

SUBSTATION EARTH GRID AND EARTH TAILS NOTES:

1. THE MAIN EARTH GRID SHALL BE CONSTRUCTED FROM A 10mm DIAMETER ANNEALED COPPER ROD, BURIED AT LEAST 1000mm BELOW FINISHED GROUND LEVEL (UNLESS OTHERWISE INDICATED).
2. THE SUBSTATION EARTH GRID SHALL BE INSTALLED TO THE DIMENSIONS AS PER THE SUBSTATION EARTH GRID LAYOUT DRAWING.
3. ON FOUNDATION AND EARTHING DRAWINGS, ROD TRAVERSE CROSSINGS SHALL BE INDICATED BY AND THESE CROSSING SHALL BE JOINED AS PER D-DT-5240 SHT 2.
4. ALL JOINTS SHALL BE EXOTHERMICALLY WELDED OR OXY-ACETYLENE BRAZED, USING 3mm DIAMETER BRAZING RODS ACCORDING TO STANDARD EN1044 ITEM CP105.
5. WHERE THE EARTH GRID CLASHES WITH DEEPER FOUNDATIONS THE CONDUCTOR SHALL BE LAID 150mm BELOW THE FOUNDATIONS OR DEVIATED AROUND IT AS INDICATED ON D-DT-5240 SHT 23.
6. WHERE THE EARTH GRID CLASHES WITH DRAINS THE CONDUCTOR SHALL BE LAID 150mm BELOW IT AS DETAILED ON D-DT-5240 SHT 22.
7. WHERE A CONCRETE BLINDING IS CAST UNDER BUILDING FOUNDATIONS THE EARTH GRID MESHES ARE TO BE INSTALLED ON TOP OF THE BLINDING AND UNDER THE CONCRETE FOOTING OF COLUMNS ETC.
8. THE MAIN EARTH GRID SHALL BE 1000mm AWAY FROM THE INSIDE OF THE SUBSTATION SECURITY FENCE AND EXTEND BETWEEN 600mm AND 1000mm ON THE OUTSIDE OF THE SUBSTATION FENCE.
9. SUPPORT STRUCTURE EARTH TAILS SHALL BE 50X3mm FLAT ANNEALED COPPER BOLTED TO HOLDING DOWN BOLTS (UNLESS OTHERWISE INDICATED) AS DETAILED ON D-DT-5240 SHT 6.
10. WHERE AN EXTERNAL EARTH CONNECTION IS REQUIRED, THE 50X3mm FLAT COPPER SHALL BE BOLTED TO THE EQUIPMENT SUPPORT AS INDICATED ON D-DT-5240 SHT 6C.
11. THE NUMBER OF SUPPORT STRUCTURE EARTH CONNECTIONS SHALL DEPEND ON THE FAULT CURRENT (UNLESS OTHERWISE INDICATED):

DESIGN EARTH FAULT CURRENT	NUMBER OF EARTH TAILS PER STRUCTURE
25ka AND BELOW	2
BETWEEN 25ka AND 40ka	4

12. ADDITIONAL SUPPORT STRUCTURE EARTH TAILS FOR FAULT LEVELS ABOVE 25ka MUST BE IN ACCORDANCE WITH D-DT-5240 SHT 3.
13. WHERE EARTH TAILS CROSS THEY SHALL BE WELDED TOGETHER AS PER D-DT-5240 SHT 2.
14. ALL SUPPORT STRUCTURE HOLDING DOWN BOLTS SHALL BE M24 OR LARGER.
15. SACRIFIAL EARTH GRID ANODE SHALL BE INSTALLED FOR MILD TO SEVERE CORROSIVE SOIL CONDITIONS (<100 OHM.M). THE APPLICATION OF THESE ANODES WILL BE DETERMINED BY THE RESULTS OF THE SOIL TESTS CARRIED OUT BY ESKOM OR AN APPROINTEED REPRESENTATIVE. WHERE THE REQUIRED, THE SACRIFIAL ANODES ARE TO BE MANUFACTURED AND CONNECTED TO THE MAIN EARTH GRID AS INDICATED ON D-DT-5240 SHT 11.
16. WHERE FLAT COPPER EARTH STRAPS RUNS ACROSS VERTICAL OR HORIZONTAL FLAT SURFACES OF CONCRETE OR BRICK, IT SHALL BE SECURED AT ALL CORNERS, INTERSECTIONS AND LENGTHS NOT LONGER THAN 1000mm AS INDICATED ON D-DT-5240 SHT 12 DETAIL A.
17. WHERE FLAT COPPER EARTH STRAPS RUN ON FINISHED FLOOR SURFACES e.g. ACROSS WALKWAYS, THE STRAP SHALL BE SECURED TO THE FLOOR AS INDICATED ON D-DT-5240 SHT 12 DETAIL A.

18. WHERE CONNECTIONS ARE MADE TO GALVANISED STEELWORK, THE SURFACE SHALL BE CLEANED AND COATED WITH ANTI OXIDIZING ELECTRICAL COMPOUND PRIOR TO BOLTING.
19. WHERE CONNECTIONS ARE MADE TO PAINTED STEELWORK, THE PAINT SHALL BE REMOVED OVER A MINIMAL AREA TO ALLOW FOR A GOOD CONTACT BETWEEN THE SURFACES. SURFACES SHALL BE COATED WITH ANTI OXIDIZING ELECTRICAL COMPOUND BEFORE BOLTING. AFTER BOLTING, ANY SCRAPED AREA NOT COVERED BY THE COPPER CONNECTION SHALL BE PAINTED USING THE ORIGINAL TYPE AND COLOUR OF PAINT.
20. TRANSFORMER PLINTH, SWITCH ROOM, CONTROL ROOM AND RUNWAY WELDED MESH REINFORCING SHALL BE BONDED TO THE MAIN EARTH GRID AT ONLY ONE POINT AS INDICATED ON D-DT-5240 SHT 10.
21. POWER TRANSFORMER EARTHING TO BE DONE ACCORDING TO D-DT-5240 SHT 5.
22. VOLTAGE TRANSFORMERS, CURRENT TRANSFORMERS, NECRTs AND JUNCTION BOXES ARE TO BE EARTH WITH FLEXIBLE COPPER TO THE EQUIPMENT SUPPORT AS INDICATED ON D-DT-5240 SHT 7.
23. ISOLATOR MECHANICAL BOX AND HANDLES ARE TO BE EARTHED IN ACCORDANCE WITH ISOLATOR MANUFACTURE'S SPECIFICATION, SEE D-DT-5240 SHT 8.
24. BUILDING ROOF EARTHING TO BE DONE AS SPECIFIED ON D-DT-5240 SHT 24.
25. FOR EARTH STRAP ARRANGEMENTS IN CABLE TRENCHES REFER TO DETAIL B ON D-DT-5240 SHEET 12.

D-DT-5240	SET 25 SHT 25	GUTTER EARTHING DETAIL	D-DT-5240	SET 25 SHT 11	SACRIFIAL EARTH GRID ANODE
D-DT-5240	SET 25 SHT 24	ROOF EARTHING DETAIL	D-DT-5240	SET 25 SHT 10	REINFORCING EARTHING DETAIL
D-DT-5240	SET 25 SHT 23	EARTH GRID TRENCH DETAIL	D-DT-5240	SET 25 SHT 9	SAFETY FENCE EARTHING DETAIL
D-DT-5240	SET 25 SHT 22	SUBSOIL TRENCH DETAIL	D-DT-5240	SET 25 SHT 8	TYPICAL ISOLATOR WITH SA EARTH
D-DT-5240	SET 25 SHT 21	MV 1-CORE CABLE TERM. AT META	D-DT-5240	SET 25 SHT 7	VT, CT AND JB EARTHING DETAIL
D-DT-5240	SET 25 SHT 20	MV 3-CORE CABLE TERM. AT META	D-DT-5240	SET 25 SHT 6C	TYPICAL SUPPORT EARTHING DETAIL
D-DT-5240	SET 25 SHT 19	MV 3-CORE CABLE TERM. AT TRAN	D-DT-5240	SET 25 SHT 6B	TYPICAL TERTIARY COLUMN FDN
D-DT-5240	SET 25 SHT 18	SIGNAL DISTRIBUTION FRAMES	D-DT-5240	SET 25 SHT 6A	TYPICAL COLUMN FDN EARTHING DET
D-DT-5240	SET 25 SHT 17	PROCESS CONTROL CABLES	D-DT-5240	SET 25 SHT 6	TYPICAL FOUNDATION EARTHING DET
D-DT-5240	SET 25 SHT 16	GPO UNARMoured TYPE 2 CABLE	D-DT-5240	SET 25 SHT 5	DETAIL OF TRFR CONCEALED EARTH
D-DT-5240	SET 25 SHT 15	ARM. TELEPHONE & CONTR. CABLE	D-DT-5240	SET 25 SHT 4A	TYPICAL STAR DELTA TRFR EARTH
D-DT-5240	SET 25 SHT 14	CONTROL PANEL EARTHING DETAIL	D-DT-5240	SET 25 SHT 4	TYPICAL AUTO TRFR EARTHING
D-DT-5240	SET 25 SHT 13	EARTHING OF SWITCH GEAR	D-DT-5240	SET 25 SHT 3	EARTH THROUGH FDN WITH WPCV
D-DT-5240	SET 25 SHT 12	EARTH STRAP FIXING DETAILS	D-DT-5240	SET 25 SHT 2	COPPER JOINTS DETAILS
DRG NO.	SHEET NO:	REFERENCE DRAWINGS:	DRG NO.	SHEET NO:	REFERENCE DRAWINGS:

THIS DRAWING IS THE NEW OFFICIAL REVISION AND IT SUPERSEDES ALL OTHER PUBLISHED DRAWINGS

5	REVISED GENERAL NOTES	BMH	JKR	T.MARAIS	05/04/2019	
4	NOTE 10 HOLDING DOWN BOLTS CHANGED	P.A.T.	T.MARAIS	T.MARAIS	28/03/2013	
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EARTHING STANDARD GENERAL NOTES

AUTH: C. CLARK
DATE: 05/11/2004
CHKD: C. CLARK

SAP No.	DATE: 05/11/2004	SET	SHEET	REVISION
SCALE 1:10	DRAWN: V VAN ZWEELE	D-DT-5240	25	1
THIS DRAWING IS THE PROPERTY OF ESKOM	DATE: 01/11/2004			5