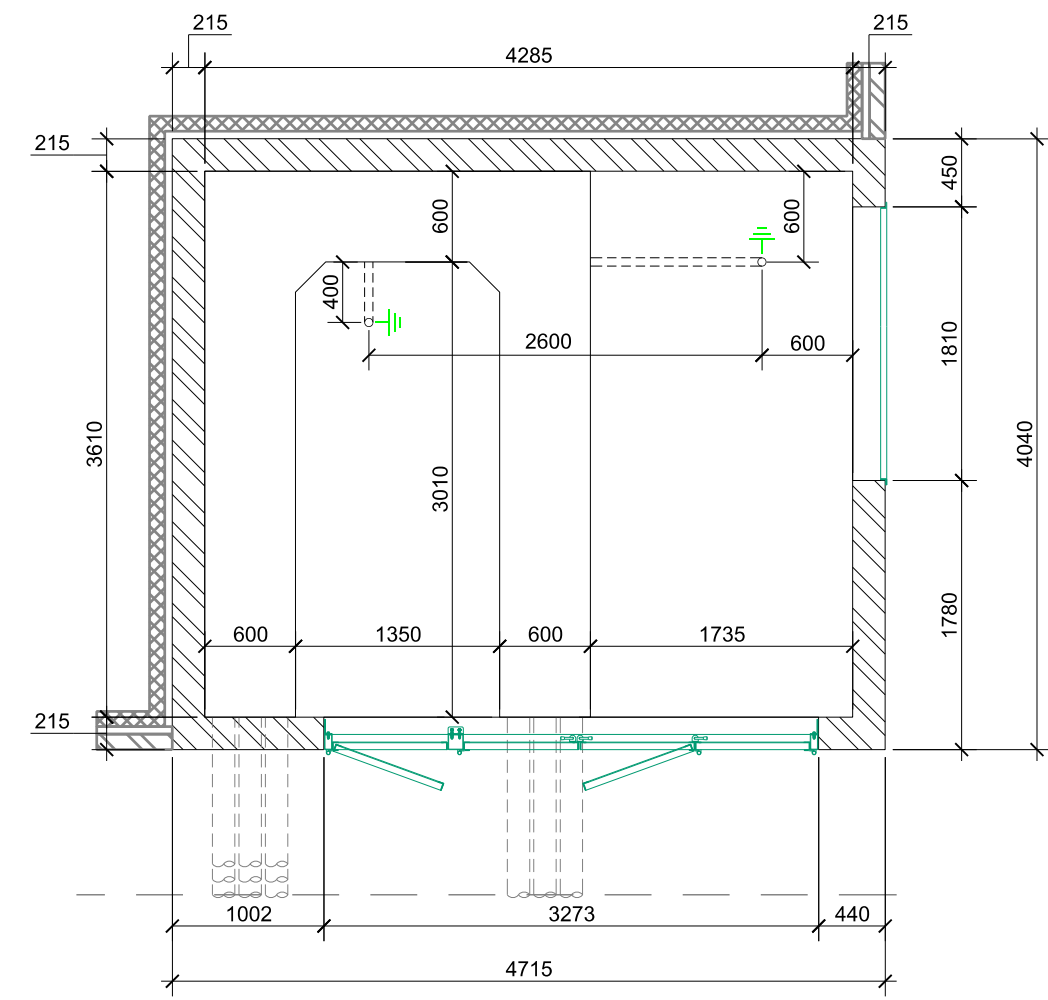


**SUBSTATION ~ GENERAL ARRANGEMENT PLAN**



**SETTING OUT DIMENSIONS**

**PROPOSED SUBSTATION LOCATION TO BE ADVISED BY DEVELOPER AND AGREED WITH UK POWER NETWORKS PRIOR TO CONSTRUCTION**

**LOCATION PLAN**

- GENERAL NOTES**
- DO NOT SCALE FROM THIS DRAWING. NO VARIATION TO THE STATED DIMENSIONS OR MATERIALS SPECIFIED WILL BE PERMITTED WITHOUT PRIOR WRITTEN CONSENT FROM UK POWER NETWORKS.
  - ALL DIMENSIONS ARE IN MILLIMETRES.
  - THE RUNNING OF SPRINKLER SYSTEM, HEATING, GAS, TELECOMS, WATER AND OTHER SERVICES THROUGH OR UNDER THE SUBSTATION AREA IS NOT PERMITTED.
  - WORKMANSHIP AND MATERIALS TO CONFORM TO THE LATEST EDITION OF THE RELEVANT CODES OF PRACTICE OR BRITISH STANDARD AND EUROCODES.
  - LOCATION OF THE SITE SHALL BE OVERLAID ON THE ORDNANCE SURVEY MAP AND ADDED ONTO THE PROJECT SPECIFIC DRAWING.

- PLANNING, LOCATION AND POSITION**
- POSITION AND ORIENTATION OF THE SUBSTATION SHALL BE AGREED WITH UK POWER NETWORKS PRIOR TO THE COMMENCEMENT OF ANY BUILDING WORKS ON SITE.
  - SUBSTATIONS SHALL BE LOCATED ADJACENT TO A PUBLIC HIGHWAY OR REACHED BY A PRIVATE DEDICATED ACCESS WAY WITH FULL CONTROL AND ASSOCIATED LEGAL RIGHTS.
  - THE DEVELOPER IS RESPONSIBLE FOR OBTAINING ALL PLANNING CONSENTS AND BUILDING REGULATION APPROVALS.
  - UNIMPEDED ACCESS FOR UK POWER NETWORKS PERSONNEL IS REQUIRED AT ALL TIMES, 365 DAYS OF THE YEAR (24/7). ANY DOORS OR GATES ON THE ACCESS ROUTE SHALL BE LOCKED WITH THE STANDARD UK POWER NETWORKS LOCKING SUITE.
  - ACCESS VIA 24 HOUR SECURITY IS UNACCEPTABLE.
  - PROPOSED SOFT LANDSCAPING ADJACENT TO THE SUBSTATION (E.G. PLANTING SCHEMES) SHALL ALLOW FOR FUTURE PLANT GROWTH WITHOUT COMPROMISING ACCESS OR VENTILATION THROUGH DOORS AND LOUVRES.

- FOUNDATIONS AND REINFORCED CONCRETE**
- AS STATED ON DRAWING OR TO SUIT THE SITE CONDITIONS.
  - SUFFICIENT COVER TO THE REINFORCEMENT TO ACHIEVE A 4 HOUR FIRE RATING (50mm MINIMUM).

- FLOOR SLAB**
- TO THE STRUCTURAL ENGINEER'S SPECIFICATIONS TO SUSTAIN THE LOADS SHOWN. THE ENTIRE ACCESS ROUTE IS TO BE CAPABLE OF SUSTAINING THIS LOAD.
  - STANDARD FLOOR SLAB THICKNESS OF 225mm MINIMUM REINFORCED CONCRETE WITH A SUITABLE WEARING SCREED WITH A MINIMUM COMPRESSIVE STRENGTH OF 40N/mm<sup>2</sup> AFTER 28 DAYS. CONCRETE WORKS FINISHED WITH A STEEL FLOAT TO WITHIN ±2mm OVER 2000mm.
  - REINFORCEMENT TO DEVELOPER'S STRUCTURAL ENGINEER REQUIREMENTS.

- ROOF**
- 150mm MINIMUM NORMAL DENSITY REINFORCED CONCRETE OR GREATER TO SUIT THE SPAN WITH SUFFICIENT CONCRETE COVER TO REINFORCEMENT TO ACHIEVE A 4 HOUR FIRE RATING.
  - HOLLOW BEAMS, PRECAST PLANKS OR LIGHTWEIGHT CONCRETE ON METAL DECKING OR SIMILAR WILL NOT BE PERMITTED.
  - REINFORCEMENT TO DEVELOPER'S STRUCTURAL ENGINEER REQUIREMENTS.

- WALLS**
- OPTION 1: 215mm FULLY BONDED BRICKWORK. FROGGED FLETTONS CONSTRUCTED IN ENGLISH BOND WITH NEAT STRUCK JOINTS. WALLS TO BE FAIR FACED ON THE INSIDE.
  - OPTION 2: TWO SKINS OF BRICKWORK LAID WITH E.M.L. HORIZONTAL BED JOINT REINFORCEMENT EVERY 3<sup>rd</sup> COURSE WITH NO CAVITY. INNER SKIN TO BE OF COMMON FLETTONS. EXTERNAL SKIN TO HARMONISE WITH ADJACENT BRICKWORK.
  - OPTION 3: 180mm MIN. RC CONCRETE WITH SUFFICIENT CONCRETE COVER TO REINFORCEMENT TO ACHIEVE A 4 HOUR FIRE RATING.
  - ENGINEERING BRICK OR BLOCK ARE NOT PERMITTED.
  - PROVIDING THAT NON-COMBUSTIBLE MATERIAL IS USED, BRICKWORK WALLS MAY BE RENDERED OR CLAD EXTERNALLY IF SPECIFICALLY REQUIRED BY THE PLANNING CONDITIONS.

- DOORS AND VENTS**
- ONLY UK POWER NETWORKS APPROVED ITEMS SHALL BE FITTED.
  - SEE NOTES ON DRAWING FOR DOOR SPECIFICATION.

- CABLE ENTRIES**
- 125mm INTERNAL DIAMETER TWIN WALLED HIGH DENSITY POLYETHYLENE DUCTING TO ESI 12-24 OR BS EN 61386.
  - TO BE LAID FLAT AND LEVEL. NO BENDS ARE PERMITTED.
  - TO BE CLEAR OF ANY UTILITY SERVICES/PITS/VAULTS, ETC.

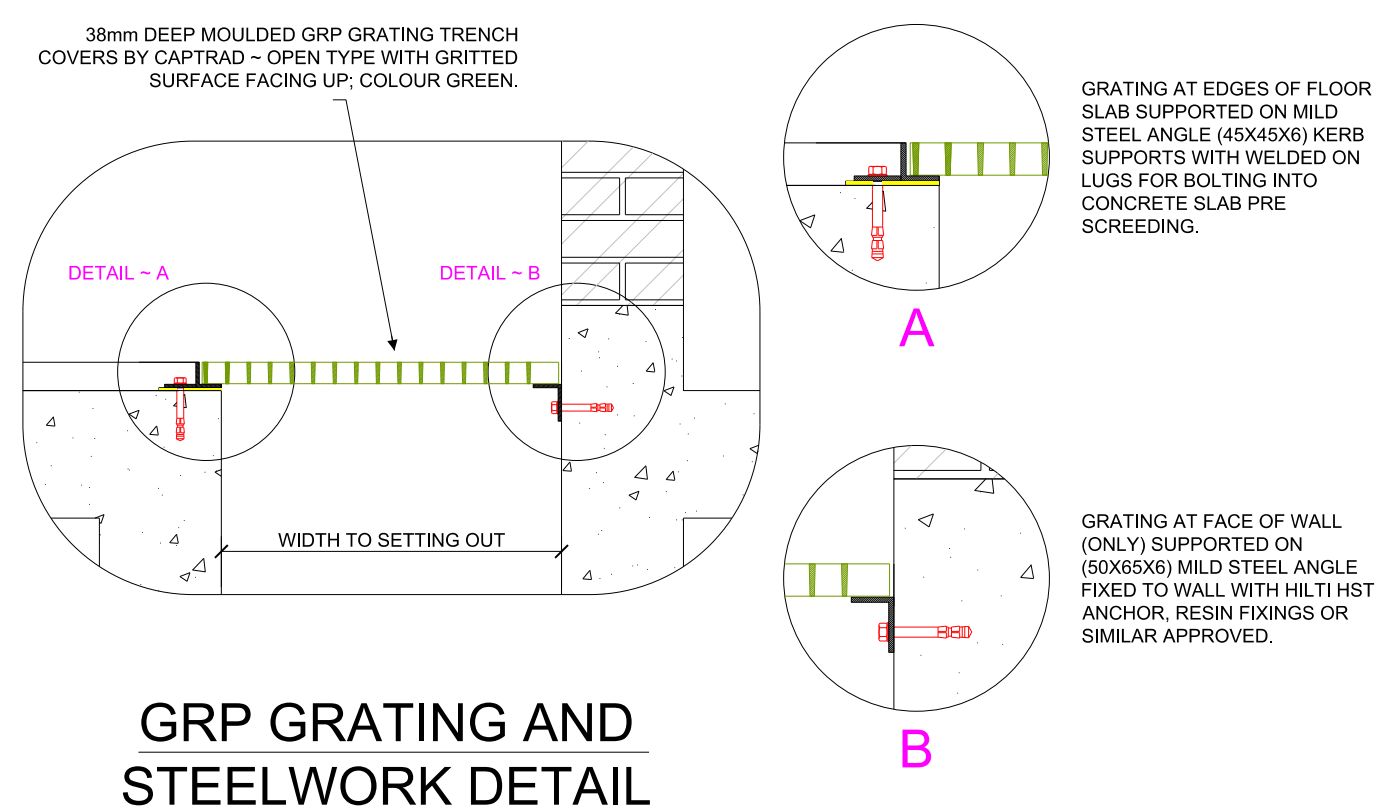
- WATERPROOFING**
- WHOLE OF THE SWITCHROOM MUST BE IMPERVIOUS TO THE INGRESS OF WATER.

- FINISHES**
- FLOOR TO RECEIVE TWO COATS OF GREY CONCRETE FLOOR PAINT.
  - WALLS AND CEILINGS TO RECEIVE TWO COATS OF WHITE EMULSION.
  - APPROVED DOORS AND VENTS TO RECEIVE POWER COATED FINISH, STANDARD COLOUR GREEN 14-C-39 OR DEVELOPER TO SPECIFY THE COLOUR TO HARMONISE WITH THE ADJACENT PREMISES AND ADVISE THE MANUFACTURER.

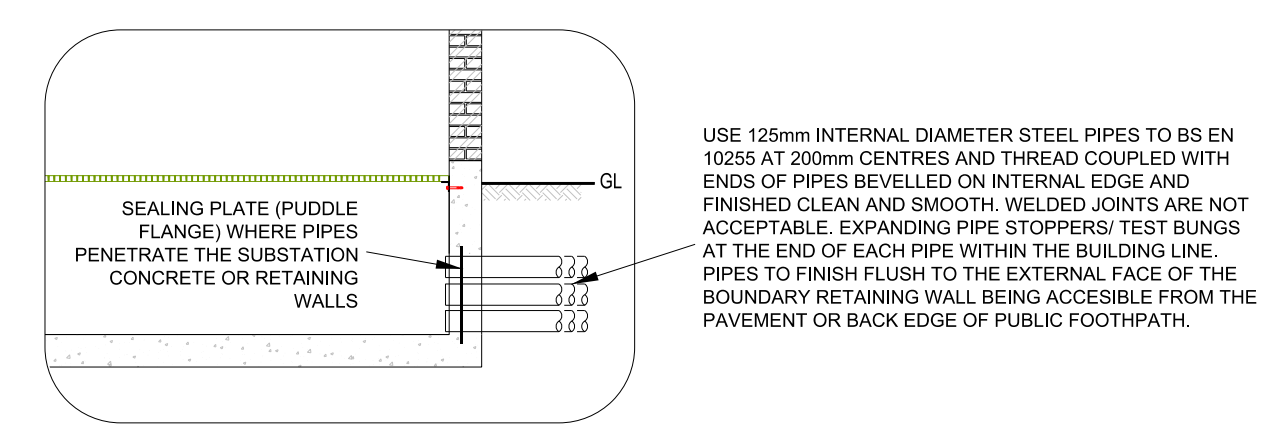
- INFILL TO AREA AROUND CABLES**
- AFTER CABLE INSTALLATION, SEAL ALL CABLE DUCTS, FILL TRENCHES WITH SAND WITH 100mm ABOVE TOP DUCT AND TO A MINIMUM OF 500mm BELOW THE TOP OF GRATINGS.

- GRP GRATINGS AND SUPPORTS**
- 38mm DEEP MOULDED GRP GRATINGS, OPEN TYPE WITH GRITTED SURFACE, GREEN.
  - GRATINGS SHALL BE SEATED LEVEL WITH NO NOTICEABLE ROCKING OR SLIDING AND SHALL BE LEFT IN POSITION.
  - CUT OFF OPENINGS FOR CABLE PENETRATIONS ENSURING THE GRATINGS CAN BE REMOVED WITH CABLES IN-SITU WHILE STILL REMAINING STABLE.
  - STEELWORK FOR GRP GRATING SUPPORTS SHALL BE GALVANISED.

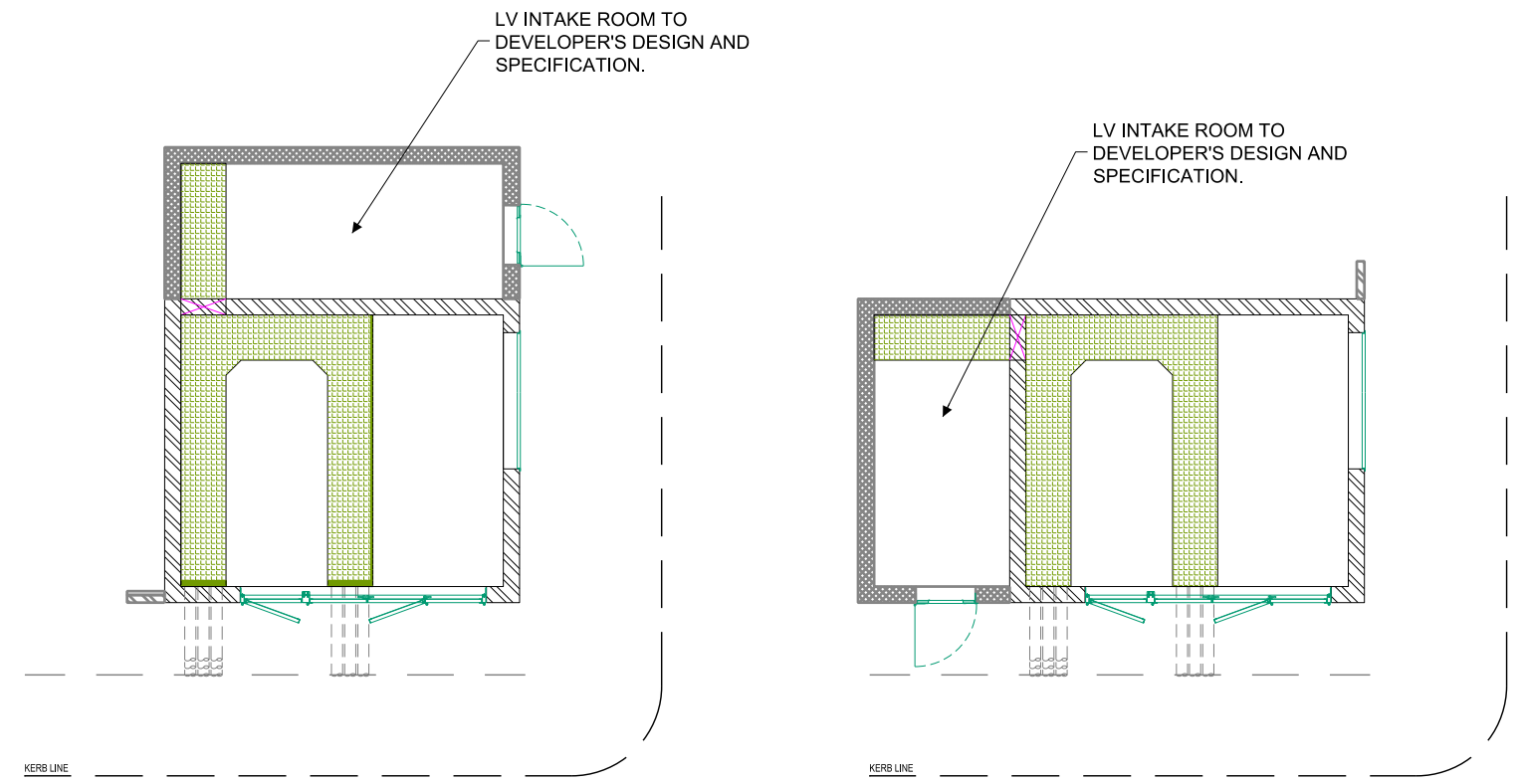
- REFERENCES**
- SHEET 2 EARTHING LAYOUT
  - SHEET 3 SMALL POWER AND LIGHTING
  - EAS 07-0000 APPROVED EQUIPMENT LIST - CIVIL
  - EAS 02-0000 APPROVED EQUIPMENT LIST - CABLES & DUCTS
  - EDS 07-1119 SUBSTATION ELECTRICAL SERVICES
  - EDS 07-3101 PRE-DESIGN REQUIREMENTS FOR SECONDARY SUBSTATIONS
  - EDS 07-3102 SECONDARY SUBSTATION CIVIL DESIGN STANDARD



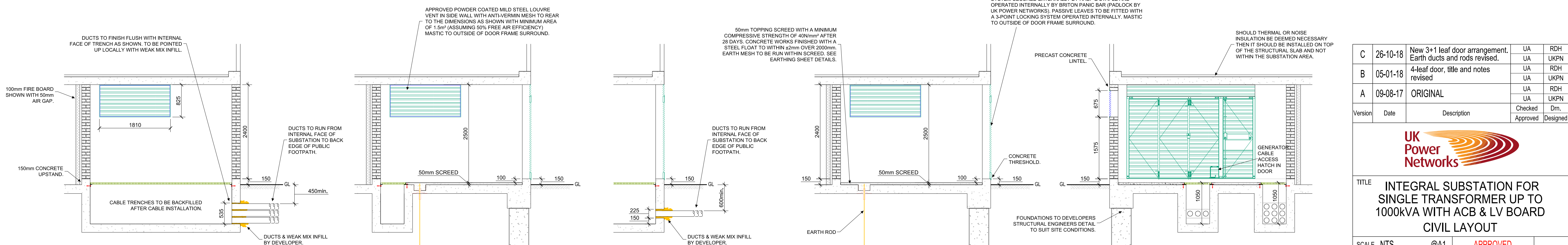
**GRP GRATING AND STEELWORK DETAIL**



**ALTERNATIVE CABLE ENTRY USING STEEL PIPES**  
(For cable entries passing through and cast-in to RC)



**ALTERNATIVE SERVICE INTAKE POSITIONS**



**SECTION A-A**

**SECTION B-B**

**SECTION PART C-C**

**SECTION D-D**

**SECTION E-E**

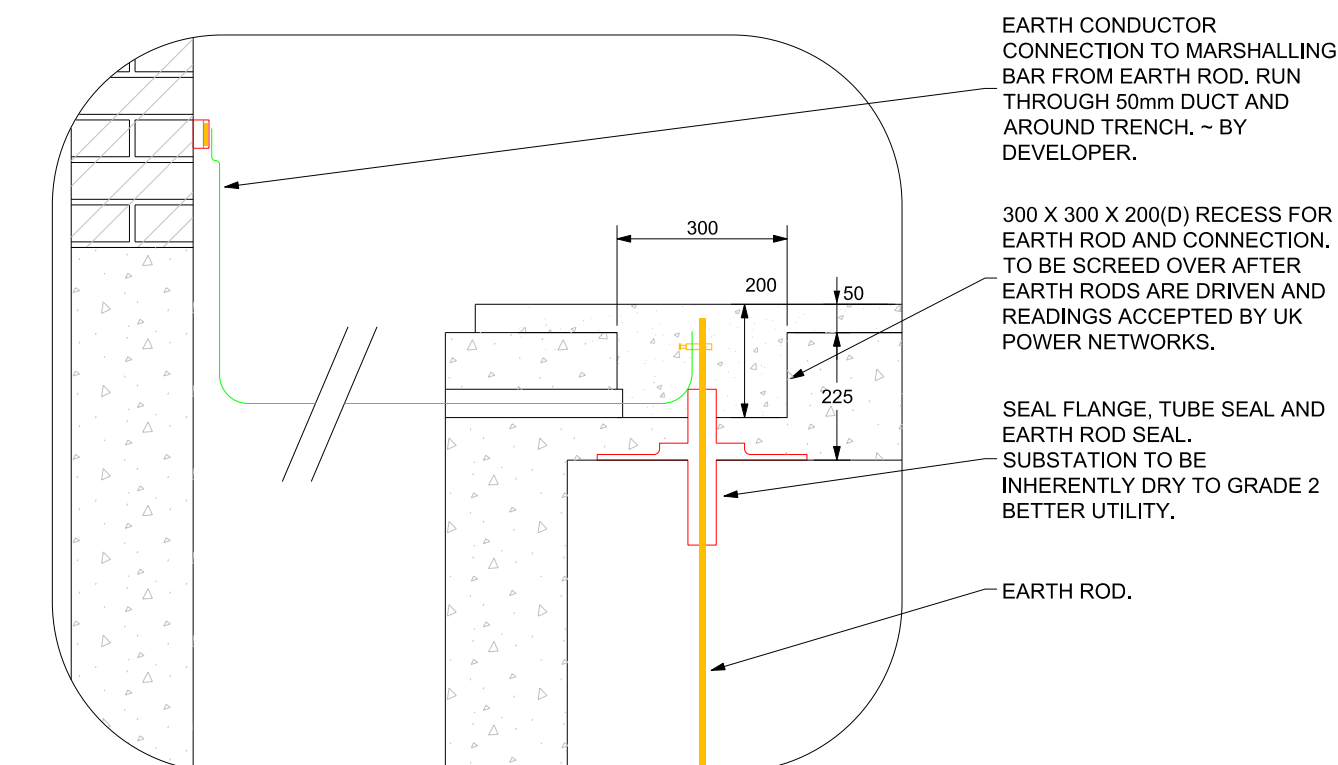
Version	Date	Description	Checked	Dm.	Approved	Designed
C	26-10-18	New 3+1 leaf door arrangement. Earth ducts and rods revised.	UA	UA	RDH	UKPN
B	05-01-18	4-leaf door, title and notes revised	UA	UA	RDH	UKPN
A	09-08-17	ORIGINAL	UA	UA	RDH	UKPN



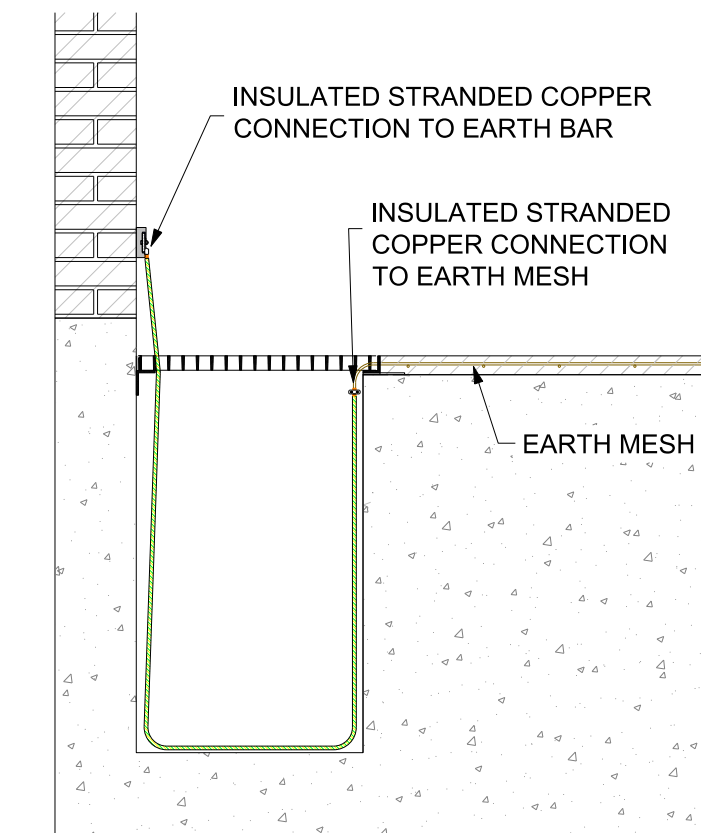
**TITLE**  
INTEGRAL SUBSTATION FOR SINGLE TRANSFORMER UP TO 1000kVA WITH ACB & LV BOARD  
CIVIL LAYOUT

SCALE	NTS @A1	APPROVED	Version
DRAWING NO.	EDS 07-3102.21	Sheet 1 of 3	C
SITE	SECONDARY SITES		

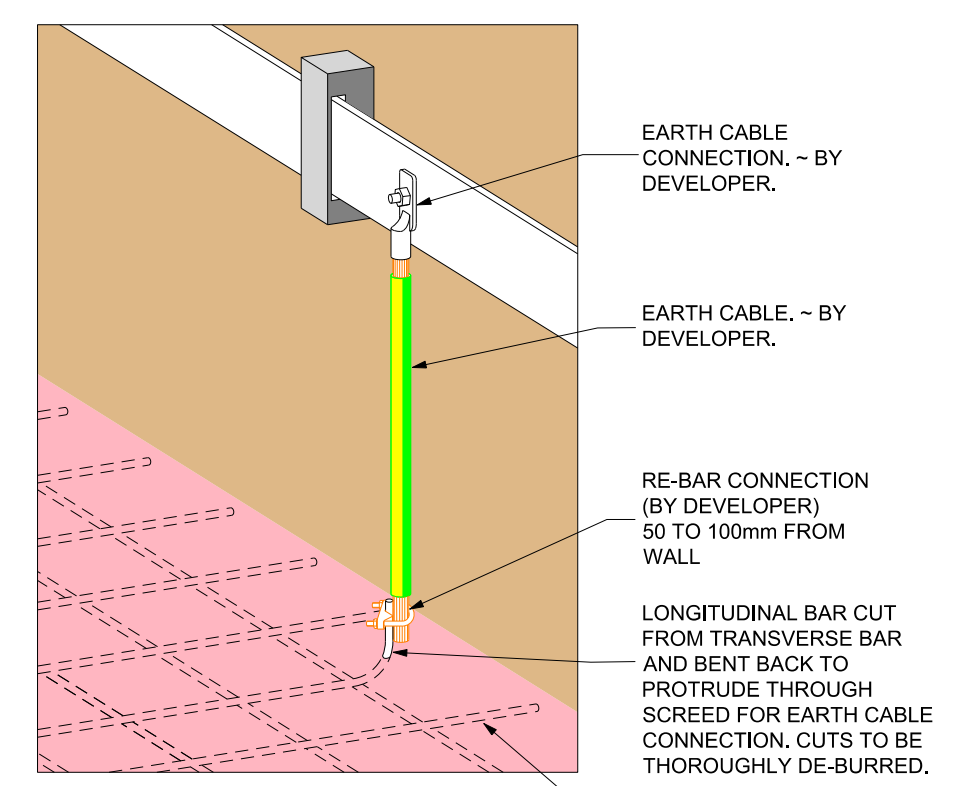
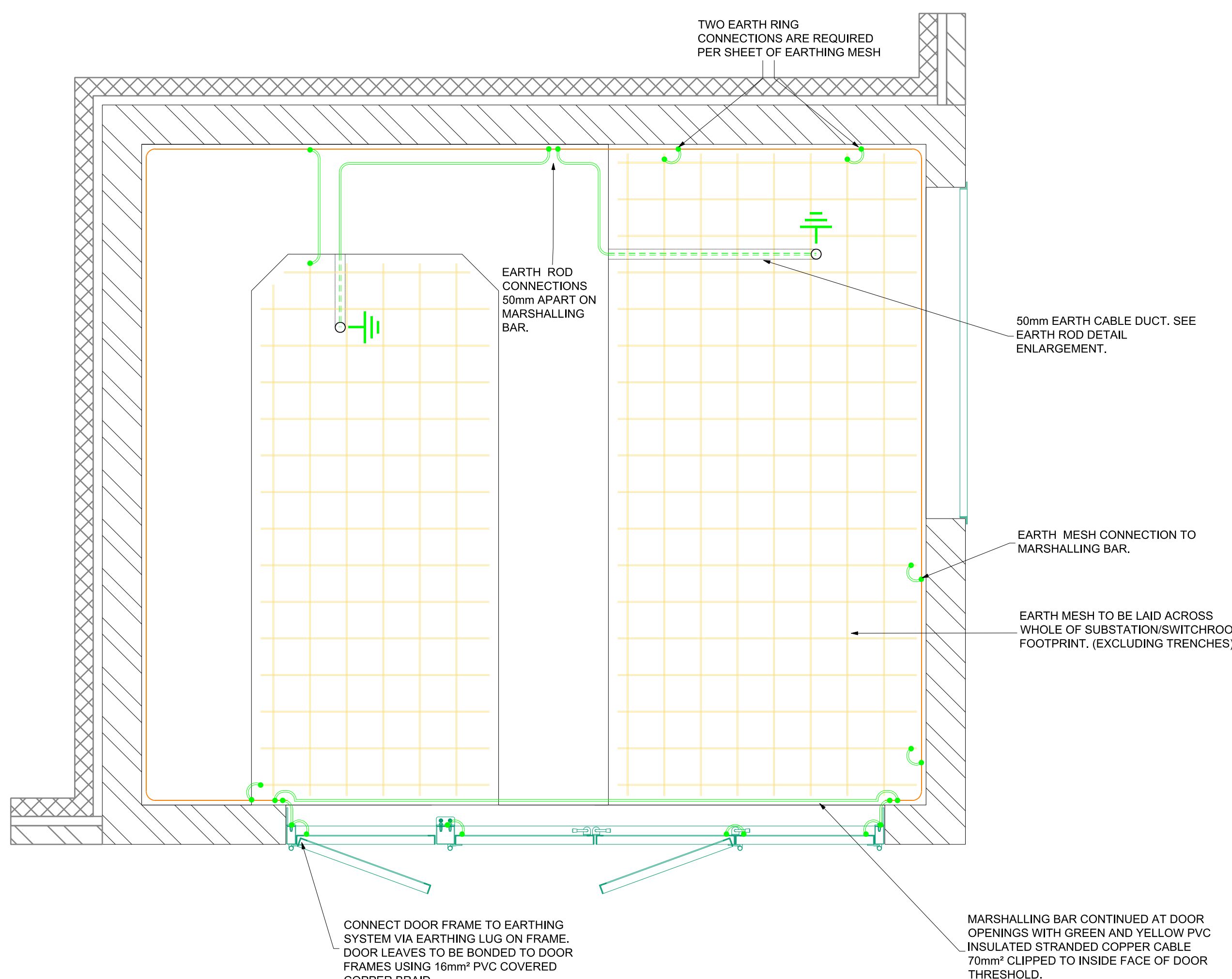




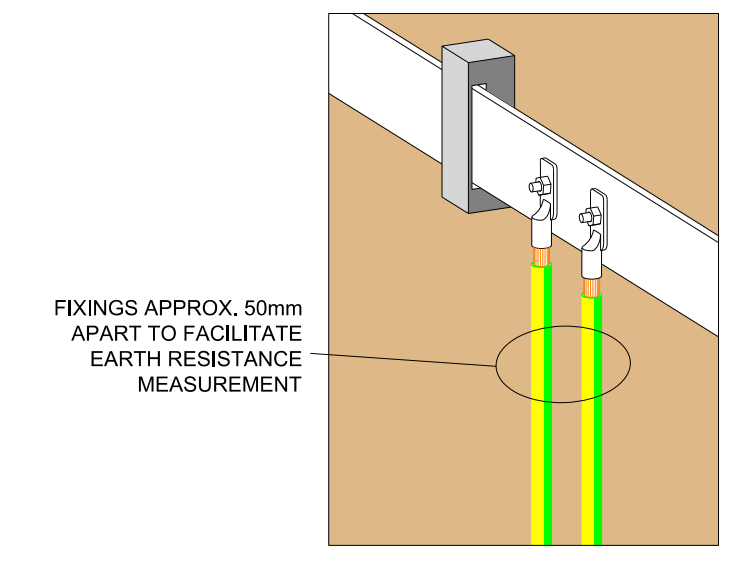
**EARTH ROD DETAIL**



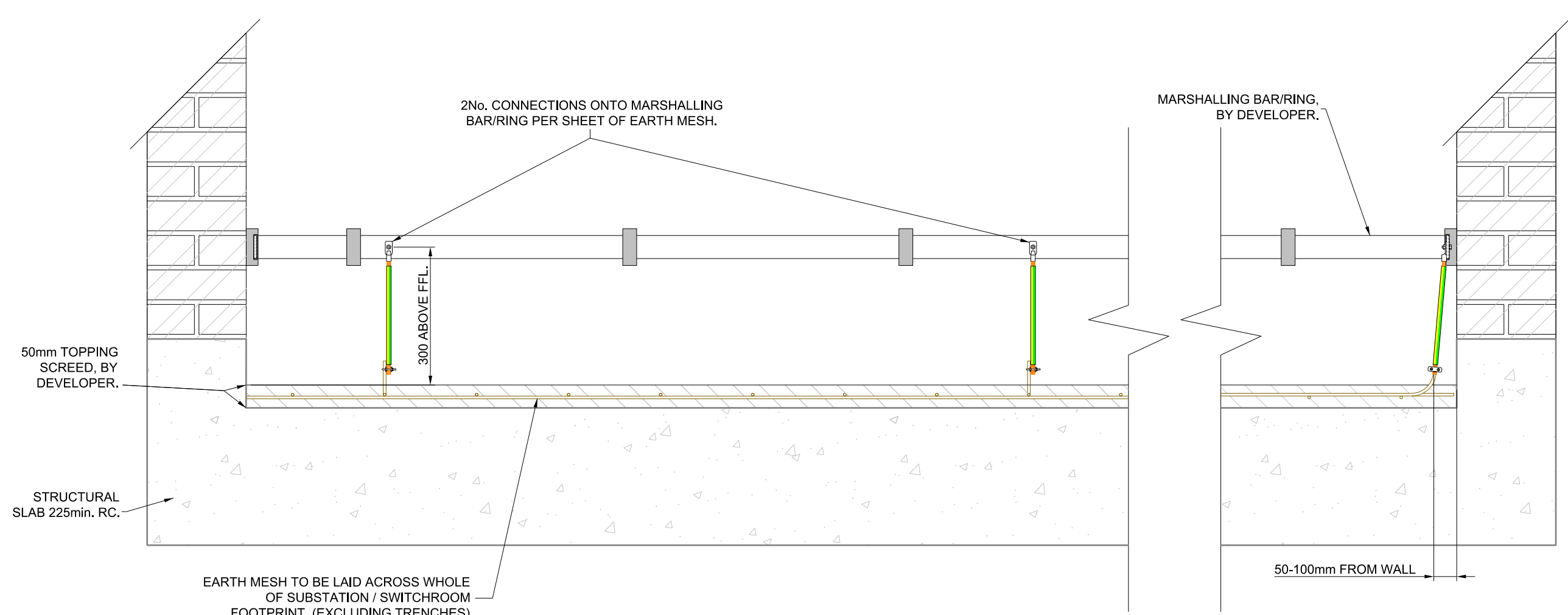
**EARTH MESH CONNECTION ACROSS TRENCH**



**EARTH MESH CONNECTION DETAIL**



**EARTH ROD CONNECTION TO EARTH BAR/RING**



**TYPICAL SECTION SHOWING EARTH MESH AND CONNECTIONS TO MARSHALLING BAR**

**GENERAL NOTES**

THIS DRAWING SHALL NOT BE SCALED AND NO VARIATION TO THE STATED DIMENSIONS OR MATERIALS SPECIFIED SHALL BE PERMITTED WITHOUT PRIOR WRITTEN CONSENT FROM UK POWER NETWORKS.

ALL DIMENSIONS ARE IN MILLIMETRES.

THE EARTHING SYSTEM SHALL BE PROVIDED BY THE DEVELOPER/CONTRACTOR UNLESS STATED OTHERWISE BY UK POWER NETWORKS.

WHEREVER POSSIBLE THE EARTHING SYSTEM SHOULD BE INSTALLED IN ASSOCIATION WITH THE GROUND WORKS TO ENSURE THAT EARTH ELECTRODES ARE CORRECTLY POSITIONED PRIOR TO PLACEMENT OF CONCRETE.

**EARTH MESH DESIGN**

THE EARTHING DESIGN SHOULD INCLUDE A MESH LAID WITHIN A TOPPING SCREED TO CONTROL THE TOUCH VOLTAGE AROUND THE EQUIPMENT.

EARTH MESH TO BE INDEPENDENT OF THE OVERALL BUILDING REINFORCEMENT, LAYING IT WITHIN A TOPPING SCREED ACHIEVES THIS.

EARTH MESH TO BE LAID ACROSS THE WHOLE OF THE SUBSTATION / SWITCHROOM FOOTPRINT, (EXCLUDING TRENCHES); SIZE AND NUMBER OF SHEETS TO THE DEVELOPER'S / BUILDER'S DIRECTION.

2 NO. CONNECTIONS FROM EACH SHEET TO BE MADE DIRECTLY TO THE MARSHALLING BAR / RING AS SHOWN.

**EARTH MESH SPECIFICATION**

STEEL FABRIC REINFORCEMENT SQUARE MESH TO BS 4483. A393, A252, A193 AND A142 ARE ACCEPTABLE.

**EARTH MESH/MARSHALLING BARRING CONNECTION**

ROD TO CABLE CLAMP TO BS 7430 OR EXOTHERMIC WELD. 70mm² GREEN AND YELLOW PVC COVERED STRANDED COPPER CABLE. COMPRESSION CRIMP CONNECTOR AND BOLTED ONTO MARSHALLING BARRING.

**MARSHALLING BARRING**

40mm x 6mm ALUMINIUM TAPE, 300mm ABOVE FFL, FIXED WITH 50mm x 6mm PLASTIC DC TAPE CLIPS AND RUN CONTINUOUSLY AROUND PERIMETER WALLS OF SUBSTATION/SWITCHROOM.

**SCREED**

50mm-100mm WITH A MINIMUM COMPRESSIVE STRENGTH OF 40N/mm² AFTER 28 DAYS. STEEL FLOAT FINISH TO ±2mm OVER 2000mm. NOTE: 50mm SUITS DEPTH OF TRENCH SUPPORT ANGLES IF PRESENT.

**EARTH ELECTRODE**

THE EARTH RODS SHALL BE COPPER CLAD WITH APPROPRIATE FITTINGS, DRIVEN TO A MINIMUM DEPTH OF 2.4m.

THE EARTH ELECTRODE SHALL BE AS FOLLOWS:

- FOR EARTH FAULT LEVELS UP TO 8kA USE 70mm² BARE STRANDED HARD DRAWN COPPER CABLE OR 25mm x 3mm COPPER TAPE.
- FOR EARTH FAULT LEVELS UP TO 12kA USE 120mm² OR 2 x 70mm² BARE STRANDED HARD DRAWN COPPER CABLE OR 25mm x 4mm COPPER TAPE.
- FOR EARTH FAULT LEVELS UP TO 15kA USE 2 x 70mm² BARE STRANDED HARD DRAWN COPPER CABLE OR 25mm x 6mm COPPER TAPE.

**EARTH RESISTANCE**

THE MAXIMUM RESISTANCE OF THE STANDALONE EARTHING SYSTEM SHALL BE SPECIFIED BY THE UK POWER NETWORKS DESIGNER.

WHERE THE EARTHING SYSTEM IS INSTALLED BY A DEVELOPER OR CONTRACTOR CERTIFICATION CONFIRMING THE RESISTANCE OF THE STANDALONE EARTHING SYSTEM SHALL BE PROVIDED TO UK POWER NETWORKS PRIOR TO EQUIPMENT INSTALLATION.

**BONDING**

NOT ALL EQUIPMENT BONDING IS SHOWN ON THE DRAWING. ALL EQUIPMENT SHALL BE BONDED IN ACCORDANCE WITH ECS 06-0023.

**OTHER**

STEEL DOORS SHALL BE BONDED TO THE EARTHING SYSTEM AS FOLLOWS:

- DOOR LEAVES TO DOOR FRAMES USING MINIMUM 16mm² COPPER BRAID.
- DOOR FRAME SURROUND TO EARTHING SYSTEM VIA EARTHING LUGS ON FRAME USING MINIMUM 16mm² PVC COVERED STRANDED COPPER CABLE.

THE EARTHING SYSTEM IS INSTALLED FOR UK POWER NETWORKS' SOLE USE AND SHALL NOT BE INTERCONNECTED WITH ANOTHER EARTHING SYSTEM OR USED FOR ANY OTHER PURPOSE WITHOUT PERMISSION FROM UK POWER NETWORKS.

**FURTHER INFORMATION**

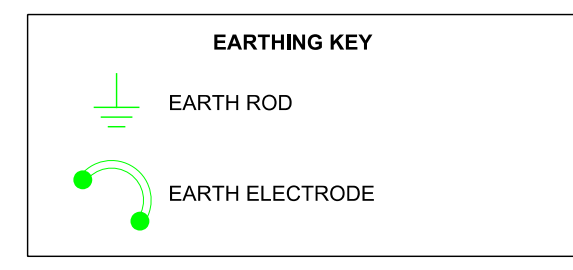
FOR FURTHER DETAILS ON THE CONSTRUCTION OF THIS EARTHING SYSTEM INCLUDING MATERIALS, CONNECTIONS, LABELLING ETC. REFER TO ECS 06-0023.

FOR INFORMATION ON SECONDARY SUBSTATION EARTHING DESIGN REFER TO EDS 06-0014.

THE EARTHING MESH PRINCIPLES MAY BE APPLIED TO SIMILAR SUBSTATIONS WHICH DIFFER IN SHAPE AND SIZE WITHOUT THE NEED FOR A SITE SPECIFIC EARTHING DRAWING.

**NOTE: THIS DRAWING ONLY SHOWS THE EARTHING ASSOCIATED WITH THE GROUND WORKS. ADDITIONAL EARTHING MAY BE REQUIRED TO ACHIEVE THE EARTH RESISTANCE VALUE AND TO ENSURE THE SUBSTATION IS SAFE. REFER TO THE RELEVANT EARTHING STANDARD FOR THE COMPLETE EARTHING AND BONDING REQUIREMENTS.**

**THE MESH EARTHING DESIGN AS SHOWN IS ONLY SUITABLE FOR SUBSTATIONS WITH AN EPR (EARTH POTENTIAL RISE) BELOW 430V (COLD SITE). IF THIS DESIGN IS TO BE USED FOR SUBSTATIONS WITH AN EPR ABOVE 430V THEN ADDITIONAL EXTERNAL EARTHING IS REQUIRED TO CONTROL THE TOUCH AND STEP VOLTAGES.**



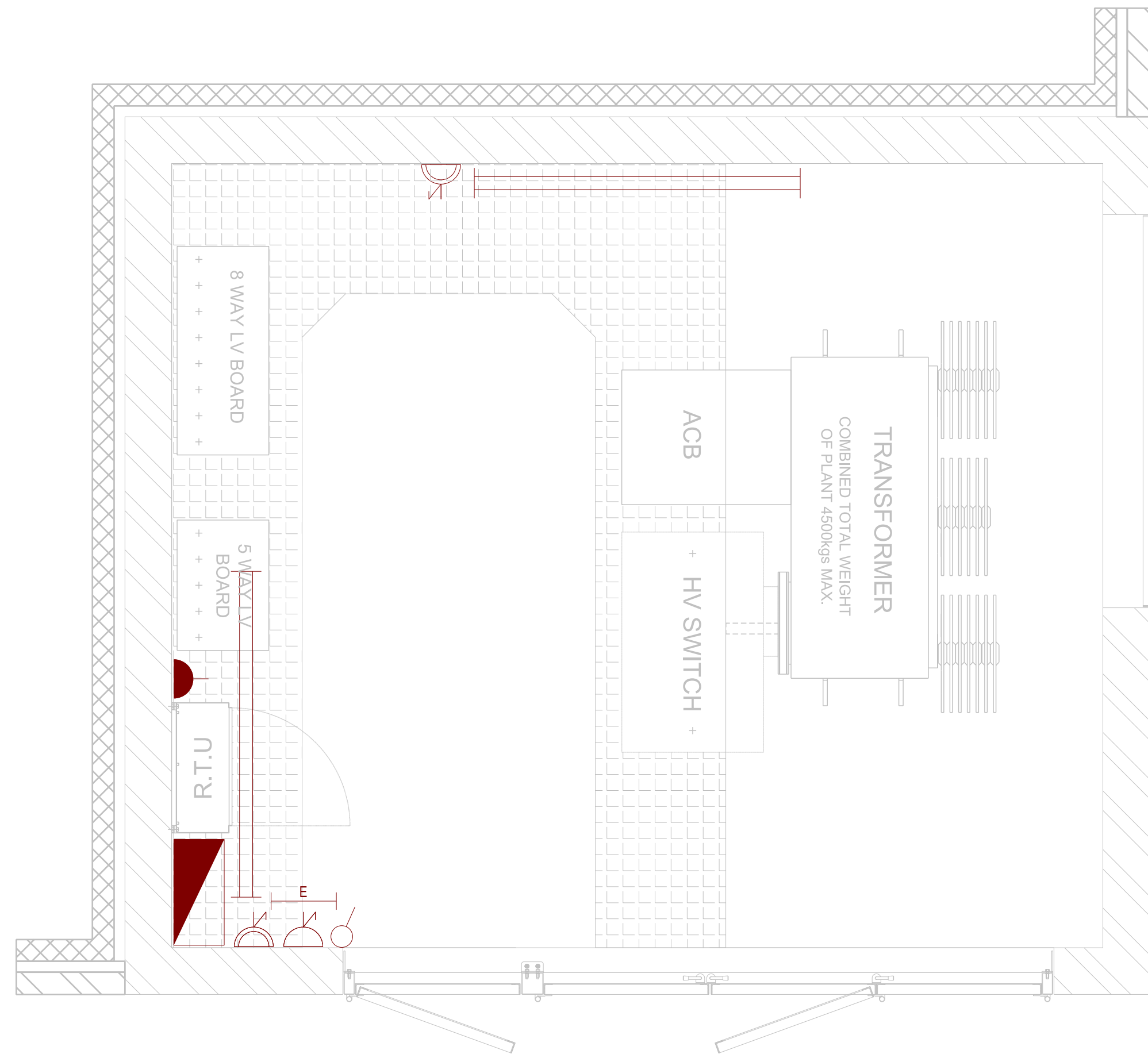
A	26-10-18	ORIGINAL	UA	RDH
Version	Date	Description	Checked	Dm.
			Approved	Designed



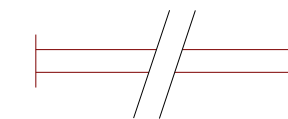






**TITLE**  
**INTEGRAL SUBSTATION FOR SINGLE TRANSFORMER UP TO 1000kVA WITH ACB & LV BOARD EARTHING LAYOUT**

SCALE	NTS	@A1	APPROVED	Version
DRAWING NO.	EDS 07-3102.21	Sheet 2 of 3		A
SITE	SECONDARY SITES			





**KEY:**  
(SEE NOTES FOR EQUIPMENT DETAILS)

-  TWIN FLUORESCENT LUMINAIRE
-  EMERGENCY SELF CONTAINED LUMINAIRE
-  13A UNSWITCHED FUSED SPUR FOR RTU
-  13A SWITCHED SINGLE SOCKET LABELLED FOR TEST EQUIPMENT
-  13A SWITCHED DOUBLE SOCKET
-  LIGHT SWITCH
-  CONSUMER UNIT

- GENERAL NOTES**
- THE LIGHTING AND POWER REQUIREMENTS ARE SUMMARISED BELOW. REFER TO EDS 07-1119 FOR FURTHER DETAILS.
  - ALL WORK AND TESTING SHALL BE CARRIED OUT BY SUITABLY COMPETENT OPERATIVES IN ACCORDANCE WITH BS 7671.
  - ALL ACCESSORIES AND ACCESSORY MOUNTING BOXES OR ENCLOSURES SHALL BE IP56 SURFACE MOUNTED FROM THE MK MASTERSEAL RANGE OR EQUIVALENT.

- POWER SUPPLY OPTIONS**
- MINIMUM 4mm<sup>2</sup> SWA FROM THE LV CABINET/BOARD 32A AUXILIARY SUPPLY TERMINALS OR 35mm<sup>2</sup> SERVICE FROM LV PILLAR OR LV DISTRIBUTION NETWORK. ALL SUPPLIES SHALL BE TERMINATED IN A 100A CUT-OUT FUSED AT 30A.

- DISTRIBUTION BOARD**
- THE DISTRIBUTION BOARD SHALL BE A TYPE IP56 WITH A MINIMUM OF 5 WAYS AND INCLUDE:
    - A 100A/125A DOUBLE-POLE (PHASE AND NEUTRAL) DISCONNECTOR WITH 15KA BREAKING CAPACITY (TO BS EN 60947).
    - RCBOs (TO BS EN 61009-1) AND MCBs (TO BS EN 60898-2) WITH 15KA BREAKING CAPACITY.
    - 16/20A RCBO FOR THE 13A SOCKET OUTLET CIRCUIT.
    - 16A MCB FOR THE TEST EQUIPMENT 13A SOCKET OUTLET.
    - 6/10A MCB FOR THE LIGHTING CIRCUIT.
    - 6A MCB FOR EACH RTU OR PLTU (IF INSTALLED).
    - A SPARE WAY COMPLETE WITH BLANKING PLATE FOR FUTURE USE.
  - THE DISTRIBUTION BOARD SHALL BE MOUNTED AT A HEIGHT OF 1350mm TO 1450mm ABOVE FINISHED FLOOR LEVEL.

- INTERNAL LIGHTING**
- THE SUBSTATION SHALL HAVE A MINIMUM LUMINANCE OF 300 LUX IN ACCORDANCE WITH HSE HSG38 PROVIDED BY A MINIMUM OF TWO LIGHT FITTINGS ON OPPOSITE SIDES OF THE SUBSTATION.
  - THE LIGHT FITTINGS SHALL BE POSITIONED TO AVOID SHADOWS WHEN EQUIPMENT DOORS ARE OPEN.
  - ALL LIGHT FITTINGS SHALL BE MOUNTED AT A MAXIMUM HEIGHT OF 2200mm ABOVE FINISHED FLOOR LEVEL AND BE POSITIONED TO AID FUTURE MAINTENANCE. LIGHT FITTINGS SHALL NOT BE INSTALLED ABOVE AN LV BOARD.
  - GENERAL PURPOSE LIGHT FITTINGS SHALL BE OF THE FLUORESCENT IMPACT AND CORROSION RESISTANT TYPE. CORROSION RESISTANT WITH A POLYCARBONATE PRISMATIC DIFFUSER (TO BS EN 60598-1) AND SHALL HAVE A MINIMUM DEGREE OF PROTECTION OF IP56. THE PREFERRED SIZE IS A 1500mm TWIN LAMP FITTING.
  - LIGHT FITTINGS SHALL BE FITTED WITH 35W OR 49W T5 OR T16 LINEAR FLUORESCENT TUBES OF THE HIGH FREQUENCY ENERGY EFFICIENT TYPE (TO BS EN 60081) OR EQUIVALENT LED. ALL LAMPS SHALL HAVE CAPS OF THE 'BI' PIN TYPE AND A MINIMUM COLOUR TEMPERATURE OF 3500K (A WHITE APPEARANCE).
  - LIGHT FITTINGS SHOULD BE CONNECTED VIA A PLUG IN ROSE (OR SIMILAR) TO AID FUTURE MAINTENANCE. A PROTECTIVE CONDUCTOR SHALL BE CONNECTED TO THE EARTH TERMINAL OF EACH FITTING.
  - A SURFACE MOUNTED LIGHT SWITCH WITH NEON INDICATOR SHALL BE POSITIONED ADJACENT TO THE SUBSTATION DOOR. SUBSTATIONS WITH MULTIPLE POINTS OF ACCESS SHALL HAVE A LIGHT SWITCH ADJACENT TO EACH DOOR AND SHALL BE WIRED WITH 2-WAY LIGHTING.
  - ALL LIGHT SWITCHES SHALL BE MOUNTED AT 1400mm ABOVE FINISHED FLOOR LEVEL.

- EMERGENCY LIGHTING**
- AN EMERGENCY LIGHT (TO BS EN 1838 AND BS 5286) SHALL BE PROVIDED AT EACH EXIT DOOR. AN ADDITIONAL EMERGENCY LIGHT SHALL BE INSTALLED WHERE THERE IS AN OPEN LV BOARD.
  - EMERGENCY LIGHTS SHALL HAVE A MINIMUM LUMINANCE OF 1 LUX AND SHALL BE THE INTEGRAL, SELF-CONTAINED TYPE (TO BS EN 60598-2-22) INCORPORATING A FLUORESCENT LAMP (OR LED EQUIVALENT) AND A POLYCARBONATE DIFFUSER. THE RATED DURATION OF EMERGENCY LIGHTS SHALL BE 3 HOURS.
  - ABOVE DOOR EMERGENCY LIGHTS SHALL INCLUDE AN EXIT LEGEND PLATE.
  - LIGHT FITTINGS SHALL BE IP65 HEAVY DUTY 26W TC-T (OR EQUIVALENT LED) BULKHEAD TYPE CONSTRUCTED IN POLYCARBONATE WITH AN IMPACT RESISTANT POLYCARBONATE COVER, SEALED TO THE BODY WITH A SILICON RUBBER GASKET AND STAINLESS STEEL CAPTIVE FIXING SCREWS.
  - ALL EXTERNAL LIGHTING SHALL BE CONTROLLED BY PHOTOELECTRIC CONTROL UNITS (TO BS 5972) AND PIR MOVEMENT DETECTORS.

- POWER**
- A MINIMUM OF TWO DOUBLE 13A SOCKET OUTLETS (TO BS 1363) SHALL BE INSTALLED ON OPPOSITE SIDES OF THE SUBSTATION.
  - AN ADDITIONAL SINGLE 13A SOCKET OUTLET (TO BS 1363) SHALL BE INSTALLED, DESIGNATED AND LABELLED AS A 'TEST EQUIPMENT SOCKET' AND SUPPLIED VIA A SEPARATE MCB.
  - ANY RTU/PLTU SHALL BE SUPPLIED BY AN UNSWITCHED FUSE CONNECTION UNIT (TO BS 1363) FUSED AT 5A AND INSTALLED ADJACENT TO THE EQUIPMENT.
  - RADIAL CIRCUITS SHALL BE USED FOR ALL POWER CIRCUITS.
  - ALL SMALL POWER ACCESSORIES SHOULD BE MOUNTED AT 1000mm ABOVE FINISHED FLOOR LEVEL.

- CABLING**
- ALL CABLES SHALL BE 6491B LSH TO BS EN 50525-3-41 AND SHALL COMPLY WITH BASEC. ALL INSULATION SHALL USE PHASE OR NEUTRAL COLOURS THROUGHOUT THE LENGTH OF THE CONDUCTOR IN ACCORDANCE WITH BS 7671. NOTE: THE USE OF COLOURED SLEEVES TO MARK CONDUCTORS IS NOT ACCEPTABLE.
  - ALL CABLES SHALL USE STRANDED COPPER CONDUCTORS WITH THE FOLLOWING MINIMUM CROSS SECTIONAL AREA:
    - CUT-OUT UNIT 25mm<sup>2</sup>.
    - LIGHTING 1.5mm<sup>2</sup>.
    - SMALL POWER 4.0mm<sup>2</sup>.
  - ALL CABLES, EXCEPT ARMOURED CABLES AND CUT-OUT TAILS, SHALL BE ENCLOSED IN PLASTIC CONDUIT OR TRUNKING. THE TYPES AND SIZES SHALL BE SUITABLE FOR THE OPERATING CONDITIONS.
  - ALL CABLES SHALL BE INSTALLED WITHOUT JOINTS OTHER THAN AT EQUIPMENT AND TERMINAL FITTINGS.

- CONDUIT, TRUNKING AND TRAYS**
- ALL CABLING SHALL BE INSTALLED IN MINIMUM 20mm CONDUIT SIZED IN ACCORDANCE BS 7671.
  - ALL CONDUIT, BOXES AND FITTINGS SHALL BE HIGH IMPACT, NON-FLAME PROPAGATING, SELF-EXTINGUISHING, HEAVY-DUTY PVC CONDUIT (TO BS EN 61386-1). DIMENSIONS SHALL COMPLY WITH BS EN 60423.
  - THERE SHALL BE SUFFICIENT JUNCTION BOXES, DRAW-IN BOXES AND INSPECTION FITTINGS INSTALLED TO ALLOW CABLES TO BE INSPECTED, WITHDRAWN AND REPLACED IF NECESSARY. THE COMPLETE INSTALLATION SHALL BE ARRANGED USING A LOOP-IN TYPE SYSTEM WITH JOINTS BEING CARRIED OUT AT SWITCHES, ISOLATORS OR APPLIANCE FITTINGS.
  - ALL ADAPTABLE BOXES AND ACCESSORIES SHALL MATCH THE CONDUIT AND SHALL BE FITTED WITH EARTHING TERMINALS.
  - JOINTS BETWEEN CONDUITS MAY BE PUSH-FIT, COMPRESSION, MECHANICAL LOCKING OR SOCKET-END SEALED WITH PVC ADHESIVE. WHERE A WEATHERPROOF OR WATERTIGHT CONNECTION IS REQUIRED PUSH-FIT ARRANGEMENT ALONE IS NOT ACCEPTABLE.
  - ALL CONDUIT SHALL BE SECURED USING MATCHING DISTANCE SADDLES SPACED AT A MAXIMUM DISTANCE OF 750mm AND 200mm FROM ANY BEND, JOINT OR ACCESSORY. ALL BOXES AND ACCESSORIES SHALL BE SECURED INDEPENDENTLY.
  - REFER TO EDS 07-0119 FOR TRUNKING AND CABLE TRAY REQUIREMENTS.

- LABELLING**
- ALL LABELLING SHALL COMPLY WITH BS 7671.
  - ALL DISTRIBUTION BOARD WAYS SHALL BE PERMANENTLY LABELLED TO IDENTIFY CIRCUIT FUNCTION, CABLE SIZE AND PROTECTIVE DEVICE RATING.

- HOT SITES**
- ALL SOCKETS SHALL BE DISCONNECTED OR REMOVED.
  - ALL LIGHTING AND RTU SUPPLIES FROM AUXILIARY TERMINALS SHALL BE VIA AN ISOLATION TRANSFORMER.
  - REFER TO ECS 06-0023 FOR FURTHER INFORMATION.

- TESTING AND CERTIFICATION**
- UPON COMPLETION OF THE WORKS, THE INSTALLATION SHALL BE TESTED IN ACCORDANCE WITH BS 7671. AN ELECTRICAL INSTALLATION CERTIFICATE TOGETHER WITH A SCHEDULE OF TEST RESULTS AS DETAILED IN BS 7671 SHALL BE FORWARDED TO UK POWER NETWORKS.

A	26-10-18	ORIGINAL	UA	RDH
Version	Date	Description	Checked Approved	Dm. Designed



<b>TITLE</b> INTEGRAL SUBSTATION FOR SINGLE TRANSFORMER UP TO 1000kVA WITH ACB & LV BOARD SMALL POWER & LIGHTING			
SCALE	NTS @A1	APPROVED	Version
DRAWING NO.	EDS 07-3102.21	Sheet 3 of 3	A
SITE	SECONDARY SITES		