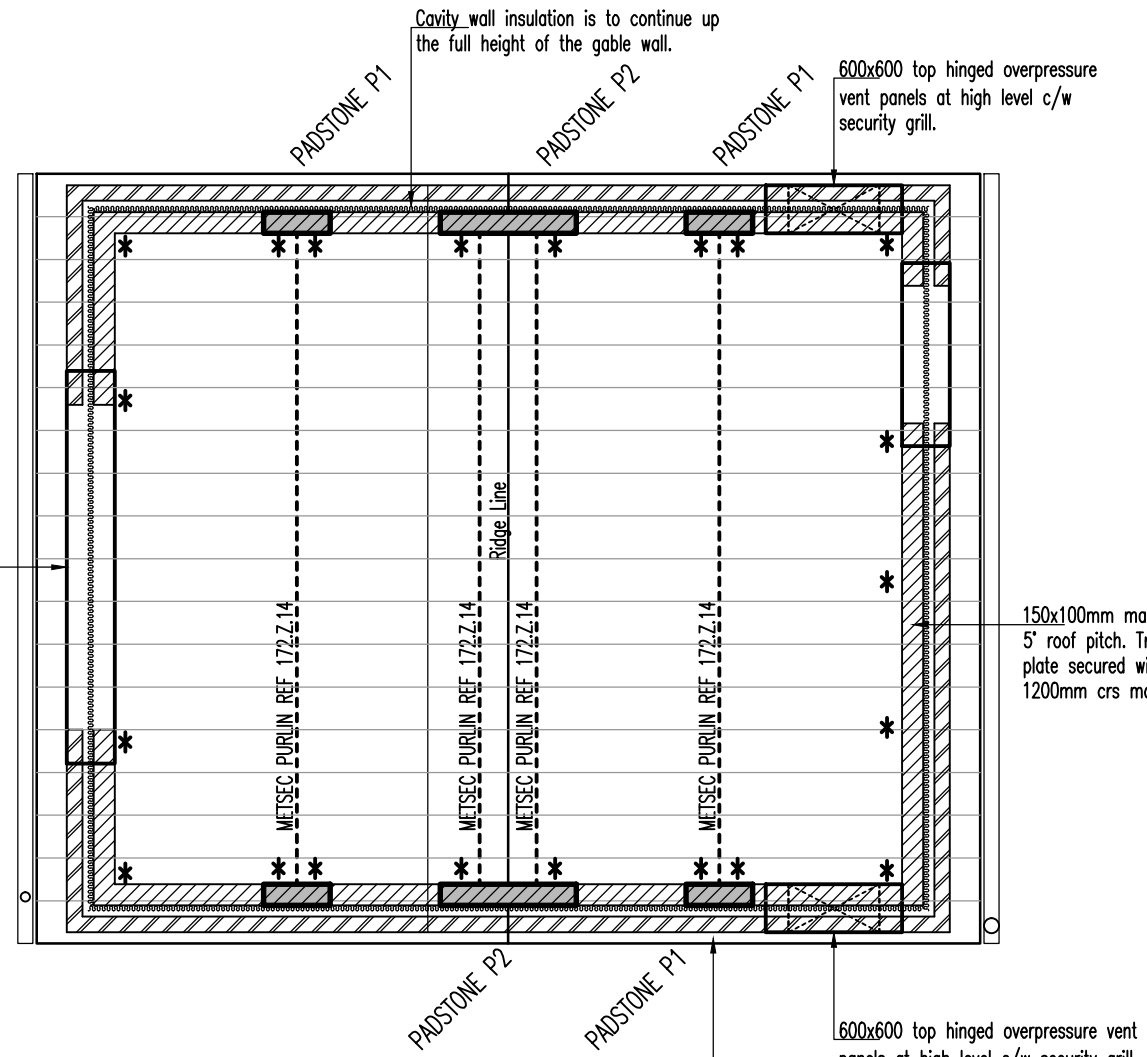


WALLPLATE STRAPS - Shown Thus *
30x2.5x1150mm long galvanneal mild steel wallplate straps plugged and screwed to wall using 4 no screws, with at least one screw to be located within 150mm of the bottom of the strap.
Strap to be nailed to wallplate using 4mm x 75mm long nails.
Straps to be located at 1200mm max crs.
Where straps occur at openings, straps are to be fixed either side of the opening so as to retain the same number of straps as would be provided if there were no openings.

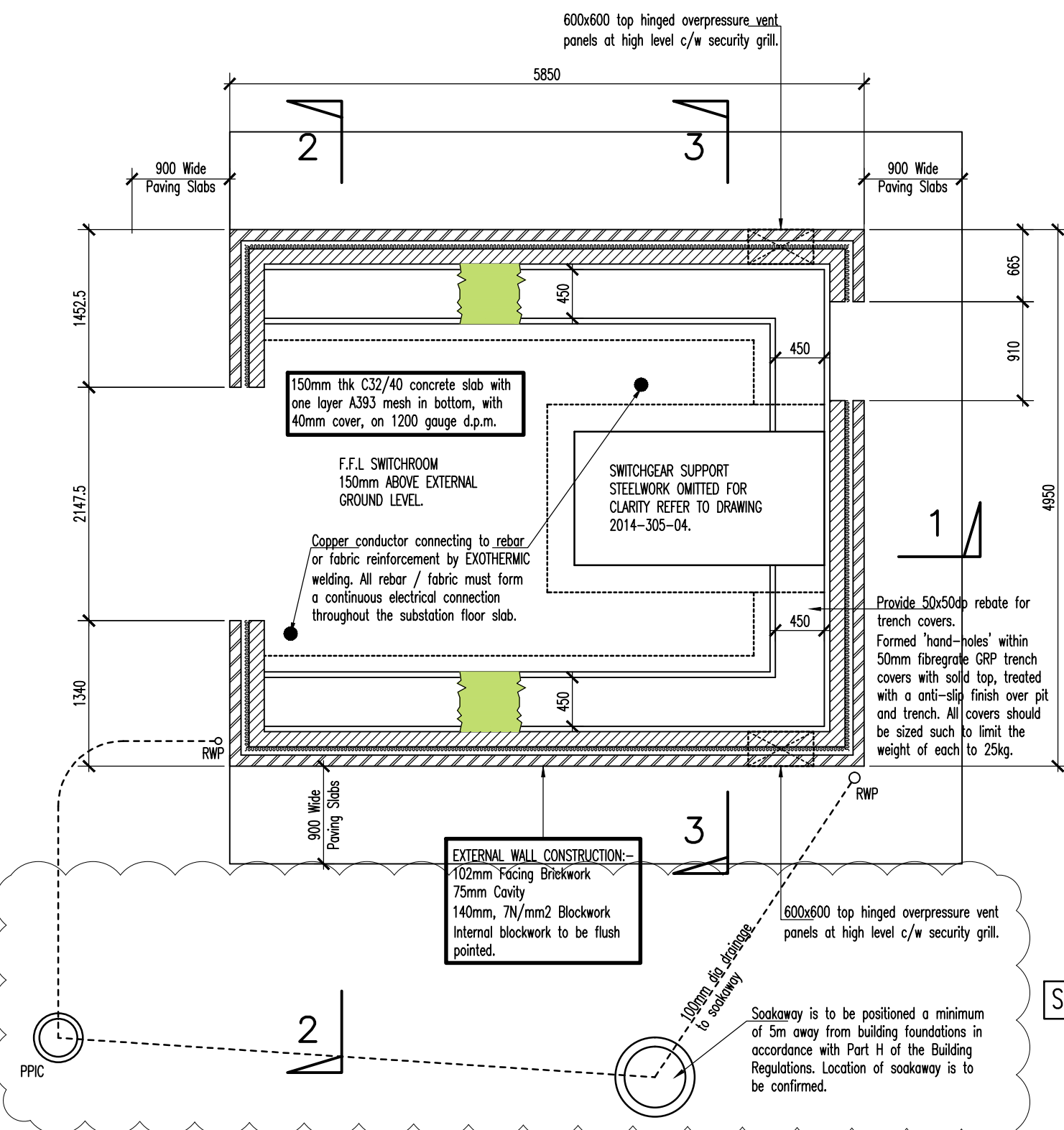
PADSTONE P1-440x140x225 conc. padstone.
PADSTONE P2-900x140x225 conc. padstone.

All linels within the external wall of the new substation are to be CATING C670/125. End bearing of lintel and any temporary propping requirements are to be in strict accordance with the manufacturers recommendations and specification but are not to be less than 150mm.

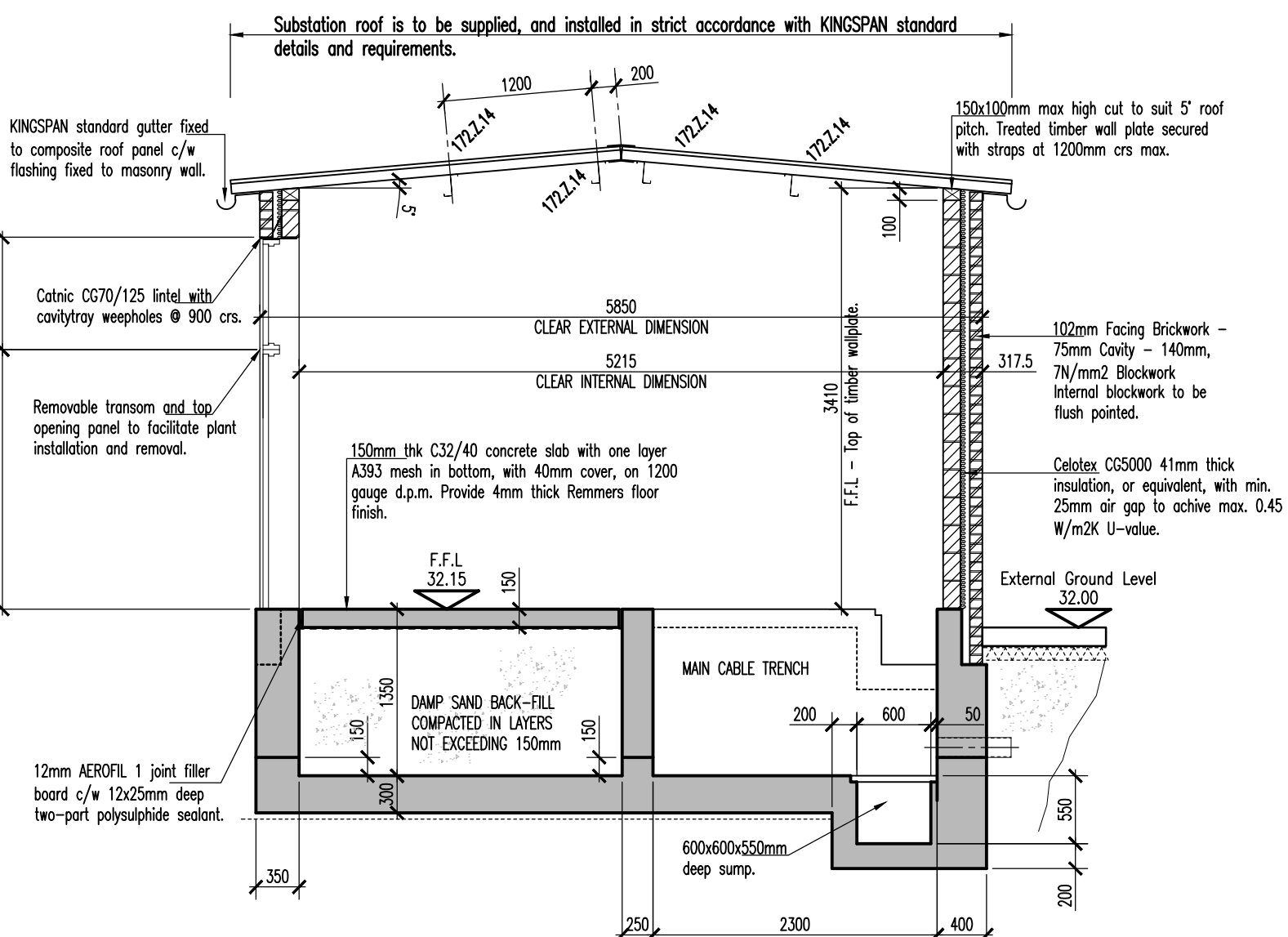
Substation roof is to be supplied, and installed in strict accordance with KINGSPAN standard details and requirements.



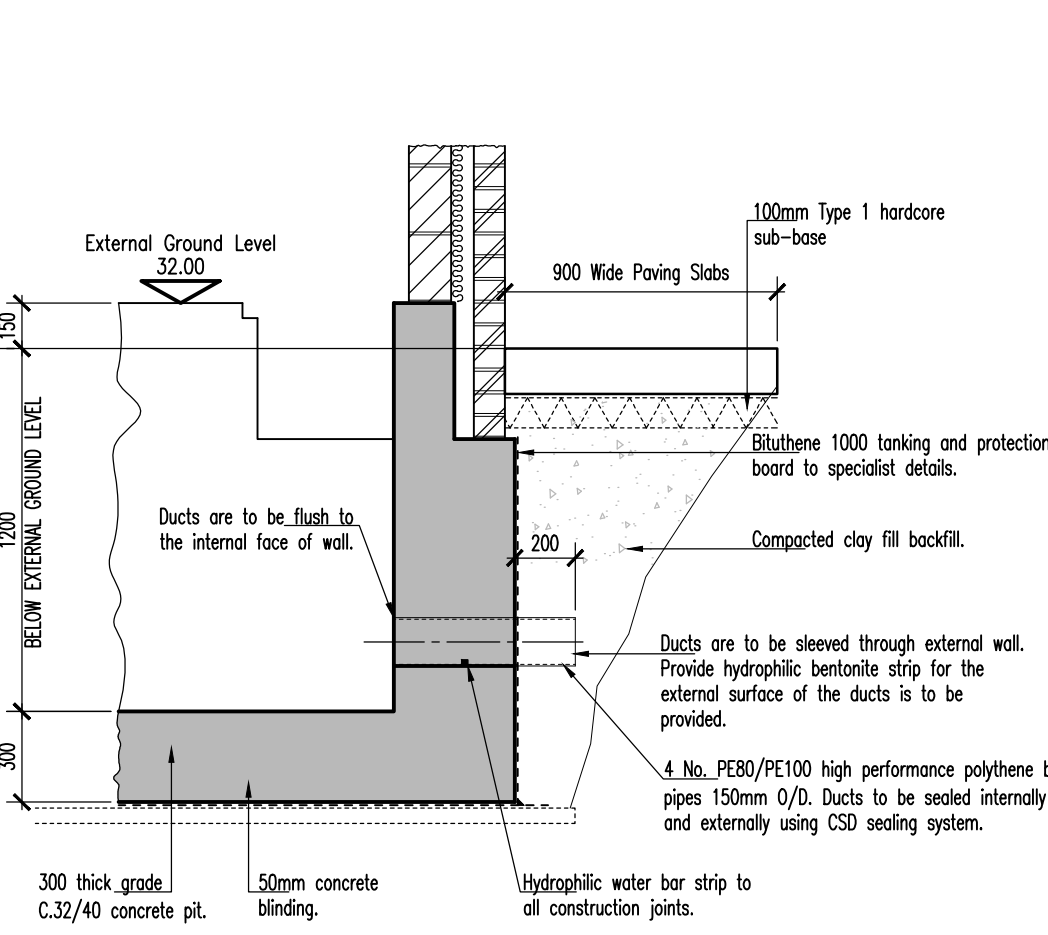
Roof Plan



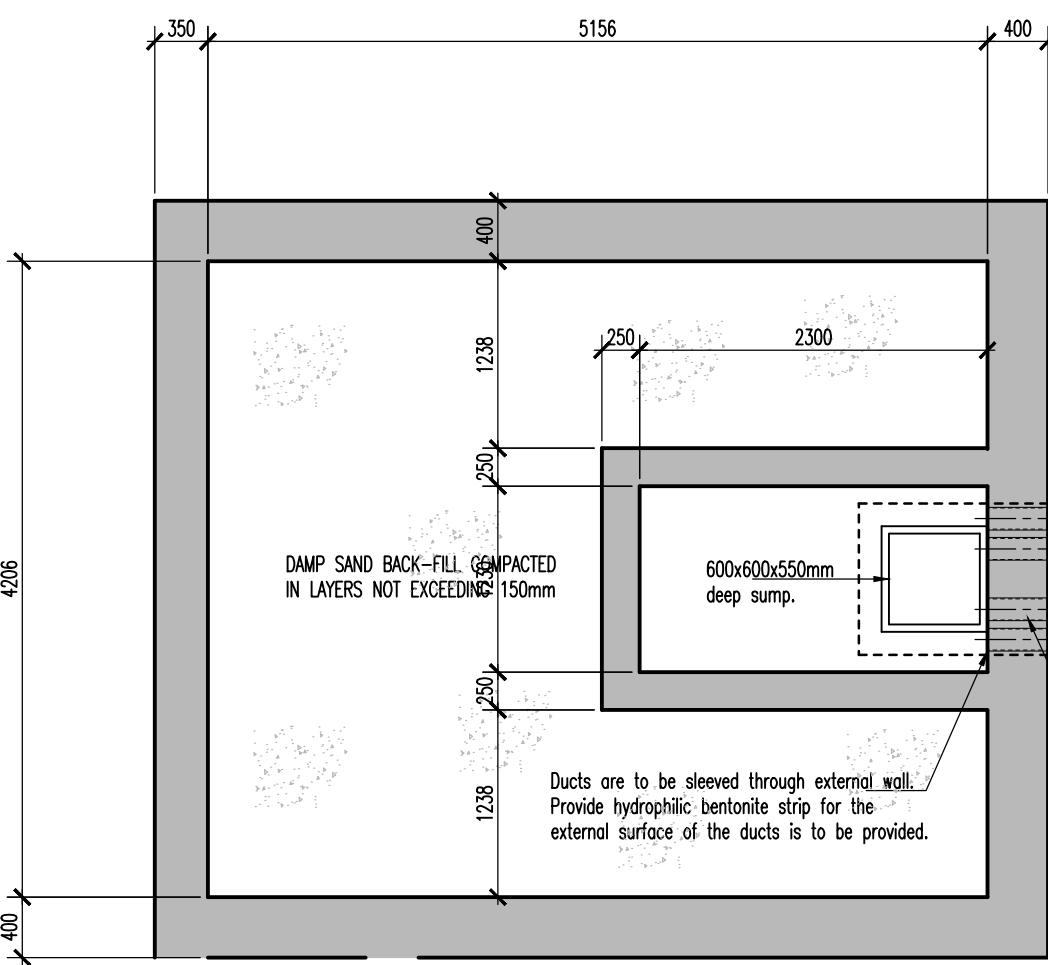
Plan On External Ground Level



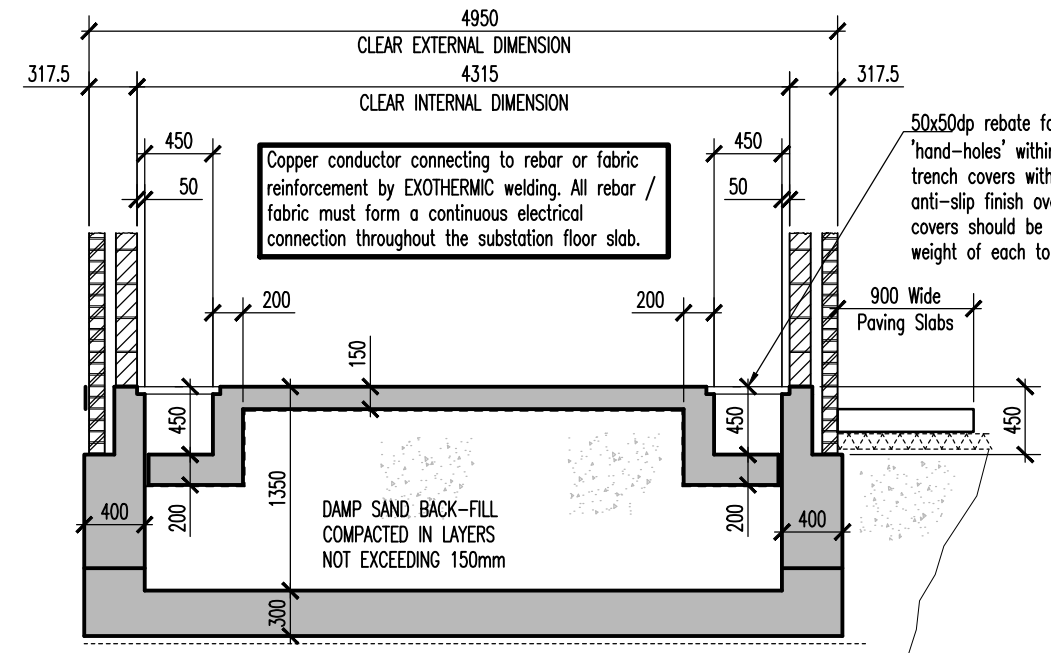
Section 1-1



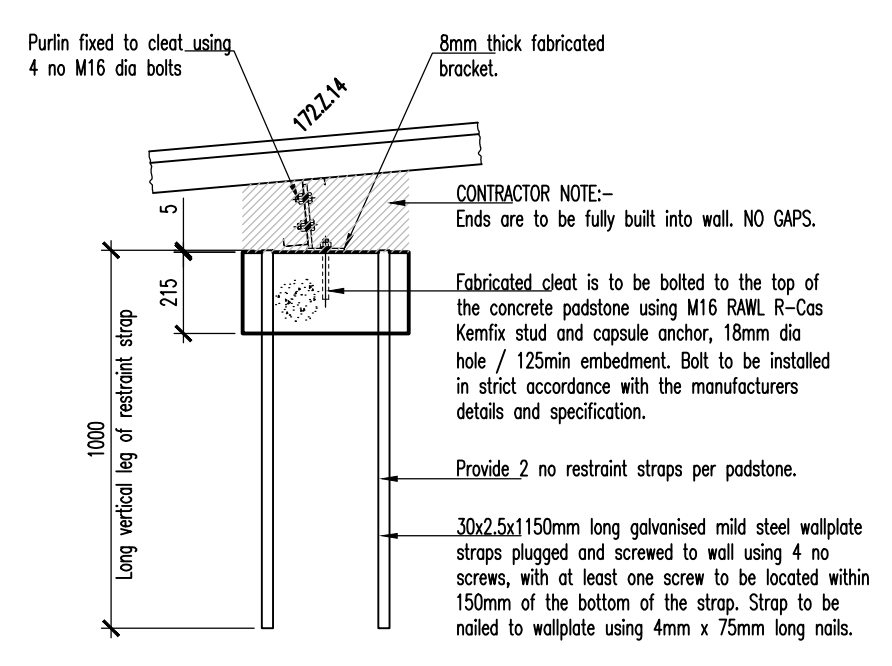
Typical Pit Section



Plan On Base Slab



Section 2-2



Typical Purlin / Wall Detail

SIGNIFICANT HAZARD ASSESSMENT

1) BASES ARE DEEP. ALL EXCAVATIONS BELOW 1.2m MUST BE SUPPORTED TO PREVENT COLLAPSE OF THE SIDES. MAIN ACCESS INTO THE EXCAVATION MUST BE CAREFULLY CONTROLLED AND USED AT ALL TIMES.

2) WHEN WORKING ADJACENT TO EMBANKMENT ENSURE THAT MACHINE EXCAVATORS ARE SUITABLY LEVELLED AND ON FIRM GROUND.

3) TAKE PRECAUTIONS WHEN WORKING WITH CONCRETE AS IT CAN BE AGGRESSIVE TO SKIN.

4) FOR GROUND WORKS CONTAINING REINFORCEMENT, ENSURE THAT BAR ENDS ARE PROTECTED TO PREVENT STABBING INJURY.

5) WHEN CUTTING REINFORCEMENT, PROTECT EYES AND WEAR GLOVES.

6) PROVIDE EDGE PROTECTION TO ALL OPEN EXCAVATIONS.

7) LIMIT USE OF PNEUMATIC COMPACTION EQUIPMENT TO PREVENT VIBRATION RELATED ILLNESS.

8) DELIVERY AND DISPATCH OF CONCRETE SHOULD TAKE ACCOUNT OF ADJACENT PUBLIC. PROVIDE TRAFFIC MANAGEMENT TO ENSURE SEGREGATION OF THE PUBLIC FROM THE WORKS.

9. SCAN FOR EXISTING SERVICES AND HAND DIG INITIALLY PRIOR TO MACHINE EXCAVATION IN AREAS OF KNOWN LIVE UNDERGROUND SERVICES

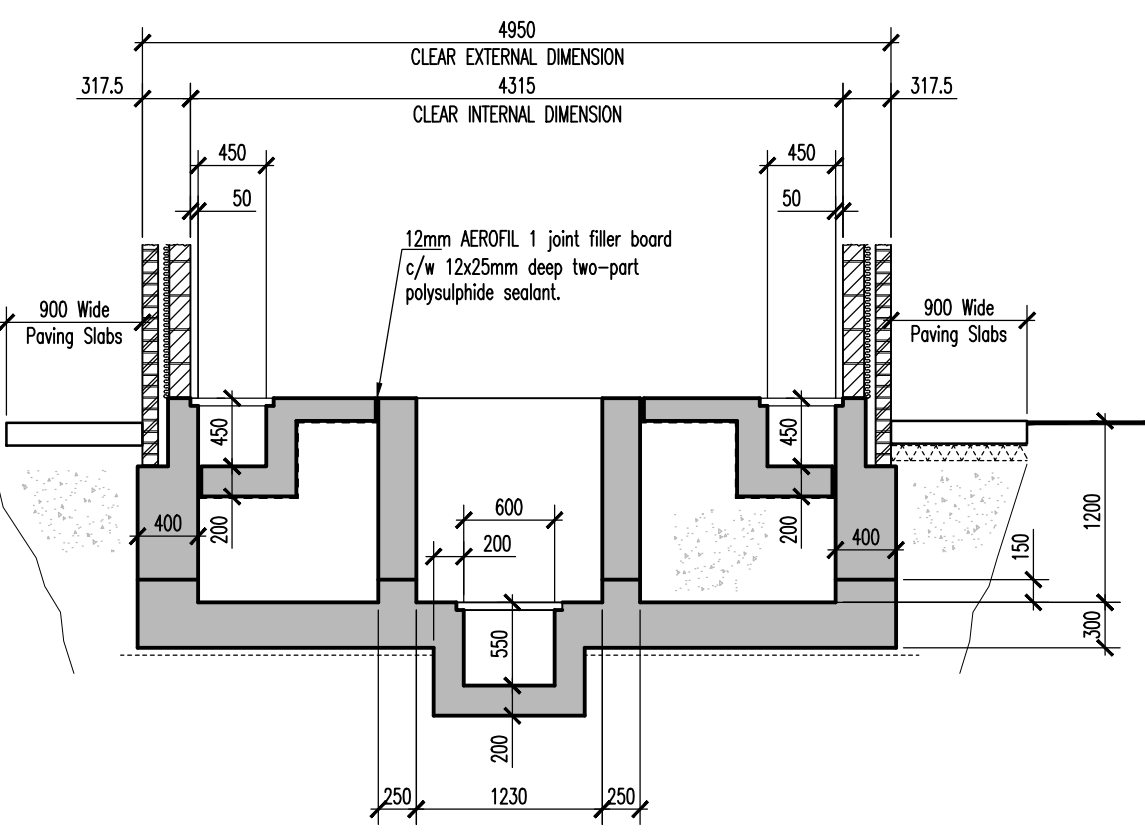
23. ALL REINFORCEMENT SHOWN ON THIS DRAWING IS LISTED ON BAR BENDING SCHEDULE PAGE No. 2014-305/03/01/02 & 03.
24. MINIMUM REINFORCEMENT LAP LENGTHS TO BE AS FOLLOWS:
T10 - 400.
25. MINIMUM CONCRETE COVER TO ALL REINFORCEMENT TO BE 40mm.
26. ALL TIMBER TO BE GRADE C24 AND MUST BE VACUUM IMPREGNATED WITH PRESERVATIVES. MINIMUM WIDTH OF TIMBER TO BE 38mm.
27. COMPOSITE U-VALUES
ROOF = 0.45 W/sq m DEG K
WALLS = 0.45 W/sq m DEG K
28. DOOR SPECIFICATION.
- SECURITY SPECIFICATION DOORS SHOULD BE 3 POINT LOCKING TO FIT WPD ABLOY EUROPROFILE CY336PT.
- STANDARD SECURITY DOOR CORES ARE TO BE A MINIMUM OF 45mm THICK FLUSH DOUBLE PAN CONSTRUCTION FORMED FROM 12mm NOMINAL THICKNESS ZINC COATED STEEL SHEET TO BSEN 10152 (BS6687). RESIN IMPREGNATED CORE MATERIAL, OR MINERAL WOOD CORE MATERIAL IS TO BE PROVIDED, AND THE WHOLE CONSTRUCTION IS TO BE RIVETED, GLUED AND WELDED AS REQUIRED TO GIVE ADEQUATE RIGIDITY AND PERFORMANCE.
- ALL DOUBLE / SINGLE LEAF ENTRANCE DOORS SHALL BE OUTWARD OPENING OF ROBUST / VANDAL RESISTANT / DURABLE MAINTENANCE FREE CONSTRUCTION AND FITTED WITH A SECURE LOCKING ARRANGEMENT OF A J-UBR40-45 EXTERNAL ACCESS DEVICE HOUSING A ABLOY CY403PT RM CYLINDER ASSEMBLY (WITH A 6 PIN TUMBLER) WITH AN INTERNAL DOUBLE FIXING J-UBR40-45 PANIC BOLT.
- DOUBLE LEAF ENTRANCE DOORS, WHERE REQUIRED SHALL BE DESIGNED SUCH THAT THE RIGHT HAND LEAF (VIEWED FROM THE OUTSIDE) WILL OPEN FIRST. THE MEETING STILES SHALL BE REBATED / OVERLAP OR OTHERWISE BE RESTING TO PRESSING. THE LEFT HAND LEAF SHALL BE FIXED INTERNALLY BY SHORT TOP AND BOTTOM SLIDING BOLTS INTO RECEPTORS WITHIN THE FRAME HEAD AND CILL.
- THE SINGLE DOOR TO THE METER ROOM TO BE FITTED WITH A MORTICE SASHLOCK EG BRITON 5220, WITH ROUND SECTION EXTERNAL LEVER HANDLE AND ESCUTCHEON CYLINDER WITH INTERNAL THUMBTURN TO SUIT METER OPERATOR LOCK BARREL.
- THE FIRE ESCAPE DOOR TO THE REAR OF THE SWITCHROOM SHALL BE FITTED WITH A PANIC BAR WITH TOP AND BOTTOM SHOOT BOLTS. NO EXTERNAL HANDLE OR LOCK BARREL REQUIRED.
- HEAVY DUTY DOOR RESTRAINTS TO BE FITTED AT THE HEAD OF EACH DOOR LEAF AND TO BE CAPABLE OF HOLDING THE DOORS OPEN AT 90 DEGREES.
- THE SWITCHROOM CHAMBER IS TO BE FITTED WITH WPD'S STANDARD LOCKING, WHICH WILL BE SUPPLIED AND INSTALLED BY WPD, AT ADDITION.
29. DOOR MANUFACTURER DETAILS - SUNRAY ENGINEERING LTD: TEL 01233 639 039.
KINGSNORTH INDUSTRIAL ESTATE, WOTTON ROAD, ASHFORD, KENT, TN11 8LL.
30. PAINT SPECIFICATION
INTERNAL WALLS TO RECEIVE 2 COATS OF VINYL SILK EMULSION, COLOUR MAGNOLIA.
CEILING WHERE APPROPRIATE TO RECEIVE 2 COATS OF WHITE VINYL MATT EMULSION FINISH.
FLOOR TO BE PAINTED WITH WATER MISIBLE EPOXY FLOOR PAINT IN ACCORDANCE WITH THE PAINT MANUFACTURERS RECOMMENDATIONS AND SPECIFICATION, BEFORE EQUIPMENT IS INSTALLED.
31. CSD DUCT SEALING SYSTEM INTERNALLY & EXTERNALLY PE80/PE100 HIGH PERFORMANCE POLYETHYLENE BLACK PIPES 180mm OD, 160mm ID.
32. HEATING AND LIGHTING - REFER TO GFP DRAWING No. J0163-6.
33. ALL DOORS, FRAMES AND FITTINGS SHALL BE DESIGNED TO PROVIDE A MINIMUM FIRE RESISTANCE OF 1 HOUR.

CONTRACTOR NOTE:-
EARTHING REQUIREMENTS AND INSTALLATION ARE TO SPECIALIST DESIGN AND DETAIL.

TEMPORARY WORKS:-
THE CONTRACTOR IS TO ENSURE THAT THE EXCAVATION IS KEPT FREE FROM WATER UNTIL THE TANKING SYSTEM HAS BEEN COMPLETED.

GROUND BEARING PRESSURE OF 50KN/m²

F.F.L. OF NEW SUB-STATION SLAB IS TO BE 150MM ABOVE THE EXISTING EXTERNAL (FINISHED) GROUND LEVEL.



Section 3-3

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NOTES:

- THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECTS, ENGINEERS AND ALL SPECIALISTS DRAWINGS TOGETHER WITH NOLAN ASSOCIATES' SPECIFICATION FOR LOAD BEARING MASONRY.
- ALL MASONRY AND WORKMANSHIP TO BE IN ACCORDANCE WITH BS 5628:2005.
- FOR ALL MASONRY SETTING OUT DETAILS REFER TO GREEN FROG DRAWINGS.
- Cavity wall specification:
102mm BRICKWORK - 75mm CAVITY INSULATED WITH 41mm THICK CELOTEX C5000 BOARD AND MIN. 25mm AIR GAP TO ACHIEVE MAX. 0.45 W/m2K U-VALUE - 140mm BLOCKWORK.
- ALL BLOCKWORK BELOW DPC TO BE SOLID CONCRETE BLOCKS (MAX DENSITY 1500kg/m³) WITH A MINIMUM COMPRESSIVE STRENGTH OF 7N/mm² LAD IN MORTAR DESIGNATION (ii) (1:3).
- ALL BRICKWORK BELOW DPC TO HAVE A MINIMUM CRUSHING STRENGTH OF 40N/mm² AND A WATER ABSORPTION OF LESS THAN 7%. DURABILITY DESIGNATION FL LAD IN MORTAR DESIGNATION (ii) (1:3). ALL EXTERNAL MORTAR JOINTS ARE TO BE STRUCK/BUCKET HANDLE POINTED FINISH.
- ALL BLOCKWORK ABOVE DPC TO BE FAIR FACED SOLID CONCRETE BLOCKS (MAX DENSITY 1500kg/m³) WITH A MINIMUM COMPRESSIVE STRENGTH OF 7N/mm² UNLESS NOTED ON PLAN, LAD IN MORTAR DESIGNATION (ii) (1:1.5). MORTAR JOINTS TO BE POINTED WITH A FLUSH OR BUCKET HANDLE FINISH. THE WALLS SHALL BE PAINTED WITH A MAXIMUM SMOOTH MASONRY PAINT. AN ADEQUATE NUMBER OF COATS SHALL BE APPLIED TO ENSURE FULL COVERAGE OF THE BLOCKWORK.
- ALL EXTERNAL BRICKWORK ABOVE DPC TO HAVE A MINIMUM CRUSHING STRENGTH OF 20N/mm² AND DURABILITY DESIGNATION FL LAD IN MORTAR DESIGNATION (ii) (1:1.6). ALL EXTERNAL MORTAR JOINTS ARE TO BE STRUCK/BUCKET HANDLE POINTED FINISH.
- ALL WALL TIES TO HAVE A MINIMUM EMBEDMENT OF 50mm INTO EACH MASONRY LEAF AND TO COMPLY FULLY WITH BS EN 845-1:2003 + A1:2008.
- ALL CAVITY WALL TIES TO BE 200 LONG, ANCON RT2 STAINLESS STEEL CAVITY WALL TIES AT 750 CENTRES HORIZONTALLY AND 450 CENTRES VERTICALLY STAGGERED. WALL TIE SPACINGS TO BE CLOSED UP TO 225 VERTICAL CENTRES AT ALL DOOR AND WINDOW JAMBS.
- MATERIALS OF AN EQUIVALENT SPECIFICATION MAY BE USED SUBJECT TO THE AGREEMENT OF THE ENGINEER.
- ALL CONCRETE MATERIALS TO BE IN ACCORDANCE WITH BS 8500-1:2006+A1:2012 AND BS EN 206-1:2000. ALL CONCRETE WORKMANSHIP TO BE IN ACCORDANCE WITH BS 8000-1:2011. ALL CONCRETE CONSTRUCTION TO BE IN ACCORDANCE WITH BS EN 1992-1-1:2004 AND NATIONAL ANNEX TO BS EN 1992-1-1:2004.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE EXECUTION OF THE WORKS IN ACCORDANCE WITH THE DRAWINGS AND THE SPECIFICATION AND FOR THE ACCURACY OF ALL DIMENSIONS AND SETTING OUT ON SITE.
- ALL CONCRETE MIX DESIGNS & GRADING CERTIFICATES FOR PROPOSED FILL MATERIALS SHOULD BE FORWARDED TO THE ENGINEER FOR COMMENT PRIOR TO USE.
- WHERE REQUIRED AS PART OF THE ENGINEER'S AGREED SCOPE OF WORKS, THE ENGINEER SHALL BE GIVEN A MINIMUM OF ONE WORKING DAYS NOTICE FOR VIEWING FORMATIONS, REINFORCEMENT, GRANULAR FILL ETC.
- FOUNDATIONS HAVE BEEN DESIGNED ON A PERMISSIBLE SAFE GROUND BEARING CAPACITY OF 50 kN/m². THE ANTICIPATED FORMATION LEVELS SHOWN, BEING A MINIMUM. ANY OVER DIG TO REACH A SUITABLE FORMATION LEVEL IS TO BE MADE UP IN GRADE C16/20 CONCRETE.
- CEMENT TO BE OPC TO BS.8500-2:2002
- CAVITIES TO CAVITY WALLS BELOW GROUND LEVEL ARE TO FILLED WITH FINE CONCRETE OR CEMENT MORTAR TO WITHIN 150mm OF GROUND LEVEL, WITH TOP SURFACE SLOPING DOWN TOWARDS THE OUTER LEAF.
- ALL BLINDING CONCRETE AND MASS CONCRETE TO BE GRADE C16/20 TO BS.8500 WITH 20mm MAXIMUM SIZE AGGREGATE AND MEDIUM WORKABILITY.
- MINIMUM LAPS TO MESH REINFORCEMENT SHALL BE 400mm.
- ALL GRADE C28/35 CONCRETE TO HAVE A MINIMUM CEMENT CONTENT OF 300kg/M3 AND A MAXIMUM FREE WATER CEMENT RATIO OF 0.60.
- BASE SLAB CONSTRUCTION.
150 THK GRADE C28/35 CONCRETE SLAB REINFORCED WITH ONE LAYER A393 MESH (40mm COVER), ON 1200 GAUGE DPM, ON 150 MINIMUM, SAND BLINDED DTG TYPE 1 SUB-BASE, COMPACTED IN LAYERS NOT EXCEEDING 150 THK.

Levels In Abeyance

NOLAN ASSOCIATES

**PRELIMINARY
DRAWING**

NOT TO BE USED FOR CONSTRUCTION

P1	Preliminary	KH	ARW	31.07.15
REV	DESCRIPTION	BY	CHKD	DATE

GF Energy
Timet, Swansea

General Arrangement Layout
of Substation



NOLAN ASSOCIATES
CONSULTING CIVIL & STRUCTURAL ENGINEERS

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Drawn by RW	Date 25.06.15	Plot Date 25.06.15	Scale 1:50@A1
Checked by RW	Project No 2015-193	Dwg No 014	P1