# DRAWINGS FOR MPULUNGU FSTP

-	DRAWIN	G REFEREN	ICE
No.	Drwg No.	Title	
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## GENERAL

- 1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS STATED OTHERWISE.
- 2. DRAWINGS TO BE READ WITH ALL RELEVANT LAYOUT PLANS AND STANDARD DRAWNG.
- 3. PROGRAMME, METHOD OF CONSTRUCTION AND SETTING OUT OF THE WORKS SHALL BE APPROVED BY THE ENGINEER BEFORE COMMENCEMENT OF WORK.
- 4. CONTRACTOR SHALL PROVIDE SAFETY MEASURES WHEN WORK IS CARRIED OUT IN HAZARD AREAS eg. NEAR OVERHEAD POWER LINES, DEEP TRENCHES etc.

# PIPELINES AND FITTINGS

THESE NOTES APPLY TO ALL DRAWINGS SHOWING PROPOSED PIPELINES AND FITTINGS UNLESS STATED OTHERWISE ON THE SPECIFIC DRAWINGS.

- 1. ANCHOR/THRUST BLOCKS TO BE CONSTRUCTED FROM CONCRETE CLASS 20/20.
- 2. CONCRETE TO BE CAST AGAINST UNDISTURBED GROUND. WHERE DISTURBED, THE SOIL AROUND THE ANCHOR BLOCK TO BE REMOVED AND FILLED WITH CONCRETE BEFORE THE PIPE IS PRESSURE TESTED OR COMPACTED TO NOT LESS THAN 95% MAX. DRY DENSITY BEFORE THE MAIN IS PRESSURE TESTED.
- 3. BENDS LESS THAN 6° TO BE TAKEN UP BY THE FLEXIBLE PIPE JOINTS WHERE PRACTICABLE.
- 4. PRESSURE CLASS FOR DISTRIBUTION PIPELINE IS PN 10.
- 5. ALL ANCHOR BLOCKS TO BE CAST LEAVING ALL PIPE JOINTS FREE.
- 6. ALL BENDS, TAPERS AND TEES TO BE WRAPPED WITH POLYTHENE SHEET GAUGE 500.
- 7. MINIMUM COVER FOR PIPELINES IS 900mm. UNDER ROADS IS 1200mm
- 8. MINIMUM TRENCH WIDTH TO BE NOMINAL PIPE DIAMETER PLUS 600mm
- 9. DIAMETER FOR STEEL DI, AC, & GI PIPES ARE NOMINAL BORE SIZES, DIAMETER FOR HDPE AND PVC PIPES ARE OUTER DIAMETER.
- 10. PROVIDE DETECTABLE MARKER TAPE ABOVE ALL PLASTIC PIPES AND NORMAL MARKER TAPE ABOVE ALL FERROUS PIPES (300mm ABOVE PIPE CROWN).
- 11. RECOMMENDED BENDS ARE AS SHOWN IN THE TABLE BELOW.

<u>BENDS IN</u> PROFILE	ANGLE MEASURED IN LAYOUT
NO BEND	0° - 6°
11.25°	<b>7° - 17°</b>
22.5°	18° - 28°
22.5°+11.25°	29° - 39°
45°	40° - 51°
45°+11.25°	52° - 62°
45°+22.5°	63° - 73°
45°+22.5°+11.25°	74•-84•
90°	85° - 90°

12. THE LOCATION AND ELEVATION OF EXISTING PIPELINES AND UTILITIES SHOWN ON THE DRAWINGS ARE INDICATIVE AND IT IS THE CONTRACTOR'S RESPONSIBILITY TO CONFIRM THEM ON THE GROUND.

13. VALVE SUPPORTS TO BE CONSTRUCTED IN CONCRETE CLASS 20/20 AS INSTRUCTED BY THE ENGINEER.

# ARCHITECTURAL

- 1. WALLS SHALL BE BUILT OF SOLID CONCRETE BLOCKS OR MASONRY. 150 mm (225 mm) THICK. ALL JOINTS SHALL BE 10 mm.
- 2. FINISH ON EXTERNAL WALLS:a. NATURAL STONE WITH HORIZONTAL JOINTS RAKED. b. CONCRETE BLOCK WALLS SHALL RECEIVE CEMENT RENDERING WITH TWO COATS EXTERNAL QUALITY WATER PAINT FINISH.
- 3. FLOOR FINISH INDICATED IN THE DRAWING IS PROVISIONAL AND SHALL BE CONFIRMED ON SITE/CLIENT.
- a. SHALL BE 10mm INTERNAL GAUGED LIME PLASTER WITH FIRST GRADE EMULSION FINISH b. KITCHEN AND BATHROOM WALLS SHALL BE CERAMIC TILES AND 10 mm CEMENT PLASTER WITH GLOSS PAINT FINISH.
- 5. WARDROBES, CUPBOARDS & SHELVES SHALL HAVE A GLOSS PAINT FINISH.
- 6. ALL ROOMS SHALL HAVE 150 x 25 mm THICK GRADE 'A' TIMBER SKIRTING EXCEPT KITCHEN AND BATHROOM WHICH SHALL HAVE 150 x 25mm THICK CONCRETE SKIRTING.

1. FINISH ON EXTERNAL WALLS:a. NATURAL STONE WITH HORIZONTAL JOINTS RAKED. b. CONCRETE BLOCK WALLS SHALL RECEIVE CEMENT RENDERING WITH TWO COATS EXTERNAL QUALITY WATER PAINT FINISH.

WATER RETAINING STRUCTURES (STORAGE TANK, RESERVOIR, INTAKE STRUCTURES, TUNNELS AND SIMILAR )

- LOAD BEARING WALL )
- 5. 75x25 CORNICE
- 6. 200x40 HARD WOOD FASCIA

- 1. PLUMBING WORKS MUST BE CO-ORDINATED WITH ELECTRICAL AND ANY CONFLICT TO BE CLARIFIED BEFORE WORK BEGINS
- 2. EXTERNAL DRAINAGE TO ENGINEER'S DETAILS
- 3. ALL INSPECTION COVERS TO BE OF CAST IRON
- 4. PLUMBING TO BE INSTALLED BY THE CONTRACTOR TO ENGINEER'S APPROVAL

# DRAWING NOTES

- THESE NOTES APPLY TO ALL ARCHITECTURAL DRAWINGS UNLESS STATED OTHERWISE ON THE SPECIFIC DRAWINGS.
- STAFF HOUSE, OFFICE BLOCK, ADMINISTRATION BLOCK, GUARD HOUSE, TOILETS AND SIMILAR
- 4. INTERNAL FINISH ON WALLS:-
- 7. CHIPBOARD CEILINGS SHALL BE PAINTED WITH DISTEMPER.
- FUNCTIONAL BUILDINGS (PUMP HOUSE, LABORATORIES, CHLORINATION BUILDING AND SIMILAR)
- 2. PLINTH SHALL RECEIVE 15 mm CEMENT RENDERING WITH BITUMINOUS PAINT FINISH.
- 1. WALLS SHALL BE REINFORCED CONCRETE WITH CEMENT RENDERING.
- **ROOF SPECIFICATIONS:**
- PRE-PAINTED IT4, GAUGE 24 ROOFING SHEET ON:
- 1. 100x50mm INTERMEDIATE RAFTERS AT 600 c/c
- 2. 150x50mm PURLINS AT 1500 c/c
- 3. TIMBER TRUSSES AT APPROXIMATE 1800 C/C (NO TRUSSES ALONG END
- 4. CHIPBOARD CEILING FIXED TO 50x50 BRANDERING AT 600 C/C
- PLUMBING WORKS:

# STRUCTURAL

THESE NOTES APPLY TO ALL STRUCTURAL DRAWINGS UNLESS ON THE SPECIFIC DRAWINGS.

## GENERAL NOTES.

- 1. STRUCTURAL DRAWINGS ARE NOT TO BE SCALED.
- 2. THE CONTRACTOR IS RESPONSIBLE FOR CONFIRMING ALL CUTTING BENDING AND PLACING OF REINFORCEMENT.
- 3. TYING OF ALL REINFORCEMENT TO BE APPROVED BY THE CONCRETING.
- 4. REINFORCEMENT :- HIGH YIELDING RIBBED BARS TO SSRM DIMENSIONS TO SSRN 127. TO BE APPROVED BY THE ENGI
- 5. ALL REINFORCEMENT LAPS TO BE STAGGERED.
- 6. ALL BACKFILL BEHIND STRUCTURAL WALLS TO BE WITH AF GRANULAR FILL.
- 7. BELOW EACH BASE SLAB: PROVIDE Min 200mm HARDCORE BLINDING.
- 8. FOR BUILDING: PROVIDE MIN 500 MICRON POLYTHENE SHE GROUND SLAB.
- 9. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING ALL \$ CHAIRS AND TYING WIRE.
- 10. ALL WALL-SLAB AND ALL WALL FOOTING CONNECTIONS 75mm KICKER.
- 11. SPECIAL ATTENTION SHOULD BE GIVEN TO THE CONCRET CONCRETING PROCEDURES AND METHODS.
- 12. LEVELS OF FOUNDATION TO BE DECIDED BY THE ENGINEE EXCAVATION TO MINIMUM DEPTH OF 1000 mm BELOW EXIS
- 13. ALL EXPOSED CONCRETE EDGES SHOULD BE CHAMFEREI

PUMP HOUSE, STAFF HOUSE, OFFICE BLOCK, ADMIN <u>GUARD HOUSE, CHAMBERS AND TOILETS, AND FUN</u> <u>BUILDINGS (PUMP HOUSE, LABORATORIES, CHLORI</u> AND SIMILAR)

- 1. CONCRETE CLASS :-
- 25/20 FOR OTHER STRUCTURAL CONCRETE 15/20 FOR BLINDING MIX.
- 2. NOMINAL COVER:-
- Min 25mm FOR BUILDINGS AND OTHER STRUCTURES.
- 3. JOINTS:-THE POSITION AND NUMBER OF PARTIAL CONTRA DIRECTED BY THE ENGINEER.
- 4. CONSTRUCTION JOINTS:-THE POSITION AND NUMBER OF I TO BE AS DIRECTED BY THE ENGINEER OR AS SHOWN IN ' BEFORE PLACING FRESH CONCRETE THE OLD SURFACE S AND ALL LAITANCE AND LOOSE MATERIAL REMOVED. THE THOROUGHLY WETTED BUT EXCESS WATER SHOULD BE F CONSTRUCTION JOINTS ARE IN A SATURATED BUT SURFACE

WATER RETAINING STRUCTURES (STORAGE TANK. INTAKE STRUCTURES, TUNNELS AND SIMILAR)

- 1. THE WATER BAR SHALL BE OF PVC Min 200mm WDTH (DUN
- 2. NOMINAL COVER:-Min 50mm FOR CIVIL WORKS. Min 40mm FOR WATER RETAINING STRUCTURES.
- 3. ALL EXPOSED ARRISES TO HAVE 25x25mm CHAMFERS.
- 4. CONCRETE STRENGTH OF CLASS 35/20 TO BE USED FOR # elements.
- 5. CONCRETE STRENGTH OF CLASS 15/20 TO BE USED FOR B
- 6. SURFACE BED HARDCORE TO BE LAID IN SEPARATELY COI LAYERS ON FIRM APPROVED GROUND AS APPROVED BY E

# ELECTRICAL

SCHEMATICS ARE FOR TENDERING PURPOSES ONLY. THE SHALL SUBMIT COMPLETE DESIGN FOR THIS SYSTEM BASE IN THESE SCHEMATICS WITH DETAILS OF THE MAKE, TYPE, AND THE DISCRIMINATIONS THEREOF. ALL COMPONENTS AVAILABLE.

	DRAWING REFERENCE
	No. Drwg No. Title
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S STATED OTHERWISE	
Dimensione on Rive	NOTES
L DIMENSIONS ON SITE	
	<ol> <li>All Dimensions are in mm unless otherwise stated</li> <li>All Concrete shall be C25</li> </ol>
ENGINEER BEFORE	3. All Dimensions to be confirmed on site and any
. Engendeen der ane	discrepancies reported to the Designer before commencement of works
	4. Structural concrete shall be made with sulphate
N 127 BENDING	resistant cement
NEER.	5. All exposed surfaces to be shuttered smooth
PPROVED /SELECTED	
E AND Min Somm	
EETING BELOW THE	
SPACER BLOCKS,	
SHOULD HAVE A Min	
E SPECIFICATION FOR	
ER ON SITE AFTER	
STING GROUND LEVEL.	
D (10mm X 10mm).	
MIGTO ATION DI OCH	
NISTRATION BLOCK,	
ICTIONAL	
	00 MPULUNGU ORIGINAL DRAWING MAR. 2020
ICTIONAL	Rev. Description Date
ICTIONAL	Rev. Description Date REVISIONS
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GENER	RAL SYMBOLS:
	NON RETURN VALVE (NRV)
	PRESSURE REDUCING VALVE (PRV)
	SECTION VALVE (SV)
$\mathbb{N}$	BUTTERFLY VALVE
	REDUCER
	AIR VALVE (AV)
	WASHOUT (WO)
	MANHOLE (MH)
	HAND PUMP (HP)
	BULK METER / WATER METER
	CONSUMER METER
工	FIRE HYDRANT (FH)
	GATE
	BENCHMARK
	SPOT HEIGHT
(•)	COORDINATE
	ELECTRICAL POLE
	SECTION A
	ELEVATION 1
<b>278</b>	ELEVATION (masl)
	TREE
	EXISTING TANK SITE
	PROPOSED TANK SITE
$\bigcirc$	EXISTING BOREHOLE
	PROPOSED BOREHOLE
	EXISTING WATER KIOSK/STANDPIPE
	PROPOSED WATER KIOSK
	OBSOLETE KIOSK/STANDPIPE
· 一 	REPLACEMENT OF EXISTING KIOSK
<u>GL</u>	GROUND LEVEL
	CUTTING/EMBANKMENT SLOPE
TWL_1241	

	 E TYPES:
	CENTER LINE
	PIPELINE WITH DIRECTION OF FLOW
	TARMAC ROAD
A CONTRACT OF CONT	DIRT / GRAVEL ROAD
280 280	CONTOURS
	RAILWAY
	FUTURE/NOT UNDER THIS SCOPE
	EXISTING WATER PIPES
	PROPOSED WATER PIPES
	EXISTING SEWER LINES
	PROPOSED SEWER LINES
	Existing Drain
DD	PROPOSED DRAIN
x x x	EXISTING BARBED WIRE FENCE
	PROPOSED BARBED WIRE FENCE
	EXISTING PALISADE FENCE
	PROPOSED PALISADE FENCE
	EXISTING POWER LINE
	PROPOSED POWER LINE
	PROJECT BORDER

	SPEC
C	

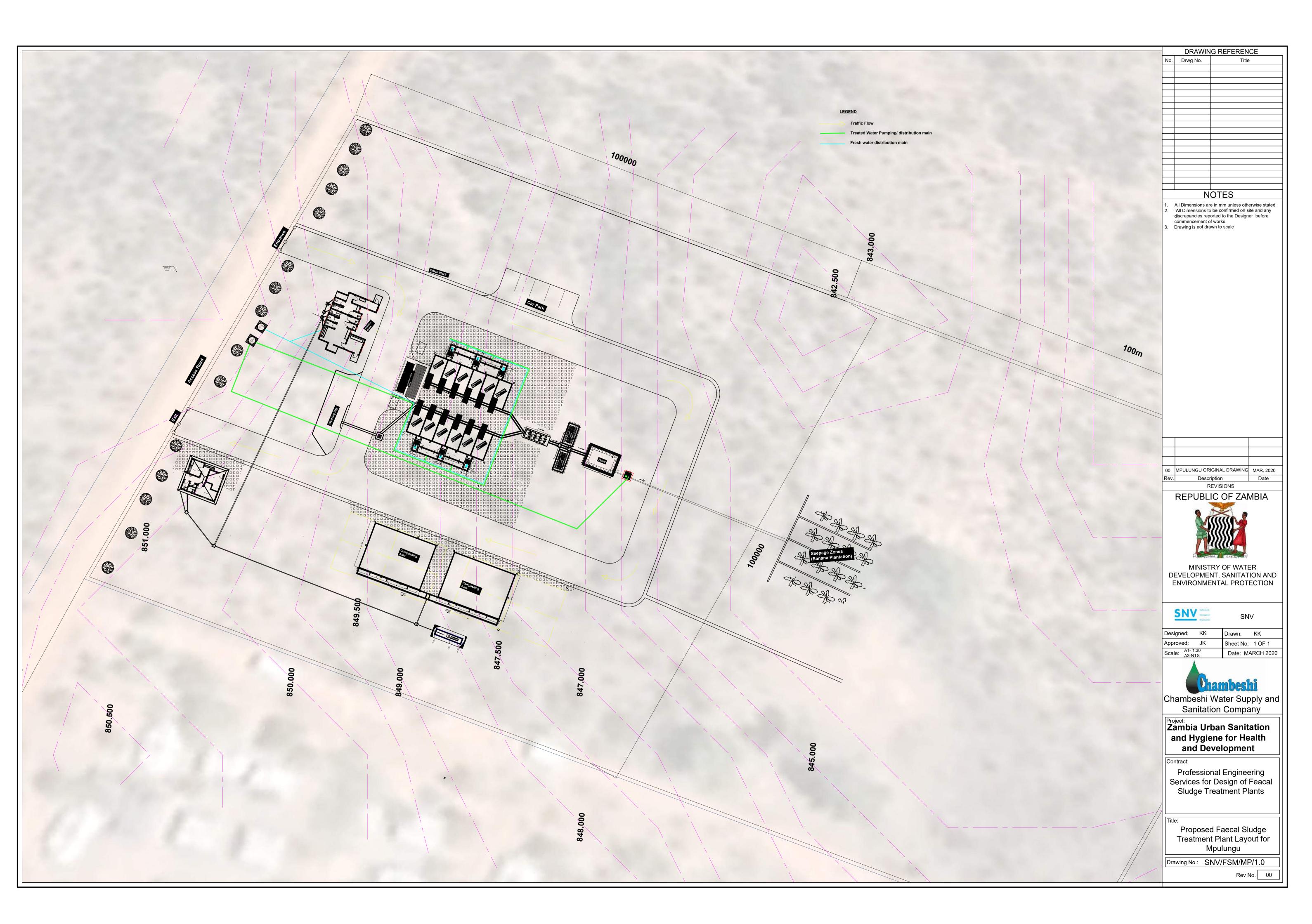
# N<u>ote</u>s:

1.SYMBOLS AND LINE TYPES ARE USED IN ALL DRAWINGS UNLESS STATED OTHERWISE ON THE SPECIFIC DRAWINGS .

ľ	IATC	HES:
		MASONRY
		REINFORCED CONCRETE
		GRAVEL / HARDCORE
		BRICK
		EARTH
		STEEL
		PAVEMENT
		PROPOSED STRUCTURE
		EXISTING STRUCTURE
		REHABILITATION STRUCTURE

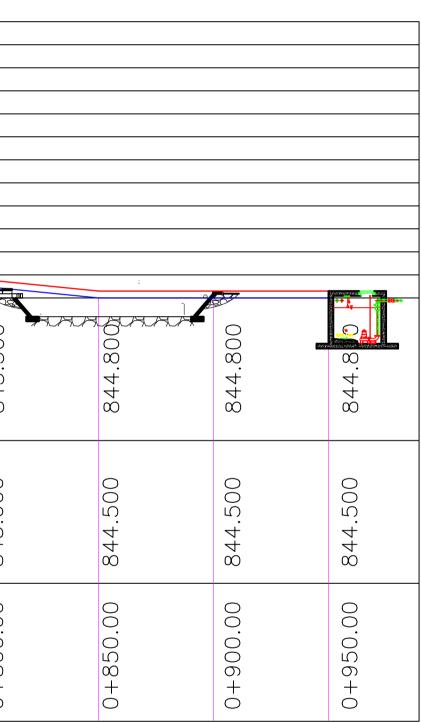
SIFIC FOR	REHABILITATION:	
	PROPOSED WORKS	_

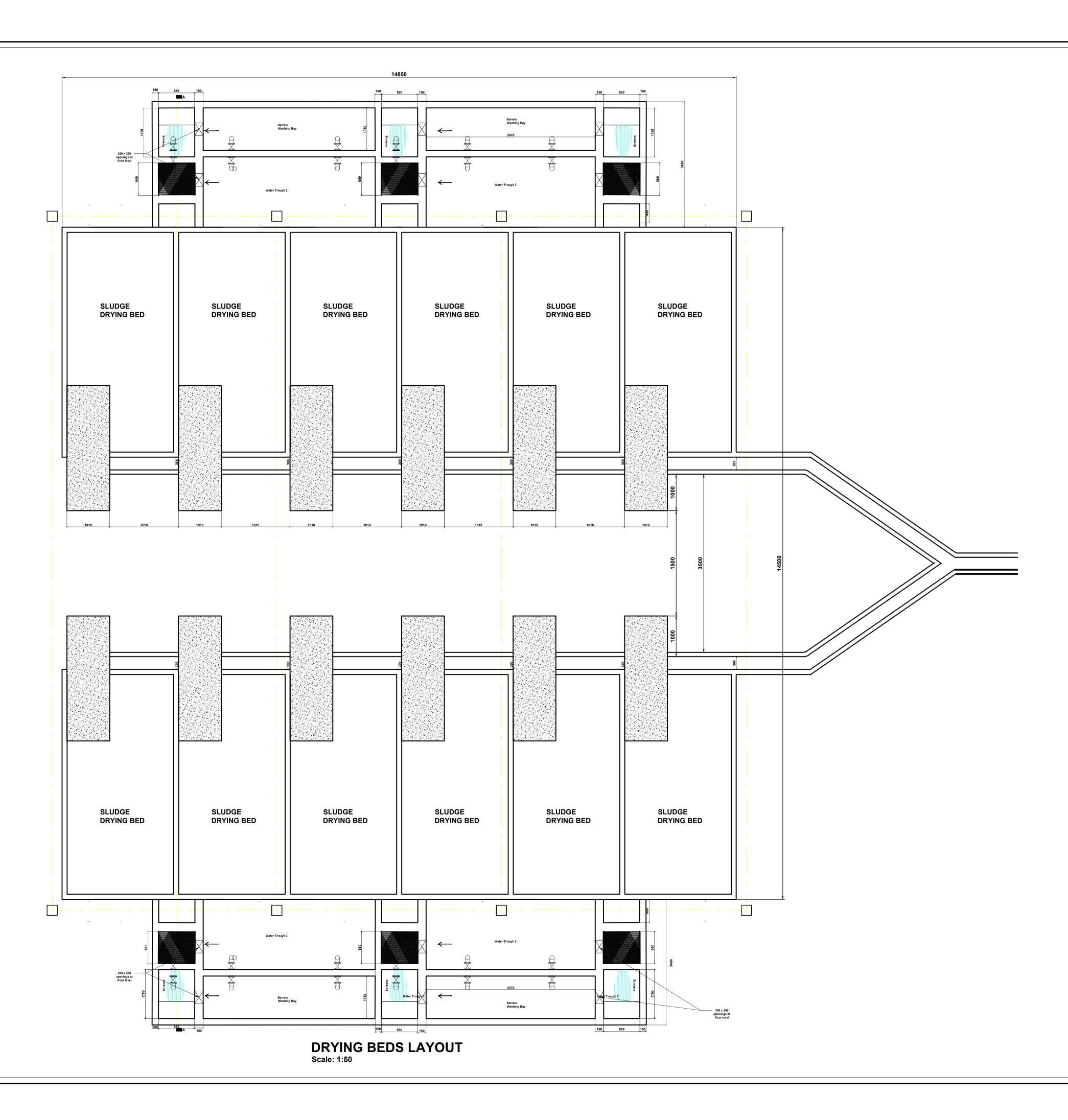
No.	DRAV Drwg No		REFEREN Title	
		NOT		
		ns are in n	nm unless oth	erwise stated
3.		ns to be co	25 onfirmed on si to the Design	
	commencem	ent of wor		
	resistant cerr All exposed s		be shuttered	smooth
00	MPULUNG	U ORIGIN	AL DRAWING	MAR. 2020
Rev.	D	Description REVIS		Date
	REPU	BLIC	OF ZAI	MBIA
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			OF WATE	
	VELOP	ISTRY MENT,		ION AND
	VELOP	ISTRY MENT,	OF WATE SANITAT	ION AND
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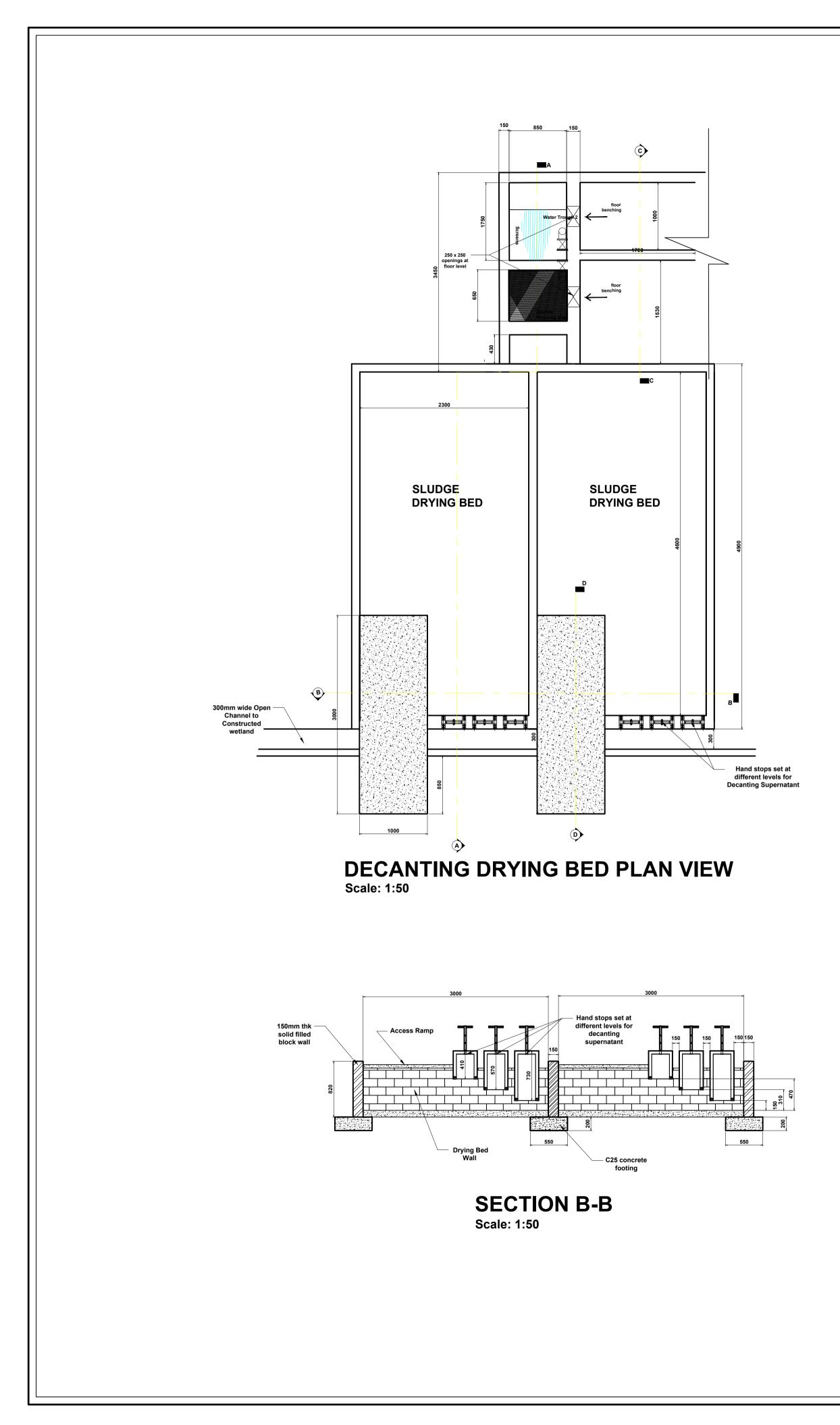
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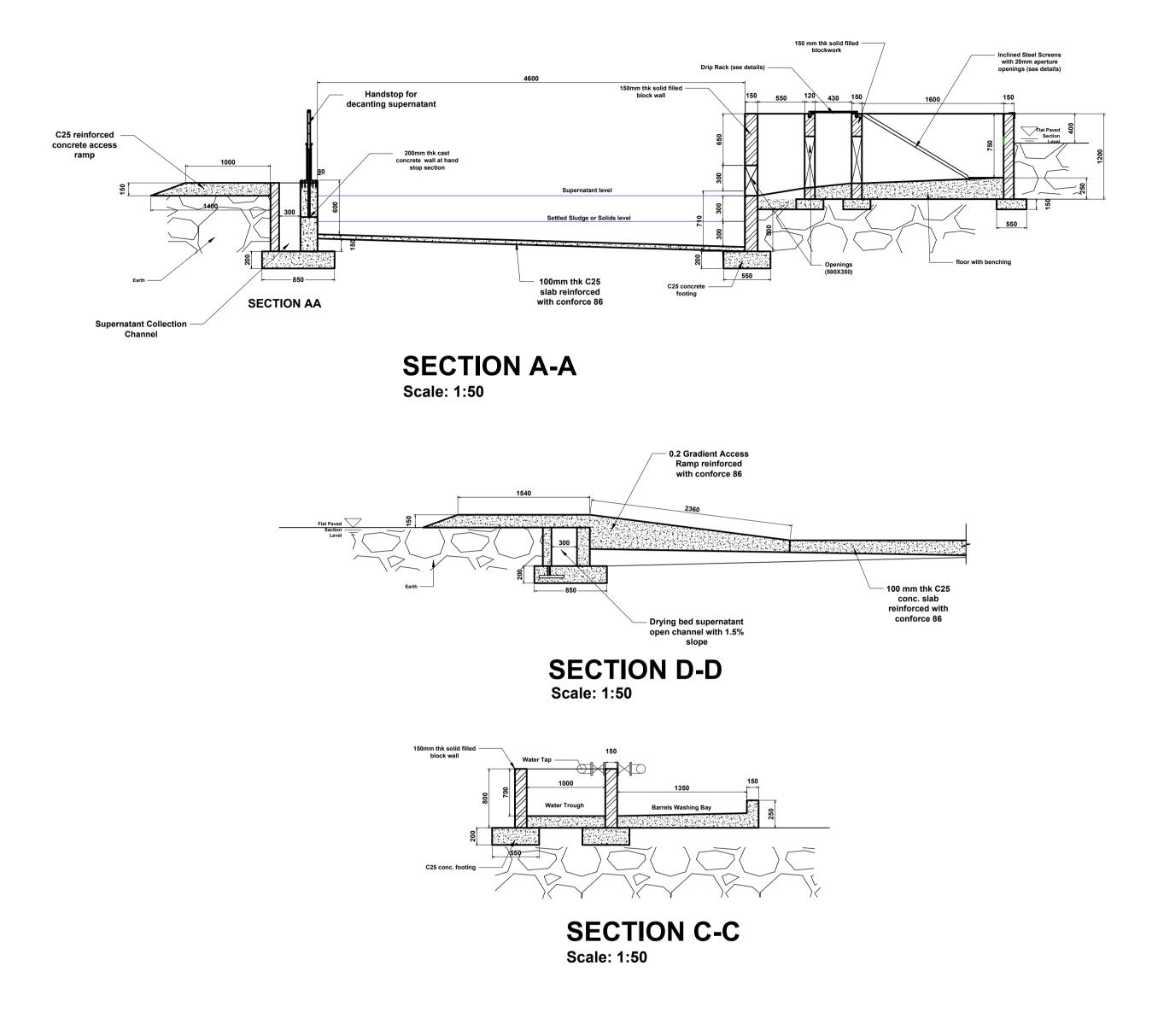
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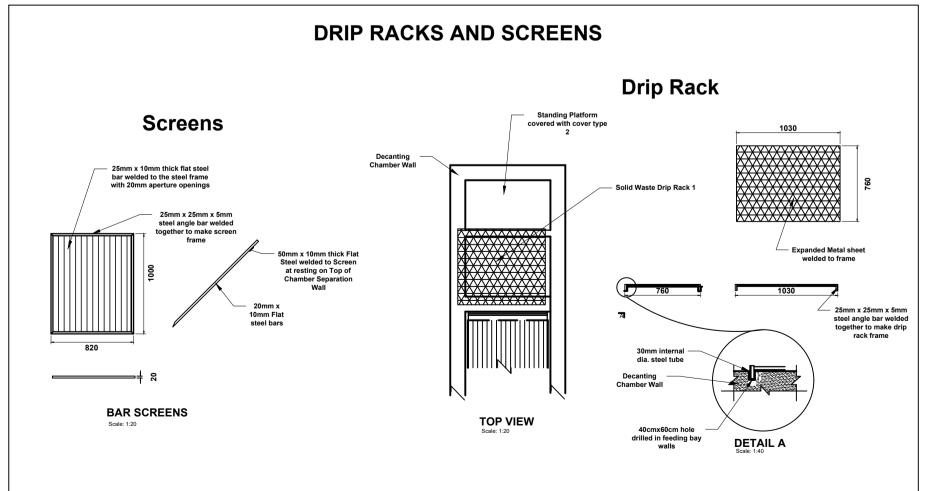




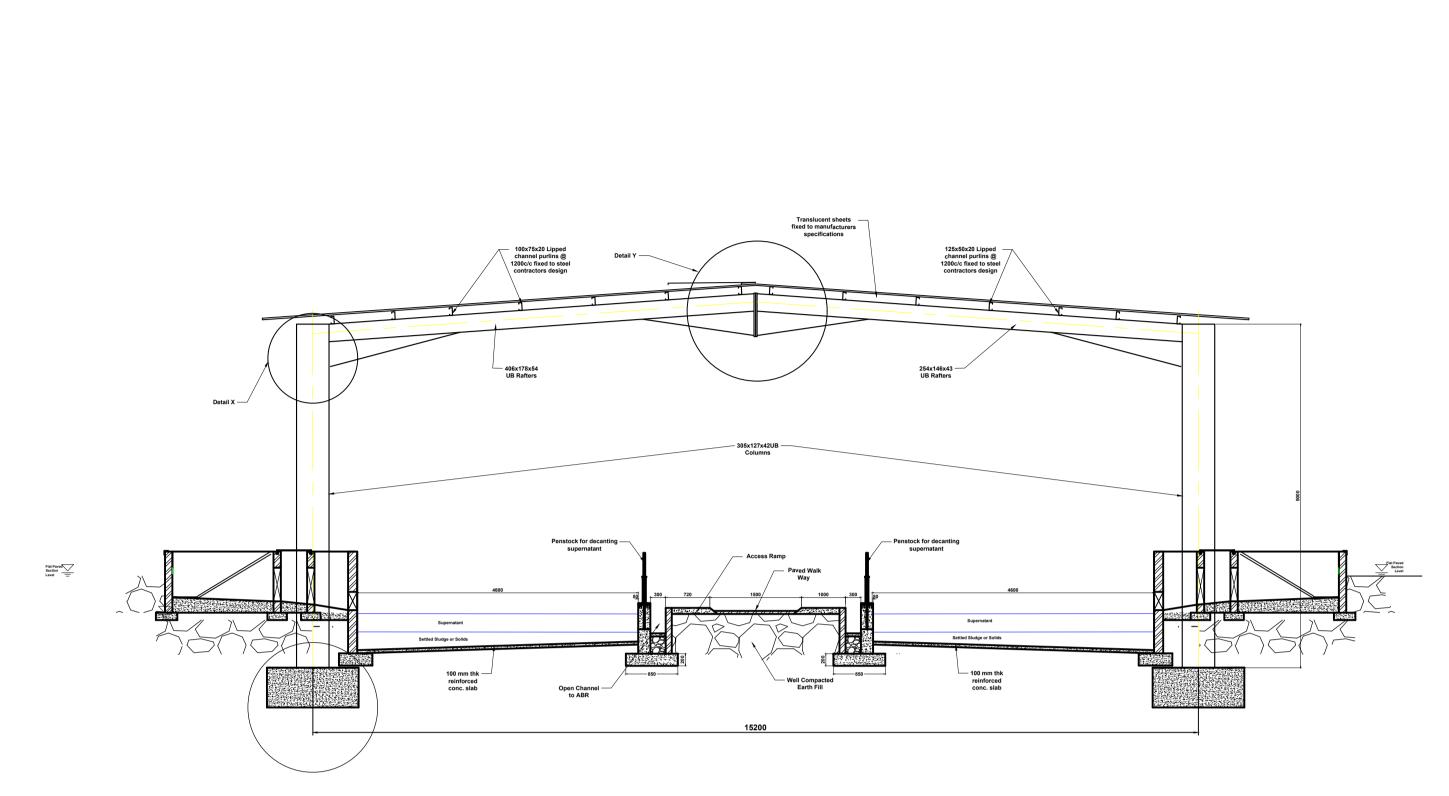
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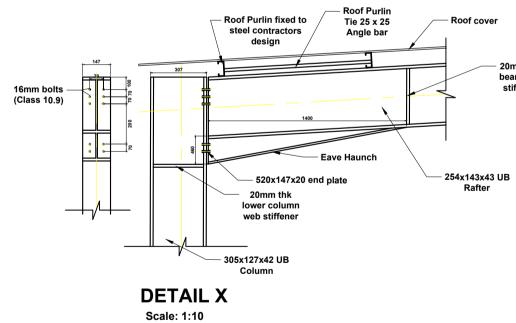




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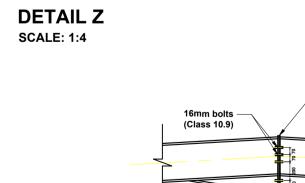


SLUDGE DRYING BED COVER DETAILS Scale: 1:50



— 20mm thk beam web stiffener

# MEMBER CONNECTION DETAILS



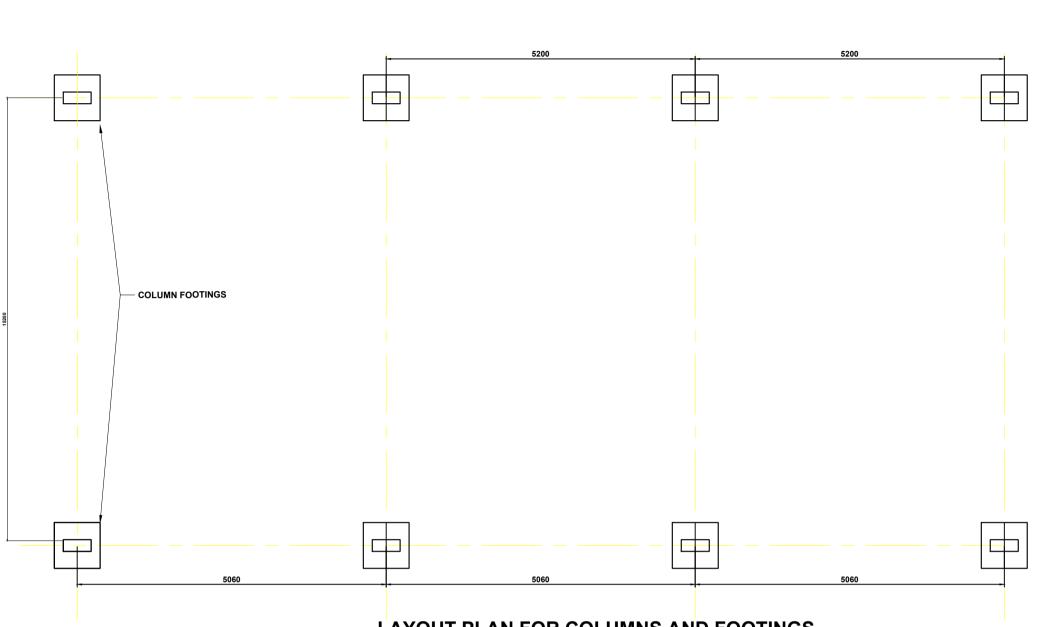
200mm J bolts – (Grade 4.8)

25mm thk  $\,-\,$ Base plate

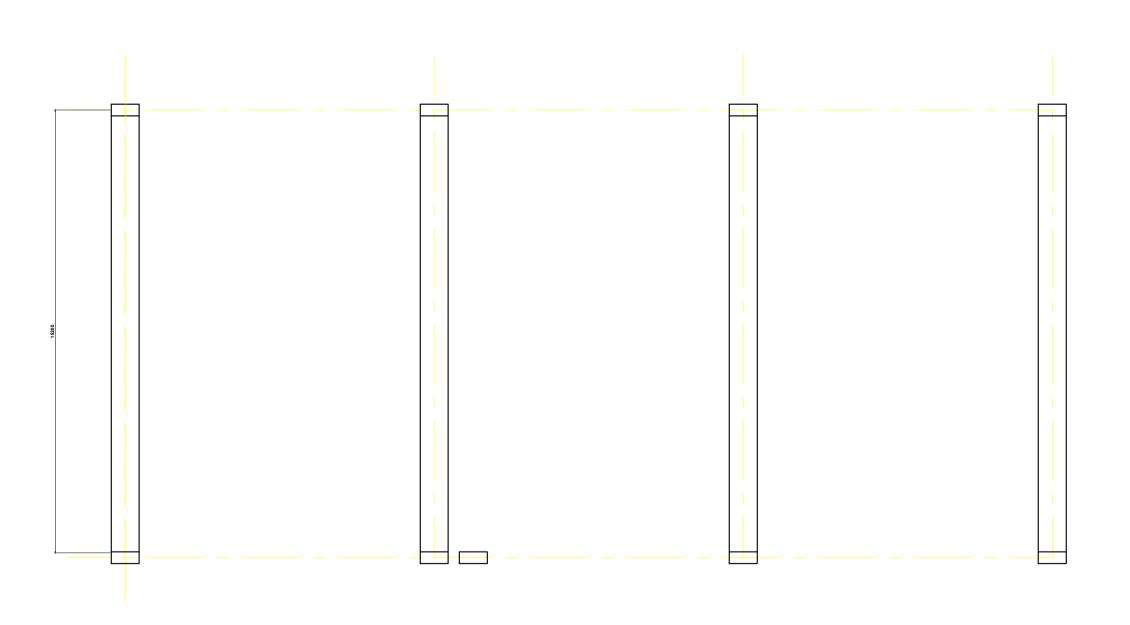
Concrete base — (actual sizing to be confirmed after soil tests)

> Scale: 1:10 5200x147x20 end plate 10.9)

DETAIL Y Scale: 1:10

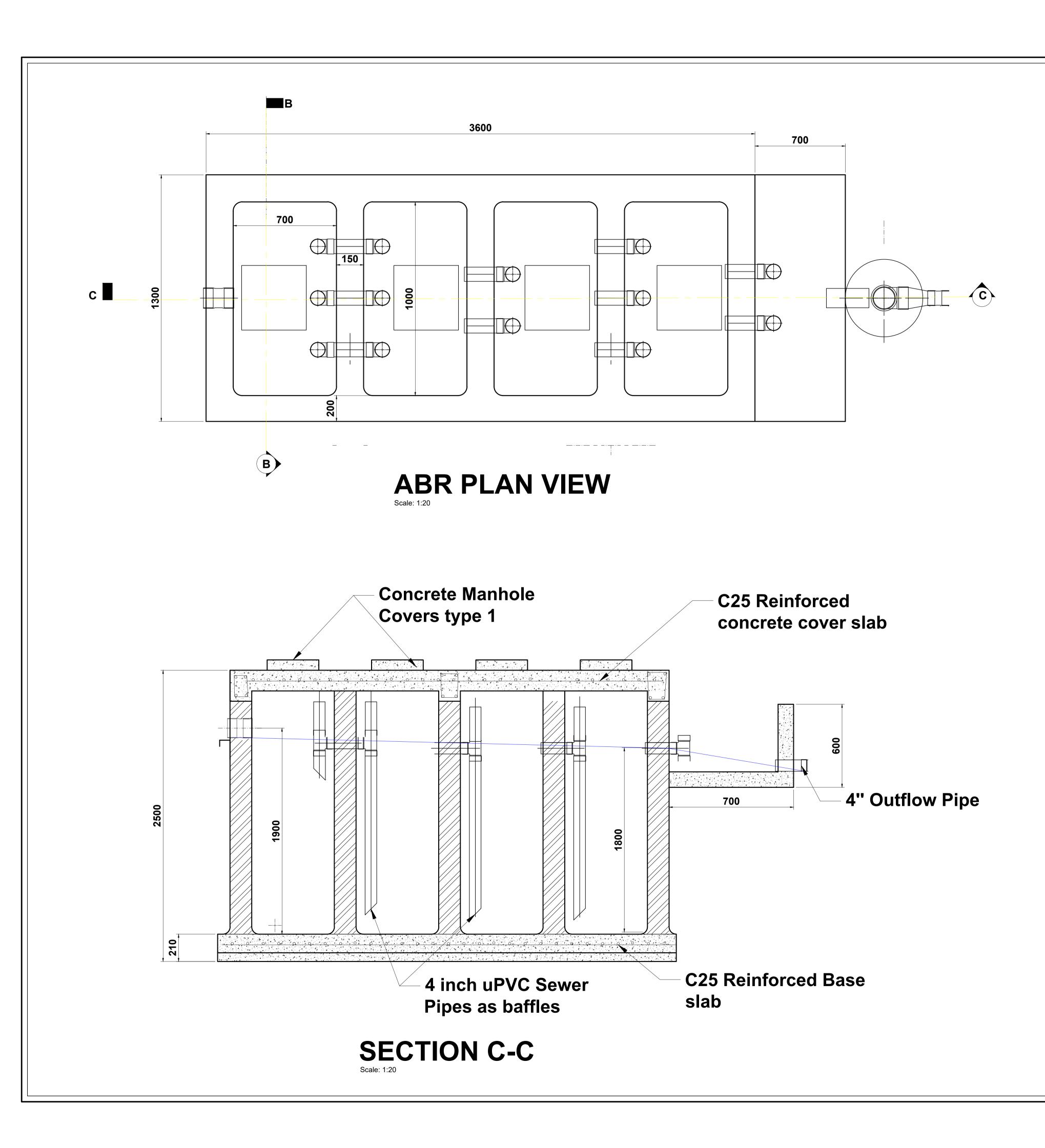


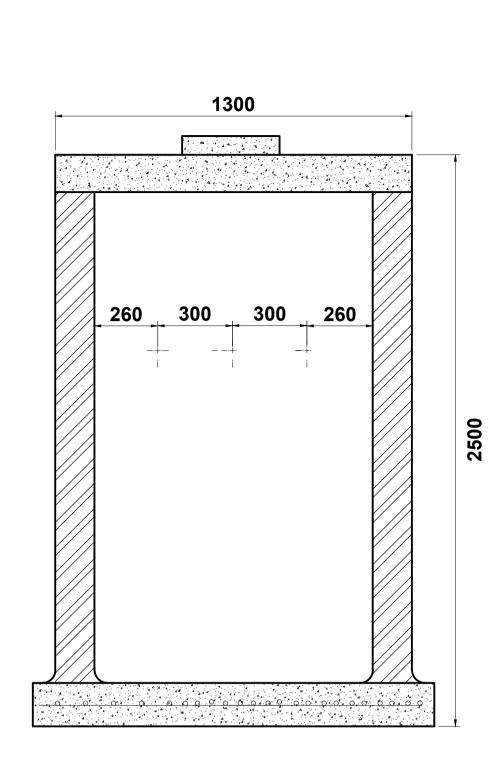
LAYOUT PLAN FOR COLUMNS AND FOOTINGS Scale: 1:100



LAYOUT PLAN ROOF BEAMS Scale: 1:100

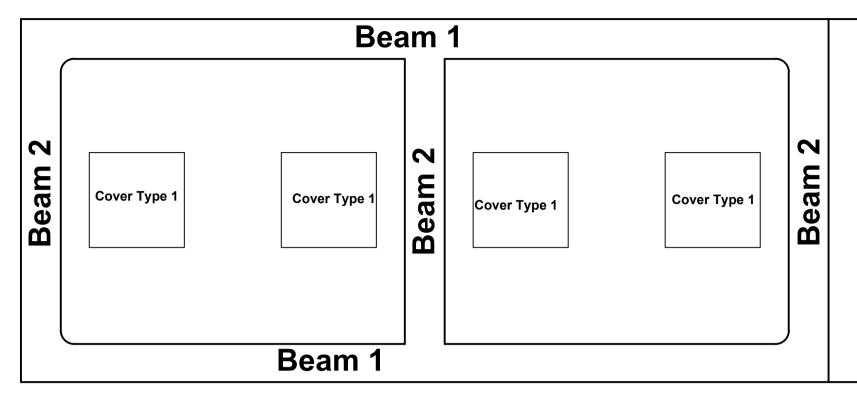
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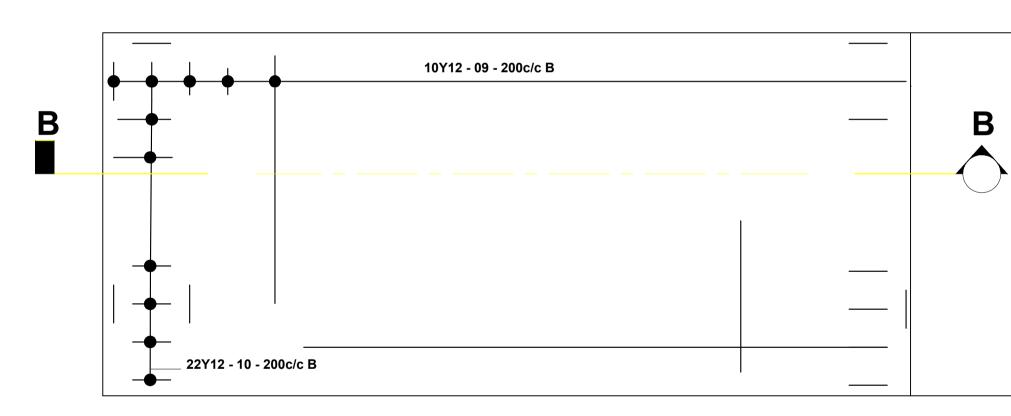


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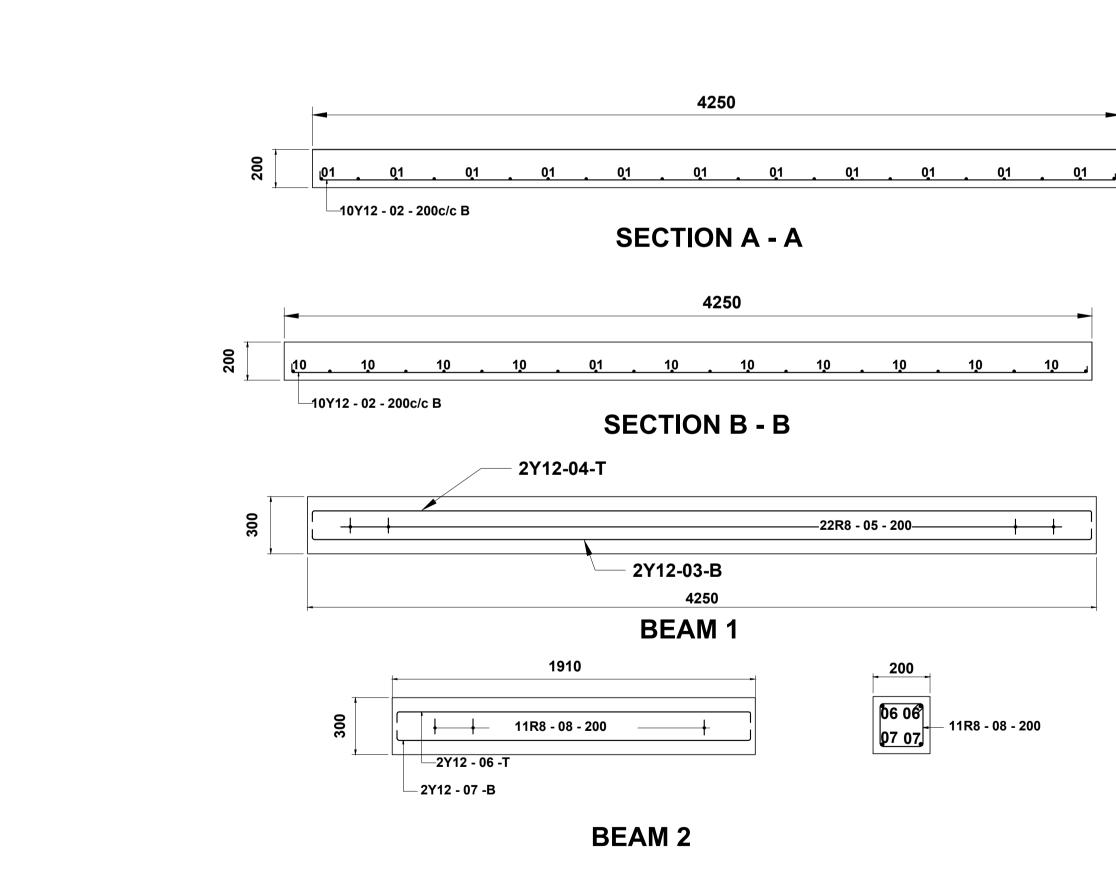


ABR FLOOR SLAB REINFORCEMENT DETAILS



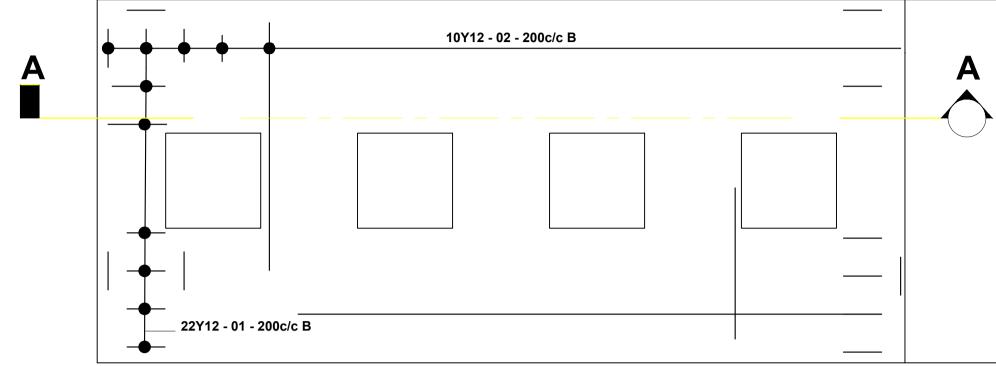
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# **ABR REINFORCEMENT DETAILS**

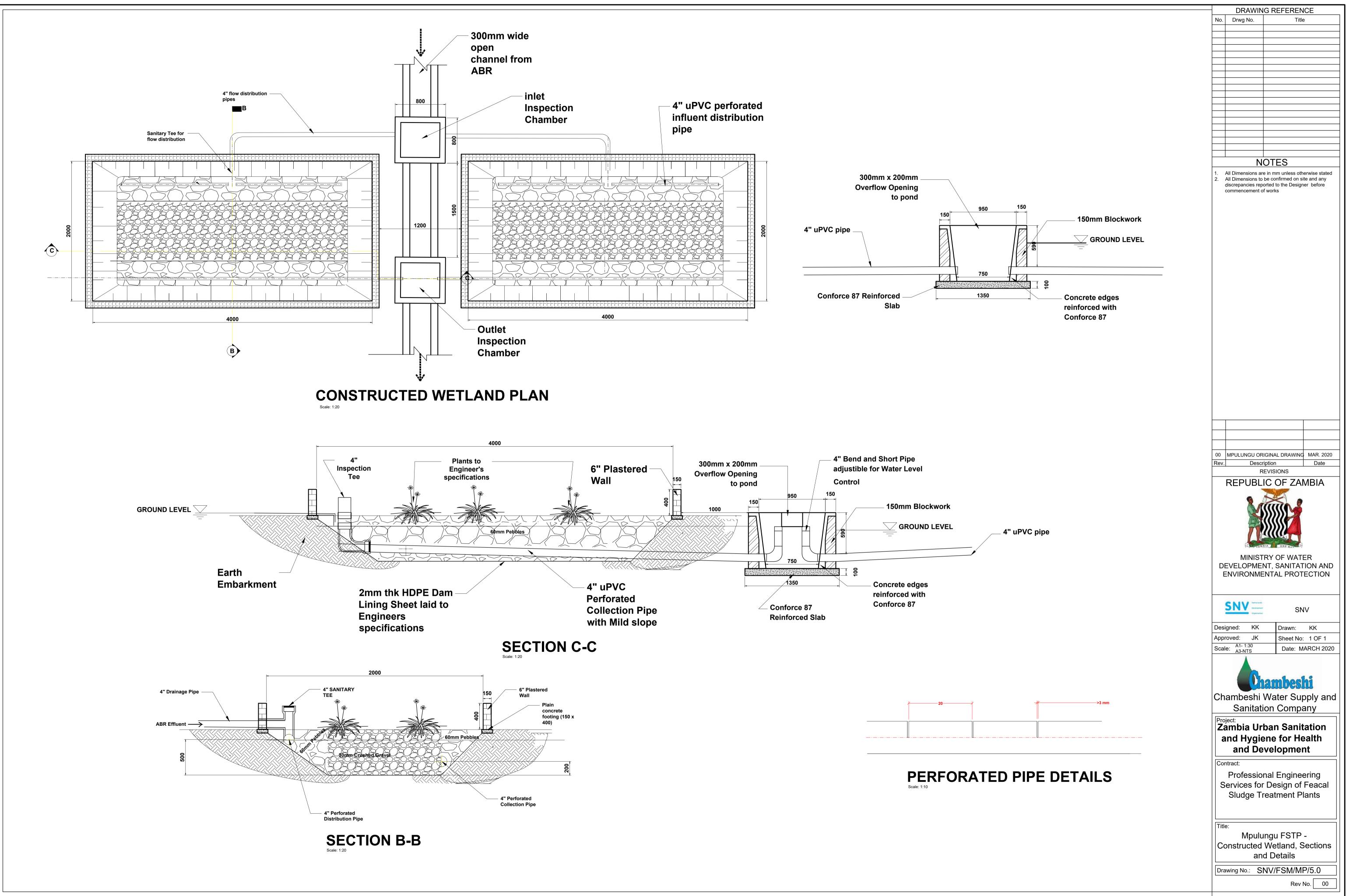


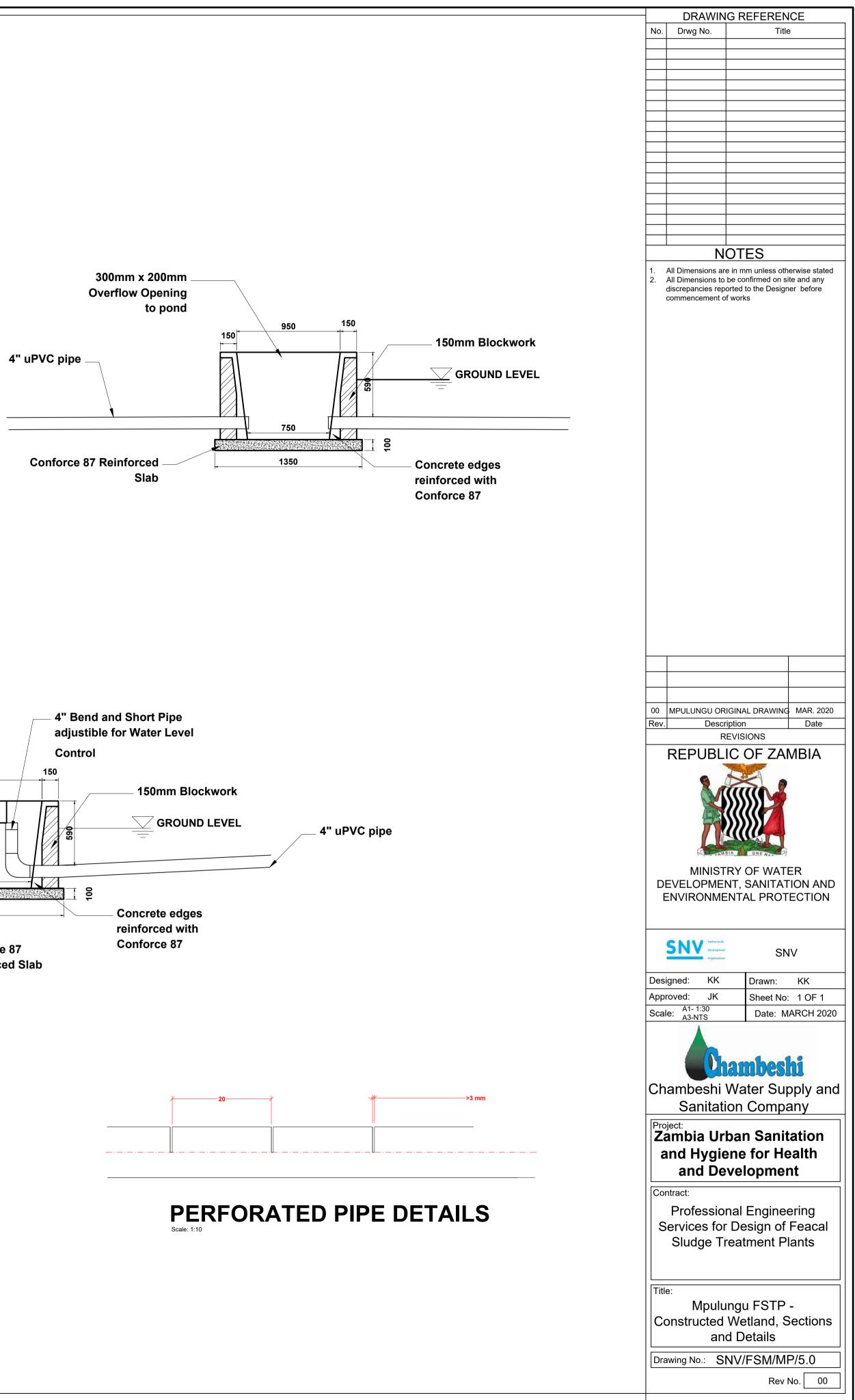


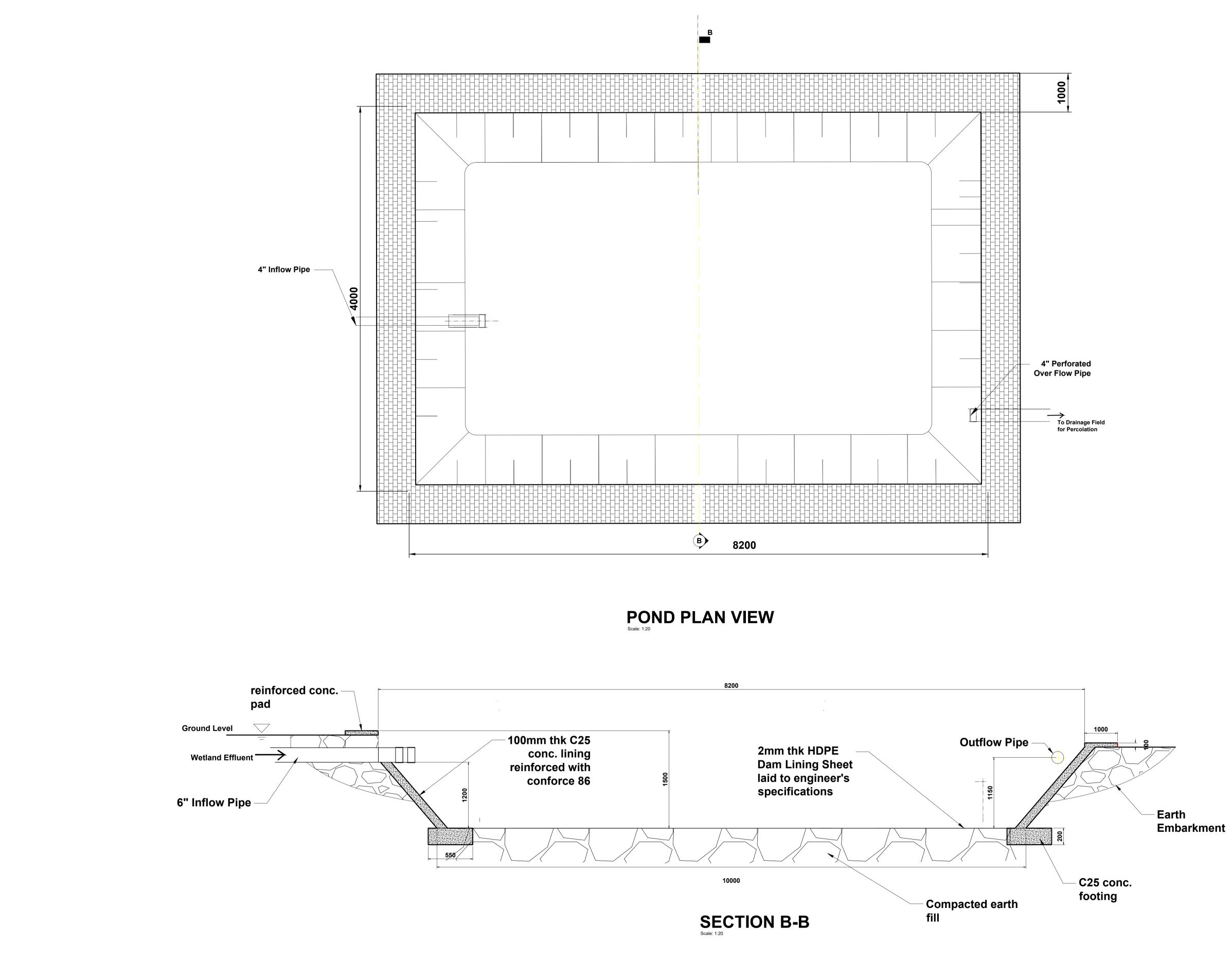
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	Project: Zambia Urban Sanitation
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	and Development
	Contract:
	Professional Engineering
	Services for Design of Feacal
	Sludge Treatment Plants
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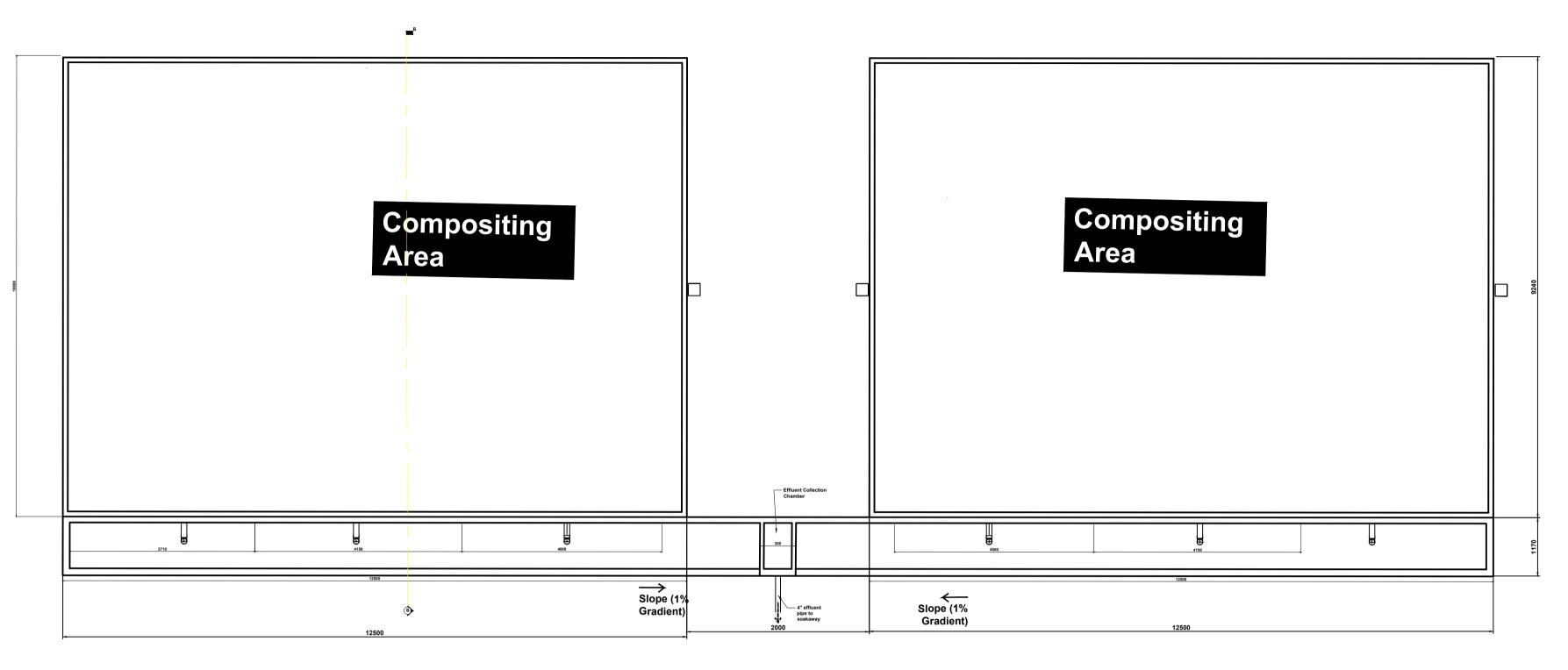


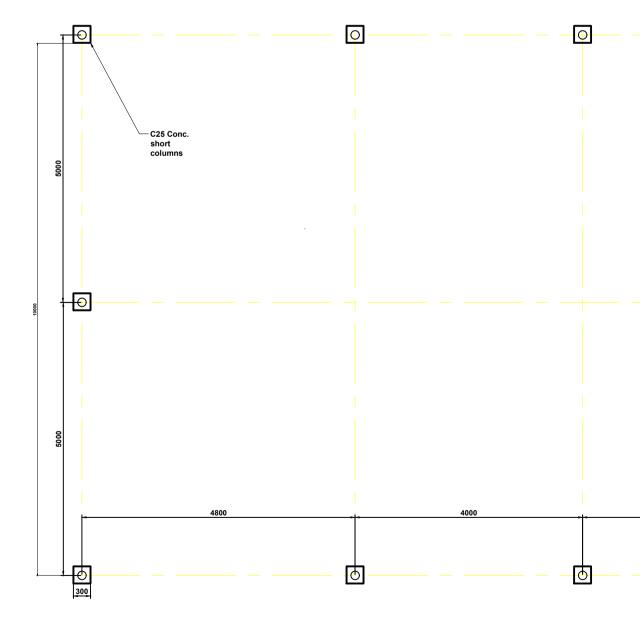




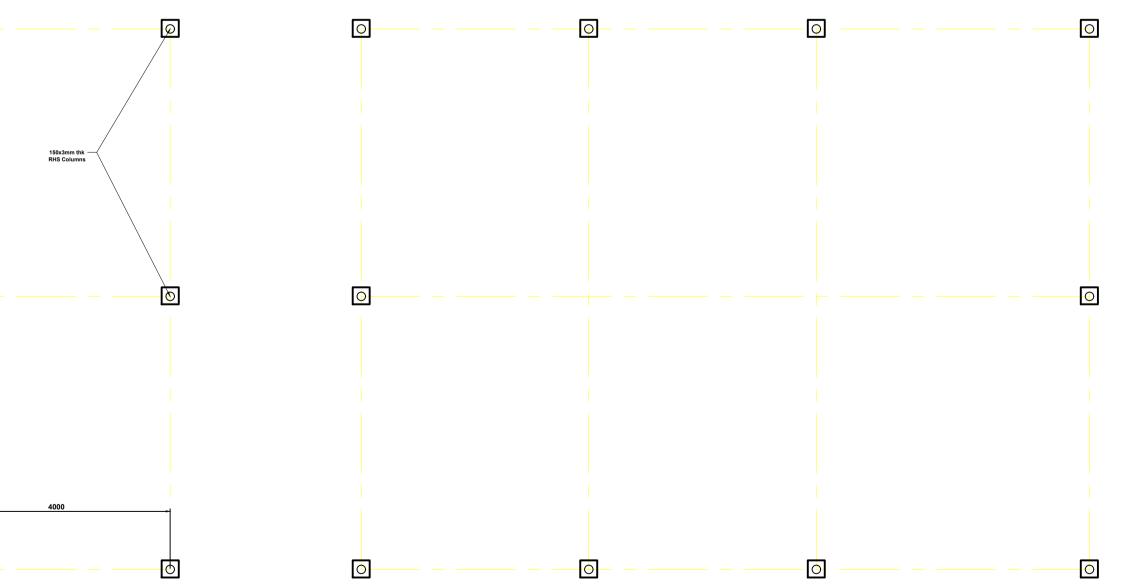
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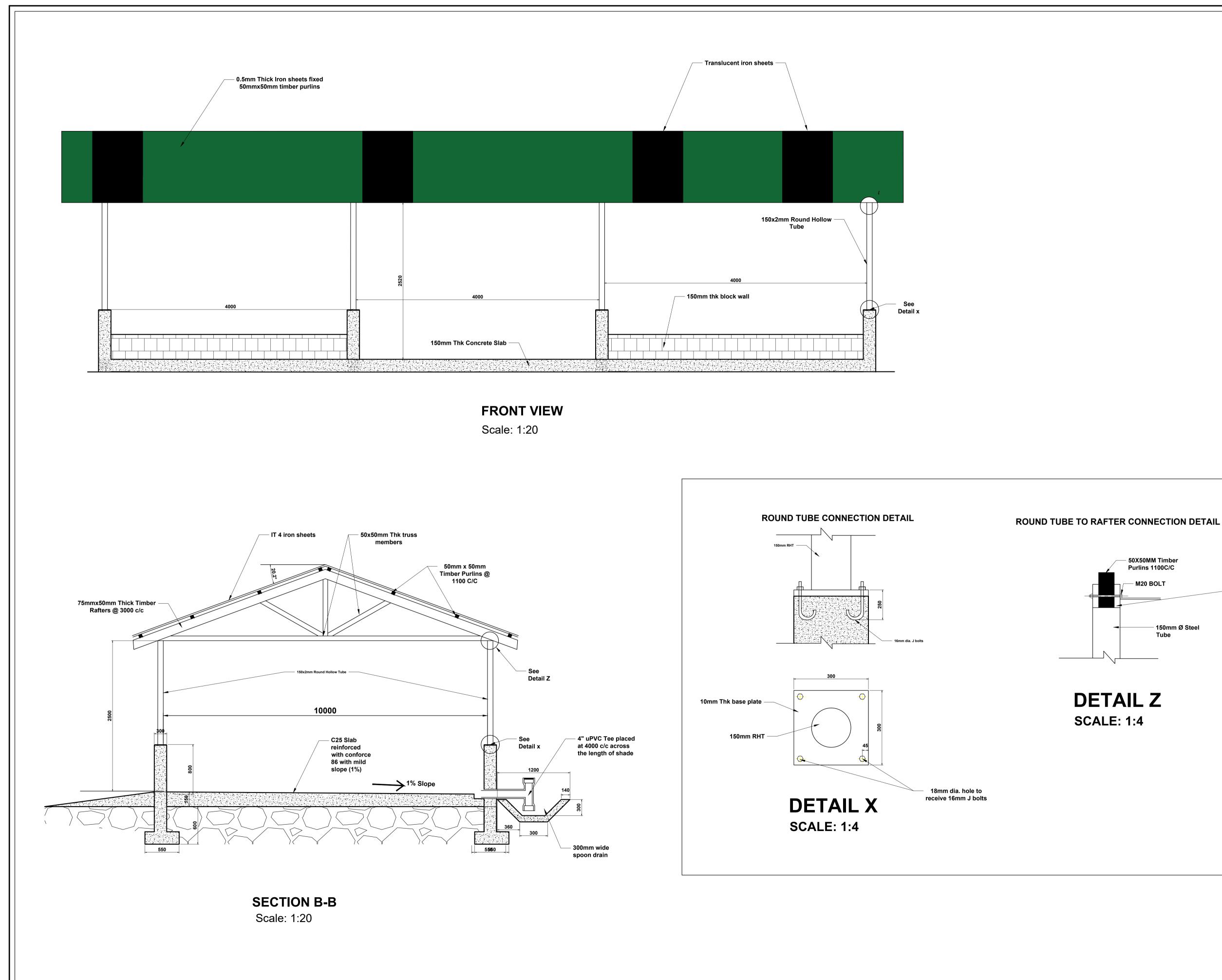


COMPOSITING SHADE LAYOUT Scale: 1:20



COMPOSITING SHED COLUMNS LAYOUT PLAN Scale: 1:20

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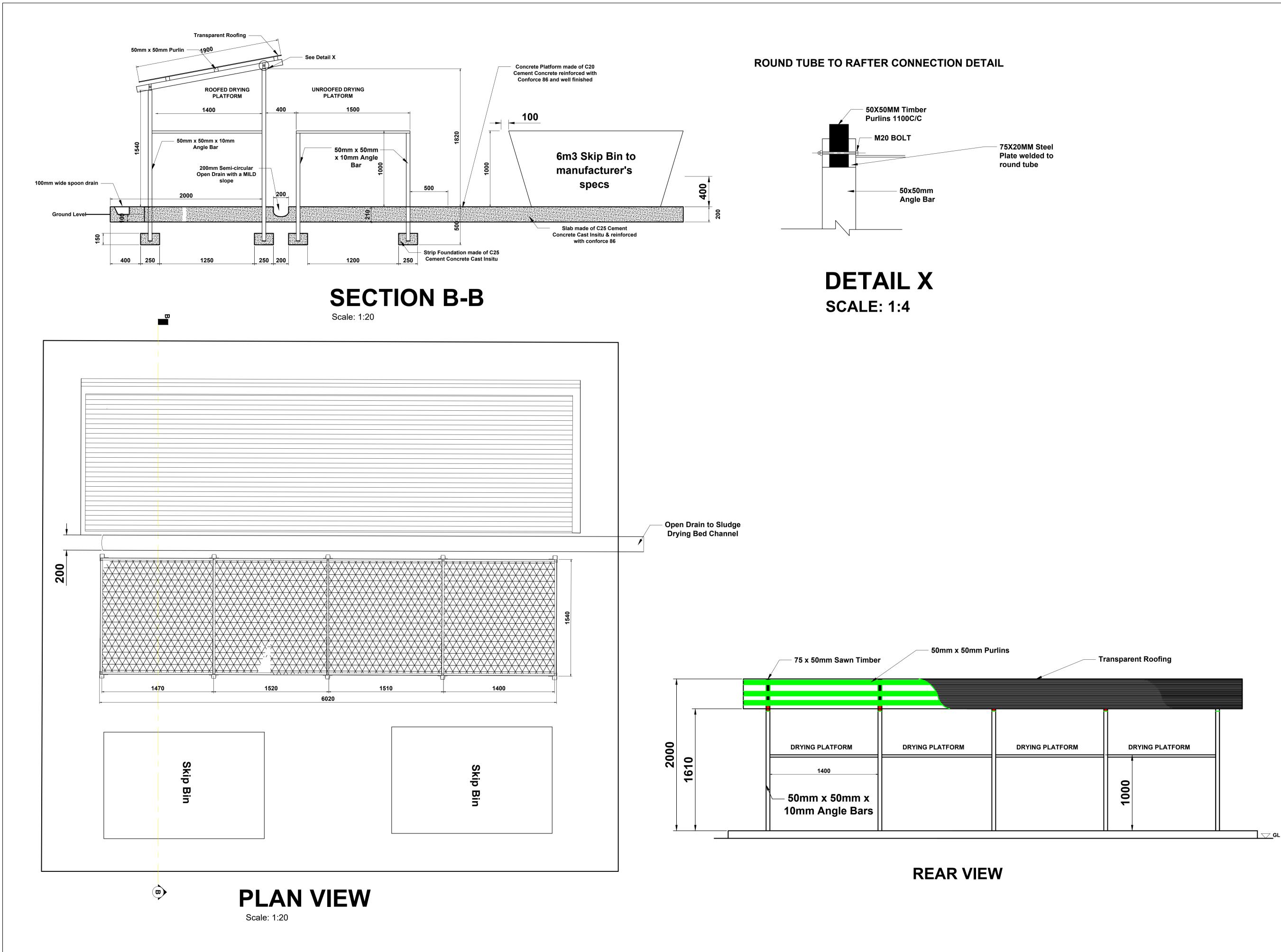


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75X20MM Steel
 Plate welded to
 round tube

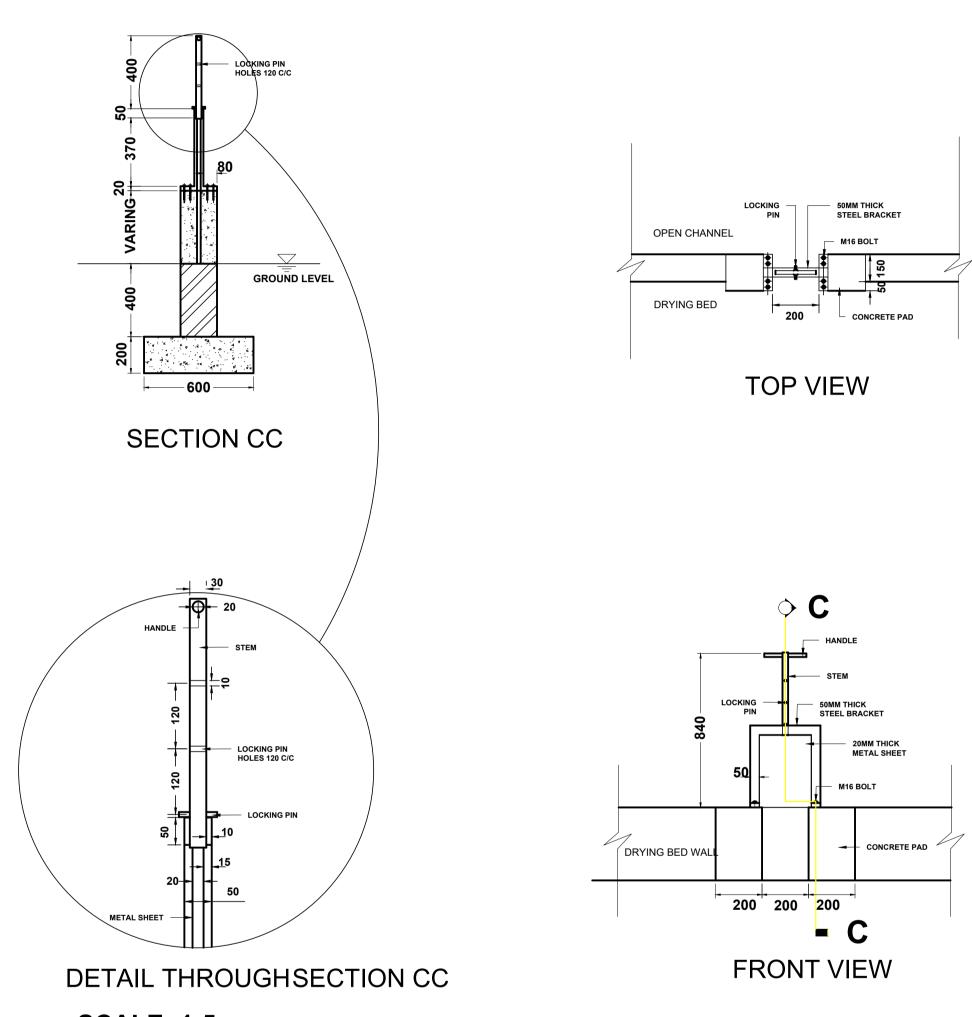
### 150mm Ø Steel Tube



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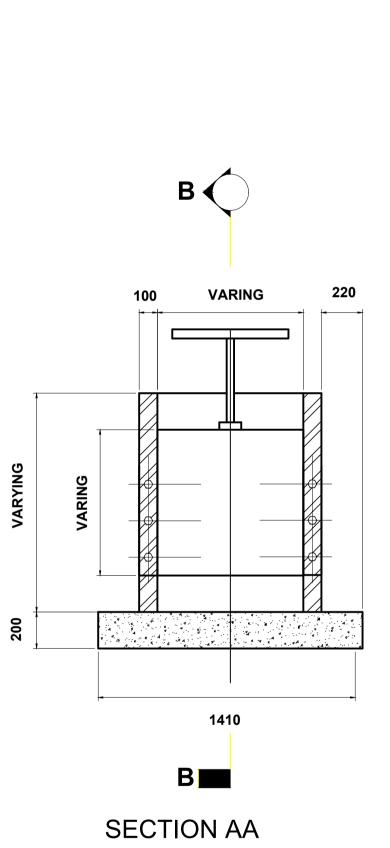
# STANDARD DRAWINGS FOR MPULUNGU FSTP

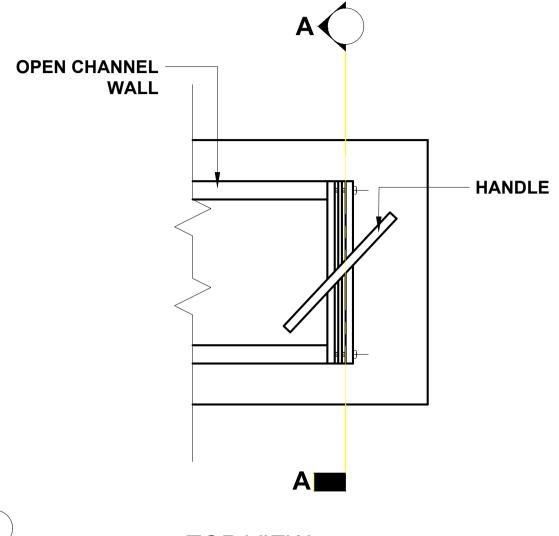
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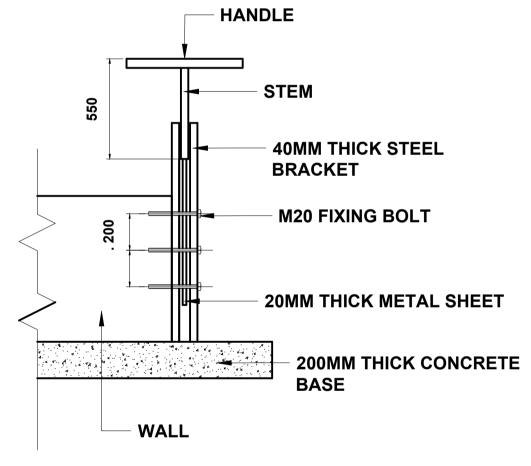
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# HAND STOPS DETAILS



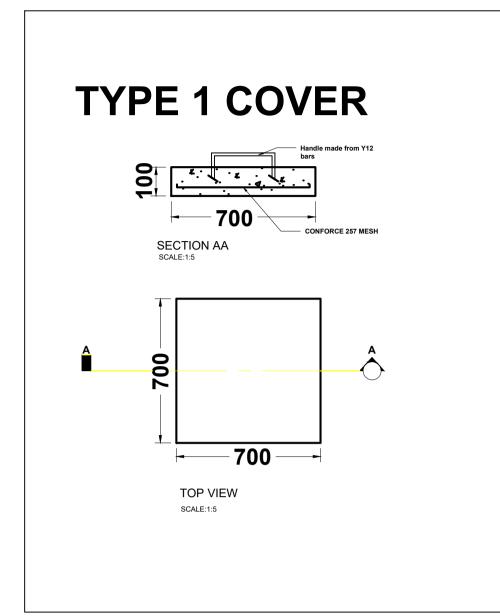


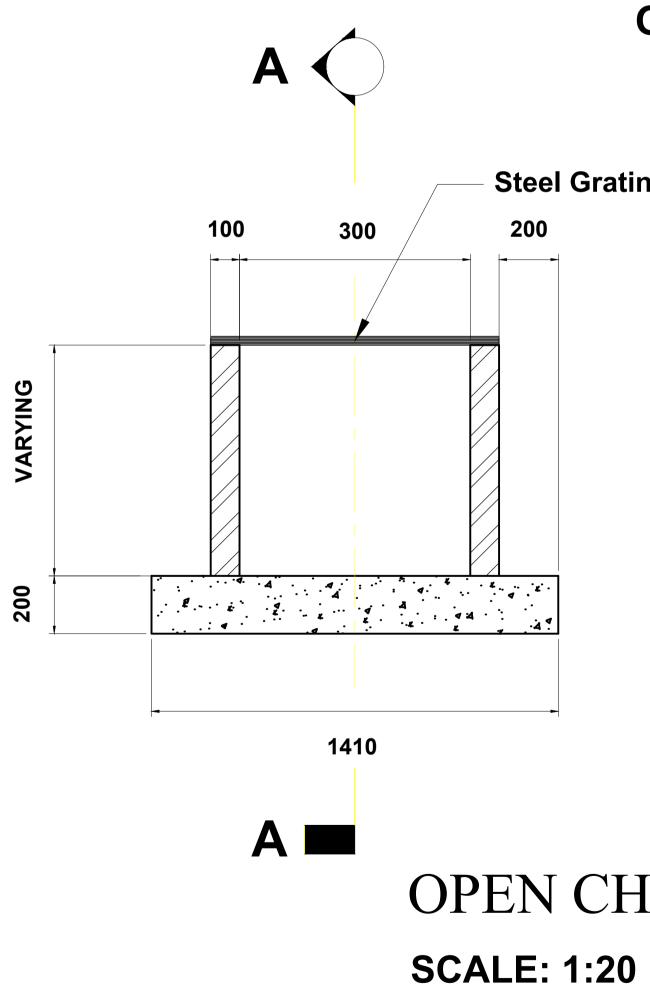


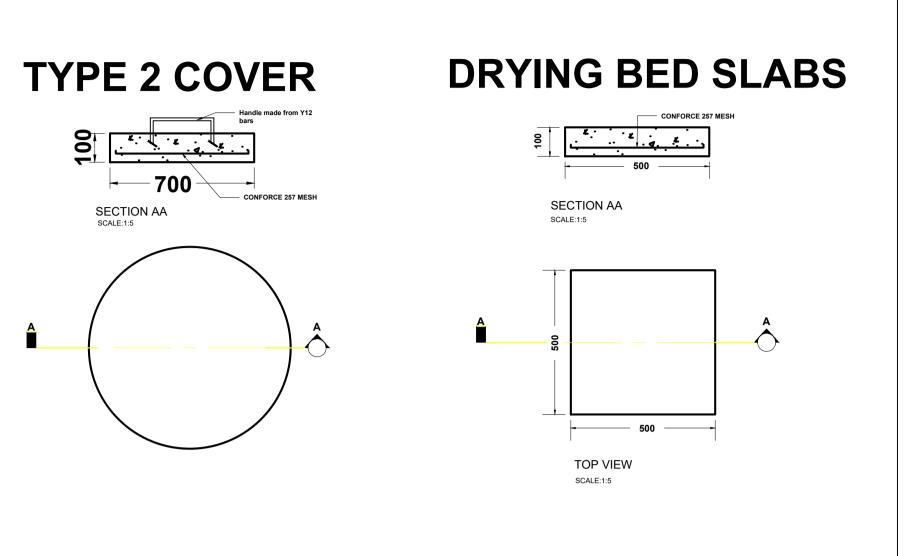


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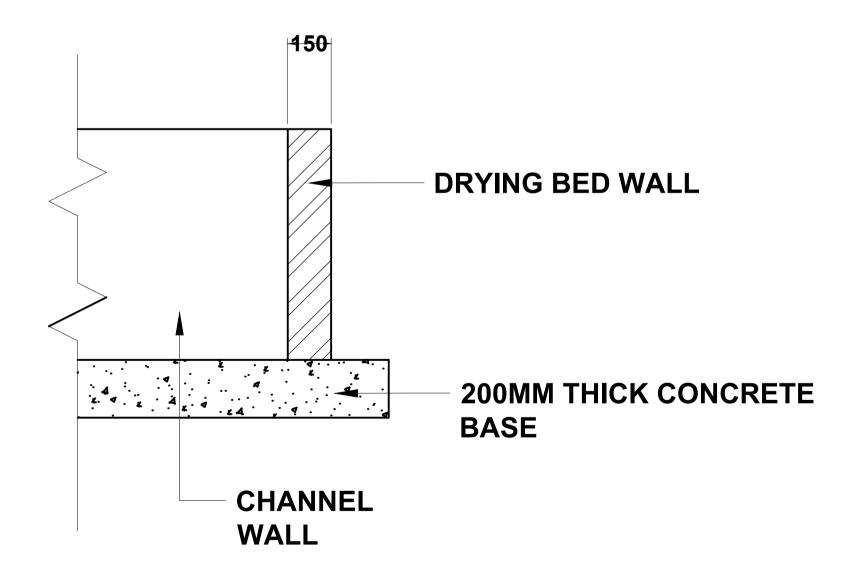






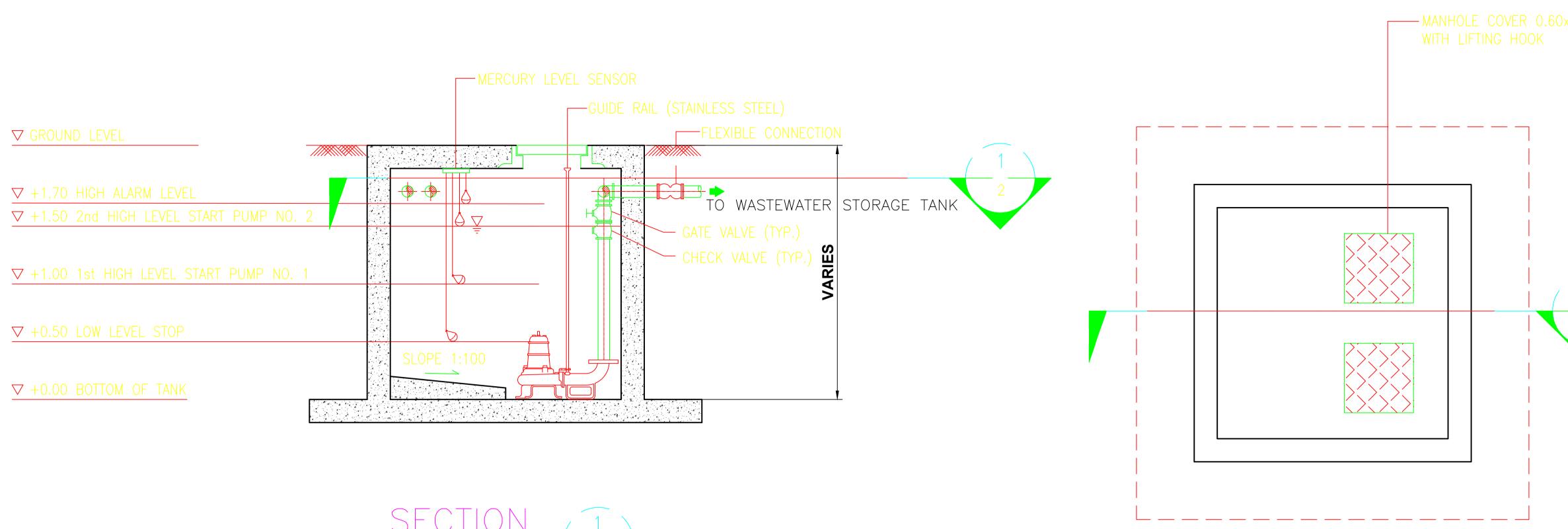
**OPEN CHANNEL** 

Steel Grating Cover

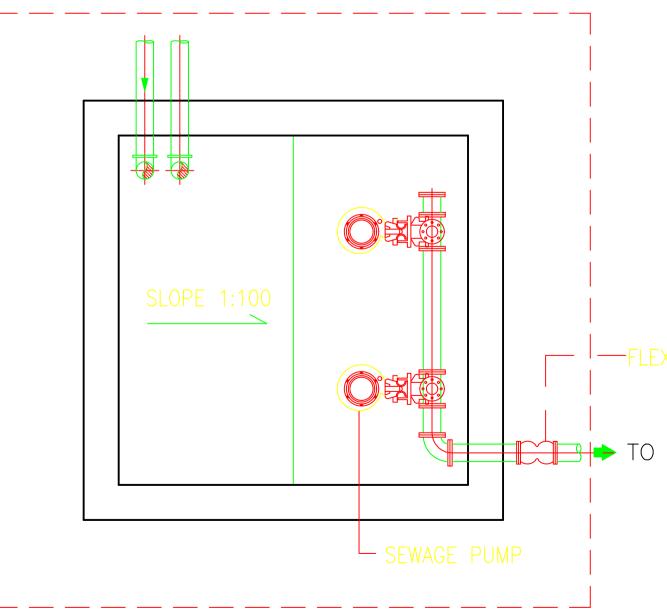


# **OPEN CHANNEL DETAILS**

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Sanitation Company
Project: Zambia Urban Sanitation
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Contract:
Professional Engineering
Services for Design of Feacal Sludge Treatment Plants
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STANDARD DRAWING - Open Channel, Cover Types
Drawing No.: SNV/FSM/MP/S 2.0
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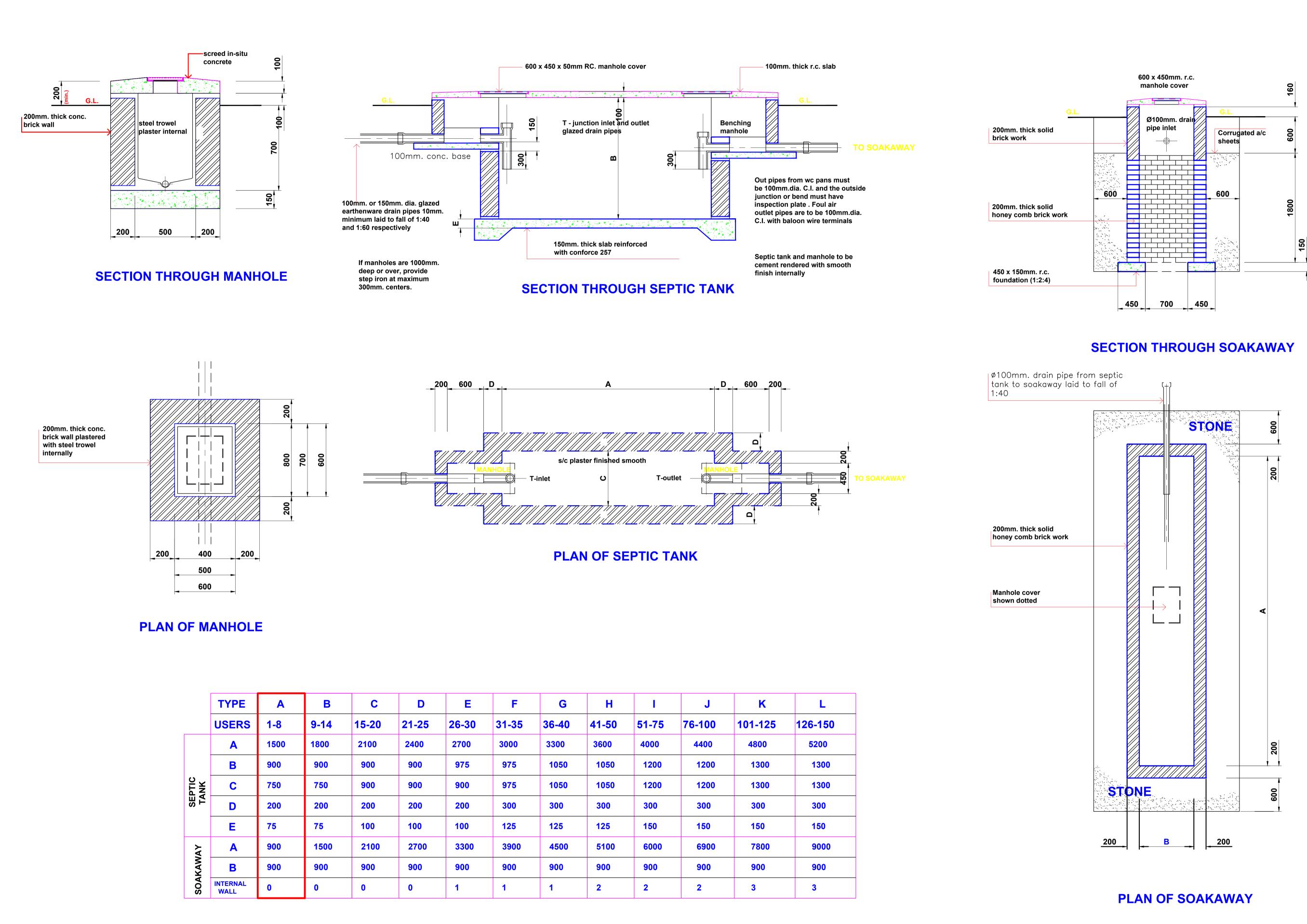




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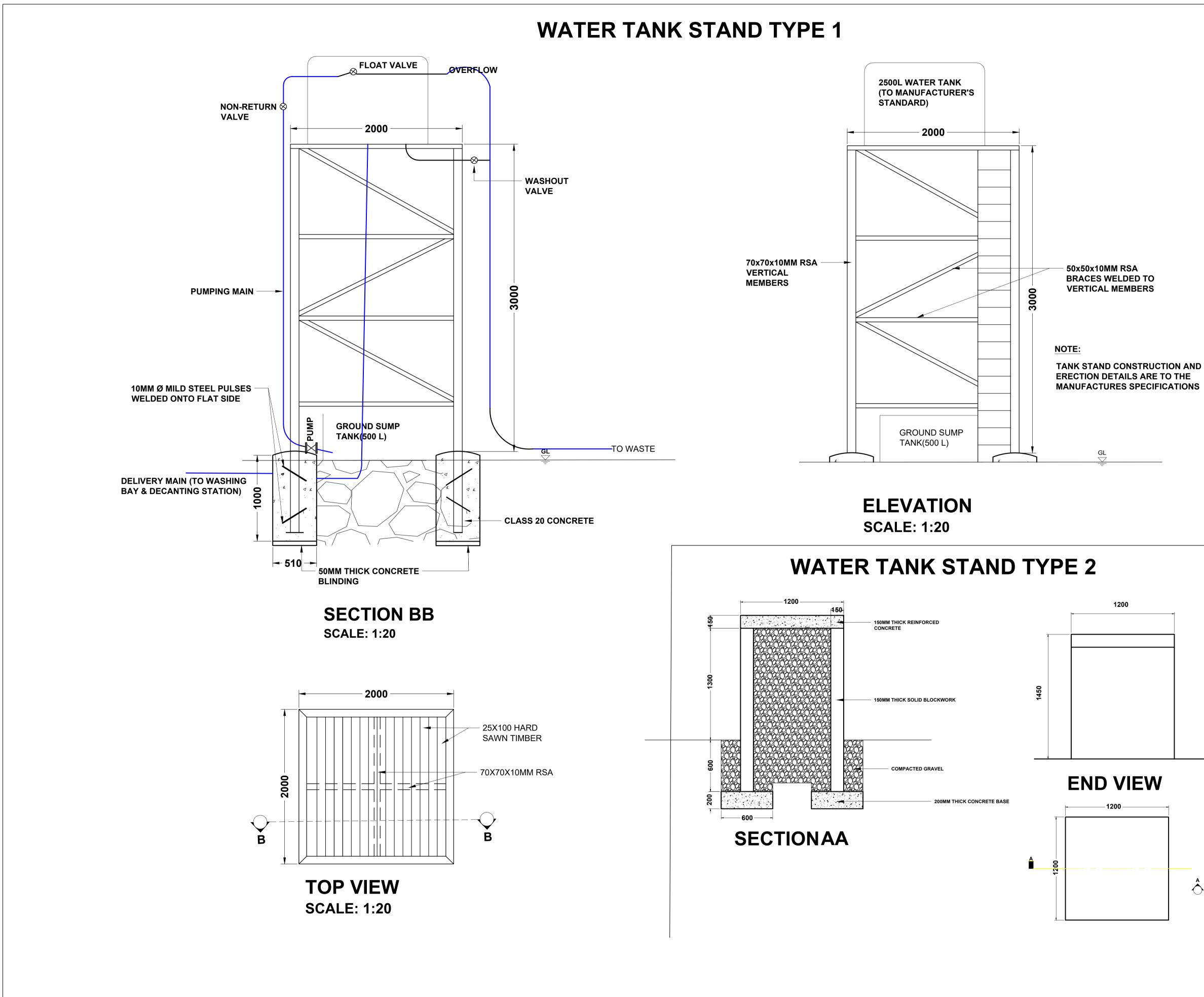
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	Project: Zambia Urban Sanitation
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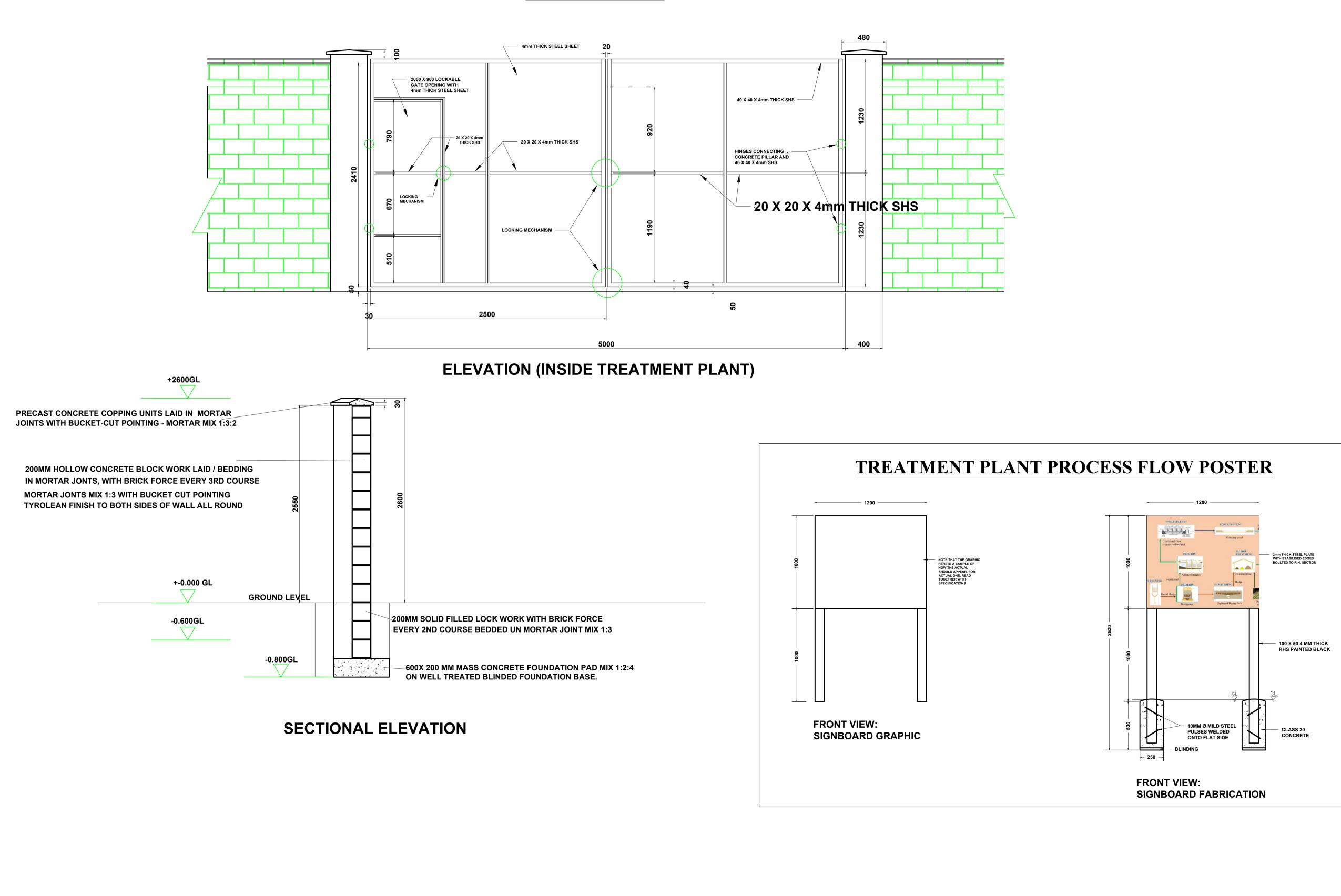
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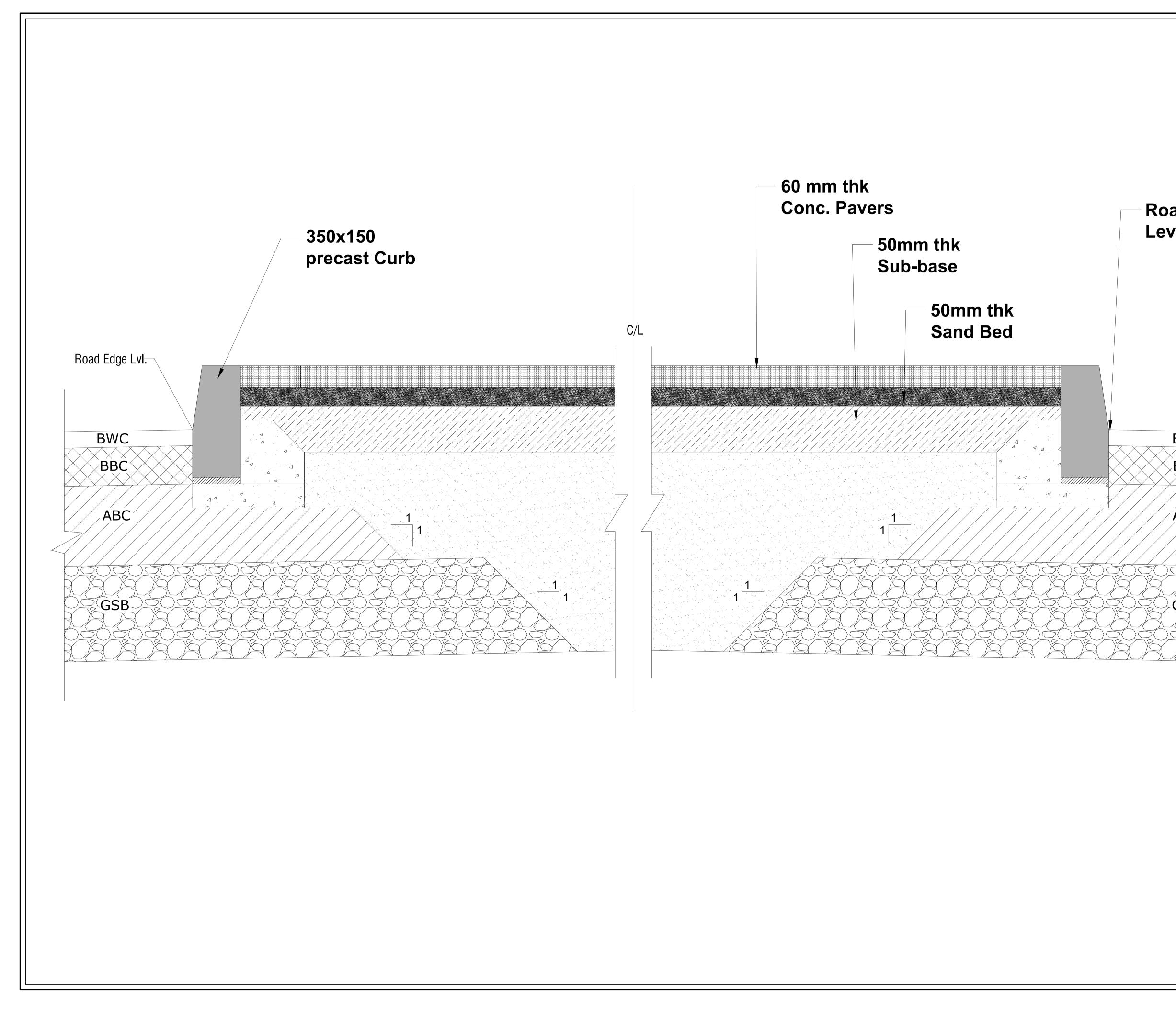
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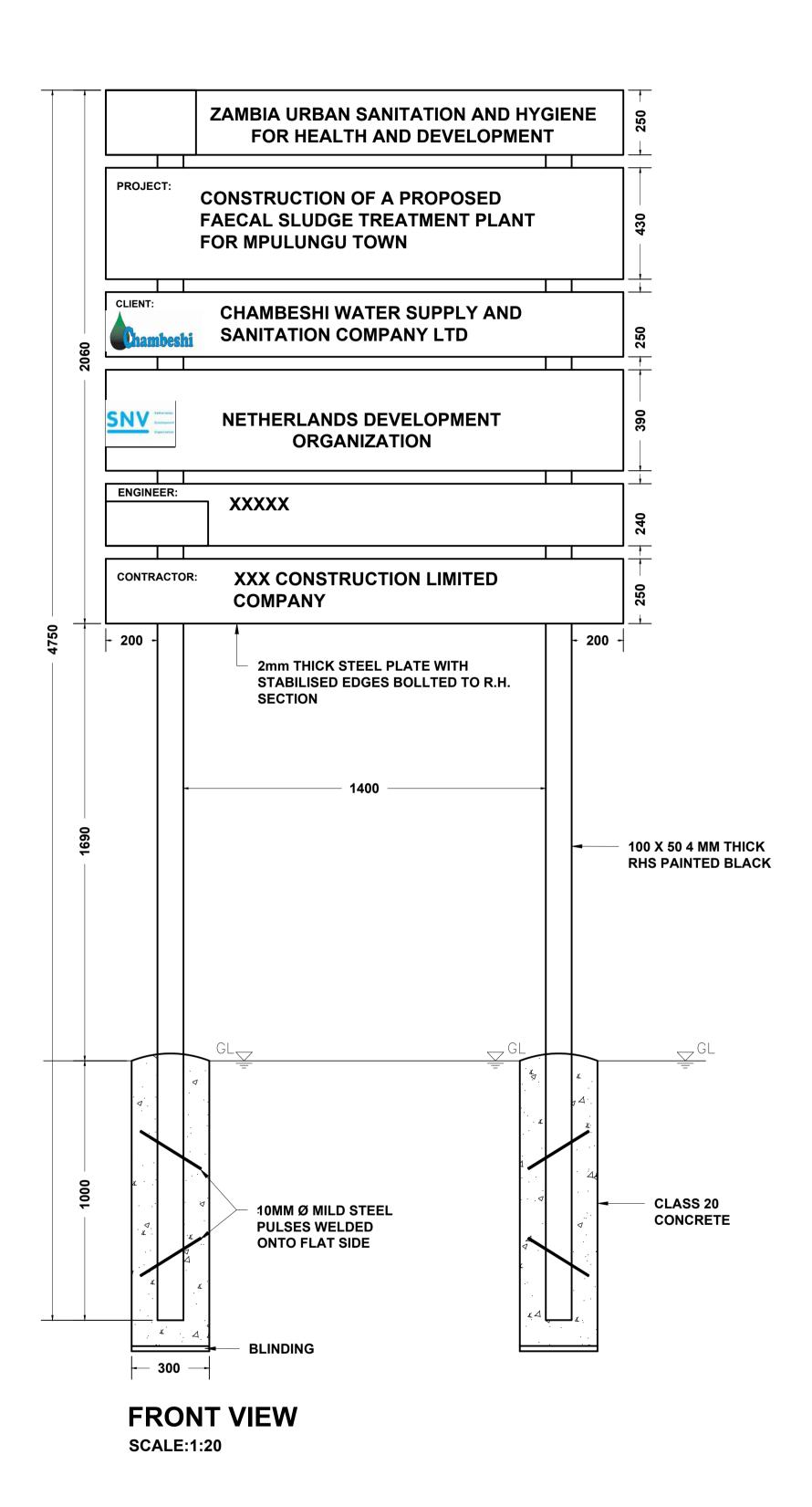
# **GATE DETAILS**

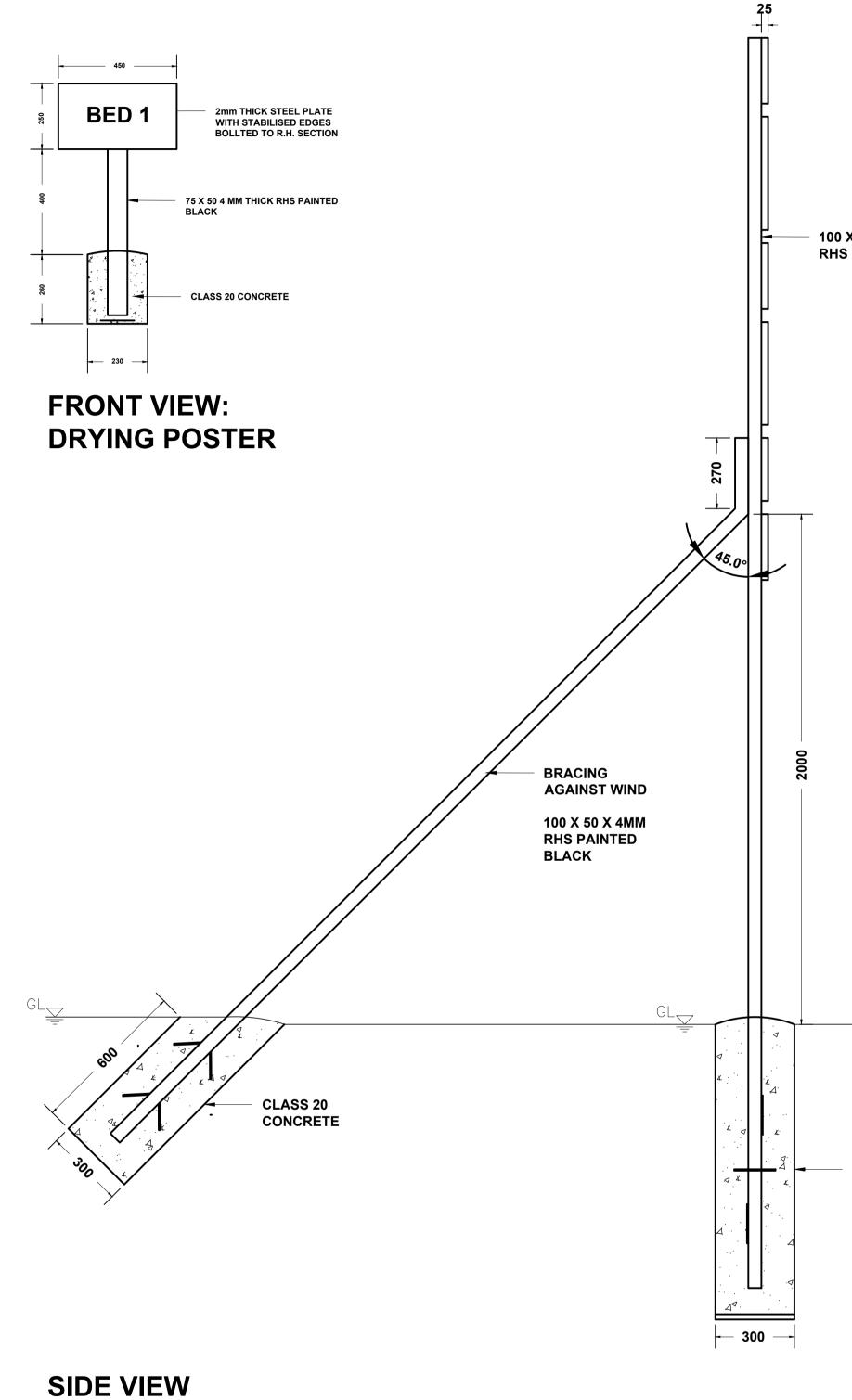


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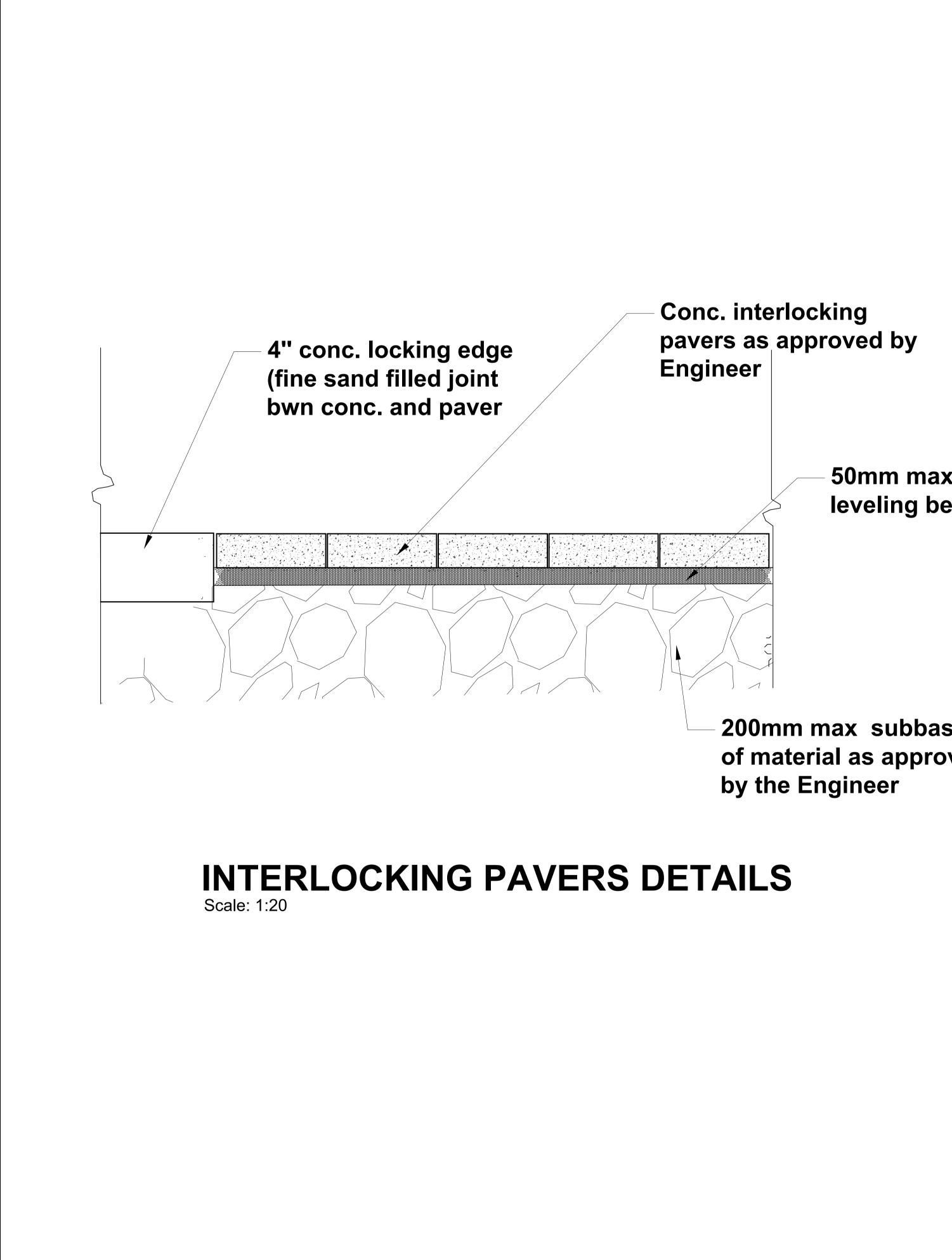
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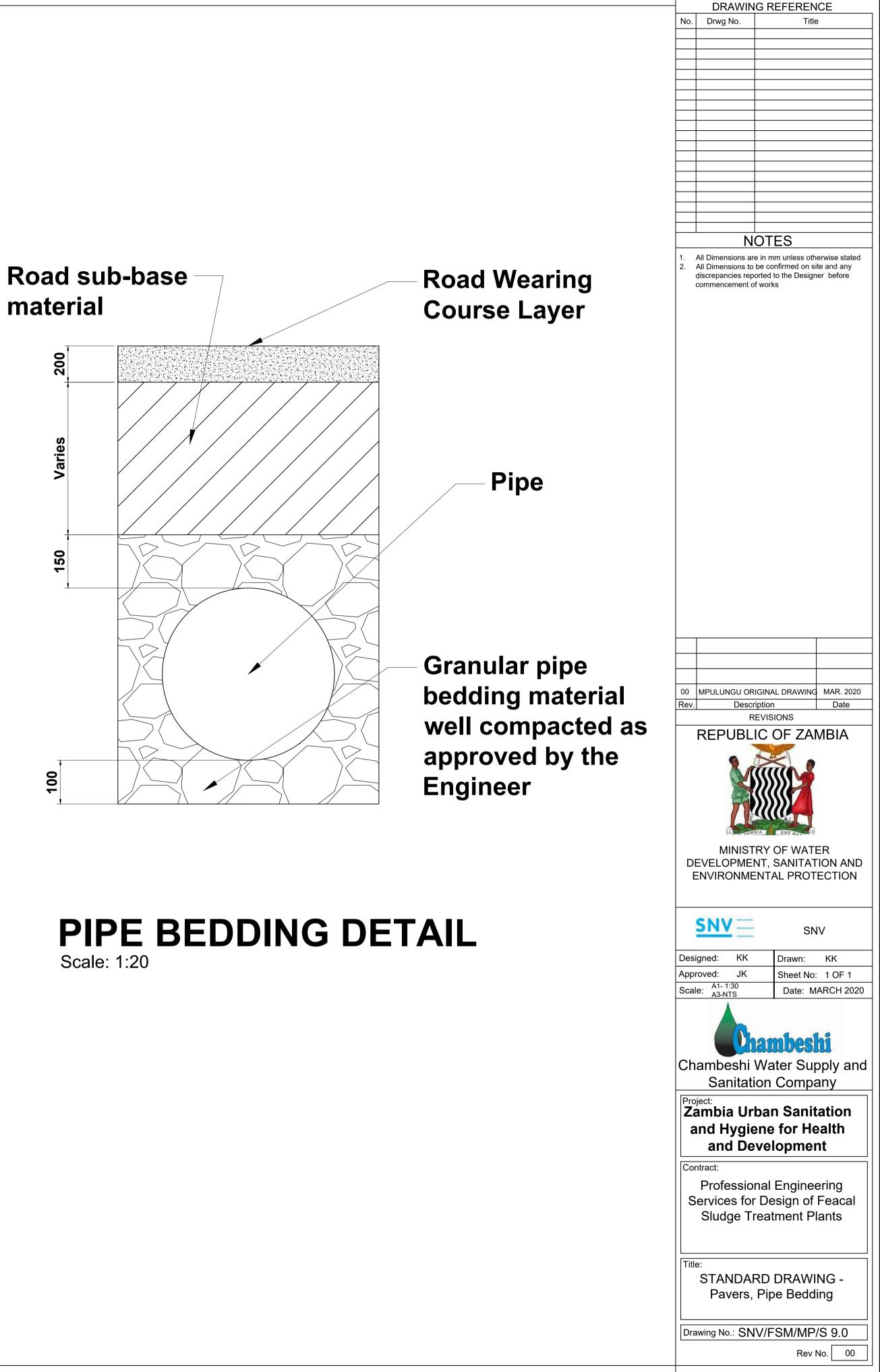
### 100 X 50 4 MM THICK RHS PAINTED BLACK

GL

CLASS 20 CONCRETE



50mm max. sharp sand leveling bed for pavers



200mm max subbase of material as approved