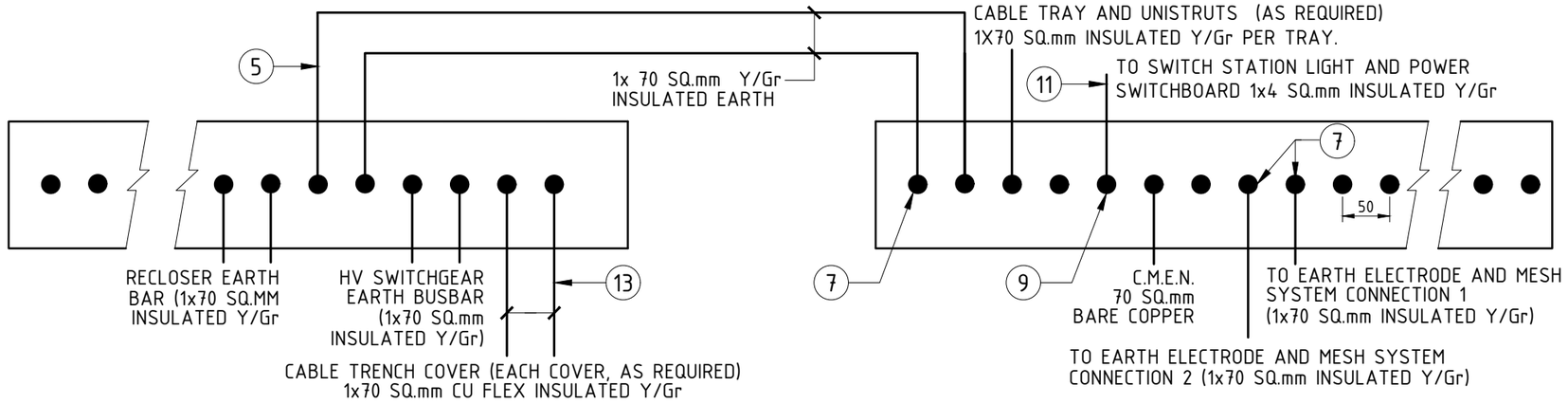
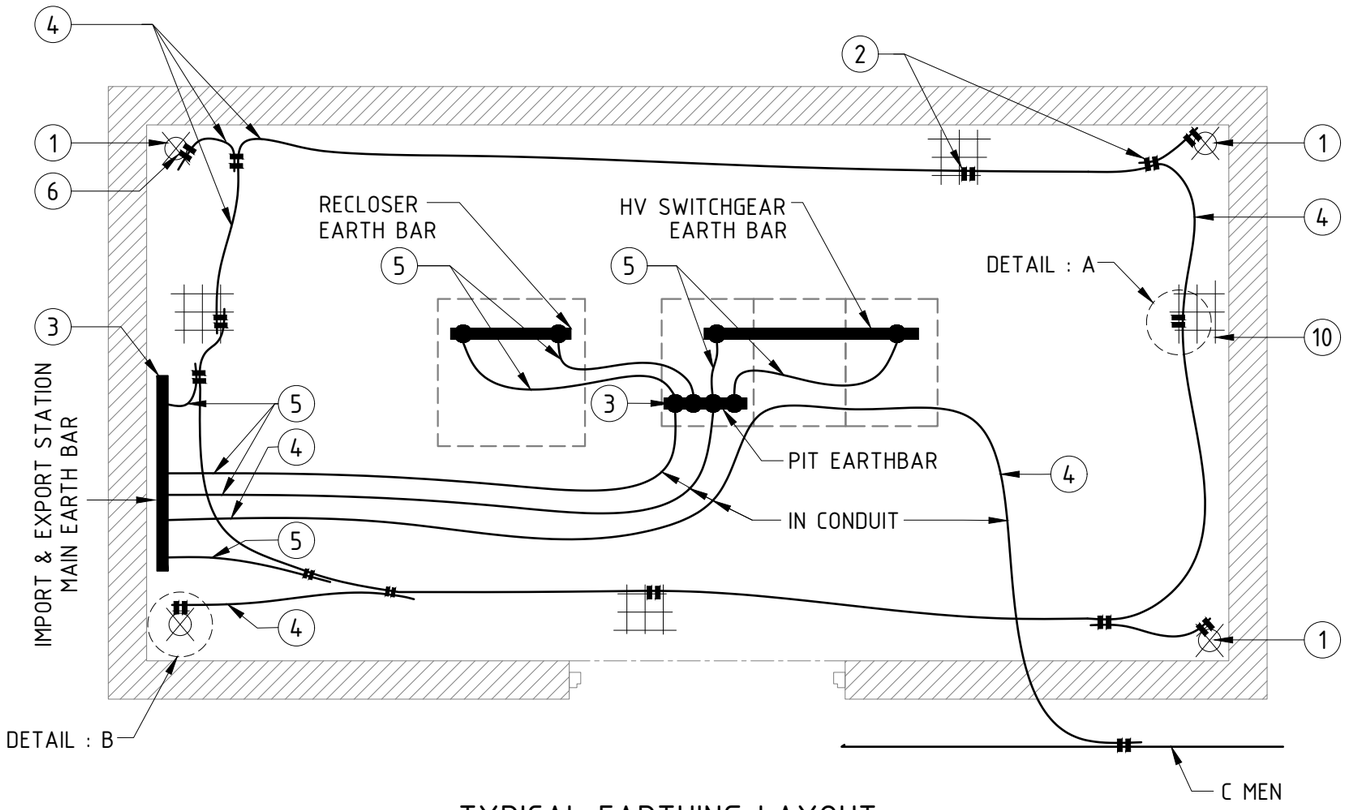


PIT EARTH BAR

REFER NOTE 10

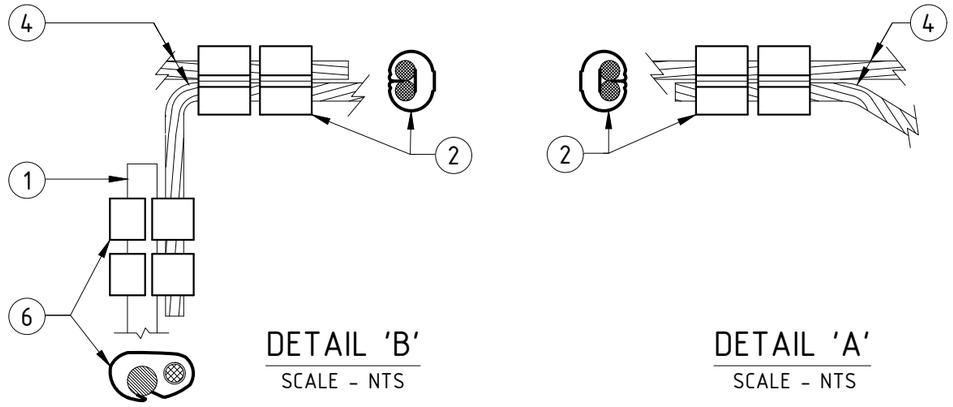


TYPICAL EARTHING LAYOUT

SCALE - NTS

IMPORT & EXPORT MAIN EARTH BAR

REFER NOTE 7



DETAIL 'B'

SCALE - NTS

DETAIL 'A'

SCALE - NTS

ITEM REF.	QTY.	DESCRIPTION	ITEM NUMBER	DRAWING REF.
13	AR	CABLE, Cu, FLEX, INSULATED, Y/Gr, 70 sq.mm	503393	-
12	AR	EARTHING COMPOUND	400915	S02-01-05-02
11	AR	CABLE, Cu, INSULATED, Y/Gr, 4 sq.mm	1750	S02-01-01-23
10	AR	EARTH MESH, GALV. STEEL, 4000x400mm, 7.2mm DIA.	288145	-
9	2	LUG, COMPRESSION, Cu, 16 sq.mm, M12	5439	S02-01-02-11
7	7	LUG, COMPRESSION, Cu, 70 sq.mm, M12	5512	S02-01-02-11
6	8	COMPRESSION LINK, '6' PROFILE, 70 sq.mm - 14 mm ROD	257394	S01-01-05-08
5	AR	CABLE, Cu, INSULATED, Y/Gr, 70 sq.mm	401059	S02-01-01-23
4	AR	BARE CONDUCTOR, Cu, 70 sq.mm	9803	S01-01-05-05
3	AR	COPPER BUSBAR, 50x6.3, C11000M, TINNED	504110	S01-01-05-06
2	20	COMPRESSION LINK, 'C' PROFILE, 70-70 sq.mm	255786	S01-01-05-08
1	4	EARTH ROD, SS316, 14mm DIA.	414060	S01-01-05-01

MATERIAL SCHEDULE

NO	DESCRIPTION	DRN	DATE	CKD	APPD
0	ISSUED FOR CONSTRUCTION	P.G.	OCT'26	B.C.	B.V.

AMENDMENTS

PowerWater
NORTHERN TERRITORY

DES	B.VANDERSTELT
DRN	P.GUNA
CKD	B.CHEUNG
APPD	B.VANDERSTELT
SCALE	NTS
ISSUED	OCT'26
ALL DIM. IN mm	
DRAFTING STANDARD TO A.S.1100	

POWER STANDARD DRAWING

IMPORT & EXPORT STATION EARTHING LAYOUT SHEET 1 OF 2

A3

DRAWING NUMBER S02-02-05-17__1

CAD PRODUCT - DO NOT AMEND MANUALLY

0 AMDT

NOTES:

1. THE EARTH RODS ARE TO BE INSTALLED AND CONNECTED AS SHOWN IN THE TYPICAL EARTHING LAYOUT, WITH THE COMMON EARTHING TAIL BEING BROUGHT UP AGAINST THE IMPORT & EXPORT STATION WALL IN THE VICINITY OF THE FUTURE NEUTRAL/EARTH BAR POSITION (REFER TO NOTE 7 FOR DETAILS), PRIOR TO POURING OF THE SUBSTATION FLOOR. ALTERNATIVELY, BARE COPPER CABLE MAY BE USED INSTEAD OF EARTH ELECTRODE. AN EARTH ROD MAY BE CONNECTED VIA TWO PROFILE '6' CONNECTORS TO END OF CABLE FOR ADDITIONAL MASS TO ASSIST INSTALLATION.

2. UNLESS EXPLICITLY STATED OTHERWISE, ALL EARTHING CABLES TO BE OF A MINIMUM 70 sq.mm COPPER CABLE.

3. COMPRESSION CONNECTOR TYPES AND DIE SIZES FOR EARTH ROD TO EARTHING CABLE SHALL BE IN ACCORDANCE WITH DRAWING S01-01-05-08.

4. EARTH ELECTRODES MUST BE EITHER 14mm DIAMETER SS316 RODS INSTALLED INTO THE GROUND OR BARE 70 sq.mm COPPER CONDUCTOR INSTALLED AS FOLLOWS:

   - USE AUGER WITH MINIMUM 50mm DIAMETER TO DRILL BORE HOLES TO A DEPTH OF 3-5m; (DEEPER IS PREFERRED)

   - EARTH RODS TO BE SPACED WELL APART PREFERABLY NEAR THE CORNERS FOR GREATER SPACING, BUT IN NO CASE CLOSER THAN 3m. FOR UPPER LEVEL IMPORT & EXPORT STATION ARRANGEMENT, EARTH STAKES MUST BE INSTALLED IN BASEMENT FLOOR. ADEQUATE EARTH CABLE PROTECTION MUST BE INSTALLED TO PROTECT CABLES TRANSITIONING TO UPPER LEVEL.

   - CONNECT EACH ROD WITH A 70 sq.mm COPPER INSULATED CONDUCTOR BY TWO (2) PROFILE '6' COMPRESSION CONNECTORS.

   - BACKFILL EACH HOLE WITH A WATERED MIXTURE OF EXISTING SOIL AND ONE BAG OF EARTHING COMPOUND WITH WATER. RATIO IS ONE (1) BAG EARTH COMPOUND TO 5L OF WATER.

     NOTE:
     (i) INSULATION TO BE REMOVED FROM THE CABLE WHICH IS IN THE BORE HOLE, TO INCREASE SURFACE CONDUCTIVITY TO GROUND.
     (ii) ALL BARE CONNECTIONS, SUCH AS COMPRESSION CONNECTORS NEED NOT BE INSULATED.

5. THE COMBINED EARTHING SYSTEM MUST HAVE A RESISTANCE NO GREATER THAN ONE (1) OHM WITH ALL CMEN CONNECTIONS MADE.

6. THE ELECTRODE EARTHING SYSTEM MUST HAVE A RESISTANCE NO GREATER THAN THIRTY (30) OHMS WHILST ISOLATED FROM THE REMAINING EARTH SYSTEM INCLUDING CMEN CONNECTIONS.

7. THE MAIN EARTH BUSBAR IS TO BE INSTALLED WITHIN THE IMPORT & EXPORT STATION. THE BUSBAR MUST BE 50X6.3mm C11000M TINNED COPPER, MOUNTED ON LV INSULATORS EACH END AND EVERY ONE (1) METRE, APPROXIMATELY 300mm ABOVE THE IMPORT & EXPORT STATION FLOOR, AND IN NO CASE BE LESS THAN 2m IN LENGTH. THE BUSBAR MUST BE MOUNTED ON BOBBIN STYLE STANDOFF INSULATORS. NUMBER OF HOLES TO SUIT INSTALLATION AND 8 SPARE, ALL HOLES TO BE 14MM UNLESS OTHERWISE NOTED.

8. THE FOLLOWING IS A GUIDE FOR THE DISCONNECTION OF COMPONENTS WHEN WORKING ON AN EARTHING INSTALLATION.

CABLE TRAY EARTH	NO RESTRICTION, EXCEPT TO KEEP TIME OF DISCONNECTION TO MINIMUM
C.M.E.N.	PERMITTED WHEN EARTH ELECTRODE SYSTEM IS IN SERVICE
EARTH ELECTRODES	PERMITTED WHEN C.M.E.N. SYSTEM IS IN SERVICE
H.V. SWITCHGEAR EARTH RECLOSER EARTH OR PIT EARTH BAR	PERMITTED ONLY WHEN ALL HV FEEDERS TAKEN OUT OF SERVICE
H.V. CABLE SHEATHS	PERMITTED ONLY WHEN THE ASSOCIATED HV FEEDER IS TAKEN OUT OF SERVICE
REINFORCING MESH	NO RESTRICTION, EXCEPT TO KEEP TIME OF DISCONNECTION TO MINIMUM

10. A SEPARATE PIT EARTH BAR SHALL BE WITHIN THE HV PIT. THE BUSBAR MUST BE A 50x6.3 C11000M TINNED COPPER DRILLED WITH 14MM HOLES TO SUIT SWITCHGEAR BANK CONFIGURATION UNLESS OTHERWISE NOTED. BUSBAR TO BE MOUNTED ON BOBBIN INSULATORS AT MAXIMUM INTERVALS APPROX. 300mm FROM THE TOP OF THE HV PIT, THE EARTH BAR SHALL BE MOUNTED AT EITHER END OF THE HV PIT AND AVOID AREAS UNDER THE SWITCHGEAR AND RECLOSER. THIS BUSBAR SHALL BE CONNECTED TO THE MAIN EARTH BAR BY 2x70Sqmm COPPER YELLOW/GREEN INSULATED CABLE AND HAS A MINIMUM OF 2 SPARE HOLES.

11. ALL CABLES ATTACHING TO THE EARTH/NEUTRAL BAR SHALL BE LABELED WITH CRITCHLEY K TYPE LABELED AS LISTED IN S02-01-08-25.

12. ALL METAL GRATES (CABLE TRENCH COVER) MUST BE INDIVIDUALLY BONDED TO THE EARTH GRID WITH 70sqmm FLEXIBLE Y/Gr INSULATED COPPER CABLE WITH ENOUGH SLACK TO REMOVE THE GRATES FROM THE CABLE TRENCH WITHOUT REMOVING THE EARTH BOND. NON-CONDUCTIVE GRATES DO NOT REQUIRE EARTHING.

13. EACH INDIVIDUAL PIECE OF REINFORCING MESH MUST BE INTERCONNECTED TO EARTHING RING. REINFORCING MESH WITHIN IMPORT & EXPORT STATION ROOM MUST BE INTERCONNECTED ELECTRICALLY WITH ADJACENT BUILDING REINFORCEMENT.

14. THE C.M.E.N. BARE COPPER CABLE SHALL BE INSTALLED WITHIN CONDUIT IN THE CONCRETE FLOOR AS TO REMAIN SEPARATED FROM THE LOCAL EARTH NETWORK.

15. ALL METAL DOOR FRAMES ARE TO BE EARTHED APPROPRIATELY WITH 70 sq.mm INSULATED Y/Gr CABLE AND CONNECTED TO THE EARTH GRID WITH DOUBLE COMPRESSION LINKS. ALL METAL DOORS MUST BE CONNECTED VIA BRADED EARTH STRAP, APPROPRIATE FOR BONDING METAL BETWEEN METAL FRAME AND METAL DOOR.

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AMENDMENTS

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DRN	P.GUNA
CKD	B.CHEUNG
APPD	B.VANDERSTELT
SCALE	NTS
ISSUED	OCT'26
ALL DIM. IN mm	
DRAFTING STANDARD TO	A.S.1100

POWER STANDARD DRAWING

IMPORT & EXPORT STATION EARTHING LAYOUT SHEET 2 OF 2

A3

DRAWING NUMBER S02-02-05-17__2

CAD PRODUCT - DO NOT AMEND MANUALLY

0 AMDT