

**BZA APPLICATION FORM**

**GENERAL INFORMATION**

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

Special Permit: X                      Variance: \_\_\_\_\_                      Appeal: \_\_\_\_\_

PETITIONER: New Cingular Wireless PCS d/b/a AT&T Mobility by Dan Accardi, agent

PETITIONER'S ADDRESS: 750 W Center Street, West Bridgewater, MA 02379 (860-227-1975)

LOCATION OF PROPERTY: 1350 Massachusetts Ave

TYPE OF OCCUPANCY: rooftop wireless telecomms                      ZONING DISTRICT: Business B

**REASON FOR PETITION:**

_____ Additions	_____ New Structure
_____ Change in Use/Occupancy	_____ Parking
_____ Conversion to Addi'l Dwelling Unit's	_____ Sign
_____ Dormer	_____ Subdivision
<u>X</u> Other: <u>telecommunications upgrade</u>	

**DESCRIPTION OF PETITIONER'S PROPOSAL:**

This application 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 installing 3 new antennas. AT&T will also be adding and upgrading other telecommunications equipment as part of nationwide network upgrades.

**SECTIONS OF ZONING ORDINANCE CITED:**

Article 4.000      Section 4.32.G1 (Telecommunications Facility)

Article 4.000      Section 4.40 (Footnote 49) (Telecommunications Facility)

Article 10.000      Section 10.40 (Special Permit)

Applicants for a Variance must complete Pages 1-5

Applicants for a Special Permit must complete Pages 1-4 and 6

Applicants for an Appeal to the BZA of a Zoning determination by the Inspectional Services Department must attach a statement concerning the reasons for the appeal

Original Signature(s):

Dan Accardi

(Petitioner(s)/Owner)

Dan Accardi (as agent)

(Print Name)

Address:

63 Forest Hills St #3

Jamaica Plain, MA 02130

Tel. No.:

401-573-4451

E-Mail Address: dan@fundraise.com

Date: 2/27/2019



**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 President and Fellows of Harvard College c/o Harvard Real Estate  
(OWNER)

Address: 1513 Massachusetts Ave, Cambridge, MA 02138

State that I/We own the property located at 1350 Massachusetts Ave,  
which is the subject of this zoning application.

The record title of this property is in the name of President and Fellows  
of Harvard College

\*Pursuant to a deed of duly recorded in the date Nov 16 1903, Middlesex South  
County Registry of Deeds at Book 4071, Page 203; or

Middlesex Registry District of Land Court, Certificate No. \_\_\_\_\_

Book \_\_\_\_\_ Page \_\_\_\_\_

[Signature] 2/22/19  
SIGNATURE BY LAND OWNER OR  
AUTHORIZED TRUSTEE, OFFICER OR AGENT\*

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

Commonwealth of Massachusetts, County of Middlesex

The above-name Charles O'Brien personally appeared before me,  
this 22 of Feb, 2019, and made oath that the above statement is true.

My commission expires 2/1/24 (Notary Seal).

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





March 12, 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
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Applicant: New Cingular Wireless PCS, LLC ("AT&T")  
Property Address: 1350 Massachusetts Ave  
Assessor's Map Block 160, Lot 14 (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 "Telephone Exchange including Transmission Facilities to serve a Mobile Communication System" (the "Facility") on and within the existing building located at 1350 Massachusetts Avenue (the "Special Permit Application").<sup>2</sup>

Under Section 6409, AT&T's proposed modification of its existing transmission 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.

<sup>2</sup> 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, which is located in the Business B zoning district and Harvard Square Overlay 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 consisting of 10 pages dated 9/24/18;
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 8/23/2018;
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 dated 3/2/2018;
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 consist of installing three panel antennas and six radio heads along with associated DC power components and ballast mounts, and augmenting the existing mounts for current equipment.

The Facility's design is shown in detail in the Drawings attached as Exhibit 3 to this application letter and the featured equipment is described in the manufacturers' specification sheets attached as Exhibit 4. The photographs and photo simulations attached as 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, attached as Exhibit 7, demonstrates that the building is capable of supporting AT&T's proposed equipment at or near the locations shown on the Drawings.

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 five (5) bands with the proposed modifications to the Facility, namely at 700, 850, and 1900 MHz, plus AWS and WCS bands.

## 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,<sup>3</sup> as further implemented by the FCC Order.<sup>4</sup>

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

<sup>3</sup> 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).

<sup>4</sup> 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.<sup>5</sup> 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

<sup>5</sup> *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 or modification 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 either be mounted on new frames at the same height as their current installation or utilize the existing equipment mounting frames, and therefore will not exceed 10 feet above the existing building;
- (ii) Protrude more than six feet from building façade;



- (iii) Involve the installation of more than the standard number of new equipment cabinets for the technology involved, because no new radio communications equipment cabinets will be installed;
- (iv) 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
- (v) Otherwise defeat the existing concealment elements of the tower or base station because the proposed antennas will be removed from the building façade and placed on mounting frames set back from the roof edge, and will 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.

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.<sup>6</sup>

### 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:<sup>7</sup>

**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 Business B 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:

<sup>6</sup> 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).

<sup>7</sup> 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 and placement of antennas and associated equipment off the building façade and on mounting frames set back from the edge of the rooftop, 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 and the rooftop architecture of the building. 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:** Neither the Property nor the existing Facility is located in the Business B zoning district, and not a residential zoning district, so this provision of the ordinance does not apply. Even so, nonresidential uses predominate in the vicinity of the existing Facility’s location and neither the Facility nor the proposed modifications are inconsistent with the prevailing character of the surrounding area, which has not changed substantially since the existing Facility was last granted a special permit.



**B. AT&T complies with the Special Permit Criteria set forth in Section 10.43 of the Ordinance.**

**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**

**AT&T's Response:** 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**

**AT&T's Response:** 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 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 applicable overlay districts. 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 from view behind the rooftop parapet and within the building, or otherwise obstructed from view, and the remaining equipment utilizes existing mounting frames or proposed frames of the same or lesser height, 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 district.

**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 district.

**19.33 The building and site design should mitigate adverse environmental impacts of a development upon its neighbors. Indicators include<sup>8</sup>**

**(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 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.

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<sup>8</sup> Inasmuch as Section 19.33 is most relevant to the Facility, it is stated here in full.



**(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 away from the



building edge at the same heights as existing equipment already 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  
Site Acquisition Project Manager  
Centerline Communications

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

cc: Arthur P. Kreiger, Esq.



BZA APPLICATION FORM

DIMENSIONAL INFORMATION

APPLICANT: New Cingular Wireless PCS d/b/a AT&T Mobility PRESENT USE/OCCUPANCY: Office/telecomm

LOCATION: 1350 Massachusetts Ave ZONE: B

PHONE: \_\_\_\_\_ REQUESTED USE/OCCUPANCY: No change (equipment upgrade)

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

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

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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'.



# STRUCTURAL ANALYSIS REPORT

For

**MA2215 (LTE 6C/7C)**  
**CAMBRIDGE, MASS. AVE**  
1350 Massachusetts Avenue  
Cambridge, MA 02138

## **Antennas Mounted on Non-Penetrating Ballast Mounts on the Roof; Equipment Room in Penthouse**



Prepared for:



Dated: March 2, 2018

Prepared by:



**HUDSON**  
Design Group LLC

45 Beechwood Drive  
North Andover, MA 01845  
Phone: (978) 557-5553  
[www.hudsondesigngroupllc.com](http://www.hudsondesigngroupllc.com)







### 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 AT&T 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 equipment.

This office conducted an on-site visual survey of the above areas on August 17, 2017.

### CONCLUSION SUMMARY:

Building plans prepared by Sert, Jackson and Gouley Architects were available and obtained for our use. A limited visual survey of the structure was completed in or near the areas of the proposed work. The following documents were used for our reference:

- Previous HDG Structural Analysis Report dated September 30, 2016.

Based on our evaluation, we have determined that the existing structure **IS NOT CAPABLE** of supporting the proposed equipment loading. HDG recommends the following modifications:

- **Install new L4x4x1/4 angle horizontals long bolted to the existing ballast sleds (typ. of 2 per sector, total of 6).**
- **Reinforce existing L3x3x3/16 angle verticals on the existing ballast sleds with new L3x3x3/16 angles, secured to existing mount (typ. of 2 per sector, total of 6).**
- **Reinforce existing L2-1/2x2-1/2x3/16 angle kickers on the existing ballast sleds with new L2-1/2x2-1/2x3/16 angles, secured to existing mount (typ. of 2 per sector, total of 6).**
- **Install new 2-1/2" std. (2.88" O.D.) steel pipe mast secured to the existing ballast sled (typ. of 1 per sector, total of 3).**

### APPURTENANCE/EQUIPMENT CONFIGURATION:

(3) HPA-65R-BUU-H4 Antennas (48.0"x14.8"x9.0" - Wt. = 34 lbs. /each)

(3) OPA-65R-LCUU-H4 Antennas (48.0"x14.4"x7.3" - Wt. = 57 lbs. /each)

(3) 742-264 Antennas (51.8"x10.3"x5.5" - Wt. = 37 lbs. /each)

(6) RRUS-11 RRH's (19.7"x17.0"x7.2" Wt. = 51 lbs. /each)

(6) RRUS-12 RRH's (20.4"x18.5"x7.5" Wt. = 58 lbs. /each)

(3) RRUS-E2 RRH's (20.4"x18.5"x7.5" Wt. = 53 lbs. /each)

(3) RRUS-32 RRH's (27.2"x12.1"x7.0" Wt. = 60 lbs. /each)

(6) LGP 21401 TMA's (14.0"x7.0"x2.7" - Wt. = 19 lbs. /each)

(3) RDC-4276-PF-48 Junction Box (26.9"x22.8"x10.4" - Wt. = 32 lbs. /each)

**(3) 800-10964 Antennas (59.0"x20.0"x6.9" Wt. = 84 lbs. /each)**

**(3) RRUS-4426 B66 RRH's (15.0"x13.2"x5.8" - Wt. = 49 lbs. /each)**

**(3) B14 4478 RRH's (18.1"x13.4"x8.3" - Wt. = 60 lbs. /each)**

**(3) Squid Surge Arrestors (24.0"x9.7"Ø - Wt. = 33 lbs. /each)**

*\*Proposed Loading Shown in Bold.*





**DESIGN CRITERIA:**

1. Massachusetts State Building code 9th edition and ASCE 7-10, Minimum Design Loads for Buildings and Other Structures.

Wind Analysis:

Reference Wind Speed:	128 mph	(780 CMR 1604.11)
Category:	B	(ASCE 7-10 Section 26.7.3)

Roof:

Ground Snow, $P_g$ :	40 psf	(780 CMR 1604.11)
Occupancy Category:	II	(ASCE 7-10 Table 1.5-1)
Importance Factor ( $I$ ):	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)

**Calculated Flat Roof Snow Load:**

$P_f = 0.7 * C_e * C_t * I * P_g$ : 30 psf (min.) (ASCE 7-10 Equation 7.3-1)

2. EIA/TIA -222- G Structural Standards for Steel Antenna Towers and Antenna Supporting Structures

City/Town:	Cambridge
County:	Middlesex
Wind Load:	105 mph
Nominal Ice Thickness:	1 inch

3. Approximate height above grade to the center of the antennas:

129'-6" +/-





#### **EXISTING ROOF CONSTRUCTION:**

The roof system appears to consist of a roofing membrane and rigid insulation over a reinforced concrete slab supported by reinforced concrete beams and columns.

#### **ANTENNA SUPPORT RECOMMENDATIONS:**

- The new antennas are proposed to be mounted on new pipe masts secured to the existing non-penetrating ballast mounts located on the roof.

Reference the chart below for the minimum ballast requirements for the non-penetrating ballast mounts.

<b>MINIMUM BALLAST REQUIREMENTS</b>	
NUMBER OF PROPOSED BLOCKS IN FRONT	26
NUMBER OF PROPOSED BLOCKS IN BACK	48
SIZE OF PROPOSED BLOCKS	4"x8"x16" Solid
WEIGHT OF PROPOSED BLOCKS	38 lbs. /each
TOTAL BALLAST WEIGHT	2812 lbs.

#### **RRH SUPPORT RECOMMENDATIONS:**

The new beta sector RRH's are proposed to be mounted on proposed non-penetrating ballast frames located on the roof.

Reference the chart below for the minimum ballast requirements for the RRH non-penetrating ballast mounts.

<b>MINIMUM BALLAST REQUIREMENTS</b>	
NUMBER OF PROPOSED BLOCKS PER SIDE	2
SIZE OF PROPOSED BLOCKS	4"x8"x16" Solid
WEIGHT OF PROPOSED BLOCKS	38 lbs. /each
TOTAL BALLAST WEIGHT	152 lbs.

#### Limitations and assumptions:

1. Reference the latest HDG construction drawings for all the equipment locations details.
2. Mount all equipment per manufacturer's specifications.
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. All antennas, coax cables and waveguide cables are assumed to be properly installed and supported as per the manufacturer requirements.
5. HDG is not responsible for any modifications completed prior to and hereafter which HDG was not directly involved.
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.
7. A condition assessment on the existing building was not part of the scope of work.



**FIELD PHOTOS:**



**Photo 1:** Sample photo illustrating the existing alpha/gamma sector ballast frame.



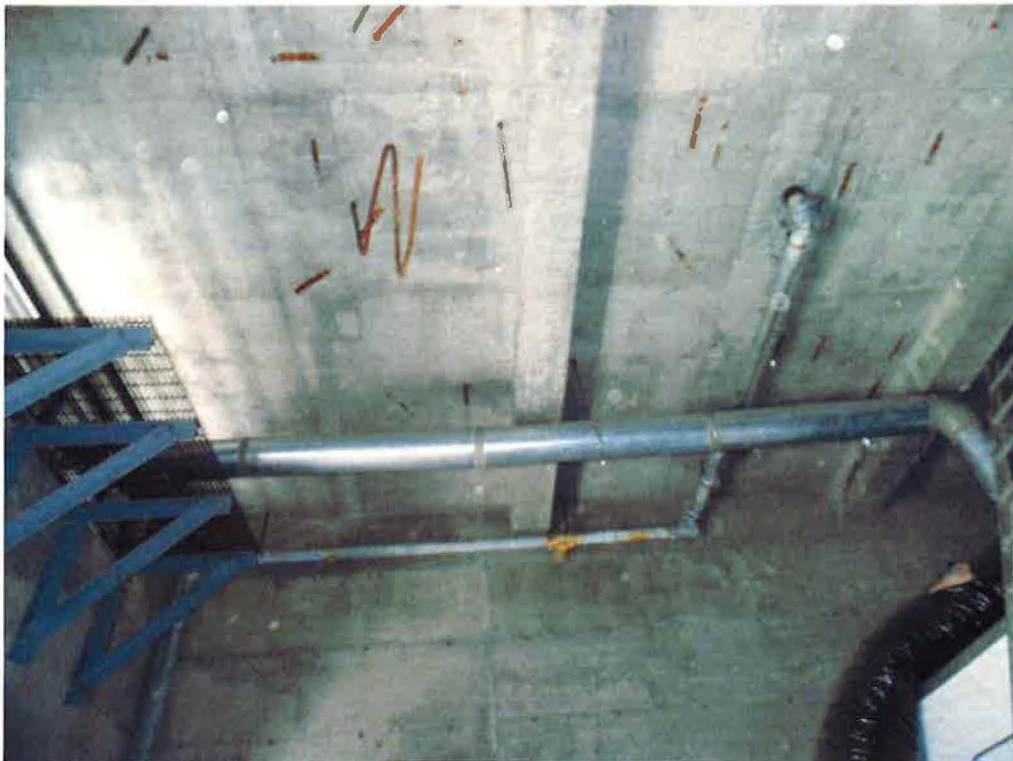
**Photo 2:** Sample photo illustrating the existing beta sector ballast frame.



**FIELD PHOTOS (CONT.):**



**Photo 3:** Sample photo illustrating the existing RRH ballast frame.



**Photo 4:** Sample photo illustrating the existing roof construction.





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Design Group LLC

## **Wind & Ice Calculations**



Date: 3/2/2018

Project Name: CAMBRIDGE, MASS. AVE

Project Number: MA2215

Designed By: BD Checked By: MSC



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#### 2.6.5.2 Velocity Pressure Coeff:

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

$$z = 129.5 \text{ (ft)}$$

$$z_g = 1200 \text{ (ft)}$$

$$\alpha = 7.0$$

$$K_z = 1.064$$

$$K_{zmin} \leq K_z \leq 2.01$$

Table 2-4

Exposure	$z_g$	$\alpha$	$K_{zmin}$	$K_e$
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

#### 2.6.6.4 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

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

$$K_h = e^{(fz/H)}$$

$$K_{zt} = \text{\#DIV/0!}$$

$$K_h = \text{\#DIV/0!}$$

$$K_e = 0 \text{ (from Table 2-4)}$$

$$K_t = 0 \text{ (from Table 2-5)}$$

$$f = 0 \text{ (from Table 2-5)}$$

$$z = 129.5$$

$$H = 0 \text{ (Ht. of the crest above surrounding terrain)}$$

$$K_{zt} = 1.00$$

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

Catego	1
--------	---



Date: 3/2/2018  
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## **2.6.7 Gust Effect Factor**

### **2.6.7.1 Self Supporting Lattice Structures**

Gh = 1.0 Latticed Structures > 600 ft

Gh = 0.85 Latticed Structures 450 ft or less

Gh = 0.85 + 0.15 [h/150 - 3.0]

h= ht. of structure

h= 121.5

Gh= 0.85

### **2.6.7.2 Guyed Masts**

Gh= 0.85

### **2.6.7.3 Pole Structures**

Gh= 1.1

### **2.6.9 Appurtenances**

Gh= 1.0

### **2.6.7.4 Structures Supported on Other Structures**

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

Gh= 1.35

Gh= 1.35

## **2.6.9.2 Design Wind Force on Appurtenances**

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

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

K<sub>z</sub>= 1.064

K<sub>zt</sub>= 1.0

K<sub>d</sub>= 0.95

V<sub>max</sub>= 105

V<sub>max (ice)</sub>= 40

I= 1.0

q<sub>z</sub>= 28.53

q<sub>z (ice)</sub>= 4.14

**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



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**Determine Ca:**

**Table 2-8**

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
Round	C < 32 (Subcritical)	0.7	0.8	1.2
	32 ≤ C ≤ 64 (Transitional)	$3.76/(C^{0.485})$	$3.37/(C^{0.415})$	$38.4/(C^{1.0})$
	C > 64 (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, and the section length considered to have uniform wind load).

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

Ice Thickness = 1.00 in

Appurtenances	Height	Width	Depth	Flat Area	Aspect Ratio	Ca	Force (lbs)	Force (lbs) (1" Ice)
HPA-65R-BUU-H4 Antenna	48.0	14.8	9.0	4.93	3.24	1.23	234	40
HPA-65R-BUU-H4 Antenna (Side)	48.0	9.0	14.8	3.00	5.33	1.33	153	28
OPA-65R-LCUU-H4 Antenna	48.0	14.4	7.3	4.80	3.33	1.24	229	39
OPA-65R-LCUU-H4 Antenna (Side)	48.0	7.3	14.4	2.43	6.58	1.38	129	25
742-264 Antenna	51.8	10.3	5.5	3.71	5.03	1.31	187	34
742-264 Antenna (Side)	51.8	5.5	10.3	1.98	9.42	1.48	113	23
800-10964 Antenna	59.0	20.0	6.9	8.19	2.95	1.22	385	64
800-10964 Antenna (Side)	59.0	6.9	20.0	2.83	8.55	1.45	158	31
RRUS-11 RRH	19.7	17.0	7.2	2.33	1.16	1.20	107	19
RRUS-11 RRH (Side)	19.7	7.2	17.0	0.99	2.74	1.21	46	9
RRUS-12 RRH	20.4	18.5	7.5	2.62	1.10	1.20	121	21
RRUS-12 RRH (Side)	20.4	7.5	18.5	1.06	2.72	1.21	50	10
RRUS-E2 RRH	20.4	18.5	7.5	2.62	1.10	1.20	121	21
RRUS-E2 RRH (Side)	20.4	7.5	18.5	1.06	2.72	1.21	50	10
RRUS-32 RRH	27.2	12.1	7.0	2.29	2.25	1.20	106	19
RRUS-32 RRH (Side)	27.2	7.0	12.1	1.32	3.89	1.26	64	13
RRUS-4426 B66 RRH	15.0	13.2	5.8	1.38	1.14	1.20	64	12
RRUS-4426 B66 RRH (Side)	15.0	5.8	13.2	0.60	2.59	1.20	28	6
B14 4478 RRH	18.1	13.4	8.3	1.68	1.35	1.20	78	14
B14 4478 RRH (Side)	18.1	8.3	13.4	1.04	2.18	1.20	48	10
LGP 21401 TMA	14.0	7.0	2.7	0.68	2.00	1.20	31	7
LGP 21401 TMA (Side)	14.0	2.7	7.0	0.26	5.19	1.32	13	4
RDC-4276-PF-48 Junction Box	26.9	22.8	10.4	4.26	1.18	1.20	197	33
RDC-4276-PF-48 Junction Box (Side)	26.9	10.4	22.8	1.94	2.59	1.20	90	17
Squid Surge Arrestor	24.0	9.7	9.7	1.62	2.47	1.20	75	14



Date: 3/2/2018

Project Name: CAMBRIDGE, MASS. AVE

Project Number: MA2215

Designed By: BD Checked By: MSC



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#### ICE WEIGHT CALCULATIONS

Thickness of ice (in): 1.0

\* Density of ice used = 56 PCF

##### HPA-65R-BUU-H4 Antenna

Weight of ice based on total radial SF area:

Depth (in):	9.0	
height (in):	48.0	
Width (in):	14.8	
Total weight of ice on object:		83 lbs
Weight of object:	34 lbs	
Combined weight of ice and object:		117 lbs

##### 742-264 Antenna

Weight of ice based on total radial SF area:

Depth (in):	5.5	
height (in):	51.8	
Width (in):	10.3	
Total weight of ice on object:		57 lbs
Weight of object:	37 lbs	
Combined weight of ice and object:		94 lbs

##### RRUS-12 RRH

Weight of ice based on total radial SF area:

Depth (in):	7.5	
height (in):	20.4	
Width (in):	18.5	
Total weight of ice on object:		43 lbs
Weight of object:	58 lbs	
Combined weight of ice and object:		101 lbs

##### RRUS-E2 RRH

Weight of ice based on total radial SF area:

Depth (in):	7.5	
height (in):	20.4	
Width (in):	18.5	
Total weight of ice on object:		43 lbs
Weight of object:	53 lbs	
Combined weight of ice and object:		96 lbs

##### RRUS-4426 B66 RRH

Weight of ice based on total radial SF area:

Depth (in):	5.8	
height (in):	15.0	
Width (in):	13.2	
Total weight of ice on object:		23 lbs
Weight of object:	49 lbs	
Combined weight of ice and object:		72 lbs

##### LGP 21401 TMA

Weight of ice based on total radial SF area:

Depth (in):	2.7	
height (in):	14.0	
Width (in):	7.0	
Total weight of ice on object:		10 lbs
Weight of object:	19 lbs	
Combined weight of ice and object:		29 lbs

##### Squid Surge Arrestor

Weight of ice based on total radial SF area:

Depth (in):	9.7	
height (in):	24.0	
Width (in):	9.7	
Total weight of ice on object:		36 lbs
Weight of object:	33 lbs	
Combined weight of ice and object:		69 lbs

##### 2" pipe

Per foot weight of ice:

diameter (in):	2.375	
Per foot weight of ice on object:		3 lbs/ft

##### OPA-65R-LCUU-H4 Antenna

Weight of ice based on total radial SF area:

Depth (in):	7.3	
height (in):	48.0	
Width (in):	14.4	
Total weight of ice on object:		74 lbs
Weight of object:	57 lbs	
Combined weight of ice and object:		131 lbs

##### 800-10964 Antenna

Weight of ice based on total radial SF area:

Depth (in):	6.9	
height (in):	59.0	
Width (in):	20.0	
Total weight of ice on object:		112 lbs
Weight of object:	84 lbs	
Combined weight of ice and object:		196 lbs

##### RRUS-11 RRH

Weight of ice based on total radial SF area:

Depth (in):	7.2	
height (in):	19.7	
Width (in):	17.0	
Total weight of ice on object:		39 lbs
Weight of object:	51 lbs	
Combined weight of ice and object:		90 lbs

##### RRUS-32 RRH

Weight of ice based on total radial SF area:

Depth (in):	7.0	
height (in):	27.2	
Width (in):	12.1	
Total weight of ice on object:		39 lbs
Weight of object:	60 lbs	
Combined weight of ice and object:		99 lbs

##### B14 4478 RRH

Weight of ice based on total radial SF area:

Depth (in):	8.3	
height (in):	18.1	
Width (in):	13.4	
Total weight of ice on object:		33 lbs
Weight of object:	60 lbs	
Combined weight of ice and object:		93 lbs

##### RDC-4276-PF-48 Junction Box

Weight of ice based on total radial SF area:

Depth (in):	10.4	
height (in):	26.9	
Width (in):	22.8	
Total weight of ice on object:		73 lbs
Weight of object:	32 lbs	
Combined weight of ice and object:		105 lbs

##### L 2-1/2x2-1/2x3/16

Weight of ice based on total radial SF area:

Depth (in):	2.5	
height (in):	12	
Width (in):	2.5	
Per foot weight of ice on object:		4 lbs/ft

##### L 3x3x3/16

Weight of ice based on total radial SF area:

Depth (in):	3	
height (in):	12	
Width (in):	3	
Per foot weight of ice on object:		5 lbs/ft

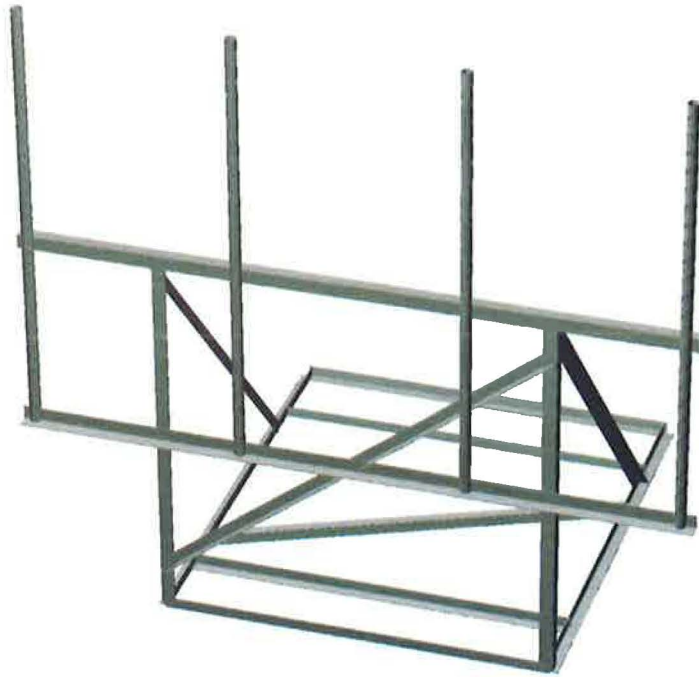




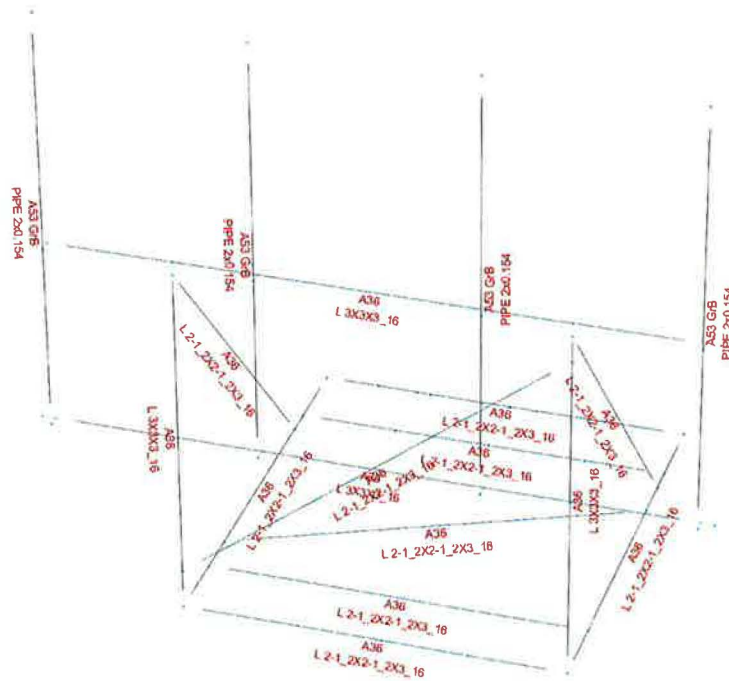
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**Antenna Mount Calculations  
(Existing Conditions)**





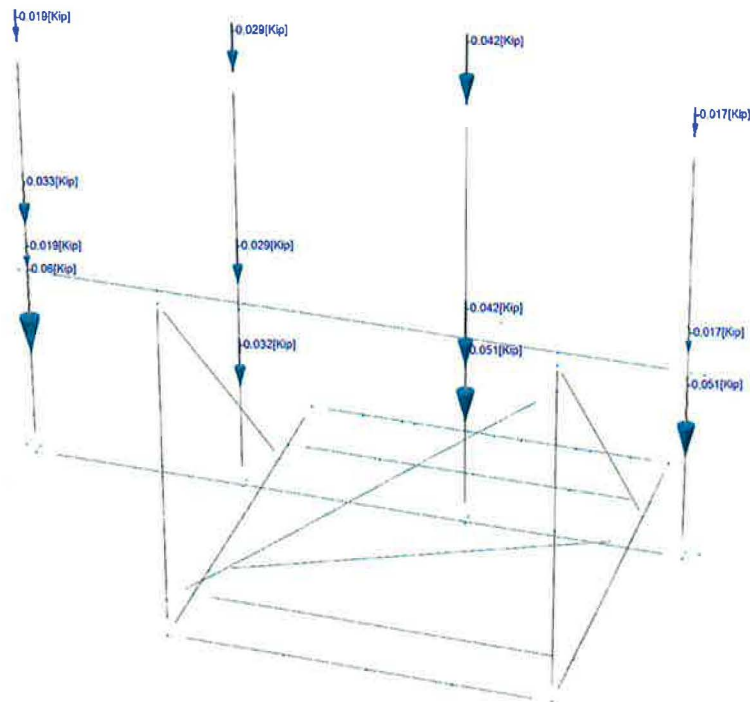






## Loads

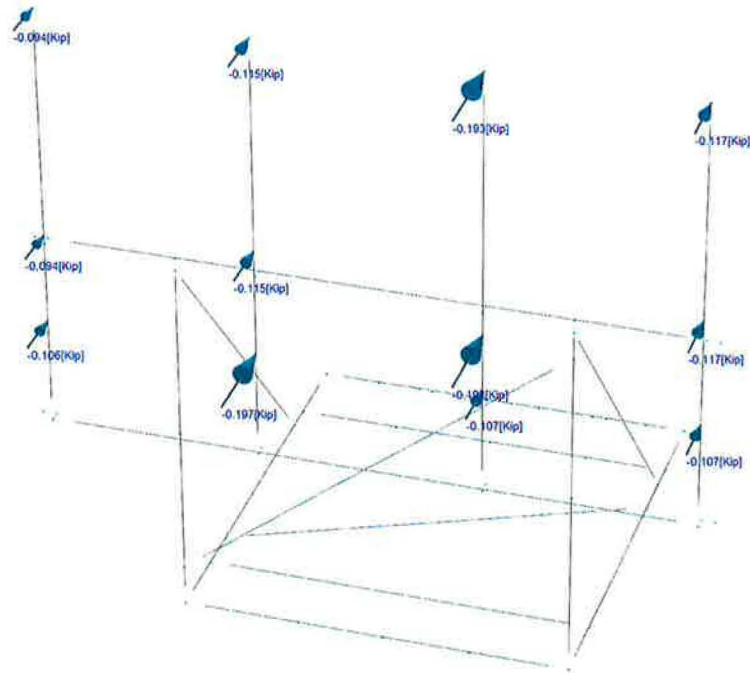
Concentrated user loads - Members





## Loads

Concentrated user loads - Members





Current Date: 3/2/2018 11:58 AM

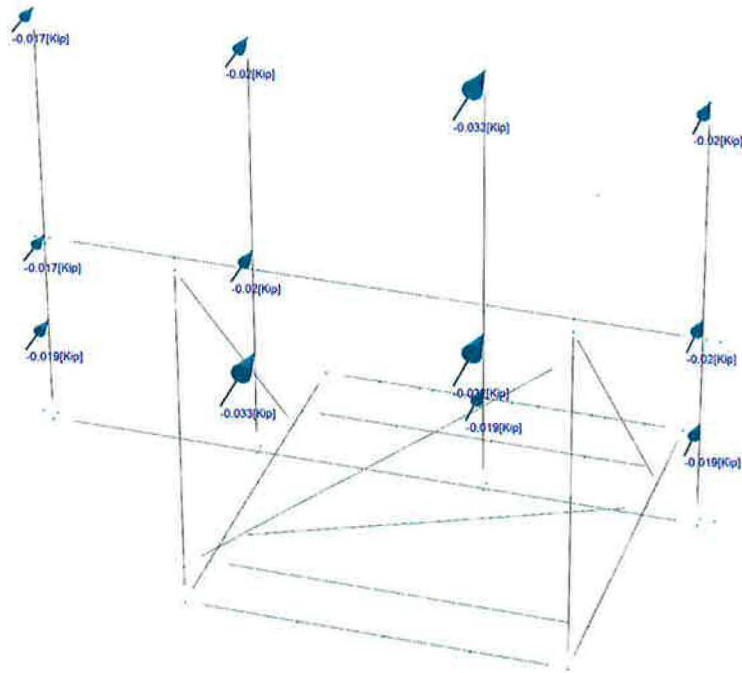
Units system: English

File name: W:\STRUCTURAL DEPARTMENT\ANALYSIS SOFTWARE\RAM Elements\RAM Projects\AT&T\MA\MA2215\MA2215.etz\

Load condition: Wif=Wind Load (WITH ICE) (FRONT)

## Loads

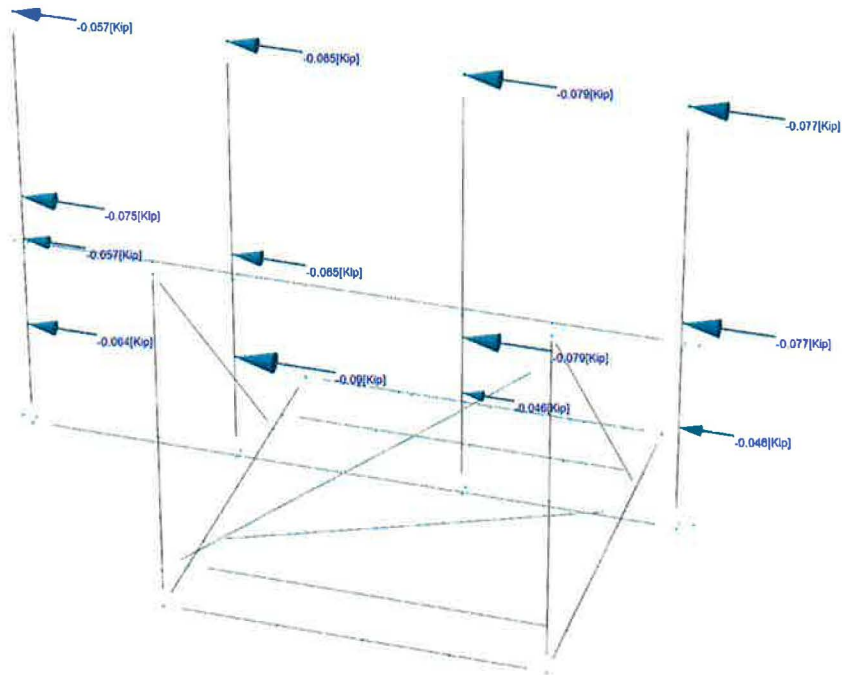
Concentrated user loads - Members





## Loads

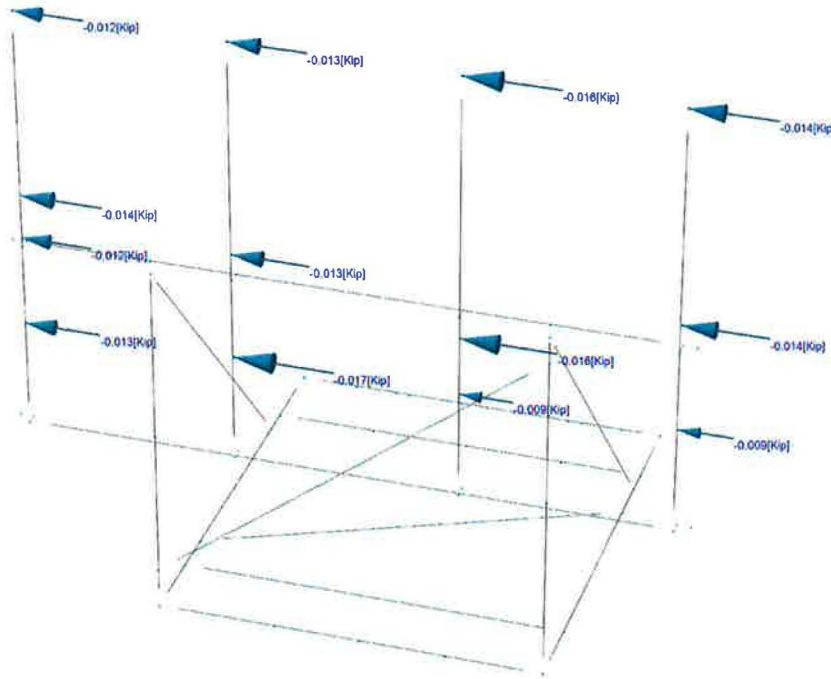
Concentrated user loads - Members





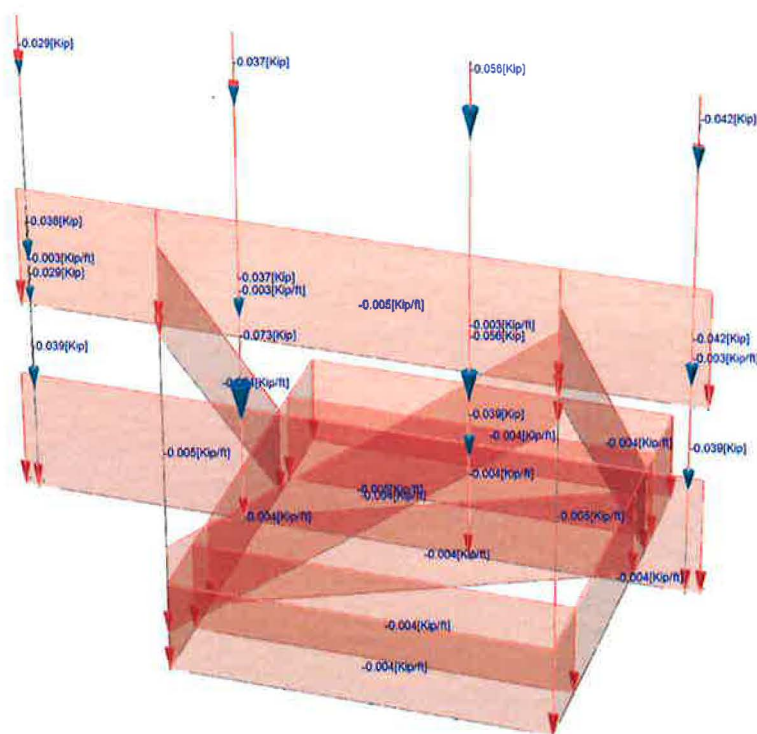
## Loads

Concentrated user loads - Members

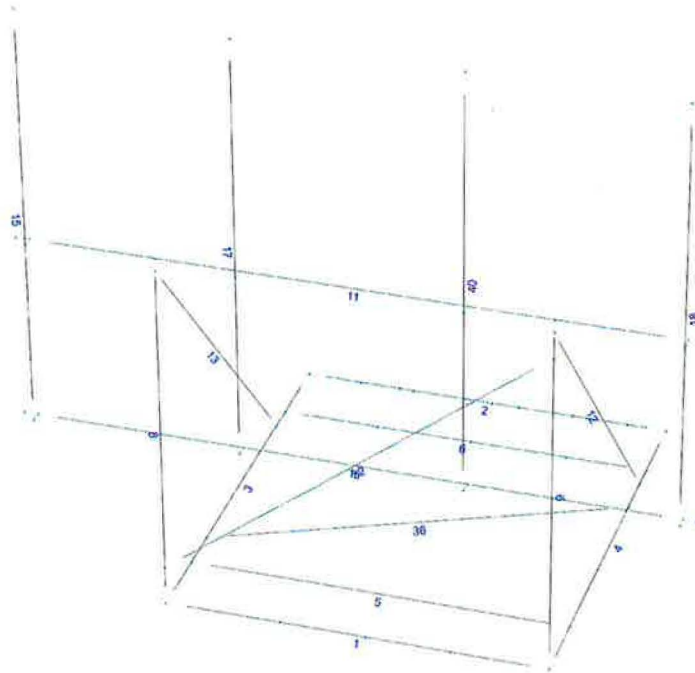




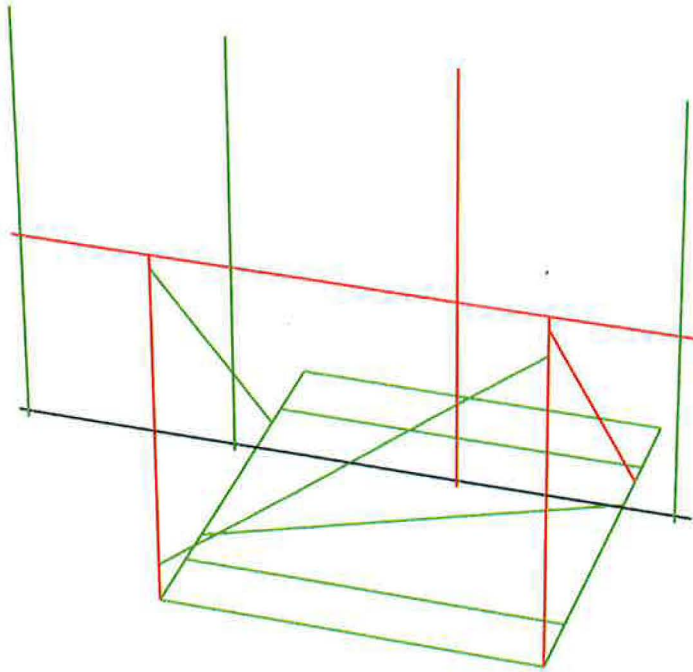
- Distributed user loads - Members
- Concentrated user loads - Members













Current Date: 3/2/2018 11:58 AM

Units system: English

File name: W:\STRUCTURAL DEPARTMENT\ANALYSIS SOFTWARE\RAM Elements\RAM Projects\AT&T\MA\MA2215\MA2215.etz\

## Steel Code Check

Report: Summary - For all selected load conditions

Load conditions to be included in design :

LC1=1.2DL+1.6Wof  
 LC2=1.2DL+1.6Wos  
 LC3=0.9DL+1.6Wof  
 LC4=0.9DL+1.6Wos  
 LC5=1.2DL+Wif+Di  
 LC6=1.2DL+Wis+Di  
 LC7=1.2DL  
 LC8=0.9DL

Description	Section	Member	Ctrl Eq.	Ratio	Status	Reference
L 2-1_2X2-1_2X3_16		1	LC1 at 100.00%	0.26	OK	Sec. F1 Eq. H2-1
			LC2 at 0.00%	0.64	OK	
			LC3 at 100.00%	0.27	OK	
			LC4 at 0.00%	<b>0.64</b>	<b>OK</b>	
			LC5 at 0.00%	0.07	OK	
			LC6 at 100.00%	0.05	OK	
			LC7 at 100.00%	0.03	OK	
			LC8 at 100.00%	0.02	OK	
		2	LC1 at 90.00%	0.00	OK	Eq. H3-8
			LC2 at 90.00%	0.00	OK	
			LC3 at 90.00%	0.00	OK	
			LC4 at 90.00%	0.00	OK	
			LC5 at 90.00%	<b>0.00</b>	<b>OK</b>	
			LC6 at 90.00%	0.00	OK	
			LC7 at 90.00%	0.00	OK	
			LC8 at 90.00%	0.00	OK	
		3	LC1 at 0.00%	0.43	OK	Eq. H2-1
			LC2 at 0.00%	0.26	OK	
			LC3 at 0.00%	<b>0.43</b>	<b>OK</b>	
			LC4 at 0.00%	0.26	OK	
			LC5 at 26.25%	0.04	OK	
			LC6 at 16.25%	0.03	OK	
			LC7 at 16.25%	0.02	OK	
			LC8 at 16.25%	0.01	OK	
		4	LC1 at 0.00%	0.68	OK	Eq. H2-1
			LC2 at 0.00%	0.02	OK	
			LC3 at 0.00%	<b>0.68</b>	<b>OK</b>	
			LC4 at 0.00%	0.02	OK	
			LC5 at 0.00%	0.05	OK	
			LC6 at 16.25%	0.04	OK	
			LC7 at 16.25%	0.02	OK	
			LC8 at 16.25%	0.02	OK	
		5	LC1 at 50.00%	0.04	OK	Sec. F1
			LC2 at 50.00%	0.04	OK	
			LC3 at 50.00%	0.03	OK	
			LC4 at 50.00%	0.03	OK	
			LC5 at 50.00%	<b>0.08</b>	<b>OK</b>	



L 3X3X3\_16

	LC6 at 50.00%	0.08	OK	
	LC7 at 50.00%	0.04	OK	
	LC8 at 50.00%	0.03	OK	
6	LC1 at 25.00%	0.00	OK	
	LC2 at 25.00%	0.00	OK	
	LC3 at 25.00%	0.00	OK	
	LC4 at 25.00%	0.00	OK	
	LC5 at 25.00%	<b>0.01</b>	<b>OK</b>	Eq. H3-8
	LC6 at 25.00%	0.01	OK	
	LC7 at 25.00%	0.00	OK	
	LC8 at 25.00%	0.00	OK	
12	LC1 at 0.00%	<b>1.02</b>	N.G.	
	LC2 at 100.00%	0.07	OK	
	LC3 at 0.00%	<b>1.03</b>	<b>N.G.</b>	Eq. H2-1
	LC4 at 100.00%	0.06	OK	
	LC5 at 100.00%	0.16	OK	
	LC6 at 100.00%	0.07	OK	
	LC7 at 100.00%	0.03	OK	
	LC8 at 100.00%	0.03	OK	
13	LC1 at 100.00%	0.78	OK	
	LC2 at 0.00%	0.06	OK	
	LC3 at 100.00%	<b>0.79</b>	<b>OK</b>	Eq. H2-1
	LC4 at 0.00%	0.06	OK	
	LC5 at 0.00%	0.14	OK	
	LC6 at 100.00%	0.07	OK	
	LC7 at 100.00%	0.03	OK	
	LC8 at 100.00%	0.03	OK	
32	LC1 at 50.00%	0.22	OK	Eq. H2-1
	LC2 at 0.00%	<b>0.82</b>	<b>OK</b>	Eq. H2-1
	LC3 at 50.00%	0.22	OK	
	LC4 at 0.00%	0.82	OK	
	LC5 at 56.25%	0.05	OK	
	LC6 at 0.00%	0.14	OK	
	LC7 at 25.00%	0.02	OK	
	LC8 at 25.00%	0.02	OK	
36	LC1 at 50.00%	0.04	OK	
	LC2 at 50.00%	0.04	OK	
	LC3 at 50.00%	0.03	OK	
	LC4 at 50.00%	0.03	OK	
	LC5 at 50.00%	<b>0.09</b>	<b>OK</b>	Eq. H2-1
	LC6 at 50.00%	0.09	OK	
	LC7 at 50.00%	0.04	OK	
	LC8 at 50.00%	0.03	OK	
8	LC1 at 0.00%	0.55	OK	Eq. H3-8
	LC2 at 90.63%	<b>1.83</b>	<b>N.G.</b>	Eq. H3-8
	LC3 at 0.00%	0.54	OK	
	LC4 at 90.63%	<b>1.82</b>	<b>N.G.</b>	
	LC5 at 50.00%	0.21	OK	
	LC6 at 50.00%	0.26	OK	
	LC7 at 50.00%	0.12	OK	
	LC8 at 50.00%	0.09	OK	
9	LC1 at 50.00%	0.78	OK	Sec. F1
	LC2 at 90.63%	<b>2.06</b>	<b>N.G.</b>	Eq. H3-8
	LC3 at 50.00%	0.78	OK	
	LC4 at 90.63%	<b>2.06</b>	<b>N.G.</b>	
	LC5 at 100.00%	0.14	OK	
	LC6 at 90.63%	0.27	OK	



	LC7 at 48.44%	0.07	OK	
	LC8 at 48.44%	0.06	OK	
10	LC1 at 20.31%	0.33	With warnings	
	LC2 at 20.31%	<b>0.45</b>	<b>With warnings</b>	Eq. H2-1
	LC3 at 97.66%	0.31	With warnings	Eq. H2-1
	LC4 at 20.31%	0.40	With warnings	
	LC5 at 20.31%	0.40	With warnings	
	LC6 at 20.31%	0.42	With warnings	
	LC7 at 20.31%	0.21	With warnings	
	LC8 at 20.31%	0.16	With warnings	
11	LC1 at 79.46%	<b>1.79</b>	N.G.	
	LC2 at 79.46%	0.56	With warnings	
	LC3 at 79.46%	<b>1.79</b>	<b>N.G.</b>	Sec. F1
	LC4 at 79.46%	0.52	With warnings	
	LC5 at 20.54%	0.36	OK	
	LC6 at 20.54%	0.38	OK	Sec. F1
	LC7 at 20.54%	0.20	OK	
	LC8 at 20.54%	0.15	OK	
PIPE 2x0.154 15	LC1 at 56.25%	<b>0.71</b>	<b>OK</b>	Eq. H1-1b
	LC2 at 53.13%	0.39	OK	
	LC3 at 56.25%	0.70	OK	
	LC4 at 53.13%	0.39	OK	
	LC5 at 56.25%	0.16	OK	
	LC6 at 56.25%	0.18	OK	
	LC7 at 56.25%	0.08	OK	
	LC8 at 56.25%	0.06	OK	
17	LC1 at 56.25%	<b>0.88</b>	<b>OK</b>	Eq. H1-1b
	LC2 at 53.13%	0.38	OK	
	LC3 at 56.25%	0.88	OK	
	LC4 at 53.13%	0.38	OK	
	LC5 at 56.25%	0.12	OK	
	LC6 at 56.25%	0.06	OK	
	LC7 at 56.25%	0.04	OK	
	LC8 at 56.25%	0.03	OK	
18	LC1 at 56.25%	<b>0.91</b>	<b>OK</b>	Eq. H1-1b
	LC2 at 53.13%	0.45	OK	
	LC3 at 56.25%	0.90	OK	
	LC4 at 53.13%	0.45	OK	
	LC5 at 56.25%	0.17	OK	
	LC6 at 56.25%	0.09	OK	
	LC7 at 56.25%	0.06	OK	
	LC8 at 56.25%	0.05	OK	
40	LC1 at 56.25%	<b>1.22</b>	N.G.	
	LC2 at 53.13%	0.43	OK	
	LC3 at 56.25%	<b>1.22</b>	<b>N.G.</b>	Eq. H1-1b
	LC4 at 53.13%	0.43	OK	
	LC5 at 56.25%	0.13	OK	
	LC6 at 56.25%	0.07	OK	
	LC7 at 56.25%	0.02	OK	
	LC8 at 56.25%	0.02	OK	





**HUDSON**  
Design Group LLC

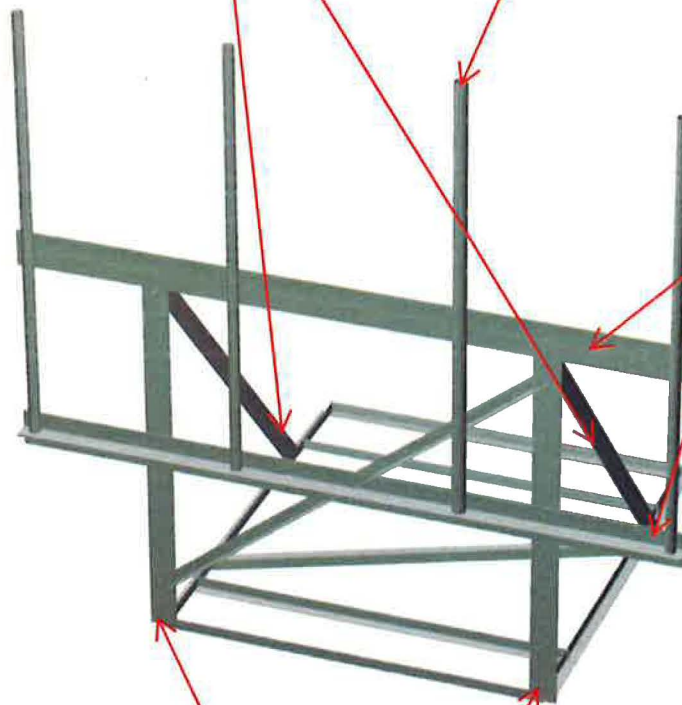
## **Antenna Mount Calculations (Proposed Conditions)**



Reinforce existing L2-1/2x2-1/2x3/16 angle kickers on the existing ballast sleds with new L2-1/2x2-1/2x3/16 angles, secured to existing mount (typ. of 2 per sector, total of 6).

Install new 2-1/2" std. (2.88" O.D.) steel pipe mast secured to the existing ballast sled (typ. of 1 per sector, total of 3).

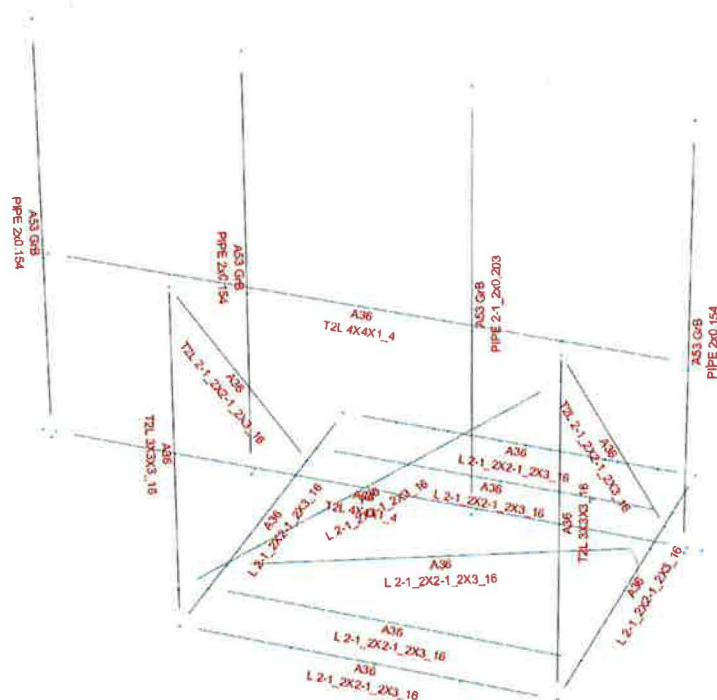
Install new L4x4x1/4 angle horizontals long bolted to the existing ballast sleds (typ. of 2 per sector, total of 6).



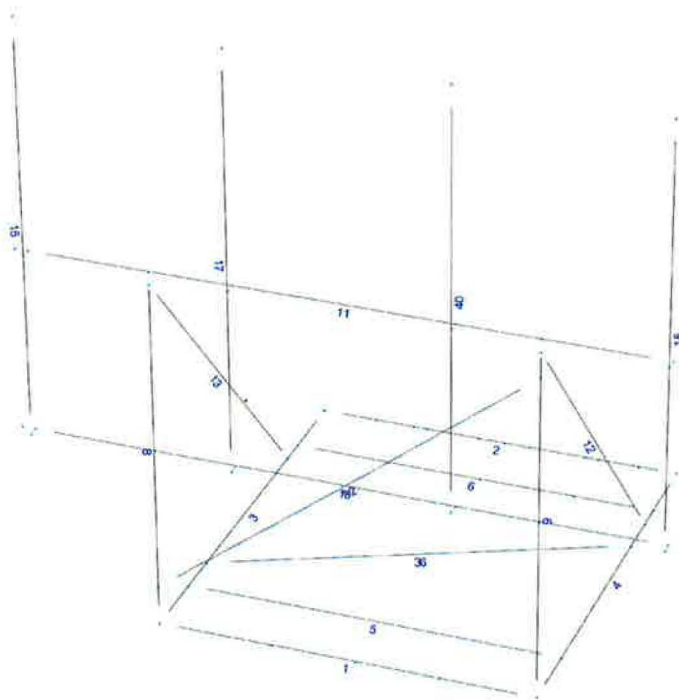
Reinforce existing L3x3x3/16 angle verticals on the existing ballast sleds with new L3x3x3/16 angles, secured to existing mount (typ. of 2 per sector, total of 6).











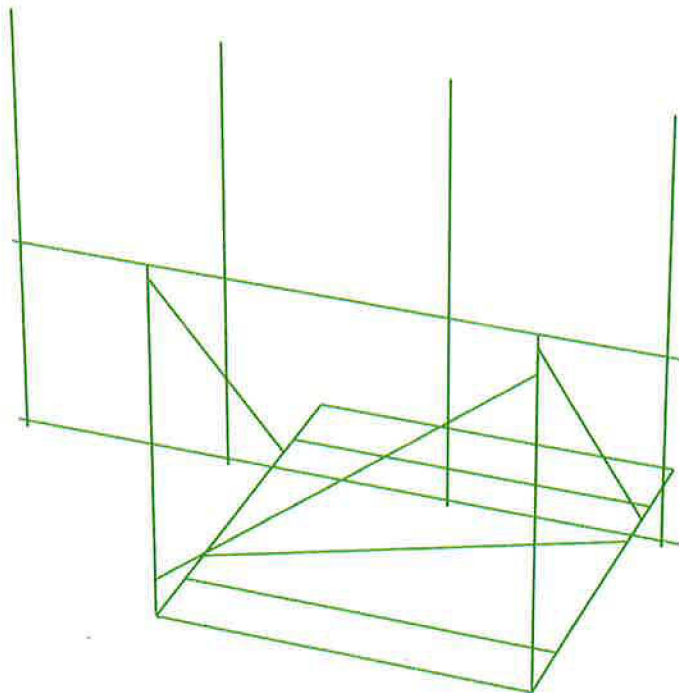






Design status

-  Not designed
-  Error on design
-  Design O.K.
-  With warnings





Current Date: 3/2/2018 12:02 PM

Units system: English

File name: W:\STRUCTURAL DEPARTMENT\ANALYSIS SOFTWARE\RAM Elements\RAM Projects\AT&T\MA\MA2215\MA2215 (MOD.).etx

## Steel Code Check

Report: Summary - For all selected load conditions

Load conditions to be included in design :

LC1=1.2DL+1.6Wof  
 LC2=1.2DL+1.6Wos  
 LC3=0.9DL+1.6Wof  
 LC4=0.9DL+1.6Wos  
 LC5=1.2DL+Wif+Di  
 LC6=1.2DL+Wis+Di  
 LC7=1.2DL  
 LC8=0.9DL

Description	Section	Member	Ctrl Eq.	Ratio	Status	Reference
	<b>L 2-1_2X2-1_2X3_16</b>	<b>1</b>	LC1 at 100.00%	0.15	OK	
			LC2 at 0.00%	0.31	OK	
			LC3 at 100.00%	0.15	OK	Sec. F1
			LC4 at 0.00%	<b>0.31</b>	<b>OK</b>	Sec. F1
			LC5 at 29.69%	0.02	OK	
			LC6 at 0.00%	0.03	OK	
			LC7 at 100.00%	0.01	OK	
			LC8 at 100.00%	0.01	OK	
		<b>2</b>	LC1 at 90.00%	0.00	OK	
			LC2 at 90.00%	0.00	OK	
			LC3 at 90.00%	0.00	OK	
			LC4 at 90.00%	0.00	OK	
			LC5 at 90.00%	<b>0.00</b>	<b>OK</b>	Eq. H3-8
			LC6 at 90.00%	0.00	OK	
			LC7 at 90.00%	0.00	OK	
			LC8 at 90.00%	0.00	OK	
		<b>3</b>	LC1 at 0.00%	0.29	OK	
			LC2 at 0.00%	0.13	OK	
			LC3 at 0.00%	<b>0.29</b>	<b>OK</b>	Eq. H2-1
			LC4 at 0.00%	0.13	OK	
			LC5 at 26.25%	0.03	OK	
			LC6 at 16.25%	0.03	OK	
			LC7 at 26.25%	0.01	OK	
			LC8 at 26.25%	0.01	OK	
		<b>4</b>	LC1 at 0.00%	0.45	OK	
			LC2 at 0.00%	0.03	OK	
			LC3 at 0.00%	<b>0.46</b>	<b>OK</b>	Eq. H2-1
			LC4 at 0.00%	0.04	OK	
			LC5 at 0.00%	0.03	OK	
			LC6 at 16.25%	0.03	OK	
			LC7 at 16.25%	0.02	OK	
			LC8 at 16.25%	0.01	OK	
		<b>5</b>	LC1 at 50.00%	0.04	OK	
			LC2 at 50.00%	0.04	OK	
			LC3 at 50.00%	0.03	OK	
			LC4 at 50.00%	0.03	OK	
			LC5 at 50.00%	<b>0.08</b>	<b>OK</b>	Sec. F1



	LC6 at 50.00%	0.08	OK		
	LC7 at 50.00%	0.04	OK		
	LC8 at 50.00%	0.03	OK		
<hr/>					
6	LC1 at 25.00%	0.00	OK	Eq. H3-8	
	LC2 at 25.00%	0.00	OK		
	LC3 at 25.00%	0.00	OK		
	LC4 at 25.00%	0.00	OK		
	LC5 at 25.00%	0.01	OK		
	LC6 at 25.00%	0.01	OK		
	LC7 at 25.00%	0.00	OK		
	LC8 at 25.00%	0.00	OK		
<hr/>					
32	LC1 at 46.88%	0.09	OK	Eq. H2-1	
	LC2 at 0.00%	0.66	OK	Eq. H2-1	
	LC3 at 46.88%	0.09	OK		
	LC4 at 0.00%	0.66	OK		
	LC5 at 0.00%	0.03	OK		
	LC6 at 0.00%	0.11	OK		
	LC7 at 0.00%	0.02	OK		
	LC8 at 0.00%	0.01	OK		
<hr/>					
36	LC1 at 50.00%	0.04	OK	Eq. H2-1	
	LC2 at 50.00%	0.04	OK		
	LC3 at 50.00%	0.03	OK		
	LC4 at 50.00%	0.03	OK		
	LC5 at 50.00%	0.09	OK		
	LC6 at 50.00%	0.09	OK		
	LC7 at 50.00%	0.04	OK		
	LC8 at 50.00%	0.03	OK		
<hr/>					
PIPE 2-1_2x0.203	40	LC1 at 53.13%	0.55	OK	Eq. H1-1b
		LC2 at 53.13%	0.23	OK	
		LC3 at 53.13%	0.55	OK	
		LC4 at 53.13%	0.23	OK	
		LC5 at 53.13%	0.06	OK	
		LC6 at 53.13%	0.03	OK	
		LC7 at 56.25%	0.01	OK	
		LC8 at 56.25%	0.01	OK	
<hr/>					
PIPE 2x0.154	15	LC1 at 53.13%	0.52	OK	Eq. H1-1b
		LC2 at 53.13%	0.39	OK	
		LC3 at 53.13%	0.52	OK	
		LC4 at 53.13%	0.39	OK	
		LC5 at 53.13%	0.07	OK	
		LC6 at 56.25%	0.07	OK	
		LC7 at 56.25%	0.02	OK	
		LC8 at 56.25%	0.02	OK	
<hr/>					
	17	LC1 at 53.13%	0.67	OK	Eq. H1-1b
		LC2 at 53.13%	0.38	OK	
		LC3 at 53.13%	0.67	OK	
		LC4 at 53.13%	0.38	OK	
		LC5 at 53.13%	0.08	OK	
		LC6 at 53.13%	0.06	OK	
		LC7 at 56.25%	0.01	OK	
		LC8 at 56.25%	0.01	OK	
<hr/>					
	18	LC1 at 53.13%	0.68	OK	Eq. H1-1b
		LC2 at 53.13%	0.45	OK	
		LC3 at 53.13%	0.68	OK	
		LC4 at 53.13%	0.45	OK	
		LC5 at 53.13%	0.08	OK	
		LC6 at 53.13%	0.06	OK	



		LC7 at 56.25%	0.02	OK	
		LC8 at 56.25%	0.01	OK	
<hr/>					
T2L 2-1_2X2-1_2X3_16	12	LC1 at 0.00%	0.36	OK	Eq. H2-1
		LC2 at 100.00%	0.02	OK	
		LC3 at 0.00%	<b>0.36</b>	<b>OK</b>	
		LC4 at 100.00%	0.02	OK	
		LC5 at 100.00%	0.06	OK	
		LC6 at 100.00%	0.03	OK	
		LC7 at 100.00%	0.02	OK	
		LC8 at 100.00%	0.01	OK	
<hr/>					
	13	LC1 at 100.00%	0.26	OK	Eq. H2-1
		LC2 at 0.00%	0.05	OK	
		LC3 at 100.00%	<b>0.27</b>	<b>OK</b>	
		LC4 at 0.00%	0.04	OK	
		LC5 at 0.00%	0.05	OK	
		LC6 at 0.00%	0.03	OK	
		LC7 at 0.00%	0.02	OK	
		LC8 at 0.00%	0.01	OK	
<hr/>					
T2L 3X3X3_16	8	LC1 at 50.00%	0.28	OK	Eq. H2-1 Eq. H2-1
		LC2 at 90.63%	<b>0.31</b>	<b>OK</b>	
		LC3 at 50.00%	0.29	OK	
		LC4 at 90.63%	0.31	OK	
		LC5 at 48.44%	0.07	OK	
		LC6 at 50.00%	0.10	OK	
		LC7 at 50.00%	0.05	OK	
		LC8 at 50.00%	0.04	OK	
<hr/>					
	9	LC1 at 48.44%	0.44	OK	Eq. H2-1 Eq. H2-1
		LC2 at 100.00%	0.24	OK	
		LC3 at 48.44%	<b>0.45</b>	<b>OK</b>	
		LC4 at 100.00%	0.23	OK	
		LC5 at 50.00%	0.08	OK	
		LC6 at 100.00%	0.06	OK	
		LC7 at 48.44%	0.04	OK	
		LC8 at 48.44%	0.03	OK	
<hr/>					
T2L 4X4X1_4	10	LC1 at 78.91%	0.20	OK	Eq. H2-1
		LC2 at 21.09%	0.07	OK	
		LC3 at 78.91%	<b>0.21</b>	<b>OK</b>	
		LC4 at 21.09%	0.06	OK	
		LC5 at 20.31%	0.05	OK	
		LC6 at 20.31%	0.07	OK	
		LC7 at 20.31%	0.04	OK	
		LC8 at 20.31%	0.03	OK	
<hr/>					
	11	LC1 at 79.46%	<b>0.58</b>	<b>OK</b>	Eq. H2-1
		LC2 at 78.57%	0.09	OK	
		LC3 at 79.46%	0.58	OK	
		LC4 at 78.57%	0.09	OK	
		LC5 at 79.46%	0.10	OK	
		LC6 at 20.54%	0.06	OK	
		LC7 at 20.54%	0.03	OK	
		LC8 at 20.54%	0.02	OK	



Date: 3/2/2018

Project Name: CAMBRIDGE, MASS. AVE

Project Number: MA2215

Designed By: BD      Checked By: MSC



**HUDSON**  
Design Group LLC

**Calculate Total Ballast Required for Ballast Mount**

**WIND FORCES**

**F antenna =** 1035 lbs.

**F RRH & Junc. Box =** 517 lbs.

**Antenna Height =** 8 ft

**RRH & Junc. Box Height =** 4 ft

**Overturning at Ballast**

**Moment =** 15522 lbs.-ft

**Hold Down Force =** 1940.25 lbs. Per Side

**Wa Ballast**

Equipment

Frame = 150 lbs.

**Total Ballast Required Wa=** 1790.25 lbs.

**Blocks Required Wa =** 48 Assumed 38 lbs. Block (4"x8"x16" Solid)

**Wb Ballast**

Equipment

Frame 300 lbs.

Antennas 236 lbs.

RRH's 402 lbs.

Junc. Box 33 lbs.

**Total =** 971 lbs.

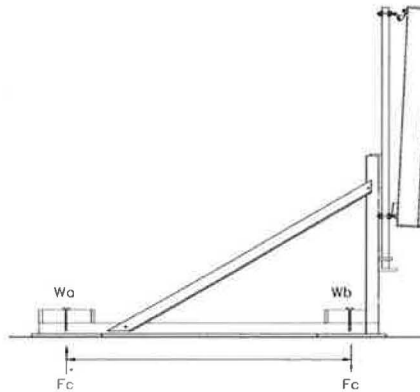
**Total Ballast Required Wb =** 969.25 lbs.

**Blocks Required Wb=** 26 Assumed 38 lbs. Block (4"x8"x16" Solid)

**Footprint area under ballast frame=** 58.4 sq. ft.

**Area Load=** 67.35 psf

**Total weight of frame and equipment=** 3933 lbs.



**Length =** 8 ft

**FS=** 1.5





**HUDSON**  
Design Group LLC

## **RRH Ballast Mount Calculations**



Date: 3/2/2018

Project Name: CAMBRIDGE, MASS. AVE

Project Number: MA2215

Designed By: BD Checked By: MSC



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#### 2.6.5.2 Velocity Pressure Coeff:

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

$$z = 124.5 \text{ (ft)}$$

$$z_g = 1200 \text{ (ft)}$$

$$\alpha = 7.0$$

$$K_z = 1.052$$

$$K_{zmin} \leq K_z \leq 2.01$$

Table 2-4

Exposure	$Z_g$	$\alpha$	$K_{zmin}$	$K_e$
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

#### 2.6.6.4 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

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

$$K_h = e^{(fz/H)}$$

$$K_{zt} = \text{\#DIV/0!}$$

$$K_h = \text{\#DIV/0!}$$

$$K_e = 0 \text{ (from Table 2-4)}$$

$$K_t = 0 \text{ (from Table 2-5)}$$

$$f = 0 \text{ (from Table 2-5)}$$

$$z = 124.5$$

$$H = 0 \text{ (Ht. of the crest above surrounding terrain)}$$

$$K_{zt} = 1.00$$

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

Catego 1



Date: 3/2/2018  
 Project Name: CAMBRIDGE, MASS. AVE  
 Project Number: MA2215  
 Designed By: BD Checked By: MSC



## 2.6.7 Gust Effect Factor

### 2.6.7.1 Self Supporting Lattice Structures

Gh = 1.0 Latticed Structures > 600 ft

Gh = 0.85 Latticed Structures 450 ft or less

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

h= 121.5 Gh= 0.85

2.6.7.2 Guyed Masts Gh= 0.85

2.6.7.3 Pole Structures Gh= 1.1

2.6.9 Appurtenances Gh= 1.0

### 2.6.7.4 Structures Supported on Other Structures

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

Gh= 1.35 Gh= 1.35

## 2.6.9.2 Design Wind Force on Appurtenances

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

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

q<sub>z</sub>= 28.21

q<sub>z (ice)</sub>= 4.09

K<sub>z</sub>= 1.052

K<sub>zt</sub>= 1.0

K<sub>d</sub>= 0.95

V<sub>max</sub>= 105

V<sub>max (ice)</sub>= 40

I= 1.0

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



Date: 3/2/2018  
 Project Name: CAMBRIDGE, MASS. AVE  
 Project Number: MA2215  
 Designed By: BD      Checked By: MSC



**Determine Ca:**

**Table 2-8**

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
Round	C < 32 (Subcritical)	0.7	0.8	1.2
	32 ≤ C ≤ 64 (Transitional)	$3.76/(C^{0.485})$	$3.37/(C^{0.415})$	$38.4/(C^{1.0})$
	C > 64 (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, and the section length considered to have uniform wind load).

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

**Ice Thickness = 1.00 in**

<u>Appurtenances</u>	<u>Height</u>	<u>Width</u>	<u>Depth</u>	<u>Flat Area</u>	<u>Aspect Ratio</u>	<u>Ca</u>	<u>Force (lbs)</u>	<u>Force (lbs) (1" Ice)</u>
RRUS-4426 B66 RRH	15.0	13.2	5.8	1.38	1.14	1.20	63	12
B14 4478 RRH	18.1	13.4	8.3	1.68	1.35	1.20	77	14



Date: 3/2/2018

Project Name: CAMBRIDGE, MASS. AVE

Project Number: MA2215

Designed By: BD      Checked By: MSC



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### Calculate Total Ballast Required for Ballast Mount

\*Assume (3) RRH's as projected area\*

Force (F) = 140 lbs.

Height (H) = 2.75 ft

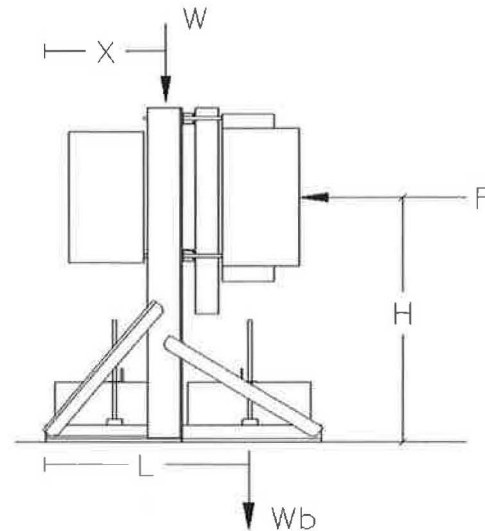
Weight of Appurtenances (W) = 289 lbs.

Frame Width/2 (X) = 1.3 ft

Length (L) = 2.2 ft

Ballast (Wb) = TBD

Safety Factor (SF) = 1.5



### Overturning at Ballast

$$\Sigma M = 0 = (F * H) - (W * X) - (Wb * L) \rightarrow$$

$$Wb = [(F * H * SF - W * X) / L] =$$

**92 lbs.**

### Determine Number of Blocks Required

(assume 4"x8"x16" solid blocks @ 38 lbs. each)

Number of Blocks Required =

**2 BLOCKS PER SIDE**

-Total Weight of Fully Loaded Frame = 621 lbs.

-Footprint Area Under Ballast Frame = 10.5 sqft.

-Distributed Load Under Ballast Frame = 59 psf





**HUDSON**  
Design Group LLC

## Reference Documents











SIST, JACKSON  
AND GOURLEY  
ARCHITECTS  
1000 N. 10th St.  
ANN ARBOR, MICH. 48106

UNIVERSITY MICROFILMS  
SERIALS ACQUISITION  
300 N. ZEEB RD.  
ANN ARBOR, MI 48106

HOLLAND CENTER  
HARVARD UNIVERSITY

PLATE - 1



NO.	DATE	REVISION
1	10/1/78	1
2	10/1/78	2
3	10/1/78	3
4	10/1/78	4
5	10/1/78	5
6	10/1/78	6
7	10/1/78	7
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96	10/1/78	96
97	10/1/78	97
98	10/1/78	98
99	10/1/78	99
100	10/1/78	100

ROOF AND  
FLOOR  
FRAMING PLANS



SHO







## Radio Frequency Safety Survey Report Prediction (RFSSRP)

### AT&T Wireless Rooftop Facility

**Pace ID:** MRCTB024356

**Site ID:** MAL02215

**Site Name:** Cambridge Mass Ave

**Address:** 1350 Massachusetts Avenue,  
Cambridge, MA 02138

**Latitude:** 42.372799

**Longitude:** -71.118597

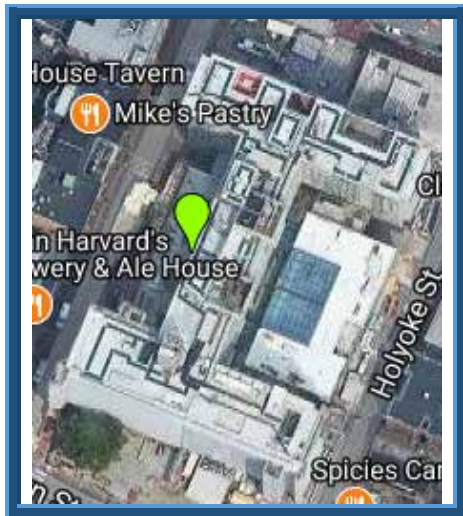
**USID:** 3126

**FA:** 10071767

**Prepared for:**

AT&T Mobility, LLC  
550 Cochituate Road, Suite 13  
Framingham, MA 01701

**Centerline PN:** 950010-054



### **Additional Site Information:**

CDs:FINAL\_CD\_COMPLIANCE\_  
MA2215\_10071767\_MRCTB018871\_  
2101A06DDT  
RFDS: NEW-ENGLAND\_  
BOSTON\_MAU2215\_2018-LTE-Next-Carrier\_  
LTE\_mb497j\_2101A0BJQJ\_10071767\_3126\_06-  
01-2017\_Preliminary-In-Progress\_v2.002

### **Report Information:**

Report Writer: Michelle Stone  
Date: May 30, 2018

Report Reviewer: Ryan McManus

### **Statement of Compliance**

AT&T is compliant with FCC Regulations.



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## 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 equipment for AT&T Mobility and any other wireless carriers on site.

### 1.1 SITE SUMMARY

Analysis Site Data	
<b>Site ID:</b>	MAL02215
<b>Site USID:</b>	3126
<b>Site FA#:</b>	10071767
<b>Site Name:</b>	Cambridge Mass Ave
<b>Site Address:</b>	1350 Massachusetts Avenue, Cambridge MA 02138
<b>Site Latitude:</b>	42.372799 N
<b>Site Longitude:</b>	-71.118597 W
<b>Facility Type:</b>	Rooftop
Compliance Summary	
<b>Compliance Status:</b>	Compliant
Maximum Modeled MPE% on Walking Surface AT&T (General Public Limit):	3.90 %
Maximum Modeled MPE% at Ground Level AT&T (General Public Limit):	3.90 %
Maximum Modeled MPE% on Walking Surface Composite (General Public Limit):	30.00 %
Maximum Modeled MPE% at Ground Level Composite (General Public Limit):	3.90 %
Site Survey Data	
<b>Is Access Locked or Controlled? :</b>	Uncontrolled*
<b>Lock or Control Measures if Present:</b>	N/A
<b>Parapet Height:</b>	6”-36”

In addition to the AT&T antennas and radio equipment there are antennas and radio equipment for Verizon Wireless, Harvard Planning, Harvard Univ Op, Town of Brookline, Harvard Police, Harvard Broadcasting, WHRB and Unknown carrier(s) which have been included in this analysis as part of the overall site compliance determination.

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



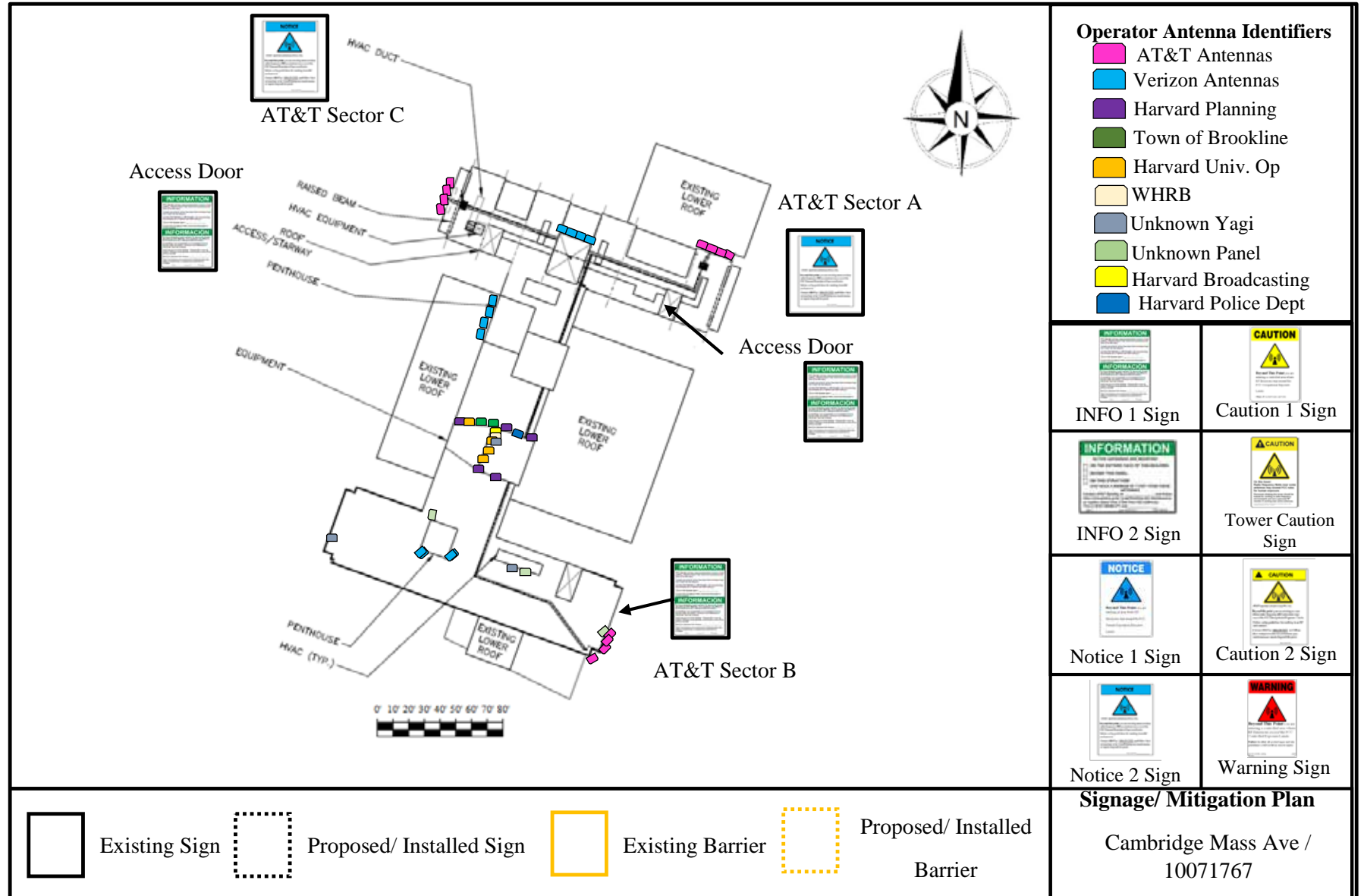
Signage and barriers are the primary means of mitigating access to accessible areas of exposure. Below is a summary of existing and recommended signage at this AT&T facility.

Existing Signage and Barriers (AT&T Sectors)		
Location	Signage	Barriers
Sector A	Blue Notice 2 signage	None
Sector B	Green INFO 1	None
Sector C	Blue Notice 2 signage	None
Access Point (s)	Green INFO 1	N/A
Recommended Signage and Barriers (AT&T Sectors)		
Location	Signage	Barriers
Sector A	No action required	No action required
Sector B	No action required	No action required
Sector C	No action required	No action required
Access Point (s)	No action required	No action required

Per OSHA, barriers should only be installed when the parapet height is greater than 36 inches. Any barriers required for non-OSHA compliant parapets can only be installed up to 6 feet from the parapet.



## 2.0 SITE SCALE MAP





### 3.0 ANTENNA INVENTORY

ANT ID	Operator	Antenna Make	Antenna Model	Type	Freq (MHz)	# of TX	Azimuth (°)	BW (°)	Gain (dBd)	ERP (Watts)	Length (ft)	x	y	Antenna Z Value (ft)**	Ant Z Value Ground (ft)
ATT A1	AT&T	CCI	HPA-65R-BUU-H4	Panel	LTE 737	1	20	65	10.55	1458.83	4.0	122	142	117.0	117.0
ATT A1	AT&T	CCI	HPA-65R-BUU-H4	Panel	LTE 1900	1	20	62	13.45	7244.79	4.0	122	142	117.0	117.0
ATT A2	AT&T	Kathrein	800-10964	Panel	LTE 737	1	20	65	11.45	2951.36	4.9	125	141	116.6	116.6
ATT A2	AT&T	Kathrein	800-10964	Panel	LTE 2100	1	20	61	15.15	5070.18	4.9	125	141	116.6	116.6
ATT A3	AT&T	CCI	HPA-65R-BUU-H4	Panel	LTE 737	1	20	65	10.55	1458.83	4.0	128	140	117.0	117.0
ATT A3	AT&T	CCI	HPA-65R-BUU-H4	Panel	LTE 850	1	20	63	11.15	1000.05	4.0	128	140	117.0	117.0
ATT A3	AT&T	CCI	HPA-65R-BUU-H4	Panel	LTE 2300	1	20	58	14.35	1300.09	4.0	128	140	117.0	117.0
ATT A4	AT&T	Kathrein	742-264	Panel	UMTS 850	1	30	68	11.85	367.31	4.3	132	139	116.8	116.8
ATT B1	AT&T	CCI	HPA-65R-BUU-H4	Panel	LTE 737	1	135	65	10.55	1458.83	4.0	98	21	117.0	117.0
ATT B1	AT&T	CCI	HPA-65R-BUU-H4	Panel	LTE 1900	1	135	62	13.45	7244.79	4.0	98	21	117.0	117.0
ATT B2	AT&T	Kathrein	800-10964	Panel	LTE 737	1	135	65	11.45	2951.36	4.9	97	20	116.6	116.6
ATT B2	AT&T	Kathrein	800-10964	Panel	LTE 2100	1	135	61	15.15	5070.18	4.9	97	20	116.6	116.6
ATT B3	AT&T	CCI	HPA-65R-BUU-H4	Panel	LTE 737	1	135	65	10.55	1458.83	4.0	95	17	117.0	117.0
ATT B3	AT&T	CCI	HPA-65R-BUU-H4	Panel	LTE 850	1	135	63	11.15	1000.05	4.0	95	17	117.0	117.0
ATT B3	AT&T	CCI	HPA-65R-BUU-H4	Panel	LTE 2300	1	135	58	14.35	1300.09	4.0	95	17	117.0	117.0
ATT B4	AT&T	Kathrein	742-264	Panel	UMTS 850	1	150	68	11.85	367.31	4.3	90	12	116.8	116.8
ATT C1	AT&T	CCI	HPA-65R-BUU-H4	Panel	LTE 737	1	265	65	10.55	1458.83	4.0	48	53	117.0	117.0
ATT C1	AT&T	CCI	HPA-65R-BUU-H4	Panel	LTE 1900	1	265	62	13.45	7244.79	4.0	48	53	117.0	117.0
ATT C2	AT&T	Kathrein	800-10964	Panel	LTE 737	1	265	65	11.45	2951.36	4.9	49	57	116.6	116.6
ATT C2	AT&T	Kathrein	800-10964	Panel	LTE 2100	1	265	61	15.15	5070.18	4.9	49	57	116.6	116.6
ATT C3	AT&T	CCI	HPA-65R-BUU-H4	Panel	LTE 737	1	265	65	10.55	1458.83	4.0	50	60	117.0	117.0
ATT C3	AT&T	CCI	HPA-65R-BUU-H4	Panel	LTE 850	1	265	63	11.15	1000.05	4.0	50	60	117.0	117.0
ATT C3	AT&T	CCI	HPA-65R-BUU-H4	Panel	LTE 2300	1	265	58	14.35	1300.09	4.0	50	60	117.0	117.0
ATT C4	AT&T	Kathrein	742-264	Panel	UMTS 850	1	270	68	11.85	367.31	4.3	51	62	116.8	116.8
VZW A1	Verizon	Unknown	Unknown	Panel	850	4	20	85	12.00	953.19	5.0	81	149	13.7	135.3
VZW A2	Verizon	Unknown	Unknown	Panel	1900	4	20	85	16.00	2394.31	5.0	84	148	13.7	135.3
VZW A3	Verizon	Unknown	Unknown	Panel	2100	2	20	85	16.00	1596.21	5.0	87	147	13.7	135.3
VZW A4	Verizon	Unknown	Unknown	Panel	700	1	20	85	12.00	476.60	5.0	91	146	13.7	135.3
VZW B1	Verizon	Unknown	Unknown	Panel	850	4	140	85	12.00	953.19	5.0	49	45	37.7	159.3
VZW B2	Verizon	Unknown	Unknown	Panel	1900	4	140	85	16.00	2394.31	5.0	49	45	33.7	155.3
VZW B3	Verizon	Unknown	Unknown	Panel	2100	2	140	85	16.00	1596.21	5.0	41	47	37.7	159.3
VZW B4	Verizon	Unknown	Unknown	Panel	700	1	140	85	12.00	476.60	5.0	41	47	33.7	155.3
VZW C1	Verizon	Unknown	Unknown	Panel	850	4	280	85	12.00	953.19	5.0	59	115	13.7	135.3
VZW C2	Verizon	Unknown	Unknown	Panel	1900	4	280	85	16.00	2394.31	5.0	60	119	13.7	135.3
VZW C3	Verizon	Unknown	Unknown	Panel	2100	2	280	85	16.00	1596.21	5.0	61	122	13.7	135.3





VZW C4	Verizon	Unknown	Unknown	Panel	700	1	280	85	12.00	476.60	5.0	62	126	13.7	135.3
Harvard Planning	Omni	Unknown	Unknown	Omni	850	1	0	Omni	12.00	103.26	10.0	23	88	18.0	139.6
Harvard Univ Op	Omni	Unknown	Unknown	Omni	850	1	0	Omni	12.00	103.26	4.9	24	88	21.0	142.6
Town of Brookline	Omni	Unknown	Unknown	Omni	850	1	0	Omni	12.00	103.26	3.0	25	88	18.9	140.5
Town of Brookline	Yagi	Unknown	Unknown	Panel	850	1	40	60	9.97	97.06	1.2	26	88	21.8	143.4
Harvard Planning	Omni	Unknown	Unknown	Omni	850	1	0	Omni	12.00	103.26	10.0	27	85	17.1	138.7
Harvard Police	Omni	Unknown	Unknown	Omni	850	1	0	Omni	12.00	103.26	10.0	28	84	18.4	140.0
Harvard Planning	Omni	Unknown	Unknown	Omni	850	1	0	Omni	12.00	103.26	4.7	29	81	19.1	140.7
Harvard Planning	Omni	Unknown	Unknown	Omni	850	1	0	Omni	12.00	103.26	4.7	30	70	21.1	142.7
Harvard Planning	Omni	Unknown	Unknown	Omni	850	1	0	Omni	12.00	103.26	4.7	31	73	19.1	140.7
Harvard Univ Op	Omni	Unknown	Unknown	Omni	850	1	0	Omni	12.00	103.26	19.3	32	76	16.8	138.4
Harvard Univ Op	Omni	Unknown	Unknown	Omni	850	1	0	Omni	12.00	103.26	19.3	33	78	16.8	138.4
Harvard Univ Op	Yagi	Unknown	Unknown	Panel	850	1	220	60	9.97	89.59	3.0	34	80	19.9	141.5
Harvard Brdcstg	Unknown	Unknown	Unknown	Panel	850	1	0	28.05	15.80	476.37	3.0	35	82	27.9	149.5
WHRB	Unknown	Unknown	Unknown	Panel	850	1	0	63	12.00	2382.98	3.0	36	83	42.4	164.0
Yagi 1	Yagi	Unknown	Unknown	Panel	850	1	90	60	9.97	82.13	3.0	37	84	20.9	142.5
UNK A1	Unknown	Unknown	Unknown	Panel	850	1	280	63	12.00	3.97	1.1	38	60	14.9	136.5
UNK A2	Unknown	Unknown	Unknown	Panel	850	1	140	63	12.00	3.97	1.1	39	21	4.5	126.1
UNK A3	Unknown	Unknown	Unknown	Panel	850	1	0	63	12.00	3.97	1.1	40	40	9.8	131.5
Yagi 2	Yagi	Unknown	Unknown	Panel	850	1	0	60	9.97	82.13	3.0	41	41	8.9	130.5
Yagi 3	Yagi	Unknown	Unknown	Panel	850	1	280	60	9.97	9.95	3.0	42	51	4.9	126.5

Table 1: Total Site data table      \*\* (Z Value is distance from bottom of antenna to 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	(ft) Type	dBd Aper	BWdth Gain	Pt Dir
1	ATT A1	AT&T	737.00000	128.5	1			0.0		128.5	CCI	HPA-65R-BUU-H4	122.0	142.0	117.0	4.0	10.55	65,20	
2	ATT A1	AT&T	1900.00000	327.4	1			0.0		327.4	CCI	HPA-65R-BUU-H4	122.0	142.0	117.0	4.0	13.45	62,20	
3	ATT A2	AT&T	737.00000	211.4	1			0.0		211.4	Kathrein	800-10964	125.0	141.0	116.6	4.9	11.45	65,20	
4	ATT A2	AT&T	2100.00000	154.9	1			0.0		154.9	Kathrein	800-10964	125.0	141.0	116.6	4.9	15.15	61,20	
5	ATT A3	AT&T	737.00000	128.5	1			0.0		128.5	CCI	HPA-65R-BUU-H4	128.0	140.0	117.0	4.0	10.55	65,20	
6	ATT A3	AT&T	850.00000	76.7	1			0.0		76.7	CCI	HPA-65R-BUU-H4	128.0	140.0	117.0	4.0	11.15	63,20	
7	ATT A3	AT&T	2300.00000	47.8	1			0.0		47.8	CCI	HPA-65R-BUU-H4	128.0	140.0	117.0	4.0	14.35	58,20	
8	ATT A4	AT&T	850.00000	24.0	1			0.0		24.0	Kathrein	742-264	132.0	139.0	116.8	4.3	11.85	68,30	
9	ATT B1	AT&T	737.00000	128.5	1			0.0		128.5	CCI	HPA-65R-BUU-H4	98.0	21.0	117.0	4.0	10.55	65,135	
10	ATT B1	AT&T	1900.00000	327.4	1			0.0		327.4	CCI	HPA-65R-BUU-H4	98.0	21.0	117.0	4.0	13.45	62,135	
11	ATT B2	AT&T	737.00000	211.4	1			0.0		211.4	Kathrein	800-10964	97.0	20.0	116.6	4.9	11.45	65,135	
12	ATT B2	AT&T	2100.00000	154.9	1			0.0		154.9	Kathrein	800-10964	97.0	20.0	116.6	4.9	15.15	61,135	
13	ATT B3	AT&T	737.00000	128.5	1			0.0		128.5	CCI	HPA-65R-BUU-H4	95.0	17.0	117.0	4.0	10.55	65,135	
14	ATT B3	AT&T	850.00000	76.7	1			0.0		76.7	CCI	HPA-65R-BUU-H4	95.0	17.0	117.0	4.0	11.15	63,135	
15	ATT B3	AT&T	2300.00000	47.8	1			0.0		47.8	CCI	HPA-65R-BUU-H4	95.0	17.0	117.0	4.0	14.35	58,135	
16	ATT B4	AT&T	850.00000	24.0	1			0.0		24.0	Kathrein	742-264	90.0	12.0	116.8	4.3	11.85	68,150	
17	ATT C1	AT&T	737.00000	128.5	1			0.0		128.5	CCI	HPA-65R-BUU-H4	48.0	53.0	117.0	4.0	10.55	65,265	
18	ATT C1	AT&T	1900.00000	327.4	1			0.0		327.4	CCI	HPA-65R-BUU-H4	48.0	53.0	117.0	4.0	13.45	62,265	
19	ATT C2	AT&T	737.00000	211.4	1			0.0		211.4	Kathrein	800-10964	49.0	57.0	116.6	4.9	11.45	65,265	
20	ATT C2	AT&T	2100.00000	154.9	1			0.0		154.9	Kathrein	800-10964	49.0	57.0	116.6	4.9	15.15	61,265	
21	ATT C3	AT&T	737.00000	128.5	1			0.0		128.5	CCI	HPA-65R-BUU-H4	50.0	60.0	117.0	4.0	10.55	65,265	
22	ATT C3	AT&T	850.00000	76.7	1			0.0		76.7	CCI	HPA-65R-BUU-H4	50.0	60.0	117.0	4.0	11.15	63,265	
23	ATT C3	AT&T	2300.00000	47.8	1			0.0		47.8	CCI	HPA-65R-BUU-H4	50.0	60.0	117.0	4.0	14.35	58,265	
24	ATT C4	AT&T	850.00000	24.0	1			0.0		24.0	Kathrein	742-264	51.0	62.0	116.8	4.3	11.85	68,270	
25	VZW A1	Verizon	850.00000	30.0	4			3.0		60.1	Unknown	Unknown	81.0	149.0	13.7	5.0	12	85,20	
26	VZW A2	Verizon	1900.00000	30.0	4			3.0		60.1	Unknown	Unknown	84.0	148.0	13.7	5.0	16	85,20	
27	VZW A3	Verizon	2100.00000	40.0	2			3.0		40.1	Unknown	Unknown	87.0	147.0	13.7	5.0	16	85,20	
28	VZW A4	Verizon	700.00000	60.0	1			3.0		30.1	Unknown	Unknown	91.0	146.0	13.7	5.0	12	85,20	
29	VZW B1	Verizon	850.00000	30.0	4			3.0		60.1	Unknown	Unknown	49.0	45.0	37.7	5.0	12	85,140	
30	VZW B2	Verizon	1900.00000	30.0	4			3.0		60.1	Unknown	Unknown	49.0	45.0	33.7	5.0	16	85,140	
31	VZW B3	Verizon	2100.00000	40.0	2			3.0		40.1	Unknown	Unknown	41.0	47.0	37.7	5.0	16	85,140	
32	VZW B4	Verizon	700.00000	60.0	1			3.0		30.1	Unknown	Unknown	41.0	47.0	33.7	5.0	12	85,140	
33	VZW C1	Verizon	850.00000	30.0	4			3.0		60.1	Unknown	Unknown	59.0	115.0	13.7	5.0	12	85,280	
34	VZW C2	Verizon	1900.00000	30.0	4			3.0		60.1	Unknown	Unknown	60.0	119.0	13.7	5.0	16	85,280	
35	VZW C3	Verizon	2100.00000	40.0	2			3.0		40.1	Unknown	Unknown	61.0	122.0	13.7	5.0	16	85,280	
36	VZW C4	Verizon	700.00000	60.0	1			3.0		30.1	Unknown	Unknown	62.0	126.0	13.7	5.0	12	85,280	
37	Harvard	Omni	850.00000	13.0	1			3.0		6.5	Unknown	Unknown	23.0	88.0	18.0	10.0	12	Omni,0	
38	Harvard	Omni	850.00000	13.0	1			3.0		6.5	Unknown	Unknown	24.0	88.0	21.0	4.9	12	Omni,0	
39	Town of	Omni	850.00000	13.0	1			3.0		6.5	Unknown	Unknown	25.0	88.0	18.9	3.0	12	Omni,0	
40	Town of	Yagi	850.00000	19.5	1			3.0		9.8	Unknown	Unknown	26.0	88.0	21.8	1.2	9.97	60,40	
41	Harvard	Omni	850.00000	13.0	1			3.0		6.5	Unknown	Unknown	27.0	85.0	17.1	10.0	12	Omni,0	
42	Harvard	Omni	850.00000	13.0	1			3.0		6.5	Unknown	Unknown	28.0	84.0	18.4	10.0	12	Omni,0	
43	Harvard	Omni	850.00000	13.0	1			3.0		6.5	Unknown	Unknown	29.0	81.0	19.1	4.7	12	Omni,0	
44	Harvard	Omni	850.00000	13.0	1			3.0		6.5	Unknown	Unknown	30.0	70.0	21.1	4.7	12	Omni,0	
45	Harvard	Omni	850.00000	13.0	1			3.0		6.5	Unknown	Unknown	31.0	73.0	19.1	4.7	12	Omni,0	
46	Harvard	Omni	850.00000	13.0	1			3.0		6.5	Unknown	Unknown	32.0	76.0	16.8	19.3	12	Omni,0	
47	Harvard	Omni	850.00000	13.0	1			3.0		6.5	Unknown	Unknown	33.0	78.0	16.8	19.3	12	Omni,0	
48	Harvard	Yagi	850.00000	18.0	1			3.0		9.0	Unknown	Unknown	34.0	80.0	19.9	3.0	9.97	60,220	
49	Harvard	Unknown	850.00000	25.0	1			3.0		12.5	Unknown	Unknown	35.0	82.0	27.9	3.0	15.8	28,05,0	
50	WHRB	Unknown	850.00000	300.0	1			3.0		150.4	Unknown	Unknown	36.0	83.0	42.4	3.0	12	63,0	
51	Yagi 1	Yagi	850.00000	16.5	1			3.0		8.3	Unknown	Unknown	37.0	84.0	20.9	3.0	9.97	60,90	
52	UNK A1	Unknown	850.00000	0.5	1			3.0		0.3	Unknown	Unknown	38.0	60.0	14.9	1.1	12	63,280	
53	UNK A2	Unknown	850.00000	0.5	1			3.0		0.3	Unknown	Unknown	39.0	21.0	4.5	1.1	12	63,140	
54	UNK A3	Unknown	850.00000	0.5	1			3.0		0.3	Unknown	Unknown	40.0	40.0	9.8	1.1	12	63,0	
55	Yagi 2	Yagi	850.00000	16.5	1			3.0		8.3	Unknown	Unknown	41.0	41.0	8.9	3.0	9.97	60,0	
56	Yagi 3	Yagi	850.00000	2.0	1			3.0		1.0	Unknown	Unknown	42.0	51.0	4.9	3.0	9.97	60,280	

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 within allowable limits for General Population 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 **3.90 %** of the FCC's allowable limit for General Population exposure to radio frequency emissions (**0.78 %** 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 are no areas that exceed the **FCC's General Population or Occupational limit** for exposure to radio frequency emissions. The maximum power density value (% MPE) calculated for AT&T's Sector A antennas is **3.80 %** of the FCC's allowable limit for General Population exposure to radio frequency emissions (**0.76 %** of the FCC's allowable Occupational limit). The Sector A antennas are transmitting over the ground level.

**Sector B:** There are no areas that exceed the **FCC's General Population or Occupational limit** for exposure to radio frequency emissions. The maximum power density value (% MPE) calculated for AT&T's Sector B antennas is **3.80 %** of the FCC's allowable limit for General Population exposure to radio frequency emissions (**0.76 %** of the FCC's allowable Occupational limit). The Sector B antennas are transmitting over the ground level.

**Sector C:** There are no areas that exceed the **FCC's General Population or Occupational limit** for exposure to radio frequency emissions. The maximum power density value (% MPE) calculated for AT&T's Sector C antennas is **3.90 %** of the FCC's allowable limit for General Population exposure to radio frequency emissions (**0.78%** of the FCC's allowable Occupational limit). The Sector C antennas are transmitting over the ground level.

At the ground level the maximum power density value calculated from the AT&T radio equipment is **3.90 %** of the **FCC's General Population limit** for exposure to radio frequency emissions. At ground level the maximum composite power density for all system operators on this facility is **0.78 %** of the **FCC's Occupational limit** for exposure to radio frequency emissions.

The anticipated maximum composite power density value (% MPE) for all transmission sources on this facility is **30.00%** of the FCC's allowable limit for General Population exposure to radio frequency emissions (**6.00 %** of the FCC's allowable Occupational limit). This composite value determines the overall compliance status for facility and will identify any potential hot spots that may exceed either limit as specified in this report and will help identify any systems that may require mitigation solutions. The below table is a summary of emissions calculations for all other system operators.

<b>Other Carrier Emissions</b>
--------------------------------



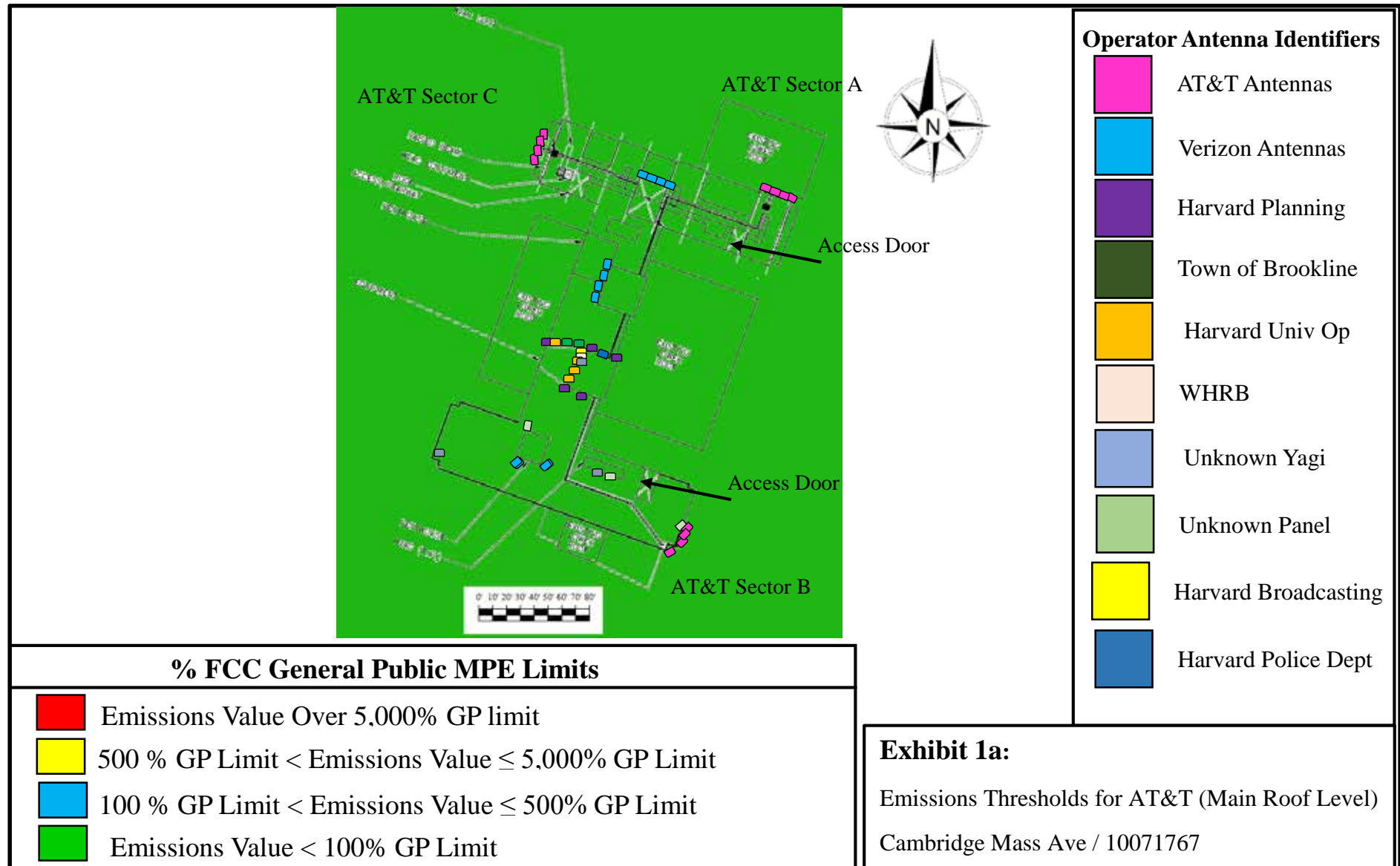
Carrier	Distance GP (feet)	Distance Occupational (feet)	% GP	% Occupational
Verizon A	0	0	29.8	5.96
Verizon B	0	0	29.9	5.98
Verizon C	0	0	29.9	5.98
Harvard Planning	0	0	0.6	0.12
Harvard Univ Op	0	0	5.1	1.02
Town of Brookline	0	0	11.8	2.36
Harvard Police	0	0	0.2	0.04
Harvard Broadcasting	0	0	7.5	1.5
WHRB	0	0	17.2	3.44
(3) Unknown Yagi	0	0	22.6	4.52
(3) Unknown Panel	0	0	28.6	5.72

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. Exhibit 1d shows a graphical representation of all areas where AT&T contributes 5% or more to the FCC general public limit on the site.

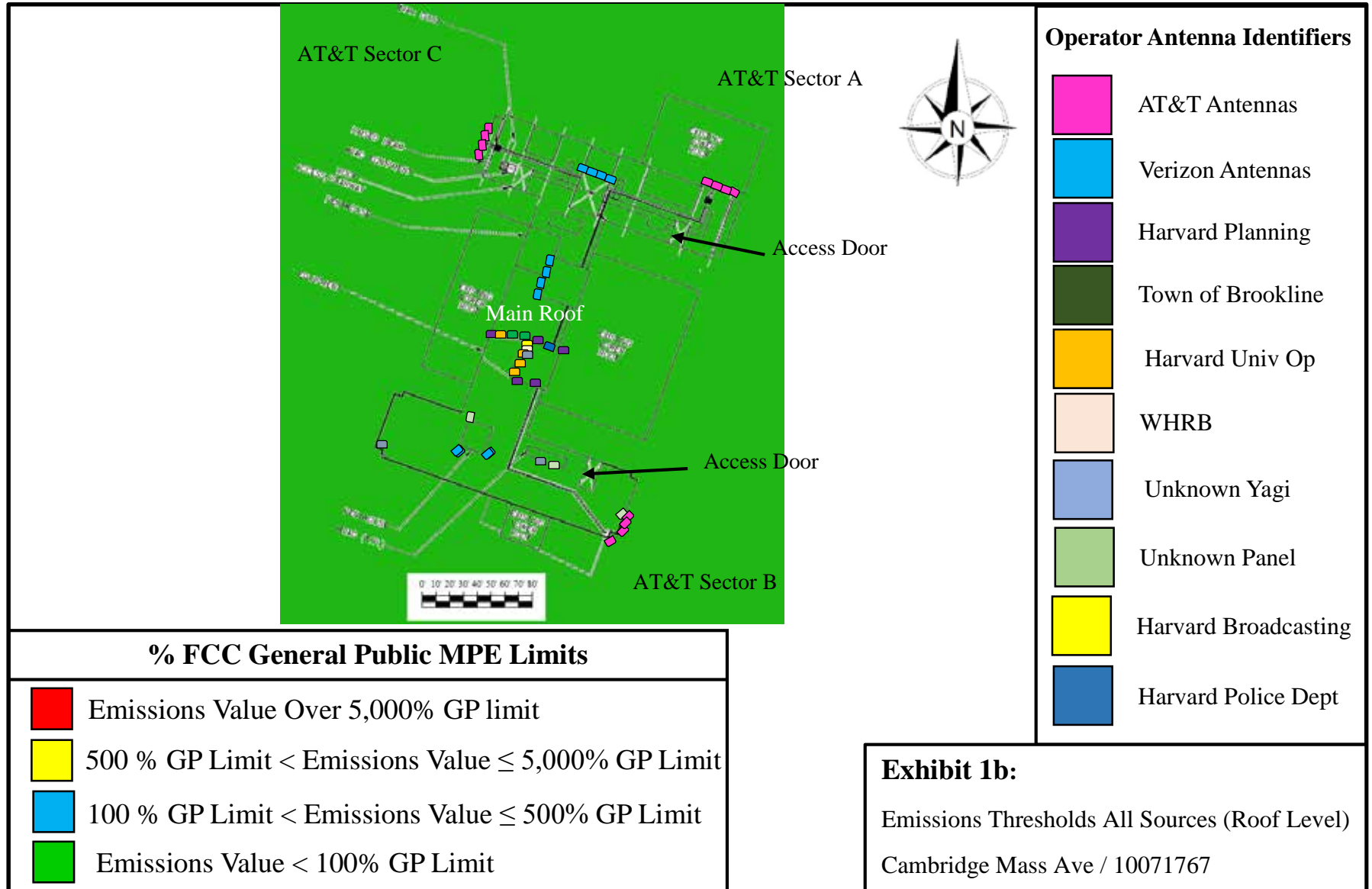
AT&T's RF Exposure: Responsibilities, Procedures & Guidelines document states that microwave dishes are compliant if they are mounted 20 feet or greater above any accessible walking or working surface. There are no microwaves identified on site.

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

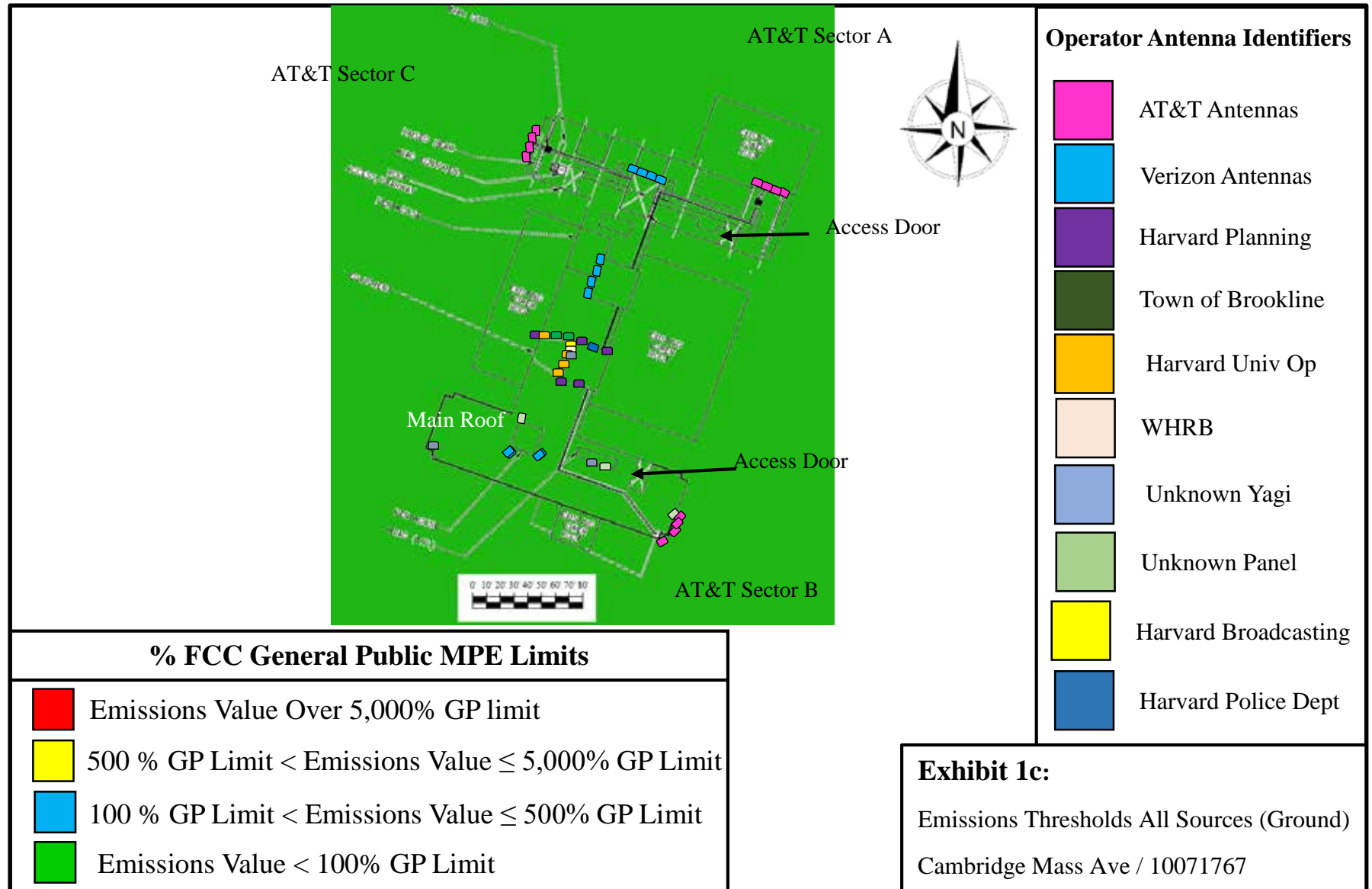




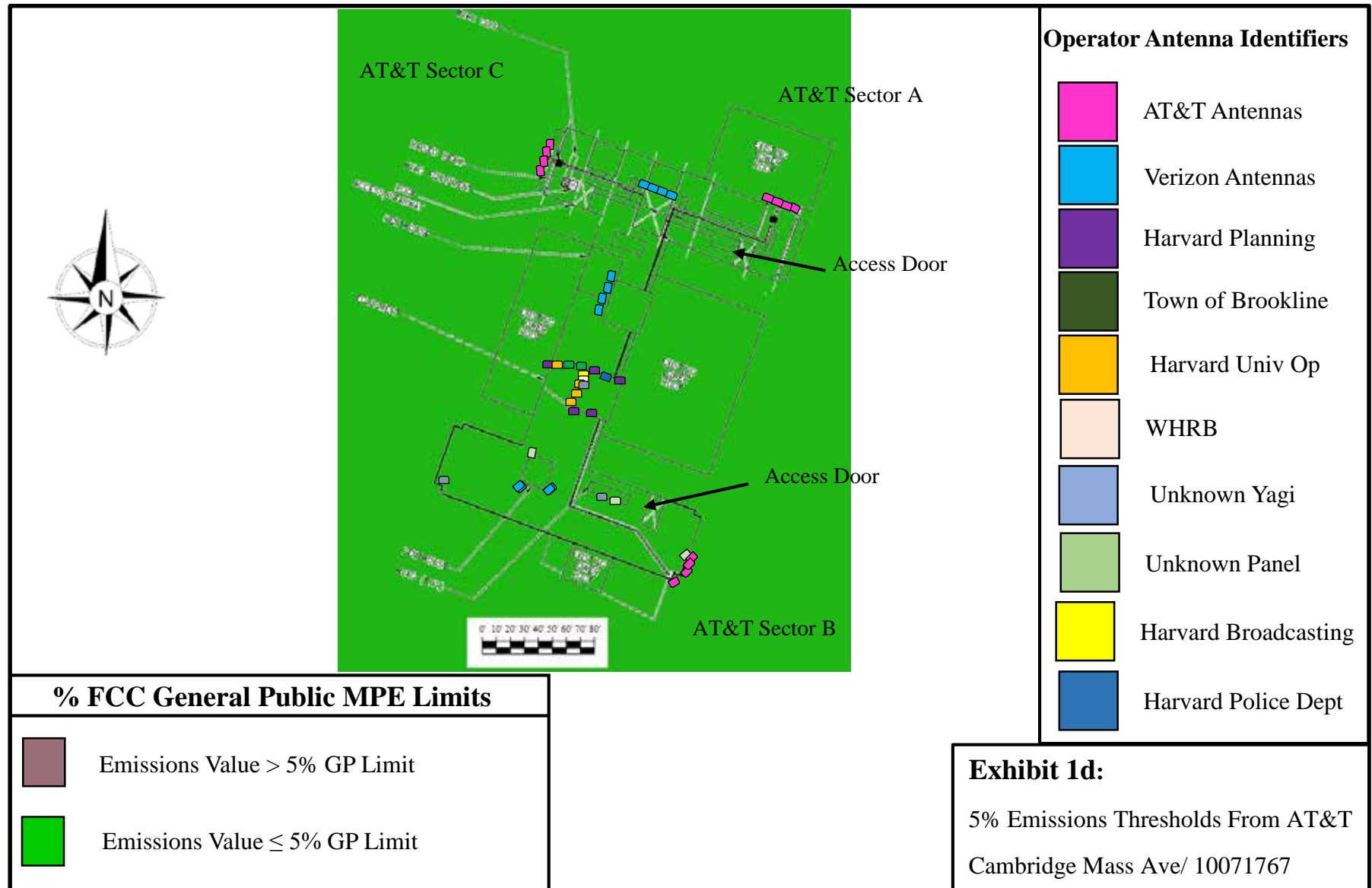














## 5.0 STATEMENT OF COMPLIANCE

Centerline conducted worst case modeling to determine whether the rooftop facility located at 1350 Massachusetts Avenue 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 in compliance with FCC Regulations. No additional action is required by AT&T.

### 5.2 RECOMMENDATIONS

AT&T Mitigation Recommendations		
Location	Signage	Barriers
Sector A	No action required	No action required
Sector B	No action required	No action required
Sector C	No action required	No action required
Access Point (s)	No action required	No action required









## 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&amp;T RF Signage

Sign	Description	Sign	Description
	<b>Information 1 Sign</b> 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.		<b>Information 2 Sign</b> Gives specific information on how to proceed and who to contact regarding antennas that are façade mounted, concealed or on stand-alone structures.
	<b>Blue Notice 1 Sign</b> 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.		<b>Blue Notice 2 Sign</b> 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.
	<b>Yellow Caution 1 Sign-Rooftop</b> 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.		<b>Yellow Caution 2 Sign-Rooftop</b> 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.
	<b>Yellow Caution 1 Sign-Tower</b> 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.		<b>Red Warning Sign</b> 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 97-01 and ANSI/IEEE Std C95.1. The FCC regulates Maximum Permissible Exposure in units of microwatts per square centimeter ( $\mu\text{W}/\text{cm}^2$ ). The number of  $\mu\text{W}/\text{cm}^2$  calculated at each sample point is called the power density. The exposure limit for power density varies depending upon the frequencies being utilized. Wireless Carriers and Paging Services use different frequency bands each with different exposure limits, therefore it is necessary to report results and limits in terms of percent MPE rather than power density.

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

General Population/Uncontrolled exposure limits apply to situations in which the general 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 ( $\mu\text{W}/\text{cm}^2$ ). The general population exposure limit for the 700 and 800 MHz Bands is approximately 467  $\mu\text{W}/\text{cm}^2$  and 567  $\mu\text{W}/\text{cm}^2$  respectively, and the general population exposure limit for the 1900 MHz PCS and 2100 MHz AWS bands is 1000  $\mu\text{W}/\text{cm}^2$ . Because each carrier will be using different frequency bands, and each frequency band has different exposure limits, it is necessary to report percent of MPE rather than power density.

Occupational/Controlled exposure limits apply to situations in which persons are exposed as a consequence of their employment and in which those persons who are exposed have been made fully aware of the potential for exposure, 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.

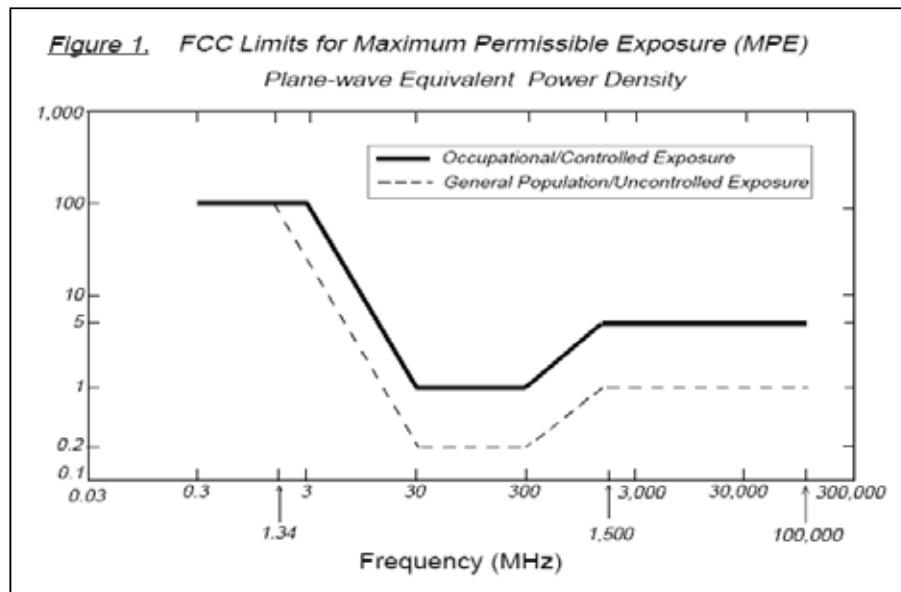


**Table 1: Limits for Maximum Permissible Exposure (MPE)**

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

f = Frequency in (MHz)

\* Plane-wave equivalent power density

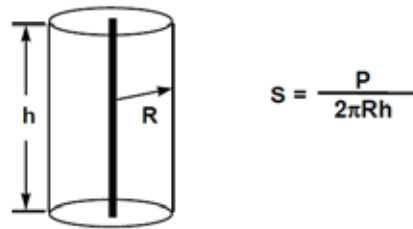




## APPENDIX C: CALCULATION METHODOLOGY

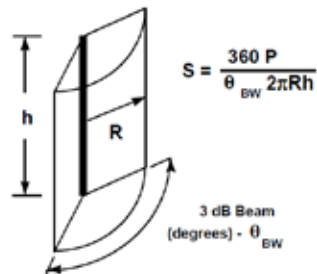
Centerline has performed theoretical calculations on all transmission equipment located on this facility. All calculations have been performed using the RoofView® software from Richard Tell Associates. This software performs calculations using a cylindrical model for very conservative power density predictions 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

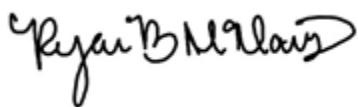
I, Michelle Stone, preparer of this report certify that I am fully trained and aware of the Rules and Regulations of both the Federal Communications Commissions (FCC) and the Occupational Safety and Health Administration (OSHA) with regard to Human Exposure to Radio Frequency Radiation. I have been trained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

A handwritten signature in black ink that reads 'Michelle Stone'.

---

5/30/2018

I, Ryan McManus, 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.

A handwritten signature in black ink that reads 'Ryan McManus'.

---

5/30/2018



## **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.





Bk: 49184 Pg: 233 Doc: AGR  
Page: 1 of 3 03/27/2007 03:26 PM

## LICENSE AGREEMENT

Owner: President and Fellows of Harvard College  
Property: 1350 Massachusetts Avenue, Cambridge, Massachusetts

Permission is hereby given under this License Agreement ("License") by the President and Fellows of Harvard College ("Licensor") to the City of Cambridge and its duly authorized employees, agents and contractors ("Licensee") to enter upon a portion of its property located at 1350 Massachusetts Avenue, Cambridge, Massachusetts ("Property"). The Property is a parcel of land bordered by Massachusetts Avenue, JFK Street, Peabody Street, Cambridge Street, and Quincy Street. The portion of the Property that is the subject of this Agreement is more fully described as the second story of the building known as 1350 Massachusetts Avenue located at the Property ("the Licensed Area").

Ref: 30691460, 30721184, 4071203

### I. Scope of License

This License allows the Licensee to place a wireless Internet antenna ("WiFi Antenna") in the Licensed Area. The WiFi Antenna shall consist of a small access point and mesh repeater attached to the window of the Licensed Area. The WiFi Antenna shall operate from a power supply requiring a hard-wired electrical feed from the building electrical system.

This License also allows the Licensee access to the Licensed Area in order to repair, replace and maintain the WiFi Antenna. Maintenance of the WiFi Antenna may include but is not limited to yearly inspections as well as on an as-needed basis should the WiFi Antenna require emergency servicing. Although it is not contemplated that the Licensed Area shall be disturbed in any way under the terms of this License, any portions of the Licensed Area disturbed by the Licensee's activities relating to this License, will be restored to pre-existing conditions upon Licensee's removal of the WiFi Antenna.

### II. Indemnification and Release

(a) Licensor shall indemnify, defend (at the option of the Licensee) and save the Licensee harmless from and against any and all liabilities, losses, damages, costs, expenses (including reasonable attorneys' expenses and fees), causes of action, suits, claims, demands or judgments of any nature whatsoever including, without limitation, asserted against the Licensee by reason of any of the activities of the Licensee hereunder or the exercise by the Licensee of any rights or privileges hereby granted; or any use, condition or occupation of the Licensed Area or any part thereof by Licensee; or any failure of Licensee to perform or comply with any of the terms hereof, or of any contracts, agreements or restrictions, statutes, laws, ordinances or regulations affecting the activities or any part thereof.

(b) Licensee has inspected the Licensed Area and decided that the Licensed Area is suitable for the uses Licensee contemplates. Licensee assumes all the risk of entry on to the Licensed Area.

(c) Licensor hereby releases the Licensee from any responsibility for Licensor's losses or damages related to the condition of the Licensed Area, and Licensor covenants and agrees that it will

City of Cambridge  
Solicitors Office  
795 Massachusetts Ave  
Cambridge, MA 02139



not assert or bring, nor cause any third-party to assert or bring, any claim, demand, lawsuit or cause of action (whether by way of original claim, cross claim, counterclaim, contribution claim, indemnification claim, third-party claim or any other claim).

(d) In clarification of the above release and covenants of defense and indemnification, and not in limitation of them, Licensor shall indemnify, defend (at the option of the Licensee) and save the Licensee harmless from and against any and all liabilities, losses, damages, costs, expenses (including reasonable attorneys' expenses and fees), causes of action, suits, claims, demands or judgments related to the injury, illness or death of any employee of Licensor or of an employee of Licensor's contractors or consultants; except if the "Claim" arose because of the Licensee's grossly negligent or willful misconduct.

(e) Licensee shall be notified, in writing, by the Licensor of the assertion of any claim against it that Licensor has agreed to indemnify above (the "Indemnified Claim").

(1) If the Licensee decides to itself conduct the defense of an Indemnified Claim against it or to conduct any other response itself, Licensor shall reimburse the Licensee for all costs and expenses (including, without limitation, reasonable attorneys' fees and expenses) incurred by the Licensee in connection with the Licensee's defense of the Indemnified Claim against it. The settlement or compromise of any Indemnified Claim shall not include the admission of guilt (or comparable plea), wrongdoing or negligence or the permitting or imposition of civil or criminal penalties or indictments, or the entering of consent decrees or orders of any kind by the Licensee on behalf of the Licensor or any other action that would materially prejudice the rights of the Licensor without the Licensor's express written approval. The Licensor shall cooperate with the Licensee in the defense of any Indemnified Claim

(2) If the Licensee decides to have Licensor defend the Indemnified Claim or handle the response action, the Licensee shall notify Licensor of that decision in writing and the Licensor shall bear the entire cost thereof and shall have sole control of the defense of any Indemnified Claim and all negotiations for its settlement or compromise provided that the Licensee is fully indemnified by the Licensor and provided further that the settlement or compromise shall not include the admission of guilt (or comparable plea), wrongdoing or negligence or the permitting or imposition of civil or criminal penalties or indictments, or the entering of consent decrees or orders of any kind by the Licensor on behalf of the Licensee or any other action that would materially prejudice the rights of the Licensee without the Licensee's express written approval. The Licensee shall cooperate with the Licensor in the defense of any Indemnified Claim.

The provisions of this Section II shall survive the termination or expiration of this License Agreement.

### III. Notices

The Licensee may terminate this License at any time by written notice to the Licensor. The Licensor may only terminate this License after providing the Licensee ninety (90) days written notice.

All notices, demands, requests, consents, approvals and other instruments required or permitted to be given pursuant to the terms hereof, shall be in writing and shall be deemed to have been properly



given when delivered by hand or by overnight courier, or deposited in registered or certified United States mail, postage prepaid, return receipt requested, addressed:

if intended for the Licensee:

Robert W. Healy, City Manager  
Cambridge City Hall  
795 Massachusetts Avenue  
Cambridge, Massachusetts 02139

with a copy to:

Donald A. Drisdell, City Solicitor  
Cambridge City Hall  
795 Massachusetts Avenue  
Cambridge, Massachusetts 02139

Mary P. Hart, Chief Information Officer  
City of Cambridge  
Information Technology Department  
831 Massachusetts Avenue, 2<sup>nd</sup> Floor  
Cambridge, Massachusetts 02139

if intended for Licensor:

James W. Gray, Associate Vice President  
Harvard Real Estate Services  
Holyoke Center  
1350 Massachusetts Avenue  
Cambridge, Massachusetts 02138

Granted By:

President and Fellows of Harvard College

By: \_\_\_\_\_

Dated: \_\_\_\_\_

*James W. Gray, AVP Real Estate*  
*3/12/07 James W. Gray*

*James C. Brown*  
Attest. Middlesex S. Register



and recorded with said Deeds Lib. 2817 end and is bounded and further described as follows to wit: Southeastwardly by Fayette Street forty eight 48 feet, Southwestwardly by remaining portion of Lot 6 on Plan end of Lib. 414 one hundred and twenty six 126 feet Northwestwardly on land formerly of Livermore and Hovey fifty five  $\frac{14}{100}$  feet Northeastwardly by Parcel "B" on said first named Plan thirty two 32 feet Southeastwardly again by said Parcel B seven 7 feet Northeastwardly again by said Parcel "B" ninety six and twenty hundredths  $96\frac{20}{100}$  feet. To Have and To Hold the same to the said Margaret A. Elston and her heirs and assigns, to their own use and behoof forever. But this release shall not in any way affect or impair my right to hold under the said mortgage and as security for the sum remaining due thereon or to sell under the power of sale in said mortgage contained all the remainder of the premises therein conveyed and not hereby released. In witness whereof I hereunto set my hand and seal this sixteenth day of November A.D. 1903. Willard A. Bullard (seal) Signed and sealed in presence of Edwin H. Gose. Commonwealth of Massachusetts. Middlesex ss. November 16th. 1903. Then personally appeared the above named Willard A. Bullard and acknowledged the foregoing instrument to be his free act and deed, before me Edwin H. Gose Justice of the Peace.

Middlesex ss. Nov. 16. 1903. 3h. 35 m. P.M. Rec'd. & Recorded.  
Attest: Edwin O. Childs Reg.

Tupper's Est.  
to  
Cambridge  
Homes for  
Aged People  
Possn.  
A

We hereby certify that on the twelfth day of November in the year one thousand nine hundred and three we were present and saw Frederic D. Fisk as treasurer of and in behalf of the Cambridge Homes for Aged People, the mortgage named in a certain mortgage given by William T. Tupper to the Cambridge Homes for Aged People dated August 27 A.D. 1901, and recorded in Middlesex South District Registry of Deeds, libro 2915 folio 85, make an open, peaceable and unopposed entry on the premises described in said mortgage, for the purpose, by him declared, of foreclosing said mortgage for breach of conditions thereof. Horace S. Litchfield. Joseph Sargent Jr. Commonwealth of Massachusetts. Middlesex ss. November 12. 1903. Then personally appeared the above named Horace S. Litchfield and Joseph Sargent Jr. and made oath that the above certificate by them subscribed is true, before me Charles Waugh Justice of the Peace.

Middlesex ss. Nov. 16. 1903. 3h. 32 m. P.M. Rec'd. & Recorded.  
Attest: Edwin O. Childs Reg.



Then personally appeared the above named Mary A. Munster and acknowledged the foregoing instrument to be her free act and deed before me Clarence F. French Justice of the Peace.

Middlesex ss. Nov. 30. 1903. 2 h. 52 m. P. M. Recd. & Recorded.  
Attest: Edwin O. Childs Reg.

Sherburne  
to  
Harvard  
Co-op. Society  
A

Know All Men by these Presents that I, Reuben Sherburne of Boston, in the County of Suffolk and Commonwealth of Massachusetts in consideration of one dollar and other valuable considerations paid by the Harvard Co-operative Society, a corporation organized under the laws of said Commonwealth, the receipt whereof is hereby acknowledged do hereby grant, remise, release and forever quit claim unto the said Harvard Co-operative Society, a certain parcel of land with the buildings thereon, situated in Cambridge, in the County of Middlesex in said Commonwealth, being shown on a "Plan of premises in Old Cambridge belonging to Philip Nutting & Others" made by W. A. Mason & Son, Surveyors, dated October 29. 1892 and recorded with Middlesex South District Deeds Book of Plans 89 plan 13 and bounded and described as follows: Beginning at a point marked "b" on said plan by land conveyed by the Cambridge Lyceum to Alexander H. Ramsay by deed dated January 1. 1847 and recorded with said Deeds Book 500 page 26 thence running westerly by said land of said Ramsay fifty four and  $\frac{6}{100}$  feet to land marked "Philip Nutting" on said plan; thence turning a little southerly and running westerly by said last mentioned land thirty and  $\frac{75}{100}$  feet to land now or late of William L. Whitney at a point marked "A" on said plan; thence running northerly by land now or late of said Whitney forty six and  $\frac{25}{100}$  feet; thence turning a little easterly and running northerly by land now or late of said Whitney eight and  $\frac{5}{10}$  feet to land of Harvard College at a point marked "B" on said plan; thence running easterly by land of said college and beyond one hundred twelve and  $\frac{6}{100}$  feet to Harvard Square at a point marked "H" on said plan; thence running southerly forty eight and  $\frac{83}{100}$  feet by said Square to a point marked "G" on said plan; thence running westerly nine and  $\frac{72}{100}$  feet to said point of beginning. Said premises contain five thousand one hundred and ninety two square feet of land more or less, and are conveyed subject to a right of passageway granted to said Ramsay, his heirs and assigns by said deed of January 1.



1847 to the rear of the lot therein conveyed, provided said right of passageway still exists. See for my title deed given to me by the Cambridge Lyceum dated March 1, 1895 recorded with said Deeds Book 2346 page 286 and deed from Charles R. Saunders, trustee to me, dated November 18, 1903, and recorded with said Deeds on November 18, 1903. See also notice to prevent easement recorded with said Deeds Book 2104 page 160. The premises are hereby conveyed subject to any existing leases which are herewith and hereby assigned. To Have and To Hold the above granted premises with all the rights, easements and appurtenances thereto belonging to the said Harvard Co-operative Society, its successors and assigns to their use and behoof forever. And I the said grantor for myself and my heirs, executors and administrators do covenant with the said grantee, its successors and assigns, that the premises are free from all incumbrances made by me except as aforesaid; and that I will and my heirs, executors and administrators shall Warrant and Defend the same to the said grantee, its successors and assigns forever, against the lawful claims and demands of all persons claiming by, through or under me except as aforesaid, but against none other. And for the consideration aforesaid J. Annie M. T. Sherburne wife of said Reuben Sherburne, do hereby release unto said grantee, its successors and assigns, all rights of Dower and Homestead exemption in the granted premises. In Witness Whereof we the said Reuben Sherburne and Annie M. T. Sherburne have hereunto set our hands and seals this thirtieth day of November in the year nineteen hundred and three. Reuben Sherburne and Annie M. T. Sherburne and Signed, sealed and delivered in presence of "Annie M. T." first written over "Sarah J." erased in two places. H. Taylor Mills to both Commonwealth of Massachusetts. Suffolk ss. Boston. December 1, 1903. Then personally appeared the above named Reuben Sherburne and acknowledged the foregoing instrument to be his free act and deed before me James M. Newell Justice of the Peace.

Middlesex ss. Dec. 1, 1903. 3h. 5m. P. M. Recd. & Recorded.

Attest, Edwin O. Childs Reg.

At a special meeting of the Directors of the Harvard Co-operative Society duly called and held at Cambridge, Mass. on November 30, 1903, a quorum being present and acting it was Voted: That William M. McInnes,

Vote.

A



\* \* \* \* \*

\* U. S. \*

\* Rev. \*

\* Stamps \*

\* \$450. \*

\* C.F.A. \*

\* July 26/16 \*

\* \* \* \* \*

Fellows of Harvard College a corporation duly organized under the laws of the Commonwealth of Massachusetts for consideration paid hereby grants unto Loren D. Towle of Newton in the County of Middlesex and said Commonwealth with QUITCLAIM COVENANTS all that lot of land with the buildings thereon situate in CAMBRIDGE in said County of Middlesex and known as the College House and bounded Easterly by Massachusetts Avenue one hundred six and 85/100 feet; Southeasterly by Harvard Square one hundred sixty five and 68/100 feet; Southwesterly by Lyceum Hall and vacant land now the property of the Harvard Co-operative Society one hundred seven and 60/100 feet; Easterly by said vacant land now of said Society eight and 50/100 feet; Southwesterly by land formerly of Whitney; now of said Society sixty nine and 21/100 feet; Westerly by land now or late of Jones one hundred eighty seven and 33/100 feet; Northerly by Church Street one hundred thirty six and 39/100 feet; and still Northerly but more Westerly by Church Street one hundred three and 52/100 feet; containing 47650 square feet of land, more or less. Said premises are shown on a plan made by Aspinwall & Lincoln dated July 14, 1916, to be recorded herewith and are hereby conveyed subject to the lease to the English Cleansing Shop expiring July 1, 1920, which is hereby assigned to the grantee to taxes for the year 1916, which are to be paid by said grantee and to the rights granted by deed recorded with Middlesex South District Deeds, lib. 414, Page 70, and to the rights taken by instrument recorded said deeds book 2514, page 81, both if and so far as now in force. IN WITNESS WHEREOF the said President and Fellows of Harvard College has caused its corporate seal to be hereto affixed and these presents to be signed in its name and behalf by Charles F. Adams its Treasurer thereto duly authorized this 26th, day of July A.D. 1916. President & Fellows of Harvard College by Charles F. Adams Treasr. (Corporate seal) COMMONWEALTH OF MASSACHUSETTS. Suffolk ss. 26, July 1916. Then personally appeared the above named Charles F. Adams Treasurer and acknowledged the foregoing instrument to be the free act and deed of said President and Fellows of Harvard College, before me, George W. Ryley, Justice of the Peace. - - - - - Middlesex ss. July 27, 1916. 11h. 32m. A.M. Rec'd & Recorded.

KNOW ALL MEN BY THESE PRESENTS that I, Loren D. Towle of Newton in the County of Middlesex and Commonwealth of Massachusetts, in consideration of one dollar and other valuable considerations paid by the Harvard Co-operative Society a corporation duly organized under

TOWLE

to

HARVARD

CO-OP. SOCIETY

See Book of Plans No. 251. Plans 5 and 6.

See Book 4095 Page 220.



\* \* \* \* \*

*	U. S.	*
*	Rev.	*
*	Stamp	*
*	\$1.00	*
*	L.D.T.	*
*	7/27/16	*

\* \* \* \* \*

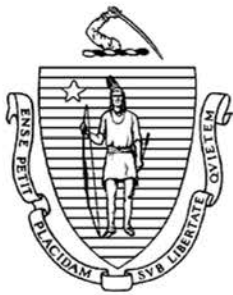
the laws of said Commonwealth the receipt whereof is hereby acknowledged do hereby remise, release and forever QUITCLAIM unto the said Harvard Co-operative Society its successors and assigns a certain parcel of land situated in CAMBRIDGE in said County of Middlesex and bounded and described as follows: Commencing at the Northwesternly corner of other land of the grantee; thence about Westerly by other land of the grantor twenty eight and 33/100 (28.33) feet to a point; thence Southwesterly also by land of the grantor, twenty one and 29/100 (21.29) feet to land of the grantee; thence about Easterly by said land of the grantee forty five and 71/100 (45.71) feet to land of the grantee and thence about Northerly also by land of the grantee eight and 50/100 (8.50) feet to the point of beginning. Containing three hundred sixty nine (369) square feet more or less or however otherwise said premises may be bounded or described. All as shown on a "Plan of land in Cambridge, Massachusetts, dated July 22, 1916, Aspinwall and Lincoln Civil Engineers," and to be recorded herewith. These premises are hereby conveyed subject to the taxes assessed April 1, 1916. Being a portion of the premises conveyed to me by deed of Harvard College dated July 26, 1916, and to be recorded herewith. TO HAVE AND TO HOLD the granted premises with all the privileges and appurtenances thereto belonging to the said Harvard Co-operative Society and its successors and assigns to their own use and behoof forever. And I do hereby for myself and my heirs, executors, and administrators, covenant with the said grantee and its successors and assigns that the granted premises are free from all incumbrances made or suffered by me except as herein stated, and that I will and my heirs, executors, and administrators shall WARRANT AND DEFEND the same to the said grantee and its successors and assigns forever against the lawful claims and demands of all persons claiming by, through or under me, except as herein stated. And for the considerations aforesaid I, Helen M. Towle wife of said Loren D. Towle do hereby release unto the said grantee and its successors and assigns all right of or to both DOWER AND HOMESTEAD in the granted premises and all rights by statutes and all other rights therein. IN WITNESS WHEREOF we the said Loren D. Towle and Helen M. Towle hereunto set our hands and seals this twenty seventh day of July in the year one thousand nine hundred and sixteen. Loren D. Towle (seal) Helen M. Towle (seal) COMMONWEALTH OF MASSACHUSETTS. Suffolk ss. July 27, 1916. Then personally appeared the above named Loren D. Towle and acknowledged the foregoing instrument to be his free act and deed, before me, J. Gilbert Hill, Justice of the Peace Middlesex ss. July 27, 1916. 11h. 32m. A.M. Rec'd & Recorded

See Book of Plans No. 251 Plans 5 and 6.



# **EXHIBIT 10**





MARTHA COAKLEY  
ATTORNEY GENERAL

# THE COMMONWEALTH OF MASSACHUSETTS OFFICE OF THE ATTORNEY GENERAL

CENTRAL MASSACHUSETTS DIVISION  
10 MECHANIC STREET, SUITE 301  
WORCESTER, MA 01608

(508) 792-7600  
(508) 795-1991 fax  
[www.mass.gov/ago](http://www.mass.gov/ago)

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

*Kelli E. Gunagan*

By: Kelli E. Gunagan  
Assistant Attorney General  
Municipal Law Unit  
10 Mechanic Street, Suite 301  
Worcester, MA 01608  
(508) 792-7600

cc: Town Counsel Joel Bard (via electronic mail)









MAURA HEALEY  
ATTORNEY GENERAL

# THE COMMONWEALTH OF MASSACHUSETTS OFFICE OF THE ATTORNEY GENERAL

CENTRAL MASSACHUSETTS DIVISION  
10 MECHANIC STREET, SUITE 301  
WORCESTER, MA 01608

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(508) 795-1991 fax  
[www.mass.gov/ago](http://www.mass.gov/ago)

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*

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 Gregg J. Corbo





MAURA HEALEY  
ATTORNEY GENERAL

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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



**BZA APPLICATION FORM**

**GENERAL INFORMATION**

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

Special Permit: X Variance: \_\_\_\_\_ Appeal: \_\_\_\_\_

PETITIONER: New Cingular Wireless PCS d/b/a AT&T Mobility by Dan Accardi, agent

PETITIONER'S ADDRESS: 750 W Center Street, West Bridgewater, MA 02379 (860-227-1975)

LOCATION OF PROPERTY: 1350 Massachusetts Ave

TYPE OF OCCUPANCY: rooftop wireless telecomms ZONING DISTRICT: Business B

**REASON FOR PETITION:**

<input type="checkbox"/> Additions	<input type="checkbox"/> New Structure
<input type="checkbox"/> Change in Use/Occupancy	<input type="checkbox"/> Parking
<input type="checkbox"/> Conversion to Addi'l Dwelling Unit's	<input type="checkbox"/> Sign
<input type="checkbox"/> Dormer	<input type="checkbox"/> Subdivision
<input checked="" type="checkbox"/> Other: <u>telecommunications upgrade</u>	

**DESCRIPTION OF PETITIONER'S PROPOSAL:**

This application 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 installing 3 new antennas. AT&T will also be adding and upgrading other telecommunications equipment as part of nationwide network upgrades.

**SECTIONS OF ZONING ORDINANCE CITED:**

Article <u>4.000</u>	Section <u>4.32.G1 (Telecommunications Facility)</u>
Article <u>4.000</u>	Section <u>4.40 (Footnote 49) (Telecommunications Facility)</u>
Article <u>10.000</u>	Section <u>10.40 (Special Permit)</u>

Applicants for a Variance must complete Pages 1-5  
Applicants for a Special Permit must complete Pages 1-4 and 6  
Applicants for an Appeal to the BZA of a Zoning determination by the Inspectional Services Department must attach a statement concerning the reasons for the appeal

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

Dan Accardi (as agent)  
(Print Name)

Address: 63 Forest Hills St #3  
Jamaica Plain, MA 02130

Tel. No.: 401-573-4451

E-Mail Address: dan@fundraise.com

Date: 2/27/2019



This map shows the Holyoke Center area in Massachusetts, with streets and lot numbers. Key locations include Douglas MacArthur Square, Brattle Square, Harvard Square, Holyoke Center North, and Holyoke Center South. A red line with arrows indicates a route starting from the bottom left, passing through Holyoke Center North and South, and ending near Harvard Square. A blue line with arrows indicates a route starting from the bottom right, passing through Holyoke Center North and South, and ending near Harvard Square. The map is color-coded with yellow for residential areas and green for parks or open spaces.



1350 mass Ave

Petitioner

159-1 / 160-37-38-74 / 161-1 / 162-11  
PRESIDENT & FELLOWS OF HARVARD COLLEGE  
C/O HARVARD REAL ESTATE, INC.  
HOLYOKE CENTER, ROOM 1000  
1350 MASSACHUSETTS AVE  
CAMBRIDGE, MA 02138

159-2  
OUT OF TOWN NEWS, INC.  
C/O HUDSON NEWS AGENCY  
0 HARVARD SQ.  
CAMBRIDGE, MA 02138

NEW CINGULAR WIRELESS PCS  
D/B/A AT&T MOBILITY  
C/O DAN ACCARDI, AGENT  
63 FOREST HILL STREET #3  
JAMAICA PLAIN, MA 02130

160-14  
PRESIDENT AND FELLOWS OF HARVARD COLLEGE  
HARVARD UNIVERSITY R.E. DEPT  
HOLYOKE CENTER, ROOM 1017  
1350 MASS AVENUE  
CAMBRIDGE, MA 02138

160-11  
TRINITY REALTY LIMITED PARTNERSHIP I  
P.O. BOX 380212  
CAMBRIDGE, MA 02238

ANDERSON & KREIGER LLP  
C/O BRETT ROMAN, LITIGATION PARALEGAL  
50 MILK STREET – 21<sup>ST</sup> FLOOR  
BOSTON, MA 02109

160-58  
CAMBRIDGE SAVINGS BANK  
C/O KAREN A. GIESTA  
1374 MASS AVE  
CAMBRIDGE, MA 02138

160-59  
DANA CHAMBERS ALLIANCE  
P.O. BOX 650043  
NEWTON, MA 02465

160-14  
PRESIDENT & FELLOW OF HARVARD HARVARD  
UNIVERSITY R.E. DEPT  
HOLYOKE CENTER., ROOM 451  
1350 MASS AVE  
CAMBRIDGE, MA 02138

160-76  
WHOLEY, FREDERICK R.,  
TRS OF FREDERICK R. WHOLEY IRREVOCABLE TR.  
15 ANIS ROAD  
BELMONT, MA 02478

160-77  
HARVARD STUDENT AGENCIES, INC  
67 MT. AUBURN ST  
CAMBRIDGE, MA 02138

160-85  
P.C. HOLYOKE STREET, LLC,  
50 CONGRESS ST. ROOM 540  
BOSTON, MA 02109

160-83  
PLATIN LLC  
15 WALNUT ST., SUITE 150  
WELLESLEY, MA 02481

160-84  
DAVIDSON, CHARLES L.  
19 GARDEN ST.  
CAMBRIDGE, MA 02138

162-62  
76 MOUNT AUBURN STREET, INC.  
C/O RICK CHILDS, SRB CORP  
125 HIGH STREET  
OLIVER STREET TOWER 9TH FL  
BOSTON, MA 02110

162-10  
SIGNET ASSOCIATES  
46 DUNSTER ST  
CAMBRIDGE, MA 02138

162-67  
45 DUNSTER STREET LLC  
2 HOLYOKE PLACE  
CAMBRIDGE, MA 02138



March 12, 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
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Applicant: New Cingular Wireless PCS, LLC (“AT&T”)  
Property Address: 1350 Massachusetts Ave  
Assessor’s Map Block 160, Lot 14 (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 “Telephone Exchange including Transmission Facilities to serve a Mobile Communication System” (the “Facility”) on and within the existing building located at 1350 Massachusetts Avenue (the “Special Permit Application”).<sup>2</sup>

Under Section 6409, AT&T’s proposed modification of its existing transmission 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.

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<sup>2</sup> 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, which is located in the Business B zoning district and Harvard Square Overlay 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 consisting of 10 pages dated 9/24/18;
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 8/23/2018;
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 dated 3/2/2018;
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 consist of installing three panel antennas and six radio heads along with associated DC power components and ballast mounts, and augmenting the existing mounts for current equipment.

The Facility's design is shown in detail in the Drawings attached as Exhibit 3 to this application letter and the featured equipment is described in the manufacturers' specification sheets attached as Exhibit 4. The photographs and photo simulations attached as 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, attached as Exhibit 7, demonstrates that the building is capable of supporting AT&T's proposed equipment at or near the locations shown on the Drawings.

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 five (5) bands with the proposed modifications to the Facility, namely at 700, 850, and 1900 MHz, plus AWS and WCS bands.

## **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,<sup>3</sup> as further implemented by the FCC Order.<sup>4</sup>

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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<sup>3</sup> 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).

<sup>4</sup> 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.<sup>5</sup> 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

<sup>5</sup> *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 or modification 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 either be mounted on new frames at the same height as their current installation or utilize the existing equipment mounting frames, and therefore will not exceed 10 feet above the existing building;
- (ii) Protrude more than six feet from building façade;



- (iii) Involve the installation of more than the standard number of new equipment cabinets for the technology involved, because no new radio communications equipment cabinets will be installed;
- (iv) 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
- (v) Otherwise defeat the existing concealment elements of the tower or base station because the proposed antennas will be removed from the building façade and placed on mounting frames set back from the roof edge, and will 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.

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.<sup>6</sup>

### 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:<sup>7</sup>

**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 Business B 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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<sup>6</sup> 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).

<sup>7</sup> 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 and placement of antennas and associated equipment off the building façade and on mounting frames set back from the edge of the rooftop, 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 and the rooftop architecture of the building. 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:** Neither the Property nor the existing Facility is located in the Business B zoning district, and not a residential zoning district, so this provision of the ordinance does not apply. Even so, nonresidential uses predominate in the vicinity of the existing Facility’s location and neither the Facility nor the proposed modifications are inconsistent with the prevailing character of the surrounding area, which has not changed substantially since the existing Facility was last granted a special permit.



**B. AT&T complies with the Special Permit Criteria set forth in Section 10.43 of the Ordinance.**

**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**

**AT&T’s Response:** 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**

**AT&T’s Response:** 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 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 applicable overlay districts. 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 from view behind the rooftop parapet and within the building, or otherwise obstructed from view, and the remaining equipment utilizes existing mounting frames or proposed frames of the same or lesser height, 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 district.

**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 district.

**19.33 The building and site design should mitigate adverse environmental impacts of a development upon its neighbors. Indicators include<sup>8</sup>**

**(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 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.

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<sup>8</sup> Inasmuch as Section 19.33 is most relevant to the Facility, it is stated here in full.



**(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 away from the



building edge at the same heights as existing equipment already 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  
Site Acquisition Project Manager  
Centerline Communications

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

cc: Arthur P. Kreiger, Esq.



# **EXHIBIT 2**





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

 [New Search](#)

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 Reference

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[ADMIN](#)
[MARKET](#)
[LOCATIONS](#)

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

1st	06/28/2000	2nd	03/08/2005
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Licensee ID SGIN	L00024153 000	FRN	0003291192 ( <a href="#">View Ownership</a> )	Type	Corporation
---------------------	------------------	-----	--	------	-------------

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			
<b>Contact</b>			
Cingular Wireless LLC Kellye E Abernathy Esq 17330 Preston Road, Suite 100A Dallas, TX 75252		P:(972)733-2092 F:(972)733-8141	
<b>Qualifications, Ownership, and Demographics</b>			
Radio Service Type	Mobile		
Regulatory Status	Common Carrier	Interconnected	Yes
<b>Alien Ownership</b> The Applicant answered "No" to each of the <a href="#">Alien Ownership</a> questions.			
<b>Basic Qualifications</b>			
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	
<b>Tribal Land Bidding Credits</b> This license did not have tribal land bidding credits.			
Race			
Hispanic/Latino		Gender	





## Universal Licensing System



[FCC](#) > [WTB](#) > [ULS](#) > [Online Systems](#) > License Search

[FCC Site Map](#)

ULS License

### Cellular License - KNKA226 - ORANGE LICENSES HOLDING, LLC

[? HELP](#)

[New Search](#) [Refine Search](#) [Return to Results](#) [Printable Page](#) [Reference](#)  
[Copy](#) [Map License](#)

MAIN		ADMIN		LOCATIONS	
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 ( <a href="#">View Frequencies</a> )	
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	L00963843 000	FRN	0012362919 ( <a href="#">View Ownership</a> )	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		



<b>Contact</b>			
CINGULAR WIRELESS LLC DAVID G RICHARDS 5565 GLENRIDGE CONNECTOR, SUITE 1700 ATLANTA, GA 30342		P:(404)236-5543 F:(404)236-5575	
<b>Qualifications, Ownership, and Demographics</b>			
Radio Service Type	Mobile		
Regulatory Status	Common Carrier	Interconnected	Yes
<b>Alien Ownership</b> The Applicant answered "No" to each of the <a href="#">Alien Ownership</a> questions.			
<b>Basic Qualifications</b>			
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	

<b>ULS Help</b>	<a href="#">ULS Glossary</a> - <a href="#">FAQ</a> - <a href="#">Online Help</a> - <a href="#">Technical Support</a> - <a href="#">Licensing Support</a>
<b>ULS Online Systems</b>	<a href="#">CORES/Call Sign Registration</a> - <a href="#">ULS Online Filing</a> - <a href="#">License Search</a> - <a href="#">Application Search</a>
<b>About ULS</b>	<a href="#">Privacy Statement</a> - <a href="#">About ULS</a> - <a href="#">ULS Home</a>
<b>Basic Search</b>	<input type="text" value="By Call Sign"/> <input type="button" value="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
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## **Notification Dates**

1st	07/06/2000	2nd	03/08/2005
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## **Licensee**

FRN	0003291192	Type	Limited Liability Company
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## **Licensee**

New Cingular Wireless PCS, LLC 5601 LEGACY DRIVE, MS: A-3 PLANO, TX 75024 ATTN FCC GROUP	P:(469)229-7422 F:(469)229-7297 E:KELLYE.E.ABERNATHY@CINGULAR.COM
---	---

## **Contact**

Cingular Wireless LLC Kellye E Abernathy Esq 5601 LEGACY DRIVE, MS: A-3 PLANO, TX 75024	P:(469)229-7422 F:(469)229-7297 E:KELLYE.E.ABERNATHY@CINGULAR.COM
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## **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
<b>Market</b>			
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	
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**Notification Dates**

1st		2nd	
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**Licensee**

FRN	0014980726	Type	Limited Liability Company
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**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**

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, 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)
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Status	Active	Auth Type	Regular
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### 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	
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### Notification Dates

1st		2nd	
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### Licensee

FRN	0014980726	Type	Limited Liability Company
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### 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	Fixed, Mobile	Type	
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
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**Notification Dates**

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

FRN	0003291192	Type	Limited Liability Company
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**Licensee**

NEW CINGULAR WIRELESS PCS, LLC 5601 LEGACY DRIVE, MS: A-3 PLANO, TX 75024 ATTN KELLYE E. ABERNATHY	P:(469)229-7422 F:(469)229-7297 E:KELLYE.E.ABERNATHY@CINGULAR.COM
---	---

**Contact**

AT&T MOBILITY LLC DAVID C JATLOW 11760 US HIGHWAY 1 NORTH PALM BEACH, FL 33408	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.





# Universal Licensing System

FCC > WTB > ULS > Online Systems > License Search

FCC Site Map

## 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			

ULS Help	<a href="#">ULS Glossary</a> - <a href="#">FAQ</a> - <a href="#">Online Help</a> - <a href="#">Technical Support</a> - <a href="#">Licensing Support</a>		
ULS Online Systems	<a href="#">CORES</a> - <a href="#">ULS Online Filing</a> - <a href="#">License Search</a> - <a href="#">Application Search</a> - <a href="#">Archive License Search</a>		
About ULS	<a href="#">Privacy Statement</a> - <a href="#">About ULS</a> - <a href="#">ULS Home</a>		
Basic Search	By Call Sign	<input type="text"/>	<input type="button" value="SEARCH"/>



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
<b>Market</b>			
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
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**Notification Dates**

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

FRN	0014980726	Type	Limited Liability Company
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**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**

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
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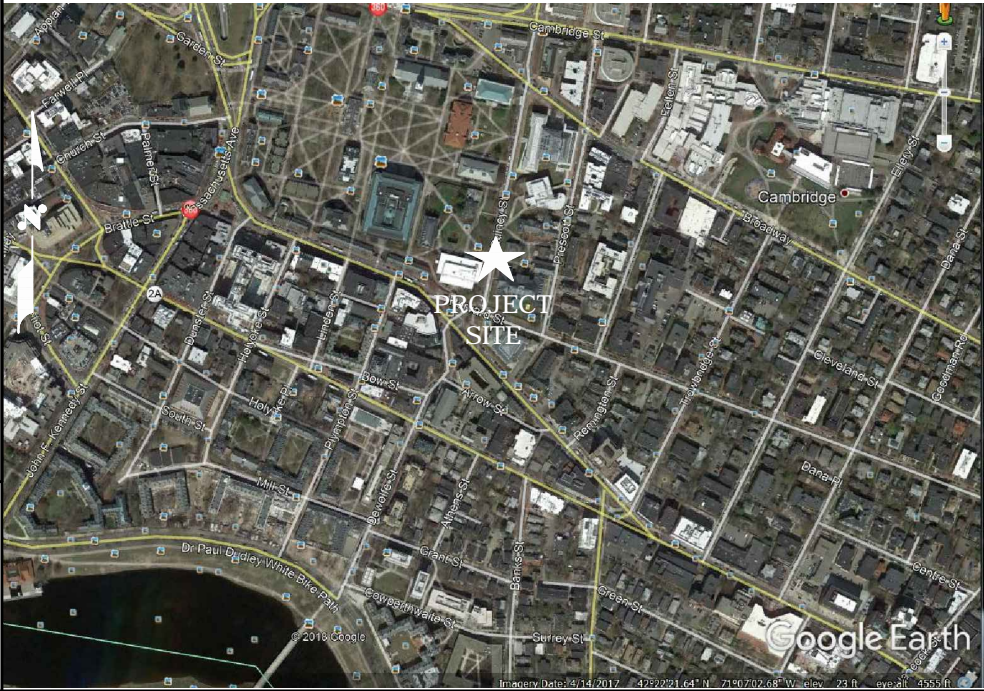

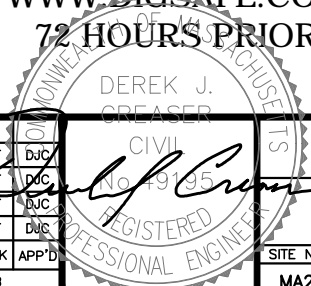









**Ownership and Qualifications**

Radio Service	Mobile
Type	
Regulatory Status	Common Carrier
Interconnected	Yes

**Alien Ownership**

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



<div>PROJECT INFORMATION</div> <div>SCOPE OF WORK: ITEMS TO BE MOUNTED ON THE EXISTING ROOFTOP:<ul style="list-style-type: none"><li>• INSTALL (3) NEW ANTENNA BALLAST FRAMES</li><li>• INSTALL NEW LTE ANTENNA (800-10954) (TYP. OF 1 PER SECTORS, TOTAL OF 3).</li><li>• INSTALL NEW AT&amp;T RRUS (B14 4478) (TYP. OF 1 PER SECTOR, TOTAL OF 3).</li><li>• INSTALL NEW AT&amp;T RRUS (4426 B66) (TYP. OF 1 PER SECTOR, TOTAL OF 3).</li><li>• INSTALL (2) DC POWER CABLE.</li><li>• INSTALL DC SQUID (TYP. OF 1 PER SECTOR, TOTAL OF 3).</li><li>• INSTALL (1) RRH BALLAST FRAME (BETA SECTOR).</li><li>• INSTALL (2) DC POWER PER SECTOR, TOTAL OF 6.</li></ul>ITEMS TO BE MOUNTED INSIDE EXISTING EQUIPMENT SHELTER:<ul style="list-style-type: none"><li>• SWITCH EXISTING BASEBAND WITH (2) 5216'S.</li><li>• ADD IDLe CABLE.</li></ul>ITEMS TO REMAIN:<ul style="list-style-type: none"><li>• (9) ANTENNAS, (6) TMA'S, (3) SURGE ARRESTORS, (12) COAX, (6) DC POWER CABLES, &amp; (3) FIBER RUNS.</li></ul>SITE ADDRESS: 1350 MASSACHUETTS AVENUE CAMBRIDGE, MA 02138</div> <div>LATITUDE: 42.372798° N 42° 22' 22.07" N</div> <div>LONGITUDE: 71.118596° W 71° 7' 6.94" W</div> <div>TYPE OF SITE: ROOFTOP / INDOOR EQUIPMENT</div> <div>ROOF HEIGHT: 121'-0"±</div> <div>RAD CENTER: 129'-6"±</div> <div>JURISDICTION: NATIONAL, STATE &amp; LOCAL CODES OR ORDINANCES</div> <div>CURRENT USE: TELECOMMUNICATIONS FACILITY</div> <div>PROPOSED USE: TELECOMMUNICATIONS FACILITY</div>			<div></div> <div>SITE NUMBER: MA2215</div> <div>SITE NAME: CAMBRIDGE, MASS. AVE</div> <div>FA CODE:10071767</div> <div>PACE ID: MRCTB024439, MRCTB024356</div> <div>PROJECT: LTE 6C/7C 2018 UPGRADE</div>																																																																																			
<div>DRAWING INDEX</div> <table><thead><tr><th>SHEET NO.</th><th>DESCRIPTION</th><th>REV.</th></tr></thead><tbody><tr><td>T-1</td><td>TITLE SHEET</td><td>2</td></tr><tr><td>GN-1</td><td>GENERAL NOTES</td><td>2</td></tr><tr><td>A-1</td><td>ROOF &amp; EQUIPMENT PLANS</td><td>2</td></tr><tr><td>A-2</td><td>ELEVATION</td><td>2</td></tr><tr><td>A-3</td><td>ANTENNA LAYOUTS</td><td>2</td></tr><tr><td>A-4</td><td>DETAILS</td><td>2</td></tr><tr><td>S-1</td><td>STRUCTURAL NOTES</td><td>2</td></tr><tr><td>S-2</td><td>STRUCTURAL DETAILS</td><td>2</td></tr><tr><td>RF-1</td><td>RF PLUMBING DIAGRAM</td><td>2</td></tr><tr><td>G-1</td><td>GROUNDING DETAILS</td><td>2</td></tr></tbody></table>			SHEET NO.	DESCRIPTION	REV.	T-1	TITLE SHEET	2	GN-1	GENERAL NOTES	2	A-1	ROOF & EQUIPMENT PLANS	2	A-2	ELEVATION	2	A-3	ANTENNA LAYOUTS	2	A-4	DETAILS	2	S-1	STRUCTURAL NOTES	2	S-2	STRUCTURAL DETAILS	2	RF-1	RF PLUMBING DIAGRAM	2	G-1	GROUNDING DETAILS	2	<div>VICINITY MAP</div> <div><div>DIRECTIONS TO SITE: START OUT GOING SOUTHWEST ON COCHITUATE RD / RT-30 W TOWARD WHITTIER ST. 0.2 MI. MAKE A U-TURN ONTO COCHITUATE RD / RT-30 E. 0.3 MI. MERGE ONTO I-90 E / MASS PIKE / MASSACHUSETTS TURNPIKE TOWARD I-95 / BOSTON (PORTIONS TOLL). 14.7 MI. TAKE EXIT 18 ON THE LEFT TOWARD CAMBRIDGE / SOMERVILLE. 0.5 MI. MERGE ONTO CAMBRIDGE ST. 0.0 MI. CAMBRIDGE ST BECOMES RIVER ST. 0.2 MI. TURN LEFT ONTO PUTNAM AVE. 0.5 MI. PUTNAM AVE BECOMES MASSACHUSETTS AVE / RT-2A W. 0.3 MI. 1350 MASSACHUSETTS AVE IS ON THE LEFT.</div></div> <div>GENERAL NOTES</div> <div><div>1. THIS DOCUMENT IS THE CREATION, DESIGN, PROPERTY AND COPYRIGHTED WORK OF AT&amp;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.</div><div>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.</div><div>3. CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE AT&amp;T MOBILITY REPRESENTATIVE IN WRITING OF DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.</div><div>4. CONSTRUCTION DRAWINGS ARE VALID FOR SIX MONTHS AFTER ENGINEER OF RECORD'S STAMPED AND SIGNED SUBMITTAL DATE LISTED HEREIN.</div></div> <div>UNDERGROUND SERVICE ALERT</div> <div><div><div>WWW.DIGSAFE.COM 72 HOURS PRIOR</div></div><div></div></div> <table><tr><td colspan="2"><div>45 BEECHWOOD DRIVE NORTH ANDOVER, MA 01845</div><div>TEL: (978) 557-5553 FAX: (978) 336-5586</div></td><td><div>750 WEST CENTER STREET., SUITE #301 WEST BRIDGEWATER, MA 02379</div></td><td><div>SITE NUMBER: MA2215</div><div>SITE NAME: CAMBRIDGE, MASS. 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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-OFF-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		



45 BEECHWOOD DRIVE  
NORTH ANDOVER, MA 01845  
TEL: (978) 557-5553  
FAX: (978) 336-5586



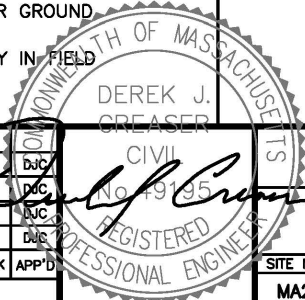
750 WEST CENTER STREET., SUITE #301  
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SITE NUMBER: MA2215  
SITE NAME: CAMBRIDGE, MASS. AVE  
1350 MASSACHUSETTS AVENUE  
CAMBRIDGE, MA 02138  
MIDDLESEX COUNTY



550 COCHITUATE ROAD  
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AT&T		
GENERAL NOTES (LTE 6C/7C)		
SITE NUMBER	DRAWING NUMBER	REV
MA2215	GN-1	2

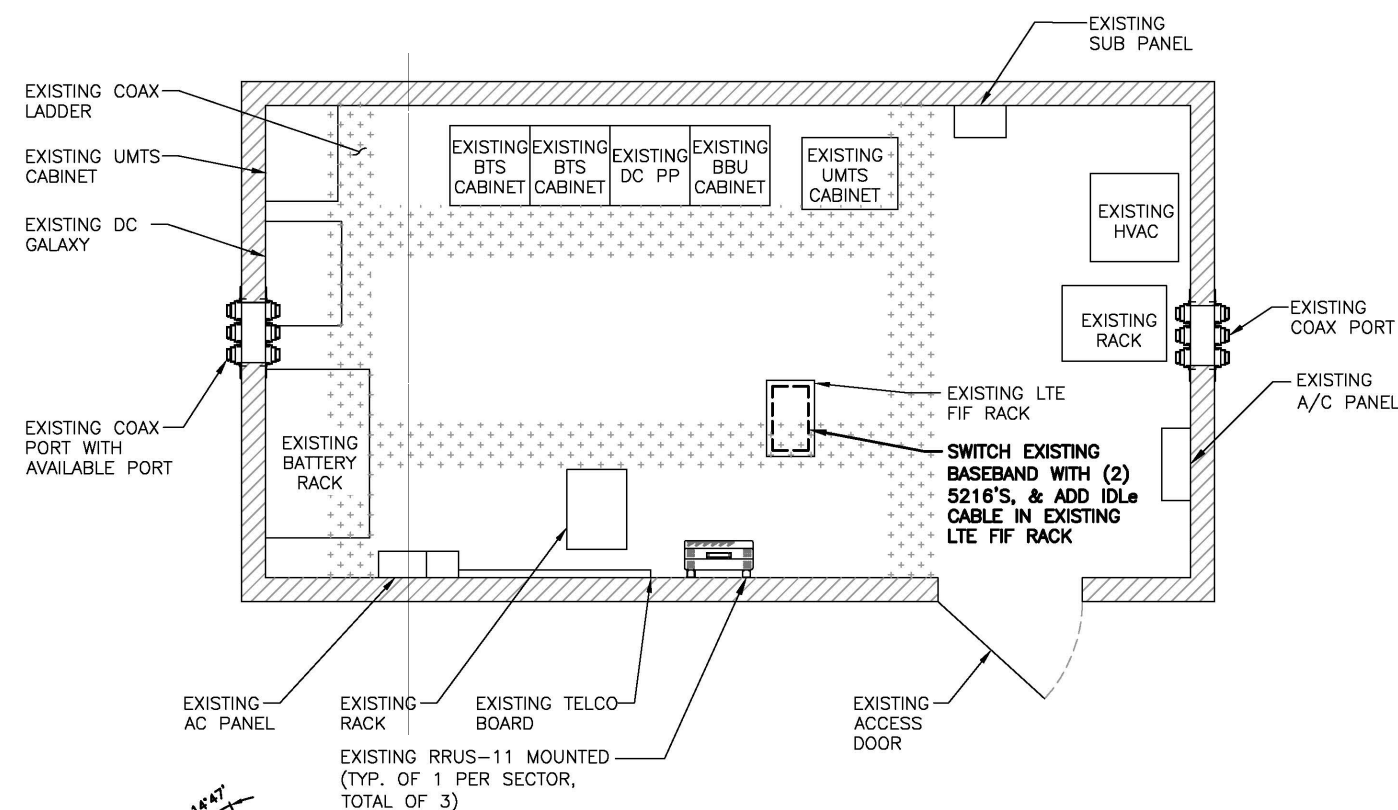


**NOTE:**

REFER TO STRUCTURAL ANALYSIS  
BY: HUDSON DESIGN GROUP, LLC,  
DATED: MARCH 02, 2018,  
FOR THE CAPACITY OF THE  
EXISTING STRUCTURES TO SUPPORT  
THE PROPOSED EQUIPMENT.

**NOTE:**

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



22x34 SCALE: 1/32"=1'-0"  
11x17 SCALE: 1/64"=1'-0"

22x34 SCALE: 1/2"=1'-0"  
11x17 SCALE: 1/4"=1'-0"



SITE NUMBER: MA2215  
SITE NAME: CAMBRIDGE, MASS. AVE  
1350 MASSACHUETTS AVENUE  
CAMBRIDGE, MA 02138  
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SCALE: AS SHOWN		DESIGNED BY: AT	DRAWN BY: EB		

DEREK J.  
GREASER  
CIVIL  
No. 49195  
REGISTERED  
PROFESSIONAL ENGINEER

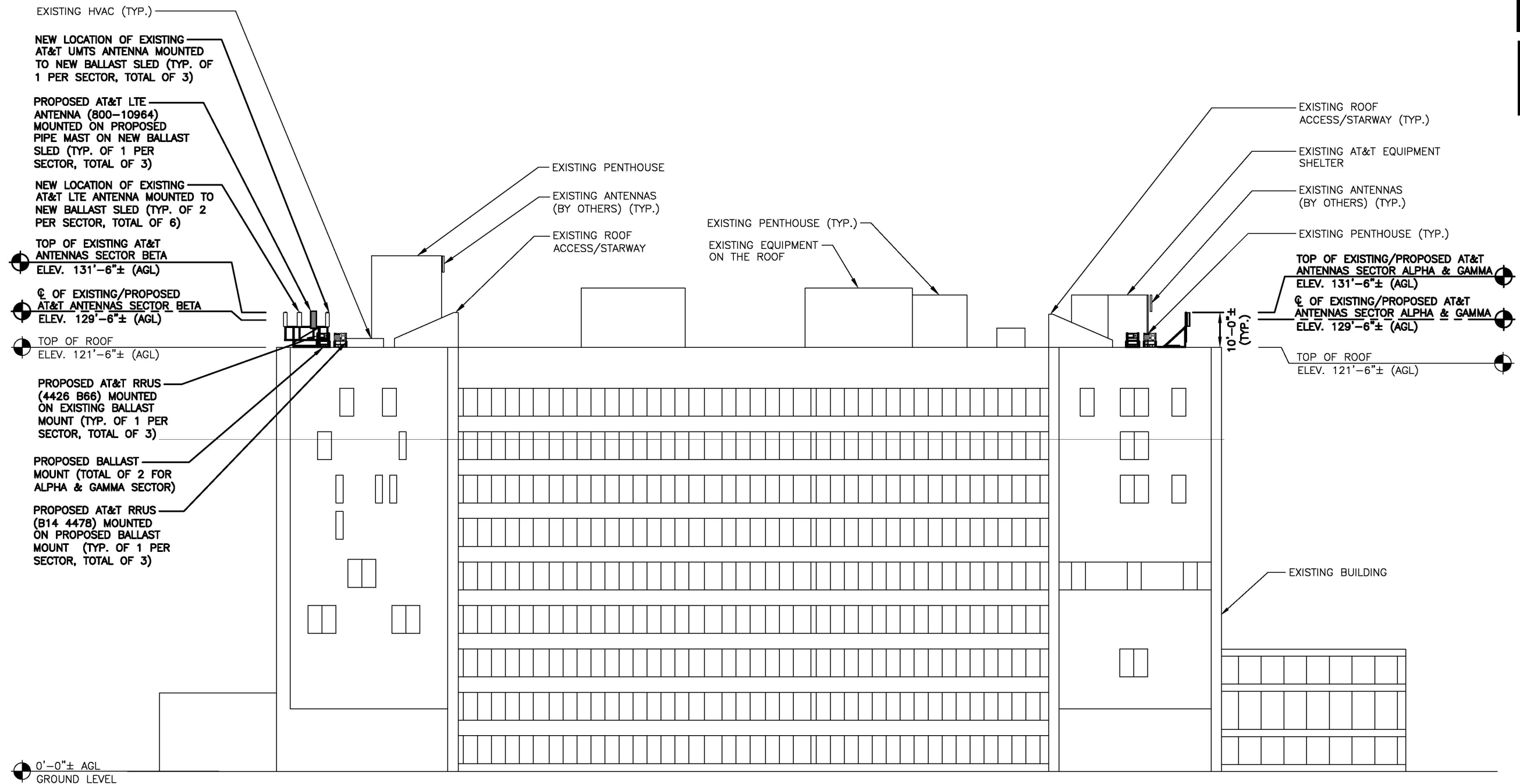
**ROOFTOP & EQUIPMENT PLANS**  
(LTE 6C/7C)

SITE NUMBER	DRAWING NUMBER	REVISION
MA2215	A-1	2



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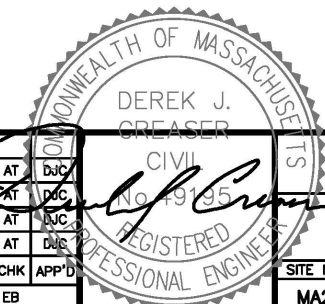
NOTE:  
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SHEET FOR FINAL ANTENNA  
SETTINGS.



ELEVATION  
22x34 SCALE: 1/16"=1'-0"  
11x17 SCALE: 1/32"=1'-0"  
0 8'-0" 16'-0" 32'-0" 48'-0"

NO.	DATE	REVISIONS	BY	CHK	APP'D
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SCALE: AS SHOWN DESIGNED BY: AT DRAWN BY: EB



AT&T		
ELEVATION (LTE 6C/7C)		
SITE NUMBER	DRAWING NUMBER	REV
MA2215	A-2	2



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

EXISTING AT&T LTE ANTENNA  
MOUNTED TO FACADE (TYP.  
OF 2 PER SECTOR, TOTAL  
OF 6) (TO BE RELOCATED  
ON NEW BALLAST FRAME)

ALPHA SECTOR  
LTE 700  
1900  
20°

ALPHA SECTOR  
LTE 700/850  
20°

ALPHA SECTOR  
UMTS DB  
30°

EXISTING AT&T UMTS ANTENNA  
MOUNTED TO FACADE (TYP. OF 1  
PER SECTOR, TOTAL OF 3) (TO  
BE RELOCATED TO POSITION 4  
ON NEW BALLAST FRAME)

EXISTING TMA'S (TYP. OF 2  
PER SECTOR, TOTAL OF 6)  
(TO BE RELOCATED ON NEW  
BALLAST FRAME)

EXISTING (6) DC CABLE &  
(3) FIBER TO FOLLOW  
EXISTING COAX (TO BE  
REMOVED & REPLACED)

EXISTING (18) 1-5/8"  
COAX CABLE (TO REMAIN)

EXISTING SURGE ARRESTOR  
DC2-48-60-0-9E  
(TO REMAIN)

EXISTING RRH (TYP. OF 5  
PER SECTOR, TOTAL OF 15)  
(TO REMAIN)

EXISTING ROOF  
CURB (TYP.)

### ALPHA SECTOR

NEW LOCATION OF EXISTING  
TMA'S (TYP. OF 2 PER SECTOR,  
TOTAL OF 6) (RELOCATED ON  
NEW BALLAST FRAME)

NEW LOCATION OF EXISTING  
AT&T UMTS ANTENNA MOUNTED  
TO NEW BALLAST SLED (TYP. OF  
1 PER SECTOR, TOTAL OF 3)

PROPOSED AT&T LTE  
ANTENNA (800-10964)  
MOUNTED ON  
PROPOSED PIPE MAST  
ON NEW BALLAST SLED  
(TYP. OF 1 PER  
SECTOR, TOTAL OF 3)

KEY PLAN  
SCALE: N.T.S.

GAMMA SECTOR  
UMTS 850  
270°

GAMMA SECTOR  
LTE 700 DE/  
850/WCS  
265°

GAMMA SECTOR  
LTE  
700(B14)AWSJ  
265°

GAMMA SECTOR  
LTE  
700 BC/PCS  
265°

BETA SECTOR  
LTE 700/1900  
135°

BETA SECTOR  
LTE 700/850  
135°

BETA SECTOR  
UMTS DB  
150°

### BETA SECTOR

PROPOSED NON-PENETRATING  
SLED MOUNT SITE PRO 1  
RTW-12-4-96 (TYP. OF 1  
PER SECTOR, TOTAL OF 3)

NEW LOCATION OF EXISTING AT&T  
LTE ANTENNA MOUNTED TO NEW  
BALLAST SLED (TYP. OF 2 PER  
SECTOR, TOTAL OF 6)

PROPOSED (6) DC POWER  
(TO FOLLOW EXISTING  
ROUTE)

EXISTING (18) 1-5/8"  
COAX CABLE (TO REMAIN)

EXISTING SURGE ARRESTOR  
DC2-48-60-0-9E  
(TO REMAIN)

PROPOSED AT&T RRUS  
(4426 B66) MOUNTED ON  
EXISTING BALLAST MOUNT  
(TYP. OF 1 PER SECTOR,  
TOTAL OF 3)

EXISTING RRH  
(TYP. OF 5 PER  
SECTOR, TOTAL OF  
15) (TO REMAIN)

PROPOSED AT&T RRUS  
(B14 4478) MOUNTED  
ON PROPOSED BALLAST  
MOUNT (TYP. OF 1 PER  
SECTOR, TOTAL OF 3)

PROPOSED  
BALLAST MOUNT  
(TOTAL OF 2  
FOR ALPHA &  
GAMMA SECTOR)

### ALPHA SECTOR

PROPOSED AT&T  
SURGE ARRESTOR  
(DC6-48-60-18-8C)  
(TYP. OF 1 PER  
SECTOR, TOTAL OF 3)

BETA SECTOR  
LTE  
700 1900  
135°

BETA SECTOR  
LTE  
700 (B14)  
AWSJ  
135°

BETA SECTOR  
LTE  
700/850  
135°

### BETA SECTOR

EXISTING ANTENNA LAYOUT  
SCALE: N.T.S.

PROPOSED ANTENNA LAYOUT  
SCALE: N.T.S.

**HDG** HUDSON  
Design Group LLC

45 BEECHWOOD DRIVE  
NORTH ANDOVER, MA 01845  
TEL: (978) 557-5553  
FAX: (978) 336-5586

**CENTERLINE**  
COMMUNICATIONS

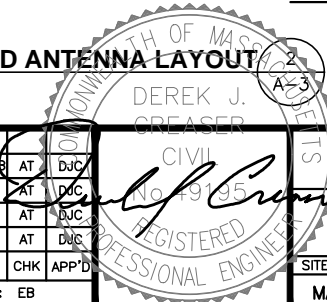
750 WEST CENTER STREET., SUITE #301  
WEST BRIDGEWATER, MA 02379

SITE NUMBER: MA2215  
SITE NAME: CAMBRIDGE, MASS. AVE  
1350 MASSACHUSETTS AVENUE  
CAMBRIDGE, MA 02138  
MIDDLESEX COUNTY

**at&t**

550 COCHITUCKET ROAD  
FRAMINGHAM, MA 01701

2	09/24/18	ISSUED FOR PERMITTING	ET/EB	AT	DJC
1	03/19/18	ISSUED FOR REVIEW	EB	AT	DJC
0	02/26/18	ISSUED FOR REVIEW	MR	AT	DJC
A	01/28/18	ISSUED FOR REVIEW	RB	AT	DJC
NO.	DATE	REVISIONS	BY	CHK	APP'D
SCALE: AS SHOWN			DESIGNED BY: AT	DRAWN BY: EB	



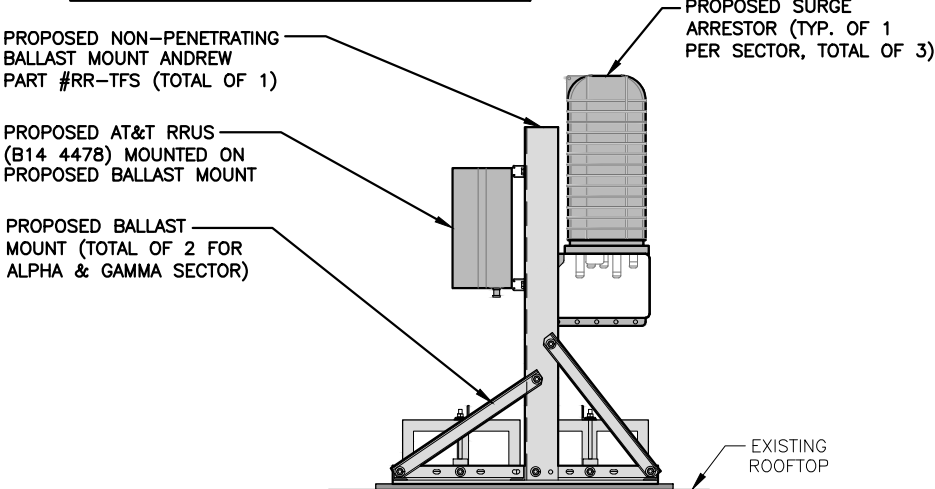
AT&T

ANTENNA LAYOUTS  
(LTE 6C/7C)

SITE NUMBER	DRAWING NUMBER	REV
MA2215	A-3	2



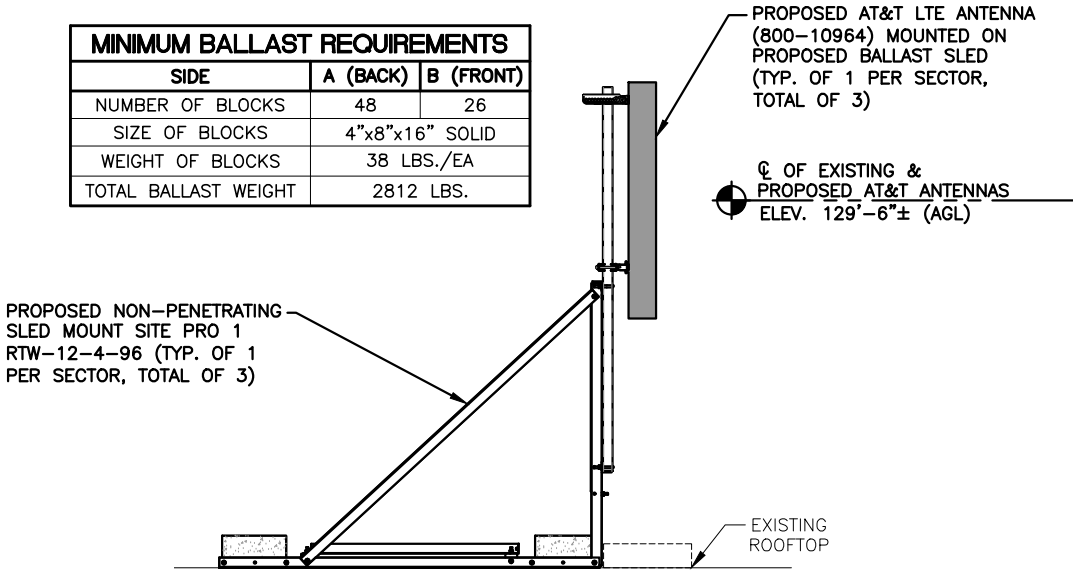
MINIMUM BALLAST REQUIREMENTS		
SIDE	A (BACK)	B (FRONT)
NUMBER OF BLOCKS	2	2
SIZE OF BLOCKS	4"x8"x16" SOLID	
WEIGHT OF BLOCKS	38 LBS./EA	
TOTAL BALLAST WEIGHT	152 LBS.	



**PROPOSED RRH & SURGE ARRESTOR MOUNTING DETAIL**  
SCALE: N.T.S.

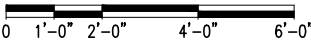
1  
A-4

MINIMUM BALLAST REQUIREMENTS		
SIDE	A (BACK)	B (FRONT)
NUMBER OF BLOCKS	48	26
SIZE OF BLOCKS	4"x8"x16" SOLID	
WEIGHT OF BLOCKS	38 LBS./EA	
TOTAL BALLAST WEIGHT	2812 LBS.	



**PROPOSED ANTENNA MOUNT DETAIL**  
22x34 SCALE: 1/2"=1'-0"  
11x17 SCALE: 1/4"=1'-0"

2  
A-4



RRU CHART					
QUANTITY	MODEL	L	W	D	
6(E)	RRUS-11	19.7"	17.0"	7.2"	
6(E)	RRUS-12	19.7"	17.0"	7.2"	
3(E)	RRUS-32	27.2"	12.1"	7.0"	
3(P)	4426	15.0"	13.2"	7.4"	
3(P)	RRUS-B14	15.0"	13.2"	7.4"	
3(E)	RRUS-E2	19.7"	17.0"	7.2"	

**NOTE:**  
MOUNT PER MANUFACTURER'S SPECIFICATIONS

**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**  
SCALE: N.T.S.

3  
A-4

**ANTENNA SCHEDULE**

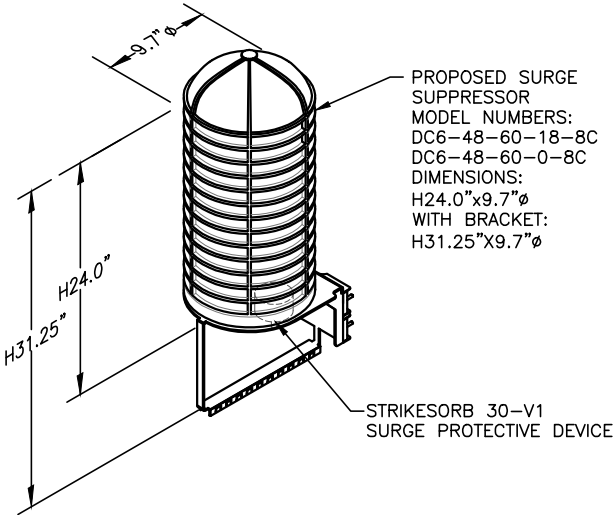
SECTOR	EXISTING/PROPOSED	BAND	ANTENNA	SIZE (INCHES) (L x W x D)	ANTENNA Q HEIGHT	AZIMUTH	TMA/DIPLEXER	RRU	SIZE ( INCHES) (L x W x D)	FEEDER	RAYCAP
A1	EXISTING	LTE 700 BC/PCS	HPA-65R-BUU-H4	48X14.8X9	129'-6"±	20°	-	(E) RRUS-11 (700) (E) RRUS-12 (PCS) (E) RRUS-12 (PCS)	-	-	(E) (1) RAYCAP DC2-48-60-0-9E (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

**NOTE:**  
REFER TO STRUCTURAL ANALYSIS BY: HUDSON DESIGN GROUP, LLC, DATED: MARCH 02, 2018, FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT.

**NOTE:**  
REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS.



**NOTE:**  
MOUNT PER MANUFACTURER'S SPECIFICATIONS.

**DC SURGE SUPPRESSOR DETAIL**  
SCALE: N.T.S.

4  
A-4



- DESIGN REQUIREMENTS ARE PER STATE BUILDING CODE AND APPLICABLE SUPPLEMENTS, INTERNATIONAL BUILDING CODE, EIA/TIA-222-G STRUCTURAL STANDARDS FOR STEEL ANTENNA, TOWERS AND ANTENNA SUPPORTING STRUCTURES.
- CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CONDITIONS IN THE FIELD PRIOR TO FABRICATION AND ERECTION OF ANY MATERIAL. ANY UNUSUAL CONDITIONS SHALL BE REPORTED TO THE ATTENTION OF THE CONSTRUCTION MANAGER AND ENGINEER OF RECORD.
- DESIGN AND CONSTRUCTION OF STRUCTURAL STEEL SHALL CONFORM TO THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION "SPECIFICATION FOR THE DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS".
- STRUCTURAL STEEL SHALL CONFORM TO ASTM A992 (Fy=50 ksi), MISCELLANEOUS STEEL SHALL CONFORM TO ASTM A36 UNLESS OTHERWISE INDICATED.
- STEEL PIPE SHALL CONFORM TO ASTM A500 "COLD-FORMED WELDED & SEAMLESS CARBON STEEL STRUCTURAL TUBING", GRADE B, OR ASTM A53 PIPE STEEL BLACK AND HOT-DIPPED ZINC-COATED WELDED AND SEAMLESS TYPE E OR S, GRADE B. PIPE SIZES INDICATED ARE NOMINAL. ACTUAL OUTSIDE DIAMETER IS LARGER.
- STRUCTURAL CONNECTION BOLTS SHALL BE HIGH STRENGTH BOLTS (BEARING TYPE) AND CONFORM TO ASTM A325 TYPE-X "HIGH STRENGTH BOLTS FOR STRUCTURAL JOINTS, INCLUDING SUITABLE NUTS AND PLAIN HARDENED WASHERS". ALL BOLTS SHALL BE 3/4" DIA UON.
- ALL STEEL MATERIALS SHALL BE GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A123 "ZINC (HOT-DIP GALVANIZED) COATINGS ON IRON AND STEEL PRODUCTS", UNLESS OTHERWISE NOTED.
- ALL BOLTS, ANCHORS AND MISCELLANEOUS HARDWARE SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A153 "ZINC-COATING (HOT-DIP) ON IRON AND STEEL HARDWARE", UNLESS OTHERWISE NOTED.
- FIELD WELDS, DRILL HOLES, SAW CUTS AND ALL DAMAGED GALVANIZED SURFACES SHALL BE REPAIRED WITH AN ORGANIC ZINC REPAIR PAINT COMPLYING WITH REQUIREMENTS OF ASTM A780. GALVANIZING REPAIR PAINT SHALL HAVE 65 PERCENT ZINC BY WEIGHT, ZIRP BY DUNCAN GALVANIZING, GALVA BRIGHT PREMIUM BY CROWN OR EQUAL. THICKNESS OF APPLIED GALVANIZING REPAIR PAINT SHALL BE NOT NOT LESS THAN 4 COATS (ALLOW TIME TO DRY BETWEEN COATS) WITH A RESULTING COATING THICKNESS REQUIRED BY ASTM A123 OR A153 AS APPLICABLE.
- CONTRACTOR SHALL COMPLY WITH AWS CODE FOR PROCEDURES, APPEARANCE AND QUALITY OF WELDS, AND FOR METHODS USED IN CORRECTING WELDING. ALL WELDERS AND WELDING PROCESSES SHALL BE QUALIFIED IN ACCORDANCE WITH AWS "STANDARD QUALIFICATION PROCEDURES". ALL WELDING SHALL BE DONE USING E70XX ELECTRODES AND WELDING SHALL CONFORM TO AISC AND D.I.I. WHERE FILLET WELD SIZES ARE NOT SHOWN, PROVIDE THE MINIMUM SIZE PER TABLE J2.4 IN THE AISC "STEEL CONSTRUCTION MANUAL". 14TH EDITION.
- INCORRECTLY FABRICATED, DAMAGED OR OTHERWISE MISFITTING OR NON-CONFORMING MATERIALS OR CONDITIONS SHALL BE REPORTED TO THE CONSTRUCTION MANAGER PRIOR TO REMEDIAL OR CORRECTIVE ACTION. ANY SUCH ACTION SHALL REQUIRE CONSTRUCTION MANAGER APPROVAL.
- UNISTRUT SHALL BE FORMED STEEL CHANNEL STRUT FRAMING AS MANUFACTURED BY UNISTRUT CORP., WAYNE, MI OR EQUAL. STRUT MEMBERS SHALL BE 1 5/8"x1 5/8"x12GA, UNLESS OTHERWISE NOTED, AND SHALL BE HOT-DIP GALVANIZED AFTER FABRICATION.
- EPOXY ANCHOR ASSEMBLY SHALL CONSIST OF STAINLESS STEEL ANCHOR ROD WITH NUTS & WASHERS. AN INTERNALLY THREADED INSERT, A SCREEN TUBE AND A EPOXY ADHESIVE. THE ANCHORING SYSTEM SHALL BE THE HILTI-HIT HY-270 AND OR HY-200 SYSTEMS (AS SPECIFIED IN DWG.) OR ENGINEERS APPROVED EQUAL.
- EXPANSION BOLTS SHALL CONFORM TO FEDERAL SPECIFICATION FF-S-325, GROUP II, TYPE 4, CLASS I, HILTI KWIK BOLT III OR APPROVED EQUAL. INSTALLATION SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
- LUMBER SHALL COMPLY WITH THE REQUIREMENTS OF THE AMERICAN INSTITUTE OF TIMBER CONSTRUCTION AND THE NATIONAL FOREST PRODUCTS ASSOCIATION'S NATIONAL DESIGN SPECIFICATION FOR WOOD CONSTRUCTION. ALL LUMBER SHALL BE PRESSURE TREATED AND SHALL BE STRUCTURAL GRADE NO. 2 OR BETTER.
- WHERE ROOF PENETRATIONS ARE REQUIRED, THE CONTRACTOR SHALL CONTACT AND COORDINATE RELATED WORK WITH THE BUILDING OWNER AND THE EXISTING ROOF INSTALLER. WORK SHALL BE PERFORMED IN SUCH A MANNER AS TO NOT VOID THE EXISTING ROOF WARRANTY. ROOF SHALL BE WATERTIGHT.
- ALL FIBERGLASS MEMBERS USED ARE AS MANUFACTURED BY STRONGWELL COMPANY OF BRISTOL, VA 24203. ALL DESIGN CRITERIA FOR THESE MEMBERS IS BASED ON INFORMATION PROVIDED IN THE DESIGN MANUAL. ALL REQUIREMENTS PUBLISHED IN SAID MANUAL MUST BE STRICTLY ADHERED TO.
- NO MATERIALS TO BE ORDERED AND NO WORK TO BE COMPLETED UNTIL SHOP DRAWINGS HAVE BEEN REVIEWED AND APPROVED IN WRITING.
- SUBCONTRACTOR SHALL FIREPROOF ALL STEEL TO PRE-EXISTING CONDITIONS.

BEFORE CONSTRUCTION	
CONSTRUCTION/INSTALLATION INSPECTIONS AND TESTING REQUIRED (COMPLETED BY ENGINEER OF RECORD)	REPORT ITEM
N/A	ENGINEER OF RECORD APPROVED SHOP DRAWINGS <sup>1</sup>
N/A	MATERIAL SPECIFICATIONS REPORT <sup>2</sup>
N/A	FABRICATOR NDE INSPECTION
REQUIRED	PACKING SLIPS <sup>3</sup>
ADDITIONAL TESTING AND INSPECTIONS:	
DURING CONSTRUCTION	
CONSTRUCTION/INSTALLATION INSPECTIONS AND TESTING REQUIRED (COMPLETED BY ENGINEER OF RECORD)	REPORT ITEM
REQUIRED	STEEL INSPECTIONS
N/A	HIGH STRENGTH BOLT INSPECTIONS
N/A	HIGH WIND ZONE INSPECTIONS <sup>4</sup>
N/A	FOUNDATION INSPECTIONS
N/A	CONCRETE COMP. STRENGTH, SLUMP TESTS AND PLACEMENT
N/A	POST INSTALLED ANCHOR VERIFICATION <sup>5</sup>
N/A	GROUT VERIFICATION
N/A	CERTIFIED WELD INSPECTION
N/A	EARTHWORK: LIFT AND DENSITY
N/A	ON SITE COLD GALVANIZING VERIFICATION
N/A	GUY WIRE TENSION REPORT
ADDITIONAL TESTING AND INSPECTIONS:	
AFTER CONSTRUCTION	
CONSTRUCTION/INSTALLATION INSPECTIONS AND TESTING REQUIRED (COMPLETED BY ENGINEER OF RECORD)	REPORT ITEM
REQUIRED	MODIFICATION INSPECTOR REDLINE OR RECORD DRAWINGS <sup>6</sup>
N/A	POST INSTALLED ANCHOR PULL-OUT TESTING
REQUIRED	PHOTOGRAPHS
ADDITIONAL TESTING AND INSPECTIONS:	

1. REQUIRED FOR ANY NEW SHOP FABRICATED FRP OR STEEL.
2. PROVIDED BY MANUFACTURER, REQUIRED IF HIGH STRENGTH BOLTS OR STEEL.
3. PROVIDED BY GENERAL CONTRACTOR; PROOF OF MATERIALS.
4. HIGH WIND ZONE INSPECTION CATB 120MPH OR CAT C,D 110MPH INSPECT FRAMING OF WALLS, ANCHORING, FASTENING SCHEDULE.
5. ADHESIVE FOR REBAR AND ANCHORS SHALL HAVE BEEN TESTED IN ACCORDANCE WITH ACI 355.4 AND ICC-ES AC308 FOR CRACKED CONCRETE AND SEISMIC APPLICATIONS. DESIGN ADHESIVE BOND STRENGTH HAS BEEN BASED ON ACI 355.4 TEMPERATURE CATEGORY B WITH INSTALLATIONS INTO DRY HOLES DRILLED USING A CARBIDE BIT INTO CRACKED CONCRETE THAT HAS CURED FOR AT LEAST 21 DAYS. ADHESIVE ANCHORS REQUIRING CERTIFIED INSTALLATIONS SHALL BE INSTALLED BY A CERTIFIED ADHESIVE ANCHOR INSTALLER PER ACI 318-11 D.9.2.2. INSTALLATIONS REQUIRING CERTIFIED INSTALLERS SHALL BE INSPECTED PER ACI 318-11 D.8.2.4.
6. AS REQUIRED; FOR ANY FIELD CHANGES TO THE ITEMS IN THIS TABLE.

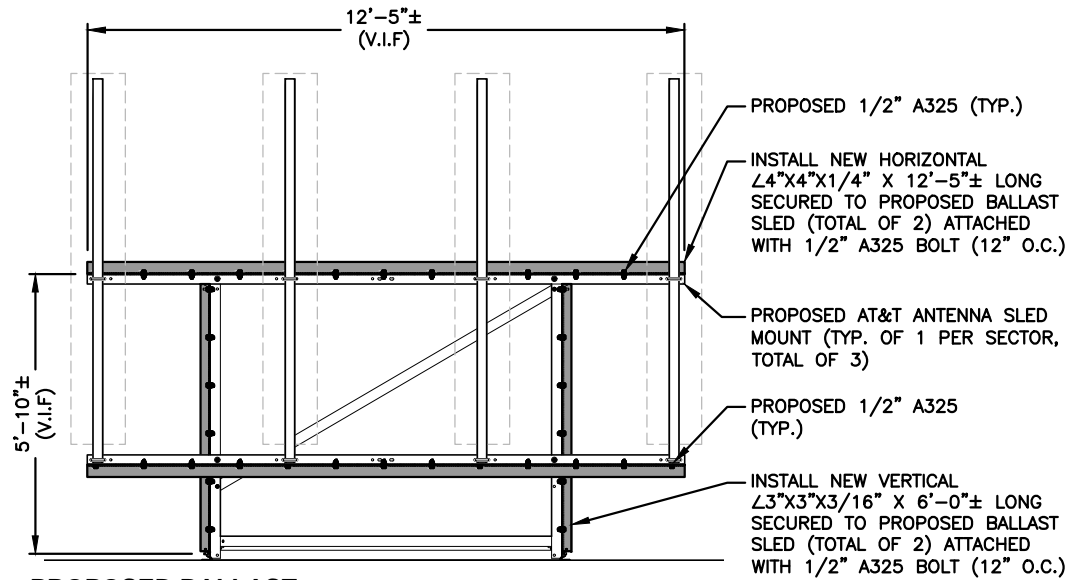
1. IT IS THE RESPONSIBILITY OF THE PERMIT APPLICANT TO NOTIFY THE BUILDING OFFICIAL OF REQUIRED INSPECTIONS (X). INSPECTION OF 780 CMR FIRE PROTECTION SYSTEMS MAY BE WITNESSED BY THE FIRE OFFICIAL AND INSTALLATION PERMITS ARE REQUIRED FROM THE FIRE DEPARTMENT PER 527 CMR.
2. INCLUDE NFPA 72 TEST AND ACCEPTANCE DOCUMENTATION
3. INCLUDE APPLICABLE NFPA 13, 13R, 13D, 14, 15, 17, 20, 241, ETC. – TEST AND ACCEPTANCE DOCUMENTATION
4. INCLUDE NFPA 720 RECORD OF COMPLETION AND INSPECTION AND TEST FORM
5. INCLUDE FIELD REPORTS AND RELATED DOCUMENTATION
6. WORK SHALL NOT PROCEED, OR BE CONCEALED, UNTIL THE REQUIRED INSPECTION HAS BEEN APPROVED BY THE BUILDING OFFICIAL, AND NOTHING WITHIN CONSTRUCTION CONTROL SHALL HAVE THE EFFECT OF WAIVING OR LIMITING THE BUILDING OFFICIAL'S AUTHORITY TO ENFORCE THIS CODE WITH RESPECT TO EXAMINATION OF THE CONTRACT DOCUMENTS, INCLUDING PLANS, COMPUTATIONS AND SPECIFICATIONS, AND FIELD INSPECTIONS.
7. ROUGH AND/OR FINISH INSPECTIONS OF ELECTRICAL, PLUMBING, OR SHEET METAL SHALL BE INSPECTED PRIOR TO ROUGH AND FINISH INSPECTIONS BY THE BUILDING OFFICIAL.

**107.6.5 BUILDING OFFICIAL RESPONSIBILITY.** NOTHING CONTAINED IN SECTION 107.6 SHALL HAVE THE EFFECT OF WAIVING OR LIMITING THE BUILDING OFFICIAL'S AUTHORITY TO ENFORCE 780 CMR WITH RESPECT TO EXAMINATION OF THE CONTRACT DOCUMENTS, INCLUDING PLANS, COMPUTATIONS AND SPECIFICATIONS, AND FIELD INSPECTIONS.

1. ALL CONNECTIONS TO BE SHOP WELDED & FIELD BOLTED USING 3/4"Ø A325-X BOLTS, UNLESS OTHERWISE NOTIFIED.
2. SHOP DRAWING ENGINEER REVIEW & APPROVAL REQUIRED BEFORE ORDERING MATERIAL.
3. SHOP DRAWING ENGINEER REVIEW & APPROVAL REQUIRED PRIOR TO STEEL FABRICATION.
4. VERIFICATION OF EXISTING ROOF CONSTRUCTION IS REQUIRED PRIOR TO THE INSTALLATION OF THE ROOF PLATFORM. ENGINEER OF RECORD IS TO APPROVE EXISTING CONDITIONS IN ORDER TO MOVE FORWARD.
5. CENTERLINE OF PROPOSED STEEL PLATFORM SUPPORT COLUMNS TO BE CENTRALLY LOCATED OVER THE EXISTING BUILDING COLUMNS.
6. EXISTING BRICK MASONRY COLUMNS/BEARING TO BE REPAIRED/REPLACED AT ALL PROPOSED PLATFORM SUPPORT POINTS. ENGINEER OF RECORD TO REVIEW AND APPROVE.



MINIMUM BALLAST REQUIREMENTS		
SIDE	A (BACK)	B (FRONT)
NUMBER OF BLOCKS	48	26
SIZE OF BLOCKS	4"x8"x16" SOLID	
WEIGHT OF BLOCKS	38 LBS./EA	
TOTAL BALLAST WEIGHT	2812 LBS.	

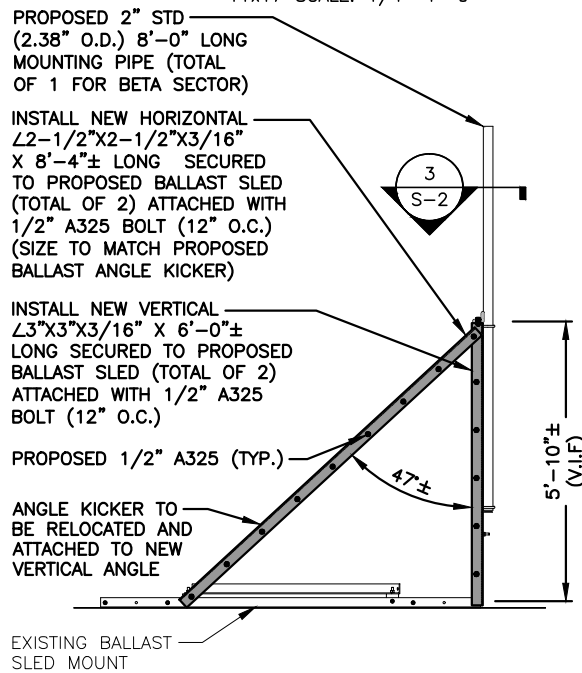


**PROPOSED BALLAST MOUNT MODIFICATIONS**

22x34 SCALE: 1/2"=1'-0"  
11x17 SCALE: 1/4"=1'-0"

2  
S-2

0 1'-0" 2'-0" 4'-0" 6'-0"

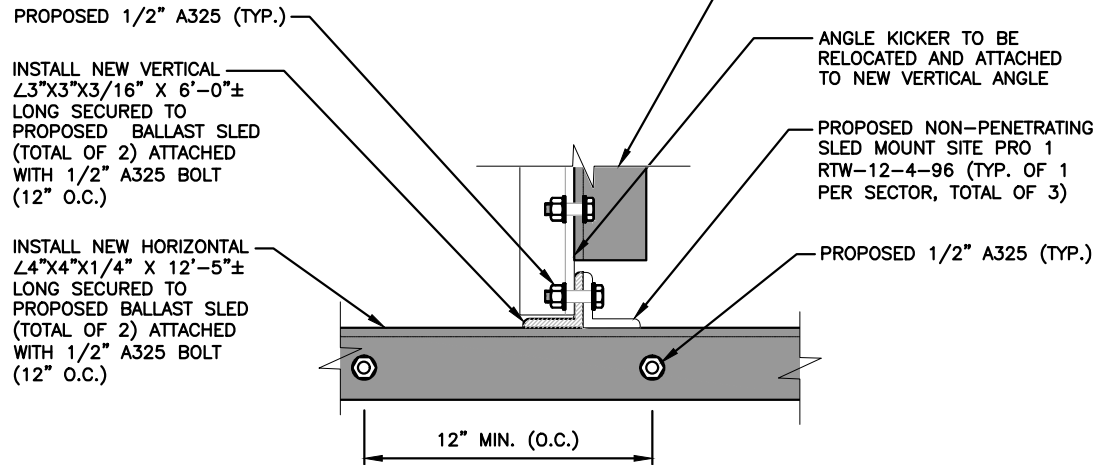


**PROPOSED BALLAST MOUNT MODIFICATIONS**

22x34 SCALE: 1/2"=1'-0"  
11x17 SCALE: 1/4"=1'-0"

1  
S-2

0 1'-0" 2'-0" 4'-0" 6'-0"



**CONNECTION DETAIL DETAIL**

22x34 SCALE: 3"=1'-0"  
11x17 SCALE: 1-1/2"=1'-0"

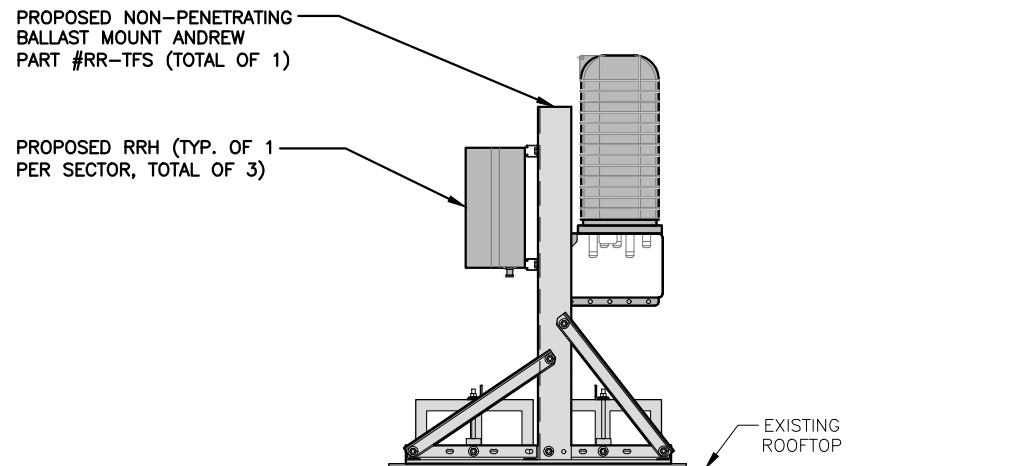
3  
S-2

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

**NOTES:**

- ALL STEEL REINFORCE SHOWN TO BE A36
- GC OR OR CONTRACTOR TO VERIFY ALL REQUIRES LENGTHS IN THE FIELD PRIOR TO FABRICATION AND INSTALLATION.

MINIMUM BALLAST REQUIREMENTS		
SIDE	A (BACK)	B (FRONT)
NUMBER OF BLOCKS	2	2
SIZE OF BLOCKS	4"x8"x16" SOLID	
WEIGHT OF BLOCKS	38 LBS./EA	
TOTAL BALLAST WEIGHT	152 LBS.	



**PROPOSED RRH BALLAST MOUNT**

22x34 SCALE: 1"=1'-0"  
11x17 SCALE: 1/2"=1'-0"

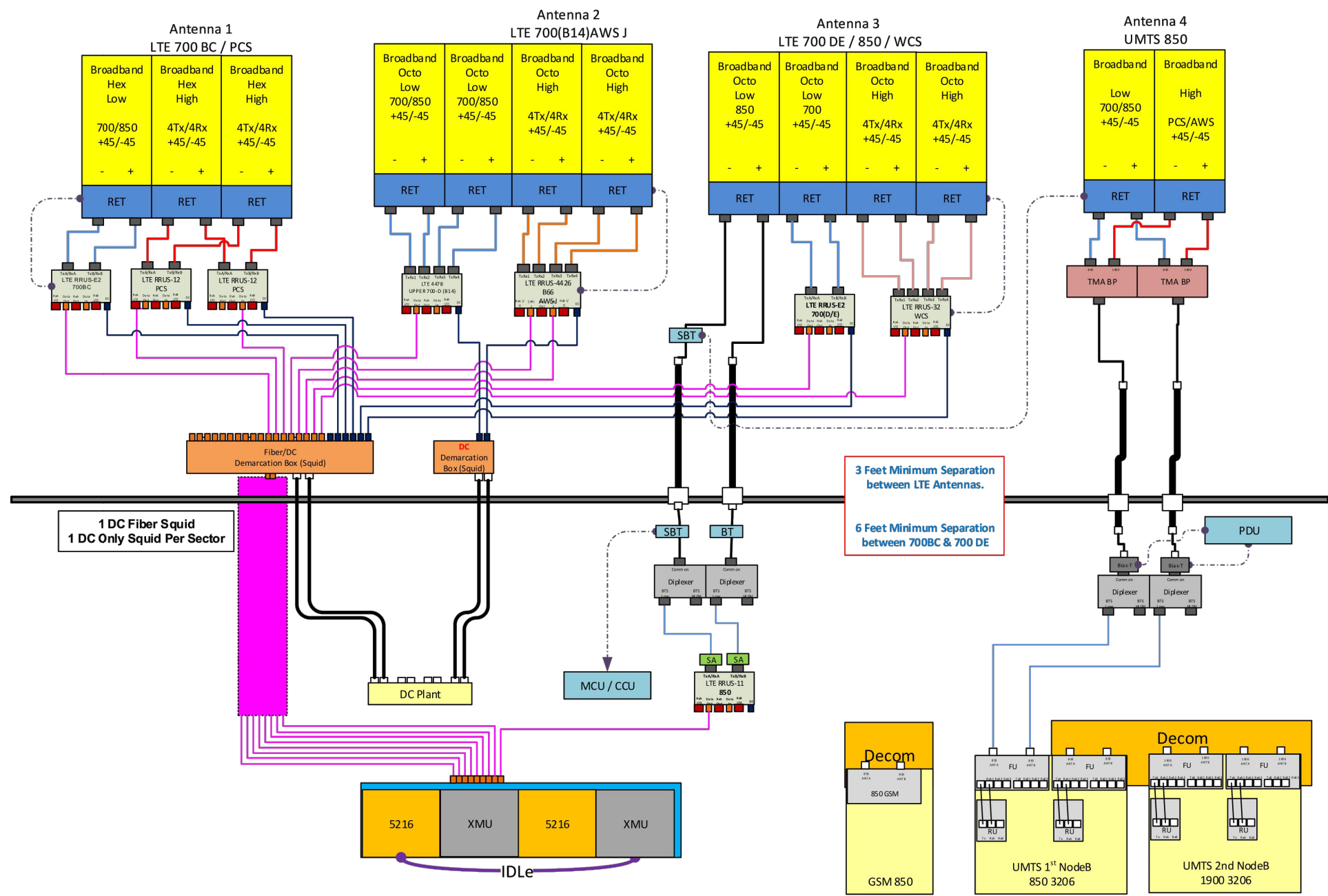
0 0'-6" 1'-0" 2'-0" 3'-0"

NO.	DATE	REVISIONS	BY	CHK	APP'D
2	09/24/18	ISSUED FOR PERMITTING	ET/EB	AT	DJC
1	03/19/18	ISSUED FOR REVIEW	EB	AT	DJC
0	02/26/18	ISSUED FOR REVIEW	MR	AT	DJC
A	01/28/18	ISSUED FOR REVIEW	RB	AT	DJC

SCALE: AS SHOWN DESIGNED BY: AT DRAWN BY: EB

SITE NUMBER	DRAWING NUMBER	REV
MA2215	S-2	2





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

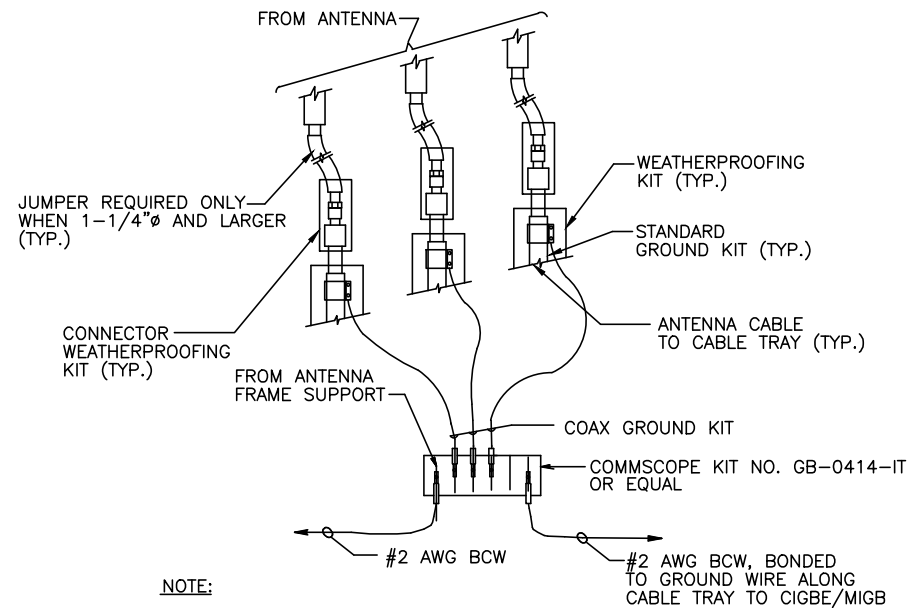
NOTE:  
1. CONTRACTOR TO CONFIRM ALL PARTS.  
2. INSTALL ALL EQUIPMENT TO MANUFACTURER'S RECOMMENDATIONS

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

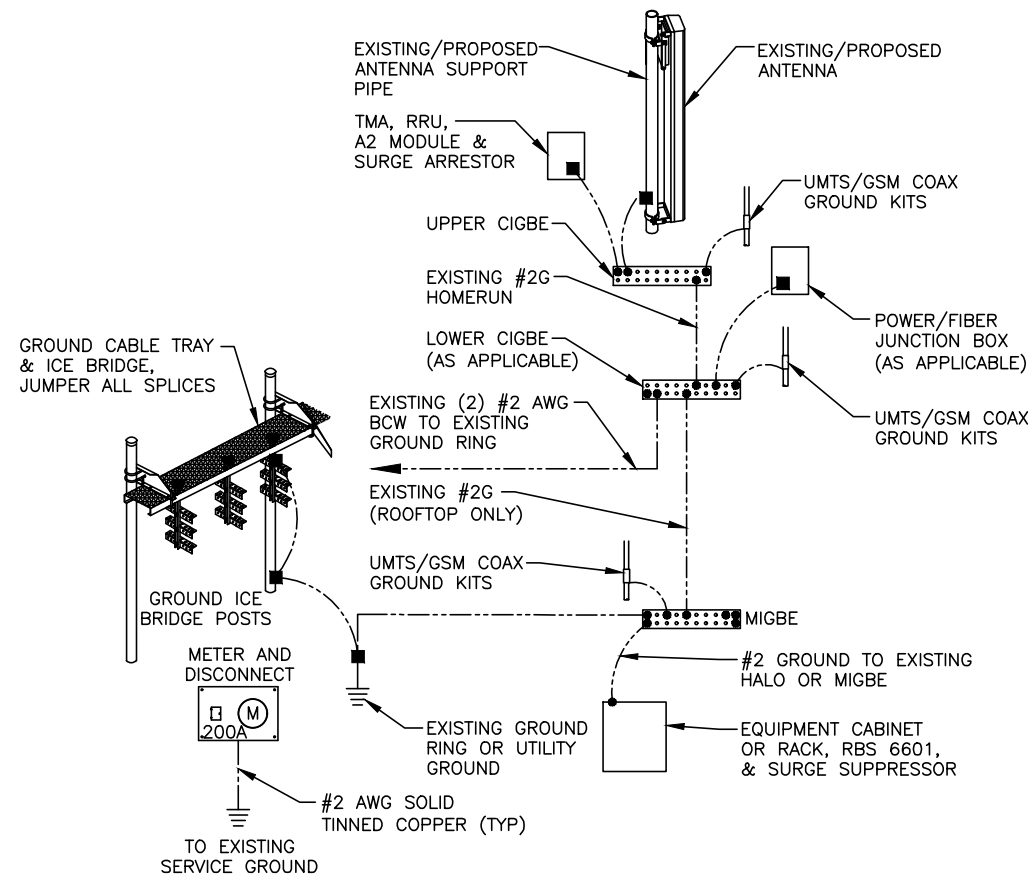
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1	03/19/18	ISSUED FOR REVIEW	EB	AT	DJC
0	02/26/18	ISSUED FOR REVIEW	MR	AT	DJC
A	01/28/18	ISSUED FOR REVIEW	RB	AT	DJC
NO.	DATE	REVISIONS	BY	CHK	APP'D
SCALE: AS SHOWN		DESIGNED BY: AT	DRAWN BY: EB		

AT&T		
RF PLUMBING DIAGRAM (LTE 6C/7C)		
SITE NUMBER	DRAWING NUMBER	REV
MA2215	RF-1	2

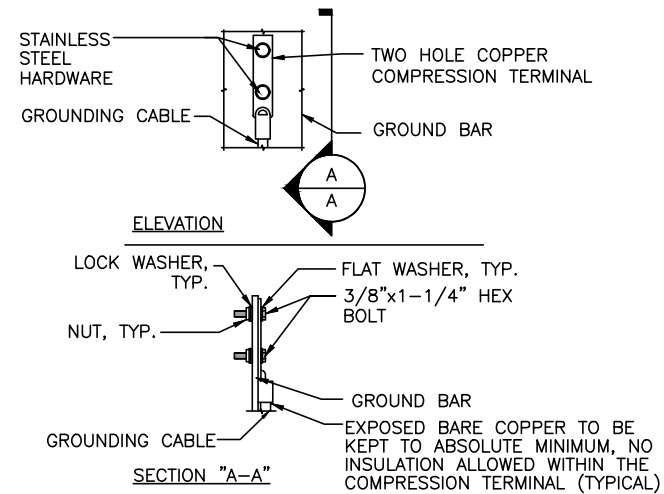




**GROUND WIRE TO GROUND BAR CONNECTION DETAIL** 1  
SCALE: N.T.S. G-1



**GROUNDING RISER DIAGRAM** 2  
SCALE: N.T.S. 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** 3  
SCALE: N.T.S. G-1

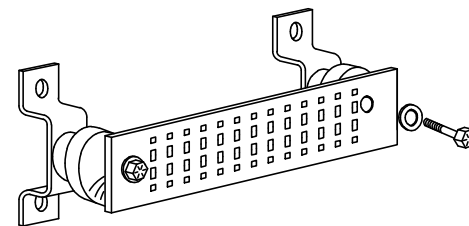
EACH GROUND CONDUCTOR TERMINATING ON ANY GROUND BAR SHALL HAVE AN IDENTIFICATION TAG ATTACHED AT EACH END THAT WILL IDENTIFY ITS ORIGIN AND DESTINATION.

**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** 4  
SCALE: N.T.S. G-1



# 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/B50/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/B50/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/B50/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



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

**KATHREIN**



**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
<b>Horizontal Pattern:</b>					
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
<b>Vertical Pattern:</b>					
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.



936.5553.1 ngmn Subject to alteration.

All specifications are subject to change without notice.  
The latest specifications are available at [www.kathreinusa.com](http://www.kathreinusa.com)

**80010964-2018-R1.0** Page 1 of 5

Kathrein USA Greenway Plaza II, 2400 Lakeside Blvd., Suite 650, Richardson TX 75082  
Phone: 214.238.8800 Fax: 214.238.8801 Email: [info@kathrein.com](mailto:info@kathrein.com)



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
<b>Horizontal Pattern:</b>					
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
<b>Vertical Pattern:</b>					
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
<b>Horizontal Pattern:</b>						
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
<b>Vertical Pattern:</b>						
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.



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
<b>Horizontal Pattern:</b>						
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
<b>Vertical Pattern:</b>						
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.



Electrical specifications, all systems		
Impedance	$\Omega$	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 <sup>2</sup>   ft <sup>2</sup> )		Front: 0.767   8.26 Lateral: .132   1.42	
Max. Wind Velocity	km/h mph	241 / 145 150 / 33	
Height / Width / Depth	mm	1499 / 508 / 175	
	inches	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)

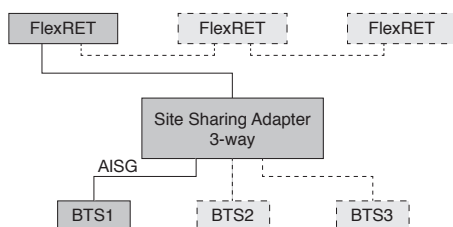
85010096	2 clamps	Mast diameter: 55 – 115   2.2 – 4.5	5.0   11.0	1
86010153v01	FlexRET			1

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

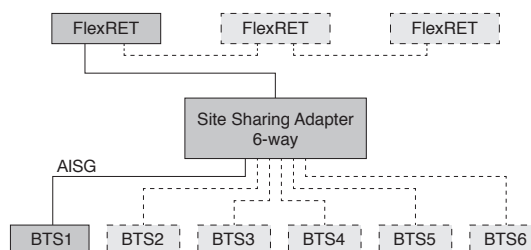
**Material:** **Reflector screen:** Aluminum.  
**Fiberglass housing:** It covers totally the internal antenna components. The special design reduces the sealing areas to a minimum and guarantees the best weather protection. Fiberglass material guarantees optimum performance with regards to stability, 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.

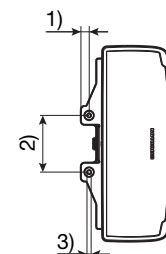
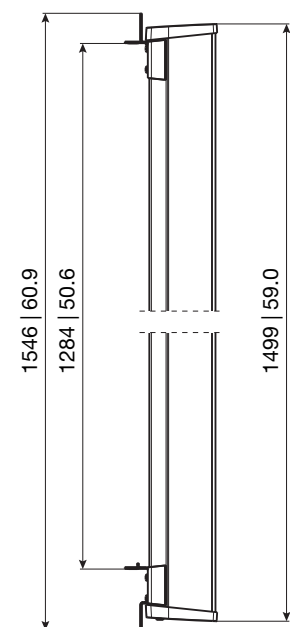
### Configuration example with Site Sharing Adapter 86010154



### Configuration example with Site Sharing Adapter 86010155



For more information please refer to the respective data sheets.



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

All dimensions  
in mm | inches

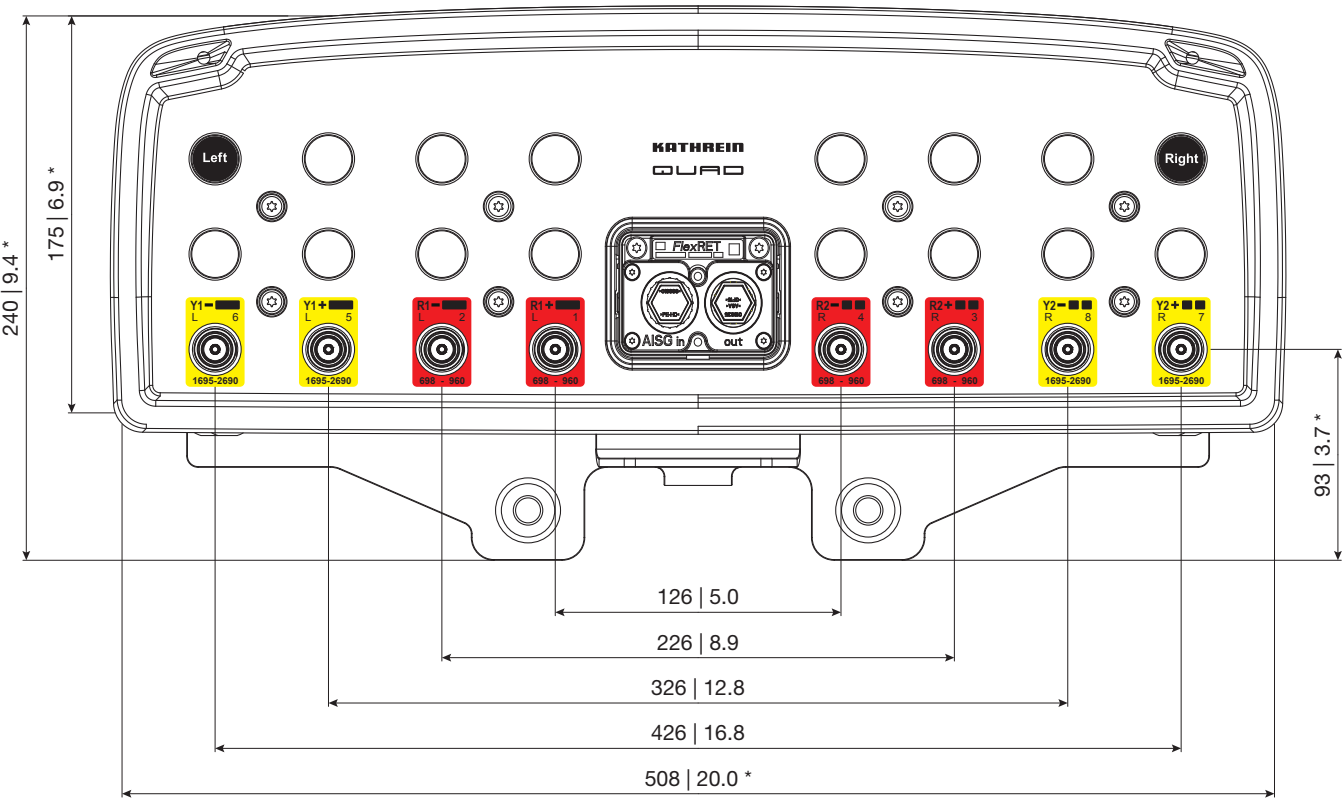
936.5553.1 ngmn Subject to alteration.

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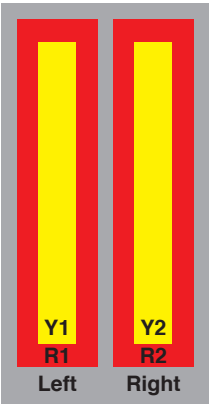
Layout of interface:



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.

All specifications are subject to change without notice.  
The latest specifications are available at [www.kathreinusa.com](http://www.kathreinusa.com)





Prepared For:  
**CENTERLINE - AT&T**  
 Site Number:  
**MA2215**  
 Site Name:  
**CAMBRIDGE, MASS.**  
**AVE**  
**1350 MASSACHUSETTS AVE**  
**CAMBRIDGE, MA**

**SITE NO:** MA2215  
**SITE NAME:** CAMBRIDGE, MASS. AVE  
**ADDRESS:** 1350 MASSACHUSETTS AVE  
 CAMBRIDGE, MA



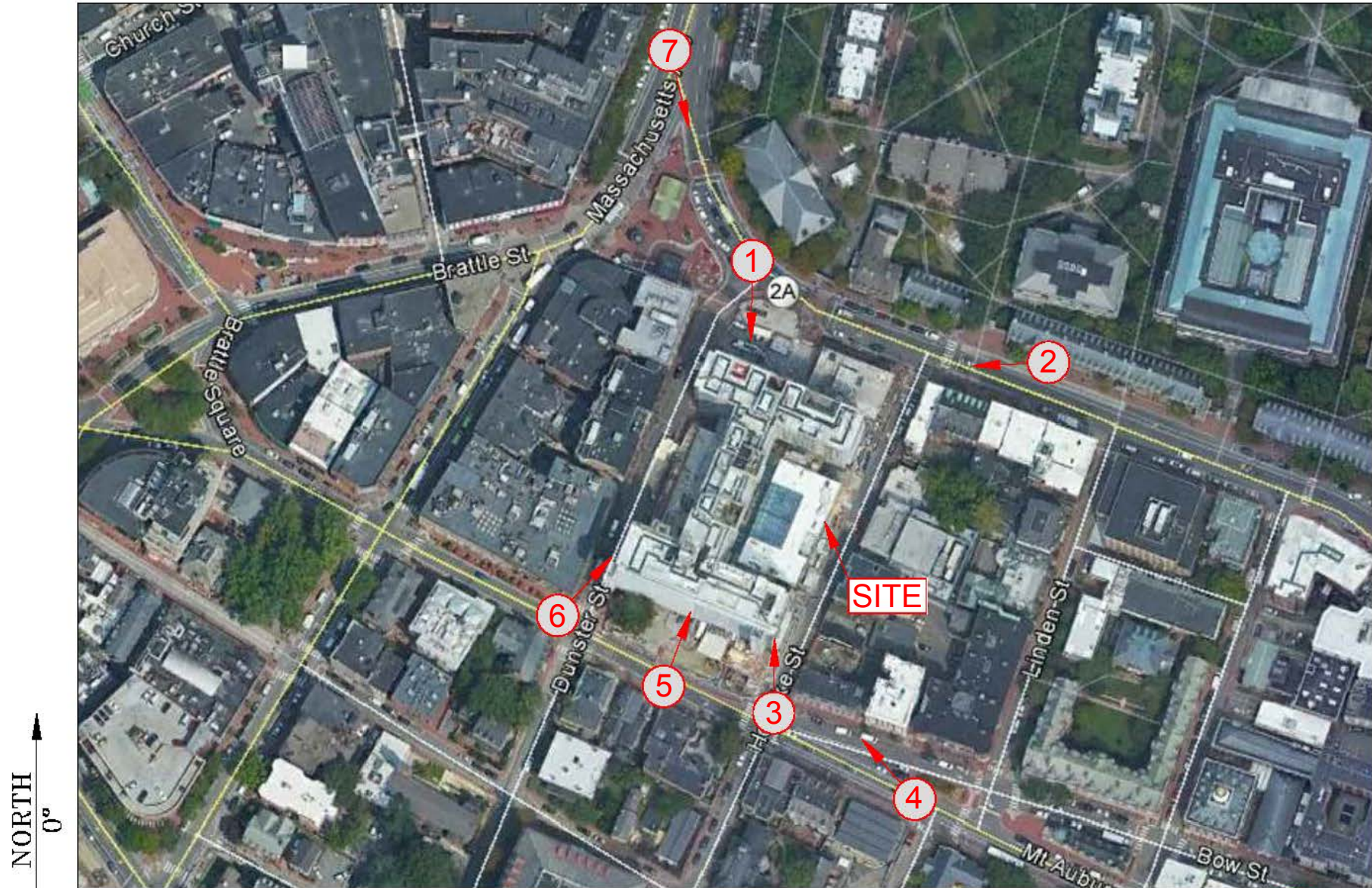
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**DATE:** 08/23/2018 **REV:** 0  
**DRAWN BY:** KB  
**SCALE:** N.T.S.

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 06-20-18



# PHOTO LOCATION

**SITE NO:** MA2215  
**SITE NAME:** CAMBRIDGE, MASS. AVE  
**ADDRESS:** 1350 MASSACHUSETTS AVE  
 CAMBRIDGE, MA



**PREPARED FOR:**  
  
 95 RYAN DRIVE  
 RAYNHAM, MA 02767



**SITE TYPE:** ROOFTOP  
**DATE:** 08/23/2018 **REV:** 0  
**DRAWN BY:** KB  
**SCALE:** N.T.S.

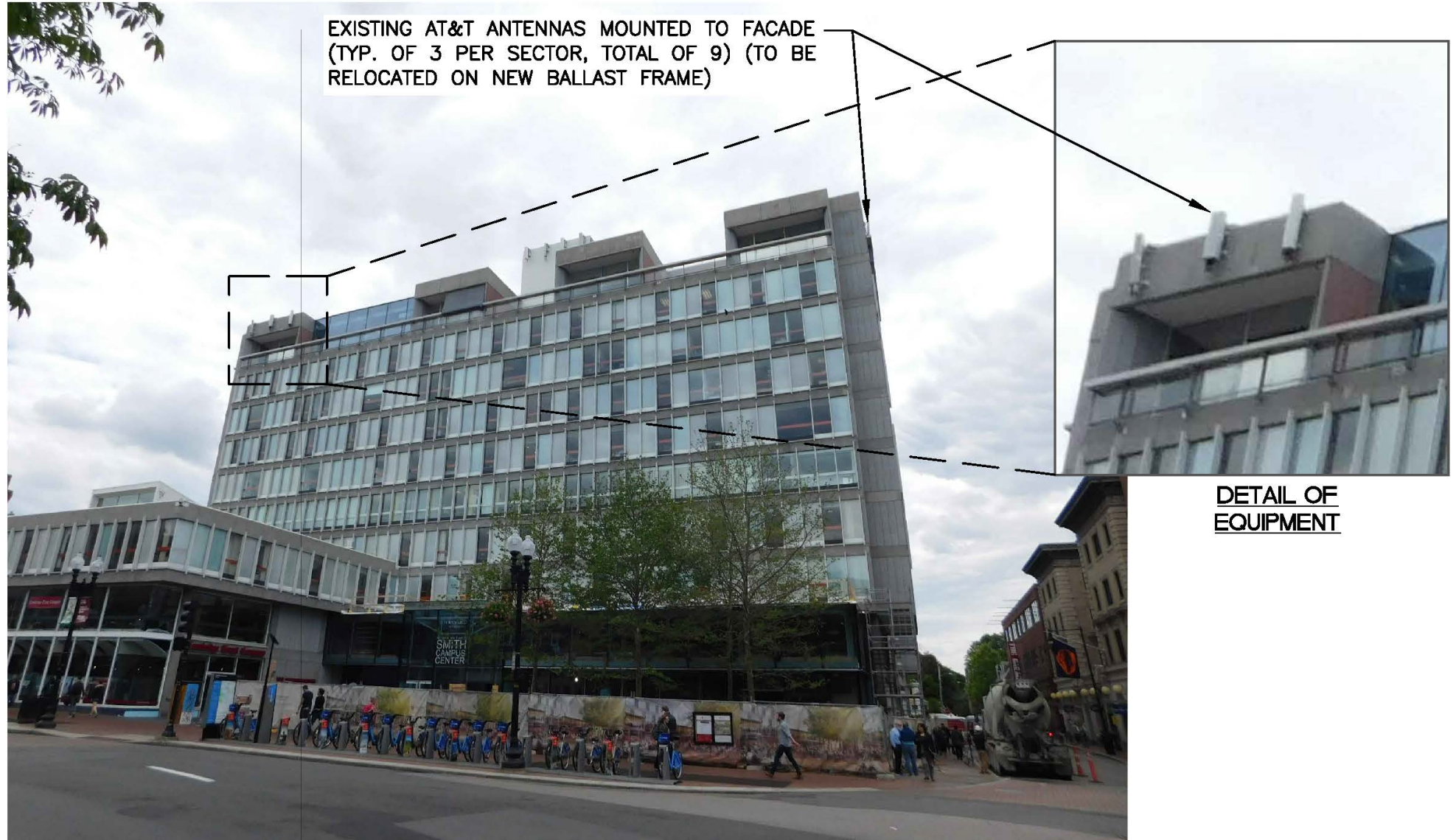
THIS STUDY DOES NOT CLAIM IN ANY WAY TO SHOW THE ONLY AREAS OF VISIBILITY. IT IS MEANT TO SHOW A BROAD REPRESENTATION OF AREAS WHERE THE PROPOSED INSTALLATION MAY BE VISIBLE BASED UPON THE BEST INFORMATION FOR TOPOGRAPHY AND VEGETATION LOCATIONS AVAILABLE TO DATE.



# EXISTING CONDITIONS

# LOCATION # 1

DATE OF PHOTO: 06/07/2018



EXISTING AT&T ANTENNAS MOUNTED TO FACADE  
(TYP. OF 3 PER SECTOR, TOTAL OF 9) (TO BE  
RELOCATED ON NEW BALLAST FRAME)

DETAIL OF  
EQUIPMENT

VIEW SOUTH FROM THE INTERSECTION MASSACHUSETTS AVENUE  
AND DUNSTER STREET

SITE NO: MA2215  
SITE NAME: CAMBRIDGE, MASS. AVE  
ADDRESS: 1350 MASSACHUSETTS AVE  
CAMBRIDGE, MA



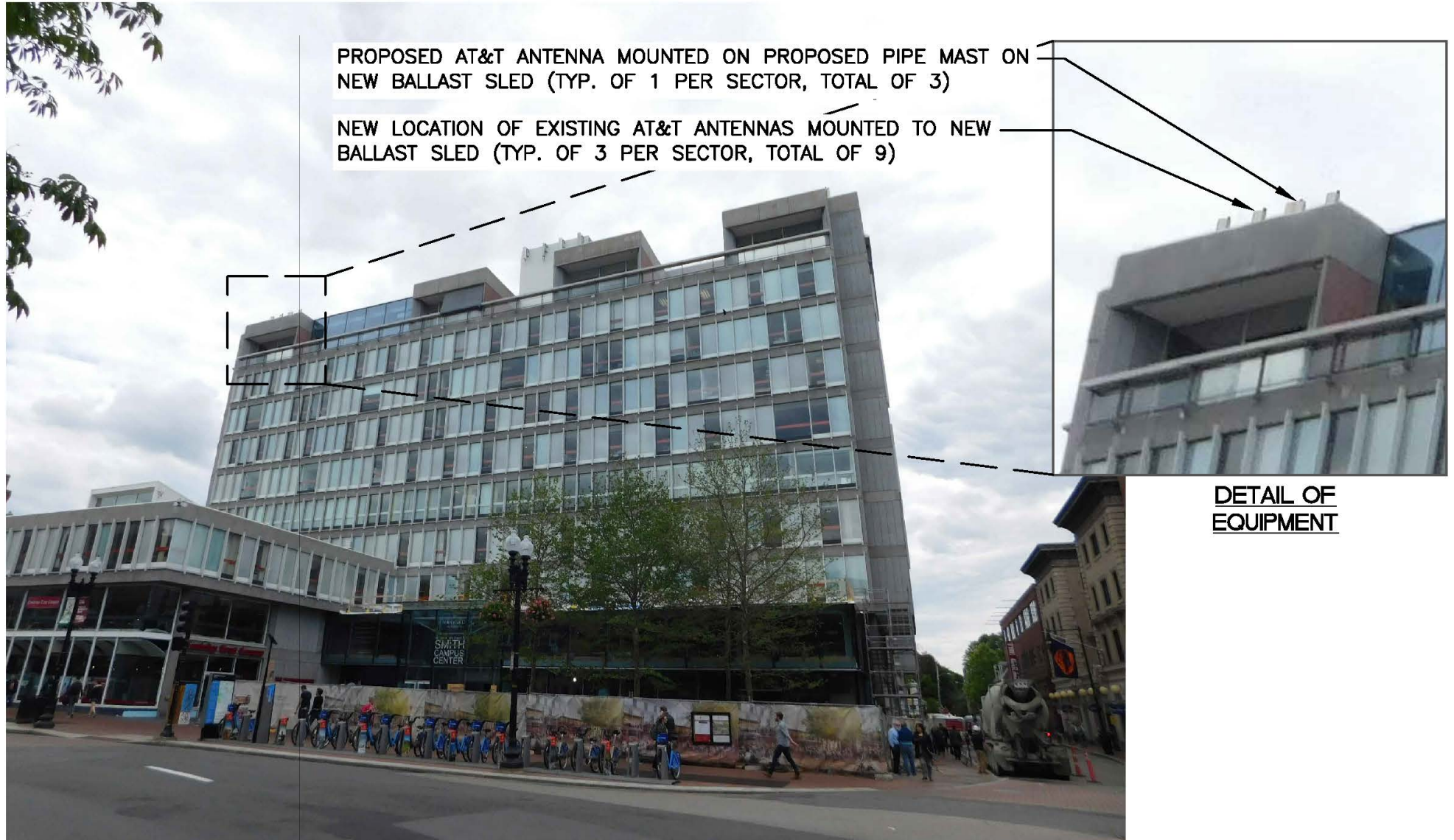
PREPARED FOR:  
 CENTERLINE  
COMMUNICATIONS  
95 RYAN DRIVE  
RAYNHAM, MA 02767

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

SITE TYPE: ROOFTOP  
DATE: 08/23/2018 REV: 0  
DRAWN BY: KB  
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.





VIEW SOUTH FROM THE INTERSECTION MASSACHUSETTS AVENUE  
AND DUNSTER STREET

SITE NO: MA2215  
SITE NAME: CAMBRIDGE, MASS. AVE  
ADDRESS: 1350 MASSACHUSETTS AVE  
CAMBRIDGE, MA



PREPARED FOR:  
 CENTERLINE  
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SITE TYPE: ROOFTOP  
DATE: 08/23/2018 REV: 0  
DRAWN BY: KB  
SCALE: N.T.S.

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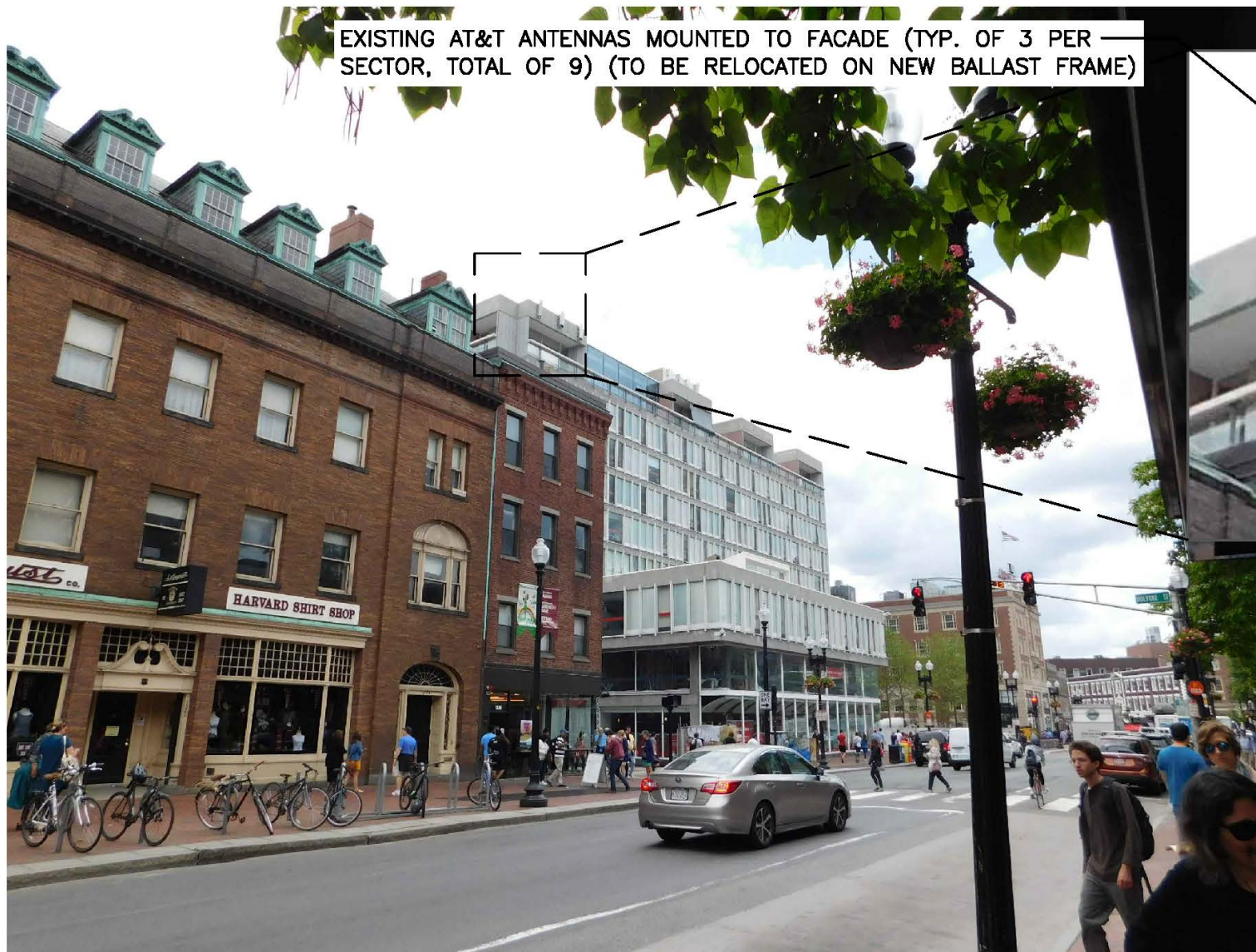


## EXISTING CONDITIONS

## LOCATION # 2

DATE OF PHOTO: 06/07/2018

EXISTING AT&T ANTENNAS MOUNTED TO FACADE (TYP. OF 3 PER SECTOR, TOTAL OF 9) (TO BE RELOCATED ON NEW BALLAST FRAME)



**DETAIL OF  
EQUIPMENT**

**VIEW EAST FROM MASSACHUSETTS AVENUE**

**SITE NO:** MA2215

**SITE NAME:** CAMBRIDGE, MASS. AVE

**ADDRESS:** 1350 MASSACHUSETTS AVE  
CAMBRIDGE, MA



550 COCHITUATE ROAD  
FRAMINGHAM, MA 01701

PREPARED FOR:



95 RYAN DRIVE  
RAYNHAM, MA 02767



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

**SITE TYPE:** ROOFTOP

**DATE:** 08/23/2018 **REV:** 0

**DRAWN BY:** KB

**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.

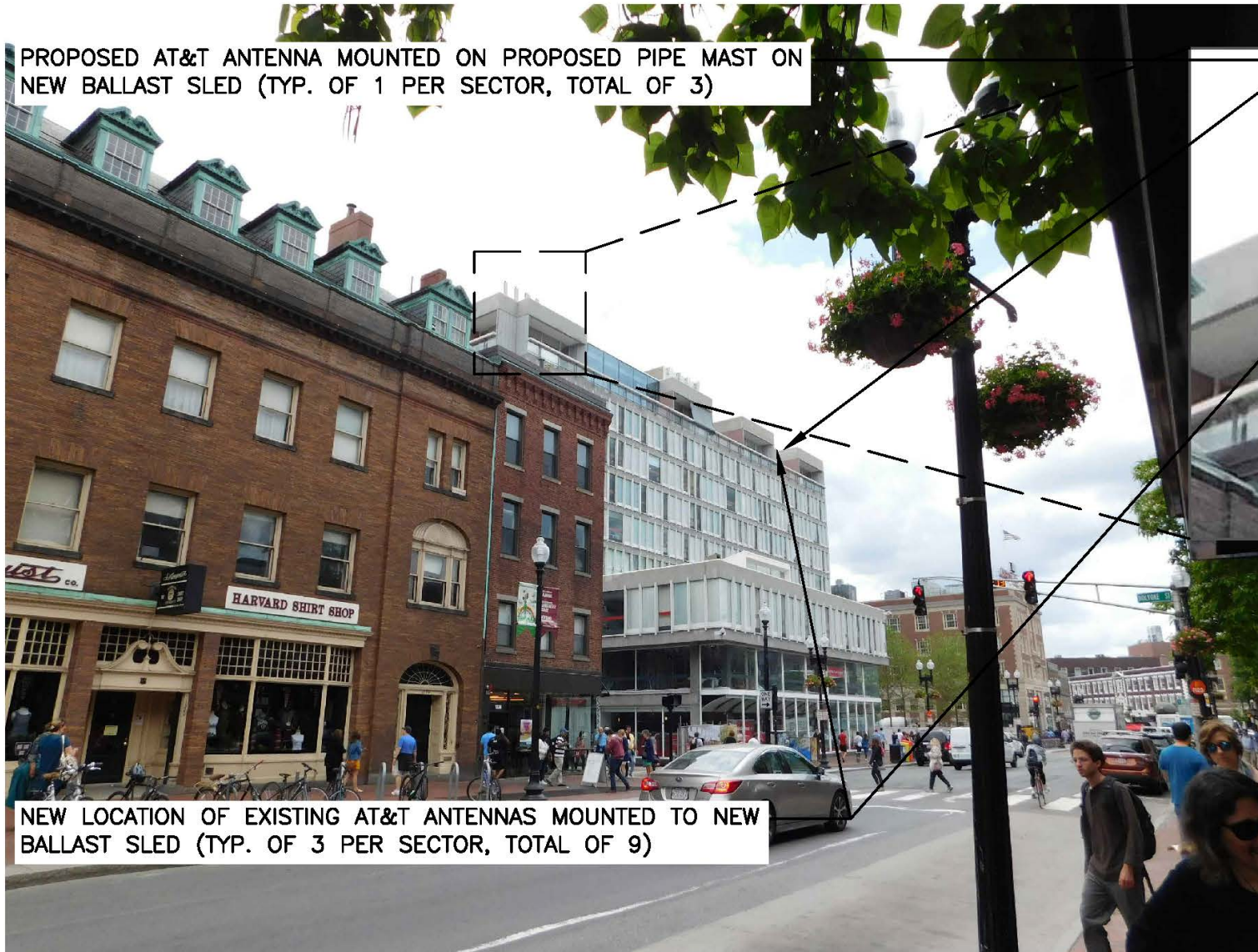


# PROPOSED CONDITIONS

## LOCATION # 2

DATE OF PHOTO: 06/07/2018

PROPOSED AT&T ANTENNA MOUNTED ON PROPOSED PIPE MAST ON NEW BALLAST SLED (TYP. OF 1 PER SECTOR, TOTAL OF 3)



**DETAIL OF  
EQUIPMENT**

NEW LOCATION OF EXISTING AT&T ANTENNAS MOUNTED TO NEW BALLAST SLED (TYP. OF 3 PER SECTOR, TOTAL OF 9)

**VIEW EAST FROM MASSACHUSETTS AVENUE**

**SITE NO:** MA2215

**SITE NAME:** CAMBRIDGE, MASS. AVE

**ADDRESS:** 1350 MASSACHUSETTS AVE  
CAMBRIDGE, MA



550 COCHITUATE ROAD  
FRAMINGHAM, MA 01701

PREPARED FOR:



95 RYAN DRIVE  
RAYNHAM, MA 02767



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

**SITE TYPE:** ROOFTOP

**DATE:** 08/23/2018 **REV:** 0

**DRAWN BY:** KB

**SCALE:** N.T.S.

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**VIEW NORTH FROM THE INTERSECTION OF MT AUBURN STREET  
AND HOLYOKE STREET (PROPOSED EQUIPMENT NOT VISIBLE)**

**SITE NO:** MA2215

**SITE NAME:** CAMBRIDGE, MASS. AVE

**ADDRESS:** 1350 MASSACHUSETTS AVE  
CAMBRIDGE, MA



550 COCHITUATE ROAD  
FRAMINGHAM, MA 01701

PREPARED FOR:



95 RYAN DRIVE  
RAYNHAM, MA 02767



45 BEECHWOOD DRIVE  
N. ANDOVER, MA 01845  
TEL: (978) 557-5553  
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**SITE TYPE:** ROOFTOP

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**VIEW NORTH FROM THE INTERSECTION OF MT AUBURN STREET AND HOLYOKE STREET (PROPOSED EQUIPMENT NOT VISIBLE)**

**SITE NO:** MA2215  
**SITE NAME:** CAMBRIDGE, MASS. AVE  
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# EXISTING CONDITIONS

# LOCATION # 4

DATE OF PHOTO: 06/07/2018

EXISTING AT&T ANTENNAS MOUNTED TO FACADE (TYP. OF 3 PER SECTOR, TOTAL OF 9) (TO BE RELOCATED ON NEW BALLAST FRAME)



**DETAIL OF EQUIPMENT**

**VIEW NORTHWEST FROM MT AUBURN STREET**

**SITE NO:** MA2215  
**SITE NAME:** CAMBRIDGE, MASS. AVE  
**ADDRESS:** 1350 MASSACHUSETTS AVE  
CAMBRIDGE, MA



**PREPARED FOR:**  
  
95 RYAN DRIVE  
RAYNHAM, MA 02767

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

**SITE TYPE:** ROOFTOP  
**DATE:** 08/23/2018 **REV:** 0  
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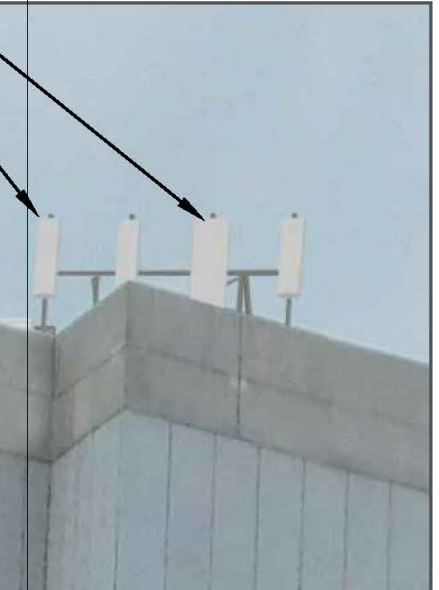
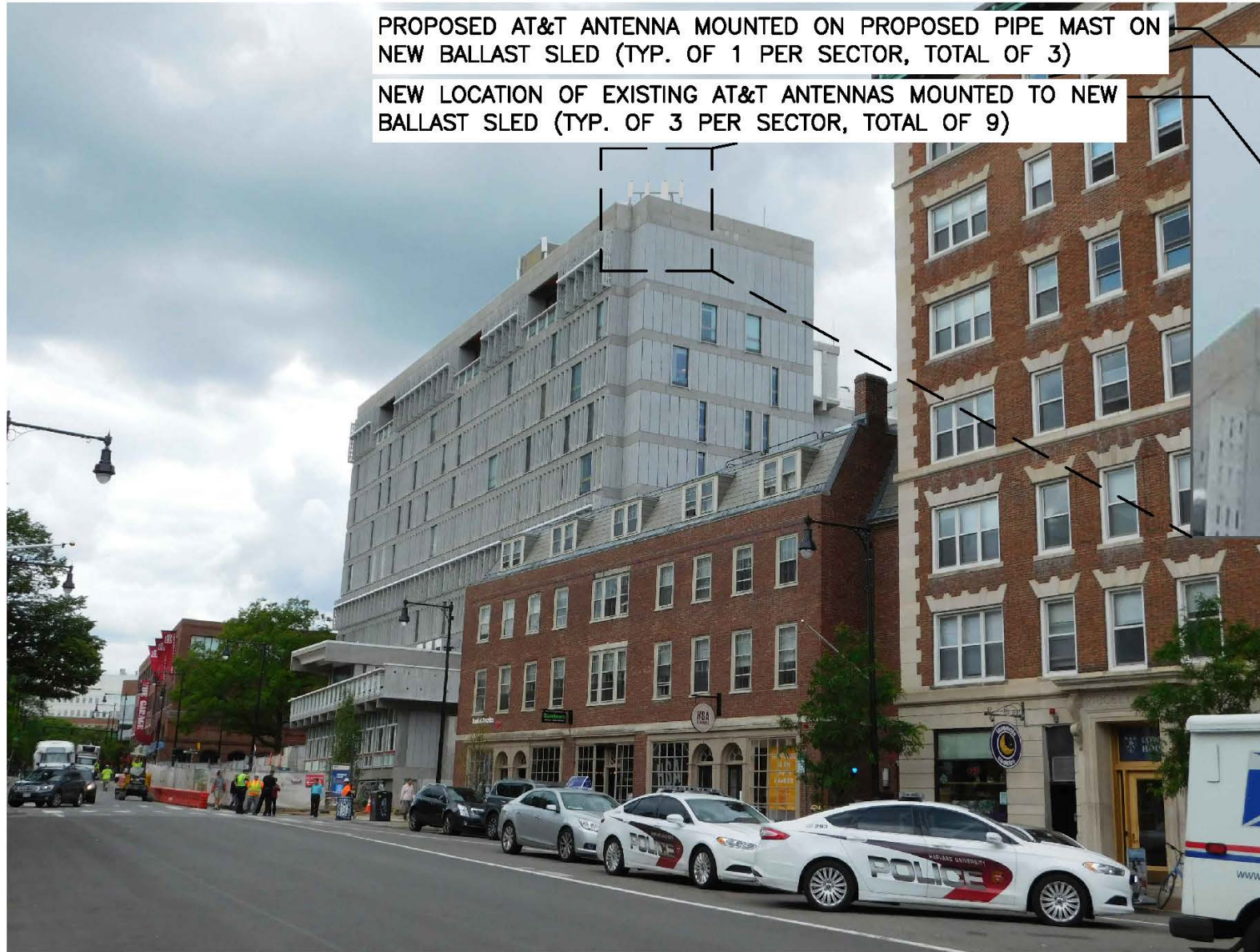
# PROPOSED CONDITIONS

# LOCATION # 4

DATE OF PHOTO: 06/07/2018

PROPOSED AT&T ANTENNA MOUNTED ON PROPOSED PIPE MAST ON NEW BALLAST SLED (TYP. OF 1 PER SECTOR, TOTAL OF 3)

NEW LOCATION OF EXISTING AT&T ANTENNAS MOUNTED TO NEW BALLAST SLED (TYP. OF 3 PER SECTOR, TOTAL OF 9)



**DETAIL OF EQUIPMENT**

**VIEW NORTHWEST FROM MT AUBURN STREET**

**SITE NO:** MA2215  
**SITE NAME:** CAMBRIDGE, MASS. AVE  
**ADDRESS:** 1350 MASSACHUSETTS AVE  
CAMBRIDGE, MA



**PREPARED FOR:**  
  
95 RYAN DRIVE  
RAYNHAM, MA 02767

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

**SITE TYPE:** ROOFTOP  
**DATE:** 08/23/2018 **REV:** 0  
**DRAWN BY:** KB  
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VIEW NORTHEAST FROM MT AUBURN STREET  
(EQUIPMENT NOT VISIBLE)

**SITE NO:** MA2215

**SITE NAME:** CAMBRIDGE, MASS. AVE

**ADDRESS:** 1350 MASSACHUSETTS AVE  
CAMBRIDGE, MA



550 COCHITUATE ROAD  
FRAMINGHAM, MA 01701

PREPARED FOR:



95 RYAN DRIVE  
RAYNHAM, MA 02767



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

**SITE TYPE:** ROOFTOP

**DATE:** 08/23/2018 **REV:** 0

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## EXISTING CONDITIONS

## LOCATION # 6

DATE OF PHOTO: 06/07/2018

EXISTING AT&T LTE ANTENNAS MOUNTED TO FACADE (TYP. OF 3 PER SECTOR, TOTAL OF 9) (TO BE RELOCATED ON NEW BALLAST FRAME)



DETAIL OF EQUIPMENT

**VIEW NORTHEAST FROM THE INTERSECTION OF MT AUBURN STREET  
AND J.F. KENNEDY STREET**

**SITE NO:** MA2215

**SITE NAME:** CAMBRIDGE, MASS. AVE

**ADDRESS:** 1350 MASSACHUSETTS AVE  
CAMBRIDGE, MA



550 COCHITUATE ROAD  
FRAMINGHAM, MA 01701

PREPARED FOR:



95 RYAN DRIVE  
RAYNHAM, MA 02767



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

**SITE TYPE:** ROOFTOP

**DATE:** 08/23/2018 **REV:** 0

**DRAWN BY:** KB

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# PROPOSED CONDITIONS

# LOCATION # 6

DATE OF PHOTO: 06/07/2018

PROPOSED AT&T ANTENNA MOUNTED ON PROPOSED PIPE MAST ON  
NEW BALLAST SLED (TYP. OF 1 PER SECTOR, TOTAL OF 3)



DETAIL OF  
EQUIPMENT

NEW LOCATION OF EXISTING AT&T ANTENNAS MOUNTED TO NEW  
BALLAST SLED (TYP. OF 3 PER SECTOR, TOTAL OF 9)

**VIEW NORTHEAST FROM THE INTERSECTION OF MT AUBURN STREET  
AND J.F. KENNEDY STREET**

**SITE NO:** MA2215  
**SITE NAME:** CAMBRIDGE, MASS. AVE  
**ADDRESS:** 1350 MASSACHUSETTS AVE  
CAMBRIDGE, MA



**SITE TYPE:** ROOFTOP  
**DATE:** 08/23/2018 **REV:** 0  
**DRAWN BY:** KB  
**SCALE:** N.T.S.

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LOCATIONS AVAILABLE TO DATE.

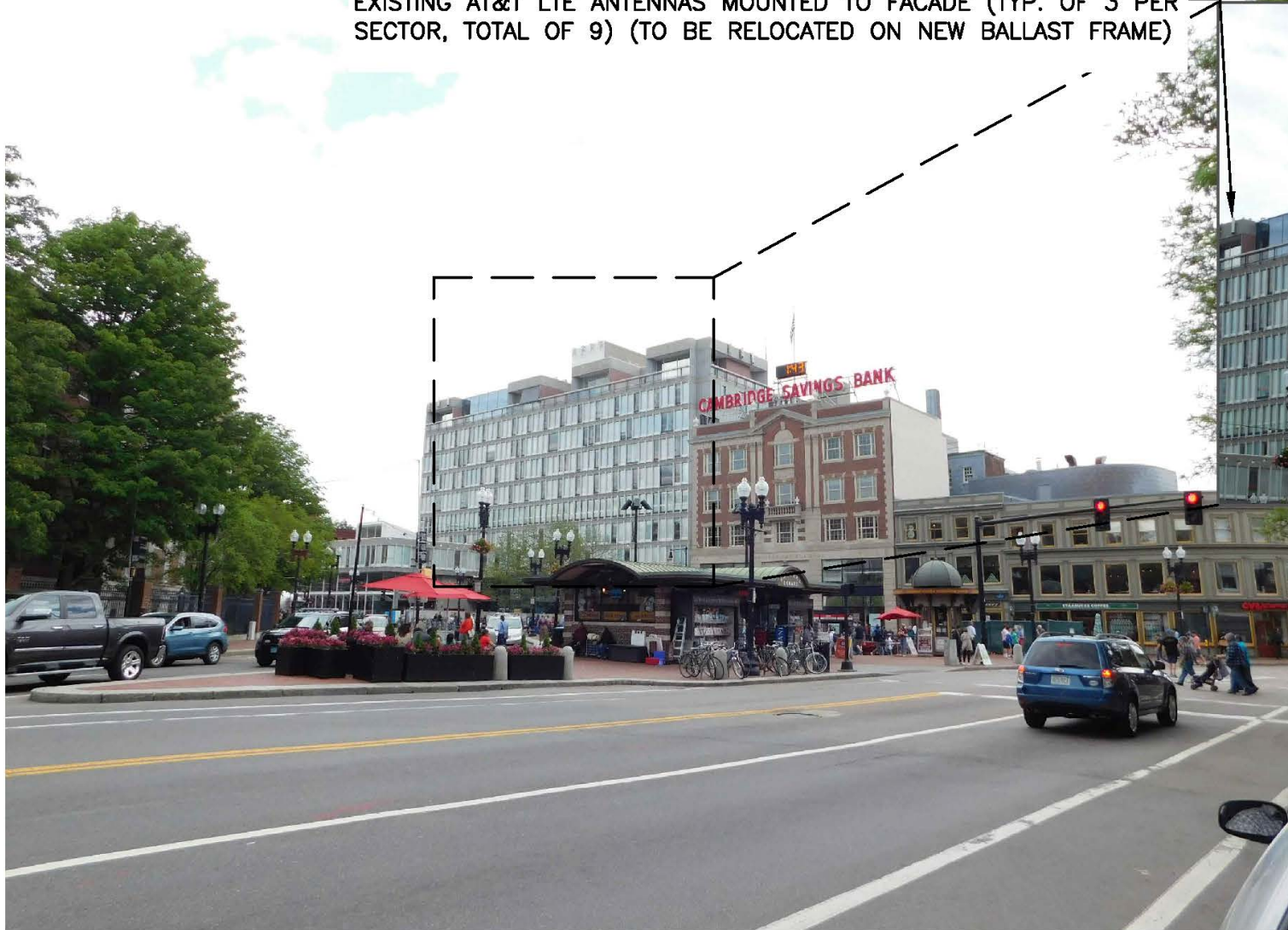


# EXISTING CONDITIONS

# LOCATION # 7

DATE OF PHOTO: 06/07/2018

EXISTING AT&T LTE ANTENNAS MOUNTED TO FACADE (TYP. OF 3 PER SECTOR, TOTAL OF 9) (TO BE RELOCATED ON NEW BALLAST FRAME)



**DETAIL OF EQUIPMENT**

**VIEW SOUTHWEST FROM THE INTERSECTION OF MASSACHUSETTS AVE AND HARVARD SQUARE**

**SITE NO:** MA2215

**SITE NAME:** CAMBRIDGE, MASS. AVE

**ADDRESS:** 1350 MASSACHUSETTS AVE  
CAMBRIDGE, MA



550 COCHITUATE ROAD  
FRAMINGHAM, MA 01701

PREPARED FOR:



95 RYAN DRIVE  
RAYNHAM, MA 02767



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

**SITE TYPE:** ROOFTOP

**DATE:** 08/23/2018 **REV:** 0

**DRAWN BY:** KB

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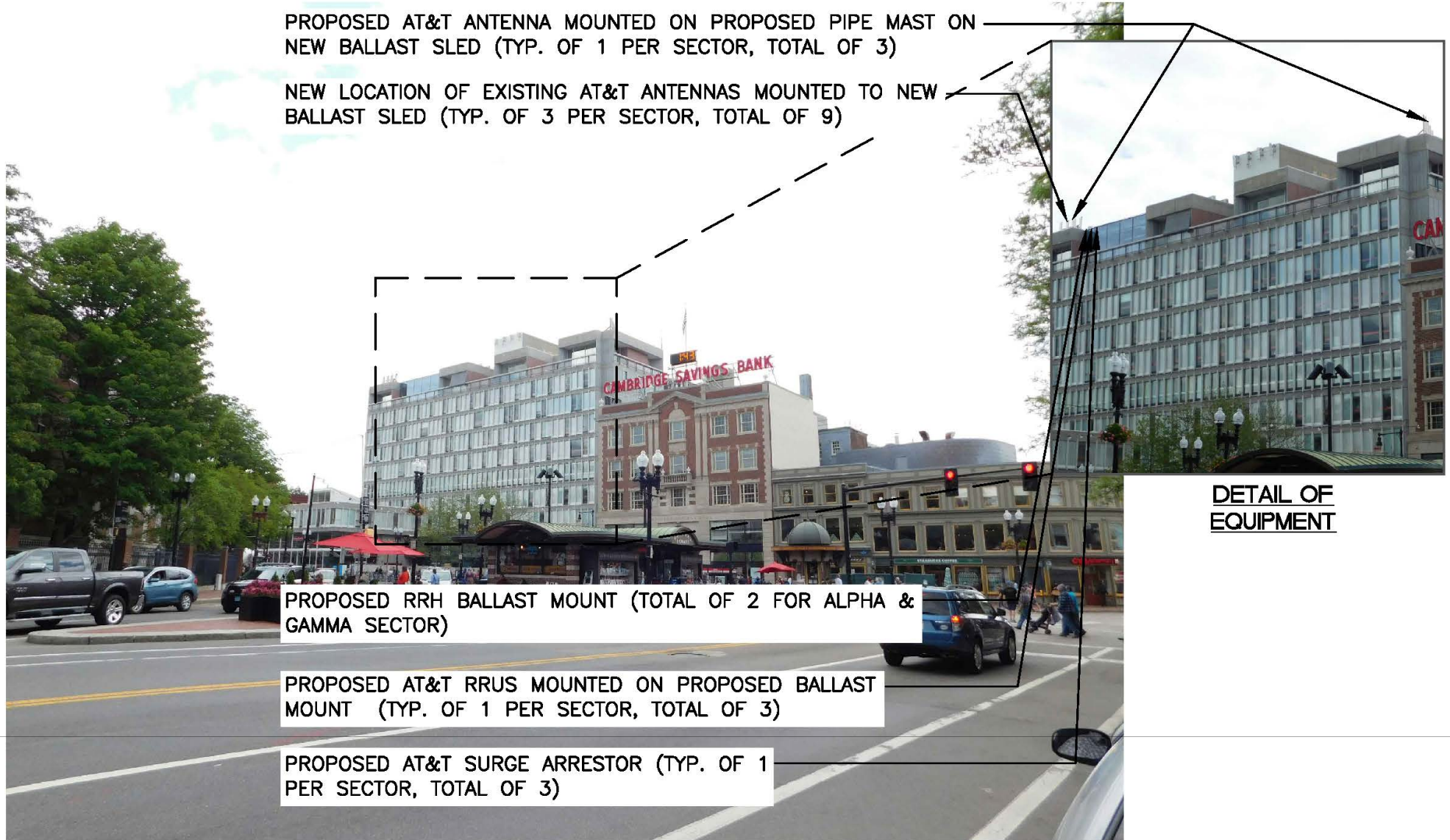
## PROPOSED CONDITIONS

## LOCATION # 7

DATE OF PHOTO: 06/07/2018

PROPOSED AT&T ANTENNA MOUNTED ON PROPOSED PIPE MAST ON  
NEW BALLAST SLED (TYP. OF 1 PER SECTOR, TOTAL OF 3)

NEW LOCATION OF EXISTING AT&T ANTENNAS MOUNTED TO NEW  
BALLAST SLED (TYP. OF 3 PER SECTOR, TOTAL OF 9)



**DETAIL OF  
EQUIPMENT**

PROPOSED RRH BALLAST MOUNT (TOTAL OF 2 FOR ALPHA &  
GAMMA SECTOR)

PROPOSED AT&T RRUS MOUNTED ON PROPOSED BALLAST  
MOUNT (TYP. OF 1 PER SECTOR, TOTAL OF 3)

PROPOSED AT&T SURGE ARRESTOR (TYP. OF 1  
PER SECTOR, TOTAL OF 3)

## VIEW SOUTHWEST FROM THE INTERSECTION OF MASSACHUSETTS AVE AND HARVARD SQUARE

**SITE NO:** MA2215

**SITE NAME:** CAMBRIDGE, MASS. AVE

**ADDRESS:** 1350 MASSACHUSETTS AVE  
CAMBRIDGE, MA



550 COCHITUATE ROAD  
FRAMINGHAM, MA 01701

PREPARED FOR:



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**SITE TYPE:** ROOFTOP

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LOCATIONS AVAILABLE TO DATE.





AT&T Mobility  
550 Cochituate Road  
Suite 13 & 14  
Framingham, MA 01701

**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 add three 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 1350 Massachusetts Avenue, Cambridge, MA 02138 (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 begin 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 1350 Cambridge Park Drive to provide better LTE coverage to area. This proposed modification consists of installing three (3) new 4426 B66; installing three (3) new 4478 B14; add three (3) 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, MA 01701

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*



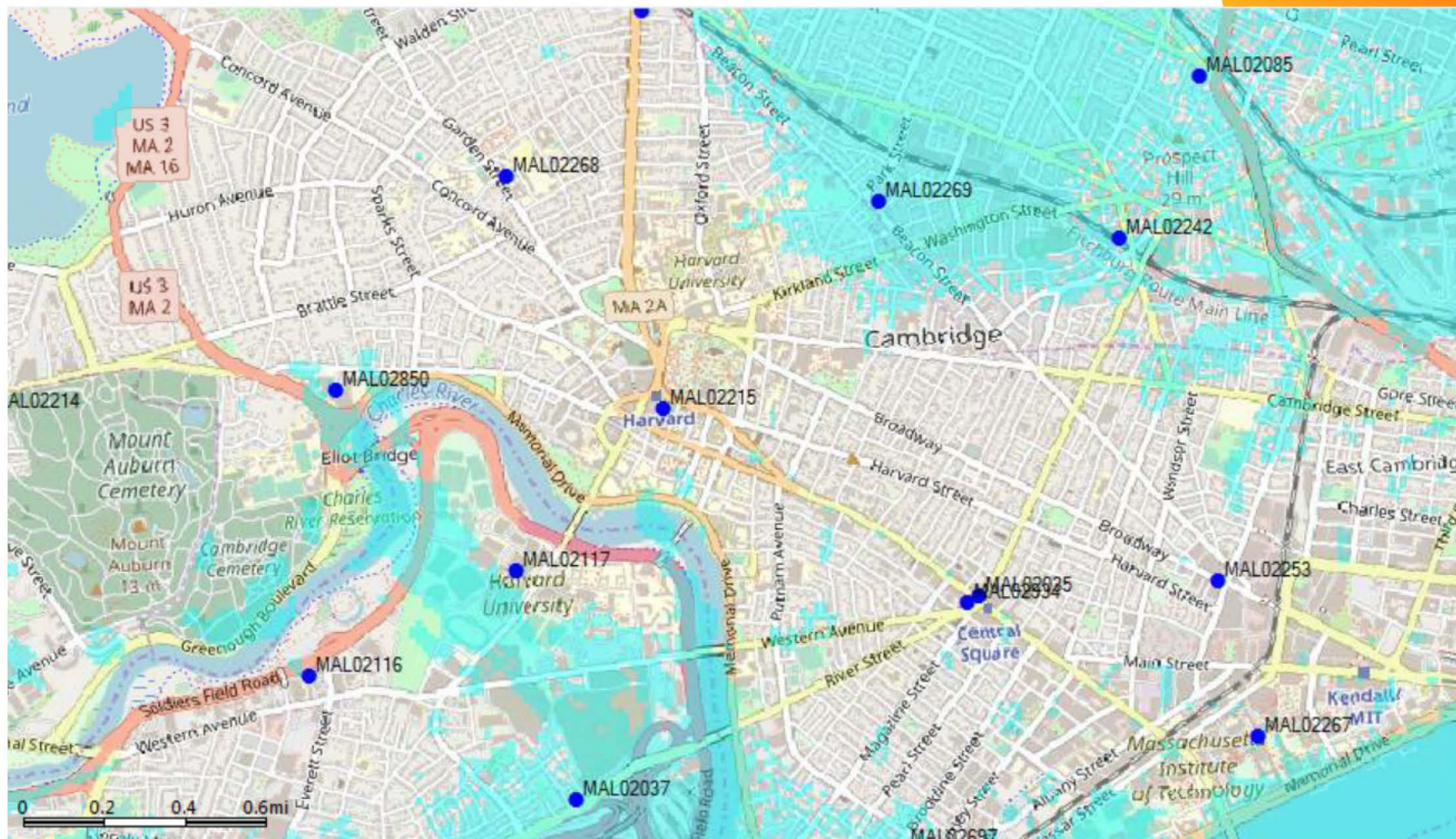
# MAL02215 LTE Plots

- Zoning LTE AWS & 700 Band 14 Plots



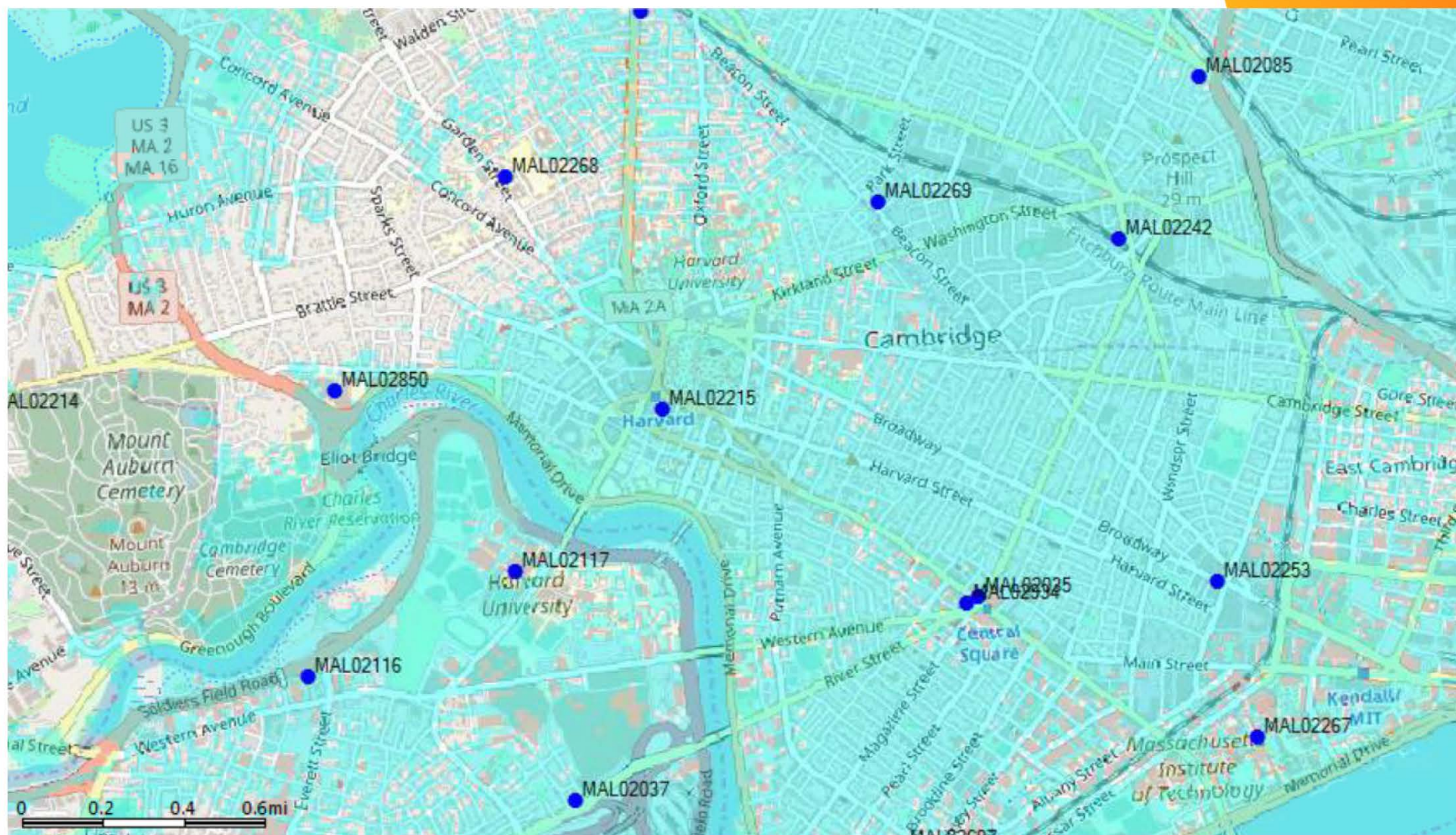


# Current LTE AWS Band Coverage



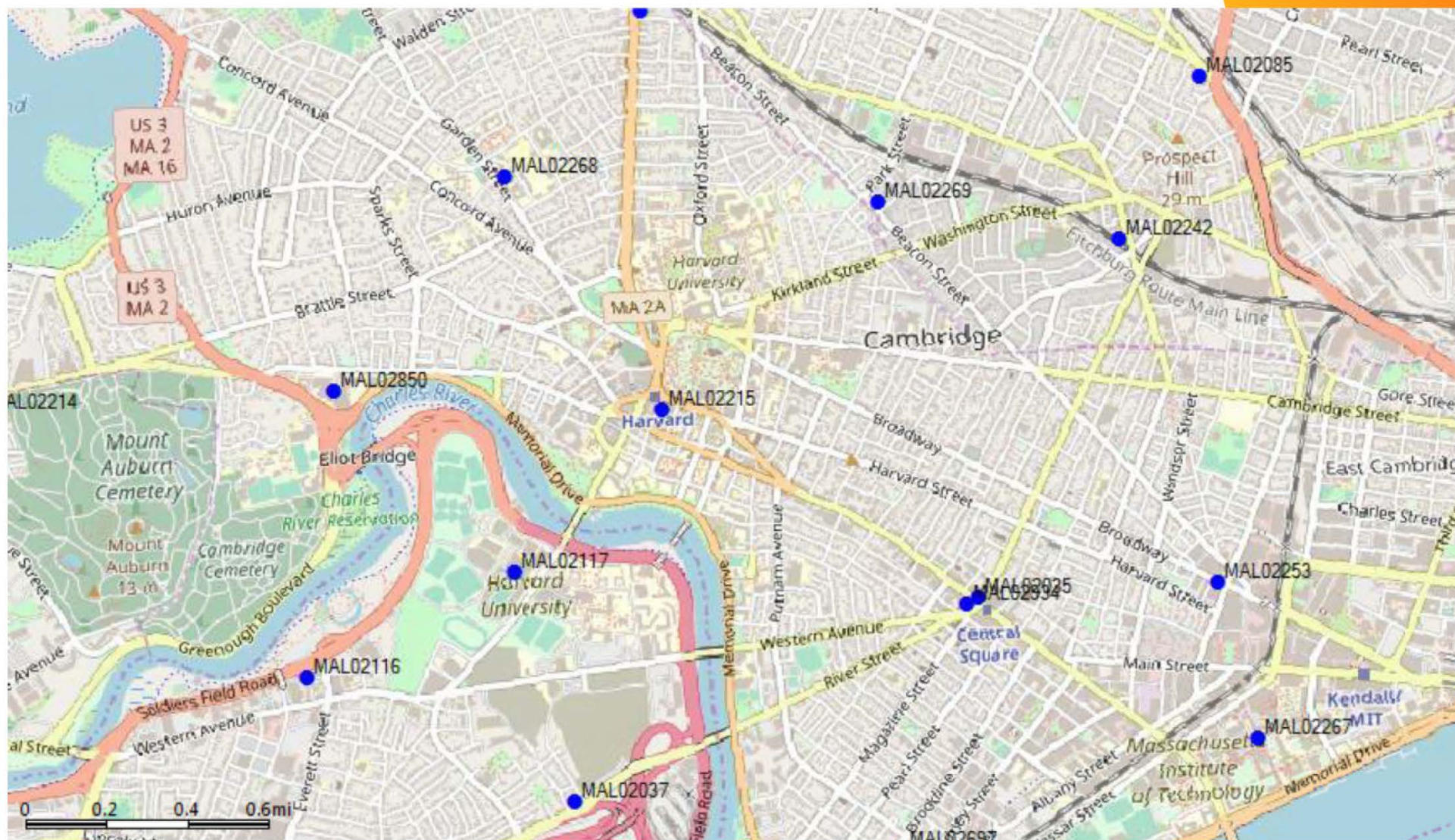


## With Proposed MAL02215 AWS Band Coverage





# Current LTE 700 Band 14 Coverage





## With Proposed MAL02215 700 Band 14 Coverage

