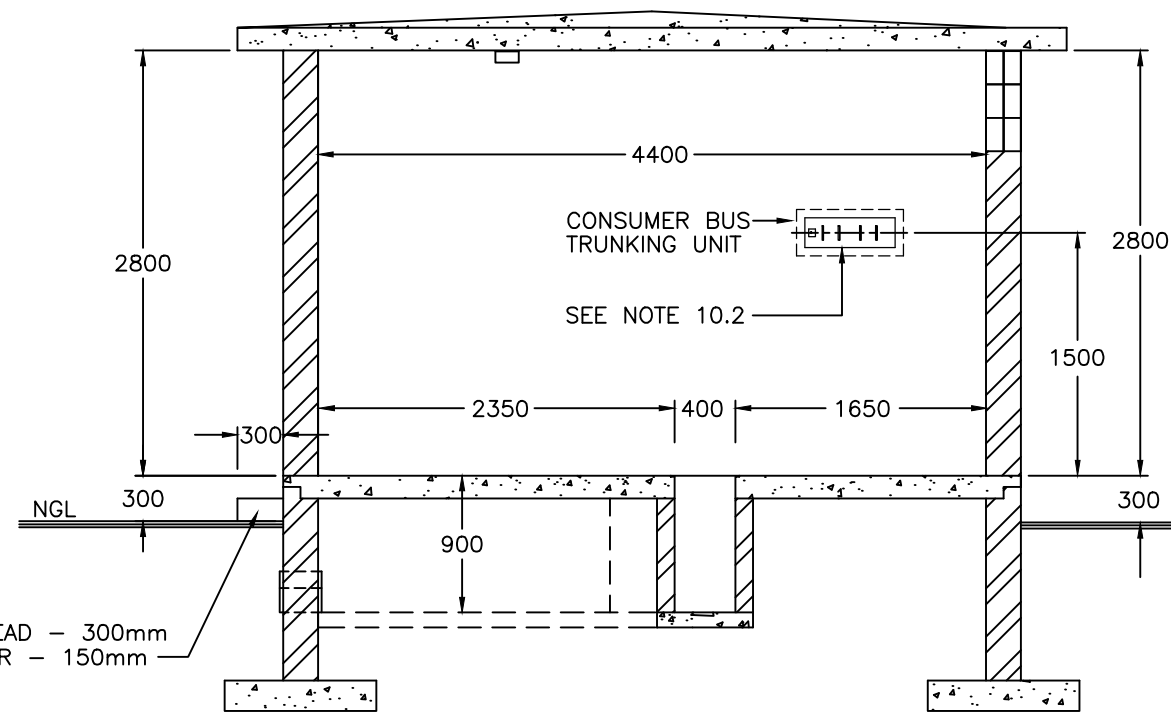
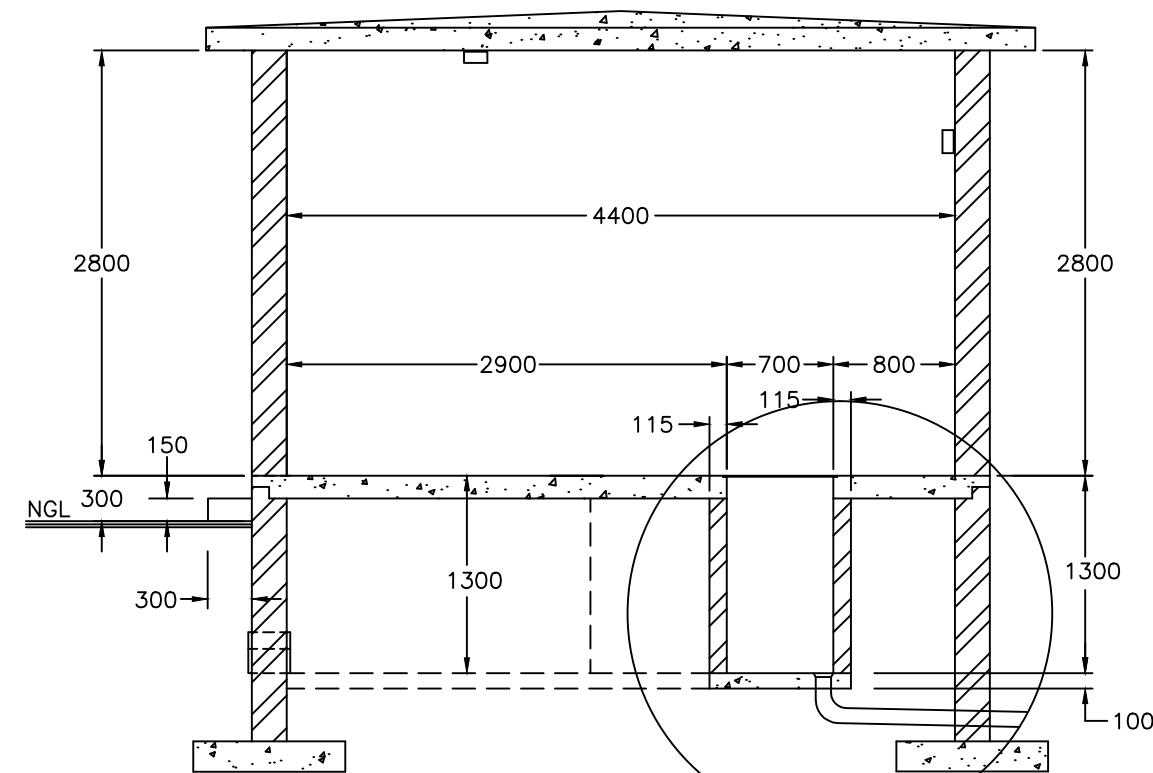


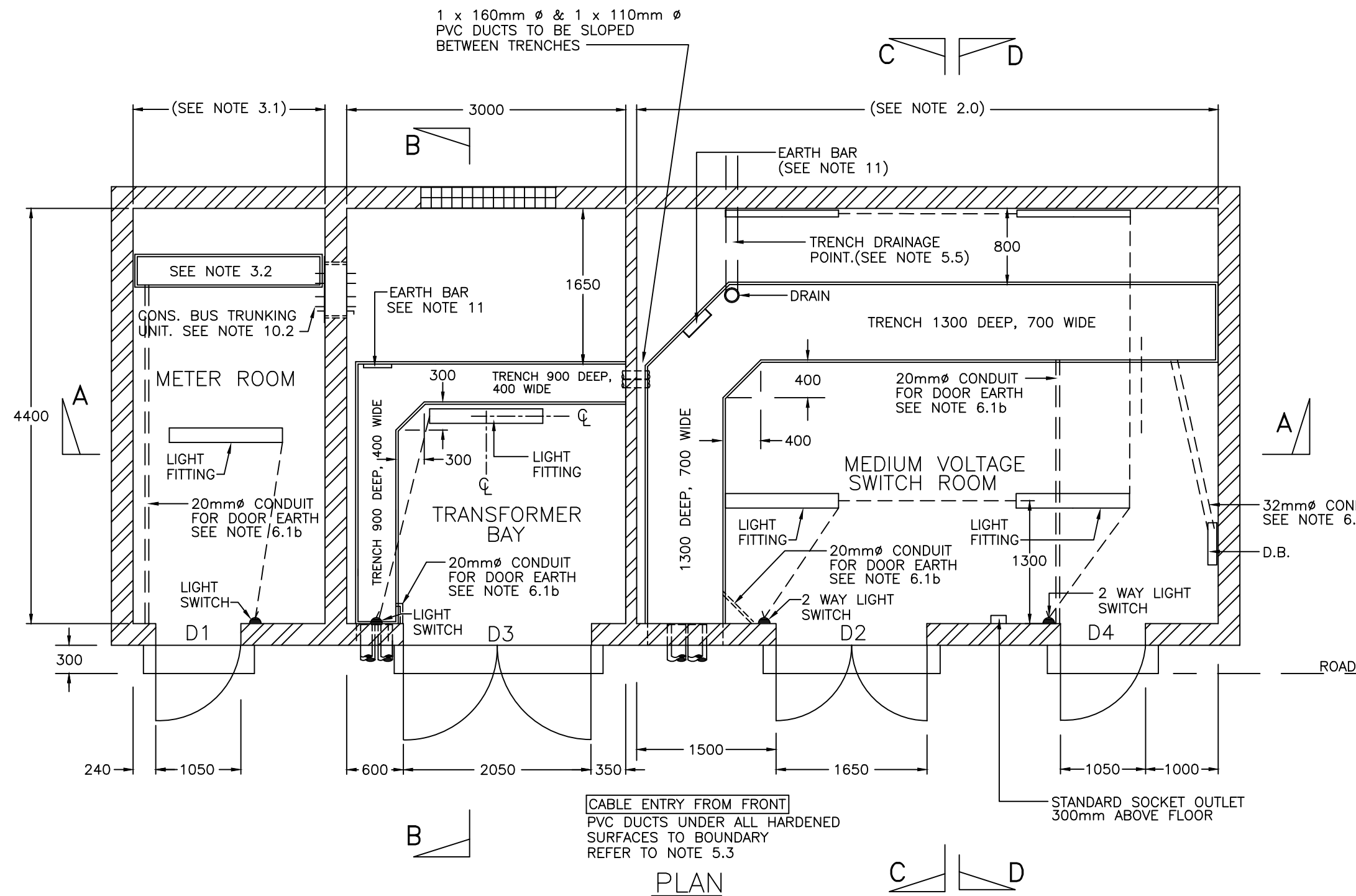
SECTIONAL ELEVATION A-A



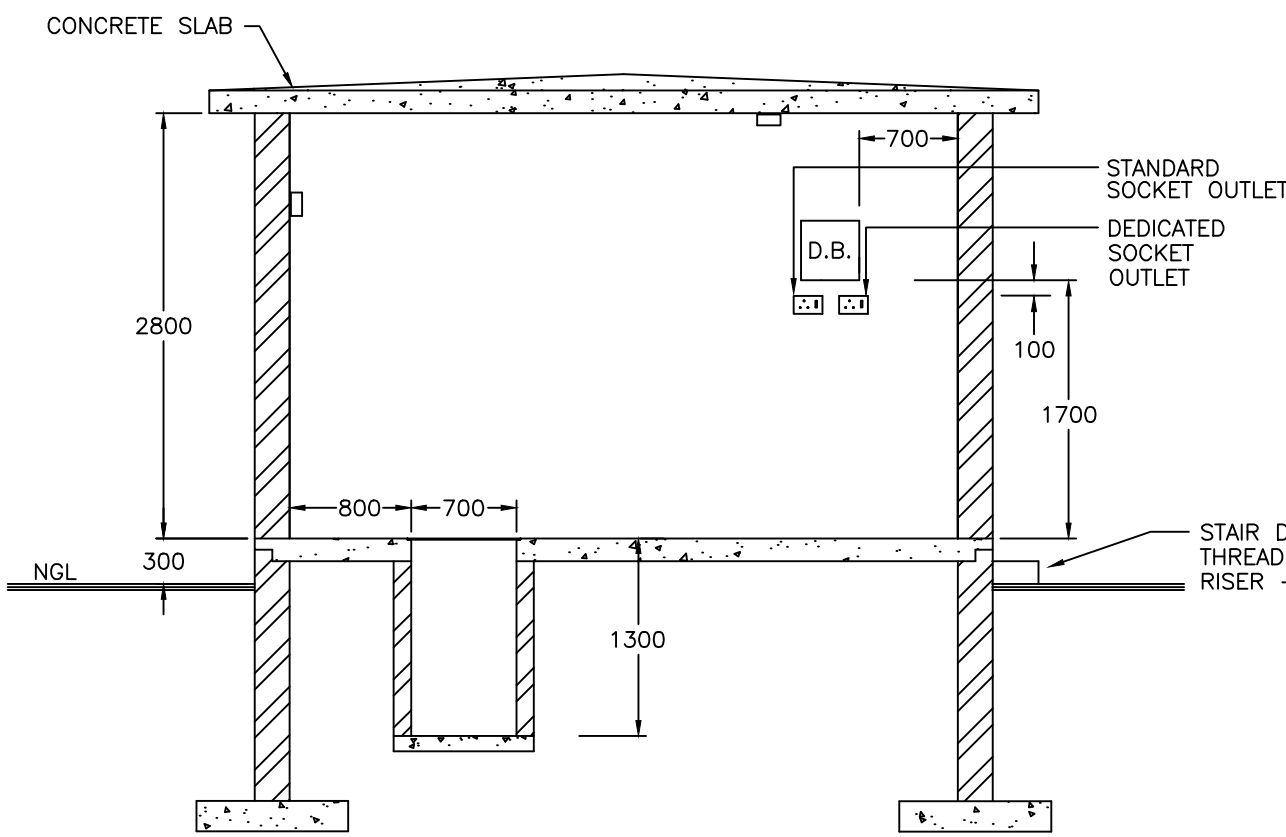
SECTIONAL ELEVATION B-B



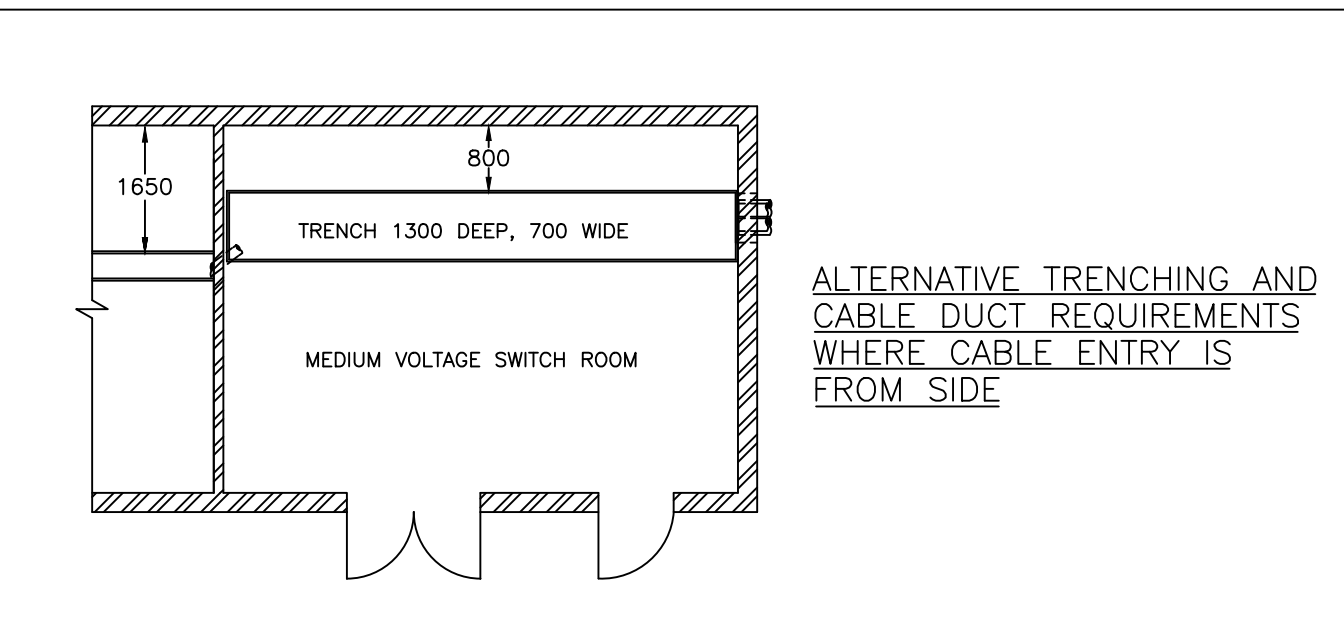
SECTIONAL ELEVATION C-C



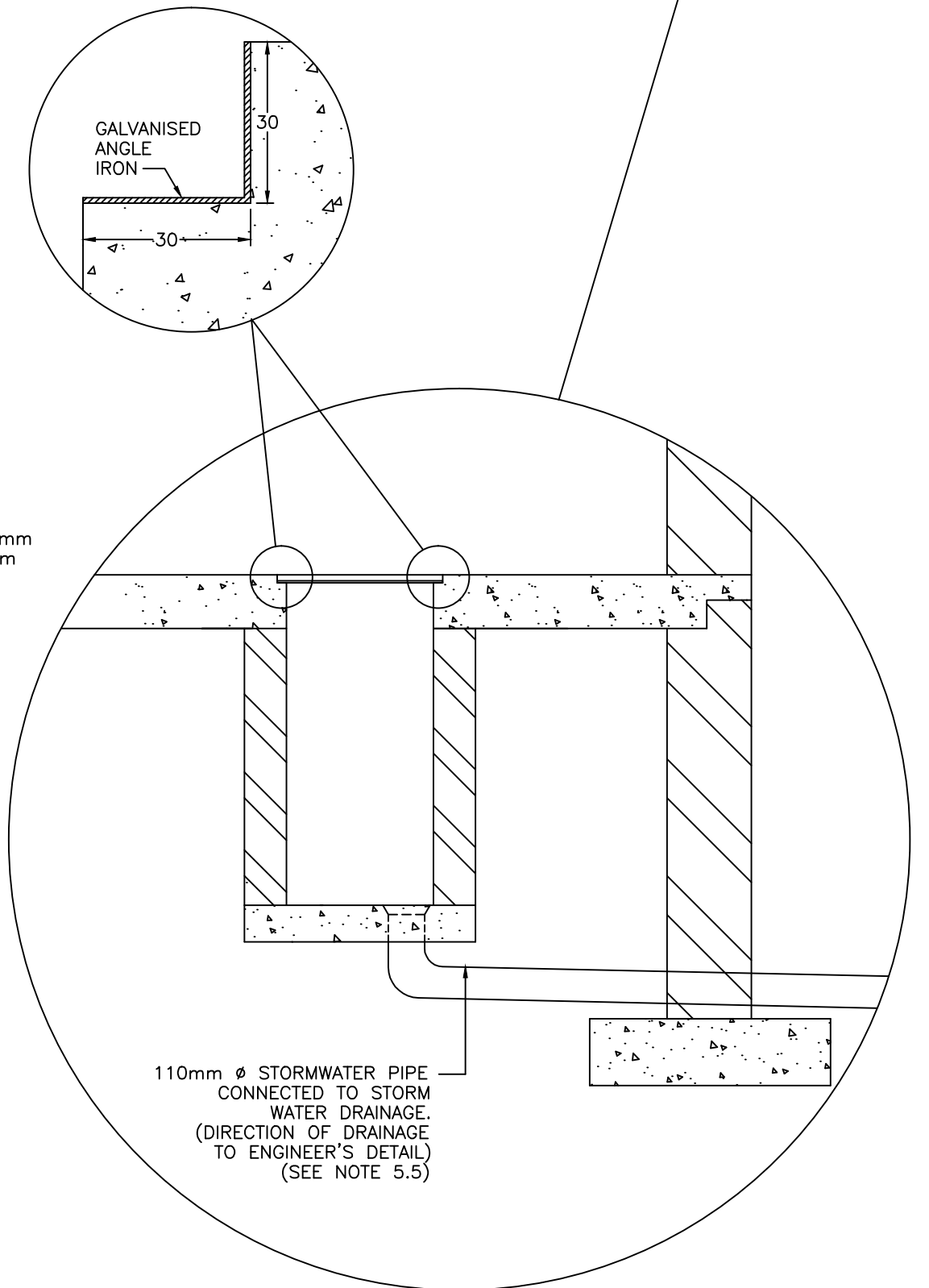
PLAN



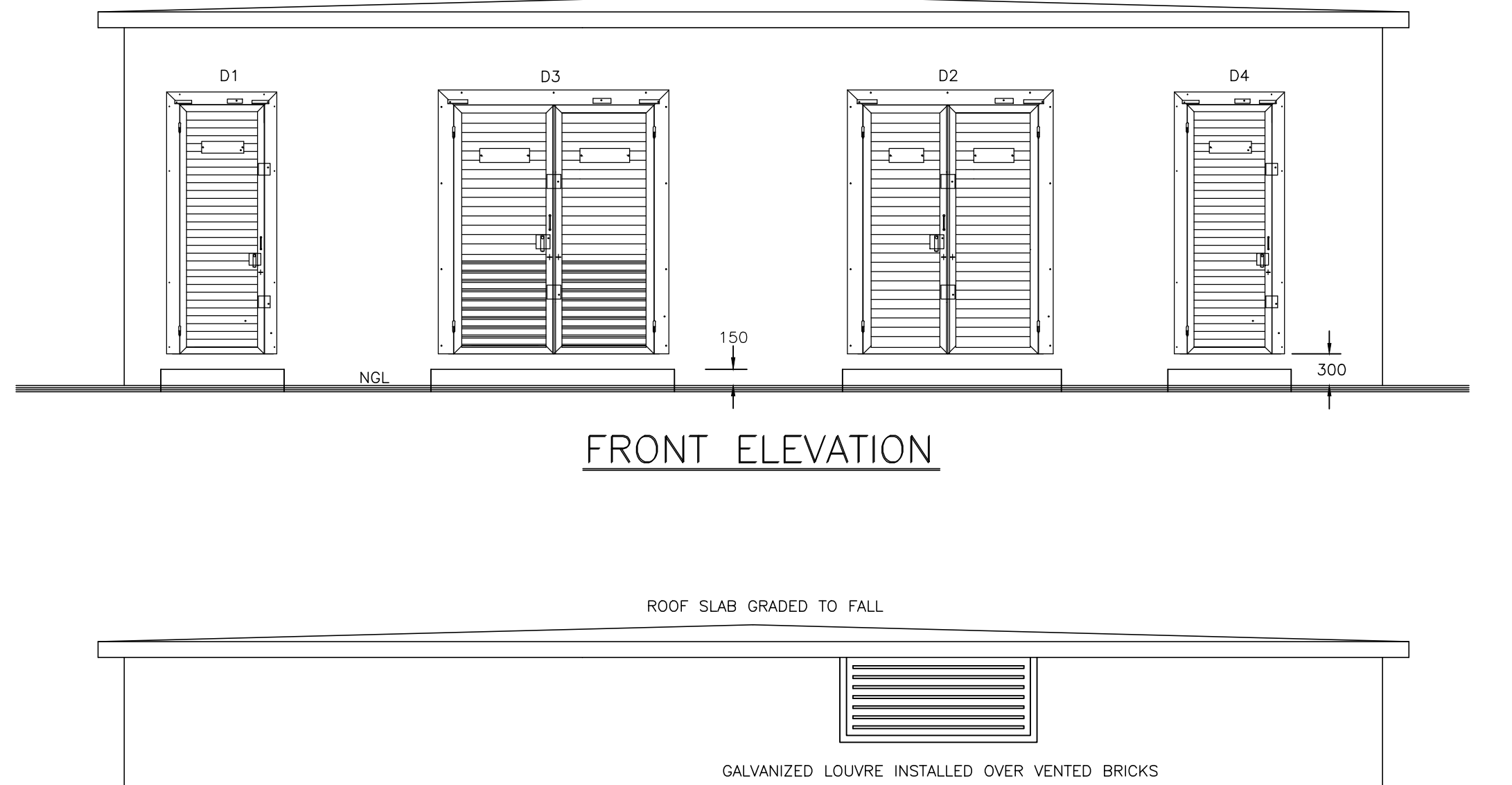
SECTIONAL ELEVATION D-D



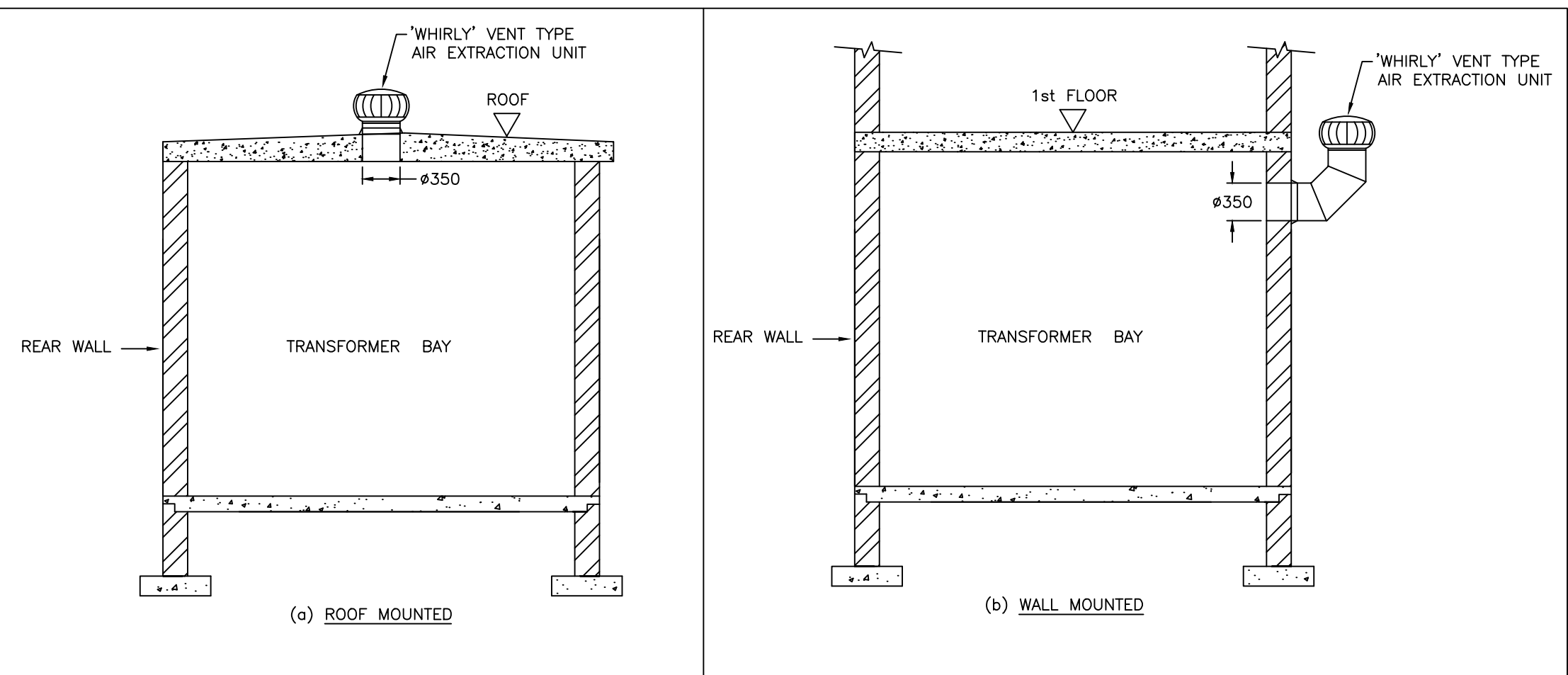
ALTERNATIVE TRENCHING AND CABLE DUCT REQUIREMENTS WHERE CABLE ENTRY IS FROM SIDE



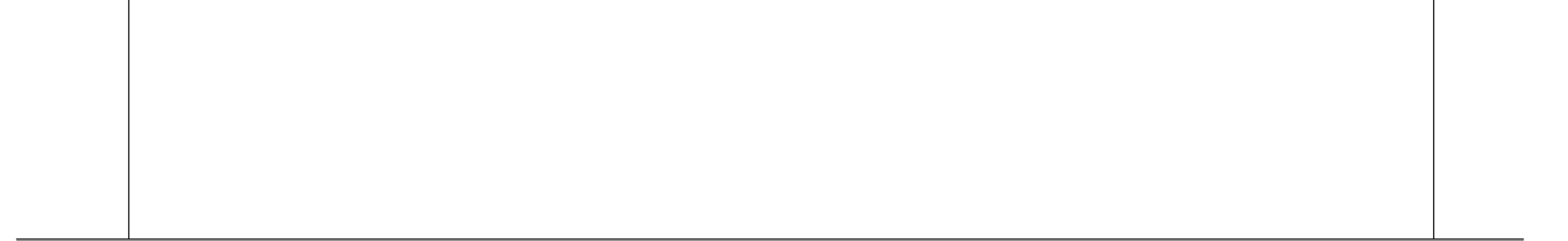
TRENCH RECESS AND DRAIN DETAIL
SCALE: N.T.S.



FRONT ELEVATION



ALTERNATIVE TRANSFORMER ROOM VENTILATION



REAR ELEVATION

- This Drawing is a typical layout plan and NOT for construction purposes.
A building plan shall be submitted to the Electricity Department: Construction Planning and Works for layout approval, prior to submission for eThekweni Town Planning approval.
The plan shall indicate the site plan, all elevations and stormwater management details.
- 1.0 ACCESS TO SUBSTATION
Permanent vehicle access to substation 3000mm wide x 5000mm high. shall be provided. These dimensions shall be the minimum requirement.
- 2.0 MEDIUM VOLTAGE SWITCH ROOM
Size: _____mm (Length) x 4400mm (Depth) x 2800mm (Height).
* Technician: Construction Planning to indicate length of Switch Room.
The length of the Switch Room shall not be less than 4000mm + (____mm (No. of panels) x 500mm) + 1000mm if Bus Section is required.
- 3.0 METER ROOM
3.1 Size: _____mm (Length) * x 4400mm (Depth) x 2800mm (Height).
* Length to be determined by Consumer's Consultant but shall not be less than 2000mm.
- 3.2 Trench to be determined by Consumer's Consultant.
- 3.3 Where the situation requires the meter room to be positioned on the right hand side of the building, the complete substation shall be mirrored.
- 4.0 WALLS, ROOF, SLAB AND FLOOR
4.1 The substation shall be built using mortar and clay bricks.
4.2 Roof and floor slab shall be as specified by a Structural Engineer.
NOTE: ROOF SLAB GRADED TO FALL.
4.3 Internal roof slab and walls shall be plastered and painted white.
4.4 Floor shall be screeded level with a 50mm thick 1 : 3 mix. and shall be power floated.
4.5 Floor to be level within +/- 1mm/m
4.6 Floor slab to carry a weight of 6000 kg's.
4.7 Where embankments slope towards the building, the walls and trench walls shall be waterproofed and FRENCH DRAINS shall be installed.
4.8 The floor of the building shall be 300mm above the ground level.
4.9 Entrance Stair details (Thread - 300mm and Riser - 150mm).
- 5.0 TRENCHING
5.1 All trench covers shall be supplied by eThekweni Electricity.
5.2 Recess around trench edges shall be 30mm deep and 30mm wide to accept trench covers. The recess shall be achieved using galvanized angle iron. (refer to "TRENCH RECESS AND DRAIN DETAIL" on drawing)
- 5.3 PVC cable ducts in accordance with Sans 61386-1 and Sans 61386-24 shall be used under all hardened surfaces to boundary. Manholes shall be located along cable route as specified in eThekweni Electricity's drawing drawing SS_MANHOLES.
- 5.4 Cable entry point shall be from the front/side.
(* Delete that which is not applicable)
- 5.5 All trenches shall slope towards a drain outlet pipe. The slope shall be at least 1:75 gradient. The drain outlet pipe shall be connected to the stormwater system in accordance with The National Building Regulations and Municipal Bylaws. The direction of drainage shall be in accordance with Stormwater Department Requirements.
- 5.6 Number of ducts to be installed at cable entry. 110mmø and 160mmø.
(to be determined by Technician : Construction Planning)
These ducts shall be capped to prevent any flow of ground water into trenches.
- 6.0 INSTALLATION WIRING
6.1 All conduits in the floor slab shall be embedded before slab is cast and shall have a maximum of 1 x 90° bend.
6.1a 1 x 32mmø conduit with draw wire shall be provided from the distribution board (DB) to the cable trench.
6.1b 1 x 20mmø conduit with draw wire shall be provided from each door to the cable trench.
6.2 DB shall be six-way. The main incoming supply shall be protected using a 32A double pole DIN type fuse holder with neutral link and 32A fuse in live link. One 16A fuse holder fused at 16A for plug circuit and one 10A fuse holder fused at 10A for lighting circuit.
6.3 One Standard 16A switched socket outlet as per SANS 164-1 and one dedicated (RED) 16A switched socket outlet as per SANS 164-4 shall be positioned as shown in "SECTIONAL ELEVATION D-D" of the drawing.
A further standard 16A switched socket outlet as per SANS 164-1 is to be positioned between DOOR D2 and D4 at 300mm above floor level. The standard socket outlets are to be labelled: "USE WITH PORTABLE EARTH LEAKAGE".
6.4 1200mm fluorescent double tube fittings (40W max. rating) shall be positioned as shown. The fittings shall have a minimum ingress protection rating of IP 55.
number of 1200mm double fluorescent fittings _____
(*Technician - Construction Planning to indicate)
(Room less than 8000mm - install 4, Room 8000mm or greater - install 6)
Two-way switching between transformer bay and switch room shall be provided.
6.5 The LV supply for the DB shall be provided by eThekweni Electricity.
6.6 The D.B., all piping, socket outlets, and light switches shall be recessed within the brick and plaster.
6.7 The LV supply and installation in the Consumer Meter Room shall be provided by the consumer. This installation shall be electrically separate from the Switch Room and Transformer Room.
- 7.0 DOORS
7.1 D1/D4 - Single door, shall have a clear opening of 1050mm wide x 2400mm high, and shall be manufactured as per drawing MRD REV2.
7.2 D2 - Centre opening double door in two equal halves, shall have a clear opening of 1650mm wide x 2400mm high, and shall be manufactured as per drawing DSSD REV2.
7.3 D3 - Centre opening bottom vented double door in two equal halves, shall have a clear opening of 2050mm wide x 2400mm high, and shall be manufactured as per drawing SSSTD REV2.
7.4 All doors shall open outwards. Open door retainers shall be fitted to hold doors in the open position.
7.5 Galvanized steel pipes shall be embedded into the concrete floor to accept the floor locking bolts of the barrel bolt and three point locking mechanism of the doors when in the closed position.
7.6 All doors shall be adequately bonded and earthed via a flexible braided earth conductor. The cross sectional area of the earth conductor shall not be less than 2.5mm².
This earth conductor shall be connected to the main substation earth bar which is housed within the cable trench via a conduit embedded in floor slab.
7.7 Padlocks (SS) shall be fitted to medium voltage switch room door D2/D4 and transformer room door D3 and padlock (MR) to meter room door D1.
These Padlocks are obtainable from eThekweni Electricity's Customer Services Division.
- 8.0 VENTILATION
8.1 The rear wall of the transformer bay shall be vented.
8.2 The ventilation area shall be built using clay bricks with holes.
Bricks to be laid "SIDE FACING" to permit ventilation.
8.3 All vents on inner walls are to be covered with hot-dip galvanized wire mesh or similar (not gauze), with 10mm x 10mm holes.
8.4 A hot dipped galvanized louver shall be fitted on the outside wall of the vent to prevent water ingress.
8.5 In transformer bay, if cross ventilation is not possible through D3 door and rear ventilation, a mechanical (aren) convection driven) shall be installed in transformer bay as per the ALTERNATIVE TRANSFORMER ROOM VENTILATION detail.
8.6 The mechanical fan and any associated equipment shall be manufactured from corrosion resistant material suitable for heavy marine and industrial pollution.
- 9.0 CABLE BASKET
Galvanized cable basket in transformer bay to be installed by contractor after transformer has been positioned. The cable basket shall be a 600mm wide, heavy duty basket. The position, length and route shall be agreed upon between the Consumers contractor and the local Depot Superintendent or Clerk of Works.
- 10.0 CONSUMER BUS TRUNKING UNIT
10.1 One unit shall be built in as shown with the flange sides in the consumer meter room.
10.2 Busbar trunking unit may be positioned between a distance of 200mm and 1200mm from adjacent wall to accommodate Consumer's LV Panel.
10.3 Busbar trunking shall be positioned at a minimum height of 1500mm.
10.4 The current rating shall be as indicated in note 1 of drawing: "CONSUMER BUS TRUNKING UNIT"
11.0 FARTHING
11.1 A 400mm (L) x 50mm (H) x 6.35mm (W) copper busbar shall be installed on insulators in the MV Switch Room and Transformer bay as shown on plan.
These Earth Bars shall be linked by eThekweni Electricity.
11.2 The busbars shall be installed in each trench at 300mm below floor level and 50mm from the trench wall using standoff insulators.
11.3 Each busbar shall have 6 x 12mmø holes with a spacing of 50mm between centres.
11.4 The earth conductors from each door shall be connected to these busbars.
11.5 Earth conductors from the meter room door to be connected to the Consumer's LV Board.
- 12.0 DEVIATIONS
12.1 Approval for any deviations shall be obtained from the Senior Manager: Construction Planning and Works.

ISSUED TO:			
ISSUED BY:	(PLANNING TECHNICIAN)	DATE:	
GENERAL ITEM DESCRIPTION:			
STANDARD SUBSTATION FOR 1 x 800 kVA / 1 000 kVA / 1 600 kVA TRANSFORMER, METAL CLAD SWITCHGEAR & METER ROOM			
DATE:	2017/06/12	APPROVED BY : MANAGER, TECHNOLOGY SERVICES	DRAWING NUMBER DSS1T
DRAWN BY :	K. GOVENDER	APPROVED BY : SENIOR MANAGER, PLANNING	REV: 1

REV No.	REVISIONS	DATE	REV. BY	APPROVED
1	TRENCH DEPTH AND ARRANGEMENT CHANGED. SUBSTATION RAISED.	2017-06-12	K.G.	

