NORTHEAST SITE SOLUTIONS
Turnkey Wireless Development

Northeast Site Solutions
Victoria Masse
420 Main Street #2, Sturbridge, MA 01566
860-306-2326
victoria@northeastsitesolutions.com

May 4, 2023

Members of the Siting Council
Connecticut Siting Council
Ten Franklin Square
New Britain, CT 06051

RE: Exempt Modification Application
798 Toby Hill Road, Westbrook CT 06498
Latitude: 41.320194
Longitude: -72.442278
Site#: 876384_Crown_VZW

Dear Ms. Bachman:

Please accept this application as replacement for EM-VER-154-230221. The revised application has the corrected mount analysis and RF analysis. Verizon Wireless is requesting to file an exempt modification for an existing tower located at 798 Toby Hill Road, Westbrook CT 06498. Verizon Wireless currently maintains twelve (12) antennas at the 140-foot level of the existing 150-foot tower. The property is owned by Toby Hill Farm LLC and the tower is owned by Crown Castle. Verizon now intends to replace six (6) existing antenna and add three (3) antenna. The new antennas would be installed at the 140-foot level of the tower. This modification includes B2, B5 hardware that is both 4G (LTE), and 5G capable. Antenna mount modifications will be completed as per the attached Maser mount analysis dated June 3, 2022.

Verizon Planned Modifications: Remove: (6) Coax

Remove and Replace:
(3) BXA 70063-6CF Antenna (REMOVE) - (3) JMA MX06FRO660-03 Antenna (REPLACE) (3) BXA 185085-12CF Antenna (REMOVE) - (3) JMA MX06FRO660-03 Antenna (REPLACE)

Install New:
(3) Samsung B5/B13 -BRO4C – RFV01U-D2A RRH (3) Samsung B2/B66A -BRO49 – RFV01U-D1A RRH (3) Samsung MT6407-77 Antenna
(1) Raycap
(1) Hybrid Lines

Existing to Remain:
(2) DB846F65ZAXY Antenna (4) DB846H80E-SX Antenna (12) Coax Line
(3) Diplexers

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Turnkey Wireless Development

The facility was approved by the Town of Westbrook Planning and Zoning on May 25, 2000. Please see attached.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies§ 16- SOj-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.C.SA. § 16-SOj-73, a copy of this letter is being sent to John Hall, First Selectman, and Peter Gillespie, Town Planner, for the Town of Westbrook. A copy is also being sent to the tower owner, and property owner.

The planned modifications to the facility fall squarely within those activities explicitly provided for in R.C.S.A. § 16-50j-72(b)(2).

1. The proposed modifications will not result in an increase in the height of the existing structure.

2. The proposed modifications will not require the extension of the site boundary.

3. The proposed modifications will not increase noise levels at the facility by six decibels or more, or to levels that exceed state and local criteria.

4. The operation of the replacement antennas will not increase radio frequency emissions at the facility to a level at or above the Federal Communications Commission safety standard.

5. The proposed modifications will not cause a change or alteration in the physical or environmental characteristics of the site.

6. The existing structure and its foundation can support the proposed loading.

For the foregoing reasons, Verizon Wireless respectfully submits that the proposed modifications to the above referenced telecommunications facility constitute an exempt modification under R.C.S.A. § 16-50j-72(b)(2).

Sincerely,

Victoria Masse

Victoria Masse
Mobile: 860-306-2326
Fax: 413-521-0558
Office: 420 Main Street, Unit 2, Sturbridge MA 01566
Email: victoria@northeastsitesolutions.com

NORTHEAST SITE SOLUTIONS
Turnkey Wireless Development

Attachments cc:
Jennifer Tooker, First Selectwoman
Town of Westbrook
866 Boston Post Road
Westbrook, CT 06498

Peter Gillespie, Town Planner
Town of Westbrook
866 Boston Post Road
Westbrook, CT 06498

Toby Hill Farm LLC- Property Owner
439 Spencer Plains Rd
Westbrook, CT 06498

Crown Castle- Tower Owner

ATTACHMENT 1

TOWN OF WESTBROOK
ZONING

P.O. BOX G
WESTBROOK, CONNECTICUT 06498-0676
(860) 399-3046 • FAX (860) 399-9568

May 25, 2000

Donald Duthaler, Jr.
O'Brien & Gere Engineers, Inc.
Raritan Plaza 1
Edison, NJ 08837

RE: Special Permit/Site Plan application from Sprint Spectrum LP for a telecommunications facility at Toby Hill Road

Dear Mr. Duthaler:

At its meeting of May 23, 2000 the Westbrook Zoning Commission took the following action on the above named application:

APPROVED: To approve the Special Permit application for a telecommunications facility at Toby Hill Road as shown in drawing entitled " Site Plans Sprint PCS Site #CT 33XC548 Orsina Property Toby Hill Road Westbrook, Connecticut" dated October 26, 1999, prepared by Vanasse Hangen Brustlin, Inc.

A mylar and three (3) copies of the Site Plan must be delivered to the Zoning Office. Please include an approval signature block on these plans.

Sincerely,

James R. Taylor

James R. Taylor
Zoning Enforcement Officer

Cc: Town Clerk
Assessor
Building Dept.

JRT:cgg

CERTIFIED MAIL # Z 033 664 069

TOWN OF WESTBROOK
INLAND WETLANDS AND WATERCOURSES

P.O. BOX G
WESTBROOK, CONNECTICUT 06498-0676
(203) 399-3046

April 17, 2000

Sprint Spectrum, L.P.
One International Blvd.
Suite 800
Mahwah, NJ 07495

Re: Toby Hill Rd, Map 67, Lot 70, Westbrook, CT –Construction of Telecommunication Facility, 150-foot monopole tower

Ladies and Gentlemen:

At the last regular meeting of the Westbrook Inland Wetlands & Watercourses Commission on Tuesday, April 4, 2000, it was voted to approve the above-referenced application with the following stipulations:

To approve this activity with the following 5 stipulations:

1. A reference point denoting the water elevation will be outside the construction area
2. Asphalt will be used on downhill section of road, starting where drainage swale is and continuing to drainage basin #4, with 2" stone on embankments
3. Soil and erosion control measures must be shown on the plans
4. Detailed sequence of wetland crossing dewatering plan must be on file in the Town Hall Wetland Office at least 5 days prior to the start of dewatering
5. Inland Wetland Enforcement Officer must be notified prior to the start of construction so she may monitor the process.

If you have any questions or concerns, please do not hesitate to contact me.

Sincerely,

Heidi K. Wallace

Heidi K. Wallace
Inland Wetland Enforcement Officer
Town of Westbrook

ATTACHMENT 2

798 TOBY HILL RD

Location	798 TOBY HILL RD	**Mblu**	134/ / 010/ /
Acct#	O0268700	**Owner**	TOBY HILL FARM LLC
Assessment	$3,690	**Appraisal**	$146,910
PID	2783	**Building Count**	1

Current Value

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2016	$2,490	$144,420	$146,910

Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2016	$1,740	$1,950	$3,690

Owner of Record

Owner	TOBY HILL FARM LLC	**Sale Price**	$0
Co-Owner		**Certificate**	
Address	PO BOX 700 WESTBROOK, CT 06498	**Book & Page**	337/439
		Sale Date	11/05/2015

Ownership History

Ownership History				
Owner	**Sale Price**	**Certificate**	**Book & Page**	**Sale Date**
TOBY HILL FARM LLC	$0		337/439	11/05/2015
TOBY HILL FARM LLC	$0		327/637	12/12/2013
ORSINA PAUL J TRUSTEE	$0		136/480	12/29/1989

Building Information

Building 1 : Section 1

Year Built:
Living Area: 0
Replacement Cost: $0
Building Percent Good:

Replacement Cost
Less Depreciation: $0

Building Attributes	
Field	**Description**
Style	Outbuildings
Model	
Grade:	
Stories	
Occupancy	
Exterior Wall 1	
Exterior Wall 2	
Roof Structure	
Roof Cover	
Interior Wall 1	
Interior Wall 2	
Interior Flr 1	
Interior Flr 2	
Heat Fuel	
Heat Type:	
AC Type:	
Total Bedrooms:	
Full Bthrms:	
Half Baths:	
Extra Fixtures	
Total Rooms:	
Bath Style:	
Kitchen Style:	
Extra Kitchens	
Fireplace(s)	
Gas Fireplace(s)	
Stacks	
Bsmt Garage(s)	
Callback	
Fireplaces	
Fin Bsmnt	
Fin Bsmnt Qual	
Bsmt Heat	
Int Vs Ext	
Fndtn Cndtn	
Basement	

Building Photo

(http://images.vgsi.com/photos2/WestbrookCTPhotos//default.jpg)

Building Layout

Building Layout
(http://images.vgsi.com/photos2/WestbrookCTPhotos//Sketches/2783_278

Building Sub-Areas (sq ft)	Legend
No Data for Building Sub-Areas	

Extra Features

Extra Features	Legend
No Data for Extra Features	

Land

Land Use

Use Code	610
Description	Forest
Zone	RR
Neighborhood	0050
Alt Land Appr	No
Category	

Land Line Valuation

Size (Acres)	11.59
Depth	
Assessed Value	$1,950
Appraised Value	$144,420

Special Land			
Land Use Code	**Land Use Description**	**Units**	**Unit Type**
610	Forest	2	AC
610	Forest	9	AC

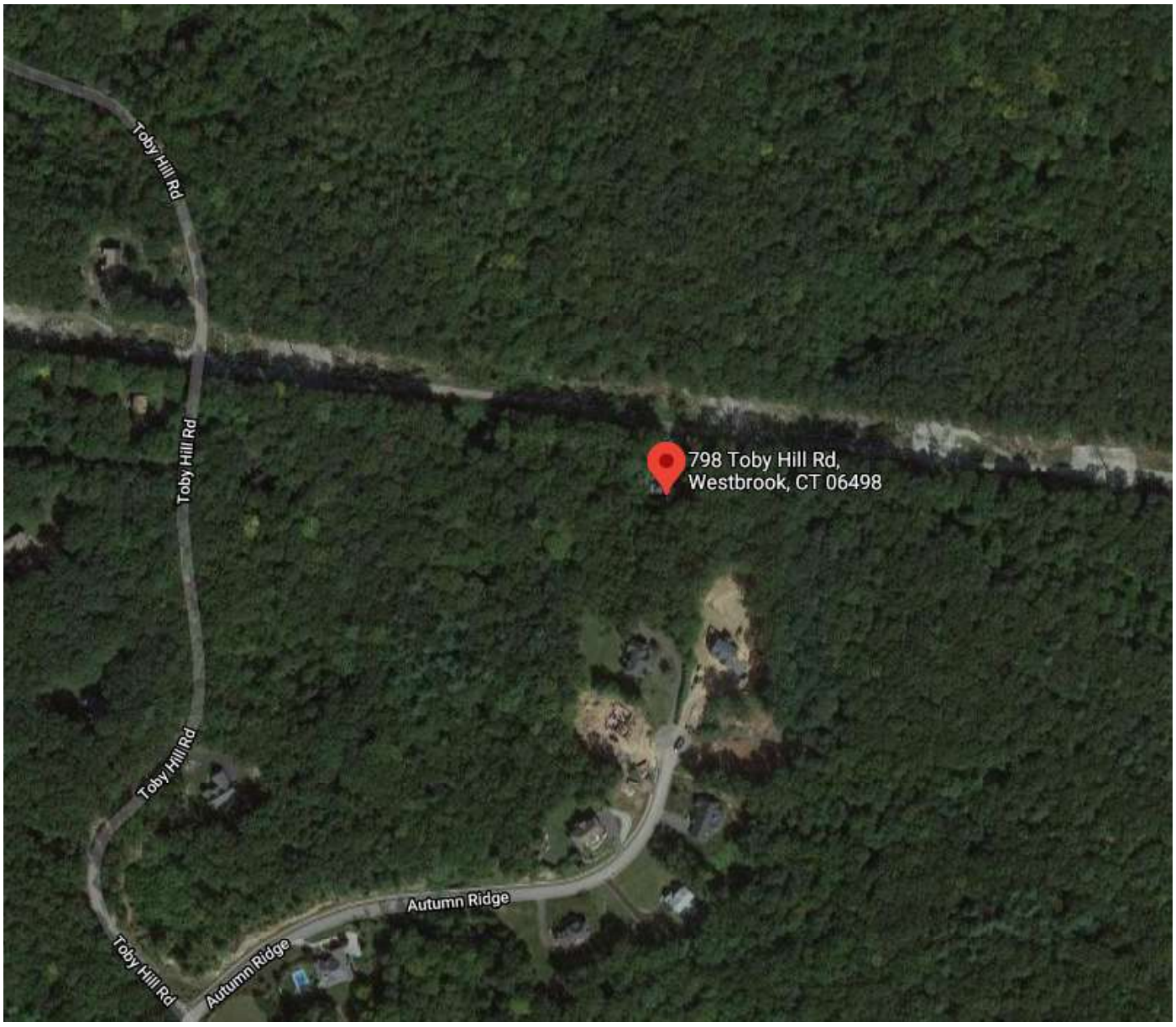
Outbuildings

Outbuildings							Legend
Code	**Description**	**Sub Code**	**Sub Description**	**Size**	**Value**	**Bldg #**	**Comment**
TCM	Telecomm			75.00 S.F.&HGT	$2,490	1	
TCS	Telecomm Site			0.00 UNITS	$0	1	

Valuation History

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2019	$42,490	$144,420	$186,910
2018	$2,490	$144,400	$146,890
2017	$2,490	$144,400	$146,890

Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2019	$29,740	$1,950	$31,690
2018	$1,740	$1,950	$3,690
2017	$1,740	$1,950	$3,690


Toby Hill Rd
Toby Hill Rd
Toby Hill Rd
Toby Hill Rd
798 Toby Hill Rd,
Westbrook, CT 06498
Autumn Ridge
Autumn Ridge

ATTACHMENT 3

verizon

VERIZON SITE NUMBER: 468771
VERIZON SITE NAME: WESTBROOK NE CT
SITE TYPE: MONOPOLE
TOWER HEIGHT: 150'-0"

BUSINESS UNIT #: 876384
SITE ADDRESS: 798 TOBY HILL ROAD WESTBROOK, CT 06498
COUNTY: MIDDLESEX
JURISDICTION: CONNECTICUT SITING COUNCIL

VERIZON 4XRX

SITE INFORMATION

CROWN CASTLE USA INC. SITE NAME:	WESTBROOK / ORSINA
SITE ADDRESS:	798 TOBY HILL ROAD WESTBROOK, CT 06498
COUNTY:	MIDDLESEX
MAP/PARCEL #:	134-010
AREA OF CONSTRUCTION:	EXISTING
LATITUDE:	41.320167°
LONGITUDE:	-72.441667°
LAT/LONG TYPE:	NAD83
GROUND ELEVATION:	211'
CURRENT ZONING:	RR
JURISDICTION:	CONNECTICUT SITING COUNCIL
OCCUPANCY CLASSIFICATION:	U
TYPE OF CONSTRUCTION:	IIB
A.D.A. COMPLIANCE:	FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION
PROPERTY OWNER:	TOBY HILL FARM LLC PO BOX 700 WESTBROOK, CT 06498
TOWER OWNER:	CROWN CASTLE 2000 CORPORATE DRIVE CANONSBURG, PA 15317
CARRIER/APPLICANT:	VERIZON WIRELESS 180 WASHINGTON VALLEY ROAD BEDMINSTER, NJ 07921
ELECTRIC PROVIDER:	CONNECTICUT L&P CO. 800-286-2000
TELCO PROVIDER:	LIGHT TOWER 855-91-FIBER

PROJECT TEAM

A&E FIRM:	B+T GROUP 1717 S. BOULDER AVE. TULSA, OK 74119 MARVIN PHILLIPS marvin.phillips@btgrp.com
CROWN CASTLE USA INC. DISTRICT CONTACTS:	3 CORPORATE PARK DRIVE, SUITE 101 CLIFTON PARK, NY 12065 WILLIAM GATES - PROJECT MANAGER WILLIAM.GATES@CROWNCASTLE.COM JASON D'AMICO - CONSTRUCTION MANAGER JASON.DAMICO@CROWNCASTLE.COM
VERIZON CONTACT:	ANDREW LEONE ALEONE@STRUCTURECONSULTING.NET

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 MODIFICATIONS DRAWINGS

ALL DRAWINGS CONTAINED HEREIN ARE FORMATTED FOR 22X34. 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	10153052
VzW LOCATION CODE (PSLC)	468771

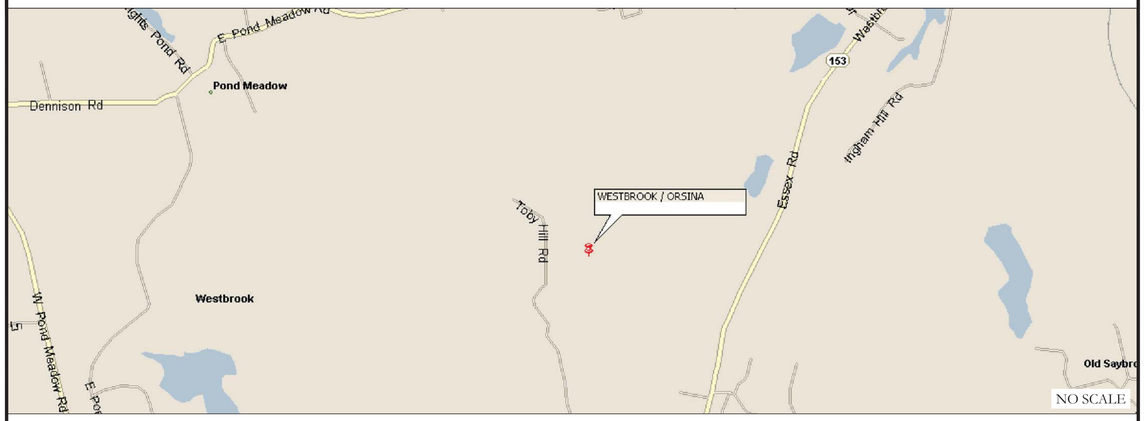
*** PMI AND REQUIREMENTS ALSO EMBEDDED IN MOUNT ANALYSIS REPORT

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 (819 HARTFORD TURNPIKE, WATERFORD, CT 06385, UNITED STATES)
GET ON I-95 S, HEAD NORTHWEST ON CT-85 N. MAKE A U-TURN.TURN RIGHT ONTO THE ROUTE 95 S RAMP TO NEW HAVEN. FOLLOW I-95 S TO CT-153 N IN WESTBROOK. TAKE EXIT 65 FROM I-95 S, MERGE WITH I-95 S. KEEP LEFT TO STAY ON I-95 S, TAKE EXIT 65 FOR CT-153 TOWARD WESTBROOK, CONTINUE ON CT-153 N. TAKE TOBY HILL RD TO AUTUMN RIDGE. TURN RIGHT ONTO CT-153 N, TURN LEFT ONTO MCVEAGH RD. TURN RIGHT ONTO TOBY HILL RD. TURN RIGHT ONTO AUTUMN RIDGE.

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	2022 CONNECTICUT SBC
MECHANICAL	2022 CONNECTICUT SBC
ELECTRICAL	2022 CONNECTICUT SBC

REFERENCE DOCUMENTS:

STRUCTURAL ANALYSIS:	CROWN CASTLE
DATED:	9/12/22
MOUNT ANALYSIS:	MASER CONSULTING CONNECTICUT
DATED:	6/23/22
MOUNT MOD. DRAWINGS:	MASER CONSULTING CONNECTICUT
DATED:	6/23/22
RFDS REVISION:	0
DATED:	5/18/22
ORDER ID:	631885
REVISION:	0

CALL CONNECTICUT ONE CALL
(800) 922-4455 CBYD.COM
CALL 2 WORKING DAYS
BEFORE YOU DIG!

PROJECT DESCRIPTION

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

TOWER SCOPE OF WORK:
- REMOVE (6) ANTENNAS
- REMOVE (6) COAX
- ROTATE EXISTING MOUNT 20° CW
- INSTALL MOUNT MODIFICATIONS REQUIRED PER MOUNT MODIFICATION DRAWINGS BY MASER CONSULTING CONNECTICUT DATED JUNE 23, 2022
- INSTALL (9) ANTENNAS
- INSTALL (3) DUAL ANTENNA MOUNTING BRACKETS
- INSTALL (6) RRHs
- INSTALL (1) OVP
- INSTALL (1) HYBRID CABLE

GROUND SCOPE OF WORK:
- REMOVE (3) NOKIA - UHBC B13 TRDU 2x40 RADIOS

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

verizon
180 WASHINGTON VALLEY ROAD
BEDMINSTER, NJ 07921

CROWN CASTLE
3 CORPORATE PARK DRIVE, SUITE 101
CLIFTON PARK, NY 12065

B+T GRP
MTS ENGINEERING, P.L.L.C.
1717 S. BOULDER,
SUITE 300
TULSA, OK 74119
PH: (918) 587-4630
btwo@btgrp.com

VERIZON SITE NUMBER:
468771

BU #: **876384**
WESTBROOK / ORSINA

798 TOBY HILL ROAD
WESTBROOK, CT 06498

EXISTING 150'-0" MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
0	10/26/22	YX	CONSTRUCTION	LR
1	11/29/22	YX	CONSTRUCTION	ANP

MTS ENGINEERING P.L.L.C.
BER:2386985
Expires 3/31/23

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: 1

CROWN CASTLE USA INC. SITE ACTIVITY REQUIREMENTS:

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

GENERAL NOTES:

1. FOR THE PURPOSE OF CONSTRUCTION DRAWING, THE FOLLOWING DEFINITIONS SHALL APPLY:
   CONTRACTOR: GENERAL CONTRACTOR RESPONSIBLE FOR CONSTRUCTION
   CARRIER: 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.

GREENFIELD GROUNDING NOTES:

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

ELECTRICAL INSTALLATION NOTES:

1. ALL ELECTRICAL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS, NEC AND ALL APPLICABLE FEDERAL, STATE, AND LOCAL CODES/ORDINANCES.
2. CONDUIT ROUTINGS ARE SCHEMATIC. CONTRACTOR SHALL INSTALL CONDUITS SO THAT ACCESS TO EQUIPMENT IS NOT BLOCKED AND TRIP HAZARDS ARE ELIMINATED.
3. WIRING, RACEWAY AND SUPPORT METHODS AND MATERIALS SHALL COMPLY WITH THE REQUIREMENTS OF THE NEC.
4. ALL CIRCUITS SHALL BE SEGREGATED AND MAINTAIN MINIMUM CABLE SEPARATION AS REQUIRED BY THE NEC.
   4.1. ALL EQUIPMENT SHALL BEAR THE UNDERWRITERS LABORATORIES LABEL OF APPROVAL, AND SHALL CONFORM TO REQUIREMENT OF THE NATIONAL ELECTRICAL CODE.
   4.2. ALL OVERCURRENT DEVICES SHALL HAVE AN INTERRUPTING CURRENT RATING THAT SHALL BE GREATER THAN THE SHORT CIRCUIT CURRENT TO WHICH THEY ARE SUBJECTED, 22,000 AIC MINIMUM. VERYIFY AVAILABLE SHORT CIRCUIT CURRENT DOES NOT EXCEED THE RATING OF ELECTRICAL EQUIPMENT IN ACCORDANCE WITH ARTICLE 110.24 NEC OR THE MOST CURRENT ADOPTED CODE PRE THE GOVERNING JURISDICTION.
5. EACH END OF EVERY POWER PHASE CONDUCTOR, GROUNDING CONDUCTOR, AND TELCO CONDUCTOR OR CABLE SHALL BE LABELED WITH COLOR–CODED INSULATION OR ELECTRICAL TAPE (3M BRAND, 1/2" PLASTIC ELECTRICAL TAPE WITH UV PROTECTION, OR EQUAL). THE IDENTIFICATION METHOD SHALL CONFORM WITH NEC AND OSHA.
6. ALL ELECTRICAL COMPONENTS SHALL BE CLEARLY LABELED WITH LAMICOID TAGS SHOWING THEIR RATED VOLTAGE, PHASE CONFIGURATION, WIRE CONFIGURATION, POWER OR AMPACITY RATING AND BRANCH CIRCUIT ID NUMBERS (i.e. PANEL BOARD AND CIRCUIT ID'S).
7. PANEL BOARDS (ID NUMBERS) SHALL BE CLEARLY LABELED WITH PLASTIC LABELS.
8. ALL TIE WRAPS SHALL BE CUT FLUSH WITH APPROVED CUTTING TOOL TO REMOVE SHARP EDGES.
9. ALL POWER AND EQUIPMENT GROUND WIRING IN TUBING OR CONDUIT SHALL BE SINGLE COPPER CONDUCTOR (#14 OR LARGER) WITH TYPE THHW, THWN, THWN–2, XHHW, XHHW–2, THW, THW–2, RHW, OR RHW–2 INSULATION UNLESS OTHERWISE SPECIFIED.
10. SUPPLEMENTAL EQUIPMENT GROUND WIRING LOCATED INDOORS SHALL BE SINGLE COPPER CONDUCTOR (#6 OR LARGER) WITH TYPE THHW, THWN, THWN–2, XHHW, XHHW–2, THW, THW–2, RHW, OR RHW–2 INSULATION UNLESS OTHERWISE SPECIFIED.
11. POWER AND CONTROL WIRING IN FLEXIBLE CORD SHALL BE MULTI–CONDUCTOR, TYPE SOOW CORD (#14 OR LARGER) UNLESS OTHERWISE SPECIFIED.
12. POWER AND CONTROL WIRING FOR USE IN CABLE TRAY SHALL BE MULTI–CONDUCTOR, TYPE TC CABLE (#14 OR LARGER), WITH TYPE THHW, THWN, THWN–2, XHHW, XHHW–2, THW, THW–2, RHW, OR RHW–2 INSULATION UNLESS OTHERWISE SPECIFIED.
13. ALL POWER AND GROUNDING CONNECTIONS SHALL BE CRIMP–STYLE, COMPRESSION WIRE LUGS AND WIRE NUTS BY THOMAS AND BETTS (OR EQUAL). LUGS AND WIRE NUTS SHALL BE RATED FOR OPERATION NOT LESS THAN 75° C (90° C IF AVAILABLE).
14. RACEWAY AND CABLE TRAY SHALL BE LISTED OR LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA, UL, ANSI/IEEE AND NEC.
15. ELECTRICAL METALLIC TUBING (EMT), INTERMEDIATE METAL CONDUIT (IMC), OR RIGID METAL CONDUIT (RMC) SHALL BE USED FOR EXPOSED INDOOR LOCATIONS.
16. ELECTRICAL METALLIC TUBING (EMT) OR METAL–CLAD CABLE (MC) SHALL BE USED FOR CONCEALED INDOOR LOCATIONS.
17. 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 SCREW FITTINGS ARE NOT ACCEPTABLE.
20. CABINETS, BOXES AND WIRE WAYS SHALL BE LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA, UL, ANSI/IEEE AND THE NEC.
21. WIREWAYS SHALL BE METAL WITH AN ENAMEL FINISH AND INCLUDE A HINGED COVER, DESIGNED TO SWING OPEN DOWNWARDS (WIREMOLD SPECMATE WIREWAY).
22. SLOTTED WIRING DUCT SHALL BE PVC AND INCLUDE COVER (PANDUIT TYPE E OR EQUAL).
23. CONDUITS SHALL BE FASTENED SECURELY IN PLACE WITH APPROVED NON–PERFORATED STRAPS AND HANGERS. EXPLOSIVE DEVICES (i.e. POWDER–ACTUATED) FOR ATTACHING HANGERS TO STRUCTURE WILL NOT BE PERMITTED. CLOSELY FOLLOW THE LINES OF THE STRUCTURE, MAINTAIN CLOSE PROXIMITY TO THE STRUCTURE AND KEEP CONDUITS IN TIGHT ENVELOPES. CHANGES IN DIRECTION TO ROUTE AROUND OBSTACLES SHALL BE MADE WITH CONDUIT OUTLET BODIES. CONDUIT SHALL BE INSTALLED IN A NEAT AND WORKMANLIKE MANNER. PARALLEL AND PERPENDICULAR TO STRUCTURE WALL AND CEILING LINES. ALL CONDUIT SHALL BE FISHED TO CLEAR OBSTRUCTIONS. ENDS OF CONDUITS SHALL BE TEMPORARILY CAPPED FLUSH TO FINISH GRADE TO PREVENT CONCRETE, PLASTER OR DIRT FROM ENTERING. CONDUITS SHALL BE RIGIDLY CLAMPED TO BOXES BY GALVANIZED MALLEABLE IRON BUSHING ON INSIDE AND GALVANIZED MALLEABLE IRON LOCKNUT ON OUTSIDE AND INSIDE.
24. EQUIPMENT CABINETS, TERMINAL BOXES, JUNCTION BOXES AND PULL BOXES SHALL BE GALVANIZED OR EPOXY–COATED SHEET STEEL. SHALL MEET OR EXCEED UL 50 AND BE RATED NEMA 1 (OR BETTER) FOR INTERIOR LOCATIONS AND NEMA 3R (OR BETTER) FOR EXTERIOR LOCATIONS.
25. METAL RECEPTACLE, SWITCH AND DEVICE BOXES SHALL BE GALVANIZED, EPOXY–COATED OR NON–CORRODING; SHALL MEET OR EXCEED UL 514A AND NEMA OS 1 AND BE RATED NEMA 1 (OR BETTER) FOR INTERIOR LOCATIONS AND WEATHER PROTECTED (WP OR BETTER) FOR EXTERIOR LOCATIONS.
26. NONMETALLIC RECEPTACLE, SWITCH AND DEVICE BOXES SHALL MEET OR EXCEED NEMA OS 2 (NEWEST REVISION) AND BE RATED NEMA 1 (OR BETTER) FOR INTERIOR LOCATIONS AND WEATHER PROTECTED (WP OR BETTER) FOR EXTERIOR LOCATIONS.
27. THE CONTRACTOR SHALL NOTIFY AND OBTAIN NECESSARY AUTHORIZATION FROM THE CARRIER AND/OR CROWN CASTLE USA INC. BEFORE COMMENCING WORK ON THE AC POWER DISTRIBUTION PANELS.
28. THE CONTRACTOR SHALL PROVIDE NECESSARY TAGGING ON THE BREAKERS, CABLES AND DISTRIBUTION PANELS IN ACCORDANCE WITH THE APPLICABLE CODES AND STANDARDS TO SAFEGUARD LIFE AND PROPERTY.
29. INSTALL LAMICOID LABEL ON THE METER CENTER TO SHOW "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
	GROUND	GREEN
277/480V, 3Ø	A PHASE	BROWN
	B PHASE	ORANGE OR PURPLE
	C PHASE	YELLOW
	NEUTRAL	GREY
	GROUND	GREEN
DC VOLTAGE	POS (+)	RED**
	NEG (–)	BLACK**

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

APWA UNIFORM COLOR CODE:

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

ABBREVIATIONS:

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

verizon
180 WASHINGTON VALLEY ROAD
BEDMINSTER, NJ 07921

CROWN CASTLE
3 CORPORATE PARK DRIVE, SUITE 101
CLIFTON PARK, NY 12065

B+T GRP
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SUITE 300
TULSA, OK 74119
PH: (918) 587-4630
btwo@btgrp.com

VERIZON SITE NUMBER:
468771

BU #: **876384**
WESTBROOK / ORSINA

798 TOBY HILL ROAD
WESTBROOK, CT 06498

EXISTING 150'-0" MONOPOLE

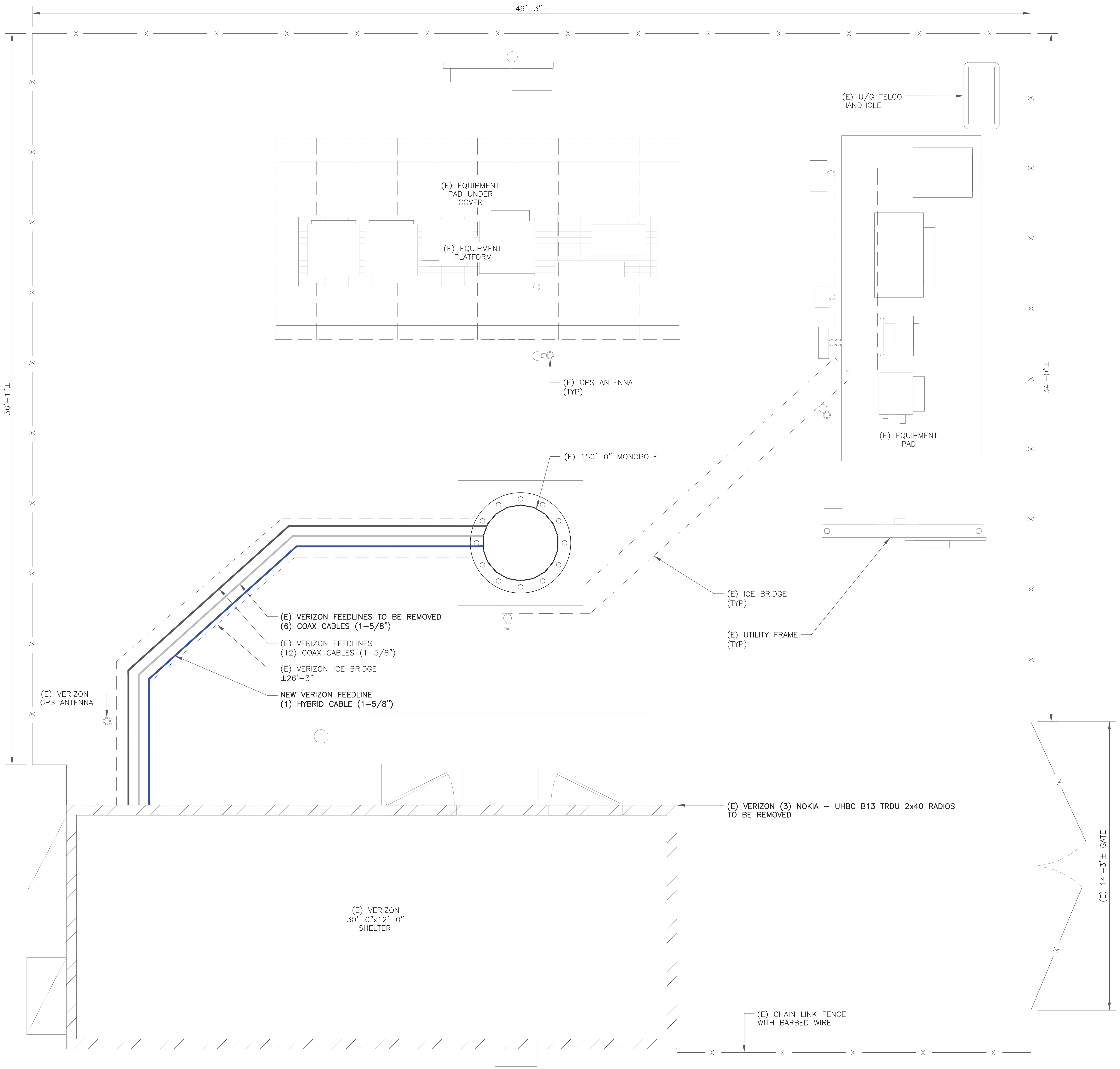
ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
0	10/26/22	YX	CONSTRUCTION	LR
1	11/29/22	YX	CONSTRUCTION	ANP

No. 23924
11/29/22

MTS ENGINEERING P.L.L.C.
BER:2386985
Expires 3/31/23

SHEET NUMBER: T-2
REVISION: 1



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

verizon
180 WASHINGTON VALLEY ROAD
BEDMINSTER, NJ 07921

CROWN CASTLE
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CLIFTON PARK, NY 12065

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VERIZON SITE NUMBER:
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WESTBROOK / ORSINA

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EXISTING 150'-0" MONOPOLE

ISSUED FOR:

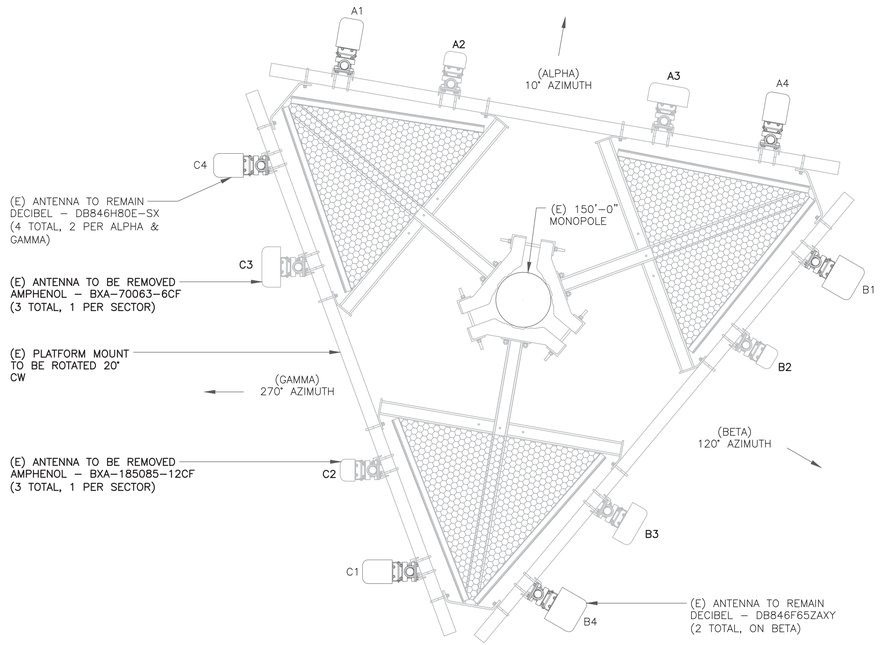
REV	DATE	DRWN	DESCRIPTION	DES./QA
0	10/26/22	YX	CONSTRUCTION	LR
1	11/29/22	YX	CONSTRUCTION	ANP

STATE OF CONNECTICUT LICENSED PROFESSIONAL ENGINEER No. 23924
11/29/22

MTS ENGINEERING P.L.L.C.
BER:2386985
Expires 3/31/23

SHEET NUMBER: C-1
REVISION: 1

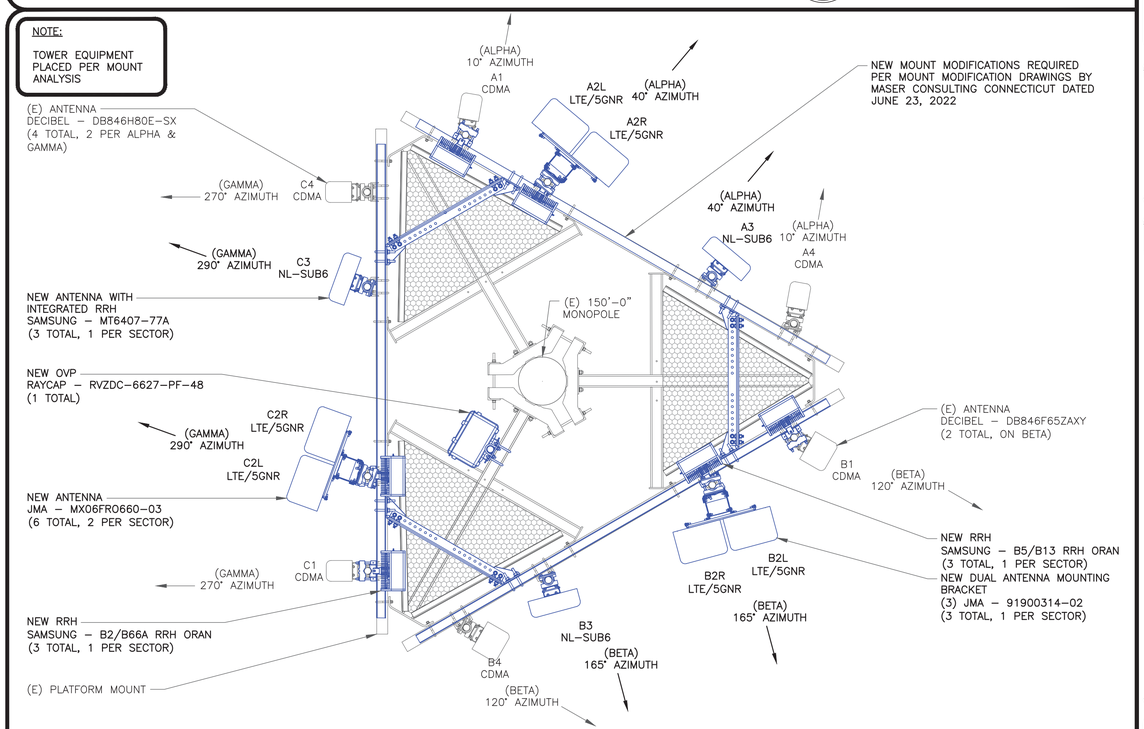
1 TOWER ELEVATION
SCALE: NOT TO SCALE



2 EXISTING ANTENNA PLAN
SCALE: NOT TO SCALE

NOTE:

TOWER EQUIPMENT PLACED PER MOUNT ANALYSIS



3 NEW ANTENNA PLAN
SCALE: NOT TO SCALE

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180 WASHINGTON VALLEY ROAD
BEDMINSTER, NJ 07921

CROWN CASTLE
3 CORPORATE PARK DRIVE, SUITE 101
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VERIZON SITE NUMBER:
468771

BU #: **876384**
WESTBROOK / ORSINA

798 TOBY HILL ROAD
WESTBROOK, CT 06498

EXISTING 150'-0" MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
0	10/26/22	YX	CONSTRUCTION	LR
1	11/29/22	YX	CONSTRUCTION	ANP

MTS ENGINEERING P.L.L.C.
BER:2386985
Expires 3/31/23

SHEET NUMBER: C-2

REVISION: 1

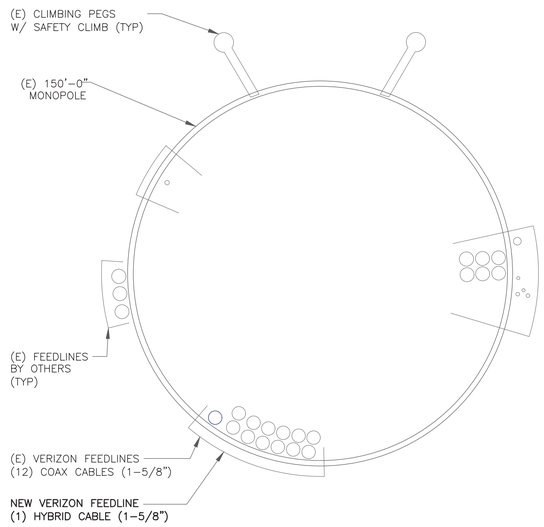
ANTENNA/RRH SCHEDULE

SECTOR	STATUS	ANTENNA MANUFACTURER	ANTENNA MODEL	ANTENNA CENTERLINE	AZIMUTH	MECHANICAL DOWNTILTS	ELECTRICAL DOWNTILTS	TOWER EQUIPMENT MANUFACTURER	TOWER EQUIPMENT QTY/MODEL
A1	EXISTING	DECIBEL	DB846H80E-SX	140'-0"	10°	0°	0°	SAMSUNG	(1) B2/B66A RRH ORAN
A2L	NEW	SAMSUNG	MX06FRO660-03	140'-0"	40°	0°	2°/2°/2°/2°/2°	SAMSUNG	(1) B5/B13 RRH ORAN
A2R	NEW	SAMSUNG	MX06FRO660-03	140'-0"	40°	0°	2°/2°/2°/2°/2°	RAYCAP	(1) RVZDC-6627-PF-48
A3	NEW	SAMSUNG	MT6407-77A	140'-0"	40°	0°	6°	–	INTEGRATED WITHIN
A4	EXISTING	DECIBEL	DB846H80E-SX	140'-0"	10°	0°	0°	–	–
B1	EXISTING	DECIBEL	DB846F65ZAXY	140'-0"	120°	3°	0°	SAMSUNG	(1) B2/B66A RRH ORAN
B2L	NEW	SAMSUNG	MX06FRO660-03	140'-0"	165°	0°	3°/8°/8°/2°/2°	SAMSUNG	(1) B5/B13 RRH ORAN
B2R	NEW	SAMSUNG	MX06FRO660-03	140'-0"	165°	0°	3°/8°/8°/2°/2°	–	–
B3	NEW	SAMSUNG	MT6407-77A	140'-0"	165°	0°	6°	–	INTEGRATED WITHIN
B4	EXISTING	DECIBEL	DB846F65ZAXY	140'-0"	120°	3°	0°	–	–
C1	EXISTING	DECIBEL	DB846H80E-SX	140'-0"	270°	0°	0°	SAMSUNG	(1) B2/B66A RRH ORAN
C2L	NEW	SAMSUNG	MX06FRO660-03	140'-0"	290°	0°	2°/2°/2°/2°/2°	SAMSUNG	(1) B5/B13 RRH ORAN
C2R	NEW	SAMSUNG	MX06FRO660-03	140'-0"	290°	0°	2°/2°/2°/2°/2°	–	–
C3	NEW	SAMSUNG	MT6407-77A	140'-0"	290°	0°	6°	–	INTEGRATED WITHIN
C4	EXISTING	DECIBEL	DB846H80E-SX	140'-0"	270°	0°	0°	–	–

1 VERIZON TOWER EQUIPMENT SCHEDULE
SCALE: NOT TO SCALE

CABLE SCHEDULE

STATUS	CABLE TYPE	SIZE	LENGTH	QTY
EXISTING	COAX	1-5/8"	190'-0"±	12
NEW	HYBRID	1-5/8"	190'-0"	1
TOTAL CABLE QTY:				13



2 BASE LEVEL DETAIL
SCALE: NOT TO SCALE

N

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VERIZON SITE NUMBER:
468771

BU #: **876384**
WESTBROOK / ORSINA

798 TOBY HILL ROAD
WESTBROOK, CT 06498

EXISTING 150'-0" MONOPOLE

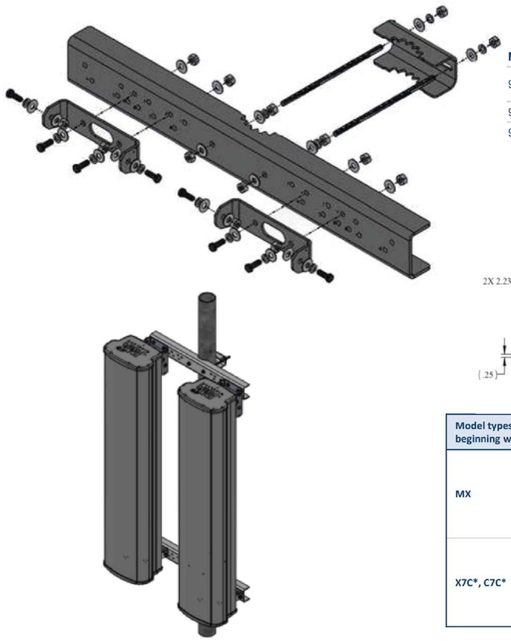
ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
0	10/26/22	YX	CONSTRUCTION	LR
1	11/29/22	YX	CONSTRUCTION	ANP

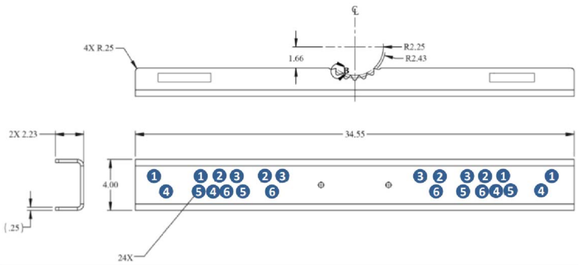
STATE OF CONNECTICUT
No. 23824
LICENSED
PROFESSIONAL ENGINEER
11/29/22

MTS ENGINEERING P.L.L.C.
BER:2386985
Expires 3/31/23

SHEET NUMBER: C-3
REVISION: 1



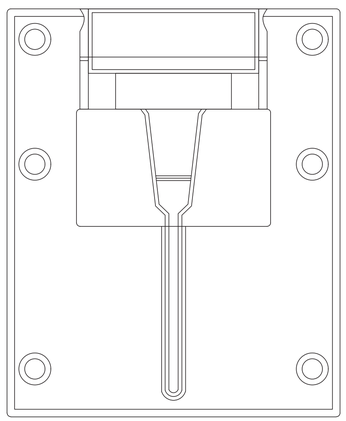
Mounting bracket model	Description
91900314-01	Single dual-mount antenna bracket assembly
91900314-02	Two dual-mount antenna bracket assemblies
91900314-03	Three dual-mount antenna bracket assemblies



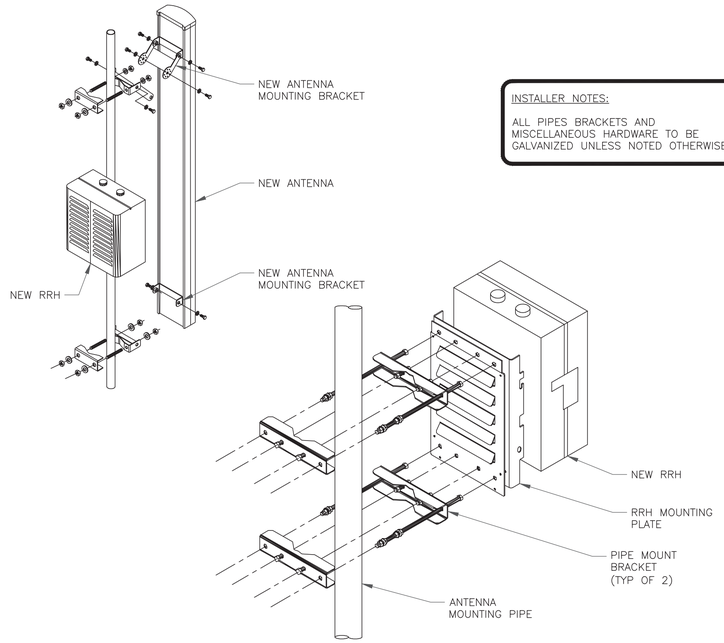
Model types beginning with:	Antenna width	Corresponding hole position	Resulting spacing between antennas
MX	15.4" (wide spacing)	1	12"
	15.4" (narrow spacing)	2	2"
	12"	3	2"
	20"	5	3/4"
X7C*, C7C*	12.5"	3	2"
	24.0"	4	2"
	18.8"	5	2"
	14.6"	6	2"

1 JMA – 91900314
SCALE: NOT TO SCALE

2 NOT USED
SCALE: NOT TO SCALE



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



INSTALLER NOTES:

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

4 ANTENNA & RRH MOUNTING DETAIL
SCALE: NOT TO SCALE

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VERIZON SITE NUMBER:
468771

BU #: **876384**
WESTBROOK / ORSINA

798 TOBY HILL ROAD
WESTBROOK, CT 06498

EXISTING 150'-0" MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
0	10/26/22	YX	CONSTRUCTION	LR
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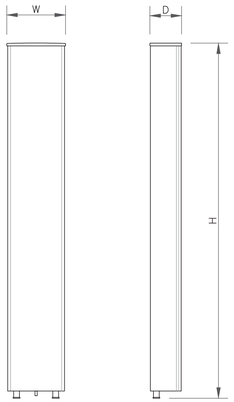
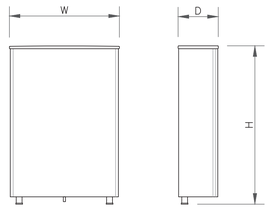
SHEET NUMBER: C-4

REVISION: 1



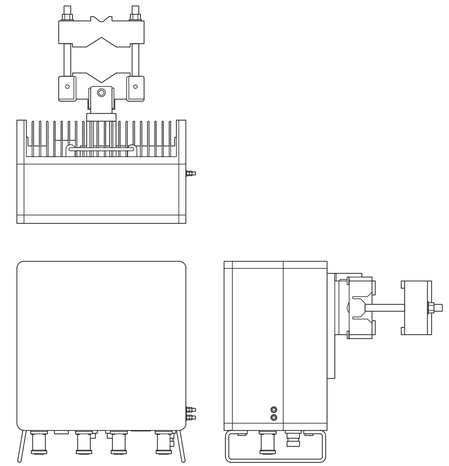
ANTENNA SPECS	
MANUFACTURER	JMA
MODEL #	MX06FRO660-03
WIDTH	15.40"
DEPTH	10.70"
HEIGHT	71.30"
WEIGHT	78.00 LBS

1 ANTENNA SPECS
SCALE: NOT TO SCALE



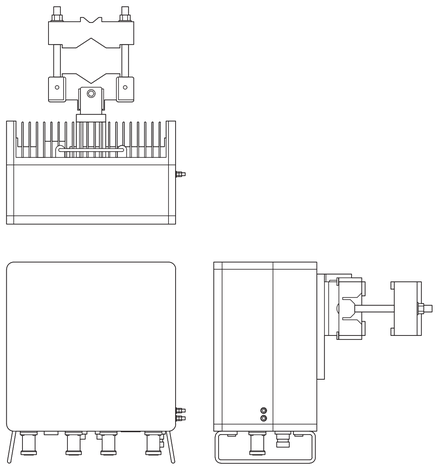
ANTENNA SPECS	
MANUFACTURER	SAMSUNG
MODEL #	MT6407-77A
WIDTH	16.06"
DEPTH	5.51"
HEIGHT	35.06"
WEIGHT	81.57 LBS

2 ANTENNA SPECS
SCALE: NOT TO SCALE



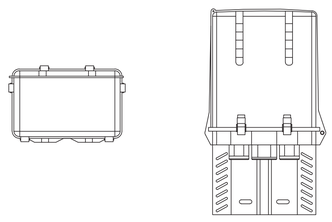
RRU SPECS	
MANUFACTURER	SAMSUNG
MODEL #	B5/B13 RRH ORAN
WIDTH	14.96"
DEPTH	9.06"
HEIGHT	14.96"
WEIGHT	72.50 LBS

3 RRU SPECS
SCALE: NOT TO SCALE



RRU SPECS	
MANUFACTURER	SAMSUNG
MODEL #	B2/B66A RRH ORAN
WIDTH	14.96"
DEPTH	10.04"
HEIGHT	14.96"
WEIGHT	74.70 LBS

4 RRU SPECS
SCALE: NOT TO SCALE



RAYCAP – RVZDC-6627-PF-48
WEIGHT (WITHOUT MOUNTING HARDWARE): 32.0 LBS
SIZE (HxWxD): 28.9x15.7x10.3 IN.

RATED WIND VELOCITY: 150 MPH (SUSTAINED)
OPERATING TEMPERATURE: -40° C TO +80° C
NOMINAL OPERATING DC VOLTAGE: 48 VDC

5 RAYCAP – RVZDC-6627-PF-48
SCALE: NOT TO SCALE

6 NOT USED
SCALE: NOT TO SCALE

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PH: (918) 587-4630
btwo@btgrp.com

VERIZON SITE NUMBER:
468771

BU #: **876384**
WESTBROOK / ORSINA

798 TOBY HILL ROAD
WESTBROOK, CT 06498

EXISTING 150'-0" MONOPOLE

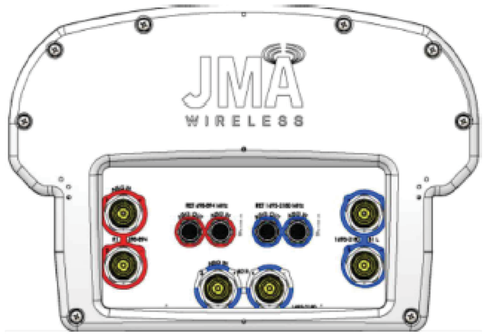
ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
0	10/26/22	YX	CONSTRUCTION	LR
1	11/29/22	YX	CONSTRUCTION	ANP

MTS ENGINEERING P.L.L.C.
BER:2386985
Expires 3/31/23

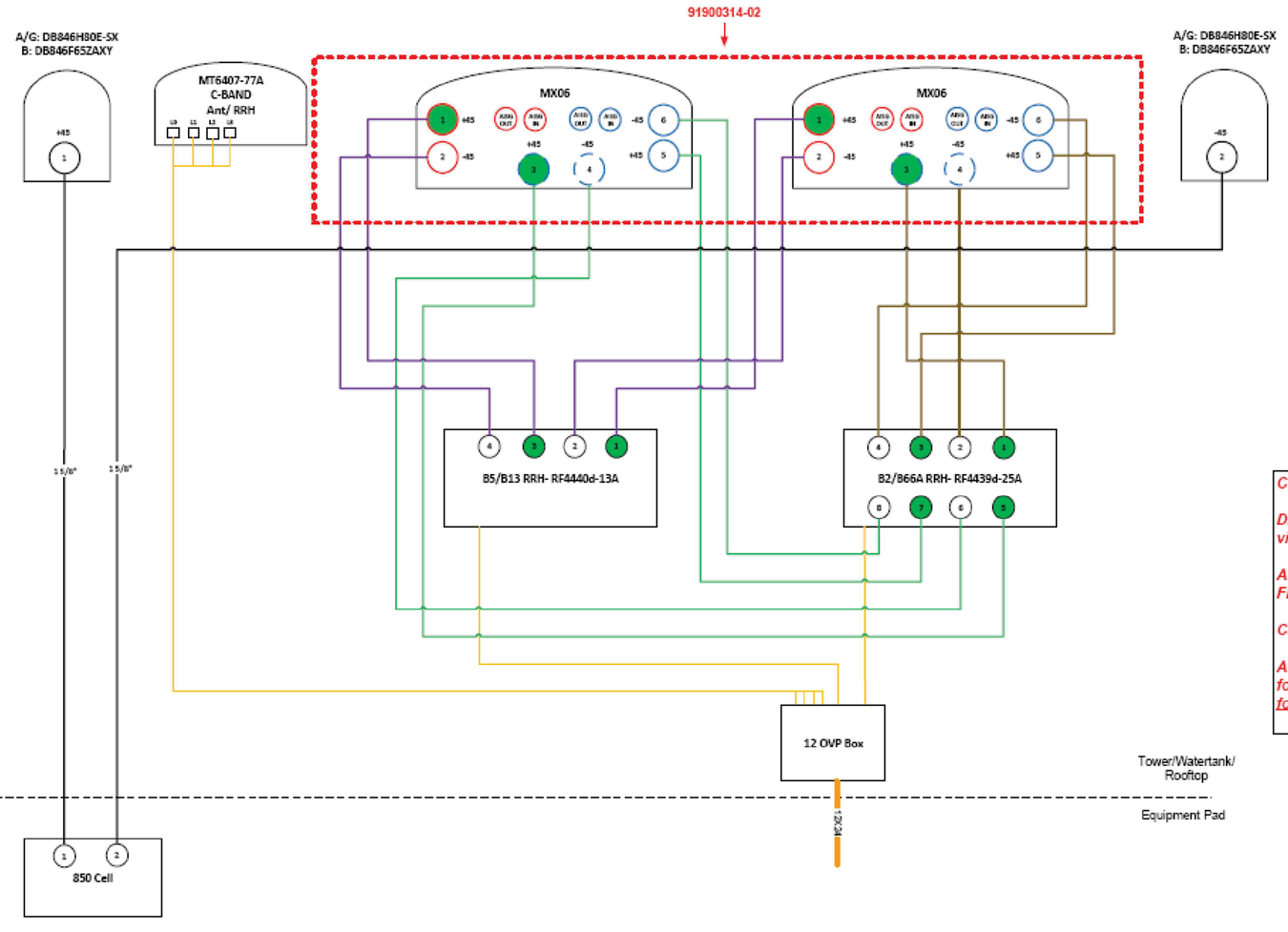
SHEET NUMBER: C-5

REVISION: 1



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

RET DC signal pass for RET
(Port that will control RET)



DC signal capable Port

AISG Cable

RET DC signal pass for RET
(Port that will control RET)

Hybriflex cables

Comments:

Diagram shows antenna port configuration as viewed from below antennas.

Antenna positions are indicated as viewed from IN FRONT of antennas.

Cap and weatherproof unused antenna ports.

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

1 PLUMBING DIAGRAM
SCALE: NOT TO SCALE

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EXISTING 150'-0" MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
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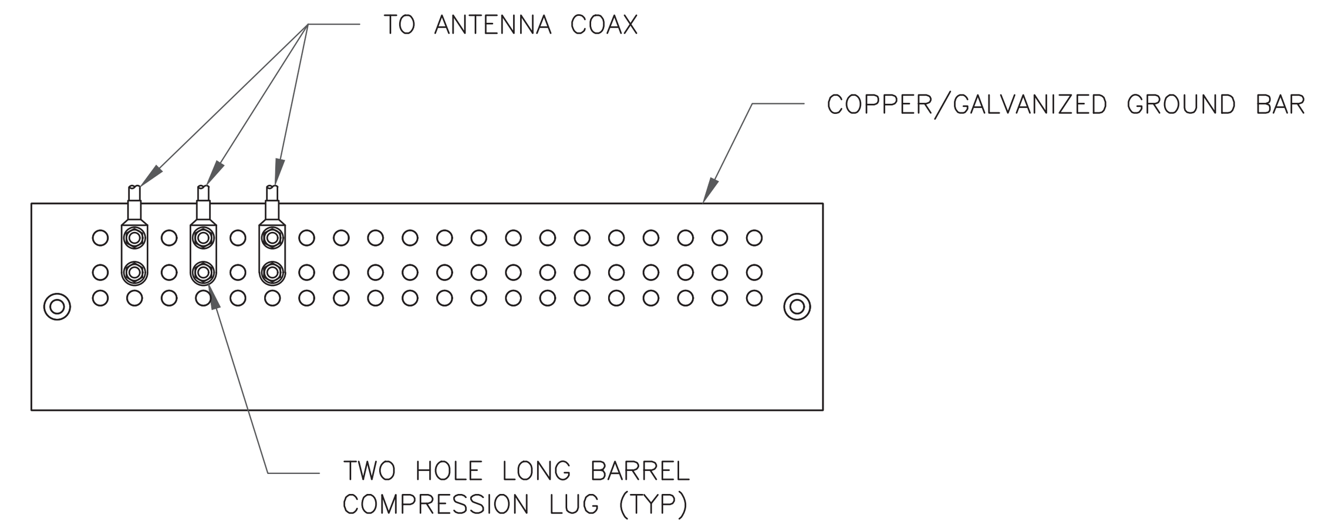
1	11/29/22	YX	CONSTRUCTION	ANP

MTS ENGINEERING P.L.L.C.
BER:2386985
Expires 3/31/23

SHEET NUMBER: C-6

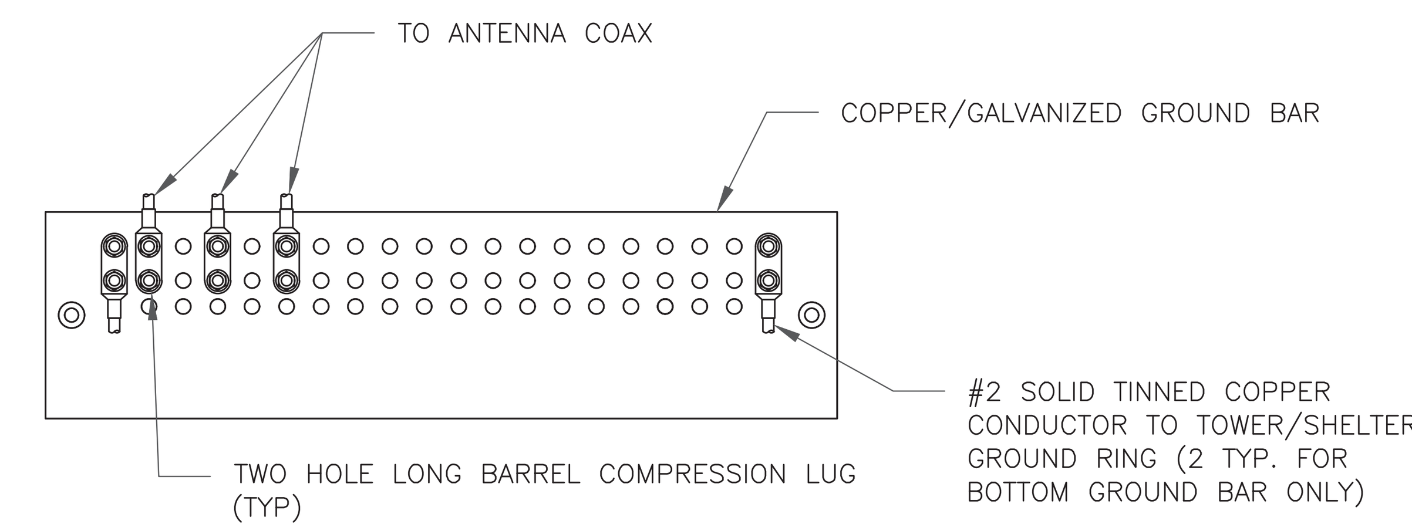
REVISION: 1



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.

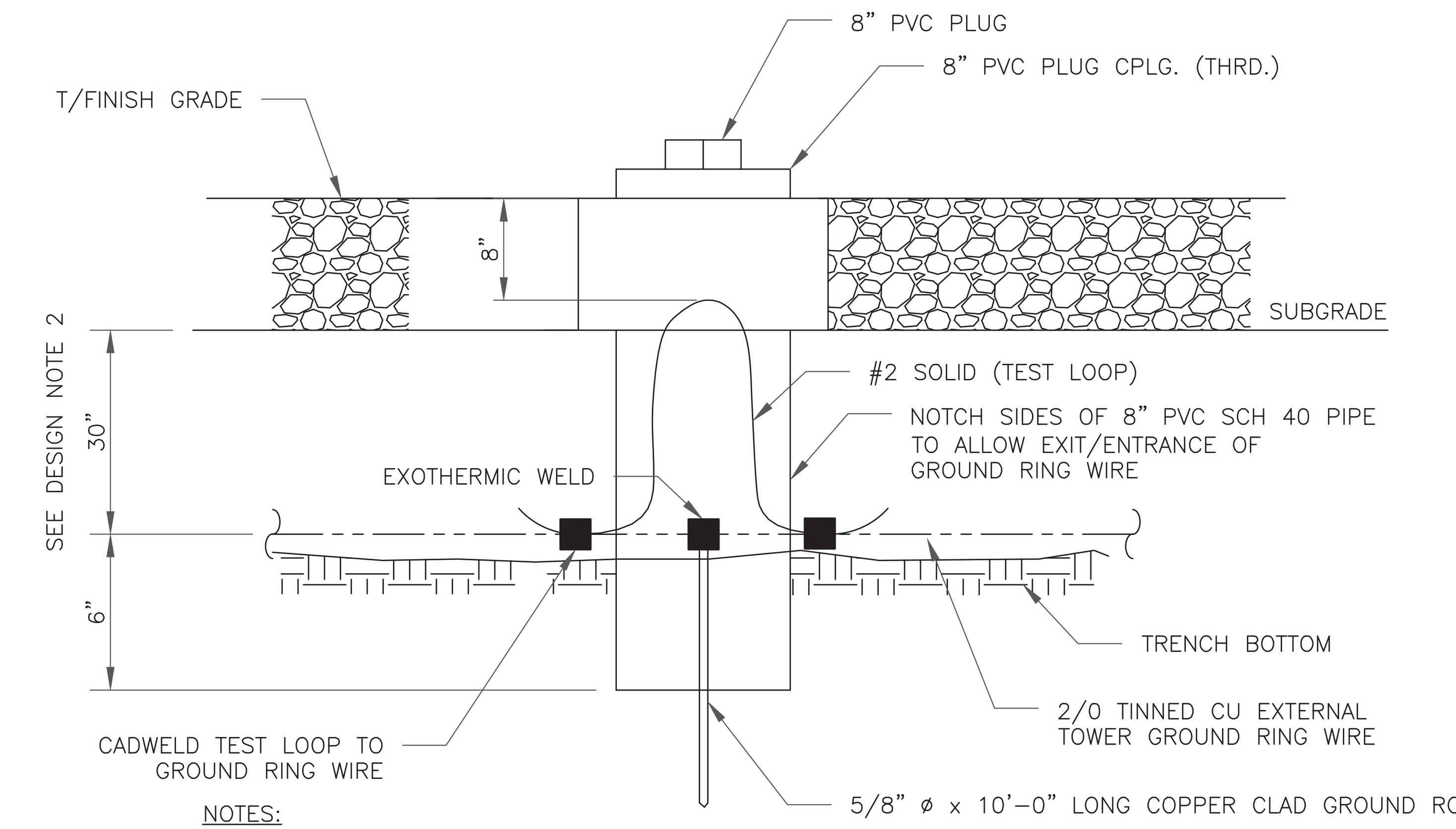
1 ANTENNA SECTOR GROUND BAR DETAIL
SCALE: NOT TO SCALE



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.

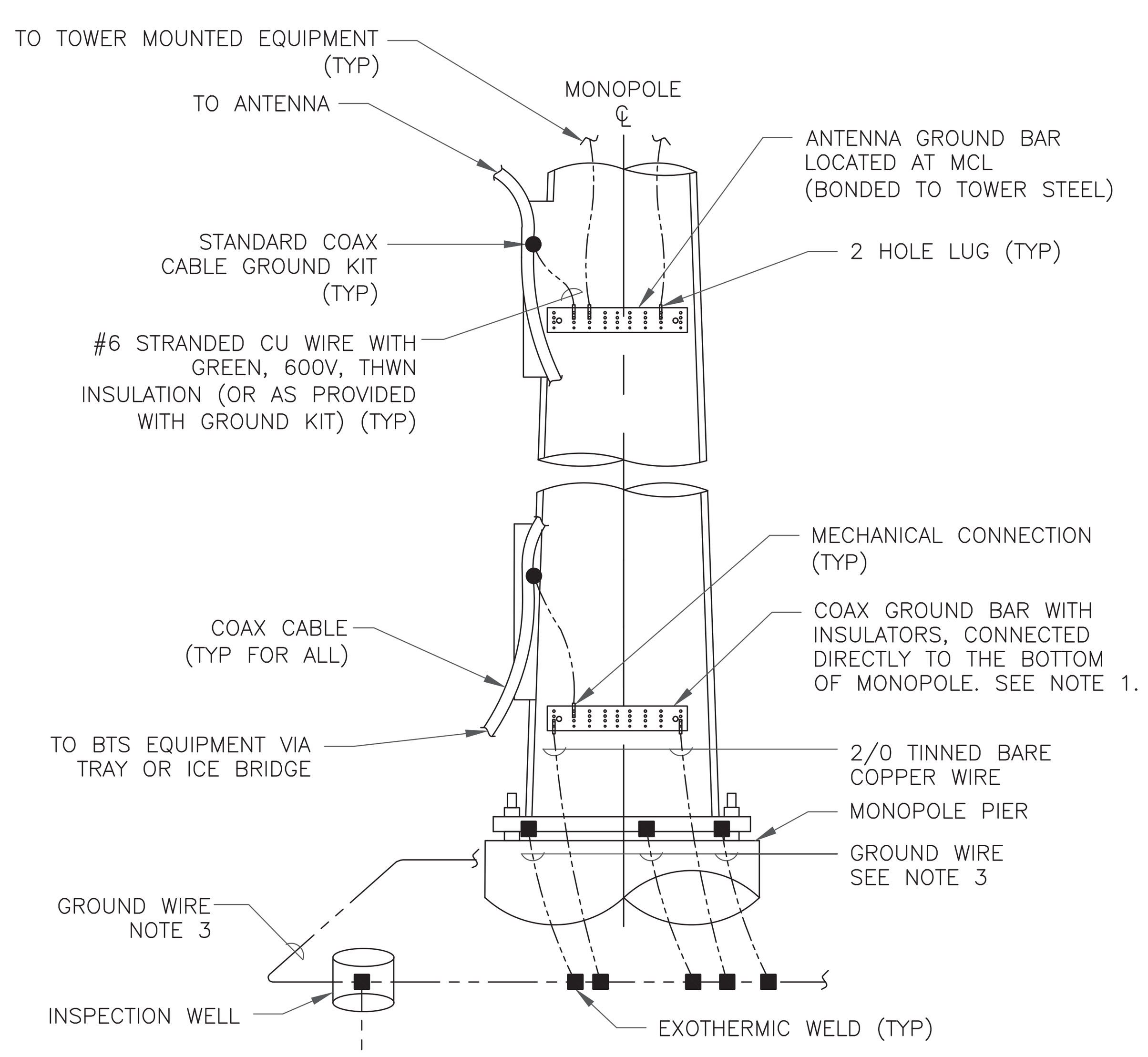
2 TOWER/SHELTER GROUND BAR DETAIL
SCALE: NOT TO SCALE



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)

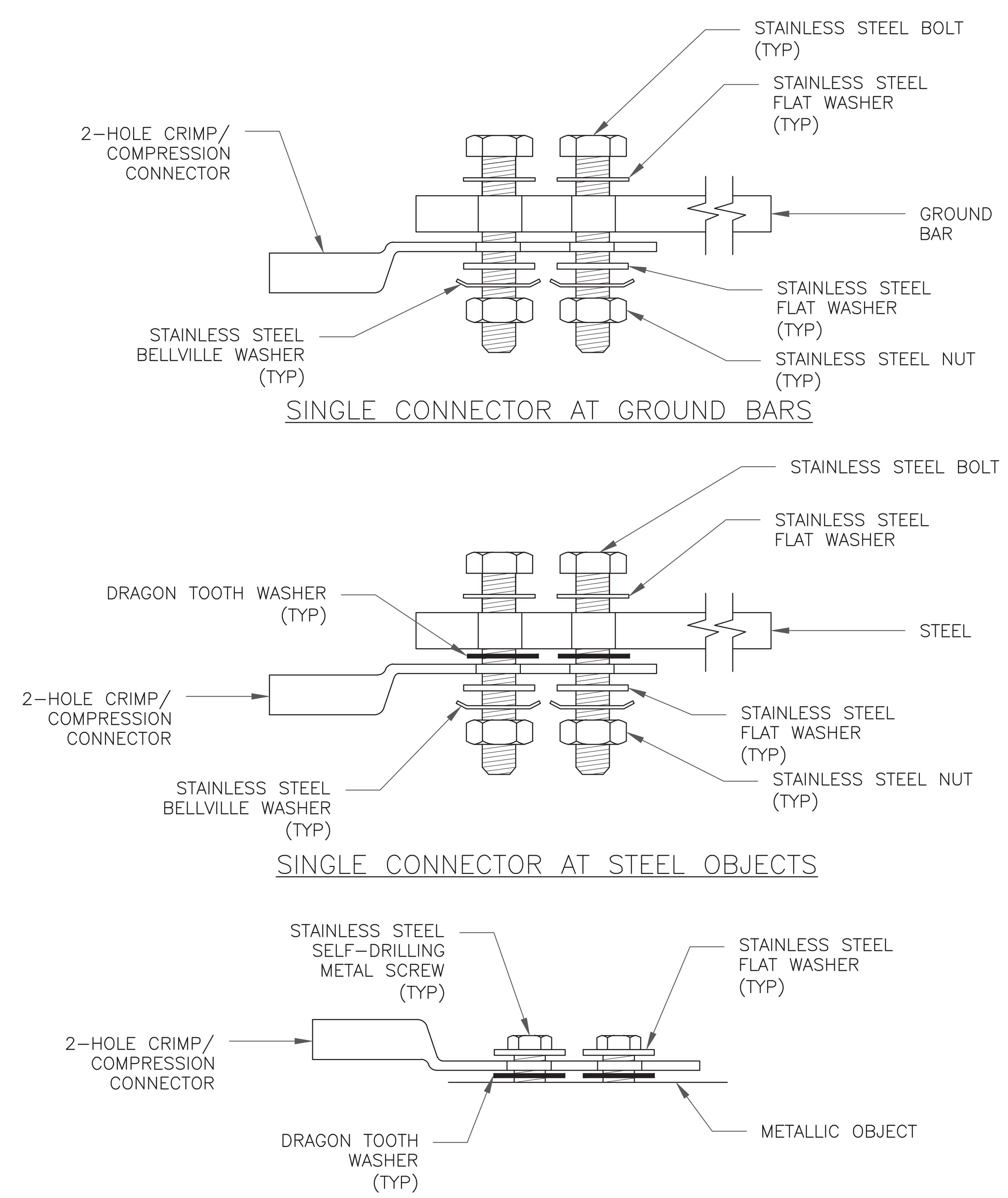
3 INSPECTION WELL DETAIL
SCALE: NOT TO SCALE



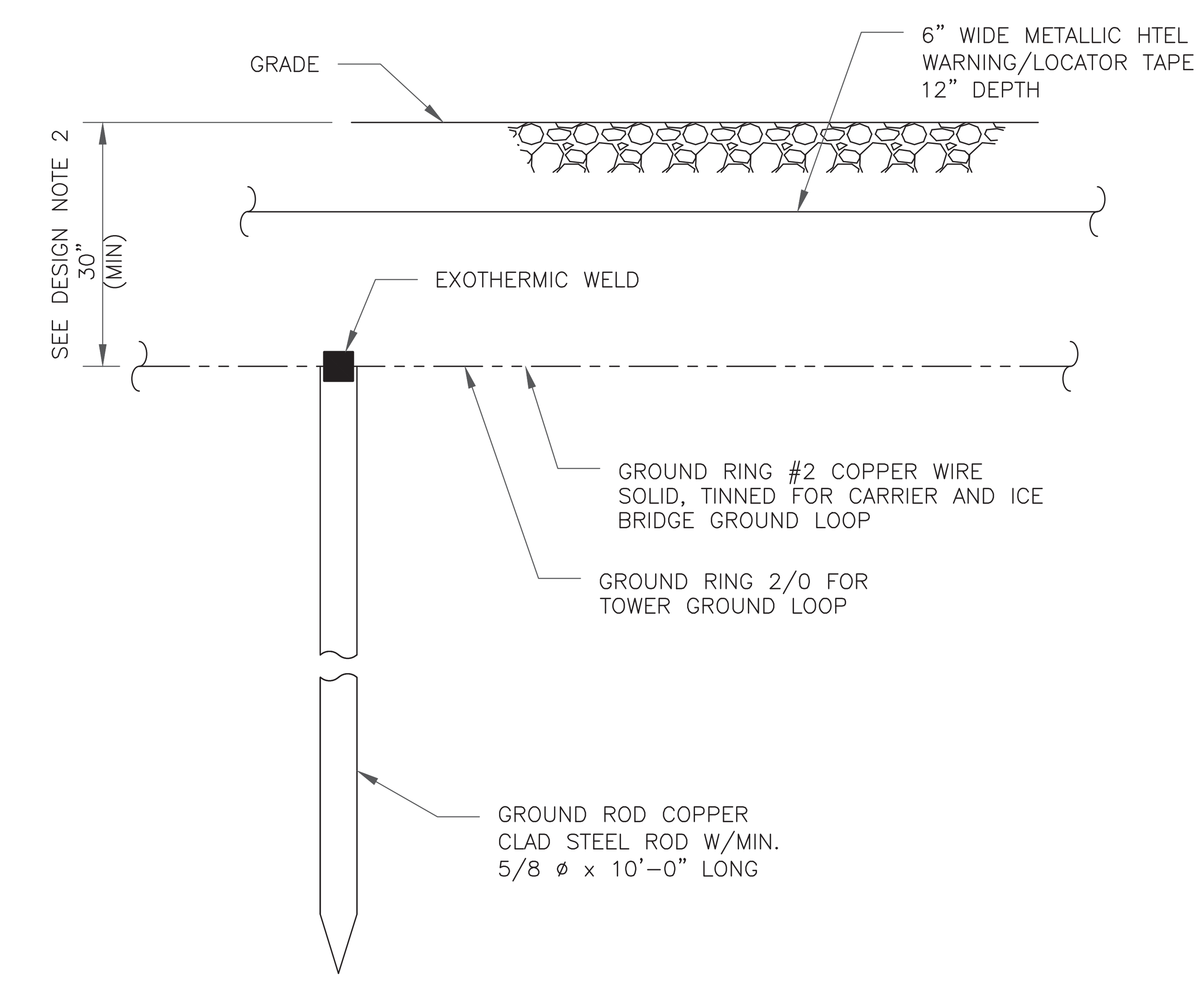
NOTES:

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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VERIZON SITE NUMBER:
468771

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WESTBROOK / ORSINA

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EXISTING 150'-0" MONOPOLE

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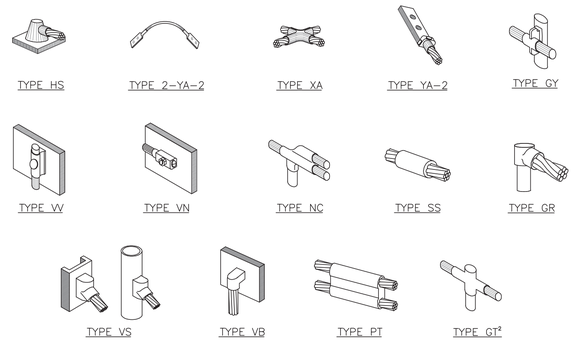
1	11/29/22	YX	CONSTRUCTION	ANP

STATE OF CONNECTICUT, No. 23924, LICENSED PROFESSIONAL ENGINEER
11/29/22

MTS ENGINEERING P.L.L.C.
BER:2386985
Expires 3/31/23

SHEET NUMBER: G-1
REVISION: 1

128492.002.01.0001_876384_WESTBROOK-ORSINA.dwg — Sheet:G-1 — User: ashley.pope — Nov 29, 2022 — 2:16pm

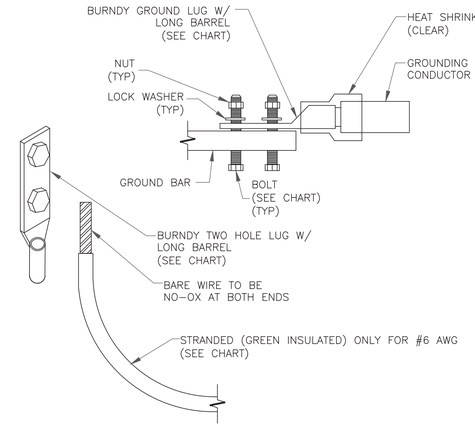


NOTE:

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

1 CADWELD GROUNDING CONNECTIONS
SCALE: NOT TO SCALE

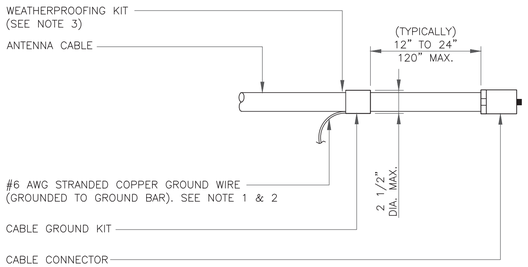
WIRE SIZE	BURNDY LUG	BOLT SIZE
#6 AWG GREEN INSULATED	YA6C-2TC38	3/8" - 16 NC S 2 BOLT
#2 AWG SOLID TINNED	YA3C-2TC38	3/8" - 16 NC S 2 BOLT
#2 AWG STRANDED	YA2C-2TC38	3/8" - 16 NC S 2 BOLT
#2/0 AWG STRANDED	YA26-2TC38	3/8" - 16 NC S 2 BOLT
#4/0 AWG STRANDED	YA28-2N	1/2" - 16 NC S 2 BOLT



NOTES:

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

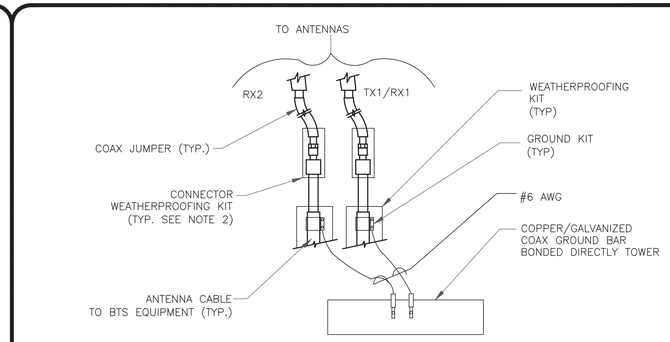
2 MECHANICAL LUG CONNECTION
SCALE: NOT TO SCALE



NOTES:

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

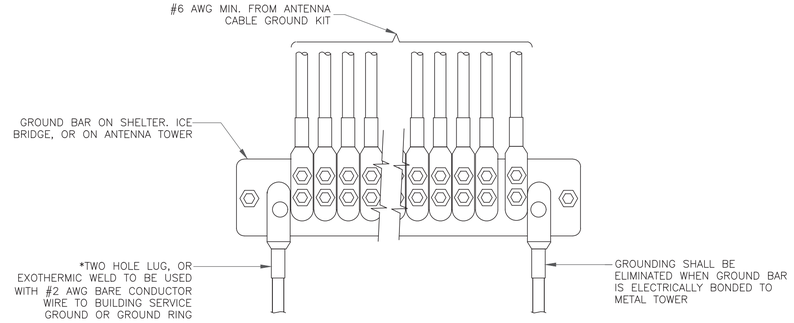
3 CABLE GROUND KIT CONNECTION
SCALE: NOT TO SCALE



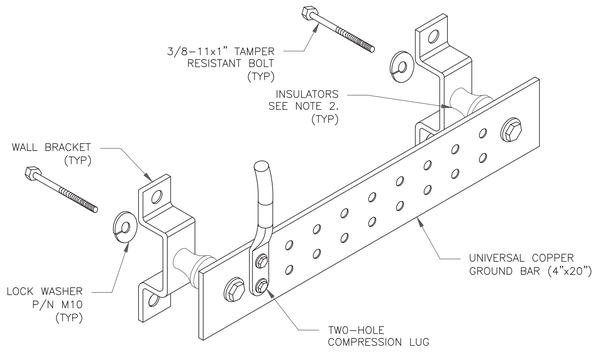
NOTES:

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

4 GROUND CABLE CONNECTION
SCALE: NOT TO SCALE



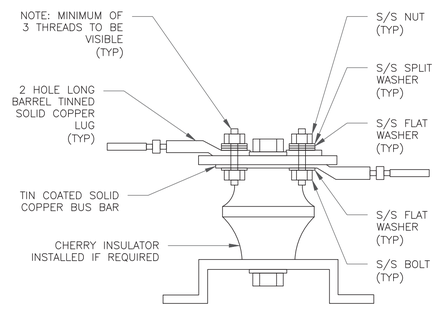
5 GROUNDWIRE INSTALLATION
SCALE: NOT TO SCALE



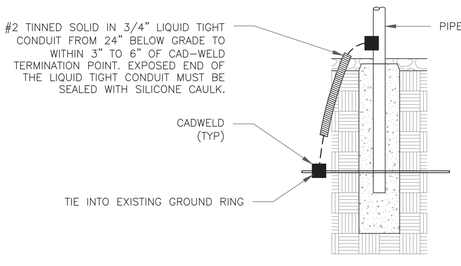
NOTES:

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

6 GROUND BAR DETAIL
SCALE: NOT TO SCALE



7 LUG DETAIL
SCALE: NOT TO SCALE



8 TRANSITIONING GROUND DETAIL
SCALE: NOT TO SCALE

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SUITE 300
TULSA, OK 74119
PH: (918) 587-4630
btwo@btgrp.com

VERIZON SITE NUMBER:
468771

BU #: **876384**
WESTBROOK / ORSINA

798 TOBY HILL ROAD
WESTBROOK, CT 06498

EXISTING 150'-0" MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
0	10/26/22	YX	CONSTRUCTION	LR
1	11/29/22	YX	CONSTRUCTION	ANP

STATE OF CONNECTICUT
No. 23024
LICENSED PROFESSIONAL ENGINEER
11/29/22

MTS ENGINEERING P.L.L.C.
BER:2386985
Expires 3/31/23

SHEET NUMBER: G-2
REVISION: 1

verizon

MOUNT MODIFICATION DRAWINGS
EXISTING 13.33' PLATFORM

TOWER OWNER: CROWN CASTLE
TOWER OWNER SITE NUMBER: 876384

CARRIER SITE NAME: WESTBROOK NE CT
CARRIER SITE NUMBER: 468771
FUZE ID: 2222426

798 TOBY HILL ROAD
WESTBROOK, CT 06498
MIDDLESEX COUNTY

LATITUDE: 41.320194° N
LONGITUDE: 72.442278° W

DESIGN CRITERIA

WIND LOADS

BASIC WIND SPEED (3 SECOND GUST), V = 124 MPH
EXPOSURE CATEGORY B
TOPOGRAPHY METHOD II
TOPOGRAPHIC CONSIDERED N/A
MEAN BASE ELEVATION (AMSL) = 146.03'

ICE LOADS

ICE WIND SPEED (3 SECOND GUST), V = 50 MPH
ICE THICKNESS = 1.00 IN

SEISMIC LOADS

SEISMIC DESIGN CATEGORY B
SHORT TERM MCER GROUND MOTION, S_S = .206
LONG TERM MCER GROUND MOTION, S_1 = .054

PROJECT INFORMATION

APPLICANT/LESSEE

COMPANY: VERIZON WIRELESS

CLIENT REPRESENTATIVE

COMPANY: VERIZON WIRELESS

PROJECT MANAGER

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 #: 10153052
VZW LOCATION CODE (PSLC): 468771
ANALYSIS DATE: 6/23/2022

PMI REQUIREMENTS EMBEDDED WITHIN MOUNT MODIFICATION REPORT

SHEET INDEX

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

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SCALE :	JOB NUMBER :
AS SHOWN	22777110A

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0	06/23/22	ISSUED FOR CONSTRUCTION	GHW	DRH
REV	DATE	DESCRIPTION	DRAWN BY	CHECKED BY

6/23/22
STATE OF CONNECTICUT
DEREK R HARTZELL
32710
LICENSED
PROFESSIONAL ENGINEER

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SITE NAME:

WESTBROOK NE CT
468771

798 TOBY HILL ROAD
WESTBROOK, CT 06498
MIDDLESEX COUNTY

Colliers Engineering & Design

STAMFORD
1055 Washington Boulevard
Stamford, CT 06901
Phone: 203.324.0800
COLLIERS ENGINEERING & DESIGN CT, P.C.
DOING BUSINESS AS MASER CONSULTING

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.)
1	VZWSMART	VZWSMART-MSK6	BACK TO BACK CROSSOVER PLATE		34	34
1		VZWSMART-PLK1	SUPPORT RAIL KIT	CONTRACTOR TO VERIFY THE LENGTH REQUIRED AND TRIM AS NECESSARY IN ACCORDANCE WITH THE 'STRUCTURAL STEEL' NOTES ON SHEET SGN-1.	504	504
1		VZWSMART-P40-238X048	48" LONG, PIPE 2 STD (2.375"OD X 0.154" THK)		15	15

SECTION 2 - OTHER REQUIRED PARTS

QUANTITY	MANUFACTURER	PART NUMBER	DESCRIPTION	NOTES	UNIT WEIGHT (LBS.)	WEIGHT (LBS.)
					TOTAL:	553

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	
CONTACT	SALVADOR ANGUIANO
PHONE	(817) 304-7492
EMAIL	SALVADOR.ANGUIANO@COMMSCOPE.COM
WEBSITE	WWW.COMMSCOPE.COM
METROSITE FABRICATORS, LLC	
CONTACT	KENT RAMEY
PHONE	(706) 335-7045 (O), (706) 982-9788 (M)
EMAIL	KENT@METROSITELLC.COM
WEBSITE	METROSITEFABRICATORS.COM
PERFECTVISION	
CONTACT	WIRELESS SALES
PHONE	(844) 887-6723
EMAIL	WWW.PERFECT-VISION.COM
WEBSITE	WIRELESSSALES@PERFECT-VISION.COM
SABRE INDUSTRIES, INC.	
CONTACT	ANGIE WELCH
PHONE	(866) 428-6937
EMAIL	AKWELCH@SABREINDUSTRIES.COM
WEBSITE	WWW.SABRESITESOLUTIONS.COM
SITE PRO 1	
CONTACT	PAULA BOSWELL
PHONE	(972) 236-9843
EMAIL	PAULA.BOSWELL@VALMONT.COM
WEBSITE	WWW.SITEPRO1.COM

VZWSMART KITS - APPROVED VENDORS	
NEWAVE	
CONTACT	NEWAVE SALES TEAM
PHONE	(971) 239-4762
EMAIL	SALES@NEWAVETC.COM
WEBSITE	WWW.NEWAVETC.COM
BETTER METAL, LLC	
CONTACT	DAVID STANSBERRY
PHONE	(615) 535-0990 (O), (615) 631-2520 (M)
EMAIL	DLS@BETTERMETAL.COM
WEBSITE	WWW.BETTERMETAL.COM

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STATE OF CONNECTICUT
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32710
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PROFESSIONAL ENGINEER
COLLIERS ENGINEERING & DESIGN CT, P.C.
CT. PEC.0000[illegible]
6/23/22

SITE NAME:

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468771

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WESTBROOK, CT 06498
MIDDLESEX COUNTY

Colliers Engineering & Design

STAMFORD
1055 Washington Boulevard
Stamford, CT 06901
Phone: 203.324.0800
COLLIERS ENGINEERING & DESIGN CT, P.C.
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SHEET TITLE: 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

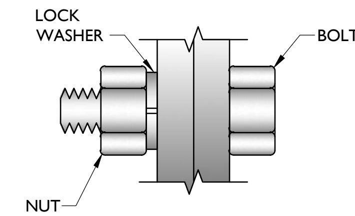
1. ALL WELDING SHALL BE DONE IN ACCORDANCE WITH AWS D1.0 (LATEST EDITION). THIS SHALL INCLUDE A CERTIFIED WELD INSPECTION (CWI) FOR ACCEPTANCE OR REJECTION OF ALL WELDING OPERATIONS, PRE, DURING, AND POST INSTALLATION, USING THE ACCEPTANCE CRITERIA OF AWS D1.1.
2. CONTRACTOR IS RESPONSIBLE FOR COMMISSIONING 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

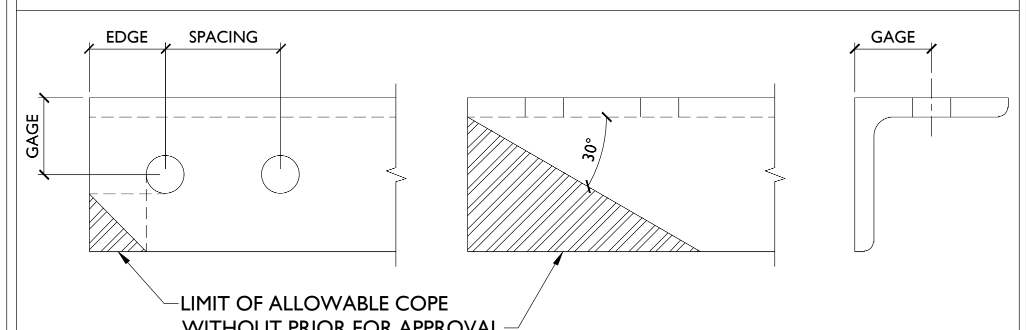


TYP. BOLT ASSEMBLY

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.

ALLOWABLE COPING



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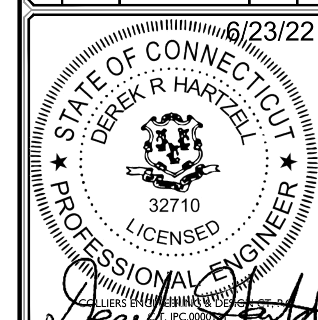

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SITE NAME:

WESTBROOK NE CT
468771

798 TOBY HILL ROAD
WESTBROOK, CT 06498
MIDDLESEX COUNTY

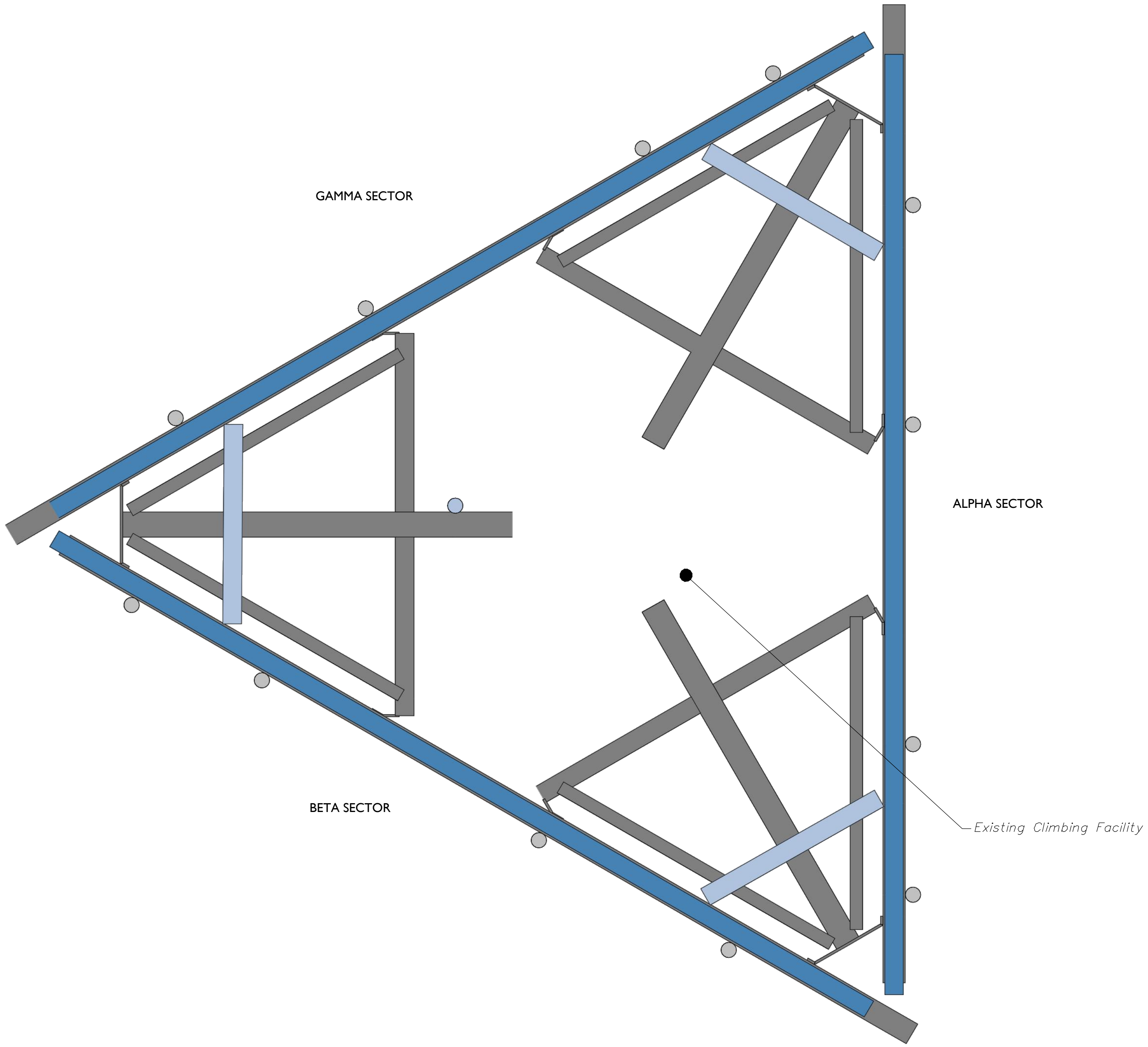
Colliers Engineering & Design

STAMFORD
1055 Washington Boulevard
Stamford, CT 06901
Phone: 203.324.0800
COLLIERS ENGINEERING & DESIGN CT, P.C.
DOING BUSINESS AS MASER CONSULTING

SHEET TITLE :
MODIFICATION NOTES

SHEET NUMBER :
SGN-1

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.



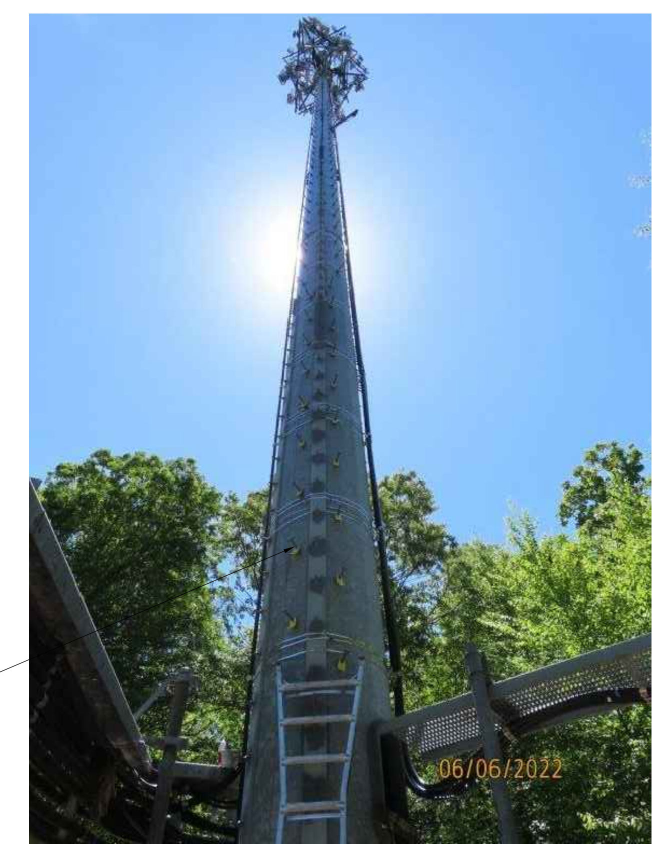
1 CLIMBING FACILITY LOCATION
SCALE : N.T.S.

STRUCTURAL NOTES:

1. PER THE MOUNT MAPPING COMPLETED BY HUDSON DESIGN GROUP, LLC ON 6/6/2022, THE SAFETY CLIMB AND CLIMBING FACILITIES UP TO THE VERIZON MOUNT ELEVATION (139'-3") ARE IN GOOD CONDITION. COLLIERS ENGINEERING & DESIGN DOES NOT WARRANT THIS INFORMATION.

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.

Existing Climbing Facility



CLIMBING FACILITY PHOTO

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0	06/23/22	ISSUED FOR CONSTRUCTION	GHW	DRH

6/23/22
STATE OF CONNECTICUT
DEREK R HARTZELL
32710
LICENSED
PROFESSIONAL ENGINEER
COLLIERS ENGINEERING & DESIGN CT, P.C.
CT. JPC.0000...

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468771

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WESTBROOK, CT 06498
MIDDLESEX COUNTY

Colliers Engineering & Design
STAMFORD
1055 Washington Boulevard
Stamford, CT 06901
Phone: 203.324.0800
COLLIERS ENGINEERING & DESIGN CT, P.C.
DOING BUSINESS AS MASER CONSULTING

SHEET TITLE : CLIMBING FACILITY DETAIL

SHEET NUMBER : SCF-1

LEGEND:

- PROPOSED
- RELOCATED
- EXISTING

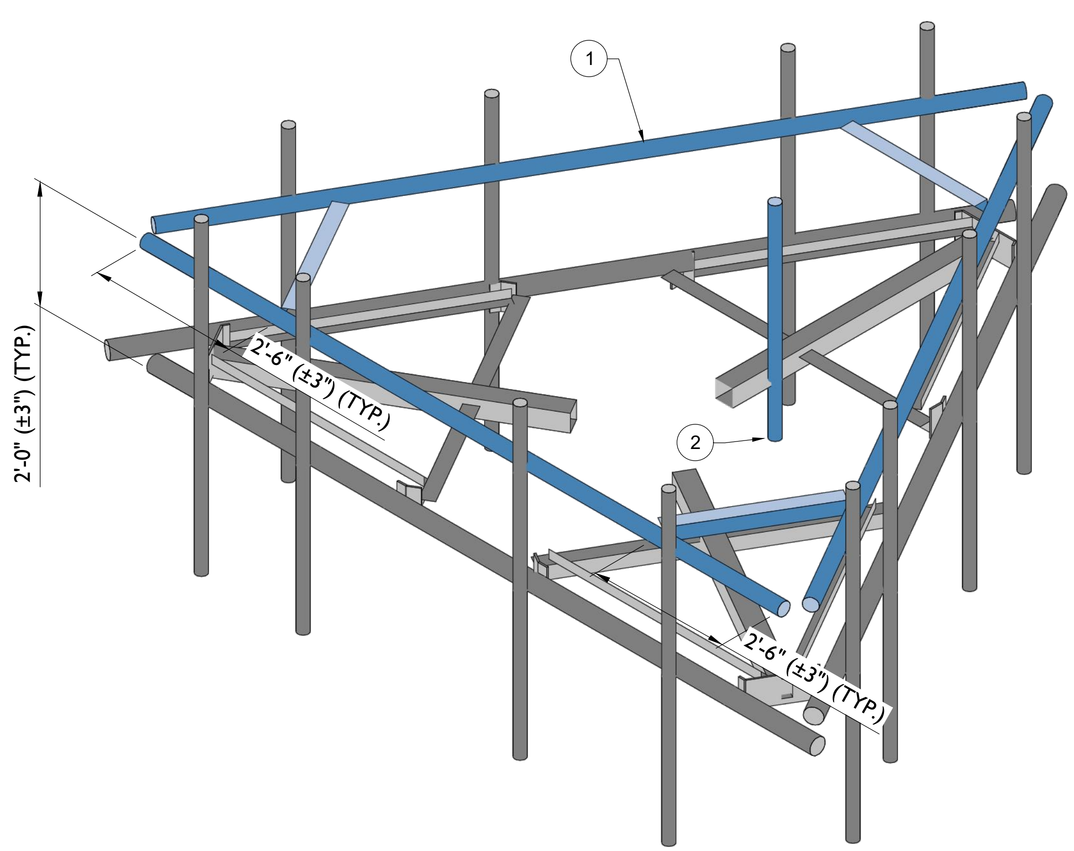
MOUNT MODIFICATION SCHEDULE

NO.	ELEVATION	QUANTITY	DESCRIPTION	NOTES
1	139'-3"	1	PROPOSED SUPPORT RAIL KIT (PART #: VZWSMART-PLK1)	CONTRACTOR TO VERIFY THE LENGTH REQUIRED AND TRIM AS NECESSARY IN ACCORDANCE WITH THE 'STRUCTURAL STEEL' NOTES ON SHEET SGN-1. 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.
2		1	PROPOSED 48" LONG, P2 STD PART #: VZWSMART-P40-238X048)	CONNECT NEW OVP PIPE TO EXISTING STANDOFF HORIZONTAL BETWEEN BETA AND GAMMA SECTORS WITH CROSSOVER PLATE (PART #: VZWSMART-MSK6)

NOTES.

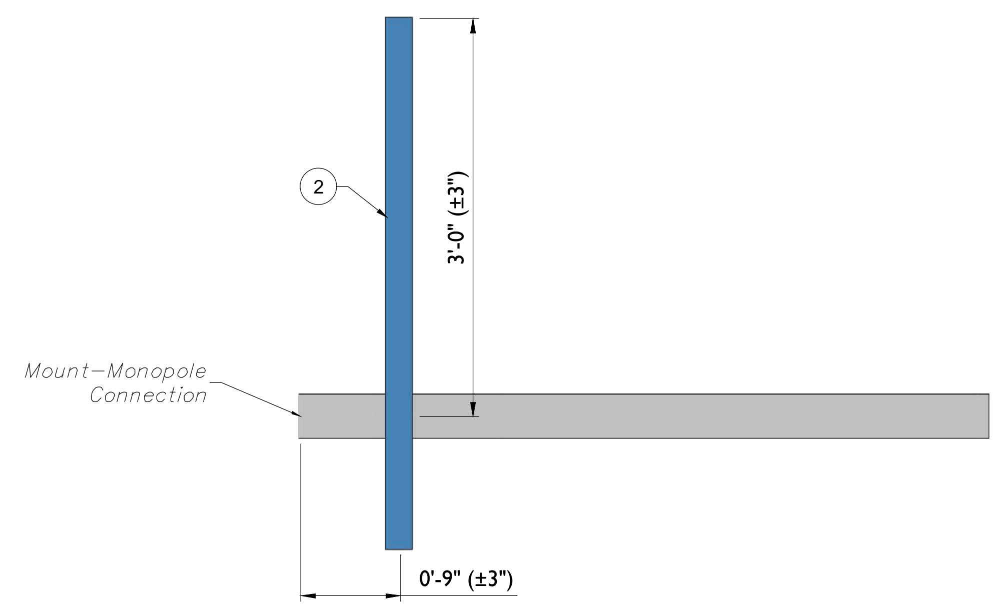
MOUNT MEMBERS NOT SHOWN FOR CLARITY U.N.O.

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).



1 PROPOSED ISOMETRIC VIEW

SCALE : N.T.S.



2 PROPOSED SIDE ELEVATION VIEW (TYP. ALL SECTORS)

SCALE : N.T.S.

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811 Know what's below. Call before you dig.

FOR STATE SPECIFIC DIRECT PHONE NUMBERS VISIT: WWW.CALL811.COM

SCALE :	JOB NUMBER :
AS SHOWN	22777110A

REV	DATE	DESCRIPTION	DRAWN BY	CHECKED BY
.	.	.	.	.
.	.	.	.	.
.	.	.	.	.
0	06/23/22	ISSUED FOR CONSTRUCTION	GHW	DRH

6/23/22

STATE OF CONNECTICUT DEREK R HARTZELL 32710 LICENSED PROFESSIONAL ENGINEER

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SHEET TITLE : MODIFICATION DETAILS

SHEET NUMBER : SS-1

MOUNT PHOTO 1

MOUNT PHOTO 2

MOUNT PHOTO 3

MOUNT PHOTO 4

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SCALE :	JOB NUMBER :
AS SHOWN	22777110A

REV	DATE	DESCRIPTION	DRAWN BY	CHECKED BY
0	06/23/22	ISSUED FOR CONSTRUCTION	GHW	DRH

6/23/22

STATE OF CONNECTICUT
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32710
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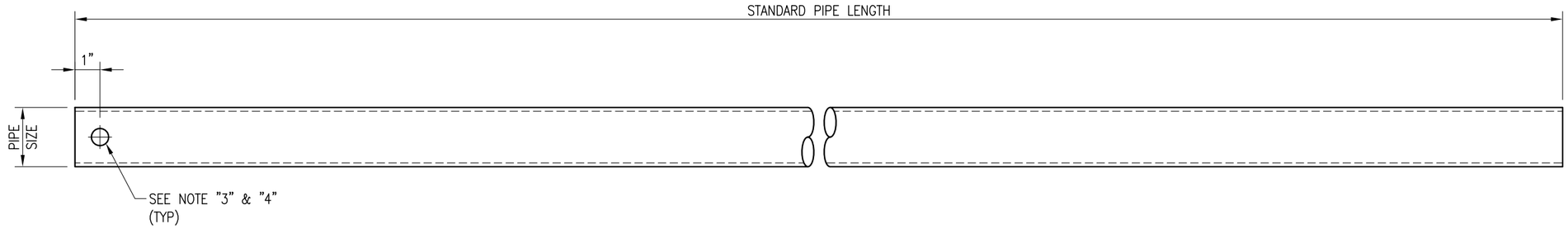
SHEET TITLE :

MOUNT PHOTOS

SHEET NUMBER :

SS-2



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

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

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

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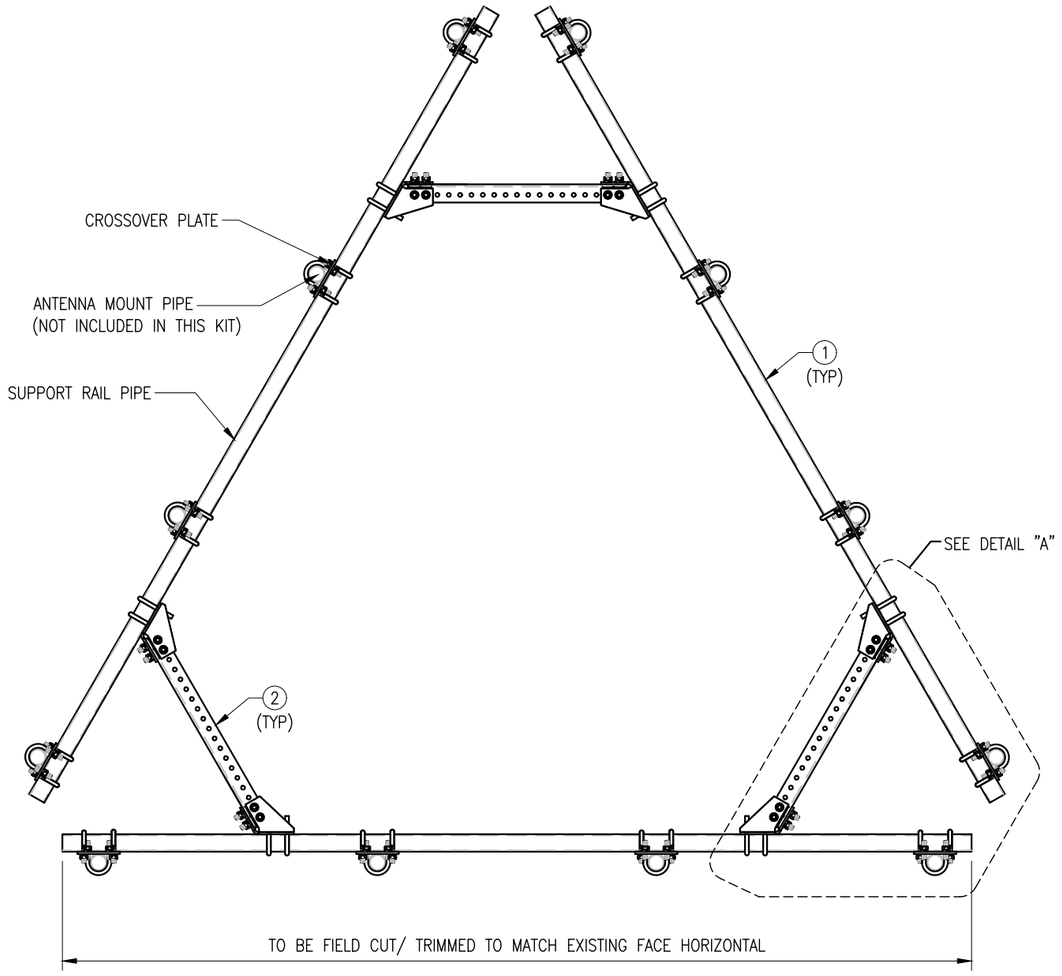
DRAWN BY: BT | CHECKED BY: HMA/KW

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

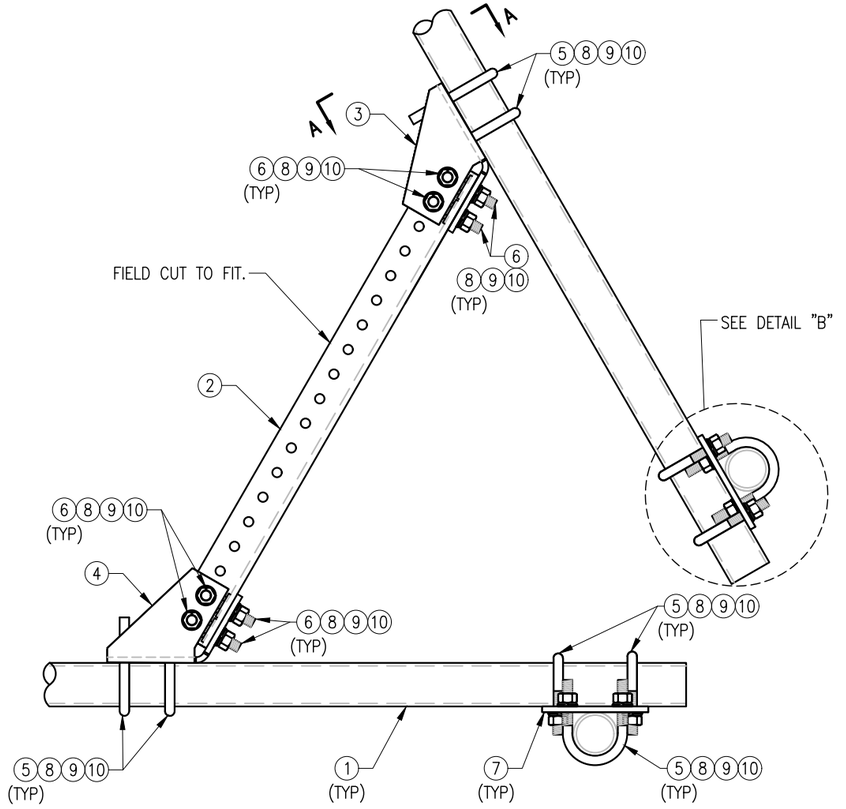
SHEET TITLE:
VZWSMART STANDARD PIPE

SHEET NUMBER: VZWSMART-PIPE

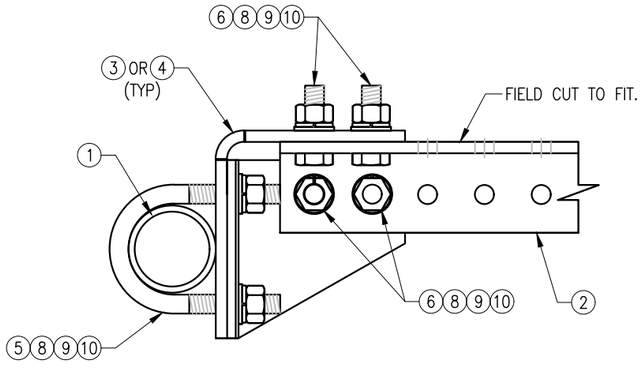
REV #: 0



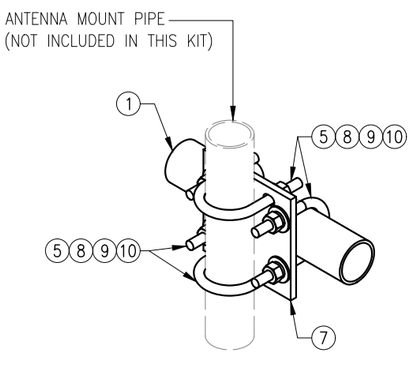
PLAN VIEW



DETAIL "A"



SECTION "A–A"



DETAIL "B"

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

VZW SMART–PLK1 (SUPPORT RAIL KIT)

ITEM NO.	QTY.	PART NO.	DESCRIPTION	SHEET #	WT
1	3	PST2875–12.5	2.5" PST (2.875" O.D. X 0.203" THK.) X 12'–6" A53 GR–B	PLK1–F1	292
2	3	L33375–3	L 3" X 3" X 3/8" X 3'–0" A36	PLK1–F1	66
3	3	CBP–L	CORNER BENT PLATE BRACKET	PLK1–F2	28
4	3	CBP–R	CORNER BENT PLATE BRACKET	PLK1–F2	28
5	60	MS02–625–300–500	RU–BOLT 5/8" X 3" I.W. X 5" I.L. A36 (OR EQUIV.)	RBC–1	82
6	24	---	BOLT 5/8" X 2" A325	---	9
7	12	PL375–857	PL 3/8" X 8 1/2" X 7'–0" A36	PLK1–F3	77
8	144	FW–625	5/8" HDG USS FLAT WASHER	---	12
9	144	LW–625	5/8" HDG LOCK WASHER	---	3
10	144	NUT–625	5/8" HDG HEX NUT	---	17
				GALVANIZED WT	504

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DRAWN BY: H.R | CHECKED BY: HMA

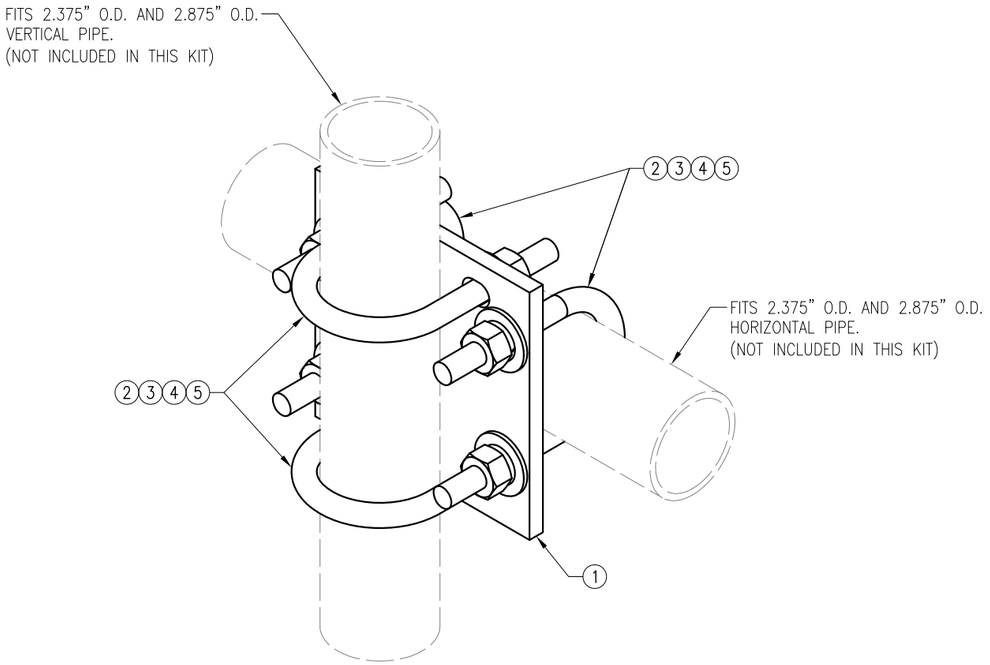
REV.	DESCRIPTION	BY	DATE
0	FIRST ISSUE	H.R	05/08/20

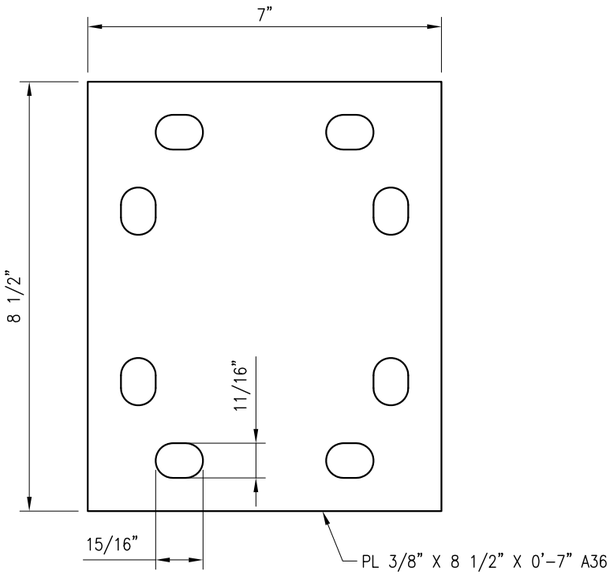
SHEET TITLE:

VZWSMART–PLK1
SUPPORT RAIL KIT

SHEET NUMBER: VZWSMART–PLK1

REV #: 0





PL375-857

VZWSMART-MSK1 (CROSSOVER PLATE)					
ITEM NO.	QTY.	PART NO.	DESCRIPTION	SHEET #	WT
1	1	PL375-857	PL 3/8" X 8 1/2" X 0'-7" A36	MSK1-F1	6
2	4	MS02-625-300-500	RU-BOLT 5/8" X 3" I.W. X 5" I.L. A36 (OR EQUIV.)	RBC-1	5
3	8	FW-625	5/8" HDG USS FLAT WASHER	---	1
4	8	LW-625	5/8" HDG LOCK WASHER	---	0
5	8	NUT-625	5/8" HDG HEX NUT	---	1
				GALVANIZED WT	14

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

VzW SMART Tool© Vendor

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DRAWN BY: H.R | CHECKED BY: HMA

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

SHEET TITLE:

VZWSMART-MSK1
CROSSOVER PLATE

SHEET NUMBER: VZWSMART-MSK1

REV #: 0

ATTACHMENT 4

Date: **February 02, 2023**

Crown Castle
2000 Corporate Drive
Canonsburg, PA 15317
(724) 416-2286

Subject:	**Structural Analysis Report**	
Carrier Designation:	***Verizon Wireless* Co-Locate**	
	Site Number:	468771
	Site Name:	Westbrook NE CT
Crown Castle Designation:	**BU Number:**	876384
	Site Name:	WESTBROOK / ORSINA
	JDE Job Number:	740379
	Work Order Number:	2201104
	Order Number:	644548 Rev. 0
Engineering Firm Designation:	**Crown Castle Project Number:**	2201104
Site Data:	**798 Toby Hill Road, WESTBROOK, MIDDLESEX County, CT** **Latitude *41° 19' 12.6"*, Longitude *-72° 26' 30"*** **150 Foot - Monopole Tower**	

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

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

LC7: Proposed Equipment Configuration **Sufficient Capacity**

This analysis utilizes an ultimate 3-second gust wind speed of 124 mph as required by the 2022 Connecticut State Building Code. Applicable Standard references and design criteria are listed in Section 2 - Analysis Criteria.

Structural analysis prepared by: Brittany Mihalko Bozak

Respectfully submitted by:

Digitally signed by Maham Barimani
Date: 2023.02.02 15:20:00 -05'00'

STATE OF CONNECTICUT
MAHAM BARIMANI
30501
LICENSED
PROFESSIONAL ENGINEER

Maham Barimani, P.E.
Senior Project Engineer

TABLE OF CONTENTS

1) INTRODUCTION

This tower is a 150 ft Monopole tower designed by ENGINEERED ENDEAVORS, INC. The tower has been modified multiple times to accommodate additional loading.

2) ANALYSIS CRITERIA

TIA-222 Revision:	TIA-222-H
Risk Category:	II
Wind Speed:	124 mph
Exposure Category:	B
Topographic Factor:	1
Ice Thickness:	1 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)
140.0	140.0	2	decibel	DB846F65ZAXY w/ Mount Pipe	13	1-5/8
		4	decibel	DB846H80E-SX w/ Mount Pipe		
		6	jma wireless	MX06FRO660-03 w/ Mount Pipe		
		1	raycap	RVZDC-6627-PF-48		
		3	rfs celwave	FDJ85020Q7-S1		
		3	samsung telecommunications	MT6407-77A w/ Mount Pipe		
		3	samsung telecommunications	RF4439D-25A		
		3	samsung telecommunications	RF4440D-13A		
		-	-	Mount Modifications		
		1	tower mounts	Platform Mount [LP 304-1_HR-1]		

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)
152.0	154.0	3	commscope	VV-65A-R1_TMO w/ Mount Pipe	3	1-5/8
		3	ericsson	AIR6449 B41_T-MOBILE w/ Mount Pipe		
		3	ericsson	RADIO 2X2212 B2		
		3	ericsson	RADIO 4415 B66A		
		3	ericsson	RADIO 4449 B71 B85A_T-MOBILE		
		3	rfs celwave	APXVAALL24_43-U-NA20_TMO w/ Mount Pipe		
	152.0	1	tower mounts	Platform Mount [LP 303-1_HR-1]		

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
130.0	130.0	3	cci antennas	DMP65R-BU6D w/ Mount Pipe	12 1 2 2	1-5/8 7/8 7/16 3/8
		3	cci antennas	OPA65R-BU6D w/ Mount Pipe		
		3	ericsson	RRUS 4449 B5/B12		
		3	ericsson	RRUS 4478 B14		
		3	ericsson	RRUS 8843 B2/B66A		
		3	powerwave technologies	1001940		
		3	powerwave technologies	7770.00 w/ Mount Pipe		
		2	raycap	DC6-48-60-18-8F		
		1	tower mounts	Platform Mount [LP 304-1_KCKR-HR-1]		
		1	tower mounts	Side Arm Mount [SO 102-3]		
		1	tower mounts	Side Arm Mount [SO 701-3]		
120.0	120.0	3	fujitsu	TA08025-B604	1	1-1/2
		3	fujitsu	TA08025-B605		
		3	jma wireless	MX08FRO665-20 w/ Mount Pipe		
		1	raycap	RDIDC-9181-PF-48		
		1	tower mounts	Commscope MC-K6MHDX-9-96 (3)		
80.0	81.0	1	lucent	KS24019-L112A	1	1/2
	80.0	1	tower mounts	Side Arm Mount [SO 701-1]		

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Reference	Source
4-GEOTECHNICAL REPORTS	1615342	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	1615435	CCISITES
4-TOWER MANUFACTURER DRAWINGS	1615370	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	2154747	CCISITES
4-TOWER STRUCTURAL ANALYSIS REPORTS	3373253	CCISITES
4-POST-MODIFICATION INSPECTION	5840467	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	5650397	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.

tnxTower was used to determine the loads on the modified structure. Additional calculations were performed to determine the stresses in the reinforcing elements. These calculations are presented in Appendix C.

3.2) Assumptions

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

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

4) ANALYSIS RESULTS

Table 4 - Section Capacity (Summary)

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
150 - 145	Pole	TP14.12x13x0.1875	Pole	20.8%	Pass
145 - 140	Pole	TP15.241x14.12x0.1875	Pole	30.2%	Pass
140 - 136.29	Pole	TP16.65x15.241x0.1875	Pole	42.3%	Pass
136.29 - 131.29	Pole	TP16.804x15.696x0.3125	Pole	35.4%	Pass
131.29 - 126.29	Pole	TP17.912x16.804x0.3125	Pole	45.6%	Pass
126.29 - 121.29	Pole	TP19.02x17.912x0.3125	Pole	54.3%	Pass
121.29 - 116.29	Pole	TP20.128x19.02x0.3125	Pole	62.6%	Pass
116.29 - 111.29	Pole	TP21.236x20.128x0.3125	Pole	69.4%	Pass
111.29 - 108.25	Pole	TP21.911x21.236x0.3125	Pole	72.8%	Pass
108.25 - 108	Pole + Reinf.	TP21.966x21.911x0.6375	Reinf. 9 Tension Rupture	59.8%	Pass
108 - 103	Pole + Reinf.	TP23.074x21.966x0.6125	Reinf. 9 Tension Rupture	65.2%	Pass
103 - 98	Pole + Reinf.	TP24.182x23.074x0.6	Reinf. 9 Tension Rupture	69.9%	Pass
98 - 93	Pole + Reinf.	TP25.29x24.182x0.5875	Reinf. 9 Tension Rupture	73.9%	Pass
93 - 91.92	Pole + Reinf.	TP26.38x25.29x0.5875	Reinf. 9 Tension Rupture	74.7%	Pass
91.92 - 86.92	Pole + Reinf.	TP26.012x24.906x0.6375	Reinf. 9 Tension Rupture	73.3%	Pass
86.92 - 85.17	Pole + Reinf.	TP26.399x26.012x0.6375	Reinf. 9 Tension Rupture	74.3%	Pass
85.17 - 84.92	Pole + Reinf.	TP26.454x26.399x0.6375	Reinf. 5 Tension Rupture	74.4%	Pass
84.92 - 79.92	Pole + Reinf.	TP27.561x26.454x0.625	Reinf. 5 Tension Rupture	76.8%	Pass
79.92 - 77	Pole + Reinf.	TP28.206x27.561x0.6125	Reinf. 5 Tension Rupture	78.1%	Pass
77 - 76.75	Pole + Reinf.	TP28.262x28.206x0.5375	Reinf. 5 Tension Rupture	79.8%	Pass

76.75 - 75	Pole + Reinf.	TP28.649x28.262x0.5313	Reinf. 5 Tension Rupture	80.4%	Pass
75 - 74.75	Pole + Reinf.	TP28.704x28.649x0.6125	Reinf. 5 Tension Rupture	79.0%	Pass
74.75 - 69.75	Pole + Reinf.	TP29.811x28.704x0.6	Reinf. 5 Tension Rupture	80.7%	Pass
69.75 - 65.08	Pole + Reinf.	TP30.843x29.811x0.5875	Reinf. 5 Tension Rupture	82.2%	Pass
65.08 - 64.83	Pole + Reinf.	TP30.899x30.843x0.5875	Reinf. 3 Tension Rupture	82.2%	Pass
64.83 - 59.83	Pole + Reinf.	TP32.005x30.899x0.5875	Reinf. 3 Tension Rupture	83.5%	Pass
59.83 - 54.83	Pole + Reinf.	TP33.111x32.005x0.575	Reinf. 3 Tension Rupture	84.6%	Pass
54.83 - 49.83	Pole + Reinf.	TP34.218x33.111x0.5625	Reinf. 3 Tension Rupture	85.5%	Pass
49.83 - 48.5	Pole + Reinf.	TP35.62x34.218x0.5625	Reinf. 3 Tension Rupture	85.7%	Pass
48.5 - 42.5	Pole + Reinf.	TP35.092x33.764x0.5625	Reinf. 3 Tension Rupture	89.7%	Pass
42.5 - 37.5	Pole + Reinf.	TP36.199x35.092x0.55	Reinf. 3 Tension Rupture	90.3%	Pass
37.5 - 33	Pole + Reinf.	TP37.194x36.199x0.55	Reinf. 3 Tension Rupture	90.6%	Pass
33 - 32.75	Pole + Reinf.	TP37.25x37.194x0.6625	Reinf. 4 Tension Rupture	77.6%	Pass
32.75 - 32	Pole + Reinf.	TP37.416x37.25x0.6625	Reinf. 4 Tension Rupture	77.6%	Pass
32 - 31.75	Pole + Reinf.	TP37.471x37.416x0.5875	Reinf. 4 Tension Rupture	79.9%	Pass
31.75 - 30	Pole + Reinf.	TP37.858x37.471x0.5875	Reinf. 4 Tension Rupture	80.1%	Pass
30 - 29.75	Pole + Reinf.	TP37.914x37.858x0.5875	Reinf. 2 Tension Rupture	80.1%	Pass
29.75 - 24.75	Pole + Reinf.	TP39.021x37.914x0.575	Reinf. 2 Tension Rupture	80.4%	Pass
24.75 - 19.75	Pole + Reinf.	TP40.128x39.021x0.5688	Reinf. 2 Tension Rupture	80.6%	Pass
19.75 - 14.75	Pole + Reinf.	TP41.235x40.128x0.5625	Reinf. 2 Tension Rupture	80.8%	Pass
14.75 - 9.75	Pole + Reinf.	TP42.341x41.235x0.5625	Reinf. 2 Tension Rupture	80.9%	Pass
9.75 - 4.75	Pole + Reinf.	TP43.448x42.341x0.55	Reinf. 2 Tension Rupture	80.9%	Pass
4.75 - 0	Pole + Reinf.	TP44.5x43.448x0.55	Reinf. 2 Tension Rupture	80.9%	Pass
				Summary	
			Pole	72.8%	Pass
			Reinforcement	90.6%	Pass
			Overall	90.6%	Pass

Table 5 - Tower Component Stresses vs. Capacity - LC7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	83.4	Pass
1	Base Plate	0	76.9	Pass
1	Base Foundation (Structure)	0	85.9	Pass
1	Base Foundation (Soil Interaction)	0	60.0	Pass
1	Baseplate Stiffener	0	75.8	Pass

Structure Rating (max from all components) =	**90.6%**

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

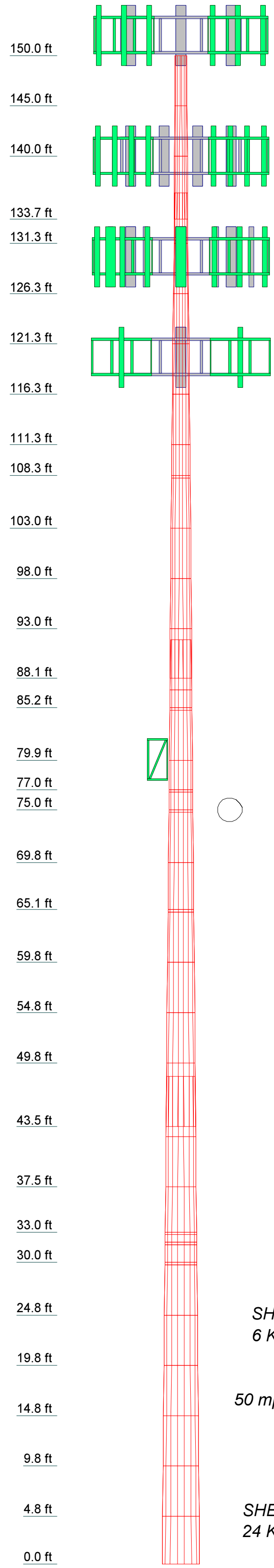
4.1) Recommendations

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

APPENDIX A

TNXTOWER OUTPUT

Section	Length (ft)	Number of Sides	Thickness (in)	Socket Length (ft)	Top Dia (in)	Bot Dia (in)	Grade	Weight (K)
1	5.00	18	0.188		13.000	14.120		0.1
2	5.00	18	0.188		14.120	15.241		0.1
3	6.29	18	0.188	2.58	15.241	16.650		0.2
4	5.00	18	0.313		15.696	16.804		0.3
5	5.00	18	0.313		16.804	17.912		0.3
6	5.00	18	0.313		17.912	19.020		0.3
7	5.00	18	0.313		19.020	20.128		0.3
8	5.00	18	0.313		20.128	21.236		0.3
9	3.04	18	0.313		21.236	[illegible]		0.2
10	[illegible]	18	[illegible]		[illegible]	[illegible]		0.0
11	5.00	18	[illegible]		[illegible]	[illegible]		0.7
12	5.00	18	0.600		23.074	24.182		0.7
13	5.00	18	0.588		24.182	25.290		0.7
14	[illegible]	18	0.588	3.83	25.290	26.380		0.7
15	[illegible]	18	[illegible]		[illegible]	[illegible]		0.8
16	[illegible]	18	[illegible]		[illegible]	[illegible]		0.0
17	[illegible]	18	[illegible]		[illegible]	[illegible]		[illegible]
18	5.00	18	[illegible]		[illegible]	[illegible]		0.8
19	2.92	18	0.613		[illegible]	[illegible]		0.5
20	[illegible]	18	[illegible]		[illegible]	[illegible]		[illegible]
21	[illegible]	18	[illegible]		[illegible]	[illegible]		[illegible]
22	[illegible]	18	[illegible]		[illegible]	[illegible]		[illegible]
23	5.00	18	0.600		[illegible]	[illegible]		0.9
24	4.67	18	0.588		29.811	30.843		0.8
25	[illegible]	18	[illegible]		[illegible]	[illegible]		0.0
26	5.00	18	0.588		[illegible]	[illegible]		0.9
27	5.00	18	0.575		32.005	33.111		1.0
28	5.00	18	0.563		33.111	34.218		1.0
29	6.34	18	0.563	5.00	34.218	35.620		1.3
30	[illegible]	18	0.563		[illegible]	[illegible]		1.2
31	5.00	18	0.550		[illegible]	[illegible]		1.0
32	4.50	18	0.550		[illegible]	[illegible]		0.9
33–37	[illegible]	18	[illegible]		[illegible]	[illegible]		[illegible]
38	5.00	18	[illegible]		[illegible]	39.021		1.2
39	5.00	18	0.569		39.021	40.128		1.2
40	5.00	18	0.563		40.128	41.235		1.2
41	5.00	18	0.563		41.235	42.341		1.2
42	5.00	18	0.550		42.341	43.448		1.3
43	4.75	18	0.550		43.448	44.500		1.2
							A572-65	25.0



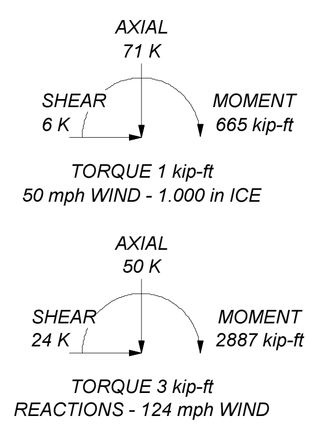
MATERIAL STRENGTH

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

TOWER DESIGN NOTES

1. Tower is located in Middlesex County, Connecticut.
2. Tower designed for Exposure B to the TIA-222-H Standard.
3. Tower designed for a 124 mph basic wind in accordance with the TIA-222-H Standard.
4. Tower is also designed for a 50 mph basic wind with 1.00 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Risk Category II.
7. Topographic Category 1 with Crest Height of 0.00 ft

ALL REACTIONS ARE FACTORED



CROWN CASTLE The Pathway to Possible	**Crown Castle** 2000 Corporate Drive Canonsburg, PA 15317 Phone: (724) 416-2286 FAX:	Job: **876384**		
		Project:		
		Client: Crown Castle	Drawn by: BMihalkoBozak	App'd:
		Code: TIA-222-H	Date: 02/02/23	Scale: NTS
		Path: C:\Users\bmihalkobozak\SAPI Work Area\876384\WO 2201104 - SA\Prod\876384-mod.eri		Dwg No. E-1

Tower Input Data

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

- Tower is located in Middlesex County, Connecticut.
- Tower base elevation above sea level: 160.00 ft.
- Basic wind speed of 124 mph.
- Risk Category II.
- Exposure Category B.
- Simplified Topographic Factor Procedure for wind speed-up calculations is used.
- Topographic Category: 1.
- Crest Height: 0.00 ft.
- Nominal ice thickness of 1.000 in.
- Ice thickness is considered to increase with height.
- Ice density of 56 pcf.
- A wind speed of 50 mph is used in combination with ice.
- Temperature drop of 50 °F.
- Deflections calculated using a wind speed of 60 mph.
- A non-linear (P-delta) analysis was used.
- Pressures are calculated at each section.
- Stress ratio used in pole design is 1.
- Tower analysis based on target reliabilities in accordance with Annex S.
- Load Modification Factors used: $K_{es}(F_w) = 0.95$, $K_{es}(t_i) = 0.85$.
- Maximum demand-capacity ratio is: 1.05.
- Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

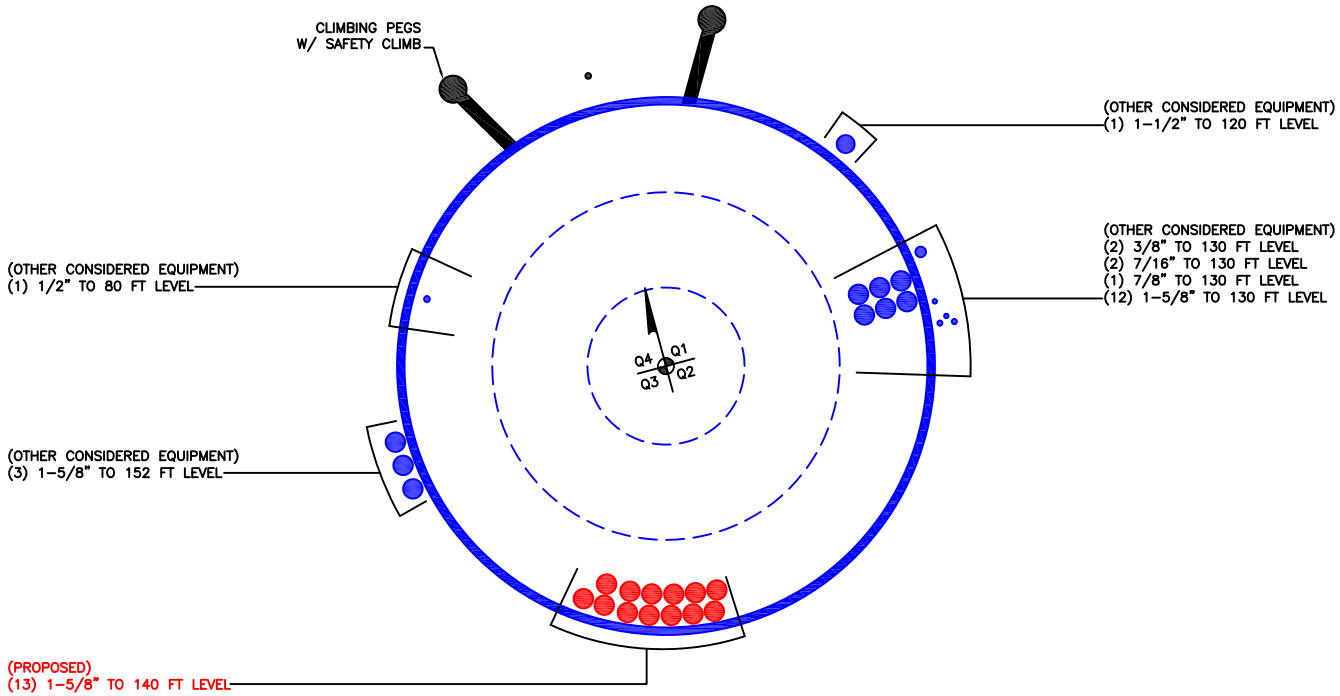
Options

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

Tapered Pole Section Geometry

APPENDIX B

BASE LEVEL DRAWING


CLIMBING PEGS
W/ SAFETY CLIMB
(OTHER CONSIDERED EQUIPMENT)
(1) 1-1/2" TO 120 FT LEVEL
(OTHER CONSIDERED EQUIPMENT)
(2) 3/8" TO 130 FT LEVEL
(2) 7/16" TO 130 FT LEVEL
(1) 7/8" TO 130 FT LEVEL
(12) 1-5/8" TO 130 FT LEVEL
(OTHER CONSIDERED EQUIPMENT)
(1) 1/2" TO 80 FT LEVEL
Q4
Q1
Q3
Q2
(OTHER CONSIDERED EQUIPMENT)
(3) 1-5/8" TO 152 FT LEVEL
(PROPOSED)
(13) 1-5/8" TO 140 FT LEVEL

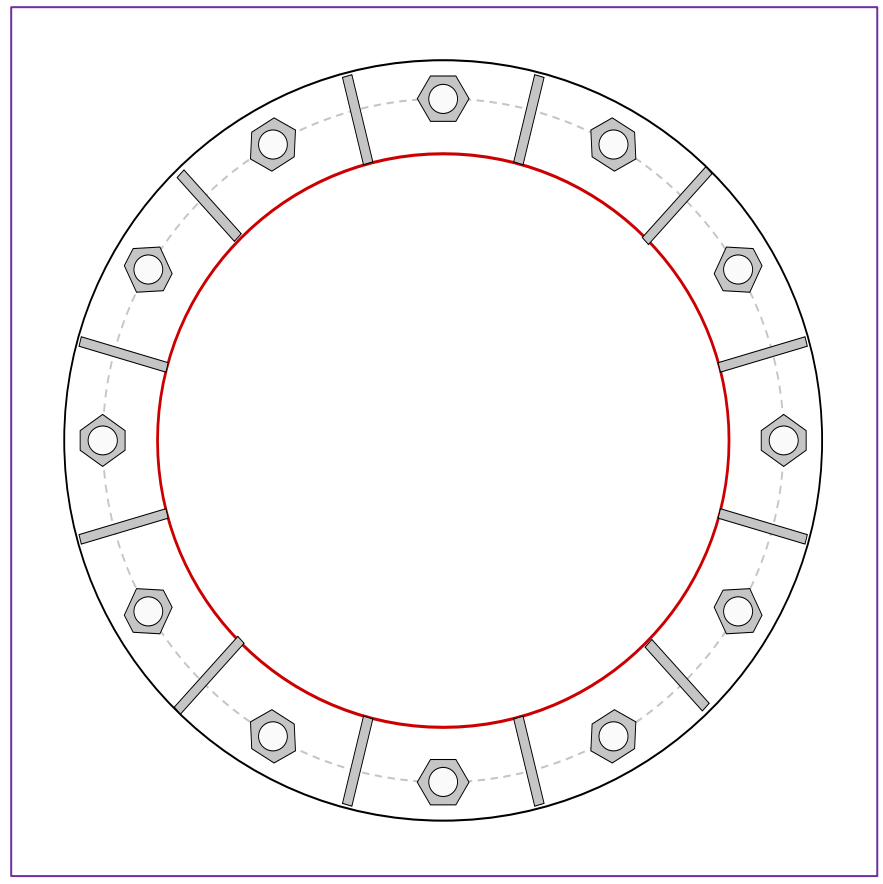
Monopole Base Plate Connection

Site Info	
BU #	876384
Site Name	Westbrook/ Orsina
Order #	644548 Rev 0

Analysis Considerations	
TIA-222 Revision	H
Grout Considered:	No
l_{ar} (in)	0.75

Applied Loads	
Moment (kip-ft)	2887.31
Axial Force (kips)	50.07
Shear Force (kips)	24.29

**TIA-222-H Section 15.5 Applied*



Connection Properties

Anchor Rod Data

(12) 2-1/4" ø bolts (A615-75 N; Fy=75 ksi, Fu=100 ksi) on 53" BC

Base Plate Data

59" OD x 1.75" Plate (A572-60; Fy=60 ksi, Fu=75 ksi)

Stiffener Data

(12) 18"H x 7"W x 0.75"T, Notch: 0.75"

plate: Fy= 50 ksi ; weld: Fy= 70 ksi

horiz. weld: 0.375" groove, 45° dbl bevelFALSE

vert. weld: 0.375" fillet

Pole Data

44.5" x 0.375" 18-sided pole (A572-65; Fy=65 ksi, Fu=80 ksi)

Analysis Results

Anchor Rod Summary		*(units of kips, kip-in)*
Pu_t = 213.58	ϕPn_t = 243.75	**Stress Rating**
Vu = 2.02	ϕVn = 149.1	**83.4%**
Mu = n/a	ϕMn = n/a	**Pass**

Base Plate Summary		
Max Stress (ksi):	43.63	(Roark's Flexural)
Allowable Stress (ksi):	54	
Stress Rating:	**76.9%**	**Pass**

Stiffener Summary		
Horizontal Weld:	**68.6%**	**Pass**
Vertical Weld:	**52.0%**	**Pass**
Plate Flexure+Shear:	**24.9%**	**Pass**
Plate Tension+Shear:	**69.4%**	**Pass**
Plate Compression:	**75.8%**	**Pass**

Pole Summary		
Punching Shear:	**15.6%**	**Pass**

Pier and Pad Foundation

BU # :	876384
Site Name:	Westbrook/Orsina
App. Number:	644548 Rev 0

TIA-222 Revision:	H
Tower Type:	Monopole

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

Superstructure Analysis Reactions

Compression, P_{comp}:	50.08	kips
Base Shear, Vu_comp:	24.27	kips
Moment, M_u:	2887.31	ft-kips
Tower Height, **H**:	150	ft
BP Dist. Above Fdn, bp_{dist}:	3	in

Pier Properties

Pier Shape:	Square	
Pier Diameter, **dpier**:	6	ft
Ext. Above Grade, **E**:	1	ft
Pier Rebar Size, **Sc**:	8	
Pier Rebar Quantity, **mc**:	30	
Pier Tie/Spiral Size, **St**:	4	
Pier Tie/Spiral Quantity, **mt**:	7	
Pier Reinforcement Type:	Tie	
Pier Clear Cover, cc_{pier}:	5	in

Pad Properties

Depth, **D**:	5	ft
Pad Width, W_1:	28	ft
Pad Thickness, **T**:	3	ft
Pad Rebar Size (Bottom dir. 2), Sp_2:	8	
Pad Rebar Quantity (Bottom dir. 2), mp_2:	28	
Pad Clear Cover, cc_{pad}:	3	in

Material Properties

Rebar Grade, **Fy**:	60	ksi
Concrete Compressive Strength, **F'c**:	4	ksi
Dry Concrete Density, δ**c**:	150	pcf

Soil Properties

Total Soil Unit Weight, γ:	100	pcf
Ultimate Gross Bearing, Qult:	8.000	ksf
Cohesion, **Cu**:	0.000	ksf
Friction Angle, φ:	0	degrees
SPT Blow Count, N_{blows}:	13	
Base Friction, μ:	0.3	
Neglected Depth, **N**:	3.33	ft
Foundation Bearing on Rock?	No	
Groundwater Depth, **gw**:	2.5	ft

<--Toggle between Gross and Net

Foundation Analysis Checks

	Capacity	Demand	Rating*	Check
Lateral (Sliding) (kips)	99.66	24.27	**23.2%**	**Pass**
Bearing Pressure (ksf)	6.00	1.34	**22.4%**	**Pass**
*Overturning (kip*ft)*	5065.47	3039.00	**60.0%**	**Pass**
*Pier Flexure (Comp.) (kip*ft)*	3283.00	2960.12	**85.9%**	**Pass**
Pier Compression (kip)	22913.28	69.52	**0.3%**	**Pass**
*Pad Flexure (kip*ft)*	3077.69	1283.24	**39.7%**	**Pass**
Pad Shear - 1-way (kips)	1004.09	167.98	**15.9%**	**Pass**
Pad Shear - 2-way (Comp) (ksi)	0.190	0.035	**17.7%**	**Pass**
*Flexural 2-way (Comp) (kip*ft)*	3248.34	1776.07	**52.1%**	**Pass**

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

Structural Rating*:	**85.9%**
Soil Rating*:	**60.0%**

Version 4.1.1

ASCE 7 Hazards Report

Address:
No Address at This Location

Standard:	ASCE/SEI 7-16	**Latitude:**	41.320167
Risk Category:	II	**Longitude:**	-72.441667
Soil Class:	D - Default (see Section 11.4.3)	**Elevation:**	159.59 ft (NAVD 88)

Wind

Results:

Wind Speed	124 Vmph
10-year MRI	75 Vmph
25-year MRI	85 Vmph
50-year MRI	96 Vmph
100-year MRI	101 Vmph

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

Date Accessed: Wed Feb 01 2023

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

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

Seismic

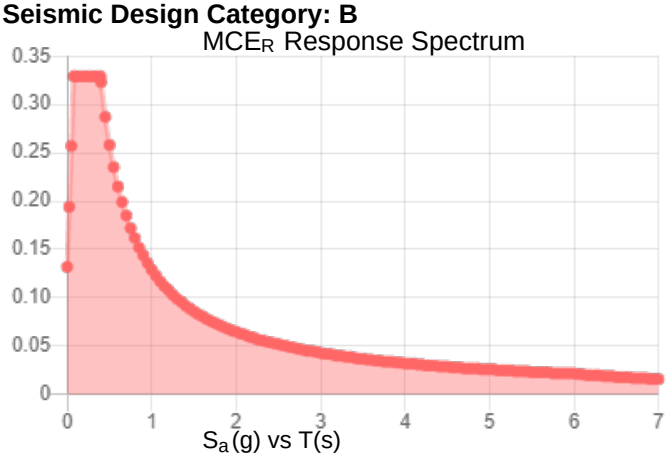
D - Default (see Section 11.4.3)

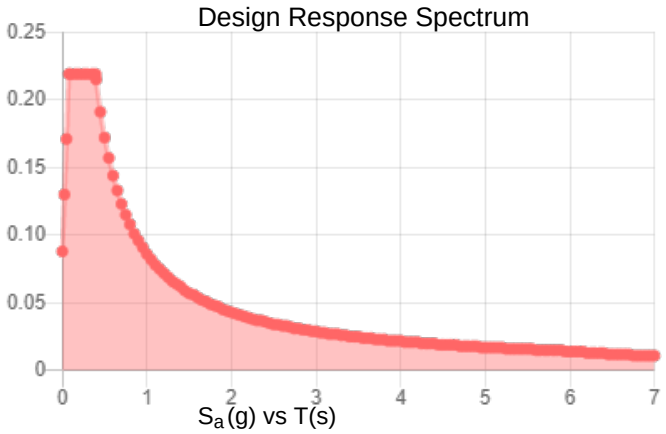
Site Soil Class:

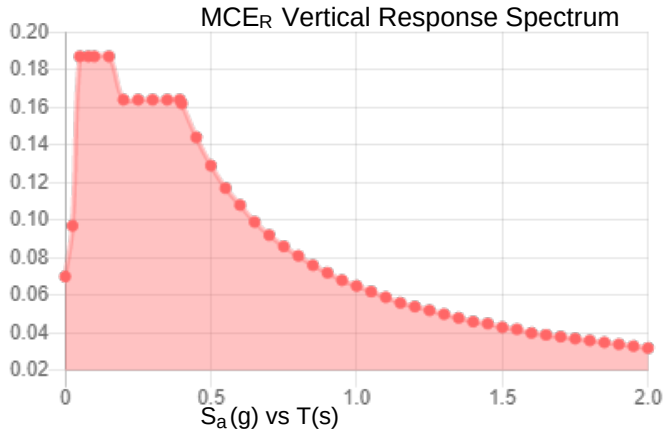
Results:

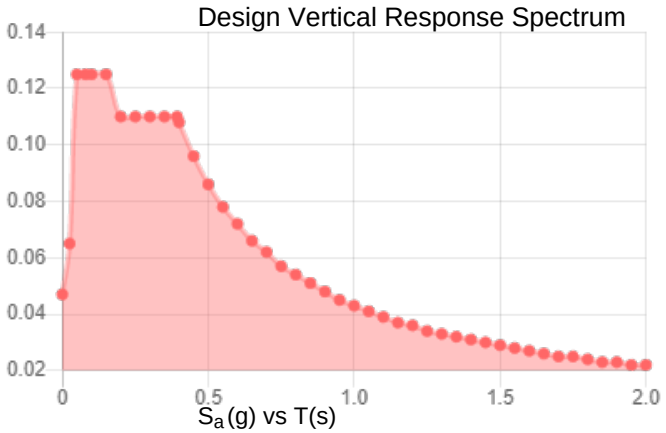
S_S :	0.206	S_{D1} :	0.086
S_1 :	0.054	T_L :	6
F_a :	1.6	PGA :	0.115
F_v :	2.4	PGA_M :	0.18
S_{MS} :	0.329	F_{PGA} :	1.57
S_{M1} :	0.129	I_e :	1
S_{DS} :	0.219	C_v :	0.711

Seismic Design Category: B









Data Accessed: **Wed Feb 01 2023**

Date Source:

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

Ice

Results:

Ice Thickness:	1.00 in.
Concurrent Temperature:	15 F
Gust Speed	50 mph
Data Source:	Standard ASCE/SEI 7-16, Figs. 10-2 through 10-8
Date Accessed:	Wed Feb 01 2023

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

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

ATTACHMENT 5

Maser Consulting Connecticut
1055 Washington Boulevard
Stamford, CT 06901
203.324.0800
peter.albano@colliersengineering.com

Post-Modification Antenna Mount Analysis Report and PMI Requirements

Mount Fix

SMART Tool Project #: 10153052
Maser Consulting Connecticut Project #: 22777110A (Rev 1)

April 28, 2023

Site Information	*Site ID:*	*5000245119-VZW / WESTBROOK NE CT*
	Site Name:	*WESTBROOK NE CT*
	Carrier Name:	*Verizon Wireless*
	Address:	*798 Toby Hill Road* *Westbrook, Connecticut 06498* *Middlesex County*
	Latitude:	*41.320194°*
	Longitude:	*-72.442278°*
Structure Information	*Tower Type:*	*142-Ft Monopole*
	Mount Type:	*13.33-Ft Platform*

FUZE ID # 2222426

Analysis Results

Platform: **89.2% Pass w/ Modifications***

***Antennas and equipment to be installed in compliance with PMI Requirements of this mount analysis.**

******Contractor PMI Requirements*:**
Included at the end of this MA report
Available & Submitted via portal at https://pmi.vzwsmart.com
For additional questions and support, please reach out to:
pmisupport@colliersengineering.com

Report Prepared By: David Anuka

Executive Summary:

The objective of this report is to summarize the analysis results of the antenna support mount including the proposed modifications at the subject facility for the final wireless telecommunications configuration, per the applicable codes and standards.

This analysis is inclusive of the mount structure only and does not address the structural capacity of the supporting structure. This mounting frame was not analyzed as an anchor attachment point for fall protection. All climbing activities are required to have a fall protection plan completed by a competent person.

Sources of Information:

Document Type	Remarks
Radio Frequency Data Sheet (RFDS)	*Verizon RFDS Site ID: 626815, dated May 18, 2022*
Mount Mapping Report	*Hudson Design Group, LLC., Site ID: 468771, dated June 6, 2022*
Previous Mount Analysis	*Maser Consulting Connecticut, Project #: 22777110A dated June 20, 2022*
Mount Modification Drawings	*Maser Consulting Connecticut, Project #: 22777110A dated June 20, 2022*

Analysis Criteria:

Codes and Standards:	ANSI/TIA-222-H 2022 Connecticut State Building Code (CSBC), Effective October 1, 2022	
Wind Parameters:	Basic Wind Speed (Ultimate 3-sec. Gust), V_{ULT}:	125 mph
	Ice Wind Speed (3-sec. Gust):	50 mph
	Design Ice Thickness:	1.00 in
	Risk Category:	II
	Exposure Category:	B
	Topographic Category:	1
	Topographic Feature Considered:	N/A
	Topographic Method:	N/A
	Ground Elevation Factor, K_e:	0.995
Seismic Parameters:	S_S:	0.206 g
	S_1:	0.054 g
Maintenance Parameters:	Wind Speed (3-sec. Gust):	30 mph
	Maintenance Load, Lv:	250 lbs.
	Maintenance Load, Lm:	500 lbs.
Analysis Software:	RISA-3D (V17)	

Final Loading Configuration:

The following equipment has been considered for the analysis of the mount:

Mount Elevation (ft)	Equipment Elevation (ft)	Quantity	Manufacturer	Model	Status
139.25	140.00	6	JMA Wireless	MX06FRO660-03	Added
		3	Samsung	MT6407-77A	
		3	Samsung	RF4439d-25A	
		3	Samsung	RF4440d-13A	
		1	Raycap	RVZDC-6627-PF-48	
		2	Andrew	DB846F65ZAXY	Retained
		4	Decibel	DB846H80E-SX	

The recent mount mapping reported existing OVP units. It is acceptable to install up to any three (3) of the OVP model numbers listed below as required at any location other than the mount face without affecting the structural capacity of the mount. If OVP units are installed on the mount face, a mount re-analysis may be required unless replacing an existing OVP.

Model Number	Ports	AKA
DB-B1-6C-12AB-0Z	6	OVP-6
RVZDC-6627-PF-48	12	OVP-12

Standard Conditions:

1. All engineering services are performed on the basis that the information provided to Maser Consulting Connecticut and used in this analysis is current and correct. The existing equipment loading has been applied at locations determined from the supplied documentation. Any deviation from the loading locations specified in this report shall be communicated to Maser Consulting Connecticut to verify deviation will not adversely impact the analysis.

2. Mounts are assumed to have been properly fabricated, installed and maintained in good condition, twist free and plumb in accordance with its original design and manufacturer's specifications.

   Obvious safety and structural issues/deficiencies noticed at the time of the mount mapping and reported in the Mount Mapping Report are assumed to be corrected and documented as part of the PMI process and are not considered in the mount analysis.

   The mount analysis and the mount mapping are not a condition assessment of the mount. Proper maintenance and condition assessments are still required post analysis.

3. For mount analyses completed from other data sources (including new replacement mounts) and not specifically mapped in accordance with the NSTD-446 Standard, the mounts are assumed to have been properly fabricated, installed and maintained in good condition, twist free and plumb in accordance with its original design and manufacturer's specifications.

4. All member connections are assumed to have been designed to meet or exceed the load carrying capacity of the connected member unless otherwise specified in this report.

5. The mount was checked up to, and including, the bolts that fasten it to the mount collar/attachment and threaded rod connections in collar members if applicable. Local deformation and interaction between the mount collar/attachment and the supporting tower structure are outside the scope of this analysis.

6. All services are performed, results obtained, and recommendations made in accordance with generally accepted engineering principles and practices. Maser Consulting Connecticut is not responsible for the conclusion, opinions, and recommendations made by others based on the information supplied.

7. Structural Steel Grades have been assumed as follows, if applicable, unless otherwise noted in this analysis:
   - Channel, Solid Round, Angle, Plate — ASTM A36 (Gr. 36)
   - HSS (Rectangular) — ASTM 500 (Gr. B-46)
   - Pipe — ASTM A53 (Gr. B-35)
   - Threaded Rod — F1554 (Gr. 36)
   - Bolts — ASTM A325

8. Any mount modifications listed under Sources of Information are assumed to have been installed per the design specifications.

Discrepancies between in-field conditions and the assumptions listed above may render this analysis invalid unless explicitly approved by Maser Consulting Connecticut.

Analysis Results:

Component	Utilization %	Pass/Fail
Standoff Horizontal	40.1 %	Pass
Platform Crossmember	89.2 %	Pass
Corner Plate	28.0 %	Pass
Grating Support	27.9 %	Pass
Cross Arm Plate	48.6 %	Pass
Face Horizontal	11.5 %	Pass
Mount Pipe	22.5 %	Pass
MOD Support Rail	20.9 %	Pass
MOD Support Rail Corner	14.2 %	Pass
Mount Connection	84.7 %	Pass

Structure Rating – *(Controlling Utilization of all Components)*	**89.2%**

Mount Steel (EPA)a per ANSI/TIA-222-H Section 2.6.11.2:

Ice Thickness (In)	Mount Pipes Excluded		Mount Pipes Included	
	Front (EPA)a (Sq. Ft.)	Side (EPA)a (Sq. Ft.)	Front (EPA)a (Sq. Ft.)	Side (EPA)a (Sq. Ft.)
0	26.0	26.0	40.8	40.8
0.5	33.6	33.6	54.2	54.2
1	40.7	40.7	67.2	67.2

Notes:
- (EPA)a values listed above may be used in the absence of more precise information
- (EPA)a values in the table above include 3 sector(s).
- Ka factors included in (EPA)a calculations

Requirements:

The existing mounts will be **SUFFICIENT** for the final loading configuration (Attachment 2) after the modifications detailed in attachment 3 are successfully completed.

ANSI/ASSP rigging plan review services compliant with the requirements of ANSI/TIA 322 are available for a Construction Class IV site or other, if required. Separate review fees will apply.

Attachments:

1. **Contractor Required PMI Report Deliverables**
2. Antenna Placement Diagrams
3. Mount Modification Drawings
4. Mount Photos
5. Mount Mapping Report (for reference only)
6. Analysis Calculations

Mount Desktop – Post Modification Inspection (PMI) Report Requirements

Documents & Photos Required from Contractor – Mount Modification

Electronic pdf version of this can be downloaded at https://pmi.vzwsmart.com
For additional questions and support, please reach out to pmisupport@colliersengineering.com

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MDG #: 5000245119 SMART Project #: 10153052 Fuze Project ID: 2222426

Purpose – to upload the proper documentation to the SMART Tool in order to allow the SMART Tool engineering vendor to complete the required Mount Desktop review of the Post Modification Inspection Report.

- Contractor is responsible for making certain the photos provided as noted below provide confirmation that the modification was completed in accordance with the modification drawings.
- Contractor shall relay any data that can impact the performance of the mount or the mount modification, this includes safety issues.

Base Requirements:

- If installation of the modification will cause damage to the structure, the climbing facility, or safety climb if present or any installed system, SMART Tool vendor to be notified prior to install. Any special photos outside of the standard requirements will be indicated on the drawings.
- Provide "as built drawings" showing contractor's name, preparer's signature, and date. Any deviations from the drawings (proposed modification) shall be shown. NOTE: If loading is different than what is conveyed in the post-modification passing mount analysis (MA) contact the SMART Tool vendor immediately.
- Each photo shall be time and date stamped.
- Photos should be high resolution.
- Contractor shall ensure that the safety climb wire rope is not adversely impacted by the install of the modification components. This may involve the install of wire rope guides, or other items to protect the wire rope. If there is conflict, contact the SMART Tool engineer for recommendations.
- The PMI can be accessed at the following portal: **https://pmi.vzwsmart.com**

Photo Requirements:

- *Photos taken at ground level*
  - Photo of Gate Signs showing the tower owner, site name, and number.
  - Overall tower structure after installation of the modifications.
  - Photos of the mount after installation of the modifications; if the mounts are at different rad elevations, pictures must be provided for all elevations that the modifications were installed

- *Photos taken at Mount Elevation*
  - Photos showing the safety climb wire rope above and below the mount prior to modification.
  - Photos showing the climbing facility and safety climb if present.

- Photos showing each individual sector after installation of modifications. Each entire sector must be in one photo to show the interconnection of members.
  - These photos shall also certify that the placement and geometry of the equipment on the mount is as depicted in the antenna placement diagram in this form.
- Photos that show the model number of each antenna and piece of equipment installed per sector.
- Photos of each installed modification per the modification drawings; pictures shall also include connection hardware (U-bolts, bolts, nuts, all-threaded rods, etc.)
- Photos showing the distances (relative distance between collars) of the installed modifications from the appropriate reference locations shown in the modification drawings.
- Photos showing the installed modifications onto the tower (i.e. ring/collar mounts, tie-backs, V-bracing kits, etc.); if the existing mount elevation needs to be changed according to the modification drawings, an elevation measurement shall be provided before the elevation change.

Material Certification:

- Materials utilized must be as per specification on the drawings or the equivalent as validated by the SMART Tool vendor.
  - If the materials are as specified on the drawings
    - The contractor shall provide the packing list, or the materials certifications for the materials utilized to perform the mount modification
    - Commscope, Metrosite, Perfect Vision, Sabre, and Site Pro have all agreed to support Verizon vendors with the necessary material certifications
  - If seeking permission to use an equivalent
    - It is required that the SMART Tool engineering vendor approval of such is included in the contractor submission package. There may be an additional charge for approval if the equivalent submission doesn't meet specifications as prescribed in the drawings.

☐ All hardware has been properly installed, and the existing hardware was inspected.

☐ The material utilized was as specified on the SMART Tool engineering vendor Mount Modification Drawings and included in the material certification folder is a packing list or invoice for these materials.

OR

☐ The material utilized was approved by a SMART Tool engineering vendor as an "equivalent" and this approval is included as part of the contractor submission.

Antenna & Equipment Placement and Geometry Confirmation:

☐ The contractor certifies that the photos support and the equipment on the mount is as depicted on the sketch and table included in this form and with the mount analysis provided.

OR

☐ The contractor notes that the equipment on the mount is not in accordance with the sketch and has noted the differences below and provided photo documentation of any alterations.

Comments:

Was the mount modification completed in conjunction with the equipment change / installation?

☐ Yes ☐ No

Special Instructions / Validation as required from the MA or Mod Drawings:

Issue:

Contractor to install proposed OVP 12” below the top of the proposed OVP pipe

Response:

Special Instruction Confirmation:

☐ The contractor has read and acknowledges the above special instructions.

Comments:

Contractor certifies that the climbing facility / safety climb was not damaged prior to starting work:

☐ Yes ☐ No

Contractor certifies no new damage created during the current installation:

☐ Yes ☐ No

Contractor to certify the condition of the safety climb and verify no damage when leaving the site:

☐ Safety Climb in Good Condition ☐ Safety Climb Damaged

Comments:

Certifying Individual:

Company:	
Employee Name:	
Contact Phone:	
Email:	
Date:	

Structure: 5000245119-VZW - WESTBROOK NE CT

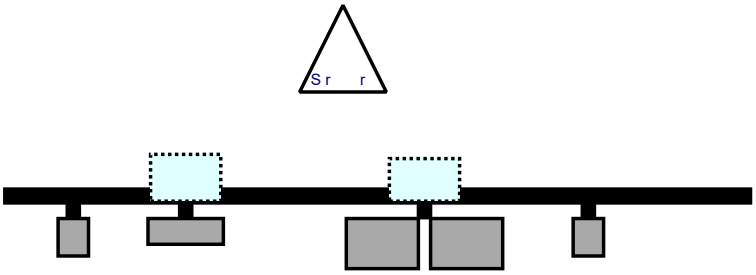
S r **A** 2 2 2

S r r T M 1 1 2

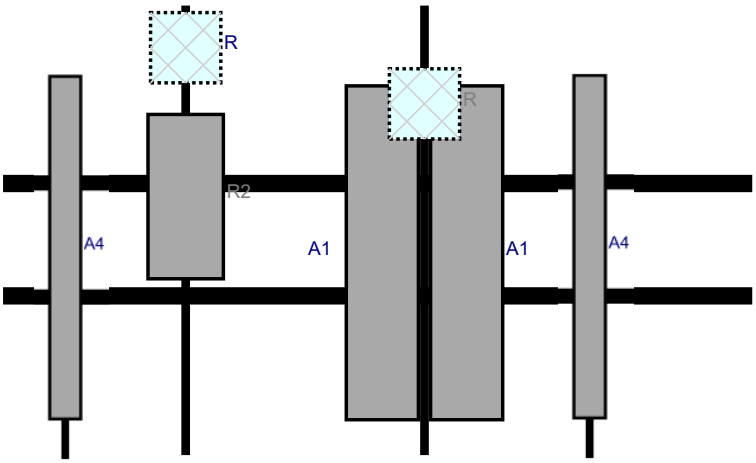
M E 1 .2 P 1

Colliers Engineering & Design

Plan View



Front View - L S r r



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A	DB E S	2 . 12	1	r	2 .		R d	2 22
A1	M RO	1. 1 .	2	r	2.		Add d	
A1	M RO	1. 1 .	2	r	2.		Add d	
R	R d 1 A	1 1	2	B	d 21		Add d	
R2	MT A	.1 1 .1		r	.		Add d	
R	R d 2 A	1 1		B	d		Add d	
A	DB E S	2 . 1		r	2 .		R d	2 22
O P	R D 2 P	2 . 1 .	M r				Add d	

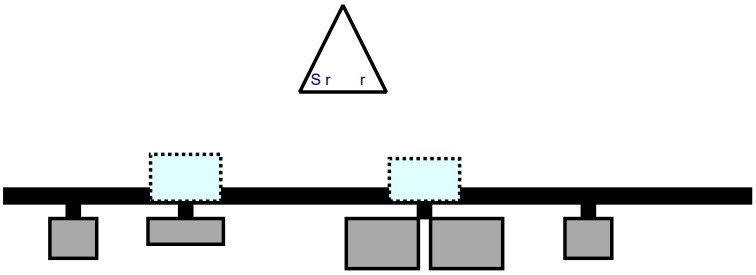
S r **B** 2 2 2

S r r T M 1 1 2

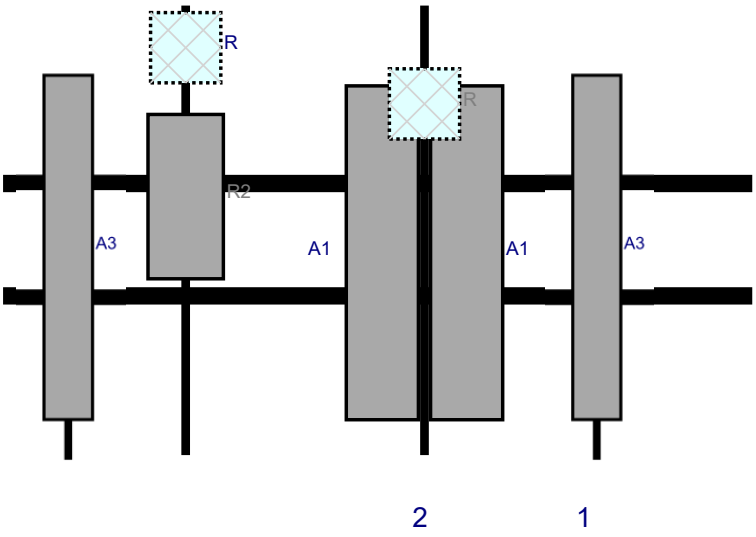
M E 1 .2 P 2

Colliers Engineering & Design

Plan View



Front View - L S r r



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R2	MT	A	.1	1 .1				r	.	Add d	
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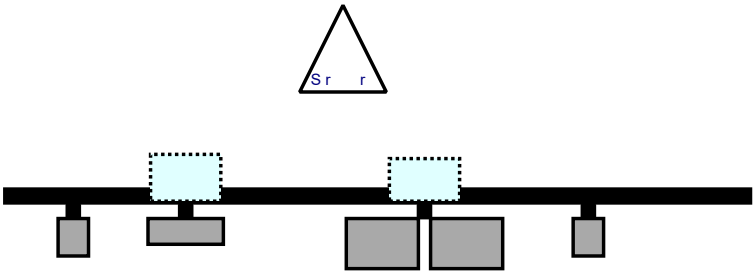
A	DB	A Y	2	1	1			r	2 .	R d	2 22

S r **C** 2 2 2

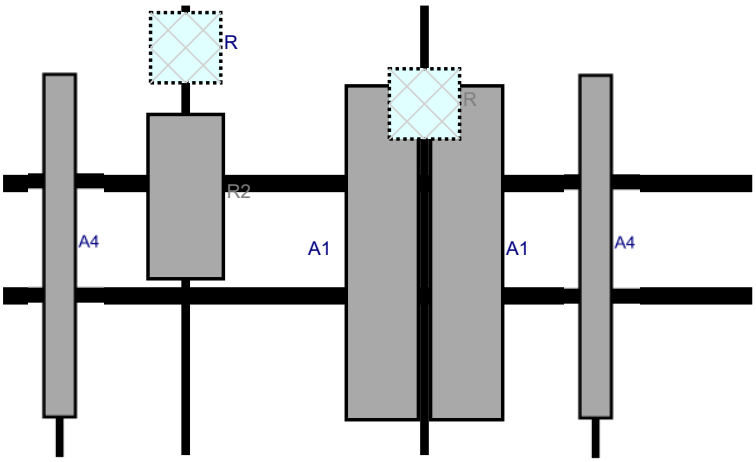
S r r T M 1 1 2

M E 1 .2 P

Plan View



Front View - L S r r



R	M d	d r L.	D P	P P	A r T.	. A O	A S	d
A	DB E S	2 . 12	1	r	2 .		R d	2 22
A1	M RO	1. 1 .	2	r	2.		Add d	
A1	M RO	1. 1 .	2	r	2.		Add d	
R	R d 1 A	1 1	2	B	d 21		Add d	
R2	MT A	.1 1 .1		r	.		Add d	
R	R d 2 A	1 1		B	d		Add d	
A	DB E S	2 . 1		r	2 .		R d	2 22

MOUNT MODIFICATION DRAWINGS
EXISTING 13.33' PLATFORM

TOWER OWNER: CROWN CASTLE
TOWER OWNER SITE NUMBER: 876384

CARRIER SITE NAME: WESTBROOK NE CT
CARRIER SITE NUMBER: 5000245119
FUZE ID: 2222426

798 TOBY HILL ROAD
WESTBROOK, CT 06498
MIDDLESEX COUNTY

LATITUDE: 41.320194° N
LONGITUDE: 72.442278° W

DESIGN CRITERIA

WIND LOADS

BASIC WIND SPEED (3 SECOND GUST), V = 125 MPH
EXPOSURE CATEGORY B
TOPOGRAPHIC CATEGORY: 1
TOPOGRAPHIC CONSIDERED: N/A
TOPOGRAPHIC METHOD: N/A
MEAN BASE ELEVATION (AMSL) = 146.03'

ICE LOADS

ICE WIND SPEED (3 SECOND GUST), V = 50 MPH
ICE THICKNESS = 1.00 IN

SEISMIC LOADS

SEISMIC DESIGN CATEGORY B
SHORT TERM MCER GROUND MOTION, S_S = .206
LONG TERM MCER GROUND MOTION, S_1 = .054

PROJECT INFORMATION

APPLICANT/LESSEE

COMPANY: VERIZON WIRELESS

CLIENT REPRESENTATIVE

COMPANY: VERIZON WIRELESS

PROJECT MANAGER

COMPANY: COLLIERS ENGINEERING & DESIGN
CONTACT: PETER ALBANO
PHONE: 856.797.0412
E-MAIL: PETER.ALBANO@COLLIERSENG.COM

CONTRACTOR PMI REQUIREMENTS

PMI LOCATION:	HTTPS://PMI.VZWSMART.COM
SMART TOOL PROJECT #:	10153052
VZW MDG #:	5000245119
ANALYSIS DATE:	4/28/2023

PMI REQUIREMENTS EMBEDDED WITHIN MOUNT MODIFICATION REPORT

SHEET INDEX

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

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SCALE :	JOB NUMBER :
AS SHOWN	22777110A

REV	DATE	DESCRIPTION	DRAWN BY	CHECKED BY
.	.	.	.	.
.	.	.	.	.
1	04/28/23	ISSUED FOR CONSTRUCTION	DA	PMA
0	06/23/22	ISSUED FOR CONSTRUCTION	GHW	DRH

COLLIERS ENGINEERING & DESIGN CT, P.C.
C.T. JPC.0000131

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

SITE NAME:

WESTBROOK NE CT
5000245119

798 TOBY HILL ROAD
WESTBROOK, CT 06498
MIDDLESEX COUNTY

Colliers Engineering & Design

STAMFORD
1055 Washington Boulevard
Stamford, CT 06901
Phone: 203.324.0800
COLLIERS ENGINEERING & DESIGN CT, P.C. DOING BUSINESS AS MASER CONSULTING

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.)
1	VZWSMART	VZWSMART-PLK1	SUPPORT RAIL KIT	CONTRACTOR TO VERIFY THE LENGTH REQUIRED AND TRIM AS NECESSARY IN ACCORDANCE WITH THE 'STRUCTURAL STEEL' NOTES ON SHEET SGN-1.	504	504
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-P40-278X096	96" LONG, PIPE 2.5 SCH40 (2.875"OD X 0.203" THK)		46	138
3		VZWSMART-MSK2	CROSSOVER PLATE		15	45

SECTION 2 - OTHER REQUIRED PARTS

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

SECTION 3 - REQUIRED SAFETY CLIMB PARTS

QUANTITY	MANUFACTURER	PART NUMBER	DESCRIPTION	NOTES	UNIT WEIGHT (LBS.)	WEIGHT (LBS.)
				TOTAL:		736

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	
CONTACT	SALVADOR ANGUIANO
PHONE	(817) 304-7492
EMAIL	SALVADOR.ANGUIANO@COMMSCOPE.COM
WEBSITE	WWW.COMMSCOPE.COM

METROSITE FABRICATORS, LLC	
CONTACT	KENT RAMEY
PHONE	(706) 335-7045 (O), (706) 982-9788 (M)
EMAIL	KENT@METROSITELLC.COM
WEBSITE	METROSITEFABRICATORS.COM

PERFECTVISION	
CONTACT	WIRELESS SALES
PHONE	(844) 887-6723
EMAIL	WWW.PERFECT-VISION.COM
WEBSITE	WIRELESSSALES@PERFECT-VISION.COM

SABRE INDUSTRIES, INC.	
CONTACT	ANGIE WELCH
PHONE	(866) 428-6937
EMAIL	AKWELCH@SABREINDUSTRIES.COM
WEBSITE	WWW.SABRESITESOLUTIONS.COM

SITE PRO 1	
CONTACT	PAULA BOSWELL
PHONE	(972) 236-9843
EMAIL	PAULA.BOSWELL@VALMONT.COM
WEBSITE	WWW.SITEPRO1.COM

NEWAVE	
CONTACT	NEWAVE SALES TEAM
PHONE	(971) 239-4762
EMAIL	SALES@NEWAVETC.COM
WEBSITE	WWW.NEWAVETC.COM

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

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FOR STATE SPECIFIC DIRECT PHONE NUMBERS VISIT: WWW.CALL811.COM

SCALE: AS SHOWN

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REV	DATE	DESCRIPTION	DRAWN BY	CHECKED BY
1	04/28/23	ISSUED FOR CONSTRUCTION	DA	PMA
0	06/23/22	ISSUED FOR CONSTRUCTION	GHW	DRH

COLLIERS ENGINEERING & DESIGN CT, P.C.
C.T. JPC.0000131

SITE NAME:

WESTBROOK NE CT
5000245119

798 TOBY HILL ROAD
WESTBROOK, CT 06498
MIDDLESEX COUNTY

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STAMFORD
1055 Washington Boulevard
Stamford, CT 06901
Phone: 203.324.0800
COLLIERS ENGINEERING & DESIGN CT, P.C.
DOING BUSINESS AS MASER CONSULTING

SHEET TITLE: BILL OF MATERIALS

SHEET NUMBER: SBOM-1

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@COLLIERSENG.COM

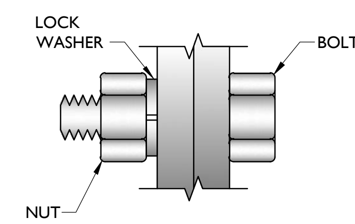
   b. PROVIDE COLLIERS ENGINEERING & DESIGN PROJECT # AND COLLIERS ENGINEERING & DESIGN PROJECT ENGINEER CONTACT IN THE BODY OF THE EMAIL.
5. DRILL NO HOLES IN ANY NEW OR EXISTING STRUCTURAL STEEL MEMBERS OTHER THAN THOSE SHOWN ON STRUCTURAL DRAWINGS WITHOUT THE APPROVAL OF THE ENGINEER OF RECORD.
6. GALVANIZED 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. 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.
9. 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.
10. FOR MEMBERS BEING REPLACED, PROVIDE NEW BOLTS AND MATCH EXISTING SIZE AND GRADE. MAINTAIN AISC REQUIREMENTS FOR MINIMUM BOLT DISTANCE AND SPACING.
11. 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.
12. GALVANIZED ASTM A325 BOLTS SHALL NOT BE REUSED.
13. ALL NEW STEEL SHALL BE HOT BE DIPPED GALVANIZED FOR FULL WEATHER PROTECTION. CONTRACTOR SHALL OBTAIN WRITTEN PERMISSION TO PROTECT STEEL BY ANY OTHER MEANS.
14. ALL EXISTING PAINTED/GALVANIZED SURFACES DAMAGED DURING REHAB INCLUDING AREAS UNDER STIFFENER PLATES SHALL BE WIRE BRUSHED CLEAN, REPAIRED BY COLD GALVANIZING (ZINC COTE, OR EOR APPROVED EQUAL), 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.

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

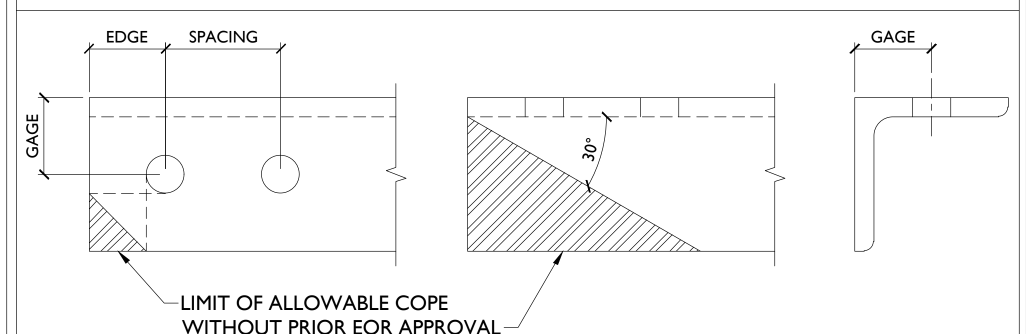


TYP. BOLT ASSEMBLY

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.

ALLOWABLE COPING



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SCALE : AS SHOWN

JOB NUMBER : 22777110A

REV	DATE	DESCRIPTION	DRAWN BY	CHECKED BY
.	.	.	.	.
.	.	.	.	.
1	04/28/23	ISSUED FOR CONSTRUCTION	DA	PMA
0	06/23/22	ISSUED FOR CONSTRUCTION	GHW	DRH

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C.T. JPC.0000131

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SITE NAME:

WESTBROOK NE CT
5000245119

798 TOBY HILL ROAD
WESTBROOK, CT 06498
MIDDLESEX COUNTY

Colliers Engineering & Design

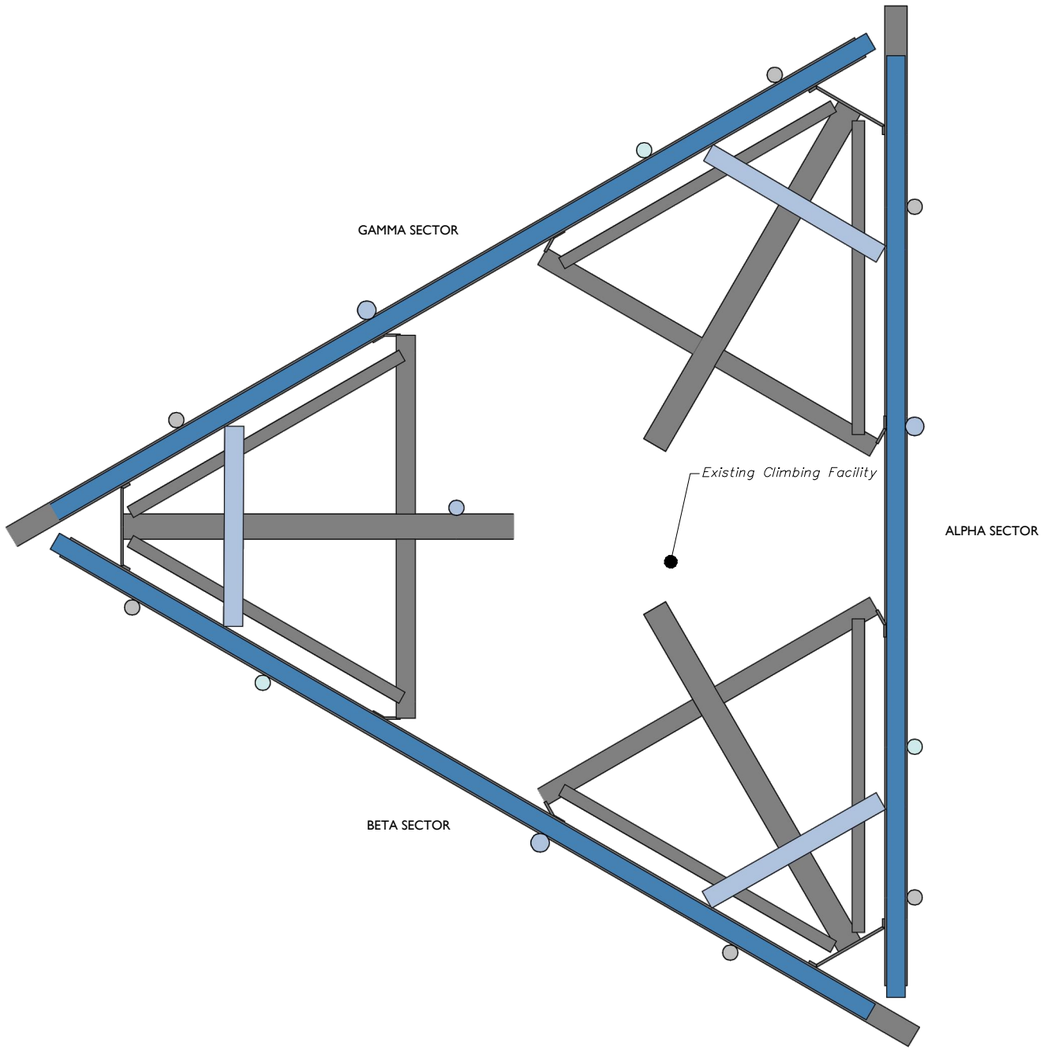
STAMFORD
1055 Washington Boulevard

Stamford, CT 06901
Phone: 203.324.0800
COLLIERS ENGINEERING & DESIGN CT, P.C.
DOING BUSINESS AS MASER CONSULTING

SHEET TITLE : GENERAL NOTES

SHEET NUMBER : SGN-1

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.



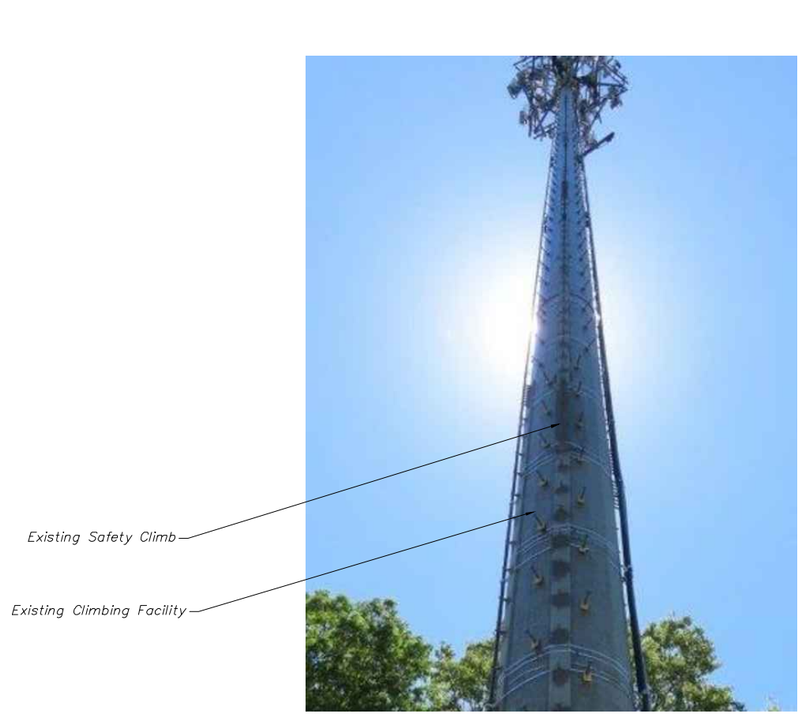
1 CLIMBING FACILITY LOCATION

SCALE : N.T.S.

STRUCTURAL NOTES:

1. PER THE MOUNT MAPPING COMPLETED BY HUDSON DESIGN GROUP, LLC ON 6/6/2022, THE SAFETY CLIMB AND CLIMBING FACILITIES UP TO THE VERIZON MOUNT ELEVATION (139'-9") ARE IN GOOD CONDITION. COLLIERS ENGINEERING & DESIGN DOES NOT WARRANT THIS INFORMATION.

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.



CLIMBING FACILITY PHOTO

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SHEET TITLE :
CLIMBING FACILITY DETAIL

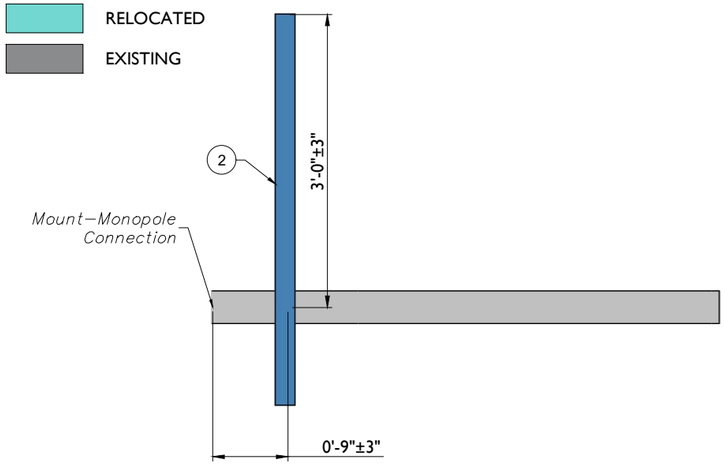
SHEET NUMBER :
SCF-1

LEGEND:

PROPOSED

RELOCATED

EXISTING



2 PROPOSED SIDE ELEVATION VIEW (TYP. ALL SECTORS)

SCALE : N.T.S.

MOUNT MODIFICATION SCHEDULE

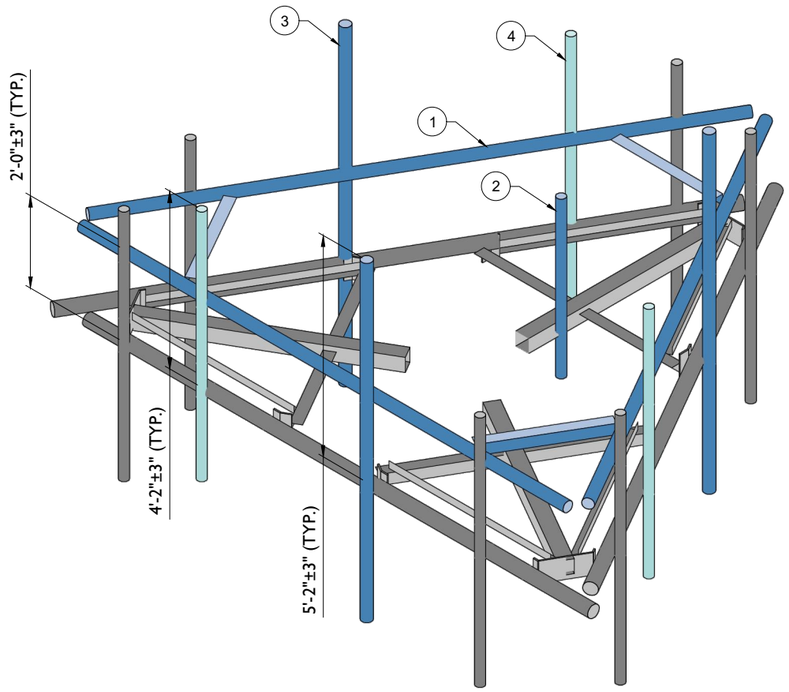
NO.	ELEVATION	QUANTITY	DESCRIPTION	NOTES
1	139'-9"	1	PROPOSED SUPPORT RAIL KIT (PART #: VZWSMART-PLK1)	CONTRACTOR TO VERIFY THE LENGTH REQUIRED AND TRIM AS NECESSARY IN ACCORDANCE WITH THE 'STRUCTURAL STEEL' NOTES ON SHEET SGN-1. RADIO AND/OR TME POSITIONS SHALL BE ADJUSTED VERTICALLY AS NEEDED IN ORDER TO ACHIEVE INSTALLATION OF HORIZONTAL AS SHOWN.
2		1	PROPOSED 48" LONG, PIPE 2 SCH40 (PART #: VZWSMART-P40-238X048)	CONNECT NEW OVP PIPE TO EXISTING STANDOFF HORIZONTAL WITH CROSSOVER PLATES (PART #: VZWSMART-MSK6). BETA/GAMMA STANDOFF HORIZONTAL ONLY.
3		3	PROPOSED 96" LONG, PIPE 2.5 SCH40 (PART #: VZWSMART-P40-278X096)	CONNECT NEW MOUNT PIPE TO EXISTING HORIZONTAL WITH CROSSOVER PLATES (PART #: VZWSMART-MSK2). CONNECT TO PROPOSED SUPPORT RAIL WITH PROVIDED CONNECTIONS IN KIT (PART #: VZWSMART-PLK1).
4		3	RELOCATED MOUNT PIPES	RECONNECT SHIFTED PIPES TO MOUNT HORIZONTALS USING EXISTING AND PROVIDED CONNECTION CROSSOVER PLATES, ETC. WITH NEW BOLTING HARDWARE. DO NOT REUSE EXISTING BOLTS.

GENERAL NOTES:

A. CONTRACTOR SHALL VERIFY THAT NEW & EXISTING STEEL IS FREE OF CORROSION. VISIBLE MINOR CORROSION SHALL BE WIRE BRUSHED CLEAN AND TREATED WITH COLD GALVANIZATION. REPORT ANY SIGNIFICANT CORROSION TO EOR

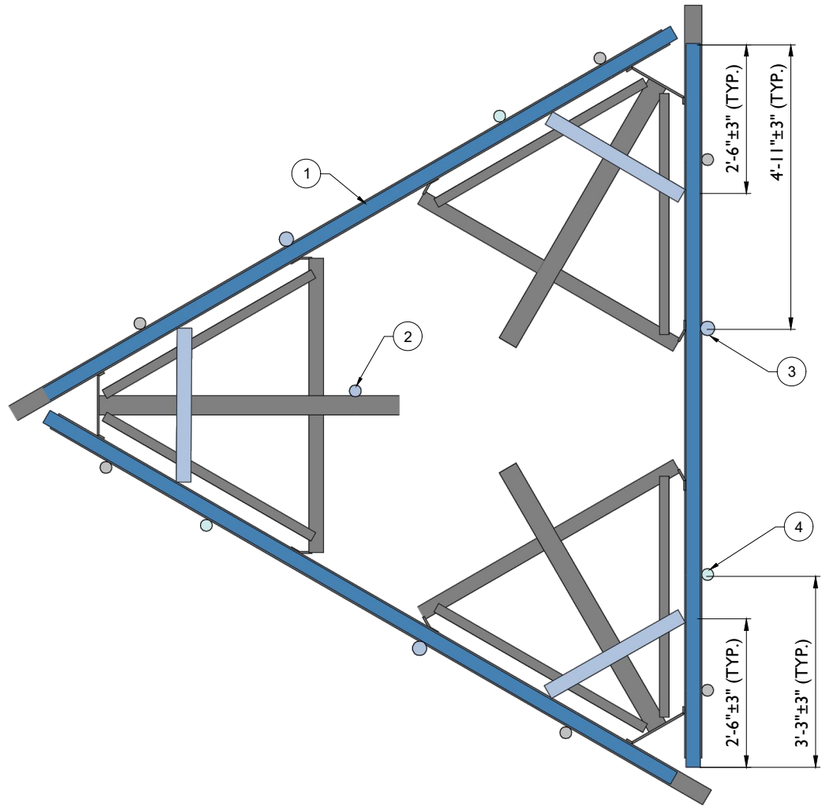
B. THREADED ROD FROM PROPOSED KITS SHALL BE TRIMMED TO EXTEND NO MORE THAN 3" BEYOND THE LOCK NUT. TREAT ALL CUT ENDS WITH (2) COATS OF COLD GALVANIZATION (ZINC KOTE, OR EOR APPROVED EQUAL).

C. MOUNT MEMBERS NOT SHOWN FOR CLARITY U.N.O.



1 PROPOSED ISOMETRIC VIEW

SCALE : N.T.S.



3 PROPOSED PLAN VIEW

SCALE : N.T.S.

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SCALE : AS SHOWN

JOB NUMBER : 22777110A

REV	DATE	DESCRIPTION	DRAWN BY	CHECKED BY
1	04/28/23	ISSUED FOR CONSTRUCTION	DA	PMA
0	06/23/22	ISSUED FOR CONSTRUCTION	GHW	DRH

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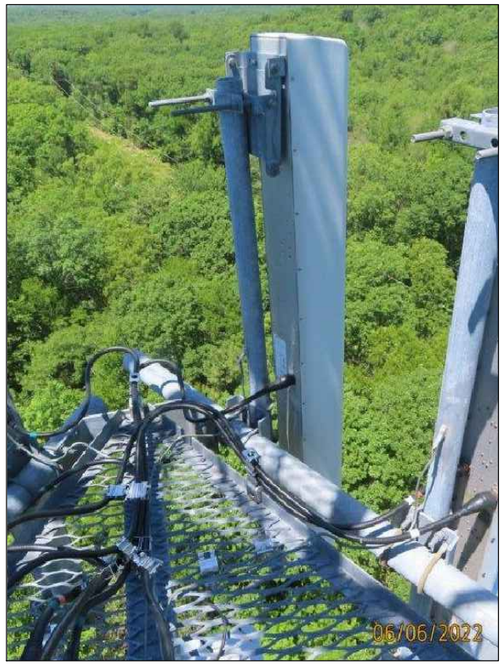
SHEET TITLE : MODIFICATION DETAILS

SHEET NUMBER : SS-1

MOUNT PHOTO 1

MOUNT PHOTO 2



MOUNT PHOTO 3

MOUNT PHOTO 4

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SCALE : AS SHOWN

JOB NUMBER : 22777110A

REV	DATE	DESCRIPTION	DRAWN BY	CHECKED BY
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0	06/23/22	ISSUED FOR CONSTRUCTION	GHW	DRH

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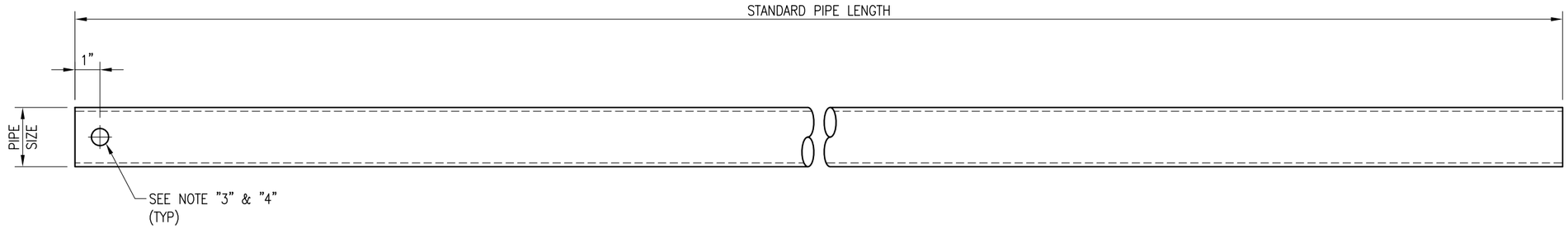
SHEET TITLE : MOUNT PHOTOS

SHEET NUMBER : SS-2



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

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

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

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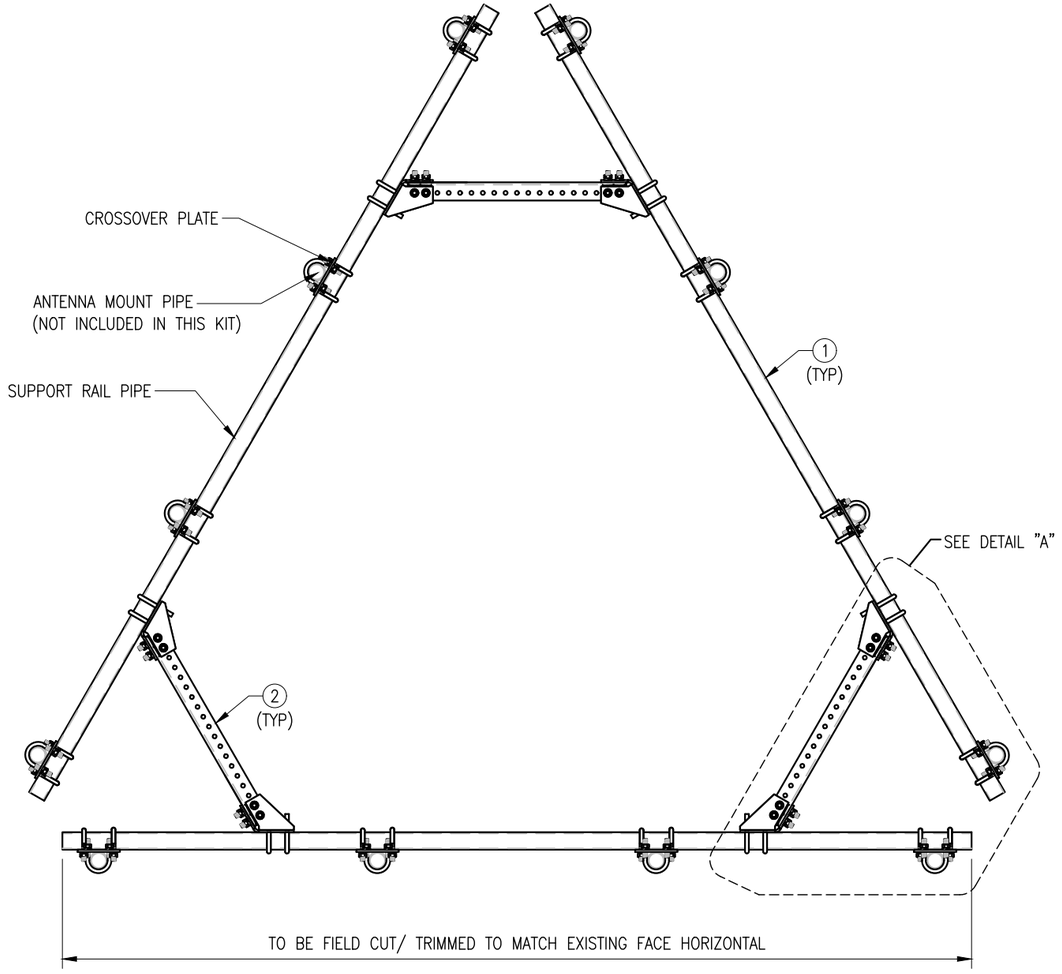
DRAWN BY: BT | CHECKED BY: HMA/KW

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

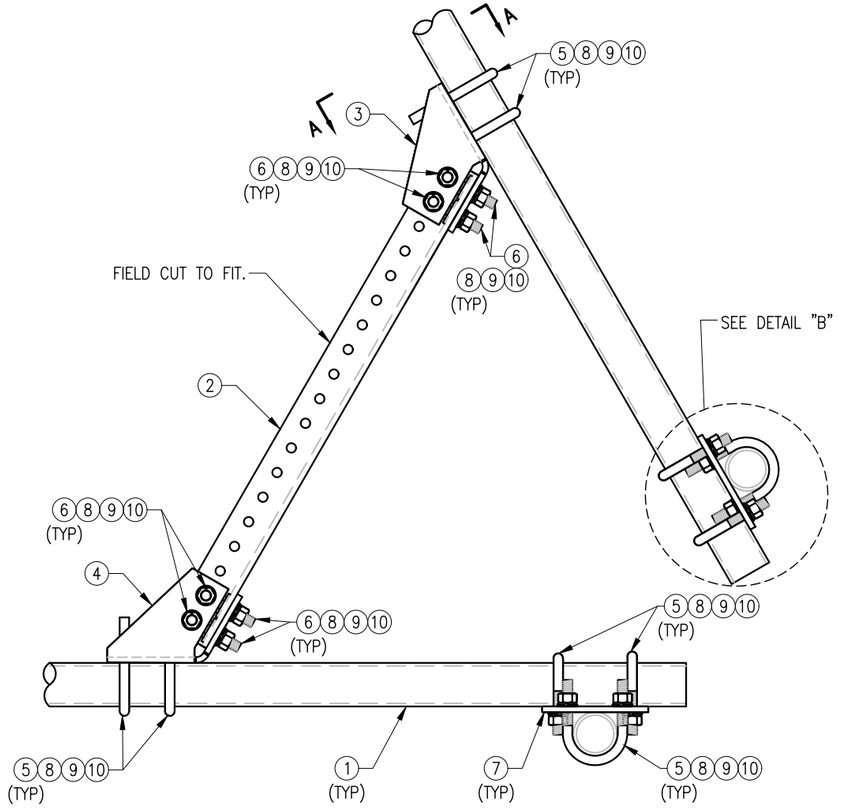
SHEET TITLE:
VZWSMART STANDARD PIPE

SHEET NUMBER: VZWSMART-PIPE

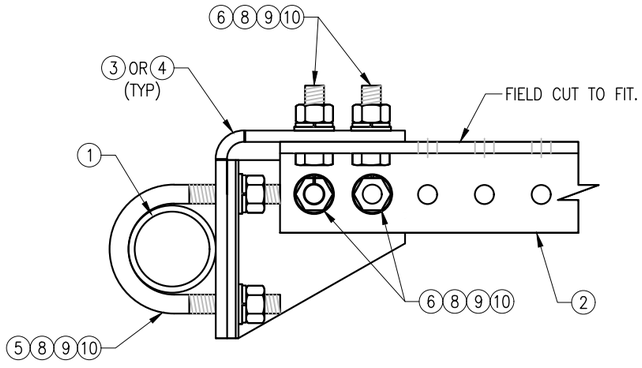
REV #: 0



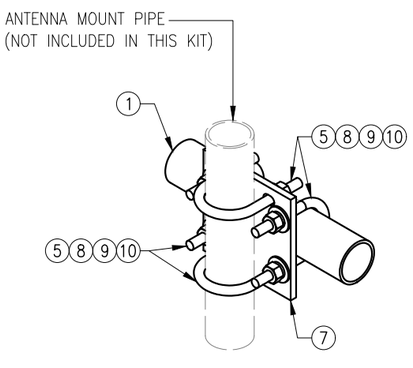
PLAN VIEW



DETAIL "A"



SECTION "A–A"



DETAIL "B"

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

VZW SMART–PLK1 (SUPPORT RAIL KIT)

ITEM NO.	QTY.	PART NO.	DESCRIPTION	SHEET #	WT
1	3	PST2875–12.5	2.5" PST (2.875" O.D. X 0.203" THK.) X 12'–6" A53 GR–B	PLK1–F1	292
2	3	L33375–3	L 3" X 3" X 3/8" X 3'–0" A36	PLK1–F1	66
3	3	CBP–L	CORNER BENT PLATE BRACKET	PLK1–F2	28
4	3	CBP–R	CORNER BENT PLATE BRACKET	PLK1–F2	28
5	60	MS02–625–300–500	RU–BOLT 5/8" X 3" I.W. X 5" I.L. A36 (OR EQUIV.)	RBC–1	82
6	24	---	BOLT 5/8" X 2" A325	---	9
7	12	PL375–857	PL 3/8" X 8 1/2" X 7'–0" A36	PLK1–F3	77
8	144	FW–625	5/8" HDG USS FLAT WASHER	---	12
9	144	LW–625	5/8" HDG LOCK WASHER	---	3
10	144	NUT–625	5/8" HDG HEX NUT	---	17
				GALVANIZED WT	504

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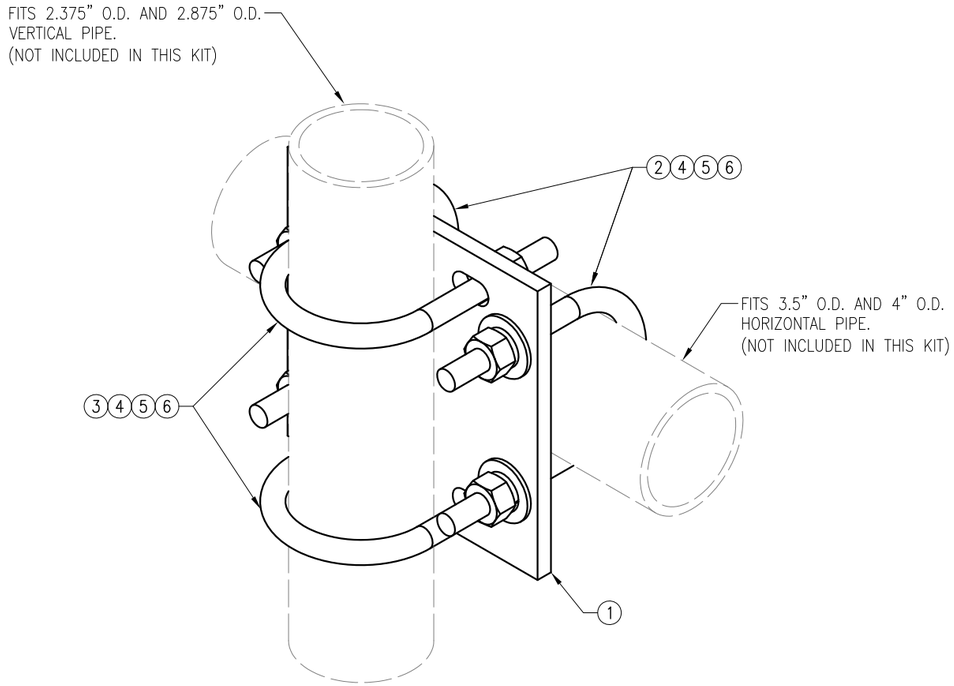
DRAWN BY: H.R | CHECKED BY: HMA

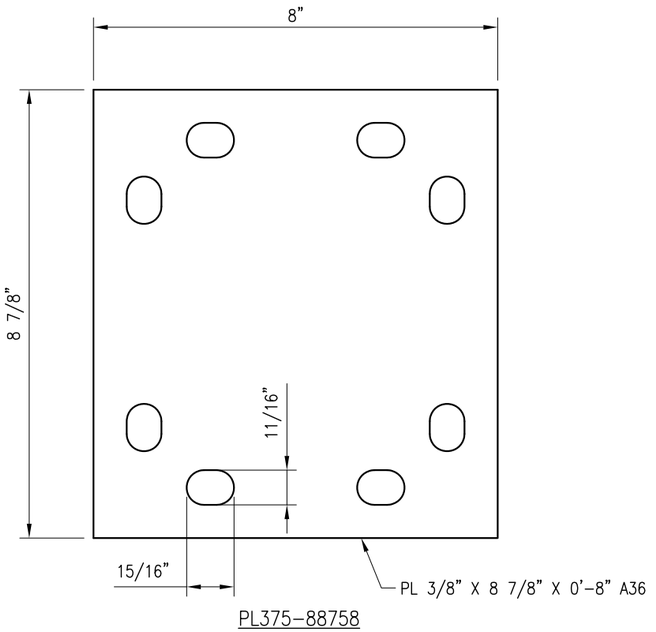
REV.	DESCRIPTION	BY	DATE
0	FIRST ISSUE	H.R	05/08/20

SHEET TITLE:
VZWSMART–PLK1
SUPPORT RAIL KIT

SHEET NUMBER: VZWSMART–PLK1

REV #: 0





PL375-88758

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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DRAWN BY: H.R | CHECKED BY: HMA

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

SHEET TITLE:
VZWSMART-MSK2
CROSSOVER PLATE

SHEET NUMBER: VZWSMART-MSK2

REV #: 0


05/06/2022

V4.1 Updated on 12-17-2021

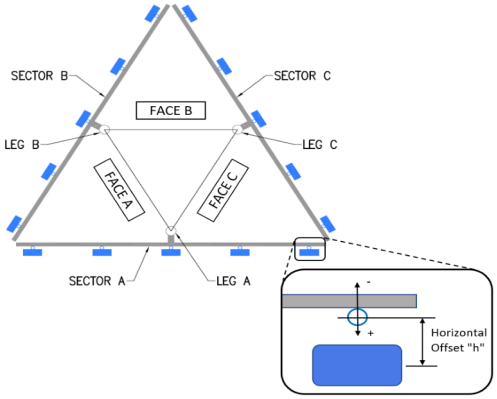
Antenna Mount Mapping Form (PATENT PENDING)

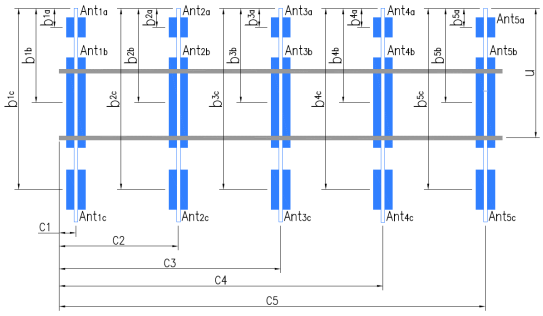
Colliers Engineering & Design

Tower Owner:		**Mapping Date:**	6/6/2022
Site Name:	WESTBROOK NE CT	**Tower Type:**	Monopole
Site Number or ID:	468771	**Tower Height (Ft.):**	
Mapping Contractor:	HUDSON DESIGN GROUP, LLC.	**Mount Elevation (Ft.):**	141.5

FCC #

Please insert the sketches of the antenna mount from the "Sketches" tab with dimensions and members here.





Antenna Layout (Looking Out From Tower)

Mount Pipe Configuration and Geometries [Unit = Inches]

Sector / Position	Mount Pipe Size & Length	Vertical Offset Dimension "u"	Horizontal Offset "C1, C2, C3, etc."	Sector / Position	Mount Pipe Size & Length	Vertical Offset Dimension "u"	Horizontal Offset "C1, C2, C3, etc."
A1	2.375"Ø x .125 WALL X 72" LONG	38.00	25.00	C1	2.375"Ø x .125 WALL X 72" LONG	38.00	25.00
A2	2.375"Ø x .125 WALL X 72" LONG	38.00	50.00	C2	2.375"Ø x .125 WALL X 72" LONG	38.00	50.00
A3	2.375"Ø x .125 WALL X 72" LONG	38.00	111.00	C3	2.375"Ø x .125 WALL X 72" LONG	38.00	111.00
A4	2.375"Ø x .125 WALL X 72" LONG	38.00	135.00	C4	2.375"Ø x .125 WALL X 72" LONG	38.00	135.00
A5				C5			
A6				C6			
B1	2.375"Ø x .125 WALL X 72" LONG	38.00	25.00	D1			
B2	2.375"Ø x .125 WALL X 72" LONG	38.00	50.00	D2			
B3	2.375"Ø x .125 WALL X 72" LONG	38.00	111.00	D3			
B4	2.375"Ø x .125 WALL X 72" LONG	38.00	135.00	D4			
B5				D5			
B6				D6			

Distance from top of bottom support rail to lowest tip of ant./eqpt. of Carrier above. (N/A if > 10 ft.) :	3
Distance from top of bottom support rail to highest tip of ant./eqpt. of Carrier below. (N/A if > 10 ft.) :	1

Please enter additional infomation or comments below.

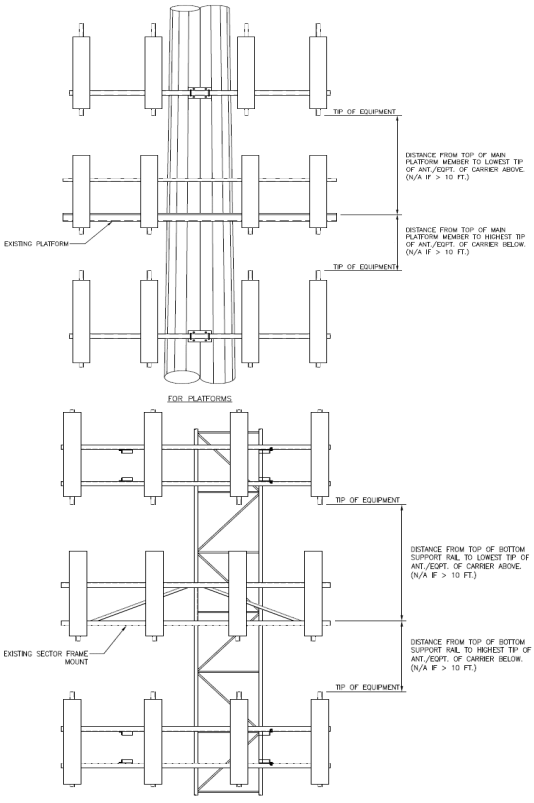
Tower Face Width at Mount Elev. (ft.):		Tower Leg Size or Pole Shaft Diameter at Mount Elev. (in.):	14

	Enter antenna model. If not labeled, enter "Unknown".						Mounting Locations [Units are inches and degrees]			Photos of antennas
Ants. Items	Antenna Models if Known	Width (in.)	Depth (in.)	Height (in.)	Coax Size and Qty	Antenna Center-line (Ft.)	Vertical Distances"b_{1a}, b_{2a}, b_{3a}, b_{1b}...." (Inches)	Horiz. Offset "h" (Use "-" if Ant. is behind)	Antenna Azimuth (Degrees)	Photo Numbers
Sector A										
Ant_{1a}										
Ant_{1b}	ANDREW ANTENNA	6.50	8.25	72.25		141.75	35.00	8.00	5.00	7,53,94
Ant_{1c}										
Ant_{2a}										
Ant_{2b}	BXA-185063/12CF E-D	6.00	4.00	72.50		141.75	35.00	7.00	5.00	8,54,95
Ant_{2c}										
Ant_{3a}										
Ant_{3b}	BXA-70063/6CF E-DIN	11.00	5.25	71.00		141.75	35.00	10.00	5.00	9,55,96
Ant_{3c}										
Ant_{4a}										
Ant_{4b}	ANDREW ANTENNA	6.50	8.25	72.25		141.75	35.00	8.00	5.00	10,56,97
Ant_{4c}										
Ant_{5a}										
Ant_{5b}										
Ant_{5c}										
Ant on Standoff										
Ant on Standoff										
Ant on Tower										
Ant on Tower										

Mount Azimuth (Degree) for Each Sector				Tower Leg Azimuth (Degree) for Each Sector	
Sector A:	0.00	Deg	Leg A:		Deg
Sector B:	120.00	Deg	Leg B:		Deg
Sector C:	240.00	Deg	Leg C:		Deg
Sector D:		Deg	Leg D:		Deg

Climbing Facility Information			
Location:	350.00	Deg	N/A
Climbing Facility	Corrosion Type:		Good condition.
	Access:		Climbing path was unobstructed.
	Condition:		N/A

Please insert a photo of the mount centerline measurement here.



Sector B										
Ant_{1a}										
Ant_{1b}	ANDREW ANTENNA	6.50	8.25	72.25		141.75	35.00	8.00	120.00	15,53,99
Ant_{1c}										
Ant_{2a}										
Ant_{2b}	BXA-185063/12CF E-D	6.00	4.00	72.50		141.75	35.00	7.00	120.00	16,54,100
Ant_{2c}										
Ant_{3a}										
Ant_{3b}	BXA-70063/6CF E-DIN	11.00	5.25	71.00		141.75	35.00	10.00	120.00	17,55,101
Ant_{3c}										
Ant_{4a}										
Ant_{4b}	ANDREW ANTENNA	6.50	8.25	72.25		141.75	35.00	8.00	120.00	18,56,102
Ant_{4c}										
Ant_{5a}										
Ant_{5b}										
Ant_{5c}										
Ant on Standoff										
Ant on Standoff										
Ant on Tower										
Ant on Tower										
Sector C										
Ant_{1a}										
Ant_{1b}	ANDREW ANTENNA	6.50	8.25	72.25		141.75	35.00	8.00	280.00	21,53,104
Ant_{1c}										
Ant_{2a}										
Ant_{2b}	BXA-185063/12CF E-D	6.00	4.00	72.50		141.75	35.00	7.00	280.00	22,54,105
Ant_{2c}										
Ant_{3a}										
Ant_{3b}	BXA-70063/6CF E-DIN	11.00	5.25	71.00		141.75	35.00	10.00	280.00	23,55,106
Ant_{3c}										
Ant_{4a}										
Ant_{4b}	ANDREW ANTENNA	6.50	8.25	72.25		141.75	35.00	8.00	280.00	25,56,107
Ant_{4c}										
Ant_{5a}										
Ant_{5b}										
Ant_{5c}										
Ant on Standoff										
Ant on Standoff										
Ant on Tower										
Ant on Tower										
Sector D										
Ant_{1a}										
Ant_{1b}										
Ant_{1c}										
Ant_{2a}										
Ant_{2b}										
Ant_{2c}										
Ant_{3a}										
Ant_{3b}										
Ant_{3c}										
Ant_{4a}										
Ant_{4b}										
Ant_{4c}										
Ant_{5a}										
Ant_{5b}										
Ant_{5c}										
Ant on Standoff										
Ant on Standoff										
Ant on Tower										
Ant on Tower										

Observed Safety and Structural Issues During the Mount Mapping		
Issue #	Description of Issue	Photo #
1	SAFETY CLIMB CABLE REPLACED WITH STEP BOLT ANCHOR BRACKETS	35,36
2		
3		
4		
5		
6		
7		
8		

Mapping Notes
1. Please report any visible structural or safety issues observed on the antenna mounts (Damaged members, loose connections, tilting mounts, safety climb issues, etc.)
2. If the thickness of the existing pipes or tubing can't be obtained from a general tool (such as Caliper), please use an ultrasonic measurement tool (thickness gauge) to measure the thickness.
3. Please create all required detail sketches of the mounts and insert them into the "Sketches" tab.
4. Please measure and enter the bolt sizes and types under the Members Box in the spreadsheet of the mount type.
5. Take and label the photos of the tower, mounts, connections, antennas and all measurements. Minimum 50 photos are required.
6. Please measure and report the size and length of all existing antenna mounting pipes.
7. Please measure and report the antenna information for all sectors.
8. Don't delete or rearrange any sheet or contents of any sheet from this mapping form.

Standard Conditions
1. Obvious safety and structural issues/deficiencies noticed at the time of the mount mapping are to be reported in this mapping. However, this mount mapping is not a condition assessment of the mount.

V4.1 Updated on 12-17-2021

SMART Tool© Vendor

Antenna Mount Mapping Form (PATENT PENDING)

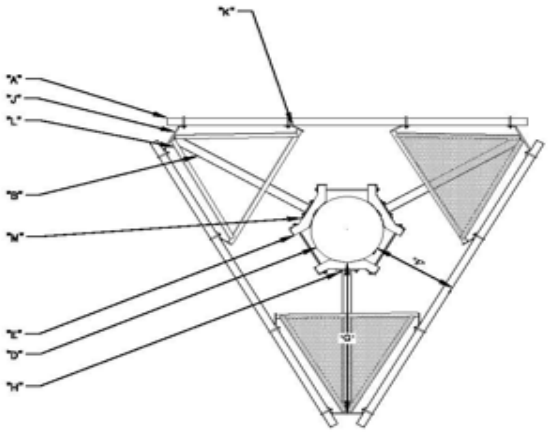
FCC #

Tower Owner:		**Mapping Date:**	6/6/2022
Site Name:	WESTBROOK NE CT	**Tower Type:**	Monopole
Site Number or ID:	468771	**Tower Height (Ft.):**	
Mapping Contractor:	HUDSON DESIGN GROUP, LLC.	**Mount Elevation (Ft.):**	141.5

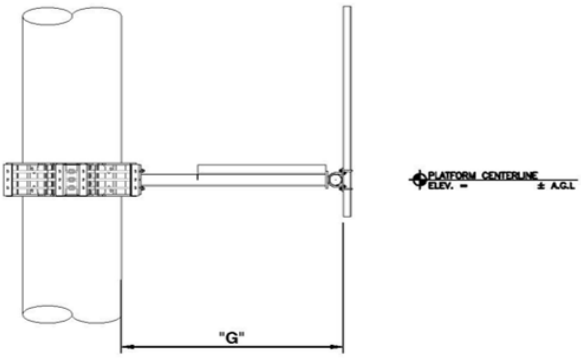
Please Insert Sketches of the Antenna Mount

DESCRIPTION	STATUS	Value
A: FACE PIPE CONFIG.	☐	ROUND MAST
SIZE		3-1/2"
LENGTH		160"
B: STAND OFF SIZE	☐	4x4
C: ANTENNA PIPE MAST	☐	1/8"
DIA.		2-3/8"
LENGTH		72"
D: MONOPOLE DIA.	☐	14"
E: RINGMOUNT	☐	10-7/8"x 3/8"
F: TOWER TO FACE	☐	39"
G: TOWER TO APEX	☐	68.5"
H: HARDWARE	☐	5/8"Ø
I: U-BOLTS	☐	1/2"Ø
J: A PLATE	☐	6"x 12.5"x 3.5"x 3/8"
K: B PLATE	☐	6"x 5.5"x 3.5"x 3/8"
L: ANGLE	☐	2"X2"X3/16"
M: MOUNTING PLATE	☐	10"x 10"x 1/2"
N: ALPHA POS 1	☐	6.5"x 8.25"x 72.25"
ALPHA POS 2	☐	6"-4"-72.5"
ALPHA POS 3	☐	11"-5.25"-71"
ALPHA POS 4	☐	6.5"x 8.25"x 72.25"
ALPHA POS 5		N/A
O: BETA POS 1	☐	9.5"x 8.5"x 72.25"
BETA POS 2	☐	6"-4"-72.5"
BETA POS 3	☐	11"-5.25"-71"
BETA POS 4	☐	9.5"x 8.5"x 72.25"
BETA POS 5		N/A
P: GAMMA POS 1	☐	6.5"x 8.25"x 72.25"
GAMMA POS 2	☐	6"-4"-72.5"
GAMMA POS 3	☐	11"-5.25"-71"
GAMMA POS 4	☐	6.5"x 8.25"x 72.25"
GAMMA POS 5		N/A
Q: TMA	☐	N/A
R: RADIOS	☐	N/A
S: SURGE	☐	N/A
T: SECOND MOUNT	☐	N/A
COMMENTS:		

Legend



PLAN

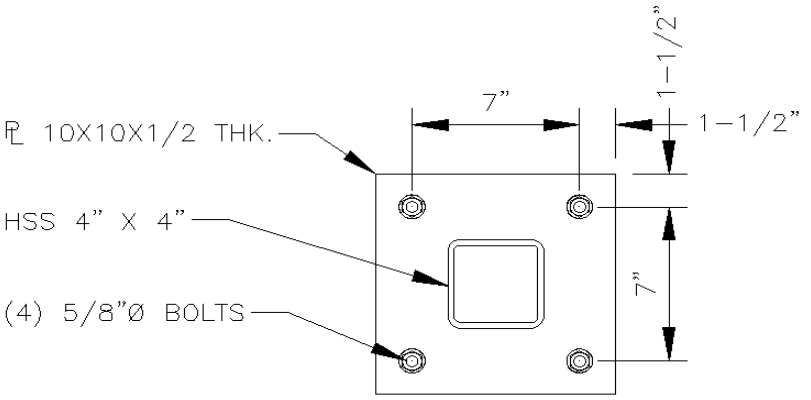


ELEVATION

FACE SKETCH

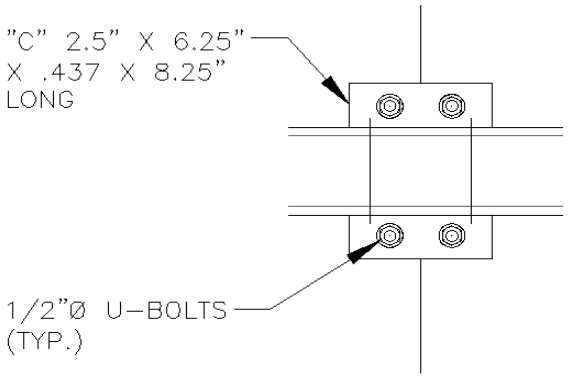
All #2 BXA-185063/12CF, All #3 BXA-70063/6CF, All "U" 38", All CL 35", "H" 8-7-10-8, C1 25", C2 50", C3 111", C4 135". Mount CL: 141' 5" See pic 108. 8' up from MCL, 3' down from MCL

Please Insert Sketches of the Antenna Mount, cont'd

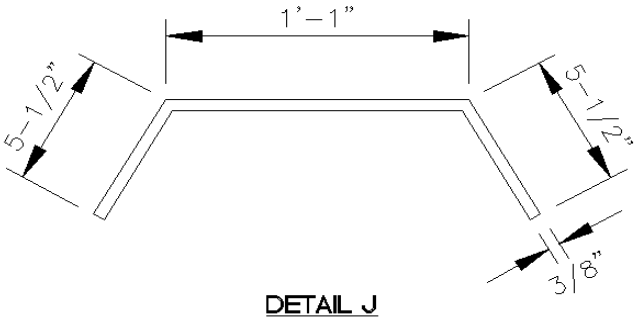


STANDOFF TO RING MOUNT CONNECTION

DETAIL M

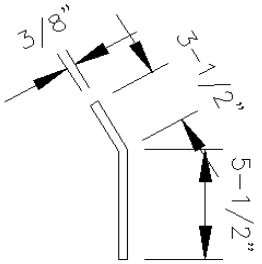


CROSSOVER PLATE DETAIL



DETAIL J

APEX "A" PLATE DETAIL



DETAIL K

"B" PLATE DETAIL

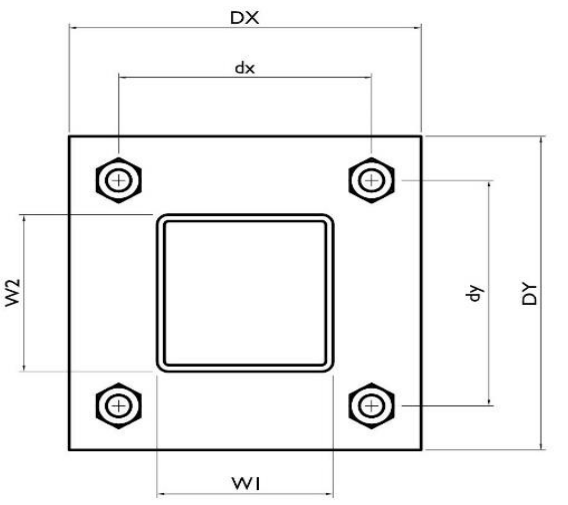
VzW SMART Tool© Vendor

Client:	Verizon Wireless	Date:	4/28/2023
Site Name:	Westbrook NE CT		
MDG #:	5000245119		
Fuze ID #:	2222426	Page:	1

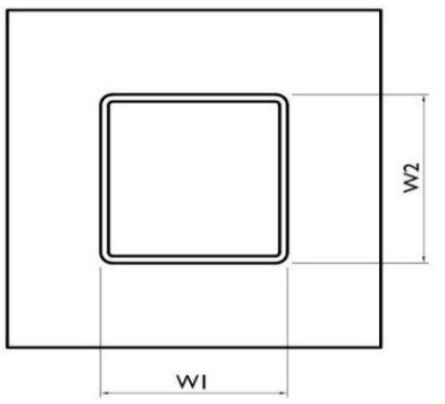
Version 1.0

I. Mount-to-Tower Connection Check

Custom Orientation Required	No
Tower Connection Bolt Checks	Yes
Bolt Orientation	Parallel
Bolt Quantity per Reaction:	4
d_x (in) *(Delta X of typ. bolt config. sketch)* :	6
d_y (in) *(Delta Y of typ. bolt config. sketch)* :	6
Bolt Type:	A325N
Bolt Diameter (in):	0.625
Required Tensile Strength / bolt (kips):	6.6
Required Shear Strength / bolt (kips):	0.6
Tensile Capacity / bolt (kips):	20.7
Shear Capacity / bolt (kips):	12.4
Bolt Overall Utilization:	**31.8%**



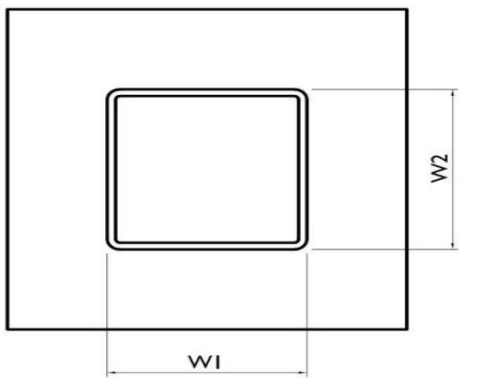
Tower Connection Baseplate Checks	Yes
Connecting Standoff Member Shape:	Rect Tube
Weld Stiffener Configuration:	No Stiffeners
Plate Width, D_x (in):	10
Plate Height, D_y (in):	10
W1(in):	4
W2 (in):	4
Member Thickness (in):	0.25
Stiffener location a_1 (in):	
Stiffener location b_1 (in):	
Stiffener location a_2 (in):	
Stiffener location b_2 (in):	
F_y (ksi, plate):	36
Plate Thickness (in):	0.5
Length of Yield Line, L_y (in):	6.34
Bolt Eccentricity, e (in):	1.65
M_u (kip-in):	10.86
Phi*M_n (kip-in):	12.83
Plate Bending Utilization:	**84.7%**



Client:	Verizon Wireless	Date:	4/28/2023
Site Name:	Westbrook NE CT		
MDG #:	5000245119		
Fuze ID #:	2222426	Page:	2

Version 1.0

Tower Connection Weld Checks	Yes
Weld Shape:	Rectangle
Weld Stiffener Configuration:	None
Stiffner Notch Length, n (in):	
Weld Size (1/16 in):	4
W1 (in):	4
W2 (in):	4
Weld Total Length (in):	16.00
Z_x (in^3/in):	21.33
Z_y (in^3/in):	21.33
J_p (in^4/in):	85.33
c_x (in)	2.25
c_y (in)	2.25
Required combined strength (kip/in):	2.45
Weld Capacity (kip/in):	5.57
Weld Utilization:	**44.0%**



ATTACHMENT 6

FOX HILL TELECOM

Radio Frequency Emissions Analysis Report

Prepared for:

CROWN CASTLE

verizon

Crown Site BU: 876384

Verizon Wireless Site Name: Westbrook NE CT

Verizon Wireless FUZE ID: 2222426

Site Address:

798 Toby Hill Road

Westbrook, CT 06498

April 24, 2023

Fox Hill Telecom Project Number: 230378

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general population allowable limit:	17.50 %

Fox Hill Telecom, Inc Worcester MA 01609

FOX HILL TELECOM

April 24, 2023

Crown Castle
1800 W. Park Drive
Westborough, MA 01581

Emissions Analysis for:

Crown Castle Site: 876384 – Westbrook / Orsina

Verizon Wireless Site: Westbrook / Orsina

Fox Hill Telecom, Inc ("Fox Hill") was directed to analyze the proposed upgrades for Verizon Wireless to the Crown Castle facility located at **798 Toby Hill Road, Westbrook, CT**, for the purpose of determining whether the emissions from the Proposed Verizon Wireless Antenna Installation, in addition to all existing radio systems located on this property, are within specified federal limits.

All information used in this report was analyzed as a percentage of current Maximum Permissible Exposure (% MPE) as listed in the FCC OET Bulletin 65 Edition 97-01and ANSI/IEEE Std C95.1. The FCC regulates Maximum Permissible Exposure in units of microwatts per square centimeter (μW/cm2). The number of $\mu W/cm^2$ calculated at each sample point is called the power density. The exposure limit for power density varies depending upon the frequencies being utilized. Wireless Carriers and Paging Services use different frequency bands each with different exposure limits, therefore it is necessary to report results and limits in terms of percent MPE rather than power density.

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

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

General population exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ($\mu W/cm^2$). The general population exposure limits for the 700 MHz frequency band & the 850 MHz cellular frequency band are approximately 497 $\mu W/cm^2$ and 586 $\mu W/cm^2$ respectively. The general population exposure limit for the 1900 MHz (PCS), 2100 MHz (AWS) and 3700 MHz (C Band) frequency bands is 1000 $\mu W/cm^2$. Because each carrier will be using different frequency bands, and each frequency band has different exposure limits, it is necessary to report the percentage of MPE rather than power density.

Occupational/controlled exposure limits apply to situations in which persons are exposed as a consequence of their employment and in which those persons who are exposed have been made fully aware of the potential for exposure and can exercise control over their exposure. Occupational/controlled exposure limits also apply where exposure is of a transient nature as a result of incidental passage through a location where exposure levels may be above general population/uncontrolled limits (see below), as long as the exposed person has been made fully aware of the potential for exposure and can exercise control over his or her exposure by leaving the area or by some other appropriate means.

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were performed for the proposed upgrades to the Crown Castle facility for Verizon Wireless located at **798 Toby Hill Road, Westbrook, CT**, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65 for far field modeling calculations.

In OET-65, plane wave power densities in the far field of an antenna are calculated by considering antenna gain and reflective waves that would contribute to exposure.

Since the radiation pattern of an antenna has developed in the **far field** region the power gain in specific directions needs to be considered in exposure predictions to yield an Effective Radiated Power (ERP) in each specific direction from the antenna. Also, since the vertical radiation pattern of the antenna is considered, the exposure calculations would most likely be reduced significantly at ground level, resulting in a more realistic estimate of the actual exposure levels. To determine a worst-case scenario at each point along the calculation radials, each point was calculated using the antenna gain value at each angle of incident and compared against the result using an isotropic radiator at the antenna height with the greater of the two used to yield the more pessimistic far field value for each point along the calculation radial.

Additionally, to model a truly "worst case" prediction of exposure levels at or near a surface, such as at ground-level or on a rooftop, reflection off the surface of antenna radiation power can be assumed, resulting in a potential 1.6 times increase in power density in calculating far field power density values.

With these factors considered, the worst case **far field prediction model** utilized in this analysis is determined by the following equation:

Equation 9 per FCC OET65 for Far Field Modeling

$$S = \frac{33.4\ ERP}{R^2}$$

S = Power Density (in μw/cm^2)
ERP = Effective Radiated Power from antenna (watts)
R = Distance from the antenna (meters)

Predicted far field power density values for all carriers identified in this report were calculated 6 feet above the ground level and are displayed as a percentage of the applicable FCC standards. All emissions values for other carriers were calculated using the same Far Field model outlined above, using industry standard radio configurations and frequency band selection based upon available licenses in this geographic area for emissions contribution estimates.

For each Verizon Wireless sector, the following channel counts, frequency bands and power levels were utilized as shown in *Table 1*:

Technology	Frequency Band	Channel Count	Transmit Power per Channel (W)
LTE	700 MHz	4	40
LTE / 5G	850 MHz	4	40
LTE	1900 MHz (PCS)	4	40
LTE	2100 MHz (AWS)	4	40
5G	3700 MHz (C Band)	8	20

Table 1: Channel Data Table

The following **Verizon Wireless** antennas listed in *Table 2 – Antenna Data* were used in the modeling for transmission in the 700 MHz, 850 MHz, 1900 MHz (PCS), 2100 MHz (AWS) and 3700 MHz (C Band) frequency bands. This is based on feedback from Verizon Wireless regarding anticipated antenna selection. Maximum gain values for all antennas are listed in *Table 3 – Verizon Wireless Inventory and Power Data* below.

Sector	Antenna Number	Antenna Make / Model	Antenna Centerline (ft)
A	1	Decibel DB846F65ZAXY (Dormant)	140
A	2	JMA MX06FRO660-03	140
A	3	JMA MX06FRO660-03	140
A	4	Samsung MT6407-77A	140
A	5	Decibel DB846H80E-SX (Dormant)	140
B	1	Decibel DB846F65ZAXY (Dormant)	140
B	2	JMA MX06FRO660-03	140
B	3	JMA MX06FRO660-03	140
B	4	Samsung MT6407-77A	140
B	5	Decibel DB846H80E-SX (Dormant)	140
C	1	Decibel DB846H80E-SX (Dormant)	140
C	2	JMA MX06FRO660-03	140
C	3	JMA MX06FRO660-03	140
C	4	Samsung MT6407-77A	140
C	5	Decibel DB846H80E-SX (Dormant)	140

Table 2: Antenna Data

All calculations were done with respect to uncontrolled / general population threshold limits.

RESULTS

Per the calculations completed for the proposed Verizon Wireless configurations *Table 3* shows resulting emissions power levels and percentages of the FCC's allowable general population limit.

Antenna ID	Antenna Make / Model	Frequency Bands	Antenna Gain (dBd)	Channel Count	Total TX Power (W)	ERP (W)	MPE %
Antenna A1	Decibel DB846H80E-SX	NA	NA	0	0	0.00	0.00
Antenna A2	JMA MX06FRO660-03	700 MHz / 850 MHz / 1900 MHz (PCS) / 2100 MHz (AWS)	12.25 / 11.85 / 15.85 / 16.05	8	320	8,866.38	1.47
Antenna A3	JMA MX06FRO660-03	700 MHz / 850 MHz / 1900 MHz (PCS) / 2100 MHz (AWS)	12.25 / 11.85 / 15.85 / 16.05	8	320	8,866.38	1.47
Antenna A4	Samsung MT6407-77A	3700 MHz (C Band)	23.15	8	132	27,263.02	4.79
Antenna A5	Decibel DB846H80E-SX	NA	NA	0	0	0.00	0.00
						Sector A Composite MPE%	**7.73**
Antenna B1	Decibel DB846H80E-SX	NA	NA	0	0	0.00	0.00
Antenna B2	JMA MX06FRO660-03	700 MHz / 850 MHz / 1900 MHz (PCS) / 2100 MHz (AWS)	12.25 / 11.85 / 15.85 / 16.05	8	320	8,866.38	1.47
Antenna B3	JMA MX06FRO660-03	700 MHz / 850 MHz / 1900 MHz (PCS) / 2100 MHz (AWS)	12.25 / 11.85 / 15.85 / 16.05	8	320	8,866.38	1.47
Antenna B4	Samsung MT6407-77A	3700 MHz (C Band)	23.15	8	132	27,263.02	4.79
Antenna B5	Decibel DB846H80E-SX	NA	NA	0	0	0.00	0.00
						Sector B Composite MPE%	**7.73**
Antenna C1	Decibel DB846H80E-SX	NA	NA	0	0	0.00	0.00
Antenna C2	JMA MX06FRO660-03	700 MHz / 850 MHz / 1900 MHz (PCS) / 2100 MHz (AWS)	12.25 / 11.85 / 15.85 / 16.05	8	320	8,866.38	1.47
Antenna C3	JMA MX06FRO660-03	700 MHz / 850 MHz / 1900 MHz (PCS) / 2100 MHz (AWS)	12.25 / 11.85 / 15.85 / 16.05	8	320	8,866.38	1.47
Antenna C4	Samsung MT6407-77A	3700 MHz (C Band)	23.15	8	132	27,263.02	4.79
Antenna C5	Decibel DB846H80E-SX	NA	NA	0	0	0.00	0.00
						Sector C Composite MPE%	**7.73**

Table 3: Verizon Wireless Inventory and Power Data table

Table 4: All Carrier MPE Contributions shows all additional identified carriers on site and their emissions contribution estimates, along with the newly calculated maximum Verizon Wireless far field emissions contributions per this report. FCC OET 65 specifies that for carriers utilizing directional antennas the highest recorded sector value be used for composite site emissions values due to their greatly reduced emissions contributions in the directions of the adjacent sectors. For this site, all three Verizon Wireless sectors have the same configuration yielding the same results for all three sectors. *Table 5* below shows a summary for each Verizon Wireless Sector as well as the composite estimated emissions value for the site.

Site Composite MPE%	
Carrier	**MPE%**
Verizon Wireless – Max Per Sector Value	**7.73 %**
T-Mobile	1.28 %
AT&T	5.88 %
Dish	2.61 %
Site Total MPE %:	**17.50 %**

Table 4: All Carrier MPE Contributions

Verizon Wireless Sector A Total:	7.73 %
Verizon Wireless Sector B Total:	7.73 %
Verizon Wireless Sector C Total:	7.73 %
Site Total:	17.50 %

Table 5: Site MPE Summary

Table 6 below details a breakdown by frequency band and technology for the MPE power values for the maximum calculated Verizon sector(s). For this site, all three Verizon Wireless sectors have the same configuration yielding the same results for all three sectors.

Verizon Wireless _ Frequency Band / Technology Max Power Values (Per Sector)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ($\mu W/cm^2$)	Frequency (MHz)	Allowable MPE ($\mu W/cm^2$)	Calculated % MPE
Verizon Wireless 700 MHz LTE	4	671.52	140	5.57	700 MHz	497	1.12%
Verizon Wireless 850 MHz LTE / 5G	4	612.43	140	5.98	850 MHz	586	1.02%
Verizon Wireless 1900 MHz (PCS) LTE	4	1,538.37	140	3.80	1900 MHz (PCS)	1000	0.38%
Verizon Wireless 2100 MHz (AWS) LTE	4	1,610.87	140	4.20	2100 MHz (AWS)	1000	0.42%
Verizon Wireless 3700 MHz (C Band) 5G	8	3,407.88	140	47.90	3700 MHz (C Band)	1000	4.79%
						Total:	**7.73 %**

Table 6: Verizon Wireless Maximum Sector MPE Power Values

Summary

All calculations performed for this analysis yielded results that were **within** the allowable limits for general population exposure to RF Emissions.

The anticipated maximum composite contributions from the Verizon Wireless facility as well as the site composite emissions estimates value with regards to compliance with FCC's allowable limits for general population exposure to RF Emissions are shown here:

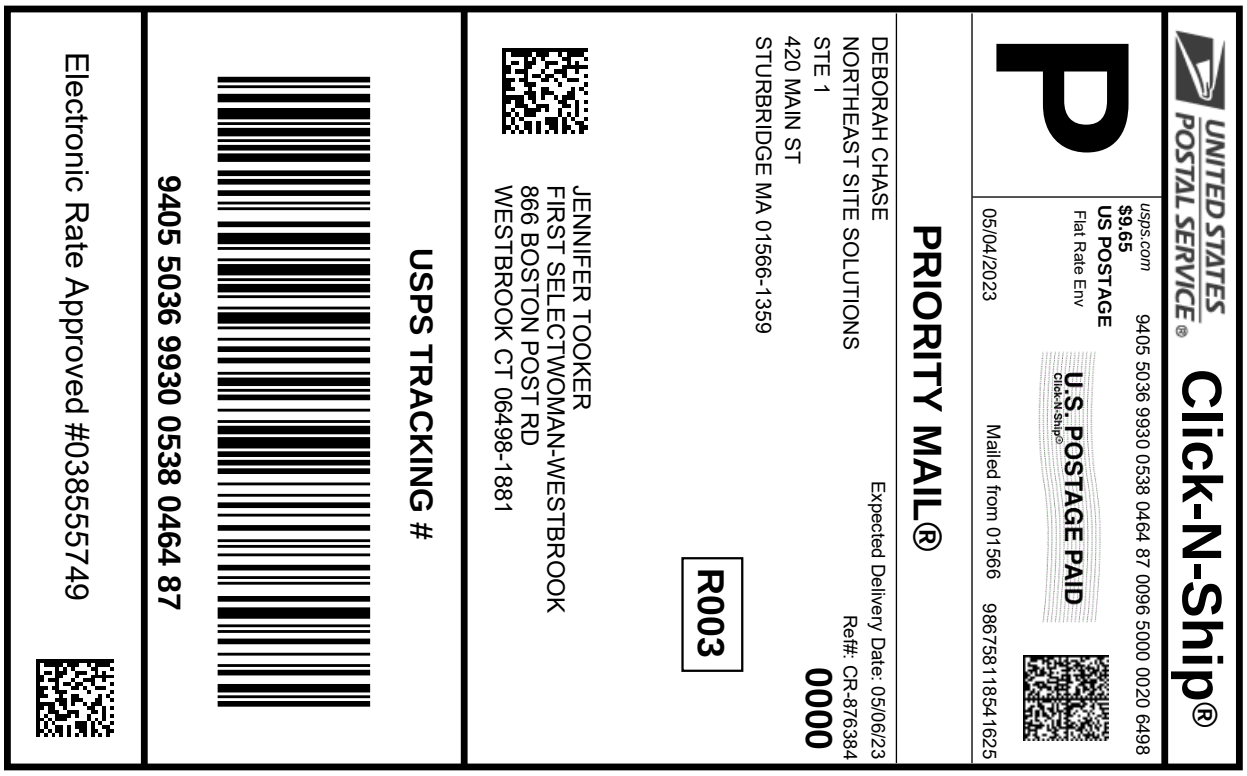
Verizon Wireless Sector	Power Density Value (%)
Sector A:	7.73 %
Sector B:	7.73 %
Sector C:	7.73 %
Verizon Wireless Maximum Total (per sector):	7.73 %
Site Total:	17.50 %
Site Compliance Status:	**COMPLIANT**

The estimated composite emissions value for this site, assuming all carriers present, is **17.50 %** of the allowable FCC established general population limit sampled at the ground level. This is based upon the far field calculations performed for all carriers identified in this report.

FCC guidelines state that if a site is found to be out of compliance (over allowable thresholds), that carriers over a 5% contribution to the composite value will require measures to bring the site into compliance. For this facility, the composite estimated values calculated were well within the allowable 100% threshold standard per the federal government.

Scott Heffernan
Principal RF Engineer
Fox Hill Telecom, Inc
Worcester, MA 01609
(978)660-3998

ATTACHMENT 7



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Priority Mail® Postage:	**$9.65**
Total:	**$9.65**

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420 MAIN ST
STURBRIDGE MA 01566-1359

Ref#: CR-876384

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FIRST SELECTWOMAN-WESTBROOK
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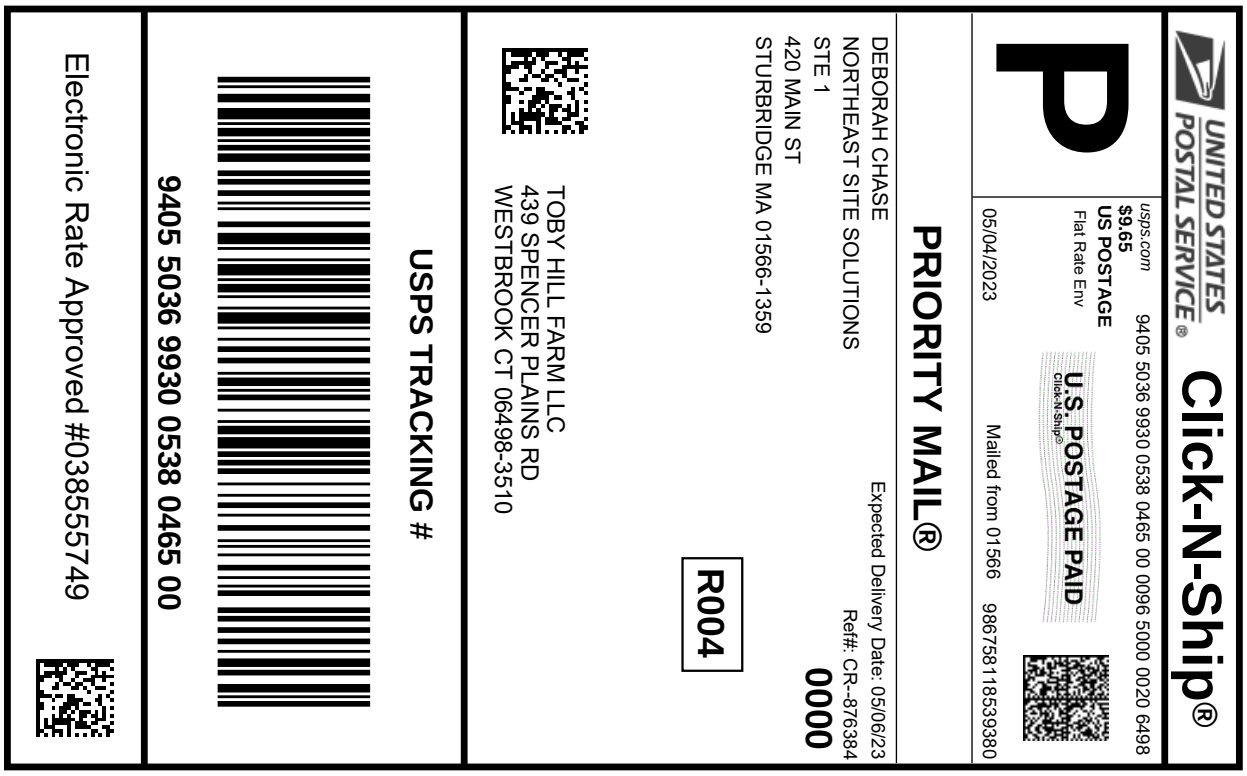

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To: TOBY HILL FARM LLC
439 SPENCER PLAINS RD
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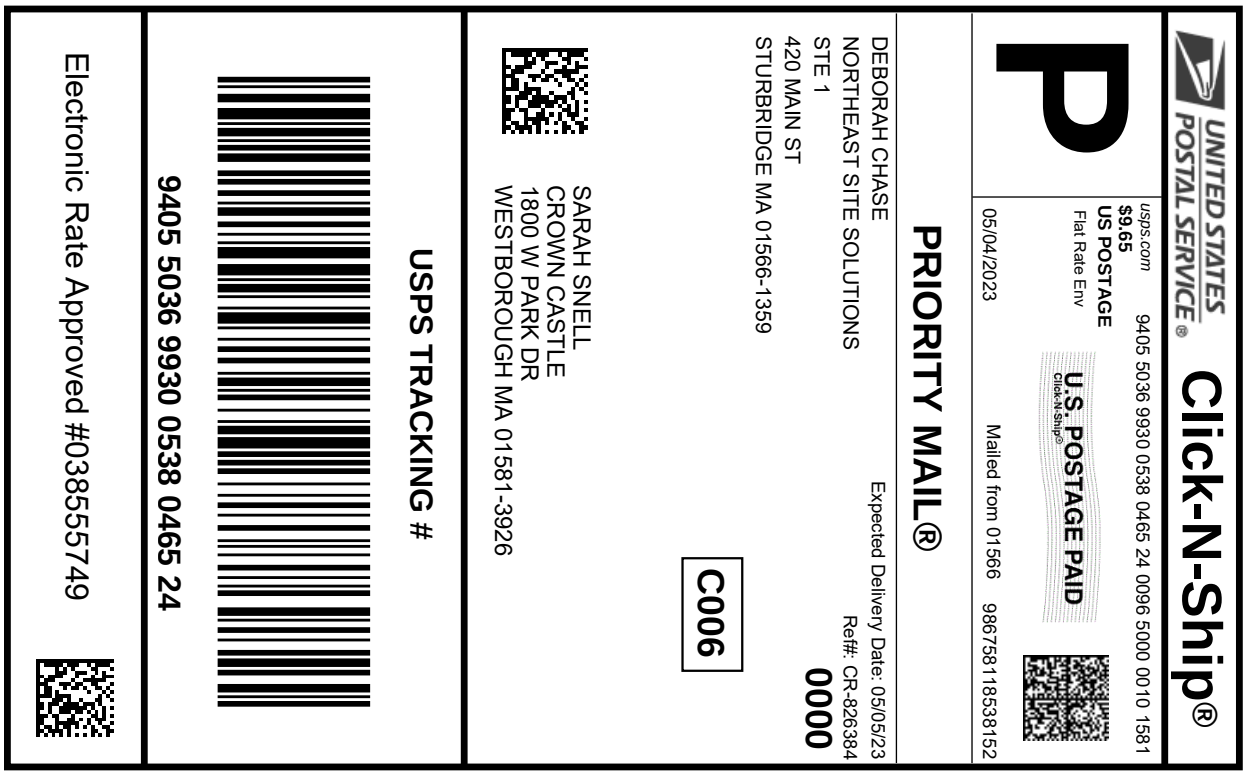

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STURBRIDGE MA 01566-1359

Ref#: CR-826384

To: SARAH SNELL
CROWN CASTLE
1800 W PARK DR
WESTBOROUGH MA 01581-3926

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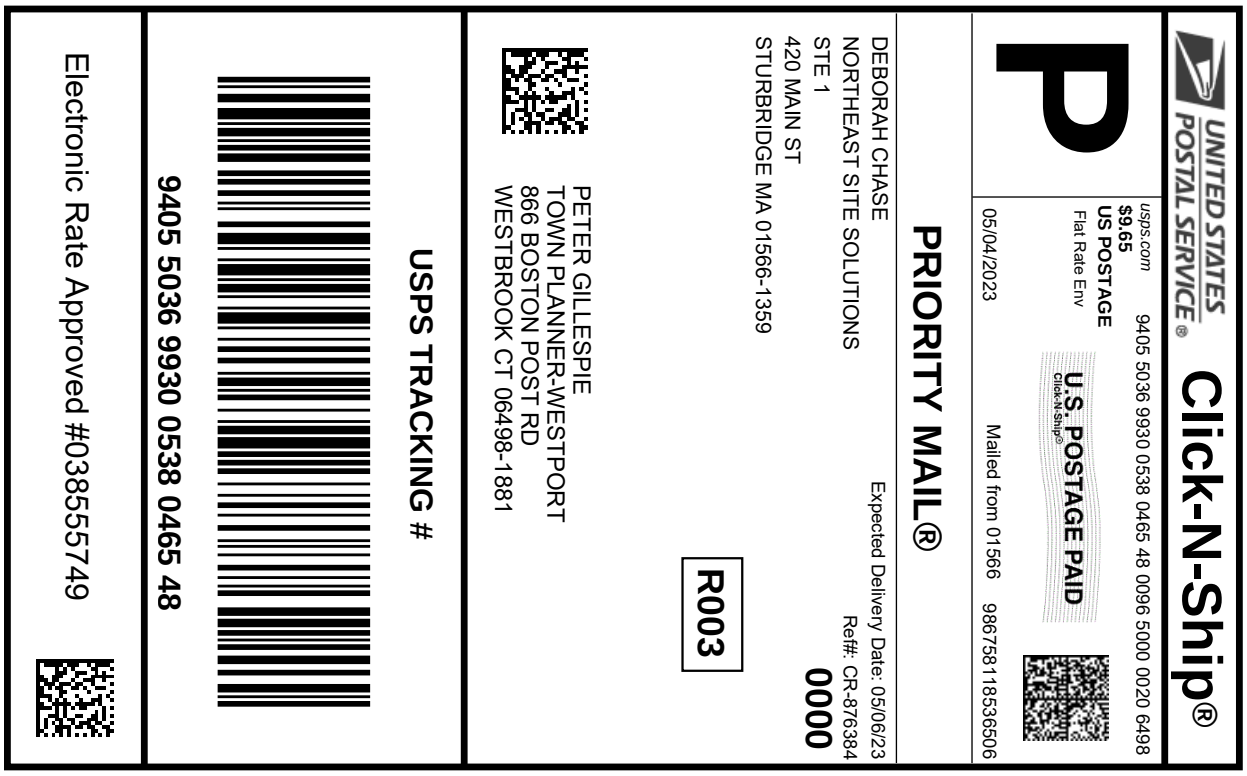

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STURBRIDGE MA 01566-1359

Ref#: CR-876384

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TOWN PLANNER-WESTPORT
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