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

BZA APPLICATION FORM

GENERAL INFORMATION

Plan No: BZA-017182-2019

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

Special Permit : V Variance : _____ Appeal : _____

PETITIONER : New Cingular Wireless PCS LLC d/b/a AT&T Mobility C/O Patricia Nowak. Center

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

LOCATION OF PROPERTY : 150 Cambridgepark Dr Cambridge, MA 02140

TYPE OF OCCUPANCY : INV-OFF/Telecom ZONING DISTRICT : Office-2A Zone

REASON FOR PETITION :

Other: Telecommunications Upgrade

DESCRIPTION OF PETITIONER'S PROPOSAL :

This appplication is an Eligible Facilities Request pursuant to Section 6409 of the Middle Class Tax Relief and Job Creation Act of 2012, 47 U.S.C 1455: or in the alternative, for a special permit under the zoning ordinance as cited above, if and to the extent necessary, all rights reserved. AT&T will be adding (3) Antennas, (1) Dish Antenna, (6) Remote Radio Units and will also be adding and upgrading other telecommunications equipment per the attached Construction Drawings prepared by Hudson Design Group LLC dated March 7, 2019 and last revised April 16, 2019.

SECTIONS OF ZONING ORDINANCE CITED :

Article 4.000 Section 4.32.G.1 (Telecommunications Facility).
Article 4.000 Section 4.40 (Footnote 49) (Telecommunications Facility).
Article 10.000 Section 10.40 (Special Permit).
Article 6409 Section (Middle Class Tax Relief Act)

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

Patricia Nowak
(Print Name)

Address : 750 West Center Strat
3rd Floor, West Bridgewater MA 02140
Tel. No. : 508-265-5599
E-Mail Address : pnowak@clinellc.com

Date : 9/18/2019

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 PPF OFF 150 Cambridge Park Drive, LLC
(OWNER)

Address: 1585 Broadway, 37th Floor, New York, New York 10036

State that I/We own the property located at 150 Cambridgepark Drive, Cambridge, MA 02140 which is the subject of this zoning application.

The record title of this property is in the name of PPF OFF 150 Cambridge Park Drive, LLC

*Pursuant to a deed of duly recorded in the date June 21, 2017, Middlesex South County Registry of Deeds at Book 69471, Page 436; or Middlesex Registry District of Land Court, Certificate No. _____ Book _____ Page _____.

Andrew S. Bauman
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~~, State of New York, County of New York

The above-name Andrew S. Bauman personally appeared before me, this 11 of September, 2019, and made oath that the above statement is true.

Julie F Zeitlin
Notary

My commission expires 07/17/2022 (Notary Seal).

JULIE F ZEITLIN
Notary Public - State of New York
NO. 01ZE6149901
Qualified In New York County
My Commission Expires 07/17/2022

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

BZA APPLICATION FORM

DIMENSIONAL INFORMATION

APPLICANT: Brett Roman **PRESENT USE/OCCUPANCY:** INV-OFF/Telecom

LOCATION: 150 Cambridgepark Dr Cambridge, MA 02140 **ZONE:** Office-2A Zone

PHONE: _____ **REQUESTED USE/OCCUPANCY:** No Change

		EXISTING CONDITIONS	*REQUESTED CONDITIONS*	*ORDINANCE REQUIREMENTS* [1]	
TOTAL GROSS FLOOR AREA:		0	0	0	(max.)
LOT AREA:		0	0	0	(min.)
RATIO OF GROSS FLOOR AREA TO LOT AREA: [2]		0	0	0	(max.)
LOT AREA FOR EACH DWELLING UNIT:		0	0	0	(min.)
SIZE OF LOT:	WIDTH	0	0	0	(min.)
	DEPTH	0	0	0	
SETBACKS IN FEET:	FRONT	0	0	0	(min.)
	REAR	0	0	0	(min.)
	LEFT SIDE	0	0	0	(min.)
	RIGHT SIDE	0	0	0	(min.)
SIZE OF BLDG.:	HEIGHT	0	0	0	(max.)
	LENGTH	0	0	0	
	WIDTH	0	0	0	
RATIO OF USABLE OPEN SPACE TO LOT AREA: [3]		0	0	0	(min.)
NO. OF DWELLING UNITS:		0	0	0	(max.)
NO. OF PARKING SPACES:		0	0	0	(min./max)
NO. OF LOADING AREAS:		0	0	0	(min.)
DISTANCE TO NEAREST BLDG. ON SAME LOT:		0	0	0	(min.)

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

N/A

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'.

September 13, 2019

Donna P. Lopez, City Clerk City of Cambridge City Hall 795 Massachusetts Avenue Cambridge, MA 02139	Constantine Alexander, Chair Board of Zoning Appeal City Hall 795 Massachusetts Avenue Cambridge, MA 02139

Applicant:	New Cingular Wireless PCS, LLC ("AT&T")
Property Address:	150 Cambridgepark Drive, Cambridge, MA Assessor's Map 267.4 - 319 (the "Property")
Re:	Application for: (i) Eligible Facilities Request pursuant to Section 6409 of the Middle Class Tax Relief and Job Creation Act of 2012, 47 U.S.C. § 1455; or, in the alternative, (ii) Special Permit under Cambridge Zoning Ordinance Section 4.32(g)(1) and M.G.L. c. 40A, Section 9; and (iii) Any other zoning relief required. (All relief if and to the extent necessary, all rights reserved)

Dear Ms. Lopez, Mr. Alexander and Members of the Board of Zoning Appeal:

Pursuant to Section 6409 of the Middle Class Tax Relief and Job Creation Act of 2012 (a/k/a the "Spectrum Act" or "Section 6409"), 47 U.S.C. § 1455, as further implemented by the Federal Communications Commission's Report and Order *In re Acceleration of Broadband Deployment by Improving Wireless Facilities Siting Policies*, FCC Docket No. 13-238, Report and Order No. 14-153 (October 17, 2014) (the "FCC Order"), New Cingular Wireless PCS, LLC ("AT&T") hereby submits this Eligible Facilities Request ("Request"); and, in the alternative, applies for a special permit from the City of Cambridge Board of Zoning Appeal (the "Board") under Section 432(g)(1) of the Cambridge Zoning Ordinance (the "Ordinance") to modify its existing "Telecommunications Facility" (the "Facility") on and within the existing building located at 150 Cambridgepark Drive, Cambridge, MA 02140 . (the "Special Permit Application").[2]

Under Section 6409, AT&T's proposed modification of its existing telecommunications facility equipment on and within the existing building does "not substantially change the physical dimensions" of the existing building. Therefore, AT&T's Request must be approved administratively, including the issuance of a building permit, to enable AT&T to make the proposed modifications to its transmission equipment.

[2] AT&T submits this Request, Special Permit application and supporting materials subject to a full and complete reservation of AT&T's rights under the Spectrum Act and the FCC Order including without limitation its rights with respect to (i) any submittal requirements or approval criteria that are inconsistent with the prohibitions established by the FCC Order, (ii) any delay beyond the deadlines established in the FCC Order, (iii) the imposition of conditions on any approval that are inconsistent with the FCC Order, and (iv) referral or requirement to a discretionary review process such as a special permit.

In the alternative, as demonstrated in this application letter, the AT&T's proposed modifications to its existing Facility on the Property located in the 0-2A zoning district satisfy the requirements for the grant of a special permit pursuant to Section 10.43 of the Ordinance.

I. APPLICATION PACKAGE

Enclosed with this application is payment to the City of Cambridge in the amount of $500.00. In addition to the signed original of this letter are copies of the letter and the following materials:

1. The following completed and signed application forms:

   a. BZA Application Form – General Information;
   b. BZA Application Form – Ownership Information;
   c. BZA Application Form – Dimensional Requirements;
   d. BZA Application Form – Supporting Statement for a Special Permit; and
   e. BZA Application Form – Check List;

2. AT&T's relevant FCC License information;

3. Drawings by Hudson Design Group, LLC consisting of 9 pages dated 4/22/19;

4. Manufacturer's specification sheets for AT&T's proposed antennas and other featured equipment;

5. Photographs of the existing building and photo simulations of the proposed modifications Facility by Hudson Design Group, LLC dated 4/9/19;

6. Radio Frequency Coverage Report, demonstrating the public need for the proposed modifications to the Facility, radio frequency coverage maps showing (a) existing or predicted coverage from neighboring facilities; and (b) coverage with the proposed Facility;

7. Structural Analysis by Hudson Design Group, LLC dated 4/16/19;

8. Maximum Permissible Exposure Study, Theoretical Report, by Centerline Communications.

9. Letter of Authorization from Owner of Subject Property;

10. Deed to subject property; and

11. Attorney General's letters to the Towns of Mount Washington, Lynnfield and Montague.

II. PROPOSED FACILITY DESIGN

The proposed modifications include the installation of three (3) antennas, nine (3) Remote Radio Units, three (3) Surge Arrestors and other ancillary equipment, all as more particularly detailed and described in the attached Drawings.

The Facility's design is shown in detail in the Drawings attached as Exhibit 3 to this application letter and featured equipment is described in the manufacturers' specification sheets attached as Exhibit 4. The photographs and photo simulations (Exhibit 5) show the existing Facility from various locations in the neighborhood around the Property and as simulated with proposed modifications. A structural analysis for the Facility demonstrates that the building is capable of supporting AT&T's proposed equipment at or near the locations shown on the Drawings (*see* Exhibit 7).

The Facility will continue to bring advanced wireless voice, text and data communications services to the surrounding areas. It will allow residents, professionals, government, businesses and students to communicate locally, nationally and internationally from virtually any location within the coverage area. In the event of an emergency, the improved Facility will allow immediate contact with fire, rescue and other emergency personnel. The improved Facility will thus enhance public health, safety and welfare both in ordinary daily living and in the event of fire, accident, medical emergency, natural disaster or other dangers.

III. BACKGROUND

AT&T is licensed by the Federal Communications Commission to construct and operate a wireless telecommunications network in various markets throughout the country, including the Commonwealth of Massachusetts and the City of Cambridge. A copy of the AT&T's FCC license that covers the area of the proposed Facility is included with this application (*see* Exhibit 2). AT&T is in the process of designing and constructing additional wireless facilities to its existing telecommunications system to serve Massachusetts. One of the key design objectives of its systems is to provide adequate and reliable coverage. Such a system requires a grid of radio transmitting and receiving links located approximately .5 to 2 miles apart, depending on the location of existing and proposed installations in the surrounding area, the extent of use of AT&T's wireless services within the network, and the existing topography and obstructions. The radio transmitting and receiving facilities operate on a line-of-sight basis, requiring a clear path from the facility to the user on the ground. In urban settings, this dynamic requires the antennas to be located on buildings at heights and in locations where the signal is not obstructed or degraded by other buildings or by topographical features such as hills.

IV. RF COVERAGE DETERMINATION

AT&T has performed a study of radio frequency coverage for the City of Cambridge and from the Property, the results of which are described in the Radio Frequency Report submitted with this application (see Exhibit 6). Without the proposed modifications to its existing Facility, AT&T has a substantial coverage gap in this area of Cambridge. AT&T has determined that the proposed modifications to the existing Facility located on the building at the Property will provide needed coverage to the targeted sections of the City and the immediately surrounding area if AT&T's antennas

are located on the building's roof at the height and in the configuration requested. The importance of a facility at this location is underscored by AT&T's interest in enhancing its ability to provide its most up-to-date wireless technology, known as long-term evolution technology ("LTE"), in this area to satisfy its customers' ever-increasing needs for high-speed data services. Radio frequency coverage maps included in the report are provided to pictorially and vividly show the differences in existing and proposed wireless coverage at the various bands authorized for AT&T's service. The maps show dramatic improvements to wireless coverage at all two (2) bands with the inclusion of the proposed Facility, namely, at 700 B14 and AWS MHz.

V. THE FEDERAL SPECTRUM ACT AND THE FCC ORDER

As set forth below, the proposed modifications constitute an Eligible Facilities Request pursuant to the federal Spectrum Act,[3] as further implemented by the FCC Order.[4]

Under the Spectrum Act, as further clarified by the FCC Order, the streamlined process for this Eligible Facilities Request is limited to non-discretionary review. Specifically, the FCC Order "adopt[s] an objective standard for determining when a proposed modification will 'substantially change the physical dimensions' of an existing tower or base station." *FCC Order*, ¶ 87. As stated in the FCC Order, Section 6409 "states without equivocation that the reviewing authority 'may not deny, and shall approve' any qualifying application. This directive leaves no room for a lengthy and discretionary approach to reviewing an application that meets the statutory criteria." *FCC Order*, ¶ 116.

In issuing the FCC Order and eliminating discretionary review for eligible facilities requests, the FCC's goal was to "adopt a test that is defined by specific, objective factors rather than the contextual and entirely subjective standard advocated by the IAC and municipalities." The FCC intentionally sought to reduce "flexibility" and "open ended context-specific approach" engendered by the discretionary review process:

> While we acknowledge that the IAC approach would provide municipalities with maximum flexibility to consider potential effects, we are concerned that it would invite lengthy review processes that conflict with Congress's intent. Indeed, some municipal commenters anticipate their review of covered requests under a subjective, case-by-case approach could take even longer than their review of

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[3] Pursuant to Section 6409(a)(2) an "eligible facilities request" means any request for modification of an existing wireless tower or base station that involves—

(A) collocation of new transmission equipment;
(B) removal of transmission equipment; or
(C) replacement of transmission equipment.

47 U.S.C. § 1455(a)(2).

[4] The Order was effective on February 9, 2015, except for § 1.40001, which became effective on April 8, 2015, except for §§ 1.40001(c)(3)(i), 1.40001(c)(3)(iii), 1.140001(c)(4), and 17.4(c)(1)(vii), which became effective on May 18, 2015, after approval by the Office of Management and Budget. The FCC Order makes clear that under the Spectrum Act discretionary review is not required or permitted for an Eligible Facilities Request.

> collocations absent Section 6409(a). We also anticipate that disputes arising from a subjective approach would tend to require longer and more costly litigation to resolve given the more fact-intensive nature of the IAC's open-ended and context-specific approach. We find that an objective definition, by contrast, will provide an appropriate balance between municipal flexibility and the rapid deployment of covered facilities. We find further support for this approach in State statutes that have implemented Section 6409(a), all of which establish objective standards.

FCC Order, ¶ 88.

As a result, the FCC Order implementing Section 6409 establishes clear and objective criteria for determining eligibility, limits the types of information that a municipality may require when processing an application for an eligible facilities request, and imposes a "deemed granted" remedy for failure to timely process and eligible facilities request.[5] The FCC Order also establishes significant limits on the information that can be required to be provided with an eligible facilities request and limits it to only that information "reasonably related to determining whether the request meets the requirements of this section. A State or local government may not require an applicant to submit any other documentation". 47 CFR 1.40001(c)(1).

Both before and after the FCC Order was issued, the Massachusetts Attorney General's Office provided clear guidance that an eligible request cannot be subjected to a discretionary special permit process. *See* Attorney General's letters to (i) Town of Mount Washington, dated June 12, 2014, p. 3 (ii) Town of Lynnfield, dated February 10, 2015, p. 3 (the "AG Lynnfield Letter") and (iii) Town of Montague, dated February 23, 2015, p. 2 (all attached hereto). As set forth in each letter [t]he Act's requirement that a local government 'may not deny, and shall approve, any eligible facilities request' means that a request for modification to an existing facility that does not substantially change the physical dimensions of the tower or base station must be approved. ***Such qualifying requests also cannot be subject to a discretionary special permit.***")(Emphasis added). In providing these opinions, the Attorney General's Office specifically opined that provisions in zoning ordinances that specifically required a special permit for modifications to existing facilities could not be applied to eligible facilities requests. While approving the Town of Lynnfield's Zoning Bylaw, the Attorney General stated that "Section 8.7.5.1 requires that PWSF may only be erected upon the grant of a special permit. The Town cannot apply this requirement to eligible facilities requests for modification to existing facilities that qualify for required approval under Section 6409 of the Act." *AG Lynnfield Letter*, p. 3.

Therefore, as set forth in the FCC Order and Attorney General's opinion letters, the City cannot impose a requirement that AT&T obtain a special permit, or an amendment to an existing special permit utilizing the same discretionary review process, in connection with its eligible facilities request. To the extent that the City of Cambridge's Zoning Ordinance and any prior decisions by the Board include provisions seeking to further regulate the modification of wireless communication facilities, federal law overrules those requirements. *See* Sprint Spectrum L.P. v. Town of Swansea, 574 F.Supp.2d 227, 236 (2008) (Board is obligated to consider whether its

[5] *See* 47 CFR §§1.40001(c)(1) - (c)(4).

actions would violate federal law even if a different outcome would be permitted under state law). The standard of review for an application to modify an existing wireless communication facility on an existing tower or base station is governed by the Spectrum Act and the FCC Order which require eligible facilities requests to be permitted "by right."

In addition, the FCC Order establishes a 60-day period for approval from the time of AT&T's submission. 47 CFR §1.40001(c)(2). Within the context of the Spectrum Act and FCC Order, approval means all necessary approvals to permit the proposed modifications, including the issuance of a building permit, if required. The FCC found that this 60-day period is appropriate due to "the more restricted scope of review applicable to applications under section 6409(a)." *FCC Order*, ¶ 108. If the Request is not acted upon within the 60-day period, it is deemed granted. 47 CFR §1.40001(c)(4).

As set forth below, the proposed modifications constitute an eligible facilities request. Therefore, AT&T respectfully requests the Board to find that Section 4.32(g)(1) of the Ordinance does not apply to its Request.

VI. THE PROPOSED MODIFICATIONS ARE AN ELIGIBLE FACILITIES REQUEST

Under Section 6409 and the FCC Order, a "base station" means "[a] structure or equipment at a fixed location that enables Commission-licensed or authorized wireless communications between user equipment and a communications network." 47 C.F.R §1.40001(b)(1). A Base Station includes "any structure other than a tower" that supports or houses "authorized wireless communications between user equipment and a communications network." 47 C.F.R §1.40001(b)(1). Therefore, the existing building that is currently used for FCC-licensed transmissions for personal wireless services is a "base station" for purposes of Section 6409.

AT&T proposes to modify its existing Facility as described above and depicted on the Plans submitted herewith.

The proposed modifications will not require the installation of any part of the facility on the ground outside of the building.

As a result, AT&T's proposed modifications involving the removal and replacement of the existing transmission equipment constitute an "eligible facilities request" under Section 6409. The proposed eligible facilities request is not a "substantial modification" under Section 6409 and the FCC Order because it does not:

(i) Result in an increase in "the height of the structure by more than 10% or more than ten feet, whichever is greater" because the proposed replacement antennas will be mounted and located at the same height as the existing antennas or otherwise will be located so as not to exceed 10 feet above the existing building; Protrude from the edge of the edge of the building by more than six feet because AT&T's proposed antennas will not protrude more than six feet from building façade;

(ii) Involve the installation of more than the standard number of new equipment cabinets for the technology involved, but not to exceed five cabinets no new radio communications equipment cabinets will be installed;

(iii) Require any excavation or deployment outside the current site of the tower or base station because all antennas, equipment cabinets and related equipment will be installed entirely on and within the existing building; or

(iv) Otherwise defeat the existing concealment elements of the tower or base station because the proposed replacement antennas will use the same or similar design and concealment elements as the existing antennas and will be positioned in a location and manner that continue to integrate the Facility into the existing architecture of the building. Therefore, AT&T's proposed Facility will remain aesthetically consistent with the exterior finish of the building as well as maintain the concealment elements of the original design.

See FCC Order, §1.40001(b)(7)(i)-(v).

VII. COMPLIANCE WITH THE CAMBRIDGE ZONING ORDINANCE

In the alternative, AT&T respectfully requests the Board to grant a special permit for the proposed modifications to the existing Facility.[6]

A. AT&T complies with the Wireless Communications provisions set forth in Section 4.32(g)(1), and Section 4.40, Footnote 49 of the Ordinance.

AT&T's proposed modifications comply with Section 4.32(g)(1), and Section 4.40, Footnote 49 of the Ordinance as follows:[7]

Section 4.32(g)(1): Section 4.32(g)(1) of the Ordinance allows for the use of a "*[t]elephone exchange (including switching, relay, and transmission facilities serving mobile communications systems) and any towers or antennas accessory thereto.*" Under the Table of Use Regulations beginning at Section 4.30, AT&T's proposed use of the Facility as a transmission facility serving a mobile communications system is permitted by special permit in the PUD-2 & Residence C-3A zoning district *(see* the table at Section 4.32(g)(1)).

Section 4.40, Footnote 49: Section 4.32(g)(1) includes a reference to Section 4.40, Footnote 49 which sets out the standards for granting the special permit. AT&T's proposed Facility complies with Footnote 49's standards as noted below:

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[6] AT&T's request is made, if and to the extent necessary, all rights reserved. As discussed above, the FCC Order establishes a 60-day period for receipt of all necessary approvals from the time of AT&T's submission, including a building permit, if required. 47 CFR §1.40001(c)(2). If the Request is not acted upon within the 60-day period, it is deemed granted. 47 CFR §1.40001(c)(4). Therefore, AT&T expressly reserves its rights under 47 CFR §1.40001(c)(2) and (4).

[7] To the extent that Section 4.32(g)(1), and Section 4.40, Footnote 49 of the Ordinance purport to require the submission of information that is beyond the scope permitted by the FCC Order or Spectrum Act, AT&T expressly reserves, and does not waive, its right to assert that such information is not required under the Spectrum Act and the submission of such information shall not constitute a waiver of AT&T's rights pursuant thereto.

1. **The Board of Zoning Appeal shall consider "[t]he scope of or limitations imposed by any license secured from any state or federal agency having jurisdiction over such matters."**

AT&T's Response: AT&T's FCC license is included with this application and the license information included shows that AT&T is authorized to provide wireless service in the area served by the Facility (*see* Exhibit 2).

2. **The Board of Zoning Appeal shall consider "[t]he extent to which the visual impact of the various elements of the proposed facility is minimized: (1) through the use of existing mechanical elements on the building's roof or other features of the building as support and background, (2) through the use in materials that in texture and color blend with the materials to which the facilities are attached, or (3) other effective means to reduce the visual impact of the facility on the site."**

AT&T's Response: The design of the overall Facility, including the choice, height, and placement of replacement antennas and associated equipment, which will be mounted in the same manner as the existing antennas, , minimizes the visual impact of the proposed Facility. This is because the any visible antennas and equipment will be minimally visible and consistent with the elements of the existing Facility. The minimal visual impact of the Facility is shown in the photographs of the existing Facility and the photo simulations that superimpose the proposed modifications to the existing Facility (*see,* Exhibit 5).

3. **The Board of Zoning Appeal shall consider "[w]here it is proposed to erect such a facility in any residential zoning district, the extent to which there is a demonstrated public need for the facility at the proposed locations, the existence of alternative, functionally suitable sites in nonresidential locations, the character of the prevailing uses in the area, and the prevalence of other existing mechanical systems and equipment carried on or above the roof of nearby structures. The Board of Zoning Appeal shall grant a special permit to erect such a facility in a residential zoning district only upon finding that nonresidential uses predominate in the vicinity of the proposed facility's location and that the telecommunications facility is not inconsistent with the character that does prevail in the surrounding neighborhood.**

In granting a special permit the Board of Zoning Appeal shall set forth in its decision under which circumstances or procedures, if any, the permittee shall be allowed to replace and upgrade its equipment without the necessity of seeking a new special permit."

AT&T's Response: As demonstrated by the Radio Frequency Report and the associated coverage maps, AT&T has demonstrated an immediate and compelling need for the proposed modifications to its existing Facility located at the Property in order to provide substantially improved indoor coverage to residents, businesses, students and faculty, and the general public in that area. AT&T also seeks to substantially improve its ability to satisfy the ever-increasing need of its customers for data accessibility, navigation and use. This is especially critical in and around the area of

Cambridgepark Drive which also serves as home for numerous businesses. AT&T proposes to satisfy its RF coverage needs in the area by adding to the existing Facility the antennas and equipment necessary to provide the latest LTE wireless communications service technology. By modifying its existing Facility, AT&T obviates the need to construct an entirely new facility within this area of Cambridge in order to meet its wireless network coverage needs. In addition, nonresidential uses predominate in the vicinity of the Facility's location, and the facility as modified will not be inconsistent with the character that does prevail in the surrounding neighborhood. This is further bolstered by the fact that the character of the neighborhood has not substantially changed since the special permit for the existing facility was issued.

As provided in Footnote 49, AT&T requests that once permission is received from the City to site the Facility at the Property, the Board permit AT&T to replace and upgrade the equipment at this Facility in the future without further zoning proceedings or a new special permit, provided that such equipment shall meet the eligible facilities request criteria set forth in 47 CFR § 1.40001.

B. <u>AT&T complies with the Special Permit Criteria set forth in Section 10.43 of the Ordinance</u>.

Section 10.43 of the Ordinance specifies the following criteria for issuance of a special permit: "Special permits will normally be granted where specific provisions of this Ordinance are met, except when particulars of the location or use, not generally true of the district or of the uses permitted in it, would cause granting of such permit to be to the detriment of the public interest because:

(a) The requirements of this Ordinance cannot or will not be met, or

<u>AT&T's Response</u>: As provided above, AT&T's proposed modifications comply with the requirements set forth in Section 4.32(g), Footnote 49 of the Ordinance, the Spectrum Act and the eligible facilities request criteria set forth in 47 CFR § 1.40001. Granting the special permit would not be a detriment to the public interest and is consistent with the Board's obligations pursuant to the Spectrum Act and FCC Order.

(b) Traffic generated or patterns of access or egress would cause congestion, hazard, or substantial change in established neighborhood character for the following reasons, or

<u>AT&T's Response</u>: The proposed modifications to AT&T's existing Facility will not result in any change to the existing traffic on or near the Property. The Facility will continue to be unmanned and only require infrequent visits by a technician (typically two times per month for routine diagnostics and/or maintenance, except in cases of emergency), there will be no material increase in traffic or disruption to patterns of access or egress that will cause congestion, hazards or a substantial change in the established neighborhood character. AT&T's maintenance personnel will make use of the existing access roads and parking at the building. Granting the special permit would not be a detriment to the public interest and is consistent with the Board's obligations pursuant to the Spectrum Act and FCC Order.

(c) The continued operation of or the development of adjacent uses as permitted in the Zoning Ordinance would be adversely affected by the nature of the proposed use, or

AT&T's Response: As described above and illustrated on the attached photographs and photo simulations (*see* Exhibit 5) the proposed modifications to the existing Facility will result in a *de minimis* change in the appearance of the building. As a result, the Facility as a whole either will be hidden from view or will visually blend with existing characteristics of the building and the surrounding neighborhood. Because the proposed installation will not generate any traffic, smoke, dust, heat or glare, discharge noxious substances, nor pollute waterways or groundwater, it will not adversely affect residential uses on neighboring streets. Conversely, the surrounding properties and general public will benefit from the potential to enjoy improved wireless communications services. Granting the special permit would not be a detriment to the public interest and is consistent with the Board's obligations pursuant to the Spectrum Act and FCC Order.

(d) Nuisance or hazard would 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, or

AT&T's Response: Because the proposed modifications to the existing Facility will not cause the Facility to generate any traffic, smoke, dust, heat or glare, discharge noxious substances, nor pollute waterways or groundwater, no nuisance or hazard will be created to the detriment of the health, safety, or welfare of the occupants of the building or the residents of the City of Cambridge. To the contrary, the proposed Facility will benefit the City and promote the safety and welfare of its residents, businesses and drivers by providing reliable state-of-the-art digital wireless voice and data services that will improve the reliability of emergency communications with the police and fire departments by eliminating dropped or blocked calls due to inadequate signal strength or insufficient network capacity to handle call volume, particularly important during emergency situations. The Facility, as modified, will continue to comply with all federal, state and local safety requirements including the standards established by the FCC and Federal Aviation Administration (FAA). (*See* Exhibit 8 Maximum Permissible Exposure Study, Theoretical Report). Granting the special permit would not be a detriment to the public interest and is consistent with the Board's obligations pursuant to the Spectrum Act and FCC Order.

(e) For other reasons, the proposed installation would impair the integrity of the district or adjoining district or otherwise derogate from the intent or purpose of this Ordinance, or

AT&T's Response: The purpose of the Ordinance is multifaceted, the relevant aspects of which relating to wireless telecommunications facilities include the lessening of congestion in the streets, conserving health, securing safety from fire, flood, panic and other danger, conserving the value of land and buildings and natural resources, preventing blight and pollution, encouraging the most rational use of land throughout the city, including encouraging appropriate economic development, and protecting residential neighborhoods from incompatible activities.

As noted above, the proposed modifications to the existing Facility directly accord with the purposes of the Ordinance because the modifications will not result in any traffic, smoke, dust, heat or glare, discharge noxious substances, nor pollute waterways or groundwater. As the Facility will improve the ability of residents, businesses, travelers and drivers in the area to access state-of-the-art wireless technology, the City's ability to provide emergency services will be improved, as will the economic development of the City as more people will be able to conduct commerce by virtue of a mobile platform. Because the proposed modifications to the existing Facility will be installed on an existing building that includes the Facility, and the proposed modifications are consistent with the existing concealment elements, the proposed modifications to the existing Facility are in consistent with the building's character and will not affect the value of the building or the natural resources of the City. Because the proposed modifications to the existing Facility are designed to be consistent with the existing concealment elements of the Facility and characteristics of the Property, the visual impact on the underlying and adjacent zoning districts will be *de minimis*. As a result, the proposed modifications to the existing Facility are consistent with the Ordinance's purpose to allow for less intrusive wireless telecommunications facilities in all districts (other than Open Space) including the applicable overlay districts, and the underlying O-2A (PUD-2 & Residence C-3A) district. Granting the special permit would not be a detriment to the public interest and is consistent with the Board's obligations pursuant to the Spectrum Act and FCC Order.

(f) The new use or building construction is inconsistent with the Urban Design Objectives set forth in Section 19.30

AT&T's Response: As stated in the Section 19.30, the Citywide Urban Design Objectives ("Objectives") "are intended to provide guidance to property owners and the general public as to the city's policies with regard to the form and character desirable for new development in the city. It is understood that application of these principles can vary with the context of specific building proposals in ways that, nevertheless, fully respect the policies' intent. It is intended that proponents of projects, and city staff, the Planning Board and the general public, where public review or approval is required, should be open to creative variations from the detailed provisions presented in this Section as long as the core values expressed are being served. ***A project need not meet all the objectives of this Section 19.30 where this Section serves as the basis for issuance of a special permit. Rather the permit granting authority shall find that on balance the objectives of the city are being served.*** Nor shall a project subject to special permit review be required to conform to the Required Building and Site Plan Requirements set forth in Section 11.50." [emphasis added]. For the reasons stated in AT&T's response to this Section 10.43(f) of the Zoning Ordinance and in its application generally, "on balance, the objectives of the city are being served" by the installation of the Facility at the Property so that granting the special permit would not be a detriment to the public interest and is consistent with the Board's obligations pursuant to the Spectrum Act and FCC Order.

The following are the Objectives' headings as appearing in the Ordinance:

19.31: New projects should be responsive to the existing or anticipated pattern of development.

AT&T's Response: The existing Facility is located on and within the existing building, some of the equipment of which is hidden within the building, or otherwise obstructed from view, and the

remaining equipment utilizes the same or similar antenna mounting frames and blends with the structures and colors of the building to the extent feasible. The proposed modifications to the existing Facility are consistent with the previously approved design and concealment elements of the existing Facility. Therefore, the proposed modifications are responsive to the existing pattern of development in the Property's applicable zoning and overlay districts.

19.32: Development should be pedestrian and bicycle-friendly, with a positive relationship to its surroundings.

AT&T's Response: The existing Facility is located on and within the existing building. The Facility is only accessed by authorized AT&T personnel for routine maintenance one to two times per month and is not accessed by the general public. The proposed modifications to the existing Facility will not result in any increase in routine visits nor otherwise result in a change in traffic patterns in the vicinity of the Property that would affect pedestrian flow or cyclists' access to the building or surrounding areas within the Property's applicable zoning districts.

19.33 The building and site design should mitigate adverse environmental impacts of a development upon its neighbors. Indicators include[8]

(1) Mechanical equipment that is carefully designed, well organized or visually screened from its surroundings and is acoustically buffered from neighbors. Consideration is given to the size, complexity and appearance of the equipment, its proximity to residential areas, and its impact on the existing streetscape and skyline. The extent to which screening can bring order, lessen negative visual impacts, and enhance the overall appearance of the equipment should be taken into account. More specifically:

(a) Reasonable attempts have been made to avoid exposing rooftop mechanical equipment to public view from city streets. Among the techniques that might be considered are the inclusion of screens or a parapet around the roof of the building to shield low ducts and other equipment on the roof from view.

(b) Treatment of the mechanical equipment (including design and massing of screening devices as well as exposed mechanical elements) that relates well to the overall design, massing, scale and character of the building.

(c) Placement of mechanical equipment at locations on the site other than on the rooftop (such as in the basement), which reduces the bulk of elements located on the roof; however, at-grade locations external to the building should not be viewed as desirable alternatives.

(d) Tall elements, such as chimneys and air exhaust stacks, which are typically carried above screening devices for functioning reasons, are

[8] Inasmuch as Section 19.33 is most relevant to the Facility, it is stated here in full.

carefully designed as features of the building, thus creating interest on the skyline.

(e) All aspects of the mechanical equipment have been designed with attention to their visual impact on adjacent areas, particularly with regard to residential neighborhoods and views and vistas.

AT&T's Response: As shown in the photo simulations (*see* Exhibit 5), the existing Facility, as proposed to be modified herein, will continue to be visually consistent with the color and texture of the building, the concealment elements of the design of the Facility, and with other existing wireless communications facilities from competing carriers located on the building. As a result, AT&T's Facility is in keeping with the building's existing features without adversely affecting the building's overall design, massing, scale or character.

(2) Trash that is handled to avoid impacts (noise, odor, and visual quality) on neighbors, e.g. the use of trash compactors or containment of all trash storage and handling within a building is encouraged.

AT&T's Response: The Facility does not generate trash, therefore this design objective is inapplicable.

(3) Loading docks that are located and designed to minimize impacts (visual and operational) on neighbors.

AT&T's Response: The Facility does not utilize any loading dock, therefore this design objective is inapplicable.

(4) Stormwater Best Management Practices and other measures to minimize runoff and improve water quality are implemented.

AT&T's Response: The existing Facility, and the proposed modifications, are located entirely on and within the existing Building on the Property and have no effect on stormwater runoff, therefore this design objective is inapplicable.

(5) Landscaped areas and required Green Area Open Space, in addition to serving as visual amenities, are employed to reduce the rate and volume of stormwater runoff compared to pre-development conditions.

AT&T's Response: The existing Facility and proposed modifications have no effect any landscaped or Green Area Open Space, therefore this design objective is inapplicable.

(6) The structure is designed and sited to minimize shadow impacts on neighboring lots, especially shadows that would have a significant impact on the use and enjoyment of adjacent open space and shadows that might impact the operation of a Registered Solar Energy System as defined in Section 22.60 of this Zoning Ordinance.

AT&T's Response: The existing Facility and proposed modifications are designed so as not to cause shadows on neighboring lots.

(7) Changes in grade across the lot are designed in ways that minimize the need for structural retaining walls close to property lines.

AT&T's Response: The existing Facility and proposed modifications are located entirely on and within the existing building and have no impact on the grade of the Property, therefore this design objective is inapplicable.

(8) Building scale and wall treatment, including the provision of windows, are sensitive to existing residential uses on adjacent lots.

AT&T's Response: The proposed modifications to the existing Facility will not change the building's scale because antennas and equipment will be mounted in the same or similar locations and at the same or similar height as the existing antennas mounted and located on the building (*see* Exhibit 3). The existing Facility and proposed modifications are consistent with characteristics of the existing building design, maintain the existing concealment elements of the Facility and therefore minimize any visual impact from the Facility.

(9) Outdoor lighting is designed to provide minimum lighting and necessary to ensure adequate safety, night vision, and comfort, while minimizing light pollution.

AT&T's Response: The existing Facility does not use any outdoor lighting. The proposed modifications to the Facility do not include any additional lighting of the Facility or building. As a result, this design objective is inapplicable.

(10) The creation of a Tree Protection Plan that identifies important trees on the site, encourages their protection, or provides for adequate replacement of trees lost to development on the site.

AT&T's Response: The existing Facility and proposed modifications are located entirely on and within the existing building and have no effect on any trees on the Property, therefore this design objective is inapplicable.

19.34: Projects should not overburden the City infrastructure services, including neighborhood roads, city water supply system, and sewer system.

AT&T's Response: The existing Facility, including the proposed modifications, is a passive use and will not generate trash, odor, excess noise, or utilize water or wastewater services. As such, it will not burden the City's infrastructure services.

19.35: New construction should reinforce and enhance the complex urban aspects of Cambridge as it has developed historically.

AT&T's Response: The proposed modification of the existing Facility located on and within the existing building, will obviate the need for AT&T to construct an additional Facility to

address its wireless network coverage need in this area of Cambridge. The existing Facility and the proposed modifications blend the equipment with the building texture and color, and are consistent with the concealment elements of the Facility's design. As a result, the Facility will reinforce the existing Cambridge landscape as it currently is manifested at the Property.

19.36: Expansion of the inventory of housing in the city is encouraged.

AT&T's Response: The Facility and proposed modifications provide wireless services and will not adversely impact the City's housing inventory.

19.37. Enhancement and expansion of open space amenities in the city should be incorporated into new development in the city.

AT&T's Response: The Facility and proposed modifications are located on and within the existing building. The Facility and proposed modifications will not adversely impact or otherwise reduce open space amenities within the City.

VIII. SUMMARY

For the foregoing reasons AT&T respectfully requests that the Board to determine that pursuant to the Spectrum Act and the FCC Order, the Request constitutes and eligible facilities request and therefore AT&T's Request must be approved administratively, including the issuance of a building permit, without the need for further relief from the Board. In the alternative, without waiving its rights, AT&T requests the Board grant the foregoing zoning relief in the form of a Special Permit and such other relief as the Board deems necessary to allow the modification and operation of AT&T's proposed Facility.

Best Regards,

/s/ Susan Masse

Susan Masse
Authorized Agent to New Cingular Wireless PCS, LLC ("AT&T")

cc: Arthur Kreiger, Esq.
Jonathan Elder, Esq.

(REVISED)
STRUCTURAL ANALYSIS REPORT

For

MA2009 (LTE 6C/7C) (ECHO REPEATER PROJECT)

CAMBRIDGE PARK
150 Cambridge Park Drive
Cambridge, MA 02140

Antennas Mounted on Building Façade and on Non-penetrating Ballast Mount on Roof

Prepared for:

CENTERLINE COMMUNICATIONS

at&t

Dated: April 16, 2019 (Rev.2)
March 6, 2019 (Rev.1)
December 20, 2017

COMMONWEALTH OF MASSACHUSETTS
DANIEL P. HAMM
CIVIL
No. 40720
REGISTERED PROFESSIONAL ENGINEER

Prepared by:

HUDSON Design Group LLC

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HUDSON Design Group LLC

SCOPE OF WORK:

Hudson Design Group LLC (HDG) has been authorized by AT&T to conduct a structural evaluation of the structure supporting the proposed equipment located in the areas depicted in the latest HDG construction drawings.

This report represents this office's findings, conclusions and recommendations pertaining to the support of AT&T's proposed antennas listed below.

This office conducted an on-site visual survey of the above site on August 17, 2017. Attendees included Edvin Broka (HDG – Lead Designer).

CONCLUSION SUMMARY:

Based on our evaluation, we have determined that the proposed connections **ARE CAPABLE** of supporting the proposed equipment loading.

	Member	Stress Ratio	Pass/Fail
Wall Mount	3/8" Epoxy Anchors	8%	**PASS**
Echo Repeater Wall Mount	3/8" Epoxy Anchors	8%	**PASS**

Based on our evaluation, we have determined that the proposed antenna mounts **ARE CAPABLE** of supporting the proposed equipment loading.

	Member	Controlling Load Case	Stress Ratio	Pass/Fail
Wall Mount	2" Pipe	Deflection	88%	**PASS**
Echo Repeater Wall Mount	2-1/2" Pipe	Deflection	74%	**PASS**

HDG did not perform a condition assessment of the entire roof but did perform an inspection of the existing roof members and structural bearing walls below the area where the equipment is proposed to be located.

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APPURTENANCE CONFIGURATION:

Appurtenances	Dimensions	Weight	**Elevation	Mount
(3) 800-10121 Antennas	54.5"x10.3"x5.9"	47 lbs	144'	Wall Mount
(3) SBNHH-1D65A Antennas	55.6"x11.9"x7.1"	34 lbs	144'	Wall Mount
(3) OPA-65R-LCUU-H4 Antennas	48.0"x14.4"x7.3"	57 lbs	144'	Wall Mount
(6) RRUS-11 RRH's	19.7"x17.0"x7.2"	51 lbs	144'	Unistrut
(6) RRUS-12 RRH's	20.4"x18.5"x7.5"	58 lbs	144'	Unistrut
(3) RRUS-32 RRH's	27.2"x12.1"x7.0"	53 lbs	144'	Unistrut
(3) DTMABP7819VG12A TMA's	10.7"x11.1"x3.8"	20 lbs	144'	Wall Mount
(3) EPBQ-654L8H6-L2 Antennas	73.0"x21.0"x6.3"	73 lbs	144'	Wall Mount
(3) B14 4478 RRH's	18.1"x13.4"x8.3"	60 lbs	144'	Unistrut
(3) RRUS-32 B66 RRH's	27.2"x12.1"x7.0"	53 lbs	144'	Unistrut
(3) Squid Surge Arrestors	24.0"Φx9.7"	33 lbs	144'	Unistrut
(1) ANT-2300-PB-24 Antenna	23.8"x39.8"x14.3"	6 lbs	153.83'	Ballast Mount
(2) SER-23002W-EC Echo Repeater	14.6"x13.5"x7.0"	21 lbs	144'	Unistrut
(2) DPO-2323-SX Diplexer	13.5"x13.6"x2.5"	20 lbs	144'	Unistrut

** Proposed equipment shown in bold.*
*** Elevation to antenna centerline.*

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DESIGN CRITERIA:

International Building Code (IBC) 2015 with Massachusetts State Building Code, 9th Edition, and ASCE 7-10 (Minimum Design Loads for Buildings and Other Structures).		
Wind		
Reference Wind Speed:	128 mph	(MSBC Table 1604.11)
Exposure Category:	B	(ASCE 7-10 Chapter 26)
Risk Category:	II	(ASCE 7-10 Table 1.5-1)
Snow		
Ground Snow, P_g:	40	(MSBC Table 1604.11)
Importance Factor (I_s):	1.0	(ASCE 7-10 Table 1.5-2)
Exposure Factor (C_e):	0.9	(Fully Exposed, Table 7-2)
Thermal Factor (C_t):	1.0	(ASCE 7-10 Table 7-3)
Flat Roof Snow Load:	25.2 psf	(ASCE 7-10 Equation 7.3-1)
Min. Flat Roof Snow Load:	30 psf	
EIA/TIA-222-H Structural Standards for Steel Antenna Towers and Antenna Supporting Structures		
Wind		
City/Town:	Cambridge	
County:	Middlesex	
Wind Load:	120 mph	(TIA-222-H Figure B-2)
Ice		
Design Ice Thickness (t_i):	1.0 in	(TIA-222-H Figure B-9)
Structure Class:	II	(TIA-222-H Table 2-1)
Importance Factor (I_i):	1.0	(TIA-222-H Table 2-3)
Factored Thickness of Radial Ice (t_{iz}):	1.16 in	(TIA-222-H Sec. 2.6.10)

EXISTING PENTHOUSE ROOF CONSTRUCTION:

HDG has assumed for this report that the existing roof construction consists of loose laid ballast stone over a rubber roofing membrane over rigid insulation over metal decking supported by steel beams, columns and bearing walls.

The existing roof structure was not accessible during our inspection. If field conditions differ from what is assumed in this report, then the engineer of record is to be notified as soon as possible.

ANTENNA SUPPORT RECOMMENDATIONS:

The new antennas are proposed to be mounted on new pipe masts secured to the existing building façade with epoxy anchors.

ECHO REPEATER ANTENNA SUPPORT RECOMMENDATIONS:

The new Echo Repeater antenna is proposed to be installed on new pipe masts secured to the existing building façade with epoxy anchors.

RRH/SURGE ARRESTOR SUPPORT RECOMMENDATIONS:

The new RRH's and surge arrestors are proposed to be installed on new and existing unistrut components secured to the existing penthouse façade with epoxy anchors.

Limitations and Assumptions:

1. Reference the latest HDG construction drawings for all the equipment locations.
2. All detail requirements will be designed and furnished in the construction drawings.
3. All structural members and their connections are assumed to be in good condition and are free from defects with no deterioration to its member capacities.
4. HDG is not responsible for any modifications completed prior to and hereafter which HDG was not directly involved.
5. All antennas, coax cables and waveguide cables are assumed to be properly installed and supported as per the manufacturer requirements.
6. If field conditions differ from what is assumed in this report, then the engineer of record is to be notified as soon as possible.

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FIELD PHOTOS:

Photo 1: Sample photo illustrating the existing antennas secured to the building façade.

Photo 2: Sample photo illustrating the existing RRH's secured to the building façade.

FIELD PHOTOS (CONT.):

Photo 3: Sample photo illustrating the existing equipment room.

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Antenna Mount Calculations

Date: 3/6/2019
Project Name: CAMBRIDGE PARK
Project No.: MA2009
Designed By: JN **Checked By:** MSC

HUDSON Design Group LLC

2.6.5.2 Velocity Pressure Coeff:

$K_z = 2.01\ (z/z_g)^{2/\alpha}$

z=	144	(ft)
z_g=	1200	(ft)
α=	7.0	

K_z= 1.097

Kzmin ≤ Kz ≤ 2.01

Table 2-4

Exposure	Z_g	α	K_{zmin}	K_c
B	1200 ft	7.0	0.70	0.9
C	900 ft	9.5	0.85	1.0
D	700 ft	11.5	1.03	1.1

2.6.6.2 Topographic Factor:

Table 2-5

Topo. Category	K_t	f
2	0.43	1.25
3	0.53	2.0
4	0.72	1.5

$K_{zt} = [1+(K_c K_t/K_h)]^2$

$K_h = e^{(f*z/H)}$

K_{zt}= #DIV/0!

K_h=	#DIV/0!	
K_c=	0	(from Table 2-4)
K_t=	0	(from Table 2-5)
f=	0	(from Table 2-5)
z=	144	
z_s=	0	(Mean elevation of base of structure above sea level)
H=	0	(Ht. of the crest above surrounding terrain)
K_{zt}=	1.00	(from 2.6.6.2.1)
K_e=	1.00	(from 2.6.8)

(If Category 1 then K_{zt}=1.0)

Category= **1**

2.6.10 Design Ice Thickness

Max Ice Thickness = t_i =	1.00	in
Importance Factor = I=	1.0	(from Table 2-3)
K_{iz} =	1.16	(from Sec. 2.6.10)

$t_{iz} = t_i * I * K_{iz} * (K_{zt})^{0.35}$

t_{iz} = 1.16 in

Date: 3/6/2019
Project Name: CAMBRIDGE PARK
Project No.: MA2009
Designed By: JN Checked By: MSC

HUDSON Design Group LLC

2.6.9 Gust Effect Factor

2.6.9.1 Self Supporting Lattice Structures

G_h = 1.0 Latticed Structures > 600 ft

G_h = 0.85 Latticed Structures 450 ft or less

$G_h = 0.85 + 0.15\ [h/150 - 3.0]$ h= ht. of structure

h=	150	G_h=	0.85

2.6.9.2 Guyed Masts G_h= 0.85

2.6.9.3 Pole Structures G_h= 1.1

2.6.9 Appurtenances G_h= 1.0

2.6.9.4 Structures Supported on Other Structures

(Cantilivered tubular or latticed spines, pole, structures on buildings (ht. : width ratio > 5)

G_h=	1.35	Gh=	**1.00**

2.6.11.2 Design Wind Force on Appurtenances

$F = q_z * G_h * (EPA)_A$

$q_z = 0.00256 * K_z * K_{zt} * K_s * K_e * K_d * V_{max}^2$

		K_z=	1.097	(from 2.6.5.2)
		K_{zt}=	1.0	(from 2.6.6.2.1)
		K_s=	1.0	(from 2.6.7)
q_z=	**43.70**	K_e=	1.00	(from 2.6.8)
$q_{z\ (ice)}$=	**6.67**	K_d=	0.95	(from Table 2-2)
$q_{z\ (30)}$=	**2.40**	V_{max}=	128	mph (Ultimate Wind Speed)
		$V_{max\ (ice)}$=	50	mph
		V_{30}=	30	mph

Table 2-2

Structure Type	Wind Direction Probability Factor, Kd
Latticed structures with triangular, square or rectangular cross sections	0.85
Tubular pole structures, latticed structures with other cross sections, appurtenances	0.95
Tubular pole structures supporting antennas enclosed within a cylindrical shroud	1.00

Date: 3/6/2019
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Determine Ca:

Table 2-9

Force Coefficients (Ca) for Appurtenances				
Member Type		**Aspect Ratio ≤ 2.5**	**Aspect Ratio = 7**	**Aspect Ratio ≥ 25**
		Ca	**Ca**	**Ca**
Flat		1.2	1.4	2.0
Square/Rectangular HSS		1.2 - 2.8(r_s) ≥ 0.85	1.4 - 4.0(r_s) ≥ 0.90	2.0 - 6.0(r_s) ≥ 1.25
Round	**C < 39** (Subcritical)	0.7	0.8	1.2
	39 ≤ C ≤ 78 (Transitional)	$4.14/(C^{0.485})$	$3.66/(C^{0.415})$	$46.8/(C^{1.0})$
	C > 78 (Supercritical)	0.5	0.6	0.6

Aspect Ratio is the overall length/width ratio in the plane normal to the wind direction.
(Aspect ratio is independent of the spacing between support points of a linear appurtenance,

Note: Linear interpolation may be used for aspect ratios other than those shown.

Ice Thickness = **1.16** in | **Angle =** **0 (deg)** | **Equivalent Angle =** **180 (deg)**

Appurtenances	Height	Width	Depth	Flat Area	Aspect Ratio	Ca	Force (lbs)	Force (lbs) (w/ Ice)
800-10121 Antenna	54.5	10.3	5.9	3.90	5.29	1.32	**226**	**44**
SBNHH-1D65A Antenna	55.6	11.9	7.1	4.59	4.67	1.30	**260**	**49**
EPBQ-654L8H6-L2 Antenna	73.0	21.0	6.3	10.65	3.48	1.24	**578**	**101**
OPA-65R-LCUU-H4 Antenna	48.0	14.4	7.3	4.80	3.33	1.24	**259**	**48**
RRUS-11 RRH	19.7	17.0	7.2	2.33	1.16	1.20	**122**	**24**
RRUS-12 RRH	20.4	18.5	7.5	2.62	1.10	1.20	**137**	**26**
RRUS-32 RRH	27.2	12.1	7.0	2.29	2.25	1.20	**120**	**24**
RRUS-32 B66 RRH	27.2	12.1	7.0	2.29	2.25	1.20	**120**	**24**
B14 4478 RRH	18.1	13.4	8.3	1.68	1.35	1.20	**88**	**18**
DTMABP7819VG12A TMA	10.7	11.1	3.8	0.82	0.96	1.20	**43**	**10**
Surge Arrestor	24.0	9.7	9.7	1.62	2.47	0.70	**49**	**10**

Date: 3/6/2019
Project Name: CAMBRIDGE PARK
Project No.: MA2009
Designed By: JN **Checked By:** MSC

HUDSON Design Group LLC

ICE WEIGHT CALCULATIONS

Thickness of ice: 1.16 in.
Density of ice: 56 pcf

800-10121 Antenna

Weight of ice based on total radial SF area:

Height (in):	54.5	
Width (in):	10.3	
Depth (in):	5.9	
Total weight of ice on object:		84 lbs
Weight of object:	47.0 lbs	
Combined weight of ice and object:		131 lbs

SBNHH-1D65A Antenna

Weight of ice based on total radial SF area:

Height (in):	55.6	
Width (in):	11.9	
Depth (in):	7.1	
Total weight of ice on object:		99 lbs
Weight of object:	34.0 lbs	
Combined weight of ice and object:		133 lbs

EPBQ-654L8H6-L2 Antenna

Weight of ice based on total radial SF area:

Height (in):	73.0	
Width (in):	21.0	
Depth (in):	6.3	
Total weight of ice on object:		199 lbs
Weight of object:	73.0 lbs	
Combined weight of ice and object:		272 lbs

OPA-65R-LCUU-H4 Antenna

Weight of ice based on total radial SF area:

Height (in):	48.0	
Width (in):	14.4	
Depth (in):	7.3	
Total weight of ice on object:		98 lbs
Weight of object:	57.0 lbs	
Combined weight of ice and object:		155 lbs

RRUS-11 RRH

Weight of ice based on total radial SF area:

Height (in):	19.7	
Width (in):	17.0	
Depth (in):	7.2	
Total weight of ice on object:		46 lbs
Weight of object:	51.0 lbs	
Combined weight of ice and object:		97 lbs

RRUS-12 RRH

Weight of ice based on total radial SF area:

Height (in):	20.4	
Width (in):	18.5	
Depth (in):	7.5	
Total weight of ice on object:		51 lbs
Weight of object:	58.0 lbs	
Combined weight of ice and object:		109 lbs

RRUS-32 RRH

Weight of ice based on total radial SF area:

Height (in):	27.2	
Width (in):	12.1	
Depth (in):	7.0	
Total weight of ice on object:		49 lbs
Weight of object:	53.0 lbs	
Combined weight of ice and object:		102 lbs

RRUS-32 B66 RRH

Weight of ice based on total radial SF area:

Height (in):	27.2	
Width (in):	12.1	
Depth (in):	7.0	
Total weight of ice on object:		49 lbs
Weight of object:	53.0 lbs	
Combined weight of ice and object:		102 lbs

B14 4478 RRH

Weight of ice based on total radial SF area:

Height (in):	18.1	
Width (in):	13.4	
Depth (in):	8.3	
Total weight of ice on object:		36 lbs
Weight of object:	60.0 lbs	
Combined weight of ice and object:		96 lbs

DTMABP7819VG12A TMA

Weight of ice based on total radial SF area:

Height (in):	10.7	
Width (in):	11.1	
Depth (in):	3.8	
Total weight of ice on object:		16 lbs
Weight of object:	20.0 lbs	
Combined weight of ice and object:		36 lbs

Squid Surge Arrestor

Weight of ice based on total radial SF area:

Depth (in):	24.0	
Diameter(in):	9.7	
Total weight of ice on object:		31 lbs
Weight of object:	33 lbs	
Combined weight of ice and object:		64 lbs

2" pipe

Per foot weight of ice:

diameter (in):	2.38	
Per foot weight of ice on object:		5 plf

Project: MA2009 (LTE 6C-7C) (Rev.1)

Location: Proposed pipe mast
Multi-Loaded Multi-Span Beam
[2015 International Building Code(AISC 14th Ed ASD)]
Pipe 2 Std. x 8.0 FT (1.5 + 4 + 2.5) / ASM A53-GR.B
Section Adequate By: 12.6%
Controlling Factor: Deflection

Jared Nash
Hudson Design Group LLC
45 Beechwood Drive
North Andover, MA 01845

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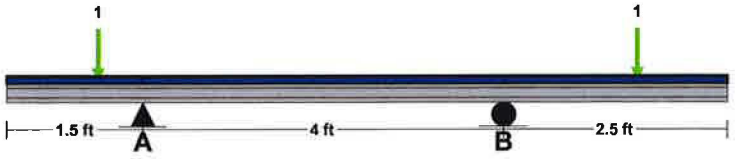
DEFLECTIONS	Left		Center		Right	
Live Load	0.07	IN 2L/492	-0.06	IN L/868	0.22	IN 2L/270
Dead Load	0.00	in	0.00	in	0.00	in
Total Load	0.07	IN 2L/486	-0.06	IN L/863	0.23	IN 2L/266

Live Load Deflection Criteria: L/240 Total Load Deflection Criteria: L/180

REACTIONS	A	B
Live Load	325 lb	397 lb
Dead Load	11 lb	18 lb
Total Load	336 lb	415 lb
Uplift (1.5 F.S)	**-101 lb**	**-24 lb**
Bearing Length	0.29 in	0.29 in

BEAM DATA	Left	Center	Right
Span Length	1.5 ft	4 ft	2.5 ft
Unbraced Length-Top	0 ft	0 ft	0 ft
Unbraced Length-Bottom	1.5 ft	4 ft	2.5 ft

LOADING DIAGRAM



UNIFORM LOADS	Left	Center	Right
Uniform Live Load	0 plf	0 plf	0 plf
Uniform Dead Load	0 plf	0 plf	0 plf
Beam Self Weight	4 plf	4 plf	4 plf
Total Uniform Load	4 plf	4 plf	4 plf

POINT LOADS - LEFT SPAN

Load Number	One
Live Load	289 lb
Dead Load	0 lb
Location	1 ft

RIGHT SPAN

Load Number	One
Live Load	289 lb
Dead Load	0 lb
Location	1.5 ft

STEEL PROPERTIES
Pipe 2 Std. - A53-GR.B

Properties:

Steel Yield Strength:	Fy =	35	ksi
Modulus of Elasticity:	E =	29000	ksi
Tube Steel Section (X Axis):	dx =	2.38	in
Tube Steel Section (Y Axis):	dy =	2.38	in
Tube Steel Wall Thickness:	t =	0.143	in
Area:	A =	1	in2
Moment of Inertia (X Axis):	Ix =	0.63	in4
Section Modulus (X Axis):	Sx =	0.53	in3
Plastic Section Modulus:	Z =	0.71	in3

Design Properties per AISC 14th Edition Steel Manual:

Flange Buckling Ratio:	FBR =	16.61	
Allowable Flange Buckling Ratio:	AFBR =	58	
Allowable Flange Buckling Ratio non-compact:	AFBR_NC =	256.86	
Nominal Flexural Strength w/ Safety Factor:	Mn =	1245	ft-lb
Controlling Equation:	F8-1		
Shear Buckling Stress Coefficient Eqn. G6-2a:	Fcr =	21	ksi
Nominal Shear Strength w/ Safety Factor:	Vn =	6287	lb

Controlling Moment: -445 ft-lb
Over right support of span 2 (Center Span)
Created by combining all dead loads and live loads on span(s) 2, 3
Controlling Shear: 298 lb
At left support of span 3 (Right Span)
Created by combining all dead loads and live loads on span(s

Comparisons with required sections:	Req'd	Provided
Moment of Inertia (deflection):	0.56 in4	0.63 in4
Moment:	-445 ft-lb	1245 ft-lb
Shear:	298 lb	6287 lb

NOTES

Date: 3/6/2019
Project Name: CAMBRIDGE PARK
Project No.: MA2009
Designed By: JN **Checked By:** MSC

HUDSON Design Group LLC

CHECK EPOXY ANCHOR CONNECTION CAPACITY → PROPOSED ANCHORS

Reference: Hilti Anchor Fastening Technical Guide 2014

Assumed Epoxy Type =	HIT-HY 200	
Assumed Anchor Diameter =	3/8	in.
Assumed Embedment Depth =	2 3/8	in.
f'c of Concrete =	2500	psi

Allowable Tensile Load =

F_{Tall} = 2855 lbs.

Allowable Shear Load =

F_{Vall} = 3075 lbs.

WIND FORCES

Reaction (Worst Case) F = 578 lbs.

GRAVITY LOADS

Ice and Equipment 342 lbs.

No. of Supports = 2
No. of Anchors / Support = 2

Tension Design Load / Anchor =

f_t = 144.50 lbs. < 2855 lbs. **Therefore, OK !**

Shear Design Load / Anchor=

f_v = 85.50 lbs. < 3075 lbs. **Therefore, OK !**

CHECK COMBINED TENSION AND SHEAR

f_t / F_T	+	f_v / F_V	≤	1.0			
0.051	+	0.028	=	0.078	<	1.0	**Therefore, OK !**

HUDSON
Design Group LLC

Echo Repeater Antenna Mount Calculations

Date: 4/16/2019
Project Name: CAMBRIDGE PARK
Project No.: MA2009
Designed By: JN **Checked By:** MSC

HUDSON Design Group LLC

2.6.5.2 Velocity Pressure Coeff:

$K_z = 2.01\ (z/z_g)^{2/\alpha}$

z=	153.83	(ft)
z_g=	1200	(ft)
α=	7.0	
K_z=	**1.118**	

$Kzmin \leq Kz \leq 2.01$

Table 2-4

Exposure	Z_g	α	K_{zmin}	K_c
B	1200 ft	7.0	0.70	0.9
C	900 ft	9.5	0.85	1.0
D	700 ft	11.5	1.03	1.1

2.6.6.2 Topographic Factor:

Table 2-5

Topo. Category	K_t	f
2	0.43	1.25
3	0.53	2.0
4	0.72	1.5

$K_{zt} = [1+(K_c K_t/K_h)]^2$

$K_h = e^{(f*z/H)}$

K_{zt}= #DIV/0!

(If Category 1 then K_{zt} =1.0)

Category= 1

K_h=	#DIV/0!	
K_c=	0	(from Table 2-4)
K_t=	0	(from Table 2-5)
f=	0	(from Table 2-5)
z=	153.83	
z_s=	0	(Mean elevation of base of structure above sea level)
H=	0	(Ht. of the crest above surrounding terrain)
K_{zt}=	1.00	(from 2.6.6.2.1)
K_e=	1.00	(from 2.6.8)

2.6.10 Design Ice Thickness

Max Ice Thickness =
Importance Factor =

t_i =	1.00	in
I=	1.0	(from Table 2-3)
K_{iz} =	1.17	(from Sec. 2.6.10)

$t_{iz} = t_i * I * K_{iz} * (K_{zt})^{0.35}$

t_{iz} = **1.17** in

Date: 4/16/2019
Project Name: CAMBRIDGE PARK
Project No.: MA2009
Designed By: JN Checked By: MSC

HUDSON Design Group LLC

2.6.9 Gust Effect Factor

2.6.9.1 Self Supporting Lattice Structures

G_h = 1.0 Latticed Structures > 600 ft

G_h = 0.85 Latticed Structures 450 ft or less

G_h = 0.85 + 0.15 [h/150 - 3.0] h= ht. of structure

h=	150	G_h=	0.85

2.6.9.2 Guyed Masts G_h= 0.85

2.6.9.3 Pole Structures G_h= 1.1

2.6.9 Appurtenances G_h= 1.0

2.6.9.4 Structures Supported on Other Structures

(Cantilivered tubular or latticed spines, pole, structures on buildings (ht. : width ratio > 5)

G_h=	1.35	Gh=	**1.00**

2.6.11.2 Design Wind Force on Appurtenances

$F = q_z * G_h * (EPA)_A$

$q_z = 0.00256 * K_z * K_{zt} * K_s * K_e * K_d * V_{max}^2$

		K_z=	1.118	(from 2.6.5.2)
		K_{zt}=	1.0	(from 2.6.6.2.1)
		K_s=	1.0	(from 2.6.7)
q_z=	**44.53**	K_e=	1.00	(from 2.6.8)
$q_{z\,(Ice)}$=	**6.80**	K_d=	0.95	(from Table 2-2)
$q_{z\,(30)}$=	**2.45**	V_{max}=	128	mph (Ultimate Wind Speed)
		$V_{max\,(ice)}$=	50	mph
		V_{30}=	30	mph

Table 2-2

Structure Type	Wind Direction Probability Factor, Kd
Latticed structures with triangular, square or rectangular cross sections	0.85
Tubular pole structures, latticed structures with other cross sections, appurtenances	0.95
Tubular pole structures supporting antennas enclosed within a cylindrical shroud	1.00

Date: 4/16/2019
Project Name: CAMBRIDGE PARK
Project No.: MA2009
Designed By: JN Checked By: MSC

HUDSON Design Group LLC

Determine Ca:

Table 2-9

Force Coefficients (Ca) for Appurtenances				
Member Type		**Aspect Ratio ≤ 2.5**	**Aspect Ratio = 7**	**Aspect Ratio ≥ 25**
		Ca	**Ca**	**Ca**
Flat		1.2	1.4	2.0
Square/Rectangular HSS		1.2 - 2.8(r_s) ≥ 0.85	1.4 - 4.0(r_s) ≥ 0.90	2.0 - 6.0(r_s) ≥ 1.25
Round	**C < 39** (Subcritical)	0.7	0.8	1.2
	39 ≤ C ≤ 78 (Transitional)	$4.14/(C^{0.485})$	$3.66/(C^{0.415})$	$46.8/(C^{-1.0})$
	C > 78 (Supercritical)	0.5	0.6	0.6

Aspect Ratio is the overall length/width ratio in the plane normal to the wind direction.
(Aspect ratio is independent of the spacing between support points of a linear appurtenance,

Note: Linear interpolation may be used for aspect ratios other than those shown.

Ice Thickness = **1.17** in | **Angle =** **0 (deg)** | **Equivalent Angle =** **180 (deg)**

Appurtenances	Height	Width	Depth	Flat Area	Aspect Ratio	Ca	Force (lbs)	Force (lbs) (w/ Ice)
ANT-2300-PB-24 Antenna	23.8	39.8	14.3	1.64	0.60	1.20	**88**	**16**
***Note: Assumed 1/4 wind area for wire dish antenna**								
SER-23002W-EC Echo Repeater	14.6	13.5	7.0	1.37	1.08	1.20	**73**	**15**
DPO-2323-SX Diplexer	13.5	13.6	2.5	1.28	0.99	1.20	**68**	**14**

Date: 4/16/2019
Project Name: CAMBRIDGE PARK
Project No.: MA2009
Designed By: JN **Checked By:** MSC

HUDSON Design Group LLC

ICE WEIGHT CALCULATIONS

Thickness of ice:	1.17	in.
Density of ice:	56	pcf

ANT-2300-PB-24 Antenna

Weight of ice based on total radial SF area:

Height (in):	23.8	
Width (in):	39.8	
Depth (in):	14.3	
Total weight of ice on object:		123 lbs
Weight of object:	6.0 lbs	
Combined weight of ice and object:		129 lbs

SER-23002W-EC Echo Repeater

Weight of ice based on total radial SF area:

Height (in):	14.6	
Width (in):	13.5	
Depth (in):	7.0	
Total weight of ice on object:		28 lbs
Weight of object:	21.0 lbs	
Combined weight of ice and object:		49 lbs

DPO-2323-SX Diplexer

Weight of ice based on total radial SF area:

Height (in):	13.5	
Width (in):	13.6	
Depth (in):	2.5	
Total weight of ice on object:		24 lbs
Weight of object:	20.0 lbs	
Combined weight of ice and object:		44 lbs

2-1/2" pipe

Per foot weight of ice:

diameter (in):	2.88	
Per foot weight of ice on object:		6 plf

Project: MA2009 (LTE 6C-7C) (Rev.2)

Location: Proposed Echo Repeater Pipe Mast
Multi-Loaded Multi-Span Beam
[2015 International Building Code(AISC 14th Ed ASD)]
Pipe 2-1/2 Std. x 12.5 FT (6.5 + 4 + 2) / ASTM A53-GR.B
Section Adequate By: 35.1%
Controlling Factor: Deflection

Jared Nash
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45 Beechwood Drive
North Andover, MA 01845

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DEFLECTIONS	Left		Center		Right	
Live Load	0.48	IN 2L/324	-0.02	IN L/2155	0.03	IN 2L/1660
Dead Load	0.10	in	0.00	in	0.01	in
Total Load	0.58	IN 2L/270	-0.03	IN L/1770	0.04	IN 2L/1328

Live Load Deflection Criteria: L/240 Total Load Deflection Criteria: L/180

REACTIONS	A		B	
Live Load	220	lb	0	lb
Dead Load	77	lb	-5	lb
Total Load	297	lb	-5	lb
Uplift (1.5 F.S)	0	**lb**	**-137**	**lb**
Bearing Length	0.38	in	0.00	in

BEAM DATA	Left		Center		Right	
Span Length	6.5	ft	4	ft	2	ft
Unbraced Length-Top	0	ft	0	ft	0	ft
Unbraced Length-Bottom	6.5	ft	4	ft	2	ft

STEEL PROPERTIES
Pipe 2-1/2 Std. - A53-GR.B

Properties:

Steel Yield Strength:	Fy =	35	ksi
Modulus of Elasticity:	E =	29000	ksi
Tube Steel Section (X Axis):	dx =	2.88	in
Tube Steel Section (Y Axis):	dy =	2.88	in
Tube Steel Wall Thickness:	t =	0.189	in
Area:	A =	1.59	in2
Moment of Inertia (X Axis):	Ix =	1.45	in4
Section Modulus (X Axis):	Sx =	1.01	in3
Plastic Section Modulus:	Z =	1.37	in3

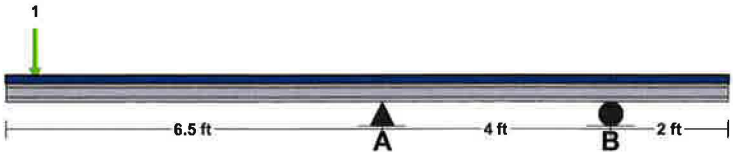
Design Properties per AISC 14th Edition Steel Manual:

Flange Buckling Ratio:	FBR =	15.21	
Allowable Flange Buckling Ratio:	AFBR =	58	
Allowable Flange Buckling Ratio non-compact:	AFBR_NC =	256.86	
Nominal Flexural Strength w/ Safety Factor:	Mn =	2393	ft-lb
Controlling Equation:	F8-1		
Shear Buckling Stress Coefficient Eqn. G6-2a:	Fcr =	21	ksi
Nominal Shear Strength w/ Safety Factor:	Vn =	9997	lb

Controlling Moment: -651 ft-lb
Over right support of span 1 (Left Span)
Created by combining all dead loads and live loads on span(s) 1, 2, 3
Controlling Shear: 171 lb
At left support of span 2 (Center Span)
Created by combining all dead loads and live loads on span(s

Comparisons with required sections:	Req'd	Provided
Moment of Inertia (deflection):	1.07 in4	1.45 in4
Moment:	-651 ft-lb	2393 ft-lb
Shear:	171 lb	9997 lb

LOADING DIAGRAM



UNIFORM LOADS	Left		Center		Right	
Uniform Live Load	0	plf	0	plf	0	plf
Uniform Dead Load	0	plf	0	plf	0	plf
Beam Self Weight	6	plf	6	plf	6	plf
Total Uniform Load	6	plf	6	plf	6	plf

POINT LOADS - LEFT SPAN

Load Number	One
Live Load	88 lb
Dead Load	0 lb
Location	0.5 ft

NOTES

Date: 4/16/2019
Project Name: CAMBRIDGE PARK
Project No.: MA2009
Designed By: JN **Checked By:** MSC

HUDSON Design Group LLC

CHECK EPOXY ANCHOR CONNECTION CAPACITY → PROPOSED ANCHORS

Reference: Hilti Anchor Fastening Technical Guide 2014

Assumed Epoxy Type =	HIT-HY 200	
Assumed Anchor Diameter =	3/8	in.
Assumed Embedment Depth =	2 3/8	in.
f'c of Concrete =	2500	psi

Allowable Tensile Load =

F_{Tall} = 2855 lbs.

Allowable Shear Load =

F_{Vall}= 3075 lbs.

WIND FORCES

Reaction (Worst Case) F = 297 lbs.

GRAVITY LOADS

Ice and Equipment 136 lbs.

No. of Supports = 1
No. of Anchors / Support = 2

Tension Design Load / Anchor =

f_t= 148.50 lbs. < 2855 lbs. **Therefore, OK !**

Shear Design Load / Anchor=

f_v= 68.00 lbs. < 3075 lbs. **Therefore, OK !**

CHECK COMBINED TENSION AND SHEAR

f_t / F_T	+	f_v / F_V	≤	1.0			
0.052	+	0.022	=	0.074	<	1.0	**Therefore, OK !**

Radio Frequency Safety Survey Report Prediction (RFSSRP)

AT&T Wireless Rooftop Facility

Site ID: MA2009
Site Name: Cambridge Park
Address: 150 Cambridge Park Drive,
Cambridge MA 02140
Latitude: 42.394201
Longitude: -71.146396
USID: 54452
FA: 10007258

Prepared for:
AT&T Mobility
550 Cochituate Road
Framingham, MA 01701

Centerline PN: 950010-029

Additional Site Information:

CDs: MRCTB023903_MA2009 LTE 6C-7C CD REVA 11.29.17
RFDS: NEW-MA2009 RFDS dated 4/26/2017

Report Information:

Report Writer: Ryan McManus
Date: February 6, 2018

Report Reviewer: Scott Heffernan

Statement of Compliance

AT&T **is compliant** with FCC Regulations.

TABLE OF CONTENTS

1.0 GENERAL SUMMARY

Centerline Communications, LLC ("Centerline") has been contracted to provide a Radio Frequency (RF) Analysis for the following AT&T Mobility wireless rooftop facility to determine whether the facility is in compliance with federal standards and regulations regarding RF emissions. This analysis includes theoretical emissions calculations, for all proposed equipment for AT&T Mobility.

1.1 SITE SUMMARY

Analysis Site Data	
Site ID:	MA2009
Site USID:	54452
Site FA#:	10007258
Site Name:	Cambridge Park
Site Address:	150 Cambridge Park Drive, Cambridge, MA 02140
Site Latitude:	42.394201 N
Site Longitude:	-71.146396 W
Facility Type:	Rooftop
Compliance Summary	
Compliance Status:	Compliant
Maximum Modeled MPE% on Walking Surface (General Public Limit):	217.1 %
Maximum Modeled MPE% at Ground Level (General Public Limit):	2.9 %
Site Survey Data	
Is Access Locked or Controlled? :	Uncontrolled *
Lock or Control Measures if Present:	N/A
Parapet Height:	None

There are no other carriers on this site.

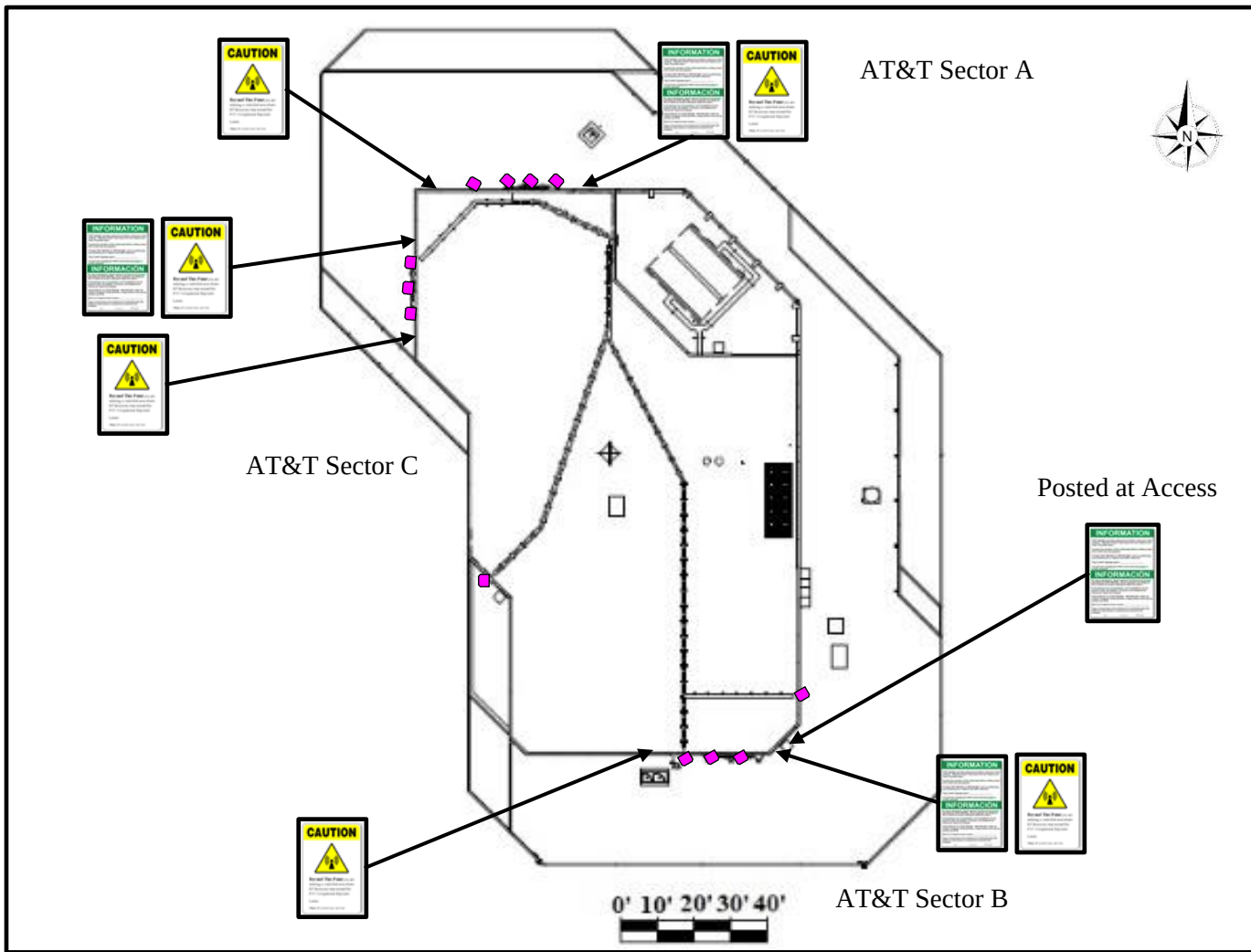
*To be conservative, all rooftop sites are considered uncontrolled for modeling purposes.

Signage and barriers are the primary means of mitigating access to accessible areas of exposure. Below is a summary of existing and recommended signage at this AT&T facility.

Existing Signage and Barriers (AT&T Sectors)		
Location	**Signage**	**Barriers**
Sector A	(2) Yellow CAUTION signs posted on the penthouse wall (1) Green INFO 1 sign posted on the penthouse wall	N/A
Sector B	(2) Yellow CAUTION signs posted on the penthouse wall (1) Green INFO 1 sign posted on the penthouse wall	N/A
Sector C	(2) Yellow CAUTION signs posted on the penthouse wall (1) Green INFO 1 sign posted on the penthouse wall	N/A
Access Point (s)	Green INFO 1 Sign at Access door	N/A
Recommended Signage and Barriers (AT&T Sectors)		
Location	**Signage**	**Barriers**
Sector A	No additional signage required	Not required
Sector B	No additional signage required	Not required
Sector C	No additional signage required	Not required
Access Point (s)	No additional signage required	Not required

Barriers are not required because the areas of exposure are within 2 feet of the antennas.

2.0 SITE SCALE MAP



Operator Antenna Identifiers

AT&T Antennas

INFO 1 Sign	Caution 1 Sign
INFO 2 Sign	Tower Caution Sign
Notice 1 Sign	Caution 2 Sign
Notice 2 Sign	Warning Sign

Existing Sign | Proposed Sign | Existing Barrier | Proposed Barrier

Signage/ Mitigation Plan

Cambridge Park / 10007258

3.0 ANTENNA INVENTORY

ANT ID	Operator	Antenna Make	Antenna Model	Type	Freq (MHz)	# of Transmitters	Azimuth	BW (°)	Gain (dBd)	ERP (Watts)	x	y	Ant Z Value NWS (ft) **	Ant Z Value Ground (ft)
ATT A1	AT&T	Kathrein	800-10121	Panel	UMTS 850	1	30	88	11.25	319.15	21	175	10.3	141.7
ATT A2	AT&T	Andrew	SBNHH-1D65A	Panel	LTE 700	1	40	66	10.95	629.51	31	175	10.3	141.7
ATT A2	AT&T	Andrew	SBNHH-1D65A	Panel	LTE 2300	1	40	61	15.05	1093.96	31	175	10.3	141.7
ATT A3	AT&T	KMW	EPBQ-654L8H6-L2	Panel	LTE 700	1	40	65	12.35	1475.71	36	175	9.6	141.0
ATT A3	AT&T	KMW	EPBQ-654L8H6-L2	Panel	LTE 2100	1	40	57	15.65	3837.07	36	175	9.6	141.0
ATT A4	AT&T	CCI	OPA-65R-LCUU-H4	Panel	LTE 700	1	40	65	10.55	574.12	40	175	10.6	142.0
ATT A4	AT&T	CCI	OPA-65R-LCUU-H4	Panel	LTE 850	1	40	63	11.15	659.17	40	175	10.6	142.0
ATT A4	AT&T	CCI	OPA-65R-LCUU-H4	Panel	LTE 1900	1	40	63	13.55	1655.77	40	175	10.6	142.0
ATT B1	AT&T	Kathrein	800-10121	Panel	UMTS 850	1	150	88	11.25	266.07	110	38	10.3	141.7
ATT B2	AT&T	Andrew	SBNHH-1D65A	Panel	LTE 700	1	150	66	10.95	629.51	95	19	10.3	141.7
ATT B2	AT&T	Andrew	SBNHH-1D65A	Panel	LTE 2300	1	150	61	15.05	1093.96	95	19	10.3	141.7
ATT B3	AT&T	KMW	EPBQ-654L8H6-L2	Panel	LTE 700	1	150	65	12.35	1475.71	85	19	9.6	141.0
ATT B3	AT&T	KMW	EPBQ-654L8H6-L2	Panel	LTE 2100	1	150	57	15.65	3837.07	85	19	9.6	141.0
ATT B4	AT&T	CCI	OPA-65R-LCUU-H4	Panel	LTE 700	1	150	65	10.55	574.12	80	19	10.6	142.0
ATT B4	AT&T	CCI	OPA-65R-LCUU-H4	Panel	LTE 850	1	150	63	11.15	659.17	80	19	10.6	142.0
ATT B4	AT&T	CCI	OPA-65R-LCUU-H4	Panel	LTE 1900	1	150	63	13.55	1655.77	80	19	10.6	142.0
ATT C1	AT&T	Kathrein	800-10121	Panel	UMTS 850	1	270	88	11.25	264.24	25	69	10.3	141.7
ATT C2	AT&T	Andrew	SBNHH-1D65A	Panel	LTE 700	1	275	66	10.95	629.51	5	140	10.3	141.7
ATT C2	AT&T	Andrew	SBNHH-1D65A	Panel	LTE 2300	1	275	61	15.05	1093.96	5	140	10.3	141.7
ATT C3	AT&T	KMW	EPBQ-654L8H6-L2	Panel	LTE 700	1	275	65	12.35	1475.71	5	148	9.6	141.0
ATT C3	AT&T	KMW	EPBQ-654L8H6-L2	Panel	LTE 2100	1	275	57	15.65	3837.07	5	148	9.6	141.0
ATT C4	AT&T	CCI	OPA-65R-LCUU-H4	Panel	LTE 700	1	275	65	10.55	574.12	5	151	10.6	142.0
ATT C4	AT&T	CCI	OPA-65R-LCUU-H4	Panel	LTE 850	1	275	63	11.15	659.17	5	151	10.6	142.0
ATT C4	AT&T	CCI	OPA-65R-LCUU-H4	Panel	LTE 1900	1	275	63	13.55	1655.77	5	151	10.6	142.0

*Table 1: Total Site data table **(Z Value is distance from bottom of antenna to closest walking surface)*

3.1 ROOFVIEW® EXPORT FILE

Ant Num	ID	Name	(MHz) Freq	Trans Power	Trans Count	Coax Len	Coax Type	Other Loss	Input Power	Calc Power	Mfg	Model	(ft) X	(ft) Y	(ft) Z	Type	(ft) Aper	dBd Gain	BWdth Pt Dir
1	ATT A1	UMTS	850.00000	23.9	1	0	0.0	0.0		23.9	Kathrein	800-10121	21.0	175.0	10.3		4.5	11.25	88;30
2	ATT A2	LTE	700.00000	50.6	1	0	0.0	0.0		50.6	Andrew	SBNHH-1D65	31.0	175.0	10.3		4.6	10.95	66;40
3	ATT A2	LTE	2300.00000	34.2	1	0	0.0	0.0		34.2	Andrew	SBNHH-1D65	31.0	175.0	10.3		4.6	15.05	61;40
4	ATT A3	LTE	700.00000	85.9	1	0	0.0	0.0		85.9	KMW	EPBQ-654L8H	36.0	175.0	9.6		6.0	12.35	65;40
5	ATT A3	LTE	2100.00000	104.5	1	0	0.0	0.0		104.5	KMW	EPBQ-654L8H	36.0	175.0	9.6		6.0	15.65	57;40
6	ATT A4	LTE	700.00000	50.6	1	0	0.0	0.0		50.6	CCI	OPA-65R-LCU	40.0	175.0	10.6		4.0	10.55	65;40
7	ATT A4	LTE	850.00000	50.6	1	0	0.0	0.0		50.6	CCI	OPA-65R-LCU	40.0	175.0	10.6		4.0	11.15	63;40
8	ATT A4	LTE	1900.00000	73.1	1	0	0.0	0.0		73.1	CCI	OPA-65R-LCU	40.0	175.0	10.6		4.0	13.55	63;40
9	ATT B1	UMTS	850.00000	20.0	1	0	0.0	0.0		20.0	Kathrein	800-10121	110.0	38.0	10.3		4.5	11.25	88;150
10	ATT B2	LTE	700.00000	50.6	1	0	0.0	0.0		50.6	Andrew	SBNHH-1D65	95.0	19.0	10.3		4.6	10.95	66;150
11	ATT B2	LTE	2300.00000	34.2	1	0	0.0	0.0		34.2	Andrew	SBNHH-1D65	95.0	19.0	10.3		4.6	15.05	61;150
12	ATT B3	LTE	700.00000	85.9	1	0	0.0	0.0		85.9	KMW	EPBQ-654L8H	85.0	19.0	9.6		6.0	12.35	65;150
13	ATT B3	LTE	2100.00000	104.5	1	0	0.0	0.0		104.5	KMW	EPBQ-654L8H	85.0	19.0	9.6		6.0	15.65	57;150
14	ATT B4	LTE	700.00000	50.6	1	0	0.0	0.0		50.6	CCI	OPA-65R-LCU	80.0	19.0	10.6		4.0	10.55	65;150
15	ATT B4	LTE	850.00000	50.6	1	0	0.0	0.0		50.6	CCI	OPA-65R-LCU	80.0	19.0	10.6		4.0	11.15	63;150
16	ATT B4	LTE	1900.00000	73.1	1	0	0.0	0.0		73.1	CCI	OPA-65R-LCU	80.0	19.0	10.6		4.0	13.55	63;150
17	ATT C1	UMTS	850.00000	19.8	1	0	0.0	0.0		19.8	Kathrein	800-10121	25.0	69.0	10.3		4.5	11.25	88;270
18	ATT C2	LTE	700.00000	50.6	1	0	0.0	0.0		50.6	Andrew	SBNHH-1D65	5.0	140.0	10.3		4.6	10.95	66;275
19	ATT C2	LTE	2300.00000	34.2	1	0	0.0	0.0		34.2	Andrew	SBNHH-1D65	5.0	140.0	10.3		4.6	15.05	61;275
20	ATT C3	LTE	700.00000	85.9	1	0	0.0	0.0		85.9	KMW	EPBQ-654L8H	5.0	148.0	9.6		6.0	12.35	65;275
21	ATT C3	LTE	2100.00000	104.5	1	0	0.0	0.0		104.5	KMW	EPBQ-654L8H	5.0	148.0	9.6		6.0	15.65	57;275
22	ATT C4	LTE	700.00000	50.6	1	0	0.0	0.0		50.6	CCI	OPA-65R-LCU	5.0	151.0	10.6		4.0	10.55	65;275
23	ATT C4	LTE	850.00000	50.6	1	0	0.0	0.0		50.6	CCI	OPA-65R-LCU	5.0	151.0	10.6		4.0	11.15	63;275
24	ATT C4	LTE	1900.00000	73.1	1	0	0.0	0.0		73.1	CCI	OPA-65R-LCU	5.0	151.0	10.6		4.0	13.55	63;275

Table 2: Roofview® Export File

4.0 PREDICTED EMISSION LEVELS AND DISCUSSION

All calculations performed based upon the data listed for this facility have produced results that are above allowable limits for General Population limits for exposure to RF emissions as specified by federal standards. AT&T can ensure compliance on this facility by following the signage and barrier recommendations presented in this report.

The anticipated maximum power density value (% MPE) calculated in front of any of the AT&T sectors is **217.1 %** of the FCC's allowable limit for General Population exposure to radio frequency emissions (**43.42 %** of the FCC's allowable Occupational limit). This was determined based upon worst-case theoretical modeling as described in this report for all walking surfaces in close proximity to the antenna arrays. The following is a summary for each AT&T Sector.

Sector A: There is an area that extends out **2 feet** from the antenna along the walking surface that exceeds the **FCC's General Population limit** for exposure to radio frequency emissions in front of the Sector A antenna. There are no areas that exceed the **FCC's Occupational limit** for exposure to radio frequency emissions. The maximum power density value (% MPE) calculated for AT&T's Sector A antenna is **217.1 %** of the FCC's allowable limit for General Population exposure to radio frequency emissions (**43.42 %** of the FCC's allowable Occupational limit). The Sector A antenna is transmitting over the main roof level.

Sector B: There is an area that extends out **2 feet** from the antenna along the walking surface that exceeds the **FCC's General Population limit** for exposure to radio frequency emissions in front of the Sector A antenna. There are no areas that exceed the **FCC's Occupational limit** for exposure to radio frequency emissions. The maximum power density value (% MPE) calculated for AT&T's Sector B antenna is **208.2 %** of the FCC's allowable limit for General Population exposure to radio frequency emissions (**41.64 %** of the FCC's allowable Occupational limit). The Sector B antenna is transmitting over a the main roof level.

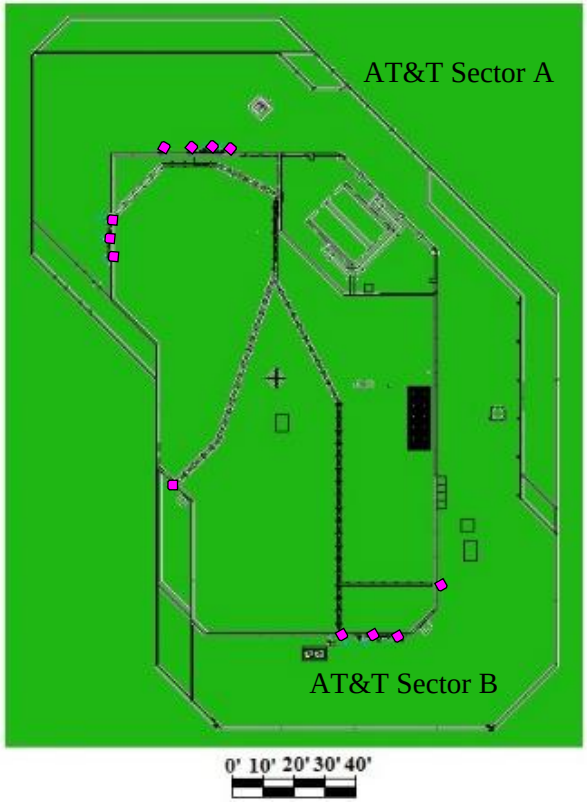
Sector C: There is an area that extends out **2 feet** from the antenna along the walking surface that exceeds the **FCC's General Population limit** for exposure to radio frequency emissions in front of the Sector A antenna. There are no areas that exceed the **FCC's Occupational limit** for exposure to radio frequency emissions. The maximum power density value (% MPE) calculated for AT&T's Sector C antenna is **210.2 %** of the FCC's allowable limit for General Population exposure to radio frequency emissions (**41.04 %** of the FCC's allowable Occupational limit). The Sector C antenna is transmitting over a lower balcony level.

At the ground level the maximum power density value calculated from the AT&T radio equipment is **2.9%** of the **FCC's General Population limit** for exposure to radio frequency emissions. At ground level the maximum power density value calculated from the AT&T radio equipment is **0.58 %** of the **FCC's General Population limit** for exposure to radio frequency emissions.

The FCC mandates that if a site is found to be out of compliance with regard to emissions that any system operator contributing 5% or more to areas exceeding the FCC's allowable limits, as outlined in this report,

will be responsible for bringing the site into compliance. AT&T is the only carrier are this site. Exhibit 1c shows a graphical representation of all areas where AT&T contributes 5% or more to the FCC general public limit on the site.

Emissions threshold plots which graphically show power density values is shown following in **Exhibits 1a-1c.**



Operator Antenna Identifiers

AT&T Antennas

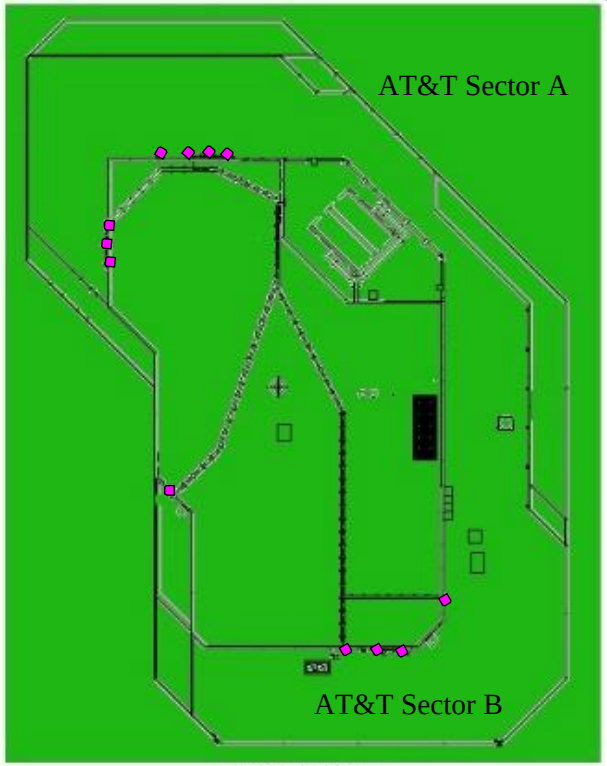
% FCC General Public MPE Limits

- Emissions Value Over 5,000% GP limit
- 500 % GP Limit < Emissions Value ≤ 5,000% GP Limit
- 100 % GP Limit < Emissions Value ≤ 500% GP Limit
- Emissions Value < 100% GP Limit

Exhibit 1a:

Emissions Thresholds AT&T (Roof Level)

Cambridge Park / 10007258



Operator Antenna Identifiers

AT&T Antennas

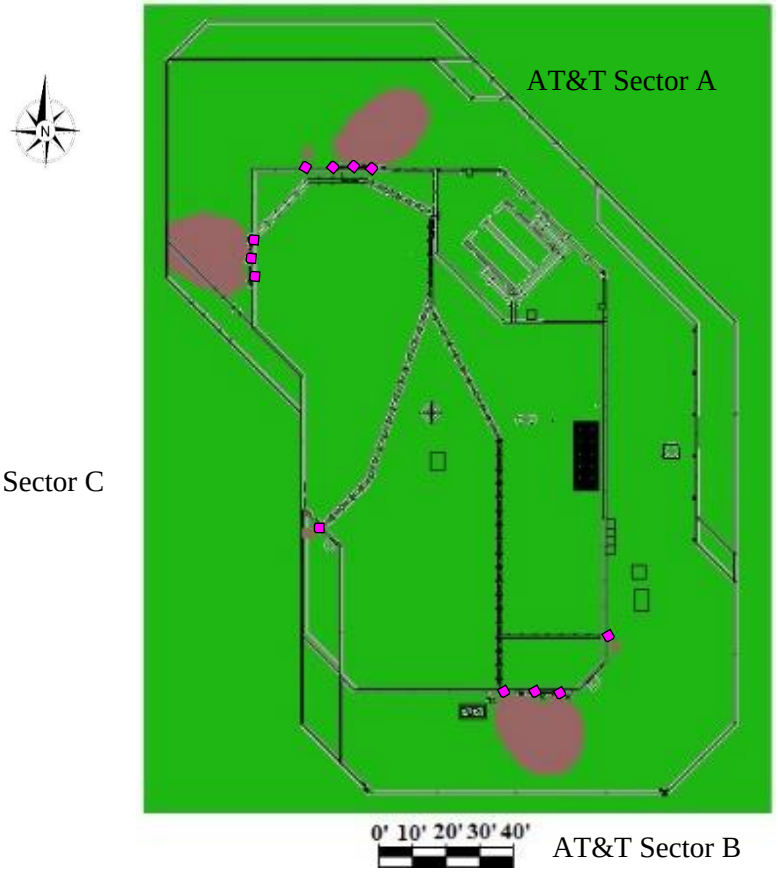
% FCC General Public MPE Limits

- Emissions Value Over 5,000% GP limit
- 500 % GP Limit < Emissions Value ≤ 5,000% GP Limit
- 100 % GP Limit < Emissions Value ≤ 500% GP Limit
- Emissions Value < 100% GP Limit

Exhibit 1b:

Emissions Thresholds All Sources on Site (Ground)

Cambridge Park / 10007258



Operator Antenna Identifiers

AT&T Antennas

% FCC General Public

Emissions Value > 5% GP Limit

Emissions Value ≤ 5% GP Limit

Exhibit 1c:

5% Emissions Thresholds From AT&T

Cambridge Park / 10007258

5.0 STATEMENT OF COMPLIANCE

Centerline conducted worst case modeling to determine whether the proposed rooftop site located at 150 Cambridge Park Drive in Cambridge, Massachusetts is in compliance with FCC Regulations.

5.1 STATEMENT OF AT&T MOBILITY COMPLIANCE

Based on the information analyzed, AT&T is compliant with FCC Regulations. No further action is required by AT&T.

5.2 RECOMMENDATIONS

AT&T Mitigation Recommendations		
Location	**Signage**	**Barriers**
Sector A	No additional signage required	Not required
Sector B	No additional signage required	Not required
Sector C	No additional signage required	Not required
Access Point (s)	No additional signage required	Not required

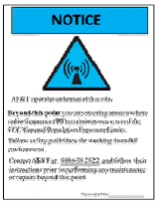
Barriers are not required because the areas of exposure are within 2 feet of the antennas.

6.0 FALL ARREST AND PARAPET INFORMATION

As per AT&T barrier policy, rooftop edges that are protected with a 36-inch parapet wall or guardrail are safe for work activity within six (6) feet of the edge. OSHA has stated that an existing 36-inch guardrail or parapet provides sufficient protection for employees. The height of the top rail or equivalent component of guardrail systems in new construction shall be at least 42 inches above the walking or working surface. It should also be noted that the height of the parapet or guardrail may be reduced to no less than 30 inches at any point provided the sum of the depth (horizontal distance) of the top edge, and the height of the top edge (vertical distance from the work surface to the top edge of the top member, is at least 48 inches. If there is no reason for working atop the roof, then edge protection is not required. In addition, workers may use personnel lifts or temporary fall protection measures to perform work within 6 feet of the roof edge in place of permanent edge protection. Reference: 29 CFR 1910.28, 29 CFR 1910.23 (NPRM-1990); OSHA Letters of Interpretation 2/9/83 and 3/8/9

APPENDIX A: RF SIGNAGE

AT&T RF Signage

Sign	Description	Sign	Description
	**Information 1 Sign** Gives guidelines on how to proceed and who to contact regarding areas that may exceed either the FCC's General Population or Occupational emissions limits.		**Information 2 Sign** Gives specific information on how to proceed and who to contact regarding antennas that are façade mounted, concealed or on stand-alone structures.
	**Blue Notice 1 Sign** Used to alert individuals that they are entering an area that may exceed the FCC's General Population emissions limit. Must be positioned such that persons approaching from any angle have ample warning to avoid the marked areas.		**Blue Notice 2 Sign** Used to alert individuals that they are entering an area that may exceed either the FCC's General Population emissions limits. To be used on barriers or antenna sectors as a hybrid of the Information 1 and Blue Notice 1 signs.
	**Yellow Caution 1 Sign-Rooftop** Used to inform individuals that they are entering an area that may exceed the FCC's Occupational emissions limit. Must be positioned such that persons approaching from any angle have ample warning to avoid the marked areas.		**Yellow Caution 2 Sign-Rooftop** Used to alert individuals that they are entering an area that may exceed the FCC's Occupational emissions limit. To be used on barriers or antenna sectors as a hybrid of the Information 1 and Yellow Caution 1 signs.
	**Yellow Caution 1 Sign-Tower** Used to inform individuals that they are entering an area that may exceed the FCC's Occupational emissions limits. Must be placed at the base of the tower to warn tower climbers of potential for exposure.		**Red Warning Sign** Used to inform individuals that they are entering an area that may exceed the FCC's Occupational emissions limit by a factor of 10 or greater. Must be positioned such that persons approaching from any angle have ample warning to avoid the marked areas.

APPENDIX B: FCC GUIDELINES AND EMISSIONS THRESHOLD LIMITS

All power density values used in this report were analyzed as a percentage of current Maximum Permissible Exposure (% MPE) as listed in the FCC OET Bulletin 65 Edition 97-01and ANSI/IEEE Std C95.1. The FCC regulates Maximum Permissible Exposure in units of microwatts per square centimeter ($\mu W/cm^2$). The number of $\mu W/cm^2$ calculated at each sample point is called the power density. The exposure limit for power density varies depending upon the frequencies being utilized. Wireless Carriers and Paging Services use different frequency bands each with different exposure limits, therefore it is necessary to report results and limits in terms of percent MPE rather than power density.

All results were compared to the FCC (Federal Communications Commission) radio frequency exposure rules, 47 CFR 1.1307(b)(1) – (b)(3), to determine compliance with the Maximum Permissible Exposure (MPE) limits for General Population/Uncontrolled environments as defined below.

General Population/Uncontrolled exposure limits apply to situations in which the general public may be exposed or in which persons who are exposed as a consequence of their employment may not be made fully aware of the potential for exposure or cannot exercise control over their exposure. Therefore, members of the general public would always be considered under this category when exposure is not employment related, for example, in the case of a telecommunications tower that exposes persons in a nearby residential area.

Public exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ($\mu W/cm^2$). The general population exposure limit for the 700 and 800 MHz Bands is approximately 467 $\mu W/cm^2$ and 567 $\mu W/cm^2$ respectively, and the general population exposure limit for the 1900 MHz PCS and 2100 MHz AWS bands is 1000 $\mu W/cm^2$. Because each carrier will be using different frequency bands, and each frequency band has different exposure limits, it is necessary to report percent of MPE rather than power density.

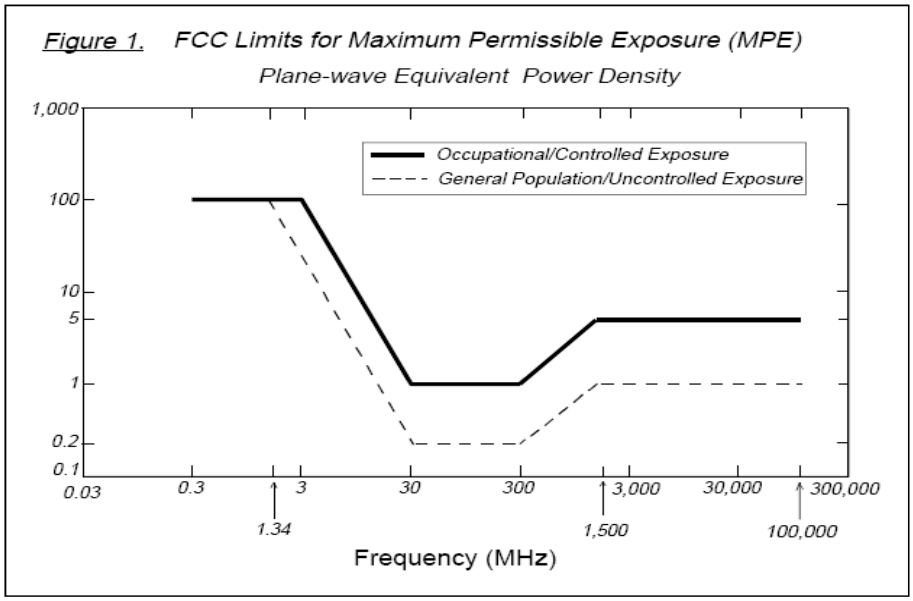
Occupational/Controlled exposure limits apply to situations in which persons are exposed as a consequence of their employment and in which those persons who are exposed have been made fully aware of the potential for exposure, have been properly trained in RF safety and can exercise control over their exposure. Occupational/Controlled exposure limits also apply where exposure is of a transient nature as a result of incidental passage through a location where exposure levels may be above general population/uncontrolled limits (see below), as long as the exposed person has been made fully aware of the potential for exposure, have been trained in RF safety and can exercise control over his or her exposure by leaving the area or by some other appropriate means. The Occupational/Controlled exposure limits all utilized frequency bands is five (5) times the FCC's General Public / Uncontrolled exposure limit.

Additional details can be found in FCC OET 65.

Table 1: Limits for Maximum Permissible Exposure (MPE)				
(A) Limits for Occupational/Controlled Exposure				
Frequency Range (MHz)	**Electric Field Strength (E) (V/m)**	**Magnetic Field Strength (H) (A/m)**	**Power Density (S) (mW/cm^2)**	**Averaging Time $[E]^2$, $[H]^2$, or S (minutes)**
0.3-3.0	614	1.63	(100)*	6
3.0-30	1842/f	4.89/f	$(900/f^2)$*	6
30-300	61.4	0.163	1.0	6
300-I,500	--	--	f/300	6
1,500-100,000	--	--	5	6
(B) Limits for General Public/Uncontrolled Exposure				
Frequency Range (MHz)	**Electric Field Strength (E) (V/m)**	**Magnetic Field Strength (H) (A/m)**	**Power Density (S) (mW/cm^2)**	**Averaging Time $[E]^2$, $[H]^2$, or S (minutes)**
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	$(180/f^2)$*	30
30-300	27.5	0.073	0.2	30
300-I,500	--	--	f/1,500	30
1,500-100,000	--	--	1.0	30

f = Frequency in (MHz)

* Plane-wave equivalent power density



APPENDIX C: CALCULATION METHODOLOGY

Centerline has performed theoretical calculations on all transmission equipment located on this facility. All calculations have been performed using the RoofView® software from Richard Tell Associates. This software performs calculations using a cylindrical model for very conservative power density predictions within the near-field of the antenna where the antenna pattern has not truly formed yet. Within this area power density values tend to decrease based upon an inverse distance function. At the point where it is appropriate for modeling to change from near-field calculations to far-field calculations the power decreases inversely with the square of the distance. This modeling technique is very accurate with very low antenna centerlines, such as rooftops, where persons can get very close to the antennas and pass through fields in close proximity.

The below calculation in Figure 1 shows the theoretical distribution of power over an imaginary cylinder with equal power distribution in all directions.

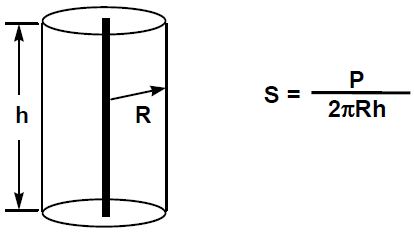


Figure 1: Distribution of power over an imaginary cylinder in all directions

This model can be modified for directional antennas to show directionality of power distribution. This formula will tend to be conservative as it assumes that all power is focused between the 3 dB power roll off points as shown in Figure 2.

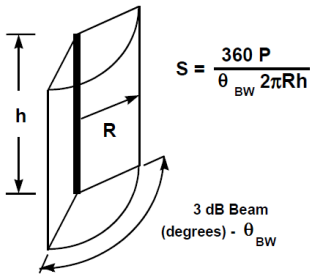
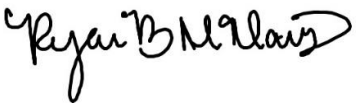


Figure 2: Distribution of power over an imaginary cylinder between the half power (3dB) roll off points (HBW) for directional antennas

APPENDIX D: CERTIFICATIONS

I, Ryan McManus, preparer of this report certify that I am fully trained and aware of the Rules and Regulations of both the Federal Communications Commissions (FCC) and the Occupational Safety and Health Administration (OSHA) with regard to Human Exposure to Radio Frequency Radiation. I have been trained in the procedures and requirements outlined in AT&T's RF Exposure: Responsibilities, Procedures & Guidelines document.



_____ 2/6/2018

I, Scott Heffernan, reviewer and approver of this report certify that I am fully trained and aware of the Rules and Regulations of both the Federal Communications Commissions (FCC) and the Occupational Safety and Health Administration (OSHA) with regard to Human Exposure to Radio Frequency Radiation. I have been trained in the procedures and requirements outlined in AT&T's RF Exposure: Responsibilities, Procedures & Guidelines document.

_____ 2/6/2018

APPENDIX E: PROPRIETARY STATEMENT

This report was prepared for the use of AT&T Mobility, LLC to meet requirements specified in AT&T's corporate RF safety guidelines. It was performed in accordance with generally accepted practices of other consultants undertaking similar studies at the same time and in the same locale under like circumstances. The conclusions provided by Centerline Communications, LLC are based solely on the information provided by AT&T Mobility and all observations in this report are valid on the date of the investigation. Any additional information that becomes available concerning the site should be provided to Centerline Communications, LLC so that our conclusions may be revised and modified, if necessary. This report has been prepared in accordance with Standard Conditions for Engagement and authorized proposal, both of which are integral parts of this report. No other warranty, expressed or implied, is made.

Middlesex South Registry of Deeds

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SPACE ABOVE FOR REGISTRY USE ONLY

QUITCLAIM DEED

The undersigned, SPUS7 150 CAMBRIDGEPARK, LP, a Delaware limited partnership, having an address at 515 South Flower Street, 31st Floor, Los Angeles, California 90071 ("Grantor"), for consideration paid and in full consideration of ONE HUNDRED NINETEEN MILLION SEVEN HUNDRED THOUSAND AND 00/100 DOLLARS ($119,700,000.00) paid, GRANTS with QUITCLAIM COVENANTS to PPF OFF 150 CAMBRIDGE PARK DRIVE, LLC, a Delaware limited liability company, having an address at 1585 Broadway, 37th Floor, New York, New York 10036 ("Grantee"), the land and all improvements thereon located in the City of Boston, County of Suffolk, Commonwealth of Massachusetts being more particularly described on Exhibit A attached hereto and made a part hereof.

For Grantor's title see Deed from BRE/CPD LLC, dated November 4, 2014, recorded in Book 64476, Page 530.

Said premises are conveyed subject to, and with all benefits of, real property taxes not yet due and payable, leases, and all matters of record including (but not limited to) liens, easements, encumbrances, covenants, conditions and restrictions, and all matters that would be revealed by an accurate survey of said premises, as the same are now in force and are applicable. Reference is hereby made to that certain Draft Notice of Activity and Use Limitation dated February 19, 2014, signed by BRE/CPD L.L.C., recorded with the Middlesex County (South) Registry of Deeds at Book 63312, Page 493, the terms of which are incorporated herein in their entirety by this reference and for all purposes.

Grantor certifies that it has not elected to be treated as a corporation for federal tax purposes for the current taxable year.

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Property Address: 150 CambridgePark Drive, Cambridge, Massachusetts

IN WITNESS WHEREOF, the said Grantor has executed this Quitclaim Deed as a sealed instrument as of the 14th day of June, 2017.

GRANTOR:

SPUS7 150 CAMBRIDGEPARK, LP,
a Delaware limited partnership

By: SPUS7 150 Cambridgepark GP, LLC,
a Delaware limited liability company,
its general partner

By: _____
Name: JOHN M. GILB
Title: VICE PRESIDENT

By: _____
Name: ROBERT JUE
Title: VICE PRESIDENT

ACKNOWLEDGMENT

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.

State of California
County of Los Angeles)

On June 14th, 2017 before me, Regina Heffler, Notary Public
(insert name and title of the officer)

personally appeared John M Gilb and Robert Jue ,
who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

Signature _____

REGINA HEFFLER
Notary Public - California
Los Angeles County
Commission # 2158899
My Comm. Expires Jul 2, 2020

(Seal)

EXHIBIT A

LEGAL DESCRIPTION OF THE PROPERTY

Real property in the City of Cambridge, County of Middlesex, Commonwealth of Massachusetts, described as follows:

Real Property in the City of Cambridge, County of Middlesex South, Commonwealth of Massachusetts, described as follows:

150 CambridgePark Drive – Lot 4

A certain parcel of land situated in Cambridge, Middlesex County, Massachusetts bounded and described as follows:

Beginning at a point on the southerly line of CambridgePark Drive at the northwesterly corner of land now or formerly of Samuels CambridgePark Drive LLC; thence

S 00 degrees 54' 16" E in part along said land now or formerly of Samuels CambridgePark Drive LLC and in part along land now or formerly of 76R CambridgePark Realty LLC a distance of two

hundred seventy-five and 23/100 (275.23) feet to a point at the corner of Lot 5 as shown on the plan referenced below; thence

S 74 degrees 53' 40" W a distance of ninety and 14/100 (90.14) feet to a point; thence

N 76 degrees 48' 28" W a distance of twenty-two and 50/100 (22.50) feet to a point; thence

N 66 degrees 15' 38" W a distance of sixty-nine and 29/100 (69.29) feet to a point; thence

N 76 degrees 55' 35" W a distance of one hundred seventy-four and 49/100 (174.49) feet to a point; thence

N 89 degrees 25' 05" W a distance of fifty-three and 66/100 (53.66) feet to a point; thence

S 18 degrees 38' 05" W a distance of one hundred sixty-three and 15/100 (163.15) feet to a point on the northerly line of land now or formerly of Boston and Maine Railroad, the last six (6) courses by said Lot 5; thence

WESTERLY along a curve to the left having a radius of one thousand five hundred twenty-eight and 16/100 (1,528.16) feet an arc distance of fifty-nine and 00/100 (59.00) feet to a point; thence

N 71 degrees 32' 24" W a distance of one hundred eighty-one and 28/100 (181.28) feet to a point at land now or formerly of Cambridge Park Apartments Limited Partnership, the last two (2) courses by said land now or formerly of Boston and Maine Railroad; thence

N 13 degrees 44' 43" E by said land now or formerly of CambridgePark Apartments Limited Partnership a distance of four hundred five and 94/100 (405.94) feet to a point on the southerly line of said CambridgePark Drive; thence

S 76 degrees 31' 48" E along said southerly line of CambridgePark Drive a distance of two hundred forty-eight and 62/100 (248.62) feet to a point at land now or formerly of KT Cambridge Park, LLC; thence

S 13 degrees 28' 12" W a distance of two hundred ten and 30/100 (210.30) feet to a point; thence

S 73 degrees 43' 30" E a distance of two hundred sixty-four and 59/100 (264.59) feet to a point; thence

S 82 degrees 32' 29''E a distance of one hundred six and 76/100 (106.76) feet to a point; thence

N 00 degrees 54' 16" W a distance of two hundred sixty and 00/100 (260.00) feet to a point on said southerly line of CambridgePark Drive, the last four (4) courses by said land now or formerly of KT Cambridge Park, LLC; thence

S 88 degrees 20' 16" E along said southerly line of CambridgePark Drive a distance of twenty-six and 33/100 (26.33) feet to the point of beginning.

Containing an area of 125,089 square feet or 2.872 acres of land, more or less, as shown on a plan entitled "PLAN OF LAND -130, 150, AND 180R CAMBRIDGEPARK DRIVE IN CAMBRIDGE, MASSACHUSETTS," prepared by BSC Group, Inc., dated February 18, 2014 and recorded February 25, 2014 as Plan 133 of 2014.

NOTE: 150 Cambridgepark Drive was previously described as Lot A on Plan 895 of 1989. There was a subdivision in 2012, and 150 Cambridgepark Drive is now Lot 2 shown on Plan 732 of 2012, which includes a portion of the aforementioned Lot A, a portion of Lot D on the same plan,

and a portion of Lot C-2 shown on Plan 993 of 1997. Lots A, D and C-2 were previously part of 180 and 180R Cambridgepark Drive.

MARTHA COAKLEY
ATTORNEY GENERAL

THE COMMONWEALTH OF MASSACHUSETTS
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June 12, 2013

Gail Garrett, Town Clerk
Town of Mount Washington
118 East Street
Mount Washington, MA 01258

RE: Mount Washington Special Town Meeting of April 1, 2013 - Case # 6642
Warrant Articles # 1, 2, and 3 (Zoning)

Dear Ms. Garrett:

Articles 1, 2, and 3 - We approve the amendments to the Town by-laws adopted under Articles 1, 2, and 3 on the warrant for the Mount Washington Special Town Meeting that convened on April 1, 2013, and the map pertaining to Article 3. Our comments on Articles 1 and 2 are provided below.

Article 1 - The amendments adopted under Article 1 add a new Section 215-27 to the zoning by-laws entitled "Wireless Telecommunication Facility Zoning Bylaw." We approve the new Section 215-27, but offer the following comments.

I. Applicable Law

The federal Telecommunications Act of 1996, 47 U.S.C. § 332 (7) preserves state and municipal zoning authority to regulate personal wireless service facilities, subject to the following limitations:

1. Zoning regulations "shall not unreasonably discriminate among providers of functionally equivalent services." 47 U.S.C. §332(7) (B) (i) (I)

2. Zoning regulations "shall not prohibit or have the effect of prohibiting the provisions of personal wireless services." 47 U.S.C. § 332 (7) (B) (i) (II).

3. The Zoning Authority "shall act on any request for authorization to place, construct, or modify personal wireless service facilities within a reasonable period of time." 47 U.S.C.

§ 332 (7) (B) (ii).

4. Any decision "to deny a request to place, construct, or modify personal wireless service facilities shall be in writing and supported by substantial evidence contained in a written record." 47 U.S.C. § 332 (7) (B) (iii).

5. "No state or local government or instrumentality thereof may regulate the placement, construction and modification of personal wireless service facilities on the basis of the environmental effects of radio frequency emissions to the extent that such facilities comply with the [Federal Communications] Commission's regulations concerning emissions." 47 U.S.C. § 332(7) (B) (iv).

Federal courts have construed the limitations listed under 47 U.S.C. § 332(7) as follows. First, even a facially neutral by-law may have the effect of prohibiting the provision of wireless coverage if its application suggests that no service provider is likely to obtain approval. "If the criteria or their administration effectively preclude towers no matter what the carrier does, they may amount to a ban 'in effect'...." Town of Amherst, N.H. v. Omnipoint Communications Enters, Inc., 173 F.3d 9, 14 (1st Cir. 1999).

Second, local zoning decisions and by-laws that prevent the closing of significant gaps in wireless coverage have been found to effectively prohibit the provision of personal wireless services in violation of 47 U.S.C. § 332(7). See, e.g., Nat'l Tower, LLC v. Plainville Zoning Bd. of Appeals, 297 F.3d 14, 20 (1st Cir. 2002) ("local zoning decisions and ordinances that prevent the closing of significant gaps in the availability of wireless services violate the statute"); Omnipoint Communications MB Operations, LLC v. Town of Lincoln, 107 F. Supp. 2d 108, 117 (D. Mass. 2000) (by-law resulting in significant gaps in coverage within town had effect of prohibiting wireless services).

Third, whether the denial of a permit has the effect of prohibiting the provision of personal wireless services depends in part upon the availability of reasonable alternatives. See 360 Degrees Communications Co. v. Bd. of Supervisors, 211 F.3d 79, 85 (4th Cir. 2000). Zoning regulations must allow cellular towers to exist somewhere. Towns may not effectively ban towers throughout the municipality, even under the application of objective criteria. See Virginia Metronet, Inc. v. Bd. of Supervisors, 984 F. Supp. 966, 971 (E.D. Va. 1998).

State law also establishes certain limitations on a municipality's authority to regulate wireless communications facilities and service providers. Under General Laws Chapter 40A, Section 3, wireless service providers may apply to the Department of Telecommunications and Cable for an exemption from local zoning requirements. If a telecommunication provider does not apply for or is not granted an exemption under c. 40A, § 3, it remains subject to local zoning requirements pertaining to cellular towers. See Building Comm'r of Franklin v. Dispatch Communications of New England, Inc., 48 Mass. App. Ct. 709, 722 (2000). Also, G.L. c. 40J, § 6B, charges the Massachusetts Broadband Institute with the task of promoting broadband access throughout the state. Municipal regulation of broadband service providers must not frustrate the achievement of this statewide policy.

In addition, Section 6409 of the Middle Class Tax Relief and Job Creation Act of 2012

requires 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." (emphasis added). The Act defines "eligible facilities request" as any request for modification of an existing wireless tower or base station that involves: 1) collocation of new transmission equipment; 2) removal of transmission equipment; or 3) replacement of transmission equipment. The Act applies "[n]otwithstanding section 704 of the Telecommunications Act of 1996." The Act's requirement that a local government "may not deny, and shall approve, any eligible facilities request" means that a request for modification to an existing facility that does not substantially change the physical dimensions of the tower or base station must be approved. Such qualifying requests also cannot be subject to a discretionary special permit.

We approve the new Section 215-27. However, the Town must apply the by-law in a manner consistent with the applicable law outlined above. In particular, Section IV of the new by-law requires that Wireless Telecommunication Facilities are only allowed by special permit in the Wireless Telecommunication Overlay District. This requirement cannot be applied to eligible facilities requests for modification to existing facilities which qualify for required approval under Section 6409 of the Act, as described above. We urge the Town to consult closely with Town Counsel regarding the appropriate response to applications for collocation in light of these recent amendments.

II. Analysis of Mount Washington's Wireless Telecommunication Facility By-Law

A. Section VIII "Criteria For Approval and Conditions".

This section provides as follows:

> 5. The applicant will remove the Facility, should the Facility be abandoned or cease to operate. The Planning Board may require the applicant to provide a bond, or other form of financial guarantee acceptable to the Planning Board to cover the cost of removal of the Facility, should the Facility be abandoned or cease to operate, and ensure other compliance hereunder.

The Town must apply any bond or other financial guarantee proceeds in a manner consistent with state law. Bond proceeds do not become Town funds unless and until the applicant defaults on the obligation under the proposed by-law. Moreover, if the Town must use the bond to pay for removal of a wireless communication facility or the repair and/or restoration of the premises, an appropriation is required before expenditure is made to do the work. General Laws Chapter 44, Section 53, provides that "[a]ll moneys received by a city, town or district officer or department, except as otherwise provided by special acts and except fees provided for by statute, shall be paid by such officers or department upon their receipt into the city, town or district treasury." Under Section 53 all moneys received by the Town become a part of the general fund, unless the Legislature has expressly made other provisions that are applicable to such receipt. In the absence of any general or special law to the contrary, performance security funds of the sort contemplated here must be deposited with the Town Treasurer and made part of the Town's general fund, pursuant to G.L. c. 44, § 53. The Town must then appropriate the money for the specific purpose of completing the work required for removal and/or restoration.

B. Section X "Permit Revocation For Non-Performance".

Section X authorizes the Planning Board to revoke a special permit for failure to comply with certain conditions. We approve Section X. However, before the Planning Board revokes a permit for failure to comply with certain conditions provided in Section X, the Planning Board should discuss with Town Counsel what due process, including notice and hearing requirements, are required. We suggest that the Town discuss this issue in more detail with Town Counsel.

Finally, the word "ordinance" is used in the by-law. Towns enact "by-laws" and cities enact "ordinances." The Town may wish delete the word "ordinance" from the new Section 215-27 and insert the word "by-law" at a future Town Meeting.

Article 2 - The amendments adopted under Article 2 add a new Section 215-28, "Solar Photovoltaic Installation Moratorium Bylaw," to the Town's zoning by-laws. The temporary moratorium (through one year from the date of enactment of Section 215-28) on solar photovoltaic installation other than those mounted on an existing structure provides as follows:

> Whereas, the Town of Mount Washington is undertaking a comprehensive study with respect to regulating the use of land for Solar Photovoltaic Installations, and
>
> Whereas, there have been significant changes in law regarding Solar Photovoltaic Installations; and,
>
> Whereas, the Town wishes to act carefully in a field with evolving law and technology, to investigate ways to preserve the character of the community while serving the needs of its people, and to devise an orderly process for granting permits by drafting an amendment to the Bylaw which is comprehensive, practical, equitable, and addresses the concerns of the Town on number, size, appearance, site standards, and location of Solar Photovoltaic Installations; and,
>
> Whereas, it is desired to protect the Town from ill-advised and inappropriate development of Solar Photovoltaic Installations pending a thorough review and the formulation of such a zoning amendment; and,
>
> Whereas, the Planning Board has determined that one year is necessary for such a comprehensive review and development of a Bylaw Subsection on Solar Photovoltaic Installations.
>
> Now, therefore, no Solar Photovoltaic Installations other than those mounted on an existing structure, in the usual manner, shall be permitted for one year from the date of enactment of this Bylaw.

We approve the temporary moratorium adopted under Article 2 because the Town has the authority to "impose reasonable time limitations on development, at least where those restrictions are temporary and adopted to provide controlled development while the municipality engages in comprehensive planning studies." Sturges v. Chilmark, 380 Mass. 246, 252-253 (1980). Such a temporary moratorium is within the Town's zoning power where there is a stated need for "study, reflection and decision on a subject matter of [some] complexity..." W.R.

Grace v. Cambridge City Council, 56 Mass. App. Ct. 559, 569 (2002) (City's temporary moratorium on building permits in two districts was within city's authority to zone for public purposes.) The time limit Mount Washington has selected for its temporary moratorium (one year from the date of enactment of the by-law) appears to be reasonable in the circumstances. The moratorium is limited in time period and scope (to the use of land and structures for solar photovoltaic installations), and thus does not present the problem of a rate-of-development bylaw of unlimited duration which the Zuckerman court determined was unconstitutional. Zuckerman v. Hadley, 442 Mass. 511, 512 (2004) ("[A]bsent exceptional circumstances not present here, restrictions of unlimited duration on a municipality's rate of development are in derogation of the general welfare and thus are unconstitutional.")

While we approve the temporary one year moratorium on solar photovoltaic installations, we note that G.L. c. 40A, § 3, protects solar energy systems and the building of structures that facilitate the collection of solar energy from certain local zoning requirements. General Laws Chapter 40A, Section 3, provides in pertinent part as follows:

> No zoning ordinance or by-law shall prohibit or unreasonably regulate the installation of solar energy systems or the building of structures that facilitate the collection of solar energy, except where necessary to protect the public health, safety or welfare.

General Laws Chapter 40A, Section 3, prohibits towns from adopting zoning by-laws that prohibit or *unreasonably regulate* the installation of solar energy systems or the building of structures that facilitate the collection of solar energy, except where necessary to protect the public health, safety or welfare. A temporary moratorium longer than one year may be vulnerable to a challenge in court that it is an unreasonable regulation of solar energy systems under G.L. c. 40A, § 3. We suggest the Town consult closely with Town Counsel on this issue.

Note: Pursuant to G.L. c. 40, § 32, neither general nor zoning by-laws take effect unless the Town has first satisfied the posting/publishing requirements of that statute. Once this statutory duty is fulfilled, (1) general by-laws and amendments take effect on the date these posting and publishing requirements are satisfied unless a later effective date is prescribed in the by-law, and (2) zoning by-laws and amendments are deemed to have taken effect from the date they were approved by the Town Meeting, unless a later effective date is prescribed in the by-law.

Very truly yours,
MARTHA COAKLEY
ATTORNEY GENERAL
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By: Kelli E. Gunagan
Assistant Attorney General
Municipal Law Unit
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cc: Town Counsel Joel Bard (via electronic mail)

MAURA HEALEY
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February 23, 2015

Debra A. Bourbeau, Town Clerk
Town of Montague
1 Avenue A
Montague, MA 01376

RE: Montague Special Town Meeting of October 29, 2014 - Case # 7451
Warrant Article # 17 (Zoning)

Dear Ms. Bourbeau:

Article 17 - We approve Article 17 from the October 29, 2014 Montague Special Town Meeting. Article 17 amends several portions of the Town's zoning by-laws pertaining to site plan review.

1. Section 5.2 (d), Permitted Uses and Special Permits - Procedures

Section 5.2 (d) was deleted in its entirety and replaced with new text that provides as follows (with emphasis added):

> All applications for Special Permits and Site Plan Review from the Board of Appeals or the Planning Board shall be subject to the procedural requirements established by the respective Board. The Board of Appeals or Planning Board may determine that the assistance of outside professional expertise is required due to the size, scale, or complexity of a given project or its potential impact on the health, safety, and welfare of the Town. When outside review is determined to be necessary, the Board may require the applicant pay all reasonable expenses for this purpose, in accordance with the Board's regulations and M.G.L. Chapter 44 Section 53G.

General Laws Chapter 44, Section 53G, authorizes zoning boards, planning boards, boards of health, and conservation commissions, acting under authority conferred by G.L. c. 40A, § 9 and 12, c. 41, § 81Q, c. 40B, § 21, c. 111; and c. 40, § 8C, to impose consultant review fees, to disburse the funds collected, and to return unused portions to the applicant. However, the Legislature did not include Boards acting under the authority conferred solely by a local law within the small class of local boards that enjoy the benefits of G.L. c. 44, § 53G. When the Board is reviewing a site plan application based solely on the authority granted under local law, it cannot avail itself of the provisions of G.L. c. 44, § 53G. We suggest that the Town discuss this issue in more detail with Town Counsel.

2. Section 7.5.2, Telecommunication Facilities - General Provisions

Section 7.5.2, was deleted in its entirety and replaced with new text that provides as follows:

> Telecommunication Facilities may be allowed by Special Permit from the Board of Appeals pursuant to Sections 5.2 and Section 7.5. Conditions shall maximize the shared use of any new or existing structures to minimize the required number of such facilities; and shall minimize[e] adverse visual impacts through careful design, siting, and screening. No facility shall be located in a (RS) Residential District. (see: Section 2, Definitions).

Section 7.5.2 must be applied in a manner consistent with Section 6409 of the Middle Class Tax Relief and Job Creation Act of 2012, which requires 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." (emphasis added). The Act defines "eligible facilities request" as any request for modification of an existing wireless tower or base station that involves: 1) collocation of new transmission equipment; 2) removal of transmission equipment; or 3) replacement of transmission equipment. The Act applies "[n]otwithstanding section 704 of the Telecommunications Act of 1996." The Act's requirement that a local government "may not deny, and shall approve, any eligible facilities request" means that a request for modification to an existing facility that does not substantially change the physical dimensions of the tower or base station must be approved. Such qualifying requests also cannot be subject to a discretionary special permit.

The Town must apply Section 7.5.2 in a manner consistent with the applicable law outlined above. We also urge the Town to consult closely with Town Counsel regarding the appropriate response to applications for collocation in light of these recent amendments.

Note: Pursuant to G.L. c. 40, § 32, neither general nor zoning by-laws take effect unless the Town has first satisfied the posting/publishing requirements of that statute. Once this statutory duty is fulfilled, (1) general by-laws and amendments take effect on the date these posting and publishing requirements are satisfied unless a later effective date is prescribed in the by-law, and (2) zoning by-laws and amendments are deemed to have taken effect from the

date they were approved by the Town Meeting, unless a later effective date is prescribed in the by-law.

Very truly yours,

MAURA HEALEY
ATTORNEY GENERAL
Nicole B. Caprioli

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cc: Town Counsel Gregg J. Corbo

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February 10, 2015

Trudy L. Reid, Town Clerk
Town of Lynnfield
55 Summer Street
Lynnfield, MA 01940

RE: Lynnfield Fall Annual Town Meeting of October 20, 2014 - Case # 7408
Warrant Articles # 12, 13 and 14 (Zoning)
Warrant Articles # 16 and 17 (General)

Dear Ms. Reid:

Articles 12, 13, 14, 16 and 17 - We approve Articles 12, 13, 14, 16 and 17 from the October 20, 2014 Lynnfield Fall Annual Town Meeting. Our comments regarding Article 14 are provided below.

Article 14 - Article 14 makes a number of changes to the Town's zoning by-laws pertaining to Radio Telecommunication Facilities (RTF) and Personal Wireless Service Facilities (PWSF) including adding new definitions to Section 2, amending Section 7.4, "Site Plan" to add a new sub-section 7.4A "Additional Requirements for Personal Wireless Service Facilities"; and amending Section 8, "Special Permits" to add a new sub-section 8.7, "Siting of Radio Telecommunications Facilities."

I. Applicable Law

The federal Telecommunications Act of 1996, 47 U.S.C. § 332 (7) preserves state and municipal zoning authority to regulate personal wireless service facilities, subject to the following limitations:

1. Zoning regulations "shall not unreasonably discriminate among providers of functionally equivalent services." 47 U.S.C. §332(7) (B) (i) (I)

2. Zoning regulations "shall not prohibit or have the effect of prohibiting the provisions of personal wireless services." 47 U.S.C. § 332 (7) (B) (i) (II).

3. The Zoning Authority "shall act on any request for authorization to place, construct, or modify personal wireless service facilities within a reasonable period of time." 47 U.S.C. § 332 (7) (B) (ii).

4. Any decision "to deny a request to place, construct, or modify personal wireless service facilities shall be in writing and supported by substantial evidence contained in a written record." 47 U.S.C. § 332 (7) (B) (iii).

5. "No state or local government or instrumentality thereof may regulate the placement, construction and modification of personal wireless service facilities on the basis of the environmental effects of radio frequency emissions to the extent that such facilities comply with the [Federal Communications] Commission's regulations concerning emissions." 47 U.S.C. § 332(7) (B) (iv).

Federal courts have construed the limitations listed under 47 U.S.C. § 332(7) as follows. First, even a facially neutral by-law may have the effect of prohibiting the provision of wireless coverage if its application suggests that no service provider is likely to obtain approval. "If the criteria or their administration effectively preclude towers no matter what the carrier does, they may amount to a ban 'in effect'...." Town of Amherst, N.H. v. Omnipoint Communications Enters, Inc., 173 F.3d 9, 14 (1st Cir. 1999).

Second, local zoning decisions and by-laws that prevent the closing of significant gaps in wireless coverage have been found to effectively prohibit the provision of personal wireless services in violation of 47 U.S.C. § 332(7). See, e.g., Nat'l Tower, LLC v. Plainville Zoning Bd. of Appeals, 297 F.3d 14, 20 (1st Cir. 2002) ("local zoning decisions and ordinances that prevent the closing of significant gaps in the availability of wireless services violate the statute"); Omnipoint Communications MB Operations, LLC v. Town of Lincoln, 107 F. Supp. 2d 108, 117 (D. Mass. 2000) (by-law resulting in significant gaps in coverage within town had effect of prohibiting wireless services).

Third, whether the denial of a permit has the effect of prohibiting the provision of personal wireless services depends in part upon the availability of reasonable alternatives. See 360 Degrees Communications Co. v. Bd. of Supervisors, 211 F.3d 79, 85 (4th Cir. 2000). Zoning regulations must allow cellular towers to exist somewhere. Towns may not effectively ban towers throughout the municipality, even under the application of objective criteria. See Virginia Metronet, Inc. v. Bd. of Supervisors, 984 F. Supp. 966, 971 (E.D. Va. 1998).

State law also establishes certain limitations on a municipality's authority to regulate wireless communications facilities and service providers. Under General Laws Chapter 40A, Section 3, wireless service providers may apply to the Department of Telecommunications and Cable for an exemption from local zoning requirements. If a telecommunication provider does not apply for or is not granted an exemption under c. 40A, § 3, it remains subject to local zoning requirements pertaining to cellular towers. See Building Comm'r of Franklin v. Dispatch Communications of New England, Inc., 48 Mass. App. Ct. 709, 722 (2000). Also, G.L. c. 40J, § 6B, charges the Massachusetts Broadband Institute with the task of promoting broadband access throughout the state. Municipal regulation of broadband service providers must not frustrate the achievement of this statewide policy.

In addition, Section 6409 of the Middle Class Tax Relief and Job Creation Act of 2012 requires 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." (emphasis added). The Act defines "eligible facilities request" as any request for modification of an existing wireless tower or base station that involves: 1) collocation of new transmission equipment; 2) removal of transmission equipment; or 3) replacement of transmission equipment. The Act applies "[n]otwithstanding section 704 of the Telecommunications Act of 1996." The Act's requirement that a local government "may not deny, and shall approve, any eligible facilities request" means that a request for modification to an existing facility that does not substantially change the physical dimensions of the tower or base station must be approved. Such qualifying requests also cannot be subject to a discretionary special permit.

The Town must apply Article 14 in a manner consistent with the applicable law outlined above. In particular, Section 8.7.5.1 requires that PWSF may only be erected upon the grant of a special permit. The Town cannot apply this requirement to eligible facilities requests for modification to existing facilities that qualify for required approval under Section 6409 of the Act. We also urge the Town to consult closely with Town Counsel regarding the appropriate response to applications for collocation in light of these recent amendments.

II. Section 8.7, Siting of Radio Telecommunications Facilities

A. Section 8.7.2, Purpose

Section 8.7.2 provides that the purpose of the by-law is to establish general guidelines for the siting of RTFs. Section 8.7.2 (4) establishes one of the by-law's goals as "[t]o make all RTF locations available for municipal agencies use where feasible."

It is unclear whether Section 8.7.2 (4) would require the Town's use of the RTF, and whether such use would be compensated or uncompensated. When applying the by-law, the Town cannot require an applicant to transfer property to the public without fair compensation. "The Fifth Amendment to the United States Constitution, made applicable to the States through the Fourteenth Amendment, provides that private property shall not 'be taken for public use, without just compensation.'" This protection is "designed to bar Government from forcing some people alone to bear public burdens which, in all fairness and justice, should be borne by the public as a whole." Giovanella v. Conservation Commission of Ashland, 447 Mass. 720, 724 (2006) (*quoting* Armstrong v. United States, 364 U.S. 40, 49 (1960). More recently, the court in Collins v. Stow, 79 Mass. App. Ct. 447 (2011) ruled that a town cannot condition subdivision approval on the dedication of open space for public use and actual conveyance of the land to the Town in exchange for waivers. "Although a planning board's authority under the subdivision control law certainly encompasses, in appropriate circumstances, requiring open space, it does not extend to requiring the transfer of that open space to the public for reasons unrelated to adequate access and safety of the subdivision without providing just compensation." Id. at 453. We suggest that the Town consult with Town Counsel regarding the proper application of Section 8.7.2 (4).

B. Section 8.7.5.4, General

Section 8.7.5.4.1 provides in relevant part that:

> An undertaking shall be required, secured by a BOND appropriate in form and amount for removal of the PWSF within 6 months of cessation of operation of said facility or such other activity which may be appropriate to prevent the structures from becoming a nuisance or aesthetic blights.

The Town must apply any bond proceeds in a manner consistent with state law. Bond proceeds do not become Town funds unless and until the applicant defaults on the obligation under the by-law. Moreover, if the Town must use the bond to pay for removal of a PWSF or for other activity to prevent nuisance or blight, an appropriation is required before expenditure is made to do the work. General Laws Chapter 44, Section 53, provides that "[a]ll moneys received by a city, town or district officer or department, except as otherwise provided by special acts and except fees provided for by statute, shall be paid by such officers or department upon their receipt into the city, town or district treasury." Under Section 53 all moneys received by the Town become a part of the general fund, unless the Legislature has expressly made other provisions that are applicable to such receipt. In the absence of any general or special law to the contrary, performance security funds of the sort contemplated here must be deposited with the Town Treasurer and made part of the Town's general fund, pursuant to G.L. c. 44, § 53. The Town must then appropriate the money for the specific purpose of completing the work required for removal and/or other activities. The Town should consult with Town Counsel regarding the proper application of Section 8.7.5.4.

C. Section 8.7.5.5, Application Procedures

Section 8.7.5.5 pertaining to the Special Permit application provides in relevant part, that:

> The Application Phase of the process begins with the receipt by the SPGA of a complete application including all materials required by the Zoning Bylaw and any applicable regulations.
>
> *****
>
> Within 30 days of receipt, the SPGA or its designee shall review the application for consistency and completeness with respect to the Application Requirements in the bylaw and any applicable regulations and shall notify the Applicant in writing of any deficiency in the completeness of the application.
>
> *****
>
> The SPGA shall take regulatory notice of the Federal Communications Commission (FCC) presumption that the final action of the SPGA on a new Antenna Tower should take no more than 150 days from the date of receipt of the completed application, and that final action on a Collocation or Site Sharing application should take no more than 90 days from the date of receipt of the completed application except upon written

extension of these timelines by mutual agreement between the SPGA and the Applicant.

Section 8.7.5.5 must be applied in a manner consistent with the time limits established in G.L. c. 40A, § 9. General Laws Chapter 40A, Section 9, requires that the special permit granting authority "shall hold a public hearing for which notice has been given as provided in section eleven, on any application for a special permit within sixty-five days from the date of filing of such application. . . . The decision of the special permit granting authority shall be made within ninety days following the date of such public hearing. . . Failure by the special permit granting authority to take final action within . . . ninety days . . . shall be deemed to be a grant of the special permit." (emphasis added).

Pursuant to G.L. c. 40A, § 9, the filing of a special permit application "starts the clock" on the time period within which the special permitting authority must act. Section 8.7.5.5 cannot be applied in a manner that "starts the clock" only when a *completed* application is filed. The Town must apply Section 8.7.5.5 consistent with G.L. c. 40A, § 9. *See* Massachusetts Broken Stone Co. v. Town of Weston, 430 Mass. 637, 642 (2000). The Town should consult with Town Counsel regarding the proper application of Section 8.7.5.5.

Note: Pursuant to G.L. c. 40, § 32, neither general nor zoning by-laws take effect unless the Town has first satisfied the posting/publishing requirements of that statute. Once this statutory duty is fulfilled, (1) general by-laws and amendments take effect on the date these posting and publishing requirements are satisfied unless a later effective date is prescribed in the by-law, and (2) zoning by-laws and amendments are deemed to have taken effect from the date they were approved by the Town Meeting, unless a later effective date is prescribed in the by-law.

Very truly yours,

MAURA HEALEY
ATTORNEY GENERAL

Nicole B. Caprioli

By: Nicole B. Caprioli
Assistant Attorney General
Municipal Law Unit
10 Mechanic Street, Suite 301
Worcester, MA 01608
(508) 792-7600 ext. 4418
nicole.caprioli@state.ma.us

cc: Town Counsel Thomas Mullen

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

2019 SEP 23 PM 3:41
OFFICE OF THE CITY CLERK
CAMBRIDGE, MASSACHUSETTS

BZA APPLICATION FORM

Plan No: BZA-017182-2019

GENERAL INFORMATION

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

Special Permit : V **Variance :** _____ **Appeal :** _____

PETITIONER : New Cingular Wireless PCS LLC d/b/a AT&T Mobility C/O Patricia Nowak. Center

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

LOCATION OF PROPERTY : 150 Cambridgepark Dr Cambridge, MA 02140

TYPE OF OCCUPANCY : INV-OFF/Telecom **ZONING DISTRICT :** Office-2A Zone

REASON FOR PETITION :

Other: Telecommunications Upgrade

DESCRIPTION OF PETITIONER'S PROPOSAL :

This appplication is an Eligible Facilities Request pursuant to Section 6409 of the Middle Class Tax Relief and Job Creation Act of 2012, 47 U.S.C 1455: or in the alternative, for a special permit under the zoning ordinance as cited above, if and to the extent necessary, all rights reserved. AT&T will be adding (3) Antennas, (1) Dish Antenna, (6) Remote Radio Units and will also be adding and upgrading other telecommunications equipment per the attached Construction Drawings prepared by Hudson Design Group LLC dated March 7, 2019 and last revised April 16, 2019.

SECTIONS OF ZONING ORDINANCE CITED :

Article 4.000 Section 4.32.G.1 (Telecommunications Facility).
Article 4.000 Section 4.40 (Footnote 49) (Telecommunications Facility).
Article 10.000 Section 10.40 (Special Permit).
Article 6409 Section (Middle Class Tax Relief Act).

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

Patricia Nowak
(Print Name)

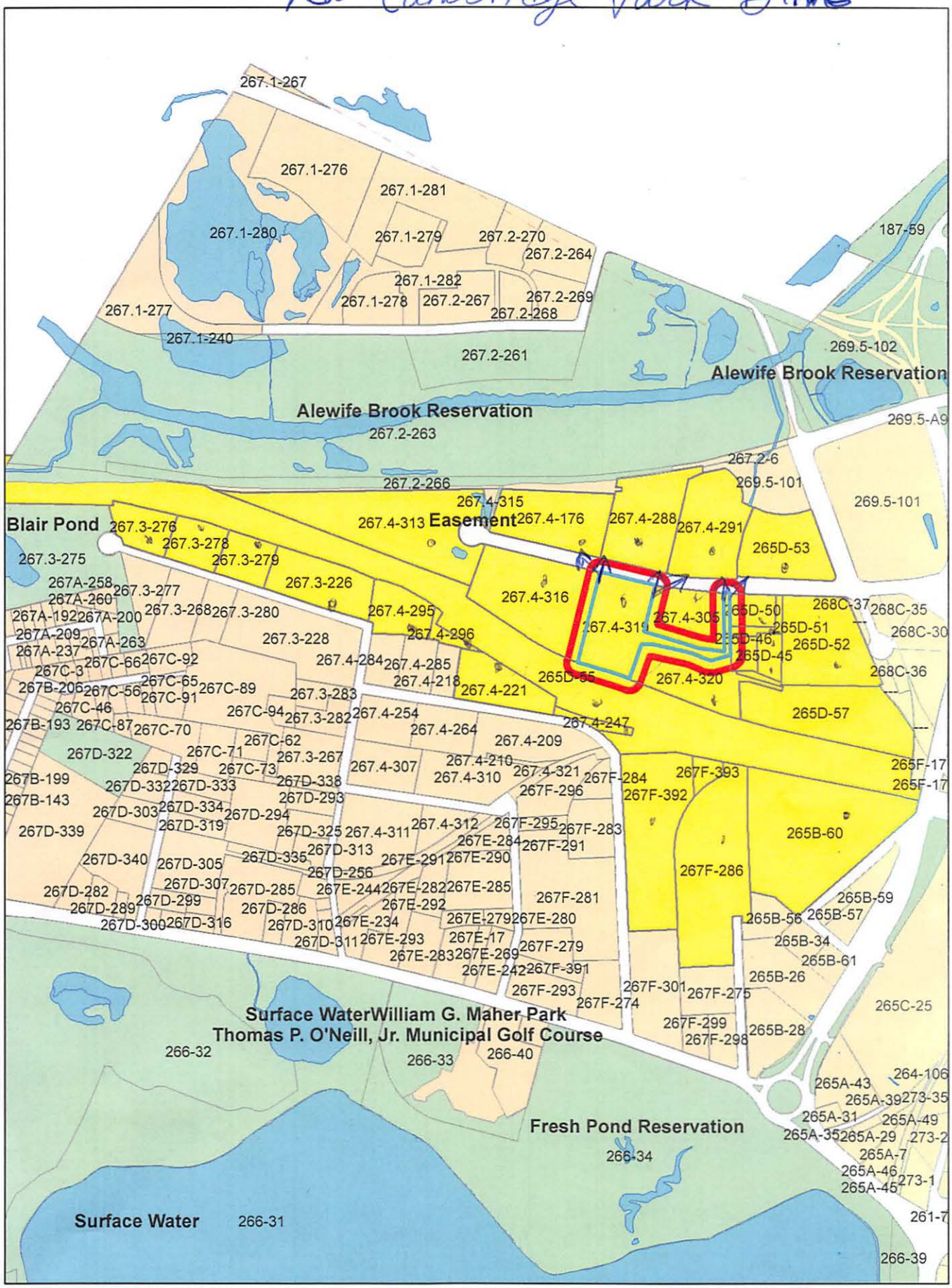
Address : 750 West Center Strat
3rd Floor, West Bridgewater MA 02140

Tel. No. : 508-265-5599

E-Mail Address : pnowak@clinellc.com

Date : 9/18/2019

150 Cambridge Park Drive



150 Cambridge Park Drive

265B-60
BOSTON EDISON COMPANY
C/O NSTAR ELECTRIC COMPANY
P.O. BOX 270, PROPERTY TAX DEPT
HARTFORD, CT 06141

265D-55
MASSACHUSETTS BAY TRANSPORTATION AUTHORITY
10 PARK PLAZA
BOSTON, MA 02116

Petitioner
CENTERLINE COMMUNICATIONS
C/O PATRICIA NOWAK, CENTERLINE COMMUNICATIONS
750 WEST CENTER STREET – 3RD. FLOOR
WEST BRIDGEWATER, MA 02379

265D-46-45-50-51
PROPERTIES AT CAMBRIDGE PARK LLC
36 CAMBRIDGEPARK DR
CAMBRIDGE, MA 02140

267.4-320
130 CPD APARTMENTS LIMITED PARTNESHIP
C/O THE HANOVER COMPANY
ATTN: EARL SMALLEY
5847 SAN FELIPE, SUITE 3600
HOUSTON, TX 77057

ANDERSON & KREIGER, LLP
C/O BRETT ROMAN, LITIGATION PARALEGAL
50 MILK STREET – 21ST FL.
BOSTON, MA 02109

265D-52
HART CAMBRIDGE LLC
C/O HEITMAN CAPITAL MANAGEMENT LLC,
191 NORTH WACKER DRIVE. SUITE 2500
CHICAGO, IL 60606

265D-53
DIV 35 CPD, LLC
125 HIGH ST. 21ST FLOOR
BOSTON, MA 02110

267F-392
FORT POINT INVESTMENTS, LLC
C/O AEW CAPITAL MANAGEMENT, LP
TWO SEAPORT LANE
BOSTON, MA 02210

267F-286
55-9 WHEELS OWNER, LLC
7121 FAIRWAY DR., SUITE 410
PALM BEACH GARDENS, FL 33418

267.3-226
THIRTEEN MOONEY STREET LLC,
C/O CCF ASVRF 45-61 MOONEY LLC,
185 DARTMOUTH ST
BOSTON, MA 02110

267.3-276
61 MOONEY STREET, LLC
C/O CCF ASVRF 45-61 MOONEY LLC,
185 DARTMOUTH ST
BOSTON, MA 02110

267.3-278
MABARDY, CHARLES J.,
TRUSTEE OF THE MICH-LIN REALTY TRUST
50 MOONEY ST
CAMBRIDGE, MA 02138

267.3-279
MABARDY, CHARLES J.
TRUSTEE OF MICH-LIN REALTY TRUST
C/O CCF ASVRF 45-61 MOONEY LLC,
185 DARTMOUTH ST
BOSTON, MA 02110

267.4-176
HINES MIP CAMBRIDGEPARK DRIVE LLC,
C/O CAMBRIDGE GF DEAL LP
599 LEXINGTON AVENUE
NEW YORK, NY 10022

267.4-221
IVANOVIC, LUDMILLA R. L.,
TR. OF 130 FAWCETT STREET REALTY TRUST
76 POWDER HOUSE ROAD
MEDFORD, MA 02155

267.4-247
BELAM REALTY LLC.
15 WARD ST
SOMERVILLE, MA 02143

267.3-275 & 267.2-263
MASSACHUSETTS COMMONWEALTH OF
STATE HOUSE
BOSTON, MA 02133

267.4-291
CPI/KING 87 CPD OWNER, LLC
200 CAMBRIDGEPARK DR
CAMBRIDGE, MA 02140

267.4-295
180A FAWCETT LLC
100 SMITH PLACE
CAMBRIDGE, MA 02138

267.4-296
FIRST MIDDLESEX REALTY LLC
170 FAWCETT ST
CAMBRIDGE, MA 02138

267.4-319-288
PPF OFF 150 CAMBRIDGE PARK DR, LLC
1585 BROADWAY, 37TH FLR
NEW YORK, NY 10036

267.4-316
IMP WINDSOR AT CAMBRIDGE PARK LLC
C/O GID INVESTMENT ADVISERS LLC
125 HIGH ST., HIGH ST TOWER 27TH FL
BOSTON, MA 02110

267.4-305
PPF OFF 100 CAMBRIDGEPARK DR LLC
MORGAN STANLEY REAL ESTATE ADVISOR INC
1585 BROADWAY 37TH FLR
NEW YORK, NY 02140

265D-57
88 CAMBRIDGE PARK LIMITED PARTNERSHIP
5847 SAN FELIPE, SUITE 3600
HOUSTON, TX 77057

267.4-313
PPF OFF 200 CAMBRIDGE PARK DRIVE, LLC
C/O MORGAN STANLEY REAL ESTATE ADVISOR
1585 BROADWAY, 37TH FLOOR
NEW YORK, NY 10036

267F-393
ONA II WHEELER, LLC
C/O O'CONNOR CAPITAL PARTNERS
535 MADISON AVENUE, 23RD FL
NEW YORK, NY 10022

September 13, 2019

Donna P. Lopez, City Clerk City of Cambridge City Hall 795 Massachusetts Avenue Cambridge, MA 02139	Constantine Alexander, Chair Board of Zoning Appeal City Hall 795 Massachusetts Avenue Cambridge, MA 02139

Applicant:	New Cingular Wireless PCS, LLC ("AT&T")
Property Address:	150 Cambridgepark Drive, Cambridge, MA Assessor's Map 267.4 - 319 (the "Property")
Re:	Application for: (i) Eligible Facilities Request pursuant to Section 6409 of the Middle Class Tax Relief and Job Creation Act of 2012, 47 U.S.C. § 1455; or, in the alternative, (ii) Special Permit under Cambridge Zoning Ordinance Section 4.32(g)(1) and M.G.L. c. 40A, Section 9; and (iii) Any other zoning relief required. (All relief if and to the extent necessary, all rights reserved)

Dear Ms. Lopez, Mr. Alexander and Members of the Board of Zoning Appeal:

Pursuant to Section 6409 of the Middle Class Tax Relief and Job Creation Act of 2012 (a/k/a the "Spectrum Act" or "Section 6409"), 47 U.S.C. § 1455, as further implemented by the Federal Communications Commission's Report and Order *In re Acceleration of Broadband Deployment by Improving Wireless Facilities Siting Policies*, FCC Docket No. 13-238, Report and Order No. 14-153 (October 17, 2014) (the "FCC Order"), New Cingular Wireless PCS, LLC ("AT&T") hereby submits this Eligible Facilities Request ("Request"); and, in the alternative, applies for a special permit from the City of Cambridge Board of Zoning Appeal (the "Board") under Section 432(g)(1) of the Cambridge Zoning Ordinance (the "Ordinance") to modify its existing "Telecommunications Facility" (the "Facility") on and within the existing building located at 150 Cambridgepark Drive, Cambridge, MA 02140 . (the "Special Permit Application").[2]

Under Section 6409, AT&T's proposed modification of its existing telecommunications facility equipment on and within the existing building does "not substantially change the physical dimensions" of the existing building. Therefore, AT&T's Request must be approved administratively, including the issuance of a building permit, to enable AT&T to make the proposed modifications to its transmission equipment.

[2] AT&T submits this Request, Special Permit application and supporting materials subject to a full and complete reservation of AT&T's rights under the Spectrum Act and the FCC Order including without limitation its rights with respect to (i) any submittal requirements or approval criteria that are inconsistent with the prohibitions established by the FCC Order, (ii) any delay beyond the deadlines established in the FCC Order, (iii) the imposition of conditions on any approval that are inconsistent with the FCC Order, and (iv) referral or requirement to a discretionary review process such as a special permit.

In the alternative, as demonstrated in this application letter, the AT&T's proposed modifications to its existing Facility on the Property located in the 0-2A zoning district satisfy the requirements for the grant of a special permit pursuant to Section 10.43 of the Ordinance.

I. APPLICATION PACKAGE

Enclosed with this application is payment to the City of Cambridge in the amount of $500.00. In addition to the signed original of this letter are copies of the letter and the following materials:

1. The following completed and signed application forms:

    a. BZA Application Form – General Information;
    b. BZA Application Form – Ownership Information;
    c. BZA Application Form – Dimensional Requirements;
    d. BZA Application Form – Supporting Statement for a Special Permit; and
    e. BZA Application Form – Check List;

2. AT&T's relevant FCC License information;

3. Drawings by Hudson Design Group, LLC consisting of 9 pages dated 4/22/19;

4. Manufacturer's specification sheets for AT&T's proposed antennas and other featured equipment;

5. Photographs of the existing building and photo simulations of the proposed modifications Facility by Hudson Design Group, LLC dated 4/9/19;

6. Radio Frequency Coverage Report, demonstrating the public need for the proposed modifications to the Facility, radio frequency coverage maps showing (a) existing or predicted coverage from neighboring facilities; and (b) coverage with the proposed Facility;

7. Structural Analysis by Hudson Design Group, LLC dated 4/16/19;

8. Maximum Permissible Exposure Study, Theoretical Report, by Centerline Communications.

9. Letter of Authorization from Owner of Subject Property;

10. Deed to subject property; and

11. Attorney General's letters to the Towns of Mount Washington, Lynnfield and Montague.

II. PROPOSED FACILITY DESIGN

The proposed modifications include the installation of three (3) antennas, nine (3) Remote Radio Units, three (3) Surge Arrestors and other ancillary equipment, all as more particularly detailed and described in the attached Drawings.

The Facility's design is shown in detail in the Drawings attached as Exhibit 3 to this application letter and featured equipment is described in the manufacturers' specification sheets attached as Exhibit 4. The photographs and photo simulations (Exhibit 5) show the existing Facility from various locations in the neighborhood around the Property and as simulated with proposed modifications. A structural analysis for the Facility demonstrates that the building is capable of supporting AT&T's proposed equipment at or near the locations shown on the Drawings (*see* Exhibit 7).

The Facility will continue to bring advanced wireless voice, text and data communications services to the surrounding areas. It will allow residents, professionals, government, businesses and students to communicate locally, nationally and internationally from virtually any location within the coverage area. In the event of an emergency, the improved Facility will allow immediate contact with fire, rescue and other emergency personnel. The improved Facility will thus enhance public health, safety and welfare both in ordinary daily living and in the event of fire, accident, medical emergency, natural disaster or other dangers.

III. BACKGROUND

AT&T is licensed by the Federal Communications Commission to construct and operate a wireless telecommunications network in various markets throughout the country, including the Commonwealth of Massachusetts and the City of Cambridge. A copy of the AT&T's FCC license that covers the area of the proposed Facility is included with this application (*see* Exhibit 2). AT&T is in the process of designing and constructing additional wireless facilities to its existing telecommunications system to serve Massachusetts. One of the key design objectives of its systems is to provide adequate and reliable coverage. Such a system requires a grid of radio transmitting and receiving links located approximately .5 to 2 miles apart, depending on the location of existing and proposed installations in the surrounding area, the extent of use of AT&T's wireless services within the network, and the existing topography and obstructions. The radio transmitting and receiving facilities operate on a line-of-sight basis, requiring a clear path from the facility to the user on the ground. In urban settings, this dynamic requires the antennas to be located on buildings at heights and in locations where the signal is not obstructed or degraded by other buildings or by topographical features such as hills.

IV. RF COVERAGE DETERMINATION

AT&T has performed a study of radio frequency coverage for the City of Cambridge and from the Property, the results of which are described in the Radio Frequency Report submitted with this application (see Exhibit 6). Without the proposed modifications to its existing Facility, AT&T has a substantial coverage gap in this area of Cambridge. AT&T has determined that the proposed modifications to the existing Facility located on the building at the Property will provide needed coverage to the targeted sections of the City and the immediately surrounding area if AT&T's antennas

are located on the building's roof at the height and in the configuration requested**.** The importance of a facility at this location is underscored by AT&T's interest in enhancing its ability to provide its most up-to-date wireless technology, known as long-term evolution technology ("LTE"), in this area to satisfy its customers' ever-increasing needs for high-speed data services. Radio frequency coverage maps included in the report are provided to pictorially and vividly show the differences in existing and proposed wireless coverage at the various bands authorized for AT&T's service. The maps show dramatic improvements to wireless coverage at all two (2) bands with the inclusion of the proposed Facility, namely, at 700 B14 and AWS MHz.

V. THE FEDERAL SPECTRUM ACT AND THE FCC ORDER

As set forth below, the proposed modifications constitute an Eligible Facilities Request pursuant to the federal Spectrum Act,[3] as further implemented by the FCC Order.[4]

Under the Spectrum Act, as further clarified by the FCC Order, the streamlined process for this Eligible Facilities Request is limited to non-discretionary review. Specifically, the FCC Order "adopt[s] an objective standard for determining when a proposed modification will 'substantially change the physical dimensions' of an existing tower or base station." *FCC Order*, ¶ 87. As stated in the FCC Order, Section 6409 "states without equivocation that the reviewing authority 'may not deny, and shall approve' any qualifying application. This directive leaves no room for a lengthy and discretionary approach to reviewing an application that meets the statutory criteria." *FCC Order*, ¶ 116.

In issuing the FCC Order and eliminating discretionary review for eligible facilities requests, the FCC's goal was to "adopt a test that is defined by specific, objective factors rather than the contextual and entirely subjective standard advocated by the IAC and municipalities." The FCC intentionally sought to reduce "flexibility" and "open ended context-specific approach" engendered by the discretionary review process:

> While we acknowledge that the IAC approach would provide municipalities with maximum flexibility to consider potential effects, we are concerned that it would invite lengthy review processes that conflict with Congress's intent. Indeed, some municipal commenters anticipate their review of covered requests under a subjective, case-by-case approach could take even longer than their review of

---

[3] Pursuant to Section 6409(a)(2) an "eligible facilities request" means any request for modification of an existing wireless tower or base station that involves—

> (A) collocation of new transmission equipment;
> (B) removal of transmission equipment; or
> (C) replacement of transmission equipment.

47 U.S.C. § 1455(a)(2).

[4] The Order was effective on February 9, 2015, except for § 1.40001, which became effective on April 8, 2015, except for §§ 1.40001(c)(3)(i), 1.40001(c)(3)(iii), 1.140001(c)(4), and 17.4(c)(1)(vii), which became effective on May 18, 2015, after approval by the Office of Management and Budget. The FCC Order makes clear that under the Spectrum Act discretionary review is not required or permitted for an Eligible Facilities Request.

> collocations absent Section 6409(a). We also anticipate that disputes arising from a subjective approach would tend to require longer and more costly litigation to resolve given the more fact-intensive nature of the IAC's open-ended and context-specific approach. We find that an objective definition, by contrast, will provide an appropriate balance between municipal flexibility and the rapid deployment of covered facilities. We find further support for this approach in State statutes that have implemented Section 6409(a), all of which establish objective standards.

FCC Order, ¶ 88.

As a result, the FCC Order implementing Section 6409 establishes clear and objective criteria for determining eligibility, limits the types of information that a municipality may require when processing an application for an eligible facilities request, and imposes a "deemed granted" remedy for failure to timely process and eligible facilities request.[5] The FCC Order also establishes significant limits on the information that can be required to be provided with an eligible facilities request and limits it to only that information "reasonably related to determining whether the request meets the requirements of this section. A State or local government may not require an applicant to submit any other documentation". 47 CFR 1.40001(c)(1).

Both before and after the FCC Order was issued, the Massachusetts Attorney General's Office provided clear guidance that an eligible request cannot be subjected to a discretionary special permit process. *See* Attorney General's letters to (i) Town of Mount Washington, dated June 12, 2014, p. 3 (ii) Town of Lynnfield, dated February 10, 2015, p. 3 (the "AG Lynnfield Letter") and (iii) Town of Montague, dated February 23, 2015, p. 2 (all attached hereto). As set forth in each letter [t]he Act's requirement that a local government 'may not deny, and shall approve, any eligible facilities request' means that a request for modification to an existing facility that does not substantially change the physical dimensions of the tower or base station must be approved. ***Such qualifying requests also cannot be subject to a discretionary special permit***.")(Emphasis added). In providing these opinions, the Attorney General's Office specifically opined that provisions in zoning ordinances that specifically required a special permit for modifications to existing facilities could not be applied to eligible facilities requests. While approving the Town of Lynnfield's Zoning Bylaw, the Attorney General stated that "Section 8.7.5.1 requires that PWSF may only be erected upon the grant of a special permit. The Town cannot apply this requirement to eligible facilities requests for modification to existing facilities that qualify for required approval under Section 6409 of the Act." *AG Lynnfield Letter*, p. 3.

Therefore, as set forth in the FCC Order and Attorney General's opinion letters, the City cannot impose a requirement that AT&T obtain a special permit, or an amendment to an existing special permit utilizing the same discretionary review process, in connection with its eligible facilities request. To the extent that the City of Cambridge's Zoning Ordinance and any prior decisions by the Board include provisions seeking to further regulate the modification of wireless communication facilities, federal law overrules those requirements. *See* Sprint Spectrum L.P. v. Town of Swansea, 574 F.Supp.2d 227, 236 (2008) (Board is obligated to consider whether its

[5] *See* 47 CFR §§1.40001(c)(1) - (c)(4).

actions would violate federal law even if a different outcome would be permitted under state law). The standard of review for an application to modify an existing wireless communication facility on an existing tower or base station is governed by the Spectrum Act and the FCC Order which require eligible facilities requests to be permitted "by right."

In addition, the FCC Order establishes a 60-day period for approval from the time of AT&T's submission. 47 CFR §1.40001(c)(2). Within the context of the Spectrum Act and FCC Order, approval means all necessary approvals to permit the proposed modifications, including the issuance of a building permit, if required. The FCC found that this 60-day period is appropriate due to "the more restricted scope of review applicable to applications under section 6409(a)." *FCC Order*, ¶ 108. If the Request is not acted upon within the 60-day period, it is deemed granted. 47 CFR §1.40001(c)(4).

As set forth below, the proposed modifications constitute an eligible facilities request. Therefore, AT&T respectfully requests the Board to find that Section 4.32(g)(1) of the Ordinance does not apply to its Request.

VI. THE PROPOSED MODIFICATIONS ARE AN ELIGIBLE FACILITIES REQUEST

Under Section 6409 and the FCC Order, a "base station" means "[a] structure or equipment at a fixed location that enables Commission-licensed or authorized wireless communications between user equipment and a communications network." 47 C.F.R §1.40001(b)(1). A Base Station includes "any structure other than a tower" that supports or houses "authorized wireless communications between user equipment and a communications network." 47 C.F.R §1.40001(b)(1). Therefore, the existing building that is currently used for FCC-licensed transmissions for personal wireless services is a "base station" for purposes of Section 6409.

AT&T proposes to modify its existing Facility as described above and depicted on the Plans submitted herewith.

The proposed modifications will not require the installation of any part of the facility on the ground outside of the building.

As a result, AT&T's proposed modifications involving the removal and replacement of the existing transmission equipment constitute an "eligible facilities request" under Section 6409. The proposed eligible facilities request is not a "substantial modification" under Section 6409 and the FCC Order because it does not:

(i) Result in an increase in "the height of the structure by more than 10% or more than ten feet, whichever is greater" because the proposed replacement antennas will be mounted and located at the same height as the existing antennas or otherwise will be located so as not to exceed 10 feet above the existing building; Protrude from the edge of the edge of the building by more than six feet because AT&T's proposed antennas will not protrude more than six feet from building façade;

(ii) Involve the installation of more than the standard number of new equipment cabinets for the technology involved, but not to exceed five cabinets no new radio communications equipment cabinets will be installed;

(iii) Require any excavation or deployment outside the current site of the tower or base station because all antennas, equipment cabinets and related equipment will be installed entirely on and within the existing building; or

(iv) Otherwise defeat the existing concealment elements of the tower or base station because the proposed replacement antennas will use the same or similar design and concealment elements as the existing antennas and will be positioned in a location and manner that continue to integrate the Facility into the existing architecture of the building. Therefore, AT&T's proposed Facility will remain aesthetically consistent with the exterior finish of the building as well as maintain the concealment elements of the original design.

See FCC Order, §1.40001(b)(7)(i)-(v).

VII. COMPLIANCE WITH THE CAMBRIDGE ZONING ORDINANCE

In the alternative, AT&T respectfully requests the Board to grant a special permit for the proposed modifications to the existing Facility.[6]

A. AT&T complies with the Wireless Communications provisions set forth in Section 4.32(g)(1), and Section 4.40, Footnote 49 of the Ordinance.

AT&T's proposed modifications comply with Section 4.32(g)(1), and Section 4.40, Footnote 49 of the Ordinance as follows:[7]

Section 4.32(g)(1): Section 4.32(g)(1) of the Ordinance allows for the use of a "*[t]elephone exchange (including switching, relay, and transmission facilities serving mobile communications systems) and any towers or antennas accessory thereto.*" Under the Table of Use Regulations beginning at Section 4.30, AT&T's proposed use of the Facility as a transmission facility serving a mobile communications system is permitted by special permit in the PUD-2 & Residence C-3A zoning district *(see* the table at Section 4.32(g)(1)).

Section 4.40, Footnote 49: Section 4.32(g)(1) includes a reference to Section 4.40, Footnote 49 which sets out the standards for granting the special permit. AT&T's proposed Facility complies with Footnote 49's standards as noted below:

[6] AT&T's request is made, if and to the extent necessary, all rights reserved. As discussed above, the FCC Order establishes a 60-day period for receipt of all necessary approvals from the time of AT&T's submission, including a building permit, if required. 47 CFR §1.40001(c)(2). If the Request is not acted upon within the 60-day period, it is deemed granted. 47 CFR §1.40001(c)(4). Therefore, AT&T expressly reserves its rights under 47 CFR §1.40001(c)(2) and (4).

[7] To the extent that Section 4.32(g)(1), and Section 4.40, Footnote 49 of the Ordinance purport to require the submission of information that is beyond the scope permitted by the FCC Order or Spectrum Act, AT&T expressly reserves, and does not waive, its right to assert that such information is not required under the Spectrum Act and the submission of such information shall not constitute a waiver of AT&T's rights pursuant thereto.

1. **The Board of Zoning Appeal shall consider "[t]he scope of or limitations imposed by any license secured from any state or federal agency having jurisdiction over such matters."**

AT&T's Response: AT&T's FCC license is included with this application and the license information included shows that AT&T is authorized to provide wireless service in the area served by the Facility (*see* Exhibit 2).

2. **The Board of Zoning Appeal shall consider "[t]he extent to which the visual impact of the various elements of the proposed facility is minimized: (1) through the use of existing mechanical elements on the building's roof or other features of the building as support and background, (2) through the use in materials that in texture and color blend with the materials to which the facilities are attached, or (3) other effective means to reduce the visual impact of the facility on the site."**

AT&T's Response: The design of the overall Facility, including the choice, height, and placement of replacement antennas and associated equipment, which will be mounted in the same manner as the existing antennas, , minimizes the visual impact of the proposed Facility. This is because the any visible antennas and equipment will be minimally visible and consistent with the elements of the existing Facility. The minimal visual impact of the Facility is shown in the photographs of the existing Facility and the photo simulations that superimpose the proposed modifications to the existing Facility (*see,* Exhibit 5).

3. **The Board of Zoning Appeal shall consider "[w]here it is proposed to erect such a facility in any residential zoning district, the extent to which there is a demonstrated public need for the facility at the proposed locations, the existence of alternative, functionally suitable sites in nonresidential locations, the character of the prevailing uses in the area, and the prevalence of other existing mechanical systems and equipment carried on or above the roof of nearby structures. The Board of Zoning Appeal shall grant a special permit to erect such a facility in a residential zoning district only upon finding that nonresidential uses predominate in the vicinity of the proposed facility's location and that the telecommunications facility is not inconsistent with the character that does prevail in the surrounding neighborhood.**

In granting a special permit the Board of Zoning Appeal shall set forth in its decision under which circumstances or procedures, if any, the permittee shall be allowed to replace and upgrade its equipment without the necessity of seeking a new special permit."

AT&T's Response: As demonstrated by the Radio Frequency Report and the associated coverage maps, AT&T has demonstrated an immediate and compelling need for the proposed modifications to its existing Facility located at the Property in order to provide substantially improved indoor coverage to residents, businesses, students and faculty, and the general public in that area. AT&T also seeks to substantially improve its ability to satisfy the ever-increasing need of its customers for data accessibility, navigation and use. This is especially critical in and around the area of

Cambridgepark Drive which also serves as home for numerous businesses. AT&T proposes to satisfy its RF coverage needs in the area by adding to the existing Facility the antennas and equipment necessary to provide the latest LTE wireless communications service technology. By modifying its existing Facility, AT&T obviates the need to construct an entirely new facility within this area of Cambridge in order to meet its wireless network coverage needs. In addition, nonresidential uses predominate in the vicinity of the Facility's location, and the facility as modified will not be inconsistent with the character that does prevail in the surrounding neighborhood. This is further bolstered by the fact that the character of the neighborhood has not substantially changed since the special permit for the existing facility was issued.

As provided in Footnote 49, AT&T requests that once permission is received from the City to site the Facility at the Property, the Board permit AT&T to replace and upgrade the equipment at this Facility in the future without further zoning proceedings or a new special permit, provided that such equipment shall meet the eligible facilities request criteria set forth in 47 CFR § 1.40001.

B. <u>AT&T complies with the Special Permit Criteria set forth in Section 10.43 of the Ordinance</u>.

Section 10.43 of the Ordinance specifies the following criteria for issuance of a special permit: "Special permits will normally be granted where specific provisions of this Ordinance are met, except when particulars of the location or use, not generally true of the district or of the uses permitted in it, would cause granting of such permit to be to the detriment of the public interest because:

(a) The requirements of this Ordinance cannot or will not be met, or

<u>AT&T's Response</u>: As provided above, AT&T's proposed modifications comply with the requirements set forth in Section 4.32(g), Footnote 49 of the Ordinance, the Spectrum Act and the eligible facilities request criteria set forth in 47 CFR § 1.40001. Granting the special permit would not be a detriment to the public interest and is consistent with the Board's obligations pursuant to the Spectrum Act and FCC Order.

(b) Traffic generated or patterns of access or egress would cause congestion, hazard, or substantial change in established neighborhood character for the following reasons, or

<u>AT&T's Response</u>: The proposed modifications to AT&T's existing Facility will not result in any change to the existing traffic on or near the Property. The Facility will continue to be unmanned and only require infrequent visits by a technician (typically two times per month for routine diagnostics and/or maintenance, except in cases of emergency), there will be no material increase in traffic or disruption to patterns of access or egress that will cause congestion, hazards or a substantial change in the established neighborhood character. AT&T's maintenance personnel will make use of the existing access roads and parking at the building. Granting the special permit would not be a detriment to the public interest and is consistent with the Board's obligations pursuant to the Spectrum Act and FCC Order.

(c) The continued operation of or the development of adjacent uses as permitted in the Zoning Ordinance would be adversely affected by the nature of the proposed use, or

AT&T's Response: As described above and illustrated on the attached photographs and photo simulations (*see* Exhibit 5) the proposed modifications to the existing Facility will result in a *de minimis* change in the appearance of the building. As a result, the Facility as a whole either will be hidden from view or will visually blend with existing characteristics of the building and the surrounding neighborhood. Because the proposed installation will not generate any traffic, smoke, dust, heat or glare, discharge noxious substances, nor pollute waterways or groundwater, it will not adversely affect residential uses on neighboring streets. Conversely, the surrounding properties and general public will benefit from the potential to enjoy improved wireless communications services. Granting the special permit would not be a detriment to the public interest and is consistent with the Board's obligations pursuant to the Spectrum Act and FCC Order.

(d) Nuisance or hazard would 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, or

AT&T's Response: Because the proposed modifications to the existing Facility will not cause the Facility to generate any traffic, smoke, dust, heat or glare, discharge noxious substances, nor pollute waterways or groundwater, no nuisance or hazard will be created to the detriment of the health, safety, or welfare of the occupants of the building or the residents of the City of Cambridge. To the contrary, the proposed Facility will benefit the City and promote the safety and welfare of its residents, businesses and drivers by providing reliable state-of-the-art digital wireless voice and data services that will improve the reliability of emergency communications with the police and fire departments by eliminating dropped or blocked calls due to inadequate signal strength or insufficient network capacity to handle call volume, particularly important during emergency situations. The Facility, as modified, will continue to comply with all federal, state and local safety requirements including the standards established by the FCC and Federal Aviation Administration (FAA). (*See* Exhibit 8 Maximum Permissible Exposure Study, Theoretical Report). Granting the special permit would not be a detriment to the public interest and is consistent with the Board's obligations pursuant to the Spectrum Act and FCC Order.

(e) For other reasons, the proposed installation would impair the integrity of the district or adjoining district or otherwise derogate from the intent or purpose of this Ordinance, or

AT&T's Response: The purpose of the Ordinance is multifaceted, the relevant aspects of which relating to wireless telecommunications facilities include the lessening of congestion in the streets, conserving health, securing safety from fire, flood, panic and other danger, conserving the value of land and buildings and natural resources, preventing blight and pollution, encouraging the most rational use of land throughout the city, including encouraging appropriate economic development, and protecting residential neighborhoods from incompatible activities.

As noted above, the proposed modifications to the existing Facility directly accord with the purposes of the Ordinance because the modifications will not result in any traffic, smoke, dust, heat or glare, discharge noxious substances, nor pollute waterways or groundwater. As the Facility will improve the ability of residents, businesses, travelers and drivers in the area to access state-of-the-art wireless technology, the City's ability to provide emergency services will be improved, as will the economic development of the City as more people will be able to conduct commerce by virtue of a mobile platform. Because the proposed modifications to the existing Facility will be installed on an existing building that includes the Facility, and the proposed modifications are consistent with the existing concealment elements, the proposed modifications to the existing Facility are in consistent with the building's character and will not affect the value of the building or the natural resources of the City. Because the proposed modifications to the existing Facility are designed to be consistent with the existing concealment elements of the Facility and characteristics of the Property, the visual impact on the underlying and adjacent zoning districts will be *de minimis*. As a result, the proposed modifications to the existing Facility are consistent with the Ordinance's purpose to allow for less intrusive wireless telecommunications facilities in all districts (other than Open Space) including the applicable overlay districts, and the underlying O-2A (PUD-2 & Residence C-3A) district**.** Granting the special permit would not be a detriment to the public interest and is consistent with the Board's obligations pursuant to the Spectrum Act and FCC Order.

(f) The new use or building construction is inconsistent with the Urban Design Objectives set forth in Section 19.30

AT&T's Response: As stated in the Section 19.30, the Citywide Urban Design Objectives ("Objectives") "are intended to provide guidance to property owners and the general public as to the city's policies with regard to the form and character desirable for new development in the city. It is understood that application of these principles can vary with the context of specific building proposals in ways that, nevertheless, fully respect the policies' intent. It is intended that proponents of projects, and city staff, the Planning Board and the general public, where public review or approval is required, should be open to creative variations from the detailed provisions presented in this Section as long as the core values expressed are being served. ***A project need not meet all the objectives of this Section 19.30 where this Section serves as the basis for issuance of a special permit. Rather the permit granting authority shall find that on balance the objectives of the city are being served.*** Nor shall a project subject to special permit review be required to conform to the Required Building and Site Plan Requirements set forth in Section 11.50." [emphasis added]. For the reasons stated in AT&T's response to this Section 10.43(f) of the Zoning Ordinance and in its application generally, "on balance, the objectives of the city are being served" by the installation of the Facility at the Property so that granting the special permit would not be a detriment to the public interest and is consistent with the Board's obligations pursuant to the Spectrum Act and FCC Order.

The following are the Objectives' headings as appearing in the Ordinance:

19.31: New projects should be responsive to the existing or anticipated pattern of development.

AT&T's Response: The existing Facility is located on and within the existing building, some of the equipment of which is hidden within the building, or otherwise obstructed from view, and the

remaining equipment utilizes the same or similar antenna mounting frames and blends with the structures and colors of the building to the extent feasible. The proposed modifications to the existing Facility are consistent with the previously approved design and concealment elements of the existing Facility. Therefore, the proposed modifications are responsive to the existing pattern of development in the Property's applicable zoning and overlay districts.

19.32: Development should be pedestrian and bicycle-friendly, with a positive relationship to its surroundings.

AT&T's Response: The existing Facility is located on and within the existing building. The Facility is only accessed by authorized AT&T personnel for routine maintenance one to two times per month and is not accessed by the general public. The proposed modifications to the existing Facility will not result in any increase in routine visits nor otherwise result in a change in traffic patterns in the vicinity of the Property that would affect pedestrian flow or cyclists' access to the building or surrounding areas within the Property's applicable zoning districts.

19.33 The building and site design should mitigate adverse environmental impacts of a development upon its neighbors. Indicators include[8]

(1) Mechanical equipment that is carefully designed, well organized or visually screened from its surroundings and is acoustically buffered from neighbors. Consideration is given to the size, complexity and appearance of the equipment, its proximity to residential areas, and its impact on the existing streetscape and skyline. The extent to which screening can bring order, lessen negative visual impacts, and enhance the overall appearance of the equipment should be taken into account. More specifically:

(a) Reasonable attempts have been made to avoid exposing rooftop mechanical equipment to public view from city streets. Among the techniques that might be considered are the inclusion of screens or a parapet around the roof of the building to shield low ducts and other equipment on the roof from view.

(b) Treatment of the mechanical equipment (including design and massing of screening devices as well as exposed mechanical elements) that relates well to the overall design, massing, scale and character of the building.

(c) Placement of mechanical equipment at locations on the site other than on the rooftop (such as in the basement), which reduces the bulk of elements located on the roof; however, at-grade locations external to the building should not be viewed as desirable alternatives.

(d) Tall elements, such as chimneys and air exhaust stacks, which are typically carried above screening devices for functioning reasons, are

[8] Inasmuch as Section 19.33 is most relevant to the Facility, it is stated here in full.

carefully designed as features of the building, thus creating interest on the skyline.

(e) All aspects of the mechanical equipment have been designed with attention to their visual impact on adjacent areas, particularly with regard to residential neighborhoods and views and vistas.

AT&T's Response: As shown in the photo simulations (*see* Exhibit 5), the existing Facility, as proposed to be modified herein, will continue to be visually consistent with the color and texture of the building, the concealment elements of the design of the Facility, and with other existing wireless communications facilities from competing carriers located on the building. As a result, AT&T's Facility is in keeping with the building's existing features without adversely affecting the building's overall design, massing, scale or character.

(2) Trash that is handled to avoid impacts (noise, odor, and visual quality) on neighbors, e.g. the use of trash compactors or containment of all trash storage and handling within a building is encouraged.

AT&T's Response: The Facility does not generate trash, therefore this design objective is inapplicable.

(3) Loading docks that are located and designed to minimize impacts (visual and operational) on neighbors.

AT&T's Response: The Facility does not utilize any loading dock, therefore this design objective is inapplicable.

(4) Stormwater Best Management Practices and other measures to minimize runoff and improve water quality are implemented.

AT&T's Response: The existing Facility, and the proposed modifications, are located entirely on and within the existing Building on the Property and have no effect on stormwater runoff, therefore this design objective is inapplicable.

(5) Landscaped areas and required Green Area Open Space, in addition to serving as visual amenities, are employed to reduce the rate and volume of stormwater runoff compared to pre-development conditions.

AT&T's Response: The existing Facility and proposed modifications have no effect any landscaped or Green Area Open Space, therefore this design objective is inapplicable.

(6) The structure is designed and sited to minimize shadow impacts on neighboring lots, especially shadows that would have a significant impact on the use and enjoyment of adjacent open space and shadows that might impact the operation of a Registered Solar Energy System as defined in Section 22.60 of this Zoning Ordinance.

AT&T's Response: The existing Facility and proposed modifications are designed so as not to cause shadows on neighboring lots.

(7) Changes in grade across the lot are designed in ways that minimize the need for structural retaining walls close to property lines.

AT&T's Response: The existing Facility and proposed modifications are located entirely on and within the existing building and have no impact on the grade of the Property, therefore this design objective is inapplicable.

(8) Building scale and wall treatment, including the provision of windows, are sensitive to existing residential uses on adjacent lots.

AT&T's Response: The proposed modifications to the existing Facility will not change the building's scale because antennas and equipment will be mounted in the same or similar locations and at the same or similar height as the existing antennas mounted and located on the building (*see* Exhibit 3). The existing Facility and proposed modifications are consistent with characteristics of the existing building design, maintain the existing concealment elements of the Facility and therefore minimize any visual impact from the Facility.

(9) Outdoor lighting is designed to provide minimum lighting and necessary to ensure adequate safety, night vision, and comfort, while minimizing light pollution.

AT&T's Response: The existing Facility does not use any outdoor lighting. The proposed modifications to the Facility do not include any additional lighting of the Facility or building. As a result, this design objective is inapplicable.

(10) The creation of a Tree Protection Plan that identifies important trees on the site, encourages their protection, or provides for adequate replacement of trees lost to development on the site.

AT&T's Response: The existing Facility and proposed modifications are located entirely on and within the existing building and have no effect on any trees on the Property, therefore this design objective is inapplicable.

19.34: Projects should not overburden the City infrastructure services, including neighborhood roads, city water supply system, and sewer system.

AT&T's Response: The existing Facility, including the proposed modifications, is a passive use and will not generate trash, odor, excess noise, or utilize water or wastewater services. As such, it will not burden the City's infrastructure services.

19.35: New construction should reinforce and enhance the complex urban aspects of Cambridge as it has developed historically.

AT&T's Response: The proposed modification of the existing Facility located on and within the existing building, will obviate the need for AT&T to construct an additional Facility to

address its wireless network coverage need in this area of Cambridge. The existing Facility and the proposed modifications blend the equipment with the building texture and color, and are consistent with the concealment elements of the Facility's design. As a result, the Facility will reinforce the existing Cambridge landscape as it currently is manifested at the Property.

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19.36: Expansion of the inventory of housing in the city is encouraged.

AT&T's Response: The Facility and proposed modifications provide wireless services and will not adversely impact the City's housing inventory.

19.37. Enhancement and expansion of open space amenities in the city should be incorporated into new development in the city.

AT&T's Response: The Facility and proposed modifications are located on and within the existing building. The Facility and proposed modifications will not adversely impact or otherwise reduce open space amenities within the City.

VIII. SUMMARY

For the foregoing reasons AT&T respectfully requests that the Board to determine that pursuant to the Spectrum Act and the FCC Order, the Request constitutes and eligible facilities request and therefore AT&T's Request must be approved administratively, including the issuance of a building permit, without the need for further relief from the Board. In the alternative, without waiving its rights, AT&T requests the Board grant the foregoing zoning relief in the form of a Special Permit and such other relief as the Board deems necessary to allow the modification and operation of AT&T's proposed Facility.

Best Regards,

/s/ Susan Masse

Susan Masse
Authorized Agent to New Cingular Wireless PCS, LLC ("AT&T")

cc: Arthur Kreiger, Esq.
Jonathan Elder, Esq.

EXHIBIT 2

http://wireless2.fcc.gov/UlsApp/UlsSearch/license.jsp?licKey=8893

Universal Licensing System

ULS License

PCS Broadband License - KNLF216 - New Cingular Wireless PCS, LLC

This license has pending applications: 0002158279

Call Sign	KNLF216	Radio Service	CW - PCS Broadband
Status	Active	Auth Type	Regular
Market			
Market	MTA008 - Boston-Providence	Channel Block	A
Submarket	11	Associated Frequencies (MHz)	1850.00000-1865.00000 1930.00000-1945.00000
Dates			
Grant	06/23/1995	Expiration	06/23/2005
Effective	10/28/2004	Cancellation	
Buildout Deadlines			
1st	06/23/2000	2nd	06/23/2005
Notification Dates			
1st	06/28/2000	2nd	03/08/2005

Licensee

Licensee ID SGIN	L00024153000	FRN	0003291192 (View Ownership)	Type	Corporation

Licensee

New Cingular Wireless PCS, LLC 17330 Preston Road, Suite 100A Dallas, TX 75252	P:(972)733-2092 F:(972)733-8141

ATTN Kellye E. Abernathy	

Contact

Cingular Wireless LLC Kellye E Abernathy Esq 17330 Preston Road, Suite 100A Dallas, TX 75252	P:(972)733-2092 F:(972)733-8141

Qualifications, Ownership, and Demographics

Radio Service Type	Mobile		
Regulatory Status	Common Carrier	Interconnected	Yes

Alien Ownership
The Applicant answered "No" to each of the Alien Ownership questions.

Basic Qualifications

Has the Applicant or any party to this application or amendment had any FCC station authorization, license, or construction permit revoked or had any application for an initial, modification or renewal of FCC station authorization, license, construction permit denied by the Commission?	No
Has the Applicant or any party to this application or amendment, or any party directly or indirectly controlling the Applicant, ever been convicted of a felony by any state or federal court?	No
Has any court finally adjudged the Applicant or any party directly or indirectly controlling the Applicant guilty of unlawfully monopolizing or attempting unlawfully to monopolize radio communication, directly or indirectly, through control of manufacture or sale of radio apparatus, exclusive traffic arrangement, or any other means or unfair methods of competition?	No
Is the Applicant or any party directly or indirectly controlling the Applicant, currently a party in any pending matter referred to in the preceding two items?	**Yes**

Tribal Land Bidding Credits
This license did not have tribal land bidding credits.

Race			
Hispanic/Latino		Gender	

ULS Help	ULS Glossary - FAQ - Online Help - Technical Support - Licensing

http://wireless2.fcc.gov/UlsApp/UlsSearch/license.jsp?licKey=12925

Universal Licensing System

ULS License

Cellular License - KNKA226 - ORANGE LICENSES HOLDING, LLC

Call Sign	KNKA226	Radio Service	CL - Cellular
Status	Active	Auth Type	Regular
Market			
Market	CMA006 - Boston-Lowell-Brockton-Lawrence-Haverhill, MA-NH	Channel Block	A (View Frequencies)
Submarket	0	Phase	2
Dates			
Grant	10/05/2004	Expiration	10/01/2014
Effective	01/20/2005	Cancellation	
Five Year Buildout Date			
06/28/1999			
Control Points			
2	100 LOWDER BROOK DR, NORFOLK, WESTWOOD, MA P: (617)462-7094		

Licensee					
Licensee ID SGIN	L00963843000	FRN	0012362919 (View Ownership)	Type	Limited Liability Corporation
Licensee					
ORANGE LICENSES HOLDING, LLC 17330 PRESTON ROAD, SUITE 100A DALLAS, TX 75252 ATTN KELLYE E. ABERNATHY			P:(972)733-2092 F:(972)733-8141		

Contact	
CINGULAR WIRELESS LLC DAVID G RICHARDS 5565 GLENRIDGE CONNECTOR, SUITE 1700 ATLANTA, GA 30342	P:(404)236-5543 F:(404)236-5575

Qualifications, Ownership, and Demographics			
Radio Service Type	Mobile		
Regulatory Status	Common Carrier	Interconnected	Yes

Alien Ownership
The Applicant answered "No" to each of the Alien Ownership questions.

Basic Qualifications	
Has the Applicant or any party to this application or amendment had any FCC station authorization, license, or construction permit revoked or had any application for an initial, modification or renewal of FCC station authorization, license, construction permit denied by the Commission?	No
Has the Applicant or any party to this application or amendment, or any party directly or indirectly controlling the Applicant, ever been convicted of a felony by any state or federal court?	No
Has any court finally adjudged the Applicant or any party directly or indirectly controlling the Applicant guilty of unlawfully monopolizing or attempting unlawfully to monopolize radio communication, directly or indirectly, through control of manufacture or sale of radio apparatus, exclusive traffic arrangement, or any other means or unfair methods of competition?	No
Is the Applicant or any party directly or indirectly controlling the Applicant, currently a party in any pending matter referred to in the preceding two items?	**Yes**

Race			
Hispanic/Latino		Gender	

ULS Help	ULS Glossary - FAQ - Online Help - Technical Support - Licensing Support
ULS Online Systems	CORES/Call Sign Registration - ULS Online Filing - License Search - Application Search
About ULS	Privacy Statement - About ULS - ULS Home
Basic Search	By Call Sign = SEARCH

ULS License

PCS Broadband License - WPOI214 - New Cingular Wireless PCS, LLC

Call Sign	WPOI214	Radio Service	CW - PCS Broadband
Status	Active	Auth Type	Regular

Market

Market	MTA008 - Boston-Providence	Channel Block	A
Submarket	7	Associated Frequencies (MHz)	001850.00000000-001865.00000000 001930.00000000-001945.00000000

Dates

Grant	07/07/2005	Expiration	06/23/2015
Effective	09/27/2005	Cancellation	

Buildout Deadlines

1st	06/23/2000	2nd	06/23/2005

Notification Dates

1st	07/06/2000	2nd	03/08/2005

Licensee

FRN	0003291192	Type	Limited Liability Company

Licensee

New Cingular Wireless PCS, LLC
5601 LEGACY DRIVE, MS: A-3
PLANO, TX 75024
ATTN FCC GROUP

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Contact

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F:(469)229-7297
E:KELLYE.E.ABERNATHY@CINGULAR.COM

Ownership and Qualifications

Radio Service Type	Mobile		
Regulatory Status	Common Carrier	Interconnected	Yes

Alien Ownership
The Applicant answered "No" to each of the Alien Ownership questions.

ULS License

700 MHz Lower Band (Blocks C, D) License - WPWU950 - AT&T Mobility Spectrum LLC

Call Sign	WPWU950	Radio Service	WZ - 700 MHz Lower Band (Blocks C, D)
Status	Active	Auth Type	Regular

Market

Market	CMA006 - Boston-Lowell-Brockton-Lawrence-Haverhill, MA-NH	Channel Block	C
Submarket	0	Associated Frequencies (MHz)	000710.00000000-000716.00000000 000740.00000000-000746.00000000

Dates

Grant	01/24/2003	Expiration	06/13/2019
Effective	08/17/2016	Cancellation	

Buildout Deadlines

1st	06/13/2019	2nd	

Notification Dates

1st		2nd	

Licensee

FRN	0014980726	Type	Limited Liability Company

Licensee

AT&T Mobility Spectrum LLC
3300 E. Renner Road, B3132
Richardson, TX 75082
ATTN Leslie A. Wilson

P:(855)699-7073
F:(972)907-1131
E:FCCMW@att.com

Contact

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Michael P Goggin
1120 20th Street, NW - Suite 1000
Washington, DC 20036
ATTN Michael P. Goggin

P:(202)457-2055
F:(202)457-3073
E:michael.p.goggin@att.com

Ownership and Qualifications

Radio Service Type	Fixed, Mobile, Radio Location		
Regulatory Status	Common Carrier, Non-Common Carrier, Private Comm	Interconnected	Yes

ULS License

700 MHz Lower Band (Blocks C, D) License - WPZA235 - AT&T Mobility Spectrum LLC

Call Sign	WPZA235	Radio Service	WZ - 700 MHz Lower Band (Blocks C, D)
Status	Active	Auth Type	Regular

Market

Market	EAG701 - Northeast	Channel Block	D
Submarket	0	Associated Frequencies (MHz)	000716.00000000-000722.00000000

Dates

Grant	12/11/2003	Expiration	06/13/2019
Effective	02/12/2014	Cancellation	

Buildout Deadlines

1st	06/13/2019	2nd	

Notification Dates

1st		2nd	

Licensee

FRN	0014980726	Type	Limited Liability Company

Licensee

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Ownership and Qualifications

Radio Service Type	Fixed, Mobile		
Regulatory Status	Non-Common Carrier	Interconnected	No

Alien Ownership
The Applicant answered "No" to each of the Alien Ownership questions.

ULS License

PCS Broadband License - WPZY689 - NEW CINGULAR WIRELESS PCS, LLC

Call Sign	WPZY689	Radio Service	CW - PCS Broadband
Status	Active	Auth Type	Regular

Market

Market	BTA051 - Boston, MA	Channel Block	C
Submarket	2	Associated Frequencies (MHz)	001895.00000000-001910.00000000 001975.00000000-001990.00000000

Dates

Grant	02/28/2007	Expiration	01/03/2017
Effective	02/08/2007	Cancellation	

Buildout Deadlines

1st	12/07/2003	2nd	01/03/2007

Notification Dates

1st	01/30/2002	2nd	12/22/2006

Licensee

FRN	0003291192	Type	Limited Liability Company

Licensee

NEW CINGULAR WIRELESS PCS, LLC
5601 LEGACY DRIVE, MS: A-3
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Contact

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P:(202)255-1679
F:(561)279-2097
E:DAVID.JATLOW@CINGULAR.COM

Ownership and Qualifications

Radio Service Type	Mobile		
Regulatory Status	Common Carrier	Interconnected	Yes

Alien Ownership
The Applicant answered "No" to each of the Alien Ownership questions.

ULS License

700 MHz Lower Band (Blocks A, B & E) License - WQIZ616 - AT&T Mobility Spectrum LLC

HELP

New Search | Printable Page | Reference Copy | Map License

MAIN | ADMIN | MARKET | LEASES

Call Sign	WQIZ616	Radio Service	WY - 700 MHz Lower Band (Blocks A, B & E)
Status	Active	Auth Type	Regular
Market			
Market	BEA003 - Boston-Worcester-Lawrence-Lowell-Brockton, MA-NH-RI-VT	Channel Block	E
Submarket	0	Associated Frequencies (MHz)	000722.00000000-000728.00000000
Dates			
Grant	06/26/2008	Expiration	03/07/2021
Effective	02/12/2014	Cancellation	
Buildout Deadlines			
1st	03/07/2017	2nd	03/07/2021
Notification Dates			
1st		2nd	

Licensee			
FRN	0014980726 (View Ownership Filing)	Type	Limited Liability Company
Licensee			
AT&T Mobility Spectrum LLC 3300 E. Renner Road, B3132 Richardson, TX 75082 ATTN Reginald Youngblood		P:(855)699-7073 F:(972)907-1131 E:FCCMW@att.com	
Contact			
AT&T Mobility LLC Michael P Goggin 1120 20th Street, NW - Suite 1000 Washington, DC 20036 ATTN Michael P. Goggin		P:(202)457-2055 F:(202)457-3073 E:michael.p.goggin@att.com	

Ownership and Qualifications			
Radio Service Type	Fixed, Mobile		
Regulatory Status	Non-Common Carrier, Private Comm	Interconnected	No
Alien Ownership The Applicant answered "No" to each of the Alien Ownership questions.			
Basic Qualifications The Applicant answered "No" to each of the Basic Qualification questions.			
Tribal Land Bidding Credits This license did not have tribal land bidding credits.			

Demographics			
Race			
Ethnicity		Gender	

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ULS Online Systems	CORES - ULS Online Filing - License Search - Application Search - Archive License Search
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Basic Search	By Call Sign = SEARCH

FCC | Wireless | ULS | CORES

Help | Tech Support

Federal Communications Commission
445 12th Street SW
Washington, DC 20554

Phone: 1-877-480-3201
TTY: 1-717-338-2824
Submit Help Request

ULS License

700 MHz Lower Band (Blocks A, B & E) License - WQJU427 - AT&T Mobility Spectrum LLC

Call Sign	WQJU427	Radio Service	WY - 700 MHz Lower Band (Blocks A, B & E)
Status	Active	Auth Type	Regular

Market

Market	CMA006 - Boston-Lowell-Brockton-Lawrence-Haverhill, MA-NH	Channel Block	B
Submarket	0	Associated Frequencies (MHz)	000704.00000000-000710.00000000 000734.00000000-000740.00000000

Dates

Grant	01/06/2009	Expiration	06/13/2019
Effective	07/30/2016	Cancellation	

Buildout Deadlines

1st	12/13/2016	2nd	06/13/2019

Notification Dates

1st	10/30/2012	2nd	10/30/2012

Licensee

FRN	0014980726	Type	Limited Liability Company

Licensee

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E:michael.p.goggin@att.com

Ownership and Qualifications

Radio Service Type	Mobile		
Regulatory Status	Common Carrier	Interconnected	Yes

Alien Ownership
The Applicant answered "No" to each of the Alien Ownership questions.

PROJECT INFORMATION

SCOPE OF WORK:	ITEMS TO BE MOUNTED ON THE EXISTING ROOFTOP: • ECHO REPEATER INSTALL (BETA & GAMMA SECTORS): (1) DISH ANTENNAS, (2) REPEATER, (2) DIPLEXERS, (2) ERMS, (1) 2–WAY POWER DIVIDER, & (1) DIRECTIONAL COUPLER. • NEW AT&T ANTENNA: (EPBQ–654L8H6–L2) (TYP. OF 1 PER SECTOR, TOTAL OF 3) MOUNTED @ POS. 3. • NEW AT&T RRUS: RRUS–32 B66 (AWS) (TYP. OF 1 PER SECTOR, TOTAL OF 3). • NEW AT&T RRUS: B14 4478 (700) (TYP. OF 1 PER SECTOR, TOTAL OF 3). • NEW AT&T DC ONLY SURGE ARRESTORS (TYP. OF 1 PER SECTOR, TOTAL OF 3) WITH (6) DC POWER AND (3) ALARM CABLES (TO FOLLOW EXISTING ROUTE). ITEMS TO BE MOUNTED INSIDE EXISTING EQUIPMENT SHELTER: • INSTALL (2) DC12'S IN EXISTING LTE RACK. • SWAP (2) DUS'S WITH (2) 5216'S AND SWAP IDL2 CABLE FOR IDLE. • INSTALL (6) 30A & (2) 25A BREAKERS TO EXISTING POWER PLANT. • INSTALL (2) EMERSON RECTIFIERS. ITEMS TO REMAIN: • (9) ANTENNAS, (15) RRU'S, (3) SURGE ARRESTORS, (12) COAX (6) DC POWER CABLES, & (3) FIBER RUNS.
SITE ADDRESS:	150 CAMBRIDGE PARK DRIVE CAMBRIDGE, MA 02140
LATITUDE:	42.394201° N 42° 23' 39.12" N
LONGITUDE:	71.146396° W 71° 08' 47.02" W
TYPE OF SITE:	ROOFTOP/INDOOR EQUIPMENT
PENTHOUSE HEIGHT:	150'± A.G.L
RAD CENTER:	144'± A.G.L
CURRENT USE:	TELECOMMUNICATIONS FACILITY
PROPOSED USE:	TELECOMMUNICATIONS FACILITY

SITE NUMBER: MA2009

SITE NAME: CAMBRIDGE PARK

FA CODE: 10007258

PACE ID: MRCTB023924, MRCTB023903, MRCTB028038

PROJECT: LTE 6C/7C/ECHO REPEATER 2019 UPGRADE

DRAWING INDEX

SHEET NO.	DESCRIPTION	REV.
T–1	TITLE SHEET	0
GN–1	GENERAL NOTES	0
A–1	ROOFTOP & EQUIPMENT PLANS	0
A–2	ELEVATION	0
A–3	ANTENNA LAYOUTS	0
A–4	DETAILS	0
A–5	DETAILS	0
RF–1	RF PLUMBING DIAGRAMS	0
G–1	GROUNDING DETAILS	0

VICINITY MAP

DIRECTIONS TO SITE:

HEAD NORTHEAST TOWARD LEGGAT McCALL CONN. 0.2 MILES. TURN LEFT AT LEGGAT McCALL CONN. 0.2 MILES. SLIGHT RIGHT AT BURR ST. 489 FT. TURN LEFT AT COCHITUATE RD. 295 FT. MERGE ONTO I–90 E/MASSACHUSETTS TPKE E TOWARD BOSTON/I–95 (PORTIONS TOLL). 6.7 MI. TAKE THE I–95 N/RT–128 N / RT–30 EXIT, EXIT 14, TOWARD N.H.–MAINE/POINTS NORTH. 1.2 MI. MERGE ONTO I–95 N / MA–128 N VIA THE EXIT ON THE LEFT TOWARD WALTHAM/PORTSMOUTH NH. 5.9 MI. MERGE ONTO MA–2 E VIA EXIT 29A TOWARD ARLINGTON / CAMBRIDGE. 6.6 MI. TURN RIGHT ONTO CAMBRIDGE PARK DR. 0.2 MI. 150 CAMBRIDGE PARK DR IS ON THE LEFT.

GENERAL NOTES

1. THIS DOCUMENT IS THE CREATION, DESIGN, PROPERTY AND COPYRIGHTED WORK OF AT&T. ANY DUPLICATION OR USE WITHOUT EXPRESS WRITTEN CONSENT IS STRICTLY PROHIBITED. DUPLICATION AND USE BY GOVERNMENT AGENCIES FOR THE PURPOSES OF CONDUCTING THEIR LAWFULLY AUTHORIZED REGULATORY AND ADMINISTRATIVE FUNCTIONS IS SPECIFICALLY ALLOWED.
2. THE FACILITY IS AN UNMANNED PRIVATE AND SECURED EQUIPMENT INSTALLATION. IT IS ONLY ACCESSED BY TRAINED TECHNICIANS FOR PERIODIC ROUTINE MAINTENANCE AND THEREFORE DOES NOT REQUIRE ANY WATER OR SANITARY SEWER SERVICE. THE FACILITY IS NOT GOVERNED BY REGULATIONS REQUIRING PUBLIC ACCESS PER ADA REQUIREMENTS.
3. CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE AT&T MOBILITY REPRESENTATIVE IN WRITING OF DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.
4. CONSTRUCTION DRAWINGS ARE VALID FOR SIX MONTHS AFTER ENGINEER OF RECORD'S STAMPED AND SIGNED SUBMITTAL DATE LISTED HEREIN.

UNDERGROUND SERVICE ALERT

811 DigSafe MA·ME·NH·RI·VT

WWW.DIGSAFE.COM
72 HOURS PRIOR

HUDSON Design Group LLC
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NORTH ANDOVER, MA 01845
TEL: (978) 557-5553
FAX: (978) 336-5586

CENTERLINE COMMUNICATIONS
750 WEST CENTER STREET., SUITE #301
WEST BRIDGEWATER, MA 02379

SITE NUMBER: MA2009
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150 CAMBRIDGE PARK DRIVE
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at&t
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FRAMINGHAM, MA 01701

NO.	DATE	REVISIONS	BY	CHK	APP'D
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A	04/01/19	ISSUED FOR REVIEW	ET	AT	DJC

SCALE: AS SHOWN | DESIGNED BY: AT | DRAWN BY: ET

AT&T

TITLE SHEET
(LTE 6C/7C/ECHO REPEATER)

SITE NUMBER	DRAWING NUMBER	REV
MA2009	T–1	0

GROUNDING NOTES

1. THE SUBCONTRACTOR SHALL REVIEW AND INSPECT THE EXISTING FACILITY GROUNDING SYSTEM AND LIGHTNING PROTECTION SYSTEM (AS DESIGNED AND INSTALLED) FOR STRICT COMPLIANCE WITH THE NEC (AS ADOPTED BY THE AHJ), THE SITE-SPECIFIC (UL, LPI, OR NFPA) LIGHTING PROTECTION CODE, AND GENERAL COMPLIANCE WITH TELCORDIA AND TIA GROUNDING STANDARDS. THE SUBCONTRACTOR SHALL REPORT ANY VIOLATIONS OR ADVERSE FINDINGS TO THE CONTRACTOR FOR RESOLUTION.
2. ALL GROUND ELECTRODE SYSTEMS (INCLUDING TELECOMMUNICATION, RADIO, LIGHTNING PROTECTION, AND AC POWER GES'S) SHALL BE BONDED TOGETHER, AT OR BELOW GRADE, BY TWO OR MORE COPPER BONDING CONDUCTORS IN ACCORDANCE WITH THE NEC.
3. THE SUBCONTRACTOR SHALL PERFORM IEEE FALL-OF-POTENTIAL RESISTANCE TO EARTH TESTING (PER IEEE 1100 AND 81) FOR NEW GROUND ELECTRODE SYSTEMS. THE SUBCONTRACTOR SHALL FURNISH AND INSTALL SUPPLEMENTAL GROUND ELECTRODES AS NEEDED TO ACHIEVE A TEST RESULT OF 5 OHMS OR LESS.
4. METAL RACEWAY SHALL NOT BE USED AS THE NEC REQUIRED EQUIPMENT GROUND CONDUCTOR. STRANDED COPPER CONDUCTORS WITH GREEN INSULATION, SIZED IN ACCORDANCE WITH THE NEC, SHALL BE FURNISHED AND INSTALLED WITH THE POWER CIRCUITS TO BTS EQUIPMENT.
5. EACH BTS CABINET FRAME SHALL BE DIRECTLY CONNECTED TO THE MASTER GROUND BAR WITH GREEN INSULATED SUPPLEMENTAL EQUIPMENT GROUND WIRES, 6 AWG STRANDED COPPER OR LARGER FOR INDOOR BTS 2 AWG STRANDED COPPER FOR OUTDOOR BTS.
6. EXOTHERMIC WELDS SHALL BE USED FOR ALL GROUNDING CONNECTIONS BELOW GRADE.
7. APPROVED ANTIOXIDANT COATINGS (I.E., CONDUCTIVE GEL OR PASTE) SHALL BE USED ON ALL COMPRESSION AND BOLTED GROUND CONNECTIONS.
8. ICE BRIDGE BONDING CONDUCTORS SHALL BE EXOTHERMICALLY BONDED OR BOLTED TO GROUND BAR.
9. ALUMINUM CONDUCTOR OR COPPER CLAD STEEL CONDUCTOR SHALL NOT BE USED FOR GROUNDING CONNECTIONS.
10. MISCELLANEOUS ELECTRICAL AND NON-ELECTRICAL METAL BOXES, FRAMES AND SUPPORTS SHALL BE BONDED TO THE GROUND RING, IN ACCORDANCE WITH THE NEC.
11. METAL CONDUIT SHALL BE MADE ELECTRICALLY CONTINUOUS WITH LISTED BONDING FITTINGS OR BY BONDING ACROSS THE DISCONTINUITY WITH 6 AWS COPPER WIRE UL APPROVED GROUNDING TYPE CONDUIT CLAMPS.
12. ALL NEW STRUCTURES WITH A FOUNDATION AND/OR FOOTING HAVING 20 FT. OR MORE OF 1/2 IN. OR GREATER ELECTRICALLY CONDUCTIVE REINFORCING STEEL MUST HAVE IT BONDED TO THE GROUND RING USING AN EXOTHERMIC WELD CONNECTION USING #2 AWG SOLID BARE TINNED COPPER GROUND WIRE, PER NEC 250.50

GENERAL NOTES

1. FOR THE PURPOSE OF CONSTRUCTION DRAWING, THE FOLLOWING DEFINITIONS SHALL APPLY:

   CONTRACTOR – CENTERLINE
   SUBCONTRACTOR – GENERAL CONTRACTOR (CONSTRUCTION)
   OWNER – AT&T MOBILITY
2. PRIOR TO THE SUBMISSION OF BIDS, THE BIDDING SUBCONTRACTOR SHALL VISIT THE CELL SITE TO FAMILIARIZE WITH THE EXISTING CONDITIONS AND TO CONFIRM THAT THE WORK CAN BE ACCOMPLISHED AS SHOWN ON THE CONSTRUCTION DRAWINGS. ANY DISCREPANCY FOUND SHALL BE BROUGHT TO THE ATTENTION OF CONTRACTOR.
3. ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS, AND ORDINANCES. SUBCONTRACTOR SHALL ISSUE ALL APPROPRIATE NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS, AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY REGARDING THE PERFORMANCE OF THE WORK. ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL JURISDICTIONAL CODES, ORDINANCES AND APPLICABLE REGULATIONS.
4. DRAWINGS PROVIDED HERE ARE NOT TO BE SCALED AND ARE INTENDED TO SHOW OUTLINE ONLY.
5. UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES, AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.
6. "KITTING LIST" SUPPLIED WITH THE BID PACKAGE IDENTIFIES ITEMS THAT WILL BE SUPPLIED BY CONTRACTOR. ITEMS NOT INCLUDED IN THE BILL OF MATERIALS AND KITTING LIST SHALL BE SUPPLIED BY THE SUBCONTRACTOR.
7. THE SUBCONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.
8. IF THE SPECIFIED EQUIPMENT CANNOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE SUBCONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION SPACE FOR APPROVAL BY THE CONTRACTOR.
9. SUBCONTRACTOR SHALL DETERMINE ACTUAL ROUTING OF CONDUIT, POWER AND T1 CABLES, GROUNDING CABLES AS SHOWN ON THE POWER, GROUNDING AND TELCO PLAN DRAWING. SUBCONTRACTOR SHALL UTILIZE EXISTING TRAYS AND/OR SHALL ADD NEW TRAYS AS NECESSARY. SUBCONTRACTOR SHALL CONFIRM THE ACTUAL ROUTING WITH THE CONTRACTOR.
10. THE SUBCONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT SUBCONTRACTOR'S EXPENSE TO THE SATISFACTION OF OWNER.
11. SUBCONTRACTOR SHALL LEGALLY AND PROPERLY DISPOSE OF ALL SCRAP MATERIALS SUCH AS COAXIAL CABLES AND OTHER ITEMS REMOVED FROM THE EXISTING FACILITY. ANTENNAS REMOVED SHALL BE RETURNED TO THE OWNER'S DESIGNATED LOCATION.
12. SUBCONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION.
13. ALL CONCRETE REPAIR WORK SHALL BE DONE IN ACCORDANCE WITH AMERICAN CONCRETE INSTITUTE (ACI) 301.
14. ANY NEW CONCRETE NEEDED FOR THE CONSTRUCTION SHALL BE AIR-ENTRAINED AND SHALL HAVE 4000 PSI STRENGTH AT 28 DAYS. ALL CONCRETE WORK SHALL BE DONE IN ACCORDANCE WITH ACI 318 CODE REQUIREMENTS.
15. ALL STRUCTURAL STEEL WORK SHALL BE DETAILED, FABRICATED AND ERECTED IN ACCORDANCE WITH AISC SPECIFICATIONS. ALL STRUCTURAL STEEL SHALL BE ASTM A36 (Fy = 36 ksi) UNLESS OTHERWISE NOTED. PIPES SHALL BE ASTM A53 TYPE E (Fy = 36 ksi). ALL STEEL EXPOSED TO WEATHER SHALL BE HOT DIPPED GALVANIZED. TOUCHUP ALL SCRATCHES AND OTHER MARKS IN THE FIELD AFTER STEEL IS ERECTED USING A COMPATIBLE ZINC RICH PAINT.
16. CONSTRUCTION SHALL COMPLY WITH SPECIFICATIONS AND "GENERAL CONSTRUCTION SERVICES FOR CONSTRUCTION OF AT&T SITES."
17. SUBCONTRACTOR SHALL VERIFY ALL EXISTING DIMENSIONS AND CONDITIONS PRIOR TO COMMENCING ANY WORK. ALL DIMENSIONS OF EXISTING CONSTRUCTION SHOWN ON THE DRAWINGS MUST BE VERIFIED. SUBCONTRACTOR SHALL NOTIFY THE CONTRACTOR OF ANY DISCREPANCIES PRIOR TO ORDERING MATERIAL OR PROCEEDING WITH CONSTRUCTION.
18. THE EXISTING CELL SITE IS IN FULL COMMERCIAL OPERATION. ANY CONSTRUCTION WORK BY SUBCONTRACTOR SHALL NOT DISRUPT THE EXISTING NORMAL OPERATION. ANY WORK ON EXISTING EQUIPMENT MUST BE COORDINATED WITH CONTRACTOR. ALSO, WORK SHOULD BE SCHEDULED FOR AN APPROPRIATE MAINTENANCE WINDOW USUALLY IN LOW TRAFFIC PERIODS AFTER MIDNIGHT.
19. SINCE THE CELL SITE IS ACTIVE, ALL SAFETY PRECAUTIONS MUST BE TAKEN WHEN WORKING AROUND HIGH LEVELS OF ELECTROMAGNETIC RADIATION. EQUIPMENT SHOULD BE SHUTDOWN PRIOR TO PERFORMING ANY WORK THAT COULD EXPOSE THE WORKERS TO DANGER. PERSONAL RF EXPOSURE MONITORS ARE ADVISED TO BE WORN TO ALERT OF ANY DANGEROUS EXPOSURE LEVELS.
20. APPLICABLE BUILDING CODES:
    SUBCONTRACTOR'S WORK SHALL COMPLY WITH ALL APPLICABLE NATIONAL, STATE, AND LOCAL CODES AS ADOPTED BY THE LOCAL AUTHORITY HAVING JURISDICTION (AHJ) FOR THE LOCATION. THE EDITION OF THE AHJ ADOPTED CODES AND STANDARDS IN EFFECT ON THE DATE OF CONTRACT AWARD SHALL GOVERN THE DESIGN.

    BUILDING CODE: IBC 2015 & MA STATE BUILDING CODE 780 CMR 9TH EDITION
    ELECTRICAL CODE: 2017 NATIONAL ELECTRICAL CODE (NFPA 70-2017)

    SUBCONTRACTOR'S WORK SHALL COMPLY WITH THE LATEST EDITION OF THE FOLLOWING STANDARDS:

    AMERICAN CONCRETE INSTITUTE (ACI) 318; BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE

    AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC) MANUAL OF STEEL CONSTRUCTION, ASD, FOURTEENTH EDITION;

    TELECOMMUNICATIONS INDUSTRY ASSOCIATION (TIA) 222-G, STRUCTURAL STANDARDS FOR STEEL

FOR ANY CONFLICTS BETWEEN SECTIONS OF LISTED CODES AND STANDARDS REGARDING MATERIAL, METHODS OF CONSTRUCTION, OR OTHER REQUIREMENTS, THE MOST RESTRICTIVE REQUIREMENT SHALL GOVERN. WHERE THERE IS CONFLICT BETWEEN A GENERAL REQUIREMENT AND A SPECIFIC REQUIREMENT, THE SPECIFIC REQUIREMENT SHALL GOVERN.

ABBREVIATIONS

AGL	ABOVE GRADE LEVEL	EQ	EQUAL	REQ	REQUIRED
AWG	AMERICAN WIRE GAUGE	GC	GENERAL CONTRACTOR	RF	RADIO FREQUENCY
BBU	BATTERY BACKUP UNIT	GRC	GALVANIZED RIGID CONDUIT	TBD	TO BE DETERMINED
BTCW	BARE TINNED SOLID COPPER WIRE	MGB	MASTER GROUND BAR	TBR	TO BE REMOVED
BGR	BURIED GROUND RING	MIN	MINIMUM	TBRR	TO BE REMOVED AND REPLACED
BTS	BASE TRANSCEIVER STATION	P	PROPOSED	TYP	TYPICAL
E	EXISTING	NTS	NOT TO SCALE	UG	UNDER GROUND
EGB	EQUIPMENT GROUND BAR	RAD	RADIATION CENTER LINE (ANTENNA)	VIF	VERIFY IN FIELD
EGR	EQUIPMENT GROUND RING	REF	REFERENCE		

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WEST BRIDGEWATER, MA 02379

SITE NUMBER: MA2009
SITE NAME: CAMBRIDGE PARK
150 CAMBRIDGE PARK DRIVE
CAMBRIDGE, MA 02140
MIDDLESEX COUNTY

at&t
550 COCHITUATE ROAD
FRAMINGHAM, MA 01701

NO.	DATE	REVISIONS	BY	CHK	APP'D
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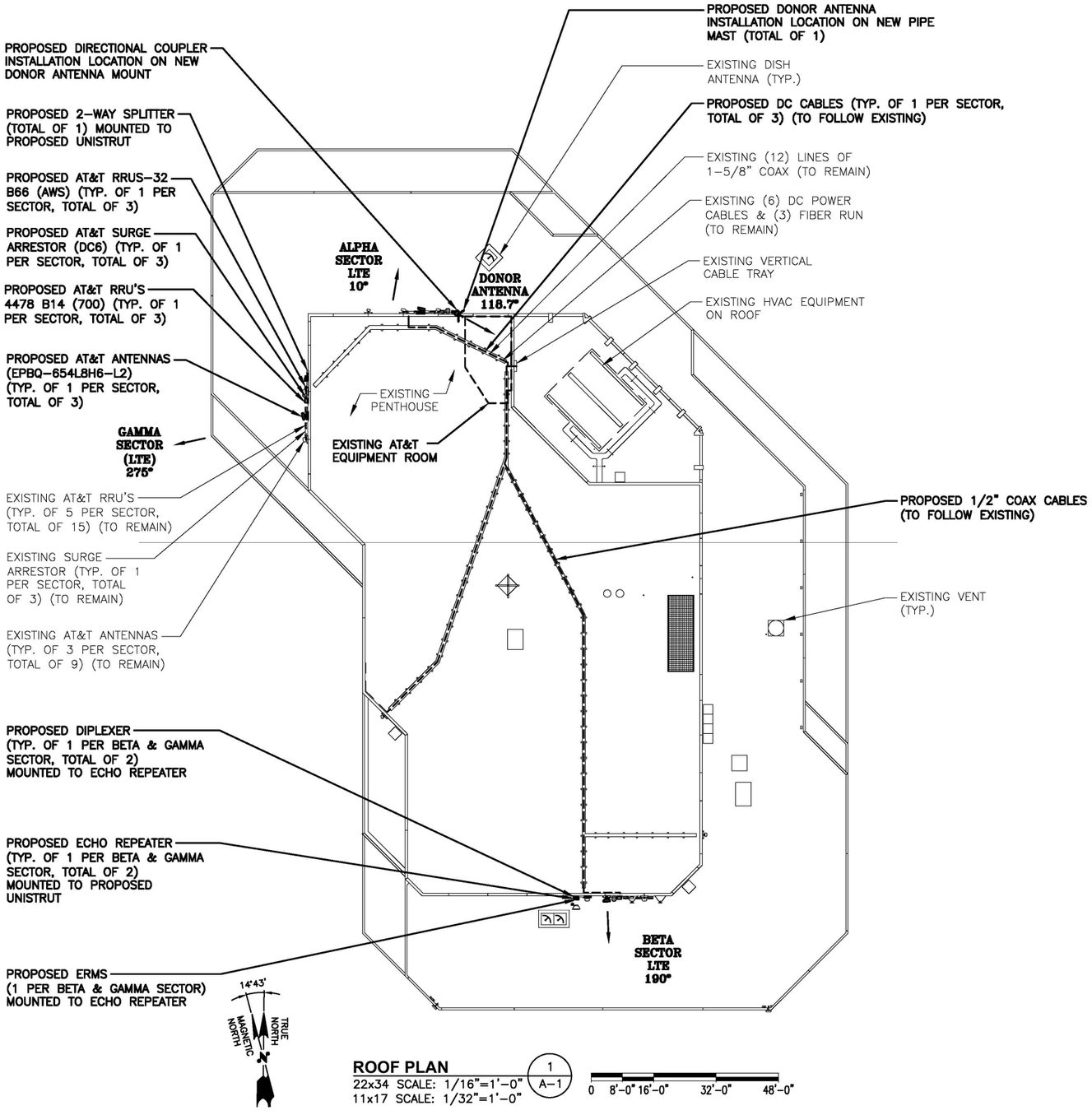
A	04/01/19	ISSUED FOR REVIEW	ET	AT	DJC

SCALE: AS SHOWN | DESIGNED BY: AT | DRAWN BY: ET

AT&T

GENERAL NOTES
(LTE 6C/7C/ECHO REPEATER)

SITE NUMBER	DRAWING NUMBER	REV
MA2009	GN-1	0



ROOF PLAN (1 / A-1)
22x34 SCALE: 1/16"=1'-0"
11x17 SCALE: 1/32"=1'-0"
0 8'-0" 16'-0" 32'-0" 48'-0"

NOTE:

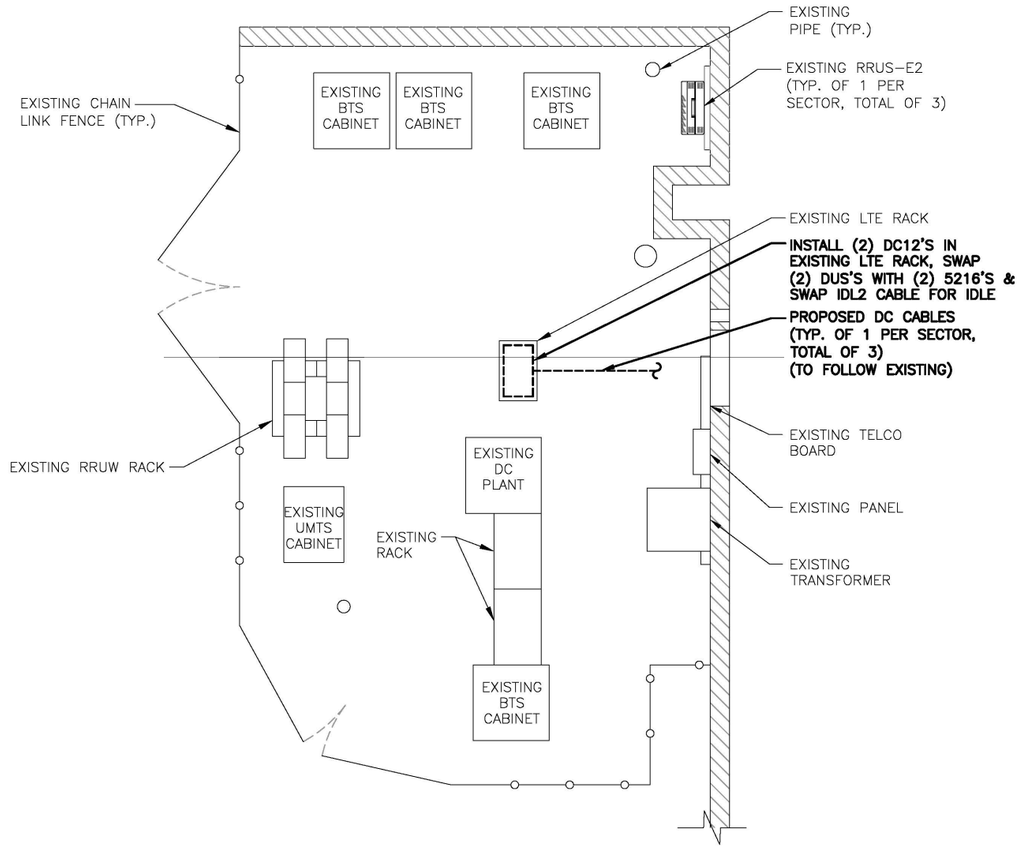
PROPOSED ANTENNAS TO BE PAINTED TO MATCH EXISTING ANTENNAS.

NOTE:

REFER TO STRUCTURAL ANALYSIS BY: HUDSON DESIGN GROUP, LLC, DATED: **APRIL 16, 2019 (REV.2)**, FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT.

NOTE:

REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS.



EQUIPMENT PLAN (2 / A-1)
22x34 SCALE: 1/2"=1'-0"
11x17 SCALE: 1/4"=1'-0"
0 1'-0" 2'-0" 4'-0" 6'-0"

POWER PANEL NOTE:

1. ADD (6) 30A, & (2) 25A BREAKER IN EXISTING POWER PLANT.
2. ADD (2) EMERSON RECTIFIERS.

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AT&T

ROOFTOP & EQUIPMENT PLANS (LTE 6C/7C/ECHO REPEATER)

SITE NUMBER	DRAWING NUMBER	REV
MA2009	A-1	0

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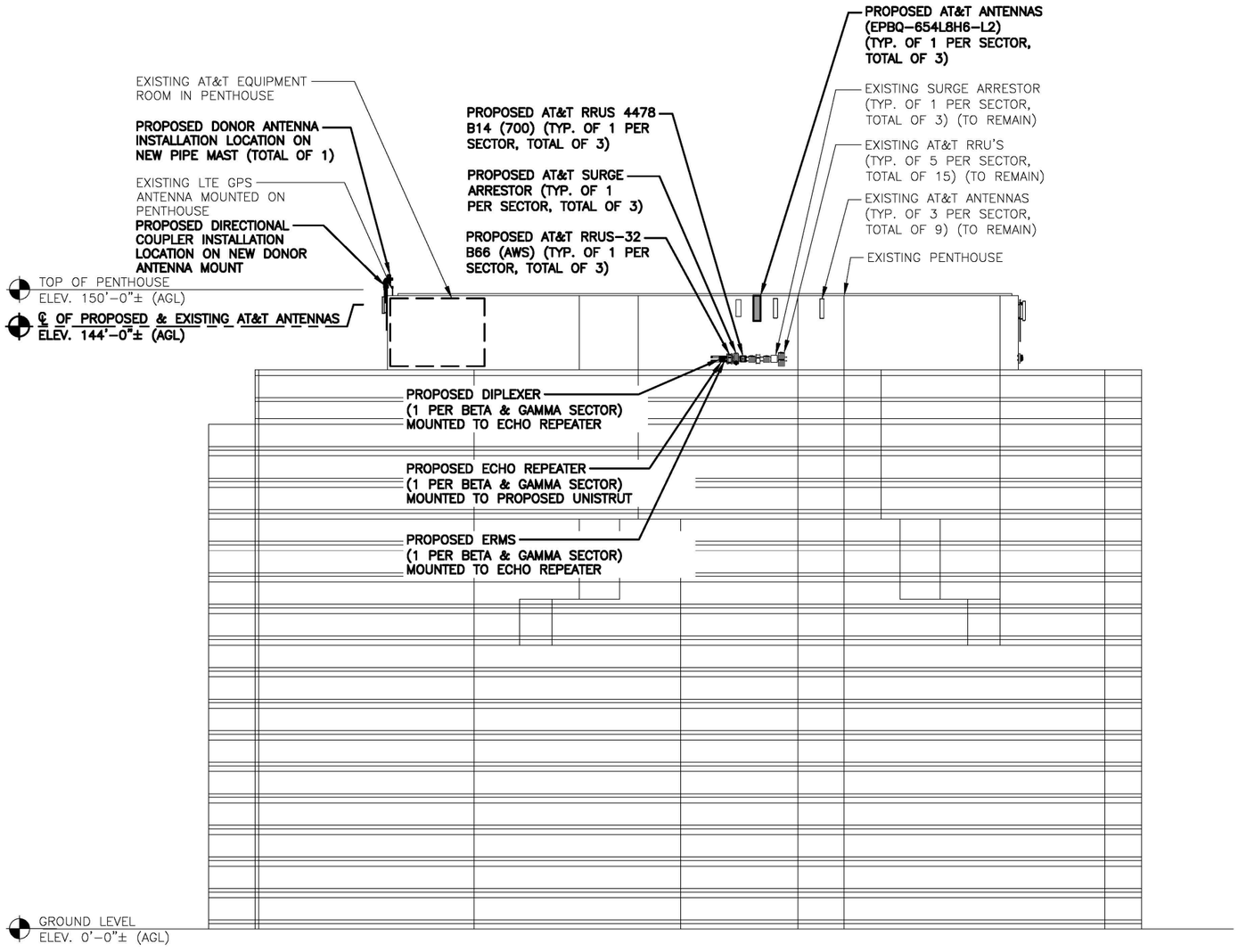

ELEVATION (1 / A-2)
22x34 SCALE: 1/16"=1'-0"
11x17 SCALE: 1/32"=1'-0"

0 8'-0" 16'-0" 32'-0" 48'-0"

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SCALE: AS SHOWN | DESIGNED BY: AT | DRAWN BY: ET

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ELEVATION
(LTE 6C/7C/ECHO REPEATER)

SITE NUMBER	DRAWING NUMBER	REV
MA2009	A-2	0

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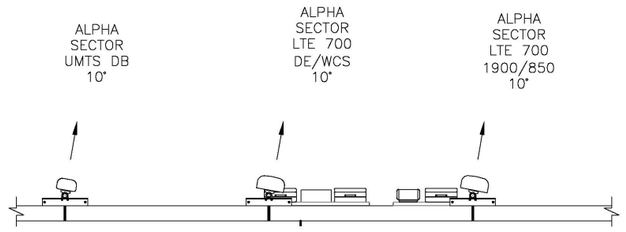
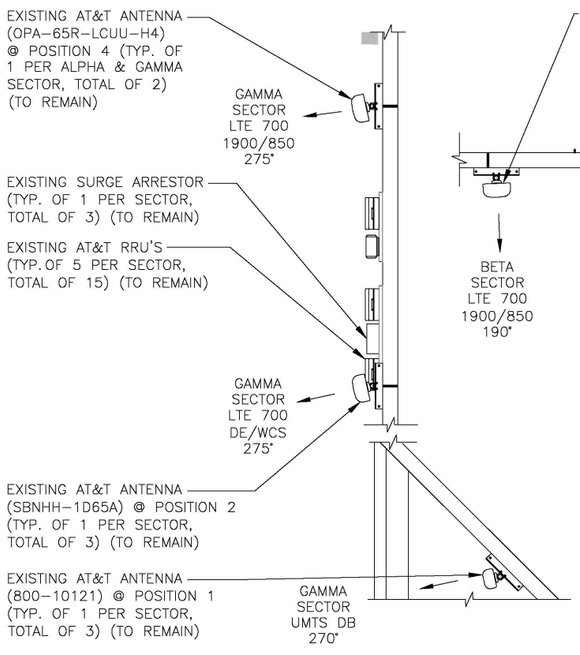
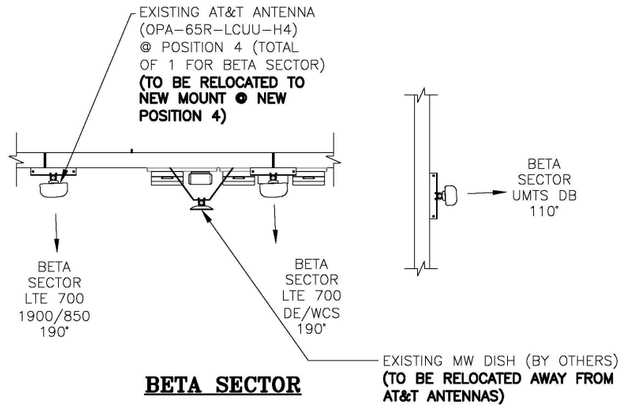


ALPHA SECTOR

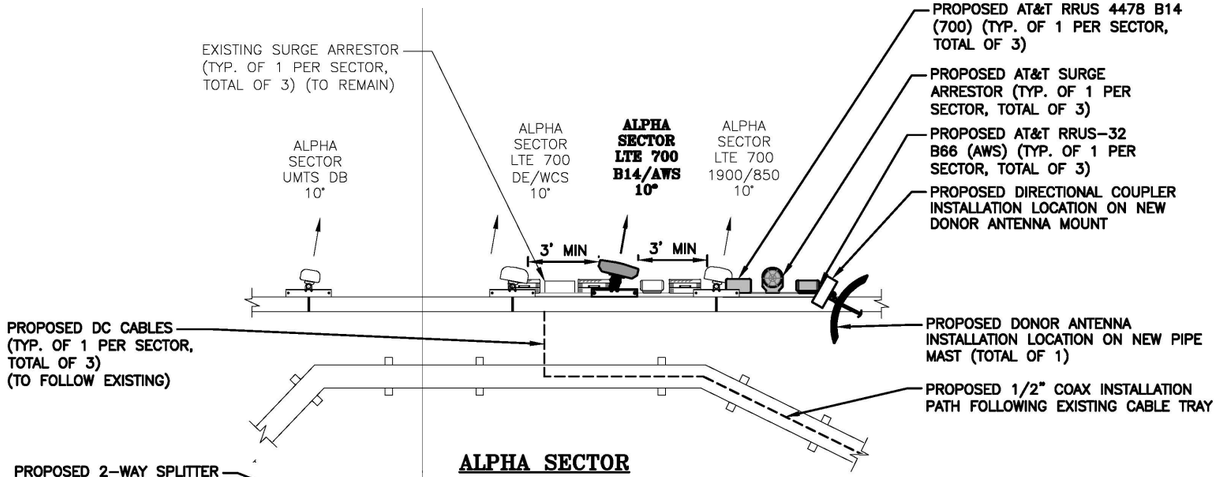




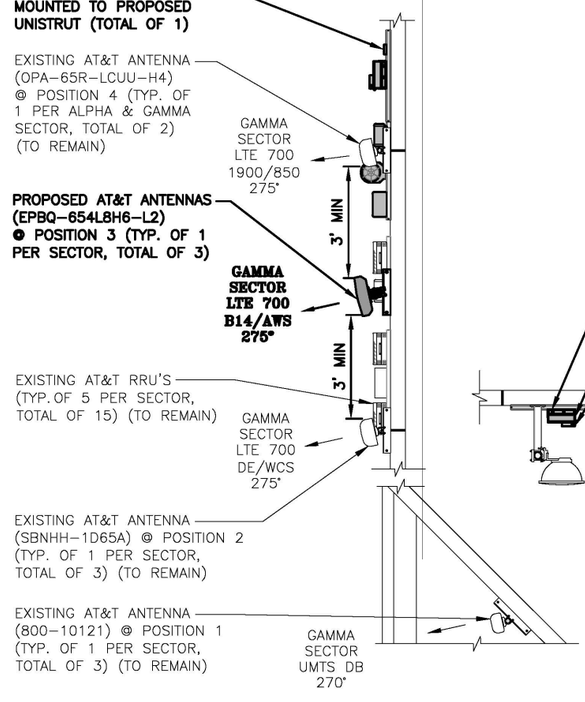
BETA SECTOR

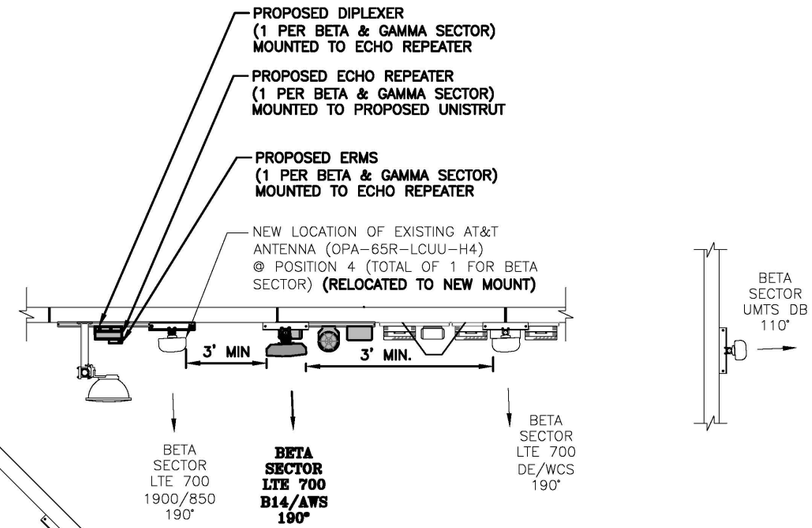
GAMMA SECTOR

EXISTING ANTENNA LAYOUT (1 / A-3)
SCALE: N.T.S



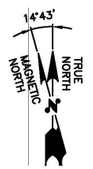
ALPHA SECTOR





BETA SECTOR

GAMMA SECTOR



PROPOSED ANTENNA LAYOUT (2 / A-3)
SCALE: N.T.S

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SCALE: AS SHOWN | DESIGNED BY: AT | DRAWN BY: ET

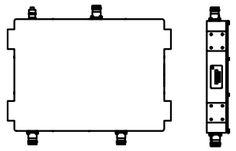
AT&T

ANTENNA LAYOUTS
(LTE 6C/7C/ECHO REPEATER)

SITE NUMBER	DRAWING NUMBER	REV
MA2009	A-3	0

WCS/SDARS BAND DIPLEXER DIMENSIONS	
MODEL #	**DPO-2323-SX**
MANUF.	CCI
HEIGHT	13.46"
WIDTH	13.60"
DEPTH	2.45"
WEIGHT	19.8 LBS

PLAN

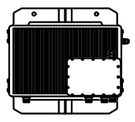


SIDE

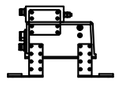
PROPOSED DIPLEXER DETAIL (1 / A-4)
SCALE: N.T.S

2W SDARS ECHO REPEATER DIMENSIONS	
MODEL #	**SER-23002W-EC W/ ERMS**
MANUF.	CCI
HEIGHT	14.56"
WIDTH	13.46"
DEPTH	7.02"
WEIGHT	20.75 LBS

PLAN



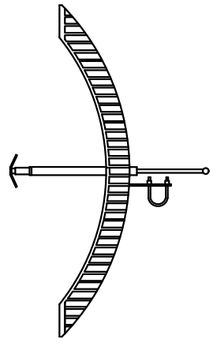
FRONT



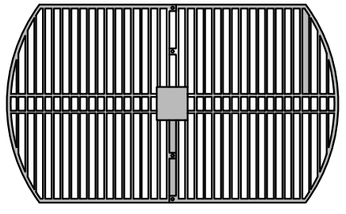
SIDE

PROPOSED 2W SDARS ECO REPEATER DETAIL (2 / A-4)
SCALE: N.T.S

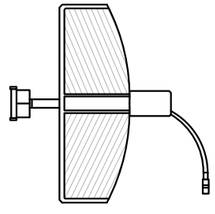
PARABOLIC ANTENNA DIMENSIONS	
MODEL #	**ANT-2300-PB-24**
MANUF.	CCI
HEIGHT	23.75"
WIDTH	39.78"
DEPTH	14.30"
WEIGHT	5.15 LBS



PLAN

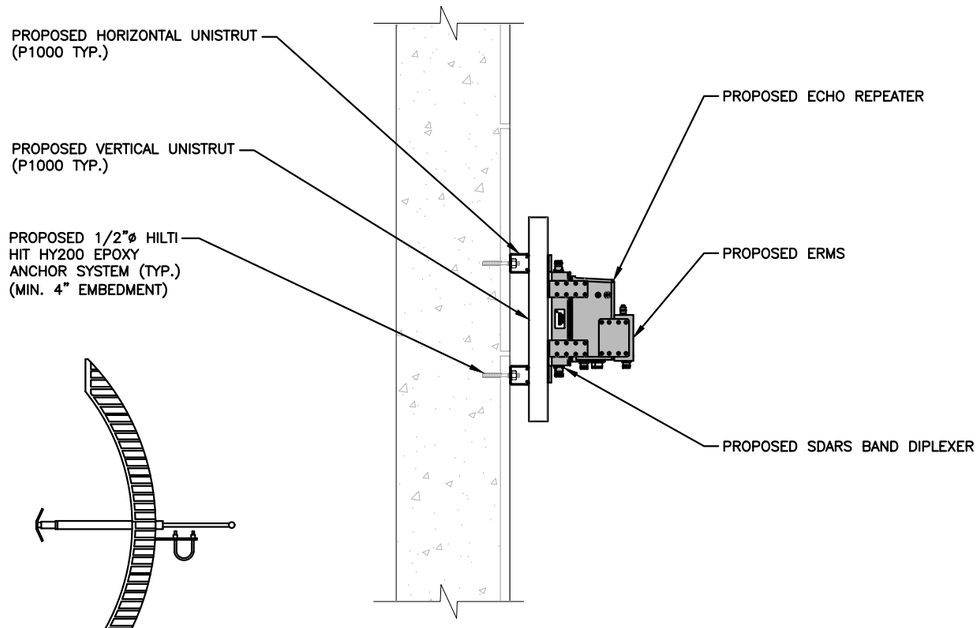


FRONT



SIDE

PROPOSED PARABOLIC ANTENNA DETAIL (3 / A-4)
SCALE: N.T.S



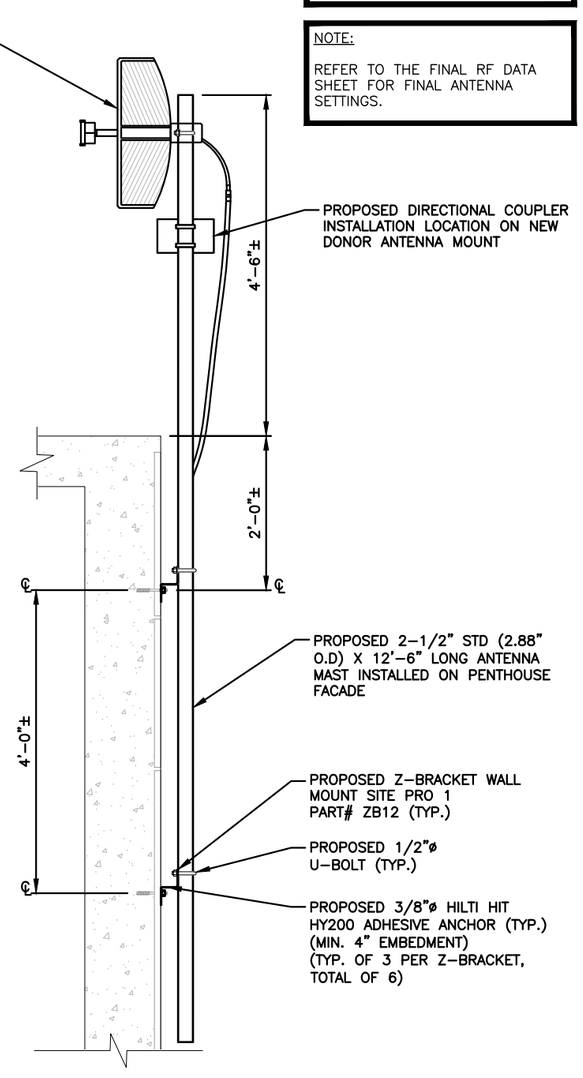
PROPOSED DIPLEXER & REPEATER MOUNTING DETAIL (4 / A-3)
SCALE: N.T.S

NOTE:

REFER TO STRUCTURAL ANALYSIS BY: HUDSON DESIGN GROUP, LLC, DATED: **APRIL 16, 2019 (REV.2)**, FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT.

NOTE:

REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS.



PROPOSED DONOR ANTENNA MOUNTING DETAIL (5 / A-4)
SCALE: N.T.S

HUDSON Design Group LLC
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CENTERLINE COMMUNICATIONS
750 WEST CENTER STREET., SUITE #301
WEST BRIDGEWATER, MA 02379

SITE NUMBER: MA2009
SITE NAME: CAMBRIDGE PARK
150 CAMBRIDGE PARK DRIVE
CAMBRIDGE, MA 02140
MIDDLESEX COUNTY

at&t
550 COCHITUATE ROAD
FRAMINGHAM, MA 01701

NO.	DATE	REVISIONS	BY	CHK	APP'D
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A	04/01/19	ISSUED FOR REVIEW	ET	AT	DJC

SCALE: AS SHOWN | DESIGNED BY: AT | DRAWN BY: ET

AT&T

DETAILS
(LTE 6C/7C/ECHO REPEATER)

SITE NUMBER	DRAWING NUMBER	REV
MA2009	A-4	0

NOTE:

REFER TO STRUCTURAL ANALYSIS BY: HUDSON DESIGN GROUP, LLC, DATED: **APRIL 16, 2019 (REV.2)**, FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT.

NOTE:

REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS.

ANTENNA SCHEDULE

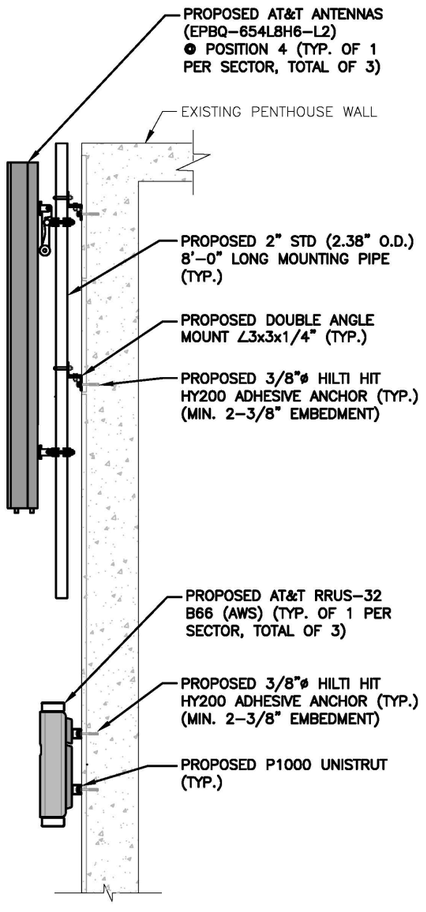
SECTOR	EXISTING/ PROPOSED	BAND	ANTENNA	SIZE (INCHES) (L x W x D)	ANTENNA ℄ HEIGHT	AZIMUTH	TMA/ DIPLEXER	ECHO REPEATER	RRU	SIZE (INCHES) (L x W x D)	FEEDER	RAYCAP
A1	EXISTING	UMTS 850	800-10121	54.5X10.3X5.9	144'-0"±	10°	(E)(1) CCI DTMABP7819VG12A	–	–	–	(2) 1-5/8 COAX	(E)(1) RAYCAP SURGE PROTECTOR (P)(1) RAYCAP DC6-48-60-18-8F
A2	EXISTING	LTE 700 DE/WCS	SBNHH-1D65A	55X11.9X7.1	144'-0"±	10°	–		RRUS-32 (WCS) (E)(1)(G) RRUS-E2 (700 D/E)	– –	(2) 1-5/8 COAX	
A3	**PROPOSED**	**LTE 700 B14/AWS**	**EPBQ-654L8H6-L2**	**73X21X6.3**	**144'-0"±**	**10°**	–		**(P)(1) B14 4478 (700) (P)(1) RRUS-32 B66 (AWS)**	**18.1X13.4X8.3 27.2X12.1X7.0**	**(1) DC POWER**	
A4	EXISTING	LTE 700/PCS/ 850	OPA-65R-LCUU-H4	48X14.4X7.3	144'-0"±	10°	–		(E)(1) RRUS-11 (700) (E)(1) RRUS-11 (850) (E)(1) RRUS-12 (PCS) (E)(1) RRUS-12 (PCS)	– – – –	–	
B1	EXISTING	UMTS 850	800-10121	54.5X10.3X5.9	144'-0"±	110°	(E)(1) CCI DTMABP7819VG12A	**(P)(1) DPO-2323-SX (P)(1) SER-23002W-EC W/ERMS**	–	–	(2) 1-5/8 COAX	(E)(1) RAYCAP SURGE PROTECTOR (P)(1) RAYCAP DC6-48-60-18-8F
B2	EXISTING	LTE 700 DE/WCS	SBNHH-1D65A	55X11.9X7.1	144'-0"±	190°	–		RRUS-32 (WCS) (E)(1)(G) RRUS-E2 (700 D/E)	– –	(2) 1-5/8 COAX	
B3	**PROPOSED**	**LTE 700 B14/AWS**	**EPBQ-654L8H6-L2**	**73X21X6.3**	**144'-0"±**	**190°**	–		**(P)(1) B14 4478 (700) (P)(1) RRUS-32 B66 (AWS)**	**18.1X13.4X8.3 27.2X12.1X7.0**	**(1) DC POWER**	
B4	EXISTING	LTE 700/PCS/ 850	OPA-65R-LCUU-H4	48X14.4X7.3	144'-0"±	190°	–		(E)(1) RRUS-11 (700) (E)(1) RRUS-11 (850) (E)(1) RRUS-12 (PCS) (E)(1) RRUS-12 (PCS)	– – – –	–	
C1	EXISTING	UMTS 850	800-10121	54.5X10.3X5.9	144'-0"±	270°	(E)(1) CCI DTMABP7819VG12A	**(P)(1) DPO-2323-SX (P)(1) SER-23002W-EC W/ERMS**	–	–	(2) 1-5/8 COAX	(E)(1) RAYCAP SURGE PROTECTOR (P)(1) RAYCAP DC6-48-60-18-8F
C2	EXISTING	LTE 700 DE/WCS	SBNHH-1D65A	55X11.9X7.1	144'-0"±	275°	–		RRUS-32 (WCS) (E)(1)(G) RRUS-E2 (700 D/E)	– –	(2) 1-5/8 COAX	
C3	**PROPOSED**	**LTE 700 B14/AWS**	**EPBQ-654L8H6-L2**	**73X21X6.3**	**144'-0"±**	**275°**	–		**(P)(1) B14 4478 (700) (P)(1) RRUS-32 B66 (AWS)**	**18.1X13.4X8.3 27.2X12.1X7.0**	**(1) DC POWER**	
C4	EXISTING	LTE 700/PCS/ 850	OPA-65R-LCUU-H4	48X14.4X7.3	144'-0"±	275°	–		(E)(1) RRUS-11 (700) (E)(1) RRUS-11 (850) (E)(1) RRUS-12 (PCS) (E)(1) RRUS-12 (PCS)	– – – –	–	

RRU CHART

QUANTITY	MODEL	L	W	D
6(E)	RRUS-11	19.7"	17.0"	7.2"
6(E)	RRUS-12	20.4"	18.5"	7.5"
3(E)3(P)	RRUS-32	27.2"	12.1"	7.0"
3(E)	RRUS-E2	20.0"	18.5"	7.5"
3(P)	B14 4478	18.1"	13.4"	8.3"

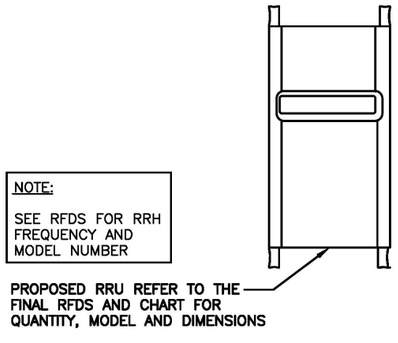
NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS

FINAL ANTENNA CONFIGURATION TABLE (1 / A-5)



PROPOSED ANTENNA & RRU MOUNTING DETAIL (2 / A-5)
22x34 SCALE: 3/4"=1'-0"
11x17 SCALE: 3/8"=1'-0"

0 8" 1'-4" 2'-8" 4'-0"

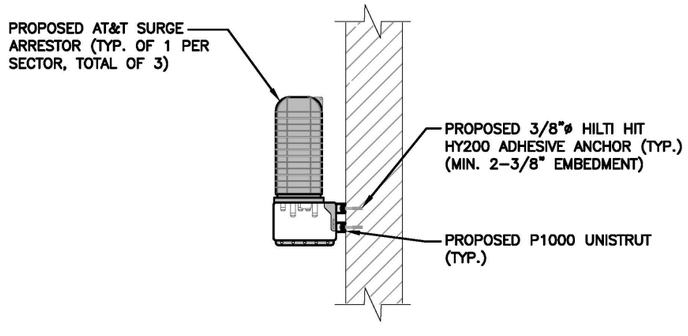


NOTE:
SEE RFDS FOR RRH FREQUENCY AND MODEL NUMBER

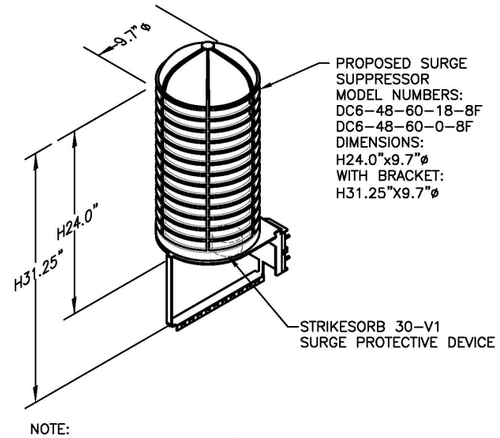
PROPOSED RRU REFER TO THE FINAL RFDS AND CHART FOR QUANTITY, MODEL AND DIMENSIONS

NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS.

PROPOSED RRUS DETAIL (3 / A-5)
SCALE: N.T.S



PROPOSED ANTENNA & RRU MOUNTING DETAIL (4 / A-5)
22x34 SCALE: 3/4"=1'-0"
11x17 SCALE: 3/8"=1'-0"



NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS.

DC SURGE SUPPRESSOR DETAIL (5 / A-5)
SCALE: N.T.S

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WEST BRIDGEWATER, MA 02379

SITE NUMBER: MA2009
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at&t
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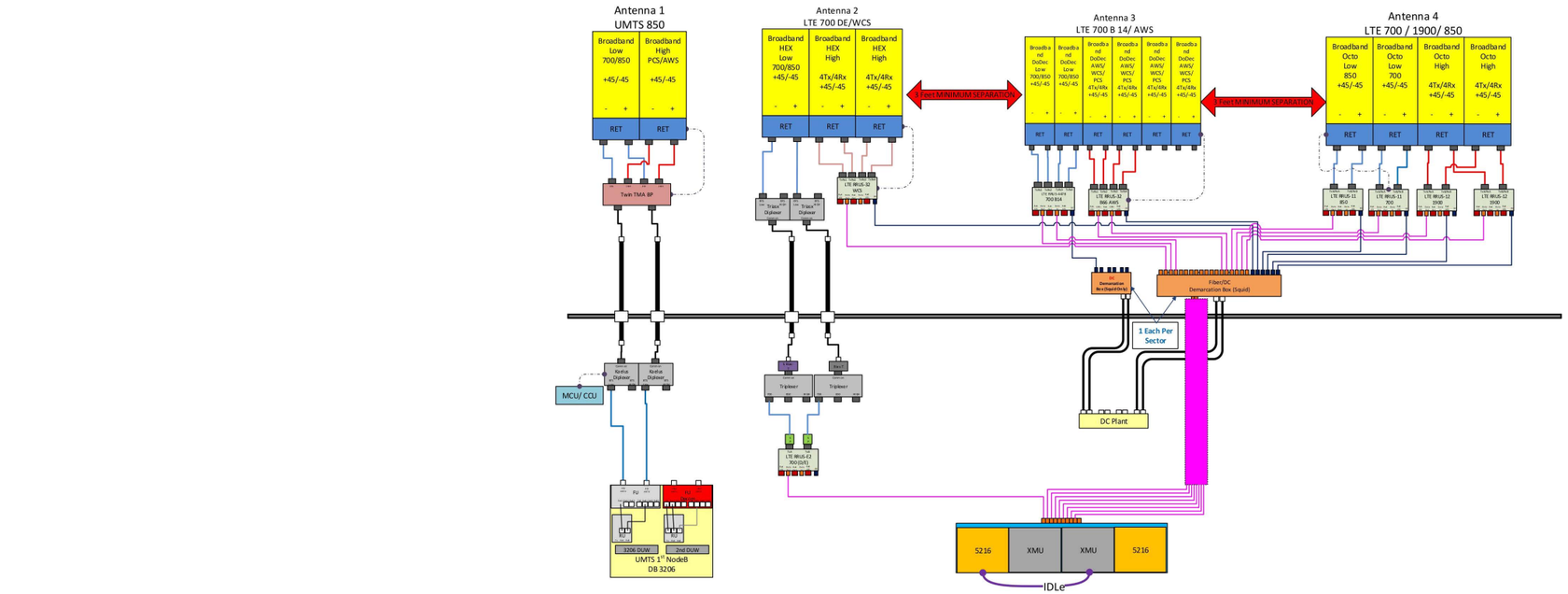
SCALE: AS SHOWN | DESIGNED BY: AT | DRAWN BY: ET

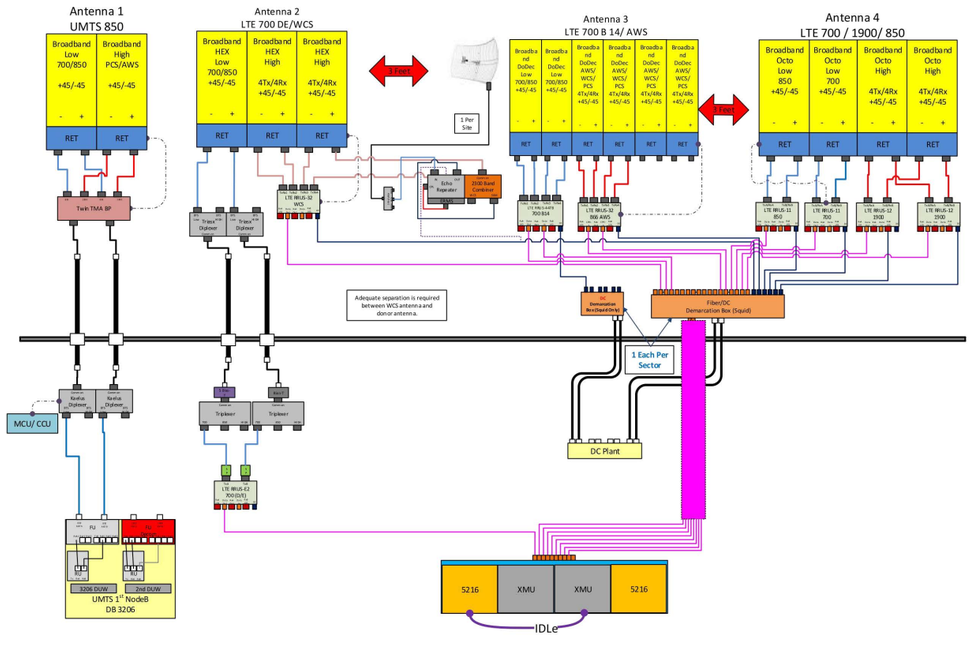
AT&T

DETAILS
(LTE 6C/7C/ECHO REPEATER)

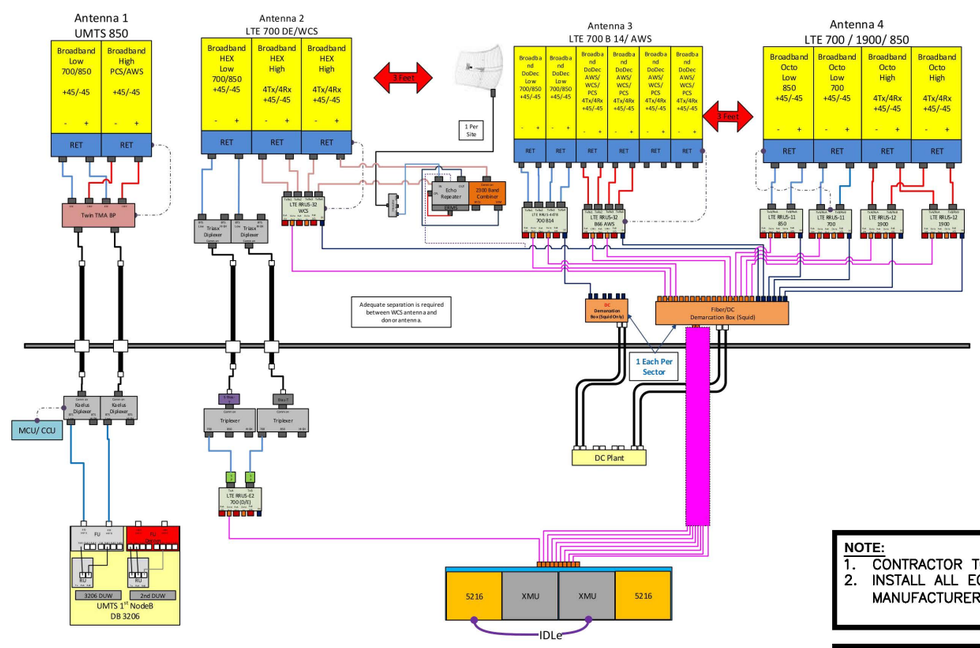
SITE NUMBER	DRAWING NUMBER	REV
MA2009	A-5	0



ALPHA SECTOR



BETA SECTOR



GAMMA SECTOR

NOTE:
1. CONTRACTOR TO CONFIRM ALL PARTS.
2. INSTALL ALL EQUIPMENT TO MANUFACTURER'S RECOMMENDATIONS

NOTE:

REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS.

RF PLUMBING DIAGRAM 1 / RF–1
SCALE: N.T.S

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SCALE: AS SHOWN | DESIGNED BY: AT | DRAWN BY: ET

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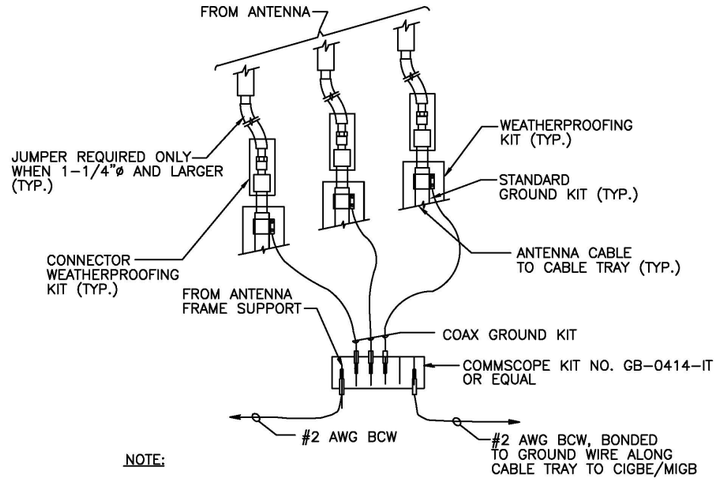
RF PLUMBING DIAGRAMS
(LTE 6C/7C/ECHO REPEATER)

SITE NUMBER	DRAWING NUMBER	REV
MA2009	RF–1	0



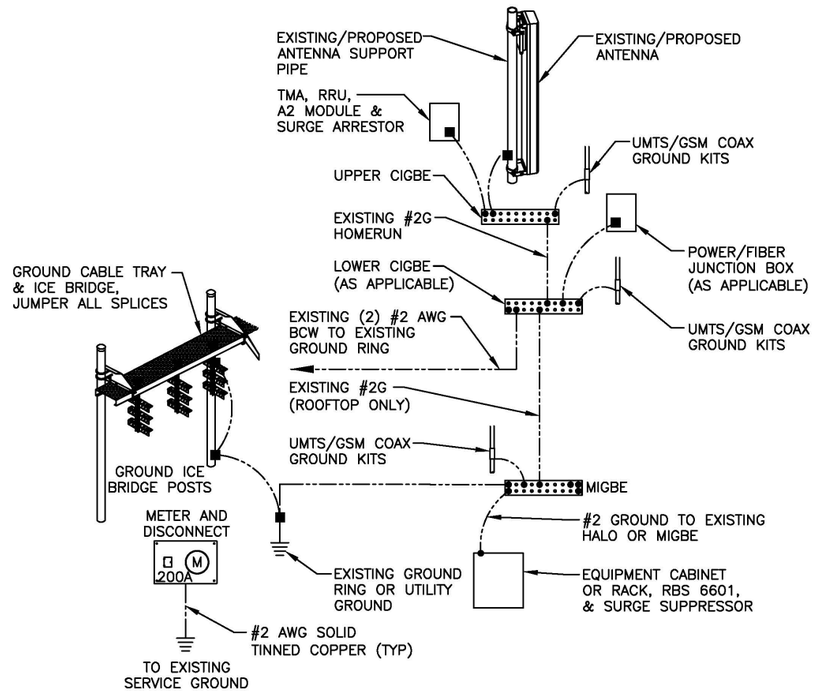
NOTE:

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

GROUND WIRE TO GROUND BAR CONNECTION DETAIL

SCALE: N.T.S

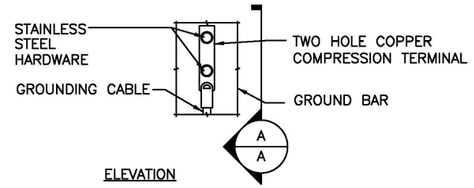
1 / G-1



GROUNDING RISER DIAGRAM

SCALE: N.T.S

2 / G-1



NOTE:

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

TYPICAL GROUND BAR CONNECTION DETAIL

SCALE: N.T.S

3 / G-1

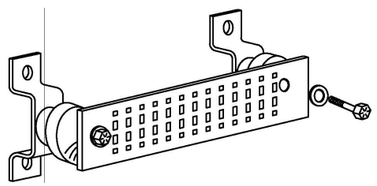
EACH GROUND CONDUCTOR TERMINATING ON ANY GROUND BAR SHALL HAVE AN IDENTIFICATION TAG ATTACHED AT EACH END THAT WILL IDENTIFY ITS ORIGIN AND DESTINATION.

SECTION "P" – SURGE PRODUCERS

CABLE ENTRY PORTS (HATCH PLATES) (#2)
GENERATOR FRAMEWORK (IF AVAILABLE) (#2)
TELCO GROUND BAR
COMMERCIAL POWER COMMON NEUTRAL/GROUND BOND (#2)
+24V POWER SUPPLY RETURN BAR (#2)
-48V POWER SUPPLY RETURN BAR (#2)
RECTIFIER FRAMES.

SECTION "A" – SURGE ABSORBERS

INTERIOR GROUND RING (#2)
EXTERNAL EARTH GROUND FIELD (BURIED GROUND RING) (#2)
METALLIC COLD WATER PIPE (IF AVAILABLE) (#2)
BUILDING STEEL (IF AVAILABLE) (#2)



GROUND BAR - DETAIL

SCALE: N.T.S

4 / G-1

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SCALE: AS SHOWN | DESIGNED BY: AT | DRAWN BY: ET

AT&T

GROUNDING DETAILS
(LTE 6C/7C/ECHO REPEATER)

SITE NUMBER	DRAWING NUMBER	REV
MA2009	G-1	0

ANTENNA SCHEDULE

SECTOR	EXISTING/ PROPOSED	BAND	ANTENNA	SIZE (INCHES) (L x W x D)	ANTENNA ℄ HEIGHT	AZIMUTH	TMA/ DIPLEXER	RRU	SIZE (INCHES) (L x W x D)	FEEDER	RAYCAP
A1	EXISTING	LTE 700 BC/PCS	HPA-65R-BUU-H4	48X14.8X9	129'-6"±	20°	–	(E) RRUS-11 (700) (E) RRUS-12 (PCS) (E) RRUS-12 (PCS)	– – –	–	(E) (1) RAYCAP DC2-48-60-0-9E (P) (1) RAYCAP DC6-48-60-0-8C
A2	**PROPOSED**	**LTE 700(B14)AWS J**	**800-10964**	**59X20X6.9**	**129'-6"±**	**20°**	–	**(P) 4426 (B66)** **(P) B14 4478**	**15X13.2X7.4** **15X13.2X7.4**	–	
A3	EXISTING	LTE 700 DE/850/WCS	OPA-65R-LCUU-H4	48X14.4X7.3	129'-6"±	20°	–	(E) RRUS-E2 (700) (E) RRUS-32 (WCS)	– –	--	
A4	EXISTING	UMTS 850	742-264	51.8X10.3X5.5	129'-6"±	30°	(E) LGP21401 (E) LGP21401	–	–	(2) 1-5/8 COAX	
B1	EXISTING	LTE 700 BC/PCS	HPA-65R-BUU-H4	48X14.8X9	129'-6"±	135±	–	(E) RRUS-11 (700) (E) RRUS-12 (PCS) (E) RRUS-12 (PCS)	– – –	–	(E) (1) RAYCAP DC2-48-60-0-9E (P) (1) RAYCAP DC6-48-60-0-8C
B2	**PROPOSED**	**LTE 700(B14)AWS J**	**800-10964**	**59X20X6.9**	**129'-6"±**	**135±**	–	**(P) 4426 (B66)** **(P) B14 4478**	**15X13.2X7.4** **15X13.2X7.4**	–	
B3	EXISTING	LTE 700 DE/850/WCS	OPA-65R-LCUU-H4	48X14.4X7.3	129'-6"±	135±	–	(E) RRUS-E2 (700) (E) RRUS-32 (WCS)	– –	--	
B4	EXISTING	UMTS 850	742-264	51.8X10.3X5.5	129'-6"±	150°	(E) LGP21401 (E) LGP21401	–	–	(2) 1-5/8 COAX	
C1	EXISTING	LTE 700 BC/PCS	HPA-65R-BUU-H4	48X14.8X9	129'-6"±	265°	–	(E) RRUS-11 (700) (E) RRUS-12 (PCS) (E) RRUS-12 (PCS)	– – –	–	(E) (1) RAYCAP DC2-48-60-0-9E (P) (1) RAYCAP DC6-48-60-0-8C
C2	**PROPOSED**	**LTE 700(B14)AWS J**	**800-10964**	**59X20X6.9**	**129'-6"±**	265°	–	**(P) 4426 (B66)** **(P) B14 4478**	**15X13.2X7.4** **15X13.2X7.4**	–	
C3	EXISTING	LTE 700 DE/850/WCS	OPA-65R-LCUU-H4	48X14.4X7.3	129'-6"±	265°	–	(E) RRUS-E2 (700) (E) RRUS-32 (WCS)	– –	--	
C4	EXISTING	UMTS 850	742-264	51.8X10.3X5.5	129'-6"±	270°	(E) LGP21401 (E) LGP21401	–	–	(2) 1-5/8 COAX	

FINAL ANTENNA CONFIGURATION TABLE 5 / A-4

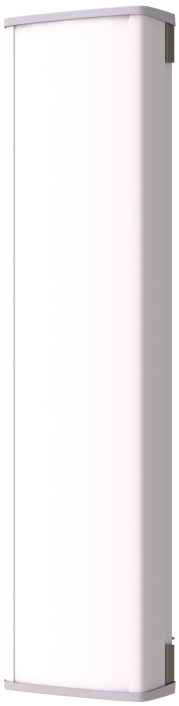
8-Port Antenna	R1	R2	Y1	Y2
Frequency Range	698–960	698–960	1695–2690	1695–2690
Dual Polarization	X	X	X	X
HPBW	65°	65°	65°	65°
Adjust. Electr. DT	2°–16°	2°–16°	2.5°–12°	2.5°–12°

set by *FlexRET*

KATHREIN

AISG Antenna Interface Standards Group

8-Port Antenna 698–960/698–960/1695–2690/1695–2690 65°/65°/65°/65° 14/14/17.5/17.5dBi 2°–16°/2°–16°/2.5°–12°/2.5°–12°T



Type No.		80010964			
Left side, lowband		R1, connector 1–2			
		698–960			
Frequency Range	MHz	698 – 806	791 – 862	824 – 894	880 – 960
Gain at mid Tilt	dBi	13.6	14.2	14.3	14.6
Gain over all Tilts	dBi	13.6 ± 0.6	14.2 ± 0.3	14.3 ± 0.3	14.5 ± 0.4
Horizontal Pattern:					
Azimuth Beamwidth	°	64.6 ± 4.2	62.5 ± 2.4	62.0 ± 2.4	59.3 ± 3.6
Front-to-Back Ratio, Total Power, ± 30°	dB	> 21.5	> 22.5	> 25.2	> 25.3
Vertical Pattern:					
Elevation Beamwidth	°	17.8 ± 1.8	16.2 ± 1.0	15.8 ± 0.8	14.7 ± 1.1
Electrical Downtilt continuously adjustable	°	2.0 – 16.0			
Tilt Accuracy	°	< 0.7	< 0.7	< 0.8	< 0.8
First Upper Side Lobe Suppression	dB	> 17.3	> 15.8	> 15.2	> 14.6
Cross Polar Isolation	dB	> 28			
Port to Port Isolation	dB	> 27 (R1 // R2) > 30 (R1 // Y1, Y2)			
Max. Effective Power per Port	W	300 (at 50 °C ambient temperature)			
Max. Effective Power Port 1–2	W	600 (at 50 °C ambient temperature)			

Values based on NGMN-P-BASTA (version 9.6) requirements.

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Right side, lowband		R2, connector 3–4			
		698–960			
Frequency Range	MHz	698 – 806	791 – 862	824 – 894	880 – 960
Gain at mid Tilt	dBi	13.4	14.1	14.3	14.3
Gain over all Tilts	dBi	13.4 ± 0.5	14.0 ± 0.5	14.2 ± 0.3	14.3 ± 0.4
Horizontal Pattern:					
Azimuth Beamwidth	°	64.1 ± 5.6	61.8 ± 2.9	61.5 ± 2.9	59.5 ± 3.6
Front-to-Back Ratio, Total Power, ± 30°	dB	> 20.6	> 23.6	> 26.1	> 25.5
Vertical Pattern:					
Elevation Beamwidth	°	17.6 ± 1.5	16.1 ± 1.3	15.5 ± 0.7	14.6 ± 0.9
Electrical Downtilt continuously adjustable	°	2.0 – 16.0			
Tilt Accuracy	°	< 1.1	< 0.8	< 0.8	< 1.1
First Upper Side Lobe Suppression	dB	> 17.9	> 14.9	> 14.6	> 15.6
Cross Polar Isolation	dB	> 28			
Port to Port Isolation	dB	> 27 (R2 // R1) > 30 (R2 // Y1, Y2)			
Max. Effective Power per Port	W	300 (at 50 °C ambient temperature)			
Max. Effective Power Port 3–4	W	600 (at 50 °C ambient temperature)			

Values based on NGMN-P-BASTA (version 9.6) requirements.

Left side, highband		Y1, connector 5–6				
		1695–2690				
Frequency Range	MHz	1695 – 1880	1850 – 1990	1920 – 2170	2300 – 2400	2500 – 2690
Gain at mid Tilt	dBi	16.9	17.3	17.5	17.7	17.2
Gain over all Tilts	dBi	16.9 ± 0.3	17.3 ± 0.4	17.4 ± 0.4	17.7 ± 0.8	17.1 ± 0.9
Horizontal Pattern:						
Azimuth Beamwidth	°	64.4 ± 4.0	62.7 ± 4.9	60.3 ± 4.5	53.6 ± 4.5	55.6 ± 8.3
Front-to-Back Ratio, Total Power, ± 30°	dB	> 23.8	> 25.3	> 25.2	> 27.2	> 23.2
Vertical Pattern:						
Elevation Beamwidth	°	6.8 ± 0.3	6.4 ± 0.2	6.0 ± 0.5	5.2 ± 0.3	4.7 ± 0.3
Electrical Downtilt continuously adjustable	°	2.5 – 12.0				
Tilt Accuracy	°	< 0.4	< 0.4	< 0.3	< 0.4	< 0.4
First Upper Side Lobe Suppression	dB	> 15.6	> 16.5	> 15.7	> 14.6	> 14.2
Cross Polar Isolation	dB	> 26, typically > 30 dB				
Port to Port Isolation	dB	> 30 (Y1 // R1, R2, Y2)				
Max. Effective Power per Port	W	200 (at 50 °C ambient temperature)				
Max. Effective Power Port 5–6	W	400 (at 50 °C ambient temperature)				

Values based on NGMN-P-BASTA (version 9.6) requirements.

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Right side, highband		Y2, connector 7–8				
		1695–2690				
Frequency Range	MHz	1695 – 1880	1850 – 1990	1920 – 2170	2300 – 2400	2500 – 2690
Gain at mid Tilt	dBi	16.8	17.2	17.3	17.6	17.0
Gain over all Tilts	dBi	16.8 ± 0.4	17.2 ± 0.5	17.2 ± 0.6	17.6 ± 0.9	17.0 ± 1.0
Horizontal Pattern:						
Azimuth Beamwidth	°	67.0 ± 4.7	63.7 ± 6.7	60.7 ± 6.8	54.6 ± 6.0	53.9 ± 9.8
Front-to-Back Ratio, Total Power, ± 30°	dB	> 24.2	> 25.3	> 25.1	> 26.2	> 22.0
Vertical Pattern:						
Elevation Beamwidth	°	6.8 ± 0.3	6.4 ± 0.3	6.0 ± 0.5	5.3 ± 0.3	4.7 ± 0.3
Electrical Downtilt continuously adjustable	°	2.5 – 12.0				
Tilt Accuracy	°	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
First Upper Side Lobe Suppression	dB	> 16.1	> 16.3	> 15.2	> 15.8	> 13.8
Cross Polar Isolation	dB	> 26, typically > 30 dB				
Port to Port Isolation	dB	> 30 (Y2 // R1, R2, Y1)				
Max. Effective Power per Port	W	200 (at 50 °C ambient temperature)				
Max. Effective Power Port 7–8	W	400 (at 50 °C ambient temperature)				

Values based on NGMN-P-BASTA (version 9.6) requirements.

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Electrical specifications, all systems		
Impedance	Ω	50
VSWR		< 1.5
Return Loss	dB	> 14
Interband Isolation	dB	> 27
Passive Intermodulation	dBc	< –153 (2 x 43 dBm carrier)
Polarization	°	+45, –45
Max. Effective Power for the Antenna	W	1200 (at 50 °C ambient temperature)

Values based on NGMN-P-BASTA (version 9.6) requirements.

Mechanical specifications		
Input		8 x 4.3-10 female
Connector Position		bottom
Adjustment Mechanism		FlexRET, continuously adjustable
Wind load (at Rated Wind Speed: 150 km/h) (93 mph)	N | lbf	Frontal: 835 | 188 Maximal: 840 | 189 Lateral: 145 | 33
EPA (m^2 | ft^2)		Front: 0.767 | 8.26 Lateral: .132 | 1.42
Max. Wind Velocity	km/h mph	241 / 145 150 / 33
Height / Width / Depth	mm inches	1499 / 508 / 175 59.0 / 20.0 / 6.9
Category of Mounting Hardware		XH (X-Heavy)
Weight	kg lb	38.0 / 43.0 (clamps incl.) 83.8 / 94.8 (clamps incl.)
Packing Size	mm inches	1700 / 542 / 268 66.9 / 21.3 / 10.6
Scope of Supply		Panel, FlexRET and clamps for 55–115 mm | 2.2–4.5 inches diameter

Accessories (order separately if required)

Type No.	Description	Remarks mm | inches	Weight approx. kg | lb	Units per antenna
85010097	2 clamps	Mast diameter: 110 – 220 | 4.3 – 8.7	9.4 | 20.7	1
85010099	1 downtilt kit	Downtilt angle: 0° – 18°	10.6 | 23.4	1
86010154	Site Sharing Adapter	3-way (see figure below)	0.7 | 1.5	
86010155	Site Sharing Adapter	6-way (see figure below)	1.4 | 3.1	
86010162	Gender Adapter	Solely to be used in combination with the FlexRET module 86010153V01	0.045 | 0.099	1
86010163	Port Extender		0.16 | 0.35	1

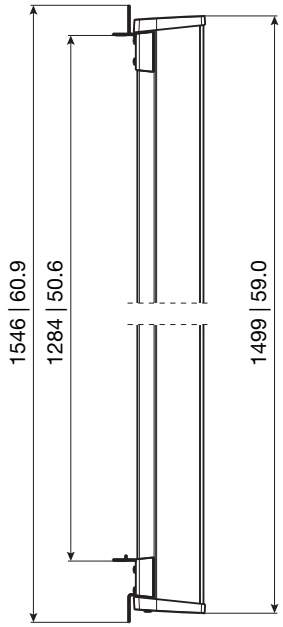
Accessories (included in the scope of supply)

85010096	2 clamps	Mast diameter: 55 – 115 | 2.2 – 4.5	5.0 | 11.0	1
86010153V01	FlexRET			1

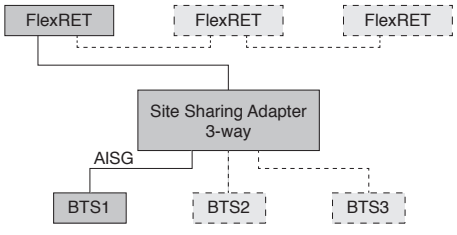
For downtilt mounting use the clamps for an appropriate mast diameter together with the downtilt kit.
Wall mounting: No additional mounting kit needed.

Material: **Reflector screen:** Aluminum.
Fiberglass housing: It covers totally the internal antenna components. The special design reduces the sealing areas to a minimum and guarantees the best weather protection. Fiberglass material guarantees optimum performance with regards to stability, stiffness, UV resistance and painting. The color of the radome is light grey.
All nuts and bolts: Stainless steel or hot-dip galvanized steel.

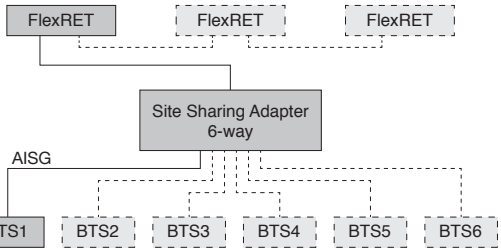
Grounding: The metal parts of the antenna including the mounting kit and the inner conductors are DC grounded.

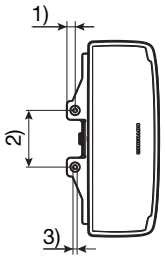


Configuration example with Site Sharing Adapter 86010154



Configuration example with Site Sharing Adapter 86010155





1) 22 | 0.9
2) 150 | 5.9
3) ∅ 11 | 0.4

All dimensions in mm | inches

For more information please refer to the respective data sheets.

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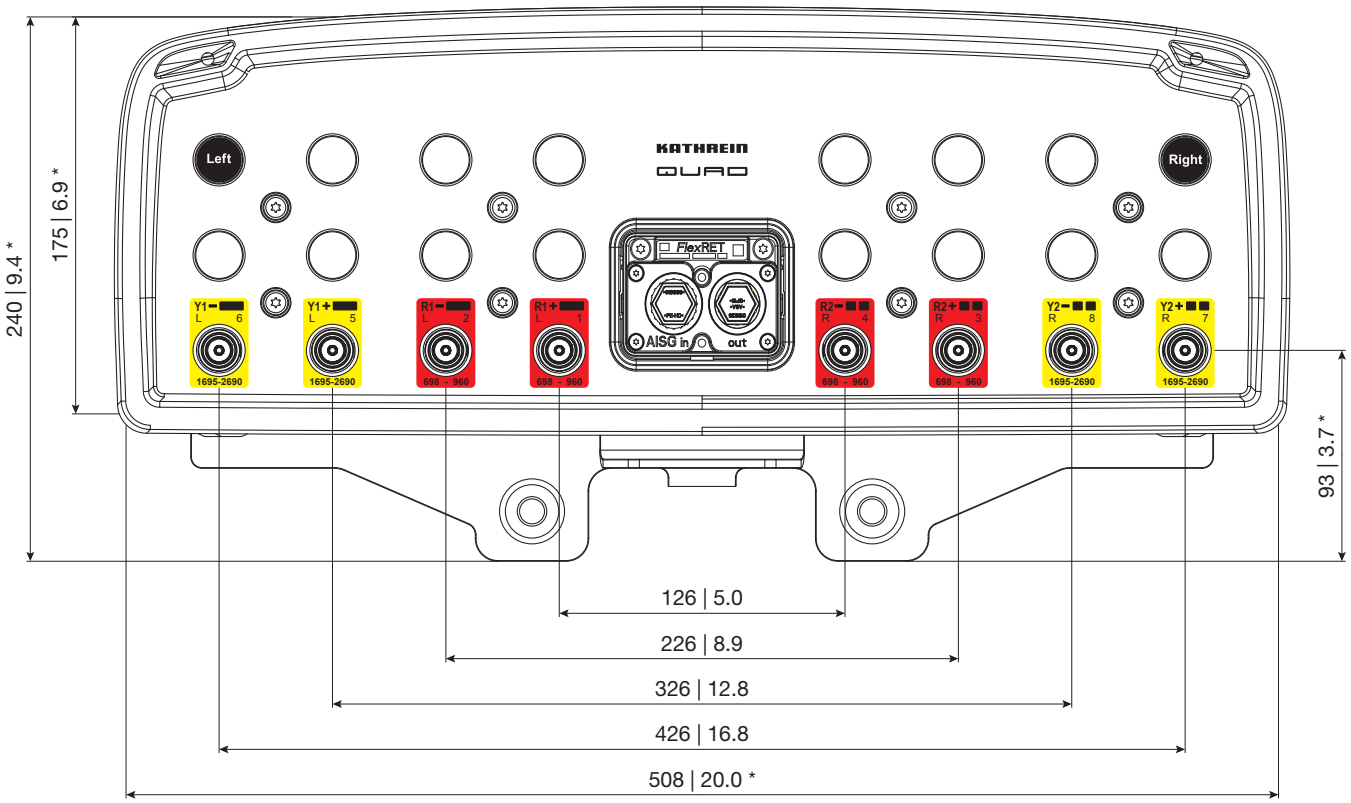
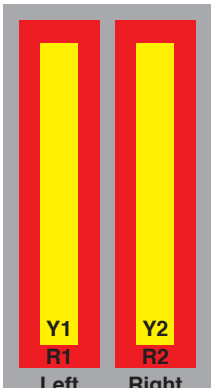
Layout of interface:



Bottom view
* Dimensions refer to radome
All dimensions in mm | inches

Correlation Table

Frequency range	Array	Connector
698–960 MHz	R1	1–2
698–960 MHz	R2	3–4
1695–2690 MHz	Y1	5–6
1695–2690 MHz	Y2	7–8



Order Information

Model	Description
80010964	8-Port antenna with mounting bracket
80010964K	8-Port antenna with mounting bracket and mechanical tilt bracket

Any previous data sheet issues have now become invalid.

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Prepared For:
AT&T - CENTERLINE
Site Number:
MA2009
Site Name:
CAMBRIDGE PARK
150 CAMBRIDGE PARK DRIVE
CAMBRIDGE, MA

SITE NO: MA2009

SITE NAME: CAMBRIDGE PARK

ADDRESS: 150 CAMBRIDGE PARK DRIVE
CAMBRIDGE, MA

at&t
550 COCHITUATE ROAD
FRAMINGHAM, MA 01701

PREPARED FOR:
CENTERLINE COMMUNICATIONS
95 RYAN DRIVE
RAYNHAM, MA 02767

HDG HUDSON Design Group LLC
45 BEECHWOOD DRIVE
N. ANDOVER, MA 01845
TEL: (978) 557-5553
FAX: (978) 336-5586

SITE TYPE: ROOFTOP

DATE: 04/09/2019 | REV: 1

DRAWN BY: KB / KAM

SCALE: N.T.S.

THIS STUDY DOES NOT CLAIM IN ANY WAY TO SHOW THE ONLY AREAS OF VISIBILITY. IT IS MEANT TO SHOW A BROAD REPRESENTATION OF AREAS WHERE THE PROPOSED INSTALLATION MAY BE VISIBLE BASED UPON THE BEST INFORMATION FOR TOPOGRAPHY AND VEGETATION LOCATIONS AVAILABLE TO DATE.

LOCUS MAP

TAKEN FROM GOOGLE.COM ON 08-23-18

LEGEND: ← DIRECTION OF VIEW (#) PHOTO LOCATION

SITE NO: MA2009

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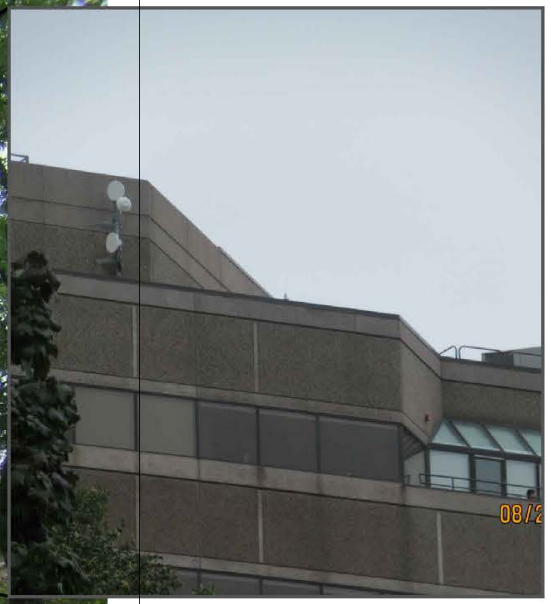
EXISTING CONDITIONS

LOCATION # 1

DATE OF PHOTO: 08/22/2018



DETAIL OF EQUIPMENT

VIEW SOUTHWEST FROM CAMBRIDGE PARK DRIVE

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PROPOSED CONDITIONS

LOCATION # 1

DATE OF PHOTO: 08/22/2018

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EXISTING CONDITIONS

LOCATION # 2

DATE OF PHOTO: 08/22/2018

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PROPOSED CONDITIONS

LOCATION # 2

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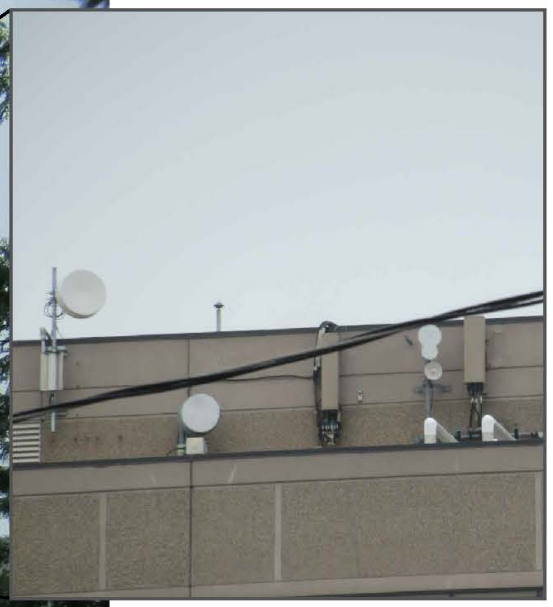
EXISTING CONDITIONS

LOCATION # 3

DATE OF PHOTO: 08/22/2018



DETAIL OF EQUIPMENT

VIEW NORTH FROM FAWCETT ST

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PROPOSED CONDITIONS

LOCATION # 3

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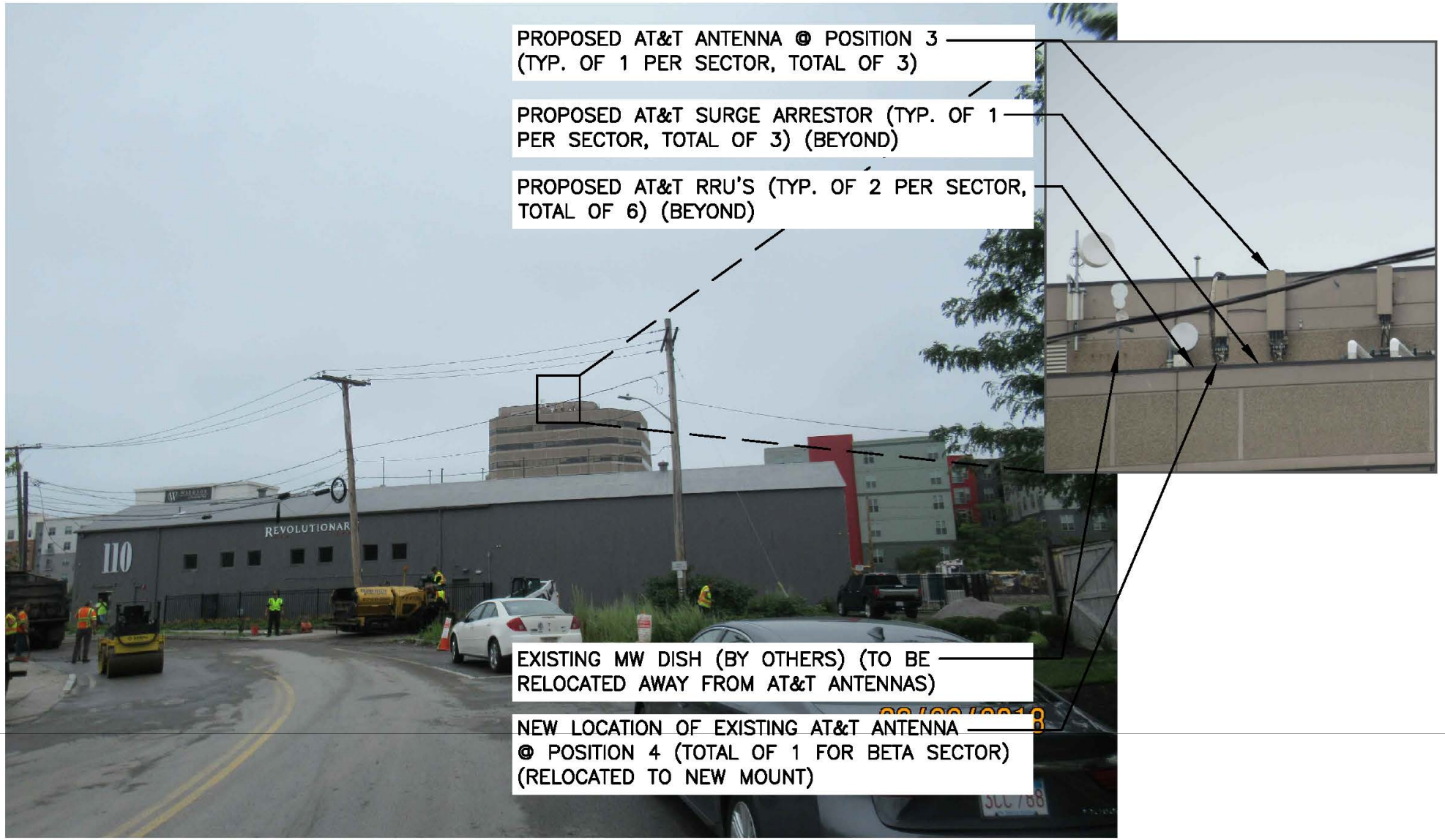

VIEW NORTH FROM FAWCETT ST

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EXISTING CONDITIONS

LOCATION # 4

DATE OF PHOTO: 08/22/2018

DETAIL OF EQUIPMENT

VIEW NORTHEAST FROM MOONEY ST + SMITH PLACE

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SITE TYPE: ROOFTOP

DATE: 04/09/2019 | REV: 1

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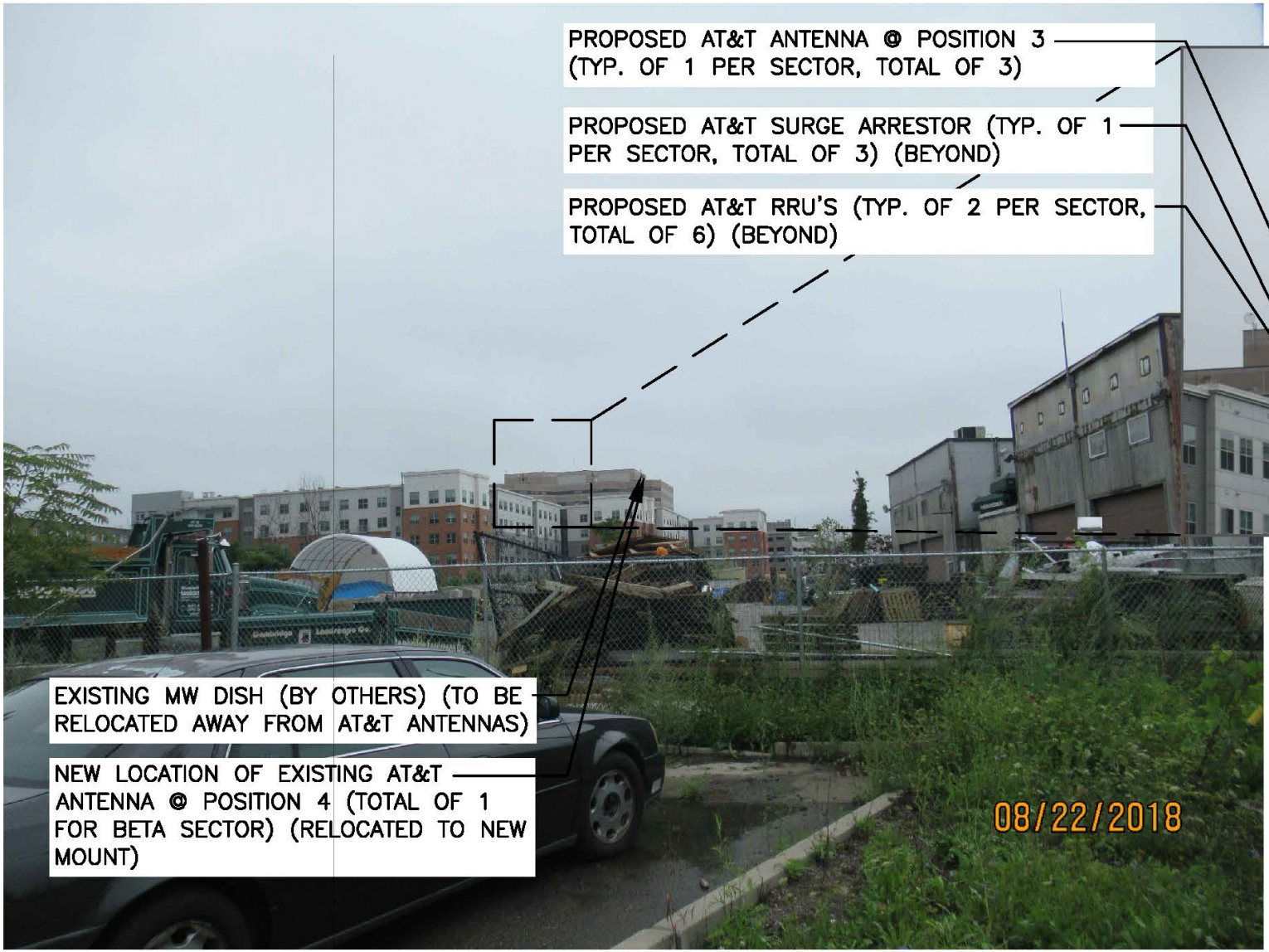
PROPOSED CONDITIONS

LOCATION # 4

DATE OF PHOTO: 08/22/2018



DETAIL OF EQUIPMENT

VIEW NORTHEAST FROM MOONEY ST + SMITH PLACE

SITE NO: MA2009

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EXISTING CONDITIONS

LOCATION # 5

DATE OF PHOTO: 08/22/2018

DETAIL OF EQUIPMENT

VIEW SOUTHEAST FROM CAMBRIDGE PARK DRIVE

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CENTERLINE COMMUNICATIONS
95 RYAN DRIVE
RAYNHAM, MA 02767

HUDSON Design Group LLC
45 BEECHWOOD DRIVE
N. ANDOVER, MA 01845
TEL: (978) 557-5553
FAX: (978) 336-5586

SITE TYPE: ROOFTOP

DATE: 04/09/2019 | REV: 1

DRAWN BY: KB / KAM

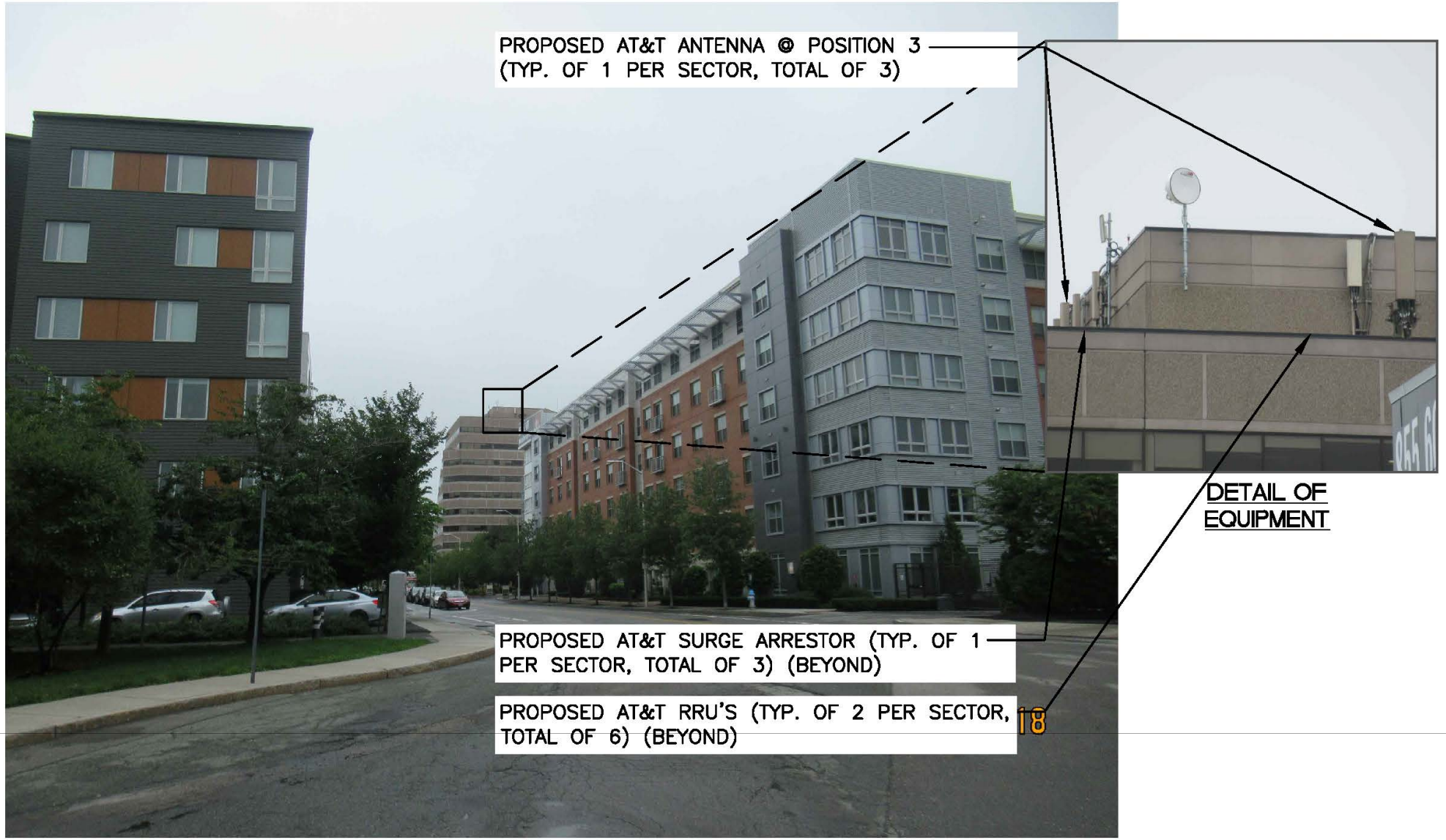
SCALE: N.T.S.

THIS STUDY DOES NOT CLAIM IN ANY WAY TO SHOW THE ONLY AREAS OF VISIBILITY. IT IS MEANT TO SHOW A BROAD REPRESENTATION OF AREAS WHERE THE PROPOSED INSTALLATION MAY BE VISIBLE BASED UPON THE BEST INFORMATION FOR TOPOGRAPHY AND VEGETATION LOCATIONS AVAILABLE TO DATE.

PROPOSED CONDITIONS

LOCATION # 5

DATE OF PHOTO: 08/22/2018



VIEW SOUTHEAST FROM CAMBRIDGE PARK DRIVE

SITE NO: MA2009

SITE NAME: CAMBRIDGE PARK

ADDRESS: 150 CAMBRIDGE PARK DRIVE
CAMBRIDGE, MA

at&t
550 COCHITUATE ROAD
FRAMINGHAM, MA 01701

PREPARED FOR:
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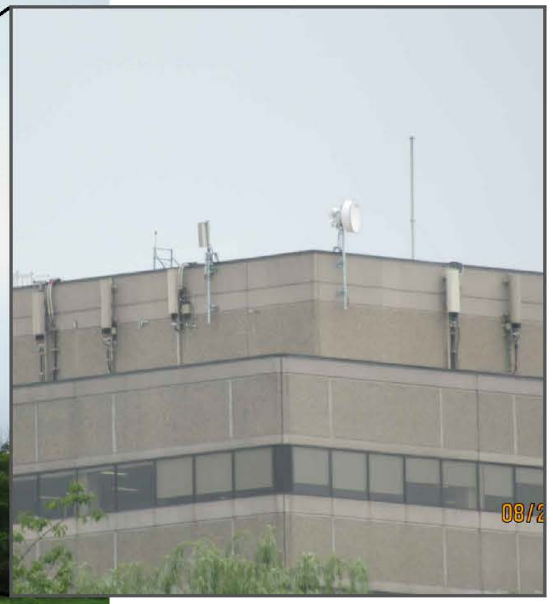
EXISTING CONDITIONS

LOCATION # 6

DATE OF PHOTO: 08/22/2018



DETAIL OF EQUIPMENT

VIEW SOUTHEAST FROM ACORN PARK DRIVE

SITE NO: MA2009

SITE NAME: CAMBRIDGE PARK

ADDRESS: 150 CAMBRIDGE PARK DRIVE
CAMBRIDGE, MA

at&t
550 COCHITUATE ROAD
FRAMINGHAM, MA 01701

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SITE TYPE: ROOFTOP

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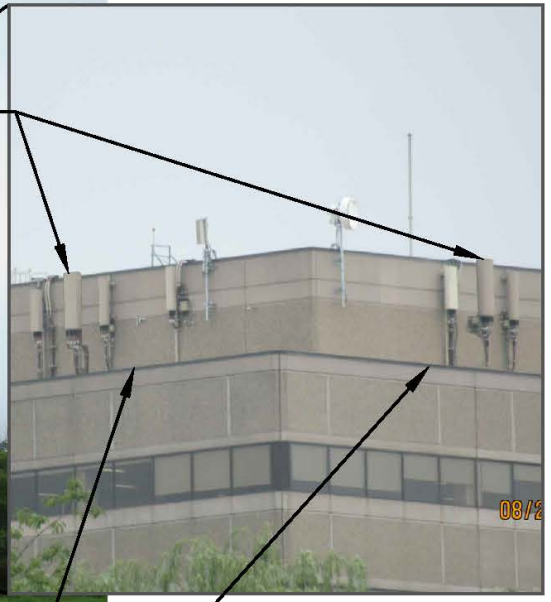
PROPOSED CONDITIONS

LOCATION # 6

DATE OF PHOTO: 08/22/2018



DETAIL OF EQUIPMENT

VIEW SOUTHEAST FROM ACORN PARK DRIVE

SITE NO: MA2009

SITE NAME: CAMBRIDGE PARK

ADDRESS: 150 CAMBRIDGE PARK DRIVE
CAMBRIDGE, MA

at&t
550 COCHITUATE ROAD
FRAMINGHAM, MA 01701

PREPARED FOR:
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N. ANDOVER, MA 01845
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SITE TYPE: ROOFTOP

DATE: 04/09/2019 | REV: 1

DRAWN BY: KB / KAM

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EXISTING/PROPOSED CONDITIONS LOCATION # 7 DATE OF PHOTO: 08/22/2018

VIEW SOUTH FROM ACORN PARK DRIVE (NOT VISIBLE)

SITE NO: MA2009
SITE NAME: CAMBRIDGE PARK
ADDRESS: 150 CAMBRIDGE PARK DRIVE CAMBRIDGE, MA

at&t
550 COCHITUATE ROAD
FRAMINGHAM, MA 01701

PREPARED FOR:
CENTERLINE COMMUNICATIONS
95 RYAN DRIVE
RAYNHAM, MA 02767

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N. ANDOVER, MA 01845
TEL: (978) 557-5553
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SITE TYPE: ROOFTOP
DATE: 04/09/2019 | REV: 1
DRAWN BY: KB / KAM
SCALE: N.T.S.

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EXISTING CONDITIONS

LOCATION # 8

DATE OF PHOTO: 08/22/2018

DETAIL OF EQUIPMENT

VIEW SOUTHEAST FROM CAMBRIDGE PARK DRIVE (PROPOSED EQUIPMENT NOT VISIBLE)

SITE NO: MA2009

SITE NAME: CAMBRIDGE PARK

ADDRESS: 150 CAMBRIDGE PARK DRIVE CAMBRIDGE, MA

at&t

550 COCHITUATE ROAD
FRAMINGHAM, MA 01701

PREPARED FOR:

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AT&T Mobility
550 Cochituate Road
Suite 13 &14
Framingham, MA01701

REPORT OF

RADIO FREQUENCY ENGINEER

The undersigned hereby states the following in support of the application by New Cingular Wireless PCS, LLC by and through its manager AT&T Mobility Corporation ("***AT&T***") to replace three existing panel antennas, add six remote radio units and on the existing building and as shown of the plans submitted with the application (the "Facility") located at 150 Cambridge Park Drive, Cambridge, MA 02140(the "Site").

1. I am a Radio Frequency Engineer employed by AT&T, with an office located at 550 Cochituate Road, Framingham, Massachusetts.

2. My primary responsibilities include radio frequency design and planning in the State of Massachusetts, including the Town of Lexington and surrounding communities.

3. As enabled under its Federal Communications Commission ("FCC") License, AT&T seeks to design its wireless network to provide reliable and adequate wireless services to its customers, whether those customers are on the street, in a vehicle, or in a building. Providing reliable and adequate service to its customers in each context is critical for AT&T to provide the quality of wireless service that customers demand, and to meet the objectives of Congress that a robust, competitive and low cost wireless communications capacity be developed to serve the entire nation.

4. AT&T is enhancing its high speed data services network commonly referred to as "long term evolution" ("LTE"). AT&T operates LTE in the 700 and 1900 MHz frequencies under license from the FCC. AT&T will began to deploy and operate LTE in the 850, 2100 (AWS) and 2300 (WCS) MHz band as well.

5. AT&T uses its 700 MHz frequency to provide a coverage footprint because the 700 MHz frequency generally covers a greater geographic area than the footprint provided by higher frequencies. Additionally, AT&T uses its other frequencies to add capacity in support of the network as the other frequency bands generally covers a smaller geographic area than that provided by the 700 MHz frequency.

6. LTE is designed as a high speed data services network and is adapting to a high fidelity voice network. LTE service is separate and apart from AT&T's existing voice and data networks carried by AT&T's UMTS (3G) service. Additionally, LTE is not integrated into AT&T's existing network or antenna facilities.

7. AT&T is using its best efforts, to the maximum extent possible, to install the enhanced LTE network utilizing existing AT&T sites and facilities to avoid the need to construct new tower sites and antenna facilities.

8. I have thoroughly reviewed the radio frequency engineering studies, reports and computer models prepared by AT&T with respect to the Facility.

9. In order to build out its LTE network and meet customer demand, AT&T must modify the existing facility at 150 Cambridge Park Drive to provide better LTE coverage to area. This proposed modification consists of installing three (3) new RRUS-32 B66; installing three (3) new 4478 B14; replacing three (3) existing antennas; and swapping out two (2) DUS with two (2) 5216 at the shelter.

10. To maintain effective, reliable and uninterrupted service, there must be a continuous series of cell sites located within close proximity to each other so as to overlap in a system comparable to a honeycomb pattern. If there is no cell site available to accept/receive the signal, network service to the mobile device, data service will terminate involuntarily. Accordingly, the overlap of coverage is necessary for the signal to transfer from one cell site to another cell site seamlessly and without involuntary termination.

AT&T Mobility
550 Cochituate Road
Suite 13 &14
Framingham, MA01701

11. A number of factors determine the distance between cell sites, including, but not limited to, topography, physical obstructions, foliage, antenna height, operating frequency and line-of-sight.

12. Based on the radio frequency studies, reports and computer models prepared in connection with this project, it is my professional assertion that there is inadequate LTE network service available across each licensed band to adequately address the demand of AT&T customers within the City of Cambridge, especially in the surrounding areas and neighborhoods surrounding the Site.

13. Based on the radio frequency studies, reports and computer models prepared in connection with this Facility, it is my further professional opinion that AT&T would be able to achieve the coverage objective by filling these significant gaps in coverage through the installation of the Facility at the Site with the proposed new antennas.

14. The Facility will enhance AT&T's ability to provide adequate coverage in the area and will increase its capacity to better serve the residents and businesses around these areas of Cambridge and to individuals traveling through these areas.

15. The Facility will be in compliance with the FCC Guidelines for Evaluating the Environmental Effects of Radio Frequency Radiation. The proposed modifications to the Facility will not cause any adverse health risks. The proposed modifications will not interfere with emergency communications systems.

16. The Facility will be installed, erected, maintained and used in compliance with all applicable Federal, State and local regulations, including, but not limited to: the radio frequency emissions regulations set forth in the federal Telecommunications Act of 1996, and applicable regulations administered by the Federal Aviation Administration and the FCC.

17. The proposed modifications will generate no vibrations, noise or fumes.

18. Based upon the best radio frequency technology available at this time, it is my professional opinion that the Facility is at the height that is needed to ensure adequate service to area residents and businesses within the geographic area described above.

Executed this __24____ day of _____January_____, 2019.

Jobet Mariano
RF ENGINEER, AT&T

Rethink Possible

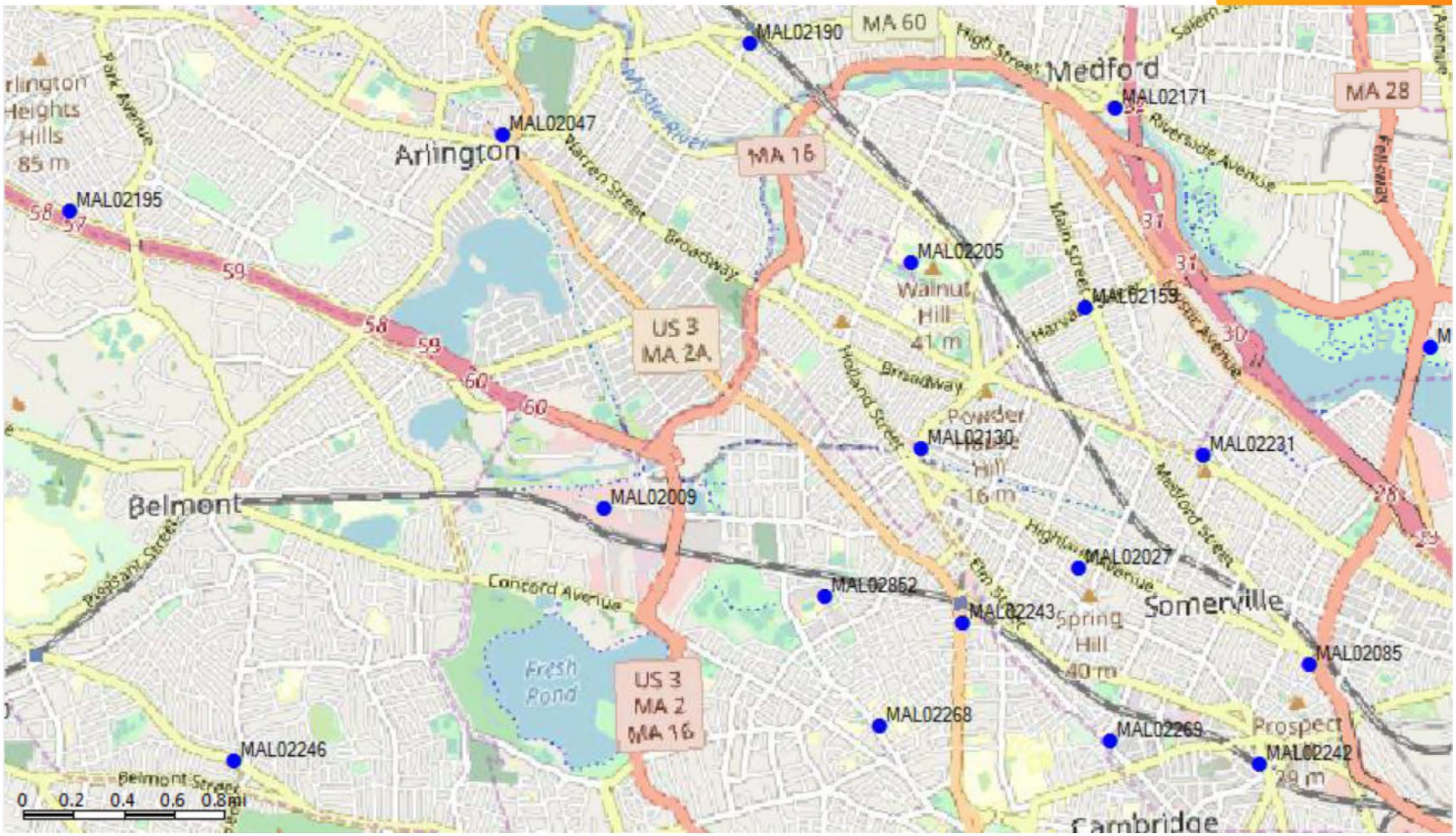
MAL02009 LTE Plots

- Zoning LTE AWS & 700 Band 14 Plots

Current LTE AWS Band Coverage

With Proposed MAL02009 AWS Band Coverage

Current LTE 700 Band 14 Coverage



With Proposed MAL02009 700 Band 14 Coverage