



**EARTHING REQUIREMENT**

- FOR SUBSTATION EARTH, WITH LINKS 1 AND 2 OPEN, THE RECORDED EARTH RESISTANCE VALUE SHOULD NOT BE GREATER THAN 30 OHMS.
- FOR CMEN EARTH, WITH LINKS 1 AND 2 CLOSED, THE RECORDED EARTH RESISTANCE VALUE SHOULD NOT BE GREATER THAN 1 OHM.
- IF ANY OF THE ABOVE VALUES CANNOT BE ACHIEVED, REFER TO THE PROJECT MANAGER.
- 1 SPARE 10mm THREAD BOLT AND NUT FOR OPERATOR EARTHS ON THE HV AND LV EARTH BARS.
- WHERE ACCESS IS LIMITED, EARTHING STAKES IN THE EASEMENT CAN BE RELOCATED TO THE CABLE TRENCH TO ENSURE THE SUBSTATION EARTH RESISTANCE IS LESS THAN 30 OHMS.
- MEN TEE OFF SHALL BE CONNECTED VIA 2 x "C" COMPRESSION CONNECTORS 300mm APART OR CADWELD.

**NOTES:**

- EARTHING FOR A PACKAGE SUBSTATION CONSISTS OF FOUR EARTH ELECTRODES IN THE EASEMENT AND THREE EARTH ELECTRODES IN THE CABLE ENTRY TRENCH.
- IN THE EASEMENT: FOUR BORE HOLES TO BE DRILLED AT CORNERS. 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.
- 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.
- EQUIPOTENTIAL EARTH MESH 400mm WIDE SHALL BE LAID ACROSS USING CONCRETE MESH CHAIRS 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.
- FOR THE MARK 2 SUBSTATION FOUNDATION DETAILS, REFER TO DRG NO S02-2-6-31.
- FOR THE MARK 3 SUBSTATION FOUNDATION DETAILS, REFER TO DRG NO S02-2-6-37.
- 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 OR IN CONDUIT WHERE PASSING THROUGH CONCRETE FOUNDATIONS.
- TRAFFIC BOLLARDS WITHIN 1m OF EASEMENT FOR THE PURPOSE OF PROTECTING THE SUBSTATION SHALL BE CONNECTED TO PERIMETER EARTHING CONDUCTOR BY 70sqmm COPPER CONDUCTOR WHICH WILL BE SET INSIDE THE POST AND LUGGED OFF ONTO A BARRIER BOLT.
- BOND THE SUBSTATION FOUNDATION TO THE SUBSTATION EARTH RING VIA 70sqmm BARE COPPER CABLE USING THE M12 FURRELLS EMBEDDED IN THE FOUNDATION.

TAG NO	QTY	DESCRIPTION	ITEM NUMBER	DRG REF
7	4	EQUIPOTENTIAL EARTHING MESH	2884.15	-
6	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	70sqmm INSULATED COPPER CONDUCTOR Y/Gr	401059	S02-1-1-23
1	AS REQ	70sqmm BARE COPPER CONDUCTOR	9803	S01-1-5-05

**MATERIAL SCHEDULE**

DRG NO	DESCRIPTION	NO	DESCRIPTION	DRN	DATE	CKD	APPD
6	NOTE 8 & EARTH NOTE 6 AMENDED			C.C.	OCT'18	B.V.	B.C.
5	ALTERED MEASUREMENTS			CWM	AUG'17	B.V.	B.C.
4	MK3 DETAIL INCLUDED			C.C.	APR'17	B.C.	B.C.
3	DIMENSIONS AMENDED			A.T.	OCT'16	B.C.	B.C.
2	NOTE 4 AMENDED			K.T.	JUN'16	B.C.	B.C.
1	NOTES 5 AND 8 AMENDED			A.T.	JUN'14	B.C.	B.C.



DES		POWER STANDARD DRAWING	
DES	A TAYLOR	EARTHING PACKAGE SUBSTATION MK2 AND MK3 CONSTRUCTION DETAILS	
DRN	C COPPINS		
CKD	B CHEUNG		
APPD	B CHEUNG		
SCALE	N.T.S.		
ISSUED	AUGUST 2011	A3	DRAWING NUMBER S02-2-5-10
ALL DIM. IN mm			
DRAFTING STANDARD TO A.S.1100		CAD PRODUCT - DO NOT AMEND MANUALLY	

