



- NOTES**
- FOR STRAIGHT THROUGH POLES, TERMINATE THE OVERHEAD DROPPER CABLE ONTO THE MAIN OVERHEAD CONDUCTOR AS PER NS126 FOR TEE-OFF CONSTRUCTION.
  - FEEDER IDENTIFICATION PLATE TO BE ATTACHED TO THE POLE 3000mm ABOVE GROUND LEVEL.
  - THE GALVANISED COVERS MUST BE INSTALLED USING SIX (6) 50mm LONG M10 COACH SCREWS THROUGH THE SECURING HOLES PROVIDED ON THE FLANGES OF THE COVER.
  - IMPORTANT: SINCE THE 11kV CABLE HAS AN EARTH SCREEN, BOTH THE UPPER AND LOWER GALVANISED STEEL CABLE COVERS (ITEMS 38 & 39) MUST NOT BE EARTHED. THE UPPER GALVANISED STEEL CABLE COVER AND THE LOWER GALVANISED STEEL CABLE COVER MUST BE SEPARATED BY THE 20mm AIR GAP AS SHOWN.
  - THE SURGE ARRESTER EARTHING BAR, BRAIDS, STAINLESS STEEL BOLTS, NUTS, AND WASHERS ARE PROVIDED AS A SINGLE KIT (STOCK CODE No. 744-3).
  - FOR BARE LOW VOLTAGE OVERHEAD MAINS, THE CROSSARM IS TO BE INSTALLED ON THE SIDE OF THE POLE OPPOSITE TO THAT OF THE UNDERGROUND CABLES.
  - THE SPECIFIED CLEARANCE BETWEEN THE CABLE TERMINATION AND THE BARE OR CCT 11kV MAINS IS REQUIRED TO WORK ON THE CABLE TERMINATION WHILE THE BARE OR 11kV MAINS ARE ENERGISED. THIS CLEARANCE MEETS THE REQUIREMENTS OF THE ELECTRICAL SAFETY RULES FOR MINIMUM SAFE WORKING DISTANCE (FOR NORMAL WORK FROM EXPOSED LIVE 11kV MAINS). THE SPECIFIED CLEARANCE MAY BE REDUCED TO 700mm IF THE PROVISION FOR WORKING NEAR 11kV ENERGISED MAINS IS NOT CONSIDERED ESSENTIAL, OR POLE HEIGHT PREVENTS WORK WITH MAINS ALIVE.
  - IF THE POLE IS A SHACKLE THROUGH-POLE FOR HV MAINS, THE PHASE BONDS SHOULD BE ROUTED OVER THE HV CROSSARM TO MAINTAIN ADEQUATE CLEARANCES FROM THE CABLE TERMINATION.
  - REFER TO THE TERMINATION KIT INSTALLATION INSTRUCTION FOR DETAILS.
  - THE SURGE ARRESTERS WHEN INSTALLED ON THE UG/OH MUST ALLOW WATER TO DRAIN AWAY FROM THE SKIRT AND NOT ALLOW WATER TO ACCUMULATE. THEREFORE IDENTIFY THE CORRECT STUD OF THE SURGE ARRESTER THAT GOES INTO THE MOUNTING BRACKET (SEE DETAIL B). REMOVE ALL NUTS AND WASHERS FROM THE STUD, INSERT THE STUD INTO THE FIXING HOLE IN THE MOUNTING BRACKET AND THEN INTO THE HOLE OF THE FLEXIBLE EARTHING BRAID. PASS A FLAT WASHER AND THEN A SPRING WASHER ONTO THE STUD. THREAD IN THE NUT ONTO THE STUD. TIGHTEN THE NUT USING A TORQUE WRENCH TO A MAXIMUM OF 27Nm. A TORQUE WRENCH MUST BE USED TO ENSURE NO DAMAGE IS CAUSED TO THE ARRESTER. REPEAT FOR REMAINING PHASES.
  - REMOVE ALL NUTS AND WASHERS FROM THE REMAINING STUD OF THE SURGE ARRESTER. INSERT THE STUD INTO THE OBLIQUE HOLE OF THE TERMINATION PLATE. PASS A FLAT WASHER AND THEN A SPRING WASHER ONTO THE STUD. THREAD IN THE NUT ONTO THE STUD. LOCATE THE TERMINAL PLATE ON THE STUD SO THAT THERE IS NO STRAIN ON THE TERMINATION OR THE SURGE ARRESTER. TIGHTEN THE NUT USING A TORQUE WRENCH TO A MAXIMUM OF 27Nm. A TORQUE WRENCH MUST BE USED TO ENSURE NO DAMAGE IS CAUSED TO THE ARRESTER. REPEAT FOR REMAINING PHASES.
  - THE TERMINATION PLATE COVER MUST BE INSTALLED ON THE SURGE ARRESTER.
  - ENSURE THAT CABLES ARE NOT BENT TO LESS THAN THE SPECIFIED MINIMUM BENDING RADIUS.
  - ENSURE THAT NO CABLE CLAMP IS USED DIRECTLY ON THE CABLE WITHOUT THE RUBBER LINING. THE RUBBER LINER SUPPLIED WITH EACH CLAMP IS OF THE CORRECT WIDTH. THE LENGTH OF THE LINER MAY BE REDUCED TO SUIT THE CABLE SO THAT ONE (1) LAYER OF LINER WRAPS AROUND THE CABLE BEFORE PLACING THE STEEL BAND OF THE CLAMP CENTRALLY OVER THE LINER. DO NOT OVERTIGHTEN THE CLAMPS. MINIMUM CLAMP SPACING OF 1000mm WITH THE LOWEST CLAMP 800mm ABOVE GROUND LEVEL. TOP MOST CLAMP MUST BE A MINIMUM OF 1200mm BELOW THE LOWEST POINT OF THE UG/OH CONNECTION SUPPORT BRACKET (ITEM 9).
  - REFER TO DRAWING 31318 FOR DETAILS ON INSTALLING AN EARTH FAULT INDICATOR.
  - THIS DESIGN IS FOR EWP ACCESS FOR SITES WHERE EWP ACCESS IS NOT POSSIBLE. POLE STEPS CAN BE INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS OF NS128.
  - THE EARTH CABLE IS TO BE SECURED TO THE POLE AS REQUIRED USING DOUBLE SIDED GALVANISED STEEL SADDLES. SADDLES MUST BE NO LESS THAN 100mm FROM EDGES OF REMOVED INSULATION.
  - 95mm<sup>2</sup> ALUMINIUM EARTH CONDUCTORS SHALL BE USED FROM THE EARTH BAR TO 300mm ABOVE GROUND WHERE 70mm<sup>2</sup> COPPER EARTH CONDUCTORS WILL BE EXTENDED VIA BI-METALLIC LINKS TO THE EARTH ELECTRODES. BLACK 95mm<sup>2</sup> ALUMINIUM EARTH CONDUCTOR MAY BE A SINGLE CORE OF ABC, PVC INSULATED OR XLPE INSULATED CABLE.
  - WHERE A HV ONLY EARTHING DESIGN IS SPECIFIED, THE FOLLOWING IS NOT REQUIRED:
    - LV CONNECTIONS SHOWN IN DETAIL 'F' AND 'G'.
    - LV GROUP 'B' ELECTRODES AND CABLE TO EARTH BAR.
  - THE EARTHING ARRANGEMENT SHOWN REPRESENTS THE MORE COMMONLY USED COMBINED EARTHING SYSTEM BUT IS INDICATIVE ONLY. SITE SPECIFIC REQUIREMENTS MUST BE TAKEN FROM THE EARTHING DESIGN FOR THE INDIVIDUAL SITE. IF THE SITE REQUIRES A SEGREGATE EARTHING SYSTEM, CONTACT NETWORK EARTHING FOR FURTHER DETAILS.
  - UG/OH CABLES WHICH ARE TERMINATED ON THE TERMINATION PLATES (ITEM 26) BUT ARE NOT TO BE IMMEDIATELY CONNECTED TO THE OVERHEAD MAINS MUST BE SHORT CIRCUITED AND EARTHED. INSULATED BLACK CABLE OF NOT LESS THAN 25mm<sup>2</sup> Cu, LUGGED M12 STUD HOLE LUGS, IS TO BE USED. CONNECTIONS ARE TO BE MADE BETWEEN THE TOP OF THE TERMINATION PLATES AND THE SURGE ARRESTER EARTH BAR (ITEM 23).
  - THE EARTH CABLE PROTECTOR MUST BE IN CONTACT WITH THE POLE. IT CAN BE CUT INTO SMALLER SECTIONS TO OVERCOME THE CURVATURE CHARACTERISTICS OF THE POLE TO ACHIEVE CONTACT.
  - IF THE VENTED CABLE COVER INHIBITS THE INSTALLATION OF THE FIBREGLASS COVER AT THE SPECIFIED LOCATION, POSITION THE FIBREGLASS COVER ABOVE THE CABLE CLAMP LOCATED DIRECTLY ABOVE THE VENTED COVER.
  - BI-METALLIC CLAMP TO BE INSTALLED WITH COPPER CONDUCTOR BELOW ALUMINIUM CONDUCTOR SO THAT COPPER SALTS DO NOT WASH ONTO ALUMINIUM CONDUCTOR.
  - REFER TO DESIGNER SAFETY REPORT D21/136567 FOR ATYPICAL HAZARDS ASSOCIATED WITH THIS STANDARD CONSTRUCTION.

**TABLE 1**

ITEM NUMBER	ITEM DESCRIPTION	OVERHEAD CABLE TYPE						
		7/4.5 AAC	19/3.25 AAC	CCT180	CCT120	CCT180	19/2.0 Cu	7/2.0 Cu
32	LUG - COMPRESSION, BI-METALLIC, Ø14mm HOLE	178675	178651	178653	58321	178669	177800	180048
31	SLEEVING - INSULATION, STINGER COVER	178643	178644	-	-	-	178643	178643

40	SCREEN - SELF DRILLING, TIMBER, TYPE 17, 100x20mm, GALVANISED	180966	AR	
39	COVER - UPPER, CABLE, VENTILATED, MXXU (SEE NOTES 3 & 4)	177882	1	
38	COVER - LOWER, CABLE, VENTILATED, MXXU (SEE NOTES 3 & 4)	177711	1	
37	SHEET - NITRILE RUBBER, 200x150x3mm	127225	1	
36	CONDUCTOR - SINGLE CORE, ALUMINIUM, 95mm <sup>2</sup> LV ABC, PVC OR XLPE COVERED, BLACK (SEE NOTE 18)	67959	AR	
35	BAR - EARTH, FLAT, TINNED COPPER, 50.8mm x 6.3mm	182110	1	
34	SADDLE - 12.7mm, DOUBLE SIDED, GALVANISED (SEE NOTE 17)	176649	AR	
33	LUG - COMPRESSION, COPPER, M12 HOLE TO SUIT 10mm CABLE	74831	3	
32	LUG - COMPRESSION, BI-METALLIC, Ø14mm HOLE (TO SUIT CONDUCTOR) (REFER TO TABLE 1)	178675	AR	
31	SLEEVING - INSULATION, STINGER COVER (TO SUIT CABLE SIZE) (REFER TO TABLE 1)	178643	1	
30	CLAMP - CABLE (WITH NITRILE RUBBER LINER) (SEE NOTE 14)	177851	AR	
29	SREW - COACH, M12x50mm, GALVANISED	50476	AR	
28	COVER - TERMINATION PLATE (SEE NOTE 12)	178721	3	
27	ARRESTER - SURGE, POLYMERIC, 10kA, M12 MOUNTING STUD EACH END (SEE NOTES 10 & 11)	111948	3	
26	PLATE - TERMINATION KIT, TINNED COPPER	118669	11932	3
25	PROTECTOR - CABLE COVER, 1000x300mm SLAB	151768	AR	
24	LETTERS - SET, PHASE, ALUMINIUM, 50mm (A, B & C)	158977	1	
23	NUT - EARTHING, SURGE DIVERTER (SEE NOTE 5)	117782	74443	1
22	SREW - COACH, M10x50mm, GALVANISED (SEE NOTE 3)	50559	AR	
21	GUARD - EARTH CABLE, 3m LENGTH, PVC, BLACK (SEE NOTE 22)	205775	157552	2
20	WASHER - FLAT, M12, GALVANISED	518081	177882	1
19	SREW - COACH, M12x70mm, GALVANISED	50486	1	
18	COVER - EARTH ELECTRODE, Ø100 HOLE TO SUIT Ø15mm ROD	181669	AR	
17	ELECTRODE - DRIVEN EARTH, Ø15mm x 180mm	181631	AR	
16	CONNECTOR - COMPRESSION, COPPER, PROFILE 6 (70mm <sup>2</sup> CONDUCTOR TO Ø15mm ROD)	181699	AR	
15	TROUGHING - FIBREGLASS, 1.2m, ITEM 2, 140mm DEPTH (SIZE TO SUIT CABLE) (SEE NOTE 23)	56886	56886	1
14	TROUGHING - FIBREGLASS, 1.2m, ITEM 1, 85mm DEPTH (SIZE TO SUIT CABLE) (SEE NOTE 23)	56886	56886	1
13	LINK - COMPRESSION, BI-METALLIC (95mm <sup>2</sup> AL TO 70mm <sup>2</sup> Cu CABLE) (SEE NOTE 18)	1107787	2	
12	CONNECTOR - COMPRESSION, 'C' GRMP, COPPER (70mm <sup>2</sup> TO 70mm <sup>2</sup> )	177942	AR	
11	KIT - TERMINATION HV (TO SUIT CABLE) (REFER TO HIS 18 FOR FURTHER CABLE & NUT KIT FOR POLYMERIC CABLE) (SEE NOTE 9)	18806	61374	6
10	CONNECTOR - INSULATION, PERING, BI-METALLIC (Ø5-150mm LV/Ø50-150mm Cu)	148387	2	
9	BRACKET - UG/OH, CONNECTION, SUPPORT	62011	60385	1
8	LUG - COMPRESSION, BI-METALLIC, PRE-INSULATED, Ø14mm HOLE (TO SUIT 95mm <sup>2</sup> AL CABLE)	58743	2	
7	CONDUCTOR - 19/2 (1470mm <sup>2</sup> ), COPPER, PVC COVERED, BLACK (SEE NOTE 17)	60111	AR	
6	CLAMP - PARALLEL, GROOVE, BI-METALLIC, 2 BOLT, 25-150mm <sup>2</sup> AL/Ø66mm <sup>2</sup> Cu (SEE NOTE 24)	188013	1	
5	BOLT - ASSEMBLY, STAINLESS STEEL (INCLUDES 1 x M12x30mm BOLT, 1 x M12 NUT, 2 x FLAT WASHERS & 1 x SPRING WASHER)	179911	14	
4	WASHER - FLAT, M12, GALVANISED	518081	1	
3	WASHER - CONICAL, M12, GALVANISED	518082	130565	1
2	WASHER - SQUARE, 75x75x6mm, GALVANISED (Ø22mm HOLE)	518081	190321	2
1	BOLT & NUT - M20, HEX, GALVANISED (LENGTH TO SUIT POLE)	515466	1	

**CAO DRAWING**

**REVISIONS**

NO.	DATE	DESCRIPTION
1	17/06/2021	ISSUED FOR CONSTRUCTION
2	17/06/2021	ISSUED FOR CONSTRUCTION
3	17/06/2021	ISSUED FOR CONSTRUCTION
4	17/06/2021	ISSUED FOR CONSTRUCTION
5	17/06/2021	ISSUED FOR CONSTRUCTION
6	17/06/2021	ISSUED FOR CONSTRUCTION
7	17/06/2021	ISSUED FOR CONSTRUCTION
8	17/06/2021	ISSUED FOR CONSTRUCTION
9	17/06/2021	ISSUED FOR CONSTRUCTION
10	17/06/2021	ISSUED FOR CONSTRUCTION
11	17/06/2021	ISSUED FOR CONSTRUCTION
12	17/06/2021	ISSUED FOR CONSTRUCTION
13	17/06/2021	ISSUED FOR CONSTRUCTION
14	17/06/2021	ISSUED FOR CONSTRUCTION
15	17/06/2021	ISSUED FOR CONSTRUCTION
16	17/06/2021	ISSUED FOR CONSTRUCTION

**APPROVED:** GLENN FORD

**DESIGNED:** GLENN FORD

**DRAWN:** GLENN FORD

**CHECKED:** GLENN FORD

**DATE:** 17/06/2021

**MATERIAL LIST:** MATERIALS LISTED AND APPROVED FOR CONSTRUCTION.

**SCALE:** N.T.S.

**PROJECT NUMBER:** -

**DRAWING No:** 160354

**SHEET:** 1

**AMD:** 18

**SIZE:** A0

**STANDARD CONSTRUCTION 11kV UNDERGROUND TO OVERHEAD (UG/OH) ON TIMBER POLE CONSTRUCTION DETAILS**

**ASSOCIATED DRAWINGS:** HV UG/OH CONSTRUCTION INSTALLATION OF EARTH FAULT INDICATOR 31318

**ISSUED FOR CONSTRUCTION**

**145 NEVILL STREET WALSLEDGE, NSW 2287**