

Specification Notes - For The Attention of the Developer/Builder.

ALL PROVIDED BY DEVELOPER UNLESS STATED OTHERWISE.

GENERAL
 A) PRIOR TO COMMENCEMENT OF ANY BUILDING WORK ON THE SUBSTATION THE BUILDER IS REQUIRED TO NOTIFY THE UK POWER NETWORKS PROJECT DESIGNER.
 B) THIS DRAWING SHOULD NOT BE SCALED AND NO VARIATIONS TO THE STATED DIMENSIONS OR MATERIALS SPECIFIED WILL BE PERMITTED WITHOUT PRIOR WRITTEN CONSENT FROM UKPN.
 C) CONTRACTORS ARE REQUIRED TO FIT STANDARD LOCKS AND FITTINGS SUPPLIED BY UK POWER NETWORKS ON ALL GATES AND DOORS TO ENABLE READY ACCESS AT ALL TIMES. NO OBSTRUCTIONS TO THE ROUTE TO THE SUBSTATION WILL BE PERMITTED AT ANY TIME.
 D) THE RUNNING OF SPRINKLER SYSTEMS, HEATING, GAS, WATER AND OTHER SERVICE PIPES OR CABLES THROUGH OR UNDER THE SUBSTATION WILL NOT BE PERMITTED.
 E) ALL MEASUREMENTS TO BE CHECKED ON SITE BY THE CONTRACTOR BEFORE WORK COMMENCES AND ANY DISCREPANCIES REPORTED TO UK POWER NETWORKS.
 F) UK POWER NETWORKS WILL NOT INSTALL ANY EQUIPMENT UNTIL ALL BUILDING WORKS ARE COMPLETED AND APPROVED BY THE UK POWER NETWORKS BUILDING OFFICER.
 G) IN THE EVENT OF BUILDING WORKS (I.E. SCAFFOLDING) AFFECTING THE PERMANENT PLANT ACCESS ARRANGEMENTS, THEN THE DEVELOPER IS TO LIAISE WITH THE UKPN FIELD ENGINEER TO AGREE AN ALTERNATIVE METHOD OF ACCESS TO UK POWER NETWORKS SPECIFICATIONS AT THE DEVELOPER'S COST.

FOUNDATIONS AS STATED ON DRAWING OR TO SUIT THE SITE CONDITIONS.

FLOOR SLAB TO THE STRUCTURAL ENGINEER'S SPECIFICATIONS TO SUSTAIN THE LOADS SHOWN. THE TRANSFORMER IS SUPPORTED ON 2 NO. 1250X50MM CHANNELS AT 500 CENTRES WHICH FORM THE BASE IN CONTACT WITH THE FLOOR. THE MAXIMUM WEIGHT OF THE TRANSFORMER IS 4000kg. THE FLOOR OF THE SUBSTATION AND THROUGHOUT 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 SCREEED WITH A MINIMUM COMPRESSIVE STRENGTH OF 40N/mm² AFTER 28 DAYS. CONCRETE WORKS FINISHED WITH A STEEL FLOAT TO WITHIN ±2mm OVER 2000mm.
REINFORCEMENT TO DEVELOPER'S STRUCTURAL ENGINEER'S REQUIREMENTS.

PIPES 125mm INTERNAL DIAMETER STEEL PIPES TO EN 10255 (2004) AND THREAD COUPLED WITH ENDS OF PIPES BEVELLED ON INTERNAL EDGE AND FINISHED CLEAN AND SMOOTH. WELDED JOINTS ARE NOT ACCEPTABLE. A SEALING PLATE (PUDDLE FLANGE) SHOULD BE USED WHERE PIPES PENETRATE THE SUBSTATION CONCRETE OR RETAINING WALLS. EXPANDING PIPE STOPPERS TO BE FITTED AT THE END OF EACH PIPE WITHIN THE BUILDING LINE.

WALLS TO BE 215mm FULLY BONDED BRICKWORK - FROGGED FLETTONS CONSTRUCTED IN ENGLISH BOND WITH NEAT STRUCK JOINTS. WALLS TO BE FAIR FACED ON THE INSIDE OR 180 MIN. RC CONCRETE WITH SUFFICIENT CONCRETE COVER TO REINFORCEMENT TO ACHIEVE A 4 HOUR FIRE RATING. NO MODULAR, CELLULAR OR FROGGED BRICKS TO BE USED ON INTERNAL SKIN. BLOCKWORK WALLS ARE NOT PERMITTED.

VENTILATION TO PROVIDE A MINIMUM OF 0.75m² AREA OF VENTILATION TO FREE AIR FOR BOTH INLET AND OUTLET FOR EACH AND EVERY TRANSFORMER.

DOORS SEE DETAILS ON DRAWING PLAN. LINTELS - SINGLE 4 HOUR FR RC LINTELS TO BE USED AT THE STRUCTURAL OPENING FOR ALL SUNRAY ENGINEERING 'FIRELOCK' DOORS. STEEL LINTELS OR MULTIPLE RC LINTELS ARE NOT PERMITTED.

STRUCTURAL STEELWORK ALL STRUCTURAL STEELWORK TO BE FIREPROOFED TO A 4 HOUR STANDARD BY ENCASEMENT IN CONCRETE OR CLAD IN 4 HOUR FR DURASTEEL BY SPECIALIST LICENSEE. DURASTEEL CONSTRUCTIONS TO BE PROVIDED WITH A LETTER OF CONFORMITY FROM PHIL CHAPMAN OF PROMAT (07713 324845). NO OTHER FORMS OF FIREPROOFING ARE ACCEPTABLE.

ROOF OR CEILING 180mm MINIMUM NORMAL DENSITY REINFORCED CONCRETE OR GREATER TO SUIT THE SPAN WITH SUFFICIENT CONCRETE COVER TO REINFORCEMENT TO ACHIEVE A 4 HOUR FR. HOLLOW POT CONSTRUCTION. PRE-CAST SLABS. LIGHTWEIGHT CONCRETE ON PROFILED METAL DECKING OR SIMILAR WILL NOT BE PERMITTED.
 EXISTING SLABS CAN BE UPGRADATED BY CLADDING IN 4 HOUR FR DURASTEEL BY SPECIALIST LICENSEE PROVIDING THE MINIMUM HEADROOM CAN STILL BE ACHIEVED.
 DURASTEEL CONSTRUCTIONS TO BE PROVIDED WITH A LETTER OF CONFORMITY FROM PHIL CHAPMAN OF PROMAT (07713 324845). NO OTHER FORMS OF FIREPROOFING ARE ACCEPTABLE.
REINFORCEMENT TO DEVELOPER'S STRUCTURAL ENGINEER'S REQUIREMENTS.

WATERPROOFING WHOLE OF THE SUBSTATION MUST BE IMPERVIOUS TO THE INGRESS OF WATER.

FINISHES 'LOUVRE DOORS' AND LOUVRES TO BE POWDER COATED AT POINT OF MANUFACTURE - DEVELOPER TO SPECIFY THE COLOUR TO HARMONISE WITH ADJACENT PREMISES AND ADVISE THE MANUFACTURER. 'FIRELOCK' DOORS ARRIVE TO SITE PRIMED ONLY AND ARE TO RECEIVE 1 UNDERCOAT AND 2 FULL GLOSS COATS TO A GOOD FINISH - COLOUR TO HARMONISE WITH ADJACENT SCHEMES.
 WALLS TO RECEIVE 2 COATS OF WHITE EMULSION FOR DUST PROOFING. CEILING TO RECEIVE 2 COATS OF WHITE EMULSION FOR DUST PROOFING. FLOOR TO RECEIVE 2 COATS OF LIGHT GREY CONCRETE FLOOR PAINT.

EARTHING EARTH RODS AS SHOWN ON THE DRAWING. FOR RESISTANCE READINGS CONTACT YOUR APPOINTED UK POWER NETWORKS PROJECT DESIGNER. TOUCH POTENTIAL EARTH MESH LAID WITHIN SCREEED. SEE UKPN DRAWING E01 FOR DETAILS.

FOR THE ATTENTION OF UK POWER NETWORKS ONLY.

FLOOD DETECTOR TO BE INSTALLED.

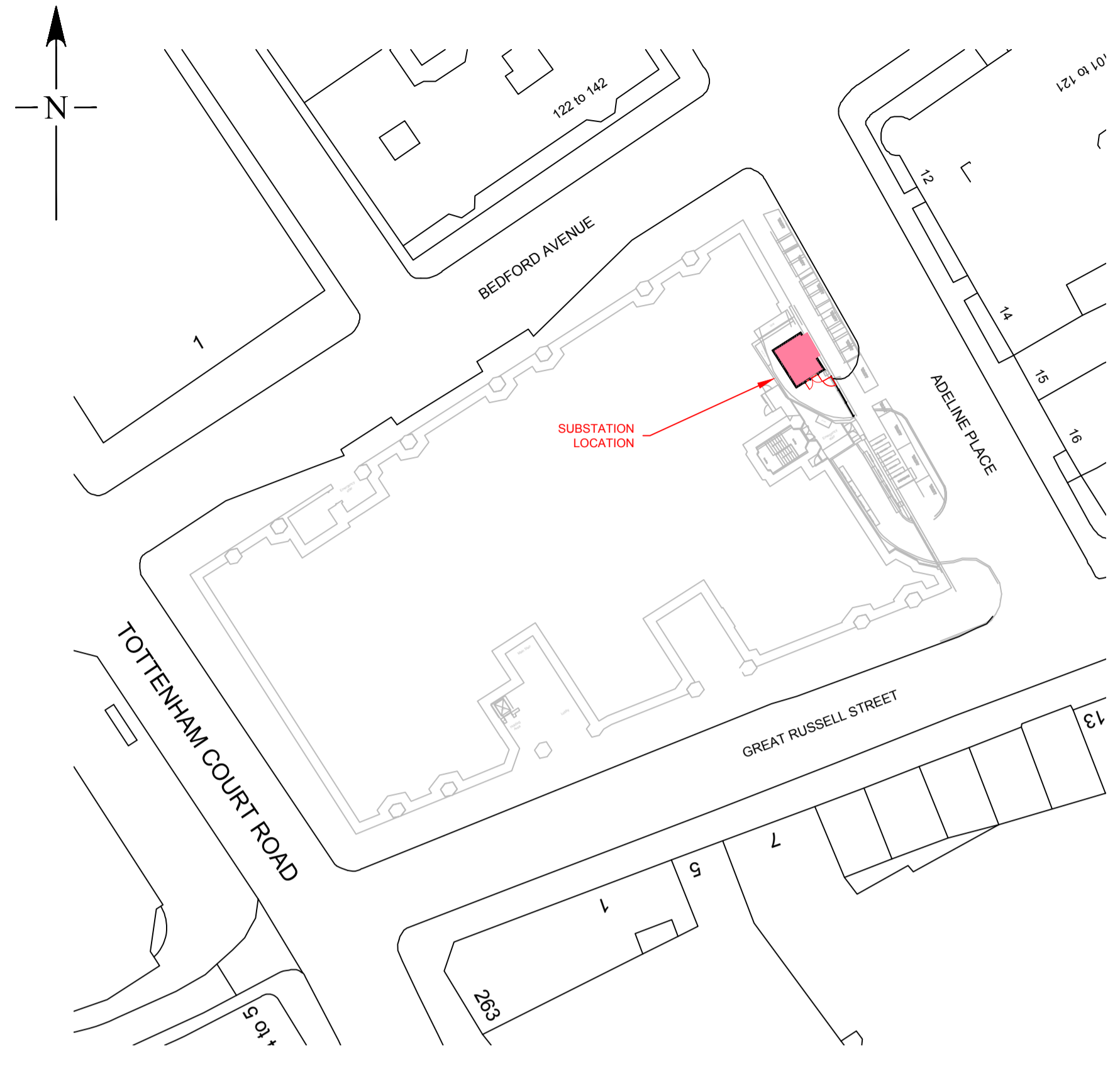
ACOUSTIC MOUNTS TO BE INSTALLED BETWEEN PLANT AND FLOOR SLAB AS PER ECS 04-0081.

EARTHING EDS 06-0014 - SECONDARY SUBSTATION EARTHING DESIGN & EDS 06-0023 - SECONDARY DISTRIBUTION NETWORK EARTHING CONSTRUCTION

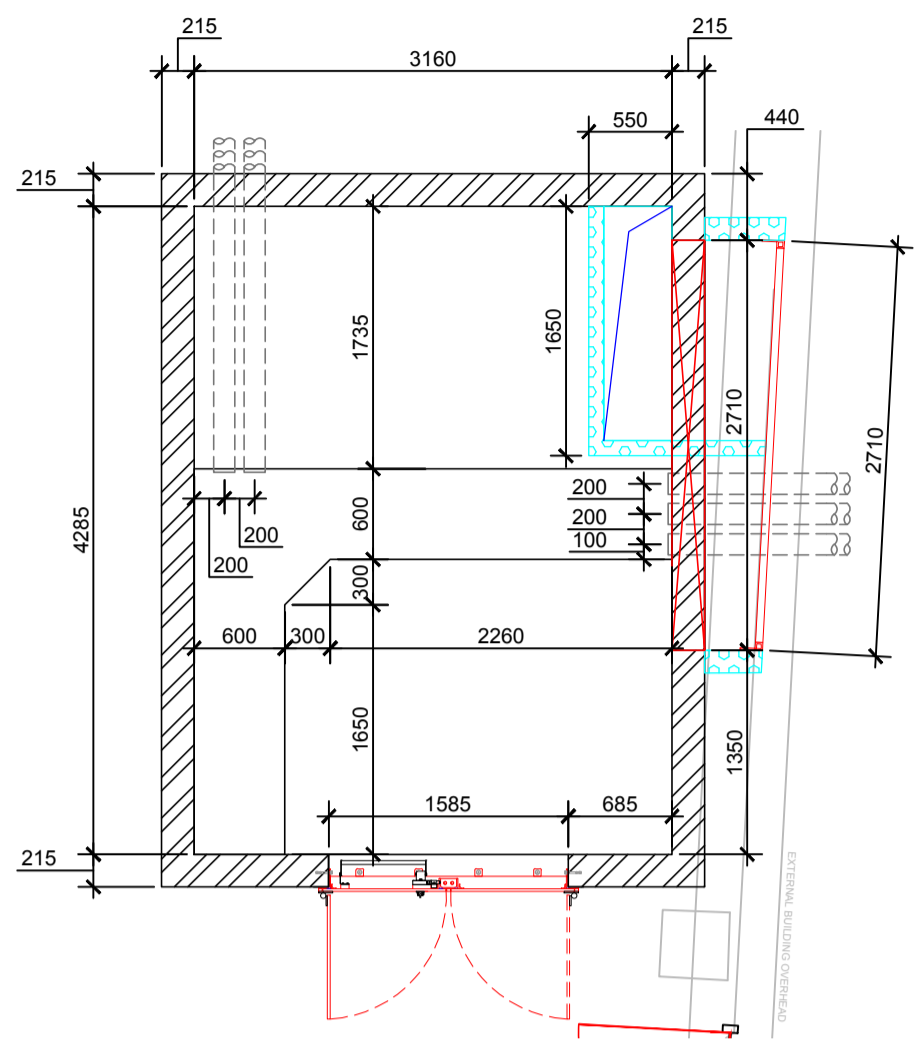
CABLE ENTRY ALL CABLE ENTRANCES ARE TO BE SEALED AGAINST THE INGRESS OF WATER AND GAS USING RAYFLATE ROSS DUCT SEALING SYSTEM - EMPTY DUCTS TO THE SAME SPECIFICATIONS.

PLANT ACCESS ALL EQUIPMENT TO BE UTILISED. SURVEY TO DETERMINE WHETHER A CRANE IS NEEDED.

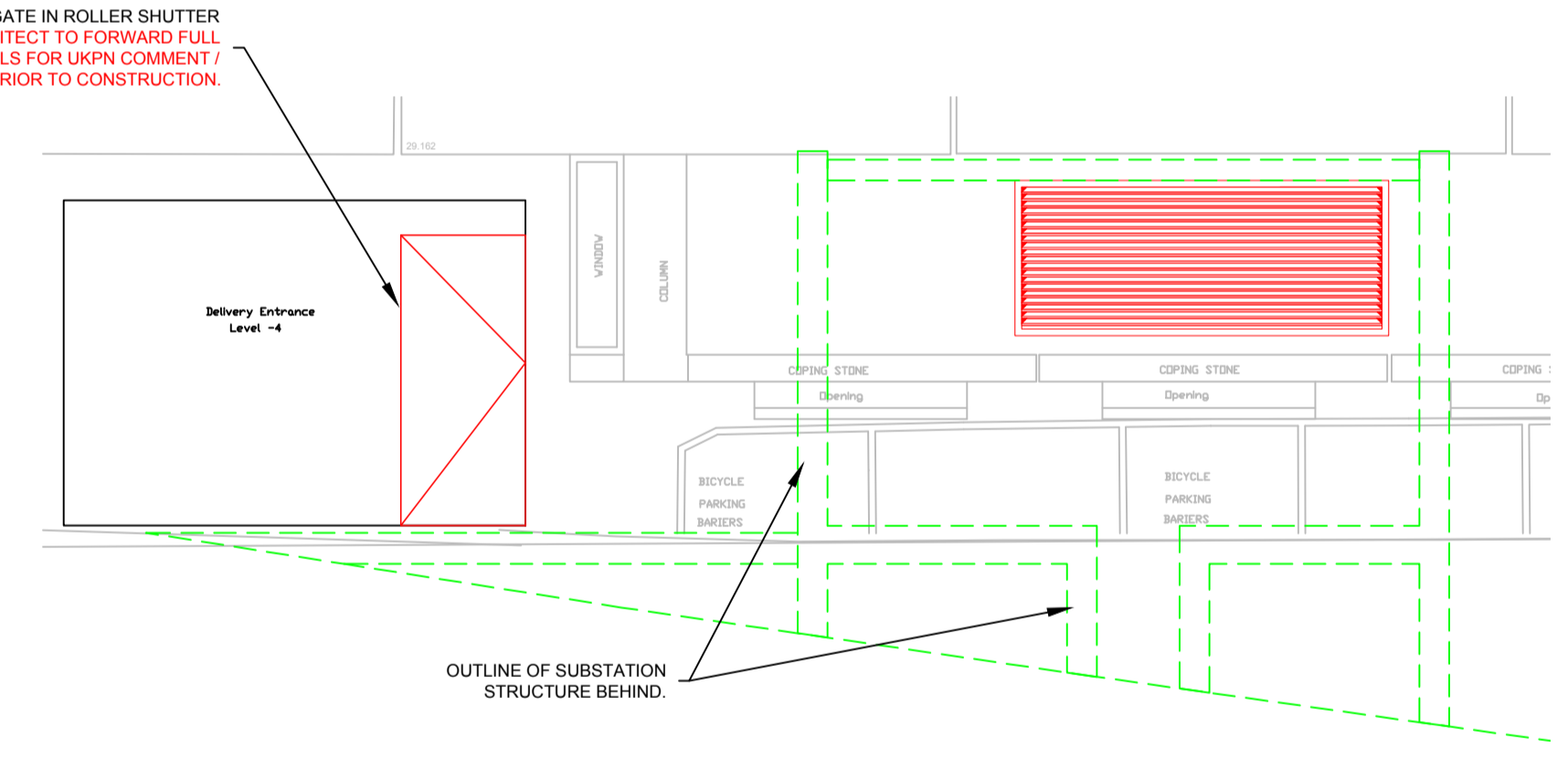
SERVICE CABLE SLOTS ALL SLOTS TO BE SEALED WITH 4 HOUR FIRE RATED 'PROMASEAL' MORTAR OR SIMILAR AFTER CABLE INSTALLATION BY DEVELOPER IN LIAISON WITH UKPN FIELD ENGINEER. NOTE: ENERGISATION IS NOT TO BE GIVEN UNTIL THIS HAS BEEN COMPLETED.



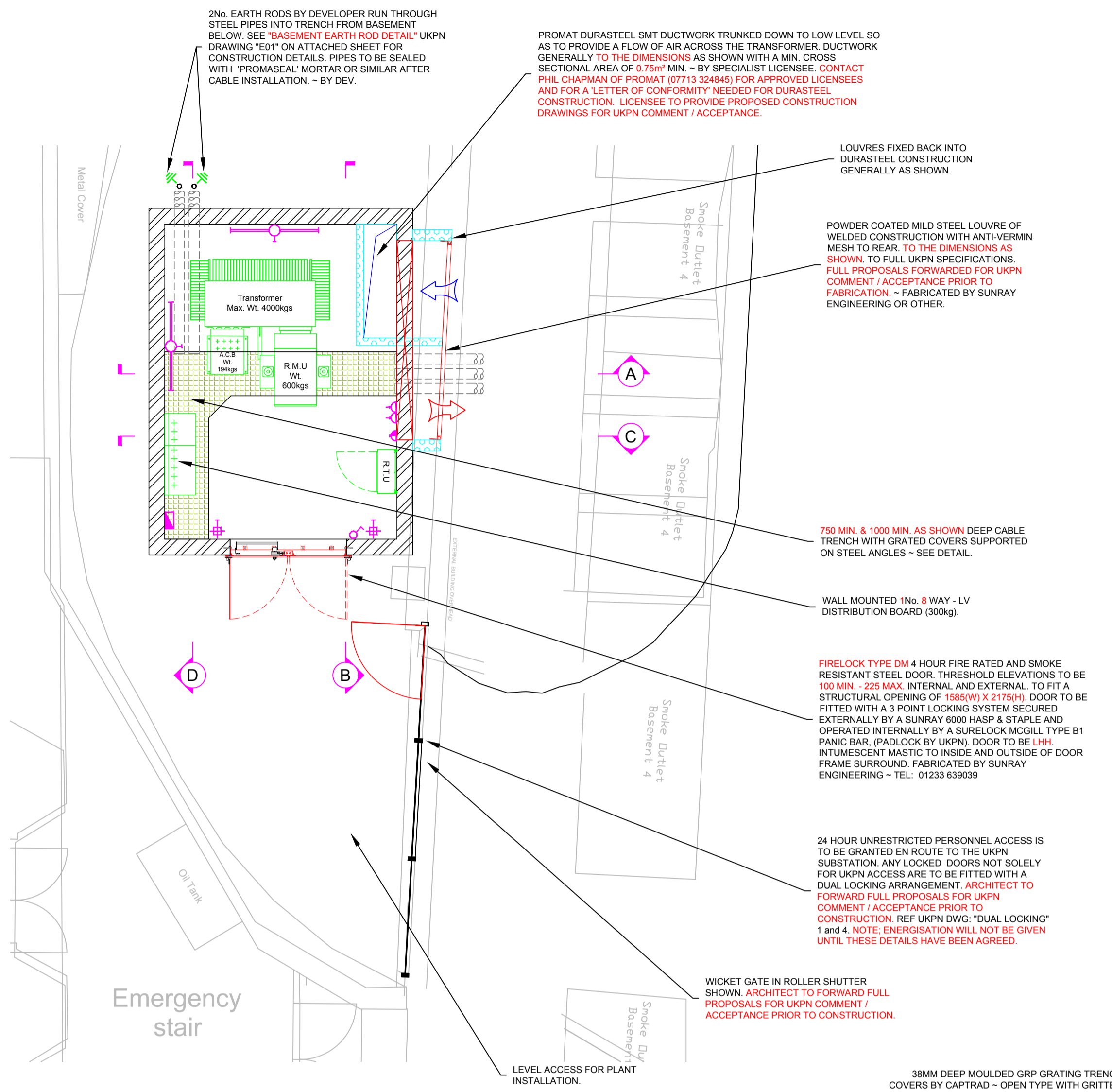
LOCATION PLAN



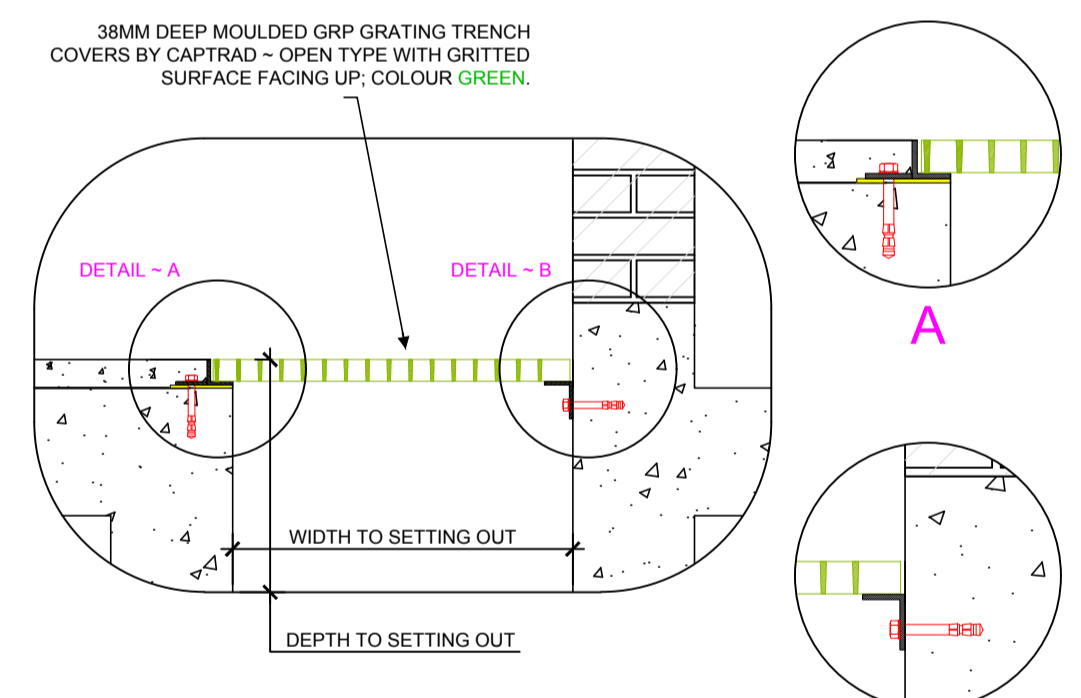
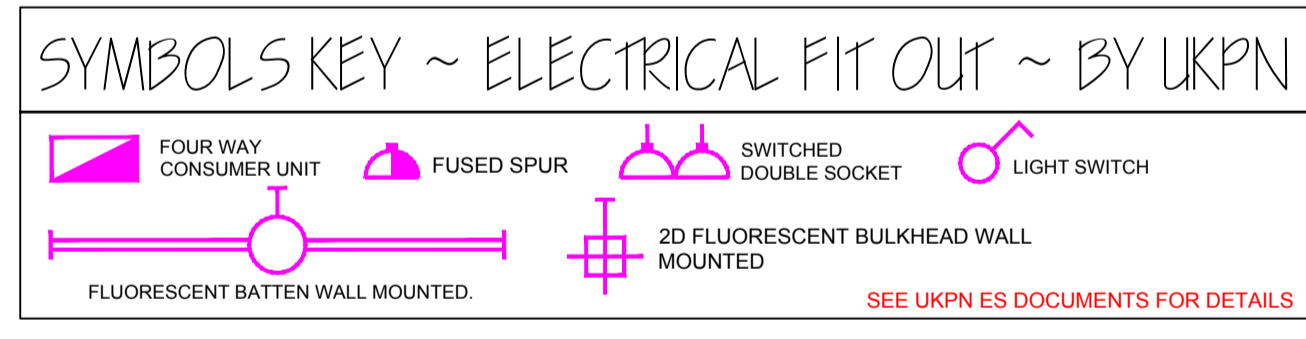
SETTING OUT DIMENSIONS



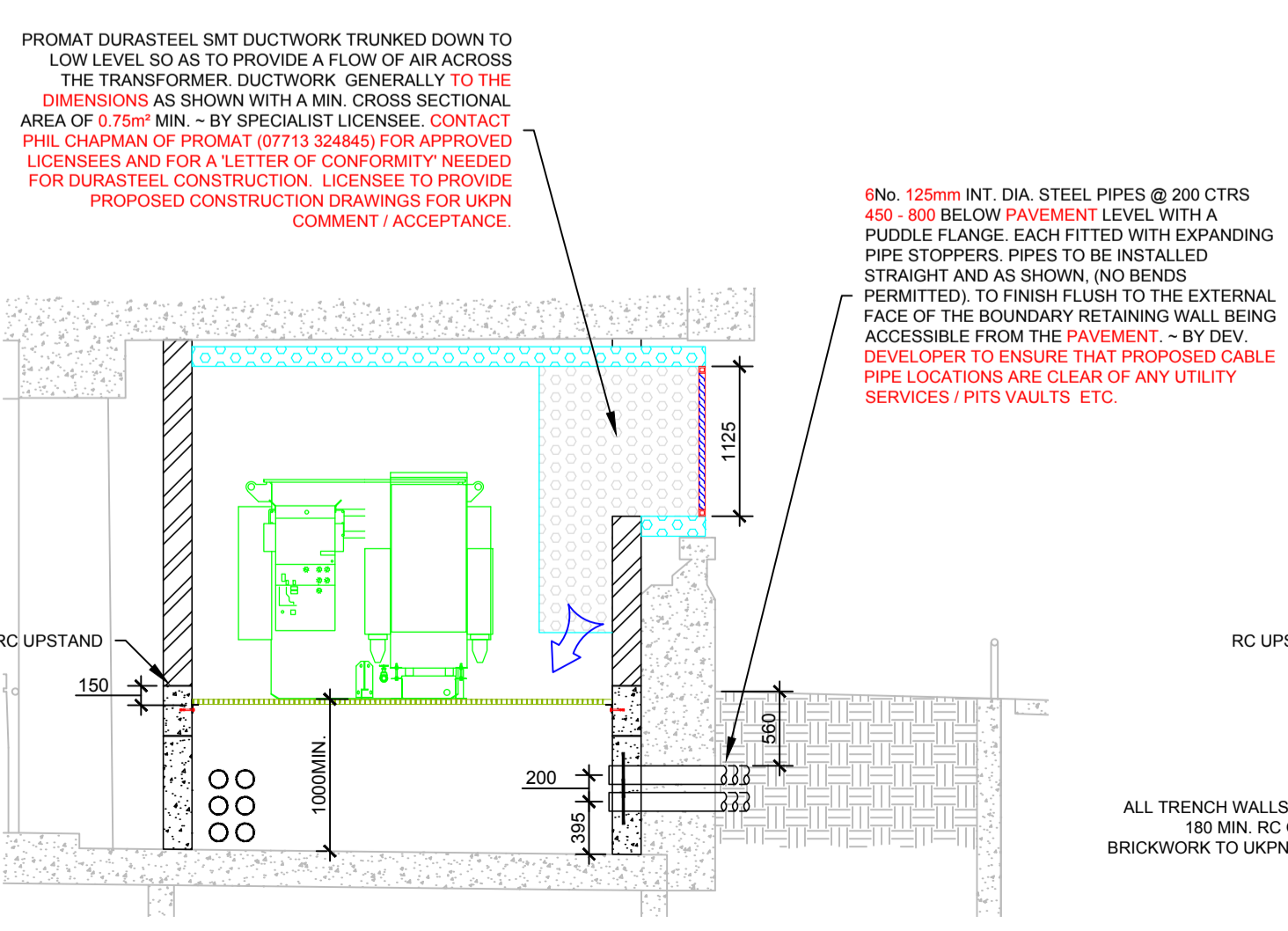
ADELINE PLACE ELEVATION



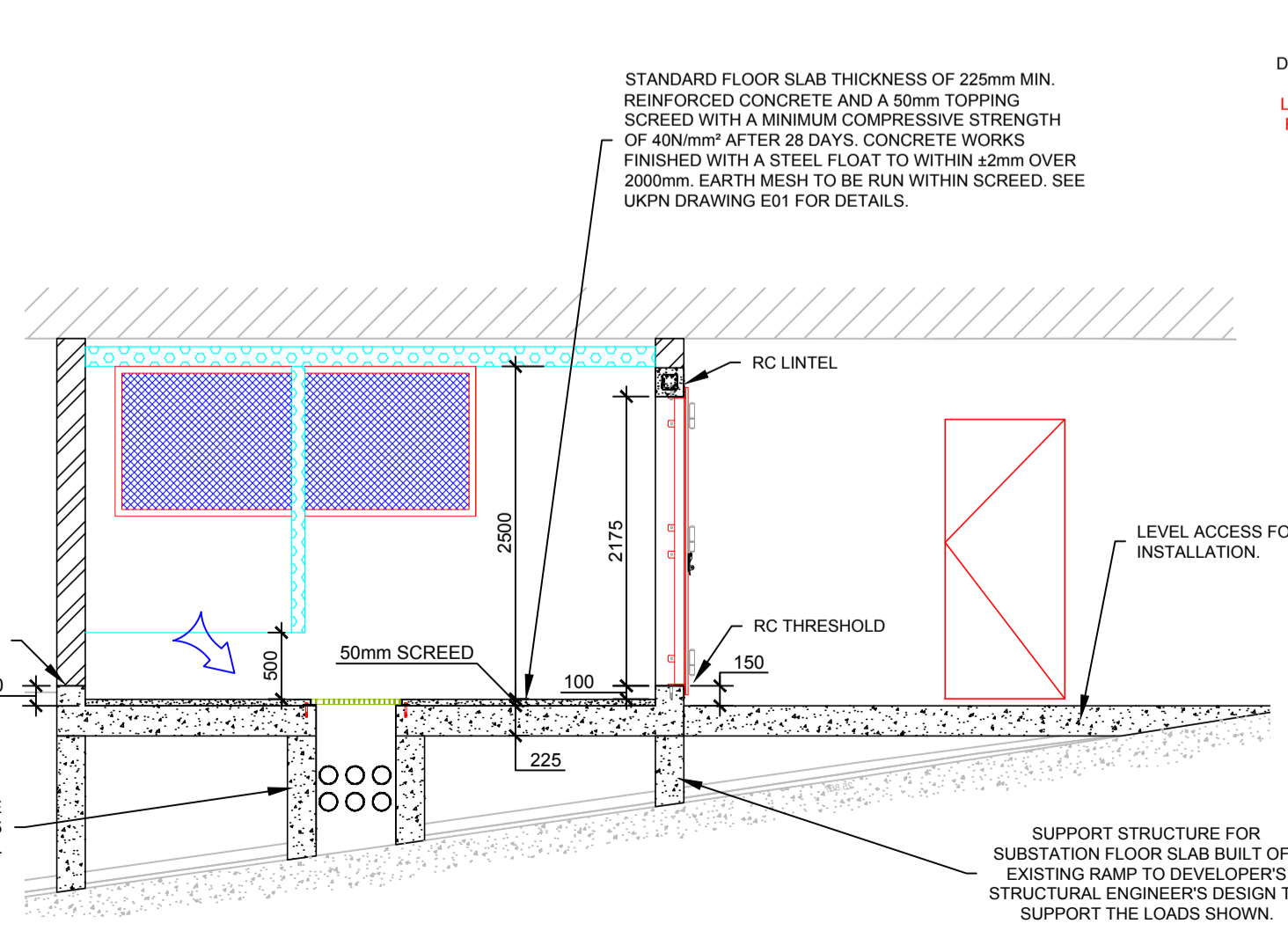
GROUND FLOOR PLAN



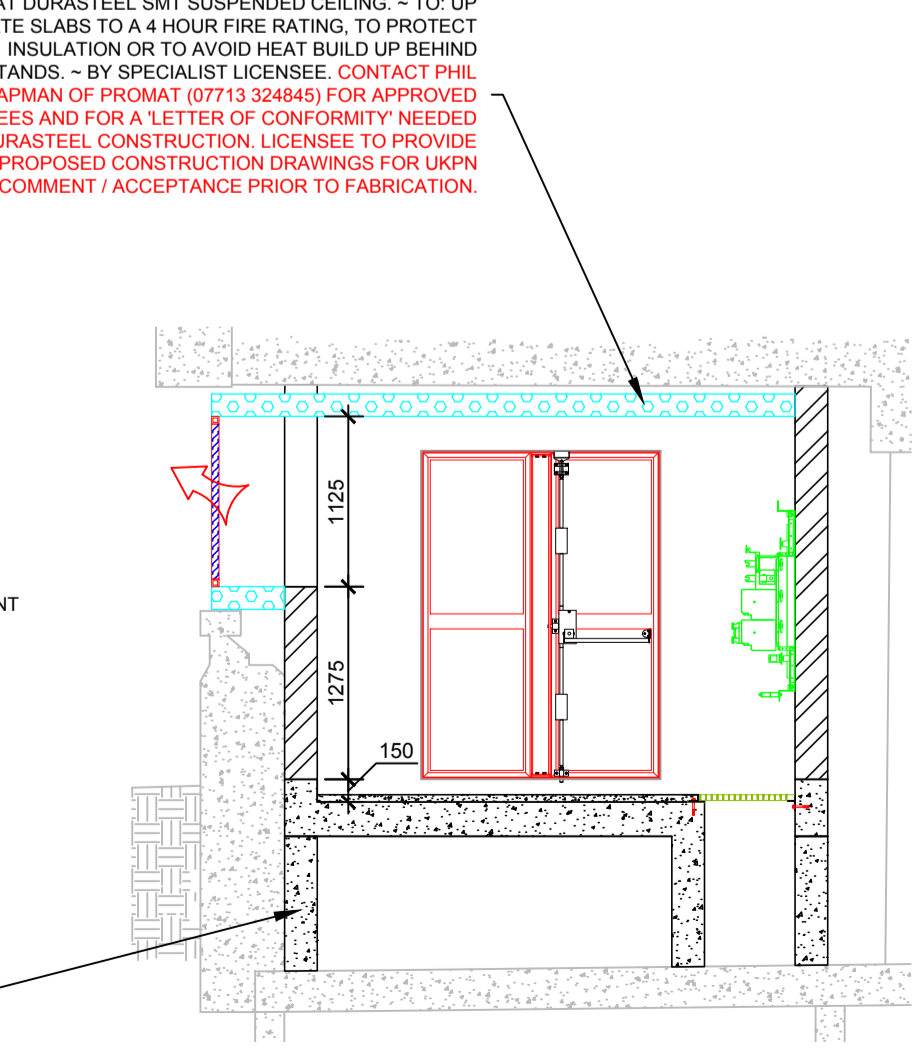
CABLE TRENCH DETAIL



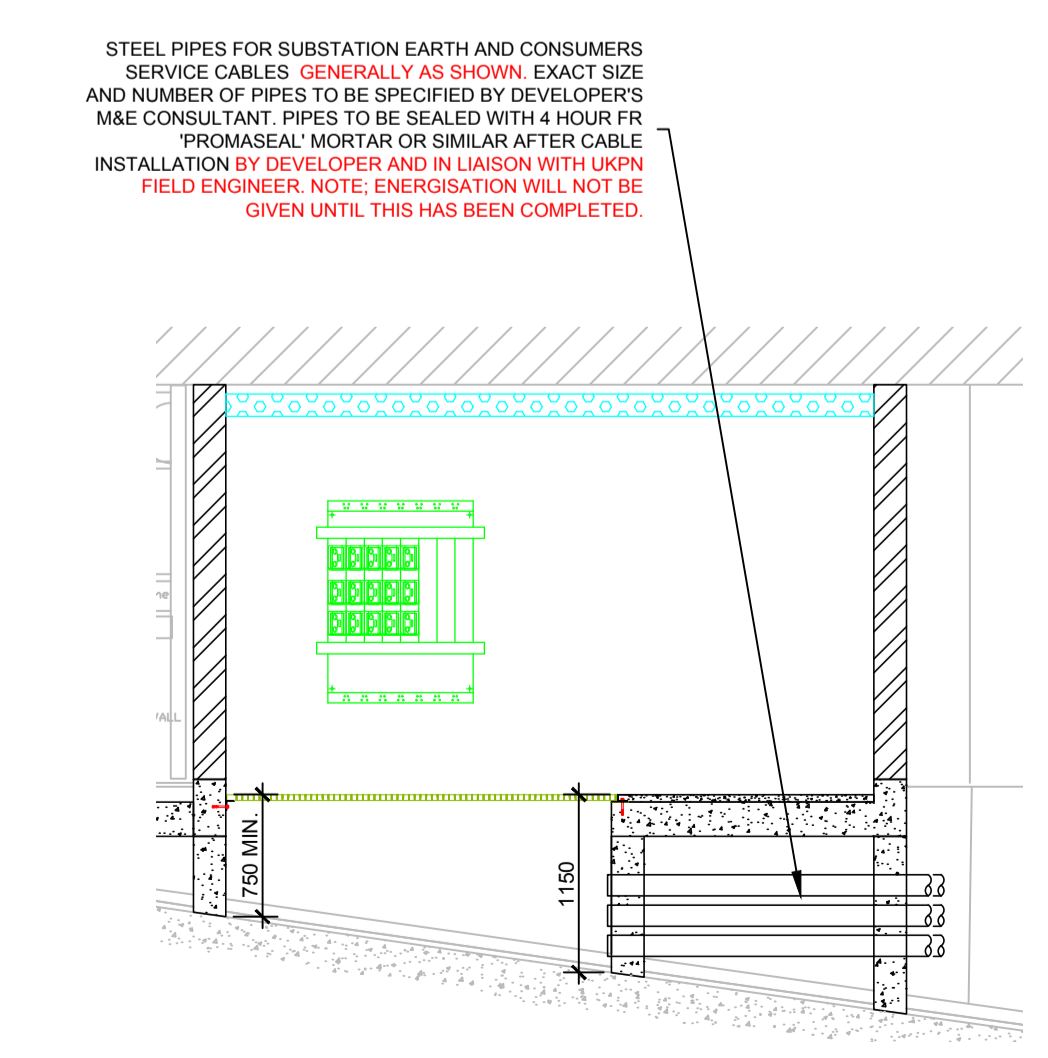
SECTION A~A



SECTION B~B



SECTION C~C



SECTION D~D

1	Room moved 1m further up ramp.	D Gabbitass	05/12/19
Rev	Description	Revised By	Date

Issued For Information Only

Substation Design Team
 Metropolitan Hse, 3 Darkes Lane, Potters Bar, EN6 1AG.

Title			
Substation at: 112A Great Russell Street, London. WC1B 3NP			
*			
Date Drawn	Scale @ A1	Project Designer	
17/09/19	Not to scale, use dimensions	Daniel Faithful	
Drawn By	Building Officer	Rev	
David Gabbitass	David Gabbitass	1	

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 UKPN EQUIPMENT AS SHOWN HERE.

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

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

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

RE-BAR CONNECTION

ROD TO CABLE CLAMP TO BS 7430 OR EXOTHERMIC WELD.

EARTH CABLE

GREEN AND YELLOW PVC INSULATED STRANDED COPPER CABLE 70mm².

EARTH CABLE CONNECTION

COMPRESSION CRIMP CONNECTOR AND BOLTED ONTO MARSHALLING BAR / RING.

MARSHALLING BAR / RING

ALUMINIUM 40mm X 6mm BAR, 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 COPPER CABLE OR 25mm x 3mm COPPER TAPE.

FOR EARTH FAULT LEVELS UP TO 12kA USE 120mm² OR 2 x 70mm² BARE COPPER CABLES OR 25mm x 4mm COPPER TAPE.

FOR EARTH FAULT LEVELS UP TO 15kA USE 2 x 70mm² BARE COPPER CABLES 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

EQUIPMENT BONDING IS NOT 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 16mm² PVC COVERED COPPER BRAID.
DOOR FRAME SURROUND TO EARTHING SYSTEM VIA EARTHING LUG ON FRAME USING MINIMUM 16mm² PVC COVERED STRANDED CABLE.

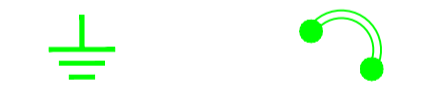
FURTHER INFORMATION

REFER TO:
EDS 06-0014 SECONDARY SUBSTATION EARTHING DESIGN
EDS 06-0023 SECONDARY DISTRIBUTION NETWORK EARTHING CONSTRUCTION

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.

EARTHING KEY

EARTH ROD EARTH CONNECTION



2	Earth Notes	A.Ramjan	10/02/16
1	Door thresholds and connections.	D.Cabbittass	16/02/19
Rev	Description	Revised By	Date

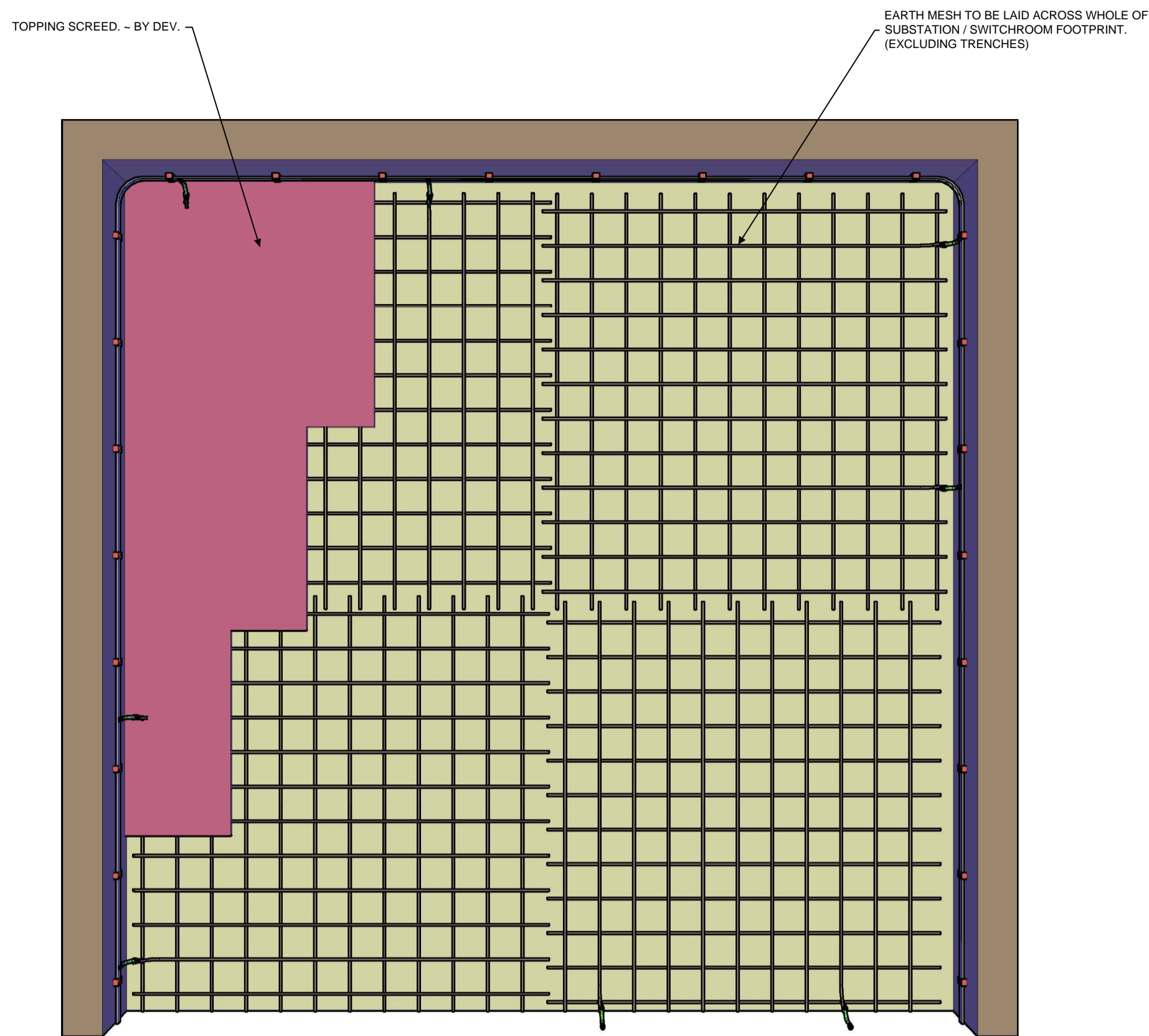
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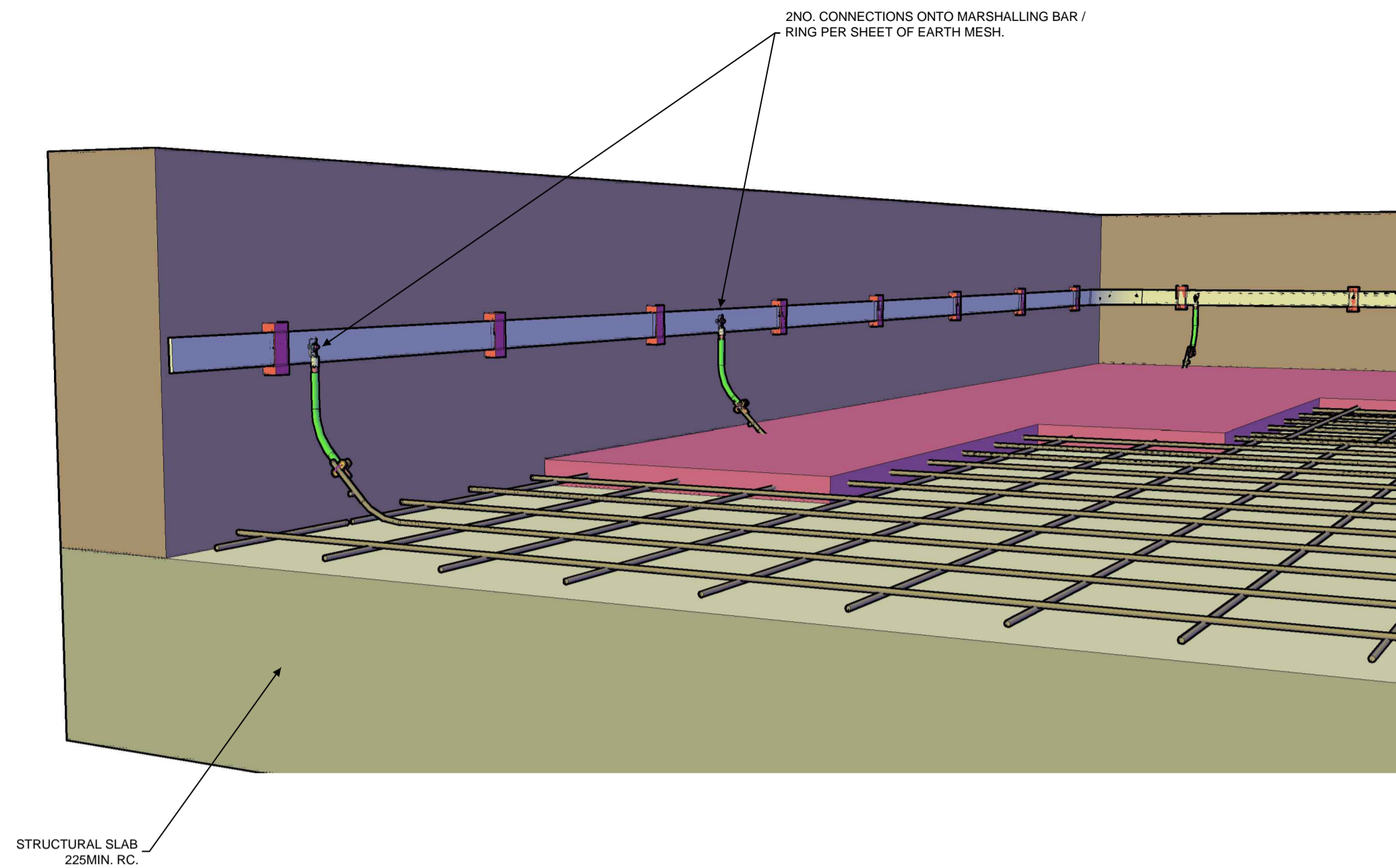
Substation Design Team
Metropolitan Hse, 3 Darkes Lane, Potters Bar, EN6 1AG.

Title
Earthing standard detail;
Floor slab earth mesh for touch voltage.
*

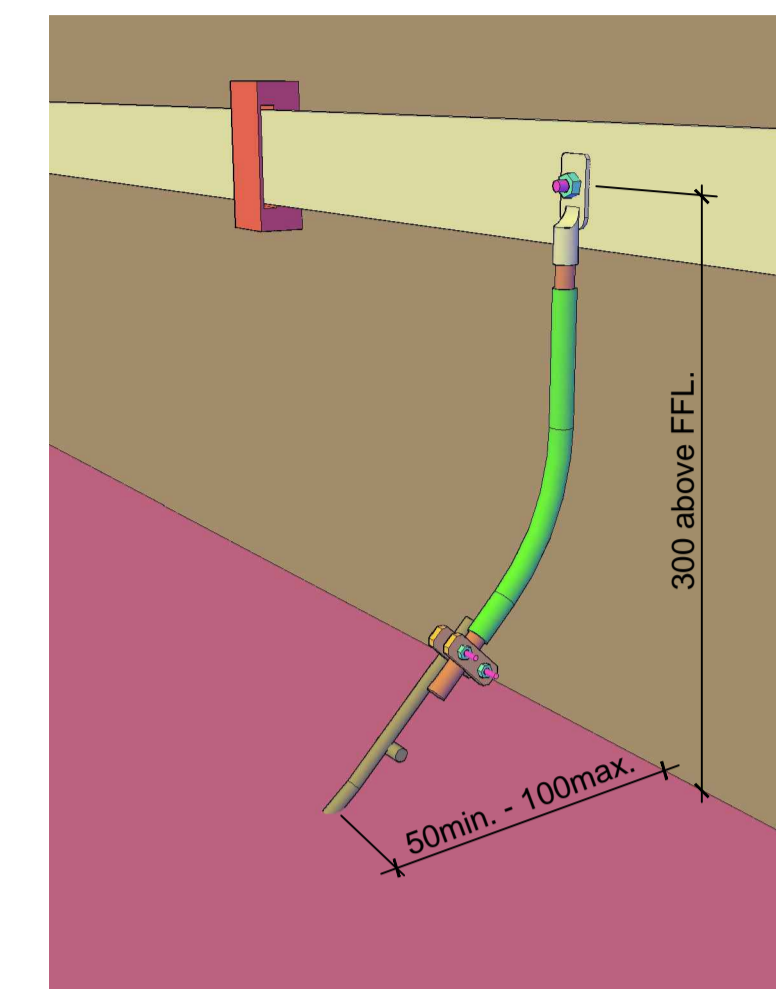
Date Drawn	Scale @ A1
November 2013	Not to scale, use dimensions
Drawn By	Building Officer
David Cabbittass	N/A
Project Designer	N/A



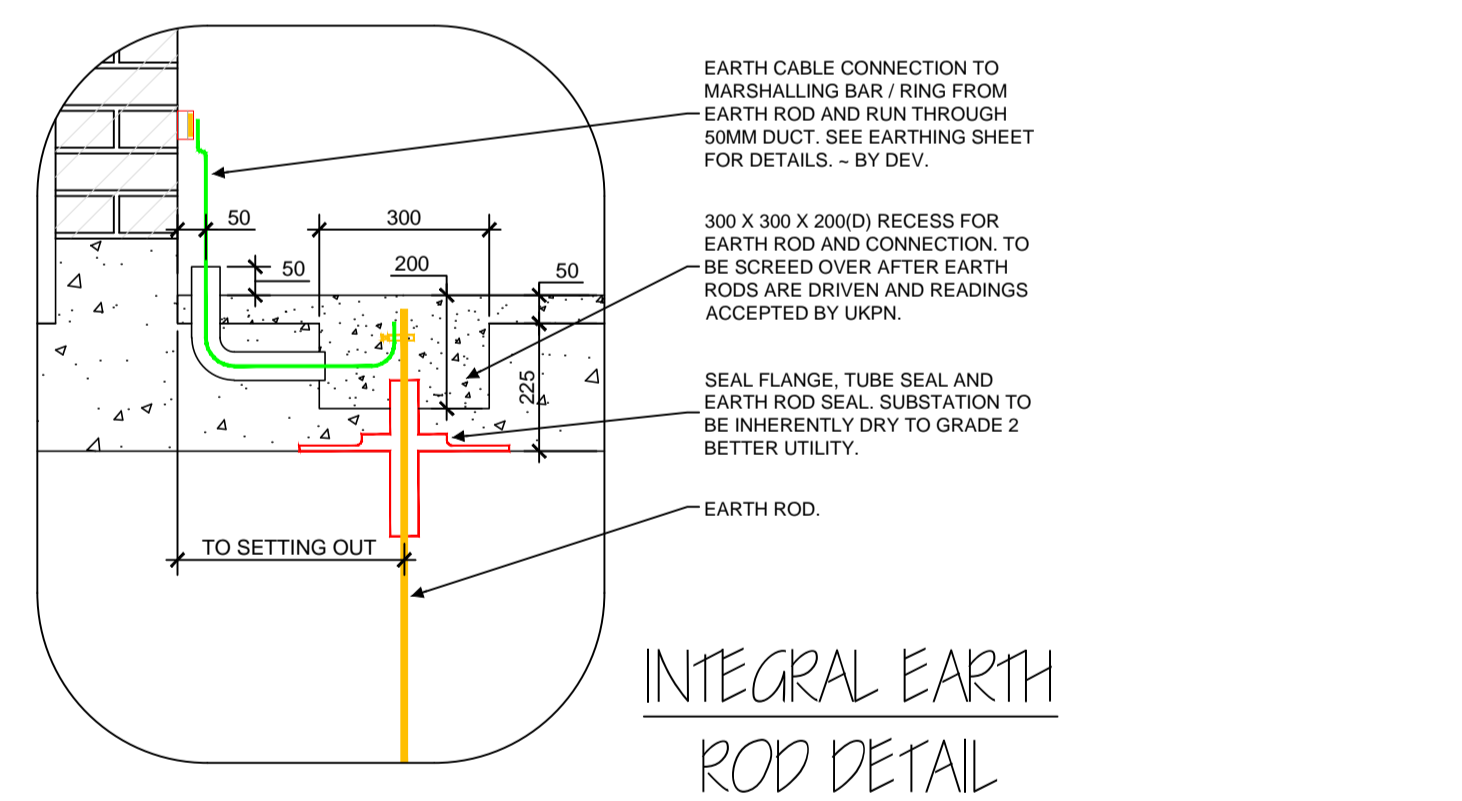
GENERIC SUBSTATION / SWITCHROOM FLOOR PLAN



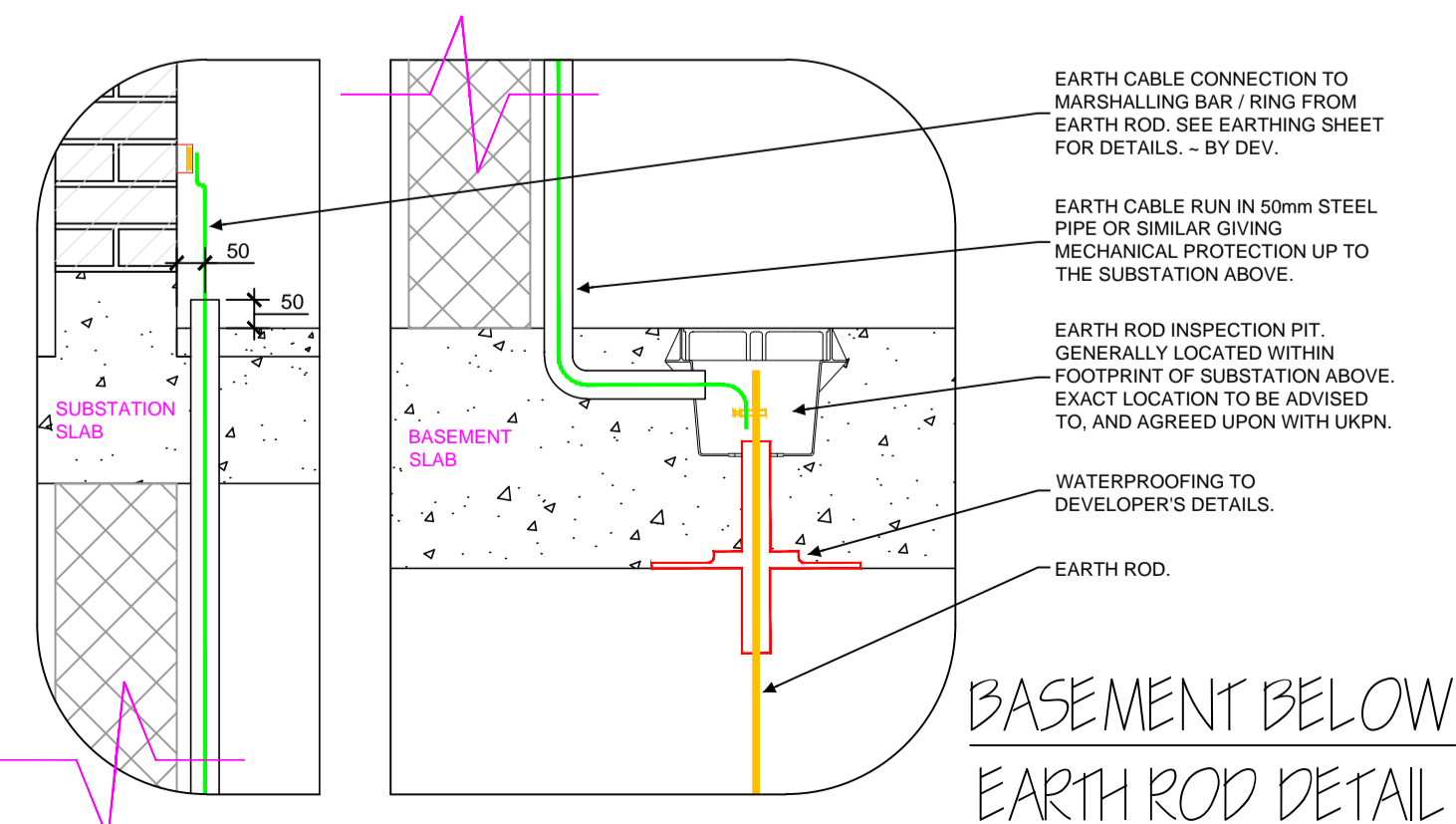
EARTH MESH CONNECTION DETAIL 1



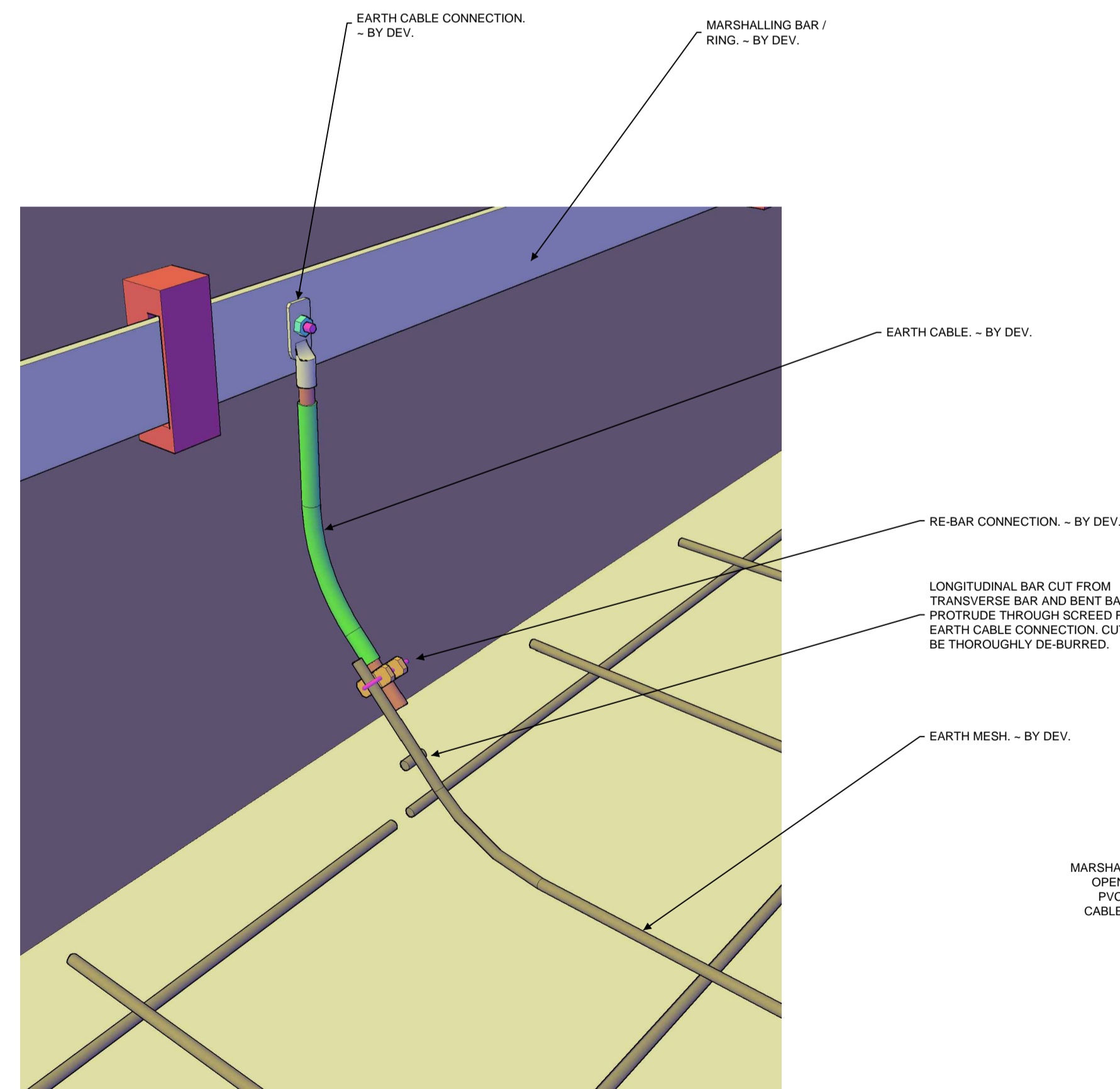
EARTH MESH CONNECTION DETAIL 2



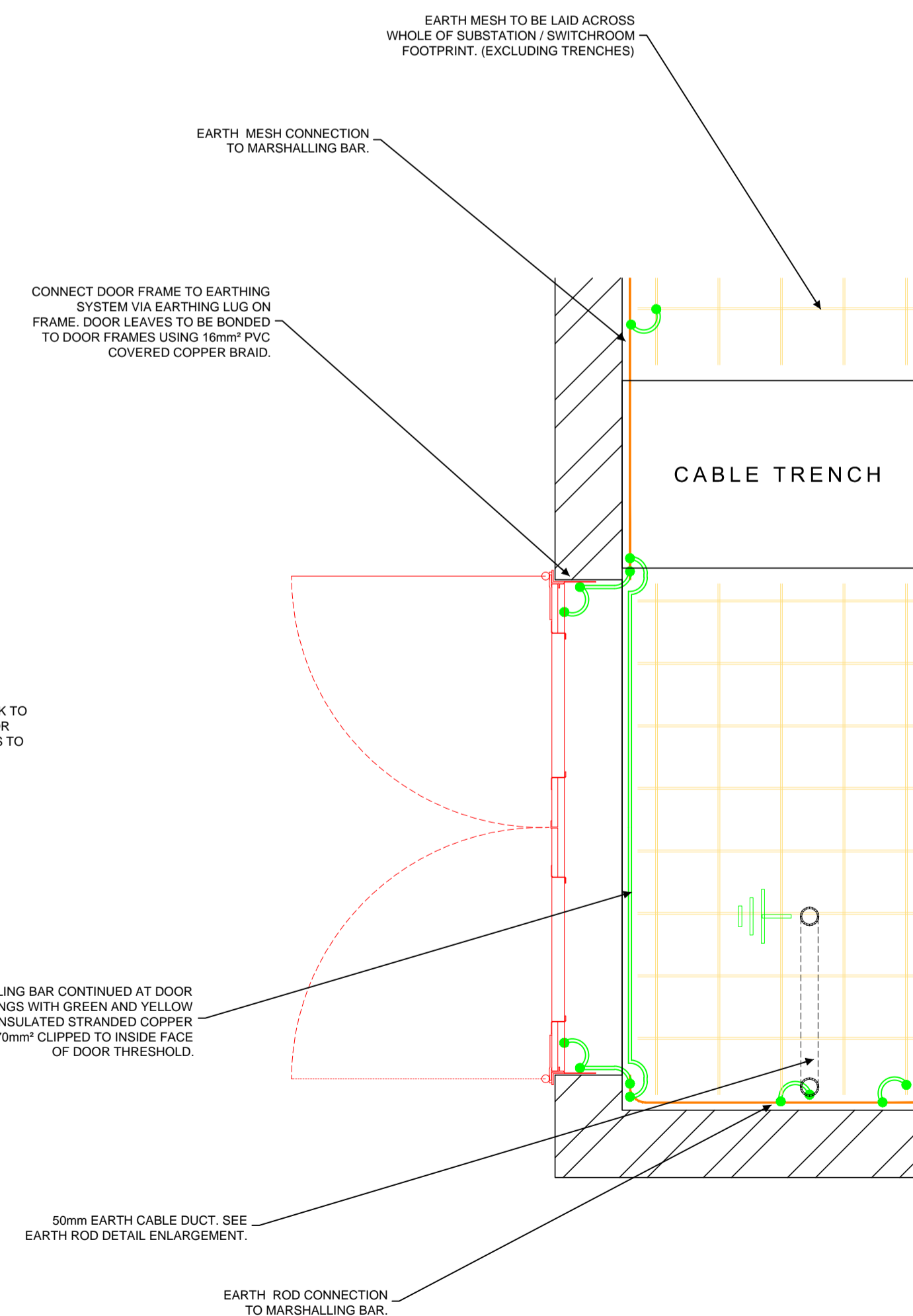
INTEGRAL EARTH ROD DETAIL



BASEMENT BELOW EARTH ROD DETAIL



EARTH MESH CONNECTION DETAIL 3



DOOR CONNECTION DETAIL