



CITY OF CAMBRIDGE

BOARD OF ZONING APPEAL

831 Massachusetts Avenue, Cambridge MA 02139

617-349-6100

2024 AUG 27 AM 10:51

OFFICE OF THE CITY CLERK
CAMBRIDGE, MASSACHUSETTS

BZA Application Form

BZA Number: 281254

General Information

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

Special Permit: X Variance: Appeal:

PETITIONER: Boston Sand & Gravel C/O Cellco Partnership D/B/A Verizon Wireless

PETITIONER'S ADDRESS: C/o 1441 Main Street - Suite 1100, Springfield, MA 01103

LOCATION OF PROPERTY: 118-R Industrial Park Rd , Cambridge, MA

TYPE OF OCCUPANCY: Industrial **ZONING DISTRICT:** Industry A Zone

REASON FOR PETITION:

/Telecommunication Facility (antenna)/

DESCRIPTION OF PETITIONER'S PROPOSAL:

There are currently thirteen (13) existing antennas located on the structure's façade of the subject property, eleven (11) of which, Verizon Wireless proposes to remove and replace with nine (9) new updated antennas along with six (6) 4G/5G Radios. Additionally, the proposal includes the removal of six (6) existing Remote Radio Heads (RRHs) and the installation of six (6) new Dual-Band RRHs, removal of three (3) existing OVP-2 Junction Boxes and replacing them with three (3) new OVP-6 Junction Boxes, as well as updated support equipment and cables as shown in greater detail on the Plans. No additional changes are proposed for the modification.

SECTIONS OF ZONING ORDINANCE CITED:

Article: 4.000	Section: 4.32.G.1 & Sec. 4.40 (Footnote 49) (Telecommunication Facility).
Article: 10.000	Section: 10.40 - 10.46 (Special Permits).
Article: 6409	Section: Federal Middle Class Tax Relief Act (Spectrum Act).

Original
Signature(s):

Brett Smith *qs Authorized Agent*

(Petitioner (s) / Owner)

Brett Smith

(Print Name)

Address:
Tel. No.
E-Mail Address:

1441 Main Street, Suite 1100, Springfield, MA 01103
~~*413-519-5901*~~ *413-737-1131*
Bsmith@ssfpc.com

BZA APPLICATION FORM - OWNERSHIP INFORMATION

To be completed by OWNER, signed before a notary and returned to The Secretary of the Board of Zoning Appeals.

I/We Boston Sand & Gravel Company
(OWNER)

Address: P.O. Box 9187 Boston, MA 02114

State that I/We own the property located at 118R Industrial Park Way, which is the subject of this zoning application.

The record title of this property is in the name of Boston Sand & Gravel Company

*Pursuant to a deed of duly recorded in the date 11/30/1959, Middlesex South County Registry of Deeds at Book 9507, Page 444; or Middlesex Registry District of Land Court, Certificate No. _____ Book _____ Page _____.

Dean Boylan
SIGNATURE BY LAND OWNER OR AUTHORIZED TRUSTEE, OFFICER OR AGENT*

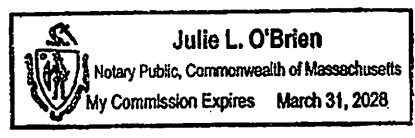
*Written evidence of Agent's standing to represent petitioner may be requested.

Commonwealth of Massachusetts, County of Suffolk

The above-name Dean F. Boylan personally appeared before me, this 28 of JUNE, 2024, and made oath that the above statement is true.

Julie L. O'Brien Notary

My commission expires 03/31/28 (Notary Seal).



- If ownership is not shown in recorded deed, e.g. if by court order, recent deed, or inheritance, please include documentation.

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 118-R Industrial Park Rd , Cambridge, MA (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:

As required by Verizon Wireless's license from the Federal Communications Commission ("FCC"), the upgraded facility will conform with the requirements of the FCC. The installation has been designed in a manner which will minimize any visual impacts to the surrounding properties and community and has been designed and camouflaged to provide minimal visibility on the structure on which it is located. The proposed modification to the existing facility is not inconsistent with the character that prevails in the surrounding neighborhood nor is it inconsistent with the requirements of the Zoning Ordinance or the requirements of the previously issued Special Permit for the existing installation and use.

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:

The upgraded facility will have no effect on existing traffic or patterns of ingress or egress. The facility only generates about one or two vehicle trips per month by a standard passenger vehicle during normal business hours for routine maintenance.

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:

The upgraded facility will not adversely impact any operations of adjacent uses. There will be no emissions of light, odor, dust or glare and it will not generate any unusual noise or other adverse impacts. Instead, the facility will benefit the adjacent uses by enhancing wireless coverage in the area surrounding the installation.

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:

The upgraded facility will create no nuisance, hazard, or any other negative impacts on the people or properties within the City of Cambridge. There will be no traffic, noise, light, odor or any other potentially negative impact generated from the upgraded facility. The upgraded facility will only provide the community with increased wireless service and enhance the health, safety, and welfare of the residents of the City of Cambridge.

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:

The upgraded facility is designed to minimize any potential visual impact to the surrounding properties and in no way impairs, but rather aligns with the purpose and intent of the Zoning

Ordinance as well as the previously issued Special Permit for the existing installation and use.

***If you have any questions as to whether you can establish all of the applicable legal requirements, you should consult with an attorney.**

Date: _____

BZA Application Form

DIMENSIONAL INFORMATION

Applicant: Boston Sand & Gravel
Location: 118-R Industrial Park Rd., Cambridge, MA
Phone: 413-519-5901

Present Use/Occupancy: Industrial
Zone: Industry A Zone
Requested Use/Occupancy: Industrial

		<u>Existing Conditions</u>	<u>Requested Conditions</u>	<u>Ordinance Requirements</u>	
TOTAL GROSS FLOOR AREA:		N/A	N/A	N/A	(max.)
LOT AREA:		N/A	N/A	N/A	(min.)
RATIO OF GROSS FLOOR AREA TO LOT AREA: ²		N/A	N/A	N/A	
LOT AREA OF EACH DWELLING UNIT		N/A	N/A	N/A	
SIZE OF LOT:	WIDTH	N/A	N/A	N/A	
	DEPTH	N/A	N/A	N/A	
SETBACKS IN FEET:	FRONT	N/A	N/A	N/A	
	REAR	N/A	N/A	N/A	
	LEFT SIDE	N/A	N/A	N/A	
	RIGHT SIDE	N/A	N/A	N/A	
SIZE OF BUILDING:	HEIGHT	93' - 0"	No Change	N/A	
	WIDTH	N/A	N/A	N/A	
	LENGTH	N/A	N/A	N/A	
RATIO OF USABLE OPEN SPACE TO LOT AREA:		N/A	N/A	N/A	
NO. OF DWELLING UNITS:		N/A	N/A	N/A	
NO. OF PARKING SPACES:		N/A	N/A	N/A	
NO. OF LOADING AREAS:		N/A	N/A	N/A	
DISTANCE TO NEAREST BLDG. ON SAME LOT		N/A	N/A	N/A	

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

Not applicable.

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'.

Verizon Wireless 60-Day Eligible Facility Request Modification of Existing Wireless Installation

Request Date: *July 19, 2024*

Jurisdiction: *City of Cambridge, Massachusetts*

Department: *Board of Zoning Appeals*

Site Address: *118-R Industrial Park Road, Cambridge, MA 02141*

Verizon Wireless Contact: *Rebecca Rafferty, SAI Communications, (603) 475-0347*

This document serves as Verizon Wireless's eligible facilities request to modify an existing wireless rooftop facility at the above-referenced site address pursuant to Section 6409 of the Federal Spectrum Act and Federal Communications Commission ("FCC") rules (the "Spectrum Act"). Review by the City of Cambridge is limited to determining administratively whether the proposed modification qualifies as an eligible facilities request that does not substantially change the physical dimensions of the wireless facility. All permits necessary to commence construction must be approved within 60 days of the request date set forth above, subject to tolling for incompleteness.

For this request, Verizon Wireless attaches the following documents for the permit required by the City of Cambridge to commence construction of the modification:

- 1. Special Permit Application;*
- 2. Plans prepared by Jacobs Telecommunications, Inc. dated May 15, 2024 (the "Plans");*
- 3. Property Owner Affidavit;*
- 4. FCC Licenses*
- 5. Antenna Specifications*
- 6. RFDS Report*
- 7. Structural Analysis*
- 8. Photo Simulations of proposed modifications*

Project Description

There are currently thirteen (13) existing antennas located on the structure's façade of the subject property, eleven (11) of which, Verizon Wireless proposes to remove and replace with nine (9) new updated antennas along with six (6) 4G/5G Radios. Additionally, the proposal includes the removal of six (6) existing Remote Radio Heads (RRHs) and the installation of six (6) new Dual-

Band RRHs, removal of three (3) existing OVP-2 Junction Boxes and replacing them with three (3) new OVP-6 Junction Boxes, as well as updated support equipment and cables as shown in greater detail on the Plans. No additional changes are proposed for the modification.

FCC Rules for Eligible Facilities Requests

The Spectrum Act states that “a State or local government may not deny, and shall approve, any eligible facilities request for a modification of an existing wireless tower or base station that does not substantially change the physical dimensions of such tower or base station.” An “eligible facilities request”¹ is defined to include any collocation, removal, or replacement of existing equipment.²

The FCC adopted rules providing legally binding guidance on key terms of the Spectrum Act, notably defining “substantial change” with the six thresholds described below.³ The FCC requires that qualifying eligible facilities requests be approved within 60 days, subject to tolling for incompleteness.⁴ The 60-day period begins when an applicant takes the first procedural step required by a local government, and submits written documentation.⁵ The only submittal documents a local government can require are those relevant to determining if a proposed modification qualifies as an eligible facilities request.⁶ If a local government does not render a decision within the 60-day period, an eligible facilities request can be deemed granted by operation of law.⁷

The Proposed Modification Does Not Constitute a “Substantial Change”

Below are the FCC’s six “substantial change” thresholds for a wireless base station,⁸ each followed by an explanation why the proposed modification does not exceed that threshold.

- 1) It increases the height of the structure by more than 10% or more than ten feet, whichever is greater.

As shown on the Plans, there are no proposed height increases beyond the existing structure’s roof.

- 2) It involves adding an appurtenance to the body of the structure that would protrude from the edge of the structure by more than six feet.

As shown on the Plans, none of the proposed equipment protrudes from the edge of the building by more than six feet.

¹ 47 U.S.C. § 1455(a)(1).

² 47 U.S.C. § 1455(a)(2).

³ See Report and Order FCC 14-153, 29 FCC Rcd. 12865 (FCC October 17, 2014); see also Report and Order FCC 20-153, 2020 WL 6501650 (FCC October 27, 2020).

⁴ See 47 C.F.R. § 1.6100(c)(2),(3).

⁵ Declaratory Ruling 20-75, 35 FCC Rcd 5977, ¶ 16 (FCC June 9, 2020).

⁶ See 47 C.F.R. § 1.6100(c)(1).

⁷ See 47 C.F.R. § 1.6100(c)(4).

⁸ See 47 C.F.R. § 1.6100(b)(7).

- 3) For any eligible support structure, it involves the installation of more than the standard number of new equipment cabinets for the technology involved, but not to exceed four; or, for base stations, it involves installation of any new equipment cabinets on the ground if there are no pre-existing ground cabinets associated with the structure, or else involves installation of ground cabinets that are more than 10% larger in height or overall volume than any other ground cabinets associated with the structure.

As shown on the Plans, no new cabinets are proposed.

- 4) Entails any excavation or deployment outside the current site (as defined at 47 C.F.R. § 1.6100(b)(6)).

As shown on the Plans, none of the modifications entail excavation or deployment outside the current site.

- 5) Would defeat any concealment elements of the existing facility.

As shown on the Plans, the existing concealment elements of the base structure will not change and the installation will remain designed to camouflage with the structure on which it is located. Therefore, the modification does not defeat any concealment elements of the existing facility.

- 6) Does not comply with conditions associated with the prior approval of the existing facility, unless the non-compliance is due only to a change in height, width, etc., that does not exceed the first four thresholds.

There are no prior conditions of approval that would render the modification to be non-compliant, aside from any conditions that would be preempted by the first four "substantial change" thresholds.

In sum, the modification clearly qualifies as an "eligible facilities request" under the Spectrum Act and FCC rules, because it does not exceed any of the thresholds such that it would "substantially change" the physical dimensions of the existing base station.

Failure to process this eligible facilities request and approve all necessary permits within 60 days may result in the request being deemed granted by operation of law.



CAMBRIDGE_MA

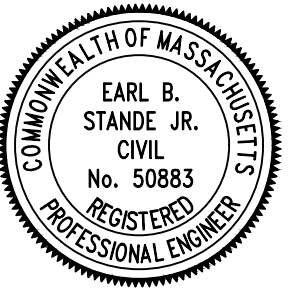
118-R INDUSTRIAL PARK RD.
 CAMBRIDGE, MA 02141
 A/K/A 500 FRONT ST.
 CAMBRIDGE, MA 02139
 VERIZON LOCATION CODE: 137820
 FUZE PROJECT ID: 16243907



118 FLANDERS ROAD 3RD FLOOR
 WESTBOROUGH, MA 01581



Jacobs Telecommunications, Inc.
 120 ST. JAMES AVENUE, 5TH FLOOR
 BOSTON, MA 02116
 TEL (617) 242-9222
 FAX (617) 242-9824



Earl B. Stander, Jr. 05/15/2024

APPROVALS

LANDLORD _____
 LEASING _____
 R.F. _____
 ZONING _____
 CONSTRUCTION _____
 A & E _____

PROJECT NO: EDVZNA01

DRAWN BY: GPN

CHECKED BY: DC

SUBMITTALS

12	05/15/24	UPDATED FOR RFDS
11	04/10/24	ADDED FLAGPOLE
10	04/01/24	UPDATED ELEVATION
9	02/28/24	UPDATED RFDS
8	12/13/23	REVISED PER NEW RFDS
7	07/20/23	REVISION
6	07/01/20	UPDATES FOR ZONING

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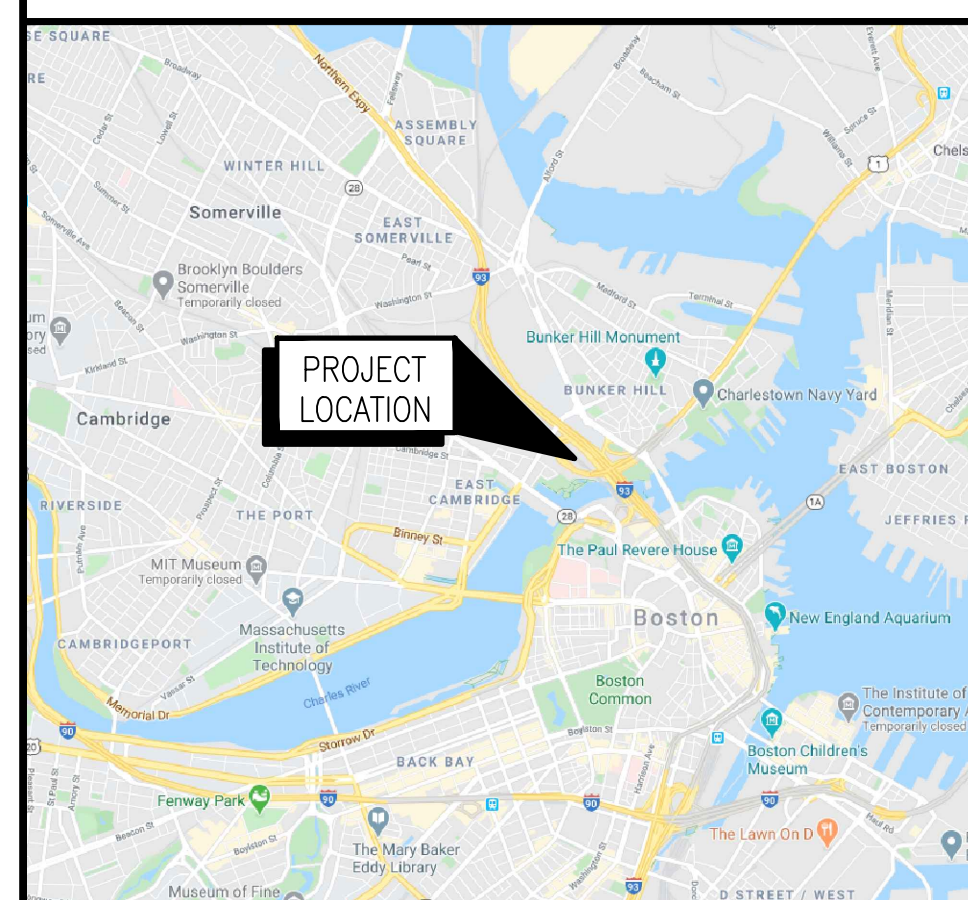
CAMBRIDGE_MA

118-R INDUSTRIAL PARK RD.
 A/K/A 500 FRONT ST.
 CAMBRIDGE, MA 02139

TITLE SHEET

T-1

VICINITY MAP NOT TO SCALE



DO NOT SCALE DRAWINGS
 CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE LESSEE/LICENSEE REPRESENTATIVE IN WRITING OF DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.

CONSULTANT TEAM

APPLICANT: VERIZON WIRELESS
 118 FLANDERS ROAD, 3RD FLOOR
 WESTBOROUGH, MA 01581

APPLICANT'S CONTACT: ALI BLACK
 (617) 875-5173

ENGINEER: JACOBS TELECOMMUNICATIONS, INC.
 120 SAINT JAMES AVENUE, 5TH FLOOR
 BOSTON, MA 02116

PROJECT SUMMARY

VERIZON SITE NAME: CAMBRIDGE_MA

COORDINATES: 42.371486 / 42° 22' 17.3496" N
 -71.067829 / 71° 4' 4.1844" W

PROJECT DIRECTORY

SITE ADDRESS: 118-R INDUSTRIAL PARK RD.
 CAMBRIDGE, MA 02141
 A/K/A 500 FRONT ST.
 CAMBRIDGE, MA 02139

COUNTY: MIDDLESEX

PROJECT DESCRIPTION


REMOVE (11) EXISTING ANTENNAS. INSTALL (6) 4G ANTENNAS, (3) CBRS RRH WITH CLIP-ON ANTENNAS, AND (6) 4G/5G RADIOS. REMOVE (6) RRH'S. INSTALL (6) DUAL-BAND RRH'S. REMOVE ANY CDMA ANTENNAS / EQUIPMENT. REMOVE (3) OVP-2 JUNCTION BOXES AND (3) 2X4 HYBRID CABLES. INSTALL (3) OVP-6 JUNCTION BOXES AND (3) 6X12 LI HYBRI-FLEX CABLES. RETAIN EXISTING COAX.

THIS DOCUMENT WAS DEVELOPED TO REFLECT A SPECIFIC SITE AND ITS SITE CONDITIONS AND IS NOT TO BE USED FOR ANOTHER SITE OR WHEN CONDITIONS PERTAIN. REUSE OF THIS DOCUMENT IS AT THE SOLE RISK OF THE USER.

A.D.A. COMPLIANCE:
 FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION

SHEET INDEX

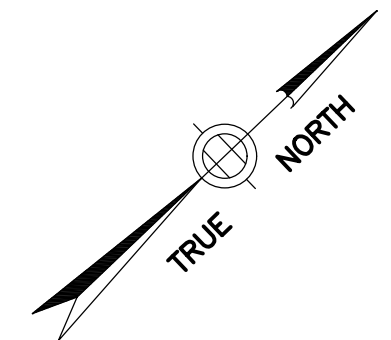
T-1	TITLE SHEET
C-1	ROOF PLAN
C-2	ANTENNA LAYOUTS
C-3	PARTIAL ELEVATION
C-4	PLUMBING DIAGRAM ALPHA
C-5	PLUMBING DIAGRAM BETA
C-5.1	PLUMBING DIAGRAM GAMMA
C-6	DETAILS



UNDERGROUND SERVICE ALERT

THE LAW REQUIRES TWO WORKING DAYS NOTICE PRIOR TO ANY EARTH MOVING ACTIVITIES. DIAL 811

C:\Users\krotin\OneDrive\Documents\Projects\137820_Cambridge_MA\16243907_CDA_Rev12_051524.dwg [1-1 Title Sheet] May 15, 2024 - 10:27am krotin



PROPOSED ANTENNAS TO REPLACE EXISTING. SEE SHEET C-2, DETAIL #2. (TYP. ALL SECTORS)

ROOFTOP LOCATION OF VERIZON EQUIPMENT. SEE PROPOSED ANTENNA LAYOUT SHEET C-2, DETAIL #2.

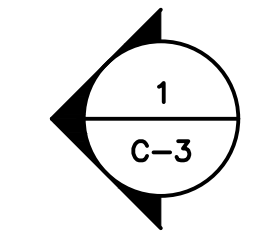
PROPOSED RRHS TO REPLACE EXISTING. SEE SHEET C-2, DETAIL #2. (TYP. ALL SECTORS)

NOTE:
ALL ANTENNAS SHALL BE WRAPPED TO MATCH COLOR OF EXISTING FACADE.

SECTOR 'GAMMA'
AZIMUTH=267

SECTOR 'ALPHA'
AZIMUTH=0

SECTOR 'BETA'
AZIMUTH=120



EXISTING VERTICAL CABLE TRAY

EXISTING ICE BRIDGE

EXISTING STEEL PLATFORM

EXISTING HVAC EQUIPMENT (TYP.)

EXISTING VERIZON WIRELESS EQUIPMENT SHELTER

EXISTING CONVEYOR (TYP.)

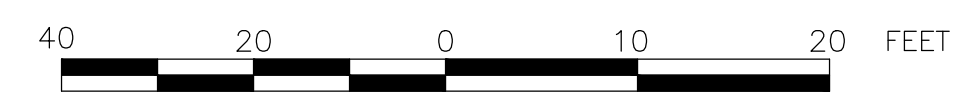
CABLE LENGTHS:

HYBRID 6x12 CABLES:
ALPHA = 75'
BETA = 80'
GAMMA = 106'

HYBRID 1x1 JUMPERS:
ALPHA = 12'
BETA = 12'
GAMMA = 12'

LEGEND:

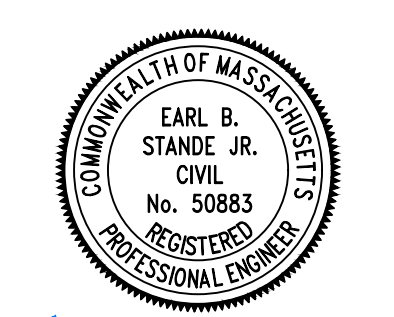
A.G.L. = ABOVE GRADE LEVEL
⊕ = CENTER LINE



SCALE: 1" = 5' FULL SCALE (22"x34")
1" = 10' HALF SCALE (11"x17")

verizon
118 FLANDERS ROAD 3RD FLOOR
WESTBOROUGH, MA 01581

Jacobs
Jacobs Telecommunications, Inc.
120 ST. JAMES AVENUE, 5TH FLOOR
BOSTON, MA 02116
TEL (617) 242-9222
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APPROVALS

LANDLORD _____

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R.F. _____

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CONSTRUCTION _____

A & E _____

PROJECT NO: EDVZNA01

DRAWN BY: GPN

CHECKED BY: DC

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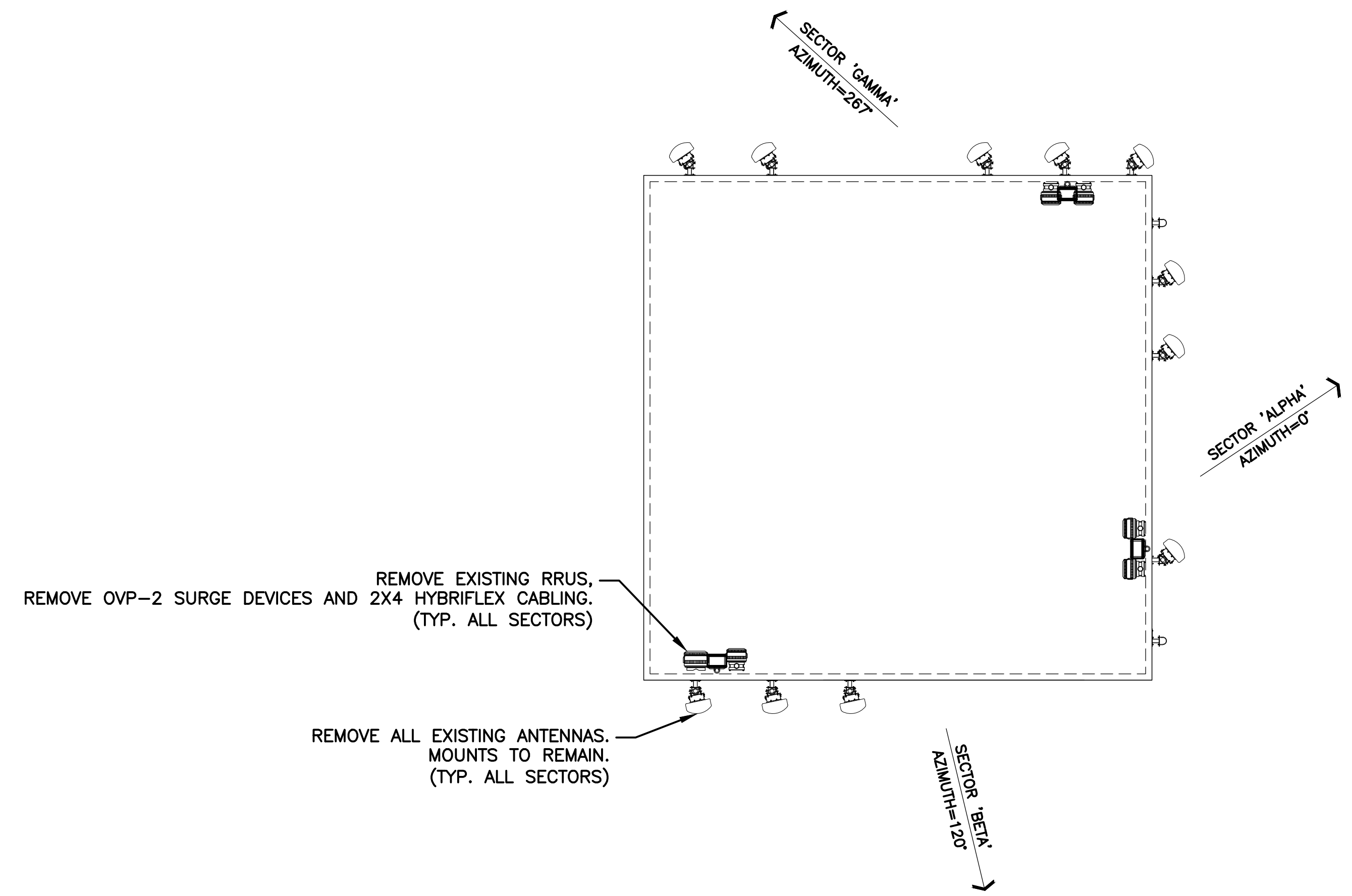
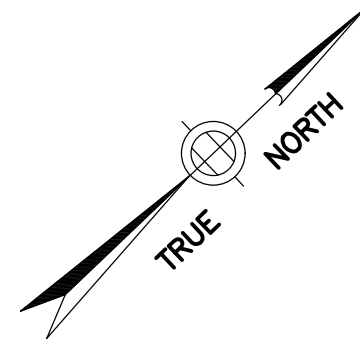
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CAMBRIDGE_MA
118-R INDUSTRIAL PARK RD.
A/K/A 500 FRONT ST.
CAMBRIDGE, MA 02139

ROOF PLAN

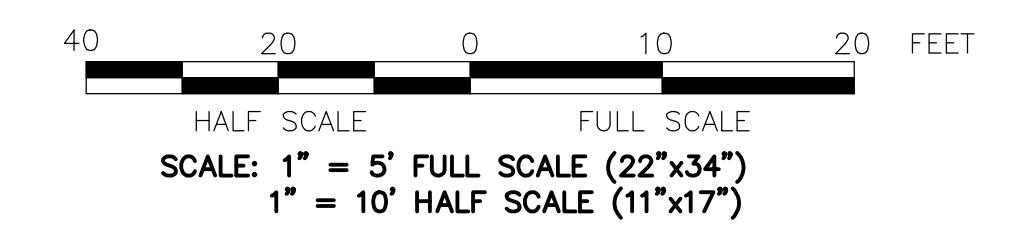
C-1

C:\Users\KratinkR\AppData\Local\Temp\Temp_VacPublish_18176\137820_Cambridge_MA_rec40820_1624367_CD_Rev12_051624.dwg [C-1 Roof Plan] May 15, 2024 10:27am KratinR

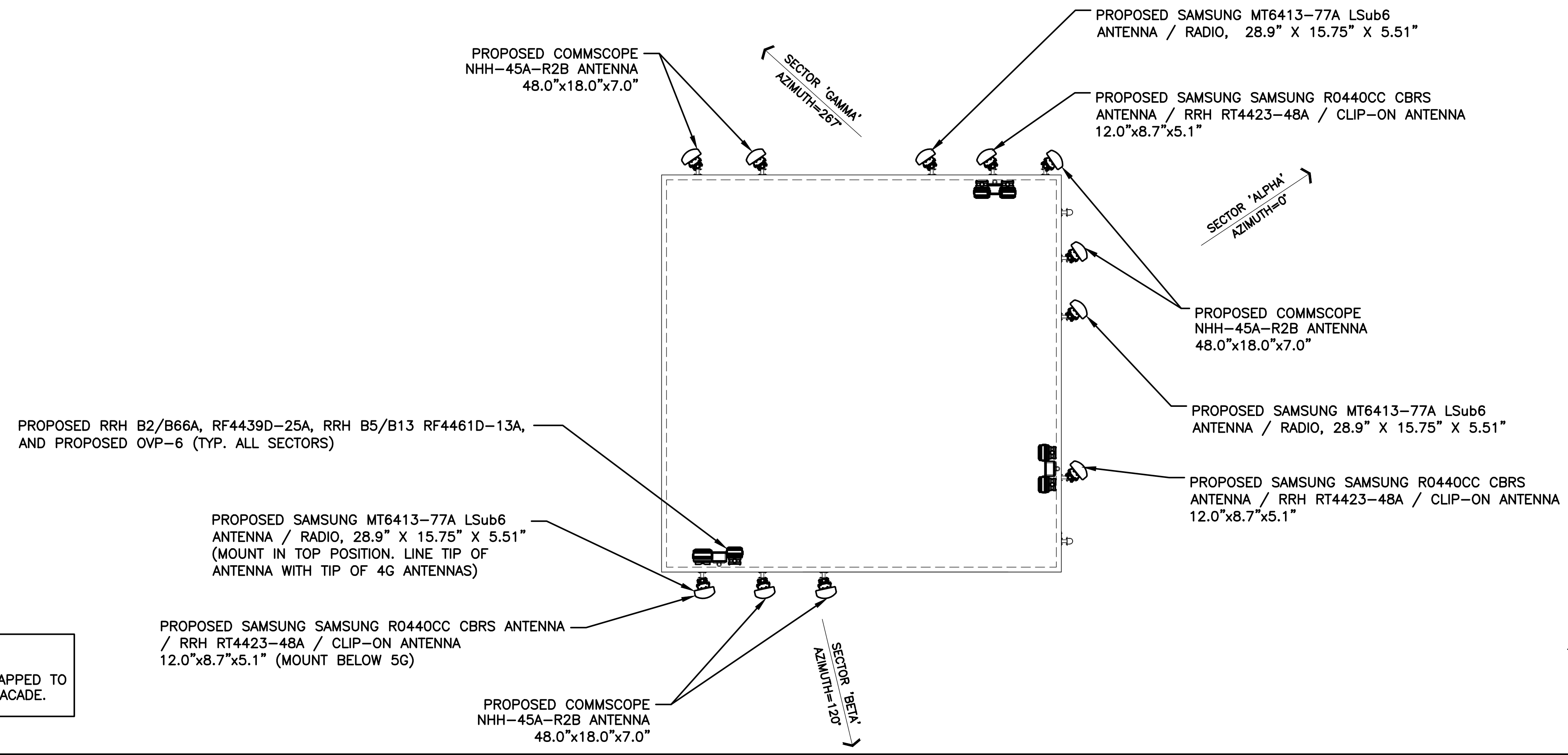
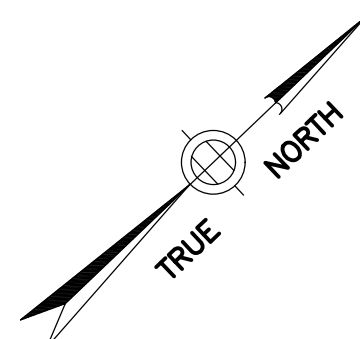


NOTE:
REMOVE ALL EXISTING CDMA EQUIPMENT AND ANTENNAS.

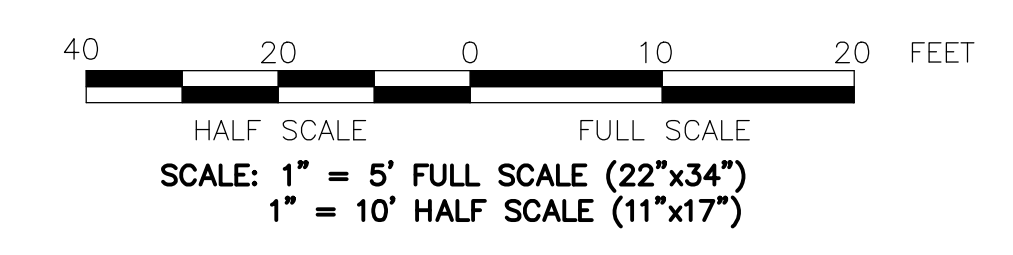
- NOTES:**
- CONTRACTOR SHALL REFER TO THE ANTENNA MOUNT ANALYSIS REPORT BY JACOBS TELECOMMUNICATIONS, INC. DATED 05/15/2024. NO MODIFICATIONS ARE REQUIRED FOR THE PROPOSED EQUIPMENT. CONTRACTOR SHALL CONFIRM ALL EXISTING AND PROPOSED EQUIPMENT ARE INSTALLED IN ACCORDANCE WITH THIS REPORT.
 - CONTRACTOR TO VERIFY FINAL RF CONFIGURATION AND NOTIFY CARRIER AND ENGINEER W/ ANY DISCREPANCIES PRIOR TO THE INSTALLATION.



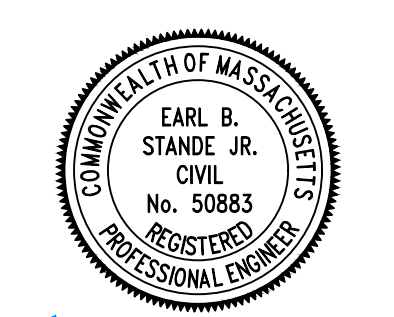
1 EXISTING ANTENNA LAYOUT



NOTE:
ALL ANTENNAS SHALL BE WRAPPED TO MATCH COLOR OF EXISTING FACADE.



2 PROPOSED ANTENNA LAYOUT



APPROVALS

LANDLORD _____

LEASING _____

R.F. _____

ZONING _____

CONSTRUCTION _____

A & E _____

PROJECT NO: EDVZNA01

DRAWN BY: GPN

CHECKED BY: DC

SUBMITTALS

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CAMBRIDGE_MA
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ANTENNA LAYOUTS

C-2

C:\Users\KrajinikR\AppData\Local\Temp\Temp\137820_Cambridge_MA_rec\40820_16243607_CDMa_Rev12_051524.dwg [C-2 Antenna Plan] May 15, 2024 10:27am krajinikR

TOP OF EXISTING FLAGPOLE
ELEV.=131'-9"± A.G.L.

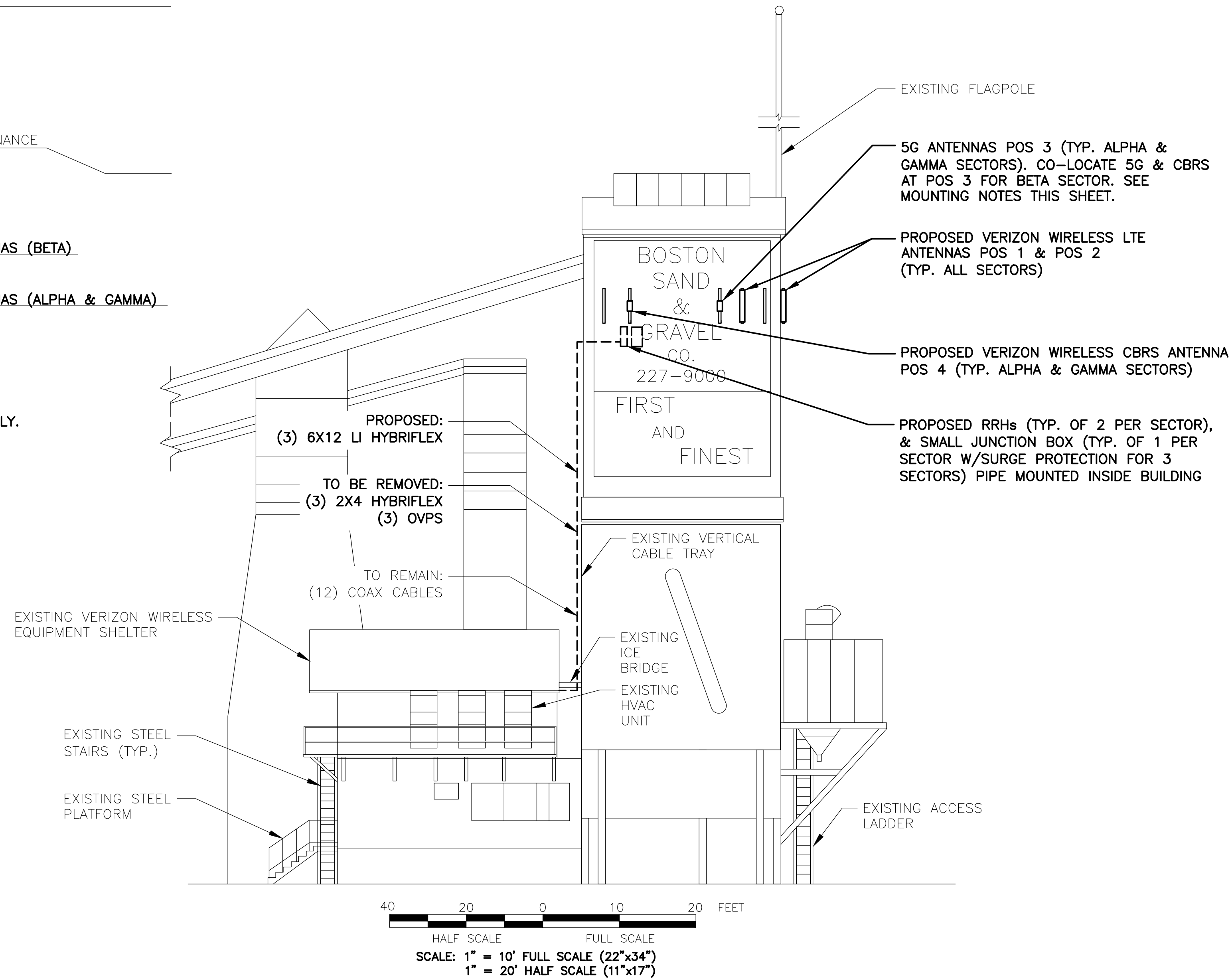
TOP OF EXISTING ROOF APPURTENANCE
ELEV.=93'-0"± A.G.L.

OF PROPOSED VERIZON ANTENNAS (BETA)
ELEV.=83'-0"± A.G.L.

OF PROPOSED VERIZON ANTENNAS (ALPHA & GAMMA)
ELEV.=75'-0"± A.G.L.

MOUNTING NOTES:

1. CL OF CBRS ANTENNAS = 75'-0" A.G.L. FOR ALPHA AND GAMMA, AND 81'-0" A.G.L FOR BETA SECTORS RESPECTIVELY.
2. CL OF 5G ANTENNAS = 75'-0" A.G.L. FOR ALPHA AND GAMMA SECTORS. FOR BETA: LINE UP THE TIP OF THE 5G ANTENNA WITH PROPOSED 4G ANTENNAS AT 85'-0" A.G.L.



NOTES:

1. CONTRACTOR SHALL REFER TO THE ANTENNA MOUNT ANALYSIS REPORT BY JACOBS TELECOMMUNICATIONS, INC. DATED 05/15/2024. NO MODIFICATIONS ARE REQUIRED FOR THE PROPOSED EQUIPMENT. CONTRACTOR SHALL CONFIRM ALL EXISTING AND PROPOSED EQUIPMENT ARE INSTALLED IN ACCORDANCE WITH THIS REPORT.

NOTE:

ALL ANTENNAS SHALL BE WRAPPED TO MATCH COLOR OF EXISTING FACADE.

GENERAL NOTES:

1. SOME EXISTING AND PROPOSED INFORMATION NOT SHOWN FOR CLARITY.
2. NORTH ARROW SHOWN AS APPROXIMATE.
3. EXISTING ANTENNAS SHOWN AS APPROXIMATE. ELEVATION BASED ON EXISTING INFORMATION AND VISUAL INSPECTION AND HAVE NOT BEEN VERIFIED THROUGH AN ANTENNA MAPPING.
4. PLANS BASED ON AWS DRAWINGS ISSUED BY DEWBERRY ENGINEERING ON 04/02/15 AND FIELD OBSERVATION DURING SITE VISIT BY JACOBS ON 07/08/15.
5. ANTENNAS TO BE INSTALLED PER TOWER MANUFACTURER RECOMMENDATIONS AND TOWER STRUCTURAL ANALYSIS SPECIFICATIONS.
6. REUSE EXISTING ANTENNA MOUNTS. INSPECT FOR DAMAGE OR DECAY AND REPLACE AS NEEDED PER STRUCTURAL ANALYSIS.
7. CONTRACTOR TO VERIFY FINAL ANTENNA DESIGN AND NOTIFY CARRIER AND ENGINEER WITH ANY DISCREPANCIES PRIOR TO THE INSTALLATION.
8. INSTALL ALL EQUIPMENT PER MANUFACTURER'S RECOMMENDATIONS.
9. ALL EQUIPMENT SHALL BE GROUNDED PER VERIZON WIRELESS STANDARDS AND MANUFACTURER'S RECOMMENDATIONS.
10. EQUIPMENT MOUNTING DETAIL IS PROVIDED AS SCHEMATIC IN NATURE WITH SUGGESTED PART NUMBERS, ACTUAL PARTS, MOUNTING METHOD, LOCATION AND ORIENTATION MUST BE IN ACCORDANCE WITH THE STRUCTURAL ANALYSIS OR CONFIRMED WITH THE STRUCTURAL ENGINEER THAT COMPLETED THE REPORT IF NOT PROVIDED.
11. ALL PROPOSED EQUIPMENT INCLUDING ANTENNAS, COAX, SURGE ARRESTORS, RRU'S, ETC. SHALL BE MOUNTED IN ACCORDANCE WITH THE STRUCTURAL ANALYSIS.
12. ALL DIMENSIONS TO, OF, AND ON EXISTING BUILDINGS, DRAINAGE STRUCTURES, AND SITE IMPROVEMENTS SHALL BE VERIFIED IN FIELD BY CONTRACTOR PRIOR TO FINAL FABRICATION. ANY DISCREPANCIES SHALL BE REPORTED IMMEDIATELY TO ENGINEER.
13. CONSTRUCTION SAFETY SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR. THESE DRAWINGS DO NOT INCLUDE NECESSARY SAFETY COMPONENTS.
14. BRACE STRUCTURES SUCH AS LATERAL BRACING, ANCHOR BOLTS, ETC. SHALL BE INSTALLED UNTIL ALL STRUCTURAL ELEMENTS REACH TO REQUIRED STABILITY.
15. INCORRECTLY FABRICATED, DAMAGED, OR OTHERWISE MISFITTING OF NONCONFORMING MATERIALS OR CONDITIONS SHALL BE REPORTED TO THE OWNER PRIOR TO REMEDIAL OR CORRECTIVE ACTION. ANY SUCH REMEDIAL ACTION SHALL REQUIRE WRITTEN APPROVAL BY THE OWNER'S REPRESENTATIVE PRIOR TO PROCEEDING.
16. EACH CONTRACTOR SHALL COOPERATE WITH THE OWNER'S REPRESENTATIVE AND COORDINATE HIS WORK WITH THE WORK OF OTHERS.
17. REPAIR ANY DAMAGE DURING CONSTRUCTION TO MATCH EXISTING PRE-CONSTRUCTION CONDITIONS TO THE SATISFACTION OF THE CONSTRUCTION MANAGER.
18. CONTRACTOR SHALL SUPERVISE AND DIRECT THE PROJECT DESCRIBED HEREIN. CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR ALL CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES AND PROCEDURES AND FOR COORDINATING ALL PORTIONS OF THE WORK UNDER THE CONTRACT.

LEGEND:

A.G.L. = ABOVE GRADE LEVEL
CL = CENTER LINE

verizon
118 FLANDERS ROAD 3RD FLOOR
WESTBOROUGH, MA 01581

JACOBS
Jacobs Telecommunications, Inc.
120 ST. JAMES AVENUE, 5TH FLOOR
BOSTON, MA 02116
TEL (617) 242-9222
FAX (617) 242-9824



APPROVALS

LANDLORD _____

LEASING _____

R.F. _____

ZONING _____

CONSTRUCTION _____

A & E _____

PROJECT NO: EDVZNA01

DRAWN BY: GPN

CHECKED BY: DC

SUBMITTALS

12	05/15/24	UPDATED FOR RFDS
11	04/10/24	ADDED FLAGPOLE
10	04/01/24	UPDATED ELEVATION
9	02/28/24	UPDATED RFDS
8	12/13/23	REVISED PER NEW RFDS
7	07/20/23	REVISION
6	07/01/20	UPDATES FOR ZONING

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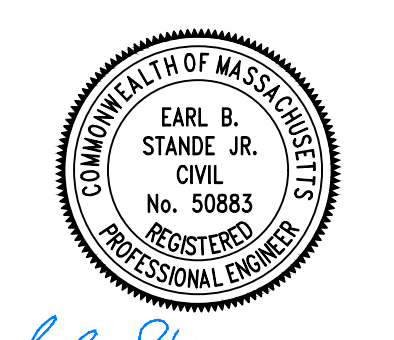
CAMBRIDGE_MA

118-R INDUSTRIAL PARK RD.
A/K/A 500 FRONT ST.
CAMBRIDGE, MA 02139

PARTIAL ELEVATION

C-3

C:\Users\KratinkR\AppData\Local\Temp\Local_Vap\Pub\18176\137820_Cambridge_MA_rec\40820_1624397_CD_rev12_051524.dwg [C-4 Details] May 15, 2024 - 10:27am KratinR



APPROVALS

LANDLORD _____

LEASING _____

R.F. _____

ZONING _____

CONSTRUCTION _____

A & E _____

PROJECT NO: EDVZNA01

DRAWN BY: GPN

CHECKED BY: DC

SUBMITTALS

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CAMBRIDGE_MA
 118-R INDUSTRIAL PARK RD.
 A/K/A 500 FRONT ST.
 CAMBRIDGE, MA 02139

PLUMBING DIAGRAM
 ALPHA

C-4

Alpha
(Proposed)

Legends

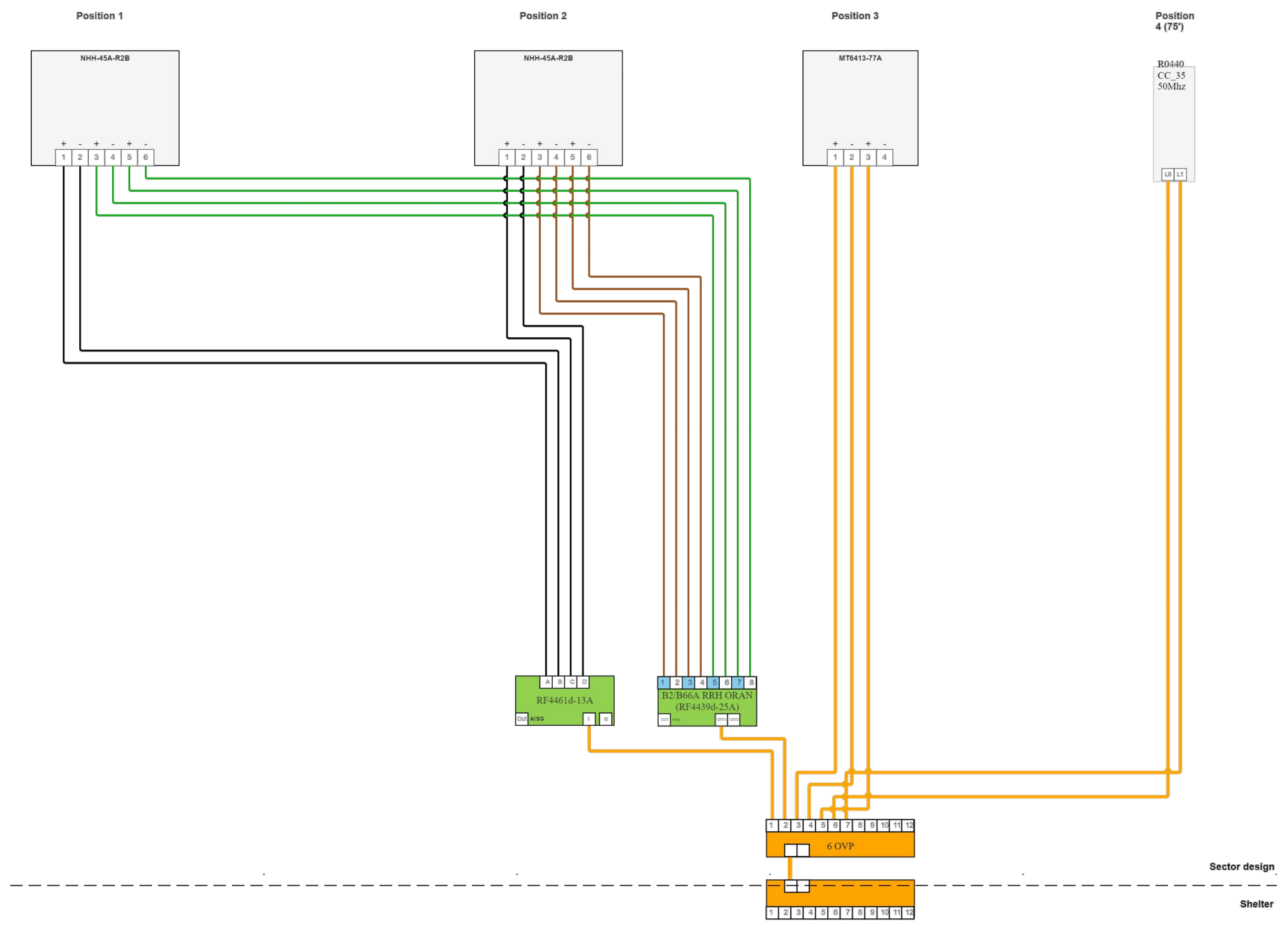
RET dc signal capable port

- 700/850(LB)
- 700(LT)
- 850(CB)
- AWS(AW)
- PCS(PC)
- AWS/PCS(HB)
- 28GHz(U28)
- 39GHz(U39)
- L-Sub6(S6)
- CBRS(RS)
- LAA(LA)
- Fiber
- AISG
- DC

Coax
 Coax Jumper
 Sectors Shared Equipments

Notes:

- Antenna view is from the back of the antennas
- Colors of connections are just for clarification
- Size of objects in drawing doesn't reflect equipment true dimensions





118 FLANDERS ROAD 3RD FLOOR
WESTBOROUGH, MA 01581



Jacobs Telecommunications, Inc.
120 ST. JAMES AVENUE, 5TH FLOOR
BOSTON, MA 02116
TEL (617) 242-9222
FAX (617) 242-9824



Earl B. Stande Jr. 05/15/2024

APPROVALS

LANDLORD _____
LEASING _____
R.F. _____
ZONING _____
CONSTRUCTION _____
A & E _____

PROJECT NO: EDVZNA01

DRAWN BY: GPN

CHECKED BY: DC

SUBMITTALS

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CAMBRIDGE_MA

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CAMBRIDGE, MA 02139

PLUMBING DIAGRAM
BETA

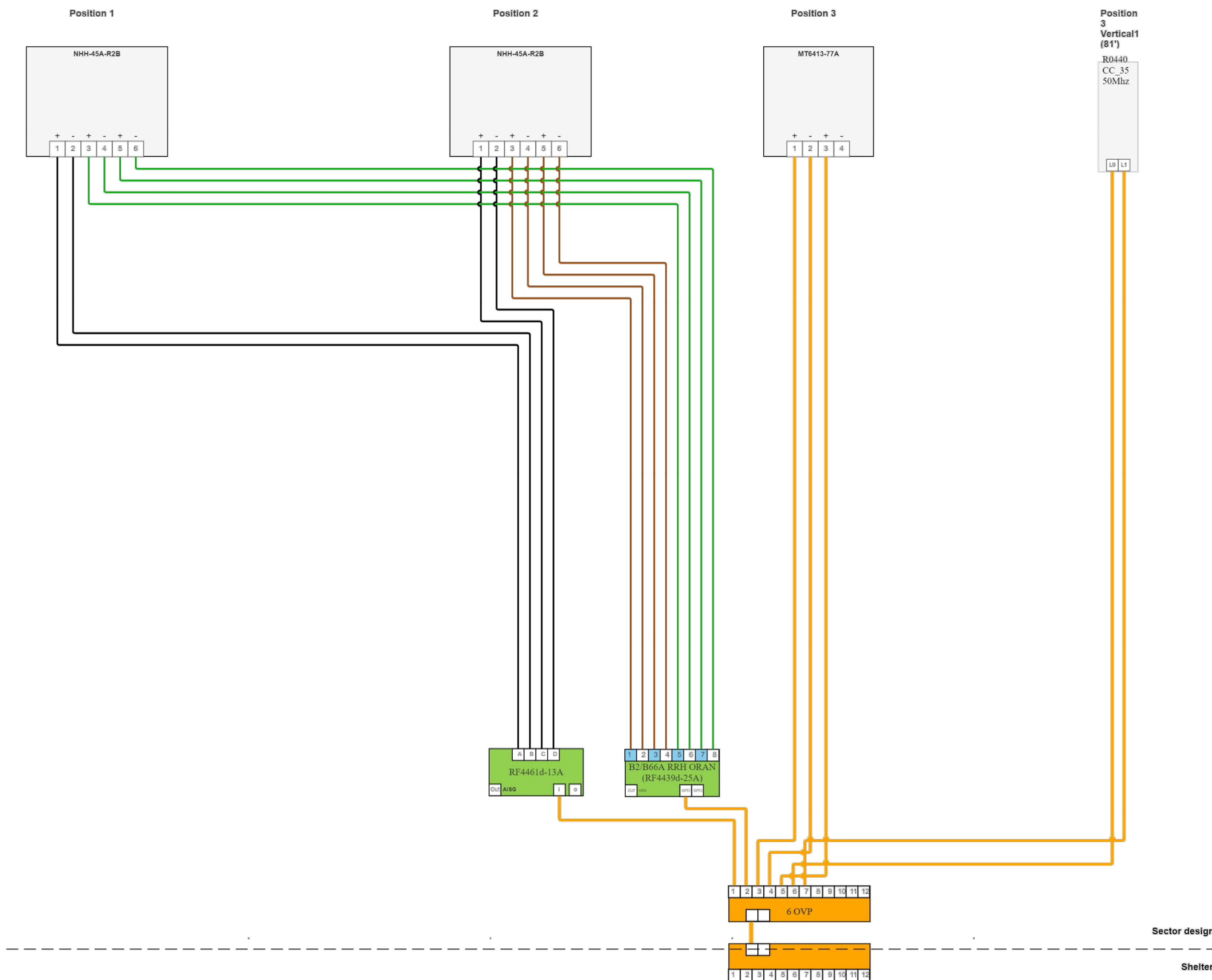
C-5

Beta (Proposed)

Legends	
■	RET dc signal capable port
—	700/850(LB)
—	700(LT)
—	850(CB)
—	AWS(AW)
—	PCS(PC)
—	AWS/PCS(HB)
—	28GHz(U28)
—	39GHz(U39)
—	L-Sub6(S6)
—	CBRS(RS)
—	LAA(LA)
—	Fiber
—	AISG
—	DC
—	Coax
—	Coax Jumper
■	Sectors Shared Equipments

Notes:

- Antenna view is from the back of the antennas
- Colors of connections are just for clarification
- Size of objects in drawing doesn't reflect equipment true dimensions



Sector design

Shelter



Earl B. Stande Jr. 05/15/2024

APPROVALS

LANDLORD _____
LEASING _____
R.F. _____
ZONING _____
CONSTRUCTION _____
A & E _____

PROJECT NO: EDVZNA01

DRAWN BY: GPN

CHECKED BY: DC

SUBMITTALS

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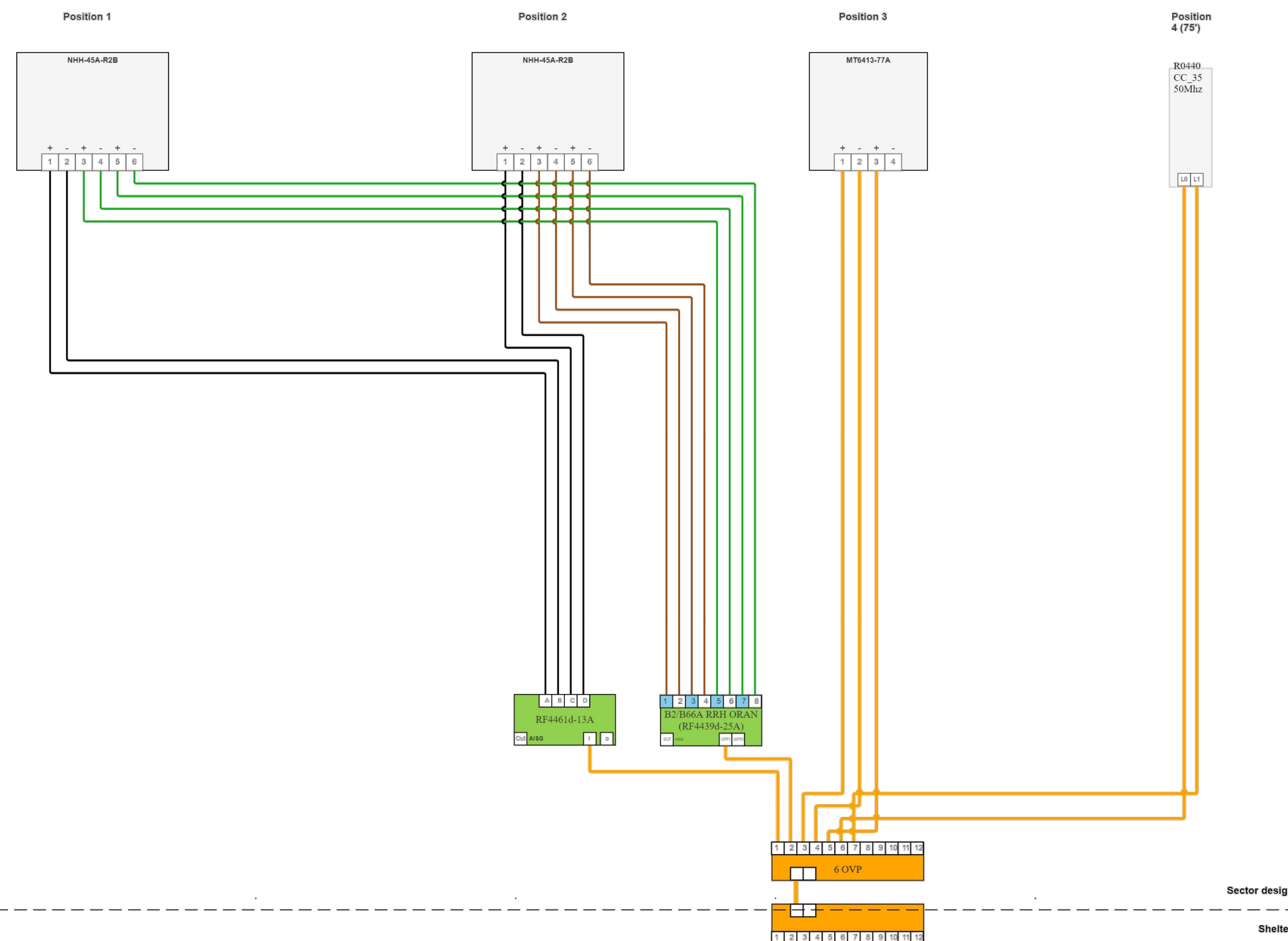
CAMBRIDGE_MA

118-R INDUSTRIAL PARK RD.
A/K/A 500 FRONT ST.
CAMBRIDGE, MA 02139

PLUMBING DIAGRAM
GAMMA

C-5.1

**Gamma
(Proposed)**



Legends

RET dc signal capable port

- 700/850(LB)
- 700(LT)
- 850(CB)
- AWS(AW)
- PCS(PC)
- AWS/PCS(HB)
- 28GHz(U28)
- 39GHz(U39)
- L-Sub6(S6)
- CBRS(RS)
- LAA(LA)
- Fiber
- AISG
- DC

Coax
Coax Jumper
Sectors Shared Equipments

Notes:

- Antenna view is from the back of the antennas
- Colors of connections are just for clarification
- Size of objects in drawing doesn't reflect equipment true dimensions

Sector design

Shelter



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BOSTON, MA 02116
TEL (617) 242-9222
FAX (617) 242-9824



Earl B. Stande, Jr. 05/15/2024

APPROVALS

LANDLORD _____
LEASING _____
R.F. _____
ZONING _____
CONSTRUCTION _____
A & E _____

PROJECT NO: EDVZNA01

DRAWN BY: GPN

CHECKED BY: DC

SUBMITTALS

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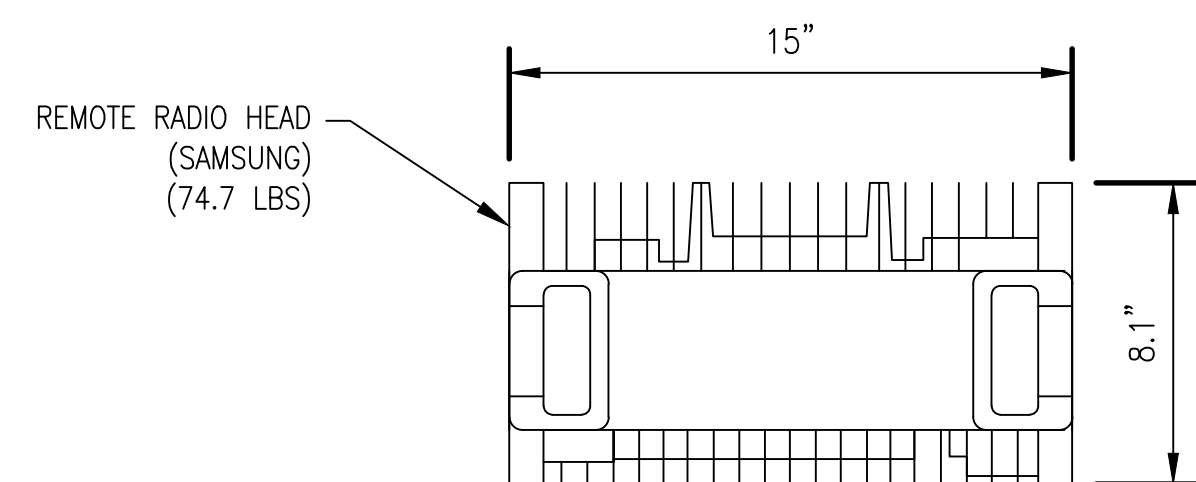
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CAMBRIDGE_MA

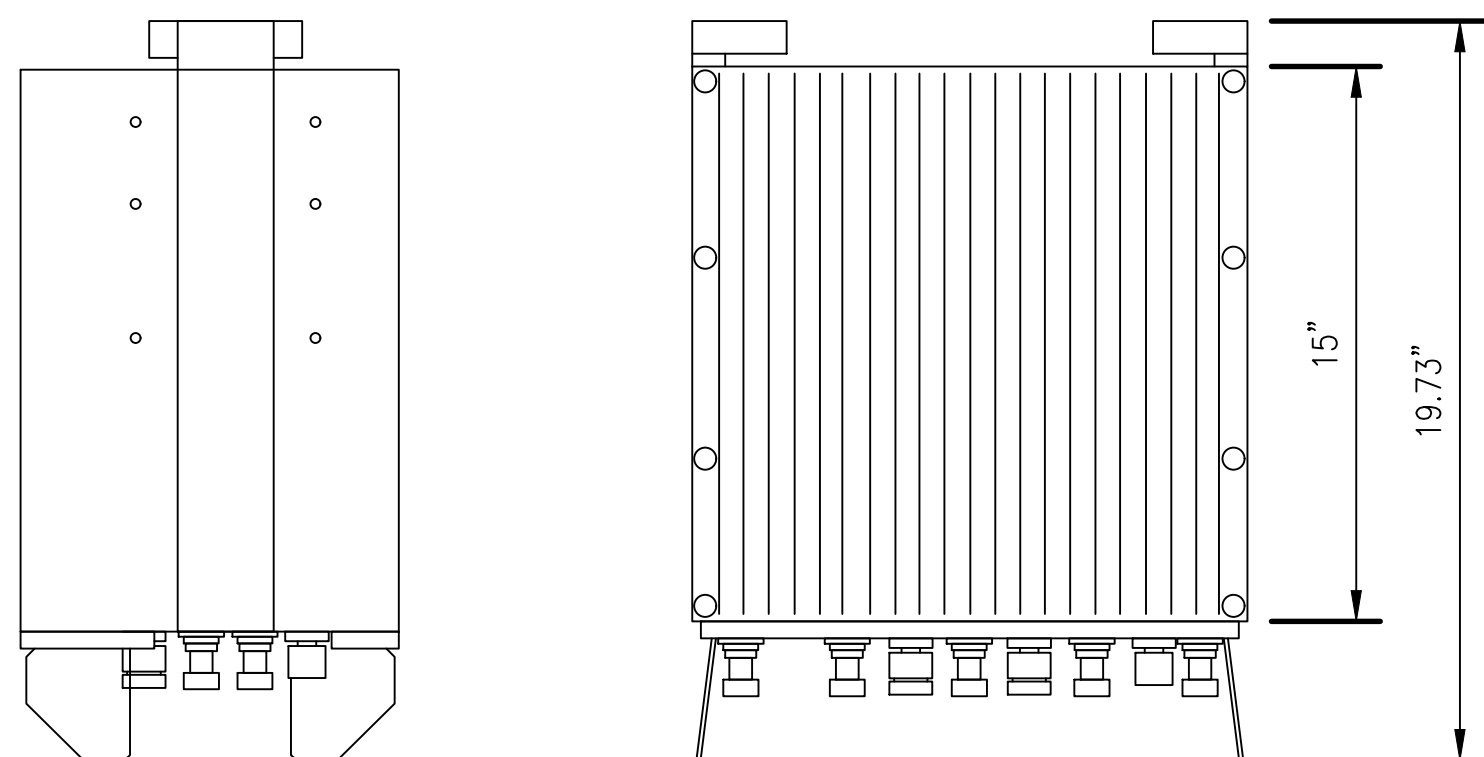
118-R INDUSTRIAL PARK RD.
A/K/A 500 FRONT ST.
CAMBRIDGE, MA 02139

DETAILS

C-6



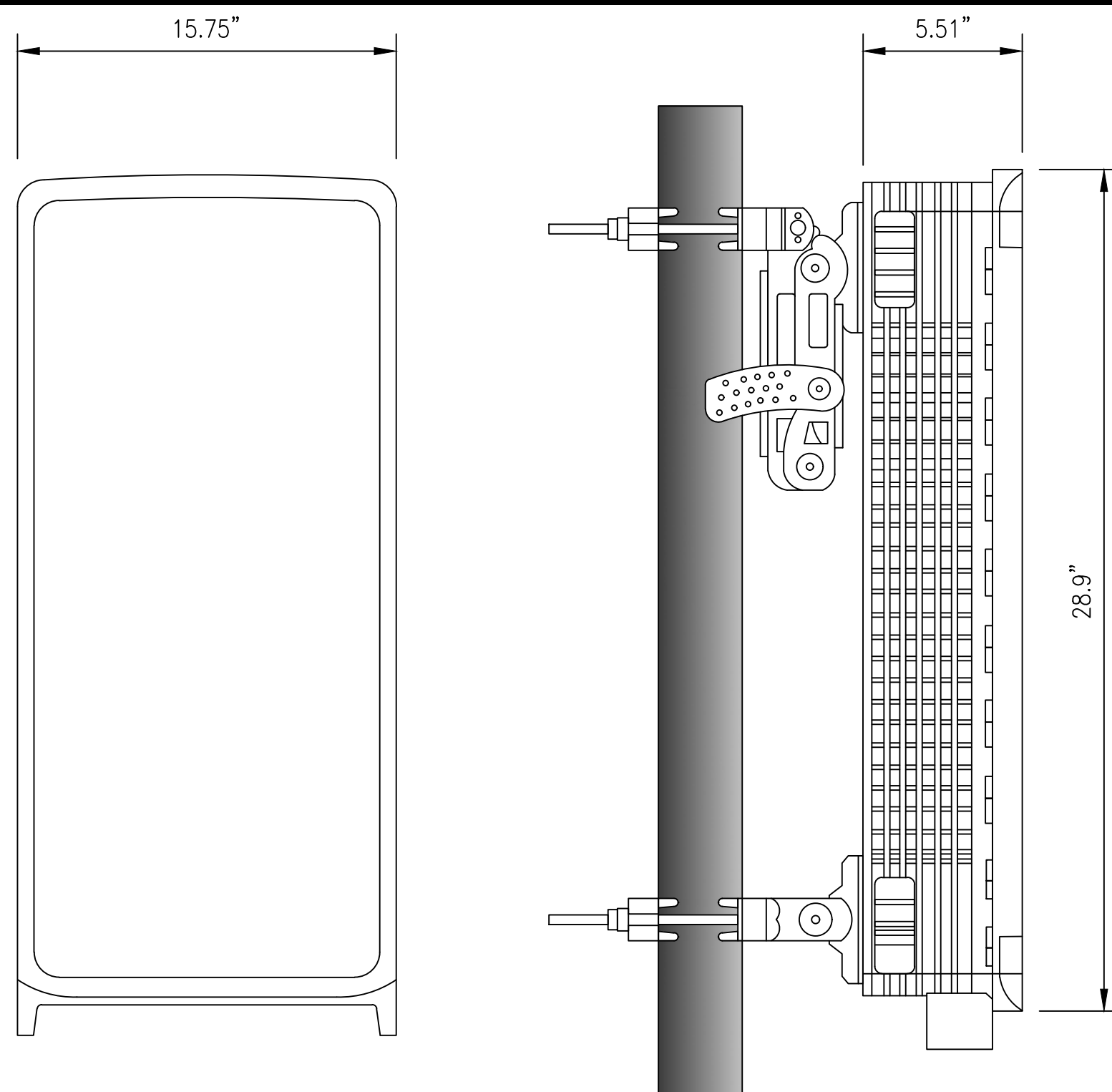
TOP



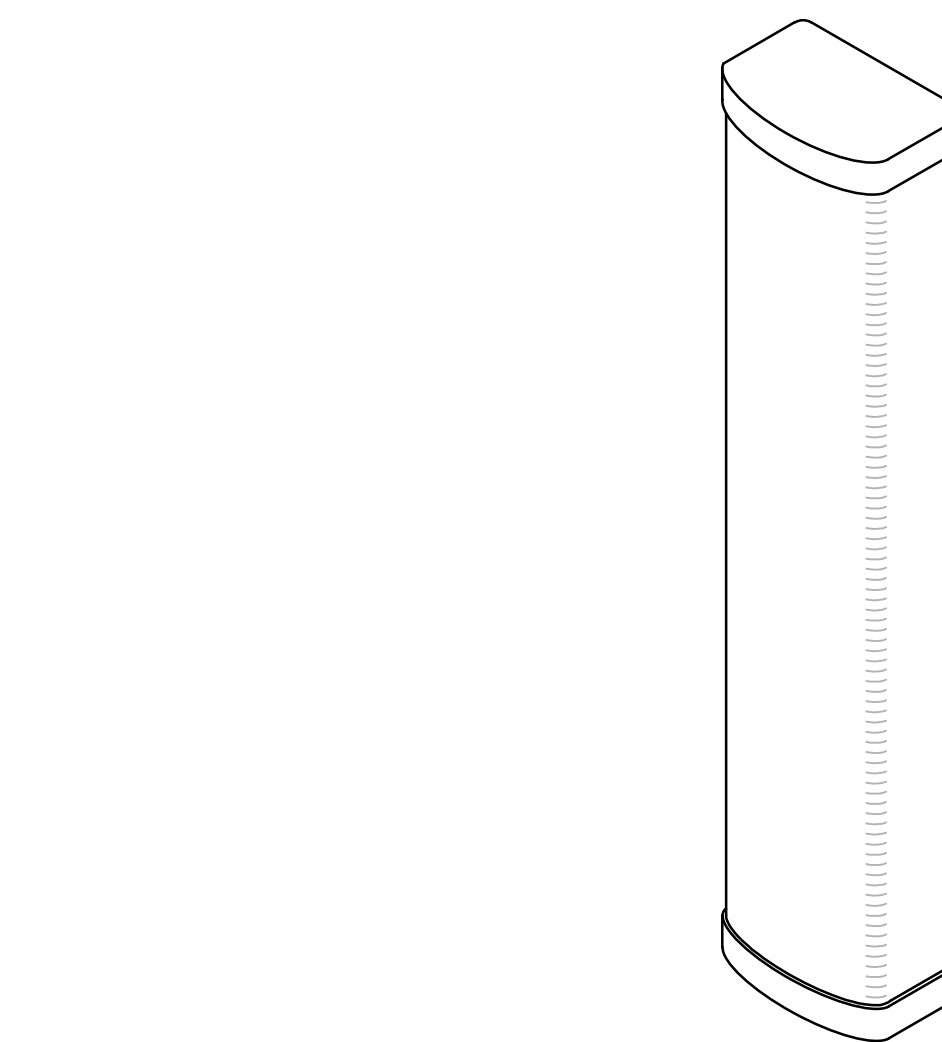
SIDE

FRONT

RRH: SAMSUNG RRH B2/B66A RF4439D-25A
WEIGHT: 74.7 LBS



ANTENNA TYPE:
SAMSUNG MT6413-77A
DIMENSIONS: 28.9" X 15.75" X 5.51" (HWD)
WEIGHT: 57.32 LBS. (WITHOUT A BRACKET)

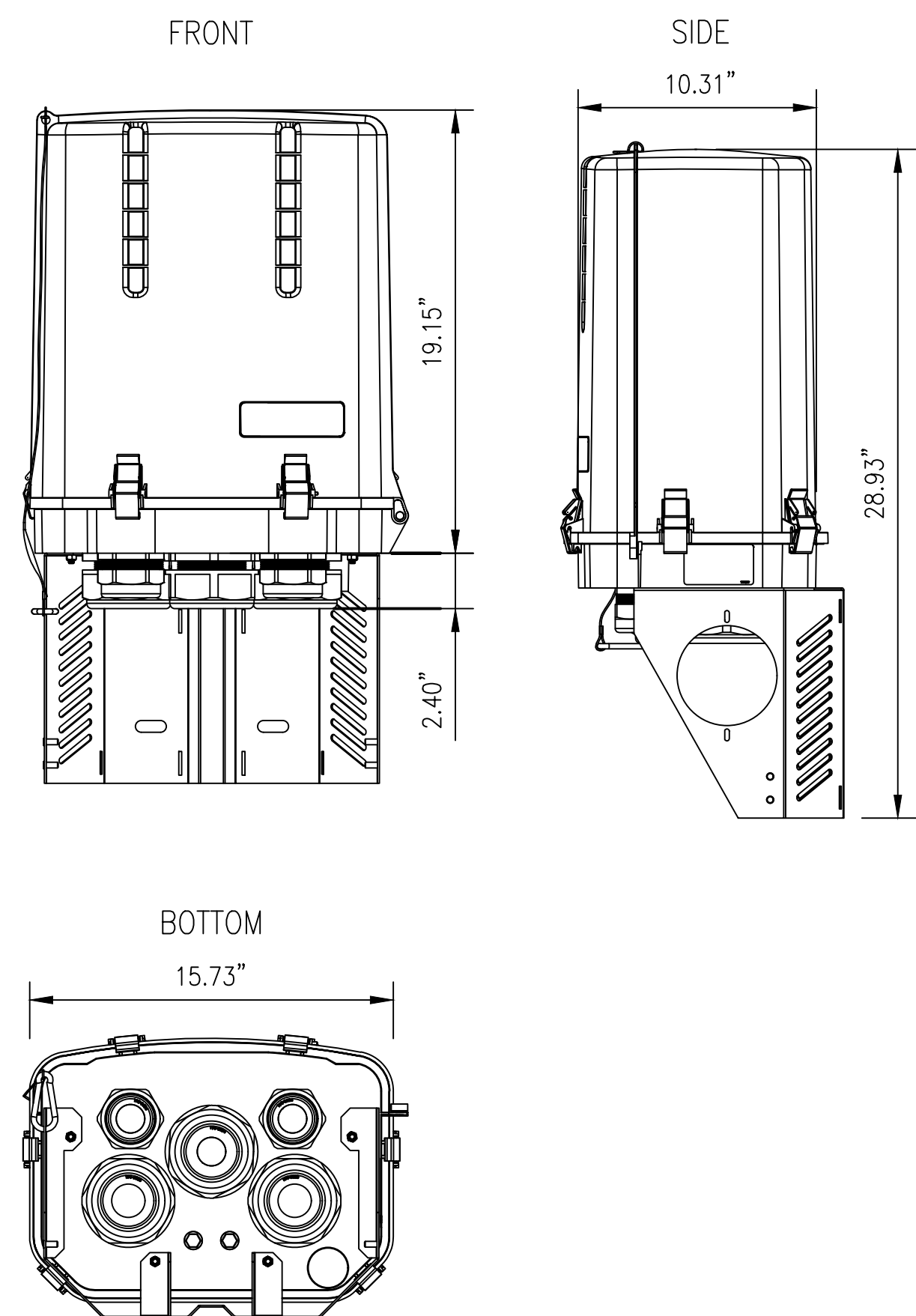


ANTENNA TYPE:
COMMSCOPE NHH-45A-R2B ANTENNA
DIMENSIONS: 48.0"x18.0"x7.0"
WEIGHT: 49.8 LBS.

1 SAMSUNG RRH B2/B66A RF4439D-25A

2 SAMSUNG 5G ANTENNA & RADIO

3 COMMSCOPE ANTENNA NHH-45A-R2B

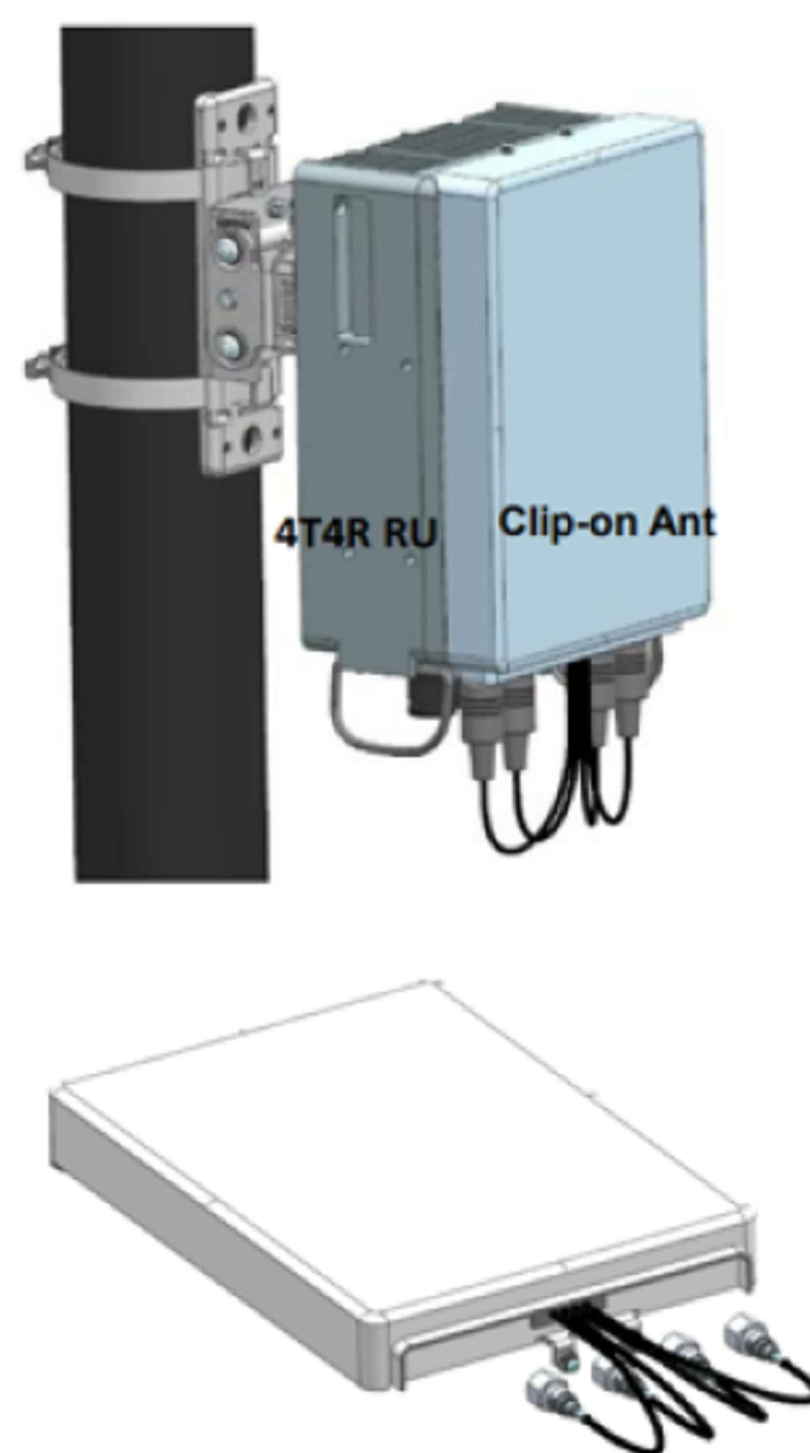


FRONT

SIDE

BOTTOM

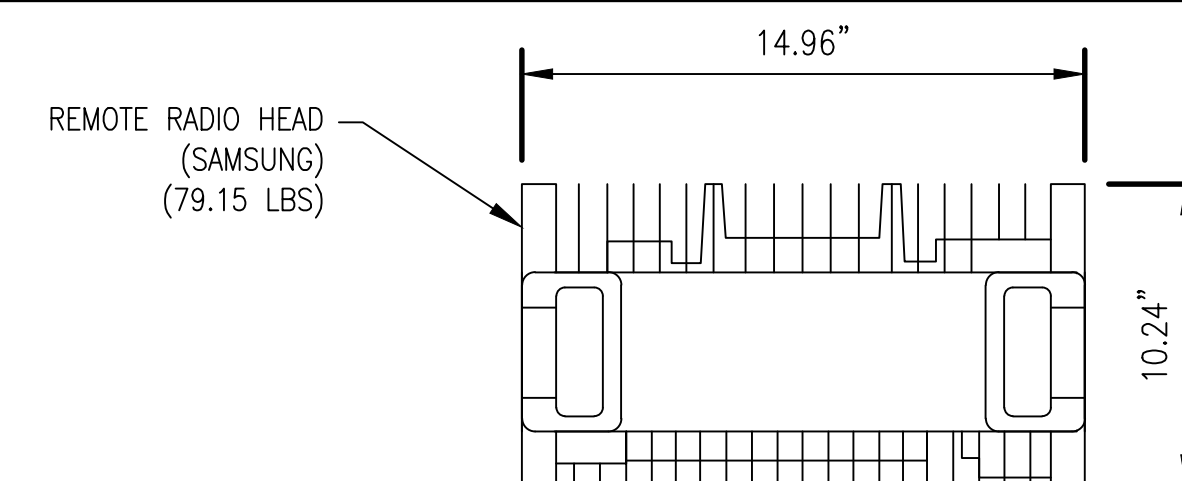
4 OVP-6 SPECIFICATION



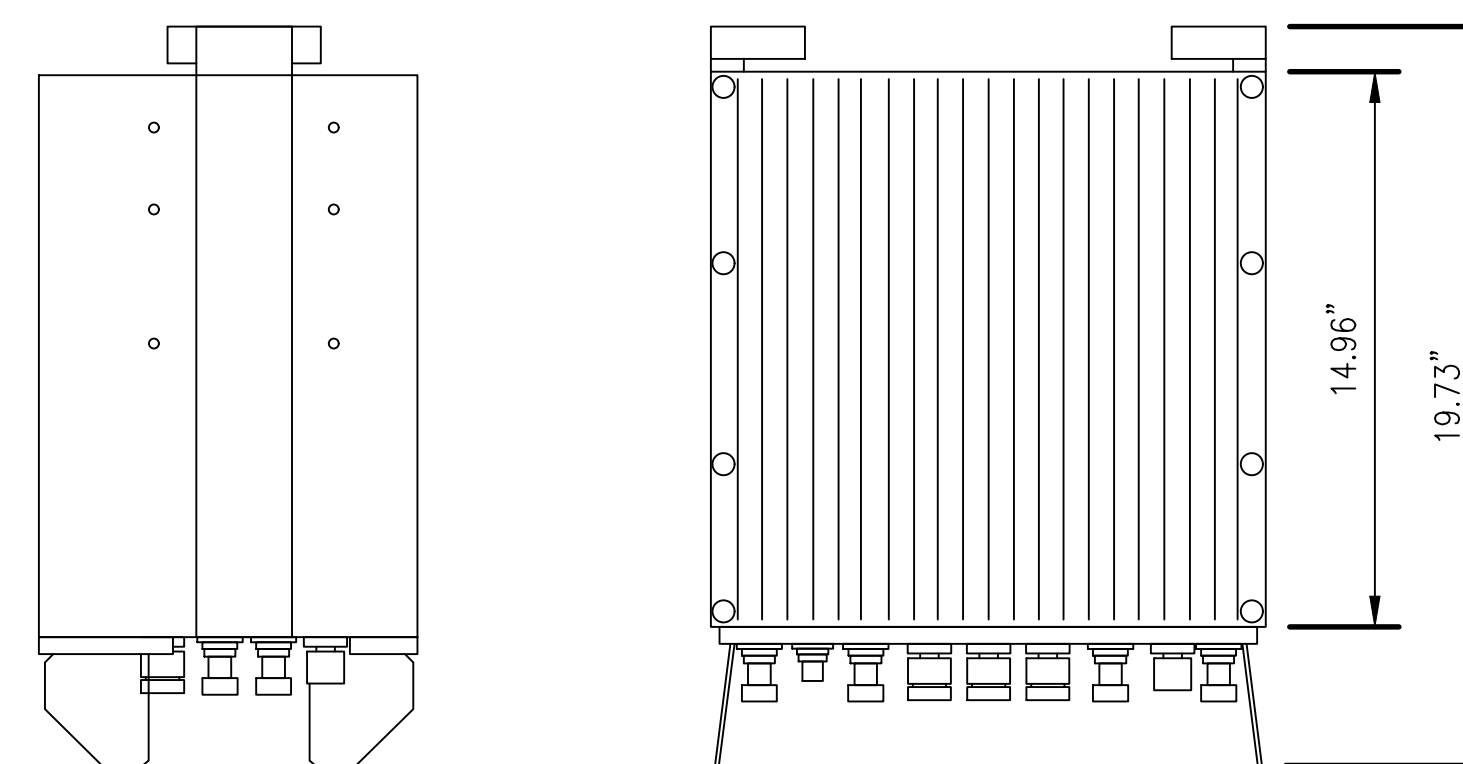
ANTENNA SPECIFICATIONS (WITH CLIP-ON):

MODEL: R0440CC_3500 MHz CBRS
DIMENSIONS: 12.0" x 8.7" x 5.1" (HWD)
WEIGHT: 18.7 LBS.

5 SAMSUNG R0440CC 3500 MHZ CBRS



TOP



SIDE

FRONT

RRH: SAMSUNG RRH B5/B13 RF4461D-13A
WEIGHT: 79.15 LBS

6 SAMSUNG RRH B5/B13 RF4461D-13A



VIEW 1 EXISTING



VIEW 1 PROPOSED



VIEW 2 EXISTING



VIEW 2 PROPOSED



VIEW 3 EXISTING



VIEW 3 PROPOSED



VIEW 4 EXISTING



VIEW 4 PROPOSED

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Federal Communications Commission
Wireless Telecommunications Bureau

RADIO STATION AUTHORIZATION

LICENSEE: CELLCO PARTNERSHIP

ATTN: REGULATORY
CELLCO PARTNERSHIP
5055 NORTH POINT PKWY, NP2NE NETWORK ENGINEERING
ALPHARETTA, GA 30022

Table with Call Sign (WQJQ689), File Number, and Radio Service (WU - 700 MHz Upper Band (Block C)).

FCC Registration Number (FRN): 0003290673

Table with columns: Grant Date, Effective Date, Expiration Date, Print Date, Market Number, Channel Block, Sub-Market Designator, Market Name, 1st Build-out Date, 2nd Build-out Date, 3rd Build-out Date, 4th Build-out Date.

Waivers/Conditions:

If the facilities authorized herein are used to provide broadcast operations, whether exclusively or in combination with other services, the licensee must seek renewal of the license either within eight years from the commencement of the broadcast service or within the term of the license had the broadcast service not been provided, whichever period is shorter in length. See 47 CFR §27.13(b).

This authorization is conditioned upon compliance with section 27.16 of the Commission's rules

Conditions:

Pursuant to §309(h) of the Communications Act of 1934, as amended, 47 U.S.C. §309(h), this license is subject to the following conditions: This license shall not vest in the licensee any right to operate the station nor any right in the use of the frequencies designated in the license beyond the term thereof nor in any other manner than authorized herein. Neither the license nor the right granted thereunder shall be assigned or otherwise transferred in violation of the Communications Act of 1934, as amended. See 47 U.S.C. § 310(d). This license is subject in terms to the right of use or control conferred by §706 of the Communications Act of 1934, as amended. See 47 U.S.C. §606.

This license may not authorize operation throughout the entire geographic area or spectrum identified on the hardcopy version. To view the specific geographic area and spectrum authorized by this license, refer to the Spectrum and Market Area information under the Market Tab of the license record in the Universal Licensing System (ULS). To view the license record, go to the ULS homepage at http://wireless.fcc.gov/uls/index.htm?job=home and select "License Search". Follow the instructions on how to search for license information.

Licensee Name: CELLCO PARTNERSHIP

Call Sign: WQJQ689

File Number:

Print Date:

700 MHz Relicensed Area Information:

Market	Market Name	Buildout Deadline	Buildout Notification	Status
---------------	--------------------	--------------------------	------------------------------	---------------

Reference Copy

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Federal Communications Commission
Wireless Telecommunications Bureau

RADIO STATION AUTHORIZATION

LICENSEE: CELLCO PARTNERSHIP

ATTN: REGULATORY
 CELLCO PARTNERSHIP
 5055 NORTH POINT PKWY, NP2NE NETWORK ENGINEERING
 ALPHARETTA, GA 30022

Call Sign KNKA201	File Number
Radio Service CL - Cellular	
Market Numer CMA006	Channel Block B
Sub-Market Designator 0	

FCC Registration Number (FRN): 0003290673

Market Name Boston-Lowell-Brockton-Lawrenc
--

Grant Date 08-26-2014	Effective Date 11-01-2016	Expiration Date 10-01-2024	Five Yr Build-Out Date	Print Date
---------------------------------	-------------------------------------	--------------------------------------	-------------------------------	-------------------

Site Information:

Location	Latitude	Longitude	Ground Elevation (meters)	Structure Hgt to Tip (meters)	Antenna Structure Registration No.
1	42-38-26.3 N	070-36-25.2 W	36.3	35.7	

Address: (Rockport) Thatcher Road

City: Rockport County: ESSEX State: MA Construction Deadline:

Antenna: 5

Maximum Transmitting ERP in Watts:	140.820							
Azimuth(from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	70.400	34.100	34.100	34.100	70.400	67.800	55.200	61.300
Transmitting ERP (watts)	246.920	325.500	33.310	0.940	0.820	0.820	1.210	20.070

Antenna: 6

Maximum Transmitting ERP in Watts:	140.820							
Azimuth(from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	70.400	34.100	34.100	34.100	70.400	67.800	55.200	61.300
Transmitting ERP (watts)	0.820	3.330	54.020	373.730	191.670	10.780	0.820	0.820

Antenna: 7

Maximum Transmitting ERP in Watts:	140.820							
Azimuth(from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	70.400	34.100	34.100	34.100	70.400	67.800	55.200	61.300
Transmitting ERP (watts)	3.330	0.820	0.820	0.820	7.810	126.630	409.780	89.650

Conditions:

Pursuant to §309(h) of the Communications Act of 1934, as amended, 47 U.S.C. §309(h), this license is subject to the following conditions: This license shall not vest in the licensee any right to operate the station nor any right in the use of the frequencies designated in the license beyond the term thereof nor in any other manner than authorized herein. Neither the license nor the right granted thereunder shall be assigned or otherwise transferred in violation of the Communications Act of 1934, as amended. See 47 U.S.C. § 310(d). This license is subject in terms to the right of use or control conferred by §706 of the Communications Act of 1934, as amended. See 47 U.S.C. §606.

Licensee Name: CELLCO PARTNERSHIP

Call Sign: KNKA201

File Number:

Print Date:

Location	Latitude	Longitude	Ground Elevation (meters)	Structure Hgt to Tip (meters)	Antenna Structure Registration No.
4	42-08-56.4 N	071-24-55.2 W	75.6	44.2	

Address: 113 Main Street

City: Medway County: NORFOLK State: MA Construction Deadline:

Antenna: 4

Maximum Transmitting ERP in Watts:	140.820							
Azimuth(from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	59.500	66.700	61.200	46.900	23.900	39.300	13.900	12.300
Transmitting ERP (watts)	81.280	89.130	24.550	1.120	0.200	0.200	0.420	16.600

Antenna: 5

Maximum Transmitting ERP in Watts:	140.820							
Azimuth(from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	59.500	66.700	61.200	46.900	23.900	39.300	13.900	12.300
Transmitting ERP (watts)	0.200	2.000	33.800	95.500	67.610	10.700	0.200	0.200

Antenna: 6

Maximum Transmitting ERP in Watts:	140.820							
Azimuth(from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	59.500	66.700	61.200	46.900	23.900	39.300	13.900	12.300
Transmitting ERP (watts)	3.890	0.200	0.200	0.200	6.760	57.540	100.000	44.670

Location	Latitude	Longitude	Ground Elevation (meters)	Structure Hgt to Tip (meters)	Antenna Structure Registration No.
9	42-11-42.4 N	070-49-10.2 W	57.9	56.1	

Address: (Scituate) OFF CLAPP RD

City: SCITUATE County: PLYMOUTH State: MA Construction Deadline:

Antenna: 7

Maximum Transmitting ERP in Watts:	140.820							
Azimuth(from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	105.300	106.100	93.800	85.900	95.600	76.500	81.800	104.300
Transmitting ERP (watts)	172.400	167.230	26.990	1.190	0.960	0.960	1.720	28.870

Antenna: 8

Maximum Transmitting ERP in Watts:	140.820							
Azimuth(from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	105.300	106.100	93.800	85.900	95.600	76.500	81.800	104.300
Transmitting ERP (watts)	0.980	3.910	54.020	409.780	200.700	15.220	0.980	0.980

Antenna: 9

Maximum Transmitting ERP in Watts:	140.820							
Azimuth(from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	105.300	106.100	93.800	85.900	95.600	76.500	81.800	104.300
Transmitting ERP (watts)	4.490	0.980	0.980	1.300	10.060	123.750	449.320	96.060

Licensee Name: CELLCO PARTNERSHIP

Call Sign: KNKA201

File Number:

Print Date:

Location	Latitude	Longitude	Ground Elevation (meters)	Structure Hgt to Tip (meters)	Antenna Structure Registration No.
10	42-52-57.3 N	071-16-28.2 W	163.0	58.2	

Address: (Derry) 46 FLOYD ROAD

City: DERRY County: ROCKINGHAM State: NH Construction Deadline:

Antenna: 4

Maximum Transmitting ERP in Watts:	140.820							
Azimuth(from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	82.200	129.400	144.500	155.100	136.800	127.900	126.200	118.100
Transmitting ERP (watts)	31.810	146.820	102.310	15.410	1.000	1.000	1.000	1.130

Antenna: 5

Maximum Transmitting ERP in Watts:	140.820							
Azimuth(from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	82.200	129.400	144.500	155.100	136.800	127.900	126.200	118.100
Transmitting ERP (watts)	1.000	1.000	4.660	82.110	250.350	80.300	3.790	1.000

Antenna: 6

Maximum Transmitting ERP in Watts:	140.820							
Azimuth(from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	80.200	129.400	144.500	155.100	136.800	127.900	126.200	118.100
Transmitting ERP (watts)	32.480	1.680	1.000	1.000	1.000	13.740	107.220	143.470

Location	Latitude	Longitude	Ground Elevation (meters)	Structure Hgt to Tip (meters)	Antenna Structure Registration No.
12	41-52-08.3 N	070-52-56.1 W	29.6	58.2	

Address: (Middleboro) E. GROVE ST.

City: MIDDLESBORO County: PLYMOUTH State: MA Construction Deadline:

Antenna: 7

Maximum Transmitting ERP in Watts:	140.820							
Azimuth(from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	57.600	32.400	40.200	47.600	44.900	41.300	50.300	52.600
Transmitting ERP (watts)	277.330	364.730	40.890	2.250	0.960	0.960	2.410	20.640

Antenna: 8

Maximum Transmitting ERP in Watts:	140.820							
Azimuth(from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	57.600	32.400	40.200	47.600	44.900	41.300	50.300	52.600
Transmitting ERP (watts)	0.960	3.730	61.620	418.280	215.780	13.090	1.700	0.960

Antenna: 9

Maximum Transmitting ERP in Watts:	140.820							
Azimuth(from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	57.600	32.400	40.200	47.600	44.900	41.300	50.300	52.600
Transmitting ERP (watts)	5.070	1.130	0.610	1.600	5.050	89.040	278.490	66.210

Licensee Name: CELLCO PARTNERSHIP

Call Sign: KNKA201

File Number:

Print Date:

Location	Latitude	Longitude	Ground Elevation (meters)	Structure Hgt to Tip (meters)	Antenna Structure Registration No.
14	42-28-06.3 N	071-27-16.2 W	102.1	54.0	

Address: Main Street

City: South Acton County: MIDDLESEX State: MA Construction Deadline:

Antenna: 4

Maximum Transmitting ERP in Watts:	140.820							
Azimuth(from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	69.000	79.000	105.500	96.200	72.600	76.300	47.400	58.700
Transmitting ERP (watts)	65.200	77.960	20.970	2.400	0.200	0.200	2.000	13.720

Antenna: 5

Maximum Transmitting ERP in Watts:	140.820							
Azimuth(from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	69.000	79.900	105.500	96.200	72.600	76.300	47.400	58.700
Transmitting ERP (watts)	0.200	3.880	23.800	59.780	43.360	10.290	0.830	0.200

Antenna: 6

Maximum Transmitting ERP in Watts:	140.820							
Azimuth(from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	76.400	65.500	105.500	96.200	72.600	76.300	47.400	58.700
Transmitting ERP (watts)	5.010	0.420	0.200	0.740	6.570	43.660	91.210	34.920

Location	Latitude	Longitude	Ground Elevation (meters)	Structure Hgt to Tip (meters)	Antenna Structure Registration No.
15	42-30-08.4 N	070-55-02.2 W	39.6	46.3	

Address: 12 First Street

City: Salem County: ESSEX State: MA Construction Deadline:

Antenna: 7

Maximum Transmitting ERP in Watts:	140.820							
Azimuth(from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	63.400	62.100	62.800	77.900	77.500	70.500	40.900	50.900
Transmitting ERP (watts)	49.150	56.730	19.190	2.360	0.200	0.200	1.930	12.920

Antenna: 8

Maximum Transmitting ERP in Watts:	140.820							
Azimuth(from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	63.400	62.100	62.800	77.900	77.500	70.500	40.900	50.900
Transmitting ERP (watts)	0.100	1.550	9.520	23.920	17.350	4.120	0.330	0.100

Antenna: 9

Maximum Transmitting ERP in Watts:	140.820							
Azimuth(from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	63.400	62.100	62.800	77.900	77.500	70.500	40.900	50.900
Transmitting ERP (watts)	5.010	0.380	0.200	0.680	6.510	35.500	64.630	29.380

Licensee Name: CELLCO PARTNERSHIP

Call Sign: KNKA201

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Location	Latitude	Longitude	Ground Elevation (meters)	Structure Hgt to Tip (meters)	Antenna Structure Registration No.
16	42-16-51.4 N	071-02-04.2 W	5.2	53.0	

Address: 100 HANCOCK STREET

City: QUINCY County: NORFOLK State: MA Construction Deadline:

Antenna: 5

Maximum Transmitting ERP in Watts:	140.820							
Azimuth(from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	43.000	44.100	42.200	29.000	8.300	14.800	12.100	31.500
Transmitting ERP (watts)	7.170	6.480	6.790	0.320	0.100	0.100	0.160	5.630

Antenna: 6

Maximum Transmitting ERP in Watts:	140.820							
Azimuth(from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	40.900	41.900	40.000	26.800	6.200	12.600	9.900	29.300
Transmitting ERP (watts)	0.100	0.340	3.140	2.480	2.970	1.500	0.100	0.100

Antenna: 7

Maximum Transmitting ERP in Watts:	140.820							
Azimuth(from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	43.000	44.100	42.200	29.000	8.300	14.800	12.100	31.500
Transmitting ERP (watts)	0.100	0.100	0.100	0.120	2.640	2.770	2.720	2.360

Location	Latitude	Longitude	Ground Elevation (meters)	Structure Hgt to Tip (meters)	Antenna Structure Registration No.
21	42-30-36.4 N	070-51-21.2 W	23.2	47.2	

Address: Tioga Way

City: Marblehead County: ESSEX State: MA Construction Deadline:

Antenna: 2

Maximum Transmitting ERP in Watts:	140.820							
Azimuth(from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	44.200	46.700	37.200	60.400	60.400	54.600	28.000	43.700
Transmitting ERP (watts)	0.100	0.130	3.130	7.860	6.600	1.220	0.100	0.100

Antenna: 3

Maximum Transmitting ERP in Watts:	140.820							
Azimuth(from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	44.200	46.700	37.200	60.400	60.400	54.600	28.000	43.700
Transmitting ERP (watts)	0.410	0.100	0.100	0.100	0.530	5.070	8.210	4.870

Antenna: 4

Maximum Transmitting ERP in Watts:	140.820							
Azimuth(from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	44.200	46.700	37.200	60.400	60.400	54.600	28.000	43.700
Transmitting ERP (watts)	6.780	7.760	2.800	0.100	0.100	0.100	0.100	1.540

Licensee Name: CELLCO PARTNERSHIP

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Location	Latitude	Longitude	Ground Elevation (meters)	Structure Hgt to Tip (meters)	Antenna Structure Registration No.
22	42-51-55.4 N	070-56-13.2 W	94.5	50.9	

Address: (Amesbury) 10 DENNET WAY

City: AMESBURY County: ESSEX State: MA Construction Deadline:

Antenna: 4

Maximum Transmitting ERP in Watts:	140.820							
Azimuth(from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	117.000	123.800	125.500	137.800	126.100	109.800	94.200	100.300
Transmitting ERP (watts)	178.880	225.190	34.880	0.860	0.860	0.860	0.860	10.780

Antenna: 5

Maximum Transmitting ERP in Watts:	140.820							
Azimuth(from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	117.000	123.800	125.500	137.800	126.100	109.800	94.200	100.300
Transmitting ERP (watts)	0.860	1.240	35.690	258.560	148.780	12.380	0.860	0.860

Antenna: 6

Maximum Transmitting ERP in Watts:	140.820							
Azimuth(from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	117.000	123.800	125.500	137.800	126.100	109.800	94.200	100.300
Transmitting ERP (watts)	3.110	0.830	0.860	0.860	3.110	89.650	270.740	81.760

Location	Latitude	Longitude	Ground Elevation (meters)	Structure Hgt to Tip (meters)	Antenna Structure Registration No.
24	42-03-31.4 N	071-17-29.2 W	105.5	59.1	

Address: (Wrentham) 415 Washington St. - Route 1

City: WRENTHAM County: NORFOLK State: MA Construction Deadline:

Antenna: 4

Maximum Transmitting ERP in Watts:	140.820							
Azimuth(from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	99.900	78.700	94.600	120.300	114.800	77.800	71.700	95.700
Transmitting ERP (watts)	2.580	85.500	401.990	363.280	54.920	1.060	0.850	0.850

Antenna: 5

Maximum Transmitting ERP in Watts:	140.820							
Azimuth(from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	99.900	78.700	94.600	120.300	114.800	77.800	71.700	95.700
Transmitting ERP (watts)	0.850	0.850	0.850	8.930	146.240	311.250	197.740	18.980

Antenna: 6

Maximum Transmitting ERP in Watts:	140.820							
Azimuth(from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	99.900	78.700	94.600	120.300	114.800	77.800	71.700	95.700
Transmitting ERP (watts)	352.500	136.390	5.560	0.980	0.980	0.980	39.210	263.760

Licensee Name: CELLCO PARTNERSHIP

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Location	Latitude	Longitude	Ground Elevation (meters)	Structure Hgt to Tip (meters)	Antenna Structure Registration No.
25	43-10-34.3 N	071-12-24.2 W	335.3	31.4	

Address: (Northwood) SADDLEBACK MOUNTAIN

City: NORTHWOOD County: ROCKINGHAM State: NH Construction Deadline:

Antenna: 4

Maximum Transmitting ERP in Watts:	140.820							
Azimuth(from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	152.900	213.700	260.100	268.500	234.000	215.400	150.700	173.600
Transmitting ERP (watts)	45.240	219.790	199.540	31.860	1.550	1.000	1.000	2.360

Antenna: 5

Maximum Transmitting ERP in Watts:	140.820							
Azimuth(from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	152.900	213.700	260.100	268.500	234.000	215.400	150.700	173.600
Transmitting ERP (watts)	1.000	1.000	6.160	105.350	236.610	142.220	7.190	1.780

Antenna: 6

Maximum Transmitting ERP in Watts:	140.820							
Azimuth(from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	152.900	213.700	260.100	268.500	234.000	215.400	150.700	173.600
Transmitting ERP (watts)	55.630	1.980	1.000	1.000	2.260	8.170	110.540	141.320

Location	Latitude	Longitude	Ground Elevation (meters)	Structure Hgt to Tip (meters)	Antenna Structure Registration No.
27	41-41-13.4 N	070-48-25.1 W	22.9	59.4	

Address: (Mattapoisett) Industrial Drive

City: Mattapoisett County: PLYMOUTH State: MA Construction Deadline:

Antenna: 4

Maximum Transmitting ERP in Watts:	140.820							
Azimuth(from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	61.700	76.400	79.200	79.900	80.600	75.400	56.100	60.600
Transmitting ERP (watts)	217.540	281.390	29.930	2.050	0.980	0.980	2.340	21.270

Antenna: 5

Maximum Transmitting ERP in Watts:	140.820							
Azimuth(from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	61.700	76.400	79.300	79.900	80.600	75.400	56.100	60.600
Transmitting ERP (watts)	0.980	10.610	118.800	349.190	74.510	4.550	0.980	0.980

Antenna: 6

Maximum Transmitting ERP in Watts:	140.820							
Azimuth(from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	61.700	76.400	79.200	79.900	80.600	75.400	56.100	60.600
Transmitting ERP (watts)	2.220	0.980	0.980	2.540	27.640	252.570	253.110	22.510

Licensee Name: CELLCO PARTNERSHIP

Call Sign: KNKA201

File Number:

Print Date:

Location	Latitude	Longitude	Ground Elevation (meters)	Structure Hgt to Tip (meters)	Antenna Structure Registration No.
29	41-55-21.0 N	070-39-05.0 W	39.6	77.4	1021869

Address: (Plymouth) CALEB ST

City: Plymouth County: PLYMOUTH State: MA Construction Deadline:

Antenna: 4

Maximum Transmitting ERP in Watts:	140.820							
Azimuth(from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	94.600	84.200	79.500	67.900	61.400	63.600	52.500	63.200
Transmitting ERP (watts)	252.450	246.240	37.800	1.470	0.940	0.940	2.080	39.370

Antenna: 5

Maximum Transmitting ERP in Watts:	140.820							
Azimuth(from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	94.600	84.200	79.500	67.900	61.400	63.600	52.500	63.200
Transmitting ERP (watts)	1.000	3.000	53.330	346.500	184.150	15.870	1.000	1.000

Antenna: 6

Maximum Transmitting ERP in Watts:	140.820							
Azimuth(from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	94.600	84.200	79.500	67.900	61.400	63.600	52.500	63.200
Transmitting ERP (watts)	4.660	1.000	1.000	1.000	5.610	128.480	425.450	99.740

Location	Latitude	Longitude	Ground Elevation (meters)	Structure Hgt to Tip (meters)	Antenna Structure Registration No.
31	42-14-40.0 N	071-30-38.0 W	142.6	102.0	1009024

Address: 1.25 MI NNE

City: HOPKINTON County: MIDDLESEX State: MA Construction Deadline:

Antenna: 4

Maximum Transmitting ERP in Watts:	140.820							
Azimuth(from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	107.800	138.000	130.800	126.800	101.200	85.900	73.000	97.500
Transmitting ERP (watts)	23.200	21.890	16.370	2.550	0.130	0.100	1.640	13.250

Antenna: 5

Maximum Transmitting ERP in Watts:	140.820							
Azimuth(from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	107.800	138.000	130.800	126.800	101.200	85.900	73.000	97.500
Transmitting ERP (watts)	0.940	9.100	53.990	96.320	78.580	26.320	3.730	0.460

Antenna: 6

Maximum Transmitting ERP in Watts:	140.820							
Azimuth(from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	107.800	138.000	130.800	126.800	101.200	85.900	73.000	97.500
Transmitting ERP (watts)	13.400	1.700	0.620	2.340	18.300	72.460	95.170	63.740

Licensee Name: CELLCO PARTNERSHIP

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Location	Latitude	Longitude	Ground Elevation (meters)	Structure Hgt to Tip (meters)	Antenna Structure Registration No.
34	42-23-29.5 N	071-07-22.9 W	7.9	26.8	

Address: 2067 MASSACHUSETTS AVENUE

City: CAMBRIDGE County: SUFFOLK State: MA Construction Deadline:

Antenna: 4

Maximum Transmitting ERP in Watts:	140.820							
Azimuth(from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	-3.400	5.800	21.700	28.600	13.000	-2.600	-14.400	-21.300
Transmitting ERP (watts)	6.780	7.760	2.800	0.100	0.100	0.100	0.100	1.540

Antenna: 5

Maximum Transmitting ERP in Watts:	140.820							
Azimuth(from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	-3.400	5.800	21.700	28.600	13.000	-2.600	-14.400	-21.300
Transmitting ERP (watts)	0.100	0.130	3.130	7.860	6.600	1.220	0.100	0.100

Antenna: 6

Maximum Transmitting ERP in Watts:	140.820							
Azimuth(from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	-3.400	5.800	21.700	28.300	13.000	-2.600	-14.400	-21.300
Transmitting ERP (watts)	0.410	0.100	0.100	0.100	0.530	5.070	8.210	4.870

Location	Latitude	Longitude	Ground Elevation (meters)	Structure Hgt to Tip (meters)	Antenna Structure Registration No.
35	42-39-16.7 N	071-44-12.3 W	192.6	51.2	

Address: 84 Bayberry Hill Road

City: Townsend County: MIDDLESEX State: MA Construction Deadline:

Antenna: 2

Maximum Transmitting ERP in Watts:	140.820							
Azimuth(from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	57.900	139.500	149.200	136.100	102.200	42.700	-79.000	-25.700
Transmitting ERP (watts)	0.580	7.080	42.660	95.500	77.620	22.390	2.820	0.460

Antenna: 4

Maximum Transmitting ERP in Watts:	140.820							
Azimuth(from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	51.300	146.600	148.900	136.600	101.300	25.000	-79.700	-22.300
Transmitting ERP (watts)	35.060	35.620	17.670	2.660	0.200	0.150	1.860	13.500

Antenna: 5

Maximum Transmitting ERP in Watts:	140.820							
Azimuth(from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	51.300	146.600	148.900	136.600	101.300	25.000	-79.700	-22.300
Transmitting ERP (watts)	5.360	0.690	0.250	0.930	7.320	28.980	38.070	25.500

Licensee Name: CELLCO PARTNERSHIP

Call Sign: KNKA201

File Number:

Print Date:

Location	Latitude	Longitude	Ground Elevation (meters)	Structure Hgt to Tip (meters)	Antenna Structure Registration No.
38	42-38-45.8 N	071-05-37.7 W	117.3	52.4	

Address: 5 Boston Hill Road

City: North Andover County: ESSEX State: MA Construction Deadline:

Antenna: 4

Maximum Transmitting ERP in Watts:	140.820							
Azimuth(from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	96.900	98.200	110.000	111.300	110.000	101.700	90.300	106.200
Transmitting ERP (watts)	83.180	87.100	23.990	2.290	0.200	0.200	1.820	20.420

Antenna: 5

Maximum Transmitting ERP in Watts:	140.820							
Azimuth(from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	96.900	98.100	110.000	111.300	110.000	101.700	90.200	106.200
Transmitting ERP (watts)	0.240	4.170	38.020	97.720	66.070	11.750	1.050	0.200

Antenna: 6

Maximum Transmitting ERP in Watts:	140.820							
Azimuth(from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	96.900	98.200	110.000	111.300	110.000	101.700	90.200	106.200
Transmitting ERP (watts)	5.250	0.340	0.200	0.830	9.770	60.262	100.000	42.660

Location	Latitude	Longitude	Ground Elevation (meters)	Structure Hgt to Tip (meters)	Antenna Structure Registration No.
39	42-18-13.0 N	071-13-05.0 W	44.8	96.0	1018331

Address: 140 CABOT ST

City: NEEDHAM County: NORFOLK State: MA Construction Deadline:

Antenna: 1

Maximum Transmitting ERP in Watts:	140.820							
Azimuth(from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	44.200	68.400	58.900	48.800	36.300	40.300	44.100	41.600
Transmitting ERP (watts)	30.340	35.650	9.380	0.920	0.100	0.100	0.610	6.050

Antenna: 2

Maximum Transmitting ERP in Watts:	140.820							
Azimuth(from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	44.200	68.400	58.900	48.800	36.300	40.300	44.100	41.600
Transmitting ERP (watts)	0.100	1.230	10.440	23.990	19.000	4.420	0.370	0.100

Antenna: 3

Maximum Transmitting ERP in Watts:	140.820							
Azimuth(from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	44.200	68.400	58.900	48.800	36.300	40.300	44.100	41.600
Transmitting ERP (watts)	2.200	0.190	0.100	0.300	2.700	19.270	35.660	16.260

Licensee Name: CELLCO PARTNERSHIP

Call Sign: KNKA201

File Number:

Print Date:

Location	Latitude	Longitude	Ground Elevation (meters)	Structure Hgt to Tip (meters)	Antenna Structure Registration No.
41	42-22-16.6 N	071-05-49.6 W	6.3	18.6	

Address: (Cambridge Donnelly Field site) 284 Norfolk Street

City: Cambridge County: MIDDLESEX State: MA Construction Deadline: 07-03-2014

Antenna: 1

Maximum Transmitting ERP in Watts:	140.820							
Azimuth(from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	-11.600	16.500	20.700	21.000	2.200	-20.400	2.300	-16.900
Transmitting ERP (watts)	48.150	197.980	63.920	1.080	0.680	0.680	0.680	0.850

Antenna: 2

Maximum Transmitting ERP in Watts:	140.820							
Azimuth(from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	-11.600	16.500	20.700	21.000	2.200	-20.400	2.300	-16.900
Transmitting ERP (watts)	0.670	0.670	18.990	128.120	74.750	3.300	0.670	0.670

Antenna: 3

Maximum Transmitting ERP in Watts:	140.820							
Azimuth(from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	-10.600	17.600	21.700	22.000	3.200	-19.400	3.400	-15.900
Transmitting ERP (watts)	28.690	0.650	0.650	0.650	0.650	5.700	114.450	208.740

Control Points:

Control Pt. No. 3

Address: 500 W. Dove Rd.

City: Southlake County: TARRANT State: TX Telephone Number: (800)264-6620

Waivers/Conditions:

THE FOLLOWING CELLULAR GEOGRAPHIC SERVICE AREAS HAVE BEEN COMBINED (LISTED BY CALL SIGN, MARKET NUMBER AND BLOCK, AND MARKET NAME): KNKA201 6B BOSTON, MASSACHUSETTS KNKA251 76B

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Federal Communications Commission
Wireless Telecommunications Bureau

RADIO STATION AUTHORIZATION

LICENSEE: CELLCO PARTNERSHIP

CELLCO PARTNERSHIP
5055 NORTH POINT PKWY, NP2NE NETWORK ENGINEERING
ALPHARETTA, GA 30022

Table with Call Sign (WQGB266), File Number (0009783855), and Radio Service (AW - AWS (1710-1755 MHz and 2110-2155 MHz)).

FCC Registration Number (FRN): 0003290673

Table with columns: Grant Date, Effective Date, Expiration Date, Print Date, Market Number, Channel Block, Sub-Market Designator, Market Name, 1st Build-out Date, 2nd Build-out Date, 3rd Build-out Date, 4th Build-out Date.

Waivers/Conditions:

This authorization is conditioned upon the licensee, prior to initiating operations from any base or fixed station, making reasonable efforts to coordinate frequency usage with known co-channel and adjacent channel incumbent federal users operating in the 1710-1755 MHz band whose facilities could be affected by the proposed operations.

Conditions:

Pursuant to §309(h) of the Communications Act of 1934, as amended, 47 U.S.C. §309(h), this license is subject to the following conditions: This license shall not vest in the licensee any right to operate the station nor any right in the use of the frequencies designated in the license beyond the term thereof nor in any other manner than authorized herein.

This license may not authorize operation throughout the entire geographic area or spectrum identified on the hardcopy version. To view the specific geographic area and spectrum authorized by this license, refer to the Spectrum and Market Area information under the Market Tab of the license record in the Universal Licensing System (ULS).

Licensee Name: CELLCO PARTNERSHIP

Call Sign: WQGB266

File Number: 0009783855

Print Date: 02-11-2022

The license is subject to compliance with the provisions of the January 12, 2001 Agreement between Deutsche Telekom AG, VoiceStream Wireless Corporation, VoiceStream Wireless Holding Corporation and the Department of Justice (DOJ) and the Federal Bureau of Investigation (FBI), which addresses national security, law enforcement, and public safety issues of the FBI and the DOJ regarding the authority granted by this license. Nothing in the Agreement is intended to limit any obligation imposed by Federal law or regulation including, but not limited to, 47 U.S.C. Section 222(a) and (c)(1) and the FCC's implementing regulations. The Agreement is published at VoiceStream-DT Order, IB Docket No. 00-187, FCC 01-142, 16 FCC Rcd 9779, 9853 (2001).

Reference Copy

Licensee Name: CELLCO PARTNERSHIP

Call Sign: WQGB266

File Number: 0009783855

Print Date: 02-11-2022

700 MHz Relicensed Area Information:

Market	Market Name	Buildout Deadline	Buildout Notification	Status
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Federal Communications Commission
Wireless Telecommunications Bureau

RADIO STATION AUTHORIZATION

LICENSEE: CELLCO PARTNERSHIP

CELLCO PARTNERSHIP
5055 NORTH POINT PKWY, NP2NE NETWORK ENGINEERING
ALPHARETTA, GA 30022

Table with Call Sign (WQGA900), File Number (0009773233), and Radio Service (AW - AWS (1710-1755 MHz and 2110-2155 MHz))

FCC Registration Number (FRN): 0003290673

Table with columns: Grant Date, Effective Date, Expiration Date, Print Date, Market Number, Channel Block, Sub-Market Designator, Market Name, 1st Build-out Date, 2nd Build-out Date, 3rd Build-out Date, 4th Build-out Date

Waivers/Conditions:

This authorization is conditioned upon the licensee, prior to initiating operations from any base or fixed station, making reasonable efforts to coordinate frequency usage with known co-channel and adjacent channel incumbent federal users operating in the 1710-1755 MHz band whose facilities could be affected by the proposed operations.

AWS operations must not cause harmful interference across the Canadian or Mexican Border. The authority granted herein is subject to future international agreements with Canada or Mexico, as applicable.

Conditions:

Pursuant to §309(h) of the Communications Act of 1934, as amended, 47 U.S.C. §309(h), this license is subject to the following conditions: This license shall not vest in the licensee any right to operate the station nor any right in the use of the frequencies designated in the license beyond the term thereof nor in any other manner than authorized herein.

This license may not authorize operation throughout the entire geographic area or spectrum identified on the hardcopy version. To view the specific geographic area and spectrum authorized by this license, refer to the Spectrum and Market Area information under the Market Tab of the license record in the Universal Licensing System (ULS).

Licensee Name: CELLCO PARTNERSHIP

Call Sign: WQGA900

File Number: 0009773233

Print Date: 01-12-2022

700 MHz Relicensed Area Information:

Market	Market Name	Buildout Deadline	Buildout Notification	Status
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Federal Communications Commission
Wireless Telecommunications Bureau

RADIO STATION AUTHORIZATION

LICENSEE: CELLCO PARTNERSHIP

ATTN: REGULATORY
CELLCO PARTNERSHIP
5055 NORTH POINT PKWY, NP2NE NETWORK ENGINEERING
ALPHARETTA, GA 30022

Table with Call Sign (WRNE629), File Number, and Radio Service (PM - 3.7 GHz Service).

FCC Registration Number (FRN): 0003290673

Table with columns: Grant Date, Effective Date, Expiration Date, Print Date, Market Number, Channel Block, Sub-Market Designator, Market Name, 1st Build-out Date, 2nd Build-out Date, 3rd Build-out Date, 4th Build-out Date.

Waivers/Conditions:

Operation for this combination license grants both interim and final rights for this PEA and is not impacted by the relocation process pursuant to 47 CFR ? 27.1412(g).

License is conditioned on compliance with all applicable FCC rules and regulations, including licensee making payments required by 47 C.F.R. §§ 27.1401- 27.1424 as described in FCC 20-22. See FCC 20-22, paras. 178-331.

Conditions:

Pursuant to §309(h) of the Communications Act of 1934, as amended, 47 U.S.C. §309(h), this license is subject to the following conditions: This license shall not vest in the licensee any right to operate the station nor any right in the use of the frequencies designated in the license beyond the term thereof nor in any other manner than authorized herein.

This license may not authorize operation throughout the entire geographic area or spectrum identified on the hardcopy version. To view the specific geographic area and spectrum authorized by this license, refer to the Spectrum and Market Area information under the Market Tab of the license record in the Universal Licensing System (ULS).

Licensee Name: CELLCO PARTNERSHIP

Call Sign: WRNE629

File Number:

Print Date:

700 MHz Relicensed Area Information:

Market	Market Name	Buildout Deadline	Buildout Notification	Status
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Federal Communications Commission
Wireless Telecommunications Bureau

RADIO STATION AUTHORIZATION

LICENSEE: CELLCO PARTNERSHIP

ATTN: REGULATORY
CELLCO PARTNERSHIP
5055 NORTH POINT PKWY, NP2NE NETWORK ENGINEERING
ALPHARETTA, GA 30022

Table with Call Sign (WRNE628), File Number, and Radio Service (PM - 3.7 GHz Service).

FCC Registration Number (FRN): 0003290673

Table with columns: Grant Date, Effective Date, Expiration Date, Print Date, Market Number, Channel Block, Sub-Market Designator, Market Name, 1st Build-out Date, 2nd Build-out Date, 3rd Build-out Date, 4th Build-out Date.

Waivers/Conditions:

Operation for this combination license grants both interim and final rights for this PEA and is not impacted by the relocation process pursuant to 47 CFR ? 27.1412(g).

License is conditioned on compliance with all applicable FCC rules and regulations, including licensee making payments required by 47 C.F.R. §§ 27.1401- 27.1424 as described in FCC 20-22. See FCC 20-22, paras. 178-331.

Conditions:

Pursuant to §309(h) of the Communications Act of 1934, as amended, 47 U.S.C. §309(h), this license is subject to the following conditions: This license shall not vest in the licensee any right to operate the station nor any right in the use of the frequencies designated in the license beyond the term thereof nor in any other manner than authorized herein.

This license may not authorize operation throughout the entire geographic area or spectrum identified on the hardcopy version. To view the specific geographic area and spectrum authorized by this license, refer to the Spectrum and Market Area information under the Market Tab of the license record in the Universal Licensing System (ULS).

Licensee Name: CELLCO PARTNERSHIP

Call Sign: WRNE628

File Number:

Print Date:

700 MHz Relicensed Area Information:

Market	Market Name	Buildout Deadline	Buildout Notification	Status
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Federal Communications Commission
Wireless Telecommunications Bureau

RADIO STATION AUTHORIZATION

LICENSEE: CELLCO PARTNERSHIP

ATTN: REGULATORY
CELLCO PARTNERSHIP
5055 NORTH POINT PKWY, NP2NE NETWORK ENGINEERING
ALPHARETTA, GA 30022

Table with 2 columns: Call Sign (WRNE627), File Number, and Radio Service (PM - 3.7 GHz Service).

FCC Registration Number (FRN): 0003290673

Table with 4 columns: Grant Date, Effective Date, Expiration Date, Print Date, Market Number, Channel Block, Sub-Market Designator, Market Name, 1st Build-out Date, 2nd Build-out Date, 3rd Build-out Date, 4th Build-out Date.

Waivers/Conditions:

Operation for this combination license grants both interim and final rights for this PEA and is not impacted by the relocation process pursuant to 47 CFR ? 27.1412(g).

License is conditioned on compliance with all applicable FCC rules and regulations, including licensee making payments required by 47 C.F.R. §§ 27.1401- 27.1424 as described in FCC 20-22. See FCC 20-22, paras. 178-331.

Conditions:

Pursuant to §309(h) of the Communications Act of 1934, as amended, 47 U.S.C. §309(h), this license is subject to the following conditions: This license shall not vest in the licensee any right to operate the station nor any right in the use of the frequencies designated in the license beyond the term thereof nor in any other manner than authorized herein.

This license may not authorize operation throughout the entire geographic area or spectrum identified on the hardcopy version. To view the specific geographic area and spectrum authorized by this license, refer to the Spectrum and Market Area information under the Market Tab of the license record in the Universal Licensing System (ULS).

Licensee Name: CELLCO PARTNERSHIP

Call Sign: WRNE627

File Number:

Print Date:

700 MHz Relicensed Area Information:

Market	Market Name	Buildout Deadline	Buildout Notification	Status
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RADIO STATION AUTHORIZATION

LICENSEE: CELLCO PARTNERSHIP

ATTN: REGULATORY
CELLCO PARTNERSHIP
5055 NORTH POINT PKWY, NP2NE NETWORK ENGINEERING
ALPHARETTA, GA 30022

Table with Call Sign (WRNE630), File Number, and Radio Service (PM - 3.7 GHz Service)

FCC Registration Number (FRN): 0003290673

Table with columns: Grant Date, Effective Date, Expiration Date, Print Date, Market Number, Channel Block, Sub-Market Designator, Market Name, 1st Build-out Date, 2nd Build-out Date, 3rd Build-out Date, 4th Build-out Date

Waivers/Conditions:

This final license provides authorization during the full 15-year license term. Operation under this final license may begin on the earlier of (1) 12/5/2025 or (2) the date that the certification for accelerated relocation for this PEA is validated by the FCC pursuant to 47 CFR § 27.1412(g).

License is conditioned on compliance with all applicable FCC rules and regulations, including licensee making payments required by 47 C.F.R. §§ 27.1401- 27.1424 as described in FCC 20-22. See FCC 20-22, paras. 178-331.

Conditions:

Pursuant to §309(h) of the Communications Act of 1934, as amended, 47 U.S.C. §309(h), this license is subject to the following conditions: This license shall not vest in the licensee any right to operate the station nor any right in the use of the frequencies designated in the license beyond the term thereof nor in any other manner than authorized herein.

This license may not authorize operation throughout the entire geographic area or spectrum identified on the hardcopy version. To view the specific geographic area and spectrum authorized by this license, refer to the Spectrum and Market Area information under the Market Tab of the license record in the Universal Licensing System (ULS).

Licensee Name: CELLCO PARTNERSHIP

Call Sign: WRNE630

File Number:

Print Date:

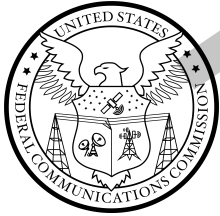
700 MHz Relicensed Area Information:

Market	Market Name	Buildout Deadline	Buildout Notification	Status
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Federal Communications Commission
Wireless Telecommunications Bureau

RADIO STATION AUTHORIZATION

LICENSEE: CELLCO PARTNERSHIP

ATTN: REGULATORY
CELLCO PARTNERSHIP
5055 NORTH POINT PKWY, NP2NE NETWORK ENGINEERING
ALPHARETTA, GA 30022

Table with 2 columns: Call Sign (WRNE631), File Number, and Radio Service (PM - 3.7 GHz Service)

FCC Registration Number (FRN): 0003290673

Table with 4 columns: Grant Date, Effective Date, Expiration Date, Print Date, Market Number, Channel Block, Sub-Market Designator, Market Name, 1st Build-out Date, 2nd Build-out Date, 3rd Build-out Date, 4th Build-out Date

Waivers/Conditions:

This final license provides authorization during the full 15-year license term. Operation under this final license may begin on the earlier of (1) 12/5/2025 or (2) the date that the certification for accelerated relocation for this PEA is validated by the FCC pursuant to 47 CFR § 27.1412(g).

License is conditioned on compliance with all applicable FCC rules and regulations, including licensee making payments required by 47 C.F.R. §§ 27.1401- 27.1424 as described in FCC 20-22. See FCC 20-22, paras. 178-331.

Conditions:

Pursuant to §309(h) of the Communications Act of 1934, as amended, 47 U.S.C. §309(h), this license is subject to the following conditions: This license shall not vest in the licensee any right to operate the station nor any right in the use of the frequencies designated in the license beyond the term thereof nor in any other manner than authorized herein.

This license may not authorize operation throughout the entire geographic area or spectrum identified on the hardcopy version. To view the specific geographic area and spectrum authorized by this license, refer to the Spectrum and Market Area information under the Market Tab of the license record in the Universal Licensing System (ULS).

Licensee Name: CELLCO PARTNERSHIP

Call Sign: WRNE631

File Number:

Print Date:

700 MHz Relicensed Area Information:

Market	Market Name	Buildout Deadline	Buildout Notification	Status
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RADIO STATION AUTHORIZATION

LICENSEE: CELLCO PARTNERSHIP

ATTN: REGULATORY
CELLCO PARTNERSHIP
5055 NORTH POINT PKWY, NP2NE NETWORK ENGINEERING
ALPHARETTA, GA 30022

Call Sign WRNE632	File Number
Radio Service PM - 3.7 GHz Service	

FCC Registration Number (FRN): 0003290673

Grant Date 07-23-2021	Effective Date 07-23-2021	Expiration Date 07-23-2036	Print Date
Market Number PEA007	Channel Block B1	Sub-Market Designator 0	
Market Name Boston, MA			
1st Build-out Date 07-23-2029	2nd Build-out Date 07-23-2033	3rd Build-out Date	4th Build-out Date

Waivers/Conditions:

This final license provides authorization during the full 15-year license term. Operation under this final license may begin on the earlier of (1) 12/5/2025 or (2) the date that the certification for accelerated relocation for this PEA is validated by the FCC pursuant to 47 CFR § 27.1412(g).

License is conditioned on compliance with all applicable FCC rules and regulations, including licensee making payments required by 47 C.F.R. §§ 27.1401- 27.1424 as described in FCC 20-22. See FCC 20-22, paras. 178-331.

Conditions:

Pursuant to §309(h) of the Communications Act of 1934, as amended, 47 U.S.C. §309(h), this license is subject to the following conditions: This license shall not vest in the licensee any right to operate the station nor any right in the use of the frequencies designated in the license beyond the term thereof nor in any other manner than authorized herein. Neither the license nor the right granted thereunder shall be assigned or otherwise transferred in violation of the Communications Act of 1934, as amended. See 47 U.S.C. § 310(d). This license is subject in terms to the right of use or control conferred by §706 of the Communications Act of 1934, as amended. See 47 U.S.C. §606.

This license may not authorize operation throughout the entire geographic area or spectrum identified on the hardcopy version. To view the specific geographic area and spectrum authorized by this license, refer to the Spectrum and Market Area information under the Market Tab of the license record in the Universal Licensing System (ULS). To view the license record, go to the ULS homepage at <http://wireless.fcc.gov/uls/index.htm?job=home> and select "License Search". Follow the instructions on how to search for license information.

Licensee Name: CELLCO PARTNERSHIP

Call Sign: WRNE632

File Number:

Print Date:

700 MHz Relicensed Area Information:

Market	Market Name	Buildout Deadline	Buildout Notification	Status
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Federal Communications Commission
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RADIO STATION AUTHORIZATION

LICENSEE: CELLCO PARTNERSHIP

ATTN: REGULATORY
CELLCO PARTNERSHIP
5055 NORTH POINT PKWY, NP2NE NETWORK ENGINEERING
ALPHARETTA, GA 30022

Table with Call Sign (WRNE633), File Number, and Radio Service (PM - 3.7 GHz Service).

FCC Registration Number (FRN): 0003290673

Table with columns: Grant Date, Effective Date, Expiration Date, Print Date, Market Number, Channel Block, Sub-Market Designator, Market Name, 1st Build-out Date, 2nd Build-out Date, 3rd Build-out Date, 4th Build-out Date.

Waivers/Conditions:

This final license provides authorization during the full 15-year license term. Operation under this final license may begin on the earlier of (1) 12/5/2025 or (2) the date that the certification for accelerated relocation for this PEA is validated by the FCC pursuant to 47 CFR § 27.1412(g).

License is conditioned on compliance with all applicable FCC rules and regulations, including licensee making payments required by 47 C.F.R. §§ 27.1401- 27.1424 as described in FCC 20-22. See FCC 20-22, paras. 178-331.

Conditions:

Pursuant to §309(h) of the Communications Act of 1934, as amended, 47 U.S.C. §309(h), this license is subject to the following conditions: This license shall not vest in the licensee any right to operate the station nor any right in the use of the frequencies designated in the license beyond the term thereof nor in any other manner than authorized herein.

This license may not authorize operation throughout the entire geographic area or spectrum identified on the hardcopy version. To view the specific geographic area and spectrum authorized by this license, refer to the Spectrum and Market Area information under the Market Tab of the license record in the Universal Licensing System (ULS).

Licensee Name: CELLCO PARTNERSHIP

Call Sign: WRNE633

File Number:

Print Date:

700 MHz Relicensed Area Information:

Market	Market Name	Buildout Deadline	Buildout Notification	Status
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Federal Communications Commission
Wireless Telecommunications Bureau

RADIO STATION AUTHORIZATION

LICENSEE: AIRTOUCH CELLULAR

ATTN: REGULATORY
AIRTOUCH CELLULAR
5055 NORTH POINT PKWY, NP2NE NETWORK ENGINEERING
ALPHARETTA, GA 30022

Table with Call Sign (KNLF646), File Number, and Radio Service (CW - PCS Broadband).

FCC Registration Number (FRN): 0006146468

Table with columns: Grant Date, Effective Date, Expiration Date, Print Date, Market Number, Channel Block, Sub-Market Designator, Market Name, 1st Build-out Date, 2nd Build-out Date, 3rd Build-out Date, 4th Build-out Date.

Waivers/Conditions:

This authorization is subject to the condition that, in the event that systems using the same frequencies as granted herein are authorized in an adjacent foreign territory (Canada/United States), future coordination of any base station transmitters within 72 km (45 miles) of the United States/Canada border shall be required to eliminate any harmful interference to operations in the adjacent foreign territory and to ensure continuance of equal access to the frequencies by both countries.

Special Condition for AU/name change (6/4/2016): Grant of the request to update licensee name is conditioned on it not reflecting an assignment or transfer of control (see Rule 1.948); if an assignment or transfer occurred without proper notification or FCC approval, the grant is void and the station is licensed under the prior name.

Conditions:

Pursuant to §309(h) of the Communications Act of 1934, as amended, 47 U.S.C. §309(h), this license is subject to the following conditions: This license shall not vest in the licensee any right to operate the station nor any right in the use of the frequencies designated in the license beyond the term thereof nor in any other manner than authorized herein.

This license may not authorize operation throughout the entire geographic area or spectrum identified on the hardcopy version. To view the specific geographic area and spectrum authorized by this license, refer to the Spectrum and Market Area information under the Market Tab of the license record in the Universal Licensing System (ULS).

Licensee Name: AIRTOUCH CELLULAR

Call Sign: KNLF646

File Number:

Print Date:

700 MHz Relicensed Area Information:

Market	Market Name	Buildout Deadline	Buildout Notification	Status
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Federal Communications Commission
Wireless Telecommunications Bureau

RADIO STATION AUTHORIZATION

LICENSEE: AIRTOUCH CELLULAR

ATTN: REGULATORY
AIRTOUCH CELLULAR
5055 NORTH POINT PKWY, NP2NE NETWORK ENGINEERING
ALPHARETTA, GA 30022

Call Sign KNLH310	File Number
Radio Service CW - PCS Broadband	

FCC Registration Number (FRN): 0006146468

Grant Date 06-08-2017	Effective Date 11-30-2017	Expiration Date 06-27-2027	Print Date
Market Number BTA051	Channel Block E	Sub-Market Designator 0	
Market Name Boston, MA			
1st Build-out Date 06-27-2002	2nd Build-out Date	3rd Build-out Date	4th Build-out Date

Waivers/Conditions:

NONE

Conditions:

Pursuant to §309(h) of the Communications Act of 1934, as amended, 47 U.S.C. §309(h), this license is subject to the following conditions: This license shall not vest in the licensee any right to operate the station nor any right in the use of the frequencies designated in the license beyond the term thereof nor in any other manner than authorized herein. Neither the license nor the right granted thereunder shall be assigned or otherwise transferred in violation of the Communications Act of 1934, as amended. See 47 U.S.C. § 310(d). This license is subject in terms to the right of use or control conferred by §706 of the Communications Act of 1934, as amended. See 47 U.S.C. §606.

This license may not authorize operation throughout the entire geographic area or spectrum identified on the hardcopy version. To view the specific geographic area and spectrum authorized by this license, refer to the Spectrum and Market Area information under the Market Tab of the license record in the Universal Licensing System (ULS). To view the license record, go to the ULS homepage at <http://wireless.fcc.gov/uls/index.htm?job=home> and select "License Search". Follow the instructions on how to search for license information.

Licensee Name: AIRTOUCH CELLULAR

Call Sign: KNLH310

File Number:

Print Date:

700 MHz Relicensed Area Information:

Market	Market Name	Buildout Deadline	Buildout Notification	Status
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Federal Communications Commission
Wireless Telecommunications Bureau

RADIO STATION AUTHORIZATION

LICENSEE: CELLCO PARTNERSHIP

ATTN: REGULATORY
CELLCO PARTNERSHIP
5055 NORTH POINT PKWY, NP2NE NETWORK ENGINEERING
ALPHARETTA, GA 30022

Table with Call Sign (KNLH242), File Number (0007716969), and Radio Service (CW - PCS Broadband).

FCC Registration Number (FRN): 0003290673

Table with columns: Grant Date, Effective Date, Expiration Date, Print Date, Market Number, Channel Block, Sub-Market Designator, Market Name, 1st Build-out Date, 2nd Build-out Date, 3rd Build-out Date, 4th Build-out Date.

Waivers/Conditions:

This authorization is subject to the condition that, in the event that systems using the same frequencies as granted herein are authorized in an adjacent foreign territory (Canada/United States), future coordination of any base station transmitters within 72 km (45 miles) of the United States/Canada border shall be required to eliminate any harmful interference to operations in the adjacent foreign territory and to ensure continuance of equal access to the frequencies by both countries.

This authorization is conditioned upon the full and timely payment of all monies due pursuant to Sections 1.2110 and 24.716 of the Commission's Rules and the terms of the Commission's installment plan as set forth in the Note and Security Agreement executed by the licensee. Failure to comply with this condition will result in the automatic cancellation of this authorization.

Conditions:

Pursuant to §309(h) of the Communications Act of 1934, as amended, 47 U.S.C. §309(h), this license is subject to the following conditions: This license shall not vest in the licensee any right to operate the station nor any right in the use of the frequencies designated in the license beyond the term thereof nor in any other manner than authorized herein.

This license may not authorize operation throughout the entire geographic area or spectrum identified on the hardcopy version. To view the specific geographic area and spectrum authorized by this license, refer to the Spectrum and Market Area information under the Market Tab of the license record in the Universal Licensing System (ULS).

Licensee Name: CELLCO PARTNERSHIP

Call Sign: KNLH242

File Number: 0007716969

Print Date: 06-06-2017

700 MHz Relicensed Area Information:

Market	Market Name	Buildout Deadline	Buildout Notification	Status
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Reference Copy



NORTHEAST > North East > New England > West Roxbury-1 > CAMBRIDGE_MA

SUMMERS, MELISSA - melissa.summers@verizonwireless.com - 20240405_170925

Project Details		Location Information	
Carrier Aggregation	N	Site Id	674416
Ecip	N	Search Ring#	
Project Name	5G L-SUB6 - CARRIER ADD	E-NodeB ID#	056291 0569001
Project Alt Name	CAMBRIDGE_MA - MKT 56 - MODIFICATION	PSLC#	137820
Project Id	16243907	Switch Name	West Roxbury-1
Designed Sector Carrier 4G	15	Tower Type	
Designed Sector Carrier 5G	6	Site Type	MACRO
Additional Sector Carrier 4G	0	Street Address	500 Front St
Additional Sector Carrier 5G	0	City	Cambridge
Suffix	REV2	State	MA
FP Solution Type & Tech Type	MODIFICATION;4G_CBRS;5G_L-Sub6;4G_Radio Swap	Zip Code	02139
		County	Middlesex
		Latitude	42.371486/ 42° 22' 17.350"
		Longitude	-71.067829/ 71° 4' 4.184"

Project Scope
<p>RFDS SOW: CBRS/ L-SUB6 carrier add, Samsung dual band RRH swap, antenna change</p> <p>REV1 (10/18/23): Upgraded to Gen2 RRHs and added second C-Band carrier REV2 (4/5/24): Corrected CBRS antenna/ RRH model number</p> <p>1- Retain 700/ 850 5G NR/ AWS/ PCS carriers and add CBRS/ L-SUB6 carriers 2- Replace (6) existing antennas in positions 1 & 2 with (6) new Commscope NHH-45A-R2B antennas 3- Replace (3) existing antennas in position 3 with (3) MT6413-77A L-Sub6 All-in-One antenna/ RRHs. Line up the tip of the Beta LS6 antenna with the 4G antennas 4- Replace (2) existing antennas in position 4 (Alpha/ Gamma) with (2) new Samsung R0440CC/ RT4423-48A- CBRS antenna/ RRH. Add (1) new Samsung R0440CC/ RT4423-48A- CBRS antenna/ RRH below the LS6 antenna in position 3 (Beta)</p>

Project Scope

- 5- Replace (6) existing Nokia HB RRHs on rooftop and (3) in shelter with (3) new Samsung B5/B13 RRH- RF4461d-13A and (3) new Samsung B2/B66A RRH- RF4439d-25A
- 6- Upgrade existing OVP/ Hybriflex
- 7- Plumb 700/ 850/ PCS/ AWS/ CBRS/ L-SUB6 according to the plumbing diagram
- 8- Use RF ports on dual band RRHs to communicate with RETs via Smart bias-T built into the antenna
- 9- Cap and weatherproof unused ports/connectors

Antenna Summary

Added Antenna

700	850	1900	AWS	CBRS	L-Sub6	Make	Model	Center line	Tip Height	Azimuth	Install Type	Quantit
					5G	Samsung	MT6413-77A	75	76.2	0(A),267(C)	PHYSICAL	2
					5G	Samsung	MT6413-77A	83.8	85	120(B)	PHYSICAL	1
LTE	5G,LTE	LTE	LTE			COMMSCOPE	NHH-45A-R2B	83	85	120(B)	PHYSICAL	2
LTE	5G,LTE	LTE	LTE			COMMSCOPE	NHH-45A-R2B	75	77	0(A),267(C)	PHYSICAL	4
				LTE		Samsung	R0440CC_3550Mhz	81	81.4	120(B)	PHYSICAL	1
				LTE		Samsung	R0440CC_3550Mhz	75	75.4	0(A),267(C)	PHYSICAL	2

Removed Antenna

700	850	1900	AWS	CBRS	L-Sub6	Make	Model	Center line	Tip Height	Azimuth	Install Type	Quantit
		LTE				ANDREW	HBXX-3319DS-A2M	83	85.4	120(B)	PHYSICAL	1
		LTE				COMMSCOPE,ANDREW	HBXX-3319DS-A2M	75	77.4	0(A),267(C)	PHYSICAL	2
LTE	5G,LTE					COMMSCOPE,ANDREW	LNX-4514DS-A1M	75	77.1	0(A),267(C)	PHYSICAL	2
LTE	5G,LTE		LTE			COMMSCOPE,ANDREW	SBNHH-1D45A	83	85	120(B)	PHYSICAL	1
			LTE			COMMSCOPE	SBNHH-1D45A	75	77	0(A),267(C)	PHYSICAL	2
						CSS Antenna	X7C-FRO-460-V	75	77.1	0(A),267(C)	SPARE	2
						CSS ANTENNA	X7CAP-465-4C	83	85.1	120(B)	SPARE	1

Retained Antenna

700	850	1900	AWS	CBRS	L-Sub6	Make	Model	Center line	Tip Height	Azimuth	Install Type	Quantit
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Added: 12

Removed: 11

Retained: 0

Non Antenna Summary

Added Non Antenna

Equipment Type	Locatio	700	850	1900	AWS	CBRS	L-Sub6	Make	Model	Install Type	Quantity
OVP	Tower	LTE	LTE,5G	LTE	LTE		5G	ovp	6 OVP	PHYSICAL	3
Hybrid Cable	Tower	LTE	LTE,5G	LTE	LTE		5G	N/A	6x12 Hybriflex LI	PHYSICAL	3
RRU	Tower			LTE	LTE			Samsung	B2/B66A RRH ORAN (RF4439d-25A)	PHYSICAL	3
RRU	Tower						5G	Samsung	MT6413-77A	PHYSICAL	0
RRU	Tower	LTE	5G,LTE					Samsung	RF4461d-13A	PHYSICAL	3
RRU	Tower					LTE		Samsung	RT4423-48A	PHYSICAL	3

Removed Non Antenna

Equipment Type	Locatio	700	850	1900	AWS	CBRS	L-Sub6	Make	Model	Install Type	Quantity
OVP	Tower	LTE							2 OVP	PHYSICAL	3
Hybrid Cable	Tower	LTE						N/A	2x4 Hybriflex	PHYSICAL	3
RRU	Shelter	LTE	5G,LTE					Samsung	B5/B13 RRH-BR04C (RFV01U-D2A)	PHYSICAL	3
RRU	Tower			LTE				Nokia	UHFA B25 RRH 4x30	PHYSICAL	3
RRU	Tower				LTE			Nokia	UHIE B66A RRH 4x45	PHYSICAL	3

Retained Non Antenna

Equipment Type	Locatio	700	850	1900	AWS	CBRS	L-Sub6	Make	Model	Install Type	Quantity
Coaxial Cables	Tower							Unknown	1 5/8" Coax	SPARE	12

Added: 15

Removed: 15

Retained: 12

Services

700 LTE	0000 (992950)			5GLS (8305870)		
Sector	01	02	03	01	02	03
Azimuth	0	120	267	0	120	267
Cell/Enodeb-Id	056291	056291	056291	056291	056291	056291
Antenna Model	LNx-4514DS-A1M	SBNHH-1D45A	LNx-4514DS-A1M	NHH-45A-R2B	NHH-45A-R2B	NHH-45A-R2B
Antenna Make	COMMSCOPE	ANDREW	ANDREW	COMMSCOPE	COMMSCOPE	COMMSCOPE
Centerline	75	83	75	75	83	75
DLEARFCN	5230	5230	5230	5230	5230	5230
Mech Down-tilt	4	4	6	2	2	2
Elect Down-tilt	8	12	14	10	14	16
Tip Height	77.1	85	77.1	77	85	77
Regulatory Power	121.04 (W/MHz) ERP	105.48 (W/MHz) ERP	116.15 (W/MHz) ERP	90.98 (W/MHz) ERP	90.98 (W/MHz) ERP	90.98 (W/MHz) ERP
Transmitter Max Power	47.8 dBm	47.8 dBm	47.8 dBm	46.0 dBm	46.0 dBm	46.0 dBm
TMA Make						
TMA Model						
RRU Make	Samsung	Samsung	Samsung	Samsung	Samsung	Samsung
RRU Model	B5/B13 RRH-BR04C (RFV01U-D2A)	B5/B13 RRH-BR04C (RFV01U-D2A)	B5/B13 RRH-BR04C (RFV01U-D2A)	RF4461d-13A	RF4461d-13A	RF4461d-13A
Number of Tx,Rx	2 , 4	2 , 4	2 , 4	4 , 4	4 , 4	4 , 4
Operational Port Count	0	0	0	0	0	0
Position	1	1	1	1,2	1,2	1,2
Transmitter Id	5613144	5613154	5613147	13117366	13117369	13117372
Source	VZNPP	VZNPP	VZNPP	VZNPP	VZNPP	VZNPP
Bandwidth	10	10	10	10	10	10
Ant. Dimensions H x W x D(inch)	51.49 x 15.29 x 6.39	47.99 x 17.99 x 7.0	51.49 x 15.31 x 6.41	47.99 x 17.99 x 7.0	47.99 x 17.99 x 7.0	47.99 x 17.99 x 7.0
Weight(lb)	29.91	50.39	29.23	49.69	49.69	49.69

Services

850 LTE	0000 (992950)			5GLS (8305870)		
Sector	01	02	03	01	02	03
Azimuth	0	120	267	0	120	267
Cell/Enodeb-Id	056291	056291	056291	056291	056291	056291
Antenna Model	LNx-4514DS-A1M	SBNHH-1D45A	LNx-4514DS-A1M	NHH-45A-R2B	NHH-45A-R2B	NHH-45A-R2B
Antenna Make	COMMSCOPE	COMMSCOPE	COMMSCOPE	COMMSCOPE	COMMSCOPE	COMMSCOPE
Centerline	75	83	75	75	83	75
DLEARFCN	2560	2560	2560	2560	2560	2560
Mech Down-tilt	4	4	6	2	2	2
Elect Down-tilt	8	12	8	10	14	16
Tip Height	77.1	85	77.1	77	85	77
Regulatory Power	165.86 (W/MHz) ERPSPD	174.07 (W/MHz) ERPSPD	157.55 (W/MHz) ERPSPD	396.02 (W/MHz) ERPSPD	396.02 (W/MHz) ERPSPD	396.02 (W/MHz) ERPSPD
Transmitter Max Power	46.0 dBm	46.0 dBm	46.0 dBm	45.6 dBm	45.6 dBm	45.6 dBm
TMA Make						
TMA Model						
RRU Make	Samsung	Samsung	Samsung	Samsung	Samsung	Samsung
RRU Model	B5/B13 RRH-BR04C (RFV01U-D2A)	B5/B13 RRH-BR04C (RFV01U-D2A)	B5/B13 RRH-BR04C (RFV01U-D2A)	RF4461d-13A	RF4461d-13A	RF4461d-13A
Number of Tx,Rx	2 , 2	2 , 2	2 , 2	4 , 4	4 , 4	4 , 4
Operational Port Count	0	0	0	0	0	0
Position	1	1	1	1,2	1,2	1,2
Transmitter Id	5613150	5613151	5613152	13117363	13117364	13117365
Source	VZNPP	VZNPP	VZNPP	VZNPP	VZNPP	VZNPP
Bandwidth	10	10	10	10	10	10
Ant. Dimensions H x W x D(inch)	51.49 x 15.29 x 6.39	47.99 x 17.99 x 6.99	51.49 x 15.29 x 6.39	47.99 x 17.99 x 7.0	47.99 x 17.99 x 7.0	47.99 x 17.99 x 7.0
Weight(lb)	29.91	50.35	29.91	49.69	49.69	49.69

Services

850 NR	0000 (992950)			5GLS (8305870)		
Sector	0358	0359	0360	0358	0359	0360
Azimuth	0	120	267	0	120	267
Cell/Enodeb-Id	0569001	0569001	0569001	0569001	0569001	0569001
Antenna Model	LNx-4514DS-A1M	SBNHH-1D45A	LNx-4514DS-A1M	NHH-45A-R2B	NHH-45A-R2B	NHH-45A-R2B
Antenna Make	COMMSCOPE	COMMSCOPE	COMMSCOPE	COMMSCOPE	COMMSCOPE	COMMSCOPE
Centerline	75	83	75	75	83	75
DLEARFCN	2560	2560	2560	2560	2560	2560
Mech Down-tilt	4	4	6	2	2	2
Elect Down-tilt	8	12	8	10	14	16
Tip Height	77.1	85	77.1	77	85	77
Regulatory Power	165.86 (W/MHz) ERPSPD	174.07 (W/MHz) ERPSPD	157.55 (W/MHz) ERPSPD	396.02 (W/MHz) ERPSPD	396.02 (W/MHz) ERPSPD	396.02 (W/MHz) ERPSPD
Transmitter Max Power	46.0 dBm	46.0 dBm	46.0 dBm	45.6 dBm	45.6 dBm	45.6 dBm
TMA Make						
TMA Model						
RRU Make	Samsung	Samsung	Samsung	Samsung	Samsung	Samsung
RRU Model	B5/B13 RRH-BR04C (RFV01U-D2A)	B5/B13 RRH-BR04C (RFV01U-D2A)	B5/B13 RRH-BR04C (RFV01U-D2A)	RF4461d-13A	RF4461d-13A	RF4461d-13A
Number of Tx,Rx	2 , 2	2 , 2	2 , 2	4 , 4	4 , 4	4 , 4
Operational Port Count	0	0	0	0	0	0
Position	1	1	1	1,2	1,2	1,2
Transmitter Id	5613150	5613151	5613152	13117363	13117364	13117365
Source	VZNPP	VZNPP	VZNPP	VZNPP	VZNPP	VZNPP
Bandwidth	10	10	10	10	10	10
Ant. Dimensions H x W x D(inch)	51.49 x 15.29 x 6.39	47.99 x 17.99 x 6.99	51.49 x 15.29 x 6.39	47.99 x 17.99 x 7.0	47.99 x 17.99 x 7.0	47.99 x 17.99 x 7.0
Weight(lb)	29.91	50.35	29.91	49.69	49.69	49.69

Services

1900 LTE	0000 (992950)			5GLS (8305870)		
Sector	01	02	03	01	02	03
Azimuth	0	120	267	0	120	267
Cell/Enodeb-Id	056291	056291	056291	056291	056291	056291
Antenna Model	HBXX-3319DS-A2M	HBXX-3319DS-A2M	HBXX-3319DS-A2M	NHH-45A-R2B	NHH-45A-R2B	NHH-45A-R2B
Antenna Make	COMMSCOPE	ANDREW	ANDREW	COMMSCOPE	COMMSCOPE	COMMSCOPE
Centerline	75	83	75	75	83	75
DLEARFCN	1025	1025	1025	1025	1025	1025
Mech Down-tilt	0	4	0	2	2	2
Elect Down-tilt	2	6	5	2	8	3
Tip Height	77.4	85.4	77.4	77	85	77
Regulatory Power	197.50 (W/MHz) EIRP	206.38 (W/MHz) EIRP	184.78 (W/MHz) EIRP	211.19 (W/MHz) EIRP	211.19 (W/MHz) EIRP	211.19 (W/MHz) EIRP
Transmitter Max Power	44.8 dBm	44.8 dBm	44.8 dBm	46.0 dBm	46.0 dBm	46.0 dBm
TMA Make						
TMA Model						
RRU Make	Nokia	Nokia	Nokia	Samsung	Samsung	Samsung
RRU Model	UHFA B25 RRH 4x30	UHFA B25 RRH 4x30	UHFA B25 RRH 4x30	B2/B66A RRH ORAN (RF4439d-25A)	B2/B66A RRH ORAN (RF4439d-25A)	B2/B66A RRH ORAN (RF4439d-25A)
Number of Tx,Rx	4 , 4	4 , 4	4 , 4	4 , 4	4 , 4	4 , 4
Operational Port Count	0	0	0	0	0	0
Position	2	2	2	1	1	1
Transmitter Id	5613145	5613155	5613148	13117367	13117370	13117373
Source	VZNPP	VZNPP	VZNPP	VZNPP	VZNPP	VZNPP
Bandwidth	15	15	15	15	15	15
Ant. Dimensions H x W x D(inch)	56.99 x 22.19 x 4.89	57.0 x 22.2 x 4.88	57.0 x 22.2 x 4.88	47.99 x 17.99 x 7.0	47.99 x 17.99 x 7.0	47.99 x 17.99 x 7.0
Weight(lb)	38.49	38.02	38.02	49.69	49.69	49.69

Services

AWS LTE	0000 (992950)			5GLS (8305870)		
Sector	01	02	03	01	02	03
Azimuth	0	120	267	0	120	267
Cell/Enodeb-Id	056291	056291	056291	056291	056291	056291
Antenna Model	SBNHH-1D45A	SBNHH-1D45A	SBNHH-1D45A	NHH-45A-R2B	NHH-45A-R2B	NHH-45A-R2B
Antenna Make	COMMSCOPE	ANDREW	COMMSCOPE	COMMSCOPE	COMMSCOPE	COMMSCOPE
Centerline	75	83	75	75	83	75
DLEARFCN	2050	2050	2050	2050	2050	2050
Mech Down-tilt	0	4	0	2	2	2
Elect Down-tilt	4	1	5	2	3	3
Tip Height	77	85	77	77	85	77
Regulatory Power	190.43 (W/MHz) EIRP	191.31 (W/MHz) EIRP	179.36 (W/MHz) EIRP	192.19 (W/MHz) EIRP	192.19 (W/MHz) EIRP	192.19 (W/MHz) EIRP
Transmitter Max Power	46.5 dBm	46.5 dBm	46.5 dBm	46.0 dBm	46.0 dBm	46.0 dBm
TMA Make						
TMA Model						
RRU Make	Nokia	Nokia	Nokia	Samsung	Samsung	Samsung
RRU Model	UHIE B66A RRH 4x45	UHIE B66A RRH 4x45	UHIE B66A RRH 4x45	B2/B66A RRH ORAN (RF4439d-25A)	B2/B66A RRH ORAN (RF4439d-25A)	B2/B66A RRH ORAN (RF4439d-25A)
Number of Tx,Rx	4 , 4	4 , 4	4 , 4	4 , 4	4 , 4	4 , 4
Operational Port Count	0	0	0	0	0	0
Position	1	1	1	2	2	2
Transmitter Id	5613153	5613146	5613149	13117368	13117371	13117374
Source	VZNPP	VZNPP	VZNPP	VZNPP	VZNPP	VZNPP
Bandwidth	20	20	20	20	20	20
Ant. Dimensions H x W x D(inch)	47.99 x 17.99 x 6.99	47.99 x 17.99 x 7.0	47.99 x 17.99 x 7.0	47.99 x 17.99 x 7.0	47.99 x 17.99 x 7.0	47.99 x 17.99 x 7.0
Weight(lb)	50.35	47.99	50.39	49.69	49.69	49.69

Services

CBRS LTE	0000 (992950)	5GLS (8305870)		
Sector		19	20	21
Azimuth		0	120	267
Cell/Enodeb-Id		056291	056291	056291
Antenna Model		R0440CC_3550Mhz	R0440CC_3550Mhz	R0440CC_3550Mhz
Antenna Make		Samsung	Samsung	Samsung
Centerline		75	81	75
DLEARFCN		55990, 56141, 56339, 56537	55990, 56141, 56339, 56537	55990, 56141, 56339, 56537
Mech Down-tilt		2	2	2
Elect Down-tilt		9	9	9
Tip Height		75.4	81.4	75.4
Regulatory Power		5.00 (W/MHz) EIRPSD, 5.00 (W/MHz) EIRPSD, 5.00 (W/MHz)	5.00 (W/MHz) EIRPSD, 5.00 (W/MHz) EIRPSD, 5.00 (W/MHz)	5.00 (W/MHz) EIRPSD, 5.00 (W/MHz) EIRPSD, 5.00 (W/MHz)
Transmitter Max Power		36.44 dBm	36.44 dBm	36.44 dBm
TMA Make				
TMA Model				
RRU Make		Samsung	Samsung	Samsung
RRU Model		RT4423-48A	RT4423-48A	RT4423-48A
Number of Tx,Rx		4 , 4	4 , 4	4 , 4
Operational Port Count		0	0	0
Position		4	3	4
Transmitter Id		13118328	13118331	13118332
Source		VZNPP	VZNPP	VZNPP
Bandwidth		10, 20, 20, 20	10, 20, 20, 20	10, 20, 20, 20
Ant. Dimensions H x W x D(inch)		8.7 x 12.0 x 1.5	8.7 x 12.0 x 1.5	8.7 x 12.0 x 1.5
Weight(lb)		3.3	3.3	3.3

Services

CBAND NR	0000 (992950)	5GLS (8305870)		
Sector		0358	0359	0360
Azimuth		0	120	267
Cell/Enodeb-Id		0569001	0569001	0569001
Antenna Model		MT6413-77A	MT6413-77A	MT6413-77A
Antenna Make		Samsung	Samsung	Samsung
Centerline		75	83.8	75
DLEARFCN		650006, 655324	650006, 655324	650006, 655324
Mech Down-tilt		2	2	2
Elect Down-tilt		1	1	1
Tip Height		76.2	85	76.2
Regulatory Power		1170.73 (W/MHz) EIRP, 1480.15 (W/MHz) EIRP	1170.73 (W/MHz) EIRP, 1480.15 (W/MHz) EIRP	1170.73 (W/MHz) EIRP, 1480.15 (W/MHz) EIRP
Transmitter Max Power		54.4 dBm	54.4 dBm	54.4 dBm
TMA Make				
TMA Model				
RRU Make		Samsung	Samsung	Samsung
RRU Model		MT6413-77A	MT6413-77A	MT6413-77A
Number of Tx,Rx		2 , 2	2 , 2	2 , 2
Operational Port Count		64	64	64
Position		3	3	3
Transmitter Id		13117396	13117397	13117398
Source		VZNPP	VZNPP	VZNPP
Bandwidth		100, 60	100, 60	100, 60
Ant. Dimensions H x W x D(inch)		29.53 x 15.75 x 5.51	29.53 x 15.75 x 5.51	29.53 x 15.75 x 5.51
Weight(lb)		55.1	55.1	55.1

Callsigns Per Antenna

Sector	Make	Model	Ant CL Height AG	Ant Tip Height	Azimuth	Elect Down-tilt	Mech Down-tilt	Gain	Bandwidth	Regulatory Power	700	850	1900	2100	28 GHz	31 GHz	39 GHz	LSub-6	CBRS
01	COMMSCOPE	NHH-45A-R2	75	77	0	10	2	12.96	48	90.98	WQJQ689								
02	COMMSCOPE	NHH-45A-R2	83	85	120	14	2	12.78	48.75	90.98	WQJQ689								
03	COMMSCOPE	NHH-45A-R2	75	77	267	16	2	12.71	49.25	90.98	WQJQ689								
01	COMMSCOPE	NHH-45A-R2	75	77	0	10	2	13.73	43.5	396.02		KNKA201							
02	COMMSCOPE	NHH-45A-R2	83	85	120	14	2	13.69	44.75	396.02		KNKA201							
03	COMMSCOPE	NHH-45A-R2	75	77	267	16	2	13.58	45.25	396.02		KNKA201							
0358	COMMSCOPE	NHH-45A-R2	75	77	0	10	2	13.73	43.5	396.02		KNKA201							
0359	COMMSCOPE	NHH-45A-R2	83	85	120	14	2	13.69	44.75	396.02		KNKA201							
0360	COMMSCOPE	NHH-45A-R2	75	77	267	16	2	13.58	45.25	396.02		KNKA201							
01	COMMSCOPE	NHH-45A-R2	75	77	0	2	2	16.36	45	211.19			KNLF646,KNLH242,KNLH310						
02	COMMSCOPE	NHH-45A-R2	83	85	120	8	2	16.12	46	211.19			KNLF646,KNLH242,KNLH310						
03	COMMSCOPE	NHH-45A-R2	75	77	267	3	2	16.33	45	211.19			KNLF646,KNLH242,KNLH310						
01	COMMSCOPE	NHH-45A-R2	75	77	0	2	2	17.02	43	192.19				WQGA900,WGB266					
02	COMMSCOPE	NHH-45A-R2	83	85	120	3	2	16.95	43.25	192.19				WQGA900,WGB266					
03	COMMSCOPE	NHH-45A-R2	75	77	267	3	2	16.95	43.25	192.19				WQGA900,WGB266					
0358	Samsung	MT6413-77A	75	76.2	0	1	2	23.15	105	1170.73								WRNE627,WRNE628,WRNE629,WRNE630,WRNE631	
0359	Samsung	MT6413-77A	83.8	85	120	1	2	23.15	105	1170.73								WRNE627,WRNE628,WRNE629,WRNE630,WRNE631	
0360	Samsung	MT6413-77A	75	76.2	267	1	2	23.15	105	1170.73								WRNE627,WRNE628,WRNE629,WRNE630,WRNE631	
0358	Samsung	MT6413-77A	75	76.2	0	1	2	23.15	105	1480.15								WRNE631,WRNE632,WRNE633,WRNE63	
0359	Samsung	MT6413-77A	83.8	85	120	1	2	23.15	105	1480.15								WRNE631,WRNE632,WRNE633,WRNE63	
0360	Samsung	MT6413-77A	75	76.2	267	1	2	23.15	105	1480.15								WRNE631,WRNE632,WRNE633,WRNE63	
19	Samsung	R0440CC_3550Mhz	75	75.4	0	9	2	10.37	68	5									
19	Samsung	R0440CC_3550Mhz	75	75.4	0	9	2	10.37	68	5									

19	Samsung	R0440CC_35 50Mhz	75	75.4	0	9	2	10.37	68	5									
19	Samsung	R0440CC_35 50Mhz	75	75.4	0	9	2	10.37	68	5									
20	Samsung	R0440CC_35 50Mhz	81	81.4	120	9	2	10.37	68	5									
20	Samsung	R0440CC_35 50Mhz	81	81.4	120	9	2	10.37	68	5									
20	Samsung	R0440CC_35 50Mhz	81	81.4	120	9	2	10.37	68	5									
20	Samsung	R0440CC_35 50Mhz	81	81.4	120	9	2	10.37	68	5									
21	Samsung	R0440CC_35 50Mhz	75	75.4	267	9	2	10.37	68	5									
21	Samsung	R0440CC_35 50Mhz	75	75.4	267	9	2	10.37	68	5									
21	Samsung	R0440CC_35 50Mhz	75	75.4	267	9	2	10.37	68	5									
21	Samsung	R0440CC_35 50Mhz	75	75.4	267	9	2	10.37	68	5									

Callsigns

Callsign	Market	Radio Code	Market #	Block	State	County	License Name	Wholly Owner	Total MHZ	Freq Range 1	Freq Range 2	Freq Range 3	Freq Range 4	Regulatory Power	Threshold (W)	POPs/Sq. mil	Status	Action	Approve for Insvc
WQJQ689	Northeast	WU	REA001	C	MA	25017	Cellco Partnership	Yes	22.000	746.000 - 757.000/.000 - .000	776.000 - 787.000/.000 - .000	746.000 - 757.000/.000 - .000	776.000 - 787.000/.000 - .000	90.98	1000	1995.55	proposed	added	1
KNKA201	Boston-Lowell-Brockton-Lawrence-Haverhill, MA-NH	CL	CMA006	B	MA	25017	Cellco Partnership	Yes	25.000	835.000 - 845.000/846.500 - 849.000	880.000 - 890.000/891.500 - 894.000	835.000 - 845.000/846.500 - 849.000	880.000 - 890.000/891.500 - 894.000	396.02	400	1995.55	proposed	added	1
KNLF646	Boston, MA	CW	BTA051	C	MA	25017	AirTouch Cellular	Yes	10.000	1895.000 - 1900.000/.000 - .000	1975.000 - 1980.000/.000 - .000	1895.000 - 1900.000/.000 - .000	1975.000 - 1980.000/.000 - .000	211.19	1640	1995.55	proposed	added	1
KNLH310	Boston, MA	CW	BTA051	E	MA	25017	AirTouch Cellular	Yes	10.000	1885.000 - 1890.000/.000 - .000	1965.000 - 1970.000/.000 - .000	1885.000 - 1890.000/.000 - .000	1965.000 - 1970.000/.000 - .000	211.19	1640	1995.55	proposed	added	1
KNLH242	Boston, MA	CW	BTA051	F	MA	25017	Cellco Partnership	Yes	10.000	1890.000 - 1895.000/.000 - .000	1970.000 - 1975.000/.000 - .000	1890.000 - 1895.000/.000 - .000	1970.000 - 1975.000/.000 - .000	211.19	1640	1995.55	proposed	added	1
CBRS_CALL SIGN	UNLICENSE	3.5 GHz	UNLICENSE	UNLICENSE	MA	UNLICENSE	UNLICENSE	UNLICENSE	UNLICENSE	UNLICENSE D - UNLICENSE D/UNLICENSE D - UNLICENSE	UNLICENSE D - UNLICENSE D/UNLICENSE D - UNLICENSE	- / -	- / -	5		1995.55	proposed	added	
WRLD615	D25017 - Middlesex, MA	PL	D25017	0	MA	25017	Verizon Wireless Network Procurement LP	Yes	100.000	3550.000 - 3650.000/.000 - .000	.000 - .000/.000 - .000	3550.000 - 3650.000/.000 - .000	.000 - .000/.000 - .000	5	501	1995.55	proposed	added	1
WRLD616	D25017 - Middlesex, MA	PL	D25017	0	MA	25017	Verizon Wireless Network Procurement LP	Yes	100.000	3550.000 - 3650.000/.000 - .000	.000 - .000/.000 - .000	3550.000 - 3650.000/.000 - .000	.000 - .000/.000 - .000	5	501	1995.55	proposed	added	1
WRLD617	D25017 - Middlesex, MA	PL	D25017	0	MA	25017	Verizon Wireless Network Procurement LP	Yes	100.000	3550.000 - 3650.000/.000 - .000	.000 - .000/.000 - .000	3550.000 - 3650.000/.000 - .000	.000 - .000/.000 - .000	5	501	1995.55	proposed	added	1
WQGB266	Boston-Lowell-Brockton-Lawrence-Haverhill, MA-NH	AW	CMA006	A	MA	25017	Cellco Partnership	Yes	20.000	1710.000 - 1720.000/.000 - .000	2110.000 - 2120.000/.000 - .000	1710.000 - 1720.000/.000 - .000	2110.000 - 2120.000/.000 - .000	192.19	1640	1995.55	proposed	added	1

WRNE627	Boston, MA	PM	PEA007	A1	MA	25017	Cellco Partnersh ip	Yes	20.000	3700.000 3720.000/ .000 - .000	.000 - .000/.000 - .000	3700.000 3720.000/ .000 - .000	.000 - .000/.000 - .000	1170.73	1640	1995.55	proposed	added	1
WRNE628	Boston, MA	PM	PEA007	A2	MA	25017	Cellco Partnersh ip	Yes	20.000	3720.000 3740.000/ .000 - .000	.000 - .000/.000 - .000	3720.000 3740.000/ .000 - .000	.000 - .000/.000 - .000	1170.73	1640	1995.55	proposed	added	1
WRNE629	Boston, MA	PM	PEA007	A3	MA	25017	Cellco Partnersh ip	Yes	20.000	3740.000 3760.000/ .000 - .000	.000 - .000/.000 - .000	3740.000 3760.000/ .000 - .000	.000 - .000/.000 - .000	1170.73	1640	1995.55	proposed	added	1
WRNE630	Boston, MA	PM	PEA007	A4	MA	25017	Cellco Partnersh ip	Yes	20.000	3760.000 3780.000/ .000 - .000	.000 - .000/.000 - .000	3760.000 3780.000/ .000 - .000	.000 - .000/.000 - .000	1170.73	1640	1995.55	proposed	added	1
WRNE631	Boston, MA	PM	PEA007	A5	MA	25017	Cellco Partnersh ip	Yes	20.000	3780.000 3800.000/ .000 - .000	.000 - .000/.000 - .000	3780.000 3800.000/ .000 - .000	.000 - .000/.000 - .000	1480.15	1640	1995.55	proposed	added	1
WQGA900	Boston-Wo rcester-L awrence-L owell-Bro ckton, MA-NH-R	AW	BEA003	B	MA	25017	Cellco Partnersh ip	Yes	20.000	1720.000 1730.000/ .000 - .000	2120.000 2130.000/ .000 - .000	1720.000 1730.000/ .000 - .000	2120.000 2130.000/ .000 - .000	192.19	1640	1995.55	proposed	added	1
WRNE632	Boston, MA	PM	PEA007	B1	MA	25017	Cellco Partnersh ip	Yes	20.000	3800.000 3820.000/ .000 - .000	.000 - .000/.000 - .000	3800.000 3820.000/ .000 - .000	.000 - .000/.000 - .000	1480.15	1640	1995.55	proposed	added	1
WRNE633	Boston, MA	PM	PEA007	B2	MA	25017	Cellco Partnersh ip	Yes	20.000	3820.000 3840.000/ .000 - .000	.000 - .000/.000 - .000	3820.000 3840.000/ .000 - .000	.000 - .000/.000 - .000	1480.15	1640	1995.55	proposed	added	1
WRNE634	Boston, MA	PM	PEA007	B3	MA	25017	Cellco Partnersh ip	Yes	20.000	3840.000 3860.000/ .000 - .000	.000 - .000/.000 - .000	3840.000 3860.000/ .000 - .000	.000 - .000/.000 - .000	1480.15	1640	1995.55	proposed	added	1

Sector	Antenna Desc	Base Station ID	Sector ID
Alpha	700-850	056291_1_17	056291_1,056291_1_7
Alpha	AWS	056291_1_2	056291_1_2
Alpha	PCS	056291_1_4	056291_1_4
Beta	700-850	056291_2_17	056291_2,056291_2_7
Beta	AWS	056291_2_2	056291_2_2
Beta	PCS	056291_2_4	056291_2_4
Gamma	700-850	056291_3_17	056291_3,056291_3_7
Gamma	AWS	056291_3_2	056291_3_2
Gamma	PCS	056291_3_4	056291_3_4

Band	Sector 1 (Alpha) Color Codes							
850 CDMA		R						
		R	R					
700		R	P					
		R	R	P				
		R	R	R	P			
		R	R	R	R	P		
850 LTE		R	P	P				
		R	R	P	P			
		R	R	R	P	P		
		R	R	R	R	P	P	
700 / 850		R	P	P	P			
		R	R	P	P	P		
		R	R	R	P	P	P	
		R	R	R	R	P	P	P
AWS		R	W					
		R	R	W				
		R	R	R	W			
PCS		R	W	W				
		R	R	W	W			
		R	R	R	W	W		
		R	R	R	R	W	W	
AWS / PCS		R	W	W	W			
		R	R	W	W	W		
		R	R	R	W	W	W	
		R	R	R	R	W	W	W
CBRS		R	Y					
		R	R	Y				
		R	R	R	Y			
		R	R	R	R	Y		
LAA		R	Y	Y				
		R	R	Y	Y			

Sector 2 (Beta) Color Codes							
	B						
	B	B					
	B	P					
	B	B	P				
	B	B	B	P			
	B	B	B	B	P		
	B	P	P				
	B	B	P	P			
	B	B	B	P	P		
	B	B	B	B	P	P	
	B	P	P	P			
	B	B	P	P	P		
	B	B	B	P	P	P	
	B	B	B	B	P	P	P
	B	W					
	B	B	W				
	B	B	B	W			
	B	B	B	B	W		
	B	W	W				
	B	B	W	W			
	B	B	B	W	W		
	B	B	B	B	W	W	
	B	Y					
	B	B	Y				
	B	B	B	Y			
	B	B	B	B	Y		
	B	Y	Y				
	B	B	Y	Y			

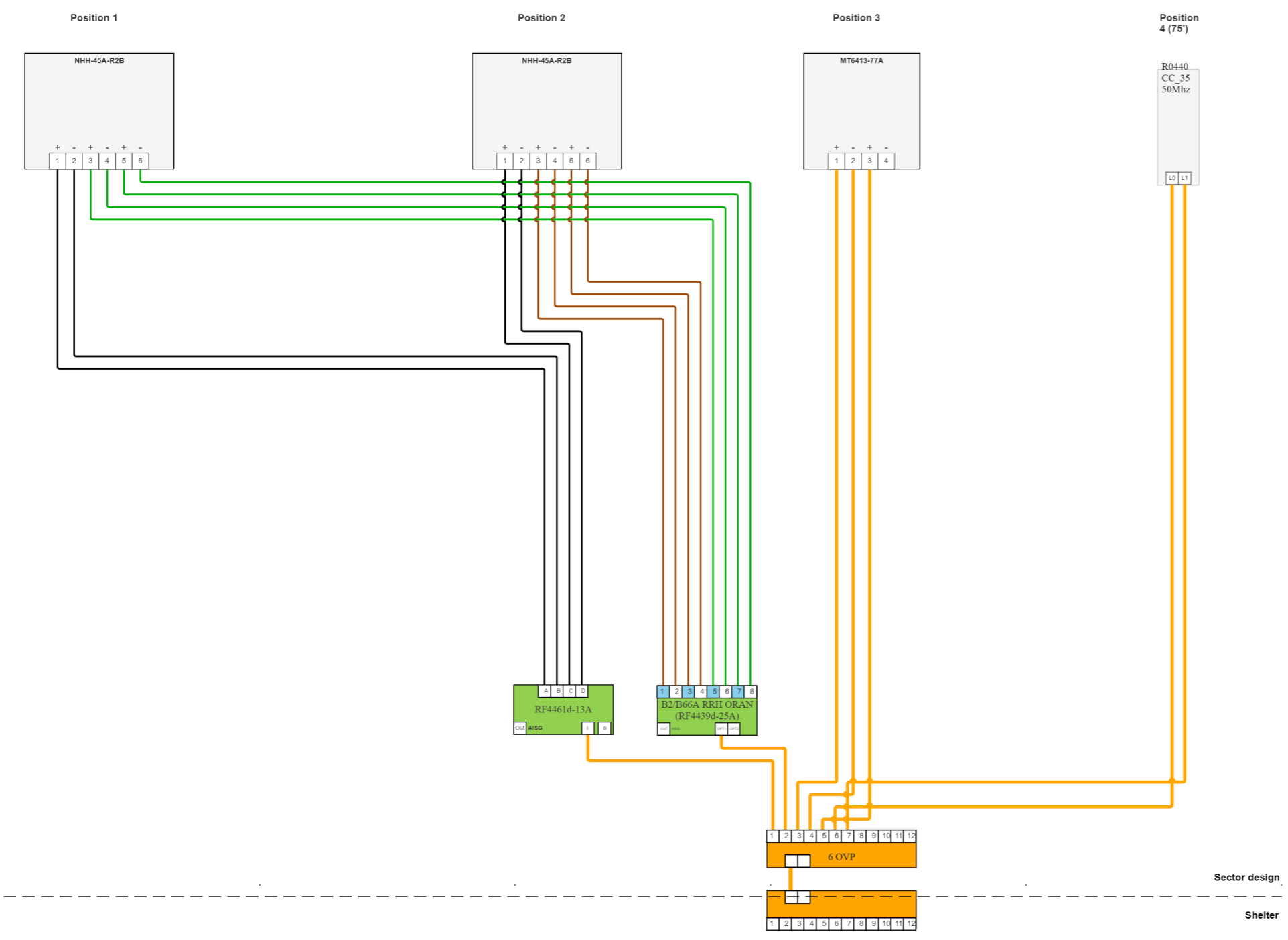
Sector 3 (Gamma) Color Codes							
	G						
	G	G					
	G	P					
	G	G	P				
	G	G	G	P			
	G	G	G	G	P		
	G	P	P				
	G	G	P	P			
	G	G	G	P	P		
	G	G	G	G	P	P	
	G	P	P	P			
	G	G	P	P	P		
	G	G	G	P	P	P	
	G	G	G	G	P	P	P
	G	W					
	G	G	W				
	G	G	G	W			
	G	W	W				
	G	G	W	W			
	G	G	G	W	W		
	G	G	G	G	W	W	
	G	W	W	W	W		
	G	G	W	W	W	W	
	G	G	G	W	W	W	
	G	G	G	G	W	W	W
	G	Y					
	G	G	Y				
	G	G	G	Y			
	G	G	G	G	Y		
	G	Y	Y				
	G	G	Y	Y			

Sector 4 (Delta) Color Codes							
850 CDMA	Gray	R					
	Gray	R	R				
700	Gray	R	P				
	Gray	R	R	P			
	Gray	R	R	R	P		
	Gray	R	R	R	R	P	
850 LTE	Gray	R	P	P			
	Gray	R	R	P	P		
	Gray	R	R	R	P	P	
	Gray	R	R	R	R	P	P
700 / 850	Gray	R	P	P	P		
	Gray	R	R	P	P	P	
	Gray	R	R	R	P	P	P
	Gray	R	R	R	R	P	P
AWS	Gray	R	W				
	Gray	R	R	W			
	Gray	R	R	R	W		
PCS	Gray	R	W	W			
	Gray	R	R	W	W		
	Gray	R	R	R	W	W	
	Gray	R	R	R	R	W	W
AWS / PCS	Gray	R	W	W	W		
	Gray	R	R	W	W	W	
	Gray	R	R	R	W	W	W
	Gray	R	R	R	R	W	W
CBRS	Gray	R	Y				
	Gray	R	R	Y			
	Gray	R	R	R	Y		
	Gray	R	R	R	R	Y	
LAA	Gray	R	Y	Y			
	Gray	R	R	Y	Y		

Sector 5 (Epsilon) Color Codes							
	B						
	B	B					
	B	P					
	B	B	P				
	B	B	B	P			
	B	B	B	B	P		
	B	P	P				
	B	B	P	P			
	B	B	B	P	P		
	B	B	B	B	P	P	
	B	P	P	P			
	B	B	P	P	P		
	B	B	B	P	P	P	
	B	B	B	B	P	P	P
	B	W					
	B	B	W				
	B	B	B	W			
	B	B	B	B	W		
	B	W	W				
	B	B	W	W			
	B	B	B	W	W		
	B	B	B	B	W	W	
	B	W	W	W			
	B	B	W	W	W		
	B	B	B	W	W	W	
	B	B	B	B	W	W	W
	B	Y					
	B	B	Y				
	B	B	B	Y			
	B	B	B	B	Y		
	B	Y	Y				
	B	B	Y	Y			

Sector 6 (Zeta) Color Codes							
	G						
	G	G					
	G	P					
	G	G	P				
	G	G	G	P			
	G	G	G	G	P		
	G	P	P				
	G	G	P	P			
	G	G	G	P	P		
	G	G	G	G	P	P	
	G	P	P	P			
	G	G	P	P	P		
	G	G	G	P	P	P	
	G	G	G	G	P	P	P
	G	W					
	G	G	W				
	G	G	G	W			
	G	W	W				
	G	G	W	W			
	G	G	G	W	W		
	G	G	G	G	W	W	
	G	W	W	W	W		
	G	G	W	W	W	W	
	G	G	G	W	W	W	
	G	G	G	G	W	W	W
	G	Y					
	G	G	Y				
	G	G	G	Y			
	G	G	G	G	Y		
	G	Y	Y				
	G	G	Y	Y			

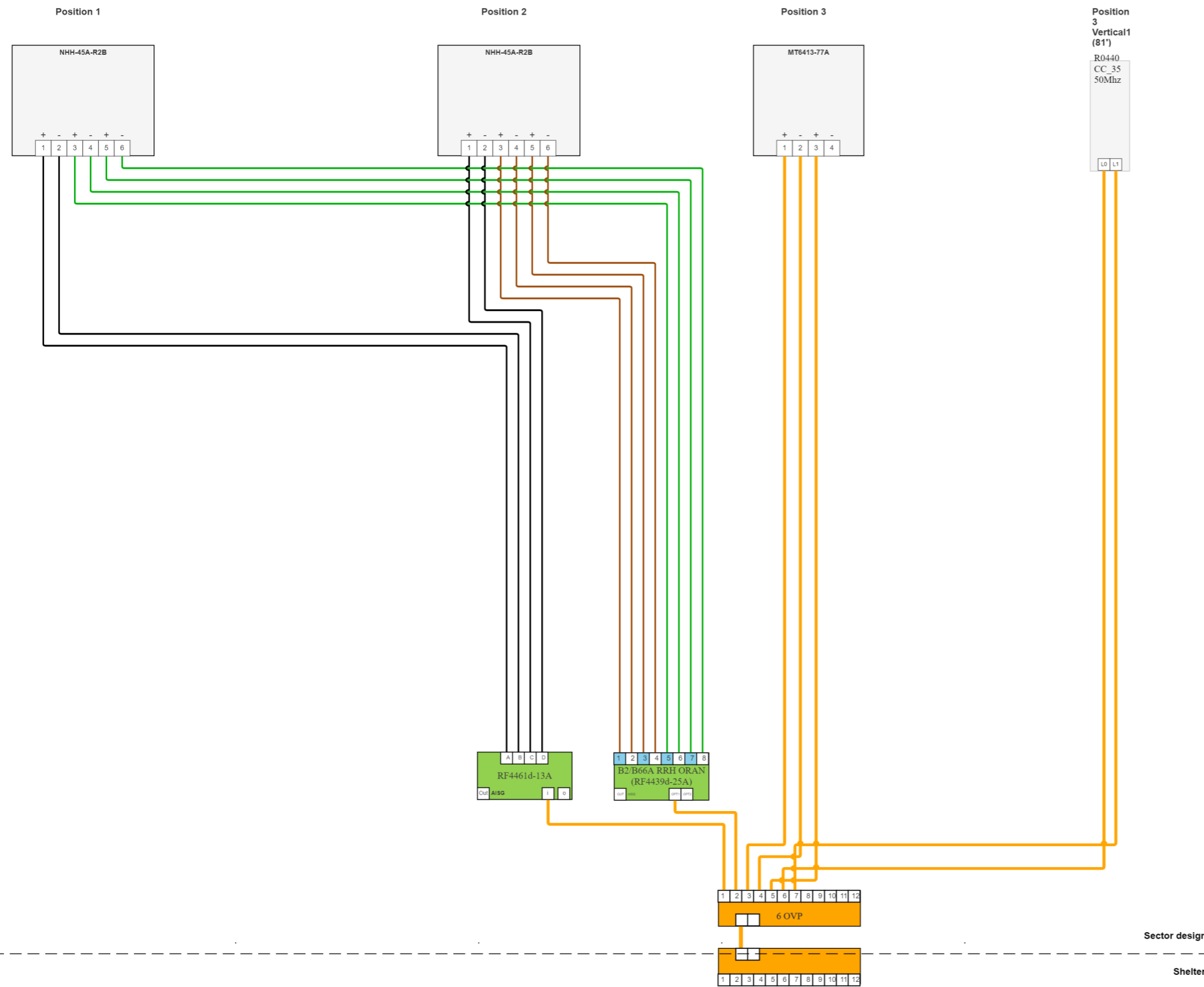
Alpha (Proposed)



Legends	
RET dc signal capable port	
700/850(LB)	700(LT)
850(CB)	AWS(AW)
AWS(PC)	AWS/PCS(HB)
28GHz(U28)	39GHz(U39)
L-Sub6(S6)	CBRs(RS)
LAA(LA)	Fiber
AISG	DC
Coax	Coax Jumper
Sectors Shared Equipments	

Notes:

- Antenna view is from the back of the antennas
- Colors of connections are just for clarification
- Size of objects in drawing doesn't reflect equipment true dimensions



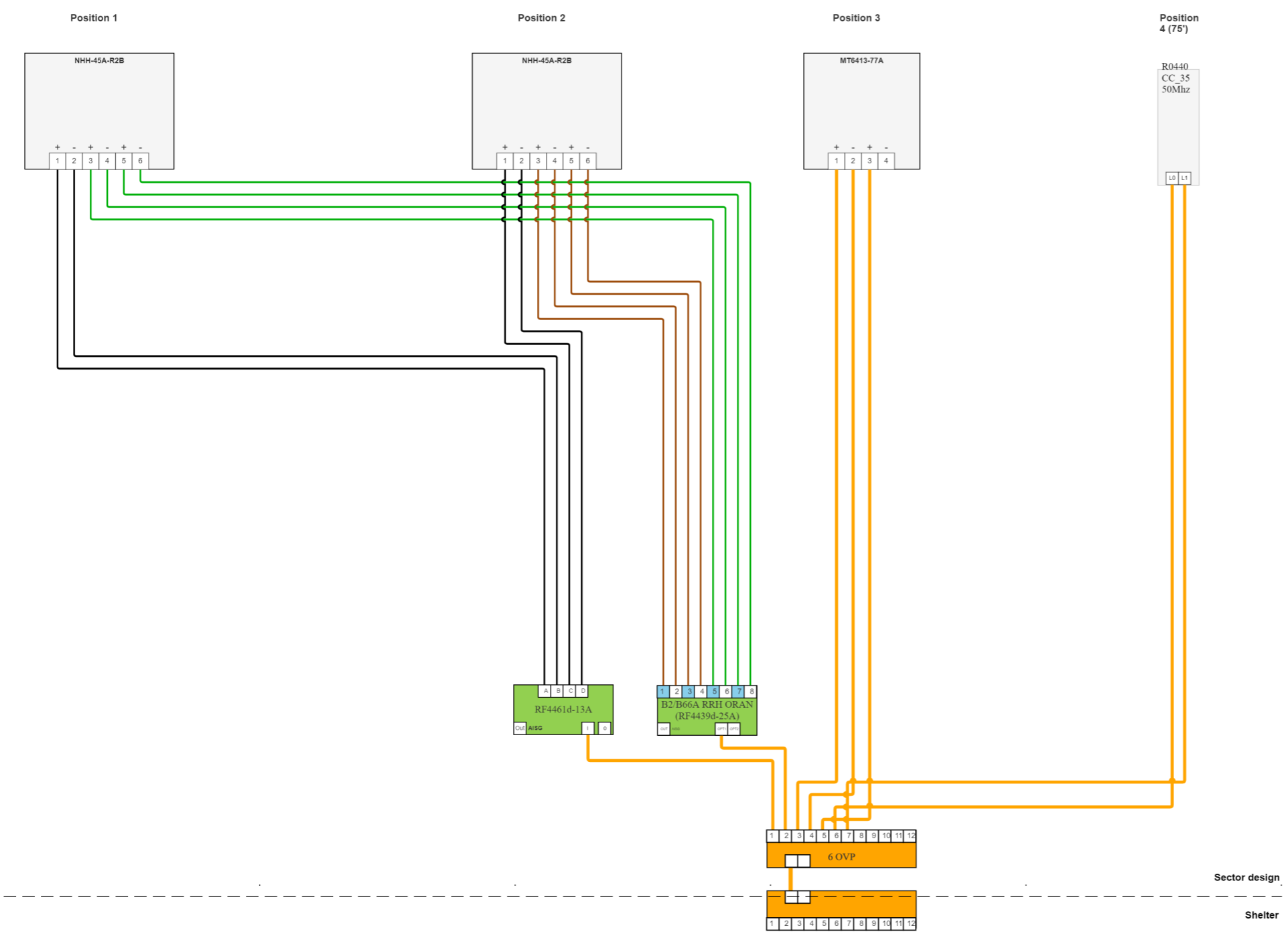
Beta (Proposed)

Legends	
RET dc signal capable port	
700/850(LB)	700(LT)
850(CB)	AWS(AW)
AWS(AW)	PCS(PC)
AWS/PCS(HB)	28GHz(U28)
39GHz(U39)	L-Sub6(S6)
CBRs(RS)	LAA(LA)
Fiber	AISG
DC	
Coax	
Coax Jumper	
Sectors Shared Equipments	

Notes:

- Antenna view is from the back of the antennas
- Colors of connections are just for clarification
- Size of objects in drawing doesn't reflect equipment true dimensions

Gamma (Proposed)



Legends	
RET dc signal capable port	
700/850(LB)	Coax
700(LT)	Coax Jumper
850(CB)	Sectors Shared Equipments
AWS(AW)	
PCS(PC)	
AWS/PCS(HB)	
28GHz(U28)	
39GHz(U39)	
L-Sub6(S6)	
CBRS(RS)	
LAA(LA)	
Fiber	
AISG	
DC	

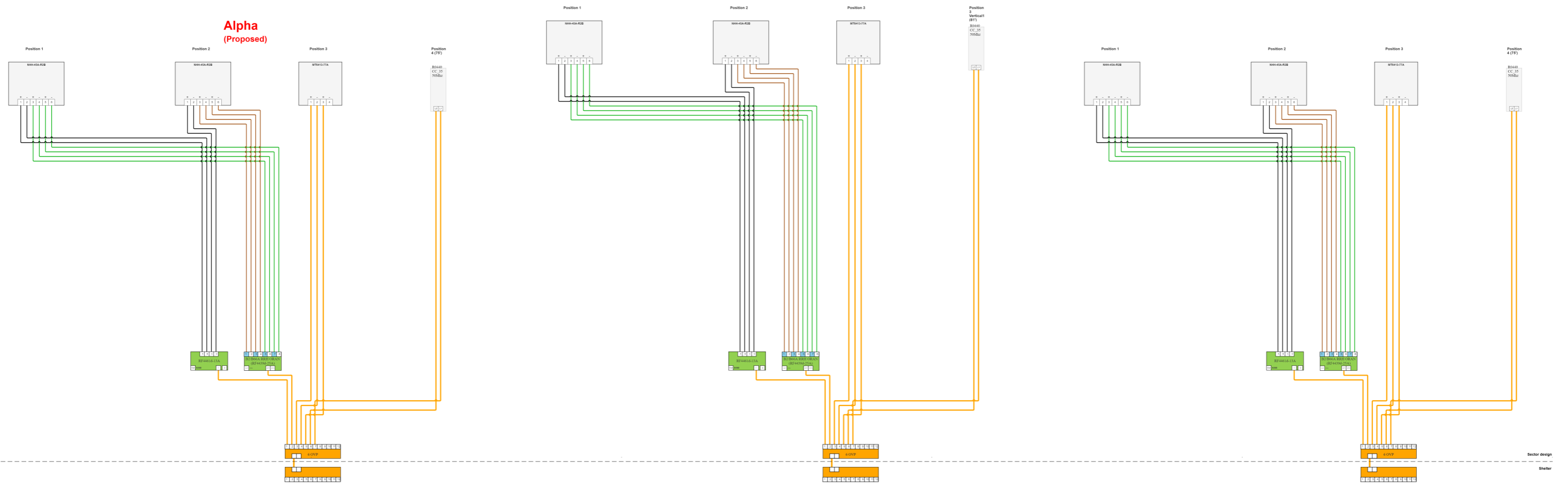
Notes:

- Antenna view is from the back of the antennas
- Colors of connections are just for clarification
- Size of objects in drawing doesn't reflect equipment true dimensions

**Beta
(Proposed)**

**Gamma
(Proposed)**

**Alpha
(Proposed)**



May 15, 2024

Cellco Partnership
D/B/A/ Verizon Wireless
118 Flanders Road, 3rd Floor
Westborough, MA 01581

Jacobs
Jacobs Telecommunications, Inc.
2 Ash St. #3000
Conshohocken, PA 19428
610-238-1000
www.jacobs.com

Subject: **Building Equipment Installation
Structural Assessment Letter – Revision 4**

Carrier Designation: **Verizon 5G L-Sub6 - Carrier Add Project
Site ID: 674416
Site Name: CAMBRIDGE_MA
FUZE ID: 16243907
Location ID: 137820**

Building Owner Designation: **Boston Sand & Gravel Company
Site ID: NA**

Engineering Firm Designation: **Jacobs Telecommunications, Inc. Project: EDVZNA01**

Site Data: **118-R Industrial Park Rd (aka 500 Front St.)
Cambridge, Middlesex County, MA 02141
Latitude: N42°22'17.3496"±; Longitude: W71°4'4.1844"±
Ground Elevation: 12 ft ± NAVD 88; RT: 90 ft ± AGL**

Per your request, we present our structural assessment of the structure at the above referenced location for the equipment change noted in **Table A**. This assessment assumes the existing structure was properly designed and constructed, as well as being well maintained and is structurally sound.

The purpose of this assessment was to review the structure in accordance with the 2018 International Building Code (current building code) and the ANSI/TIA-222-H-1-2019 Structural Standard for Antenna Supporting Structures and Antennas (industry standard) for structural feasibility and integrity.

Our review was conducted in conjunction with the existing Verizon installation information, mount assessment, previous structural evaluation, and the recent site visit photos and data. Based on a comparison of the current structural conditions and the required design criteria with the change in equipment loading, it has been determined that the proposed loading will cause minimal change in both lateral and vertical loads supported by the structure. Therefore, the structure is sufficient to support the proposed loading as listed in **Table A**.

As a result, the imposed additional loads are within the allowable limits of the existing structural system; thus, the structure will resist the stress caused by the proposed equipment configuration and will satisfy all structural strength requirements with no additional calculations required. **Thus, by comparison, it is our structural assessment that the proposed configuration will have negligible effect at this site.**

Please note that additional engineering review will be required prior to placing any future equipment. We trust you find our work satisfactory. Jacobs Telecommunications, Inc. appreciates the opportunity of providing continuing professional services to you.

Please do not hesitate to call should you have any questions.

Sincerely,



Earl Stande, PE
Engineer of Record
PE No. 50883

REFERENCES

1. Mount analysis provided by Jacobs Telecommunications, Inc., project no. EDVZNA01, dated 5/15/24.
2. Construction drawings provided by Jacobs Telecommunications Inc., project no. EDVZNA012, dated 5/15/24.
3. Mount analysis provided by Maser Consulting P.A., project no. 20777021A, dated 05/21/20.
4. Structural analysis provided by Jacobs Telecommunications Inc., project no. EUVZ0102, dated 06/11/20.
5. Site walk photos dated 09/29/14, 12/13/17, and 2/28/24.

CONCLUSION / SUMMARY

The appurtenance loading in Table A is to be installed on the existing mounts outlined in the referenced mount analysis¹.

This structure is a multi-story commercial building. **Jacobs sees that the increase in wind area and weight from the telecommunications installation is insignificant with respect to the existing size and weight of the building structure and will have negligible effect on the global stability of the structure.**

To suffice the feasibility qualification noted above, Jacobs references Chapters 8 and 11 of the Existing International Building Code for any addition and its related alterations to buildings, other structures, and components thereof. Loading design criteria from the pertinent specification (the ANSI/TIA-222 for a new tower design/maintenance) is fundamentally adapted from the ASCE Minimum Design Loads for Buildings and Other Structures referenced and outlined by the IBC; thus, by engineering judgement and reasoning, Chapters 8 and 11 of the IEBC is acceptable for the feasibility comparison of this structure. Chapters 8 and 11 loading comparison provisions follow in the next 2 paragraphs.

Pursuant to International Existing Building Code Section 806.2/1103.1, any existing gravity load-carrying structural element for which additions and/or alterations cause an increase in design gravity load of no more than 5 percent, shall be permitted to remain unaltered, and thus considered to be code-compliant and adequate. Any existing gravity load-carrying structural element for which additions and/or alterations cause an increase in design gravity loads exceeding 5 percent is to be checked against the applicable code criteria for new structures.

Pursuant to International Existing Building Code Section 806.3/1103.2, any existing lateral load-carrying structural element whose demand-capacity ratio with the addition and/or alteration considered is no more

than 10 percent greater than its demand-capacity ratio with the addition and/or alteration ignored shall be permitted to remain unaltered, and thus considered to be code-compliant and adequate. If the demand-capacity ratio increase is more than 10 percent, the subject structural element is to be checked against the applicable code criteria for new structures.

Based on the IEBC feasibility comparison, all additional/proposed loads imparted by the appurtenance configuration noted in **Table A** as determined by ANSI/TIA-222, will not increase the overall gravity load by more than 5% of the original overall structure nor will it increase the overall lateral load by more than 10% of the original overall structure. This comparison meets the additions and alterations requirement outlined in the IEBC; thus, a more rigorous analysis/assessment is not required.

CODE INTERPRETATIONS

Per Section 1609.1 and 3108.1 of the International Building Code, the determination of lateral loads for antenna supporting structures and antennas shall be determined using the ANSI/TIA-222.

Mount analysis¹ procedures are based on Section 16 of the ANSI/TIA-222-H.

Per Sections 806 and 1103 of the International Existing Building Code, the existing structure is considered to have adequate strength for the proposed appurtenance configuration loading if the *additions* or *alterations* to the existing structure do not increase the gravity load on any structural element of the existing structure by more than five percent, unless the increased forces on the element are still in compliance with the code for new structures. In addition, if the *additions* or *alterations* to the existing structure do not increase the lateral load on any structural element of the existing structure by more than ten percent cumulative since the original construction, unless the element has the capacity to resist the increased forces determined in accordance with Sections 1609 and 1613.

ASSUMPTIONS

The existing substructure drawings were not available at the time of this assessment. The existing substructure is assumed to be sufficiently designed to resist the additional loading provided by the supplementary equipment such that Sections 806/1103 of the IEBC applies.

All member connections are assumed to have been designed to meet or exceed the load carrying capacity of the connected member unless otherwise specified in this report such that Sections 806/1103 of the IEBC applies.

DISCLAIMERS

The scope of this assessment pertains only to the structural system of the additional/proposed appurtenance loads **Table A** imparted by the Verizon equipment deployment and as such does not include examination of any additional loads imparted by the equipment installation of others unknown to current mount analysis¹ and structural analysis on file. If additional loads for found to be existing, it should be brought to the attention of the EOR for reassessment.

CARRIER LOADING

Table A: Existing, Proposed and Reserved Appurtenance Configuration^{1,2}

Elevation (AGL, ft)	Sector	Azimuth	Position	Equipment ^{3,4}	Cable
75	Alpha	0°	1	(1) Commscope NHH-45A-R2B (Antenna)	(4) 1-5/8” Coax (1) 6x12 HCS
			2	(1) Commscope NHH-45A-R2B (Antenna)	
			3	(1) Samsung MT6413-77A (Antenna)	
			4	(1) Samsung R0440CC_3550Mhz CBRS (Antenna) w/ RT4423-48A (RRH)	
				(1) Samsung RF4439d-25A B2/B66A (RRH)	
				(1) Samsung RF4461d-13A B5/B13 (RRH)	
	(1) Raycap OVP-6 (OVP)				
83	Beta	120°	1	(1) Commscope NHH-45A-R2B (Antenna)	(4) 1-5/8” Coax (1) 6x12 HCS
83.5			2	(1) Commscope NHH-45A-R2B (Antenna)	
81			3	(1) Samsung MT6413-77A (Stacked Antenna)	
				(1) Samsung R0440CC_3550Mhz CBRS (Antenna) w/ RT4423-48A (RRH) (Stacked Antenna)	
				(1) Samsung RF4439d-25A B2/B66A (RRH)	
				(1) Samsung RF4461d-13A B5/B13 (RRH)	
	(1) Raycap OVP-6 (OVP)				
75	Gamma	267°	1	(1) Commscope NHH-45A-R2B (Antenna)	(4) 1-5/8” Coax (1) 6x12 HCS
			2	(1) Commscope NHH-45A-R2B (Antenna)	
			3	(1) Samsung MT6413-77A (Antenna)	
			4	(1) Samsung R0440CC_3550Mhz CBRS (Antenna) w/ RT4423-48A (RRH)	
				(1) Samsung RF4439d-25A B2/B66A (RRH)	
				(1) Samsung RF4461d-13A B5/B13 (RRH)	
	(1) Raycap OVP-6 (OVP)				

1 – Appurtenance Configuration as reflected in Verizon dated 10/18/2023.

2 – The evaluation and analysis is modeled for the worse case loading shown.

3 – Position 1 is defined as right-most mount location when facing structure.

4 – Proposed equipment shown in **bold**.

5 – Surge locations shown in table match the RFDS; actual surge locations are to the standoff members and evenly distributed between sectors.

NHH-45A-R2B



6-port sector antenna, 2x 698–896 and 4x 1695–2360 MHz, 45° HPBW, 2x RETs and 2x SBTs. Both high bands share the same electrical tilt.

- Internal SBT on low and high band allow remote RET control from the radio over the RF jumper cable
- Narrow beamwidth capacity antenna for higher level of densification and enhanced data throughput
- One LB RET and one HB RET. Both high bands are controlled by one RET to ensure same tilt level for 4x Rx or 4x MIMO
- Separate RS-485 RET input/output for low and high band

General Specifications

Antenna Type	Sector
Band	Multiband
Color	Light Gray (RAL 7035)
Grounding Type	RF connector body grounded to reflector and mounting bracket
Performance Note	Outdoor usage Wind loading figures are validated by wind tunnel measurements described in white paper WP-112534-EN
Radome Material	Fiberglass, UV resistant
Radiator Material	Copper Low loss circuit board
Reflector Material	Aluminum
RF Connector Interface	4.3-10 Female
RF Connector Location	Bottom
RF Connector Quantity, high band	4
RF Connector Quantity, low band	2
RF Connector Quantity, total	6

Remote Electrical Tilt (RET) Information

RET Hardware	CommRET v2
RET Interface	8-pin DIN Female 8-pin DIN Male
RET Interface, quantity	2 female 2 male
Input Voltage	10–30 Vdc
Internal Bias Tee	Port 1 Port 3

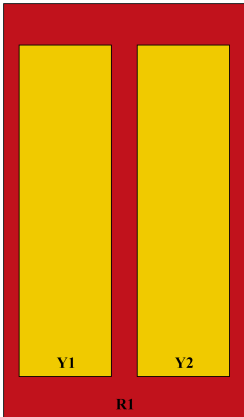
NHH-45A-R2B

Internal RET	High band (1) Low band (1)
Power Consumption, active state, maximum	10 W
Power Consumption, idle state, maximum	2 W
Protocol	3GPP/AISG 2.0 (Single RET)

Dimensions

Width	457 mm 17.992 in
Depth	178 mm 7.008 in
Length	1220 mm 48.032 in
Net Weight, antenna only	21 kg 46.297 lb

Array Layout

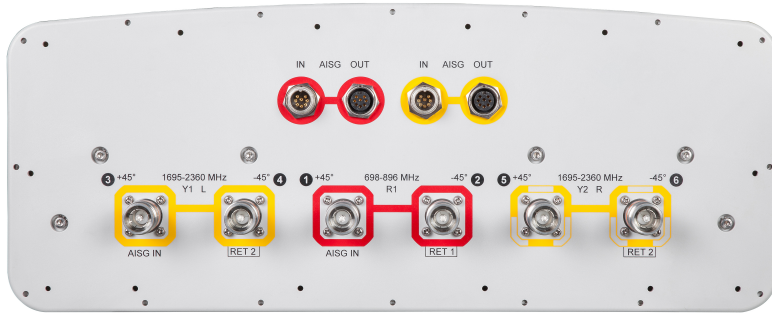


Array ID	Frequency (MHz)	RF Connector	RET (SRET)	AISG No.	AISG RET UID
R1	698-896	1 - 2	1	AISG1	CPxxxxxxxxxxxxxxxxR1
Y1	1695-2360	3 - 4	2	AISG2	CPxxxxxxxxxxxxxxxxY1
Y2	1695-2360	5 - 6			

(Sizes of colored boxes are not true depictions of array sizes)

Port Configuration

NHH-45A-R2B



Electrical Specifications

Impedance	50 ohm
Operating Frequency Band	1695 – 2360 MHz 698 – 896 MHz
Polarization	±45°
Total Input Power, maximum	800 W @ 50 °C

Electrical Specifications

	R1	R1	Y1-Y2	Y1-Y2	Y1-Y2	Y1-Y2
Frequency Band, MHz	698–806	806–896	1695–1880	1850–1990	1920–2200	2300–2360
RF Port	1-2	1-2	3-6	3-6	3-6	3-6
Gain, dBi	15.5	16.2	18.3	19	19.2	20
Beamwidth, Horizontal, degrees	48	44	44	44	43	39
Beamwidth, Vertical, degrees	18.5	16.8	7.9	7.3	6.8	6
Beam Tilt, degrees	2–18	2–18	1–9	1–9	1–9	1–9
USLS (First Lobe), dB	16	17	17	16	15	15
Front-to-Back Ratio at 180°, dB	32	33	36	36	36	35
Isolation, Cross Polarization, dB	25	25	25	25	25	25

NHH-45A-R2B

Isolation, Inter-band, dB	25	25	25	25	25	25
VSWR Return loss, dB	1.5 14.0	1.5 14.0	1.5 14.0	1.5 14.0	1.5 14.0	1.5 14.0
PIM, 3rd Order, 2 x 20 W, dBc	-153	-153	-153	-153	-153	-153
Input Power per Port at 50°C, maximum, watts	300	300	250	250	250	200

Electrical Specifications, BASTA

Frequency Band, MHz	698–806	806–896	1695–1880	1850–1990	1920–2200	2300–2360
Gain by all Beam Tilts, average, dBi	15.1	15.9	17.9	18.7	19	19.8
Gain by all Beam Tilts Tolerance, dB	±0.5	±0.4	±0.6	±0.4	±0.3	±0.4
Beamwidth, Horizontal Tolerance, degrees	±2	±3	±2	±1	±2	±2
Beamwidth, Vertical Tolerance, degrees	±1	±0.9	±0.3	±0.3	±0.5	±0.2
USLS, beampeak to 20° above beampeak, dB	17	22	12	13	14	15
Front-to-Back Total Power at 180° ± 30°, dB	24	24	27	29	30	30
CPR at Boresight, dB	24	25	15	18	19	20
CPR at Sector, dB	18	17	11	13	15	16

Mechanical Specifications

Wind Loading @ Velocity, frontal	677.0 N @ 150 km/h (152.2 lbf @ 150 km/h)
Wind Loading @ Velocity, lateral	135.0 N @ 150 km/h (30.3 lbf @ 150 km/h)
Wind Loading @ Velocity, maximum	677.0 N @ 150 km/h (152.2 lbf @ 150 km/h)
Wind Loading @ Velocity, rear	595.0 N @ 150 km/h (133.8 lbf @ 150 km/h)
Wind Speed, maximum	241 km/h 149.75 mph

Packaging and Weights

Width, packed	563 mm 22.165 in
Depth, packed	355 mm 13.976 in
Length, packed	1393 mm 54.843 in
Weight, gross	32.1 kg 70.768 lb

Regulatory Compliance/Certifications

Agency	Classification
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NHH-45A-R2B

CHINA-ROHS	Above maximum concentration value
ISO 9001:2015	Designed, manufactured and/or distributed under this quality management system
REACH-SVHC	Compliant as per SVHC revision on www.commscope.com/ProductCompliance
ROHS	Compliant/Exempted
UK-ROHS	Compliant/Exempted



Included Products

BSAMNT-3	–	Wide Profile Antenna Downtilt Mounting Kit for 2.4 - 4.5 in (60 - 115 mm) OD round members. Kit contains one scissor top bracket set and one bottom bracket set.
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* Footnotes

Performance Note	Severe environmental conditions may degrade optimum performance
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HYBRIFLEX® RRH Hybrid Feeder Cabling Solution 6x12, 4 AWG, 1-5/8", Single-Mode Fiber, 90m



RFS' HYBRIFLEX Remote Radio Head (RRH) hybrid feeder cabling solution combines optical fiber and DC power for RRHs in a single lightweight aluminum corrugated cable, making it the world's most innovative solution for RRH deployments. It was developed to reduce installation complexity and costs at Cellular sites.

HYBRIFLEX allows mobile operators deploying an RRH architecture to standardize the RRH installation process and eliminate the need for and cost of cable grounding. HYBRIFLEX combines optical fiber (multi-mode or single-mode) and power in a single corrugated cable. It eliminates the need for junction boxes and can connect multiple RRHs with a single feeder. Standard RFS CELLFLEX® accessories can be used with HYBRIFLEX cable. Both pre-connectorized and on-site options are available.

FEATURES / BENEFITS

- ➔ Aluminum corrugated armor with outstanding bending characteristics – Minimizes installation time and enables mechanical protection and shielding
- ➔ Armored fiber optic breakout – Preserves the integrity of the fiber and provides mechanical/environmental protection
- ➔ Same accessories as 1-5/8" coaxial cable
- ➔ Outer conductor grounding – Eliminates typical grounding requirements and saves on installation costs
- ➔ Lightweight solution and compact design – Decreases tower loading
- ➔ Robust cabling – Eliminates need for expensive cable trays and ducts
- ➔ Installation of tight bundled fiber optic cable pairs directly to the RRH – Reduces CAPEX and wind load by eliminating need for interconnection
- ➔ Optical fiber and power cables housed in single corrugated cable – Saves CAPEX by standardizing RRH cable installation and reducing installation requirements
- ➔ Outdoor, black PE jacket – Ensures long-lasting cable protection
- ➔ Shielded DC wire – Jacketed and braided cable provides grounding and EMI protection
- ➔ **Maximum robustness – Fully armored cable includes riser and breakout**

Technical Features

STRUCTURE		
Cable Type		HYBRIFLEX®
Size		1-5/8"
Length	m (ft)	90 (295)
MECHANICAL SPECIFICATIONS		
Outer Diameter Nominal	mm (in)	50.7 (1.99)
Cable Weight	kg/m (lb/ft)	2.81 (1.9)
Minimum Bending Radius, Single Bend	mm (in)	250 (10)
Minimum Bending Radius, Multi Bends	mm (in)	500 (20)
Recommended / Maximum Clamp Spacing	m (ft)	1 / 1.2 (3.25 / 4)
DC POWER CABLE SPECIFICATIONS		
Number of DC Pairs		6
Maximum DC-Resistance Power Cable	Ω/km (Ω/kft)	0.83 (0.25)
Cross Section of Power Cable	mm ² (AWG)	21.1 (4)
DC Wire Jacket Material		PVC
DC Cable Diameter	mm (in)	7.8 (0.308)
DC Cable Jacket		PVC
DC Standards (Meets or Exceeds)		For use in UL 2822, PVC Nylon, RoHS/REACH Compliant
Break-out length (Top)	mm(in)	4000
Break-out length (Bottom)	mm(in)	150
DC Cable sealing method		Semi-rigid flame-retarded polyolefin, with hot melt adhesive
CABLE JACKET		
UV-Protection Individual and External Jacket		Yes
ARMOR SPECIFICATIONS		
Armor Type		Corrugated Aluminum
Maximum DC-Resistance of Armor	Ω/km (Ω/kft)	0.58 (0.178)
Diameter Corrugated Armor	mm (in)	46.4 (1.83)
F/O CABLE SPECIFICATIONS		
F/O Cable Type		Single-mode
Number of F/O Pairs		12
Core/Clad	μm	9 /125
Single Bending Radius	mm (in)	137 (5.4)
F/O Standards (Meets or Exceeds)		UL Listed Type OFNR (UL1666), RoHS Compliant
Optical Loss	dB/Km	0.5 @ 1310 nm 0.5 @ 1550 nm
Fiber Termination End 1		ODC plug
Fiber Termination End 2		LC
FO Break-out length	mm(in)	500 (20)
FO Break-out length (Top)	mm(in)	1350
Cable sealing method		Semi-rigid flame-retarded polyolefin, with hot melt adhesive
TESTING AND ENVIRONMENTAL		
Storage Temperature	°C (°F)	-40 to 70 (-40 to 158)
Operation Temperature	°C (°F)	-40 to 65 (-40 to 149)
Installation Temperature	°C (°F)	-20 to 65 (-4 to 149)
ASSEMBLY LOSS		
Optical Insertion Loss, Assembly or Jumper	Assembly or Jumper	0.4 dB (typ)/0.95dB (max) @ 1310/1550
SYSTEM LOSS		
Optical Insertion Loss	Total Path	0.8dB (typ)/1.9dB (max) @ 1310/1550

External Document Links

Installation Instructions
Pre-packed HYBRIFLEX Kits and Accessories

Notes

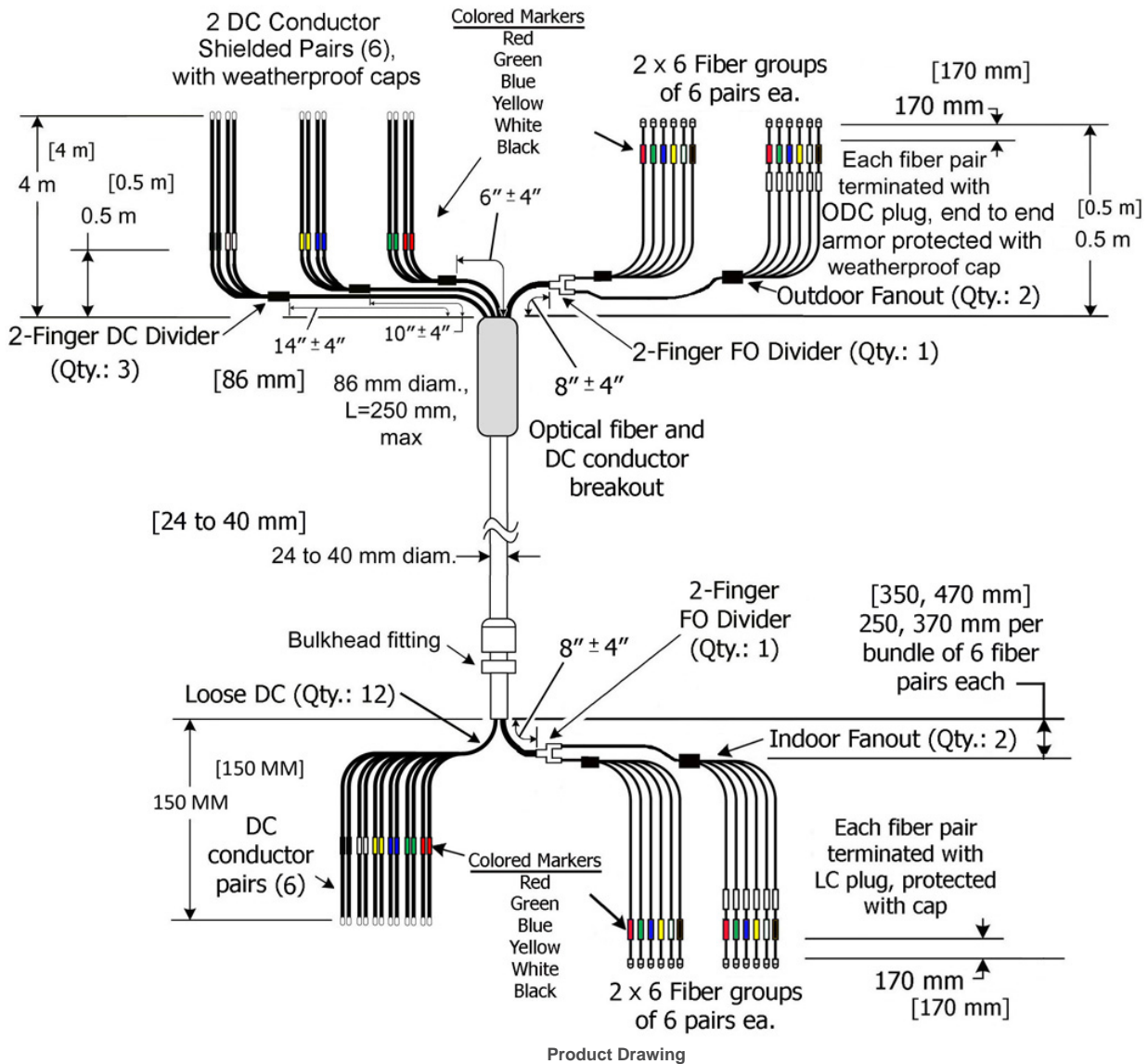


HYBRIFLEX® RRH Hybrid Feeder Cabling Solution 6x12, 4 AWG, 1-5/8", Single-Mode Fiber, 90m

External Link Reference

View Factory Test Results On-line
HYBRIFLEX Armor Removal Video

<http://myrfs.rfsworld.com/hybriflex/Default.aspx>
<https://www.youtube.com/watch?v=kepUAPg6nCQ>





RCMDC-6627-PF-48

Raycap OVP box for 12 RRUs, 12 strikesorb modules, voltage indicator, large box, UL

Product Classification

Portfolio	CommScope®
Product Type	Outdoor junction box
Regional Availability	North America

Construction Materials

Material Type	High-impact polycarbonate, UV resistant
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Dimensions

Depth	320.04 mm 12.60 in
Height	749.30 mm 29.50 in
Width	419.10 mm 16.50 in
Weight	14.51 kg 32.00 lb

Environmental Specifications

Environmental Space	Indoor Outdoor
Qualification Standards	IEC 60529:2001, IP67

General Specifications

Application	Used as a fiber/power junction box
Color	Gray
Includes	Mounting kit
Mount Type	Pipe, 44–114 mm (1.75–4.5 in) OD Wall

Mechanical Specifications

Cable Entry, quantity, maximum, bottom 6

Regulatory Compliance/Certifications

Agency	Classification
UL/ETL Certification	
RoHS 2011/65/EU	Compliant
ISO 9001:2008	Designed, manufactured and/or distributed under this quality management system

Product Specifications

COMMScope®

RCMDC-6627-PF-48



C-band 64T64R

SAMSUNG

Gen 2

Gen 2 : Higher conducted power radio with reduced size/volume/weight vs Gen 1 and also SOC embedded for flexibility to support new features



※ Preliminary Design: External appearance and mechanical design can be subject to change

Gen 2. 64T64R C-band MMU Dimensions	
Size (WxHxD)	400 x 734 x 140 mm (15.75 x 28.90 x 5.51 inch)
Weight	26kg (57.3 lb)

Item	Gen 2 64T64R (MT6413-77A)
Air Technology	NR n77/TDD
Frequency	3700 – 3980 MHz
IBW	200 MHz
OBW	200 MHz
Carrier Bandwidth	20(HW ready)/40/60/80/100 MHz
# of Carriers	2 carriers
Layer	DL : 16L, UL : 16RX (8L)
RF Chain	64T64R
Antenna Configuration	4V16H with 192 AE
EIRP	80.5 dBm @320W (55 dBm + 25.5 dBi)
Conductive Power	320W
Spectrum Analyzer	TX/RX support
RX Sensitivity	Typical -97.8dBm @(1Rx, 18.36MHz with 30kHz,51RBs)
Modulation	DL 256QAM support, (DL 1024QAM with 1~2dB power back-off)
Function Split	DL/UL option 7-2x
Input Power	-48 VDC (-38 VDC to -57 VDC)
Power Consumption	1,287W (100% load, room temp.)
Size (WHD)	400 x 734 x 140 mm (15.75 x 28.90 x 5.51 inch)
Volume	41.1L
Weight	26kg (57.3 lb)
Operating Temperature	-40°C - 55°C (w/o solar load)
Cooling	Natural convection
Unwanted Emission	3GPP 38.104
	FCC 47 CFR 27.53 : < -13dBm/MHz
	< -40 dBm/MHz @ above 4 GHz < -50 dBm /MHz @ 4,040 ~ 4,050 MHz, < -60 dBm /MHz @ above 4,050 MHz
Optic Interface	15km, 4 ports (25Gbps x 4), SFP28, single mode, Bi-di (Option: Duplex)
Mounting Options	Pole, wall
NB-IoT	Not support
External Alarm	4RX
Fronthaul Interface	eCPRI

700/850 4T4R Macro 320W ORU - New Filter (RF4461d-13A)

SAMSUNG

Specifications



* 5MHz supporting in B13(700MHz) depends on 3GPP std. and UE capability.
 External filters in interferer and victim sides for Mexican boarder to support 5MHz service need to be considered
 ** Finger guard is not needed.

Item	Specification	
Air Interface	LTE, NR(HW resource ready)	
Band	Band13 (700MHz)	Band5 (850MHz)
Frequency	DL: 746~756MHz	DL: 869~894MHz
	UL: 777~787MHz	UL: 824~849MHz
IBW	10MHz	25MHz
OBW	10MHz	25MHz
Carrier Bandwidth	LTE/NR 5*/10MHz	LTE 5/10MHz NR 5/10/15/20MHz
# of carriers	2C*	3C
Total # of carriers	4C + B13 (SDL) 1C	
RF Chain	4T4R/2T4R/2T2R/1T2R 2T2R+2T2R bi-sector	
RF Output Power	4 x 40W or 2 x 60W	4 x 40W or 2 x 60W
Spectrum Analyzer	TX/RX Support	
RX Sensitivity	Typ. -104.5dBm @1Rx (25RBs 5MHz)	
Modulation	256QAM support, (1024QAM with 1~2dB power back-off)	
Input Power	-48VDC (-38VDC to -57VDC)	
Power Consumption	1,165 Watt @ 100% RF load, room temperature	
Size (WHD)	380 x 380 x 260 mm (14.96 x 14.96 x 10.23 inch)	
Volume	37.5 L	
Weight (W/o Solar Shield & finger guard)	35.9 kg (79.1 lb)	
Operating Temperature	-40°C (-40°F) ~ 55°C (131°F) (Without solar load)	
Cooling	Natural convection	
Unwanted Emission	3GPP 36.104	3GPP 36.104
	FCC 47 CFR 27.53 c), f)	FCC 47 CFR 22.917
	-	-69 dBm/100 kHz per path @ 896 ~901MHz
CPRI Cascade	Not supported	
Optic Interface	20km, 2 ports (9.8Gbps x 2), SFP+, single mode, Duplex (Option: Bi-di)	
RET & TMA Interface	AISG 3.0	
Bias-T	4 ports (2 ports per band)	
Mounting Options	Pole, wall	
NB-IoT	2GB+2IB or 4IB	2SA+2GB or 2GB+2IB or 4GB
PIM Cancellation	Support	
# of antenna port	4	
External Alarm	4	
Fronthaul Interface	Opt. 8 CPRI / Opt. 7-2x selectable (not simultaneous support)	
CPRI compression	Not Support	

SAMSUNG

Samsung Micro Radio

CBRS(N48)
4T4R Micro Radio

Samsung's CBRS 4T4R Micro Radio provides mobile operators with a cost-effective solution to fill coverage gaps encountered when Macro Radios are in use.

Model Code RT4423-48A(DC)
RT4423-48B(AC)

57196



Homepage
[samsungnetworks.com](https://www.samsungnetworks.com)

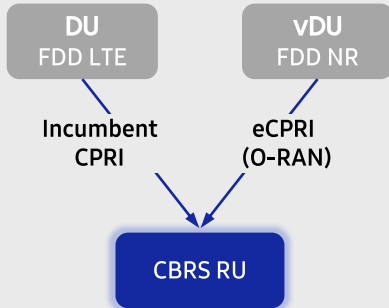


Youtube
www.youtube.com/samsung5g

Points of Differentiation

Dual Personality

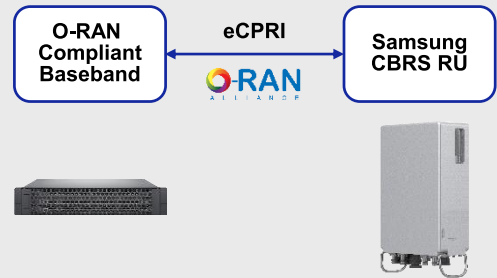
The new CBRS Radio supports existing CPRI and advanced eCPRI interfaces providing installation options for both legacy LTE and NR network equipment.



O-RAN Compliant

A standardized O-RAN radio supports implementing cost-effective networks capable of enhanced data throughput without compromising existing or new network investments.

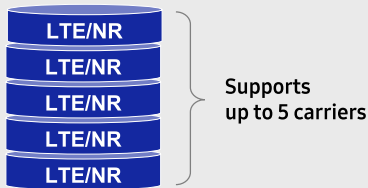
Samsung O-RAN products ensure state-of-the-art O-RAN technology will accelerate efforts for creating solid O-RAN ecosystems.



High Capacity

The number of carriers required varies according to site(region). Supporting multiple carriers is essential to customers as they seek to utilize all frequencies available to them.

The new CBRS radio can support up to 5 carriers which is an increase of 3 carriers over the capacity of the previous CBRS product.

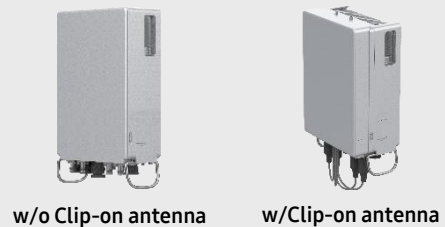


Compact and Easy Installation

New CBRS RU is compact in its design with a volume of 6L and weighing only about 7kg.

This compact design allows for various installation options including, tower, rooftop, pole, wall and shroud.

A clip on antenna is available providing flexibility to installation requirements.



Technical Specifications

Item	Specification
Tech	LTE / NR
Band	B48, n48 / TDD
Frequency Band	3,550 – 3,700 MHz
RF Power	20 W (5 W x 4 Ports)
IBW/OBW	150MHz / 100MHz
Installation	Pole, Wall, Side by side (max 3 radio)
Size/ Weight	<p>[Radio] w/o Clip-on antenna : 8.7 x 11.8 x 3.6 inch, 5.97L, 7kg w/ Clip-on antenna : 8.7 x 11.8 x 5.0 inch, 8.42L, 8.5kg *AC and DC type have same size and weight</p> <p>[Bracket Weight] Tilting & Swivel (EP97-02038A) : 2.51kg Fixed (EP97-02037A) : 1.31kg Side by side (EP97-02089A) : 8.0kg</p>

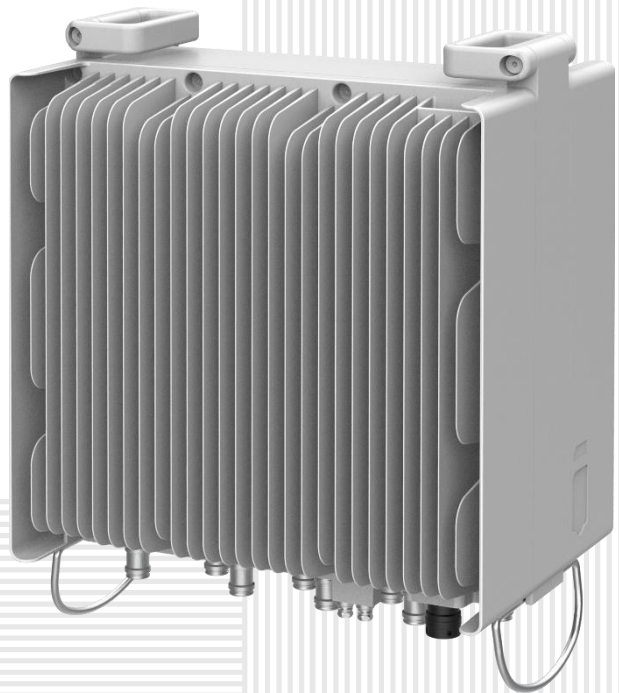
SAMSUNG

AWS/PCS MACRO RADIO

DUAL-BAND AND HIGH POWER
FOR MACRO COVERAGE

Samsung's future proof dual-band radio is designed to help effectively increase the coverage areas in wireless networks. This AWS/PCS 4T4R dual-band radio has 4Tx/4Rx to 2Tx/2Rx RF chains options and a total output power of 320W, making it ideal for macro sites.

Model Code RF4439d-25A



Homepage
samsungnetworks.com

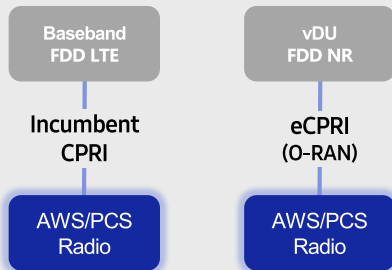


Youtube
www.youtube.com/samsung5g

Points of Differentiation

Continuous Migration

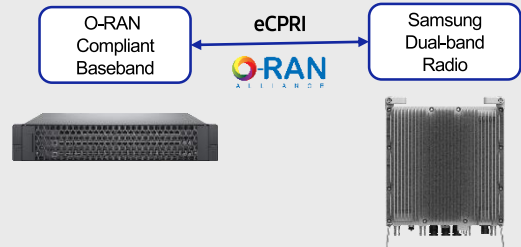
Samsung's AWS/PCS macro radio can support each incumbent CPRI interface as well as advanced eCPRI interfaces. This feature provides installable options for both legacy LTE networks and added NR networks.



O-RAN Compliant

A standardized O-RAN radio can help in implementing cost-effective networks, which are capable of sending more data without compromising additional investments.

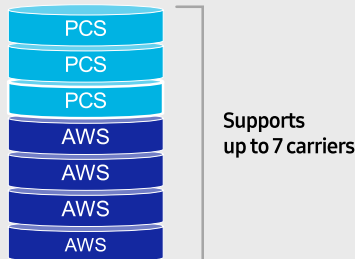
Samsung's state-of-the-art O-RAN technology will help accelerate the effort toward constructing a solid O-RAN ecosystem.



Optimum Spectrum Utilization

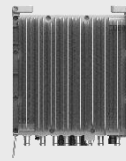
The number of required carriers varies according to site (region). Supporting many carriers is essential for using all frequencies that the operator has available.

The new AWS/PCS dual-band radio can support up to 3 carriers in the PCS (1.9GHz) band and 4 carriers in the AWS (2.1GHz) band, respectively.



Brand New Features in a Compact Size

Samsung's AWS/PCS macro radio offers several features, such as dual connectivity for baseband for both CDU and vDU, O-RAN capability, more carriers and an enlarged PCS spectrum, combined into an incumbent radio volume of 36.8L.



- 2 FH connectivity
- O-RAN capability
- More carriers and spectrum

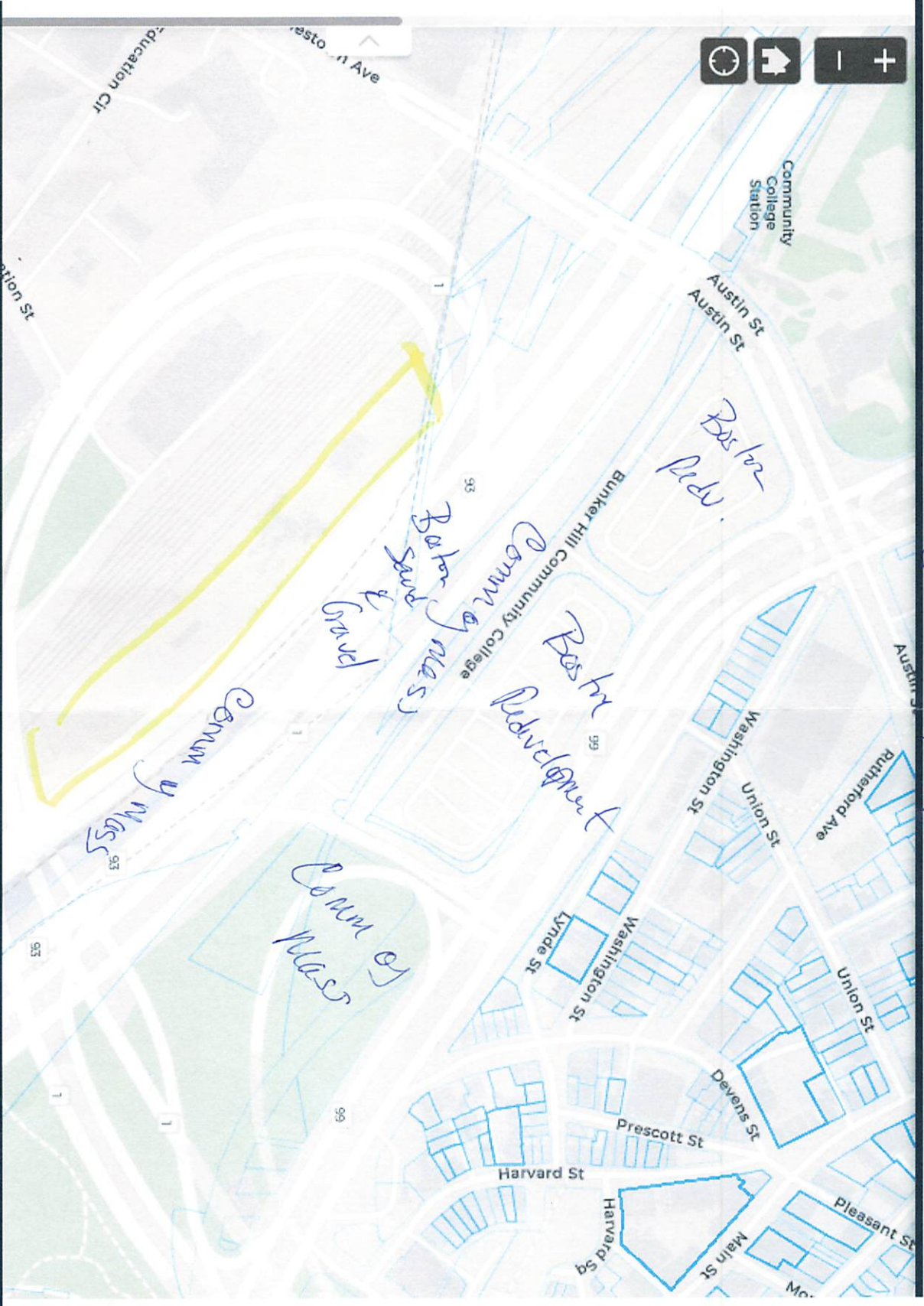
Same as an incumbent radio volume

Technical Specifications

Item	Specification
Tech	LTE / NR
Brand	B25(PCS), B66(AWS)
Frequency Band	DL: 1930 – 1995MHz, UL: 1850 – 1915MHz DL: 2110 – 2200MHz, UL: 1710 – 1780MHz
RF Power	(B25) 4 × 40W or 2 × 60W (B66) 4 × 60W or 2 × 80W
IBW/OBW	(B25) 65MHz / 30MHz (B66) DL 90MHz, UL 70MHz / 60MHz
Installation	Pole, Wall
Size/ Weight	14.96 x 14.96 x 10.04inch (36.8L) / 74.7lb

118-R Industrial Park Rd.





Boston MAP

Education Cir
Boston Ave



Community College Station

Austin St
Austin St

Boston Red Sox

Comm of Mass
Bunker Hill Community College

Redevelopment
Boston

Comm of Mass

Comm of Mass

Austin St

Puttnerford Ave

Washington St
Union St

Washington St
Lynde St

Union St

Devens St

Prescott St

Harvard St

Harvard Sq

Main St

Pleasant St

118-R Industrial Pl. Rd.

Petitioner

1A-183
MASSACHUSETTS BAY TRANSPORTATION
AUTHORITY
10 PARK PLAZA
BOSTON, MA 02116

1A-184-182
COMMONWEALTH OF MASSACHUSETTS
PUBLIC WORKS DEPT.
ATTN: KRISSY TOLMAN
165 DAY BLVD
SOUTH BOSTON, MA 02127

BRETT SMITH, AGENT
1441 MAIN STREET - SUITE 1100
SPRINGFIELD, MA 01103

1A-172
EFEKTA HOUSE INC.
C/O EDUCATION FIRST
ONE EDUCATION STREET
CAMBRIDGE, MA 02141

1A-197-81-169
COMMONWEALTH OF MASS
MDC
251 CAUSEWAT ST. 9TH FL
BOSTON, MA 02114

1A-67
BOSTON SAND AND GRAVEL CO
P.O. BOX 9187
100 NO. WASHINGTON ST
BOSTON, MA 02114

BOSTON REDEVELOPMENT AUTHORITY
ONE CITY HALL SQUARE - 9TH FL.
BOSTON, MA 02201

COMMONWEALTH OF MASS
20 SOMERSET STREET
BOSTON, MA 02108

COMMONWEALTH OF MASS
169 PORTLAND STREET
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