



EARTHING TERMINATION ARRANGEMENT

EARTHING REQUIREMENT

1. FOR SUBSTATION EARTH, WITH LINKS 1 AND 2 OPEN, THE RECORDED EARTH RESISTANCE VALUE SHOULD NOT BE GREATER THAN 30 OHMS.
2. FOR CMEN EARTH, WITH LINKS 1 AND 2 CLOSED, THE RECORDED EARTH RESISTANCE VALUE SHOULD NOT BE GREATER THAN 1 OHM.
3. IF ANY OF THE ABOVE VALUES CANNOT BE ACHIEVED, REFER TO THE PROJECT MANAGER.
4. 1 SPARE 10mm THREAD BOLT AND NUT FOR OPERATOR EARTHS ON THE HV AND LV EARTH BARS.

- NOTES:**
1. EARTHING FOR A PACKAGE SUBSTATION CONSISTS OF FOUR EARTH ELECTRODES IN THE EASEMENT AND THREE EARTH ELECTRODES IN THE CABLE ENTRY TRENCH.
 2. IN THE EASEMENT: FOUR BORE HOLES TO BE DRILLED AT CORNERS WITH A DISTANCE OF 2.7m APART. FOR EACH HOLE:
 - AUGER DIAMETER TO BE USED SHOULD NOT BE GREATER THAN 150mm.
 - BORE DEPTH IS 3m.
 - EARTH ELECTRODE SHALL BE MADE FROM EITHER BARE 70 SQMM COPPER CONDUCTOR OR 70SQMM BARE COPPER CONDUCTOR WITH AN EARTH STAKE ATTACHED VIA A PROFILE "6" COMPRESSION CONNECTOR BEFORE LOWERING THE STAKE INTO THE BORE HOLE.
 - ATTACH THE 70SQMM COPPER CONDUCTOR TO THE EARTH GRID AS SHOWN IN DETAIL 1.
 - BACKFILL BORE HOLE FIRST WITH WATERED SLURRY MIXTURE OF ONE BAG OF EARTHING COMPOUND AND SOIL AT 1:1 RATIO, THEN TOP UP WITH EXISTING SOIL.
 3. THREE ADDITIONAL EARTH ELECTRODES ARE TO BE INSTALLED AT THE BOTTOM OF THE CABLE ENTRY TRENCH WITH A DISTANCE OF 6M BETWEEN ELECTRODES AND TO A DEPTH OF 3M. A HAMMER CAN BE USED TO DRIVE CONNECTED EARTH RODS INTO THE GROUND, OR ALTERNATIVELY THE EARTH ELECTRODES CAN BE AS PER NOTE 2. DO NOT LET ANY OTHER EARTHING SYSTEM MAKE CONTACT WITH THE SUBSTATION EARTH.
 4. EQUIPOTENTIAL EARTH GRID OF 300mm WIDTH MINIMUM TO BE LAID ACROSS AND CONNECTED TO FOUR EARTH ELECTRODES IN THE EASEMENT AS SHOWN BEFORE FORMING THE CONCRETE APRON FROM THE EASEMENT BOUNDARY TO THE SUBSTATION PAD FOUNDATION.
 5. FOR SUBSTATION FOUNDATION DETAILS, REFER TO DRAWING NO S2-2-6-9.
 6. M.E.N. EARTH (FROM DISTRIBUTION SYSTEM) MUST NOT BE BROUGHT INTO ELECTRICAL CONTACT WITH FOUNDATION SO THAT TESTING CAN BE CARRIED OUT. M.E.N. SHALL BE INSULATED WHERE PASSING THROUGH CONCRETE FOUNDATIONS.
 7. TRAFFIC BOLLARDS SHALL BE CONNECTED TO PERIMETER EARTHING CONDUCTOR BY 70sq.mm COPPER CONDUCTOR WHICH WILL BE SET INSIDE THE POST AND LUGGED OFF ONTO A BARRIER BOLT.
 8. WHERE EXTRA ROOM IN FRONT OF THE SUBSTATION IS REQUIRED, THE REARMOST EDGE OF THE SUBSTATION FOUNDATION CAN BE MOVED BACK AS FAR AS THE OUTER EDGE OF THE EQUIPOTENTIAL EARTH GRID. THE EXTRA AREA BETWEEN THE SUBSTATION DOOR AND THE EQUIPOTENTIAL EARTH RING SHALL BE FILLED WITH EQUIPOTENTIAL EARTH RING, SET IN CONCRETE AND BONDED TO THE SUBSTATION EARTH GRID.
 9. CONNECT SUBSTATION FOUNDATION TO EARTH RING VIA 70SQMM BARE COPPER.

TAG NO	QTY	DESCRIPTION	ITEM NO.	DRG REF
8	1	SUBSTATION FOUNDATION	-	S02-2-6-09
7	4	EQUIPOTENTIAL EARTHING MESH	288415	-
	4	EARTHING COMPOUND.(BAG)	10876	-
5	7	COMPRESSION CONNECTOR, "6" PROFILE.	257394	S01-1-5-08
4	17	COMPRESSION CONNECTOR, "C" PROFILE.	255786	S01-1-5-08
3	7	EARTH ROD - 14mm DIA.	414060	S01-1-5-01
2	AS REQ	70sq.mm INSULATED COPPER CONDUCTOR Y/Gr	401059	S02-1-1-23
1	AS REQ	70sq.mm BARE COPPER CONDUCTOR.	9803	S01-1-5-05

NO	DESCRIPTION	DRN	DATE	CKD	APPD
26	ITEM NO. REPLACES STOCK CODE, EARTH ROD ITEM NO. AMENDED	A.B.	JAN'17	I.B.	B.C.
25	SUBSTATION FOUNDATION CONNECTED TO SUBSTATION EARTH	A.T.	AUG'12	B.C.	S.C.
24	NOTE8 ADDED	C.C.	NOV'11	A.T.	S.C.
23	NOTE 2 AND EARTHING REQUIREMENT NOTE 4 AMENDED	A.T.	APR'11	B.C.	S.C.
22	NOTE 3 AMENDED	C.M.	SEPT'10	A.T.	S.C.
21	SAND PIT SHAPE UPDATED	C.M.	MAR'10	A.T.	S.C.
20	EARTH STAKE SEPERATION INCREASED	A.B.	JUL'09	A.T.	S.C.
19	NOTE 6 & EARTHING REQUIREMENT AMENDED	J.C.	NOV'08	B.C.	S.C.
18	EARTHING TERMINATION AMENDED	J.C.	JUL'08	B.C.	S.C.



DES		G.MCSHANAG	
DRN		T.R.	
CKD		S.S.	
APPD		R.REYNOLDS	
SCALE		1:50	
ISSUED		APR'85	
ALL DIM. IN mm		A3	
DRAWING NUMBER		S02-2-5-01	
		CAD PRODUCT - DO NOT AMMEND MANUALLY	

