

T-Mobile

T-MOBILE SITE NUMBER: SE03853D
T-MOBILE SITE NAME: DOT/190 SOUND WALL MERCER
T-MOBILE PROJECT: SECTOR ADD

BUSINESS UNIT #: 823754
SITE ADDRESS: 2250 60TH AVE SE
 MERCER ISLAND, WA 98040
COUNTY: KING
SITE TYPE: MULTI-SECTOR POLE
TOWER HEIGHT: 11'-0"

T-Mobile
 12920 SE 38TH STREET
 BELLEVUE, WA 98006

CROWN CASTLE
 1505 WESTLAKE AVENUE NORTH, SUITE 800
 SEATTLE, WA 98109

PM&A
 P. MARSHALL & ASSOCIATES

6801 PORTWEST DR., SUITE 100
 HOUSTON, TX 77024

T-MOBILE SITE NUMBER:
SE03853D

BU #: 823754
DOT/190 SOUND WALL
MERCER

2250 60TH AVE SE
 MERCER ISLAND, WA 98040

EXISTING 11'-0"
 MULTI-SECTOR POLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
A	12/08/22	KW	PRELIMINARY	VT
0	01/11/23	RB	FINALS	VT
1	02/13/23	RB	REVISED FINALS	RAM
2	05/19/23	RB	REVISED ACL	RAM
3	07/17/2023	RB	REVISED FINALS	RAM

SITE INFORMATION

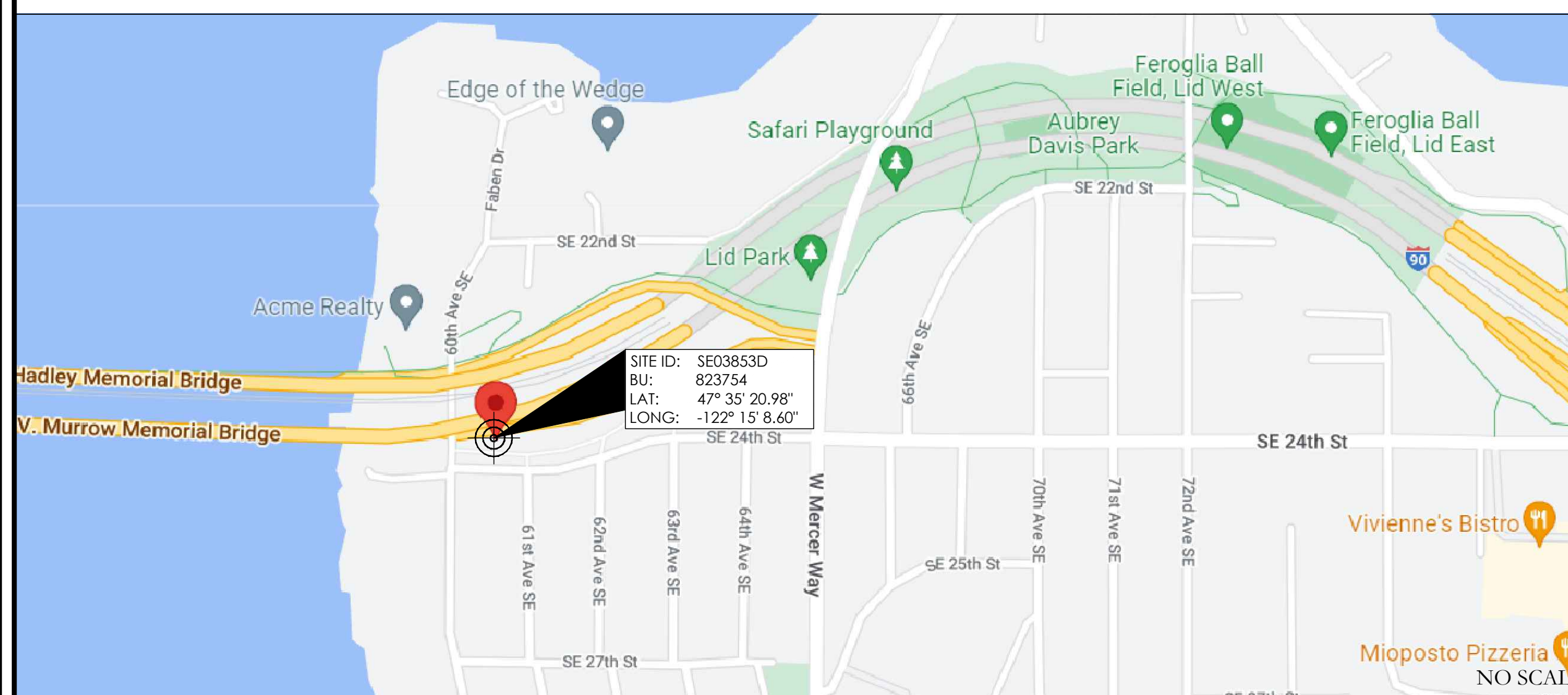
CROWN CASTLE USA INC. DOT/190 SOUND WALL MERCER
 SITE NAME:
 SITE ADDRESS: 2250 60TH AVE SE
 MERCER ISLAND, WA 98040
 COUNTY: KING
 MAP/PARCEL #: I-90 ROW
 AREA OF CONSTRUCTION: EXISTING
 LATITUDE: 47° 35' 20.98"
 LONGITUDE: -122° 15' 8.60"
 LAT/LONG TYPE: NAD83
 GROUND ELEVATION: 0'-0"
 CURRENT ZONING: PI - PUBLIC INSTITUTION
 JURISDICTION: COUNTY OF MERCER ISLAND, WA
 OCCUPANCY CLASSIFICATION: U
 TYPE OF CONSTRUCTION: IIB
 A.D.A. COMPLIANCE: FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION
 PROPERTY OWNER: WSDOT REAL ESTATE SERVICES
 PO BOX 47338
 OLYMPIA, WA 98504
 TOWER OWNER: CROWN CASTLE USA, INC.
 2000 CORPORATE DRIVE
 CANONSBURG, PA 15317
 CARRIER/APPLICANT: T-MOBILE
 12920 SE 38TH STREET
 BELLEVUE, WA 98006
 ELECTRIC PROVIDER: PUGET SOUND ENERGY
 (888) 225-5773
 TELCO PROVIDER: CENTURY LINK
 (855) 978-9939

DRAWING INDEX

SHEET #	SHEET DESCRIPTION
T-1	TITLE SHEET
T-2	GENERAL NOTES
C-1.1	OVERALL SITE PLAN
C-1.2	SITE PLAN
C-1.3	EXISTING & FINAL EQUIPMENT PLANS
C-2	EXISTING & FINAL ELEVATIONS
C-3	ANTENNA SCHEDULES & PLANS
C-4	EXISTING & FINAL PLUMBING DIAGRAMS
C-5	EQUIPMENT SPECS
G-1	ANTENNA GROUNDING DIAGRAM
G-2	GROUNDING DETAILS
G-3	GROUNDING DETAILS

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.

LOCATION MAP



PROJECT TEAM

A&E FIRM: P. MARSHALL & ASSOCIATES, LLC
 6801 PORTWEST DR. STE 100
 HOUSTON, TX 77024
 (713) 677-0964
 CROWN CASTLE USA INC. DISTRICT CONTACTS:
 1505 WESTLAKE AVENUE NORTH, SUITE 800
 SEATTLE, WA 98109
 ALICIA POWERS - PROJECT MANAGER
 (206) 336-3218
 ERIC OSUND - CONSTRUCTION MANAGER
 (503) 867-0000

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

APPROVALS

APPROVAL	SIGNATURE	DATE
PROJECT MGR	_____	_____
T-MOBILE RF ENGINEER	_____	_____
SITE ACQUISITION	_____	_____
CONSTRUCTION MGR	_____	_____
SITE OWNER	_____	_____
T-MOBILE DEVELOPMENT MGR	_____	_____
T-MOBILE CONSTRUCTION MGR	_____	_____
T-MOBILE OPS MGR	_____	_____
T-MOBILE REGULATORY REVIEW	_____	_____
T-MOBILE PROJECT MGR	_____	_____
T-MOBILE PERMITTING	_____	_____

THE PARTIES ABOVE HEREBY APPROVE AND ACCEPT THESE DOCUMENTS AND AUTHORIZE THE CONTRACTOR TO PROCEED WITH THE CONSTRUCTION DESCRIBED HEREIN. ALL CONSTRUCTION DOCUMENTS ARE SUBJECT TO REVIEW BY THE LOCAL BUILDING DEPARTMENT AND ANY CHANGES AND MODIFICATIONS THEY MAY IMPOSE.

PROJECT DESCRIPTION

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

- TOWER SCOPE OF WORK:
- RE-LABEL EXISTING BETA SECTOR TO GAMMA AND CHANGE AZIMUTH TO 300°
 - RAISE ALPHA ANTENNAS TO 6'-0" RAD CENTER
 - INSTALL (1) FFVV-65C-R3-V1 ANTENNA
 - INSTALL (1) AEHC ANTENNA
 - INSTALL (1) AHLOA RRU
 - INSTALL (1) AHFIG RRU
 - INSTALL (2) ANTENNA MOUNT & MAST EXTENSION PER STRUCTURAL ANALYSIS

- GROUND SCOPE OF WORK:
- NONE

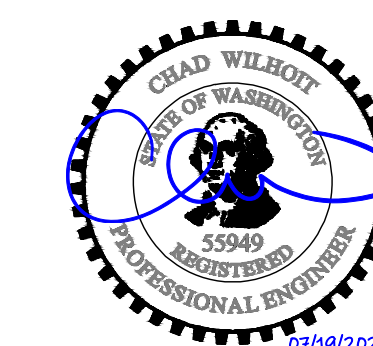
APPLICABLE CODES/REFERENCE DOCUMENTS

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	2018 INTERNATIONAL BUILDING CODE
MECHANICAL	2018 INTERNATIONAL MECHANICAL CODE
ELECTRICAL	2020 NATIONAL ELECTRICAL CODE

REFERENCE DOCUMENTS:

STRUCTURAL ANALYSIS:	PAUL J. FORD & COMPANY
DATED:	01/31/2023
MOUNT ANALYSIS:	KIMLEY HORN
DATED:	05/24/2021
RFDS REVISION:	9
DATED:	10/11/2022
ORDER ID:	633059
REVISION:	3

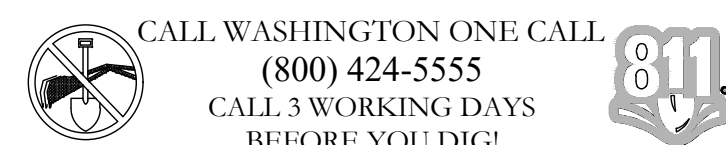


UBI NUMBER: 604-106-184

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.

PM&A JOB #:
22CCTT7M-219

SHEET NUMBER: **T-1** REVISION: **3**



CALL WASHINGTON ONE CALL
 (800) 424-5555
 CALL 3 WORKING DAYS
 BEFORE YOU DIG!

SITE PLAN DISCLAIMER:
 PROPERTY LINES AND STRUCTURES HAVE BEEN DIGITIZED FROM GOOGLE EARTH. CROWN CASTLE USA INC. HAS NOT COMPLETED A SITE SURVEY AND THEREFORE MAKES NO CLAIMS AS TO THE ACCURACY OF INFORMATION DEPICTED ON THIS SHEET.

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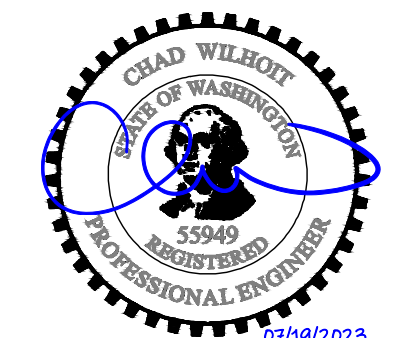
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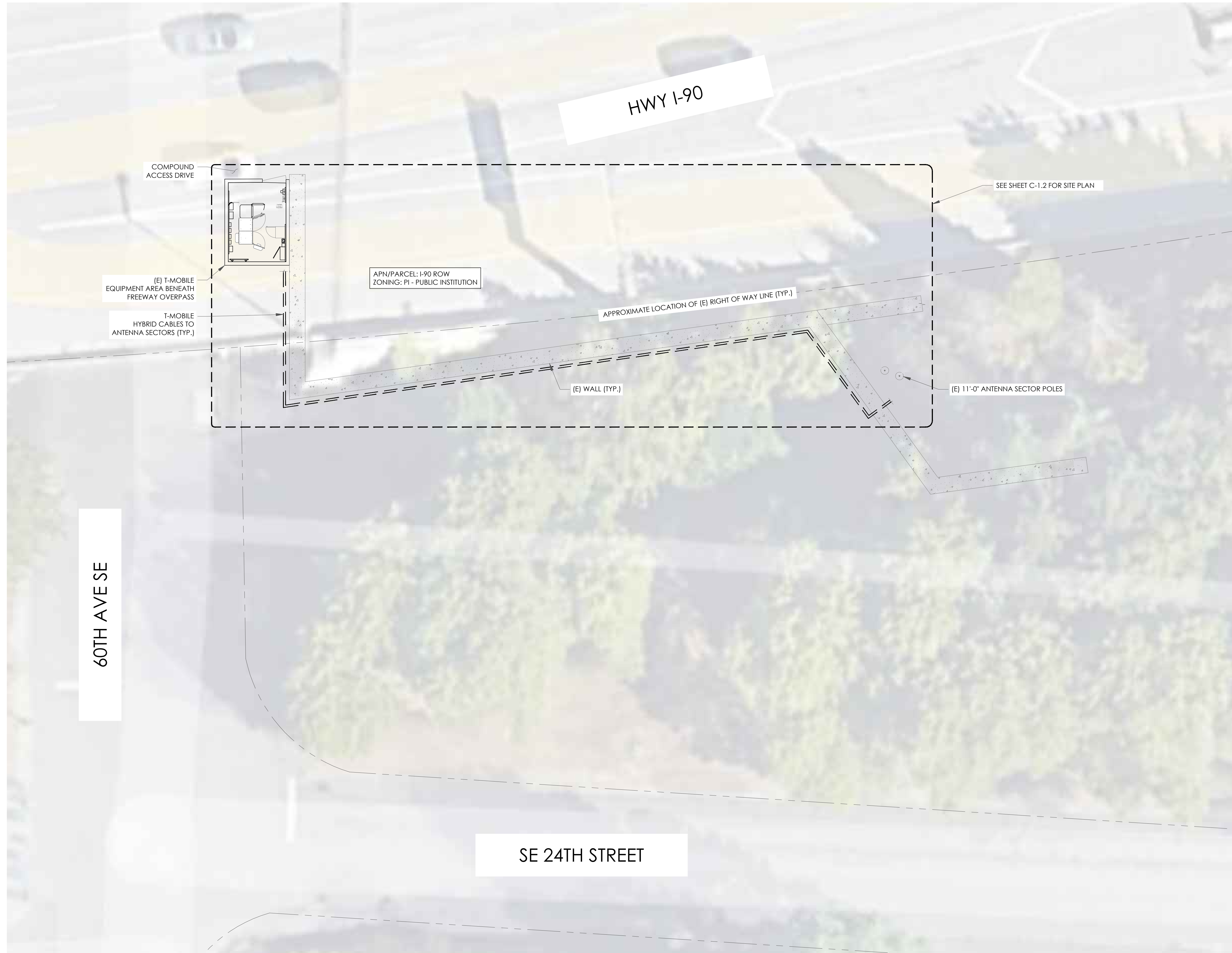


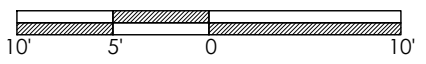

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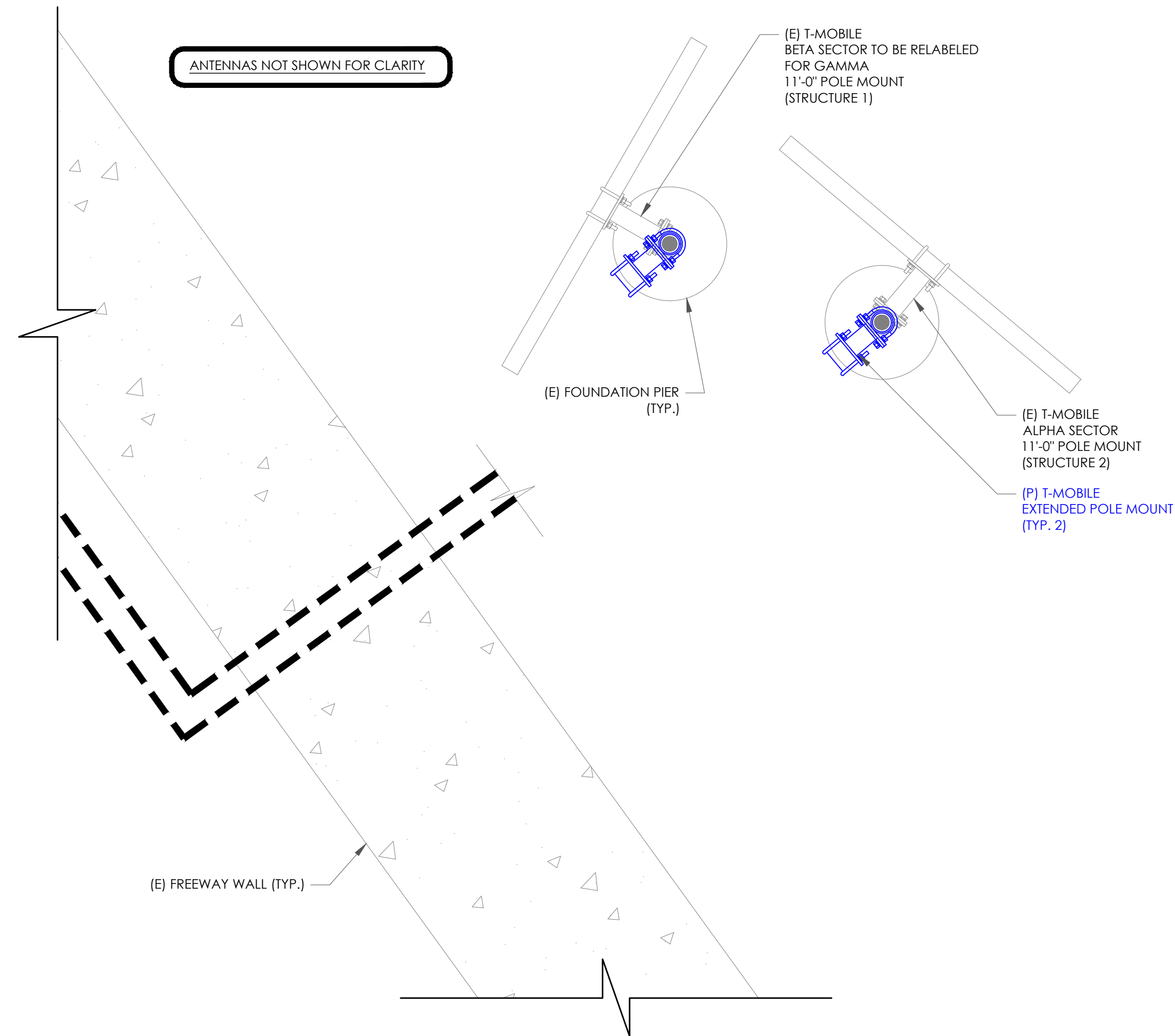
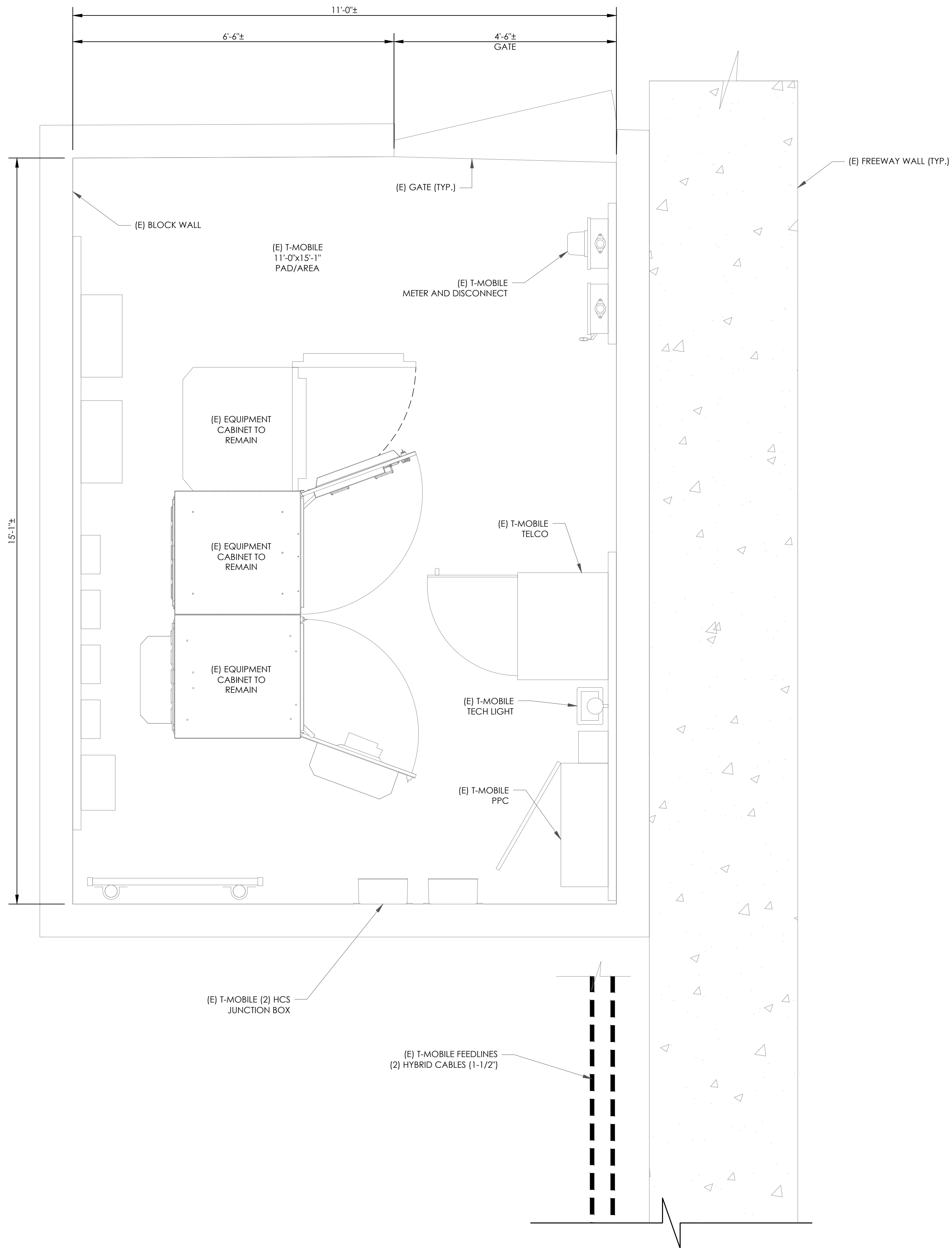
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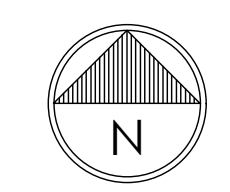
SHEET NUMBER: C-1.1	REVISION: 3
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1 OVERALL SITE PLAN
 SCALE:  1"=10'-0" (FULL SIZE) 1"=20'-0" (11x17) 



1 SITE PLAN
 SCALE: 3/4"=1'-0" (FULL SIZE) 3/8"=1'-0" (11x17)



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3	07/17/2023	RB	REVISED FINALS	RAM

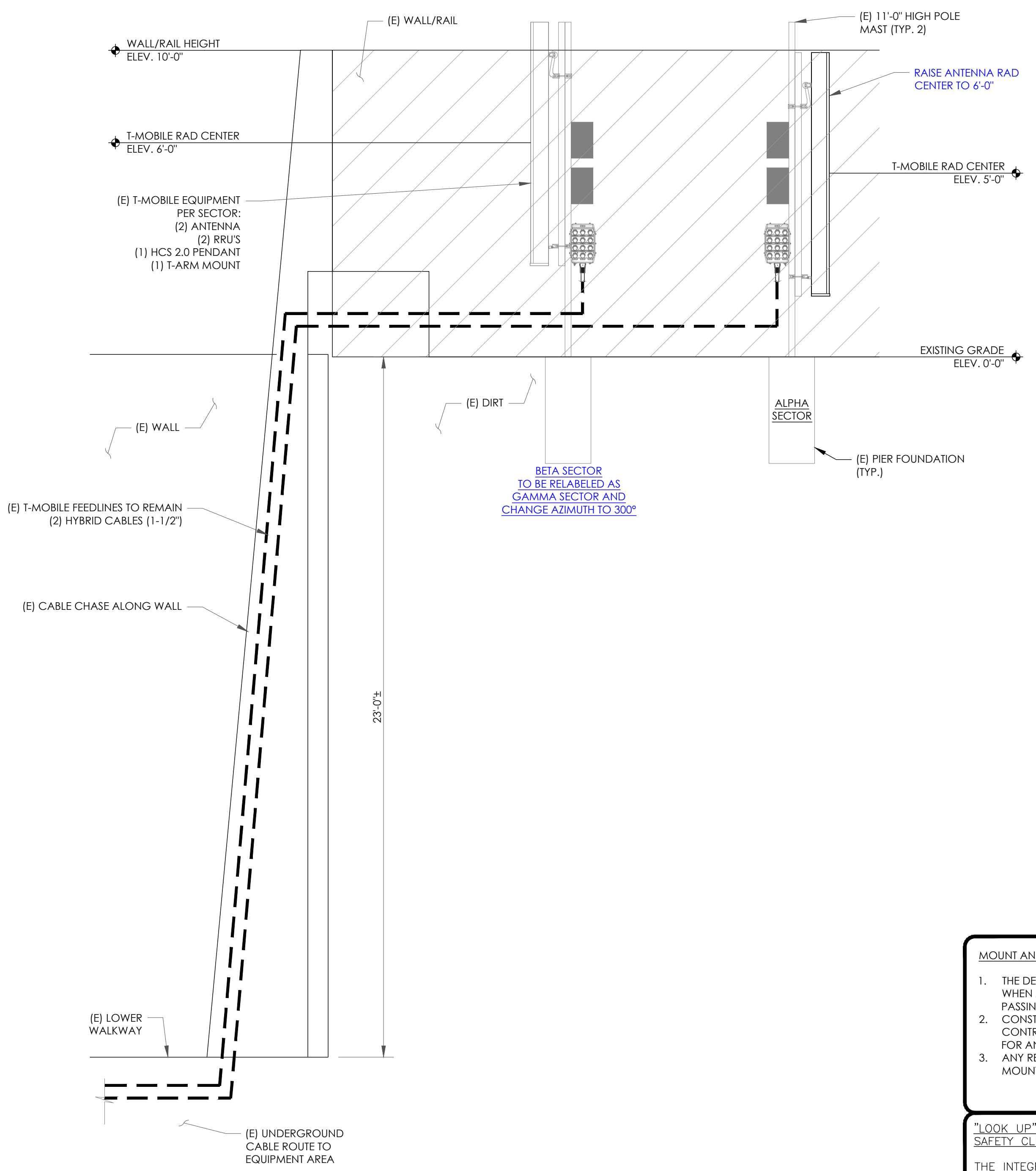
CHAD WILBORN
 STATE OF WASHINGTON
 55949
 REGISTERED PROFESSIONAL ENGINEER
 07/19/2023
 UBI NUMBER: 604-106-184

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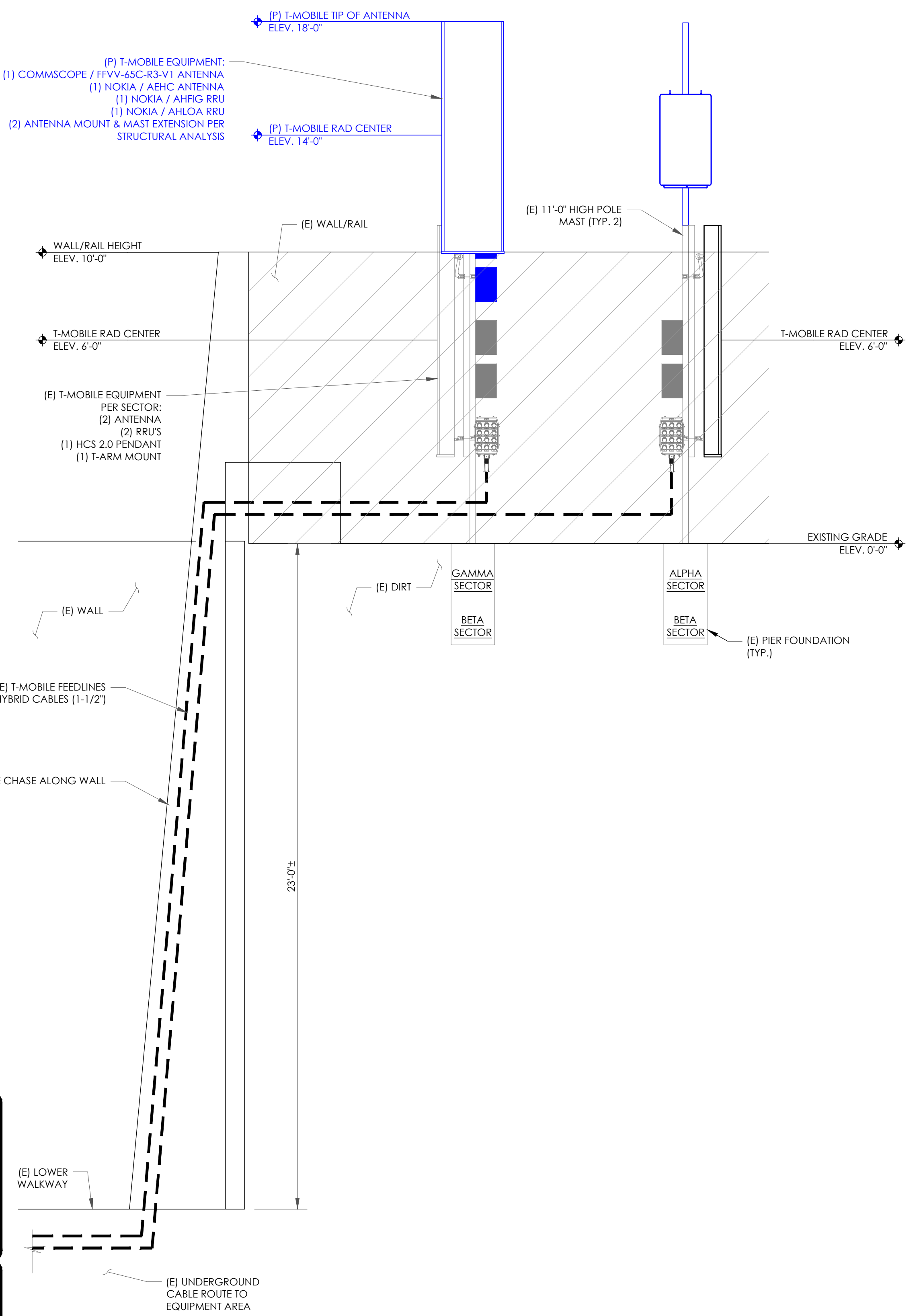
PM&A JOB #:
22CCTT7M-219

SHEET NUMBER: **C-1.2** REVISION: **3**

TOWER ELEVATION DISCLAIMER:
 ANTENNA PLAN HAVE BEEN DIGITIZED FROM PREVIOUS APP 558144 OR FROM CCISITES. PM&A HAS NOT COMPLETED A TOWER ELEVATION AND THEREFORE MAKES NO CLAIMS AS TO THE ACCURACY OF INFORMATION AND SPACING BETWEEN ANTENNAS/RADIOS DEPICTED ON THIS SHEET.



1 EXISTING TOWER SOUTH ELEVATION
 SCALE: 3/8"=1'-0" (FULL SIZE)
 3/16"=1'-0" (11x17)



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

MOUNT ANALYSIS NOTES:

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

"LOOK UP" - CROWN CASTLE USA INC. SAFETY CLIMB REQUIREMENTS:

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.



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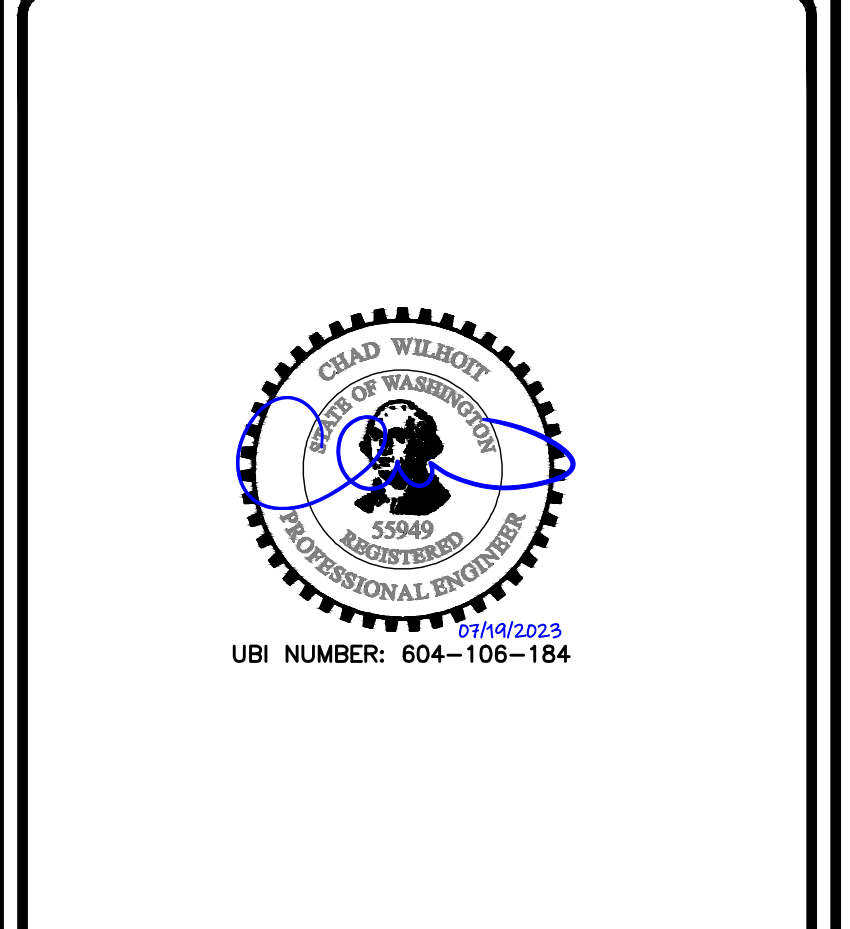
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PM&A JOB #:
22CCTT7M-219

SHEET NUMBER: **C-2** REVISION: **3**

MOUNT ANALYSIS NOTES:

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TOWER LOADING SUMMARY				
STATUS	CABLE TYPE	SIZE	LENGTH	QUANTITY
-	-	-	-	-
-	-	-	-	-
EXISTING	HCS 2.0 TRUNK	1-1/2"	225'-0"	2
-	-	-	-	-
FINAL CABLE QUANTITY:				2

EXISTING ANTENNA SCHEDULE								
SECTOR	POS.	TECHNOLOGY	RAD CENTER	AZIMUTH	ANTENNA MANUFACTURER	ANTENNA MODEL	TOWER MOUNTED EQUIPMENT	FEEDLINE TYPE
ALPHA	A1	L700/L600/N600/L2100/L1900G1900/N2100/N1900/U2100	5'-0"	40°	COMMSCOPE	FFVV-65C-R3-V1	-	SHARED HCS 2.0 TRUNK
ALPHA	A2	L2500/N2500	5'-0"	40°	NOKIA	AEHC	(1) AHL0A / (1) AHFIG HCS 2.0 J-BOX W/ BREAKOUT PENDANT	HCS 2.0 TRUNK
BETA	B1	L700/L600/N600/L2100/L1900G1900/N2100/N1900/U2100	6'-0"	290°	COMMSCOPE	FFVV-65C-R3-V1	-	SHARED HCS 2.0 TRUNK
BETA	B2	L2500/N2500	6'-0"	290°	NOKIA	AEHC	(1) AHL0A / (1) AHFIG HCS 2.0 J-BOX W/ BREAKOUT PENDANT	HCS 2.0 TRUNK

PROPOSED ANTENNA SCHEDULE								
SECTOR	POS.	TECHNOLOGY	RAD CENTER	AZIMUTH	ANTENNA MANUFACTURER	ANTENNA MODEL	TOWER MOUNTED EQUIPMENT	FEEDLINE TYPE
ALPHA	A1	L700/L600/N600/L2100/L1900G1900/N2100/N1900/U2100	6'-0"	40°	COMMSCOPE	FFVV-65C-R3-V1	(1) AHL0A / (1) AHFIG HCS 2.0 J-BOX W/ BREAKOUT PENDANT	HCS 2.0 TRUNK
ALPHA	A2	L2500/N2500	6'-0"	40°	NOKIA	AEHC	-	SHARED HCS 2.0 TRUNK
BETA	B1	L700/L600/N600/L2100/L1900G1900/N2100/N1900/U2100	14'-0"	230°	COMMSCOPE	FFVV-65C-R3-V1	(1) AHL0A / (1) AHFIG	SHARED HCS 2.0 TRUNK
BETA	B2	L2500/N2500	14'-0"	230°	NOKIA	AEHC	-	SHARED HCS 2.0 TRUNK
GAMMA	C1	L700/L600/N600/L2100/L1900G1900/N2100/N1900/U2100	6'-0"	300°	COMMSCOPE	FFVV-65C-R3-V1	(1) AHL0A / (1) AHFIG HCS 2.0 J-BOX W/ BREAKOUT PENDANT	HCS 2.0 TRUNK
GAMMA	C2	L2500/N2500	6'-0"	300°	NOKIA	AEHC	-	SHARED HCS 2.0 TRUNK

1 ANTENNA AND CABLE SCHEDULE
SCALE: NOT TO SCALE



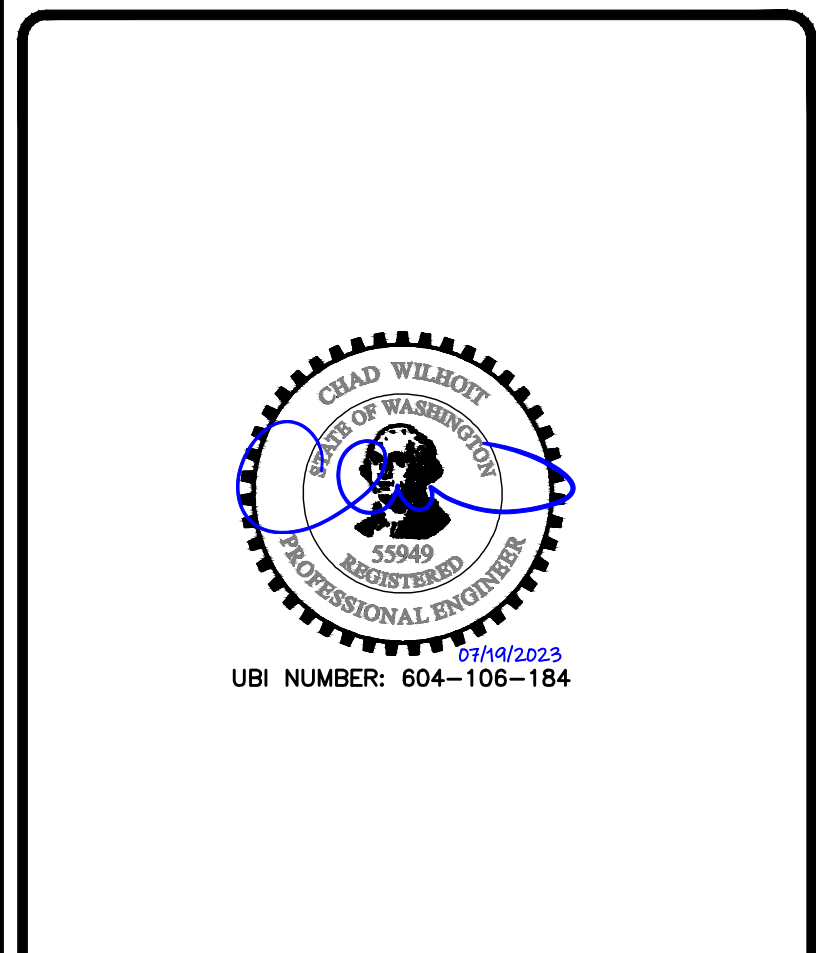
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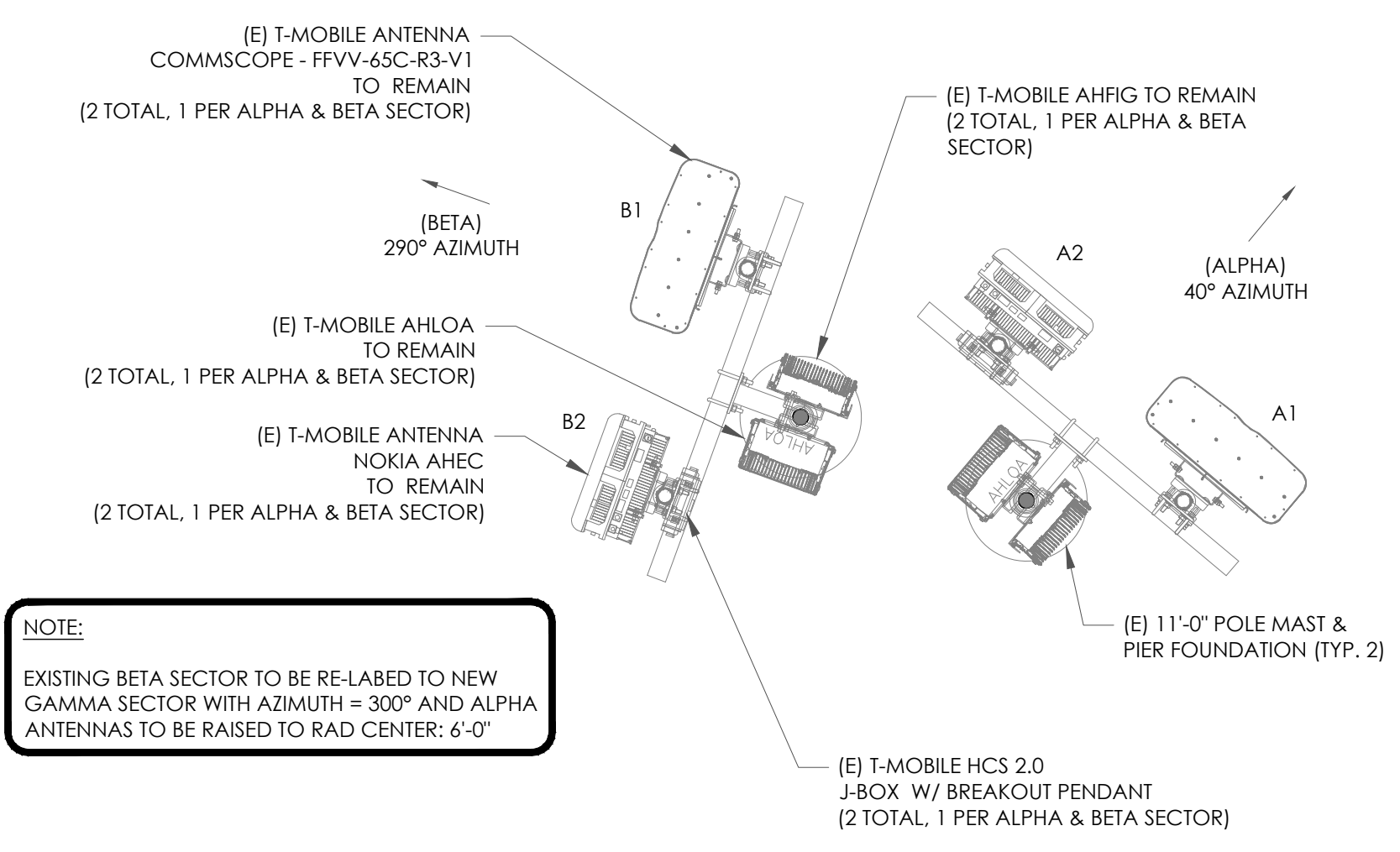
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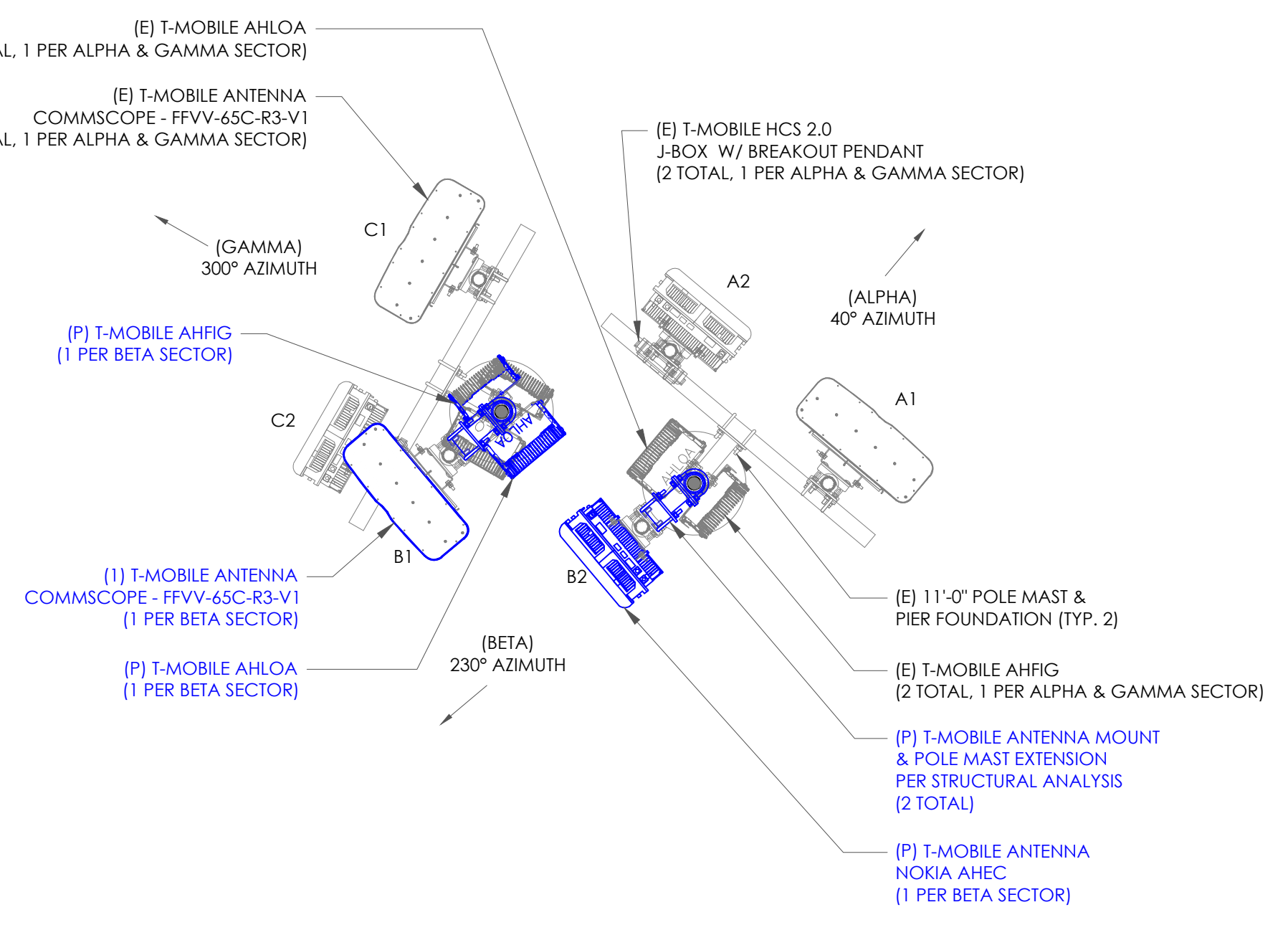
SHEET NUMBER: **C-3** REVISION: **3**



NOTE:
EXISTING BETA SECTOR TO BE RE-LABELLED TO NEW GAMMA SECTOR WITH AZIMUTH = 300° AND ALPHA ANTENNAS TO BE RAISED TO RAD CENTER: 6'-0"

2 EXISTING ANTENNA PLAN
SCALE: 1/2"=1'-0" (FULL SIZE)
1/4"=1'-0" (11x17)

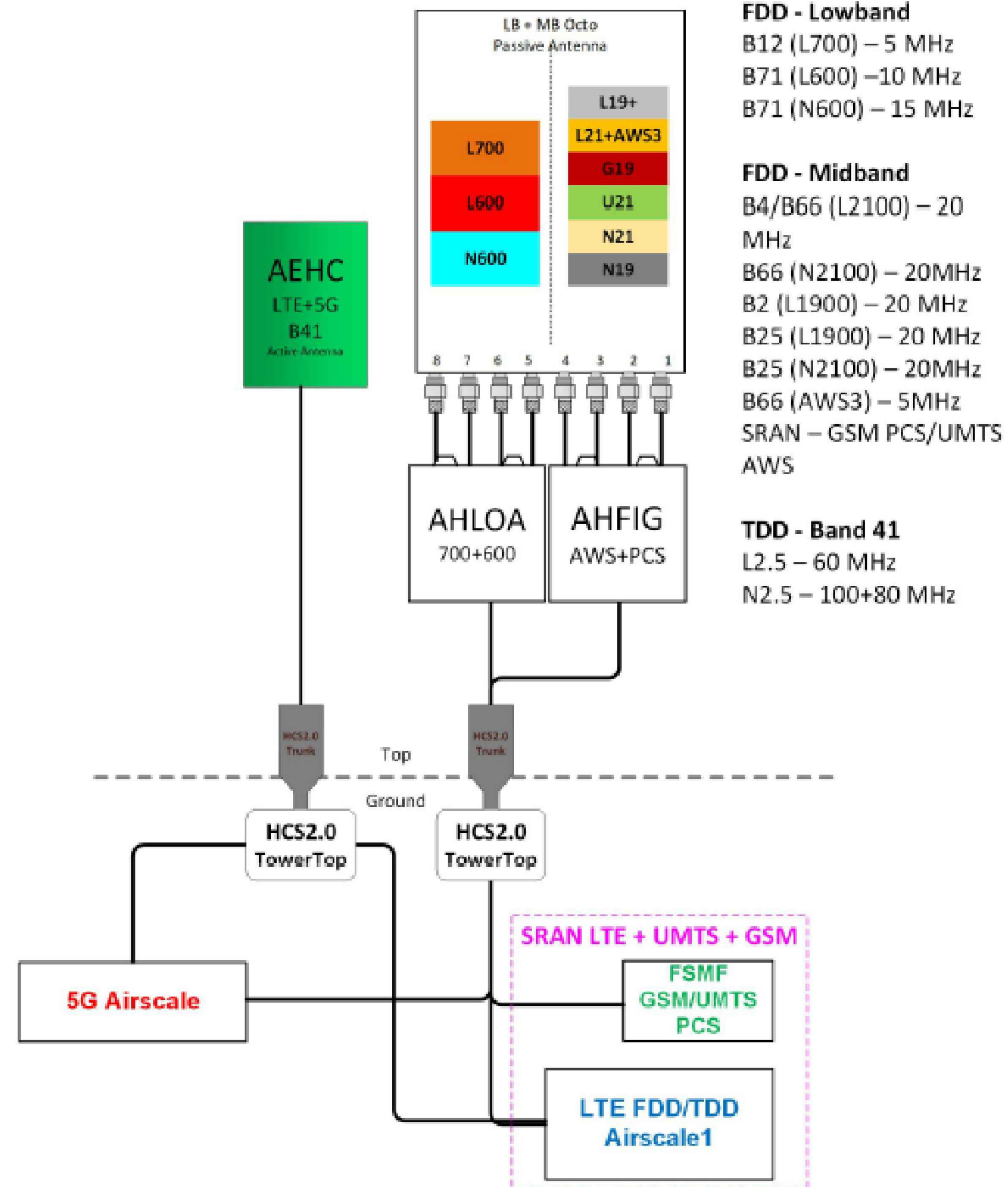
ANTENNA PLAN DISCLAIMER:
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3 FINAL ANTENNA PLAN
SCALE: 1/2"=1'-0" (FULL SIZE)
1/4"=1'-0" (11x17)

Configuration 56791EZ_SR_U21

* For 5G and LTE Airscale BB dimensioning refer to Fiber Port matrices.
(Alpha, Beta & Gamma)



FDD - Lowband
B12 (L700) – 5 MHz
B71 (L600) – 10 MHz
B71 (N600) – 15 MHz

FDD - Midband
B4/B66 (L2100) – 20 MHz
B66 (N2100) – 20MHz
B2 (L1900) – 20 MHz
B25 (L1900) – 20 MHz
B25 (N2100) – 20MHz
B66 (AWS3) – 5MHz
SRAN – GSM PCS/UMTS
AWS

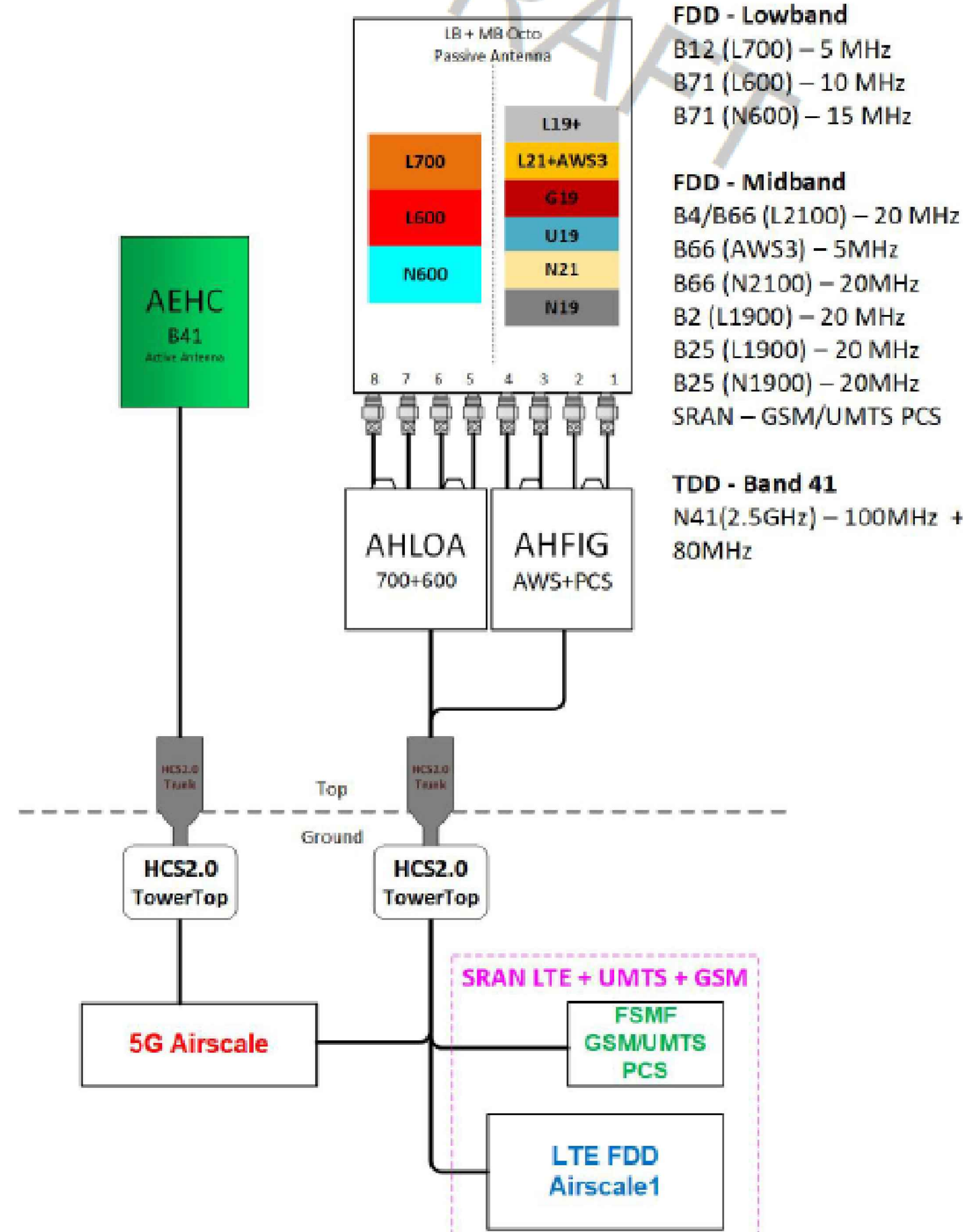
TDD - Band 41
L2.5 – 60 MHz
N2.5 – 100+80 MHz

Notes:

1 EXISTING PLUMBING DIAGRAM
SCALE: NOT TO SCALE

Configuration 56791EZ_SR

* For 5G and LTE Airscale BB dimensioning refer to Fiber Port matrices.
(Alpha, Beta & Gamma)



FDD - Lowband
B12 (L700) – 5 MHz
B71 (L600) – 10 MHz
B71 (N600) – 15 MHz

FDD - Midband
B4/B66 (L2100) – 20 MHz
B66 (AWS3) – 5MHz
B66 (N2100) – 20MHz
B2 (L1900) – 20 MHz
B25 (L1900) – 20 MHz
B25 (N1900) – 20MHz
SRAN – GSM/UMTS PCS

TDD - Band 41
N41(2.5GHz) – 100MHz + 80MHz

Notes:

2 FINAL PLUMBING DIAGRAM
SCALE: NOT TO SCALE



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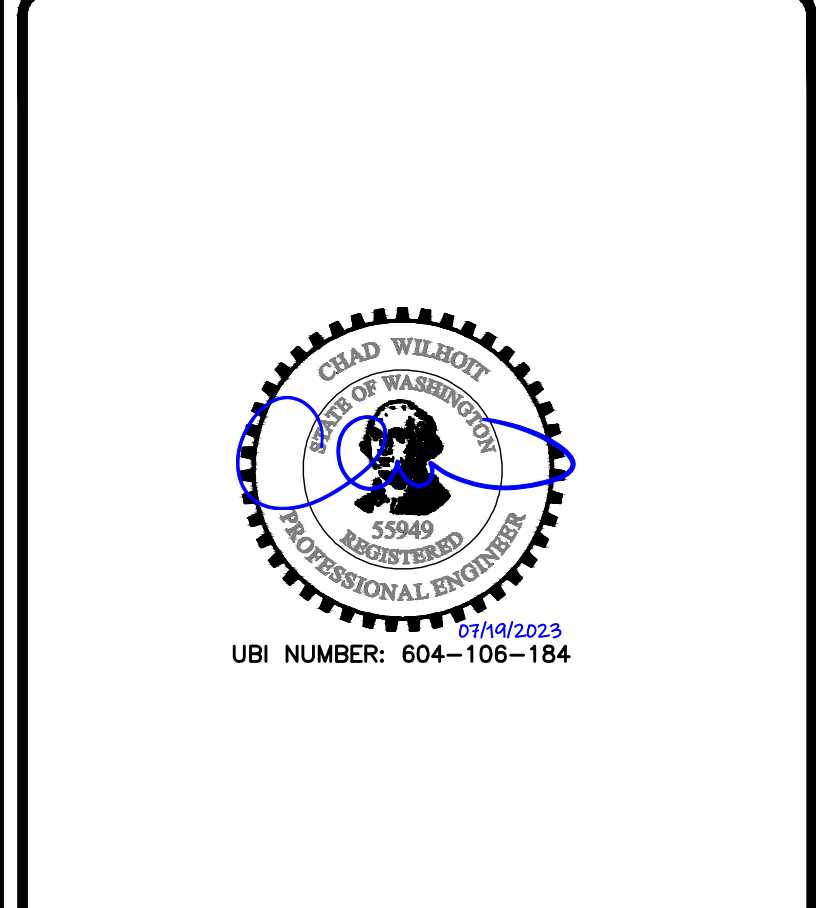
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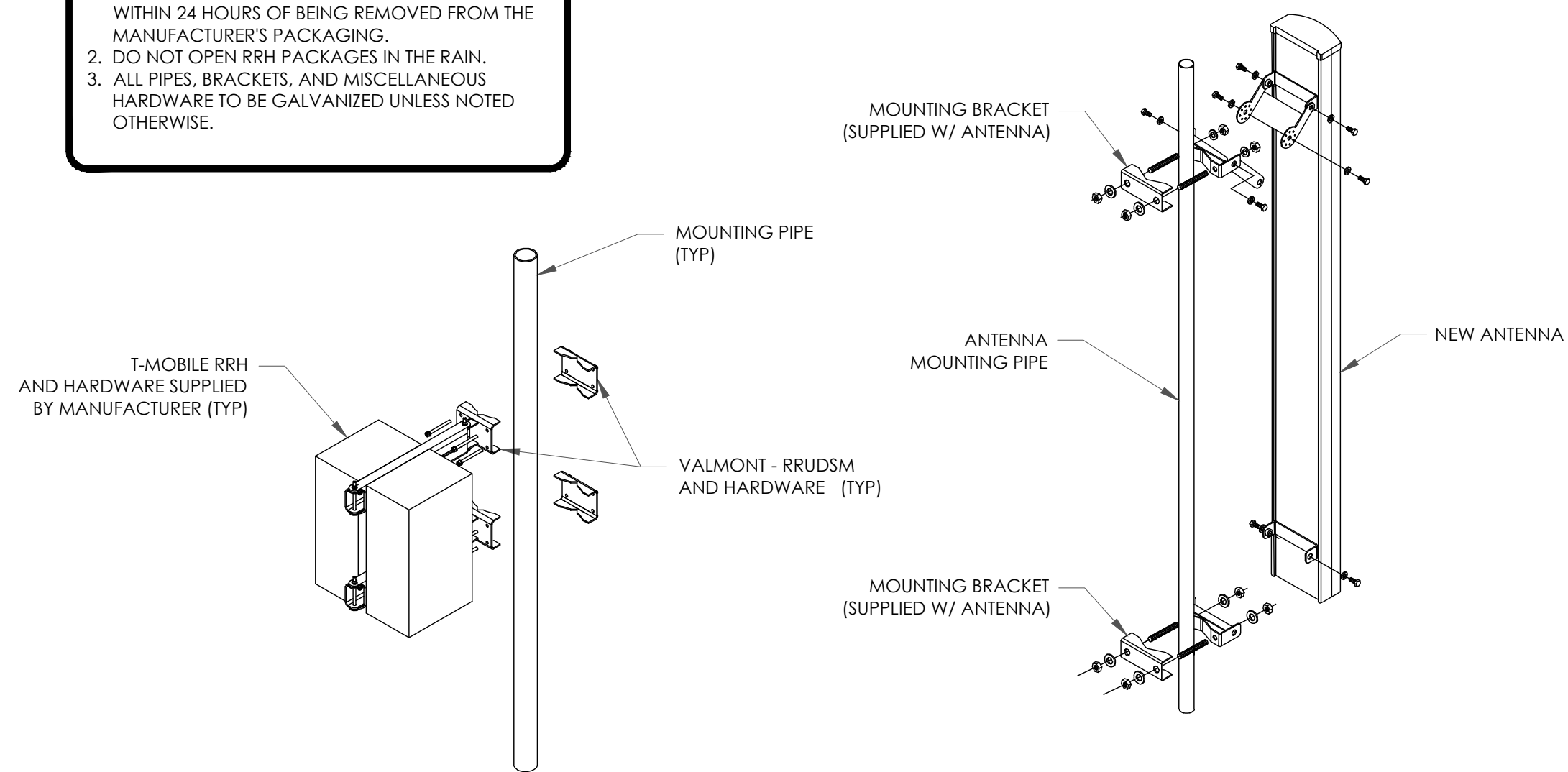
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SHEET NUMBER: **C-4** REVISION: **3**

INSTALLER NOTES:

1. COMPLY WITH MANUFACTURER'S INSTRUCTIONS TO ENSURE THAT ALL RRHs RECEIVE ELECTRICAL POWER WITHIN 24 HOURS OF BEING REMOVED FROM THE MANUFACTURER'S PACKAGING.
2. DO NOT OPEN RRH PACKAGES IN THE RAIN.
3. ALL PIPES, BRACKETS, AND MISCELLANEOUS HARDWARE TO BE GALVANIZED UNLESS NOTED OTHERWISE.



1 ANTENNA WITH RRHs MOUNTING DETAIL
SCALE: NOT TO SCALE

AirScale Dual RRH 4T4R B12/71 240W AHLOA (Draft)

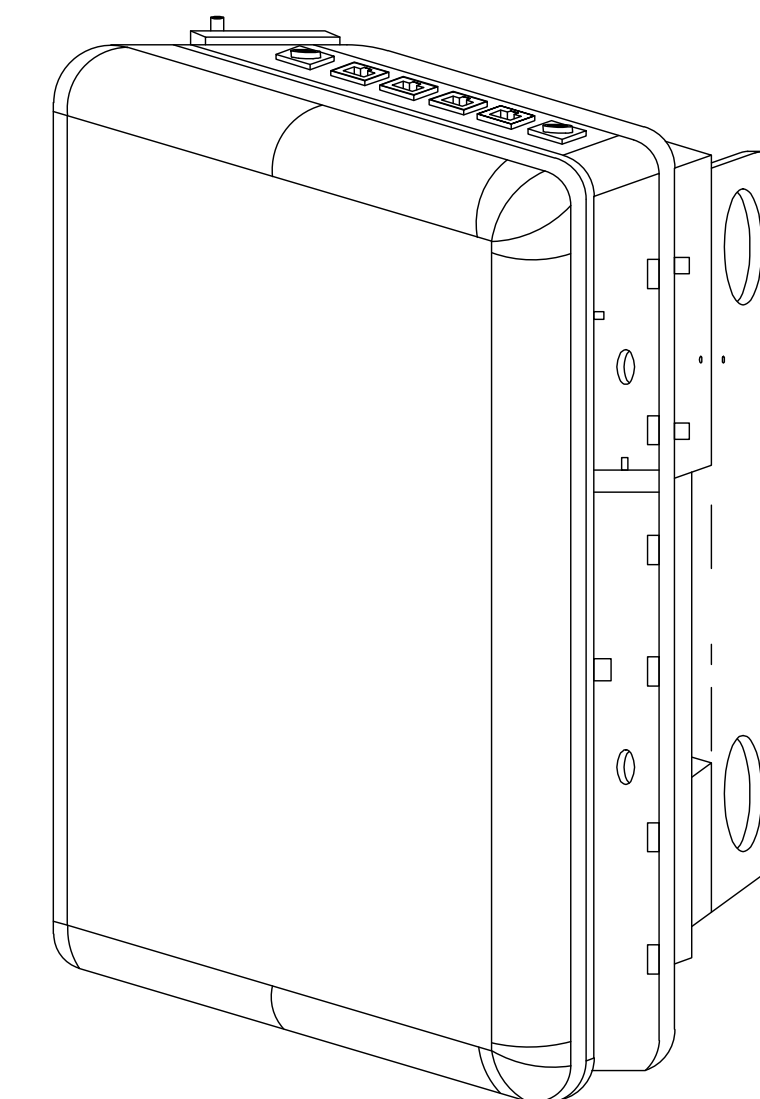


2 © Nokia 2017
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Product Code:	476331A
Supported Frequency Bands	3GPP Band 12/71
Frequencies	Band 12 adjusted: Rx 698 – 715 MHz, TX 728 – 745 MHz Band 71: Rx 663 MHz – 698 MHz, TX 617 MHz – 652 MHz
Number of TX/RX paths/pipes	4 pipes; 2T2R, 2T4R, 4T4R for both bands
Instantaneous Bandwidth (IBW)	16 MHz for B12 and 35MHz for B71 1 MHz below B12 NB IoT future use
Occupied Bandwidth (OBW)	52 MHz total across bands
Output Power	60W per TX shared between bands
Supply Voltage / Range	DC-48 V / -36 V to -60 V
Typical Power Consumption	654W [ETSI Busy Hour Load at 4TX@60W [Both Bands Active]] 399W [ETSI Busy Hour Load at 4TX@90W [One Band Active]]
Antenna Ports	4 ports, 4.3-10+
Optical Ports	2 x CPRI 9.8 Gbps
ALD Control Interfaces	ASGS.0 from ANT1, 2, 3, 4 and RET (DC on ANT1 & ANT3)
Other Interfaces	External Alarm MDR-26 Serial connector (4 inputs, 1 Output) DC Circular Power Connector
Physical	560 mm x 308 mm x 189 mm Approximately 38kg with no covers or brackets
Operating Temperature Range	-40°C to 55°C (with no solar load)
Surge Protection	Class II 5A
Installation Options	Vertical & Horizontal Pole Mount, Pole & Wall Mount

NOKIA - AHLOA
WEIGHT (WITHOUT MOUNTING HARDWARE): 83.77 LBS
SIZE (HxWxD): 22.04x12.12x7.44 IN.

2 NOKIA - AHLOA
SCALE: NOT TO SCALE



NOKIA AEHC
WEIGHT (WITHOUT MOUNTING HARDWARE): 99.2 LBS.
SIZE (HxWxD): 35.43x22.83x8.26 IN.

3 NOKIA AEHC DETAIL
SCALE: NOT TO SCALE

T-Mobile

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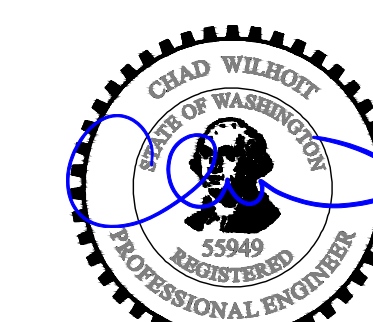
BU #: **823754**
DOT/190 SOUND WALL
MERCER

2250 60TH AVE SE
MERCER ISLAND, WA 98040

EXISTING 11'-0"
MULTI-SECTOR POLE

ISSUED FOR:

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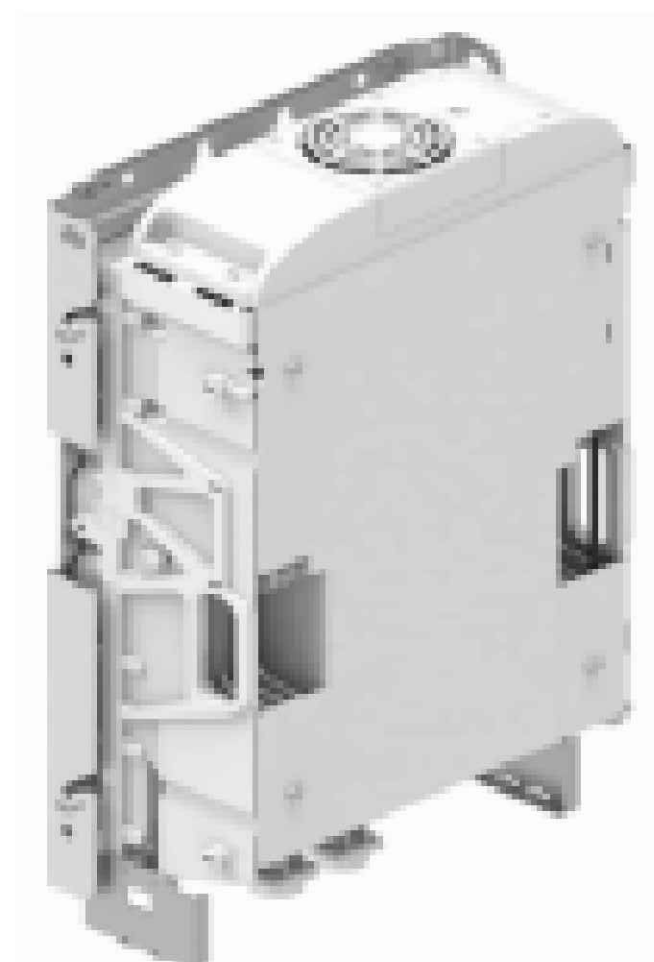


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NOKIA AHFG
WEIGHT (WITHOUT MOUNTING HARDWARE): 79.4 LBS.
SIZE (HxWxD): 27.6x13.4x5.6 IN.

4 AHFG SPECIFICATIONS
SCALE: NOT TO SCALE

FFVW-65C-R3-V1



8-port sector antenna, 4x 617-894 and 4x 1695-2690 MHz, 65°
HPBW, 3x RET

General Specifications

Antenna Type	Sector
Band	Multiband
Color	Light gray
Effective Projective Area (EPA), frontal	0.99 m² 10.656 ft²
Effective Projective Area (EPA), lateral	0.33 m² 3.552 ft²
Grounding Type	RF connector linear conductor and body grounded to reflector and mounting bracket
Performance Note	Outdoor usage
Radome Material	Fiberglass, UV resistant
Radiator Material	Low loss circuit board
Reflector Material	Aluminum
RF Connector Interface	4.3-10 Female
RF Connector Location	Bottom
RF Connector Quantity, high band	4
RF Connector Quantity, low band	4
RF Connector Quantity, total	8

Remote Electrical Tilt (RET) Information, General

RET Interface	8-pin DIN Female 8-pin DIN Male
RET Interface, quantity	1 female 1 male

Dimensions

Width	640 mm 25.197 in
Length	2437 mm 95.945 in

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COMMSCOPE

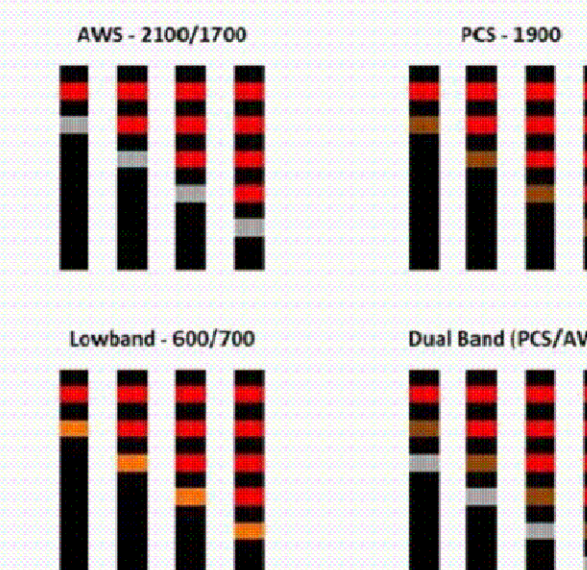
5 COMMSCOPE - FFVW-65C-R3-V1 SPECS
SCALE: NOT TO SCALE

New RF Jumper Color Codes

Frequency Bands & Sectors

Frequency Band Colors	Orange
Lowband - 600/700	Brown
PCS - 1900	Gray
AWS - 2100/1700	
Sector Colors	Red
Alpha	Blue
Beta	Green
Gamma	Yellow
Delta	White
Epsilon	White
Zeta	Purple

Alpha Sector Example



6 RF JUMPER COLOR CODING
SCALE: NOT TO SCALE

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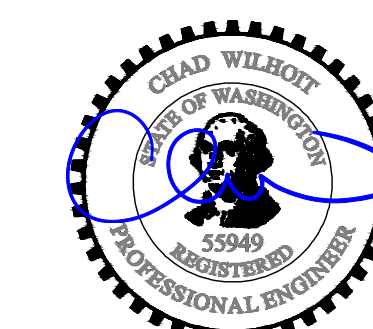
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MERCER

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3	07/17/2023	RB	REVISED FINALS	RAM

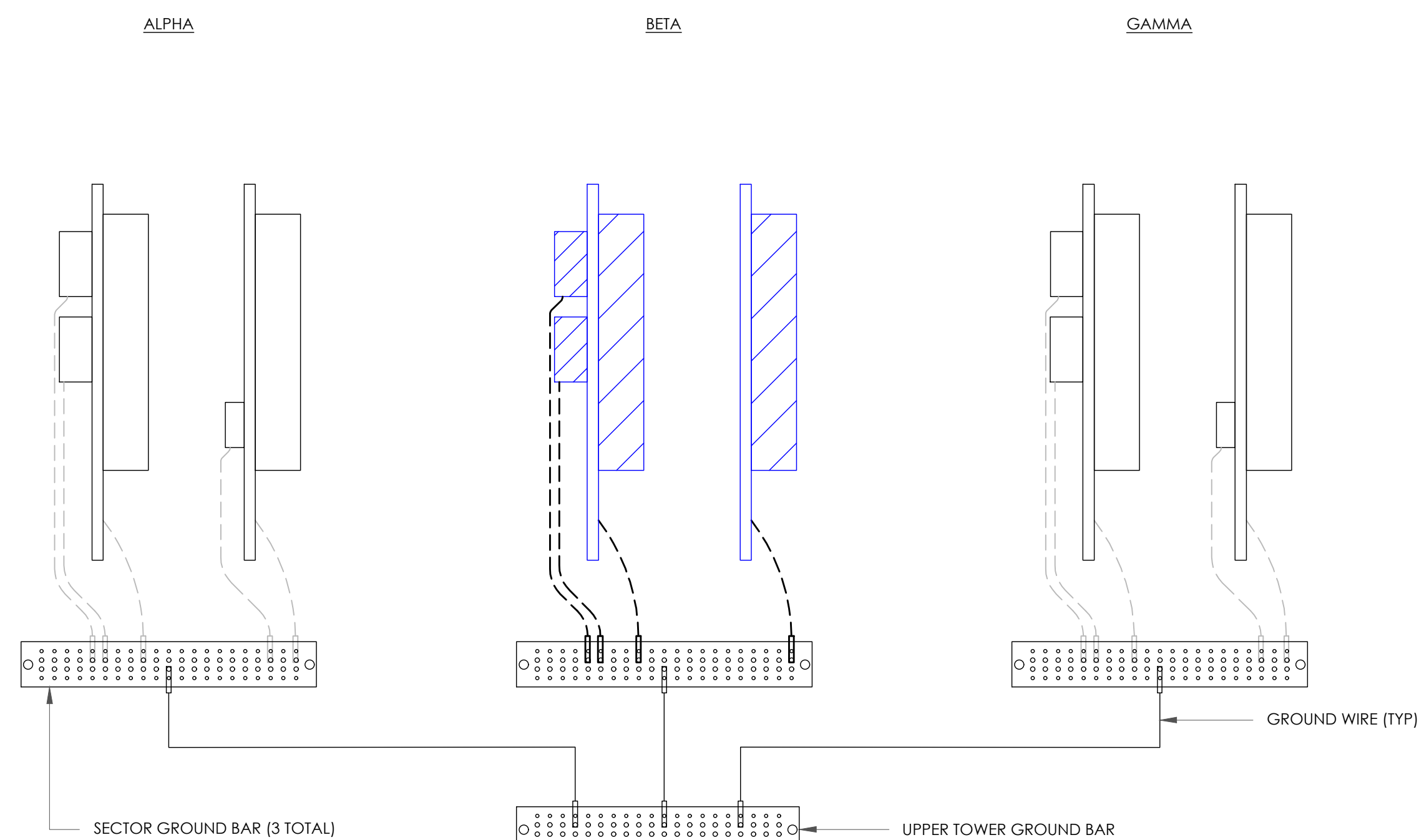


07/19/2023
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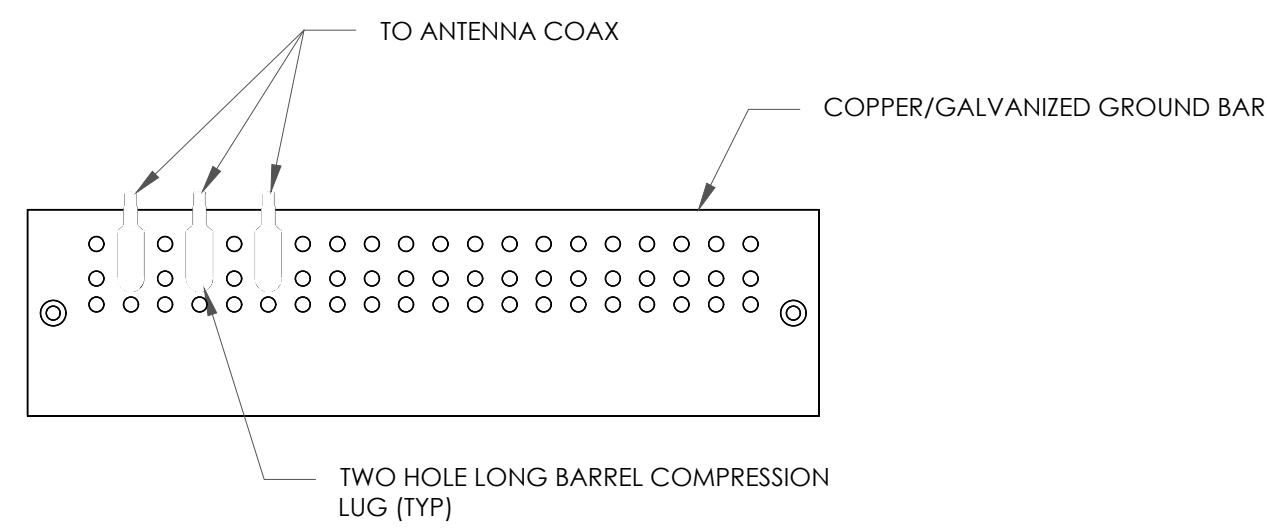
PM&A JOB #:
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SHEET NUMBER: **G-1** REVISION: **3**



NOTE:
ALL NEW GROUNDS TO BE #6 STRANDED
COPPER WITH GREEN INSULATION UNLESS
NOTED OTHERWISE.

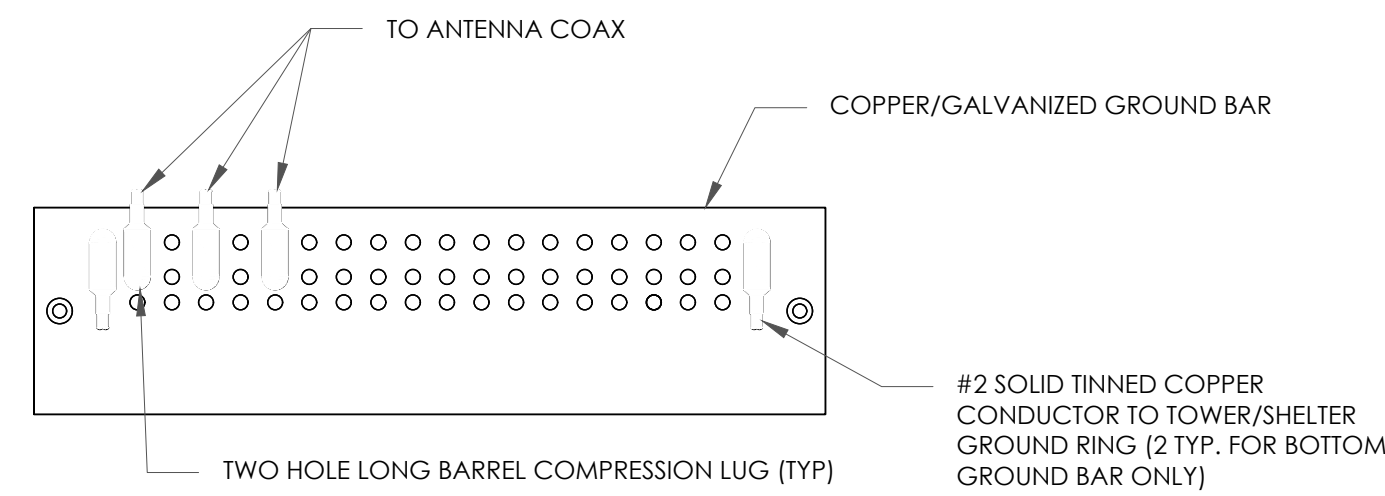
1 ANTENNA GROUNDING DIAGRAM
SCALE: NOT TO SCALE



NOTES:

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

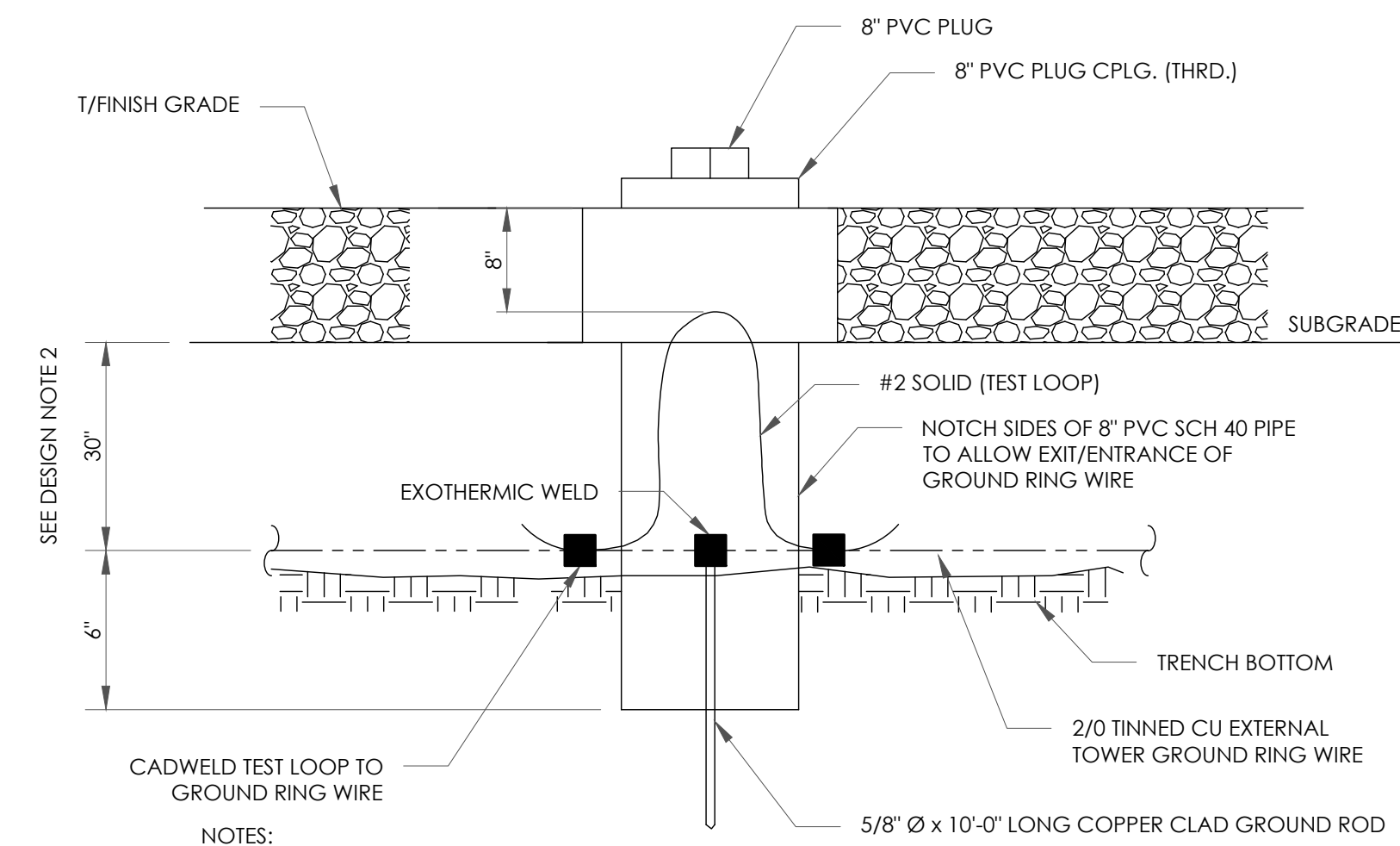
1 ANTENNA SECTOR GROUND BAR DETAIL
SCALE: NOT TO SCALE



NOTES:

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

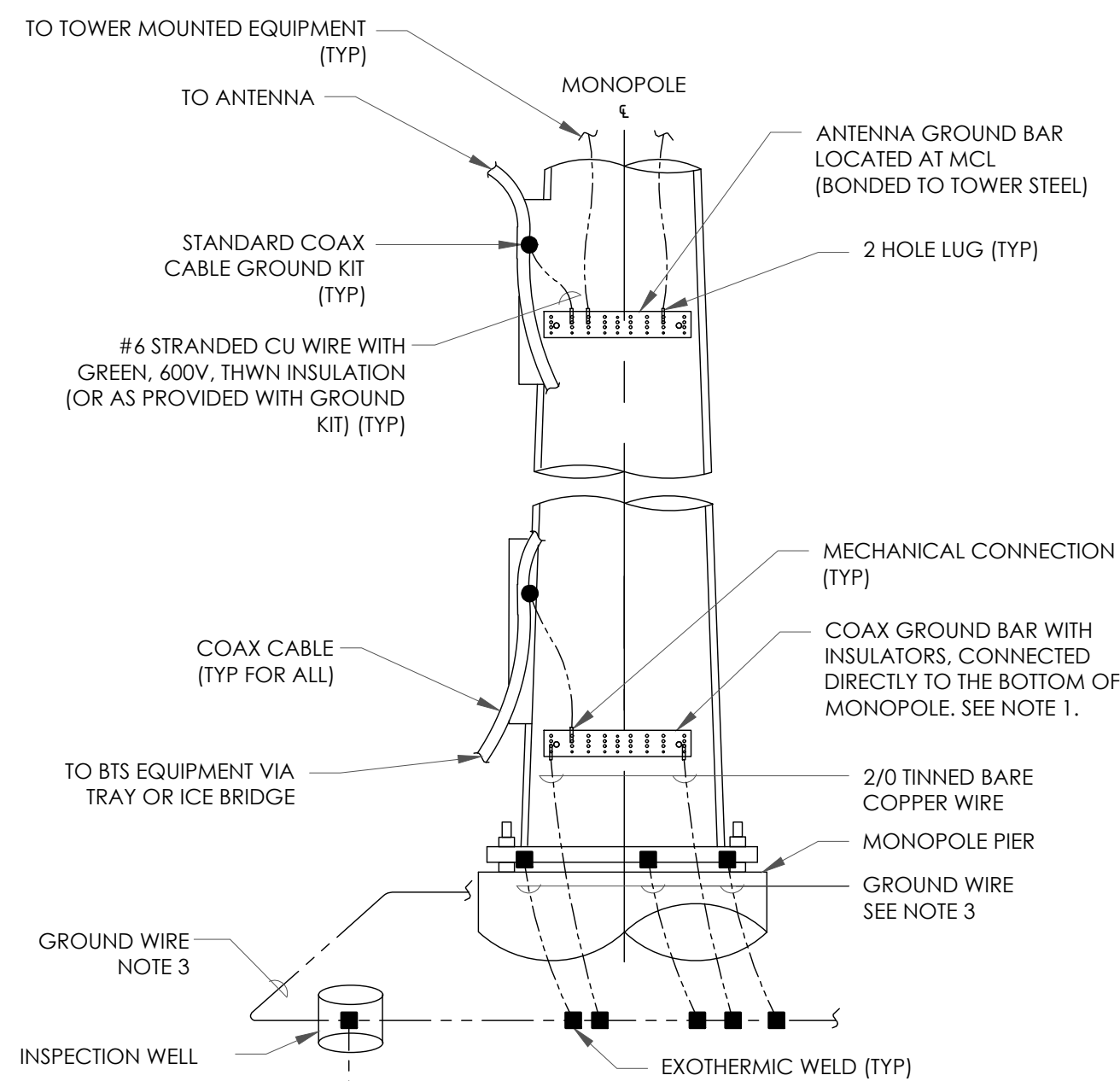
2 TOWER/SHELTER GROUND BAR DETAIL
SCALE: NOT TO SCALE



NOTES:

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

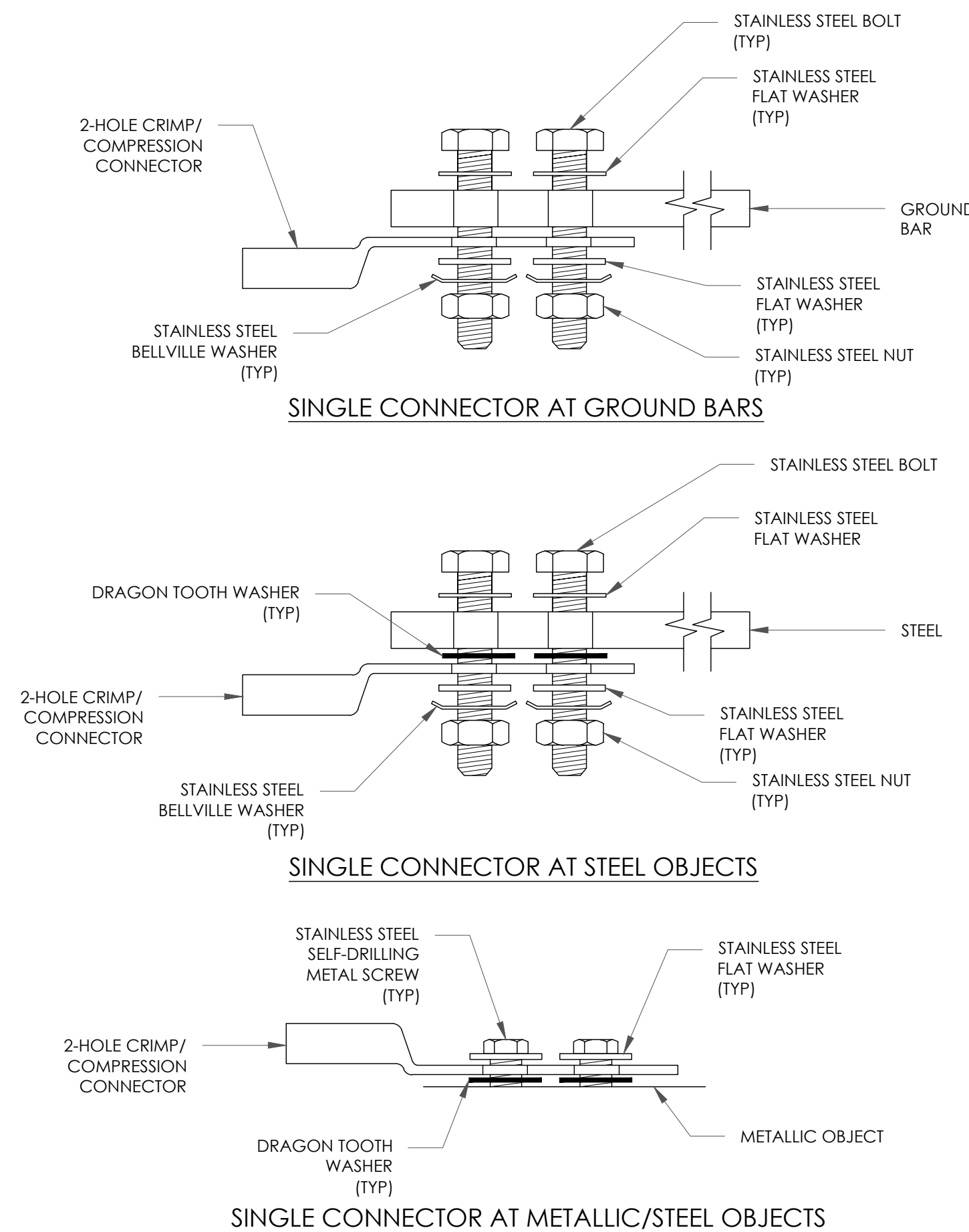
3 INSPECTION WELL DETAIL
SCALE: NOT TO SCALE



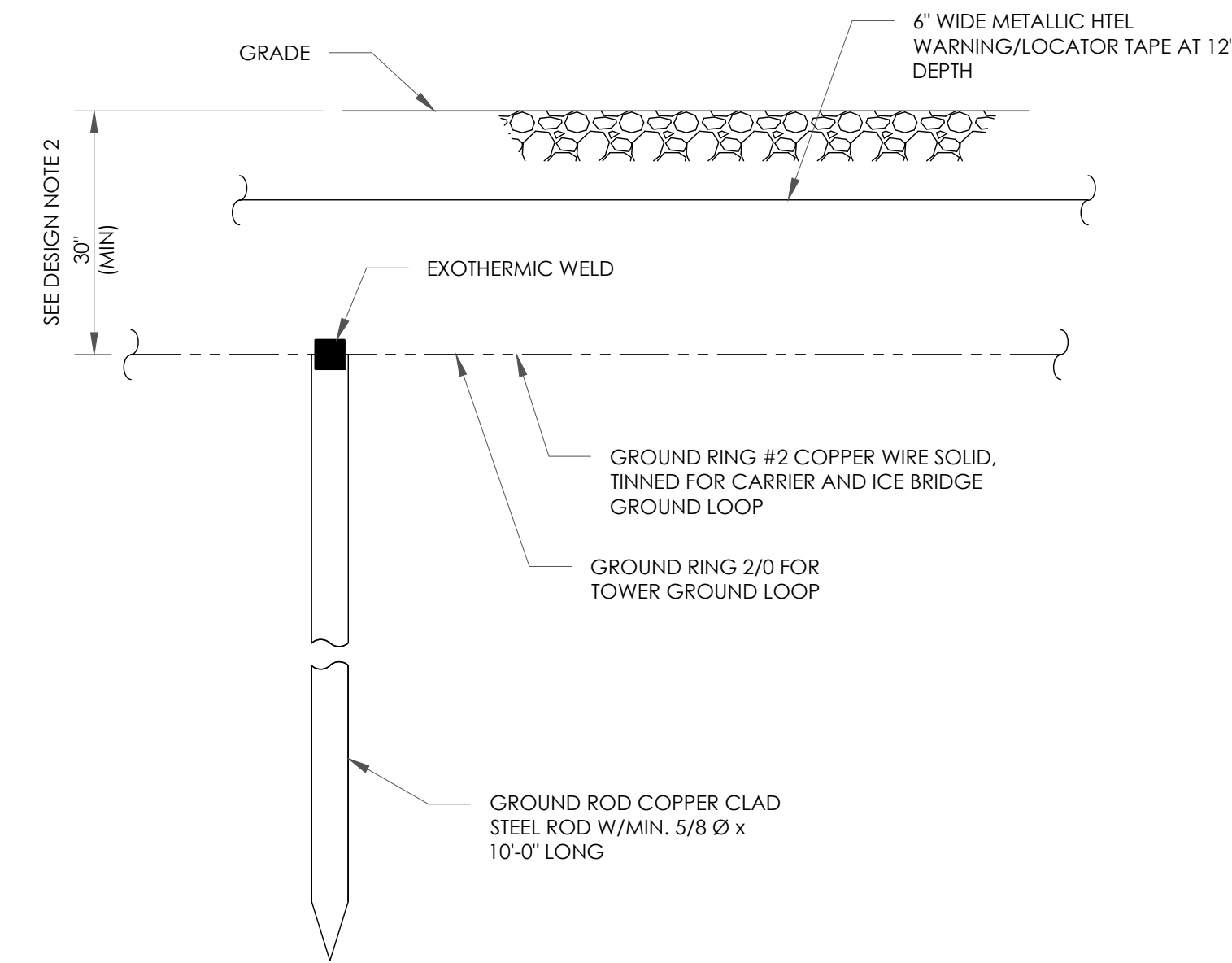
NOTES:

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

4 TYPICAL TOWER GROUNDING
SCALE: NOT TO SCALE



5 HARDWARE DETAIL FOR EXTERIOR CONNECTIONS
SCALE: NOT TO SCALE



NOTES:

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

6 GROUND ROD DETAIL
SCALE: NOT TO SCALE



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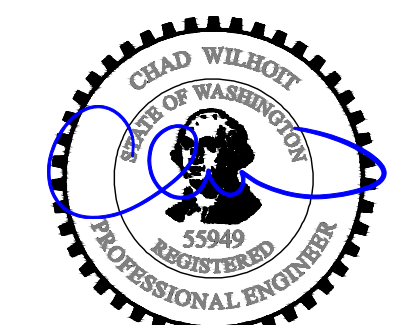
BU #: 823754
**DOT/190 SOUND WALL
MERCER**

2250 60TH AVE SE
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EXISTING 11'-0"
MULTI-SECTOR POLE

ISSUED FOR:

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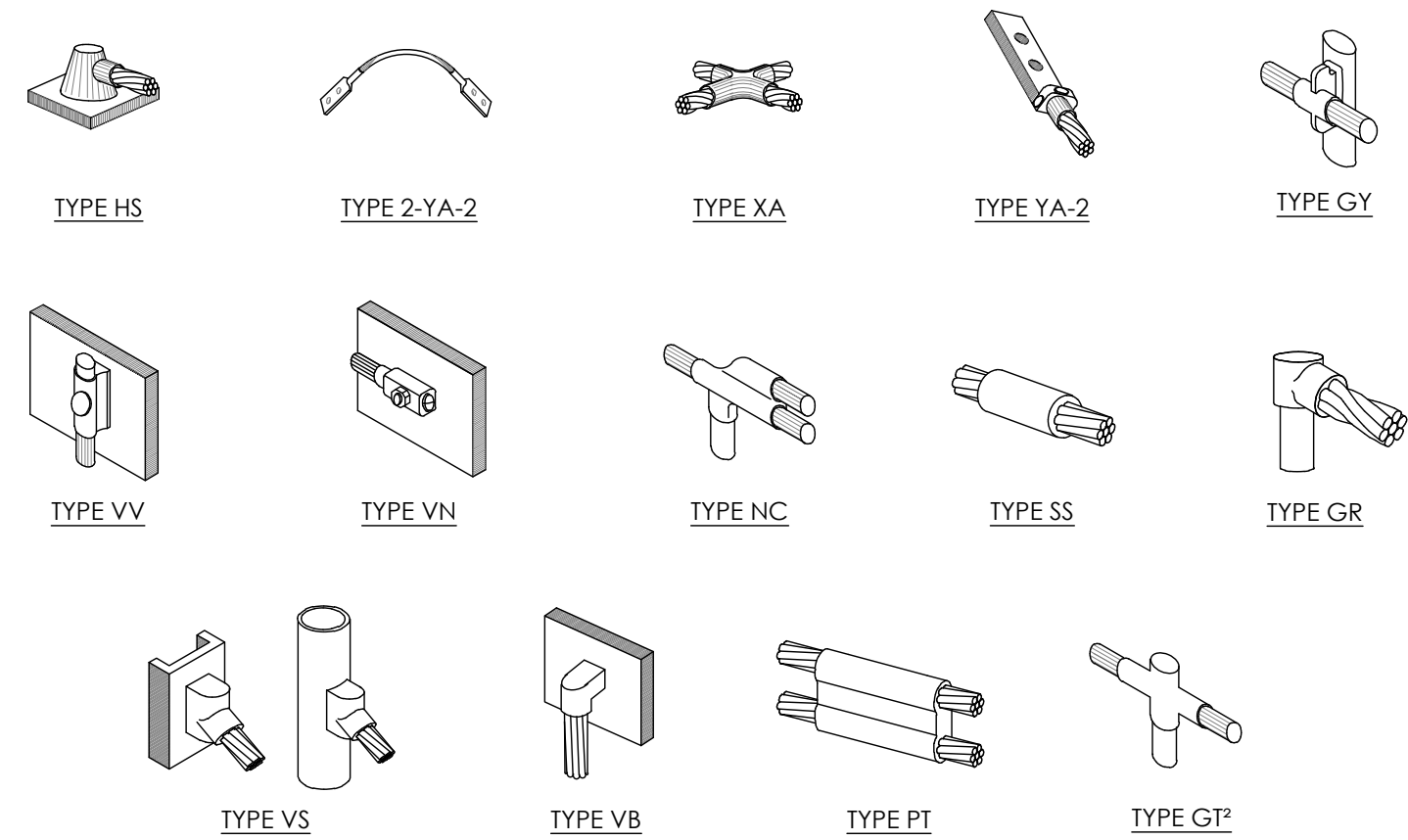
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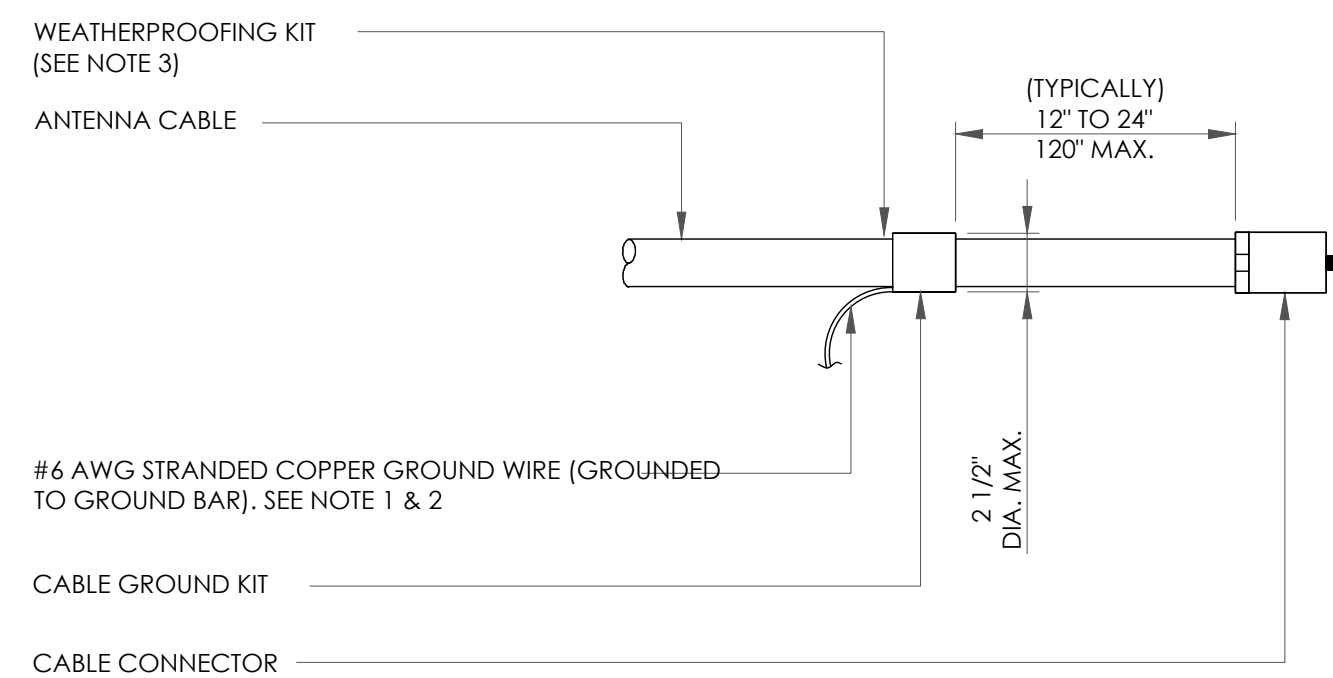
REVISION:

3



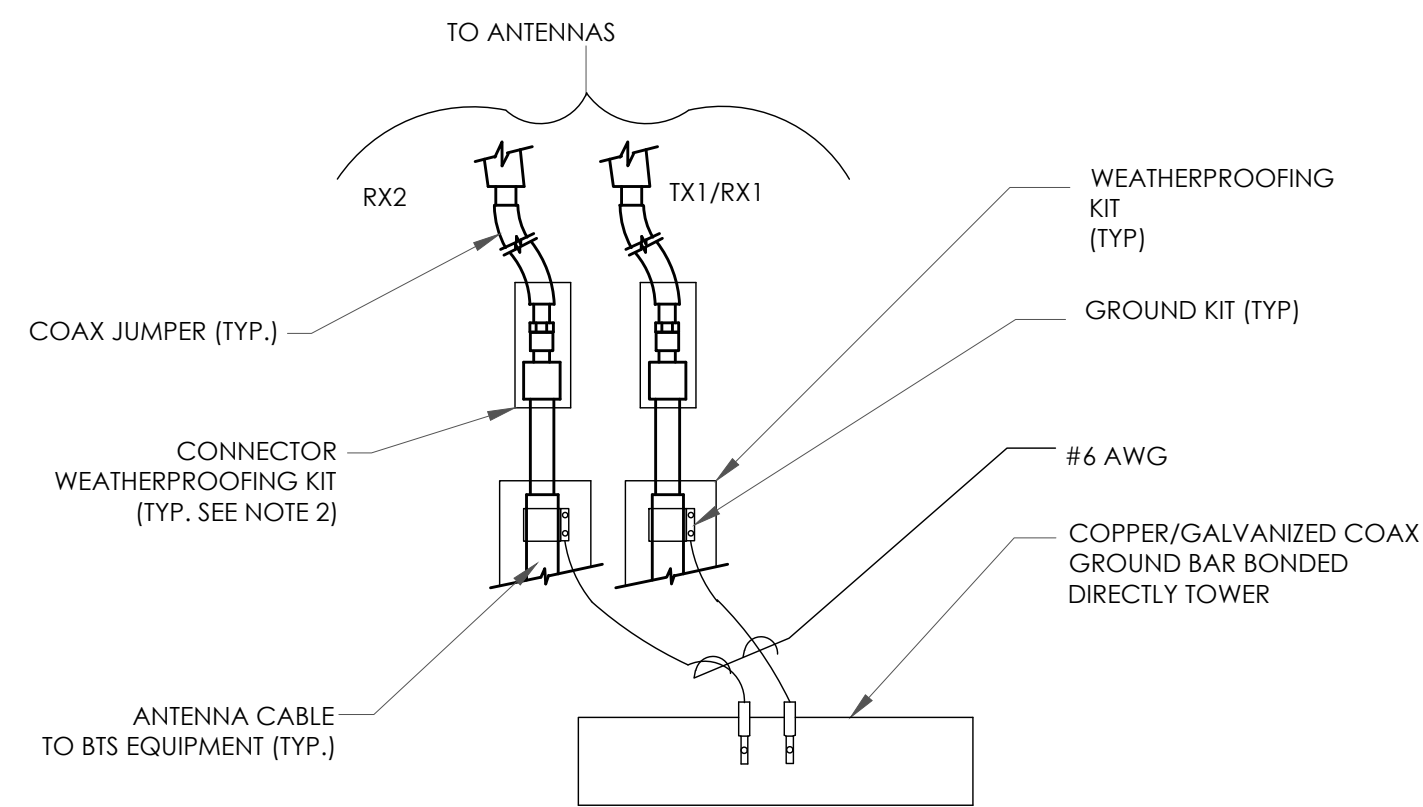
- NOTE:
1. ERICO EXOTHERMIC "MOLD TYPES" SHOWN HERE ARE EXAMPLES. CONSULT WITH CONSTRUCTION MANAGER FOR SPECIFIC MOLDS TO BE USED FOR THIS PROJECT.
 2. MOLD TYPE ONLY TO BE USED BELOW GRADE WHEN CONNECTING GROUND RING TO GROUND ROD.

1 CADWELD GROUNDING CONNECTIONS
SCALE: NOT TO SCALE



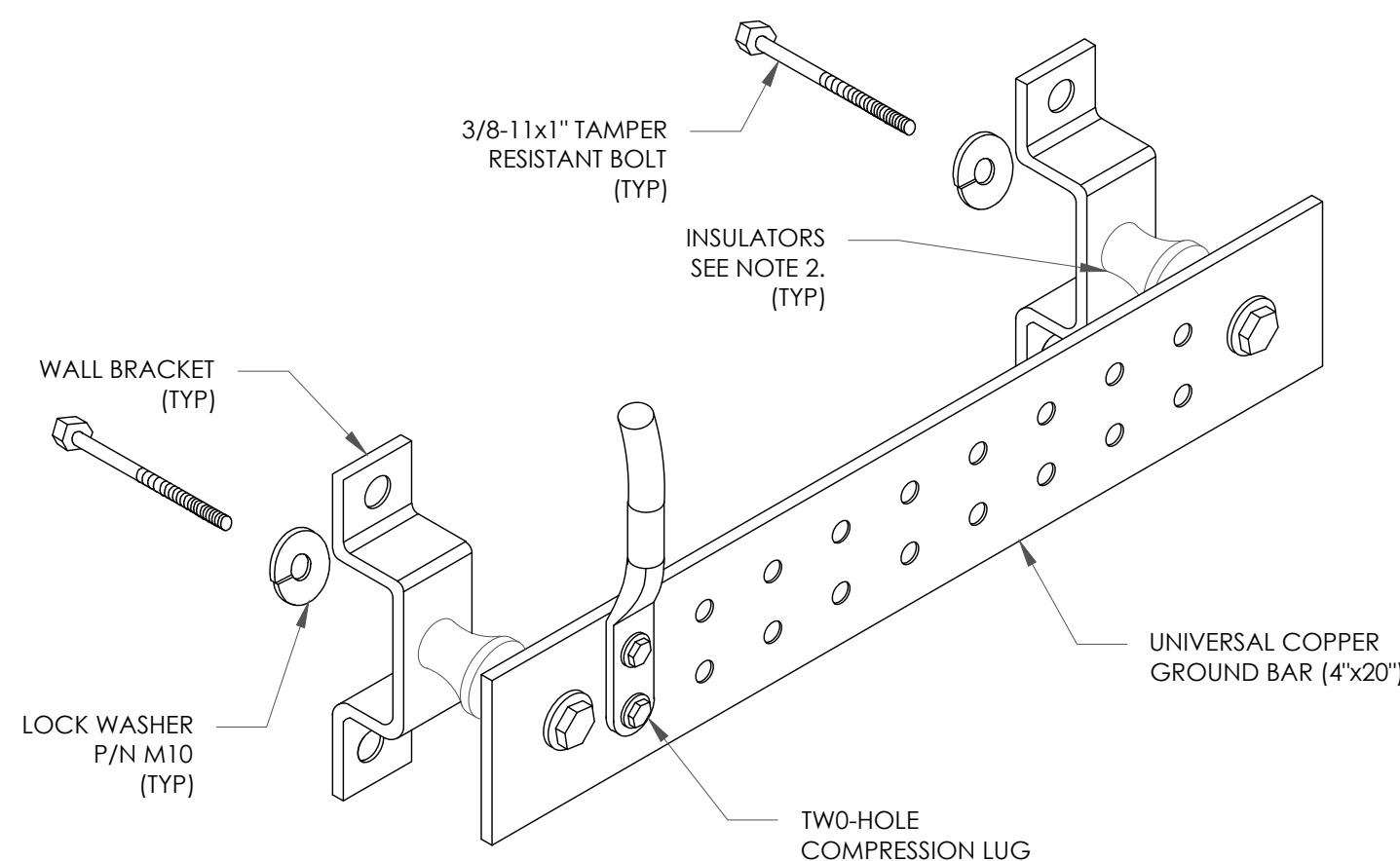
- NOTES:
1. DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO GROUND BAR.
 2. GROUNDING KIT SHALL BE TYPE AND PART NUMBER AS SUPPLIED OR RECOMMENDED BY CABLE MANUFACTURER.
 3. WEATHER PROOFING SHALL BE TWO-PART TAPE KIT. COLD SHRINK SHALL NOT BE USED.

3 CABLE GROUND KIT CONNECTION
SCALE: NOT TO SCALE



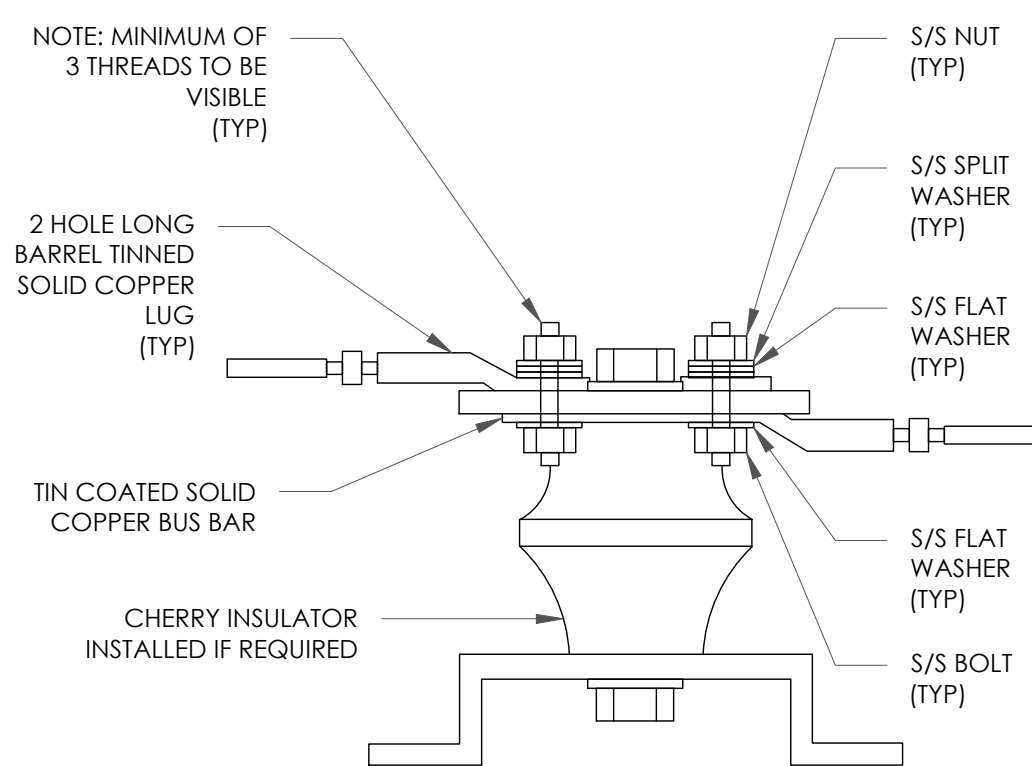
- NOTES:
1. DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO ANTENNA GROUND BAR.
 2. WEATHER PROOFING SHALL BE TWO-PART TAPE KIT. COLD SHRINK SHALL NOT BE USED.

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-STD-10091. NO MODIFICATION OR DRILLING TO TOWER STEEL IS ALLOWED IN ANY FORM OR FASHION. CAD-WELDING ON THE TOWER AND/OR IN THE AIR ARE NOT PERMITTED.
 2. OMIT INSULATOR WHEN MOUNTING TO TOWER STEEL OR PLATFORM STEEL. USE INSULATORS WHEN ATTACHING TO BUILDING OR SHELTERS.

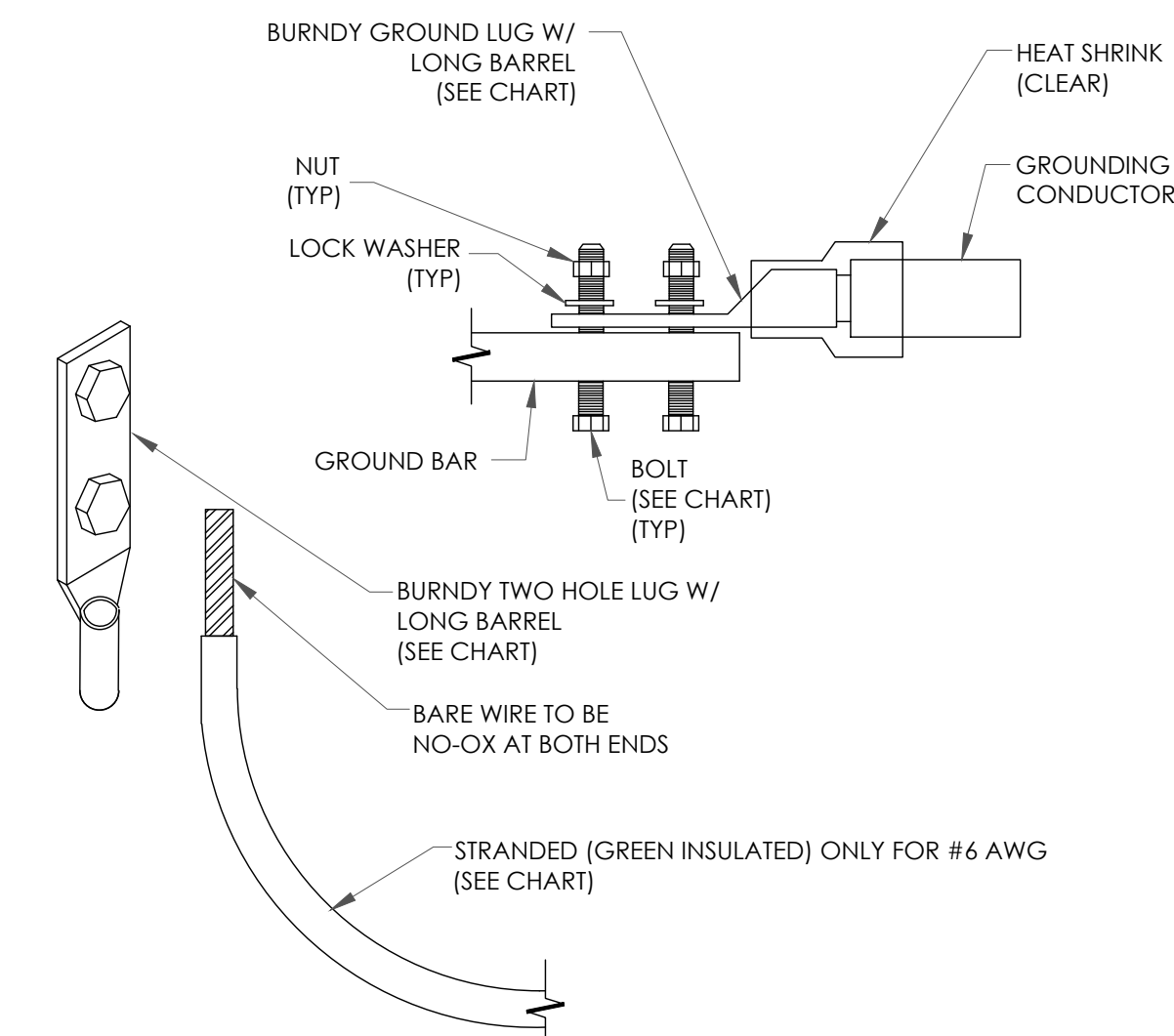
6 GROUND BAR DETAIL
SCALE: NOT TO SCALE



- NOTE: MINIMUM OF 3 THREADS TO BE VISIBLE (TYP)

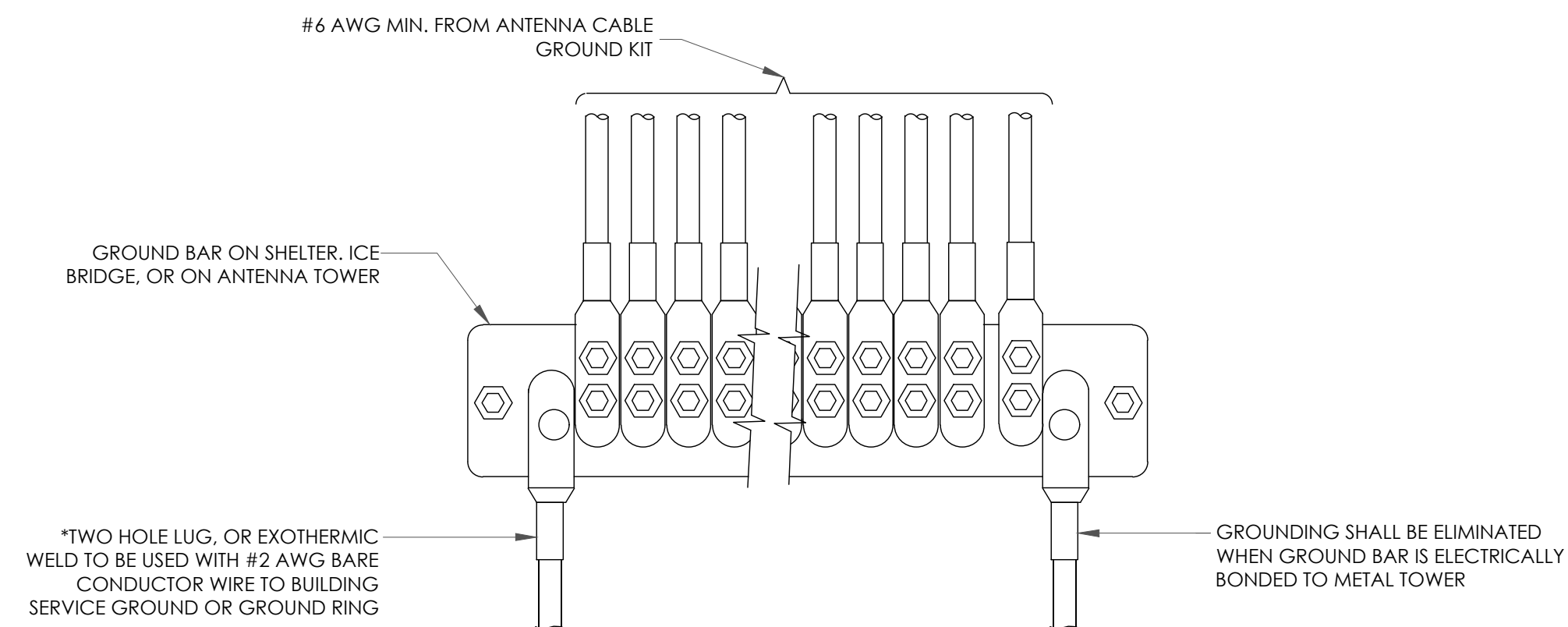
7 LUG DETAIL
SCALE: NOT TO SCALE

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

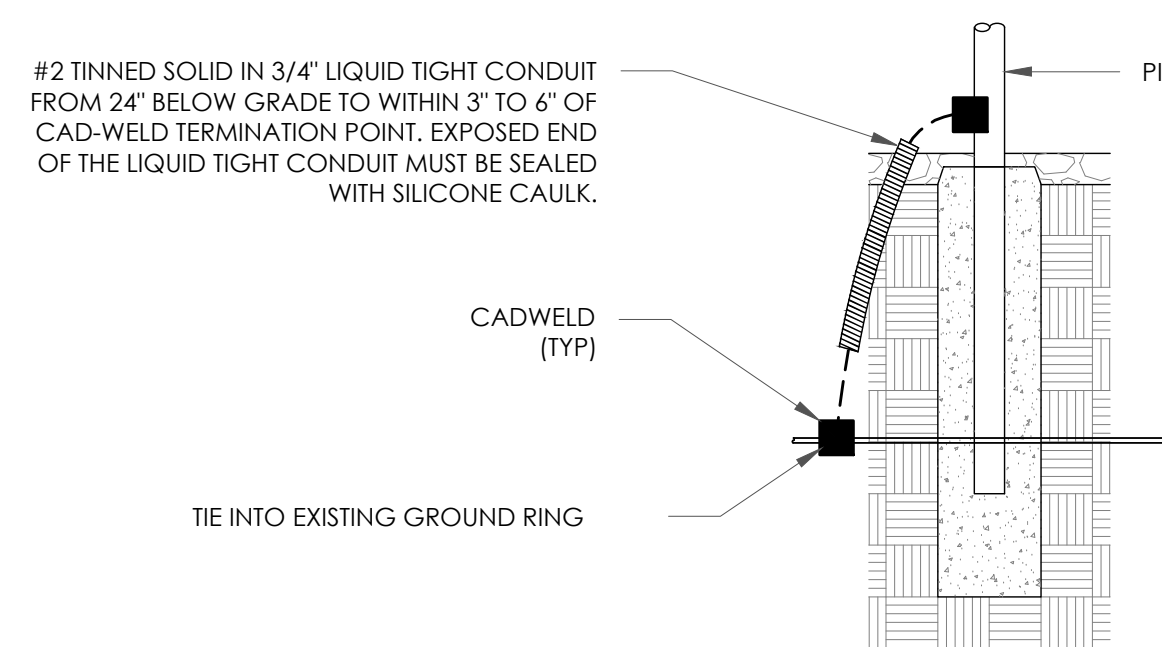


- NOTES:
1. ALL GROUNDING LUGS ARE TO BE INSTALLED PER MANUFACTURER'S SPECIFICATIONS. ALL HARDWARE BOLTS, NUTS, LOCK WASHERS SHALL BE STAINLESS STEEL. ALL HARDWARE ARE TO BE AS FOLLOWS: BOLT, FLAT WASHER, GROUND BAR, GROUND LUG, FLAT WASHER AND NUT.

2 MECHANICAL LUG CONNECTION
SCALE: NOT TO SCALE



5 GROUNDWIRE INSTALLATION
SCALE: NOT TO SCALE



8 TRANSITIONING GROUND DETAIL
SCALE: NOT TO SCALE



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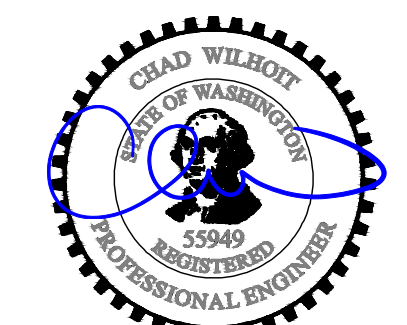
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