CITY OF CAMBRIDGE

BOARD OF ZONING APPEAL

831 Massachusetts Avenue, Cambridge MA 02139

617-349-6100

2025 SEP 18 AM 10: 24

OFFICE OF THE CITY CLERK
CAMBRIDGE, MASSACHUSETTS

BZA Application Form

BZA Number: 1182932

General Information

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

Special Permit: ___X___ Variance: _____ Appeal: _____

PETITIONER: Massachusetts Institute of Technology C/O Timothy Greene/SAI Group

PETITIONER'S ADDRESS: 157 Riverside Drive, Norwell, MA 02061

LOCATION OF PROPERTY: **60 Vassar St , Cambridge, MA**

TYPE OF OCCUPANCY: Education/Wireless telecommunications

ZONING DISTRICT: Residence C-3 Zone

REASON FOR PETITION:

/Telecommunication Facility (antenna)/

DESCRIPTION OF PETITIONER'S PROPOSAL:

AT&T will be adding 3 panel antennas to its existing facility on site. AT&T will also be replacing and upgrading equipment as part of nationwide upgrades to its existing facility on site.

SECTIONS OF ZONING ORDINANCE CITED:

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

Original Signature(s):

(Petitioner (s) / Owner)

Timothy W. Greene

(Print Name)

Address: 157 Riverside Drive, Norwell, MA 02061
Tel. No. 617-877-2950
E-Mail Address: tgreene@terrasearchllc.com

Date: 9/12/25

BZA Application Form

DIMENSIONAL INFORMATION

Applicant: Massachusetts Institute of Technology
Location: 60 Vassar St , Cambridge, MA
Phone: 617-877-2950

Present Use/Occupancy: Education/Wireless telecommunications
Zone: Residence C-3 Zone
Requested Use/Occupancy: Education/Wireless telecommunications

		Existing Conditions		Requested Conditions		Ordinance Requirements	
TOTAL GROSS FLOOR AREA:		0		0		0	(max.)
LOT AREA:		0		0		0	(min.)
RATIO OF GROSS FLOOR AREA TO LOT AREA: [2]		0		0		0	
LOT AREA OF EACH DWELLING UNIT		0		0		0	
SIZE OF LOT:	WIDTH	0		0		0	
	DEPTH	0		0		0	
SETBACKS IN FEET:	FRONT	0		0		0	
	REAR	0		0		0	
	LEFT SIDE	0		0		0	
	RIGHT SIDE	0		0		0	
SIZE OF BUILDING:	HEIGHT	0		0		0	
	WIDTH	0		0		0	
	LENGTH	0		0		0	
RATIO OF USABLE OPEN SPACE TO LOT AREA:		0		0		0	
NO. OF DWELLING UNITS:		0		0		0	
NO. OF PARKING SPACES:		0		0		0	
NO. OF LOADING AREAS:		0		0		0	
DISTANCE TO NEAREST BLDG. ON SAME LOT		0		0		0	

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

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 Massachusetts Institute of Technology
(OWNER)

Address: 77 Massachusetts Ave.

State that I/We own the property located at 77 Massachusetts Ave.
which is the subject of this zoning application.

The record title of this property is in the name of Massachusetts Institute of Technology

*Pursuant to a deed of duly recorded in the date 3/22/1917 Middlesex South County Registry of Deeds at Book 3678, Page 190; or

Middlesex Registry District of Land Court, Certificate No. _____

Book _____ Page _____.

_____
*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 Glen Shor personally appeared before me,

this 2 of July, 2025, and made oath that the above statement is true.

Lydia S Devlin Notary

My commission expires 2/3/2028 (Notary Seal)

Lydia S. Devlin
Notary Public
COMMONWEALTH OF MASSACHUSETTS
My Commission Expires
February 3, 2028

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

September 9, 2025

Paula Crane, City Clerk City of Cambridge City Hall 795 Massachusetts Avenue Cambridge, MA 02139	Jim Monteverde, Chair Board of Zoning Appeal City Hall 795 Massachusetts Avenue Cambridge, MA 02139

Applicant:	New Cingular Wireless PCS, LLC ("AT&T")
Property Address:	60 Vassar Street. Assessor's Map 52A, Lot 21 (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. Crane, Mr. Monteverde 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 60 Vassar Street (the "Special Permit Application").[2]

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

Under Section 6409, AT&T's proposed modification of its existing transmission equipment on and within the existing building, previously approved by the Board for use as a wireless communication base station, 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.

In the alternative, as demonstrated in this application letter, the AT&T's proposed modifications to its existing Facility on the Property located in the C-3 zoning district satisfy the requirements for the grant of a special permit pursuant to Section 10.43 of the Ordinance.

I. APPLICATION PACKAGE

Enclosed with this application are the following materials:

1. The following completed and signed application forms:

   a. BZA Application Form – Electronic Filing;

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

3. Drawings by TEP Group consisting of 15 pages dated 7/23/25;

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

5. Photographs of the existing building and photosimulations of the proposed modifications Facility by Virtual Site Simulations, LLC., dated 3/11/25;

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

7. Structural Analysis by Hudson Design Group LLC dated 2/8/25;

8. Maximum Permissible Exposure Study, Theoretical Report, by C2 Systems, dated March 31, 2025;

9. Letter of Authorization from Owner of Subject Property;

10. Deed to subject property

II. PROPOSED FACILITY DESIGN

AT&T seeks to modify the existing Facility on and within the building located at the Property. The existing Facility consists of twelve (12) panel antennas (Alpha Sector: 4 antennas, Beta Sector: 4 antennas, and Gamma Sector: 4 antennas) that are mounted in three (3) locations. The proposed modifications include the addition of one (1) antenna per sector. The additional antennas will be mounted to the existing antenna mounts consistent with the current Facility's design. Three (3) remote radio-head units (RRUs) (one per sector) will be added in close proximity to the antennas. Consistent with the concealment elements of the existing Facility's design, the proposed replacement antennas will be painted to match the color and texture of the existing façade. The proposed RRUs will match the color of the existing RRUs.

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

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

III. BACKGROUND

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

IV. RF COVERAGE DETERMINATION

AT&T has performed a study of radio frequency coverage for the City of Cambridge and from the Property, the results of which are described in the Radio Frequency Report submitted with this application (*see* Exhibit 6). Without the proposed modifications to its existing Facility, AT&T has a substantial coverage gap in this area of Cambridge. AT&T has determined that the proposed modifications to the existing Facility located on the building at the Property will provide needed coverage to the targeted sections of the City and the immediately surrounding area if AT&T's antennas are located on the building 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 3.45GHz and 3.7GHz band authorized for AT&T's service. The maps show dramatic improvements to wireless coverage in that band with the inclusion of the proposed Facility,

V. THE FEDERAL SPECTRUM ACT AND THE FCC ORDER

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

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

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

---

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

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

47 U.S.C. § 1455(a)(2).

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

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

FCC Order, ¶ 88.

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

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

Therefore, as set forth in the FCC Order and Attorney General's opinion letters, the City cannot impose a requirement that AT&T obtain a special permit, or an amendment to an existing special

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

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

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

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

VI. THE PROPOSED MODIFICATIONS ARE AN ELIGIBLE FACILITIES REQUEST

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

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

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

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

(i) Result in an increase in "the height of the structure by more than 10% or more than ten feet, whichever is greater" because the proposed replacement antennas will be façade mounted and located below the roofline and therefore will not exceed 10 feet above the existing building and the proposed roof mounted RRUs and surge arrestors will also not exceed 10 feet above the existing building;

(ii) Protrude from the edge of the edge of the building by more than six feet because AT&T's proposed antennas will not protrude more than six feet from building façade;

(iii) Involve the installation of more than the standard number of new equipment cabinets for the technology involved, but not to exceed four cabinets 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 replacement antennas will be painted and textured to match the façade of the existing building on which the existing and proposed antennas will be located and will continue to integrate the Facility into the existing architecture of the building. Further, the proposed and surge arrestors will be mounted in a manner and color consistent with the existing RRUs and surge arrestors. Therefore, AT&T's proposed Facility will remain aesthetically consistent with the exterior finish of the building as well as maintain the concealment elements of the original design.

See FCC Order, §1.40001(b)(7)(i)-(v).

VII. COMPLIANCE WITH THE CAMBRIDGE ZONING ORDINANCE

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

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

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

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

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**

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

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

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 replacement antennas and associated equipment, on the building's façade, minimizes the visual impact of the proposed Facility. This is because the antennas and equipment on the exterior façade surfaces will be painted to match the color and texture of the building so as to be minimally visible and consistent with the concealment elements of the existing Facility. The minimal visual impact of the Facility is shown in the photographs of the existing Facility and the photosimulations that superimpose the proposed modifications to the existing Facility (*see,* Exhibit 5).

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

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

AT&T's Response: As demonstrated by the Radio Frequency Report and the associated coverage maps, AT&T has demonstrated an immediate and compelling need for the proposed modifications to its existing Facility located at the Property in order to provide substantially improved indoor coverage to residents, businesses, students and faculty, and the general public in that area.[8] AT&T also seeks to substantially improve its ability to satisfy the ever-increasing need of its customers for data accessibility, navigation and use. This is especially critical in and around the area Vassar Street, Massachusetts Avenue and the surrounding MIT campus. AT&T proposes to satisfy its RF coverage needs in the area by adding to the existing Facility the antennas and equipment necessary to provide the latest LTE wireless communications service technology. By modifying its existing Facility, AT&T obviates the need to construct an entirely new facility within this area of Cambridge in order to meet its wireless network coverage needs.

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

[8] AT&T must generate a signal strength of at least -74 dBm to provide serviceable voice and data coverage on its mobile wireless devices in indoor environments. AT&T also seeks to substantially improve its data navigation service coverage in the area by including antennas and equipment that will provide LTE service.

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 photosimulations (*see* Exhibit 5) the proposed modifications to the existing Facility will result in a *de minimis* change in the appearance of the building because the equipment will be located on building exterior surfaces. As a result, the Facility as a whole either will be hidden from view or will visually blend with existing characteristics of the building and the surrounding neighborhood. Because the proposed installation will not generate any traffic, smoke, dust, heat or glare, discharge noxious substances, nor pollute waterways or groundwater, it will not adversely affect residential uses on neighboring streets. Conversely, the surrounding properties and general public will benefit from the potential to enjoy improved wireless communications services. Granting the special permit

would not be a detriment to the public interest and is consistent with the Board's obligations pursuant to the Spectrum Act and FCC Order.

(d) Nuisance or hazard would be created to the detriment of the health, safety and/or welfare of the occupant of the proposed use or the citizens of the City, or

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

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

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

As noted above, the proposed modifications to the existing Facility directly accord with the purposes of the Ordinance because the modifications will not result in any traffic, smoke, dust, heat or glare, discharge noxious substances, nor pollute waterways or groundwater. As the Facility will improve the ability of residents, businesses, travelers and drivers in the area to access state-of-the-art wireless technology, the City's ability to provide emergency services will be improved, as will the economic development of the City as more people will be able to conduct commerce by virtue of a mobile platform. Because the proposed modifications to the existing Facility will be installed on an existing building that includes the Facility, and the proposed modifications are consistent with the existing concealment elements, the proposed modifications to the existing Facility are in consistent with the building's character and will not affect the value of the building or the natural resources of the City. Because the proposed modifications to the existing Facility are designed to be consistent with the existing concealment elements of the Facility and characteristics of the

Property, the visual impact on the underlying and adjacent zoning districts will be *de minimis*. As a result, the proposed modifications to the existing Facility are consistent with the Ordinance's purpose to allow for less intrusive wireless telecommunications facilities in all districts (other than Open Space) including the applicable overlay districts, and the underlying C-3 district. Granting the special permit would not be a detriment to the public interest and is consistent with the Board's obligations pursuant to the Spectrum Act and FCC Order.

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

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

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

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

AT&T's Response: The existing Facility is located on n the existing building, some of the equipment of which is hidden from view behind the screen wall on the existing building, or otherwise obstructed from view, and the remaining equipment blends with the structures and colors of the building. The proposed modifications to the existing Facility are consistent with the previously approved design and concealment elements of the existing Facility. Therefore, the proposed modifications are responsive to the existing pattern of development in the Property's applicable zoning and overlay districts.

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

AT&T's Response: The existing Facility is located on and within the existing building. The Facility is only accessed by authorized AT&T personnel for routine maintenance one to two times per month and is not accessed by the general public. The proposed modifications to the existing

Facility will not result in any increase in routine visits nor otherwise result in a change in traffic patterns in the vicinity of the Property that would affect pedestrian flow or cyclists' access to the building or surrounding areas within the Property's applicable zoning districts.

> **19.33 The building and site design should mitigate adverse environmental impacts of a development upon its neighbors. Indicators include[9]**
>
> **(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 photosimulations (*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 and the concealment elements of the design of the Facility. 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.

---

[9] 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 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 blend with the color and

(2) Trash that is located 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.

<u>AT&T's Response</u>: 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.

<u>AT&T's Response</u>: 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.

<u>AT&T's Response</u>: 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.

<u>AT&T's Response</u>: 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.

<u>AT&T's Response</u>: 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.

<u>AT&T's Response</u>: The existing Facility and proposed modifications are located entirely on 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.

<u>AT&T's Response</u>: The proposed modifications to the existing Facility will not change the building's scale because antennas and equipment will blend with the color and

textures of 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 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 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 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,

Timothy W. Greene
Authorized Agent to New Cingular Wireless PCS, LLC ("AT&T")

PROJECT INFORMATION

SCOPE OF WORK:

ITEMS TO BE MOUNTED ON THE EXISTING ROOF TOP:
- NEW AT&T ANTENNAS: DMP65R-BU4D (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- NEW AT&T ANTENNAS: QD6616-7 (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- NEW AT&T ANTENNAS: AIR6449 B77D+AIR6419 B77G STACKED (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- NEW AT&T RRUS: RRUS-4415 B25 (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- NEW AT&T DC & FIBER SURGE ARRESTOR: DC9-48-60-24-PC16-EV (TYP. OF 1 PER SECTOR TOTAL OF 3) WITH 4AWG DC TRUNK (TYP. OF 1 PER SECTOR TOTAL OF 3).

ITEMS TO BE MOUNTED AT EQUIPMENT LOCATION:
- ADD (3) 6673 FHG.
- ADD (4) RECTIFIERS.
- ADD -58v CONVERTER KIT.
- NEW AT&T BATTERY CABINET W/ (3) STRINGS OF BATTERIES (TOTAL OF 12)

ITEMS TO BE REMOVED:
- EXISTING AT&T ANTENNA: OPA-65R-LCUU-H4 (TYP. OF 2 PER SECTOR, TOTAL OF 6).
- EXISTING AT&T ANTENNA: 800-10964 (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- EXISTING AT&T RRUS: RRUS-12 B2 (TYP. OF 2 PER SECTOR, TOTAL OF 6).
- EXISTING AT&T DIPLEXERS: LGP21901 (TYP. OF 2 PER SECTOR, TOTAL OF 6).
- EXISTING AT&T SURGE ARRESTOR: DC6-48-60-0-8C-EV (DC ONLY) (TYP. OF 1 PER SECTOR, TOTAL OF 3)
- EXISTING AT&T (3) DC POWER TRUNKS (TYP. OF 1 PER SECTOR, TOTAL OF 3).

ITEMS TO REMAIN:
- (3) ANTENNAS, (15) RRU'S, (3) SURGE ARRESTORS (NEMA), (9) DC POWER & (3) FIBER.

SITE ADDRESS:	77 MASSACHUSETTS AVENUE CAMBRIDGE, MA 02139
LATITUDE:	42.360444° N 42° 21' 37.59" N
LONGITUDE:	71.090686° W 71° 05' 26.46" W
TYPE OF SITE:	ROOF TOP / OUTDOOR EQUIPMENT
STRUCTURE HEIGHT:	123'-0"± (ROOF TOP)
RAD CENTER:	120'-0"±
CURRENT USE:	TELECOMMUNICATIONS FACILITY
PROPOSED USE:	TELECOMMUNICATIONS FACILITY

DRAWING INDEX

SHEET NO.	DESCRIPTION	REV.
T-1	TITLE SHEET	6
GN-1	GENERAL NOTES	6
A-1	ROOFTOP & EQUIPMENT PLANS	6
A-2	EXISTING ANTENNA PLAN	6
A-3	PROPOSED ANTENNA PLAN	6
A-4	ELEVATION	6
A-5	DETAILS	6
A-6	DETAILS	6
SN-1	STRUCTURAL NOTES	6
S-1	STRUCTURAL MODIFICATION DESIGN	6
G-1	GROUNDING DETAILS	6
E-1	ELECTRICAL NOTES AND DETAILS	6
E-2	ELECTRICAL ONE LINE DIAGRAM	6
RF-1	RF PLUMBING DIAGRAM	6

SITE NUMBER: MAL02267

SITE NAME: MIT DORRANCE BLDG #16

FA CODE: 10063414

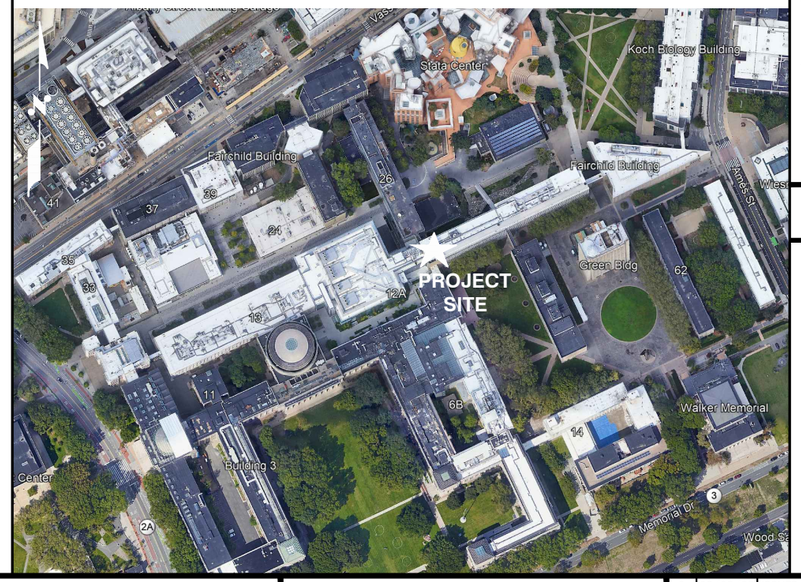
PACE ID: MRCTB051745, MRCTB051721, MRCTB052217, MRCTB051728

PROJECT: C-BAND UPGRADE

VICINITY MAP

DIRECTIONS TO SITE:

TAKE THE RAMP TO I-90 E/MASSPIKE W/SPRINGFIELD/BOSTON. TOLL ROAD. 0.6 MILES. KEEP RIGHT AT THE FORK TO CONTINUE TOWARD I-90 E AND MERGE ONTO I-90 E. PARTIAL TOLL ROAD. 14.0 MILES. TAKE EXIT 18 ON THE LEFT TOWARD BRIGHTON/CAMBRIDGE. TOLL ROAD. 0.4 MILES. KEEP RIGHT AT THE FORK TO CONTINUE TOWARD CAMBRIDGE ST AND MERGE ONTO CAMBRIDGE ST. PARTIAL TOLL ROAD. 0.3 MILES. CONTINUE ONTO RIVER ST. 0.7 MILES. TURN RIGHT AT MASSACHUSETTS AVE/MASSACHUSETTS 2A E. 0.7 MILES. END AT 77 MASSACHUSETTS AVE, CAMBRIDGE.



GENERAL NOTES

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

UNDERGROUND SERVICE ALERT

811 DigSafe MA-ME-NH-RI-VT

TEP OPCO, L

WWW.DIGSAFE.COM
72 HOURS PRIOR

SCOTT C PRANTILEY
CIVIL
No. 56874
REGISTERED PROFESSIONAL ENGINEER
COMMONWEALTH OF MASSACHUSETTS

TEP OPCO, LLC.
45 BEECHWOOD DR.
NORTH ANDOVER, MA 01845
OFFICE: (978) 557-5553

12 INDUSTRIAL WAY
SALEM, NH 03079

SITE NUMBER: MAL02267
SITE NAME: MIT DORRANCE BLDG #16

77 MASSACHUSETTS AVENUE
CAMBRIDGE, MA 02139
MIDDLESEX COUNTY

492 OLD CONNECTICUT
PATH SUITE #210
FRAMINGHAM, MA 01701

NO.	DATE	REVISIONS	BY	CHK	APP'D
6	08/28/25	ISSUED FOR CONSTRUCTION	SG	JC	DPH
5	07/23/25	ISSUED FOR CONSTRUCTION	CJ	JC	DPH
4	07/10/25	ISSUED FOR CONSTRUCTION	GA/SGK	JC	DPH
3	05/15/25	ISSUED FOR CONSTRUCTION	GA	JC	DPH
2	03/12/25	ISSUED FOR CONSTRUCTION	GA	JC	DPH

SCALE: AS SHOWN | DESIGNED BY: HC | DRAWN BY: AM

AT&T

TITLE SHEET
C-BAND UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
MAL02267	T-1	6

GROUNDING NOTES

1. THE SUBCONTRACTOR SHALL REVIEW AND INSPECT THE EXISTING FACILITY GROUNDING SYSTEM AND LIGHTNING PROTECTION SYSTEM (AS DESIGNED AND INSTALLED) FOR STRICT COMPLIANCE WITH THE NEC (AS ADOPTED BY THE AHJ), THE SITE-SPECIFIC (UL, LPI, OR NFPA) LIGHTING PROTECTION CODE, AND GENERAL COMPLIANCE WITH TELCORDIA AND TIA GROUNDING STANDARDS. THE SUBCONTRACTOR SHALL REPORT ANY VIOLATIONS OR ADVERSE FINDINGS TO THE CONTRACTOR FOR RESOLUTION.

2. ALL GROUND ELECTRODE SYSTEMS (INCLUDING TELECOMMUNICATION, RADIO, LIGHTNING PROTECTION, AND AC POWER GES'S) SHALL BE BONDED TOGETHER, AT OR BELOW GRADE, BY TWO OR MORE COPPER BONDING CONDUCTORS IN ACCORDANCE WITH THE NEC.

3. THE SUBCONTRACTOR SHALL PERFORM IEEE FALL-OF-POTENTIAL RESISTANCE TO EARTH TESTING (PER IEEE 1100 AND 81 STANDARDS) 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 AND #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. CABLE TRAY 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 AWG 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 – SAI
   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. 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 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. TOUCH UP ALL SCRATCHES AND OTHER MARKS IN THE FIELD AFTER STEEL IS ERECTED USING A COMPATIBLE ZINC RICH PAINT.

14. CONSTRUCTION SHALL COMPLY WITH SPECIFICATIONS AND "GENERAL CONSTRUCTION SERVICES FOR CONSTRUCTION OF AT&T SITES."

15. 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.

16. 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.

17. 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.

18. **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 2021 & MA STATE BUILDING CODE 780 CMR 10TH EDITION
ELECTRICAL CODE: 2020 NATIONAL ELECTRICAL CODE (NFPA 70-2020) WITH MA AMENDMENTS

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-H, STRUCTURAL STANDARDS FOR STEEL;

ANSI/BICSI N1-2019 INSTALLATION PRACTICES FOR TELECOMMUNICATIONS AND ICT CABLING AND RELATED CABLING INFRASTRUCTURE.

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.

MIT DESIGN STANDARDS 2022

3.16 – 3/4 INCH MINIMUM CONDUITS ARE REQUIRED. EMT SHALL BE PROVIDED WITH STEEL FITTINGS OR RIGID STEEL CONDUIT WITH THREADED FITTINGS FOR INTERIOR. DIE-CAST FITTINGS ARE NOT ACCEPTABLE. OUTDOOR CIRCUITS AND FEEDERS SHALL BE INSTALLED IN RIGID STEEL CONDUIT WITH THREADED FITTINGS. NEMA 4X SHALL BE PROVIDED FOR OUTDOOR PULL BOXES AND ELECTRICAL EQUIPMENT. NO CONDUIT IS TO BE EMBEDDED IN BASEMENT FLOOR SLABS. ALL SURFACE RACEWAY SYSTEMS SHALL BE MANUFACTURED BY WIREMOLD, CARLON OR HUBBELL. THE USE OF WIREMOLD ISO DUCT SURFACE RACEWAY IS PROHIBITED. IN GENERAL, WIREMOLD 3000, 4000 AND 6000 IS PREFERRED (HUBBELL AND CARLON EQUIVALENT ARE ACCEPTABLE). NON-METALLIC SURFACE RACEWAY MAY BE USED IN SPECIAL APPLICATIONS. IN LABORATORIES, CONDUITS SHALL BE USED BETWEEN THE PANELBOARDS AND THE SURFACE MOUNTED RACEWAYS. UNDERGROUND BRANCH CIRCUIT RACEWAYS ARE TO BE SCHEDULE 40 PVC. CONCRETE ENCASE WITH MINIMUM OF 3 INCHES OF COVER ALL AROUND. DIRECT BURIAL OF CONDUCTORS IS NOT ALLOWED. MC CABLE IS ACCEPTABLE ONLY FOR CONCEALED SPACES, ABOVE CEILINGS, FISHING WITHIN WALLS, AND FOR FINAL CONNECTIONS WHERE NOT SUBJECT TO PHYSICAL DAMAGE. ACCESS SHALL BE PROVIDED BY THE CONSTRUCTION TEAM FOR ALL JUNCTION BOXES, PULL BOXES AND SPLICES BOXES OR WHERE WIRING NEEDS TO BE MAINTAINED.

3.18 – ALL CABLES SHALL HAVE COPPER CONDUCTORS. ALL CONDUCTORS ARE TO BE STRANDED. SOLID CONDUCTORS SHALL NOT BE USED. THHN/THWN CONDUCTORS SHALL BE PROVIDED. INSULATION TO BE 90° C RATED WITH CONNECTORS SIZED FOR 75°C AMPACITY USE (90°C AMPACITY RATING OF A CONDUCTOR IS NOT TO BE USED). XHHW AND RHW CABLE SHALL BE USED FOR OUTDOOR UNDERGROUND LIGHTING AND POWER INSTALLATIONS. MINIMUM CONDUCTOR SIZE TO BE #12 AWG. MI CABLE SHALL BE USED FOR ALL EMERGENCY AND LEGALLY REQUIRED STANDBY LOADS. SPLICES ARE PERMITTED ONLY UPON THE WRITTEN ACCEPTANCE OF AN ELECTRICAL REPRESENTATIVE IN THE FACILITIES ENGINEERING GROUP AT MIT. FACTORS IN THIS DECISION SHALL INCLUDE THE CONDITION OF THE CABLE, INSTALLATION, CRITICAL NATURE OF THE SYSTEM, ACCESSIBILITY TO THE POTENTIAL SPLICE, AND THE LEVEL OF RESILIENCY AT THE SPLICE LOCATION. MC CABLE WITH OVERALL STEEL ARMOR IS ACCEPTABLE ONLY FOR CONCEALED SPACES, ABOVE CEILINGS, FISHING WITHIN WALLS, AND FOR FINAL CONNECTIONS WHERE NOT SUBJECT TO PHYSICAL DAMAGE.

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		

TEP OPCO, LLC.
45 BEECHWOOD DR.
NORTH ANDOVER, MA 01845
OFFICE: (978) 557-5553

12 INDUSTRIAL WAY
SALEM, NH 03079

SITE NUMBER: MAL02267
SITE NAME: MIT DORRANCE BLDG #16

77 MASSACHUSETTS AVENUE
CAMBRIDGE, MA 02139
MIDDLESEX COUNTY

492 OLD CONNECTICUT
PATH SUITE #210
FRAMINGHAM, MA 01701

NO.	DATE	REVISIONS	BY	CHK	APP'D
6	08/28/25	ISSUED FOR CONSTRUCTION	SG	JC	DPH
5	07/23/25	ISSUED FOR CONSTRUCTION	CJ	JC	DPH
4	07/10/25	ISSUED FOR CONSTRUCTION	GA/SGK	JC	DPH
3	05/15/25	ISSUED FOR CONSTRUCTION	GA	JC	DPH
2	03/12/25	ISSUED FOR CONSTRUCTION	GA	JC	DPH

SCALE: AS SHOWN | DESIGNED BY: HC | DRAWN BY: AM

COMMONWEALTH OF MASSACHUSETTS
SCOTT C. BRANTLEY
CIVIL
No. 56874
REGISTERED PROFESSIONAL ENGINEER

AT&T

GENERAL NOTES
C-BAND UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
MAL02267	GN-1	6

NOTE TO GENERAL CONTRACTOR: (PRIOR TO CONSTRUCTION COMPLETION)

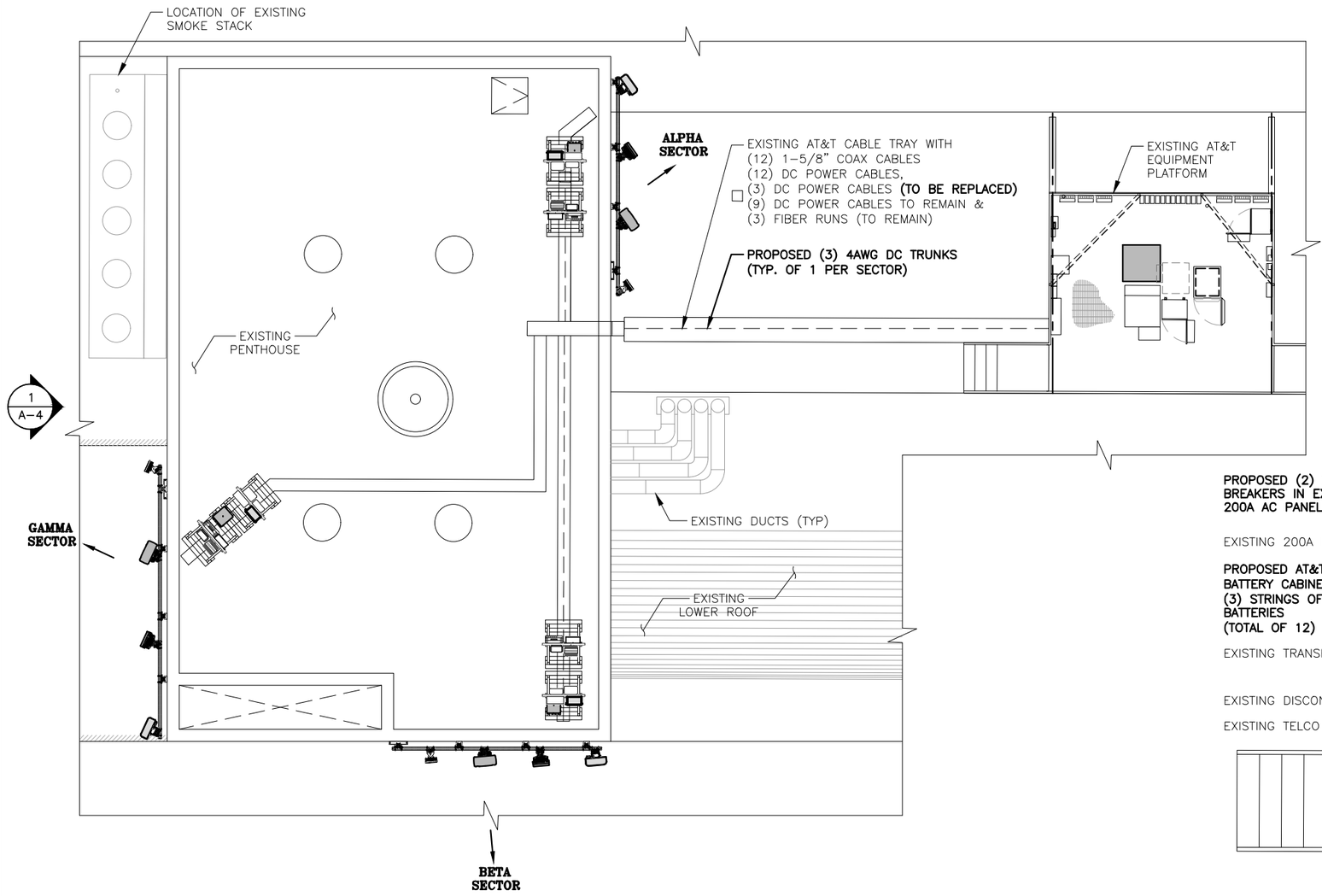
TEP OPCO, LLC. TO PERFORM POST/CLIMB AND INSPECTION TO CONFIRM PROPOSED INSTALLATION COMPLIES WITH THE RECORD STAMPED DRAWINGS AND STRUCTURAL REPORTS PRIOR TO SUBMITTING FCCA (FINAL CONSTRUCTION CONTROL AFFIDAVIT). GC IS RESPONSIBLE FOR COORDINATING INSPECTIONS WITH TEP OPCO, LLC. PRIOR TO CONSTRUCTION BEING COMPLETED.

NOTE:

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

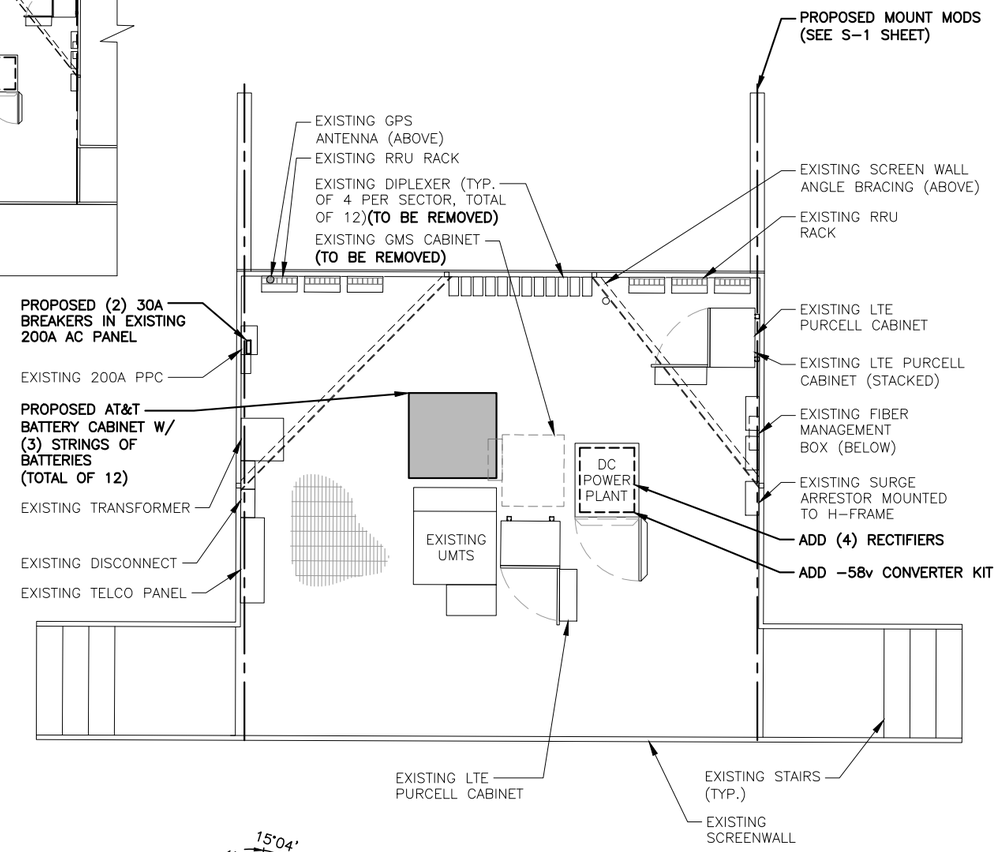
NOTE:

REFER TO STRUCTURAL ANALYSIS BY: TEP (TEP OPCO, LLC.) DATED: FEBRUARY 8, 2025 (REV.1) FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT.



ROOF PLAN (1 / A-1)
22x34 SCALE: 3/16"=1'-0"
11x17 SCALE: 3/32"=1'-0"

0 2'-8" 5'-4" 10'-8" 16'-0"



EQUIPMENT PLAN (2 / A-1)
22x34 SCALE: 3/8"=1'-0"
11x17 SCALE: 3/16"=1'-0"

0 1'-4" 2'-8" 5'-4" 8'-0"

TEP OPCO, LLC

TEP OPCO, LLC.
45 BEECHWOOD DR.
NORTH ANDOVER, MA 01845
OFFICE: (978) 557-5553

12 INDUSTRIAL WAY
SALEM, NH 03079

SITE NUMBER: MAL02267
SITE NAME: MIT DORRANCE BLDG #16

77 MASSACHUSETTS AVENUE
CAMBRIDGE, MA 02139
MIDDLESEX COUNTY

AT&T
492 OLD CONNECTICUT
PATH SUITE #210
FRAMINGHAM, MA 01701

NO.	DATE	REVISIONS	BY	CHK	APP'D
6	08/28/25	ISSUED FOR CONSTRUCTION	SG	JC	DPH
5	07/23/25	ISSUED FOR CONSTRUCTION	CJ	JC	DPH
4	07/10/25	ISSUED FOR CONSTRUCTION	GA/SGK	JC	DPH
3	05/15/25	ISSUED FOR CONSTRUCTION	GA	JC	DPH
2	03/12/25	ISSUED FOR CONSTRUCTION	GA	JC	DPH

SCALE: AS SHOWN | DESIGNED BY: HC | DRAWN BY: AM

COMMONWEALTH OF MASSACHUSETTS
SCOTT C BRANTLEY
CIVIL
No. 56874
REGISTERED PROFESSIONAL ENGINEER

AT&T

ROOFTOP & EQUIPMENT PLANS
C-BAND UPGRADE

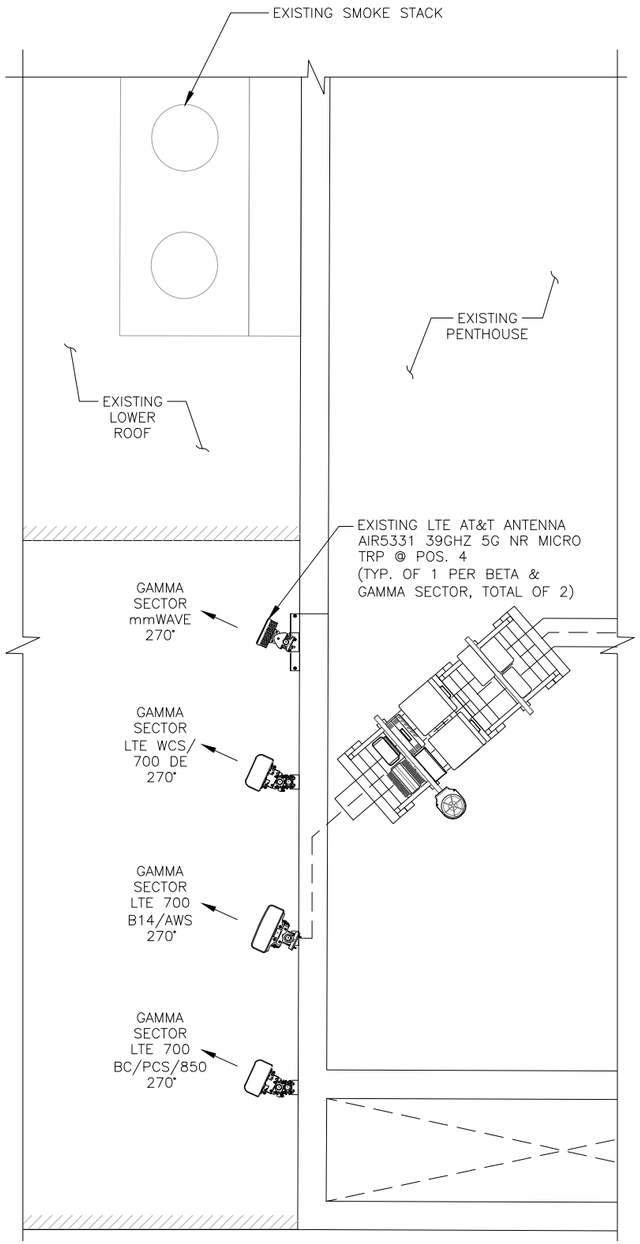
SITE NUMBER	DRAWING NUMBER	REV
MAL02267	A-1	6

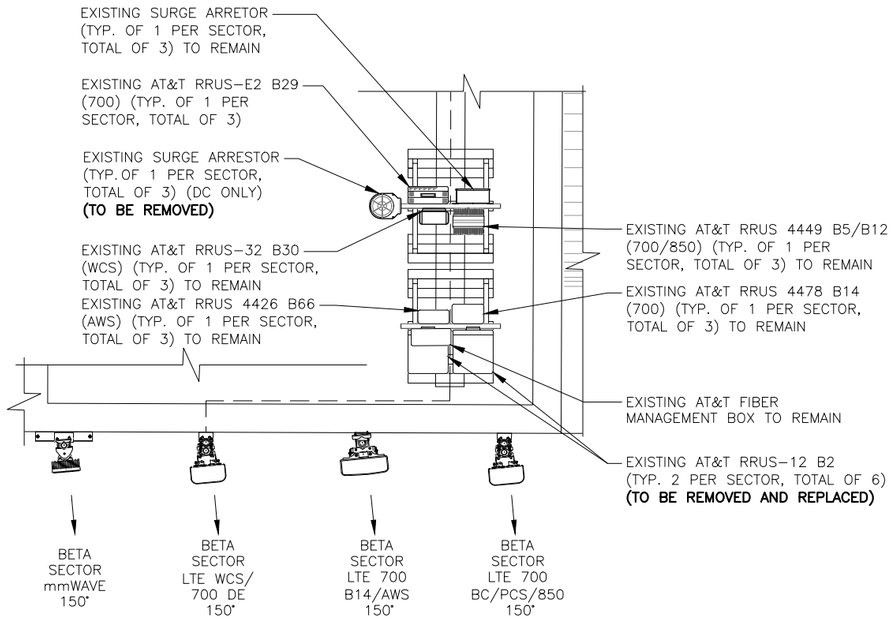
NOTE:

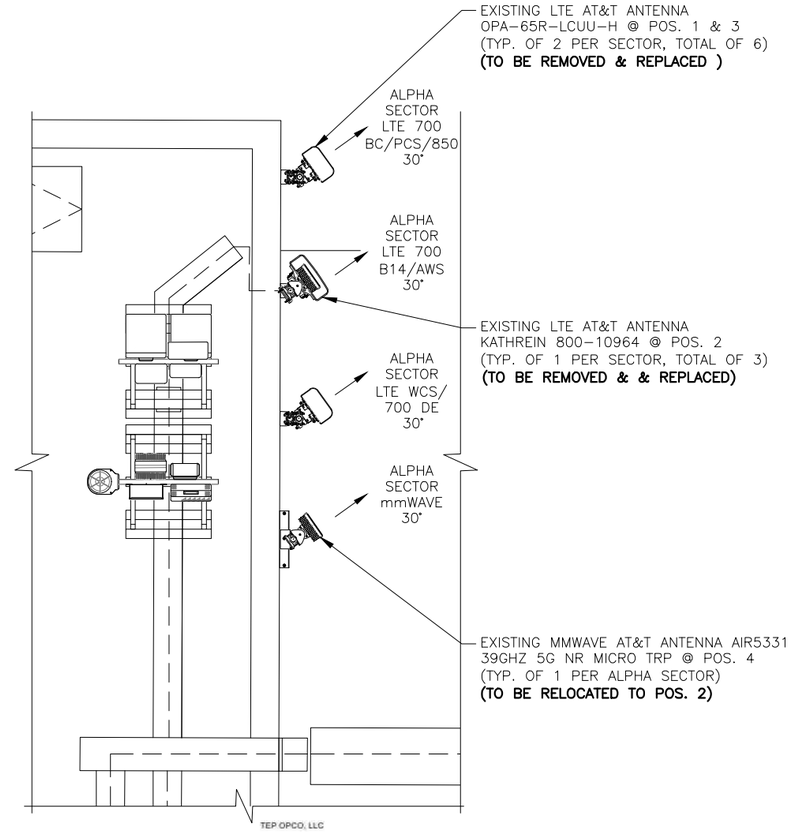
REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS.

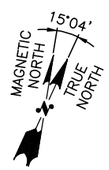
NOTE:

REFER TO STRUCTURAL ANALYSIS BY: TEP (TEP OPCO, LLC.) DATED: FEBRUARY 8, 2025 (REV.1) FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT.









EXISTING ANTENNA PLAN (1 / A-2)
SCALE: N.T.S

TEP OPCO, LLC.
45 BEECHWOOD DR.
NORTH ANDOVER, MA 01845
OFFICE: (978) 557-5553

12 INDUSTRIAL WAY
SALEM, NH 03079

SITE NUMBER: MAL02267
SITE NAME: MIT DORRANCE BLDG #16

77 MASSACHUSETTS AVENUE
CAMBRIDGE, MA 02139
MIDDLESEX COUNTY

492 OLD CONNECTICUT
PATH SUITE #210
FRAMINGHAM, MA 01701

NO.	DATE	REVISIONS	BY	CHK	APP'D
6	08/28/25	ISSUED FOR CONSTRUCTION	SG	JC	DPH
5	07/23/25	ISSUED FOR CONSTRUCTION	CJ	JC	DPH
4	07/10/25	ISSUED FOR CONSTRUCTION	GA/SGK	JC	DPH
3	05/15/25	ISSUED FOR CONSTRUCTION	GA	JC	DPH
2	03/12/25	ISSUED FOR CONSTRUCTION	GA	JC	DPH

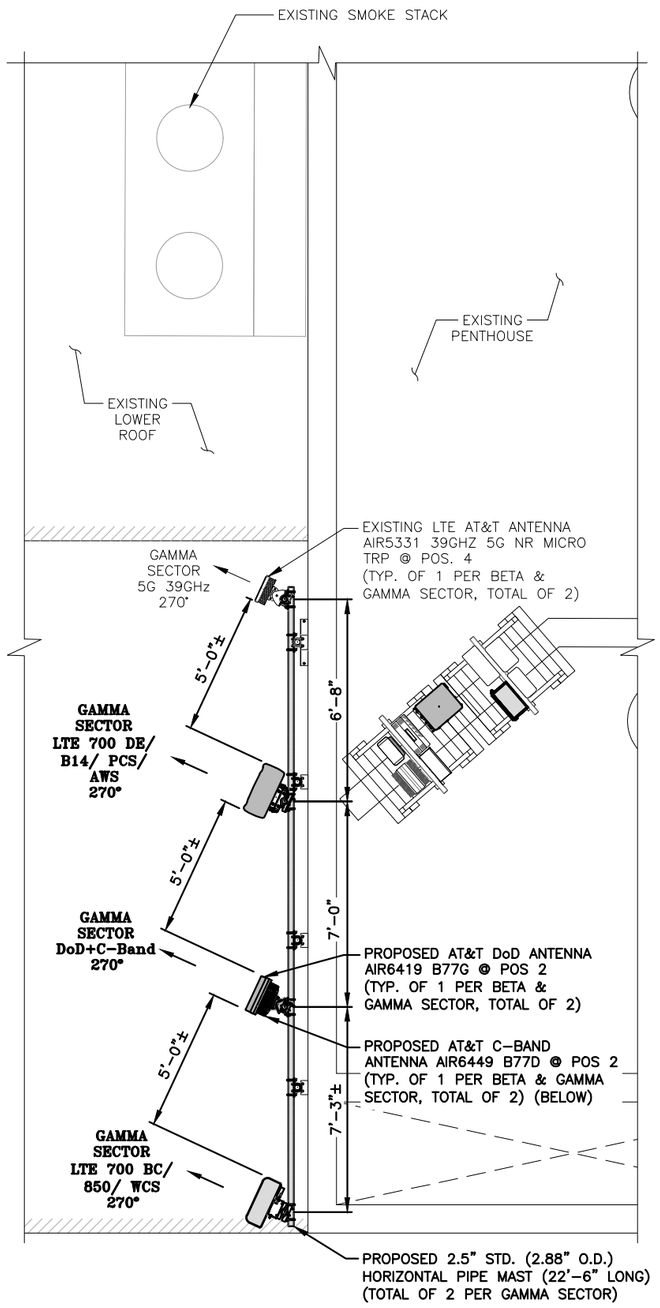
SCALE: AS SHOWN | DESIGNED BY: HC | DRAWN BY: AM

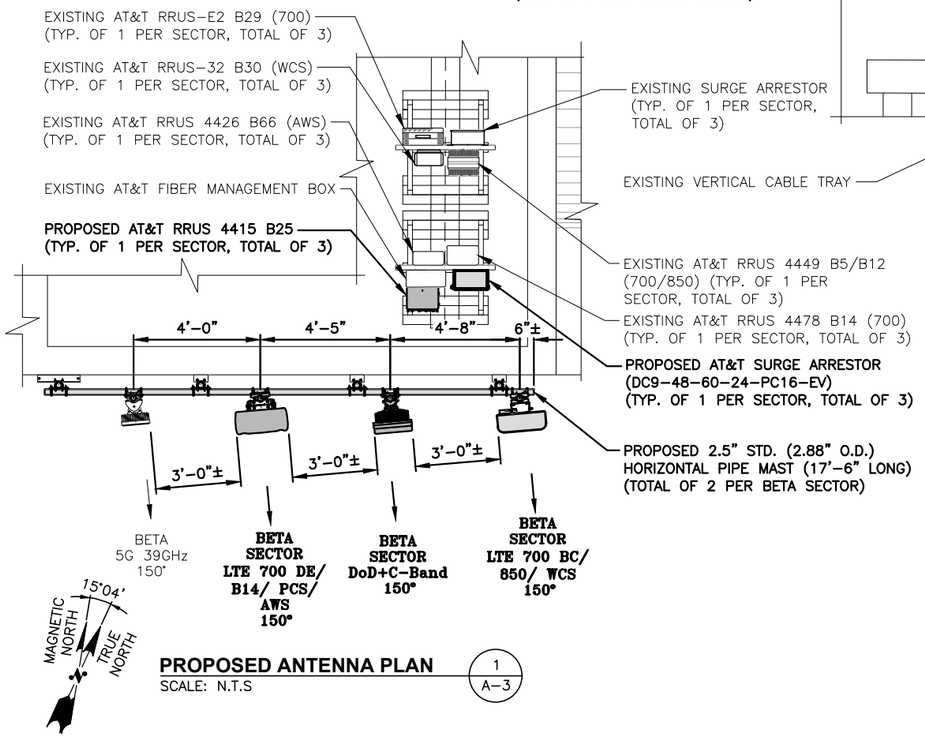
COMMONWEALTH OF MASSACHUSETTS
SCOTT C BRANTLEY
CIVIL
No. 56874
REGISTERED PROFESSIONAL ENGINEER

AT&T

EXISTING ANTENNA PLAN
C-BAND UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
MAL02267	A-2	6

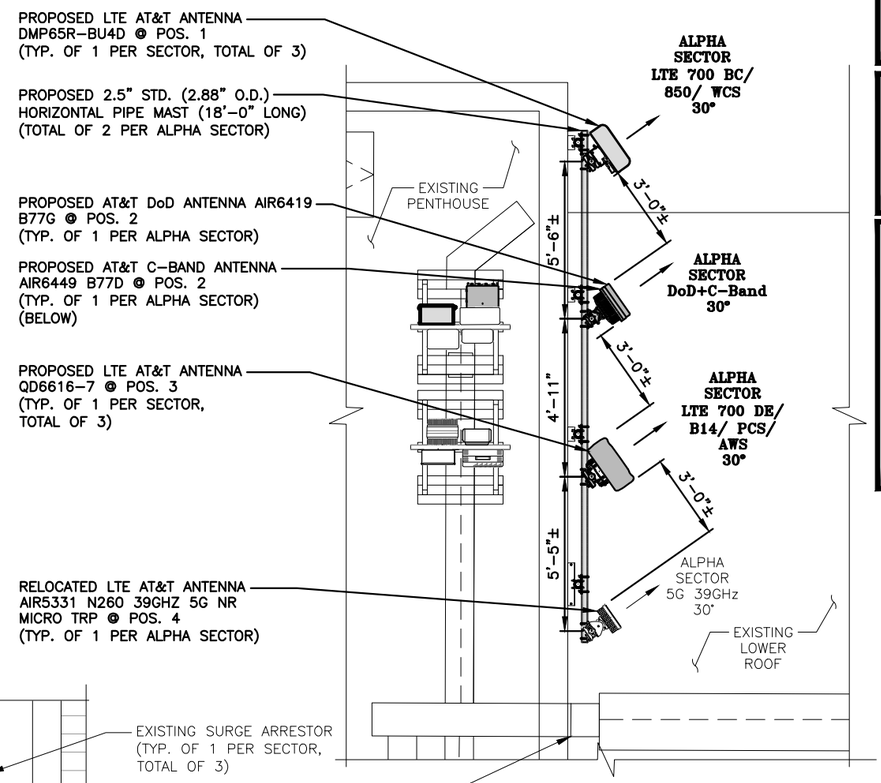




PROPOSED ANTENNA PLAN

SCALE: N.T.S

1 / A-3



NOTE:

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

NOTE:

REFER TO STRUCTURAL ANALYSIS BY: TEP (TEP OPCO, LLC.) DATED: FEBRUARY 8, 2025 (REV.1) FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT.

NOTE TO GENERAL CONTRACTOR: (PRIOR TO CONSTRUCTION COMPLETION)

TEP OPCO, LLC. TO PERFORM POST/CLIMB AND INSPECTION TO CONFIRM PROPOSED INSTALLATION COMPLIES WITH THE RECORD STAMPED DRAWINGS AND STRUCTURAL REPORTS PRIOR TO SUBMITTING FCCA (FINAL CONSTRUCTION CONTROL AFFIDAVIT). GC IS RESPONSIBLE FOR COORDINATING INSPECTIONS WITH TEP OPCO, LLC. PRIOR TO CONSTRUCTION BEING COMPLETED.

TEP OPCO, LLC

TEP OPCO, LLC.
45 BEECHWOOD DR.
NORTH ANDOVER, MA 01845
OFFICE: (978) 557-5553

12 INDUSTRIAL WAY
SALEM, NH 03079

SITE NUMBER: MAL02267
SITE NAME: MIT DORRANCE BLDG #16

77 MASSACHUSETTS AVENUE
CAMBRIDGE, MA 02139
MIDDLESEX COUNTY

AT&T
492 OLD CONNECTICUT
PATH SUITE #210
FRAMINGHAM, MA 01701

NO.	DATE	REVISIONS	BY	CHK	APP'D
6	08/28/25	ISSUED FOR CONSTRUCTION	SG	JC	DPH
5	07/23/25	ISSUED FOR CONSTRUCTION	CJ	JC	DPH
4	07/10/25	ISSUED FOR CONSTRUCTION	GA/SGK	JC	DPH
3	05/15/25	ISSUED FOR CONSTRUCTION	GA	JC	DPH
2	03/12/25	ISSUED FOR CONSTRUCTION	GA	JC	DPH

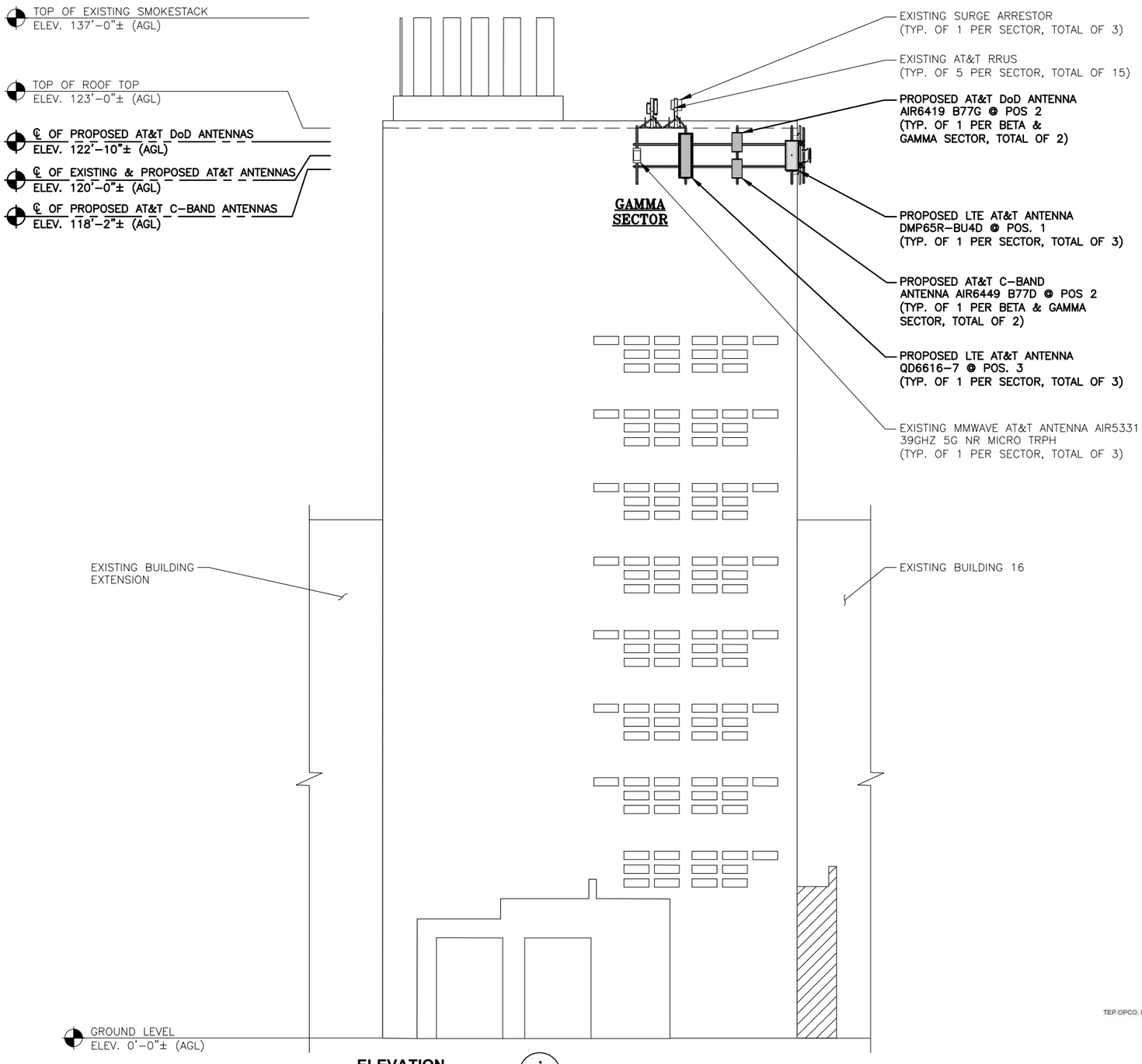
SCALE: AS SHOWN | DESIGNED BY: HC | DRAWN BY: AM

COMMONWEALTH OF MASSACHUSETTS
SCOTT C BRANTLEY
CIVIL
No. 56874
REGISTERED PROFESSIONAL ENGINEER

AT&T

PROPOSED ANTENNA PLAN
C-BAND UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
MAL02267	A-3	6



ELEVATION (1 / A-4)
22x34 SCALE: 1/8"=1'-0"
11x17 SCALE: 1/16"=1'-0"

0 4'-0" 8'-0" 16'-0" 24'-0"

NOTE:

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

NOTE:

REFER TO STRUCTURAL ANALYSIS BY: TEP (TEP OPCO, LLC.) DATED: FEBRUARY 8, 2025 (REV.1) FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT.

NOTE TO GENERAL CONTRACTOR: (PRIOR TO CONSTRUCTION COMPLETION)

TEP OPCO, LLC. TO PERFORM POST/CLIMB AND INSPECTION TO CONFIRM PROPOSED INSTALLATION COMPLIES WITH THE RECORD STAMPED DRAWINGS AND STRUCTURAL REPORTS PRIOR TO SUBMITTING FCCA (FINAL CONSTRUCTION CONTROL AFFIDAVIT). GC IS RESPONSIBLE FOR COORDINATING INSPECTIONS WITH TEP OPCO, LLC. PRIOR TO CONSTRUCTION BEING COMPLETED.

TEP OPCO, LLC
45 BEECHWOOD DR.
NORTH ANDOVER, MA 01845
OFFICE: (978) 557-5553

12 INDUSTRIAL WAY
SALEM, NH 03079

SITE NUMBER: MAL02267
SITE NAME: MIT DORRANCE BLDG #16

77 MASSACHUSETTS AVENUE
CAMBRIDGE, MA 02139
MIDDLESEX COUNTY

AT&T
492 OLD CONNECTICUT
PATH SUITE #210
FRAMINGHAM, MA 01701

NO.	DATE	REVISIONS	BY	CHK	APP'D
6	08/28/25	ISSUED FOR CONSTRUCTION	SG	JC	DPH
5	07/23/25	ISSUED FOR CONSTRUCTION	CJ	JC	DPH
4	07/10/25	ISSUED FOR CONSTRUCTION	GA/SGK	JC	DPH
3	05/15/25	ISSUED FOR CONSTRUCTION	GA	JC	DPH
2	03/12/25	ISSUED FOR CONSTRUCTION	GA	JC	DPH

SCALE: AS SHOWN | DESIGNED BY: HC | DRAWN BY: AM

TEP OPCO, LLC

COMMONWEALTH OF MASSACHUSETTS
SCOTT C BRANTLEY
CIVIL
No. 56874
REGISTERED PROFESSIONAL ENGINEER

AT&T

ELEVATION
C-BAND UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
MAL02267	A-4	6

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	PROPOSED	LTE 700 BC/ 850/ WCS	DMP65R-BU4D	48.0x20.7x7.7	120'-0"±	30°	–	(E)(1) 4449 B5/B12 (850/700) (E)(1) RRUS-32 B30 (WCS)	–	(E)(2) DC POWER	(P) (1) RAYCAP DC9-48-60-24-PC16-EV (E) (1) RAYCAP DC6-48-60-18
A2	PROPOSED	DOD+C-BAND	AIR6419 B77G AIR6449 B77D STACKED	30.4x15.9x8.1	122'-10"± 118'-2"±	30°	–	–	–		
A3	PROPOSED	LTE 700 DE/ B14/ PCS/ AWS	QD6616-7	72X22X9.6	120'-0"±	30°	–	(E)(1) 4478 B14 (700) (E)(1) RRUS-E2 B29 (700) (E)(1) RRUS-4426 B66 (AWS) **(P)(1) 4415 B25 (PCS)**	16.5"x13.4"x5.9"	(E)(1) DC POWER **(P)(1) DC POWER** (1) FIBER	
A4	EXISTING	5G 39GHZ	AIR5331 39GHz 5G NR Micro TRP	23.6x11.9x6.2	120'-0"±	30°	–	–	–	–	
B1	PROPOSED	LTE 700 BC/ 850/ WCS	DMP65R-BU4D	48.0x20.7x7.7	120'-0"±	150°	–	(E)(1) 4449 B5/B12 (850/700) (E)(1) RRUS-32 B30 (WCS)	–	(E)(2) DC POWER	(P) (1) RAYCAP DC9-48-60-24-PC16-EV (E) (1) RAYCAP DC6-48-60-18
B2	PROPOSED	DOD+C-BAND	AIR6419 B77G AIR6449 B77D STACKED	30.4x15.9x8.1	122'-10"± 118'-2"±	150°	–	–	–		
B3	PROPOSED	LTE 700 DE/ B14/ PCS/ AWS	QD6616-7	72X22X9.6	120'-0"±	150°	–	(E)(1) 4478 B14 (700) (E)(1) RRUS-E2 B29 (700) (E)(1) RRUS-4426 B66 (AWS) **(P)(1) 4415 B25 (PCS)**	16.5"x13.4"x5.9"	(E)(1) DC POWER **(P)(1) DC POWER** (1) FIBER	
B4	EXISTING	5G 39GHZ	AIR5331 39GHz 5G NR Micro TRP	23.6x11.9x6.2	120'-0"±	150°	–	–	–	–	
C1	PROPOSED	LTE 700 BC/ 850/ WCS	DMP65R-BU4D	48.0x20.7x7.7	120'-0"±	270°	–	(E)(1) 4449 B5/B12 (850/700) (E)(1) RRUS-32 B30 (WCS)	–	(E)(2) DC POWER	(P) (1) RAYCAP DC9-48-60-24-PC16-EV (E) (1) RAYCAP DC6-48-60-18
C2	PROPOSED	DOD+C-BAND	AIR6419 B77G AIR6449 B77D STACKED	30.4x15.9x8.1	122'-10"± 118'-2"±	270°	–	–	–		
C3	PROPOSED	LTE 700 DE/ B14/ PCS/ AWS	QD6616-7	72X22X9.6	120'-0"±	270°	–	(E)(1) 4478 B14 (700) (E)(1) RRUS-E2 B29 (700) (E)(1) RRUS-4426 B66 (AWS) **(P)(1) 4415 B25 (PCS)**	16.5"x13.4"x5.9"	(E)(1) DC POWER **(P)(1) DC POWER** (1) FIBER	
C4	EXISTING	5G 39GHZ	AIR5331 39GHz 5G NR Micro TRP	23.6x11.9x6.2	120'-0"±	270°	–	–	–	–	

FINAL ANTENNA SCHEDULE (1 / A-5)
SCALE: N.T.S

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

NOTE:
REFER TO STRUCTURAL ANALYSIS BY: TEP (TEP OPCO, LLC.) DATED: FEBRUARY 8, 2025 (REV.1) FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT.

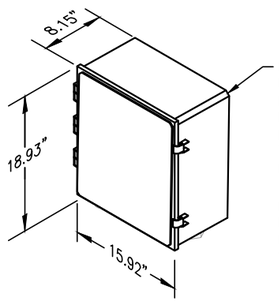
NOTE TO GENERAL CONTRACTOR: (PRIOR TO CONSTRUCTION COMPLETION)

TEP OPCO, LLC. TO PERFORM POST/CLIMB AND INSPECTION TO CONFIRM PROPOSED INSTALLATION COMPLIES WITH THE RECORD STAMPED DRAWINGS AND STRUCTURAL REPORTS PRIOR TO SUBMITTING FCCA (FINAL CONSTRUCTION CONTROL AFFIDAVIT). GC IS RESPONSIBLE FOR COORDINATING INSPECTIONS WITH TEP OPCO, LLC. PRIOR TO CONSTRUCTION BEING COMPLETED.

PROPOSED AT&T BATTERY CABINET W/ (3) STRINGS OF BATTERIES (TOTAL OF 12).

NOTE:
MOUNT PROPOSED EQUIPMENT PER MANUFACTURER'S SPECIFICATIONS

PROPOSED VERVIT OUTDOOR BATT. CABINET DETAIL (2 / A-5)
SCALE: N.T.S



PROPOSED SURGE PROTECTOR MODEL NUMBER:
DC9-48-60-24-PC16-EV
DIMENSIONS:
H18.93"x15.92"x8.15"
WITH BRACKET:
H18.93"x15.92"x9.64"

NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS.

DC SURGE SUPPRESSOR DETAIL (3 / A-5)
SCALE: N.T.S

TEP OPCO, LLC

COMMONWEALTH OF MASSACHUSETTS
SCOTT C BRANTLEY
CIVIL
No. 56874
REGISTERED PROFESSIONAL ENGINEER

TEP OPCO, LLC.
45 BEECHWOOD DR.
NORTH ANDOVER, MA 01845
OFFICE: (978) 557-5553

12 INDUSTRIAL WAY
SALEM, NH 03079

SITE NUMBER: MAL02267
SITE NAME: MIT DORRANCE BLDG #16

77 MASSACHUSETTS AVENUE
CAMBRIDGE, MA 02139
MIDDLESEX COUNTY

492 OLD CONNECTICUT
PATH SUITE #210
FRAMINGHAM, MA 01701

NO.	DATE	REVISIONS	BY	CHK	APP'D
6	08/28/25	ISSUED FOR CONSTRUCTION	SG	JC	DPH
5	07/23/25	ISSUED FOR CONSTRUCTION	CJ	JC	DPH
4	07/10/25	ISSUED FOR CONSTRUCTION	GA/SGK	JC	DPH
3	05/15/25	ISSUED FOR CONSTRUCTION	GA	JC	DPH
2	03/12/25	ISSUED FOR CONSTRUCTION	GA	JC	DPH

SCALE: AS SHOWN | DESIGNED BY: HC | DRAWN BY: AM

AT&T

DETAILS
C-BAND UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
MAL02267	A-5	6

NOTE TO GENERAL CONTRACTOR: (PRIOR TO CONSTRUCTION COMPLETION)

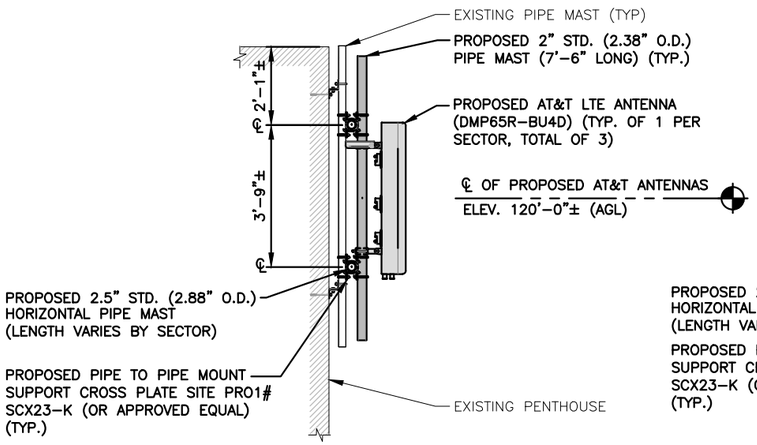
TEP OPCO, LLC. TO PERFORM POST/CLIMB AND INSPECTION TO CONFIRM PROPOSED INSTALLATION COMPLIES WITH THE RECORD STAMPED DRAWINGS AND STRUCTURAL REPORTS PRIOR TO SUBMITTING FCCA (FINAL CONSTRUCTION CONTROL AFFIDAVIT). GC IS RESPONSIBLE FOR COORDINATING INSPECTIONS WITH TEP OPCO, LLC. PRIOR TO CONSTRUCTION BEING COMPLETED.

NOTE:

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

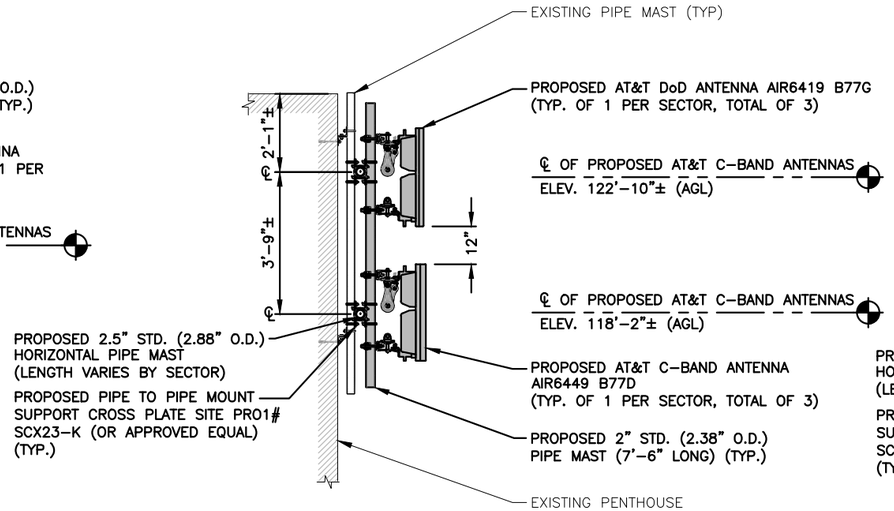
NOTE:

REFER TO STRUCTURAL ANALYSIS BY: TEP (TEP OPCO, LLC.) DATED: FEBRUARY 8, 2025 (REV.1) FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT.



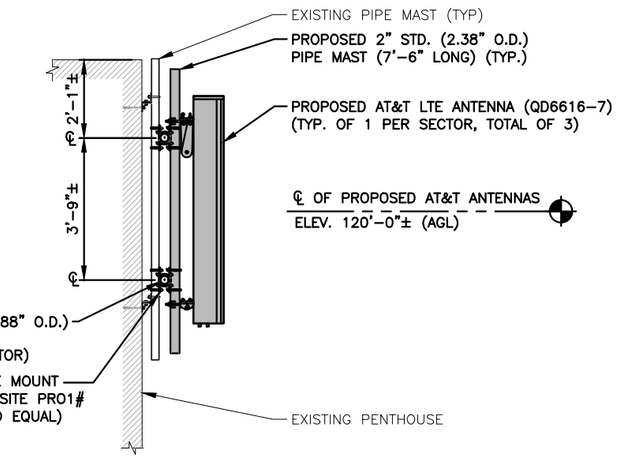
PROPOSED LTE ANTENNA MOUNTING DETAIL (1 / A-6)
22x34 SCALE: 1/2"=1'-0"
11x17 SCALE: 1/4"=1'-0"

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



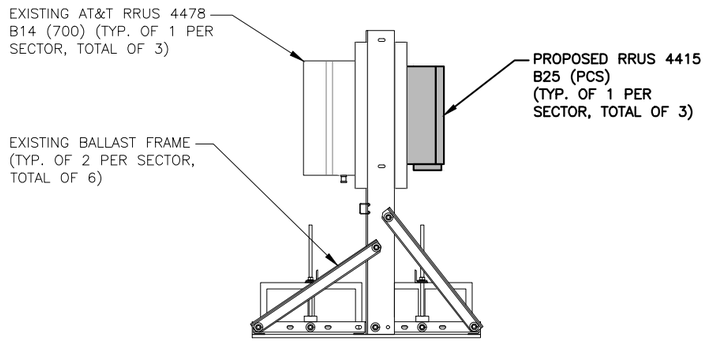
PROPOSED C-BAND ANTENNA MOUNTING DETAIL (2 / A-6)
22x34 SCALE: 1/2"=1'-0"
11x17 SCALE: 1/4"=1'-0"

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



PROPOSED LTE ANTENNA MOUNTING DETAIL (3 / A-6)
22x34 SCALE: 1/2"=1'-0"
11x17 SCALE: 1/4"=1'-0"

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



PROPOSED RRH MOUNTING DETAIL (4 / A-6)
22x34 SCALE: 1"=1'-0"
11x17 SCALE: 1/2"=1'-0"

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

TEP OPCO, LLC

COMMONWEALTH OF MASSACHUSETTS
SCOTT C BRANTLEY
CIVIL
No. 56874
REGISTERED PROFESSIONAL ENGINEER

TEP OPCO, LLC.
45 BEECHWOOD DR.
NORTH ANDOVER, MA 01845
OFFICE: (978) 557-5553

12 INDUSTRIAL WAY
SALEM, NH 03079

492 OLD CONNECTICUT
PATH SUITE #210
FRAMINGHAM, MA 01701

SITE NUMBER: MAL02267
SITE NAME: MIT DORRANCE BLDG #16

77 MASSACHUSETTS AVENUE
CAMBRIDGE, MA 02139
MIDDLESEX COUNTY

NO.	DATE	REVISIONS	BY	CHK	APP'D
6	08/28/25	ISSUED FOR CONSTRUCTION	SG	JC	DPH
5	07/23/25	ISSUED FOR CONSTRUCTION	CJ	JC	DPH
4	07/10/25	ISSUED FOR CONSTRUCTION	GA/SGK	JC	DPH
3	05/15/25	ISSUED FOR CONSTRUCTION	GA	JC	DPH
2	03/12/25	ISSUED FOR CONSTRUCTION	GA	JC	DPH

SCALE: AS SHOWN | DESIGNED BY: HC | DRAWN BY: AM

AT&T

DETAILS
C-BAND UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
MAL02267	A-6	6

STRUCTURAL NOTES:

1. DESIGN REQUIREMENTS ARE PER STATE BUILDING CODE AND APPLICABLE SUPPLEMENTS, INTERNATIONAL BUILDING CODE, EIA/TIA–222–H STRUCTURAL STANDARDS FOR STEEL ANTENNA, TOWERS AND ANTENNA SUPPORTING STRUCTURES.
2. 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.
3. 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".
4. STRUCTURAL STEEL SHALL CONFORM TO ASTM A992 (Fy=50 ksi), MISCELLANEOUS STEEL SHALL CONFORM TO ASTM A36 UNLESS OTHERWISE INDICATED.
5. 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.
6. 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.
7. 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.
8. 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.
9. 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.
10. 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 DI.I. WHERE FILLET WELD SIZES ARE NOT SHOWN, PROVIDE THE MINIMUM SIZE PER TABLE J2.4 IN THE AISC "STEEL CONSTRUCTION MANUAL". 14TH EDITION.
11. 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.
12. 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.
13. 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.
14. 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.
15. 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.
16. 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.
17. 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.
18. NO MATERIALS TO BE ORDERED AND NO WORK TO BE COMPLETED UNTIL SHOP DRAWINGS HAVE BEEN REVIEWED AND APPROVED IN WRITING.
19. SUBCONTRACTOR SHALL FIREPROOF ALL STEEL TO PRE–EXISTING CONDITIONS.

MASSACHUSETTS AMENDMENTS TO THE IBC (REFERENCE 780 CMR):

107.6 CONSTRUCTION CONTROL.
107.6.1 GENERAL. THIS SECTION SHALL APPLY TO THE CONSTRUCTION CONTROLS, PROFESSIONAL SERVICES AND CONTRACTOR SERVICES REQUIRED FOR BUILDINGS AND STRUCTURES NEEDING REGISTERED DESIGN PROFESSIONAL SERVICES.

107.6.1.1 SPECIALIZED STRUCTURES. TELECOMMUNICATION TOWERS, WIND TURBINE TOWERS, AND SIMILAR STRUCTURES ARE ENGINEERED STRUCTURES AND SHALL BE SUBJECT TO THE REQUIREMENTS OF SECTION 107.6.

107.6.2.2 CONSTRUCTION. THE REGISTERED DESIGN PROFESSIONALS WHO ARE RESPONSIBLE FOR THE DESIGN, PLANS, CALCULATIONS, AND SPECIFICATIONS, THEIR DESIGNEE OR THE REGISTERED DESIGN PROFESSIONALS WHO HAVE BEEN RETAINED FOR CONSTRUCTION PHASE SERVICES, SHALL PERFORM THE FOLLOWING TASKS:

1. REVIEW, FOR CONFORMANCE TO 780 CMR AND THE DESIGN CONCEPT, SHOP DRAWINGS, SAMPLES AND OTHER SUBMITTALS BY THE CONTRACTOR IN ACCORDANCE WITH THE REQUIREMENTS OF THE CONSTRUCTION DOCUMENTS.
2. PERFORM THE DUTIES FOR REGISTERED DESIGN PROFESSIONALS IN 780 CMR 17.00 SPECIAL INSPECTIONS AND TESTS.
3. BE PRESENT AT INTERVALS APPROPRIATE TO THE STAGE OF CONSTRUCTION TO BECOME GENERALLY FAMILIAR WITH THE PROGRESS AND QUALITY OF THE WORK AND TO DETERMINE IF THE WORK IS BEING PERFORMED IN A MANNER CONSISTENT WITH THE CONSTRUCTION DOCUMENTS AND 780 CMR.

THE PERMIT APPLICATION SHALL NOT BE DEEMED COMPLETED UNTIL ALL OF THE CONSTRUCTION DOCUMENTS REQUIRED BY 780 CMR HAVE BEEN SUBMITTED. DOCUMENTATION INDICATING THAT WORK COMPLIES WITH THE PLANS AND SPECIFICATIONS SHALL BE PROVIDED AT THE COMPLETION OF EACH PHASE WHEN REQUIRED BY THE BUILDING OFFICIAL. UPON COMPLETION OF THE WORK, THE REGISTERED DESIGN PROFESSIONAL SHALL FILE A FINAL DOCUMENT TO THE BUILDING OFFICIAL INDICATING THAT, TO THE BEST OF HIS OR HER KNOWLEDGE AND BELIEF, THE WORK HAS BEEN PERFORMED IN ACCORDANCE WITH THW APPROVED PLANS AND 780 CMR. FORMS FOR CONSTRUCTION CONTROL WHEN REQUIRED BY THE BUILDING OFFICIAL SHALL BE THOSE FOUND AT http://www.mass.gov/ocabr/government/oca–agencies/dpl–lp/opsi/.

107.6.2.3 SPECIAL INSPECTIONS AND TESTS. SPECIAL INSPECTIONS AND TESTS SHALL BE PROVIDED IN ACCORDANCE WITH 780 CMR 17.00 SPECIAL INSPECTIONS AND TESTS.

170.6.2.4 NON STRUCTURAL SYSTEM TEST AND INSPECTION. TESTS AND INSPECTIONS OF NON–STRUCTURAL SYSTEMS SHALL BE PERFORMED IN ACCORDANCE WITH APPLICABLE ENGINEERING PRACTICE STANDARDS, REFERENCED STANDARDS LISTED IN 780 CMR 35.00: REFERENCED STANDARDS, OR AS OTHERWISE SPECIFIED IN 780 CMR.

107.6.3 CONSTRUCTION CONTRACTOR SERVICES. THE ACTUAL CONSTRUCTION OF THE WORK SHALL BE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR AS IDENTIFIED ON THE APPROVED PERMIT AND SHALL INVOLVE THE FOLLOWING:

1. EXECUTION OF ALL WORK IN ACCORDANCE WITH THE APPROVED CONSTRUCTION DOCUMENTS.
2. EXECUTION AND CONTROL OF ALL METHODS OF CONSTRUCTION IN A SAFE AND SATISFACTORY MANNER IN ACCORDANCE WITH ALL APPLICABLE LOCAL, STATE, AND FEDERAL STATUTES AND REGULATIONS.
3. UPON COMPLETION OF THE CONSTRUCTION, CERTIFICATION IN WRITING TO THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE THAT, TO THE BEST OF THE CONTRACTOR'S KNOWLEDGE AND BELIEF, CONSTRUCTION HAS BEEN DONE IN SUBSTANTIAL ACCORD WITH SECTION 107.6 AND WITH ALL PERTINENT DEVIATIONS SPECIFICALLY NOTED. THE BUILDING OFFICIAL MAY REQUIRE A COPY OF THIS CERTIFICATION.

107.6.4 PROJECT REPRESENTATION. A PROJECT REPRESENTATIVE MAY BE REQUIRED BY THE BUILDING OFFICIAL. THIS REPRESENTATIVE SHALL KEEP DAILY RECORDS AND SUBMIT REPORTS AS MAY BE REQUIRED BY THE BUILDING OFFICIAL. THIS PROJECT REPRESENTATION REQUIREMENT SHALL BE DETERMINED PRIOR TO THE ISSUANCE OF THE PERMIT AND MAY BE A PREREQUISITE FOR PERMIT ISSUANCE. REFUSAL BY THE APPLICANT TO PROVIDE SUCH SERVICE IF REQUIRED BY THE BUILDING OFFICIAL SHALL RESULT IN THE DENIAL OF THE PERMIT. ALL FEES AND COSTS RELATED TO THE PERFORMANCE OF PROJECT REPRESENTATION SHALL BE BORNE BY THE OWNER. WHEN APPLICATIONS FOR UNUSUAL DESIGNS OR MAGNITUDE OF CONSTRUCTION ARE FILED, OR WHERE REFERENCE STANDARDS REQUIRE SPECIAL ARCHITECTURAL OR ENGINEERING INSPECTIONS, THE BUILDING OFFICIAL MAY REQUIRE THAT THE PROJECT REPRESENTATIVE BE A REGISTERED DESIGN PROFESSIONAL IN ADDITION TO THOSE REGISTERED DESIGN PROFESSIONALS REQUIRED ELSEWHERE IN ACCORDANCE WITH SECTION 107.6.

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.

SPECIAL INSPECTIONS (REFERENCE IBC CHAPTER 17):

GENERAL: WHERE APPLICATION IS MADE FOR CONSTRUCTION, THE OWNER OR THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE ACTING AS THE OWNER'S AGENT SHALL EMPLOY ONE OR MORE APPROVED AGENCIES TO PERFORM INSPECTIONS DURING CONSTRUCTION ON THE TYPES OF WORK LISTED IN THE INSPECTION CHECKLIST ABOVE.

THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE AND ENGINEERS OF RECORD INVOLVED IN THE DESIGN OF THE PROJECT ARE PERMITTED TO ACT AS THE APPROVED AGENCY AND THEIR PERSONNEL ARE PERMITTED TO ACT AS THE SPECIAL INSPECTOR FOR THE WORK DESIGNED BY THEM, PROVIDED THOSE PERSONNEL MEET THE QUALIFICATION REQUIREMENTS.

STATEMENT OF SPECIAL INSPECTIONS: THE APPLICANT SHALL SUBMIT A STATEMENT OF SPECIAL INSPECTIONS PREPARED BY THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE IN ACCORDANCE WITH SECTION 107.1 AS A CONDITION FOR ISSUANCE. THIS STATEMENT SHALL BE IN ACCORDANCE WITH SECTION 1705.

REPORT REQUIREMENT: SPECIAL INSPECTORS SHALL KEEP RECORDS OF INSPECTIONS. THE SPECIAL INSPECTOR SHALL FURNISH INSPECTION REPORTS TO THE BUILDING OFFICIAL, AND TO THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE. REPORTS SHALL INDICATE THAT WORK INSPECTED WAS OR WAS NOT COMPLETED IN CONFORMANCE TO APPROVED CONSTRUCTION DOCUMENTS. DISCREPANCIES SHALL BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE CONTRACTOR FOR CORRECTION. IF THEY ARE NOT CORRECTED, THE DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE BUILDING OFFICIAL AND TO THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE. A FINAL REPORT DOCUMENTING REQUIRED SPECIAL INSPECTIONS SHALL BE SUBMITTED.

REQUIRED INSPECTIONS AND SITE REVIEW DOCUMENT AS A CONDITION OF THE BUILDING PERMIT THE FOLLOWING INSPECTIONS AND SITE REVIEWS IDENTIFIED BY THE BUILDING OFFICIAL ARE REQUIRED FOR WORK PER THE 9TH EDITION OF THE MASSACHUSETTS STATE BUILDING CODE, 780 CMR, SECTION 110 AND CHAPTER 17

REQUIRED SITE REVIEW AND DOCUMENTATION FOR PORTIONS OR PHASES CONSTRUCTION [1,6,7]
(TO BE PERFORMED BY THE APPROPRIATE REGISTERED DESIGN PROFESSIONAL OR HIS/HER DESIGNEE OR M.G.L.C 112 §81R CONTRACTOR)

SITE REVIEW AND DOCUMENTATION	X	SITE REVIEW AND DOCUMENTATION	X
SOIL CONDITION/ANALYSIS/REPORT		ENERGY EFFICIENCY REQUIREMENTS	
FOOTING AND FOUNDATION (INCLUDING REINFORCEMENT AND FOUNDATION ATTACHMENT)		FIRE ALARM INSTALLATION[2]	
CONCRETE FLOOR AND UNDER FLOOR		FIRE SUPPRESSION INSTALLATION[3]	
LOWEST FLOOR FLOOD ELEVATION		FIELD REPORTS[5]	
STRUCTURAL FRAME – WALL/FLOOR/ROOF	X	CARBON MONOXIDE DETECTION SYSTEM[4]	
LATH AND PLASTER/GYPSUM		SEISMIC REINFORCEMENT	
FIRE RESISTANT WALL/PARTITIONS FRAMING		SMOKE CONTROL SYSTEMS	
FIRE RESISTANT WALL/PARTITIONS FINISH ATTACHMENTS		SMOKE AND HEAT VENTS	
ABOVE CEILING INSPECTION		ACCESSIBILITY (521 CMR)	
FIRE BLOCKING/STOPPING SYSTEM		OTHER:	
EMERGENCY LIGHTING/EXIT SIGNAGE			
MEANS OF EGRESS COMPONENTS		SPECIAL INSPECTIONS (SECTION 1704):	X
ROOFING, COPING/SYSTEM			
VENTING SYSTEMS (KITCHEN, CHEMICAL, FUME)			
MECHANICAL SYSTEMS			

NOTES:

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.

NOTES:

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.

TEP OPCO, LLC

SPECIAL INSPECTION CHECKLIST

BEFORE CONSTRUCTION	
CONSTRUCTION/INSTALLATION INSPECTIONS AND TESTING REQUIRED (COMPLETED BY ENGINEER OF RECORD)	REPORT ITEM
N/A	ENGINEER OF RECORD APPROVED SHOP DRAWINGS [1]
N/A	MATERIAL SPECIFICATIONS REPORT [2]
N/A	FABRICATOR NDE INSPECTION
REQUIRED	PACKING SLIPS [3]
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 [4]
N/A	FOUNDATION INSPECTIONS
N/A	CONCRETE COMP. STRENGTH, SLUMP TESTS AND PLACEMENT
N/A	POST INSTALLED ANCHOR VERIFICATION [5]
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 [6]
N/A	POST INSTALLED ANCHOR PULL–OUT TESTING
REQUIRED	PHOTOGRAPHS
ADDITIONAL TESTING AND INSPECTIONS:	

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.

TEP OPCO, LLC.
45 BEECHWOOD DR.
NORTH ANDOVER, MA 01845
OFFICE: (978) 557-5553

SAI
12 INDUSTRIAL WAY
SALEM, NH 03079

SITE NUMBER: MAL02267
SITE NAME: MIT DORRANCE BLDG #16

77 MASSACHUSETTS AVENUE
CAMBRIDGE, MA 02139
MIDDLESEX COUNTY

AT&T
492 OLD CONNECTICUT
PATH SUITE #210
FRAMINGHAM, MA 01701

NO.	DATE	REVISIONS	BY	CHK	APP'D
6	08/28/25	ISSUED FOR CONSTRUCTION	SG	JC	DPH
5	07/23/25	ISSUED FOR CONSTRUCTION	CJ	JC	DPH
4	07/10/25	ISSUED FOR CONSTRUCTION	GA/SGK	JC	DPH
3	05/15/25	ISSUED FOR CONSTRUCTION	GA	JC	DPH
2	03/12/25	ISSUED FOR CONSTRUCTION	GA	JC	DPH

SCALE: AS SHOWN | DESIGNED BY: HC | DRAWN BY: AM

COMMONWEALTH OF MASSACHUSETTS
SCOTT C BRANTLEY
CIVIL
NO. 56874
REGISTERED PROFESSIONAL ENGINEER

AT&T

STRUCTURAL NOTES
C–BAND UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
MAL02267	SN–1	6

NOTE TO GENERAL CONTRACTOR: (PRIOR TO CONSTRUCTION COMPLETION)

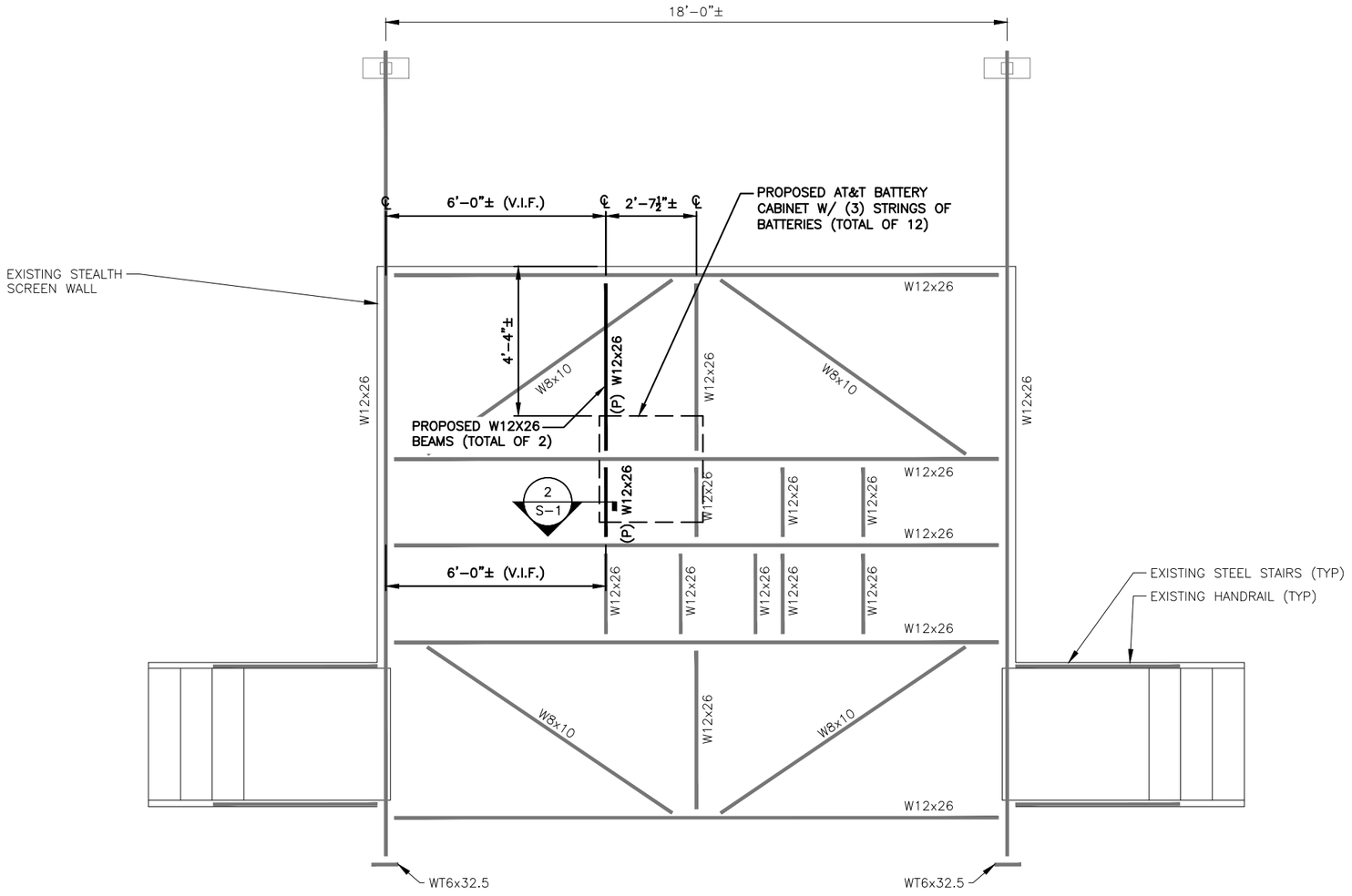
TEP OPCO, LLC. TO PERFORM POST/CLIMB AND INSPECTION TO CONFIRM PROPOSED INSTALLATION COMPLIES WITH THE RECORD STAMPED DRAWINGS AND STRUCTURAL REPORTS PRIOR TO SUBMITTING FCCA (FINAL CONSTRUCTION CONTROL AFFIDAVIT). GC IS RESPONSIBLE FOR COORDINATING INSPECTIONS WITH TEP OPCO, LLC. PRIOR TO CONSTRUCTION BEING COMPLETED.

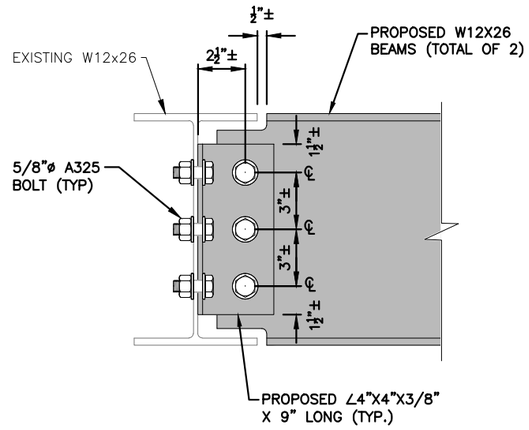
NOTE:

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

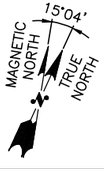
NOTE:

REFER TO STRUCTURAL ANALYSIS BY: TEP (TEP OPCO, LLC.) DATED: FEBRUARY 8, 2025 (REV.1) FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT.





W12X26 TO W12X26 CONNECTION DETAIL (2 / S-1)
22x34 SCALE: 3"=1'-0"
11x17 SCALE: 1-1/2"=1'-0"
0 0'-2" 0'-4" 0'-8" 1'-0"



PROPOSED STEEL FRAME REINFORCEMENT PLAN (1 / S-1)
22x34 SCALE: 1/2"=1'-0"
11x17 SCALE: 1/4"=1'-0"
0 1'-0" 2'-0" 4'-0" 6'-0"

TEP OPCO, LLC

COMMONWEALTH OF MASSACHUSETTS
SCOTT C BRANTLEY
CIVIL
No. 56874
REGISTERED PROFESSIONAL ENGINEER

TEP OPCO, LLC.
45 BEECHWOOD DR.
NORTH ANDOVER, MA 01845
OFFICE: (978) 557-5553

12 INDUSTRIAL WAY
SALEM, NH 03079

SITE NUMBER: MAL02267
SITE NAME: MIT DORRANCE BLDG #16

77 MASSACHUSETTS AVENUE
CAMBRIDGE, MA 02139
MIDDLESEX COUNTY

AT&T
492 OLD CONNECTICUT PATH SUITE #210
FRAMINGHAM, MA 01701

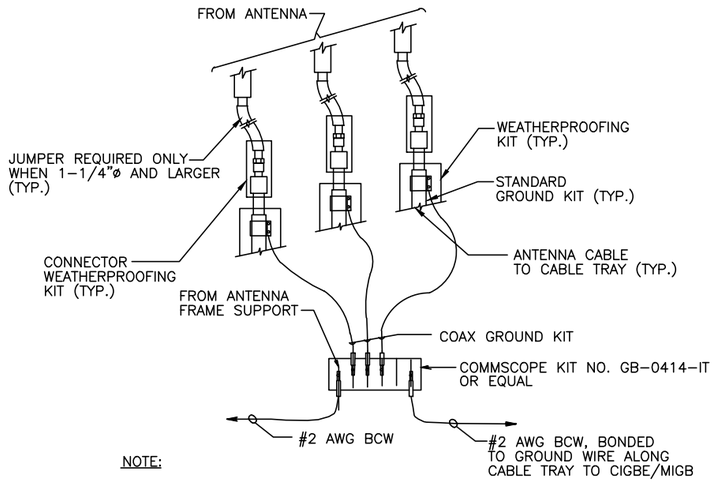
NO.	DATE	REVISIONS	BY	CHK	APP'D
6	08/28/25	ISSUED FOR CONSTRUCTION	SG	JC	DPH
5	07/23/25	ISSUED FOR CONSTRUCTION	CJ	JC	DPH
4	07/10/25	ISSUED FOR CONSTRUCTION	GA/SGK	JC	DPH
3	05/15/25	ISSUED FOR CONSTRUCTION	GA	JC	DPH
2	03/12/25	ISSUED FOR CONSTRUCTION	GA	JC	DPH

SCALE: AS SHOWN | DESIGNED BY: HC | DRAWN BY: AM

AT&T

STRUCTURAL MODIFICATION DESIGN
C-BAND UPGRADE

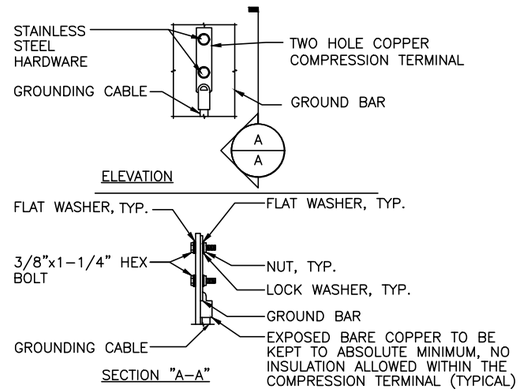
SITE NUMBER	DRAWING NUMBER	REV
MAL02267	S-1	6



NOTE:

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

GROUND WIRE TO GROUND BAR CONNECTION DETAIL (1 / G-1)
SCALE: N.T.S

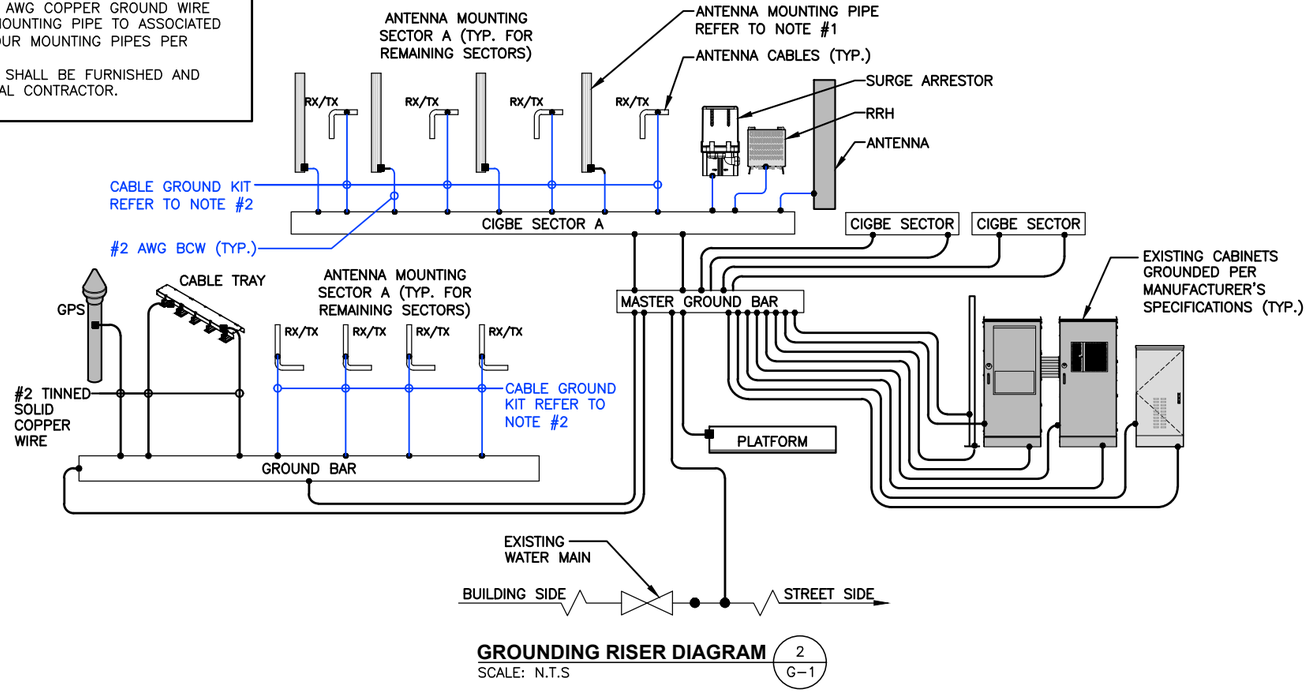


NOTES:
1. "DOUBLING UP" OR "STACKING" OF CONNECTION IS NOT PERMITTED.
2. OXIDE INHIBITING COMPOUND TO BE USED AT ALL LOCATION.
3. CADWELD DOWNLEADS FROM UPPER EGB, LOWER EGB, AND MGB

TYPICAL GROUND BAR CONNECTION DETAIL (3 / G-1)
SCALE: N.T.S

GROUNDING NOTES

1. PROVIDE DEDICATED #2 AWG COPPER GROUND WIRE FROM EACH ANTENNA MOUNTING PIPE TO ASSOCIATED CIGBE (TYPICAL FOR FOUR MOUNTING PIPES PER SECTOR).
2. ANTENNA GROUND KITS SHALL BE FURNISHED AND INSTALLED BY ELECTRICAL CONTRACTOR.



GROUNDING RISER DIAGRAM (2 / G-1)
SCALE: N.T.S

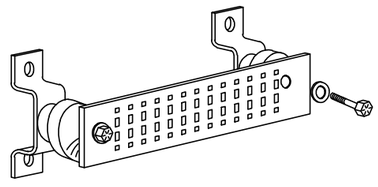
EACH GROUND CONDUCTOR TERMINATING ON ANY GROUND BAR SHALL HAVE AN IDENTIFICATION TAG ATTACHED AT EACH END THAT WILL IDENTIFY ITS ORIGIN AND DESTINATION.

SECTION "P" – SURGE PRODUCERS

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

SECTION "A" – SURGE ABSORBERS

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



GROUND BAR DETAIL (AS REQUIRED) (4 / G-1)
SCALE: N.T.S

TEP
TEP OPCO, LLC.
45 BEECHWOOD DR.
NORTH ANDOVER, MA 01845
OFFICE: (978) 557-5553

SAI
12 INDUSTRIAL WAY
SALEM, NH 03079

SITE NUMBER: MAL02267
SITE NAME: MIT DORRANCE BLDG #16

77 MASSACHUSETTS AVENUE
CAMBRIDGE, MA 02139
MIDDLESEX COUNTY

AT&T
492 OLD CONNECTICUT
PATH SUITE #210
FRAMINGHAM, MA 01701

NO.	DATE	REVISIONS	BY
6	08/28/25	ISSUED FOR CONSTRUCTION	SG
5	07/23/25	ISSUED FOR CONSTRUCTION	CJ
4	07/10/25	ISSUED FOR CONSTRUCTION	GA/SG
3	05/15/25	ISSUED FOR CONSTRUCTION	GA
2	03/12/25	ISSUED FOR CONSTRUCTION	GA

SCALE: AS SHOWN | DESIGNED BY: HC | DRAWN BY

COMMONWEALTH OF MASSACHUSETTS
SCOTT C BRANTLEY
CIVIL
No. 56874
REGISTERED PROFESSIONAL ENGINEER

AT&T

GROUNDING DETAILS
C-BAND UPGRADE

R	DRAWING NUMBER	REV
7	G-1	6

GENERAL NOTES

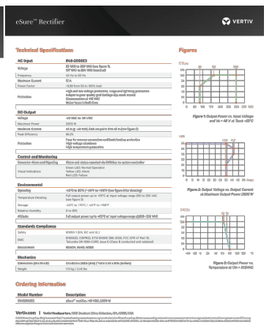
ELECTRICAL

1. CONTRACTOR SHALL OBTAIN THE MAXIMUM AVAILABLE FAULT CURRENT AT THE UTILITY SERVICE POINT FROM THE ELECTRIC COMPANY IN WRITING PRIOR TO ORDERING MATERIALS AND ENSURE THE EQUIPMENT WILL HAVE HIGHER RATING WITH A MIN VALUE OF 10,000A.
2. THE GROUNDED SERVICE CONDUCTOR SHALL BE GROUNDED AT THE SERVICE DISCONNECT ONLY.
3. DO NOT BOND THE NEUTRAL TO GROUND AT THE GENERATOR.
4. SIGNAGE MUST BE DISPLAYED ON DISCONNECT "OPENING THE EQUIPMENT DISCONNECT WILL CAUSE THE EMERGENCY GENERATOR TO START. TO REMOVE POWER ENTIRELY FROM EQUIPMENT, THE GENERATOR MUST BE TURNED OFF USING.
5. REFER TO SHEET C-2B FOR DECOMMISSIONING GUIDELINES.

POWER PANEL SCHEDULE 200A MCB 120/240V 1PH 3W

LOAD SERVED	UNCOMPENSATED VOLT AMPERES L1 (VA)	UNCOMPENSATED VOLT AMPERES L2 (VA)	TRIP	CKT #	PHASE	CKT #	TRIP	UNCOMPENSATED VOLT AMPERES L1 (VA)	UNCOMPENSATED VOLT AMPERES L2 (VA)	LOAD SERVED
EMERSON POWER PLANT FEED #1	2880		30A	1	A	2	30A	2880		EMERSON POWER PLANT FEED #2
		2880		3	B	4			2880	
EMERSON POWER PLANT FEED #3	2880		30A	5	A	6	30A	2880		EMERSON POWER PLANT FEED #4
		2880		7	B	8			2880	
RECEPTACLE	180		20A	9	A	10	30A	2880		UMTS 3206 HEATER
PP HEATER		1920	20A	11	B	12			2880	
RECTIFIERS #7 & #8	1141		30A	13	A	14	30A	180		UMTS 3206 RECEPTACLE
		1141		15	B	16			180	
RECTIFIERS #9 & #10	1141		30A	17	A	18	–	–		–
		1141		19	B	20	–		–	–
SPARE	0		20A	21	A	22	–	–		–
		0		23	B	24	–		–	–
–	–		–	25	A	26	–	–		–
–		–	–	27	B	28	–		–	–
–	–		–	29	A	30	–	–		–
VOLT AMPS	8222	9962						8820	8820	VOLT AMPS
				L1 VOLT AMPERES	17042	18782	L2 VOLT AMPERES			
				L1 AMPERES	142.0	156.5	L2 AMPERES			
					156.5		MAX AMPERES			
					195.6		MAX AMPERES x125%			

AC PANEL SCHEDULE (1 / E-1)
SCALE: N.T.S



TEP OPCO, LLC

SCOTT C BRANTLEY
COMMONWEALTH OF MASSACHUSETTS
CIVIL
No. 56874
REGISTERED PROFESSIONAL ENGINEER

TEP OPCO, LLC.
45 BEECHWOOD DR.
NORTH ANDOVER, MA 01845
OFFICE: (978) 557-5553

SAI
12 INDUSTRIAL WAY
SALEM, NH 03079

SITE NUMBER: MAL02267
SITE NAME: MIT DORRANCE BLDG #16

77 MASSACHUSETTS AVENUE
CAMBRIDGE, MA 02139
MIDDLESEX COUNTY

AT&T
492 OLD CONNECTICUT
PATH SUITE #210
FRAMINGHAM, MA 01701

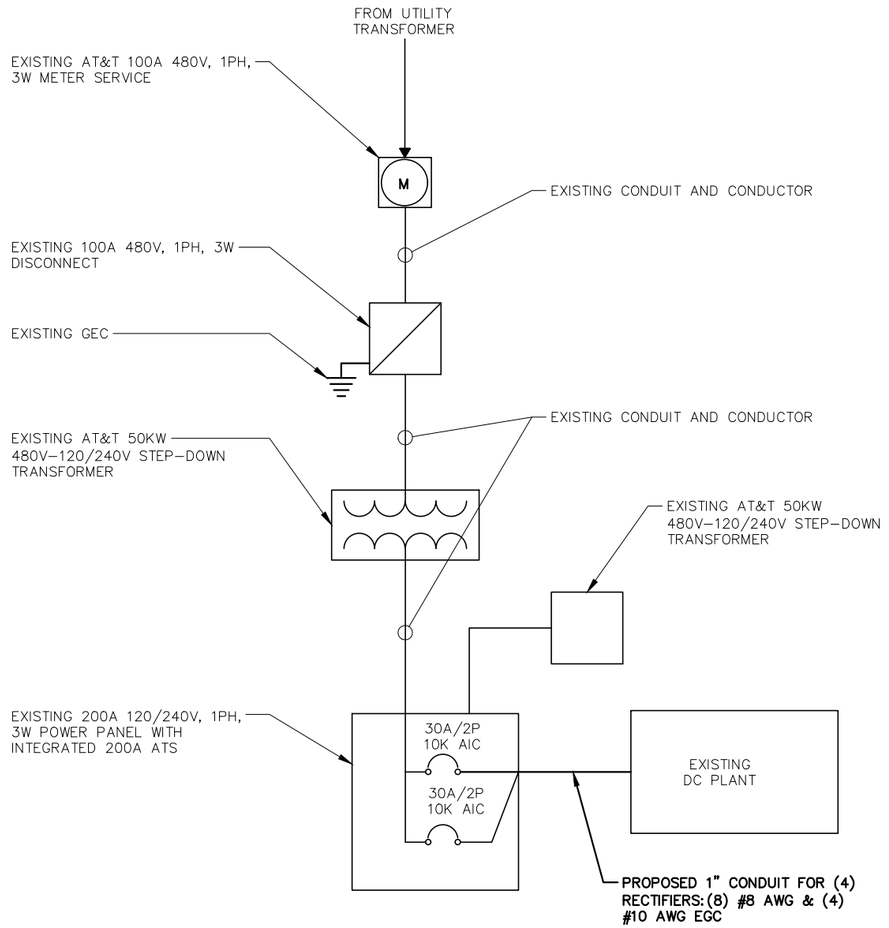
NO.	DATE	REVISIONS	BY	CHK	APP'D
6	08/28/25	ISSUED FOR CONSTRUCTION	SG	JC	DPH
5	07/23/25	ISSUED FOR CONSTRUCTION	CJ	JC	DPH
4	07/10/25	ISSUED FOR CONSTRUCTION	GA/SGK	JC	DPH
3	05/15/25	ISSUED FOR CONSTRUCTION	GA	JC	DPH
2	03/12/25	ISSUED FOR CONSTRUCTION	GA	JC	DPH

SCALE: AS SHOWN | DESIGNED BY: HC | DRAWN BY: AM

AT&T

ELECTRICAL NOTES & DETAILS
C-BAND UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
MAL02267	E-1	6



ONE LINE DIAGRAM (1 / E–2)
SCALE: N.T.S

TEP OPCO, LLC

TEP OPCO, LLC.
45 BEECHWOOD DR.
NORTH ANDOVER, MA 01845
OFFICE: (978) 557-5553

12 INDUSTRIAL WAY
SALEM, NH 03079

SITE NUMBER: MAL02267
SITE NAME: MIT DORRANCE BLDG #16

77 MASSACHUSETTS AVENUE
CAMBRIDGE, MA 02139
MIDDLESEX COUNTY

AT&T
492 OLD CONNECTICUT
PATH SUITE #210
FRAMINGHAM, MA 01701

NO.	DATE	REVISIONS	BY	CHK	APP'D
6	08/28/25	ISSUED FOR CONSTRUCTION	SG	JC	DPH
5	07/23/25	ISSUED FOR CONSTRUCTION	CJ	JC	DPH
4	07/10/25	ISSUED FOR CONSTRUCTION	GA/SGK	JC	DPH
3	05/15/25	ISSUED FOR CONSTRUCTION	GA	JC	DPH
2	03/12/25	ISSUED FOR CONSTRUCTION	GA	JC	DPH

SCALE: AS SHOWN | DESIGNED BY: HC | DRAWN BY: AM

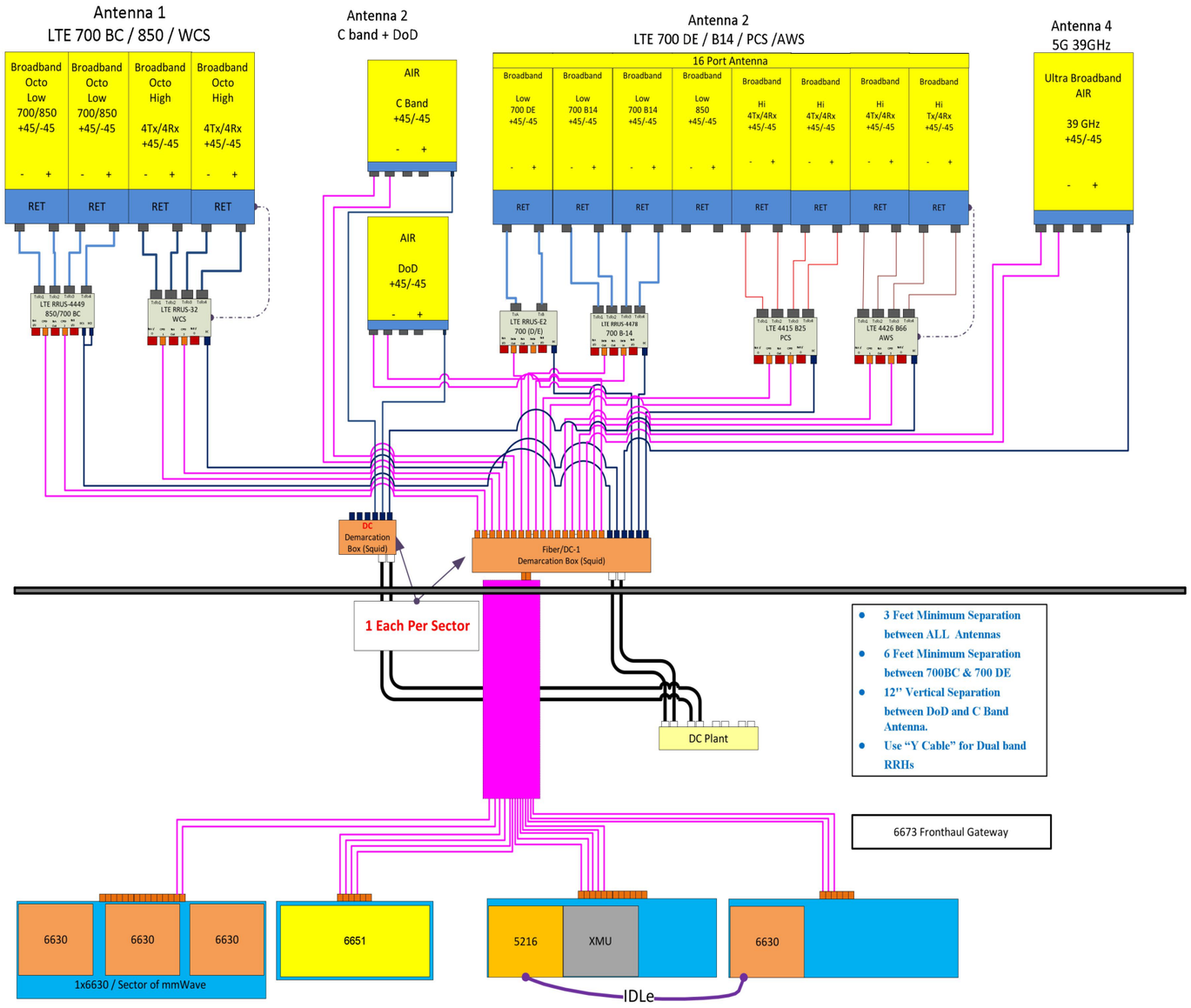
COMMONWEALTH OF MASSACHUSETTS
SCOTT C BRANTLEY
CIVIL
No. 56874
REGISTERED PROFESSIONAL ENGINEER

AT&T

ELECTRICAL ONE LINE DIAGRAM
C–BAND UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
MAL02267	E–2	6

ALPHA



RF PLUMBING DIAGRAM (1 / RF–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.

TEP OPCO, LLC.
45 BEECHWOOD DR.
NORTH ANDOVER, MA 01845
OFFICE: (978) 557-5553

12 INDUSTRIAL WAY
SALEM, NH 03079

SITE NUMBER: MAL02267
SITE NAME: MIT DORRANCE BLDG #16

77 MASSACHUSETTS AVENUE
CAMBRIDGE, MA 02139
MIDDLESEX COUNTY

AT&T
492 OLD CONNECTICUT
PATH SUITE #210
FRAMINGHAM, MA 01701

NO.	DATE	REVISIONS	BY	CHK	APP'D
6	08/28/25	ISSUED FOR CONSTRUCTION	SG	JC	DPH
5	07/23/25	ISSUED FOR CONSTRUCTION	CJ	JC	DPH
4	07/10/25	ISSUED FOR CONSTRUCTION	GA/SGK	JC	DPH
3	05/15/25	ISSUED FOR CONSTRUCTION	GA	JC	DPH
2	03/12/25	ISSUED FOR CONSTRUCTION	GA	JC	DPH

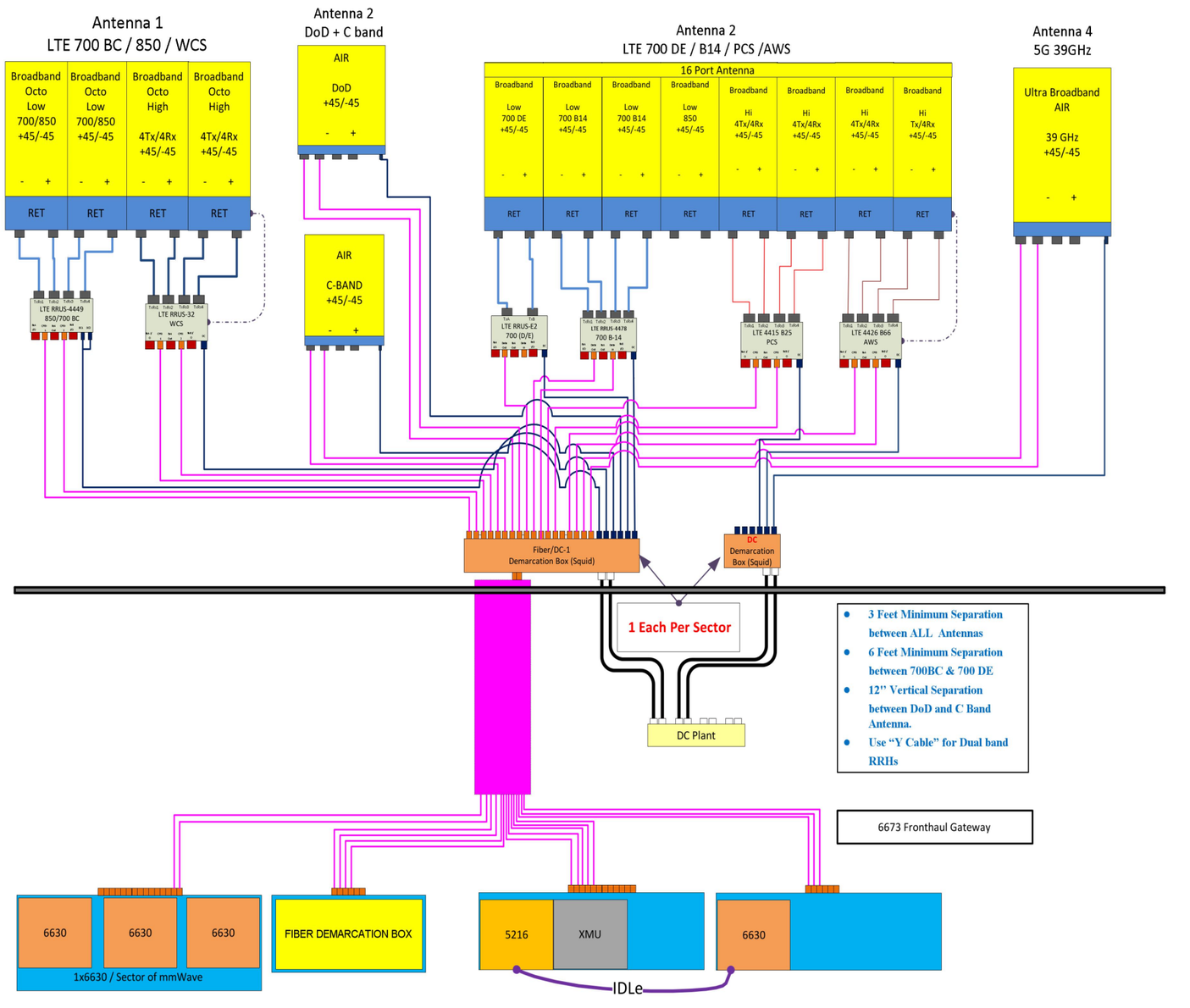
SCALE: AS SHOWN | DESIGNED BY: HC | DRAWN BY: AM

AT&T

RF PLUMBING DIAGRAM
C–BAND UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
MAL02267	RF–1	6

BETA & GAMMA



RF PLUMBING DIAGRAM (1 / RF–2)
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.

TEP OPCO, LLC.
45 BEECHWOOD DR.
NORTH ANDOVER, MA 01845
OFFICE: (978) 557-5553

12 INDUSTRIAL WAY
SALEM, NH 03079

SITE NUMBER: MAL02267
SITE NAME: MIT DORRANCE BLDG #16

77 MASSACHUSETTS AVENUE
CAMBRIDGE, MA 02139
MIDDLESEX COUNTY

AT&T
492 OLD CONNECTICUT
PATH SUITE #210
FRAMINGHAM, MA 01701

NO.	DATE	REVISIONS	BY	CHK	APP'D
6	08/28/25	ISSUED FOR CONSTRUCTION	SG	JC	DPH
5	07/23/25	ISSUED FOR CONSTRUCTION	CJ	JC	DPH
4	07/10/25	ISSUED FOR CONSTRUCTION	GA/SGK	JC	DPH
3	05/15/25	ISSUED FOR CONSTRUCTION	GA	JC	DPH
2	03/12/25	ISSUED FOR CONSTRUCTION	GA	JC	DPH

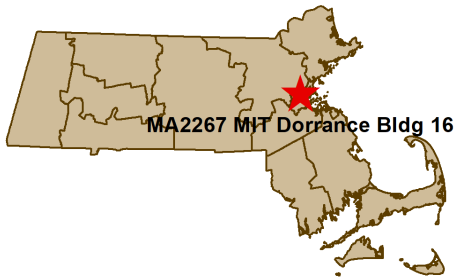
SCALE: AS SHOWN | DESIGNED BY: HC | DRAWN BY: AM

AT&T

RF PLUMBING DIAGRAM
C–BAND UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
MAL02267	RF–2	6

Photographic Simulation Package



Proposed Wireless Telecommunications Facility:

MA2267 MIT Dorrance Bldg 16
77 Massachusetts Avenue
Cambridge, MA 02139

- Documentation Photos Taken 3/11/25

Package prepared by:

Virtual Site Simulations, LLC
24 Salt Pond Road
Suite C3
South Kingstown, Rhode Island 02879

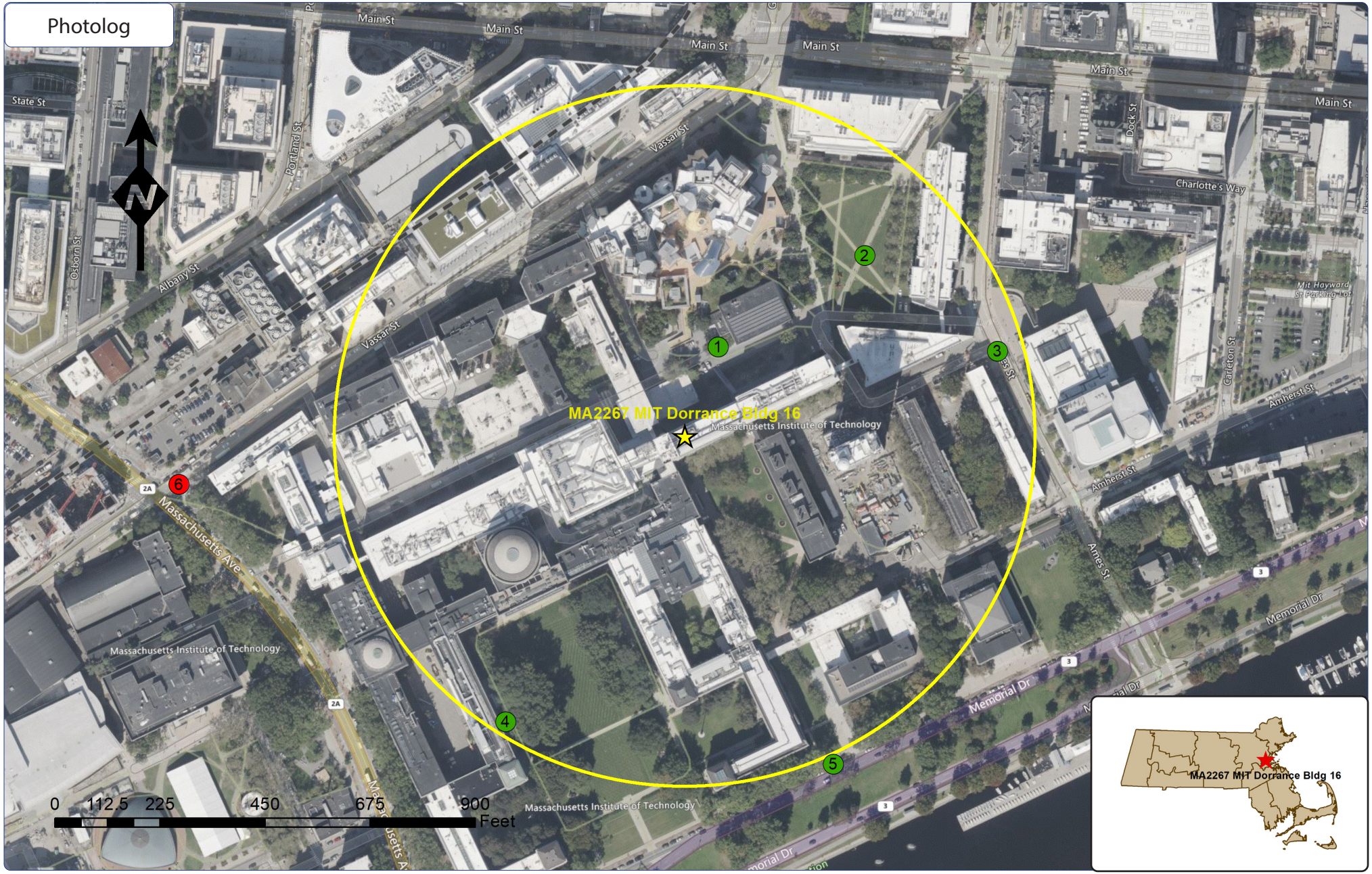
www.VirtualSiteSimulations.com
www.ThinkVSSFirst.com

VSS
Your Visual Data Partner

TOWER ENGINEERING PROFESSIONALS

at&t

Photolog



Wireless Telecommunications Facility:

MA2267 MIT Dorrance Bldg 16

77 Massachusetts Avenue

Cambridge, MA 02139

Legend:

Facility Location

750 Ft Radius

Photo location - Year Round Visibility

Photo location- Obscured Visibility

Photo location - NOT visible

Photo Simulations are for demonstration purposes only. It should not be used in any other fashion or with any other intent. The accuracy of the resulting data is not guaranteed and is not for redistribution

VSS
Your Visual Data Partner

TOWER ENGINEERING PROFESSIONALS

at&t

Existing

Photo #	Approximate Location	Gps Coordinates		Distance to site	Orientation	Bearing to site	Visibility
1	Swimming Pool	42.36097	-71.09041	206.7 Feet	North	201	Year Round

Site: MA2267 MIT Dorrance Bldg 16

Photo Simulations are for demonstration purposes only. It should not be used in any other fashion or with any other intent. The accuracy of the resulting data is not guaranteed and is not for redistribution

VSS

TOWER ENGINEERING PROFESSIONALS

at&t

Simulation

Photo #	Approximate Location	Gps Coordinates		Distance to site	Orientation	Bearing to site	Visibility
1	Swimming Pool	42.36097	-71.09041	206.7 Feet	North	201	Year Round

Site: MA2267 MIT Dorrance Bldg 16

Photo Simulations are for demonstration purposes only. It should not be used in any other fashion or with any other intent. The accuracy of the resulting data is not guaranteed and is not for redistribution

VSS

TOWER ENGINEERING PROFESSIONALS

at&t

Existing

Photo #	Approximate Location	Gps Coordinates		Distance to site	Orientation	Bearing to site	Visibility
2	Court	42.36149	-71.08923	0.1 Miles	North-East	226	Year Round

Site: MA2267 MIT Dorrance Bldg 16

Photo Simulations are for demonstration purposes only. It should not be used in any other fashion or with any other intent. The accuracy of the resulting data is not guaranteed and is not for redistribution

VSS

TOWER ENGINEERING PROFESSIONALS

at&t

Simulation

Photo #	Approximate Location	Gps Coordinates		Distance to site	Orientation	Bearing to site	Visibility
2	Court	42.36149	-71.08923	0.1 Miles	North-East	226	Year Round

Site: MA2267 MIT Dorrance Bldg 16

VSS

TOWER ENGINEERING PROFESSIONALS

at&t

Existing

Photo #	Approximate Location	Gps Coordinates		Distance to site	Orientation	Bearing to site	Visibility
3	Ames St	42.36091	-71.0882	0.13 Miles	East	256	Year Round

Site: MA2267 MIT Dorrance Bldg 16

Photo Simulations are for demonstration purposes only. It should not be used in any other fashion or with any other intent. The accuracy of the resulting data is not guaranteed and is not for redistribution

VSS

TOWER ENGINEERING PROFESSIONALS

at&t

Simulation

Photo #	Approximate Location	Gps Coordinates		Distance to site	Orientation	Bearing to site	Visibility
3	Ames St	42.36091	-71.0882	0.13 Miles	East	256	Year Round

Site: MA2267 MIT Dorrance Bldg 16

Photo Simulations are for demonstration purposes only. It should not be used in any other fashion or with any other intent. The accuracy of the resulting data is not guaranteed and is not for redistribution

VSS

TOWER ENGINEERING PROFESSIONALS

at&t

Existing

Photo #	Approximate Location	Gps Coordinates		Distance to site	Orientation	Bearing to site	Visibility
4	MA-2A	42.35879	-71.09215	0.14 Miles	South-West	33	Year Round

Site: MA2267 MIT Dorrance Bldg 16

Photo Simulations are for demonstration purposes only. It should not be used in any other fashion or with any other intent. The accuracy of the resulting data is not guaranteed and is not for redistribution

VSS

TOWER ENGINEERING PROFESSIONALS

at&t

Simulation

Photo #	Approximate Location	Gps Coordinates		Distance to site	Orientation	Bearing to site	Visibility
4	MA-2A	42.35879	-71.09215	0.14 Miles	South-West	33	Year Round

Site: MA2267 MIT Dorrance Bldg 16

Photo Simulations are for demonstration purposes only. It should not be used in any other fashion or with any other intent. The accuracy of the resulting data is not guaranteed and is not for redistribution

VSS

TOWER ENGINEERING PROFESSIONALS

at&t

Existing

Photo #	Approximate Location	Gps Coordinates		Distance to site	Orientation	Bearing to site	Visibility
5	Memorial Dr	42.35851	-71.08956	0.15 Miles	South-East	337	Year Round

Site: MA2267 MIT Dorrance Bldg 16

Photo Simulations are for demonstration purposes only. It should not be used in any other fashion or with any other intent. The accuracy of the resulting data is not guaranteed and is not for redistribution

VSS

TOWER ENGINEERING PROFESSIONALS

at&t

Simulation

Photo #	Approximate Location	Gps Coordinates		Distance to site	Orientation	Bearing to site	Visibility
5	Memorial Dr	42.35851	-71.08956	0.15 Miles	South-East	337	Year Round

Site: MA2267 MIT Dorrance Bldg 16

Photo Simulations are for demonstration purposes only. It should not be used in any other fashion or with any other intent. The accuracy of the resulting data is not guaranteed and is not for redistribution

VSS

TOWER ENGINEERING PROFESSIONALS

at&t

Existing

Antenna Array not visible from this location

Photo #	Approximate Location	Gps Coordinates		Distance to site	Orientation	Bearing to site	Visibility
6	St @ Mass Ave	42.36022	-71.0947	0.21 Miles	West	86	Not Visible

Site: MA2267 MIT Dorrance Bldg 16

Photo Simulations are for demonstration purposes only. It should not be used in any other fashion or with any other intent. The accuracy of the resulting data is not guaranteed and is not for redistribution

VSS

TOWER ENGINEERING PROFESSIONALS

at&t

C Squared Systems, LLC
65 Dartmouth Drive
Auburn, NH 03032
(603) 644-2800
support@csquaredsystems.com

Calculated Radio Frequency Emissions Report

MA2267

77 Massachusetts Avenue, Cambridge, MA 02139

March 31, 2025

Table of Contents

List of Figures

List of Tables

1. Introduction

The purpose of this report is to investigate compliance with applicable FCC regulations for the proposed installation of AT&T's antenna arrays to be mounted at 118.16', 120', 122.83' AGL on the existing rooftop located at 77 Massachusetts Avenue in Cambridge, MA. The coordinates[1] of the rooftop facility are 42° 21' 37.59" N, 71° 05' 26.46" W.

AT&T is proposing the following:

1) Install fifteen (15) direction antennas (three sectors, five antennas per sector) to support its 4G LTE and 5G NR networks.

This report considers the antenna configuration for AT&T's proposed installation to calculate the resulting % Maximum Permissible Exposure (MPE) at ground level around the existing rooftop facility.

2. FCC Guidelines for Evaluating RF Radiation Exposure Limits

In 1985, the FCC established rules to regulate radio frequency (RF) exposure from FCC licensed antenna facilities. In 1996, the FCC updated these rules, which were further amended in August 1997 by OET Bulletin 65 Edition 97-01. These new rules include Maximum Permissible Exposure (MPE) limits for transmitters operating between 300 kHz and 100 GHz. The FCC MPE limits are based upon those recommended by the National Council on Radiation Protection and Measurements (NCRP), developed by the Institute of Electrical and Electronics Engineers, Inc., (IEEE) and adopted by the American National Standards Institute (ANSI).

The FCC general population/uncontrolled limits set the maximum exposure to which most people may be subjected. General population/uncontrolled exposures apply in situations in which the general public may be exposed, or in which persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or cannot exercise control over their exposure.

Public exposure to radio frequencies is regulated and enforced in units of milliwatts per square centimeter (mW/cm^2). The general population exposure limits for the various frequency ranges are defined in the document referenced in Attachment A of this report.

Higher exposure limits are permitted under the occupational/controlled exposure category, but only for persons who are exposed as a consequence of their employment and who have been made fully aware of the potential for exposure, and they must be able to exercise control over their exposure. General population/uncontrolled limits are five times more stringent than the levels that are acceptable for occupational, or radio frequency trained individuals. Attachment B contains excerpts from OET Bulletin 65 and defines the Maximum Exposure Limit.

Finally, it should be noted that the MPE limits adopted by the FCC for both general population/uncontrolled exposure and for occupational/controlled exposure incorporate a substantial margin of safety and have been established to be well below levels generally accepted as having the potential to cause adverse health effects.

[1] As defined in the Construction Drawings prepared by TEP OPCO, LLC dated 01/29/2025 (Rev. 2).

3. RF Exposure Prediction Methods

The emission field calculation results displayed in the following figures were generated using the following formula as outlined in FCC bulletin OET 65:

$$\text{Power Density} = \left(\frac{\text{GRF}^2 \times 1.64 \times \text{ERP}}{4\pi \times R^2}\right) \text{X Off Beam Loss}$$

Where:

EIRP = Effective Isotropic Radiated Power

R = Radial Distance = $\sqrt{\left(H^2 + V^2\right)}$

H = Horizontal Distance from antenna in meters

V = Vertical Distance from radiation center of antenna in meters

Off Beam Loss is determined by the selected antenna patterns

Ground reflection factor (GRF) of 2.0

These calculations assume that the antennas are operating at 100 percent capacity, that all antenna channels are transmitting simultaneously, and that the radio transmitters are operating at full power. Obstructions (trees, buildings, etc.) that would normally attenuate the signal are not taken into account. The calculations assume even terrain in the area of study and do not take into account actual terrain elevations which could attenuate the signal. As a result, the predicted signal levels reported below are much higher than the actual signal levels will be from the final installations.

The percent of MPE values presented in this report reflect levels that one may encounter from one sector of a carrier's antennas. Most carriers use 3 or 4 sectors per site with azimuths approximately 90 or 120 degrees apart, respectively; therefore, one could not be standing in the main beam of all sectors at the same time. In cases where antenna models are not uniform across all sectors, the antenna model with the highest gain was used for the calculations. This results in a conservative or "worst case" assumption for percent of MPE calculations.

4. Antenna Inventory

Table 1 below outlines AT&T's proposed antenna configuration for the site. The associated data model and antenna patterns for these specific antenna models are included in Attachments C.

Operator	Sector / Azimuth	TX Freq (MHz)	Power at Antenna (Watts)	Ant Gain (dBi)	Power EIRP (Watts)	Antenna Model	Beam Width	Elect. Tilt	Mech. Tilt	Length (ft)	Antenna Centerline Height (ft)
AT&T	Alpha / 30°	722	40	14.2	1052	QD6616-7	71	10	0	6	120
		763	160	14.7	4722		65	10			
		1900	160	17.2	8397		67	0			
		2100	240	17.7	14132		62	3			
		739	160	12.7	2979	DMP65R-BU4D	75	10	0	4	120
		850	160	13.0	3192		67	10			
		2300	100	17.2	5248		57	8			
		3500	54.22	25.5	19238	AIR6419 B77G	55	0	0	2.4	118.16
		3700	86.75	25.65	31862	AIR6449 B77D	60	0	0	2.6	122.83
		39000	1.12	29	890	AIR 5531 N260	4	-	0	2	120
	Beta / 150°	722	40	14.2	1052	QD6616-7	71	6	0	6	120
		763	160	14.7	4722		65	6			
		1900	160	17.2	8397		67	0			
		2100	240	17.7	14132		62	3			
		739	160	12.7	2979	DMP65R-BU4D	75	6	0	4	120
		850	160	13.0	3192		67	6			
		2300	100	17.2	5248		57	4			
		3500	54.22	25.5	19238	AIR6419 B77G	55	0	0	2.4	118.16
		3700	86.75	25.65	31862	AIR6449 B77D	60	0	0	2.6	122.83
		39000	1.12	29	890	AIR 5531 N260	4	-	0	2	120
	Gamma / 270°	722	40	14.2	1052	QD6616-7	71	4	0	6	120
		763	160	14.7	4722		65	4			
		1900	160	17.2	8397		67	0			
		2100	240	17.7	14132		62	3			
		739	160	12.7	2979	DMP65R-BU4D	75	4	0	4	120
		850	160	13.0	3192		67	4			
		2300	100	17.2	5248		57	6			
		3500	54.22	25.5	19238	AIR6419 B77G	55	0	0	2.4	118.16
		3700	86.75	25.65	31862	AIR6449 B77D	60	0	0	2.6	122.83
		39000	1.12	29	890	AIR 5531 N260	4	-	0	2	120

Table 1: Proposed Antenna Inventory[2,3]

[2] AT&T's antenna configuration is in reference to AT&T's Radio Frequency Design Sheet updated 01/16/2025 and the Construction Drawings prepared by TEP OPCO, LLC dated 01/29/2025 (Rev. 2).

[3] Transmit power assumes 0 dB of cable loss.

5. Calculation Results

The calculated %MPE results for the proposed antenna configuration are shown in Figure 1 below. Each frequency band and technology is calculated as well as the resulting cumulative percent of MPE. For completeness, the calculations for this analysis range from 0 feet horizontal distance (directly below the antennas) to a value of 3,000 feet horizontal distance from the site. In addition to the other worst-case scenario considerations that were previously mentioned, the power density calculations to each horizontal distance point away from the antennas was completed using a local maximum off beam antenna gain (within ± 5 degrees of the true mathematical angle) to incorporate a realistic worst-case scenario.

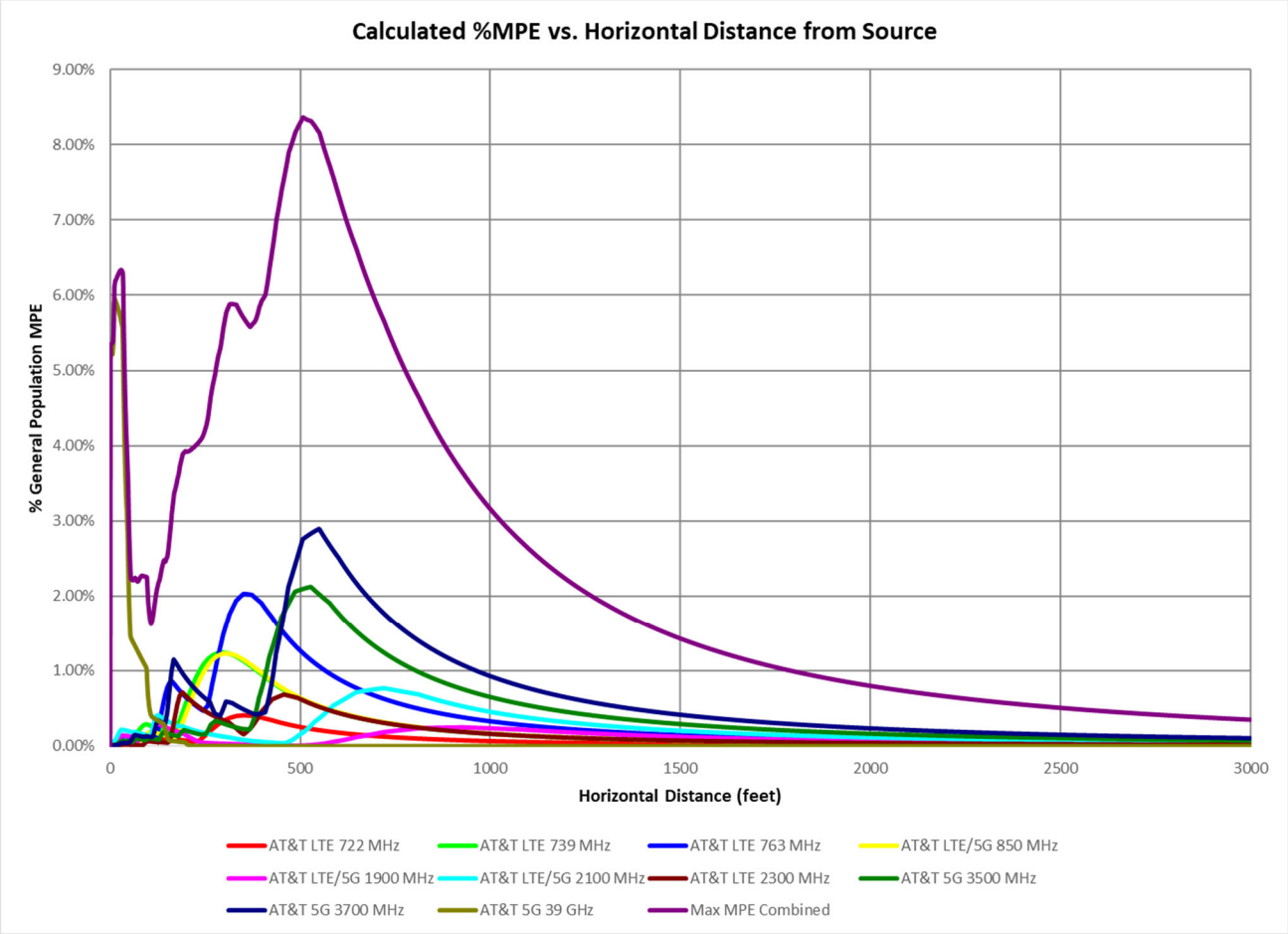


Figure 1: Graph of General Population % MPE vs. Distance

The highest percent of MPE (**8.36%** of the General Population limit) is calculated to occur at a horizontal distance of 506 feet from antennas. Please note that the percent of MPE calculations close to the site take into account off beam loss, which is determined from the vertical pattern of the antennas used. Therefore, RF power density levels may increase as the distance from the site increases. At distances of approximately 700 feet and beyond, one would now be in the main beam of the antenna pattern and off beam loss is no longer considered. Beyond this point, RF levels become calculated solely on distance from the site and the percent of MPE decreases significantly as distance from the site increases.

Table 2 below lists percent of MPE values as well as the associated parameters that were included in the calculations. As stated in Section 3, all calculations assume that the antennas are operating at 100 percent capacity, and that all antenna channels are transmitting simultaneously. Obstructions (trees, buildings etc.) that would normally attenuate the signal are not taken into account. Additionally, a six foot height offset was considered in this analysis to account for the height of a person standing at ground level. As a result, the calculated % MPE levels are significantly higher than the actual signal levels will be from the final installation. The results presented in Figure 1 and Table 2 assume level ground elevation from the base of the tower out to the horizontal distances calculated.

Carrier	Number of Transmitters	Power out of Base Station Per Transmitter (Watts)	Antenna Height (Feet)	Distance to the Base of Antennas (Feet)	Power Density (mW/cm^2)	Limit (mW/cm^2)	% MPE
AT&T 5G 3500 MHz	1	54.22	118.2	506	0.020941	1.000	2.09%
AT&T 5G 3700 MHz	1	86.75	122.8	506	0.027544	1.000	2.75%
AT&T 5G 39 GHz	1	1.12	120.0	506	0.000003	1.000	0.00%
AT&T LTE 2300 MHz	1	100.0	120.0	506	0.006096	1.000	0.61%
AT&T LTE 722 MHz	1	40.0	120.0	506	0.001191	0.481	0.25%
AT&T LTE 739 MHz	1	160.0	120.0	506	0.003014	0.493	0.61%
AT&T LTE 763 MHz	1	160.0	120.0	506	0.006297	0.509	1.24%
AT&T LTE/5G 1900 MHz	1	160.0	120.0	506	0.000075	1.000	0.01%
AT&T LTE/5G 2100 MHz	1	240.0	120.0	506	0.001760	1.000	0.18%
AT&T LTE/5G 850 MHz	1	160.0	120.0	506	0.003541	0.567	0.62%
						Total	**8.36%**

Table 2: Maximum Percent of General Population Exposure Values[4] [5] [6]

[4] Frequencies listed are representative of the operating band and are not the specific operating frequency.

[5] The total % MPE listed is a summation of each unrounded contribution. Therefore, summing each rounded value may not reflect the total value listed in the table.

[6] When the antenna pattern data is unavailable, similar antenna pattern was used based on the frequency, beamwidth and gain of the antenna.

6. Conclusion

The above analysis verifies that RF exposure levels from the proposed site will be well below the maximum permissible levels as outlined by the FCC in the OET Bulletin 65 Ed. 97-01. Using the conservative calculation methods and parameters detailed above, the maximum cumulative percent of MPE in consideration of all transmitters is calculated to be **8.36 % of the FCC limit (General Population/Uncontrolled)**. This maximum cumulative percent of MPE value is calculated to occur 506 feet away from the site.

7. Statement of Certification

I certify to the best of my knowledge that the statements in this report are true and accurate. The calculations follow guidelines set forth in ANSI/IEEE Std. C95.1, ANSI/IEEE Std. C95.3 and FCC OET Bulletin 65 Edition 97-01.

March 28, 2025

Report Prepared By: Ram Acharya
RF Engineer
C Squared Systems, LLC

Date

March 31, 2025

Reviewed/Approved By: Martin Lavin
Senior RF Engineer
C Squared Systems, LLC

Date

Attachment A: References

OET Bulletin 65 - Edition 97-01 - August 1997 Federal Communications Commission Office of Engineering & Technology

IEEE C95.1-2019, IEEE Standard Safety Levels With Respect to Human Exposure to Electric, Magnetic, and Electromagnetic Fields, 0 Hz to 300 GHz IEEE-SA Standards Board

IEEE C95.3-2021, IEEE Recommended Practice for Measurements and Computations of Electric, Magnetic, and Electromagnetic Fields with Respect to Human Exposure to Such Fields, 0 Hz-300 GHz IEEE-SA Standards Board

Attachment B: FCC Limits for Maximum Permissible Exposure (MPE)

(A) Limits for Occupational/Controlled Exposure[7]

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (E) (A/m)	Power Density (S) (mW/cm^2)	Averaging Time $\|E\|^2$, $\|H\|^2$ or S (minutes)
0.3-3.0	614	1.63	(100)*	6
3.0-30	1842/f	4.89/f	($900/f^2$)*	6
30-300	61.4	0.163	1.0	6
300-1500	-	-	f/300	6
1500-100,000	-	-	5	6

(B) Limits for General Population/Uncontrolled Exposure[8]

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (E) (A/m)	Power Density (S) (mW/cm^2)	Averaging Time $\|E\|^2$, $\|H\|^2$ or S (minutes)
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	($180/f^2$)*	30
30-300	27.5	0.073	0.2	30
300-1500	-	-	f/1500	30
1500-100,000	-	-	1.0	30

f = frequency in MHz * Plane-wave equivalent power density

Table 3: FCC Limits for Maximum Permissible Exposure

[7] Occupational/controlled limits apply in situations in which persons are exposed as a consequence of their employment provided those persons are fully aware of the potential for exposure and can exercise control over their exposure. Limits for occupational/controlled exposure also apply in situations when an individual is transient through a location where occupational/controlled limits apply provided he or she is made aware of the potential for exposure.

[8] General population/uncontrolled exposures apply in situations in which the general public may be exposed, or in which persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or cannot exercise control over their exposure.

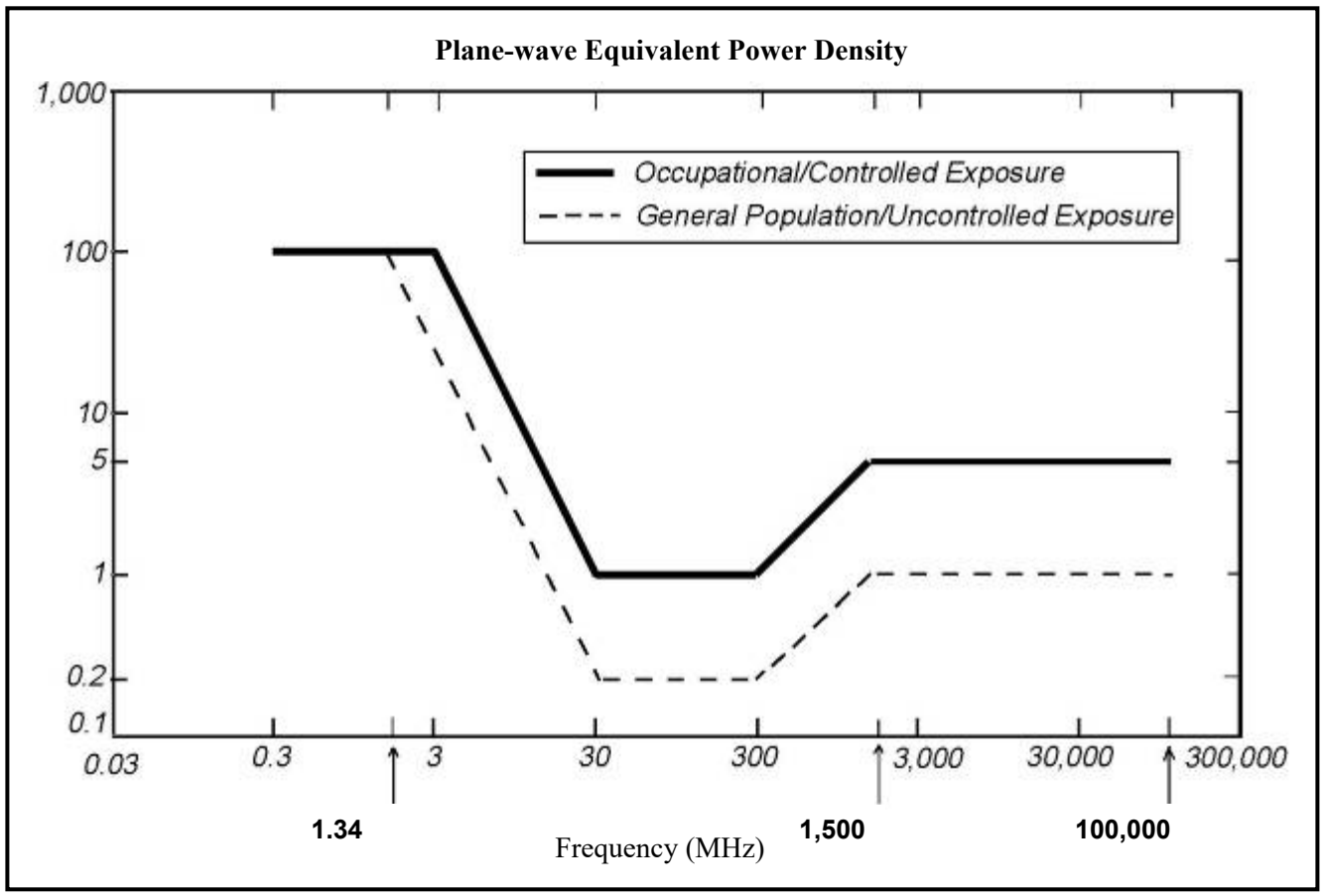
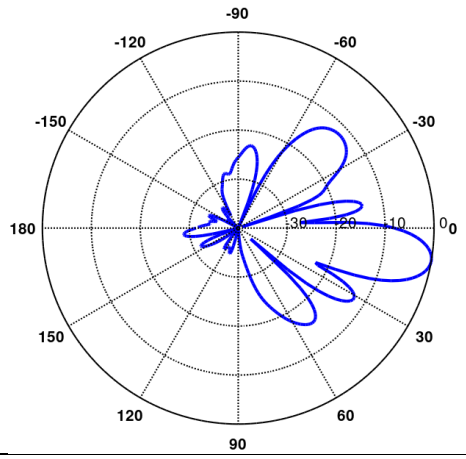


Figure 2: Graph of FCC Limits for Maximum Permissible Exposure (MPE)

Attachment C: AT&T Antenna Model Data Sheets and Electrical Patterns

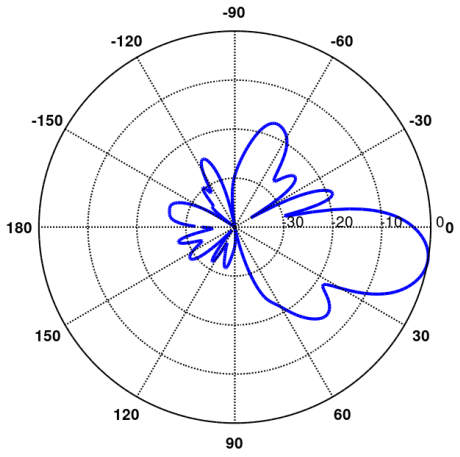
722 MHz

Manufacturer:	QUINTEL
Model #:	QD6616-7
Frequency Band:	698-806 MHz
Gain:	14.2 dBi
Vertical Beamwidth:	12.5°
Horizontal Beamwidth:	71°
Polarization:	±45°
Dimensions (L x W x D):	72” x 22” x 9.6“



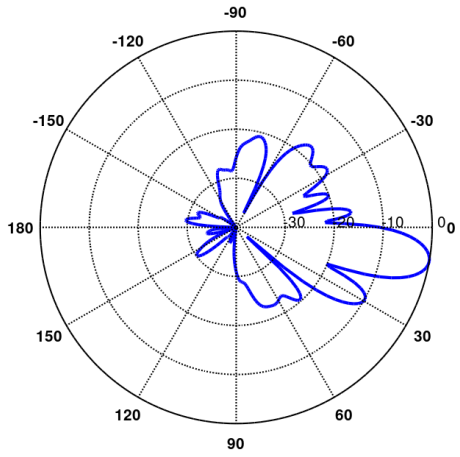
739 MHz

Manufacturer:	CCI
Model #:	DMP65R-BU4D
Frequency Band:	698-798 MHz
Gain:	12.7 dBi
Vertical Beamwidth:	19.9°
Horizontal Beamwidth:	75°
Polarization:	Dual Linear 45°
Dimensions (L x W x D):	48” x 20.7” x 7.7“



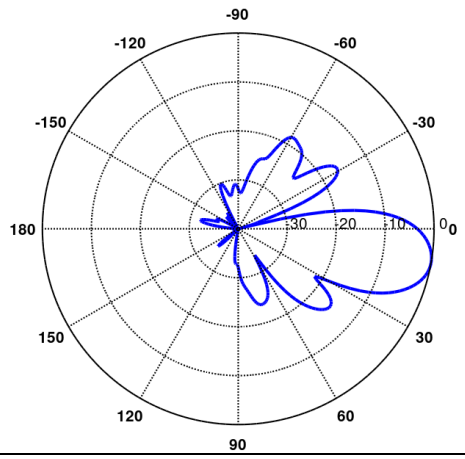
763 MHz

Manufacturer:	QUINTEL
Model #:	QD6616-7
Frequency Band:	758-798 MHz
Gain:	14.7 dBi
Vertical Beamwidth:	10.3°
Horizontal Beamwidth:	65°
Polarization:	±45°
Dimensions (L x W x D):	72” x 22” x 9.6“



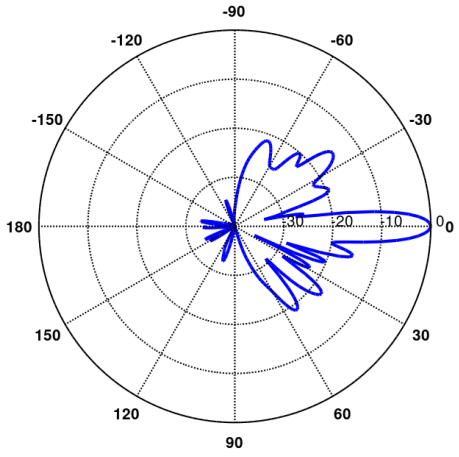
850 MHz

Manufacturer:	CCI
Model #:	DMP65R-BU4D
Frequency Band:	824-896 MHz
Gain:	13 dBi
Vertical Beamwidth:	17.9°
Horizontal Beamwidth:	67°
Polarization:	Dual Linear 45°
Dimensions (L x W x D):	48” x 20.7” x 7.7“



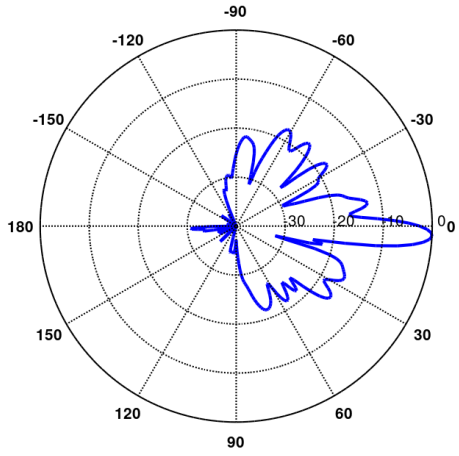
1900 MHz

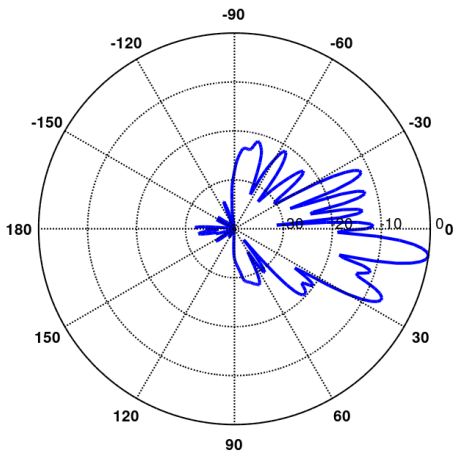
Manufacturer:	QUINTEL
Model #:	QD6616-7
Frequency Band:	1850-1990 MHz
Gain:	17.2 dBi
Vertical Beamwidth:	6.5°
Horizontal Beamwidth:	67°
Polarization:	±45°
Dimensions (L x W x D):	72” x 22” x 9.6“



2100 MHz

Manufacturer:	QUINTEL
Model #:	QD6616-7
Frequency Band:	1920-2180 MHz
Gain:	17.7 dBi
Vertical Beamwidth:	5.7°
Horizontal Beamwidth:	62°
Polarization:	±45°
Dimensions (L x W x D):	72” x 22” x 9.6“



2300 MHz Manufacturer: CCI Model #: DMP65R-BU4D Frequency Band: 2300-2400 MHz Gain: 17.2 dBi Vertical Beamwidth: 5.9° Horizontal Beamwidth: 57° Polarization: Dual Linear 45° Dimensions (L x W x D): 48” x 20.7” x 7.7“	
3500 MHz Manufacturer: ERICSSON Model #: AIR 6419 B77G Frequency Band: 3450-3550 MHz Gain: 25.5 dBi Vertical Beamwidth: 87-101° Horizontal Beamwidth: ±55° Polarization: -° Dimensions (L x W x D): 28.2” x 16.1” x 7.24“	N/A
3700 MHz Manufacturer: ERICSSON Model #: AIR 6449 B77D Frequency Band: 3700-3980 MHz Gain: 25.65 dBi Vertical Beamwidth: 83-109° Horizontal Beamwidth: ±60° Polarization: -° Dimensions (L x W x D): 30.6” x 15.8” x 8.9“	N/A

39000 MHz Manufacturer: ERICSSON Model #: AIR 6419 B77G Frequency Band: 37000-40000 MHz Gain: 29 dBi Vertical Beamwidth: 15° Horizontal Beamwidth: 60° Polarization: -° Dimensions (L x W x D): 23.6” x 11.9” x 4.3“	N/A

(REVISED)
STRUCTURAL ANALYSIS REPORT

For

Site Number: MAL02267 (C-BAND)

TEP Project Number: 323967.1058557

Site Name: MIT DORRANCE BLDG #16

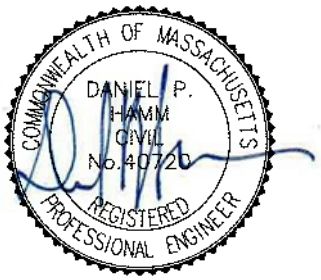
77 Massachusetts Avenue
Cambridge, MA 02139
42.360444° N, 71.090686° W

Antennas Mounted on Building Façade; Equipment Located within Stealth Enclosure on Rooftop

Prepared for:

12 Industrial Way
Salem, NH 03079

Dated: February 8, 2025 (Rev.1)
September 24, 2021



Prepared by:

(TEP OPCO, LLC)
45 Beachwood Drive
North Andover, MA 01845
(P) 978-557-5533
www.tepgroup.net

SCOPE OF WORK:

TEP has been authorized by AT&T to conduct a structural evaluation of the structure supporting the proposed equipment located in the areas depicted in the latest TEP construction drawings.

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

This office conducted an on-site visual survey of the above site on April 8, 2021.

The following documents were used for our reference:

- Previous Construction Drawings prepared by Dewberry dated December 21, 2009.
- Building Plans prepared by Wilson Architects, Inc. dated January 30, 2015.
- Previous Structural Analysis Report prepared by Hudson Design Group LLC dated October 11, 2019.

CONCLUSION SUMMARY:

Based on our evaluation, we have determined that the existing structure **IS CAPABLE** of supporting the proposed equipment loading.

	Member	Controlling Component	Stress Ratio	Pass/Fail
Equipment Platform	Beam	W12x26	61%	**PASS**

	Member	Controlling Component	Stress Ratio	Pass/Fail
Antenna Mount	Face Pipe	2-1/2" STD	22%	**PASS**

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

	Anchor Description	Stress Ratio	Pass/Fail
Mount Connection	3/8" Epoxy Anchor	65%	**PASS**
Platform Connection	5/8" Epoxy Anchor	59%	**PASS**
Platform Connection	3/4" Epoxy Anchor	37%	**PASS**

Reference the table below for the minimum ballast requirements:

MINIMUM BALLAST REQUIREMENTS – SLEEPER STYLE			
	Existing	**Proposed**	**Total**
Number of Sleepers	8	N/A	8
Size of Sleepers	4"x4"x57"	-	4"x4"x57"
Weight of Sleepers	80 lbs. /each	-	80 lbs. /each
Total Ballast Weight	640 lbs.	0 lbs.	640 lbs.

No additional ballast is required. The amount of ballast required for the proposed equipment does not exceed the current amount of ballast.

DESIGN CRITERIA:

International Building Code (IBC) 2021 with Massachusetts State Building Code 10th Edition, and ASCE 7-16 (Minimum Design Loads for Buildings and Other Structures).		
Wind		
Reference Wind Speed:	120 mph	(780 CMR Table 1604.11)
Exposure Category:	B	(ASCE 7-16 Chapter 26)
Risk Category:	II	(ASCE 7-16 Table 1.5-1)
Snow		
Ground Snow, P_g:	40 psf	(780 CMR Table 1604.11)
Importance Factor (I_s):	1.0	(ASCE 7-16 Table 1.5-2)
Exposure Factor (C_e):	1.0	(Partially Exposed, Table 7.3-1)
Thermal Factor (C_t):	1.0	(ASCE 7-16 Table 7.3-2)
Flat Roof Snow Load:	28 psf	(ASCE 7-16 Equation 7.3-1)
Min. Flat Roof Snow Load:	30 psf	(780 CMR Table 1604.11)
Seismic		
Seismic Design Category:	B	(ASCE 7-16 Table 11.6-1/2)
Site Class:	D	(Default)
Importance Factor (I_e):	1.0	(ASCE 7-16 Table 1.5-2)
Ground Motion Parameter (S_s):	0.272 g	(780 CMR Table 1604.11)
Ground Motion Parameter (S_1):	0.066 g	(780 CMR Table 1604.11)
EIA/TIA-222-H Structural Standards for Steel Antenna Towers and Antenna Supporting Structures		
Wind		
City/Town:	Cambridge	
County:	Middlesex	
Risk Category:	II	(TIA-222-H Table 2-1)
Wind Load:	120 mph	(TIA-222-H Figure B-2)
Ice		
Design Ice Thickness (t_i):	1.00 in	(TIA-222-H Figure B-9)
Importance Factor (I_i):	1.0	(TIA-222-H Table 2-3)
Factored Thickness of Radial Ice (t_{iz}):	1.14 in	(TIA-222-H Sec. 2.6.10)

APPURTENANCE CONFIGURATION:

Appurtenances	Dimensions	Weight	**Elevation	Mount
(3) AIR5331 Antennas	23.6"x11.9"x6.2"	45 lbs.	120'-0"	Pipe Mast
(3) 4449 B5/B12 RRH's	17.9"x13.2"x9.4"	73 lbs	--	Ballast Sled
(3) RRUS-32 B30 RRH's	27.2"x12.1"x7.0"	60 lbs	--	Ballast Sled
(3) 4478 B14 RRH's	18.1"x13.4"x8.3"	60 lbs	--	Ballast Sled
(3) RRUS-E2 B29 RRH's	20.4"x18.5"x7.5"	53 lbs	--	Ballast Sled
(3) 4426 B66 RRH's	14.9"x13.2"x5.8"	49 lbs	--	Ballast Sled
(3) DC6-48-60-18-8F Surge Arrestors	31.4"x10.2"Ø	29 lbs	--	Ballast Sled
(3) DC6 Surge Arrestors	20.1"x18.2"x6.4"	44 lbs	--	Ballast Sled
(3) DMP65R-BU4D Antennas	48.0"x20.7"x7.7"	68 lbs	120'-0"	Pipe Mast
(3) AIR6419 B77G Antennas [1]	28.2"x16.1"x7.3"	66 lbs	120'-0"	Pipe Mast
(3) AIR6449 B77D Antennas	30.6"x15.9"x10.6"	84 lbs	120'-0"	Pipe Mast
(3) QD6616-7 Antennas	72.0"x22.0"x9.6"	114 lbs	120'-0"	Pipe Mast
(3) 4415 B25 RRH's	16.5"x13.5"x6.3"	50 lbs	--	Ballast Sled

** Proposed equipment shown in bold.*
*** Elevation to antenna centerline.*
[1] Appurtenance uses CFD aerodynamic efficiency data provided by the carrier.

NOTE:

This analysis has been prepared in association with antennae aerodynamic efficiency data, produced via computational fluid dynamic (CFD) analyses, at the direction of AT&T. TEP is under the assumption that the aforementioned data has been produced in accordance with all pertinent rules and regulations of the design codes referenced herein.

EQUIPMENT CONFIGURATION:

Equipment Description	Dimensions	Weight	Location
(1) Telco Box	36.0"x36.0"x9.0"	200 lbs	Platform
(1) Hoffman Box	12.0"x12.0"x6.0"	50 lbs	Platform
(1) Disconnect Switch	18.0"x12.0"x6.0"	50 lbs	Platform
(1) Transformer	32.0"x20.0"x20.0"	450 lbs	Platform
(1) Intersect Box	24.0"x12.0"x12.0"	75 lbs	Platform
(1) AC Panel	36.0"x24.0"x12.0"	200 lbs	Platform
(6) RRUW RRH's	23.6"x13.8"x4.4"	45 lbs	Platform
(3) Purcell Cabinets	30.0"x25.0"x20.0"	200 lbs	Platform
(1) Fiber Box	18.0"x18.0"x6.0"	25 lbs	Platform
(2) DC12 Surge Arrestors	24.0"x24.0"x8.0"	57 lbs	Platform
(1) Power Plant w/ (12) Batteries	76.8"x28.0"x24.0"	2000 lbs.	Platform
(1) UMTS Cabinet	84.0"x31.0"x35.0"	1600 lbs.	Platform
(1) Battery Cabinet w/ (12) Batteries	72.0"x36.0"x37.0"	2400 lbs.	Platform

ANTENNA SUPPORT RECOMMENDATIONS:

The proposed antennas are to be mounted on existing pipe masts secured to the penthouse façade with existing double angle mounts and epoxy anchors.

RRH SUPPORT RECOMMENDATIONS:

The proposed RRH's are to be mounted on existing non-penetrating ballast sleds located on the roof. Reference the table on page 2 for minimum ballast requirements.

EQUIPMENT RECOMMENDATIONS:

The proposed AT&T equipment is to be installed on an existing steel platform located on the rooftop secured to existing reinforced concrete columns with epoxy anchors.

Limitations and Assumptions:

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

FIELD PHOTOS:

Photo 1: Sample photo illustrating the existing location of the Alpha sector.

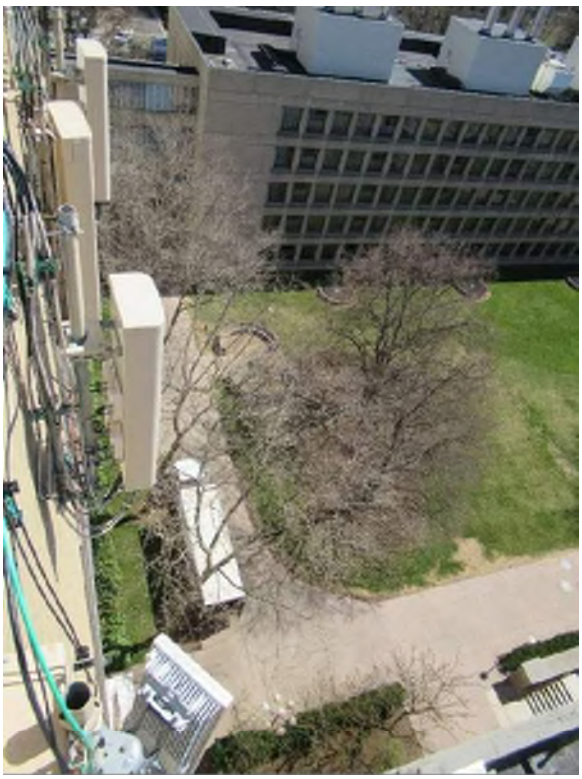


Photo 2: Sample photo illustrating the existing location of the Beta sector.

FIELD PHOTOS (CONT.):

Photo 3: Sample photo illustrating the existing location of the Gamma sector.

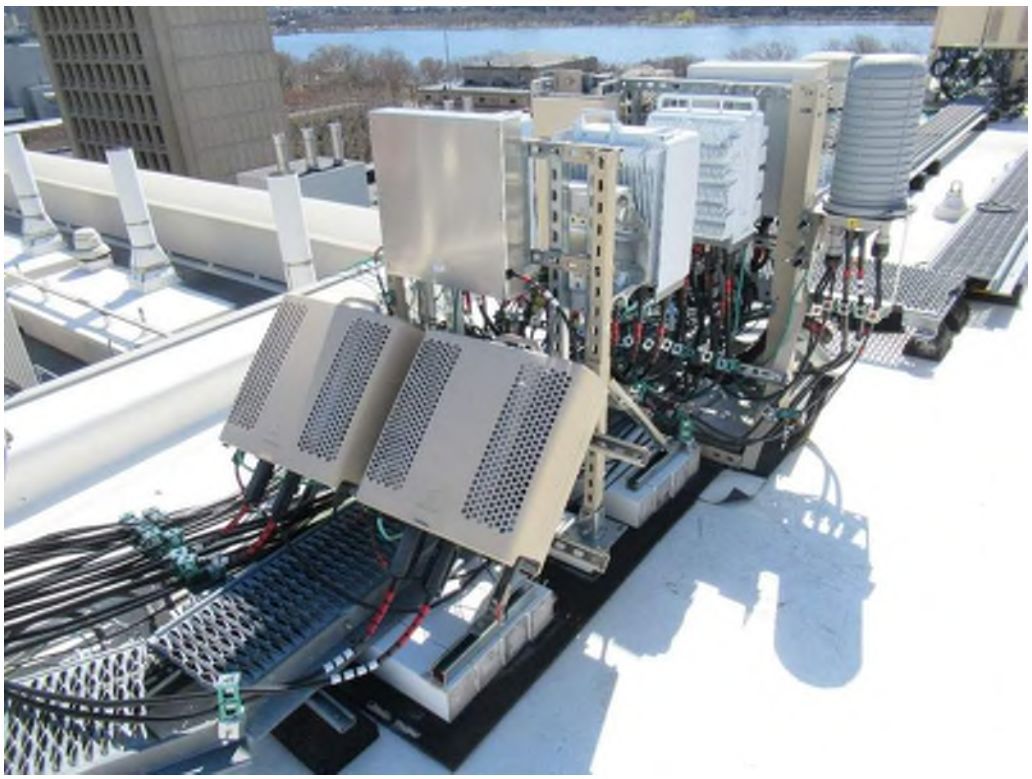


Photo 4: Sample photo illustrating existing RRH ballast sleds.

FIELD PHOTOS (CONT.):

Photo 5: Sample photo illustrating the existing equipment platform.

Photo 6: Sample photo illustrating the location of the proposed battery rack (GSM cabinet to be removed).

Wind Load Calculations

Date: 2/10/2025
Project Name: MIT DORRANCE BLDG #16
Project No.: MAL02267
Designed By: CL **Checked By:** MSC

2.6.5.2 Velocity Pressure Coeff:

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

z=	120	(ft)
z_g=	1200	(ft)
α=	7.0	
K_z=	**1.041**	

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

Table 2-4

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

2.6.6.2 Topographic Factor:

Table 2-5

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

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

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

K_{zt}=	**1**	
K_h=	1	
K_c=	0.9	(from Table 2-4)
K_t=	0	(from Table 2-5)
f=	0	(from Table 2-5)
Category=	1	
z=	120	
z_s=	9	(Mean elevation of base of structure above sea level)
H=	0	(Ht. of the crest above surrounding terrain)
K_{zt}=	1.00	(from 2.6.6.2.1)
K_e=	1.00	(from 2.6.8)

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

2.6.10 Design Ice Thickness

Max Ice Thickness =	t_i =	1.00 in
Importance Factor =	I=	1.00 (from Table 2-3)
	K_{iz} =	1.14 (from Sec. 2.6.10)

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

t_{iz} = 1.14 in

Date: 2/10/2025
Project Name: MIT DORRANCE BLDG #16
Project No.: MAL02267
Designed By: CL Checked By: MSC

2.6.9 Gust Effect Factor

2.6.9.1 Self Supporting Lattice Structures

G_h = 1.0 Latticed Structures > 600 ft

G_h = 0.85 Latticed Structures 450 ft or less

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

h=	123	G_h=	0.85

2.6.9.2 Guyed Masts G_h= 0.85

2.6.9.3 Pole Structures G_h= 1.1

2.6.9 Appurtenances G_h= 1.0

2.6.9.4 Structures Supported on Other Structures

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

G_h=	1.35	**Gh=**	**1.00**

2.6.11.2 Design Wind Force on Appurtenances

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

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

		K_z=	1.041	(from 2.6.5.2)
		K_{zt}=	1.00	(from 2.6.6.2.1)
		K_s=	1.14	(from 2.6.7)
q_z=	**41.45**	K_e=	1.00	(from 2.6.8)
$q_{z\ (ice)}$=	**7.20**	K_d=	0.95	(from Table 2-2)
$q_{z\ (30)}$=	**2.59**	V_{max}=	120	mph (Ultimate Wind Speed)
		$V_{max\ (ice)}$=	50	mph
		V_{30}=	30	mph

Table 2-2

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

Date: 2/10/2025
Project Name: MIT DORRANCE BLDG #16
Project No.: MAL02267
Designed By: CL Checked By: MSC

Determine Ca:

Table 2-9

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

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

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

Ice Thickness = 1.14 in | **Angle =** 0 (deg) | **Equivalent Angle =** 180 (deg)

Appurtenances	Height	Width	Depth	Flat Area	Aspect Ratio	Ca	Force (lbs)	Force (lbs) (w/ Ice)
AIR5331 Antenna	23.6	11.9	6.2	1.95	1.98	1.20	97	22
DMP65R-BU4D Antenna	48.0	20.7	7.7	6.90	2.32	1.20	343	69
AIR6419 Antenna	28.2	16.1	7.3	3.23	1.75	1.20	161	34
AIR6449 Antenna	30.6	15.9	10.6	3.38	1.92	1.20	168	36
QD6616-7 Antenna	72.0	22.0	9.6	11.00	3.27	1.23	563	111
4449 B5/B12 RRH	17.9	13.2	9.4	1.64	1.36	1.20	82	19
RRUS-32 B30 RRH	27.2	12.1	7.0	2.29	2.25	1.20	114	25
4478 B14 RRH	18.1	13.4	8.3	1.68	1.35	1.20	84	19
RRUS-E2 B29 RRH	20.4	18.5	7.5	2.62	1.10	1.20	130	28
4426 B66 RRH	14.9	13.2	5.8	1.37	1.13	1.20	68	16
4415 B25 RRH	16.5	13.5	6.3	1.55	1.22	1.20	77	18
Fiber Box	18.0	18.0	4.0	2.25	1.00	1.20	112	25
DC6 Surge Arrestor	20.1	18.2	6.4	2.54	1.10	1.20	126	27
DC6-48-60-18-8F Surge Arrestor	31.4	10.2	10.2	2.22	3.08	0.70	65	15
2" Pipe	2.4	12.0		0.20	0.20	1.20	10	
2-1/2" Pipe	2.9	12.0		0.24	0.24	1.20	12	

Date: 2/10/2025
Project Name: MIT DORRANCE BLDG #16
Project No.: MAL02267
Designed By: CL Checked By: MSC

WIND LOADS

Angle =	90	(deg)	Ice Thickness =	1.14	in.	Equivalent Angle =	270	(deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Aspect Ratio (normal)	Aspect Ratio (side)	Ca (normal)	Ca (side)	Force (lbs) (normal)	Force (lbs) (side)	Force (lbs) (angle)
AIR5331 Antenna	23.6	11.9	6.2	1.95	1.02	1.98	3.81	1.20	1.26	97	53	53
DMP65R-BU4D Antenna	48.0	20.7	7.7	6.90	2.57	2.32	6.23	1.20	1.37	343	145	145
AIR6419 Antenna	28.2	16.1	7.3	3.23	1.10	1.75	3.86	1.20	1.26	161	57	57
AIR6449 Antenna	30.6	15.9	10.6	3.38	2.25	1.92	2.89	1.20	1.22	168	114	114
QD6616-7 Antenna	72.0	22.0	9.6	11.00	4.80	3.27	7.50	1.23	1.42	563	282	282
4449 B5/B12 RRH	17.9	13.2	9.4	1.64	1.17	1.36	1.90	1.20	1.20	82	58	58
RRUS-32 B30 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	114	69	69
4478 B14 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	84	52	52
RRUS-E2 B29 RRH	20.4	18.5	7.5	2.62	1.06	1.10	2.72	1.20	1.21	130	53	53
4426 B66 RRH	14.9	13.2	5.8	1.37	0.60	1.13	2.57	1.20	1.20	68	30	30
4415 B25 RRH	16.5	13.5	6.3	1.55	0.72	1.22	2.62	1.20	1.21	77	36	36
Fiber Box	18.0	18.0	4.0	2.25	0.50	1.00	4.50	1.20	1.29	112	27	27

WIND LOADS WITH ICE:

AIR5331 Antenna	25.9	14.2	8.5	2.55	1.52	1.83	3.05	1.20	1.22	22	13	13
DMP65R-BU4D Antenna	50.3	23.0	10.0	8.02	3.48	2.19	5.04	1.20	1.31	69	33	33
AIR6419 Antenna	30.5	18.4	9.6	3.89	2.03	1.66	3.18	1.20	1.23	34	18	18
AIR6449 Antenna	32.9	18.2	12.9	4.15	2.94	1.81	2.55	1.20	1.20	36	25	25
QD6616-7 Antenna	74.3	24.3	11.9	12.52	6.13	3.06	6.25	1.22	1.37	110	60	60
4449 B5/B12 RRH	20.2	15.5	11.7	2.17	1.64	1.30	1.73	1.20	1.20	19	14	14
RRUS-32 B30 RRH	29.5	14.4	9.3	2.94	1.90	2.05	3.18	1.20	1.23	25	17	17
4478 B14 RRH	20.4	15.7	10.6	2.22	1.50	1.30	1.93	1.20	1.20	19	13	13
RRUS-E2 B29 RRH	22.7	20.8	9.8	3.27	1.54	1.09	2.32	1.20	1.20	28	13	13
4426 B66 RRH	17.2	15.5	8.1	1.85	0.96	1.11	2.13	1.20	1.20	16	8	8
4415 B25 RRH	18.8	15.8	8.6	2.06	1.12	1.19	2.19	1.20	1.20	18	10	10
Fiber Box	20.3	20.3	6.3	2.85	0.88	1.00	3.23	1.20	1.23	25	8	8
DC6 Surge Arrestor	22.4	20.5	8.7	3.18	1.35	1.09	2.58	1.20	1.20	27	12	12

Date: 2/7/2025
Project Name: MIT DORRANCE BLDG #16
Project No.: MAL02267
Designed By: CL **Checked By:** MSC

ICE WEIGHT CALCULATIONS

Thickness of ice: 1.14 in.
Density of ice: 56 pcf

AIR5331 Antenna

Weight of ice based on total radial SF area:

Height (in):	23.6	
Width (in):	11.9	
Depth (in):	6.2	
Total weight of ice on object:		40 lbs
Weight of object:	45.0 lbs	
Combined weight of ice and object:		85 lbs

DMP65R-BU4D Antenna

Weight of ice based on total radial SF area:

Height (in):	48.0	
Width (in):	20.7	
Depth (in):	7.7	
Total weight of ice on object:		129 lbs
Weight of object:	68.0 lbs	
Combined weight of ice and object:		197 lbs

AIR6419 Antenna

Weight of ice based on total radial SF area:

Height (in):	28.2	
Width (in):	16.1	
Depth (in):	7.3	
Total weight of ice on object:		62 lbs
Weight of object:	66.0 lbs	
Combined weight of ice and object:		128 lbs

AIR6449 Antenna

Weight of ice based on total radial SF area:

Height (in):	30.6	
Width (in):	15.9	
Depth (in):	10.6	
Total weight of ice on object:		72 lbs
Weight of object:	84.0 lbs	
Combined weight of ice and object:		156 lbs

QD6616-7 Antenna

Weight of ice based on total radial SF area:

Height (in):	72.0	
Width (in):	22.0	
Depth (in):	9.6	
Total weight of ice on object:		210 lbs
Weight of object:	114.0 lbs	
Combined weight of ice and object:		324 lbs

4449 B5/B12 RRH

Weight of ice based on total radial SF area:

Height (in):	17.9	
Width (in):	13.2	
Depth (in):	9.4	
Total weight of ice on object:		36 lbs
Weight of object:	73.0 lbs	
Combined weight of ice and object:		109 lbs

RRUS-32 B30 RRH

Weight of ice based on total radial SF area:

Height (in):	27.2	
Width (in):	12.1	
Depth (in):	7.0	
Total weight of ice on object:		48 lbs
Weight of object:	60.0 lbs	
Combined weight of ice and object:		108 lbs

4478 B14 RRH

Weight of ice based on total radial SF area:

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

RRUS-E2 B29 RRH

Weight of ice based on total radial SF area:

Height (in):	20.4	
Width (in):	18.5	
Depth (in):	7.5	
Total weight of ice on object:		50 lbs
Weight of object:	53.0 lbs	
Combined weight of ice and object:		103 lbs

4426 B66 RRH

Weight of ice based on total radial SF area:

Height (in):	14.9	
Width (in):	13.2	
Depth (in):	5.8	
Total weight of ice on object:		27 lbs
Weight of object:	49.0 lbs	
Combined weight of ice and object:		76 lbs

4415 B25 RRH

Weight of ice based on total radial SF area:

Height (in):	16.5	
Width (in):	13.5	
Depth (in):	6.3	
Total weight of ice on object:		31 lbs
Weight of object:	50.0 lbs	
Combined weight of ice and object:		81 lbs

Fiber Box

Weight of ice based on total radial SF area:

Height (in):	18.0	
Width (in):	18.0	
Depth (in):	4.0	
Total weight of ice on object:		41 lbs
Weight of object:	25.0 lbs	
Combined weight of ice and object:		66 lbs

DC6 Surge Arrestor

Weight of ice based on total radial SF area:

Height (in):	20.1	
Width (in):	18.2	
Depth (in):	6.4	
Total weight of ice on object:		48 lbs
Weight of object:	44.0 lbs	
Combined weight of ice and object:		92 lbs

DC6-48-60-18-8F Surge Arrestor

Weight of ice based on total radial SF area:

Depth (in):	31.4	
Diameter(in):	10.2	
Total weight of ice on object:		41 lbs
Weight of object:	29 lbs	
Combined weight of ice and object:		70 lbs

2" Pipe

Per foot weight of ice:

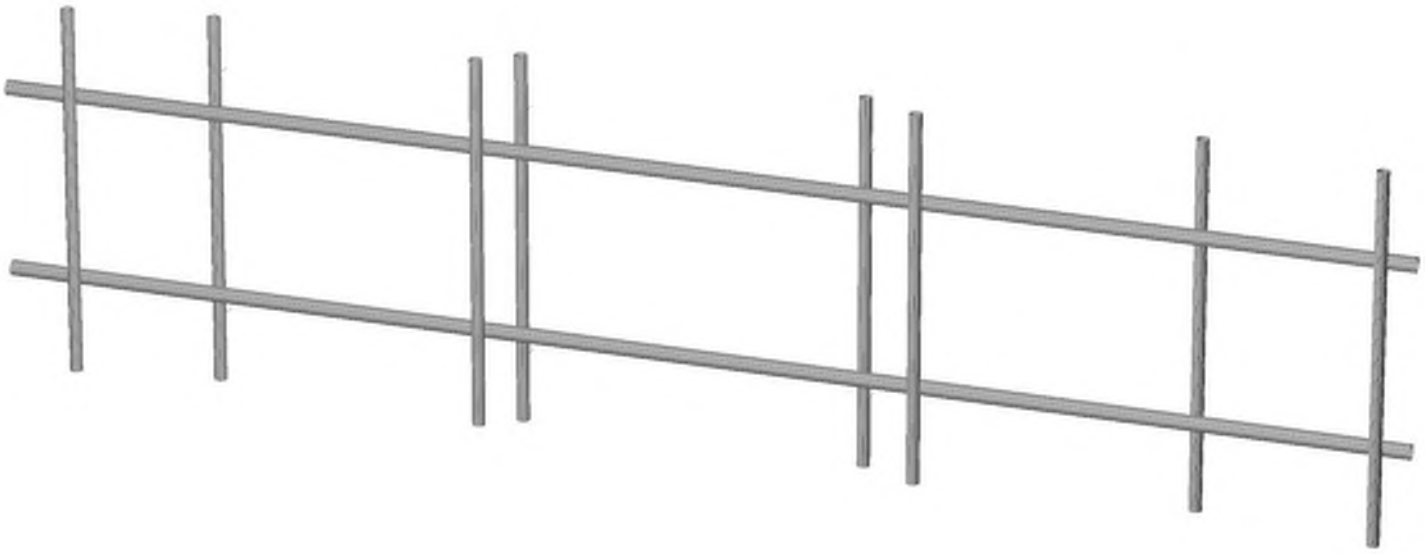
diameter (in):	2.38	
Per foot weight of ice on object:		5 plf

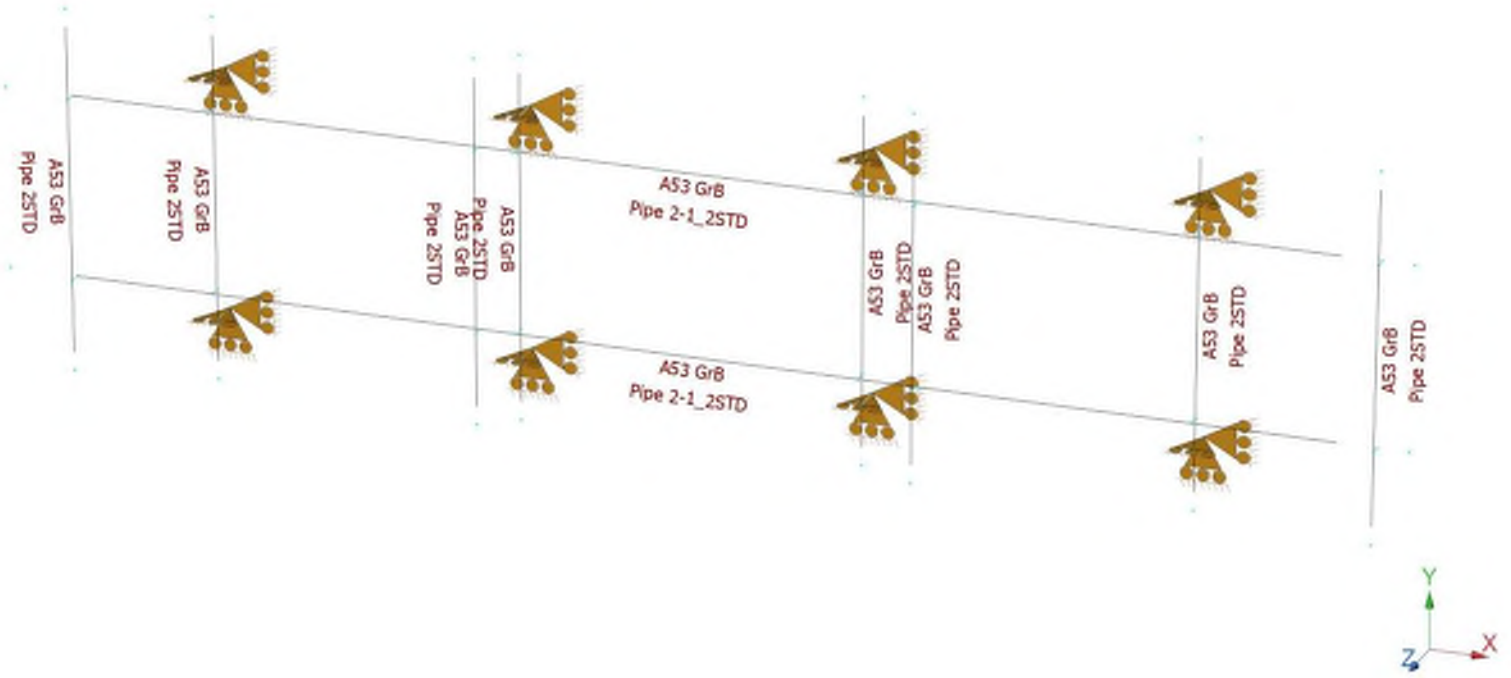
2-1/2" Pipe

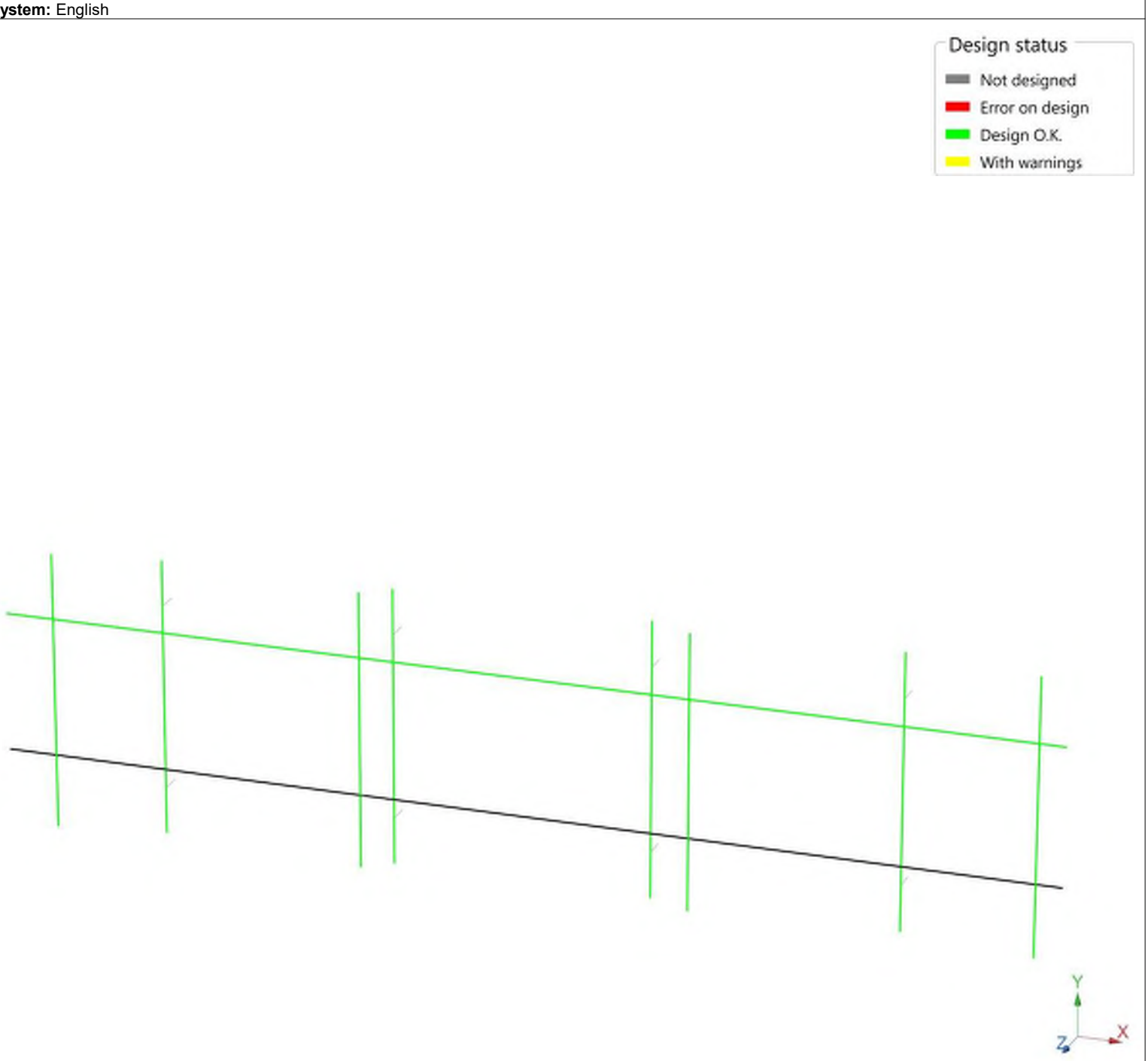
Per foot weight of ice:

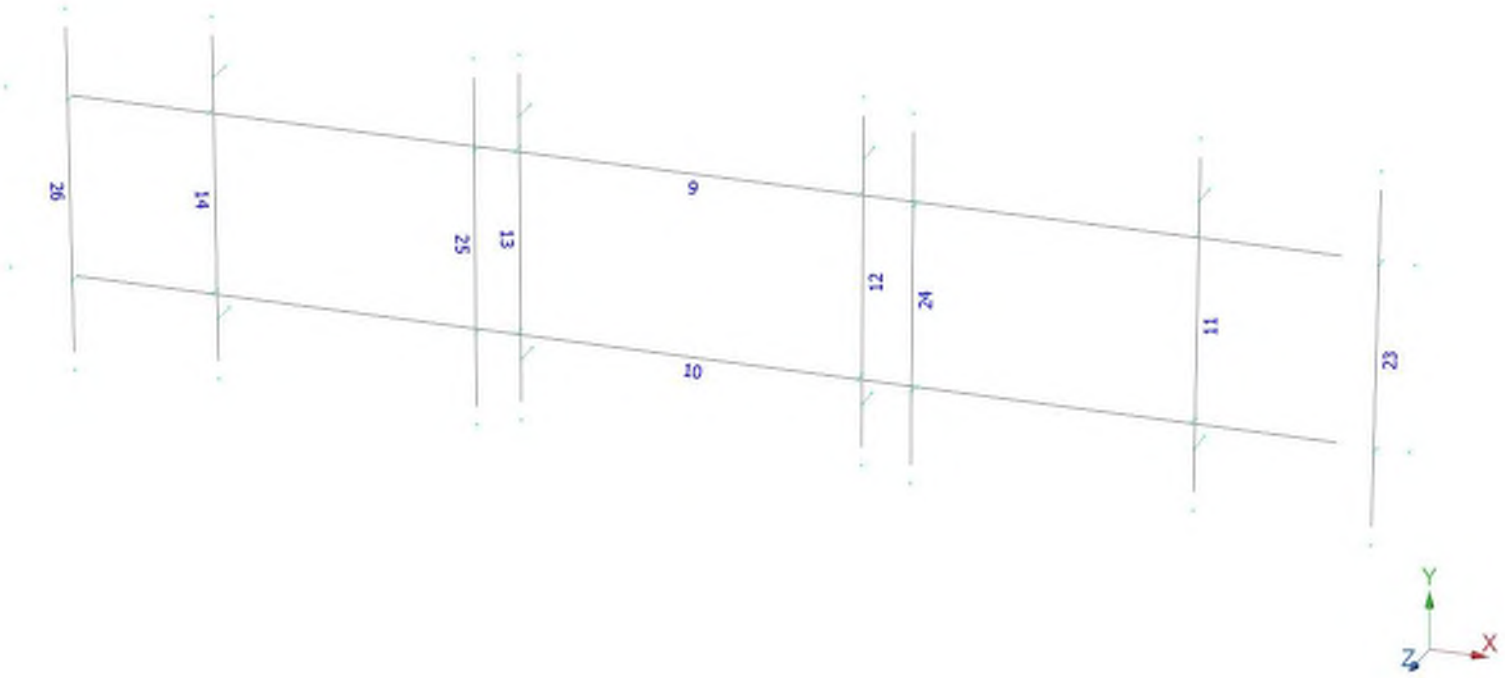
diameter (in):	2.88	
Per foot weight of ice on object:		6 plf

Antenna Mount
Calculations


Y
X
Z


A53 GrB
Pipe 2STD
A53 GrB
Pipe 2STD
A53 GrB
Pipe 2STD
A53 GrB
Pipe 2-1_2STD
A53 GrB
Pipe 2STD
A53 GrB
Pipe 2STD
A53 GrB
Pipe 2STD
A53 GrB
Pipe 2-1_2STD
A53 GrB
Pipe 2STD
A53 GrB
Pipe 2STD
Y
Z
X


Design status
Not designed
Error on design
Design O.K.
With warnings
Y
X
Z


26
14
25
13
9
12
24
11
23
10
Y
Z
X

RAM Elements **TEP OPCO LLC**

Current Date: 2/10/2025 1:49 PM
Units system: English

Load data

Load Conditions

Condition	Description	Comb.	Category
DL	Dead Load	No	DL
Wf	Wind Load (FRONT)	No	WIND
Ws	Wind Load (SIDE)	No	WIND
Wfice	Wind ICE (FRONT)	No	WIND
Wsice	Wind ICE (SIDE)	No	WIND
Di	Ice Load	No	LL

Distributed force on members

Condition	Member	Dir1	Val1 [Kip/ft]	Val2 [Kip/ft]	Dist1 [ft]	%	Dist2 [ft]	%
Wf	9	z	-0.012	-0.012	0.00	No	100.00	Yes
	10	z	-0.012	-0.012	0.00	No	100.00	Yes
	11	z	-0.01	-0.01	0.00	No	100.00	Yes
	12	z	-0.01	-0.01	0.00	No	100.00	Yes
	13	z	-0.01	-0.01	0.00	No	100.00	Yes
	14	z	-0.01	-0.01	0.00	No	100.00	Yes
	23	z	-0.01	-0.01	0.00	Yes	10.00	Yes
		z	-0.01	-0.01	90.00	Yes	100.00	Yes
	24	z	-0.01	-0.01	0.00	Yes	10.00	Yes
		z	-0.01	-0.01	90.00	Yes	100.00	Yes
	26	z	-0.01	-0.01	0.00	Yes	10.00	Yes
		z	-0.01	-0.01	90.00	Yes	100.00	Yes
Ws	11	x	-0.01	-0.01	0.00	No	100.00	Yes
	12	x	-0.01	-0.01	0.00	No	100.00	Yes
	13	x	-0.01	-0.01	0.00	No	100.00	Yes
	14	x	-0.01	-0.01	0.00	No	100.00	Yes
	23	x	-0.01	-0.01	0.00	No	100.00	Yes
	24	x	-0.01	-0.01	0.00	No	100.00	Yes
	25	x	-0.01	-0.01	0.00	No	100.00	Yes
	26	x	-0.01	-0.01	0.00	No	100.00	Yes
Di	9	y	-0.006	-0.006	0.00	No	100.00	Yes
	10	y	-0.006	-0.006	0.00	No	100.00	Yes
	11	y	-0.005	-0.005	0.00	No	100.00	Yes
	12	y	-0.005	-0.005	0.00	No	100.00	Yes
	13	y	-0.005	-0.005	0.00	No	100.00	Yes
	14	y	-0.005	-0.005	0.00	No	100.00	Yes
	23	y	-0.005	-0.005	0.00	No	100.00	Yes
	24	y	-0.005	-0.005	0.00	No	100.00	Yes
	25	y	-0.005	-0.005	0.00	No	100.00	Yes
	26	y	-0.005	-0.005	0.00	No	100.00	Yes

Concentrated forces on members

Condition	Member	Dir1	Value1 [Kip]	Dist1 [ft]	%
DL	23	y	-0.034	1.00	No
		y	-0.034	5.00	No
	24	y	-0.033	0.50	No
		y	-0.033	2.50	No
		y	-0.042	3.50	No
		y	-0.042	5.50	No
	25	y	-0.057	0.50	No
		y	-0.057	5.50	No
	26	y	-0.023	2.00	No
		y	-0.023	4.00	No
Wf	23	z	-0.172	1.00	No
		z	-0.172	5.00	No
	24	z	-0.081	0.50	No
		z	-0.081	2.50	No
		z	-0.084	3.50	No
		z	-0.084	5.50	No
	25	z	-0.282	0.50	No
		z	-0.282	5.50	No
	26	z	-0.049	2.00	No
		z	-0.049	4.00	No
Ws	23	x	-0.073	1.00	No
		x	-0.073	5.00	No
	24	x	-0.029	0.50	No
		x	-0.029	2.50	No
		x	-0.057	3.50	No
		x	-0.057	5.50	No
	25	x	-0.141	0.50	No
		x	-0.141	5.50	No
	26	x	-0.027	2.00	No
		x	-0.027	4.00	No
Wfice	23	z	-0.035	1.00	No
		z	-0.035	5.00	No
	24	z	-0.017	0.50	No
		z	-0.017	2.50	No
		z	-0.018	3.50	No
		z	-0.018	5.50	No
	25	z	-0.056	0.50	No
		z	-0.056	5.50	No
	26	z	-0.011	2.00	No
		z	-0.011	4.00	No
Wsice	23	x	-0.017	1.00	No
		x	-0.017	5.00	No
	24	x	-0.009	0.50	No
		x	-0.009	2.50	No
		x	-0.013	3.50	No
		x	-0.013	5.50	No
	25	x	-0.03	0.50	No
		x	-0.03	5.50	No
	26	x	-0.007	2.00	No
		x	-0.007	4.00	No
Di	23	y	-0.065	1.00	No
		y	-0.065	5.00	No
	24	y	-0.031	0.50	No
		y	-0.031	2.50	No
		y	-0.036	3.50	No
		y	-0.036	5.50	No
	25	y	-0.105	0.50	No
		y	-0.105	5.50	No
	26	y	-0.02	2.00	No
		y	-0.02	4.00	No

Self weight multipliers for load conditions

Condition	Description	Self weight multiplier			
		Comb.	MultX	MultY	MultZ
DL	Dead Load	No	0.00	-1.00	0.00
Wf	Wind Load (FRONT)	No	0.00	0.00	0.00
Ws	Wind Load (SIDE)	No	0.00	0.00	0.00
Wfice	Wind ICE (FRONT)	No	0.00	0.00	0.00
Wsice	Wind ICE (SIDE)	No	0.00	0.00	0.00
Di	Ice Load	No	0.00	0.00	0.00

Glossary

Comb : Indicates if load condition is a load combination

RAM Elements

TEP OPCO LLC

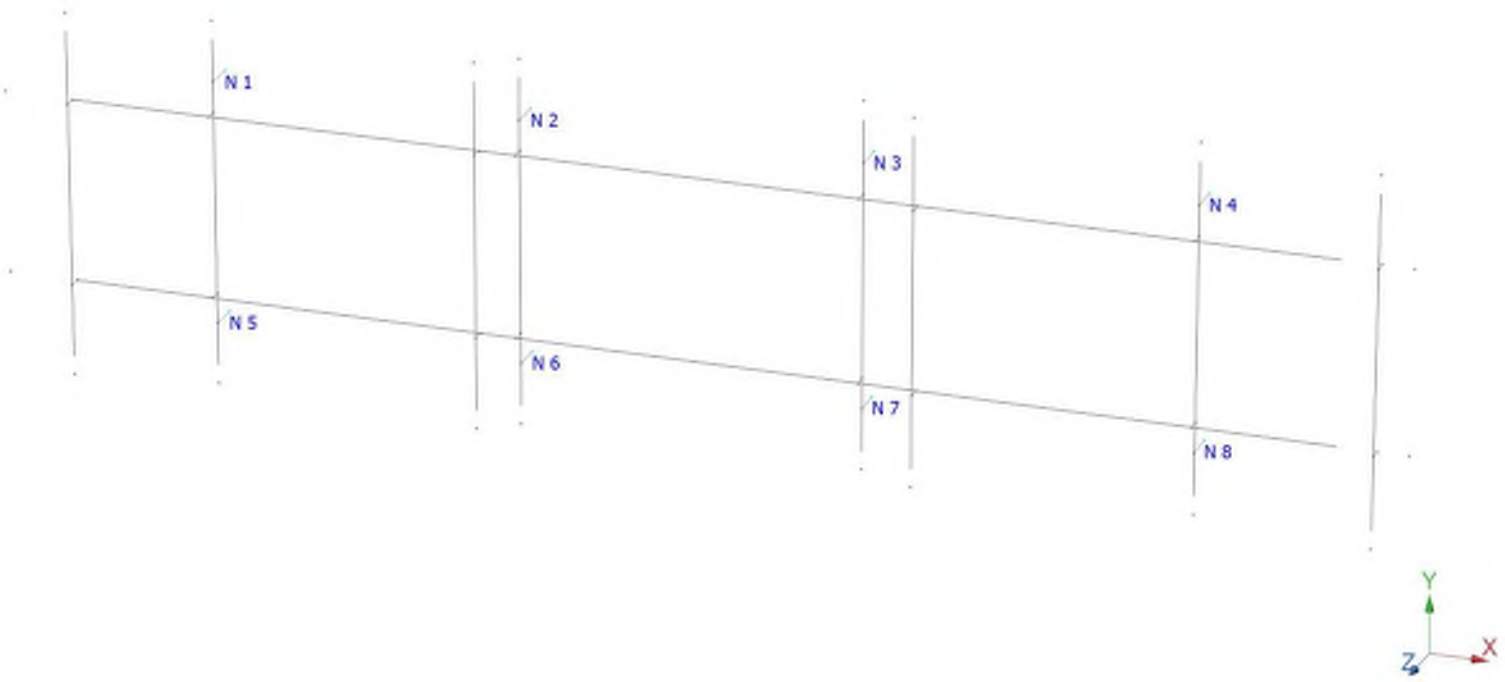
Current Date: 2/10/2025 1:50 PM
Units system: English

Steel Code Check
Summary - Group by member

Load conditions to be included in design :

LC1=1.2DL+Wf
LC2=1.2DL+Ws
LC3=0.9DL+Wf
LC4=0.9DL+Ws
LC5=1.2DL+Wfice+Di
LC6=1.2DL+Wsice+Di
LC7=1.4DL
LC8=0.9DL

Description	Section	Member	Ctrl Eq.	Ratio	Status	Reference
	Pipe 2-1_2STD	**9**	LC1 at 85.00%	0.18	OK	
		10	LC1 at 85.00%	**0.22**	**With warnings**	
	Pipe 2STD	**11**	LC1 at 25.00%	0.17	OK	
		12	LC5 at 83.33%	0.09	OK	
		13	LC1 at 25.00%	0.15	OK	
		14	LC1 at 25.00%	0.09	OK	
		23	LC6 at 75.00%	0.11	OK	
		24	LC1 at 75.00%	0.07	OK	
		25	LC1 at 25.00%	**0.21**	**OK**	
		26	LC6 at 25.00%	0.05	OK	


N 1
N 2
N 3
N 4
N 5
N 6
N 7
N 8
Y
Z
X

RAM Elements **TEP OPCO LLC**

Current Date: 2/10/2025 1:50 PM
Units system: English

Analysis result

Nodes

Envelope for nodal reactions

Note.- **Ic** is the controlling load condition

Direction of positive forces and moments

Envelope of nodal reactions for :
LC1=1.2DL+Wf
LC2=1.2DL+Ws
LC3=0.9DL+Wf
LC4=0.9DL+Ws
LC5=1.2DL+Wfice+Di
LC6=1.2DL+Wsice+Di
LC7=1.4DL
LC8=0.9DL

		Forces						Moments					
Node		**Fx** [Kip]	**Ic**	**Fy** [Kip]	**Ic**	**Fz** [Kip]	**Ic**	**Mx** [Kip*ft]	**Ic**	**My** [Kip*ft]	**Ic**	**Mz** [Kip*ft]	**Ic**
1	Max	0.134	LC2	0.196	LC6	0.161	LC3	0.00000	LC1	0.00000	LC1	0.00000	LC1
	Min	-0.091	LC3	0.077	LC3	-0.072	LC6	0.00000	LC1	0.00000	LC1	0.00000	LC1
2	Max	0.153	LC4	0.220	LC6	0.307	LC3	0.00000	LC1	0.00000	LC1	0.00000	LC1
	Min	-0.067	LC1	0.077	LC3	-0.092	LC6	0.00000	LC1	0.00000	LC1	0.00000	LC1
3	Max	0.145	LC4	0.222	LC5	0.103	LC3	0.00000	LC1	0.00000	LC1	0.00000	LC1
	Min	-0.079	LC1	0.091	LC3	-0.089	LC6	0.00000	LC1	0.00000	LC1	0.00000	LC1
4	Max	0.204	LC3	0.255	LC6	0.356	LC3	0.00000	LC1	0.00000	LC1	0.00000	LC1
	Min	-0.058	LC6	0.084	LC3	-0.103	LC6	0.00000	LC1	0.00000	LC1	0.00000	LC1
5	Max	0.122	LC4	0.194	LC5	0.239	LC1	0.00000	LC1	0.00000	LC1	0.00000	LC1
	Min	-0.110	LC1	0.085	LC8	0.033	LC8	0.00000	LC1	0.00000	LC1	0.00000	LC1
6	Max	0.166	LC2	0.217	LC5	0.388	LC1	0.00000	LC1	0.00000	LC1	0.00000	LC1
	Min	-0.062	LC3	0.086	LC4	0.018	LC4	0.00000	LC1	0.00000	LC1	0.00000	LC1
8	Max	0.255	LC1	0.252	LC5	0.448	LC1	0.00000	LC1	0.00000	LC1	0.00000	LC1
	Min	0.022	LC8	0.101	LC4	0.004	LC4	0.00000	LC1	0.00000	LC1	0.00000	LC1
7	Max	0.181	LC2	0.219	LC5	0.199	LC1	0.00000	LC1	0.00000	LC1	0.00000	LC1
	Min	-0.051	LC3	0.095	LC4	0.039	LC8	0.00000	LC1	0.00000	LC1	0.00000	LC1

Date: 2/10/2025
Project Name: MIT DORRANCE BLDG #16
Project Number: MAL02267
Designed By: CL **Checked By:** MSC

CHECK EPOXY ANCHOR CONNECTION CAPACITY → EXISTING ANCHORS (WORST CASE)

Reference: Hilti North American Product Technical Guide, 2008.
Construction Drawings prepared by Hudson Design Group LLC dated October 21, 2016.

Epoxy Type =	HIT-HY20		(Per HDG)
Anchor Diameter =	3/8	in.	(Per HDG)
Embedment Depth =	3-1/8	in.	(Per HDG)

	Allowable Loads (lbs)	Spacing Reduct. Factor	Edge Reduct. Factor	Reduced Loads (lbs)
Tensile Load	525	1.00	1.00	525.00
Shear Load	790	1.00	1.00	790.00

TENSILE FORCES

Reaction in Z direction: 448 lbs. (See Bentley Output)

SHEAR FORCES

Reactions in X direction: 255 lbs. (See Bentley Output)
Reactions in Y direction: 252 lbs. (See Bentley Output)

Resultant: 359 lbs.

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

Tension Design Load / Anchor =

f_t= 224.00 lbs. < 525 lbs. **Therefore, OK !**

Shear Design Load / Anchor =

f_v= 179.25 lbs. < 790 lbs. **Therefore, OK !**

CHECK COMBINED TENSION AND SHEAR

f_t / F_T	+	f_v / F_V	≤	1.0			
0.427	+	0.227	=	0.654	<	1.0	**Therefore, OK !**

Non-penetrating Ballast Mount Calculations

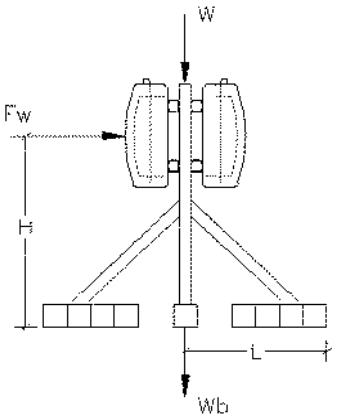
Date: 2/7/2025
Project Name: MIT DORRANCE BLDG #16
Project No.: MAL02267
Designed By: CL **Checked By:** MSC

Calculate Total Ballast Required for Ballast Mount: Sleeper Style

Assumed (2) RRH's as Projected Wind Area

Wind Force, F_w =	196	lbs.
Height, H =	3	ft
Weight of Frame =	102	lbs
Weight of Appurtenances =	184	lbs
Weight of Frame + Equipment, W =	286	lbs
50% of Frame Width, L =	2.50	ft
Weight of Existing Ballast, W_b	640	lbs

(8) 4"x4"x57" Sleepers @ 80 lbs. /each



Length, L_{frame} =	5.00	ft
Width, W_{frame} =	4.75	ft
Factor of Safety (FS) =	1.5	

Overturning at Ballast

$\Sigma M = 0 \rightarrow$ $W_{b,\,req} = [(F*H*FS) - ((W+W_b)*L)] / L_{frame} =$ **-287 lbs.**

Verify Adequacy of Existing Ballast

$W_{b,req}$ < W_b → Therefore, OK!

Calculate Imposed Loading from Ballast Mount

Bearing Area of Ballast Mount, A_{SLED} =	23.75	ft^2
Net Weight of Loaded Frame, W_{NET} =	926	lbs
Resultant Area Load =	39.01	psf

Equipment Platform
Calculations

Date: 2/10/2025
Project Name: MIT DORRANCE BLDG #16
Project No.: MAL02267
Designed By: CL **Checked By:** MSC

Wind Analysis → Equipment Cabinets

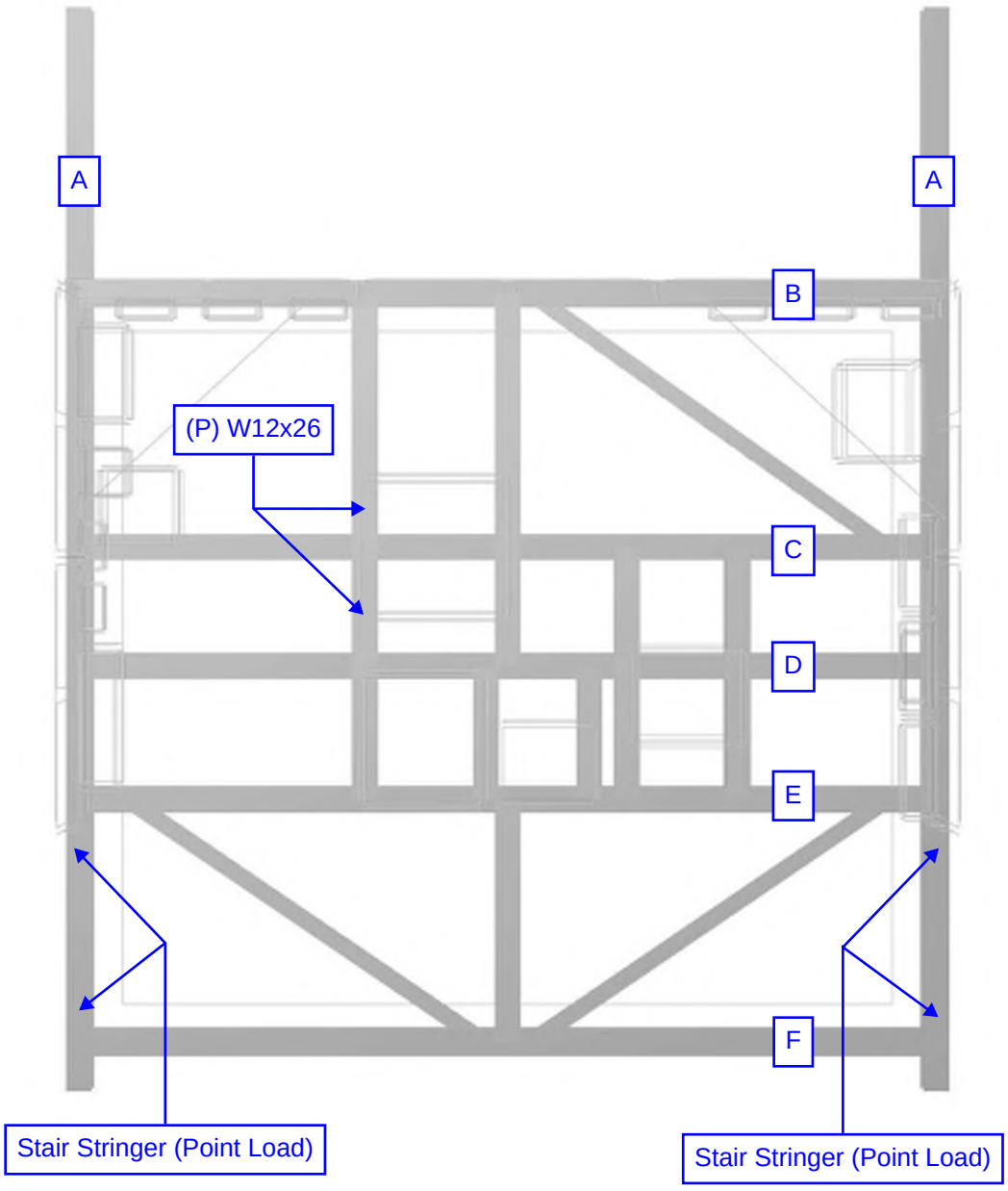
Reference Codes:

-Massachusetts State Building Code (780 CMR) 10th Edition

-International Building Code 2021 (IBC 2021)

-Minimum Design Loads for Buildings and Other Structures (ASCE 7-16)

Structure Classification	II		(ASCE 7-16 Table 1.5-1)
Basic Wind Speed, V	120	mph	(ASCE 7-16 Figure 26.5-1C)
Exposure Category	B		(ASCE 7-16 Section 26.7)
Topographic Category	1		(ASCE 7-16 Section 26.8)
Height Above Ground Level, z	115	ft	(Top of Cabinet)
Exposure Coefficient, K_z	1.03		(ASCE 7-16 Table 26.10-1)
Topographic Factor, K_{zt}	1.00		(ASCE 7-16 Section 26.8.2)
Wind Directionality Coef., K_d	0.90		(ASCE 7-16 Table 26.6-1)
Ground Elevation Factor, K_e	1.00		(ASCE 7-16 Table 26.9-1)
Velocity Pressure, q_z	$= 0.00256K_zK_{zt}K_dK_eV^2$		(ASCE 7-16 Equation 26.10-1)
	= **34.08** **psf**		
Gust Factor, G	0.85		(ASCE 7-16 Section 26.11)
Net Force Coefficient, C_f	1.32		(ASCE 7-16 Figures 29.4-1 to 29.4-4)
Wind Force, F	= q_zGC_f		(ASCE 7-16 Equation 29.4-1)
	= **38.14** **psf**		


A
A
B
(P) W12x26
C
D
E
F
Stair Stringer (Point Load)
Stair Stringer (Point Load)
Y
X
Z

Date: 2/7/2025
Project Name: MIT DORRANCE BLDG #16
Project Number: MAL02267
Designed By: CL **Checked By:** MSC

Load Breakdown at Existing Equipment Platform

Dead Loads:

Grating	15	psf
Screen Wall	40	plf

Live Loads:

Service	20	psf

Snow Loads:

Min. Flat Roof Snow Load	30	psf

- **Beam A**

Dead Load

→ Screen Wall 40 plf

- **Beam B**

Dead Load

→ Grating 15 psf x 2.67 ft. (Tributary Width)

= **40.0 plf**

→ Screen Wall 40 plf

Live Load

→ Service 20 psf x 2.67 ft. (Tributary Width)

= **53.3 plf**

Date: 2/7/2025
Project Name: MIT DORRANCE BLDG #16
Project Number: MAL02267
Designed By: CL Checked By: MSC

Load Breakdown at Existing Equipment Platform (cont.)

- **Beam C**

Dead Load

→ Grating 15 psf x 3.92 ft. (Tributary Width)
= **58.7 plf**

Live Load

→ Service 20 psf x 3.92 ft. (Tributary Width)
= **78.3 plf**

- **Beam D**

Dead Load

→ Grating 15 psf x 2.66 ft. (Tributary Width)
= **39.8 plf**

Live Load

→ Service 20 psf x 2.66 ft. (Tributary Width)
= **53.1 plf**

- **Beam E**

Dead Load

→ Grating 15 psf x 3.96 ft. (Tributary Width)
= **59.3 plf**

Live Load

→ Service 20 psf x 3.96 ft. (Tributary Width)
= **79.1 plf**

Date: 2/7/2025
Project Name: MIT DORRANCE BLDG #16
Project Number: MAL02267
Designed By: CL Checked By: MSC

Load Breakdown at Existing Equipment Platform (cont.)

- **Beam F**

Dead Load

→ Grating 15 psf x 2.55 ft. (Tributary Width)
= **38.3 plf**

Live Load

→ Service 20 psf x 2.55 ft. (Tributary Width)
= **51.0 plf**

- **Stair Stringer**

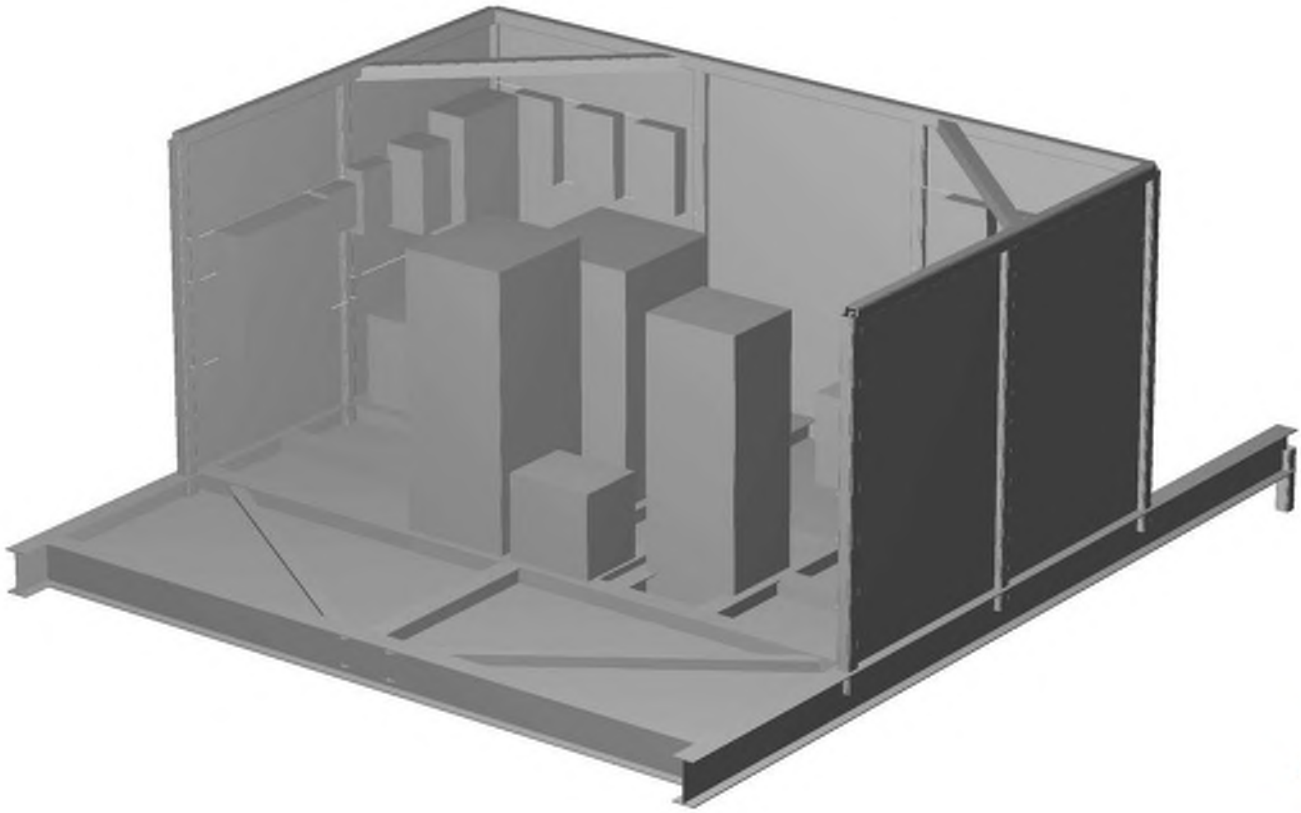
Trib. Length, t_L = 5.33 ft
Trib. Width, t_W = 4.00 ft
Trib. Area, t_A = $t_L t_W$
21.32 ft^2 (Net)
Stringer Qty, n = 2
Trib. Area, t_A = t_A / n
10.66 ft^2 (Per Stringer)

Dead Load

→ Grating 15 psf x 10.66 ft^2 (Tributary Area)
= **159.9 lbs**

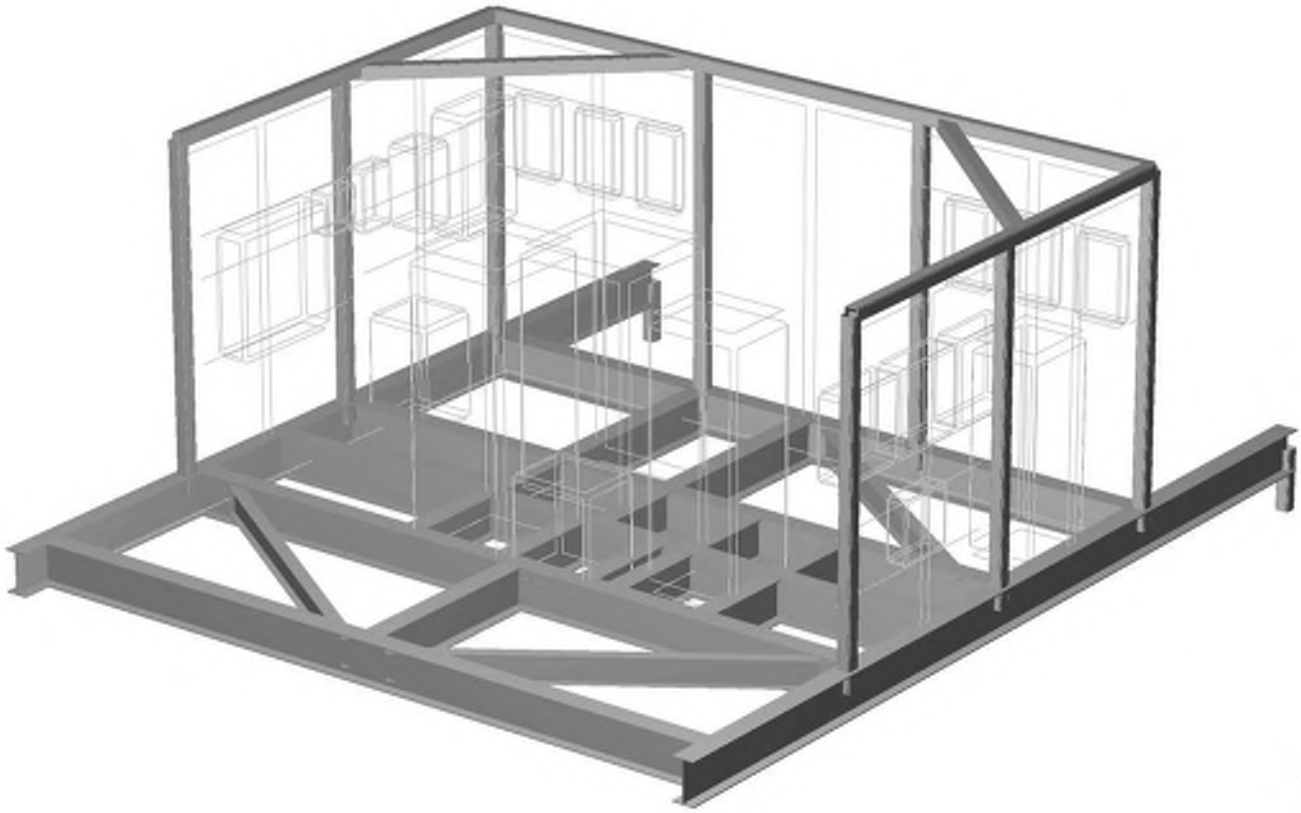
Live Load

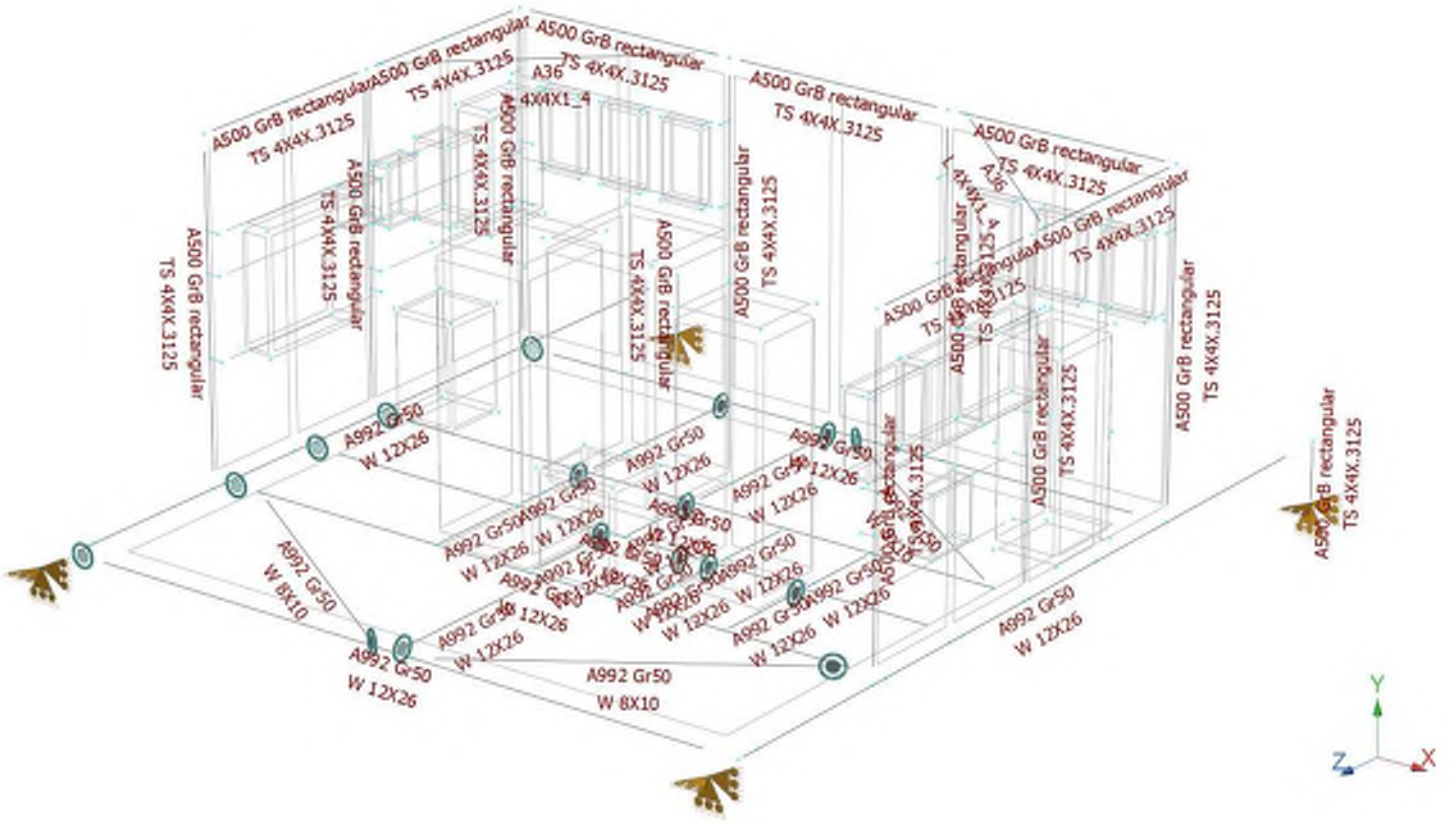
→ Service 20 psf x 10.66 ft^2 (Tributary Area)
= **213.2 lbs**

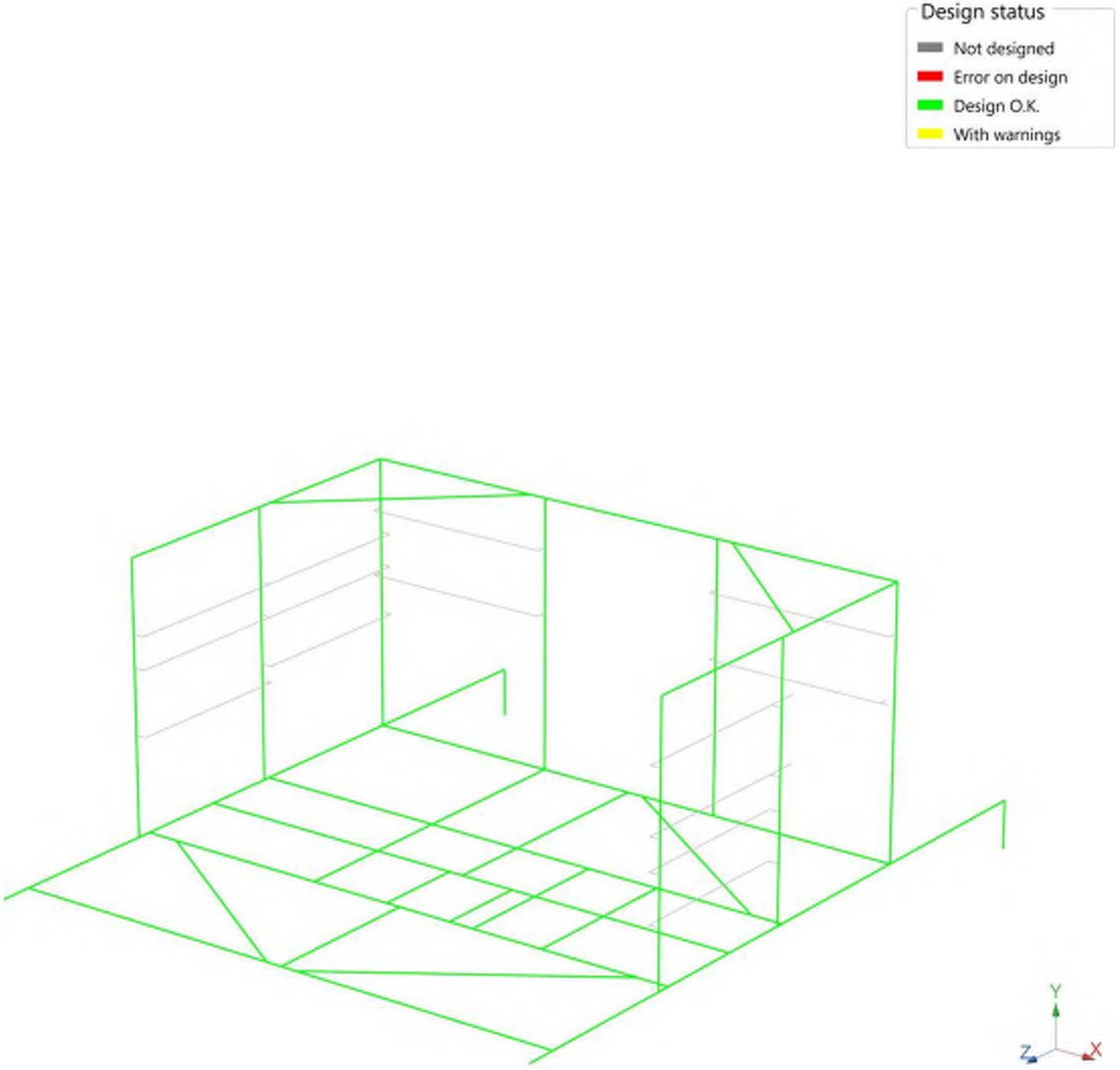

Y
Z
X

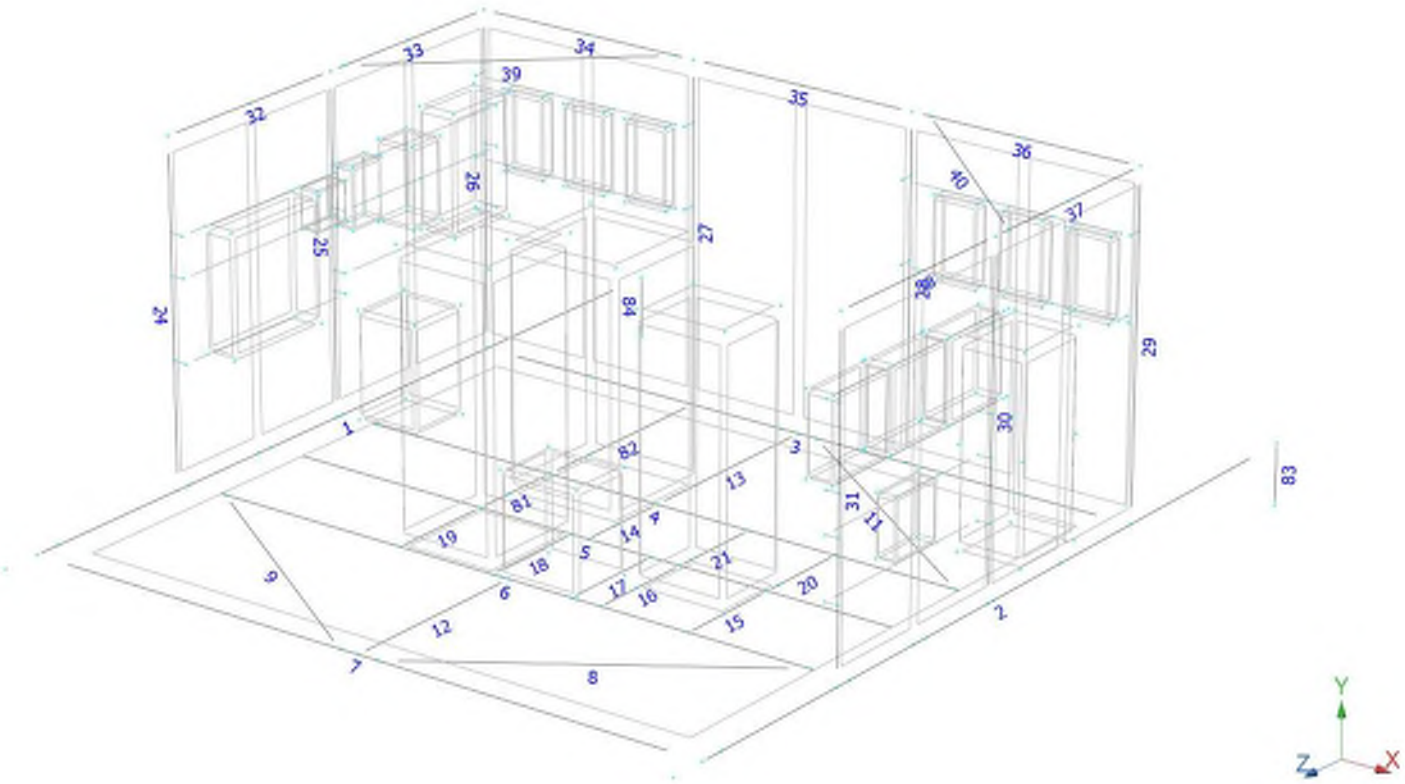
TEP OPCO LLC

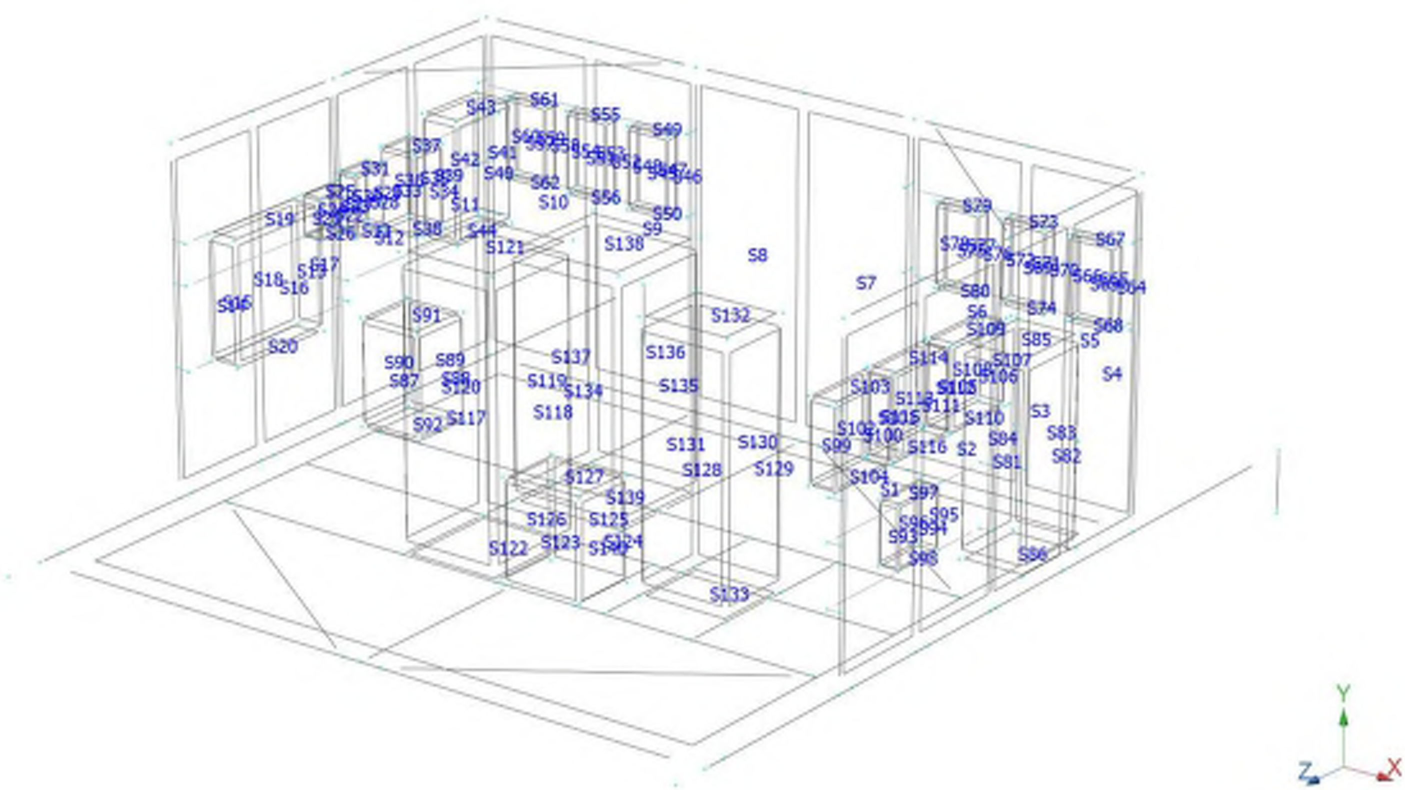
Current Date: 2/7/2025 4:52 PM
Units system: English




A500 GrB rectangular
TS 4X4X.3125
A36
4X4X1_4
A992 Gr50
W 12X26
W 8X10
Y
Z
X


Design status
Not designed
Error on design
Design O.K.
With warnings
Y
Z
X


Y
Z
X


S43
S61
S55
S49
S37
S31
S42
S41
S40
S62
S10
S56
S50
S9
S11
S38
S44
S121
S138
S8
S7
S19
S12
S17
S18
S16
S20
S91
S90
S89
S87
S120
S117
S92
S137
S119
S134
S118
S136
S135
S132
S131
S128
S130
S129
S127
S139
S126
S125
S123
S122
S133
S29
S73
S67
S80
S6
S74
S68
S5
S4
S85
S107
S106
S114
S103
S110
S3
S83
S84
S82
S81
S2
S116
S99
S104
S1
S97
S95
S93
S98
S86
Y
Z
X

RAM Elements

TEP OPCO LLC

Current Date: 2/7/2025 4:53 PM
Units system: English

Load data

Load Conditions

Condition	Description	Comb.	Category
DL	Dead Load	No	DL
WL1	Wind Load (Side 1)	No	WIND
WL2	Wind Load (Side 2)	No	WIND
WL3	Wind Load (Side 3)	No	WIND
WL4	Wind Load (Side 4)	No	WIND
LL	Live Load	No	LL
SL	Snow Load	No	SNOW

Load on nodes

Condition	Node	FX [Kip]	FY [Kip]	FZ [Kip]	MX [Kip*ft]	MY [Kip*ft]	MZ [Kip*ft]
DL	30	0.00	-0.40	0.00	0.00	0.00	0.00
	31	0.00	-0.40	0.00	0.00	0.00	0.00
	35	0.00	-0.40	0.00	0.00	0.00	0.00
	36	0.00	-0.40	0.00	0.00	0.00	0.00
	44	0.00	-0.16	0.00	0.00	0.00	0.00
	45	0.00	-0.16	0.00	0.00	0.00	0.00
	62	0.00	-0.16	0.00	0.00	0.00	0.00
	63	0.00	-0.16	0.00	0.00	0.00	0.00
	87	0.00	-0.05	0.00	0.00	0.00	0.00
	88	0.00	-0.05	0.00	0.00	0.00	0.00
	89	0.00	-0.05	0.00	0.00	0.00	0.00
	90	0.00	-0.05	0.00	0.00	0.00	0.00
	95	0.00	-0.0125	0.00	0.00	0.00	0.00
	96	0.00	-0.0125	0.00	0.00	0.00	0.00
	97	0.00	-0.0125	0.00	0.00	0.00	0.00
	98	0.00	-0.0125	0.00	0.00	0.00	0.00
	103	0.00	-0.0125	0.00	0.00	0.00	0.00
	104	0.00	-0.0125	0.00	0.00	0.00	0.00
	107	0.00	-0.0125	0.00	0.00	0.00	0.00
	108	0.00	-0.0125	0.00	0.00	0.00	0.00
	115	0.00	-0.019	0.00	0.00	0.00	0.00
	116	0.00	-0.019	0.00	0.00	0.00	0.00
	117	0.00	-0.019	0.00	0.00	0.00	0.00
	118	0.00	-0.019	0.00	0.00	0.00	0.00
	127	0.00	-0.05	0.00	0.00	0.00	0.00
	128	0.00	-0.05	0.00	0.00	0.00	0.00
	129	0.00	-0.05	0.00	0.00	0.00	0.00
	130	0.00	-0.05	0.00	0.00	0.00	0.00
	143	0.00	-0.0113	0.00	0.00	0.00	0.00
	144	0.00	-0.0113	0.00	0.00	0.00	0.00
	145	0.00	-0.0113	0.00	0.00	0.00	0.00
	146	0.00	-0.0113	0.00	0.00	0.00	0.00
	151	0.00	-0.0113	0.00	0.00	0.00	0.00
	152	0.00	-0.0113	0.00	0.00	0.00	0.00
	153	0.00	-0.0113	0.00	0.00	0.00	0.00

	154	0.00	-0.0113	0.00	0.00	0.00	0.00
	159	0.00	-0.0113	0.00	0.00	0.00	0.00
	160	0.00	-0.0113	0.00	0.00	0.00	0.00
	161	0.00	-0.0113	0.00	0.00	0.00	0.00
	162	0.00	-0.0113	0.00	0.00	0.00	0.00
	169	0.00	-0.0113	0.00	0.00	0.00	0.00
	170	0.00	-0.0113	0.00	0.00	0.00	0.00
	171	0.00	-0.0113	0.00	0.00	0.00	0.00
	172	0.00	-0.0113	0.00	0.00	0.00	0.00
	177	0.00	-0.0113	0.00	0.00	0.00	0.00
	178	0.00	-0.0113	0.00	0.00	0.00	0.00
	179	0.00	-0.0113	0.00	0.00	0.00	0.00
	180	0.00	-0.0113	0.00	0.00	0.00	0.00
	185	0.00	-0.0113	0.00	0.00	0.00	0.00
	186	0.00	-0.0113	0.00	0.00	0.00	0.00
	187	0.00	-0.0113	0.00	0.00	0.00	0.00
	188	0.00	-0.0113	0.00	0.00	0.00	0.00
	195	0.00	-0.05	0.00	0.00	0.00	0.00
	196	0.00	-0.05	0.00	0.00	0.00	0.00
	197	0.00	-0.05	0.00	0.00	0.00	0.00
	198	0.00	-0.05	0.00	0.00	0.00	0.00
	203	0.00	-0.05	0.00	0.00	0.00	0.00
	204	0.00	-0.05	0.00	0.00	0.00	0.00
	205	0.00	-0.05	0.00	0.00	0.00	0.00
	206	0.00	-0.05	0.00	0.00	0.00	0.00
	207	0.00	-0.1125	0.00	0.00	0.00	0.00
	208	0.00	-0.1125	0.00	0.00	0.00	0.00
	209	0.00	-0.1125	0.00	0.00	0.00	0.00
	210	0.00	-0.1125	0.00	0.00	0.00	0.00
	249	0.00	-0.0063	0.00	0.00	0.00	0.00
	250	0.00	-0.0063	0.00	0.00	0.00	0.00
	251	0.00	-0.0063	0.00	0.00	0.00	0.00
	252	0.00	-0.0063	0.00	0.00	0.00	0.00
	257	0.00	-0.0145	0.00	0.00	0.00	0.00
	258	0.00	-0.0145	0.00	0.00	0.00	0.00
	259	0.00	-0.0145	0.00	0.00	0.00	0.00
	260	0.00	-0.0145	0.00	0.00	0.00	0.00
	261	0.00	-0.0145	0.00	0.00	0.00	0.00
	262	0.00	-0.0145	0.00	0.00	0.00	0.00
	263	0.00	-0.0145	0.00	0.00	0.00	0.00
	264	0.00	-0.0145	0.00	0.00	0.00	0.00
	275	0.00	-0.0145	0.00	0.00	0.00	0.00
	277	0.00	-0.0145	0.00	0.00	0.00	0.00
	279	0.00	-0.0145	0.00	0.00	0.00	0.00
	281	0.00	-0.0145	0.00	0.00	0.00	0.00
	287	0.00	-0.05	0.00	0.00	0.00	0.00
	288	0.00	-0.05	0.00	0.00	0.00	0.00
	289	0.00	-0.05	0.00	0.00	0.00	0.00
	290	0.00	-0.05	0.00	0.00	0.00	0.00
	295	0.00	-0.50	0.00	0.00	0.00	0.00
	296	0.00	-0.50	0.00	0.00	0.00	0.00
	297	0.00	-0.50	0.00	0.00	0.00	0.00
	298	0.00	-0.50	0.00	0.00	0.00	0.00
	303	0.00	-0.60	0.00	0.00	0.00	0.00
	304	0.00	-0.60	0.00	0.00	0.00	0.00
	305	0.00	-0.60	0.00	0.00	0.00	0.00
	306	0.00	-0.60	0.00	0.00	0.00	0.00
LL	44	0.00	-0.213	0.00	0.00	0.00	0.00
	45	0.00	-0.213	0.00	0.00	0.00	0.00
	62	0.00	-0.213	0.00	0.00	0.00	0.00
	63	0.00	-0.213	0.00	0.00	0.00	0.00

Distributed force on members

Condition	Member	Dir1	Val1 [Kip/ft]	Val2 [Kip/ft]	Dist1 [ft]	%	Dist2 [ft]	%
DL	1	y	-0.04	-0.04	26.00	Yes	76.00	Yes
	2	y	-0.04	-0.04	26.00	Yes	76.00	Yes
	3	y	-0.04	-0.04	0.00	Yes	100.00	Yes
		y	-0.04	-0.04	0.00	Yes	100.00	Yes
	4	y	-0.059	-0.059	0.00	No	100.00	Yes
	5	y	-0.04	-0.04	0.00	No	100.00	Yes
	6	y	-0.059	-0.059	0.00	No	100.00	Yes
	7	y	-0.038	-0.038	0.00	No	100.00	Yes
LL	3	y	-0.053	-0.053	0.00	Yes	100.00	Yes
	4	y	-0.078	-0.078	0.00	No	100.00	Yes
	5	y	-0.053	-0.053	0.00	No	100.00	Yes
	6	y	-0.079	-0.079	0.00	No	100.00	Yes
	7	y	-0.051	-0.051	0.00	No	100.00	Yes

Load on shells

Condition	Shell	Pressure [Kip/ft2]	Temp. [F]
WL1	5	0.0381	0.00
	6	0.0381	0.00
	7	0.0381	0.00
	8	0.0381	0.00
	9	0.0381	0.00
	10	0.0381	0.00
	15	-0.0381	0.00
	33	-0.0381	0.00
	39	-0.0381	0.00
	45	-0.0381	0.00
	51	-0.0381	0.00
	57	-0.0381	0.00
	63	-0.0381	0.00
	69	-0.0381	0.00
	75	-0.0381	0.00
	81	-0.0381	0.00
	87	-0.0381	0.00
	93	-0.0381	0.00
	99	-0.0381	0.00
	117	-0.0381	0.00
	123	-0.0381	0.00
	128	-0.0381	0.00
	134	-0.0381	0.00
WL2	1	-0.0381	0.00
	2	-0.0381	0.00
	3	-0.0381	0.00
	4	-0.0381	0.00
	11	0.0381	0.00
	12	0.0381	0.00
	13	0.0381	0.00
	14	0.0381	0.00
	16	-0.0381	0.00
	22	-0.0381	0.00
	28	-0.0381	0.00
	34	-0.0381	0.00
	40	-0.0381	0.00
	46	-0.0381	0.00

	88	-0.0381	0.00
	118	-0.0381	0.00
	124	-0.0381	0.00
	129	-0.0381	0.00
	135	-0.0381	0.00
WL3	5	-0.0381	0.00
	6	-0.0381	0.00
	7	-0.0381	0.00
	8	-0.0381	0.00
	9	-0.0381	0.00
	10	-0.0381	0.00
	17	-0.0381	0.00
	89	-0.0381	0.00
	95	-0.0381	0.00
	107	-0.0381	0.00
	119	-0.0381	0.00
	125	-0.0381	0.00
	130	-0.0381	0.00
	136	-0.0381	0.00
WL4	1	0.0381	0.00
	2	0.0381	0.00
	3	0.0381	0.00
	4	0.0381	0.00
	11	-0.0381	0.00
	12	-0.0381	0.00
	13	-0.0381	0.00
	14	-0.0381	0.00
	78	-0.0381	0.00
	84	-0.0381	0.00
	96	-0.0381	0.00
	102	-0.0381	0.00
	108	-0.0381	0.00
	113	-0.0381	0.00
	120	-0.0381	0.00
	131	-0.0381	0.00
	137	-0.0381	0.00
SL	19	-0.03	0.00
	25	-0.03	0.00
	31	-0.03	0.00
	37	-0.03	0.00
	43	-0.03	0.00
	49	-0.03	0.00
	55	-0.03	0.00
	61	-0.03	0.00
	67	-0.03	0.00
	73	-0.03	0.00
	79	-0.03	0.00
	85	-0.03	0.00
	91	-0.03	0.00
	97	-0.03	0.00
	103	-0.03	0.00
	109	-0.03	0.00
	114	-0.03	0.00
	121	-0.03	0.00
	127	-0.03	0.00
	132	-0.03	0.00
	138	-0.03	0.00

Self weight multipliers for load conditions

Condition	Description	Self weight multiplier			
		Comb.	**MultX**	**MultY**	**MultZ**
DL	Dead Load	No	0.00	-1.00	0.00
WL1	Wind Load (Side 1)	No	0.00	0.00	0.00
WL2	Wind Load (Side 2)	No	0.00	0.00	0.00
WL3	Wind Load (Side 3)	No	0.00	0.00	0.00
WL4	Wind Load (Side 4)	No	0.00	0.00	0.00
LL	Live Load	No	0.00	0.00	0.00
SL	Snow Load	No	0.00	0.00	0.00

Glossary

Comb : Indicates if load condition is a load combination

RAM Elements **TEP OPCO LLC**

Current Date: 2/7/2025 4:53 PM
Units system: English

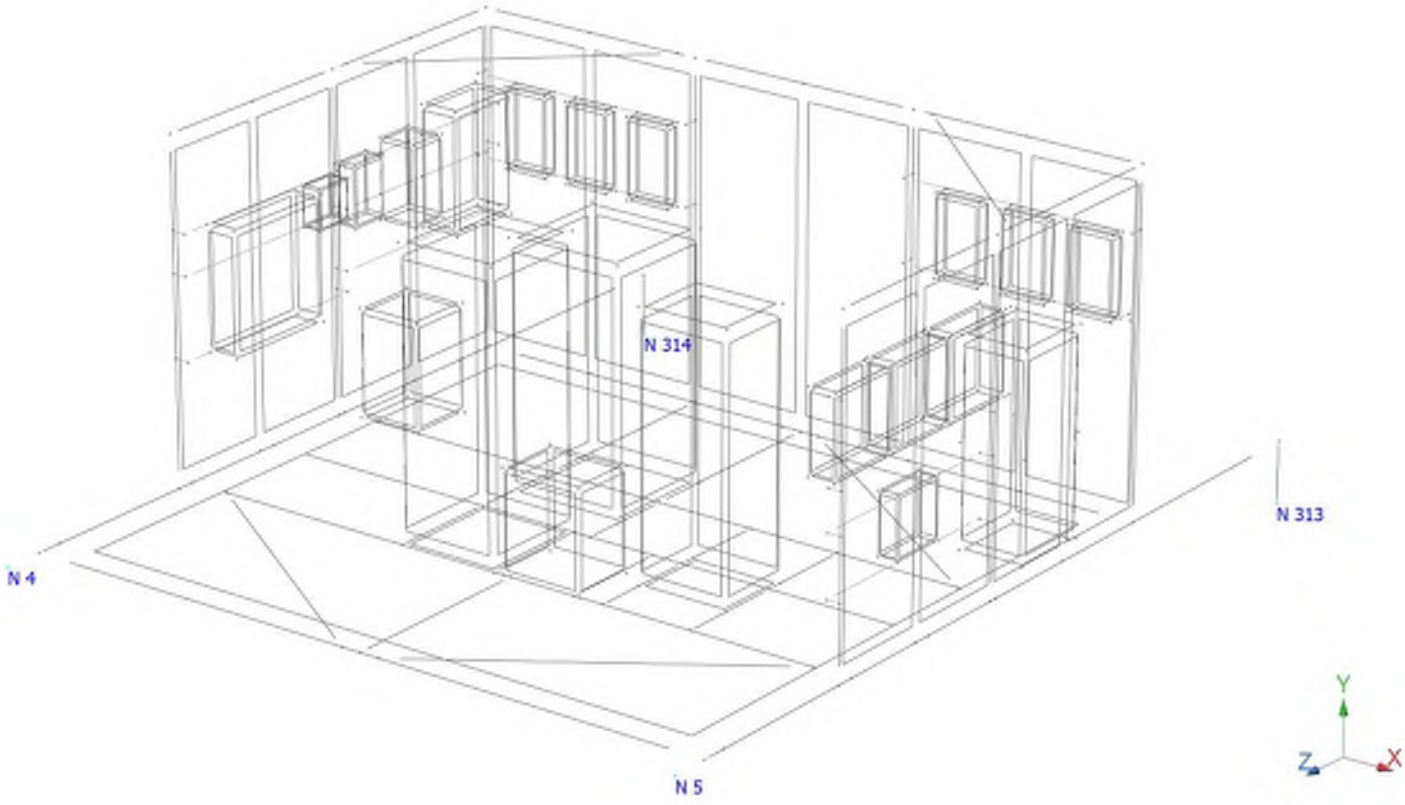
Steel Code Check
Summary - Group by member

Load conditions to be included in design :

LC1=1.4DL
LC2=1.2DL+1.6LL
LC3=1.2DL+0.5SL
LC4=1.2DL+1.6LL+0.5SL
LC5=1.2DL+1.6SL
LC6=1.2DL+0.5WL1
LC7=1.2DL+0.5WL2
LC8=1.2DL+0.5WL3
LC9=1.2DL+0.5WL4
LC10=1.2DL+LL+1.6SL
LC11=1.2DL+0.5WL1+1.6SL
LC12=1.2DL+0.5WL2+1.6SL
LC13=1.2DL+0.5WL3+1.6SL
LC14=1.2DL+0.5WL4+1.6SL
LC15=1.2DL+WL1
LC16=1.2DL+WL2
LC17=1.2DL+WL3
LC18=1.2DL+WL4
LC19=1.2DL+WL1+0.5SL
LC20=1.2DL+WL2+0.5SL
LC21=1.2DL+WL3+0.5SL
LC22=1.2DL+WL4+0.5SL
LC23=1.2DL+WL1+LL
LC24=1.2DL+WL2+LL
LC25=1.2DL+WL3+LL
LC26=1.2DL+WL4+LL
LC27=1.2DL+WL1+LL+0.5SL
LC28=1.2DL+WL2+LL+0.5SL
LC29=1.2DL+WL3+LL+0.5SL
LC30=1.2DL+WL4+LL+0.5SL
LC31=0.9DL+WL1
LC32=0.9DL+WL2
LC33=0.9DL+WL3
LC34=0.9DL+WL4
LC35=1.2DL+0.2SL
LC36=1.2DL+LL+0.2SL

Description	Section	Member	Ctrl Eq.	Ratio	Status	Reference
	L 4X4X1_4	**39**	LC27 at 0.00%	0.21	OK	
		40	LC27 at 100.00%	**0.23**	**OK**	
	TS 4X4X.3125	**24**	LC29 at 100.00%	0.29	OK	
		25	LC24 at 27.01%	0.09	OK	
		26	LC28 at 100.00%	0.23	OK	
		27	LC27 at 42.02%	0.11	OK	
		28	LC27 at 42.02%	0.11	OK	
		29	LC30 at 100.00%	0.13	OK	
		30	LC26 at 24.01%	0.10	OK	
		31	LC29 at 100.00%	0.36	OK	
		32	LC27 at 100.00%	0.05	OK	

		33	LC27 at 9.03%	0.09	OK
		34	LC32 at 91.67%	0.15	OK
		35	LC24 at 0.00%	0.14	OK
		36	LC34 at 8.33%	0.13	OK
		37	LC27 at 90.97%	0.11	OK
		38	LC27 at 0.00%	0.07	OK
		83	LC30 at 0.00%	0.59	OK
		84	LC28 at 0.00%	**0.61**	**OK**
	W 12X26	**1**	LC28 at 75.08%	**0.61**	**OK**
		2	LC30 at 75.08%	0.60	OK
		3	LC27 at 100.00%	0.02	OK
		4	LC4 at 63.92%	0.14	OK
		5	LC4 at 47.47%	0.21	OK
		6	LC4 at 33.33%	0.26	OK
		7	LC4 at 50.00%	0.11	OK
		12	LC28 at 100.00%	0.01	OK
		13	LC27 at 71.86%	0.05	OK
		14	LC30 at 100.00%	0.01	OK
		15	LC30 at 100.00%	0.02	OK
		16	LC30 at 55.56%	0.01	OK
		17	LC27 at 0.00%	0.00	OK
		18	LC4 at 0.00%	0.01	OK
		19	LC27 at 0.00%	0.03	OK
		20	LC29 at 91.25%	0.01	OK
		21	LC27 at 82.50%	0.02	OK
	W 8X10	**8**	LC28 at 50.00%	0.02	OK
		9	LC30 at 57.14%	**0.03**	**OK**
		11	LC29 at 50.00%	0.03	OK
(P) Blocking Beam	***W 12X26***	**81**	LC27 at 60.00%	**0.05**	**OK**
		82	LC27 at 71.86%	0.02	OK


N 314
N 313
N 4
N 5
Y
Z
X

Current Date: 2/7/2025 4:53 PM
Units system: English

Analysis result

Nodes

Envelope for nodal reactions

Note.- **Ic** is the controlling load condition

Direction of positive forces and moments

Envelope of nodal reactions for :

LC1=1.4DL
LC2=1.2DL+1.6LL
LC3=1.2DL+0.5SL
LC4=1.2DL+1.6LL+0.5SL
LC5=1.2DL+1.6SL
LC6=1.2DL+0.5WL1
LC7=1.2DL+0.5WL2
LC8=1.2DL+0.5WL3
LC9=1.2DL+0.5WL4
LC10=1.2DL+LL+1.6SL
LC11=1.2DL+0.5WL1+1.6SL
LC12=1.2DL+0.5WL2+1.6SL
LC13=1.2DL+0.5WL3+1.6SL
LC14=1.2DL+0.5WL4+1.6SL
LC15=1.2DL+WL1
LC16=1.2DL+WL2
LC17=1.2DL+WL3
LC18=1.2DL+WL4
LC19=1.2DL+WL1+0.5SL
LC20=1.2DL+WL2+0.5SL
LC21=1.2DL+WL3+0.5SL
LC22=1.2DL+WL4+0.5SL
LC23=1.2DL+WL1+LL
LC24=1.2DL+WL2+LL
LC25=1.2DL+WL3+LL
LC26=1.2DL+WL4+LL
LC27=1.2DL+WL1+LL+0.5SL
LC28=1.2DL+WL2+LL+0.5SL
LC29=1.2DL+WL3+LL+0.5SL
LC30=1.2DL+WL4+LL+0.5SL
LC31=0.9DL+WL1
LC32=0.9DL+WL2
LC33=0.9DL+WL3
LC34=0.9DL+WL4
LC35=1.2DL+0.2SL
LC36=1.2DL+LL+0.2SL

Node		Forces						Moments					
		Fx [Kip]	**lc**	**Fy** [Kip]	**lc**	**Fz** [Kip]	**lc**	**Mx** [Kip*ft]	**lc**	**My** [Kip*ft]	**lc**	**Mz** [Kip*ft]	**lc**
4	Max	5.154	LC28	10.216	LC4	3.233	LC34	0.00000	LC1	0.00000	LC1	0.00000	LC1
	Min	-5.004	LC34	4.290	LC31	-14.029	LC28	0.00000	LC1	0.00000	LC1	0.00000	LC1
5	Max	4.942	LC32	10.149	LC4	3.444	LC32	0.00000	LC1	0.00000	LC1	0.00000	LC1
	Min	-4.959	LC30	4.258	LC31	-13.677	LC30	0.00000	LC1	0.00000	LC1	0.00000	LC1
313	Max	0.007	LC30	9.191	LC30	7.694	LC30	0.00000	LC1	0.00000	LC1	0.00000	LC1
	Min	-0.004	LC28	2.566	LC32	2.581	LC32	0.00000	LC1	0.00000	LC1	0.00000	LC1
314	Max	0.004	LC30	9.430	LC28	7.997	LC28	0.00000	LC1	0.00000	LC1	0.00000	LC1
	Min	-0.008	LC28	2.740	LC34	2.744	LC34	0.00000	LC1	0.00000	LC1	0.00000	LC1

Date: 2/7/2025
Project Name: MIT DORRANCE BLDG #16
Project Number: MAL02267
Designed By: CL **Checked By:** MSC

CHECK EPOXY ANCHOR CONNECTION CAPACITY → EXISTING PLATFORM ANCHORS AT ROOF

Reference: Hilti North American Product Technical Guide, 2008.
Construction Drawings prepared by Dewberry dated December 21, 2009.

Epoxy Type =	HIT-HY150		(Per Dewberry)
Anchor Rod Type =	HAS-E		(Per Dewberry)
Anchor Rod Diameter =	3/4	in.	(Per Dewberry)
Embedment Depth =	4	in.	(Per Dewberry)
f'_c of Concrete =	2000	psi	(Min.)

	Allowable Loads (lbs)	Spacing Reduct. Factor	Edge Reduct. Factor	Reduced Loads (lbs)	Steel Strength (lbs)
Tensile Load	2365	1.00	1.00	2365.00	10570
Shear Load	5435	1.00	1.00	5435.00	5445

TENSILE FORCES

Reaction in Y direction: 0 lbs. (Gravity Load Supported by RC Column)

SHEAR FORCES

Reactions in X direction: 8 lbs. (See Bentley Output)
Reactions in Z direction: 7997 lbs. (See Bentley Output)

Resultant: 7997 lbs.

No. of Supports = 1
No. of Anchors / Support = 4

Tension Design Load / Anchor =

f_t= 0.00 lbs. < 2365 lbs. **Therefore, OK !**

Shear Design Load / Anchor =

f_v= 1999.25 lbs. < 5435 lbs. **Therefore, OK !**

CHECK COMBINED TENSION AND SHEAR

f_t / F_T	+	f_v / F_V	≤	1.0			
0.000	+	0.368	=	0.368	<	1.0	**Therefore, OK !**

Date: 2/7/2025
Project Name: MIT DORRANCE BLDG #16
Project Number: MAL02267
Designed By: CL **Checked By:** MSC

CHECK EPOXY ANCHOR CONNECTION CAPACITY → EXISTING PLATFORM ANCHORS AT WALL

Reference: Hilti North American Product Technical Guide, 2008.
Construction Drawings prepared by Dewberry dated December 21, 2009.

Epoxy Type =	HIT-HY150		(Per Dewberry)
Anchor Rod Type =	HAS-E		(Per Dewberry)
Anchor Rod Diameter =	5/8	in.	(Per Dewberry)
Embedment Depth =	6	in.	(Per Dewberry)
f'_c of Concrete =	2000	psi	(Min.)

	Allowable Loads (lbs)	Spacing Reduct. Factor	Edge Reduct. Factor	Reduced Loads (lbs)	Steel Strength (lbs)
Tensile Load	4395	1.00	1.00	4395.00	7340
Shear Load	7350	1.00	1.00	7350.00	3780

TENSILE FORCES

Reaction in Z direction: 14029 lbs. (See Bentley Output)

SHEAR FORCES

Reactions in X direction: 5154 lbs. (See Bentley Output)
Reactions in Y direction: 10216 lbs. (See Bentley Output)

Resultant: 11442 lbs.

No. of Supports = 1
No. of Anchors / Support = 8

Tension Design Load / Anchor =

f_t= 1753.63 lbs. < 4395 lbs. **Therefore, OK !**

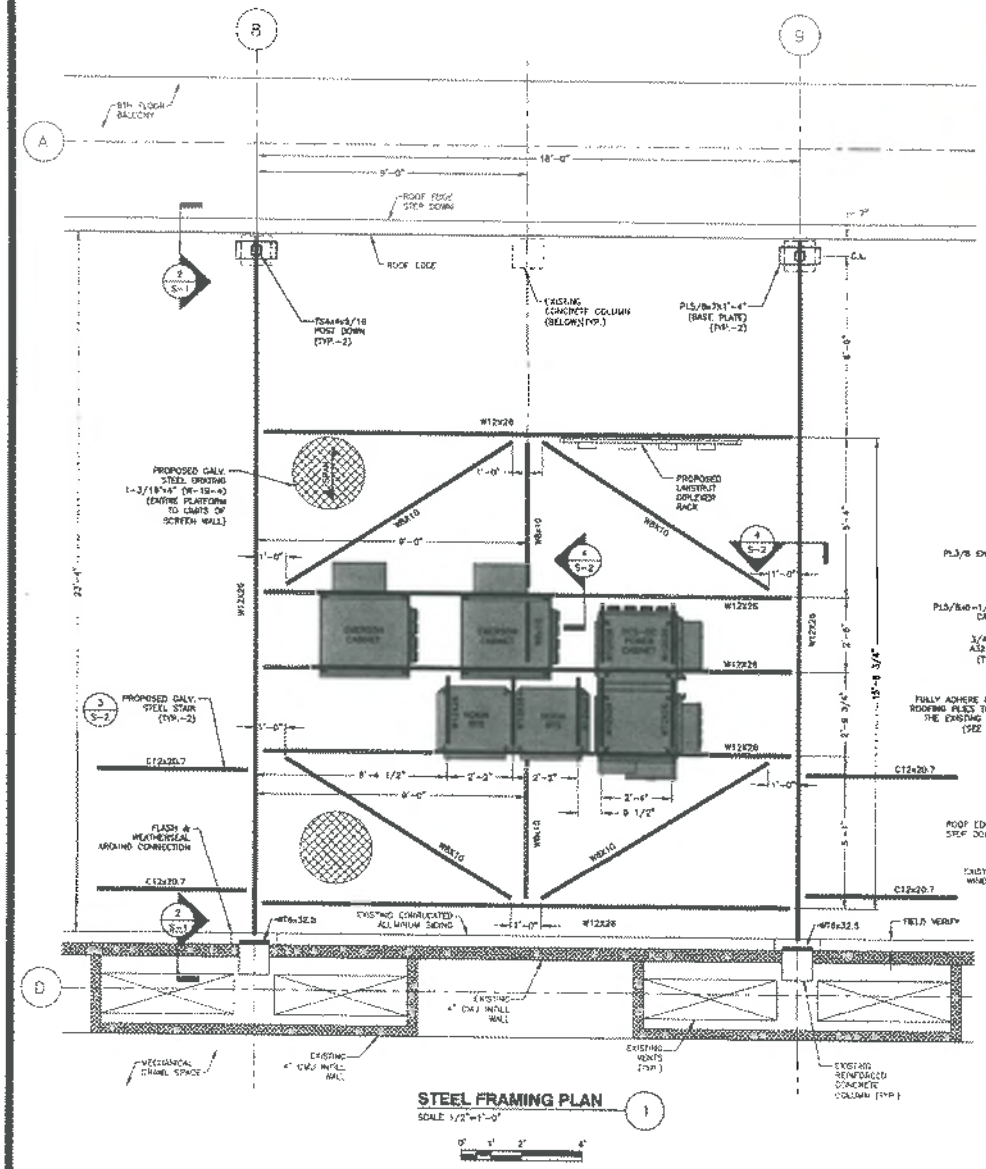
Shear Design Load / Anchor =

f_v= 1430.31 lbs. < 3780 lbs. **Therefore, OK !**

CHECK COMBINED TENSION AND SHEAR

f_t / F_T	+	f_v / F_V	≤	1.0			
0.399	+	0.195	=	0.594	<	1.0	**Therefore, OK !**

Reference Documents



STEEL FRAMING PLAN

SCALE 1/2"=1'-0" (1)

0' 1' 2' 4'

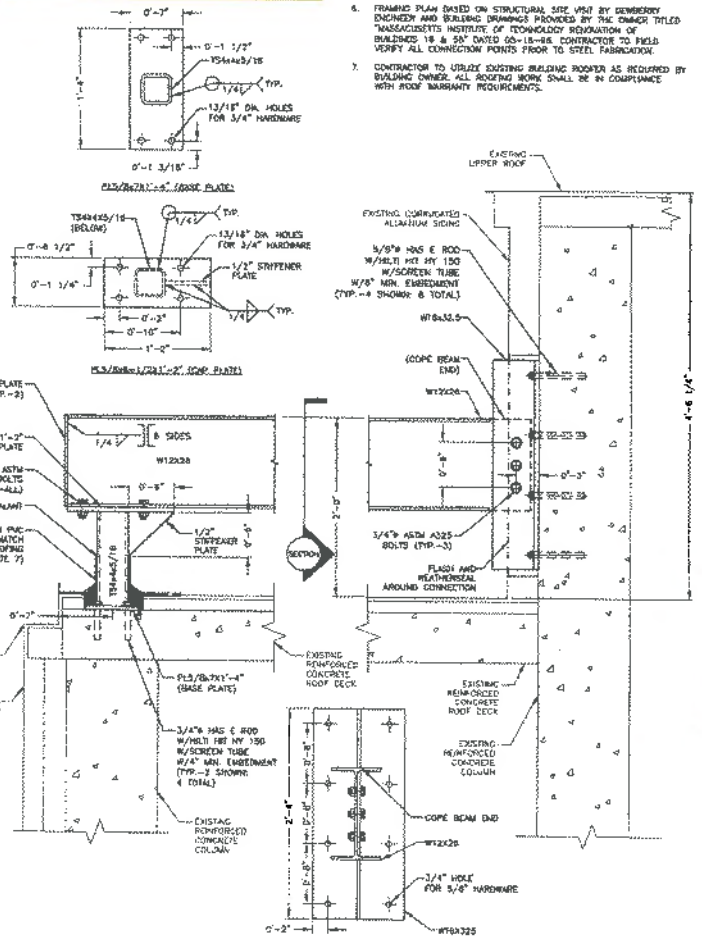
ROOF LOADING INFORMATION

DESCRIPTION	SIZE	WEIGHT #
(1) DCS-DC CABINET + 18 BATTERIES	80"Wx31"Dx77.4"H	3100 LBS
(2) NORTA CABINETS	35.7"Wx29.5"Dx78.6"H	(2X) 750 LBS
(2) EMERSON CABINETS	34.71"Wx28.13"Dx97"H	(2X) 1500 LBS
TOTAL EQUIPMENT DEAD LOAD		7,600 LBS*

* STRUCTURAL ANALYSIS BASED ON ROOF LOADING SHOWN. NO ADDITIONAL EQUIPMENT SHALL BE ADDED WITHOUT ADDITIONAL ANALYSIS.

STRUCTURAL NOTES:

1. SOME INFORMATION NOT SHOWN FOR CLARITY. NORTH IS APPROXIMATE.
2. EXISTING BUILDING LOCATION, ORIENTATION & ASSOCIATED EQUIPMENT LOCATIONS ARE APPROXIMATE AND HAVE NOT BEEN VERIFIED THROUGH FIELD SURVEY. CONTRACTOR SHALL VERIFY ALL DIMENSIONS, EXISTING STRUCTURES, EQUIPMENT LOCATIONS AND SITE DETAILS PRIOR TO ALL FABRICATION & CONSTRUCTION.
3. SEE G-1 FOR STRUCTURAL STEEL NOTES.
4. ALL BOLTS SHALL BE 3/4" ASTM A325 BOLTS UNLESS OTHERWISE STATED.
5. CONTRACTOR VERIFY EQUIPMENT CABINET MANUFACTURER, MODEL # AND WEIGHT WITH AT&T CM PRIOR TO STEEL FABRICATION.
6. FRAMING PLAN BASED ON STRUCTURAL SITE VISIT BY DEWBERRY ENGINEER AND BUILDING DRAWINGS PROVIDED BY THE OWNER TITLED "MASSACHUSETTS INSTITUTE OF TECHNOLOGY RENOVATION OF BUILDINGS 16 & 56" DATED 05-18-06. CONTRACTOR TO FIELD VERIFY ALL CONNECTION POINTS PRIOR TO STEEL FABRICATION.
7. CONTRACTOR TO UTILIZE EXISTING BUILDING ROOFTOP AS REQUIRED BY BUILDING OWNER. ALL ROOFING WORK SHALL BE IN COMPLIANCE WITH ROOF WARRANTY REQUIREMENTS.



FRAME ATTACHMENT DETAILS

SCALE 1-1/2"=1'-0" (2)

0' 1/2' 1' 1 1/2'

HALF SIZE PRINT
THIS DRAWING IS SCALEABLE AT HALF THE NOTED SCALE

at&t Mobility
550 COCHITUATE ROAD
SUITES 13 & 14
FRAMINGHAM, MA 01701

MASSACHUSETTS INSTITUTE OF TECHNOLOGY

CONSTRUCTION DRAWINGS		
C	12/21/09	FOR SUBMITTAL
B	12/17/09	FOR COMMENT
A	11/11/09	FOR COMMENT

Dewberry
Dewberry-Goodkind, Inc.
280 SUMMER STREET
10TH FLOOR
BOSTON, MA 02210
PHONE: 617.660.2400
FAX: 617.406.3810

COMMONWEALTH OF MASSACHUSETTS
DENNIS W. REIP
STRUCTURAL
No. 36494
REGISTERED PROFESSIONAL ENGINEER
12-21-09

DRAWN BY:	BBR
REVIEWED BY:	BBR
CHECKED BY:	PPP
JOB NUMBER	50012872
PROJECT NUMBER	50003938
SITE ADDRESS	

BUILDING 16
77 MASSACHUSETTS AVE
CAMBRIDGE, MA 02139

SHEET TITLE

STEEL FRAMING PLAN & DETAILS

SHEET NUMBER

S-1

NOTE:
PAINT ALL VISIBLE PROPOSED EQUIPMENT TO MATCH EXISTING SURROUNDINGS

NOTE:

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

NOTE:

REFER TO STRUCTURAL ANALYSIS BY: HUDSON DESIGN GROUP, LLC, DATED: OCTOBER 21, 2016, FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT.

EXISTING ANTENNA SCHEDULE

SECTOR	MAKE	MODEL#	SIZE (INCHES)
ALPHA:	KMW	AM-X-CD-14-65-00T-RET	48X11.8X5.9
	–	–	–
	KATHREIN	742264	51.8X10.3X5.5
	KATHREIN	742264	51.8X10.3X5.5
BETA:	KMW	AM-X-CD-14-65-00T-RET	48X11.8X5.9
	–	–	–
	KATHREIN	742264	51.8X10.3X5.5
	KATHREIN	742264	51.8X10.3X5.5
GAMMA:	KMW	AM-X-CD-14-65-00T-RET	48X11.8X5.9
	–	–	–
	KATHREIN	742264	51.8X10.3X5.5
	KATHREIN	742264	51.8X10.3X5.5

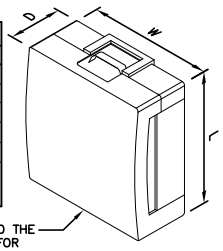
PROPOSED ANTENNA SCHEDULE

SECTOR	MAKE	MODEL#	SIZE (INCHES)
ALPHA:	CCI	OPA-65R-LCUU-H4	48.0X14.4X7.3
	–	–	–
	KATHREIN	742264	51.8X10.3X5.5
	CCI	OPA-65R-LCUU-H4	48.0X14.4X7.3
BETA:	CCI	OPA-65R-LCUU-H4	48.0X14.4X7.3
	–	–	–
	KATHREIN	742264	51.8X10.3X5.5
	CCI	OPA-65R-LCUU-H4	48.0X14.4X7.3
GAMMA:	CCI	OPA-65R-LCUU-H4	48.0X14.4X7.3
	–	–	–
	KATHREIN	742264	51.8X10.3X5.5
	CCI	OPA-65R-LCUU-H4	48.0X14.4X7.3

RRU CHART

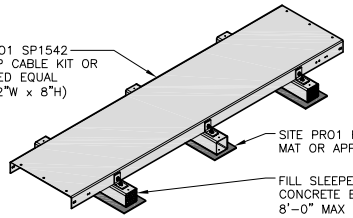
QUANTITY	MODEL	L	W	D
(6)E,(3)P	RRUS-11	19.7"	17.0"	7.2"
–	RRUS-12	20.4"	18.5"	7.5"
(3)P	RRUS-32	27.2"	12.1"	7.0"
(3)P	RRUS-E2	20.4"	18.5"	7.5"
(3)P	LTE-A2	16.4"	15.2"	3.4"

NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS

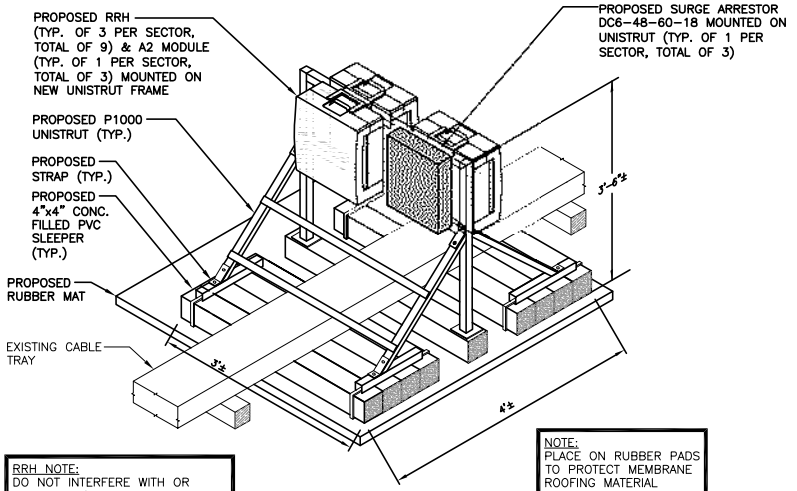


PROPOSED RRU REFER TO THE FINAL RFDS AND CHART FOR QUANTITY, MODEL AND DIMENSIONS

RRU DETAIL (1 / A-5)
SCALE: N.T.S



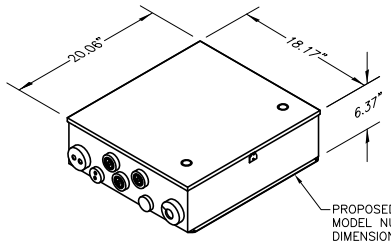
CABLE TRAY DETAIL (3 / A-5)
22x34 SCALE: N.T.S



RRH NOTE:
DO NOT INTERFERE WITH OR RESTRICT ACCESS TO EXISTING FALL PROTECTION CABLE SYSTEM

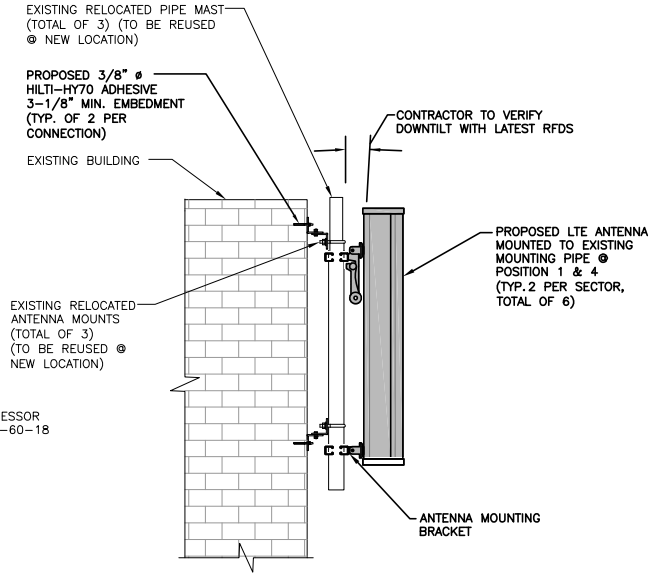
NOTE:
PLACE ON RUBBER PADS TO PROTECT MEMBRANE ROOFING MATERIAL

RRH & SURGE ARRESTOR MOUNTING DETAIL (2 / A-5)
SCALE: N.T.S



NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS.

PROPOSED SURGE ARRESTOR DETAIL (4 / A-5)
SCALE: N.T.S



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

Hudson Design Group LLC
1600 OSGOOD STREET
BUILDING 20 NORTH, SUITE 3090
N. ANDOVER, MA 01845
TEL: (978) 557-5553
FAX: (978) 336-5586

SAI
27 NORTHWESTERN DR.
SALEM, NH 03079

SITE NUMBER: MA2267
SITE NAME: MIT DORRANCE
BLDG #16
77 MASSACHUSETTS AVENUE
CAMBRIDGE, MA 02139
MIDDLESEX COUNTY

at&t
550 COCHITUATE ROAD
FRAMINGHAM, MA 01701

NO.	DATE	REVISIONS	BY	CHK	APP'D
3	10/21/16	ISSUED FOR CONSTRUCTION	SG	AT	DPH
2	03/02/16	ISSUED FOR CONSTRUCTION	EB	AT	DPH
1	08/06/15	ISSUED FOR REVIEW	SG	AT	DPH
0	05/29/15	ISSUED FOR REVIEW	SG	AT	DPH
A	04/24/15	ISSUED FOR REVIEW	MR	AT	DPH

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

COMMONWEALTH OF MASSACHUSETTS
DEREK J. CREASER
No. 43105
REGISTERED PROFESSIONAL ENGINEER

AT&T

DETAILS
(3C,4C,5C, & RELO)

JOB NUMBER	DRAWING NUMBER	REV
2267.02	A-5	3

4.2.5 HIT-ICE/HIT-HY 150 Adhesive Anchoring System

HIT-ICE/HIT-HY 150 Allowable and Ultimate Bond/Concrete Capacity for HAS Rods in Normal-Weight Concrete[1,2,3]

Anchor Diameter in. (mm)	Embedment Depth in. (mm)	HIT-ICE/HIT-HY 150 Allowable Bond/Concrete Capacity				HIT-ICE/HIT-HY 150 Ultimate Bond/Concrete Capacity			
		Tensile		Shear		Tensile		Shear	
		f'_c = 2000 psi (13.8 MPa) lb (kN)	f'_c = 4000 psi (27.6 MPa) lb (kN)	f'_c = 2000 psi (13.8 MPa) lb (kN)	f'_c = 4000 psi (27.6 MPa) lb (kN)	f'_c = 2000 psi (13.8 MPa) lb (kN)	f'_c = 4000 psi (27.6 MPa) lb (kN)	f'_c = 2000 psi (13.8 MPa) lb (kN)	f'_c = 4000 psi (27.6 MPa) lb (kN)
3/8 (9.5)	1-3/4 (44)	720 (3.2)	1265 (5.6)	1395 (6.2)	1970 (8.8)	2710 (12.1)	4750 (21.1)	4175 (18.6)	5900 (26.2)
	3-1/2 (89)	1895 (8.4)	2705 (12.0)	3335 (14.8)	4715 (21.0)	7120 (31.7)	10160 (45.2)	10000 (44.5)	14140 (62.9)
	5-1/4 (133)	2835 (11.7)	2900 (12.5)	6120 (27.2)	8655 (38.5)	9880 (44.0)	10510 (46.8)	18360 (81.7)	25960 (115.5)
1/2 (12.7)	2-1/8 (54)	1220 (5.4)	1575 (7.0)	1980 (8.8)	2800 (12.5)	4580 (20.4)	5910 (26.3)	5940 (26.4)	8400 (37.4)
	4-1/4 (108)	2725 (12.1)	3935 (17.5)	5150 (22.9)	7280 (32.4)	10220 (44.5)	14760 (65.7)	15440 (68.7)	21840 (97.1)
	6-3/8 (162)	4300 (19.1)	5295 (23.6)	9455 (42.1)	13375 (59.5)	16140 (71.8)	19860 (88.3)	28360 (126.2)	40120 (178.5)
5/8 (15.9)	2-1/2 (64)	1620 (7.2)	1985 (8.8)	2460 (10.9)	3480 (15.5)	6090 (27.1)	7460 (33.2)	7380 (32.8)	10440 (46.4)
	5 (127)	4395 (19.6)	5250 (23.4)	7350 (32.7)	10390 (46.2)	16480 (73.3)	19660 (87.6)	22940 (96.0)	31190 (138.8)
	7-1/2 (191)	6825 (26.8)	8225 (36.6)	13495 (60.0)	19080 (84.9)	22595 (100.5)	30850 (137.2)	40480 (180.0)	57240 (254.6)
3/4 (19.1)	3-3/8 (86)	2365 (10.5)	3925 (17.5)	5435 (24.2)	7680 (34.2)	8870 (39.5)	14720 (65.5)	16295 (72.5)	23040 (102.5)
	6-5/8 (168)	4855 (20.7)	8385 (39.5)	12270 (54.6)	17355 (77.2)	17460 (77.7)	33330 (148.3)	36800 (163.7)	52060 (231.6)
	10 (254)	9515 (42.3)	12140 (54.0)	22755 (101.2)	32180 (143.1)	35995 (160.1)	45530 (202.5)	68290 (303.6)	96540 (429.4)
7/8 (22.2)	3-3/4 (95)	3080 (13.7)	4800 (21.4)	6705 (29.8)	9480 (42.4)	11555 (51.4)	18000 (80.1)	20105 (89.4)	28430 (126.5)
	7-1/2 (191)	7845 (34.9)	11020 (49.0)	15960 (71.0)	22575 (100.4)	29430 (130.9)	41000 (182.3)	47880 (213.0)	67720 (301.2)
	11-1/4 (286)	13330 (59.3)	16645 (74.0)	29330 (130.5)	41475 (184.5)	49990 (222.4)	62425 (277.7)	87980 (391.4)	124420 (553.4)
1 (25.4)	4-1/8 (105)	3445 (15.3)	4865 (21.6)	8265 (36.8)	11685 (52.0)	12920 (57.5)	18250 (81.2)	24790 (110.3)	35050 (155.9)
	8-1/4 (210)	8330 (37.1)	11635 (51.8)	19990 (88.9)	27840 (123.8)	31250 (139.0)	43640 (194.1)	59960 (266.7)	83520 (371.5)
	12-3/8 (314)	15540 (69.1)	19525 (86.85)	36170 (160.9)	51150 (227.5)	58280 (259.3)	73220 (325.7)	108500 (482.6)	153480 (682.5)
1-1/4 (31.8)	5 (127)	4645 (20.7)	7000 (31.1)	14760 (65.7)	20870 (92.8)	17430 (77.5)	26265 (116.8)	44280 (197.0)	62610 (278.5)
	12 (305)	15490 (68.9)	20770 (92.4)	38615 (171.8)	54610 (242.9)	58085 (258.4)	77900 (346.5)	115840 (515.3)	163820 (728.7)
	15 (381)	19210 (85.5)	26815 (119.3)	53960 (240.0)	76315 (339.5)	72040 (320.5)	100660 (447.7)	161880 (720.1)	228940 (1018.4)

1 Influence factors for spacing and/or edge distance are applied to concrete/bond values above, and then compared to the steel value. The lesser of the values is to be used for the design.

2 For $h_{ef} \geq h_{crit}$, average ultimate concrete shear capacity based on Concrete Capacity Design (CCD) method. For $h_{ef} < h_{crit}$, average ultimate concrete shear values based on testing.

3 All values based on holes drilled with carbide bit and cleaned with compressed air and a wire brush per manufacturer's instructions.

HIT-ICE/HIT-HY 150 Adhesive Anchoring System 4.2.5

Allowable Steel Strength for HAS Rods[1]

Rod Diameter in. (mm)	HAS-E Standard ISO 898 Class 5.8		HAS Super ASTM A 193 B7		HAS SS AISI 304/316 SS	
	Tensile lb (kN)	Shear lb (kN)	Tensile lb (kN)	Shear lb (kN)	Tensile lb (kN)	Shear lb (kN)
3/8 (9.5)	2640 (11.7)	1360 (6.0)	4555 (20.3)	2345 (10.4)	3845 (16.2)	1875 (8.3)
1/2 (12.7)	4700 (20.9)	2420 (10.8)	8100 (36.0)	4170 (18.5)	6480 (28.8)	3335 (14.8)
5/8 (15.9)	7340 (32.7)	3780 (16.8)	12655 (56.3)	6520 (29.0)	10125 (45.0)	5215 (23.2)
3/4 (19.1)	10570 (47.0)	5445 (24.2)	18225 (81.1)	9390 (41.8)	12390 (55.1)	6385 (28.4)
7/8 (22.2)	14385 (64.0)	7410 (33.0)	24805 (110.3)	12780 (56.9)	16885 (75.0)	8690 (38.6)
1 (25.4)	18790 (83.6)	9680 (43.0)	32400 (144.1)	16690 (74.2)	22330 (99.3)	11350 (50.5)
1-1/4 (31.8)	29360 (130.6)	15125 (67.3)	50620 (225.2)	26080 (116.0)	34425 (153.1)	17735 (78.9)

1 Steel strength as defined in AISC Manual of Steel Construction (ASD):

Tensile = 0.33 x F_u x Nominal Area

Shear = 0.17 x F_u x Nominal Area

Ultimate Steel Strength for HAS Rods[1]

Rod Diameter in. (mm)	HAS-E Standard ISO 898 Class 5.8			HAS Super ASTM A 193 B7			HAS SS AISI 304/316 SS		
	Yield lb (kN)	Tensile lb (kN)	Shear lb (kN)	Yield lb (kN)	Tensile lb (kN)	Shear lb (kN)	Yield lb (kN)	Tensile lb (kN)	Shear lb (kN)
3/8 (9.5)	4495 (20.0)	6065 (26.7)	3905 (16.0)	8135 (36.2)	10350 (43.4)	6210 (27.6)	5035 (22.4)	8280 (36.8)	4970 (22.1)
1/2 (12.7)	8230 (36.6)	10675 (47.5)	6405 (28.5)	14900 (66.3)	18405 (79.0)	11040 (49.1)	9225 (41.0)	14720 (65.5)	8835 (39.3)
5/8 (15.9)	13110 (58.3)	16680 (74.2)	10010 (44.5)	23730 (105.6)	28760 (125.7)	17260 (76.8)	14690 (65.3)	23010 (102.4)	13805 (61.4)
3/4 (19.1)	19400 (86.3)	24020 (106.9)	14415 (64.1)	35120 (156.2)	41420 (185.7)	24850 (110.5)	15050 (66.9)	28165 (125.3)	16900 (75.2)
7/8 (22.2)	26780 (119.1)	32695 (145.4)	19620 (87.3)	48480 (215.7)	56370 (256.9)	33825 (150.5)	20775 (92.4)	38335 (170.5)	23000 (102.3)
1 (25.4)	35130 (156.3)	42705 (190.0)	25625 (114.0)	63600 (282.9)	73630 (327.0)	44180 (196.5)	27255 (121.2)	50070 (222.7)	30040 (133.6)
1-1/4 (31.8)	56210 (250.0)	66730 (296.8)	40035 (178.1)	101755 (452.6)	115050 (511.8)	69030 (307.1)	43610 (194.0)	78235 (348.0)	46940 (208.8)

1 Steel strength as defined in AISC Manual of Steel Construction 2nd Ed. (LRFD):

Yield = F_y x Tensile Stress Area

Tensile = 0.75 x F_u x Nominal Area

Shear = 0.45 x F_u x Nominal Area

4.2.8 HIT-HY 20 for Masonry Anchoring System

HIT HY 20 Allowable Loads for Threaded HIT-A Rods in Hollow Concrete Block, Lightweight Concrete Block, Brick with Holes, Clay Tile[1, 2]

Anchor Type	Anchor Diameter in. (mm)	HIT-A Short 2" (51mm) Embedment		HIT-A Standard 3-3/8" (86mm) Embedment			
		L/W or N/W Hollow Concrete Block		Brick with Holes		Clay Tile	
		Tension lb (kN)	Shear lb (kN)	Tension lb (kN)	Shear lb (kN)	Tension lb (kN)	Shear lb (kN)
HIT-A Rod Anchor	1/4[3] (6.4)[3]	255 (1.1)	340 (1.5)	365 (1.6)	305 (1.4)	130 (0.6)	100 (0.4)
	5/16 (7.9)	370 (1.6)	505 (2.2)	565 (2.5)	530 (2.4)	150 (0.7)	220 (1.0)
	3/8 (9.5)	525 (2.3)	790 (3.5)	775 (3.4)	930 (4.1)	150 (0.7)	220 (1.0)
	1/2 (12.7)	525 (2.3)	1230 (5.5)	775 (3.4)	1375 (6.1)	150 (0.7)	500 (2.2)

1 Based on using a safety factor of 6 for tension and 4 for shear.

2 Due to wide strength variations encountered in masonry, these values should be considered as guide values.

3 1/4" anchor diameter installed at 2" embedment in brick with holes and clay tile.

HIT HY 20 Allowable Loads for Threaded HIT-I Inserts in Hollow Concrete Block, Lightweight Concrete Block, Brick with Holes, Clay Tile[1, 2]

Anchor Type	Anchor Diameter in. (mm)	HIT Short 2" (51mm) Embedment		HIT Standard 3-3/8" (86mm) Embedment			
		L/W or N/W Hollow Concrete Block		Brick with Holes		Clay Tile	
		Tension lb (kN)	Shear lb (kN)	Tension lb (kN)	Shear lb (kN)	Tension lb (kN)	Shear lb (kN)
HIT-I Insert Anchor	No 14 screw w/ insert[3] (6.4)	240 (1.1)	510 (2.3)	300 (1.3)	530 (2.4)	85 (0.4)	150 (0.7)
	5/16 (7.9)	400 (1.8)	780 (3.5)	585 (2.6)	750 (3.3)	175 (0.8)	220 (1.0)
	3/8 (9.5)	400 (1.8)	1425 (6.3)	1160 (5.2)	1380 (6.1)	185 (0.8)	435 (1.9)
	1/2 (12.7)	400 (1.8)	1800 (8.0)	1160 (5.2)	1635 (7.3)	185 (0.8)	500 (2.2)

1 Based on using a safety factor of 6 for tension and 4 for shear.

2 Due to wide strength variations encountered in masonry, these values should be considered as guide values.

3 1/4" anchor installed at 2" embedment in brick with holes and clay tile.

Anchor Spacing and Edge Distance Guidelines

Brick with Holes & Multi-Wythe Brick Walls

Spacing:

$s_{cr} = s_{min}$ = Two (2) complete bricks in any direction

Edge Distance:

$c_{cr} = c_{min}$ = Two (2) complete bricks, or 16" (406 mm) in any direction (whichever is less.)

Clay Tile

Spacing:

$s_{cr} = s_{min}$ = One (1) anchor per tile cell

Edge Distance:

$c_{cr} = c_{min}$ = 12" (305 mm) from free edge

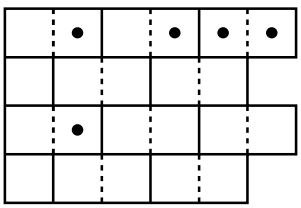
Hollow, Normal Weight & Lightweight Concrete Block

Spacing:

$s_{cr} = s_{min}$ = One (1) anchor per block cell

Edge Distance:

$c_{cr} = c_{min}$ = 12" (305 mm) min. from free edge

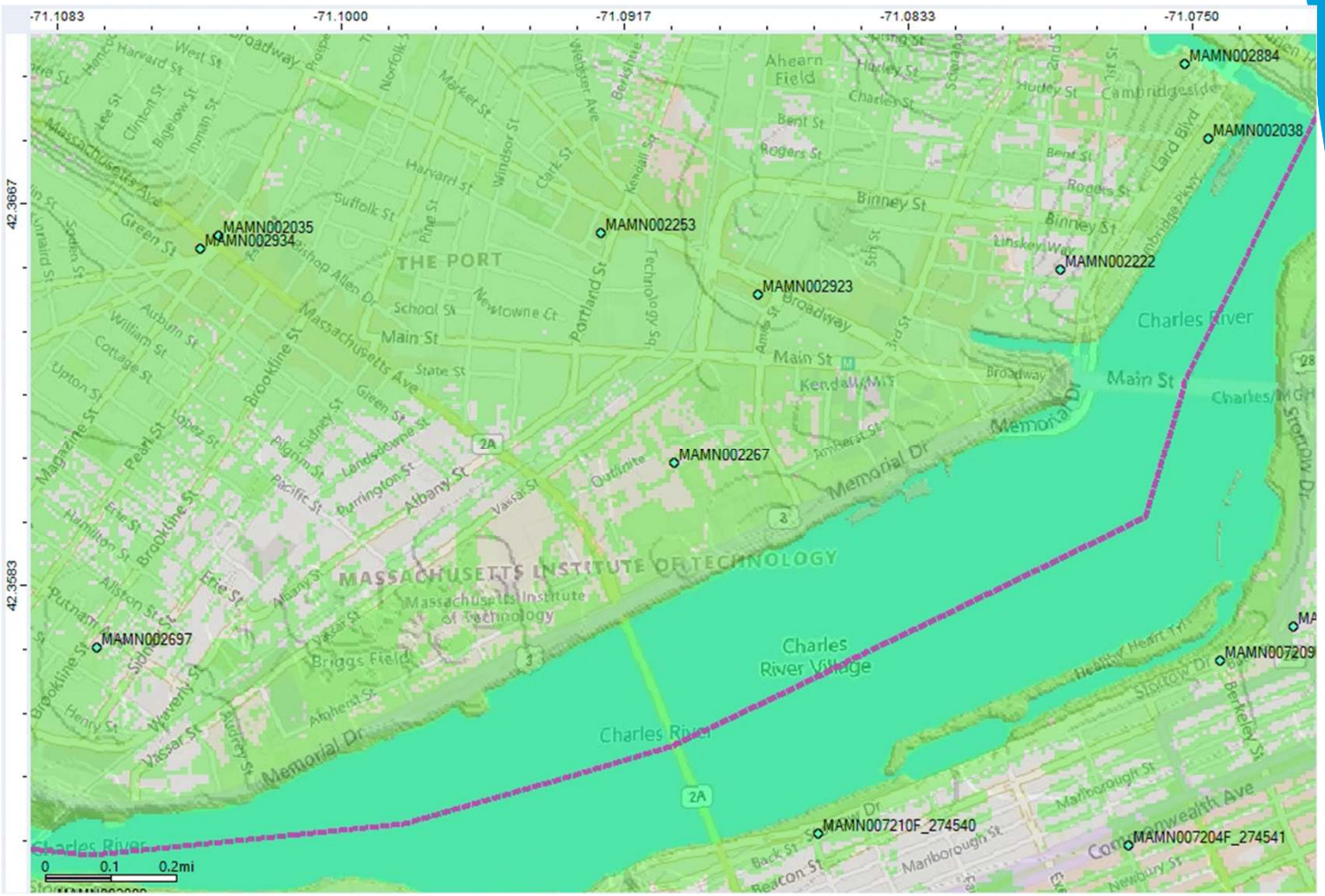


Wall Elevation

AT&T 3.45 and 3.7GHz Coverage for MA2267

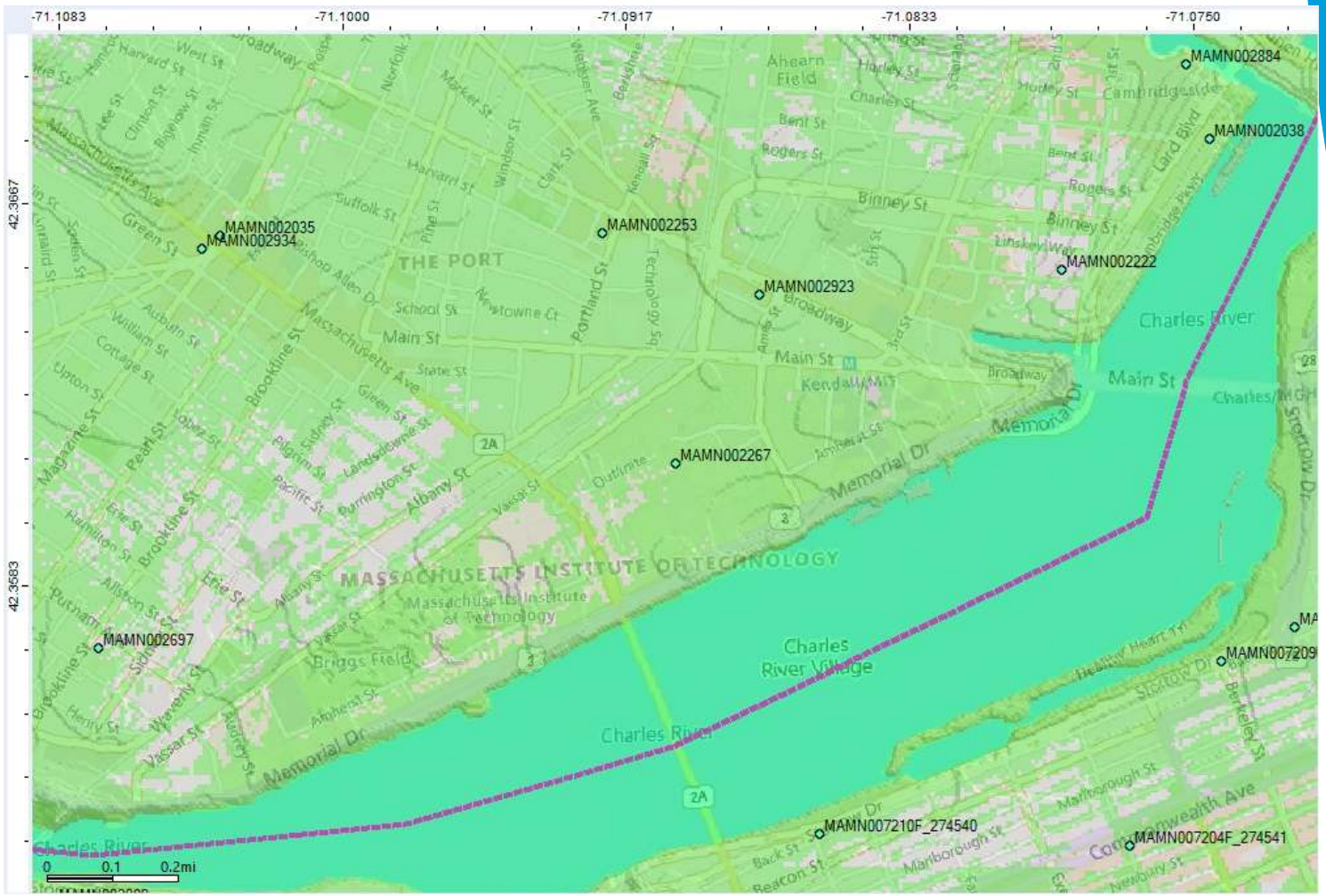
Aug 2025

Cambridge 3.7GHz Coverage Plot Without MAL02267



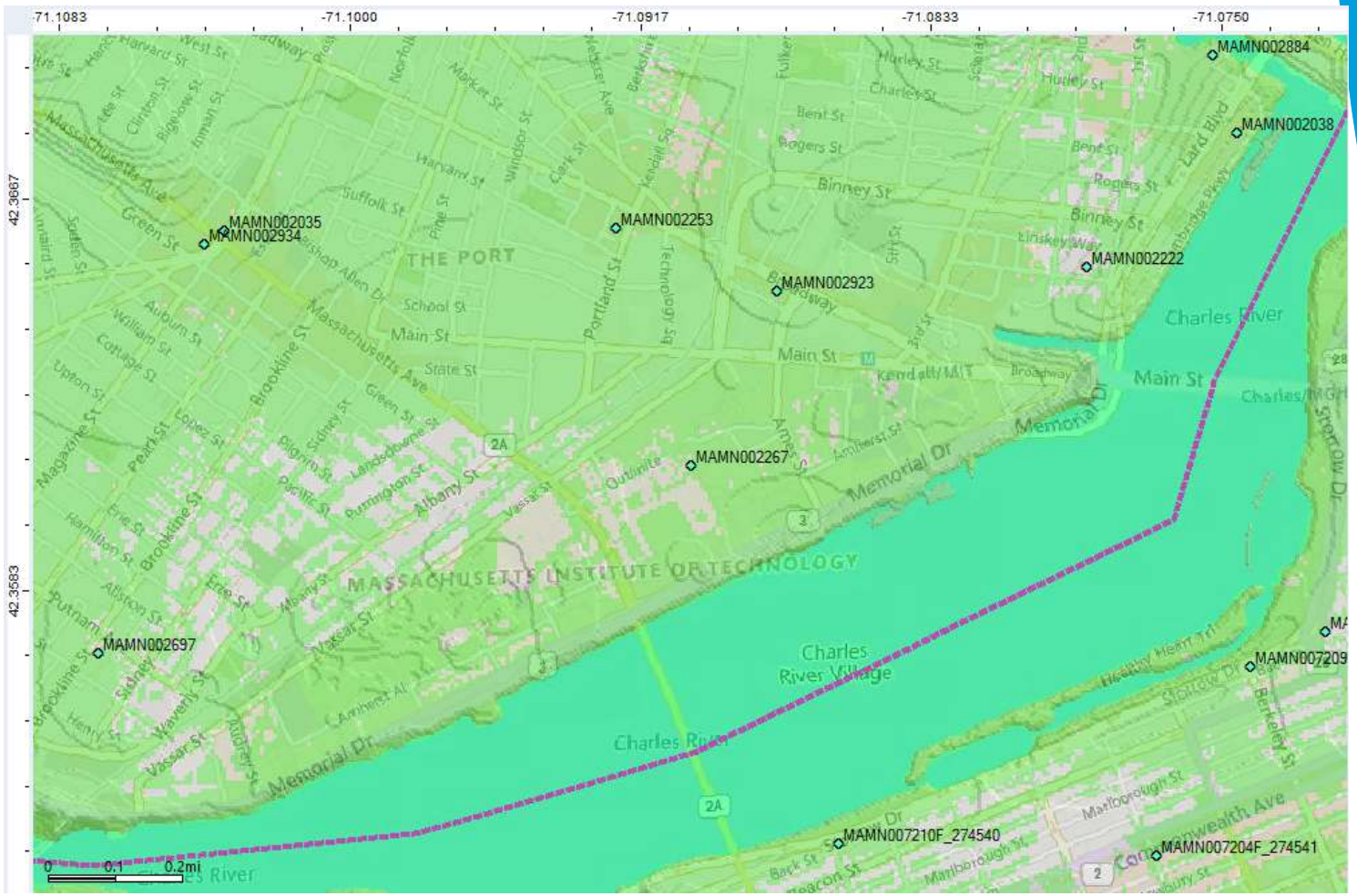
CBAND tri_color: SS-RSRP (dBm)
SS-RSRP Level (DL) (dBm) >=-108
5G-SITE-Launched

Cambridge 3.7GHz Coverage Plot With MAL02267



CBAND tri_color: SS-RSRP (dBm)
SS-RSRP Level (DL) (dBm) >=-108
5G-SITE-Launched

Cambridge 3.45GHz Coverage Plot Without MAL02267

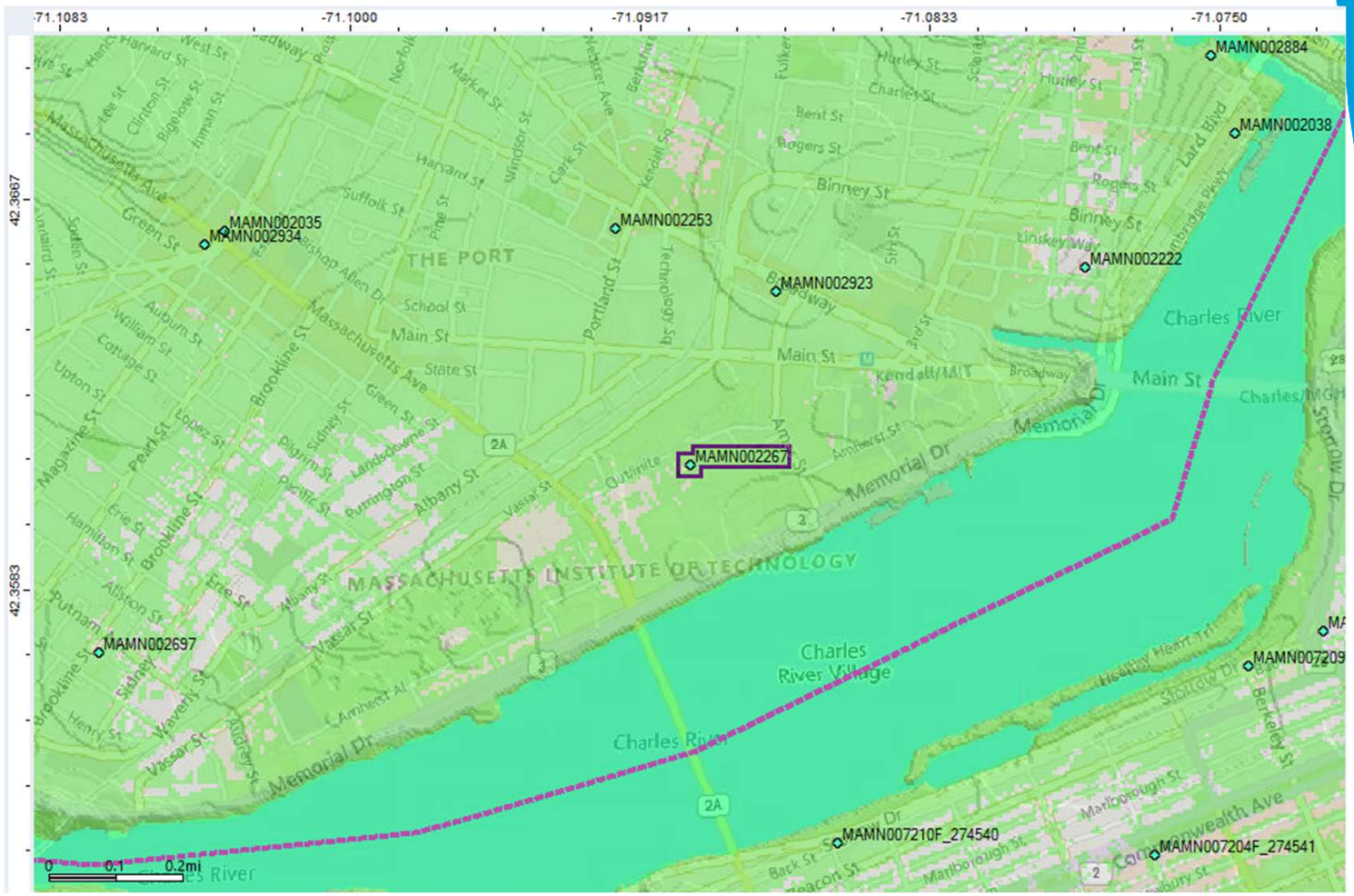


CBAND tri_color: SS-RSRP (dBm)

SS-RSRP Level (DL) (dBm) >=-108

5G-SITE-Launched

Cambridge 3.45GHz Coverage Plot With MAL02267



CBAND tri_color: SS-RSRP (dBm)

SS-RSRP Level (DL) (dBm) >=-108

5G-SITE-Launched

AT&T

September 9, 2025

Paula Crane, City Clerk City of Cambridge City Hall 795 Massachusetts Avenue Cambridge, MA 02139	Jim Monteverde, Chair Board of Zoning Appeal City Hall 795 Massachusetts Avenue Cambridge, MA 02139

Applicant:	New Cingular Wireless PCS, LLC ("AT&T")
Property Address:	60 Vassar Street. Assessor's Map 52A, Lot 21 (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. Crane, Mr. Monteverde 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 60 Vassar Street (the "Special Permit Application").[2]

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

Under Section 6409, AT&T's proposed modification of its existing transmission equipment on and within the existing building, previously approved by the Board for use as a wireless communication base station, 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.

In the alternative, as demonstrated in this application letter, the AT&T's proposed modifications to its existing Facility on the Property located in the C-3 zoning district satisfy the requirements for the grant of a special permit pursuant to Section 10.43 of the Ordinance.

I. APPLICATION PACKAGE

Enclosed with this application are the following materials:

1. The following completed and signed application forms:

    a. BZA Application Form – Electronic Filing;

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

3. Drawings by TEP Group consisting of 15 pages dated 7/23/25;

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

5. Photographs of the existing building and photosimulations of the proposed modifications Facility by Virtual Site Simulations, LLC., dated 3/11/25;

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

7. Structural Analysis by Hudson Design Group LLC dated 2/8/25;

8. Maximum Permissible Exposure Study, Theoretical Report, by C2 Systems, dated March 31, 2025;

9. Letter of Authorization from Owner of Subject Property;

10. Deed to subject property

II. PROPOSED FACILITY DESIGN

AT&T seeks to modify the existing Facility on and within the building located at the Property. The existing Facility consists of twelve (12) panel antennas (Alpha Sector: 4 antennas, Beta Sector: 4 antennas, and Gamma Sector: 4 antennas) that are mounted in three (3) locations. The proposed modifications include the addition of one (1) antenna per sector. The additional antennas will be mounted to the existing antenna mounts consistent with the current Facility's design. Three (3) remote radio-head units (RRUs) (one per sector) will be added in close proximity to the antennas. Consistent with the concealment elements of the existing Facility's design, the proposed replacement antennas will be painted to match the color and texture of the existing façade. The proposed RRUs will match the color of the existing RRUs.

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

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

III. BACKGROUND

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

IV. RF COVERAGE DETERMINATION

AT&T has performed a study of radio frequency coverage for the City of Cambridge and from the Property, the results of which are described in the Radio Frequency Report submitted with this application (*see* Exhibit 6). Without the proposed modifications to its existing Facility, AT&T has a substantial coverage gap in this area of Cambridge. AT&T has determined that the proposed modifications to the existing Facility located on the building at the Property will provide needed coverage to the targeted sections of the City and the immediately surrounding area if AT&T's antennas are located on the building 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 3.45GHz and 3.7GHz band authorized for AT&T's service. The maps show dramatic improvements to wireless coverage in that band with the inclusion of the proposed Facility,

V. THE FEDERAL SPECTRUM ACT AND THE FCC ORDER

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

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

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

---

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

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

47 U.S.C. § 1455(a)(2).

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

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

FCC Order, ¶ 88.

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

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

Therefore, as set forth in the FCC Order and Attorney General's opinion letters, the City cannot impose a requirement that AT&T obtain a special permit, or an amendment to an existing special

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

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

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

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

VI. THE PROPOSED MODIFICATIONS ARE AN ELIGIBLE FACILITIES REQUEST

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

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

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

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

(i) Result in an increase in “the height of the structure by more than 10% or more than ten feet, whichever is greater” because the proposed replacement antennas will be façade mounted and located below the roofline and therefore will not exceed 10 feet above the existing building and the proposed roof mounted RRUs and surge arrestors will also not exceed 10 feet above the existing building;

(ii) Protrude from the edge of the edge of the building by more than six feet because AT&T’s proposed antennas will not protrude more than six feet from building façade;

(iii) Involve the installation of more than the standard number of new equipment cabinets for the technology involved, but not to exceed four cabinets 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 replacement antennas will be painted and textured to match the façade of the existing building on which the existing and proposed antennas will be located and will continue to integrate the Facility into the existing architecture of the building. Further, the proposed and surge arrestors will be mounted in a manner and color consistent with the existing RRUs and surge arrestors. Therefore, AT&T’s proposed Facility will remain aesthetically consistent with the exterior finish of the building as well as maintain the concealment elements of the original design.

See FCC Order, §1.40001(b)(7)(i)-(v).

VII. COMPLIANCE WITH THE CAMBRIDGE ZONING ORDINANCE

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

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

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

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

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**

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

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

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 replacement antennas and associated equipment, on the building's façade, minimizes the visual impact of the proposed Facility. This is because the antennas and equipment on the exterior façade surfaces will be painted to match the color and texture of the building so as to be minimally visible and consistent with the concealment elements of the existing Facility. The minimal visual impact of the Facility is shown in the photographs of the existing Facility and the photosimulations that superimpose the proposed modifications to the existing Facility (*see,* Exhibit 5).

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

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

AT&T's Response: As demonstrated by the Radio Frequency Report and the associated coverage maps, AT&T has demonstrated an immediate and compelling need for the proposed modifications to its existing Facility located at the Property in order to provide substantially improved indoor coverage to residents, businesses, students and faculty, and the general public in that area.[8] AT&T also seeks to substantially improve its ability to satisfy the ever-increasing need of its customers for data accessibility, navigation and use. This is especially critical in and around the area Vassar Street, Massachusetts Avenue and the surrounding MIT campus. AT&T proposes to satisfy its RF coverage needs in the area by adding to the existing Facility the antennas and equipment necessary to provide the latest LTE wireless communications service technology. By modifying its existing Facility, AT&T obviates the need to construct an entirely new facility within this area of Cambridge in order to meet its wireless network coverage needs.

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

[8] AT&T must generate a signal strength of at least -74 dBm to provide serviceable voice and data coverage on its mobile wireless devices in indoor environments. AT&T also seeks to substantially improve its data navigation service coverage in the area by including antennas and equipment that will provide LTE service.

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

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

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

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

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

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

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

<u>AT&T's Response</u>: As described above and illustrated on the attached photographs and photosimulations (*see* Exhibit 5) the proposed modifications to the existing Facility will result in a *de minimis* change in the appearance of the building because the equipment will be located on building exterior surfaces. As a result, the Facility as a whole either will be hidden from view or will visually blend with existing characteristics of the building and the surrounding neighborhood. Because the proposed installation will not generate any traffic, smoke, dust, heat or glare, discharge noxious substances, nor pollute waterways or groundwater, it will not adversely affect residential uses on neighboring streets. Conversely, the surrounding properties and general public will benefit from the potential to enjoy improved wireless communications services. Granting the special permit

would not be a detriment to the public interest and is consistent with the Board's obligations pursuant to the Spectrum Act and FCC Order.

(d) Nuisance or hazard would be created to the detriment of the health, safety and/or welfare of the occupant of the proposed use or the citizens of the City, or

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

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

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

As noted above, the proposed modifications to the existing Facility directly accord with the purposes of the Ordinance because the modifications will not result in any traffic, smoke, dust, heat or glare, discharge noxious substances, nor pollute waterways or groundwater. As the Facility will improve the ability of residents, businesses, travelers and drivers in the area to access state-of-the-art wireless technology, the City's ability to provide emergency services will be improved, as will the economic development of the City as more people will be able to conduct commerce by virtue of a mobile platform. Because the proposed modifications to the existing Facility will be installed on an existing building that includes the Facility, and the proposed modifications are consistent with the existing concealment elements, the proposed modifications to the existing Facility are in consistent with the building's character and will not affect the value of the building or the natural resources of the City. Because the proposed modifications to the existing Facility are designed to be consistent with the existing concealment elements of the Facility and characteristics of the

Property, the visual impact on the underlying and adjacent zoning districts will be *de minimis*. As a result, the proposed modifications to the existing Facility are consistent with the Ordinance's purpose to allow for less intrusive wireless telecommunications facilities in all districts (other than Open Space) including the applicable overlay districts, and the underlying C-3 district. Granting the special permit would not be a detriment to the public interest and is consistent with the Board's obligations pursuant to the Spectrum Act and FCC Order.

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

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

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

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

AT&T's Response: The existing Facility is located on n the existing building, some of the equipment of which is hidden from view behind the screen wall on the existing building, or otherwise obstructed from view, and the remaining equipment blends with the structures and colors of the building. The proposed modifications to the existing Facility are consistent with the previously approved design and concealment elements of the existing Facility. Therefore, the proposed modifications are responsive to the existing pattern of development in the Property's applicable zoning and overlay districts.

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

AT&T's Response: The existing Facility is located on and within the existing building. The Facility is only accessed by authorized AT&T personnel for routine maintenance one to two times per month and is not accessed by the general public. The proposed modifications to the existing

Facility will not result in any increase in routine visits nor otherwise result in a change in traffic patterns in the vicinity of the Property that would affect pedestrian flow or cyclists' access to the building or surrounding areas within the Property's applicable zoning districts.

> **19.33 The building and site design should mitigate adverse environmental impacts of a development upon its neighbors. Indicators include[9]**
>
> **(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 photosimulations (*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 and the concealment elements of the design of the Facility. 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.

[9] 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 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 blend with the color and

textures of 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 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 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 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,

Timothy W. Greene
Authorized Agent to New Cingular Wireless PCS, LLC ("AT&T")

.

60 Vassar St.

Binney Street Park
Loughrey Walkway
Danny Lewin Park
Grand Junction Path
ROAD
Novartis Courtyard
52A-21
52A-22
52A-31
52A-19
48-129
43-63
43A-29
53-54
53-60
58-162
58-74
58-161
57-169
57-170
MIT Henry Steinbrenner Stadium and Track
57-173
MIT Barry Astroturf Field
MIT Brigg's Field
Charles River Basin
274-1E
274-1D
58-166
--MD
DCR

60 Vassar St. Petitioner

58-74-161-162-165 / 53-60-54 / 274-1E/ 57-170-173
MASSACHUSETTS INSTITUTE OF TECHNOLOGY
C/O MIT INVESTMENTS MANAGEMENT CO
ONE BROADWAY, SUITE 09-200
CAMBRIDGE, MA 02142

43-63
WHITEHEAD INSTITUTE FOR BIOMEDICAL RESEARCH
9 CAMBRIDGE CENTER
CAMBRIDGE, MA 02142

TERRA SEARCH LLC
C/O TIMOTHY GREENE, AGENT
157 NORWELL DRIVE
NORWELL, MA 02061

57-169/48-129/52A-31-22-21-19/56-4
MASSACHUSETTS INSTITUTE OF TECHNOLOGY
OFFICE OF THE TREASURER
C/O MIT INVESTMENT MGMT COM
ONE BROADWAY, 9TH FL, SUITE 200
CAMBRIDGE, MA 02142

43A-29
CAMBRIDGE REDEVELOPMENT AUTHORITY
255 MAIN ST 8TH FLOOR
CAMBRIDGE, MA 02142

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

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

Federal Communications Commission
Wireless Telecommunications Bureau

RADIO STATION AUTHORIZATION

LICENSEE: AT&T MOBILITY SPECTRUM, LLC

ATTN: NATIONAL REGULATORY COMPLIANCE
AT&T MOBILITY SPECTRUM, LLC
208 S AKARD ST, 20F
DALLAS, TX 75202

Call Sign	File Number
WRNI966	0011502576
Radio Service PM - 3.7 GHz Service	

FCC Registration Number (FRN): 0014980726

Grant Date	Effective Date	Expiration Date	Print Date
07-23-2021	03-27-2025	07-23-2036	04-02-2025

Market Number	Channel Block	Sub-Market Designator
PEA007	C2	0

Market Name
Boston, MA

1st Build-out Date	2nd Build-out Date	3rd Build-out Date	4th Build-out Date
07-23-2029	07-23-2033		

Waivers/Conditions:

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

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

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

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

Licensee Name: AT&T MOBILITY SPECTRUM, LLC

Call Sign: WRNI966 **File Number:** 0011502576 **Print Date:** 04-02-2025

700 MHz Relicensed Area Information:

Market	Market Name	Buildout Deadline	Buildout Notification	Status

Federal Communications Commission
Wireless Telecommunications Bureau

RADIO STATION AUTHORIZATION

LICENSEE: AT&T MOBILITY SPECTRUM, LLC

ATTN: NATIONAL REGULATORY COMPLIANCE
AT&T MOBILITY SPECTRUM, LLC
208 S AKARD ST, 20F
DALLAS, TX 75202

Call Sign	File Number
WRQM360	0011502576
Radio Service PK - 3.45 GHz Service	

FCC Registration Number (FRN): 0014980726

Grant Date	Effective Date	Expiration Date	Print Date
05-04-2022	03-27-2025	05-04-2037	04-02-2025

Market Number	Channel Block	Sub-Market Designator
PEA007	D	0

Market Name
Boston, MA

1st Build-out Date	2nd Build-out Date	3rd Build-out Date	4th Build-out Date
05-04-2026	05-04-2030		

Waivers/Conditions:
NONE

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

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

Licensee Name: AT&T MOBILITY SPECTRUM, LLC

Call Sign: WRQM360 **File Number:** 0011502576 **Print Date:** 04-02-2025

700 MHz Relicensed Area Information:

Market	Market Name	Buildout Deadline	Buildout Notification	Status