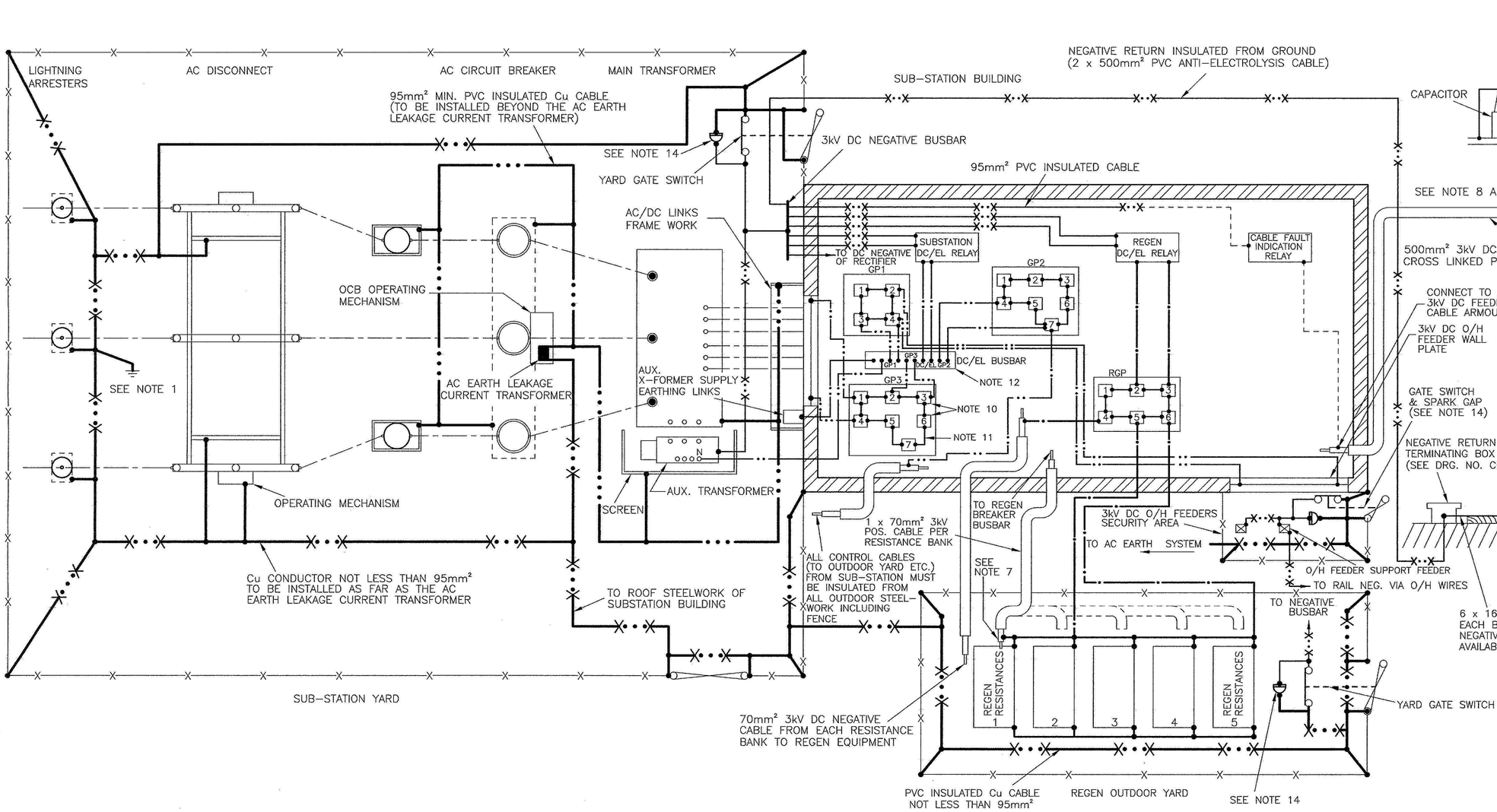

NOTES
1. DEEP EARTH OR TRENCH SYSTEM SEE CODE OF PRACTICE: EARTH SYSTEMS FOR ELECTRIC LIGHT AND POWER AND TRACTION INSTALLATIONS. ALSO TO BE CONNECTED TO SUPPLY AUTHORITY EARTH SYSTEM.
2. THE OVERALL RESISTANCE OF A LIGHTNING ARRESTER EARTH SYSTEM EITHER AC OR DC WHEN DISCONNECTED FROM THE EQUIPMENT EARTHING CIRCUITS MUST NOT EXCEED 5 OHMS.
3. THE INSTALLED EARTHING SYSTEM SHOULD BE LOCATED DIRECTLY BENEATH THE AC OR DC LIGHTNING ARRESTER OR AS CLOSE TO THIS POSITION AS POSSIBLE. UNNECESSARY BENDS IN THE DOWN LEADS FROM THE LIGHTNING ARRESTERS SHOULD BE AVOIDED.
4. ALL UNDERGROUND EARTHING CONNECTIONS MUST BE BRAZED.
5. ALL CORNER AND GATE POSTS TO BE DIRECTLY EARTHED.
6. THE SWITCH ATTACHED TO THE SUB-STATION OUTDOOR YARD GATE, THE 3kV DC O/H FEEDER SECURITY AREA GATE AND THE REGEN RESISTANCE ENCLOSURE GATE ARE TO BE SO MOUNTED THAT THE SWITCH IS OPEN WHEN THE GATE IS CLOSED AND IS CLOSED WHEN THE YARD GATE IS OPEN.
7. CABLE ARMOURING TO BE EARTHED TO REGEN DC/EL BUSBAR AT RESISTANCE BANKS.
8. WHERE A CABLE FAULT INDICATION RELAY IS INSTALLED THE ARMOURING OF THE 3kV DC TRACK FEEDER CABLES SHALL BE BLOCK JOINTED AT THE MAST.
9. WHERE NO CABLES FAULT INDICATION RELAY IS INSTALLED THE ARMOURING OF THE 3kV DC FEEDER CABLES SHALL BE BLOCK JOINTED IN THE 3kV DC BUSBAR CHAMBER.
10. CONNECTIONS NEED NOT BE IN THE NUMERICAL ORDER AS SHOWN IN DC/EL (SUBSTATION AND REGEN) GROUPS.
11. ALL INTERCONNECTIONS OF THE EARTH LEAKAGES TO BE 95mmý OR EQUIVALENT PVC INSULATED CABLE.
12. SUBSTATION DC/EL BUSBAR SHALL BE MARKED ACCORDING TO GROUP NUMBERS FOR EASY REFERENCE.
13. FOR END BOX ASSY EARTHING DETAIL SEE DRG NO CEE-TCL-78.
14. THE SPARK GAP ASSEMBLY SHALL COMPLY TO THE ASSEMBLY DRAWING BBB906 AND SPECIFICATION BBB1616.

LEGEND (EQUIPMENT)

GP1 – BUSBAR CHAMBER GROUP.
1. BREAKER CELL(S).
2. UNDERVOLTAGE POTENTIAL DEVIDER SUPPORT BRACKET.
3. DOOR FRAME.
4. CHEQUER PLATES WHERE APPLICABLE.
5. 3kV O/H FEEDER WALL PLATE.

GP2 – SUBSTATION AUXILIARIES GROUP.
1. BATTERY CHARGER.
2. TELECONTROL PANEL.
3. POWER AND LIGHTING DISTRIBUTION BOX AND STEEL TUBING.
4. UNDERVOLTAGE RELAY STEEL BOX.
5. ALL STEEL ENTRY DOORS.
6. CHEQUER PLATES WHERE APPLICABLE.
7. LT CONTROL PANEL.

GP3 – HT BAY GROUP.
1. RECTIFIER STEELWORK.
2. WAVE FILTER STEELWORK.
3. REACTOR STEELWORK.
4. POSITIVE ISOLATOR STEELWORK.
5. BAY FENCES STEELWORK.
6. FAN FRAMEWORK.
7. CHEQUER PLATES WHERE APPLICABLE.
8. ANODE WALL PLATE.

RGP – REGEN GROUP.
1. REGEN CONTROL PANEL.
2. BAY GATE.
3. BAY GATE EARTH LINK.
4. ALL STEEL DOORS AND FRAMES.
5. POTENTIAL DEVIDER SUPPORT BRACKET.
6. CHEQUER PLATES WHERE APPLICABLE.
7. REGEN RESISTANCE BOXES.

LEGEND (SYSTEMS)
- REGENERATIVE DC EARTH LEAKAGE SYSTEM
- SUBSTATION DC EARTH LEAKAGE SYSTEM
- DC NEGATIVE SYSTEM
- AC EQUIPMENT EARTH LEAKAGE SYSTEM
- AC EARTH SYSTEM
- SECURITY FENCE

AMENDMENTS		
NO	NAME	DATE
6	FM EYGELAAR	95-04-26
DRAWING REVISED. DO REF T95/025		
7	FM EYGELAAR	95-08-24
SUBSTATION DC EARTH LEAKAGE SYSTEM IN BUILDING REVISED. DO REF T95/043		
8	LO BORCHARD	98-01-24
NOTES REVISED. DO REF T98/004		
9	D O SCHULZ	2001-05-25
NOTE 14 ADDED. DO REF: CDO/1197		
10		2008-07-31
NOTE 8 & 9 REVISED. DO REF: CDO/6236 ECP NO: BBD4921		

DO REF: J71/196	GEN TOL: LIN± – ANG± –	
DRN: D WEIDEMAN	CKD: E JURGENSEN	DATE: 73-08-20
ENG: –	T C BROOK	for CHIEF ENG
INFRASTRUCTURE (ELECTRICAL)	SPOORNET	

3kV DC EARTHING ARRANGEMENT
TYPICAL 1 x 4,5 MVA RECTIFIER TRACTION SUBSTATION

DIMENSIONS: mm
SCALE: NTS
A1
DRAWING NO CEE-TBD-7
SHEET – OF –
T0000221