

GENERAL NOTES

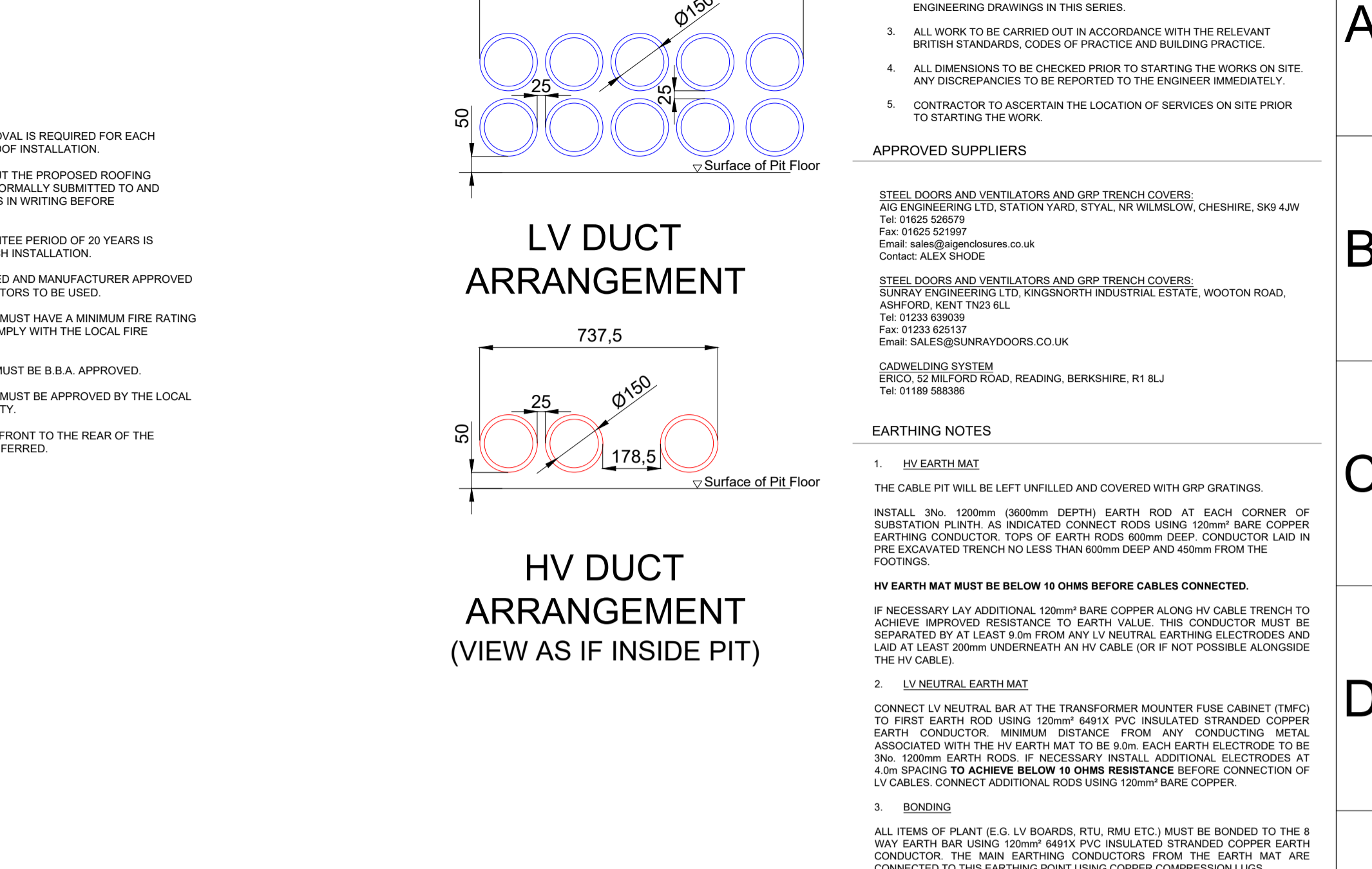
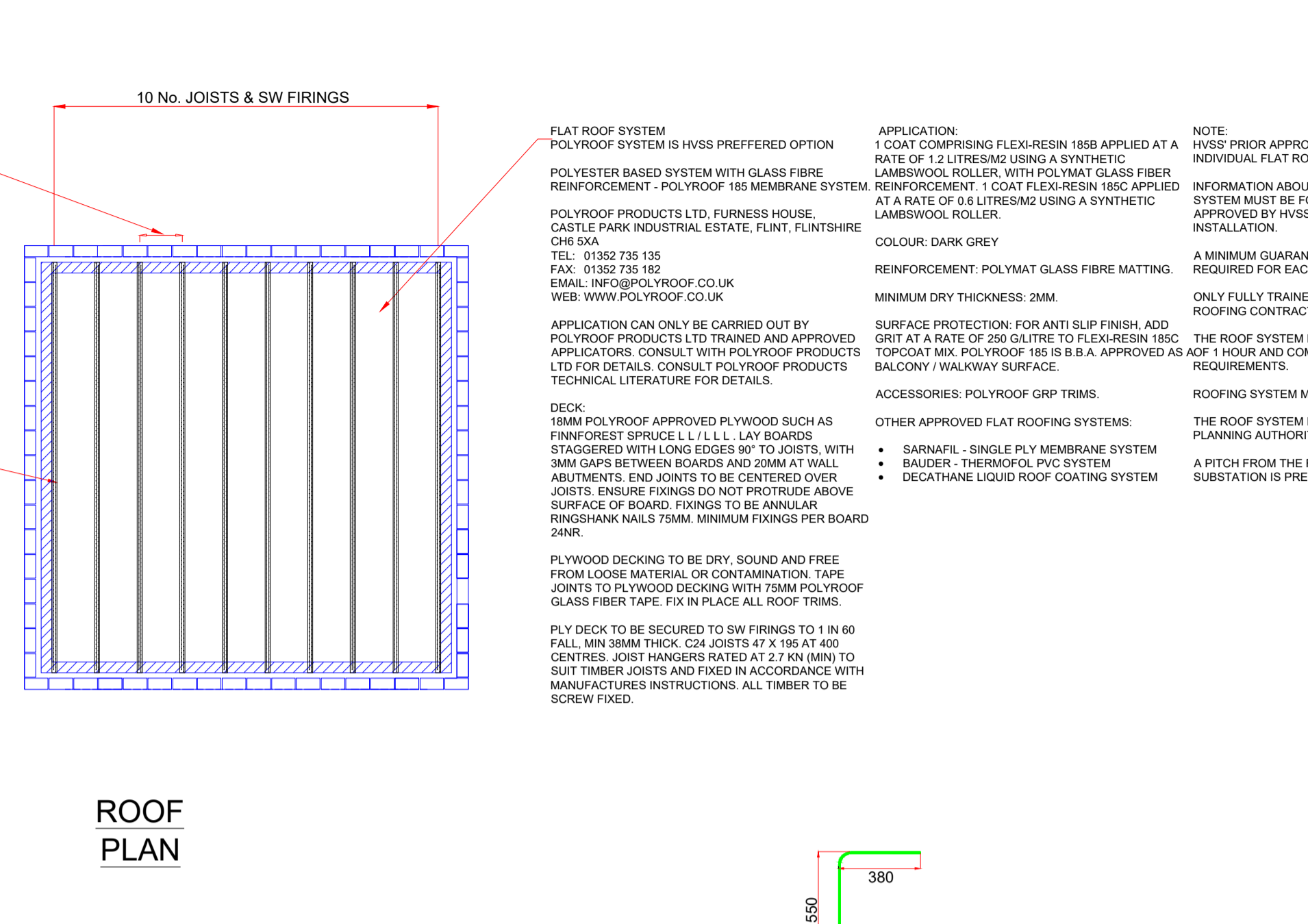
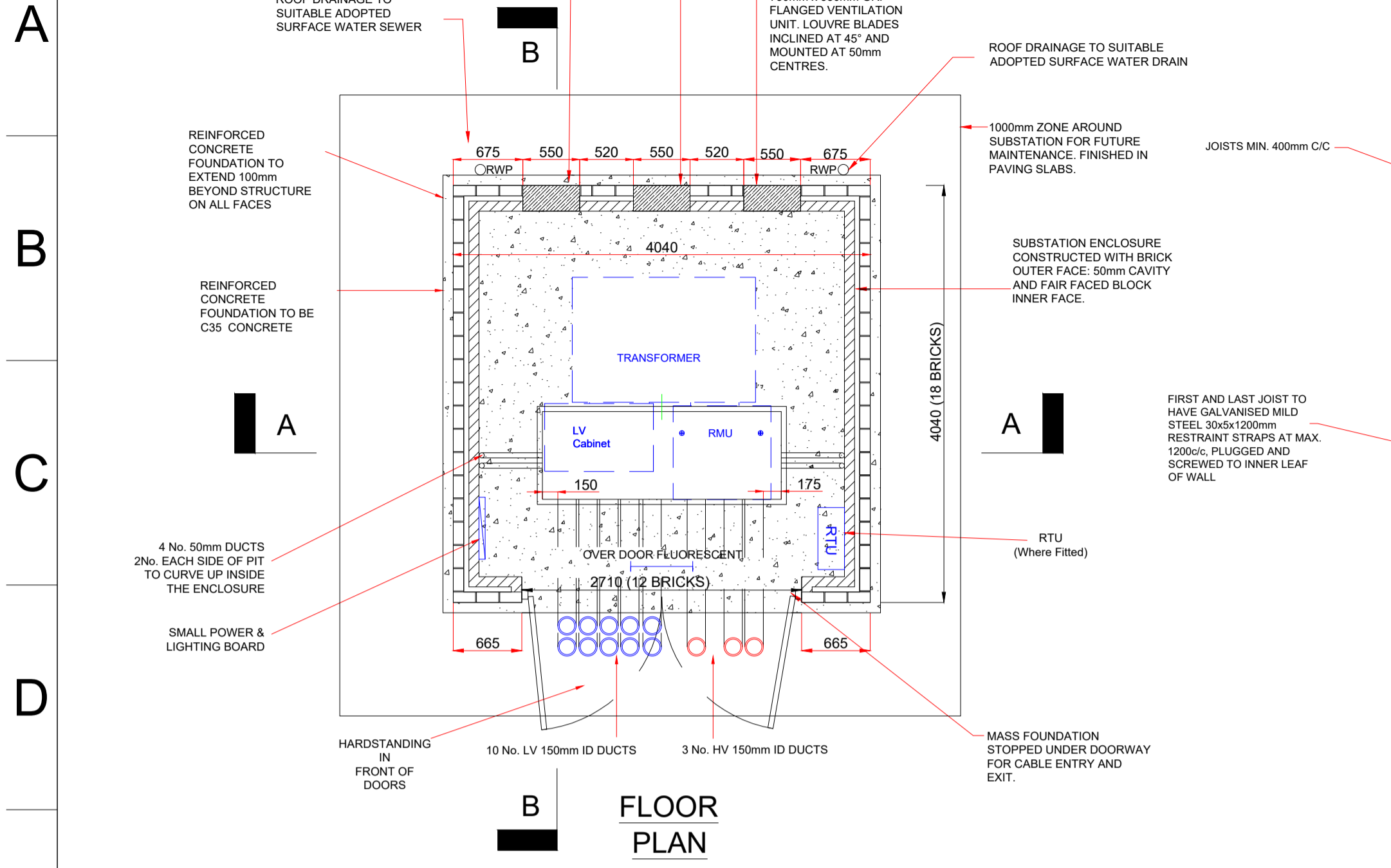
- IF IN DOUBT - ASK !!! DO NOT SCALE
- THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER ENGINEERING DRAWINGS IN THIS SERIES.
- ALL WORK TO BE CARRIED OUT IN ACCORDANCE WITH THE RELEVANT BRITISH STANDARDS, CODES OF PRACTICE AND BUILDING PRACTICE.
- ALL DIMENSIONS TO BE CHECKED PRIOR TO STARTING THE WORKS ON SITE. ANY DISCREPANCIES TO BE REPORTED TO THE ENGINEER IMMEDIATELY.
- CONTRACTOR TO ASCERTAIN THE LOCATION OF SERVICES ON SITE PRIOR TO STARTING THE WORK.

APPROVED SUPPLIERS

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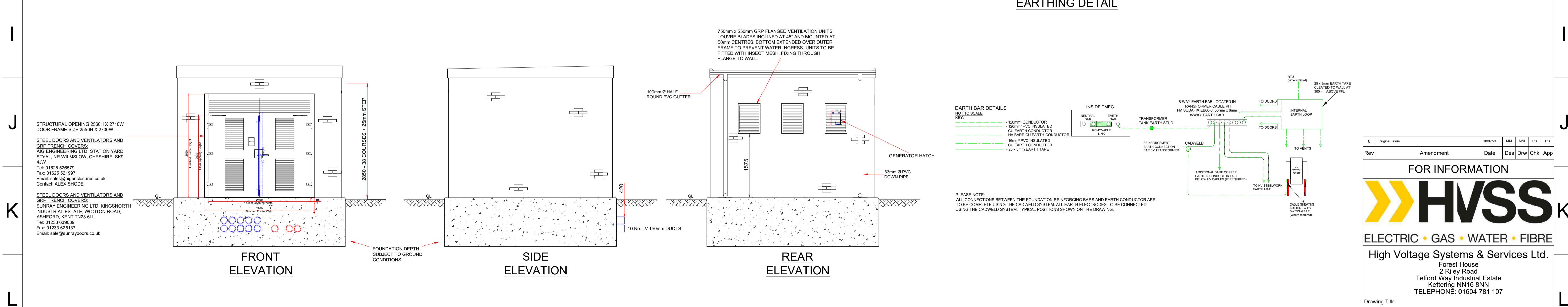
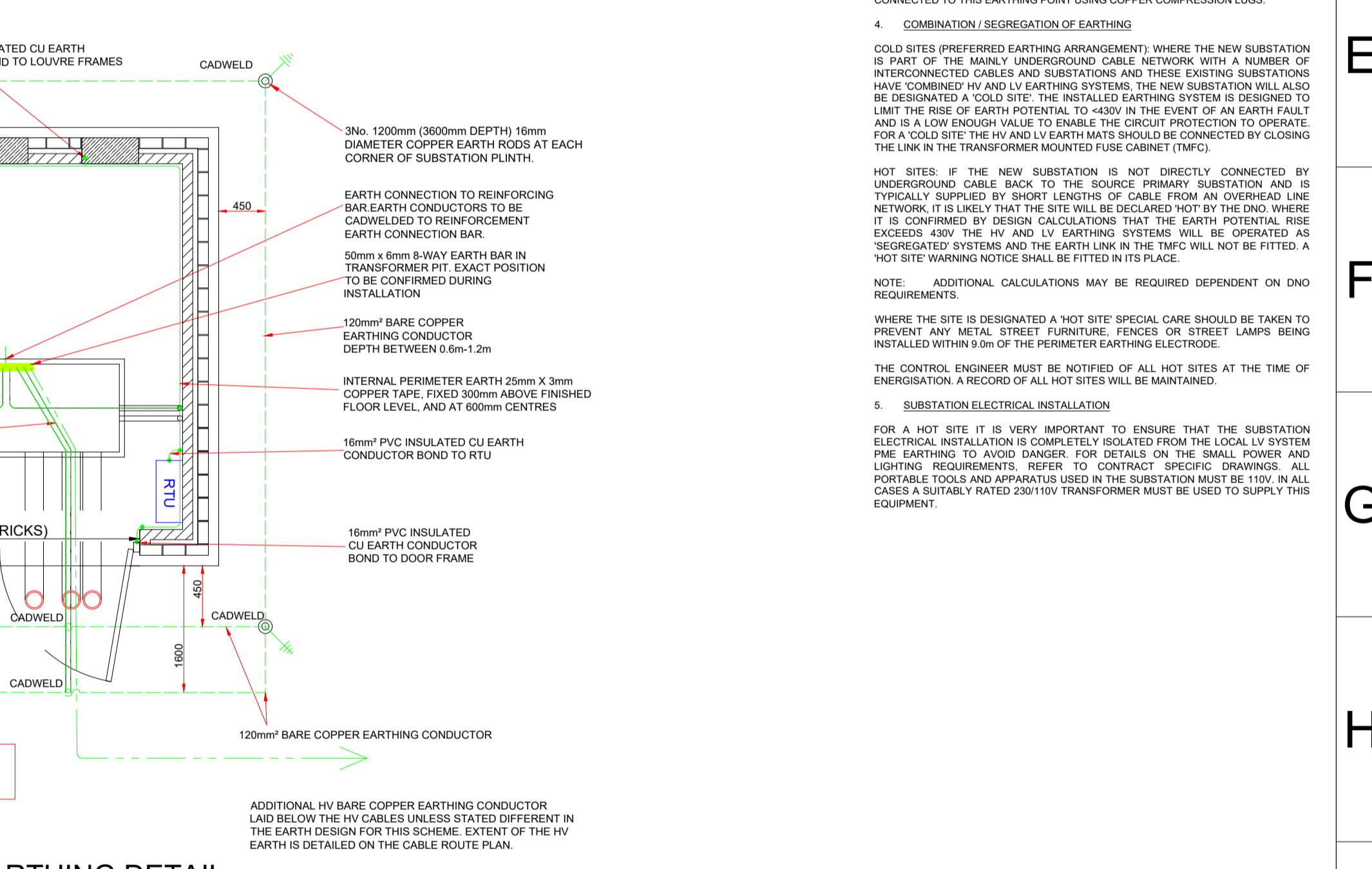
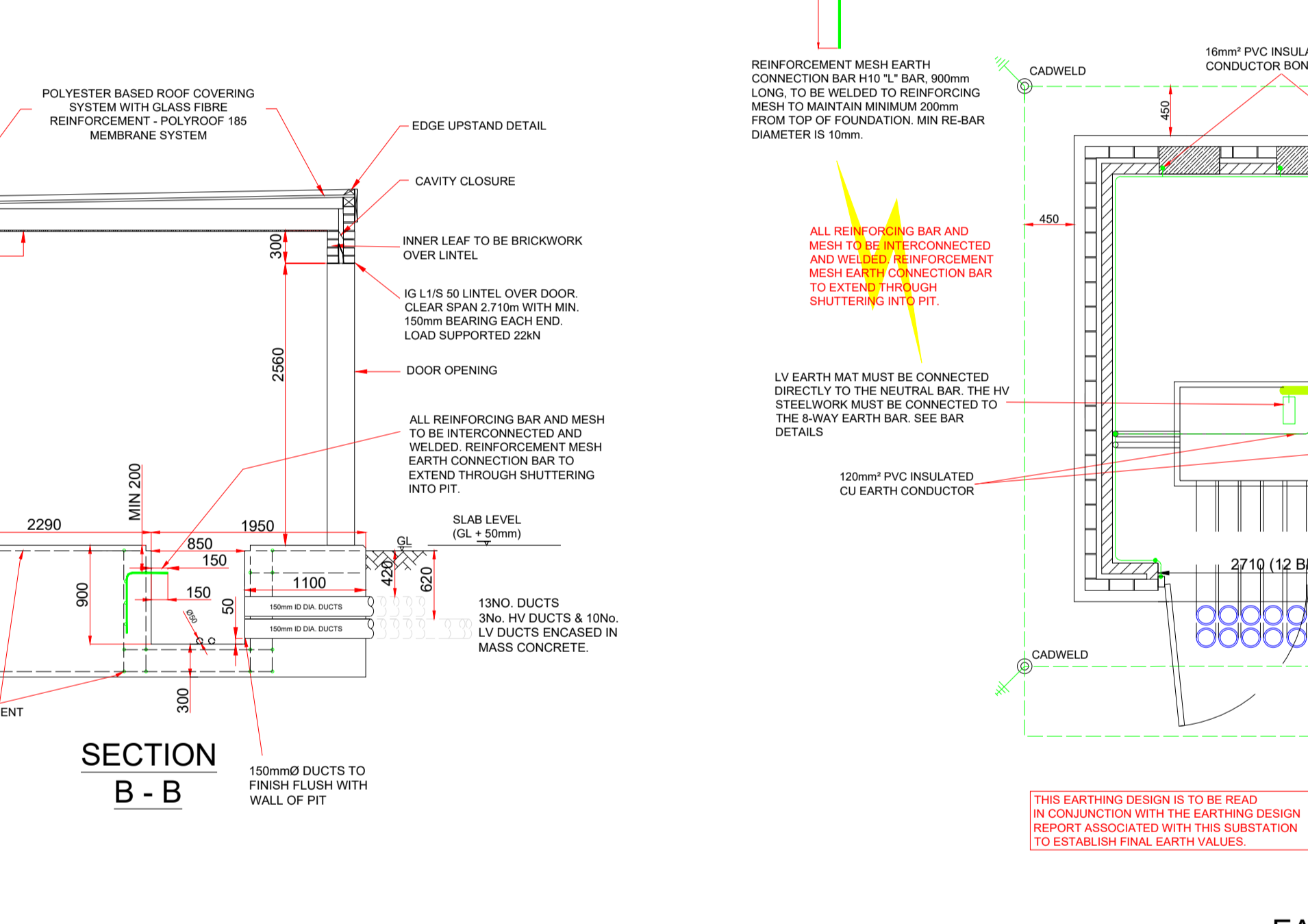
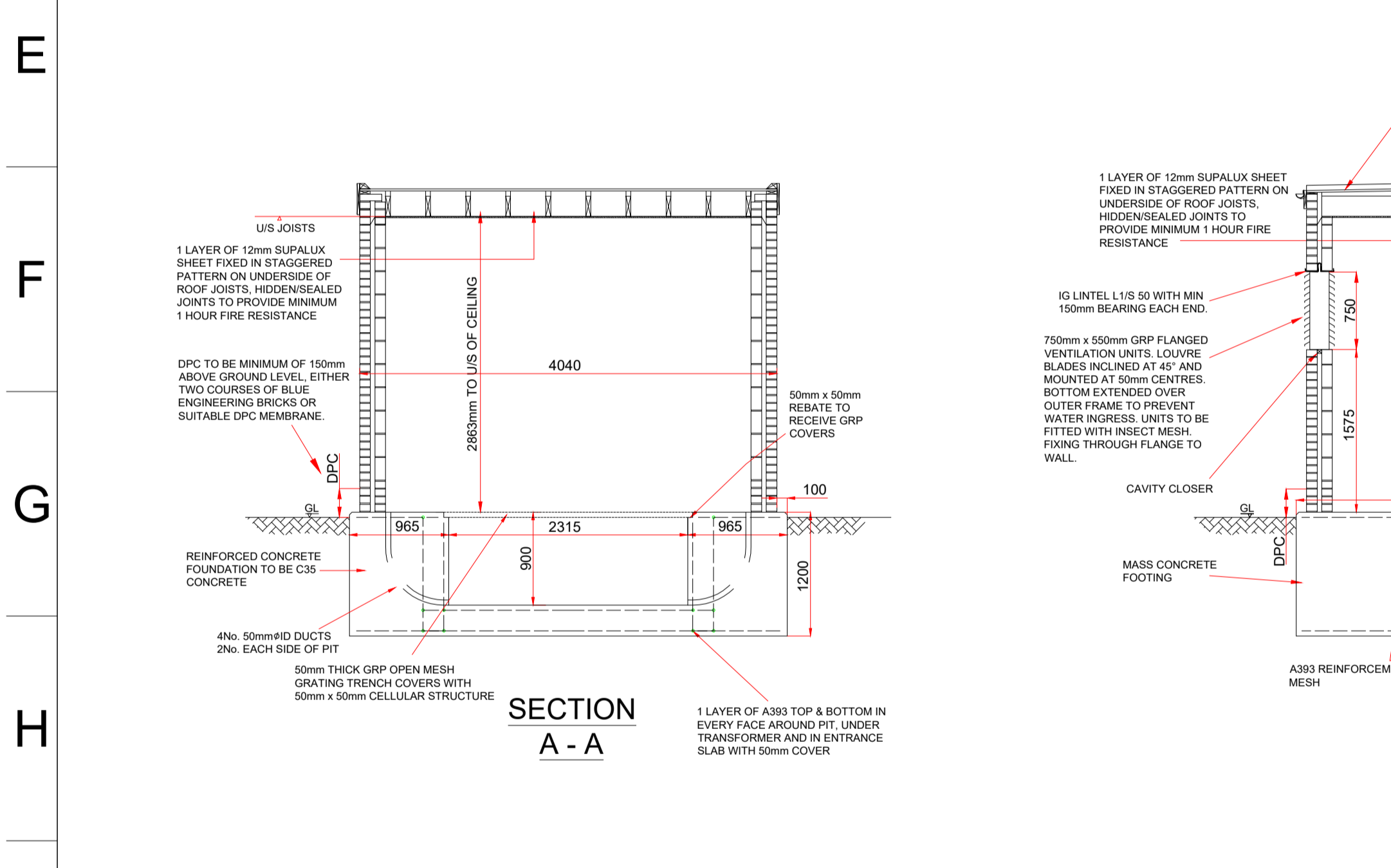
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EARTHING NOTES

- HV EARTH MAT**
 THE CABLE PIT WILL BE LEFT UNFILLED AND COVERED WITH GRP GRATINGS.
 INSTALL 3 No. 1200mm (3000mm DEPTH) EARTH ROD AT EACH CORNER OF SUBSTATION PLINTH. AS INDICATED CONNECT RODS USING 120mm² BARE COPPER EARTHING CONDUCTOR. TOPS OF EARTH RODS 500mm CONDUCTOR LAD IN PRE EXCAVATED TRENCH NO LESS THAN 600mm DEEP AND 450mm FROM THE FOOTINGS.
HV EARTH MAT MUST BE BELOW 10 OHMS BEFORE CABLES CONNECTED.
 IF NECESSARY LAY ADDITIONAL 120mm² BARE COPPER ALONG HV CABLE TRENCH TO ACHIEVE IMPROVED RESISTANCE TO EARTH VALUE. THIS CONDUCTOR MUST BE SEPARATED BY AT LEAST 80mm FROM ANY LV NEUTRAL EARTHING ELECTRODES AND LAD AT LEAST 200mm UNDERNEATH AN HV CABLE (OR IF NOT POSSIBLE ALONGSIDE THE LV CABLE).
- LV NEUTRAL EARTH MAT**
 CONNECT LV NEUTRAL BAR AT THE TRANSFORMER MOUNTED FUSE CABINET (TMFC) TO FIRST EARTH ROD USING 120mm² 6491X PVC INSULATED STRANDED COPPER EARTH CONDUCTOR. MINIMUM DISTANCE FROM ANY CONDUCTING METAL ASSOCIATED WITH THE HV EARTH MAT TO BE 90mm. EACH EARTH ELECTRODE TO BE 3No. 1200mm EARTH RODS IF NECESSARY INSTALL ADDITIONAL ELECTRODES AT 4.0m SPACING TO ACHIEVE BELOW 10 OHMS RESISTANCE BEFORE CONNECTION OF LV CABLES. CONNECT ADDITIONAL RODS USING 120mm² BARE COPPER.
- BONDING**
 ALL ITEMS OF PLANT (E.G. LV BOARDS, RTU, RMU ETC.) MUST BE BONDED TO THE 8 WAY EARTH BAR USING 120mm² 6491X PVC INSULATED STRANDED COPPER EARTH CONDUCTOR. THE MAIN EARTHING CONDUCTORS FROM THE EARTH MAT ARE CONNECTED TO THIS EARTHING POINT USING COPPER COMPRESSION LUGS.
- COMBINATION / SEGREGATION OF EARTHING**
 COLD SITES (PREFERRED EARTHING ARRANGEMENT) WHERE THE NEW SUBSTATION IS PART OF THE MAINLY UNDERGROUND CABLE NETWORK WITH A NUMBER OF INTERCONNECTED CABLES AND SUBSTATIONS AND THESE EXISTING SUBSTATIONS HAVE COMBINED HV AND LV EARTHING SYSTEMS. THE NEW SUBSTATION WILL ALSO BE DESIGNATED A 'COLD SITE'. THE INSTALLED EARTHING SYSTEM IS DESIGNED TO LIMIT THE RISE OF EARTH POTENTIAL TO $430V$ IN THE EVENT OF AN EARTH FAULT AND A LOW ENOUGH VALUE TO ENABLE THE CIRCUIT PROTECTION TO OPERATE FOR A 'COLD SITE' THE HV AND LV EARTH MATS SHOULD BE CONNECTED BY CLOSING THE LINK IN THE TRANSFORMER MOUNTED FUSE CABINET (TMFC).
 HOT SITES: IF THE NEW SUBSTATION IS NOT DIRECTLY CONNECTED BY UNDERGROUND CABLE BACK TO THE SOURCE PRIMARY SUBSTATION AND IS TYPICALLY SUPPLIED BY SHORT LENGTHS OF CABLE FROM AN OVERHEAD LINE NETWORK IT IS LIKELY THAT THE SITE WILL BE DECLARED 'HOT' BY THE DNO. WHERE IT IS CONFIRMED BY DESIGN CALCULATIONS THAT THE EARTH POTENTIAL RISE EXCEEDS 430V THE HV AND LV EARTHING SYSTEMS WILL BE OPERATED AS 'SEGREGATED' SYSTEMS AND THE EARTH LINK IN THE TMFC WILL NOT BE FITTED. A 'HOT SITE' WARNING NOTICE SHALL BE FITTED IN ITS PLACE.
 NOTE: ADDITIONAL CALCULATIONS MAY BE REQUIRED DEPENDENT ON DNO REQUIREMENTS.
 WHERE THE SITE IS DESIGNATED A 'HOT SITE' SPECIAL CARE SHOULD BE TAKEN TO PREVENT ANY METAL STREET FURNITURE, FENCES OR STREET LAMPS BEING INSTALLED WITHIN 90mm OF THE PERIMETER EARTHING ELECTRODES.
 THE CONTROL ENGINEER MUST BE NOTIFIED OF ALL HOT SITES AT THE TIME OF ERECTION/A RECORD OF ALL HOT SITES WILL BE MAINTAINED.
- SUBSTATION ELECTRICAL INSTALLATION**
 FOR A HOT SITE IT IS VERY IMPORTANT TO ENSURE THAT THE SUBSTATION ELECTRICAL INSTALLATION IS COMPLETELY ISOLATED FROM THE LOCAL LV SYSTEM PNE EARTHING TO AVOID DANGER FOR DETAILS ON THE SMALL POWER AND LIGHTING REQUIREMENTS REFER TO CONTRACT SPECIFIC DRAWINGS. ALL PORTABLE TOOLS AND APPARATUS USED IN THE SUBSTATION MUST BE 110V. IN ALL CASES A SUITABLY RATED 230V/10V TRANSFORMER MUST BE USED TO SUPPLY THIS EQUIPMENT.



FLAT ROOF BRICK BUILT SUBSTATION: NTS

FOR INFORMATION

HVSS

ELECTRIC • GAS • WATER • FIBRE

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Drawing Title
 Flat Roof Brick Built Substation Construction Details

Drawing No. LD007b Scale @ Size A1 Sheet 1/1