

Rev	Revision Note	Date	Drawn by	Approved
7-2	Dimensional and Text change	22/10/12	AS	MS
7-3	HV Earth Mat Dimension amended	30/10/12	JM	MS
7-4	6-Way HV Mat Earth Bar added, amendments to earthing detail and arrangements	10/05/13	AS	MS
7-5	Design altered to include Conducrete, Notes and comments amended to suit	23/04/14	AS	MS
7-6	Wording of sub station stamp amended.	10/09/14	SW	MS
7-7	Minor amendments to wording.	26/02/15	NG	MS

NOTES:

1. **LV EARTH MAT**
THE CABLE PIT WILL NORMALLY BE LEFT UNVEILED AND COVERED WITH GRP GRATING. IF IT IS SPECIFIED THAT THE PIT IS TO BE SINGLE FILLED, AN EARTHING LOOP SHOULD BE INSTALLED AT A DEPTH OF 300mm IN FRONT OF THE EQUIPMENT IMMEDIATELY BELOW WHEN AN OPERATIVE WOULD BE STANDING WHILE OPERATING THE SWITCHGEAR.
REFER TO DRAWING GTC-E-EA-0003 FOR REINFORCING MESH EARTH CONNECTION DETAILS.

2. **LV NEUTRAL EARTH MAT**
CONNECT LV NEUTRAL BAR AT THE TMPC TO FIRST EARTH ROD USING 70mm² PVC CONDUCTOR. IF NECESSARY, ADDITIONAL 120mm² BARE COPPER ALONG HV CABLE TRENCH TO 9.0M FROM ANY LV NEUTRAL EARTHING ELECTRODES AND LAID AT LEAST 200mm UNDERNEATH AN HV CABLE (OR IF NOT POSSIBLE ALONGSIDE THE HV CABLE).

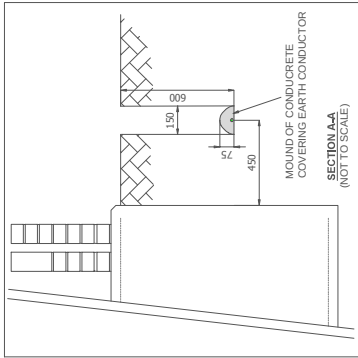
3. **CONCRETE**
THE BARE EARTH CONDUCTOR AND THE TOPS OF THE EARTH RODS ARE TO BE COVERED IN CONCRETE AFTER INSTALLATION TO BOTH IMPROVE THE EARTH VALUE AND TO PROTECT THE CONDUCTOR FROM WEATHER. THE CONCRETE SHALL BE INSTALLED IN ACCORDANCE WITH AN APPROVED METHOD STATEMENT. IN BRIEF, THE POWDERED CONCRETE IS POURED DIRECTLY FROM THE TOP OF THE EARTH RODS AND THE EXPOSED COPPER INCLUDING THE TOP OF THE EARTH RODS. THE CONCRETE IS THEN BACKFILLED IN THE NORMAL WAY. THE RECOMMENDED PPE, EYE PROTECTION, GLOVES AND RESPIRATOR (WHERE THERE IS INADEQUATE VENTILATION) SHALL BE USED AT ALL TIMES IN ACCORDANCE WITH COSHH DATA REFERENCE SHEET.

4. **BONDING**
NOTE: THE INSULATED EARTH CONDUCTOR WHICH IS THE 30m SEPARATION BETWEEN HV AND LV EARTH MATS MUST NOT BE COVERED IN CONCRETE.

5. **COMBINATION/ SEGREGATION OF EARTHING**
COLD SITES (PREFERRED EARTHING ARRANGEMENT) WHERE THE NEW SUBSTATION IS INTERCONNECTED CABLES AND SUBSTATION AND THESE EXISTING SUBSTATIONS HAVE 'COMBINED' HV AND LV EARTHING SYSTEMS, THE NEW SUBSTATION WILL ALSO BE 'COMBINED'. THE NEW SUBSTATION WILL NOT BE INSTALLED IN A 'COLD' SITE. THE NEW SUBSTATION WILL NOT BE INSTALLED IN A 'COLD' SITE. THE NEW SUBSTATION WILL NOT BE INSTALLED IN A 'COLD' SITE. THE NEW SUBSTATION WILL NOT BE INSTALLED IN A 'COLD' SITE.

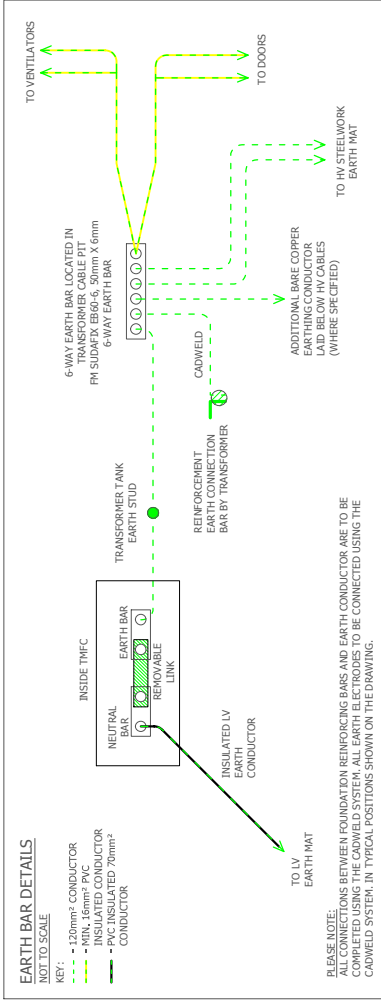
6. **SUBSTATION ELECTRICAL INSTALLATION**
FOR NOT SITE IT IS VERY IMPORTANT TO ENSURE THAT THE SUBSTATION ELECTRICAL INSTALLATION IS COMPLETELY ISOLATED FROM THE LOCAL LV SYSTEM PHE EARTHING TO AVOID DANGER.
REFER TO THE SUBSTATION SPECIFICATION FOR DETAILS OF LIGHTING AND POWER INSTALLATIONS REQUIREMENTS (DOCUMENT NO. EN0012)
ALL PORTABLE TOOLS AND APPARATUS USED IN THE SUBSTATION, MUST BE USED IN ALL CASES A SUITABLY RATED 2300.0V TRANSFORMER MUST BE USED TO SUPPLY THIS EQUIPMENT.

DESIGN APPROVED BY
THE ELECTRICITY NETWORK CO
21-11-16

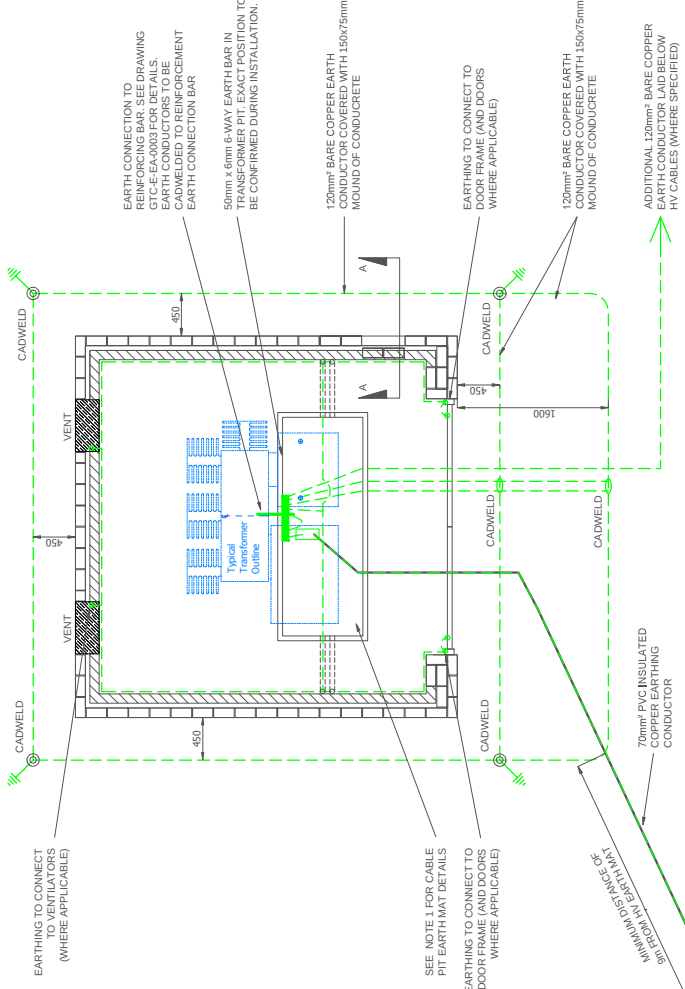


FOR FULL BASE DETAIL PLEASE
REFER TO GTC SUBSTATION
DRAWINGS GTC-E-SS-0010/11/12
AND GTC-E-EA-0003, AND
SUBSTATION DOCUMENT
GE-TG1-IG-0032

APPROVED FOR
CONSTRUCTION



PLEASE NOTE:
CONNECTIONS BETWEEN FOUNDATION REINFORCING BARS AND EARTH CONDUCTOR ARE TO BE COMPLETED USING THE CADWELD SYSTEM. ALL EARTH ELECTRODES TO BE CONNECTED USING THE CADWELD SYSTEM. IN TYPICAL POSITIONS SHOWN ON THE DRAWING.



APPROVED FOR
CONSTRUCTION

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ene
Electricity Networks Company Ltd

Drawing Scale: NOT TO SCALE
O.S. REF: N/A
Drawing Number: GTC-E-EA-0001_R7-7
Description: SUBSTATION EARTHING LAYOUT

SHEET
SIZE
A2