CROWN CASTLE

1800 W Park Dr rSuite 200
Westborough, MA 01581

Phone: (508) 621-9161
www.crowncastle.com

August 14, 2025

MA - TOWN OF ASHLAND
PLANNING DEPARTMENT
101 MAIN STREET, 2ND FLOOR
ASHLAND, MA 01721

************NOTICE OF ELIGIBLE FACILITIES REQUEST************

RE: Request for Minor Modification to Existing Wireless Facility – Section 6409
Site Address: 117 Oregon Rd, Ashland, Middlesex County, MA 01721
Crown Site Number: 822710 / Crown Site Name: BN510/Oregon Club
Customer Site Number: 4BN0510A / Application Number: 657779

On behalf of T-Mobile Northeast LLC ("T-Mobile" or "Applicant"), Crown Castle USA Inc. ("Crown Castle") is pleased to submit this request to modify the existing wireless facility noted above through the collocation, replacement and/or removal of the Applicant's equipment as an eligible facilities request for a minor modification under Section 6409[1] and the rules of the Federal Communications Commission ("FCC").[2]

Section 6409 mandates that state and local governments must approve any eligible facilities request for the modification of an existing wireless tower or base station that does not substantially change the physical dimensions of such tower or base station. Under Section 6409, to toll the review period, if the reviewing authority determines that the application is incomplete, it must provide written notice to the applicant within 30 days, which clearly and specifically delineates all missing documents or information reasonably related to whether the request meets the federal requirements.[3] Additionally, if a state or local government, fails to issue any approvals required for this request within 60 days, these approvals are deemed granted. The FCC has clarified that the 30-day and 60-day deadlines begins when an applicant: (1) takes the first step required under state or local law; and (2) submits information sufficient to inform the jurisdiction that this modification qualifies under the federal law[4]. Please note that with the submission of this letter and enclosed items, the thirty and sixty-day review periods have started. **Based on the date of this filing, the deadline for written notice of incomplete application is September 13, 2025, and the deadline for issuance of approval is October 13, 2025.**

[1] Middle Class Tax Relief and Job Creation Act of 2012, Pub. L. No. 112-96, § 6409 (2012) (codified at 47 U.S.C. § 1455).
[2] *Acceleration of Broadband Deployment by Improving Wireless Facility Siting Policies*, 29 FCC Rcd. 12865 (2014) (codified at 47 CFR § 1.6100); and *Implementation of State & Local Governments' Obligation to Approve Certain Wireless Facility Modification Requests Under Section 6409(a) of the Spectrum Act of 2012*, WT Docket No. 19-250 (June 10, 2020).
[3] *See* 47 CFR § 1.6100 (c)(3). [4] *See* 2020 Upgrade Order at paragraph 16.

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The proposed scope of work for this project includes:

> Add or replace antennas, ancillary equipment and ground equipment as per plans for an existing carrier on an existing wireless communication facility.

At the end of this letter is a checklist outlining the applicable substantial change criteria under Section 6409. Additionally, the following items are included in support of this request:

- Special Permit Modification Application & Findings of Fact
- Filing Fee check #3090960 for $400
- Certified Abutter List
- Construction Drawings
- Structural Analysis
- Radio Frequency Emissions Analysis Report

As these documents indicate, (i) the modification involves the collocation, removal or replacement of transmission equipment; and (ii) such modification will not substantially change the physical dimensions of such tower or base station. As such, it is an "eligible facilities request" as defined in the FCC's rules to which the 60-day deadline for approval applies. Accordingly, Applicant requests all authorization necessary for this proposed minor modification under Section 6409.

Our goal is to work with you to obtain approvals earlier than the deadline. We will respond promptly to any request for related information you may have in connection with this request. Please let us know how we can work with you to expedite the approval process. We look forward to working with you on this important project, which will improve wireless telecommunication services in your community using collocation on existing infrastructure. If you have any questions, please do not hesitate to contact me.

Regards,

Domenica Tatasciore

Domenica Tatasciore
Permitting Specialist, Tower Services
Crown Castle, Agent for T-Mobile
(508) 621-9161
Domenica.Tatasciore@crowncastle.com

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Section 6409 Substantial Change Checklist for Towers Outside of the Public Right of Way

The Federal Communications Commission has determined that a modification substantially changes the physical dimension of a wireless tower or base station under 47 U.S.C. § 1455(a) if it meets one of six enumerated criteria under 47 C.F.R. § 1.6100.

Criteria for Towers Outside of the Public Rights of Way

YES/NO **NO**	Does the modification increase the height of the tower by more than the greater of: (a) 10%; or (b) the height of an additional antenna array plus separation of up to 20 feet from the top of the nearest existing antenna?
YES/NO **NO**	Does the modification add an appurtenance to the body of the tower that would protrude from the edge of the tower more than 20 feet or more than the width of the tower structure at the level of the appurtenance, whichever is greater?
YES/NO **NO**	Does the modification involve the installation of more than the standard number of new equipment cabinets for the technology involved or add more than four new equipment cabinets?
YES/NO **NO**	Does the modification entail any excavation or deployment outside the current site by more than 30 feet in any direction, not including any access or utility easements?
YES/NO **NO**	Does the modification defeat the concealment elements of the eligible support structure?
YES/NO **NO**	Does the modification violate conditions associated with the siting approval for the tower or base station other than as specified in 47 C.F.R. § 1.6100(c)(7)(i) – (iv)?

If all questions in the above section are answered "NO," then the modification does <u>not</u> constitute a substantial change to the existing tower under 47 C.F.R. § 1.6100.

Town of Ashland
Planning Department
101 Main St.
Ashland, MA 01721
508.881.0101
Ashlandmass.com/193/Planning

Application for Planning Board Approval/Permit

Note: Application must be complete, with a certified plot plan and all application fees to be accepted.

Property Information:

Street Address: 117 Oregon Road

Zoning District: Res A Overlay District: _____

Assessor's Map: 1 Lot: 38-00-000 Deed Book: 22628 Page: 49

Current Property Owner: John J. Briasco Realty Trust and Catherline R Briasco Realty Trust

Permit/Approval Sought:

X Special Permit (§9.3)

X Special Permit Amendment/Modification

___ Design Plan Review (§9.6)

___ Site Plan Review (§9.4)

___ Site Plan Modification

___ Scenic Road Permit (Ch. 249 §20)

___ Earth Removal Permit (Ch. 242 §3)

___ Site Alteration Special Permit (§5.8)

___ Subdivision (Include Subdivision Application form)

X Wireless Communication Facilities (§6.4)

Use Type: ___ Residential X Commercial ___ Industrial ___ Mixed Use

Applicant Information:

___ Owner X Tenant ___ Prospective Purchaser/Tenant

Name: T-Mobile Northeast LLC

Address: 15 Commerce Way, Norton, MA 02766

Phone: 508-621-9161 Email: Domenica.Tatasciore@crowncastle.com

Agent's Name: Domenica Tataciore for Crown Castle on behalf of T-Mobile Northeast LLC

Agent's Address: 1800 W. Park Drive, Suite 200, Westborough, MA 01581

Agent's Phone: 508-621-9161 Agent's Email: Domenica.Tatasciore@crowncastle.com

Additional Information:

Are all real estate taxes and other assessments to the Town current? Yes

Is the parcel on a scenic road? No Is the parcel in a flood plain? No

Is the parcel within 100 feet of a wetland or 200 feet of a river? No

Is this an amendment to a previously issued Special Permit? (Attach approved permit): Yes

Date structure(s) built? 2010

The following requirements are acceptable in Cover Letter or Memo format

Description of the Relief Sought: (attach additional pages if needed)

Pursant to Section 6.4 of the Town of Ashland Zoning bylaws and Section 6409(a) of the Federal Middle Class Tax Relief and Job Creation Act, also referred to as the "Spectrum Act, " T-Mobile Northeast LLC is proposing to remove 6 antennas and install 6 new antennas, ancillary equipment, collar mounts and ground equipment. No proposed change to tower height or compound size.

What specific zoning bylaws and/or Special Permit types are relevant to this application?
Section 6.4 of the Town of Ashland Zoning Bylaws and Section 6409(a) of the Federal Middle Class Tax Relief and Job Creation Act of 2012, also referred to as the "Spectrum Act."

Benefits of Project:

The modification will improve network performance, and provide enhanced wireless service and coverage and capacity to the Town of Ashland and the surrounding area.

Existing use and condition of the property and surrounding neighborhood: (Please list all non-conformities.)

Existing 75-ft wireless facility located on the premises of the Oregon Club and across the road from Briasco Field for youth soccer.

Attach Building Permit Denial letter if applicable.

By signing below, you assert this application is complete and accurate to the best of your knowledge:

Signatures:

Applicant/Agent: _____ Applicant's Name: Domenica Tatasciore on behalf of T-Mobile Northeast LLC / Crown Castle

Agent's Relationship to Applicant: Authorized Agent Firm: Crown Castle

Owner: See Attached Lease Agreement Owner's Name: _____

Note: If the applicant is not the owner, please have the owner sign above or submit a letter of permission with the application.

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In Support of the Special Permit Findings of Fact

By Domenica Tatasciore, Agent for Crown Castle on behalf of T-Mobile Northeast LLC

RE:	Application for Special Permit (*while reserving all rights*) for Modification of a Wireless Communications Facility
Property:	117 Oregon Road, Ashland, MA (the "Property")
Applicant:	T-Mobile Northeast LLC by its representative Crown Castle, Agent Domenica Tatasciore
Property Owner:	John J Briasco Realty Trust & Catherine Briasco Realty Trust

Dear Honorable Board Members:

I am the Agent for Crown Castle and represent T-Mobile Northeast LLC in connection with an application for a Special Permit, *with all rights reserved,* for T-Mobile Northeast LLC from the Town of Ashland Planning Board (the "Board"). In its application, Applicant seeks permission to modify an existing Wireless Communications Facility ("WCF") located at 117 Oregon Road, as more fully described herein (the "Project"). Pursuant to Section 6.4 of the Town of Ashland Zoning Bylaws, as more fully described herein (the "Bylaws"), the Project falls within the subject matter of, and is consistent with, the spirit, intent and purpose of the said Bylaws.

This application is submitted with full reservation of Applicant's rights including without limitation Section 6409(a) of the federal Middle Class Tax Relief and Job Creation Act of 2012 also referred to as the "Spectrum Act." The Spectrum Act was passed to "advance wireless broadband service" for both public safety and commercial purposes. The modification to the existing WCF satisfies the standards for the modification of an eligible facility under the Spectrum Act.

Applicant holds an interest in the Property by virtue of a Site Lease Agreement with the property owner/tower owner and operator. Applicant is the current holder and operator of a WCF at the Property pursuant to a Special Permit and Variance Decision, filed by the Ashland Zoning Board of Appeals on June 18, 2007 recorded with the Middlesex County District Registry of Deeds in Book 49808, Page 29.

The Property is located in the Residential A (RA) zone. The Board is therefore vested with the authority to grant the permissions sought herein by Section 6.4 et seq. of the Bylaws and Section 6409(a) of the federal Middle Class Tax Relief and Job Creation Act of 2012 also referred to as the "Spectrum Act".

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I. Background

The Applicant 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 in particular the Town of Ashland. The Applicant, in its design, has established the objective of providing seamless coverage to its customers throughout its coverage area. The radio transmitting and receiving facilities operate on a line of site basis, requiring a clear path from the facility to the user on the ground. This dynamic requires the antennas to be located above the tree line, and in a location where the signal is not obstructed or degraded by other buildings or by topographical features such as hills.

II. The Project

T-Mobile Northeast LLC currently has equipment at the 61-foot and the 71-foot centerlines of the pole. The Project consists of the following scope of work: At the 61-foot centerline replace three (3) existing antennas with three (3) new antennas; at the 71-foot centerline, replace three (3) existing antennas with three (3) new antennas. Thus, a total of six (6) existing antennas to be replaced with six (6) new antennas. Other tower equipment to include: install two (2) collar mounts; install six (6) Bias Ts; and install six (6) cables. Ground equipment includes the replacement of three (3) cabinets, eight (8) radios, three (3) diplexers and other ancillary equipment at an existing telecommunications facility.

The specifications and locations of equipment associated with the Project and equipment already existing on the Property are more fully described on the plans included with this application.

The Project will comply with all applicable local, state and federal safety codes, including but not limited to all regulations promulgated by the Federal Communications Commission.

III. Legal Analysis

6.4.1 Purpose and Intent. This Section is designed to provide guidance for the installation of new towers, antennas and other communication structures for all types of Wireless Communications Facilities (WCF) within the Town of Ashland or for the replacement, expansion, upgrade or modification of said equipment. The By-Law will establish standards to protect the interests of the general public, provide for public safety, preserve character and property values, and minimize visual and environmental impacts throughout the town as well as adjacent towns and especially on Residential Districts. The Bylaw enables the review and approval of Wireless Communications Facilities by the Town's Planning Board, acting as the Special Permit Granting Authority, in keeping with the Town's existing bylaws and historic development patterns, including the size and spacing of structures and open spaces. This bylaw is intended to be used in conjunction with other regulations adopted by the Town, including historic district regulations, site plan review and other local bylaws designed to preserve the character of the town, preserve quality of life, and other local bylaws designed to preserve the character of the town, preserve quality of life, and encourage appropriate land use, environmental protection, and provision of adequate infrastructure development in Ashland.

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6.4.2. District Regulations

1. New or modified WCFs in Ashland's zoning districts shall require a special permit from the SPGA. These include ground mounts, building (roof or side) mounts, and WCFs mounted on other existing structures. These also include replacement, expansion, upgrade, modification, or significant change in appearance of a WCF such as an extension in height or width; addition of cells, antennae, or panels; upgrade of technology; or a new replacement of a facility. The Applicant shall submit documentation of the legal right, physical need, and structural capacity to install and/ or use the proposed facility mount at the time of application of the special permit.
2. In commercial and industrial zoning districts, WCFs are allowed in all areas, subject to the exceptions listed below.
3. In residential zoning districts, WCFs are not allowed in any areas unless the Applicant can show that the proposed location is necessary to close a significant gap in wireless service AND no feasible alternative, location, or technology exists, subject to the exceptions listed below.

   The Applicant was previously granted a Special Permit and Variance to install a new tower with antennas and ground equipment at the existing site. The proposed equipment modifications are a continuation of this operation and are intrinsic to the Applicant's ability to provide necessary communications services. The Applicant further respectfully submits the proposed modifications satisfy the standards for an eligible facility request pursuant to 47 U.S.C. §1455 and 47 C.F.R. §1.6100.

4. Under no conditions will the SPGA allow a new or modified WCF located:
   a. Within 300 feet of a residential building in Ashland's residential zoning districts;
   b. Within 300 feet of a building in Ashland licensed by the Massachusetts Department of Elementary and Secondary Education to educate persons under the age of 18; and
   c. On land for which there is a permanent conservation restriction as authorized under Sections 31-33 of Chapter 184 of the General Laws of Massachusetts OR there are active/ fixed recreational activities including but not limited to playgrounds, ball fields, and tennis courts.

   The Wireless Telecommunications Facility is an existing and permitted use.

5. Notwithstanding any of these regulations, the Town encourages co-location on existing structures, including but not limited to existing WCFs, buildings, water towers, utility poles and towers, and related facilities, provided such installations preserve the character and integrity of those structures. Applicants are urged to consider use of existing telephone and electric utility structure.

   The subject application conforms to the stated intent to utilize existing structures and WCFs by modifying an existing facility on an existing telecommunications tower.

6. WCFs on existing structures shall:
   a. Not extend the height of the existing structure unless the structure meets all requirements of this Bylaw;

      The proposed modifications will not extend above the height of the existing telecommunication tower.

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b. not project above the existing structure by more than ten feet;

The proposed modifications will not extend above the height of the existing telecommunications tower.

c. be finished in a manner designed to be aesthetically consistent with the exterior finish of the structure;

The proposed equipment is compatible with the existing previously permitted equipment.

d. be mounted so that it does not obscure any window or other exterior architectural feature; and

This provision is not applicable in the case of the existing telecommunications tower.

e. not exceed fifty (50) square feet of front surface facing surrounding streets and adjacent properties, individually or in aggregate. In reviewing an application, the SPGA may increase this surface if it finds that a substantially better design will result from such increase. In making such a finding the SPGA shall consider both the visual and safety impacts of the proposed use.

The proposed modifications comply with this provision. The Applicant further respectfully submits the proposed modifications satisfy the standards for an eligible facility request pursuant to 47 U.S.C. §1455 and 47 C.F.R. §1.6100.

7. WCFs in new locations shall:

a. be allowed only if the Applicant has definitively demonstrated that there are no feasible existing structures upon which to locate;

b. be camouflaged to the greatest extent possible, including but not limited to the use of compatible building materials and colors, screening, and landscaping; and

c. include a "fall zone" equal to 150% of the height of the facility/ mount, including any antennae or other appurtenances. Within this fall zone there shall be no habitable structure and the Applicant shall demonstrate control of the land (via lease or ownership) to prohibit future habitable construction. In reviewing an application the SPGA may reduce the required fall zone by as much as 50% of the required distance if it finds that a substantially better design will result from such reduction. In making such a finding the SPGA shall consider both the visual and safety impacts of the proposed use.

Paragraphs 7 (a, b, c) do not apply as the modifications will not be located on a new structure.

8. All WCFs shall:

a. be no higher than ten feet above the average height AGL of buildings, tree canopy, or other structures within 300 feet OR, if on an existing structure, ten feet above the height of the existing structure, whichever is higher;

b. be no higher than ten feet above the height limit of the zoning district within which the WCF is located, unless the WCF is completely camouflaged such as within a flagpole, steeple, chimney, or similar structure; and

c. meet the setback requirements of the underlying zoning district.

The Applicant believes that since the proposed equipment will not extend above the height of the existing telecommunications tower structure, it will be in compliance with height requirements. Similarly, the proposed modifications do not alter the existing ground footprint of the WCF and this will not impact existing setbacks. The Applicant further respectfully submits the proposed modifications satisfy the standards for an eligible facility request pursuant to 47 U.S.C. §1455 and 47 C.F.R. §1.6100.

6.4.3 Special Permit Regulations. All Wireless Communications Facilities shall comply with the Requirements and Performance Standards set forth in this section.

1. The following types of wireless communications facilities are exempt from the Special Permit requirement of this bylaw and may be constructed, erected, installed, placed and/or used within the Town subject to the issuance of a building permit by the Building Commissioner:
   a. Amateur radio towers used in accordance with the terms of any amateur radio service license issued by the Federal Communications Commission, provided that:
      i. the tower is not used or licensed for any commercial purpose;
      ii. the tower must have a cost or replacement value of less than $10,000.00;
      iii. if the tower is a free-standing device, such device shall be installed in the rear yard only, outside the setback; and
      iv. the tower must be removed if the use is discontinued for one (1) year.
   b. Towers used for the purposes set forth in M.G.L. C. 40, Section 3.
   c. Satellite dishes less than 1 meter in diameter

The Applicant agrees that the exemptions provided by Section 6.4.3, Paragraph 1 above do not apply to its proposed equipment modification. Section 6409(a) of P.L. 112-96, as codified at 47 U.S. Code §1455, however, requires permitting authorities to approve most applications administratively for the collocation and modification of wireless equipment in an effort to streamline "the process for siting of a wireless facility by preempting the ability of State and local authorities to delay collocation of, removal of, and replacement of wireless transmission equipment."

2. The SPGA shall not grant a Special Permit for lattice towers and similar facilities requiring three (3) or more legs and/or guy wires for support. Only monopoles, with associated antenna and/or panels, are allowed.

The Applicant submits that this provision does not apply as the subject structure is an existing telecommunication tower, which was previously permitted as a WCF.

3. Any new free standing towers shall be designed to structurally accommodate the maximum number of foreseeable users (within a ten (10) year period) as technically practicable. The intent of this requirement is to reduce the number of facilities which will be required to be located within the community.

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This provision does not apply as the proposed modifications do not involve a new telecommunications tower structure.

4. Design Standards

   a. Site Design Standards

      i. All wireless communications facilities shall minimize, to the extent feasible, adverse visual effects on the environment, the community and surrounding communities. The SPGA may impose reasonable conditions to ensure this result, including painting, screening and lighting standards.

         The Applicant agrees to reasonable conditions under this section while noting that the modifications are to an existing facility which will not exceed the height of the telecommunications tower structure and will not result in adverse visual effects to the community. The Applicant further respectfully submits the proposed modifications satisfy the standards for an eligible facility request pursuant to 47 U.S.C. §1455 and 47 C.F.R. §1.6100.

      ii. Access shall be provided to a tower site by a roadway which respects the natural terrain, does not appear as a scar on the landscape and is approved by the SPGA, the SPGA and the Fire Chief to assure emergency access at all times. Consideration shall be given to design which minimizes erosion, construction on unstable soils and steep slopes.

         The existing WCF complies with this requirement. Access will be unaffected by the proposed modifications.

      iii. There shall be a minimum of one (1) parking space for each WCF to be used in connection with the maintenance of the site, and not to be used for the permanent storage of vehicles or other equipment.

         See comment below.

      iv. Traffic associated with the tower and accessory facilities and structures shall not adversely affect abutting ways.

         The Applicant will comply with this provision and notes that the subject WCF is unmanned and will remain unmanned subsequent to the proposed equipment modifications. The WCF will not generate traffic in and of itself except for periodic site visits by a technician for routine maintenance. This status will remain unchanged from the existing facility.

   b. Visibility/Camouflage. All WCFs shall be sited in such a manner that the view of the facility from adjacent abutters, residential neighbors and other areas of the Town or Adjacent Towns shall be as limited as possible. All monopoles and dishes shall be painted or otherwise colored so as to blend in with the landscape or the structure on which they are located. A different color scheme shall be used to blend the structure with the landscape below and above the tree or building line.

      Satellite dishes and/or antennae shall be situated on or attached to a structure in such a manner that they are screened, preferably not being visible from abutting streets. Free-standing dishes or antennae shall be located on the landscape in such a manner so as to

minimize visibility from abutting streets and residences and to limit the need to remove existing vegetation. All equipment shall be colored, molded and/or installed to blend into the structure and/or the landscape.

Wireless Communications Facilities shall be camouflaged as follows:

i. Camouflage by Existing Buildings or Structures. When a Wireless Communications Facility extends above the roof height of a building on which it is mounted, every effort shall be made to conceal the facility within or behind existing architectural features to limit its visibility from public ways. Facilities mounted on a roof shall be stepped back from the front facade in order to limit their impact on the building's silhouette. Wireless Communications Facilities which are side mounted shall blend with the existing building's architecture and shall be painted or shielded with material which is consistent with the design features and materials of the building.

This provision is inapplicable in that the proposed equipment modification will not extend above the height of the telecommunications tower structure and will not be mounted on a roof. The Applicant further respectfully submits the proposed modifications satisfy the standards for an eligible facility request pursuant to 47 U.S.C. §1455 and 47 C.F.R. §1.6100.

ii. Camouflage by Vegetation. If Wireless Communications Facilities are not camouflaged from public viewing areas by existing buildings or structures, they shall be surrounded by buffers of dense tree growth and understory vegetation in all directions to create an effective year-round visual buffer. Ground-mounted Wireless Communications Facilities shall provide a vegetated buffer of sufficient height and depth to effectively screen the facility. Trees and vegetation may be existing on the subject property or installed as part of the proposed facility or a combination of both. Existing on-site vegetation shall be preserved to the maximum extent practicable. The SPGA shall determine the types of trees and plant materials and depth of the needed buffer based on site conditions.

This provision is inapplicable in that the proposed equipment modification will not affect any changes to the existing fenced ground equipment area.

iii. Color. Wireless Communications Facilities which are side-mounted on buildings shall be painted or constructed of materials to match the color of the building material directly behind them. To the extent that any Wireless Communications Facilities extend above the height of the vegetation immediately surrounding it, they shall be painted in a light grey or light blue hue which blends with sky and clouds. The portion of a building-mounted WCF extending above the building shall be painted to blend with sky and clouds.

This provision is inapplicable in that the proposed equipment modification is mounted on an existing telecommunications tower and not a building.

c. Equipment Shelters. Where feasible, the equipment to relay the wireless transmission or to transfer the wireless transmissions to the phone system shall be located inside an existing structure. Otherwise, such equipment shall be located in a new structure in a location where the visual impact to the community and surrounding communities will be minimized. The SPGA may impose conditions on the siting and screening of such structure.

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Equipment shelters for Wireless Communications Facilities shall be designed consistent with one of the following design standards:

i. Equipment shelters shall be located in underground vaults;

ii. Equipment shelters shall be designed to be consistent with the architectural context, styles and materials, of the surrounding neighborhood as determined by the SPGA.

iii. Equipment shelters shall be camouflaged behind an effective year-round landscape buffer, equal to the height of the proposed building, and/or wooden fence. The SPGA shall determine the style of fencing and/or landscape buffer that is compatible with the neighborhood.

The Applicant believes that sub section (c) above is inapplicable as T-Mobile does not utilize an equipment shelter at the site but locates its ground equipment using cabinets on an existing concrete equipment pad. T-Mobile Northeast LLC proposes to continue utilizing replacement equipment cabinets located inside the existing fenced area.

d. Lighting and Signage:

i. Wireless Communications Facilities shall be lighted only if required by the Federal Aviation Administration (FAA). Lighting of equipment structures and any other facilities on site shall be shielded from abutting properties. There shall be total cutoff of all light at the property lines of the parcel to be developed, and foot-candle measurements at the property line shall be 0.0 initial foot- candles when measured at grade.

This provision is not applicable as the WCF is not lighted.

ii. There shall be no signs, except for announcement signs, danger signs, "No Trespassing" signs and a required sign giving the telephone number where the owner may be reached on a twenty-four-hour (24-hr.) basis. All signs shall conform with the Town of Ashland Sign Bylaws.

The Applicant will comply with this provision subject to any lawful requirements by federal and state authority.

e. Historic Buildings and Districts:

i. Any Wireless Communications Facilities located on or within an historic structure shall not alter the character-defining features, distinctive construction methods, or original historic materials of the building.

ii. Any alteration made to an historic structure to accommodate a Wireless Communications Facility shall be fully reversible.

iii. Wireless Communications Facilities within an historic district shall be concealed within or behind existing architectural features or shall be located so that they are not visible from public roads and viewing areas within the district.

The provisions of this subsection regarding Historic Districts and Buildings **do not apply.**

f. Scenic Landscapes and Vistas:

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i. Wireless Communications Facilities shall not be located within open areas that are visible from public roads, recreational areas or residential development. As required in the Camouflage section above, all ground- mounted Wireless Communications Facilities which are not camouflaged by existing buildings or structures shall be surrounded by a buffer of dense tree growth.

ii. Any Wireless Communications Facility that is located within 300 feet of a scenic vista, scenic landscape, or scenic road as designated by the town shall not exceed the height of vegetation at the proposed location. If the facility is located farther than 300 feet from those elements, the height regulations described elsewhere in this bylaw will apply.

The Applicant respectfully submits that the subject telecommunication tower facility is not located within a scenic landscape or vista and thus the provision of subsection (f) does not apply.

g. Service Utilities. All utilities, which will service the proposed personal wireless service facility, shall be located below ground from the facility's property line.

The WCF is an existing facility and no new utilities are proposed for the subject site.

h. Environmental Standards:

i. Wireless Communications Facilities shall not be located in wetlands. Locating of wireless facilities in wetland buffer areas shall be avoided whenever possible and disturbance to wetland buffer areas shall be minimized and subject to approval of the Conservation Commission.

The subject facility is not located within a wetland area.

ii. No hazardous waste shall be discharged on the site of any Wireless Communications Facility. If any hazardous materials are to be used on site, there shall be provisions for full containment of such materials. An enclosed containment area shall be provided with a sealed floor, designed to contain at least 110% of the volume of the hazardous materials stored or used on the site.

iii. Stormwater run-off shall be contained on-site. Any WCF or related groundwork shall comply with Chapter 282 sec 9.4 (Site Plan Review) and Chapter 247 Stormwater Management of the Codes of the Town of Ashland.

iv. Ground-mounted equipment for Wireless Communications Facilities shall not generate noise in excess of 50 db at the property line.

v. Roof-mounted or side-mounted equipment for Wireless Communications Facilities shall not generate noise in excess of 50 db at ground level at the base of the building closest to the antenna.

The Applicant respectfully notes that the WCF both as currently existing and subsequent to the installation of the proposed equipment modifications does not and will not produce any hazardous waste or other physical byproducts. Similarly, the existing WCF and post- modification WCF will not produce noise.

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1800 W Park Dr rSuite 200
Westborough, MA 01581

Phone: (508) 621-9161
www.crowncastle.com

i. Safety Standards:

i. Radiofrequency Radiation (RFR) Standards. All equipment proposed for a Wireless Communications Facility shall be authorized per the FCC Guidelines for Evaluating the Environmental Effects of Radiofrequency Radiation (FCC Guidelines), as well as the Massachusetts Department of Public Health standards with respect to emissions from wireless facilities.

The Applicant complies and will continue to comply in all respects to RF emissions standards as established by the FCC both in general and specifically as under the terms of its license. The Applicant has been advised that the Massachusetts Department of Public Health no longer issues RF compliance letters but defers to established FCC standards.

ii. All ground-mounted WCFs shall be surrounded by a security barrier. The security barrier shall be a minimum of eight (8) feet in height All fencing, walls and gates shall be compatible with the context of the existing neighborhood and community as determined by the SPGA and the Building Inspector.

The existing telecommunications tower itself is protected by an existing fence. The Applicant will comply with reasonable security provisions applicable to its own installation.

IV. Compliance with Telecommunications Act of 1996

Because the Applicant is applying for zoning approval for the installation of equipment that provides wireless services, the application is subject to §704 of the federal Telecommunications Act of 1996 ("TCA"), codified at 47 U.S.C. §332(c)(7)(B). By way of background, the TCA is a federal law enacted in 1996 whose purpose is "[t]o promote competition and reduce regulation in order to secure lower prices and higher quality services for American telecommunications consumers and encourage the rapid deployment of new telecommunications technologies." To further this purpose, the TCA established national standards that apply to zoning applications for wireless facilities. These standards preempt inconsistent state and local laws, so they must be considered by zoning boards in making decisions on applications for wireless facilities.

On February 22, 2012, President Obama signed into law H.R. 3630, known as the "Middle Class Tax Relief and Job Creation Act of 2012," which then became Public Law 112-96 ("P.L. 112-96"). Section 6409(a) of P.L. 112-96 adds new language to the existing body of laws, regulations, and decisions pertaining to wireless facility zoning.

In an effort to advance Congress' goal of facilitating the rapid deployment of qualified modifications, the Federal Communications Commission adopted rules in 2014 that clarified many of the terms of Section 6409(a). The Commission stated that the purpose of implementing the rules "will serve the public interest by providing guidance to all stakeholders on their rights and responsibilities under the provision, reducing the delays in the review process for wireless infrastructure modifications, and facilitating the rapid deployment of wireless infrastructure, thereby promoting the advanced wireless broadband services."

47 U.S. Code §1455(a) and 47 C.F.R. §1.6100(b) builds on the existing legal framework for wireless facilities by requiring permitting authorities to approve an eligible facilities request in an effort to streamline "the process for siting of a wireless facility by preempting the ability of State and local authorities to delay

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collocation of, removal of, and replacement of wireless transmission equipment." "Collocation" is defined as "the mounting or installation of transmission equipment on an eligible support structure for the purpose of transmitting and/or receiving radio frequency signals for communications purposes." The term "eligible support structure" means any structure that is a "tower" or "base station." The term "eligible facilities request" includes any request for modification of an existing wireless tower or base station that involves— (i) collocation of new transmission equipment; (ii) removal of transmission equipment; or (iii) replacement of transmission equipment.

The tower is "eligible support structure" in that it currently exists and "supports and houses" wireless communication equipment that has been reviewed and approved under the Town's zoning bylaws. The proposed replacement of the T-Mobile equipment for the purpose of transmitting and receiving radio frequency signals for communication purposes constitutes a "replacement of transmission equipment" and the proposed addition of equipment is the "collocation of new transmission equipment."

Federal authorities clearly provide that an eligible facilities request must be approved if the installation does not result in a substantial change. The proposed modifications to the existing T-Mobile Northeast LLC facility is an "eligible facilities request."

V. Conclusion

Applicant respectfully requests the Board to determine that the Applicant has satisfied the requirements for the granting of the requested special permit and to further determine that the proposed Project will not have an adverse effect on the surrounding neighborhood or the Town of Ashland. This conclusion is supported by the particular unique topographical characteristics of the Property and the proposed Project's design and equipment location as detailed above and within the supporting documentation submitted herewith.

The Property is an appropriate location for the installation and operation of the proposed Project and represents the least intrusive and most practical means by which the Applicant can enhance service coverage and capacity by deploying new and replacement. For the foregoing reasons, the Applicant respectfully requests that the honorable Board members grant the requested special permit and/or such other relief as the Board deems necessary to allow the Applicant to install and complete the proposed Project on the Property.

Regards,

Domenica Tatasciore
Permitting Specialist, Tower Services
Crown Castle
(508) 621-9161
Domenica.Tatasciore@crowncastle.com

July 21, 2025

To The Planning Board
117 Oregon Road
John J. Briasco
Trustee of the John Briasco Realty Trust
Abutters To Map 1 Parcel 38

PARCEL ID	PARCEL ADDRESS	OWNER NAME 1	OWNER NAME 2	MAILING ADDRESS	CITY/TOWN	STATE	ZIP
014/001.0-0032-0000.0	0 OREGON RD	SMITH RICHARD E		7 PARTRIDGE TRAIL	BELLINGHAM	MA	02019
014/001.0-0034-0000.0	85 OREGON RD	TORELLI ELEANOR E/TR OREGON ROAD RLTY TR	C/O LAURIE GIORGIO	85 OREGON RD	ASHLAND	MA	01721
014/001.0-0039-0000.0	0 OREGON RD	BRIASCO JOHN J TR JOHN BRIASCO RLTY TR	CATHERINE BRIASCO TR CATHERINE BRIASCO	105 OREGON RD	ASHLAND	MA	01721
014/001.0-0040-0000.0	105 OREGON RD	BRIASCO JOHN J TR JOHN BRIASCO RLTY TR	CATHERINE BRIASCO TR CATHERINE BRIASCO	105 OREGON RD	ASHLAND	MA	01721
014/001.0-0051-0000.0	138 OREGON RD	WILSON TIMOTHY L	JENNIFER M WILSON	138 OREGON RD	ASHLAND	MA	01721
014/001.0-0052-0000.0	130 OREGON RD	WILSON WILLIAM R	ELIZABETH R WILSON	130 OREGON RD	ASHLAND	MA	01721
014/001.0-0053-0000.0	98 OREGON RD	PAULHUS ANDREW E	ERIN PAULHUS	98 OREGON RD	ASHLAND	MA	01721
014/003.0-0142-0000.0	0 OREGON RD	BRIASCO JOHN J & CATHERINE R	TRS JOHN J BRIASCO RLTY TR	105 OREGON RD	ASHLAND	MA	01721
014/003.0-0151-0000.0	4 WILSON CIRCLE	HERMAN JEFFREY T		4 WILSON CIRCLE	ASHLAND	MA	01721
014/003.0-0152-0000.0	8 WILSON CIRCLE	GILL KEVIN JAMES & KELLY MARIE BEFORE	TRUSTEES UNDER THE GILL LIVING TRUST	8 WILSON CIRCLE	ASHLAND	MA	01721

The above reflects the latest information available on our records.

Terry Capen
Senior Clerk

Date 7/21/25

10 parcels/abutters

Page datalets/datalet.aspx?mode=agriculture not registered

PARID: 0140010003800000 MUNICIPALITY: ASHLAND LUC: 326
BRIASCO JOHN J TR JOHN BRIASCO RLTY TR 117 OREGON RD PARCEL YEAR: 2026

Property Information

Property Location:	117 OREGON RD
Class:	C-COMMERCIAL
Use Code (LUC):	326-EATING AND DRINKING ESTABLISHMENTS
District:	MA014 - ASHLAND
Deeded Acres:	2.2900
Square Feet:	99,752

Owner

Owner	Co-Owner	City	Address	State	Zip Code	Deed Book/Page
BRIASCO JOHN J TR JOHN BRIASCO RLTY TR	CATHERINE BRIASCO TR CATHERINE BRIASCO	ASHLAND	105 OREGON RD	MA	01721	22628/0049

Sales

Sale Date (D/M/Y)	Book/Page	Sale Price	Grantee:	Grantor:	Cert Doc #
18-11-1992	22628-49	$1	BRIASCO JOHN J TR JOHN BRIASCO	BRIASCO J J AND C R	

Owner History

1 of 19

Tax Year	2026
Owner:	BRIASCO JOHN J TR JOHN BRIASCO RLTY TR
Co-Owner:	CATHERINE BRIASCO TR CATHERINE BRIASCO
Sale Care Of	
State:	MA
City	ASHLAND
Address:	105 OREGON RD
Zip Code:	01721
Deed Book/Page	22628/0049

Land

Land Line #	Land Type	Land Code	Class	Square Feet	Acres	Suppressed	CH61B %	Infl %	Infl Reason	Infl 2 %	Infl 2 Reason	Base Rate	Chap Market Value	Assessed Value
1	S-SQUARE FOOT	P-PRIMARY	326-EATING AND DRINKING ESTABLISHMENTS	30,000	.69	N						12		346,500
2	A-ACREAGE	R-RESIDUAL	326-EATING AND DRINKING ESTABLISHMENTS	69,696	1.60	N						32,000		38,336
Total:														0 384,836

Printed on Monday, July 14, 2025, at 9:42:08 AM EST

CROWN CASTLE

1800 W Park Dr rSuite 200
Westborough, MA 01581

Phone: (508) 621-9161
www.crowncastle.com

Crown Castle Letter of Authorization

MA - TOWN OF ASHLAND
Planning Department
101 MAIN STREET, 2ND FLOOR
ASHLAND, MA 01721

Re: Application for Zoning/Building Permit
Crown Castle telecommunications site at: 117 OREGON RD, ASHLAND, MA 01721

T-MOBILE USA TOWER LLC ("Crown Castle") hereby authorizes T-MOBILE, including their Agent, to act as our Agent in the processing of all zoning applications, building permits and approvals through the MA - TOWN OF ASHLAND for the existing wireless communications site described below:

Crown Site ID/Name:	**822710/BN510/Oregon Club**
Customer Site ID:	**4BN0510A/BN510/Oregon Club**
Site Address:	**117 Oregon Rd, Ashland, MA 01721**
APN:	**ASHL-014001-000038**

Crown Castle

By: _____ Date: 07/24/25

Domenica Tatasciore
Permitting Specialist

SITE LEASE WITH OPTION

THIS SITE LEASE WITH OPTION (this "Lease") is by and between John J. Briasco Realty Trust u/d/t dated October 15, 1992, a Massachusetts trust and Catherine R. Briasco Realty Trust u/d/t dated October 15, 1992, a Massachusetts trust ("Landlord") and Omnipoint Communications, Inc., a Delaware corporation ("Tenant").

1. Option to Lease.

(a) In consideration of the payment of [redacted] by Tenant to Landlord, Landlord hereby grants to Tenant an option to lease a portion of the real property described in the attached Exhibit A (the "Property"), on the terms and conditions set forth herein (the "Option"). The Option shall be for an initial term of twelve (12) months, commencing on the Effective Date (as defined below) (the "Option Period"). Provided that Tenant is actively pursuing the "Governmental Approvals" (as defined below) the Option Period may be extended by Tenant for an additional twelve (12) months upon written notice to Landlord and payment of the sum of [redacted] at any time prior to the end of the first Option Period.

(b) During the Option Period and any extension thereof, and during the Initial Term and any Renewal Term (as those terms are defined below) of this Lease, Landlord agrees to cooperate with Tenant in obtaining, at Tenant's expense, all licenses and permits or authorizations required for Tenant's use of the Premises (as defined below) from all applicable government and/or regulatory entities (including, without limitation, zoning and land use authorities, and the Federal Communication Commission ("FCC") ("Governmental Approvals"), including all land use and zoning permit applications, and Landlord agrees to cooperate with and to allow Tenant, at no cost to Landlord, to obtain a title report, zoning approvals and variances, land-use permits. Landlord expressly grants to Tenant a right of access to the Property to perform any surveys, soil tests, and other engineering procedures or environmental investigations ("Tests") on the Property deemed necessary or appropriate by Tenant to evaluate the suitability of the Property for the uses contemplated under this Lease. During the Option Period and any extension thereof, and during the Initial Term or any Renewal Term of this Lease, Landlord agrees that it will not interfere with Tenant's efforts to secure other licenses and permits or authorizations that relate to other property and which are consistent with the use of the property for the placement of Antenna Facilities (as defined below). During the Option Period and any extension thereof, Tenant may exercise the Option by so notifying Landlord in writing, at Landlord's address in accordance with Section 12 hereof.

(c) If Tenant exercises the Option, then Landlord hereby leases to Tenant that portion of the Property sufficient for placement of the Antenna Facilities (as defined below), together with all necessary space and easements for access and utilities, as generally described and depicted in the attached Exhibit B (collectively referred to hereinafter as the "Premises"). The Premises, located at 117 Oregon Road, Ashland, MA 01721, comprises approximately 1600 square feet.

2. Term. The initial term of this Lease shall be five (5) years commencing on the date of exercise of the Option (the "Commencement Date"), and terminating at midnight on the last day of the initial term (the "Initial Term").

3. Permitted Use. The Premises may be used by Tenant for the transmission and reception of radio communication signals and for the construction, installation, operation, maintenance, repair, removal or replacement of related facilities, including, without limitation, tower and base, antennas, microwave dishes, equipment shelters and/or cabinets and related activities.

4. Rent. Tenant shall pay Landlord, as rent, [redacted] per month ("Rent"). Rent shall be payable within twenty (20) days following the Commencement Date prorated for the remainder of the month in which the Commencement Date falls, and thereafter Rent will be payable monthly in advance by the fifth day of each month to Landlord at the address specified in Section 12 below. If this Lease is terminated at a time other than on the last day of a month, Rent shall be prorated as of the date of termination for any reason (other than a default by Tenant) and all prepaid Rent shall be immediately refunded to Tenant.

Subject to all permits and approvals from all governmental agencies having jurisdiction thereover, Tenant may lease or license space on the support structure forming a part of the Antenna Facilities and within its Premises to a third party for installation of transmission, receiving or other types of equipment or facilities, whether similar or dissimilar to Tenant's installation, on such terms and conditions as Tenant in its sole discretion, desires (a "Third Party Lease"); provided, however, that, so long as Landlord has not entered into a separate agreement with the Third Party, Landlord shall receive as additional rent under this Agreement, [redacted] of all rental (net of all costs incurred by Tenant as a result of or in connection with such Third Party Lease) actually received by Tenant pursuant to the Third Party Lease (the "Collocation Fee").

5. Renewal. Tenant shall have the right to extend this Lease for four (4) additional and successive five-year terms (each a "Renewal Term") on the same terms and conditions as set forth herein, except that Rent shall be increased by [redacted] of the Rent paid over the preceding term. This Lease shall automatically renew for each successive Renewal Term unless Tenant notifies Landlord, in writing, of Tenant's intention not to renew this Lease, at least thirty (30) days prior to the expiration of the Initial Term or any Renewal Term. If Tenant shall remain in possession of the Premises at the expiration of this Lease or any Renewal Term without a written agreement, such tenancy shall be deemed a month-to-month tenancy under the same terms and conditions of this Lease. If Tenant shall remain in possession of the Premises at the expiration of this Lease or any Renewal Term without a written agreement, such tenancy shall be deemed a month-to-month tenancy under the same terms and conditions of this Lease, except that hold over rent shall be [redacted] of the then current rent.

6. Interference. Tenant shall not use the Premises in any way which interferes with the use of the Property by Landlord, or lessees or licensees of Landlord with rights in the Property prior in time to Tenant's (subject to Tenant's rights under this Lease, including, without limitation, non-interference). Landlord shall not use, nor shall Landlord permit its lessees, licensees, employees, invitees or agents to use, subject to Landlord's rights to reasonably lease or license areas of the Property, including areas over which Tenant may also hold non-exclusive easement rights, any portion of the Property in any way which interferes with the operations of Tenant. Such interference shall be deemed a material breach by the interfering party, who shall, upon written notice from the other, be responsible for terminating said interference. In the event any such interference does not cease promptly, the parties acknowledge that continuing interference may cause irreparable injury and, therefore, the injured party shall have the right, in addition to any other rights that it may have at law or in equity, to bring a court action to enjoin such interference or to terminate this Lease immediately upon written notice.

7. Improvements; Utilities; Access.

(a) Tenant shall have the right, at its expense, to erect and maintain on the Premises improvements, personal property and facilities necessary to operate its communications system, including, without limitation, radio transmitting and receiving antennas, microwave dishes, tower and base, equipment shelters and/or cabinets and related cables and utility lines and a location based system, as such location based system may be required by any county, state or federal agency/department, and including, without limitation, additional antenna(s), coaxial cable, base units and other associated equipment (collectively, the "Antenna Facilities"). Following the execution of this Lease, and at least seven (7) days prior to the commencement of its construction, Tenant shall submit to Landlord plans and specifications (the "Plans") for the installation showing the size, height and appearance of the component parts of the installation. Landlord shall have the right to approve the Plans in writing, provided that such approval shall not be unreasonably withheld or delayed. Landlord's approval must be given or denied within fourteen (14) days after submission thereof by Tenant. Failure of Landlord to approve or object to the Plans within said fourteen (14) day period shall be deemed an approval. In the event Landlord objects to the Plans within said fourteen (14) day period, Landlord's objections shall be clearly stated in writing and given in accordance with Paragraph 12. The Plans which are the subject of this provision may be delivered to Landlord in hand, the receipt of which must be acknowledged in writing or in accordance with Paragraph 12. The Plans which are the subject of this provision are not those plans or specifications which were provided to Landlord prior to the execution of this Lease or which are attached hereto as an Exhibit. If Landlord objects to the Plans, Tenant shall have the right either to (a) resubmit the Plans in accordance with the same approval process as stated above, or (b) terminate this Agreement, whereupon the parties shall have no further obligations or liabilities to each other. Tenant may resubmit the Plans for approval by Landlord as many additional times as Tenant desires. In the event of any conflict between the

terms and conditions of this Lease (including the exhibits hereto) and the Plans which have been approved by Landlord, then, as to any aesthetic aspects of Tenant's Work so approved (e.g., colors and other decorative features), such approved plans shall prevail. Tenant shall have the right to alter, replace, expand, enhance and upgrade the Antenna Facilities at any time during the term of this Lease. Tenant shall cause all construction to occur lien-free and in compliance with all applicable laws and ordinances. Landlord acknowledges that it shall neither interfere with any aspects of construction nor attempt to direct construction personnel as to the location of or method of installation of the Antenna Facilities and the Easements (as defined below). The Antenna Facilities shall remain the exclusive property of Tenant and shall not be considered fixtures. Tenant shall have the right to remove the Antenna Facilities at any time during and upon the expiration or termination of this Lease.

(b) Tenant, at its expense, may use any and all appropriate means of restricting access to the Antenna Facilities. Provided that Tenant receives all necessary Governmental Approvals, Tenant shall install a suitable chain link fence as part of the construction of the Antenna Facility.

(c) Tenant shall, at Tenant's expense, keep and maintain the Antenna Facilities now or hereafter located on the Property in commercially reasonable condition and repair during the term of this Lease, normal wear and tear and casualty excepted. Upon termination or expiration of this Lease, the Premises shall be returned to Landlord in good, usable condition, normal wear and tear and casualty excepted.

(d) Tenant shall have the right to install utilities, at Tenant's expense, and to improve the present utilities on the Property (including, but not limited to, the installation of emergency power generators). Landlord agrees to use reasonable efforts in assisting Tenant to acquire necessary utility service. Tenant shall install separate meters for utilities used on the Property by Tenant, subject to the approval of such servicing utility company. In the event separate meters are not installed, Tenant shall pay the periodic charges for all utilities attributable to Tenant's use, at the rate charged by the servicing utility. Landlord shall diligently correct any variation, interruption or failure of utility service.

(e) As partial consideration for Rent paid under this Lease, Landlord hereby grants Tenant non-exclusive easements, under and across the Property for ingress, egress, utilities and access (including access for the purposes described in Section 1) to the Premises adequate to install and maintain utilities, including but not limited to, the installation of power and telephone service cable, and to service the Premises and the Antenna Facilities at all times during the Initial Term of this Lease and any Renewal Term (collectively, the "Easements"). The Easements provided hereunder shall have the same term as this Lease.

(f) Tenant shall have 24-hours-a-day, 7-days-a-week access to the Premises at all times during the Initial Term of this Lease and any Renewal Term, at no charge to Tenant.

(g) Landlord shall maintain and repair all access roadways from the nearest public roadway to the edge of the gravel lot as presently utilized by Landlord in connection with the operation of the restaurant in a manner sufficient to allow vehicular and pedestrian access at all times, at its sole expense, except for any damage to such roadways caused by Tenant. To allow for Tenant's sole use and access of the Premises, Tenant shall install and maintain the access roadway from the edge of the gravel lot to the Premises.

(h) Within sixty (60) days of the expiration or earlier termination of this Lease Agreement, Tenant agrees to remove its equipment, repair any damage to the Premises caused by Tenant, and restore the Premises to substantially the same condition as it was in on the Commencement Date, ordinary wear and tear and damage from the elements and casualty beyond Tenant's control, excepted.

(i) Tenant agrees to accommodate Landlord's reasonable concerns regarding disturbances to Landlord's ordinary use of the Property and specifically acknowledges that certain buildings and parking areas presently situated on the Property are used, and will continue to be used, as and for a restaurant and that a portion of the Property is used, and will continue to be used as a landscape contractors yard. Tenant acknowledges that said uses are reasonable and shall not be deemed as interfering with Tenant's uses of the Property provided for herein. Tenant agrees to undertake construction of the Antenna Facilities and necessary easements in a manner so as to not unreasonably interfere with the current use of

the Property. Tenant shall not park nor store construction equipment or materials in the existing parking area during normal restaurant business hours. Tenant shall not interfere with the delivery of goods to the restaurant or access to the landscape yard. Tenant shall restore all areas of the Property disturbed during construction promptly upon the completion of construction to substantially the same condition as it was in on the Commencement Date, normal wear, tear and insured casualty excepted.

8. Termination. Except as otherwise provided herein, this Lease may be terminated, without any penalty or further liability as follows:

(a) upon thirty (30) days' written notice by Landlord if Tenant fails to cure a default for payment of amounts due under this Lease within such thirty (30) day period;

(b) immediately upon written notice by Tenant if Tenant notifies Landlord of any unacceptable results of any Tests prior to Tenant's installation of the Antenna Facilities on the Premises, or if Tenant does not obtain, maintain, or otherwise forfeits or cancels any license (including, without limitation, an FCC license), permit or any Governmental Approval necessary to the installation and/or operation of the Antenna Facilities or Tenant's business;

(c) upon thirty (30) days' written notice by Tenant, given at any time following the expiration of the Initial Term, if Tenant determines that the Property, the Building or the Antenna Facilities are inappropriate or unnecessary for Tenant's operations for economic or technological reasons, provided Tenant pays Landlord a termination fee equal to three (3) months of the then current rent as liquidated damages;

(d) immediately upon written notice by Tenant if the Premises or the Antenna Facilities are destroyed or damaged and such damage and/ or destruction was the result of the negligence or willful misconduct of Landlord, or Landlord's employees, agents, contractors, licensees, tenants and/or subtenants, so as in Tenant's reasonable judgment to substantially and adversely affect the effective use of the Antenna Facilities. In such event, all rights and obligations of the parties shall cease as of the date of the damage or destruction, and Tenant shall be entitled to the reimbursement of any Rent prepaid by Tenant. If Tenant elects to continue this Lease, then all Rent shall abate until the Premises and/or the Antenna Facilities are restored to the condition existing immediately prior to such damage or destruction; or

(e) at the time title to the Property transfers to a condemning authority, pursuant to a taking of all or a portion of the Property sufficient in Tenant's determination to render the Premises unsuitable for Tenant's use. Landlord and Tenant shall each be entitled to pursue their own separate awards with respect to such taking. Sale of all or part of the Property to a purchaser with the power of eminent domain in the face of the exercise of the power shall be treated as a taking by condemnation.

9. Default and Right to Cure. Notwithstanding anything contained herein to the contrary and without waiving any other rights granted to it at law or in equity, each party shall have the right, but not the obligation, to terminate this Lease on written notice pursuant to Section 12 hereof, to take effect immediately, if the other party fails to perform any covenant or commits a material breach of this Lease and fails to diligently pursue a cure thereof to its completion after thirty (30) days' written notice specifying such failure of performance or default.

10. Taxes. Landlord shall pay when due all real property taxes for the Property, including the Premises. In the event that Landlord fails to pay any such real property taxes or other fees and assessments, Tenant shall have the right, but not the obligation, to pay such owed amounts and deduct them from Rent amounts due under this Lease. Notwithstanding the foregoing, Tenant shall pay any personal property tax, any increase in real property tax or any other tax or fee which is directly attributable to the presence or installation of Tenant's Antenna Facilities, only for so long as this Lease remains in effect. If Landlord receives notice of any personal property or real property tax assessment against Landlord, which may affect Tenant and is directly attributable to Tenant's installation, Landlord shall provide timely notice of the assessment to Tenant sufficient to allow Tenant to consent to or challenge such assessment, whether in a Court, administrative proceeding, or other venue, on behalf of Landlord and/or Tenant. Further, Landlord shall provide to Tenant any and all documentation associated with the assessment and shall execute any and all documents reasonably necessary to effectuate the intent of this Section 10. In the event real property taxes are assessed against Landlord or

Tenant for the Premises or the Property, Tenant shall have the right, but not the obligation, to terminate this Lease without further liability after thirty (30) days' written notice to Landlord, provided Tenant pays any real property taxes assessed as provided herein.

11. Insurance and Subrogation and Indemnification.

(a) Tenant will maintain Commercial General Liability Insurance in amounts of One Million and no/100 Dollars ($1,000,000.00) per occurrence and Two Million and no/100 Dollars ($2,000,000.00) aggregate. Tenant may satisfy this requirement by obtaining the appropriate endorsement to any master policy of liability insurance Tenant may maintain.

(b) Landlord and Tenant hereby mutually release each other (and their successors or assigns) from liability and waive all right of recovery against the other for any loss or damage covered by their respective first party property insurance policies for all perils insured thereunder. In the event of such insured loss, neither party's insurance company shall have a subrogated claim against the other.

(c) Subject to the property insurance waiver set forth in Section 11(b) above, Landlord and Tenant each agree to indemnify and hold harmless the other party from and against any and all claims, damages, costs and expenses, including reasonable attorney fees, to the extent caused by or arising out of the negligent acts or omissions or willful misconduct in the operations or activities on the Property by the indemnifying party or the employees, agents, contractors, licensees, tenants and/or subtenants of the indemnifying party, or a breach of any obligation of the indemnifying party under this Lease. The indemnifying party's obligations under this section are contingent upon its receiving prompt written notice of any event giving rise to an obligation to indemnify the other party and the indemnified party's granting it the right to control the defense and settlement of the same.

(d) Notwithstanding anything to the contrary in this Lease, the parties hereby confirm that the provisions of this Section 11 shall survive the expiration or termination of this Lease.

(e) Tenant shall not be responsible to Landlord, or any third-party, for any claims, costs or damages (including, fines and penalties) attributable to any pre-existing violations of applicable codes, statutes or other regulations governing the Property.

12. Notices. All notices, requests, demands and other communications shall be in writing and are effective three (3) days after deposit in the U.S. mail, certified and postage paid, or upon receipt if personally delivered or sent by next-business-day delivery via a nationally recognized overnight courier to the addresses set forth below. Landlord or Tenant may from time to time designate any other address for this purpose by providing written notice to the other party.

If to Tenant, to:

Omnipoint Communications, Inc.
Attn: Property Management
4 Sylvan Way
Parsippany, NJ 07054

With a copy to:

T-Mobile USA, Inc.
Attn: PCS Lease Administrator
12920 SE 38th Street
Bellevue, WA 98006

With a copy to: Attn: Legal Dept.

If to Landlord, to:

John J. and Catherine R. Briasco
105 Oregon Road
Ashland, MA 01721

With a copy to:

Angelo P. Catanzaro, Equire
Catanzaro and Allen
100 Waverly Street
Ashland, MA 01721

13. Quiet Enjoyment, Title and Authority. Landlord covenants and warrants to Tenant that (i) Landlord has full right, power and authority to execute this Lease; (ii) it has good and unencumbered title to the Property free and clear of any liens or mortgages, except those disclosed to Tenant and which will not interfere with Tenant's rights to or use of the Premises; and (iii) execution and performance of this Lease will not violate any laws, ordinances, covenants, or the provisions of any mortgage, lease, or other agreement binding on Landlord. Landlord covenants that at all times during the term of this Lease, Tenant's quiet enjoyment of the Premises or any part thereof shall not be disturbed as long as Tenant is not in default beyond any applicable grace or cure period.

14. Environmental Laws. Landlord represents that it has no knowledge of any substance, chemical or waste (collectively, "Hazardous Substance") on the Property that is identified as hazardous, toxic or dangerous in any applicable federal, state or local law or regulation. Landlord and Tenant shall not introduce or use any Hazardous Substance on the Property in violation of any applicable law. Landlord shall be responsible for, and shall promptly conduct any investigation and remediation as required by any applicable environmental laws, all spills or other releases of any Hazardous Substance not caused solely by Tenant, that have occurred or which may occur on the Property. Each party agrees to defend, indemnify and hold harmless the other from and against any and all administrative and judicial actions and rulings, claims, causes of action, demands and liability (collectively, "Claims") including, but not limited to, damages, costs, expenses, assessments, penalties, fines, losses, judgments and reasonable attorney fees that the indemnitee may suffer or incur due to the existence or discovery of any Hazardous Substances on the Property or the migration of any Hazardous Substance to other properties or the release of any Hazardous Substance into the environment (collectively, "Actions"), that relate to or arise from the indemnitor's activities on the Property. Landlord agrees to defend, indemnify and hold Tenant harmless from Claims resulting from Actions on the Property not caused by Landlord or Tenant prior to and during the Initial Term and any Renewal Term. The indemnifications in this section specifically include, without limitation, costs incurred in connection with any investigation of site conditions or any cleanup, remedial, removal or restoration work required by any governmental authority. This Section 14 shall survive the termination or expiration of this Lease.

15. Assignment and Subleasing. Tenant shall have the right to assign or otherwise transfer this Lease and the Easements (as defined above) granted herein upon written notice to Landlord to any person or business entity which: (i) is FCC licensed to operate a wireless communications business; (ii) is a parent, subsidiary or affiliate of Tenant or Tenant's parent; (iii) is merged or consolidated with Tenant; or (iv) acquires more than fifty percent (50%) of either an ownership interest in Tenant or the assets of Tenant in the "Metropolitan Trading Area" or "Basic Trading Area" (as those terms are defined by the FCC) in which the Property is located. Upon such assignment, Tenant shall be relieved of all liabilities and obligations hereunder and Landlord shall look solely to the assignee for performance under this Lease and all obligations hereunder. Tenant may sublease the Premises, upon written notice to Landlord. Tenant may otherwise assign this Lease upon written approval of Landlord, which approval shall not be unreasonably delayed, withheld, conditioned or denied.

Additionally, Tenant may, upon notice to Landlord, grant a security interest in this Lease and the Antenna Facilities, and may collaterally assign this Lease and the Antenna Facilities to any mortgagees or holders of security interests, including their successors or assigns (collectively "Secured Parties"). In such event, Landlord shall execute such consent to leasehold financing as may reasonably be required by Secured Parties.

16. Successors and Assigns. This Lease and the Easements granted herein shall run with the land, and shall be binding upon and inure to the benefit of the parties, their respective successors, personal representatives and assigns.

17. Waiver of Landlord's Lien. Landlord hereby waives any and all lien rights it may have, statutory or otherwise, concerning the Antenna Facilities or any portion thereof, which shall be deemed personal property for the purposes of this Lease, whether or not the same is deemed real or personal property under applicable laws, and Landlord gives Tenant and Secured Parties the right to remove all or any portion of the same from time to time, whether before or after a default under this Lease, in Tenant's and/or Secured Party's sole discretion and without Landlord's consent.

JJB

18. Miscellaneous.

(a) The prevailing party in any litigation arising hereunder shall be entitled to reimbursement from the other party of its reasonable attorneys' fees and court costs, including appeals, if any.

(b) This Lease constitutes the entire agreement and understanding of the parties, and supersedes all offers, negotiations and other agreements with respect to the subject matter and property covered by this Lease. Any amendments to this Lease must be in writing and executed by both parties.

(c) Landlord agrees to cooperate with Tenant in executing any documents necessary to protect Tenant's rights in or use of the Premises. A Memorandum of Lease in substantially the form attached hereto as Exhibit C may be recorded in place of this Lease by Tenant.

(d) In the event the Property is encumbered by a mortgage or deed of trust, Landlord agrees, upon request of Tenant, to obtain and furnish to Tenant a non-disturbance and attornment agreement for each such mortgage or deed of trust, in a form reasonably acceptable to Tenant.

(e) Tenant may obtain title insurance on its interest in the Premises. Landlord agrees to execute such documents as the title company may require in connection therewith.

(f) This Lease shall be construed in accordance with the laws of the state in which the Property is located, without regard to the conflicts of law principles of such state..

(g) If any term of this Lease is found to be void or invalid, the remaining terms of this Lease shall continue in full force and effect. Any questions of particular interpretation shall not be interpreted against the drafter, but rather in accordance with the fair meaning thereof. No provision of this Lease will be deemed waived by either party unless expressly waived in writing by the waiving party. No waiver shall be implied by delay or any other act or omission of either party. No waiver by either party of any provision of this Lease shall be deemed a waiver of such provision with respect to any subsequent matter relating to such provision.

(h) The persons who have executed this Lease represent and warrant that they are duly authorized to execute this Lease in their individual or representative capacities as indicated.

(i) This Lease may be executed in any number of counterparts, each of which shall be deemed an original, but all of which together shall constitute a single instrument.

(j) All Exhibits referred to herein and any Addenda are incorporated herein for all purposes. The parties understand and acknowledge that Exhibits A and B may be attached to this Lease and the Memorandum of Lease, in preliminary form. Accordingly, the parties agree that upon the preparation of final, more complete exhibits, Exhibits A, and/or B, as the case may be, may be replaced by Tenant with such final, more complete exhibit(s).

(k) If either party is represented by any broker or any other leasing agent, such party is responsible for all commission fee or other payment to such agent, and agrees to indemnify and hold the other party harmless from all claims by such broker or anyone claiming through such broker.

JJB

The effective date of this Lease is the date of execution by the last party to sign (the "Effective Date").

LANDLORD: JOHN J. BRIASCO REALTY TRUST

By: John J. Briasco
Printed Name: John J. Briasco
Its: Trustee, John J. Briasco Realty Trust
Date: November 3, 2006

LANDLORD: CATHERINE R. BRIASCO REALTY TRUST

By: Catherine R. Briasco
Printed Name: Catherine R. Briasco
Its: Trustee, Catherine R. Briasco Realty Trust
Date: November 2, 2006

TENANT: OMNIPOINT COMMUNICATIONS, INC.

By: Anne Patrick
Printed Name: Anne Patrick
Its: Area Director
Date: 11/30/06

KHP

COMMONWEALTH OF MASSACHUSETTS
ASHLAND ZONING BOARD OF APPEALS
HEARING NUMBER: 06-13

2007 JUL 19 PM 2:33

tmw

I. **APPLICANT:** The applicant in this matter is Omnipoint Communications, Inc., a wholly owned subsidiary of T-Mobile USA, Inc. John J. Briasco Realty Trust

II. **APPLICATION:** The applicant is applying for relief under Section 282-9.B(2) and 282-46.D95) and 8=282-46.B of the Zoning Code, Town of Ashland to permit the installation, operation, and maintenance of a wireless communications facility.

III. **THE LOCUS:** The locus which is the subject of this application is located at 117 Oregon Road, which is in a Residential A zoning district and is shown on the Assessor's Atlas as Sheet 1, Block B, Lot 7.

IV. **THE HEARING:** The hearing was held in the Town Hall Meeting Room on Monday, November 20, 2006, commencing at 7:15 pm and was continued multiple times, and closed on June 4, 2007("Hearing"). Notice of the Hearing was given to all persons deemed affected as shown on the latest tax rolls of the Town and twice by publication in "The Metrowest Daily News", a newspaper of general circulation in the Town. The Board of Selectmen, Town Manager, Inspector of Buildings, Planning Board, Conservation Commission, Board of Health and Board of Assessors were also notified. Sitting on the hearing were Tara Illiano, Jim Hanna and Randy Gruber.

The applicant, represented by Brian Grossman, Esq., of Prince, Lobel, Glovsky & Tye, LLP, presented the facts and legal arguments in support of the grant of a use variance to install, operate and maintain a wireless communication tower in a residential A zoning district, as well as to permit a dimensional variance from the required setback from a property line of the height of the tower (75 feet), plus ten feet. The proposed pole would be located 25 feet to an adjacent property also owned by the owner of the subject property. The property across the street from the subject lot is also in common ownership.

With respect to the use variance, Attorney Grossman emphasized the unique situation at hand. First, the subject property is already used non-residential purposes. The applicant provided radio frequency analysis and other supporting documentation, evidencing that there is no alternative site suitable to remedy the significant gap in coverage. Peer review supported the evidence. With respect to the dimensional variance, Attorney Grossman explained that the tower meets all other setbacks other than the setback for the property line in common ownership. He further argued that due to the location of wetlands on the subject lot, there is no feasible location on the lot that would comply with the setback to property line requirement. The selected spot minimizes the need to remove existing vegetation and preserves property line setbacks for lots not in common ownership.

The Applicant argued that the requirements for a variance were present. The Applicant argued further, however, that even if the Board did not so find, that the Telecommunications Act of 1996, and Massachusetts case law thereunder, does not permit the denial of a variance if in doing so it would prohibit wireless services.

V. **DELIBERATIONS:** The decision intent in this matter is based upon testimony and evidence brought forth at the Hearing, the ZBA Hearing Minutes, Terms of the Zoning Code (the "Code"), Town of Ashland and a viewing of the locus, all of which are incorporated by reference.

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As required by the Code, the ZBA may only grant a variance if it finds that all of the following requirements have been met: (1) a literal enforcement of the provisions of this chapter would involve a substantial hardship, financial or otherwise, to the petitioner; (2) the hardship *is owing to* circumstances related to the soil conditions, shape or topography of such land or structures and especially affecting such land or structures, but not affecting generally the zoning district in which it is located; and (3) desirable relief may be granted without either substantial detriment to the public good or nullifying or substantially derogating from the intent or purpose of this chapter. Generally speaking, it is much more difficult to meet the requirements for a variance than for a special permit. It is well settled that variances are to be issued only if all of the pre-requisites (listed above) are met. In this case, the Telecommunications Act of 1996 applies to the Board's decision as well.

Under its FCC license, the applicant is required to provide reliable wireless communications service to its population. Therefore, the substantial hardship is the significant gap in coverage existing on the geographic areas depicted in the coverage maps that are part of the hearing record. The Applicant argued that a literal enforcement of the by-law would prohibit the Applicant from eliminating a significant gap in coverage.

While the hardship may be related to the soil conditions (wetlands) with respect to the dimensional variance, the hardship with respect to the use variance is not caused by the shape, topography or soil conditions of the subject lot. Despite the failure to meet the requirements for a variance, the Board is persuaded that in this particular case, under the applicable federal law noted above, and the relevant Massachusetts case law relating to this law, the denial of the variances requested would be an effective prohibition on the Applicant (prohibiting the elimination of the significant gap in coverage), in contravention of that law.

The Town has established zoning districts appropriate for wireless towers. While none of those locations are viable to remedy the significant gap in coverage at issue here, the Board is conscious of the message of this decision, and in no way intends to signal that it embraces or endorses the placement of wireless towers in residential districts. The Board remains concerned that the grant of a variance in this case could lead to more requests for wireless tower installation in residential zoning districts. In light of this concern, the Board wishes to emphasize that this decision is unique to the property and facts in this record, and the same result would not necessarily prevail for other residential lots. In particular, the fact that the lot in question is already used for a non-residential use (The Oregon Club), and the fact that the adjacent lots affected by the setback requirements are in common ownership are very significant, are central to the decision. Moreover, the fact that this will be an unmanned station, will create a negligible impact on traffic, has battery back up, does not generate heat, light, smoke, and does not require additional town resources such as trash, water or sewer service, the existence of the tower would not substantially derogate from the neighborhood in this case. To the contrary, the tower will assist all surrounding residents and visitors, regardless of the cell service carrier, with emergency services through the e911 system.

VI. **VOTE:** Therefore, it was Duly voted to Approve the subject variance.
Tara Illiano, Chairman, Voting to Approve with conditions.
Randy Gruber, Member & Clerk, Voting to Approve with conditions.
Jim Hanna, Associate Member, Voting to Approve with conditions.

VII. **CONDITIONS**: (1) Applicant must plan for and include the potential for co-location that would include 3 antennae; (2) Applicant must provide a bond for potential deconstruction (the removal bond) in an amount reasonably satisfactory to the Planning Department of the Town, but in no event less than the amount of $33,650.00, the amount depicted on

the estimated removal costs provided by Applicant through a memo dated December 3, 2006 from the Adams Engineering Group; and (3) Applicant will solicit and receive from the Town the requirements for repeaters for use by Town emergency services, and subsequently determine the feasibility of such requirements before obtaining the proper building permits.

SIGNATURE PAGE TO FOLLOW

DATE: June 18, 2007 ASHLAND ZONING BOARD OF APPEALS

By: Tara J. Ward

Filed with Town Clerk on: June 19, 2007

Date: _____ Tara M. Ward, Ashland Town Clerk

Tara Ward, Town Clerk

APPEALS MAY BE MADE PURSUANT TO SECTION 17, CHAPTER 40A, M.G.L.. IF NO APPEAL IS MADE WITHIN TWENTY DAYS OF THE DATE OF FILING OF THIS DECISION WITH TOWN CLERK, THE FOLLOWING SHALL BE EXCUTED BY TOWN CLERK:
I HEREBY CERTIFY THAT TWENTY DAYS HAVE ELAPSED FROM THE DATE THIS DECISION WAS FILED IN THE TOWN CLERK'S OFFICE AND THAT NO APPEAL HAS BEEN FILED.

DATE: July 17, 2007 Cheryl A Yancey

~~Tara Ward~~, Town Clerk
Cheryl A Yancey / Asst.

NOTICE

The Grantee must see to the filing and indexing of this decision and certification in the Registry of Deeds as set forth in Chapter 40A, Section 11, M.G.L. This grant shall not be in effect until proof of filing is shown and filed with the Inspector of Buildings and the Zoning Board of Appeals.

Eugene C. Bruno

Attest Middlesex S. Registe

Radio Frequency Emissions Analysis Report

T-Mobile Wireless Enclosed Monopole Facility

Prepared by: FOX HILL TELECOM

Site ID: 4BN0510A
Site Name: BN510/Oregon Club

Address: 117 Oregon Road
Ashland, MA 01721

County: Middlesex
Latitude: 42.284798
Longitude: -71.490710
Site Structure Type: enclosed monopole
IXUS Version: 4.13 (2025)

Report Date: 8/7/2025

Prepared For: Crown Castle
1800 West Park Drive
Westborough, MA 01581

Report Author: Scott Heffernan
Report Reviewer: Ryan McManus
Fox Hill Project Number: 250303

Compliance Status:

This site is compliant with FCC regulations for radio frequency emissions.

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1.0 Introduction

Fox Hill Telecom, Inc. has been contracted by T-Mobile to produce a theoretical assessment of the potential radio frequency emissions at the proposed T-Mobile enclosed monopole site. FCC OET Bulletin 65 – Edition 97-01 recommends that theoretical calculations should be done for all radio systems to yield a worst-case assessment of potential emissions. This analysis will assume all transmitters are operating at their maximum transmit power to produce the maximum emissions values across the entire study area. This will provide T-MOBILE with a guideline of how to proceed with mitigating the site to ensure the site will be compliant with FCC regulations at any instance.

Licensed wireless system operators are typically required to perform periodic assessments of potential impacts to humans due to radio frequency emissions from active radio frequency transmitters. The Federal Communications Commission ("FCC") considers two levels of standards based on access controls to the site and the level of knowledge of the effects of radio frequency to humans.

A controlled/occupational environmental limit assumes that anyone accessing the defined area is fully trained in RF safety and is aware of the effects of the exposure to radio frequency emissions to humans,

An uncontrolled/general population environmental limit establishes the area where access does not need to be restricted to RF trained individuals and other members of the general population may be able to access the site for any reason, occupation or otherwise.

2.0 Site Information

The proposed T-Mobile facility will be installed on an existing monopole structure located at **117 Oregon Road, Ashland, MA.** Table 1below contains the site-specific data for this structure, including structure type, height as well as existing and proposed carriers on this structure.

Site Type:	Enclosed Monopole
Site Height (ft):	75 feet above ground level
Site Latitude (dec):	42.284798 N
Site Longitude (dec):	-71.490710 W
County:	Middlesex
Ground Level:	311 feet AMSL
Carriers on Site:	T-Mobile (Existing & Proposed) Verizon Wireless (Existing)

Table 1: Site Information

3.0 Results Snapshot and Mitigation Measures

Based on the theoretical modeling analysis performed, there are areas that exceed the FCC's General Public and/or Occupational limits at this site. T-Mobile must ensure proper mitigation is installed at the site in order for the site to remain in compliance.

Table 2.0 below provides a snapshot of the highest T-Mobile and composite emissions at each pertinent location at and around the site.

T-Mobile MPE Contribution		
	% FCC General Public	% FCC Occupational
Ground Level	1.25 %	0.25 %
Adjacent Building 1	1.49 %	0.298 %
Adjacent Building 2	1.09 %	0.218 %
Composite MPE Contribution		
Ground Level	3.40 %	0.68 %
Adjacent Building 1	5.05 %	1.01 %
Adjacent Building 2	3.26 %	0.652 %

Table 2.0 MPE Contribution

Based on the data provided by T-Mobile, there are antennas from other wireless providers on site. These other carrier antennas were also included in the modeling analysis using assumed values based on existing industry standards.

Section 6.0 will show the areas of exposure, if any, for each T-Mobile Sector.

A site scaled map can be found in section 4.0 which details the locations where mitigation should be installed to bring the site into compliance with FCC regulations.

Below is a summary of **recommended mitigation** at this T-Mobile facility.

Access Point:

- Since the T-Mobile antennas are higher than 10 meters above the ground level and there are no areas that exceed the FCC's general population or occupational limits, no signage or mitigation is required.

Sector A:

- No additional mitigation required.

Sector B:

- No Additional Mitigation required.

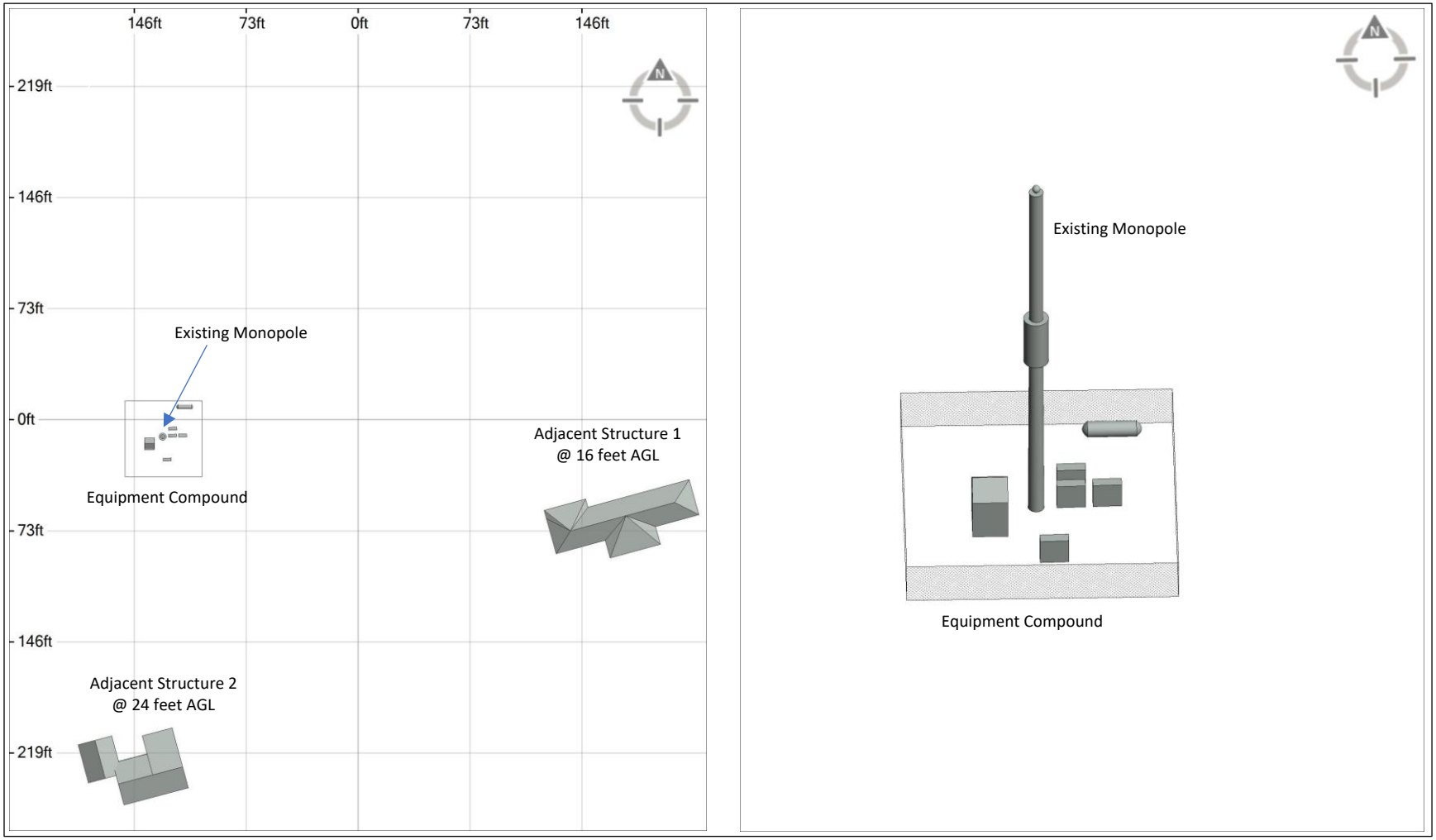
Sector C:

- No Additional Mitigation required.

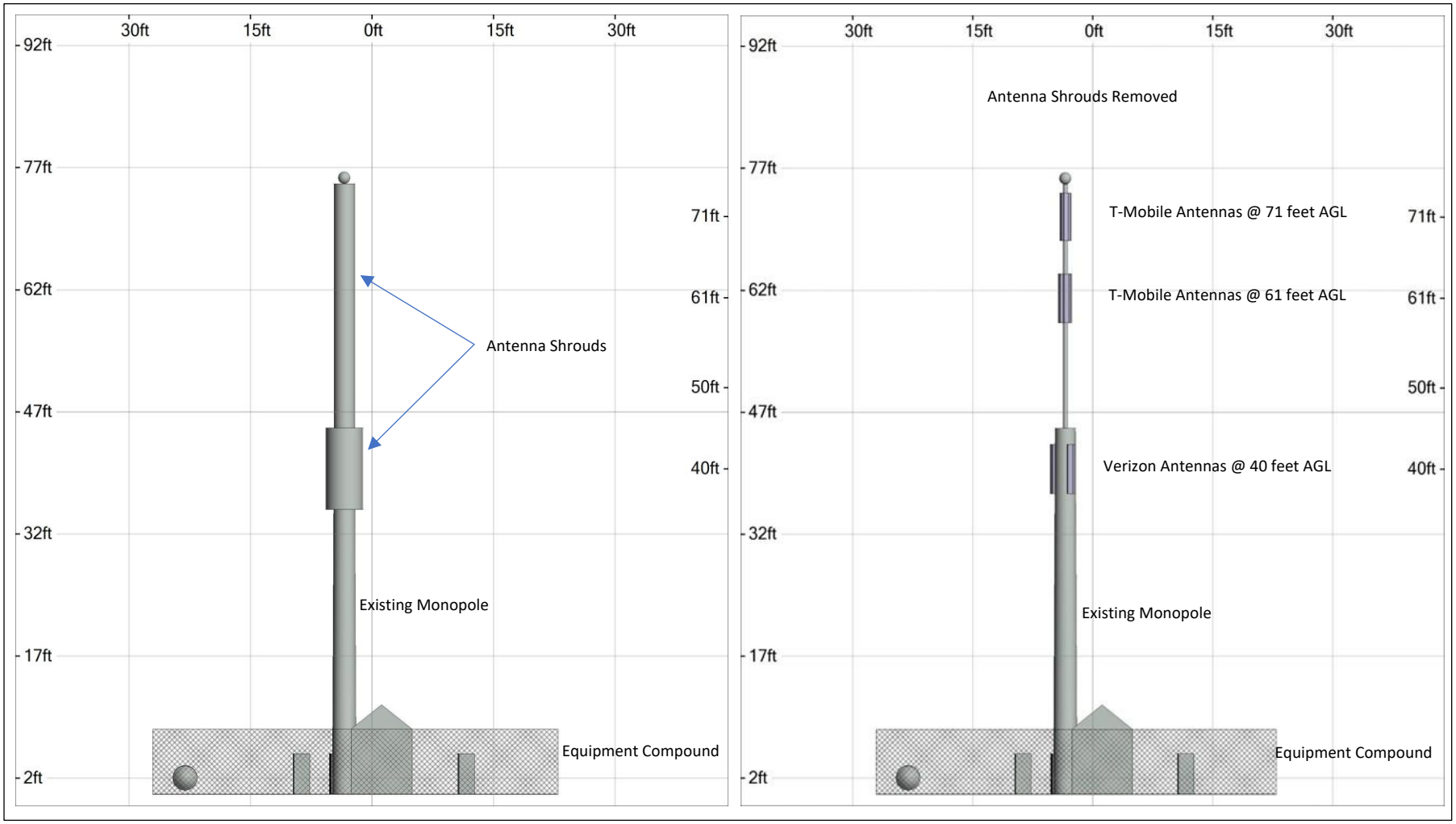
4.0 Site Maps

Site Overview Map

T-Mobile Antenna Layout



Antenna Layout



5.0 Antenna Inventory Tables

Antenna & Radio Configuration Data

Antenna ID	Operator	Antenna Make and Model	Type	Freq (MHz)	Input Power (Watts)	# of TX	ERP (Watts)	Azimuth (°)	Gain (dBd)	BW (°)	Length (ft)	Antenna Height CL (ft)
A1	T-Mobile	Commscope VV-65B-R1	Panel	LTE 1900 MHz	35	4	6778.41	0	16.85	65	5.86	71
A1	T-Mobile	Commscope VV-65B-R1	Panel	5G NR 1900 MHz	40	4	7746.76	0	16.85	65	5.86	71
A1	T-Mobile	Commscope VV-65B-R1	Panel	LTE 2100 MHz	60	4	11620.14	0	16.85	65	5.86	71
A1	T-Mobile	Commscope VV-65B-R1	Panel	5G NR 2500 MHz	40	8	16601.60	0	17.15	58	5.86	71
A2	T-Mobile	Commscope FVV-65B-R3	Panel	LTE / 5G NR 600 MHz	60	4	3937.42	0	12.15	71	6.00	61
A2	T-Mobile	Commscope FVV-65B-R3	Panel	LTE 700 MHz	20	4	1439.10	0	12.55	70	6.00	61
B1	T-Mobile	Commscope VV-65B-R1	Panel	LTE 1900 MHz	35	4	3163.26	120	16.85	65	5.86	71
B1	T-Mobile	Commscope VV-65B-R1	Panel	5G NR 1900 MHz	40	4	4131.60	120	16.85	65	5.86	71
B1	T-Mobile	Commscope VV-65B-R1	Panel	LTE 2100 MHz	60	4	11620.14	120	16.85	65	5.86	71
B1	T-Mobile	Commscope VV-65B-R1	Panel	5G NR 2500 MHz	40	8	16601.60	120	17.15	58	5.86	71
B2	T-Mobile	Commscope FVV-65B-R3	Panel	LTE / 5G NR 600 MHz	60	4	3937.42	120	12.15	71	6.00	61
B2	T-Mobile	Commscope FVV-65B-R3	Panel	LTE 700 MHz	20	4	1439.10	120	12.55	70	6.00	61
C1	T-Mobile	Commscope VV-65B-R1	Panel	LTE 1900 MHz	35	4	3163.26	240	16.85	65	5.86	71
C1	T-Mobile	Commscope VV-65B-R1	Panel	5G NR 1900 MHz	40	4	4131.60	240	16.85	65	5.86	71
C1	T-Mobile	Commscope VV-65B-R1	Panel	LTE 2100 MHz	60	4	11620.14	240	16.85	65	5.86	71
C1	T-Mobile	Commscope VV-65B-R1	Panel	5G NR 2500 MHz	40	8	16601.60	240	17.15	58	5.86	71
C2	T-Mobile	Commscope FVV-65B-R3	Panel	LTE / 5G NR 600 MHz	60	4	3937.42	240	12.15	71	6.00	61
C2	T-Mobile	Commscope FVV-65B-R3	Panel	LTE 700 MHz	20	4	1439.10	240	12.55	70	6.00	61
VZW_A1	Verizon	Commscope SBNHH-1D65B	Panel	LTE 700 MHz	40	4	3013.84	0	12.75	68	6.07	40

Antenna ID	Operator	Antenna Make and Model	Type	Freq (MHz)	Input Power (Watts)	# of TX	ERP (Watts)	Azimuth (°)	Gain (dBd)	BW (°)	Length (ft)	Antenna Height CL (ft)
VZW_A1	Verizon	Commscope SBNHH-1D65B	Panel	LTE / 5G 850 MHz	40	4	2878.19	0	12.55	66	6.07	40
VZW_A1	Verizon	Commscope SBNHH-1D65B	Panel	LTE 1900 MHz	40	4	5742.75	0	15.55	69	6.07	40
VZW_A1	Verizon	Commscope SBNHH-1D65B	Panel	LTE 2100 MHz	40	4	7065.13	0	16.45	63	6.07	40
VZW_B1	Verizon	Commscope SBNHH-1D65B	Panel	LTE 700 MHz	40	4	3013.84	120	12.75	68	6.07	40
VZW_B1	Verizon	Commscope SBNHH-1D65B	Panel	LTE / 5G 850 MHz	40	4	2878.19	120	12.55	66	6.07	40
VZW_B1	Verizon	Commscope SBNHH-1D65B	Panel	LTE 1900 MHz	40	4	5742.75	120	15.55	69	6.07	40
VZW_B1	Verizon	Commscope SBNHH-1D65B	Panel	LTE 2100 MHz	40	4	7065.13	120	16.45	63	6.07	40
VZW_C1	Verizon	Commscope SBNHH-1D65B	Panel	LTE 700 MHz	40	4	3013.84	240	12.75	68	6.07	40
VZW_C1	Verizon	Commscope SBNHH-1D65B	Panel	LTE / 5G 850 MHz	40	4	2878.19	240	12.55	66	6.07	40
VZW_C2	Verizon	Commscope SBNHH-1D65B	Panel	LTE 1900 MHz	40	4	5742.75	240	15.55	69	6.07	40
VZW_C1	Verizon	Commscope SBNHH-1D65B	Panel	LTE 2100 MHz	40	4	7065.13	240	16.45	63	6.07	40

6.0 Results and Compliance Recommendations

Based on the theoretical modeling analysis performed, there are no areas at this site and identified in this study that exceed the FCC's General Public and/or Occupational limits. All areas of concern extend into free space.

T-Mobile Results:

At the ground (0.00' AGL), the maximum power density value (% MPE) calculated for T-MOBILE's antennas is 1.25 % of the FCC's allowable limit for General Population exposure to radio frequency emissions (0.25 % of the FCC's allowable Occupational limit).

At the Adjacent Building 1 (16' AGL), the maximum power density value (% MPE) calculated for T-Mobile's antennas is 1.49 % of the FCC's allowable limit for General Population exposure to radio frequency emissions (0.30 % of the FCC's allowable Occupational limit).

At the Adjacent Building 2 (24' AGL), the maximum power density value (% MPE) calculated for T-Mobile's antennas is 1.09 % of the FCC's allowable limit for General Population exposure to radio frequency emissions (0.22 % of the FCC's allowable Occupational limit).

Sector A:

The maximum power density value (% MPE) at any generally accessible area was calculated for T-Mobile's Sector A antennas on the ground level (0') is 1.25% of the FCC's allowable limit for General Population exposure to radio frequency emissions (0.25 % of the FCC's allowable Occupational limit).

There are no generally accessible areas at any forementioned level that exceed the FCC's General Population or Occupational limit for exposure to radio frequency emissions in front of the Sector A antennas. All areas of concern extend into free space.

Sector B:

The maximum power density value (% MPE) at any generally accessible area was calculated for T-Mobile's Sector B antennas on the ground level (0') is 1.25 % of the FCC's allowable limit for General Population exposure to radio frequency emissions (0.25 % of the FCC's allowable Occupational limit).

There are no generally accessible areas at any forementioned level that exceed the FCC's General Population or Occupational limit for exposure to radio frequency emissions in front of the Sector B antennas. All areas of concern extend into free space.

Sector C:

The maximum power density value (% MPE) at any generally accessible area was calculated for T-Mobile's Sector C antennas on the ground level (0') is 1.25 % of the FCC's allowable limit for General Population exposure to radio frequency emissions (0.25 % of the FCC's allowable Occupational limit).

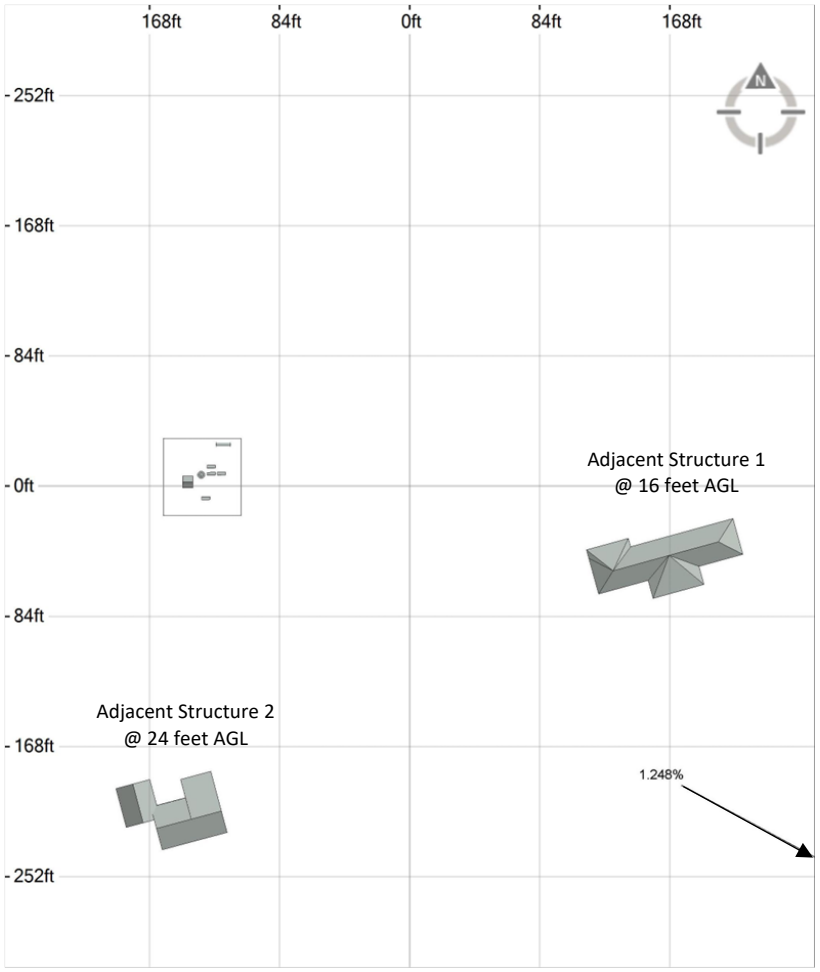
There are no generally accessible areas at any forementioned level that exceed the FCC's General Population or Occupational limit for exposure to radio frequency emissions in front of the Sector C antennas. All areas of concern extend into free space.

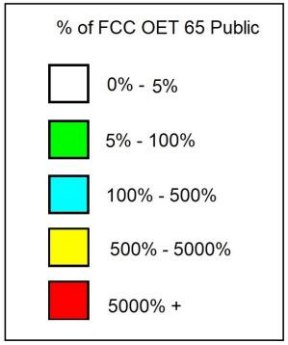
The FCC mandates that if a site is found to be out of compliance with regard to emissions that any system operator contributing 5% or more to areas exceeding the FCC's allowable limits, as outlined in this report, will be responsible for bringing the site into compliance.

there are antennas from other wireless providers on site. These other carrier antennas were also included in the modeling analysis using assumed values based on existing industry standards.

The largest composite maximum power density value (% MPE) calculated for all carriers at any accessible area surrounding the site is 3.40 % of the FCC's allowable limit for General Population exposure to radio frequency emissions (0.68 % of the FCC's allowable Occupational limit), located on the ground level.

MPE Contribution T-Mobile Antennas @ Ground Level (0’ AGL)



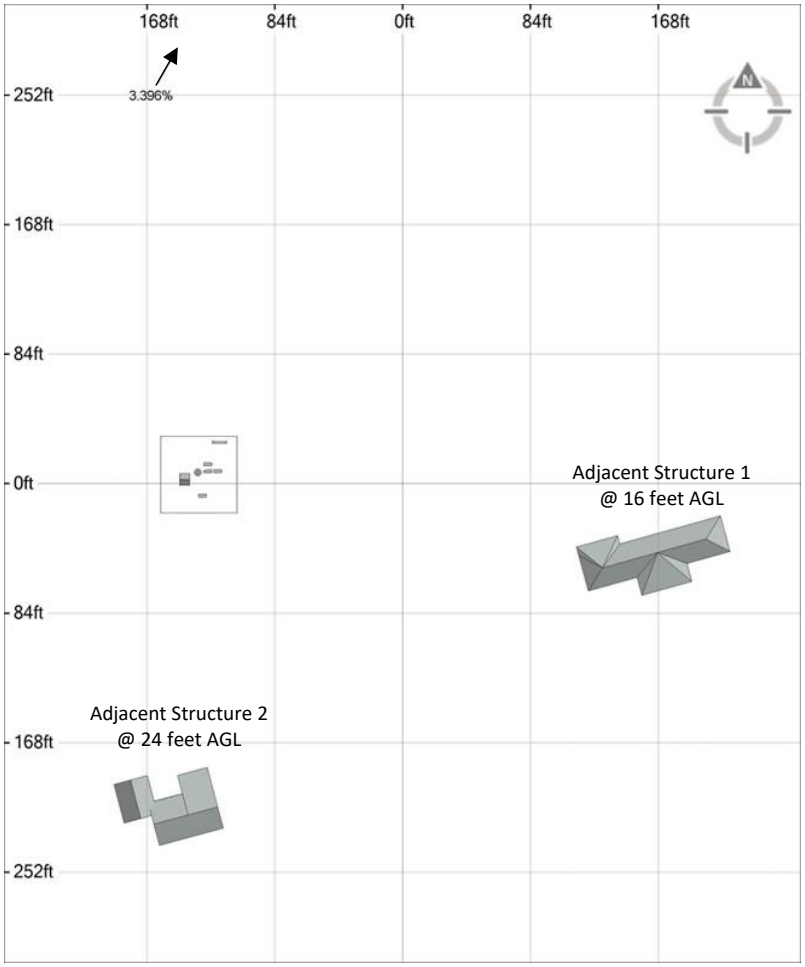


Maximum % MPE

General Population Limit
1.25 %

Occupational Limit
0.25 %

MPE Contribution All Antennas @ Ground Level (0’ AGL)



% of FCC OET 65 Public

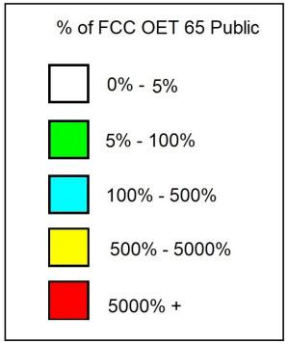
- 0% - 5%
- 5% - 100%
- 100% - 500%
- 500% - 5000%
- 5000% +

Maximum % MPE

General Population Limit
3.40 %

Occupational Limit
0.68 %

MPE Contribution T-Mobile Antennas @ Adjacent structures

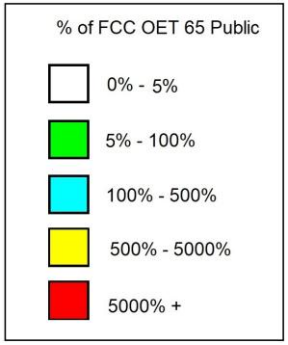


Maximum % MPE

General Population Limit
1.49 %

Occupational Limit
0.298 %

MPE Contribution all Antennas @ Adjacent structures

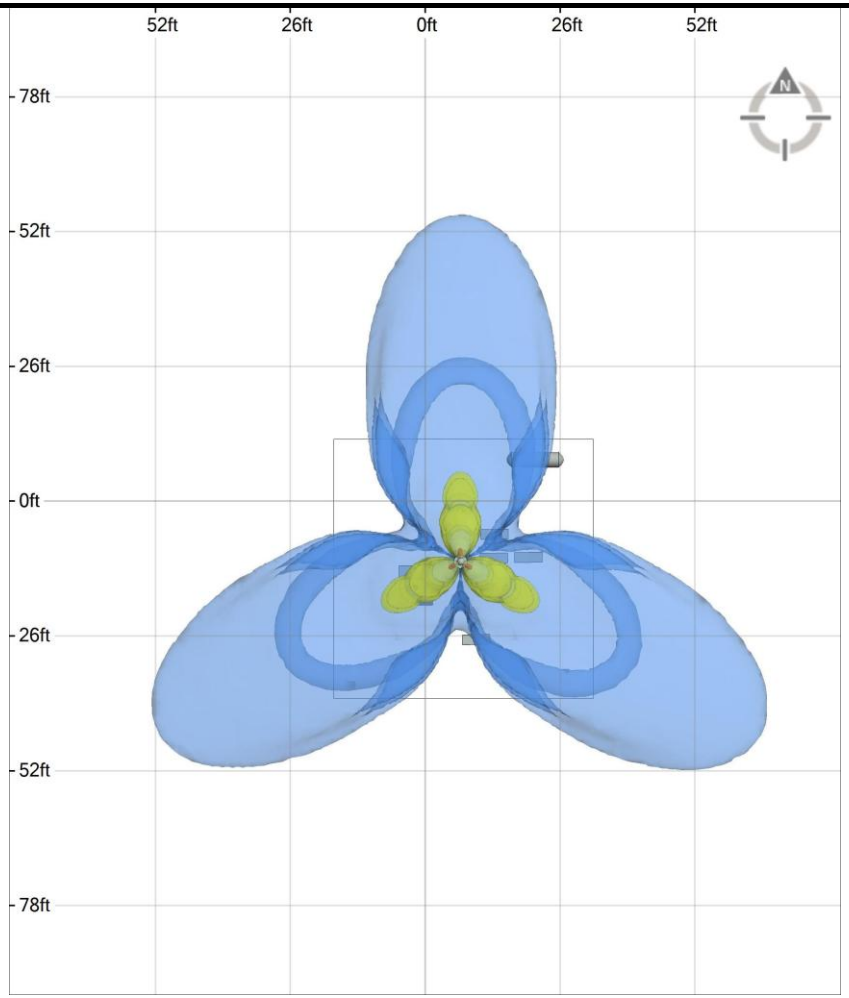


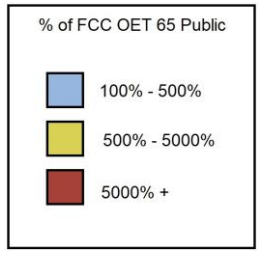
Maximum % MPE

General Population Limit
5.05 %

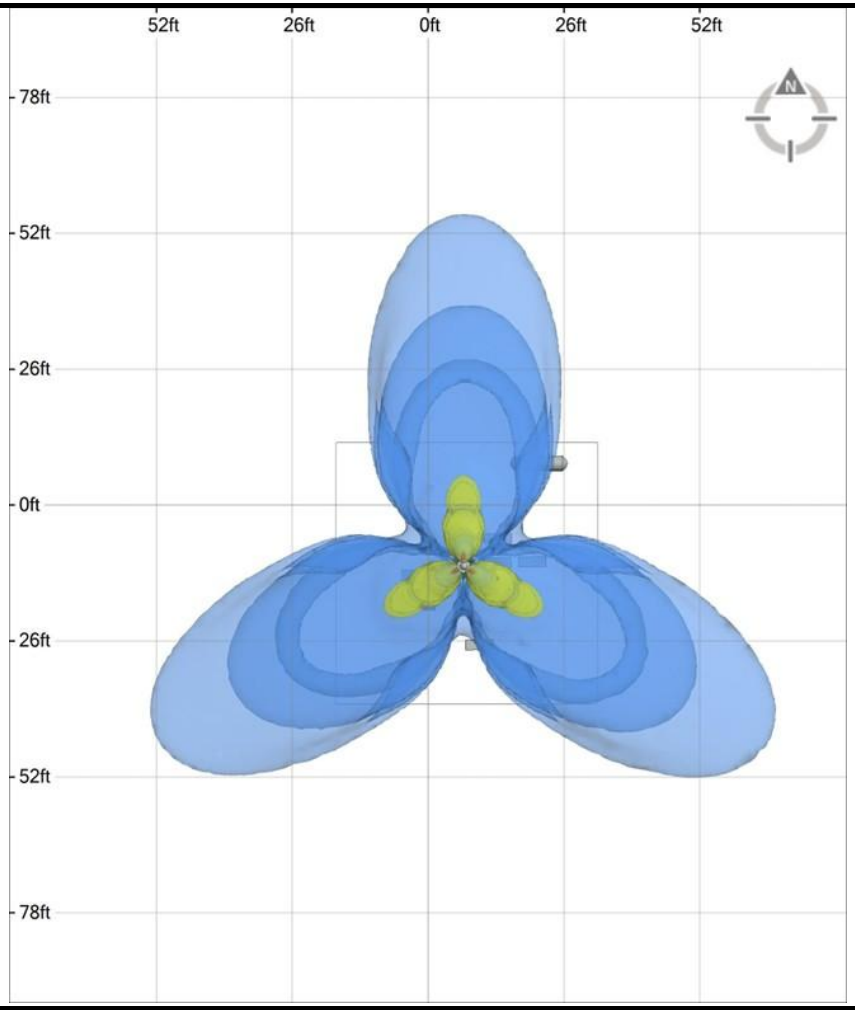
Occupational Limit
1.01 %

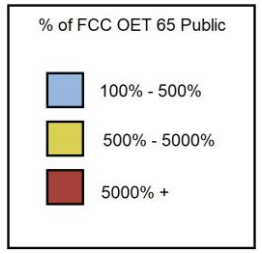
Top-Down View T-Mobile Antennas



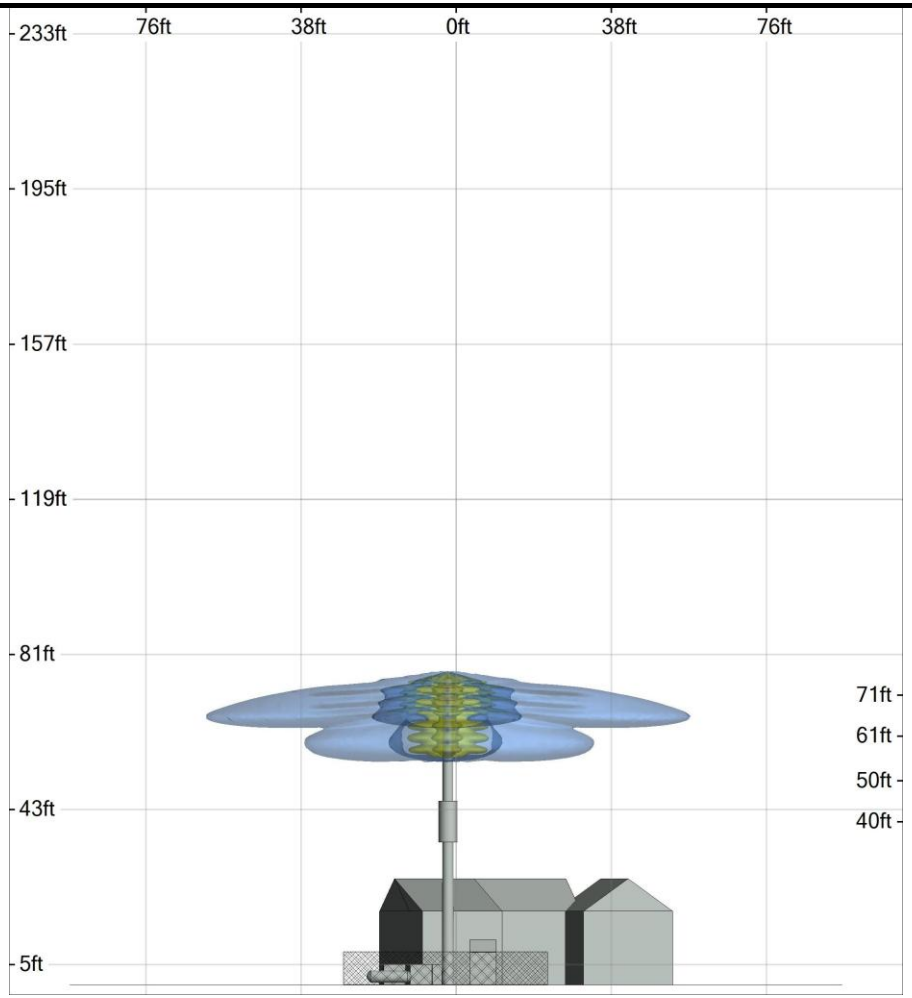


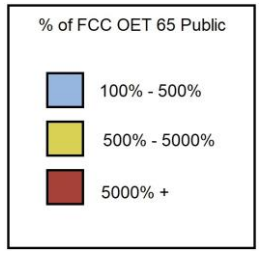
Top-Down View All Antennas



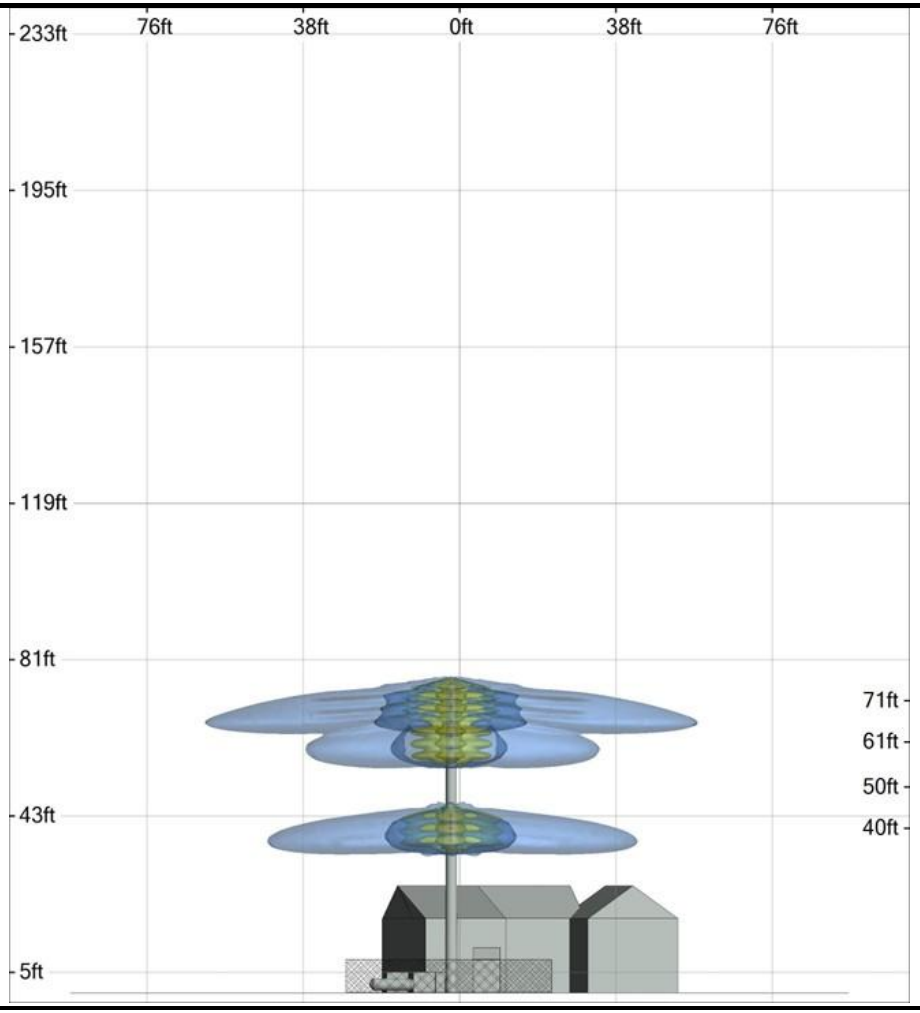


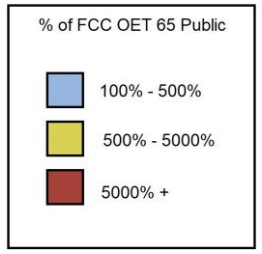
Elevation View T-Mobile Antennas (View from North)





Elevation View All Antennas (View from North)





7.0 T-Mobile Signage Policy

Sign	Description
	**RF Guidelines Sign** Gives guidelines on how to proceed in areas that may exceed either the FCC's General Population or Occupational emissions limits.
	**Blue Notice Sign** Used to inform individuals that they are entering an area that may exceed the FCC's General Population limits. Must be placed anywhere the public can get within 30 feet vertically or horizontally of an antenna.
	**Yellow Caution Sign** Used to inform individuals that they are entering an area that may exceed either the FCC's General Population or Occupational Emissions limits. It must be placed so it is visible from all approachable sides. It must also be just outside of the area predicted to exceed the MPE limits so it can be read without standing within the affected area.
	**Red Warning Sign** Used to inform individuals that they are entering an area that may exceed 10x the FCC's Occupational emissions limit. It must be placed so it is visible from all approachable sides. It must also be just outside of the area predicted to exceed the MPE limits so it can be read without standing within the affected area.

8.0 FCC Guidelines

All power density values used in this report were analyzed as a percentage of current Maximum Permissible Exposure (% MPE) as listed in the FCC OET Bulletin 65 Edition 97-01and ANSI/IEEE Std C95.1. The FCC regulates Maximum Permissible Exposure in units of microwatts per square centimeter (µW/cm2). The number of µW/cm2 calculated at each sample point is called the power density. The exposure limit for power density varies depending upon the frequencies being utilized. Wireless Carriers and Paging Services use different frequency bands each with different exposure limits, therefore it is necessary to report results and limits in terms of percent MPE rather than power density.

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

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

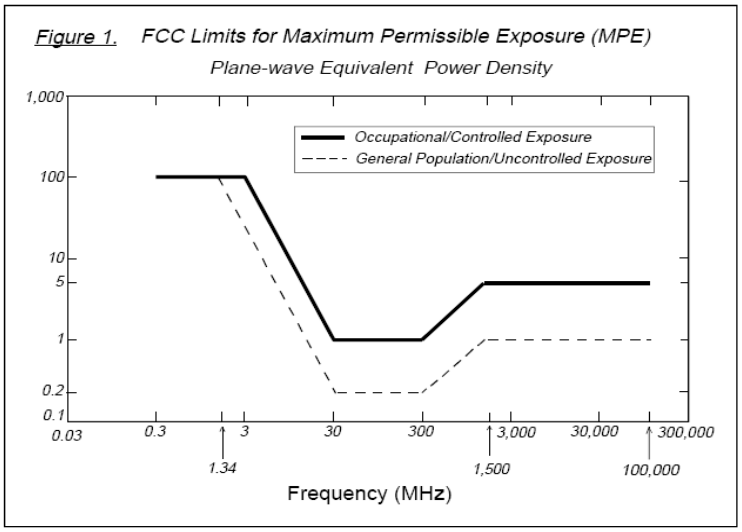
General Population exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter (µW/cm2). The general population exposure limit for the 600 MHz, 700 MHz and 850 MHz Bands is approximately 400 $\mu W/cm^2$, 467 $\mu W/cm^2$ and 567 $\mu W/cm^2$ respectively, and the general population exposure limit for the 1900 MHz PCS band, 2100 MHz AWS band and 2500 MHz BRS band is 1000 $\mu W/cm^2$ (1mw/cm^2). Because each carrier will be using different frequency bands, and each frequency band has different exposure limits, it is necessary to report the percentage of MPE rather than power density.

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

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

f = Frequency in (MHz)

* Plane-wave equivalent power density



9.0 Calculation Methodology

The IXUS electromagnetic field (EMF) calculation software was used to assess all the RF field levels presented in this study. IXUS (https://ixusapp.com/) is a software product of Alphawave Mobile Network Products (Pty) Ltd, who specialize in electromagnetic software and systems. The IXUS software uses a fast and accurate EMF calculation tool that allows for the determination of RF field strength in the vicinity of radio communication base stations and transmitters. At its core, the IXUS EMF calculation module implements field evaluation techniques detailed in the ITU-T K.61, CENELEC 50383, and IEC62232 specifications. The calculation of EMF results at any point in 3-D space is achieved by either a synthetic ray tracing technique, a conservative cylindrical envelope method, or through full-wave EM simulation results obtained from a computational electromagnetic software tool.

The selection of the solution method is determined by the specific antenna being considered. In addition, a conservative and verified modelling technique for 5G beamforming antennas in IXUS is used. The simulation accuracy of the IXUS calculation module has been verified extensively with full-wave EM simulations.

Predicted power densities are displayed as a percentage of the applicable FCC standards.

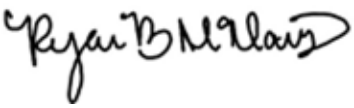
10.0 Certifications

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

8/7/2025

_____

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



_____ 8/7/2025

Date: **July 31, 2025**

Crown Castle
2000 Corporate Drive
Canonsburg, PA 15317
(724) 416-2000

Subject:	**Structural Analysis Report**	
Carrier Designation:	***T-Mobile* Co-Locate**	
	Site Number:	4BN0510A
	Site Name:	BN510/Oregon Club
Crown Castle Designation:	**BU Number:**	822710
	Site Name:	BN510/Oregon Club
	JDE Job Number:	2102347
	Work Order Number:	2414601
	Order Number:	657779 Rev. 7
Engineering Firm Designation:	**Crown Castle Project Number**	2414601
Site Data:	**117 Oregon Rd, Ashland, Middlesex County, MA**	
	Latitude: *42° 17' 5.25"* Longitude: *-71° 29' 26.55"*	
	75.0 ft - (Top of Steel) Concealment Tower	

Crown Castle is pleased to submit this **"Structural Analysis Report"** to determine the structural integrity of the above-mentioned tower.

The purpose of the analysis is to determine acceptability of the tower stress level. Based on our analysis we have determined the tower stress level for the structure and foundation, under the following load case, to be:

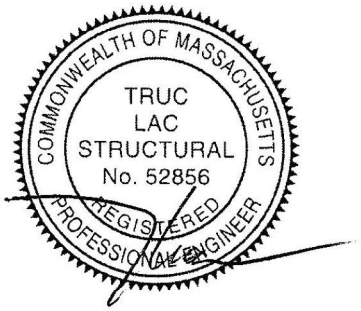
LC5: Proposed Equipment Configuration **Sufficient Capacity**

This analysis utilizes an ultimate 3-second gust wind speed of 119 mph as required by the 2021 International Building Code as amended by the Massachusetts State Building Code, Tenth Edition. Applicable standard references and design criteria are listed in Section 2 - Analysis Criteria.

Structural analysis prepared by: Steven Hu

08/01/25

Respectfully submitted by:



Truc Lac, P.E., S.E.
Senior Project Engineer

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2) ANALYSIS CRITERIA
Table 1 - Proposed Equipment Configuration
Table 2 - Other Considered Equipment

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3.1) Analysis Method
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Table 5 - Tower Component Stresses vs. Capacity - LC5
4.1) Recommendations

5) APPENDIX A
tnxTower Output

6) APPENDIX B
Base Level Drawing

7) APPENDIX C
Additional Calculations

1) INTRODUCTION

This tower is a 75.0 ft (Top of Steel) Concealment Tower designed by Pennsummit Tubular, Llc. The base tower is 45 ft, and the concealment section is from 35 ft to 75 ft. The tower has been modified in the past to accommodate additional loading.

2) ANALYSIS CRITERIA

TIA-222 Revision:	TIA-222-H
Risk Category:	II
Wind Speed:	119 mph
Exposure Category:	B
Topographic Factor:	1
Ice Thickness:	1.00 in
Wind Speed with Ice:	50 mph
Service Wind Speed:	60 mph

Table 1 - Proposed Equipment Configuration

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
70	71	3	commscope	VV-65B-R1_TMO	12	7/8
60	61	3	commscope	FVV-65B-R3	6	7/8

Table 2 - Other Considered Equipment

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
70	70	1	-	Concealment Canister (24.625"x10')	-	-
60	60	1	-	Concealment Canister (25.625"x10')	-	-
50	50	1	-	Concealment Canister (26.625"x10')	-	-
40	40	1	-	Concealment Canister (52"x10')	3	1/4
		3	commscope	SBNHH-1D65B	18	7/8

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Reference	Source
4-GEOTECHNICAL REPORTS	3477027	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	3907716	CCISITES
4-TOWER MANUFACTURER DRAWINGS	3477028	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	5743265	CCISITES
4-POST-MODIFICATION INSPECTION	6119037	CCISITES

3.1) Analysis Method

tnxTower (version 8.3.0.5), a commercially available analysis software package, was used to create a three-dimensional model of the tower and calculate member stresses for various loading cases.

Selected output from the analysis is included in Appendix A. When applicable, Crown Castle has calculated and provided the effective area for panel antennas using approved methods following the intent of the TIA-222 standard.

3.2) Assumptions

1) Tower and structures were maintained in accordance with the TIA-222 Standard.
2) The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Tables 1 and 2 and the referenced drawings.

This analysis may be affected if any assumptions are not valid or have been made in error. Crown Castle should be notified to determine the effect on the structural integrity of the tower.

4) ANALYSIS RESULTS

Table 4 - Section Capacity (Summary)

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass/ Fail
L1	75 - 65	Pole	TP6x6x0.75	1	-1.09	841.66	4.3	Pass
L2	65 - 55	Pole	TP6x6x0.75	2	-2.57	841.66	11.6	Pass
L3	55 - 45	Pole	TP6x6x0.75	3	-3.86	841.66	21.4	Pass
L4	45 - 35	Pole	TP28.0261x26.625x0.2188	4	-5.68	1185.93	5.7	Pass
L5	35 - 0	Pole	TP32.93x28.0261x0.2188	5	-9.40	1395.07	14.5	Pass
							Summary	
						Pole (L3)	21.4	Pass
						RATING =	21.4	Pass

Table 5 - Tower Component Stresses vs. Capacity - LC5

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Flange Bolts	45	12.8	Pass
1	Flange Plate	45	51.9	Pass
1	Anchor Rods	0	16.4	Pass
1	Base Plate	0	18.6	Pass
1	Base Foundation (Structural)	0	8.3	Pass
1	Base Foundation (Soil)	0	14.8	Pass

Structure Rating (max from all components) =	51.9%

Notes:
1) See additional documentation in “Appendix C – Additional Calculations” for calculations supporting the % capacity consumed

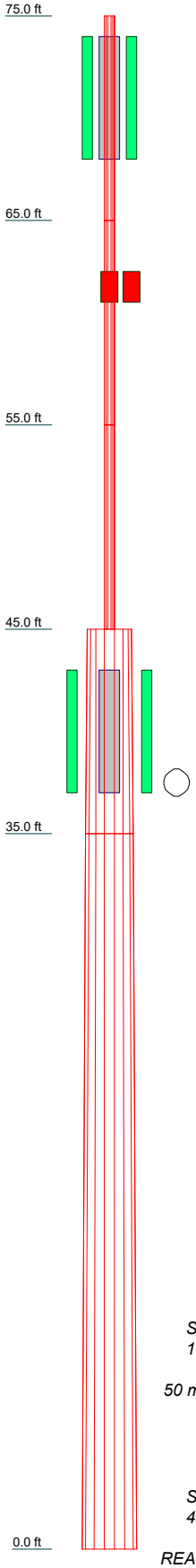
4.1) Recommendations

The tower and its foundation have sufficient capacity to carry the considered equipment configuration. No modifications are required at this time.

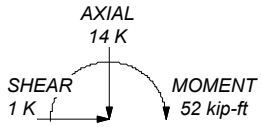
APPENDIX A

TNXTOWER OUTPUT

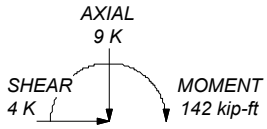
Section	Length (ft)	Number of Sides	Thickness (in)	Top Dia (in)	Bot Dia (in)	Grade	Weight (K)
1	10.0000	0	0.7500	6.0000	6.0000	A519 Type 1026	0.4
2	10.0000	0	0.7500	6.0000	6.0000		0.4
3	10.0000	0	0.7500	6.0000	6.0000		0.4
4	10.0000	18	0.2188	26.6250	28.0261		0.6
5	35.0000	18	0.2188	28.0261	32.9300	A572-65	2.5
							4.4



ALL REACTIONS ARE FACTORED



50 mph WIND - 1.0000 in ICE



REACTIONS - 119 mph WIND

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A519 Type 1026	72 ksi	87 ksi	A572-65	65 ksi	80 ksi

TOWER DESIGN NOTES

1. Tower is located in Middlesex County, Massachusetts.
2. Tower designed for Exposure B to the TIA-222-H Standard.
3. Tower designed for a 119 mph basic wind in accordance with the TIA-222-H Standard.
4. Tower is also designed for a 50 mph basic wind with 1.00 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Risk Category II.
7. Topographic Category 1 with Crest Height of 0.00 ft
8. TOWER RATING: 21.4%

CROWN CASTLE
The Pathway to Possible
Crown Castle
2000 Corporate Dr
Canonsburg, PA
Phone: (724) 416-2000
FAX:

Job: **822710**			
Project:			
Client: Crown Castle	Drawn by: SHu		App'd:
Code: TIA-222-H	Date: 07/31/25		Scale: NTS
Path: C:\SAPI Work Area\822710\WO 2414601 - SA\Prod\822710.eri			Dwg No. E-1

Tower Input Data

The tower is a monopole.
This tower is designed using the TIA-222-H standard.
The following design criteria apply:

Tower is located in Middlesex County, Massachusetts.
Tower base elevation above sea level: 308.08 ft.
Basic wind speed of 119 mph.
Risk Category II.
Exposure Category B.
Simplified Topographic Factor Procedure for wind speed-up calculations is used.
Topographic Category: 1.
Crest Height: 0.00 ft.
Nominal ice thickness of 1.0000 in.
Ice thickness is considered to increase with height.
Ice density of 56.00 pcf.
A wind speed of 50 mph is used in combination with ice.
Temperature drop of 50 °F.
Deflections calculated using a wind speed of 60 mph.
Non-linear (P-delta) analysis was used.
Pressures are calculated at each section.
Stress ratio used in pole design is 1.
Tower analysis based on target reliabilities in accordance with Annex S.
Load Modification Factors used: $K_{es}(F_w) = 0.95$, $K_{es}(t_i) = 0.85$.
Maximum demand-capacity ratio is: 1.05.
Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

	Consider Moments - Legs		Assume Legs Pinned		Calculate Redundant Bracing Forces
	Consider Moments - Horizontals	√	Assume Rigid Index Plate		Ignore Redundant Members in FEA
	Consider Moments - Diagonals	√	Use Clear Spans For Wind Area		SR Leg Bolts Resist Compression
	Use Moment Magnification		Use Clear Spans For KL/r		All Leg Panels Have Same Allowable
√	Use Code Stress Ratios		Retension Guys To Initial Tension		Offset Girt At Foundation
√	Use Code Safety Factors - Guys	√	Bypass Mast Stability Checks	√	Consider Feed Line Torque
	Escalate Ice	√	Use Azimuth Dish Coefficients		Include Angle Block Shear Check
	Always Use Max Kz	√	Project Wind Area of Appurtenances		Use TIA-222-H Bracing Resist. Exemption
	Kz In Exposure D Hurricane Region	√	Alternative Appurt. EPA Calculation		Use TIA-222-H Tension Splice Exemption
	Include Bolts In Member Capacity		Autocalc Torque Arm Areas		Poles
	Leg Bolts Are At Top Of Section		Add IBC .6D+W Combination	√	Include Shear-Torsion Interaction
	Secondary Horizontal Braces Leg		Sort Capacity Reports By Component		Always Use Sub-Critical Flow
	Use Diamond Inner Bracing (4 Sided)		Triangulate Diamond Inner Bracing		Use Top Mounted Sockets
	SR Members Have Cut Ends		Treat Feed Line Bundles As Cylinder		Pole Without Linear Attachments
	SR Members Are Concentric		Ignore KL/ry For 60 Deg. Angle Legs	√	Pole With Shroud Or No Appurtenances
	Distribute Leg Loads As Uniform		Use ASCE 10 X-Brace Ly Rules		Outside and Inside Corner Radii Are Known
	Use Special Wind Profile				

Tapered Pole Section Geometry

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L1	75.0000-65.0000	10.0000	0.00	Round	6.0000	6.0000	0.7500		A519 Type 1026 (72 ksi)
L2	65.0000-55.0000	10.0000	0.00	Round	6.0000	6.0000	0.7500		A519 Type 1026 (72 ksi)
L3	55.0000-45.0000	10.0000	0.00	Round	6.0000	6.0000	0.7500		A519 Type 1026 (72 ksi)
L4	45.0000-35.0000	10.0000	0.00	18	26.6250	28.0261	0.2188	0.8750	A572-65 (65 ksi)
L5	35.0000-0.0000	35.0000		18	28.0261	32.9300	0.2188	0.8750	A572-65 (65 ksi)

Tapered Pole Properties

Section	Tip Dia. in	Area in^2	I in^4	r in	C in	I/C in^3	J in^4	It/Q in^2	w in	w/t
L1	6.0000	12.3700	43.4884	1.8750	3.0000	14.4961	86.9767	6.1813	0.0000	0
	6.0000	12.3700	43.4884	1.8750	3.0000	14.4961	86.9767	6.1813	0.0000	0
L2	6.0000	12.3700	43.4884	1.8750	3.0000	14.4961	86.9767	6.1813	0.0000	0
	6.0000	12.3700	43.4884	1.8750	3.0000	14.4961	86.9767	6.1813	0.0000	0
L3	6.0000	12.3700	43.4884	1.8750	3.0000	14.4961	86.9767	6.1813	0.0000	0
	6.0000	12.3700	43.4884	1.8750	3.0000	14.4961	86.9767	6.1813	0.0000	0
L4	27.0020	18.3342	1615.1491	9.3742	13.5255	119.4151	3232.4235	9.1688	4.3010	19.662
	28.4247	19.3070	1886.1304	9.8716	14.2373	132.4784	3774.7426	9.6553	4.5476	20.789
L5	28.4247	19.3070	1886.1304	9.8716	14.2373	132.4784	3774.7426	9.6553	4.5476	20.789
	33.4043	22.7118	3070.3215	11.6125	16.7284	183.5390	6144.6830	11.3581	5.4107	24.735

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
L1 75.0000-65.0000				1	0	1			
L2 65.0000-55.0000				1	0	1			
L3 55.0000-45.0000				1	0	1			
L4 45.0000-35.0000				1	0	1			
L5 35.0000-0.0000				1	1	1			

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Sector	Exclude From Torque Calculation	Component Type	Placement ft	Total Number	Number Per Row	Start/End Position	Width or Diameter in	Perimeter in	Weight plf
********** ******* ********** *******										
AL5-50(7/8)	A	No	Surface Ar	35.0000 -	18	6	0.084	1.1000		0.26

Description	*Sector*	*Exclude From Torque Calculation*	*Component Type*	*Placement* ft	*Total Number*	*Number Per Row*	*Start/End Position*	*Width or Diameter* in	*Perimeter* in	*Weight* plf
CC-05-025-FM(1/4)	A	No	(CaAa) Surface Ar (CaAa)	0.0000 35.0000 - 0.0000	3	1	0.084 0.092 0.259	0.2400		0.13
********** *******										

Feed Line/Linear Appurtenances - Entered As Area

Description	*Face or Leg*	*Allow Shield*	*Exclude From Torque Calculation*	*Component Type*	*Placement* ft	*Total Number*		C_AA_A ft^2/ft	*Weight* plf
LDF5-50A(7/8'')	C	No	No	Inside Pole	70.0000 - 0.0000	12	No Ice	0.0000	0.33
							1/2'' Ice	0.0000	0.33
							1'' Ice	0.0000	0.33
********** **********									
LDF5-50A(7/8)	C	No	No	Inside Pole	60.0000 - 0.0000	6	No Ice	0.0000	0.33
							1/2'' Ice	0.0000	0.33
							1'' Ice	0.0000	0.33
********** **********									
AL5-50(7/8)	A	No	No	Inside Pole	40.0000 - 35.0000	18	No Ice	0.0000	0.26
							1/2'' Ice	0.0000	0.26
							1'' Ice	0.0000	0.26
CC-05-025-FM(1/4)	A	No	No	Inside Pole	40.0000 - 35.0000	3	No Ice	0.0000	0.13
							1/2'' Ice	0.0000	0.13
							1'' Ice	0.0000	0.13
********** **********									

Feed Line/Linear Appurtenances Section Areas

Tower Section	*Tower Elevation* ft	*Face*	A_R ft^2	A_F ft^2	C_AA_A *In Face* ft^2	C_AA_A *Out Face* ft^2	*Weight* K
L1	75.0000-65.0000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.02
L2	65.0000-55.0000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.05
L3	55.0000-45.0000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.06
L4	45.0000-35.0000	A	0.000	0.000	0.000	0.000	0.03
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.06
L5	35.0000-0.0000	A	0.000	0.000	23.940	0.000	0.18
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.21

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	75.0000-65.0000	A	0.916	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.02
L2	65.0000-55.0000	A	0.902	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.05
L3	55.0000-45.0000	A	0.886	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.06
L4	45.0000-35.0000	A	0.866	0.000	0.000	0.000	0.000	0.03
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.06
L5	35.0000-0.0000	A	0.796	0.000	0.000	42.246	0.000	0.57
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.21

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	75.0000-65.0000	0.0000	0.0000	0.0000	0.0000
L2	65.0000-55.0000	0.0000	0.0000	0.0000	0.0000
L3	55.0000-45.0000	0.0000	0.0000	0.0000	0.0000
L4	45.0000-35.0000	0.0000	0.0000	0.0000	0.0000
L5	35.0000-0.0000	-3.4167	-2.9127	-3.1340	-2.7866

Note: For pole sections, center of pressure calculations do not consider feed line shielding.

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L5	9	AL5-50(7/8)	0.00 - 35.00	1.0000	1.0000
L5	11	CC-05-025-FM(1/4)	0.00 - 35.00	1.0000	1.0000

User Defined Loads

Description	*Elevation*	*Offset From Centroid*	*Azimuth Angle*		*Weight*	F_x	F_z	*Wind Force*	C_AA_C
	ft	*ft*	°		*K*	*K*	*K*	*K*	ft^2
Truck Ball 18'' dia.	75.7500	0.00	0.00	No Ice	0.05	0.00	0.00	0.03	**0.8836**
				Ice	0.08	0.00	0.00	0.01	**1.5040**
				Service	0.05	0.00	0.00	0.01	**0.8836**
Flag (18'x12')	75.0000	0.00	0.00	No Ice	0.02	0.00	0.00	0.27	**8.0374**
				Ice	0.21	0.00	0.00	0.05	**8.1232**
				Service	0.02	0.00	0.00	0.06	**8.0374**
Concealment Canister (24.625''x10')-top	75.0000	0.00	0.00	No Ice	0.29	0.00	0.00	0.15	**4.5271**
				Ice	0.43	0.00	0.00	0.07	**12.0714**
				Service	0.29	0.00	0.00	0.04	**4.5271**
Concealment Canister (24.625''x10')-bottom	65.0000	0.00	0.00	No Ice	0.29	0.00	0.00	0.15	**4.7160**
				Ice	0.43	0.00	0.00	0.07	**12.5752**
				Service	0.29	0.00	0.00	0.04	**4.7160**
Concealment Canister (25.625''x10')-top	65.0000	0.00	0.00	No Ice	0.31	0.00	0.00	0.15	**4.6960**
				Ice	0.45	0.00	0.00	0.07	**12.4726**
				Service	0.31	0.00	0.00	0.03	**4.6960**
Concealment Canister (25.625''x10')-bottom	55.0000	0.00	0.00	No Ice	0.31	0.00	0.00	0.15	**4.9256**
				Ice	0.45	0.00	0.00	0.07	**13.0823**
				Service	0.31	0.00	0.00	0.03	**4.9256**
Concealment Canister (26.625''x10')-top	55.0000	0.00	0.00	No Ice	0.27	0.00	0.00	0.15	**4.8581**
				Ice	0.42	0.00	0.00	0.07	**12.8527**
				Service	0.27	0.00	0.00	0.03	**4.8581**
Concealment Canister (26.625''x10')-bottom	45.0000	0.00	0.00	No Ice	0.27	0.00	0.00	0.15	**5.1448**
				Ice	0.42	0.00	0.00	0.07	**13.6112**
				Service	0.27	0.00	0.00	0.03	**5.1448**
Concealment Canister (52''x10')-top	45.0000	0.00	0.00	No Ice	0.20	0.00	0.00	0.39	**13.1983**
				Ice	0.48	0.00	0.00	0.13	**24.1565**
				Service	0.20	0.00	0.00	0.09	**13.1983**
Concealment Canister (52''x10')-bottom	35.0000	0.00	0.00	No Ice	0.20	0.00	0.00	0.39	**14.1808**
				Ice	0.48	0.00	0.00	0.13	**25.9548**
				Service	0.20	0.00	0.00	0.09	**14.1809**

Discrete Tower Loads

Description	*Face or Leg*	*Offset Type*	*Offsets: Horz Lateral Vert* *ft* *ft* *ft*	*Azimuth Adjustment* °	*Placement* *ft*
****					
**********					
**********					
**********					
**********					
**********					
**********					
****					
VV-65B-R1_TMO	A	From Leg	1.0000 0.00 1.00	0.00	70.0000
VV-65B-R1_TMO	B	From Leg	1.0000 0.00 1.00	0.00	70.0000
VV-65B-R1_TMO	C	From Leg	1.0000 0.00 1.00	0.00	70.0000

Description	*Face or Leg*	*Offset Type*	*Offsets: Horz Lateral Vert* *ft* *ft* *ft*	*Azimuth Adjustment* °	*Placement* *ft*
**********					
FVV-65B-R3	A	From Leg	1.0000 0.00 1.00	0.00	60.0000
FVV-65B-R3	B	From Leg	1.0000 0.00 1.00	0.00	60.0000
FVV-65B-R3	C	From Leg	1.0000 0.00 1.00	0.00	60.0000
********** ********** **********					
SBNHH-1D65B	A	From Leg	1.0000 0.00 0.00	0.00	40.0000
SBNHH-1D65B	B	From Leg	1.0000 0.00 0.00	0.00	40.0000
SBNHH-1D65B	C	From Leg	1.0000 0.00 0.00	0.00	40.0000
Pipe Mount [PM 601-3]	C	None		0.00	40.0000
**********					
Concealment Canister (24.625''x10')	C	None		0.00	70.0000
Concealment Canister (25.625''x10')	C	None		0.00	60.0000
Concealment Canister (26.625''x10')	C	None		0.00	50.0000
Concealment Canister (52''x10')	C	None		0.00	40.0000

Tower Pressures - No Ice

G_H = 1.100

Section Elevation *ft*	*z* *ft*	K_z	q_z *psf*	A_G *ft²*	*Face*	A_F *ft²*	A_R *ft²*	A_{leg} *ft²*	*Leg %*	C_AA_A *In Face* *ft²*	C_AA_A *Out Face* *ft²*
L1 75.0000-65.0000	70.0000	0.892	30.40	5.000	A	0.000	0.000	0.000	0.00	0.000	0.000
					B	0.000	0.000		0.00	0.000	0.000
					C	0.000	0.000		0.00	0.000	0.000
L2 65.0000-55.0000	60.0000	0.854	29.09	5.000	A	0.000	0.000	0.000	0.00	0.000	0.000
					B	0.000	0.000		0.00	0.000	0.000
					C	0.000	0.000		0.00	0.000	0.000
L3 55.0000-45.0000	50.0000	0.811	27.61	5.000	A	0.000	0.000	0.000	0.00	0.000	0.000
					B	0.000	0.000		0.00	0.000	0.000
					C	0.000	0.000		0.00	0.000	0.000
L4 45.0000-35.0000	39.9573	0.760	25.90	23.094	A	0.000	0.000	0.000	0.00	0.000	0.000
					B	0.000	0.000		0.00	0.000	0.000

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
					C	0.000	0.000		0.00	0.000	0.000
L5 35.0000-0.0000	17.0302	0.700	23.84	90.167	A	0.000	90.167	90.167	100.00	23.940	0.000
					B	0.000	90.167		100.00	0.000	0.000
					C	0.000	90.167		100.00	0.000	0.000

Tower Pressure - With Ice

G_H = 1.100

Section Elevation ft	z ft	K_Z	q_z psf	t_Z in	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
L1 75.0000-65.0000	70.0000	0.892	5.37	0.9164	6.527	A	0.000	0.000	0.000	0.00	0.000	0.000
						B	0.000	0.000		0.00	0.000	0.000
						C	0.000	0.000		0.00	0.000	0.000
L2 65.0000-55.0000	60.0000	0.854	5.13	0.9024	6.504	A	0.000	0.000	0.000	0.00	0.000	0.000
						B	0.000	0.000		0.00	0.000	0.000
						C	0.000	0.000		0.00	0.000	0.000
L3 55.0000-45.0000	50.0000	0.811	4.87	0.8861	6.477	A	0.000	0.000	0.000	0.00	0.000	0.000
						B	0.000	0.000		0.00	0.000	0.000
						C	0.000	0.000		0.00	0.000	0.000
L4 45.0000-35.0000	39.9573	0.760	4.57	0.8664	24.538	A	0.000	0.000	0.000	0.00	0.000	0.000
						B	0.000	0.000		0.00	0.000	0.000
						C	0.000	0.000		0.00	0.000	0.000
L5 35.0000-0.0000	17.0302	0.700	4.21	0.7956	94.808	A	0.000	94.808	94.808	100.00	42.246	0.000
						B	0.000	94.808		100.00	0.000	0.000
						C	0.000	94.808		100.00	0.000	0.000

Tower Pressure - Service

G_H = 1.100

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
L1 75.0000-65.0000	70.0000	0.892	6.91	5.000	A	0.000	0.000	0.000	0.00	0.000	0.000
					B	0.000	0.000		0.00	0.000	0.000
					C	0.000	0.000		0.00	0.000	0.000
L2 65.0000-55.0000	60.0000	0.854	6.62	5.000	A	0.000	0.000	0.000	0.00	0.000	0.000
					B	0.000	0.000		0.00	0.000	0.000
					C	0.000	0.000		0.00	0.000	0.000
L3 55.0000-45.0000	50.0000	0.811	6.28	5.000	A	0.000	0.000	0.000	0.00	0.000	0.000
					B	0.000	0.000		0.00	0.000	0.000
					C	0.000	0.000		0.00	0.000	0.000
L4 45.0000-35.0000	39.9573	0.760	5.89	23.094	A	0.000	0.000	0.000	0.00	0.000	0.000
					B	0.000	0.000		0.00	0.000	0.000
					C	0.000	0.000		0.00	0.000	0.000
L5 35.0000-0.0000	17.0302	0.700	5.42	90.167	A	0.000	90.167	90.167	100.00	23.940	0.000
					B	0.000	90.167		100.00	0.000	0.000
					C	0.000	90.167		100.00	0.000	0.000

Load Combinations

Comb. No.	*Description*
1	Dead Only
2	1.2 Dead+1.0 Wind 0 deg - No Ice
3	0.9 Dead+1.0 Wind 0 deg - No Ice
4	1.2 Dead+1.0 Wind 30 deg - No Ice
5	0.9 Dead+1.0 Wind 30 deg - No Ice
6	1.2 Dead+1.0 Wind 60 deg - No Ice
7	0.9 Dead+1.0 Wind 60 deg - No Ice
8	1.2 Dead+1.0 Wind 90 deg - No Ice
9	0.9 Dead+1.0 Wind 90 deg - No Ice
10	1.2 Dead+1.0 Wind 120 deg - No Ice
11	0.9 Dead+1.0 Wind 120 deg - No Ice
12	1.2 Dead+1.0 Wind 150 deg - No Ice
13	0.9 Dead+1.0 Wind 150 deg - No Ice
14	1.2 Dead+1.0 Wind 180 deg - No Ice
15	0.9 Dead+1.0 Wind 180 deg - No Ice
16	1.2 Dead+1.0 Wind 210 deg - No Ice
17	0.9 Dead+1.0 Wind 210 deg - No Ice
18	1.2 Dead+1.0 Wind 240 deg - No Ice
19	0.9 Dead+1.0 Wind 240 deg - No Ice
20	1.2 Dead+1.0 Wind 270 deg - No Ice
21	0.9 Dead+1.0 Wind 270 deg - No Ice
22	1.2 Dead+1.0 Wind 300 deg - No Ice
23	0.9 Dead+1.0 Wind 300 deg - No Ice
24	1.2 Dead+1.0 Wind 330 deg - No Ice
25	0.9 Dead+1.0 Wind 330 deg - No Ice
26	1.2 Dead+1.0 Ice+1.0 Temp
27	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp
28	1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp
29	1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp
30	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp
31	1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp
32	1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp
33	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp
34	1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp
35	1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp
36	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp
37	1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp
38	1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp
39	Dead+Wind 0 deg - Service
40	Dead+Wind 30 deg - Service
41	Dead+Wind 60 deg - Service
42	Dead+Wind 90 deg - Service
43	Dead+Wind 120 deg - Service
44	Dead+Wind 150 deg - Service
45	Dead+Wind 180 deg - Service
46	Dead+Wind 210 deg - Service
47	Dead+Wind 240 deg - Service
48	Dead+Wind 270 deg - Service
49	Dead+Wind 300 deg - Service
50	Dead+Wind 330 deg - Service

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L1	75 - 65	Pole	Max Tension	36	0.00	-0.00	-0.00
			Max. Compression	26	-1.80	0.00	0.00
			Max. Mx	20	-1.09	4.92	0.00
			Max. My	2	-1.09	0.00	4.92
			Max. Vy	20	-0.50	4.92	0.00
			Max. Vx	2	-0.50	0.00	4.92
			Max. Torque	4			-0.00
L2	65 - 55	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-3.94	0.00	0.00
			Max. Mx	20	-2.57	13.34	0.00
			Max. My	2	-2.57	0.00	13.34
			Max. Vy	20	-0.85	9.96	0.00
			Max. Vx	2	-0.85	0.00	9.96
			Max. Torque	5			-0.00
L3	55 - 45	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-5.58	0.00	0.00
			Max. Mx	20	-3.86	24.72	0.00
			Max. My	2	-3.86	0.00	24.72
			Max. Vy	20	-1.16	14.50	0.00
			Max. Vx	2	-1.16	0.00	14.50
			Max. Torque	5			-0.00
L4	45 - 35	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-8.48	0.00	0.00
			Max. Mx	20	-5.68	41.17	0.00
			Max. My	2	-5.68	0.00	41.17
			Max. Vy	20	-1.65	37.88	0.00
			Max. Vx	2	-1.65	0.00	37.88
			Max. Torque	5			-0.00
L5	35 - 0	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-13.94	0.73	0.42
			Max. Mx	20	-9.40	141.70	0.15
			Max. My	2	-9.40	0.26	141.59
			Max. Vy	20	-3.73	141.70	0.15
			Max. Vx	2	-3.73	0.26	141.59
			Max. Torque	5			-0.00

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	26	13.94	0.00	0.00
	Max. H_x	20	9.40	3.73	-0.00
	Max. H_z	2	9.40	-0.00	3.73
	Max. M_x	2	141.59	-0.00	3.73
	Max. M_z	8	141.18	-3.73	-0.00
	Max. Torsion	19	0.00	3.23	-1.86
	Min. Vert	21	7.05	3.73	-0.00
	Min. H_x	8	9.40	-3.73	-0.00
	Min. H_z	14	9.40	-0.00	-3.73
	Min. M_x	14	-141.29	-0.00	-3.73
	Min. M_z	20	-141.70	3.73	-0.00
	Min. Torsion	5	-0.00	-1.89	3.28

Tower Mast Reaction Summary

Load Combination	*Vertical*	*Shear$_x$*	*Shear$_z$*	*Overturning Moment, M$_x$*	*Overturning Moment, M$_z$*	*Torque*
	K	*K*	*K*	*kip-ft*	*kip-ft*	*kip-ft*
Dead Only	7.84	0.00	0.00	-0.12	0.22	0.00
1.2 Dead+1.0 Wind 0 deg - No Ice	9.40	0.00	-3.73	-141.59	0.26	0.00
0.9 Dead+1.0 Wind 0 deg - No Ice	7.05	0.00	-3.73	-140.79	0.19	0.00
1.2 Dead+1.0 Wind 30 deg - No Ice	9.40	1.89	-3.28	-123.50	-70.96	0.00
0.9 Dead+1.0 Wind 30 deg - No Ice	7.05	1.89	-3.28	-122.80	-70.64	0.00
1.2 Dead+1.0 Wind 60 deg - No Ice	9.40	3.23	-1.86	-70.87	-122.23	-0.00
0.9 Dead+1.0 Wind 60 deg - No Ice	7.05	3.23	-1.86	-70.45	-121.63	-0.00
1.2 Dead+1.0 Wind 90 deg - No Ice	9.40	3.73	0.00	-0.15	-141.18	0.00
0.9 Dead+1.0 Wind 90 deg - No Ice	7.05	3.73	0.00	-0.11	-140.48	0.00
1.2 Dead+1.0 Wind 120 deg - No Ice	9.40	3.23	1.86	70.57	-122.23	0.00
0.9 Dead+1.0 Wind 120 deg - No Ice	7.05	3.23	1.86	70.22	-121.63	0.00
1.2 Dead+1.0 Wind 150 deg - No Ice	9.40	1.86	3.23	122.34	-70.46	-0.00
0.9 Dead+1.0 Wind 150 deg - No Ice	7.05	1.86	3.23	121.72	-70.14	-0.00
1.2 Dead+1.0 Wind 180 deg - No Ice	9.40	0.00	3.73	141.29	0.26	-0.00
0.9 Dead+1.0 Wind 180 deg - No Ice	7.05	0.00	3.73	140.56	0.19	-0.00
1.2 Dead+1.0 Wind 210 deg - No Ice	9.40	-1.89	3.28	123.20	71.48	0.00
0.9 Dead+1.0 Wind 210 deg - No Ice	7.05	-1.89	3.28	122.58	71.03	0.00
1.2 Dead+1.0 Wind 240 deg - No Ice	9.40	-3.23	1.86	70.57	122.75	-0.00
0.9 Dead+1.0 Wind 240 deg - No Ice	7.05	-3.23	1.86	70.22	122.02	-0.00
1.2 Dead+1.0 Wind 270 deg - No Ice	9.40	-3.73	0.00	-0.15	141.70	-0.00
0.9 Dead+1.0 Wind 270 deg - No Ice	7.05	-3.73	0.00	-0.11	140.87	-0.00
1.2 Dead+1.0 Wind 300 deg - No Ice	9.40	-3.23	-1.86	-70.87	122.75	0.00
0.9 Dead+1.0 Wind 300 deg - No Ice	7.05	-3.23	-1.86	-70.45	122.02	0.00
1.2 Dead+1.0 Wind 330 deg - No Ice	9.40	-1.86	-3.23	-122.64	70.98	-0.00
0.9 Dead+1.0 Wind 330 deg - No Ice	7.05	-1.86	-3.23	-121.94	70.53	-0.00
1.2 Dead+1.0 Ice+1.0 Temp	13.94	-0.00	-0.00	-0.42	0.73	0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	13.94	0.00	-1.27	-51.28	0.74	-0.00
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	13.94	0.63	-1.10	-44.47	-24.68	-0.00
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	13.94	1.10	-0.63	-25.85	-43.30	-0.00
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	13.94	1.27	0.00	-0.43	-50.11	-0.00
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	13.94	1.10	0.63	25.00	-43.30	0.00
1.2 Dead+1.0 Wind 150 deg+1.0	13.94	0.63	1.10	43.61	-24.68	0.00

Load Combination	Vertical K	$Shear_x$ K	$Shear_z$ K	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
Ice+1.0 Temp						
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	13.94	0.00	1.27	50.42	0.74	0.00
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	13.94	-0.63	1.10	43.61	26.17	0.00
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	13.94	-1.10	0.63	25.00	44.78	0.00
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	13.94	-1.27	0.00	-0.43	51.59	0.00
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	13.94	-1.10	-0.63	-25.85	44.78	0.00
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	13.94	-0.63	-1.10	-44.47	26.17	-0.00
Dead+Wind 0 deg - Service	7.84	0.00	-0.85	-32.15	0.22	-0.00
Dead+Wind 30 deg - Service	7.84	0.43	-0.75	-28.06	-15.91	-0.00
Dead+Wind 60 deg - Service	7.84	0.73	-0.42	-16.14	-27.52	-0.00
Dead+Wind 90 deg - Service	7.84	0.85	0.00	-0.13	-31.81	-0.00
Dead+Wind 120 deg - Service	7.84	0.73	0.42	15.89	-27.52	0.00
Dead+Wind 150 deg - Service	7.84	0.42	0.73	27.61	-15.80	0.00
Dead+Wind 180 deg - Service	7.84	0.00	0.85	31.90	0.22	0.00
Dead+Wind 210 deg - Service	7.84	-0.43	0.75	27.81	16.34	0.00
Dead+Wind 240 deg - Service	7.84	-0.73	0.42	15.89	27.95	0.00
Dead+Wind 270 deg - Service	7.84	-0.85	0.00	-0.13	32.24	0.00
Dead+Wind 300 deg - Service	7.84	-0.73	-0.42	-16.14	27.95	0.00
Dead+Wind 330 deg - Service	7.84	-0.42	-0.73	-27.86	16.23	-0.00

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX K	PY K	PZ K	PX K	PY K	PZ K	% Error
1	0.00	-7.84	0.00	0.00	7.84	0.00	0.000%
2	0.00	-9.40	-3.73	-0.00	9.40	3.73	0.004%
3	0.00	-7.05	-3.73	-0.00	7.05	3.73	0.007%
4	1.89	-9.40	-3.28	-1.89	9.40	3.28	0.004%
5	1.89	-7.05	-3.28	-1.89	7.05	3.28	0.007%
6	3.23	-9.40	-1.86	-3.23	9.40	1.86	0.004%
7	3.23	-7.05	-1.86	-3.23	7.05	1.86	0.007%
8	3.73	-9.40	0.00	-3.73	9.40	-0.00	0.004%
9	3.73	-7.05	0.00	-3.73	7.05	-0.00	0.007%
10	3.23	-9.40	1.86	-3.23	9.40	-1.86	0.004%
11	3.23	-7.05	1.86	-3.23	7.05	-1.86	0.007%
12	1.86	-9.40	3.23	-1.86	9.40	-3.23	0.004%
13	1.86	-7.05	3.23	-1.86	7.05	-3.23	0.007%
14	0.00	-9.40	3.73	-0.00	9.40	-3.73	0.004%
15	0.00	-7.05	3.73	-0.00	7.05	-3.73	0.007%
16	-1.89	-9.40	3.28	1.89	9.40	-3.28	0.004%
17	-1.89	-7.05	3.28	1.89	7.05	-3.28	0.007%
18	-3.23	-9.40	1.86	3.23	9.40	-1.86	0.004%
19	-3.23	-7.05	1.86	3.23	7.05	-1.86	0.007%
20	-3.73	-9.40	0.00	3.73	9.40	-0.00	0.004%
21	-3.73	-7.05	0.00	3.73	7.05	-0.00	0.007%
22	-3.23	-9.40	-1.86	3.23	9.40	1.86	0.004%
23	-3.23	-7.05	-1.86	3.23	7.05	1.86	0.007%
24	-1.86	-9.40	-3.23	1.86	9.40	3.23	0.004%
25	-1.86	-7.05	-3.23	1.86	7.05	3.23	0.007%
26	0.00	-13.94	0.00	0.00	13.94	0.00	0.000%
27	0.00	-13.94	-1.27	-0.00	13.94	1.27	0.004%
28	0.63	-13.94	-1.10	-0.63	13.94	1.10	0.004%
29	1.10	-13.94	-0.63	-1.10	13.94	0.63	0.004%

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX K	PY K	PZ K	PX K	PY K	PZ K	% Error
30	1.27	-13.94	0.00	-1.27	13.94	-0.00	0.004%
31	1.10	-13.94	0.63	-1.10	13.94	-0.63	0.004%
32	0.63	-13.94	1.10	-0.63	13.94	-1.10	0.004%
33	0.00	-13.94	1.27	-0.00	13.94	-1.27	0.004%
34	-0.63	-13.94	1.10	0.63	13.94	-1.10	0.004%
35	-1.10	-13.94	0.63	1.10	13.94	-0.63	0.004%
36	-1.27	-13.94	0.00	1.27	13.94	-0.00	0.004%
37	-1.10	-13.94	-0.63	1.10	13.94	0.63	0.004%
38	-0.63	-13.94	-1.10	0.63	13.94	1.10	0.004%
39	0.00	-7.84	-0.85	-0.00	7.84	0.85	0.007%
40	0.43	-7.84	-0.75	-0.43	7.84	0.75	0.007%
41	0.73	-7.84	-0.42	-0.73	7.84	0.42	0.007%
42	0.85	-7.84	0.00	-0.85	7.84	-0.00	0.007%
43	0.73	-7.84	0.42	-0.73	7.84	-0.42	0.007%
44	0.42	-7.84	0.73	-0.42	7.84	-0.73	0.007%
45	0.00	-7.84	0.85	-0.00	7.84	-0.85	0.007%
46	-0.43	-7.84	0.75	0.43	7.84	-0.75	0.007%
47	-0.73	-7.84	0.42	0.73	7.84	-0.42	0.007%
48	-0.85	-7.84	0.00	0.85	7.84	-0.00	0.007%
49	-0.73	-7.84	-0.42	0.73	7.84	0.42	0.007%
50	-0.42	-7.84	-0.73	0.42	7.84	0.73	0.007%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	6	0.00000001	0.00000001
2	Yes	15	0.00000001	0.00006505
3	Yes	14	0.00000001	0.00011380
4	Yes	15	0.00000001	0.00008532
5	Yes	14	0.00000001	0.00013923
6	Yes	15	0.00000001	0.00008528
7	Yes	14	0.00000001	0.00013925
8	Yes	15	0.00000001	0.00006501
9	Yes	14	0.00000001	0.00011375
10	Yes	15	0.00000001	0.00008522
11	Yes	14	0.00000001	0.00013919
12	Yes	15	0.00000001	0.00008522
13	Yes	14	0.00000001	0.00013919
14	Yes	15	0.00000001	0.00006502
15	Yes	14	0.00000001	0.00011376
16	Yes	15	0.00000001	0.00008537
17	Yes	14	0.00000001	0.00013927
18	Yes	15	0.00000001	0.00008530
19	Yes	14	0.00000001	0.00013928
20	Yes	15	0.00000001	0.00006507
21	Yes	14	0.00000001	0.00011381
22	Yes	15	0.00000001	0.00008535
23	Yes	14	0.00000001	0.00013934
24	Yes	15	0.00000001	0.00008536
25	Yes	14	0.00000001	0.00013934
26	Yes	6	0.00000001	0.00000001
27	Yes	14	0.00000001	0.00009467
28	Yes	14	0.00000001	0.00009630
29	Yes	14	0.00000001	0.00009616
30	Yes	14	0.00000001	0.00009420
31	Yes	14	0.00000001	0.00009595
32	Yes	14	0.00000001	0.00009599

33	Yes	14	0.00000001	0.00009433
34	Yes	14	0.00000001	0.00009635
35	Yes	14	0.00000001	0.00009649
36	Yes	14	0.00000001	0.00009480
37	Yes	14	0.00000001	0.00009670
38	Yes	14	0.00000001	0.00009666
39	Yes	12	0.00000001	0.00009925
40	Yes	12	0.00000001	0.00009770
41	Yes	12	0.00000001	0.00009753
42	Yes	12	0.00000001	0.00009902
43	Yes	12	0.00000001	0.00009745
44	Yes	12	0.00000001	0.00009748
45	Yes	12	0.00000001	0.00009908
46	Yes	12	0.00000001	0.00009769
47	Yes	12	0.00000001	0.00009770
48	Yes	12	0.00000001	0.00009931
49	Yes	12	0.00000001	0.00009777
50	Yes	12	0.00000001	0.00009774

Maximum Tower Deflections - Service Wind

Section No.	*Elevation*	*Horz. Deflection*	*Gov. Load Comb.*	*Tilt*	*Twist*
	ft	*in*		*°*	*°*
L1	75 - 65	3.05	49	0.54	0.00
L2	65 - 55	1.94	49	0.50	0.00
L3	55 - 45	1.01	49	0.37	0.00
L4	45 - 35	0.50	49	0.09	0.00
L5	35 - 0	0.32	49	0.08	0.00

Critical Deflections and Radius of Curvature - Service Wind

Elevation	*Appurtenance*	*Gov. Load Comb.*	*Deflection*	*Tilt*	*Twist*	*Radius of Curvature*
ft			*in*	*°*	*°*	*ft*
75.7500	Truck Ball 18'' dia.	49	3.05	0.54	0.00	19233
75.0000	Flag (18'x12')	49	3.05	0.54	0.00	19233
70.0000	VV-65B-R1_TMO	49	2.49	0.53	0.00	19233
65.0000	Concealment Canister (24.625''x10')-bottom	49	1.94	0.50	0.00	8167
60.0000	FVV-65B-R3	49	1.43	0.46	0.00	3750
55.0000	Concealment Canister (25.625''x10')-bottom	49	1.01	0.37	0.00	2550
50.0000	Concealment Canister (26.625''x10')	49	0.70	0.22	0.00	2714
45.0000	Concealment Canister (26.625''x10')-bottom	49	0.50	0.09	0.00	3412
40.0000	SBNHH-1D65B	49	0.38	0.06	0.00	6241
35.0000	Concealment Canister (52''x10')-bottom	49	0.32	0.08	0.00	26818

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	75 - 65	13.54	4	2.40	0.00
L2	65 - 55	8.62	4	2.24	0.00
L3	55 - 45	4.45	4	1.65	0.00
L4	45 - 35	2.19	4	0.40	0.00
L5	35 - 0	1.41	4	0.34	0.00

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
75.7500	Truck Ball 18'' dia.	4	13.54	2.40	0.00	4348
75.0000	Flag (18'x12')	4	13.54	2.40	0.00	4348
70.0000	VV-65B-R1_TMO	4	11.04	2.34	0.00	4348
65.0000	Concealment Canister (24.625''x10')-bottom	4	8.62	2.24	0.00	1843
60.0000	FVV-65B-R3	4	6.36	2.05	0.00	843
55.0000	Concealment Canister (25.625''x10')-bottom	4	4.45	1.65	0.00	573
50.0000	Concealment Canister (26.625''x10')	4	3.07	0.97	0.00	609
45.0000	Concealment Canister (26.625''x10')-bottom	4	2.19	0.40	0.00	766
40.0000	SBNHH-1D65B	4	1.69	0.25	0.00	1402
35.0000	Concealment Canister (52''x10')-bottom	4	1.41	0.34	0.00	6078

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
L1	75 - 65 (1)	TP6x6x0.75	10.0000	0.0000	0.0	12.3700	-1.09	801.58	0.001
L2	65 - 55 (2)	TP6x6x0.75	10.0000	0.0000	0.0	12.3700	-2.57	801.58	0.003
L3	55 - 45 (3)	TP6x6x0.75	10.0000	0.0000	0.0	12.3700	-3.86	801.58	0.005
L4	45 - 35 (4)	TP28.0261x26.625x0.2188	10.0000	0.0000	0.0	19.3070	-5.68	1129.46	0.005
L5	35 - 0 (5)	TP32.93x28.0261x0.2188	35.0000	0.0000	0.0	22.7118	-9.40	1328.64	0.007

Pole Bending Design Data

Section No.	Elevation ft	Size	M_{ux} kip-ft	ϕM_{nx} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} kip-ft	ϕM_{ny} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
L1	75 - 65 (1)	TP6x6x0.75	4.92	112.39	0.044	0.00	112.39	0.000
L2	65 - 55 (2)	TP6x6x0.75	13.34	112.39	0.119	0.00	112.39	0.000
L3	55 - 45 (3)	TP6x6x0.75	24.72	112.39	0.220	0.00	112.39	0.000
L4	45 - 35 (4)	TP28.0261x26.625x0.2188	41.17	754.27	0.055	0.00	754.27	0.000

Section No.	Elevation ft	Size	M_{ux} kip-ft	ϕM_{nx} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} kip-ft	ϕM_{ny} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
L5	35 - 0 (5)	TP32.93x28.0261x0.2188	142.44	981.11	0.145	0.00	981.11	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V_u K	ϕV_n K	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u kip-ft	ϕT_n kip-ft	Ratio $\frac{T_u}{\phi T_n}$
L1	75 - 65 (1)	TP6x6x0.75	0.50	240.47	0.002	0.00	111.00	0.000
L2	65 - 55 (2)	TP6x6x0.75	0.84	240.47	0.004	0.00	111.00	0.000
L3	55 - 45 (3)	TP6x6x0.75	1.10	240.47	0.005	0.00	111.00	0.000
L4	45 - 35 (4)	TP28.0261x26.625x0.2188	1.65	338.84	0.005	0.00	825.15	0.000
L5	35 - 0 (5)	TP32.93x28.0261x0.2188	3.79	398.59	0.010	0.00	1141.84	0.000

Pole Interaction Design Data

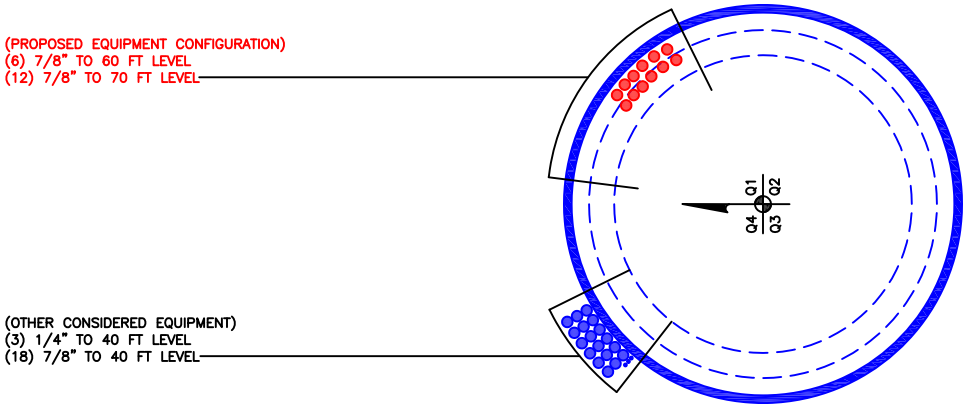
Section No.	Elevation ft	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Ratio $\frac{V_u}{\phi V_n}$	Ratio $\frac{T_u}{\phi T_n}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	75 - 65 (1)	0.001	0.044	0.000	0.002	0.000	0.045	1.050	
L2	65 - 55 (2)	0.003	0.119	0.000	0.004	0.000	0.122	1.050	
L3	55 - 45 (3)	0.005	0.220	0.000	0.005	0.000	0.225	1.050	
L4	45 - 35 (4)	0.005	0.055	0.000	0.005	0.000	0.060	1.050	
L5	35 - 0 (5)	0.007	0.145	0.000	0.010	0.000	0.152	1.050	

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
L1	75 - 65	Pole	TP6x6x0.75	1	-1.09	841.66	4.3	Pass
L2	65 - 55	Pole	TP6x6x0.75	2	-2.57	841.66	11.6	Pass
L3	55 - 45	Pole	TP6x6x0.75	3	-3.86	841.66	21.4	Pass
L4	45 - 35	Pole	TP28.0261x26.625x0.2188	4	-5.68	1185.93	5.7	Pass
L5	35 - 0	Pole	TP32.93x28.0261x0.2188	5	-9.40	1395.07	14.5	Pass
							Summary	
						Pole (L3)	21.4	Pass
						RATING =	**21.4**	**Pass**

APPENDIX B

BASE LEVEL DRAWING


(PROPOSED EQUIPMENT CONFIGURATION)
(6) 7/8" TO 60 FT LEVEL
(12) 7/8" TO 70 FT LEVEL
(OTHER CONSIDERED EQUIPMENT)
(3) 1/4" TO 40 FT LEVEL
(18) 7/8" TO 40 FT LEVEL
Q1
Q2
Q3
Q4

APPENDIX C

ADDITIONAL CALCULATIONS

CCI Concealment Tool

Site Data

BU#:	822710
Site Name:	BN510/Oregon Club
Order #:	

File Path: C:\SAPI Work Area\822710\WO 2414601 - SA\Prod\20250513_APP657779_WO_2385910_BU_822710_SA_TNX_T-M

Import tnxTower File Export tnxTower File

Code

Code:	TIA-222-H	
Ice Thickness:	1	in
Windspeed:	119	mph
Ice Wind Speed:	50	mph
Service Wind Speed:	60	mph
Exposure Category:	B	
Topographic Feature:	N/A	
Risk Category:	II	
Ground Elevation (z_s):	308.08	ft

☑ Use Target Reliabilities
☑ No External Appurtenances (Kd=1.0)

☐ Topo Downwind

Truck Ball

Truck Ball on Tower:	**Yes**	
Diameter:	18	in
Weight:	0.05	kip

Flag

Flag on Tower:	**Yes**	
Flag Width:	18	ft
Flag Height:	12	ft
Flag Elevation(z):	75	ft

Pole Geometry

	Pole Height Above Base (ft)	Section Length (ft)	Lap Splice Length (ft)	Number of Sides	Top Diameter (in)	Bottom Diameter (in)	Wall Thickness (in)	Bend Radius (in)	Pole Material	Delete
1	75	10	0	0	6	6	0.75	n/a	A519 Type 1026	[x]
2	65	10	0	0	6	6	0.75	n/a	A519 Type 1026	[x]
3	55	10	0	0	6	6	0.75	n/a	A519 Type 1026	[x]
4	45	10	0	18	26.625	28.02611	0.21875	0.875	A572-65	[x]
5	35	35	0	18	28.02611	32.93	0.21875	0.875	A572-65	[x]

☐ Default Plate Type to 0.75 Solidity Ratio

Canisters Enter from highest elevation to lowest elevation

ID[1]	Top Elevation (ft)	Classification Category	Canister Assembly Length (ft)	Canister Assembly Diameter (in)	Ventilated Canister	Manufacturer[2]	Number of Sides Canister Section	Plate Type	Flange Plate Thickness (in)[3]	Flange Plate Diameter (in)	Solidity Ratio	Plate Weight (Kip)	Vent Length (ft)
1	75	Existing	10	24.625	No		Round	4	3.00	24.625	0.55	0.446	0-0
2	65	Existing	10	25.625	No		Round	4	3.00	25.625	0.55	0.483	0-0
3	55	Existing	10	26.625	No		Round	4	2.50	25.75	0.55	0.406	0-0
4	45	Existing	10	52	No		18	1	0.25	52	0.45	0.135	0-0

[1] Double-click respective ID to auto-populate top elevation. Elevation will reference the previously entered canister's bottom elevation.

[2] Select manufacturer if available for vented canister. Leave blank to autocalculate Cf values.

[3] Accounts for the flange at the top and bottom of the canister. Enter larger dimensions.

Deflection Check

Deflection Check Required:	**No**

Canister assembly spine deflection check is NOT required per Section 4.1.4, ENG-SOW-10134 Structural Analysis of Flagpole and Concealment Towers.

User Forces

Name	Elev. (ft)	Shear (kip)	Weight (kip)	$Shear_{ICE}$ (kip)	$Weight_{ICE}$ (kip)	$Shear_{SERVICE}$ (kip)	$Weight_{SERVICE}$ (kip)
Truck Ball 18" dia.	75.75	0.030217	0.050000	0.009080	0.083702	0.006873	0.050000
Flag (18'x12')	75	0.274084	0.022680	0.048904	0.208702	0.062343	0.022680
Concealment Canister (24.625"x10')-top	75	0.154378	0.287301	0.072673	0.430278	0.035115	0.287301
Concealment Canister (24.625"x10')-bottom	65	0.154378	0.287301	0.072673	0.430278	0.035115	0.287301
Concealment Canister (25.625"x10')-top	65	0.153725	0.308384	0.072080	0.454609	0.034966	0.308384
Concealment Canister (25.625"x10')-bottom	55	0.153725	0.308384	0.072080	0.454609	0.034966	0.308384
Concealment Canister (26.625"x10')-top	55	0.151617	0.272752	0.070815	0.421660	0.034487	0.272752
Concealment Canister (26.625"x10')-bottom	45	0.151617	0.272752	0.070815	0.421660	0.034487	0.272752
Concealment Canister (52"x10')-top	45	0.388956	0.203884	0.125679	0.483718	0.088472	0.203884
Concealment Canister (52"x10')-bottom	35	0.388956	0.203884	0.125679	0.483718	0.088472	0.203884

Monopole Flange Plate Connection

Elevation = 45 ft.

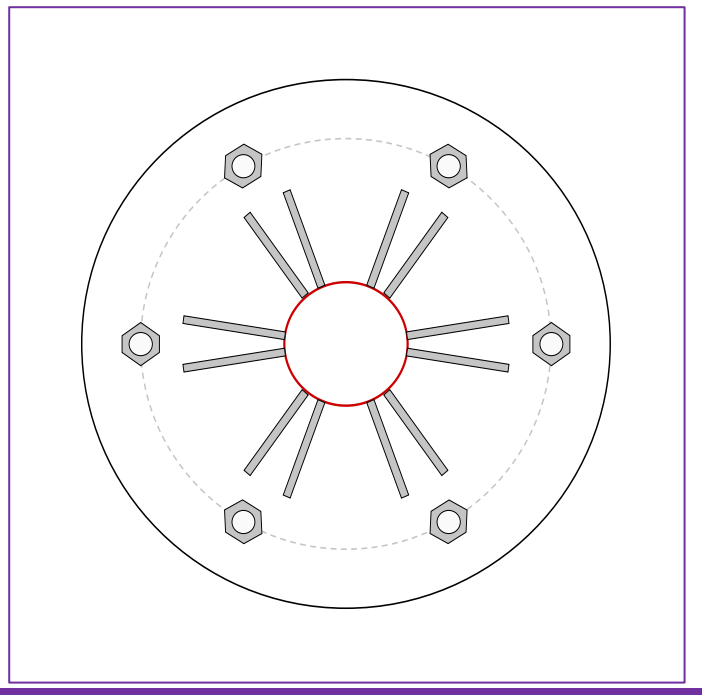
BU #	822710
Site Name	BN510/Oregon Club
Order #	657779 REV. 7

TIA-222 Revision	H

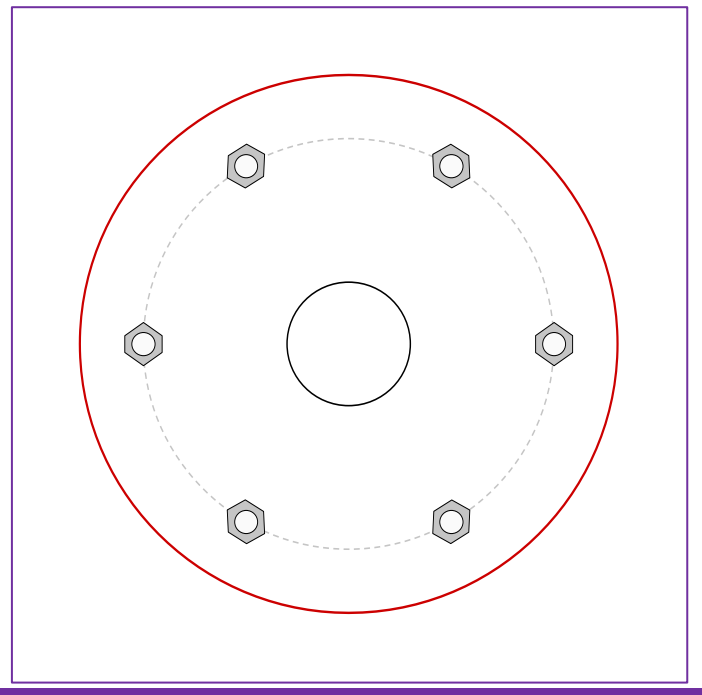
Applied Loads	
Moment (kip-ft)	24.72
Axial Force (kips)	3.86
Shear Force (kips)	1.10

**TIA-222-H Section 15.5 Applied*

Top Plate - External



Bottom Plate - Internal



Connection Properties

Bolt Data

(6) 1-1/8" ø bolts (A325 N; Fy=81 ksi, Fu=120 ksi) on 20" BC

Top Plate Data

25.75" OD x 2.5" Plate (A572-50; Fy=50 ksi, Fu=65 ksi)

Bottom Plate Data

6" ID x 2.5" Plate (A572-50; Fy=50 ksi, Fu=65 ksi)

Top Stiffener Data

(12) 5"H x 5"W x 0.375"T, Notch: 1.5"
plate: Fy= 36 ksi ; weld: Fy= 80 ksi
horiz. weld: 0.3125" fillet
vert. weld: 0.3125" fillet

Bottom Stiffener Data

N/A

Top Pole Data

6" x 0.75" round pole (A519 Type 1026; Fy=72 ksi, Fu=87 ksi)

Bottom Pole Data

26.625" x 0.21875" 18-sided pole (A572-65; Fy=65 ksi, Fu=80 ksi)

Analysis Results

Bolt Capacity

Max Load (kips)	9.23	
Allowable (kips)	68.67	
Stress Rating:	**12.8%**	**Pass**

:

Top Stiffener Capacity

Horizontal Weld:	**16.1%**	**Pass**
Vertical Weld:	**20.5%**	**Pass**
Plate Flexure+Shear:	**27.6%**	**Pass**
Plate Tension+Shear:	**20.3%**	**Pass**
Plate Compression:	**51.9%**	**Pass**

Top Pole Capacity

Punching Shear:	**4.1%**	**Pass**

Bottom Plate Capacity

Max Stress (ksi):	-
Allowable Stress (ksi):	-
Stress Rating:	**N/A**
Tension Side Stress Rating:	**N/A**

Bottom Stiffener Capacity

Horizontal Weld:	**N/A**
Vertical Weld:	**N/A**
Plate Flexure+Shear:	**N/A**
Plate Tension+Shear:	**N/A**
Plate Compression:	**N/A**

Bottom Pole Capacity

Punching Shear:	**N/A**

BU: 822710
Site Name: BN510/Oregon Club
Work Order: 2414601

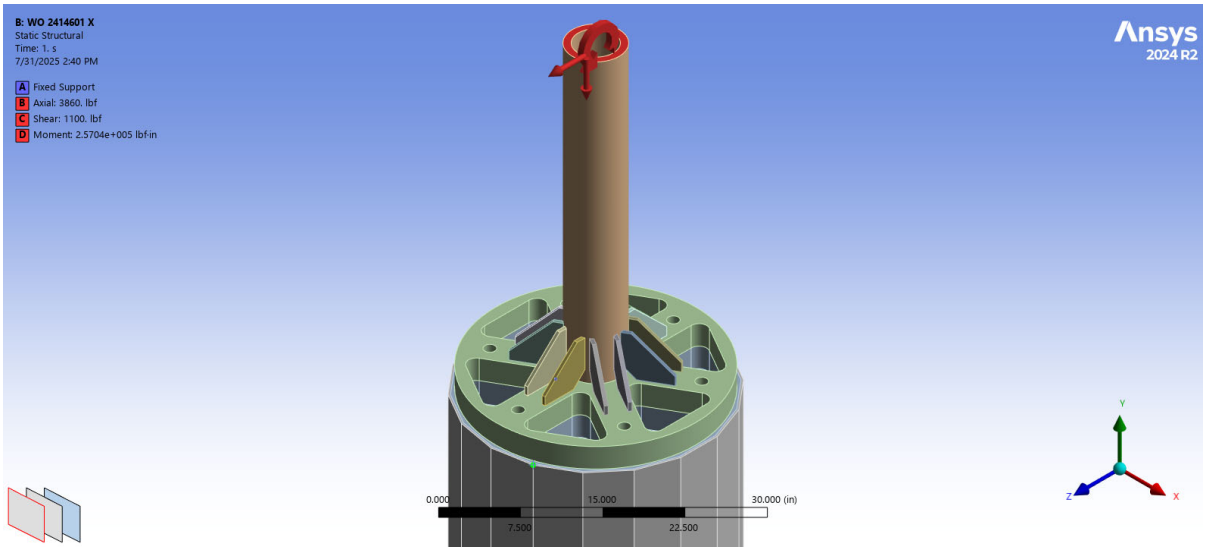
Done By: SDH
Date Completed: 07/31/2025

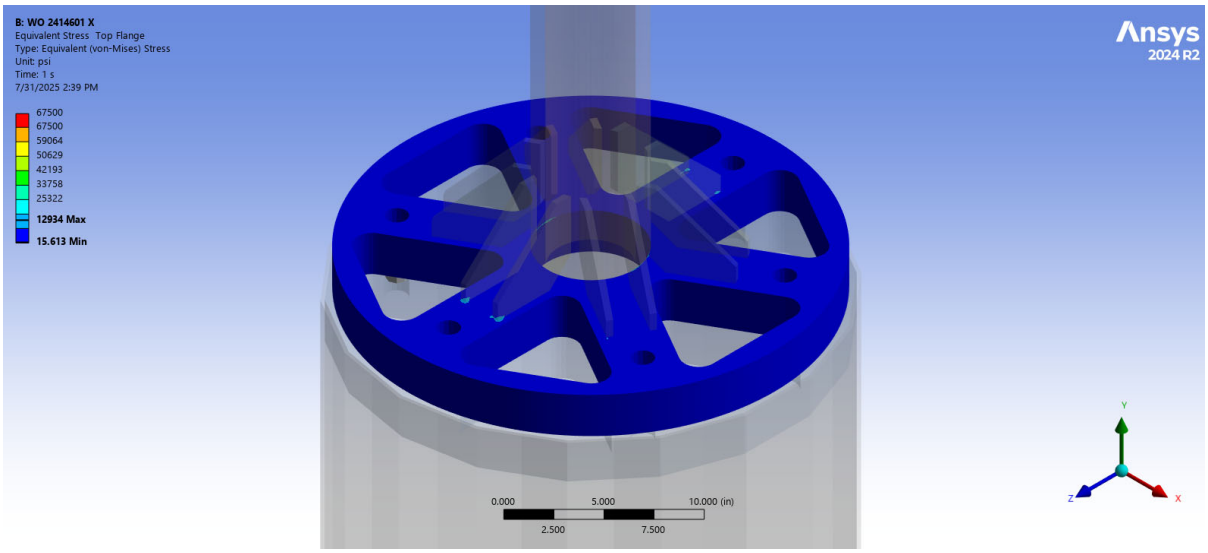
Finite Element Analysis- 45’ Flange Plate Connection

A finite element analysis was completed on the 45ft flange plate connection. The purpose of this analysis was to determine the suitability of the tower’s flange plate connection using the corresponding level reactions provided by tnxTower (see Appendix A). A 3D solid model was created of the 45ft flange plate connection using SpaceClaim. A full analysis was performed of all components of the flange plate connection using ANSYS Structural (version 2024 R2). The images illustrate the controlling force direction and stress gradient of the controlling component.

Controlling Component: Top Flange

Status: **Pass**





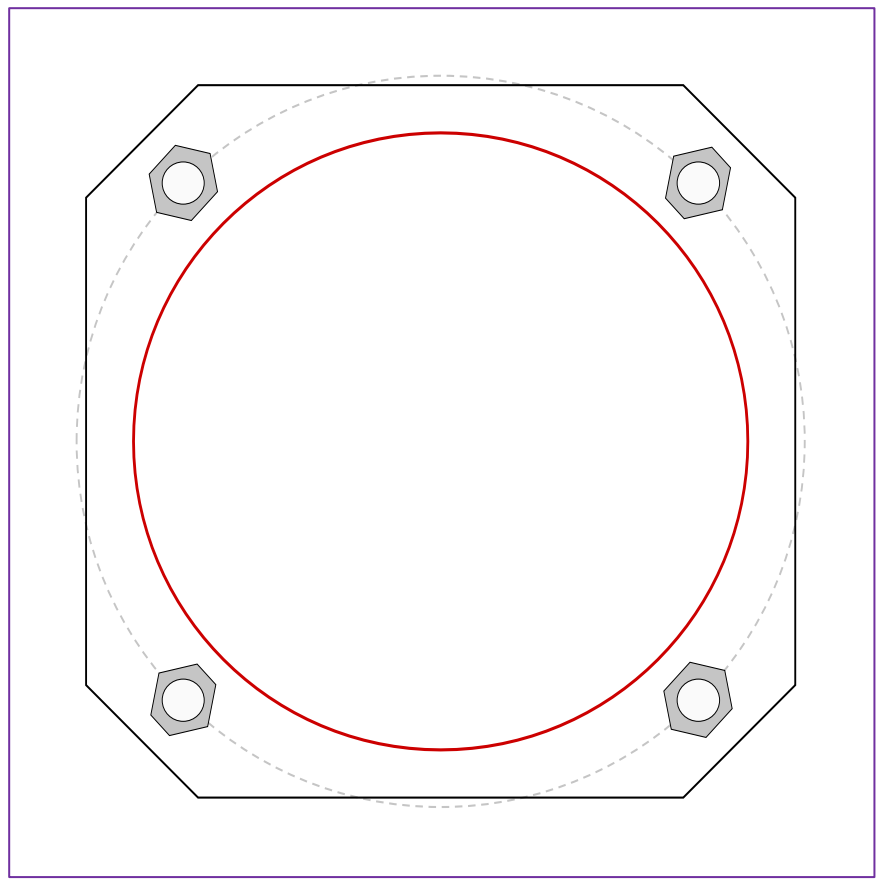
Monopole Base Plate Connection

Site Info	
BU #	822710
Site Name	BN510/Oregon Club
Order #	657779 REV. 7

Analysis Considerations	
TIA-222 Revision	H
Grout Considered:	No
l_{ar} (in)	1.125

Applied Loads	
Moment (kip-ft)	142.44
Axial Force (kips)	9.40
Shear Force (kips)	3.79

**TIA-222-H Section 15.5 Applied*



Connection Properties

Anchor Rod Data

(4) 2-1/4" ø bolts (A615-75 N; Fy=75 ksi, Fu=100 ksi) on 39" BC

Base Plate Data

38" W x 1.75" Plate (A572-50; Fy=50 ksi, Fu=65 ksi); Clip: 6 in

Stiffener Data

N/A

Pole Data

32.93" x 0.21875" 18-sided pole (A572-65; Fy=65 ksi, Fu=80 ksi)

Analysis Results

Anchor Rod Summary *(units of kips, kip-in)*

Pu_c = 46.12	ϕPn_c = 268.39	**Stress Rating**
Vu = 0.95	ϕVn = 120.77	**16.4%**
Mu = n/a	ϕMn = n/a	**Pass**

Base Plate Summary

Max Stress (ksi):	8.78	(Flexural)
Allowable Stress (ksi):	45	
Stress Rating:	**18.6%**	**Pass**

Pier and Pad Foundation

BU # :	822710
Site Name:	BN510/Oregon Clu
App. Number:	657779 REV. 7

TIA-222 Revision:	H
Tower Type:	Monopole

Top & Bot. Pad Rein. Different?:	☐
Block Foundation?:	☐
Rectangular Pad?:	☐

Superstructure Analysis Reactions

Compression, P_{comp}:	9.4	kips
Base Shear, Vu_comp:	3.79	kips
Moment, M_u:	142.43	ft-kips
Tower Height, **H**:	75	ft
BP Dist. Above Fdn, bp_{dist}:	3.375	in

Pier Properties

Pier Shape:	Circular	
Pier Diameter, **dpier**:	5	ft
Ext. Above Grade, **E**:	0.5	ft
Pier Rebar Size, **Sc**:	7	
Pier Rebar Quantity, **mc**:	30	
Pier Tie/Spiral Size, **St**:	5	
Pier Tie/Spiral Quantity, **mt**:	10	
Pier Reinforcement Type:	Tie	
Pier Clear Cover, cc_{pier}:	3	in

Pad Properties

Depth, **D**:	6	ft
Pad Width, W_1:	14	ft
Pad Thickness, **T**:	2	ft
Pad Rebar Size (Bottom dir. 2), Sp_2:	7	
Pad Rebar Quantity (Bottom dir. 2), mp_2:	14	
Pad Clear Cover, cc_{pad}:	3	

Material Properties

Pier Rebar Grade, **Fy**:	60	ksi
Concrete Compressive Strength, **F'c**:	3	ksi
Dry Concrete Density, δ**c**:	150	pcf

Soil Properties

Total Soil Unit Weight, γ:	115	pcf
Ultimate Net Bearing, Qnet:	15.000	ksf
Cohesion, **Cu**:	0.000	ksf
Friction Angle, φ:	40	degrees
SPT Blow Count, N_{blows}:	29	
Base Friction, μ:	0.4	
Neglected Depth, **N**:	5.00	ft
Foundation Bearing on Rock?	No	
Groundwater Depth, **gw**:	5	ft

<--Toggle between Gross and Net

Foundation Analysis Checks

	Capacity	Demand	Rating*	Check
Lateral (Sliding) (kips)	69.21	3.79	**5.2%**	**Pass**
Bearing Pressure (ksf)	11.72	1.17	**9.5%**	**Pass**
*Overturning (kip*ft)*	1136.06	168.13	**14.8%**	**Pass**
*Pier Flexure (Comp.) (kip*ft)*	1971.43	159.49	**7.7%**	**Pass**
Pier Compression (kip)	9372.94	25.30	**0.3%**	**Pass**
*Pad Flexure (kip*ft)*	721.95	51.41	**6.8%**	**Pass**
Pad Shear - 1-way (kips)	271.74	14.67	**5.1%**	**Pass**
Pad Shear - 2-way (Comp) (ksi)	0.164	0.009	**5.4%**	**Pass**
*Flexural 2-way (Comp) (kip*ft)*	1099.49	95.69	**8.3%**	**Pass**
Pad Shear - 2-way (Uplift) (ksi)	0.164	0.000	**0.0%**	**Pass**

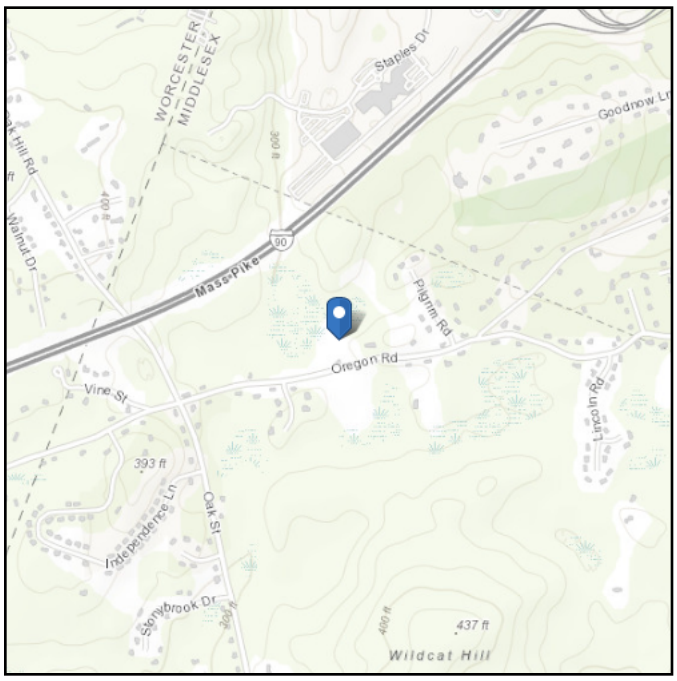
**Rating per TIA-222-H Section 15.5*

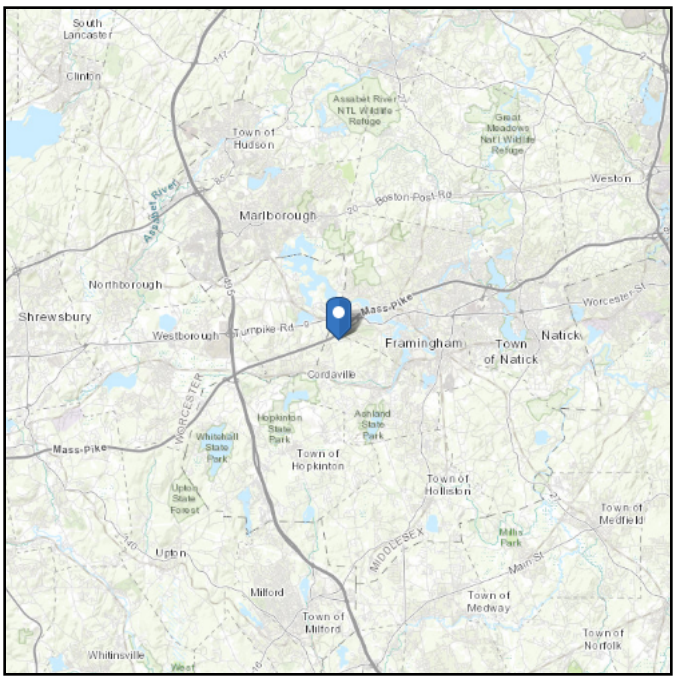
Structural Rating*:	**8.3%**
Soil Rating*:	**14.8%**

ASCE Hazards Report

Address:
No Address at This Location

Standard:	ASCE/SEI 7-16	**Latitude:**	42.284792
Risk Category:	II	**Longitude:**	-71.490708
Soil Class:	D - Default (see Section 11.4.3)	**Elevation:**	308.0856992517867 ft (NAVD 88)





Wind

Results:

Wind Speed	119 Vmph
10-year MRI	75 Vmph
25-year MRI	84 Vmph
50-year MRI	91 Vmph
100-year MRI	98 Vmph

Data Source: ASCE/SEI 7-16, Fig. 26.5-1B and Figs. CC.2-1–CC.2-4, and Section 26.5.2

Date Accessed: Thu Jan 30 2025

Value provided is 3-second gust wind speeds at 33 ft above ground for Exposure C Category, based on linear interpolation between contours. Wind speeds are interpolated in accordance with the 7-16 Standard. Wind speeds correspond to approximately a 7% probability of exceedance in 50 years (annual exceedance probability = 0.00143, MRI = 700 years).

Site is in a hurricane-prone region as defined in ASCE/SEI 7-16 Section 26.2. Glazed openings need not be protected against wind-borne debris.

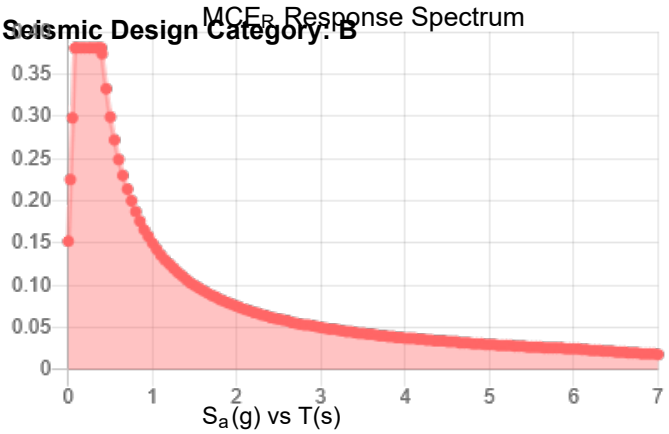
Seismic

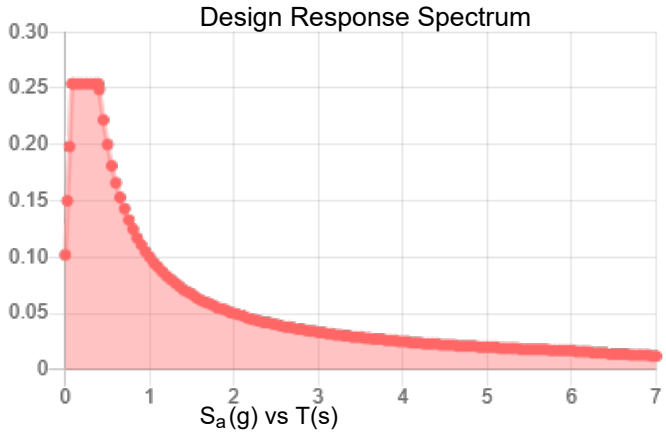
Site Soil Class: D - Default (see Section 11.4.3)

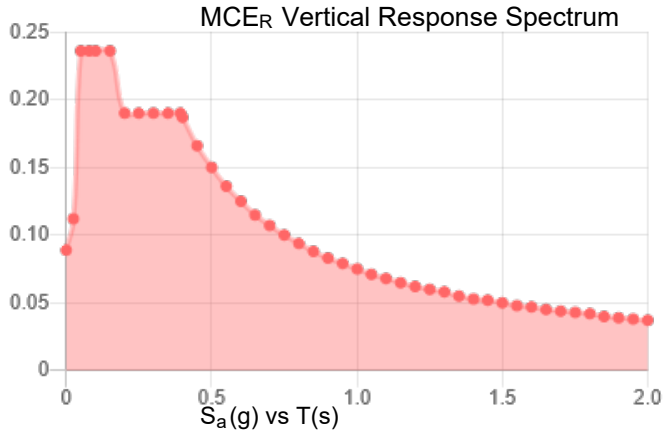
Results:

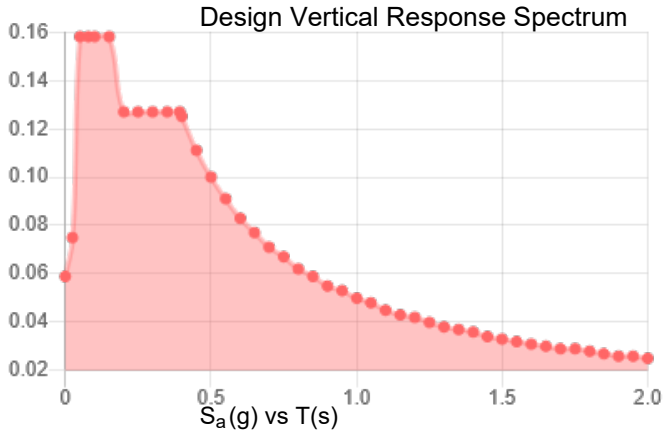
S_S :	0.238	S_{D1} :	0.1
S_1 :	0.062	T_L :	6
F_a :	1.6	PGA :	0.137
F_v :	2.4	PGA_M :	0.209
S_{MS} :	0.381	F_{PGA} :	1.526
S_{M1} :	0.15	I_e :	1
S_{DS} :	0.254	C_v :	0.776

Seismic Design Category: B









Data Accessed: Thu Jan 30 2025

Date Source:

USGS Seismic Design Maps based on ASCE/SEI 7-16 and ASCE/SEI 7-16 Table 1.5-2. Additional data for site-specific ground motion procedures in accordance with ASCE/SEI 7-16 Ch. 21 are available from USGS.

Ice

Results:

Ice Thickness:	1.00 in.
Concurrent Temperature:	15 F
Gust Speed	50 mph
Data Source:	Standard ASCE/SEI 7-16, Figs. 10-2 through 10-8
Date Accessed:	Thu Jan 30 2025

Ice thicknesses on structures in exposed locations at elevations higher than the surrounding terrain and in valleys and gorges may exceed the mapped values.

Values provided are equivalent radial ice thicknesses due to freezing rain with concurrent 3-second gust speeds, for a 500-year mean recurrence interval, and temperatures concurrent with ice thicknesses due to freezing rain. Thicknesses for ice accretions caused by other sources shall be obtained from local meteorological studies. Ice thicknesses in exposed locations at elevations higher than the surrounding terrain and in valleys and gorges may exceed the mapped values.

THE COMPOUND AUDIT WAS COMPLETED ON 02/07/2024, THE CONSTRUCTION DRAWING REFLECT CONDITIONS AT TIME OF AUDIT.

T-Mobile

T-MOBILE SITE NUMBER: 4BN0510A
T-MOBILE SITE NAME: BN510/OREGON CLUB
T-MOBILE PROJECT: ANCHOR
T-MOBILE TEMPLATE: RAN-TEMPLATE-67G5C998G6160

BUSINESS UNIT #: 822710
SITE ADDRESS: 117 OREGON RD
ASHLAND, MA 01721
COUNTY: MIDDLESEX
SITE TYPE: CONCEALMENT FLAGPOLE
TOWER HEIGHT: 75'-0"

SITE INFORMATION

CROWN CASTLE USA INC.	
SITE NAME:	BN510/OREGON CLUB
BU NUMBER:	822710
TOWER OWNER:	CROWN CASTLE 2000 CORPORATE DRIVE CANONSBURG, PA 15317
CARRIER/APPLICANT:	T-MOBILE 15 COMMERCE WAY NORTON, MA 02766
SITE ADDRESS:	117 OREGON RD ASHLAND, MA 01721
COUNTY:	MIDDLESEX
LATITUDE:	42° 17' 05.30" / 42.284798°
LONGITUDE:	-71° 29' 26.60" / -71.490710°
LAT/LONG TYPE:	NAD83
GROUND ELEVATION:	308"+/- AMSL
AREA OF CONSTRUCTION:	EXISTING
CURRENT ZONING:	RESIDENTIAL A (RA)
MAP/PARCEL #:	014/001.0-0038-0000.0
OCCUPANCY CLASSIFICATION:	U
TYPE OF CONSTRUCTION:	IIB
A.D.A. COMPLIANCE:	FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION
PROPERTY OWNER:	BRIASCO JOHN J TR JOHN BRIASCO RLTY TR 105 OREGON RD ASHLAND, MA 01721
JURISDICTION:	TOWN OF ASHLAND 101 MAIN STREET, 2ND FLOOR ASHLAND, MA 01721
ELECTRIC PROVIDER:	NSTAR (800) 572-9337
TELCO PROVIDER:	COMCAST (800) 934-6489

PROJECT TEAM

A&E FIRM:	B+T GROUP 1717 S. BOULDER AVE. TULSA, OK 74119 BRAYDEN SHIELDS BRAYDEN.SHIELDS@BTGRP.COM
CROWN CASTLE USA INC. DISTRICT CONTACTS:	12 GILL STREET, SUITE 5800 WOBURN, MA 01801 TRICIA PELON - PROJECT MANAGER TRICIA.PELON@CROWNCASTLE.COM ISRAEL CAREY - CONSTRUCTION MANAGER ISRAEL.CAREY@CROWNCASTLE.COM DANIEL ANDERSON - AES DANIEL.ANDERSON@CROWNCASTLE.COM

PRIOR TO ACCESSING/ENTERING THE SITE YOU MUST CONTACT THE CROWN NOC AT (800) 788-7011 & CROWN CONSTRUCTION MANAGER.

T-MOBILE_NATIONAL_ANCHOR

DRAWING INDEX

SHEET #	SHEET DESCRIPTION
T-1	TITLE SHEET
T-2	GENERAL NOTES
C-1.1	COMPOUND PLAN
C-1.2	EXISTING EQUIPMENT PLAN
C-1.3	FINAL EQUIPMENT PLAN
C-2	TOWER ELEVATIONS
C-3	ANTENNA PLANS
C-4	FINAL EQUIPMENT SCHEDULE
C-5	TOWER EQUIPMENT DETAILS & SPECIFICATIONS
C-5.1	TOWER EQUIPMENT DETAILS & SPECIFICATIONS
C-6.1	ENCLOSURE CLEARANCES
C-6.2	SITE SUPPORT CABINET SPECIFICATIONS
C-6.3	BATTERY CABINET SPECIFICATIONS
C-6.4	GROUND EQUIPMENT DETAILS
E-1	PANEL SCHEDULES & ONE-LINE DIAGRAM
E-2	ELECTRICAL DETAILS
G-1	TYPICAL GROUNDING SCHEMATIC
G-2	GROUNDING DETAILS
G-3	GROUNDING DETAILS
ATTACHED	RFDS
ATTACHED	MOUNT SPECIFICATION

ALL DRAWINGS CONTAINED HEREIN ARE FORMATTED FOR FULL SIZE. CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE ENGINEER IN WRITING OF ANY DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.

CALL MASSACHUSETTS ONE CALL
(888) 344-7233
CALL 3 WORKING DAYS BEFORE YOU DIG!

PROJECT DESCRIPTION

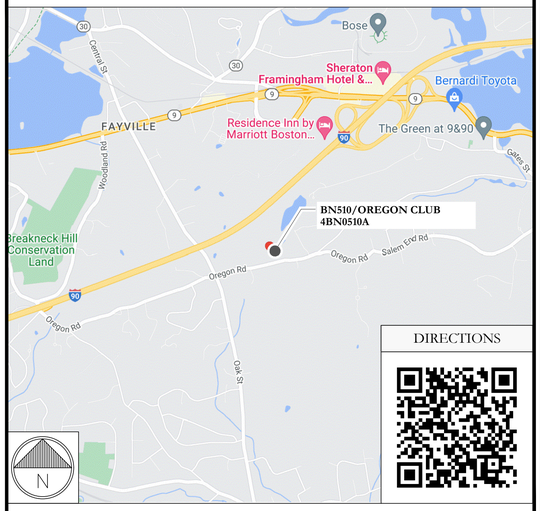
THE PURPOSE OF THIS PROJECT IS TO ENHANCE BROADBAND CONNECTIVITY AND CAPACITY TO THE EXISTING ELIGIBLE WIRELESS FACILITY.

TOWER SCOPE OF WORK:
- REMOVE (6) RFS - APX16DWV-16DWV-S-E-A20 ANTENNAS
- REMOVE (6) ERICSSON - KRY 112 89/1 TMAs
- REMOVE (6) ERICSSON - KRY 112 114/1 TMAs
- REUSE (12) COAX CABLES
- INSTALL (2) COMMSCOPE - MTC3713 COLLAR MOUNTS
- INSTALL (3) COMMSCOPE - VV-65B-R1 ANTENNAS 71'-0" LEVEL
- INSTALL (3) COMMSCOPE - ATSBT-TOP-MF-4G BIAS Ts AT 71'-0" LEVEL
- INSTALL (3) COMMSCOPE - FVV-65B-R3 ANTENNAS 61'-0" LEVEL
- INSTALL (3) COMMSCOPE - ATSBT-TOP-MF-4G BIAS Ts AT 61'-0" LEVEL
- INSTALL (6) ANDREW - LDF5-50A CABLES

GROUND SCOPE OF WORK:
- REMOVE (1) RBS 3106 CABINET
- REMOVE (1) RBS 6102 CABINET
- REMOVE (1) RBS 2106 CABINET
- REMOVE (1) BB 5216, (1) DUG20, (2) DUW30, (6) RUS01 B2 RADIOS AND (6) RUS01 B4 RADIOS
- INSTALL (1) ERICSSON - 6160 AC V2 CABINET
- INSTALL (1) ERICSSON - B160 BATTERY CABINET
- INSTALL (1) PURCELL (AAV) CABINET
- INSTALL (1) H-FRAME W/ (1) SLACK BOX
- INSTALL (2) RP 6651 AND (1) CSR IXRE V2 (GEN2)
- INSTALL (3) ERICSSON - 4460 B25+B66 RADIOS
- INSTALL (3) ERICSSON - 4480 B71+B85 RADIOS
- INSTALL (2) ERICSSON - 8863 B41 RADIOS
- INSTALL (3) MICRODATA - QUAD (8:4) B66/B25 + B41 DIPLEXER - MI-54844 DIPLEXERS
- INSTALL 6'-0" LONG UNISTRUT KIT
- INSTALL LED FLOOD LIGHT W/ TIMER
- INSTALL (2) 6/24 4AWG HYBRID TRUNKS (FROM RADIO TO CABINET)

EXISTING T-MOBILE ELECTRIC SERVICE:
METER AND DISCONNECT: 200A 120/240V~3PH
PPC: NORTHERN TECHNOLOGIES 200A 120/240V~3PH, FAULT CURRENT RATING 10kA, 200A GENERATOR PLUG, 200A MAXIMUM BRANCH CIRCUIT SIZE & 24 AC BREAKER POSITIONS.

LOCATION MAP



NO SCALE

APPLICABLE CODES & REFERENCE DOCUMENTS

ALL WORK SHALL BE PERFORMED AND MATERIALS INSTALLED IN ACCORDANCE WITH THE CURRENT EDITIONS OF THE FOLLOWING CODES AS ADOPTED BY THE LOCAL GOVERNING AUTHORITIES. NOTHING IN THESE PLANS IS TO BE CONSTRUED TO PERMIT WORK NOT CONFORMING TO THESE CODES:

CODE TYPE	CODE
BUILDING	2021 IBC / 10TH ED MA BUILDING CODE (780 CMR)
MECHANICAL	2021 IMC / 10TH ED MA BUILDING CODE (780 CMR)
ELECTRICAL	2023 NEC /MA ELECTRICAL CODE (527 CMR 12.00)

REFERENCE DOCUMENTS:

STRUCTURAL ANALYSIS:	CROWN CASTLE
DATED:	7/31/25
RFDS REVISION:	10
DATED:	03/04/25
ORDER ID:	657779
REVISION:	6

INSTALLER NOTE:

TOWER DOES NOT HAVE CLIMBING FACILITIES – MANLIFT REQUIRED FOR ELEVATED WORK.

T-Mobile

CROWN CASTLE

B+T GRP
1717 S. BOULDER
SUITE 300
TULSA, OK 74119
PH: (918) 587-4630
www.btgrp.com

T-MOBILE SITE NUMBER:
4BN0510A

BU #: **822710**
CROWN CASTLE SITE NAME:
BN510/OREGON CLUB

117 OREGON RD
ASHLAND, MA 01721

EXISTING 75'-0"
CONCEALMENT FLAGPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
1	5/28/25	YX	CONSTRUCTION	LR
2	7/11/25	YX	CONSTRUCTION	TDG
3	7/29/25	YX	CORRECTION	TDG
4	8/7/25	YX	CORRECTION	TDG
5	8/12/25	YX	CORRECTION	LR

COMMONWEALTH OF MASSACHUSETTS
PETER D. SMITH
No. 56245
REGISTERED PROFESSIONAL ENGINEER
8/12/25

B&T ENGINEERING, INC.

SHEET NUMBER: T-1
REVISION: 5

CROWN CASTLE USA INC. SITE ACTIVITY REQUIREMENTS:

1. NOTICE TO PROCEED– NO WORK SHALL COMMENCE PRIOR TO CROWN CASTLE USA INC. WRITTEN NOTICE TO PROCEED (NTP) AND THE ISSUANCE OF A PURCHASE ORDER. PRIOR TO ACCESSING/ENTERING THE SITE YOU MUST CONTACT THE CROWN CASTLE USA INC. NOC AT 800–788–7011 & THE CROWN CASTLE USA INC. CONSTRUCTION MANAGER.
2. "LOOK UP" – CROWN CASTLE USA INC. SAFETY CLIMB REQUIREMENT:
   THE INTEGRITY OF THE SAFETY CLIMB AND ALL COMPONENTS OF THE CLIMBING FACILITY SHALL BE CONSIDERED DURING ALL STAGES OF DESIGN, INSTALLATION, AND INSPECTION. TOWER MODIFICATION, MOUNT REINFORCEMENTS, AND/OR EQUIPMENT INSTALLATIONS SHALL NOT COMPROMISE THE INTEGRITY OR FUNCTIONAL USE OF THE SAFETY CLIMB OR ANY COMPONENTS OF THE CLIMBING FACILITY ON THE STRUCTURE. THIS SHALL INCLUDE, BUT NOT BE LIMITED TO: PINCHING OF THE WIRE ROPE, BENDING OF THE WIRE ROPE FROM ITS SUPPORTS, DIRECT CONTACT OR CLOSE PROXIMITY TO THE WIRE ROPE WHICH MAY CAUSE FRICTIONAL WEAR, IMPACT TO THE ANCHORAGE POINTS IN ANY WAY, OR TO IMPEDE/BLOCK ITS INTENDED USE. ANY COMPROMISED SAFETY CLIMB, INCLUDING EXISTING CONDITIONS MUST BE TAGGED OUT AND REPORTED TO YOUR CROWN CASTLE USA INC. POC OR CALL THE NOC TO GENERATE A SAFETY CLIMB MAINTENANCE AND CONTRACTOR NOTICE TICKET.
3. PRIOR TO THE START OF CONSTRUCTION, ALL REQUIRED JURISDICTIONAL PERMITS SHALL BE OBTAINED. THIS INCLUDES, BUT IS NOT LIMITED TO, BUILDING, ELECTRICAL, MECHANICAL, FIRE, FLOOD ZONE, ENVIRONMENTAL, AND ZONING. AFTER ONSITE ACTIVITIES AND CONSTRUCTION ARE COMPLETED, ALL REQUIRED PERMITS SHALL BE SATISFIED AND CLOSED OUT ACCORDING TO LOCAL JURISDICTIONAL REQUIREMENTS.
4. ALL CONSTRUCTION MEANS AND METHODS; INCLUDING BUT NOT LIMITED TO, ERECTION PLANS, RIGGING PLANS, CLIMBING PLANS, AND RESCUE PLANS SHALL BE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR RESPONSIBLE FOR THE EXECUTION OF THE WORK CONTAINED HEREIN, AND SHALL MEET ANSI/ASSE A10.48 (LATEST EDITION); FEDERAL, STATE, AND LOCAL REGULATIONS; AND ANY APPLICABLE INDUSTRY CONSENSUS STANDARDS RELATED TO THE CONSTRUCTION ACTIVITIES BEING PERFORMED. ALL RIGGING PLANS SHALL ADHERE TO ANSI/ASSE A10.48 (LATEST EDITION) AND CROWN CASTLE USA INC. STANDARD CED–STD–10253, INCLUDING THE REQUIRED INVOLVEMENT OF A QUALIFIED ENGINEER FOR CLASS IV CONSTRUCTION, TO CERTIFY THE SUPPORTING STRUCTURE(S) IN ACCORDANCE WITH ANSI/TIA–322 (LATEST EDITION).
5. ALL SITE WORK TO COMPLY WITH QAS–STD–10068 "INSTALLATION STANDARDS FOR CONSTRUCTION ACTIVITIES ON CROWN CASTLE USA INC. TOWER SITE," CED–STD–10294 "STANDARD FOR INSTALLATION OF MOUNTS AND APPURTENANCES," AND LATEST VERSION OF ANSI/TIA–1019–A–2012 "STANDARD FOR INSTALLATION, ALTERATION, AND MAINTENANCE OF ANTENNA SUPPORTING STRUCTURES AND ANTENNAS."
6. IF THE SPECIFIED EQUIPMENT CAN NOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE CONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION FOR APPROVAL BY CROWN CASTLE USA INC. PRIOR TO PROCEEDING WITH ANY SUCH CHANGE OF INSTALLATION.
7. ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS AND ORDINANCES. CONTRACTOR 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.
8. THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.
9. THE CONTRACTOR SHALL CONTACT UTILITY LOCATING SERVICES PRIOR TO THE START OF CONSTRUCTION.
10. ALL EXISTING ACTIVE SEWER, WATER, GAS, ELECTRIC AND OTHER UTILITIES WHERE ENCOUNTERED IN THE WORK, SHALL BE PROTECTED AT ALL TIMES AND WHERE REQUIRED FOR THE PROPER EXECUTION OF THE WORK, SHALL BE RELOCATED AS DIRECTED BY CONTRACTOR. EXTREME CAUTION SHOULD BE USED BY THE CONTRACTOR WHEN EXCAVATING OR DRILLING PIERS AROUND OR NEAR UTILITIES. CONTRACTOR SHALL PROVIDE SAFETY TRAINING FOR THE WORKING CREW. THIS WILL INCLUDE BUT NOT BE LIMITED TO A) FALL PROTECTION B) CONFINED SPACE C) ELECTRICAL SAFETY D) TRENCHING AND EXCAVATION E) CONSTRUCTION SAFETY PROCEDURES.
11. ALL SITE WORK SHALL BE AS INDICATED ON THE STAMPED CONSTRUCTION DRAWINGS AND PROJECT SPECIFICATIONS, LATEST APPROVED REVISION.
12. CONTRACTOR SHALL KEEP THE SITE FREE FROM ACCUMULATING WASTE MATERIAL, DEBRIS, AND TRASH AT THE COMPLETION OF THE WORK. IF NECESSARY, RUBBISH, STUMPS, DEBRIS, STICKS, STONES AND OTHER REFUSE SHALL BE REMOVED FROM THE SITE AND DISPOSED OF LEGALLY.
13. ALL EXISTING INACTIVE SEWER, WATER, GAS, ELECTRIC AND OTHER UTILITIES, WHICH INTERFERE WITH THE EXECUTION OF THE WORK, SHALL BE REMOVED AND/OR CAPPED, PLUGGED OR OTHERWISE DISCONTINUED AT POINTS WHICH WILL NOT INTERFERE WITH THE EXECUTION OF THE WORK, SUBJECT TO THE APPROVAL OF CONTRACTOR, TOWER OWNER, CROWN CASTLE USA INC., AND/OR LOCAL UTILITIES.
14. THE CONTRACTOR SHALL PROVIDE SITE SIGNAGE IN ACCORDANCE WITH THE TECHNICAL SPECIFICATION FOR SITE SIGNAGE REQUIRED BY LOCAL JURISDICTION AND SIGNAGE REQUIRED ON INDIVIDUAL PIECES OF EQUIPMENT, ROOMS, AND SHELTERS.
15. THE SITE SHALL BE GRADED TO CAUSE SURFACE WATER TO FLOW AWAY FROM THE CARRIER'S EQUIPMENT AND TOWER AREAS.
16. THE SUB GRADE SHALL BE COMPACTED AND BROUGHT TO A SMOOTH UNIFORM GRADE PRIOR TO FINISHED SURFACE APPLICATION.
17. THE AREAS OF THE OWNERS PROPERTY DISTURBED BY THE WORK AND NOT COVERED BY THE TOWER, EQUIPMENT OR DRIVEWAY, SHALL BE GRADED TO A UNIFORM SLOPE, AND STABILIZED TO PREVENT EROSION AS SPECIFIED ON THE CONSTRUCTION DRAWINGS AND/OR PROJECT SPECIFICATIONS.
18. CONTRACTOR SHALL MINIMIZE DISTURBANCE TO EXISTING SITE DURING CONSTRUCTION. EROSION CONTROL MEASURES, IF REQUIRED DURING CONSTRUCTION, SHALL BE IN CONFORMANCE WITH THE LOCAL GUIDELINES FOR EROSION AND SEDIMENT CONTROL.
19. THE CONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT CONTRACTOR'S EXPENSE TO THE SATISFACTION OF OWNER.
20. CONTRACTOR 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.
21. CONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION. TRASH AND DEBRIS SHOULD BE REMOVED FROM SITE ON A DAILY BASIS.
22. NO FILL OR EMBANKMENT MATERIAL SHALL BE PLACED ON FROZEN GROUND. FROZEN MATERIALS, SNOW OR ICE SHALL NOT BE PLACED IN ANY FILL OR EMBANKMENT.

GENERAL NOTES:

1. FOR THE PURPOSE OF CONSTRUCTION DRAWING, THE FOLLOWING DEFINITIONS SHALL APPLY:
   CONTRACTOR: GENERAL CONTRACTOR RESPONSIBLE FOR CONSTRUCTION
   CARRIER: T–MOBILE
   TOWER OWNER: CROWN CASTLE USA INC.
2. THESE DRAWINGS HAVE BEEN PREPARED USING STANDARDS OF PROFESSIONAL CARE AND COMPLETENESS NORMALLY EXERCISED UNDER SIMILAR CIRCUMSTANCES BY REPUTABLE ENGINEERS IN THIS OR SIMILAR LOCALITIES. IT IS ASSUMED THAT THE WORK DEPICTED WILL BE PERFORMED BY AN EXPERIENCED CONTRACTOR AND/OR WORKPEOPLE WHO HAVE A WORKING KNOWLEDGE OF THE APPLICABLE CODE STANDARDS AND REQUIREMENTS AND OF INDUSTRY ACCEPTED STANDARD GOOD PRACTICE. AS NOT EVERY CONDITION OR ELEMENT IS (OR CAN BE) EXPLICITLY SHOWN ON THESE DRAWINGS, THE CONTRACTOR SHALL USE INDUSTRY ACCEPTED STANDARD GOOD PRACTICE FOR MISCELLANEOUS WORK NOT EXPLICITLY SHOWN.
3. THESE DRAWINGS REPRESENT THE FINISHED STRUCTURE. THEY DO NOT INDICATE THE MEANS OR METHODS OF CONSTRUCTION. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR THE CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES, AND PROCEDURES. THE CONTRACTOR SHALL PROVIDE ALL MEASURES NECESSARY FOR PROTECTION OF LIFE AND PROPERTY DURING CONSTRUCTION. SUCH MEASURES SHALL INCLUDE, BUT NOT BE LIMITED TO, BRACING, FORMWORK, SHORING, ETC. SITE VISITS BY THE ENGINEER OR HIS REPRESENTATIVE WILL NOT INCLUDE INSPECTION OF THESE ITEMS AND IS FOR STRUCTURAL OBSERVATION OF THE FINISHED STRUCTURE ONLY.
4. NOTES AND DETAILS IN THE CONSTRUCTION DRAWINGS SHALL TAKE PRECEDENCE OVER GENERAL NOTES AND TYPICAL DETAILS. WHERE NO DETAILS ARE SHOWN, CONSTRUCTION SHALL CONFORM TO SIMILAR WORK ON THE PROJECT, AND/OR AS PROVIDED FOR IN THE CONTRACT DOCUMENTS. WHERE DISCREPANCIES OCCUR BETWEEN PLANS, DETAILS, GENERAL NOTES, AND SPECIFICATIONS, THE GREATER, MORE STRICT REQUIREMENTS, SHALL GOVERN. IF FURTHER CLARIFICATION IS REQUIRED CONTACT THE ENGINEER OF RECORD.
5. SUBSTANTIAL EFFORT HAS BEEN MADE TO PROVIDE ACCURATE DIMENSIONS AND MEASUREMENTS ON THE DRAWINGS TO ASSIST IN THE FABRICATION AND/OR PLACEMENT OF CONSTRUCTION ELEMENTS BUT IT IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO FIELD VERIFY THE DIMENSIONS, MEASUREMENTS, AND/OR CLEARANCES SHOWN IN THE CONSTRUCTION DRAWINGS PRIOR TO FABRICATION OR CUTTING OF ANY NEW OR EXISTING CONSTRUCTION ELEMENTS. IF IT IS DETERMINED THAT THERE ARE DISCREPANCIES AND/OR CONFLICTS WITH THE CONSTRUCTION DRAWINGS THE ENGINEER OF RECORD IS TO BE NOTIFIED AS SOON AS POSSIBLE.
6. PRIOR TO THE SUBMISSION OF BIDS, THE BIDDING CONTRACTOR 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 CROWN CASTLE.
7. ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS AND ORDINANCES. CONTRACTOR 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.
8. UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.
9. THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.
10. IF THE SPECIFIED EQUIPMENT CAN NOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE CONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION FOR APPROVAL BY THE CARRIER AND CROWN CASTLE PRIOR TO PROCEEDING WITH ANY SUCH CHANGE OF INSTALLATION.
11. CONTRACTOR IS TO PERFORM A SITE INVESTIGATION AND IS TO DETERMINE THE BEST ROUTING OF ALL CONDUITS FOR POWER, AND TELCO AND FOR GROUNDING CABLES AS SHOWN IN THE POWER, TELCO, AND GROUNDING PLAN DRAWINGS.
12. THE CONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT CONTRACTOR'S EXPENSE TO THE SATISFACTION OF CROWN CASTLE USA INC.
13. CONTRACTOR 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.
14. CONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION. TRASH AND DEBRIS SHOULD BE REMOVED FROM SITE ON A DAILY BASIS.

CONCRETE, FOUNDATIONS, AND REINFORCING STEEL:

1. ALL CONCRETE WORK SHALL BE IN ACCORDANCE WITH THE ACI 301, ACI 318, ACI 336, ASTM A184, ASTM A185 AND THE DESIGN AND CONSTRUCTION SPECIFICATION FOR CAST–IN–PLACE CONCRETE.
2. UNLESS NOTED OTHERWISE, SOIL BEARING PRESSURE USED FOR DESIGN OF SLABS AND FOUNDATIONS IS ASSUMED TO BE 1000 psf.
3. ALL CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH (f'c) OF 3000 psi AT 28 DAYS, UNLESS NOTED OTHERWISE. NO MORE THAN 90 MINUTES SHALL ELAPSE FROM BATCH TIME TO TIME OF PLACEMENT UNLESS APPROVED BY THE ENGINEER OF RECORD. TEMPERATURE OF CONCRETE SHALL NOT EXCEED 90°f AT TIME OF PLACEMENT.
4. CONCRETE EXPOSED TO FREEZE–THAW CYCLES SHALL CONTAIN AIR ENTRAINING ADMIXTURES. AMOUNT OF AIR ENTRAINMENT TO BE BASED ON SIZE OF AGGREGATE AND F3 CLASS EXPOSURE (VERY SEVERE). CEMENT USED TO BE TYPE II PORTLAND CEMENT WITH A MAXIMUM WATER–TO–CEMENT RATIO (W/C) OF 0.45.
5. ALL STEEL REINFORCING SHALL CONFORM TO ASTM A615. ALL WELDED WIRE FABRIC (WWF) SHALL CONFORM TO ASTM A185. ALL SPLICES SHALL BE CLASS "B" TENSION SPLICES, UNLESS NOTED OTHERWISE. ALL HOOKS SHALL BE STANDARD 90 DEGREE HOOKS, UNLESS NOTED OTHERWISE. YIELD STRENGTH (Fy) OF STANDARD DEFORMED BARS ARE AS FOLLOWS:
   #4 BARS AND SMALLER..........40 ksi
   #5 BARS AND LARGER..........60 ksi
6. THE FOLLOWING MINIMUM CONCRETE COVER SHALL BE PROVIDED FOR REINFORCING STEEL UNLESS SHOWN OTHERWISE ON DRAWINGS:
   CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH..........3"
   CONCRETE EXPOSED TO EARTH OR WEATHER:
   #6 BARS AND LARGER..........2"
   #5 BARS AND SMALLER..........1–1/2"
   CONCRETE NOT EXPOSED TO EARTH OR WEATHER:
   SLAB AND WALLS..........3/4"
   BEAMS AND COLUMNS..........1–1/2"
7. A TOOLED EDGE OR A 3/4" CHAMFER SHALL BE PROVIDED AT ALL EXPOSED EDGES OF CONCRETE, UNLESS NOTED OTHERWISE, IN ACCORDANCE WITH ACI 301 SECTION 4.2.4.

GREENFIELD GROUNDING NOTES:

1. 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.
2. THE CONTRACTOR SHALL PERFORM IEEE FALL–OF–POTENTAL RESISTANCE TO EARTH TESTING (PER IEEE 1100 AND 81) FOR GROUND ELECTRODE SYSTEMS, THE CONTRACTOR SHALL FURNISH AND INSTALL SUPPLEMENTAL GROUND ELECTRODES AS NEEDED TO ACHIEVE A TEST RESULT OF 5 OHMS OR LESS.
3. THE CONTRACTOR IS RESPONSIBLE FOR PROPERLY SEQUENCING GROUNDING AND UNDERGROUND CONDUIT INSTALLATION AS TO PREVENT ANY LOSS OF CONTINUITY IN THE GROUNDING SYSTEM OR DAMAGE TO THE CONDUIT AND PROVIDE TESTING RESULTS.
4. METAL CONDUIT AND TRAY SHALL BE GROUNDED AND MADE ELECTRICALLY CONTINUOUS WITH LISTED BONDING FITTINGS OR BY BONDING ACROSS THE DISCONTINUITY WITH #6 COPPER WIRE UL APPROVED GROUNDING TYPE CONDUIT CLAMPS.
5. 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.
6. EACH CABINET FRAME SHALL BE DIRECTLY CONNECTED TO THE MASTER GROUND BAR WITH GREEN INSULATED SUPPLEMENTAL EQUIPMENT GROUND WIRES, #6 STRANDED COPPER OR LARGER FOR INDOOR BTS; #2 BARE SOLID TINNED COPPER FOR OUTDOOR BTS.
7. CONNECTIONS TO THE GROUND BUS SHALL NOT BE DOUBLED UP OR STACKED BACK TO BACK CONNECTIONS ON OPPOSITE SIDE OF THE GROUND BUS ARE PERMITTED.
8. ALL EXTERIOR GROUND CONDUCTORS BETWEEN EQUIPMENT/GROUND BARS AND THE GROUND RING SHALL BE #2 SOLID TINNED COPPER UNLESS OTHERWISE INDICATED.
9. ALUMINUM CONDUCTOR OR COPPER CLAD STEEL CONDUCTOR SHALL NOT BE USED FOR GROUNDING CONNECTIONS.
10. USE OF 90° BENDS IN THE PROTECTION GROUNDING CONDUCTORS SHALL BE AVOIDED WHEN 45° BENDS CAN BE ADEQUATELY SUPPORTED.
11. EXOTHERMIC WELDS SHALL BE USED FOR ALL GROUNDING CONNECTIONS BELOW GRADE.
12. ALL GROUND CONNECTIONS ABOVE GRADE (INTERIOR AND EXTERIOR) SHALL BE FORMED USING HIGH PRESS CRIMPS.
13. COMPRESSION GROUND CONNECTIONS MAY BE REPLACED BY EXOTHERMIC WELD CONNECTIONS.
14. ICE BRIDGE BONDING CONDUCTORS SHALL BE EXOTHERMICALLY BONDED OR BOLTED TO THE BRIDGE AND THE TOWER GROUND BAR.
15. APPROVED ANTIOXIDANT COATINGS (i.e. CONDUCTIVE GEL OR PASTE) SHALL BE USED ON ALL COMPRESSION AND BOLTED GROUND CONNECTIONS.
16. ALL EXTERIOR GROUND CONNECTIONS SHALL BE COATED WITH A CORROSION RESISTANT MATERIAL.
17. MISCELLANEOUS ELECTRICAL AND NON–ELECTRICAL METAL BOXES, FRAMES AND SUPPORTS SHALL BE BONDED TO THE GROUND RING, IN ACCORDANCE WITH THE NEC.
18. BOND ALL METALLIC OBJECTS WITHIN 6 ft OF MAIN GROUND RING WITH (1) #2 BARE SOLID TINNED COPPER GROUND CONDUCTOR.
19. GROUND CONDUCTORS USED FOR THE FACILITY GROUNDING AND LIGHTNING PROTECTION SYSTEMS SHALL NOT BE ROUTED THROUGH METALLIC OBJECTS THAT FORM A RING AROUND THE CONDUCTOR, SUCH AS METALLIC CONDUITS, METAL SUPPORT CLIPS OR SLEEVES THROUGH WALLS OR FLOORS. WHEN IT IS REQUIRED TO BE HOUSED IN CONDUIT TO MEET CODE REQUIREMENTS OR LOCAL CONDITIONS, NON–METALLIC MATERIAL SUCH AS PVC CONDUIT SHALL BE USED. WHERE USE OF METAL CONDUIT IS UNAVOIDABLE (i.e., NONMETALLIC CONDUIT PROHIBITED BY LOCAL CODE) THE GROUND CONDUCTOR SHALL BE BONDED TO EACH END OF THE METAL CONDUIT.
20. ALL GROUNDS THAT TRANSITION FROM BELOW GRADE TO ABOVE GRADE MUST BE #2 BARE SOLID TINNED COPPER IN 3/4" NON–METALLIC, FLEXIBLE CONDUIT FROM 24" BELOW GRADE TO WITHIN 3" TO 6" OF CAD–WELD TERMINATION POINT. THE EXPOSED END OF THE CONDUIT MUST BE SEALED WITH SILICONE CAULK. (ADD TRANSITIONING GROUND STANDARD DETAIL AS WELL).
21. BUILDINGS WHERE THE MAIN GROUNDING CONDUCTORS ARE REQUIRED TO BE ROUTED TO GRADE, THE CONTRACTOR SHALL ROUTE TWO GROUNDING CONDUCTORS FROM THE ROOFTOP, TOWERS, AND WATER TOWERS GROUNDING RING, TO THE EXISTING GROUNDING SYSTEM, THE GROUNDING CONDUCTORS SHALL NOT BE SMALLER THAN 2/0 COPPER. ROOFTOP GROUNDING RING SHALL BE BONDED TO THE EXISTING GROUNDING SYSTEM, THE BUILDING STEEL COLUMNS, LIGHTNING PROTECTION SYSTEM, AND BUILDING MAIN WATER LINE (FERROUS OR NONFERROUS METAL PIPING ONLY).

ELECTRICAL INSTALLATION NOTES:

1. ALL ELECTRICAL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS, NEC AND ALL APPLICABLE FEDERAL, STATE, AND LOCAL CODES/ORDINANCES.
2. CONDUIT ROUTINGS ARE SCHEMATIC. CONTRACTOR SHALL INSTALL CONDUITS SO THAT ACCESS TO EQUIPMENT IS NOT BLOCKED AND TRIP HAZARDS ARE ELIMINATED.
3. WIRING, RACEWAY AND SUPPORT METHODS AND MATERIALS SHALL COMPLY WITH THE REQUIREMENTS OF THE NEC.
4. ALL CIRCUITS SHALL BE SEGREGATED AND MAINTAIN MINIMUM CABLE SEPARATION AS REQUIRED BY THE NEC.
   4.1. ALL EQUIPMENT SHALL BEAR THE UNDERWRITERS LABORATORIES LABEL OF APPROVAL, AND SHALL CONFORM TO REQUIREMENT OF THE NATIONAL ELECTRICAL CODE.
   4.2. ALL OVERCURRENT DEVICES SHALL HAVE AN INTERRUPTING CURRENT RATING THAT SHALL BE GREATER THAN THE SHORT CIRCUIT CURRENT TO WHICH THEY ARE SUBJECTED, 22,000 AIC MINIMUM. VERYIFY AVAILABLE SHORT CIRCUIT CURRENT DOES NOT EXCEED THE RATING OF ELECTRICAL EQUIPMENT IN ACCORDANCE WITH ARTICLE 110.24 NEC OR THE MOST CURRENT ADOPTED CODE PRE THE GOVERNING JURISDICTION.
5. EACH END OF EVERY POWER PHASE CONDUCTOR, GROUNDING CONDUCTOR, AND TELCO CONDUCTOR OR CABLE SHALL BE LABELED WITH COLOR–CODED INSULATION OR ELECTRICAL TAPE (3M BRAND, 1/2" PLASTIC ELECTRICAL TAPE WITH UV PROTECTION, OR EQUAL). THE IDENTIFICATION METHOD SHALL CONFORM WITH NEC AND OSHA.
6. ALL ELECTRICAL COMPONENTS SHALL BE CLEARLY LABELED WITH LAMICOID TAGS SHOWING THEIR RATED VOLTAGE, PHASE CONFIGURATION, WIRE CONFIGURATION, POWER OR AMPACITY RATING AND BRANCH CIRCUIT ID NUMBERS (i.e. PANEL BOARD AND CIRCUIT ID'S).
7. PANEL BOARDS (ID NUMBERS) SHALL BE CLEARLY LABELED WITH PLASTIC LABELS.
8. ALL TIE WRAPS SHALL BE CUT FLUSH WITH APPROVED CUTTING TOOL TO REMOVE SHARP EDGES.
9. ALL POWER AND EQUIPMENT GROUND WIRING IN TUBING OR CONDUIT SHALL BE SINGLE COPPER CONDUCTOR (#14 OR LARGER) WITH TYPE THHW, THWN, THWN–2, XHHW, XHHW–2, THW, THW–2, RHW, OR RHW–2 INSULATION UNLESS OTHERWISE SPECIFIED.
10. SUPPLEMENTAL EQUIPMENT GROUND WIRING LOCATED INDOORS SHALL BE SINGLE COPPER CONDUCTOR (#6 OR LARGER) WITH TYPE THHW, THWN, THWN–2, XHHW, XHHW–2, THW, THW–2, RHW, OR RHW–2 INSULATION UNLESS OTHERWISE SPECIFIED.
11. POWER AND CONTROL WIRING IN FLEXIBLE CORD SHALL BE MULTI–CONDUCTOR, TYPE SOOW CORD (#14 OR LARGER) UNLESS OTHERWISE SPECIFIED.
12. POWER AND CONTROL WIRING FOR USE IN CABLE TRAY SHALL BE MULTI–CONDUCTOR, TYPE TC CABLE (#14 OR LARGER), WITH TYPE THHW, THWN, THWN–2, XHHW, XHHW–2, THW, THW–2, RHW, OR RHW–2 INSULATION UNLESS OTHERWISE SPECIFIED.
13. ALL POWER AND GROUNDING CONNECTIONS SHALL BE CRIMP–STYLE, COMPRESSION WIRE LUGS AND WIRE NUTS BY THOMAS AND BETTS (OR EQUAL). LUGS AND WIRE NUTS SHALL BE RATED FOR OPERATION NOT LESS THAN 75° C (90° C IF AVAILABLE).
14. RACEWAY AND CABLE TRAY SHALL BE LISTED OR LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA, UL, ANSI/IEEE AND NEC.
15. ELECTRICAL METALLIC TUBING (EMT), INTERMEDIATE METAL CONDUIT (IMC), OR RIGID METAL CONDUIT (RMC) SHALL BE USED FOR EXPOSED INDOOR LOCATIONS.
16. ELECTRICAL METALLIC TUBING (EMT) OR METAL–CLAD CABLE (MC) SHALL BE USED FOR CONCEALED INDOOR LOCATIONS.
17. UNDERGROUND CONDUIT SHALL BE SCHEDULE 40 PVC ON STRAIGHTS AND SCHEDULE 80 PVC UNDER ALL TRAFFIC EASEMENTS AND ALL ELBOWS/90s. ABOVE GRADE CONDUIT TO BE SCH 80 PVC OR IMC/RMC CONDUIT. EMT IS ALLOWED AT STUB UP LOCATIONS AND INDOORS ONLY.
18. LIQUID–TIGHT FLEXIBLE METALLIC CONDUIT (LIQUID–TITE FLEX) SHALL BE USED INDOORS AND OUTDOORS, WHERE VIBRATION OCCURS OR FLEXIBILITY IS NEEDED.
19. CONDUIT AND TUBING FITTINGS SHALL BE THREADED OR COMPRESSION–TYPE AND APPROVED FOR THE LOCATION USED. SET SCREW FITTINGS ARE NOT ACCEPTABLE.
20. CABINETS, BOXES AND WIRE WAYS SHALL BE LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA, UL, ANSI/IEEE AND THE NEC.
21. WIREWAYS SHALL BE METAL WITH AN ENAMEL FINISH AND INCLUDE A HINGED COVER, DESIGNED TO SWING OPEN DOWNWARDS (WIREMOLD SPECMATE WIREWAY).
22. SLOTTED WIRING DUCT SHALL BE PVC AND INCLUDE COVER (PANDUIT TYPE E OR EQUAL).
23. CONDUITS SHALL BE FASTENED SECURELY IN PLACE WITH APPROVED NON–PERFORATED STRAPS AND HANGERS. EXPLOSIVE DEVICES (i.e. POWDER–ACTUATED) FOR ATTACHING HANGERS TO STRUCTURE WILL NOT BE PERMITTED. CLOSELY FOLLOW THE LINES OF THE STRUCTURE, MAINTAIN CLOSE PROXIMITY TO THE STRUCTURE AND KEEP CONDUITS IN TIGHT ENVELOPES. CHANGES IN DIRECTION TO ROUTE AROUND OBSTACLES SHALL BE MADE WITH CONDUIT OUTLET BODIES. CONDUIT SHALL BE INSTALLED IN A NEAT AND WORKMANLIKE MANNER. PARALLEL AND PERPENDICULAR TO STRUCTURE WALL AND CEILING LINES. ALL CONDUIT SHALL BE FISHED TO CLEAR OBSTRUCTIONS. ENDS OF CONDUITS SHALL BE TEMPORARILY CAPPED FLUSH TO FINISH GRADE TO PREVENT CONCRETE, PLASTER OR DIRT FROM ENTERING. CONDUITS SHALL BE RIGIDLY CLAMPED TO BOXES BY GALVANIZED MALLEABLE IRON BUSHING ON INSIDE AND GALVANIZED MALLEABLE IRON LOCKNUT ON OUTSIDE AND INSIDE.
24. EQUIPMENT CABINETS, TERMINAL BOXES, JUNCTION BOXES AND PULL BOXES SHALL BE GALVANIZED OR EPOXY–COATED SHEET STEEL. SHALL MEET OR EXCEED UL 50 AND BE RATED NEMA 1 (OR BETTER) FOR INTERIOR LOCATIONS AND NEMA 3R (OR BETTER) FOR EXTERIOR LOCATIONS.
25. METAL RECEPTACLE, SWITCH AND DEVICE BOXES SHALL BE GALVANIZED, EPOXY–COATED OR NON–CORRODING; SHALL MEET OR EXCEED UL 514A AND NEMA OS 1 AND BE RATED NEMA 1 (OR BETTER) FOR INTERIOR LOCATIONS AND WEATHER PROTECTED (WP OR BETTER) FOR EXTERIOR LOCATIONS.
26. NONMETALLIC RECEPTACLE, SWITCH AND DEVICE BOXES SHALL MEET OR EXCEED NEMA OS 2 (NEWEST REVISION) AND BE RATED NEMA 1 (OR BETTER) FOR INTERIOR LOCATIONS AND WEATHER PROTECTED (WP OR BETTER) FOR EXTERIOR LOCATIONS.
27. THE CONTRACTOR SHALL NOTIFY AND OBTAIN NECESSARY AUTHORIZATION FROM THE CARRIER AND/OR CROWN CASTLE USA INC. BEFORE COMMENCING WORK ON THE AC POWER DISTRIBUTION PANELS.
28. THE CONTRACTOR SHALL PROVIDE NECESSARY TAGGING ON THE BREAKERS, CABLES AND DISTRIBUTION PANELS IN ACCORDANCE WITH THE APPLICABLE CODES AND STANDARDS TO SAFEGUARD LIFE AND PROPERTY.
29. INSTALL LAMICOID LABEL ON THE METER CENTER TO SHOW "T–MOBILE".
30. ALL EMPTY/SPARE CONDUITS THAT ARE INSTALLED ARE TO HAVE A METERED MULE TAPE PULL CORD INSTALLED.

CONDUCTOR COLOR CODE

SYSTEM	CONDUCTOR	COLOR
120/240V, 1Ø	A PHASE	BLACK
	B PHASE	RED
	NEUTRAL	WHITE
	GROUND	GREEN
120/208V, 3Ø	A PHASE	BLACK
	B PHASE	RED
	C PHASE	BLUE
	NEUTRAL	WHITE
	GROUND	GREEN
277/480V, 3Ø	A PHASE	BROWN
	B PHASE	ORANGE OR PURPLE
	C PHASE	YELLOW
	NEUTRAL	GREY
	GROUND	GREEN
DC VOLTAGE	POS (+)	RED**
	NEG (–)	BLACK**

* SEE NEC 210.5(C)(1) AND (2)
** POLARITY MARKED AT TERMINATION

APWA UNIFORM COLOR CODE:

WHITE	PROPOSED EXCAVATION
PINK	TEMPORARY SURVEY MARKINGS
RED	ELECTRIC POWER LINES, CABLES, CONDUIT, AND LIGHTING CABLES
YELLOW	GAS, OIL, STEAM, PETROLEUM, OR GASEOUS MATERIALS
ORANGE	COMMUNICATION, ALARM OR SIGNAL LINES, CABLES, OR CONDUIT AND TRAFFIC LOOPS
BLUE	POTABLE WATER
PURPLE	RECLAIMED WATER, IRRIGATION, AND SLURRY LINES
GREEN	SEWERS AND DRAIN LINES

ABBREVIATIONS:

ANT	ANTENNA
(E)	EXISTING
FIF	FACILITY INTERFACE FRAME
GEN	GENERATOR
GPS	GLOBAL POSITIONING SYSTEM
GSM	GLOBAL SYSTEM FOR MOBILE
LTE	LONG TERM EVOLUTION
MGB	MASTER GROUND BAR
MW	MICROWAVE
(N)	NEW
NEC	NATIONAL ELECTRIC CODE
(P)	PROPOSED
PP	POWER PLANT
QTY	QUANTITY
RECT	RECTIFIER
RBS	RADIO BASE STATION
RET	REMOTE ELECTRIC TILT
RFDS	RADIO FREQUENCY DATA SHEET
RRH	REMOTE RADIO HEAD
RRU	REMOTE RADIO UNIT
SIAD	SMART INTEGRATED DEVICE
TMA	TOWER MOUNTED AMPLIFIER
TYP	TYPICAL
UMTS	UNIVERSAL MOBILE TELECOMMUNICATIONS SYSTEM
W.P.	WORK POINT

T-Mobile

CROWN CASTLE

B+T GRP
1717 S. BOULDER
SUITE 300
TULSA, OK 74119
PH: (918) 587-4630
www.btgrp.com

T-MOBILE SITE NUMBER:
4BN0510A

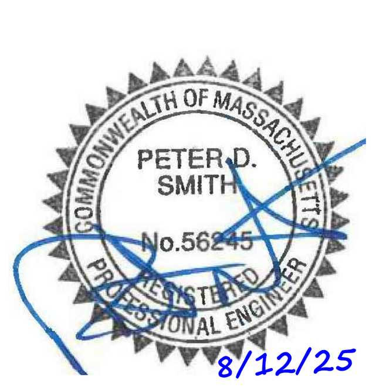
BU #: **822710**
CROWN CASTLE SITE NAME:
BN510/OREGON CLUB

117 OREGON RD
ASHLAND, MA 01721

EXISTING 75'-0"
CONCEALMENT FLAGPOLE

ISSUED FOR:

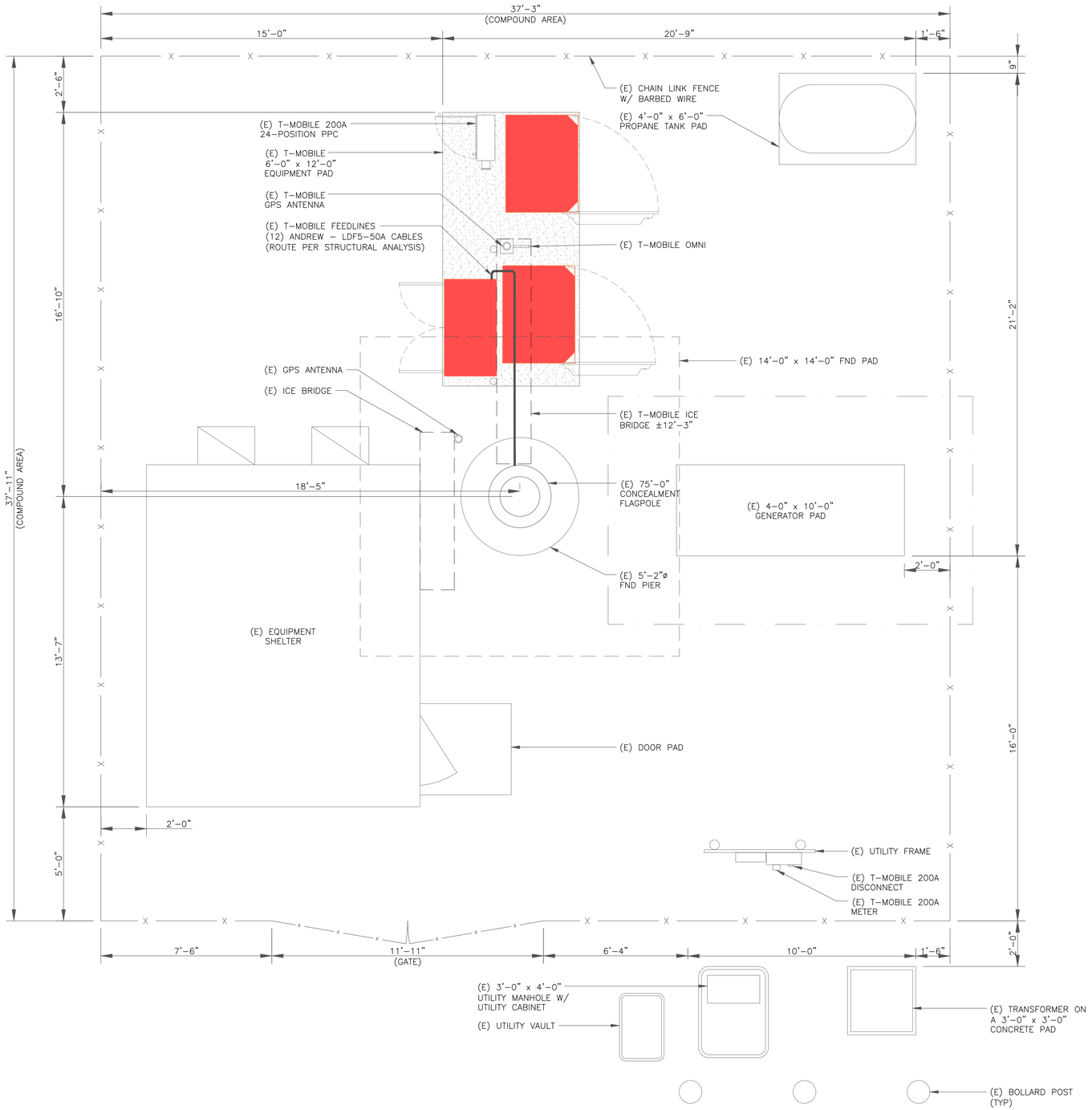
REV	DATE	DRWN	DESCRIPTION	DES./QA
1	5/28/25	YX	CONSTRUCTION	LR
2	7/11/25	YX	CONSTRUCTION	TDG
3	7/29/25	YX	CORRECTION	TDG
4	8/7/25	YX	CORRECTION	TDG
5	8/12/25	YX	CORRECTION	LR



B&T ENGINEERING, INC.

SHEET NUMBER: T-2

REVISION: 5



1 SITE PLAN

SCALE: 2' 1' 0 2' 3/8"=1'-0" (FULL SIZE) 3/16"=1'-0" (11x17)

N

T-MOBILE_NATIONAL_ANCHOR

T-Mobile

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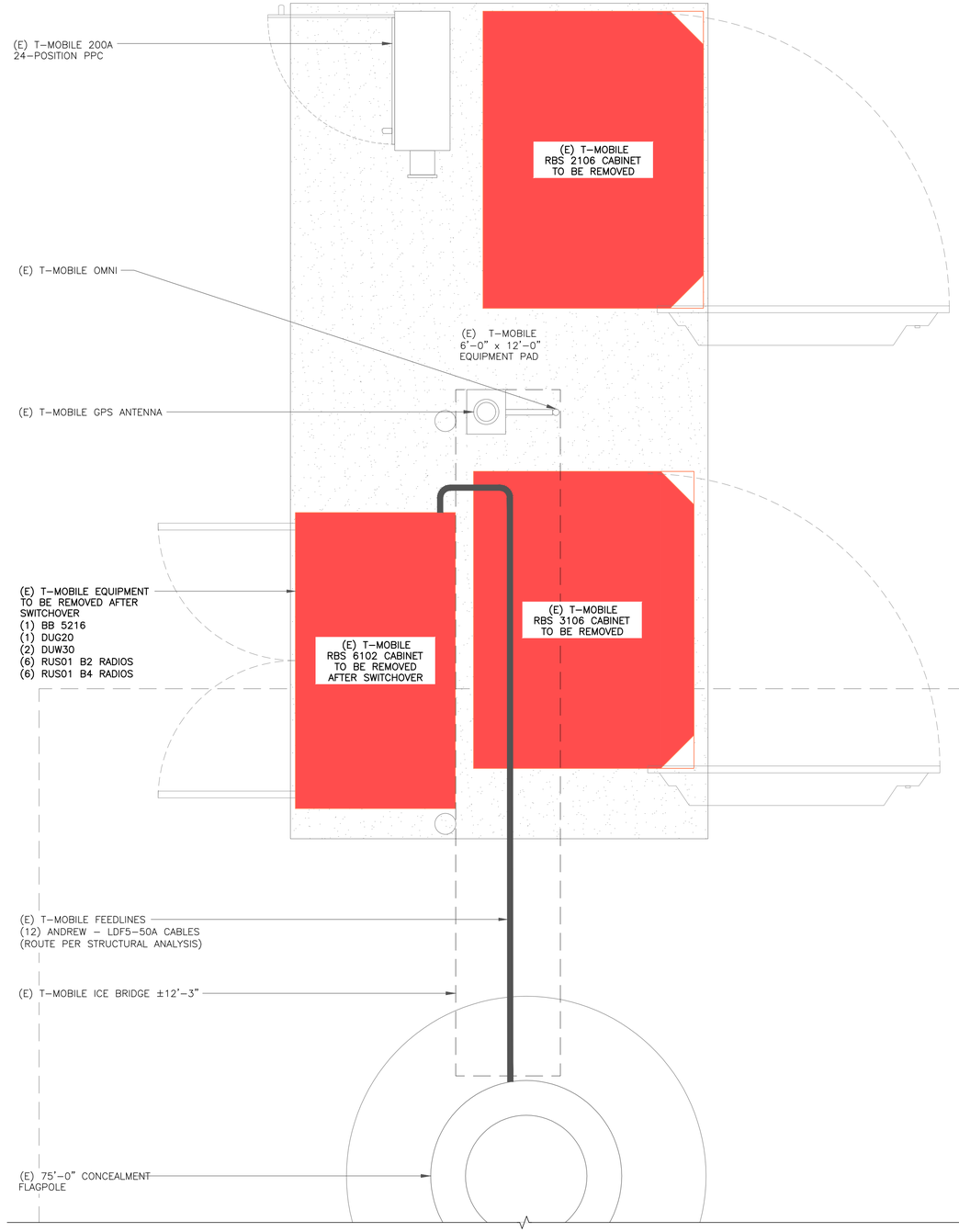
5	8/12/25	YX	CORRECTION	LR

COMMONWEALTH OF MASSACHUSETTS
PETER D. SMITH
No.56249
REGISTERED PROFESSIONAL ENGINEER
8/12/25

B&T ENGINEERING, INC.

SHEET NUMBER: C-1.1

REVISION: 5



1 SITE PLAN

SCALE: 1' 6" 0 1' 1"=1'-0" (FULL SIZE) 1/2"=1'-0" (11x17)

N

T-MOBILE_NATIONAL_ANCHOR

T-Mobile

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TULSA, OK 74119
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T-MOBILE SITE NUMBER:
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CROWN CASTLE SITE NAME:
BN510/OREGON CLUB

117 OREGON RD
ASHLAND, MA 01721

EXISTING 75'-0"
CONCEALMENT FLAGPOLE

ISSUED FOR:

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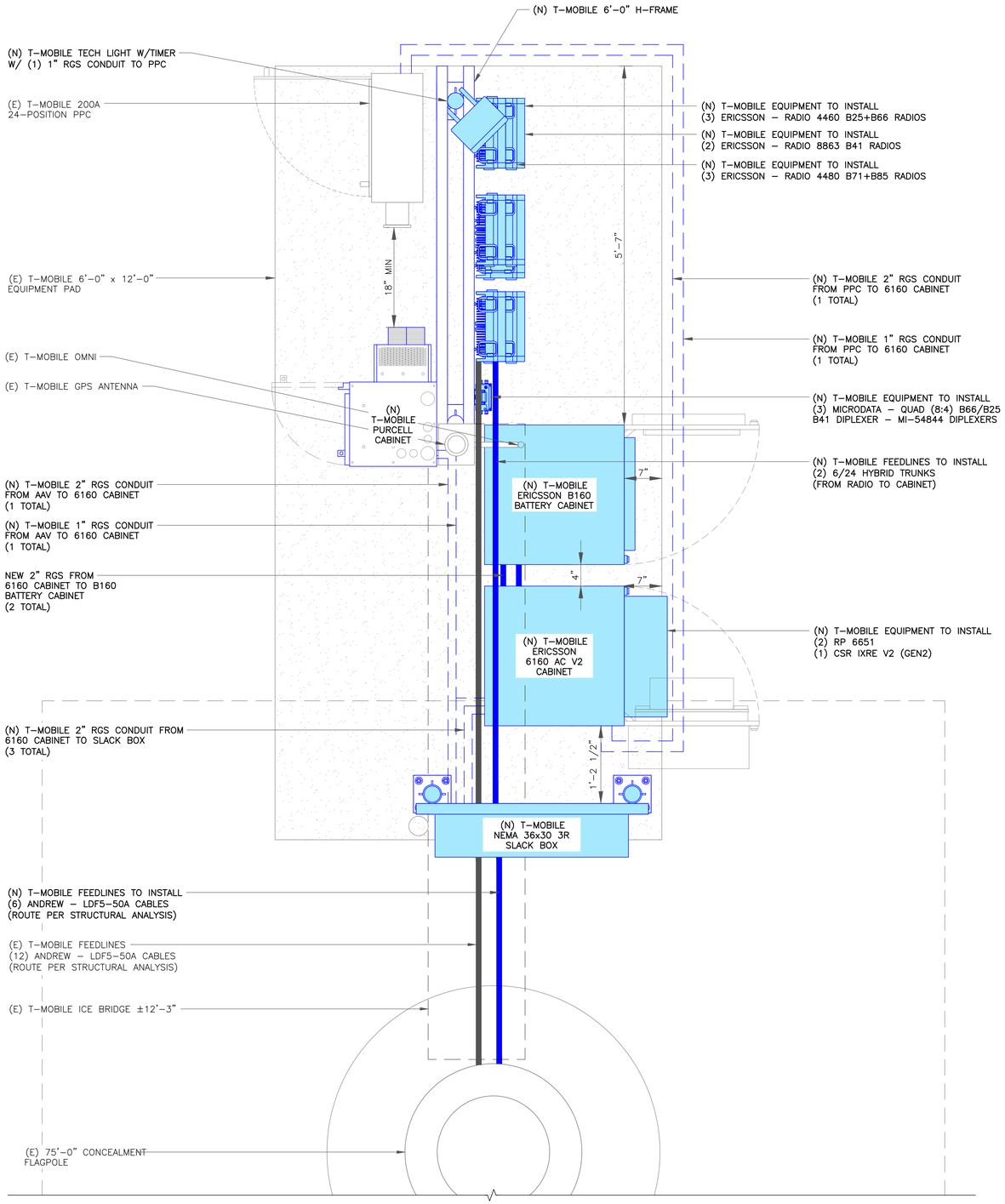
3	7/29/25	YX	CORRECTION	TDG
4	8/7/25	YX	CORRECTION	TDG
5	8/12/25	YX	CORRECTION	LR

COMMONWEALTH OF MASSACHUSETTS
PETER D. SMITH
No. 56245
REGISTERED PROFESSIONAL ENGINEER
8/12/25

B&T ENGINEERING, INC.

SHEET NUMBER: C-1.2

REVISION: 5



1 SITE PLAN

SCALE: 1' 6" 0 1" 1"=1'-0" (FULL SIZE) 1/2"=1'-0" (11x17)

N

CONDUITS TO BE INSTALLED BETWEEN CABINETS:	
PPC TO 6160:	(1) 2" RGS (1) 1" RGS
AAV TO 6160:	(1) 2" RGS (1) 1" RGS
6160 TO SLACK BOX: 6160 TO B160:	(3) 2" RGS (2) 2" RGS

T-Mobile

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EXISTING 75'-0" CONCEALMENT FLAGPOLE

ISSUED FOR:

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3	7/29/25	YX	CORRECTION	TDG
4	8/7/25	YX	CORRECTION	TDG
5	8/12/25	YX	CORRECTION	LR

COMMONWEALTH OF MASSACHUSETTS
PETER D. SMITH
No.56245
REGISTERED PROFESSIONAL ENGINEER
8/12/25

B&T ENGINEERING, INC.

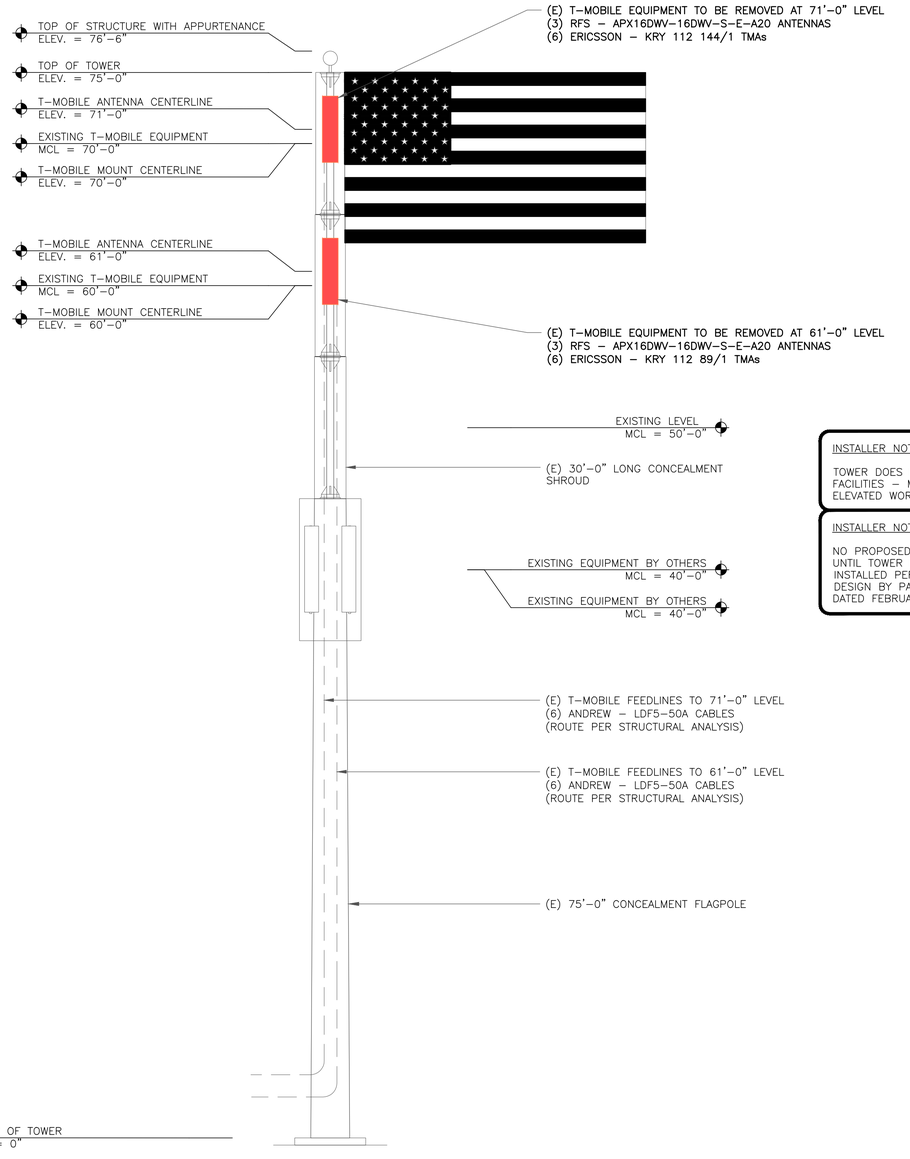
SHEET NUMBER: C-1.3

REVISION: 5

T-MOBILE_NATIONAL_ANCHOR

T-MOBILE EQUIPMENT

ANTENNA CL: 71'-0" & 61'-0"



1 EXISTING TOWER ELEVATION

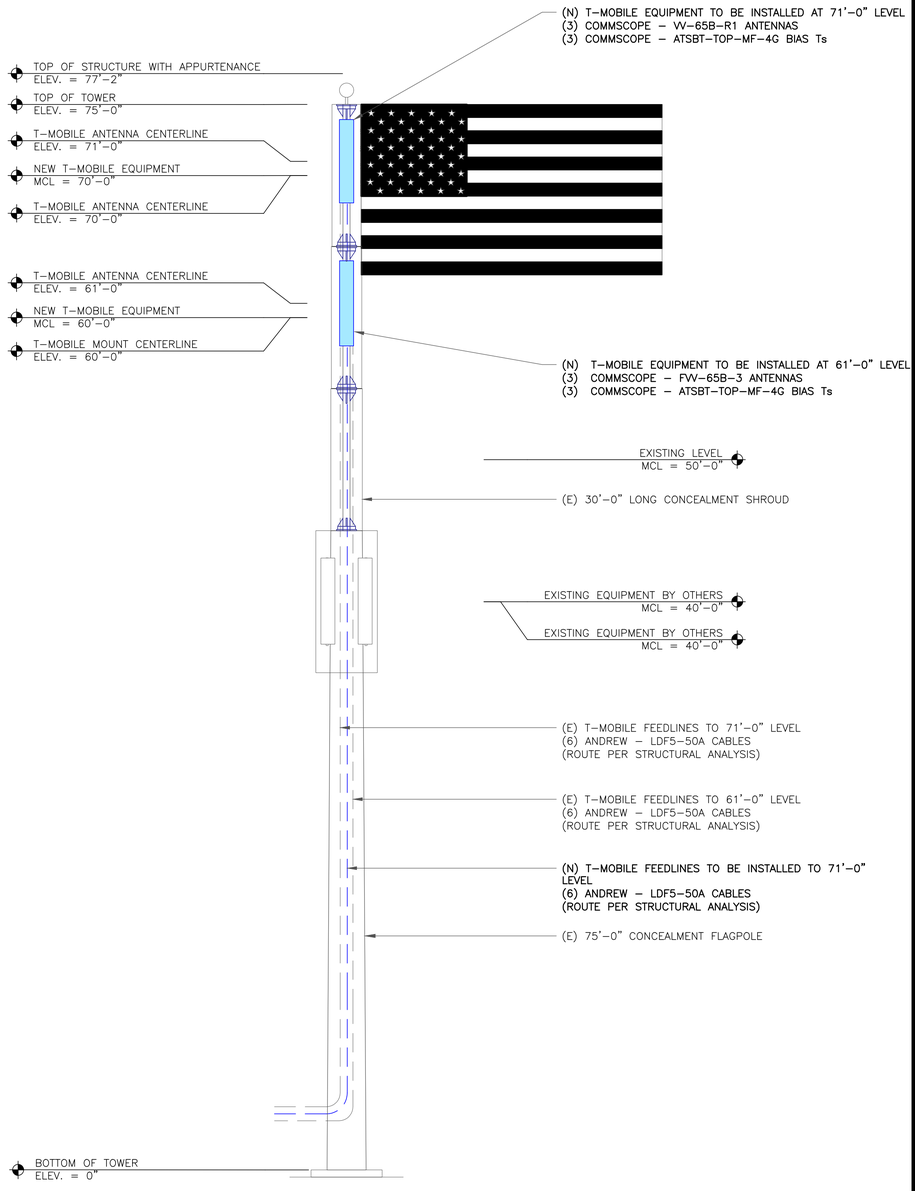
SCALE: 4' 2' 0 4' 3/16"=1'-0" (FULL SIZE) 3/32"=1'-0" (11x17)

INSTALLER NOTE:

TOWER DOES NOT HAVE CLIMBING FACILITIES - MANLIFT REQUIRED FOR ELEVATED WORK.

INSTALLER NOTE:

NO PROPOSED LOADING TO BE ADDED UNTIL TOWER MODIFICATIONS ARE INSTALLED PER TOWER MODIFICATION DESIGN BY PAUL J. FORD & COMPANY DATED FEBRUARY 6, 2024.



2 FINAL TOWER ELEVATION

SCALE: 4' 2' 0 4' 3/16"=1'-0" (FULL SIZE) 3/32"=1'-0" (11x17)

T-MOBILE_NATIONAL_ANCHOR

T-Mobile

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CROWN CASTLE SITE NAME:
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117 OREGON RD
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EXISTING 75'-0"
CONCEALMENT FLAGPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
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2	7/11/25	YX	CONSTRUCTION	TDG
3	7/29/25	YX	CORRECTION	TDG
4	8/7/25	YX	CORRECTION	TDG
5	8/12/25	YX	CORRECTION	LR

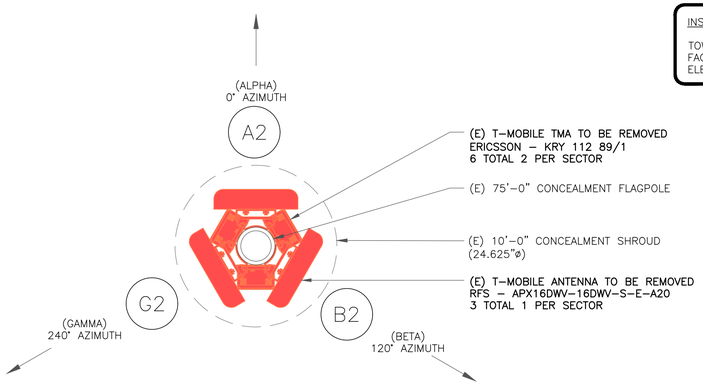
B&T ENGINEERING, INC.

SHEET NUMBER: C-2

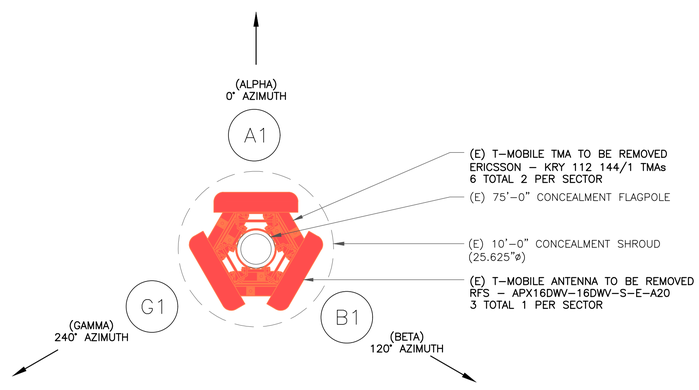
REVISION: 5

INSTALLER NOTE:

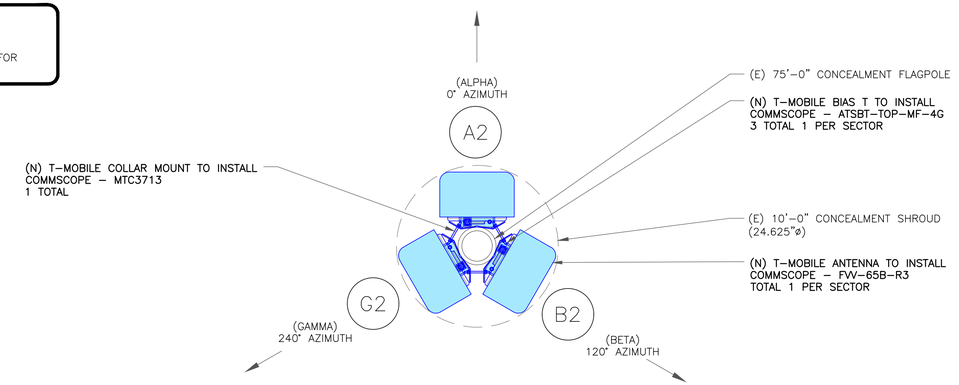
TOWER DOES NOT HAVE CLIMBING FACILITIES – MANLIFT REQUIRED FOR ELEVATED WORK.



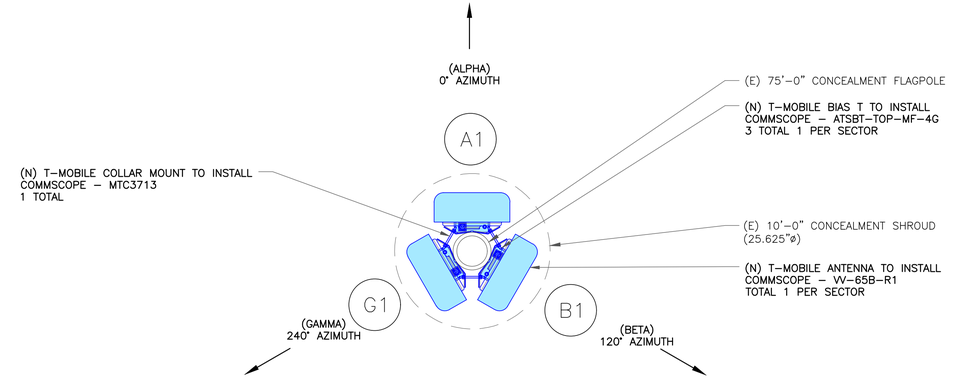
1 EXISTING ANTENNA PLAN @ 61'–0"
SCALE: 1" 6" 0 1" 1"=1'–0" (FULL SIZE) 1/2"=1'–0" (11x17)



3 EXISTING ANTENNA PLAN @ 71'–0"
SCALE: 1" 6" 0 1" 1"=1'–0" (FULL SIZE) 1/2"=1'–0" (11x17)



2 FINAL ANTENNA PLAN @ 61'–0"
SCALE: 1" 6" 0 1" 1"=1'–0" (FULL SIZE) 1/2"=1'–0" (11x17)



4 FINAL ANTENNA PLAN @ 71'–0"
SCALE: 1" 6" 0 1" 1"=1'–0" (FULL SIZE) 1/2"=1'–0" (11x17)

T-MOBILE

CROWN CASTLE

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SUITE 300
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www.btgrp.com

T-MOBILE SITE NUMBER:
4BN0510A

BU #: **822710**
CROWN CASTLE SITE NAME:
BN510/OREGON CLUB

117 OREGON RD
ASHLAND, MA 01721

EXISTING 75'-0"
CONCEALMENT FLAGPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
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2	7/11/25	YX	CONSTRUCTION	TDG
3	7/29/25	YX	CORRECTION	TDG
4	8/7/25	YX	CORRECTION	TDG
5	8/12/25	YX	CORRECTION	LR

B&T ENGINEERING, INC.

SHEET NUMBER: C-3

REVISION: 5

T-MOBILE_NATIONAL_ANCHOR

FINAL EQUIPMENT SCHEDULE AT 70'–0" LEVEL
(VERIFY WITH CURRENT RFDS)

POSITION	ANTENNA				RADIO			DIPLEXER			BIAS T		SURGE PROTECTION		CABLES			
	TECH	STATUS/MANUFACTURER MODEL	AZIMUTH	RAD CENTER	QTY.	STATUS/MODEL	LOCATION	QTY.	STATUS	LOCATION	QTY.	STATUS	QTY.	STATUS/MODEL	QTY.	STATUS/TYPE	SIZE	LENGTH
A1	N1900/N2500/ L2100/L1900	(N) COMMMSCOPE – VV–65B–R1	0°	71'–0"	1	(N) ERICSSON – RADIO 4460 B25+B66	GROUND	1	(N)	GROUND	1	(N)	–	–	2	(E) COAX	7/8"	121'–0"
					1	(N) ERICSSON – RADIO 8863 B41	GROUND								2	(N) COAX	7/8"	121'–0"
															1	(N) HYBRID (GROUND)	6/24	33'–0"
B1	N1900/N2500/ L2100/L1900	(N) COMMMSCOPE – VV–65B–R1	120°	71'–0"	1	(N) ERICSSON – RADIO 4460 B25+B66	GROUND	1	(N)	GROUND	1	(N)	–	–	2	(E) COAX	7/8"	121'–0"
					–	–	–								2	(N) COAX	7/8"	121'–0"
															1	(N) HYBRID (GROUND)	6/24	33'–0"
G1	N1900/N2500/ L2100/L1900	(N) COMMMSCOPE – VV–65B–R1	240°	71'–0"	1	(N) ERICSSON – RADIO 4460 B25+B66	GROUND	1	(N)	GROUND	1	(N)	–	–	2	(E) COAX	7/8"	121'–0"
					1	(N) ERICSSON – RADIO 8863 B41	GROUND								2	(N) COAX	7/8"	121'–0"

FINAL EQUIPMENT SCHEDULE AT 60'–0" LEVEL
(VERIFY WITH CURRENT RFDS)

POSITION	ANTENNA				RADIO			DIPLEXER			TMA		SURGE PROTECTION		CABLES			
	TECH	STATUS/MANUFACTURER MODEL	AZIMUTH	RAD CENTER	QTY.	STATUS/MODEL	LOCATION	QTY.	STATUS	LOCATION	QTY.	STATUS	QTY.	STATUS/MODEL	QTY.	STATUS/TYPE	SIZE	LENGTH
A2	L700/ N600/L600	(N) COMMMSCOPE – FVV–65B–R3	0°	61'–0"	1	(N) ERICSSON – RADIO 4480 B71+B85	GROUND	1	(N)	GROUND	1	(N)	–	–	2	(E) COAX	7/8"	121'–0"
															1	(N) HYBRID (GROUND)	6/24	33'–0"
B2	L700/ N600/L600	(N) COMMMSCOPE – FVV–65B–R3	120°	61'–0"	1	(N) ERICSSON – RADIO 4480 B71+B85	GROUND	1	(N)	GROUND	1	(N)	–	–	2	(E) COAX	7/8"	121'–0"
															1	(N) HYBRID (GROUND)	6/24	33'–0"
G2	L700/ N600/L600	(N) COMMMSCOPE – FVV–65B–R3	240°	61'–0"	1	(N) ERICSSON – RADIO 4480 B71+B85	GROUND	1	(N)	GROUND	1	(N)	–	–	2	(E) COAX	7/8"	121'–0"

1 FINAL EQUIPMENT SCHEDULE
SCALE: NOT TO SCALE

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T-Mobile

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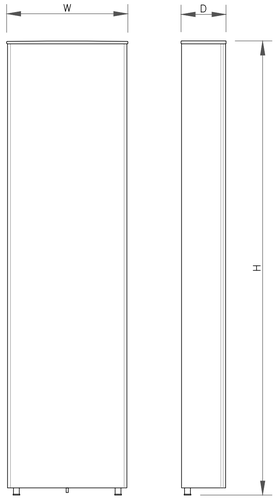
COMMONWEALTH OF MASSACHUSETTS
PETER D. SMITH
No.56249
REGISTERED PROFESSIONAL ENGINEER
8/12/25

B&T ENGINEERING, INC.

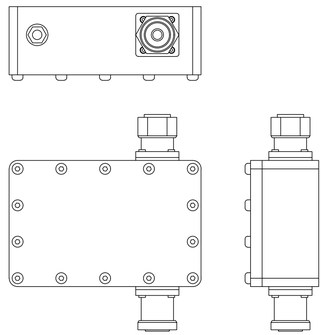
SHEET NUMBER: C-4

REVISION: 5



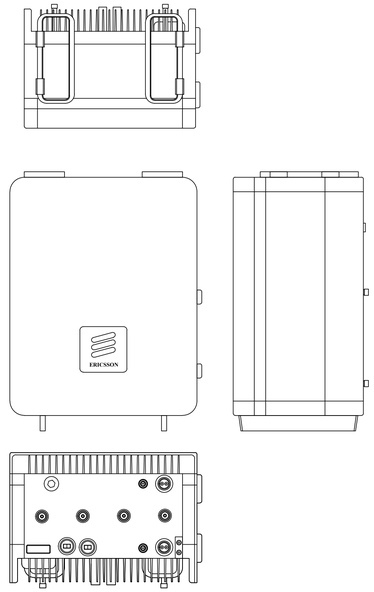
ANTENNA SPECS	
MANUFACTURER	COMMSCOPE
MODEL #	VV-65B-R1
WIDTH	12.0"
DEPTH	4.65"
HEIGHT	70.35"
WEIGHT	28.0 LBS

1 ANTENNA SPECS
SCALE: NOT TO SCALE



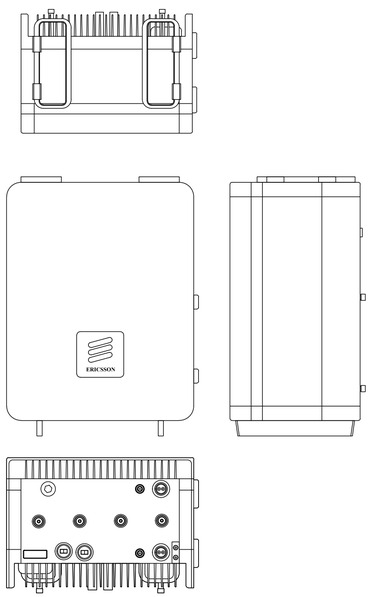
COMMSCOPE – SMART BIAST – ATSBT-TOP-MF-4G
WEIGHT: 1.7 LBS
SIZE (HxWxD): 3.7x5.63x2.0 IN.

2 BIAS-T SPECS
SCALE: NOT TO SCALE



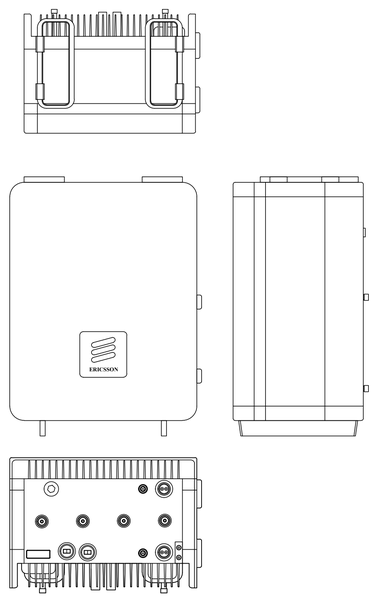
ERICSSON – RADIO 4460 B25+B66
WEIGHT: 109 LBS
SIZE (HxWxD): 19.6x15.7x12.1 IN.

3 RADIO SPECS
SCALE: NOT TO SCALE



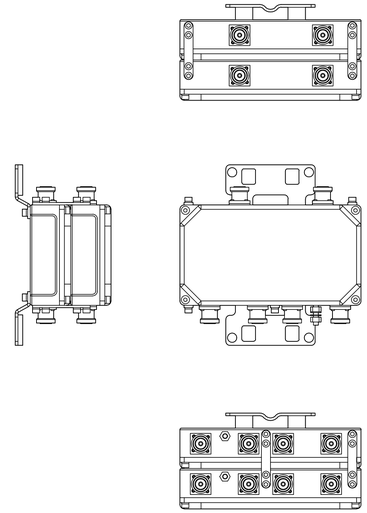
ERICSSON – RADIO 4480 B71+B85
WEIGHT: 81 LBS
SIZE (HxWxD): 22.0X15.7X7.5 IN.

4 RADIO SPECS
SCALE: NOT TO SCALE



ERICSSON – RADIO 8863 B41
WEIGHT: 52.93 LBS
SIZE (HxWxD): 18.82x14.76x5.71IN.

5 RADIO SPECS
SCALE: NOT TO SCALE



MICRODATA – MI-54844
WEIGHT: 11.02 LBS
SIZE (HxWxD): 4.33x9.41x4.65IN.

6 DIPLEXER SPECS
SCALE: NOT TO SCALE

T-Mobile

CROWN CASTLE

B+T GRP
1717 S. BOULDER
SUITE 300
TULSA, OK 74119
PH: (918) 587-4630
www.btgrp.com

T-MOBILE SITE NUMBER:
4BN0510A

BU #: **822710**
CROWN CASTLE SITE NAME:
BN510/OREGON CLUB

117 OREGON RD
ASHLAND, MA 01721

EXISTING 75'-0"
CONCEALMENT FLAGPOLE

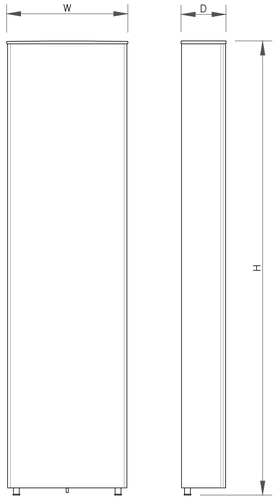
ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
1	5/28/25	YX	CONSTRUCTION	LR
2	7/11/25	YX	CONSTRUCTION	TDG
3	7/29/25	YX	CORRECTION	TDG
4	8/7/25	YX	CORRECTION	TDG
5	8/12/25	YX	CORRECTION	LR

B&T ENGINEERING, INC.

SHEET NUMBER: C-5

REVISION: 5



ANTENNA SPECS	
MANUFACTURER	COMMSCOPE
MODEL #	FVV-65B-R3
WIDTH	11.81"
DEPTH	7.13"
HEIGHT	71.97"
WEIGHT	43.21 LBS

1 ANTENNA SPECS
SCALE: NOT TO SCALE

2 NOT USED
SCALE: NOT TO SCALE

3 NOT USED
SCALE: NOT TO SCALE

4 NOT USED
SCALE: NOT TO SCALE

5 NOT USED
SCALE: NOT TO SCALE

6 NOT USED
SCALE: NOT TO SCALE

T-MOBILE_NATIONAL_ANCHOR

T-Mobile

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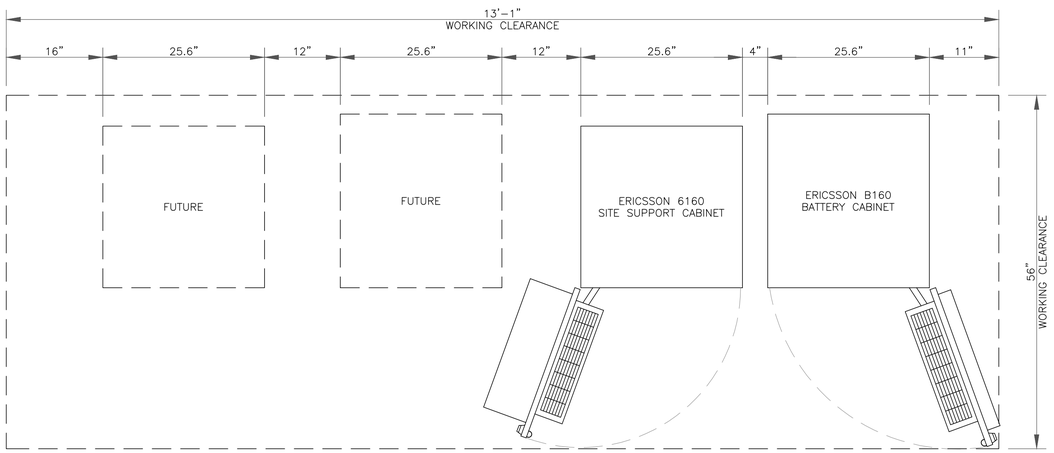
4	8/7/25	YX	CORRECTION	TDG
5	8/12/25	YX	CORRECTION	LR

COMMONWEALTH OF MASSACHUSETTS
PETER D. SMITH
No.56249
REGISTERED PROFESSIONAL ENGINEER
8/12/25

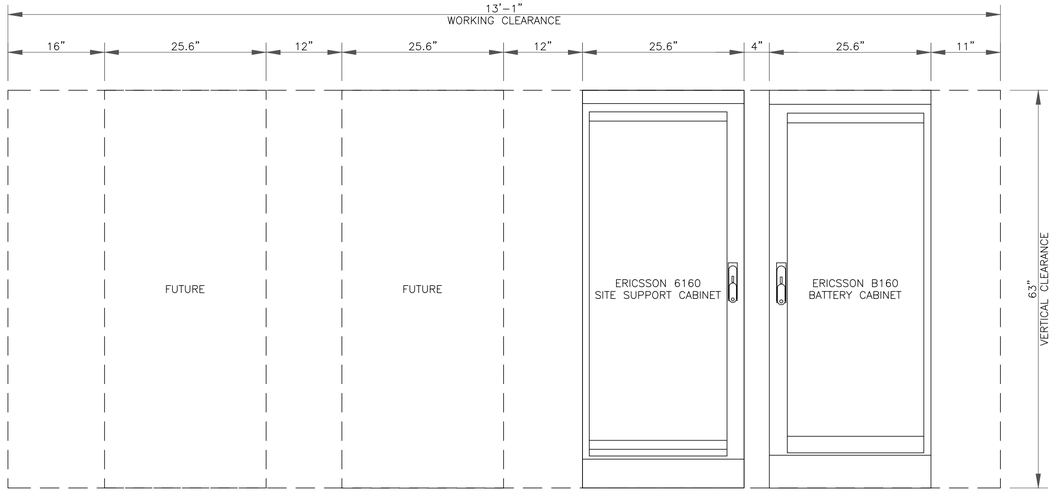
B&T ENGINEERING, INC.

SHEET NUMBER: C-5.1

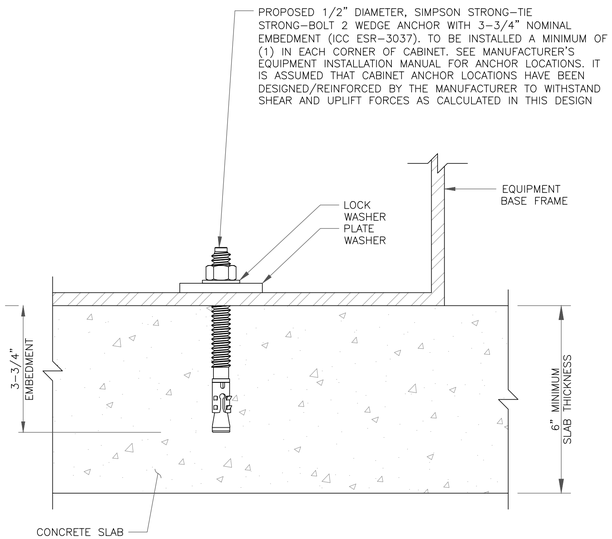
REVISION: 5



1 PLAN VIEW WORKING CLEARANCE 6160 & B160 LAYOUT
SCALE: NOT TO SCALE

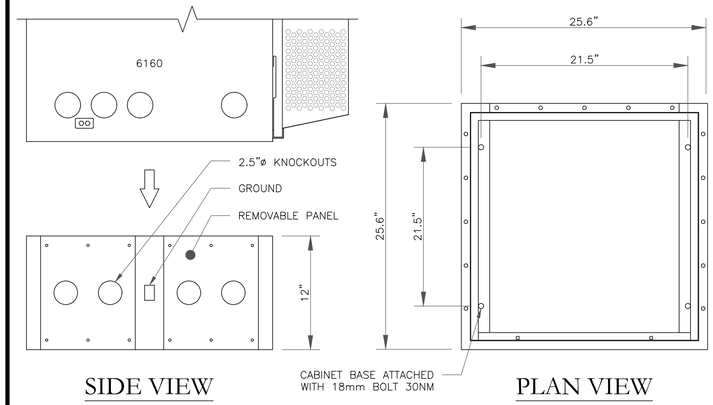


2 ELEVATION VIEW WORKING CLEARANCE 6160 & B160 LAYOUT
SCALE: NOT TO SCALE



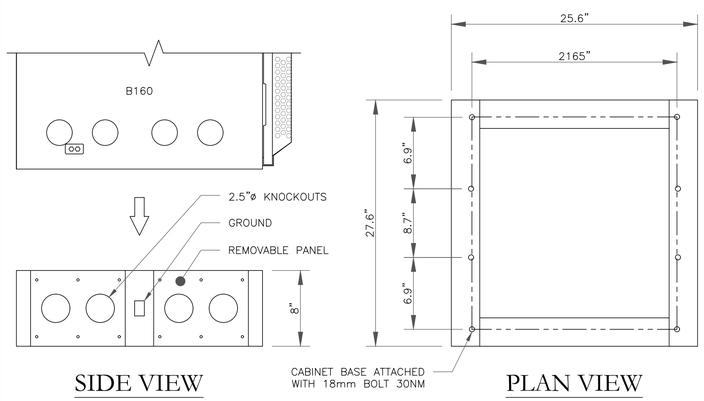
3 TYPICAL ANCHOR BOLT DETAIL
SCALE: NOT TO SCALE

MANUFACTURER:	ERICSSON
MODEL:	6160 12" BASE FRAME (SXK 125 5009/1)
DIMENSIONS (HxWxD):	12"x25.6"x25.6"
T-MOBILE SKU#	T.B.D.



4 ERICSSON 6160 PLINTH DETAIL
SCALE: NOT TO SCALE

MANUFACTURER:	ERICSSON
MODEL:	B160 BASE FRAME (SKU 125 5010/1)
DIMENSIONS (HxWxD):	8"x27.5"x25.6"
T-MOBILE SKU#	T.B.D.



5 ERICSSON B160 PLINTH DETAIL
SCALE: NOT TO SCALE

T-MOBILE_NATIONAL_ANCHOR

T-Mobile

CROWN CASTLE

B+T GRP
1717 S. BOULDER
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BU #: **822710**
CROWN CASTLE SITE NAME:
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117 OREGON RD
ASHLAND, MA 01721

EXISTING 75'-0"
CONCEALMENT FLAGPOLE

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4	8/7/25	YX	CORRECTION	TDG
5	8/12/25	YX	CORRECTION	LR

B&T ENGINEERING, INC.

SHEET NUMBER: C-6.1

REVISION: 5

MANUFACTURER:	ERICSSON
MODEL:	(UT6160_ENCL_AC) V2 CABINET
DIMENSIONS (HxWxD):	63.25"x26.0"x34.0"
WEIGHT:	320 LBS
SKU #:	T.B.D.

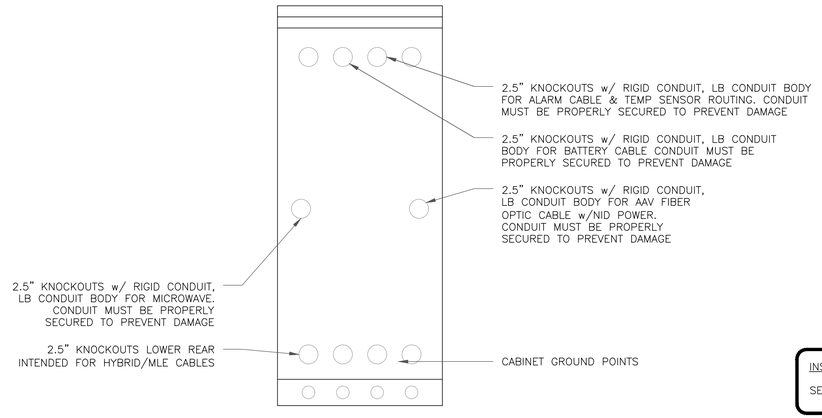
NOTE:

CORRECT KNOCKOUT TOOL REQUIRED FOR PUNCHING KNOCKOUTS. DO NOT DRILL THROUGH KNOCKOUTS

CONDUIT MUST BE PROPERLY SECURED TO PREVENT DAMAGE TO CABINETS AND OR CABLING

GROUNDING NOTE:

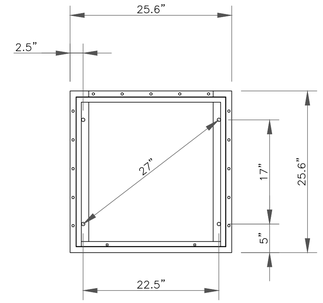
CABINET GROUNDING TO USE A SINGLE, #2 BTCW CONDUCTOR, W/ 2-HOLE, 1" C-C, LONG BARREL, WINDOW LUG, IN 3/4" LFNC TO GROUND RING. PLINTH GROUNDING IS NOT REQUIRED.



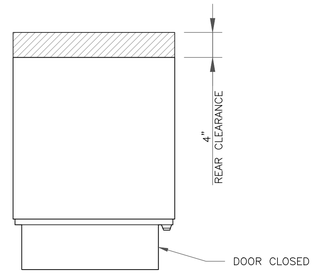
REAR VIEW

INSTALLER NOTE:

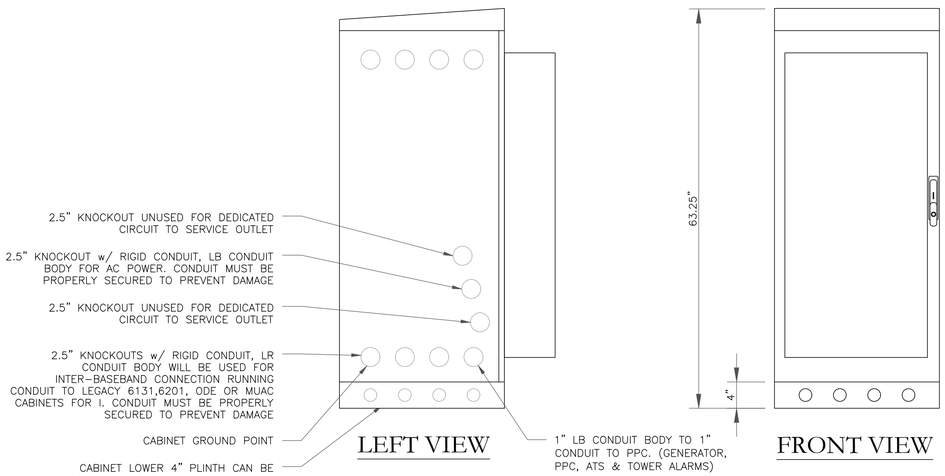
SEE PLINTH ON SHEET C-6.1.



BOLT DOWN PATTERN

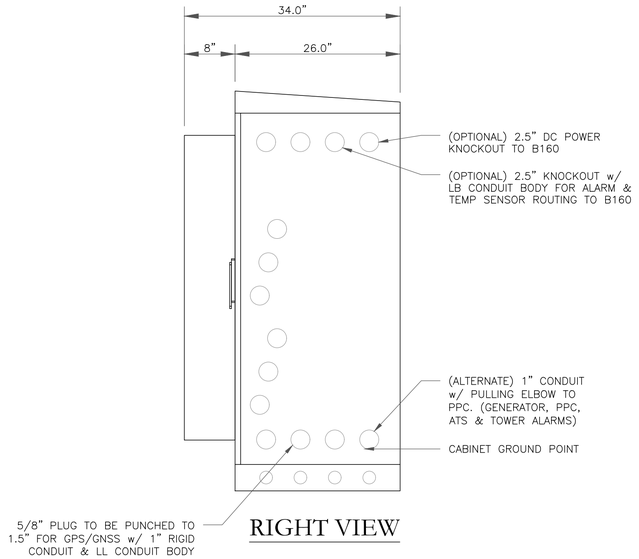


PLAN VIEW

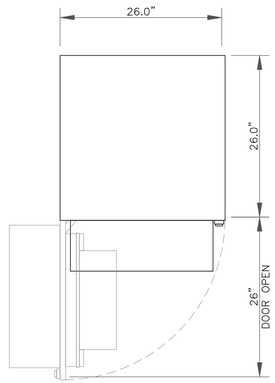


LEFT VIEW

FRONT VIEW



RIGHT VIEW



DOOR SWING

1 6160 ERICSSON SITE SUPPORT CABINET

SCALE: 1" 6" 0 1' 1"=1'-0" (FULL SIZE) 1/2"=1'-0" (11x17)

T-MOBILE_NATIONAL_ANCHOR

T-Mobile

CROWN CASTLE

B+T GRP
1717 S. BOULDER
SUITE 300
TULSA, OK 74119
PH: (918) 587-4630
www.btgrp.com

T-MOBILE SITE NUMBER:
4BN0510A

BU #: **822710**
CROWN CASTLE SITE NAME:
BN510/OREGON CLUB

117 OREGON RD
ASHLAND, MA 01721

EXISTING 75'-0"
CONCEALMENT FLAGPOLE

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3	7/29/25	YX	CORRECTION	TDG
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5	8/12/25	YX	CORRECTION	LR

B&T ENGINEERING, INC.

SHEET NUMBER: C-6.2

REVISION: 5

MANUFACTURER:	ERICSSON
MODEL:	B160 BATTERY CABINET
DIMENSIONS (HxWxD):	63"x25.6"x29.5"
WEIGHT:	295 LBS
SKU #:	T.B.D.

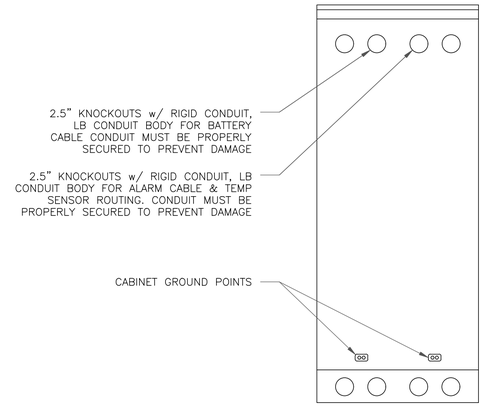
NOTE:

CORRECT KNOCKOUT TOOL REQUIRED FOR PUNCHING KNOCKOUTS. DO NOT DRILL THROUGH KNOCKOUTS

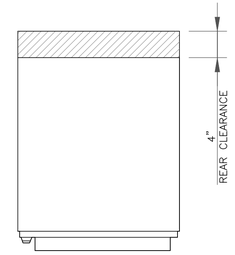
CONDUIT MUST BE PROPERLY SECURED TO PREVENT DAMAGE TO CABINETS AND OR CABLING

GROUNDING NOTE:

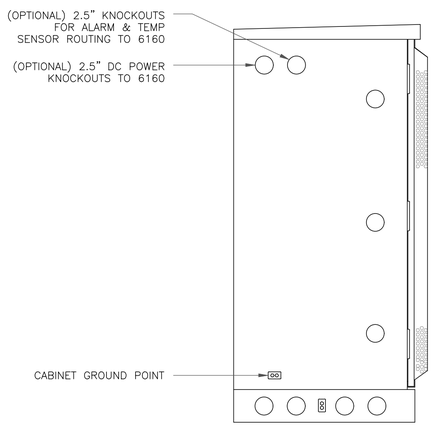
CABINET GROUNDING TO USE A SINGLE, #2 BTCW CONDUCTOR, W/ 2-HOLE, 1" C-C, LONG BARREL, WINDOW LUG, IN 3/4" LFNC TO GROUND RING. PLINTH GROUNDING IS NOT REQUIRED.



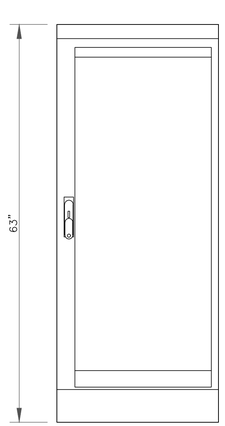
REAR VIEW



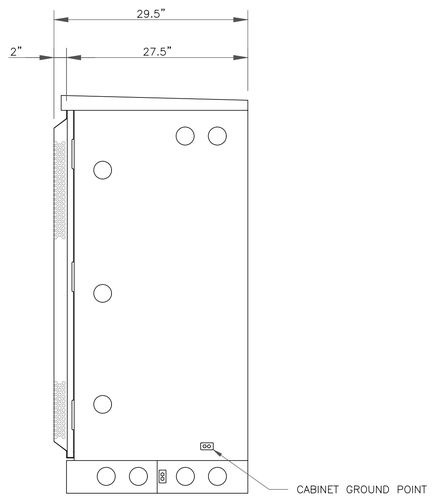
PLAN VIEW



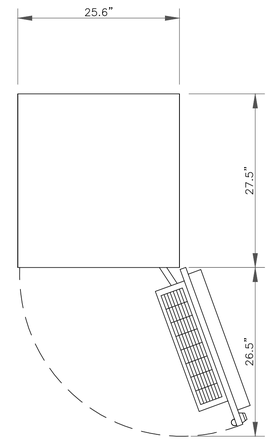
LEFT VIEW



FRONT VIEW



RIGHT VIEW



DOOR SWING

1 ERICSSON B160 BATTERY CABINET
SCALE: 1' 6" 0 1' 1"=1'-0" (FULL SIZE) 1/2"=1'-0" (11x17)

T-MOBILE_NATIONAL_ANCHOR

T-Mobile

CROWN CASTLE

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SUITE 300
TULSA, OK 74119
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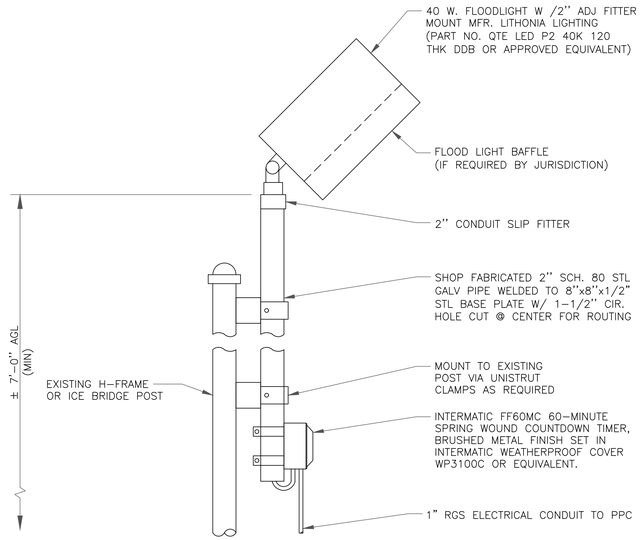
4	8/7/25	YX	CORRECTION	TDG
5	8/12/25	YX	CORRECTION	LR

COMMONWEALTH OF MASSACHUSETTS
PETER D. SMITH
No.56249
REGISTERED PROFESSIONAL ENGINEER
8/12/25

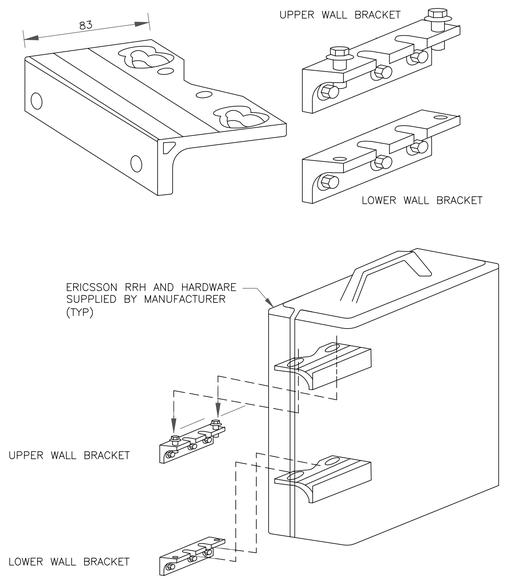
B&T ENGINEERING, INC.

SHEET NUMBER: C-6.3

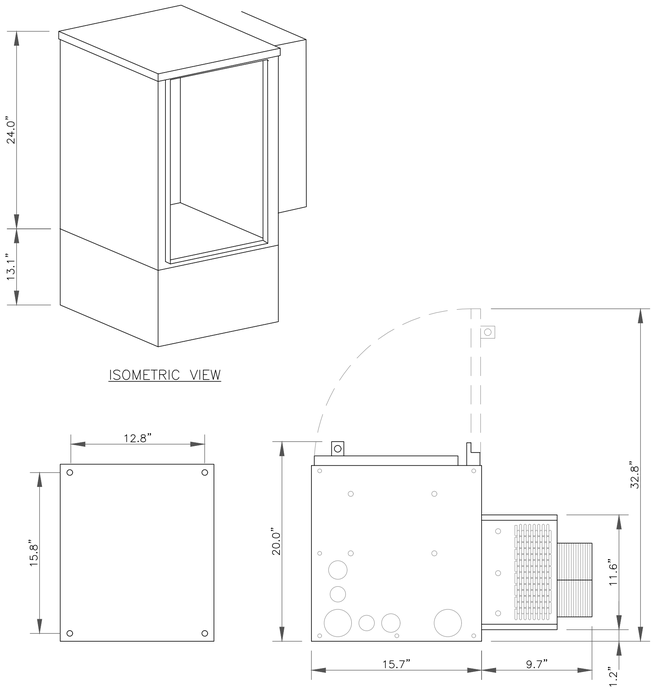
REVISION: 5



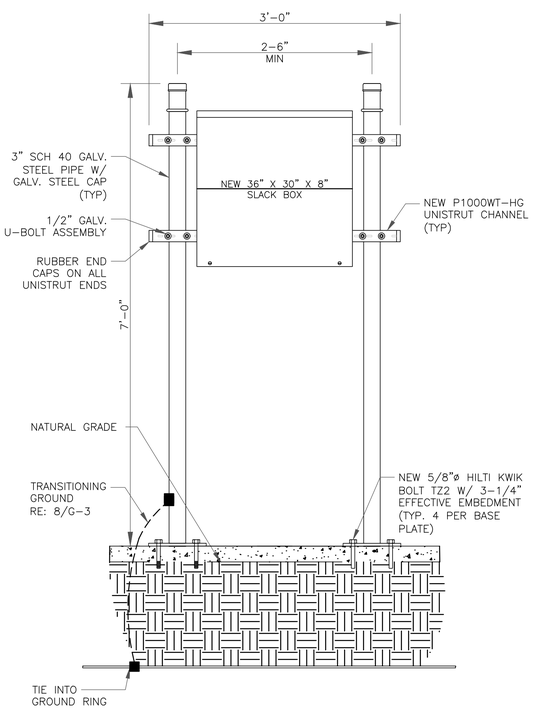
1 FLOOD LIGHT
SCALE: NOT TO SCALE



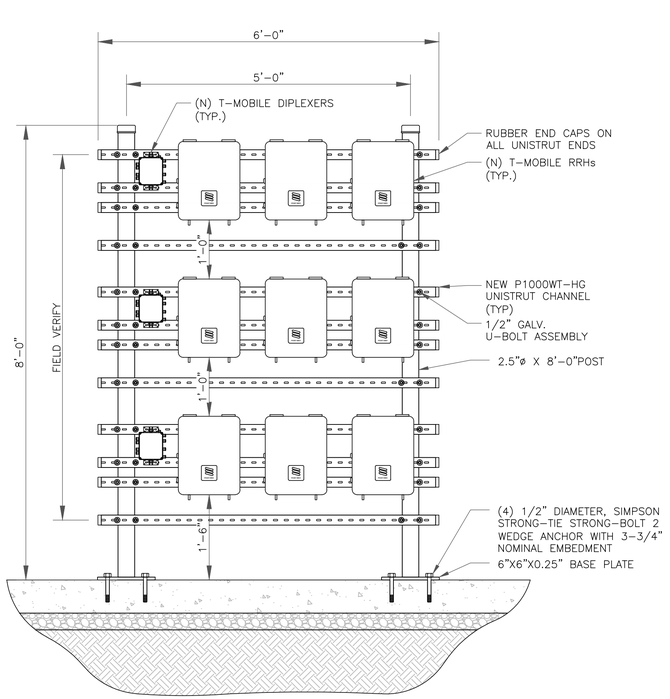
2 ERICSSON – SXK1250247/1 RRH MOUNTING BRACKETS
SCALE: NOT TO SCALE



3 PURCELL – RAC24
SCALE: NOT TO SCALE



4 H-FRAME DETAIL
SCALE: NOT TO SCALE



5 H-FRAME DETAILS
SCALE: NOT TO SCALE

6 NOT USED
SCALE: NOT TO SCALE

T-MOBILE_NATIONAL_ANCHOR

T-Mobile

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4	8/7/25	YX	CORRECTION	TDG
5	8/12/25	YX	CORRECTION	LR

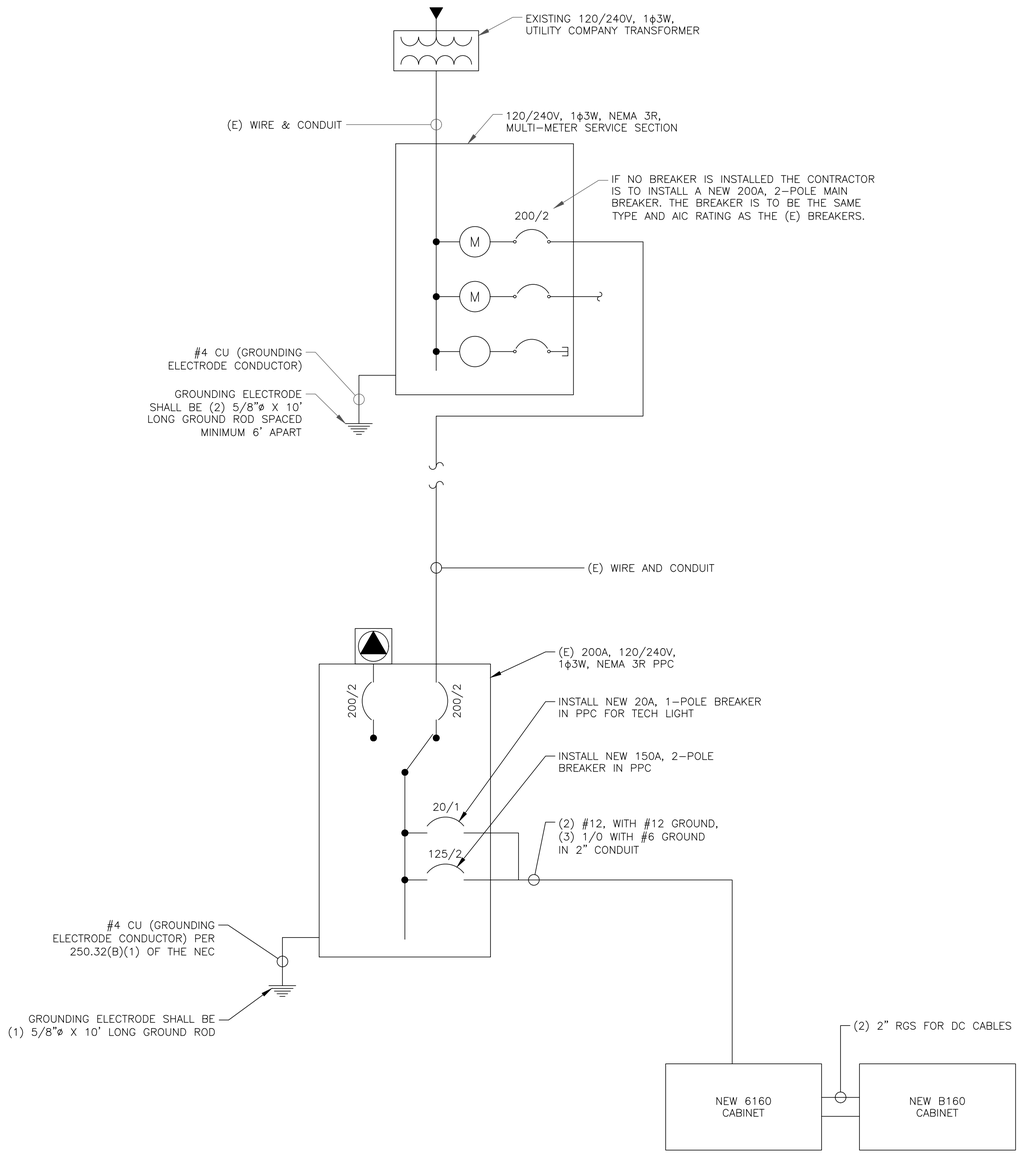
B&T ENGINEERING, INC.

SHEET NUMBER: C-6.4

REVISION: 5

NOTES:

1. ALL NEW CONDUCTORS TO BE INSTALLED SHALL BE COPPER. ALL CONDUCTORS SHALL BE THHW, THWN, THWN-2, XHHW, OR XHHW-2 UNLESS NOTED OTHERWISE.
2. CONTRACTOR IS TO FIELD VERIFY ALL EXISTING ITEMS SHOWN ON THE ELECTRICAL ONE-LINE DIAGRAM AND NOTIFY THE ENGINEER OF ANY DISCREPANCIES.
3. ALL GROUNDING AND BONDING PER THE NEC.



1 ONE-LINE DIAGRAM
SCALE: NOT TO SCALE

NOTES:

1. PANEL SCHEDULE PENDING FIELD VERIFICATION.

EXISTING PANEL SCHEDULE

LOAD	POLES	AMPS	BUS L1	BUS L2	AMPS	POLES	LOAD
SURGE	2	60A	1	2	20A	1	TELCO OUTLET
			3	4	50A	2	BTS 1
BOOSTER 1	2	30A	5	6			
			7	8	30A	2	STRONGWELL
UMTS NODE (OFF)	2	80A	9	10			
			11	12	60A	2	RBS 6102
			13	14			
			15	16			
			17	18			
			19	20			
			21	22			
			23	24			

RATED VOLTAGE: ■120/240 □_____, 1 PHASE, 3 WIRE	BRANCH POLES: □12 ■24 □30 □42	APPROVED MF'RS
RATED AMPS: □100 ■200 □400 □_____	CABINET: ■SURFACE □FLUSH	NEMA □1 ■3R □4X
□MAIN LUGS ONLY | MAIN 200 AMPS ■BREAKER □FUSED SWITCH	■HINGED DOOR	■KEYED DOOR LATCH
□FUSED ■CIRCUIT BREAKER BRANCH DEVICES	□_____ TO BE GFCI BREAKERS	FULL NEUTRAL BUS | GROUND BAR
ALL BREAKERS MUST BE RATED TO INTERRUPT A SHORT CIRCUIT ISC OF 10,000 AMPS SYMMETRICAL		

2 EXISTING PANEL SCHEDULE
SCALE: NOT TO SCALE

FINAL PANEL SCHEDULE

LOAD	POLES	AMPS	BUS L1	BUS L2	AMPS	POLES	LOAD
SURGE	2	60A	1	2	20A	1	TELCO OUTLET
			3	4	125A	2	6160
BOOSTER 1	2	30A	5	6			
			7	8	30A	2	STRONGWELL
UMTS NODE (OFF)	2	80A	9	10			
			11	12	20A	1	TECH LIGHT
			13	14			
			15	16			
			17	18			
			19	20			
			21	22			
			23	24			

RATED VOLTAGE: ■120/240 □_____, 1 PHASE, 3 WIRE	BRANCH POLES: □12 ■24 □30 □42	APPROVED MF'RS
RATED AMPS: □100 ■200 □400 □_____	CABINET: ■SURFACE □FLUSH	NEMA □1 ■3R □4X
□MAIN LUGS ONLY | MAIN 200 AMPS ■BREAKER □FUSED SWITCH	■HINGED DOOR	■KEYED DOOR LATCH
□FUSED ■CIRCUIT BREAKER BRANCH DEVICES	□_____ TO BE GFCI BREAKERS	FULL NEUTRAL BUS | GROUND BAR
ALL BREAKERS MUST BE RATED TO INTERRUPT A SHORT CIRCUIT ISC OF 10,000 AMPS SYMMETRICAL		

REPLACE EXISTING 2P BREAKER IN POSITION 4 AND 6 WITH NEW 2P 150A BREAKER
REPLACE EXISTING 2P BREAKER IN POSITION 12 WITH NEW 1P 20A BREAKER
IF 150A BREAKER WILL NOT PROPERLY FIT IN EXISTING PANEL, REPLACE (E) PANEL WITH SQUARE D PANEL QO130M150PRB (OR APPROVED EQUAL).
UPGRADE FEEDER WIRES TO MEET AMPACITY IF NEW PANEL IS REQUIRED.
FINAL PANEL DESIGN AND CALCULATIONS FOR WIRE SIZE WERE BASED OFF OF EXISTING PHOTOS

3 FINAL PANEL SCHEDULE
SCALE: NOT TO SCALE

T-Mobile

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CONCEALMENT FLAGPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
1	5/28/25	YX	CONSTRUCTION	LR
2	7/11/25	YX	CONSTRUCTION	TDG
3	7/29/25	YX	CORRECTION	TDG
4	8/7/25	YX	CORRECTION	TDG
5	8/12/25	YX	CORRECTION	LR

B&T ENGINEERING, INC.

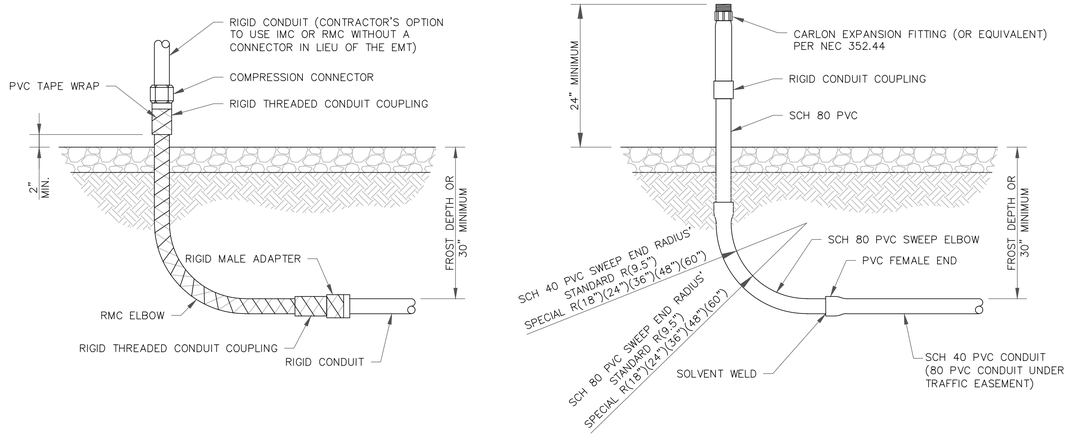
SHEET NUMBER: E-1

REVISION: 5

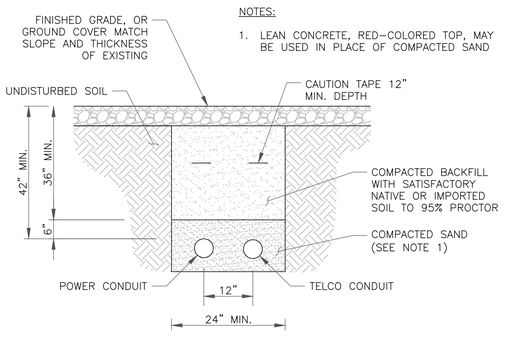
1 NOT USED
SCALE: NOT TO SCALE

INSTALLER NOTES:

ALL METAL CONDUIT INSTALLED IN DIRECT CONTACT WITH THE EARTH SHALL BE CONSIDERED TO BE INSTALLED IN A SEVERELY CORROSIVE ENVIRONMENT AND IS REQUIRED TO HAVE SUPPLEMENTAL PROTECTION AGAINST CORROSION (NEC ARTICLE 342.10(B) & 344.10(B)(1)). THIS PROTECTION SHALL EITHER BE AN APPROVED MANUFACTURER INSTALLED PROTECTIVE COATING ON THE CONDUIT OR SHALL BE (2) LAYERS OF 10 MIL PVC PIPE WRAP TAPE INSTALLED USING OPPOSING SPIRAL WRAPS. ON VERTICAL PIPE THE OUTSIDE LAYER OF TAPE SHALL BE WRAPPED SO AS TO PROVIDE SHEDDING OF WATER (i.e. TAPE SHOULD WRAP IN AN UPWARD DIRECTION WITH LOWER WRAP BEING BENEATH THE WRAP ABOVE). SPIRAL WRAPS SHALL HAVE A MINIMUM OF 1/4" OVERLAP WITH THE PRECEDING TAPE WRAP. ANY OTHER METHODS OF CORROSION PROTECTION SHALL REQUIRE APPROVAL BY THE ENGINEER OF RECORD PRIOR TO BEING USED.



2 CONDUIT STUB UP DETAILS
SCALE: NOT TO SCALE



NOTES:

1. LEAN CONCRETE, RED-COLORED TOP, MAY BE USED IN PLACE OF COMPACTED SAND

3 TRENCH DETAIL
SCALE: NOT TO SCALE

T-MOBILE_NATIONAL_ANCHOR

T-Mobile

CROWN CASTLE

B+T GRP
1717 S. BOULDER
SUITE 300
TULSA, OK 74119
PH: (918) 587-4630
www.btgrp.com

T-MOBILE SITE NUMBER:
4BN0510A

BU #: **822710**
CROWN CASTLE SITE NAME:
BN510/OREGON CLUB

117 OREGON RD
ASHLAND, MA 01721

EXISTING 75'-0"
CONCEALMENT FLAGPOLE

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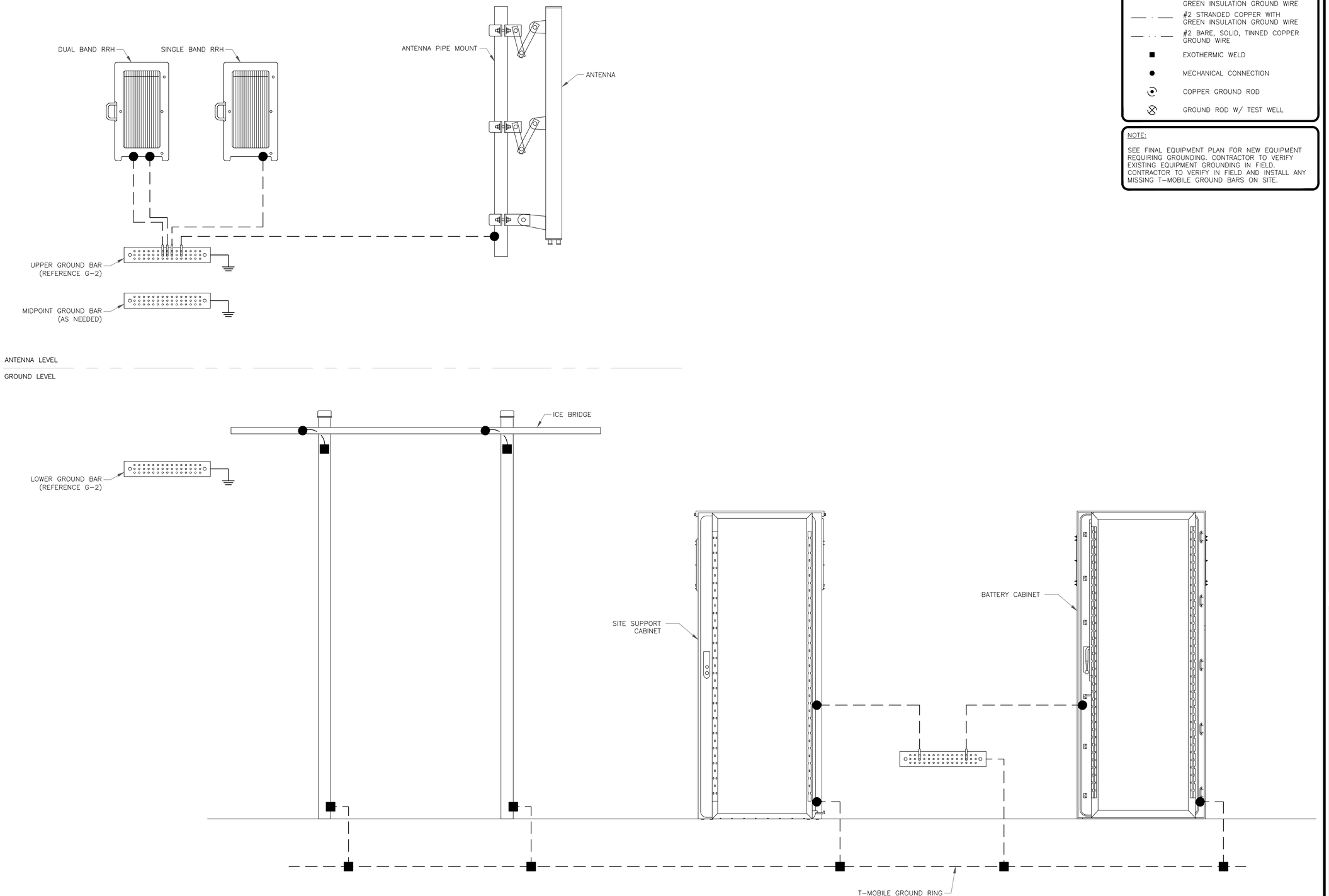
5	8/12/25	YX	CORRECTION	LR

COMMONWEALTH OF MASSACHUSETTS
PETER D. SMITH
No.56249
REGISTERED PROFESSIONAL ENGINEER
8/12/25

B&T ENGINEERING, INC.

SHEET NUMBER: E-2

REVISION: 5



1 TYPICAL FINAL GROUNDING SCHEMATIC
SCALE: NOT TO SCALE

GROUNDING PLAN LEGEND:

- #6 STRANDED COPPER WITH GREEN INSULATION GROUND WIRE
- #2 STRANDED COPPER WITH GREEN INSULATION GROUND WIRE
- #2 BARE, SOLID, TINNED COPPER GROUND WIRE
- EXOTHERMIC WELD
- MECHANICAL CONNECTION
- COPPER GROUND ROD
- GROUND ROD W/ TEST WELL

NOTE:

SEE FINAL EQUIPMENT PLAN FOR NEW EQUIPMENT REQUIRING GROUNDING. CONTRACTOR TO VERIFY EXISTING EQUIPMENT GROUNDING IN FIELD. CONTRACTOR TO VERIFY IN FIELD AND INSTALL ANY MISSING T-MOBILE GROUND BARS ON SITE.

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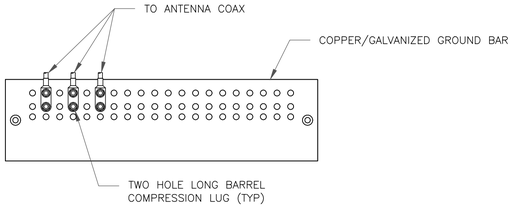
COMMONWEALTH OF MASSACHUSETTS
PETER D. SMITH
No.56249
REGISTERED PROFESSIONAL ENGINEER
8/12/25

B&T ENGINEERING, INC.

SHEET NUMBER: G-1

REVISION: 5

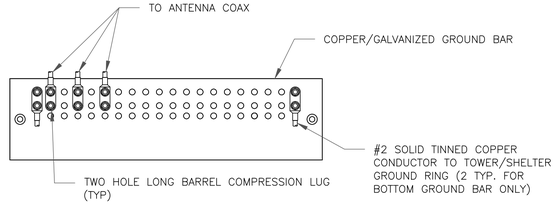
T-MOBILE_NATIONAL_ANCHOR



NOTES:

1. DOUBLING UP "OR STACKING" OF CONNECTIONS IS NOT PERMITTED.
2. EXTERIOR ANTIOXIDANT JOINT COMPOUND TO BE USED ON ALL EXTERIOR CONNECTIONS.
3. GROUND BAR SHALL NOT BE ISOLATED FROM TOWER. MOUNT DIRECTLY TO ANTENNA MOUNT STEEL.

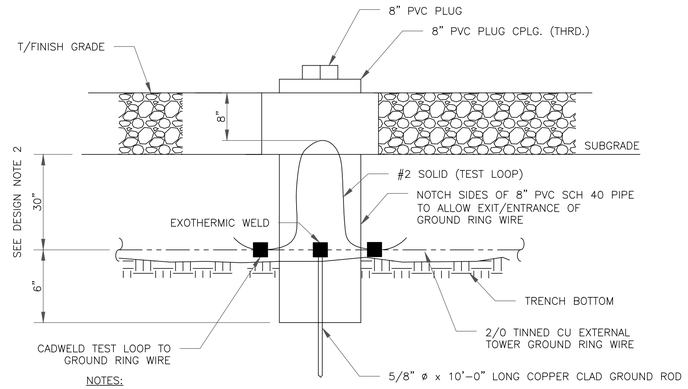
1 ANTENNA SECTOR GROUND BAR DETAIL
SCALE: NOT TO SCALE



NOTES:

1. EXTERIOR ANTIOXIDANT JOINT COMPOUND TO BE USED ON ALL EXTERIOR CONNECTIONS.
2. GROUND BAR SHALL NOT BE ISOLATED FROM TOWER. MOUNT DIRECTLY TO TOWER STEEL (TOWER ONLY).
3. GROUND BAR SHALL BE ISOLATED FROM BUILDING OR SHELTER.

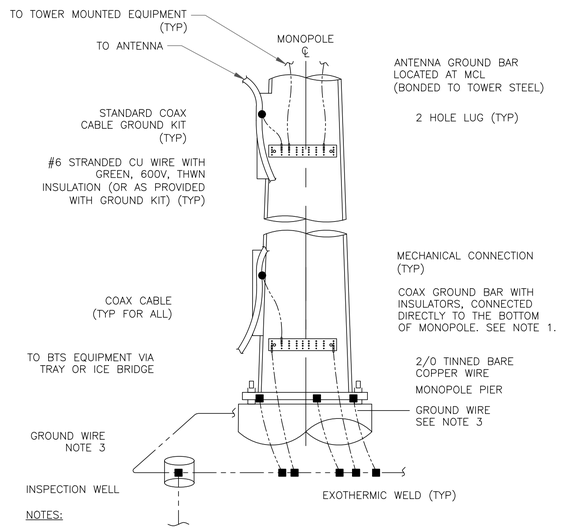
2 TOWER/SHELTER GROUND BAR DETAIL
SCALE: NOT TO SCALE



NOTES:

1. GROUND ROD SHALL BE DRIVEN VERTICALLY, NOT TO EXCEED 45 DEGREES FROM THE VERTICAL
2. GROUND WIRE SHALL BE MIN. 30" BELOW GRADE OR 6" BELOW FROST LINE. (WHICH EVER IS GREATER) AS PER N.E.C. ARTICLE 250-50(D)

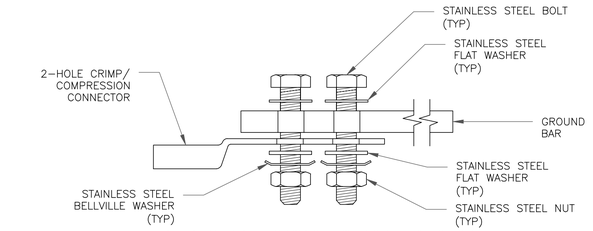
3 INSPECTION WELL DETAIL
SCALE: NOT TO SCALE



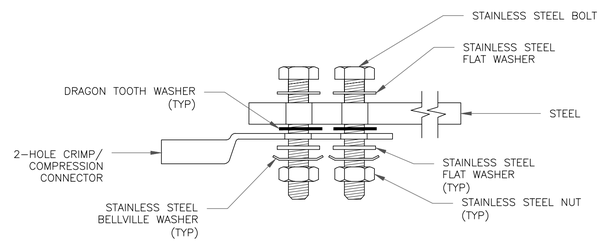
NOTES:

1. NUMBER OF GROUNDING BARS MAY VARY DEPENDING ON THE TYPE OF TOWER, ANTENNA LOCATIONS AND CONNECTION ORIENTATION. COAXIAL CABLES EXCEEDING 200 FEET ON THE TOWER SHALL HAVE GROUND KITS AT THE MIDPOINT. PROVIDE AS REQUIRED.
2. ONLY MECHANICAL CONNECTIONS ARE ALLOWED TO BE MADE TO CROWN CASTLE USA INC. TOWERS. ALL MECHANICAL CONNECTIONS SHALL BE TREATED WITH AN ANTI-OXIDANT COATING.
3. ALL TOWER GROUNDING SYSTEMS SHALL COMPLY WITH THE REQUIREMENTS OF THE RECOGNIZED EDITION OF ANSI/TIA 222 AND NFPA 780.

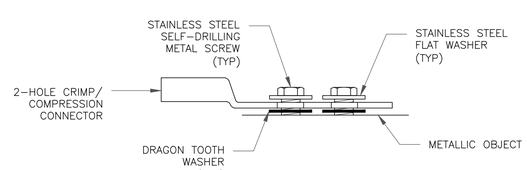
4 TYPICAL ANTENNA CABLE GROUNDING
SCALE: NOT TO SCALE



SINGLE CONNECTOR AT GROUND BARS

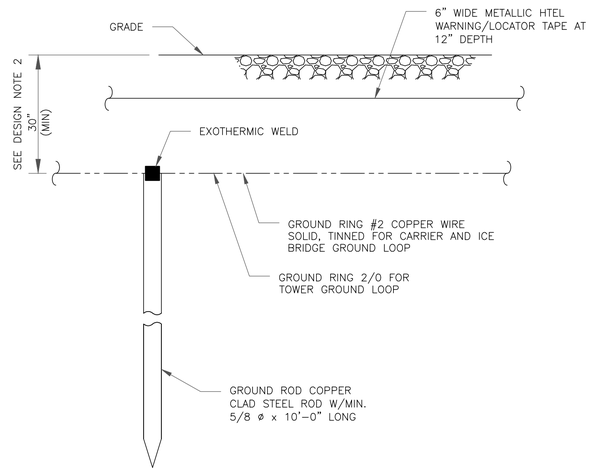


SINGLE CONNECTOR AT STEEL OBJECTS



SINGLE CONNECTOR AT METALLIC/STEEL OBJECTS

5 HARDWARE DETAIL FOR EXTERIOR CONNECTIONS
SCALE: NOT TO SCALE



NOTES:

1. GROUND ROD SHALL BE DRIVEN VERTICALLY, NOT TO EXCEED 45 DEGREES FROM THE VERTICAL
2. GROUND WIRE SHALL BE MIN. 30" BELOW GRADE OR 6" BELOW FROST LINE. (WHICH EVER IS GREATER) AS PER N.E.C. ARTICLE 250-50(D)

6 GROUND ROD DETAIL
SCALE: NOT TO SCALE

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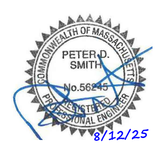
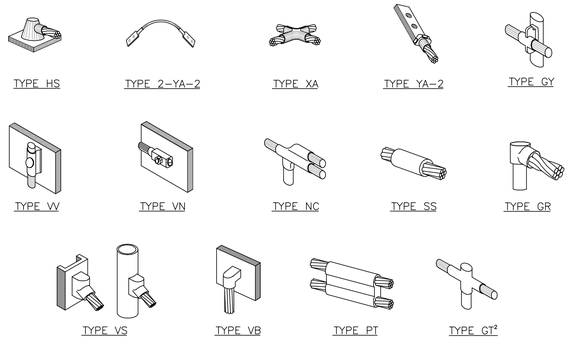


B&T ENGINEERING, INC.

SHEET NUMBER: G-2

REVISION: 5

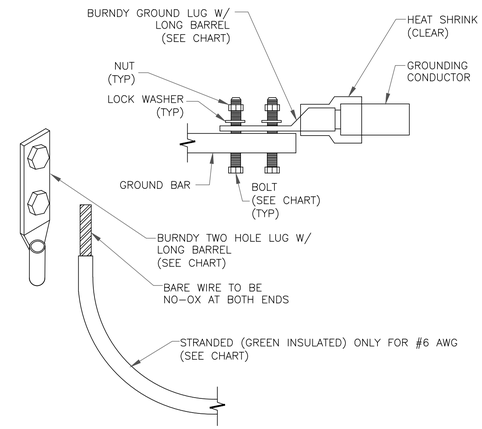


NOTE:

1. ERICO EXOTHERMIC "MOLD TYPES" SHOWN HERE ARE EXAMPLES. CONSULT WITH CONSTRUCTION MANAGER FOR SPECIFIC MOLDS TO BE USED FOR THIS PROJECT.
2. MOLD TYPE ONLY TO BE USED BELOW GRADE WHEN CONNECTING GROUND RING TO GROUND ROD.

1 CADWELD GROUNDING CONNECTIONS
SCALE: NOT TO SCALE

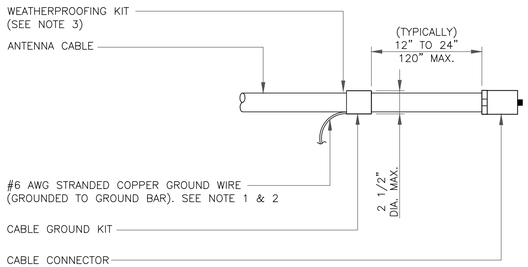
WIRE SIZE	BURNDY LUG	BOLT SIZE
#6 AWG GREEN INSULATED	YA6C-2TC38	3/8" – 16 NC S 2 BOLT
#2 AWG SOLID TINNED	YA3C-2TC38	3/8" – 16 NC S 2 BOLT
#2 AWG STRANDED	YA2C-2TC38	3/8" – 16 NC S 2 BOLT
#2/0 AWG STRANDED	YA26-2TC38	3/8" – 16 NC S 2 BOLT
#4/0 AWG STRANDED	YA28-2N	1/2" – 16 NC S 2 BOLT



NOTES:

1. ALL GROUNDING LUGS ARE TO BE INSTALLED PER MANUFACTURER'S SPECIFICATIONS. ALL HARDWARE BOLTS, NUTS, LOCK WASHERS SHALL BE STAINLESS STEEL. ALL HARDWARE ARE TO BE AS FOLLOWS: BOLT, FLAT WASHER,GROUND BAR, GROUND LUG, FLAT WASHER AND NUT.

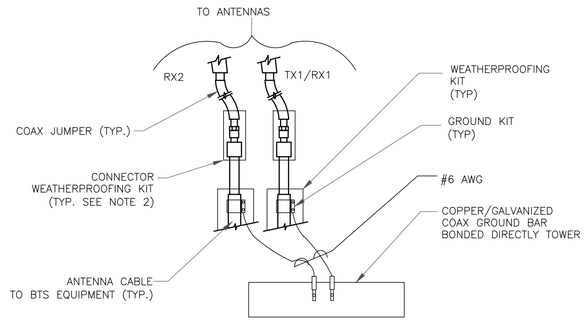
2 MECHANICAL LUG CONNECTION
SCALE: NOT TO SCALE



NOTES:

1. DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO GROUND BAR.
2. GROUNDING KIT SHALL BE TYPE AND PART NUMBER AS SUPPLIED OR RECOMMENDED BY CABLE MANUFACTURER.
3. WEATHER PROOFING SHALL BE TWO-PART TAPE KIT, COLD SHRINK SHALL NOT BE USED.

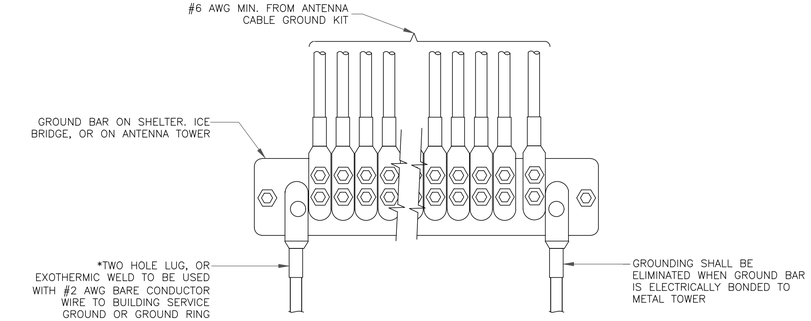
3 CABLE GROUND KIT CONNECTION
SCALE: NOT TO SCALE



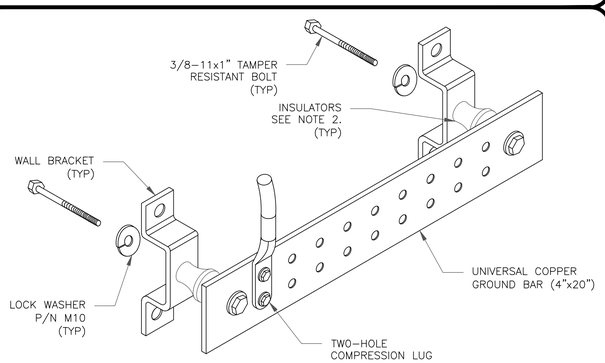
NOTES:

1. DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO ANTENNA GROUND BAR.
2. WEATHER PROOFING SHALL BE TWO-PART TAPE KIT. COLD SHRINK SHALL NOT BE USED.

4 GROUND CABLE CONNECTION
SCALE: NOT TO SCALE



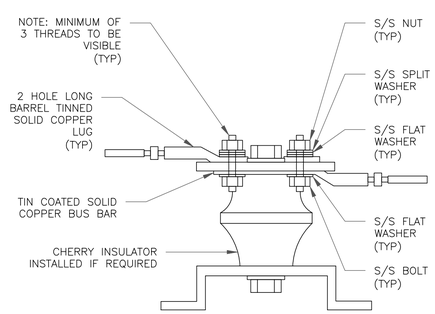
5 GROUNDWIRE INSTALLATION
SCALE: NOT TO SCALE



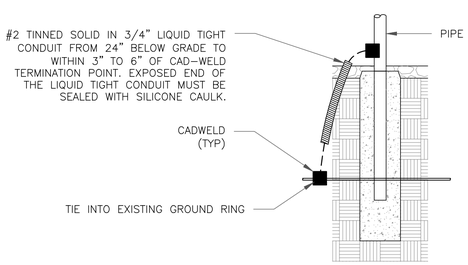
NOTES:

1. DOWN LEAD (HOME RUN) CONDUCTORS ARE NOT TO BE INSTALLED ON CROWN CASTLE USA INC. TOWER, PER THE GROUNDING DOWN CONDUCTOR POLICY QAS-STD-10091. NO MODIFICATION OR DRILLING TO TOWER STEEL IS ALLOWED IN ANY FORM OR FASHION, CAD-WELDING ON THE TOWER AND/OR IN THE AIR ARE NOT PERMITTED.
2. OMIT INSULATOR WHEN MOUNTING TO TOWER STEEL OR PLATFORM STEEL USE INSULATORS WHEN ATTACHING TO BUILDING OR SHELTERS.

6 GROUND BAR DETAIL
SCALE: NOT TO SCALE



7 LUG DETAIL
SCALE: NOT TO SCALE



8 TRANSITIONING GROUND DETAIL
SCALE: NOT TO SCALE

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8/12/25

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REVISION: 5