

LEGEND

- 4/0 GROUND WIRE
- GROUND CONNECTION
- ⊗ 3/4" Ø 10' COPPERWELD GROUND ROD

CALCULATION NOTES:

1. SOIL MODEL.

LAYER	UPPER BOUNDARY	LOWER BOUNDARY	RESISTIVITY
1	0.00'	2.00'	61 ΩM
2	2.00'	23.33'	750 ΩM
3	23.33'	∞	10 ΩM
2. DESIGN FAULT CURRENT: 3000A.
3. DESIGN CLEARING TIME: 45 CYCLES.

GENERAL NOTES:

1. MAIN GROUND GRID SHALL BE BURIED TO A DEPTH OF 1'-6" BELOW SUBGRADE.
2. VAULTS TO BE BONDED TO GRID WITH 4/0 CABLE LOOP AROUND INSIDE OF EACH VAULT. REBAR IN VAULT TO BE BONDED TO GRID VIA TWO THREADED TERMINAL CONNECTION INSERTS OR PER MANUFACTURER INSTRUCTIONS. VAULT METALLIC PLATES AND LIDS TO BE BONDED WITH GROUND BRAID.
3. GROUND CABLE TO BE TRAINED NEATLY OVER FOUNDATIONS IF APPLICABLE.
4. PIGTAILS AND EXPOSED GROUNDING CONDUCTOR SHALL BE PROTECTED FROM PHYSICAL DAMAGE DURING CONSTRUCTION. FINAL CONSTRUCTION AT THIS SITE SHALL HAVE NO ABOVE GRADE CONDUCTORS.
5. DO NOT DRIVE GROUND RODS CLOSER THAN 18" FROM ANY FOOTING.
6. SOIL RESISTIVITY MEASURED BY SIEMENS ASSOCIATES USING THE WENNER 4-PIN METHOD.
7. GROUNDING DIMENSIONS ARE APPROXIMATE.
8. STUDY ASSUMED 2" OF ASPHALT AT ALL LOCATIONS WITHIN TOUCHING DISTANCE OF GRID AREA.
9. FOR GROUNDING DETAILS AND BOM, SEE SH C11 SHEET SERIES.
10. CONCENTRIC NEUTRALS AND SHIELDS OF CABLES TO BE BONDED TO GROUND GRID. CABLE BONDING DESIGN BY 3U TECHNOLOGIES.
11. STUDY ASSUMES GROUNDS TRAVELING WITH EACH CIRCUIT BACK TO UCMF ARE BONDED TO GRID AT UCMF AND AT DRIFTWOOD LANDING SITE.



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A DIVISION OF
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NO.	DATE	REVISION	DR	BY	APVD
A	10/15/19	ISSUED FOR BIDDING	MDG	PTO	MPA

DESIGNED BY:	M ANTONISHEN	DATE:	SEP 2019
DRAFTED BY:	D VOSBURG	DRAWING NO.:	ORSU000018100C10-03
CHECKED BY:	P OSWALD	PROJECT NO.:	ORSU000018100
APPROVED BY:	M ANTONISHEN	REVISION NO.:	A

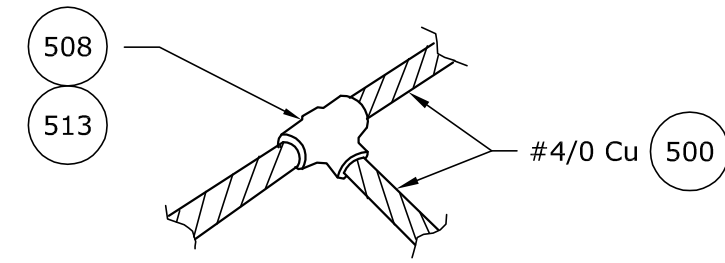
OREGON STATE UNIVERSITY
CORVALLIS, OR

PACWAVE UTILITY CONNECTION AND MONITORING FACILITY
GROUNDING PLAN
DRIFTWOOD CABLE LANDING SITE

SHEET NO.
C10-03

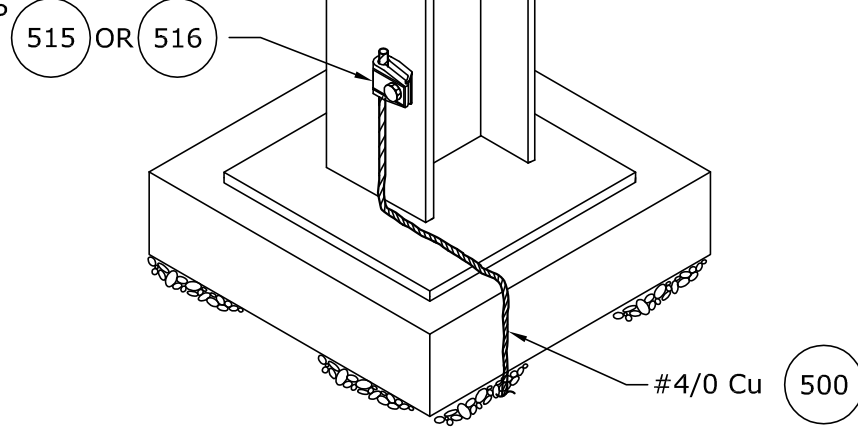
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CADWELD MOLD TAC 2Q2Q AND #150 CARTRIDGE



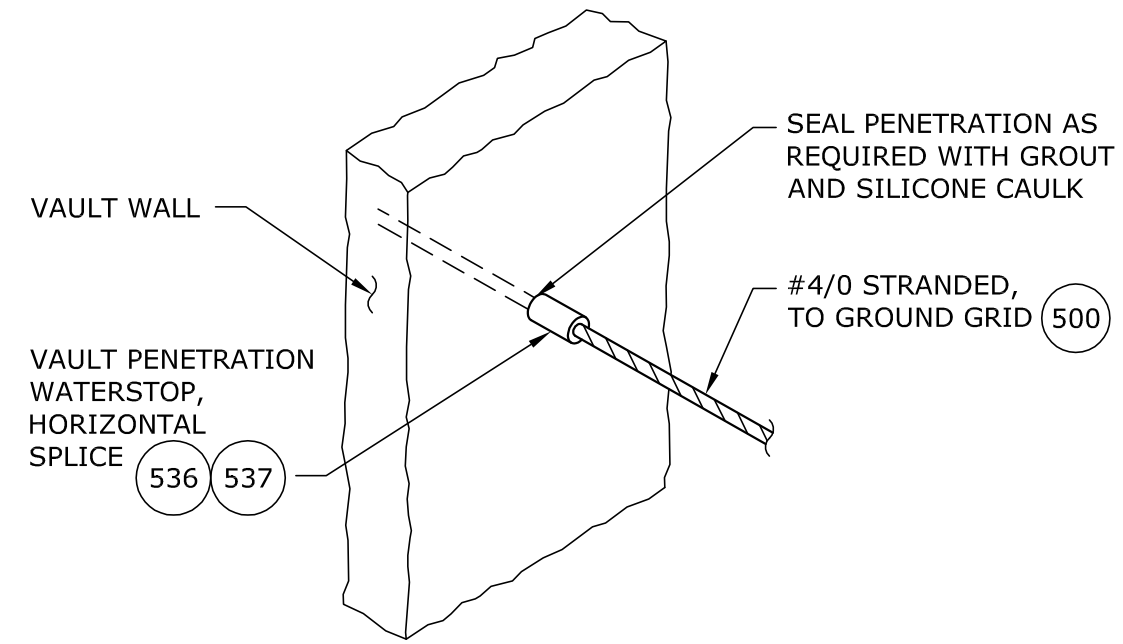
TAP AND RUN - BELOW GRADE
DETAIL A
NTS

BRONZE GROUND CLAMP



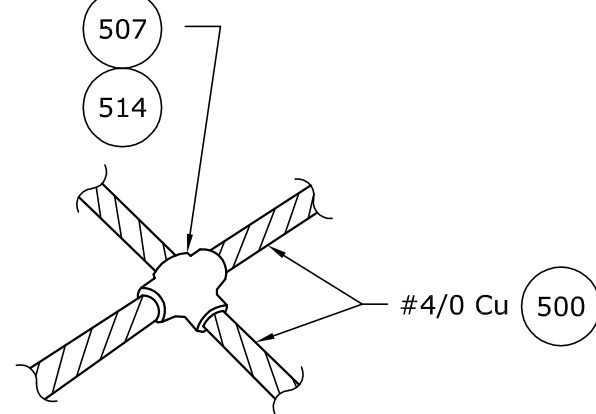
NOTE:
GROUND CONNECTION TO WIDE FLANGE COLUMN SHOWN.
BUILDING DESIGNER TO INCLUDE PRE-DRILLED HOLES FOR
GROUNDING CONNECTIONS.

STRUCTURE GROUNDING
DETAIL G
NTS

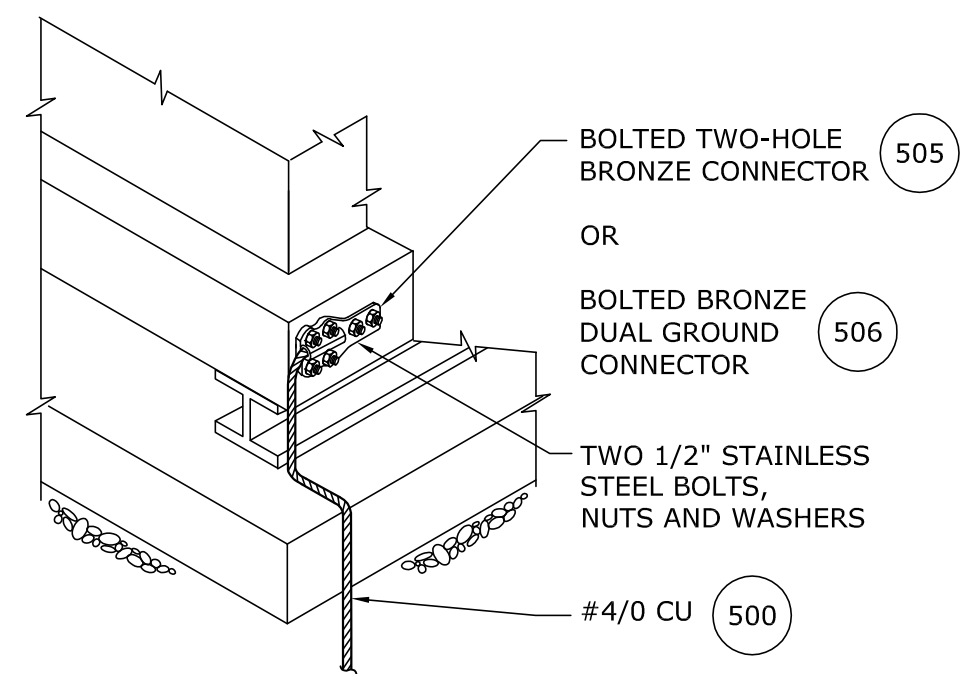


VAULT GROUND PENETRATION
DETAIL V
NTS

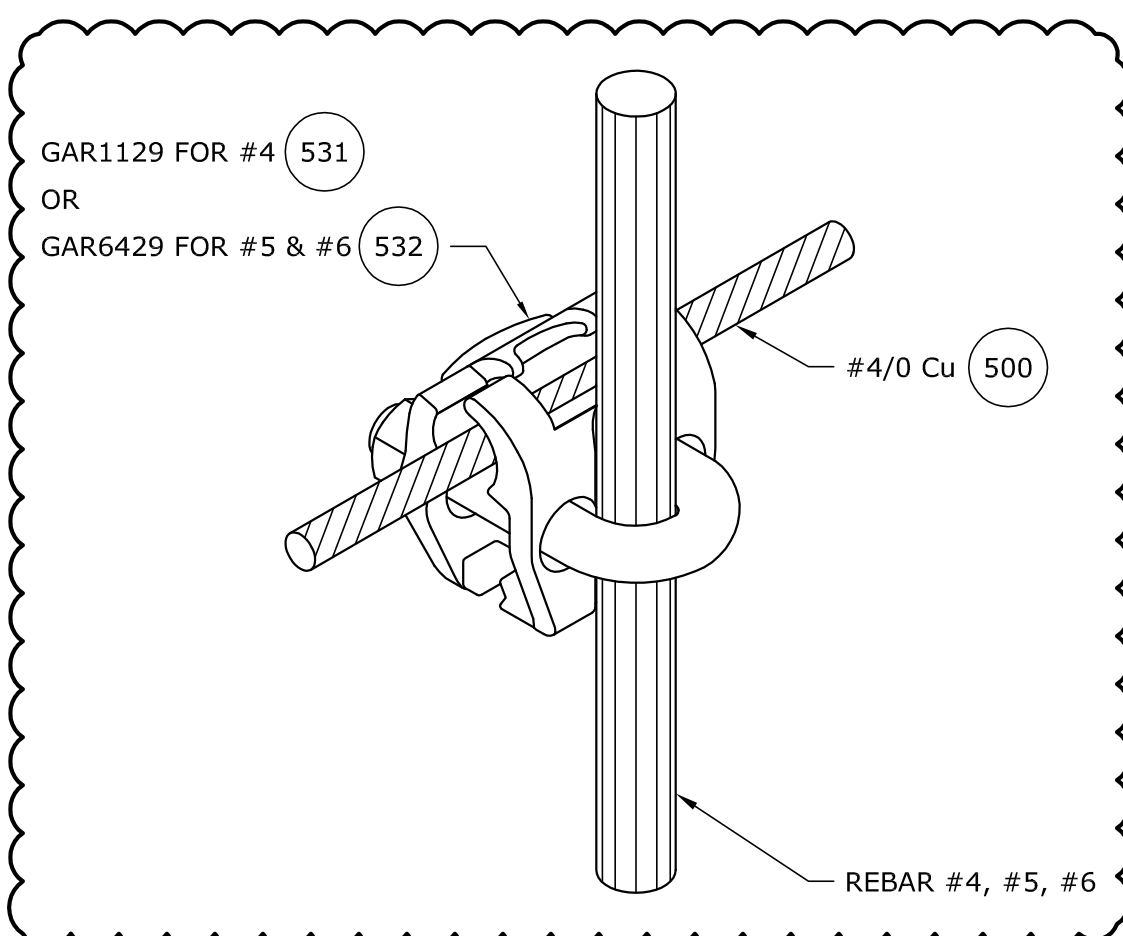
THERMITE CONNECTION, CADWELD MOLD XBM 2Q2Q AND #250 CARTRIDGE



CABLE CROSS - BELOW GRADE
DETAIL C
NTS



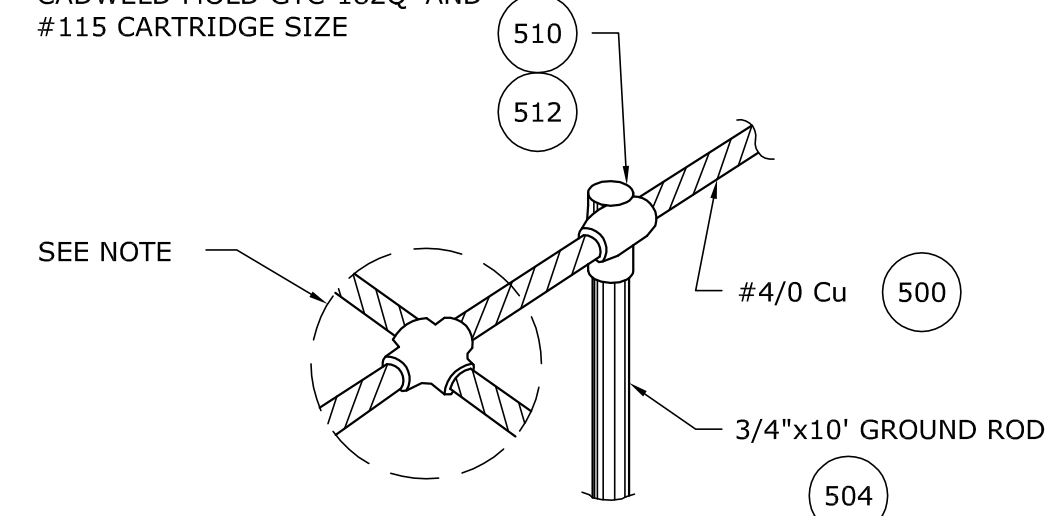
EQUIPMENT GROUND PAD CONNECTOR
DETAIL J
NTS



HOLD FOR FINAL REBAR SIZING
NOTE:
BURNDY GAR1129 & GAR6429 CAN CONNECT IN EITHER
PARALLEL OR PERPENDICULAR ARRANGEMENT.

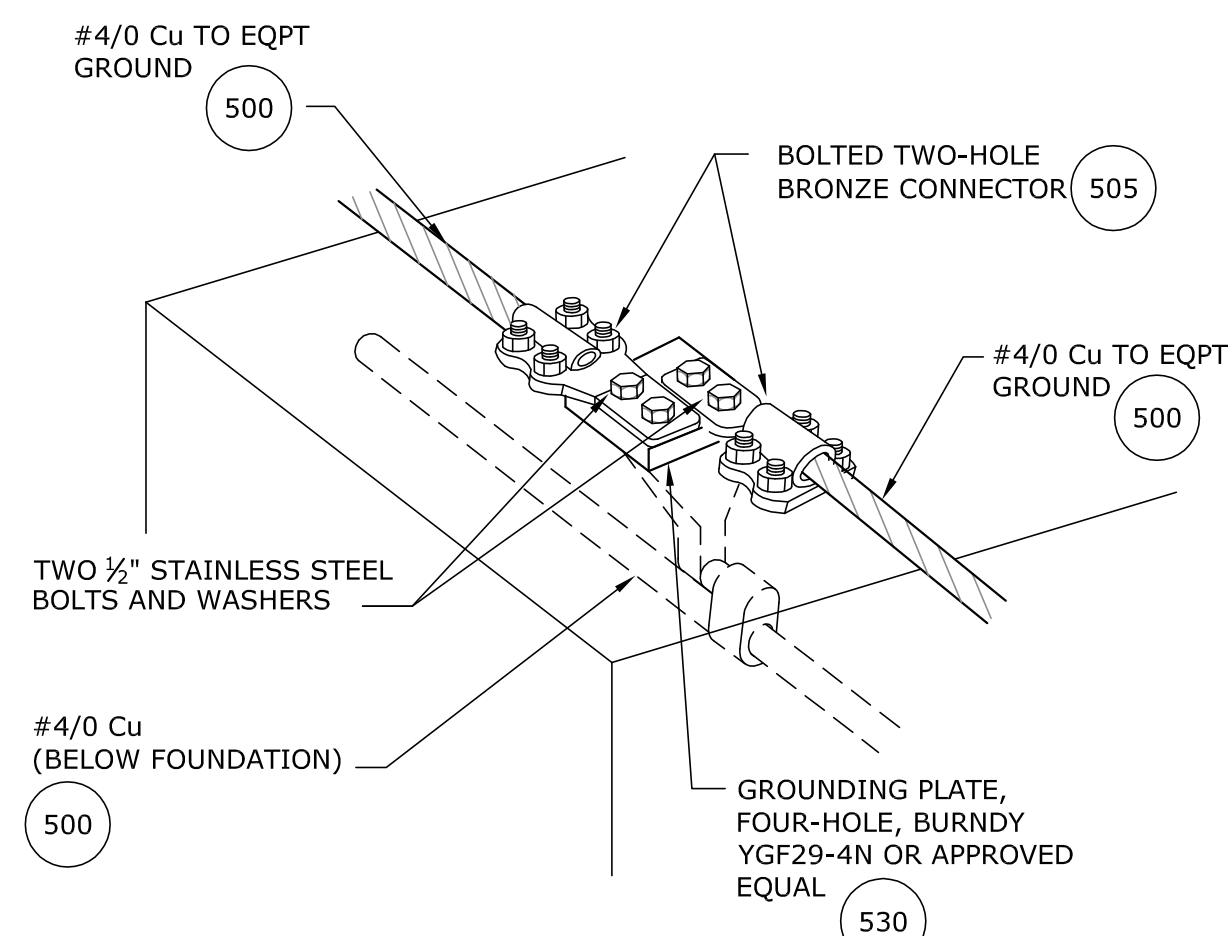
GROUND GRID TO REBAR
DETAIL W
NTS

THERMITE CONNECTION, CADWELD MOLD GTC-182Q AND #115 CARTRIDGE SIZE

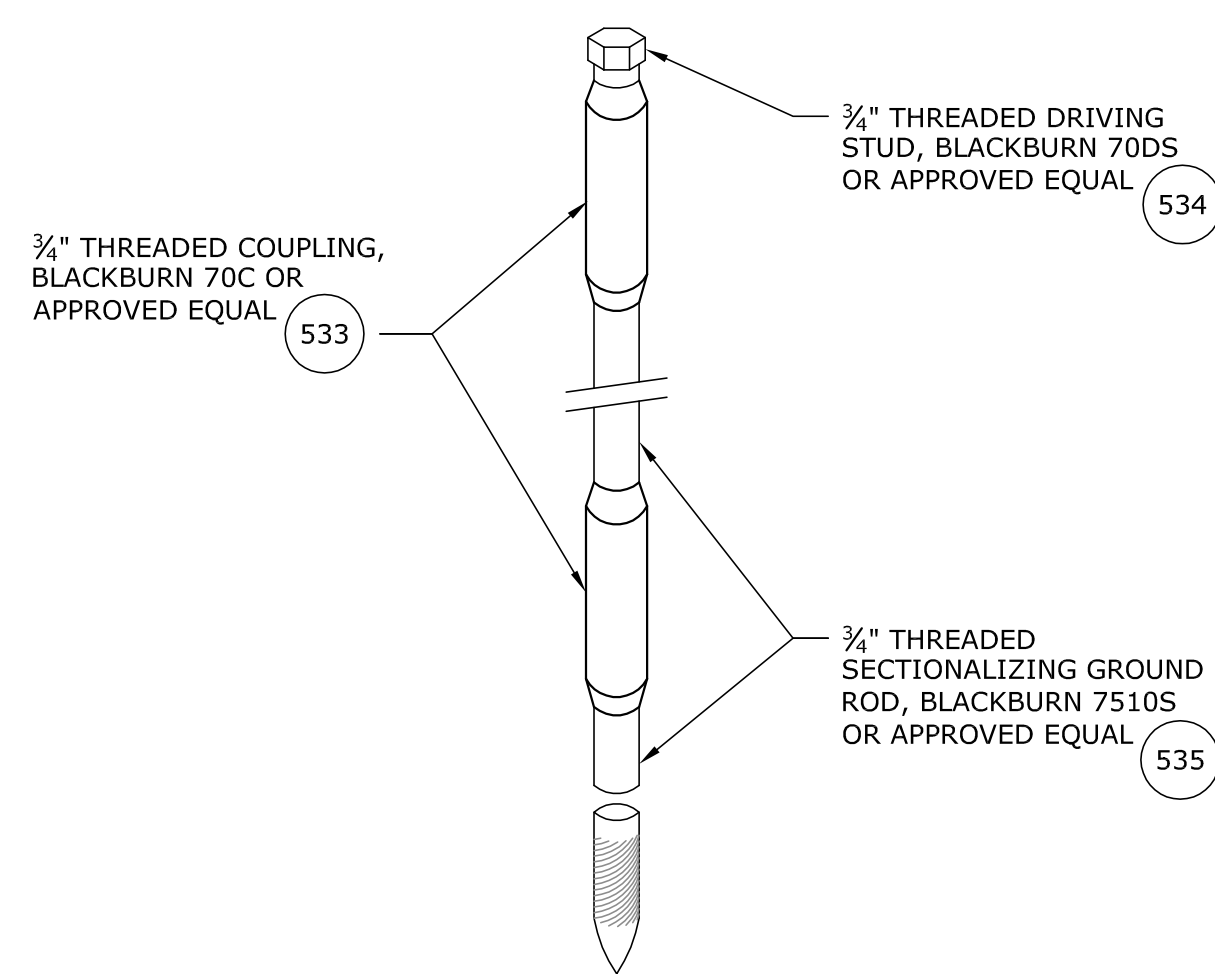


NOTE:
WHERE A GROUND ROD IS INDICATED ON THE GROUNDING
PLANS, SH C10-01 AS A CROSSING CONNECTION, THE GROUND
ROD CONNECTION SHALL BE SEPARATE.

CABLE TO GROUND ROD - BELOW GRADE
DETAIL D
NTS



EQUIPMENT TIE THROUGH FOUNDATION
DETAIL Q
NTS



SECTIONAL GROUNDING ROD ATTACHMENTS
DETAIL X
NTS



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NO.	DATE	REVISION	DR	BY	APVD
B	09/18/19	ISSUED FOR BIDDING	MDG	PTO	MPA
A	08/28/19	PRELIMINARY FOR DOE/OWNER REVIEW	MDG	PTO	MPA

DESIGNED BY:	P OSWALD	DATE:	SEP 2019
DRAFTED BY:	M GUIDOTTI	DRAWING NO.:	ORSU000018100C11-01
CHECKED BY:	M ANTONISHEN	PROJECT NO.:	ORSU000018100
APPROVED BY:	M ANTONISHEN	REVISION NO.:	B

OREGON STATE UNIVERSITY
CORVALLIS, OR

PACWAVE UTILITY CONNECTION AND MONITORING FACILITY

GROUNDING DETAILS

SHEET NO.

C11-01

ISSUED FOR BIDDING

GROUNDING BILL OF MATERIALS			
ITEM NO.	QTY	DESCRIPTION	MANUFACTURER REFERENCE
500	600	CONDUCTOR, #4/0 CU, BARE, STRANDED, SOFT DRAWN	
501		NOT USED	
502		NOT USED	
503		NOT USED	
504	12	GROUND ROD, COPPER 3/4" DIAMETER X 10'-0" LENGTH	BLACKBURN 7510
505		CONNECTOR, BRONZE, #2/0 CU OR #4/0 CU TO TWO-HOLE PAD, BOLTED	
506		CONNECTOR, BRONZE, #2/0 CU OR #4/0 CU TO FOUR-HOLE PAD, BOLTED	
507		MOLD, #4/0 CU TO #4/0 CU, CROSS CONNECTION	CADWELD MOLD XBM 2Q2Q
508	1	MOLD, #4/0 CU TO #4/0 CU, TEE CONNECTION	CADWELD MOLD TAC 2Q2Q
509		NOT USED	
510	1	MOLD, #4/0 CU TO 3/4" DIAMETER GROUND ROD	CADWELD MOLD GTC-182Q
511		NOT USED	
512	12	CARTRIDGE, SIZE 115	CADWELD 115
513	22	CARTRIDGE, SIZE 150	CADWELD 150
514		CARTRIDGE, SIZE 250	CADWELD 250
515	AS REQ'D	GROUND CLAMP, BRONZE, BOLTED, #4 TO 300 MCM CU	PDU GPA TYPE 17-159
516	AS REQ'D	GROUND CLAMP, BRONZE, BOLTED, 2-#4 TO 300 MCM CU	PDU GPB TYPE 17-164
517		NOT USED	
518		NOT USED	
519		NOT USED	
520		NOT USED	
521		NOT USED	
522		NOT USED	
523		NOT USED	
524	5	BRAID, FLEXIBLE COPPER GROUND	PDU 111-182-24-1HPS
525		NOT USED	
526		NOT USED	
527		NOT USED	
528		NOT USED	
529		NOT USED	
530		THROUGH FOUNDATION GROUNDING PAD CONNECTOR	BURNDY YGF29-4N OR APPROVED EQUAL
531		GROUND GRID TIE TO #4 REBAR	BURNDY GAR1129
532		GROUND GRID TIE TO #6 REBAR	BURNDY GAR6429
533		3/4" THREADED COUPLING	BLACKBURN 70DS
534		3/4" THREADED DRIVING STUD	BLACKBURN 70C
535		3/4" THREADED SECTIONALIZING GROUND ROD	BLACKBURN 7510S
536	10	CARTRIDGE, SIZE 90	CADWELD 90
537	1	MOLD, #4/0 CU TO #4/0 CU SPLICE CONNECTION	CADWELD SSC-2Q

NOTES:

1. DETAILS ON SHEET C11-01 ARE TYPICAL, AND ARE NOT TO SCALE (NTS).
2. FOR LOCATION OF GROUNDING PLAN, SEE C10-03 SET SHEETS.
3. FOR ADDITIONAL GROUNDING DETAILS, SEE C11 SET SHEETS.
4. MATERIAL QUANTITIES SHOWN ARE FOR CONTRACTORS CONVENIENCE. CONTRACTOR TO VERIFY QUANTITIES AND CATALOG NUMBERS PRIOR TO ORDERING MATERIALS.
5. ILSCO DE-OX NAED 96635 (NON-GRIT) SHALL BE USED ON ALL FITTING SURFACES AND BOLT THREADS.
6. BI-METAL STRIP SHALL BE USED ON ELECTRICAL FITTING SURFACES (BRONZE TO ALUMINUM).
7. MATERIAL LIST IS INTENDED TO SHOW MAJOR EQUIPMENT ITEMS. ADDITIONAL MISCELLANEOUS ITEMS MAY BE REQUIRED FOR A COMPLETE INSTALLATION.
8. MANUFACTURERS REFERENCE NUMBER INDICATES TYPE OF MATERIAL INTENDED. OTHER MANUFACTURERS EQUIPMENT MAY BE USED SUBJECT TO OWNERS AGREEMENT THAT THE OFFERED EQUIPMENT MEETS THE INTENDED PURPOSE.
9. BOND CONCENTRIC NEUTRAL OF TERMINATING CABLES TO GROUNDING CONDUCTOR.



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NO.	DATE	REVISION
A	10/15/19	ISSUED FOR BIDDING

DESIGNED BY: P OSWALD	DATE: OCT 2019
DRAFTED BY: R MAY	DRAWING NO.: ORSU000018100C11-03
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OREGON STATE UNIVERSITY
CORVALLIS, OR

PACWAVE UTILITY CONNECTION AND MONITORING FACILITY
GROUNDING BOM AND NOTES DRIFTWOOD CABLE LANDING SITE

SHEET NO.
C11-03

ISSUED FOR BIDDING