



Northeast Site Solutions
Denise Sabo
4 Angela's Way, Burlington CT 06013
203-435-3640
denise@northeastsitesolutions.com

May 12, 2023

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

RE: Exempt Modification Application
338 Oxford Road, Oxford, CT 06478
Latitude: 41.427991
Longitude: -73.108541
Site#: 876362_Crown_VZW

Dear Ms. Bachman:

Verizon Wireless is requesting to file an exempt modification for an existing tower located at 338 Oxford Road, Oxford, CT 06478. Verizon Wireless currently maintains fifteen (15) antennas at the 130-foot level of the existing 150-foot tower. The property is owned by Gina Braley & John Kapusta and the tower is owned by Crown Castle. Verizon now intends to replace nine (9) antennas. The new antennas would be installed at the 130-foot level of the tower. This modification includes B2, B5 hardware that is both 4G (LTE), and 5G capable.

Verizon Planned Modifications:

Remove:

(6) Diplexers

Remove and Replace:

- (2) Andrew BXA-70063-4CF Antennas (REMOVE) - (2) SAMSUNG MT6407 Antennas (REPLACE)
- (1) AMPHENOL BXA-70040-4CF-EDIN Antennas (REMOVE) - (1) SAMSUNG MT6407 Antennas (REPLACE)
- (6) Andrew HBXX-6517DS-A2M Antennas (REMOVE) - (6) JMA MX06FR0660 Antennas (REPLACE)
- (1) Hybrid Cable (REMOVE) - (1) Hybrid Cable (REPLACE)
- (1) RFS-DB-T1-6Z-8AB-OZ OVP (REMOVE) - (1) RAYCAP RVZDC-6627-PF-48 (REPLACE)
- (1) Platform Mount (REMOVE) - (1) Site Pro 1 Mount (REPLACE)
- (3) Nokia UHIC B4 RRH (REMOVE) - (3) Samsung RF4439D-25A B2/B66A RRH (REPLACE)

Install New:

- (3) JMA 91900314-02 Mounting Bracket
- (3) Samsung RF4440D-13A B5/B13 RRH

Existing to Remain:

- (6) RFS APL866513 Antennas



- (1) GPS_A Antennas
- (13) Coax lines

The facility was originally approved by the Town of Oxford, although a copy of the approval was not available.

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.S.A. § 16-SOj-73, a copy of this letter is being sent to George R. Temple, First Selectman and Steven Macary, Zoning Enforcement Official for the Town of Oxford, as well as the tower owner (Crown Castle) and property owner (Gina Braley & John Kapusta).

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,

Denise Sabo
Mobile: 203-435-3640
Fax: 413-521-0558
Office: 4 Angela's Way, Burlington CT 06013
Email: denise@northeastsitesolutions.com



NSS **NORTHEAST**
SITE SOLUTIONS
Turnkey Wireless Development

Attachments

Cc: George R. Temple, First Selectman
Oxford Town Hall
486 Oxford Road
Oxford, CT 06478

Steven Macary, ZEO
Oxford Town Hall
486 Oxford Road
Oxford, CT 06478

Gina Braley & John Kapusta - Property Owners
338 Oxford Road
Oxford, CT 06478

Crown Castle – Tower Owner

Exhibit A

Property Card

Property Location: 338 OXFORD RD
 Vision ID: 1406

Account # F0133100

MAP ID: 34/ 9/ 34 A/ /

Bldg #: 1 of 1

Bldg Name:

Sec #: 1 of 1 Card 1 of 1

State Use: 101

Print Date: 11/18/2020 18:36

CURRENT OWNER		TOPO.	UTILITIES	STRT./ROAD	LOCATION	CURRENT ASSESSMENT			
BRALEY GINA & KAPUSTA JOHN		00 Clear	5 Well			Description	Code	Appraised Value	Assessed Value
338 OXFORD RD			6 Septic			RES LAND	1-1	98,300	68,800
OXFORD, CT 06478		SUPPLEMENTAL DATA Other ID: 34/9/34 A Survey Map # Census Tract 3461000 490 Penalty Dev Rights Side R 50A GIS ID: Prop Remark Total Acres 2.1 Zoning COMM Town Line? Callback Ltr ASSOC PID#				RES EXCES	1-2	4,800	3,400
Additional Owners:						RES DWELLING	1-3	150,500	105,400
						RES OUTBL	1-4	7,700	5,400
						IND LAND	3-1	162,000	113,400
						Total		423,300	296,400

6108
OXFORD, CT

VISION

RECORD OF OWNERSHIP		BK-VOL/PAGE	SALE DATE	q/u	v/i	SALE PRICE	V.C.	PREVIOUS ASSESSMENTS (HISTORY)								
BRALEY GINA & KAPUSTA JOHN		431/1170	08/30/2019	U	I	235,000	25	Yr.	Code	Assessed Value	Yr.	Code	Assessed Value	Yr.	Code	Assessed Value
FRITZ WILLIAM E JR & ELLEN S		84/ 199	10/01/2010	U	V	0		2019	1-1	68,800	2018	1-1	68,800	2017	1-1	68,800
								2019	1-2	4,200	2018	1-2	4,200	2017	1-2	4,200
								2019	1-3	104,000	2018	1-3	104,000	2017	1-3	104,000
								2019	1-4	4,600	2018	1-4	4,600	2017	1-4	4,600
								2019	3-1	109,800	2018	3-1	109,800	2017	3-1	109,800
						Total:		291,400	Total:	291,400	Total:	291,400	Total:	291,400	Total:	291,400

EXEMPTIONS				OTHER ASSESSMENTS				
Year	Type	Description	Amount	Code	Description	Number	Amount	Comm. Int.
Total:								

This signature acknowledges a visit by a Data Collector or Assessor

ASSESSING NEIGHBORHOOD				
NBHD/ SUB	NBHD Name	Street Index Name	Tracing	Batch
0001/A				

APPRAISED VALUE SUMMARY

Appraised Bldg. Value (Card)	150,500
Appraised XF (B) Value (Bldg)	0
Appraised OB (L) Value (Bldg)	7,700
Appraised Land Value (Bldg)	265,100
Special Land Value	0
Total Appraised Parcel Value	423,300
Valuation Method:	C
Adjustment:	0
Net Total Appraised Parcel Value	423,300

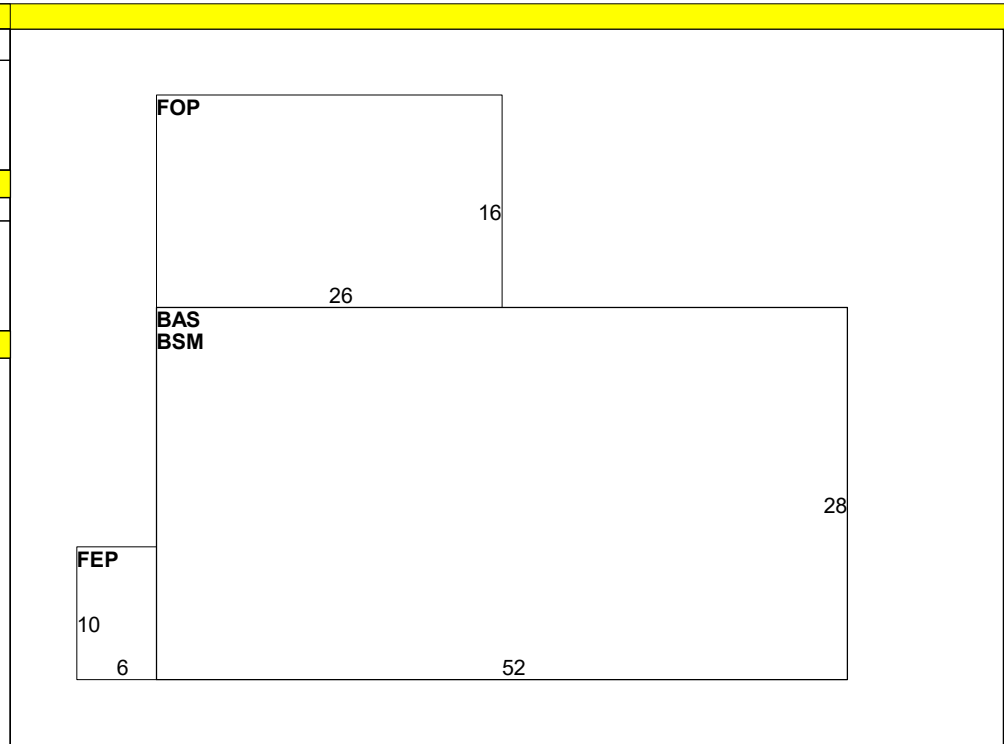
NOTES	
CELLULAR COMMUNICATION TOWER; SHARED ACCESS, INTERIOR LOT	
WHITE, EA 1A	
INT ORIG 1/10	
2019 I&E O/O	
2020-EST:POSTED:NO TRESPASSING	

BUILDING PERMIT RECORD										VISIT/ CHANGE HISTORY					
Permit ID	Issue Date	Type	Description	Amount	Insp. Date	% Comp.	Date Comp.	Comments	Date	Type	IS	ID	Cd.	Purpose/Result	
B-20-151		BP	Permit	27		0		BARN=3 BAYS-SQ	06/22/2020			ES	20	Field Review	
B-18-114	05/22/2018	BP	Permit	20,000		100		CELL TOWER ALTER	05/04/2020			VA	49	Data Mailer Sent	
B-17-007	01/20/2017	BP	Permit	8,000		100		ANTENNA ALTERATI	09/01/2015			LM	20	Field Review	
B-12-030	03/06/2012	BP	Permit	15,000	05/30/2012	100		REPLACE ALL 12 ANT	07/30/2010			DM	53	Data Mailer - Research	
B-11-229	10/06/2011	BP		35,000		100		REPLACING EXISTIN	01/22/2010			MB	00	Measure & Listed	
B-00-001	12/30/1999		CELLULAR COMMU	90,000		100									

LAND LINE VALUATION SECTION																		
B #	Use Code	Use Description	Zone	D	Front	Depth	Units	Unit Price	I. Factor	S.A.	C. Factor	ST. Idx	Adj.	Notes- Adj	Special Pricing	S Adj Fact	Adj. Unit Price	Land Value
															Spec Use	Spec Calc		
1	101	Res Dwelling	COMM				1.50	AC	112,800.00	0.7175	5	0.90	090	TF			1.00	98,300
1	101	Res Dwelling	COMM				0.60	AC	8,000.00	1.0000	0	1.00	0.00				1.00	4,800
1	307	Cell Tower					1.00	BL	162,000.00	1.0000	0	1.00	0.00	LAND LEASE VALUE			1.00	162,000

Total Card Land Units: 2.10 AC Parcel Total Land Area: 2.1 AC Total Land Value: 265,100

CONSTRUCTION DETAIL				CONSTRUCTION DETAIL (CONTINUED)			
Element	Cd.	Ch.	Description	Element	Cd.	Ch.	Description
Style	01		Ranch	Dormer LF			
Model	01		Residential	Int Millwork	1		Plain
Grade	03		C	Ext Millwork	1		Plain
Stories	1.00			Foundation	1		Poured Conc
Occupancy	1			MIXED USE			
Exterior Wall 1	25		Vinyl Siding	<i>Code</i>	<i>Description</i>		<i>Percentage</i>
Exterior Wall 2				101	Res Dwelling		100
Roof Structure	03		Gable	COST/MARKET VALUATION			
Roof Cover	03		Asphalt	Adj. Base Rate:			107.36
Interior Wall 1	05		Drywall	Replace Cost			198,070
Interior Wall 2	04		Panel	AYB			1976
Interior Flr 1	12		Hardwood	Dep Code			A
Interior Flr 2	14		Carpet	Remodel Rating			
Heat Fuel	02		Oil	Year Remodeled			
Heat Type	04		Forced Hot Air	Dep %			24
AC Type	03		Central	Functional Obslnc			
Total Bedrooms	03		3 Bedrooms	External Obslnc			
Full Bthrms	2			Cost Trend Factor			
Half Baths	0			Condition			
Extra Fixtures	0			% Complete			
Total Rooms	6			Overall % Cond			76
Bath Style	02		Average	Apprais Val			150,500
Kitchen Style	02		Average	Dep % Ovr			0
Extra Kitchens				Dep Ovr Comment			
Fireplace(s)	1			Misc Imp Ovr			0
Extra Opening(s)				Misc Imp Ovr Comment			
Gas Fireplace(s)				Cost to Cure Ovr			0
Blocked FPL(s)				Cost to Cure Ovr Comment			
Woodstove(s)	0						
Bsmt Garage(s)	0						
SF Fin Bsmt	100						
FBM Quality	5						



OB-OUTBUILDING & YARD ITEMS(L) / XF-BUILDING EXTRA FEATURES(B)

Code	Description	Sub	Sub Descript	L/B	Units	Unit Price	Yr	Gde	Dp Rt	Cnd	%Cnd	Apr Value
FGRI	Garage	FR	Frame	L	528	29.00	2000	2		A	50	7,700

BUILDING SUB-AREA SUMMARY SECTION

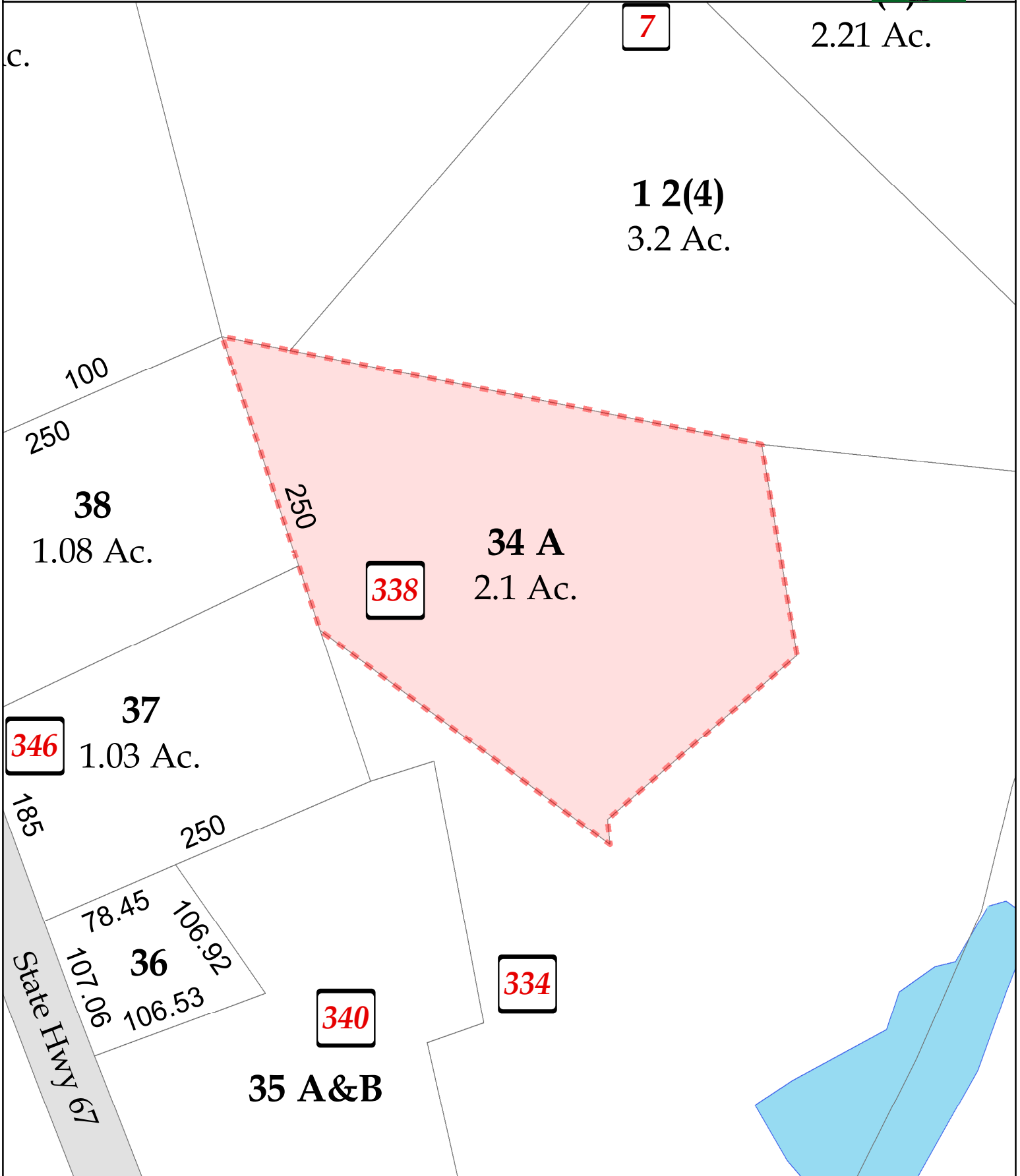
Code	Description	Living Area	Gross Area	Eff. Area	Unit Cost	Undeprec. Value
BAS	First Floor	1,456	1,456		107.36	156,309
BSM	Basement	0	1,456		21.46	31,240
FEP	Finished Enclosed Porch	0	60		64.41	3,865
FOP	Open Porch	0	416		16.00	6,656
Ttl. Gross Liv/Lease Area:		1,456	3,388			198,070



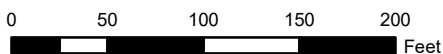
Town of Oxford, Connecticut - Assessment Parcel Map

Parcel: 34-9-34-A

Location: 338 OXFORD RD



Approximate Scale: 1 inch = 100 feet



Map Produced: February 2021

Disclaimer: This map is for informational purposes only All information is subject to verification by any user. The Town of Oxford and its mapping contractors assume no legal responsibility for the information contained herein.

Exhibit B

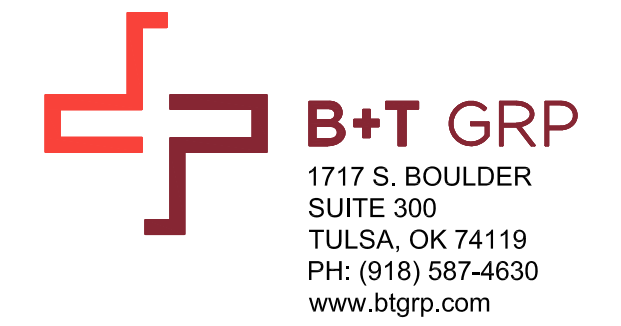
Construction Drawings



VERIZON SITE NUMBER: 324652
VERIZON SITE NAME: OXFORD CT
SITE TYPE: MONOPOLE
TOWER HEIGHT: 150'-0"

BUSINESS UNIT #: 876362
SITE ADDRESS: 338 OXFORD RD.
 OXFORD, CT 06478
COUNTY: NEW HAVEN
JURISDICTION: CONNECTICUT
SITING COUNCIL

VERIZON 850 ADD



VERIZON SITE NUMBER:
324652

BU #: 876362
OXFORD / FRITZ PROPERTY

 338 OXFORD RD.
 OXFORD, CT 06478

EXISTING 150'-0" MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
0	10/26/22	JTS	CONSTRUCTION	ANP
1	1/10/23	GAC	CONSTRUCTION	MTJ

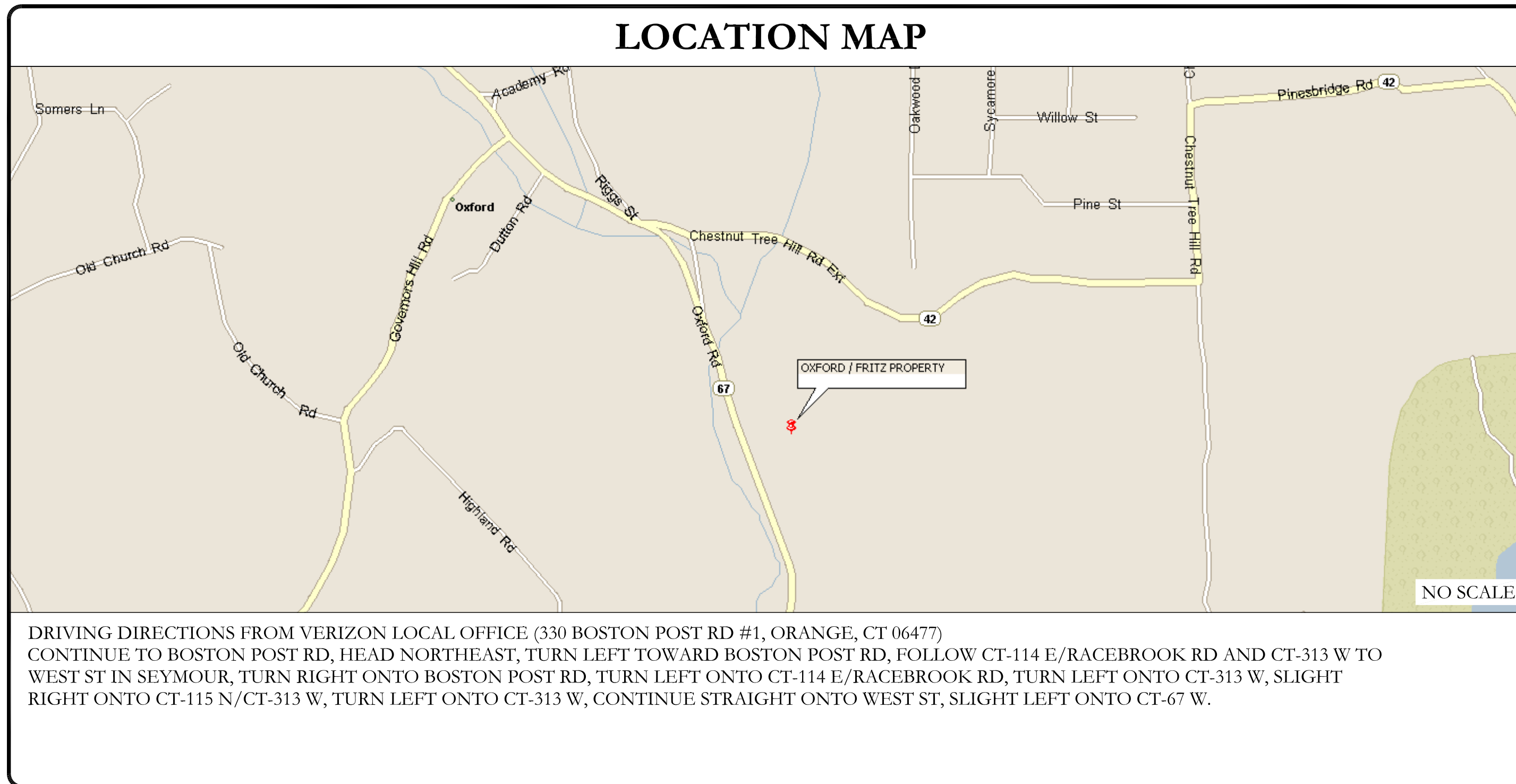
SITE INFORMATION

CROWN CASTLE USA INC. SITE NAME:	OXFORD / FRITZ PROPERTY
SITE ADDRESS:	338 OXFORD RD. OXFORD, CT 06478
COUNTY:	NEW HAVEN
MAP/PARCEL #:	34-9-34-A
AREA OF CONSTRUCTION:	EXISTING
LATITUDE:	41.427991°
LONGITUDE:	-73.108541°
LAT/LONG TYPE:	NAD83
GROUND ELEVATION:	385'
CURRENT ZONING:	RESIDENTIAL
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:	BRALEY GINA & KAPUSTA JOHN 338 OXFORD RD OXFORD, CT 06478
TOWER OWNER:	CROWN CASTLE 2000 CORPORATE DRIVE CANONSBURG, PA 15317
CARRIER/APPLICANT:	VERIZON WIRELESS 20 ALEXANDER DRIVE, 2ND FLOOR WALLINGFORD, CT 06492
ELECTRIC PROVIDER:	CONNECTICUT LIGHT & POWER CO (860) 974-2000
TELCO PROVIDER:	LIGHTTOWER (855) 913-4237

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 SPECIFICATIONS

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



APPROVALS

SIGNATURE	DATE
_____	_____
_____	_____
_____	_____
_____	_____

CONTRACTOR PMI REQUIREMENTS

PMI ACCESSED AT	https://pmi.vxwsmart.com
SMART TOOL VENDOR	
PROJECT NUMBER	10141842
VzW LOCATION CODE (PSLC)	467814

*** 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

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/2021 IBC
MECHANICAL	2022 CONNECTICUT SBC/2021 IMCED
ELECTRICAL	2022 CONNECTICUT SBC/2020 NEC

REFERENCE DOCUMENTS:

STRUCTURAL ANALYSIS:	TEP
DATED:	8/31/22
MOUNT ANALYSIS:	MASER CONSULTING CONNECTICUT
DATED:	7/11/22
RFDS REVISION:	REV0
DATED:	5/17/22
ORDER ID:	623005
REVISION:	0

INSTALLER NOTE:
 NO PROPOSED LOADING TO BE ADDED UNTIL MOUNT SWAP IS COMPLETE AND MOUNT MODIFICATIONS ARE INSTALLED PER NEW/REPLACEMENT ANTENNA MOUNT ANALYSIS BY MASER CONSULTING CONNECTICUT DATED JULY 11, 2022.

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 (9) ANTENNAS
- REMOVE (3) RRH
- REMOVE (6) DIPLEXERS
- REMOVE (1) OVP
- REMOVE (1) HYBRID CABLE
- REMOVE EXISTING PLATFORM MOUNT
- RELOCATE (6) ANTENNAS
- RELOCATE (1) GPS ANTENNA
- INSTALL SITE PRO 1 - RMQP-NP MOUNT WITH MODIFICATIONS PER NEW/REPLACEMENT ANTENNA MOUNT ANALYSIS BY MASER CONSULTING CONNECTICUT DATED JULY 11, 2022
- INSTALL (3) ANTENNAS W/ INTEGRATED RRHS
- INSTALL (6) ANTENNAS
- INSTALL (3) DUAL ANTENNA MOUNTING BRACKETS
- INSTALL (6) RRH
- INSTALL (1) OVP
- INSTALL (1) HYBRID CABLE

GROUND SCOPE OF WORK:

- REMOVE (3) NOKIA - UHBC B13 TRDU 2X40

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

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
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1:37094.005.01.0001_OXFORD_FRITZ_PROPERTY.dwg - Sheet:1-1 - User: mjonas - Jan 10, 2023 - 9:25am

CROWN CASTLE USA INC. SITE ACTIVITY REQUIREMENTS:

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

GREENFIELD GROUNDING NOTES:

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

GENERAL NOTES:

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

CONCRETE, FOUNDATIONS, AND REINFORCING STEEL:

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

ELECTRICAL INSTALLATION NOTES:

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

CONDUCTOR COLOR CODE		
SYSTEM	CONDUCTOR	COLOR
120/240V, 1Ø	A PHASE	BLACK
	B PHASE	RED
	NEUTRAL	WHITE
	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

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

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



1515 E. WOODFIELD ROAD
SCHAUMBURG, IL 60173



1505 WESTLAKE AVENUE NORTH, SUITE 800
SEATTLE, WA 98109



1717 S. BOULDER
SUITE 300
TULSA, OK 74119
PH: (918) 587-4630
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VERIZON SITE NUMBER:
324652


BU #: 876362
OXFORD / FRITZ
PROPERTY

338 OXFORD RD.
OXFORD, CT 06478

EXISTING 150'-0" MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
0	10/26/22	JTS	CONSTRUCTION	ANP
1	1/10/23	GAC	CONSTRUCTION	NTJ



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-2

REVISION:
1

verizon

1515 E. WOODFIELD ROAD
SCHAUMBURG, IL 60173

CROWN CASTLE

1505 WESTLAKE AVENUE NORTH, SUITE 800
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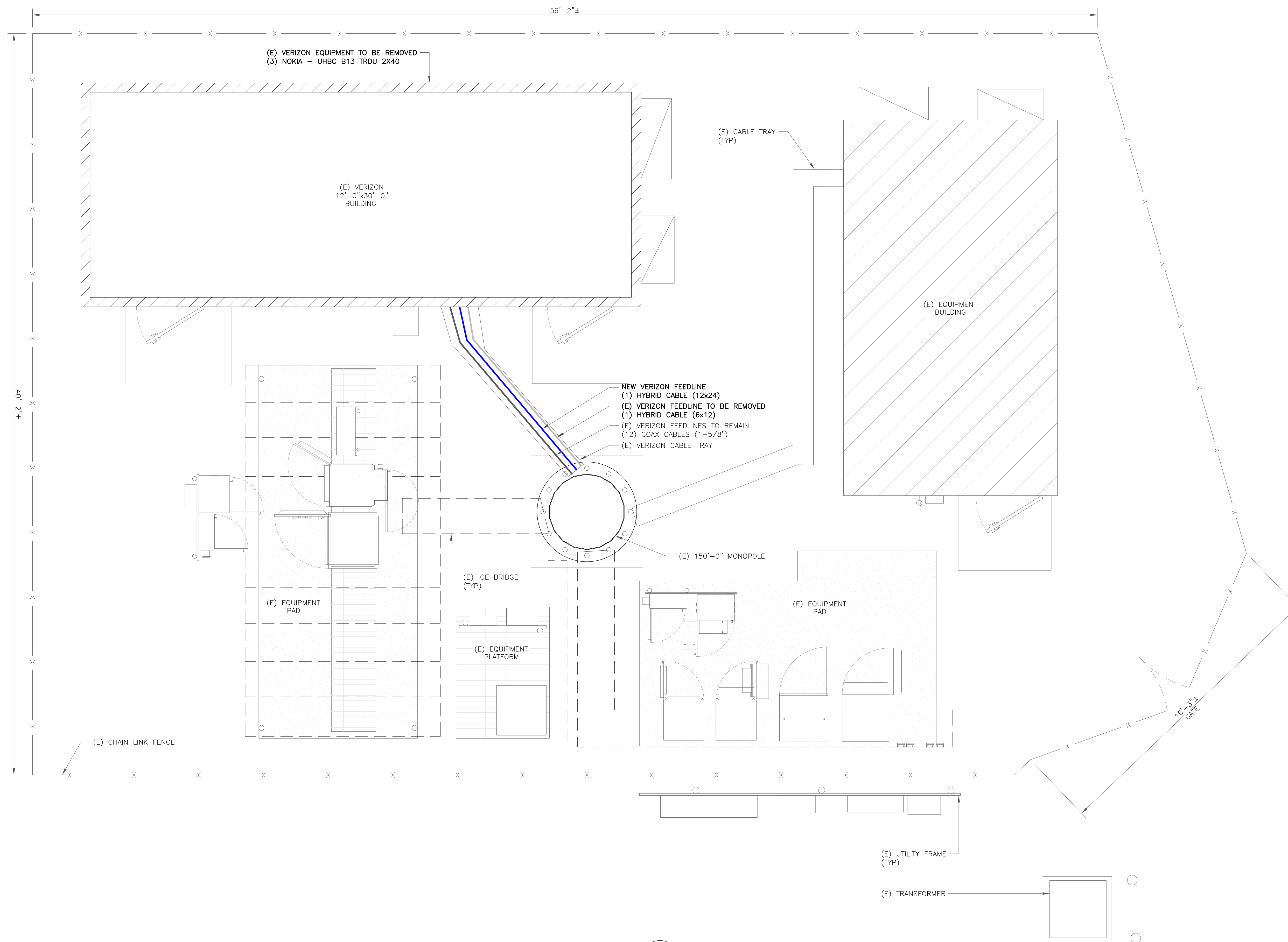
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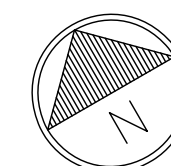
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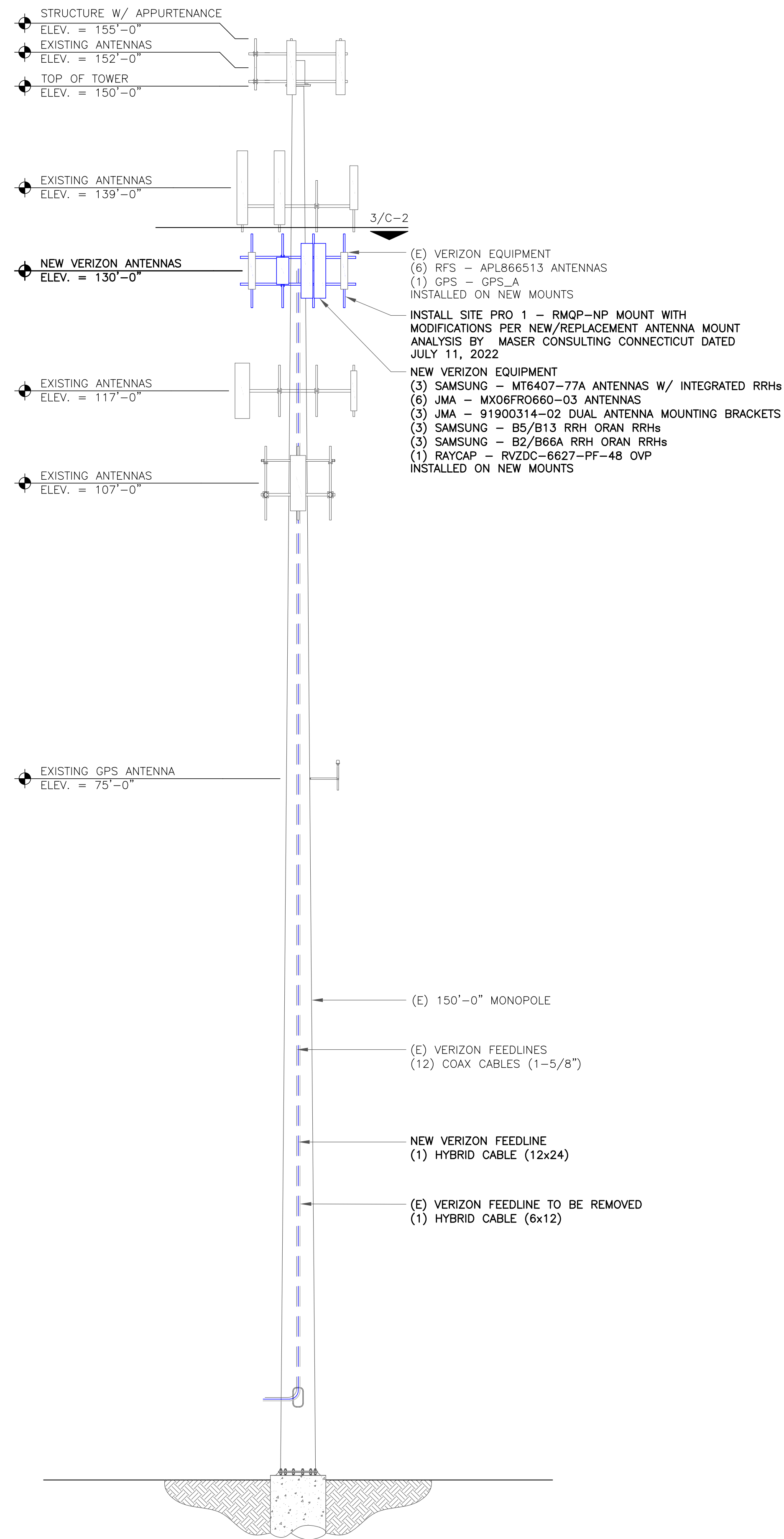
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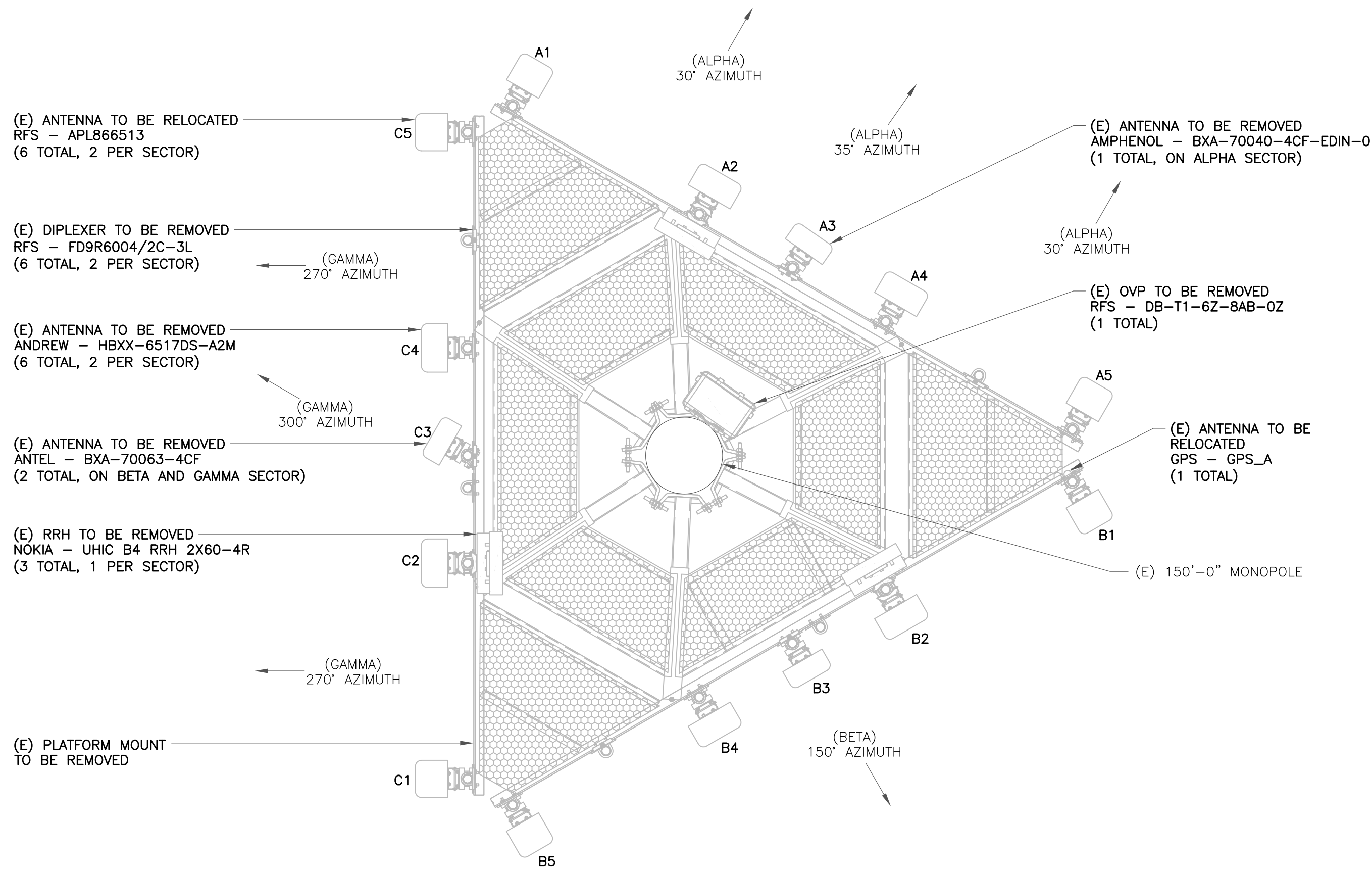


1 SITE PLAN
SCALE: 3/8"=1'-0" (FULL SIZE)
3/16"=1'-0" (11x17)

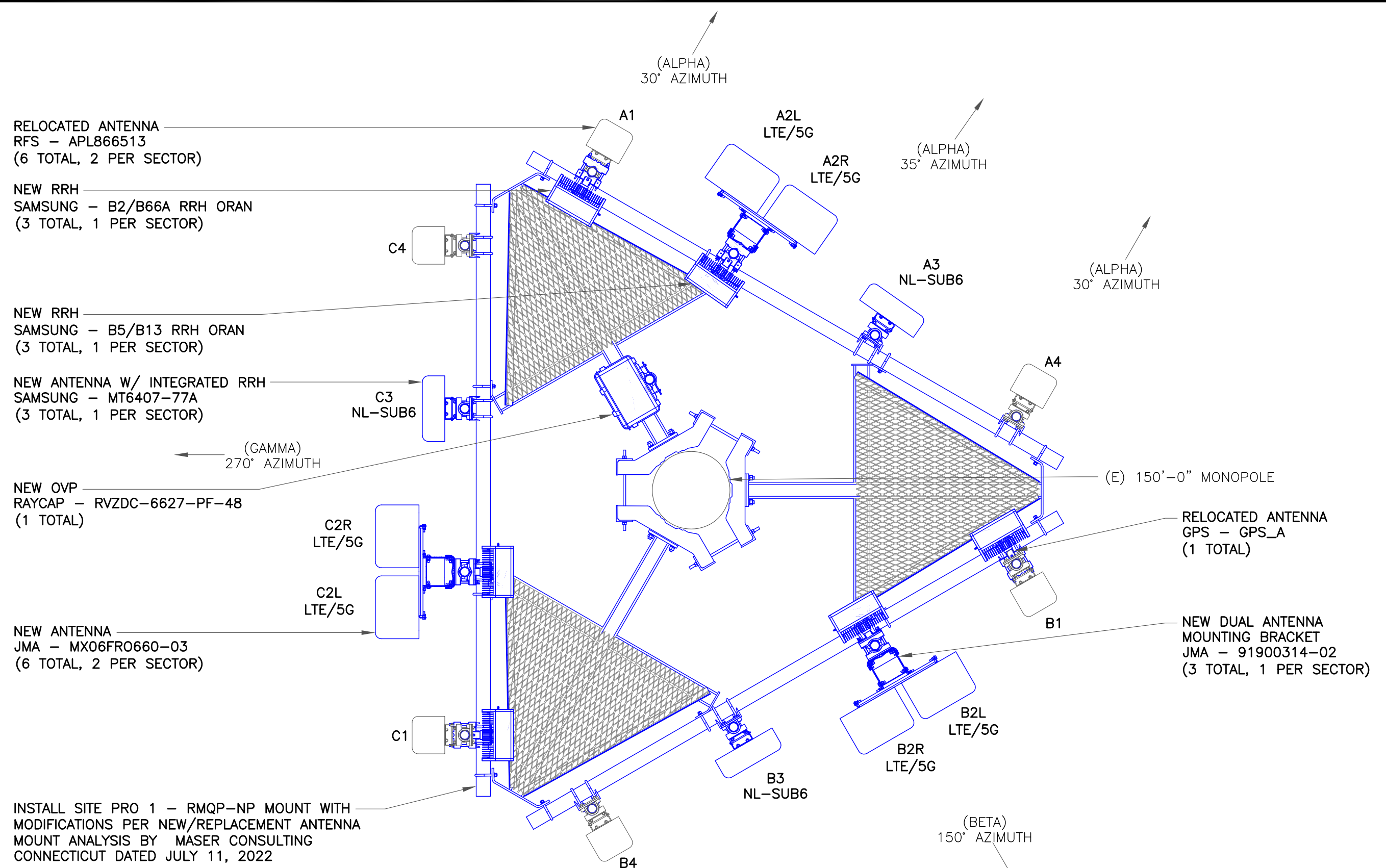




1 TOWER ELEVATION
SCALE: NOT TO SCALE



2 EXISTING ANTENNA PLAN
SCALE: NOT TO SCALE



3 NEW ANTENNA PLAN
SCALE: NOT TO SCALE

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OXFORD / FRITZ
PROPERTY

338 OXFORD RD.
OXFORD, CT 06478

EXISTING 150'-0" MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
0	10/26/22	JTS	CONSTRUCTION	ANP
1	1/10/23	GAC	CONSTRUCTION	MTJ



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

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SHEET NUMBER:

C-2

REVISION:

1

VERIZON SITE NUMBER:
324652

BU #: **876362**
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PROPERTY

338 OXFORD RD.
 OXFORD, CT 06478

EXISTING 150'-0" MONOPOLE

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SHEET NUMBER:

C-3

REVISION:

1

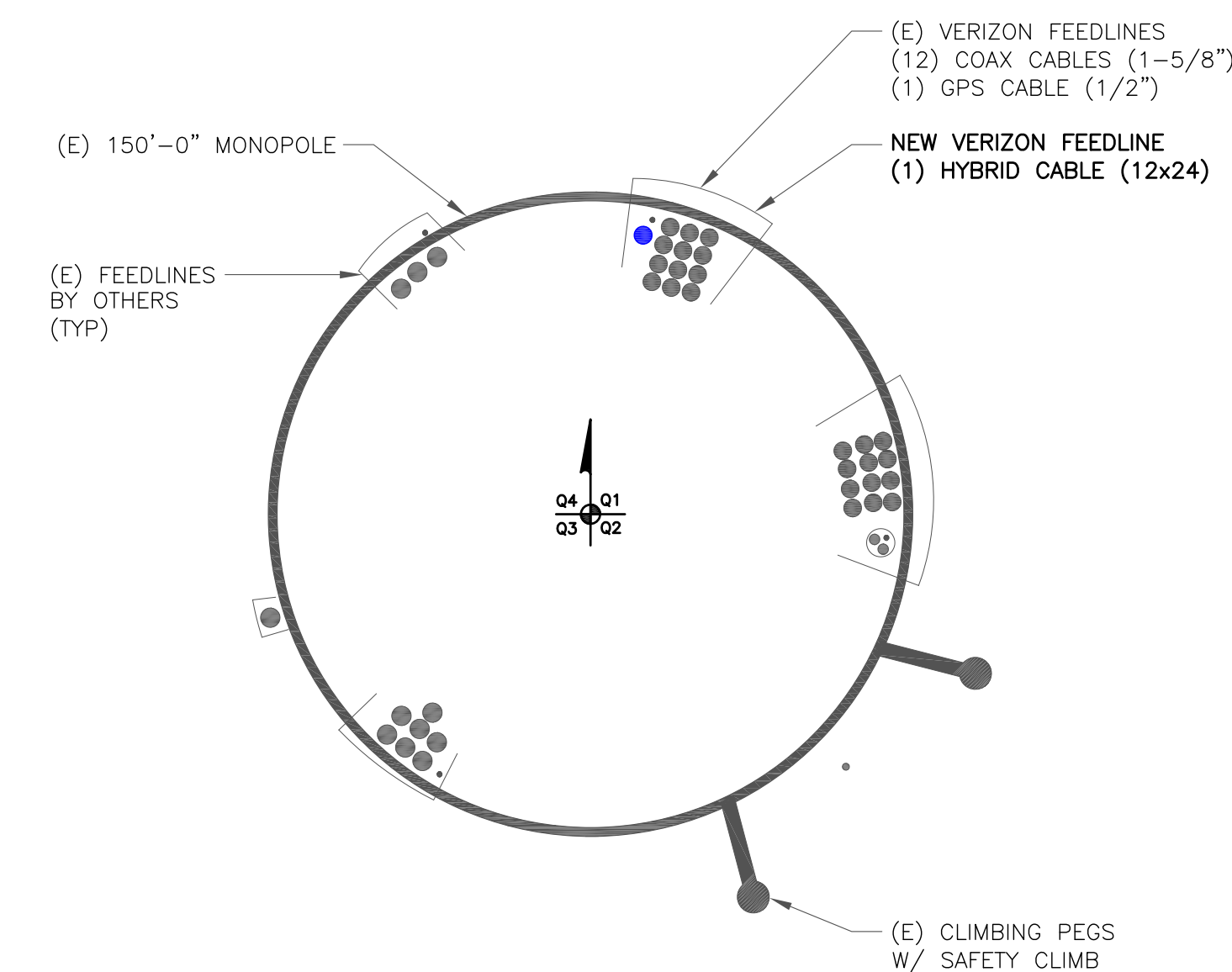
ANTENNA/RRH SCHEDULE

SECTOR	STATUS	ANTENNA MANUFACTURER	ANTENNA MODEL	ANTENNA CENTERLINE	AZIMUTH	MECHANICAL DOWNTILTS	ELECTRICAL DOWNTILTS	TOWER EQUIPMENT MANUFACTURER	TOWER EQUIPMENT QTY/MODEL
A1	EXISTING	RFS	APL866513	130'-0"	30°	0°	0°	RAYCAP SAMSUNG	(1) RVZDC-6627-PF-48_CCIV2 (1) B2/B66A RRH ORAN (RF4439D-25A)
A2L	NEW	JMA	MX06FRO660-03	130'-0"	35°	0°	2°/2°/2°/2°/0°	SAMSUNG	(1) B5/B13 RRH ORAN (RF4440D-13A)
A2R	NEW	JMA	MX06FRO660-03	130'-0"	35°	0°	2°/2°/2°/2°/0°	-	-
A3	NEW	SAMSUNG	MT6407-77A	130'-0"	35°	0°	6°	-	INTEGRATED WITHIN
A4	EXISTING	RFS	APL866513	130'-0"	30°	0°	0°	-	-
-	EXISTING	GPS	GPS_A	130'-0"	-	-	-	-	-
B1	EXISTING	RFS	APL866513	130'-0"	150°	0°	0°	SAMSUNG	(1) B2/B66A RRH ORAN (RF4439D-25A)
B2L	NEW	JMA	MX06FRO660-03	130'-0"	150°	0°	2°/2°/2°/2°/2°	SAMSUNG	(1) B5/B13 RRH ORAN (RF4440D-13A)
B2R	NEW	JMA	MX06FRO660-03	130'-0"	150°	0°	2°/2°/2°/2°/2°	-	-
B3	NEW	SAMSUNG	MT6407-77A	130'-0"	150°	0°	6°	-	INTEGRATED WITHIN
B4	EXISTING	RFS	APL866513	130'-0"	150°	0°	0°	-	-
C1	EXISTING	RFS	APL866513	130'-0"	270°	0°	0°	SAMSUNG	(1) B2/B66A RRH ORAN (RF4439D-25A)
C2L	NEW	JMA	MX06FRO660-03	130'-0"	270°	0°	2°/2°/2°/0°/2°	SAMSUNG	(1) B5/B13 RRH ORAN (RF4440D-13A)
C2R	NEW	JMA	MX06FRO660-03	130'-0"	270°	0°	2°/2°/2°/0°/2°	-	-
C3	NEW	SAMSUNG	MT6407-77A	130'-0"	270°	0°	6°	-	INTEGRATED WITHIN
C4	EXISTING	RFS	APL866513	130'-0"	270°	0°	0°	-	-

1 VERIZON TOWER EQUIPMENT SCHEDULE
 SCALE: NOT TO SCALE

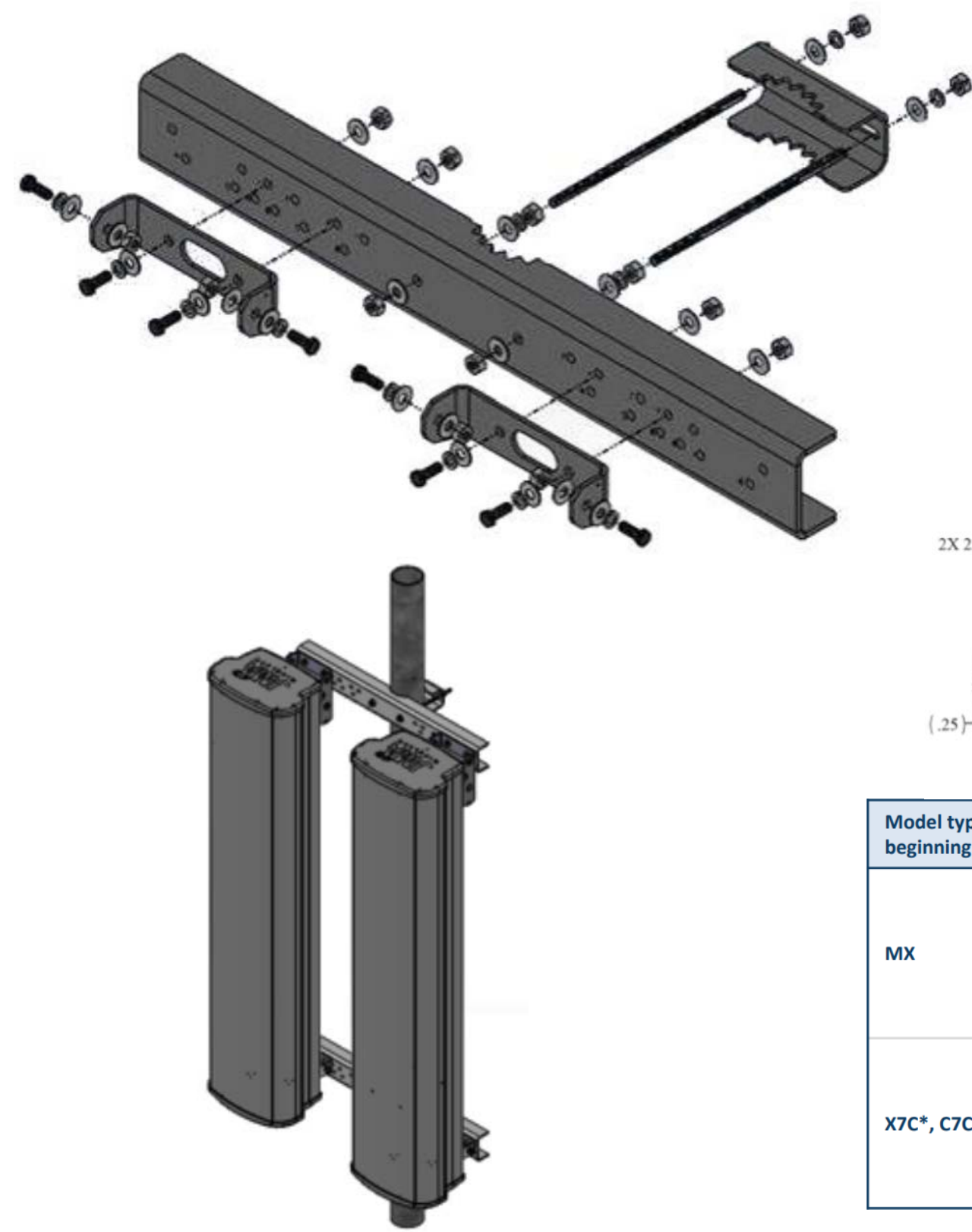
CABLE SCHEDULE

STATUS	CABLE TYPE	SIZE	LENGTH	QTY
EXISTING	COAX	1-5/8"	179'-0"±	12
NEW	HYBRID	12x24	179'-0"±	1
TOTAL CABLE QTY:				13

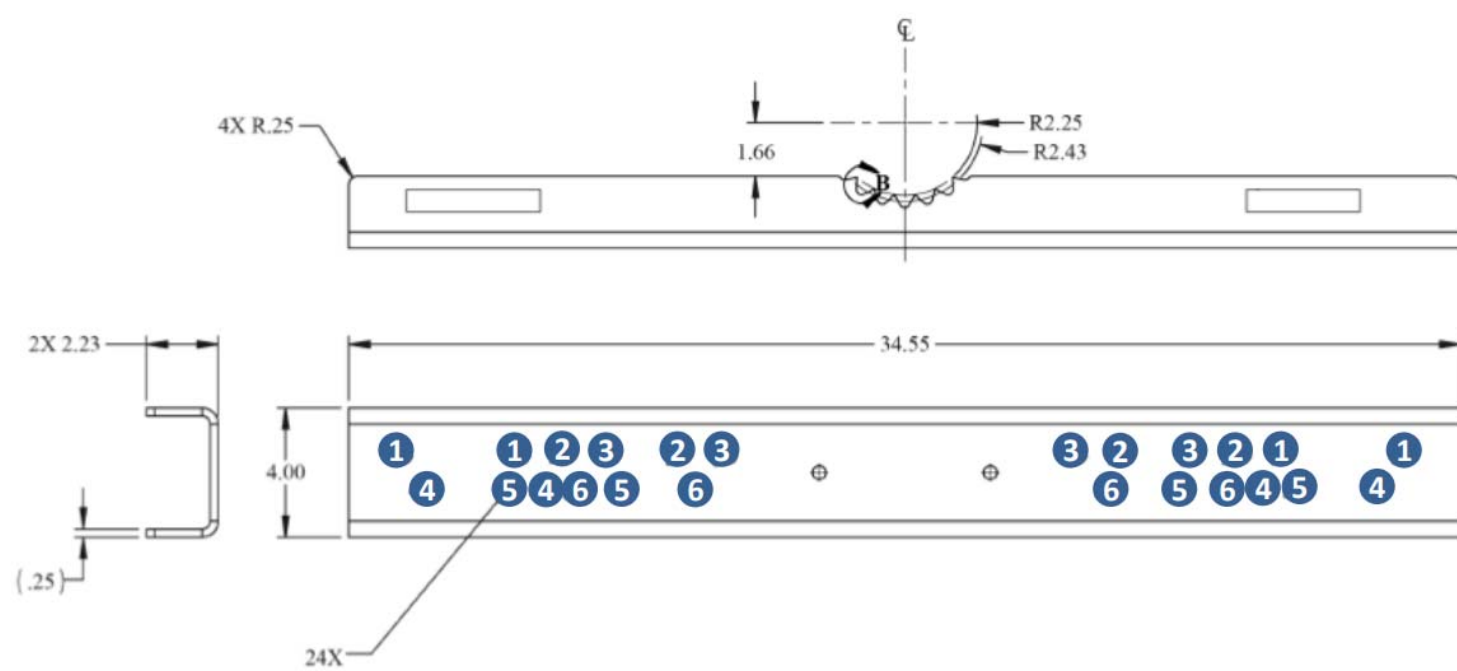


2 BASE LEVEL DETAIL
 SCALE: NOT TO SCALE





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

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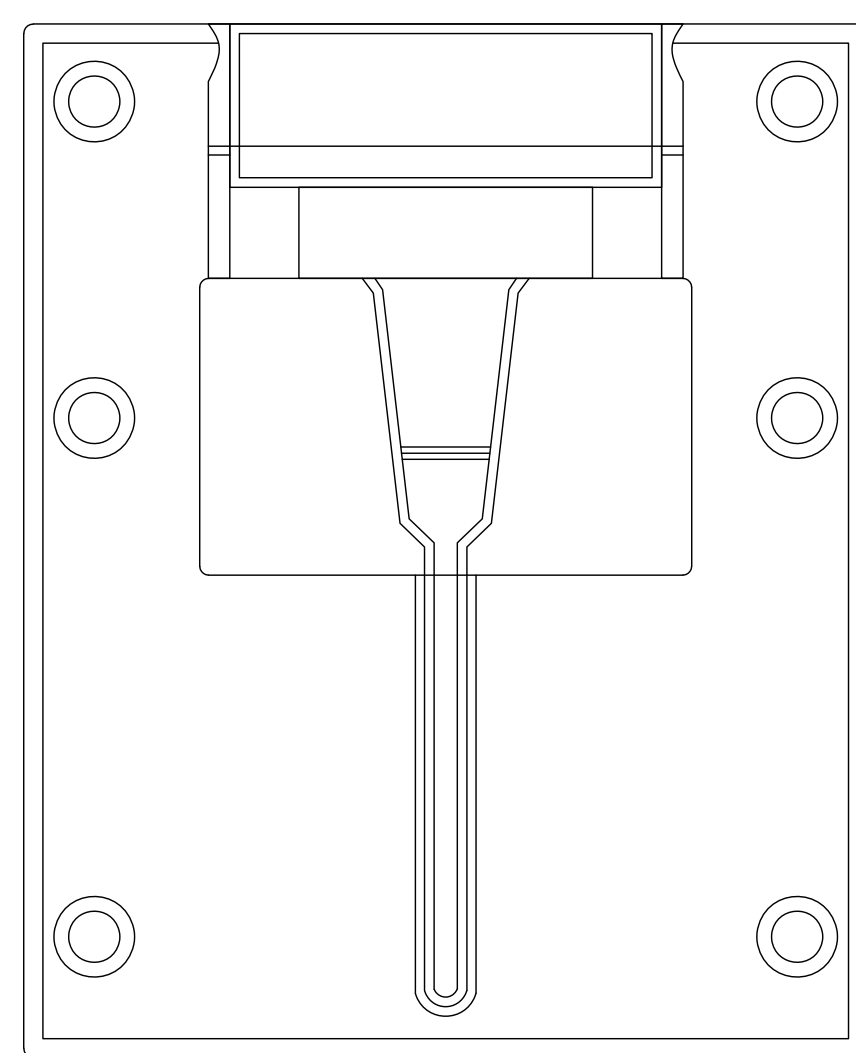
BU #: **876362**
OXFORD / FRITZ
PROPERTY

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OXFORD, CT 06478

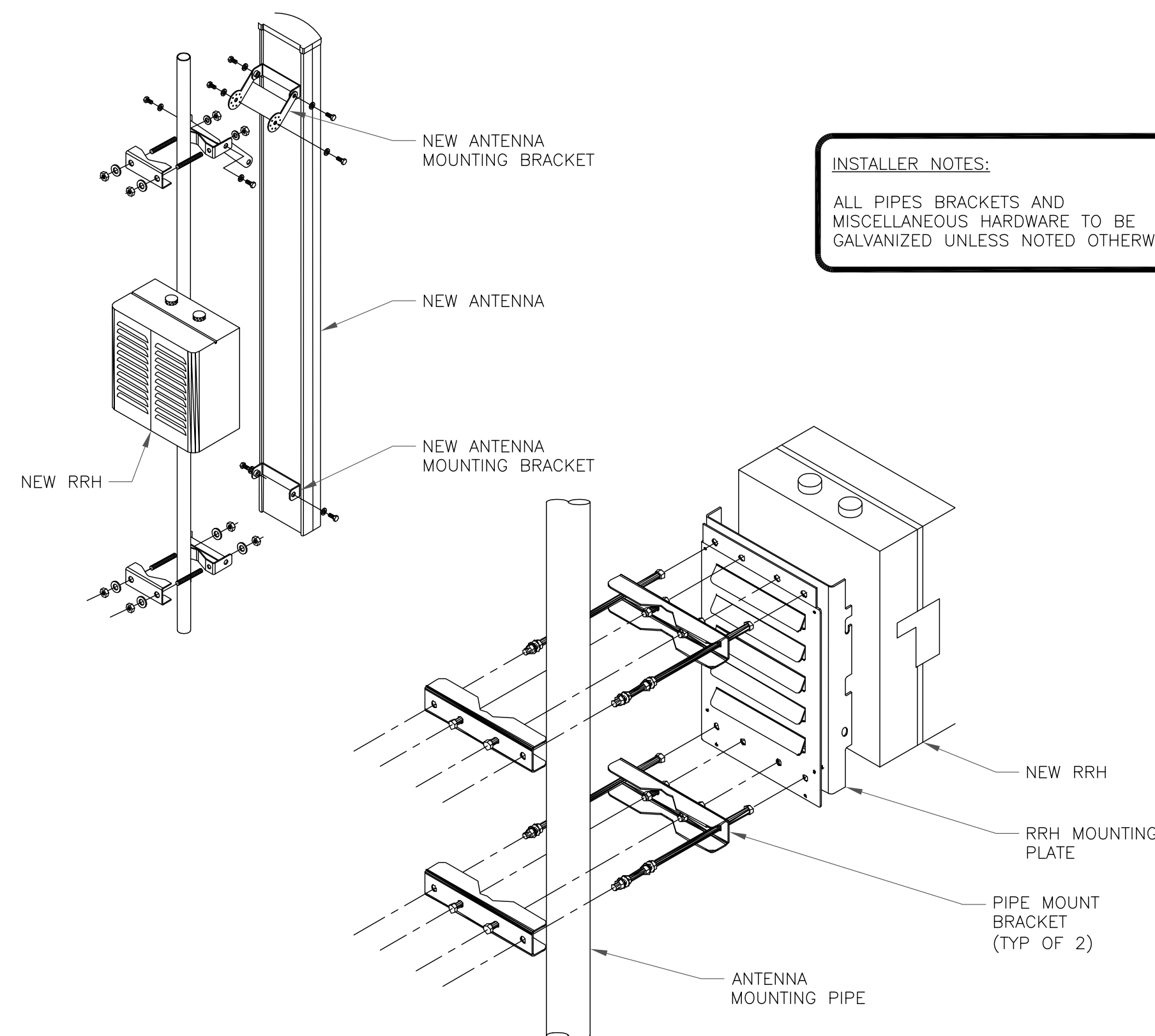
EXISTING 150'-0" MONOPOLE

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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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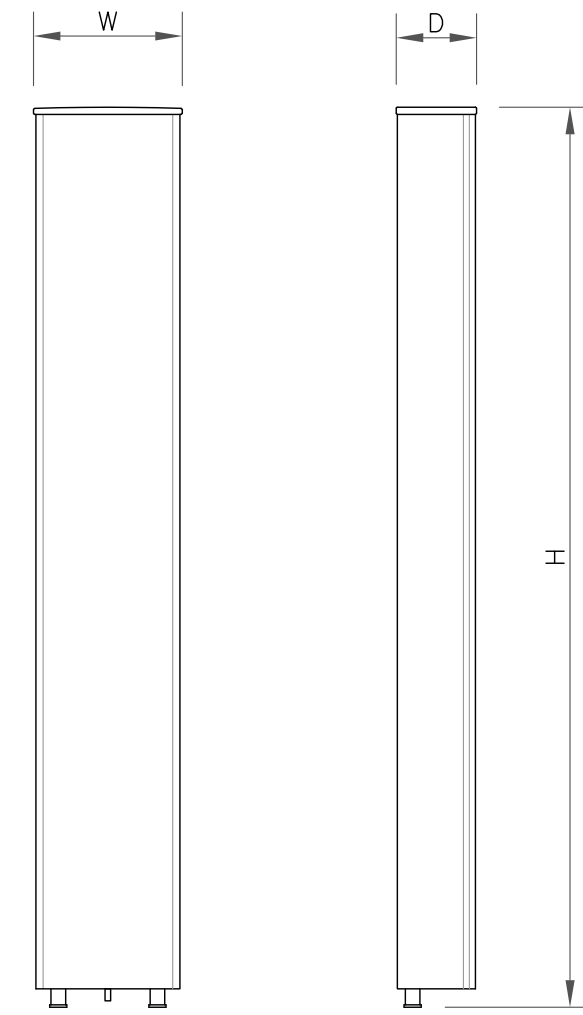
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SHEET NUMBER:

C-4

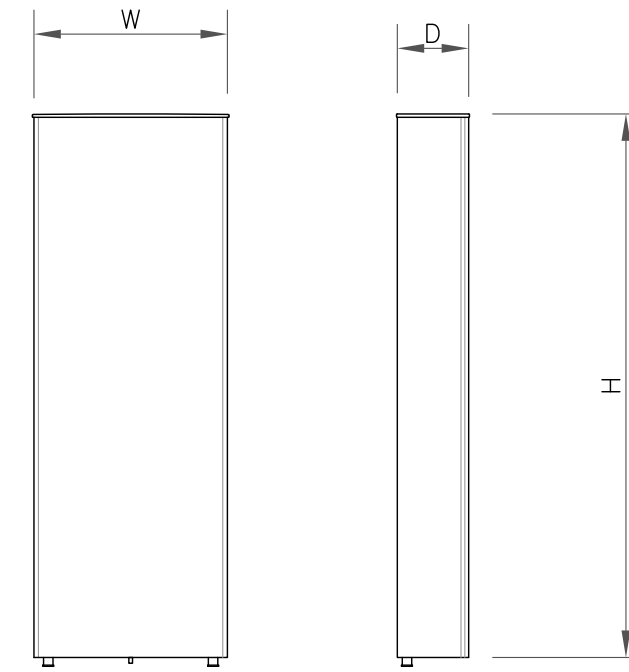
REVISION:

1



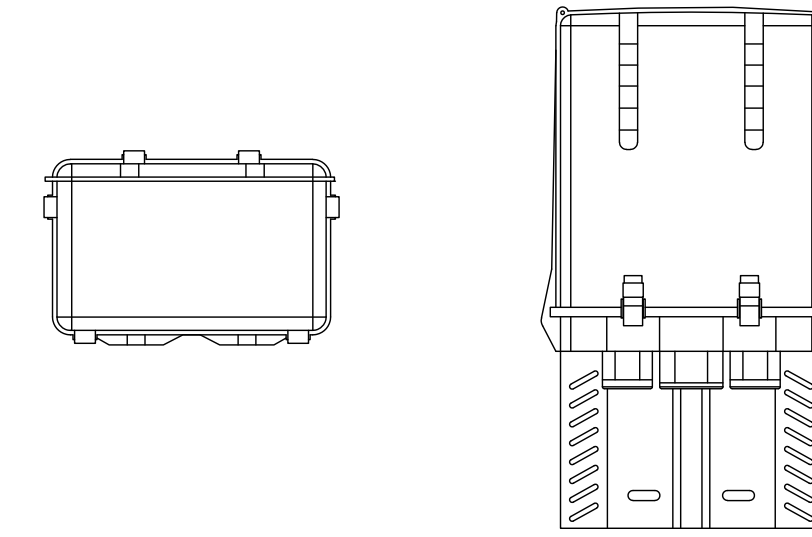
ANTENNA SPECS	
MANUFACTURER	JMA
MODEL #	MX06FR0660-03
WIDTH	15.40"
DEPTH	10.70"
HEIGHT	71.30"
WEIGHT	78.00 LBS

1 ANTENNA SPECS
SCALE: NOT TO SCALE



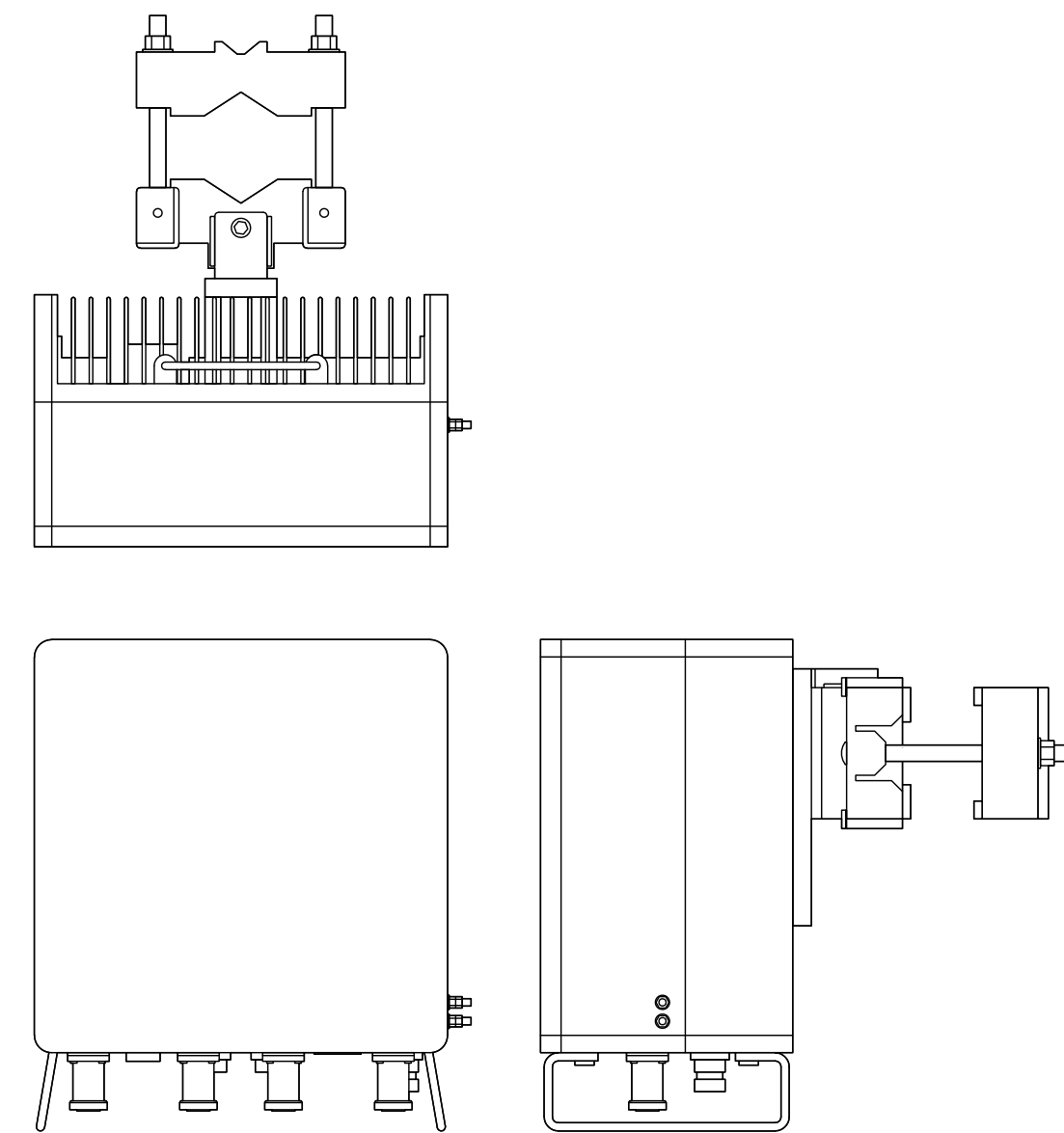
ANTENNA SPECS	
MANUFACTURER	SAMSUNG
MODEL #	MT6407-77A
WIDTH	16.06"
DEPTH	5.51"
HEIGHT	35.06"
WEIGHT	81.57 LBS

2 ANTENNA SPECS
SCALE: NOT TO SCALE



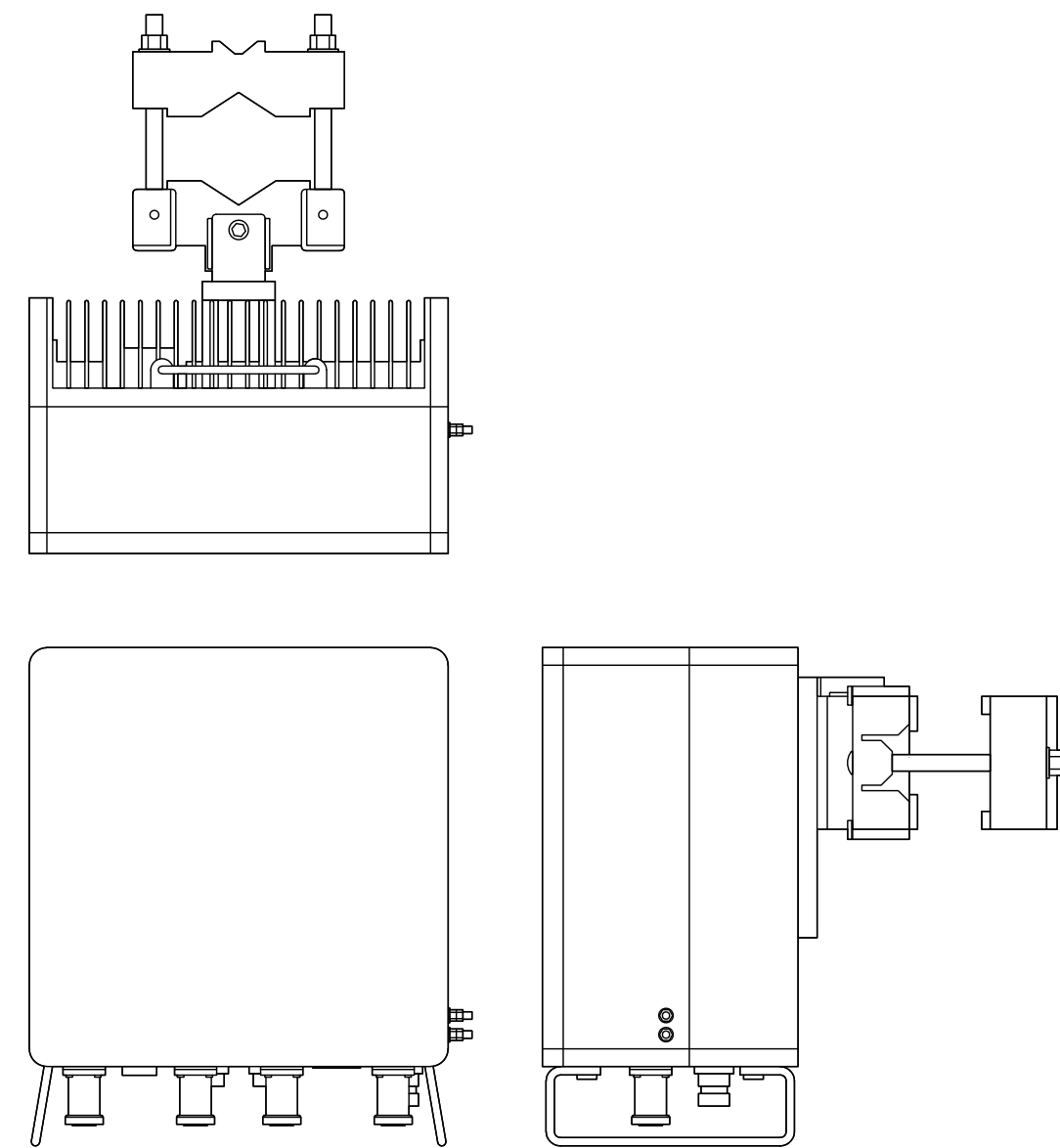
RAYCAP - RVZDC-6627-PF-48
 WEIGHT (WITHOUT MOUNTING HARDWARE): 32.0 LBS
 SIZE (HxWxD): 29.5x16.5x12.6 IN.
 RATED WIND VELOCITY: 150 MPH (SUSTAINED)
 OPERATING TEMPERATURE: -40° C TO +80° C
 NOMINAL OPERATING DC VOLTAGE: 48 VDC

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



RRU SPECS	
MANUFACTURER	SAMSUNG
MODEL #	B2/B66A RRH ORAN (RF4439d-25A)
WIDTH	14.96"
DEPTH	10.04"
HEIGHT	14.96"
WEIGHT	74.70 LBS

4 RRU SPECS
SCALE: NOT TO SCALE



RRU SPECS	
MANUFACTURER	SAMSUNG
MODEL #	B5/B13 RRH ORAN (RF4440d-13A)
WIDTH	14.96"
DEPTH	9.06"
HEIGHT	14.96"
WEIGHT	72.50 LBS

5 RRU SPECS
SCALE: NOT TO SCALE

6 NOT USED
SCALE: NOT TO SCALE

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SHEET NUMBER: **C-5** REVISION: **1**

VERIZON SITE NUMBER:
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BU #: 876362
OXFORD / FRITZ
PROPERTY

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EXISTING 150'-0" MONOPOLE

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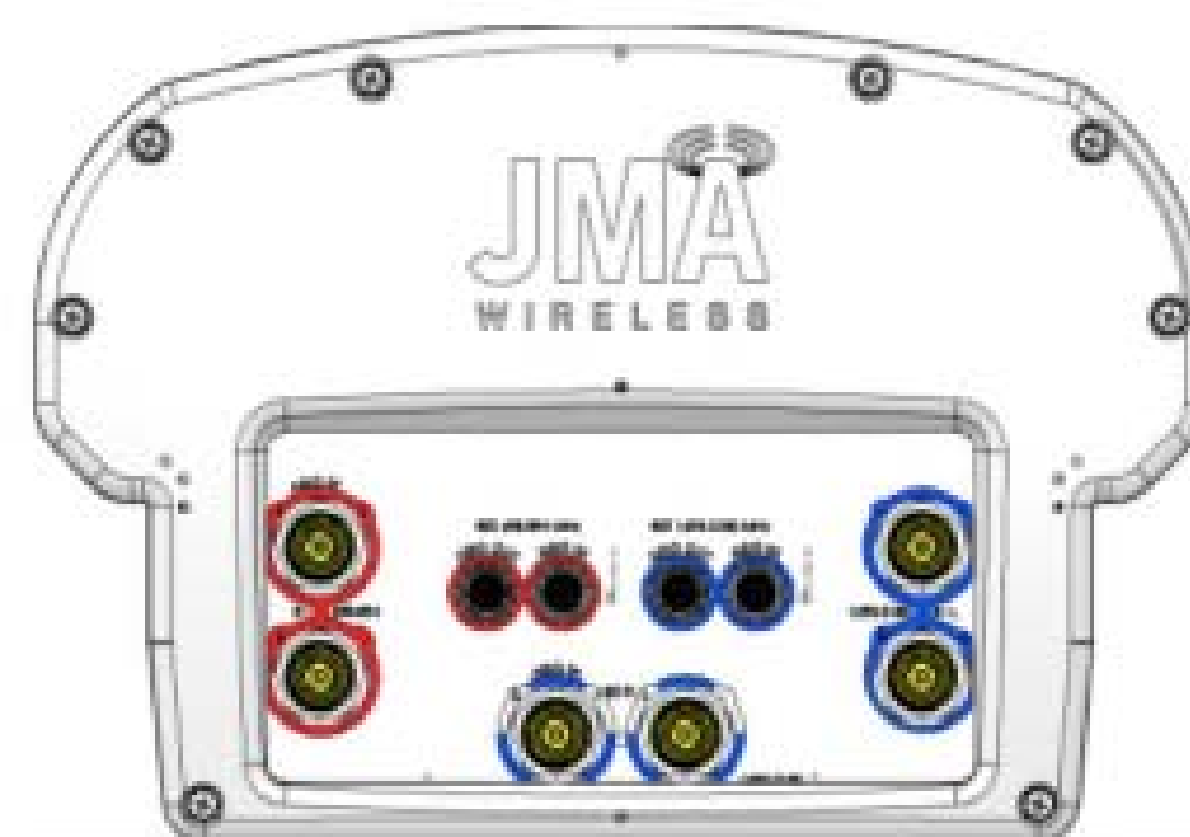
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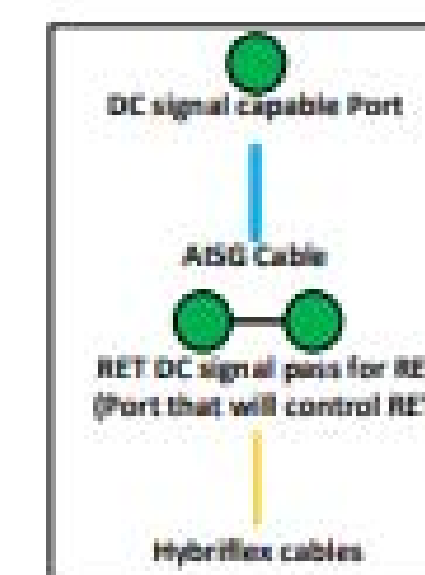
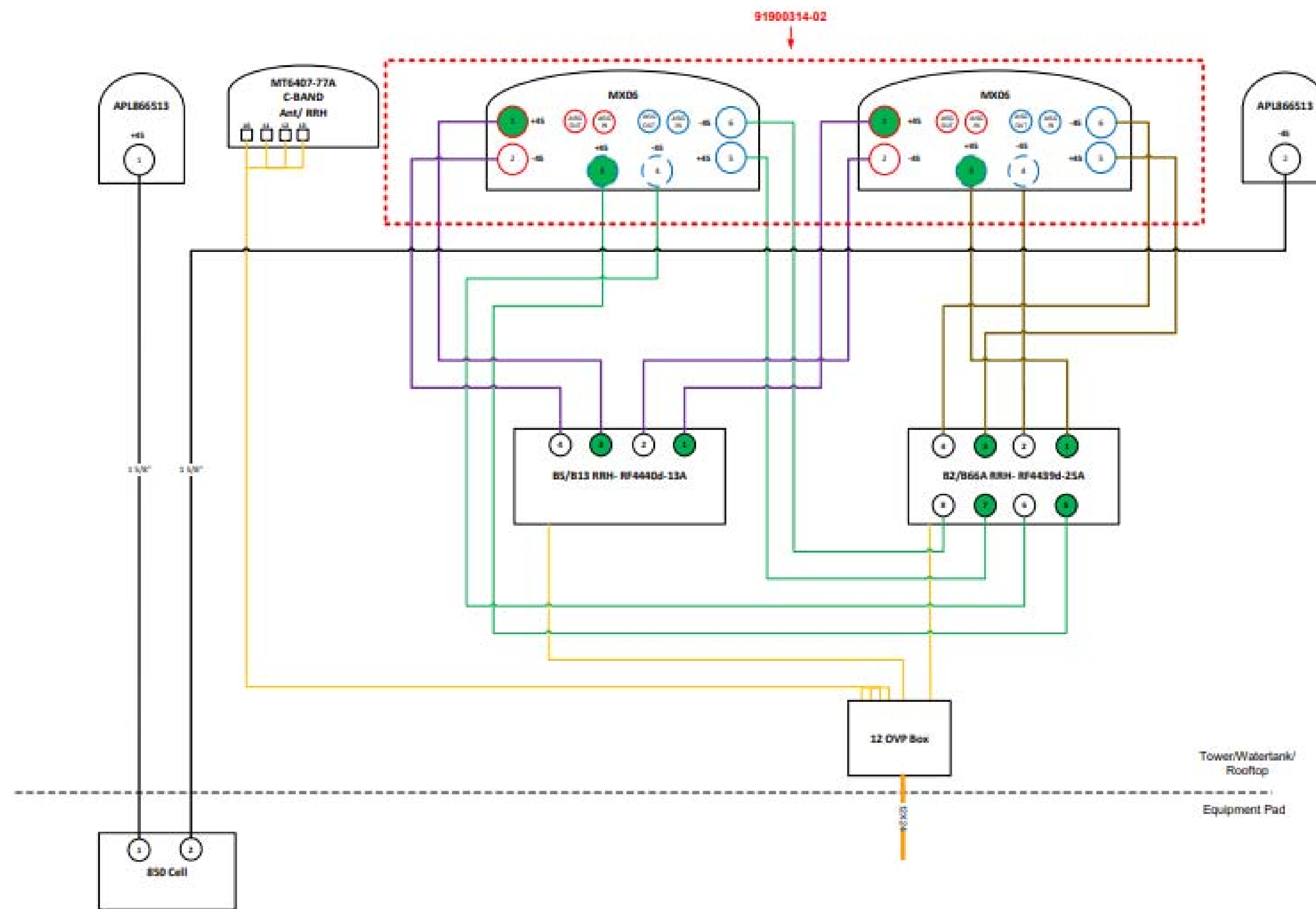
C-6

REVISION:

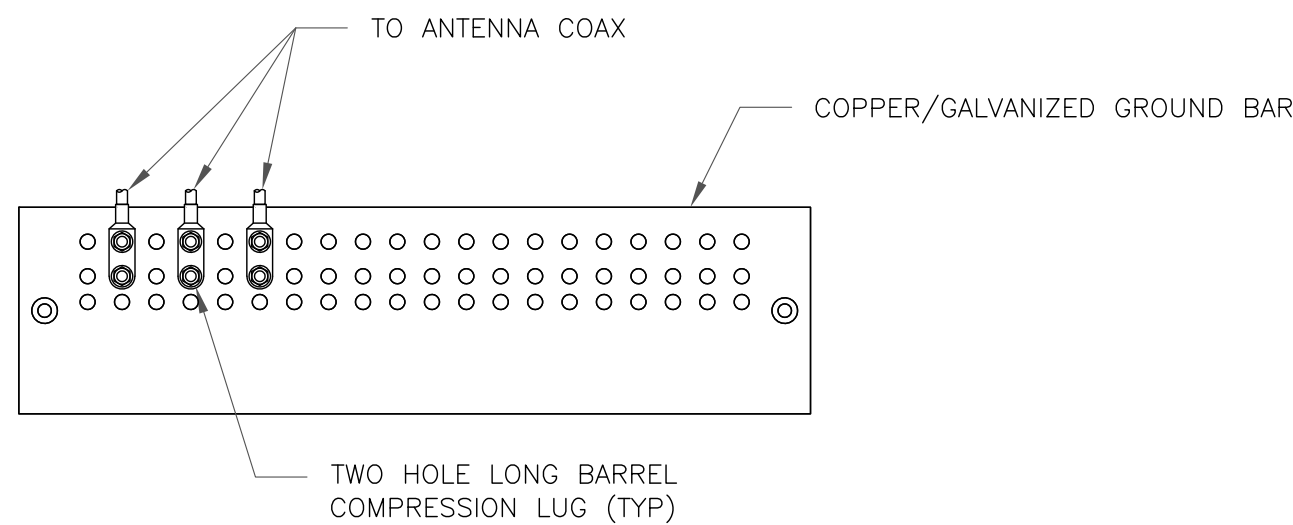
1



- 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.



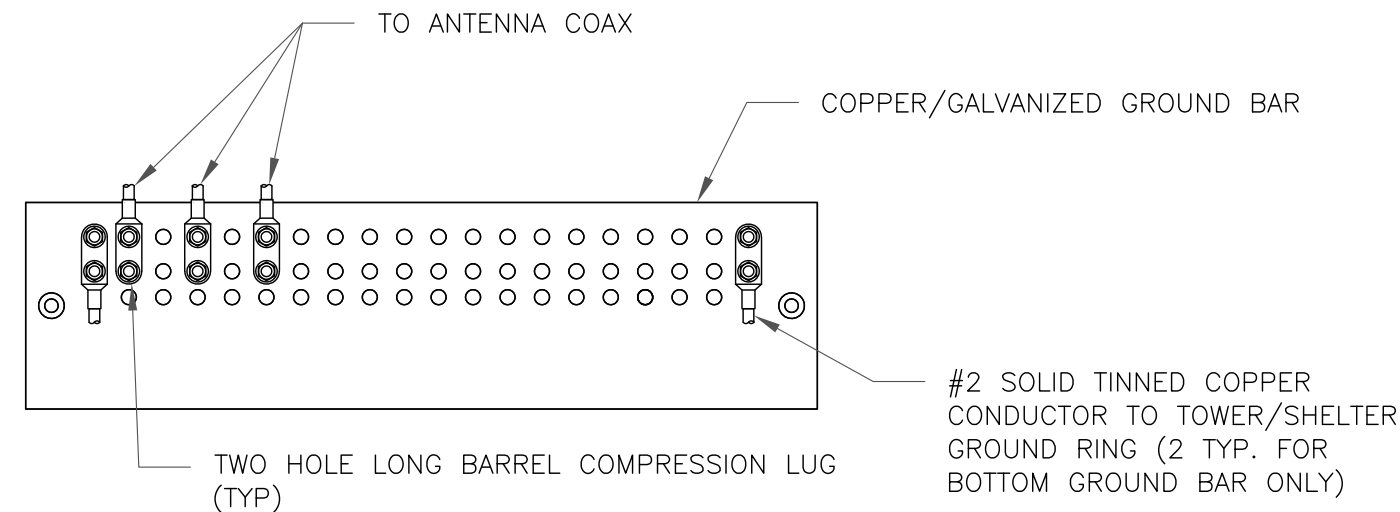
Comments:
 Diagram shows antenna port configuration as viewed from below antennas.
 Antenna positions are indicated as viewed from IN FRONT of antennas.
 Cap and weatherproof unused antenna ports.
 All plumbing diagram colors are irrelevant except for AISG & Hybriflex cable. (For the coax colors follow Coax Colors guide above)



NOTES:

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

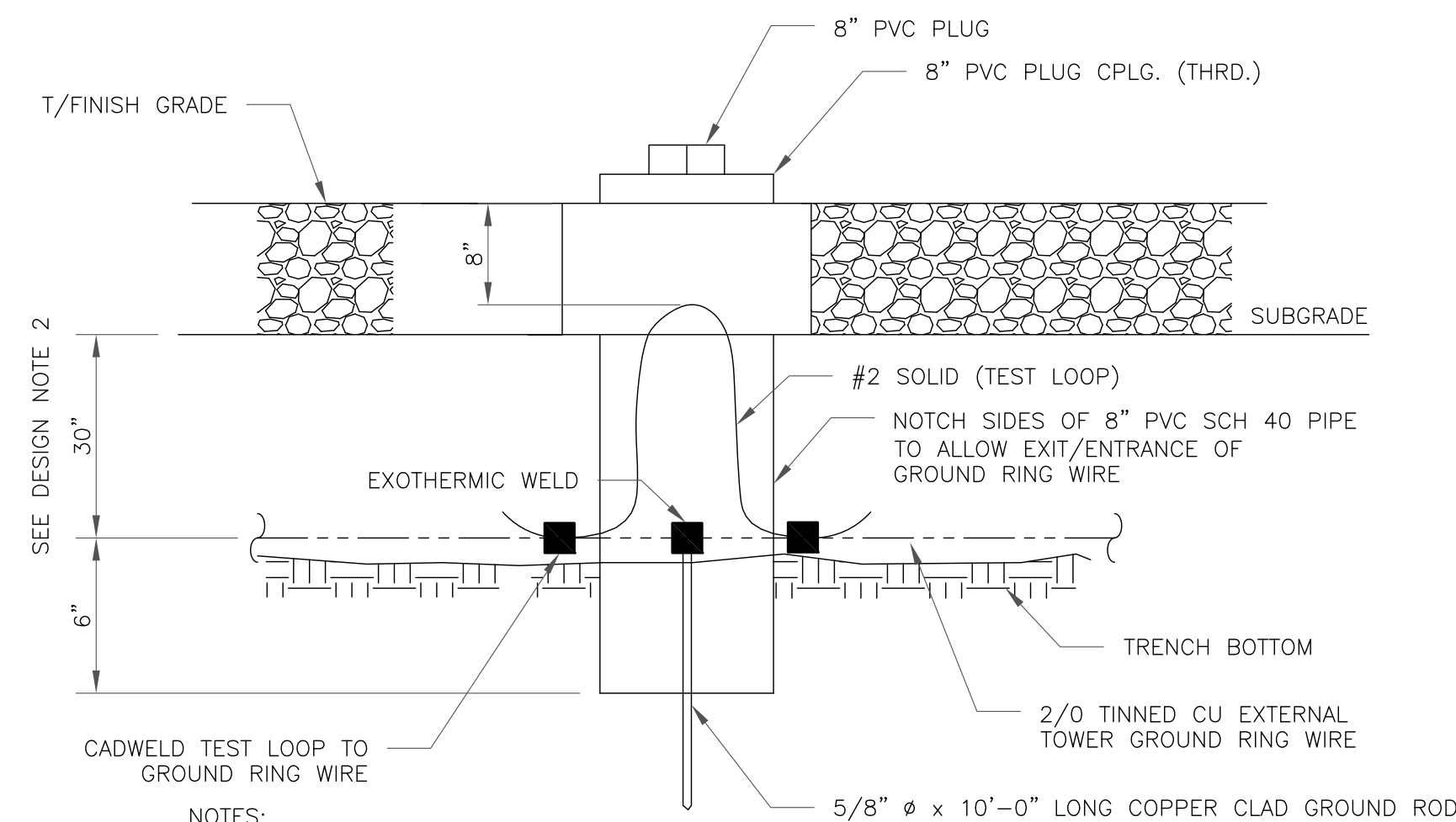
1 ANTENNA SECTOR GROUND BAR DETAIL
SCALE: NOT TO SCALE



NOTES:

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

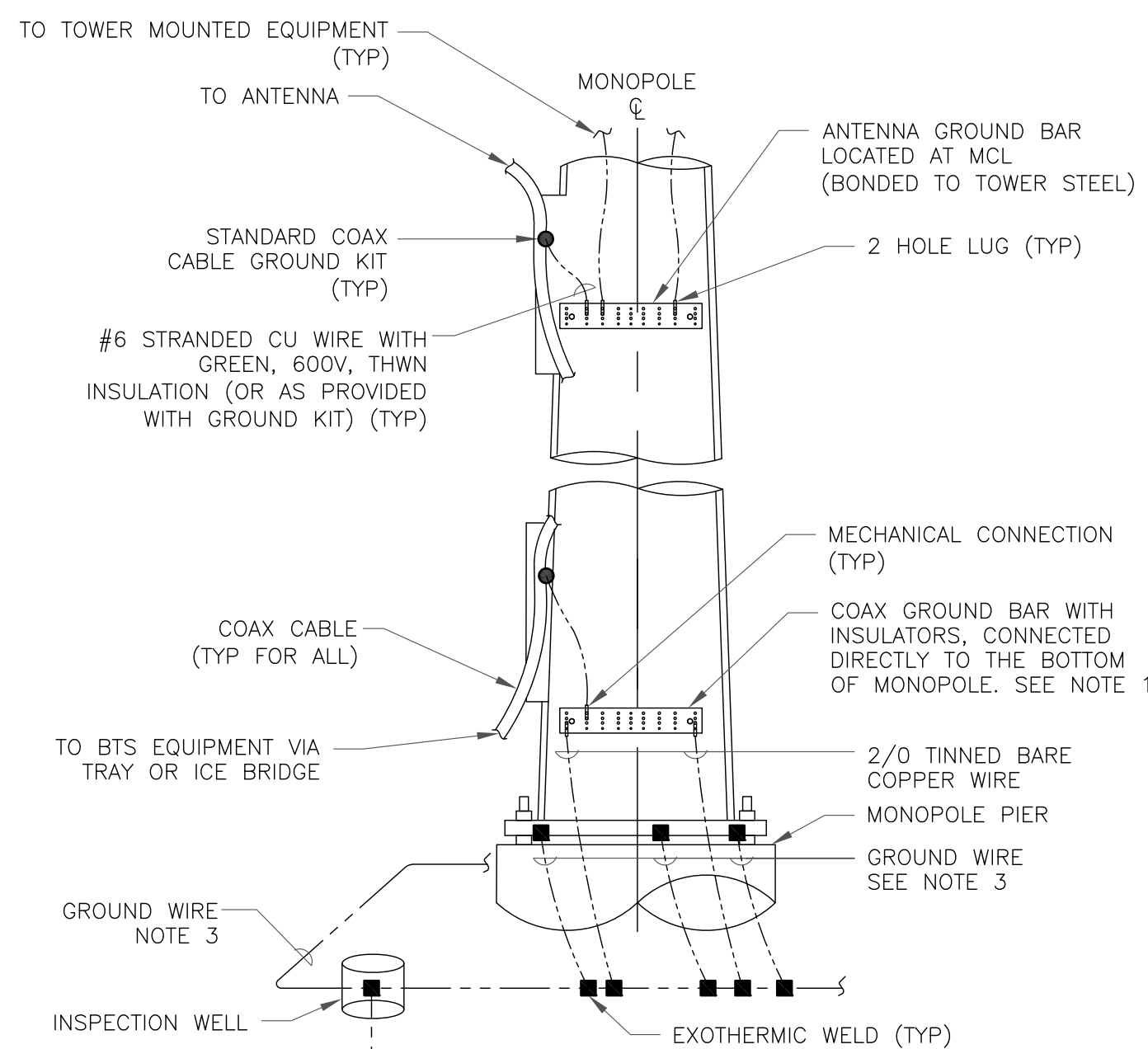
2 TOWER/SHELTER GROUND BAR DETAIL
SCALE: NOT TO SCALE



NOTES:

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

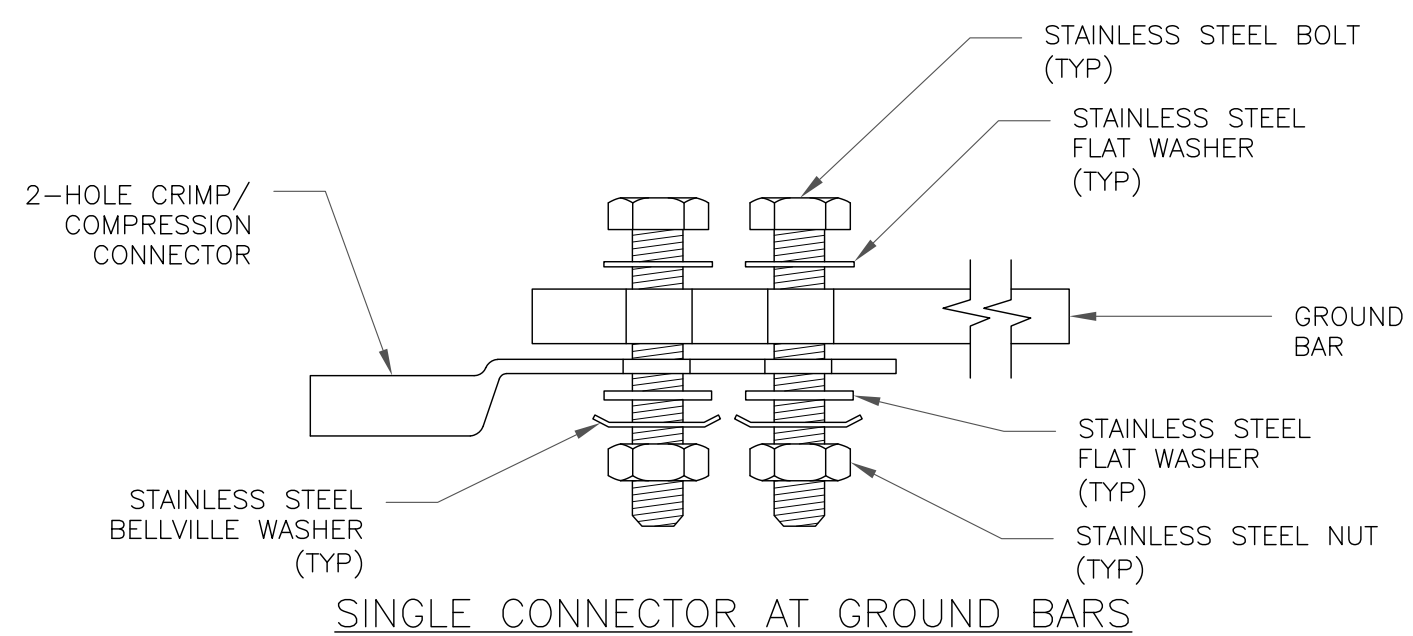
3 INSPECTION WELL DETAIL
SCALE: NOT TO SCALE



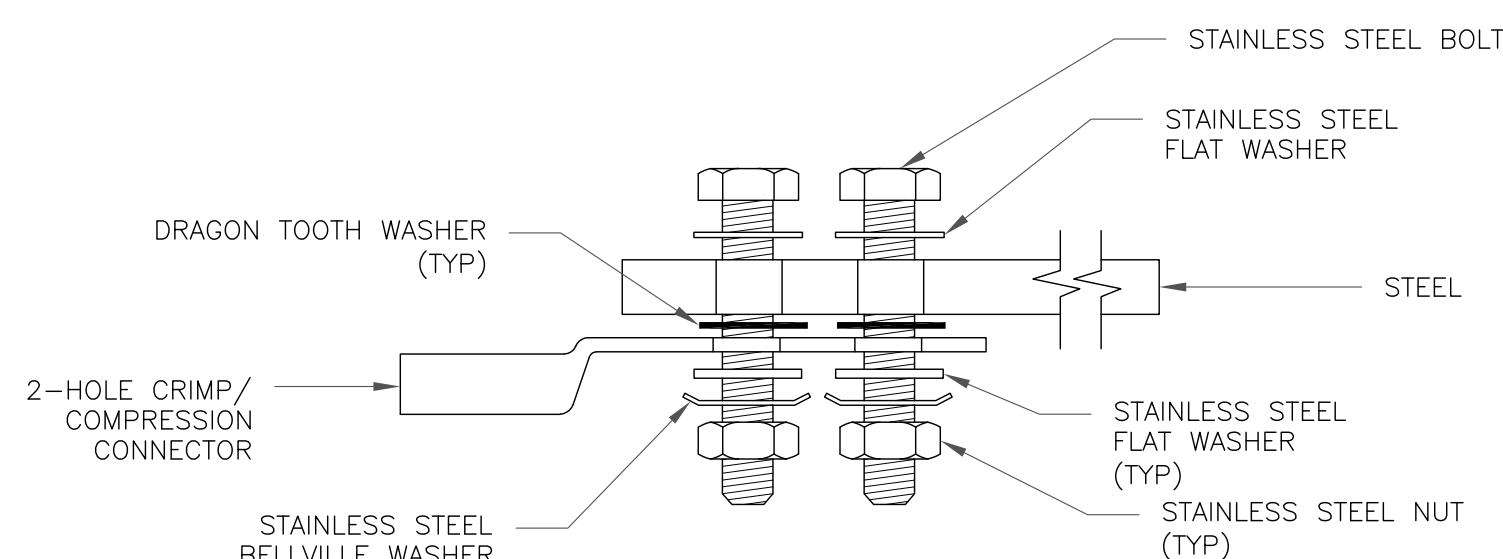
NOTES:

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

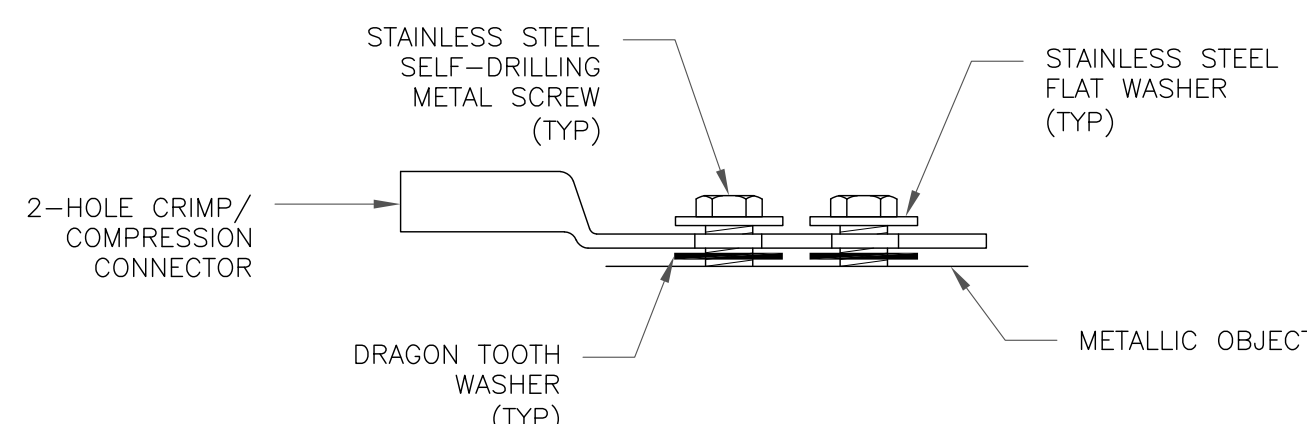
4 TYPICAL ANTENNA CABLE GROUNDING
SCALE: NOT TO SCALE



SINGLE CONNECTOR AT GROUND BARS

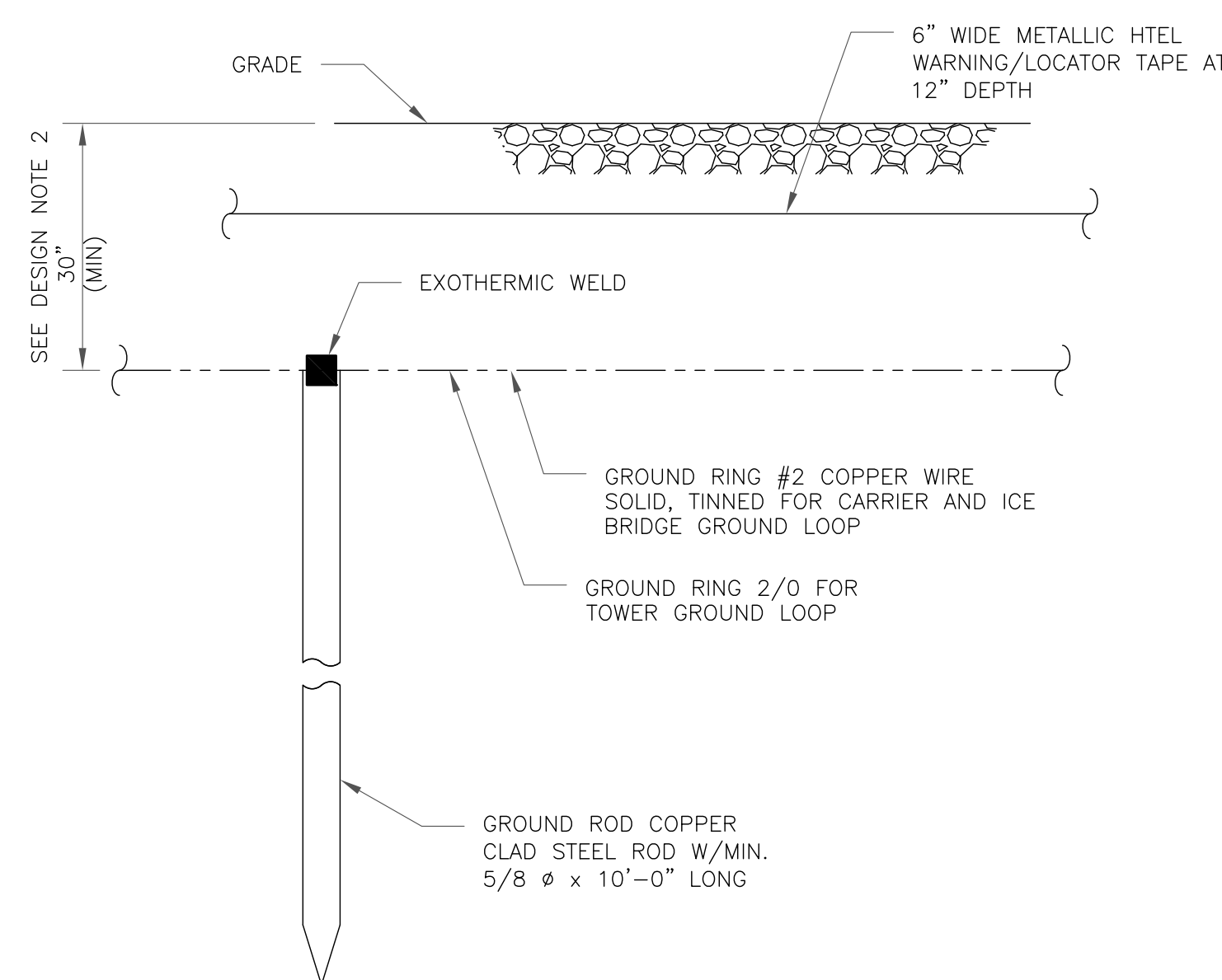


SINGLE CONNECTOR AT STEEL OBJECTS



SINGLE CONNECTOR AT METALLIC/STEEL OBJECTS

5 HARDWARE DETAIL FOR EXTERIOR CONNECTIONS
SCALE: NOT TO SCALE



NOTES:

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

6 GROUND ROD DETAIL
SCALE: NOT TO SCALE

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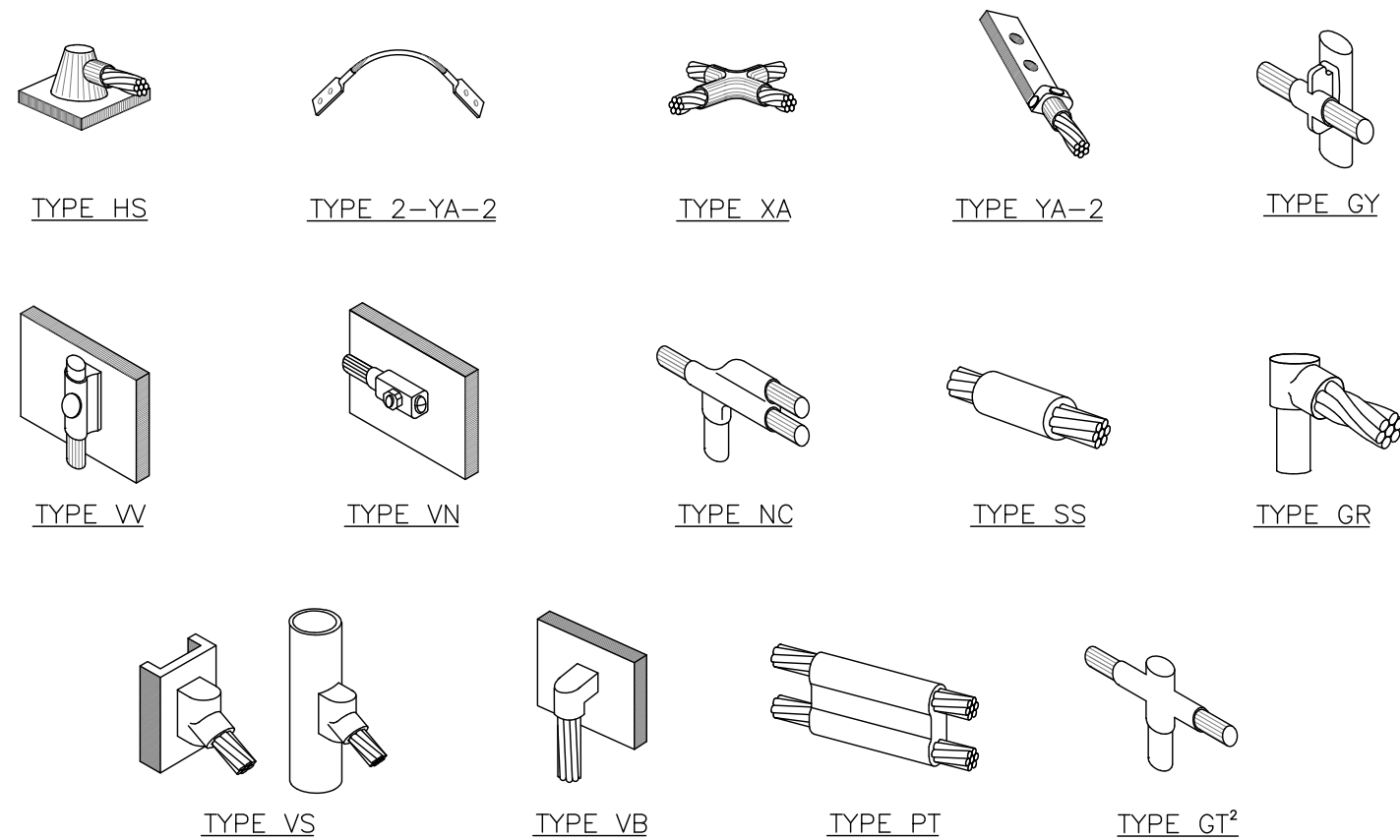
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SHEET NUMBER:

G-1

REVISION:

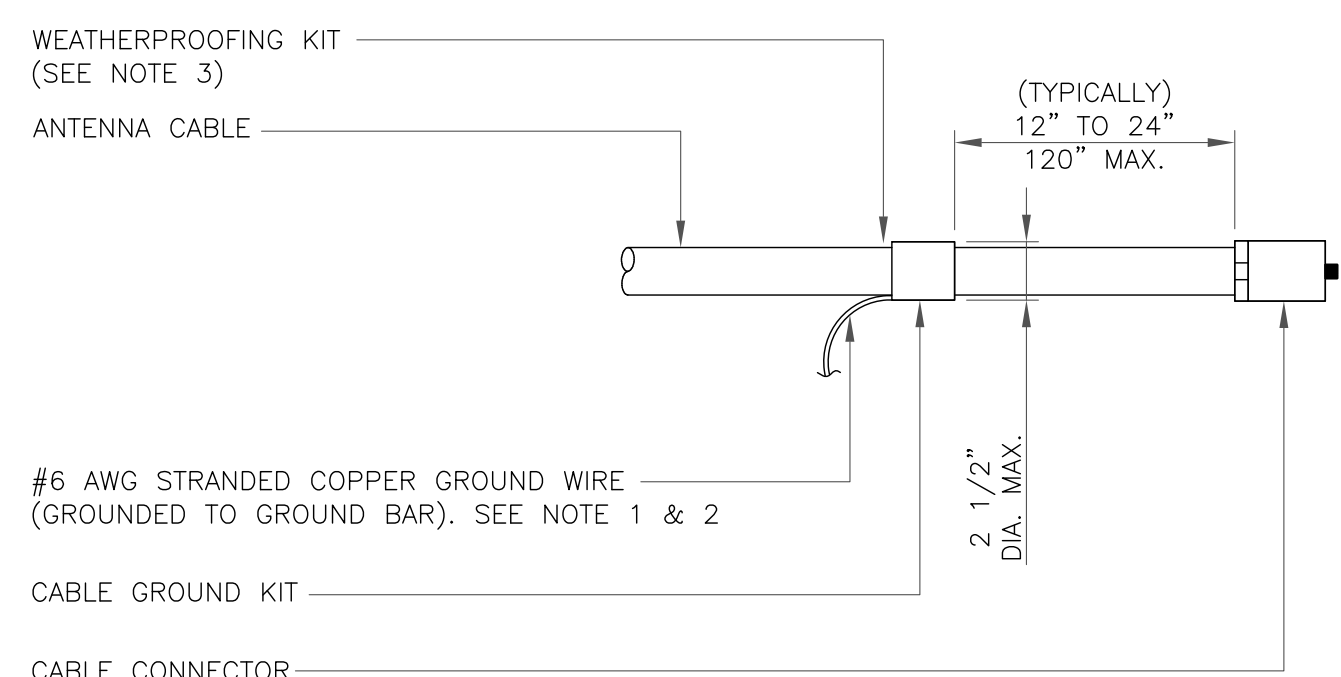
1



NOTE:

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

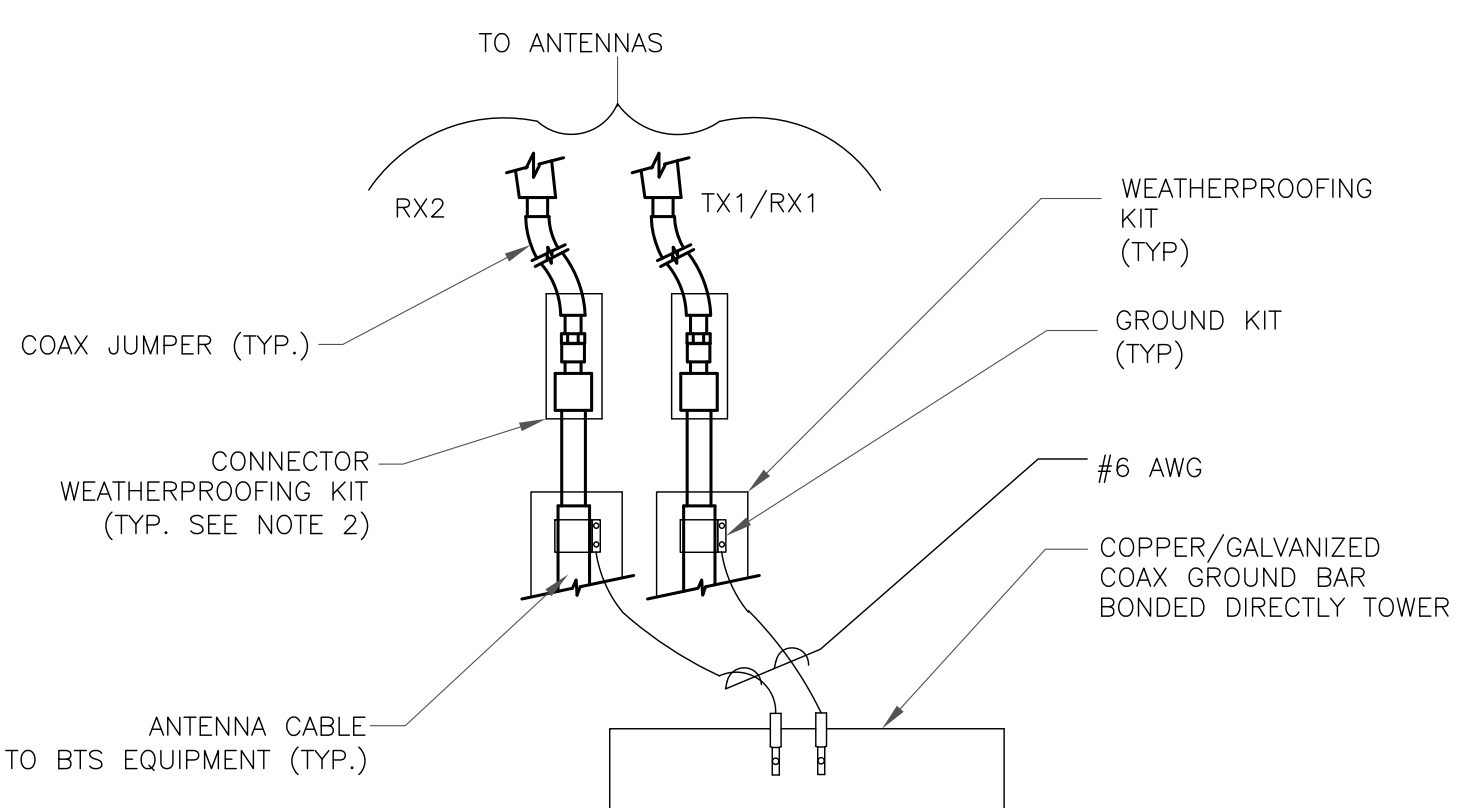
1 CADWELD GROUNDING CONNECTIONS
SCALE: NOT TO SCALE



NOTES:

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

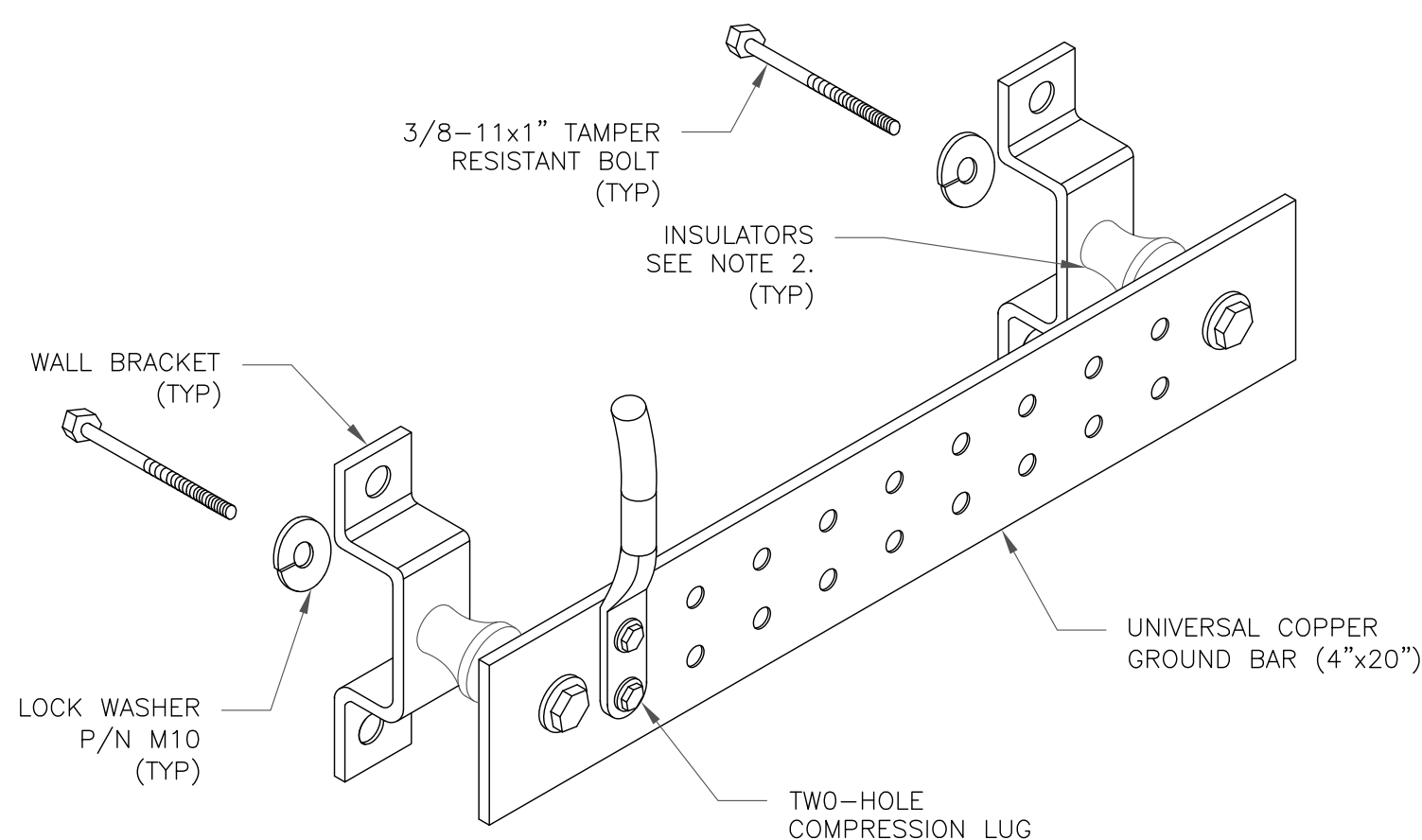
3 CABLE GROUND KIT CONNECTION
SCALE: NOT TO SCALE



NOTES:

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

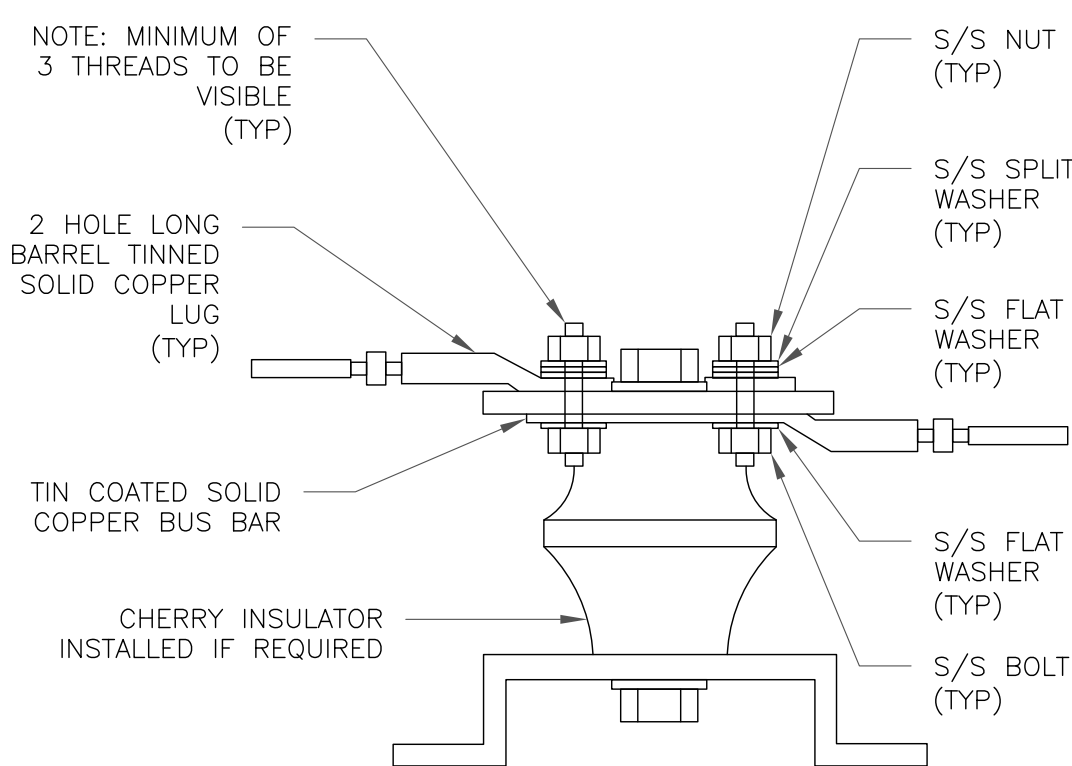
4 GROUND CABLE CONNECTION
SCALE: NOT TO SCALE



NOTES:

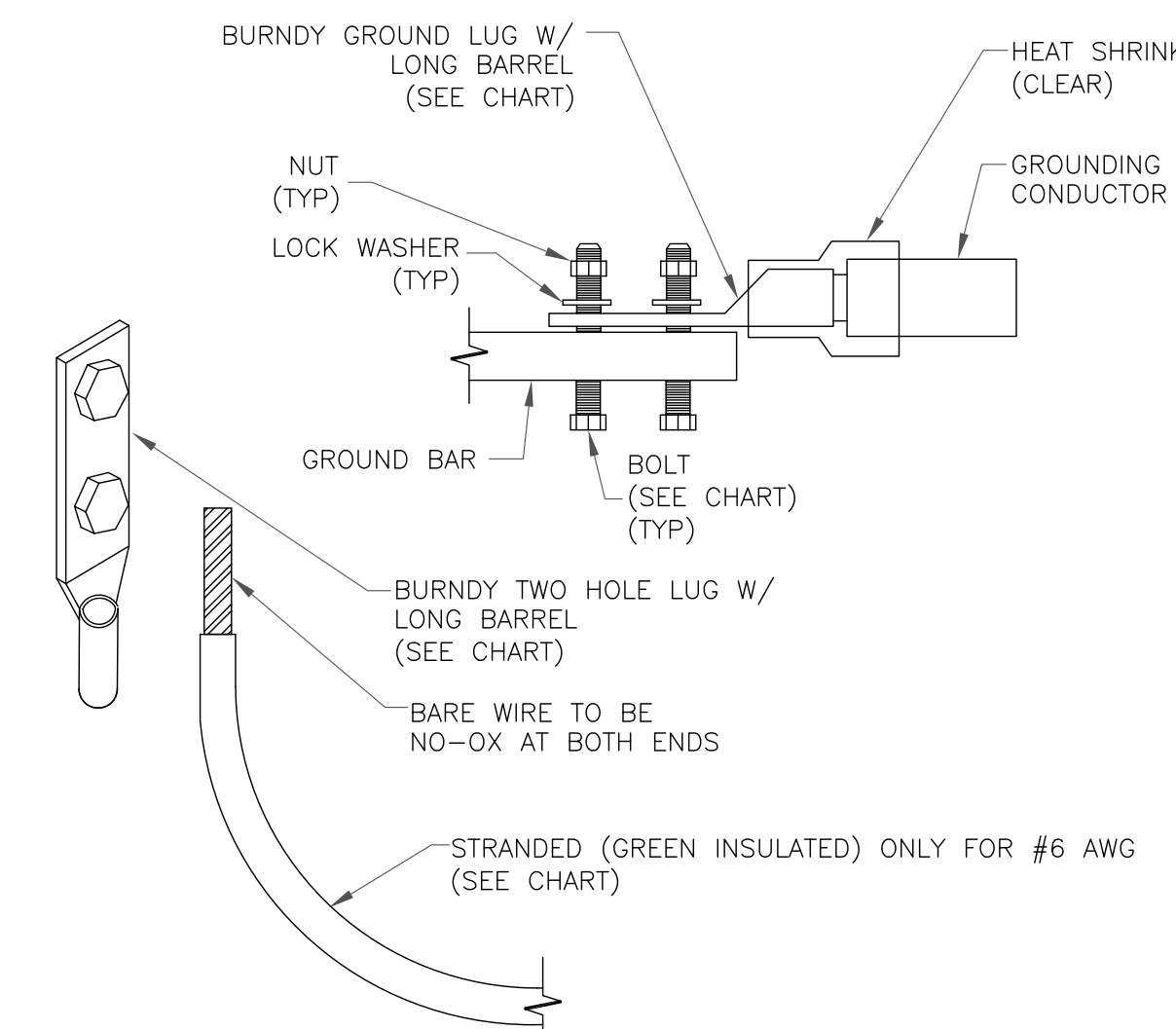
1. DOWN LEAD (HOME RUN) CONDUCTORS ARE NOT TO BE INSTALLED ON CROWN CASTLE USA INC. TOWER, PER THE GROUNDING DOWN CONDUCTOR POLICY QAS-STG-10091. NO MODIFICATION OR DRILLING TO TOWER STEEL IS ALLOWED IN ANY FORM OR FASHION, CAD-WELDING ON THE TOWER AND/OR IN THE AIR ARE NOT PERMITTED.
2. OMIT INSULATOR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

6 GROUND BAR DETAIL
SCALE: NOT TO SCALE



7 LUG DETAIL
SCALE: NOT TO SCALE

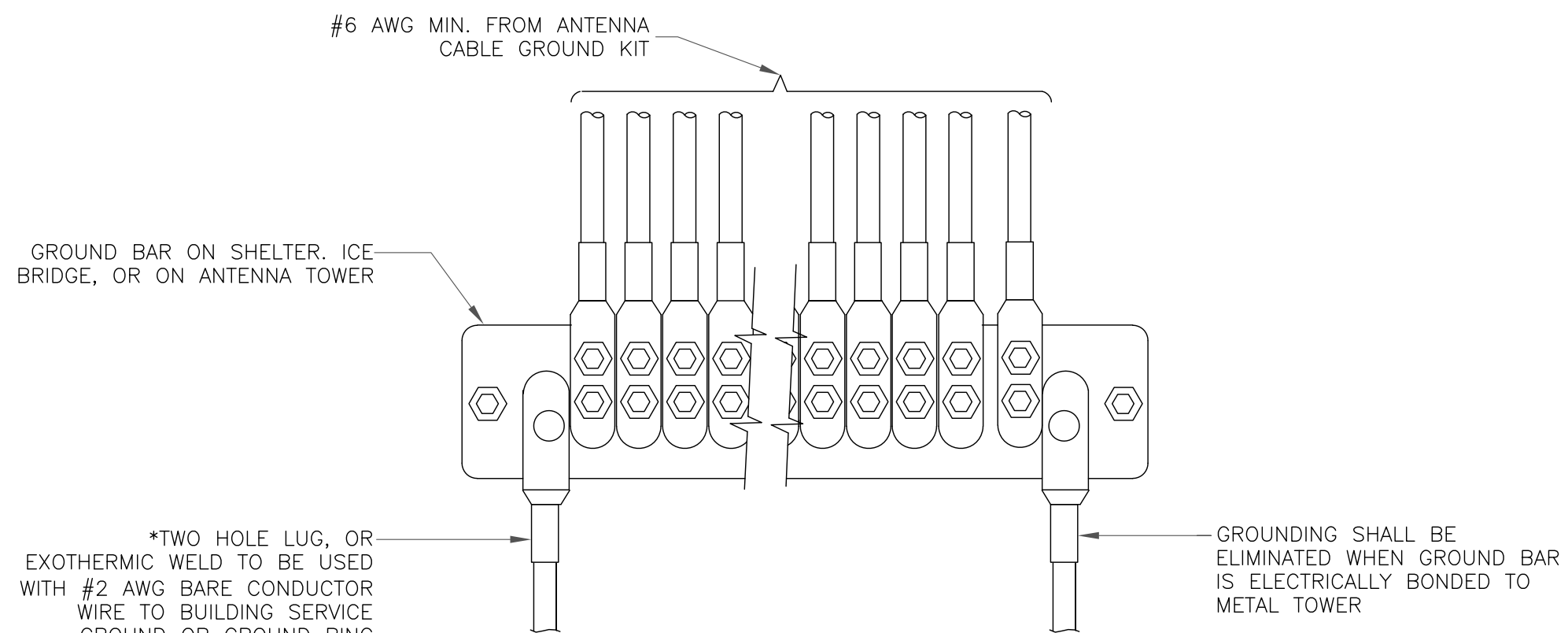
WIRE SIZE	BURNDY LUG	BOLT SIZE
#6 AWG GREEN INSULATED	YA6C-2TC38	3/8" - 16 NC S 2 BOLT
#2 AWG SOLID TINNED	YA3C-2TC38	3/8" - 16 NC S 2 BOLT
#2 AWG STRANDED	YA2C-2TC38	3/8" - 16 NC S 2 BOLT
#2/0 AWG STRANDED	YA26-2TC38	3/8" - 16 NC S 2 BOLT
#4/0 AWG STRANDED	YA28-2N	1/2" - 16 NC S 2 BOLT



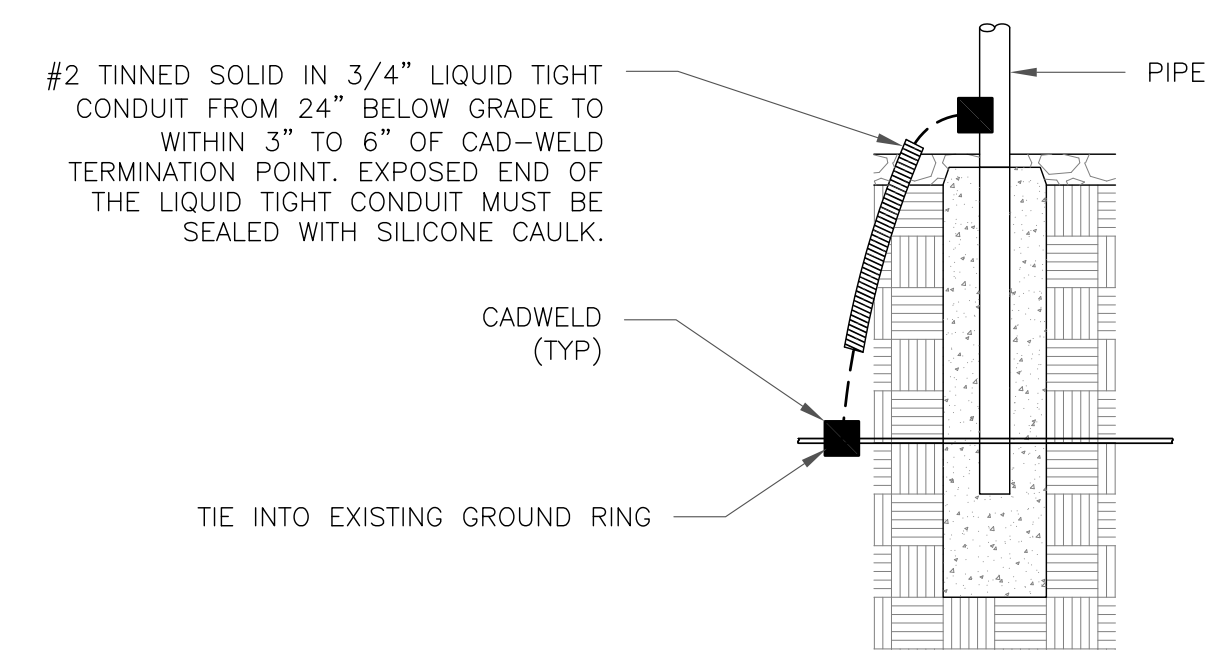
NOTES:

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

2 MECHANICAL LUG CONNECTION
SCALE: NOT TO SCALE



5 GROUNDWIRE INSTALLATION
SCALE: NOT TO SCALE



8 TRANSITIONING GROUND DETAIL
SCALE: NOT TO SCALE

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VERIZON SITE NUMBER:
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EXISTING 150'-0" MONOPOLE

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1	1/10/23	GAC	CONSTRUCTION	MTJ

PROFESSIONAL ENGINEER
No. 23924
Expires 3/31/23

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Expires 3/31/23

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SHEET NUMBER: **G-2** REVISION: **1**

1:37094.005.01.0001_OXFORD_FRITZ_PROPERTY.dwg - Sheet:G-2 - User: mjonas - Jan 10, 2023 9:27am

Exhibit C

Structural Analysis Report

Date: **February 8, 2023**



Tower Engineering Professionals
326 Tryon Road
Raleigh, NC 27603
(919) 661-6351

Subject: Structural Analysis Report

Carrier Designation: **Verizon Wireless Co-Locate**
Site Number: 467814
Site Name: Oxford, CT

Crown Castle Designation: **BU Number:** 876362
Site Name: Oxford / Fritz Property
JDE Job Number: 740378
Work Order Number: 2200964
Order Number: 644522 Rev. 0

Engineering Firm Designation: **TEP Project Number:** 25611.819335

Site Data: **338 Oxford Rd., Oxford, New Haven County, CT 06478**
Latitude 41° 25' 40.77", Longitude -73° 6' 30.75"
150 Foot - Monopole Tower

Tower Engineering Professionals 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

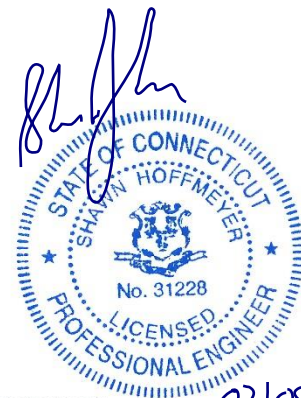
Sufficient Capacity – 74.9%

This analysis has been performed in accordance with the 2018 International Building Code based upon an ultimate 3-second gust wind speed of 118 mph. Applicable Standard references and design criteria are listed in Section 2 - Analysis Criteria.

Structural analysis prepared by: Jonathan Alvarez / WAT

Respectfully submitted by:

Shawn Hoffmeyer, P.E.



Electronic Copy

02/08/23

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1) INTRODUCTION

This tower is a 150-ft monopole tower designed by Engineered Endeavors, Inc. The tower has been modified multiple times in the past to accommodate additional loading.

2) ANALYSIS CRITERIA

TIA-222 Revision:	TIA-222-H
Risk Category:	II
Wind Speed:	118 mph
Exposure Category:	B
Topographic Factor:	1.0
Ice Thickness:	1.0 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)
127.0	129.0	6	RFS Celwave	APL866513-42T0 w/ Mount Pipe	13 1	1-5/8 1/2
		6	Jma Wireless	MX06FRO660-03 w/ Mount Pipe		
		3	Samsung Telecom.	MT6407-77A w/ Mount Pipe		
		1	Gps	GPS_A		
		3	Samsung Telecom.	RF4439D-25A		
		3	Samsung Telecom.	RF4440D-13A		
	1	Raycap	RVZDC-6627-PF-48_CCIV2			
	127.0	1	Site Pro 1	HRK12-U		
	1	Site Pro 1	RMQP-NP			

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	152.0	3	Commscope	VV-65B-R1_TMO w/ Mount Pipe	3	1-5/8
		3	Ericsson	AIR 6419 B41_TMO w/ Mount Pipe		
		3	RFS Celwave	APXVAALL24_43-U-NA20_TMO w/ Mount Pipe		
		3	Ericsson	RADIO 4460 B2/B25 B66_TMO		
		3	Ericsson	Radio 4480_TMOV2		
		1	Tower Mounts	Platform Mount [LP 602-1]		

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
137.0	139.0	3	Powerwave Technologies	7770.00 w/ Mount Pipe	12	1-1/4
		4	Andrew	SBNH-1D6565C w/ Mount Pipe		
		2	KMW Comm.	AM-X-CD-16-65-00T-RET w/ Mount Pipe		
		3	Powerwave Technologies	7020.00		
		6	Powerwave Technologies	LGP21901		
		6	Communication Components Inc.	DTMABP7819VG12A		
		6	Adc	DD1900 FULL BAND W/850 BY-PASS MASTHEAD		
	1	Raycap	DC6-48-60-18-8F			
	137.0	1	Tower Mounts	Platform Mount [LP 714-1]		
136.0	136.0	6	Ericsson	RRUS 11 B12	2 1	3/4 3/8
		1	Raycap	DC6-48-60-18-8F		
		2	Tower Mounts	Pipe Mount [PM 601-3]		
117.0	117.0	3	RFS Celwave	APXV18-206517S-C-A20	7 1	1-5/8 3/8
		3	RFS Celwave	APXVAALL24_43-U-NA20		
		3	Ericsson	RADIO 4449 B12/B71		
		1	Tower Mounts	Platform Mount [LP 1302-1]		
107.0	107.0	3	Jma Wireless	MX08FRO665-21 w/ Mount Pipe	1	1-1/2
		3	Fujitsu	TA08025-B604		
		3	Fujitsu	TA08025-B605		
		1	Raycap	RDIDC-9181-PF-48		
		1	Tower Mounts	Commscope MC-PK8-DSH		
75.0	75.0	1	Kathrein	OG-860/1920/GPS-A	1	1/2
		1	Tower Mounts	Side Arm Mount [SO 701-1]		

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Reference	Source
Geotechnical Report	1531939	CCISites
Tower Foundation Drawings	1440552	CCISites
Tower Manufacturer Drawings	1441271	CCISites
Post-Modification Inspection	2364903	CCISites
Tower Reinforcement Drawings	2364904	CCISites
Tower Reinforcement Drawings	3041498	CCISites
Post-Modification Inspection	3192205	CCISites
Tower Reinforcement Drawings	3274216	CCISites
Post-Modification Inspection	3872724	CCISites

Document	Reference	Source
Tower Reinforcement Drawings	4870951	CCISites
Post-Modification Inspection	5301920	CCISites
Tower Reinforcement Drawings	5632043	CCISites
Post-Modification Inspection	6119183	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 pole and in the reinforcing elements. These calculations are presented in Appendix C.

RISA-3D, a commercially available analysis software package, was used to model and analyze the foundation. Selected output from the analysis is included in Appendix C.

3.2) Assumptions

- 1) The 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. Tower Engineering Professionals should be notified to determine the effect on the structural integrity of the tower.

4) ANALYSIS RESULTS

Table 4 - Section Capacity (Summary)^{1,2}

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
150 - 145	Pole	TP16.08x15x0.1875	Pole	14.1%	Pass
145 - 140	Pole	TP17.16x16.08x0.1875	Pole	21.5%	Pass
140 - 135	Pole	TP18.239x17.16x0.1875	Pole	31.6%	Pass
135 - 130	Pole	TP19.319x18.239x0.1875	Pole	42.4%	Pass
130 - 126.59	Pole	TP20.74x19.319x0.1875	Pole	51.2%	Pass
126.59 - 122.25	Pole	TP20.603x19.68x0.25	Pole	47.2%	Pass
122.25 - 122	Pole + Reinf.	TP20.656x20.603x0.4125	Reinf. 22 Tension Rupture	53.6%	Pass
122 - 120.25	Pole + Reinf.	TP21.029x20.656x0.4125	Reinf. 22 Tension Rupture	57.2%	Pass
120.25 - 120	Pole + Reinf.	TP21.082x21.029x0.575	Reinf. 22 Tension Rupture	42.0%	Pass
120 - 115.25	Pole + Reinf.	TP22.092x21.082x0.5625	Reinf. 22 Tension Rupture	49.9%	Pass
115.25 - 115	Pole + Reinf.	TP22.145x22.092x0.4	Reinf. 19 Tension Rupture	68.6%	Pass
115 - 114.75	Pole + Reinf.	TP22.198x22.145x0.55	Reinf. 19 Tension Rupture	50.8%	Pass

114.75 - 109.75	Pole + Reinf.	TP23.261x22.198x0.5375	Reinf. 19 Tension Rupture	59.3%	Pass
109.75 - 105.25	Pole + Reinf.	TP24.218x23.261x0.525	Reinf. 19 Tension Rupture	66.8%	Pass
105.25 - 105	Pole + Reinf.	TP24.271x24.218x0.7375	Reinf. 3 Tension Rupture	54.6%	Pass
105 - 101.92	Pole + Reinf.	TP24.926x24.271x0.725	Reinf. 3 Tension Rupture	59.0%	Pass
101.92 - 101.67	Pole + Reinf.	TP24.979x24.926x0.75	Reinf. 2 Tension Rupture	53.1%	Pass
101.67 - 101.25	Pole + Reinf.	TP25.069x24.979x0.75	Reinf. 2 Tension Rupture	53.6%	Pass
101.25 - 101	Pole + Reinf.	TP25.122x25.069x0.75	Reinf. 2 Tension Rupture	53.9%	Pass
101 - 100.25	Pole + Reinf.	TP25.281x25.122x0.75	Reinf. 2 Tension Rupture	54.8%	Pass
100.25 - 100	Pole + Reinf.	TP25.335x25.281x0.7375	Reinf. 2 Tension Rupture	55.1%	Pass
100 - 95	Pole + Reinf.	TP26.398x25.335x0.7125	Reinf. 2 Tension Rupture	60.7%	Pass
95 - 90.04	Pole + Reinf.	TP28.32x26.398x0.7	Reinf. 2 Tension Rupture	65.7%	Pass
90.04 - 85.04	Pole + Reinf.	TP28.018x26.952x0.75	Reinf. 2 Tension Rupture	65.9%	Pass
85.04 - 82	Pole + Reinf.	TP28.665x28.018x0.7375	Reinf. 2 Tension Rupture	68.2%	Pass
82 - 81.75	Pole + Reinf.	TP28.719x28.665x0.925	Reinf. 2 Tension Rupture	55.5%	Pass
81.75 - 77.5	Pole + Reinf.	TP29.624x28.719x0.9125	Reinf. 2 Tension Rupture	58.1%	Pass
77.5 - 77.25	Pole + Reinf.	TP29.677x29.624x0.7875	Reinf. 2 Tension Rupture	66.3%	Pass
77.25 - 75	Pole + Reinf.	TP30.157x29.677x0.775	Reinf. 2 Tension Rupture	67.7%	Pass
75 - 74.75	Pole + Reinf.	TP30.21x30.157x0.7125	Reinf. 2 Tension Rupture	73.1%	Pass
74.75 - 74.5	Pole + Reinf.	TP30.263x30.21x0.825	Reinf. 2 Tension Rupture	63.8%	Pass
74.5 - 72.17	Pole + Reinf.	TP30.76x30.263x0.8125	Reinf. 2 Tension Rupture	65.1%	Pass
72.17 - 71.92	Pole + Reinf.	TP30.813x30.76x0.8375	Reinf. 18 Tension Rupture	62.1%	Pass
71.92 - 68.75	Pole + Reinf.	TP31.488x30.813x0.8125	Reinf. 18 Tension Rupture	63.7%	Pass
68.75 - 68.5	Pole + Reinf.	TP31.542x31.488x0.9375	Reinf. 1 Tension Rupture	55.9%	Pass
68.5 - 63.5	Pole + Reinf.	TP32.607x31.542x0.9125	Reinf. 1 Tension Rupture	58.0%	Pass
63.5 - 58.5	Pole + Reinf.	TP33.672x32.607x0.8875	Reinf. 1 Tension Rupture	60.0%	Pass
58.5 - 53.5	Pole + Reinf.	TP34.737x33.672x0.8625	Reinf. 1 Tension Rupture	61.9%	Pass
53.5 - 48.5	Pole + Reinf.	TP35.803x34.737x0.8375	Reinf. 1 Tension Rupture	63.5%	Pass
48.5 - 47.58	Pole + Reinf.	TP37.1x35.803x0.8375	Reinf. 1 Tension Rupture	63.8%	Pass
47.58 - 41.41	Pole + Reinf.	TP36.687x35.374x0.725	Reinf. 17 Tension Rupture	67.4%	Pass
41.41 - 36.41	Pole + Reinf.	TP37.751x36.687x0.7125	Reinf. 17 Tension Rupture	68.5%	Pass
36.41 - 32.75	Pole + Reinf.	TP38.53x37.751x0.7	Reinf. 17 Tension Rupture	69.2%	Pass
32.75 - 32.5	Pole + Reinf.	TP38.583x38.53x0.75	Reinf. 15 Tension Rupture	68.7%	Pass
32.5 - 31.25	Pole + Reinf.	TP38.849x38.583x0.75	Reinf. 15 Tension Rupture	68.9%	Pass
31.25 - 31	Pole + Reinf.	TP38.902x38.849x0.7375	Reinf. 15 Tension Rupture	69.0%	Pass
31 - 26	Pole + Reinf.	TP39.966x38.902x0.725	Reinf. 15 Tension Rupture	69.9%	Pass
26 - 21	Pole + Reinf.	TP41.031x39.966x0.725	Reinf. 15 Tension Rupture	70.7%	Pass
21 - 18.75	Pole + Reinf.	TP41.509x41.031x0.7125	Reinf. 15 Tension Rupture	71.0%	Pass
18.75 - 18.5	Pole + Reinf.	TP41.563x41.509x0.7	Reinf. 14 Tension Rupture	70.7%	Pass
18.5 - 15	Pole + Reinf.	TP42.308x41.563x0.6875	Reinf. 14 Tension Rupture	71.2%	Pass

15 - 14.75	Pole + Reinf.	TP42.361x42.308x0.5875	Reinf. 8 Tension Rupture	74.1%	Pass
14.75 - 9.75	Pole + Reinf.	TP43.425x42.361x0.5813	Reinf. 8 Tension Rupture	74.4%	Pass
9.75 - 4.75	Pole + Reinf.	TP44.489x43.425x0.575	Reinf. 8 Tension Rupture	74.7%	Pass
4.75 - 1.25	Pole + Reinf.	TP45.234x44.489x0.575	Reinf. 8 Tension Rupture	74.9%	Pass
1.25 - 1	Pole + Reinf.	TP45.287x45.234x0.75	Reinf. 13 Compression	63.5%	Pass
1 - 0	Pole + Reinf.	TP45.5x45.287x0.75	Reinf. 13 Compression	63.6%	Pass
				Summary	
			Pole	57.5%	Pass
			Reinforcement	74.9%	Pass
			Overall	74.9%	Pass

Table 5 - Tower Component Stresses vs. Capacity - LC7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1,2	Anchor Rods	-	53.2	Pass
1,2	Base Plate	-	27.7	Pass
1,2	Base Foundation Structural	-	4.3	Pass
1,2	Base Foundation Soil Interaction	-	10.2	Pass

Structure Rating (max from all components) =	74.9%
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Notes:

- 1) See additional documentation in "Appendix C - Additional Calculations" for calculations supporting the % capacity listed.
- 2) Rating per TIA-222-H Section 15.5

4.1) Recommendations

- 1) 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

tnxTower Tower Engineering Professionals, Inc. 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	Job Oxford / Fritz Property (BU 876362)	Page 1 of 65
	Project TEP No. 25611.819335	Date 12:30:47 02/08/23
	Client Crown Castle	Designed by jalvarez

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 New Haven County, Connecticut.

Tower base elevation above sea level: 373.00 ft.

Basic wind speed of 118 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 1.00 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.

TOWER RATING: 73.7%.

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

<ul style="list-style-type: none"> Consider Moments - Legs Consider Moments - Horizontals Consider Moments - Diagonals Use Moment Magnification √ Use Code Stress Ratios √ Use Code Safety Factors - Guys Escalate Ice Always Use Max Kz Use Special Wind Profile Include Bolts In Member Capacity Leg Bolts Are At Top Of Section Secondary Horizontal Braces Leg Use Diamond Inner Bracing (4 Sided) SR Members Have Cut Ends SR Members Are Concentric 	<ul style="list-style-type: none"> Distribute Leg Loads As Uniform Assume Legs Pinned √ Assume Rigid Index Plate √ Use Clear Spans For Wind Area Use Clear Spans For KL/r Retension Guys To Initial Tension √ Bypass Mast Stability Checks √ Use Azimuth Dish Coefficients √ Project Wind Area of Appurt. Autocalc Torque Arm Areas Add IBC .6D+W Combination √ Sort Capacity Reports By Component Triangulate Diamond Inner Bracing Treat Feed Line Bundles As Cylinder Ignore KL/ry For 60 Deg. Angle Legs 	<ul style="list-style-type: none"> Use ASCE 10 X-Brace Ly Rules Calculate Redundant Bracing Forces Ignore Redundant Members in FEA SR Leg Bolts Resist Compression All Leg Panels Have Same Allowable Offset Girt At Foundation √ Consider Feed Line Torque Include Angle Block Shear Check Use TIA-222-H Bracing Resist. Exemption Use TIA-222-H Tension Splice Exemption <li style="text-align: center;">Poles √ Include Shear-Torsion Interaction Always Use Sub-Critical Flow Use Top Mounted Sockets Pole Without Linear Attachments Pole With Shroud Or No Appurtenances Outside and Inside Corner Radii Are Known
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APPENDIX B
BASE LEVEL DRAWING

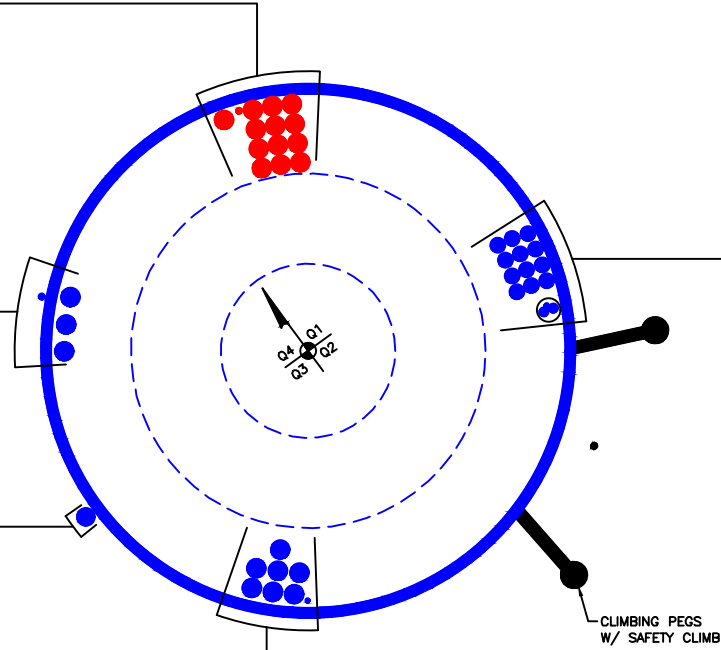


(PROPOSED EQUIPMENT CONFIGURATION)
(1) 1/2" TO 127 FT LEVEL
(13) 1-5/8" TO 127 FT LEVEL

(OTHER CONSIDERED EQUIPMENT)
(1) 1/2" TO 75 FT LEVEL
(3) 1-5/8" TO 152 FT LEVEL

(OTHER CONSIDERED EQUIPMENT)
(1) 1-1/2" TO 107 FT LEVEL

(OTHER CONSIDERED EQUIPMENT)
(1) 3/8" TO 117 FT LEVEL
(7) 1-5/8" TO 117 FT LEVEL



(OTHER CONSIDERED EQUIPMENT)
(1) 3/8" TO 136 FT LEVEL
(2) 3/4" TO 136 FT LEVEL
(OTHER CONSIDERED EQUIPMENT)
(12) 1-1/4" TO 137 FT LEVEL

CLIMBING PEGS
W/ SAFETY CLIMB

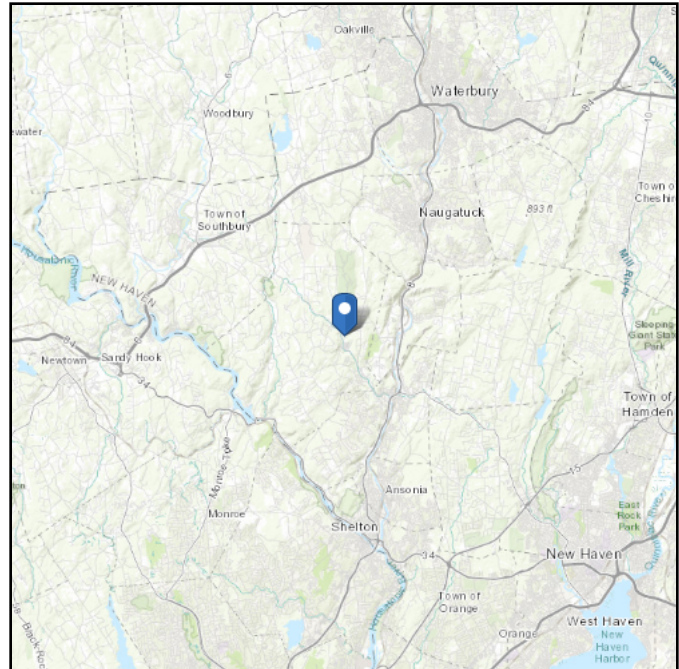
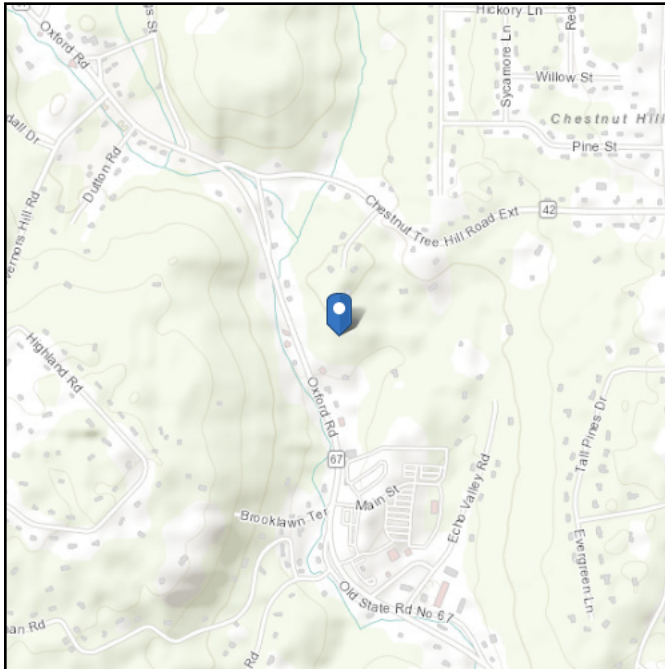
APPENDIX C
ADDITIONAL CALCULATIONS

ASCE 7 Hazards Report

Address:
No Address at This Location

Standard: ASCE/SEI 7-16
Risk Category: II
Soil Class: D - Default (see Section 11.4.3)

Latitude: 41.427992
Longitude: -73.108542
Elevation: 372.75 ft (NAVD 88)



Wind

Results:

Wind Speed	118 Vmph
10-year MRI	75 Vmph
25-year MRI	84 Vmph
50-year MRI	90 Vmph
100-year MRI	97 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: Tue Jan 31 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).

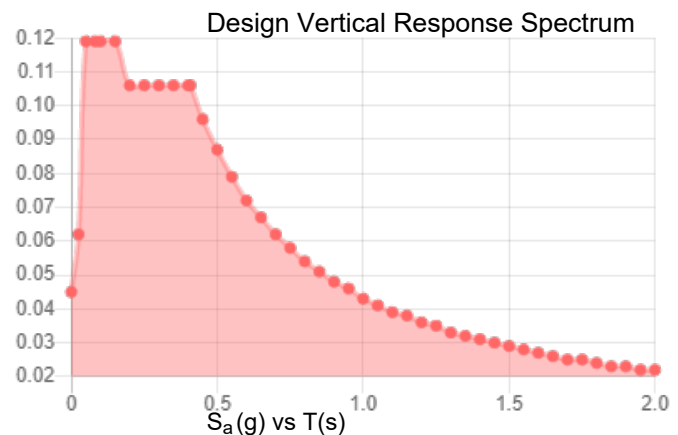
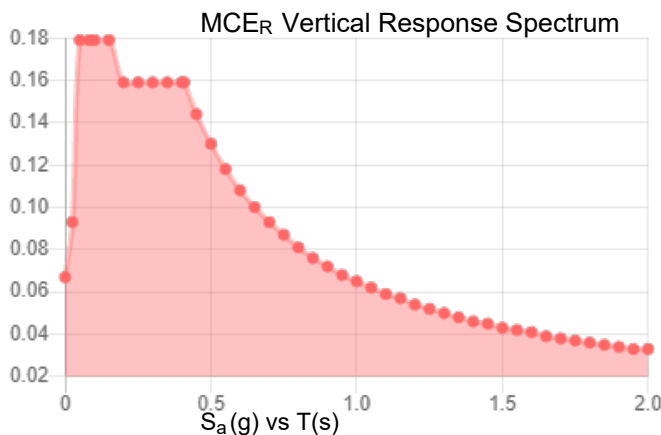
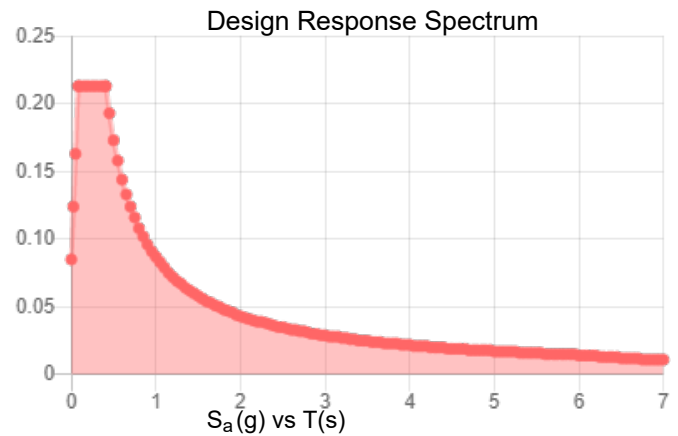
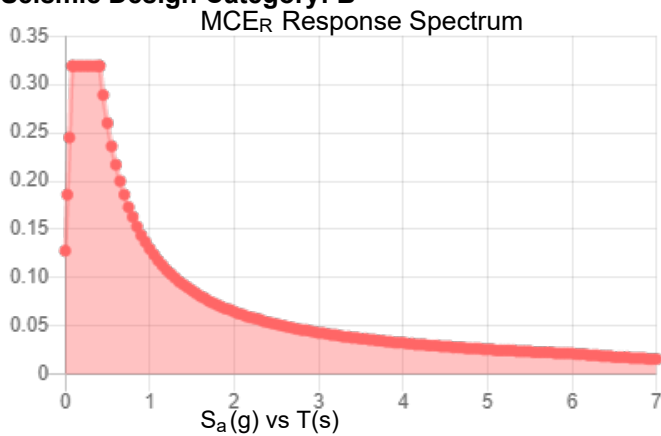
Site is in a hurricane-prone region as defined in ASCE/SEI 7-16 Section 26.2. Glazed openings need not be protected against wind-borne debris.

Site Soil Class:

Results:

S_s :	0.199	S_{D1} :	0.087
S_1 :	0.054	T_L :	6
F_a :	1.6	PGA :	0.111
F_v :	2.4	PGA _M :	0.176
S_{MS} :	0.319	F_{PGA} :	1.577
S_{M1} :	0.13	I_e :	1
S_{DS} :	0.213	C_v :	0.7

Seismic Design Category: B



Data Accessed:

Tue Jan 31 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: Tue Jan 31 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.

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Monopole on Mat Foundation with Rock Anchors - TIA-222-H

Site Data

Site Name:	Oxford / Fritz Property
Site Number:	BU 876362
TEP Job Number:	25611.739139

Mat and Pier Properties		
Mat Width	22.75	ft
Mat Length	22.75	ft
Mat Thickness	4.5	ft
Pier Type	Square	
Pier Width/Diam.	6.0	ft
Pier Height	1.5	ft

Soil Properties		
q_{allow}	30.3	ksf
FS	2.0	
Subgrade Mod.	1090	kcf
Rock Weight	160	pcf
Rock Cone Angle	45	deg

Rock Anchor Properties		
Type of Bar	Dywidag150	
Bar Size	1.25	in
Net Area	1.25	in ²
Ultimate Stress, F_u	150.0	ksi
Yield Stress, F_y	120.0	ksi
Bar Diameter	1.250	in
Steel/Grout Bond ¹	290	psi
Grout/Rock Allow Bond	450	psi
FS	2	
Drilled Shaft Diam.	3.50	in

¹ Ultimate Bond Values

Factored Reactions from TNX		
Axial	63	k
Shear	26	k
Moment	3015	k-ft

Mat Foundation Results		
Bearing Stress	2.0	ksf
Bearing Capacity, ϕq_{allow}	45.4	ksf
% Capacity*	4.3%	Pass

Mat and Pier Structural Results		
Bending Moment	583.2	kft
Clearance	3	in
Rebar F_y	60	ksi
Rebar Diameter	1	in
Rebar Spacing	8.9	in
Concrete F'_c	4	ksi
Flexural Capacity, ϕM_n	5446.5	kft
% Capacity*	10.2%	Pass

Rock Anchor Steel Results		
Max Tension Force	3.2	k
Anchor Capacity, ϕP_n	135.0	k
% Capacity*	2.3%	Pass

Rock Anchor Pullout Results		
Req. Bond Length, l_d	13.2	ft
Req. Cone Height, h	9.6	ft
Total Req. Embedment	16.2	ft
Actual Embedment	20.5	ft

*Rating per TIA-222-H Section 15.5

Exhibit D

Mount Analysis

Colliers Engineering & Design
1055 Washington Blvd
Stamford, CT 06901
856.797.0412
peter.albano@collierseng.com

New/Replacement Antenna Mount Analysis Report and PMI Requirements

Mount Analysis

SMART Tool Project #: 10141842
Colliers engineering & Design Project #: 22777022 (Rev. 1)

May 4, 2023

Site Information

Site ID: 5000385869-VZW / OXFORD CT
Site Name: OXFORD CT
Carrier Name: Verizon Wireless
Address: 338 Oxford Rd.
Oxford, Connecticut 06478
New Haven County
Latitude: 41.428016°
Longitude: -73.108558°

Structure Information

Tower Type: Monopole
Mount Type: 12.50-Ft Platform

FUZE ID # 16092573

Analysis Results

Platform: **39.8% Pass w/ Mount Replacement***
((1) RMQP-NP)

***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: Nathan LaPorte



Executive Summary:

The objective of this report is to determine the capacity of the proposed antenna support mount at the subject facility for the final wireless telecommunications configuration, per the applicable codes and standards. The proposed mount was assumed to be installed properly to the existing tower per the manufacturer's instructions. Colliers Engineering & Design cannot verify that the proposed mount will fit properly and is not liable for any fit-up issues during installation.

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: 324652, dated May 17, 2022
Mount Manufacturer Drawings	Site Pro 1 Part #: RMQP-NP
Mount Manufacturer Drawings	Site Pro 1 Part #: HRK12-U

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: C Topographic Category: 1 Topographic Feature Considered: N/A Topographic Method: Method 1 Ground Elevation Factor, K_e : 0.987
Seismic Parameters:	S_s : 0.199 g S_1 : 0.054 g
Maintenance Parameters:	Wind Speed (3-sec. Gust): 30 mph Maintenance Live Load, L_v : 250 lbs. Maintenance Live Load, L_m : 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
130.00	130.00	6	JMA Wireless	MX06FRO660-03	Added
		3	Samsung	MT6407-77A	
		1	Raycap	RVZDC-6627-PF-48	
		3	Samsung	RF4439d-25A	
		3	Samsung	RF4440d-13A	
		6	RFS	APL866513	Retained

Any proposed antennas not currently installed should be mounted such that the centerline of the antennas does not exceed 6 inches vertically from the center of the antenna mount.

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.

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 Colliers Engineering & Design 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 Colliers Engineering & Design 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.
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. Colliers Engineering & Design 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

Discrepancies between in-field conditions and the assumptions listed above may render this analysis invalid unless explicitly approved by Colliers Engineering & Design.

Analysis Results:

Component	Utilization %	Pass/Fail
Support Rail	15.1%	Pass
Mount Pipe	20.4%	Pass
Face Horizontal	12.5%	Pass
Corner Angle	12.8%	Pass
OVP Pipe	13.9%	Pass
Corner Plate	14.4%	Pass
Cross Arm Plate	36.2%	Pass
Grating Support	17.2%	Pass
Platform Crossmember	22.7%	Pass
Standoff Horizontal	39.8%	Pass
Mount Connection	33.2%	Pass

Structure Rating – (Controlling Utilization of all Components)	39.8%
---	--------------

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	23.2	23.2	43.9	43.9
0.5	30.5	30.5	58.4	58.4
1	37.4	37.4	72.5	72.5

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 proposed antenna mount is **SUFFICIENT** for the final loading configuration (attachment 2) upon completion of the mount replacement (attachment 3) and requirements below.

Refer to document at the end of this form for special instructions. Contact EOR if special instructions are not available.

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 Post Installation Inspection (PMI) Report Deliverables**
2. Antenna Placement Diagrams
3. Mount Manufacturer Drawings
4. Existing Mount Photos
5. Analysis Calculations

Mount Desktop – Post Modification Inspection (PMI) Report Requirements

Documents & Photos Required from Contractor – **New Mount Passing MA**

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

MDG #: 5000385869

SMART Project #: 10141842

Fuze Project ID: 16092573

Purpose – to provide SMART Tool structural vendor the proper documentation in order 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 installation was completed in accordance with this Passing Mount Analysis.
- Contractor shall relay any data that can impact the performance of the mount, this includes safety issues.

Base Requirements:

- If installation 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 mount drawings” showing contractor’s name, contact information, 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 passing mount analysis (MA) contact the SMART Tool vendor immediately.
- Each photo should be time and date stamped.
- Photos should be high resolution.
- Contractor shall ensure that the safety climb wire rope is supported and 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.
 - Photos of the mount after installation; if the mounts are at different rad elevations, pictures must be provided for all elevations that equipment was installed.
- Photos taken at Mount Elevation
 - Photos showing the safety climb wire rope above and below the mount prior to installation.
 - Photos showing the climbing facility and safety climb if present.
 - Photos showing each individual sector after installation of mounts. Each entire sector shall 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 mount; pictures shall also include connection hardware (U-bolts, bolts, nuts, all-threaded rods, etc.)
- Photos showing the installed mount elevation.

Antenna & Equipment Placement and Geometry Confirmation:

- The contractor shall certify that the antenna & equipment placement and geometry is in accordance with the sketch and table as included in the mount analysis and noted below.
 - 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.

Special Instructions / Validation as required from the MA or any other information the contractor deems necessary to share that was identified:

Issue:

Contractor shall verify existing monopole diameter to be 27". **Escalate any discrepancies to EOR immediately as it may render the results of this analysis invalid and require additional modifications.**

Contractor shall remove existing mount and associated hardware. Contractor shall restore any degradation in galvanization on tower due to removed mount and protect with two (2) coats of cold galvanization (Zinga or Zinc Kote).

Contractor shall install the proposed Site Pro 1 RMQP-NP platform mount with Site Pro 1 HRK12-U support rail in accordance with manufacturer specifications and the Mount Replacement Sketch. Contact EOR if these documents are not available. Contractor shall install proposed support rail 36" above face horizontal. Refer to Mount Replacement Sketch.

Contractor shall install (4) 96" long PIPE 2.0 SCH40 mount pipes per sector. Refer to placement diagrams and Mount Replacement Sketch. Contact EOR if these documents are not available.

Contractor shall inspect climbing facilities and safety climb and ensure they are in good condition. Contractor shall install safety climb wire rope guides in locations where wire rope is rubbing against the mount or mount-to-tower connection steel. Wire brush clean any observed corrosion and protect with two (2) coats of cold galvanization (Zinga or Zinc Kote). Contractor shall provide photos of wire rope guide installation as part of PMI documents. Contact EOR if additional guidance is required.

Response:

--

Special Instruction Confirmation:

The contractor has read and acknowledges the above special instructions.

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:

--

New Mount Certification:

- The contractor certifies that the New Mount installed is as specified in the Passing Mount Analysis.
- The contractor notes that the New Mount installed is not as specified and engineering approval was received for the New Mount installed.

Certifying Individual:

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

Special Requirements

Contractor shall verify existing monopole diameter to be 27". Escalate any discrepancies to EOR immediately as it may render the results of this analysis invalid and require additional modifications.

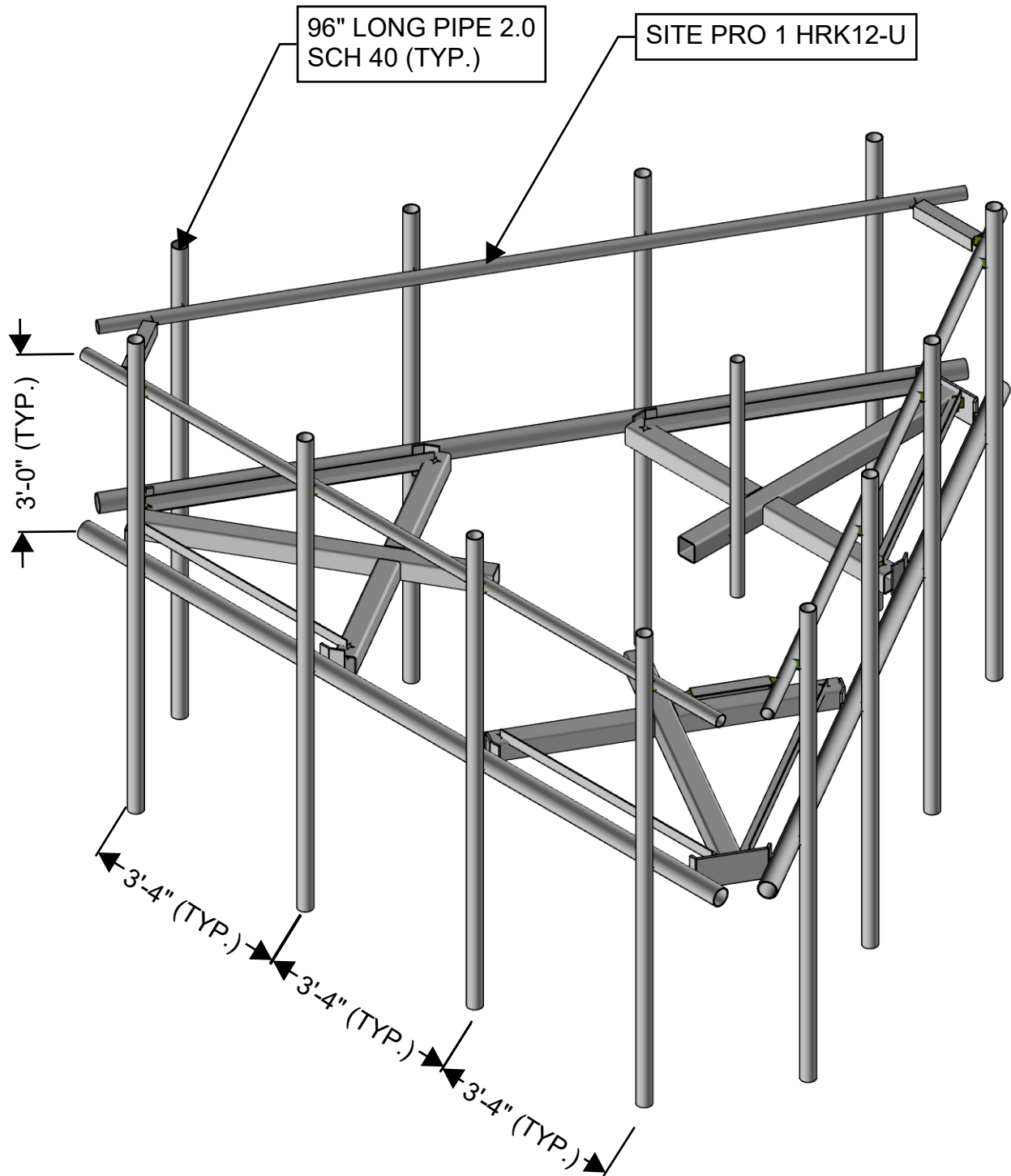
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Contractor shall install the proposed Site Pro 1 RMQP-NP platform mount with Site Pro 1 HRK12-U support rail in accordance with manufacturer specifications and the Mount Replacement Sketch. Contact EOR if these documents are not available. Contractor shall install proposed support rail 36" above face horizontal. Refer to Mount Replacement Sketch.

Contractor shall install (4) 96" long PIPE 2.0 SCH40 mount pipes per sector. Refer to placement diagrams and Mount Replacement Sketch. Contact EOR if these documents are not available.

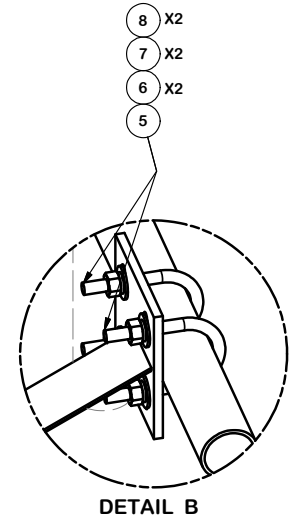
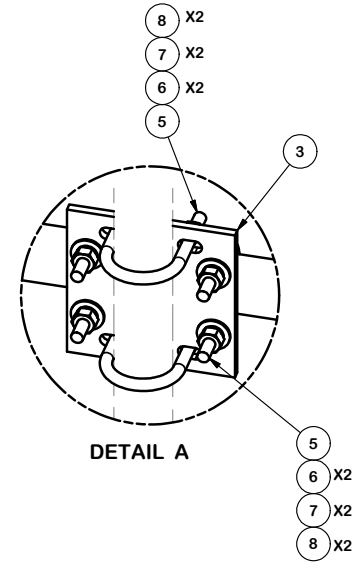
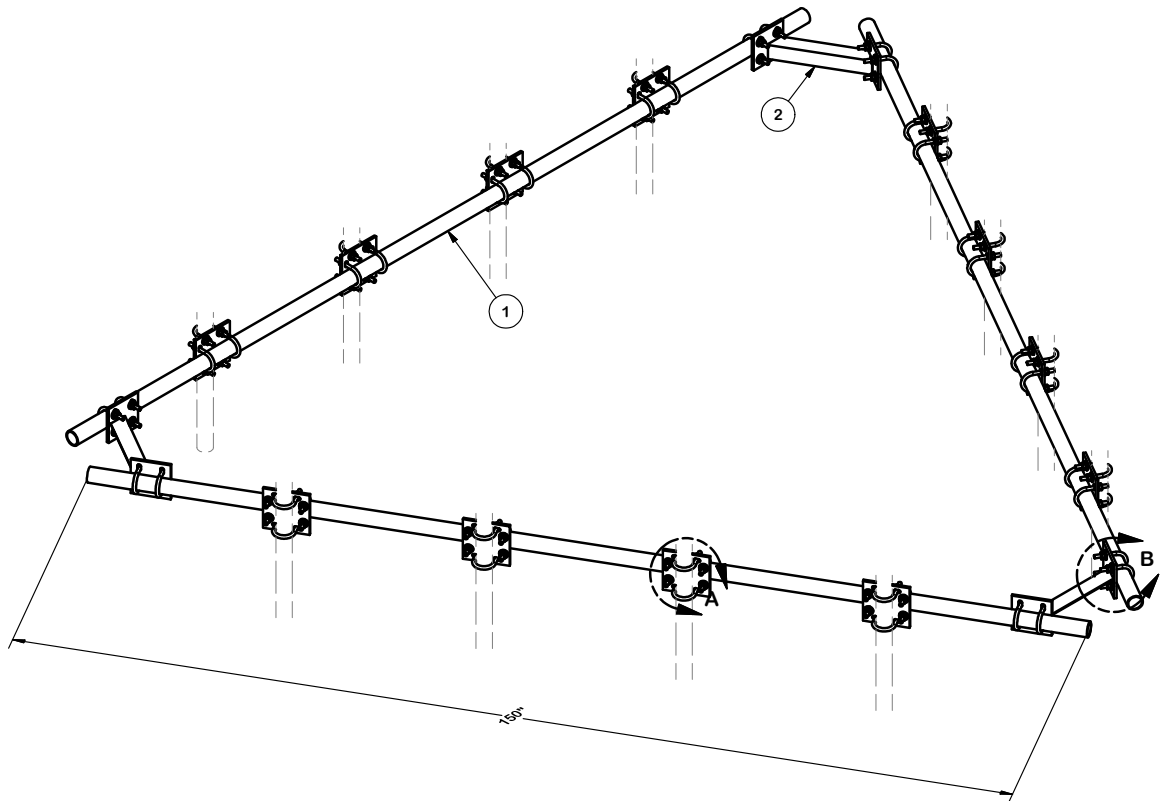
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MOUNT REPLACEMENT SKETCH



MOUNT ISOMETRIC VIEW
N.T.S

PARTS LIST						
ITEM	QTY	PART NO.	PART DESCRIPTION	LENGTH	UNIT WT.	NET WT.
1	3	P2150	2-3/8" OD X 150" SCH 40 GALVANIZED PIPE	150 in	45.77	137.31
2	3	X-AHCP	ANGLE HANDRAIL CORNER PLATE		12.92	38.76
3	12	SCX2	CROSSOVER PLATE	7 in	4.80	57.56
4	24	X-UB1300	1/2" X 3" X 5" X 2" U-BOLT (HDG.)		0.73	17.56
5	60	X-UB1212	1/2" X 2-1/2" X 4-1/2" X 2" U-BOLT (HDG.)		0.73	43.90
6	120	G12FW	1/2" HDG USS FLATWASHER		0.03	4.09
7	120	G12LW	1/2" HDG LOCKWASHER		0.01	1.67
8	120	G12NUT	1/2" HDG HEAVY 2H HEX NUT		0.07	8.60
					TOTAL WT. #	302.21



TOLERANCE NOTES

TOLERANCES ON DIMENSIONS, UNLESS OTHERWISE NOTED ARE:
 SAWED, SHEARED AND GAS CUT EDGES ($\pm 0.030"$)
 DRILLED AND GAS CUT HOLES ($\pm 0.030"$) - NO CONING OF HOLES
 LASER CUT EDGES AND HOLES ($\pm 0.010"$) - NO CONING OF HOLES
 BENDS ARE $\pm 1/2$ DEGREE
 ALL OTHER MACHINING ($\pm 0.030"$)
 ALL OTHER ASSEMBLY ($\pm 0.060"$)

PROPRIETARY NOTE:
 THE DATA AND TECHNIQUES CONTAINED IN THIS DRAWING ARE PROPRIETARY INFORMATION OF VALMONT INDUSTRIES AND CONSIDERED A TRADE SECRET. ANY USE OR DISCLOSURE WITHOUT THE CONSENT OF VALMONT INDUSTRIES IS STRICTLY PROHIBITED.

DESCRIPTION
UNIVERSAL HANDRAIL KIT FOR 12' PLATFORM
 2-3/8" & 2-7/8" ANTENNA PIPES

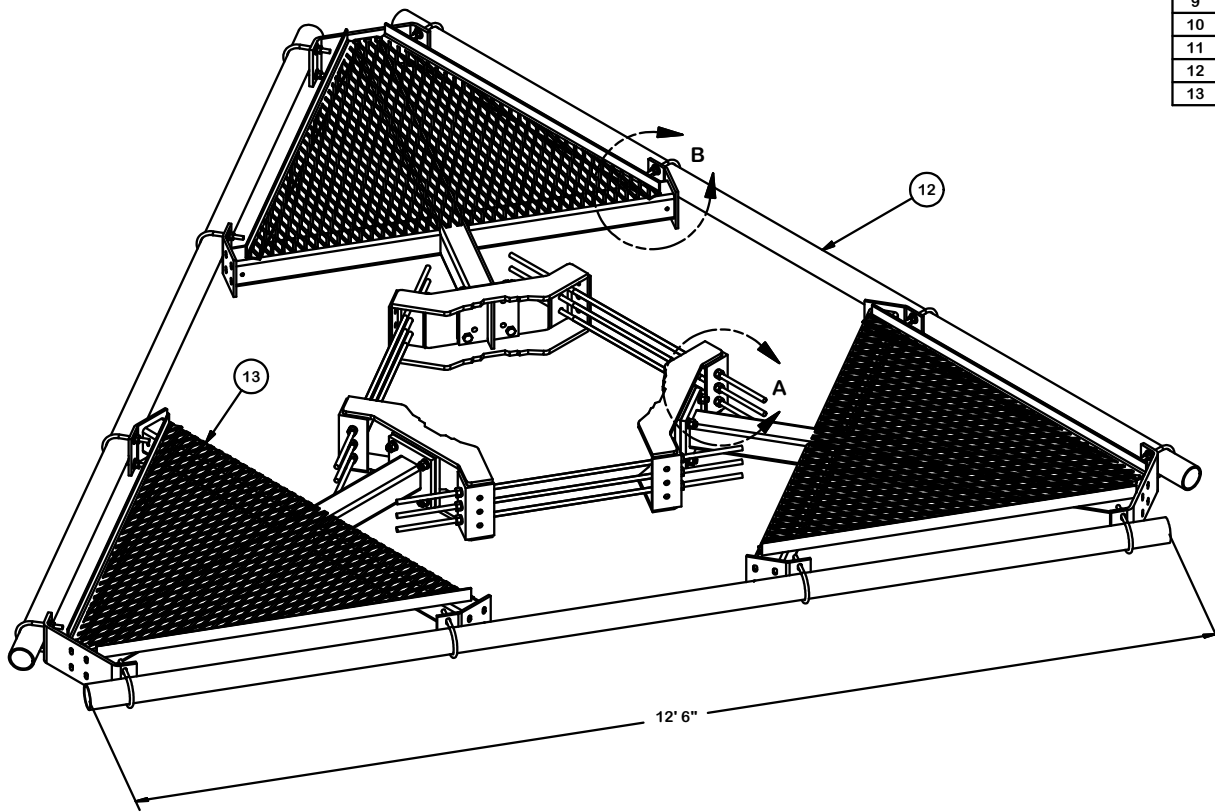
SITE PRO 1
 Engineering Support Team:
 1-888-753-7446

Locations:
 New York, NY
 Atlanta, GA
 Los Angeles, CA
 Plymouth, IN
 Salem, OR
 Dallas, TX

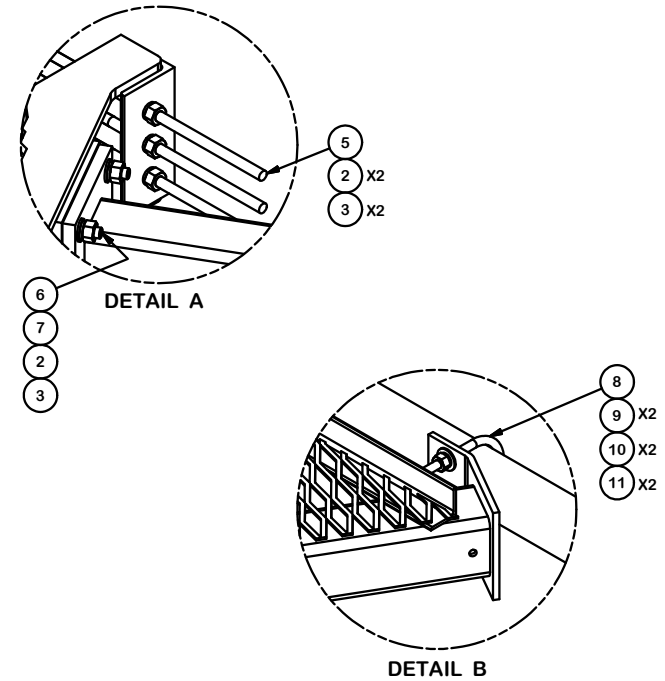
A valmont COMPANY

CPD NO.	DRAWN BY CEK	ENG. APPROVAL
CLASS 81	SUB 01	CHECKED BY BMC
DRAWING USAGE CUSTOMER		DATE 3/9/2015 3/10/2015

PART NO.	HRK12-U	PAGE 1 OF 1
DWG. NO.	HRK12-U	



PARTS LIST						
ITEM	QTY	PART NO.	PART DESCRIPTION	LENGTH	UNIT WT.	NET WT.
1	3	X-LWRM	RING MOUNT WELDMENT		68.81	206.42
2	30	G58LW	5/8" HDG LOCKWASHER		0.03	0.78
3	30	A58NUT	5/8" HDG A325 HEX NUT		0.13	3.90
4	9	G58R-24	5/8" x 24" THREADED ROD (HDG.)		0.40	3.59
5	9	G58R-48	5/8" x 48" THREADED ROD (HDG.)		0.40	3.59
6	12	A58234	5/8" x 2-3/4" HDG A325 HEX BOLT	2 3/4 in	0.36	4.27
7	12	A58FW	5/8" HDG A325 FLATWASHER		0.03	0.41
8	12	X-UB1306	1/2" X 3-5/8" X 6" X 3" U-BOLT (HDG.)		0.26	3.08
9	24	G12FW	1/2" HDG USS FLATWASHER		0.03	0.82
10	24	G12LW	1/2" HDG LOCKWASHER		0.01	0.33
11	24	G12NUT	1/2" HDG HEAVY 2H HEX NUT		0.07	1.72
12	3	P3150	3-1/2" X 150" SCH 40 GALVANIZED PIPE	150 in	94.80	284.40
13	3	X-SV196	LOW PROFILE PLATFORM CORNER		212.10	636.31



TOLERANCE NOTES

TOLERANCES ON DIMENSIONS, UNLESS OTHERWISE NOTED ARE:
 SAWED, SHEARED AND GAS CUT EDGES ($\pm 0.030"$)
 DRILLED AND GAS CUT HOLES ($\pm 0.030"$) - NO CONING OF HOLES
 LASER CUT EDGES AND HOLES ($\pm 0.010"$) - NO CONING OF HOLES
 BENDS ARE $\pm 1/2$ DEGREE
 ALL OTHER MACHINING ($\pm 0.030"$)
 ALL OTHER ASSEMBLY ($\pm 0.060"$)

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DESCRIPTION
 LOW PROFILE
 CO-LOCATION PLATFORM

SITE PRO 1
 Engineering Support Team:
 1-888-753-7446

Locations:
 New York, NY
 Atlanta, GA
 Los Angeles, CA
 Plymouth, IN
 Salem, OR
 Dallas, TX

CPD NO.	DRAWN BY CEK	7/8/2015	ENG. APPROVAL
CLASS 81	SUB 01	DRAWING USAGE CUSTOMER	CHECKED BY BMC
			7/8/2015

PART NO.	RMQP-NP	PAGE	1 OF 1
DWG. NO.	RMQP-NP		



Exhibit E

Power Density/RF Emissions Report



FOX HILL TELECOM

Radio Frequency Emissions Analysis Report

Prepared for:



Crown Site BU / Name: **876362_Oxford / Fritz Property**

Verizon Wireless Site Name: **Oxford CT**

Verizon Wireless FUZE ID: **16092573**

Site Address:

338 Oxford Road

New Haven, CT 06478

April 22, 2023

Fox Hill Telecom Project Number: 230376

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general population allowable limit:	18.37 %



April 22, 2023

Crown Castle
1800 W. Park Drive
Westborough, MA 01581

Emissions Analysis for Site:

Crown Castle: 876362 – Oxford / Fritz Property

Verizon Wireless: Oxford CT

Fox Hill Telecom, Inc (“Fox Hill”) was directed to analyze the proposed upgrades for Verizon Wireless to the Crown Castle facility located at **338 Oxford Road, New Haven, 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 97-01 and ANSI/IEEE Std C95.1. The FCC regulates Maximum Permissible Exposure in units of microwatts per square centimeter ($\mu\text{W}/\text{cm}^2$). The number of $\mu\text{W}/\text{cm}^2$ 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 ($\mu\text{W}/\text{cm}^2$). The general population exposure limits for the 700 MHz band & the 850 MHz cellular band are approximately $497 \mu\text{W}/\text{cm}^2$ and $586 \mu\text{W}/\text{cm}^2$ respectively. The general population exposure limit for the 1900 MHz (PCS), 2100 MHz (AWS) and 3700 MHz (C Band) bands is $1000 \mu\text{W}/\text{cm}^2$. 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 **338 Oxford Road, New Haven, 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

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

S = Power Density (in $\mu\text{w}/\text{cm}^2$)

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



FOX HILL TELECOM

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	RFS APL866513 (Dormant)	129
A	2	JMA MX06FRO660-03	129
A	3	JMA MX06FRO660-03	129
A	4	Samsung MT6407-77A	129
A	5	RFS APL866513 (Dormant)	129
B	1	RFS APL866513 (Dormant)	129
B	2	JMA MX06FRO660-03	129
B	3	JMA MX06FRO660-03	129
B	4	Samsung MT6407-77A	129
B	5	RFS APL866513 (Dormant)	129
C	1	RFS APL866513 (Dormant)	129
C	2	JMA MX06FRO660-03	129
C	3	JMA MX06FRO660-03	129
C	4	Samsung MT6407-77A	129
C	5	RFS APL866513 (Dormant)	129

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	RFS APL866513	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	1.50
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	1.50
Antenna A4	Samsung MT6407-77A	3700 MHz (C Band)	23.15	8	132	27,263.02	4.88
Antenna A5	RFS APL866513	NA	NA	0	0	0.00	0.00
Sector A Composite MPE%							7.88
Antenna A1	RFS APL866513	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	1.50
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	1.50
Antenna A4	Samsung MT6407-77A	3700 MHz (C Band)	23.15	8	132	27,263.02	4.88
Antenna A5	RFS APL866513	NA	NA	0	0	0.00	0.00
Sector B Composite MPE%							7.88
Antenna A1	RFS APL866513	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	1.50
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	1.50
Antenna A4	Samsung MT6407-77A	3700 MHz (C Band)	23.15	8	132	27,263.02	4.88
Antenna A5	RFS APL866513	NA	NA	0	0	0.00	0.00
Sector C Composite MPE%							7.88

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	7.88 %
Dish	3.33 %
AT&T	3.66 %
Sprint	1.38 %
T-Mobile	2.12 %
Site Total MPE %:	18.37 %

Table 4: All Carrier MPE Contributions

Verizon Wireless Sector A Total:	7.88 %
Verizon Wireless Sector B Total:	7.88 %
Verizon Wireless Sector C Total:	7.88 %
<hr/>	
Site Total:	18.37 %

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 on all three sectors.

Verizon Wireless _ Frequency Band / Technology Max Power Values (Per Sector)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ($\mu\text{W}/\text{cm}^2$)	Frequency (MHz)	Allowable MPE ($\mu\text{W}/\text{cm}^2$)	Calculated % MPE
Verizon Wireless 700 MHz LTE	4	671.52	129	5.716	700 MHz	497	1.15%
Verizon Wireless 850 MHz LTE / 5G	4	612.43	129	6.094	850 MHz	586	1.04%
Verizon Wireless 1900 MHz (PCS) LTE	4	1,538.37	129	3.800	1900 MHz (PCS)	1000	0.38%
Verizon Wireless 2100 MHz (AWS) LTE	4	1,610.87	129	4.200	2100 MHz (AWS)	1000	0.42%
Verizon Wireless 3700 MHz (C Band) 5G	8	3,407.88	129	48.80	3700 MHz (C Band)	1000	4.88%
						Total:	7.88 %

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:	7.88 %
Sector B:	7.88 %
Sector C:	7.88 %
Verizon Wireless Maximum Total (per sector):	7.88 %
Site Total:	18.37 %
Site Compliance Status:	COMPLIANT


The estimated composite emissions value for this site, assuming all carriers present, is **18.37 %** 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

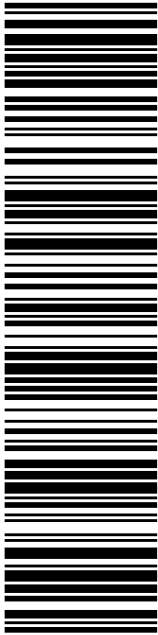
Exhibit F

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FIRST SELECTMAN
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OXFORD CT 06478-1298

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Print Date: 05/12/2023	Total: \$9.65
Ship Date: 05/12/2023	
Expected Delivery Date: 05/15/2023	


From: DEBORAH CHASE Ref#: CR-876362
 NORTHEAST SITE SOLUTIONS
 STE 1
 420 MAIN ST
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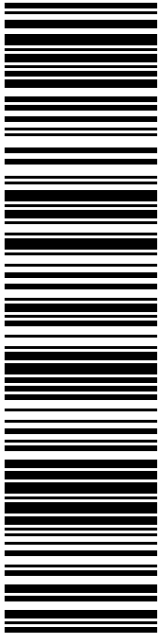


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9405 5036 9930 0543 6077 03

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Ship Date: 05/12/2023	
Expected Delivery Date: 05/15/2023	


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NORTHEAST SITE SOLUTIONS
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420 MAIN ST
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To: STEVEN S MACARY
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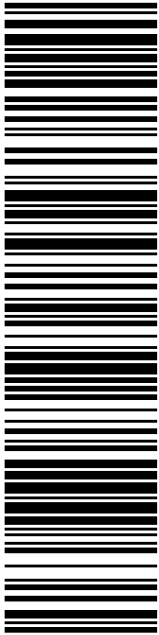


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VERIZON



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Product	Qty	Unit Price	Price
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Tracking #:			
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Prepaid Mail	1		\$0.00
Westborough, MA 01581			
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Tracking #:			
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Mon 05/15/2023			
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