



**RENOVATION, MODERNISATION & UPGRADATION OF UMIUM-UMTRU STAGE- III HYDRO  
ELECTRIC PROJECT**

**BIDDING DOCUMENTS**  
**FOR**  
**RENOVATION, MODERNIZATION AND UPGRADATION OF**  
**UMIAM-UMTRU STAGE III HYDRO ELECTRIC POWER PROJECT**  
**PACKAGE II**  
**[Civil & Hydro Mechanical Works]**  
**Volume – IV (Drawings)**



**EMPLOYER: MEGHALAYA POWER GENERATION CORPORATION LIMITED**

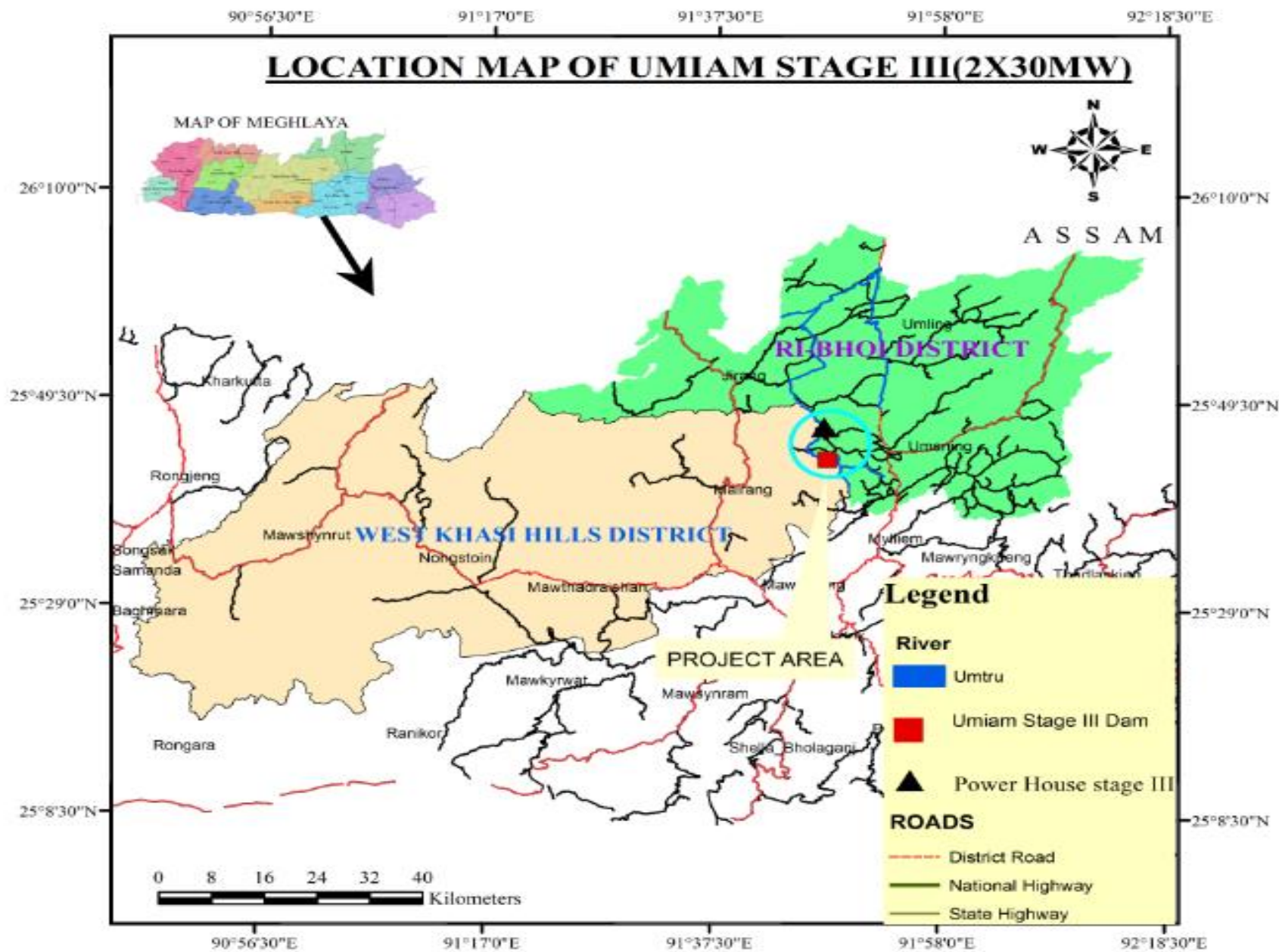
**COUNTRY: INDIA**

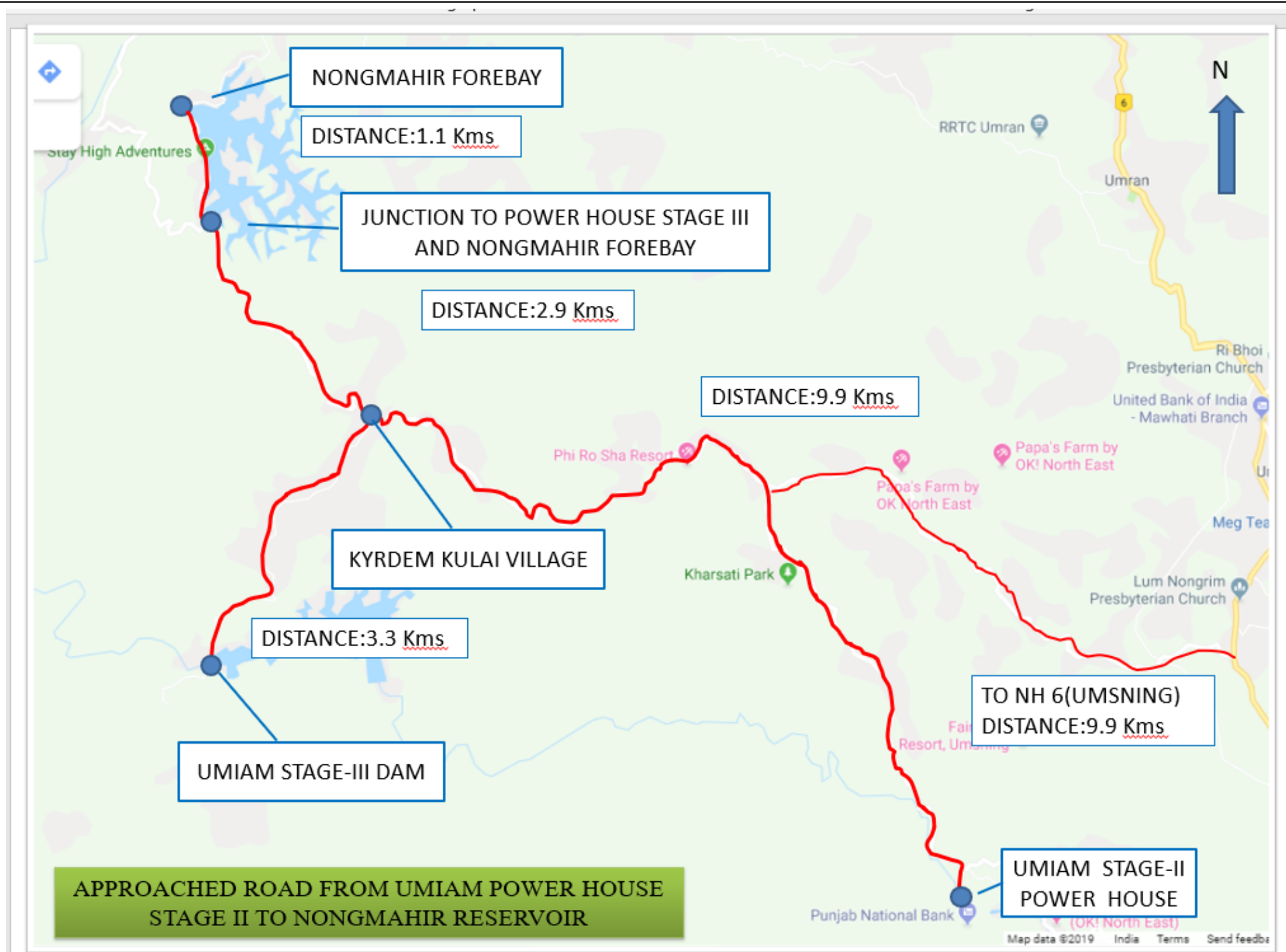
**PROJECT: UMIAM - UMTRU STAGE III HEPP**

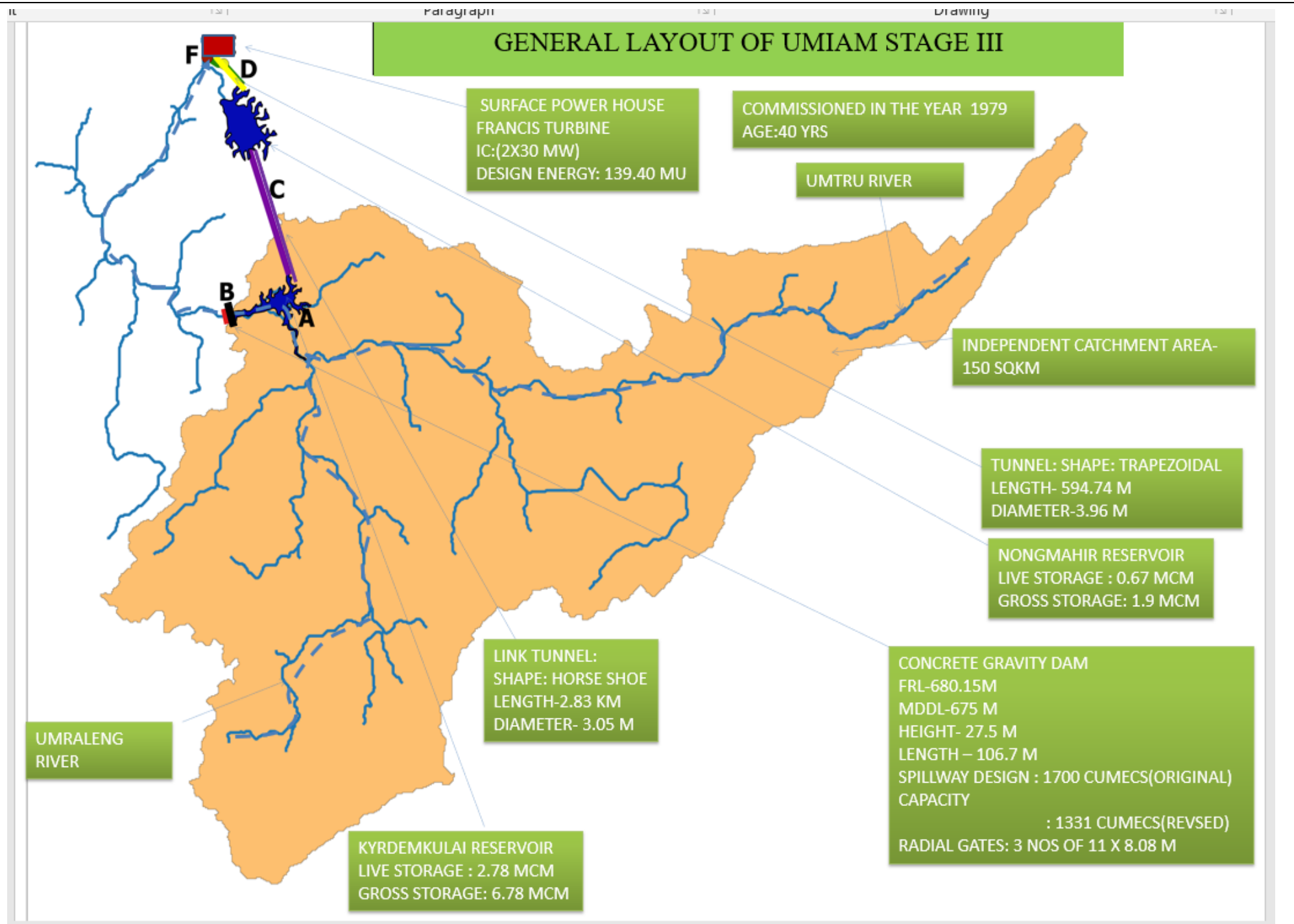
**LOAN NO. : ID-P 271**

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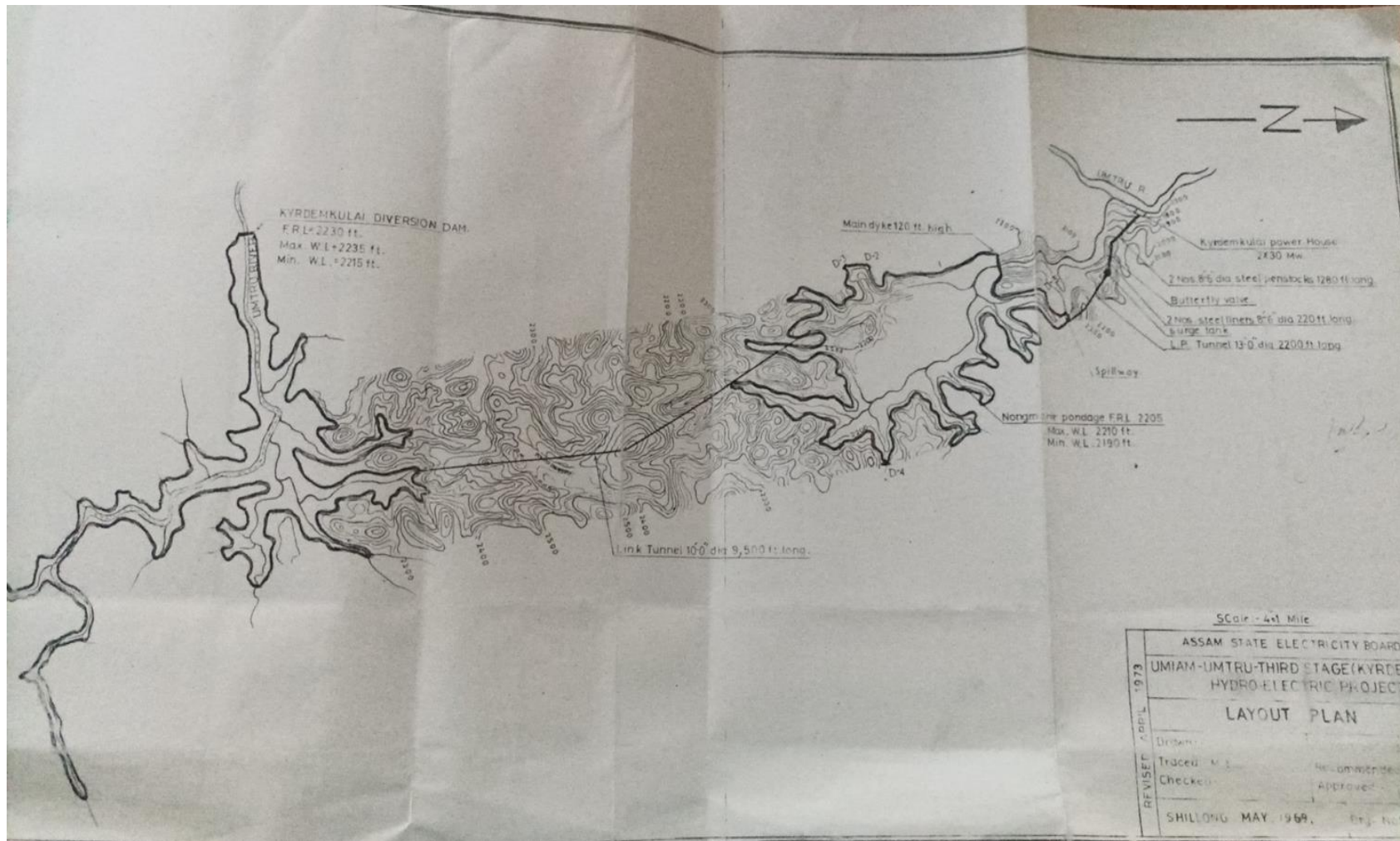
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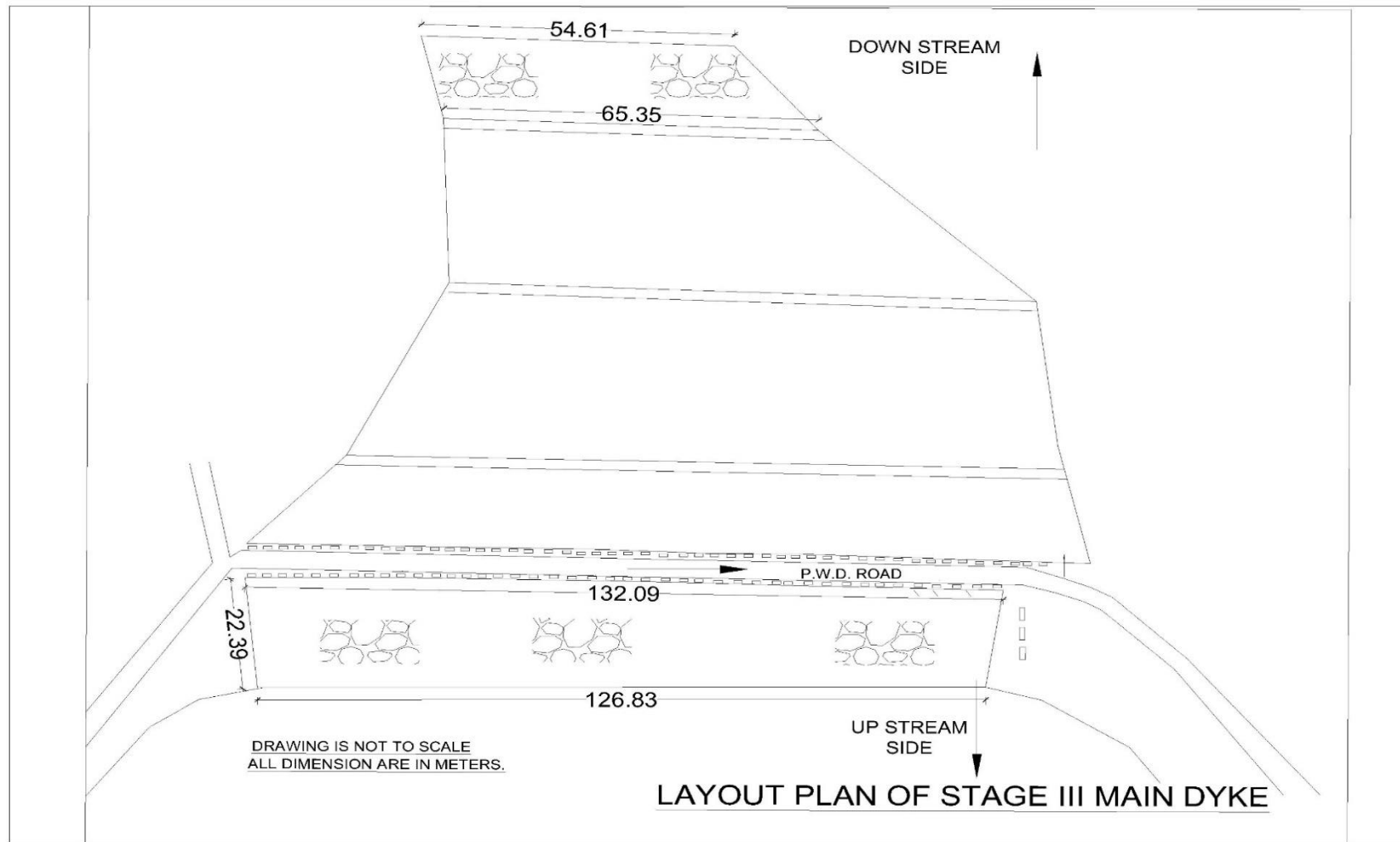






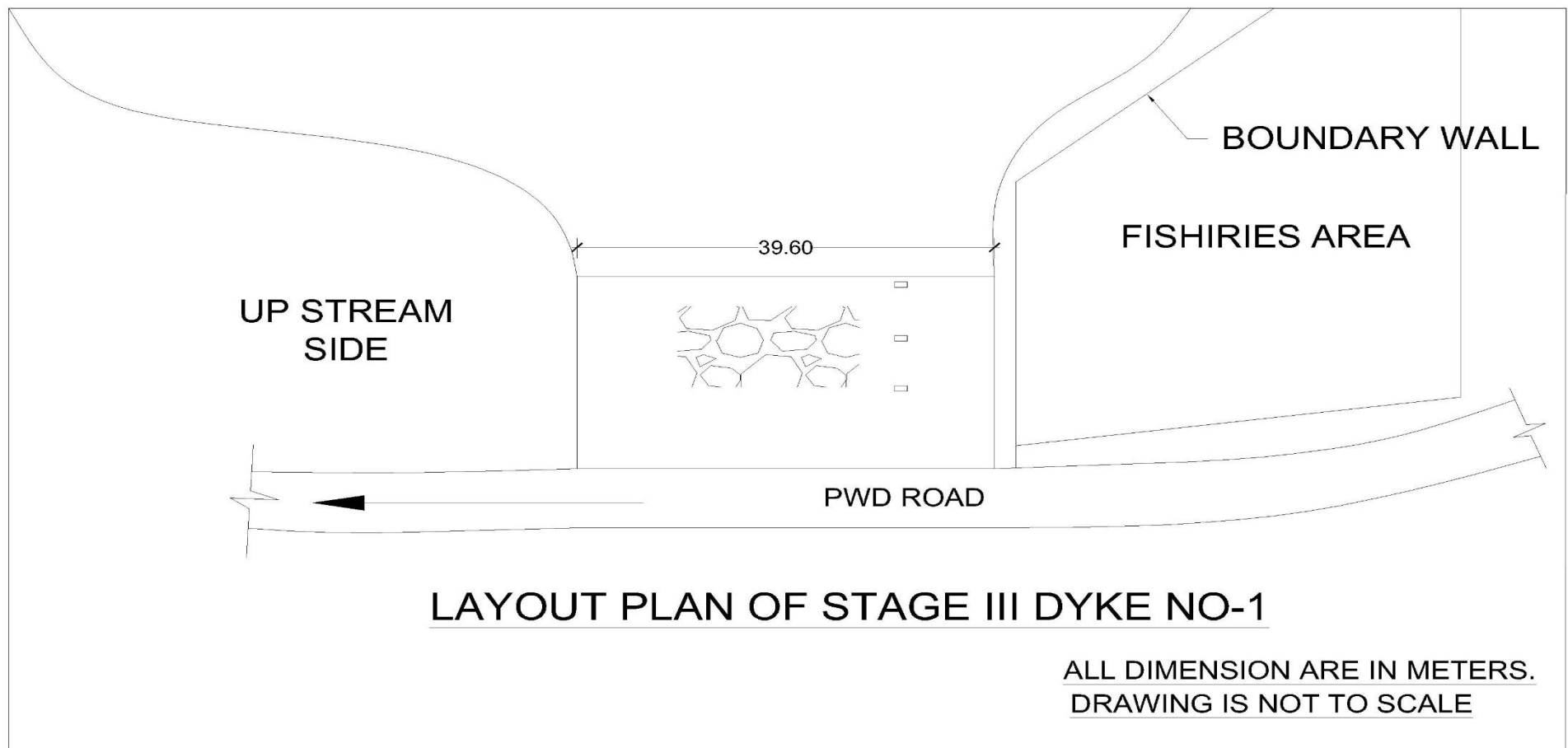


LAYOUT PLAN



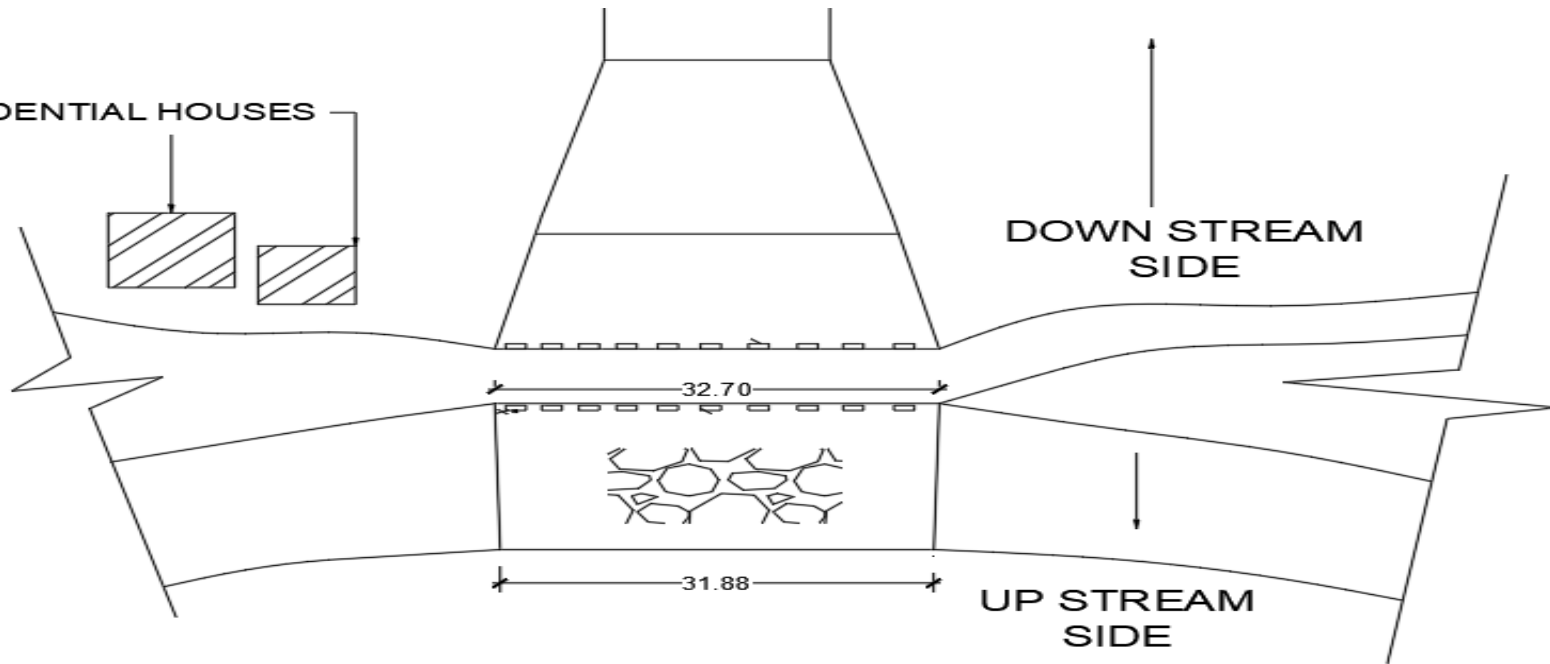
RMU /UMIAM- UMTRU STAGE-III /DRWG NO. -1





RMU /UMIAM- UMTRU STAGE-III /DRWG NO. -1 A

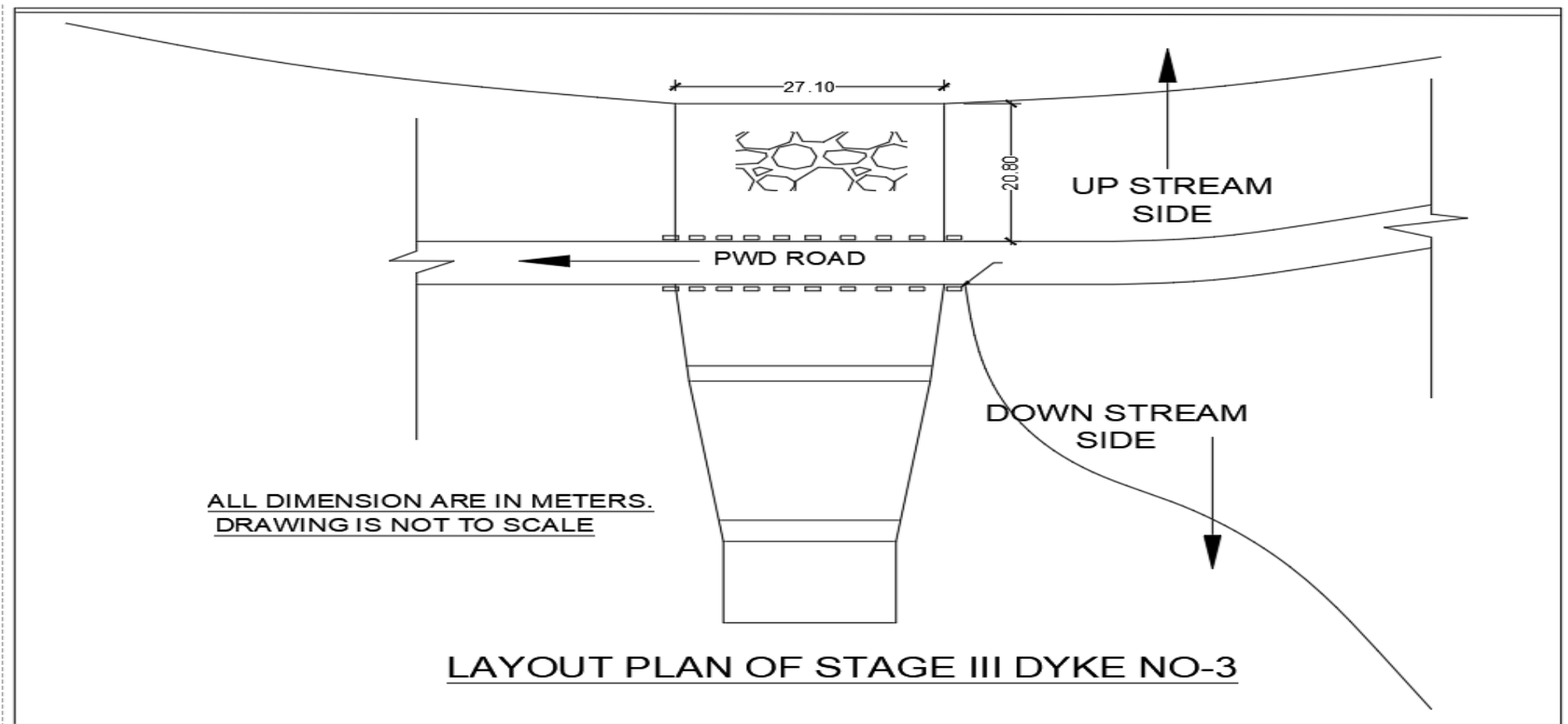
RESIDENTIAL HOUSES



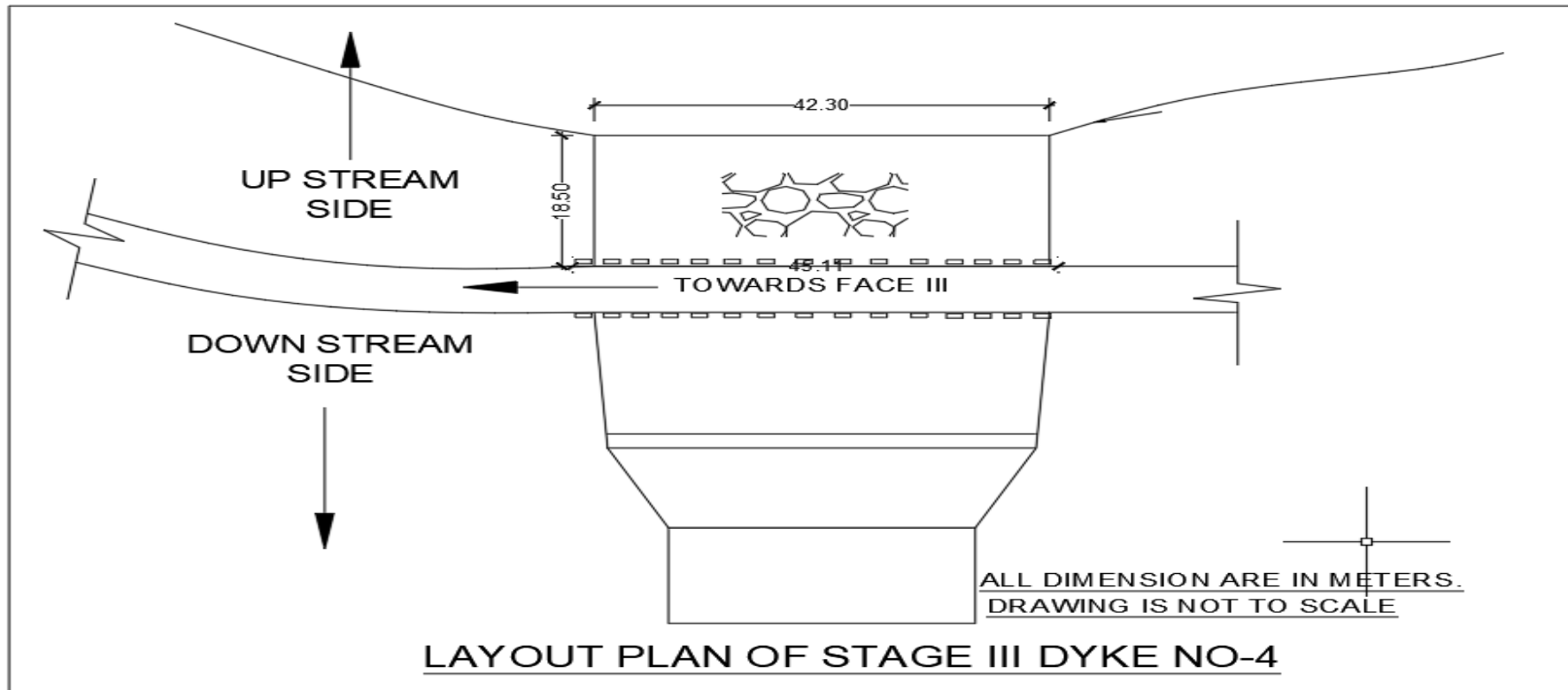
LAYOUT PLAN OF STAGE III DYKE NO-2

ALL DIMENSION ARE IN METERS.  
DRAWING IS NOT TO SCALE

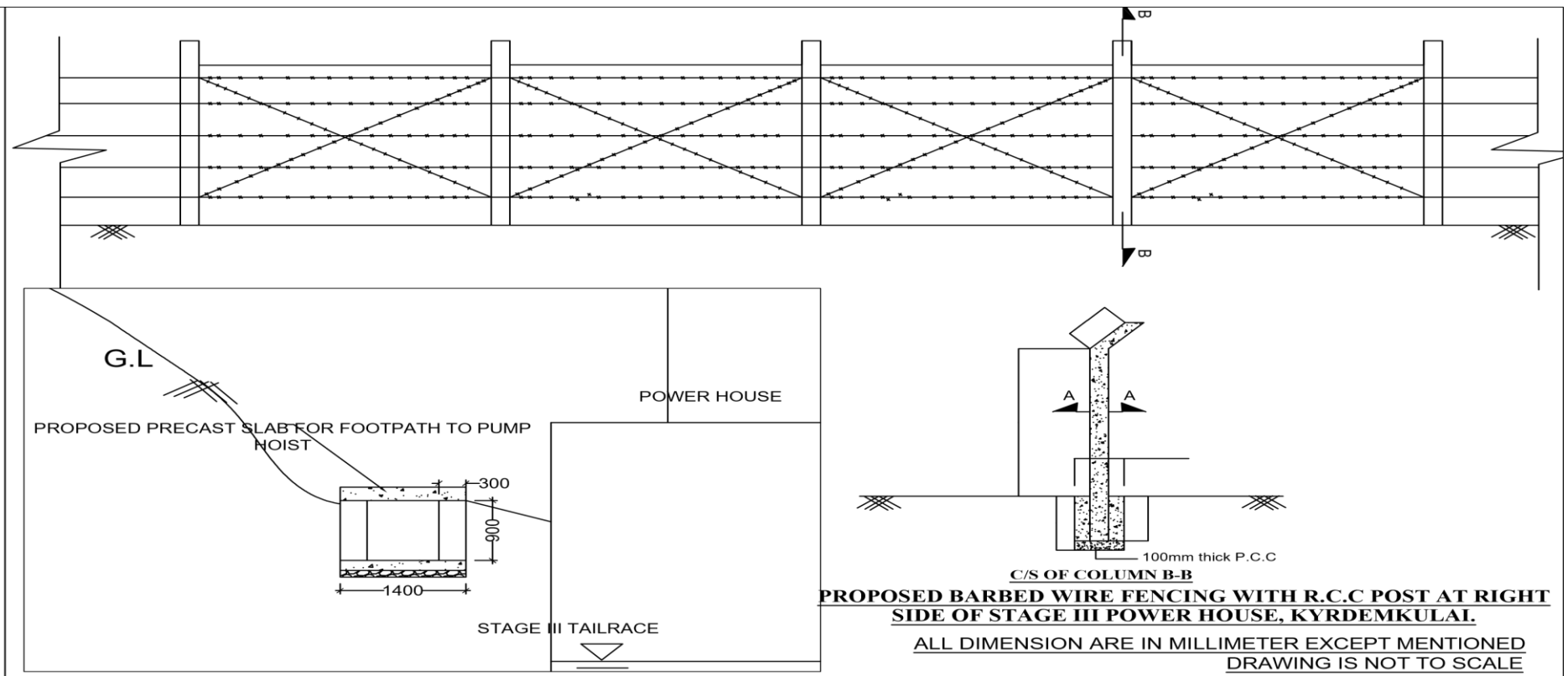
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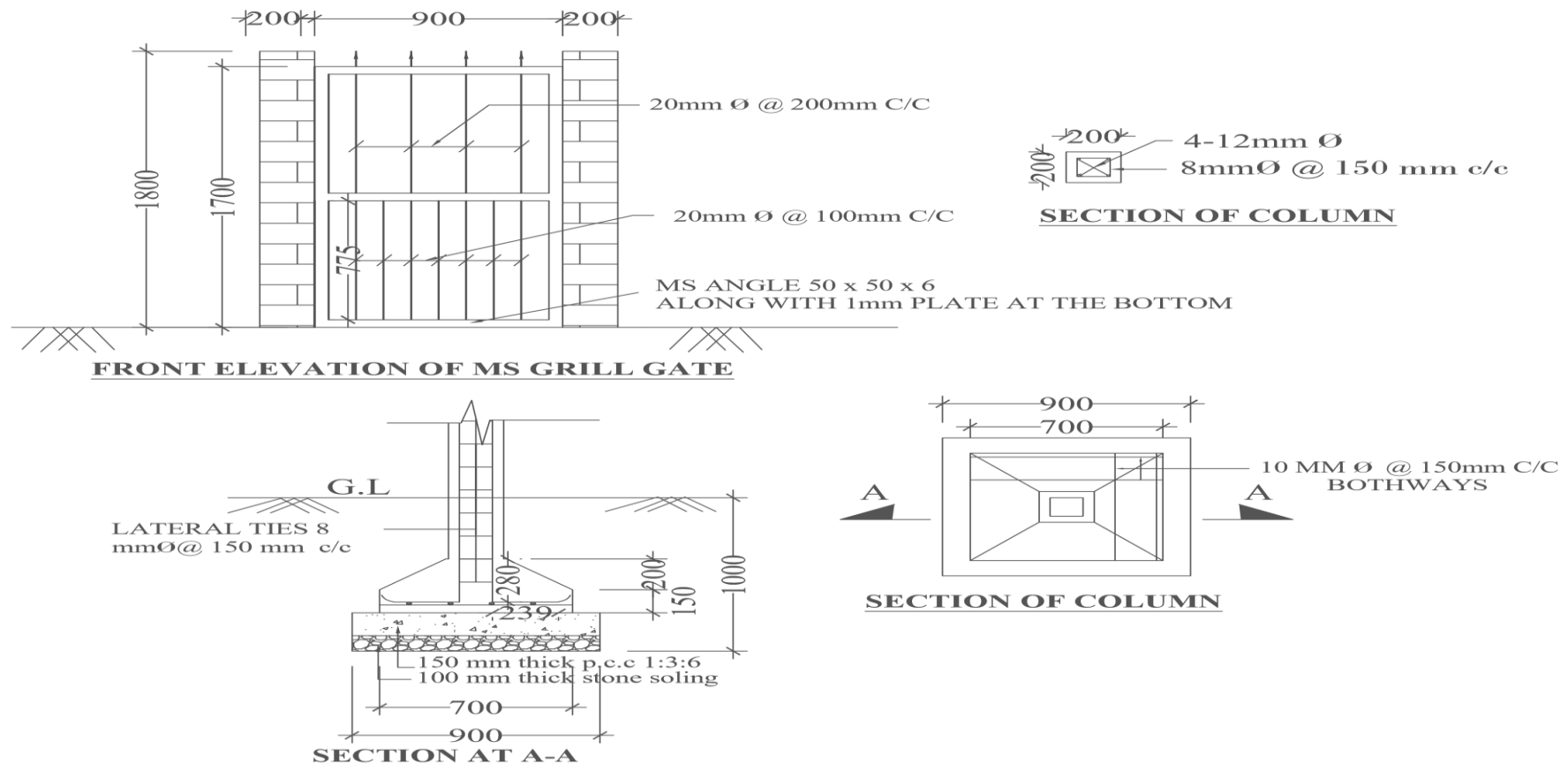
RMU /UMIAM- UMTRU STAGE-III /DRWG NO. -1 C



RMU /UMIAM- UMTRU STAGE-III /DRWG NO. -1 D



RMU /UMIAM- UMTRU STAGE-III /DRWG NO. - 2

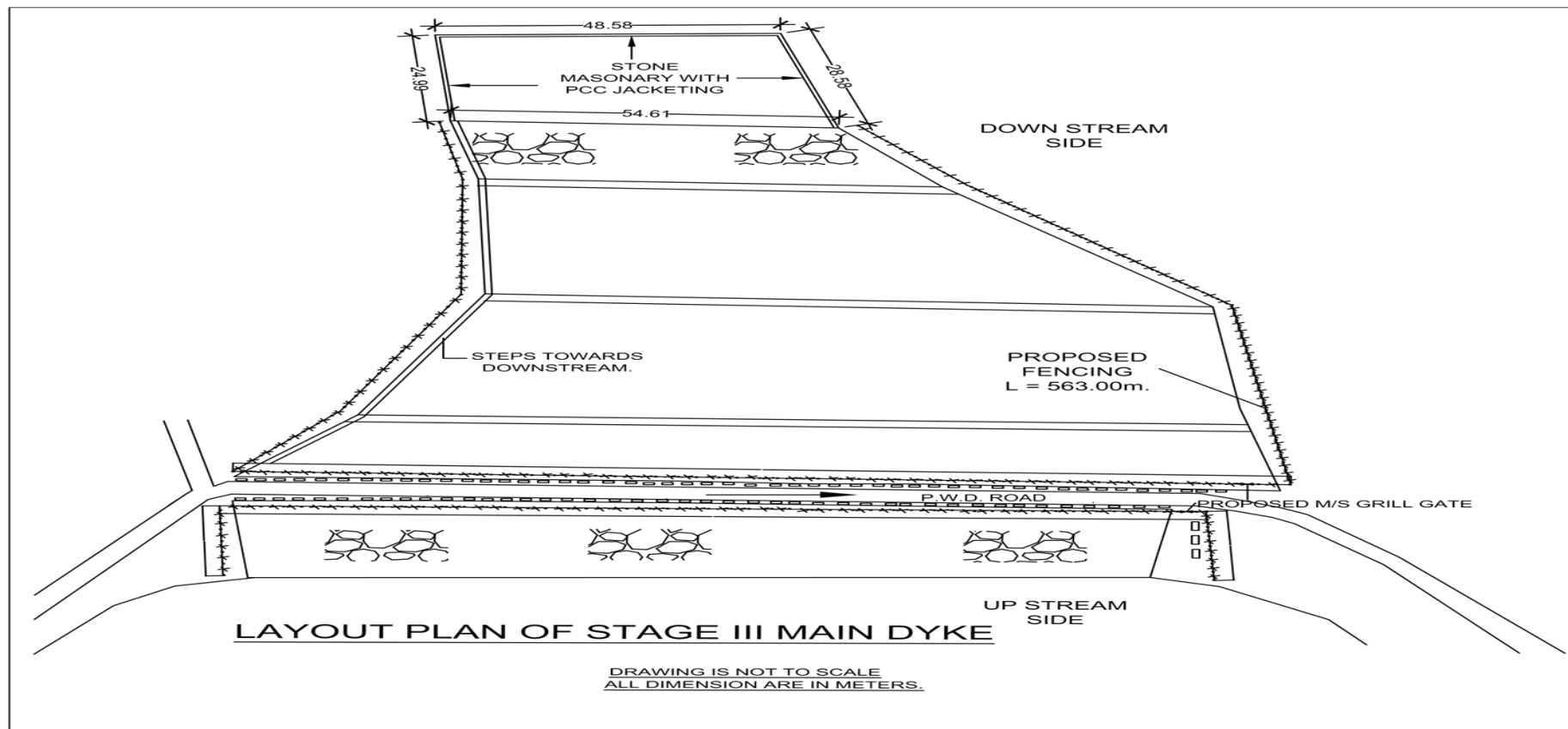


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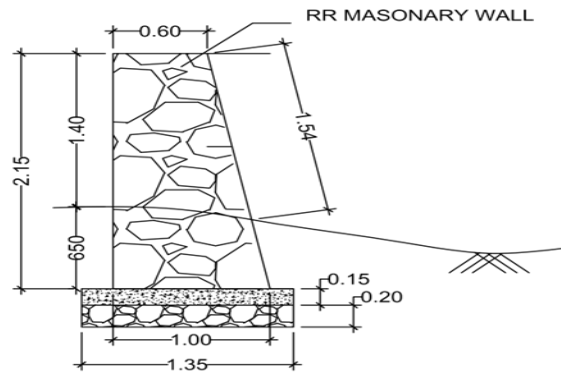
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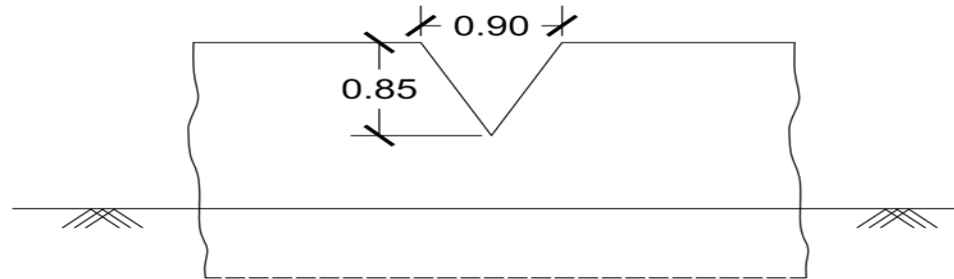




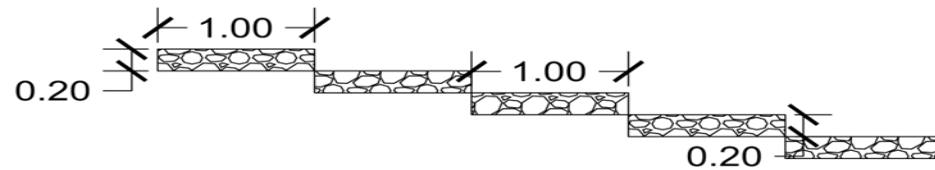
RMU /UMIAM- UMTRU STAGE-III /DRWG NO. - 3



TYPICAL SECTION OF  
MASONRY WALL



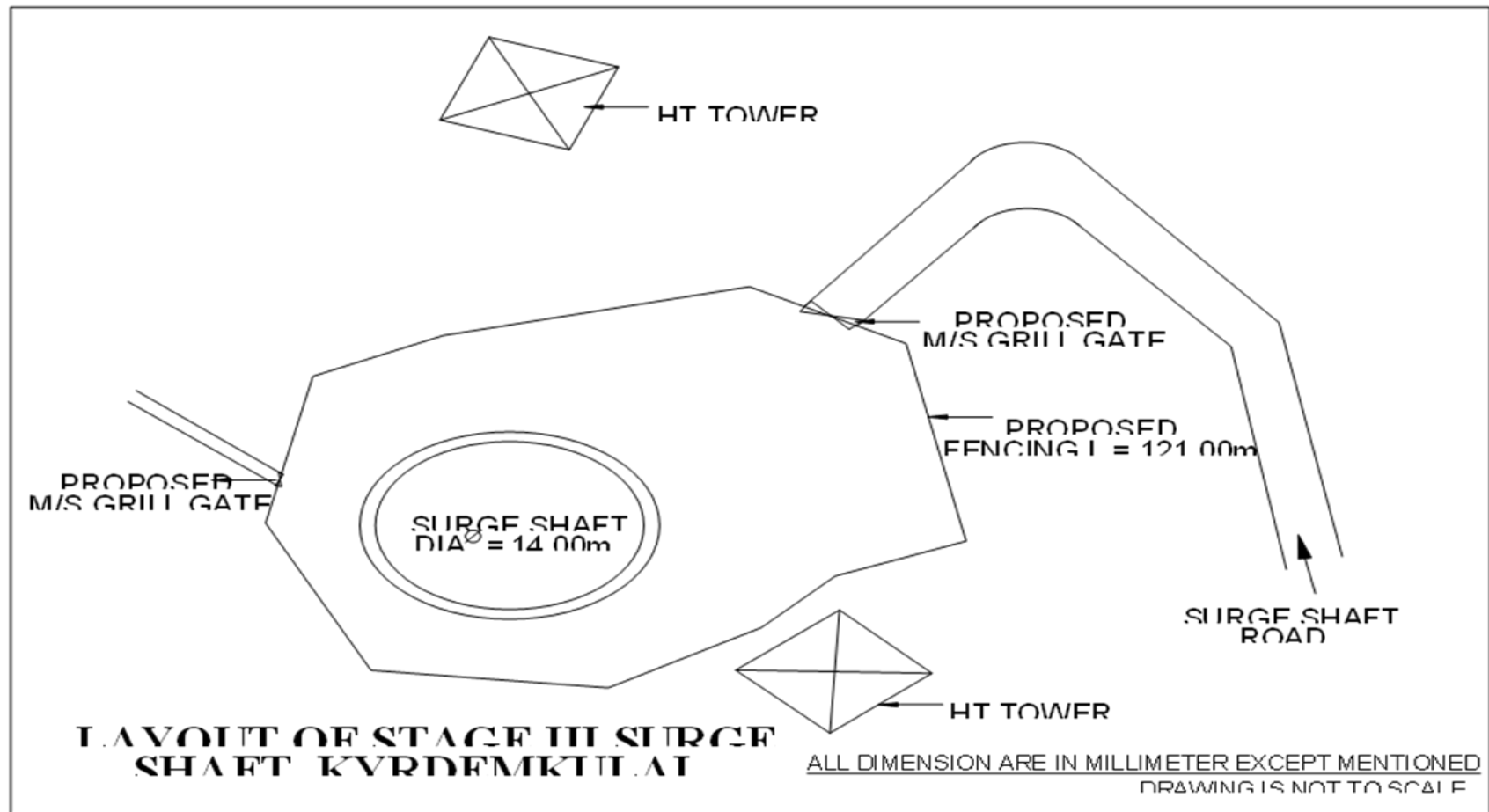
ELEVATION OF NOTCH



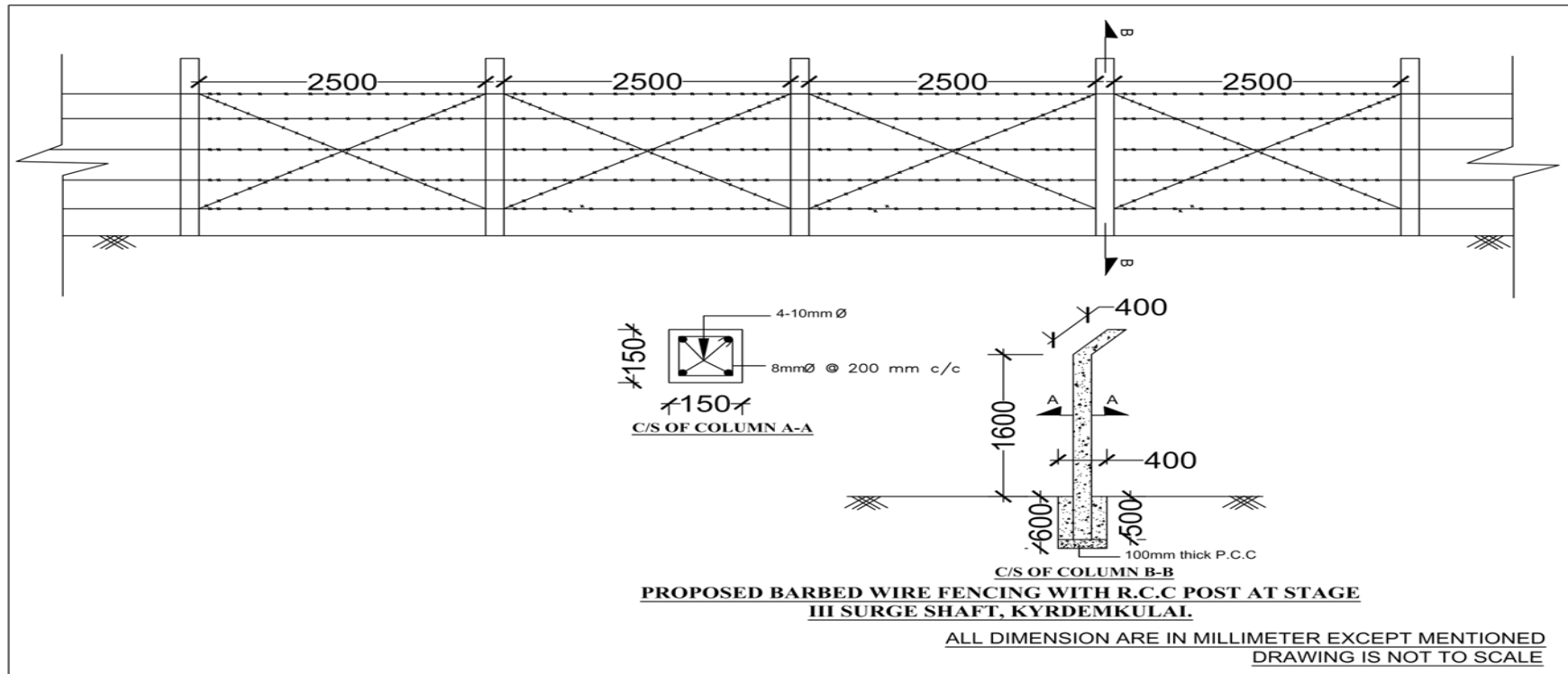
TYPICAL SECTION OF STEPS

DIMENSIONS ARE IN METRE OTHERWISE  
MENTIONED  
DRAWING IS NOT TO SCALE

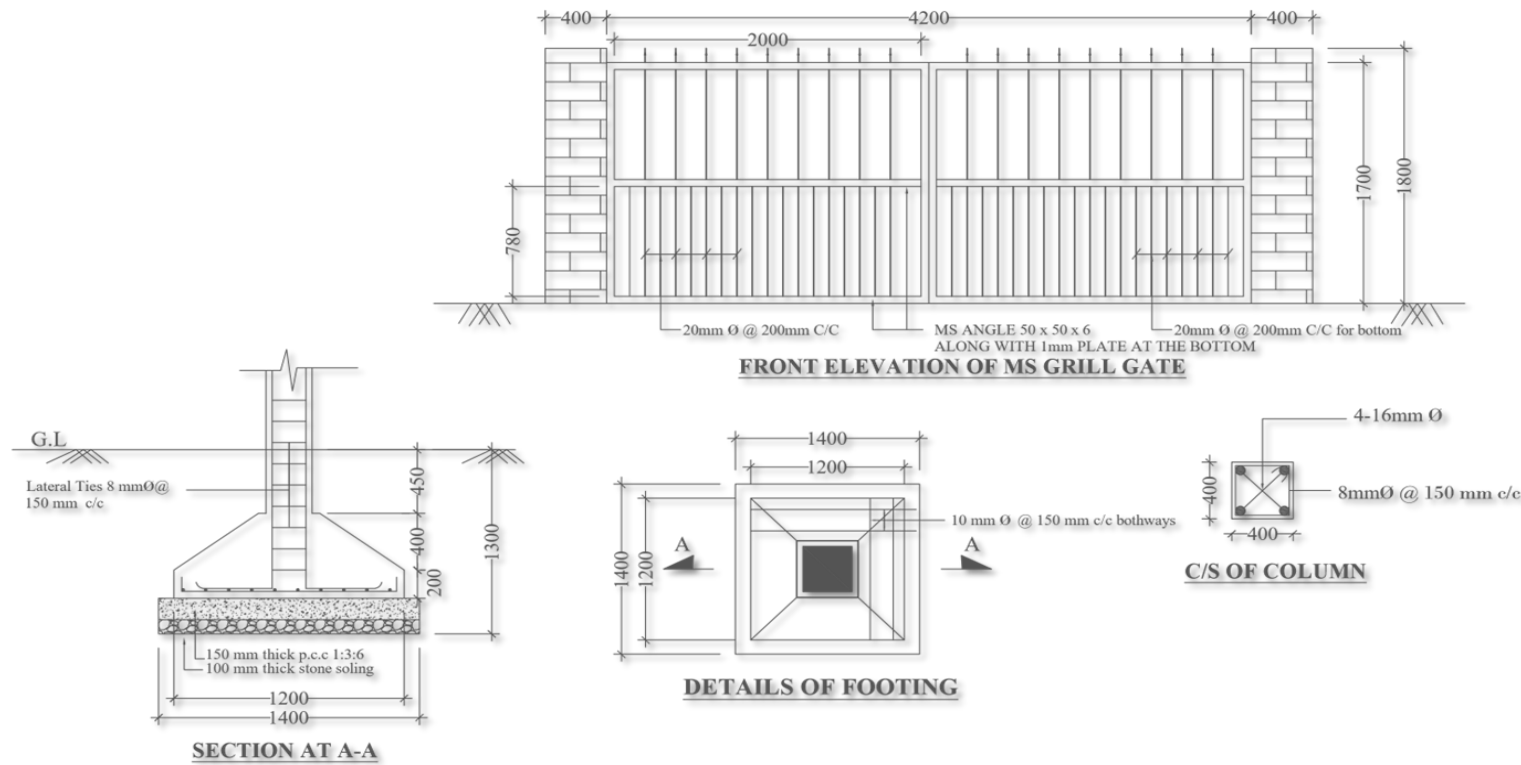
RMU /UMIAM- UMTRU STAGE-III /DRWG NO. - 3 A



RMU /UMIAM- UMTRU STAGE-III /DRWG NO. - 4



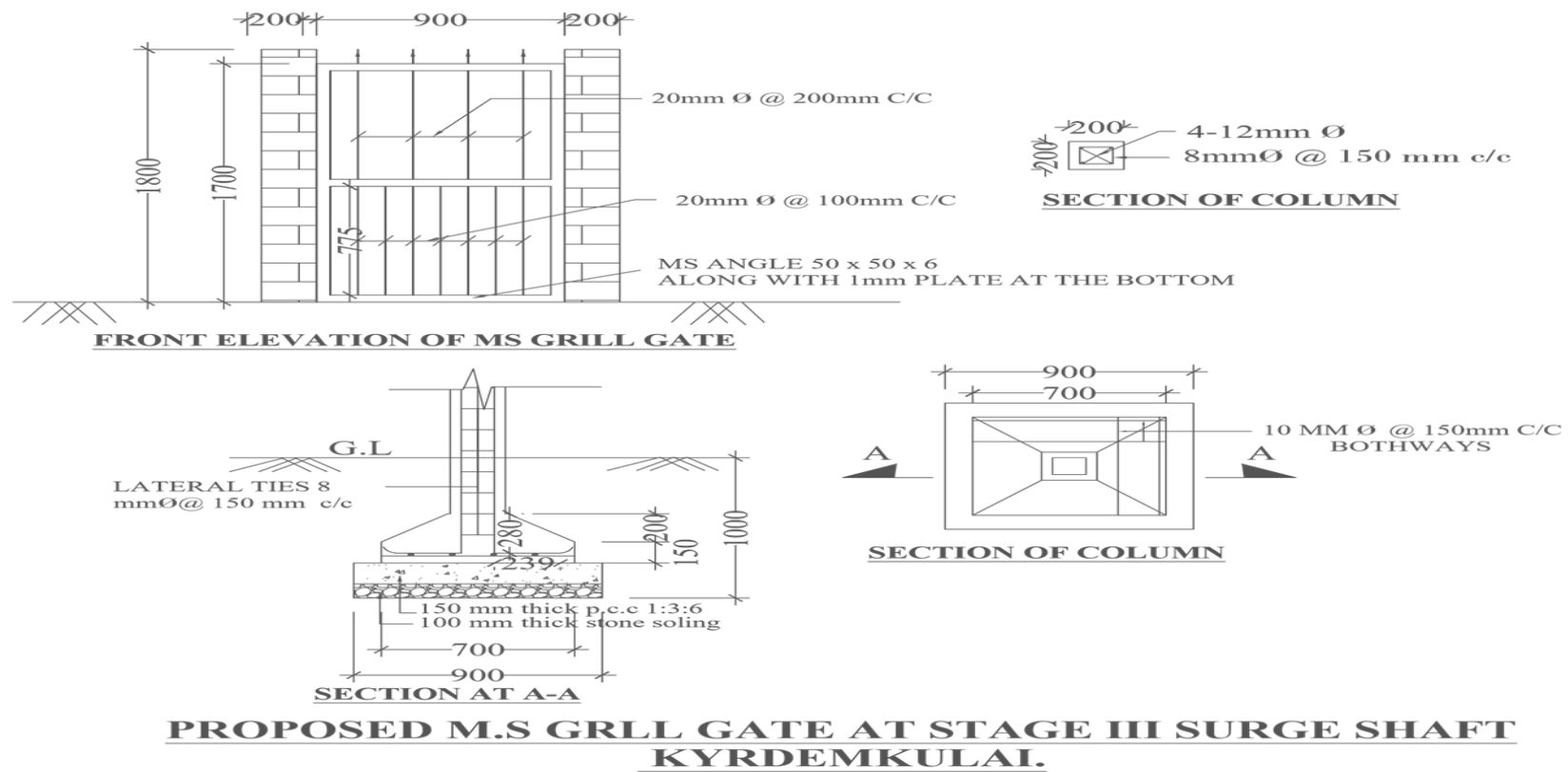
RMU /UMIAM- UMTRU STAGE-III /DRWG NO. – 4 A



**PROPOSED FRONT M.S GRLL GATE AT STAGE III SURGE SHAFT  
KYRDEM KULAI.**

ALL DIMENSIONS ARE IN MM EXCEPT MENTIONED  
DRAWING IS NOT TO BE SCALED

RMU /UMIAM- UMTRU STAGE-III /DRWG NO. – 4 B

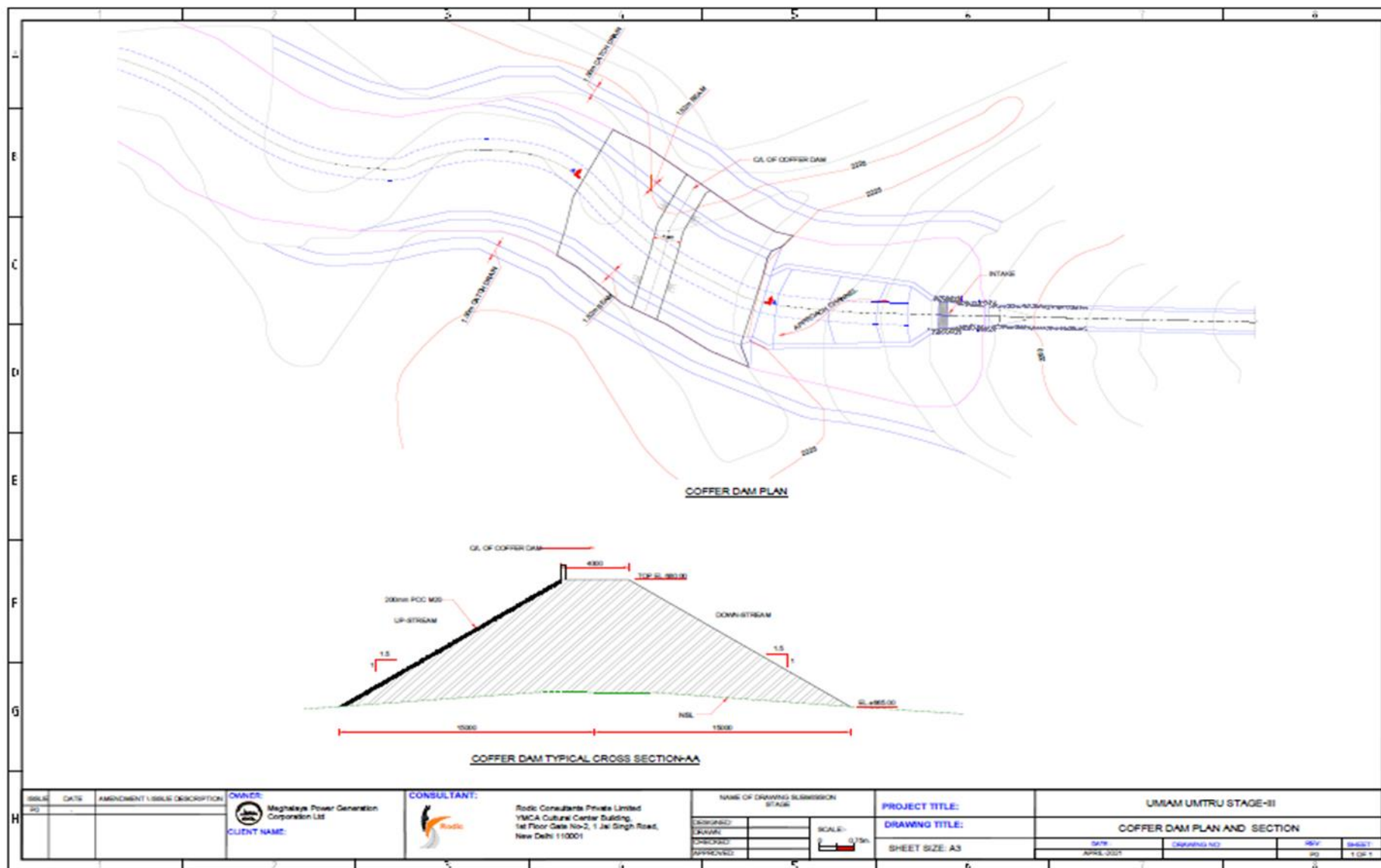


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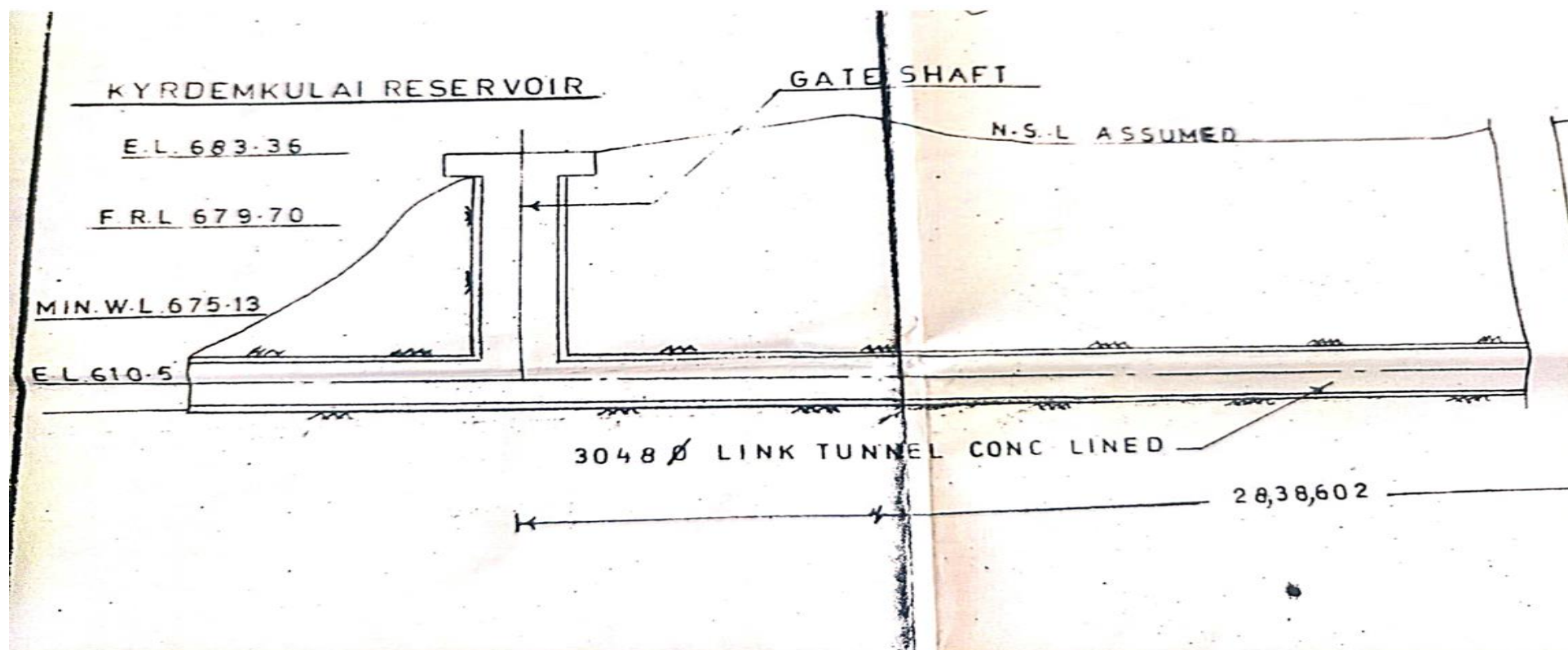
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RMU /UMIAM- UMTRU STAGE-III /DRWG NO. – 4 C



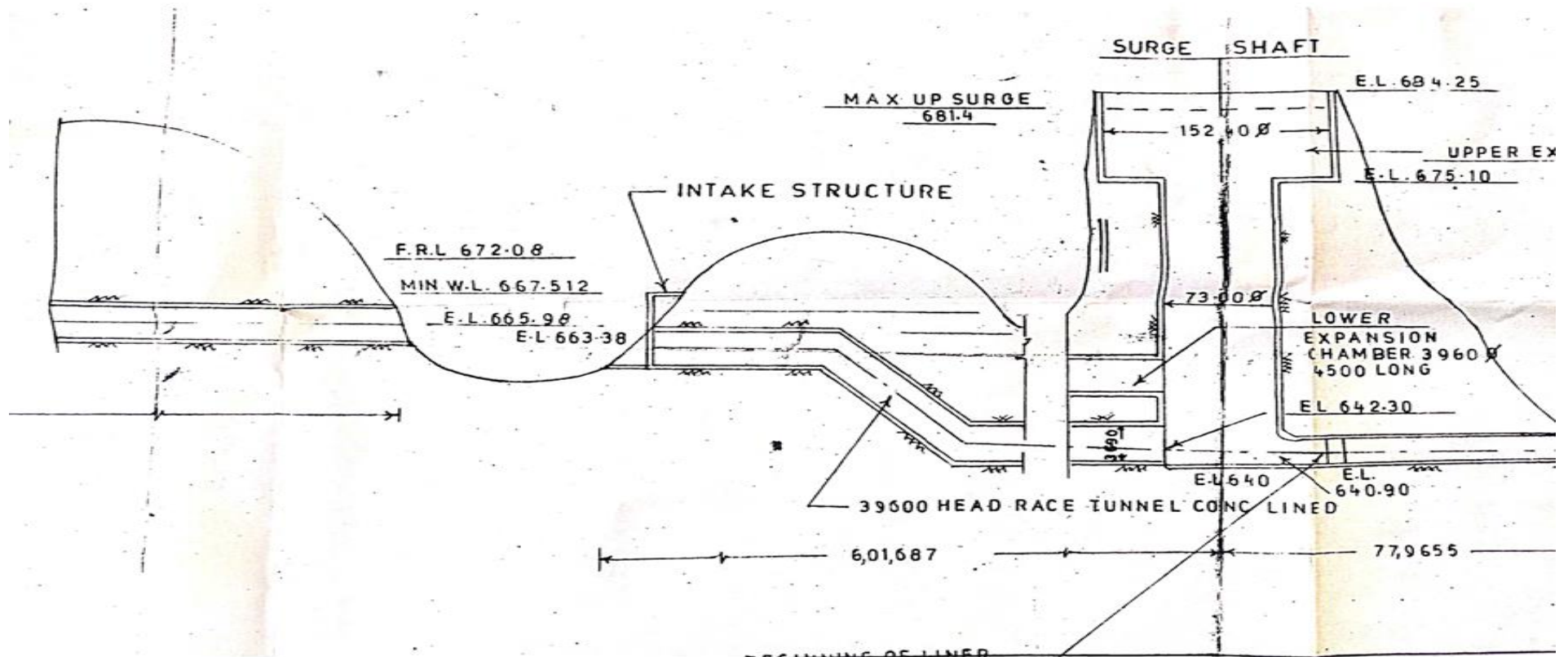


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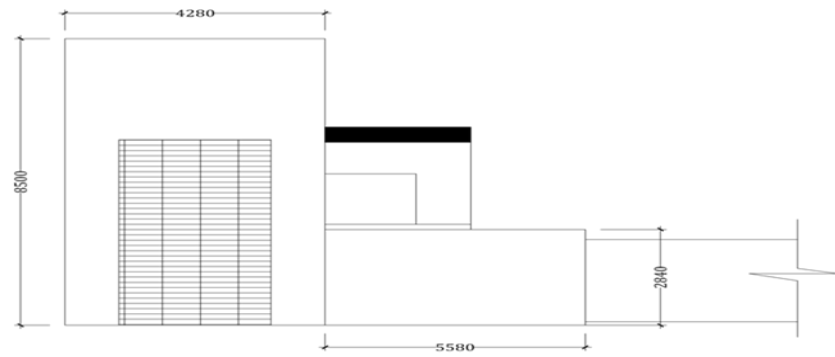


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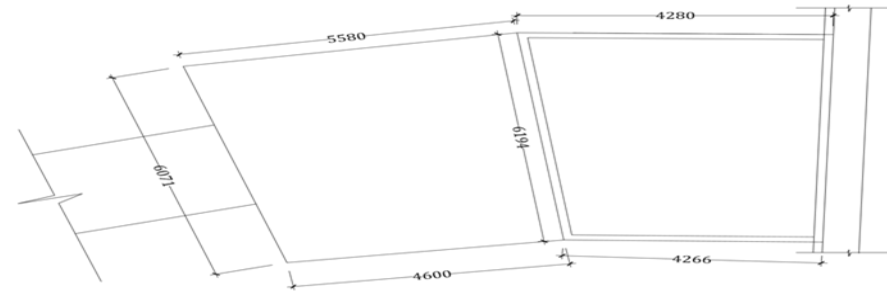




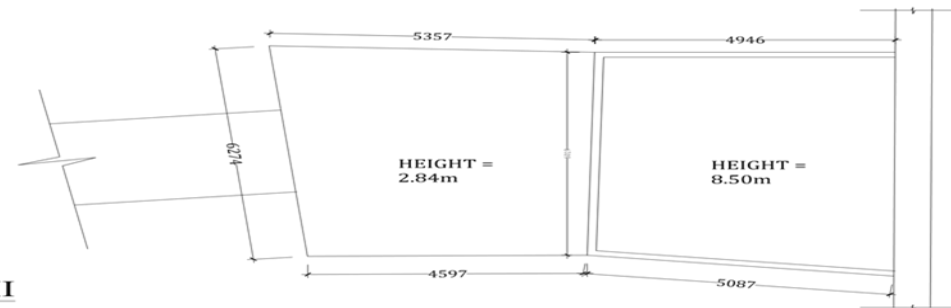
RMU /UMIAM- UMTRU STAGE-III /DRWG NO. – 5 C



FRONT ELEVATION



PLAN OF UNIT-I

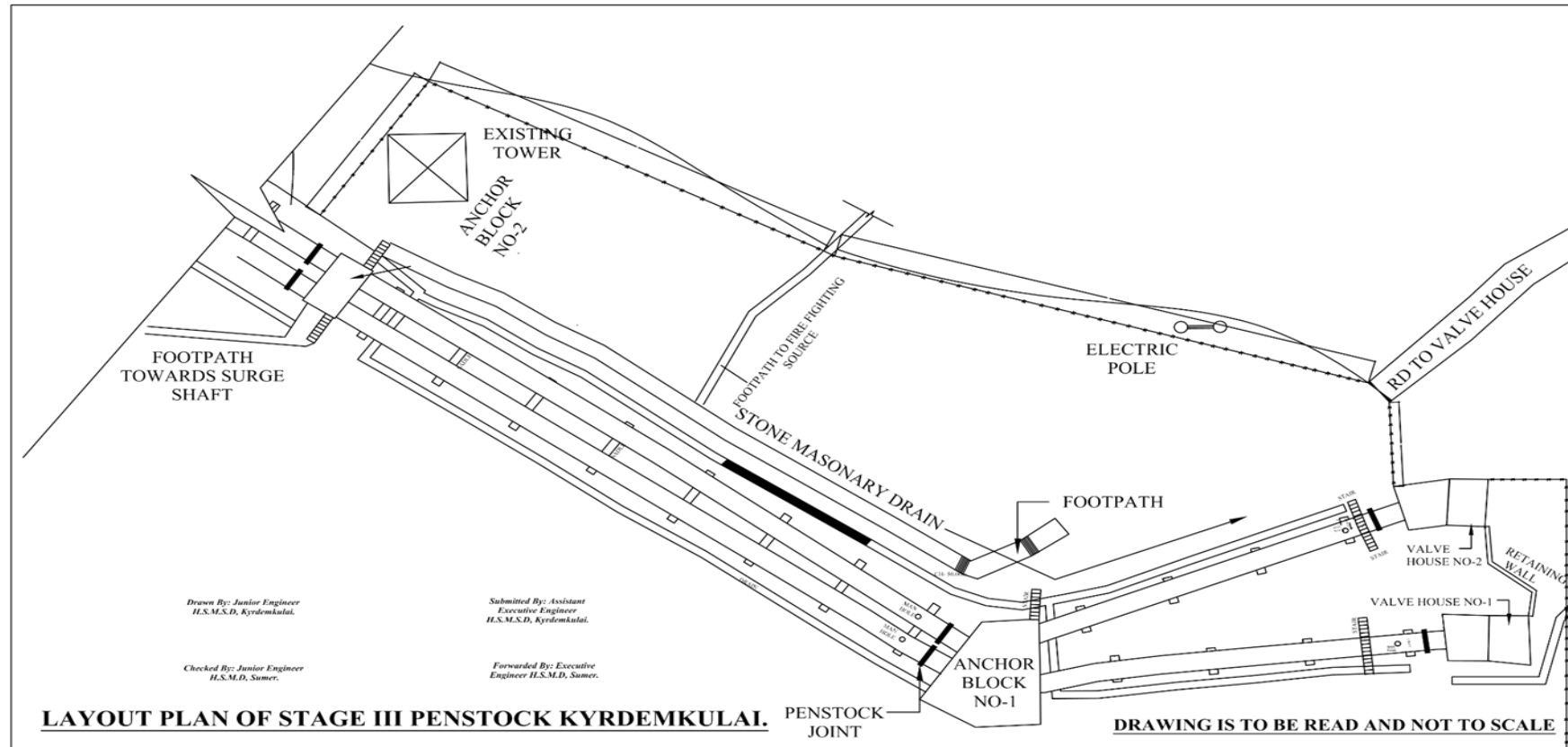


PLAN OF UNIT-II

ALL DIMENTION ARE IN MILLIMETER OTHERWISE MENTIONED  
DRAWING IS NOT TO SCALE

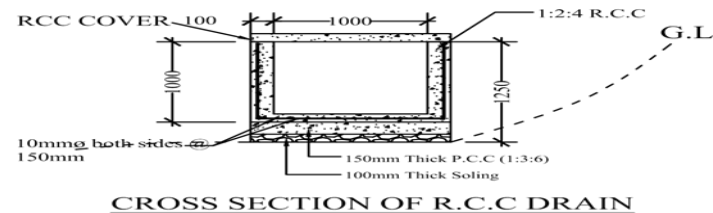
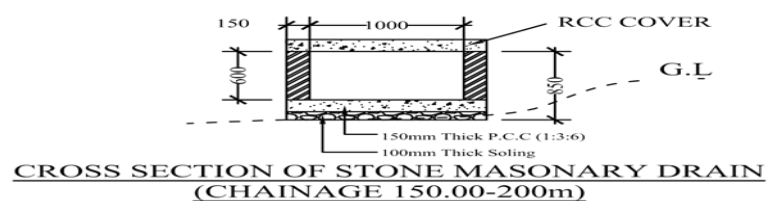
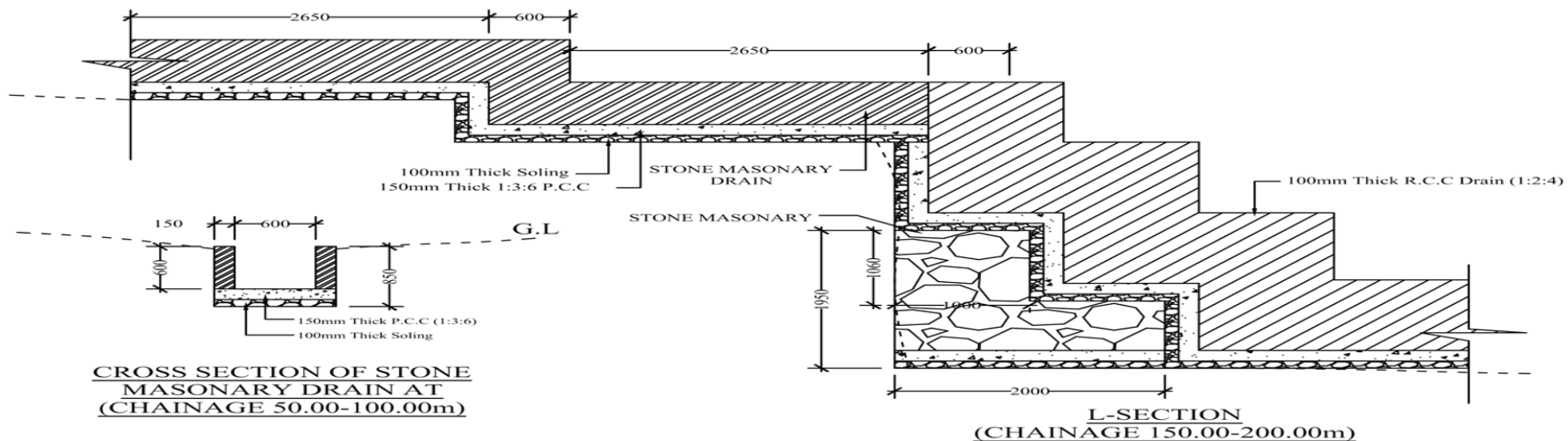
EXISTING VALVE HOUSE OF STAGE III  
KYRDEMKULAI.

RMU /UMIAM- UMTRU STAGE-III /DRWG NO. – 6



RMU /UMIAM- UMTRU STAGE-III /DRWG NO. – 7

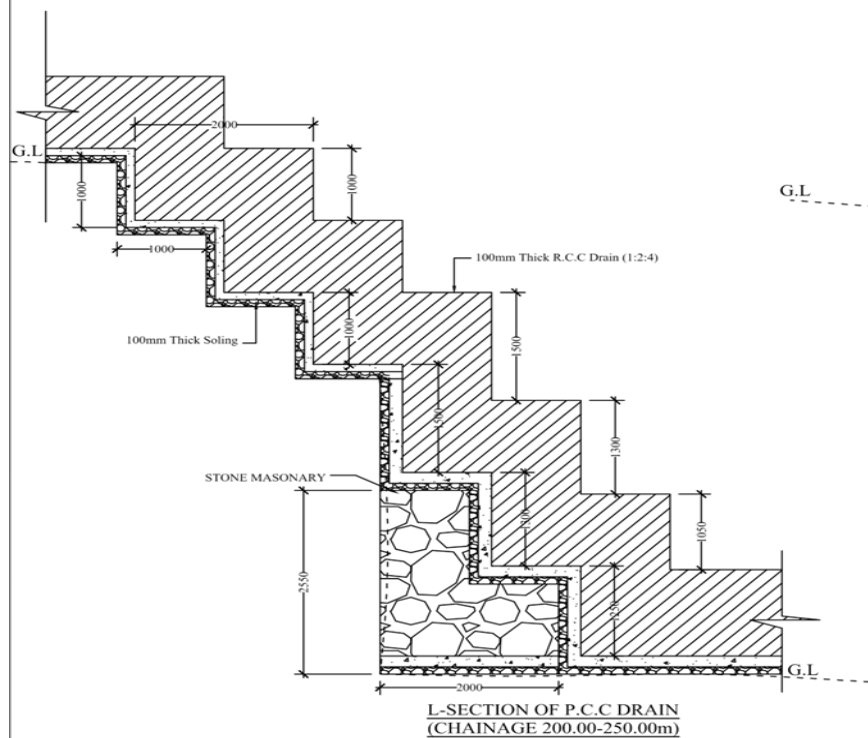




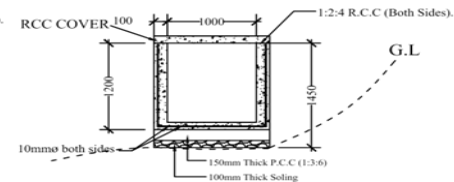
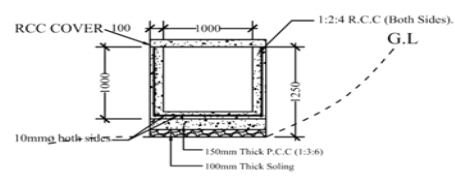
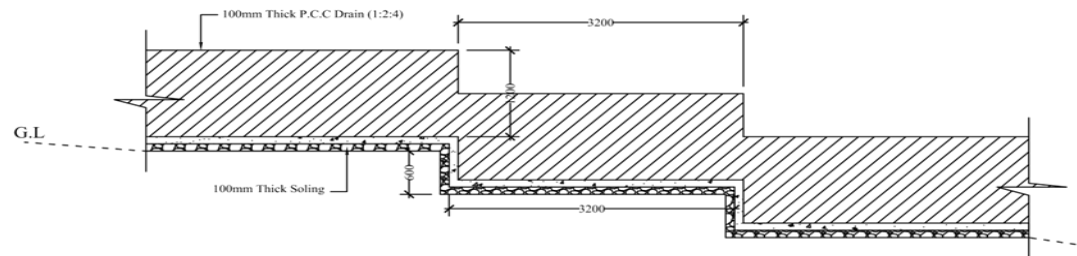
**SECTION OF STAGE III PENSTOCK DRAIN**  
**CH 0-200m, KYRDEM KULAI.**

**DRAWING IS TO BE READ AND NOT TO SCALE**  
**ALL DIMENSION ARE IN MM OTHERWISE MENTIONED.**

RMU /UMIAM- UMTRU STAGE-III /DRWG NO. – 7 A

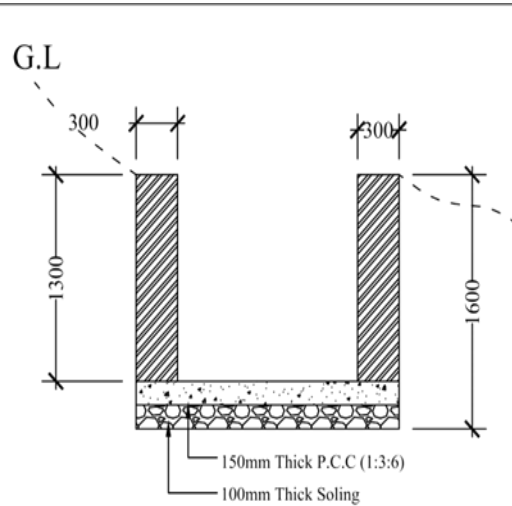


**SECTION OF STAGE III PENSTOCK DRAIN  
CH 200-280m, KYRDEMKULAI.**

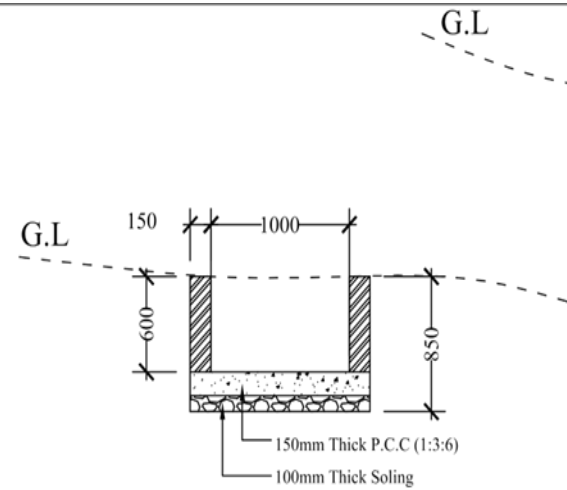


**DRAWING IS TO BE READ AND NOT TO SCALE.  
ALL DIMENSION ARE IN MM OTHERWISE MENTIONED.**

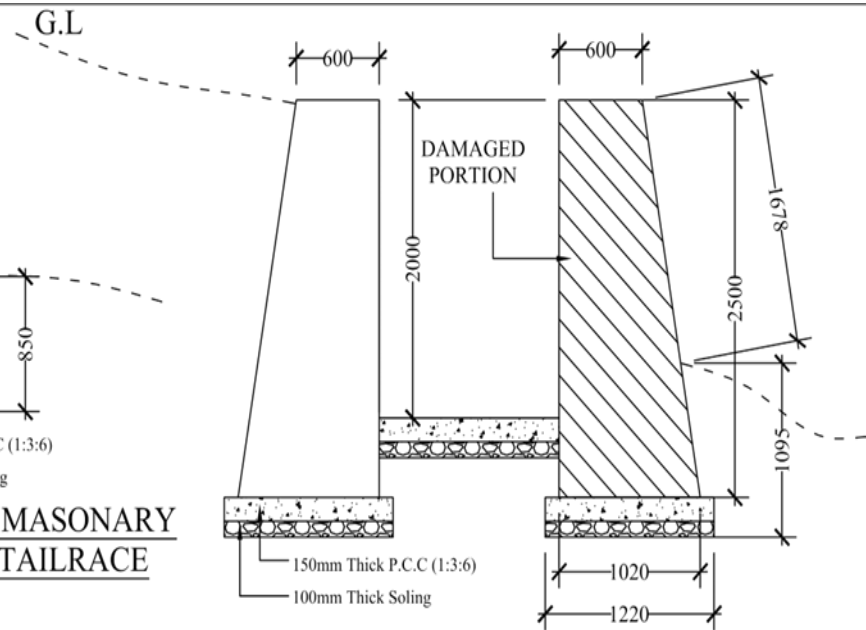
**RMU /UMIAM- UMTRU STAGE-III /DRWG NO. – 7 B**



CROSS SECTION OF STONE MASONRY OUTLET DRAIN



CROSS SECTION OF STONE MASONRY ROAD SIDE DRAIN UPTO TAILRACE

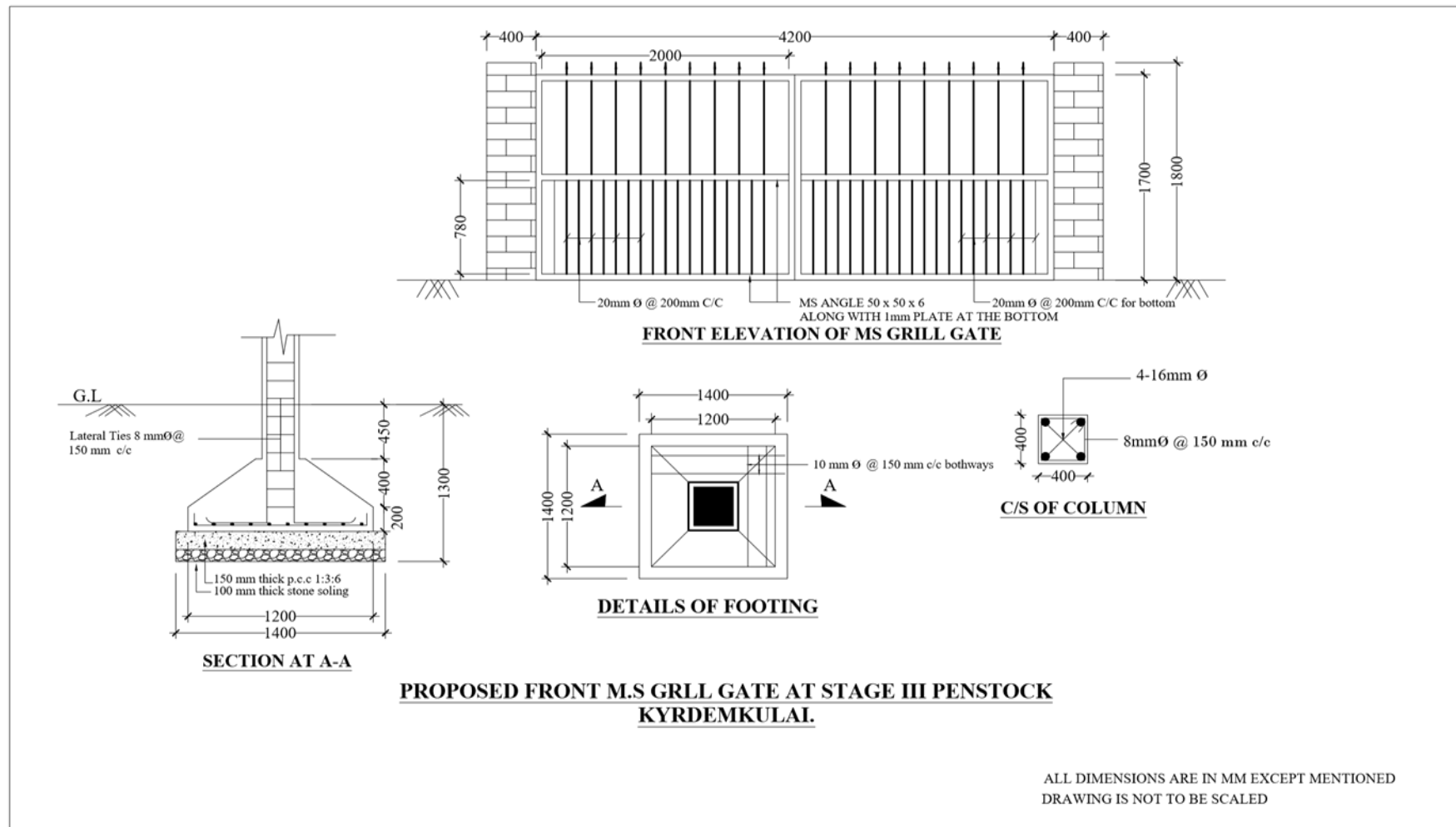


CROSS SECTION OF STONE MASONRY WALL AT END JUNCTION

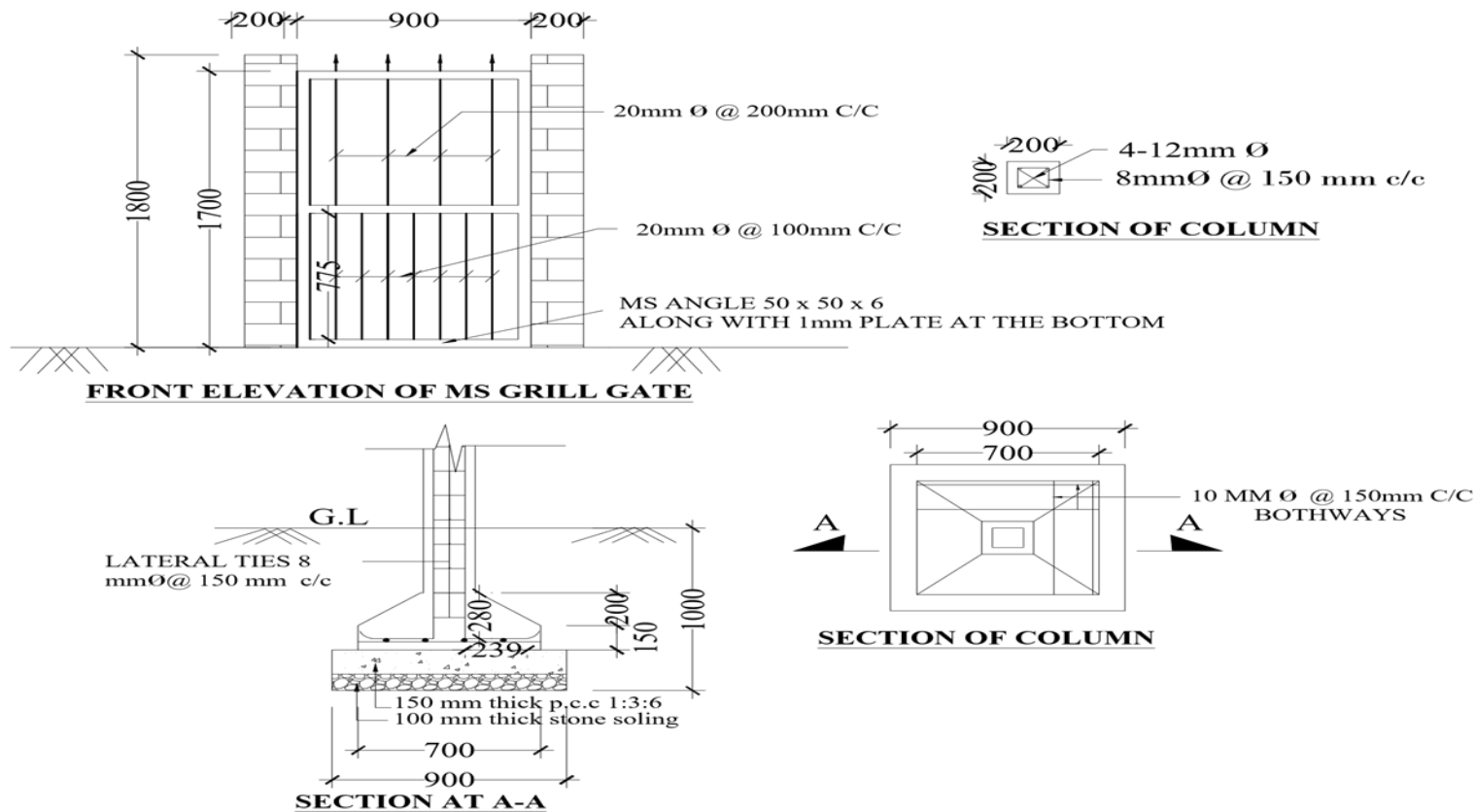
## SECTION OF STAGE III PENSTOCK OUTLET DRAIN UPTO TAILRACE DRAIN, KYRDEM KULAI.

DRAWING IS TO BE READ AND NOT TO SCALE  
ALL DIMENSION ARE IN MM OTHERWISE MENTIONED.

RMU /UMIAM- UMTRU STAGE-III /DRWG NO. – 8



RMU /UMIAM- UMTRU STAGE-III /DRWG NO. – 9

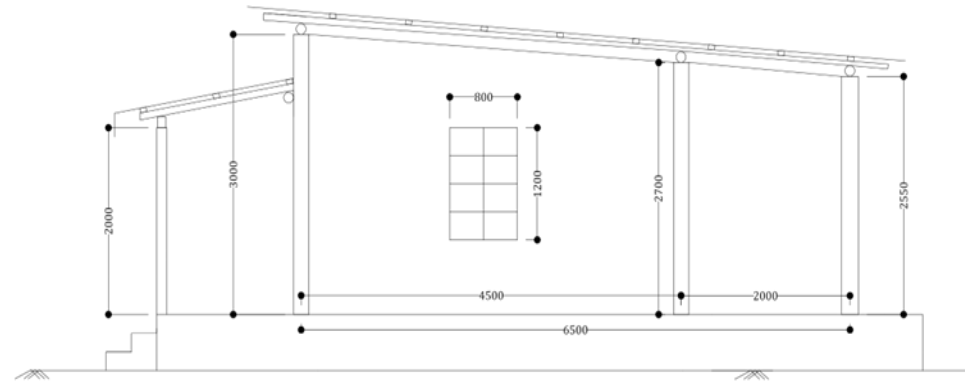
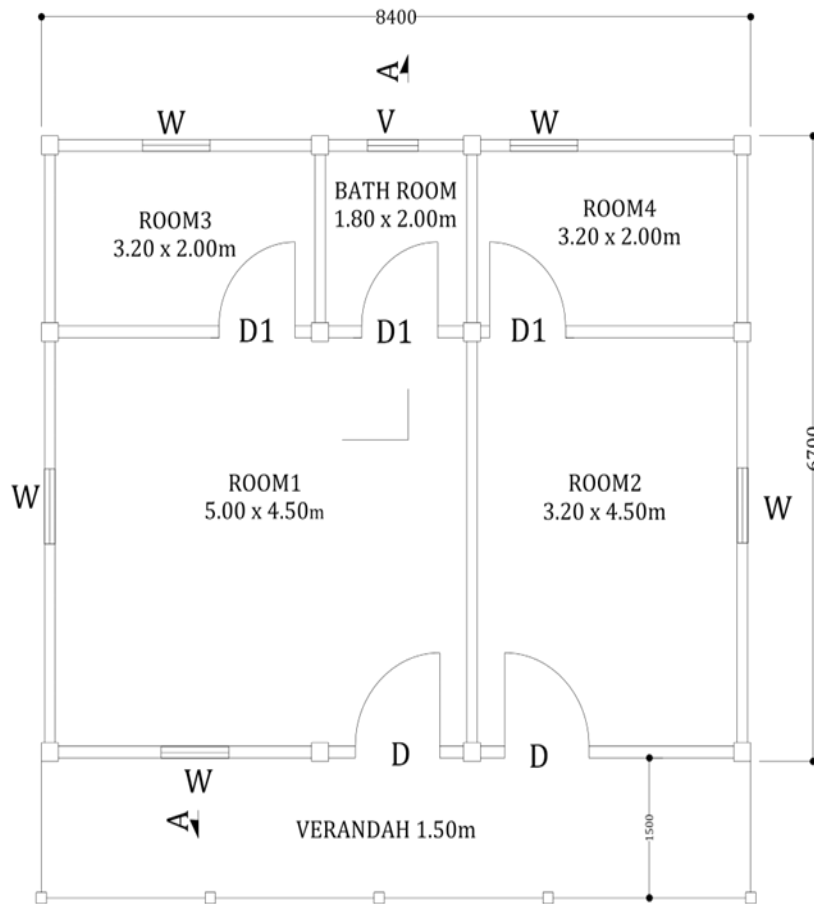


**PROPOSED M.S GRILL GATE AT STAGE III PENSTOCK  
KYRDEM KULAI.**

DRAWING IS NOT TO BE SCALED

ALL DIMENSIONS ARE IN MM EXCEPT MENTIONED

RMU /UMIAM- UMTRU STAGE-III /DRWG NO. – 9 A



**SIDE ELEVATION**

**DOOR/WINDOW SCHEDULED**

D=1000x 2100  
D1=900x 2100  
W=800 x 1200  
V= 600 x 300

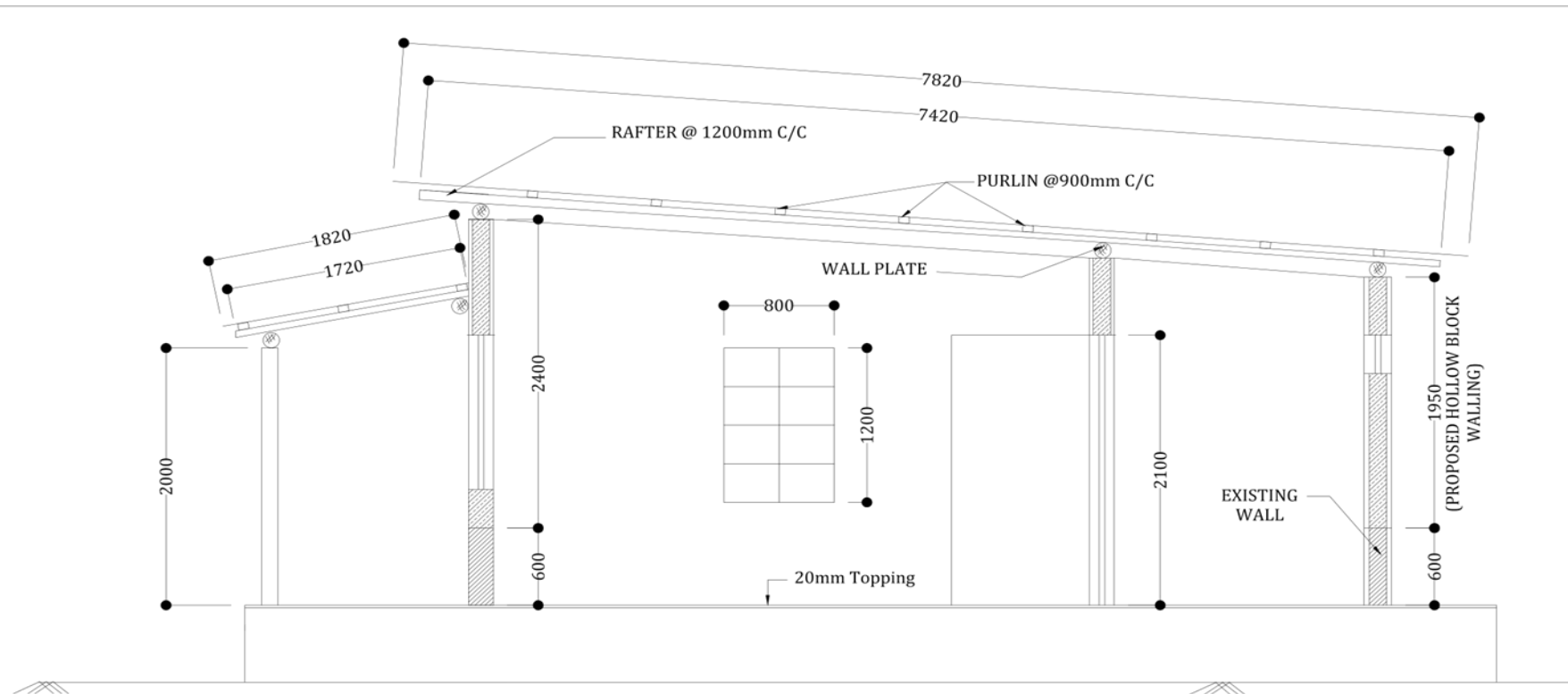
**SPECIFICATIONS**

- Door D & D1 (Panelled)
- Window W (M.S Grill)
- Existing ekra walling to be replaced with brick along with 12mm thick cement.
- plaster finish wall

**REPAIRING OF SECURITY BARRACK AT STAGE III PENSTOCK**  
**SITE, KYRDEM KULAI**

**DRAWING IS NOT TO SCALE**



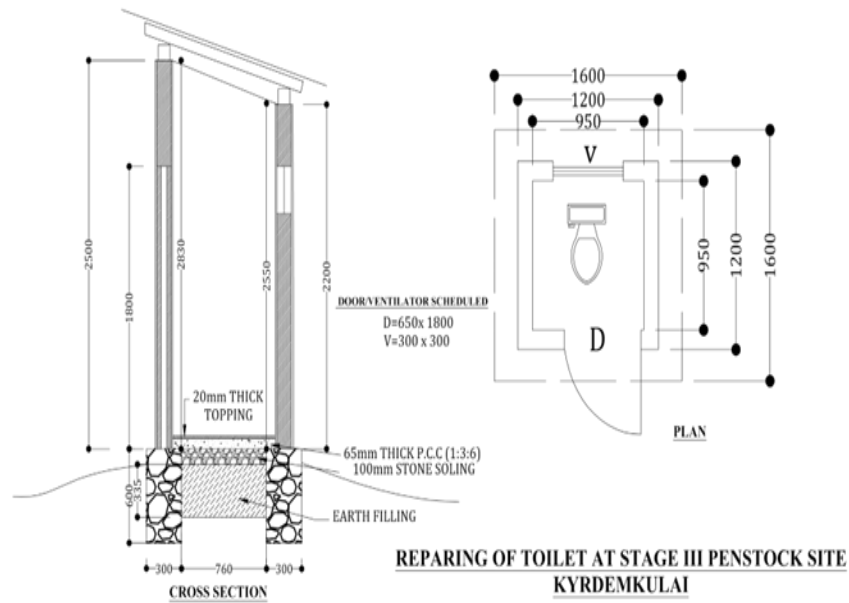


### **CROSS SECTION AT A-A**

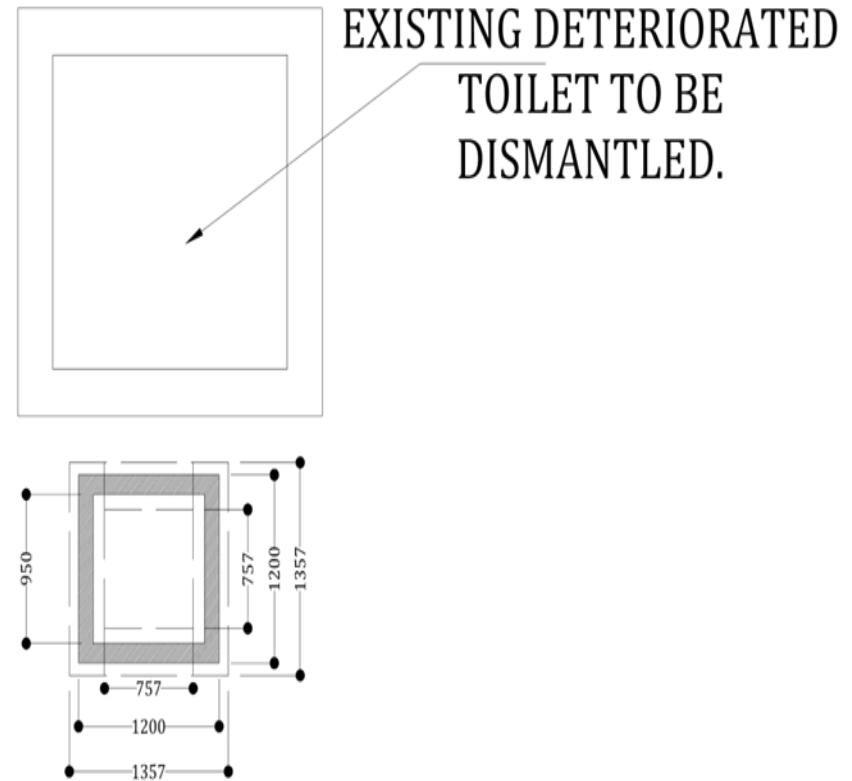
**DRAWING IS NOT TO SCALE**

All dimensions are in mm except mentioned.

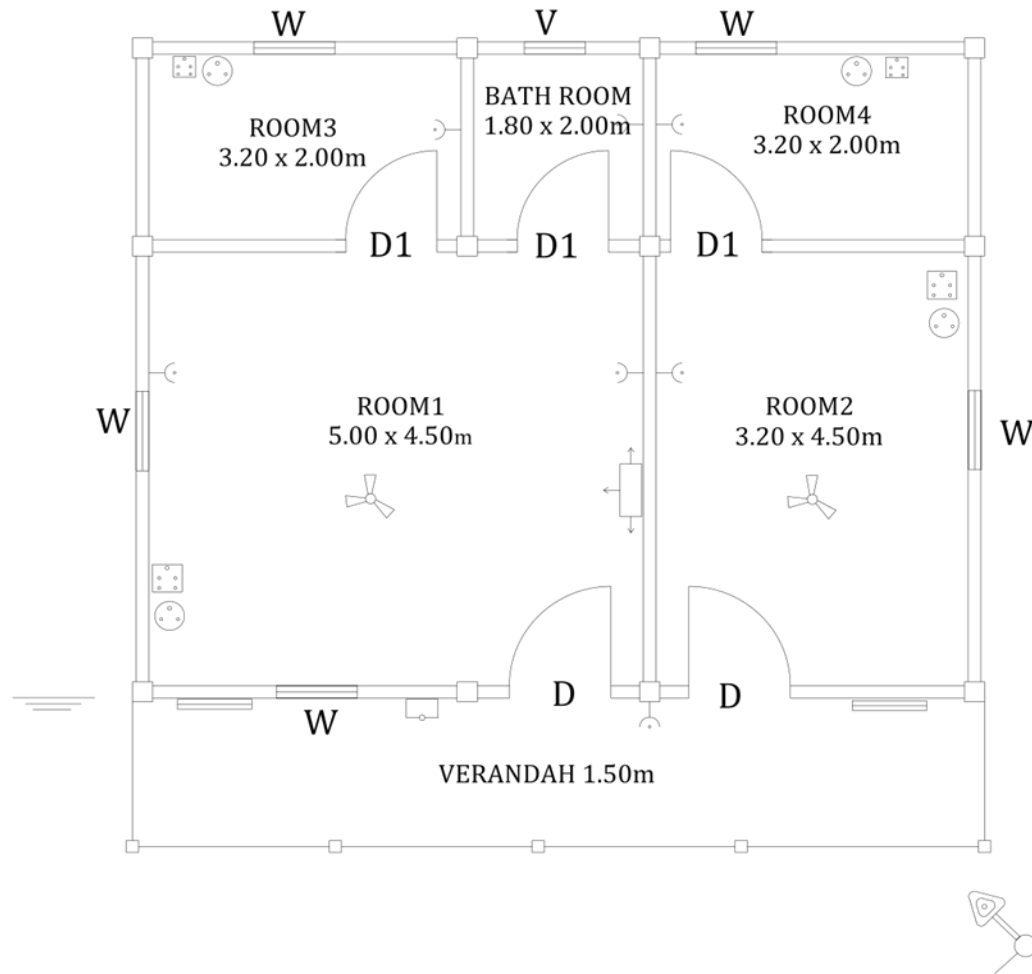
RMU /UMIAM- UMTRU STAGE-III /DRWG NO. – 10 A



ALL DIMENSION ARE IN MM OTHERWISE MENTIONED  
DRAWING IS NOT TO SCALE













RMU /UMIAM- UMTRU STAGE-III /DRWG NO. – 11



**WIRING PLAN**

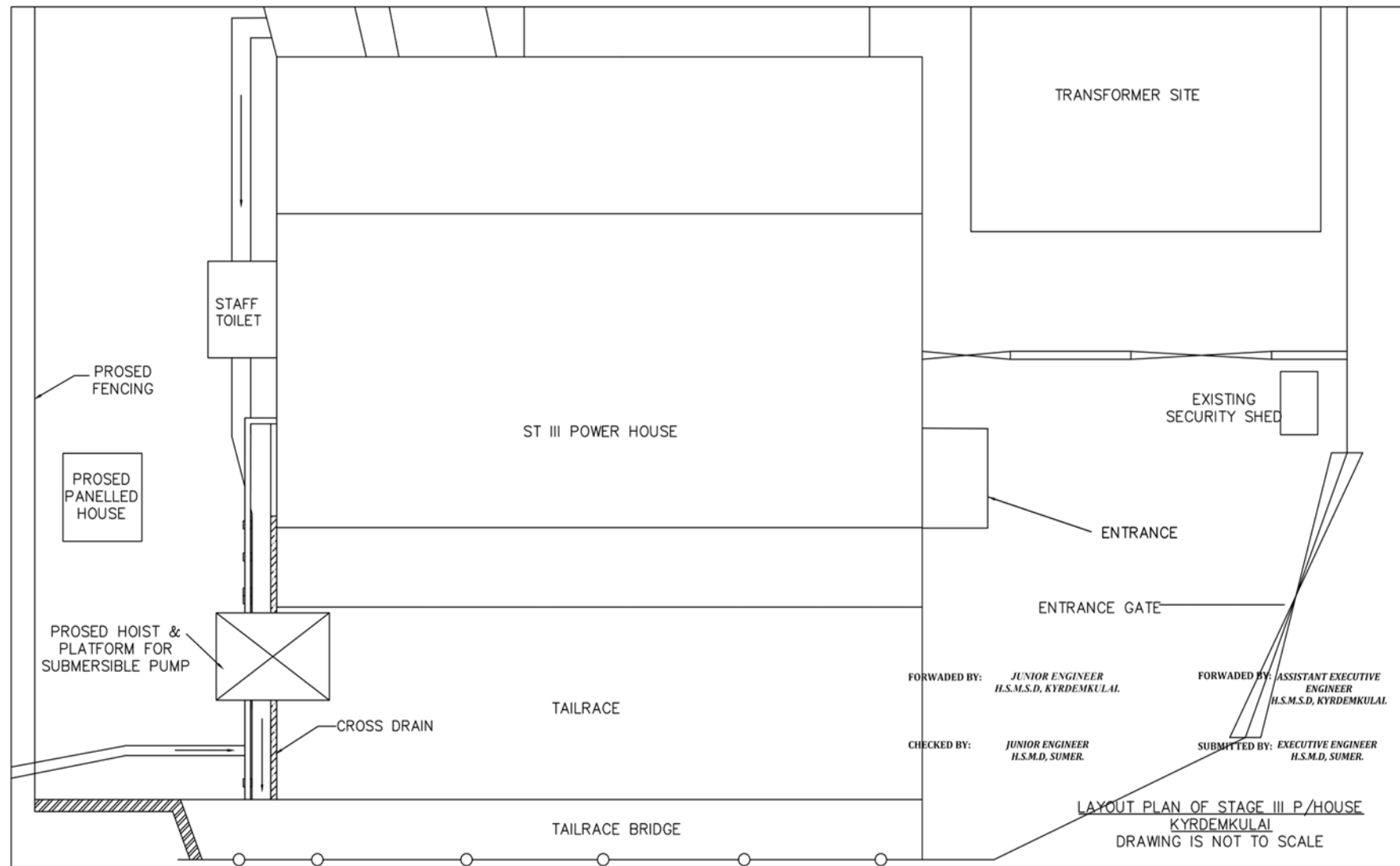
**INDEX**

-  — BULB POINT
-  — TUBE LIGHT FITTING
-  — PLUG POINT
-  — 15 AMPS SOCKET
-  — FAN POINT
-  — MAIN SWITCH
-  — DISTRIBUTION BOX
-  — MERCURY FITTING
-  — EARTHING
-  — ELECTRIC POLE

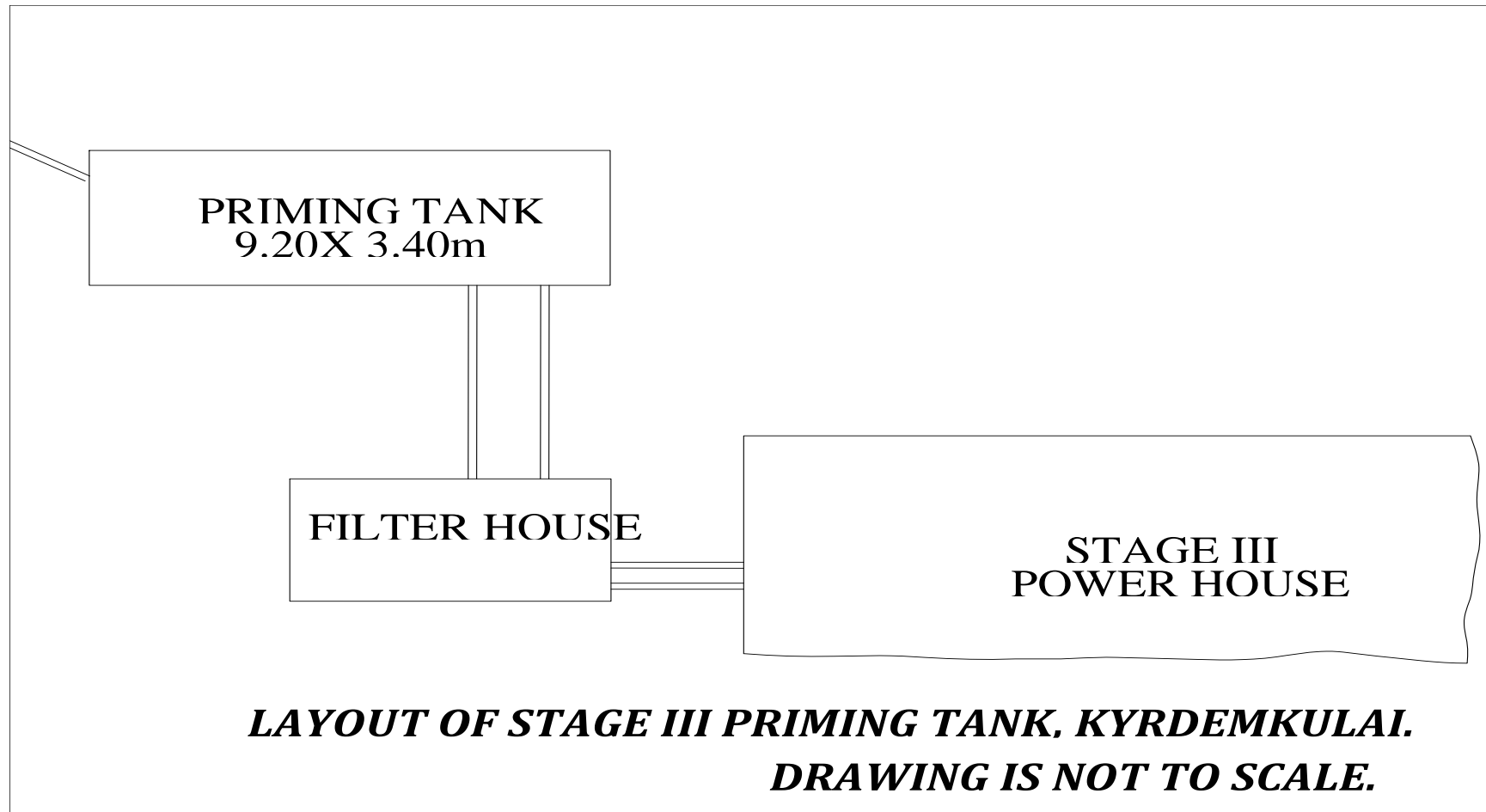
All dimensions are in mm except mentioned

**DRAWING IS NOT TO SCALE**

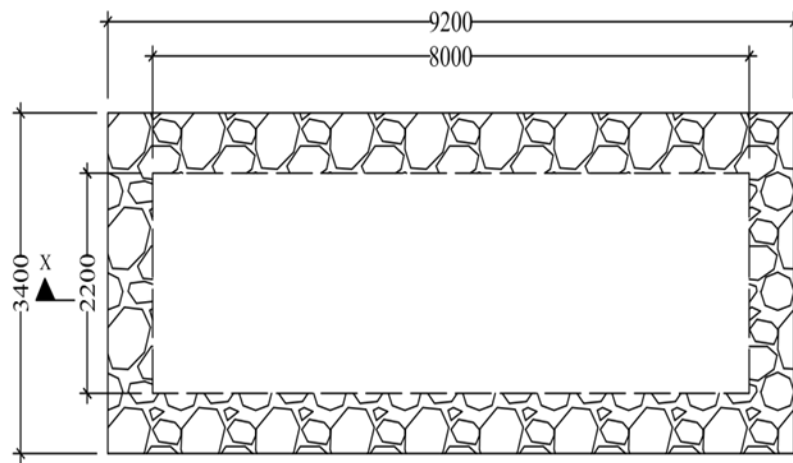
RMU /UMIAM- UMTRU STAGE-III /DRWG NO. – 12



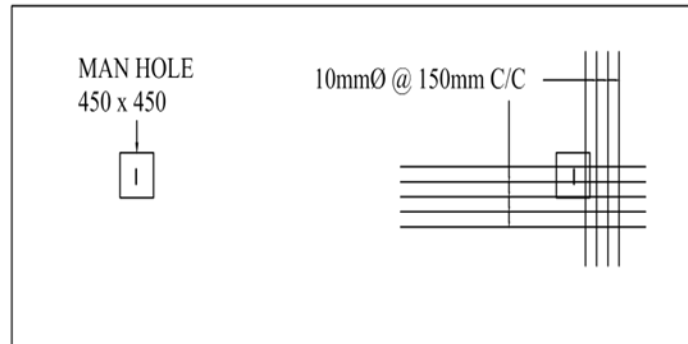
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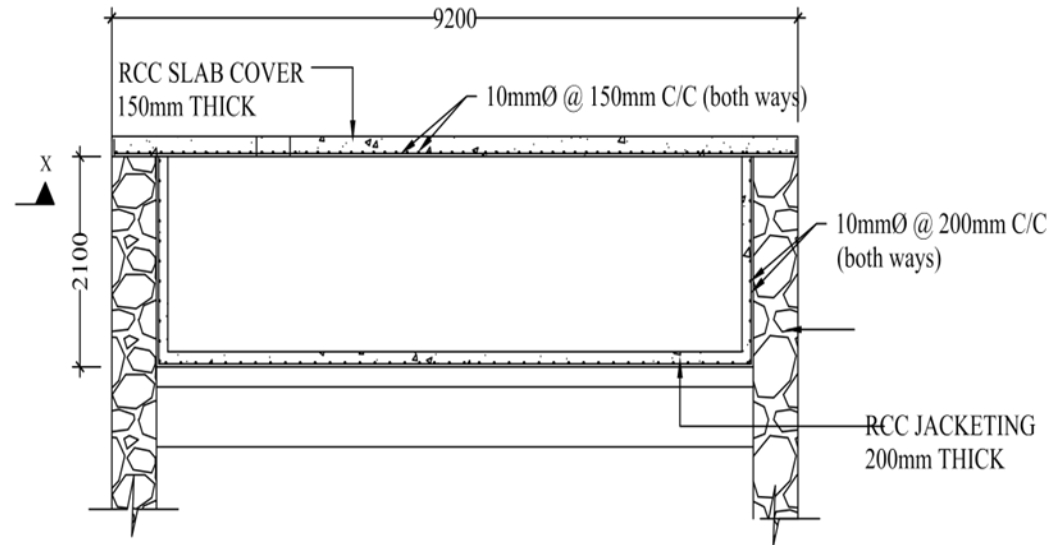
RMU /UMIAM- UMTRU STAGE-III /DRWG NO. – 14 A



PLAN OF EXISTING PRIMING TANK



SLAB COVER RE-INFORCEMENT  
DETAILS

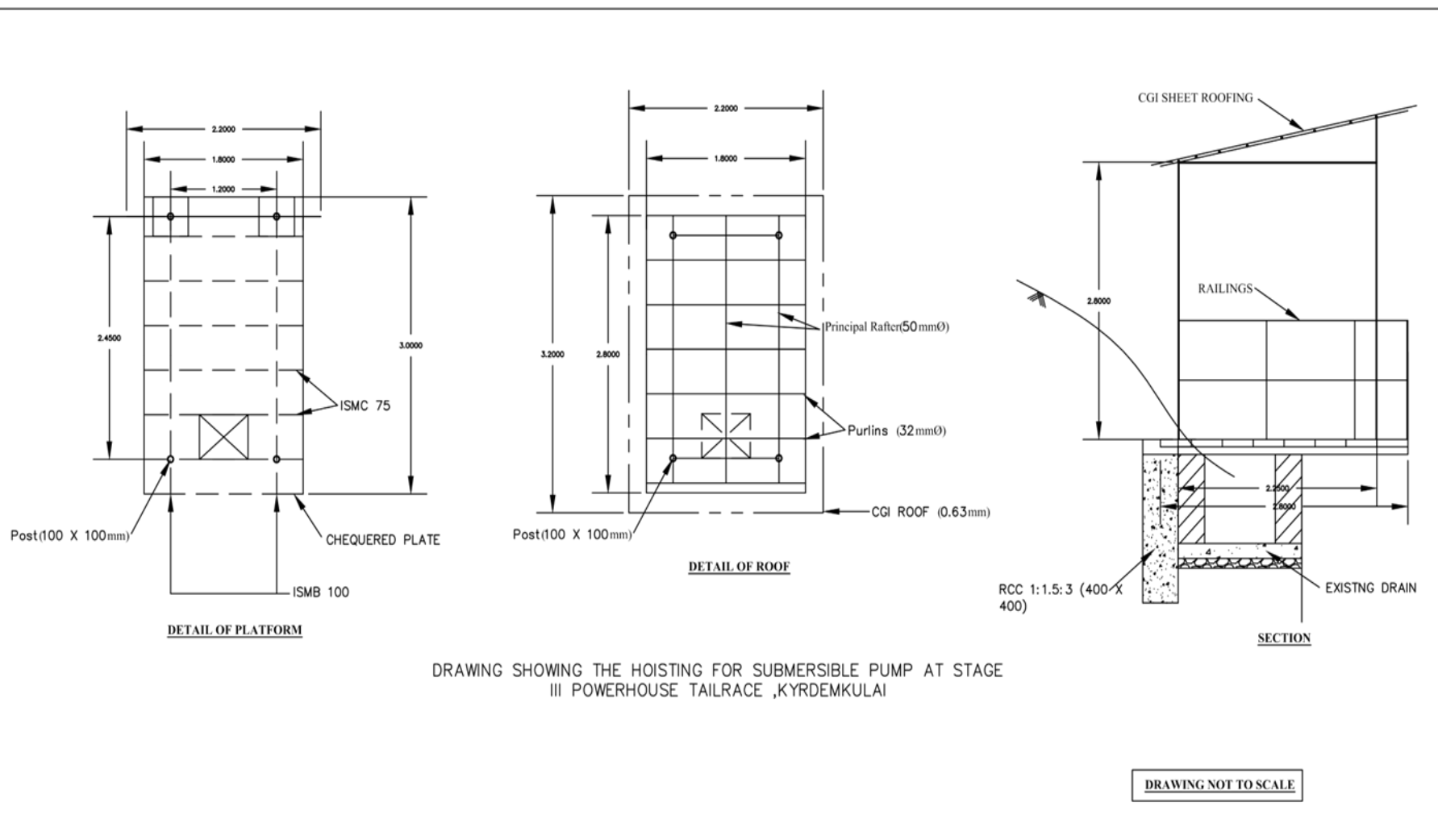


SECTION X-X

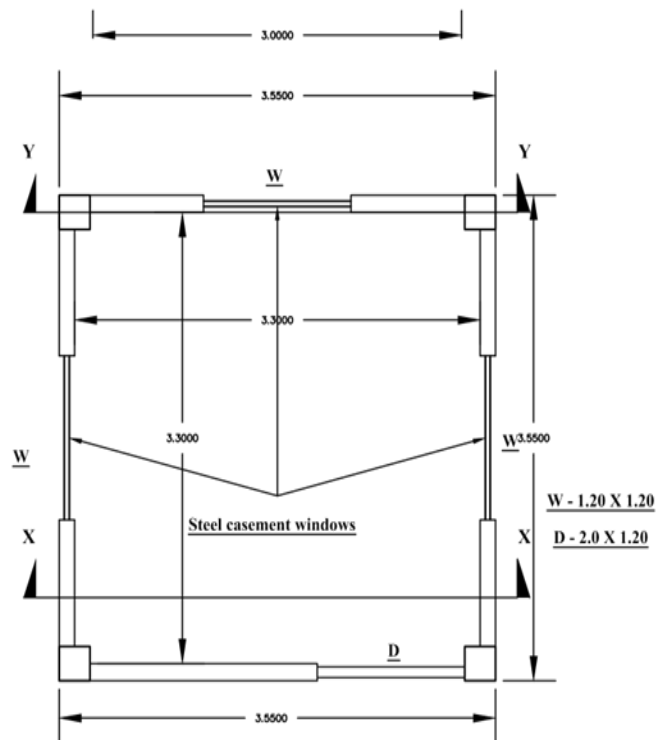
REPAIRING OF PRIMING TANK AT STAGE III POWER HOUSE,  
KYRDEMKULAI

ALL DIMENSIONS ARE IN MM OTHERWISE MENTIONED  
DRAWING IS NOT TO SCALE

RMU /UMIAM- UMTRU STAGE-III /DRWG NO. – 14 B



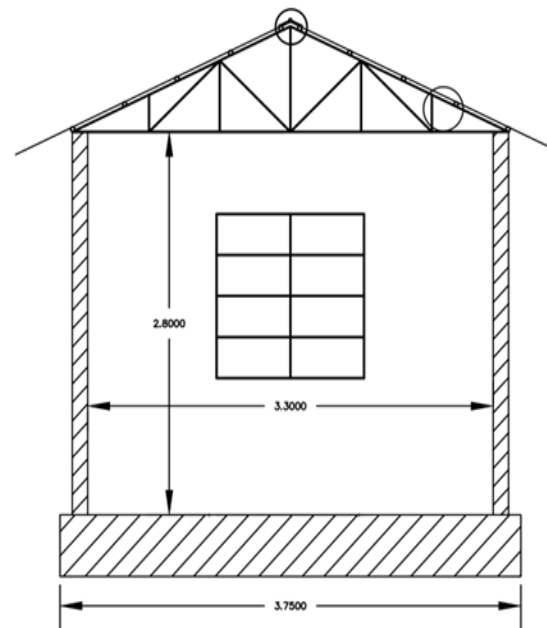
RMU /UMIAM- UMTRU STAGE-III /DRWG NO. – 15



PLAN

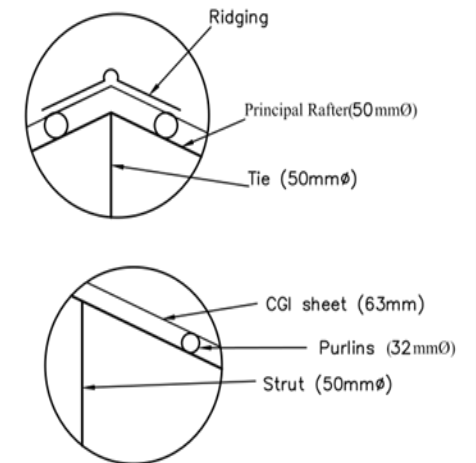
DRAWING SHOWING THE PLAN OF PANELLED-HOUSE FOR FIRE FIGHTING SYSTEM AT STAGE-III POWER-HOUSE, KYRDEM KULAI

DRAWING NOT TO SCALE

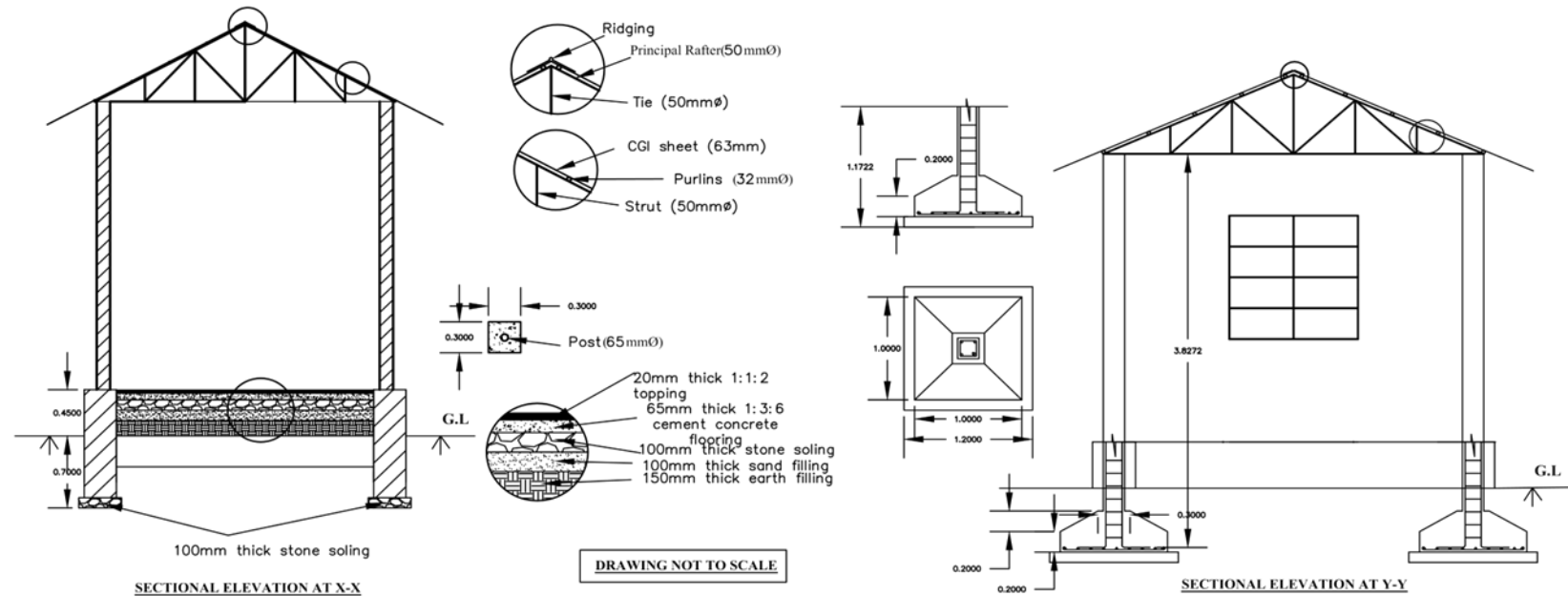


SECTIONAL ELEVATION AT X-X

DRAWING SHOWING THE ELEVATION OF THE PANELLED-HOUSE FOR FIRE FIGHTING SYSTEM AT STAGE-III POWER-HOUSE, KYRDEM KULAI

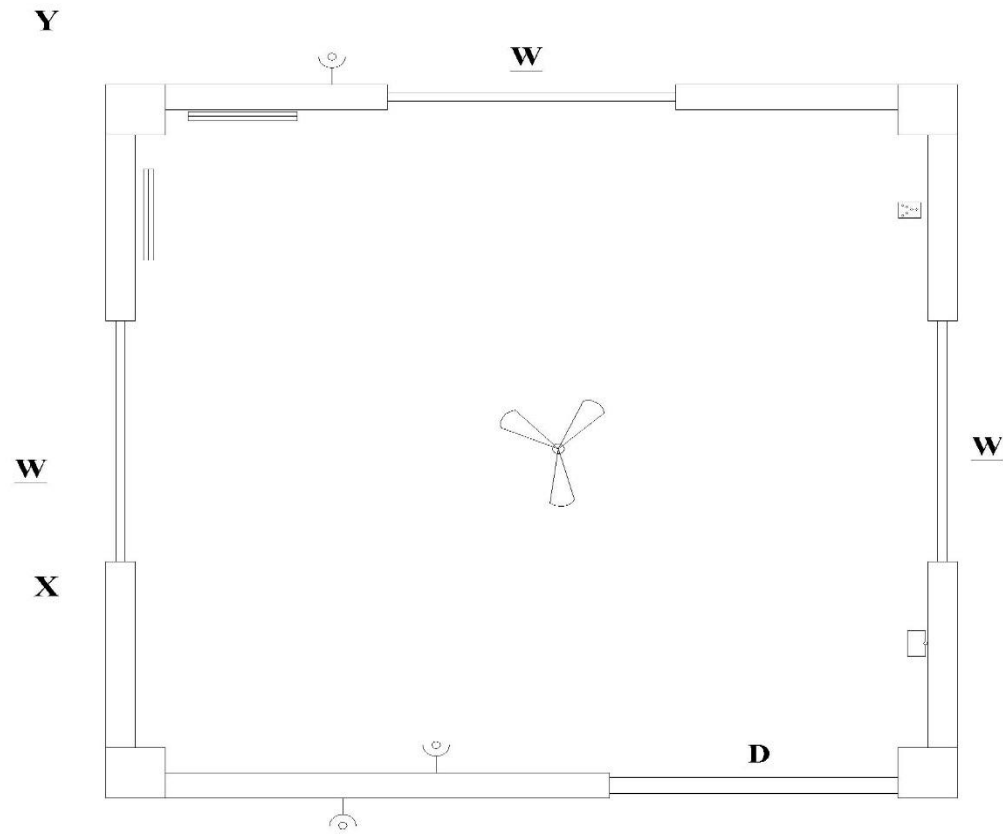






DRAWING SHOWING THE SECTIONAL-ELEVATION PANELLED-HOUSE FOR  
FIRE FIGHTING SYSTEM AT STAGE-III POWER-HOUSE, KYRDEM KULAI

RMU /UMIAM- UMTRU STAGE-III /DRWG NO. – 16 A

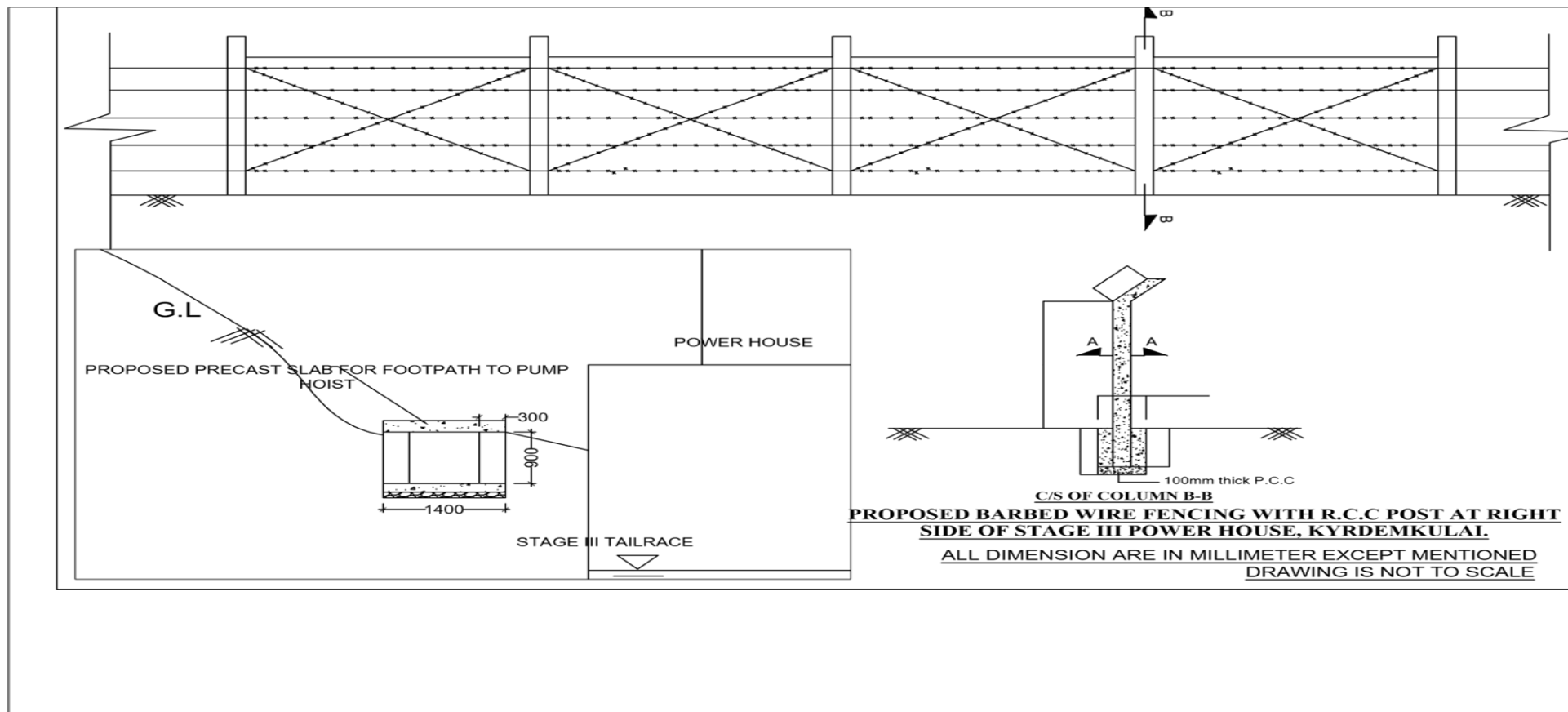


**PLAN**

DRAWING SHOWING THE PLAN OF PANELLED-HOUSE FOR FIRE FIGHTING SYSTEM AT STAGE-III POWER-HOUSE, KYRDEM KULAI

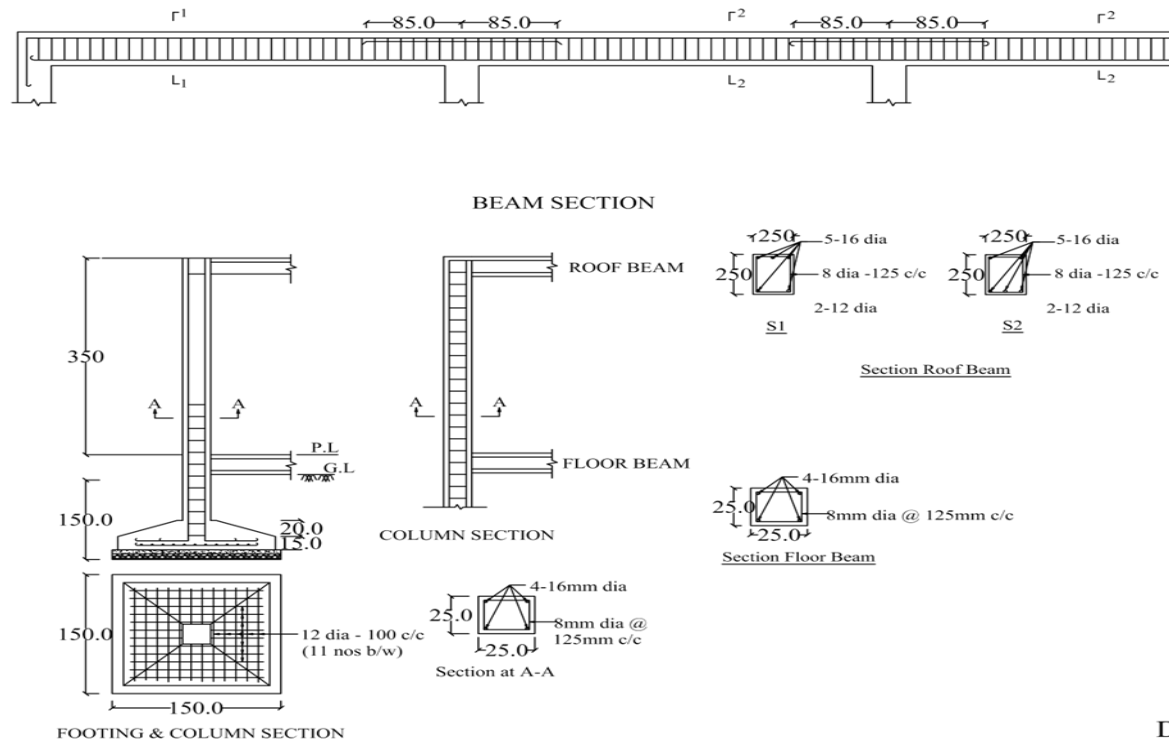
**DRAWING NOT TO SCALE**

RMU /UMIAM- UMTRU STAGE-III /DRWG NO. – 17



RMU /UMIAM- UMTRU STAGE-III /DRWG NO. – 18





**NOTES :-**

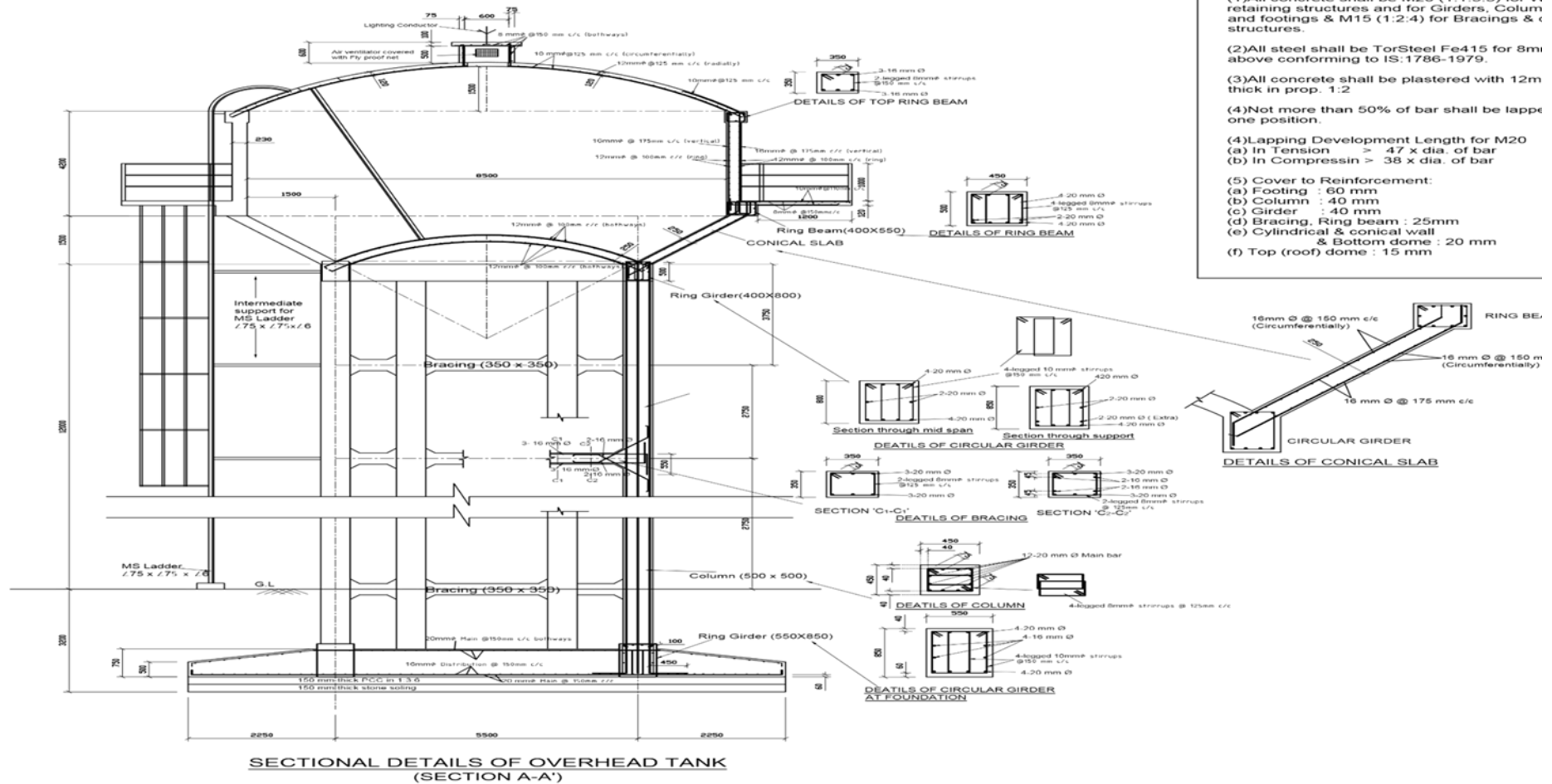
1. BEARING CAPACITY OF THE SOIL FOR THE DESIGN OF FOUNDATION IS ASSUMED AS 200KN/sqm
2. DEPTH AND SIZE OF FOOTING MAY BE MODIFIED DEPENDING THE ACTUAL SOIL CONDITION
3. CONCRETE MIX FOR ALL RCC WORKS WILL BE MIX M15
4. COVER TO REINFORCEMENT FOR COLUMN, BEAM, SLAB WILL BE 35mm, 35mm AND 15mm RESPECTIVELY
5. SHUTTERING SHOULD BE REMOVED AFTER 18 DAYS AND 3 DAYS FOR HORIZONTAL AND VERTICAL MEMBER AFTER CASTING
6. TOP AND BOTTOM BARS OF BEAM SHALL BE PROPERLY ANCHORED INTO THE COLUMN
7. LAP LENGTH IN CASE OF TENSION REINFORCEMENT SHALL NOT BE LESS THAN 750mm AND IN COMPRESSION REINFORCEMENT 600mm
8. CURING SHALL BE DONE CONTINUOUSLY ATLEAST FOR A PERIOD OF 7 DAYS AFTER 24 HOURS OF CASTING
9. QUALITY OF STONE AGGREGATE SAND CEMENT AND STEEL FOR ALL RCC WORKS SHOULD CONFER TO IS CODE 456-2000
10. COLD TWISTED FORSTEEL CONFORMING TO IS-1786 SHOULD BE USED AS REINFORCEMENT UNLESS OTHERWISE SPECIFIED.

**DRAWING IS NOT TO SCALE  
ALL DIMENSIONS ARE IN CM OTHERWISE  
MENTIONED**

**DETAIL DRAWING FOR IB ZERO POINT**

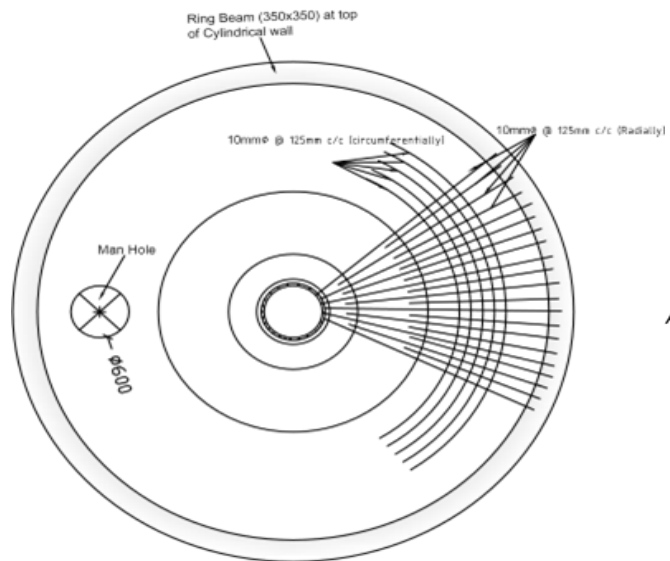
RMU /UMIAM- UMTRU STAGE-III /DRWG NO. – 19 A



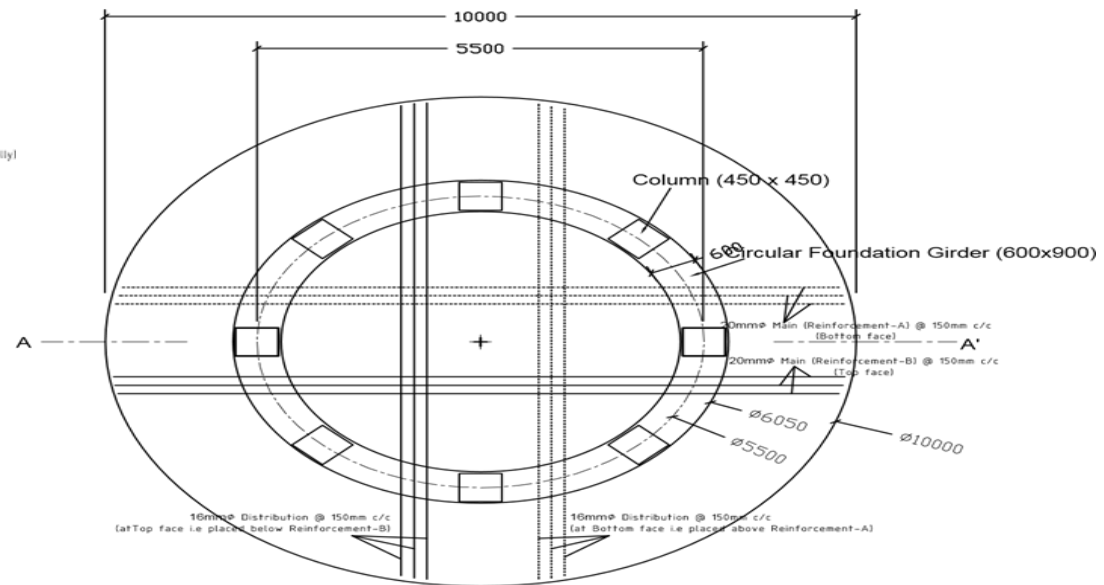


**NOTE:**

- (1) All concrete shall be M20 (1:1.5:3) for V retaining structures and for Girders, Column and footings & M15 (1:2:4) for Bracings & structures.
- (2) All steel shall be TorSteel Fe415 for 8m above conforming to IS:1786-1979.
- (3) All concrete shall be plastered with 12mm thick in prop. 1:2
- (4) Not more than 50% of bar shall be lappe one position.
- (4) Lapping Development Length for M20
  - (a) In Tension  $\geq 47 \times \text{dia. of bar}$
  - (b) In Compression  $\geq 38 \times \text{dia. of bar}$
- (5) Cover to Reinforcement:
  - (a) Footing : 60 mm
  - (b) Column : 40 mm
  - (c) Girder : 40 mm
  - (d) Bracing, Ring beam : 25mm
  - (e) Cylindrical & conical wall & Bottom dome : 20 mm
  - (f) Top (roof) dome : 15 mm



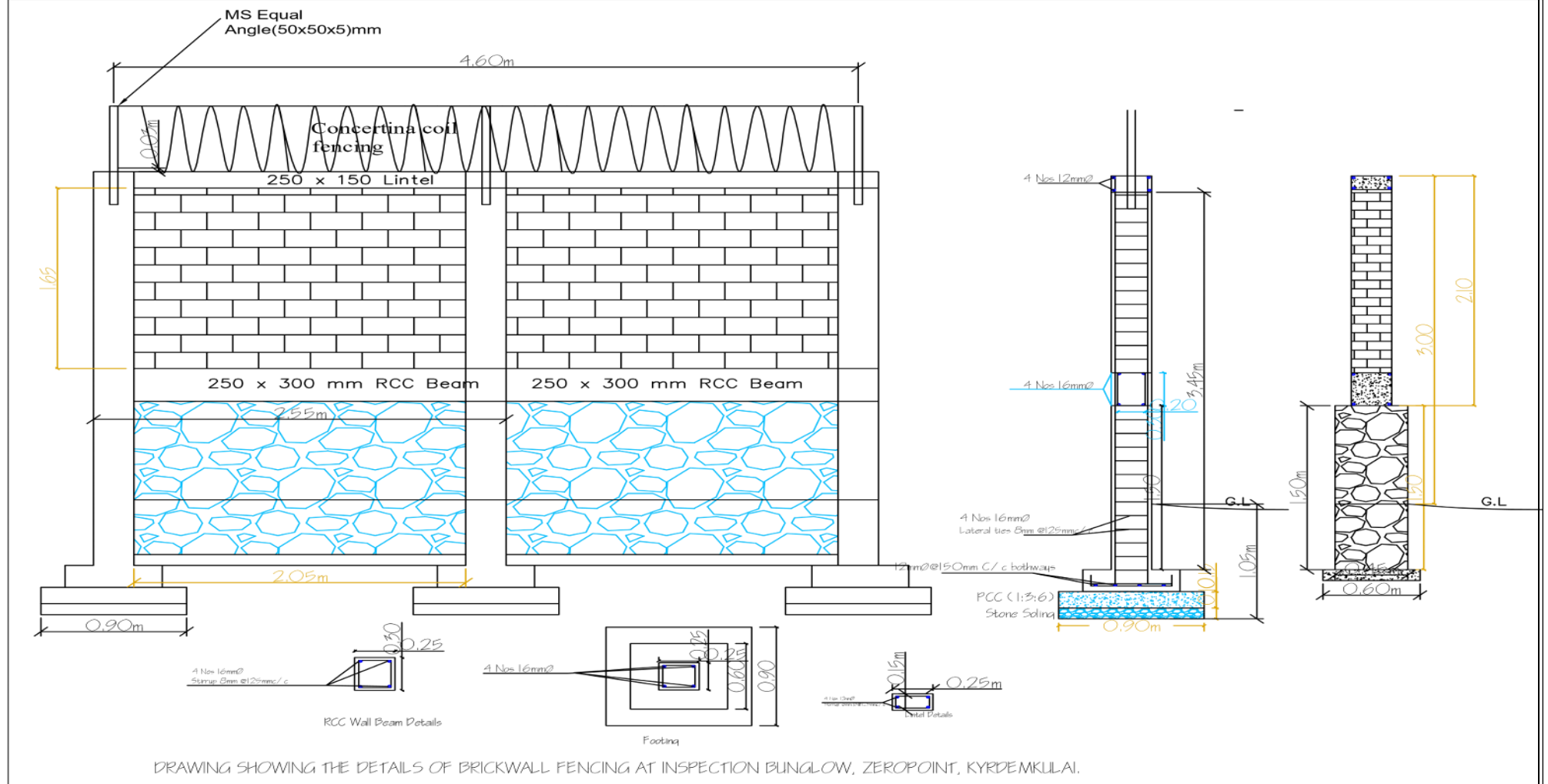
PLAN OF ROOF WITH REINFORCEMENT DETAILS



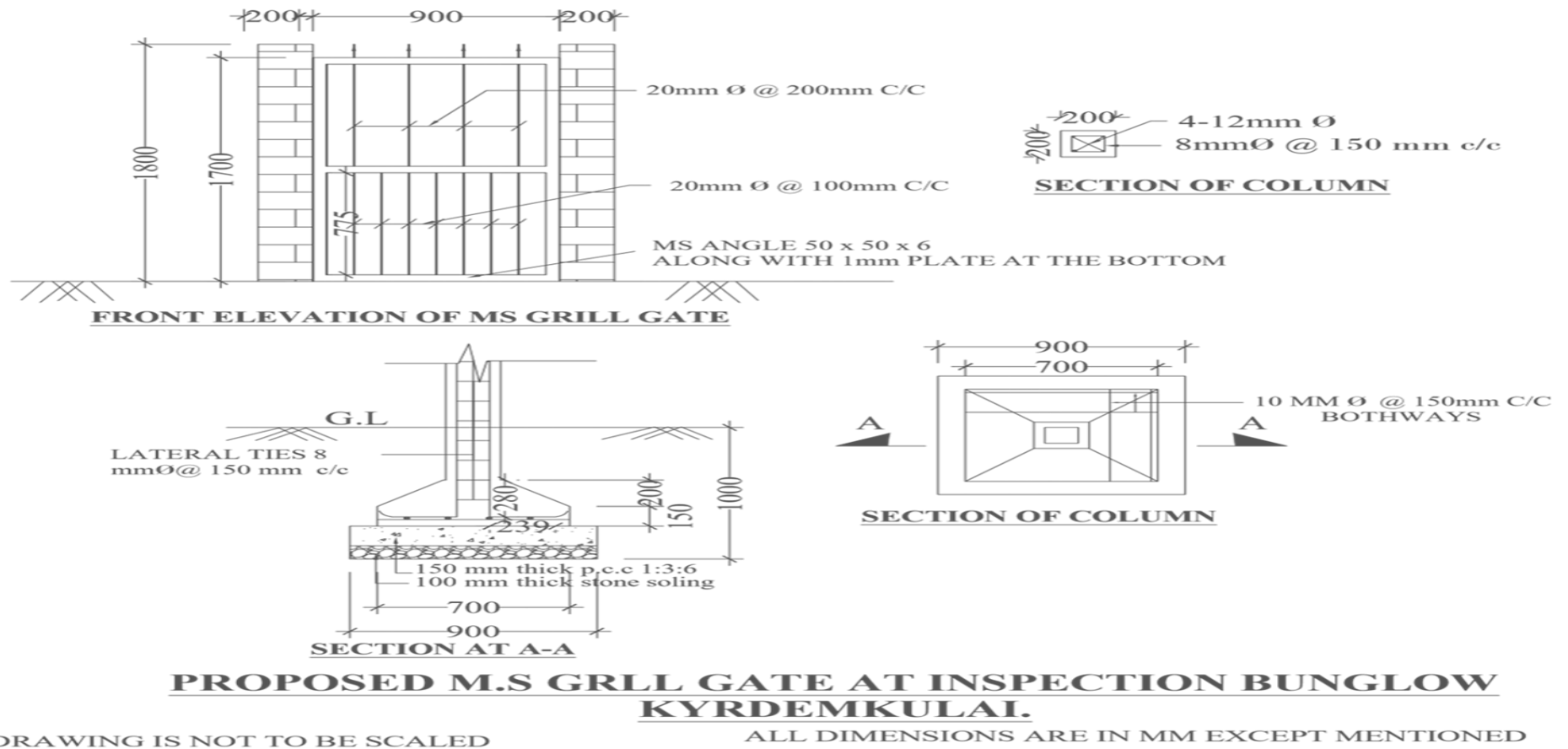
PLAN OF FOUNDATION WITH REINFORCEMENT DETAILS

RMU /UMIAM- UMTRU STAGE-III /DRWG NO. – 20 C

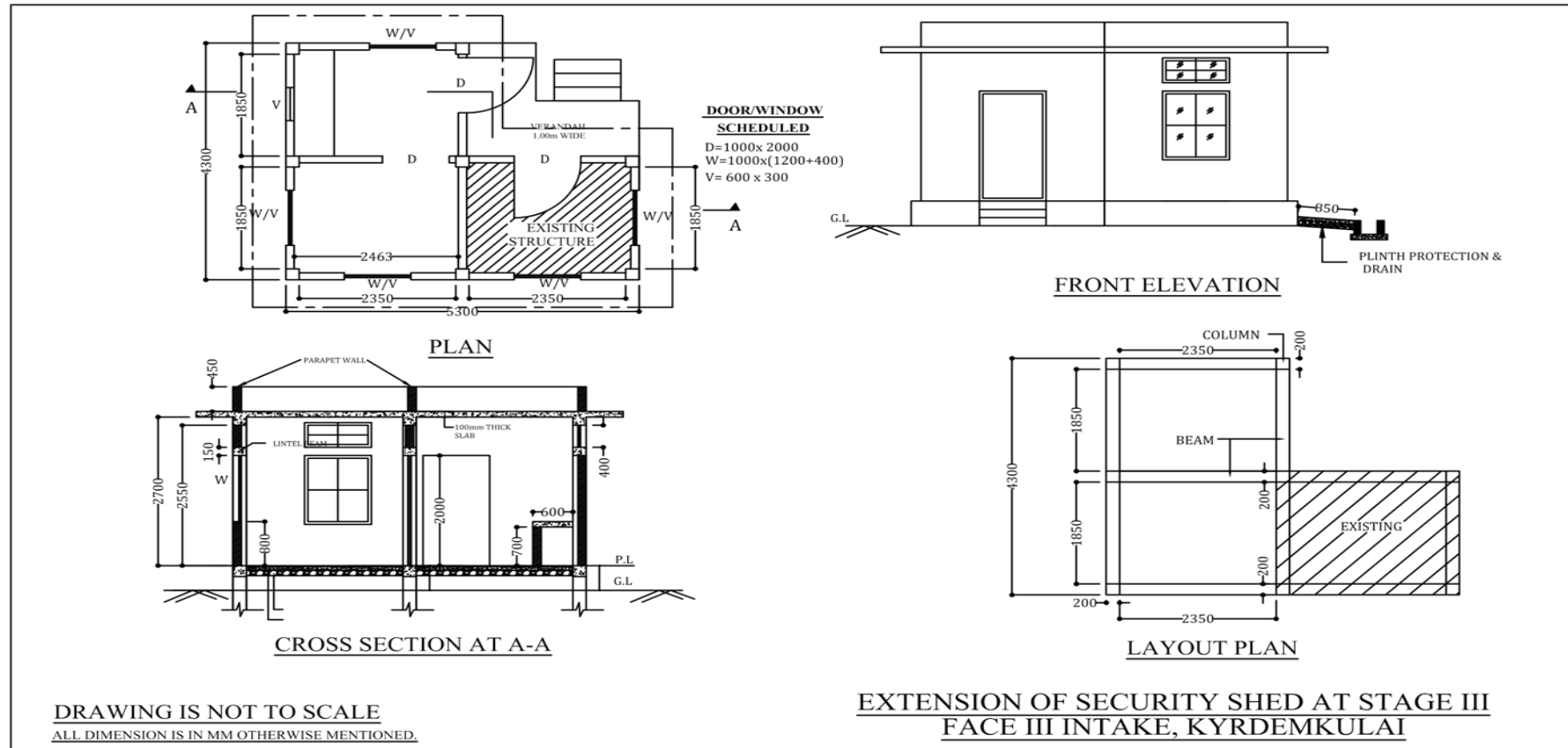




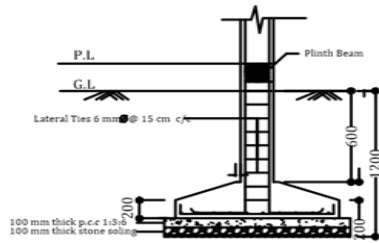
RMU /UMIAM- UMTRU STAGE-III /DRWG NO. – 21



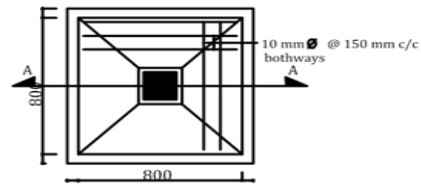
RMU /UMIAM- UMTRU STAGE-III /DRWG NO. – 22



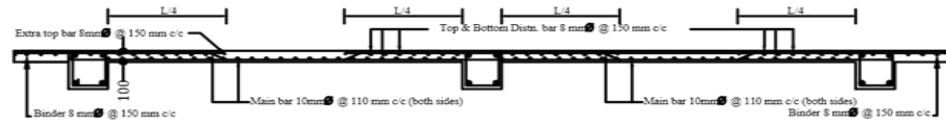
RMU /UMIAM- UMTRU STAGE-III /DRWG NO. – 23 A



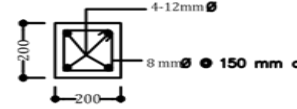
SECTION AT A-A



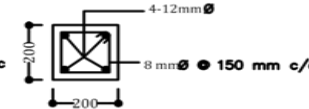
DETAILS OF FOOTING



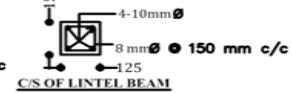
CROSS SECTION OF SLAB AND ROOF BEAM



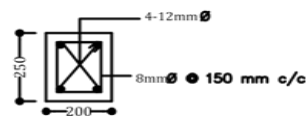
C/S OF COLUMN



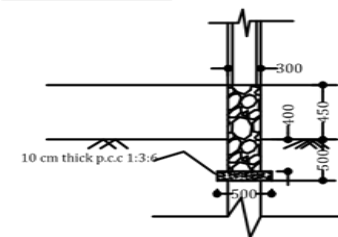
C/S OF PLINTH BEAM



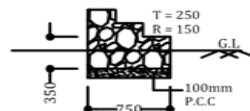
C/S OF LINTEL BEAM



C/S OF ROOF BEAM



DETAILS OF PLINTH WALL

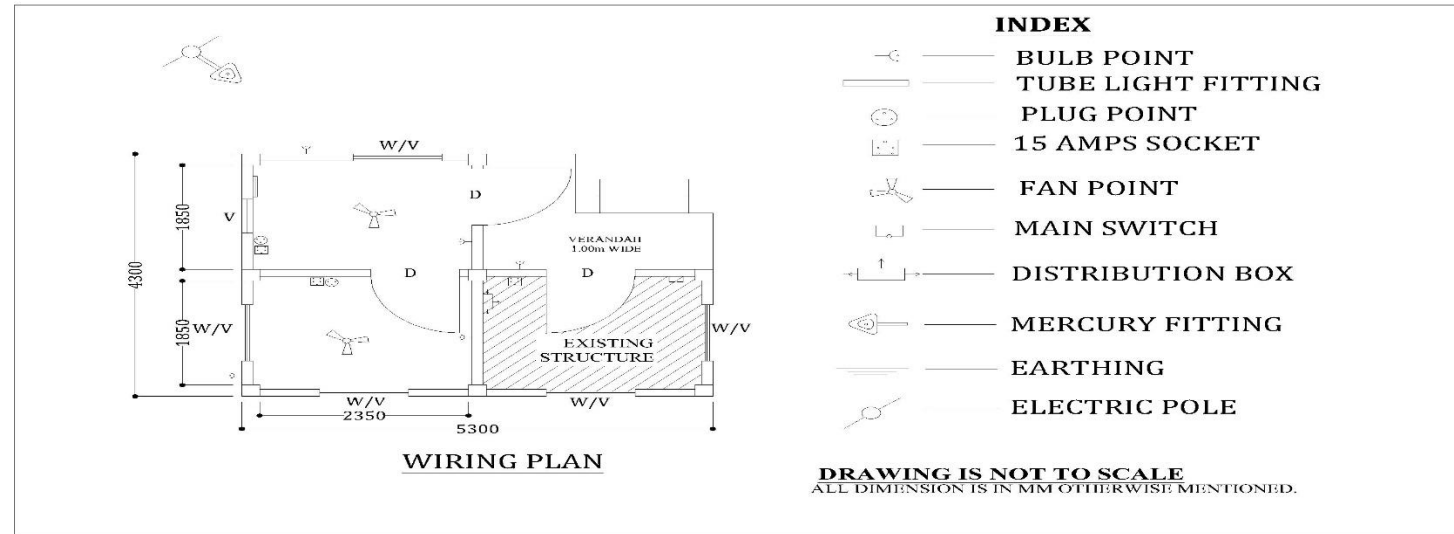


C/S OF STEPS

## STRUCTURAL DRAWING

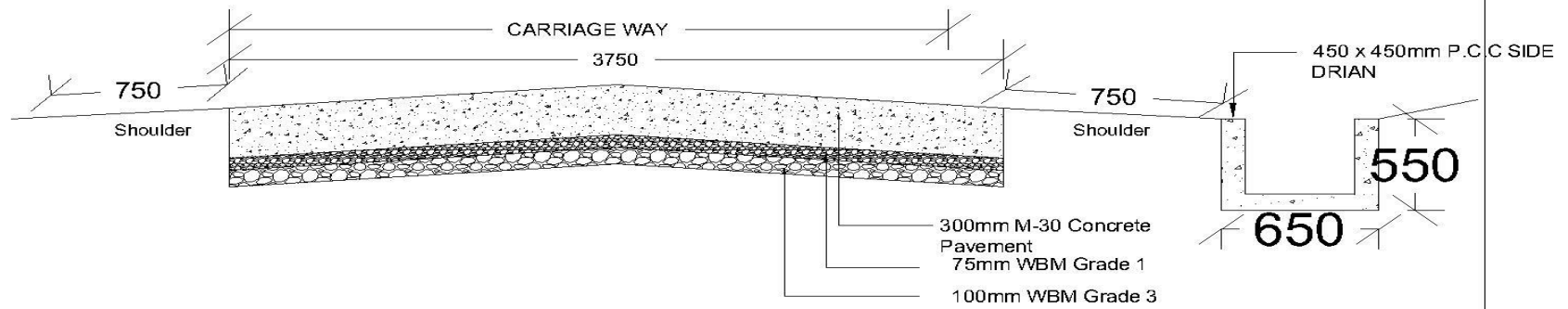
**DRAWING IS NOT TO SCALE**  
ALL DIMENSION IS IN MM OTHERWISE MENTIONED.

RMU /UMIAM- UMTRU STAGE-III /DRWG NO. – 23 B



RMU /UMIAM- UMTRU STAGE-III /DRWG NO. – 24



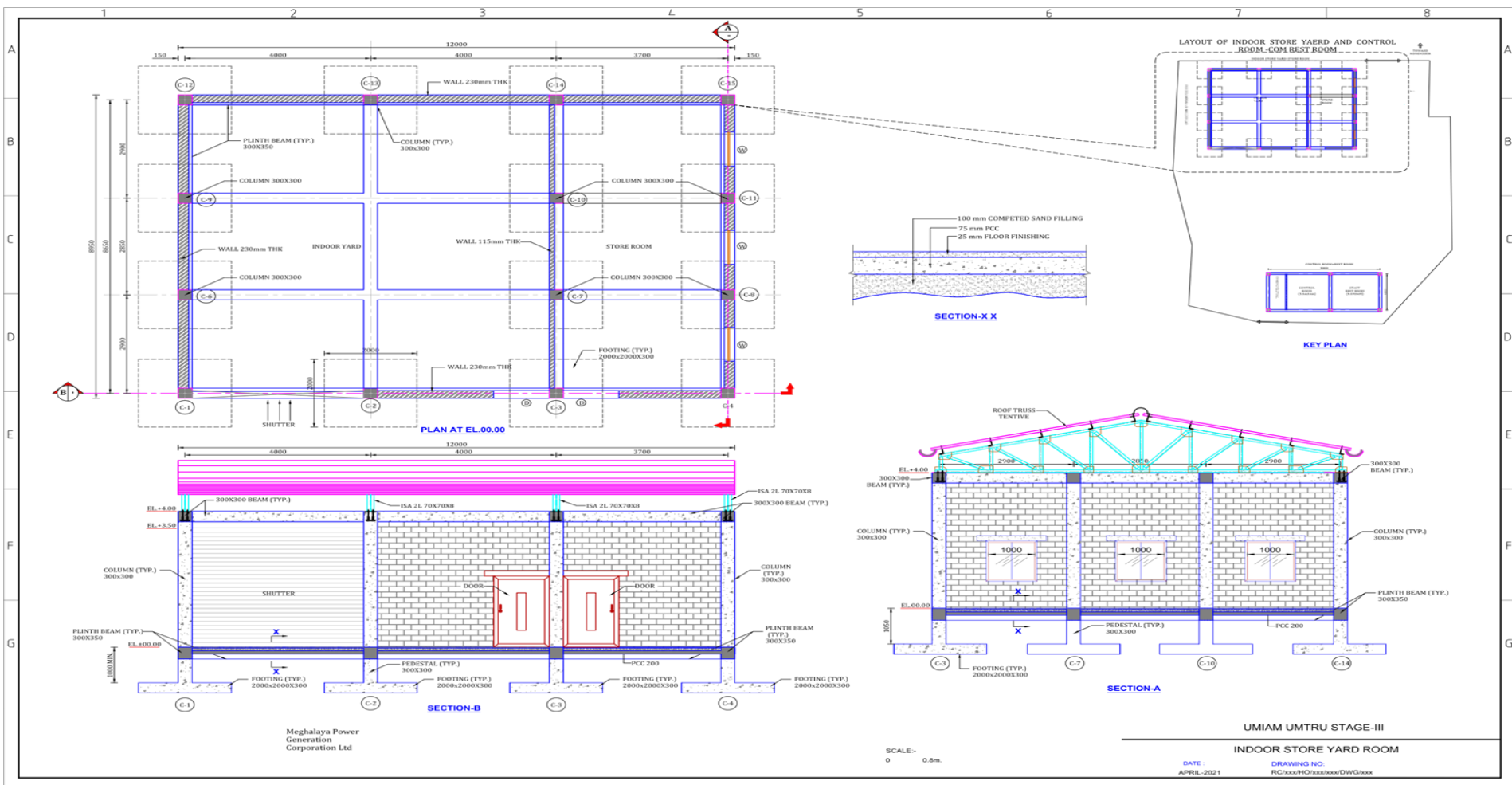


CROSS SECTION DETAILS OF CONCRETE PAVEMENT ROAD

Construction of Concrete Pavement Road from Face-III Junction to Stage-III Surge-Shaft/Valve House

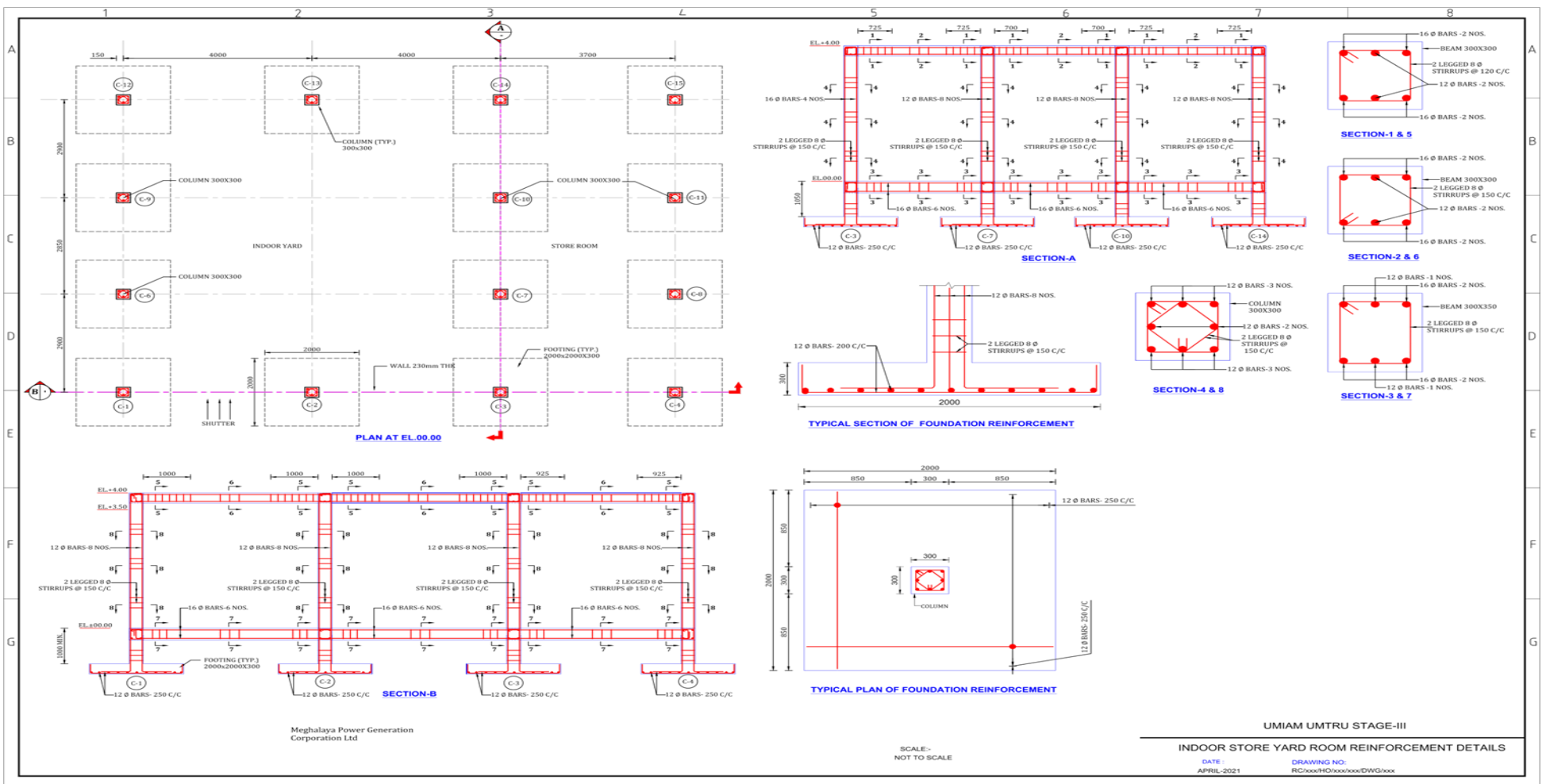
DRAWING IS NOT TO SCALE  
Dim in Millimeters

RMU /UMIAM- UMTRU STAGE-III /DRWG NO. – 26

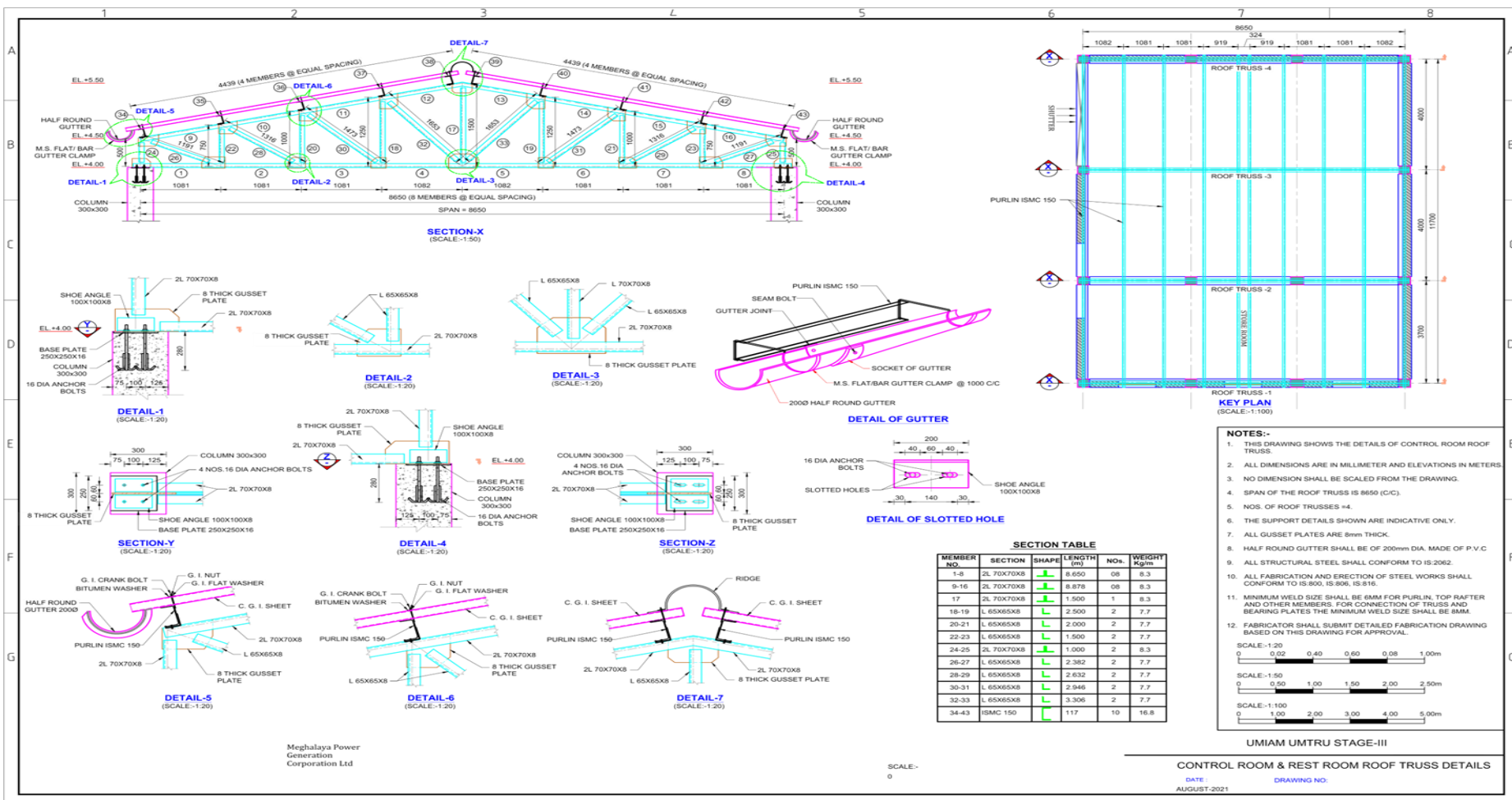


RMU /UMIAM- UMTRU STAGE-III /DRWG NO. – 27

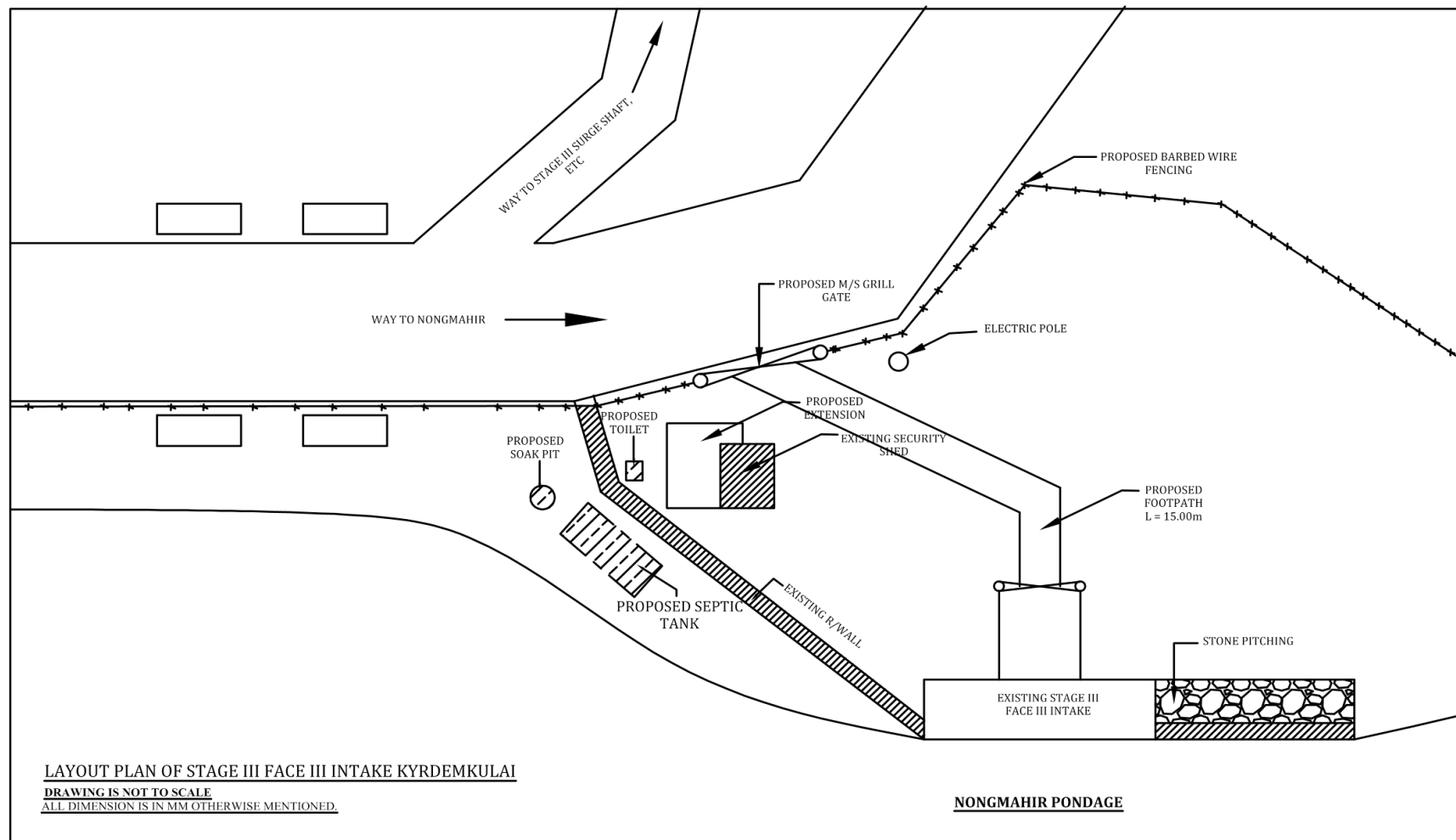




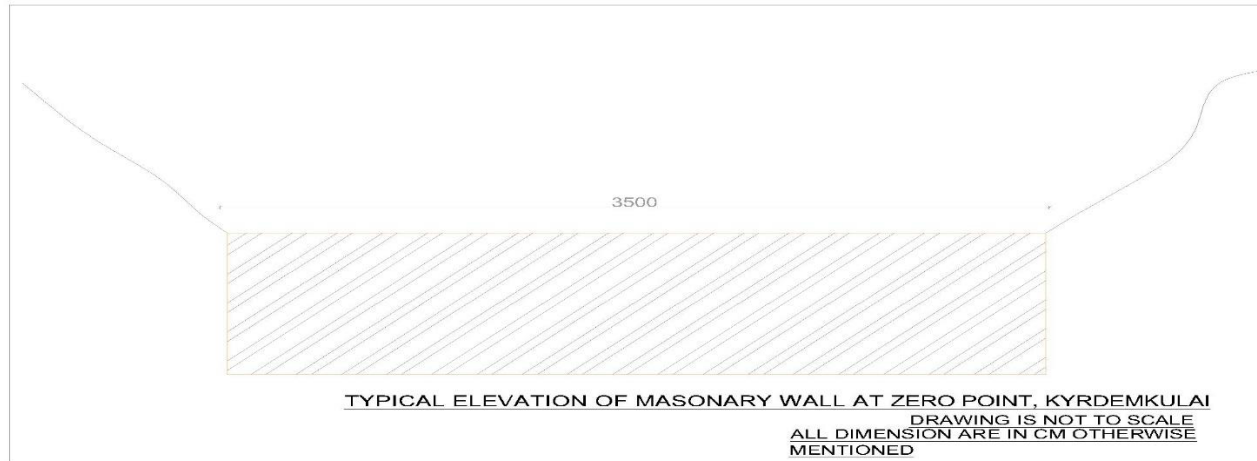
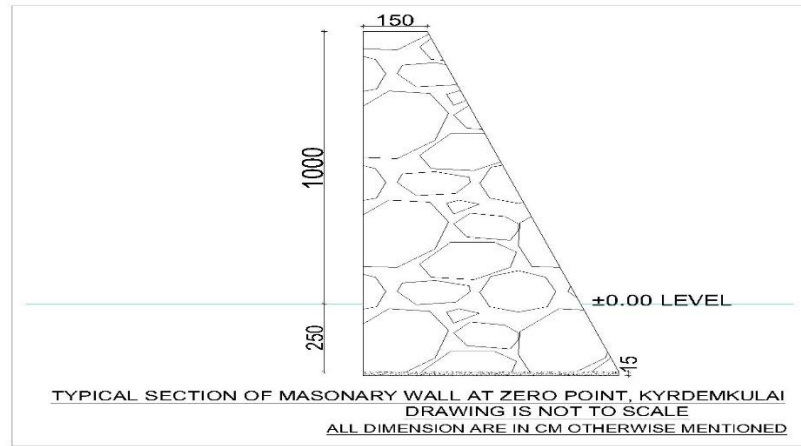
RMU /UMIAM- UMTRU STAGE-III /DRWG NO. - 27 A



RMU /UMIAM- UMTRU STAGE-III /DRWG NO. – 27 B



RMU /UMIAM- UMTRU STAGE-III /DRWG NO. – 28



RMU /UMIAM- UMTRU STAGE-III /DRWG NO. – 29