



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. 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:

<input type="checkbox"/> Special Permits*	\$500/required permit
<input type="checkbox"/> Driveway Site Plan	\$180
<input type="checkbox"/> Inspections of Driveways	\$300
<input type="checkbox"/> Approval of Covenant	\$100
<input type="checkbox"/> Wireless Communication Tower	\$2500
<input type="checkbox"/> Consultant Review Fee**	\$1000
<input type="checkbox"/> Site Plan Review with a Special Permit	\$180
<input type="checkbox"/> Site Plan Review without a Special Permit	\$500
<input checked="" type="checkbox"/> Modification/Extension	1/2 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 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: 9-7-23
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.



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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

2010 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.

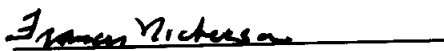
The Board voted four (4) to zero (0) (McBee, Donahue, Nickerson, and Rushmore) to issue this decision.

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

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:

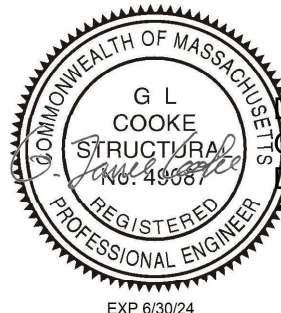
LC7: Proposed Equipment Configuration

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'

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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 4 2	1-5/8 3/4 3/8
		1	raycap	DC6-48-60-18-8F		
		1	-	Miscellaneous [NA 508-3]		
		1	-	Side Arm Mount [SO 101-3]		
	99.0	3	cci antennas	TPA-65R-LCUUUU-H8 w/ Mount Pipe		

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

Structure Rating (max from all components) =	59.2%*
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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.

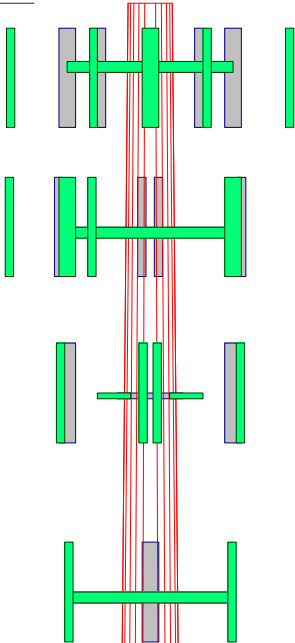
4.1) Recommendations

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		
Top Dia (in)	31.7900	42.7962	
Bot Dia (in)	44.9400	56.0000	
Grade	A572-65		
Weight (K)	7.1	12.9	20.1

103.5 ft



48.7 ft

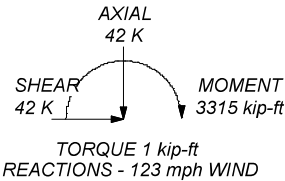
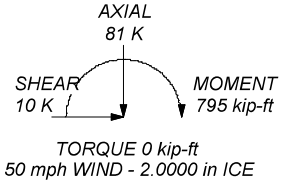
0.0 ft


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	App'd:
Code: TIA-222-H	Date: 01/04/23	Scale: NTS
Path: C:\Users\RPeddamaru\Desktop\CN11-972R2 SA\Analysis\CN11-972R2 BU_842900_WD_2191018.dwg		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

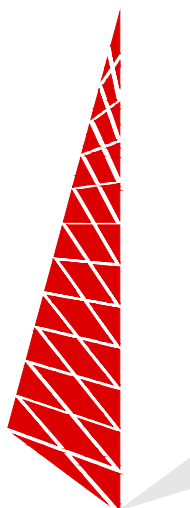
JURISDICTION: TOWN OF HARVARD



180 WASHINGTON VALLEY ROAD
BEDMINSTER, NJ 07921



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



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

SITE INFORMATION

CROWN CASTLE USA INC.
SITE NAME:

HARVARD I-495 (MA0143)

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

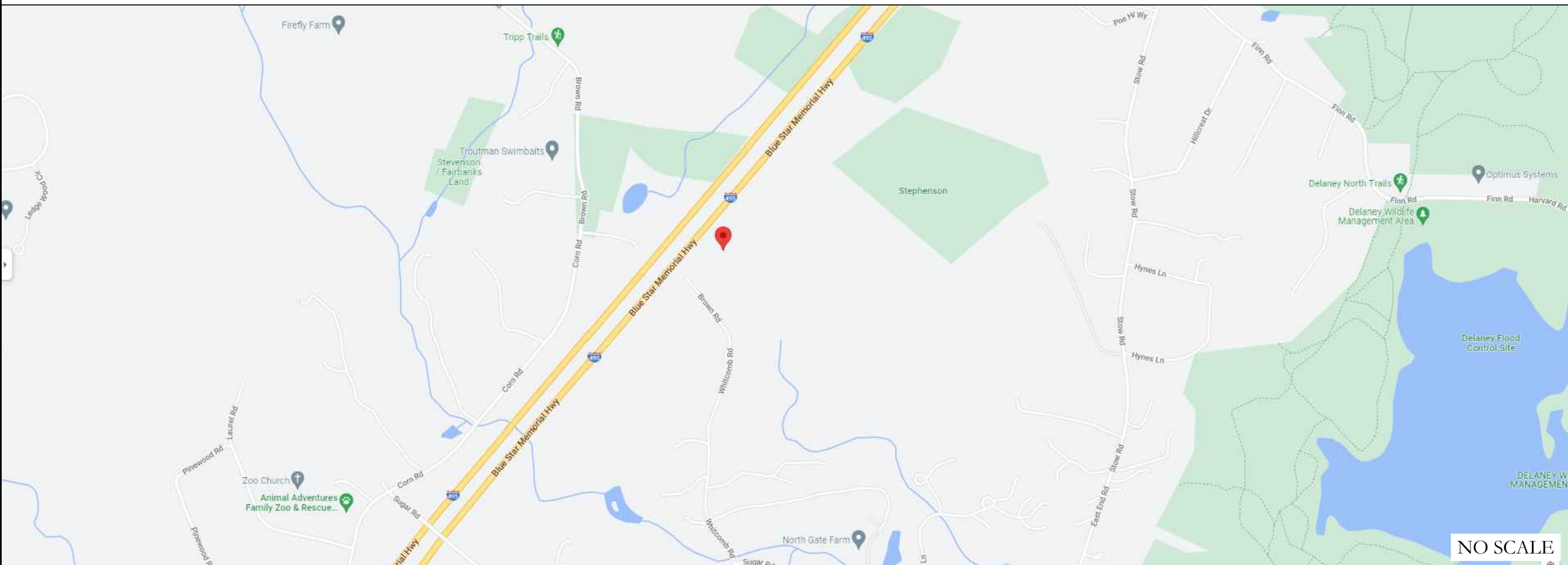
MOUNT MODIFICATION REQUIRED

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



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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

CROWN CASTLE USA INC. SITE ACTIVITY REQUIREMENTS:

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

GENERAL NOTES:

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

CONCRETE, FOUNDATIONS, AND REINFORCING STEEL:

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

ELECTRICAL INSTALLATION NOTES:

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

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

* 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 PLANT
QTY	QUANTITY
RECT	RECTIFIER
RBS	RADIO BASE STATION
RET	REMOTE ELECTRIC TILT
RFDS	RADIO FREQUENCY DATA SHEET
RRH	REMOTE RADIO HEAD
RRU	REMOTE RADIO UNIT
SIAD	SMART INTEGRATED DEVICE
TMA	TOWER MOUNTED AMPLIFIER
TYP	TYPICAL
UMTS	UNIVERSAL MOBILE TELECOMMUNICATIONS SYSTEM
W.P.	WORK POINT



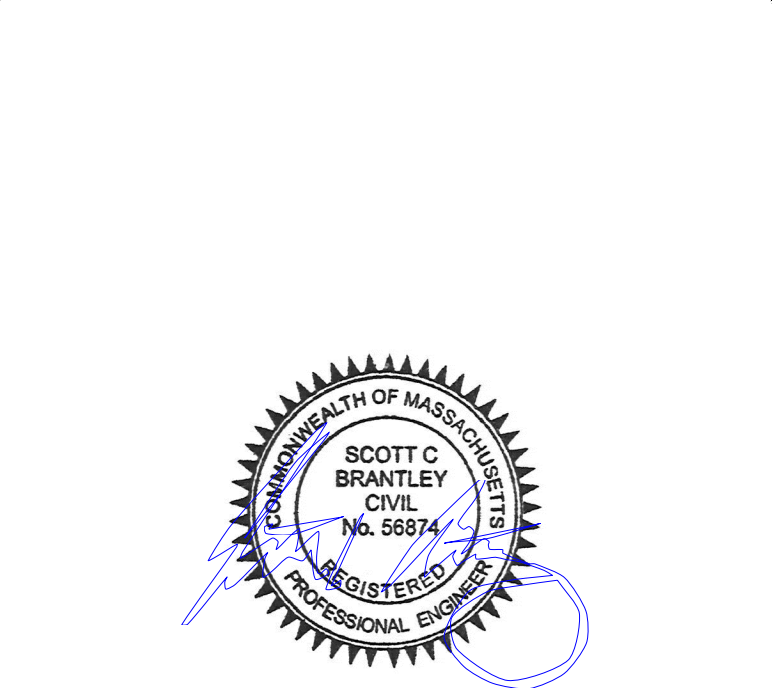
VERIZON SITE NUMBER:
138118

BU #: 842900
HARVARD I-495 (MA0143)

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

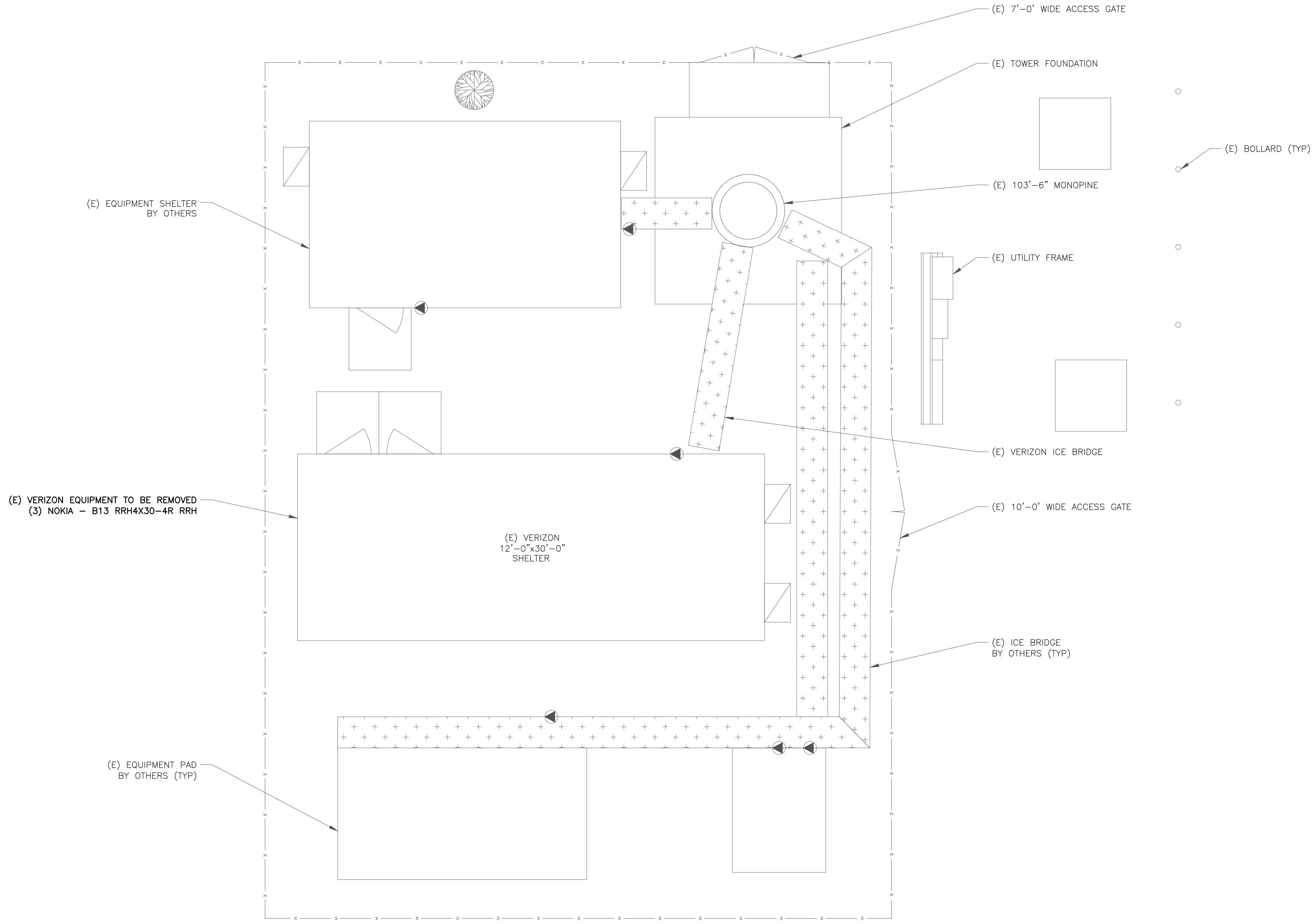
EXISTING 103'-6" MONOPINE

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



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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
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HARVARD, MA 01451

EXISTING 103'-6" MONOPINE

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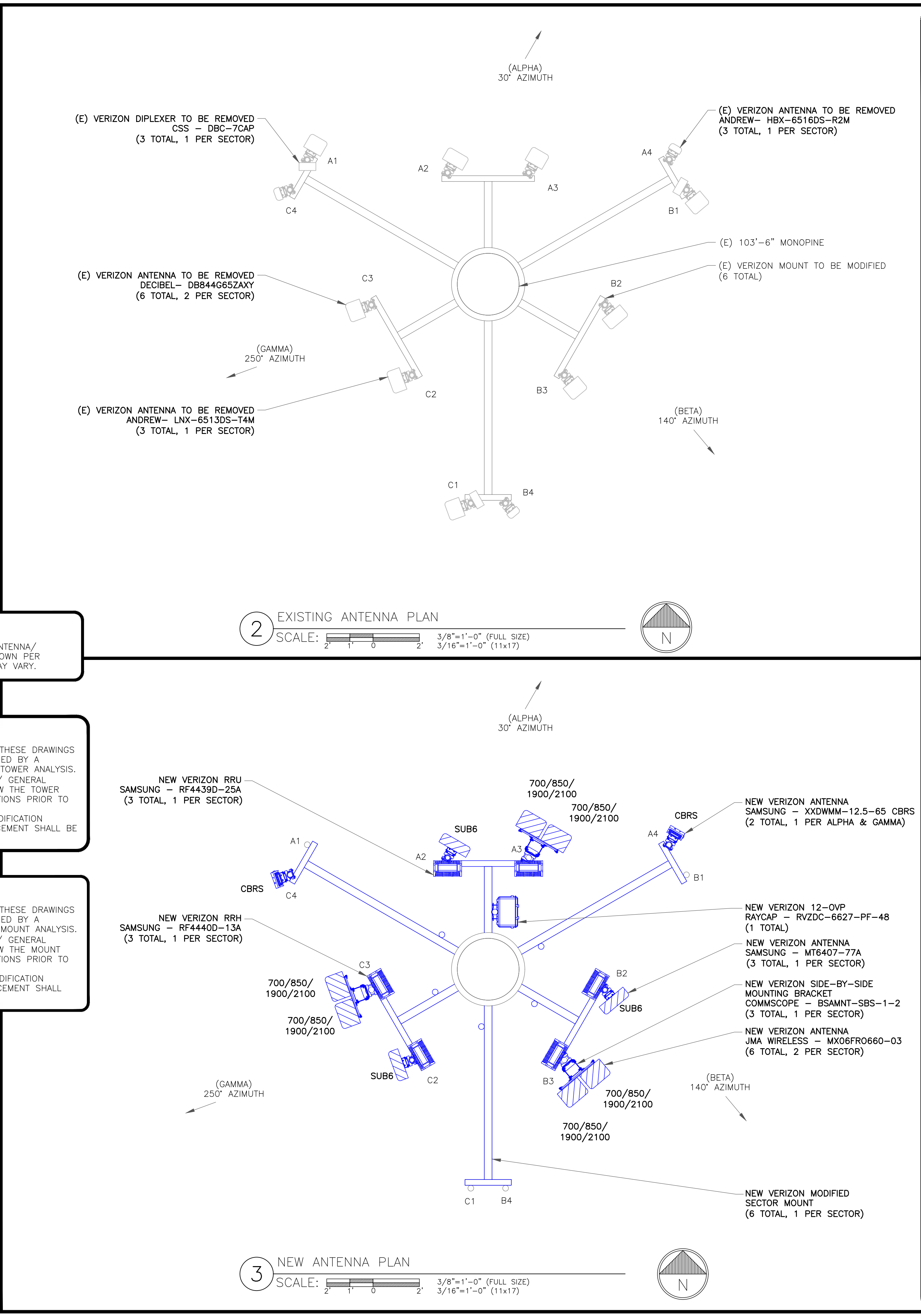
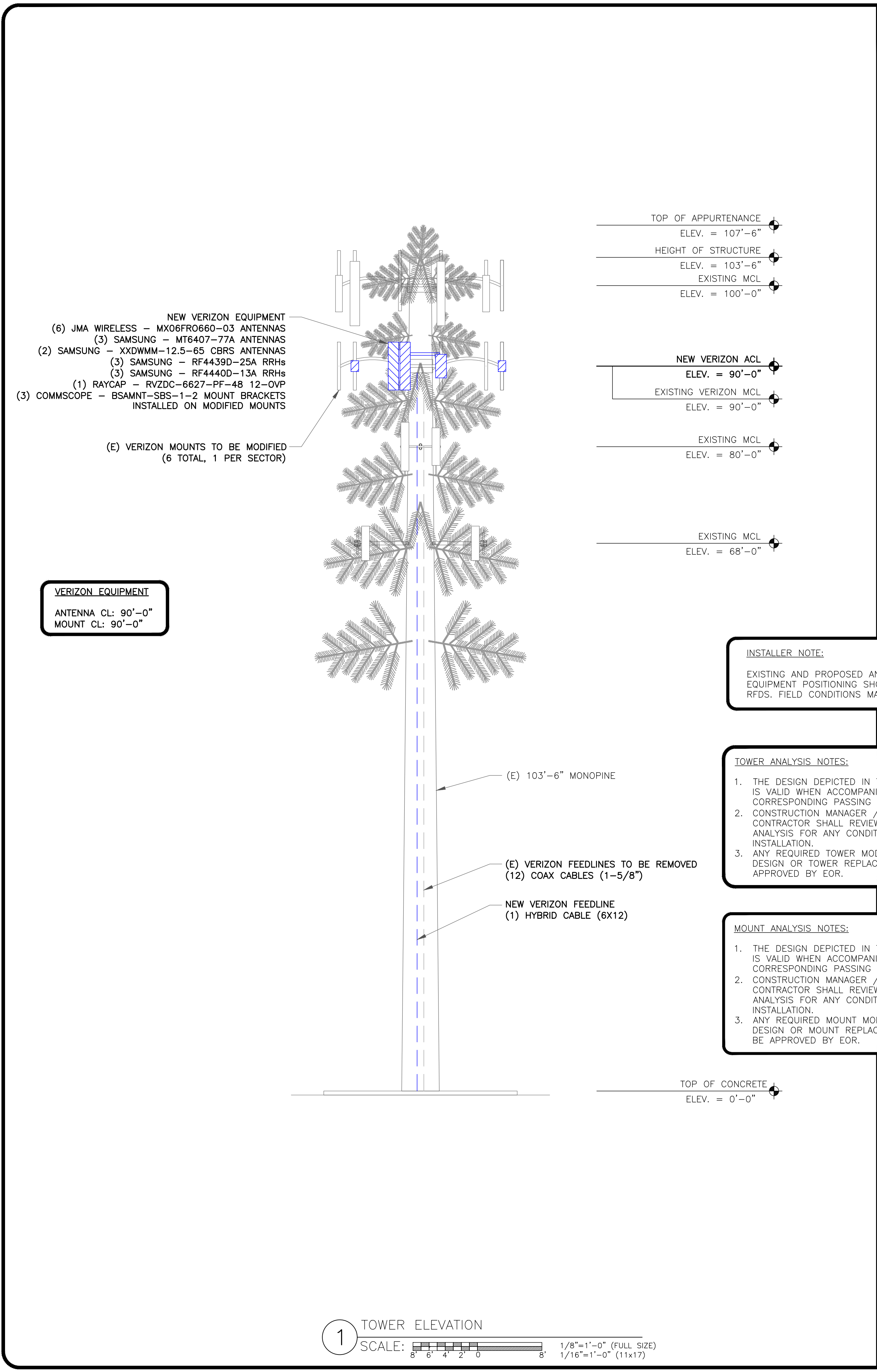
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VERIZON SITE NUMBER:
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HARVARD I-495 (MA0143)

END OF BROWN STREET
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HARVARD, MA 01451

EXISTING 103'-6" MONOPINE

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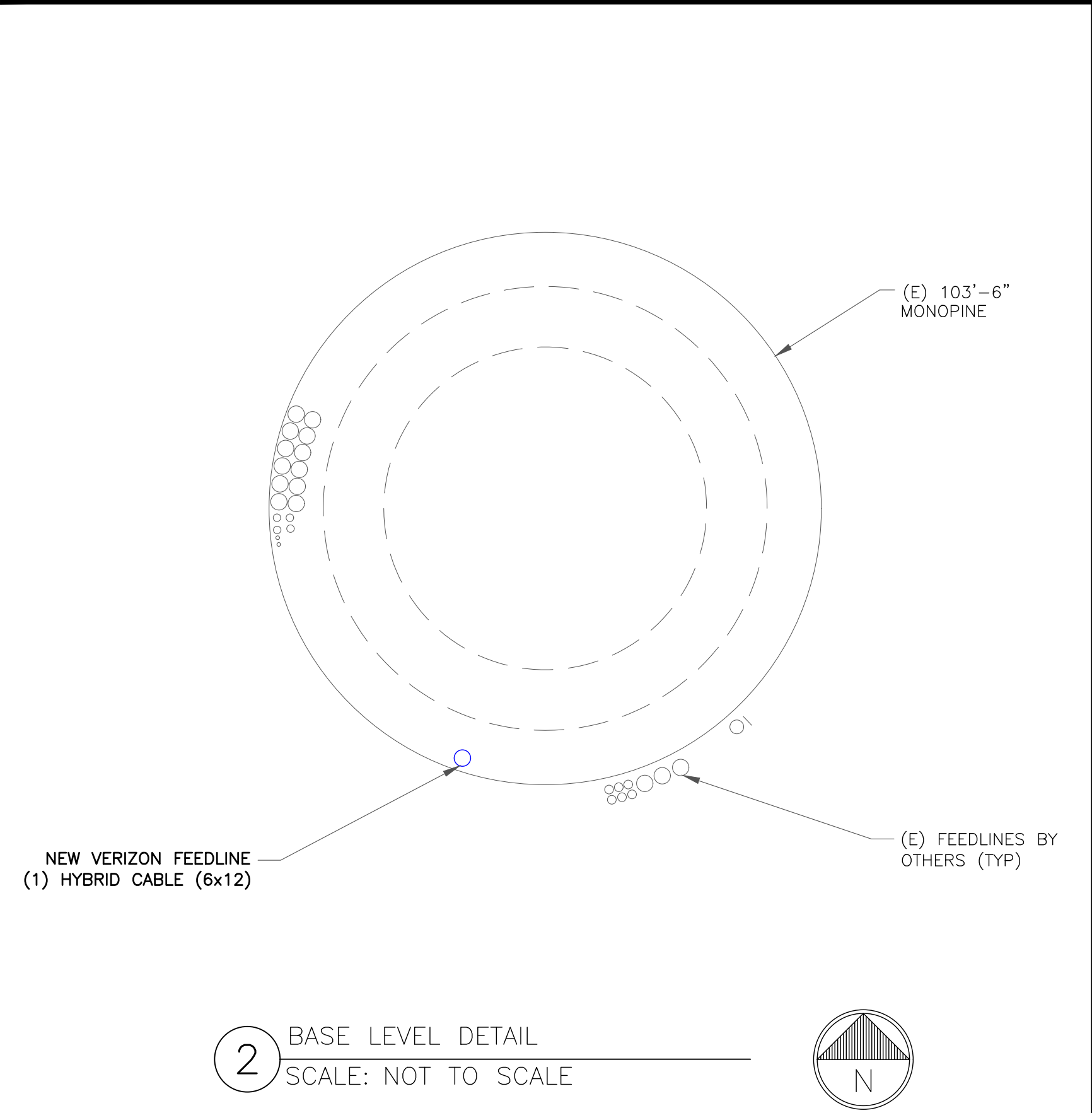
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ANTENNA/RRH SCHEDULE									
SECTOR	STATUS	ANTENNA MANUFACTURER	ANTENNA MODEL	ANTENNA CENTERLINE	AZIMUTH	MECHANICAL DOWNTILTS	ELECTRICAL DOWNTILTS	TOWER EQUIPMENT MANUFACTURER	TOWER EQUIPMENT QTY/MODEL
A1	—	—	—	—	—	—	—	—	—
A2	NEW	SAMSUNG	MT6407—77A	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

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

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

EXISTING 103'-6" MONOPINE

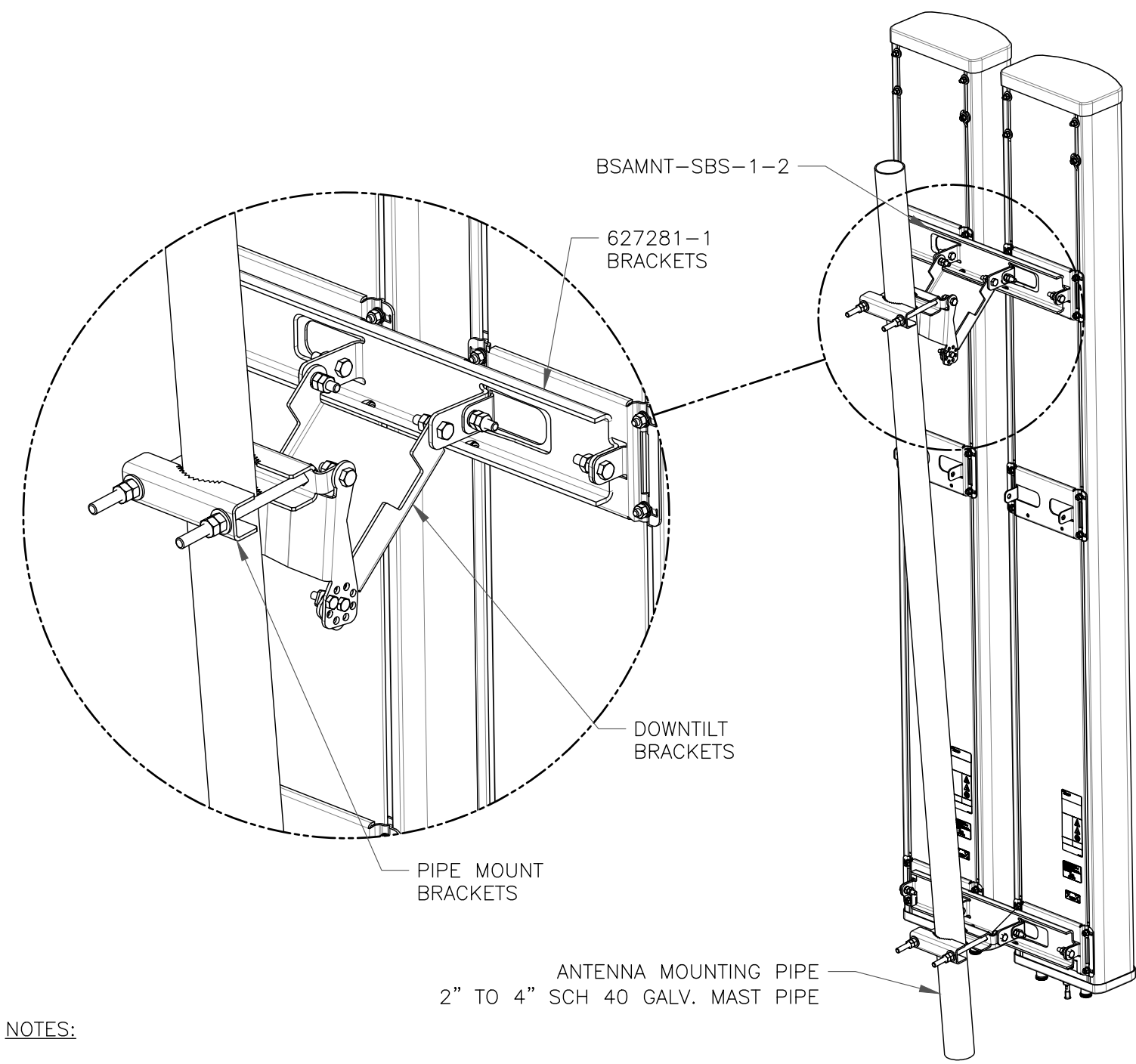
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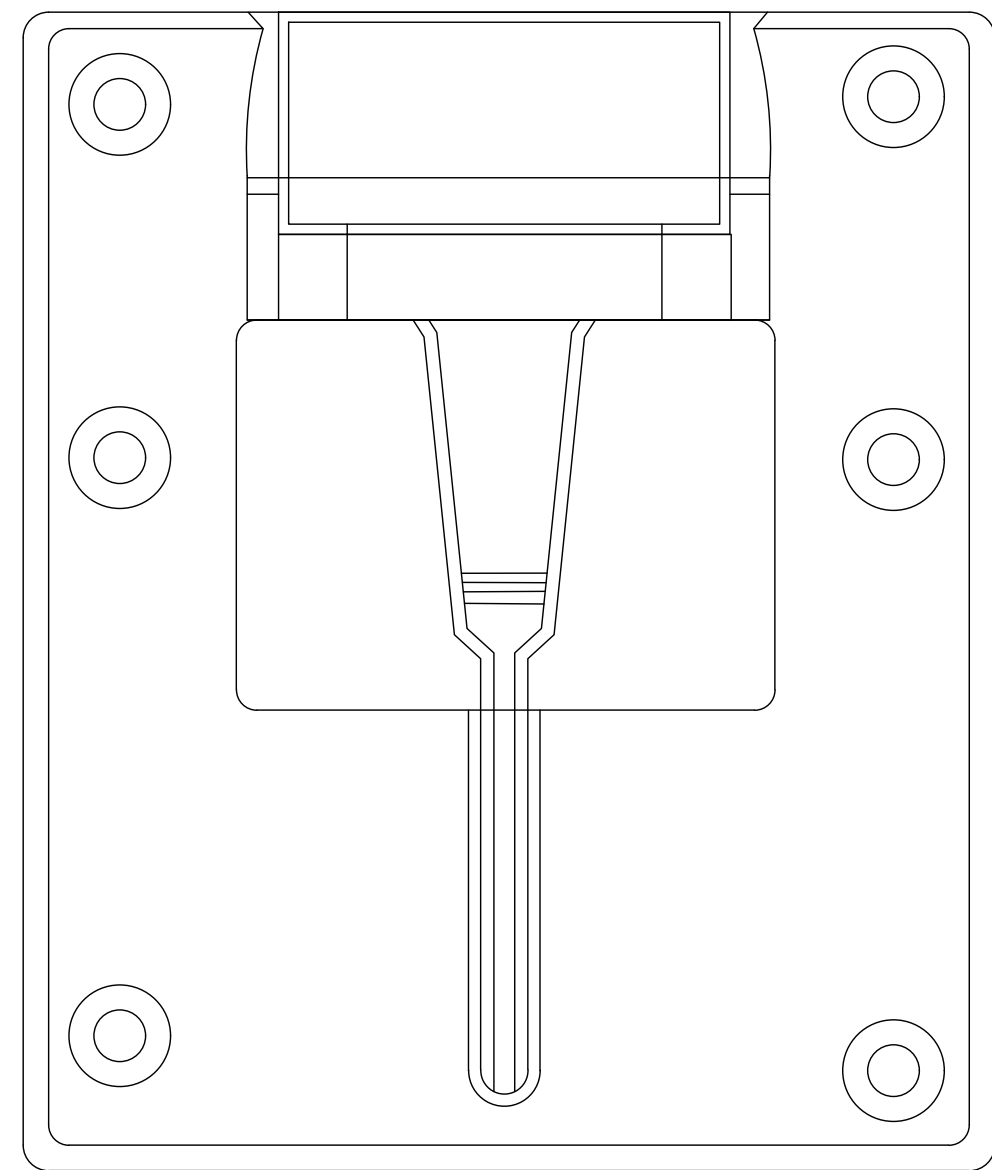
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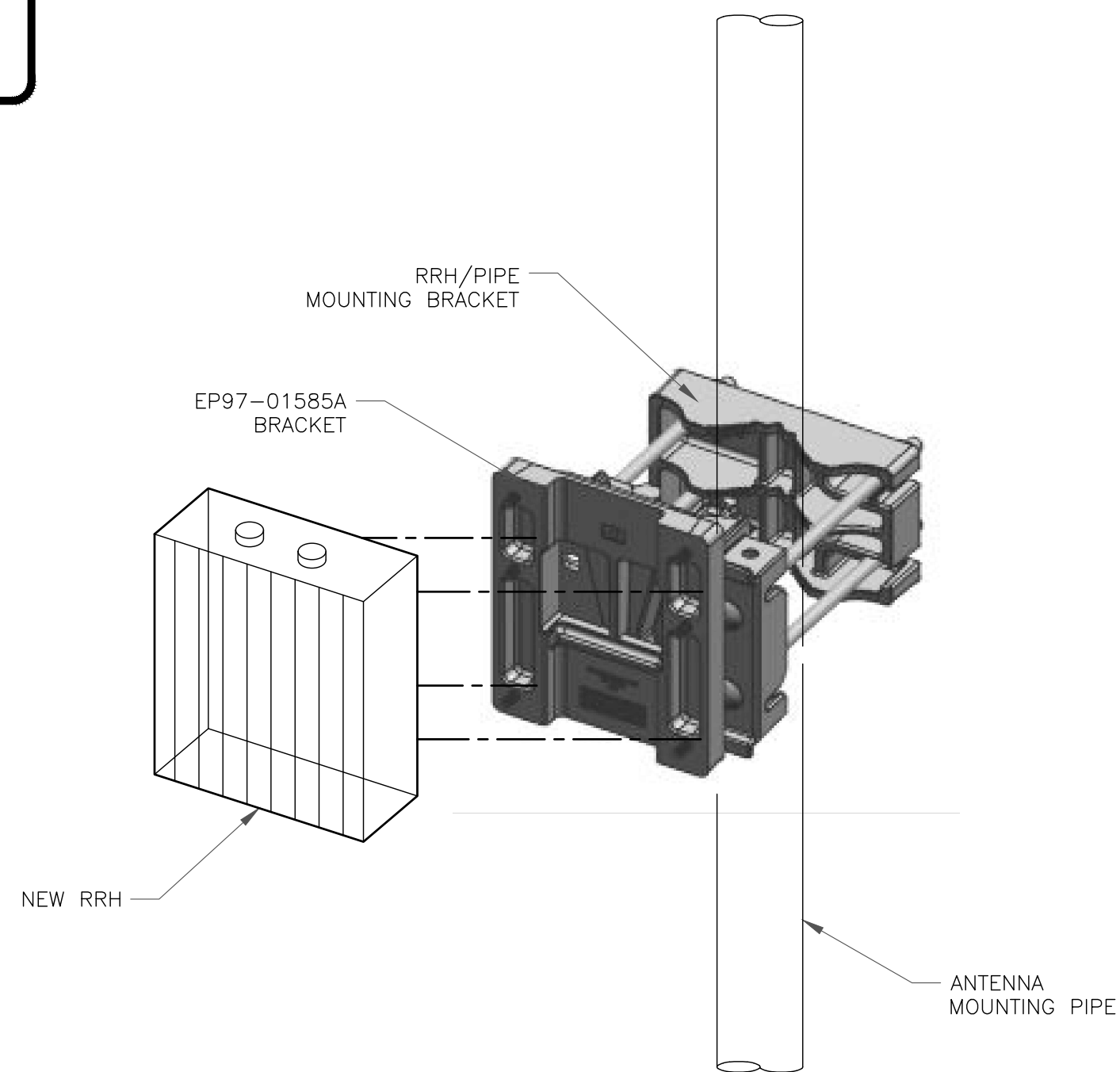
- NOTES:
- BSAMNT-SBS-1-2 KIT CONTAINS (2) 627281 MOUNTING BRACKETS.
 - TORQUE THE M10 BOLT ASSEMBLY TO 37 N.m. PER MANUFACTURE'S RECOMMENDATIONS.

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




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


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



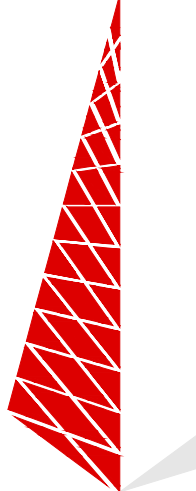
4 ANTENNA & RRH MOUNTING DETAIL
SCALE: NOT TO SCALE



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HARVARD I-495 (MA0143)

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

EXISTING 103'-6" MONOPINE

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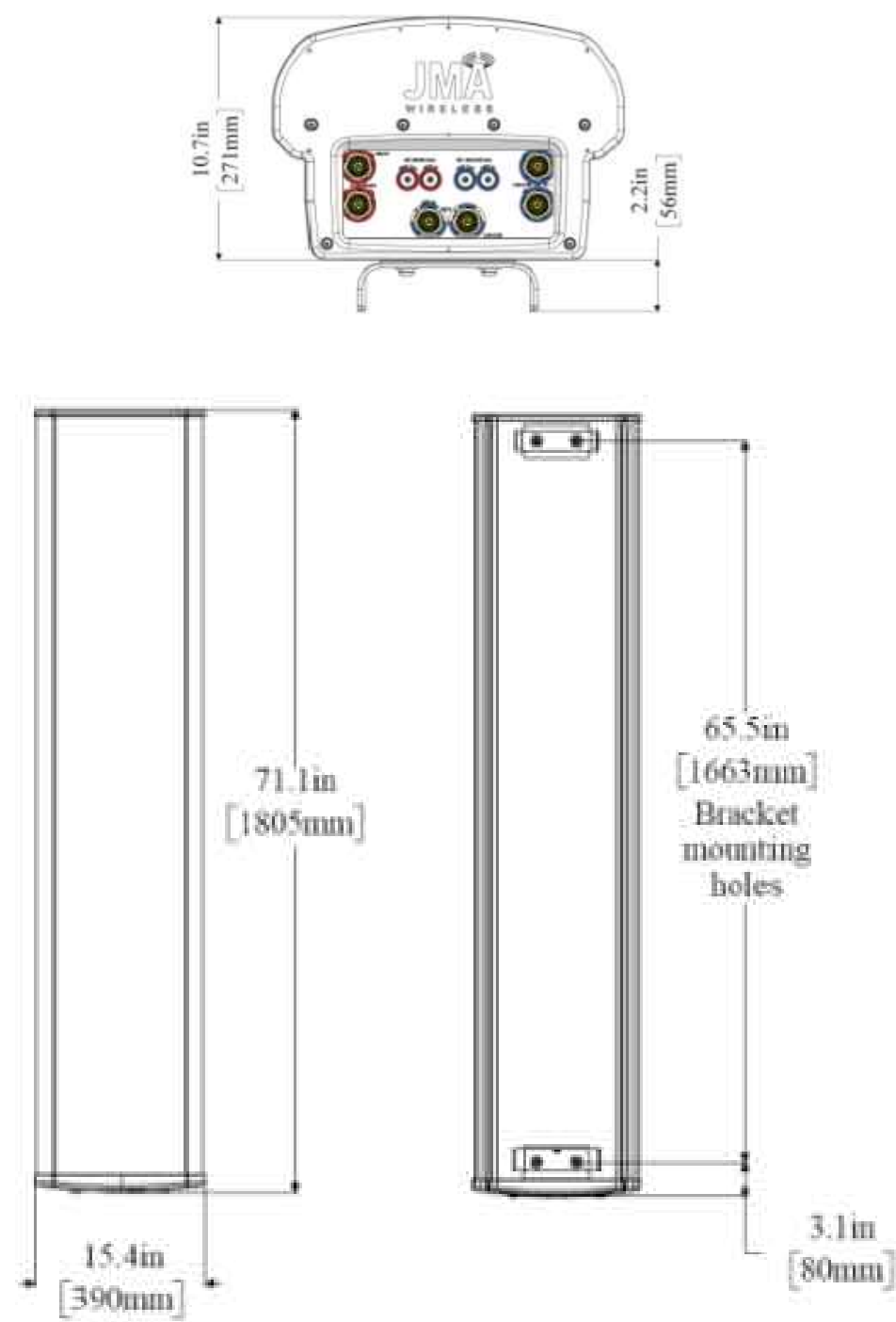


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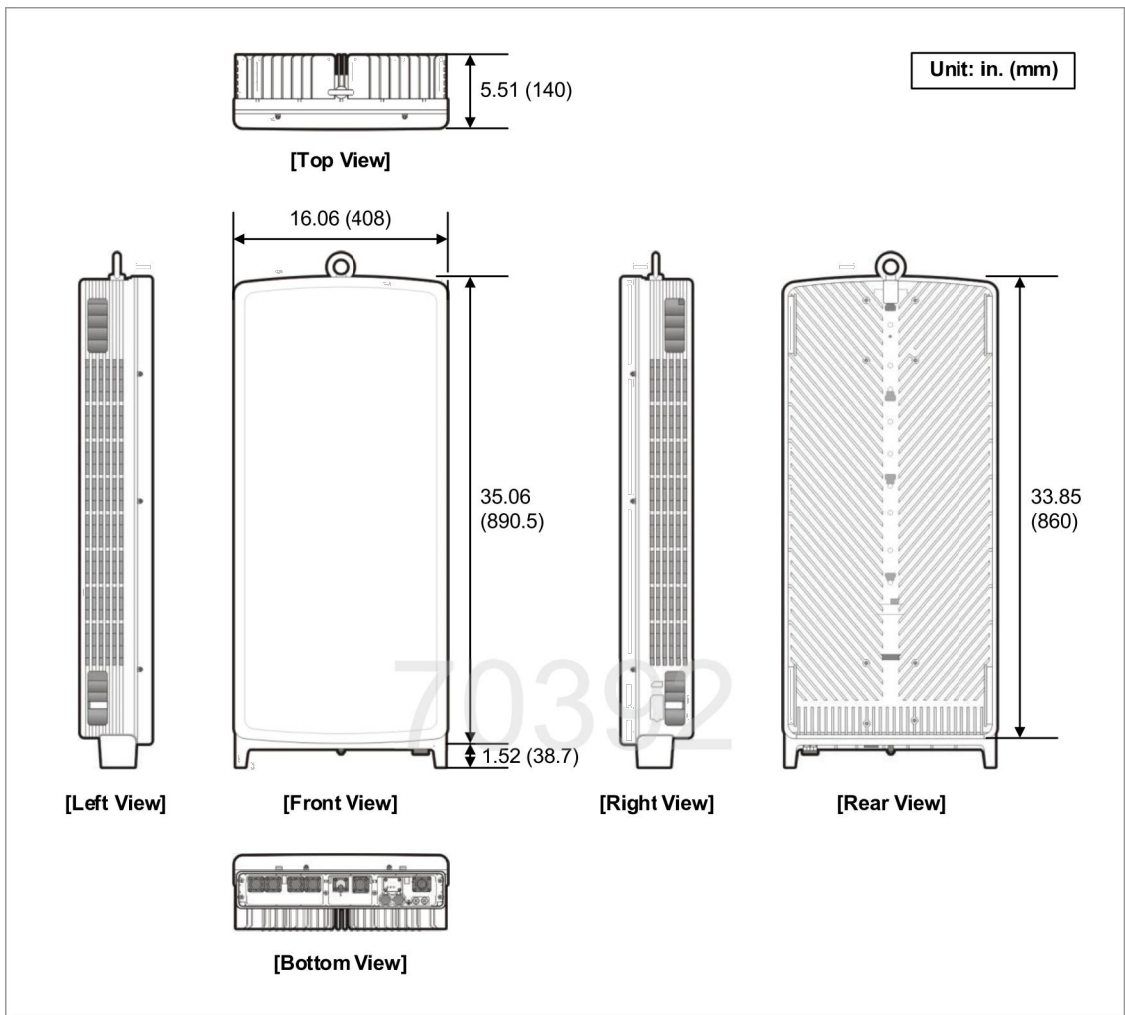
SHEET NUMBER:
C-4

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

1 JMA WIRELESS — MX06FRO660—03
SCALE: NOT TO SCALE



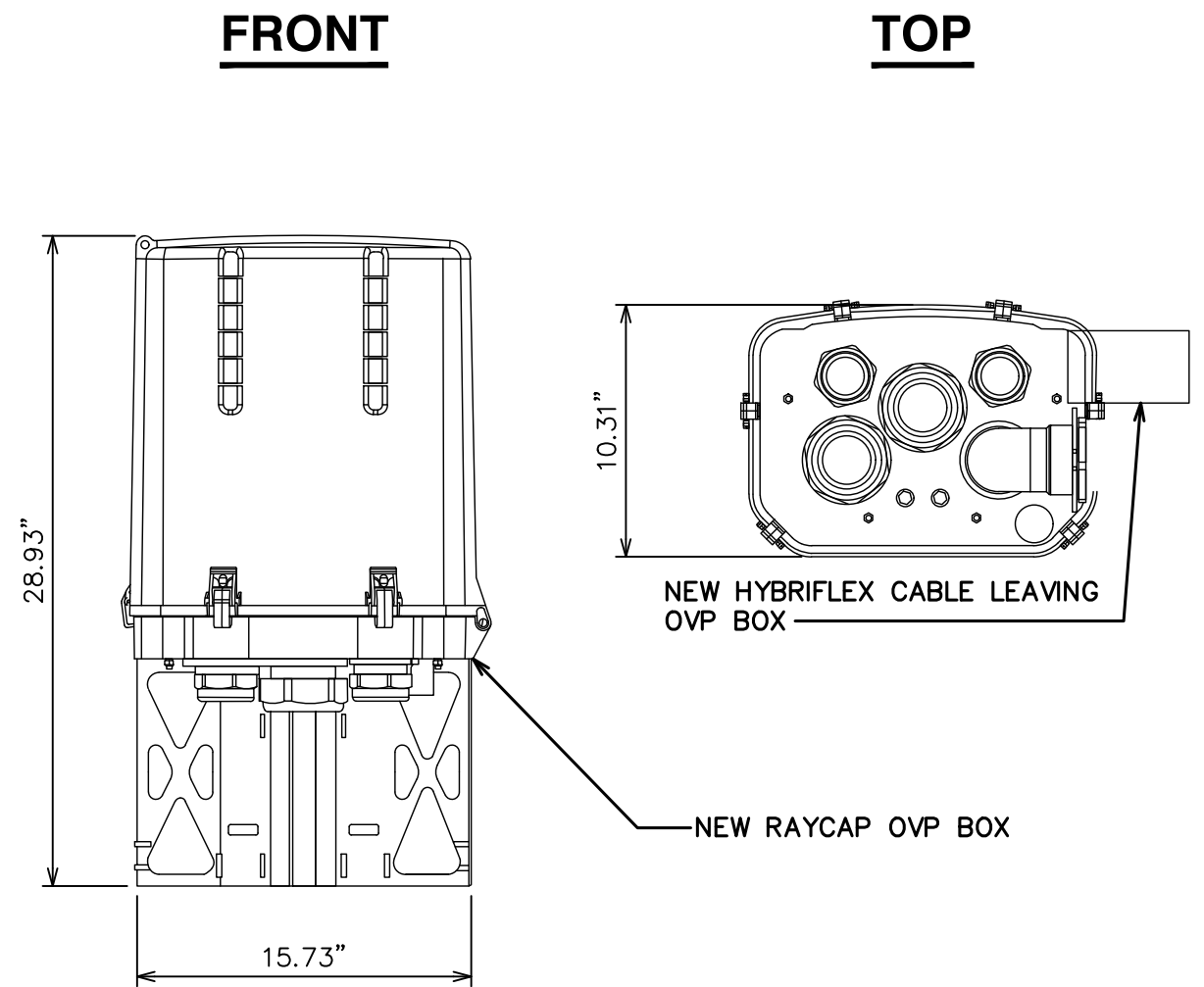
SAMSUNG TELECOMMUNICATIONS — MT6407—77A ANTENNA
WEIGHT: 81.57 LBS
SIZE (HxWxD): 35.06x16.06x5.51 IN.

2 SAMSUNG — MT6407—77A
SCALE: NOT TO SCALE

FIBER NAMING CONVENTION	
Technology	(Equipment-Sector-OPTI #)
DUPLEX FIBER RUN	
5GmmW L0	5GmmW-A-0
SIMPLEX FIBER RUN	
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

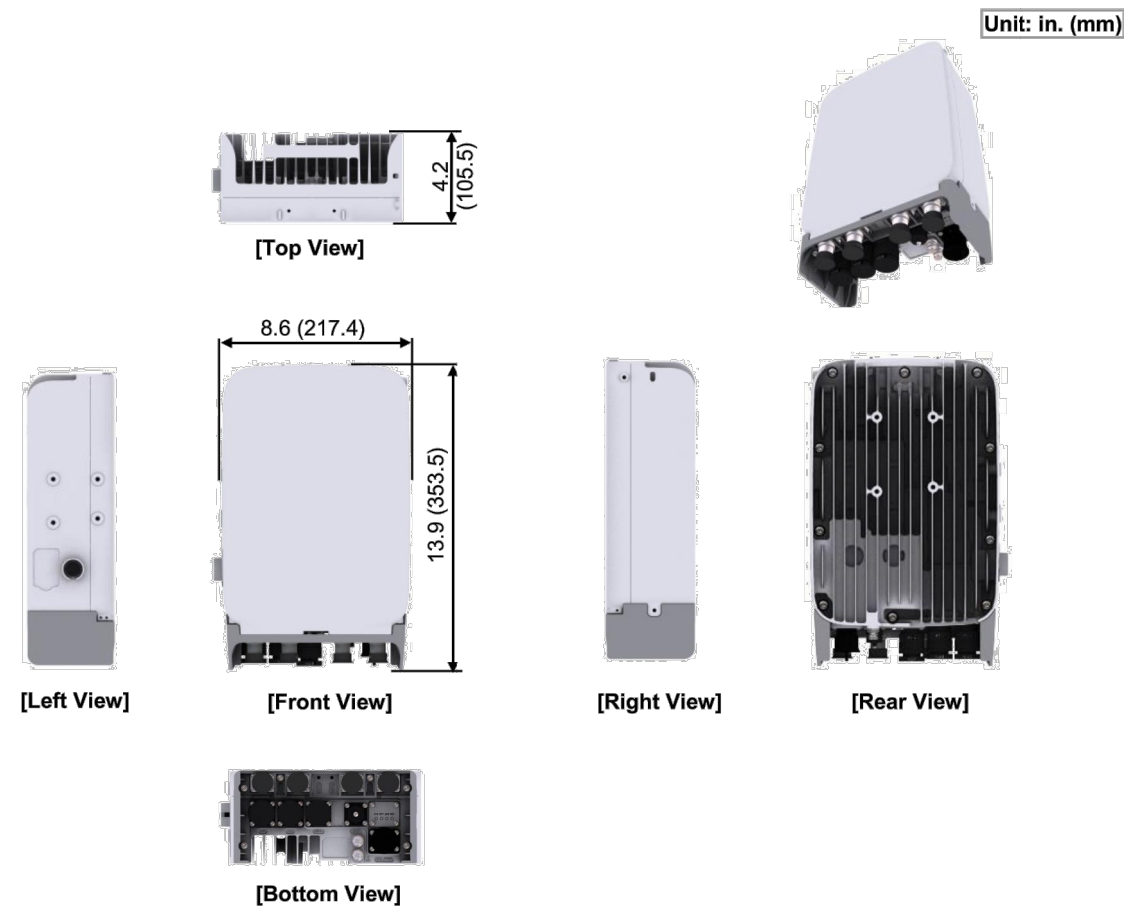
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3 FIBER NAMING CONVENTION CHART
SCALE: NOT TO SCALE



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



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



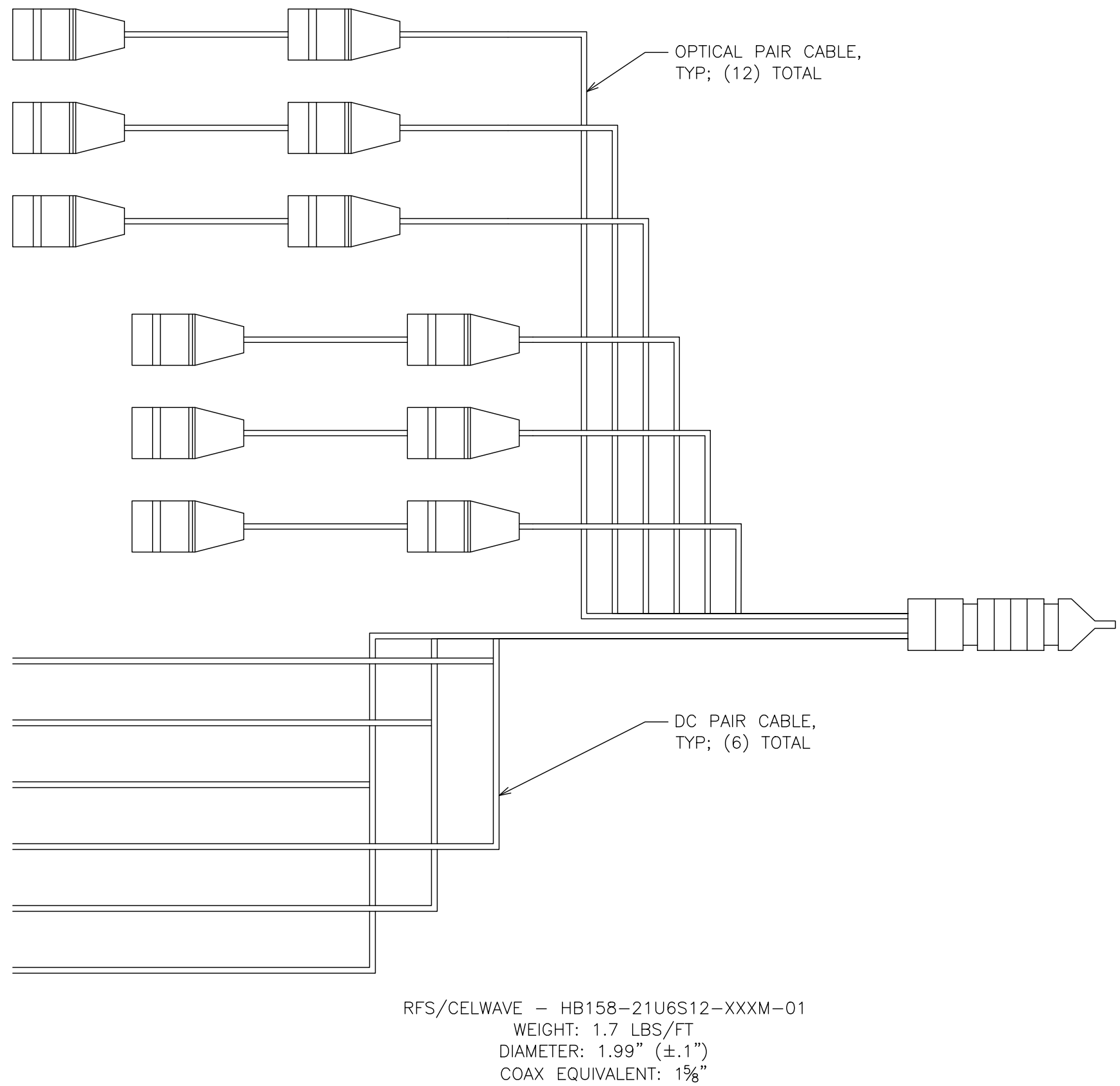
SAMSUNG — RF4439D—25A
WEIGHT: 74.7 LBS
SIZE (HxWxD): 14.96X14.96X10.04IN.

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

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CROWN
CASTLE

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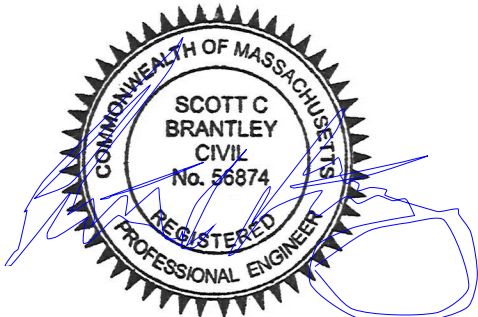
BU #: 842900
HARVARD I-495 (MA0143)

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

EXISTING 103'-6" MONOPINE

ISSUED FOR:

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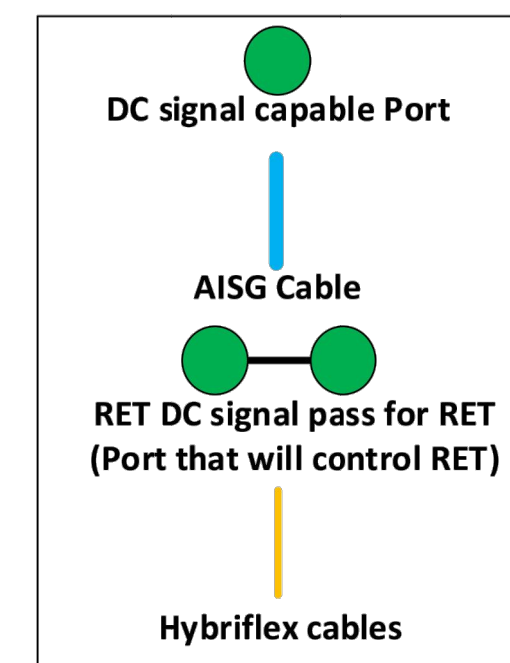
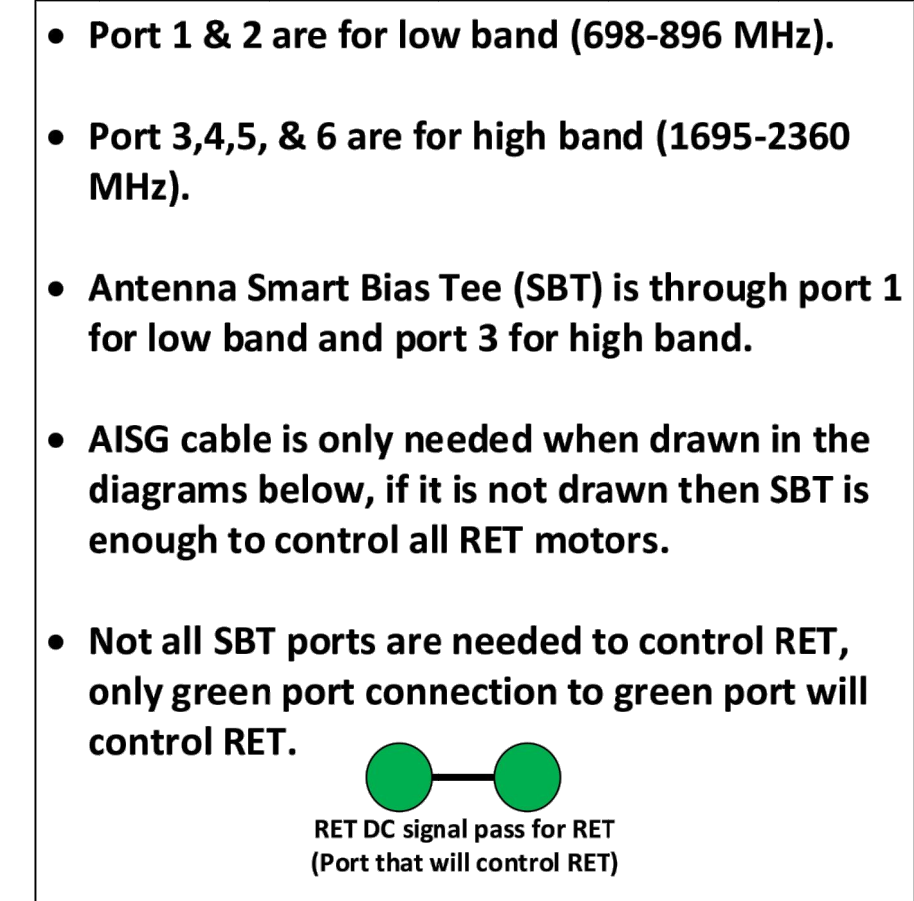
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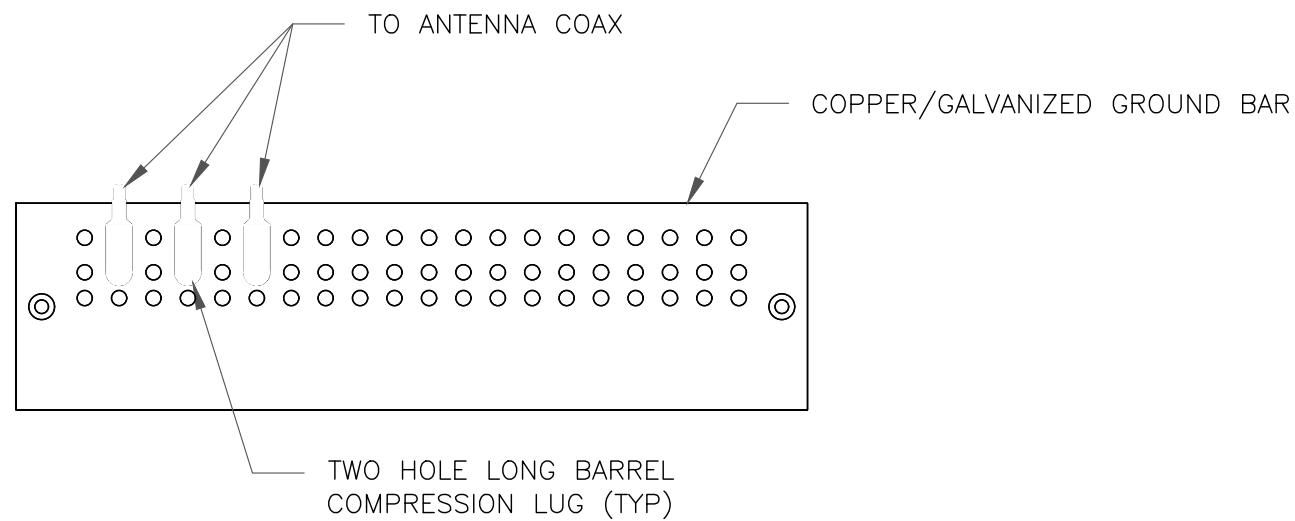
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All plumbing diagram colors are irrelevant except for AISG & Hybriflex cable. (For the coax colors follow Coax Colors guide above)



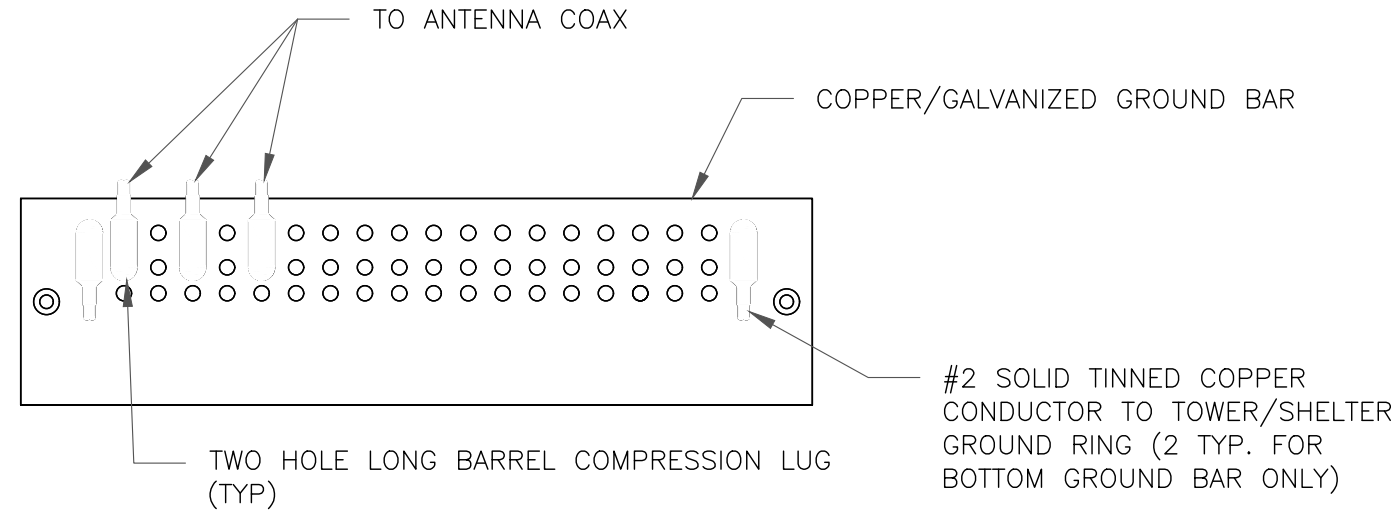
1 PLUMBING DIAGRAM
SCALE: NOT TO SCALE



NOTES:

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

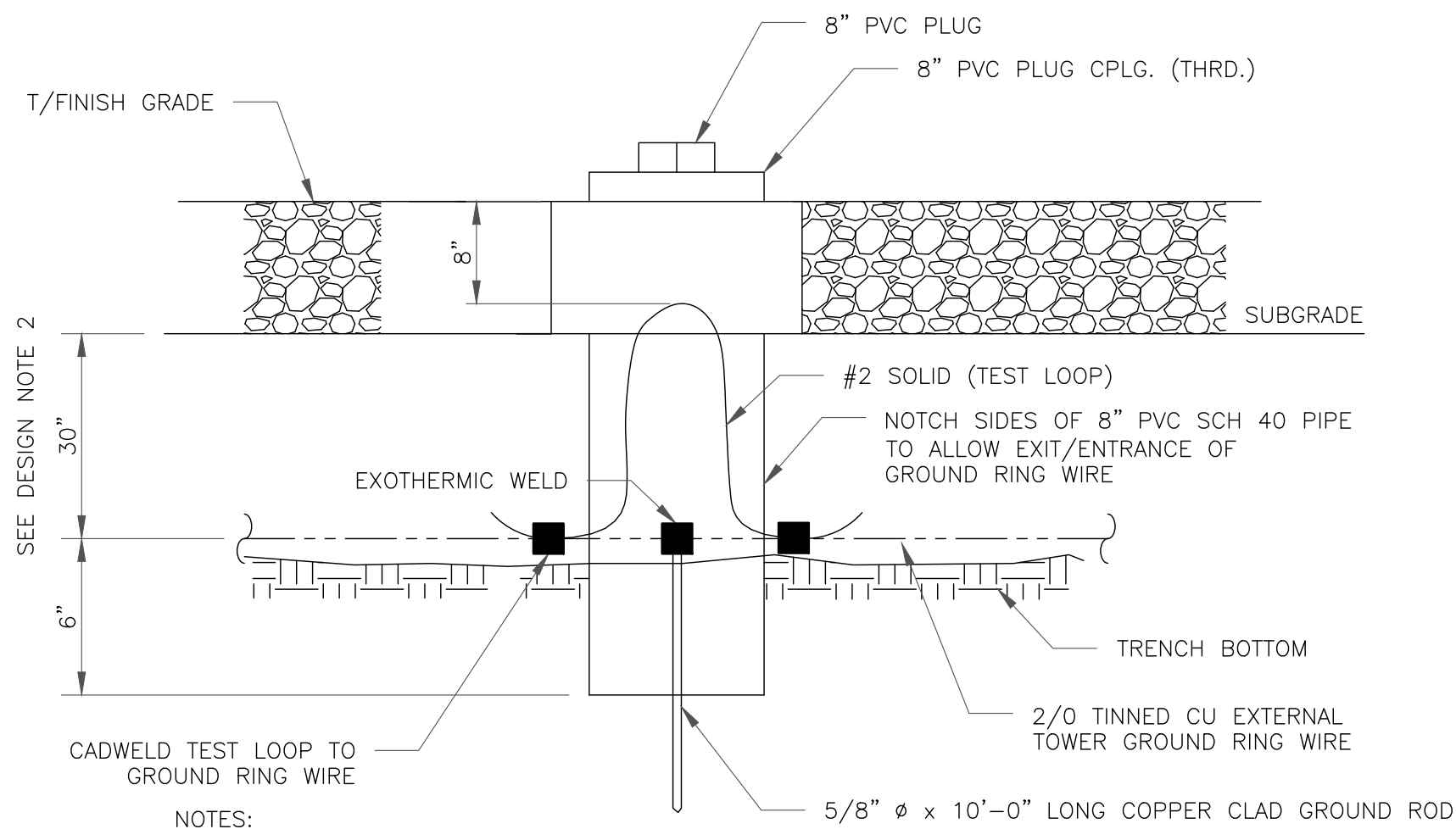
1 ANTENNA SECTOR GROUND BAR DETAIL
SCALE: NOT TO SCALE



NOTES:

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

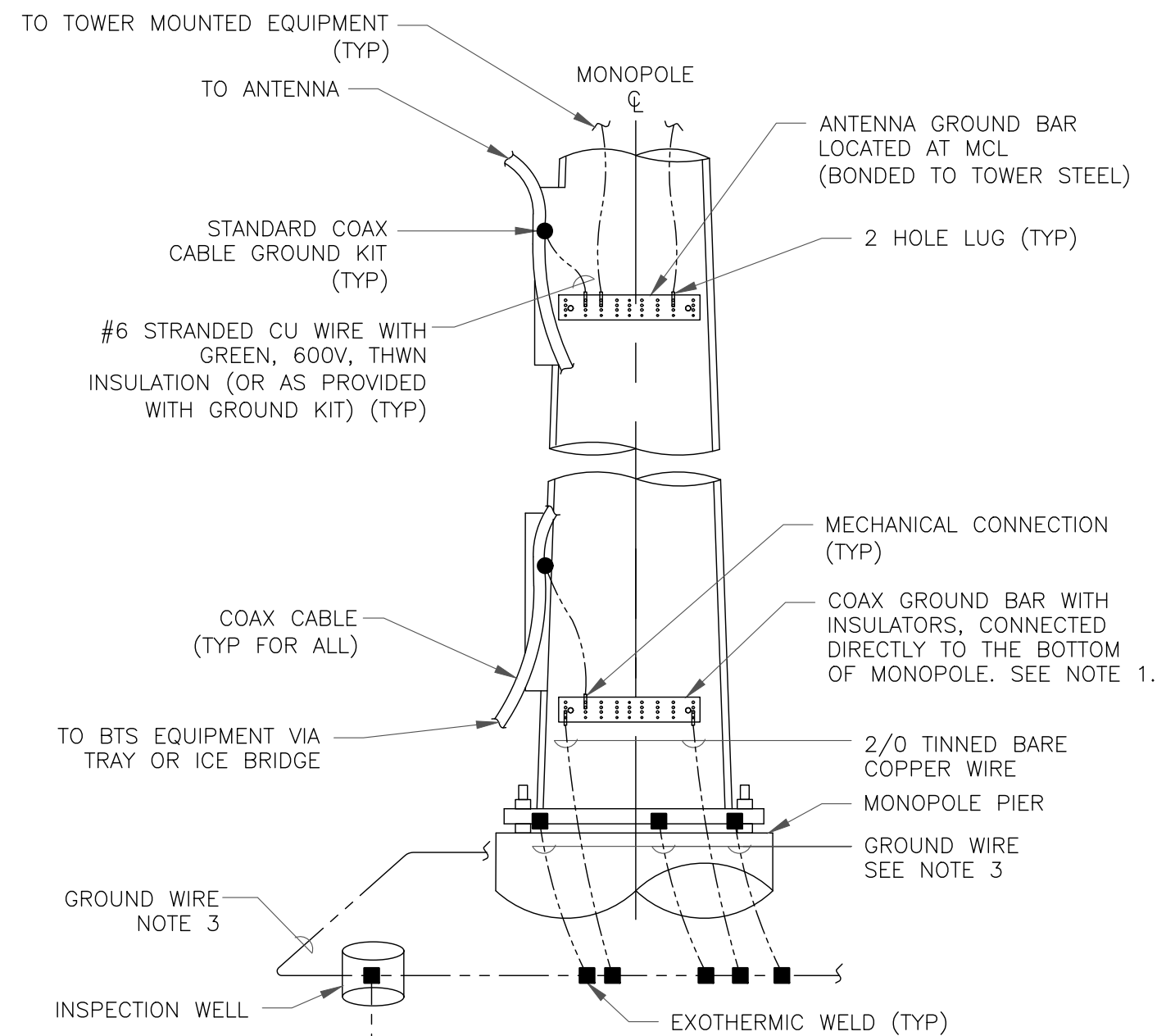
2 TOWER/SHELTER GROUND BAR DETAIL
SCALE: NOT TO SCALE



NOTES:

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

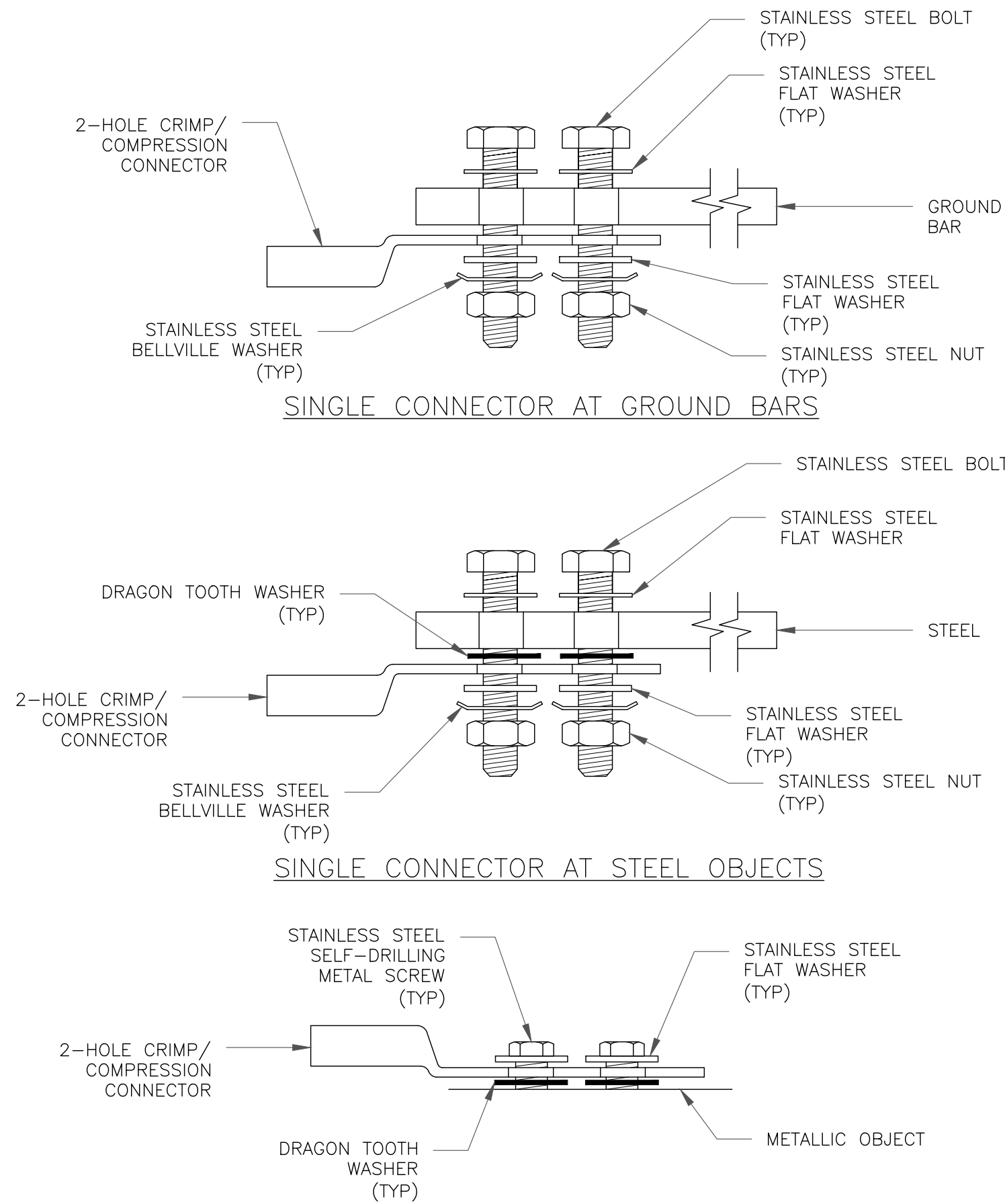
3 INSPECTION WELL DETAIL
SCALE: NOT TO SCALE



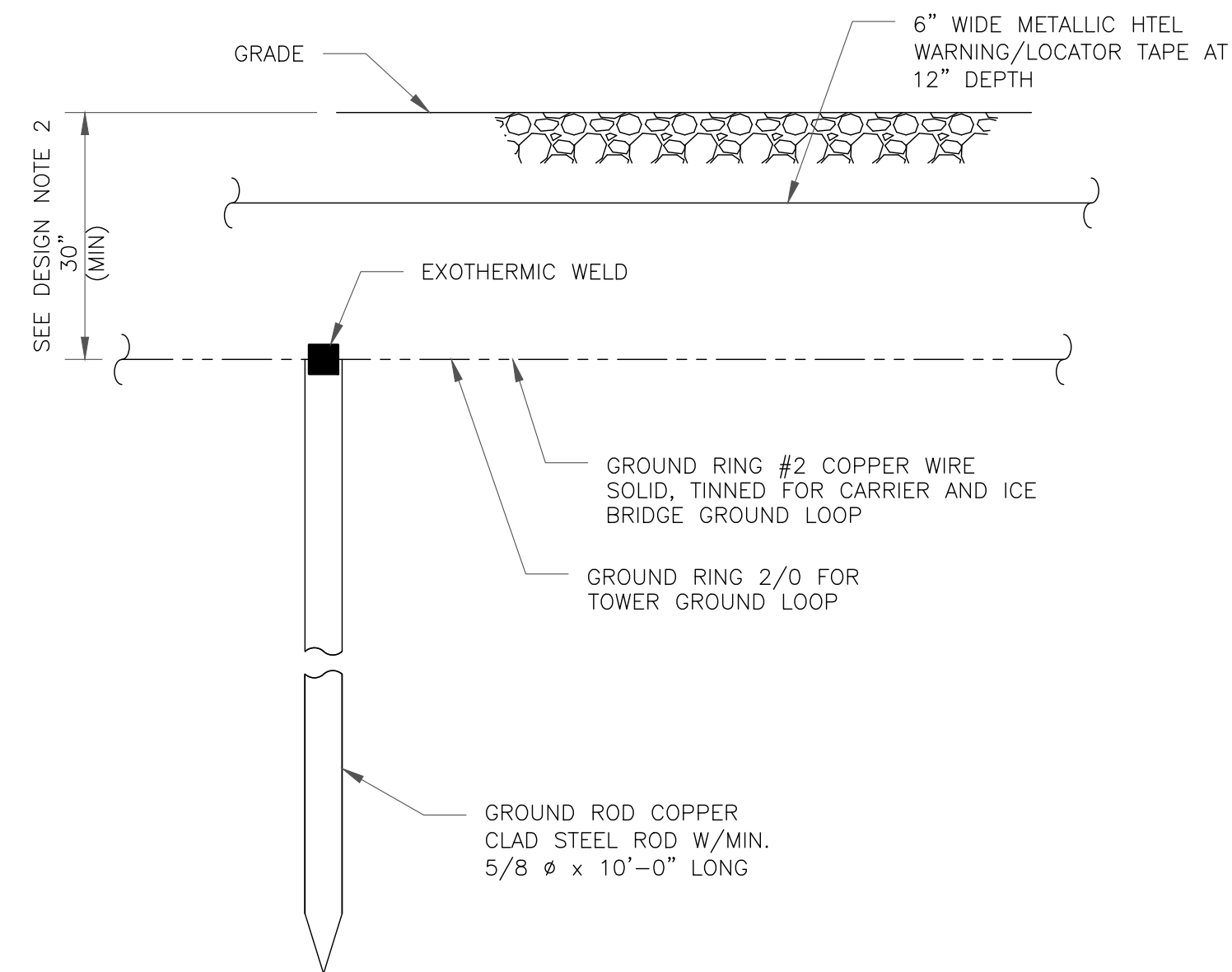
NOTES:

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

4 TYPICAL ANTENNA CABLE GROUNDING
SCALE: NOT TO SCALE



5 HARDWARE DETAIL FOR EXTERIOR CONNECTIONS
SCALE: NOT TO SCALE



NOTES:

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

6 GROUND ROD DETAIL
SCALE: NOT TO SCALE

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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



01/09/23

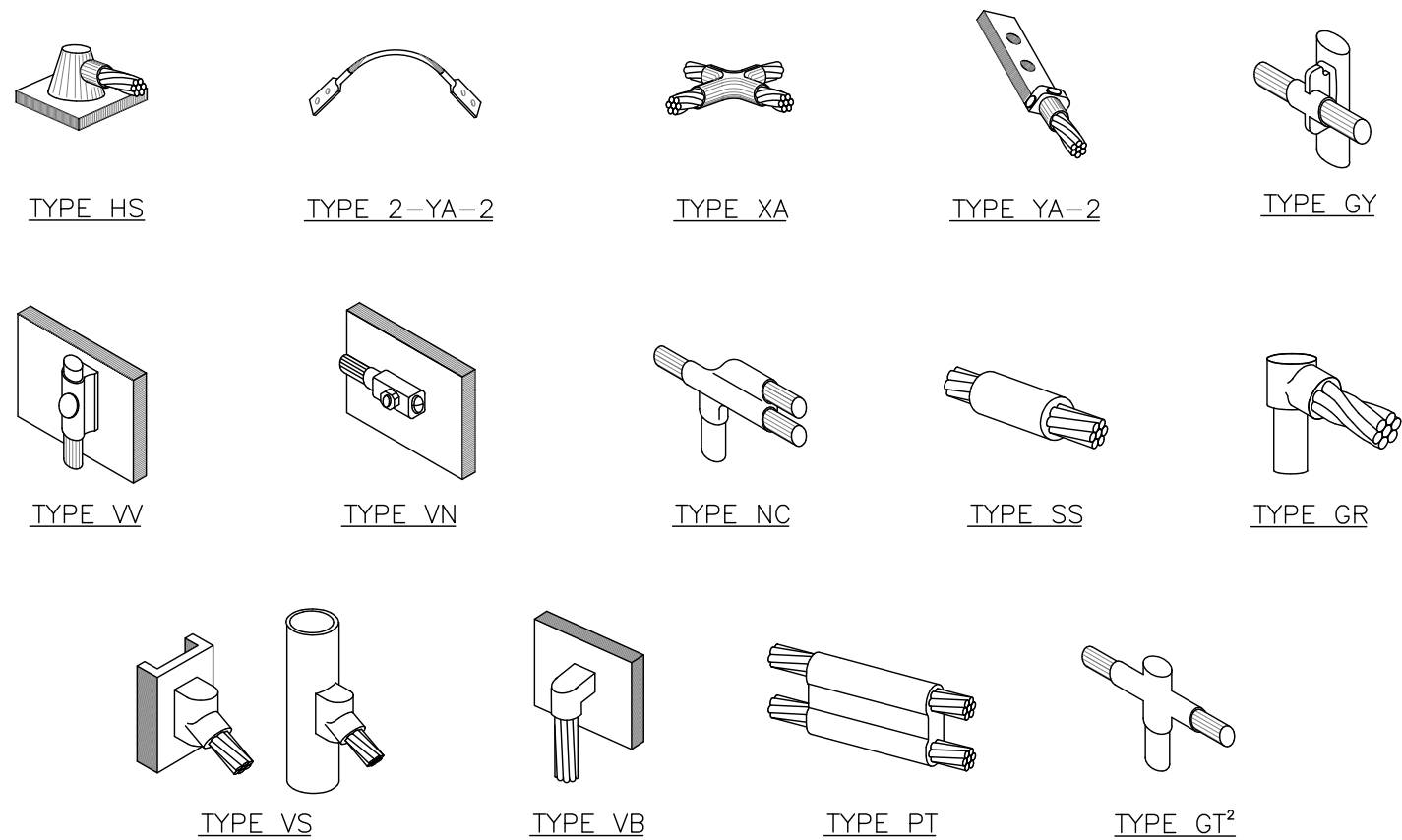
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OF A LICENSED PROFESSIONAL ENGINEER,
TO ALTER THIS DOCUMENT.

SHEET NUMBER:

G-1

REVISION:

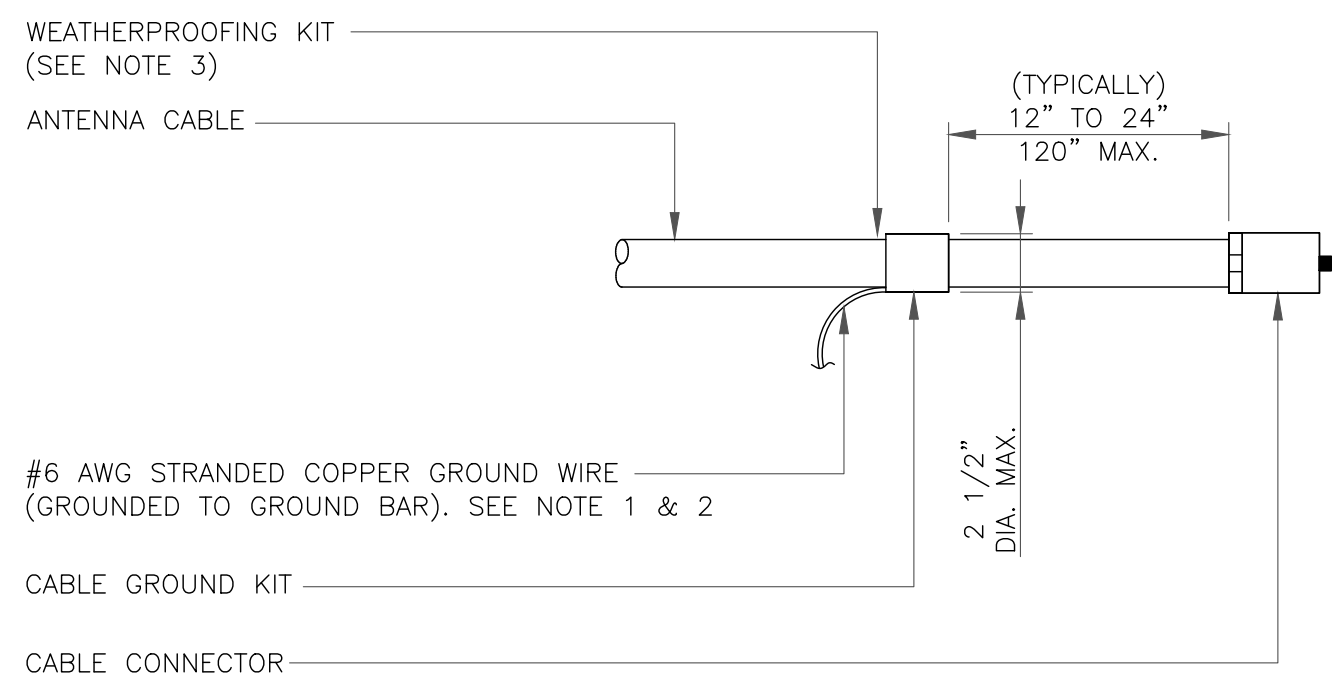
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NOTE:

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.

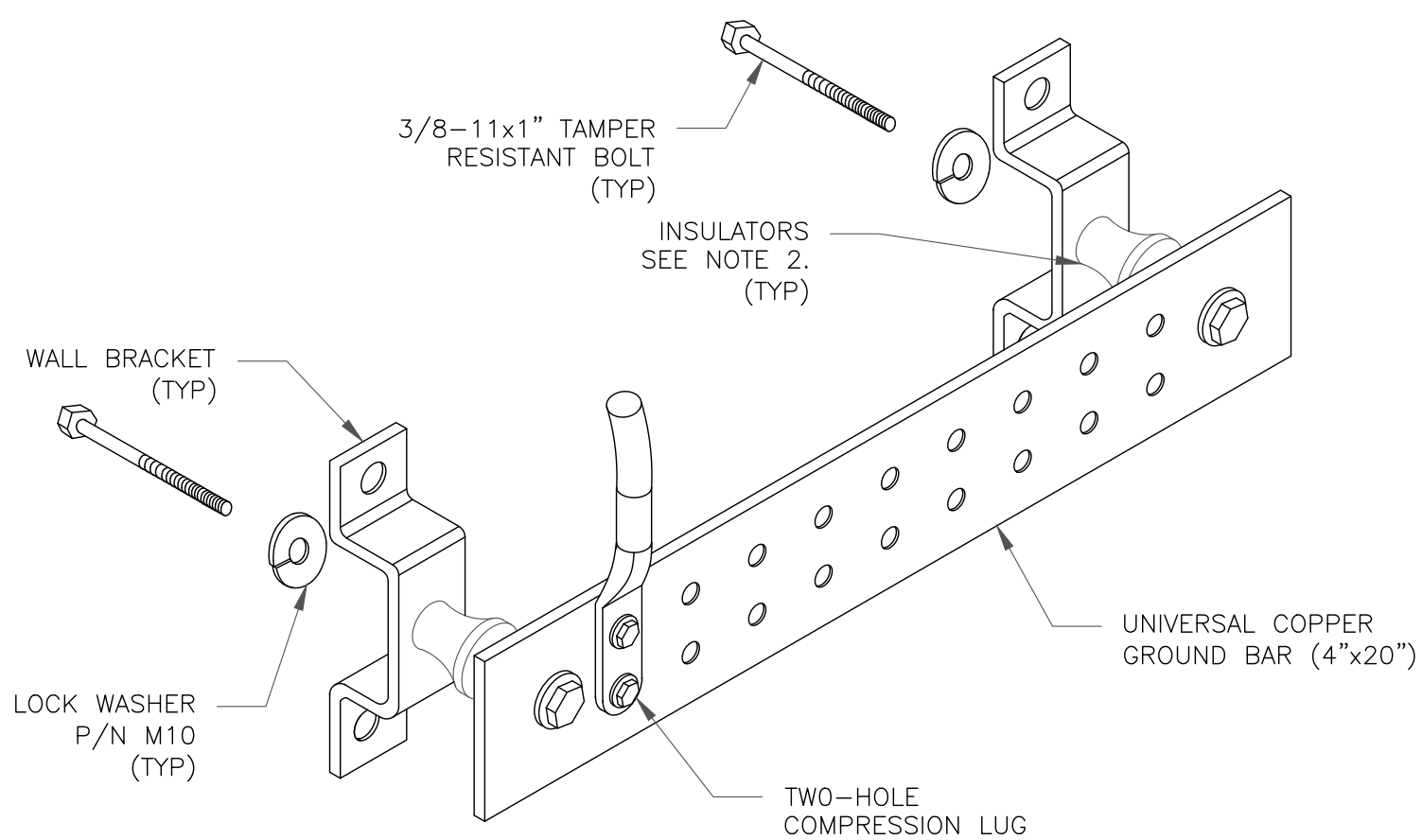
1 CADWELD GROUNDING CONNECTIONS
SCALE: NOT TO SCALE



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.

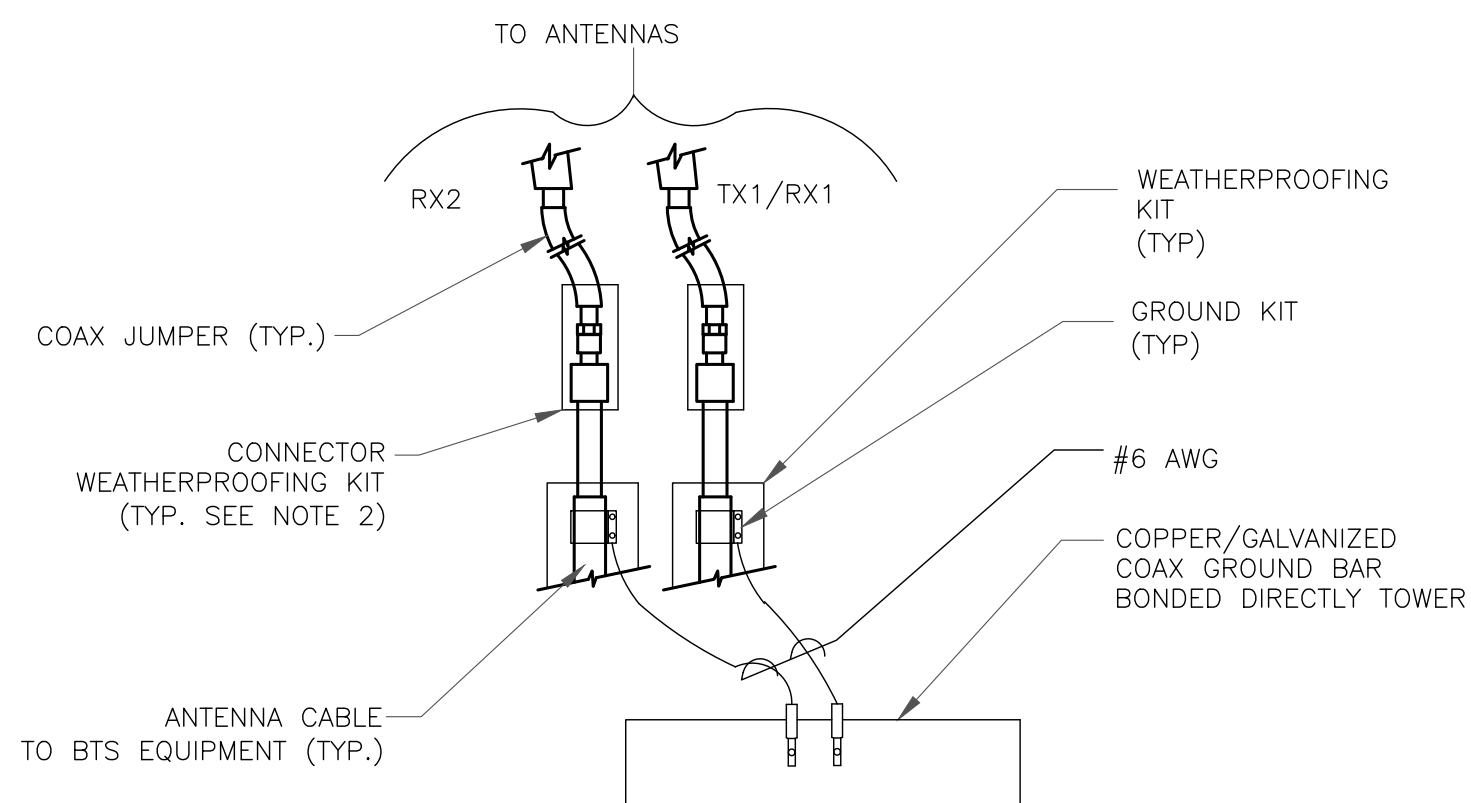
3 CABLE GROUND KIT CONNECTION
SCALE: NOT TO SCALE



NOTES:

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

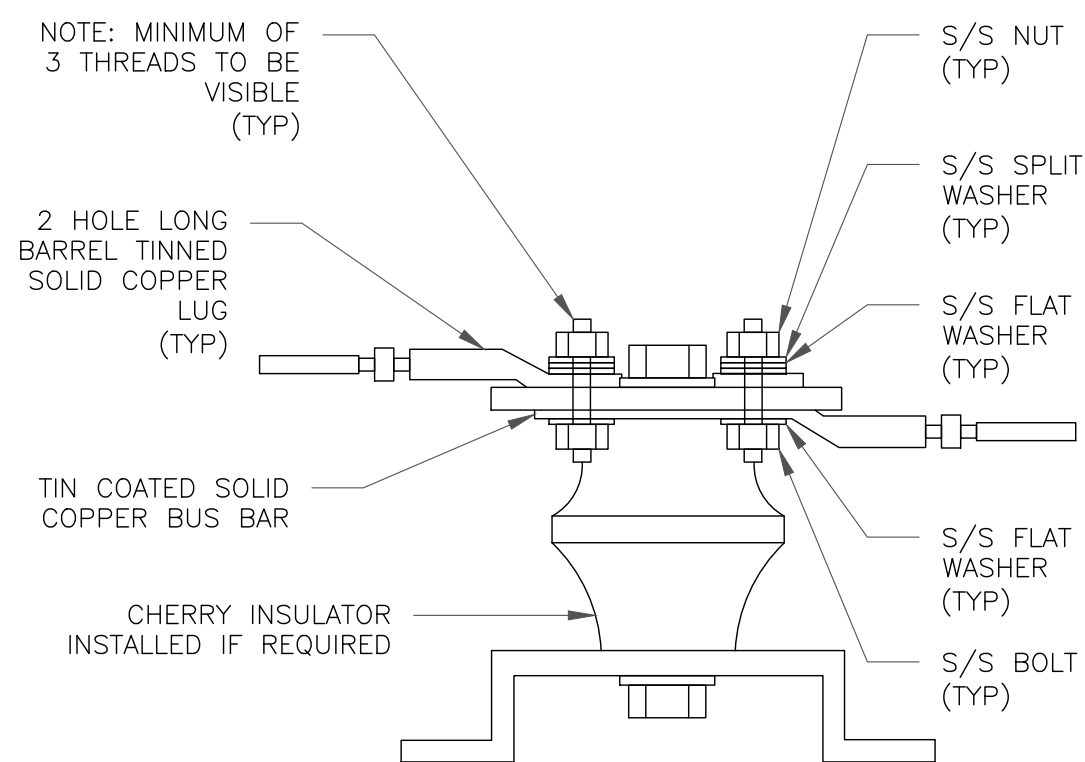
6 GROUND BAR DETAIL
SCALE: NOT TO SCALE



NOTES:

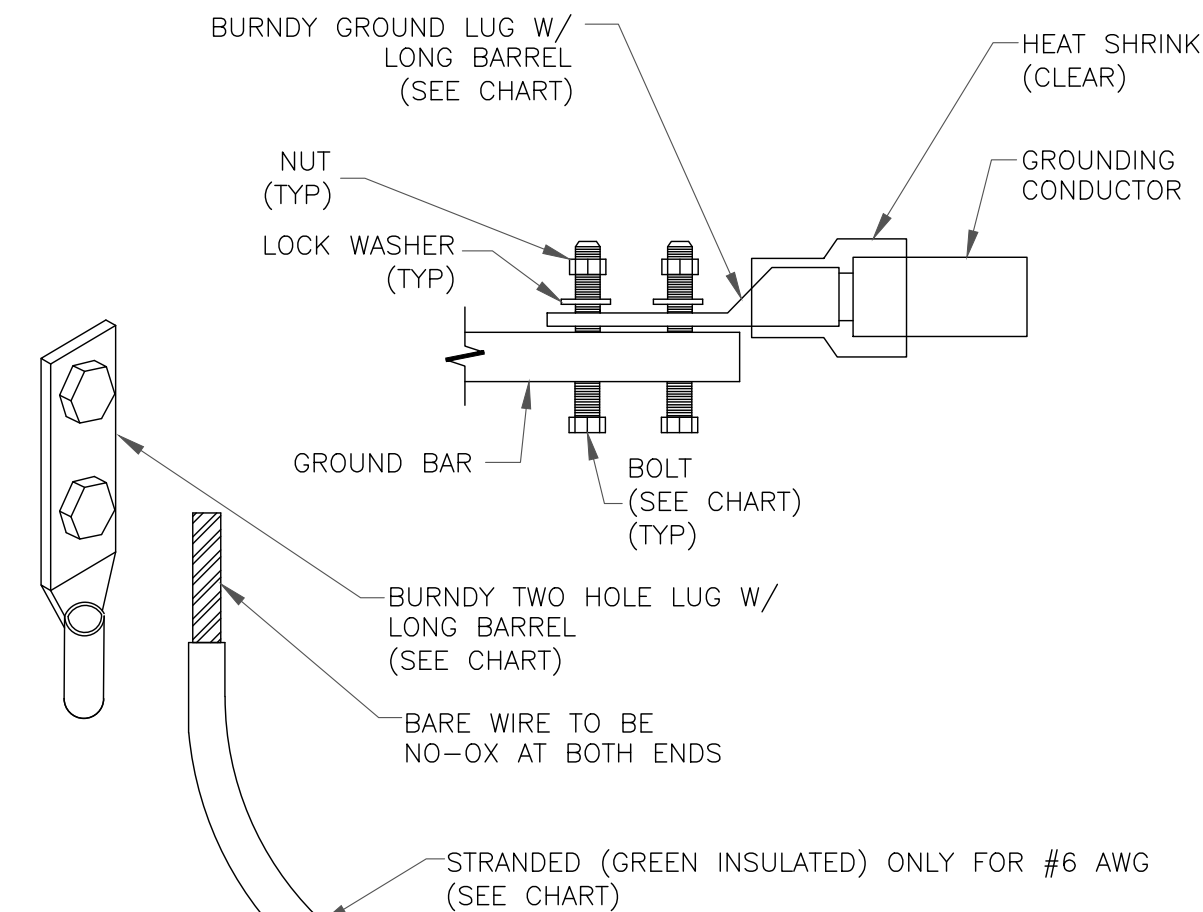
1. DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO ANTENNA GROUND BAR.
2. WEATHER PROOFING SHALL BE TWO-PART TAPE KIT. COLD SHRINK SHALL NOT BE USED.

4 GROUND CABLE CONNECTION
SCALE: NOT TO SCALE



7 LUG DETAIL
SCALE: NOT TO SCALE

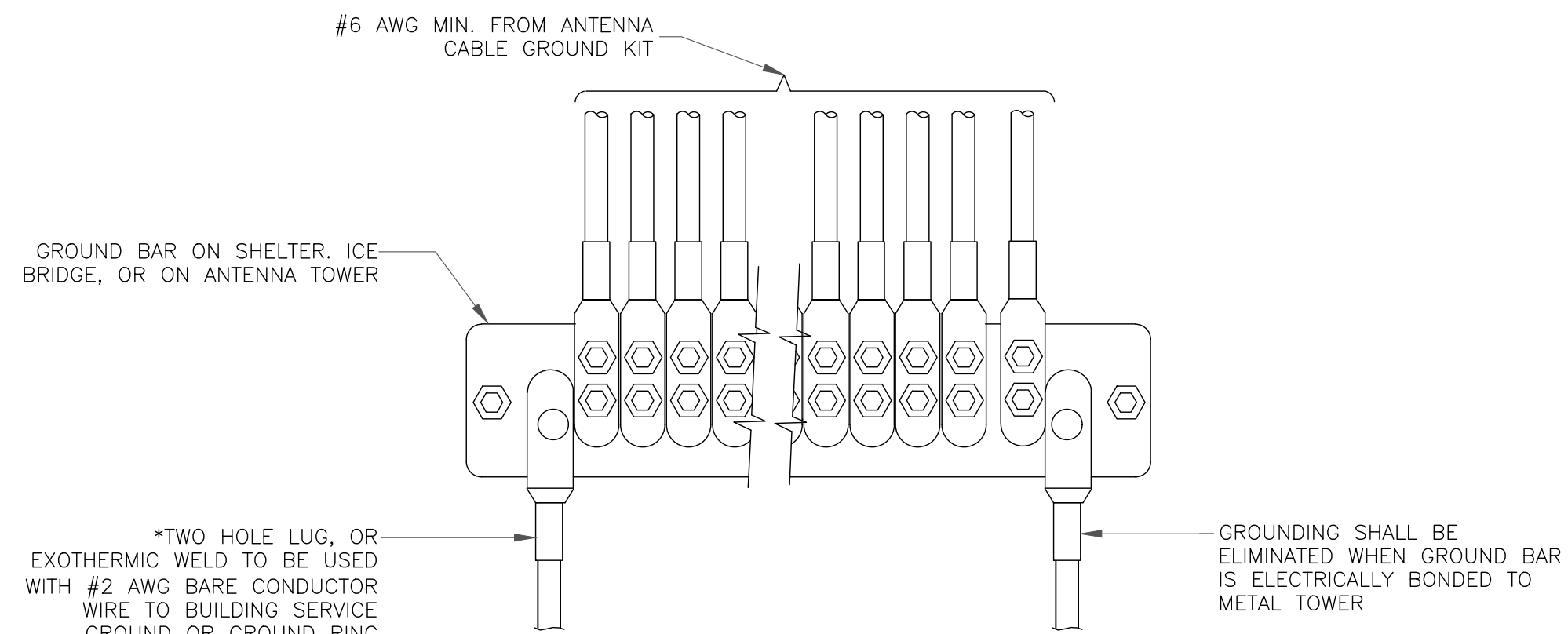
WIRE SIZE	BURNDY LUG	BOLT SIZE
#6 AWG GREEN INSULATED	YA6C-2TC38	3/8" - 16 NC S 2 BOLT
#2 AWG SOLID TINNED	YA3C-2TC38	3/8" - 16 NC S 2 BOLT
#2 AWG STRANDED	YA2C-2TC38	3/8" - 16 NC S 2 BOLT
#2/0 AWG STRANDED	YA26-2TC38	3/8" - 16 NC S 2 BOLT
#4/0 AWG STRANDED	YA28-2N	1/2" - 16 NC S 2 BOLT



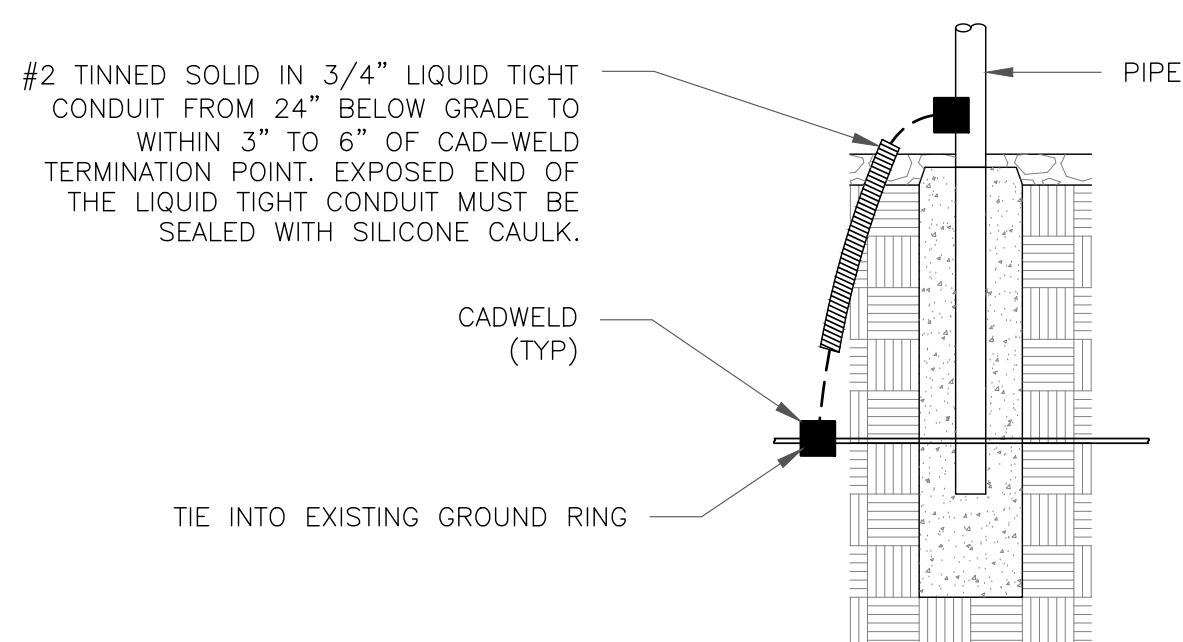
NOTES:

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

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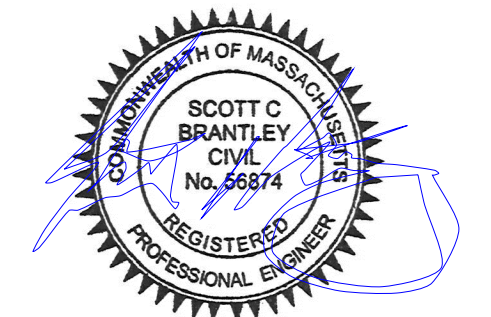
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SHEET NUMBER:

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

DESIGN CRITERIA

WIND LOADS

BASIC WIND SPEED (3 SECOND GUST), $V = 117$ MPH
EXPOSURE CATEGORY B
TOPOGRAPHY CONSIDERED N/A
MEAN BASE ELEVATION (AMSL) = 314.85'

ICE LOADS

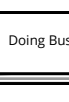





ICE WIND SPEED (3 SECOND GUST), $V = 50$ MPH
ICE THICKNESS = 1.50 IN

SEISMIC LOADS

SEISMIC DESIGN CATEGORY B
SHORT TERM MCER GROUND MOTION, $S_s = .282$
LONG TERM MCER GROUND MOTION, $S_1 = .068$

PROJECT INFORMATION	
<u>APPLICANT/LESSEE</u>	
COMPANY:	VERIZON WIRELESS
<u>CLIENT REPRESENTATIVE</u>	
COMPANY:	VERIZON WIRELESS
<u>PROJECT MANAGER</u>	
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	

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	<h1 style="margin: 0;">Engineering & Design</h1>																																
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<h1 style="margin: 0;">HARVARD 2_MA</h1> <h2 style="margin: 0;">138118</h2>																																	
<h3 style="margin: 0;">129 BROWN ROAD</h3> <h3 style="margin: 0;">HARVARD, MA 01451</h3> <h3 style="margin: 0;">WORCESTER COUNTY</h3>																																	
<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="text-align: center;">  </div> <div> <p>BOSTON</p> <p>160 Federal Street, 11th Floor Boston, MA 02110 Phone: 617.330.8000 COLLIERS ENGINEERING & DESIGN, INC. DOING BUSINESS AS MASER CONSULTING</p> </div> </div>																																	
SHEET TITLE : TITLE SHEET																																	
SHEET NUMBER : ST-1																																	

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

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:

1. 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.
2. 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		PERFECTVISION		SITE PRO 1		BETTER METAL, LLC	
CONTACT	SALVADOR ANGUIANO	CONTACT	WIRELESS SALES	CONTACT	PAULA BOSWELL	CONTACT	DAVID STANSBERRY
PHONE	(817) 304-7492	PHONE	(844) 887-6723	PHONE	(972) 236-9843	PHONE	(615) 535-0990 (O), (615) 631-2520 (M)
EMAIL	SALVADOR.ANGUIANO@COMMSCOPE.COM	EMAIL	WWW.PERFECT-VISION.COM	EMAIL	PAULA.BOSWELL@VALMONT.COM	EMAIL	DLS@BETTERMETAL.COM
WEBSITE	WWW.COMMSCOPE.COM	WEBSITE	WIRELESSSALES@PERFECT-VISION.COM	WEBSITE	WWW.SITEPRO1.COM	WEBSITE	WWW.BETTERMETAL.COM
METROSITE FABRICATORS, LLC		SABRE INDUSTRIES, INC.		NEWAVE			
CONTACT	KENT RAMEY	CONTACT	ANGIE WELCH	CONTACT	NEWAVE SALES TEAM		
PHONE	(706) 335-7045 (O), (706) 982-9788 (M)	PHONE	(866) 428-6937	PHONE	(971) 239-4762		
EMAIL	KENT@METROSITELLC.COM	EMAIL	AKWELCH@SABREINDUSTRIES.COM	EMAIL	SALES@NEWAVETC.COM		
WEBSITE	METROSITEFABRICATORS.COM	WEBSITE	WWW.SABRESITESOLUTIONS.COM	WEBSITE	WWW.NEWAVETC.COM		



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SITE NAME:

HARVARD_2_MA
138118

129 BROWN ROAD
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WORCESTER COUNTY



Engineering & Design

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11th Floor
Boston, MA 02110
Phone: 617.330.8000
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BILL OF MATERIALS

SHEET NUMBER: SBOM-1

PROJECT NOTES

1. SEE MODIFICATION NOTES
2. THE CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE CODES, ORDINANCES, LAWS AND REGULATIONS OF ALL MUNICIPALITIES, UTILITY COMPANIES OR OTHER PUBLIC/GOVERNING AUTHORITIES.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL PERMITS AND INSPECTIONS THAT MAY BE REQUIRED BY ANY FEDERAL, STATE, COUNTY OR MUNICIPAL AUTHORITIES.
4. 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.
5. 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.
6. 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.
7. 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.
8. 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.
9. 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.
10. NO NOISE, SMOKE, DUST OR ODOR WILL RESULT FROM THIS FACILITY AS TO CAUSE A NUISANCE.
11. THE FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION (NO HANDICAP ACCESS IS REQUIRED).

GENERAL NOTES

1. 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.
2. 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.
3. 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.
4. IT IS ASSUMED THAT ANY STRUCTURAL MODIFICATION WORK SPECIFIED ON THESE PLANS WILL BE ACCOMPLISHED BY KNOWLEDGEABLE WORKMEN WITH TOWER CONSTRUCTION EXPERIENCE.
5. THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE WORK AND SHALL BE SOLELY RESPONSIBLE FOR ALL CONSTRUCTION METHODS, MEANS, TECHNIQUES, SEQUENCES, AND PROCEDURES.
6. 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/TIA-322 (LATEST EDITION), OSHA, AND GENERAL INDUSTRY STANDARDS. ALL RIGGING PLANS SHALL ADHERE TO ANSI/TIA-322 (LATEST EDITION) INCLUDING THE REQUIRED INVOLVEMENT OF A QUALIFIED ENGINEER FOR CLASS IV CONSTRUCTION.
7. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR INITIATING, MAINTAINING, AND SUPERVISING ALL SAFETY PROGRAMS IN ACCORDANCE WITH APPLICABLE SAFETY CODES.
8. 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.
9. 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, ANSI/TIA-322.
10. 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.
11. 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.
12. DO NOT SCALE DRAWINGS.
13. DO NOT USE THESE DRAWINGS FOR ANY OTHER SITE.
14. 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.
15. THE MOUNT UNDER NO CIRCUMSTANCES SHOULD BE USED AS A TIE OFF POINT.

STRUCTURAL STEEL

1. DESIGN, DETAILING, FABRICATION AND ERECTION OF STRUCTURAL STEEL SHALL CONFORM TO THE FOLLOWING PUBLICATIONS EXCEPT AS SPECIFICALLY INDICATED IN THE CONTRACT DOCUMENTS.

a. AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC) MANUAL OF STEEL CONSTRUCTION (15TH EDITION)

b. SPECIFICATION FOR STRUCTURAL JOINTS USING ASTM A325 OR A490 BOLTS

c. AISC CODE OF STANDARD PRACTICE
2. 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
3. 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.
4. PROVIDE STRUCTURAL STEEL SHOP DRAWINGS TO ENGINEER FOR APPROVAL PRIOR TO FABRICATION.

a. SUBMIT SHOP DRAWINGS TO

PETER.ALBANO@COLLIERSENGINEERING.COM

b. PROVIDE MASER CONSULTING PROJECT # AND MASER CONSULTING PROJECT ENGINEER CONTACT IN THE BODY OF THE EMAIL.
5. 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.
6. GALVANIZED ASTM A325 BOLTS SHALL NOT BE REUSED.
7. 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.
8. CONTRACTOR SHALL PROTECT CUT ENDS OF ALL FIELD-CUT STEEL WITH TWO (2) COATS OF COLD GALVANIZATION (ZINGA OR ZINC COTE).
9. 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.
10. 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.
11. FOR MEMBERS BEING REPLACED, PROVIDE NEW BOLTS AND MATCH EXISTING SIZE AND GRADE. MAINTAIN AISC REQUIREMENTS FOR MINIMUM BOLT DISTANCE AND SPACING.

12. 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.
13. GALVANIZED ASTM A325 BOLTS SHALL NOT BE REUSED.
14. 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).
15. ALL HOLES IN STEEL MEMBERS SHALL BE SIZED 1/16" LARGER THAN THE BOLT DIAMETER. STANDARD HOLES SHALL BE USED UNLESS NOTED OTHERWISE.

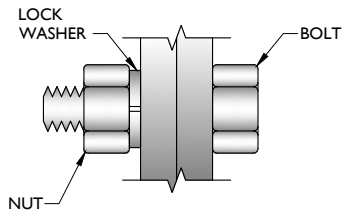
WELDING NOTES

1. 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.
2. 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.
3. 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.
4. 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.
5. 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.
6. CONTRACTOR SHALL EXERCISE CAUTION WHEN WELDING A GALVANIZED SURFACE.
7. CONTRACTOR SHALL HAVE A FIRE PROTECTION PLAN IN PLACE THAT CONFORMS WITH ALL OSHA, ANSI/ASSP A10.48, ANSI 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

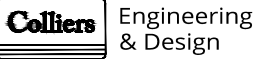
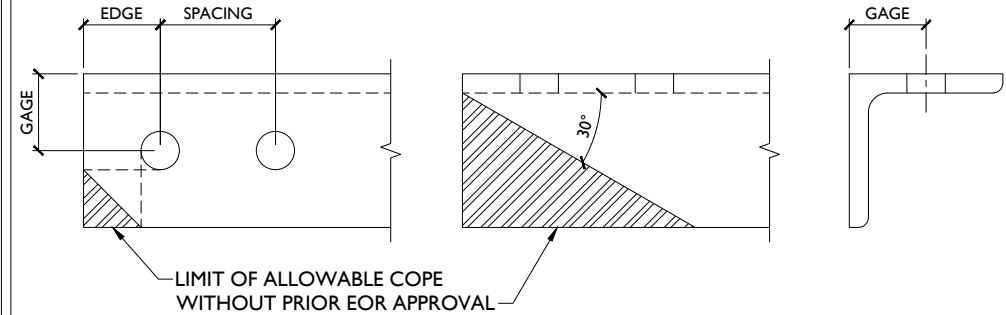


TYP. BOLT ASSEMBLY

NOTES:

1. 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.
2. THE DIMENSIONS PROVIDED ARE MINIMUM REQUIREMENTS. ACTUAL DIMENSIONS OF PROPOSED MEMBERS WITHIN THESE DRAWINGS MAY VARY FROM THE AISC MINIMUM REQUIREMENTS.
3. SHORT SLOT HOLES SHALL ONLY BE USED WHEN DEPICTED IN THE DRAWINGS
4. MATCH EXISTING GAGES WHEN APPLICABLE, UNLESS MINIMUM EDGE DISTANCES ARE COMPROMISED.

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SHEET TITLE:

MODIFICATION NOTES

SHEET NUMBER:

SGN-I

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

STRUCTURAL NOTES:

1. 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.
2. 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.
3. 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.
4. 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.

NOTE:

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



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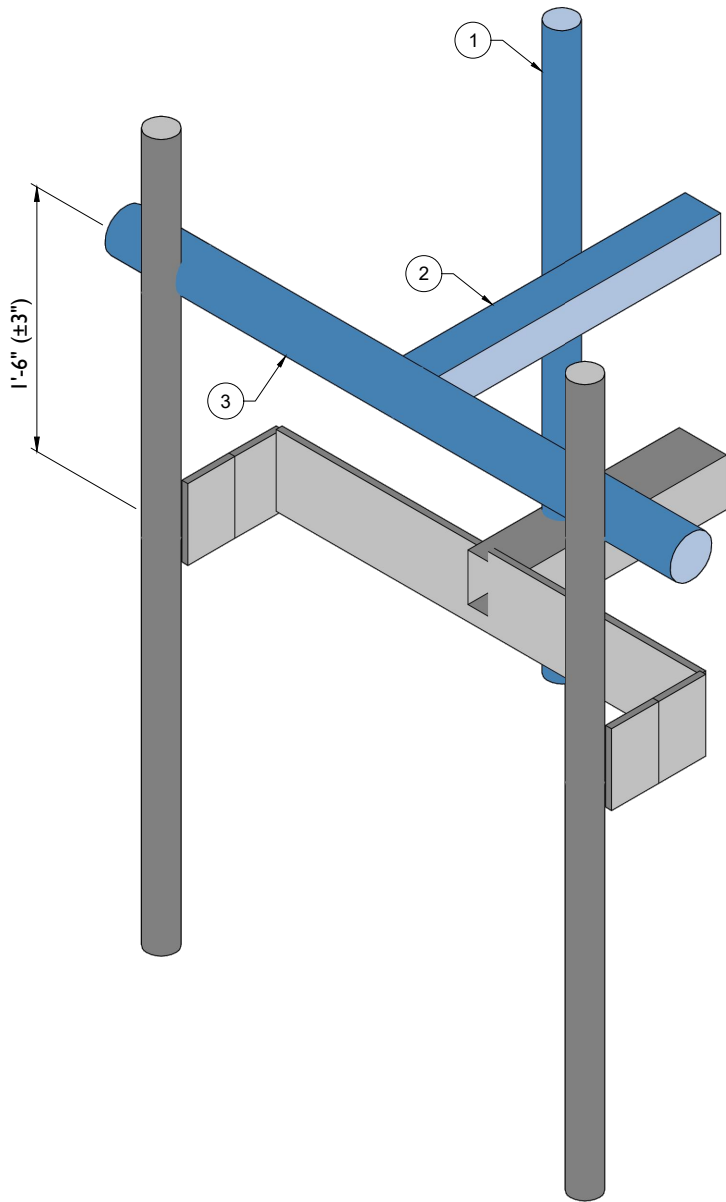
CLIMBING FACILITY DETAIL

SHEET NUMBER:

SCF-I

LEGEND:

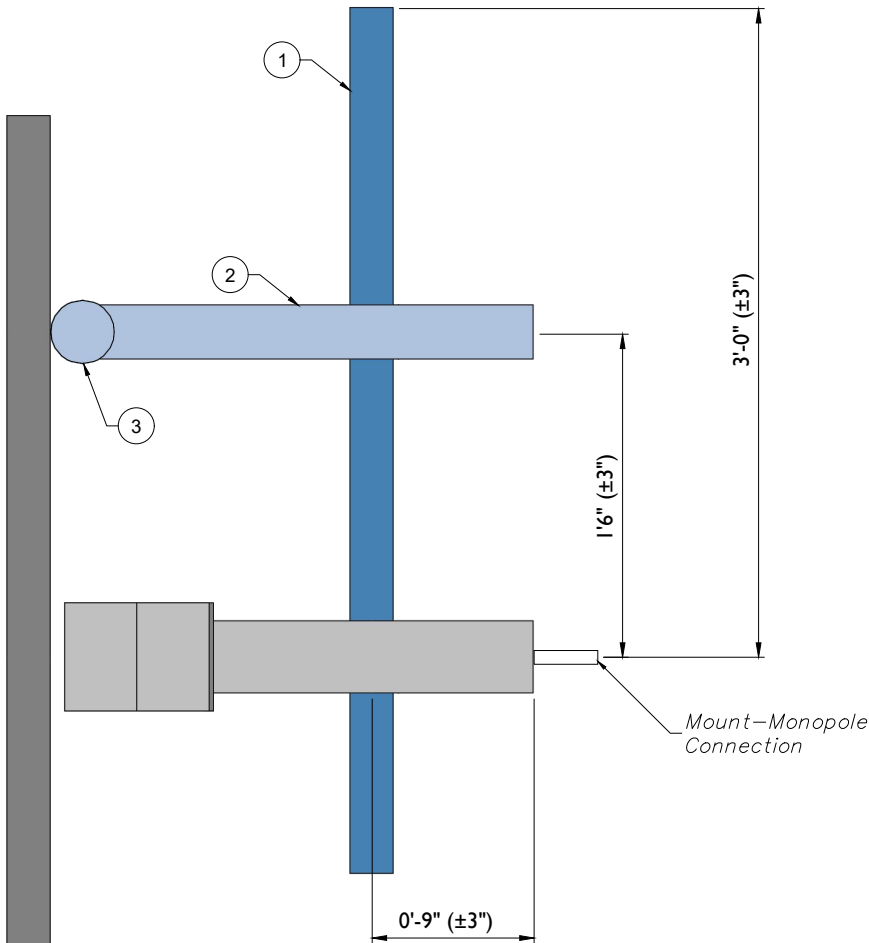
- PROPOSED
- RELOCATED
- EXISTING



PROPOSED ISOMETRIC VIEW (TYP. ALL SECTORS)

SCALE : N.T.S.

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.				



PROPOSED SIDE ELEVATION VIEW (TYP. ALL SECTORS)

SCALE : N.T.S.



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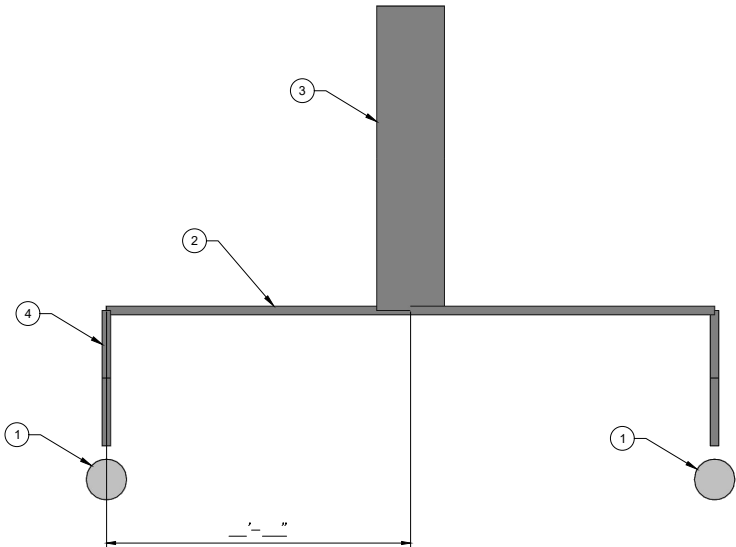
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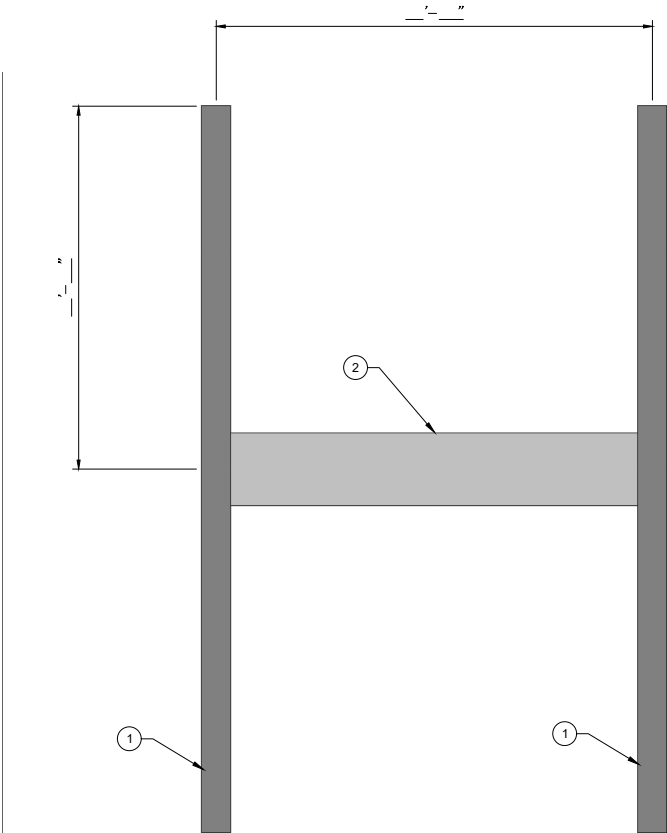
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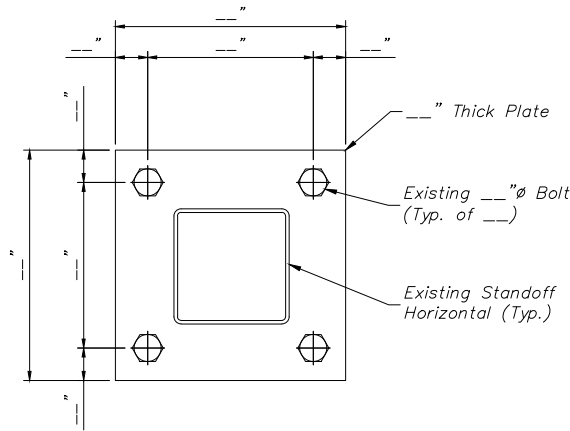
EXISTING MEMBERS				
NO.	DESCRIPTION	SHAPE	LENGTH	NOTES
1	MOUNT PIPE			TYP. OF 6, 2 PER SECTOR
2	FACE HORIZONTAL			TYP. OF 3, 1 PER SECTOR
3	STANDOFF HORIZONTAL			TYP. OF 3, 1 PER SECTOR
4	STANDOFF PLATE			TYP OF 12, 4 PER SECTOR
LIST ALL SHAPES: ANGLE (LEG1xLEG2xTH.): EX. L2x2x1/4 CHANNEL (DEPTHxFLANGE WIDTH): EX. CH6"x1-7/8" PIPE (ODxTH.): EX. PIPE 2.4"x0.12" PLATE (TH.xDEPTH): EX. PLATE 1/2"x2"				



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.

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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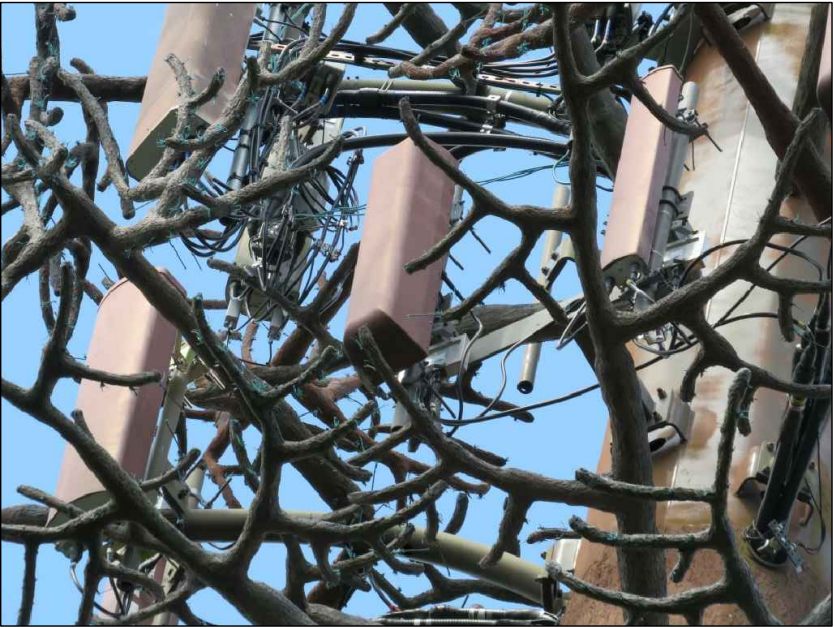
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VERIFICATION SKETCHES

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MOUNT PHOTO 1



MOUNT PHOTO 2

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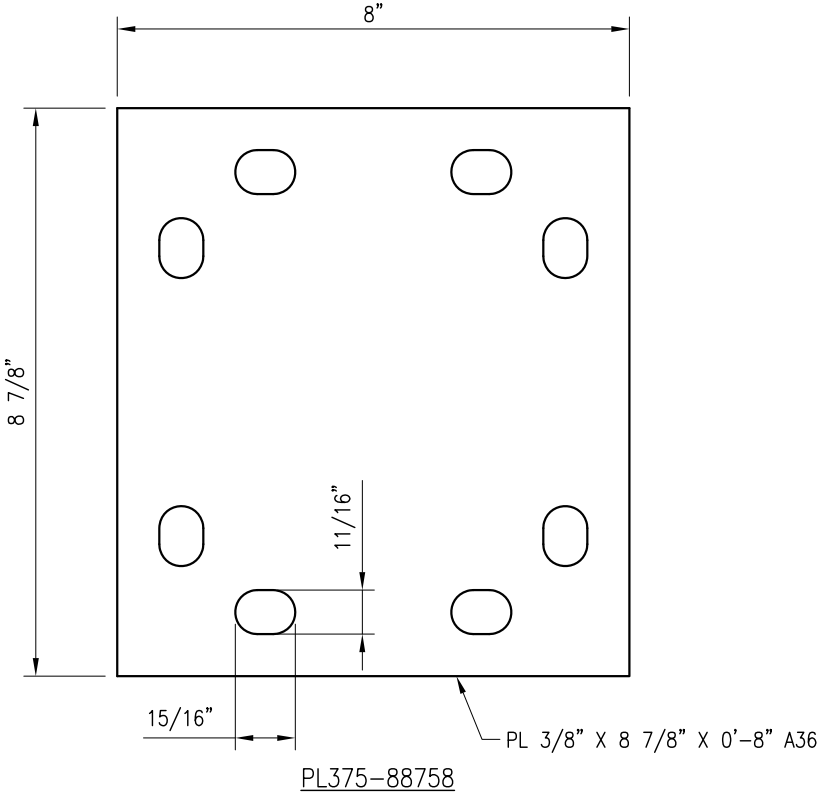
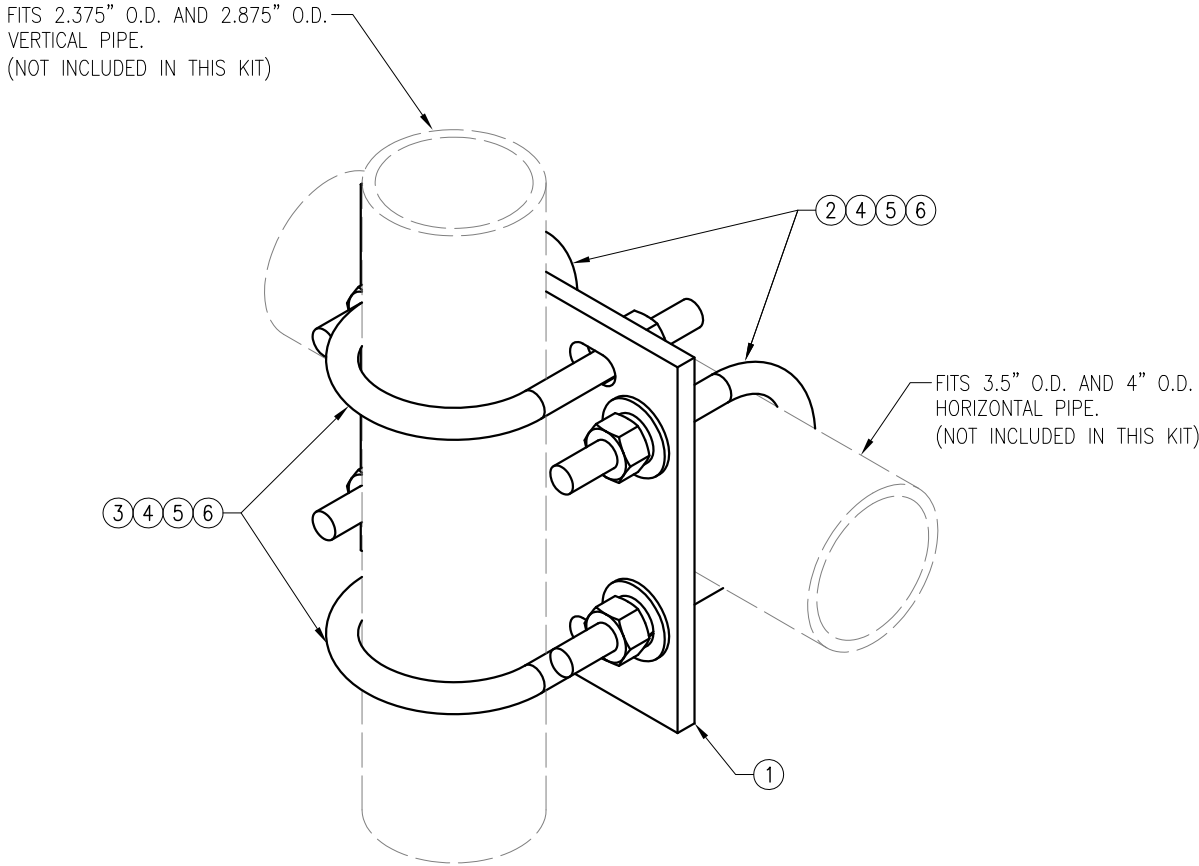
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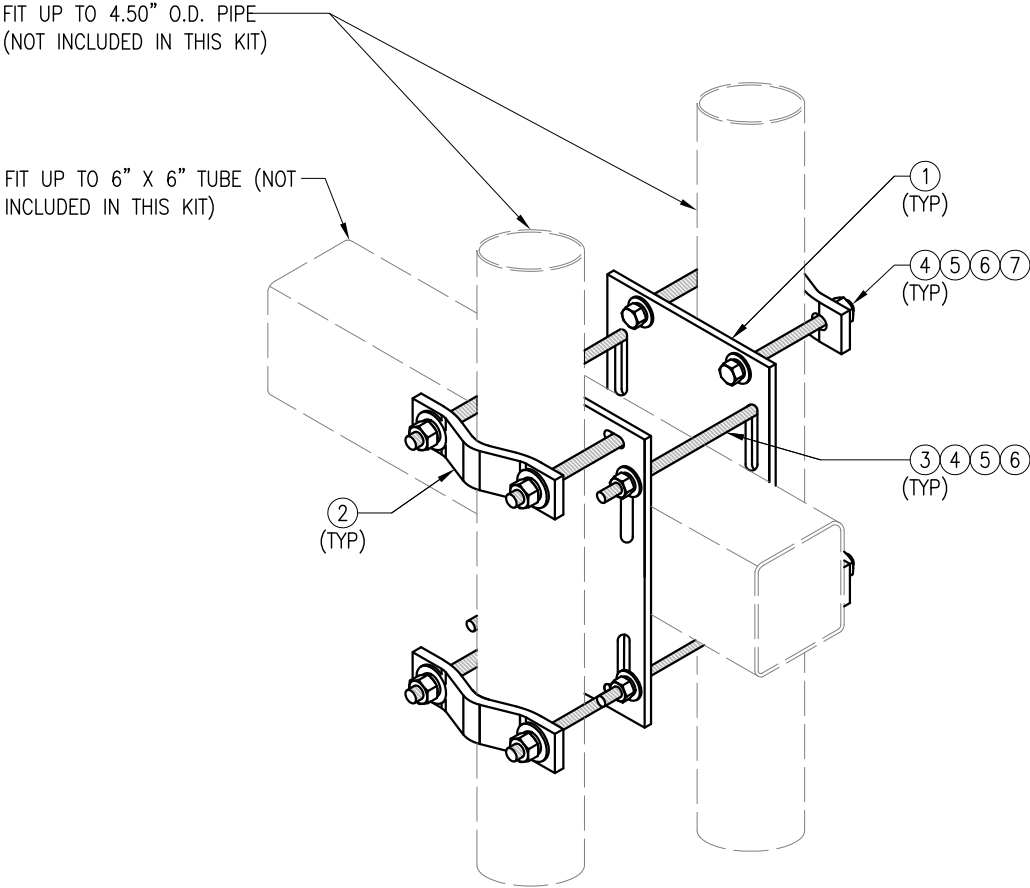
SS-3



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

VZWSMART-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

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REV.	DESCRIPTION	BY	DATE
1	FIRST ISSUE	H.R	05/08/20
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3			
4			
5			
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VZWSMART-MSK2 CROSSOVER PLATE			
SHEET NUMBER:		REV #:	
VZWSMART-MSK2		0	



ISOMETRIC VIEW
BACK TO BACK CROSSOVER

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

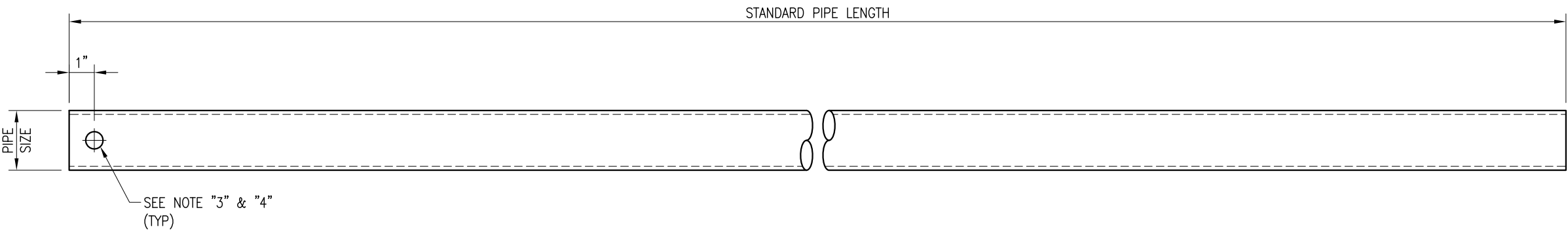
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REV.	DESCRIPTION	BY	DATE
1	FIRST ISSUE	SK	05/08/20

SHEET TITLE:
VZWSMART-MSK6
BACK TO BACK
CROSSOVER

SHEET NUMBER: VZWSMART-MSK6	REV #: 0
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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.

VzW
SMART Tool[©]
Vendor



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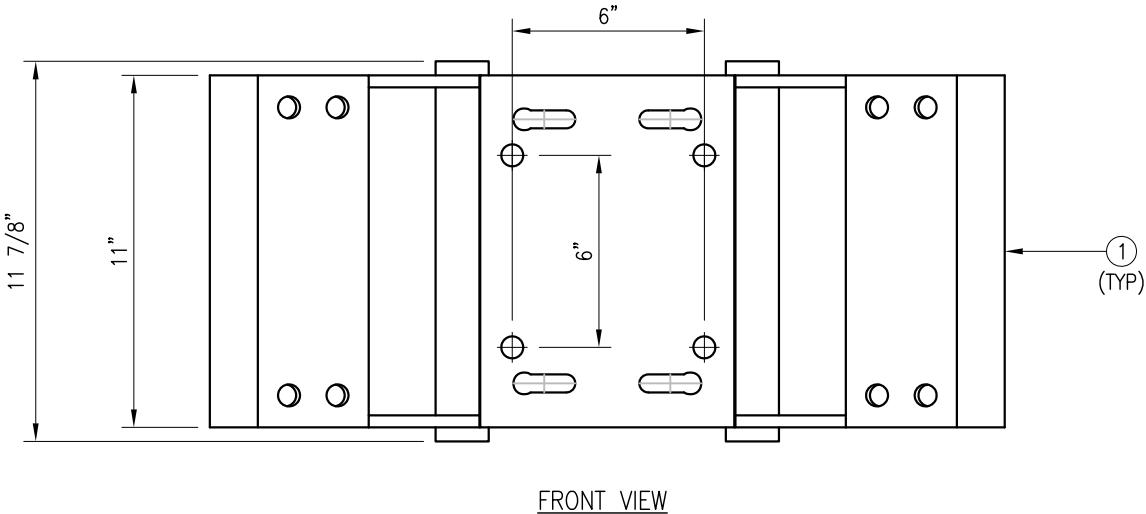
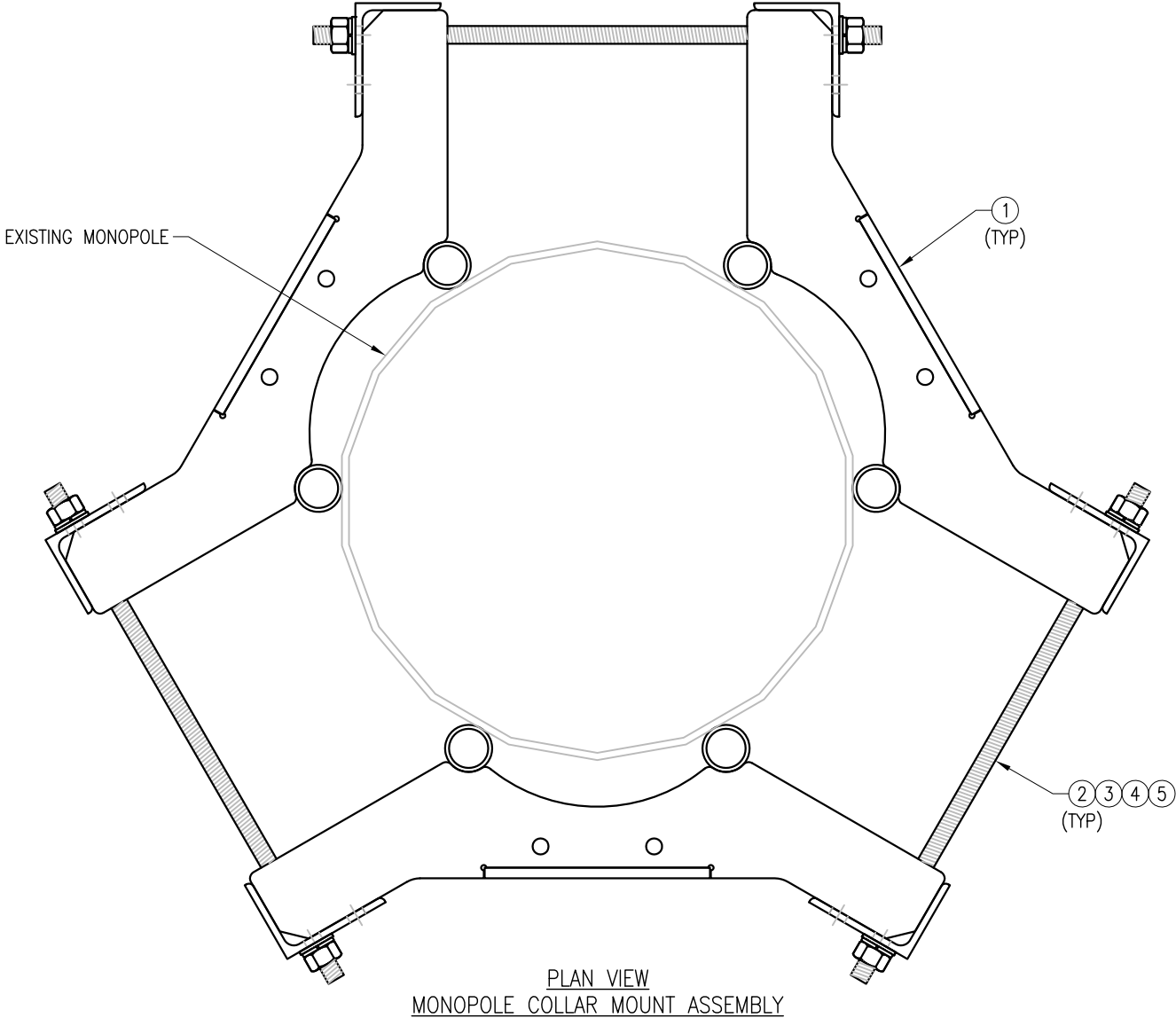
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VZWSMART
STANDARD PIPE

SHEET NUMBER: REV #:

VZWSMART-PIPE 0



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

VZWSMART-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
△	FIRST ISSUE	BT	05/11/20
△			
△			
△			
△			

SHEET TITLE:
VZWSMART-PLK7
MONOPOLE COLLAR
MOUNT ASSEMBLY

SHEET NUMBER:
VZWSMART-PLK7

REV #:
0

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