

BBU/RRH
HYBRID & COAX CABLES
MW/FIBER EQ.
FIBER
OVP/ELEC. EQ.
POWER/GROUNDING
ACCESS/UTILITY EASEMENT
GEN. CONST./UTILITY EASEMENT
LEASE AREA
EXISTING EASEMENT
ANTENNAS
PENETRATIONS



SITE NAME: **CO1 HAYDEN**
PROJECT SMR - ANTMO ERICSSON RRH
SITE I.D.#: 803
PROJECT #: 20151328528
LOCATION #: 119830
SITE ADDRESS: T6N R87W 6TH P.M.
STEAMBOAT SPRINGS, CO 80487 ADDRESS DOES NOT NAVIGATE TO SITE

VERIZON WIRELESS SERVICES
3131 S. VAUGHN WAY, SUITE 550
AURORA, CO 80014

PROJECT INFORMATION

SITE NAME

CO1 HAYDEN

SITE I.D.

803

T6N R87W 6TH P.M.
STEAMBOAT SPRINGS, CO 80487

CONSULTANT

EXISTING CONDITIONS



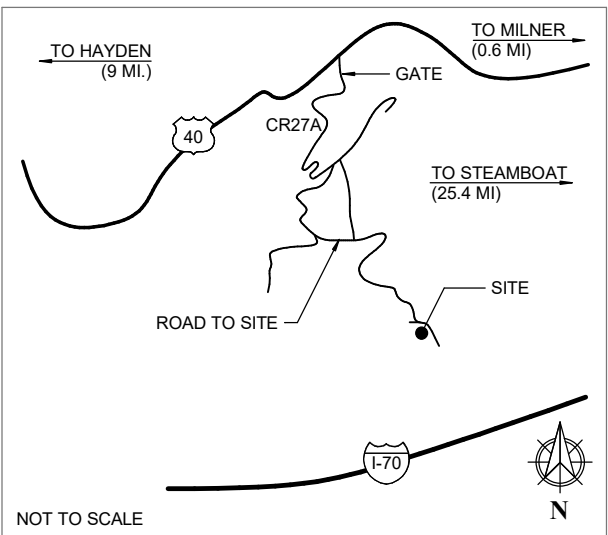
PROJECT DESCRIPTION

- REMOVE (9) ANTENNAS & REPLACE W/ (6) NEW ANTENNAS ON (E) TOWER
- ADD NEW EQUIPMENT @ ANTENNAS AND IN (E) EQUIPMENT SHELTER
- REMOVE & REPLACE ANTENNA ARMS RE: A2.20
- ADD NEW 6X12 HYBRID CABLE
- NEW ITEMS TO COMPLY WITH IFC SECTION 608 RE: G1.10

PROJECT TEAM

OWNER GHOST RANCH, LLC 259 I ST LOS BANOS, CA 93635 PHONE: 209.826.3891	CLIENT VERIZON WIRELESS MIKE HICKEY CONSTRUCTION ENGINEER 3131 S. VAUGHN WAY SUITE 550 AURORA CO. 80014 PHONE: 951.413.9704	SITE ACQUISITIONIST CLOSSER CONSULTING LLC KELLY HARRISON 1917 LOWELL BLVD DENVER, CO 80204 PHONE:303.748.0599	RF ENGINEER VERIZON WIRELESS RAM NANDIRAJU 3131 S. VAUGHN WAY SUITE 550 AURORA, CO 80014 PHONE: 720.467.0443	ARCHITECT CSAI CHARLES STECKLY AIA 5935 S. ZANG STREET SUITE 280 LITTLETON, CO 80127 CELL: 303.210.8972 OFFICE: 303.932.9974
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VICINITY MAP



DIRECTIONS

- FROM DENVER, CO
- I-70 W (50 MI.)
 - RIGHT ON EXIT 205 CO9 (37 MI.)
 - LEFT ON US40 TO STEAMBOAT SPRINGS (68 MI.)
 - LEFT ON CR27A
 - THROUGH SECURED GATE (CODE REQUIRED)
 - OVER BRIDGE
 - PAST GREY STEEL BUILDING
 - RIGHT WHEN ROAD GOES LEFT
 - PAST OLD BUILDING RUINS
 - LEFT AT SECOND ROAD
 - FOLLOW RIDGE TO SITE

PROJECT DATA

JURISDICTION	ROUTT COUNTY
APN	938192001
ZONING DESIGNATION	AG W/ RESIDENCE

EXISTING SHELTER

OCCUPANCY GROUP	S-2
CONSTRUCTION TYPE	VB
FULLY SPRINKLERED	NO
NO. STORIES	1

GOVERNING CODES:
2015 IBC, 2015 IFC, 2015 IMC, 2015 IECC, 2017 NEC

A.D.A. COMPLIANCE
THIS FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION

DRAWING INDEX

SHEET	DESCRIPTION
T1.00	TITLE SHEET
G1.00	GENERAL NOTES
G1.10	BATTERY HAZMAT REVIEW
A1.00	SITE PLAN & HYBRID CABLE DIAGRAM
A2.00	EQUIPMENT SHELTER FLOOR PLAN
A2.10	EQUIPMENT SHELTER RCP
A2.20	ANTENNA PLANS & NOTES
A3.00	SOUTH ELEVATION
A4.00	DETAILS
A5.00	GROUNDING SCHEMATIC

ATTACHMENTS:

STRUCTURAL ANALYSIS
BY: OTEGUI STRUCTURAL SERVICES, LLC
DATED: 01/15/19

A	12/3/18	CD REVIEW	TVT
B	01/03/19	CLIENT COMMENTS	TVT
0	01/15/19	CD ISSUE	TVT

1st REVIEW MKC 2nd REVIEW GOB

CHARLES
STECKLY

ARCHITECTURE

5935 SOUTH ZANG STREET, SUITE 280
LITTLETON, COLORADO 80127
OFFICE: 303.932.9974



TITLE SHEET

T1.00

LEASE AREA

ACCESS/UTILITY EASEMENT

OV/IELEC. EQ.

MW/FIBER EQ.

BBU/RRH

ANTENNAS

EASEMENT

GEN. CONST. UTILITY EASEMENT

POWER/GROUNDING

FIBER

HYBRID & COAX CABLES

PENETRATIONS

ABBREVIATIONS

°@	AT	H.M.	HOLLOW METAL
	CENTERLINE	HORZ.	HORIZONTAL
°	DEGREES	HR.	HOUR
Ø	DIAMETER	HT.	HEIGHT
A/C	AIR CONDITIONER	ILC	INTEGRATED LOAD CENTER
APPROX.	APPROXIMATE	INT.	INTERIOR
ARCH.	ARCHITECTURAL		
A.F.F.	ABOVE FINISH FLOOR	L.F.	LINEAR FEET
A.F.G.	ABOVE FINISH GRADE	LTE	LIMIT TO EXTEND
ALU	ALCATEL LUCENT		
ATS	AUTOMATIC TRANSFER SWITCH	MAX.	MAXIMUM
AWS	ADVANCED WIRELESS SYSTEM	MECH.	MECHANICAL
		MFR.	MANUFACTURER
BBU	BASE BAND UNIT	MGB	MAIN GROUND BAR
BCEM	BASE CHANNEL ELEMENT	MIN.	MINIMUM
	MODULE	MSDS	MATERIAL SAFETY DATA SHEET
BLDG.	BUILDING	MTL.	METAL
B.O.	BOTTOM OF	MTS	MANUAL TRANSFER SWITCH
CLG.	CEILING	N.T.S.	NOT TO SCALE
COL.	COLUMN		
CONC.	CONCRETE	O.C.	ON CENTER
		O.D.	OUTSIDE DIAMETER
DBL.	DOUBLE	OVP	OVER VOLTAGE PROTECTION
DIA.	DIAMETER		
DIM.	DIMENSION	PCS	PERSONAL COMMUNICATIONS SERVICE
DISC.	DISCONNECT		
DN.	DOWN		
DWG.	DRAWING	RAD.	RADIUS
		R.O.	ROUGH OPENING
(E)	EXISTING	RRH	REMOTE RADIO HEAD
EA.	EACH		
ELEV.	ELEVATION	SHTG.	SHEATHING
ELEC.	ELECTRICAL	SIM.	SIMILAR
EQ.	EQUAL	SPEC.	SPECIFICATION
EXT.	EXTERIOR	S.S.	STAINLESS STEEL
		STL.	STEEL
F.E.	FIRE EXTINGUISHER	STRUCT.	STRUCTURAL
FIN.	FINISH		
FLR.	FLOOR	T.C.	TEMPERATURE CONTROL
FUT.	FUTURE	TELCO	TELECOMMUNICATIONS
		T.O.	TOP OF
GA.	GAUGE	TYP.	TYPICAL
GALV.	GALVANIZED		
GEN.	GENERATOR	U.G.	UNDERGROUND
GPS	GLOBAL POSITIONING SYSTEM	U.N.O.	UNLESS NOTED OTHERWISE
GWB.	GYPSUM WALLBOARD		
		VERT.	VERTICAL
		V.I.F.	VERIFY IN FIELD
		W/	WITH

SYMBOLS LEGEND

----- EASEMENT

----- LEASE LINE

----- PROPERTY LINE

WOODEN FENCE

----- X ----- CHAIN LINK FENCE

----- OH ----- (E) OVERHEAD UTILITY

----- OHE ----- (E) OVERHEAD ELEC.

----- SS ----- (E) SANITARY SEWER

----- W ----- (E) WATER LINE

----- T ----- (E) TELCO CABLE

----- FIBER ----- (E) FIBER CABLE

----- E ----- (E) ELECTRICAL

----- COAX ----- (E) COAX CABLE

ENLARGED VIEW

ELEVATION MARKER

SPOT ELEVATION

SECTION CUT

EXTERIOR ELEVATION

INTERIOR ELEVATION

REVISION NUMBER

NEW WORK COLOR LEGEND

GENERAL CONSTRUCTION SOW	
HYBRID & COAX CABLES	
DC POWER	
FIBER	
ANTENNAS	
RRH/BBU	
PENETRATIONS	

4 - ABBREVIATIONS, SYMBOLS AND LEGEND

3 - NOT USED

CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE ARCHITECT IN WRITING OF ANY DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.

THESE DRAWINGS ARE TO SCALE WHEN PLOTTED ON 11X17 SHEET.

CALL BEFORE YOU DIG - COLORADO LAW REQUIRES 3 WORKING DAYS NOTICE FOR CONSTRUCTION PHASE.

THESE DRAWINGS MAY NOT SHOW ALL UNDERGROUND PIPING AND UTILITIES. THE CONTRACTOR SHALL EXERCISE EXTREME CARE DURING ALL EXCAVATION AND OTHER CONSTRUCTION ACTIVITIES.

UTILITY NOTIFICATION CENTER OF COLORADO - 1-800-922-1987

THE CONTRACTOR IS RESPONSIBLE FOR ALL UTILITY LOCATES AND UTILITY RELOCATIONS REQUIRED FOR THIS INSTALLATION. THE CONTRACTOR WILL SCHEDULE AND COORDINATE ALL WORK WITH THE OWNER TO ENSURE NO DISRUPTION TO OWNERS OPERATIONS.

SUBCONTRACTORS SHALL VERIFY ALL PLANS & EXISTING DIMENSIONS & CONDITIONS ON THE JOB SITE & SHALL IMMEDIATELY NOTIFY THE ENGINEER IN WRITING OF ANY DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME

2 - GENERAL CONTRACTOR NOTES

1. DRAWINGS ARE NOT TO BE SCALED, WRITTEN DIMENSIONS TAKE PRECEDENCE, AND THIS SET OF PLANS IS INTENDED TO BE USED FOR DIAGRAMMATIC PURPOSES ONLY, UNLESS NOTED OTHERWISE. THE GENERAL CONTRACTOR'S SCOPE OF WORK SHALL INCLUDE FURNISHING ALL MATERIALS, EQUIPMENT, LABOR, AND ANYTHING ELSE DEEMED NECESSARY TO COMPLETE INSTALLATIONS AS DESCRIBED HEREIN. REFER TO BID PACKAGE FOR MORE DATA.

2. PRIOR TO THE SUBMISSION OF BIDS, THE CONTRACTORS INVOLVED SHALL VISIT THE JOB SITE AND FAMILIARIZE THEMSELVES WITH ALL CONDITIONS AFFECTING THE PROPOSED PROJECT WITH THE CONSTRUCTION AND CONTRACT DOCUMENTS, FIELD CONDITIONS AND CONFIRM THAT THE PROJECT MAY BE ACCOMPLISHED AS SHOWN PRIOR TO PROCEEDING WITH CONSTRUCTION. ANY ERRORS, OMISSIONS, OR DISCREPANCIES ARE TO BE BROUGHT TO THE ATTENTION OF THE ARCHITECT/CONSTRUCTION ENGINEER IN WRITING.

3. THE GENERAL CONTRACTOR SHALL RECEIVE WRITTEN AUTHORIZATION TO PROCEED WITH CONSTRUCTION PRIOR TO STARTING WORK ON ANY ITEM NOT CLEARLY DEFINED BY THE CONSTRUCTION DRAWINGS/CONTRACT DOCUMENTS.

4. THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE PROJECT DESCRIBED HEREIN. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR ALL CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES AND PROCEDURES AND FOR COORDINATING ALL PORTIONS OF THE WORK UNDER THE CONTRACT.

5. THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS ACCORDING TO MANUFACTURER'S, VENDOR'S, & SPECIFIC CARRIER SPECIFICATIONS UNLESS NOTED OTHERWISE OR WHERE LOCAL CODES OR ORDINANCES TAKE PRECEDENCE NOTIFY CONSTRUCTION ENGINEER.

6. ALL WORK PERFORMED ON PROJECT AND MATERIALS INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS, AND ORDINANCES. CONTRACTOR SHALL GIVE ALL NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY, MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS, AND LOCAL AND STATE JURISDICTIONAL CODES BEARING ON THE PERFORMANCE OF THE WORK.

7. THE STRUCTURAL COMPONENTS OF THIS PROJECT SITE/FACILITY ARE NOT TO BE ALTERED BY THIS CONSTRUCTION PROJECT UNLESS NOTED OTHERWISE.

8. NEW TOWERS ARE UNDER A SEPARATE CONTRACT. THE CONTRACTOR SHALL ASSIST ANTENNA INSTALLATION SUBCONTRACTOR IN TERMS OF COORDINATION AND SITE ACCESS. ERECTION SUBCONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTION OF PERSONNEL AND PROPERTY FROM HAZARDOUS EXPOSURE TO OVERHEAD DANGERS.

9. GENERAL CONTRACTOR SHALL PROVIDE AT THE PROJECT SITE A FULL SET OF PERMITTED CONSTRUCTION DOCUMENTS UPDATED WITH THE LATEST REVISIONS AND ADDENDA OR CLARIFICATIONS FOR THE USE BY ALL PERSONNEL INVOLVED WITH THE PROJECT.

10. DETAILS INCLUDED HEREIN ARE INTENDED TO SHOW END RESULT OF DESIGN. MINOR MODIFICATIONS MAY BE REQUIRED TO SUIT JOB CONDITIONS OR SITUATIONS, AND SUCH MODIFICATIONS SHALL BE INCLUDED AS PART OF THE SCOPE OF WORK.

11. THE FACILITY IS CELLULAR RADIO EQUIPMENT, ANTENNAS, & SUPPORTING UTILITIES.

12. THE CONTRACTOR SHALL MAKE NECESSARY PROVISIONS TO PROTECT EXISTING IMPROVEMENTS, EASEMENTS, PAVING, CURBING, ETC. DURING CONSTRUCTION UPON COMPLETION OF WORK. CONTRACTOR SHALL REPAIR ANY DAMAGE THAT MAY HAVE OCCURRED DUE TO CONSTRUCTION ON OR ABOUT THE PROPERTY.

13. CONTRACTOR SHALL ENSURE THE GENERAL WORK AREA IS KEPT CLEAN AND HAZARD FREE DURING CONSTRUCTION AND DISPOSE OF ALL DIRT, DEBRIS, RUBBISH AND REMOVE EQUIPMENT NOT SPECIFIED AS REMAINING ON THE PROPERTY, PREMISES SHALL BE LEFT IN CLEAN CONDITION AND FREE FROM PAINT SPOTS, DUST, OR SMUDGES OF ANY NATURE.

14. THE ARCHITECTS/ENGINEERS HAVE MADE EVERY EFFORT TO SET FORTH IN THE CONSTRUCTION AND CONTRACT DOCUMENTS THE COMPLETE SCOPE OF WORK. CONTRACTORS BIDDING THE JOB ARE NEVERTHELESS CAUTIONED THAT MINOR OMISSIONS OR ERRORS IN THE DRAWINGS AND OR SPECIFICATIONS SHALL NOT EXCUSE SAID CONTRACTOR FROM COMPLETING THE PROJECT AND IMPROVEMENTS IN ACCORDANCE WITH THE INTENT OF THESE DOCUMENTS. THE BIDDER SHALL BEAR THE RESPONSIBILITY OF NOTIFYING (IN WRITING) THE CONSTRUCTION ENGINEER OF ANY CONFLICTS, ERRORS, OR OMISSIONS PRIOR TO THE SUBMISSION OF CONTRACTOR'S PROPOSAL.

15. SPECIAL INSPECTION TESTING REQUIRING SPECIAL INSPECTIONS SHALL BE PERFORMED BY AN INDEPENDENT SPECIAL INSPECTOR PER SECTION 1704 OF THE INTERNATIONAL BUILDING CODE (IBC) FOR ITEMS NOTED ON S1.00 IF INCLUDED IN CONSTRUCTION DOCUMENTS. THE INSPECTOR SHALL BE HIRED BY THE CONTRACTOR & COORDINATION SHALL BE ARRANGED BY THE CONTRACTOR FOR REQUIRED INSPECTIONS.



UNDERGROUND SERVICE ALERT
UTILITY NOTIFICATION CENTER OF COLORADO
1-800-922-1987
WWW.UNCC.ORG

3 WORKING DAYS UTILITY NOTIFICATION PRIOR TO CONSTRUCTION

1 - GENERAL NOTES

VERIZON WIRELESS SERVICES
3131 S. VAUGHN WAY, SUITE 550
AURORA, CO 80014

PROJECT INFORMATION

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CO1 HAYDEN

SITE I.D.

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T6N R87W 6TH P.M.
STEAMBOAT SPRINGS, CO 80487

CONSULTANT

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1st REVIEW MKC 2nd REVIEW GOB

5935 SOUTH ZANG STREET, SUITE 280
LITTLETON, COLORADO 80127
OFFICE: 303.932.9974



GENERAL NOTES

G1.00

IFC 608 COMPLIANCE REQUIREMENTS (BATTERY SYSTEMS)		
EXISTING ON SITE		
YES	NO	
		THERMAL RUNAWAY DETECTION
		BATTERY NEUTRALIZATION
		VENTILATION FAN/EXHAUST
		HAZMAT SIGNAGE
		SEISMIC PROTECTION
* IF ITEM IS LISTED AS NOT INSTALLED REFER TO 1/G1.10 INFORMATION FOR ADDITIONAL REQUIREMENTS.		
VERIZON WIRELESS STANDARD COMPLIANCE REQUIREMENTS (BATTERY SYSTEMS)		
EXISTING ON SITE		
YES	NO	
		SPILL CONTAINMENT
		FIRST AID KIT
		EYEWASH STATION
		SMOKE DETECTOR
		FIRE EXTINGUISHER
		MASK
		GLOVES
		EAR PROTECTION
		APRON

3 - BATTERY HAZMAT COMPLIANCE CHECKLIST



2 - HAZMAT PHOTOS

BATTERY SPECIFICATION:
(FIAMM 2SLA 1500) EACH CELL HAS AN IMMOBILIZE ELECTROLYTE CAPACITY OF 4.56 GALLONS EACH. (12) CELLS IN THIS OCCUPANCY RESULTING IN AN AGGREGATE ELECTROLYTE VOLUME OF 54.72 GALLONS.
(IFC 608.1) STATIONARY LEAD-ACID BATTERY SYSTEM AND VALVE-REGULATED LEAD-ACID BATTERY SYSTEMS CONTAINING MORE THAN 50 GALLONS OF ELECTROLYTE SHALL COMPLY WITH IFC 608.

SPECIFICATIONS AND CONDITIONS

- 1. SPILL CONTROL & NEUTRALIZATION** (IFC 608.5)
- A. SPILL CONTROL: IFC 608.5 EXCEPTION:** VRLA, LITHIUM-ION, LITHIUM METAL POLYMER OR OTHER TYPES OF SEALED BATTERIES WITH IMMOBILIZED ELECTROLYTE SHALL NOT REQUIRE SPILL CONTROL
- B. BATTERY NEUTRALIZATION:** (IFC 608.5.2) FOR VRLA OR OTHER TYPES OF SEALED BATTERIES WITH IMMOBILIZED ELECTROLYTE, THE METHOD AND MATERIAL SHALL BE CAPABLE OF NEUTRALIZING A SPILL OF 3.0 PERCENT OF THE CAPACITY OF THE LARGEST BATTERY IN THE ROOM (SEE CHART) TO A PH BETWEEN 5.0 AND 9.0. **PROVIDE:** ENER-SYS EMERGENCY SPILL KIT MODELS:853620-853615 (OR EQUAL)

TOTAL ACID GAL.	50	60	70	80	90	100	110	120
3%	1.5	1.8	2.1	2.4	2.7	3.0	3.3	3.6

- 2. THERMAL RUNAWAY:** (IFC 608.3) PROVIDE UL LISTED THERMAL RUNAWAY DEVICE. CONNECT TO ALARM BLOCK & PDF
- 3. ROOM VENTILATION:** (IFC 608.6.1)
FOR FLOODED LEAD-ACID, FLOODED NI-CAD AND VRLA BATTERIES, THE VENTILATION SYSTEM SHALL BE DESIGNED TO LIMIT THE MAXIMUM CONCENTRATION TO 1.0 PERCENT OF THE TOTAL VOLUME OF THE ROOM.
PER IEEE 1635 HYDROGEN GENERATION FOR VRLA BATTERIES IS DETERMINED AS:

$$H_{2-RATE} (CFM) = N_c \times C_g \times 2.82 \times 10^{-7}$$

N_c = NUMBER OF BATTERY CELLS
 C_g = 8H AMPERE CELL RATING TO 1.75V @ 25°C

HYDROGEN GENERATION RATE OF THIS INSTALLATION IS (0.001) CFM
REQUIRED FAN SIZE TO KEEP HYDROGEN BELOW 1% = (0.1) CFM
THE EXISTING FAN IS RATED AT (50) CFM WHICH MEETS THESE REQUIREMENTS.

- 4. SIGNAGE:** (IFC 608.7) DOORS INTO ROOMS AND BUILDINGS CONTAINING STORED EMERGENCY POWER SUPPLY SYSTEMS SHALL BE PROVIDED WITH APPROVED SIGNS. THE SIGNS SHALL STATE:
- A. THE ROOM CONTAINS ENERGIZED BATTERY SYSTEMS
 - B. THE ROOM CONTAINS ENERGIZED ELECTRICAL CIRCUIT
 - C. THE BATTERY ELECTROLYTE SOLUTIONS ARE CORROSIVE LIQUIDS.

- 5. SEISMIC PROTECTION:** (IFC 608.8) BOLT DOWN / ANCHOR BATTERY BASE W/ (4) 5/8" MASONRY ANCHORS, MIN 4" EMBED INTO CONCRETE FLOOR. MODULAR STEEL SEISMIC FRAME PROVIDED WITH BATTERIES.

- 6. SMOKE DETECTION:** (IFC 608.9) AN APPROVED AUTOMATIC SMOKE DETECTION SYSTEM SHALL BE INSTALLED IN ACCORDANCE WITH SECTION 907.2 IN ROOMS CONTAINING STATIONARY BATTERY SYSTEMS.

- 7. NO SMOKING SIGNS** SHALL BE PROVIDED ON DOORS LEADING INTO BATTERY ROOMS. PLACARDS SHALL BE PROVIDED ACCORDING TO NFPA 704. PLACARDS POSTED ON THE INTERIOR OF THE FACILITY SHALL BE A MINIMUM 10 INCHES EACH SIDE AND PLACARDS POSTED ON THE EXTERIOR SHALL BE A MINIMUM 15 INCHES EACH SIDE. RE: A5.00

- 8. SAFETY CAPS** (IFC 608.2.2) VRLA BATTERIES SHALL BE EQUIPPED WITH SELF-RESEALING FLAME ARRESTING SAFETY VENTS.



CONTRACTOR TO PROVIDE HAZMAT REPORTING & ADDITIONAL PERMITS FOR BATTERY & GENERATOR SYSTEMS PER LOCAL REQUIREMENTS

1 - BATTERY HAZMAT REVIEW

verizon

VERIZON WIRELESS SERVICES
3131 S. VAUGHN WAY, SUITE 550
AURORA, CO 80014

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CHARLES
STECKLY

ARCHITECTURE

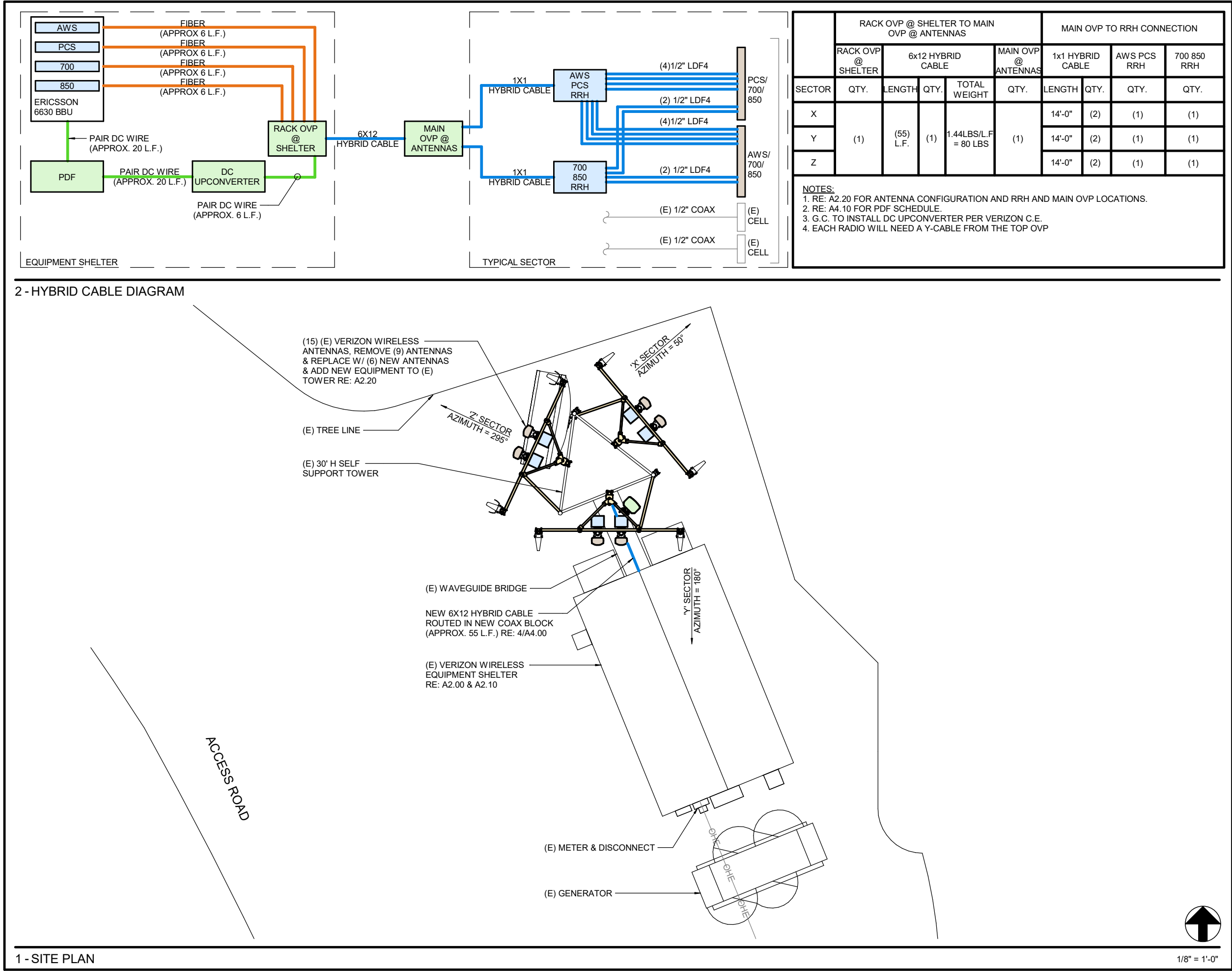
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BATTERY HAZMAT
REVIEW

G1.10

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SITE PLAN & HYBRID
CABLE DIAGRAM

A1.00

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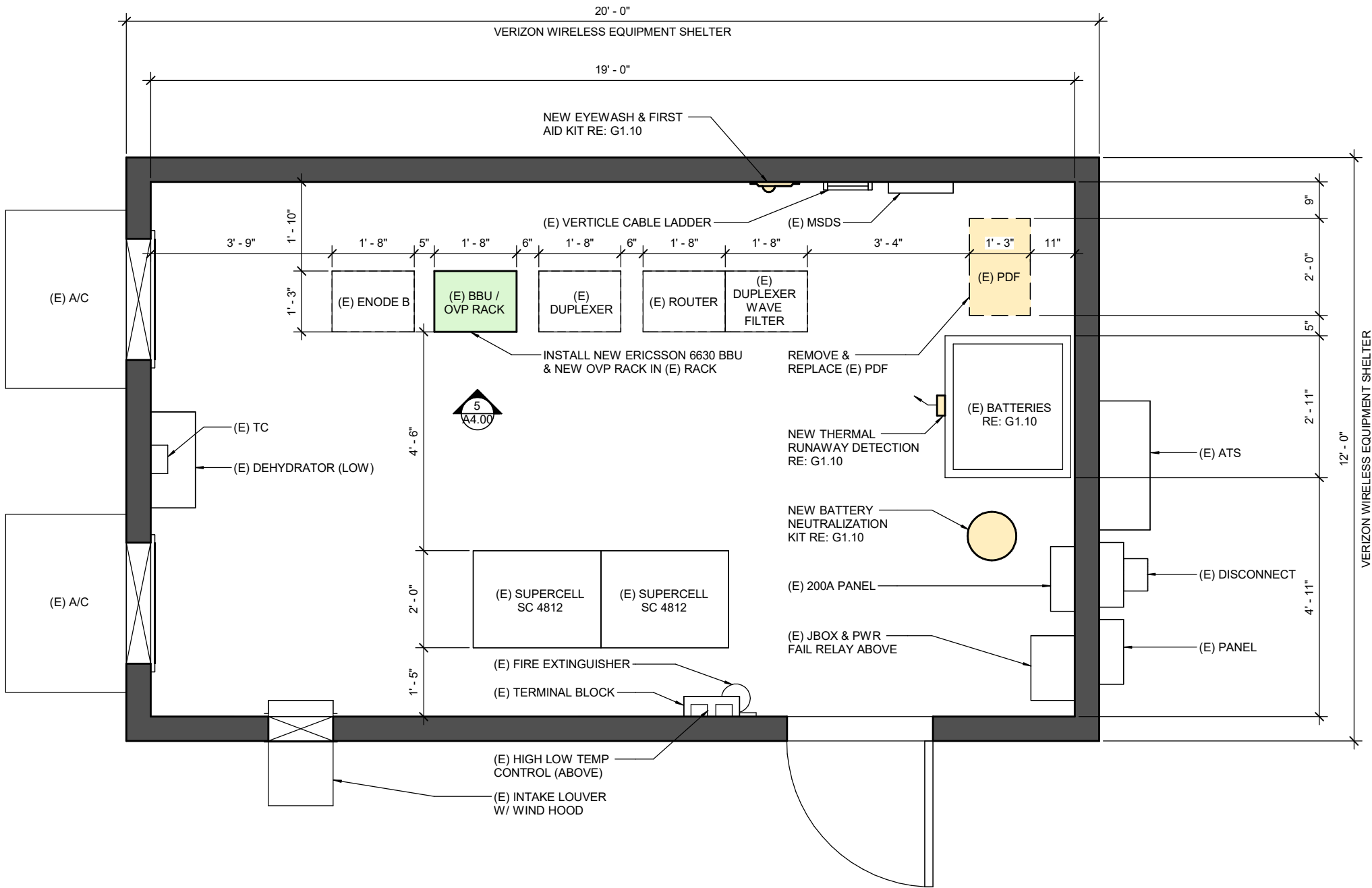
ARCHITECTURE

5935 SOUTH ZANG STREET, SUITE 280
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EQUIPMENT SHELTER
FLOOR PLAN

A2.00



NOTE:
CONTRACTOR TO PROVIDE ADDITIONAL
ITEMS FOR COMPLIANCE W/ IFC SECTION 608
(BATTERY SYSTEMS RE: G1.10)



3/8" = 1'-0"



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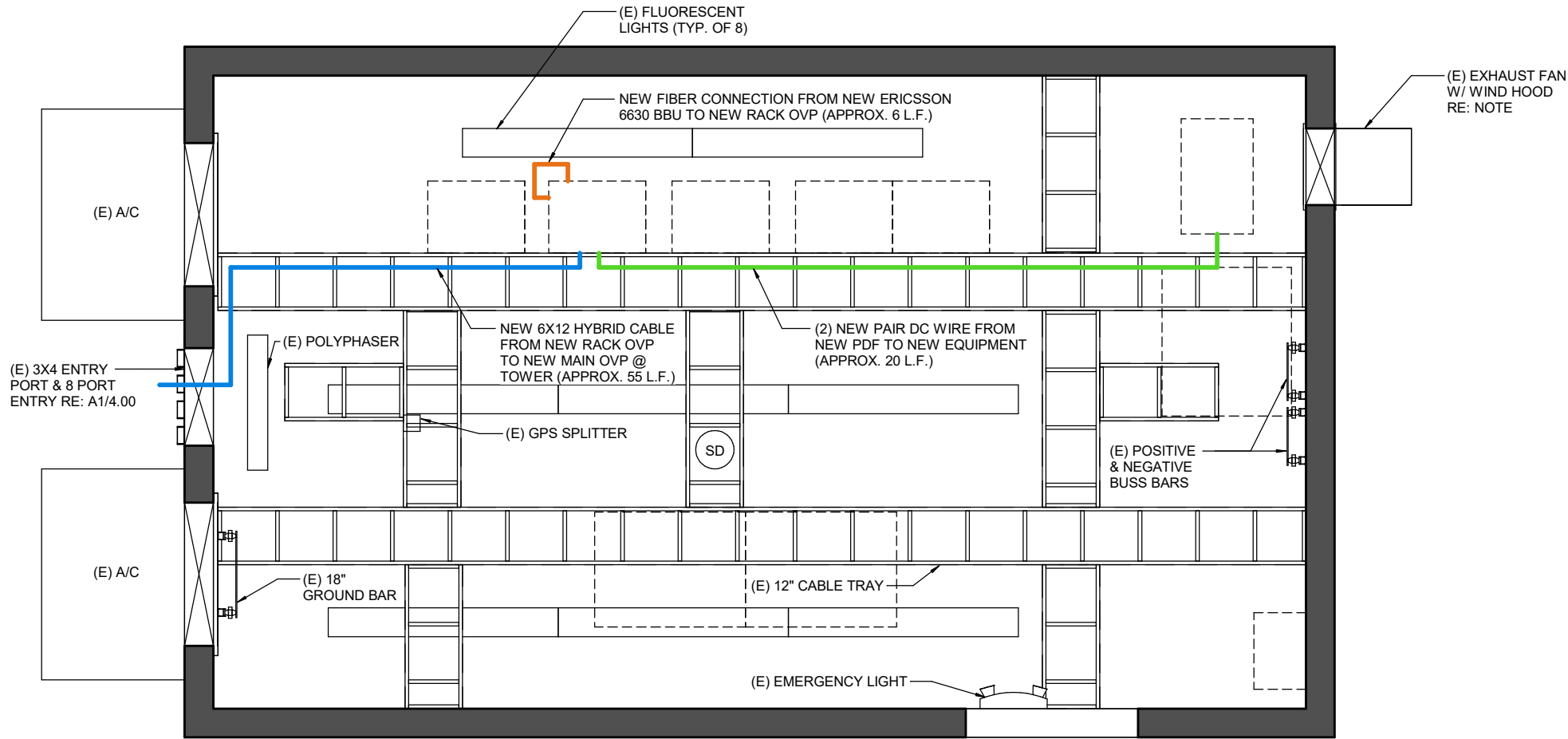
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EQUIPMENT SHELTER
RCP

A2.10

- BBU/RRH
- HYBRID & COAX CABLES
- MW/FIBER EQ.
- FIBER
- OVP/ELEC. EQ.
- POWER/GROUNDING
- ACCESS/UTILITY EASEMENT
- GEN. CONST. UTILITY EASEMENT
- LEASE AREA
- EXISTING EASEMENT
- ANTENNAS
- PENETRATIONS



NOTE:
EXHAUST FAN TO RUN CONTINUOUSLY.
UPON FAN FAILURE OR LOSS OF POWER,
GENERATE ALARM TO ANNUNCIATE TO
VERIZON N.O.C.



1 - EQUIPMENT SHELTER REFLECTED CEILING PLAN

3/8" = 1'-0"



4 - ANTENNA PHOTO

1. GENERAL:

PROVIDE ALL LABOR, EQUIPMENT AND MATERIALS NECESSARY FOR RECEIVING, INSTALLING, TESTING AND ADJUSTING ANTENNA CABLES FROM THE ANTENNA TO THE CONNECTORS AT THE BASE TRANSMISSION SYSTEM (BTS). THIS SHALL INCLUDE ALL EQUIPMENT SHOWN OR REQUIRED FOR A COMPLETE OPERATING SYSTEM. ANTENNA, ANTENNA CABLES, CONNECTORS, AND FITTINGS SHALL BE THIRD PARTY FURNISHED COMPONENTS AS SHOWN ON THE BILL OF MATERIALS.
2. MATERIALS:

A. RE: HYBRID CABLE DIAGRAM FOR ADDITIONAL INFORMATION
B. CABLE HANGERS: INSTALLED AT MAXIMUM 4' SPACING
C. GROUND EQUIPMENT PER VERIZON WIRELESS SPECS
3. INSTALLATION:

A. ANTENNA CABLE LENGTHS SHALL BE FIELD MEASURED PRIOR TO PURCHASE OF CABLE. INSTALLER SHALL NOTIFY VERIZON WIRELESS OF THE OVERALL LENGTH REQUIRED.

B. CABLES SHALL BE LABELED IN ACCORDANCE WITH VERIZON WIRELESS SPECIFICATIONS.

C. ALL OUTSIDE CABLE CONNECTIONS SHALL BE COVERED WITH WEATHERPROOFING TAPE.

D. THE MINIMUM BENDING RADIUS FOR ALL ANTENNA CABLES SHALL BE AS SHOWN BELOW OR AS PER THE MANUFACTURER, WHICHEVER IS MORE CONSERVATIVE:

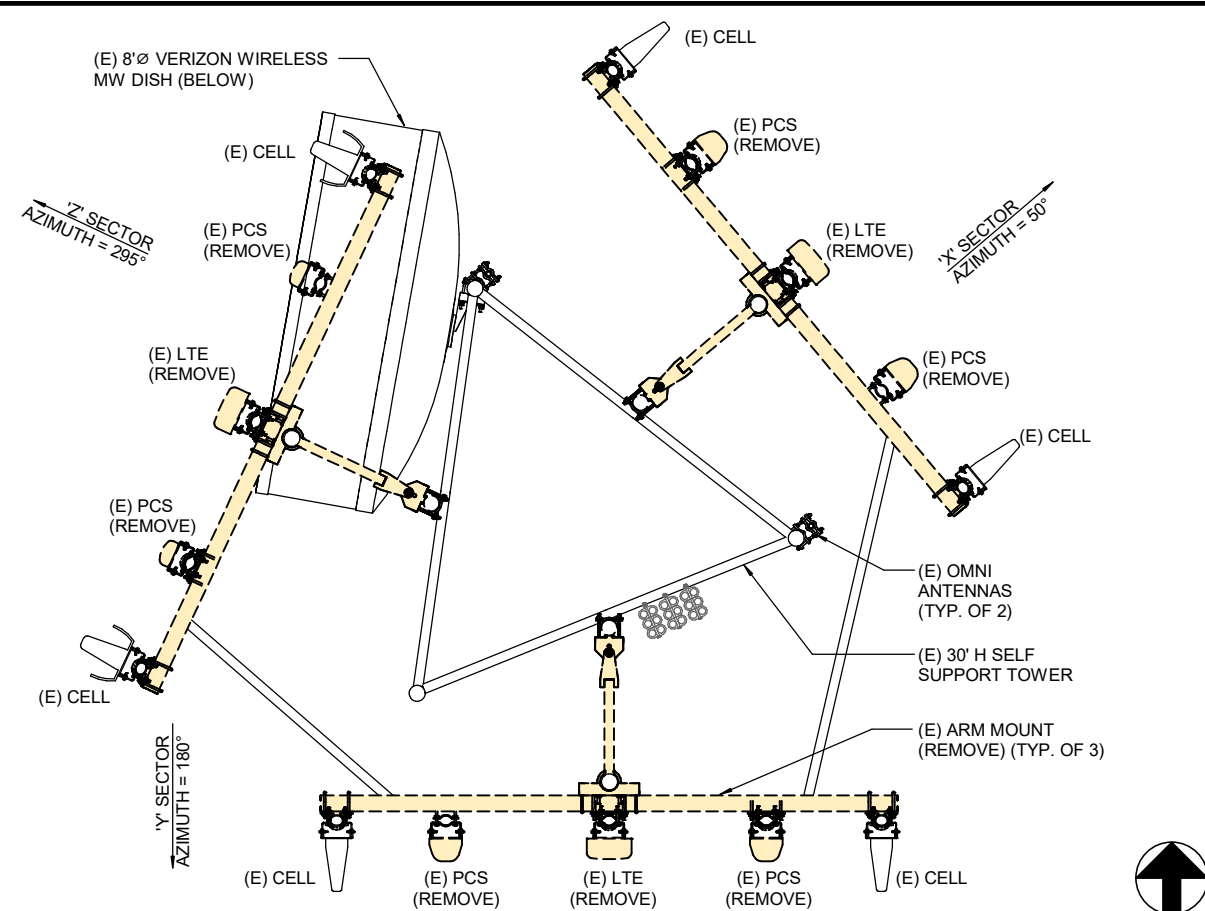
ANTENNAS CABLE	IN AIR/ CABLE TRAY	IN CONDUIT
1/2"	5"	10"
7/8"	10"	18"
1 5/8"	20"	28"
1X1 HYBRID	5"	10"
6X12 HYBRID	12"	16"

MW CABLE	WITHOUT REBENDING	WITH REBENDING
ELLIPTICAL	6" E PLAN	7" E PLAN
WAVEGUIDE	13" H PLAN	19" H PLAN

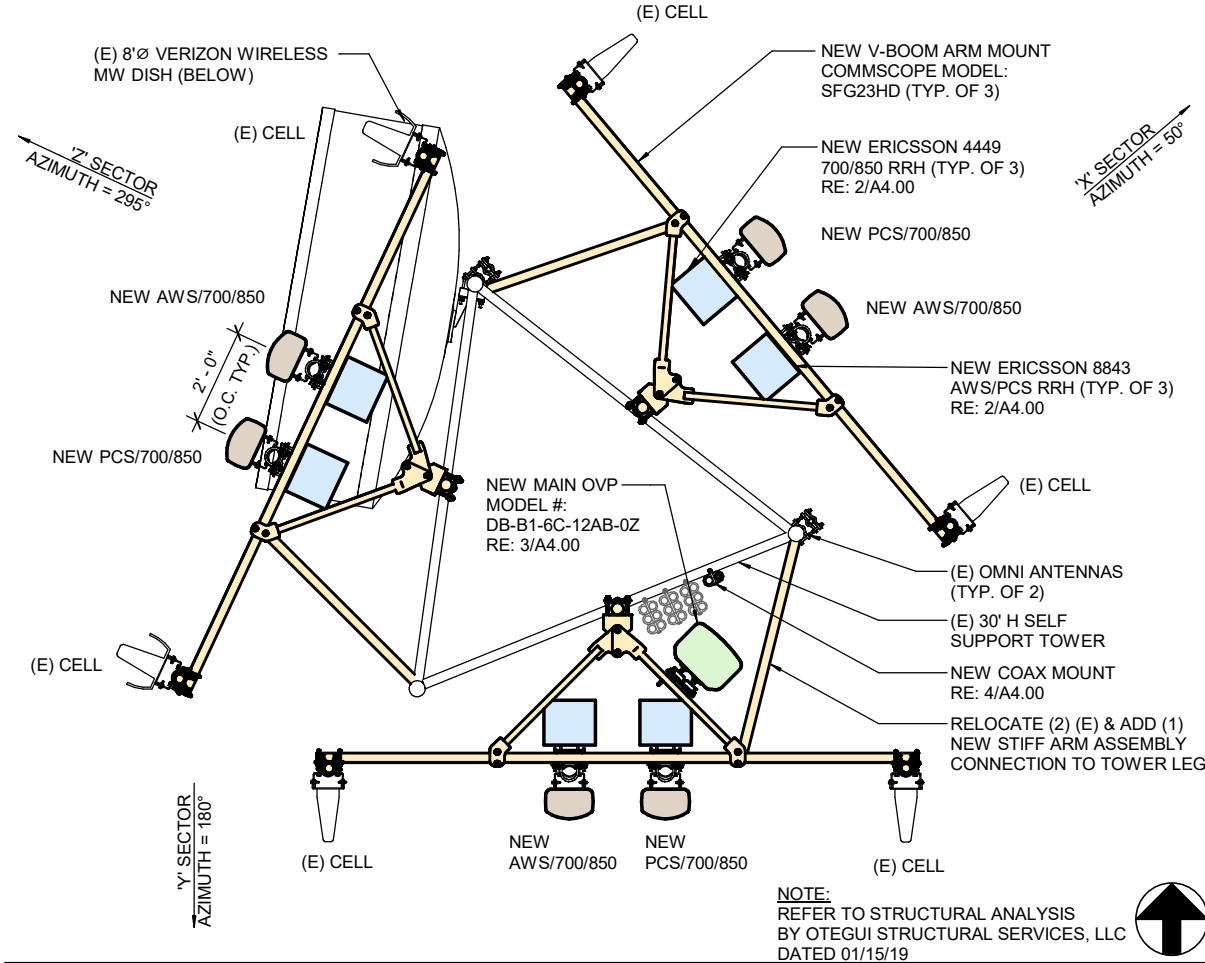
E. CABLES SHALL BE INSTALLED WITH THE MINIMUM NUMBER OF BENDS. CABLES SHALL NOT BE LEFT UNTERMINATED IN THE FIELD.

F. GROUNDING KITS - AFTER INSTALLATION OF GROUND STRAPS, THE CONNECTION SHALL BE MADE WEATHER TIGHT USING WEATHERPROOFING KITS AS IDENTIFIED ABOVE. GROUND PIGTAILS SHALL BE BROUGHT OUT IN THE DOWNWARD DIRECTION FROM THE CONNECTIONS TO THE ANTENNA CABLE WITHOUT ANY SHARP BENDS (MINIMUM BEND RADIUS 10") AND CONNECTION SHALL BE MADE TO GROUNDING SYSTEM

3 - ANTENNA NOTES



2 - ANTENNA DEMO PLAN



1 - NEW ANTENNA PLAN

verizon

VERIZON WIRELESS SERVICES
3131 S. VAUGHN WAY, SUITE 550
AURORA, CO 80014

PROJECT INFORMATION

SITE NAME

CO1 HAYDEN

SITE I.D.

803

T6N R87W 6TH P.M.
STEAMBOAT SPRINGS, CO 80487

CONSULTANT

A	12/3/18	CD REVIEW	TVT
B	01/03/19	CLIENT COMMENTS	TVT
0	01/15/19	CD ISSUE	TVT

1st REVIEW MKC 2nd REVIEW GOB

CHARLES
STECKLY

ARCHITECTURE

5935 SOUTH ZANG STREET, SUITE 280
LITTLETON, COLORADO 80127
OFFICE: 303.932.9974



ANTENNA PLANS & NOTES

A2.20



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SOUTH ELEVATION

A3.00

BBU/RRH
HYBRID & COAX CABLES

MW/FIBER EQ.
FIBER

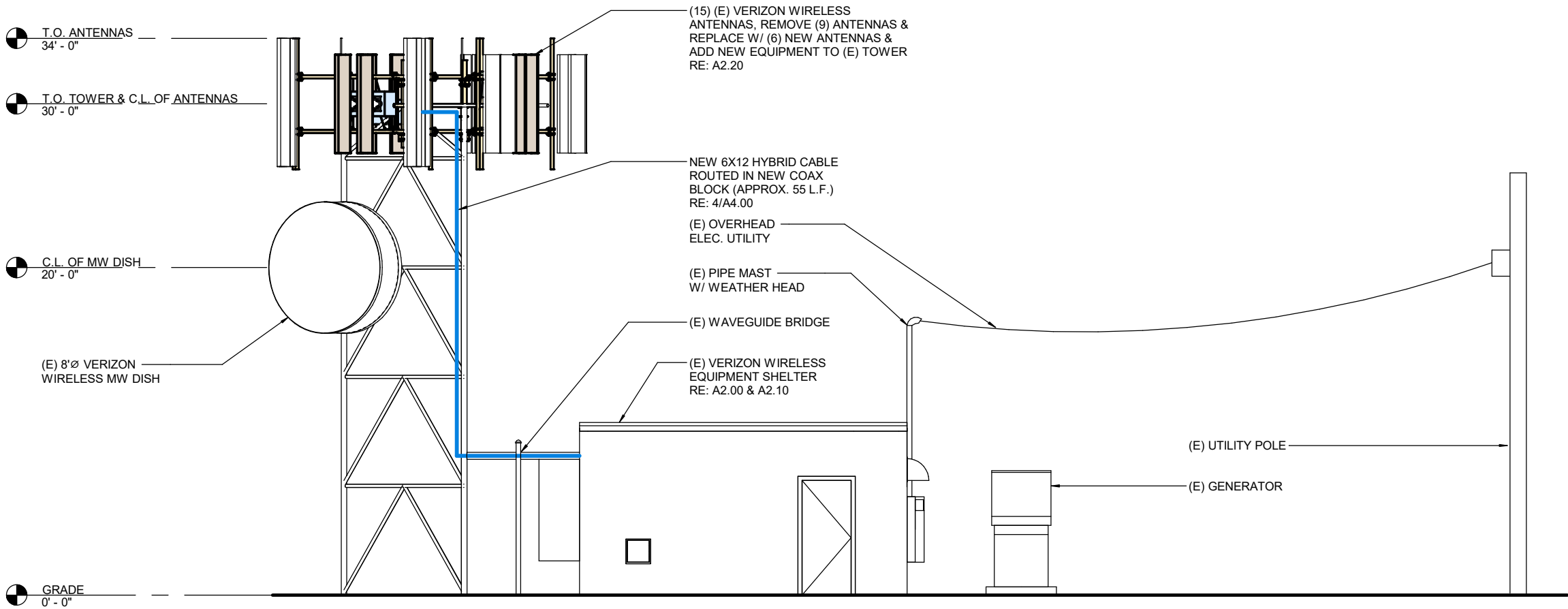
OV/PELEC. EQ.
POWER/GROUNDING

ACCESS/UTILITY EASEMENT
GEN. CONST./UTILITY EASEMENT

LEASE AREA
EXISTING EASEMENT

ANTENNAS

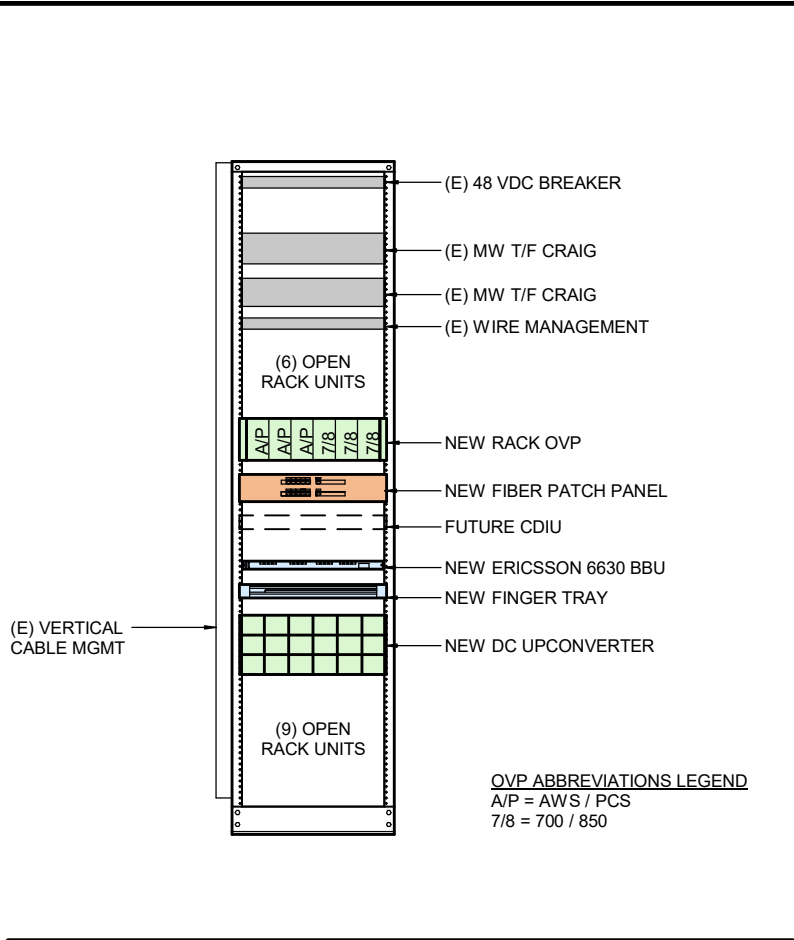
PENETRATIONS



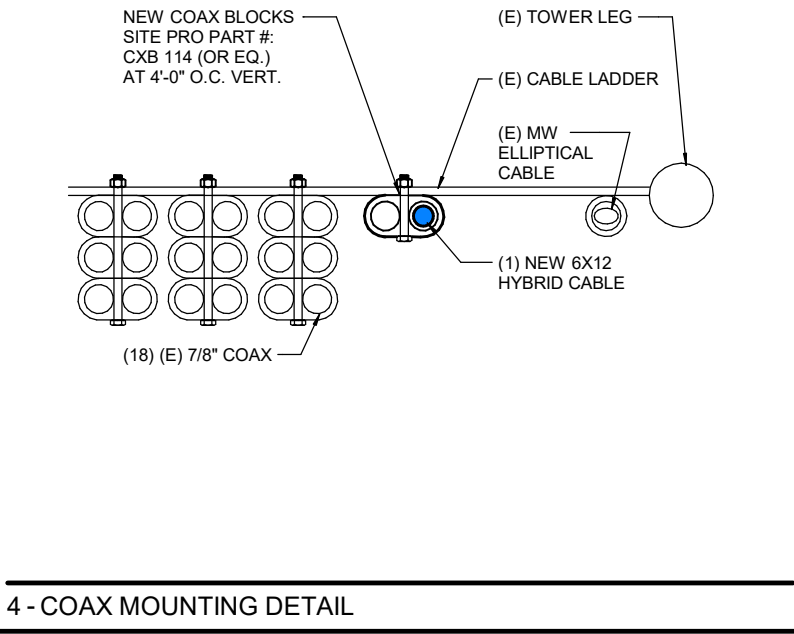
NOTE:
RE: STRUCTURAL BY: OTEGUI STRUCTURAL SERVICES, LLC DATED: 01/15/19

1 - SOUTH ELEVATION

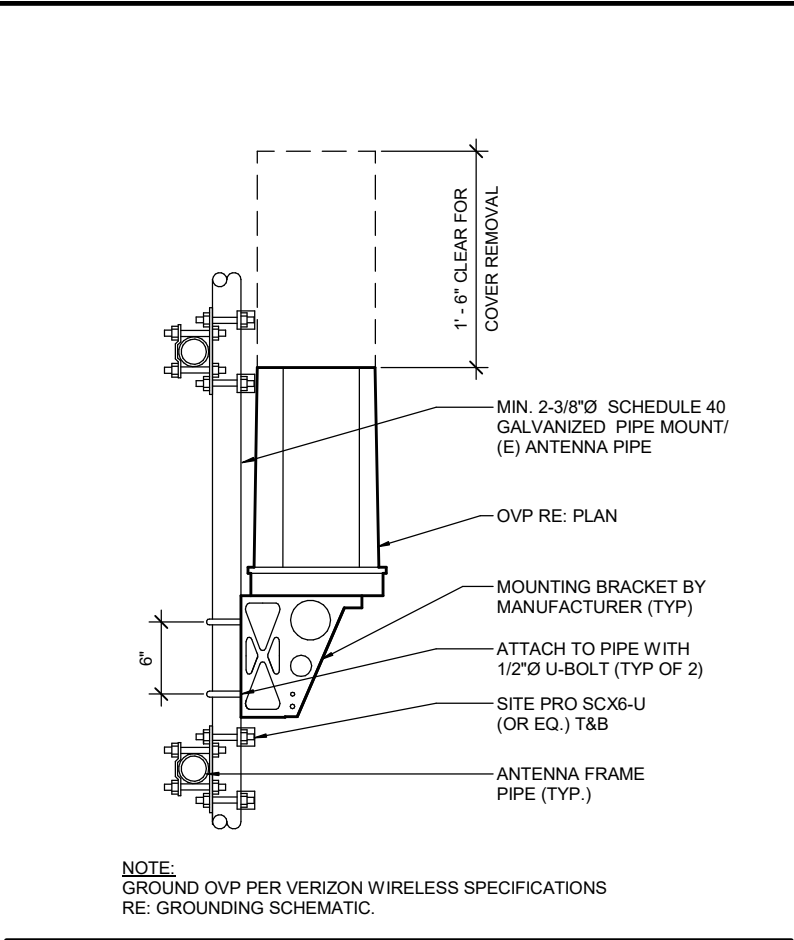
1/8" = 1'-0"



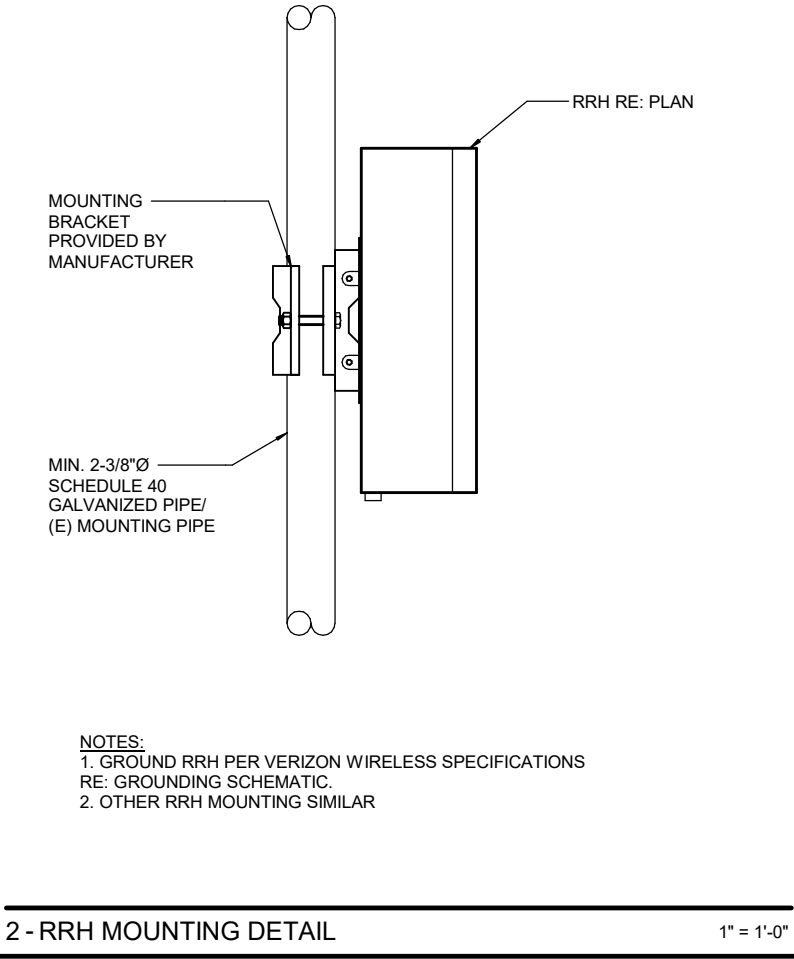
5 - RACK ELEVATION



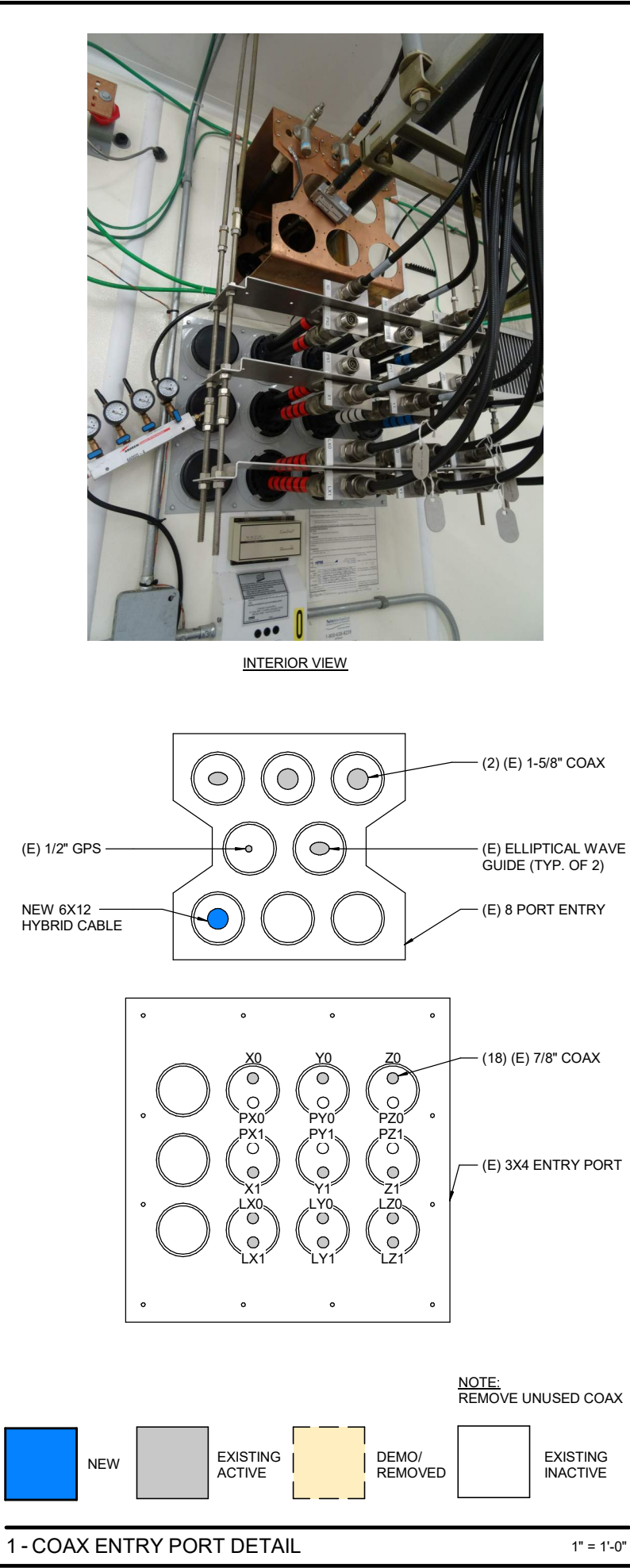
4 - COAX MOUNTING DETAIL



3 - OVP MOUNTING DETAIL



2 - RRH MOUNTING DETAIL



1 - COAX ENTRY PORT DETAIL

verizon

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LICENSED ARCHITECT

CHARLES N. STECKLY

No. 202802

JAN 15 2019

STATE OF COLORADO

DETAILS

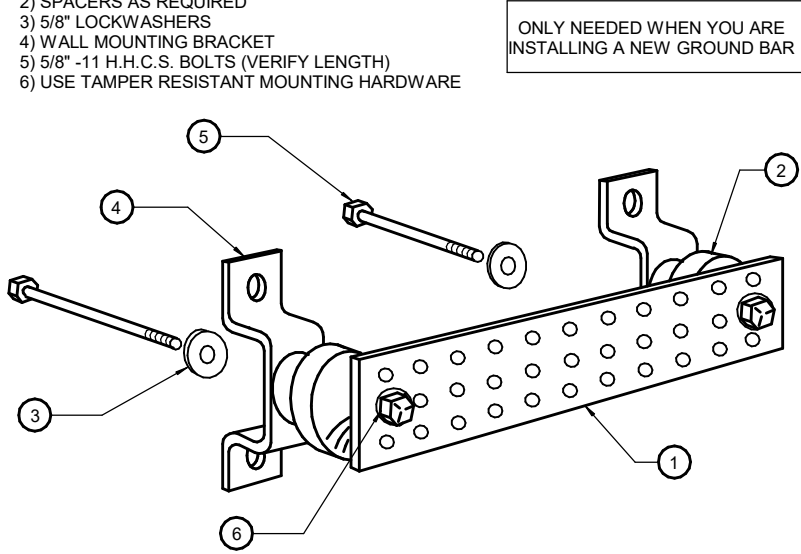
A4.00

GROUNDING NOTES

- REFER TO VERIZON WIRELESS GROUNDING SPECIFICATIONS FOR ALL GROUNDING REQUIREMENTS.
- BOND AND GROUND ANY PROPOSED STRUCTURAL STEEL, CONCRETE REINFORCING AND OTHER METALLIC BUILDING ELEMENTS, REFER TO VERIZON WIRELESS SPECIFICATIONS FOR EXACT REQUIREMENTS.
- THE ELECTRICAL CONTRACTOR SHALL PERFORM ALL BONDING AND GROUNDING TO THE SITE'S OUTER GROUNDING SYSTEM DURING THE CONSTRUCTION PHASE OF THE BUILDING.
- CONTRACTOR IS TO CONDUCT FREQUENT INSPECTIONS DURING THE CONSTRUCTION PHASE TO ENSURE THAT ALL GROUNDING ARRANGEMENTS ARE MADE ACCORDING TO THE GROUNDING DESIGN SPECIFICATIONS.
- DO NOT RETROFIT (OR UPGRADE) ESTABLISHED SITES THAT DO NOT MEET ALL THE REQUIREMENTS OF VERIZON WIRELESS GROUNDING STANDARD UNLESS THERE ARE DOCUMENTED OCCURRENCES OF EQUIPMENT DAMAGES AND/OR SERVICE AFFECTING CONDITIONS.
- USE ONLY VERIZON WIRELESS-APPROVED MATERIALS SUCH AS COPPER FOR MOST ELECTRICAL WORK AND ALUMINUM FOR CERTAIN APPLICATIONS FOR SITE GROUNDING SYSTEM, ELECTRICAL PROTECTION COMPONENTS AND AC WIRING.
- USE THE SAME METAL THROUGHOUT THE GROUND SYSTEM WHEN POSSIBLE.
- IF DIFFERENT METALS MUST BE CONNECTED, BOND THEM BY EXOTHERMICALLY WELDING THEM TOGETHER.
- USE TINNED COPPER WHEN CONNECTING TO GALVANIZED STEEL.
- DO NOT BOND COPPER AND ALUMINUM TOGETHER UNLESS USING SPECIFICALLY DESIGNED EXOTHERMIC MATERIALS DESIGNED FOR THIS APPLICATION ARE USED OR A BIMETALLIC TRANSITIONAL CONNECTION IS UTILIZED.
- MAKE ALL BONDING ATTACHMENTS TO CLEAN, UNPAINTED METAL SURFACES OR USE APPROVED PAINT PIERCING WASHERS.
- PAINTED SURFACES MUST BE SCRAPPED, CLEANED, AND LIGHTLY COATED WITH THE APPLICABLE COMPOUND.
- ALL INDOOR OR OUTDOOR POWER OR GROUNDING CONNECTIONS SHALL BE PROTECTED AGAINST CORROSION BY USE OF A THIN COATING OF ANTI-OXIDATION COMPOUND. A COPPER COSMOLINE GREASE BASED COMPOUND (NO OX-ID) SHALL BE USED ON ALL COPPER TO COPPER CONNECTIONS. A ZINC BASED (GREY COLORED) COMPOUND SHALL BE USED ON ALL COPPER TO STEEL CONNECTIONS. WHERE OTHER COMPOUNDS SUCH AS KOPPER-SHIELD ETC EXIST, THEY MAY BE 'GRANDFATHERED' IN PLACE. PENTROX GREASE OR AN APPROVED EQUAL SHALL BE USED ON ALUMINUM CONNECTIONS.
- DO NOT WELD GROUNDING CONDUCTORS TO THE STRUCTURAL MEMBERS OF TOWERS, INCLUDING DOWN GUYS AND ANCHOR RODS.
- BOND ALL METALLIC OBJECTS (SUCH AS WATER PIPES, CONDUITS, METAL FUEL TANKS WITHOUT CATHODIC PROTECTION, METAL FENCES, HVAC, ETC.) THAT ARE WITHIN 6 FEET (1.8 M) OF THE GROUND RING, OR FROM ANY OTHER GROUNDED CONDUCTOR, TO GROUND RING OR TO THE GROUNDED CONDUCTOR. HARDWARE
- ALL OUTDOOR HARDWARE (BOLTS, SCREWS, NUTS, WASHERS) SHALL BE 18-8 STAINLESS STEEL TYPE GRADE. INDOORS, GRADE 5 STEEL HARDWARE MAY BE USED. CHOOSE BOLT LENGTH TO ALLOW THE EXPOSURE OF AT LEAST TWO THREADS.
- WHEN BONDING TO A METALLIC OBJECT WHERE ACCESS IS LIMITED TO ONLY ONE SURFACE, USE DRILLING & TAPPING OR SELF DRILLING SCREWS. DO NOT USE SHEET METAL SCREWS.
- ALL GROUNDING CONDUCTORS SHOULD PRESERVE A DOWNWARD TO HORIZONTAL COURSE AND BE AS STRAIGHT AS POSSIBLE AND AVOID SHARP TURNS.
- DO NOT USE U-SHAPED GROUNDING CONDUCTOR RUNS (U-TURNS IN THE WIRING) OR BONDING LAYOUTS TO REDUCE ARC-OVERS
- ALL GROUNDING CONDUCTS MUST BE RUN IN NONMETALLIC CONDUIT. ROUTE ALL CONDUCTORS THROUGH NONMETALLIC SLEEVES WHEN PENETRATING FLOORS, CEILINGS, AND WALLS.
- IF THE USE OF METALLIC CONDUIT CANNOT BE AVOIDED, BOND BOTH ENDS OF THE CONDUIT TO THE GROUNDING CONDUCTOR BEING ROUTED THROUGH THE CONDUIT
- KEEP LENGTHS OF CONDUCTORS TO A MINIMUM
- USE MULTIPLE CONDUCTING PATHS. PARALLEL PATHS ARE ONLY DESIRABLE WHEN SENSITIVE ELECTRONIC EQUIPMENT IS NOT PART OF THE CONDUCTOR PATH
- KEEP BENDS IN CONDUCTORS TO A MINIMUM.
- THE MINIMUM INSIDE BENDING RADIUS IS:
 - 6 INCHES (0.15M) FOR CONDUCTORS UP TO #6 GAUGE.
 - 12 INCHES (0.3M) FOR CONDUCTORS #6 TO #4/0 GAUGE.
 - 24 INCHES (0.6M) FOR CONDUCTORS #4/0 GAUGE AND LARGER
- GROUND CONDUCTORS MUST NEVER BE ENCIRCLED WITH FERROUS METAL CLAMPS, PLACED THROUGH METAL WALLS, METAL PLATES, OR SHORT SECTIONS OF METAL CONDUIT, AND MUST NEVER BE PLACE IN THE SAME CABLE RACK AS DC POWER CABLES, HIGH FREQUENCY CABLES, ETC.
- WHEN ATTACHING PVC CONDUITS TO ANY SURFACE UTILIZE NONCONDUCTIVE FASTENERS OR NONFERROUS FASTENERS ONLY.
- IF CONNECTIONS BETWEEN ALUMINUM CONDUCTORS AND STEEL OBJECTS MUST BE MADE, TINNED LUGS AND PENTROX SHALL BE USED. WHERE THERE ARE CONCERNS THAT THE PENTROX MAY NOT PROVIDE ADEQUATE INTERFACING, THEN A BIMETAL SPLICE BETWEEN THE ALUMINUM CONDUCTOR AND A SHORT LENGTH OF COPPER CONDUCTOR MAY BE USED.
- ALL OF THE BONDING AND GROUNDING CONDUCTORS SPECIFIED FOR ROOFTOP CELL AND MICROWAVE SYSTEMS IS BARE WIRE. INSULATED WIRE SHALL NOT BE SPECIFIED OR SUBSTITUTED FOR THE BONDING AND GROUNDING CONDUCTORS OF ROOFTOP INSTALLATIONS.

4 - GROUNDING NOTES

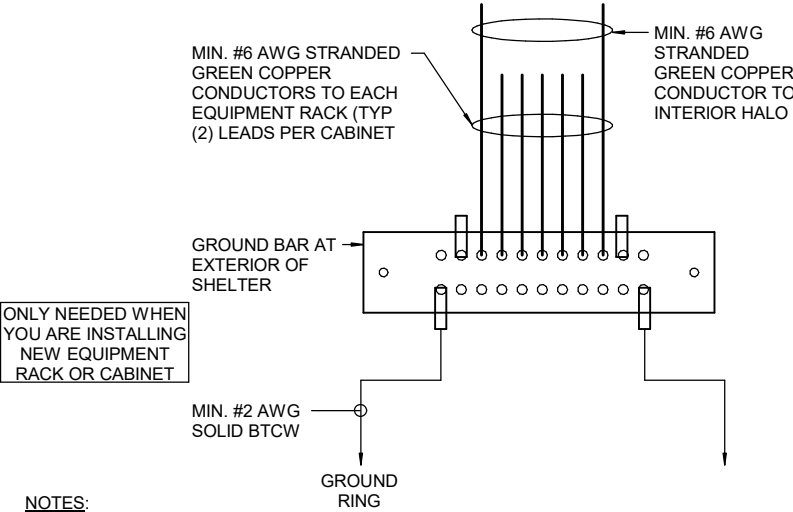
- KEY NOTES:
- 1) COPPER GROUND BAR OR APPROVED EQUAL, 1/4" x 4" X 12".HOLE CENTERS TO MATCH NEMA DOUBLE LUG CONFIGURATION.
 - 2) SPACERS AS REQUIRED
 - 3) 5/8" LOCKWASHERS
 - 4) WALL MOUNTING BRACKET
 - 5) 5/8" -11 H.H.C.S. BOLTS (VERIFY LENGTH)
 - 6) USE TAMPER RESISTANT MOUNTING HARDWARE



- NOTES:
1. THE DISTANCE BETWEEN COAXIAL CABLE SHIELD CIGBE BARS SHALL NOT EXCEED 100'. THIS MAY REQUIRE BONDING AT THE TOP, BOTTOM AND TWO LOCATIONS IN THE MIDDLE OF THE TOWER FOR TALLER TOWERS. EACH RF CABLE SHIELD SHALL BE BONDED AT A MINIMUM OF TWO (2) POINTS ON THE TOWER (TOP AND BOTTOM).

3 - GROUND BAR DETAIL

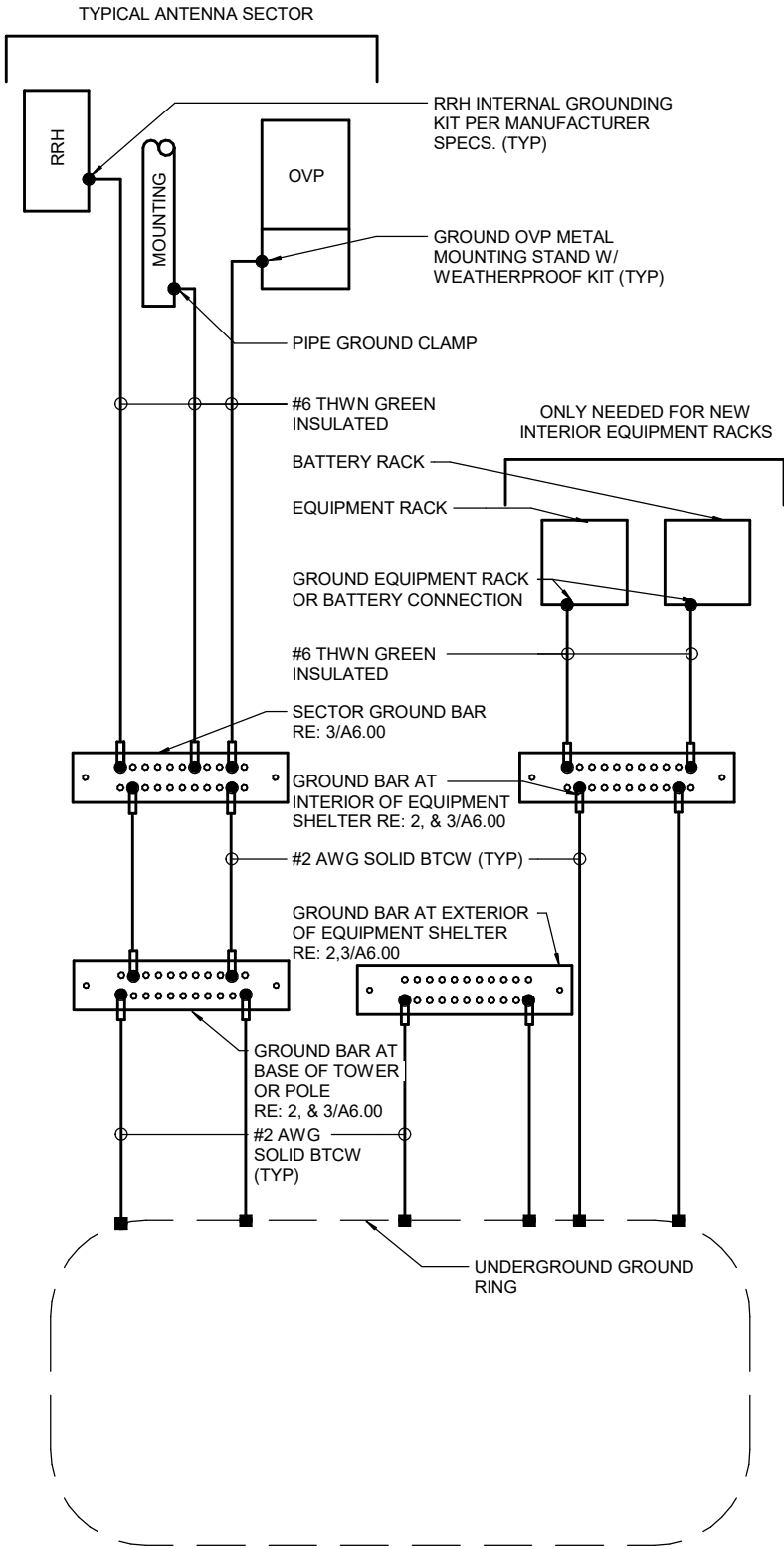
N.T.S.



- NOTES:
1. VERIFY EXISTING INTERIOR GROUNDING IS SUFFICIENT FOR NEW EQUIPMENT INSTALLATION AND GROUND ALL NEW INSTALLED EQUIPMENT AS REQUIRED BY VERIZON WIRELESS STANDARDS
 2. CONNECT THE EQUIPMENT FRAMES TO THE MGB/FGB, USING A MINIMUM OF #6 AWG STRANDED COPPER, GREEN-INSULATED CONDUCTOR. TO ASSURE A GOOD CONNECTION AT THE FRAME, CLEAN THE CONNECTION POINT ON THE FRAME TO BARE METAL, APPLY AN ANTI-OXIDATION COMPOUND, AND CONNECT USING A TWO-HOLE, LONG-BARREL COMPRESSION LUG. SOME EXISTING SITES MAY BE USING SINGLE HOLE LUGS FOR THESE PURPOSES. THESE CONNECTIONS SHOULD NOT BE REPLACED "IF" THE RUNS ARE TO SHORT AND THERE IS NO LIKELIHOOD OF MECHANICAL STRESS ON THE CABLE THAT WOULD LOOSEN THESE CONNECTIONS.
 3. DC DISTRIBUTION PANELS, CHASSIS, BATTERY RACKS, FRAMES AND CHASSIS OF RECTIFIERS AND RECTIFIERS SHOULD BE BONDED DIRECTLY TO THE MGB/FGB. WHEN UTILIZING AN INTEGRATED DC/DC CONVERTER SYSTEM, THE 48-VOLT RETURN DISTRIBUTION BAR SHALL BE BONDED TO THE 24-VOLT RETURN DISTRIBUTION BAR WITH A MINIMUM CONDUCTOR SIZE OF A #2, STRANDED COPPER CONDUCTOR, IN A WIRELESS SHELTER WITH A DEDICATED 48-VOLT PLANT, THE 48-VOLT RETURN DISTRIBUTION BAR SHALL BE BONDED TO THE MGB. ALL BATTERY FRAMES SHALL BE BONDED TO THE MGB WITH A #6 GREEN THWN INSULATED CONDUCTOR. (ONLY APPLICABLE WHEN MODIFICATIONS ARE REQUIRED TO THE BATTERY OR POWER PLANT.)
 4. VERIFY (E) SYSTEM IS PER ATTACHED NOTES AND DETAILS AND IF NOT NOTIFY P.M. FOR REQUIRED UPGRADES.

2 - INTERIOR GROUNDING

N.T.S.



- COMPRESSION TYPE CONNECTION
- EXOTHERMIC WELD

NOTE:
GROUNDING SCHEMATIC IS DIAGRAMMATIC AND DOES NOT REFLECT ACTUAL EQUIPMENT LAYOUT ORIENTATION. REFER TO PLANS FOR DIRECTION.

1 - GROUNDING SCHEMATIC

N.T.S.



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GROUNDING
SCHEMATIC

A5.00