

**TOWN OF HARVARD  
PLANNING BOARD AGENDA  
MONDAY, MAY 15, 2023 @ 7:00PM**

Pursuant to Chapter 2 of the Acts of 2023, An Act Making Appropriations for the Fiscal Year 2023 to Provide for Supplementing Certain Existing Appropriations and for Certain Other Activities and Projects, and signed into law on March 29, 2023, this meeting will be conducted via remote participation. Interested individuals can listen in and participate by phone and/or online by following the link and phone number below.

THVolGovt Pro is inviting you to a scheduled Zoom meeting.

Join Zoom Meeting

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**Public Comment**

**Old Business:** a) Prospective MBTA Multi-family zoned district  
b) Open Space Residential Development Bylaw Amendment (§125-35) comparisons  
c) Update on 320 Ayer Road situation.

**New Business:** a) **Minor Erosion Control Application, 30 Whitman Road** for a Septic system §125-58(E)3(a)2  
b) **Site Plan Review without a Special Permit, 4 Pond Road** for a proposed pavilion on the land of the Bromfield Trustees §125-35D  
c) **Approval Not Required Endorsement, 46 Warren Ave.** for a tract of land that to be combined and annexed with adjoining land to form on undivided lot, §125-29  
d) Housing Production Plan Draft  
e) Comments for ZBA Special Permit application for 32 Mass Ave.  
f) Invitation from Planning Board Chair to member of Select Board & ZBA to serve on ad hoc RFP Committee.

**Public Hearings:**

**7:30pm Special Permit Hearing – VERIZON Wireless, 131 Brown Road for installation of collocator equipment.**

**8:00pm Continuation of Special Permit - Ayer Road Village-Special Permit and Site Plan Review Hearing - Yvonne Chern & Wheeler Realty Trust, 203 Ayer Road,** for the updates on proposed development of three commercial use buildings, including a Commercial Entertainment and Recreation use.

**Standard Business:** a) Board Member Reports

- Representatives & Liaisons Update
- Community Matters

b) Approve Minutes

c) Invoices: Beals+Thomas invoice #3241.2-6 Peer Review \$835.00

**NEXT SCHEDULED MEETING: MONDAY, JUNE 5, 2023**

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The listing of matters are those reasonably anticipated by the chair which may be discussed at the meeting. Not all items listed may in fact be discussed and other items not listed may also be brought up for discussion to the extent permitted by law.

## § 125-35. Open Space and Conservation - Planned Residential Development (OSC-PRD).

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[Added 3-29-2003 ATM by Art. 32<sup>1</sup>]

This section establishes and regulates Open Space and Conservation Planned Residential Development (OSC-PRD). Development under this section is pursuant to a special permit granted by the Planning Board.

- A. Purpose and intent.** The purpose and intent of the OSC-PRD provision is to permit high-quality residential development that preserves open space, water resources, wetlands, habitat, prime agricultural land, scenic landscapes and natural features, reduces infrastructure and site development cost, and promotes a diversity of housing opportunities within the Town, while respecting and enhancing neighborhoods, and promoting attractive standards of appearance and aesthetics consistent with Town character.
- (1) A further purpose of the OSC-PRD provision is to reduce the anticipated negative fiscal impact on the Town associated with conventional residential development.
  - (2) The OSC-PRD provision is designed to encourage the siting of homes in a manner that clusters units together in well-designed village settings, on buildable portions of the site, as a distinct alternative to the more arbitrary siting associated with lot by lot development typically reflected in plans submitted pursuant to Massachusetts General Laws Chapter 41, Sections 81K through 81GG, the Subdivision Control Law.
  - (3) The OSC-PRD will aid the Town in developing sustainable housing and associated infrastructure in harmony, as much as possible, with the Town's Climate Action Plan.
- B. Applicability.** The Planning Board may grant a special permit for an OSC-PRD on an Agricultural-Residential (AR) zoned tract of land with definite boundaries ascertainable from a recorded or registered deed(s) or recorded or registered plan(s). Existing public and private ways need not constitute boundaries of the tract, but the area within such ways shall not be counted in determining tract size.
- (1) **Permitted uses in Open Space and Conservation Planned Residential Development.** Permitted uses include the following:
    - (a) Single-family detached dwellings.

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<sup>1</sup> Editor's Note: This article also repealed former § 125-35. Cluster development for open space conservation, added 3-31-1990 ATM by Art. 18, as amended.

- (b) Multi-family dwellings.
- (c) Agriculture and horticultural uses including but not limited to orchards, vineyards, forestry, farming for fruits and vegetables.
- (d) Open space.
- (e) Trails.
- (f) Passive outdoor recreation, cf. 301 Mass. Reg. 5.02.
- (g) Educational and religious uses and other uses not mentioned above which are exempt from regulation by zoning under Massachusetts General Laws Chapter 40A, Section 3.
- (h) Accessory residential recreational uses (e.g., tennis court, pool, playground).
- (i) Active outdoor recreation, cf. 301 Mass. Reg. 5.02.

**C. Requirements and process for approval.** An applicant who is the owner (or with the permission of the owner) of land in the AR District as described above, may submit to the Planning Board a plan and application for a special permit for an OSC-PRD in accordance with the provisions of this section, excepting the building lots or lot shown on such plans from the lot area and other dimensional requirements specified in other sections of this Bylaw. While a subdivision plan is not required to be submitted in conjunction with the provisions of this section, in the event that a subdivision plan is being proposed by the applicant, such plan shall be submitted to the Planning Board in accordance with the Subdivision Rules and Regulations of the Planning Board.

- (1) **Submittal requirements.** Prior to the granting of a special permit pursuant to this section, a duly submitted application for said special permit shall be submitted together with a site plan to the Planning Board, in accordance with § 125-38, Site plans, of the Bylaw, and any Site Plan Rules and Regulations adopted by the Planning Board. For purposes of this Bylaw, a landscape architect, architect, land surveyor, and professional engineer must participate in the preparation of such site plan, which shall include the following:
  - (a) The location of the proposed development.
  - (b) The size of the site in acres.
  - (c) The total number of the proposed buildings and/or lots, and the size of each in square feet.

- (d) The acreage and proposed use of permanent open space.
- (e) A statement on the disposition or manner of ownership of the proposed open space.
- (f) The lots or areas which are to be used as building areas or lots, and the lots or areas which are to remain as permanent open space.
- (g) Lines showing yard and setbacks as required by this Bylaw, within which dwellings or structures must lie.
- (h) Sufficient detail of proposed built and natural features as described in § 125-35D and § 125-35E to enable the Planning Board to make the required determinations of § 125-35C(3).
- (i) A landscape preservation plan sheet(s) to be included with the site plan, reflecting the existing, natural features to be preserved and proposed landscape features and details.<sup>2</sup>
- (j) Site Development Climate Mitigation Plan. All features which are sustainable and designed to help mitigate climate impact should be included in this plan. This plan should specifically address, but not be limited to, the following areas.

[1]. Heating and Cooling. How the development will be heated and cooled. The plans to use heat pumps or a geothermal system to heat and cool the buildings. Electrification of all systems and appliances.

[2]. Energy Generation. Solar panels should be considered to the maximum extent. Include how much power they will provide both in absolute kilowatt-hours and as a percentage of the total electricity requirements.

[3]. Energy Use and Resource Use Minimization. Roofing that minimizes heat loss and cooling loss. LED lights should be installed in all common areas. Water-saving fixtures should be installed in units as well as for landscaping.

[4]. Parking. EV chargers installed with infrastructure to expand capacity based on anticipated growth. Include percentage of the anticipated automobile population that will be served by the chargers and the anticipated expansion readiness. Parking to be pervious to reduce runoff.

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<sup>2</sup> Editor's Note: See Ch. 130, Subdivision Control.

[5]. Landscaping. Any trees removed from the site to be replaced with trees of equal size or compensated by more trees than removed. Shade trees be planted in areas to offset heat from parking areas. Drought-tolerant and native plants to be used in the landscaping.

[6]. Site Infrastructure. Composting and recycling stations available to all residents. Rain water collection site to reduce water usage.

[7]. Open Space. Open space to be landscaped naturally or with grass that does not require regular mowing. No pesticide use given proximity to agricultural lands and waterways.

- (2) **Submittal of preliminary plan.** An applicant must submit a plan of the required form and content standards as a "Preliminary Plan" in accordance with the Massachusetts General Laws Chapter 41, Section 81S and Harvard Planning Board governing laws for Subdivision Plans. Such plan, although not a formal subdivision plan filing, and submitted for conceptual purposes only, shall include a perimeter survey prepared by a registered land surveyor, location of wetlands, and topography based upon the most recent United States Geological Survey map. The applicant shall demonstrate to the satisfaction of the Board that a subdivision plan, if formally filed, would be buildable without reliance on significant waivers of the subdivision regulations.
- (3) **Approval criteria.** After notice and a public hearing in accordance with Massachusetts General Laws Chapter 40A, Section 9, 11, and 15 and after following the procedure outlined in this Bylaw, the Planning Board may grant such a special permit with any conditions, safeguards, and limitations, if it determines:
- (a) That the application form and content referred to in § 125-35C(1), herein is properly completed.
  - (b) That the site plan referred to in § 125-35C(1) is properly completed.
  - (c) That all the other requirements of this Section and Bylaw are fully met.
  - (d) That the design and layout of the proposed OSC-PRD preserves open space for conservation and recreation; that it preserves natural features of the land; allows more efficient provision of streets, utilities and other public services; and, that it provides a high degree of design quality, based on the criteria and considerations enumerated herein in § 125-35E.
  - (e) That if development of single family homes is being proposed on separate lots, as opposed to a clustered village concept that is a major

objective of this Bylaw, exemplary site planning is demonstrated, and other determinations in § 125-35D, are met.

- D. Design criteria.** In its consideration of an OSC-PRD, the Planning Board shall give particular attention to, and shall use as a basis for its decision, all of the following:
- (1) Lots, streets, off-street parking, sidewalks, pathways and buildings which achieve the harmonious integration of the proposed development with surrounding properties.
  - (2) Overall layout and design that achieves the relationship between the proposed development and the land under consideration.
  - (3) Appropriately sized and configured open spaces for active or passive recreation, and where possible, links to adjoining common open space areas.
  - (4) Protection of natural features such as streams, mature trees or clusters of trees, rock outcrops, bluffs, slopes, high points, views, vistas, and historic or archeological features.
  - (5) Provision of buffer areas, composed of existing vegetation, to surround building groupings and building envelope areas, to discourage site clearing and encourage preservation of existing land cover and mature vegetation.
  - (6) Provision of accessibility to open spaces for all, consistent with Massachusetts Architectural Access Board 521 CMR Accessibility Guidelines.
  - (7) Use of open spaces for preserving, enhancing, or providing scenic vistas; preservation and protection of historic resources.
  - (8) Adequacy of provisions for public safety, protection from fire and flood, and maintenance of public facilities, streets, utilities, and open space.
  - (9) Consistent with the Town of Harvard Climate Action Plan, with sufficient conservation and sustainability in the design of the development.
- E. Design quality.** Project design for an OSC-PRD shall be reviewed by the Planning Board with input from Town officials, any review consultant(s), and others as appropriate. This section is to be interpreted as guidelines to be applied flexibly by the Planning Board as appropriate to the situation under review, including factors such as foundation and soil characteristics and other extraordinary site constraints. While these guidelines apply to all site improvements and buildings and structures, it is not the intent of this section to prescribe or proscribe use of materials or methods of construction regulated by the state building code, but rather to enhance the appearance of the built environment within an OSC-PRD.

- (1) **Building and structure placement.** The placement of buildings and structures in an OSC-PRD should:
  - (a) Provide for maximum buffering of buildings and structures to adjoining properties either within the proposed OSC-PRD or to adjacent land uses. Such buffering includes, but is not limited to: landscaping, screening materials, natural barriers, fencing, and related measures.
  - (b) Preserve attractive views from major vantage points, especially from major thoroughfares and residential neighborhoods.
  - (c) Avoid regular spacings and building placements that will be viewed as continuous walls from important vantage points, which may be identified in an OSC-PRD pre-application conference.
  - (d) Avoid the placement of structures, common area facilities, and private space related to individual units in a manner that eclipses views or access to open space areas described in § 125-35K.
  - (e) Ensure that an appropriate number of units are designed to be fully accessible consistent with Massachusetts Architectural Access Board 521 CMR Accessibility Guidelines. If greater than 4 but fewer than 10 units, one unit must be accessible. If greater than 10 and fewer than 19, two units must be made accessible. For more than 20 units, 10% must be made accessible. .
- (2) **Building massing/articulation.** The massing/articulation of buildings should:
  - (a) Avoid unbroken building facades longer than 50 feet.
  - (b) Provide human-scale features, especially for pedestrians and at lower levels.
  - (c) Avoid unarticulated and monotonous building facades and window placement.
- (3) **Building appearance and treatment.** To the extent not inconsistent with or pre-empted by the state building code, the following should be considered as applicable:
  - (a) Materials and building treatments that reduce the visibility of the buildings from distant vantage points, and that are compatible with backgrounds and surroundings.

- (b) Materials and colors compatible with other quality buildings of similar scale in the vicinity.
  - (c) Green building technologies and materials, wherever possible, to minimize adverse environmental impacts.
- (4) **Roofline articulation.** The design of buildings should:
- (a) Provide a variety of building heights and varied roofline articulation that stresses New England vernacular architecture.
  - (b) Locate taller buildings away from major streets, abutting and off-site single-family residential areas and homes.
- (5) **Landscaping.** Landscaping criteria are as follows:
- (a) All open areas, exclusive of areas to remain in an existing natural state within an OSC-PRD, should be landscaped in an appropriate manner, utilizing both natural and man-made materials such as indigenous grasses, trees, shrubs, and other appropriate elements.
  - (b) Deciduous trees should be placed along new and existing streets and ways. Outdoor lighting should be considered in the landscaping plan, and should be designed to complement both man-made and natural elements of the OSC-PRD and adjacent areas.
  - (c) Intensive, high-quality landscaping or preservation of existing vegetation should be provided within the OSC-PRD where it abuts major streets, existing residential areas, and along internal drives.
  - (d) Preservation of existing vegetation or tree-lined areas should be maintained.
  - (e) Parking areas and lots should use landscaping and terracing to break up large areas of pavement and to enhance residential flavor and appearance; trees and shrubs should be used to the maximum extent feasible.
  - (f) Features such as shade trees, forest trees, and expansive planting areas should be preserved and/or introduced along external property boundaries and on the perimeter of the OSC-PRD itself, to buffer the site from adjoining parcels.
  - (g) Any lighting in the proposed development shall comply with Lighting Bylaw §125-40.



- F. Utilities.** To the maximum extent feasible, all utilities should be located underground.
- G. Signage.** All signs shall comply with Protective Bylaw § 125-41. However, within the development, signs, not to exceed two square-feet each, of a number and location to be approved as part of the OSC-PRD, may be permitted for the sole purposes of orientation and direction, and of identifying common building spaces.
- H. Base development density.** The maximum number of dwelling units per acre permitted in an OSC-PRD shall not exceed two units per acre of land area, and in no event exceed the maximum number of lots or dwelling units obtainable under a conventional subdivision plan for the land area under consideration, except as provided in § 125-35I.
- I. Development incentive.**

- (1) The Planning Board may authorize an increase in lots or dwelling units up to a maximum of ten units per acre. Increased permissible density will be allocated as the following conditions are met:

(a) Additional Open Space Preservation

[1] The applicant proposes a significant increase in open space above 50%, and preserves significant natural resources.

[2] There is permanent preservation of land devoted or set aside for agricultural use or other unique preservation strategy, including preservation of historic structures or barns, or other special features of the built environment.

(If (a)[1] or (a)[2] above are found to be satisfied, in the opinion of Planning Board, it may authorize a 2 unit per acre increase over base density.)

- (b) The applicant proposes public improvements or amenities that result in substantial benefit to the Town and the general public, provided:

[1] There are significant improvements to the environmental quality or condition of the site and its surrounding areas, including a decrease in stormwater runoff from what would otherwise result from a conventional subdivision plan.

[2] There are provisions contributing to off-site public facilities or environmental improvements beyond those necessary to mitigate the impacts of the proposed development.

(If (b) above is found to be satisfied, in the opinion of Planning Board, it may authorize a 1.5 unit per acre increase over base density.)

- (c) Housing units for senior citizens and persons aged 55 years and over housing is provided. Such units should conform to §125-57E, Age Appropriate Design.

(If (c) above is found to be satisfied, in the opinion of Planning Board, it may authorize a 1.5 unit per acre increase over base density.)

- (d) The applicant sets aside 15% or more of lots or dwelling units on the site for Affordable Housing for purchase or rental by those with households of low or moderate incomes. Such units must count toward the Town’s Subsidized Housing Inventory, and be in accordance with the provisions of 760 CMR 45.00, as may be amended. The Planning Board shall review and approve the actual percentage distribution of qualifying low versus moderate income units.

(If (d) above is found to be satisfied, in the opinion of Planning Board, it may authorize a 1.5 unit per acre increase over base density.)

- (e) The development incorporates at least five elements of environmentally conscious design including, but not limited to heat pump/geothermal climate controls, smart windows, solar panels, smart outlets, LED lighting, conservation-minded landscaping, and low-flow water fixtures.

(If (e) above is found to be satisfied, in the opinion of Planning Board, it may authorize a 1.5 unit per acre increase over base density.)

Condition	Units per acre	Additional Units per acre
<b>Base Density</b>	2	
<b>(a) Additional Open Space Preservation</b>		2
<b>(b) Substantial Benefit to Town</b>		1.5
<b>(c) Senior Housing</b>		1.5
<b>(d) Affordable Housing</b>		1.5
<b>(e) Environmentally Conscious</b>		1.5
<b>Maximum Density if all conditions met</b>	<b>10</b>	

**J. Dimensional requirements.** The following provisions shall apply:

- (1) The Planning Board may waive the minimum requirements for frontage and/or yard requirements that would normally be applicable to land within the AR District in order to achieve maximum open space area, and may permit more than one single or two-family dwelling be located on a lot in an OSC-PRD, as provided below.
- (2) The parcel proposed for development must have a minimum of 50 feet of frontage on a public way or private way which is open to the public.
- (3) The minimum distance between clusters of multiple unit dwellings, shall be 50 feet.
- (4) A minimum width of 150 feet of green area shall be established and maintained between any property adjacent to the OSC-PRD and the nearest dwelling unit or units in the OSC. [Amended 4-2-2005 ATM by Art. 34]
- (5) The minimum setback from internal roads shall be 25 feet.
- (6) The maximum height of proposed buildings shall be 35 feet, and shall not exceed 3 stories.
- (7) Except as provided in this Bylaw, any lot in an OSC-PRD shall comply with any other dimensional requirements of the zoning district in which it is located.

**K. Common open space.** A minimum of 50% of the OSC-PRD parcel shall be devoted to contiguous open space, completely devoid of any structure, parking, loading and unloading space, access ways thereto, or as private yards, patios, or gardens for the exclusive or principal use by residents of individual dwelling units. To the greatest extent possible, such open space shall be left in its undisturbed natural condition or shall be appropriate in size, shape, dimension, location, and character to assure its use as a conservation area, and where appropriate, a recreational area, and be a visual and natural amenity for the development and the Town. The common open space described herein is in substitution of and supersedes any other reference to common open space that may be described elsewhere in the Bylaw.

- (1) **Open space criteria.** The following criteria define open space, and open space that is considered **usable for passive outdoor recreation** within an OSC-PRD parcel:
  - (a) No more than 25% of common open space in an OSC-PRD shall be wetlands.
  - (b) Unless approved by the Planning Board, common open space shall not be considered usable if the slope of the finished grade exceeds 33%.

- (c) Unless approved by the Planning Board, the nearest part of the common **usable** open space shall not be more than 300 feet in distance from the nearest point of any building that it is proposed to serve, **in order to make the space accessible to those who use it.**
- (d) No common open space shall be considered usable unless it is compact and contiguous and has no dimension of less than 50 feet.
- (e) All usable open space shall be open to the sky and pervious.

#### **L. Open space conveyance.**

- (1) The common open space shall be conveyed in the following ways as approved by the Planning Board:
  - (a) To a corporation or trust comprising a homeowners association whose membership includes the owners of all lots or units contained in the development. The developer shall include in the deed to owners beneficial rights in said open land, and shall grant a perpetual open space restriction to the Town of Harvard or a non-profit corporation or organization over such land to insure that it be kept in an open state and not be built upon for residential use, or developed for accessory uses such as parking or roadways. Such restriction shall be in such form and substance as the Planning Board shall prescribe, and may contain such additional restrictions on development and use of the open space as the Planning Board may deem appropriate.
  - (b) To a non-profit organization, the principal purpose of which is the conservation of open space. The developer or non-profit organization shall grant an open space restriction as set forth above.
  - (c) To the Town for a park or open space use, subject to the approval of the Select Board, for management by the Park and Recreation Commission if a park, otherwise by the Conservation Commission, with a clause insuring that it be maintained as open space. [Amended 10-22-2018 STM by Art. 2]
- (2) **Multiple conveyance.** To provide flexibility, and when deemed in the public interest, the Planning Board may approve more than one organization to accept the open space conveyance, particularly when it is appropriate that a major portion of such land be conveyed to the Town or a non-profit conservation organization, and another portion of such land is more appropriately conveyed to an owners association.

**M. Passageways.** Private roadways and common driveways shall be allowed in OSCPRD parcels. While roadway surface widths may be narrower than widths associated with a traditional subdivision, the durability of passageway surfaces and subsurfaces must be comparable to those in a conventional subdivision. [Amended 4-2-2005 ATM by Art. 34]

- (1) **Criteria for passageways.** The following criteria shall guide the development of these passageways:
  - (a) Cleared widths for traveled ways (excluding on-street parking spaces and passing turnouts) shall not be more than 20 feet or less than 12 feet. A cleared height of not less than 16 feet above the entire passageway shall be established and maintained.
  - (b) Drainage and surface runoff from all passageways must be suitably accommodated by an approved drainage system, using best management practices.
  - (c) All OSC-PRD plans shall specify that such passageways will not be dedicated to the Town, but are to remain private ways; all deeds or other instruments conveying any portion of land or structure in an OSC-PRD containing such a passageway(s), shall specify that such passage way(s) are and shall remain private way(s) in perpetuity; ~~and~~

**N. Site improvements.** Site improvements specific to an OSC-PRD are listed below. To assist the Planning Board's evaluation of site changes and improvements from any OSC-PRD plan, the applicant shall submit said plan to the Town's Conservation Commission and Board of Health for review and recommendations to the Planning Board.

- (1) **Water supply.** Each lot and the development in its entirety shall be served by water supply systems.
- (2) **Sewage disposal.** Privately owned and maintained on-site sewage disposal or treatment systems may be approved to serve buildings and lots in an OSCPRD, if owned, maintained, operated, and monitored by a residents association, notwithstanding the provisions of § 125-32D of this Bylaw, if such treatment facility or system is approved by the Board of Health and in compliance with the requirements of Title 5, 310 CMR 15.00, or approved in accordance with the requirements of 314 CMR 5.00 (the Ground Water Discharge Permit Program). An approved system may be located on land owned in common by the owners of the building lots or residential units within the development.
- (3) **Parking.** Unless otherwise approved by the Planning Board, a minimum of 1.5 and maximum of 4.52 off-street parking spaces shall be provided for

each unit, exclusive of spaces within garages. The Planning Board may also approve, based upon the nature of the development proposed and exclusive of the 1.5 parking space ratio provided, areas for visitor parking.

- (4) **Storm runoff control.** The applicant shall demonstrate that, as compared with the situation that would exist on the site without the development, no phase of the proposed OSC-PRD will result in an increase in the peak rate of storm runoff at the parcel boundary for the OSC-PRD as a whole for the 25-, 50- and 100-year design storms, and that there will be no net loss in flood storage capacity for the 100-year design storm. In making such determinations, any state or local orders or requirements of the Wetlands Protection Act or the Town's Wetlands Protection Bylaw<sup>3</sup> shall be assumed in the calculations of runoff and flood storage without the OSC-PRD, but alternative forms of development shall not be assumed.
- (5) **On-site runoff and erosion control.** The applicant shall demonstrate that any adverse existing off-site runoff and erosion conditions or off-site runoff and erosion conditions which would result from the development of the OSC-PRD, are fully identified and that workable and acceptable mitigation measures are proposed as part of the submission of a final plan, **consistent with .§ 125-58 herein;**

**O. Residents association.** In order to ensure that common open space and common facilities within the development will be properly maintained, each OSC-PRD shall have a residents association, which **shall**may be in the form of a corporation, non-profit organization, or trust, established in accordance with appropriate State law by a suitable legal instrument or instruments properly recorded with the Worcester County Registry of Deeds or registered in the Worcester County Registry District of the Land Court. As part of the final OSC-PRD site plan submission, the applicant shall supply to the Planning Board copies of such proposed instruments, which shall at a minimum provide the information required by said OSC-PRD submission requirements, § 125-35L of this Bylaw, and Site Plan Rules and Regulations in effect at the time of final submission.

- (1) **Responsibilities of the residents association.** Said legal instruments pertaining to the residents association shall specify that the residents association shall be solely responsible for all related improvements, and all costs associated with the operation of the development, including:
- (a) Roadway maintenance.
  - (b) Snow-plowing.
  - (c) Maintenance of street lighting and on-site improvements and utilities.

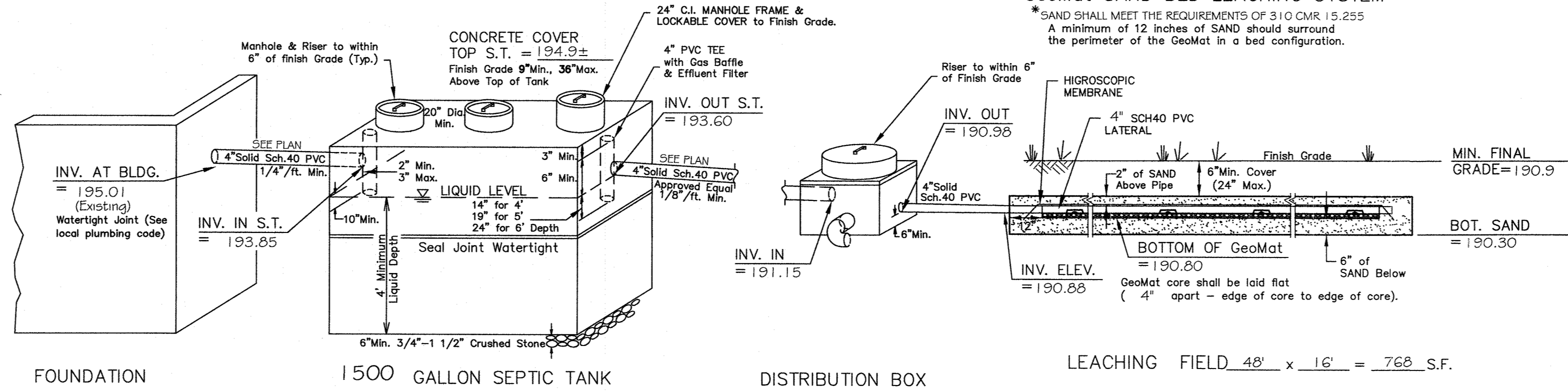
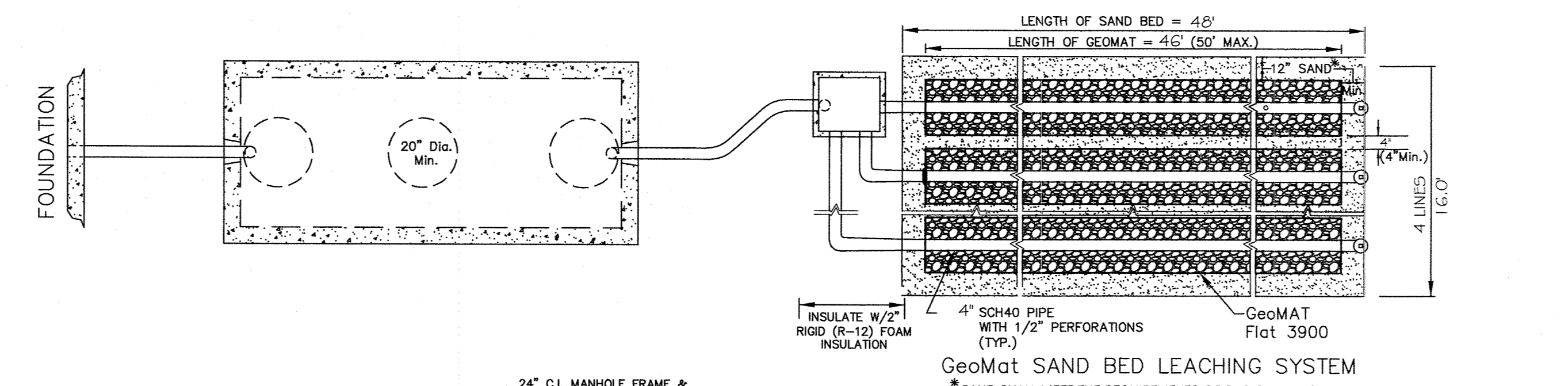
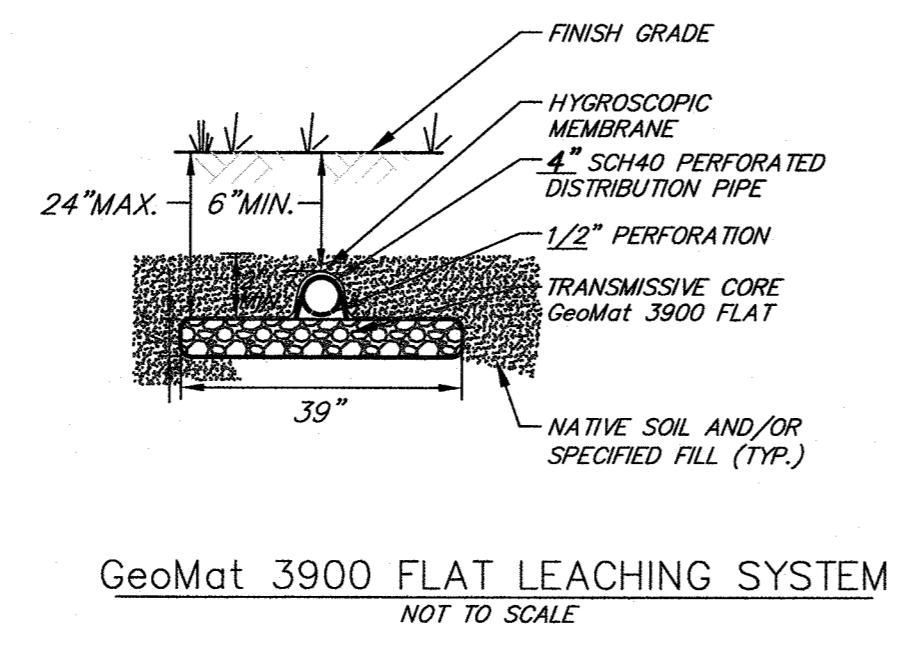
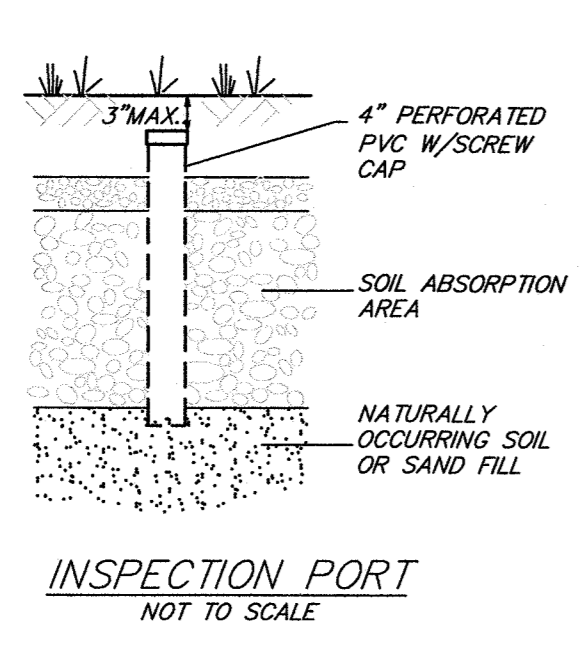
<sup>3</sup> Editor's Note: See Ch. 119, Wetlands Protection.

**P. Amendments without public hearing.** Following the granting of a special permit pursuant to this Section, the Planning Board may, upon application and for good cause shown, without public hearing, amend the OSC-PRD plan solely to make changes in lot lines shown on the plan, which lot lines are not part of the perimeter of the site, or other minor engineering changes, provided, however, that no such amendment shall:

- (1) Grant any reduction in the size or change in location of the open space as provided in the permit;
- (2) Grant any change in the layout of the ways as provided in the permit;
- (3) Increase the number of lots or units as provided in the permit; or
- (4) Decrease other dimensional requirements of any lot below the minima permitted by the approval of the initial site plan and special permit.

**Q. Amendments requiring public hearing.** Any proposed change to an existing OSC-PRD special permit considered substantial by the Planning Board, shall require notice and a formal public hearing in accordance with Massachusetts General Laws Chapter 40A, Section 9, 11, and 15 and an amendment to the special permit decision made pursuant to this section.

- LEGEND**
- 300 --- EXISTING CONTOUR
  - 300 --- PROPOSED CONTOUR
  - ⊗ PERCOLATION TEST HOLE
  - ⊗ OBSERVATION TEST HOLE
  - S — SEWER LINE
  - W — WATER LINE
  - --- EDGE OF WETLANDS



OBSERVATION TEST HOLE DATA  
BY DANIEL B. WOLFE, D.E.R.A., INC.  
WITNESSED BY BILL BROOKINGS, N.A.B.O.H.  
12/08/2022

#1222-1: ELEV. = 188.7'  
Ap 0' - 14" FINE SANDY LOAM  
Bw 14' - 30" FINE SANDY LOAM  
C 30' - 64" SANDY LOAM  
MOTTLING AT 30"  
NO GROUNDWATER  
REFUSAL AT 64"  
E.S.H.W.T. 30' (16.2)

#1222-2: ELEV. = 186.8'  
Ap 0' - 14" FINE SANDY LOAM  
Bw 14' - 30" FINE SANDY LOAM  
C 30' - 102" SANDY LOAM  
MOTTLING AT 30"  
GROUNDWATER OBSERVED AT 78"  
REFUSAL AT 102"  
E.S.H.W.T. 30' (18.3)

**SEPTIC TANK**  
SEPTIC TANK SHALL BE A PRECAST, REINFORCED CONCRETE TANK MADE WATER TIGHT. CONSTRUCTION MATERIALS AND DIMENSIONS SHALL CONFORM TO TITLES 5 AND AASHTO HS 10 REQUIREMENTS AND PLACED ON A STABLE MECHANICALLY COMPACTED LEVEL BASE.

TANK/ SYSTEM TO BE VENTED THROUGH THE BUILDING PLUMBING SYSTEM AS REQUIRED BY BUILDING CODE.

TANK SHOULD BE INSPECTED, MAINTAINED AND BE PUMPED OUT WHEN SLUDGE DEPTH IN THE BOTTOM EXCEEDS ONE FOURTH OF THE TOTAL LIQUID DEPTH.

AT LEAST THREE 20" MAHOLES SHALL BE PROVIDED. THE MAHOLES OVER THE OUTLET TEE SHALL BE EQUIPPED WITH A RISER AND LOCKABLE COVER TO FINISH GRADE. ALL OTHERS SHALL BE EQUIPPED WITH A RISER AND COVER TO WITHIN 6 INCHES OF FINISH GRADE.

"D" BOX  
"D" BOX TO BE MADE WATER TIGHT. CONSTRUCTION MATERIALS AND DIMENSIONS SHALL CONFORM TO TITLES 5 AND AASHTO HS 10 REQUIREMENTS AND PLACED ON A STABLE MECHANICALLY COMPACTED LEVEL BASE.

"D" BOX SHALL BE INSTALLED LEVEL AND TRUE TO GRADE ON A LEVEL STABLE BASE THAT HAS BEEN MECHANICALLY COMPACTED AND ONTO WHICH SIX INCHES OF CRUSHED STONE HAS BEEN PLACED TO MINIMIZE UNEVEN SETTLING OR ON A CONCRETE PAD WHICH IS AT LEAST SIX INCHES IN THICKNESS AND 1.5 TIMES THE BOTTOM SURFACE AREA OF THE DISTRIBUTION BOX.

FIRST 2' (MIN.) OF OUTLETS SHALL BE INSTALLED LEVEL TO EQUALIZE FLOW.

THE MINIMUM INSIDE DIMENSIONS OF THE "D" BOX TO BE 12" AND THE MINIMUM WALL THICKNESS TO BE 2".

WHEN INLET PIPE SLOPE EXCEEDS 8% - PVC INLET TEE REQUIRED. CUT LOW END 1" ABOVE OUTLET INVERT.

"D" BOXES BURIED GREATER THAN 9" BELOW GRADE SHALL BE EQUIPPED WITH A RISER TO WITHIN 6" OF FINISH GRADE.

**GEOMAT LEACHING SYSTEM**  
GeoMat LEACHING SYSTEM SHALL BE INSTALLED IN ACCORDANCE WITH THE SPECIFICATIONS OF THE MASSACHUSETTS GEOMAT LEACHING SYSTEM DESIGN MANUAL FOR PRESSURE AND GRAVITY APPLICATIONS, DATED SEPTEMBER 2017. GEOMAT IS A PRODUCT OF GEOMATRIX, 114 MILL ROCK ROAD EAST, OLD SAYBROOK, CT 06475 (860) 510-0730, WWW.GEOMATRIXSYSTEMS.COM

ALL LOAM, LARGE BOULDERS OR FOREIGN MATERIAL ENCOUNTERED DURING EXCAVATION ARE TO BE REMOVED FROM THE LEACHING AREA. AVOID WORKING SOILS THAT ARE MOIST OR WET BECAUSE THEY CAN EASILY SMEAR AND COMPACT.

PROPERLY SCARIFY THE DRAIN FIELD BASE BEFORE INSTALLING COMPONENTS.

A MINIMUM OF SIX (6) INCHES OF SAND MEETING THE REQUIREMENTS OF 310 CMR 15.255(3) MUST BE PLACED BENEATH THE GeoMat AND TWO (2) INCHES OF THIS SPECIFICATION OF SAND SHOULD BE PLACED OVER THE GeoMat FABRIC MEMBRANE.

COVER DEPTH SHALL MAINTAIN A MINIMUM OF SIX (6) INCHES ABOVE THE GeoMat DISTRIBUTION PIPE. USE CLEAN SANDY FILL AND TOPSOIL SUITABLE FOR GROWING GRASS.

GeoMat SHALL BE LAID FLAT (LEVEL).

A MINIMUM OF TWELVE (12) INCHES OF SAND SHOULD SURROUND THE PERIMETER OF THE GEOMAT IN A BED CONFIGURATION. THE COVER MATERIAL OVER THE GeoMat IS ABOVE THE ORIGINAL GRADE, IT SHALL SLOPE AT A 2% PITCH AWAY FROM THE GeoMat SYSTEM AND FROM A POINT FIFTEEN (15) FEET PAST THE GeoMat, PROVIDE A 3:1 SLOPE TO ORIGINAL GRADE, IN ACCORDANCE WITH 310 CMR 255(2).

MAXIMUM DEPTH OF COVER OVER LEACHING SYSTEM IS 24 INCHES.

GeoMat MAY BE INSTALLED DIRECTLY ATOP CLASS I NATIVE SOILS. GeoMat IN CLASS II, III, AND IV SOILS REQUIRE A MINIMUM OF TWO (2) INCHES OF SAND MEETING THE REQUIREMENTS OF 310 CMR 15.255(3) BENEATH, TO THE SIDES, AND ABOVE THE GeoMat.

SYSTEMS ARE NOT TO BE INSTALLED BENEATH PAVED SURFACES OR IN AREAS OF ROUTINE TRAFFIC, PARKING OR STORAGE OF HEAVY EQUIPMENT.

SOIL EXCAVATION AND/OR PLANTING WITHIN FIVE (5) FEET OF THE SYSTEM ARE NOT PERMITTED.

AN INSPECTION PORT MEETING THE REQUIREMENTS OF 310 CMR 15.240(13) IS REQUIRED FOR SYSTEMS INSTALLED WITH SIX INCHES OF SAND BENEATH THE GeoMat.

**GENERAL NOTES**  
SYSTEM IS DESIGNED TO ACCOMMODATE SANITARY SEWAGE ASSOCIATED WITH NORMAL DOMESTIC USE AND CONSISTING OF WATER CARRIED FUTRIBLE WASTE ONLY.

ALL COMPONENTS OF THE SEWAGE DISPOSAL SYSTEM, EXCEPT THE GeoMat LEACHING SYSTEM, SHALL BE COVERED BY A MAXIMUM OF 36" OF CLEAN BACKFILL MATERIAL, FREE OF STONES AND BOULDERS GREATER THAN 6" IN SIZE. THE MAXIMUM COVER OVER THE GeoMat IS 24".

ALL COMPONENTS SHALL BE MARKED WITH MAGNETIC MARKING TAPE OR A COMPARABLE MEANS IN ORDER TO LOCATE THEM ONCE BURIED. OWNER SHALL VERIFY EFFECTIVE ZONING REGULATIONS PRIOR TO CONSTRUCTION.

PLAN SHOWS ONLY THOSE FEATURES THAT WERE VISUALLY APPARENT ON DATE OF TOPOGRAPHY, AND THE ABSENCE OF SUBSURFACE STRUCTURES, UTILITIES, ETC. IS NOT INTENDED OR IMPLIED.

ALL PIPING SHALL BE LAID TRUE TO LINE, GRADE AND INSTALLED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.

THERE ARE NO EXISTING WELLS WITHIN 100' OF THE PROPOSED SEWAGE DISPOSAL SYSTEM. (SEE PLAN)

THERE ARE NO EXISTING SEWAGE DISPOSAL SYSTEMS WITHIN 100' OF THE EXISTING WELL.

ALL KNOWN WELLS WITHIN 200' OF THE PROPOSED PRIMARY AND EXPANSION LEACH AREAS ARE SHOWN.

THE DESIGN ENGINEER SHALL BE NOTIFIED PROMPTLY OF ANY PLAN DEFICIENCIES FOUND DUE TO UNFORESEEN SUBSURFACE CONDITIONS OR OTHER REASONS THAT MIGHT AFFECT THE FUNCTION OF THIS DESIGNED SYSTEM.

DEVIATIONS IN DESIGN OR CONSTRUCTION FROM THIS PLAN OR ANY OF THE CONDITIONS RELATING TO THE USE OR MAINTENANCE OF THE PROPOSED SYSTEM SHALL BE DEEMED TO VOID ANY CERTIFICATION OR REPRESENTATION MADE RELATIVE TO THIS SUBSURFACE SEWAGE DISPOSAL SYSTEM.

CONTRACTOR SHALL NOTIFY "DIG SAFE" PRIOR TO ANY EXCAVATION. 1-888-DIG-SAFE (344-7233)

PRIOR TO ANY CONSTRUCTION A BENCHMARK SHALL BE SET WITHIN 50'-75' OF THE PROPOSED SEWAGE DISPOSAL SYSTEM.

**SYSTEM IN FILL**  REQUIRED  NOT REQUIRED  
IF ANY PORTION OF THE PROPOSED LEACHING AREA IS LOCATED ABOVE EXISTING GRADE OR WITHIN TOPSOIL, PEAT OR OTHER UNSUITABLE OR IMPERVIOUS SOIL LAYER, THEN THE PLACEMENT OF FILL IS REQUIRED. PRIOR TO THE PLACEMENT OF FILL, ALL UNSUITABLE OR IMPERVIOUS SOILS SHALL BE EXCAVATED TO A MINIMUM OF FIVE FEET LATERALLY IN ALL DIRECTIONS BEYOND THE OUTER PERIMETER OF THE SOIL ABSORPTION SYSTEM TO THE DEPTH OF NATURALLY OCCURRING PERVIOUS MATERIAL. FILL MATERIAL SHALL BE SELECT, ON-SITE OR IMPORTED SOIL, CONSISTING OF CLEAN GRANULAR SAND, FREE FROM ORGANIC MATTER AND OTHER DELETERIOUS SUBSTANCES. MIXTURES AND LAYERS OF DIFFERENT SOIL CLASSES SHALL NOT BE USED. THE FILL SHALL NOT CONTAIN ANY MATERIAL LARGER THAN 2 INCHES. A SIEVE ANALYSIS USING A #4 SIEVE, SHALL BE PERFORMED ON A REPRESENTATIVE SAMPLE OF THE FILL. UP TO 45% BY WEIGHT OF THE FILL SAMPLE MAY BE RETAINED IN THE #4 SIEVE. SIEVE ANALYSES SHALL ALSO BE PERFORMED ON THE FRACTION OF FILL SAMPLE PASSING THE #4 SIEVE. SUCH ANALYSES MUST DEMONSTRATE THAT THE MATERIAL MEETS EACH OF THE FOLLOWING SPECIFICATIONS:

SIEVE SIZE	EFFECTIVE PARTICLE SIZE	% THAT MUST PASS SIEVE
# 4	4.75 MM	100%
# 50	0.30 MM	100%-100%
#100	0.15 MM	0%-20%
#200	0.075 MM	0%-5%

**WETLAND PROTECTION ACT (C131 S40)**  
PRIOR TO INITIATING ANY ALTERATIONS (REMOVAL OF VEGETATION, EXCAVATIONS, GRADING, ETC.) WITHIN 100' OF WETLANDS (POND, BROOKS, SWAMPS, ETC.) OR WITHIN 200' OF AN AREA SUBJECT TO THE RIVER'S ACT (PERENNIALY FLOWING RIVER, BROOK OR STREAM), A REQUEST FOR DETERMINATION OF APPLICABILITY OR A NOTICE OF INTENT UNDER THE WETLANDS PROTECTION ACT (310 CMR 10.00) SHOULD BE FILED WITH THE TOWN'S CONSERVATION COMMISSION. LOCAL BYLAWS MAY ALSO APPLY.

SCHEDULE OF ELEVATIONS	PROPOSED	AS-BUILT
TOP CONCRETE FOUNDATION	197.77	
INVERT AT FOUNDATION	195.01	
INVERT TANK INLET	193.85	
INVERT TANK OUTLET	193.60	
TOP SEPTIC TANK	194.9±	
INV. "D" BOX INLET	191.15	
INV. "D" BOX OUTLET	190.98	
MIN. FINAL GRADE	191.9	
INVERT LATERAL BEGIN	190.88	
INVERT LATERAL END	190.88	
BOTTOM OF GeoMat	190.80	
BOTTOM OF SAND	190.30	
GROUNDWATER OFFSET REQUIRED	4'	
GROUNDWATER OFFSET UTILIZED	4'	

**DESIGN CRITERIA**

**GARBAGE GRINDERS - NOT PERMITTED**

PERC. TESTS: PERFORMED BY DANIEL B. WOLFE, D.E.R.A.  
WITNESSED BY WILLIAM BROOKINGS, NABOH

PERC. #	RATE (M/A)	ELEVATION	DEPTH	DATE
1222-A	2	187.9	51"	12/08/22
1222-B	16	186.9	56"	12/08/22

FLOWS: 6 BEDROOMS AT 110 GPD = 660 GPD (330 GPD MIN.)

SEPTIC TANK REQUIRED: (1500 GAL. MIN.)  
660 GPD x 2.0 = 1320 GAL. TANK

LEACHING AREA PROVIDED:  
A. BASIS 16 MIN./INCH PERCOLATION RATE  
B. SOIL CLASS II

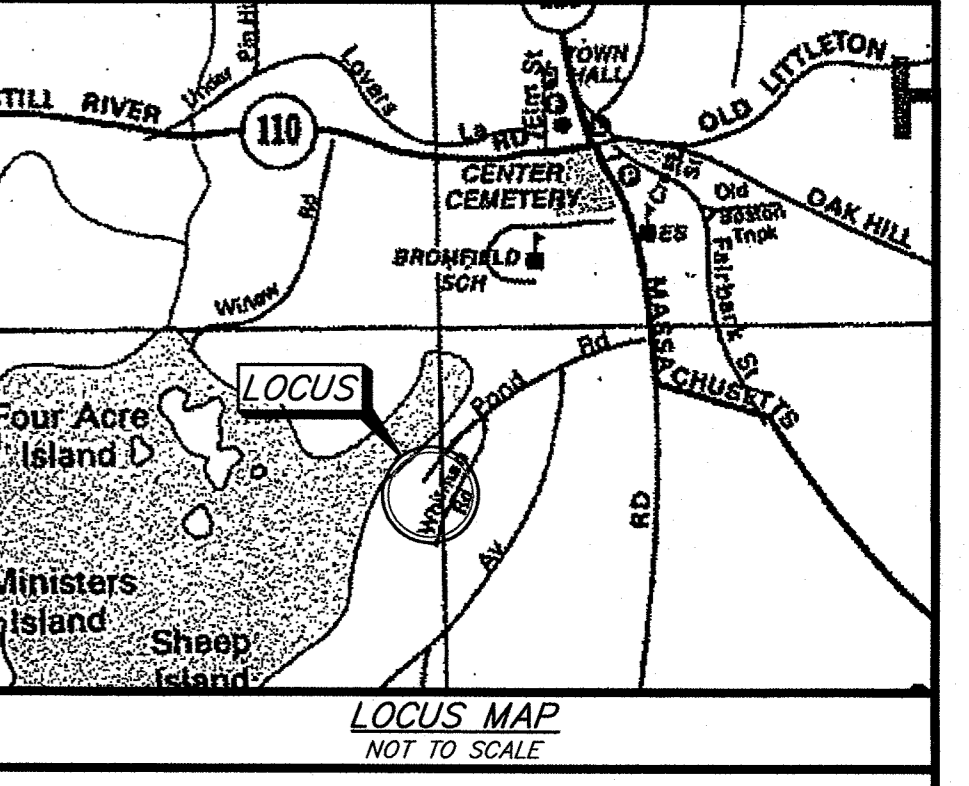
C. SAND BED GeoMat PRODUCT: 3900 FLAT  
1. LOADING RATE 1.07 GPD/S.F.  
INSTALLED IN:  6" SAND BENEATH  NATIVE SOILS

2. GeoMat AREA REQUIRED: 660 GPD / 1.07 GPD/S.F. = 617 S.F.

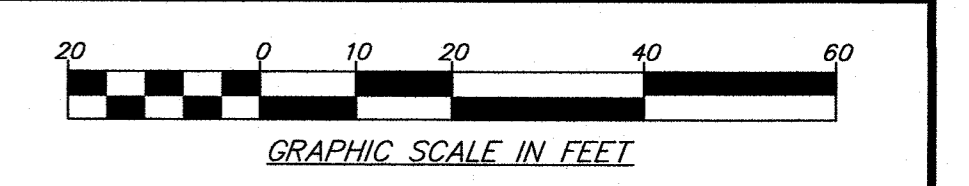
3. SAND BED PROVIDED: 768 S.F. (747 S.F. MIN.)

4. LENGTH OF GeoMat REQUIRED: 617 S.F. / 3.42 S.F./L.F. = 181 L.F.

5. LENGTH OF GeoMat PROVIDED: 4 ROWS x 46 L.F./ROW = 184 L.F.

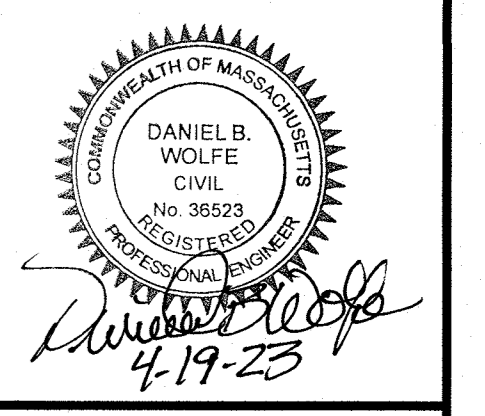


- NOTES:
- CONTRACTOR TO VERIFY ELEVATION OF EXISTING SEWER ELEVATION AT FOUNDATION OR SEWER CONNECTION PRIOR TO THE PLACEMENT OF THE SEPTIC TANK AND REPORT ANY DISCREPANCIES TO THE DESIGN ENGINEER.
  - GARBAGE DISPOSALS AND WATER SOFTENERS SHALL NOT BE USED WITH THE GeoMat LEACHING SYSTEM.
  - GeoMat LEACHING SYSTEM DESIGNED IN ACCORDANCE WITH REMEDIAL USE APPROVAL ISSUED TO GEOMATRIX SYSTEMS, LLC, OCTOBER 26, 2016, LAST MODIFICATION JUNE 26, 2019, TRANSMITTAL #267026, AND THE STANDARD CONDITIONS FOR ALTERNATIVE SOIL ABSORPTION SYSTEMS, DATED MARCH 5, 2016.
  - FOR OBTAINING A CERTIFICATE OF COMPLIANCE FOR INSTALLATION OF AN UPGRADED SYSTEM, THE SYSTEM OWNER SHALL RECORD IN THE CHAIN OF TITLE FOR THE PROPERTY SERVED BY THE ALTERNATIVE SYSTEM IN THE REGISTRY OF DEEDS OR LAND REGISTRATION OFFICE, AS APPLICABLE, A NOTICE DISCLOSING THE EXISTENCE OF THE ALTERNATIVE ON-SITE SYSTEM.
  - OWNER IS RESPONSIBLE FOR ANY UTILITIES THAT NEED TO BE REPLACED, RELOCATED OR INSTALLED.
  - THE AREAS SHOWN FOR A FULL-SIZED CONVENTIONAL PRIMARY SAS AND A FULL-SIZED CONVENTIONAL RESERVE AREA, AS REQUIRED BY THE STANDARD CONDITIONS FOR ALTERNATIVE SOIL ABSORPTION SYSTEMS, HAVE BEEN TAKEN FROM A SUBSURFACE SEWAGE DISPOSAL SYSTEM PLAN PREPARED BY GOLDSMITH, PREST AND RINGWALD, INC., JOB NO. 091042A, DATED JULY, 2022 AND LAST STAMPED ON AUGUST 3, 2022. REFERENCE TO THIS PLAN IS MADE FOR ALL DETAILS REGARDING ACTUAL CONSTRUCTION DETAILS.
  - T.O.C. NOT TO BE USED AS A BENCHMARK FOR CONSTRUCTION UNTIL VERIFIED WITH BENCHMARK NAIL AS SHOWN.



SURV: SPM	CALC.: SPM	DRAFT: PJT
NO: 843-4	DEED: 16291-91	CHECK: DBW

**REVISIONS**  
3/13/23 Original endorsement  
4/19/23 Revised per Board of Health review



**SHEET TITLE:**  
SEWAGE DISPOSAL SYSTEM

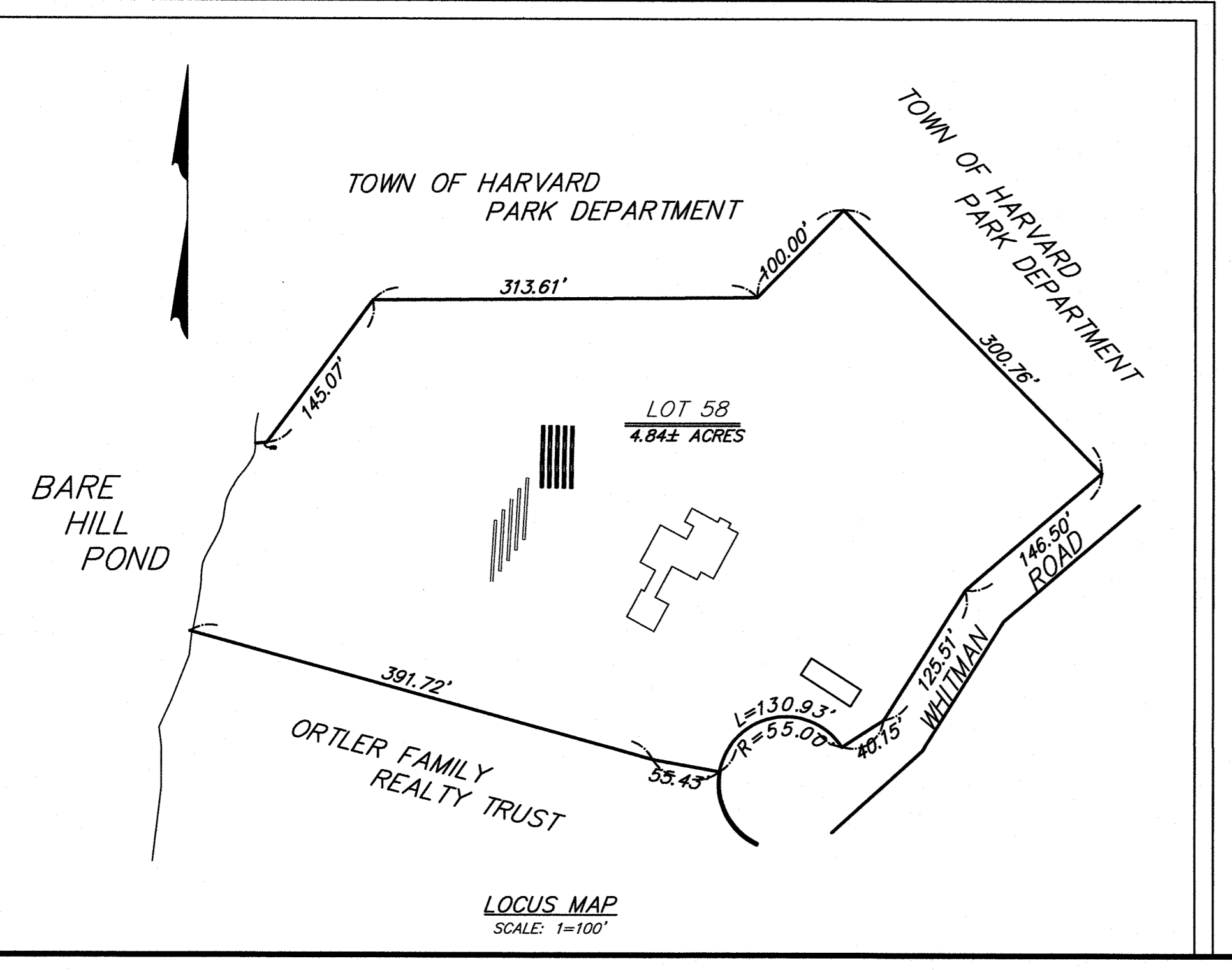
**DESIGNED FOR:**  
MOREY KRAUS

**ADDRESS:**  
30 WHITMAN ROAD  
HARVARD, MA

LOT NO.: 58	ASSESSOR MAP: 22	ASSESSOR PARCEL: 64
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**DAVID E. ROSS ASSOCIATES, INC.**  
CIVIL ENGINEERS - LAND SURVEYORS  
ENVIRONMENTAL CONSULTANTS  
6 Lancaster County Road  
P.O. Box 795  
Harvard, MA 01451-0795  
978-772-6232  
FAX 978-772-6258  
www.davidross.com

SCALE: 1"=20'	DATE: MARCH, 2023
REF: ---	PLAN NO.: L-14646
JOB NO.: 34225	SHEET NO.: 1 of 2







EROSION CONTROL APPLICATION

Applicants should review the Harvard Protective (Zoning) Bylaw, Chapter 125-58 of the Code of the Town of Harvard, the Planning Board's Rules and Regulations, Chapter 133 of the Code of the Town of Harvard. Copies of the Bylaw may be purchased from the Town Clerk and copies of the Rules and Regulations may be purchased from the Land Use Office. Information is also available online at www.harvard-ma.gov. The Rules and Regulations specify the documents that are required as a part of the application.

Applicant's Name: Mr. MOREY KRAUS  
Address: P.O. BOX 607, HARVARD, MA 01457 Phone: 508-524-4480 Email: MOREY.KRAUS@GMAIL.COM

Applicant is (check one): Owner  Agent \_\_\_\_\_ Prospective Buyer \_\_\_\_\_

Location of Property: 30 WHITMAN ROAD Zoning District: RA

Harvard Assessors' Map 22 Parcel 64

Owner's Name: TRACEY KRAUS LIVING TRUST Email: MOREY.KRAUS@GMAIL.COM  
for MOREY R KRAUS LIVING TRUST

Owner's Address: P.O. BOX 607, HARVARD, MA 01457 Owner's Phone: 508-524-4480

Signed: Daniel B. Wolfe, AS AGENT

APPLICATION CHECK LIST

Minor Permit

- Sketch plan showing limits, scope of work and proposed Best Management Practices (BMPs)
- Project narrative that includes a description of the proposed project and a description of how and where stormwater will be controlled and erosion and sediment controls to be used
- \$25.00 filing fee

Major Permit

- Applicants shall file one (1) original completed application packet and seven (7) copies
- Project narrative that includes a description of the proposed project and a description of how and where stormwater will be controlled and erosion and sediment controls to be used, plus a description of any specimen trees within the project area.
- Engineered plan set, signed and stamped by a professional engineer or a professional land surveyor registered in the Commonwealth of Massachusetts, and drawn at a legible scale and including:

- **Existing and proposed conditions plans**, which shall identify significant natural features and native trees greater than a diameter of (6) inches within the project area.
  
- **Erosion control plan**, which shall include the following related specifically to the disturbance area:
  - Location of all structural and non-structural erosion and sediment control measures and BMPs;
  - Locations where stabilization practices are expected to occur;
  - Locations for storage of materials, waste, vehicles, equipment, soil, snow, and other potential contaminants;
  - Operations and Maintenance Plan for BMP's including inspections and maintenance activities as noted in §133-41 below;
  - Areas where previous stabilization has been accomplished and no further construction-phase permit requirements apply; and
  - Any other information deemed necessary by the Planning Board.

\$200.00 filing fee

## Project Narrative

Prepared for Mr. Morey Kraus, 30 Whitman Road, Harvard  
Project No. 34225

On behalf of our client, Mr. Morey Kraus, we are hereby submitting the following narrative to outline the proposed activities and procedures that are proposed for the property at 30 Whitman Road in Harvard. This information is presented in relation to Section 125-58 (Erosion Control) of the Harvard Protective Bylaw.

The subject property is a 4.84-acre residential property on the west side of Whitman Road. This property is also on the easterly shoreline of Bare Hill Pond, south of the Town Beach. The existing 4-bedroom home is currently serviced by an on-site sewage disposal system and a private drinking water well, as shown on the accompanying Site Plan. The property is heavily wooded and private, with the house sitting on the high point of the property, approximately 330 feet from the shoreline of Bare Hill Pond. The areas of the property east of the existing house slope gradually down toward Whitman Road. Whitman Road is a gravel surfaced roadway with extremely low traffic volume, adding to the very quiet and private setting.

Our client is in the process of replacing the sewage disposal system with a new 6-bedroom septic system. This increase in capacity, over the existing 4-bedroom system, is to facilitate potential expansion of the facility at some point in the future. This new system is proposed to be placed between Whitman Road and the existing driveway that traverses up the hillside toward the house. This section of the land is currently a low spot in the landscape and would very nicely facilitate the fill involved for the proposed septic system. This area has very few trees that would need to be removed and the fill for the system only intrudes a very small distance into the wetland buffer zone. This area of fill within the buffer zone is being placed within the aforementioned low spot of the land and is isolated from direct runoff toward the wetland by berm of the road itself.

In an effort to control any erosion or sedimentation, the downgradient areas of this proposed disturbance area will be surrounded by an erosion control barrier, as is customarily proposed in more sensitive areas, and will be of the type commonly requested by the Harvard Conservation Commission (see detail). These barriers will be placed prior to any construction and will remain in place until the disturbed areas are fully restored and stabilized. Other runoff controlling measures are not warranted in this case due to the roadway itself creating a clear physical barrier to continued runoff or erosion.

It is our belief and representation that the proposed construction and land disturbance described will not result in any significant erosion or sedimentation of the property or any of the surrounding areas. The erosion control measures employed will be adequate for the project intensity and will remain until all areas have been fully stabilized.

**DAVID E. ROSS ASSOCIATES, INC.**

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6 Lancaster County Road P.O. Box 795 Harvard, Massachusetts 01451  
978-772-6232 FAX 978-772-6258  
[www.davidross.com](http://www.davidross.com)

OFFICE OF THE  
**CONSERVATION COMMISSION**

13 AYER ROAD HARVARD, MA 01451

978-456-4100 EXT.321

www.harvard-ma.gov



**MEMORANDUM**

DATE: May 9, 2023

TO: Planning Board

FROM: Liz Allard, Conservation Agent

Handwritten initials "LA" in a circle, likely representing Liz Allard.

RE: Erosion Control Application – 30 Whitman Road

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The above-mentioned location, along with the application has been reviewed for compliance with §125- 58 Erosion Control Bylaw and §§133-40 Review Standards. It would be my recommendations the following conditions be included within the decision made by the Planning Board:

- 1) Erosion Control Permit and approved plans shall be posted at the work site over the duration of site disturbance, construction, and post-construction cleanup;
- 2) No activities shall commence without receiving and complying with an Erosion Control Permit issued pursuant to §125-58;
- 3) Siltation barrier shall be the limit of clearing and grading;
- 4) Erosion and sedimentation controls shall be constructed in accordance with §§147-16A(1) Code of the Town of Harvard;
- 5) Erosion control measures shall include the use of, silt fencing, silt sacks, mulches, and/or temporary or permanent cover crops as may be most appropriate for the area. Erosion control measures damaged from heavy rainfalls, severe storms, and construction activity shall be repaired immediately;
- 6) Siltation barrier shall be inspected by the Conservation Agent prior to the commencement of activity;
- 7) Proper re-vegetation techniques shall be employed using native plant species, proper seed bed preparation, fertilizer and mulching to protect germinating plants. Re-vegetation shall occur on cleared sites within seven (7) calendar days of final grading and shall occur during the planting season appropriate to the selected plant species;
- 8) A minimum of four (4) inches of topsoil shall be placed on all areas subject to land disturbance which are proposed to be planted; and
- 9) The siltation barrier shall not be removed until approval is provided by the Conservation Agent.

THIS PLAN IS NOT TO BE USED FOR THE ESTABLISHMENT OF PROPERTY LINES, ERECTION OF FENCES, LANDSCAPING

# Certified Plot Plan

4 Pond Road

Harvard, Mass.

STREET

TOWN

David E. Ross Associates, Inc.

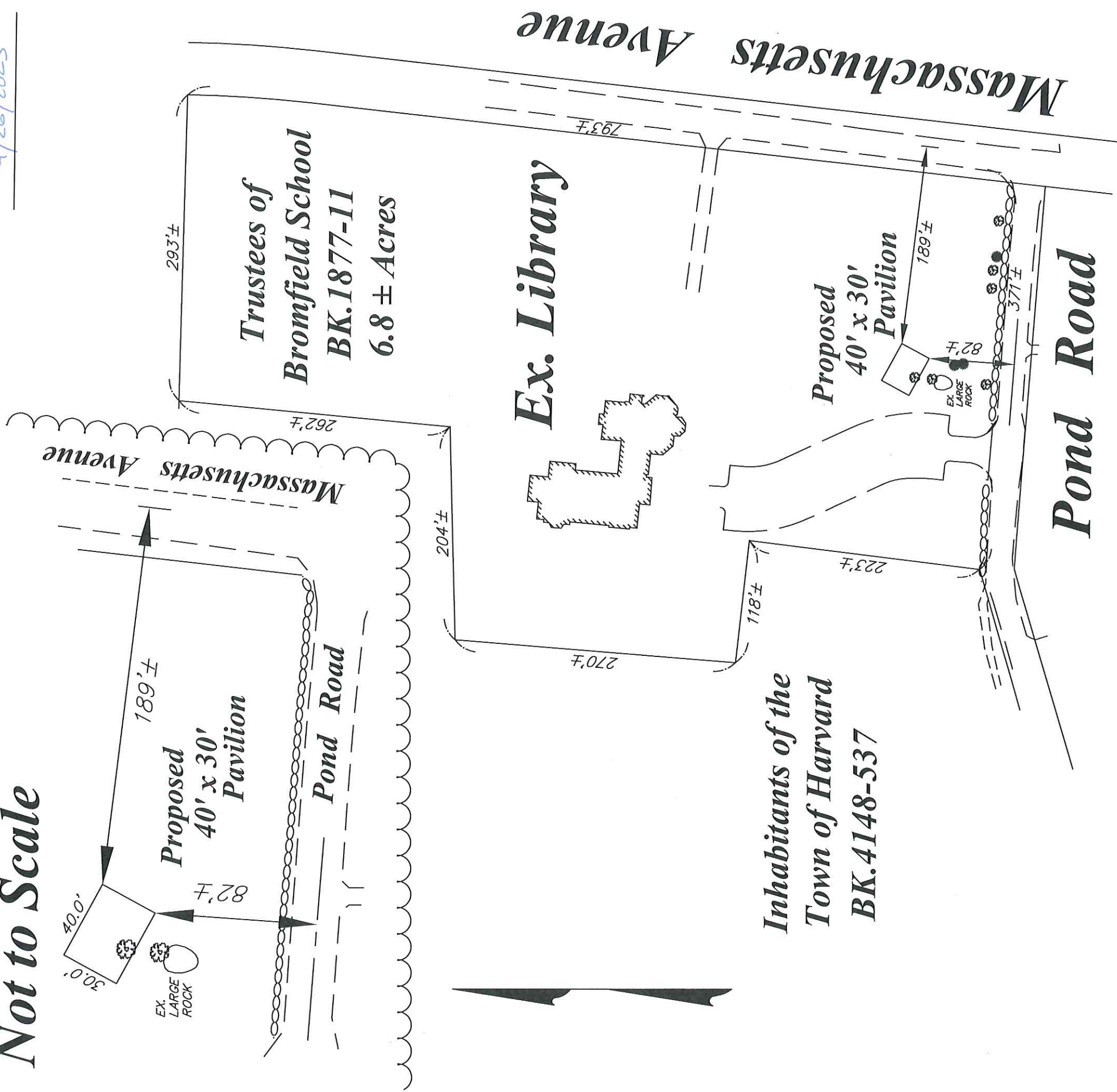
6 LANCASTER COUNTY ROAD - P.O. BOX 795 - HARVARD, MASS 01451  
(978) 772-6232 FAX 772-6258

~Detail~

Not to Scale



Robert T. Conway  
SURVEYOR  
4/26/2023



**Zoning Classification: Historic Overlay District & Agriculture-Residential**

Scale: 1"=100'

I certify that the existing library and proposed pavilion are located on the lot as shown. I further certify that the proposed pavilion, if constructed in the location shown would conform with the front, side and rear yard setback requirements of the Zoning Bylaws in effect at this time.

I further certify that the existing house and proposed pavilion are located within Flood Zone "X" (unshaded) per Flood Insurance Rate Map (FIRM) for the Town of Harvard, Community Panel No.250308 0477 F dated July 16, 2014.

**APPLICATION TO THE HARVARD PLANNING BOARD**

Applicants should review the Harvard Protective (Zoning) Bylaw, Chapter 125 of the Code of the Town of Harvard, the Planning Board's Rules and Regulations, Chapter 133 of the Code of the Town of Harvard and the Requirements regarding Driveway Inspections (Chapter 125 of the Protective Bylaw). Copies of the Bylaw may be purchased from the Town Clerk and copies of the Rules and Regulations may be purchased from the Land Use Office. Information is also available online at [www.harvard.ma.us](http://www.harvard.ma.us). The Rules and Regulations specify the documents that are required as a part of the application. The Application, with certified abutters list and filing fee, must be filed with the Town Clerk.

Name of Applicant: HARVARD PUBLIC LIBRARY TRUSTEES / MARTHA N. GREEN

Address: 288 OLD LITTLETON RD. Phone: 978-456 3547 Email: mngreen01451@gmail.com

Applicant is (check one): Owner \_\_\_\_\_ Agent X Prospective Buyer \_\_\_\_\_

Location of Property: 4 POND ROAD Zoning District: \_\_\_\_\_

Harvard Assessors' Map 22 Parcel B 40 (22B-040)

Registry of Deeds: Book Number 1877 Page Number 0011

Owner's Name: BROMFIELD TRUST Email: \_\_\_\_\_

Owner's Address: P.O. BOX 961 COTUIT MA Owner's Phone: \_\_\_\_\_

Seventeen (17) copies of the application must be submitted to the Town Clerk. This application is for:

- \_\_\_ Special Permits\* \$500/required permit
- \_\_\_ Driveway Site Plan \$180
- \_\_\_ Inspections of Driveways \$300
- \_\_\_ Approval of Covenant \$100
- \_\_\_ Wireless Communication Tower \$2500
- \_\_\_ Consultant Review Fee\*\* \$1000
- \_\_\_ Site Plan Review with a Special Permit \$180
- X Site Plan Review without a Special Permit \$500
- \_\_\_ Modification/Extension 1/2 of original application fee

Specific bylaw section(s) you are applying under 125-38D

\* Unless otherwise specified

\*\* Required with all Special Permit Applications. This is a deposit to cover costs of Planning Board consultants and additional amounts may be required depending on the complexity of the Application. All unused monies will be returned. Please submit "Request for New Vendor" form with application. (Available on line at [www.harvard.ma.us](http://www.harvard.ma.us) under Forms & Documents)

All applications associated with a Wireless Communication Tower requires proof of compliance with § 125-27H(2)

All filing fees are cumulative. All Special Permits and uses subject to Site Plan Approval require Driveway Inspections and written approval by the Planning Board, or its agent, prior to issuance of an occupancy permit or use of the premises (§ 125-31 C) All Shared (common) Driveways require an approved covenant running with the land in accordance with § 125-31 B (4) (b). The applicant will be required to pay a local newspaper of general circulation for the current cost of advertising the hearing. The applicant will be billed directly from the newspaper for the cost of the advertised hearing or all advertising must be paid for in full prior to submittal to the newspaper. The undersigned hereby requests a hearing before the Planning Board with reference to this application.

Signed: Martha N. Green



**[ RE ] ARCHITECT**

# **Harvard Public Library Pavilion**

**Historical Committee Application  
March 9, 2023**







View from Pond Road looking toward Library



View from Pond Road looking toward Library



View from the corner of Mass Ave and Pond Rd



View from near edge of sidewalk facing Mass Ave



View from Mass Ave facing Library parking lot



View from Mass Ave crosswalk facing Library parking lot



View from Pond Road looking toward Library



View from Pond Road looking toward Library



View from the corner of Mass Ave and Pond Rd



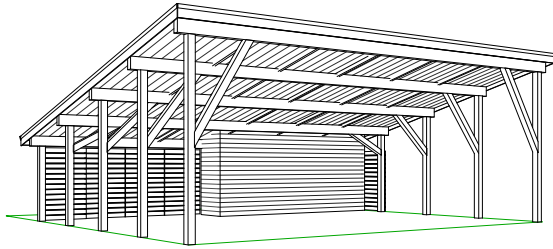
View from near edge of sidewalk facing Mass Ave



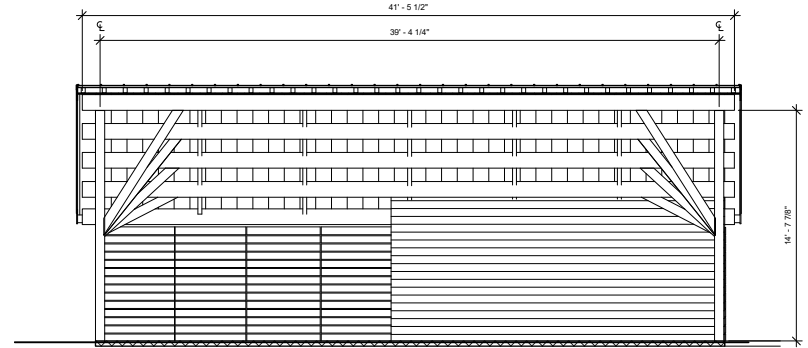
View from Mass Ave facing Library parking lot



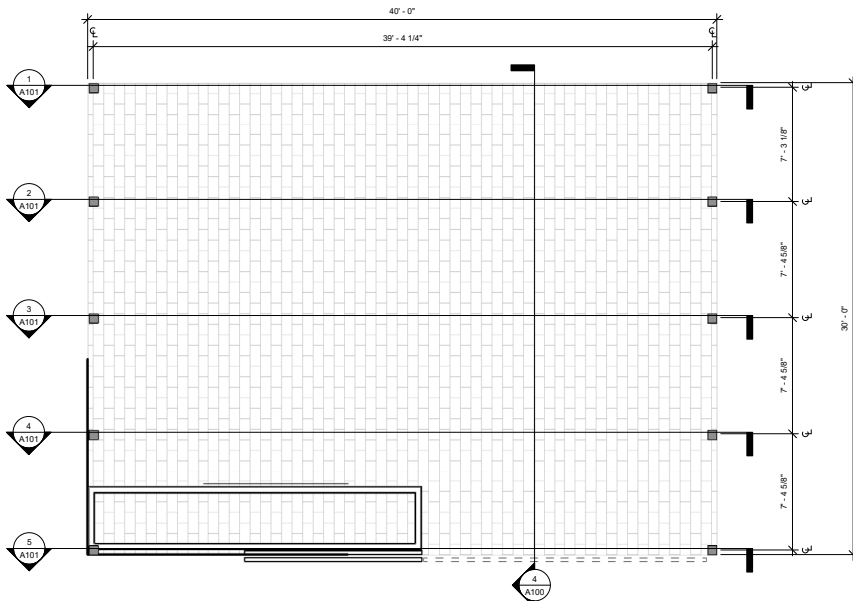
View from Mass Ave crosswalk facing Library parking lot



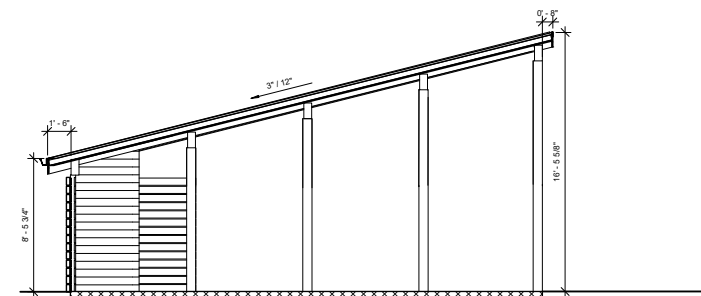
2 FRONT RIGHT VIEW



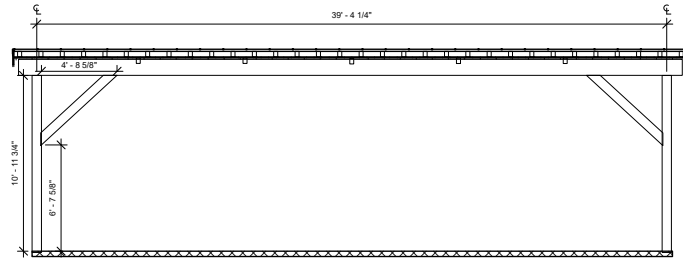
3 ELEVATION AT FRONT STRUCTURE  
1/4" = 1'-0"



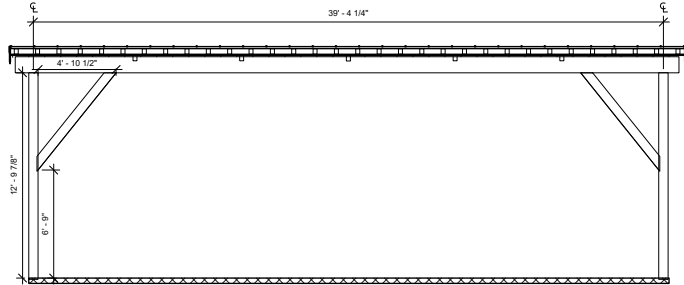
1 GROUND PLAN W DIMS  
1/4" = 1'-0"



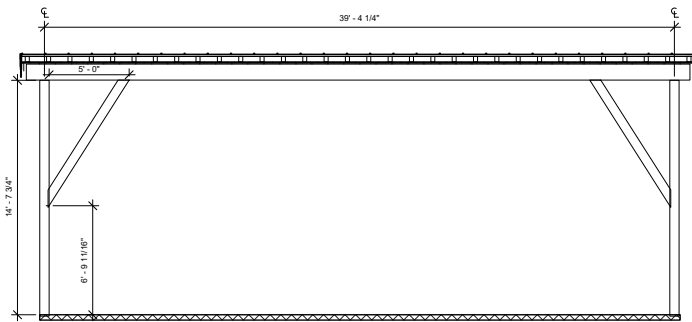
4 SECTION ANGLED ROOF  
1/4" = 1'-0"



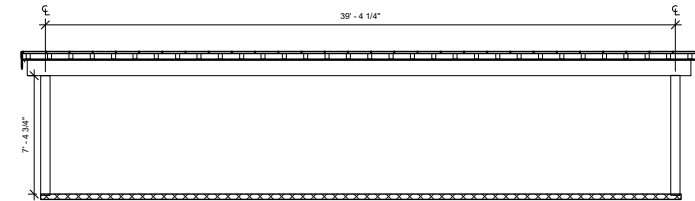
3 COLUMN ROW 3  
1/4" = 1'-0"



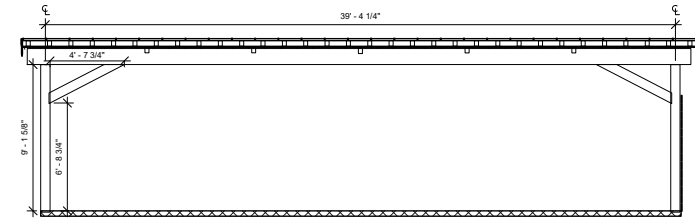
2 COLUMN ROW 2  
1/4" = 1'-0"



1 COLUMN ROW 1  
1/4" = 1'-0"



5 COLUMN ROW 5  
1/4" = 1'-0"

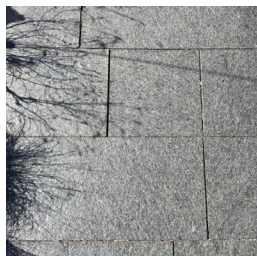


4 COLUMN ROW 4  
1/4" = 1'-0"

Materiality Diagram



Inspiration from Library



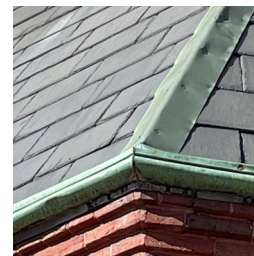
Grey Pavers



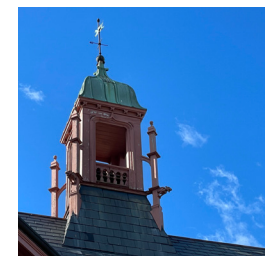
Red Brick, Dyed Mortar, and Granite



Gray Trim with Bronze Downspouts



Slate Roof with Copper Flashing



Cupola with Copper Accents



April 14, 2023

Pete Jackson, President  
Trustees of the Bromfield School

RE: Authorization to Act and Approval of Design, Library Pavilion Structure

Dear Mr. Jackson,

On April 13, the Harvard Public Library Board of Trustees reviewed the agreement dated April 8, 2023 from the Trustees of the Bromfield School regarding the construction of the pavilion structure and voted to approve the terms set forth.

Specifically, the Harvard Public Library Board of Trustees will present any deviations from the drawings presented on April 3, 2023 to the Trustees of the Bromfield School for review and approval.

We thank you for your support.

Very truly yours,

Harvard Public Library Board of Trustees

A handwritten signature in black ink, appearing to read "Stacie Cassat Green", written in a cursive style.

---

By: Stacie Cassat Green, Chair, Duly Authorized

**Trustees of the Bromfield School  
Harvard, Massachusetts**

Pete Jackson, President  
Dennis DeGara, Treasurer  
Stephen Finnegan, Secretary

April 8, 2023

Stacie Green, Chair  
Board of Trustees of The Harvard Public Library  
Acting Agent for the Town of Harvard  
4 Pond Road  
Harvard, Massachusetts 01451

RE: Authorization to Act and Approval of Design  
Library Pavilion Structure

Dear Ms. Green

On behalf of the Trustees of the Bromfield School (the “Bromfield Trustees”) this correspondence serves as authorization for your board (the “Library Trustees”) to make application to the Harvard Planning Board for review and approval of the proposed pavilion on land of the Bromfield Trustees. Specifically this authorization allows your board as our agent to apply and present to the Planning Board the plans and specifications for the construction of a covered pavilion on property owned by the Bromfield Trustees in the form presented at the public meeting of the Trustees of the Harvard Public Library held on April 3, 2023 (the “Pavilion Proposal”). This authorization is specific to the Pavilion Proposal presented at the April 3<sup>rd</sup> public meeting and any deviations from the Pavilion Proposal as may be requested or required by the Planning Board must be reviewed and approved by the Bromfield Trustees, which review and approval shall not be unreasonably delayed or withheld.

Based on the aforementioned requirements, the full board of Trustees of the Bromfield School voted to approve the Pavilion Proposal and agreed to grant permission for the construction of said pavilion as shown on the Pavilion Proposal. Further, the trustees voted to authorize your board to act as our agent with respect to the Planning Board application and review, provided you comply fully with the terms of this correspondence.

Stacie Green, Chair  
Board of Trustees of The Harvard Public Library  
Acting Agent for the Town of Harvard



This authorization and approval shall become effective upon my receipt of a letter signed by you confirming that the full board of the Library Trustees shall have voted upon and approved the agreement herein subject to the stated limitations. Once approved by your board, you may submit a copy of this correspondence and your acceptance letter to the Planning Board with your application made on our behalf.

I look forward to your prompt response and agreement.

Very truly yours,

The Trustees of the Bromfield School

---

By: Pete Jackson, President, Duly Authorized



## NOTICE OF DECISION

The Harvard Historical Commission voted at a meeting  
held on May 3, 2023 to issue a

### CERTIFICATE OF APPROPRIATENESS

for a property in the Harvard Common Historic District  
located at 4 Pond Road

---

This certificate is for the application stamped by the Town Clerk on March 13, 2023 from Martha Green on behalf of the Harvard Public Library Trustees to construct a shed pavilion, as more particularly described in the application.

This **Certificate of Appropriateness** confirms that the design and work proposed in said application has been determined by the Harvard Historical Commission to be appropriate.

Signed for the Commission:

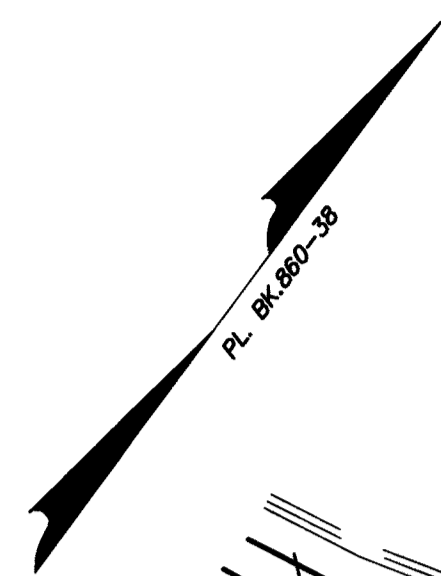
*George Triantaris*

George Triantaris, Chair

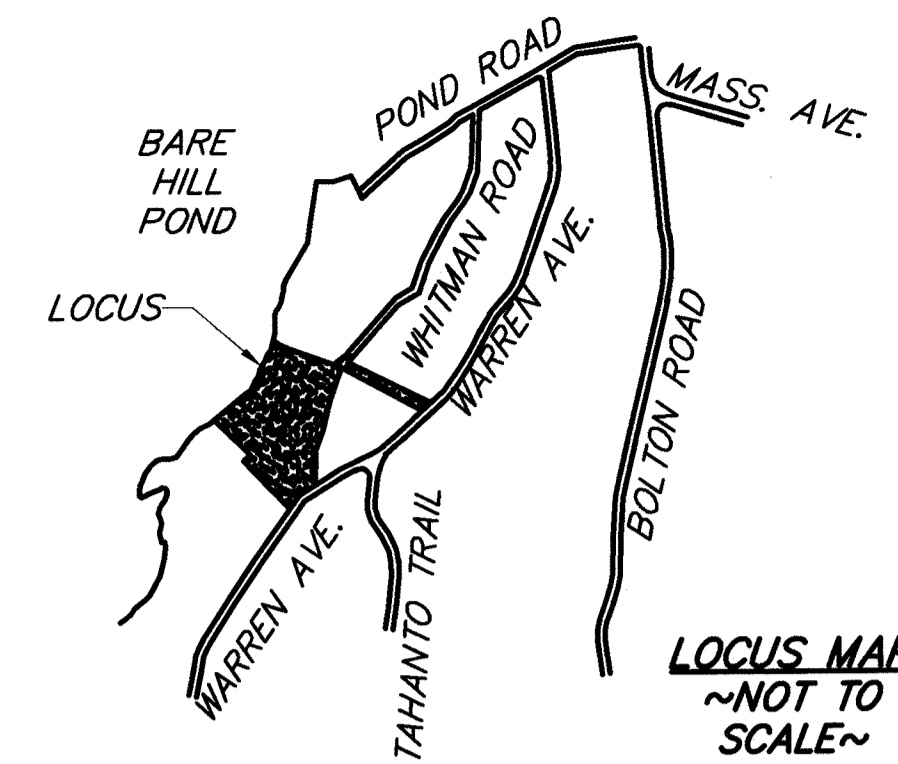
NOTE: Changes in exterior design that are not included in the application referenced above must be reviewed by the Commission and are not covered by this Certificate. Additional permits or approvals may be required from the Planning Board, Zoning Board of Appeals, Building Inspector, Board of Health, or other regulatory authorities.

This certificate is valid for two years from the date first above written.

Cc: Building Inspector, Town Clerk



BARE HILL POND



ORTLER FAMILY REALTY TRUST  
CERT. 18275 BK. 92-76  
L.C. PLAN 5604-46 & 5604-131

YARD EASEMENT  
PL. BK. 860-38

WARREN AVENUE, 58  
REALTY TRUST, BRUCE A.  
LEICHER & ELLEN SACHS  
LEICHER, TRUSTEES  
BK. 63796-351 & BK. 63796-355  
PL. BK. 728-52 & PL. BK. 860-38

APPROXIMATE LOCATION  
EXISTING HOUSE #46

APPROXIMATE LOCATION  
EXISTING STRUCTURES

REMAINING LAND OF J.  
THOMAS GORMLEY, III &  
JENNY MURRAY  
GORMLEY  
366,575± SQUARE FEET  
8.41± ACRES

PARCEL "A"  
30,680 ±  
SQUARE FEET  
0.70 ± ACRES

BENJAMIN V. & MICHELLE L.  
WHITMAN  
CERT. 17206 BK. 87-8  
L.C. PLAN 5604-57 & 5604-58

FUED OMAR & DENISE M.  
HAZOURY  
CERT. 16762 BK. 84-162  
L.C. PLAN 5604-156 & 5604-128

HARVARD CONSERVATION  
TRUST  
CERT. 14561 BK. 73-161  
L.C. PLAN 5604-156

NOTES:

PARCEL "A" IS NOT A BUILDING LOT BUT IS TO BE COMBINED TO AND ANNEXED WITH ADJOINING LAND OF WARREN AVENUE, 58 REALTY TRUST TO FORM ONE UNDIVIDED LOT. PARCEL "A" IS A DIVISION OF A PORTION OF LAND OWNED BY J. THOMAS GORMLEY, III & JENNY MURRAY GORMLEY AS DESCRIBED IN CERT. 16220 BK. 82-20

THE PREPARATION OF THIS PLAN IS NOT INTENDED TO BE A CONFIRMATION TO THE TITLE OR OWNERSHIP OF THE PROPERTIES SHOWN.

PROPERTIES SHOWN MAY BE SUBJECT TO EASEMENTS, RIGHTS OF WAY, RESTRICTIONS, RESERVATIONS OR OTHER LIMITATIONS WHICH MAY BE REVEALED BY AN EXAMINATION OF THE TITLE.

THIS PLAN WAS PREPARED WITHOUT THE BENEFIT OF A TITLE REPORT AND IS SUBJECT TO ANYTHING ONE MIGHT REVEAL. NO CERTIFICATION AS TO COMPLIANCE WITH ZONING REQUIREMENTS HAS BEEN MADE OR INTENDED.

227.76'  
S40°44'00"W  
317.95'

ROADWAY CENTERLINE

WARREN AVENUE (PUBLIC-40 FEET WIDE)

AVENUE (PUBLIC-40 FEET WIDE)

ZONING CLASSIFICATION: AGRICULTURE-RESIDENTIAL

Harvard Planning Board

APPROVAL UNDER SUBDIVISION CONTROL LAW NOT REQUIRED

CH. 41, S. 81-P. DATE:

APPLICANT/OWNER:  
J. THOMAS GORMLEY, III  
& JENNY MURRAY GORMLEY  
46 WARREN AVENUE  
HARVARD, MASS. 01451  
MAP 22 PARCEL 57.1 & 57.2

SURV: KRC CALC: KRC DRAFTED: KRC CK'D: RTC NB: DEED: L.C. BK82-20 REF:

Scale bars in feet (0-150) and meters (0-40). Surveyor seal for Robert T. Conway, No. 56614, State of Massachusetts. Certification text: 'I CERTIFY THAT THIS PLAN CONFORMS WITH THE RULES AND REGULATIONS OF THE REGISTERS OF DEEDS. 4/26/2023 DATE SURVEYOR'

PLAN OF LAND IN Harvard, Mass. PREPARED FOR J. Thomas Gormley, III & Jenny Murray Gormley APRIL, 2023 SCALE: 1"=50' David E. Ross Associates, Inc. CIVIL ENGINEERS - LAND SURVEYORS ENVIRONMENTAL CONSULTANTS PO BOX 795-6 LANCASTER COUNTY RD, HARVARD, MA 01451 (TEL. NO. 978-772-6232) JOB NO. 34257 SHEET 1 OF 1 PLAN NO. L-14660



TOWN OF HARVARD  
The Commonwealth of Massachusetts

FORM A and CHECKLIST

APPLICATION FOR ENDORSEMENT OF PLAN  
BELIEVED NOT TO REQUIRE APPROVAL UNDER  
THE SUBDIVISION CONTROL LAW (Ch. 41)  
(A.N.R.)

File ten (10) completed copies of this form, and associated plans as described in Planning Board Procedural Rules and Regulations, Chapter 133 of the Code of the Town of Harvard, with the Town Clerk and in accordance with the requirements of Section 81P

No. \_\_\_\_\_

April 28 \_\_\_\_\_, 2023

**To the Planning Board:**

The undersigned wishes to record the accompanying plan and requests a determination and endorsement by said Board that approval by it under the Subdivision Control Law is not required. The undersigned believes that such approval is not required for the following reasons (circle as appropriate):

1. The accompanying plan is not a subdivision because the plan does not show a division of land.
2. The division of the tract of land shown on the accompanying plan is not a subdivision because every lot shown on the plan has frontage of at least such distance as is presently required by the Protective (Zoning) Bylaw under Section 125-29 which requires 180 feet for erection of a building on such lot; and every lot shown on the plan has such frontage on:

a. a public way or way which the Town Clerk certifies is maintained and used as a public way, namely Warren Avenue; or

b. a way shown on a plan theretofore approved and endorsed in accordance with the Subdivision Control Law, namely \_\_\_\_\_ on \_\_\_\_\_, and subject to the following conditions \_\_\_\_\_; or

c. a private way in existence on February 6, 1954, the date when the Subdivision Control Law became effective in the Town of Harvard having, in the opinion of the Planning Board, sufficient width, suitable grades, and adequate construction to provide for the needs of vehicular traffic in relation to the proposed use of the land abutting thereon or served thereby, and for the installation of municipal services to serve such land and the buildings erected or to be erected thereon, namely \_\_\_\_\_

③ The division of the tract of land shown on the accompanying plan is not a "subdivision" because it shows a proposed conveyance/other instrument, namely Parcel "A" which adds to/takes away from/changes the size and shape of, lots in such a manner so that no lot affected is left without frontage as required by the Protective (Zoning) Bylaw under Section 125-29, which requires 180 feet.

4. The division of the tract of land shown on the accompanying plan is not a subdivision because two or more buildings, specifically \_\_\_\_\_ buildings were standing on the plan prior to February 6, 1954, the date when the subdivision control law went into effect in the Town of Harvard, and one of such buildings remains standing on each of the lots/said buildings as shown and located on the accompanying plan. Evidence of the existence of such buildings prior to the effective date of the subdivision control law is submitted as follows:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

5. Other reasons or comments (See MGL Chapter 41, Section 81L) \_\_\_\_\_

Parcel "A" is not a building lot as denoted on the plan and is to be combined to and annexed with adjoining land to form one undivided lot.

The owner's title to the land is derived under deed from J. Thomas Gormely & Jenny Murray Gormley, dated 5/15/2009, \_\_\_\_\_, and record in Worcester County Registry of Deeds, Book \_\_\_\_\_, Page \_\_\_\_\_ or Land Court Certificate of Title No. 16220, registered in Worcester District Book 82, Page 20, and Harvard Assessors' Book \_\_\_\_\_, Page \_\_\_\_\_.

6. Fee paid (\$150 per lot) \_\_\_\_\_.

APPLICANT'S NAME (Please print) Thomas Gormley

Applicant's signature  Phone No. 978-501-0784

Applicant's address 46 Warren Avenue, Harvard, Mass. 01451

OWNER'S SIGNATURE and address if not the applicant, or applicant's authorization if not the owner

---

THE PLANNING BOARD'S ENDORSEMENT ON THIS PLAN, THAT THE APPROVAL UNDER THE SUBDIVISION CONTROL LAW IS NOT REQUIRED, SHALL NOT BE CONSTRUED AS THE PLANNING BOARD FINDING THAT THE LOTS CREATED BY THIS PLAN CONFORM TO THE REQUIREMENTS OF THE HARVARD PROTECTIVE (ZONING) BYLAWS EXCEPT AS TO AREA AND FRONTAGE.

Received by Town Clerk:

---

Date/Time: \_\_\_\_\_



April 6, 2023

Town of Harvard  
Planning Board  
13 Ayer Road  
Harvard, MA 01451

**RE:** *Verizon Wireless Upgrades –47 Poor Farm Road*

Dear Members of the Town of Harvard Planning Board:

On behalf of Cellco Partnership, d/b/a Verizon Wireless, I am pleased to submit an application for a Special Permit pursuant to the Protective By-law Section 125-27 and any other relief the Board deems necessary for the upgrade of Wireless Communications Facilities at the above referenced location. This project has no new electrical service or upgrades. In addition, no new conduits are proposed from the street to the facility.

Attached is supplemental information for this filing, which will serve, along with this letter, as our transmittal to you. I would be happy to provide any additional information that you may require, and would appreciate notice of any additional information that you are accustomed to receiving in time to provide such information for the public hearing.

Should any questions arise, or if any additional material is needed, please do not hesitate to call me at (617) 877-2950. I look forward to meeting with you and presenting this application on behalf of Verizon.

Sincerely,

*Timothy W. Greene*

Timothy W. Greene  
TerraSearch  
Authorized agent for Verizon / Crown Castle

TerraSearch  
157 Riverside Drive  
Norwell, MA 02061

617-877-2950  
fax 781-394-0231  
tgreene@terrasearchllc.com

**APPLICATION TO THE HARVARD PLANNING BOARD**

Applicants should review the Harvard Protective (Zoning) Bylaw, Chapter 125 of the Code of the Town of Harvard, the Planning Board's Rules and Regulations, Chapter 133 of the Code of the Town of Harvard and the Requirements regarding Driveway Inspections (Chapter 125 of the Protective Bylaw). Copies of the Bylaw may be purchased from the Town Clerk and copies of the Rules and Regulations may be purchased from the Land Use Office. Information is also available online at [www.harvard.ma.us](http://www.harvard.ma.us). The Rules and Regulations specify the documents that are required as a part of the application. The Application, with certified abutters list and filing fee, must be filed with the Town Clerk.

Name of Applicant: Cellco Partnership d/b/a Verizon Wireless

Address: 1800 W. Park Drive, Westborough, MA 01581 Phone: 617-877-2950 Email: tgreene@terrasearchllc.com

Applicant is (check one): Owner of Tower Agent \_\_\_\_\_ Prospective Buyer \_\_\_\_\_

Location of Property: 131 Brown Road Zoning District: AR

Harvard Assessors' Map 36 Parcel 93.6

Registry of Deeds: Book Number 65796 Page Number 202

Owner's Name: Crown Castle Email: jerry.feathers.contractor@crowncastle.com

Owner's Address: 1800 W. Park Drive, Westborough, MA 01581 Owner's Phone: 303-598-7996

Seventeen (17) copies of the application must be submitted to the Town Clerk. This application is for:

- Special Permits\* \$500/required permit
- Driveway Site Plan \$180
- Inspections of Driveways \$300
- Approval of Covenant \$100
- Wireless Communication Tower \$2500
- Consultant Review Fee\*\* \$1000
- Site Plan Review with a Special Permit \$180
- Site Plan Review without a Special Permit \$500
- Modification/Extension ½ of original application fee

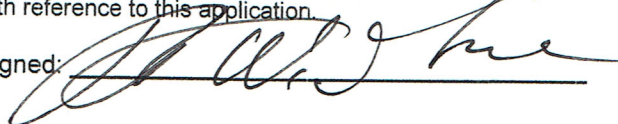
Specific bylaw section(s) you are applying under 125-27-D-1

\* Unless otherwise specified

\*\* Required with all Special Permit Applications. This is a deposit to cover costs of Planning Board consultants and additional amounts may be required depending on the complexity of the Application. All unused monies will be returned. Please submit "Request for New Vendor" form with application. (Available on line at [www.harvard.ma.us](http://www.harvard.ma.us) under Forms & Documents)

All applications associated with a Wireless Communication Tower requires proof of compliance with § 125-27H(2)

All filing fees are cumulative. All Special Permits and uses subject to Site Plan Approval require Driveway Inspections and written approval by the Planning Board, or its agent, prior to issuance of an occupancy permit or use of the premises (§ 125-31 C) All Shared (common) Driveways require an approved covenant running with the land in accordance with § 125-31 B (4) (b). The applicant will be required to pay a local newspaper of general circulation for the current cost of advertising the hearing. The applicant will be billed directly from the newspaper for the cost of the advertised hearing or all advertising must be paid for in full prior to submittal to the newspaper. The undersigned hereby requests a hearing before the Planning Board with reference to this application.

Signed: 





9250 W Flagler St  
Miami, FL 33174

Phone:  
www.crowncastle.com

**Crown Castle Letter of Authorization**

**Town of Harvard  
Planning Board  
13 Ayer Road  
Harvard, MA 01451**

**Re: Application for Zoning/Building Permit  
Crown Castle telecommunications site at: 131 BROWN ROAD, HARVARD, MA 01451**

CROWN ATLANTIC COMPANY LLC ("Crown Castle") hereby authorizes VERIZON WIRELESS, including their Agent, TerraSearch to act as our Agent in the processing of all zoning applications, building permits and approvals through the Town of Harvard for the existing wireless communications site described below:

**Crown Site ID/Name: 842900/Harvard  
Customer Site ID: 138118/Harvard 2 MA  
Site Address: 131 Brown Road, Harvard, MA 01451  
APN: 036-093-004-00T**

Crown Castle

By:  Date: 9-4-23  
Jerry Feathers  
Real Estate Specialist

RE: Wireless Telecommunications Facility Special Permit

Applicant: Cellco Partnership (“Verizon” or “Applicant”)

Facility Locations: 131 Brown Road

Facility Upgrade: Replace twelve (12) antennas with eleven (11) antennas for new network service upgrade with associated equipment, mounts, fiber and coax conduits. (the “Facility”).

Relief Requested: Special Permit per Section 125-27 Town of Harvard Protective By-Laws (hereinafter the “Ordinance”), and approval under Section 6409 of the Middle Class Tax Relief act of 2012, and any other relief the board deems necessary.

Dear Honorable Members of the Harvard Planning Board:

On behalf of Verizon, we are pleased to submit this memorandum to the Town of Harvard Planning Board (the “Board”) in support of Verizon’s Special Permit application (the “Application”) for the operation and maintenance the existing Facility. The following provides background information regarding proposal.

**BACKGROUND**

Verizon proposes to replace twelve (12) panel antennas with eleven (11) panel antennas. In addition, Verizon will add associated antenna equipment, new fiber conduits and related wireless communications equipment, as well as remove obsolete equipment. There will be no new electrical service or upgrades for this work. In addition, no new conduits are proposed from the street to the facility. The Facilities are shown in detail on the plans (the “Plans”) attached hereto and submitted with this Application.

Pursuant to Section 125-27 of the Ordinance, a modification to the Special Permit is required for any changes to the site. The Application complies with the terms of above section of the Ordinance.

Verizon operates a nationwide wireless communications system that offers enhanced features such as caller ID, voice mail, e-mail, and superior call clarity. Verizon is in the process of upgrading its national network as required by Verizon’s license issued

by the Federal Communications Commission (the "FCC"). By filling a significant coverage gap and upgrading technology, these Facility will aid in reaching Verizon's goal of providing adequate and reliable wireless communications services in and around Harvard and to all of Massachusetts. Verizon is upgrading its network to provide high speed data services. Verizon is using its best efforts, to the maximum extent possible, to upgrade the new network utilizing existing Verizon sites and facilities to avoid the need to construct new tower sites and antenna facilities.

A reliable communications system depends on a grid of antennae arranged in a geographical pattern, similar to a honeycomb. Each "site" is created by an antenna and serves as a link between the customer and the telephone system, while that caller is within proximity to the site. Each site can handle a finite number of telephone calls. As the number of customers increase, more sites must be added to handle the increased volume. If this is not accomplished, calls are dropped or customers' calls are blocked and they will get a busy signal. A new antenna installation must be constructed each time a new site is created.

Verizon submits and will demonstrate through the Application materials and the written and oral evidence at the public hearing(s) in connection with the Application that the proposed Facilities meet with all applicable requirements of the Ordinance, to the extent possible. The Facility will not adversely impact adjacent properties and neighborhoods as Verizon's Facility will not change the height of the tower. The Facility will not be a threat to public health, safety and welfare. In fact, Applicant submits that the proposed upgrades to the Facility will aid in public safety by providing and improving wireless communications services to the residents, businesses, commuters, and emergency personnel utilizing wireless communications in the immediate vicinity.

Consistent with the Ordinance, the existing wireless installation already functions as a wireless communications services facility within a local, regional, and national communications system. This system operates under license from the FCC and Verizon is mandated and authorized to provide adequate service to the general public. This Site was selected after a careful screening process and was found useful to Verizon. These upgrades will not generate noise, odor, fumes, glare, smoke, or dust or require additional lighting or signage. The Facility will have no negative impact on property values in the area. No increased traffic or hindrance to pedestrian movements will result from the Facilities. On average, only one round trip visit per month is required to service and maintain the Facilities. These are unmanned Facilities and will have minimal negative effect on the adjoining lots. The Facilities does not require police or fire protection because the installation has its own monitoring equipment that can detect malfunction and/or tampering.

## **APPROVAL REQUESTED**

Verizon respectfully requests that the Board grant, to the extent necessary, a modification to the existing Special Permit for the operation and maintenance of the existing Facility as provided in the Plans submitted with the Application, all rights reserved. As will be further demonstrated by the Applicant by evidence submitted to the

Board at the public hearing(s) in connection herewith, such approval is appropriate as the Facility satisfies all pertinent provisions and standards contained in the Ordinance for the granting of the special permit, to the extent required, all rights reserved, as enumerated below.

The Facility will not have any adverse effect on property values in the area. The Facility will not be dangerous to the public health or safety as it is designed to comply with all applicable FCC requirements relating to radio frequency emissions and will comply with all applicable requirements of the Massachusetts building code. Indeed, the maximum radio frequency output per channel for this facility will be well below the maximum radio frequency exposure levels established by the FCC. The Facility is a passive use, and will not cause any nuisance such as noise, vibration, smoke, odor or dust. Further, the Facility will improve communication coverage to residents, commercial establishments and travelers through the area and improves call connections in this area of the Town of Harvard. This Facility will greatly improve emergency communications for police and fire personnel by reducing the number and frequency of dropped and incomplete calls due to weak signals and adding an additional layer of communication to traditional land lines. In fact, published reports have highlighted the fact that during and after adverse major weather events, including ice storms, wireless telecommunications have been the only form of reliable communication. Lastly, the upgrades of the Facility will assist the Town of Harvard in complying with its obligations under the federal Telecommunications Act of 1996 (the "1996 Act").

Applicant respectfully requests that the Board grant all necessary approvals to install and operate each Facility. For the foregoing reasons, as well as to satisfy the mandate of the Federal Government to facilitate competition in the telecommunications industry as set forth in the 1996 Act, Applicant respectfully requests that the Board grant the foregoing approval. We respectfully submit that the standards for approval as set forth in the Ordinance as well as Massachusetts law relating to zoning must be interpreted and applied such that the decision issued by the Board is in conformance with the 1996 Act. Accordingly, a denial of the foregoing petition would effectively prohibit Verizon from providing adequate service to the Town of Harvard, would unreasonably discriminate among providers of substantially equivalent services and thus would be contrary to the purpose and intent of the 1996 Act.



2018 00072328

Bk: 59109 Pg: 10

Page: 1 of 6 07/17/2018 10:44 AM WD



OFFICE OF THE  
**TOWN CLERK**

13 AYER ROAD · HARVARD, MASSACHUSETTS 01451-1458  
(978)456-4100 · FAX: (978)456-4113

REF: Harvard Planning Board  
Applicant: Cellco Partnership, d/b/a Verizon Wireless  
131 Brown Road  
Assessors Map 36, Parcel 93.6  
Worcester Registry of Deeds  
Book 13188, Page 164  
Decision on a Modification and Extension of the Special Permit  
Granted with conditions and limitations on May 21, 2018

**CERTIFICATE OF NO APPEAL**

The undersigned, being the Town Clerk of the Town of Harvard, hereby certifies that the foregoing decision was filed with the Town Clerk on June 5, 2018, that twenty (20) days have elapsed after filing of the decision, and that no notice of any action appealing the decision has been filed with the Office of the Town Clerk during this twenty (20) day period.

Certified this 26th Day of June, 2018,

  
\_\_\_\_\_  
Marlene Kenney  
Harvard Town Clerk

RECEIVED  
HARVARD TOWN CLERK

2018 JUN -5 AM 11:45

OFFICE OF THE  
PLANNING BOARD

13 AYER ROAD HARVARD, MA 01451978-456-4100 EXT.321 www.harvard.ma.us



To: Marlene Kenney, Town Clerk  
Harvard Town Hall  
13 Ayer Road  
Harvard, MA 01451

June 4, 2018

**HARVARD PLANNING BOARD**

**NOTICE OF DECISION ON APPLICATION OF**

**CELLCO PARTNERSHIP, d/b/a VERIZON WIRELESS**

**FOR A MODIFICATION AND EXTENSION OF A SPECIAL PERMIT**

**FOR WIRELESS COMMUNICATIONS EQUIPMENT**

**131 BROWN ROAD**

**HARVARD, MA 01451**

**ASSESSORS MAP 36 – PARCEL 93.6**

**WORCESTER REGISTRY OF DEEDS**

**BOOK 13188 PAGE 164**

On March 20, 2000, the Harvard Planning Board (the Board) granted Cellco Partnership (Cellco), an affiliate of Bell Atlantic Mobile of Massachusetts Corp., Ltd., d/b/a Verizon Wireless, a special permit under Section 5.8 of the Harvard Protective Bylaw (now §125-27) to co-locate on an existing wireless communications tower at 131 Brown Road. The special permit had an initial term of five years. The Planning Board granted 5-year renewals in 2005 and 2010. With the Mass. Permit Extension Act, the renewal was automatically extended to 2018. Cellco has requested an additional 5-year extension.

Cellco is also proposing to upgrade the antennas located on the tower. The applicant wishes to replace six antennas with new models called Remote Radio Heads to improve the site's performance. The work also includes replacing coax cables and installing new junction boxes and necessary fittings. There will be no increase in tower height, no new ground equipment, and no changes to the site plan for the tower.

The site contains a monopine tower at a ground elevation of 328.0 feet AMSL and has a height of 103.6 feet, reaching to 431.6 feet AMSL. The highest appurtenance reaches a height 107.6 feet, or 435 feet AMSL. The Verizon antennas are at a height of 90 feet above ground level, or 418.0 feet AMSL. The tower employs stealth technology to camouflage the monopole with

evergreen "branches" to resemble a tree. All work will take place at the existing mounting location on the tower. The tower is owned by Crown Castle, 3530 Torrington Way, Suite 300, Charlotte, NC, on a leased parcel within a lot owned by Stephen and Deborah Damon, 9 Whitcomb Road, Bolton, MA. The area is zoned Agricultural-Residential and is also within the Wireless Communications Towers Overlay District. The tower area is fenced to control access and contains the telecommunications equipment.

### **Plans and Documents Submitted in Support of the Application**

The Applicant submitted the following plans and documents, which together with Public Hearing testimony, provide the basis for this decision.

1. "Special Permit Application Package", received by the Town Clerk on April 17, 2018, including:
  - a. Harvard Planning Board Application
  - b. Cover letter dated April 9, 2018 from Carl Gehring of Gehring & Associates, LLC, 40 New London Road, PO Box 98, West Mystic, CT 06388 as agent for Cellco
  - b. Certified List of Abutters
  - c. Plans prepared by HDG Hudson Design Group LLC, 45 Beechwood Drive, North Andover, MA 01845 stamped by Daniel P. Hamm P.E., dated January 11, 2018 depicting the proposed modifications to Verizon's equipment.
  - d. The following documents:
    - Statement in Support of an Eligible Facilities Request
    - Letter of Authorization from Crown Castle
    - FCC Radio Station Authorization Forms
    - Certification of Continuing Compliance with Radio Frequency Emission Guidelines, by Donald L. Haes, Jr., PhD, Certified Health Physicist
    - Technical specification of proposed remote radio head equipment
    - A Structural Analysis Report prepared by John N. Kabak, S.E. of GPD Group, 520 South Main Street, Suite 3521, Akron, OH 44311
    - A copy of the decision by the Harvard Planning Board dated March 15, 2010 renewing the special permit application of Verizon Wireless to co-locate antennas on the subject tower
    - A copy of the decision by the Planning Board dated March 9, 1998 to approve a special permit for a Wireless Communications Tower and Driveway Site Plan Approval to erect the tower on Brown Road
    - A copy of 47 CFR 1.40001, Wireless Facility Modifications
  - e. A check made payable to the Town of Harvard in the amount of \$250.00
2. Input from Harvard Town Boards/Departments:

- a. May 11, 2018 email from the Harvard Fire Chief, Richard Sicard, indicating he had no comments on the application.
  - b. A comment from the Building Commissioner stating that he has no objections with the application.
3. Consultant Reviews: None
  4. Supplemental Materials from the Applicant and/or Agent of the Applicant: None
  5. Legal Notices Advertised and Mailed to Abutters:
    - a. A copy of the Legal Notice advertising the Public Hearing to be held on the application on May 21, 2018. The advertisement appeared in the "The Harvard Press" on May 4, 2018 and the Worcester Telegram on May 12, 2018 in compliance with MGL Chapter 40A covering such public notice.
    - b. An Affidavit of Mailing to Abutters dated April 27, 2018 endorsed by the Town Clerk.

The Planning Board opened the public hearing on the application for a Modification and Extension of the Special Permit on May 21, 2018. The application was presented by Carl W. Gehring of Gehring & Associated, LLC. The Board received no public input at the hearing or by correspondence prior to the close of the hearing. The Planning Board voted to **GRANT** the Modification and Extension of the Special Permit with conditions.

## **FINDINGS**

The Harvard Planning Board makes the following findings with respect to the Application:

1. This extension of a previously granted special permit is in harmony with the provisions set forth in Article 1, §125-1, Purpose, of the Harvard Protective Bylaw.
2. The replacement of the existing antennas with new radio head antennas will improve service to customers and is an allowable Eligible Facilities Request codified at 46 CFR 1.40001.
3. The tower contains co-located facilities in conformance with the Protective Bylaw's stated preference to minimize the number of free-standing towers in Harvard.
4. The Applicant proposes no change to the approved driveway location, tower, or equipment area other than to replace coax cables and install new junction boxes and fittings.
5. The project has a \$25,000 tower removal bond in place in conformance with the terms of the Protective Bylaw.
6. The renewal of the special permit will be in compliance with the Protective Bylaw §125-46C(1) and:
  - a. will not result in substantial increase of volume or rate of surface water runoff to neighboring properties and streets, will not result in substantial danger of pollution or contamination of the ground water supply, a ground water absorption area, a well, pond, stream, watercourse, W district, or inland wetland. All surface water runoff resulting from the construction of the facility will be retained within the lot in which it originates;



- b. will result in no substantial increase in traffic on any residential street in proximity to the premises; and
- c. will be in harmony with the general purpose and intent of the Bylaw.

### **Conditions and Limitations on Exercise of Special Permit**

The following conditions and limitations shall run with this Permit. They may be altered only by an application to this Board to modify the Permit, or if such alteration is determined to be minor and meets the following requirements, they may be altered only by the written and recorded consent of four (4) members of the five (5) member Board, upon a vote taken at an open meeting, and then only if:

- a. the change is consistent with the Findings above;
  - b. the change does not reduce a requirement of the Bylaw; and
  - c. the change does not prejudice the interests of anyone entitled to notice of the hearing on the Permit.
1. The project shall conform to the previously approved decisions of the Planning Board.
  2. The Grantee shall document that the \$25,000 tower removal bond as required by §125-27H(2) remains in place to assure the Special Permit holder's compliance with its obligations in the event that the holder ceases to use the tower and to remove parts owned by the Permit holder and all accessory equipment/structures so owned.
  3. The Grantee shall file with the Building Commissioner and the Board an annual certification demonstrating continuing compliance with the standards of the Federal Communications Commission and the American National Standards Institute.
  4. The Grantee shall provide prior written notice to the Building Commissioner and the Board in the event of a change or increase of use of the tower or the Grantee's facilities on and at the tower, change of Grantee, or cessation of use on and at the tower. Any change in use or increase in the intensity of use of the tower shall require a new Special Permit.
  5. The special permit shall be extended for five (5) years from the expiration of the previous extension of the special permit. All provisions of the special permit shall be binding on the Grantee, its successors, or assigns.
  6. The Grantee shall remove all its installation(s) on the tower and all related accessory equipment/structures when there is a cessation of use for a period of at least one year, and/or one year following expiration of the Permit, unless renewed.
  7. The Grantee shall furnish current actual cost information for its installation and ground equipment in a form satisfactory to the Board and Board of Assessors, for the purposes of tax assessment. The value of site improvements and structures, including the antennas and equipment, shall be included.

**8. ACTION OF THE PLANNING BOARD-DECISION**


Therefore, as of May 21, 2018 by a vote of four (4) to zero (0) of the Planning Board members eligible to vote, the Board hereby **GRANTS** to the Applicant a Modification and Extension of the Special Permit under Sections 125-27 of the Protective Bylaw to the wireless communications facility at 131 Brown Road, Assessors Map 36, Parcel 93.6, subject to the conditions and limitations contained herein.

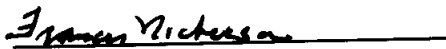
The Board voted four (4) to zero (0) (McBee, Donahue, Nickerson, and Rushmore) to issue this decision.

**This decision is not valid until after it has been certified with respect to an Appeal by the Harvard Town Clerk, as provided in MGL, Chapter 40A Section 11, and a copy as certified has been recorded in the Worcester Registry of Deeds.**

**An Appeal of this decision may be made pursuant to MGL Chapter 40A Section 17 within twenty (20) days after the decision is filed with the Town Clerk.**

  
\_\_\_\_\_  
Erin McBee, Chair

  
\_\_\_\_\_  
Stacia Donahue

  
\_\_\_\_\_  
Frances Nickerson

  
\_\_\_\_\_  
Jarrett Rushmore, Associate Member

**TO WHOM IT MAY CONCERN:**

I hereby certify the twenty (20) day appeal period on this decision has expired, and no appeals have been filed with this office.

  
\_\_\_\_\_  
Marlene Kenney, Town Clerk

  
\_\_\_\_\_  
Date



MORRISON HERSHFIELD

Date: **January 04, 2023**

Morrison Hershfield  
1455 Lincoln Parkway, Suite 500  
Atlanta, GA 30346  
(770) 379-8500

**Subject:** **Structural Analysis Report**

**Carrier Designation:** **Verizon Wireless Co-Locate**  
**Site Number:** 138118  
**Site Name:** Harvard 2 MA

**Crown Castle Designation:** **BU Number:** 842900  
**Site Name:** Harvard I-495 (MA0143)  
**JDE Job Number:** 738043  
**Work Order Number:** 2191019  
**Order Number:** 641435 Rev. 0

**Engineering Firm Designation:** **Morrison Hershfield Project Number:** CN11-972R2 / 2300001

**Site Data:** **End of Brown Street (Whitcomb Road), Harvard, Worcester County, MA 01451**  
**Latitude 42° 27' 25.50", Longitude -71° 34' 20.20"**  
**103.5 Foot – Valmont Monopole Tower**

Morrison Hershfield 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:

LC7: Proposed Equipment Configuration

**Sufficient Capacity**

This analysis utilizes an ultimate 3-second gust wind speed of 123 mph as required by the 2015 International Building Code as amended by the Massachusetts State Building Code, Ninth Edition. Applicable Standard references and design criteria are listed in Section 2 - Analysis Criteria.

Respectfully submitted by:

G. Lance Cooke, P.E. Structural (MA License No. 49087)  
Senior Engineer



Digitally signed by  
G. Lance Cooke  
Date: 2023.01.04  
19:30:58+05'30'

EXP 6/30/24

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### **5) APPENDIX A**

tnxTower Output

**1) INTRODUCTION**

This tower is a 103.5 ft monopole tower designed by Valmont Industries, Inc.

**2) ANALYSIS CRITERIA**

**TIA-222 Revision:** TIA-222-H  
**Risk Category:** II  
**Wind Speed:** 123 mph  
**Exposure Category:** B  
**Topographic Factor:** 1  
**Ice Thickness:** 2 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)
90.0	90.0	6	jma wireless	MX06FRO660-03 w/ Mount Pipe	2	1-5/8
		2	samsung telecommunications	CBRS w/ Mount Pipe		
		3	samsung telecommunications	MT6407-77A w/ Mount Pipe		
		3	samsung telecommunications	RF4439D-25A		
		3	samsung telecommunications	RF4440D-13A		
		1	raycap	RVZDC-6627-PF-48_CCIV2		
		3	-	4' Horizontal Mount Pipe [#P3STD]		
		1	-	4' Pipe Mount [#P2STD, Sch. 40]		
		1	-	Collar Mount Assembly [#VZWSMART-PLK7]		
		3	-	T-Arm Kit [#VZWSMART-SFK4]		
		1	-	Miscellaneous [NA 508-3]		
		1	-	Side Arm Mount [SO 101-3]		

**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)
100.0	100.0	6	powerwave technologies	LGP21401	12	1-5/8
		1	raycap	DC6-48-60-18-8F		
		1	-	Miscellaneous [NA 508-3]		
		1	-	Side Arm Mount [SO 101-3]		
	3	cci antennas	TPA-65R-LCUUUU-H8 w/ Mount Pipe	2	3/8	

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
100.0	99.0	3	kathrein	800 10121 w/ Mount Pipe	-	-
		3	kathrein	800 10766 w/ Mount Pipe		
		3	ericsson	RRUS 11 B12		
		3	ericsson	RRUS 32 B2		
		3	kaelus	DBC0061F1V51-2		
		1	raycap	DC6-48-60-18-8C		
80.0	80.0	3	ericsson	4003_840590966_TMO w/ Mount Pipe	6 3	7/8 1-5/8
		3	ericsson	ERICSSON AIR 21 B4A B2P w/ Mount Pipe		
		6	ericsson	KRY 112 144/1		
		3	ericsson	RRUS 11 B2		
		3	ericsson	Radio 4480_TMOV2		
		3	-	1.8' T-Arm Mount		
68.0	68.0	3	jma wireless	MX08FRO665-21 w/ Mount Pipe	1	1-3/8
		3	fujitsu	TA08025-B604		
		3	fujitsu	TA08025-B605		
		1	raycap	RDIDC-9181-PF-48		
		1	tower mounts	Commscope MC-K6MHDX-9-96 (3)		

### 3) ANALYSIS PROCEDURE

**Table 3 - Documents Provided**

Document	Reference	Source
4-GEOTECHNICAL REPORTS	4713325	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	5170083	CCISITES
4-TOWER MANUFACTURER DRAWINGS	4291765	CCISITES

#### 3.1) Analysis Method

tnxTower (version 8.1.1.0), 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. Morrison Hershfield 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	103.5 - 48.667	Pole	TP44.94x31.79x0.3125	1	-22.55	2664.50	49.5	Pass
L2	48.667 - 0	Pole	TP56x42.7962x0.4375	2	-41.62	4807.96	58.5	Pass
							Summary	
						Pole (L2)	58.5	Pass
						Rating =	58.5	Pass

**Table 5 - Tower Component Stresses vs. Capacity – LC7**

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	59.2	Pass
1	Base Plate		41.8	Pass
1,2	Base Foundation (Compared w/ Design Loads)	0	57.9	Pass

<b>Structure Rating (max from all components) =</b>	<b>59.2%*</b>
---	---------------

Notes:

- 1) See additional documentation in "Appendix C – Additional Calculations" for calculations supporting the % capacity consumed.
- 2) Foundation capacity determined by comparing analysis reactions to original design reactions.
- 3) \*Rating per TIA-222-H, Section 15.5.

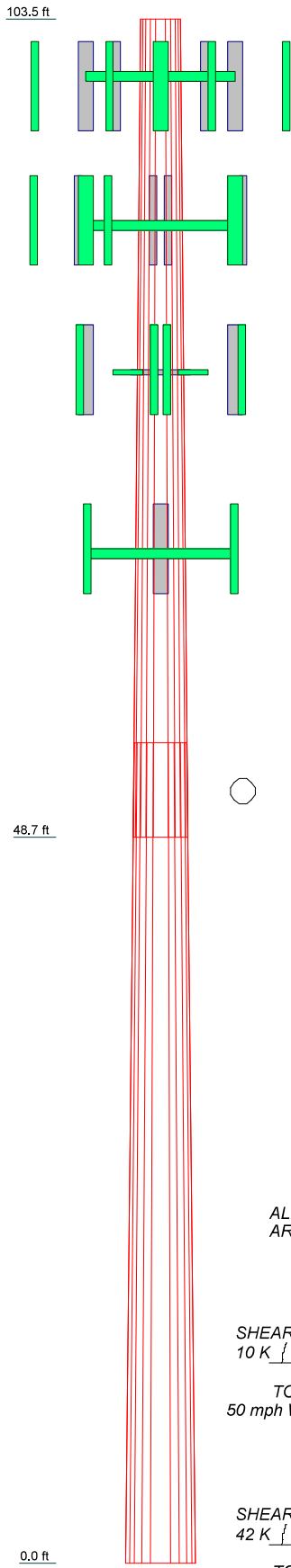
#### 4.1) Recommendations

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

**APPENDIX A**  
**TNXTOWER OUTPUT**



Section	1	2
Length (ft)	54.83	55.00
Number of Sides	12	12
Thickness (in)	0.3125	0.4375
Socket Length (ft)	6.33	42.7962
Top Dia (in)	31.7900	56.0000
Bot Dia (in)	44.9400	
Grade	A572-65	
Weight (K)	7.1	12.9



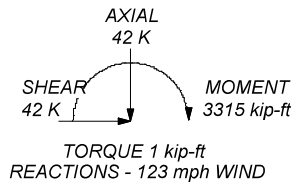
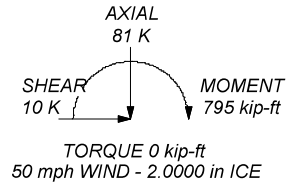
### MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-65	65 ksi	80 ksi			

### TOWER DESIGN NOTES

1. Tower is located in Worcester County, Massachusetts.
2. Tower designed for Exposure B to the TIA-222-H Standard.
3. Tower designed for a 123 mph basic wind in accordance with the TIA-222-H Standard.
4. Tower is also designed for a 50 mph basic wind with 2.00 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: 58.5%

ALL REACTIONS  
ARE FACTORED



**Morrison Hershfield**  
 1455 Lincoln Parkway, Suite 500  
 Atlanta, GA 30346  
 Phone: (770) 379-8500  
 FAX: (770) 379-8501

Job:	CN11-972R2 / 2300001		
Project:	842900 / Harvard I-495 (MA0143)		
Client:	Crown Castle USA	Drawn by:	RP
Code:	TIA-222-H	Date:	01/04/23
Path:	C:\Users\RPeddamaru\Desktop\CN11-972R2 SA\Analysis\CN11-972R2 BU_842900_WD_2191018.dwg	Scale:	NTS
		Dwg No.:	E-1



**VERIZON SITE NUMBER:** 138118  
**VERIZON SITE NAME:** HARVARD\_2\_MA  
**VERIZON FUZE ID:** 15554979  
**SITE TYPE:** MONOPINE  
**TOWER HEIGHT:** 103'-6"  
**VERIZON - MODIFICATION ;**4G\_850,4G\_AWS,4G\_CBRs,4G\_PCS,5G\_850,5G\_L-SUB6,5G\_RADIO SWAP

**BUSINESS UNIT #:** 842900  
**SITE ADDRESS:** END OF BROWN STREET (WHITCOMB ROAD)  
 HARVARD, MA 01451  
**COUNTY:** WORCESTER  
**JURISDICTION:** TOWN OF HARVARD

**verizon**  
 180 WASHINGTON VALLEY ROAD  
 BEDMINSTER, NJ 07921

**CROWN CASTLE**  
 1200 MACARTHUR BLVD, SUITE 200  
 MAHWAH, NJ 07430

**TOWER ENGINEERING PROFESSIONALS**  
 326 TRYON RD  
 RALEIGH, NC 27603  
 (919) 661-6351  
 TEP JOB #: 317510. 805162

**VERIZON SITE NUMBER:** 138118  
**BU #:** 842900  
**HARVARD I-495 (MA0143)**  
 END OF BROWN STREET (WHITCOMB ROAD)  
 HARVARD, MA 01451  
 EXISTING 103'-6" MONOPINE

**ISSUED FOR:**

REV	DATE	DRWN	DESCRIPTION	DES./QA
0	01/09/23	KRS	CONSTRUCTION	RST

**SITE INFORMATION**

CROWN CASTLE USA INC. HARVARD I-495 (MA0143)  
 SITE NAME:  
 SITE ADDRESS: END OF BROWN STREET (WHITCOMB ROAD)  
 HARVARD, MA 01451  
 COUNTY: WORCESTER  
 MAP/PARCEL #: 36\_93\_6  
 AREA OF CONSTRUCTION: EXISTING  
 LATITUDE: 42° 27' 25.50"  
 LONGITUDE: -71° 34' 20.20"  
 LAT/LONG TYPE: NAD83  
 GROUND ELEVATION: 330 FT  
 CURRENT ZONING: AR  
 JURISDICTION: TOWN OF HARVARD  
 OCCUPANCY CLASSIFICATION: U  
 TYPE OF CONSTRUCTION: IIB  
 A.D.A. COMPLIANCE: FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION  
 PROPERTY OWNER: DAMAN, STEPHEN J  
 9 WHITCOMB RD  
 BOLTON, MA 01740  
 TOWER OWNER: CROWN CASTLE  
 2000 CORPORATE DRIVE  
 CANONSBURG, PA 15317  
 CARRIER/APPLICANT: VERIZON WIRELESS  
 180 WASHINGTON VALLEY ROAD  
 BEDMINSTER, NJ 07921  
 ELECTRIC PROVIDER: RHODE ISLAND ENERGY  
 (800) 867-5222  
 TELCO PROVIDER: VERIZON

**DRAWING INDEX**

SHEET #	SHEET DESCRIPTION
T-1	TITLE SHEET
T-2	GENERAL NOTES
C-1	SITE PLAN
C-2	TOWER ELEVATION & ANTENNA PLANS
C-3	EQUIPMENT SCHEDULES
C-4	EQUIPMENT DETAILS
C-5	EQUIPMENT DETAILS
C-6	PLUMBING DIAGRAM
G-1	GROUNDING DETAILS
G-2	GROUNDING DETAILS
ATTACHED	MOUNT MODIFICATION DRAWINGS

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.

**APPROVALS**

SIGNATURE	DATE
_____	_____
_____	_____
_____	_____
_____	_____

**CONTRACTOR PMI REQUIREMENTS**

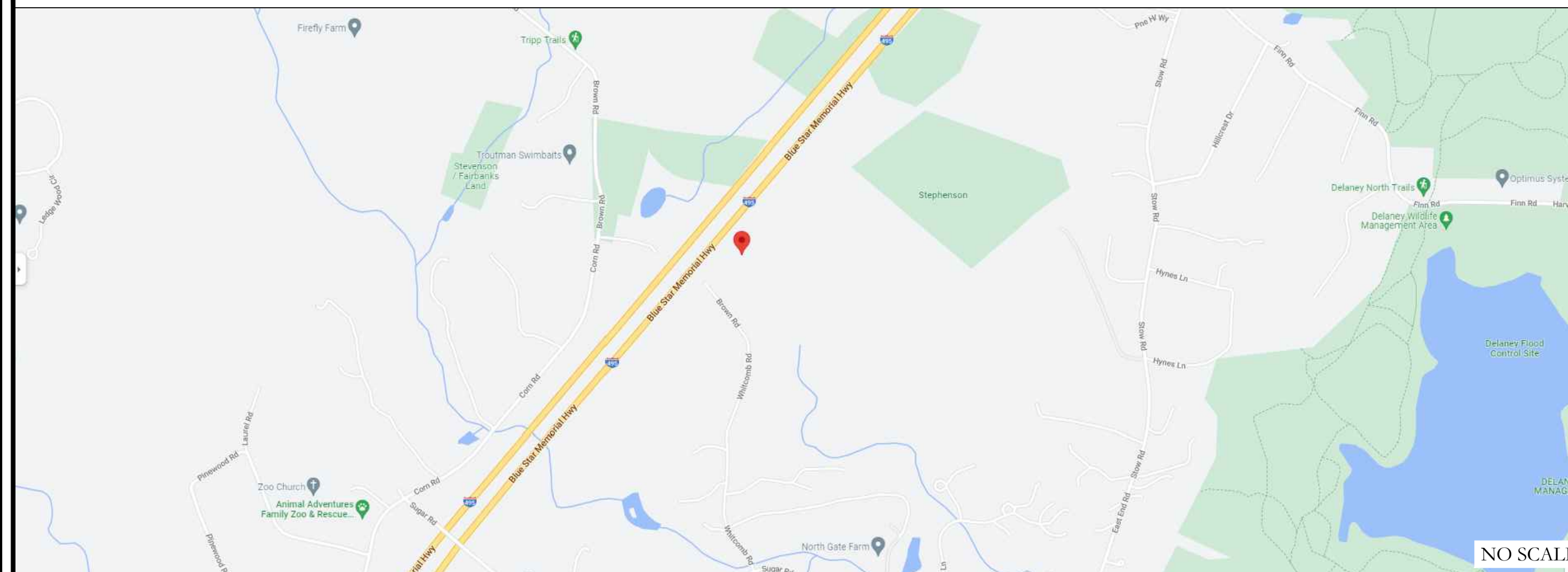
PMI ACCESSED AT <https://pmi.vxwsmart.com>  
 SMART TOOL VENDOR PROJECT NUMBER: 10160637  
 VzW LOCATION CODE (PSLC): 138118  
 \*\*\* PMI AND REQUIREMENTS ALSO EMBEDDED IN MOUNT ANALYSIS REPORT

**MOUNT MODIFICATION REQUIRED** Y

**VzW APPROVED SMART KIT VENDORS**

REFER TO MOUNT MODIFICATION DRAWINGS PAGE FOR VzW SMART KIT APPROVED VENDORS

**LOCATION MAP**



DRIVING DIRECTIONS FROM VERIZON LOCAL OFFICE (86 WORCESTER RD, FRAMINGHAM, MA 01701)  
 HEAD EAST TOWARD WORCESTER RD. TURN LEFT AT THE 1ST CROSS STREET ONTO WORCESTER RD. KEEP LEFT TO CONTINUE ON MA-9 W/BOSTON WORCESTER TURNPIKE/WORCESTER RD. USE THE RIGHT LANE TO TAKE THE ROUTE 495 N RAMP TO LOWELL. MERGE WITH I-495 N.

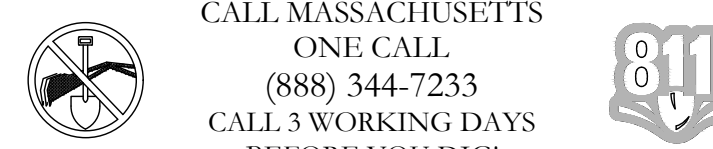
**APPLICABLE CODES/REFERENCE DOCUMENTS**

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	2015 INTERNATIONAL BUILDING CODE
MECHANICAL	2015 INTERNATIONAL MECHANICAL CODE
ELECTRICAL	2020 NEC WITH MA AMENDMENTS

**REFERENCE DOCUMENTS:**

STRUCTURAL ANALYSIS: MORRISON HERSHFIELD  
 DATED: 09/16/2022  
 MOUNT ANALYSIS: MASER CONSULTING  
 DATED: 08/23/2022  
 RFDS REVISION: 0  
 DATED: 10/25/2022  
 ORDER ID: 641435  
 REVISION: 0



**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 (12) ANTENNAS
  - REMOVE (12) COAX
  - INSTALL SECTOR MOUNT MODIFICATIONS
  - INSTALL (11) ANTENNAS
  - INSTALL (6) RRHs
  - INSTALL (1) OVP
  - INSTALL (1) HYBRID CABLE

- GROUND SCOPE OF WORK:**
- REMOVE (3) RRHs

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



01/09/23

IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS THEY ARE ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER THIS DOCUMENT.

**SHEET NUMBER:** T-1  
**REVISION:** 0

**PROJECT TEAM**

A&E FIRM: TOWER ENGINEERING PROFESSIONALS  
 326 TRYON ROAD  
 RALEIGH, NC 27603  
 (919) 661-6351  
 JOSEPH T. CRESS - PROJECT MANAGER  
 GRAHAM M. ANDRES - CIVIL ENGINEER  
 CROWN CASTLE USA INC. DISTRICT CONTACTS:  
 6325 ARDREY KELL ROAD, SUITE 600  
 CHARLOTTE, NC 28277  
 SARA REA LOADHOLDT - A&E SPECIALIST  
 (704) 405-6548

**CROWN CASTLE USA INC. SITE ACTIVITY REQUIREMENTS:**

- 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.
- "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.
- 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.
- 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-S-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).
- 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." 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.
- 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.
- THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.
- THE CONTRACTOR SHALL CONTACT UTILITY LOCATING SERVICES PRIOR TO THE START OF CONSTRUCTION.
- 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.
- ALL SITE WORK SHALL BE AS INDICATED ON THE STAMPED CONSTRUCTION DRAWINGS AND PROJECT SPECIFICATIONS, LATEST APPROVED REVISION.
- 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.
- 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.
- 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.
- THE SITE SHALL BE GRADED TO CAUSE SURFACE WATER TO FLOW AWAY FROM THE CARRIER'S EQUIPMENT AND TOWER AREAS.
- THE SUB GRADE SHALL BE COMPACTED AND BROUGHT TO A SMOOTH UNIFORM GRADE PRIOR TO FINISHED SURFACE APPLICATION.
- 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.
- 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.
- 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.
- 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.
- CONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION. TRASH AND DEBRIS SHOULD BE REMOVED FROM SITE ON A DAILY BASIS.
- 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.

**GREENFIELD GROUNDING NOTES:**

- 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.
- THE CONTRACTOR SHALL PERFORM IEEE FALL-OFF-POTENTIAL 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- ALL EXTERIOR GROUND CONDUCTORS BETWEEN EQUIPMENT/GROUND BARS AND THE GROUND RING SHALL BE #2 SOLID TINNED COPPER UNLESS OTHERWISE INDICATED.
- ALUMINUM CONDUCTOR OR COPPER CLAD STEEL CONDUCTOR SHALL NOT BE USED FOR GROUNDING CONNECTIONS.
- USE OF 90° BENDS IN THE PROTECTION GROUNDING CONDUCTORS SHALL BE AVOIDED WHEN 45° BENDS CAN BE ADEQUATELY SUPPORTED.
- EXOTHERMIC WELDS SHALL BE USED FOR ALL GROUNDING CONNECTIONS BELOW GRADE.
- ALL GROUND CONNECTIONS ABOVE GRADE (INTERIOR AND EXTERIOR) SHALL BE FORMED USING HIGH PRESS CRIMPS.
- COMPRESSION GROUND CONNECTIONS MAY BE REPLACED BY EXOTHERMIC WELD CONNECTIONS.
- ICE BRIDGE BONDING CONDUCTORS SHALL BE EXOTHERMICALLY BONDED OR BOLTED TO THE BRIDGE AND THE TOWER GROUND BAR.
- APPROVED ANTOXIDANT COATINGS (i.e. CONDUCTIVE GEL OR PASTE) SHALL BE USED ON ALL COMPRESSION AND BOLTED GROUND CONNECTIONS.
- ALL EXTERIOR GROUND CONNECTIONS SHALL BE COATED WITH A CORROSION RESISTANT MATERIAL.
- MISCELLANEOUS ELECTRICAL AND NON-ELECTRICAL METAL BOXES, FRAMES AND SUPPORTS SHALL BE BONDED TO THE GROUND RING, IN ACCORDANCE WITH THE NEC.
- BOND ALL METALLIC OBJECTS WITHIN 6 FT. OF MAIN GROUND RING WITH (1) #2 BARE SOLID TINNED COPPER GROUND CONDUCTOR.
- 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.
- 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).
- 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).

**GENERAL NOTES:**

- FOR THE PURPOSE OF CONSTRUCTION DRAWING, THE FOLLOWING DEFINITIONS SHALL APPLY:  
CONTRACTOR: GENERAL CONTRACTOR RESPONSIBLE FOR CONSTRUCTION  
CARRIER: VERIZON  
TOWER OWNER: CROWN CASTLE USA INC.
- 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.
- 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. 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.
- 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.
- 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.
- 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.
- UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.
- THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.
- 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.
- 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.
- 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.
- 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.
- CONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION. TRASH AND DEBRIS SHOULD BE REMOVED FROM SITE ON A DAILY BASIS.

**CONCRETE, FOUNDATIONS, AND REINFORCING STEEL:**

- 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.
- UNLESS NOTED OTHERWISE, SOIL BEARING PRESSURE USED FOR DESIGN OF SLABS AND FOUNDATIONS IS ASSUMED TO BE 1000 psf.
- 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.
- 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.
- ALL STEEL REINFORCING SHALL CONFORM TO ASTM A615. ALL WELDED WIRE FABRIC (WFF) 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
- 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"
- 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.

**ELECTRICAL INSTALLATION NOTES:**

- ALL ELECTRICAL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS, NEC AND ALL APPLICABLE FEDERAL, STATE, AND LOCAL CODES/ORDINANCES.
- CONDUIT ROUTINGS ARE SCHEMATIC. CONTRACTOR SHALL INSTALL CONDUITS SO THAT ACCESS TO EQUIPMENT IS NOT BLOCKED AND TRIP HAZARDS ARE ELIMINATED.
- WIRING, RACEWAY AND SUPPORT METHODS AND MATERIALS SHALL COMPLY WITH THE REQUIREMENTS OF THE NEC.
- 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. VERIFY 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.
- 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.
- 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).
- PANEL BOARDS (ID NUMBERS) SHALL BE CLEARLY LABELED WITH PLASTIC LABELS.
- ALL TIE WRAPS SHALL BE CUT FLUSH WITH APPROVED CUTTING TOOL TO REMOVE SHARP EDGES.
- ALL POWER AND EQUIPMENT GROUND WIRING IN TUBING OR CONDUIT SHALL BE SINGLE COPPER CONDUCTOR (#14 OR LARGER) WITH TYPE THW, THN, THWN-2, XHHW, XHHW-2, THW, THW-2, RHW, OR RHW-2 INSULATION UNLESS OTHERWISE SPECIFIED.
- SUPPLEMENTAL EQUIPMENT GROUND WIRING LOCATED INDOORS SHALL BE SINGLE COPPER CONDUCTOR (#6 OR LARGER) WITH TYPE THW, THN, THWN-2, XHHW, XHHW-2, THW, THW-2, RHW, OR RHW-2 INSULATION UNLESS OTHERWISE SPECIFIED.
- POWER AND CONTROL WIRING IN FLEXIBLE CORD SHALL BE MULTI-CONDUCTOR, TYPE SOOW CORD (#14 OR LARGER) UNLESS OTHERWISE SPECIFIED.
- POWER AND CONTROL WIRING FOR USE IN CABLE TRAY SHALL BE MULTI-CONDUCTOR, TYPE TC CABLE (#14 OR LARGER), WITH TYPE THW, THWN, THWN-2, XHHW, XHHW-2, THW, THW-2, RHW, OR RHW-2 INSULATION UNLESS OTHERWISE SPECIFIED.
- 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).
- RACEWAY AND CABLE TRAY SHALL BE LISTED OR LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA, UL, ANSI/IEEC AND NEC.
- ELECTRICAL METALLIC TUBING (EMT), INTERMEDIATE METAL CONDUIT (IMC), OR RIGID METAL CONDUIT (RMC) SHALL BE USED FOR EXPOSED INDOOR LOCATIONS.
- ELECTRICAL METALLIC TUBING (EMT) OR METAL-CLAD CABLE (MC) SHALL BE USED FOR CONCEALED INDOOR LOCATIONS.
- SCHEDULE 40 PVC UNDERGROUND ON STRAIGHTS AND SCHEDULE 80 PVC FOR ALL ELBOWS/90s AND ALL APPROVED ABOVE GRADE PVC CONDUIT.
- LIQUID-TIGHT FLEXIBLE METALLIC CONDUIT (LIQUID-TITE FLEX) SHALL BE USED INDOORS AND OUTDOORS, WHERE VIBRATION OCCURS OR FLEXIBILITY IS NEEDED.
- CONDUIT AND TUBING FITTINGS SHALL BE THREADED OR COMPRESSION-TYPE AND APPROVED FOR THE LOCATION USED. SET SCREW FITTINGS ARE NOT ACCEPTABLE.
- CABINETS, BOXES AND WIRE WAYS SHALL BE LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA, UL, ANSI/IEEC AND THE NEC.
- WIREWAYS SHALL BE METAL WITH AN ENAMEL FINISH AND INCLUDE A HINGED COVER, DESIGNED TO SWING OPEN DOWNWARDS (WIREMOLD SPECMATE WIREWAY).
- SLOTTED WIRING DUCT SHALL BE PVC AND INCLUDE COVER (PANDUIT TYPE E OR EQUAL). 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- INSTALL LAMICOID LABEL ON THE METER CENTER TO SHOW "VERIZON".
- 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
120/208V, 3Ø	GROUND	GREEN
	A PHASE	BLACK
	B PHASE	RED
277/480V, 3Ø	C PHASE	BLUE
	NEUTRAL	WHITE
	GROUND	GREEN
DC VOLTAGE	A PHASE	BROWN
	B PHASE	ORANGE OR PURPLE
	C PHASE	YELLOW
DC VOLTAGE	NEUTRAL	GREY
	GROUND	GREEN
	POS (+)	RED**
	NEG (-)	BLACK**


**APWA UNIFORM COLOR CODE:**

- PROPOSED EXCAVATION
- TEMPORARY SURVEY MARKINGS
- ELECTRIC POWER LINES, CABLES, CONDUIT, AND LIGHTING CABLES
- GAS, OIL, STEAM, PETROLEUM, OR GASEOUS MATERIALS
- COMMUNICATION, ALARM OR SIGNAL LINES, CABLES, OR CONDUIT AND TRAFFIC LOOPS
- POTABLE WATER
- RECLAIMED WATER, IRRIGATION, AND SLURRY LINES
- SEWERS AND DRAIN LINES


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

**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 PLAN
- QTY QUANTITY
- RECT RECTIFIER
- RBS RADIO BASE STATION
- RETS 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



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1200 MACARTHUR BLVD, SUITE 200  
MAHWAH, NJ 07430



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RALEIGH, NC 27603  
(919) 661-6351

TEP JOB #: 317510.805162

**VERIZON SITE NUMBER:  
138118**


**BU #: 842900**  
**HARVARD I-495 (MA0143)**

**END OF BROWN STREET  
(WHITCOMB ROAD)  
HARVARD, MA 01451**

**EXISTING 103'-6" MONOPINE**

**ISSUED FOR:**

REV	DATE	DRWN	DESCRIPTION	DES./QA
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REVISION: **0**

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**CROWN CASTLE**

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VERIZON SITE NUMBER:  
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EXISTING 103'-6" MONOPINE

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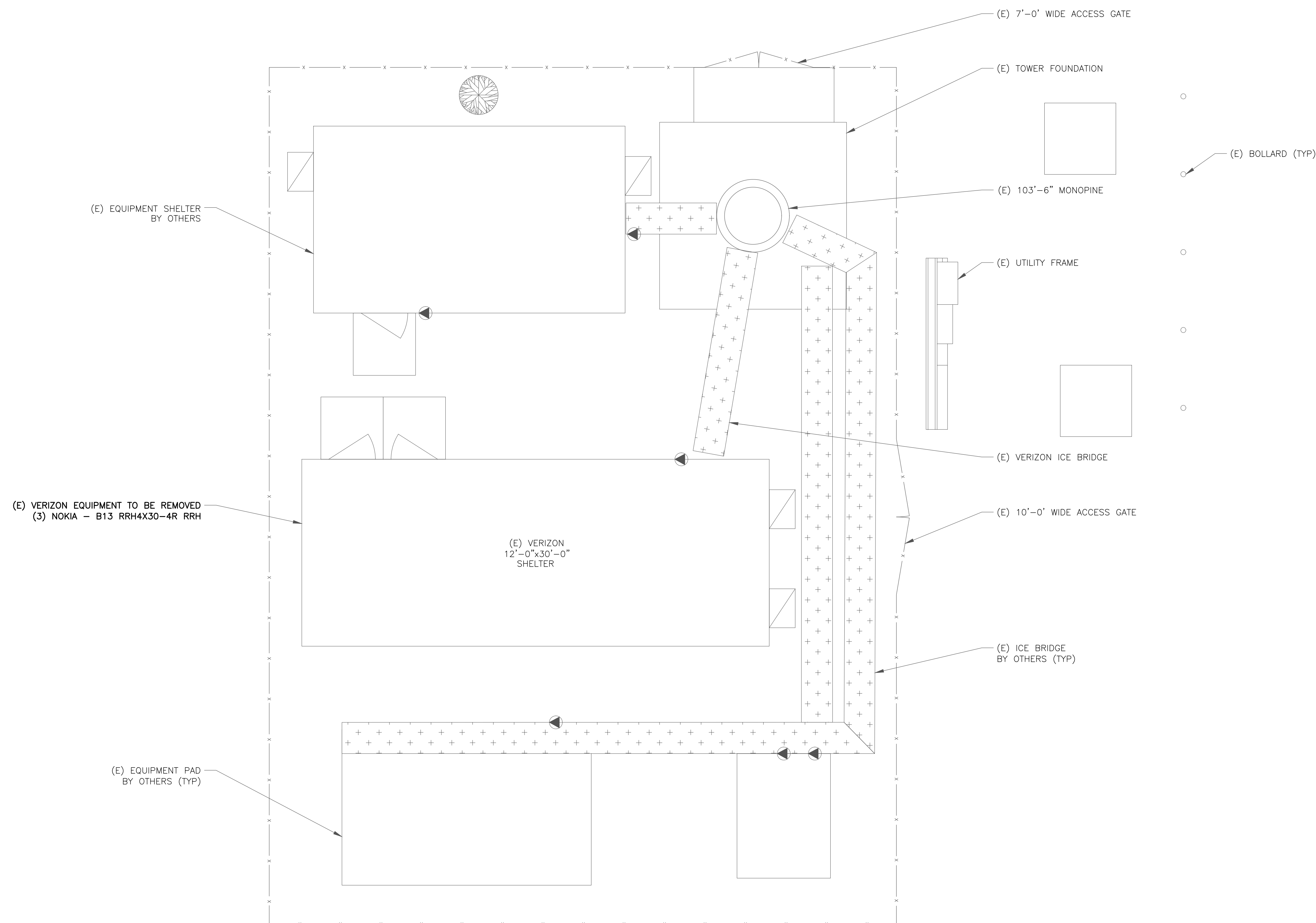
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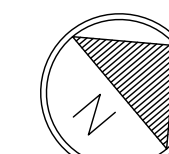
SHEET NUMBER: REVISION:

**C-1**

**0**



1 SITE PLAN  
SCALE: 1/4"=1'-0" (FULL SIZE)  
1/8"=1'-0" (11x17)



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**CROWN CASTLE**

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(919) 661-6351

TEP JOB #: 317510. 805162

VERIZON SITE NUMBER:  
**138118**

BU #: 842900  
**HARVARD I-495 (MA0143)**

END OF BROWN STREET  
(WHITCOMB ROAD)  
HARVARD, MA 01451

EXISTING 103'-6" MONOPINE

ISSUED FOR:

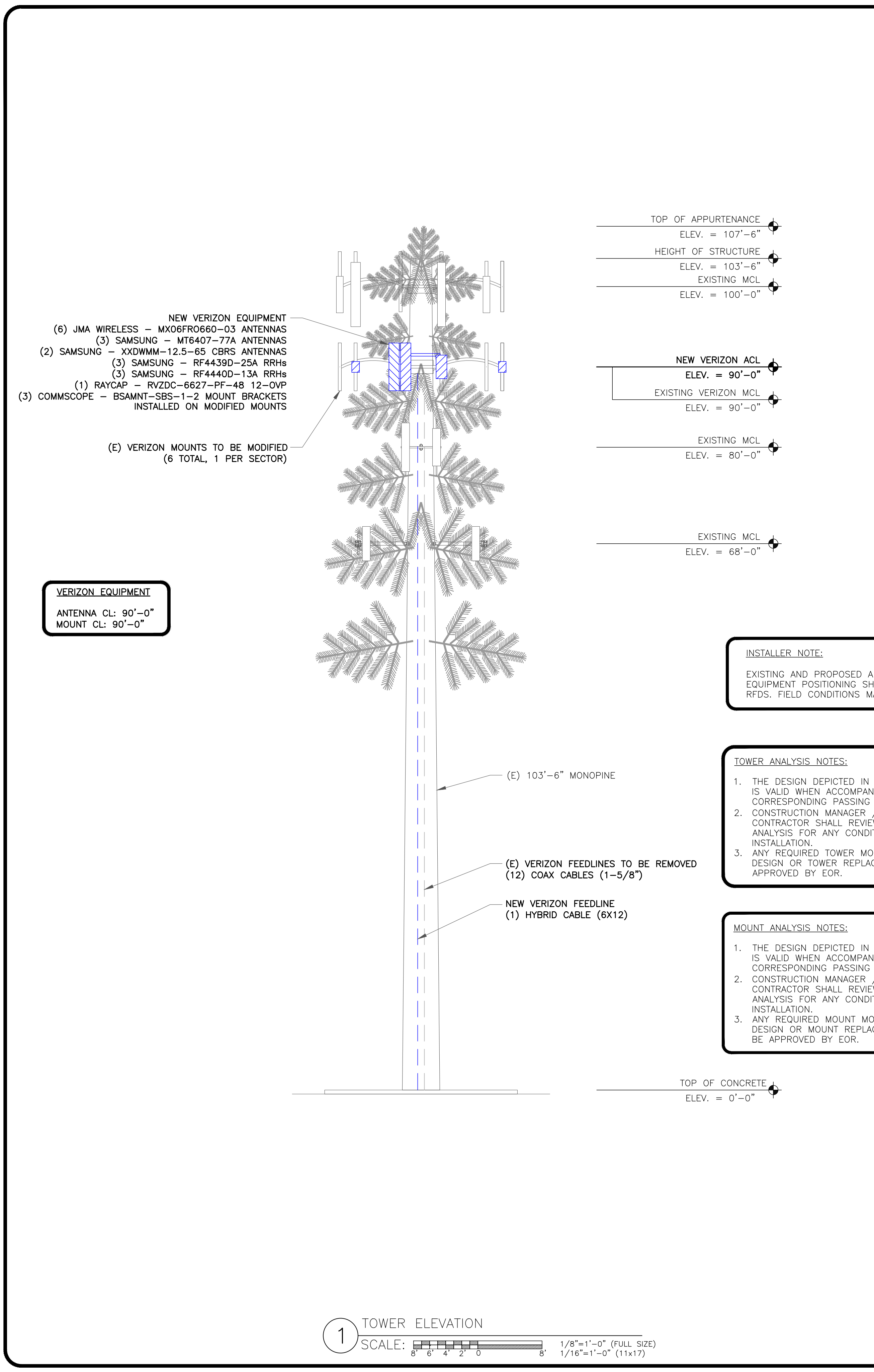
REV	DATE	DRWN	DESCRIPTION	DES./QA
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01/09/23

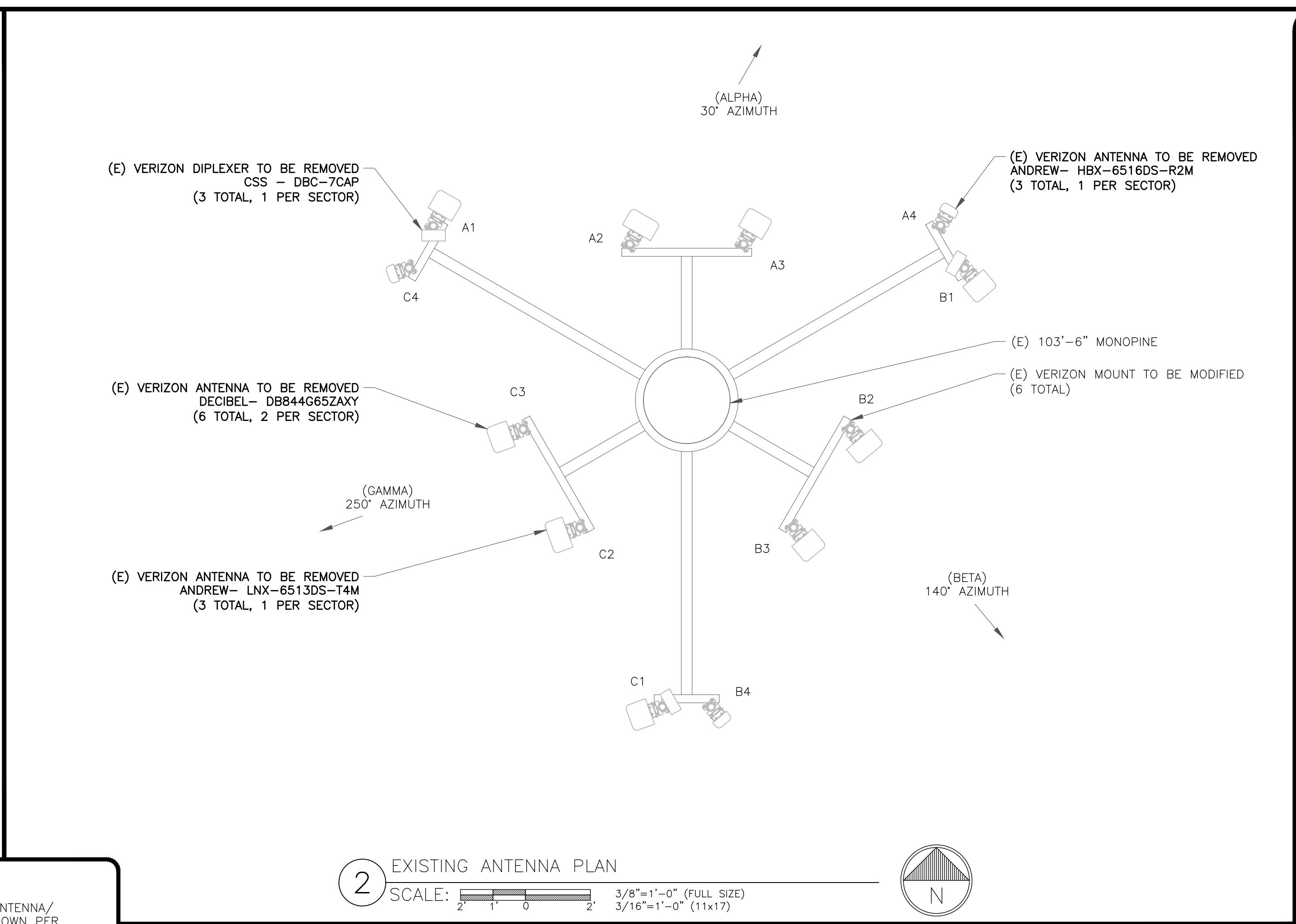
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VERIZON EQUIPMENT  
ANTENNA CL: 90'-0"  
MOUNT CL: 90'-0"

**1 TOWER ELEVATION**  
SCALE: 1/8"=1'-0" (FULL SIZE)  
1/16"=1'-0" (11x17)



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

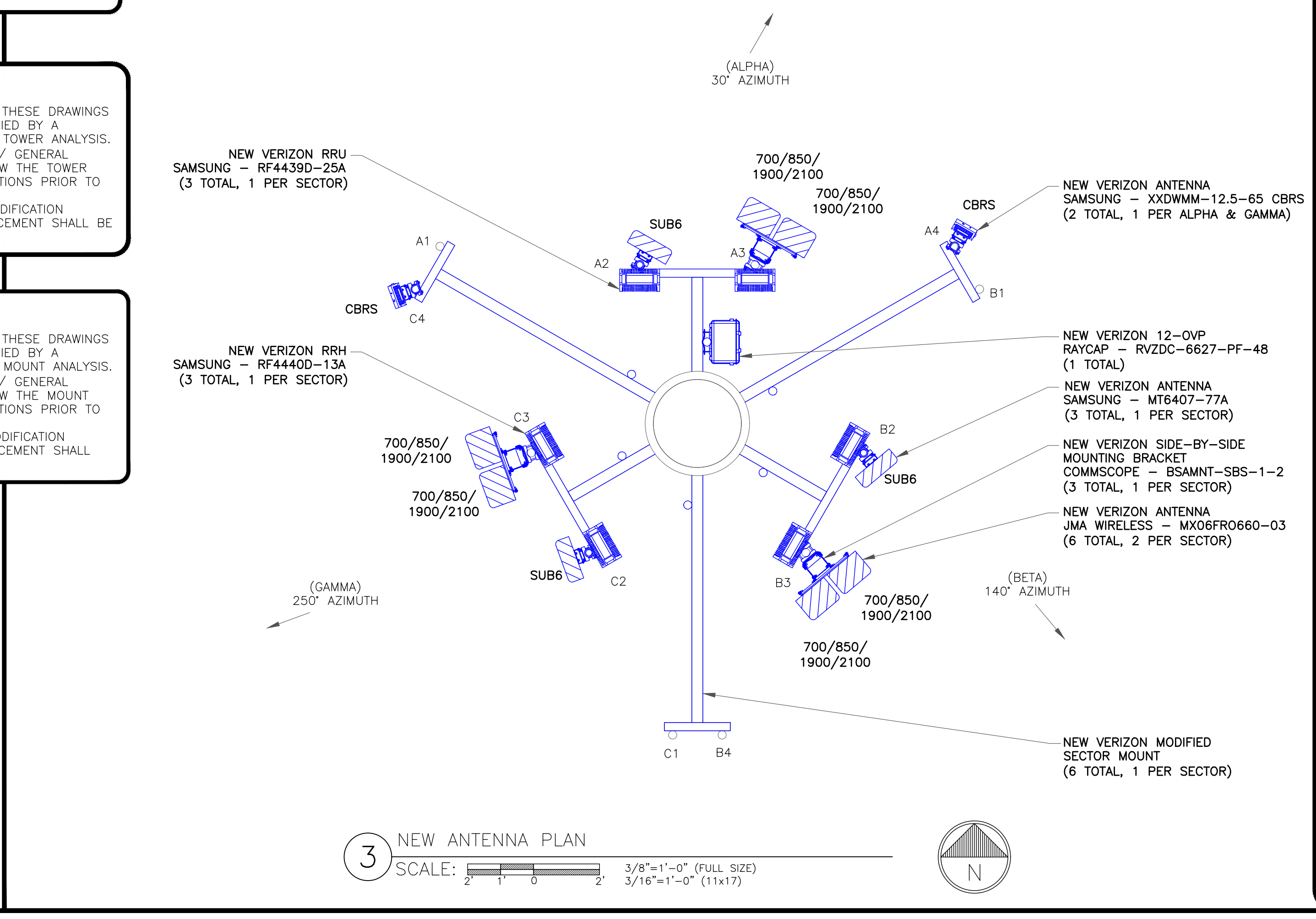
**INSTALLER NOTE:**  
EXISTING AND PROPOSED ANTENNA/EQUIPMENT POSITIONING SHOWN PER RFDS. FIELD CONDITIONS MAY VARY.

**TOWER ANALYSIS NOTES:**

1. THE DESIGN DEPICTED IN THESE DRAWINGS IS VALID WHEN ACCOMPANIED BY A CORRESPONDING PASSING TOWER ANALYSIS.
2. CONSTRUCTION MANAGER / GENERAL CONTRACTOR SHALL REVIEW THE TOWER ANALYSIS FOR ANY CONDITIONS PRIOR TO INSTALLATION.
3. ANY REQUIRED TOWER MODIFICATION DESIGN OR TOWER REPLACEMENT SHALL BE APPROVED BY EOR.

**MOUNT ANALYSIS NOTES:**

1. THE DESIGN DEPICTED IN THESE DRAWINGS IS VALID WHEN ACCOMPANIED BY A CORRESPONDING PASSING MOUNT ANALYSIS.
2. CONSTRUCTION MANAGER / GENERAL CONTRACTOR SHALL REVIEW THE MOUNT ANALYSIS FOR ANY CONDITIONS PRIOR TO INSTALLATION.
3. ANY REQUIRED MOUNT MODIFICATION DESIGN OR MOUNT REPLACEMENT SHALL BE APPROVED BY EOR.



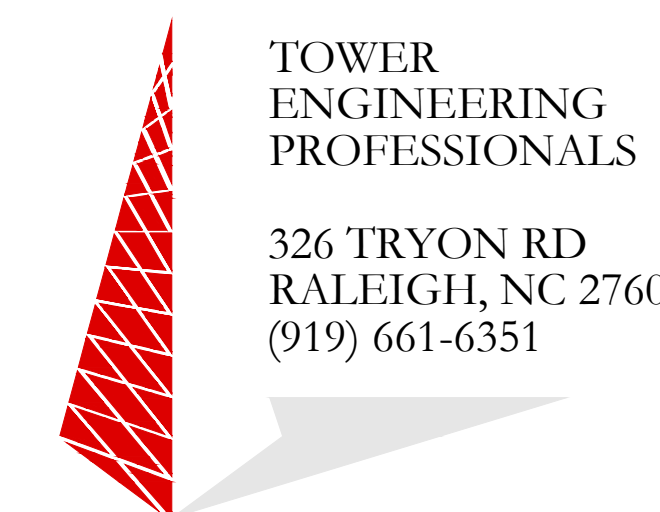
**3 NEW ANTENNA PLAN**  
SCALE: 3/8"=1'-0" (FULL SIZE)  
3/16"=1'-0" (11x17)

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**138118**

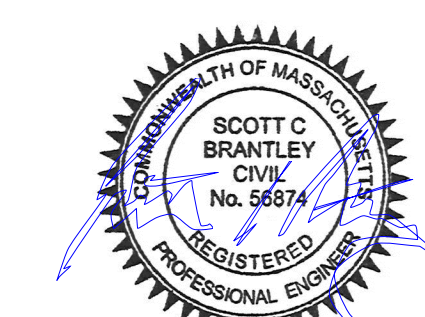
BU #: 842900  
**HARVARD I-495 (MA0143)**

END OF BROWN STREET  
(WHITCOMB ROAD)  
HARVARD, MA 01451

EXISTING 103'-6" MONOPINE

**ISSUED FOR:**

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**C-3** **0**

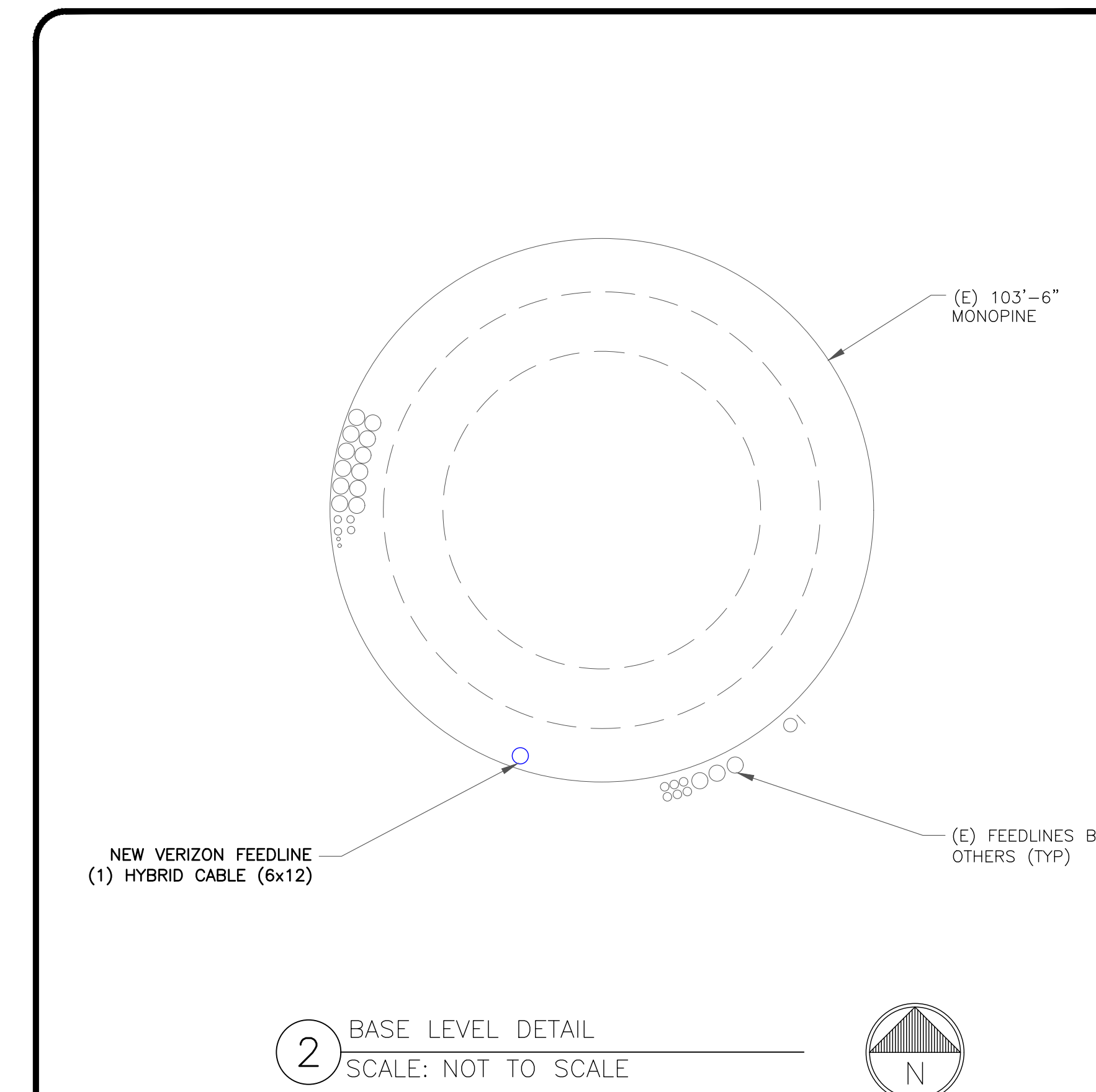
ANTENNA/RRH SCHEDULE

SECTOR	STATUS	ANTENNA MANUFACTURER	ANTENNA MODEL	ANTENNA CENTERLINE	AZIMUTH	MECHANICAL DOWNTILTS	ELECTRICAL DOWNTILTS	TOWER EQUIPMENT MANUFACTURER	TOWER EQUIPMENT QTY/MODEL
A1	-	-	-	-	-	-	-	-	-
A2	NEW	SAMSUNG	MT6407-77A	90'-0"	30°	*	*	SAMSUNG	(1) RF4439D-25A RRH
A3	NEW	JMA WIRELESS	MX06FRO660-03	90'-0"	30°	*	*	SAMSUNG	(1) RF4440D-13A RRH
	NEW	JMA WIRELESS	MX06FRO660-03	90'-0"	30°	*	*		
A4	NEW	SAMSUNG	XXDWMM-12.5-65 CBRS	90'-0"	30°	*	*	RAYCAP	(1) RVZDC-6627-PF-48 12-OVP
B1	-	-	-	-	-	-	-	-	-
B2	NEW	SAMSUNG	MT6407-77A	90'-0"	140°	*	*	SAMSUNG	(1) RF4439D-25A RRH
B3	NEW	JMA WIRELESS	MX06FRO660-03	90'-0"	140°	*	*	SAMSUNG	(1) RF4440D-13A RRH
	NEW	JMA WIRELESS	MX06FRO660-03	90'-0"	140°	*	*		
B4	-	-	-	-	-	-	-	-	-
C1	-	-	-	-	-	-	-	-	-
C2	NEW	SAMSUNG	MT6407-77A	90'-0"	250°	*	*	SAMSUNG	(1) RF4439D-25A RRH
C3	NEW	JMA WIRELESS	MX06FRO660-03	90'-0"	250°	*	*	SAMSUNG	(1) RF4440D-13A RRH
	NEW	JMA WIRELESS	MX06FRO660-03	90'-0"	250°	*	*		
C4	NEW	SAMSUNG	XXDWMM-12.5-65 CBRS	90'-0"	250°	*	*	-	-

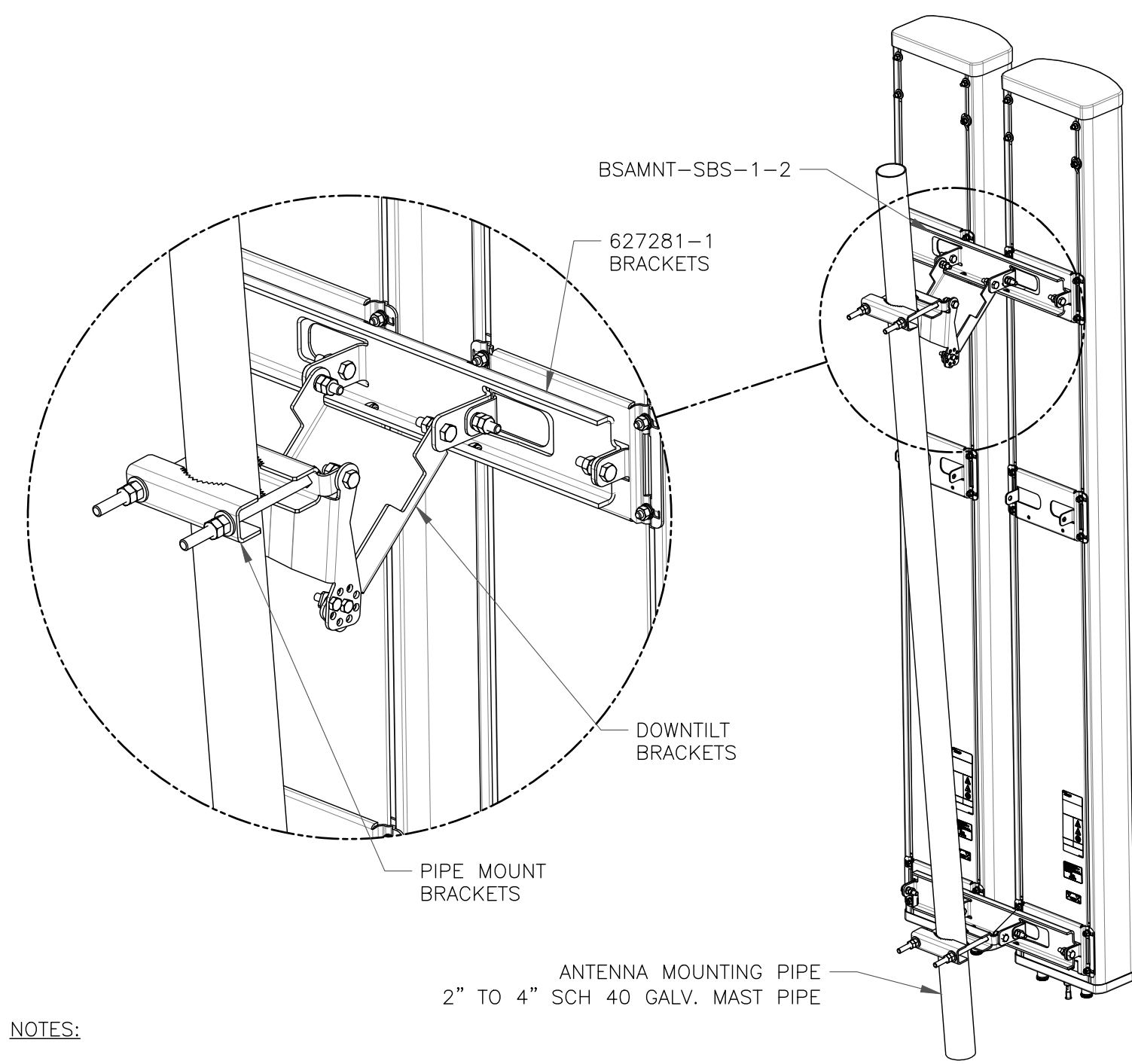
1 VERIZON TOWER EQUIPMENT SCHEDULE  
SCALE: NOT TO SCALE

CABLE SCHEDULE

STATUS	CABLE TYPE	MANUFACTURER (MODEL #)	SIZE	LENGTH	QTY
NEW	HYBRID	RFS/CELWAVE HB158-1-08U8-S8J18	6X12	140'-0"±	1
TOTAL CABLE QTY:					1



2 BASE LEVEL DETAIL  
SCALE: NOT TO SCALE

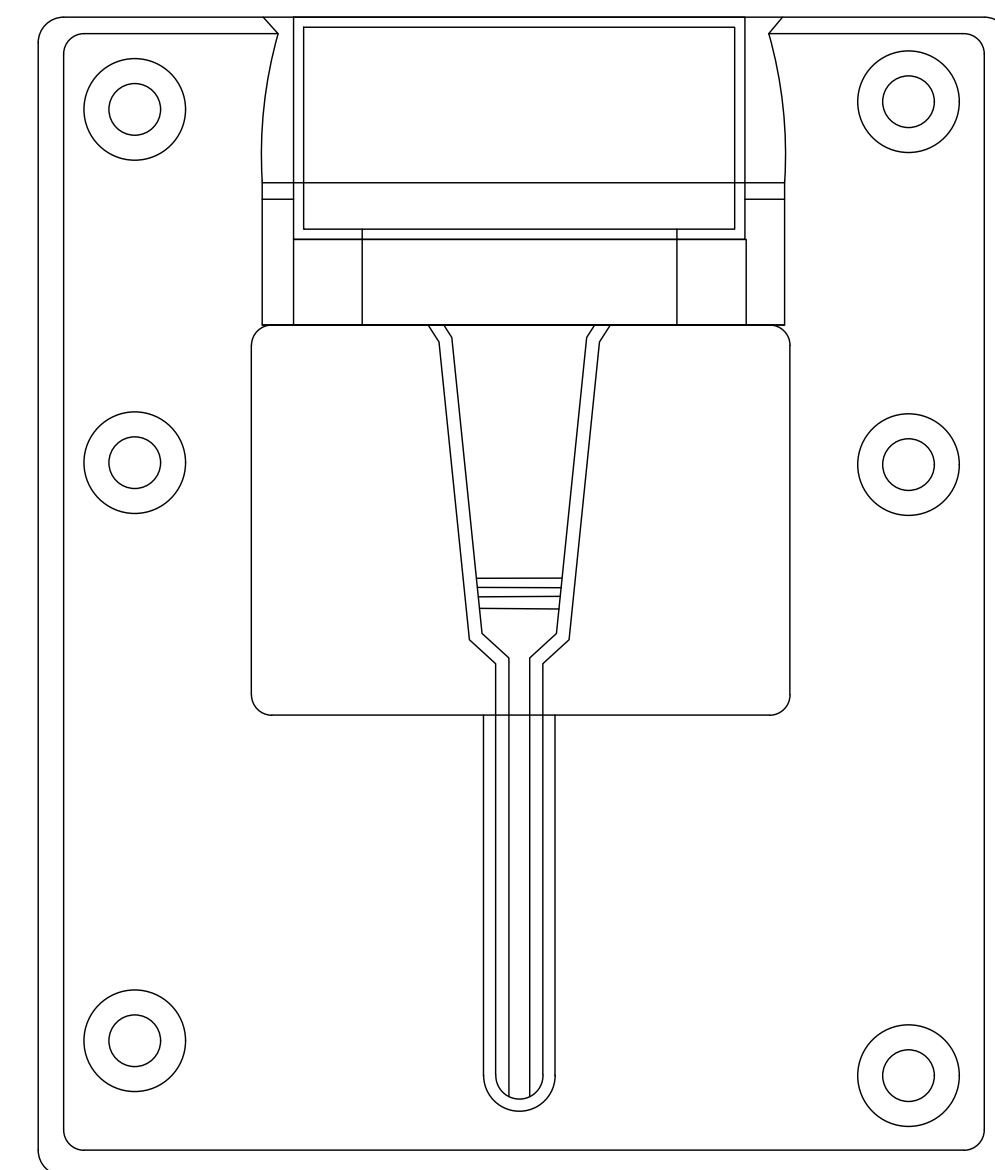


**NOTES:**

- BSAMNT-SBS-1-2 KIT CONTAINS (2) 627281 MOUNTING BRACKETS.
- TORQUE THE M10 BOLT ASSEMBLY TO 37 N.m. PER MANUFACTURE'S RECOMMENDATIONS.

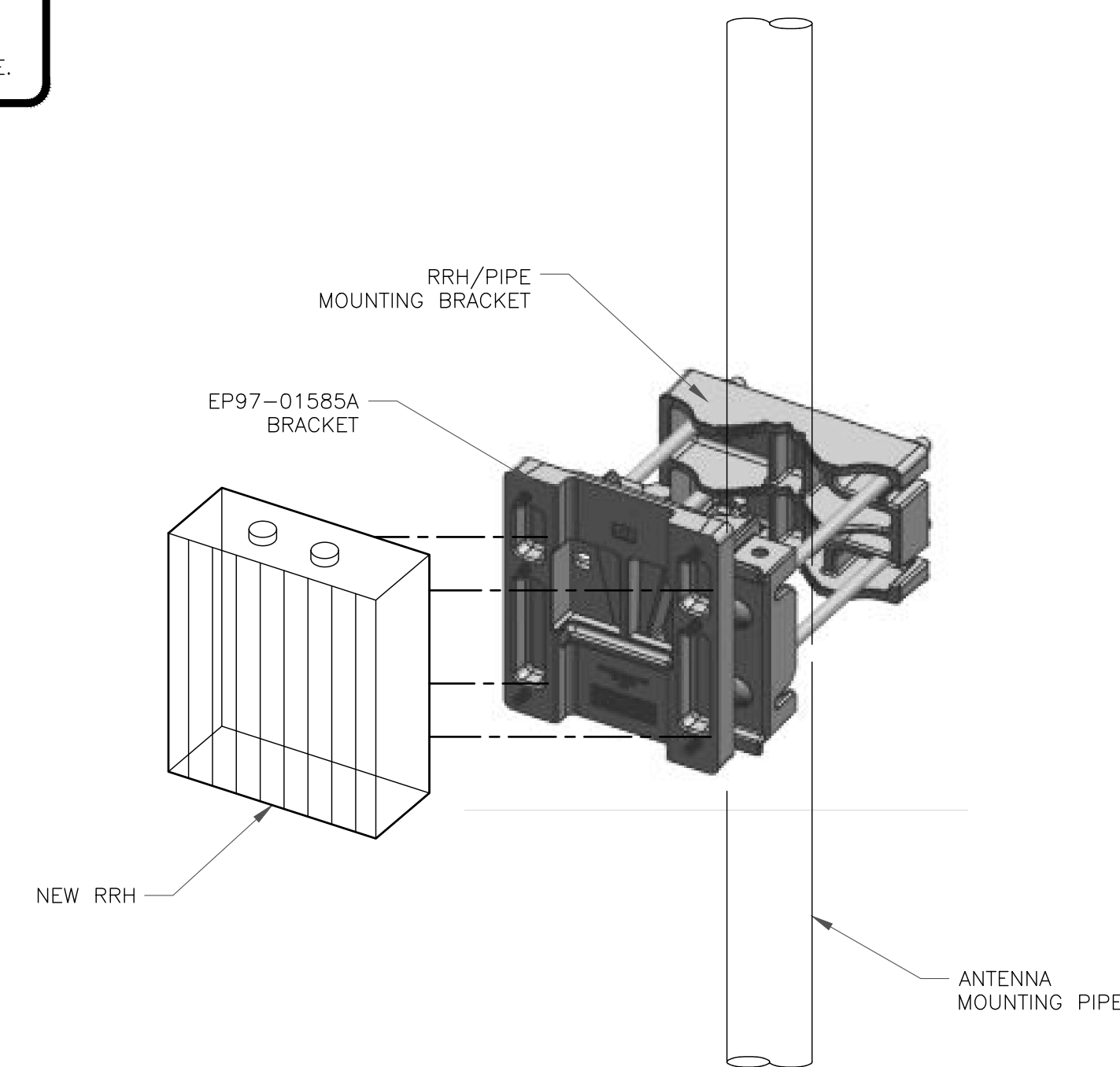
1 COMMSCOPE - BSAMNT-SBS-1-2  
SCALE: NOT TO SCALE

2 NOT USED  
SCALE: NOT TO SCALE



3 SAMSUNG - EP97-01585A BRACKET DETAIL  
SCALE: NOT TO SCALE

**INSTALLER NOTES:**  
ALL PIPES BRACKETS AND MISCELLANEOUS HARDWARE TO BE GALVANIZED UNLESS NOTED OTHERWISE.



4 ANTENNA & RRH MOUNTING DETAIL  
SCALE: NOT TO SCALE

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RALEIGH, NC 27603  
(919) 661-6351  
TEP JOB #: 317510. 805162

**VERIZON SITE NUMBER:**  
**138118**  
**BU #: 842900**  
**HARVARD I-495 (MA0143)**  
END OF BROWN STREET  
(WHITCOMB ROAD)  
HARVARD, MA 01451  
EXISTING 103'-6" MONOPINE

**ISSUED FOR:**

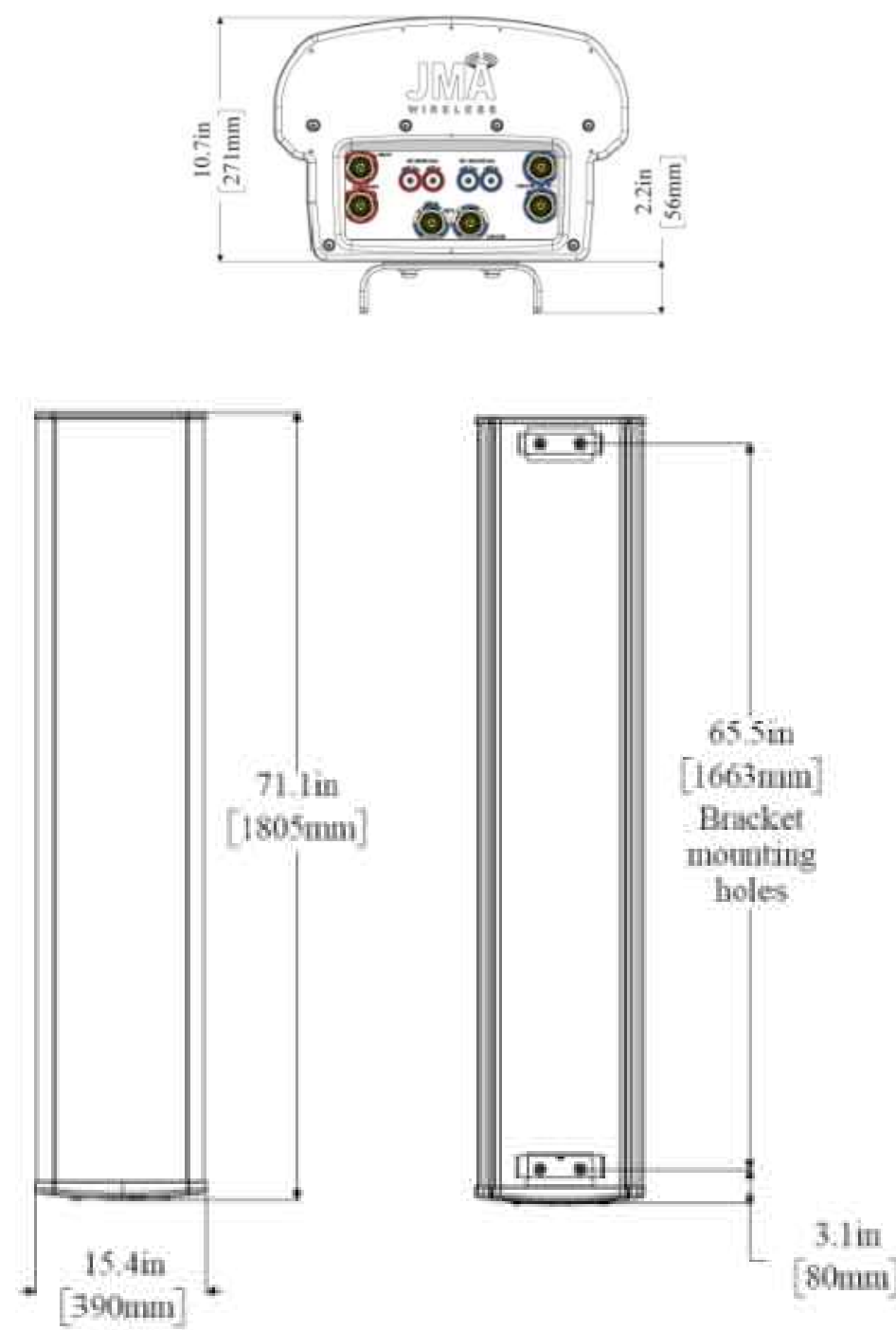
REV	DATE	DRWN	DESCRIPTION	DES./QA
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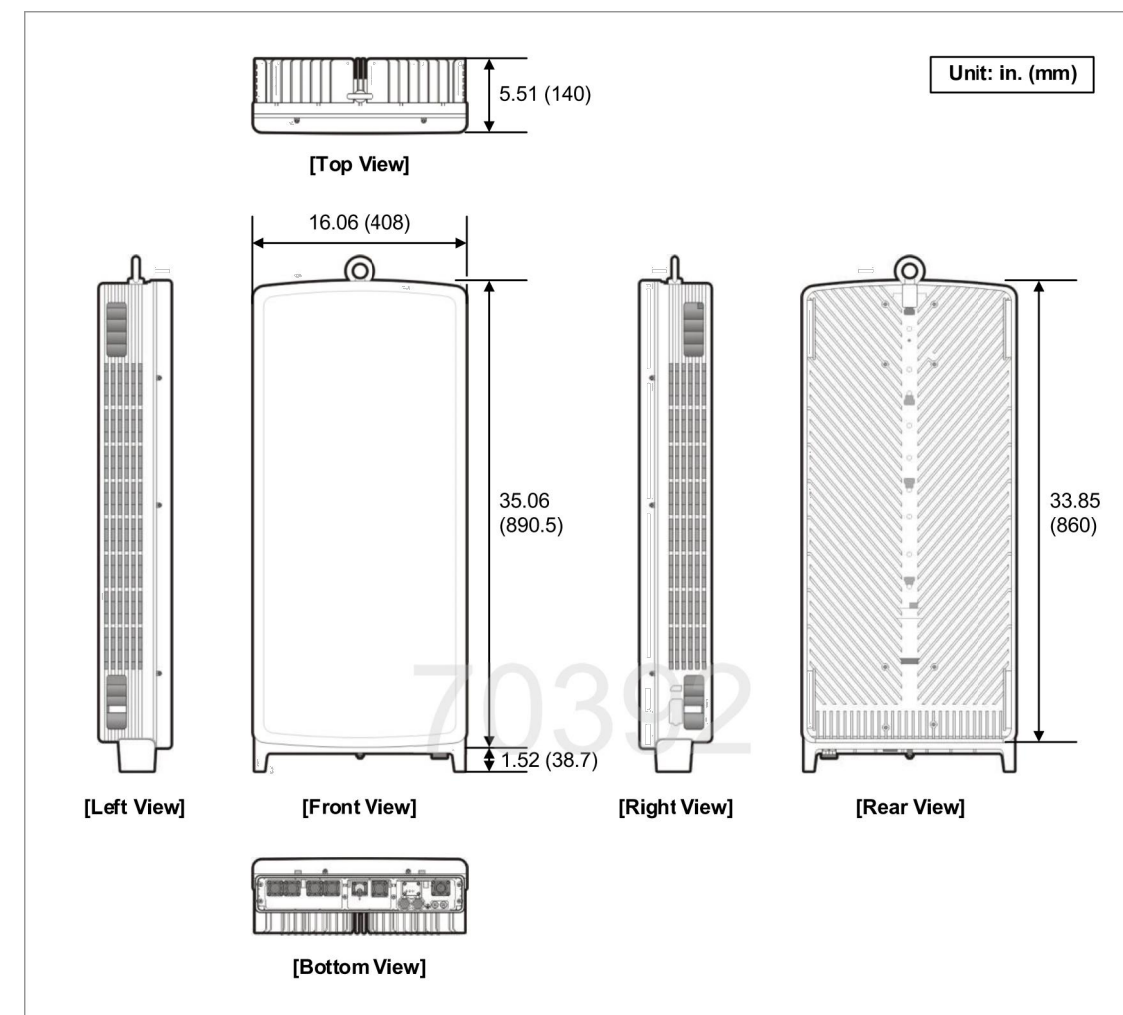
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**SHEET NUMBER:**  
**C-4**  
**REVISION:**  
**0**



JMA WIRELESS – MX06FRO660-03  
 SIZE (HxWxD): 71.30X15.40X10.70 IN.  
 WT: 78.00 LBS

1 JMA WIRELESS – MX06FRO660-03  
 SCALE: NOT TO SCALE



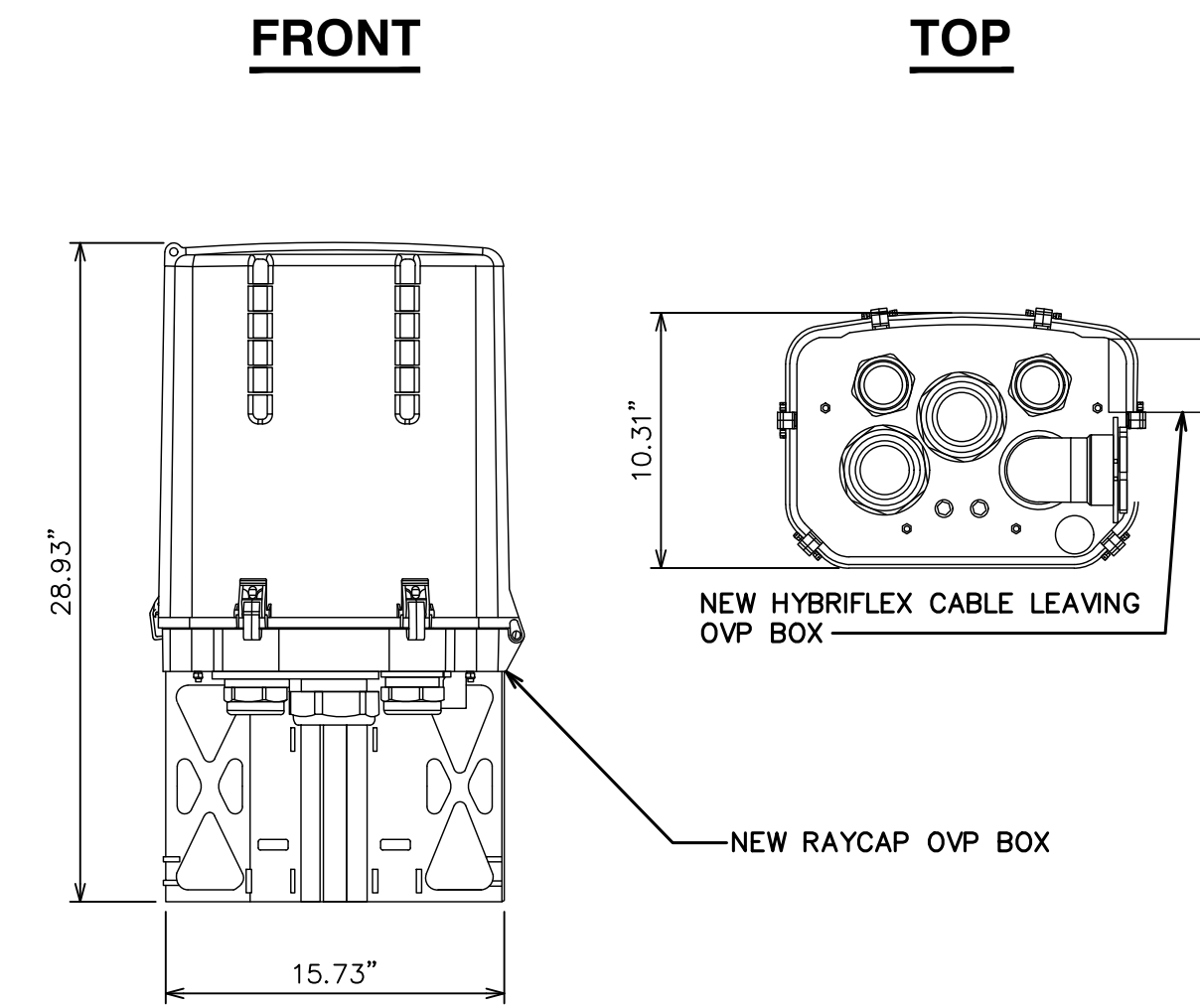
SAMSUNG TELECOMMUNICATIONS – MT6407-77A ANTENNA  
 WEIGHT: 81.57 LBS  
 SIZE (HxWxD): 35.06x16.06x5.51 IN.

2 SAMSUNG – MT6407-77A  
 SCALE: NOT TO SCALE

FIBER NAMING CONVENTION	
Technology	(Equipment-Sector-OPTI #)
<b>DUPLIX FIBER RUN</b>	
5GmmW L0	5GmmW-A-0
<b>SIMPLEX FIBER RUN</b>	
CBRS L0	CBRS-A-0
CBRS L1	CBRS-A-1
LAA L0	LAA-A-0
High Band Dual Band L0	HB-A-0
High Band Dual Band L1	HB-A-1
Low Band Dual Band L0	LB-A-0
FDMIMO AWS L0	FDM-AWS-A-0
FDMIMO AWS L1	FDM-AWS-A-1
FDMIMO PCS L0	FDM-PCS-A-0
FDMIMO PCS L1	FDM-PCS-A-1

Rev. 2/23/2021

3 FIBER NAMING CONVENTION CHART  
 SCALE: NOT TO SCALE



RAYCAP – RVZDC-6627-PF-48  
 WEIGHT: 32.00 LBS  
 SIZE (HxWxD): 28.93x15.73x10.31 IN.

4 RAYCAP-RVZDC-6627-PF-48  
 SCALE: NOT TO SCALE

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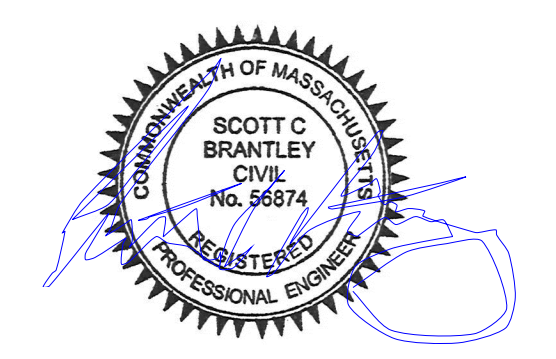
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 (919) 661-6351  
 TEP JOB #: 317510. 805162

VERIZON SITE NUMBER:  
**138118**  
 BU #: 842900  
**HARVARD I-495 (MA0143)**  
 END OF BROWN STREET  
 (WHITCOMB ROAD)  
 HARVARD, MA 01451

EXISTING 103'-6" MONOPINE

ISSUED FOR:

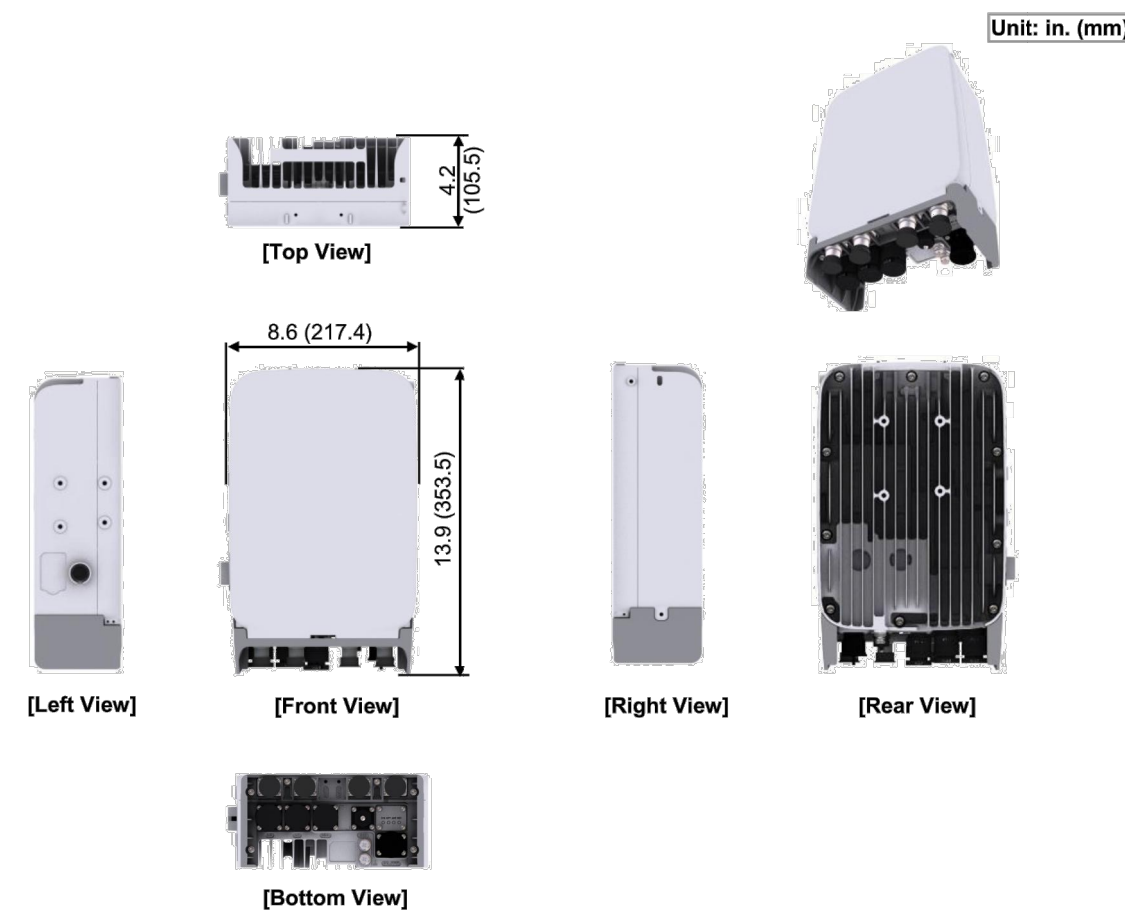
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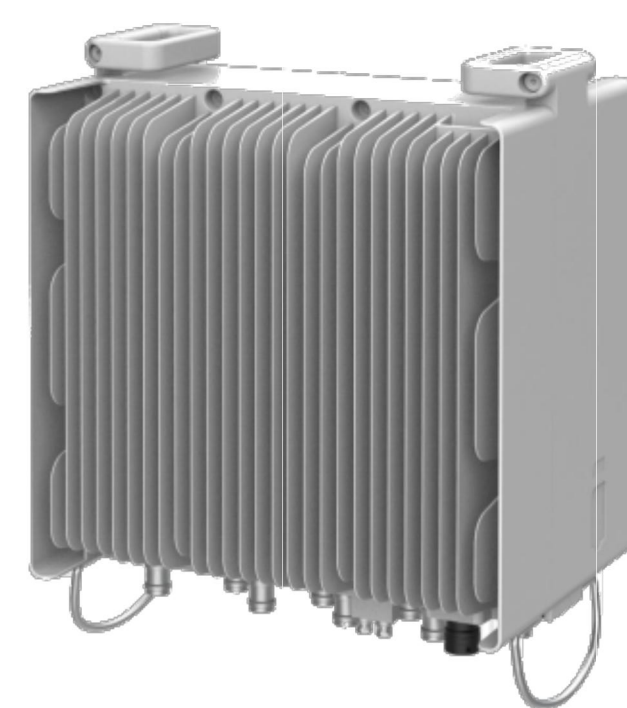
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SAMSUNG – XXDWMM-12.5-65 CBRS  
 WEIGHT: 23.14 LBS  
 SIZE (HxWxD): 16.16x11.39x5.45 IN.

5 SAMSUNG – XXDWMM-12.5-65  
 SCALE: NOT TO SCALE



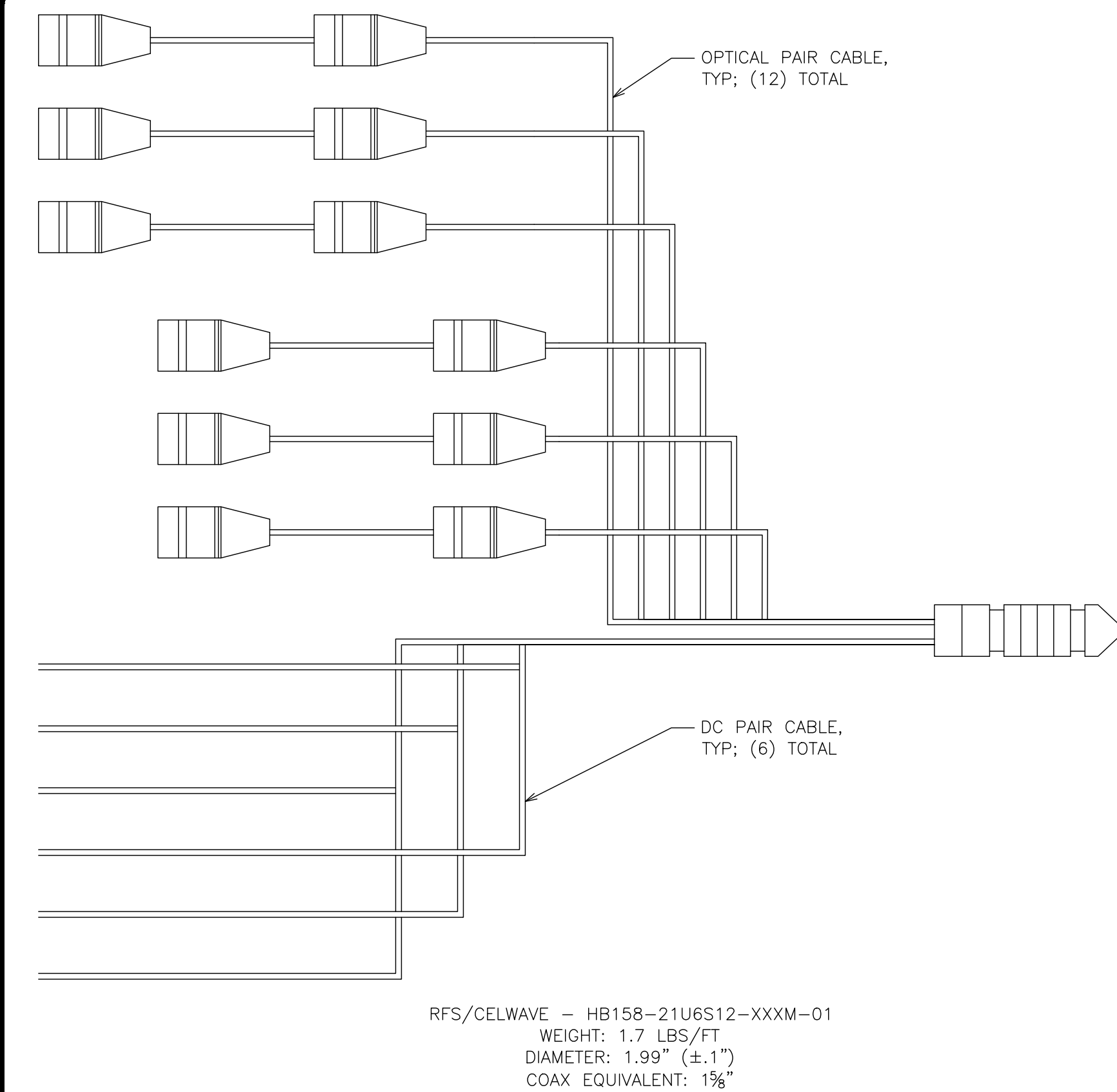
SAMSUNG – RF4439D-25A  
 WEIGHT: 74.7 LBS  
 SIZE (HxWxD): 14.96X14.96X10.04IN.

6 SAMSUNG – RF4439D-25A  
 SCALE: NOT TO SCALE



SAMSUNG – RF4440D-13A  
 WEIGHT: 70.33 LBS  
 SIZE (HxWxD): 14.96X14.96X9.05 IN.

7 SAMSUNG – RF4440D-13A  
 SCALE: NOT TO SCALE



8 HCS DETAIL  
 SCALE: NOT TO SCALE



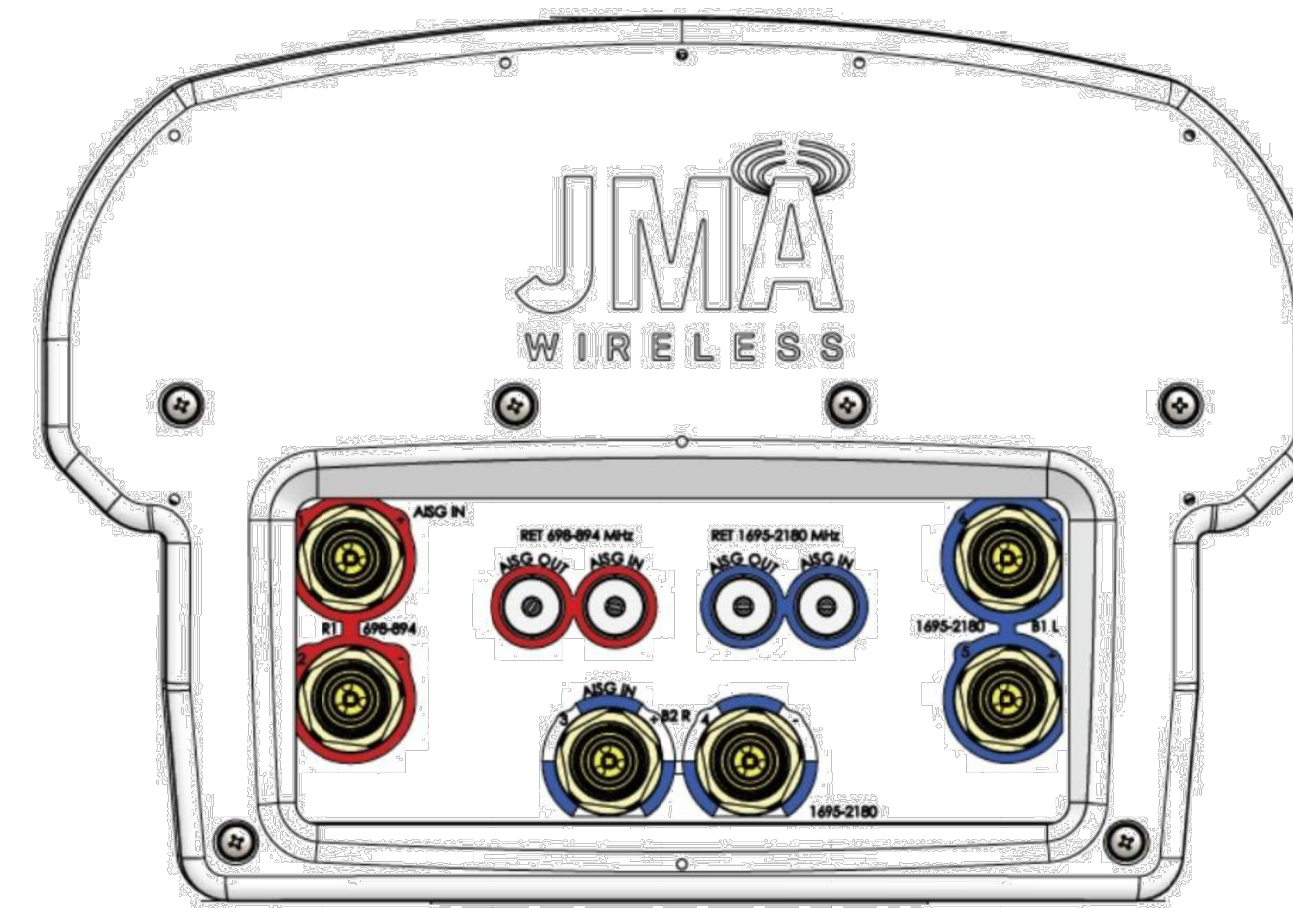
**Comments:**

Diagram shows configuration as viewed from standing behind the antennas.

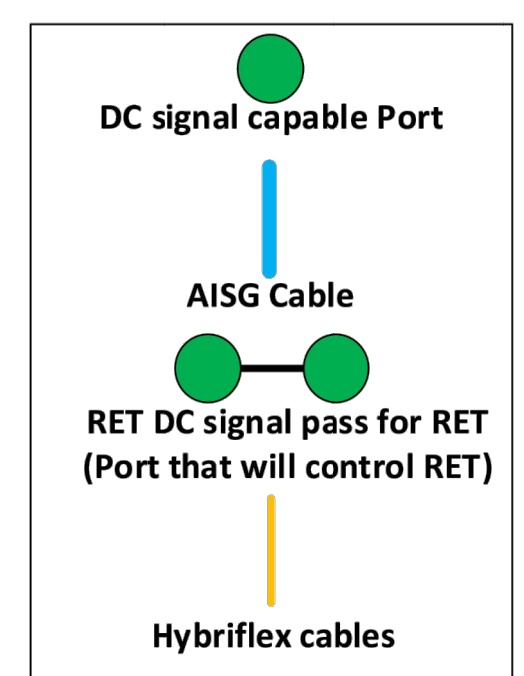
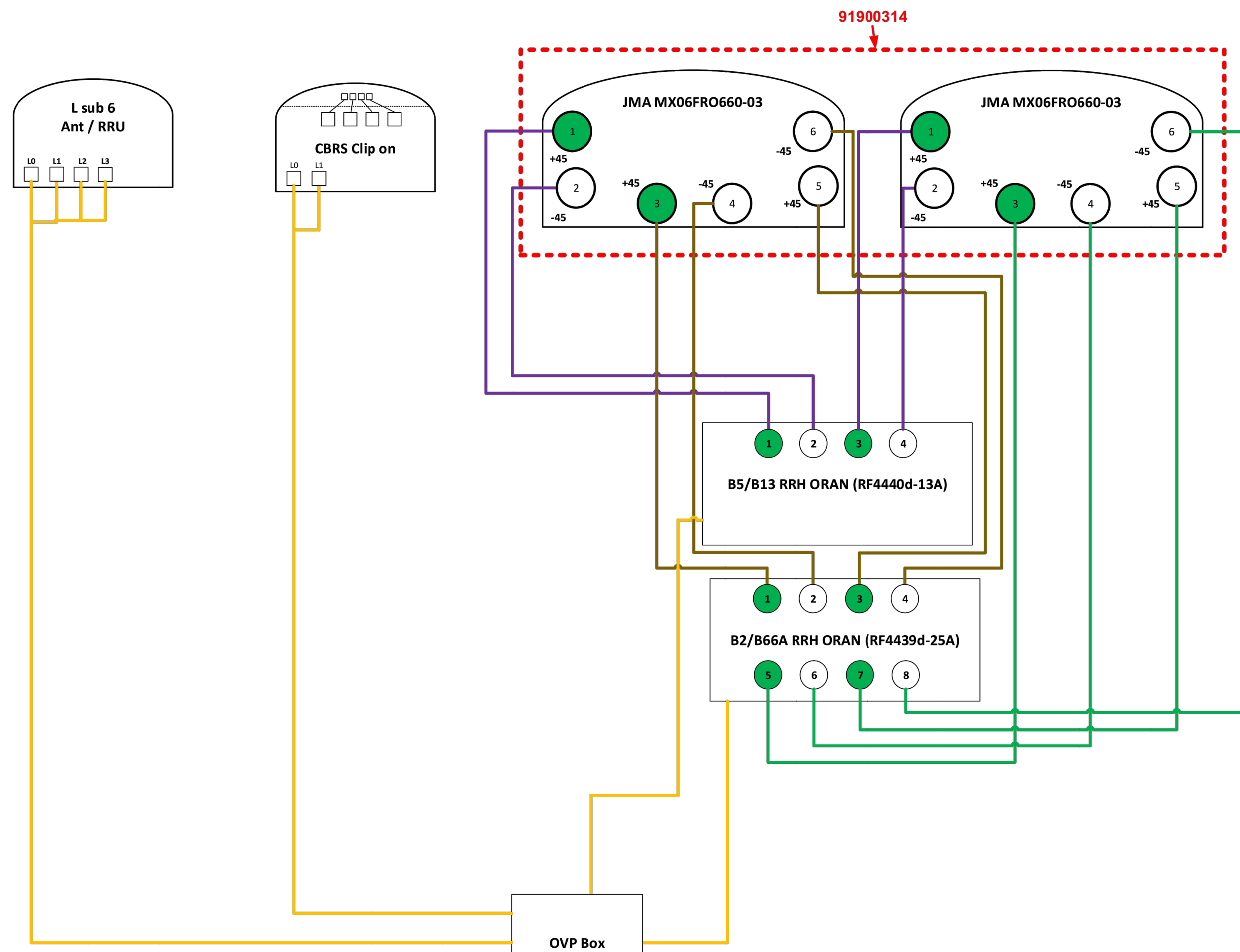
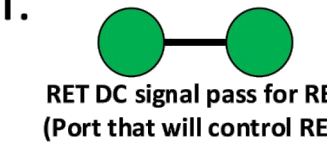
Antennas will be installed in that order from left to right.

Cap and weatherproof unused antenna ports.

All plumbing diagram colors are irrelevant except for AISG & Hybriflex cable. (For the coax colors follow Coax Colors guide above)



- Port 1 & 2 are for low band (698-896 MHz).
- Port 3,4,5, & 6 are for high band (1695-2360 MHz).
- Antenna Smart Bias Tee (SBT) is through port 1 for low band and port 3 for high band.
- AISG cable is only needed when drawn in the diagrams below, if it is not drawn then SBT is enough to control all RET motors.
- Not all SBT ports are needed to control RET, only green port connection to green port will control RET.



Tower/  
Watertank/  
Rooftop  
-----  
Equipment  
Pad

1 PLUMBING DIAGRAM  
SCALE: NOT TO SCALE

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VERIZON SITE NUMBER:  
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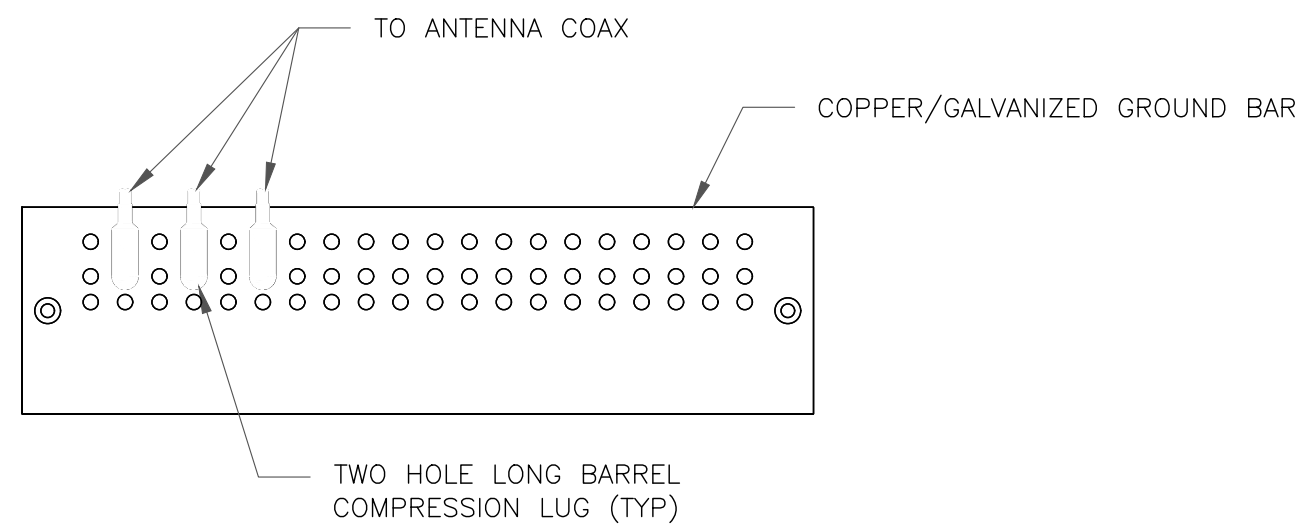
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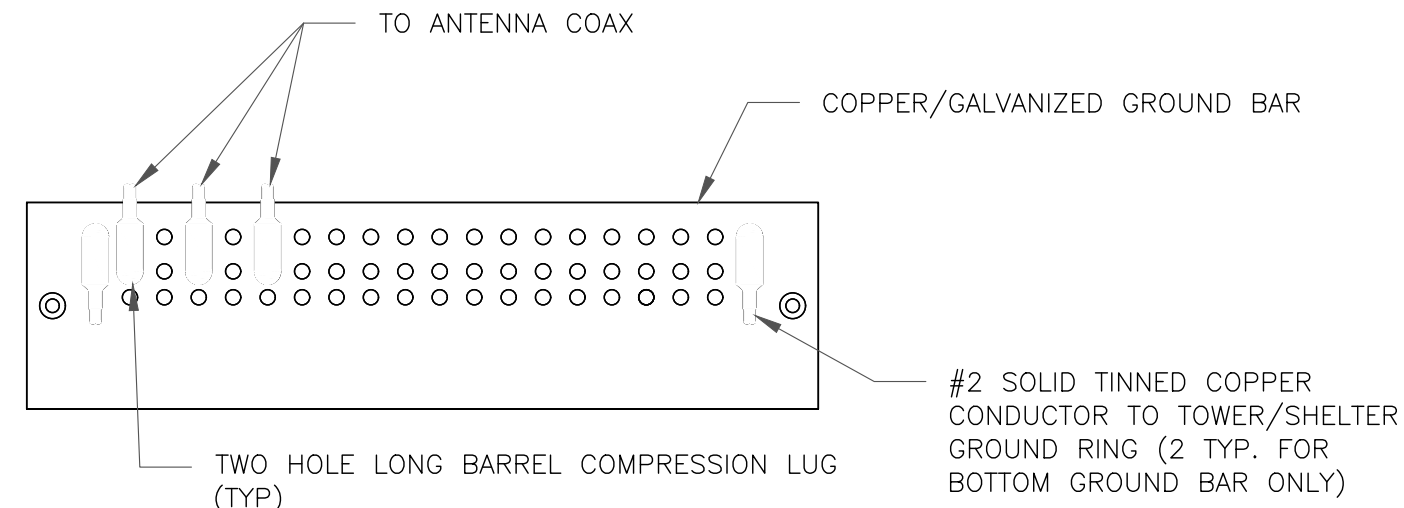
SHEET NUMBER: **C-6**      REVISION: **0**



NOTES:

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

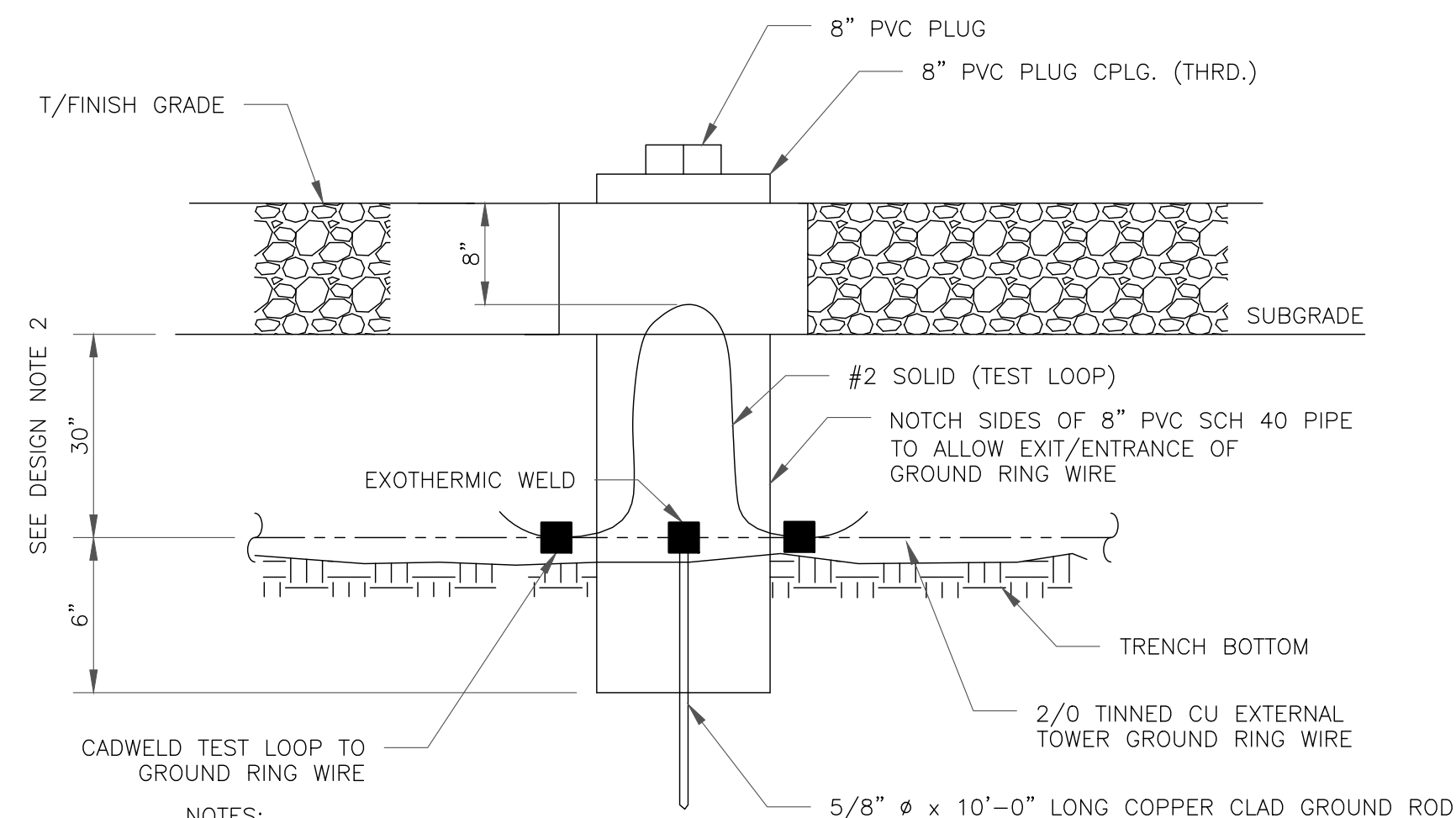
1 ANTENNA SECTOR GROUND BAR DETAIL  
SCALE: NOT TO SCALE



NOTES:

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

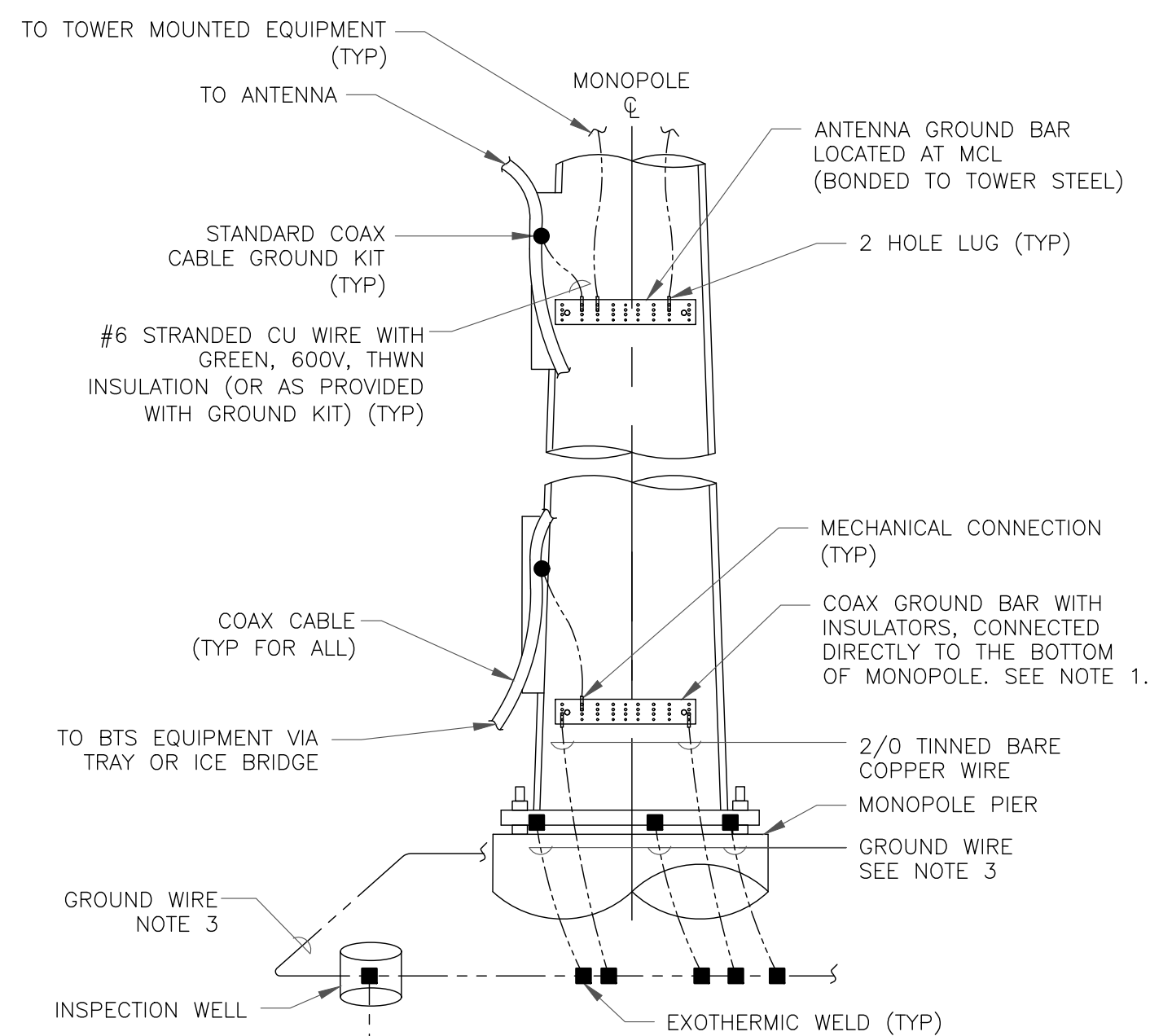
2 TOWER/SHELTER GROUND BAR DETAIL  
SCALE: NOT TO SCALE



NOTES:

- GROUND ROD SHALL BE DRIVEN VERTICALLY, NOT TO EXCEED 45 DEGREES FROM THE VERTICAL
- 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)

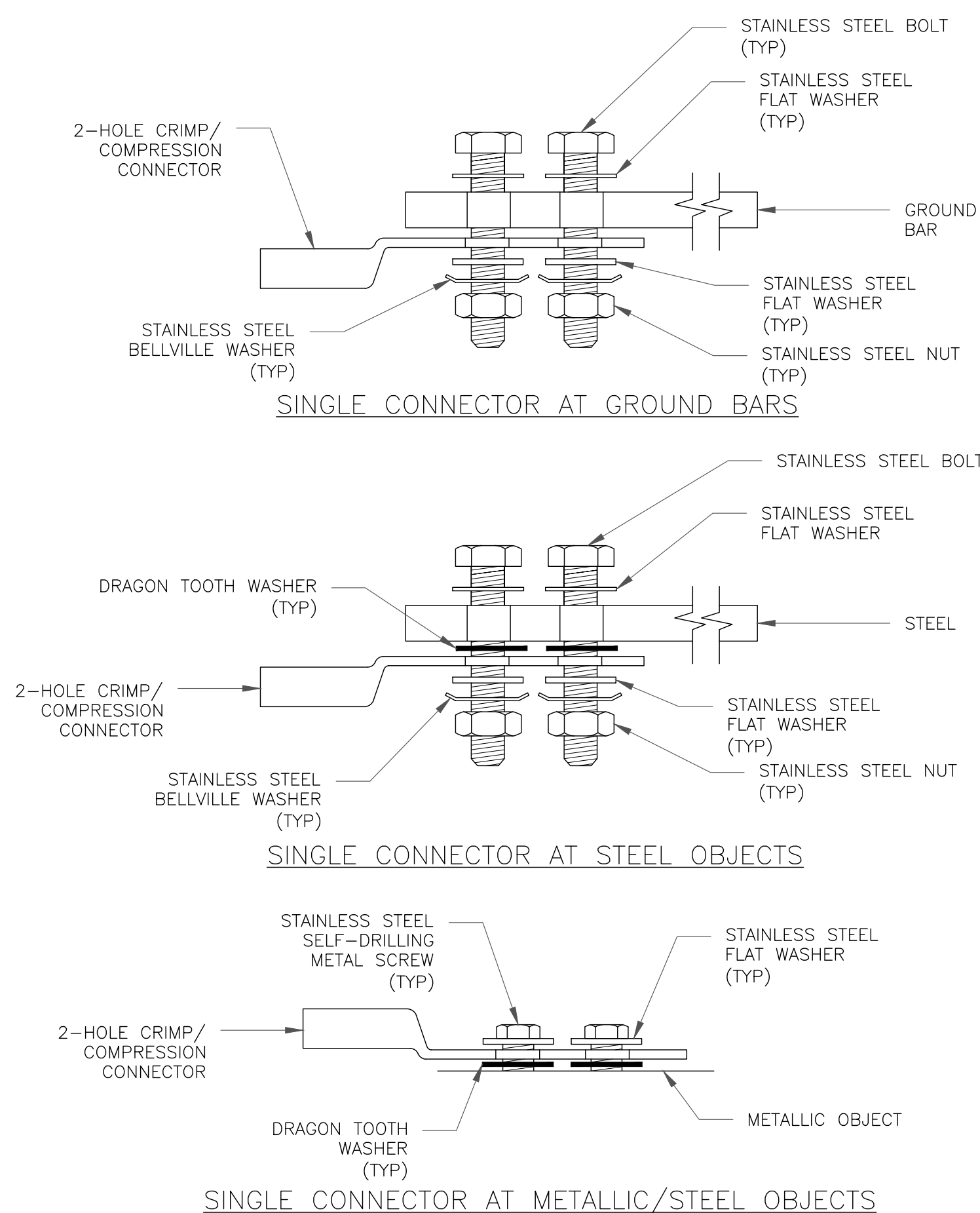
3 INSPECTION WELL DETAIL  
SCALE: NOT TO SCALE



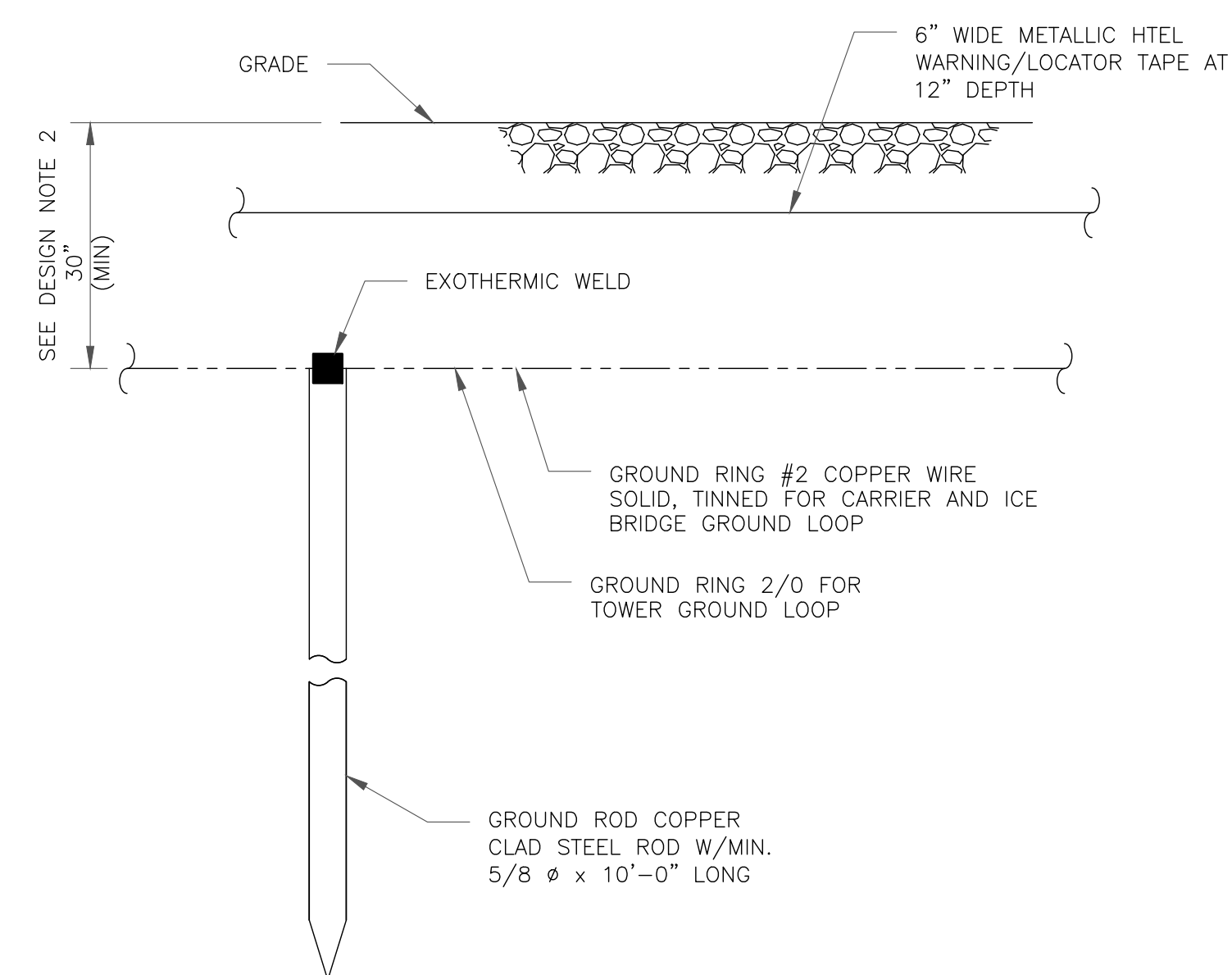
NOTES:

- 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.
- 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.
- 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



5 HARDWARE DETAIL FOR EXTERIOR CONNECTIONS  
SCALE: NOT TO SCALE



NOTES:

- GROUND ROD SHALL BE DRIVEN VERTICALLY, NOT TO EXCEED 45 DEGREES FROM THE VERTICAL
- 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

**verizon**

180 WASHINGTON VALLEY ROAD  
BEDMINSTER, NJ 07921

**CROWN CASTLE**

1200 MACARTHUR BLVD, SUITE 200  
MAHWAH, NJ 07430

**TOWER ENGINEERING PROFESSIONALS**

326 TRYON RD  
RALEIGH, NC 27603  
(919) 661-6351

TEP JOB #: 317510. 805162

VERIZON SITE NUMBER:  
**138118**

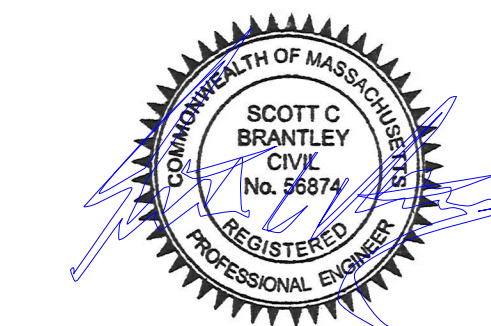
BU #: 842900  
**HARVARD I-495 (MA0143)**

END OF BROWN STREET  
(WHITCOMB ROAD)  
HARVARD, MA 01451

EXISTING 103'-6" MONOPINE

ISSUED FOR:

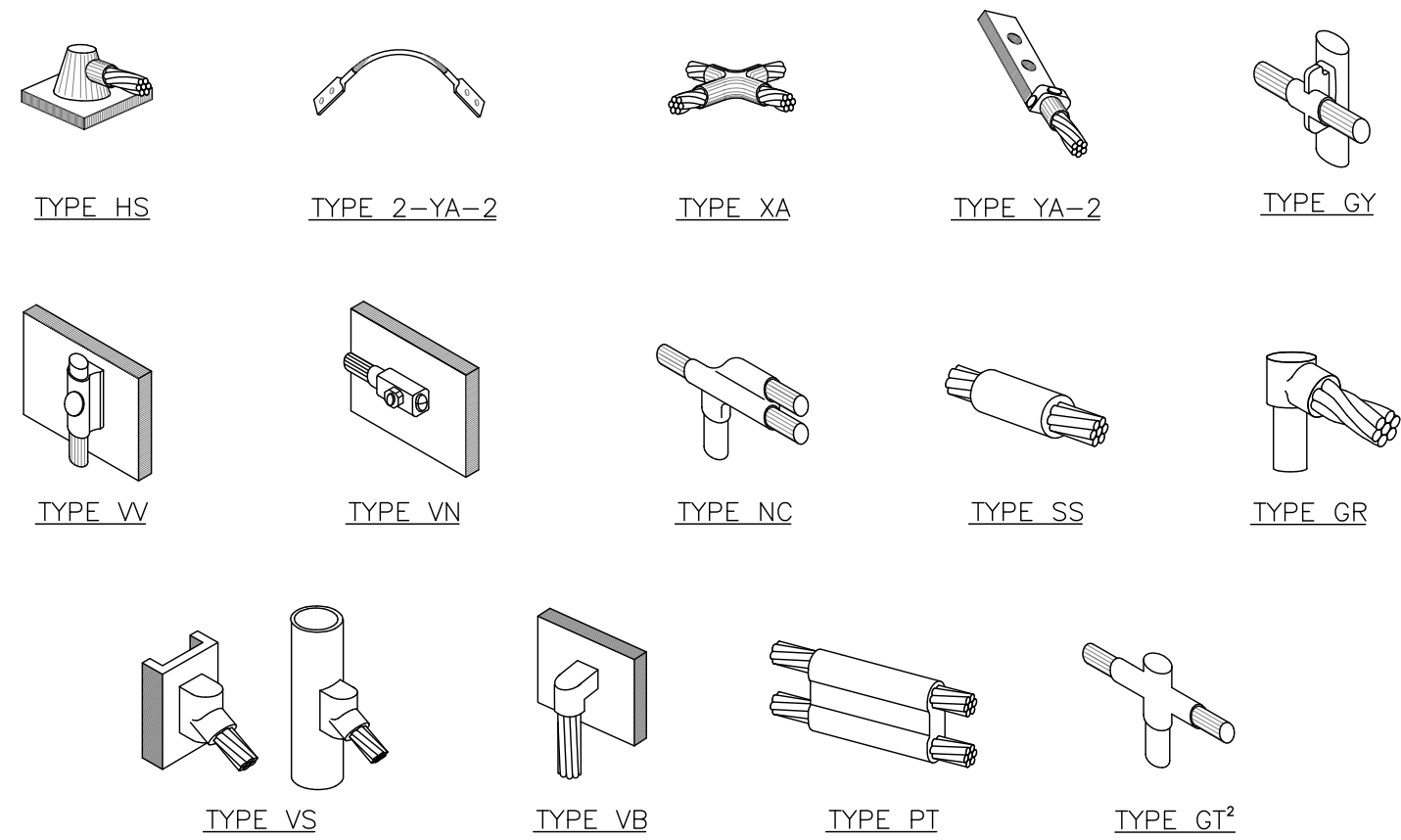
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0	01/09/23	KRS	CONSTRUCTION	RST



01/09/23

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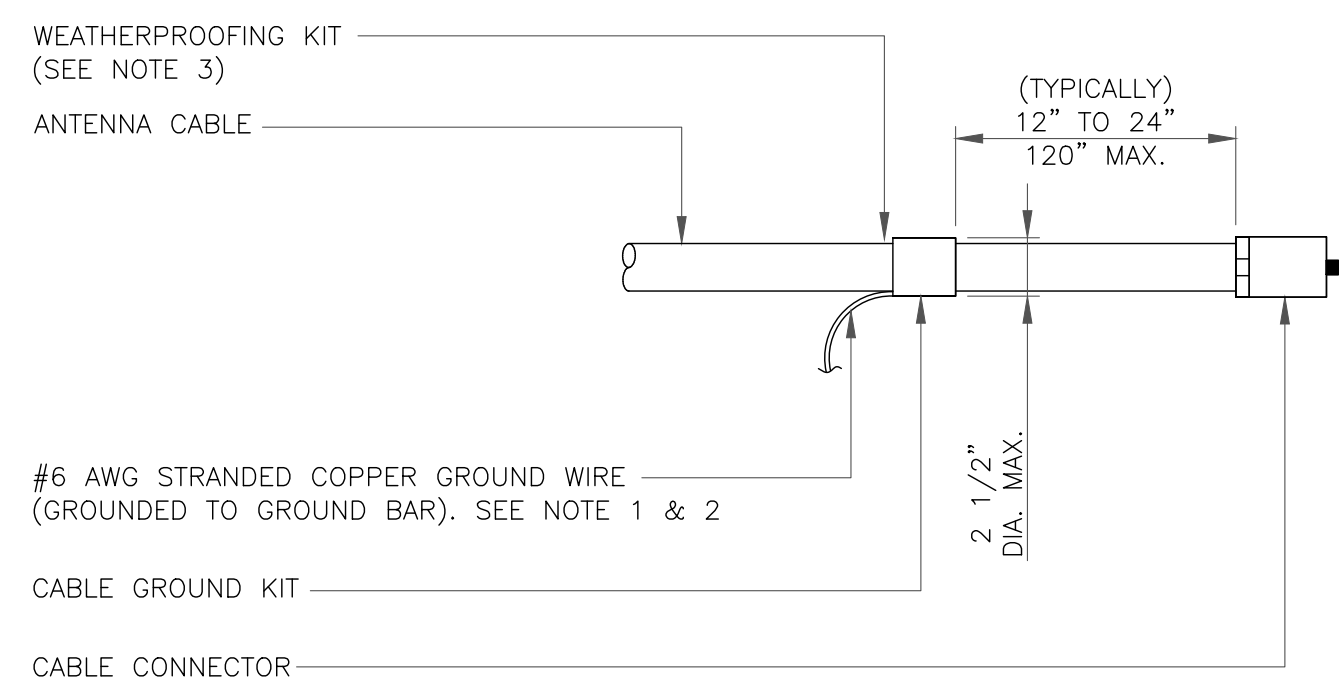
SHEET NUMBER: **G-1** REVISION: **0**



**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.

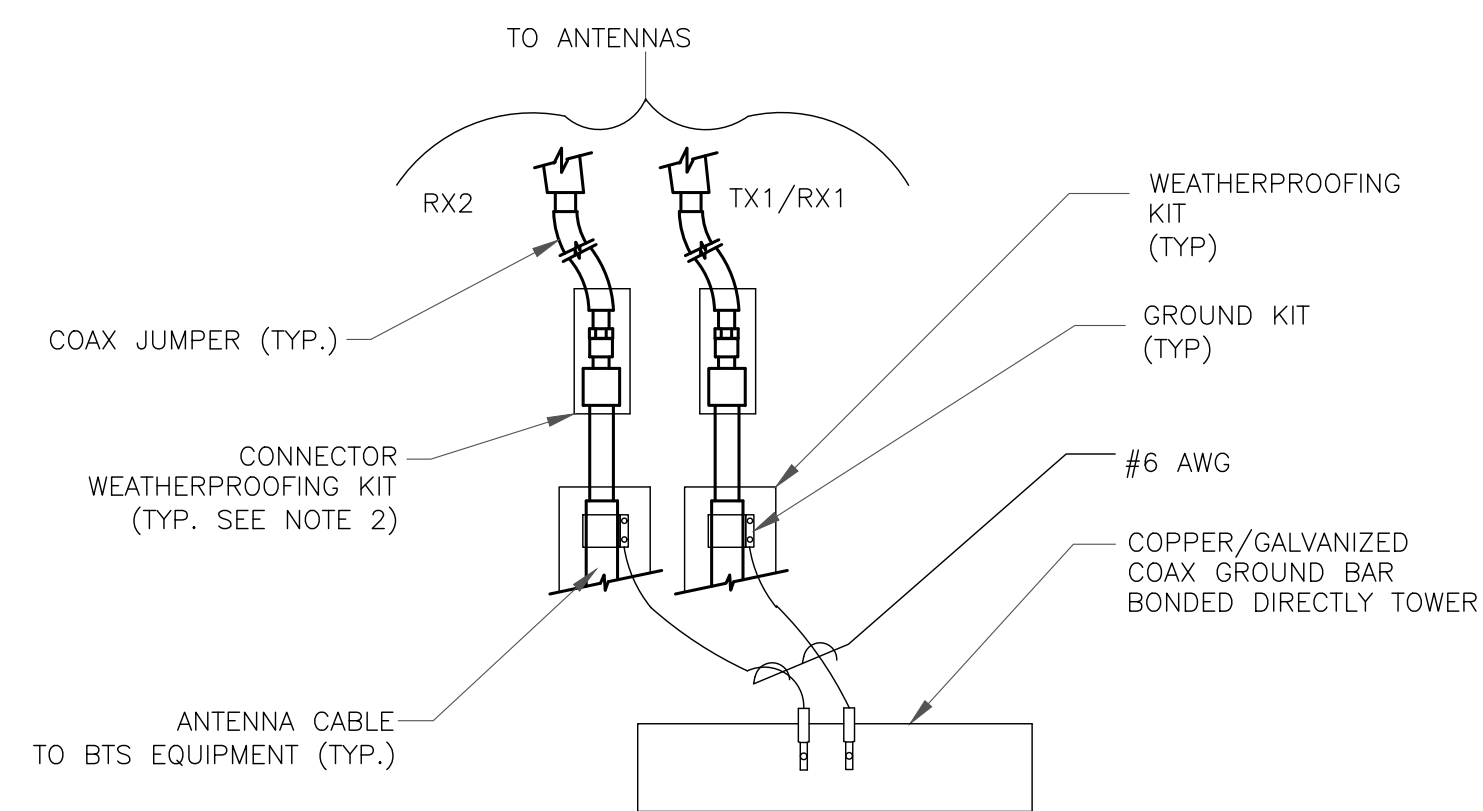
**1 CADWELD GROUNDING CONNECTIONS**  
SCALE: NOT TO SCALE



**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.

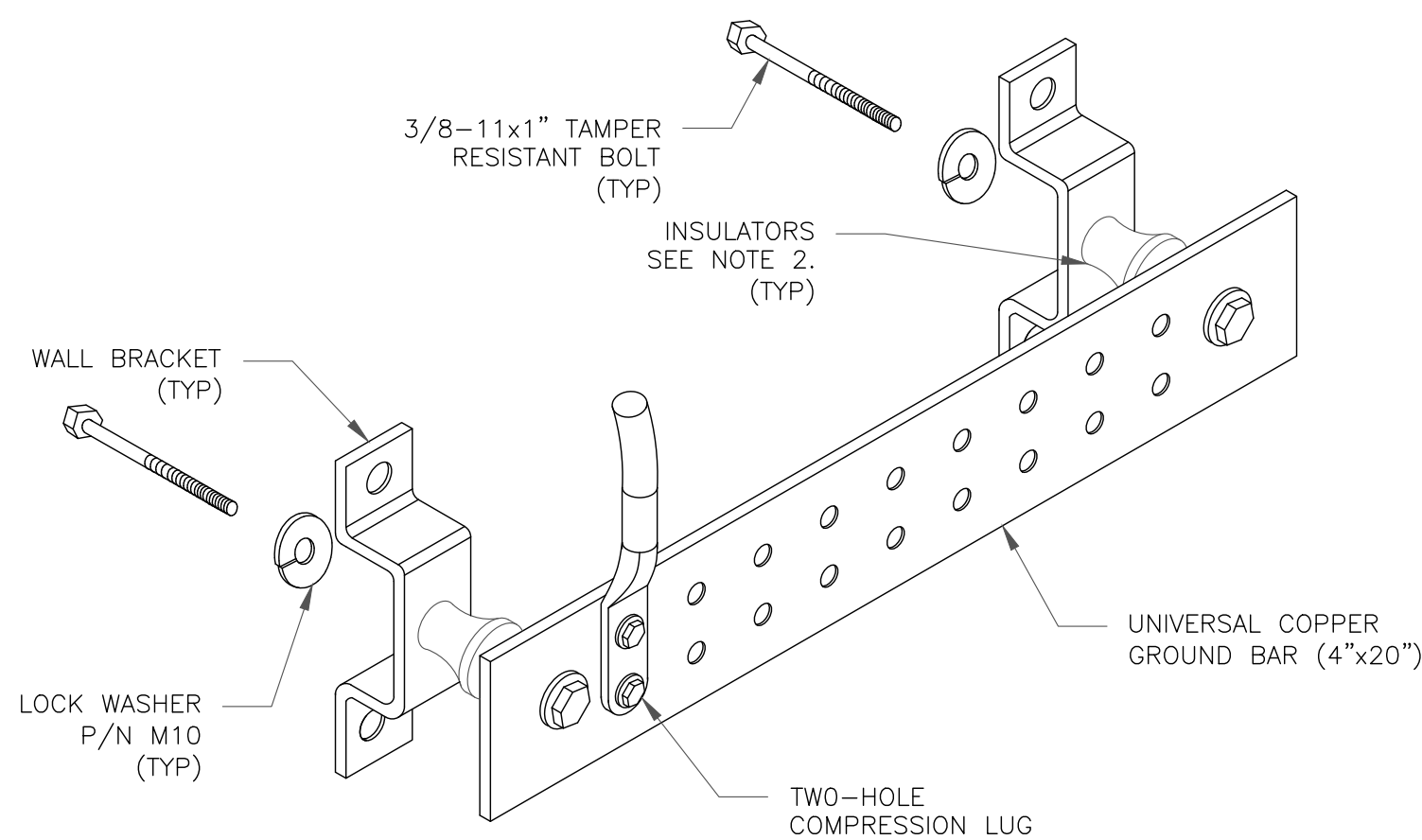
**3 CABLE GROUND KIT CONNECTION**  
SCALE: NOT TO SCALE



**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.

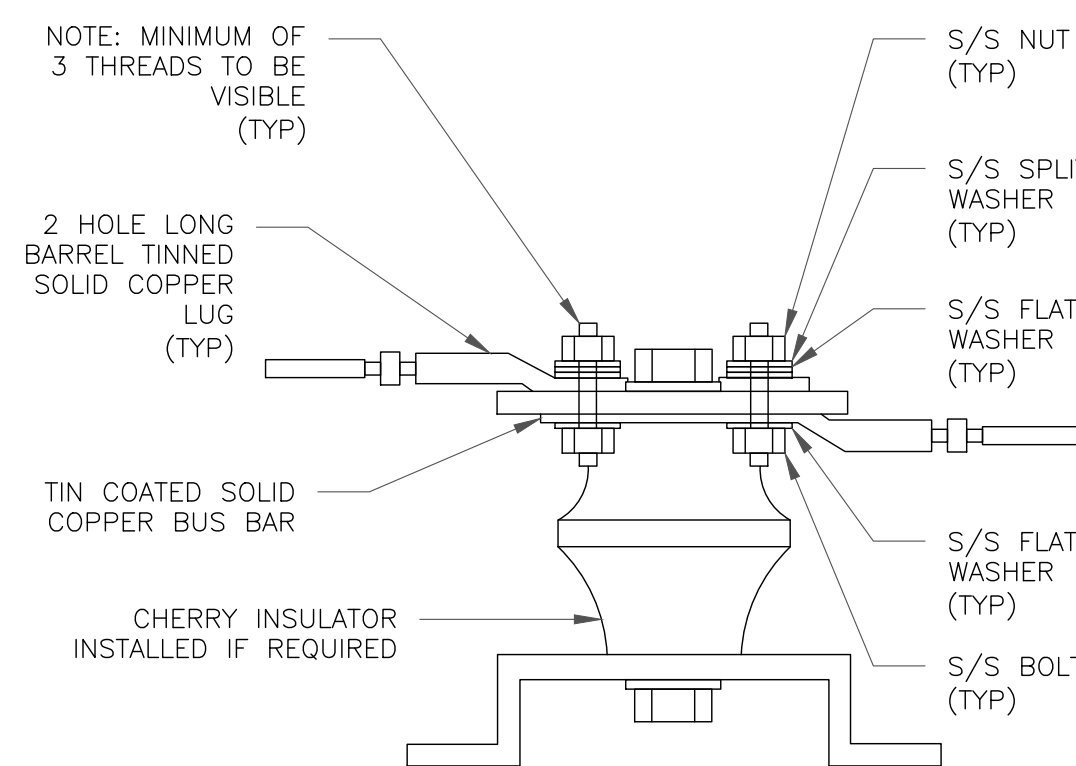
**4 GROUND CABLE CONNECTION**  
SCALE: NOT TO SCALE



**NOTES:**

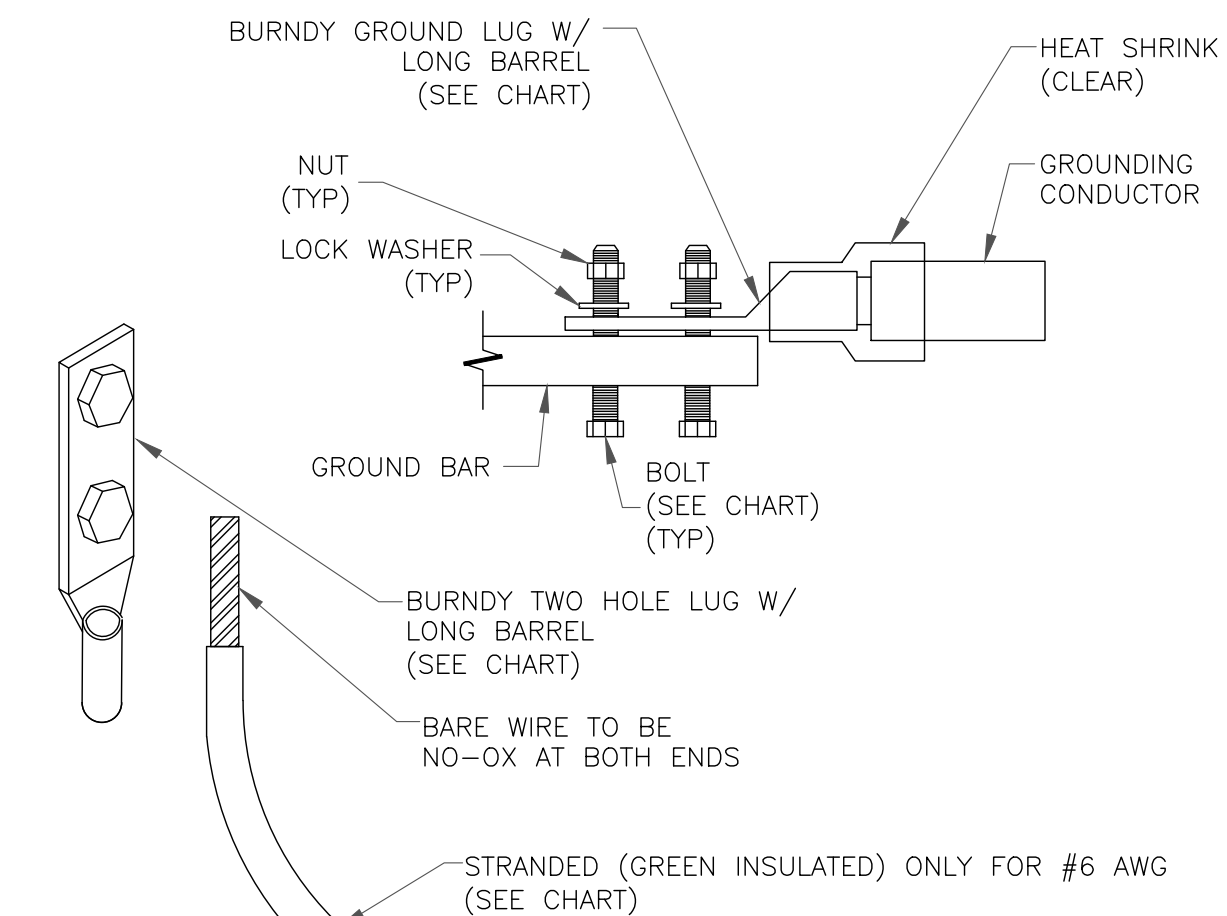
1. DOWN LEAD (HOME RUN) CONDUCTORS ARE NOT TO BE INSTALLED ON CROWN CASTLE USA INC. TOWER, PER THE GROUNDING DOWN CONDUCTOR POLICY GAS-STD-10091. NO MODIFICATION OR DRILLING TO TOWER STEEL IS ALLOWED IN ANY FORM OR FASHION. CAD-WELDING ON THE TOWER AND/OR IN THE AIR ARE NOT PERMITTED.
2. OMIT INSULATOR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

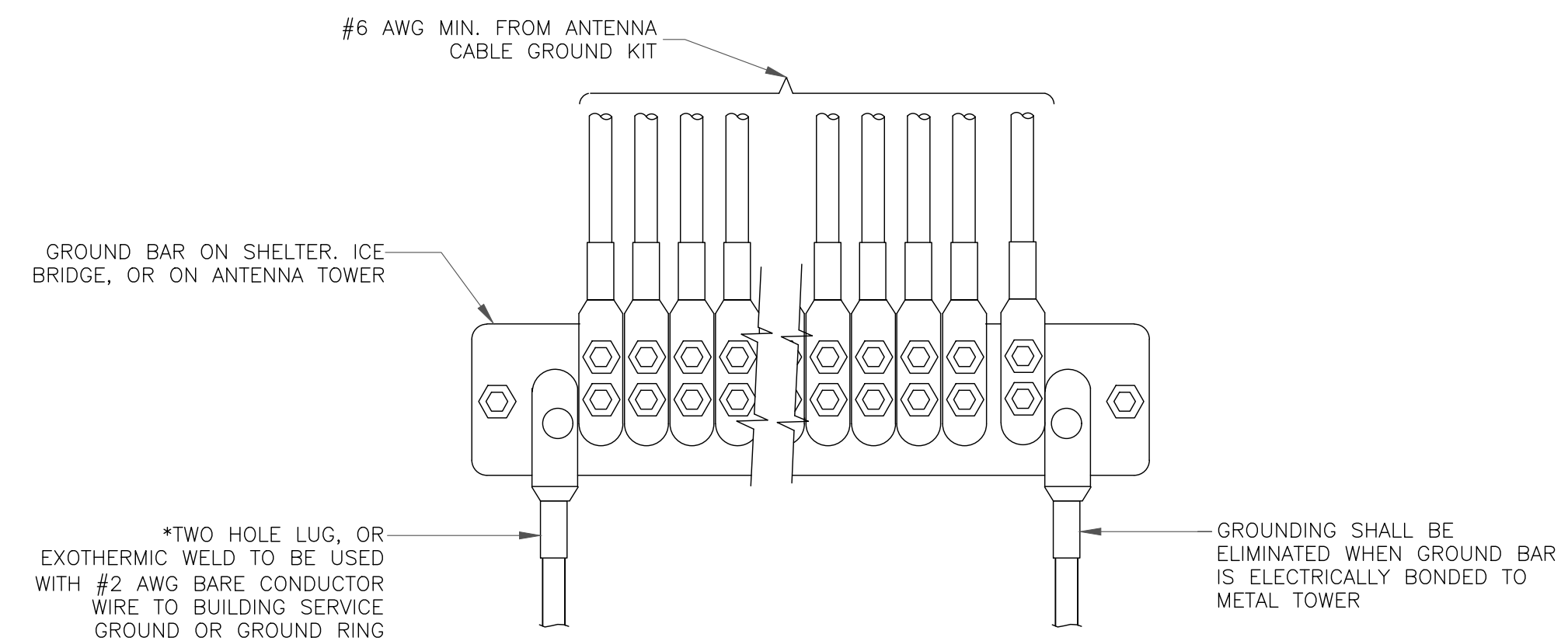
WIRE SIZE	BURNDY LUG	BOLT SIZE
#6 AWG GREEN INSULATED	YA6C-2TC38	3/8" - 16 NC S 2 BOLT
#2 AWG SOLID TINNED	YA3C-2TC38	3/8" - 16 NC S 2 BOLT
#2 AWG STRANDED	YA2C-2TC38	3/8" - 16 NC S 2 BOLT
#2/0 AWG STRANDED	YA26-2TC38	3/8" - 16 NC S 2 BOLT
#4/0 AWG STRANDED	YA28-2N	1/2" - 16 NC S 2 BOLT



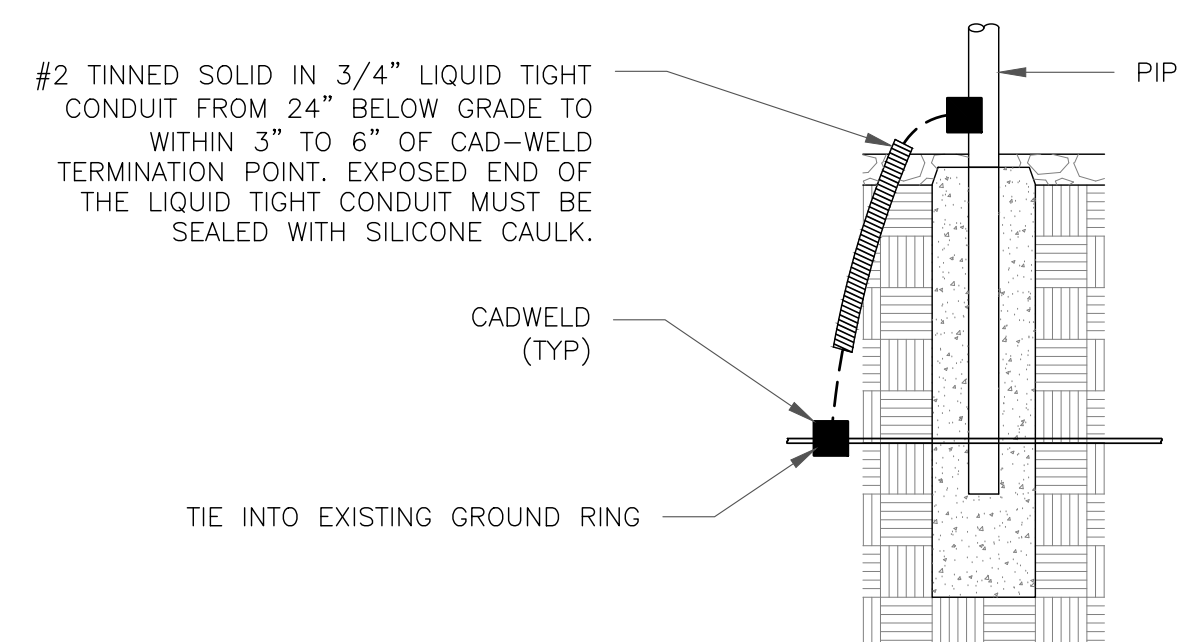
**NOTES:**

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



**5 GROUNDWIRE INSTALLATION**  
SCALE: NOT TO SCALE



**8 TRANSITIONING GROUND DETAIL**  
SCALE: NOT TO SCALE

**verizon**  
180 WASHINGTON VALLEY ROAD  
BEDMINSTER, NJ 07921

**CROWN CASTLE**  
1200 MACARTHUR BLVD, SUITE 200  
MAHWAH, NJ 07430

**TOWER ENGINEERING PROFESSIONALS**  
326 TRYON RD  
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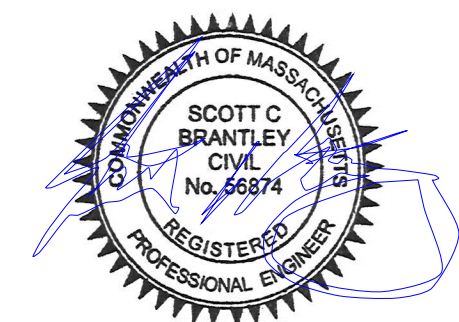
**VERIZON SITE NUMBER:**  
**138118**

**BU #: 842900**  
**HARVARD I-495 (MA0143)**

**END OF BROWN STREET**  
**(WHITCOMB ROAD)**  
**HARVARD, MA 01451**

**EXISTING 103'-6" MONOPINE**

ISSUED FOR:				
REV	DATE	DRWN	DESCRIPTION	DES./QA
0	01/09/23	KRS	CONSTRUCTION	RST



01/09/23

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**SHEET NUMBER:**  
**G-2**

**REVISION:**  
**0**



MOUNT MODIFICATION DRAWINGS  
EXISTING 3.00' T-ARM

TOWER OWNER: CROWN CASTLE  
TOWER OWNER SITE NUMBER: 842900

CARRIER SITE NAME: HARVARD\_2\_MA  
CARRIER SITE NUMBER: 138118  
FUZE ID: 15554979

129 BROWN ROAD  
HARVARD, MA 01451  
WORCESTER COUNTY

LATITUDE: 42.457037° N  
LONGITUDE: 71.573122° W



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SITE NAME:  
**HARVARD\_2\_MA**  
138118  
129 BROWN ROAD  
HARVARD, MA 01451  
WORCESTER COUNTY

**Colliers** Engineering & Design  
BOSTON  
160 Federal Street,  
11th Floor  
Boston, MA 02110  
Phone: 617.330.8000  
COLLIERS ENGINEERING & DESIGN, INC.  
DOING BUSINESS AS MASER CONSULTING

TITLE SHEET

SHEET NUMBER:  
ST-1

DESIGN CRITERIA
<b>WIND LOADS</b> BASIC WIND SPEED (3 SECOND GUST), V = 117 MPH EXPOSURE CATEGORY B TOPOGRAPHY CONSIDERED N/A MEAN BASE ELEVATION (AMSL) = 314.85'
<b>ICE LOADS</b> ICE WIND SPEED (3 SECOND GUST), V = 50 MPH ICE THICKNESS = 1.50 IN
<b>SEISMIC LOADS</b> SEISMIC DESIGN CATEGORY B SHORT TERM MCRER GROUND MOTION, S <sub>s</sub> = .282 LONG TERM MCRER GROUND MOTION, S <sub>s</sub> = .068

PROJECT INFORMATION
<b>APPLICANT/LESSEE</b> COMPANY: VERIZON WIRELESS <b>CLIENT REPRESENTATIVE</b> COMPANY: VERIZON WIRELESS <b>PROJECT MANAGER</b> COMPANY: COLLIERS ENGINEERING & DESIGN CONTACT: PETER ALBANO PHONE: 856.797.0412 E-MAIL: PETER.ALBANO@COLLIERSENGINEERING.COM

CONTRACTOR PMI REQUIREMENTS
PMI LOCATION: HTTPS://PMI.VZWSMART.COM SMART TOOL PROJECT #: 10160637 VZW LOCATION CODE (PSLC): 138118 ANALYSIS DATE: 8/23/2022 PMI REQUIREMENTS EMBEDDED WITHIN MOUNT MODIFICATION REPORT

SHEET INDEX
SHEET DESCRIPTION
ST-1 TITLE SHEET
SBOM-1 BILL OF MATERIALS
SGN-1 GENERAL NOTES
SCF-1 CLIMBING FACILITY DETAIL
SS-1 MODIFICATION DETAILS
SS-2 GEOMETRY VERIFICATION SKETCHES
SS-3 MOUNT PHOTOS
SPECIFICATION SHEETS

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# BILL OF MATERIALS

## SECTION 1 - VZWSMART KITS

QUANTITY	MANUFACTURER	PART NUMBER	DESCRIPTION	NOTES	UNIT WEIGHT (LBS.)	WEIGHT (LBS.)
6	VZWSMART	VZWSMART-MSK2	CROSSOVER PLATE		15	90
1		VZWSMART-MSK6	BACK TO BACK CROSSOVER PLATE		34	34
1		VZWSMART-P40-238X048	48" LONG, PIPE 2 SCH40 (2.375"OD X 0.154" THK)		15	15
3		VZWSMART-SFK4	T-ARM KIT	CONTRACTOR TO VERIFY THE LENGTH REQUIRED AND TRIM AS NECESSARY IN ACCORDANCE WITH THE 'STRUCTURAL STEEL' NOTES ON SHEET SGN-1.	106	318
1		VZWSMART-PLK7	MONOPOLE COLLAR MOUNT ASSEMBLY		150	150

## SECTION 2 - OTHER REQUIRED PARTS

QUANTITY	MANUFACTURER	PART NUMBER	DESCRIPTION	NOTES	UNIT WEIGHT (LBS.)	WEIGHT (LBS.)
3	-	-	48" LONG, P3 STD	GALVANIZED	30	90

## SECTION 3 - REQUIRED SAFETY CLIMB PARTS

QUANTITY	MANUFACTURER	PART NUMBER	DESCRIPTION	NOTES	UNIT WEIGHT (LBS.)	WEIGHT (LBS.)
TOTAL:						697

**NOTES:**

- THE MANUFACTURERS LISTED ARE THE APPROVED VENDORS FOR THE VZW MOUNT KITS. EACH MANUFACTURER WILL BE AWARE OF WHICH KITS HAVE BEEN THROUGH THE VZW APPROVAL PROCESS AND THEY ARE IN TURN APPROVED TO SELL. PLEASE NOTE THAT THE MATERIAL UTILIZED ON THE MOUNT MODIFICATIONS WILL BE REVIEWED AS A PART OF THE DESKTOP PMI COMPLETED BY THE SMART TOOL VENDOR. IT WILL BE REQUIRED THAT THE VZW KITS SPECIFIED ARE UTILIZED IN THE MODIFICATIONS.
- ALL MATERIALS REQUIRED FOR THE DESIGNED MODIFICATIONS BUT NOT LISTED IN THIS SHEET ARE ASSUMED TO BE PROVIDED BY THE CONTRACTOR.

### VZWSMART KITS - APPROVED VENDORS

COMMSCOPE	
CONTACT	SALVADOR ANGUIANO
PHONE	(817) 304-7492
EMAIL	SALVADOR.ANGUIANO@COMMSCOPE.COM
WEBSITE	WWW.COMMSCOPE.COM
METROSITE FABRICATORS, LLC	
CONTACT	KENT RAMEY
PHONE	(706) 335-7045 (O), (706) 982-9788 (M)
EMAIL	KENT@METROSITELLC.COM
WEBSITE	METROSITEFABRICATORS.COM

PERFECTVISION	
CONTACT	WIRELESS SALES
PHONE	(844) 887-6723
EMAIL	WWW.PERFECT-VISION.COM
WEBSITE	WIRELESSSALES@PERFECT-VISION.COM
SABRE INDUSTRIES, INC.	
CONTACT	ANGIE WELCH
PHONE	(866) 428-6937
EMAIL	AKWELCH@SABREINDUSTRIES.COM
WEBSITE	WWW.SABRESITESOLUTIONS.COM

SITE PRO 1	
CONTACT	PAULA BOSWELL
PHONE	(972) 236-9843
EMAIL	PAULA.BOSWELL@VALMONT.COM
WEBSITE	WWW.SITEPRO1.COM
NEWAVE	
CONTACT	NEWAVE SALES TEAM
PHONE	(971) 239-4762
EMAIL	SALES@NEWAVETC.COM
WEBSITE	WWW.NEWAVETC.COM

BETTER METAL, LLC	
CONTACT	DAVID STANSBERRY
PHONE	(615) 535-0990 (O), (615) 631-2520 (M)
EMAIL	DLS@BETTERMETAL.COM
WEBSITE	WWW.BETTERMETAL.COM



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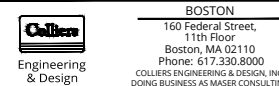
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0 08/23/22	ISSUED FOR CONSTRUCTION
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**SITE NAME:**

**HARVARD\_2\_MA**  
138118  
129 BROWN ROAD  
HARVARD, MA 01451  
WORCESTER COUNTY



**BILL OF MATERIALS**

SHEET NUMBER: **SBOM-1**

**PROJECT NOTES**

- SEE MODIFICATION NOTES
- THE CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE CODES, ORDINANCES, LAWS AND REGULATIONS OF ALL MUNICIPALITIES, UTILITY COMPANIES OR OTHER PUBLIC/GOVERNING AUTHORITIES.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL PERMITS AND INSPECTIONS THAT MAY BE REQUIRED BY ANY FEDERAL, STATE, COUNTY OR MUNICIPAL AUTHORITIES.
- THE CONTRACTOR SHALL NOTIFY THE CONSTRUCTION MANAGER, IN WRITING, OF ANY CONFLICTS, ERRORS OR OMISSIONS PRIOR TO THE SUBMISSION OF BIDS OR PERFORMANCE OF WORK.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING ALL EXISTING SITE IMPROVEMENTS PRIOR TO COMMENCING CONSTRUCTION. THE CONTRACTOR SHALL REPAIR ANY DAMAGE AS A RESULT OF CONSTRUCTION OF THIS FACILITY AT THE CONTRACTOR'S EXPENSE TO THE SATISFACTION OF THE OWNER.
- THE SCOPE OF WORK FOR THIS PROJECT SHALL INCLUDE PROVIDING ALL MATERIALS, EQUIPMENT AND LABOR REQUIRED TO COMPLETE THIS PROJECT. ALL EQUIPMENT SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
- THE CONTRACTOR SHALL VISIT THE PROJECT SITE PRIOR TO SUBMITTING THE BID TO VERIFY THAT THE PROJECT CAN BE CONSTRUCTED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS AND CONSTRUCTION DRAWINGS.
- THE CONTRACTOR SHALL VERIFY ALL EXISTING DIMENSIONS AND CONDITIONS PRIOR TO COMMENCING ANY WORK. ALL DIMENSIONS OF EXISTING CONSTRUCTION SHOWN ON THESE DRAWINGS MUST BE VERIFIED. THE CONTRACTOR SHALL NOTIFY THE CONSTRUCTION MANAGER OF ANY DISCREPANCIES PRIOR TO ORDERING MATERIAL OR PROCEEDING WITH CONSTRUCTION.
- SINCE THE CELL SITE MAY BE ACTIVE, ALL SAFETY PRECAUTIONS MUST BE TAKEN WHEN WORKING AROUND HIGH LEVELS OF ELECTROMAGNETIC RADIATION. EQUIPMENT SHOULD BE SHUTDOWN PRIOR TO PERFORMING ANY WORK THAT COULD EXPOSE THE WORKERS TO DANGER. PERSONAL RF EXPOSURE MONITORS ARE REQUIRED TO BE WORN TO ALERT OF ANY POTENTIALLY DANGEROUS EXPOSURE LEVELS.
- NO NOISE, SMOKE, DUST OR ODOR WILL RESULT FROM THIS FACILITY AS TO CAUSE A NUISANCE.
- THE FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION (NO HANDICAP ACCESS IS REQUIRED).

**GENERAL NOTES**

- THESE MODIFICATIONS HAVE BEEN DESIGNED IN ACCORDANCE WITH THE GOVERNING PROVISIONS OF THE TELECOMMUNICATIONS INDUSTRY STANDARD TIA-222-H. MATERIALS AND SERVICES PROVIDED BY THE CONTRACTOR SHALL CONFORM TO THE ABOVE MENTIONED CODES.
- CONTRACTOR SHALL TAKE ALL PRECAUTIONS NECESSARY TO PREVENT DAMAGE TO EXISTING STRUCTURES. ANY DAMAGE TO EXISTING STRUCTURES AS A RESULT OF THE CONTRACTOR'S WORK OR FROM DAMAGE DUE TO OTHER CAUSES SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE TO THE SATISFACTION OF THE OWNER.
- CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND EXISTING CONDITIONS BEFORE BEGINNING WORK, ORDERING MATERIAL, AND PREPARING OF SHOP DRAWINGS. ANY DISCREPANCIES BETWEEN FIELD CONDITIONS AND THE CONTRACT DOCUMENTS SHALL BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE ENGINEER. IF THE CONTRACTOR DISCOVERS ANY EXISTING CONDITIONS THAT ARE NOT REPRESENTED ON THESE DRAWINGS, OR ANY CONDITIONS THAT WOULD INTERFERE WITH THE INSTALLATION OF THE MODIFICATIONS, NOTIFY THE ENGINEER IMMEDIATELY.
- IT IS ASSUMED THAT ANY STRUCTURAL MODIFICATION WORK SPECIFIED ON THESE PLANS WILL BE ACCOMPLISHED BY KNOWLEDGEABLE WORKMEN WITH TOWER CONSTRUCTION EXPERIENCE.
- THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE WORK AND SHALL BE SOLELY RESPONSIBLE FOR ALL CONSTRUCTION METHODS, MEANS, TECHNIQUES, SEQUENCES, AND PROCEDURES.
- 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 ANSII/TIA-322 (LATEST EDITION), OSHA, AND GENERAL INDUSTRY STANDARDS. ALL RIGGING PLANS SHALL ADHERE TO ANSII/TIA-322 (LATEST EDITION) INCLUDING THE REQUIRED INVOLVEMENT OF A QUALIFIED ENGINEER FOR CLASS IV CONSTRUCTION.
- THE CONTRACTOR IS SOLELY RESPONSIBLE FOR INITIATING, MAINTAINING, AND SUPERVISING ALL SAFETY PROGRAMS IN ACCORDANCE WITH APPLICABLE SAFETY CODES.
- WORK SHALL ONLY BE PERFORMED DURING CALM DRY DAYS (WINDS LESS THAN 30-MPH). THE STRUCTURE SHOWN ON THE DRAWINGS IS STRUCTURALLY SOUND ONLY IN THE COMPLETED FORM. THE

CONTRACTOR SHALL BE RESPONSIBLE FOR THE STRENGTH AND STABILITY OF THE STRUCTURE DURING ERECTION. CONTRACTOR SHALL PROVIDE TEMPORARY SUPPORT, SHORING, BRACING AND ANY OTHER STRUCTURAL SYSTEMS AS REQUIRED TO RESIST ALL FORCES THAT MAY OCCUR DURING HANDLING AND ERECTION UNTIL THE STRUCTURE IS FULLY COMPLETED. TEMPORARY SUPPORTS, BRACING AND OTHER STRUCTURAL SYSTEMS REQUIRED DURING CONSTRUCTION SHALL REMAIN THE CONTRACTOR'S PROPERTY AFTER THEIR USE.

- ALL INSTALLATIONS PERFORMED ON THIS STRUCTURE SHALL BE COMPLETED IN ACCORDANCE WITH THE GOVERNING PROVISIONS OF THE STANDARD FOR INSTALLATION, ALTERATION AND MAINTENANCE OF ANTENNA SUPPORTING STRUCTURES AND ANTENNAS, ANSII/TIA-322.
- CONTRACTOR SHALL SECURE SITE BACK TO EXISTING CONDITION UNDER SUPERVISION OF OWNER. ALL FENCE, STONE, GEOFABRIC, GROUNDING, AND SURROUNDING GRADE SHALL BE REPLACED AND REPAIRED AS REQUIRED TO ACHIEVE OWNER APPROVAL. POSITIVE DRAINAGE AWAY FROM TOWER SITE SHALL BE MAINTAINED.
- CONNECTIONS BETWEEN ITEMS SUPPORTED BY THE STRUCTURE AND THE STRUCTURE NOT SPECIFICALLY DETAILED IN THE CONTRACT DOCUMENTS ARE THE RESPONSIBILITY OF THE CONTRACTOR. SUCH CONNECTIONS SHALL BE DESIGNED, COORDINATED AND INSPECTED BY A PROFESSIONAL STRUCTURAL ENGINEER LICENSED IN THE STATE OF THE PROJECT. SUBMIT SIGNED AND SEALED CALCULATIONS DURING SHOP DRAWING REVIEW.
- DO NOT SCALE DRAWINGS.
- DO NOT USE THESE DRAWINGS FOR ANY OTHER SITE.
- ALL MATERIAL UTILIZED FOR THIS PROJECT MUST BE NEW AND FREE OF ANY DEFECTS. ANY MATERIAL SUBSTITUTIONS, INCLUDING BUT NOT LIMITED TO ALTERED SIZE AND/OR STRENGTHS, MUST BE APPROVED BY THE OWNER AND ENGINEER IN WRITING.
- THE MOUNT UNDER NO CIRCUMSTANCES SHOULD BE USED AS A TIE OFF POINT.

**STRUCTURAL STEEL**

- DESIGN, DETAILING, FABRICATION AND ERECTION OF STRUCTURAL STEEL SHALL CONFORM TO THE FOLLOWING PUBLICATIONS EXCEPT AS SPECIFICALLY INDICATED IN THE CONTRACT DOCUMENTS.
  - AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC) MANUAL OF STEEL CONSTRUCTION (15TH EDITION)
  - SPECIFICATION FOR STRUCTURAL JOINTS USING ASTM A325 OR A490 BOLTS
  - AISC CODE OF STANDARD PRACTICE
- STRUCTURAL STEEL SHALL CONFORM TO THE FOLLOWING UNLESS OTHERWISE SHOWN:
 

CHANNELS, ANGLES, PLATES, ETC.	ASTM A36 (GR 36)
STEEL PIPE	ASTM A53 (GR 35)
BOLTS	ASTM A325
NUTS	ASTM A563
LOCK WASHERS	LOCKING STRUCTURAL GRADE

- ALL SUBSTITUTIONS PROPOSED BY THE CONTRACTOR SHALL BE APPROVED IN WRITING BY THE ENGINEER. CONTRACTOR SHALL PROVIDE DOCUMENTATION TO ENGINEER FOR VERIFYING THE SUBSTITUTE IS SUITABLE FOR USE AND MEETS ORIGINAL DESIGN CRITERIA. DIFFERENCES FROM THE ORIGINAL DESIGN, INCLUDING MAINTENANCE, REPAIR AND REPLACEMENT, SHALL BE NOTED. ESTIMATES OF COSTS/CREDITS ASSOCIATED WITH THE SUBSTITUTION (INCLUDING RE-DESIGN COSTS AND COSTS TO SUB-CONTRACTORS) SHALL BE PROVIDED TO THE ENGINEER. CONTRACTOR SHALL PROVIDE ADDITIONAL DOCUMENTATION AND/OR SPECIFICATIONS TO THE ENGINEER AS REQUESTED.
- PROVIDE STRUCTURAL STEEL SHOP DRAWINGS TO ENGINEER FOR APPROVAL PRIOR TO FABRICATION.
  - SUBMIT SHOP DRAWINGS TO  
PETER.ALBANO@COLLIERSENGINEERING.COM
  - PROVIDE MASER CONSULTING PROJECT # AND MASER CONSULTING PROJECT ENGINEER CONTACT IN THE BODY OF THE EMAIL.
- DRILL NO HOLES IN ANY NEW OR EXISTING STRUCTURAL STEEL MEMBERS OTHER THAN THOSE SHOWN ON STRUCTURAL DRAWINGS WITHOUT THE APPROVAL OF THE ENGINEER OF RECORD.
- GALVANIZED ASTM A325 BOLTS SHALL NOT BE REUSED.
- ALL NEW STEEL SHALL BE HOT BE DIPPED GALVANIZED FOR FULL WEATHER PROTECTION. IN ADDITION ALL NEW STEEL SHALL BE PAINTED TO MATCH EXISTING STEEL. CONTRACTOR SHALL OBTAIN WRITTEN PERMISSION TO PROTECT STEEL BY ANY OTHER MEANS.
- CONTRACTOR SHALL PROTECT CUT ENDS OF ALL FIELD-CUT STEEL WITH TWO (2) COATS OF COLD GALVANIZATION (ZINGA OR ZINC COTE).
- ALL BOLT ASSEMBLIES FOR STRUCTURAL MEMBERS REPRESENTED IN THIS DRAWING REQUIRE LOCKING DEVICES TO BE INSTALLED IN ACCORDANCE WITH TIA-222-H SECTION 4.9.2 REQUIREMENTS.
- WHERE CONNECTIONS ARE NOT FULLY DETAILED ON THESE DRAWINGS, FABRICATOR SHALL DESIGN CONNECTIONS TO RESIST LOADS AND FORCES WHERE SHOWN ON DRAWINGS AND AS OUTLINED IN SPECIFICATIONS.
- FOR MEMBERS BEING REPLACED, PROVIDE NEW BOLTS AND MATCH EXISTING SIZE AND GRADE. MAINTAIN AISC REQUIREMENTS FOR MINIMUM BOLT DISTANCE AND SPACING.

- ALL PROPOSED AND/OR REPLACED BOLTS SHALL BE OF SUFFICIENT LENGTH SUCH THAT THE END OF THE BOLT IS AT LEAST FLUSH WITH THE FACE OF THE NUT. IT IS NOT PERMITTED FOR THE BOLT END TO BE BELOW THE FACE OF THE NUT AFTER TIGHTENING IS COMPLETED.
- GALVANIZED ASTM A325 BOLTS SHALL NOT BE REUSED.
- ALL EXISTING PAINTED/GALVANIZED SURFACES DAMAGED DURING REHAB INCLUDING AREAS UNDER STIFFENER PLATES SHALL BE WIRE BRUSHED CLEAN, REPAIRED BY COLD GALVANIZING (ZINGA OR ZINC COTE), AND REPAINTED TO MATCH THE EXISTING FINISH (IF APPLICABLE).
- ALL HOLES IN STEEL MEMBERS SHALL BE SIZED 1/16" LARGER THAN THE BOLT DIAMETER. STANDARD HOLES SHALL BE USED UNLESS NOTED OTHERWISE.

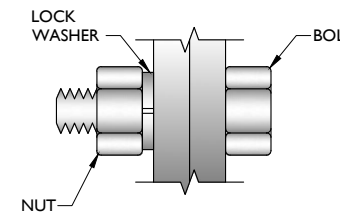
**WELDING NOTES**

- ALL WELDING SHALL BE DONE IN ACCORDANCE WITH AWS D1.0 (LATEST EDITION). THIS SHALL INCLUDE A CERTIFIED WELD INSPECTION (CWI) FOR ACCEPTANCE OR REJECTION OF ALL WELDING OPERATIONS, PRE, DURING, AND POST INSTALLATION, USING THE ACCEPTANCE CRITERIA OF AWS D1.1.
- CONTRACTOR IS RESPONSIBLE FOR COMMISSIONING A THIRD PARTY CERTIFIED WELD INSPECTOR (CWI) THROUGHOUT THE ENTIRETY OF THE PROJECT. A PASSING CWI REPORT SHALL BE PROVIDED TO THE ENGINEER UPON COMPLETION OF THE PROJECT.
- THE CERTIFIED WELD INSPECTOR SHALL INDICATE, IN A WRITTEN CWI REPORT, THAT ALL WELDING OPERATIONS PRE, DURING, AND POST INSTALLATION WERE CONDUCTED IN ACCORDANCE WITH AWS D1.1 WITH PHOTOGRAPHS AND DOCUMENTATION SUPPORTING THE ACCEPTANCE OR REJECTION OF ALL WELDING. ALL CWI WELD INSPECTION DOCUMENTATION AND PHOTOS SHALL BE SUBMITTED DURING THE PMI.
- IN CASES WHERE A WELD IS SPECIFIED BETWEEN TWO MEMBERS IN WHICH THERE IS A GAP IN BETWEEN, THE WELD IS TO BE BUILT-UP SUCH THAT THE SIZE OF WELD ON THE MEMBER IS EQUAL TO THAT SHOWN IN THE DRAWINGS.
- OXY FUEL GAS WELDING OR BRAZING IS STRICTLY PROHIBITED. SPECIFICALLY, NO TORCH CUTTING IS PERMITTED ON SITE. ALL HOLES SHALL BE CUT WITH A GRINDER.
- CONTRACTOR SHALL EXERCISE CAUTION WHEN WELDING A GALVANIZED SURFACE.
- CONTRACTOR SHALL HAVE A FIRE PROTECTION PLAN IN PLACE THAT CONFORMS WITH ALL OSHA, ANSII/ASSE A10.48, ANSII Z49.1, AND LOCAL JURISDICTIONAL REQUIREMENTS.

BOLT SCHEDULE (IN.)				
BOLT DIAMETER	STANDARD HOLE	SHORT SLOT	MIN. EDGE DISTANCE	SPACING
1/2	9/16	9/16 x 11/16	7/8	1 1/2
5/8	11/16	11/16 x 7/8	1 1/8	1 7/8
3/4	13/16	13/16 x 1	1 1/4	2 1/4
7/8	15/16	15/16 x 1 1/8	1 1/2	2 5/8
1	1 1/16	1 1/16 x 1 5/16	1 3/4	3

**WORKABLE GAGES (IN.)**

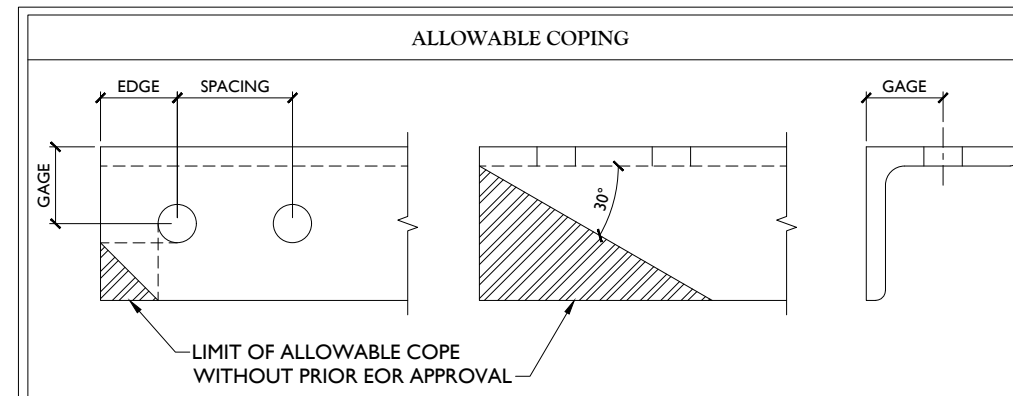
LEG	GAGE
4	2 1/2
3 1/2	2
3	1 3/4
2 1/2	1 3/8
2	1 1/8



**TYP. BOLT ASSEMBLY**

**NOTES:**

- ALL DIMENSIONS REPRESENTED IN THE ABOVE TABLES ARE AISC MINIMUM REQUIREMENTS. CONTRACTOR SHALL VERIFY EXISTING CONDITIONS IN FIELD AND NOTIFY ENGINEER IF DISTANCES ARE LESS THAN THOSE PROVIDED.
- THE DIMENSIONS PROVIDED ARE MINIMUM REQUIREMENTS. ACTUAL DIMENSIONS OF PROPOSED MEMBERS WITHIN THESE DRAWINGS MAY VARY FROM THE AISC MINIMUM REQUIREMENTS.
- SHORT SLOT HOLES SHALL ONLY BE USED WHEN DEPICTED IN THE DRAWINGS
- MATCH EXISTING GAGES WHEN APPLICABLE, UNLESS MINIMUM EDGE DISTANCES ARE COMPROMISED.



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REV	DATE DESCRIPTION DRAWN BY CHECKED BY



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**SITE NAME:**  
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138118  
129 BROWN ROAD  
HARVARD, MA 01451  
WORCESTER COUNTY

**Colliers Engineering & Design**  
BOSTON  
160 Federal Street,  
11th Floor  
Boston, MA 02110  
Phone: 617.330.8000  
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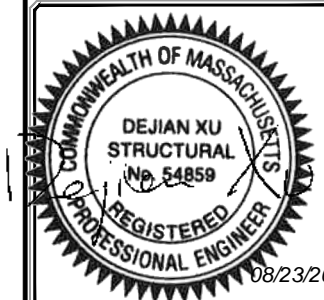
SHEET TITLE:  
**MODIFICATION NOTES**

SHEET NUMBER:  
**SGN-1**



SCALE: AS SHOWN JOB NUMBER: 22777130A

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**NOTE:**  
A DESKTOP MAPPING WAS COMPLETED AND THERE IS INSUFFICIENT INFORMATION ON THE CLIMBING FACILITY

**STRUCTURAL NOTES:**

- CONTRACTOR TO INSPECT CLIMBING FACILITIES AT SITE AND ENSURE THAT THE SAFETY CLIMB IS IN GOOD CONDITION AND THAT THE WIRE ROPE DOES NOT OR WILL NOT INTERFERE WITH THE EXISTING OR PROPOSED MOUNT CONNECTIONS. CONTRACTOR SHALL INSTALL SAFETY CLIMB WIRE ROPE GUIDED AROUND MOUNT CONNECTIONS AS NEEDED.
- INSTALL SHALL NOT CAUSE HARM TO THE STRUCTURE, CLIMBING FACILITY, SAFETY CLIMB, OR ANY SYSTEM INSTALLED ON THE STRUCTURE. TIMELY NOTICE AND DOCUMENTATION SHALL BE PROVIDED BY CONTRACTORS TO THE EOR (OF STRUCTURAL DESIGN) IF AN OBSTRUCTION WAS REQUIRED TO MEET THE RF SYSTEM DESIGN REQUIREMENTS AND PERFORMANCES.
- CONTRACTOR SHALL GRIND OFF BRANCH RECEPTACLES AS NEEDED TO INSTALL PROPOSED MODIFICATION COLLARS. CONTRACTOR SHALL MINIMIZE THE QUANTITY OF RECEPTACLES BEING REMOVED, ONLY REMOVE RECEPTACLES DIRECTLY INTERFERING WITH PROPOSED COLLAR LOCATION.
- COAX IS FLAMMABLE AND CAN CATCH FIRE IF PROPER PRECAUTIONS ARE NOT MADE TO SHIELD COAX FROM GRINDING PROCEDURES. ALL COAX SHALL BE SHIELDED AT AND BELOW EACH GRINDING PROCEDURE AND ELEVATION. IN ADDITION, COAX SHALL BE PUSHED AWAY FROM TOWER FACE WHERE WELDING OR GRINDING IS BEING PREFORMED. INSTALL 3000° (NFPA701) FIRE BLANKET AROUND ALL COAX.

**LEGEND:**

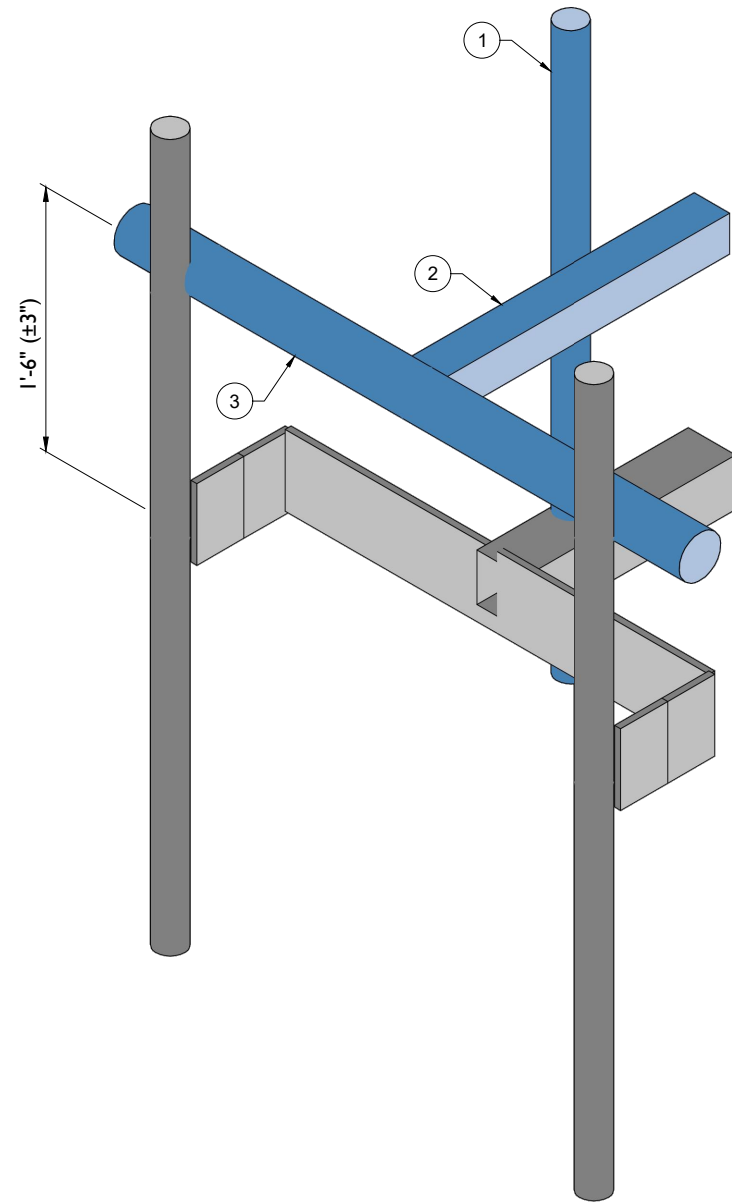
- PROPOSED
- RELOCATED
- EXISTING

**MOUNT MODIFICATION SCHEDULE**

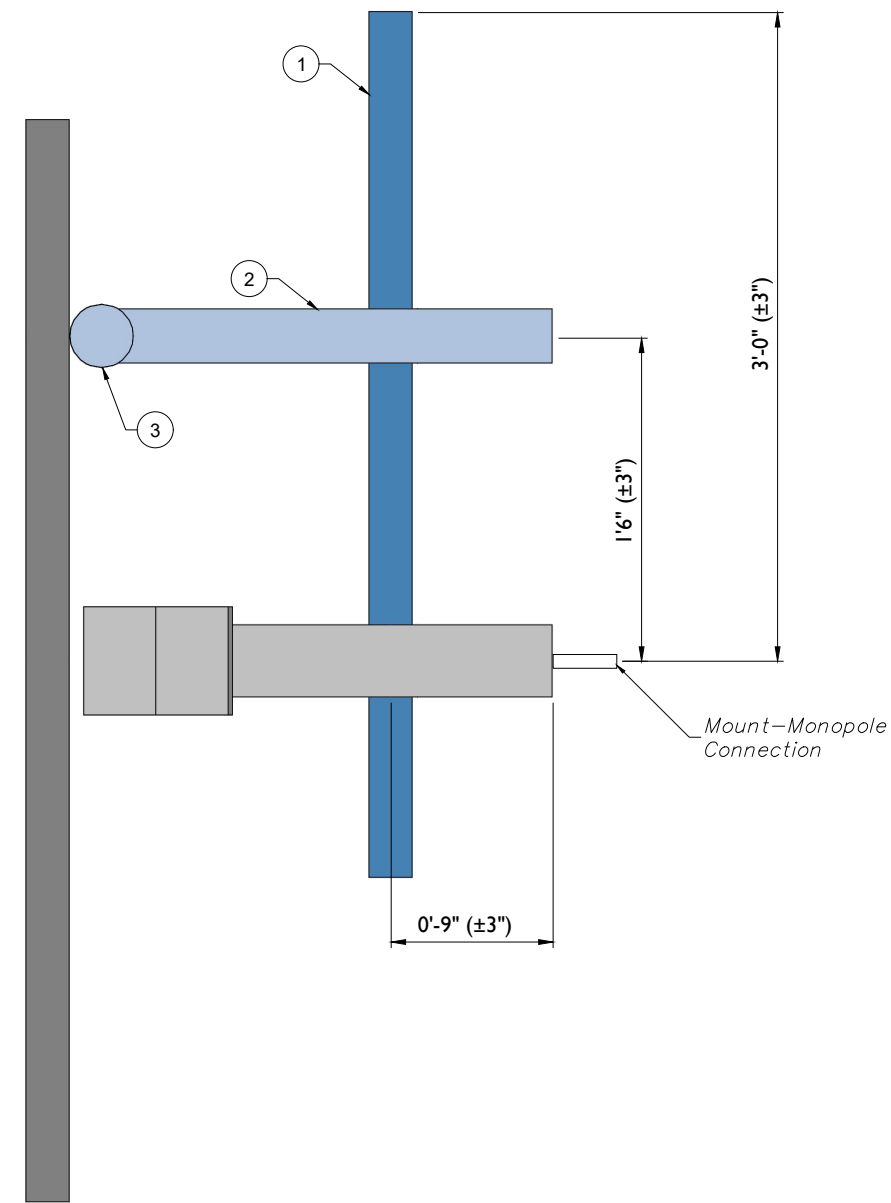
NO.	ELEVATION	QUANTITY	DESCRIPTION	NOTES
1	90'-00"	1	PROPOSED 48" LONG, PIPE 2 SCH40 (PART #: VZWSMART-P40-238X048)	CONNECT NEW OVP PIPE TO EXISTING STANDOFF HORIZONTAL WITH BACK TO BACK CROSSOVER PLATE (VZWSMART-MSK6). ALPHA SECTOR ONLY.
2		3	PROPOSED T-ARM KIT (PART #: VZWSMART-SFK4)	CONTRACTOR TO VERIFY THE LENGTH REQUIRED AND TRIM AS NECESSARY IN ACCORDANCE WITH THE 'STRUCTURAL STEEL' NOTES ON SHEET SGN-1. CONNECT OTHER END OF T-ARM KIT TO MONOPOLE COLLAR MOUNT ASSEMBLY (PART #: VZWSMART-PLK7). SEE GENERAL NOTE A.
3		3	PROPOSED 48" LONG, P3 STD	RADIO AND/OR TME POSITIONS SHALL BE ADJUSTED VERTICALLY AS NEEDED IN ORDER TO ACHIEVE INSTALLATION OF HORIZONTAL AS SHOWN. EOR SHALL BE NOTIFIED IF EQUIPMENT NEEDS TO BE RELOCATED TO ANOTHER MOUNT PIPE. CONNECT NEW HORIZONTAL TO ALL EXISTING VERTICAL MOUNT PIPES WITH CROSSOVER PLATES (PART #: VZWSMART-MSK2).

**GENERAL NOTES:**

- A. THREADED ROD FROM PROPOSED KITS SHALL BE TRIMMED TO EXTEND NO MORE THAN 3" BEYOND THE LOCK NUT. TREAT ALL CUT ENDS WITH (2) COATS OF COLD GALVANIZATION (ZINGA OR ZINC KOTE).
- B. MOUNT MEMBERS NOT SHOWN FOR CLARITY U.N.O.



**1** PROPOSED ISOMETRIC VIEW (TYP. ALL SECTORS)  
SCALE : N.T.S.



**2** PROPOSED SIDE ELEVATION VIEW (TYP. ALL SECTORS)  
SCALE : N.T.S.



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**138118**  
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**WORCESTER COUNTY**

**Colliers**  
Engineering & Design  
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160 Federal Street,  
11th Floor  
Boston, MA 02110  
Phone: 617.330.8000  
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SHEET TITLE:  
**MODIFICATION DETAILS**

SHEET NUMBER:  
**SS-1**



EXISTING MEMBERS

NO.	DESCRIPTION	SHAPE	LENGTH	NOTES
1	MOUNT PIPE			TYP. OF 6, 2 PER SECTOR
2	FACE HORIZONTAL			TYP. OF 3, 1 PER SECTOR
3	STANDOFF HORIZONTAL			TYP. OF 3, 1 PER SECTOR
4	STANDOFF PLATE			TYP. OF 12, 4 PER SECTOR

LIST ALL SHAPES:  
 ANGLE (LEG1xLEG2xTH.): EX. L2x2x1/4  
 CHANNEL (DEPTHxFLANGE WIDTH): EX. CH6"x1-7/8"  
 PIPE (ODxTH.): EX. PIPE 2.4"x0.12"  
 PLATE (TH.xDEPTH): EX. PLATE 1/2"x2"

**NOTE:**

**CONTRACTOR SHALL RECORD ALL DIMENSIONS AND MEMBER SIZES SHOWN IN THIS SKETCH. DOCUMENT VIA PHOTOS AND SKETCHES AND PROVIDE TO THE EOR FOR EVALUATION.**



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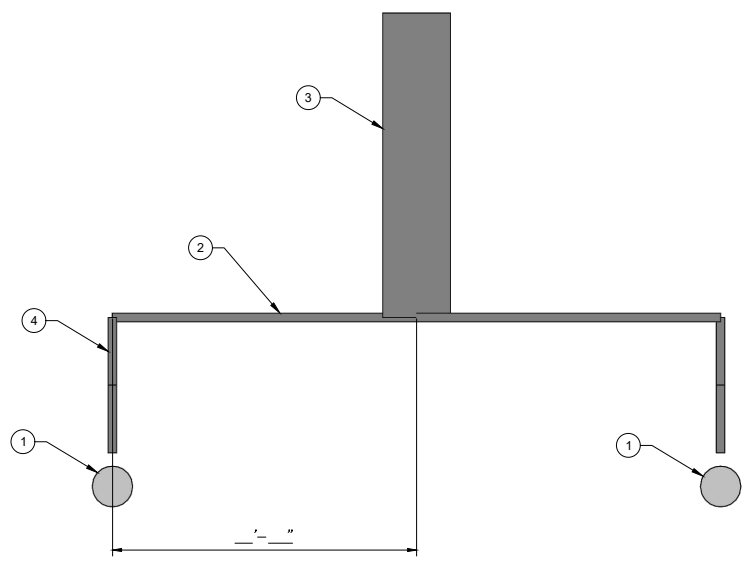


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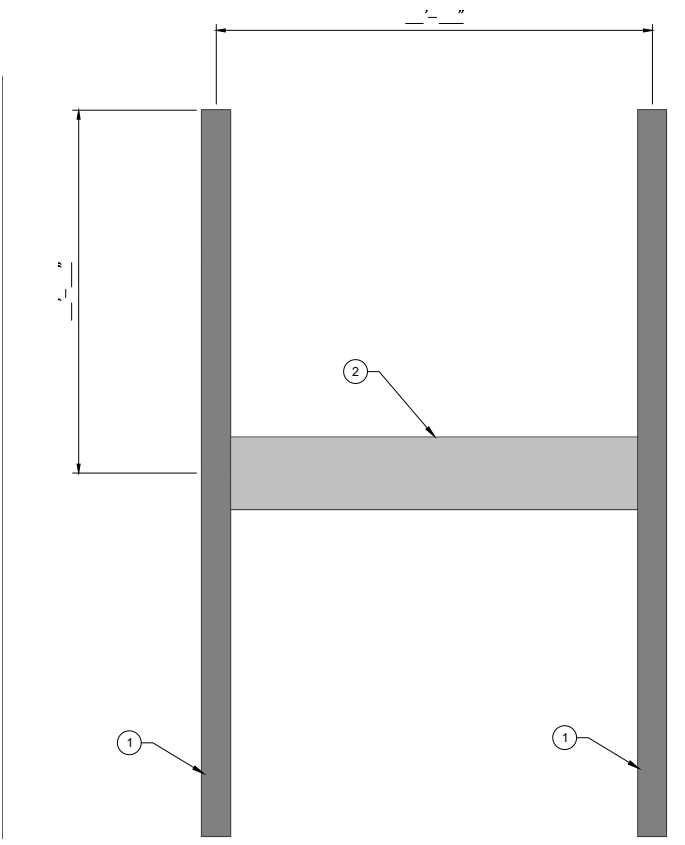
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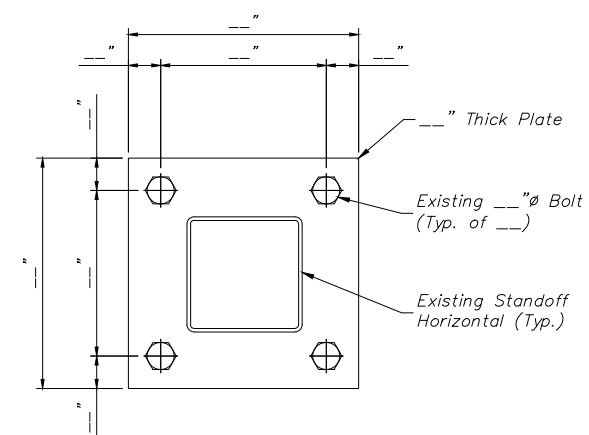
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WORCESTER COUNTY



**1** EXISTING MOUNT GEOMETRY VERIFICATION PLAN VIEW  
SCALE : N.T.S.



**2** EXISTING MOUNT GEOMETRY VERIFICATION FRONT ELEVATION VIEW  
SCALE : N.T.S.



**NOTE:**  
REFER TO WELD MEASUREMENT DETAIL FOR DIRECTIONS ON OBTAINING WELD MEASUREMENTS.

**3** MOUNT CONNECTION DETAIL  
SCALE : N.T.S.



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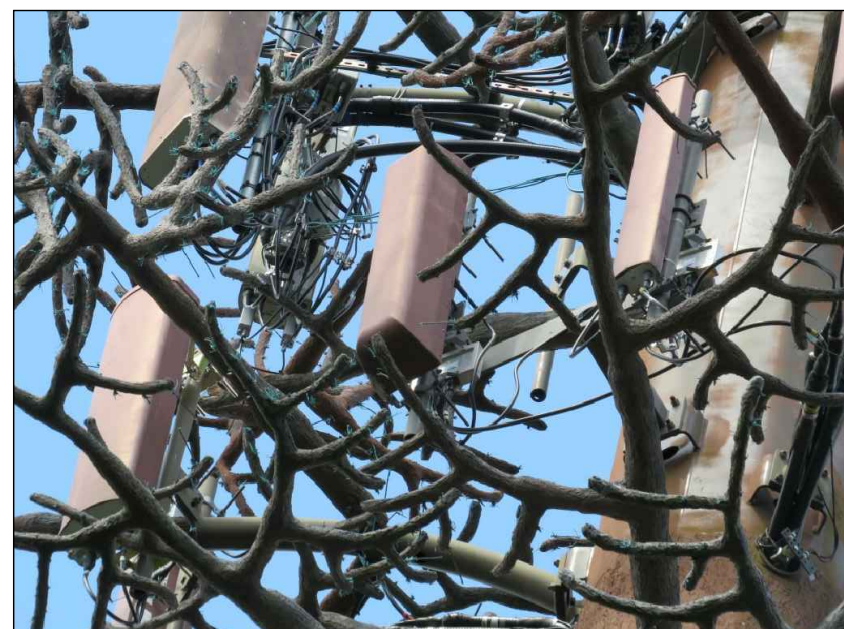
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SHEET TITLE:  
**MOUNT PHOTOS**

SHEET NUMBER:  
**SS-3**



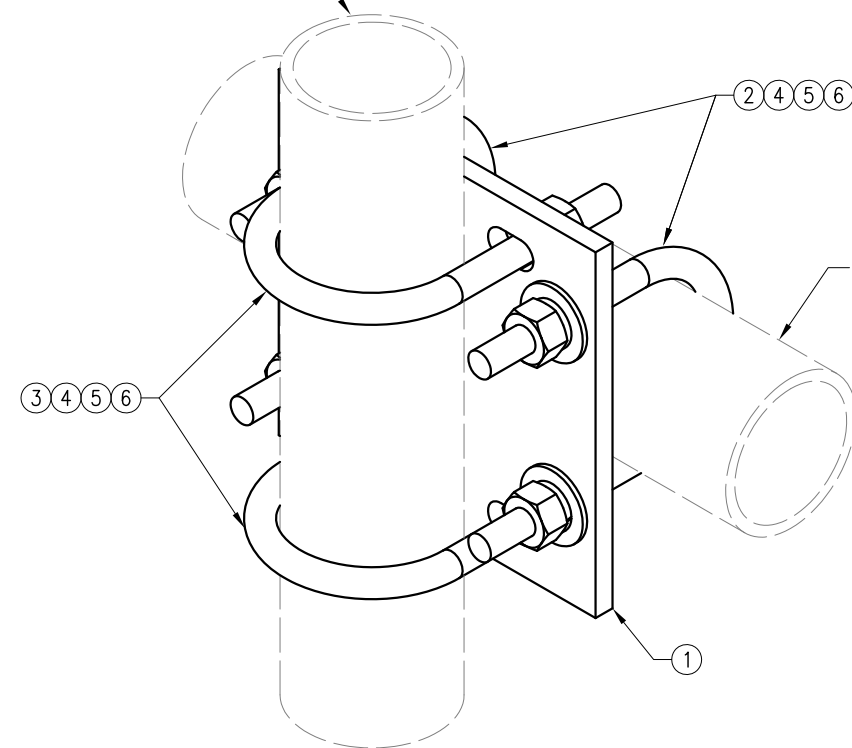
MOUNT PHOTO 1



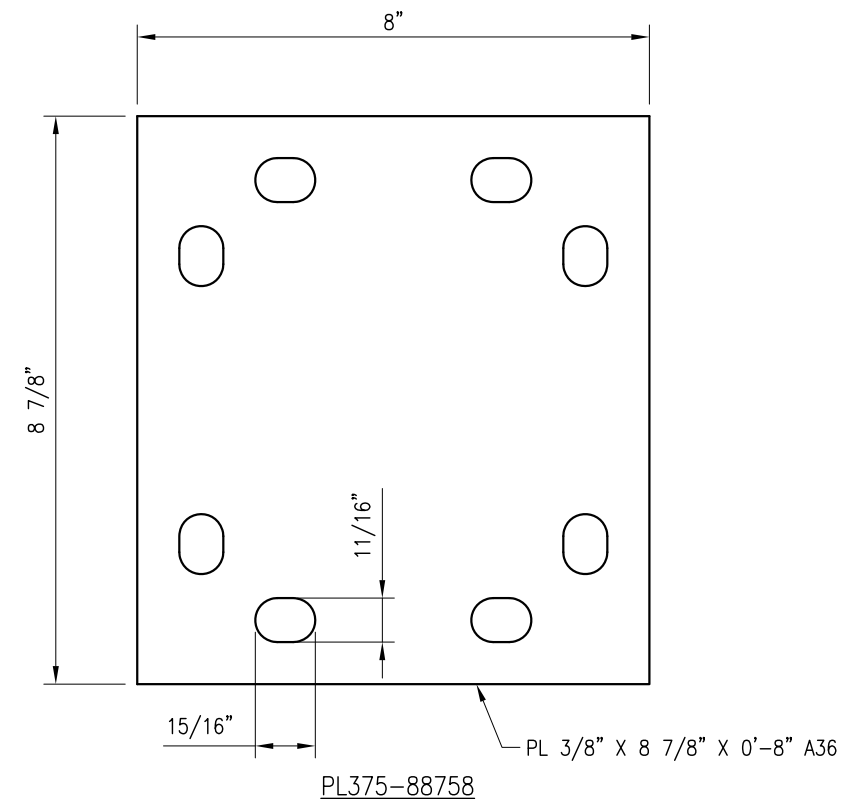
MOUNT PHOTO 2



FITS 2.375" O.D. AND 2.875" O.D.  
 VERTICAL PIPE.  
 (NOT INCLUDED IN THIS KIT)



FITS 3.5" O.D. AND 4" O.D.  
 HORIZONTAL PIPE.  
 (NOT INCLUDED IN THIS KIT)



NOTES:  
 1. HOT-DIPPED GALVANIZED PER ASTM A123.

VZSMART-MSK2 (CROSSOVER PLATE)					
ITEM NO.	QTY.	PART NO.	DESCRIPTION	SHEET #	WT
1	1	PL375-88758	PL 3/8" X 8 3/4" X 0'-8" A36	MSK2-F1	8
2	2	MS02-625-4125-600	RU-BOLT 5/8" X 4 1/8" I.W. X 6" I.L. A36 (OR EQUIV.)	RBC-1	3
3	2	MS02-625-300-500	RU-BOLT 5/8" X 3" I.W. X 5" I.L. A36 (OR EQUIV.)	RBC-1	3
4	8	FW-625	5/8" HDG USS FLAT WASHER	---	1
5	8	LW-625	5/8" HDG LOCK WASHER	---	0
6	8	NUT-625	5/8" HDG HEX NUT	---	1
GALVANIZED WT					15

DRAWN BY: H.R. CHECKED BY: HMA

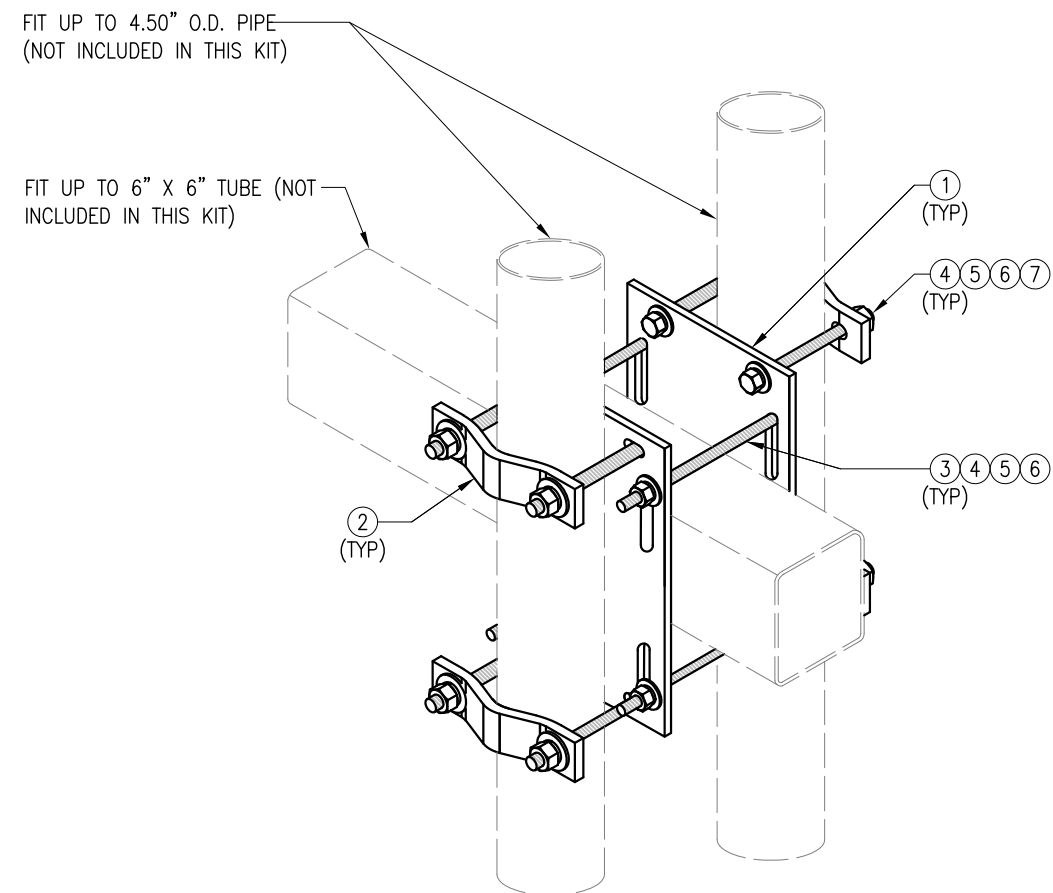
REV.	DESCRIPTION	BY	DATE
1	FIRST ISSUE	H.R.	05/08/20

SHEET TITLE:

VZSMART-MSK2  
 CROSSOVER PLATE

SHEET NUMBER: REV #:

VZSMART-MSK2 0



ISOMETRIC VIEW  
 BACK TO BACK CROSSOVER

NOTES:  
 1. HOT-DIPPED GALVANIZED PER ASTM A123.

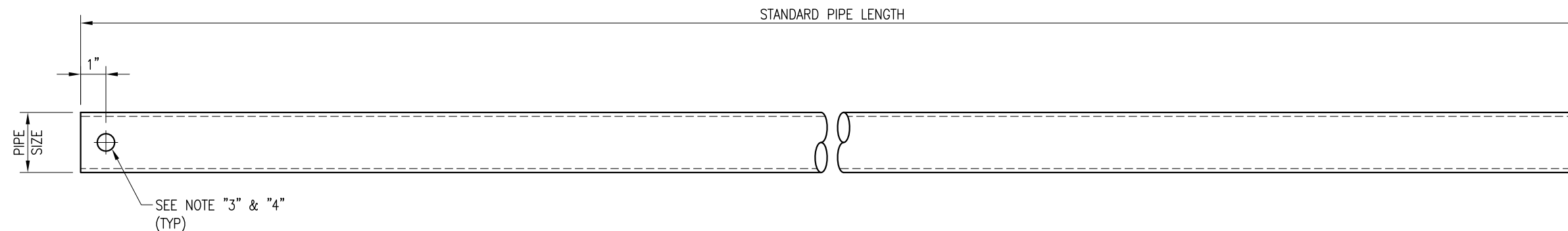
VZWSMART-MSK6 (VZWSMART-MSK6 - BACK TO BACK CROSSOVER)						
ITEM NO.	QTY.	PART NO.	DESCRIPTION	SHEET #	WT	
1	2	PL375-8512	PL 3/8" X 8 1/2" X 1'-0" A36	MSK6-F2	20.7	
2	4	VCP	PL 1/2" X 2" X 8 5/8" A36 BENT PLATE	MSK6-F1	9.6	
3	4	---	THREADED ROD 5/8" DIA. X 10" F1554-36 HDG	---	---	
4	16	NUT-625	5/8" HDG HEX NUT	---	2	
5	16	FW-625	5/8" HDG USS FLAT WASHER	---	1	
6	16	LW-625	5/8" HDG LOCK WASHER	---	0	
7	8	---	BOLT 5/8" X 6" SAE GRADE 5 ALL THREAD	---	1	
					GALVANIZED WT	34

DRAWN BY: SK      CHECKED BY: BT/KW

REV.	DESCRIPTION	BY	DATE
△	FIRST ISSUE	SK	05/08/20
△			
△			
△			

SHEET TITLE:  
 VZWSMART-MSK6  
 BACK TO BACK  
 CROSSOVER

SHEET NUMBER: VZWSMART-MSK6      REV #: 0



VZWSMART Standard Pipe		
VZWSMART Number	Size	Length
P40-238X048	PIPE 2 SCH40 (2.375" OD x 0.154" THK)	48"
P40-238X072	PIPE 2 SCH40 (2.375" OD x 0.154" THK)	72"
P40-238X096	PIPE 2 SCH40 (2.375" OD x 0.154" THK)	96"
P40-238X120	PIPE 2 SCH40 (2.375" OD x 0.154" THK)	120"
P40-238X126	PIPE 2 SCH40 (2.375" OD x 0.154" THK)	126"
P40-238X150	PIPE 2 SCH40 (2.375" OD x 0.154" THK)	150"
P40-238X174	PIPE 2 SCH40 (2.375" OD x 0.154" THK)	174"
P40-278X048	PIPE 2.5 SCH40 (2.875" OD x 0.203" THK)	48"
P40-278X072	PIPE 2.5 SCH40 (2.875" OD x 0.203" THK)	72"
P40-278X096	PIPE 2.5 SCH40 (2.875" OD x 0.203" THK)	96"
P40-278X120	PIPE 2.5 SCH40 (2.875" OD x 0.203" THK)	120"
P40-278X126	PIPE 2.5 SCH40 (2.875" OD x 0.203" THK)	126"
P40-278X150	PIPE 2.5 SCH40 (2.875" OD x 0.203" THK)	150"
P40-278X174	PIPE 2.5 SCH40 (2.875" OD x 0.203" THK)	174"
P40-312X048	PIPE 3 SCH40 (3.5" OD x 0.216" THK)	48"
P40-312X072	PIPE 3 SCH40 (3.5" OD x 0.216" THK)	72"
P40-312X126	PIPE 3 SCH40 (3.5" OD x 0.216" THK)	126"
P40-312X150	PIPE 3 SCH40 (3.5" OD x 0.216" THK)	150"
P40-312X174	PIPE 3 SCH40 (3.5" OD x 0.216" THK)	174"

**NOTE:**  
 APPROVED SMART KIT VENDORS ARE ALLOWED TO SUBSTITUTE AT THEIR DISCRETION  
 PIPES LISTED ON THIS PAGE FOR CUSTOM LENGTH COMPONENTS OF MATCHING SIZE.  
 SUBSTITUTIONS SHALL MEET THE ORIGINAL STRUCTURAL INTENT.

- NOTES:**
1. ALL PIPE GRADE A53-B OR BETTER.
  2. HOT-DIPPED GALVANIZED PER ASTM A123.
  3. ALL HOLES ARE 11/16" DIA. U.N.O
  4. HOLES MAY OR MAY NOT BE PRESENT, DEPEND UPON MANUFACTURE DISCRETION.
  5. ALL FIELD CUT AND DRILLED SURFACES SHALL BE REPAIRED WITH A MINIMUM OF TWO COATS OF ZINGA OR ZINC COTE PER ASTM A780 AND MANUFACTURER'S RECOMMENDATIONS.

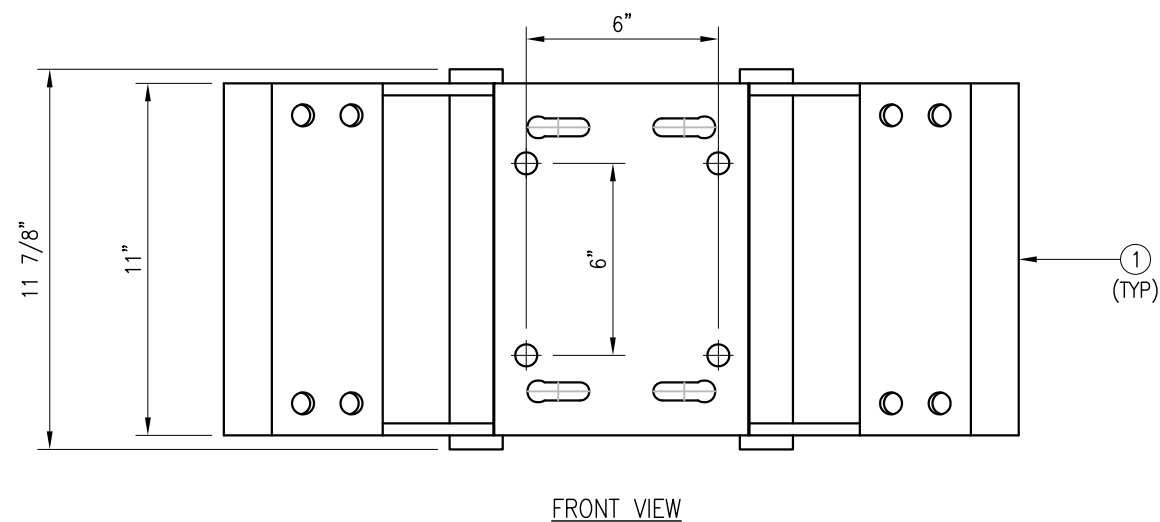
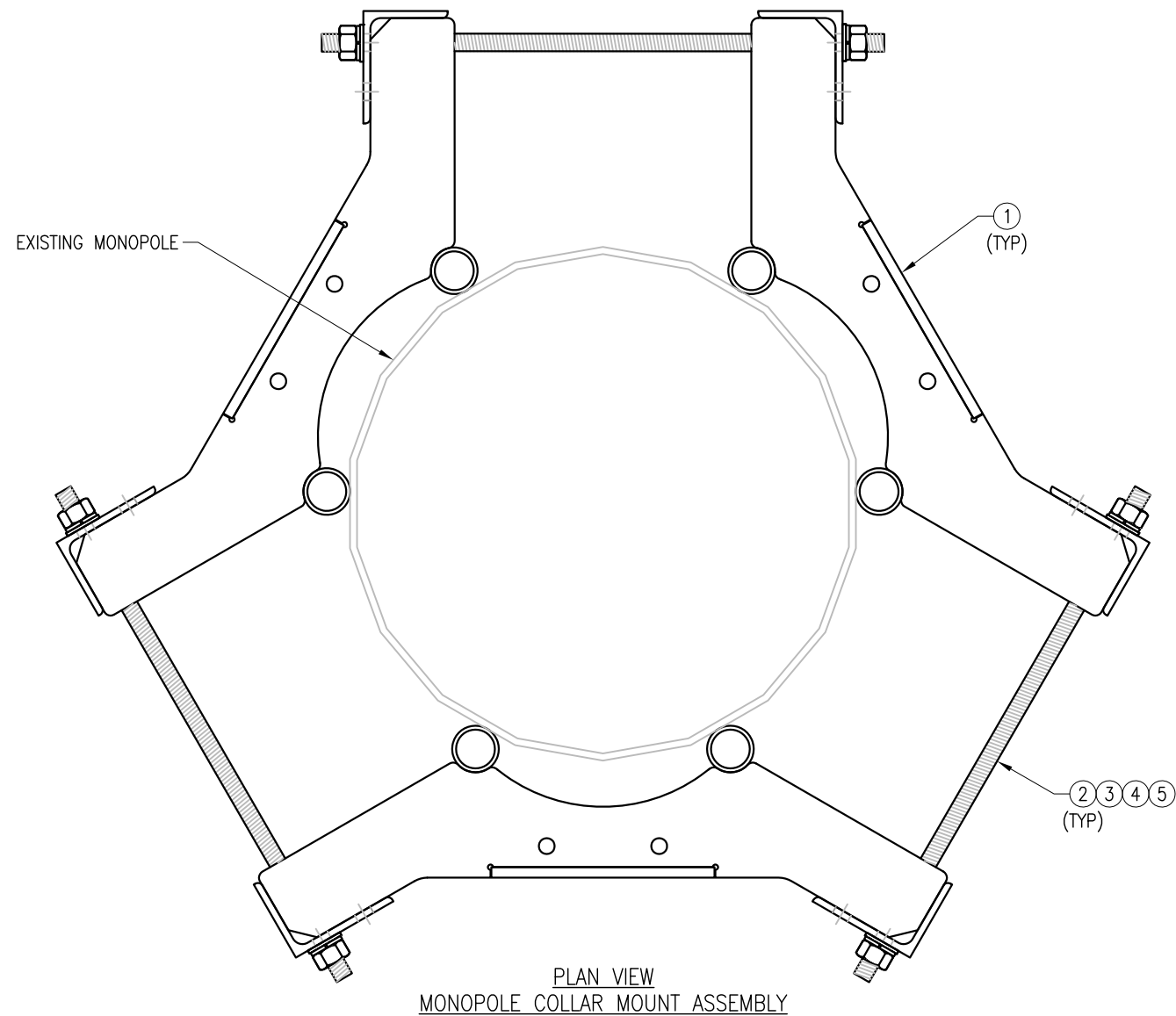
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REV.	DESCRIPTION	BY	DATE
1	FIRST ISSUE	BT	08/04/21

SHEET TITLE:

VZWSMART  
 STANDARD PIPE

SHEET NUMBER: VZWSMART-PIPE      REV #: 0



NOTES:  
 1. FIT 12" TO 45" DIA MONOPOLE.  
 2. HOT-DIPPED GALVANIZED PER ASTM A123.

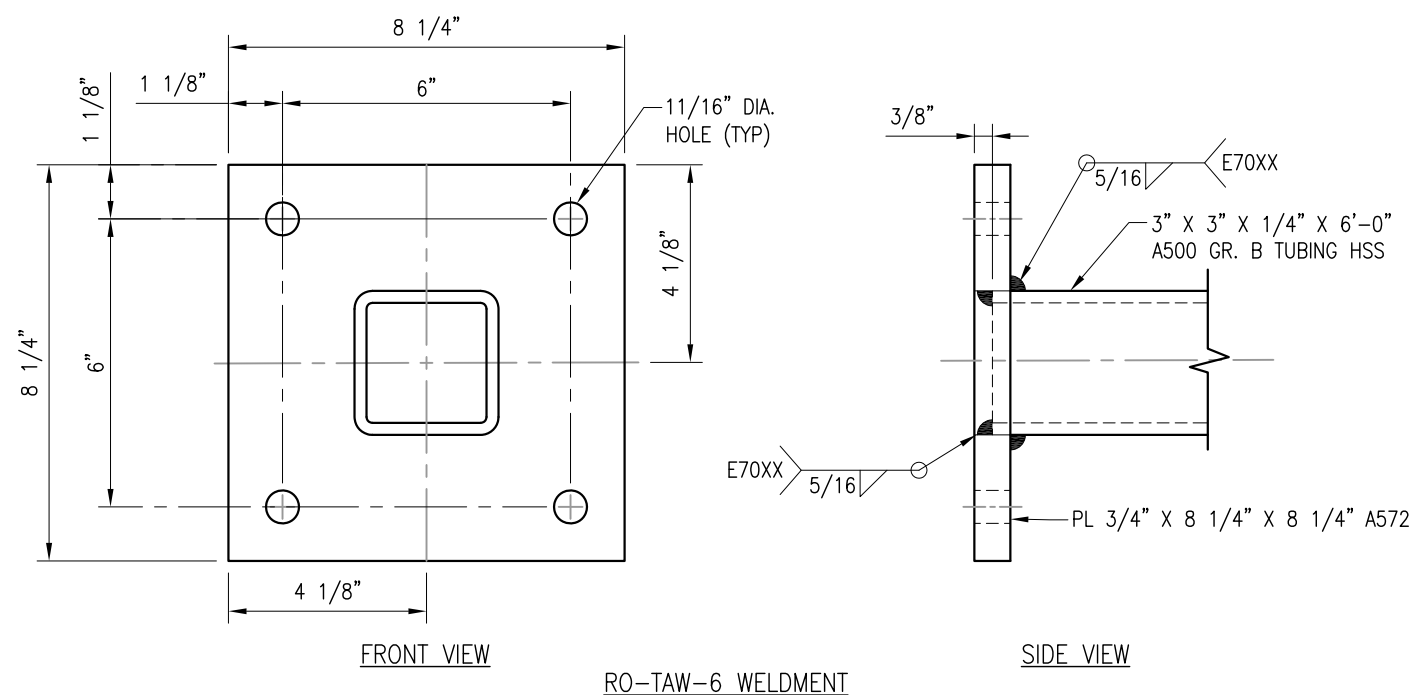
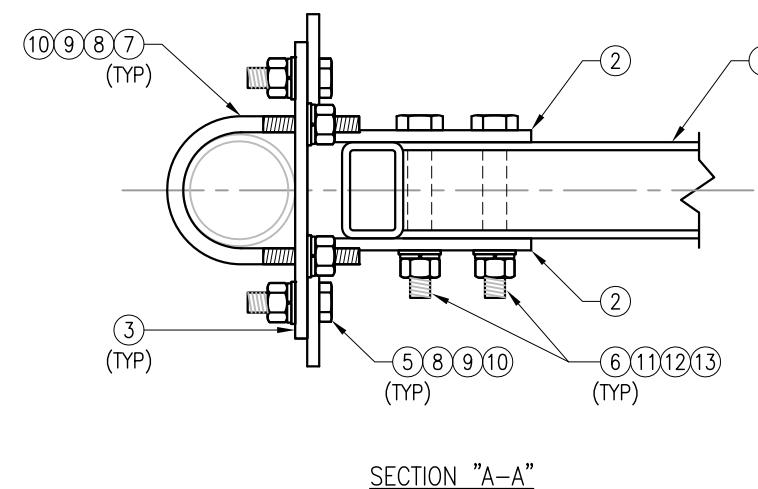
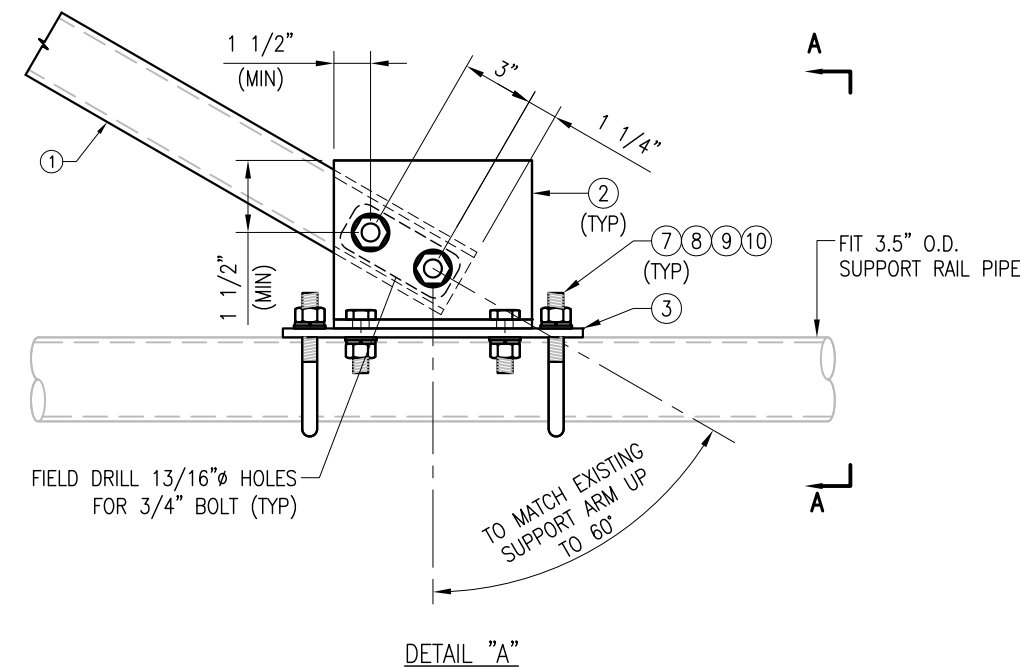
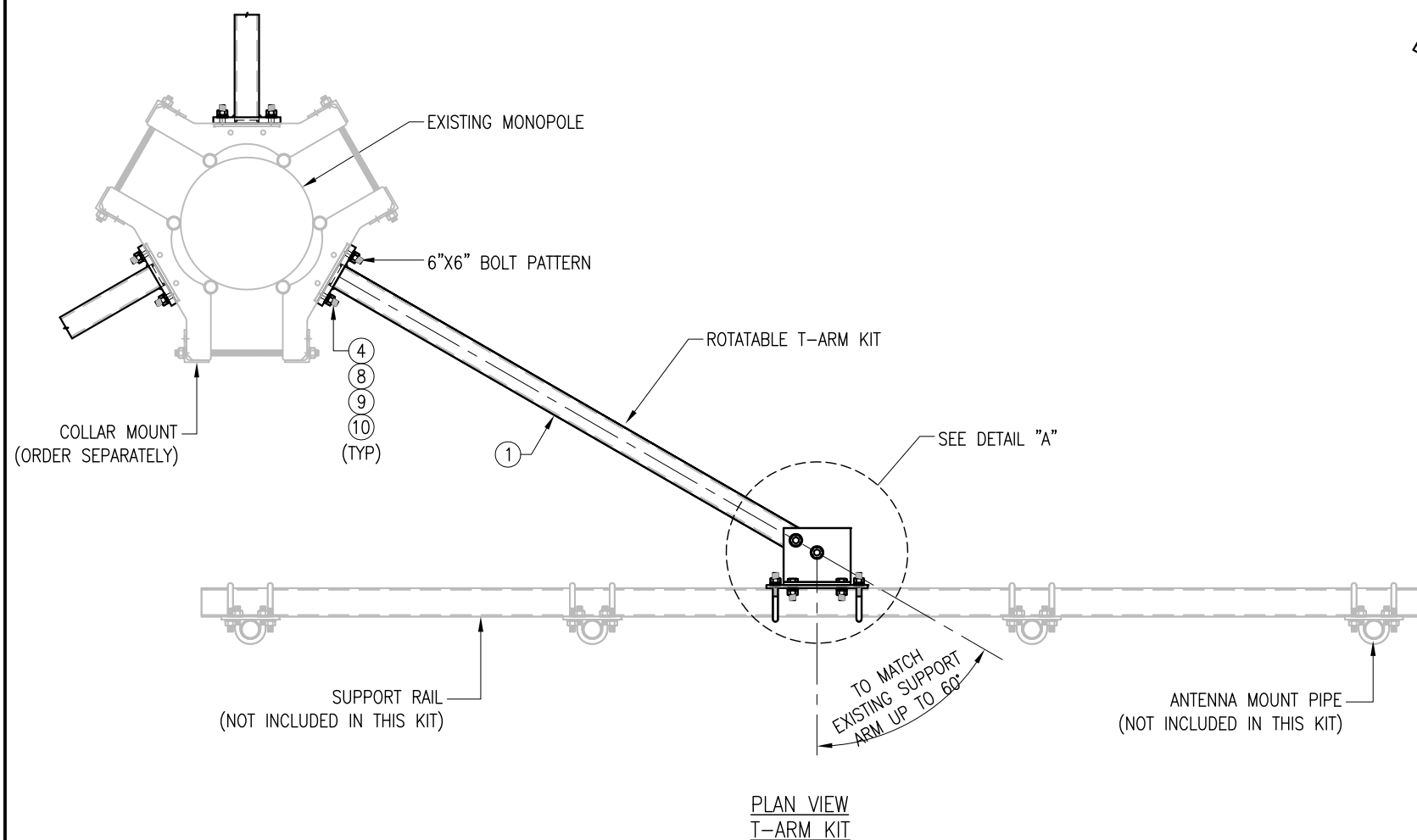
VZSMART-PLK7 (MONOPOLE COLLAR MOUNT ASSEMBLY)					
ITEM NO.	QTY.	PART NO.	DESCRIPTION	SHEET #	WT
1	3	CM-1245	COLLAR MOUNT ASSEMBLY	PLK7-F1	147
2	6	---	THREADED ROD 5/8" X 4'-0" A193-B7	---	
3	12	FW-625	5/8" HDG USS FLAT WASHER	---	1
4	12	LW-625	5/8" HDG LOCK WASHER	---	0
5	12	NUT-625	5/8" HDG HEX NUT	---	1
GALVANIZED WT					150

DRAWN BY: BT      CHECKED BY: HMA/KW

REV.	DESCRIPTION	BY	DATE
1	FIRST ISSUE	BT	05/11/20

SHEET TITLE:  
 VZSMART-PLK7  
 MONOPOLE COLLAR  
 MOUNT ASSEMBLY

SHEET NUMBER: VZSMART-PLK7      REV #: 0



VZWSMART-SFK4 (T-ARM KIT)					
ITEM NO.	QTY.	PART NO.	DESCRIPTION	SHEET #	WT
1	1	RO-TAW-6	T-ARM WELDMENT	SFK4-F1	71
2	2	BP825-94375	PL 3/8" X 8 1/4" X 9 7/16" A36 BEND PLATE	SFK4-F2	17
3	1	PL375-92512025	PL 3/8" X 9 1/4" X 1'-0 1/2" A36	SFK4-F3	12
4	4	---	BOLT 5/8" X 2 1/4" A325	---	0
5	4	---	BOLT 5/8" X 2" A325	---	0
6	2	---	BOLT 3/4" X 5 1/4" A325	---	0
7	2	MS02-625-3625-600	RU-BOLT 5/8" X 3 5/8" I.W. X 6" I.L. A36 (OR EQUIV.)	RBC-1	3
8	12	FW-625	5/8" HDG USS FLAT WASHER	---	1
9	12	LW-625	5/8" HDG LOCK WASHER	---	0
10	12	NUT-625	5/8" HDG HEX NUT	---	1
11	2	FW-75	3/4" HDG USS FLAT WASHER	---	0
12	2	LW-75	3/4" HDG LOCK WASHER	---	0
13	2	NUT-75	3/4" HDG HEX NUT	---	0
GALVANIZED WT					106

NOTES:  
1. HOT-DIPPED GALVANIZED PER ASTM A123.

DRAWN BY: BT CHECKED BY: HMA/KW

REV. DESCRIPTION BY DATE  
△ FIRST ISSUE BT 05/08/20

SHEET TITLE:

VZWSMART-SFK4  
T-ARM KIT

SHEET NUMBER: REV #:

VZWSMART-SFK4 0

Town of Harvard  
Conservation Commission  
13 Ayer Road  
Harvard, MA 01451  
Liz AllardInvoice number 3241.02-6  
Date 04/30/2023Project **3241.02**  
**Peer Review Services**  
**203 Ayer Road**  
**Harvard, MA**

FOR PROFESSIONAL SERVICES RENDERED: this period through April 30, 2023

Professional services to assist the Town of Harvard Planning Board (the Board) and Conservation Commission (the Commission) with the review of the two Special Permit Applications, a Site Plan Approval Application, and a Notice of Intent for the proposed commercial development at 203 Ayer Road, Harvard, Massachusetts. During this period we coordinated with the Planning office and Applicant, reviewed supplemental materials, and participated in the April 24th hearing.

**Professional Fees**

	Hours	Amount
Senior Professional Staff I	0.50	130.00
Senior Professional Staff V	3.00	525.00
Senior Professional Staff VI	1.00	160.00
Administrative Staff I	0.25	20.00
Professional Fees Subtotal	4.75	835.00

Invoice total **835.00**By: Stacy H. Minihane  
Stacy H. Minihane  
Principal