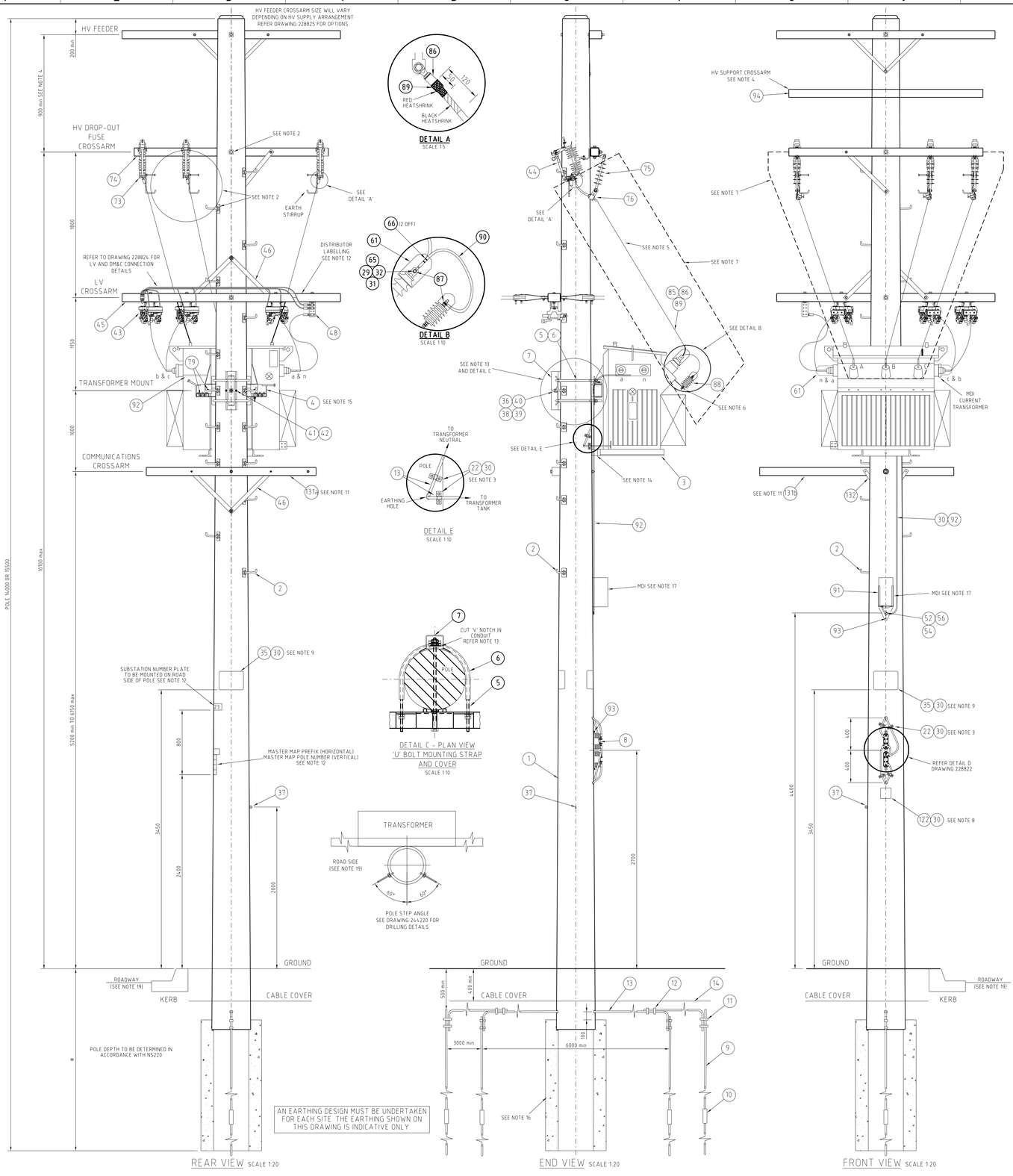

ITEM	DESCRIPTION	DWG NO	STOCK CODE	QTY
REFER NOTE 19	POLE - COMPOSITE			1
1a	14m x 24kN NOT DRILLED	244221	185075	
1b	15.5m x 24kN NOT DRILLED	244222	185016	
1c	14m x 24kN MANUFACTURER DRILLED	251876	185462	
1d	15.5m x 24kN MAUFACTURER DRILLED	251877	185463	
2	POLE STEP FOR COMPOSITE POLES	244223	184743	AS REQ
3	3 PHASE TRANSFORMER - STRAP HUNG			1
3a	25kVA 11000/433V Dyn11 3 PHASE TRANSFORMER		180374	
3b	63kVA 11000/433V Dyn11 3 PHASE TRANSFORMER		180381	
3c	100kVA 11000/433V Dyn11 3 PHASE TRANSFORMER		180377	
3d	200kVA 11000/433V Dyn11 3 PHASE TRANSFORMER		180376	
3e	400kVA 11000/433V Dyn11 3 PHASE TRANSFORMER		180383	
3f	400kVA 11000/433V Dyn1 3 PHASE TRANSFORMER		180351	
4	TRANSFORMER MOUNTING BRACKET	566101	176962	1
5	'U' BOLT Φ368	514409	H36932	2
6	CONDUIT 25mm FLEXIBLE PVC		H8919	AS REQ
7	FIBREGLASS COVER FOR TRANSFORMER MOUNTING BRACKET	566374	176961	1
8	LINK EARTH BAR FOR POLE SUBSTATIONS	151592	177069	1
9	ELECTRODE - DRIVEN EARTH, Φ15 x 1800mm		H31631	AS REQ
10	COUPLER - EARTH ELECTRODE, TO SUIT Φ15 ROD		H31649	AS REQ
11	'P' CRIMP CONNECTOR - CU, 70mm² TO Φ15 ELECTRODE		H31699	AS REQ
12	'C' CRIMP CONNECTOR - COPPER, COMPRESSION, 70mm² TO 70mm²		177942	AS REQ
13	CONDUCTOR - 19/2.14 BLACK PVC INSULATED HD (70mm² EARTH)		60111	AS REQ
14	PVC/POLYMERIC CABLE COVER - 150mm WIDE		151084	AS REQ
15	NA			
16	NA			
17	NA			
18	NA			
19	NA			
20	LUG - CRIMP, M12, FOR 70mm² COPPER	31077	74831	AS REQ
21	NA			
22	GALVANISED SADDLE FOR 70mm² COPPER EARTH CABLE		176494	AS REQ
23	CLAMP 2 BOLT PARALLEL GROOVE - COPPER		176946	1
24	SPLIT BOLT CLAMP (HENLEY B26)		H18815	2
25	CABLE 16mm² PVC INSULATED (BLACK)		H1494	AS REQ
26	LUG - CRIMP, M12, FOR 16mm² COPPER		H110270	1
27	LUG - CRIMP, M10, FOR 16mm² COPPER		74849	1
28	BOLT HEX HEAD STAINLESS STEEL M12 X 30mm	515467	H38528	8
29	NUT M12 STAINLESS STEEL	515467	8987	21
30	SCREWS SELF DRILLING - #12 X 45mm		175567	AS REQ
31	WASHER - FLAT, M12, STAINLESS STEEL	518081	49429	AS REQ
32	WASHER - BELLEVILLE, M12, STAINLESS STEEL	518082	175903	AS REQ
33	LUG - COMPRESSION 2 X M12 AT 50mm CENTRES , FOR 70mm² CU		182609	1
34	LUG - COMPRESSION 2 X M12 AT 30mm CENTRES , FOR 70mm² CU		176967	1
35	SIGN - DANGER HIGH VOLTAGE		H47012	2
36	BOLT & NUT - M20, HEX, GALVANISED, LENGTH TO SUIT POLE	515466		AS REQ
37	EYED LAG BOLT, M8 x 110mm, STAINLESS STEEL		182589	1
38	WASHER - CONICAL, M20, GALVANISED	518082	H39655	6 or 7
39	WASHER - FLAT ROUND, M20 x 44.5 x 3.23, GALV.	518081	177986	AS REQ
40	WASHER - SQUARE, M20 x 50 x 50 x 6mm	518082	H39265	10 or 11
41	COACH SCREW - M10 x 40mm, GALVANISED		50567	2
42	WASHER - M10 x 24mm x 2.21mm, GALVANISED	518081	177983	2
43a	FUSE BASE AND CARRIER LV 630A SINGLE CIRCUIT	117077	90522	3
43b	FUSE BASE AND CARRIER LV 630A DUAL CIRCUIT	31700	90563	3
44	FUSE (REFER NS122 - SECTION 10.2)			
45a	CROSSARM 2700 X 150 X 100 (LV ABC)	566345	176221	1
45b	CROSSARM 3300 X 150 X 100 (LV OPEN WIRE)	167283	H23020	1
46	BRACE CROSSARM 740 X 38 X 38 X 5mm	46	99119	3
47	GAIN BLOCK - ALUMINIUM 100mm		146274	2 or 3
48	LV ABC NEUTRAL CONNECTION PLATE	151570	149161	1
49	BOLT & NUT HEX HEAD GALV M12 x 180mm	515466	46888	2
50	BOLT & NUT HEX HEAD GALV M16 x 150mm	515466	175672	4
51	BOLT EYE GALV M20 x 200mm	513653	H37881	AS REQ
52	BOLT & NUT - M12, HEX, GALVANISED, LENGTH TO SUIT POLE	515466		1
53	NUT, EYE M20 GALV.	513951	H38853	1 to 3
54	WASHER FLAT GALV M12 x32 x 2.71mm	518081	177982	9 or 10
55	WASHER FLAT GALV M16 x38 x 3.23mm	518081	177984	14
56	WASHER - CONICAL, M12, GALVANISED	518082	H39639	4 or 5
57	WASHER - CONICAL, M16, GALVANISED	518082	H39647	7 or 10
58	WASHER - SQUARE GALVANISED, M16 x 50 x 50 x 6mm	518081	H39257	4
59	NUT HEX . M20 GALV	515466	175361	2 to 6
60	SURGE ARRESTER LV 500V 5KA		H31893	3
61a	COVER HV BUSHING (ALSO USE FOR LV 100 - 400kVA)		H21858	3 or 6
61b	COVER LV BUSHING (25 - 100kVA)		H22032	3
62a	LUG COMPRESSION LONG BARREL M12 TO SUIT 95mm² CU CABLE		151050	6
62b	LUG COMPRESSION M12 TO SUIT 185mm² CU CABLE		90183	6
62c	LUG COMPRESSION M12 TO SUIT 240mm² CU CABLE		179574	6
63a	LUG COMP. 2 HOLE (30mm CENTRES) M12 TO SUIT 95mm² CU CABLE		176968	1
63b	LUG COMP. 2 HOLE (30mm CENTRES) M12 TO SUIT 185mm² CU CABLE		176952	1
63c	LUG COMP. 2 HOLE (30mm CENTRES) M12 FOR 240mm² CU CABLE		179575	1
64a	LUG COMP. 2 HOLE (50mm CENTRES) M12 TO SUIT 95mm² CU CABLE		182628	1
64b	LUG COMP. 2 HOLE (50mm CENTRES) M12 TO SUIT 185mm² CU CABLE		182629	1
64c	LUG COMP. 2 HOLE (50mm CENTRES) M12 FOR 240mm² CU CABLE		182630	1
65	BOLT HEX HEAD STAINLESS STEEL M12 X 40mm	515467	45146	13
66	CABLE TIE BLACK 380 X 7.6mm		59907	AS REQ
67	CABLE - REFER TO TABLE 1 ON DWG 228824			
67a	CABLE 95mm² CU PVC INSULATED BLACK		59584	AS REQ
67b	CABLE SINGLE CORE CU 185mm² XLPE INSULATED BLACK		61432	AS REQ
67c	CABLE SINGLE CORE CU 240mm² INSULATED BLACK		179163	AS REQ
68	HEATSHRINK - MEDIUM AND THICK WALL MASTIC LINED			AS REQ
69	BOLT HEX HEAD STAINLESS STEEL M12 X 25mm	515467	44693	5 or 10
70a	LUG BI-METALLIC COMP. M12 TO SUIT 150mm² CABLE		150441	3 or 6
70b	LUG BI-METALLIC COMP. M12 TO SUIT 95mm² CABLE		58743	3 or 6
71a	LUG BI-METALLIC COMPRESSION 2 X M12 TO SUIT 150mm² CABLE		177073	1 or 2
71b	LUG BI-METALLIC COMPRESSION 2 X M12 TO SUIT 95mm² CABLE		177074	1 or 2
73a	DROPOUT FUSE BASE AND CARRIER 12/24KV TYPE EXPULSION		H84350	3
73b	FUSE BASE, DROPOUT, 12KV, S & C TYPE SMD-2D		H70029	3
74	CROSSARM 2400 X 100 X 100	566345	176222	1
75	INSULATOR 22KV POLYMERIC LONG-ROD		150375	3
76	CLAMP SUSPENSION LV		H113472	3
77	PLATE, TWISTED, GALV 150 X 50 x 6mm	151086	176901	3
79	BOLT & NUT HEX HEAD GALV M12 X 130mm	515466	46805	7 or 8
80	BOLT & NUT HEX HEAD GALV M16 X 160mm	515466	47043	3
81	SCREW - COACH, M12 x 90mm, GALVANISED		50443	2 or 3
82	BOLT HEX HEAD STAINLESS STEEL M16 X 40mm	515467	H38413	3
83	WASHER - FLAT, M16, 30 x 1.5mm STAINLESS STEEL	518081	H39621	6
84	NUT NYLOC, M16 STAINLESS STEEL		177122	3
85	CABLE 11KV 35mm² CU LDPE INSULATED 19/153		H14578	AS REQ
86	LUG KIT HEAVY DUTY TO SUIT 11kV LDPE CABLE (3 SET)		H125260	1
87	LUG COMPRESSION M12 TO SUIT 16mm² 11KV LDPE CABLE		H110270	6
88	ARRESTERS SURGE 11kV		111948	3
89	HEATSHRINK TERMINATION KIT FOR HV DROPPER LUGS.		152207	1
90	CABLE 11kV 16mm² CU LDPE INSULATED		6205	AS REQ
91	MAXIMUM DEMAND INDICATOR /ENCLOSURE AND WIRED UNIT	164578	178641	1
92	SADDLE CONDUIT GALV M20		176493	AS REQ
93	COACH BOLT M12 x 50mm		50476	2 or 4
94	CROSSARM 2400 X 100 X 100	228823	71589	AS REQ
	SEGREGATED EARTHING OPTION			
121	LV SURGE ARRESTER NEUTRAL (SEGREGATED ONLY)		98939	1
122	SEGREGATED EARTHING SIGN	224403	182387	NOTE 8
	COMMUNICATION CROSSARM OPTION		SEE NOTE 11	
131a	CROSSARM 2100 X 150 X 100	228823	H23745	
131b	CROSSARM 2400 X 100 X 100	228823	71589	
132	BRACE CROSSARM 490 X 40 X 5mm	46	76745	
	LV CROSSARM SUPPORT OPTION			
141	DEADEND PRE-FORMED TO SUIT 19/2.00 GALV. STEEL		58859	3 or 6
142	INSULATOR GUY TYPE GY2		74997	1 or 2
143	CONDUCTOR 19/2.00 GALV. STEEL		H10485	AS REQ
144	THIMBLE CLEVIS TO SUIT 19/2.00 GALV. STEEL		448	1 or 2
145	GUY LOCK TO SUIT 19/2.00 GALV. STEEL		59063	1 or 2

REFERENCE DRAWINGS	
TITLE	DRAWING No
POLE TRANSFORMER - 3 PHASE COMPOSITE POLE DRILLING	244220
POLE TRANSFORMER - 3 PHASE COMPOSITE 14m x 24kN POLE MANUFACTURER DRILLED	251876
POLE TRANSFORMER - 3 PHASE COMPOSITE 15.5m x 24kN POLE MANUFACTURER DRILLED	251877
POLE TRANSFORMER - 3 PHASE - EARTHING CONNECTION DETAILS	228822
POLE TRANSFORMER - 3 PHASE - CROSSARM DETAILS	228823
POLE TRANSFORMER - 3 PHASE - LV TRANSFORMER AND LV ABC CONNECTIONS	228824
POLE TRANSFORMER - 3 PHASE - HV OVERHEAD SUPPLY OPTIONS	228825
POLE TRANSFORMER - 3 PHASE - STREET LIGHTING DETAIL OPTION	228826
POLE TRANSFORMER - 3 PHASE - LV OPEN WIRE CONNECTIONS	228827
3 PHASE TRANSFORMER POLE MOUNTING BRACKET MANUFACTURING & ASSEMBLY	566101

NOTES

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH NS122.
2. CLEARANCE AROUND MIDDLE PHASE HV DROP OUT FUSE IS TO BE MAINTAINED BY INSTALLING POLE STEP ON OPPOSITE SIDE.
3. 70mm² COPPER CONDUCTORS SHALL BE USED FOR ALL EARTHING UNLESS OTHERWISE STATED. EARTHING CONDUCTORS FROM THE TRANSFORMER TO THE EARTH BAR AND FROM THE EARTH BAR TO THE EARTH ELECTRODES SHALL BE RUN INSIDE THE POLE. ALL EARTHING CABLES ARE TO BE SECURED TO THE POLE WITH SADDLES (ITEM 22) BEFORE ENTERING POLE EARTHING CABLE HOLES.
4. THE DISTANCE BETWEEN THE HV FEEDER AND HV DROP-OUT FUSE CROSSARM MUST BE A MINIMUM OF1200mm (UP TO A MAXIMUM OF 1500mm) WHERE HOT LINE CLAMPS ARE USED. THIS IS TO ACHIEVE INCREASED HV FEEDER CLEARANCE OR TO ALLOW FOR SAFE WORKING CLEARANCE TO HV. A HV SUPPORT CROSSARM IS REQUIRED FOR ALL INSTALLATION WHERE THE DISTANCE BETWEEN HV FEEDER AND HV DROP-OUT FUSE CROSSARM IS EQUAL TO OR GREATER THAN 1500mm. THE SUPPORT CROSSARM IS TO BE CONSTRUCTED AS SHOWN IRRESPECTIVE OF THE TYPE OF HV MAINS CABLE, MIDWAY BETWEEN THE HV FEEDER AND HV DROP-OUT FUSE CROSSARM. REFER TO DRAWINGS 228823 & 228825 FOR DETAILS.
5. HV DROPPER CABLES TO BE SUPPORTED AT THE TOP USING INSULATOR AND SUSPENSION CLAMP (ITEMS 75 & 76). THE BOTTOM CABLES ARE TO BE SECURED USING TWO 7.6mm WIDE CABLE TIES (ITEM 66). HEAVY DUTY 35mm² LUGS MUST BE USED ON DROPPER CABLES. TWO (2) CRIMP OPERATIONS ARE REQUIRED FOR COMPLETE TERMINATION OF CABLE INTO LUG TUNNEL. HEAVY DUTY 16mm² LUGS WITHOUT HEATSHRINK ACCEPTABLE ON SURGE ARRESTER. REFER TO DRAWING 228824.
6. SURGE ARRESTER MOUNTING BRACKETS ARE SUPPLIED ON EACH AUSGRID SPECIFIED AND APPROVED TRANSFORMER. SURGE ARRESTERS ARE SUPPLIED AND FITTED DURING CONSTRUCTION OF THE POLE TRANSFORMER SUBSTATION. MAXIMUM ALLOWABLE TORQUE ON ARRESTER IS 27Nm. TORQUE WRENCH MUST BE USED TO ENSURE ARRESTER IS NOT DAMAGED.
7. NO LV SERVICE CABLES OR COMMUNICATION CABLES SHALL BE INSTALLED THROUGH HV DROPPER CABLES AND A MINIMUM 350mm DISTANCE BE MAINTAINED BETWEEN LV AND HV.
8. SEGREGATED EARTHING SIGN (ITEM 122 - REFER DRAWING 224403) ONLY REQUIRED WHERE A SEGREGATED EARTHING SYSTEM IS INSTALLED.
9. DANGER SIGN TO BE BENT AROUND POLE BEFORE SECURING.
10. IF A LV UGOH IS REQUIRED IT IS TO BE INSTALLED TO THE REQUIREMENTS OF NS127. DRILL SUITABLY SIZED PILOT HOLES FOR SELF DRILLING SCREWS TO FIX CABLE COVERS AND SADDLES TO THE POLE.
11. COMMUNICATIONS CABLES MUST BE INSTALLED ON THE CROSSARM, MOUNTING DIRECTLY ON THE POLE OR USING STANDOFF BRACKET IS NOT PERMITTED. COMMUNICATION CROSSARM SHALL ONLY BE INSTALLED IN EXISTING AREAS IF A COMMUNICATION CABLE ALREADY EXISTS. THERE ARE 2 OPTIONAL CROSSARM SIZES (ITEMS 131a & 131b) THAT CAN BE USED DEPENDING ON LOCATION OF EXISTING CABLE AND STANDOFF THAT IS REQUIRED. BOTH CROSSARM SIZES REQUIRE HOLES TO BE DRILLED ON SITE - REFER TO DRAWING 228823 FOR DRILLING DETAILS. ENSURE GROUND CLEARANCES ARE MAINTAINED AS PER NS220. THE COMMUNICATIONS CATENARY CABLE SHALL BE INSULATED 2000mm EITHER SIDE OF THE POINT OF ATTACHMENT USING MINIMUM 0.6/1kV RATED INSULATION, UV STABILISED. THE COMMUNICATIONS CABLE SHALL BE INSTALLED ON THE PROPERTY SIDE OF POLE. COMMUNICATION CROSSARM MAY BE MOUNTED ON TRANSFORMER SIDE OF POLE IF 700mm WORKING CLEARANCE IS MAINTAINED TO 11kV TRANSFORMER BUSHINGS.
12. REFER TO NS158 FOR REQUIREMENTS REGARDING DISTRIBUTOR LABELLING AND SUBSTATION NUMBER PLATE. REFER TO NS148 FOR REQUIREMENTS REGARDING MASTER MAP POLE NUMBER.
13. INSULATION TO BE INSTALLED OVER 'U' BOLTS , CUT 25mm 'V' IN CONDUIT UNDER FIBREGLASS COVER TO DRAIN ANY WATER.
14. SECURE TRANSFORMER KICKPLATE TO POLE USING M12 BOLT. IF NO KICK PLATE IS SUPPLIED WITH TRANSFORMER INSTALL 800mmx100mmx75mm CROSSARM USING ITEMS 36, 38 & 39 (CUT SLOT IN CROSSARM 50mm WIDE AT A DEPTH OF 25mm TO ALLOW HEAD OF BOLT TO BE RECESSED FORM TRANSFORMER TANK.
15. SECURE TRANSFORMER TO TRANSFORMER MOUNTING BRACKET USING 12mm BOLTS (ITEM 79) THROUGH HANGING STRAPS. REFER TO DETAIL 'C' AND DWG 566101 FOR TRANSFORMER MOUNTING BRACKET ASSEMBLY AND INSTALLATION.
16. THE POLE FOUNDATION IS TO BE DESIGNED TO CONFORM TO ONE OF THE ARRANGEMENT OPTIONS SPECIFIED ON DRAWING 248464. IF THE FOUNDATION DESIGN OPTION CONSISTS OF CONCRETE OR CEMENT STABILISED BACKFILL, THE BACKFILL MUST STOP 600mm BELOW GROUND LEVEL SO THERE IS NO IMPACT ON THE EARTH CONDUCTOR INSTALLATION.
17. THE MDI MAY BE LOWERED TO ENSURE COMMUNICATION CROSSARM BRACES DO NOT IMPEDE MDI MOUNTING AND ACCESS.
18. THE ORIENTATION OF THE POLE SHALL BE ALIGNED WITH CORRECT HV PHASING. HV CROSSING IS NOT PERMITTED AT THE POLE TRANSFORMER. WHERE POSSIBLE POLE CLIMBING ACCESS IS TO BE ON THE POLE SIDE OPPOSITE TO TRAFFIC DIRECTION AS PER NS122.
19. POLES ARE AVAILABLE NON DRILLED OR PARTIALLY DRILLED BY THE MANUFACTURER. MANUFACTURER DRILLED POLES ARE ONLY TO BE USED IF THE DESIGN OF THE INSTALLATION CAN UTILISE THE HOLES SHOWN ON DRAWINGS 251876 AND 251877. IF HOLES DO NOT ALIGN A NON DRILLED POLE IS TO BE USED AS THE MANUFACTURER WILL NOT VARY HOLE LOCATIONS TO SUIT INDIVIDUAL SITES.
20. REFER TO DESIGNER SAFETY REPORT D20/186606 FOR ATYPICAL HAZARDS ASSOCIATED WITH THIS STANDARD CONSTRUCTION.

AMENDMENTS	DWN: PATRICK RIOS	CHKD: PHILIP JONES	APPD for: GLENN FORD
1 ITEMS 74 AND 46 ADDED (REFER DRAWING NOS 25876 AND 251877 ADDED) NOTE 19 ADDED. NOTE 4 AND 5 CHANGED TO SHOW PARKING BOLT CHANGE P.JARVIS 8.10.19 CHECKED C.MABBUTT 17.10.19			
2	DATE: 30/04/2020 ITEM NUMBERS CORRECTED. NOTE 11 AMENDED. NOTE 19 AMENDED. NOTE ADDED.		

ASSOCIATED DRAWINGS	
COMPOSITE POLE (TITAN) FOOTING ARRANGEMENT	248464

NETWORK STANDARD
Ausgrid
145 NEWCASTLE RD WALLSEND, NSW 2287

SCALE	AS SHOWN
DESIGNED	P.JARVIS
DRAWN	P.JARVIS
CHECKED	C.MABBUTT
APPROVED	D.GRICEY
DATE	01/05/18
PROJECT NUMBER	STD
PROJTRAK NUMBER	-

STANDARD CONSTRUCTION
3 PHASE - 11kV COMPOSITE POLE MOUNTED DISTRIBUTION TRANSFORMER
0-400kVA
GENERAL ARRANGEMENT

SIZE A0 | DRAWING No 244219 | SHEET 01 | AMD 2

20110901