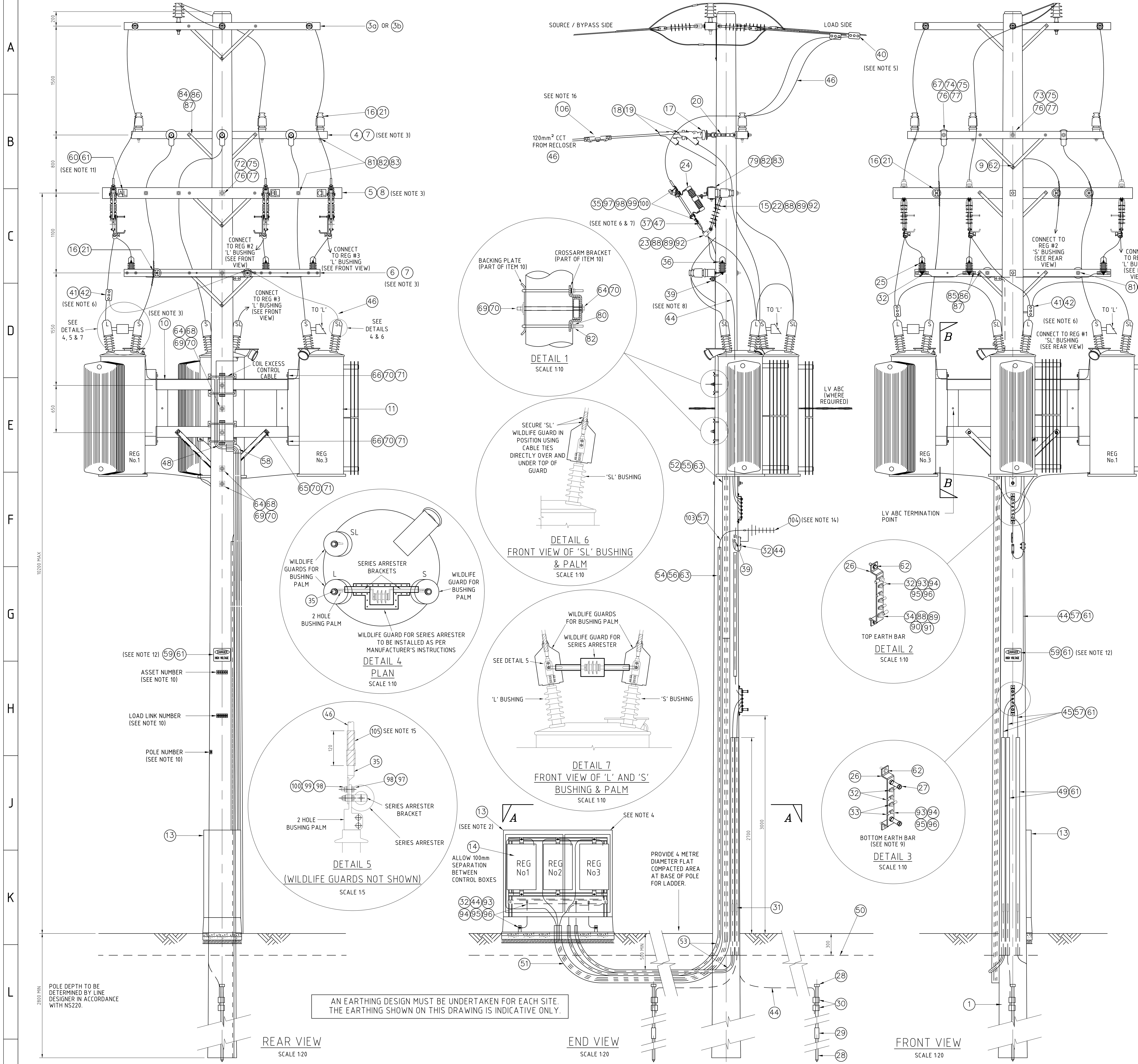

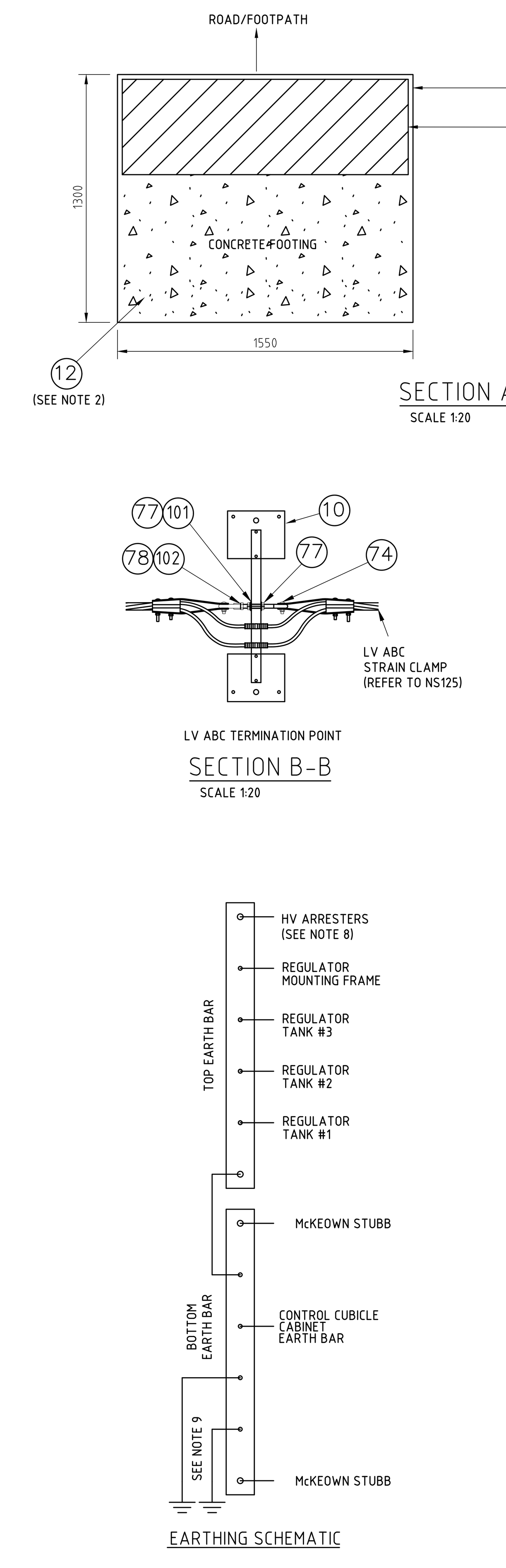

GROUND MOUNTED CONTROL UNITS SHALL BE USED WHERE THE CONTROL UNIT HOUSING IS NOT LIKELY TO BE ADVERSELY AFFECTED. ADVERSE AFFECTS INCLUDE POTENTIAL INTERFERENCE BY LIVESTOCK OR INSTALLATION IN FLOOD PRONE SITES. IN SUCH SITES, POLE MOUNTED CONTROL UNITS MAY BE USED.

NOTES

1. MINIMUM CLEARANCES: PHASE TO EARTH TO BE GREATER THAN 200mm.
   PHASE TO PHASE TO BE GREATER THAN 280mm.
2. REGULATOR CONTROL CABINET IS TO BE POSITIONED EITHER IN THE FOOTPATH ALLOCATED AREA OR IN THE LINE EASEMENT NO CLOSER THAN 2500 FROM THE POLE. A 1550 x 1300 CONCRETE FOOTING IS REQUIRED FOR THE CONTROL CABINET AS PER DRAWING 191227. THE CONTROL BOX MOUNTING FRAME AND EARTH BAR ARE SUPPLIED WITH FIBREGLASS CABINET (ITEM 13) PURCHASED FROM FULTON INDUSTRIES AUSTRALIA (PART No. F11061EA). PH. (02) 4323 4242
3. FOR REGULATOR MOUNTING FRAME FABRICATION DETAIL REFER TO DRAWING 181618. FOR CROSSARM DRILLING DETAIL REFER TO DRAWING 224230.
4. EARTH ROD IS NOT TO BE POSITIONED UNDER CONTROL CABINET CONCRETE PLINTH.
5. WHERE CCT MAINS ARE USED, STANDARD EARTHING POINTS & COVERS ARE TO BE INSTALLED AS DETAILED IN NS126.
6. ALL HV CONNECTIONS (EXCEPT CONNECTIONS TO THE ARRESTERS) ARE TO BE MADE USING 7/4.75 120mm² COVERED CONDUCTOR THICK (CCT120). WHERE THE CONDUCTOR IS REQUIRED TO BE STRIPPED PRIOR TO TERMINATION, THE ENTIRE STRIPPED LENGTH MUST BE CLEANED & WIRE BRUSHED VIGOROUSLY AND SUITABLE JOINTING COMPOUND APPLIED TO IT IMMEDIATELY.
7. THE HV CONNECTIONS TO THE ARRESTERS ARE TO BE MADE USING 35mm² COVERED COPPER CONDUCTOR (ITEM 47) AND SHALL HAVE UV STABILIZED MASTIC LINED LV HEATSHRINK TUBING SHRUNK OVER THE BARREL OF THE LUGS AND THE CABLE ENDS.
8. HV SURGE ARRESTERS ARE TO BE EARTHED BY DAISY CHAINING AND ELECTRICALLY BONDED TO TOP EARTH BAR USING 70mm² PVC INSULATED COPPER CONDUCTOR (ITEM 44).
9. 95mm² ALUMINIUM EARTH CONDUCTOR SHALL BE USED FROM THE BOTTOM EARTH BAR TO 300mm ABOVE GROUND WHERE 70mm² COPPER EARTH CONDUCTORS WILL BE EXTENDED VIA BI-METALLIC LINKS TO THE EARTH ELECTRODES. REFER TO DG158A FOR FURTHER DETAILS.
10. REGULATOR (ASSET) NUMBER TO BE INSTALLED ON POLE APPROXIMATELY 3600mm ABOVE GROUND. LOAD LINK NUMBER TO BE INSTALLED IN ACCORDANCE WITH NS158 TABLE 4.6 – 'HV & LV LINK SET NUMBER LABELS' (APPROXIMATELY 3000mm ABOVE GROUND). THE POLE NUMBER SHALL BE INSTALLED IN ACCORDANCE WITH NS148 (BETWEEN 2400mm & 3000mm ABOVE GROUND).
11. PHASE LINK LABELS TO BE INSTALLED ADJACENT TO EACH LINK AS SHOWN USING MINIMUM 50mm ALUMINIUM (BLACK ON YELLOW) CHARACTER TAGS.
12. DANGER SIGNS TO BE INSTALLED ON BOTH FRONT & REAR OF POLE. SIGNS MUST BE BENT AROUND POLE BEFORE SECURING.
13. A POLE MOUNTED EXTERNAL ANTENNA CAN BE INSTALLED WHERE REQUIRED. THE ACTUAL LOCATION OF THE ANTENNA ON THE POLE IS TO BE DETERMINED DURING INSTALLATION OF COMMUNICATION EQUIPMENT. THE LOCATION IS ALWAYS TO COMPLY WITH THE MINIMUM SAFE WORKING DISTANCES SPECIFIED IN AUSGRID'S ELECTRICAL SAFETY RULES.
14. DRAW WIRE TO BE INSTALLED INSIDE Ø40 CONDUIT FOR FUTURE COMMS COAXIAL CABLE. SECURE DRAW WIRE AND SEAL END OF CONDUIT WITH SUITABLE PVC TAPE.
15. INSTALL MEDIUM WALLED MASTIC LINED BLACK HEATSHRINK OVER THE BARE LUG BARREL AND CABLE INSULATION.
16. STANDARD CCT EARTHING POINTS AND COVERS ARE TO BE INSTALLED ON THE CCT CABLE USED FOR REGULATOR SUPPLY (ITEM 46). THESE ARE NORMALLY LOCATED AT THE INTELLIRUPTER POLE. HOWEVER IF THE INTELLIRUPTER POLE IS NOT WITHIN LINE OF SIGHT OF THE REGULATOR POLE, STANDARD EARTHING POINTS AND COVERS ARE TO BE INSTALLED ON BOTH ENDS OF THE CCT CABLE.

REFERENCE DRAWINGS	
11kV POLE MOUNTED VOLTAGE REGULATOR CONTROLLING INTELLIRUPTER	244230
11kV POLE MOUNTED VOLTAGE REGULATOR WITH CONTROLLING INTELLIRUPTER	224227
EATON COOPER POWER SYSTEMS 100A & 200A POLE MOUNTED REGULATOR MOUNTING FRAME	181618
11kV POLE MOUNTED VOLTAGE REGULATOR GROUND MOUNTED FIBREGLASS CABINET CONCRETE FOOTING DETAILS	191227
11kV POLE MOUNTED VOLTAGE REGULATOR TIMBER CROSSARM DRILLING DETAIL	224230

EQUIPMENT WEIGHTS	
EATON COOPER POWER SYSTEMS VR32 200A REGULATOR (PER UNIT)	1500kg

ITEM	DESCRIPTION	DWG No.	STOCK CODE	QTY.
106	CCT EARTHING POINT COVER (SEE NOTE 16)		144741	3
105	HEATSHRINK TERMINATION KIT FOR HV DROPPER LUGS		152207	2
104	ANTENNA (WHERE REQUIRED FOR COMMS INSTALL)			1
103	COMMUNICATIONS COAXIAL CABLE (WHERE REQUIRED FOR COMMS INSTALL)			AS REQ.
102	NUT – M20, HEX, GALV.	515466	175361	2
101	WASHER – SPRING, M20, GALV.	518082	175569	2
100	NUT – M10, HEX, STAINLESS STEEL	515467	H39401	30
99	WASHER – BELEVILLE, M10, STAINLESS STEEL	518082	177296	30
98	WASHER – FLAT ROUND, M10, STAINLESS STEEL	518081	49411	60
97	SET SCREW – M10 x 30, HEX, STAINLESS STEEL	515467	45088	30
96	NUT – M12, HEX, STAINLESS STEEL	515467	8987	22
95	WASHER – BELEVILLE, M12, STAINLESS STEEL	518082	175903	22
94	WASHER – FLAT ROUND, M12, STAINLESS STEEL	518081	49429	44
93	SET SCREW – M12 x LENGTH TO SUIT, HEX, STAINLESS STEEL	515467		22
92	NUT – M16, HEX, NYLOC, STAINLESS STEEL		177122	6
91	NUT – M16, HEX, STAINLESS STEEL	515467	179756	2
90	WASHER – BELEVILLE, M16, STAINLESS STEEL	518082	157487	2
89	WASHER – FLAT ROUND, M16, STAINLESS STEEL	518081	H39621	16
88	SET SCREW – M16 x 40, HEX, STAINLESS STEEL	515467	H38413	8
87	WASHER – FLAT ROUND, M12, GALV.	518081	177982	24
86	WASHER – CONICAL, M12, GALV.	517278	H39639	12
85	BOLT & NUT – M12 x 140, HEX, GALV.	515466	46821	10
84	BOLT & NUT – M12 x 180, HEX, GALV.	515466	46888	2
83	WASHER – FLAT ROUND, M16, GALV.	518081	177984	11
82	WASHER – CONICAL, M16, GALV.	517278	H39647	11
81	WASHER – SQUARE, M16, 50x50, GALV.	518081	H39257	8
80	U BOLT – M16, SIZE TO SUIT POLE, c/w 4 NUTS & WASHERS, GALV.	514409		4
79	BOLT & NUT – M16 x 200, HEX, GALV.	515466	83725	3
78	EYENUT – M20, GALV.	513951	H38853	2
77	WASHER – FLAT ROUND, M20, GALV.	518081	177986	9
76	WASHER – CONICAL, M20, GALV.	517278	H39655	5
75	WASHER – SQUARE, M20, 75x75, GALV.	518081	H39231	8
74	EYEBOLT – M20 x 200, c/w 2 HEX NUTS, GALV.	513653	H37881	4
73	EYEBOLT – M20 x LENGTH TO SUIT POLE, c/w 2 HEX NUTS, GALV.	513653		1
72	BOLT & NUT – M20 x LENGTH TO SUIT POLE, HEX, GALV.	515466		2
71	WASHER – SPRING, M24, GALV. AS1111		PURCHASE	8
70	WASHER – FLAT ROUND, M24, GALV.	518081	177981	25
69	WASHER – CONICAL, M24, GALV.	517278	H39663	5
68	WASHER – SQUARE, M24, 75x75, GALV.	518081	H39273	3
67	WASHER – LIP, M24, 114x75, GALV.	518081	176912	2
66	BOLT & NUT – M24 x 65, HEX, GALV. AS1111		PURCHASE	6
65	BOLT & NUT – M24 x 90, HEX GALV. AS1111		PURCHASE	2
64	BOLT & NUT – M24 x LENGTH TO SUIT POLE, HEX, GALV.	515465		5
63	COACH SCREW – M6 x 40, HEX, GALV.		50591	AS REQ.
62	COACH SCREW – M12 x 100, HEX, GALV.		H40484	7
61	CLOUT – Ø2.3 x 40, GALV.		50963	AS REQ.
60	CHARACTER TAGS – 50mm ALUMINIMUM, BLACK ON YELLOW		PURCHASE	AS REQ.
59	SIGN – "DANGER HIGH VOLTAGE"	503117	H47012	2
58	BEND – 100mm HIGH IMPACT ABS (ABScon)		PURCHASE	1
57	SADDLE – TO SUIT CABLE		PURCHASE	AS REQ.
56	SADDLE – 40mm, FULL, GALV.		PURCHASE	AS REQ.
55	SADDLE – 100mm, FULL, GALV.		PURCHASE	AS REQ.
54	CONDUIT – 40mm HIGH IMPACT ABS (ABScon)		PURCHASE	AS REQ.
53	CONDUIT – 40mm HEAVY DUTY ORANGE (BELOW GROUND ONLY)		PURCHASE	AS REQ.
52	CONDUIT – 100mm HIGH IMPACT ABS (ABScon)		PURCHASE	AS REQ.
51	CONDUIT – 100mm HEAVY DUTY ORANGE (BELOW GROUND ONLY)		PURCHASE	AS REQ.
50	COVER – UNDERGROUND CABLE PROTECTION, 150mm WIDE		151084	AS REQ.
49	COVERGUARD – PVC, HIGH IMPACT, BLACK	205775	157552	3
48	CONTROL CABLE – 12 CORE, 18m, EXTENSION		181674	3
47	CONDUCTOR – 35mm² (19/1.53) Cu, LDPE INSULATED, PVC SHEATHED		H14578	AS REQ.
46	COVERED CONDUCTOR THICK – CCT120 Al (7/4.75)		147421	AS REQ.
45	CONDUCTOR – SINGLE CORE OF 95mm² ABC (SEE DG158)		67959	AS REQ.
44	CONDUCTOR – 19/2.14 BLACK PVC INSULATED HD (70mm² EARTH)		60111	AS REQ.
43				
42	COVER – FOR CCT PARALLEL GROOVE CLAMP		144576	3
41	CLAMP – PARALLEL GROOVE, 2 BOLT, TO SUIT CCT		144568	3
40	CLAMP – PARALLEL GROOVE, TO SUIT FEEDER CONDUCTOR & CCT	514099		3
39	CLAMP – PARALLEL GROOVE, 2 BOLT, COPPER		176946	2
38	LUG KIT – FOR 35mm² Cu LDPE INSULATED PVC SHEATHED CONDUCTOR		H125260	1
37	LUG – COMPRESSION, TINNED Cu, M10, FOR 35mm² Cu CONDUCTOR		SEE ITEM 38	3
36	LUG – COMPRESSION, TINNED Cu, M12, FOR 35mm² Cu CONDUCTOR		SEE ITEM 38	3
35	LUG – COMPRESSION, BI-METALLIC, 2xM10 HOLES, FOR CCT120		176472	15
34	LUG – COMPRESSION, TINNED Cu, M16, FOR 70mm² Cu CONDUCTOR		57877	2
33	LUG – COMPRESSION, BI-METALLIC, M12, FOR 95mm² AL CONDUCTOR		58743	3
32	LUG – COMPRESSION, TINNED Cu, M12, FOR 70mm² Cu CONDUCTOR		74831	19
31	LINK – COMPRESSION, BI-METALLIC, 95mm² AL TO 70mm² CU		H107797	2
30	CONNECTOR – Cu, COMPRESSION, 70mm² CONDUCTOR TO Ø15 ROD		H31699	AS REQ.
29	COUPLING SLEEVE – TO SUIT Ø15 EARTH RODS		H31649	AS REQ.
28	EARTH ROD – 1800 x Ø15 COPPERCLAD STEEL CORED		H31631	AS REQ.
27	EARTH STUB – McKEOWN	520088	H108415	2
26	EARTH BAR – TINNED COPPER, FLAT, 50.8x6.3	222406	182110	2
25	SURGE ARRESTER – 9kV, 10kA, POLYMERIC DISTRIBUTION TYPE		111948	3
24	ISOLATING LINK – SINGLE PHASE, 12kV, 630A		58750	3
23	HANGER – CABLE CLAMP, SUSPENSION		H113472	3
22	LINK PLATE – TWISTED, 170x50x6, GALV.	151086	176901	3
21	TIE WIRE – PREFORMED, INSULATED FOR CCT120		144600	8
20	SAG LINK – 70kN (PLP PART No. CTSLEW-070-1)		PURCHASE	3
19	COVER – FOR STRAIN CLAMP		144543	3
18	STRAIN CLAMP – FOR CCT120		144527	3
17	INSULATOR – STRAIN, FOR 11kV CCT		144550	3
16	INSULATOR – M16 x 145 STUD, FOR 11kV CCT		145052	8
15	INSULATOR – 22kV LONGROD		150375	3
14	REGULATOR CONTROLER – (SUPPLIED WITH REGULATOR)			3
13	CABINET – FIBREGLASS, FULTON INDUSTRIES AUST. PART No. F11061EA		PURCHASE	1
12	CONCRETE FOOTING FOR FIBREGLASS CABINET	191227	FABRICATE	1
11	REGULATOR UNIT – EATON COOPER POWER SYSTEMS VR32, 200AMP		176613	3
10	REGULATOR MOUNTING FRAME	181618	FABRICATE	1
9	BRACE – 690x40x5 FLAT BAR, FOR CROSSARM	514385	H17738	8
8	GAIN BLOCK – 150mm, ALUMINIUM		146290	1
7	GAIN BLOCK – 100mm, ALUMINIUM		146274	2
6	CROSSARM 3 – WOOD, 2700x150x100	224230	H23761	1
5	CROSSARM 2 – WOOD, 3300x150x100	224230	H23020	1
4	CROSSARM 1 – WOOD, 2700x150x100	224230	H23761	1
3b	11kV CCT THROUGH TERMINATION (2-11CCT)	174962		1
3a	11kV THROUGH TERMINATION (2-11)	513915		1
2				
1	POLE – WOOD, MIN 15.5m/12kN, CONCRETED MIN 2.8m IN GROUND			1

CONSTRUCTION

Ausgrid
ASSET ENGINEERING, POLICY AND STANDARDS
TRANSMISSION & DISTRIBUTION SUBSTATION ENGINEERING
24 CAMPBELL STREET, SYDNEY

SCALE	AS SHOWN
DESIGNED	D.DAFO
DRAWN	D.DAFO
CHECKED	P.JARVIS
APPROVED	D.GRCEV
DATE	17/05/2011
PROJECT NUMBER	PM02-02010-1-3-1
PROJTRAK NUMBER	

STANDARD CONSTRUCTION 3 UNIT 11kV POLE MOUNTED REGULATOR WITH GROUND MOUNTED CONTROL PANEL CONSTRUCTION DETAIL

SIZE	DRAWING No	SHEET	AMD
A0	224229	1	5

20110714