

**PROJECT NAME: LAISAMIS  
INTEGRATED WATER PROJECTS  
NAMAREI WATER PAN, OLTUROT  
WATER SUPPLY , NGOROROI  
WATER SUPPLY.  
MARSABIT COUNTY  
VOLUME 3:**

CLIENT:

**CONCERN WORLDWIDE**



*in conjunction  
with*



*for*



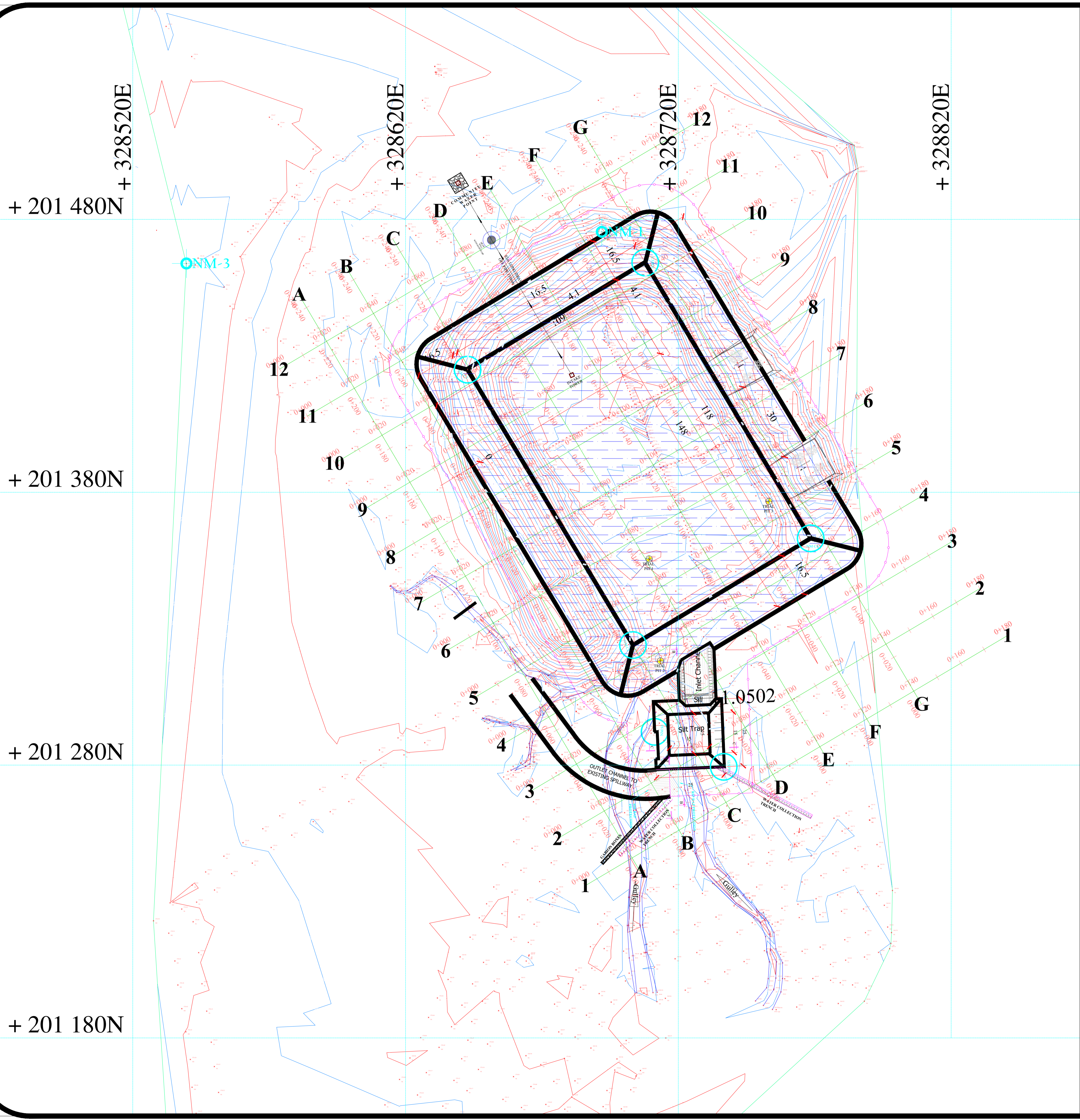
**MARSABIT  
COUNTY**

CONSULTANT:

**GEO CONSULTANTS**

LAISAMIS INTEGRATED WATER PROJECT TECHNICAL DRAWINGS		
Drawing No	Drawing Name	SHEET NO
1	Namarei Water Pan Plan	1 OF 1
2	Namarei Water pan Sections	1 OF 1
3	Namarei Silt trap	1 OF 1
4	Namarei Gabion Plan	1 OF 1
5	Namarei Shallow well	1 OF 1
6	Spill way drawing	1 OF 1
7	Olturot Rising main Profile	1 OF 1
8	Olturot Project:Borehole to Elevated Steel tank Pipeline Profile	1 OF 1
10	Olturot Project: Steel tank to Water Kiosk pipeline Profile	1 OF 1
11	100m <sup>3</sup> Elevated steel tank	1 OF 1
12	100m <sup>3</sup> Elevated steel tank Foundation details	1 OF 1
13	100m <sup>3</sup> Elevated steel tank tower	1 OF 1
14	Olturot Livestock trough	1 OF 1
15	Ngororoi Intake	1 OF 1
16	Ngororoi Intake to Old Intake Pipeline Profile	1 OF 1
17	Ngororoi Pipeline Support Details	1 OF 1
18	Ljata Pipeline Profile	1 OF 2
19	Ljata Pipeline Profile	2 OF 2
20	Ljata Pipeline Profile	3 OF 3
21	Standard Drawings	5 OF 5
22	Water Kiosk	14 OF 14
23	Olturot Layouts	1 OF 2
24	Ngororoi Layout	2 OF 2
25	Standard Sign Board model	1 OF 1





NM ST1: E.328736.864M  
N. 201279.39M

NM CI: E. 328703.359M  
N. 201323.983M

KN C3:E. 328707.865M  
N. 201464.184M

KN C4:E. 328768.514M  
N. 201363.111M

KN C2:E. 328642.741M  
N. 201424.924M

KN S1:E. 328711.3061M  
N. 201292.178M

**TRIAL PITS**

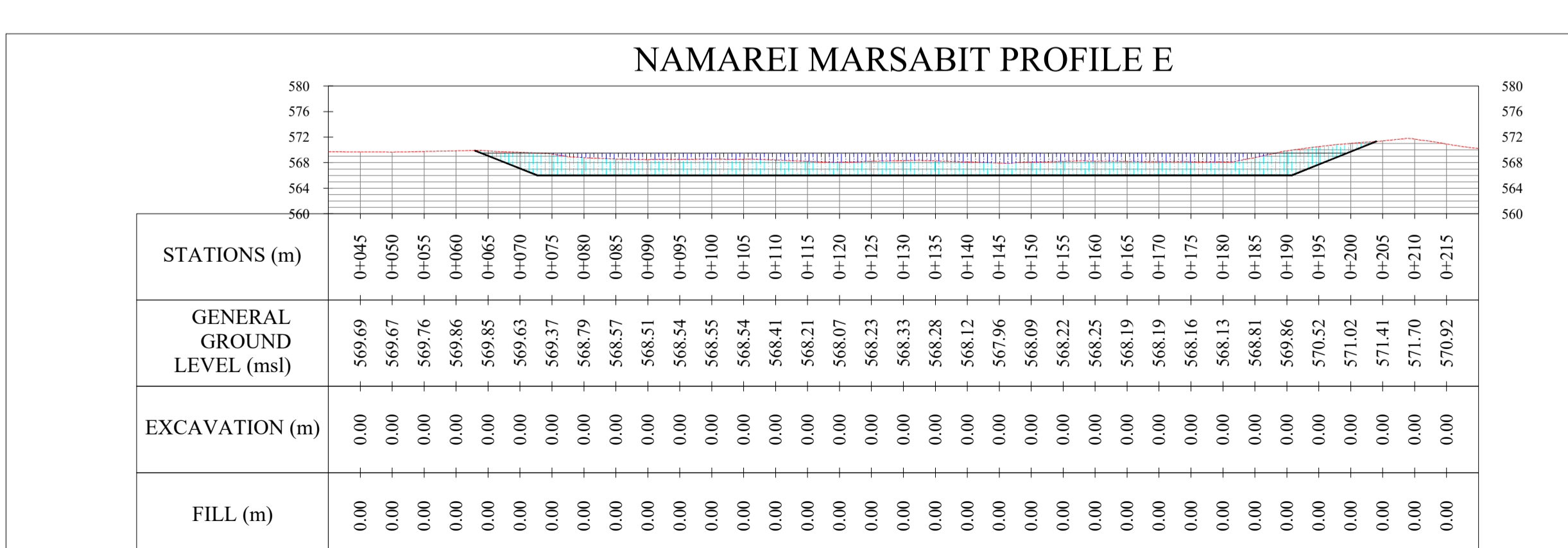
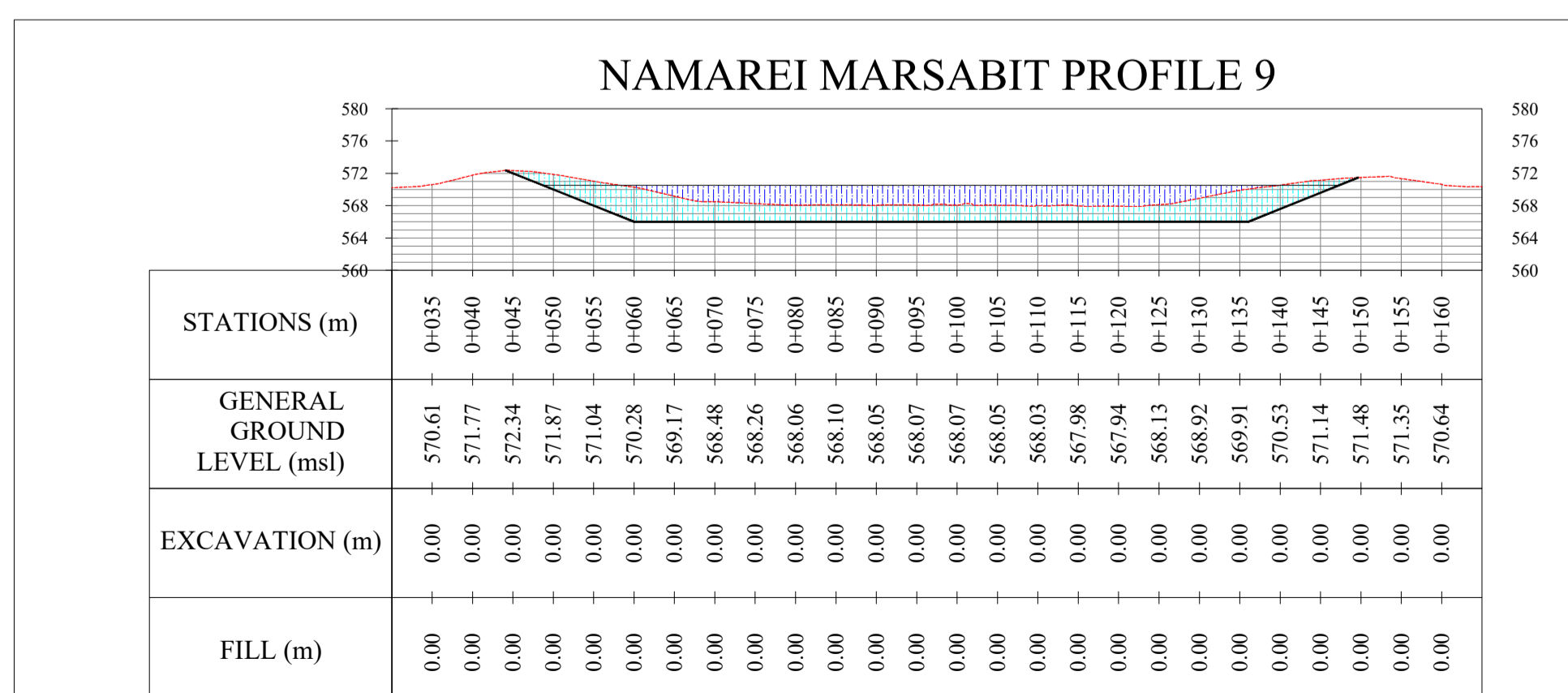
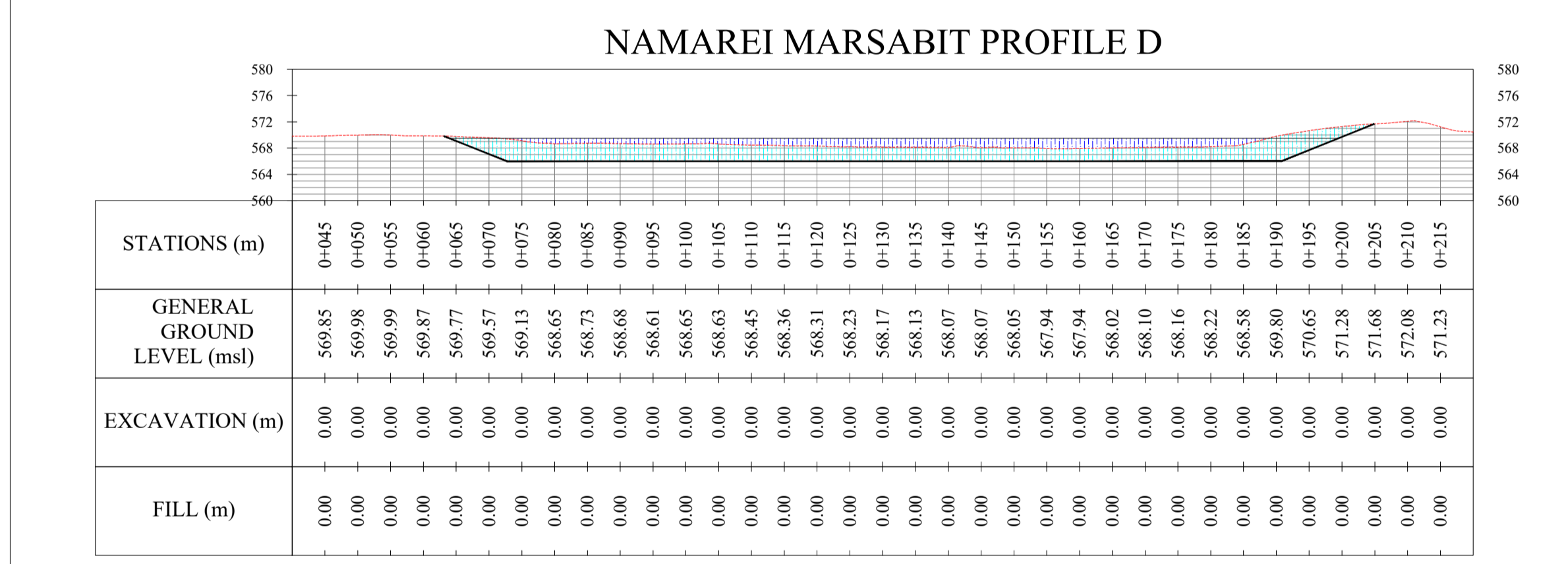
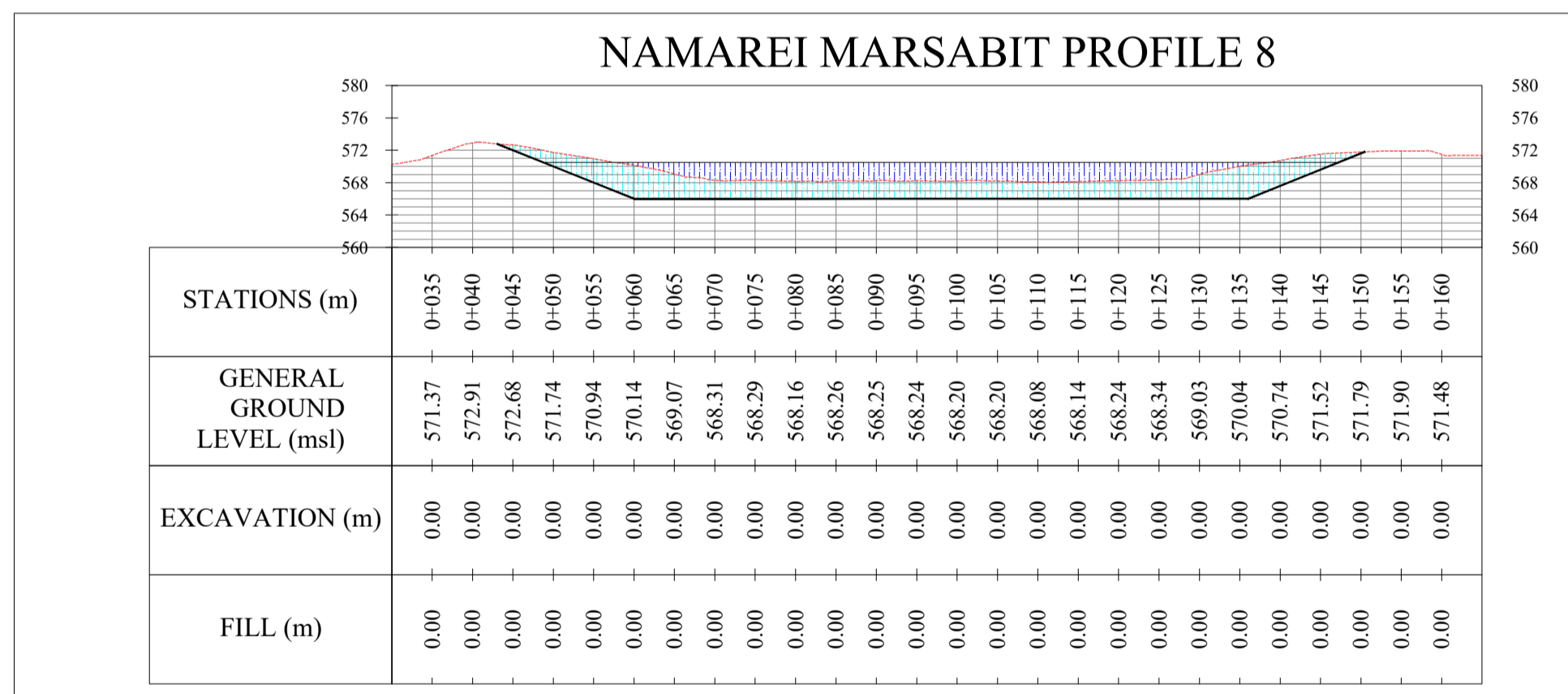
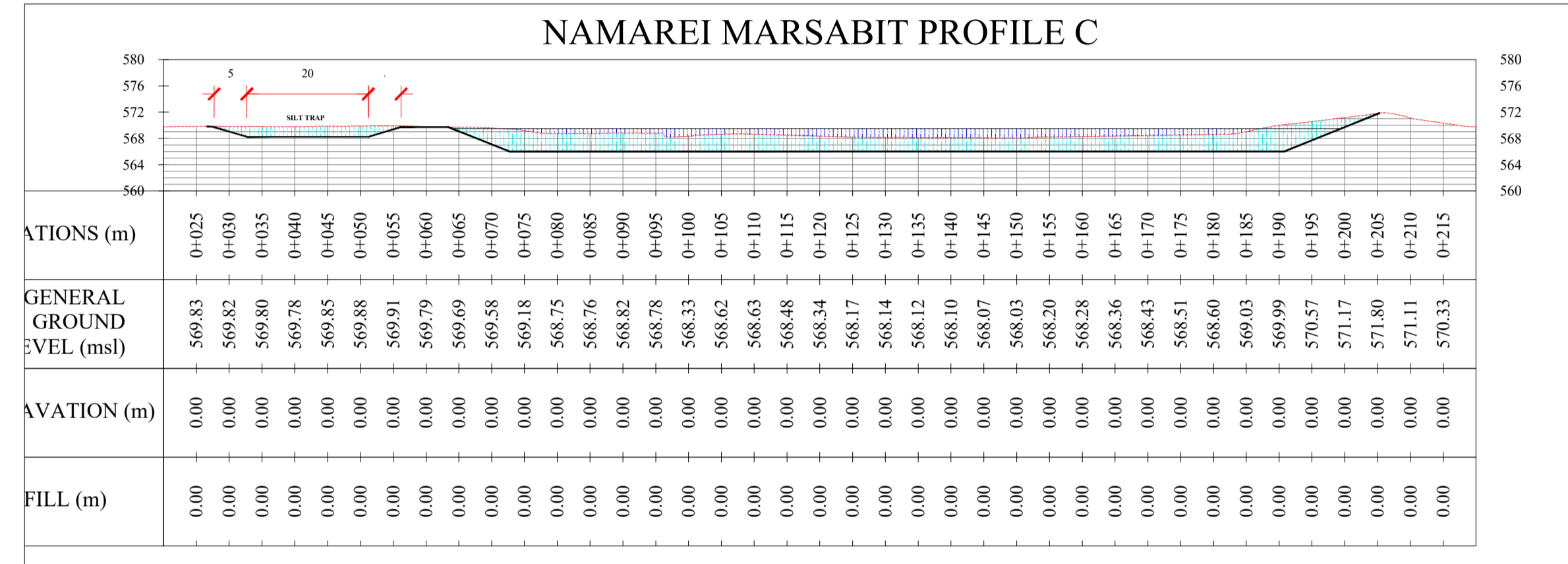
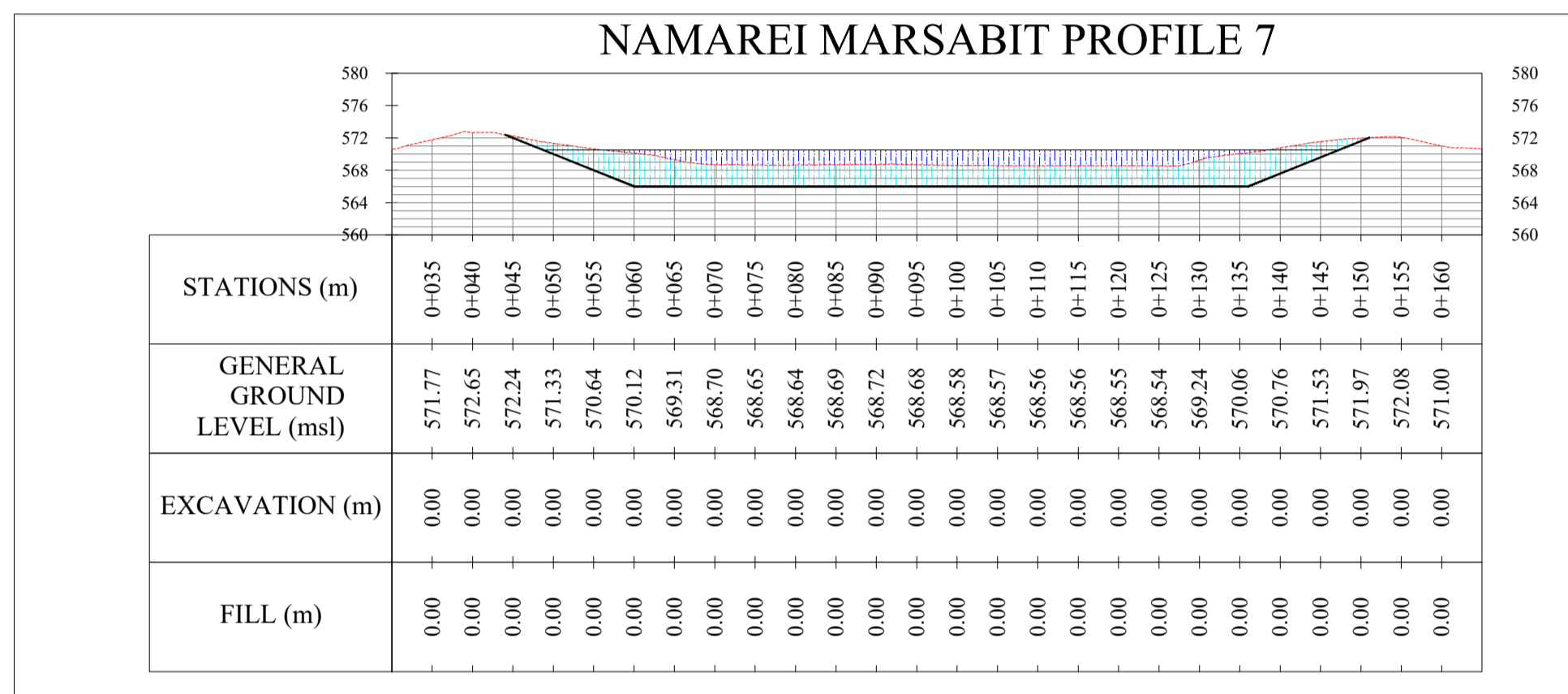
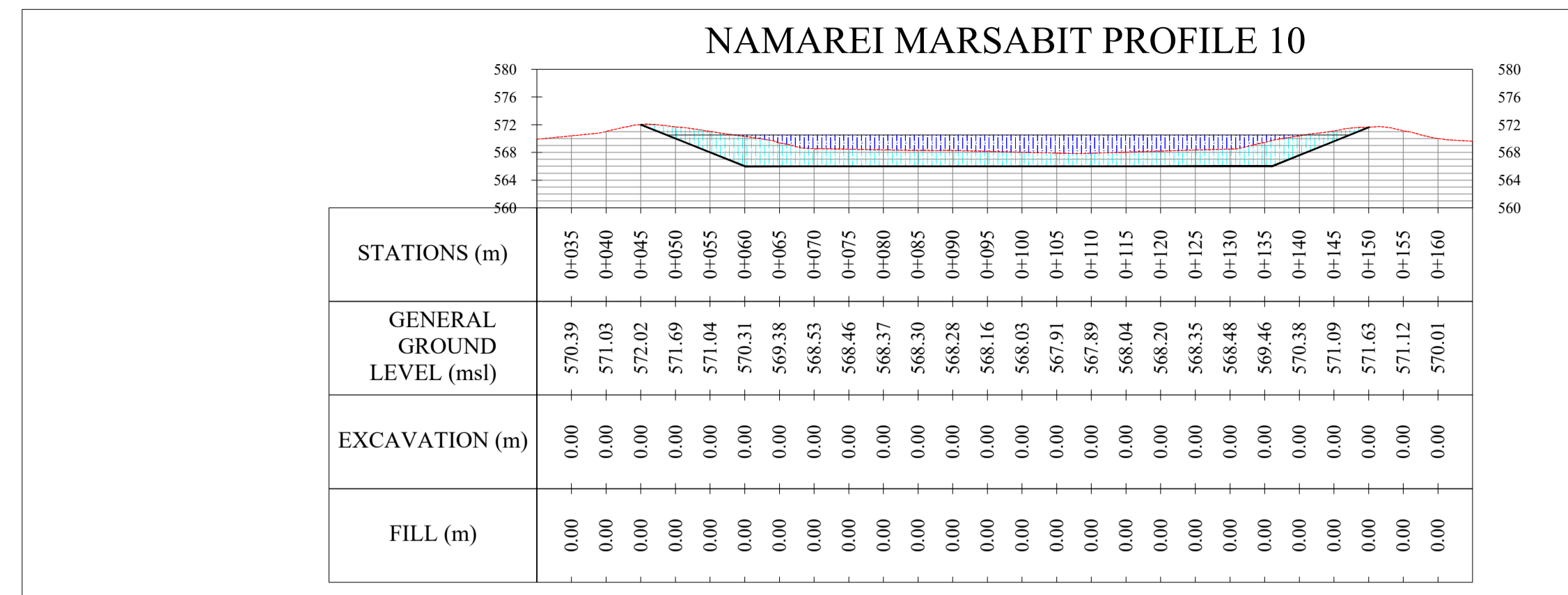
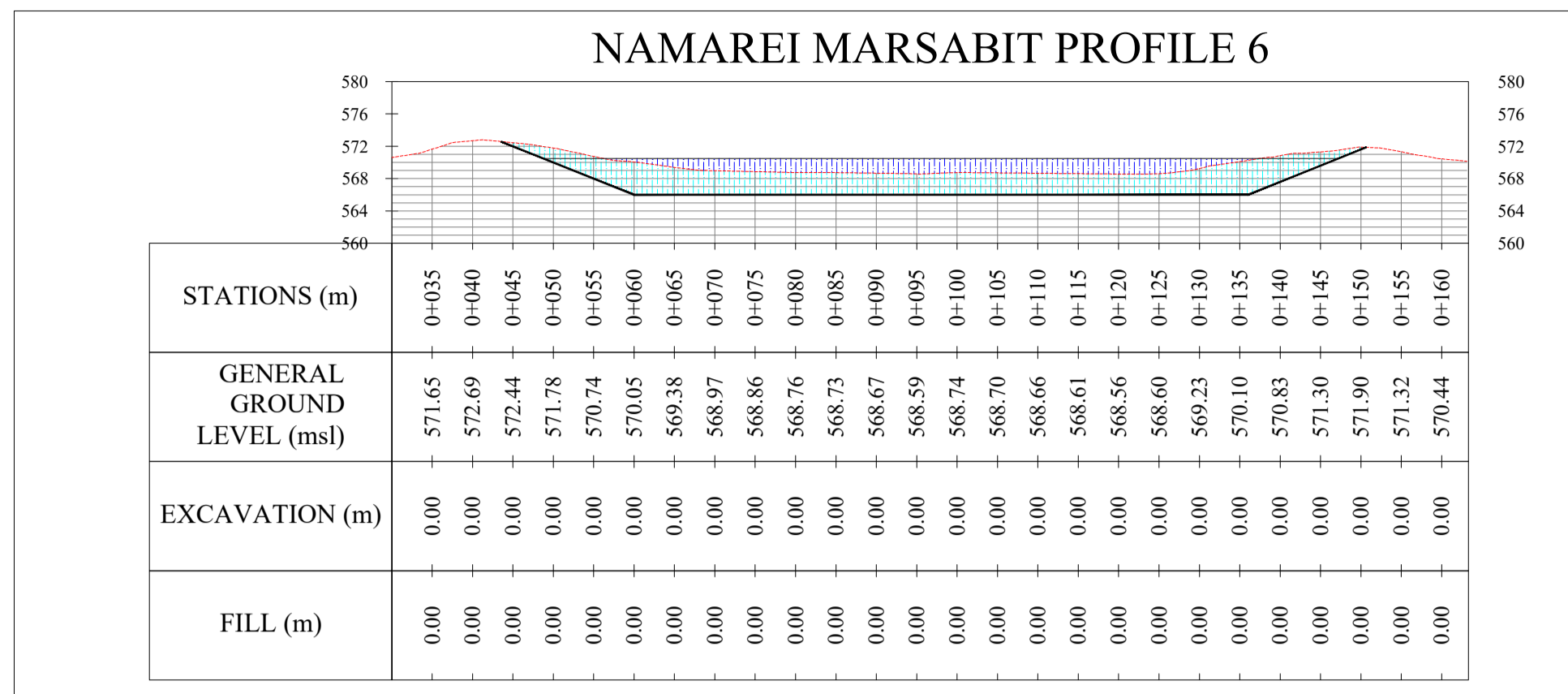
Trial Pit 1:E. 328709.264M  
N. 201355.546M

Trial Pit 1:E. 328713.411M  
N. 201318.178M

Trial Pit 3:E. 328753.2111M  
N. 201376.643M

General Notes	
STORAGE CAPACITY:	38,652m <sup>3</sup>
EXCAVATION VOLUME:	26,663.5m <sup>3</sup>
IMPOUNDED AREA:	15,612m <sup>2</sup>
MAXIMUM WALL HEIGHT:	4.5m
GROSS FREE BOARD:	0.5m
GATE	6m
FENCE LENGTH:	635m
SLOPES - UPSTREAM: 1 : 2.5	
WETTED SURFACE AREA:	13,600m <sup>2</sup>
TOTAL SURFACE AREA WHEN FULL:	15,612m <sup>2</sup>
SPILLWAY TOP WIDTH: 10m	
SPILLWAY LENGTH: 65m	
SPILLWAY SLOPES: 1 : 0.5	
REFERENCE:	
NM - 3: E. 328539.652M	
N. 201463.846M	
Elevation:	570.749m osl
NM-1: E. 328691.934M	
N. 201475.45	
Elevation:	571.674m osl
1. All measurements are in metres	
2. Contour interval is 0.2m	
SURVEYED & DRAWN BY:	
<b>GEOFFREY. OKOTH</b>	
DESIGNED BY:	
<b>P.K.W</b>	
CHECKED BY:	
<b>P.K.W</b>	
APPROVED BY:	
<b>Eng. ANDREW MESSO (A3007)</b>	
No.	Revision/Issue
	Date
Firm Name and Address	
CLIENT: <b>CONCERN WORLDWIDE</b>	
Consultant: <b>GEO Consultants</b> 0727-456089 P.O BOX 103677-00101 consultantsgeo4@gmail.com	
Signature:.....	
Project Name and Address	
<b>PROPOSED -</b> <b>REHABILITATION OF</b> <b>NAMAREI EARTH DAM.</b> <b>GENERAL PLAN LAYOUT</b>	
<b>KORR NGUMIT- WARD</b> <b>LAISAMIS SUB-COUNTY</b> <b>MARSABIT - COUNTY</b>	
Project	Sheet
Date	<b>04 AUGUST/2023</b>
Scale	<b>1:750</b>
	<b>1 of 2</b>
	PRINT ON A1 PAPER SIZE





General Notes

**STORAGE CAPACITY:** 38,652m<sup>3</sup>  
**EXCAVATION VOLUME:** 26,663.5m<sup>3</sup>  
**IMPOUNDED AREA:** 15,612m<sup>2</sup>  
**MAXIMUM WALL HEIGHT:** 4.5m  
**GROSS FREE BOARD:** 0.5m GATE  
 6m  
**FENCE LENGTH:** 635m  
**SLOPES - UPSTREAM:** 1:2.5  
**WETTED SURFACE AREA:** 13,600m<sup>2</sup>  
**TOTAL SURFACE AREA WHEN FULL:** 15,612m<sup>2</sup>  
**SPILLWAY TOP WIDTH:** 10m  
**SPILLWAY LENGTH:** 30m  
**SPILLWAY SLOPES:** 1:0.5

**REFERENCE:**  
 NM - 3: E. 328539.652M  
 N. 201463.846M  
 Elevation: 570.749m asl  
 NM-1: E. 328691.934M  
 N 201475.45  
 Elevation: 571.674m asl

1. All measurements are in metres  
 2. Contour interval is 0.2m

SURVEYED & DRAWN BY:  
**GEOFFREY OKOTH**  
 .....

DESIGNED BY:  
**P.K.W**  
 .....

CHECKED BY:  
**P.K.W**  
 .....

APPROVED BY:  
**Eng. ANDREW MESSO (A3007)**  
 .....

No.	Revision/Issue	Date

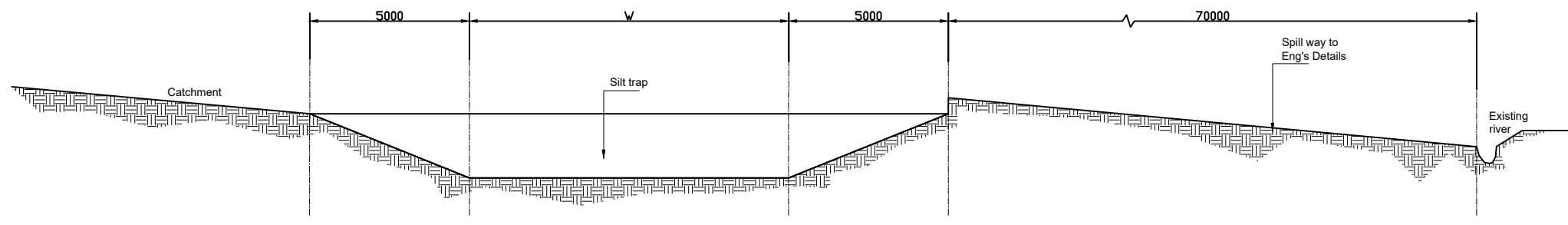
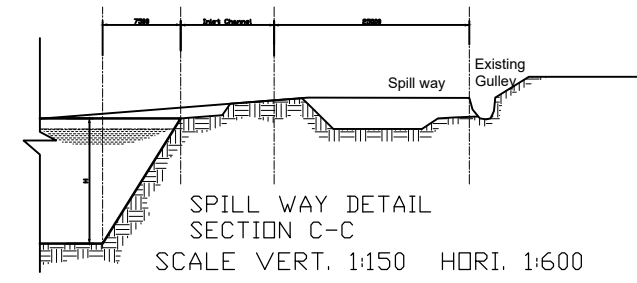
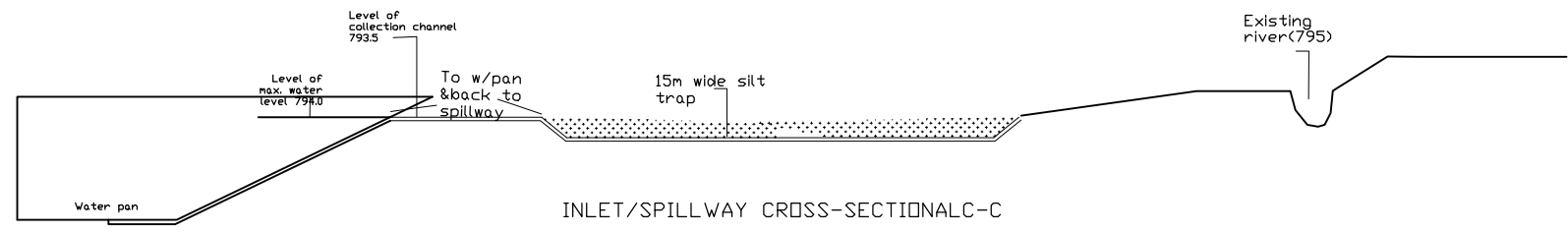
Firm Name and Address  
**CLIENT: CONCERN WORLDWIDE**

Consultant:  
**GEO Consultants**  
 0727-456089  
 P.O BOX 103677-00101  
 consultantsgeo47@gmail.com  
 Signature: .....

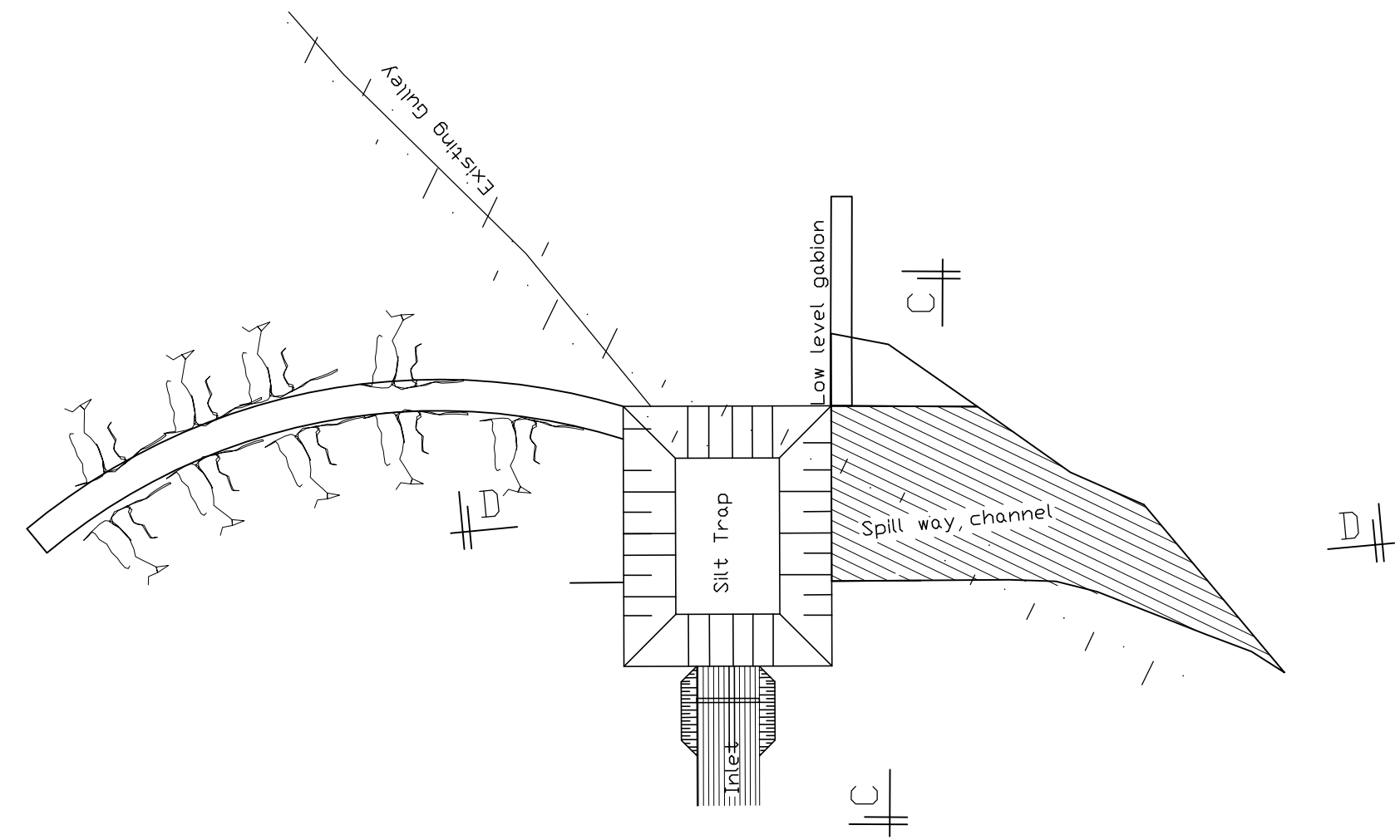
Project Name and Address  
**PROPOSED - REHABILITATION OF NAMAREI EARTH DAM. SECTIONAL ELEVATION KORR NGUMIT- WARD LAISAMIS SUB-COUNTY MARSABIT - COUNTY**

Project	Sheet
Date	<b>2 of 2</b>
Scale	PRINT ON A1 PAPER SIZE





SECTION D-D  
SCALE VERT. 1:150 HORI. 1:600



General Notes

1. All measurements are in metres

<b>DRAWN BY:</b> MMN
<b>DESIGNED BY:</b> P.K.W
<b>ENGINEERED BY:</b>
<b>APPROVED BY:</b> ENG. ANDREW MESSO (A3007)

No.	Revision/Issue	Date

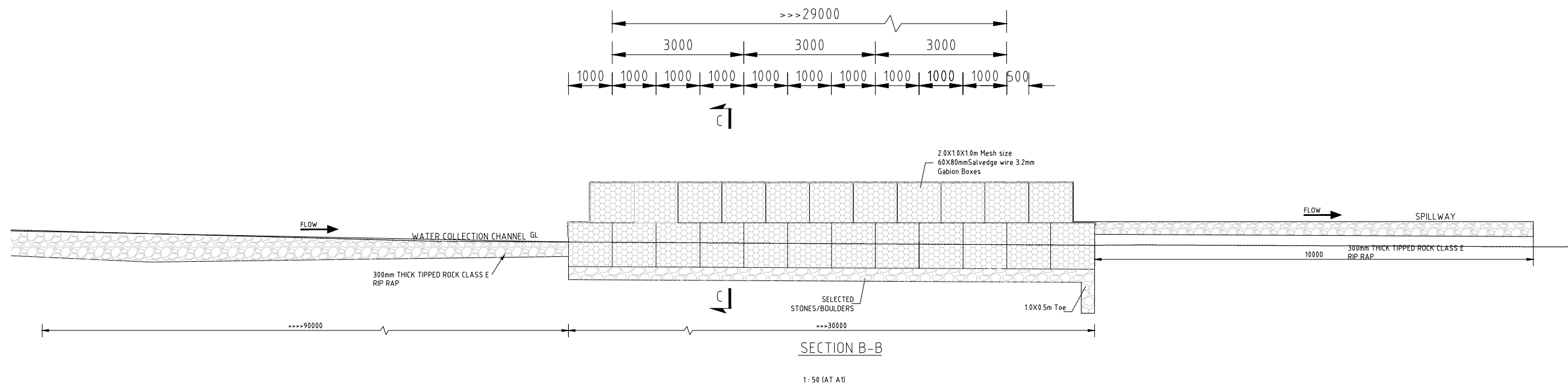
**Firm Name and Address**  
CONCERN WORLDWIDE  
  
**Consultant:**  
GEO Consultants  
0727-456089  
P.O BOX 103677-00101  
consultantsgeo47@gmail.com  
Signature:.....

**Project Name and Address**  
PROPOSED -  
KONON GOS  
SILT TRAP  
NORTH HERR - WARD  
NORTH HERR SUB-COUNTY  
MARSABIT - COUNTY

<b>Project</b>	<b>Sheet</b>
<b>Date</b> 04 AUGUST/2023	1 of 1
<b>Scale</b> AS SHOWN	PRINT ON A4 PAPER SIZE

**DRAWING NOTES**

1. THIS DRG IS TO BE READ WITH ORANGO MC PROFILE DRG
2. DIMENSIONS IN MILLIMETRES UNLESS OTHERWISE INDICATED
3. LEVELS ARE IN METRES



PRINT ON A3 PAPER SIZE

Firm Name and Address  
**CONCERN WORLDWIDE**  
 Consultant:  
**GEO Consultants**  
 0727-456089  
 P.O BOX 103677-00101  
 consultantsgeo47@gmail.com  
 Signature:.....

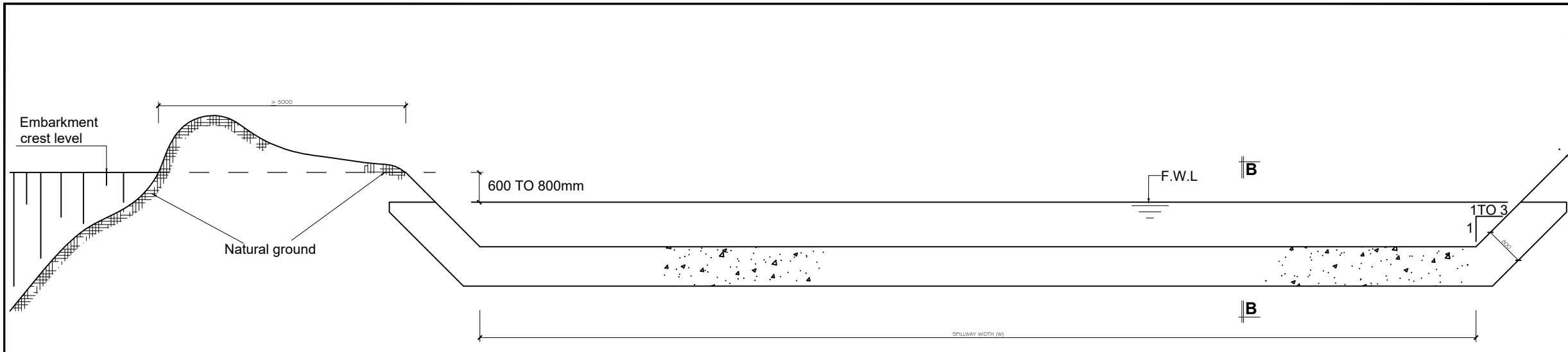
No.	REVISION	APPROVAL	DATE	REFERENCE	DWG No.

PROJECT NAME:  
**NAMAREI  
 KORR NGUMIT- WARD  
 LAISAMIS SUB-COUNTY  
 MARSABIT - COUNTY**

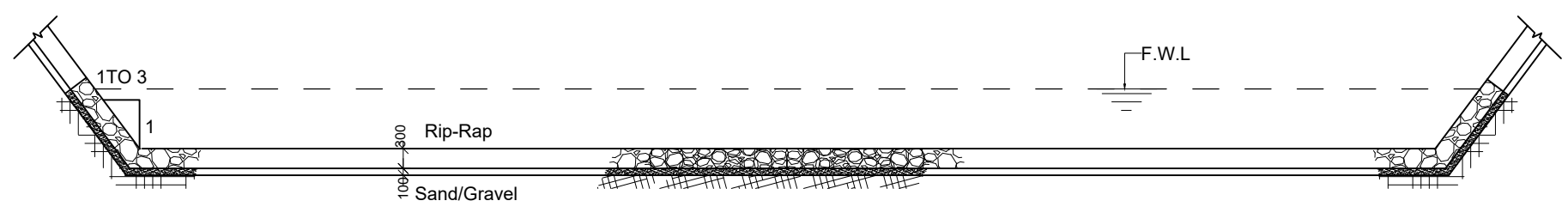
**PROPOSED.**  
**GABION BOXES**  
 DWG No.                      Sheet No.  
    **1 of 1**

Designed: Eng P.K.W	Date: SEP 2023
Drawn: MMN	Date: SEP 2023
Checked: ENG. ANDREW MESSO (A3007)	Date: SEP 2023
Approved:	Date: SEP 2023



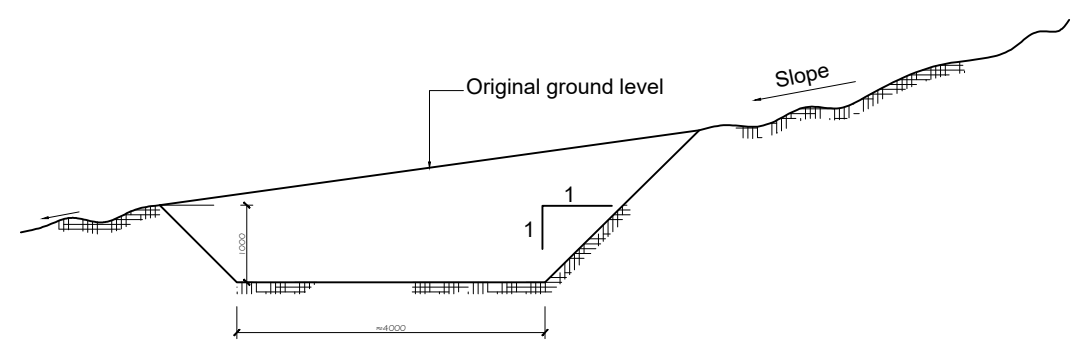


**CROSS-SECTION A-A (SPILLWAY CREST)**



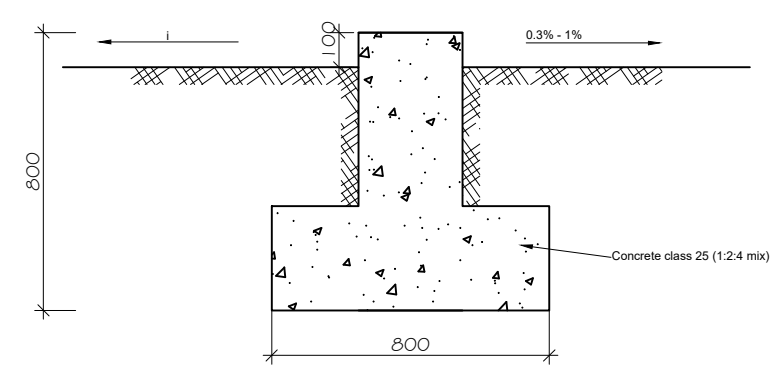
**SPILLWAY PROTECTION ARRANGEMENT**

Scale 1:100



**CROSS-SECTION C-C (PROTECTIVE TRENCH)**

Scale 1:100



**SILL CROSS SECTION B-B**

Scale 1:10

**General Notes**

1. All measurements are in metres

**DRAWN BY:**  
MMN

**DESIGNED BY:**  
P.KW

**CHECKED BY:**

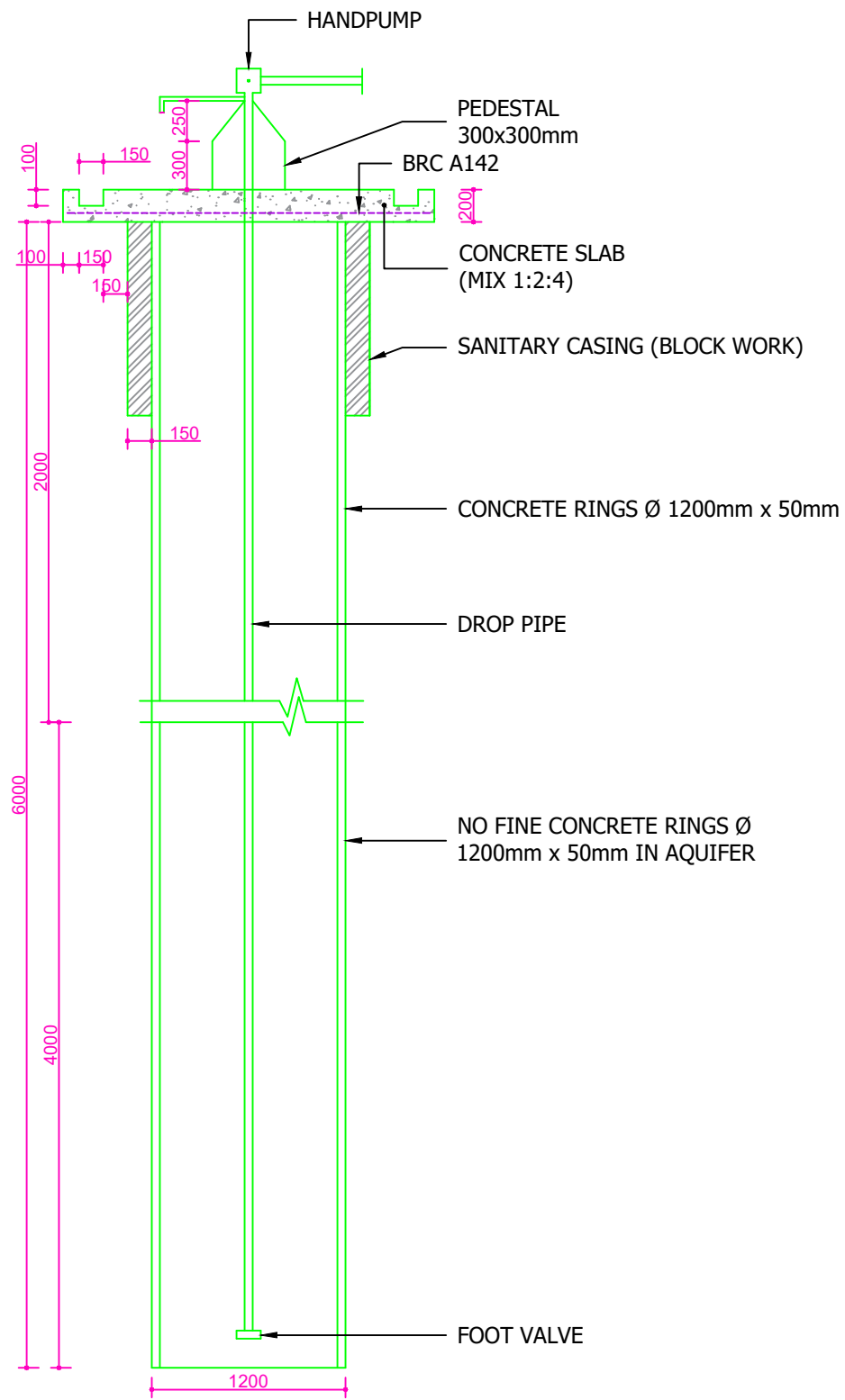
**APPROVED BY:**  
ENG. ANDREW MESSO  
(A3007)

No.	Revision/Issue	Date

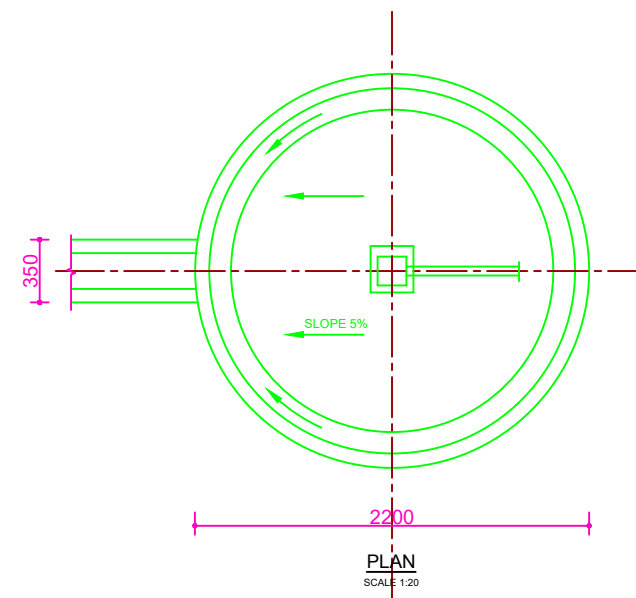
**Firm Name and Address**  
CONCERN WORLDWIDE  
  
Consultant:  
GEO Consultants  
0727-456089  
P.O BOX 103677-00101  
consultantsgeo47@gmail.com  
Signature:.....

**Project Name and Address**  
PROPOSED -  
KONON GOS SPILLWAY  
NORTH HORN - WARD  
NORTH HORN SUB-COUNTY  
MARSABIT - COUNTY

<b>Project</b>	<b>Sheet</b>
Date: 04 AUGUST/2023	1 of 1
Scale: AS SHOWN	PRINT ON A4 PAPER SIZE



CROSS SECTION OF SHALLOW WELL  
SCALE 1:20



PLAN  
SCALE 1:20

General Notes

1. All measurements are in metres

<b>DRAWN BY:</b> MMN
<b>DESIGNED BY:</b> . P.K.W
<b>APPROVED BY:</b> ENG. ANDREW MESSO (A3007)

No.	Revision/Issue	Date

Firm Name and Address  
CONCERN WORLDWIDE  
Consultant:  
GEO Consultants  
0727-456089  
P.O BOX 103677-00101  
consultantsgeo47@gmail.com  
Signature:.....

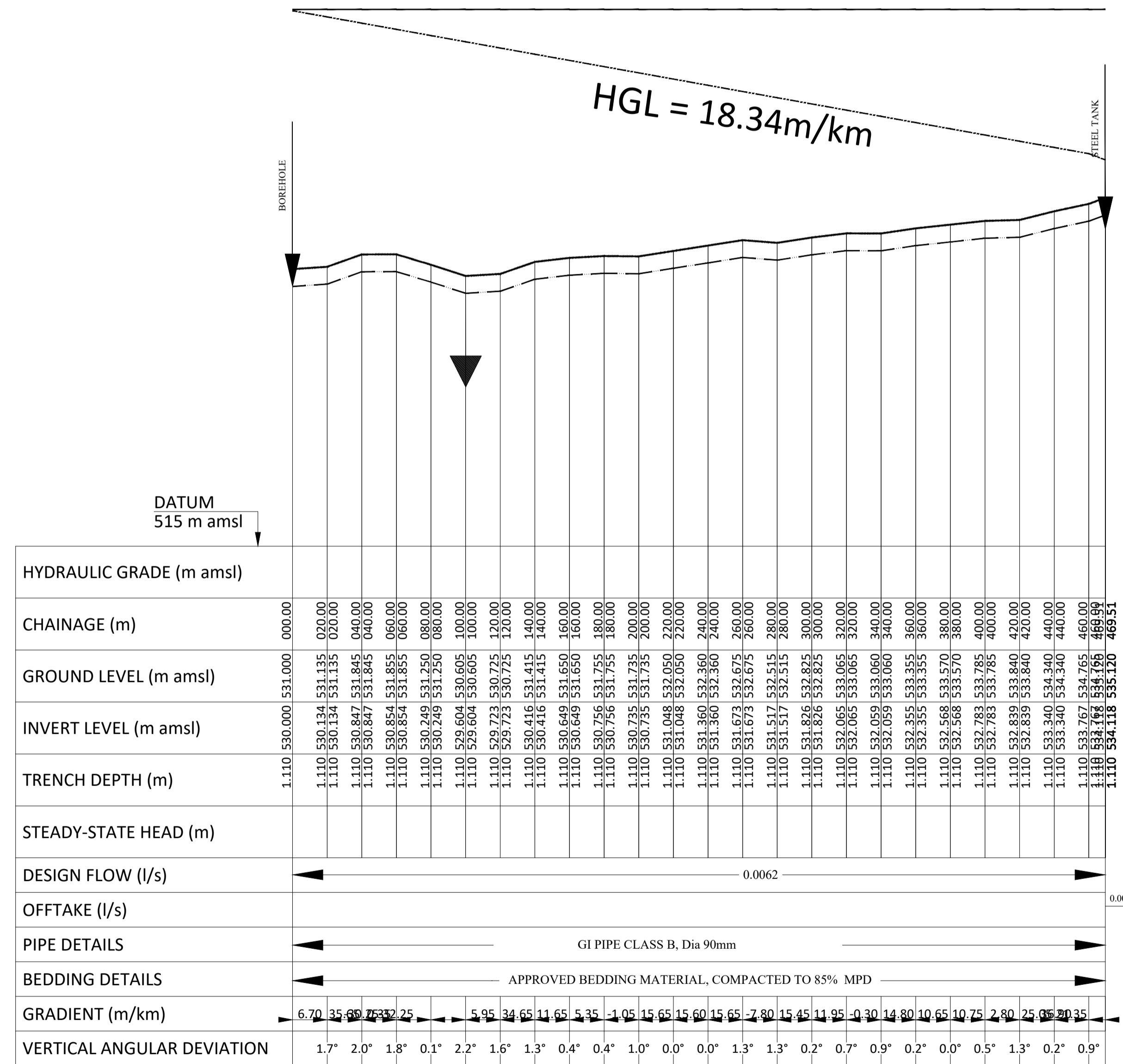
Project Name and Address  
**PROPOSED -  
NAMAREI WATER PAN,  
SHALLOW WELL PLAN  
&  
SECTIONAL DETAILS  
NORTH HERR - WARD  
NORTH HERR SUB-COUNTY  
MARSABIT - COUNTY**

Project	Sheet
Date 04 AUGUST/2023	1 of 1
Scale AS SHOWN	PRINT ON A3 PAPER SIZE



# OLTORUT RAISING MAIN FROM BOREHOLE

EL STATIC = 546m



- NOTES**
- Dimensions are in metres unless otherwise stated.
  - This drawing is to be read in conjunction with the designs and other relevant drawings.
  - Scales in A1 paper size.

**SCALES**

Horizontal Scale 1:2000  
Vertical Scale 1:200

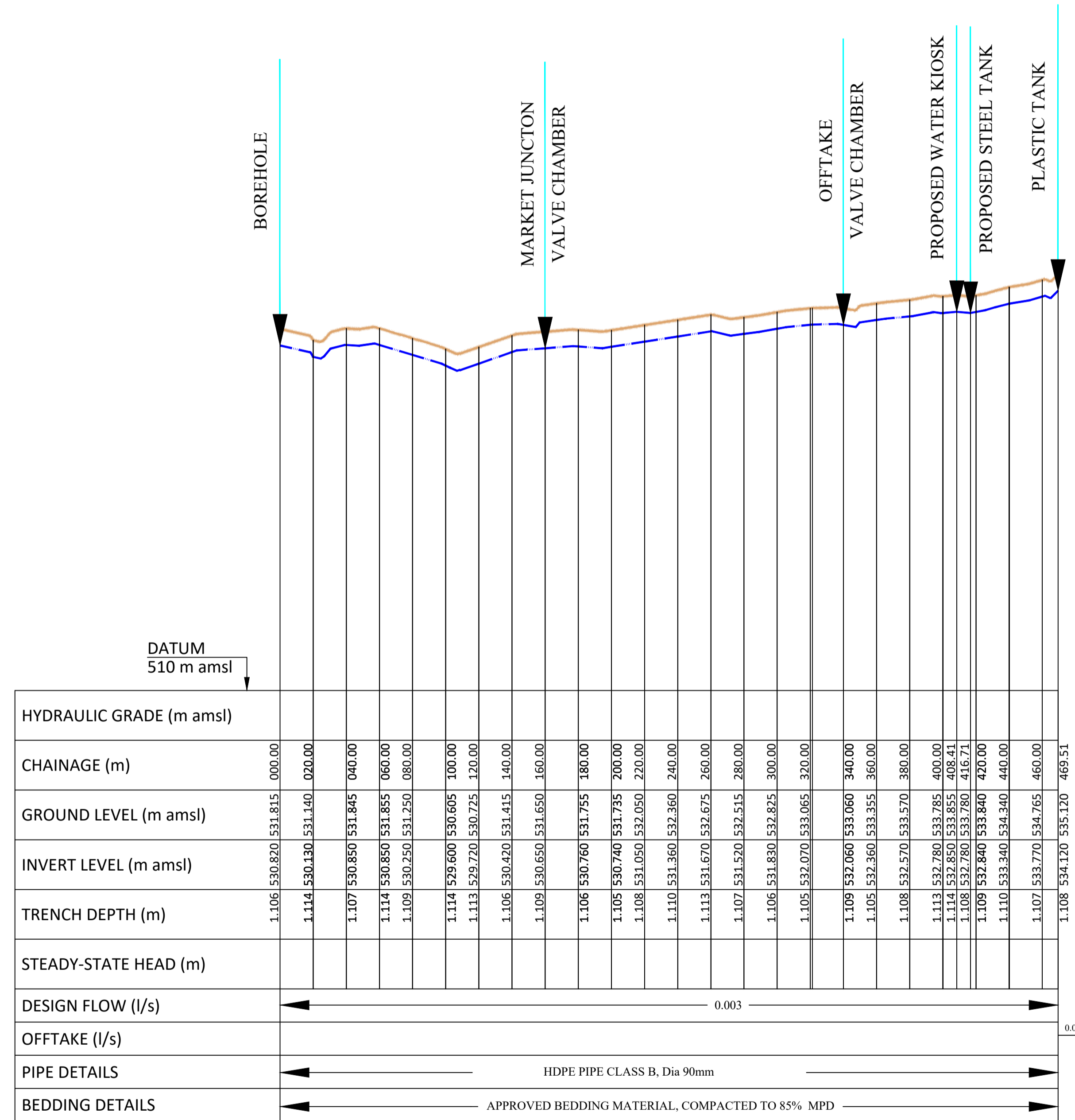
- LEGEND**
- EXISTING GROUND PROFILE
  - - - PIPE INVERT
  - ↑ SINGLE AIR VALVE
  - ↕ DOUBLE AIR VALVE
  - ↓ WASHOUT VALVE

<p>MARSABIT COUNTY</p>	No.	APPROVAL	DATE	REFERENCE	CLIENT:	CONCERN WORLDWIDE	CONSULTANT:	GEO CONSULTANTS	PROJECT TITLE:	NAMAREI WATER PAN, OLTORUT AND NGOROROI	TITLE OF DRAWING:	OLTORUT RAISING MAIN FROM BOREHOLE PROFILE Chainage 0+000 to 0+469.51	Designed:	P. K.W	Date:	Aug 2023		
						 in conjunction with					DwG. No.	KAM/DD/203/8	Sheet No.	1/1	Checked:	P. K.W	Date:	Aug 2023
														Approved:	ENG ANDREW MESSO (A3007)	Date:	Aug 2023	

# OLTORUT RAISING MAIN FROM BOREHOLE

**NOTES**  
 1. Dimensions are in metres unless otherwise stated.  
 2. This drawing is to be read in conjunction with the designs and other relevant drawings.  
 3. Scales in A1 paper size.

**SCALES**  
 Horizontal Scale 1:2000  
 Vertical Scale 1:200



**LEGEND**

- EXISTING GROUND PROFILE
- PIPE INVERT
- SINGLE AIR VALVE
- DOUBLE AIR VALVE
- WASHOUT VALVE

<p>MARSABIT COUNTY</p>	No.	APPROVAL	DATE	REFERENCE	CLIENT: <b>CONCERN WORLDWIDE</b> 	CONSULTANT: <b>GEO CONSULTANTS</b> 	PROJECT TITLE: <b>NAMAREI WATER PAN, OLTORUT AND NGOROROI LAISAMIS INTEGRATED PROJECT</b>	TITLE OF DRAWING: <b>OLTORUT RAISING MAIN FROM BOREHOLE PROFILE Chainage 0+000 to 0+469.51</b>	Designed: <b>ENG. P. WAGURAH</b> Date: <b>Aug 2023</b>
					in conjunction with 			DWG. No. <b>KAM/DD/203</b>	Drawn: <b>MMN</b> Date: <b>Aug 2023</b>
								Sheet No. <b>1/1</b>	Checked: <b>ENG. P. WAGURAH</b> Date: <b>Aug 2023</b>
									Approved: <b>ENG ANDREW MESSO (A3007)</b> Date: <b>Aug 2023</b>



EL STATIC = 597.82m  
HGL = 16.72m/km

EL STATIC = 597.82m

HGL = 16.72m/km

HGL = 16.72m/km

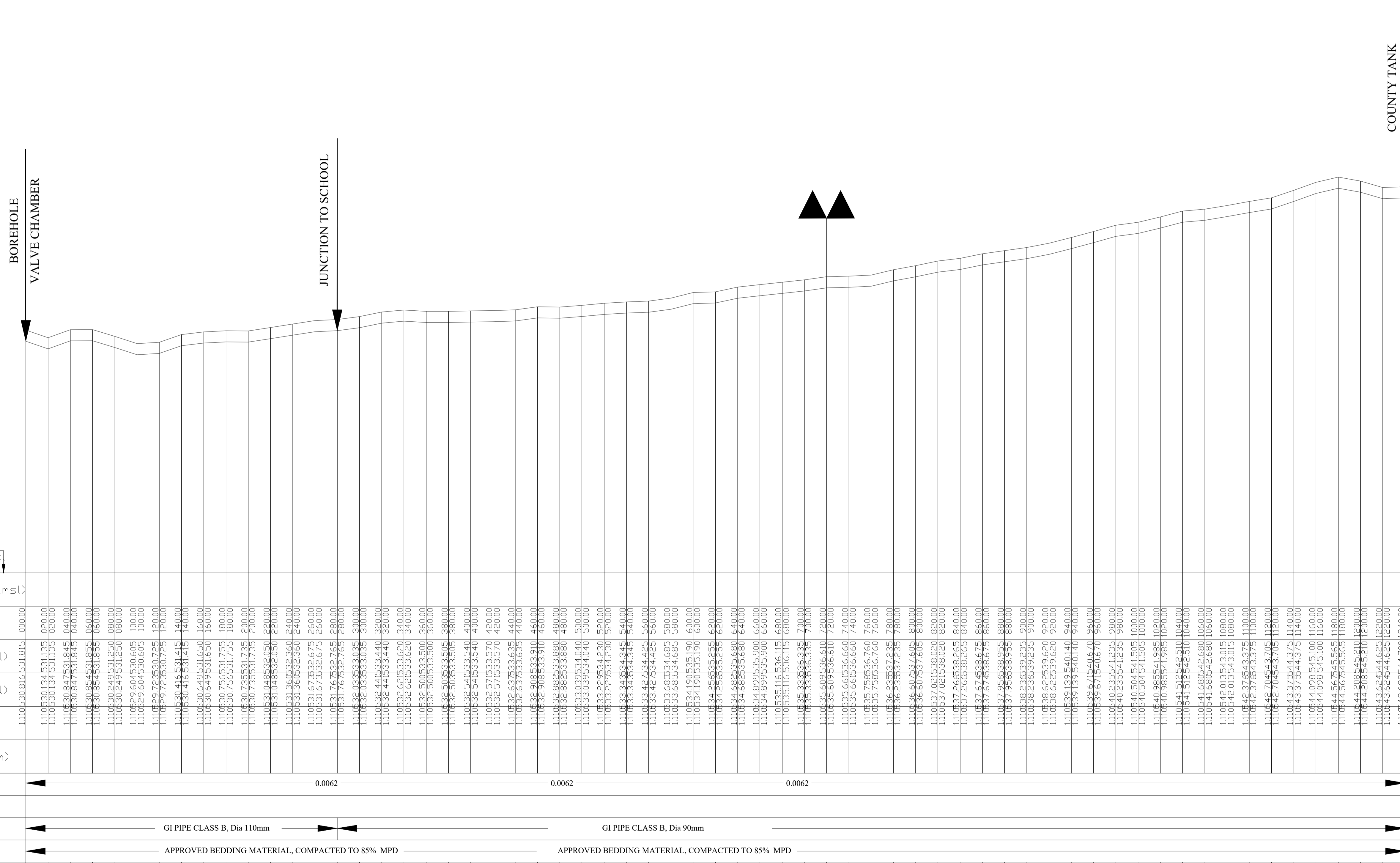
- NOTES**
- Dimensions are in metres unless otherwise stated.
  - This drawing is to be read in conjunction with the designs and other relevant drawings.
  - Scales in A1 paper size

**SCALES**

Horizontal Scale 1:2000  
Vertical Scale 1:200

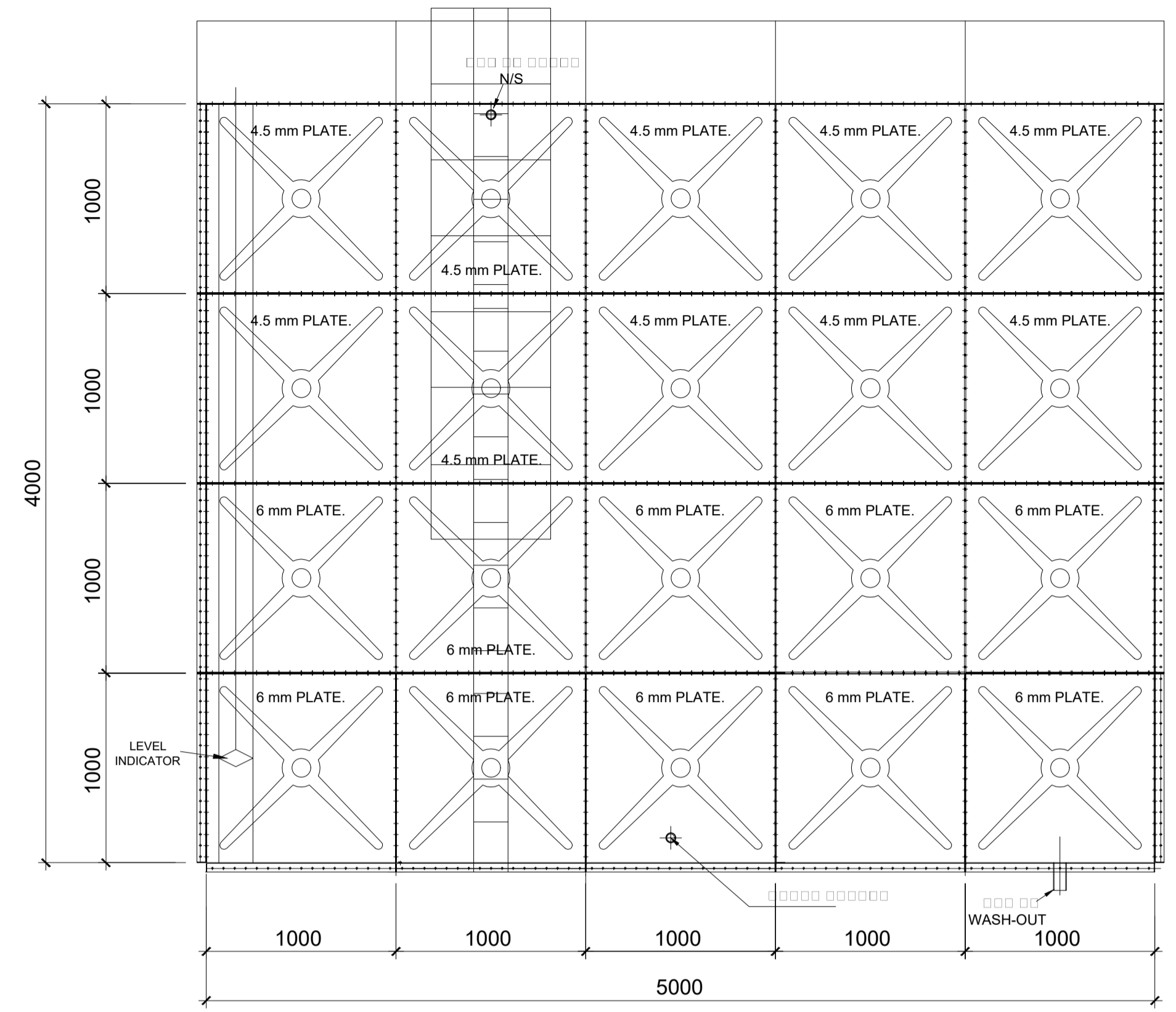
**LEGEND**

- EXISTING GROUND PROFILE
- PIPE INVERT
- SINGLE AIR VALVE
- DOUBLE AIR VALVE
- WASHOUT VALVE

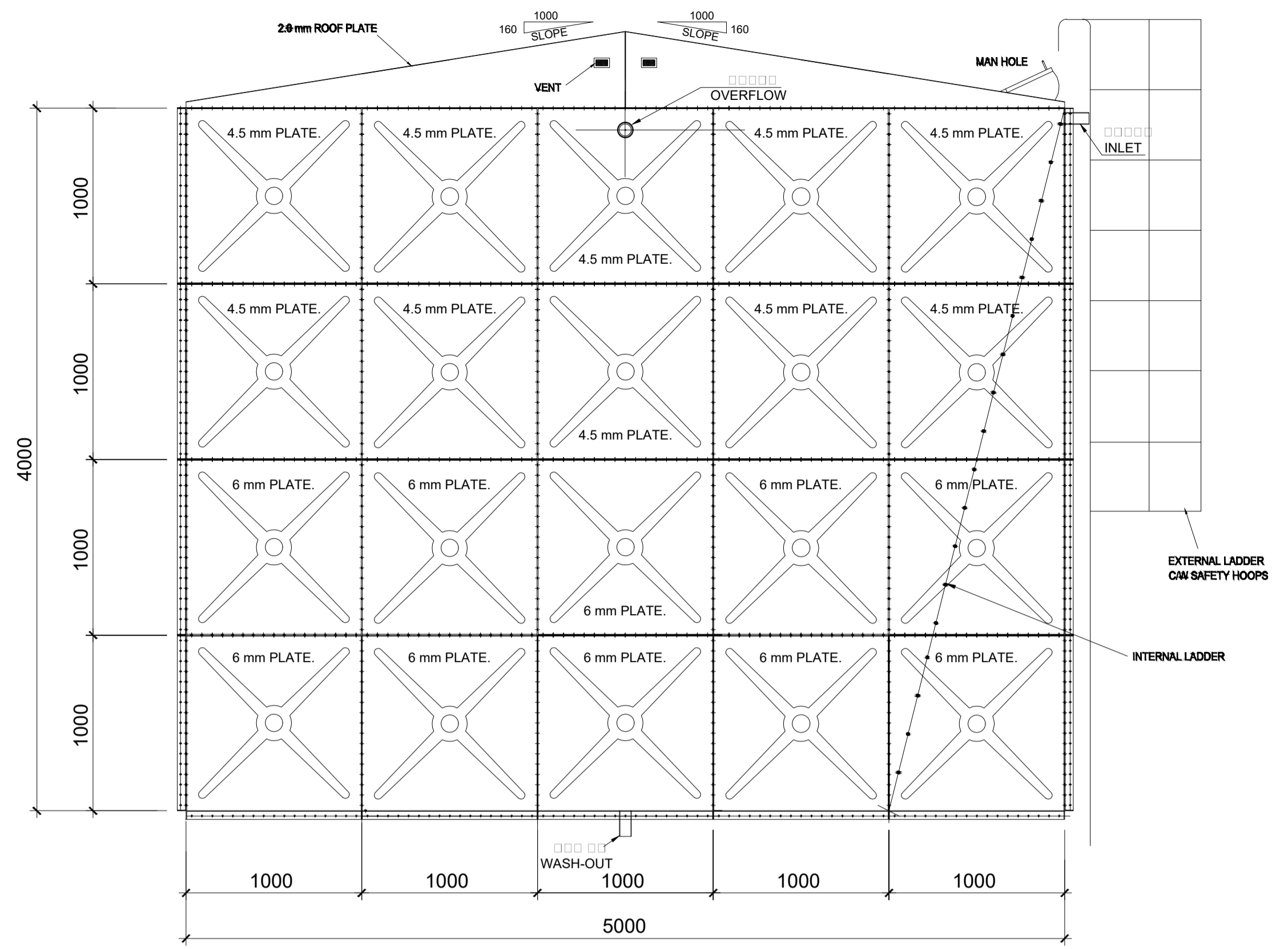


HYDRAULIC GRADE (m amsl)	1.110530.816531.815	0.0000
CHAINAGE (m)	1.110530.134531.135	0.0000
GROUND LEVEL (m amsl)	1.110530.847531.845	0.0400
INVERT LEVEL (m amsl)	1.110530.854531.855	0.6000
TRENCH DEPTH (m)	1.110530.249531.250	0.8000
STEADY-STATE HEAD (m)	1.110530.75531.755	1.8000
DESIGN FLOW (l/s)	0.0062	0.0062
OFFTAKE (l/s)		
PIPE DETAILS	GI PIPE CLASS B, Dia 110mm	GI PIPE CLASS B, Dia 90mm
BEDDING DETAILS	APPROVED BEDDING MATERIAL, COMPACTED TO 85% MPD	APPROVED BEDDING MATERIAL, COMPACTED TO 85% MPD

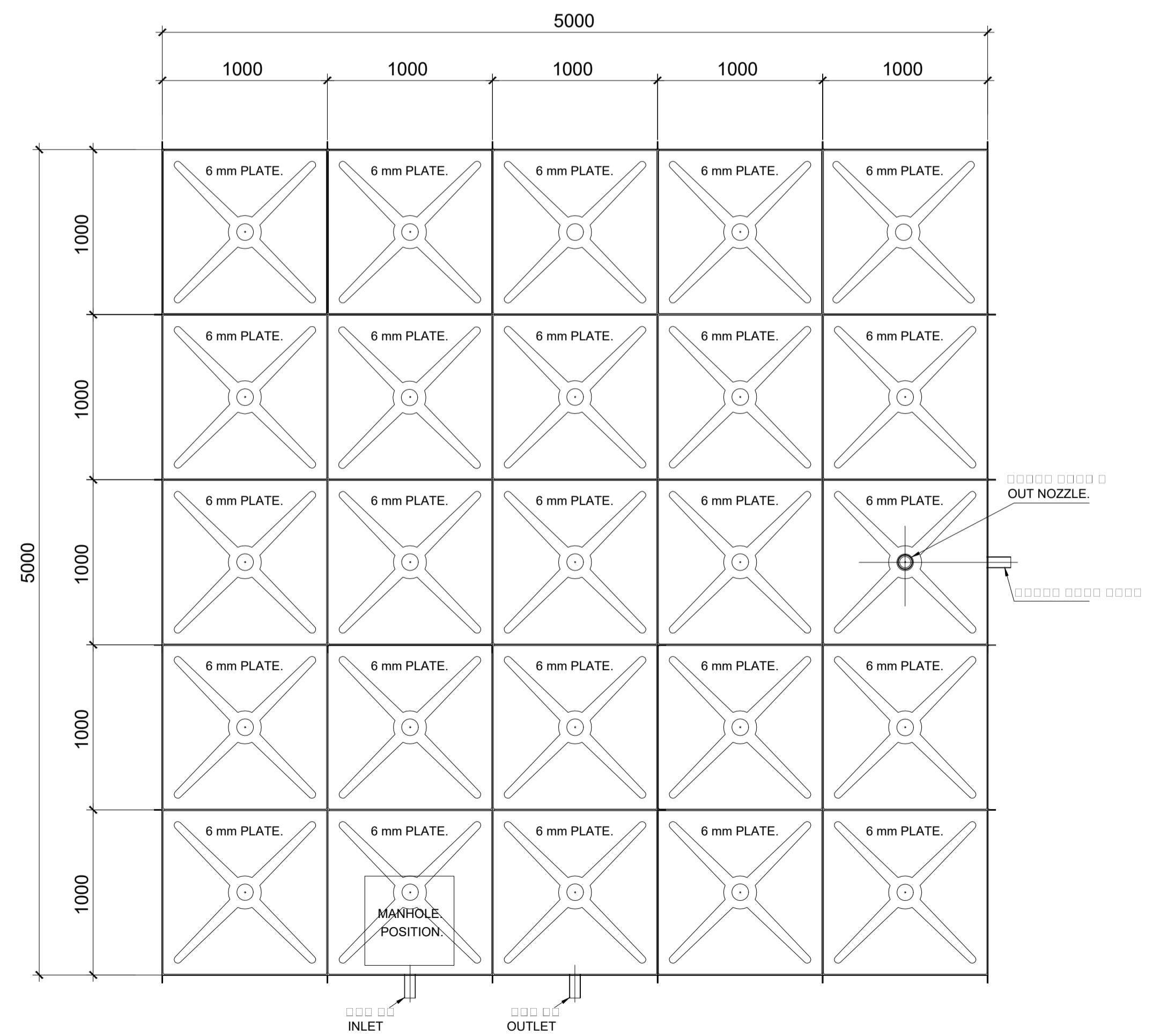
<p>MARSABIT COUNTY</p>	No.	APPROVAL	DATE	REFERENCE	<p>CLIENT:</p> <p><b>CONCERN WORLDWIDE</b></p> <p>in conjunction with</p> <p>Financing the Water Sector</p>	<p>CONSULTANT:</p> <p><b>GEO CONSULTANTS</b></p>	<p>PROJECT TITLE:</p> <p><b>NAMAREI WATER PAN, OLTUROI AND NGOROROI LAISAMIS INTEGRATED PROJECT</b></p>	<p>TITLE OF DRAWING:</p> <p><b>BH TO COUNTY TANK PROFILE</b> Chainage 0+000 to 1+240.00</p>	Designed:	<b>P. K.W</b>	Date:	<b>Aug 2023</b>
									Drawn:	<b>MMN</b>	Date:	<b>Aug 2023</b>
									Checked:	<b>P. K.W</b>	Date:	<b>Aug 2023</b>
									Approved:	<b>ENG ANDREW MESSO (A3007)</b>	Date:	<b>Aug 2023</b>
									Dwg. No.	<b>KAM/DD/203/9</b>	Sheet No.	<b>1/1</b>



**SIDE ELEVATION**



**END ELEVATION**



**PLAN**

**DESCRIPTION**

OVERFLOW	75MMØ NB
OUTLET	75MMØ NB
WASHOUT	75MMØ NB
INLET	75MMØ NB

**GENERAL NOTES:**

- 1) ALL STRUCTURAL STEELWORK TO BE GRADE 43C.
- 2) STEELWORK TO BE WIRE BRUSHED PRIOR TO FINISHING APPLICATION.
- 3) INSIDE TANK: ONE COAT OF PRIMER & TWO COATS OF NON TOXIC BITUMINOUS PAINT. OUTSIDE TANK: ONE COAT OF PRIMER & ONE COAT OF SILVER ALUMINUM PAINT.
- 4) ALL SHOP WELDS TO BE 6MM FILLET WELDS UNLESS OTHERWISE NOTED.
- 5) ALL SECTION SIZES ARE AS SPECIFIED ON DRAWING UNLESS OTHERWISE NOTED.
- 6) BOLTS ARE GALVANIZED GRADE 8.8.

- NOTES**
1. READ THE DRAWING IN CONJUNCTION WITH RELEVANT R.C.
  2. DRAWINGS: ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE STATED.
  3. ALL LEVELS ARE IN METERS ABOVE SEA LEVEL.
  4. ALL PIPEWORK ARE DUCTILE IRON TO NP 10 WITH NP 16 FLANGE.
  5. ALL CONCRETE SHALL BE CLASS C30 UNLESS OTHERWISE STATED.
  6. ALL VALVES TO BE SUPPLIED WITH EXTENSION SPINDLE.
  7. MIN CONCRETE COVER OF 40 mm TO THE MAIN STEEL TO BE MAINTAINED.
  8. SAFE BEARING CAPACITY TAKEN AS OF 150KN/M2.
  9. ALL FOUNDATIONS TO BE TAKEN DOWN TO A SUITABLE ROCK.
  10. MAXIMUM AGGREGATE SIZE FOR CONCRETE IS 20mm.
  11. ALL REINFORCEMENT TO BE INSPECTED BY THE ENGINEER BEFORE CONCRETING.

PROJECT TITLE:  
**PROPOSED FABRICATION, DELIVERY & INSTALLATION OF 100M3 PRESSED STEEL TANK ON 12M TOWER.**

DRAWING TITLE  
**PANEL DETAILS.**

CLIENT:  
**CONCERN WORLDWIDE**  
  
 in conjunction with  
  
 CONSULTANT:  
**GEO CONSULTANTS** MARSABIT COUNTY

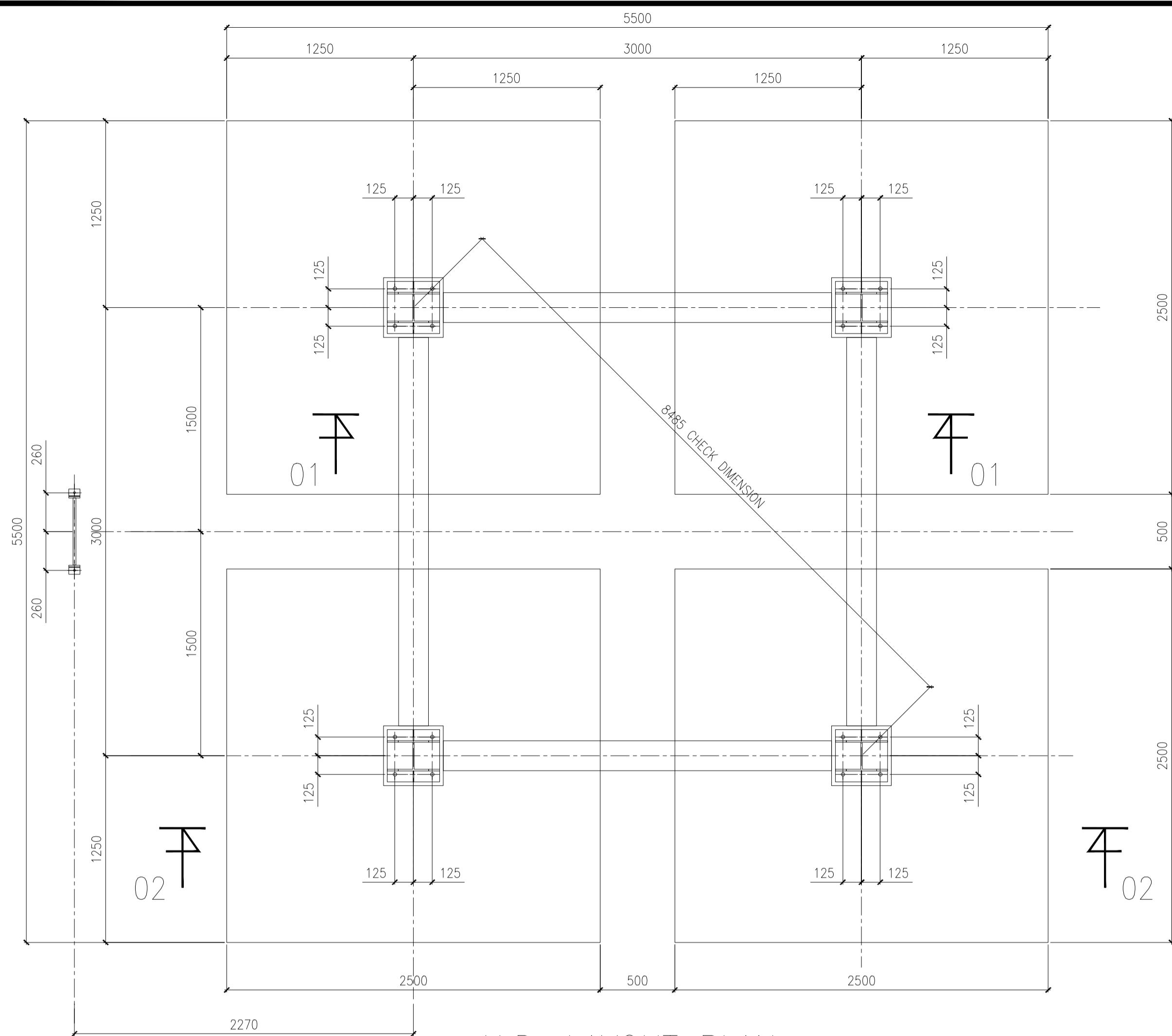
PROJECT NAME:  
**CONSTRUCTION OF 100 m³ ELEVATED STORAGE TANK  
 OLTUROT WATER SUPPLY  
 LAISAMIS INTEGRATED PROJECT  
 MARSABIT COUNTY**

SCALE: 1:50

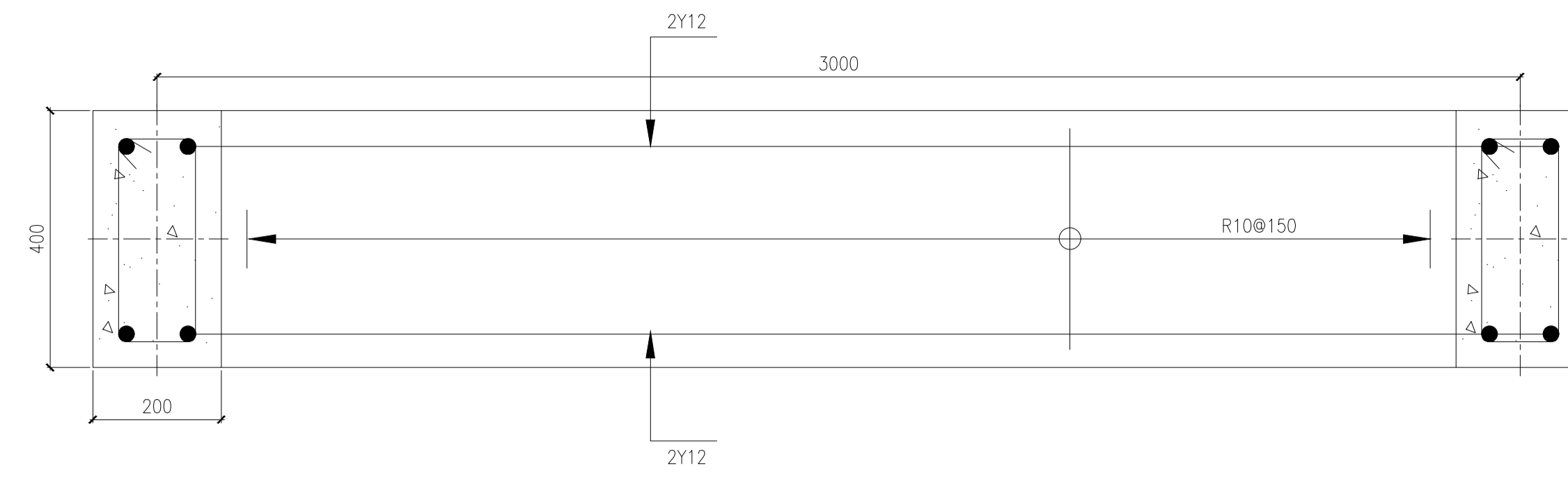
	NAME	DATE
Designed	S.Gateru	AUG 2023
Drawn	MMN	AUG 2023
Checked	Eng. Andrew Messo (A3007)	AUG 2023

DRG No. <b>02</b>	Revision Suffix
----------------------	-----------------

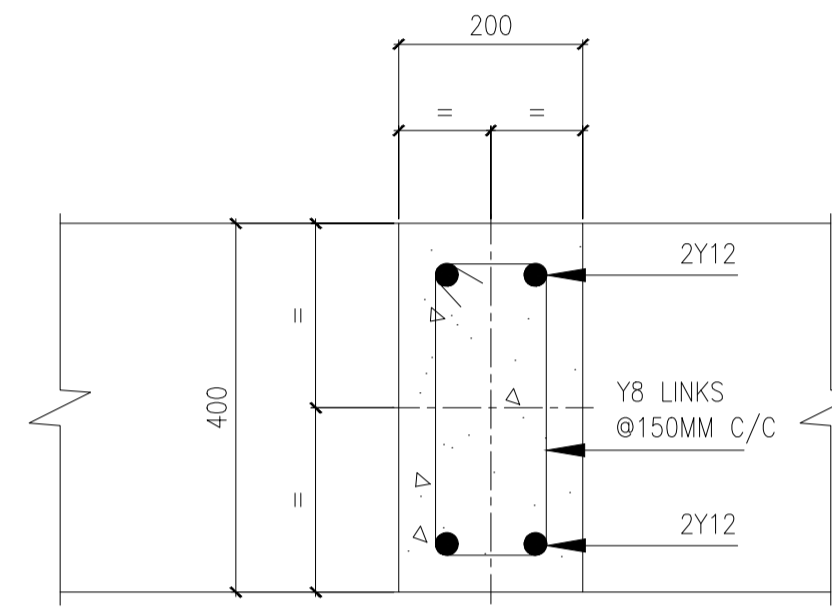




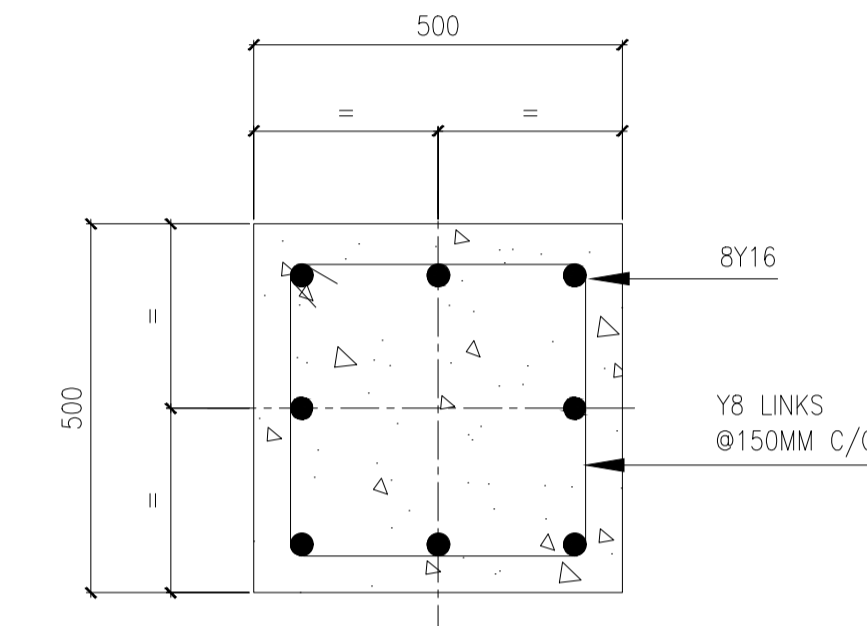
H.D. LAYOUT PLAN



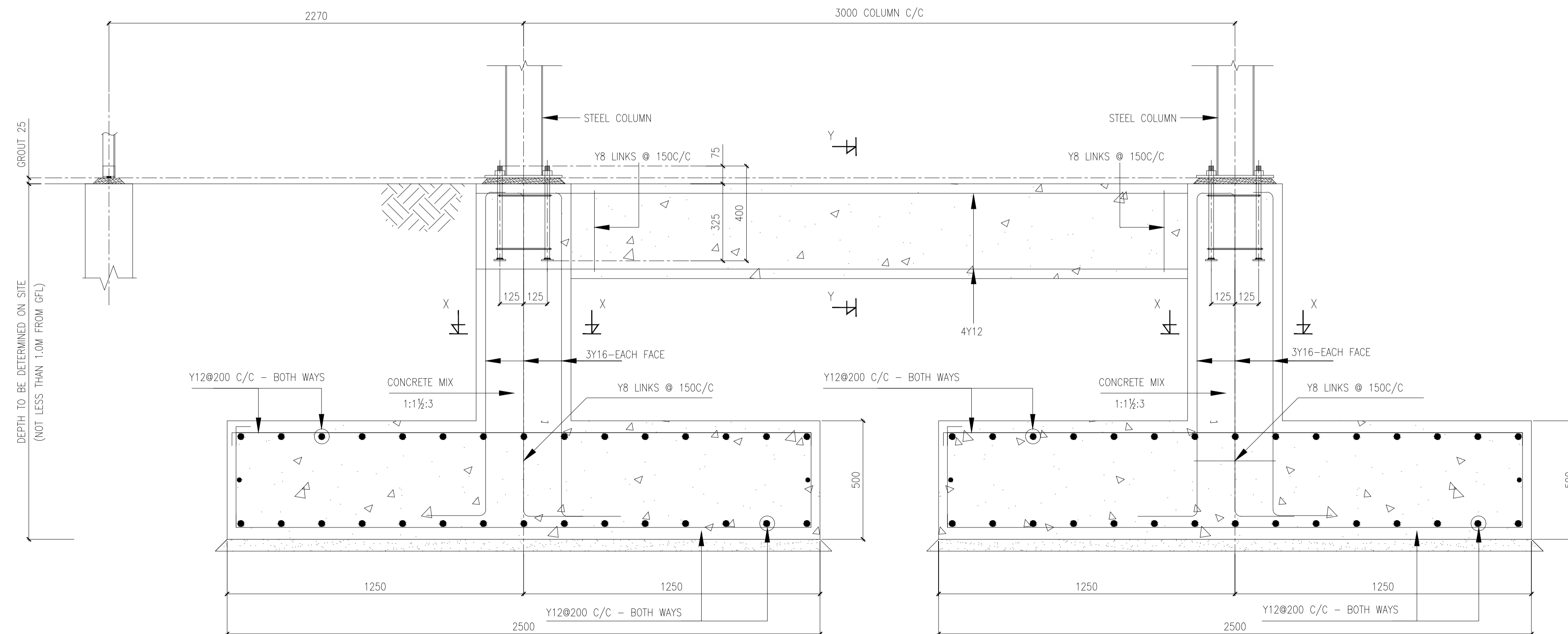
TYPICAL SECTION 01 - 01



TYPICAL SECTION Y - Y  
THRU RC BEAMS B1



TYPICAL SECTION X - X  
THRU STUB COLUMNS



TYPICAL SECTION 02 - 02

NOTES:

- MIX OF CONCRETE TO ATTAIN THE STRENGTH OF  $F_{cu}$  25  $N/mm^2$
- CONCRETE MIX 1:1 1/2:3
- CONCRETE MIX 1:4:8 BLINDING
- WATER CEMENT RATIO 0.5
- CUBE STRENGTH 28 DAYS - 25  $N/mm^2$
- REINFORCEMENT STEEL STRENGTH - 425/250  $N/mm^2$
- COVER TO BASE - 50mm
- COVER TO COLUMN - 40mm
- CONTRACTOR TO CONFIRM CHECK DIMENSION USING STEEL TAPE MEASURE.
- HOLDING DOWN BOLTS TO BE CAST TO  $\pm 5mm$  ACCURACY AND SHOULD BE RECAST IF THIS TOLERANCE IS EXCEEDED.
- CONTRACTOR TO CONFIRM LEVELS OF FOUNDATIONS.
- ASSUMED GROUND BEARING PRESSURE - 80  $KN/M^2$

NOTES

- READ THE DRAWING IN CONJUNCTION WITH RELEVANT R.C.
- DRAWINGS, ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE STATED.
- ALL LEVELS ARE IN METERS ABOVE SEA LEVEL.
- ALL PIPEWORK ARE DUCTILE IRON TO NP 10 WITH NP 16 FLANG
- ALL CONCRETE SHALL BE CLASS C30 UNLESS OTHERWISE STATED.
- ALL VALVES TO BE SUPPLIED WITH EXTENSION SPINDLE.
- MIN CONCRETE COVER OF 40 mm TO THE MAIN STEEL TO BE MAINTAINED.
- SAFE BEARING CAPACITY TAKEN AS OF 150KN/M2.
- ALL FOUNDATIONS TO BE TAKEN DOWN TO A SUITABLE ROCK.
- MAXIMUM AGGREGATE SIZE FOR CONCRETE IS 20mm.
- ALL REINFORCEMENT TO BE INSPECTED BY THE ENGINEER BEFORE CONCRETING.

PROJECT TITLE:

DRAWING TITLE

RC FOUNDATION & H.D. BOLTS LAYOUT DETAILS.

CLIENT:

CONCERN WORLDWIDE



CONSULTANT:

GEO CONSULTANTS



MARSABIT COUNTY

PROJECT NAME:

CONSTRUCTION OF 100 m<sup>3</sup> ELEVATED STORAGE TANK

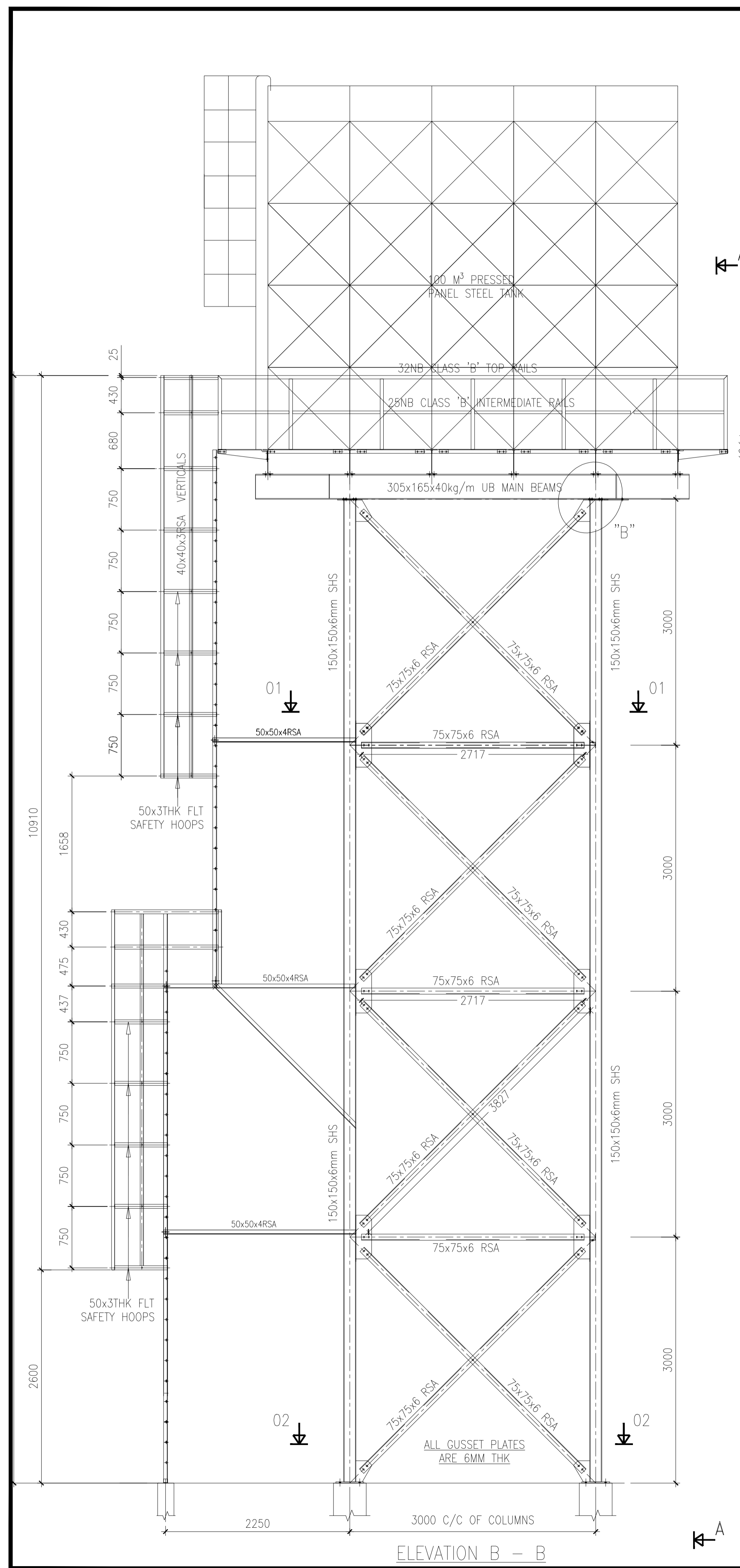
OLTUROT WATER SUPPLY  
LAISAMIS INTEGRATED PROJECT  
MARSABIT COUNTY

SCALE: 1:50

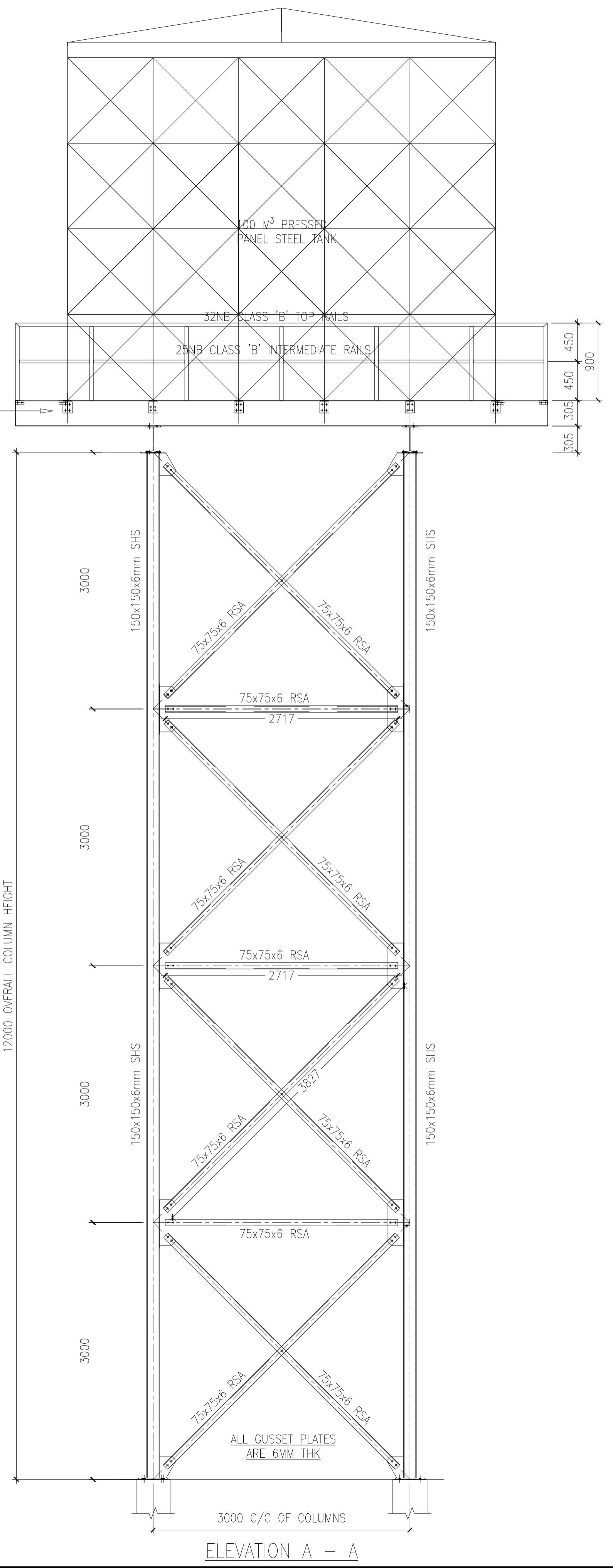
	NAME	DATE
Designed	S.Gateru	AUG 2023
Drawn	MMN	AUG 2023
Checked	Eng. Andrew Messo (A3007)	AUG 2023

DRG No.	Revision Suffix
01	

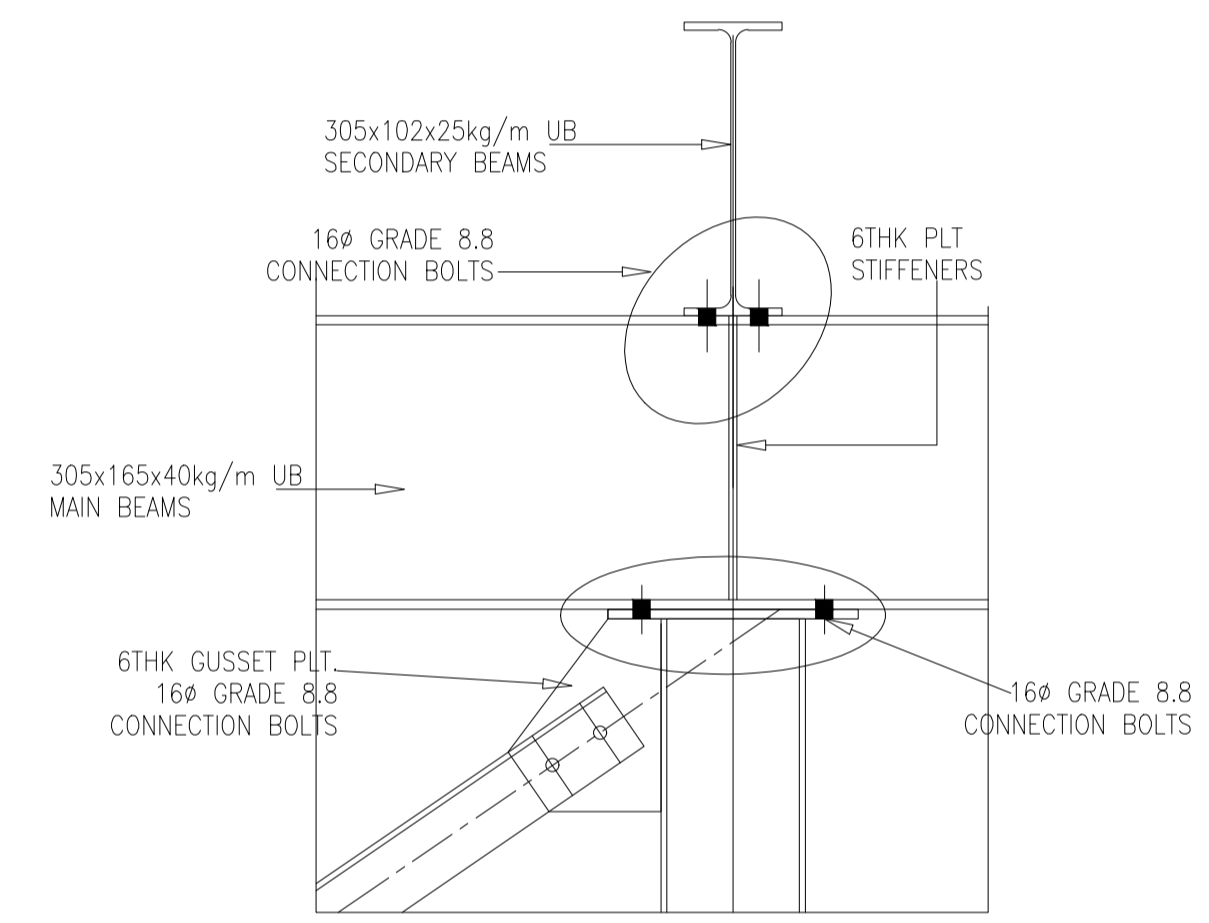




ELEVATION B - B



ELEVATION A - A



TYPICAL CONNECTION  
DETAIL AT "A"

- GENERAL NOTES:
- 1) ALL STRUCTURAL STEELWORK TO BE GRADE 43C.
  - 2) STEELWORK TO BE WIRE BRUSHED PRIOR TO PAINT APPLICATION.
  - 3) APPLY ONE COAT OF GREY OXIDE PRIMER.
  - 4) APPLY ONE COAT OF SILVER ALUMINIUM PAINT.
  - 5) ALL SHOP WELDS TO BE 6MM FILLET WELDS U.O.N.
  - 6) BOLTS ARE GALVANIZED GRADE 4.6. & GRADE 8.8
  - 7) ALL SECTION SIZES TO BE AS SPECIFIED ON DRAWING.
  - 8) THIS DRAWING TO BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT DRAWINGS.

- NOTES
1. READ THE DRAWING IN CONJUNCTION WITH RELEVANT R.C.
  2. DRAWINGS. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE STATED.
  3. ALL LEVELS ARE IN METERS ABOVE SEA LEVEL.
  4. ALL PIPEWORK ARE DUCTILE IRON TO NP 10 WITH NP 16 FLANGES
  5. ALL CONCRETE SHALL BE CLASS C30 UNLESS OTHERWISE STATED
  6. ALL VALVES TO BE SUPPLIED WITH EXTENSION SPINDLE.
  7. MIN CONCRETE COVER OF 40 mm TO THE MAIN STEEL TO BE MAINTAINED.
  8. SAFE BEARING CAPACITY TAKEN AS OF 150KN/M2.
  9. ALL FOUNDATIONS TO BE TAKEN DOWN TO A SUITABLE ROCK.
  10. MAXIMUM AGGREGATE SIZE FOR CONCRETE IS 20mm.
  11. ALL REINFORCEMENT TO BE INSPECTED BY THE ENGINEER BEFORE CONCRETING.

PROJECT TITLE:  
**PROPOSED FABRICATION, DELIVERY & INSTALLATION OF 100M³ PRESSED STEEL TANK ON 12M TOWER.**

DRAWING TITLE  
**ELEVATION DETAILS**

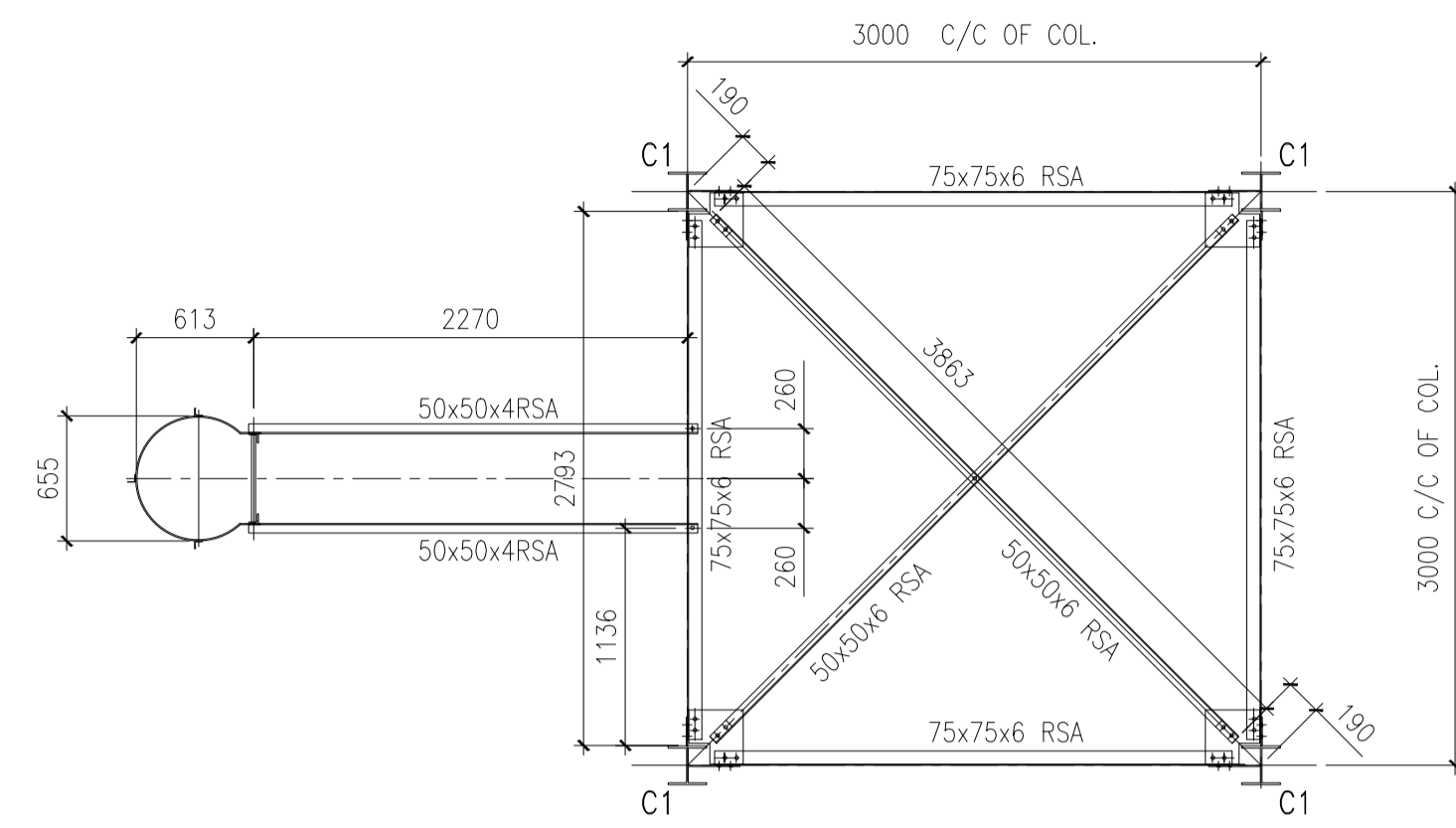
CLIENT:  
**CONCERN WORLDWIDE**  
in conjunction with  
**WaterFund**  
CONSULTANT:  
**GEO CONSULTANTS**

MARSABIT COUNTY

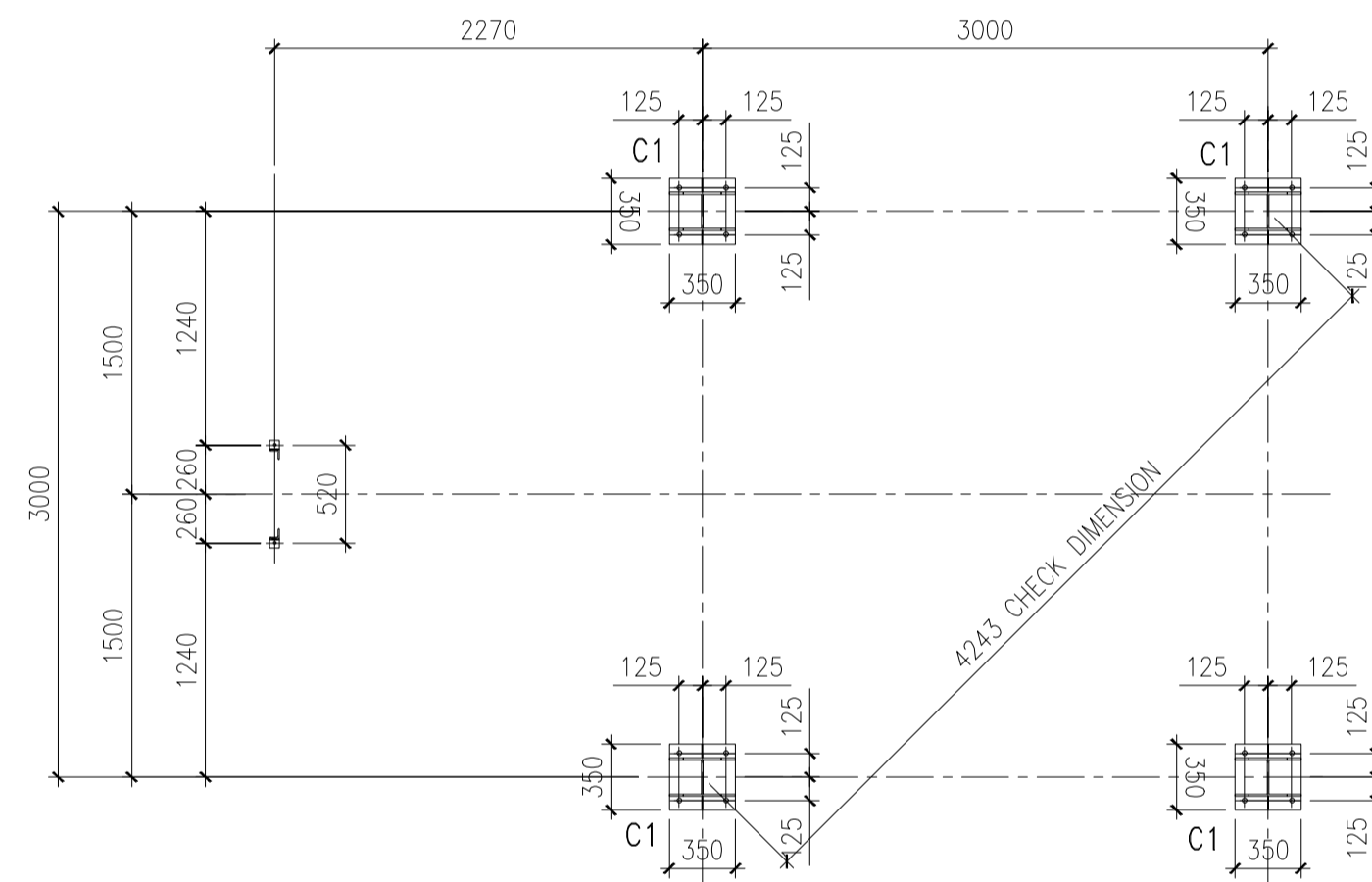
PROJECT NAME:  
**CONSTRUCTION OF 100 m³ ELEVATED STORAGE TANK**  
**OTUROT WATER SUPPLY**  
**LAISAMIS INTEGRATED PROJECT**  
**MARSABIT COUNTY**

SCALE: 1:40

	NAME	DATE
Designed	S. Gateru	AUG 2023
Drawn	MMN	AUG 2023
Checked	Eng. Andrew Messo (A3007)	AUG 2023
DRG No.	03	
	Revision	Suffix



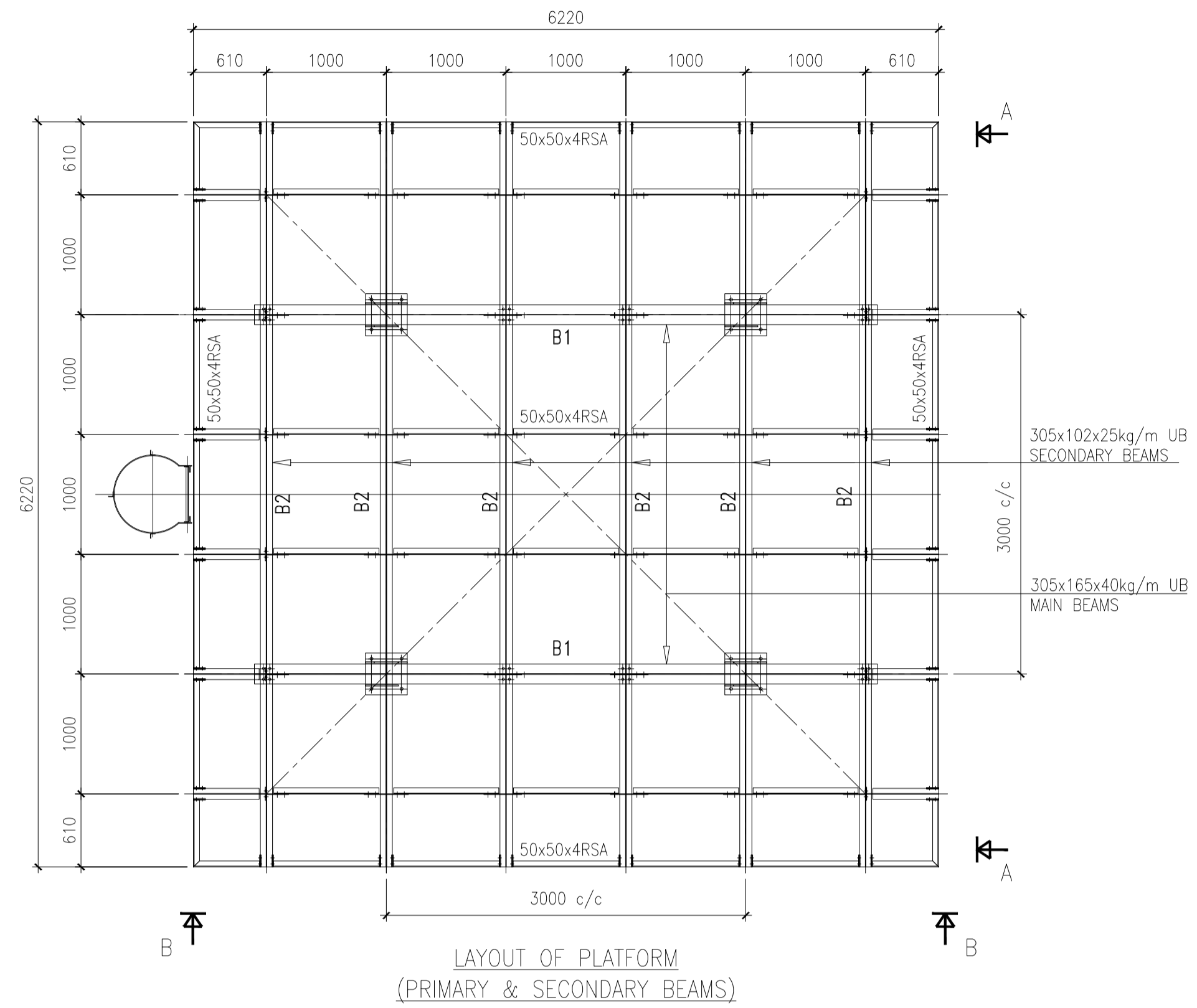
SECTION 01 - 01  
TYPICAL PLAN ON HORIZONTAL BRACINGS



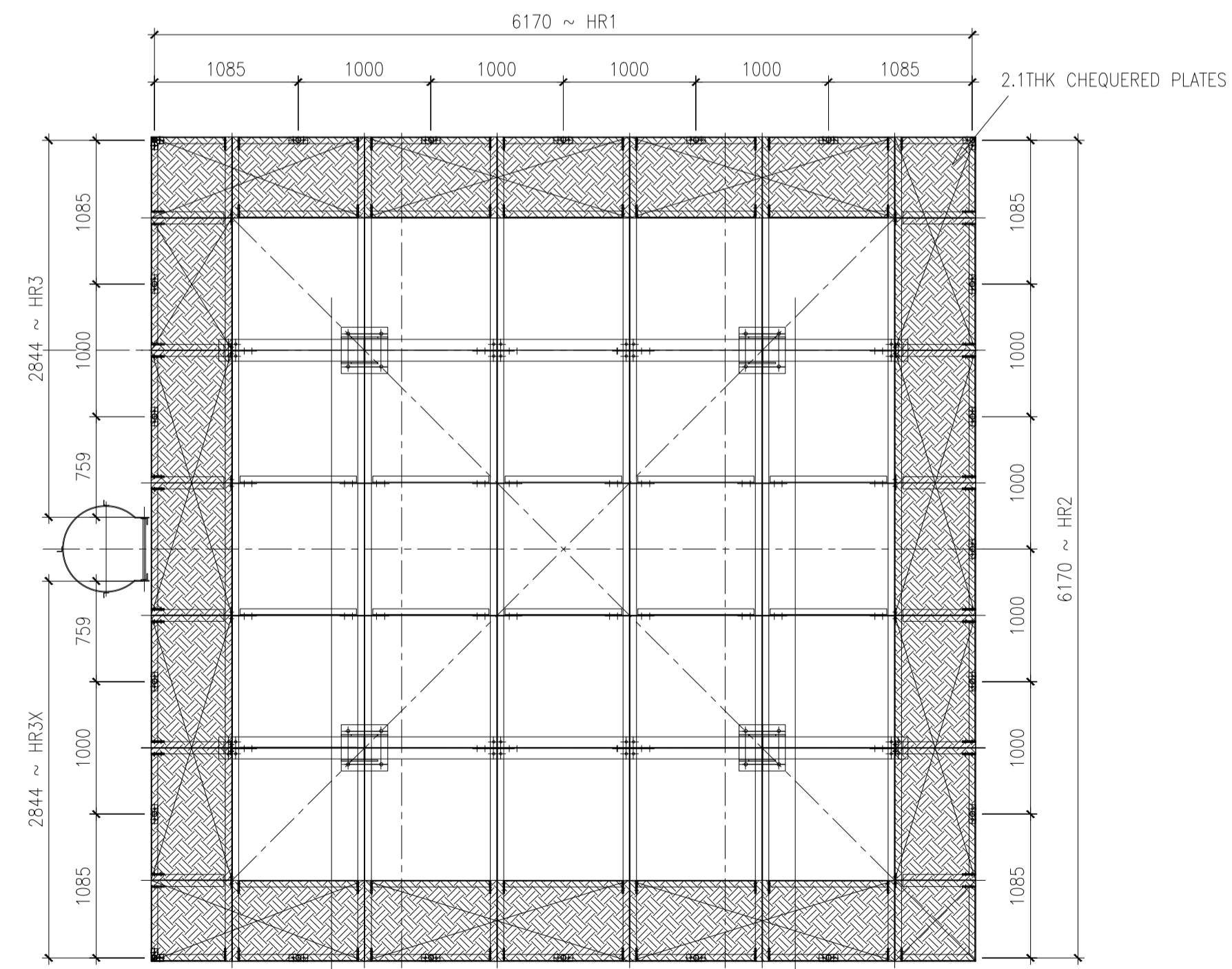
SECTION 02 - 02  
BASE PLATE DETAILS

GENERAL NOTES:

- 1) ALL STRUCTURAL STEELWORK TO BE GRADE 43C.
- 2) STEELWORK TO BE WIRE BRUSHED PRIOR TO PAINT APPLICATION.
- 3) APPLY ONE COAT OF GREY OXIDE PRIMER.
- 4) APPLY ONE COAT OF SILVER ALUMINIUM PAINT.
- 5) ALL SHOP WELDS TO BE 6MM FILLET WELDS U.O.N.
- 6) BOLTS ARE GALVANIZED GRADE 4.6. & GRADE 8.8
- 7) ALL SECTION SIZES TO BE AS SPECIFIED ON DRAWING.
- 8) THIS DRAWING TO BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT DRAWINGS.



LAYOUT OF PLATFORM  
(PRIMARY & SECONDARY BEAMS)



LAYOUT OF PLATFORM  
(CHEQUERED PLATES & HANDRAILS)

NOTES

1. READ THE DRAWING IN CONJUNCTION WITH RELEVANT R.C.
2. DRAWINGS, ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE STATED.
3. ALL LEVELS ARE IN METERS ABOVE SEA LEVEL.
4. ALL PIPEWORK ARE DUCTILE IRON TO NP 10 WITH NP 16 FLANG.
5. ALL CONCRETE SHALL BE CLASS C30 UNLESS OTHERWISE STATE.
6. ALL VALVES TO BE SUPPLIED WITH EXTENSION SPINDLE.
7. MIN CONCRETE COVER OF 40 mm TO THE MAIN STEEL TO BE MAINTAINED.
8. SAFE BEARING CAPACITY TAKEN AS OF 150KN/M2.
9. ALL FOUNDATIONS TO BE TAKEN DOWN TO A SUITABLE ROCK.
10. MAXIMUM AGGREGATE SIZE FOR CONCRETE IS 20mm.
11. ALL REINFORCEMENT TO BE INSPECTED BY THE ENGINEER BEFORE CONCRETING.

PROJECT TITLE:

PROPOSED FABRICATION, DELIVERY & INSTALLATION OF 100M3 PRESSED STEEL TANK ON 12M TOWER.

DRAWING TITLE

PLATFORM DETAILS

CLIENT:

CONCERN WORLDWIDE



CONSULTANT:  
GEO CONSULTANTS



MARSABIT COUNTY

PROJECT NAME:

CONSTRUCTION OF 100 m<sup>3</sup> ELEVATED STORAGE TANK

OLTUROT WATER SUPPLY

LAISAMIS INTEGRATED PROJECT

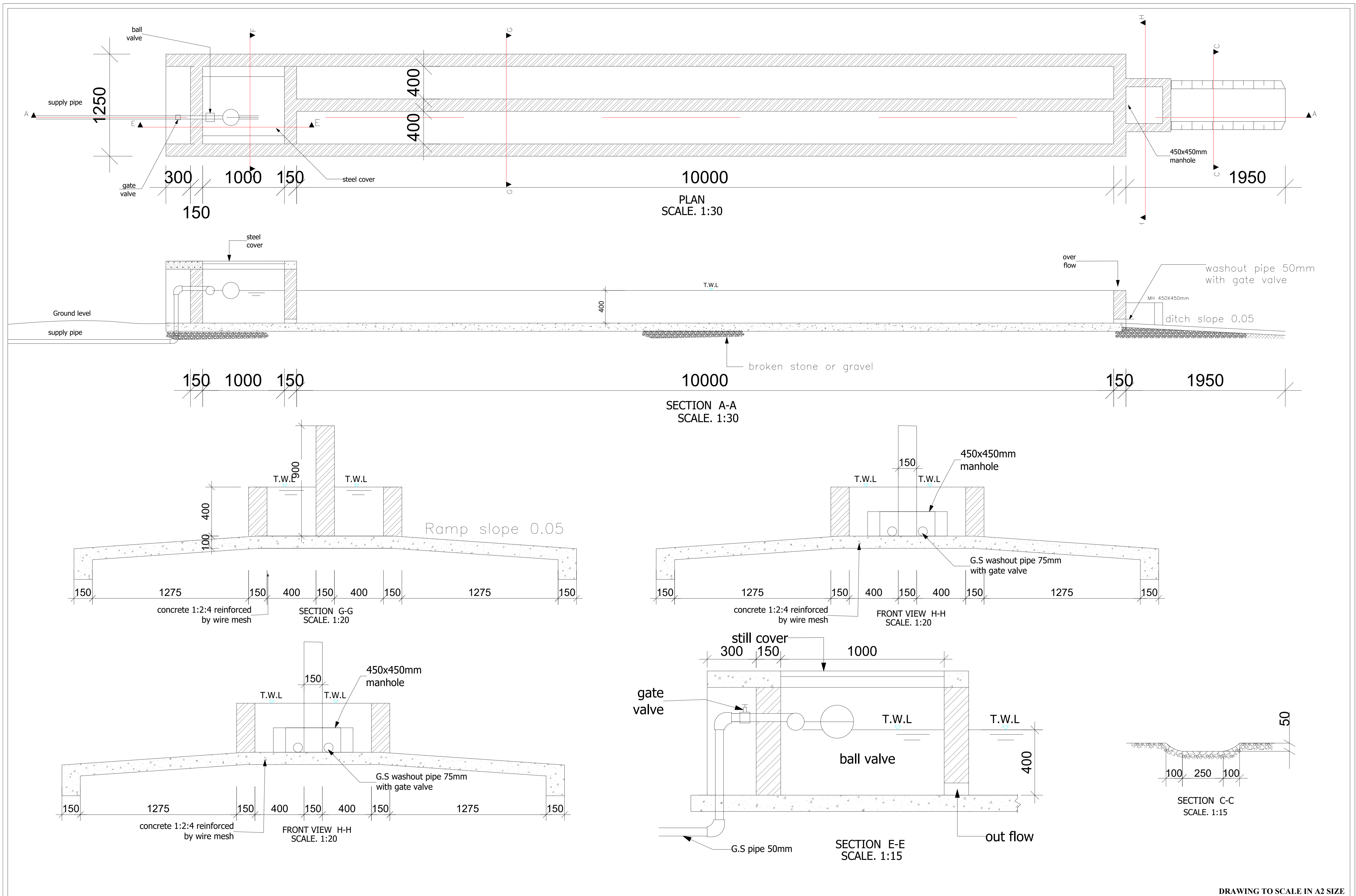
MARSABIT COUNTY

SCALE: 1:40

	NAME	DATE
Designed	ENG S. GATERU	AUG 2023
Drawn	MMN	AUG 2023
Checked	Eng. Andrew Messo (A3007)	AUG 2023

DRG No.	Revision Suffix
04	

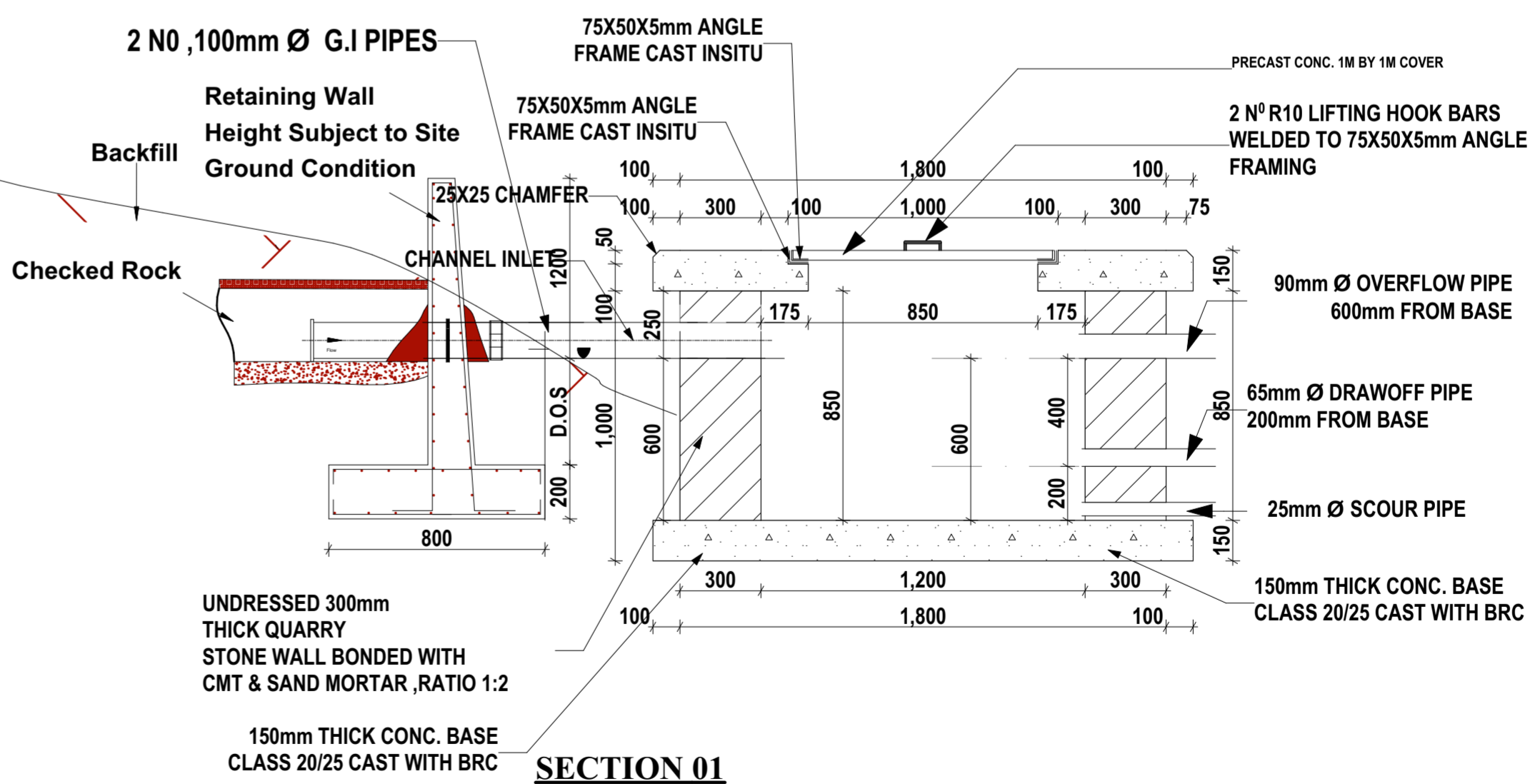
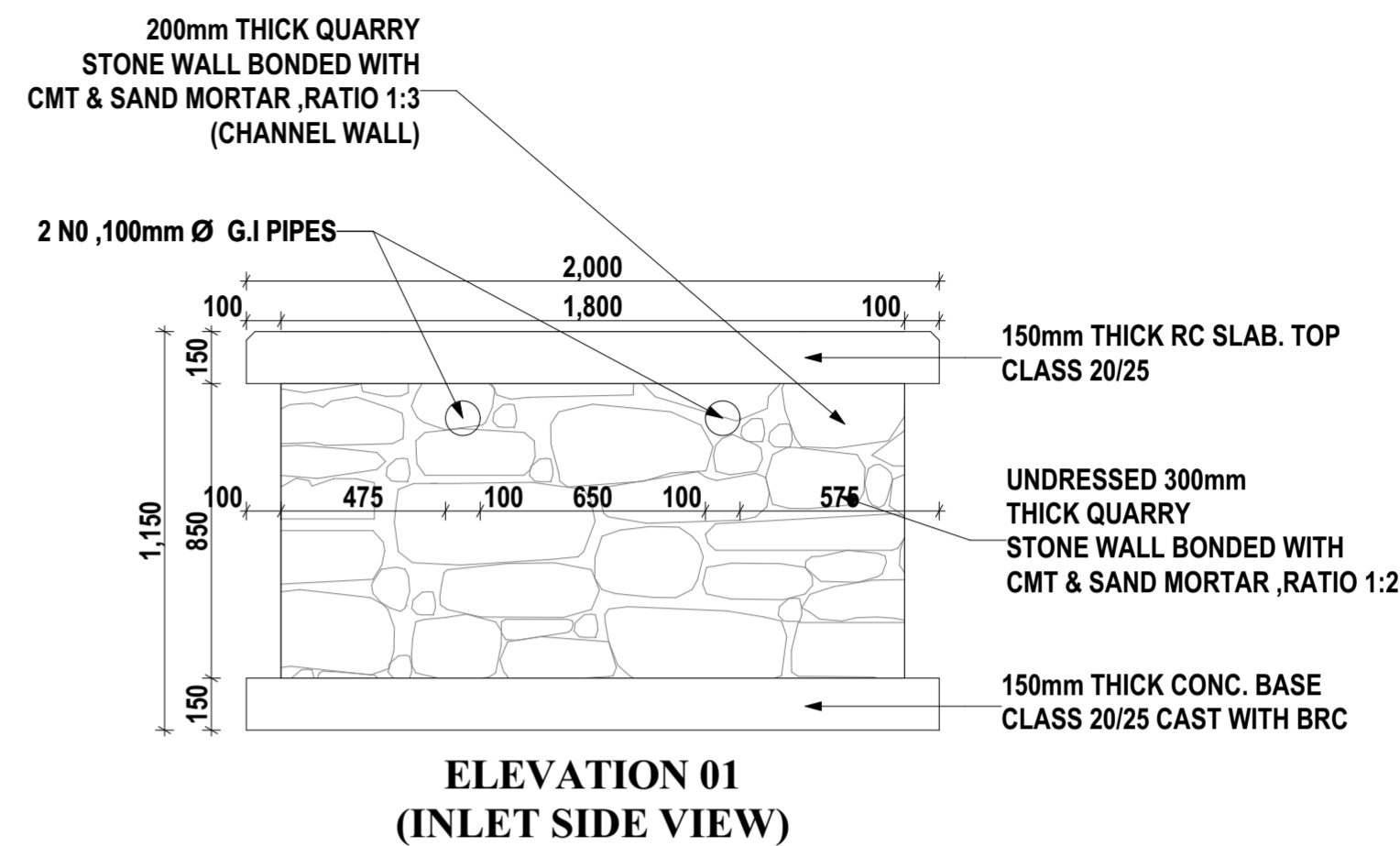
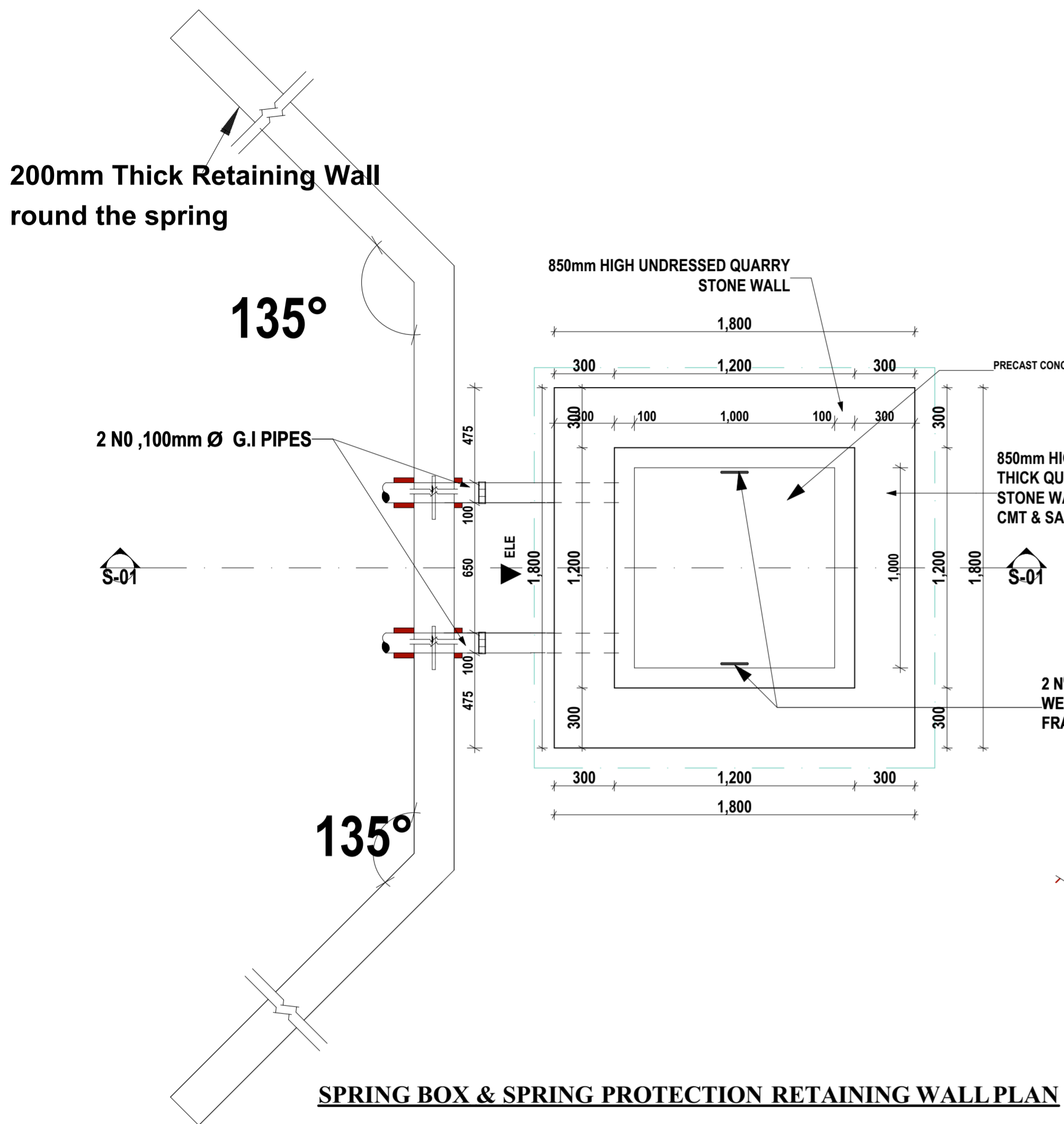




DRAWING TO SCALE IN A2 SIZE

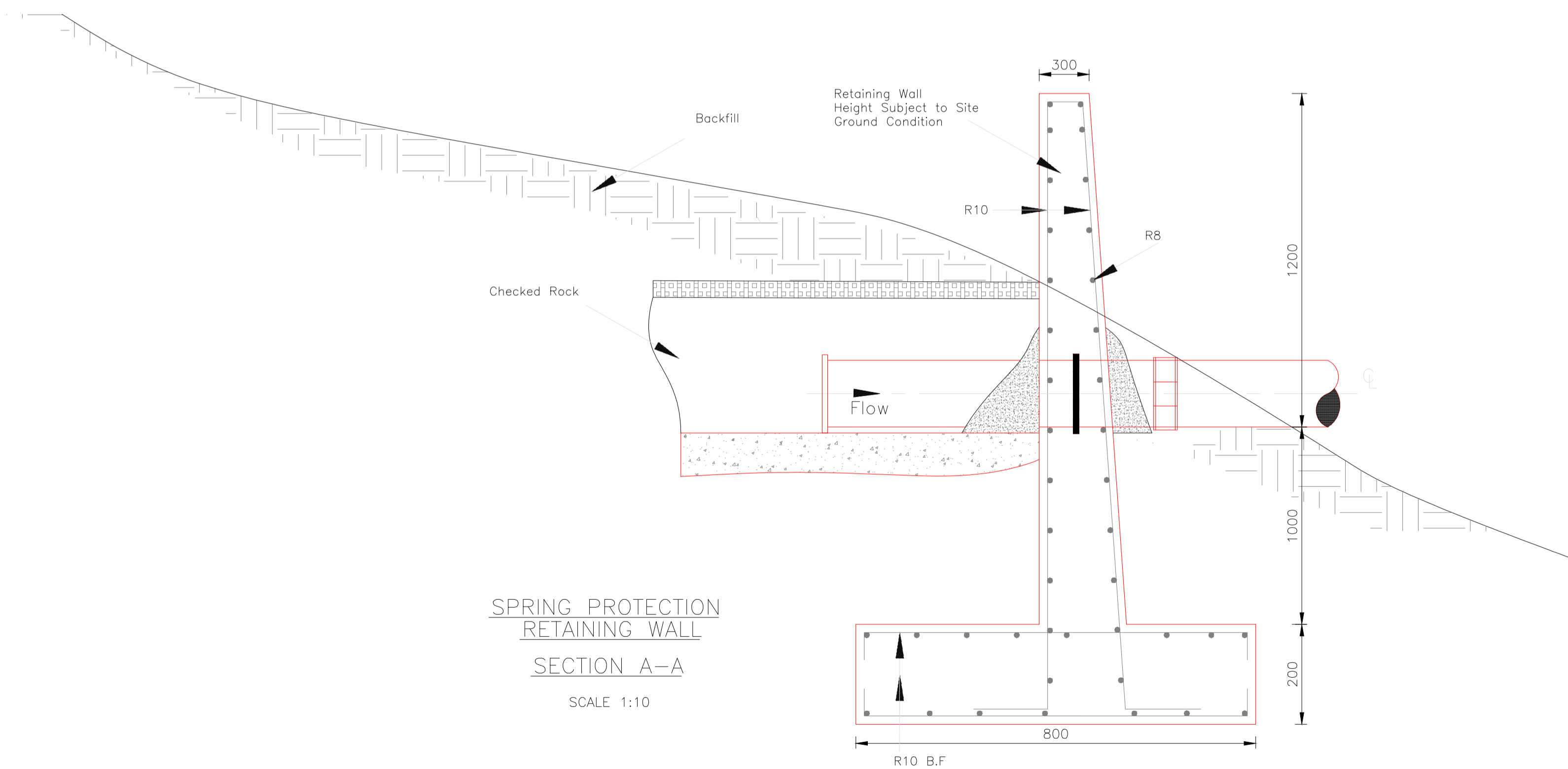
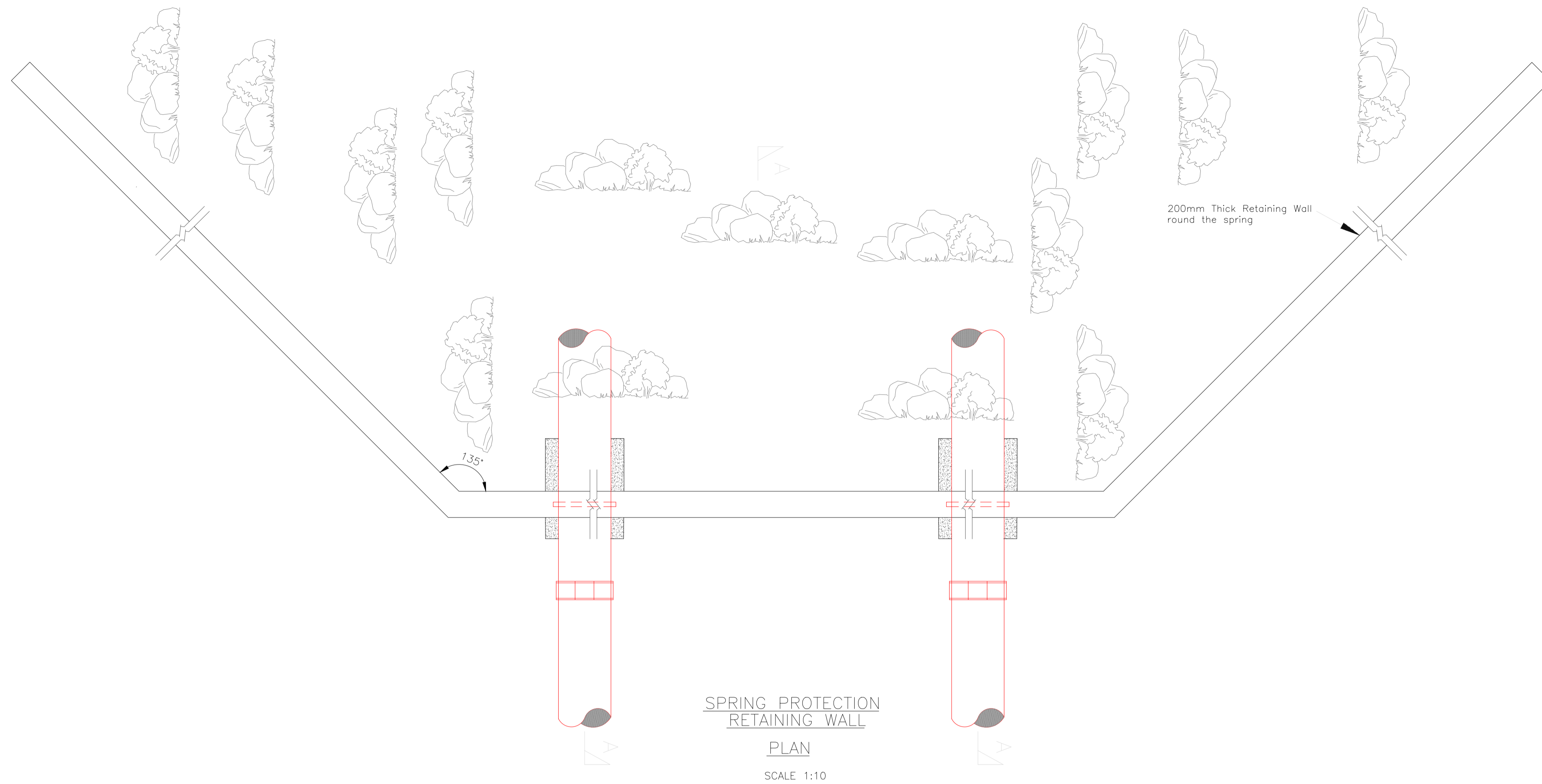
 MARSABIT COUNTY	No.	APPROVAL	DATE	REFERENCE	CLIENT: <b>CONCERN WORLDWIDE</b>   in conjunction with 	CONSULTANT: <b>GEO CONSULTANTS</b>	PROJECT TITLE: <b>NAMAREI WATER PAN, OLTUROT AND NGOROROI LAISAMIS INTEGRATED PROJECT</b>	TITLE OF DRAWING: <b>OLTUROT LIVESTOCK TROUGH DETAILS</b>		Designed:	Date:
										ENG. P. WAGURAH	Aug 2023
										MMN	Aug 2023
										ENG. P. WAGURAH	Aug 2023
										ENG ANDREW MESSO (A3007)	Aug 2023
							DWG. No.	Sheet No.			
							KAM/DD/203	1/1			





DRAWING TO SCALE IN A2 SIZE			
No.	APPROVAL	DATE	REFERENCE

<p>MARSABIT COUNTY</p>	<p>CLIENT:</p> <p><b>CONCERN WORLDWIDE</b></p> <p><b>CONCERN worldwide</b> in conjunction with <b>WaterFund</b></p> <p>Financing the Water Sector</p>	<p>CONSULTANT:</p> <p><b>GEO CONSULTANTS</b></p> <p>SPRING BOX CONSTRUCTION</p>	<p>PROJECT TITLE:</p> <p><b>NAMAREI WATER PAN, OLTUROT AND NGOROROI SPRING BOX LAISAMIS INTEGRATED PROJECT</b></p>	<p>TITLE OF DRAWING:</p> <p><b>NGOROROI PROJECT INTAKE WORKS PLAN AND SECTIONS</b></p>	<p>Designed: <b>P. K.W</b> Date: <b>Aug 2023</b></p> <p>Drawn: <b>MMN</b> Date: <b>Aug 2023</b></p> <p>Checked: <b>P. K.W</b> Date: <b>Aug 2023</b></p> <p>Approved: <b>ENG ANDREW MESSO (A3007)</b> Date: <b>Aug 2023</b></p>
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**NOTES**

1. All dimensions are in mm unless otherwise stated
2. Where the Chamber wall is used for anchorage, the restraining to be according to Drawing SD/06.
3. Chamber wall to be backfilled wall thickness with 300mm thick granular fill around walls
4. Where the chamber is along footpath in built up areas, the cover may be flushed with the footpath
5. Retaining wall depth and length to be determined on site.



MARSABIT COUNTY

No.	APPROVAL	DATE	REFERENCE

CLIENT:  
**CONCERN WORLDWIDE**

in conjunction with  
**WaterFund**  
Financing the Water Sector

CONSULTANT:  
**GEO CONSULTANTS**

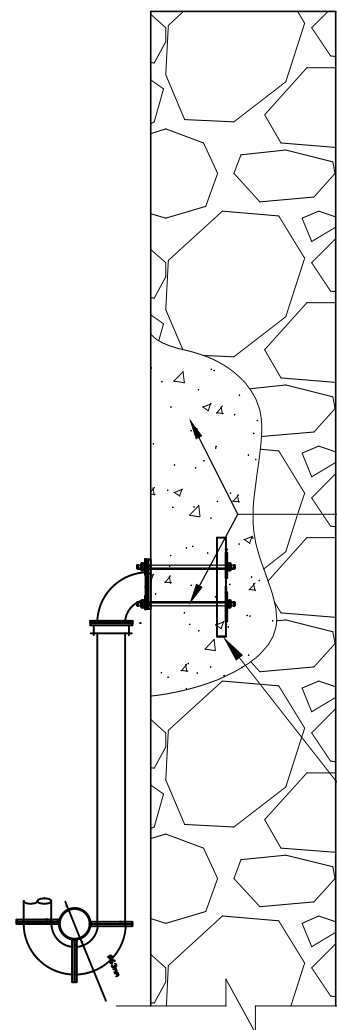
PROJECT TITLE:  
**NAMAREI WATER PAN,  
OLTUROT AND NGOROROI  
LAISAMIS INTEGRATED  
PROJECT**

TITLE OF DRAWING:  
**NGOROROI INTAKE WEIR**

DWG. No. **KAM/DD/203**  
Sheet No. **1/1**

Designed: <b>P. K.W</b>	Date: <b>Aug 2023</b>
Drawn: <b>MMN</b>	Date: <b>Aug 2023</b>
Checked: <b>P. K.W</b>	Date: <b>Aug 2023</b>
Approved: <b>ENG ANDREW MESSO (A3007)</b>	Date: <b>Aug 2023</b>

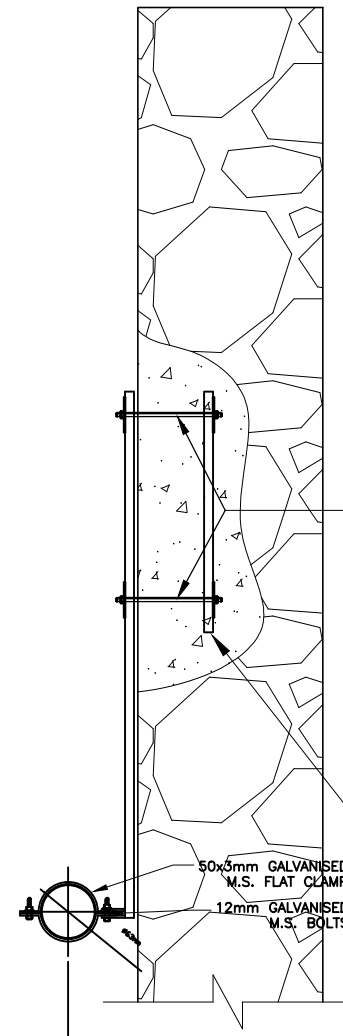
**PIPE SUPPORT/ANCHOR  
DETAILS  
TYPE A**



100mm Long, 12mm  
Dia. Thick Bolts

Cut / Drill Rock  
to accommodate 2No.  
and fill well with grouting

**PIPE SUPPORT/ANCHOR  
DETAILS  
TYPE B**



100mm Long, 12mm  
Dia. Thick Bolts

Cut / Drill Rock  
to accommodate 2No.  
and fill well with grouting

50x5mm GALVANISED  
M.S. FLAT CLAMP  
12mm GALVANISED  
M.S. BOLTS

**General Notes**

1. All measurements are in metres

**DRAWN BY:**  
MMN

**DESIGNED BY:**

P.KW.

...CHECKE  
D.B

**APPROVED BY:**  
ENG. ANDREW MESSO  
(A3007)

No.	Revision/Issue	Date

**Firm Name and Address**  
CONCERN WORLDWIDE  
  
Consultant:  
GEO Consultants  
0727-456089  
P.O BOX 103677-00101  
consultantsgeo47@gmail.com  
Signature:.....

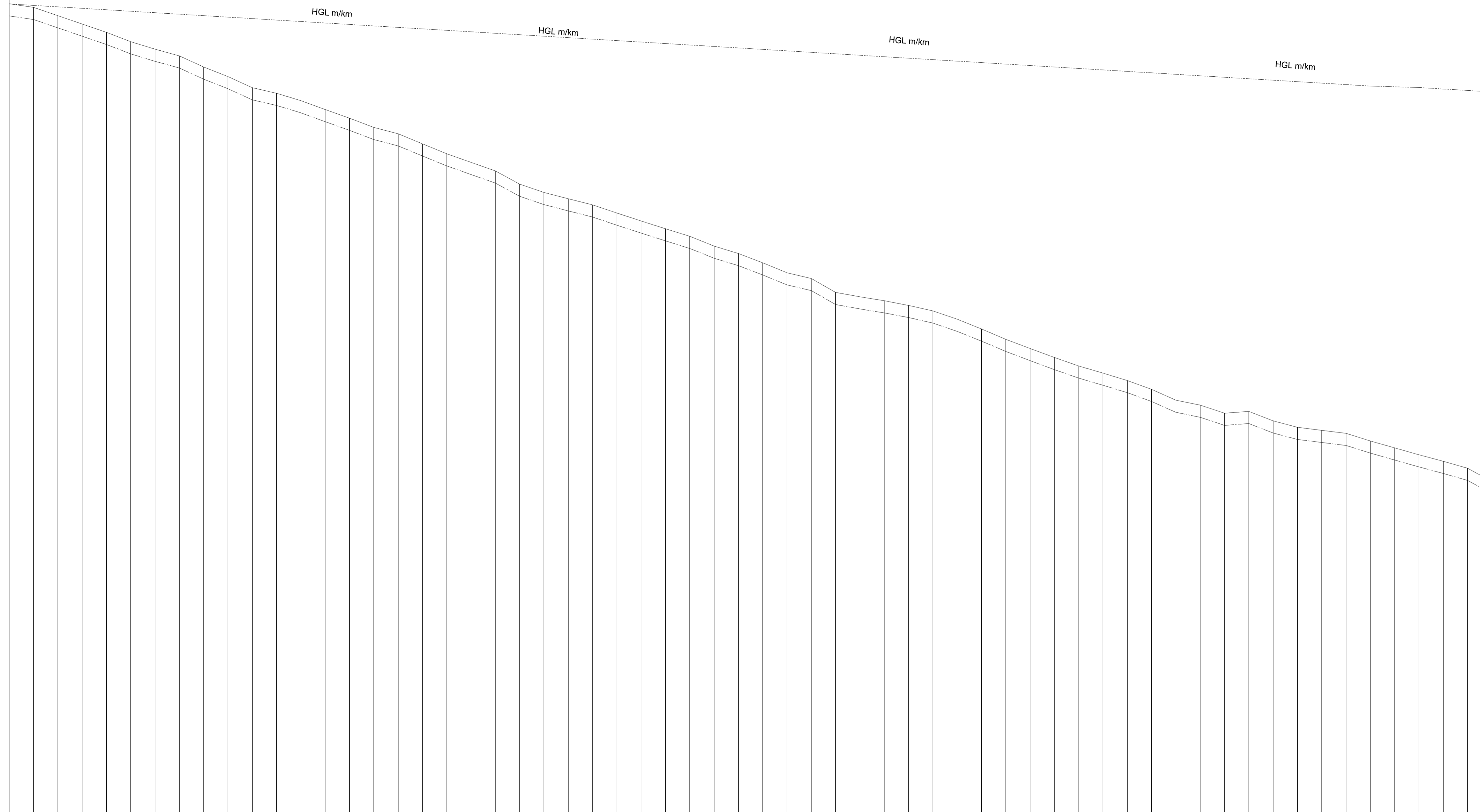
**Project Name and Address**  
PROPOSED -  
NGOROROI NAMAREI  
PIPE SUPPORT/ ANCHOR DETAILS  
KORR NGUMIT- WARD  
LAISAMIS SUB-COUNTY  
MARSABIT - COUNTY

<b>Project</b>	<b>Sheet</b>
Date 04 AUGUST/2023	1 of 1
Scale AS SHOWN	PRINT ON A4 PAPER SIZE



EL static =781.00

EL static =781



DATUM  
700m amsl

CHAINAGE (m)	1,200	786.000	787.000	000.00	1,200	785.704	786.705	020.00	1,200	785.019	786.020	040.00	1,200	784.333	785.335	060.00	1,200	783.648	784.650	080.00	1,200	782.878	783.880	100.00	1,200	782.262	783.260	120.00	1,200	781.710	782.710	140.00	1,200	780.795	781.795	160.00	1,200	780.006	781.005	180.00	1,200	779.092	780.090	200.00	1,200	778.633	779.635	220.00	1,200	778.024	779.025	240.00	1,200	777.294	778.295	260.00	1,200	776.583	777.585	280.00	1,200	775.823	776.825	300.00	1,200	775.302	776.300	320.00	1,200	774.474	775.475	340.00	1,200	773.654	774.655	360.00	1,200	772.947	773.945	380.00	1,200	772.244	773.245	400.00	1,200	771.158	772.160	420.00	1,200	770.470	771.470	440.00	1,200	769.954	770.955	460.00	1,200	769.448	770.450	480.00	1,200	768.777	769.775	500.00	1,200	768.123	769.125	520.00	1,200	767.482	768.480	540.00	1,200	766.864	767.865	560.00	1,200	766.057	767.055	580.00	1,200	765.445	766.445	600.00	1,200	764.682	765.680	620.00	1,200	763.861	764.860	640.00	1,200	763.389	764.390	660.00	1,200	762.245	763.245	680.00	1,200	761.883	762.885	700.00	1,200	761.563	762.565	720.00	1,200	761.173	762.175	740.00	1,200	760.724	761.725	760.00	1,200	760.042	761.040	780.00	1,200	759.237	760.235	800.00	1,200	758.384	759.385	820.00	1,200	757.630	758.630	840.00	1,200	756.890	757.890	860.00	1,200	756.191	757.190	880.00	1,200	755.604	756.605	900.00	1,200	754.993	755.995	920.00	1,200	754.268	755.265	940.00	1,200	753.375	754.375	960.00	1,200	752.970	753.970	980.00	1,200	752.304	753.305	1000.00	1,200	752.452	753.450	1020.00	1,200	751.674	752.675	1040.00	1,200	751.145	752.145	1060.00	1,200	750.893	751.895	1080.00	1,200	750.647	751.645	1100.00	1,200	750.019	751.020	1120.00	1,200	749.451	750.450	1140.00	1,200	748.882	749.880	1160.00	1,200	748.346	749.345	1180.00	1,200	747.776	748.775	1200.00	1,200	746.673	747.675	1220.00
TRENCH DEPTH (m)	1,200	786.000	787.000	000.00	1,200	785.704	786.705	020.00	1,200	785.019	786.020	040.00	1,200	784.333	785.335	060.00	1,200	783.648	784.650	080.00	1,200	782.878	783.880	100.00	1,200	782.262	783.260	120.00	1,200	781.710	782.710	140.00	1,200	780.795	781.795	160.00	1,200	780.006	781.005	180.00	1,200	779.092	780.090	200.00	1,200	778.633	779.635	220.00	1,200	778.024	779.025	240.00	1,200	777.294	778.295	260.00	1,200	776.583	777.585	280.00	1,200	775.823	776.825	300.00	1,200	775.302	776.300	320.00	1,200	774.474	775.475	340.00	1,200	773.654	774.655	360.00	1,200	772.947	773.945	380.00	1,200	772.244	773.245	400.00	1,200	771.158	772.160	420.00	1,200	770.470	771.470	440.00	1,200	769.954	770.955	460.00	1,200	769.448	770.450	480.00	1,200	768.777	769.775	500.00	1,200	768.123	769.125	520.00	1,200	767.482	768.480	540.00	1,200	766.864	767.865	560.00	1,200	766.057	767.055	580.00	1,200	765.445	766.445	600.00	1,200	764.682	765.680	620.00	1,200	763.861	764.860	640.00	1,200	763.389	764.390	660.00	1,200	762.245	763.245	680.00	1,200	761.883	762.885	700.00	1,200	761.563	762.565	720.00	1,200	761.173	762.175	740.00	1,200	760.724	761.725	760.00	1,200	760.042	761.040	780.00	1,200	759.237	760.235	800.00	1,200	758.384	759.385	820.00	1,200	757.630	758.630	840.00	1,200	756.890	757.890	860.00	1,200	756.191	757.190	880.00	1,200	755.604	756.605	900.00	1,200	754.993	755.995	920.00	1,200	754.268	755.265	940.00	1,200	753.375	754.375	960.00	1,200	752.970	753.970	980.00	1,200	752.304	753.305	1000.00	1,200	752.452	753.450	1020.00	1,200	751.674	752.675	1040.00	1,200	751.145	752.145	1060.00	1,200	750.893	751.895	1080.00	1,200	750.647	751.645	1100.00	1,200	750.019	751.020	1120.00	1,200	749.451	750.450	1140.00	1,200	748.882	749.880	1160.00	1,200	748.346	749.345	1180.00	1,200	747.776	748.775	1200.00	1,200	746.673	747.675	1220.00
DESIGN FLOW (m3/s)	0.001										0.001										0.001										0.001																																																																																																																																																																																																																									
OFFTAKE (l/s)																																																																																																																																																																																																																																																								
PIPE DETAILS	GI PIPE CLASS B DIA 50mm																								GI PIPE CLASS B DIA 50mm																								GI PIPE CLASS B DIA 50mm																																																																																																																																																																																																							

NOTES  
 1. Dimensions are in metres unless otherwise stated.  
 2. This drawing is to be read in conjunction with the designs and other relevant drawings.  
 3. Scales in A1 paper size

LEGEND  

 EXISTING GROUND PROFILE  
 PIPE INVERT  
 SINGLE AIR VALVE  
 DOUBLE AIR VALVE  
 WASHOUT VALVE

SCALES  
 Horizontal Scale 1:2000  
 Vertical Scale 1:200

No.	APPROVAL	DATE	REFERENCE

CLIENT:  
**CONCERN WORLDWIDE**  
  
 in conjunction with  
  
 Financing the Water Sector

CONSULTANT:  
**GEO CONSULTANTS**

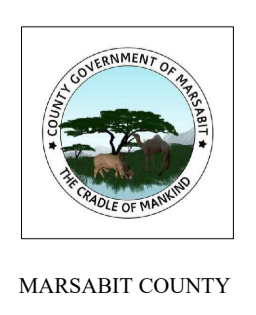
PROJECT TITLE:  
**LJATA PIPELINE EXTENSION  
 LAISAMIS - NGOROROI  
 WATER SUPPLY PROJECT**

TITLE OF DRAWING:  
**LJATA PIPELINE  
 PROFILE  
 Chainage 0+000 to 1+220**

DWG. No.  
**KAM/DD/203**

Sheet No.  
**1/3**






Designed: **P. K.W** Date: **Aug 2023**  
 Drawn: **MMN** Date: **Aug 2023**  
 Checked: **P. K.W** Date: **Aug 2023**  
 Approved: **ENG ANDREW MESSO (A3007)** Date: **Aug 2023**





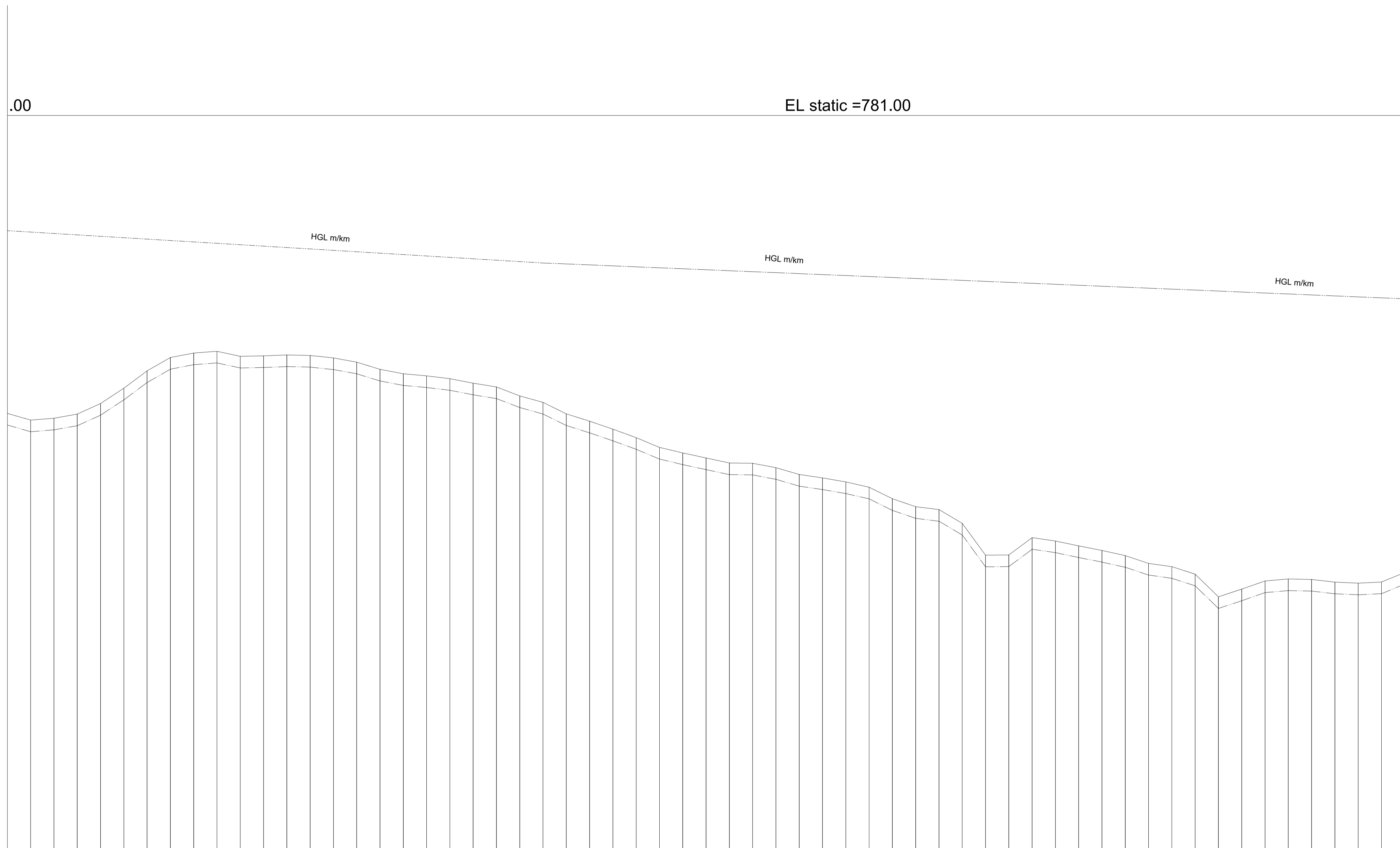
- NOTES**
1. Dimensions are in metres unless otherwise stated.
  2. This drawing is to be read in conjunction with the designs and other relevant drawings.
  3. Scales in A1 paper size.

**LEGEND**

-  EXISTING GROUND PROFILE
-  PIPE INVERT
-  SINGLE AIR VALVE
-  DOUBLE AIR VALVE
-  WASHOUT VALVE

**SCALES**

Horizontal Scale 1:2000  
Vertical Scale 1:200



**DATUM**  
710m amsl

CHAINAGE (m)	1.200 746.100 747.100 1240.00	1.200 746.258 747.260 1260.00	1.200 746.614 747.615 1280.00	1.200 747.521 748.520 1300.00	1.200 748.837 749.835 1320.00	1.200 750.329 751.330 1340.00	1.200 751.475 752.475 1360.00	1.200 751.857 752.855 1380.00	1.200 752.008 753.010 1400.00	1.200 751.578 752.580 1420.00	1.200 751.616 752.615 1440.00	1.200 751.694 752.695 1460.00	1.200 751.650 752.650 1480.00	1.200 751.438 752.440 1500.00	1.200 751.075 752.075 1520.00	1.200 750.480 751.480 1540.00	1.200 750.079 751.080 1560.00	1.200 749.898 750.900 1580.00	1.200 749.657 750.655 1600.00	1.200 749.270 750.270 1620.00	1.200 748.946 749.945 1640.00	1.200 748.176 749.175 1660.00	1.200 747.621 748.620 1680.00	1.200 746.634 747.635 1700.00	1.200 746.004 747.005 1720.00	1.200 745.318 746.320 1740.00	1.200 744.589 745.590 1760.00	1.200 743.755 744.755 1780.00	1.200 743.277 744.275 1800.00	1.200 742.846 743.845 1820.00	1.200 742.415 743.415 1840.00	1.200 742.390 743.390 1860.00	1.200 742.011 743.010 1880.00	1.200 741.428 742.430 1900.00	1.200 741.134 742.135 1920.00	1.200 740.787 741.785 1940.00	1.200 740.334 741.335 1960.00	1.200 739.346 740.345 1980.00	1.200 738.660 739.660 2000.00	1.200 738.415 739.415 2020.00	1.200 737.232 738.230 2040.00	1.200 734.497 735.495 2060.00	1.200 734.515 735.515 2080.00	1.200 736.003 737.005 2100.00	1.200 735.712 736.710 2120.00	1.200 735.295 736.295 2140.00	1.200 734.902 735.900 2160.00	1.200 734.459 735.460 2180.00	1.200 733.789 734.790 2200.00	1.200 733.510 734.510 2220.00	1.200 732.866 733.865 2240.00	1.200 730.921 731.920 2260.00	1.200 731.582 732.580 2280.00	1.200 732.281 733.280 2300.00	1.200 732.454 733.455 2320.00	1.200 732.410 733.410 2340.00	1.200 732.181 733.180 2360.00	1.200 732.093 733.095 2380.00	1.200 732.191 733.190 2400.00	1.200 733.007 734.005 2420.00
GROUND LEVEL (m amsl)	1.200 746.100 747.100 1240.00	1.200 746.258 747.260 1260.00	1.200 746.614 747.615 1280.00	1.200 747.521 748.520 1300.00	1.200 748.837 749.835 1320.00	1.200 750.329 751.330 1340.00	1.200 751.475 752.475 1360.00	1.200 751.857 752.855 1380.00	1.200 752.008 753.010 1400.00	1.200 751.578 752.580 1420.00	1.200 751.616 752.615 1440.00	1.200 751.694 752.695 1460.00	1.200 751.650 752.650 1480.00	1.200 751.438 752.440 1500.00	1.200 751.075 752.075 1520.00	1.200 750.480 751.480 1540.00	1.200 750.079 751.080 1560.00	1.200 749.898 750.900 1580.00	1.200 749.657 750.655 1600.00	1.200 749.270 750.270 1620.00	1.200 748.946 749.945 1640.00	1.200 748.176 749.175 1660.00	1.200 747.621 748.620 1680.00	1.200 746.634 747.635 1700.00	1.200 746.004 747.005 1720.00	1.200 745.318 746.320 1740.00	1.200 744.589 745.590 1760.00	1.200 743.755 744.755 1780.00	1.200 743.277 744.275 1800.00	1.200 742.846 743.845 1820.00	1.200 742.415 743.415 1840.00	1.200 742.390 743.390 1860.00	1.200 742.011 743.010 1880.00	1.200 741.428 742.430 1900.00	1.200 741.134 742.135 1920.00	1.200 740.787 741.785 1940.00	1.200 740.334 741.335 1960.00	1.200 739.346 740.345 1980.00	1.200 738.660 739.660 2000.00	1.200 738.415 739.415 2020.00	1.200 737.232 738.230 2040.00	1.200 734.497 735.495 2060.00	1.200 734.515 735.515 2080.00	1.200 736.003 737.005 2100.00	1.200 735.712 736.710 2120.00	1.200 735.295 736.295 2140.00	1.200 734.902 735.900 2160.00	1.200 734.459 735.460 2180.00	1.200 733.789 734.790 2200.00	1.200 733.510 734.510 2220.00	1.200 732.866 733.865 2240.00	1.200 730.921 731.920 2260.00	1.200 731.582 732.580 2280.00	1.200 732.281 733.280 2300.00	1.200 732.454 733.455 2320.00	1.200 732.410 733.410 2340.00	1.200 732.181 733.180 2360.00	1.200 732.093 733.095 2380.00	1.200 732.191 733.190 2400.00	1.200 733.007 734.005 2420.00
INVERT LEVEL (m amsl)	1.200 746.100 747.100 1240.00	1.200 746.258 747.260 1260.00	1.200 746.614 747.615 1280.00	1.200 747.521 748.520 1300.00	1.200 748.837 749.835 1320.00	1.200 750.329 751.330 1340.00	1.200 751.475 752.475 1360.00	1.200 751.857 752.855 1380.00	1.200 752.008 753.010 1400.00	1.200 751.578 752.580 1420.00	1.200 751.616 752.615 1440.00	1.200 751.694 752.695 1460.00	1.200 751.650 752.650 1480.00	1.200 751.438 752.440 1500.00	1.200 751.075 752.075 1520.00	1.200 750.480 751.480 1540.00	1.200 750.079 751.080 1560.00	1.200 749.898 750.900 1580.00	1.200 749.657 750.655 1600.00	1.200 749.270 750.270 1620.00	1.200 748.946 749.945 1640.00	1.200 748.176 749.175 1660.00	1.200 747.621 748.620 1680.00	1.200 746.634 747.635 1700.00	1.200 746.004 747.005 1720.00	1.200 745.318 746.320 1740.00	1.200 744.589 745.590 1760.00	1.200 743.755 744.755 1780.00	1.200 743.277 744.275 1800.00	1.200 742.846 743.845 1820.00	1.200 742.415 743.415 1840.00	1.200 742.390 743.390 1860.00	1.200 742.011 743.010 1880.00	1.200 741.428 742.430 1900.00	1.200 741.134 742.135 1920.00	1.200 740.787 741.785 1940.00	1.200 740.334 741.335 1960.00	1.200 739.346 740.345 1980.00	1.200 738.660 739.660 2000.00	1.200 738.415 739.415 2020.00	1.200 737.232 738.230 2040.00	1.200 734.497 735.495 2060.00	1.200 734.515 735.515 2080.00	1.200 736.003 737.005 2100.00	1.200 735.712 736.710 2120.00	1.200 735.295 736.295 2140.00	1.200 734.902 735.900 2160.00	1.200 734.459 735.460 2180.00	1.200 733.789 734.790 2200.00	1.200 733.510 734.510 2220.00	1.200 732.866 733.865 2240.00	1.200 730.921 731.920 2260.00	1.200 731.582 732.580 2280.00	1.200 732.281 733.280 2300.00	1.200 732.454 733.455 2320.00	1.200 732.410 733.410 2340.00	1.200 732.181 733.180 2360.00	1.200 732.093 733.095 2380.00	1.200 732.191 733.190 2400.00	1.200 733.007 734.005 2420.00
TRENCH DEPTH (m)	1.200 746.100 747.100 1240.00	1.200 746.258 747.260 1260.00	1.200 746.614 747.615 1280.00	1.200 747.521 748.520 1300.00	1.200 748.837 749.835 1320.00	1.200 750.329 751.330 1340.00	1.200 751.475 752.475 1360.00	1.200 751.857 752.855 1380.00	1.200 752.008 753.010 1400.00	1.200 751.578 752.580 1420.00	1.200 751.616 752.615 1440.00	1.200 751.694 752.695 1460.00	1.200 751.650 752.650 1480.00	1.200 751.438 752.440 1500.00	1.200 751.075 752.075 1520.00	1.200 750.480 751.480 1540.00	1.200 750.079 751.080 1560.00	1.200 749.898 750.900 1580.00	1.200 749.657 750.655 1600.00	1.200 749.270 750.270 1620.00	1.200 748.946 749.945 1640.00	1.200 748.176 749.175 1660.00	1.200 747.621 748.620 1680.00	1.200 746.634 747.635 1700.00	1.200 746.004 747.005 1720.00	1.200 745.318 746.320 1740.00	1.200 744.589 745.590 1760.00	1.200 743.755 744.755 1780.00	1.200 743.277 744.275 1800.00	1.200 742.846 743.845 1820.00	1.200 742.415 743.415 1840.00	1.200 742.390 743.390 1860.00	1.200 742.011 743.010 1880.00	1.200 741.428 742.430 1900.00	1.200 741.134 742.135 1920.00	1.200 740.787 741.785 1940.00	1.200 740.334 741.335 1960.00	1.200 739.346 740.345 1980.00	1.200 738.660 739.660 2000.00	1.200 738.415 739.415 2020.00	1.200 737.232 738.230 2040.00	1.200 734.497 735.495 2060.00	1.200 734.515 735.515 2080.00	1.200 736.003 737.005 2100.00	1.200 735.712 736.710 2120.00	1.200 735.295 736.295 2140.00	1.200 734.902 735.900 2160.00	1.200 734.459 735.460 2180.00	1.200 733.789 734.790 2200.00	1.200 733.510 734.510 2220.00	1.200 732.866 733.865 2240.00	1.200 730.921 731.920 2260.00	1.200 731.582 732.580 2280.00	1.200 732.281 733.280 2300.00	1.200 732.454 733.455 2320.00	1.200 732.410 733.410 2340.00	1.200 732.181 733.180 2360.00	1.200 732.093 733.095 2380.00	1.200 732.191 733.190 2400.00	1.200 733.007 734.005 2420.00
DESIGN FLOW (m3/s)	0.001																												0.001																															
OFFTAKE (l/s)																																																												
PIPE DETAILS	GI PIPE CLASS B DIA 50mm														HDPE PIPE CLASS PN 6 DIA 63mm								HDPE PIPE CLASS PN 6 DIA 63mm																																					



No.	APPROVAL	DATE	REFERENCE

CLIENT:  
**CONCERN WORLDWIDE**

in conjunction with  
**WaterFund**  
Financing the Water Sector

CONSULTANT:  
**GEO CONSULTANTS**

PROJECT TITLE:  
**LJATA PIPELINE EXTENSION**  
**LAISAMIS - NGOROROI**  
**WATER SUPPLY PROJECT**

TITLE OF DRAWING:  
**LJATA PIPELINE**  
**PROFILE**  
**Chainage 1+220 to 2+420**

DWG. No.  
**KAM/DD/203**

Sheet No.  
**2/3**

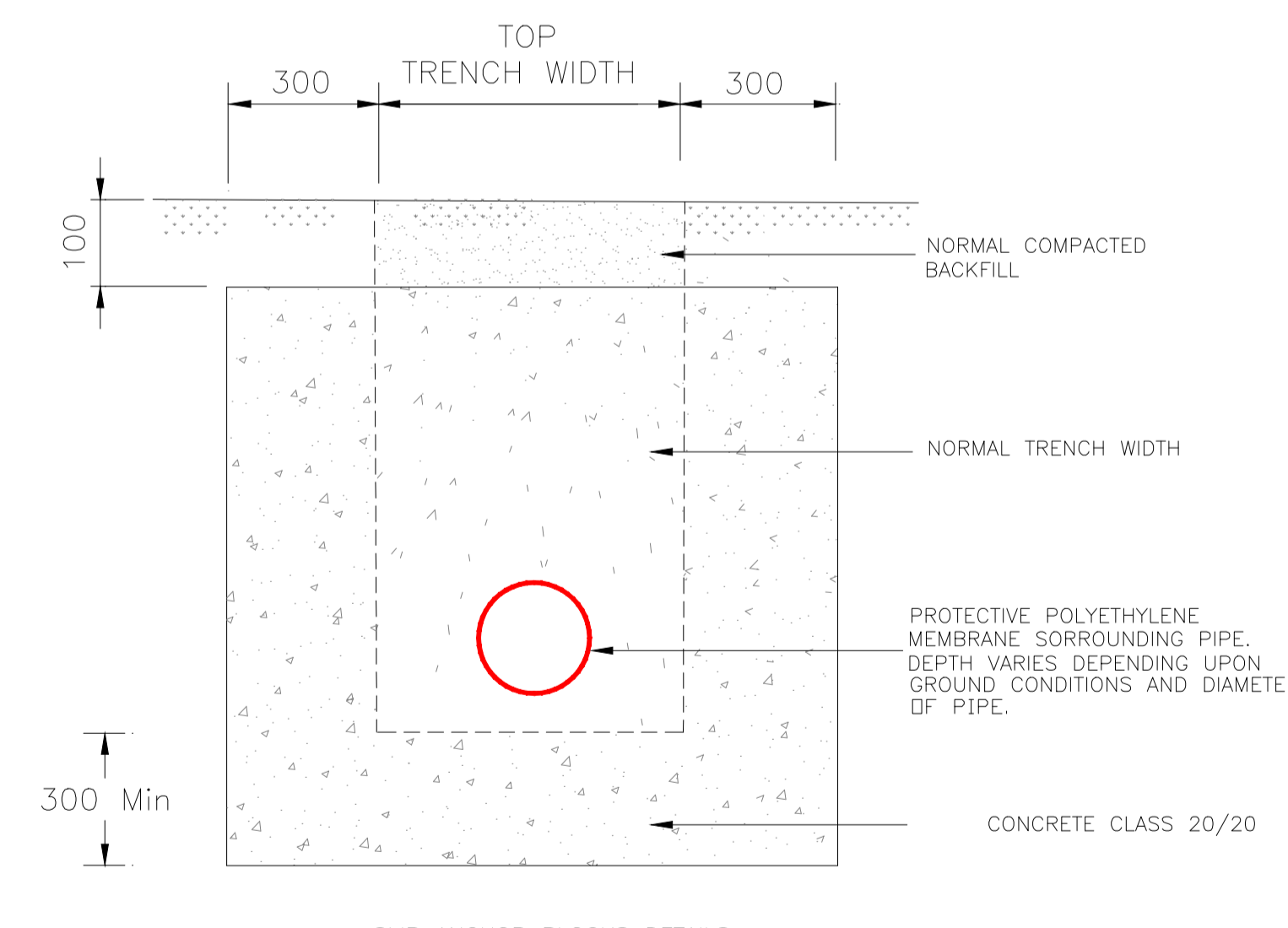
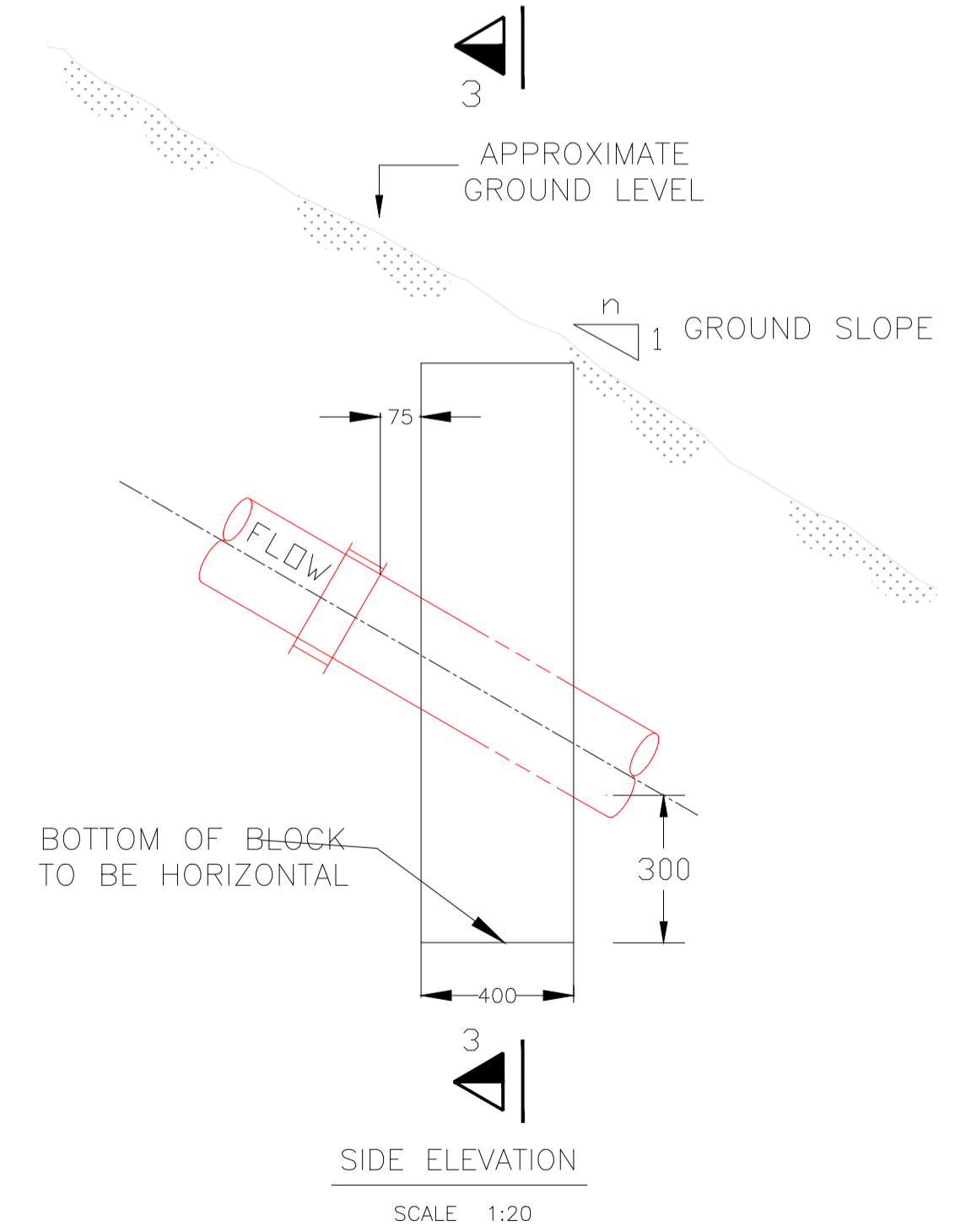
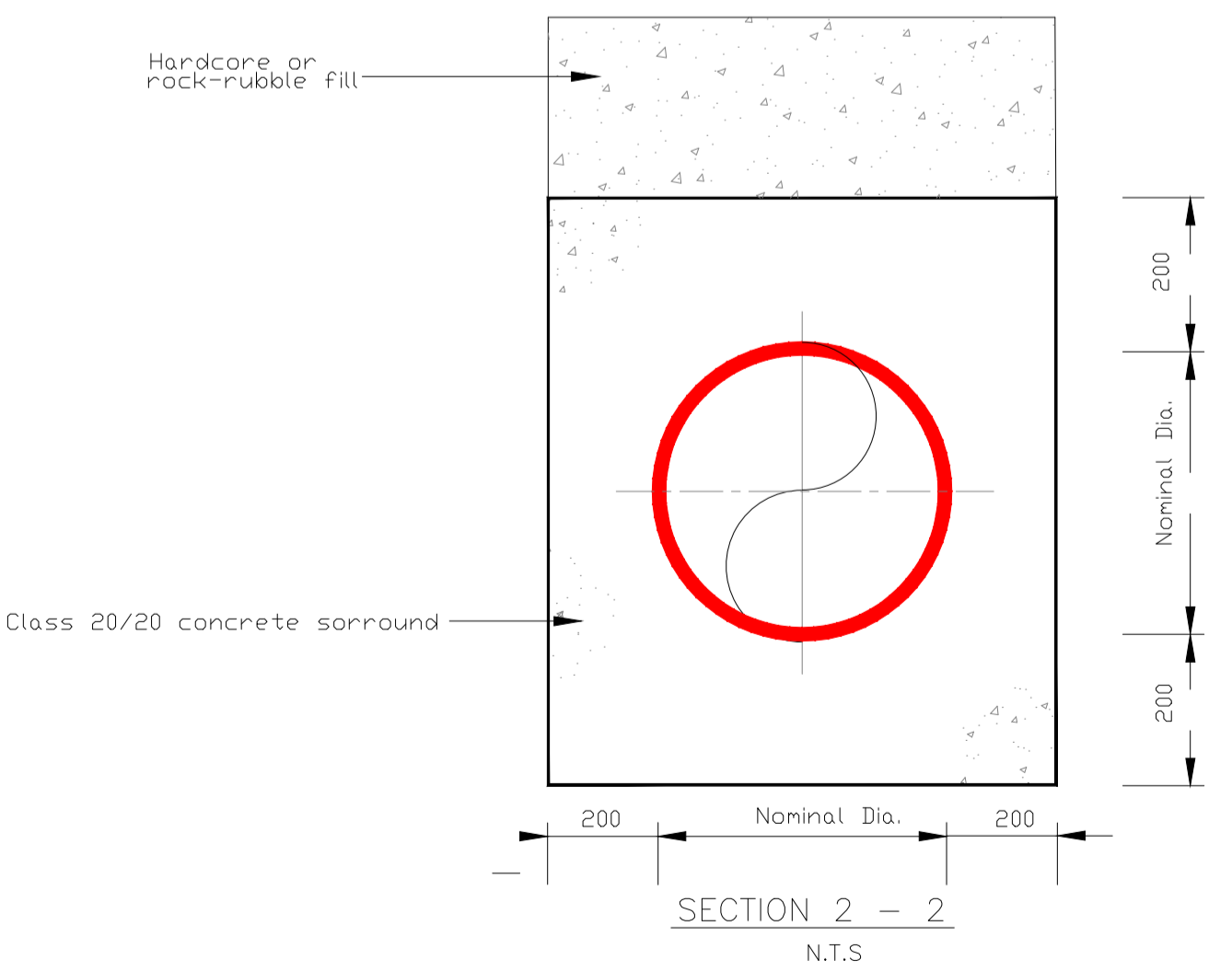
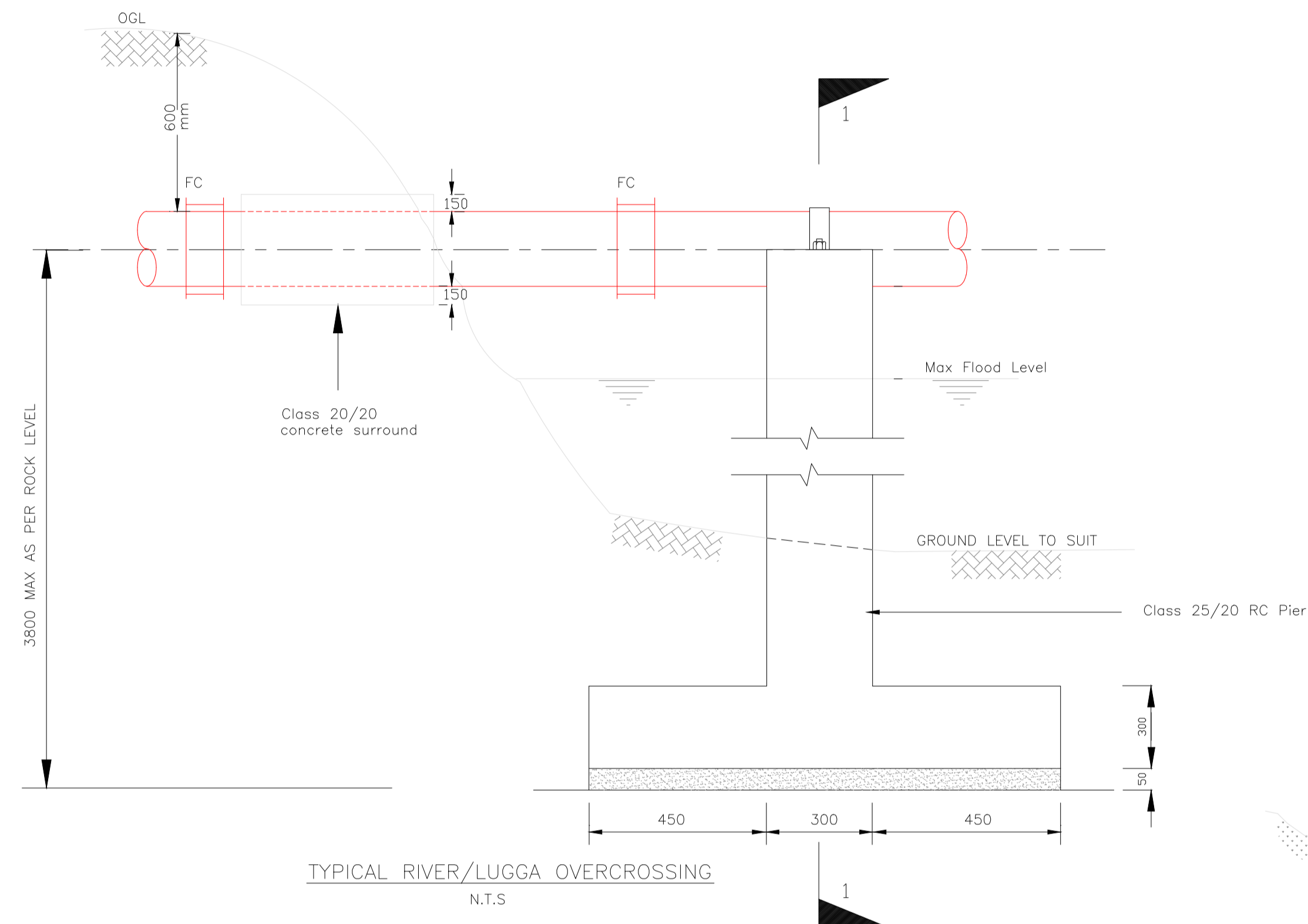
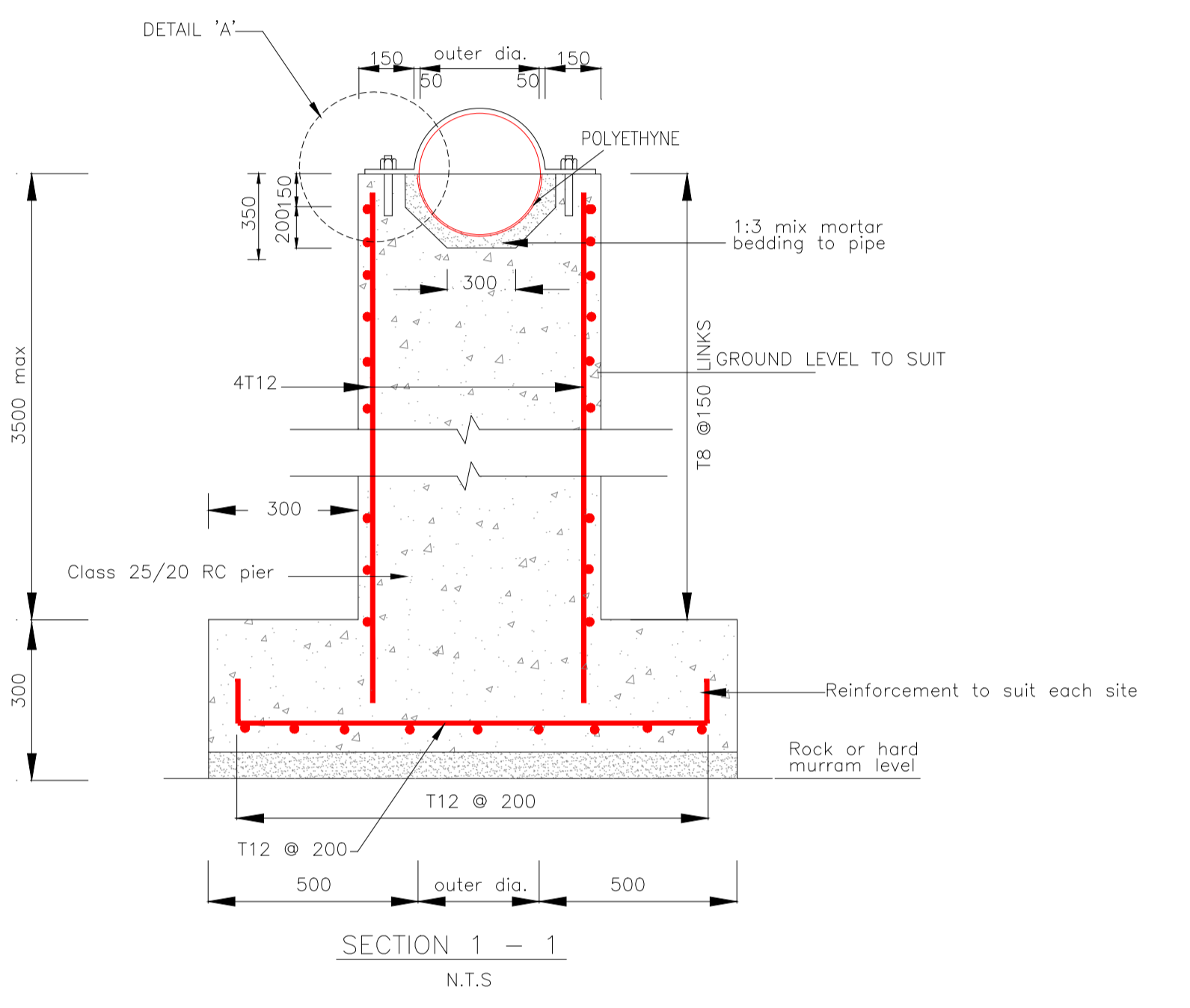
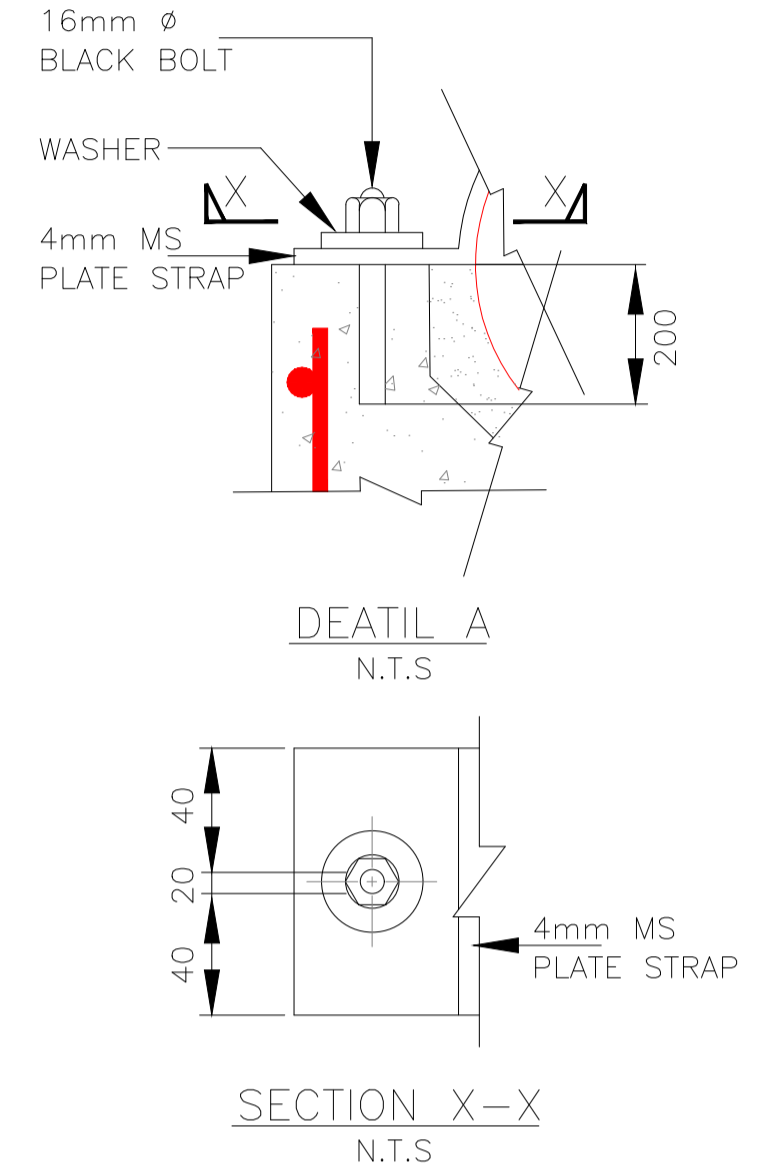
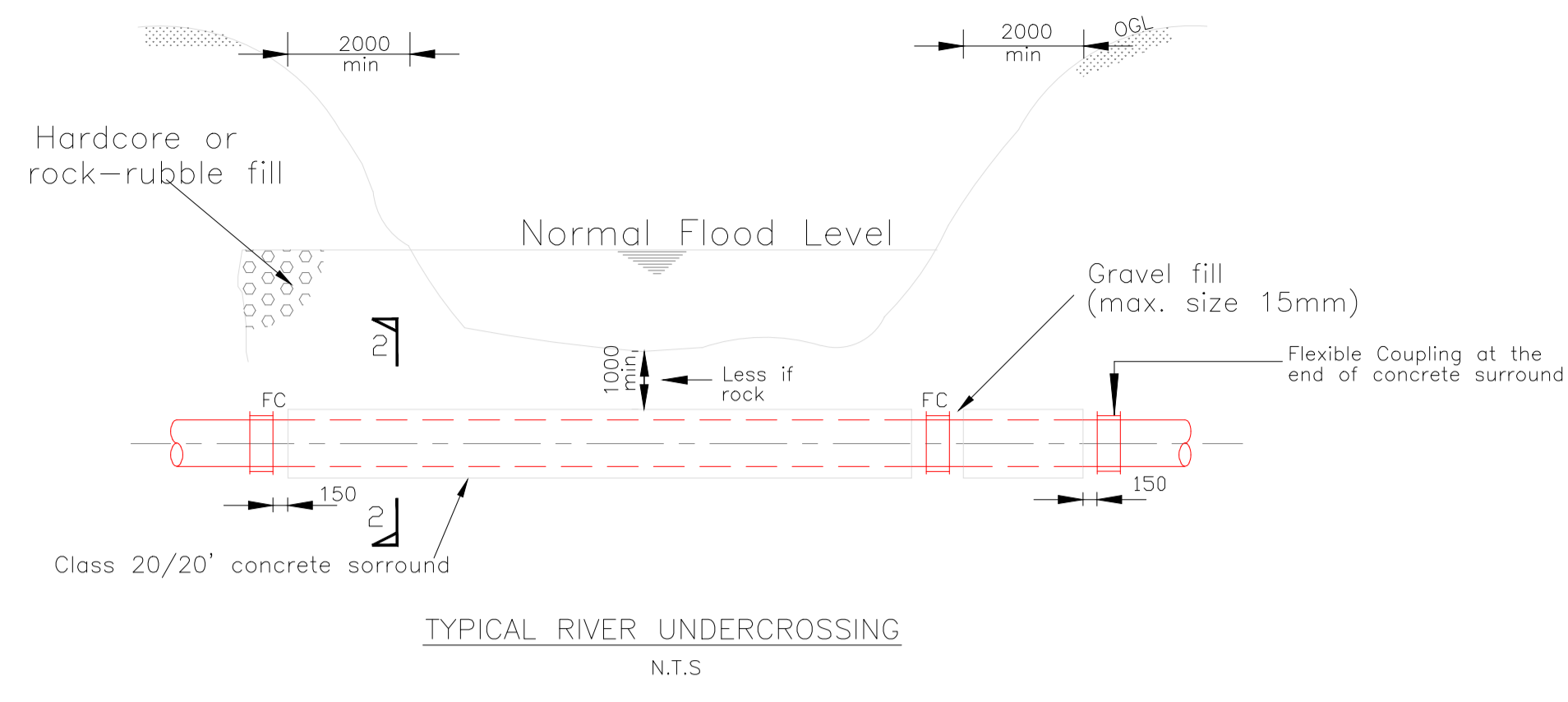
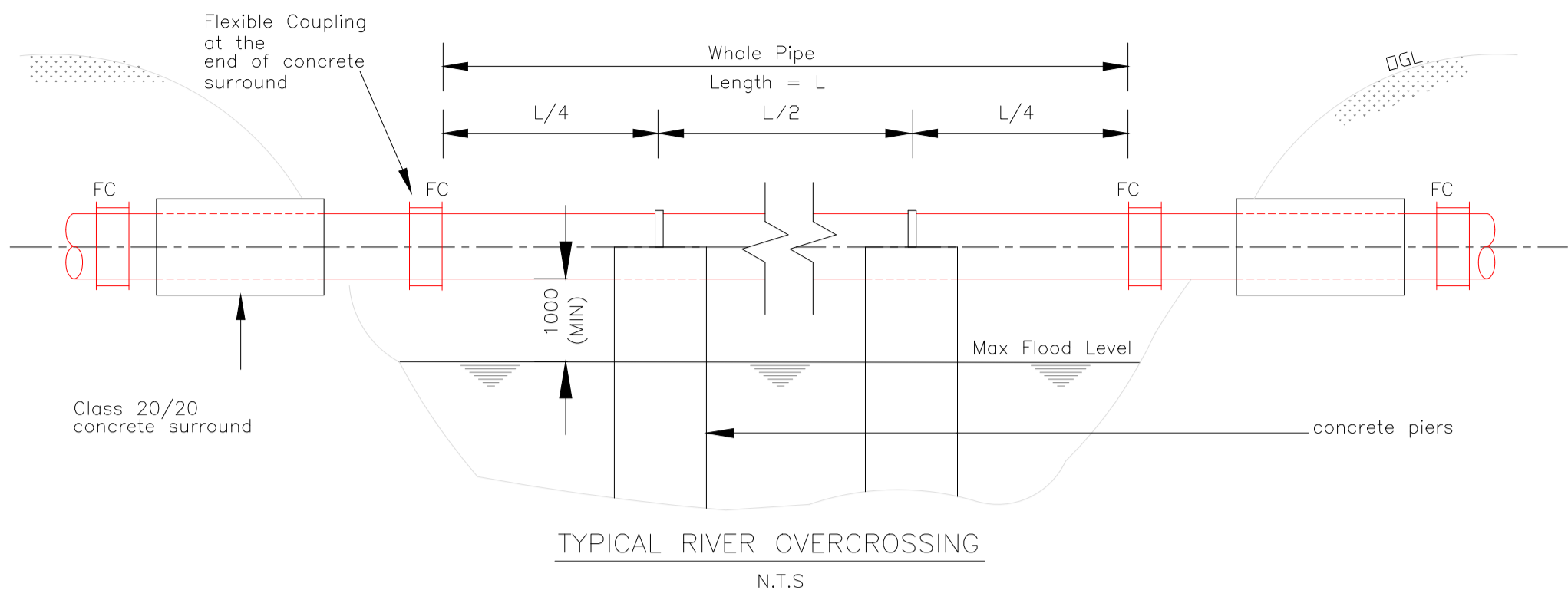
Designed: **P. K.W** Aug 2023  
Date: **2023**

Drawn: **MMN** Aug 2023  
Date: **Aug 2023**

Checked: **P. K.W** Aug 2023  
Date: **Aug 2023**

Approved: **ENG ANDREW MESSO (A3007)** Aug 2023  
Date: **Aug 2023**



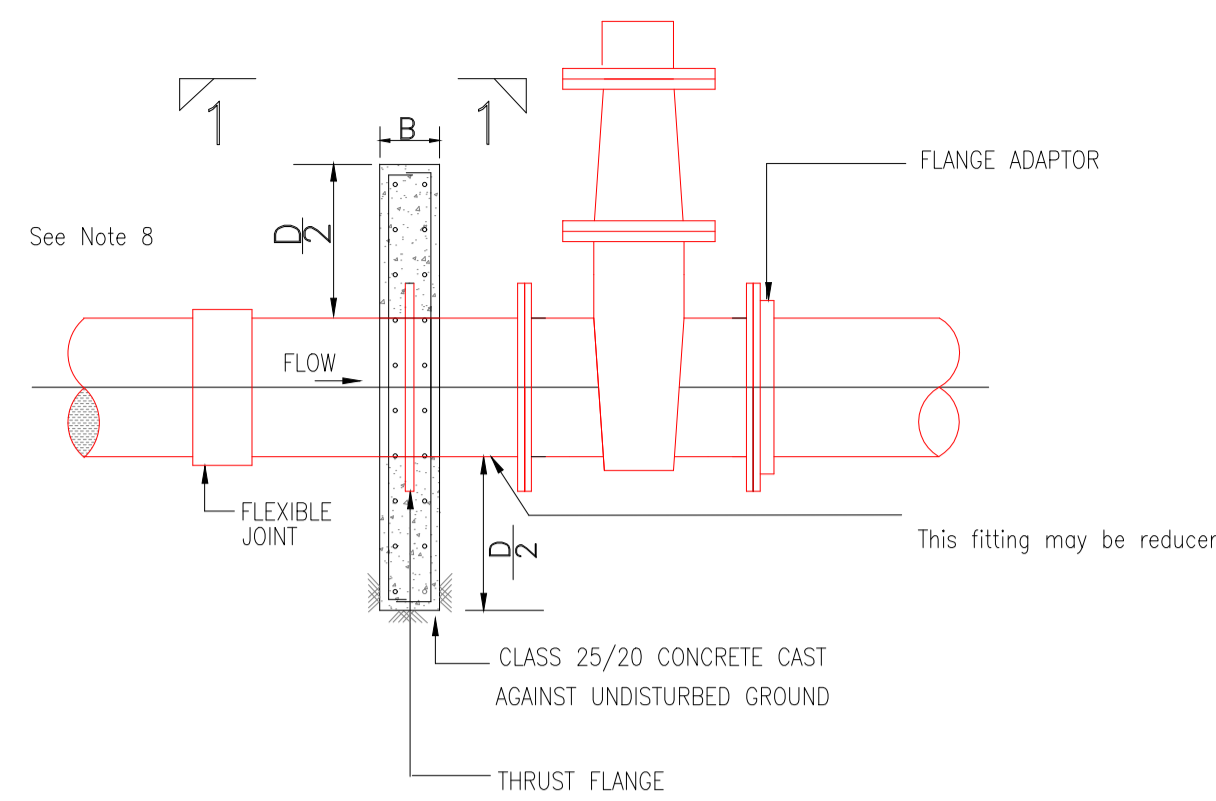


- NOTES
1. SAME ARRANGEMENT CAN BE USED AS SUPPORTS FOR PIPES LAID IN VERY SOFT GROUND BUT BLOCKS TO BE CAST ON SOUND ROCK OR HARD STRATUM.
  2. ANCHOR BLOCK TO BE CONSTRUCTED ON LOWER SIDE OF JOINT.

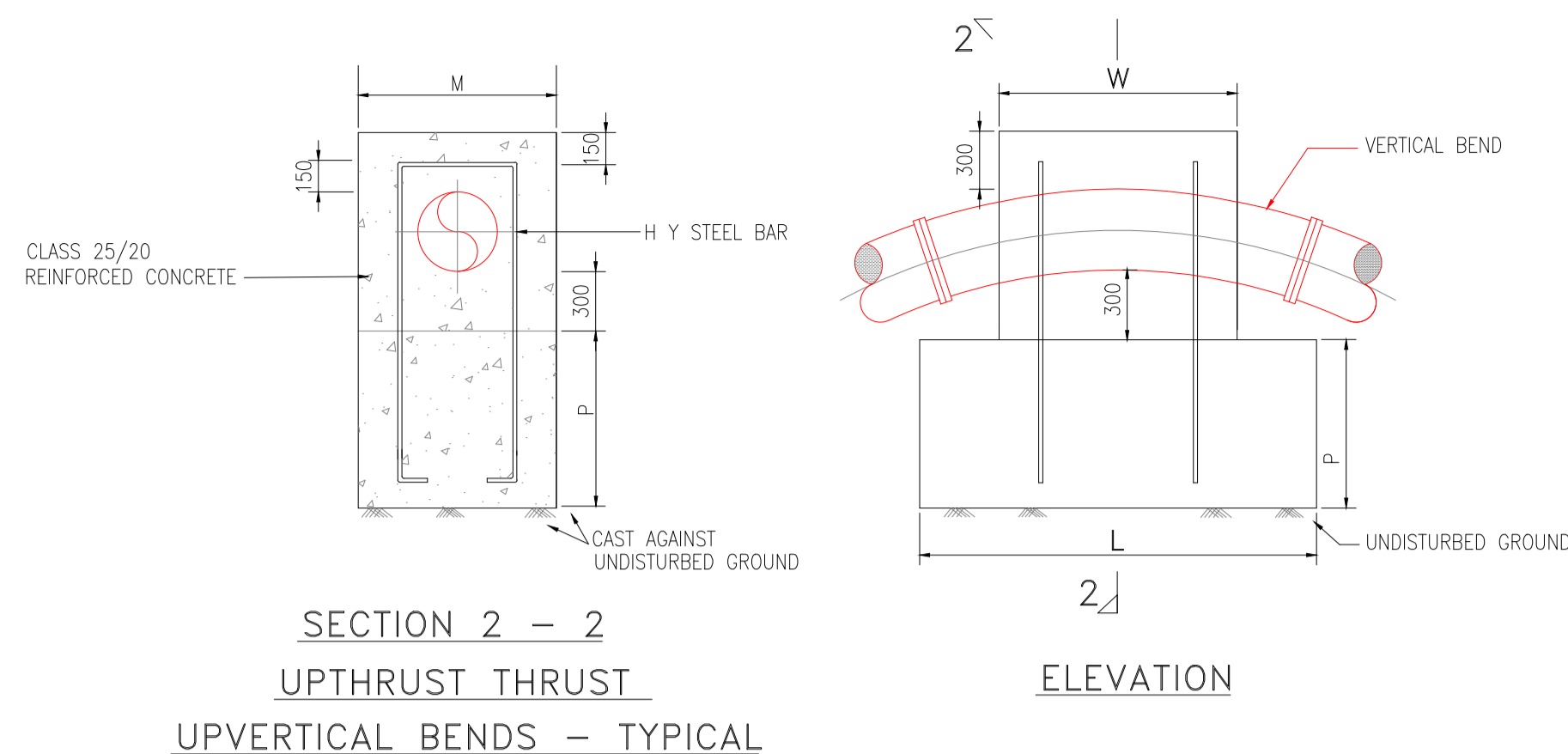
- NOTES
1. All dimensions are in mm unless otherwise stated
  2. River overcrossing details are applicable to pipes upto 500mm dia. 12m length
  3. Maximum flood level to be decided by the Engineer
  4. For river overcrossing a 10mm gap shall be left between pipes at couplings to permit expansion
  5. Slip anchors to be provided where;
    - a) Longitudinal slope exceeds 1:6
    - b) Cross fall exceeds 1:3
  6. Pipe wrap to be removed 50mm inside the concrete at slip anchors
  7. Class 20/20 surround shall be provided for undercrossing of large open drains in accordance to details of river undercrossing

DRAWING TO SCALE IN A1 SIZE

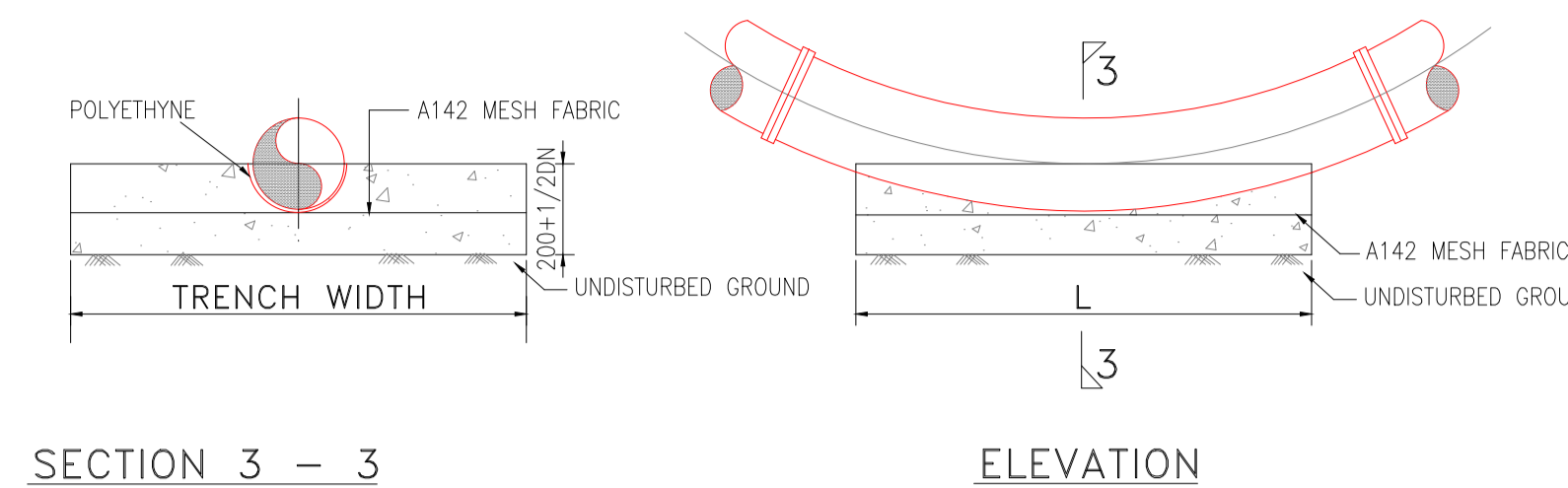
<p>MARSABIT COUNTY</p>	No.	APPROVAL	DATE	REFERENCE	CLIENT: <b>CONCERN WORLDWIDE</b>	CONSULTANT: <b>GEO CONSULTANTS</b>	PROJECT TITLE: <b>NAMAREI WATER PAN, OLTUROI AND NGOROROI LAISAMIS INTEGRATED PROJECT</b>	TITLE OF DRAWING: <b>NGOROROI PROJECT DRAIN CROSSINGS AND SLIP ANCHOR DETAILS</b>	Designed: <b>P. K.W</b>	Date: <b>Aug 2023</b>
					<p>in conjunction with</p> <p>Financing the Water Sector</p>			Drawn: <b>MMN</b>	Date: <b>Aug 2023</b>	
						Checked: <b>P. K.W</b>	Date: <b>Aug 2023</b>			
						Approved: <b>ENG ANDREW MESSO (A3007)</b>	Date: <b>Aug 2023</b>			
						DWG. No. <b>KAM/DD/203</b>	Sheet No. <b>1/1</b>			



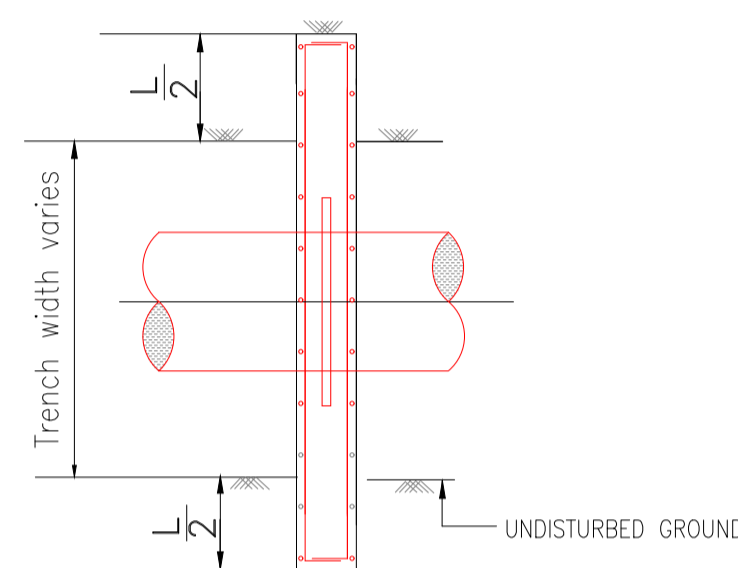
ELEVATION  
ANCHOR BLOCK  
FOR GATE VALVES



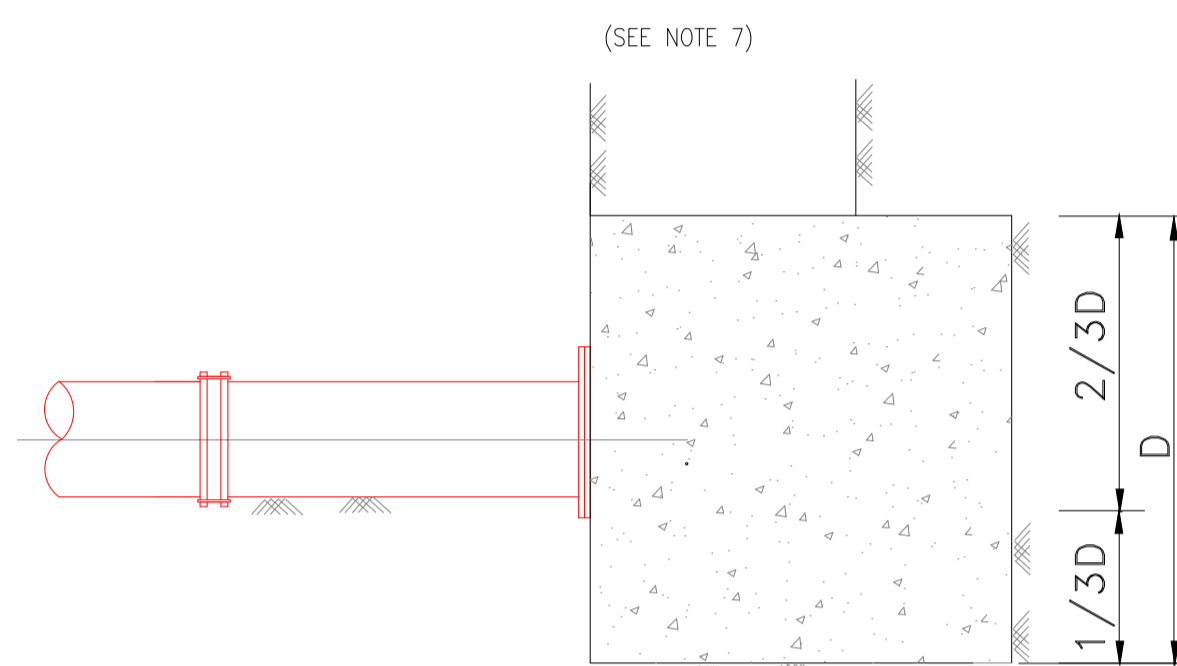
SECTION 2 - 2  
UPTHRUST THRUST  
UPVERTICAL BENDS - TYPICAL



SECTION 3 - 3  
DOWNTHRUST VERTICAL  
BENDS - TYPICAL



SECTION 1 - 1

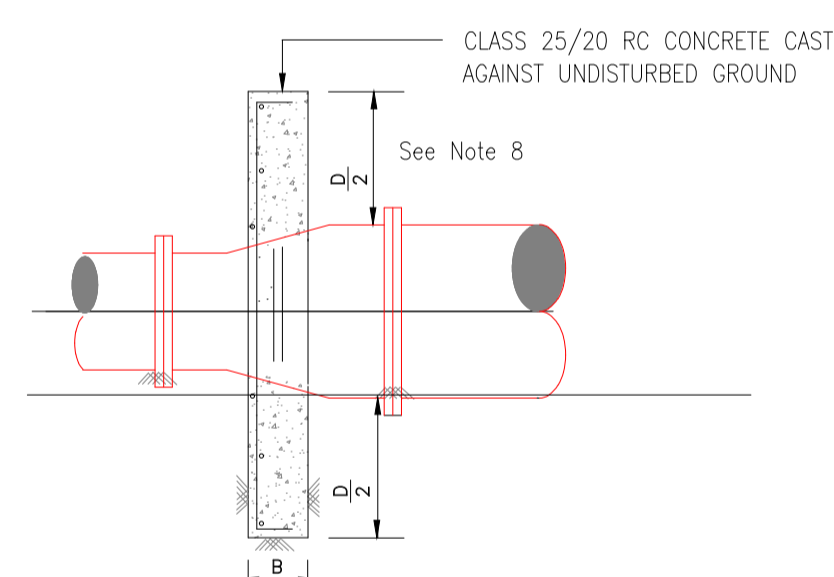


Section 4 - 4

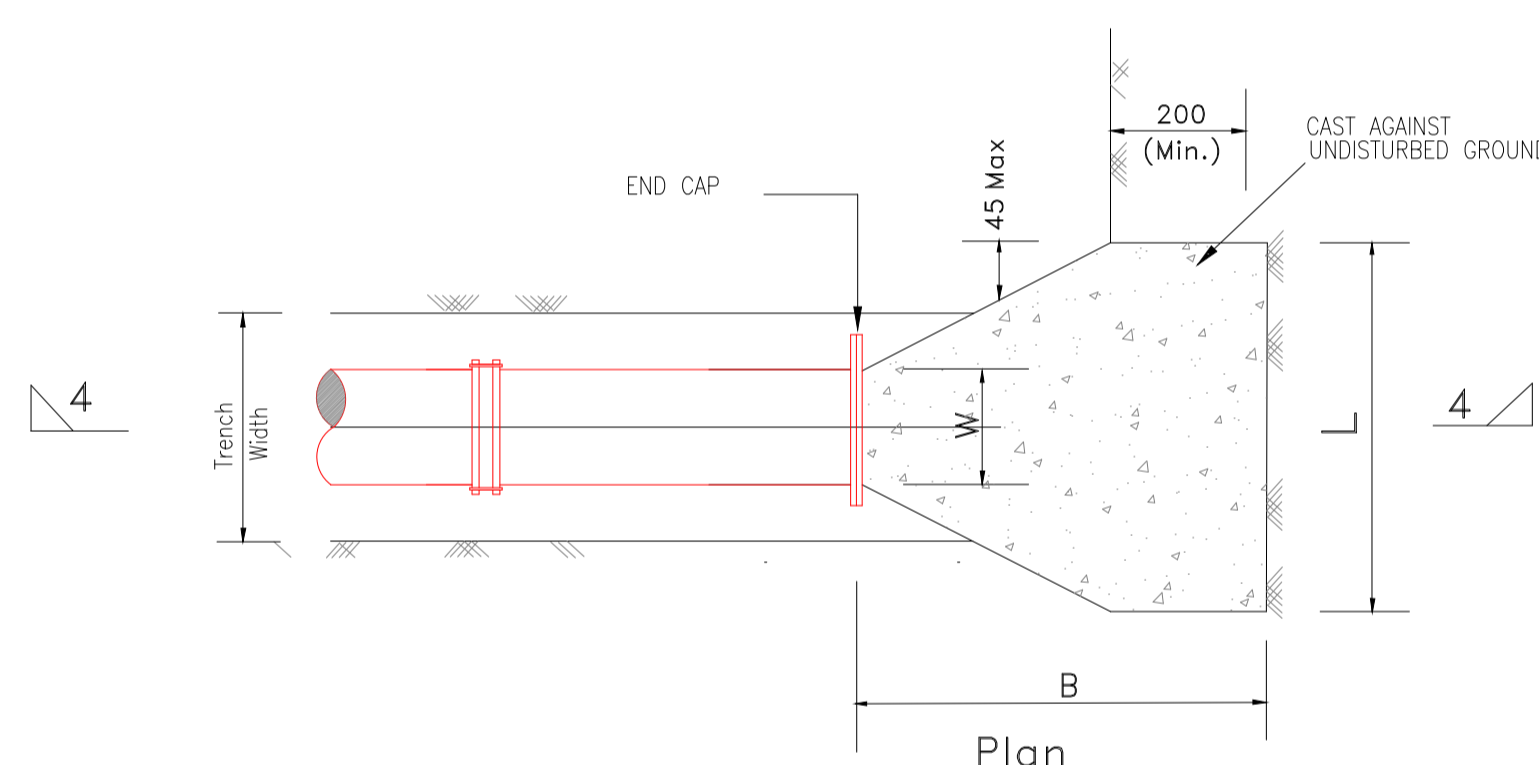
(SEE NOTE 7)

TEST HEAD (m)	PIPE DIA (mm)	D (m)	L (m)	B (m)	CONCRETE VOL (m <sup>3</sup> )
100	600	1.6	2.6	1.2	3.1
	500	1.4	2.2	1.1	2.1
	450	1.2	2.0	1.0	1.5
	400	1.2	1.6	0.8	1.0
	350	1.0	1.5	0.8	0.7
	300	1.0	1.2	0.7	0.5
	250	0.8	1.0	0.5	0.3
	200	0.6	0.8	0.5	0.2
	150	0.5	0.6	0.5	0.1
	100	0.5	0.6	0.5	0.1

TABLE OF ANCHOR BLOCKS FOR BLANK ENDS



SECTION 3 - 3  
THRUST BLOCKS FOR TAPERS

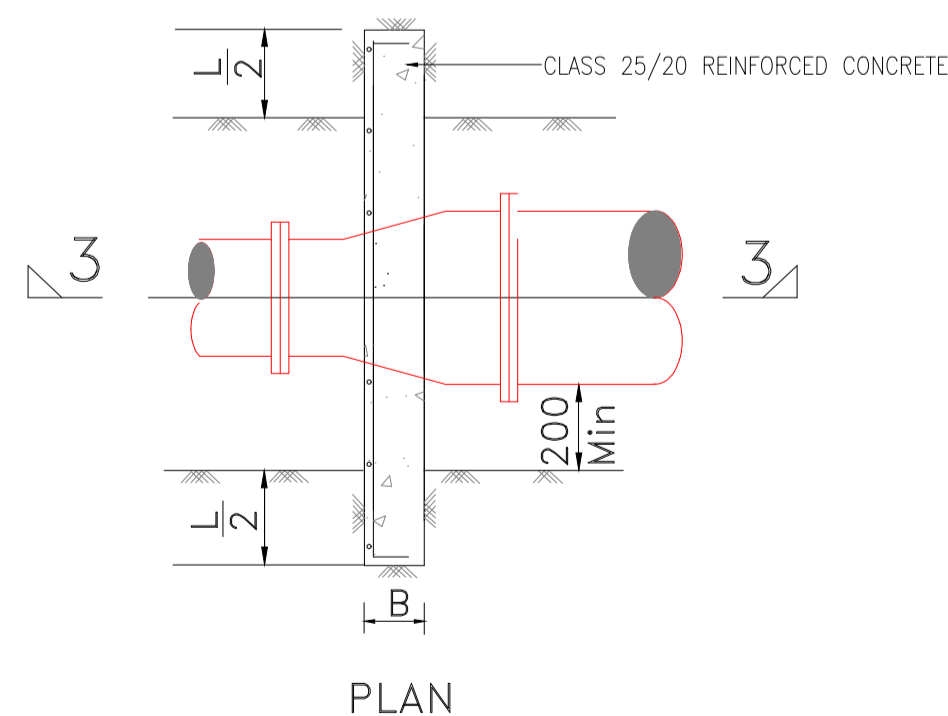


Thrust Block for Blank Ends

TABLE 4

BLOCK TYPE	D (m)	L (m)	B (mm)	MAIN STEEL	DISTRIBUTION STEEL
A	0.6	1.4	200	Y10 - 150	Y10 - 150
B	0.8	1.6	300	Y10 - 150	Y10 - 150
C	1.0	1.8	300	Y12 - 150	Y10 - 150
D	1.2	2.0	400	Y12 - 150	Y12 - 150
E	1.4	2.6	500	Y12 - 150	Y12 - 150
F	1.6	3.2	500	Y12 - 150	Y12 - 150

DETAILS OF ANCHOR BLOCKS FOR GATE VALVES AND TAPERS  
(CLASS '25/20' CONCRETE)



PLAN

TABLE 1

MAIN SIZE (mm)	BLOCK TYPE	
	100m Head	160m Head
600	E	E
500	D	E
450	D	D
400	C	D
350	C	C
300	B	C
250	B	B
200	A	A
150	A	A
100	A	A

Table of Anchor Blocks For Gate Valves

TABLE OF THRUST BLOCKS FOR TAPERS

MAIN SIZE (mm)	TAPER (SMALLER SIZE) mm											
	100 m HEAD TEST PRESSURE											
	800	700	600	500	450	400	350	300	250	200	150	100
800	—	D	E	F	—	F	—	E	—	—	—	—
700	—	—	D	E	—	F	F	E	—	—	—	—
600	—	D	D	C	D	D	E	E	—	—	—	—
500	—	B	C	—	B	C	C	D	—	—	—	—
450	—	—	B	—	—	B	C	C	D	—	—	—
400	—	—	—	—	—	—	A	B	C	C	—	—
350	—	—	—	—	—	—	—	A	B	B	C	—
300	—	—	—	—	—	—	—	—	A	B	B	—
250	—	—	—	—	—	—	—	—	—	A	A	B
200	—	—	—	—	—	—	—	—	—	—	A	A
150	—	—	—	—	—	—	—	—	—	—	—	A

TABLE OF ANCHOR BLOCKS FOR GATE VALVES AND TAPERS  
(CLASS '25' CONCRETE)  
FOR DIMENSIONS (See table 4)

NOTES

- All dimensions are in mm, unless otherwise stated
- All concrete thrust blocks shall be constructed on and against firm ground directly. The thrust or anchor blocks shall not be cast against black cotton soil and reference shall be made to the Engineer's Representative for further instructions.
- The concrete thrust blocks are designed to bear on the original earth surface with bearing pressure of 100kN/m
- Concrete to be Class '20/20' unless otherwise stated.
- Concrete in thrust and anchor blocks must be cast clear of joints
- Dimensions 'W' for thrust blocks on vertical bends to suit the size of bend and clearance required for joints.
- The steel anchoring reinforcement and the dimensions L, P and M are to be decided by the Engineer's Representative to suit each individual bend.
- Where D/2 exceeds the cover, increase the depth below the pipe to make the total = D.

LEGEND

- DN - Nominal diameter
- BF - Blank Flange
- FA - Flange Adaptor

DRAWING TO SCALE IN A1 SIZE



MARSABIT COUNTY

No.	APPROVAL	DATE	REFERENCE

CLIENT:  
**CONCERN WORLDWIDE**

in conjunction with  
**WaterFund**  
Financing the Water Sector

CONSULTANT:  
**GEO CONSULTANTS**

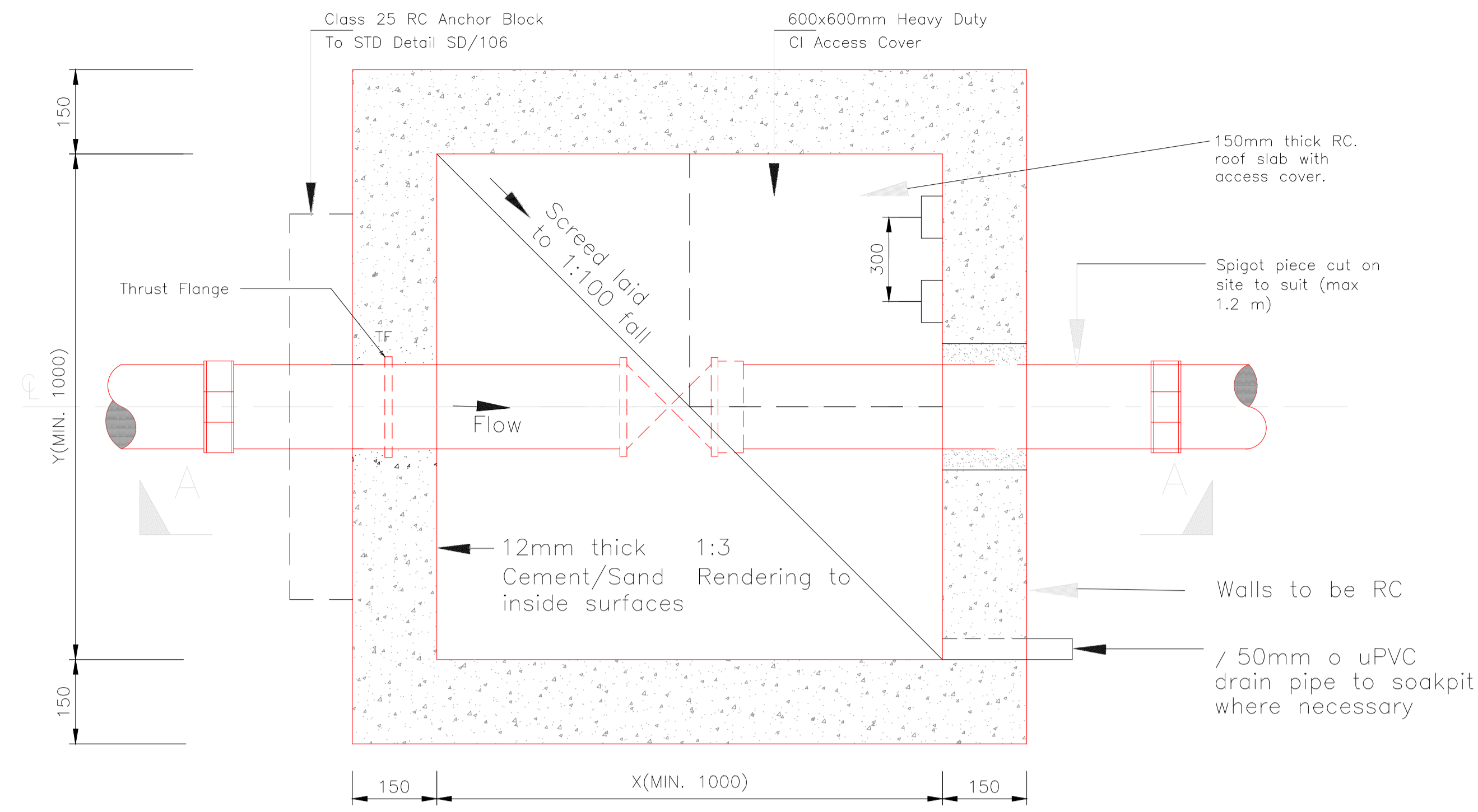
PROJECT TITLE:  
**NAMAREI WATER PAN,  
OLTUROT AND NGOROROI  
LAISAMIS INTEGRATED  
PROJECT**

TITLE OF DRAWING:  
**NGOROROI PROJECT  
TRUNK DISTRIBUTION MAINS THRUST  
BLOCKS FOR VERTICAL BENDS, TAPERS  
GATE VALVES AND BLANK ENDS**

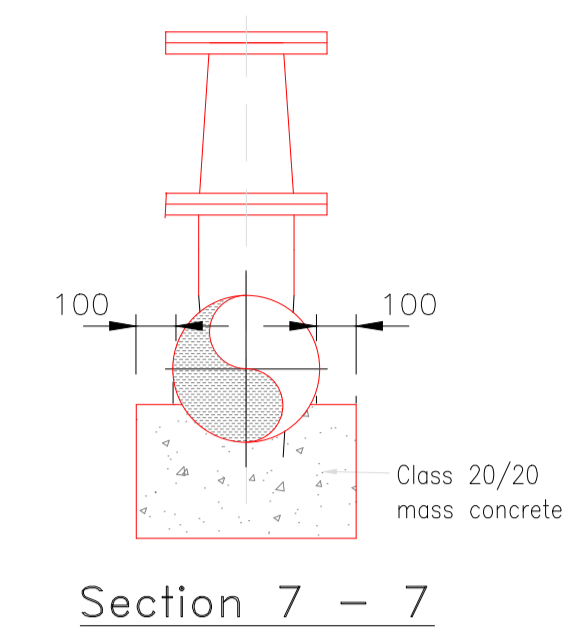
DWG. No. **KAM/DD/203**  
Sheet No. **1/1**

Designed: <b>P. K.W</b>	Date: <b>Aug 2023</b>
Drawn: <b>MMN</b>	Date: <b>Aug 2023</b>
Checked: <b>P. K.W</b>	Date: <b>Aug 2023</b>
Approved: <b>ENG ANDREW MESSO (A3007)</b>	Date: <b>Aug 2023</b>



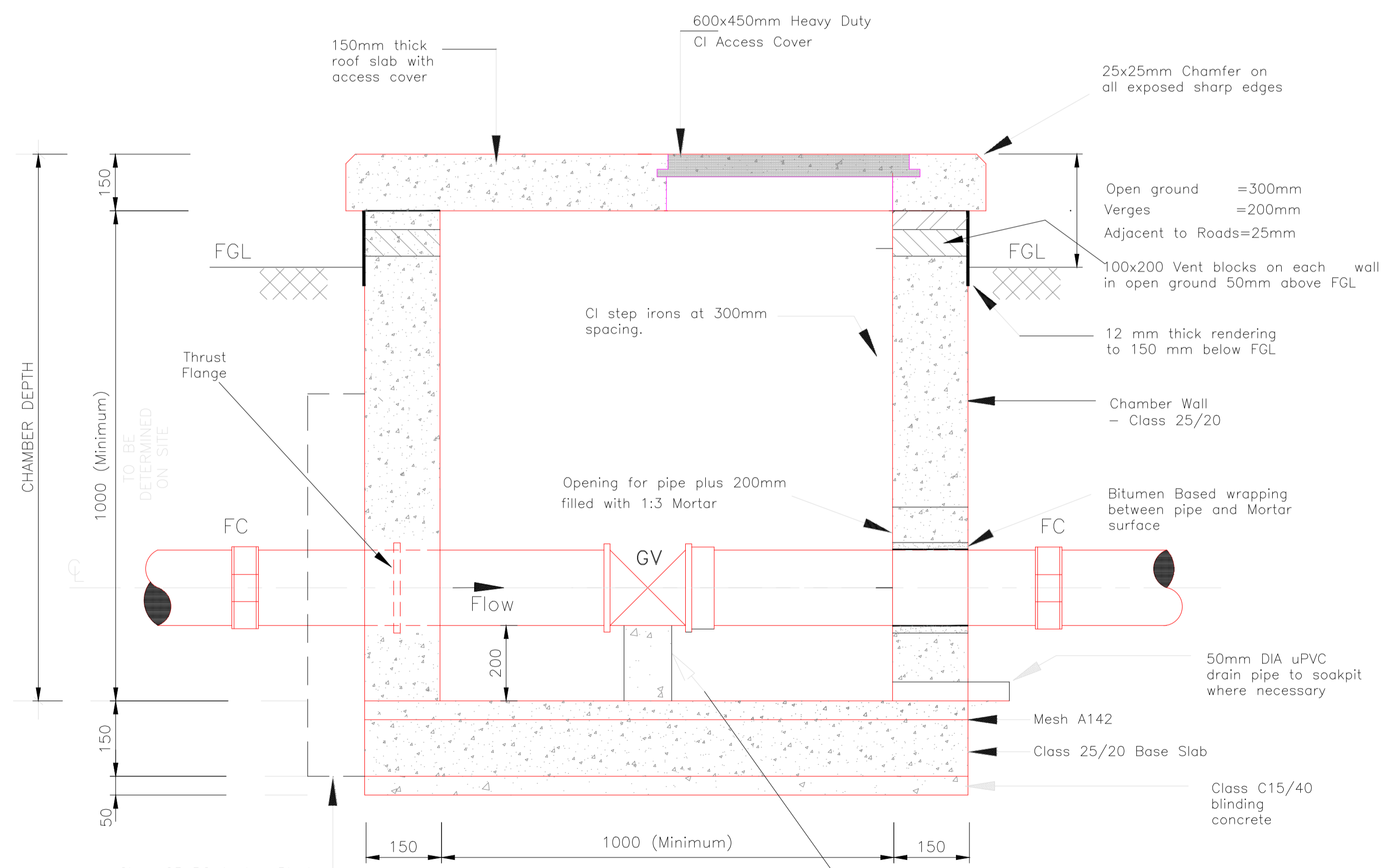


PLAN OF CHAMBER  
1:20  
(Cover omitted for clarity)

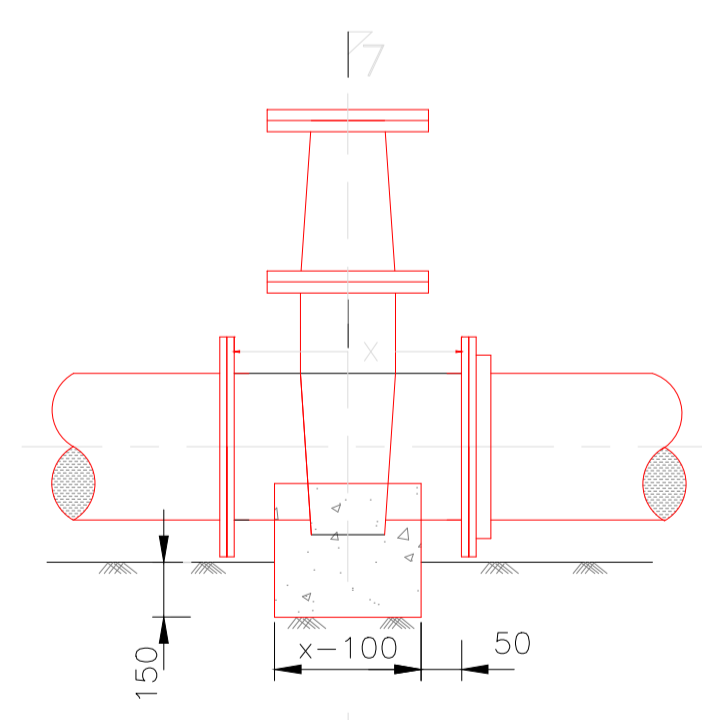


Section 7 - 7

- NOTES**
1. All dimensions are in mm unless otherwise stated
  2. Where the Chamber wall is used for anchorage, the restraining to be according to Drawing SD/06.
  3. Chamber wall to be backfilled wall thickness with 300mm thick granular fill around walls
  4. Where the chamber is along footpath in built up areas, the cover may be flushed with the footpath



GATE VALVE CHAMBER  
SECTION A-A  
SCALE 1:20



ELEVATION  
Gate Valve Support Block

DRAWING TO SCALE IN A1 SIZE

No.	APPROVAL	DATE	REFERENCE

CLIENT:  
**CONCERN WORLDWIDE**

in conjunction with  
**WaterFund**  
Financing the Water Sector

CONSULTANT:  
**GEO CONSULTANTS**

PROJECT TITLE:  
**NAMAREI WATER PAN,  
OLTUROT AND NGOROROI  
LAISAMIS INTEGRATED  
PROJECT**

TITLE OF DRAWING:  
**OLTUROT AND  
NGOROROI PROJECT  
GATE VALVE CHAMBERS**

DWG. No. **KAM/DD/203**  
Sheet No. **1/1**

Designed: <b>P. K.W</b>	Date: <b>Aug 2023</b>
Drawn: <b>MMN</b>	Date: <b>Aug 2023</b>
Checked: <b>P. K.W</b>	Date: <b>Aug 2023</b>
Approved: <b>ENG ANDREW MESO (A3007)</b>	Date: <b>Aug 2023</b>

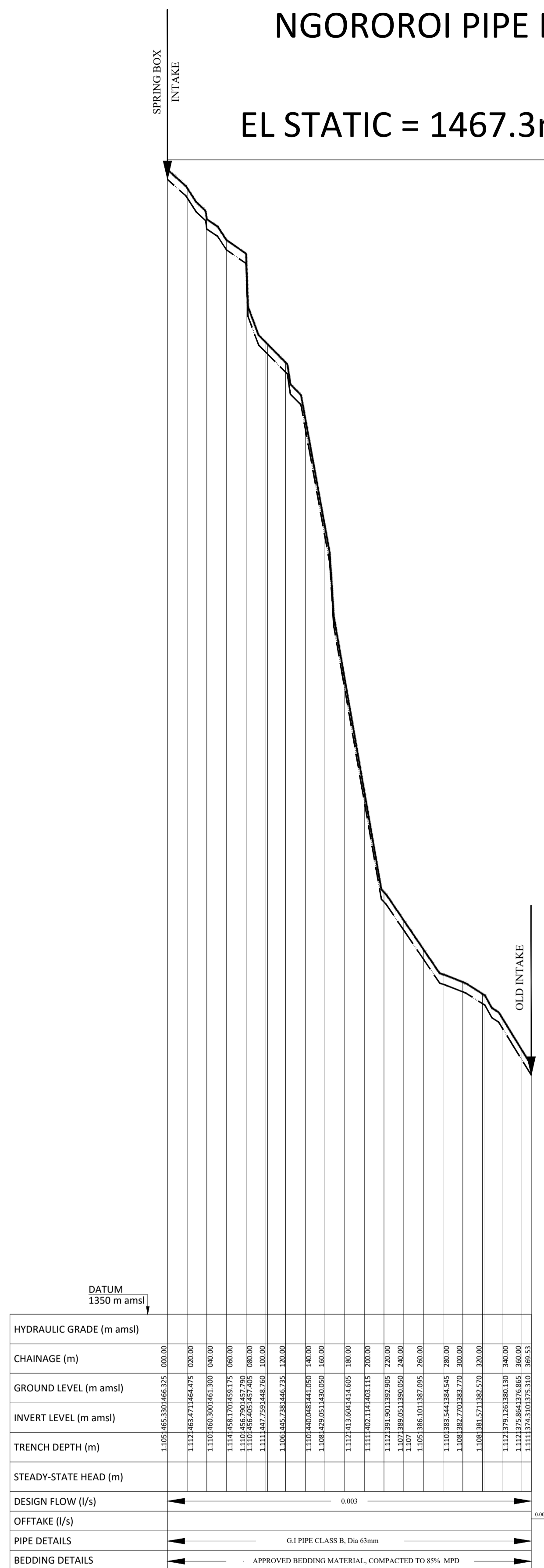


MARSABIT COUNTY



# NGOROROI PIPE DESIGN 1

EL STATIC = 1467.3m



**NOTES**  
 1. Dimensions are in metres unless otherwise stated.  
 2. This drawing is to be read in conjunction with the designs and other relevant drawings.  
 3. Scales in A1 paper size.

**SCALES**  
 Horizontal Scale 1:2000  
 Vertical Scale 1:200

**LEGEND**  
 EXISTING GROUND PROFILE  
 PIPE INVERT

No.	APPROVAL	DATE	REFERENCE

CLIENT:  
**CONCERN WORLDWIDE**  
 in conjunction with **WaterFund**  
 Financing the Water Sector

CONSULTANT:  
**GEO CONSULTANTS**

PROJECT TITLE:  
**NAMAREI WATER PAN, OLTUROT AND NGOROROI LAISAMIS INTEGRATED PROJECT**

TITLE OF DRAWING:  
**NGOROROI DESIGN 1 PROFILE**  
 Chainage 0+000 to 0+792.08

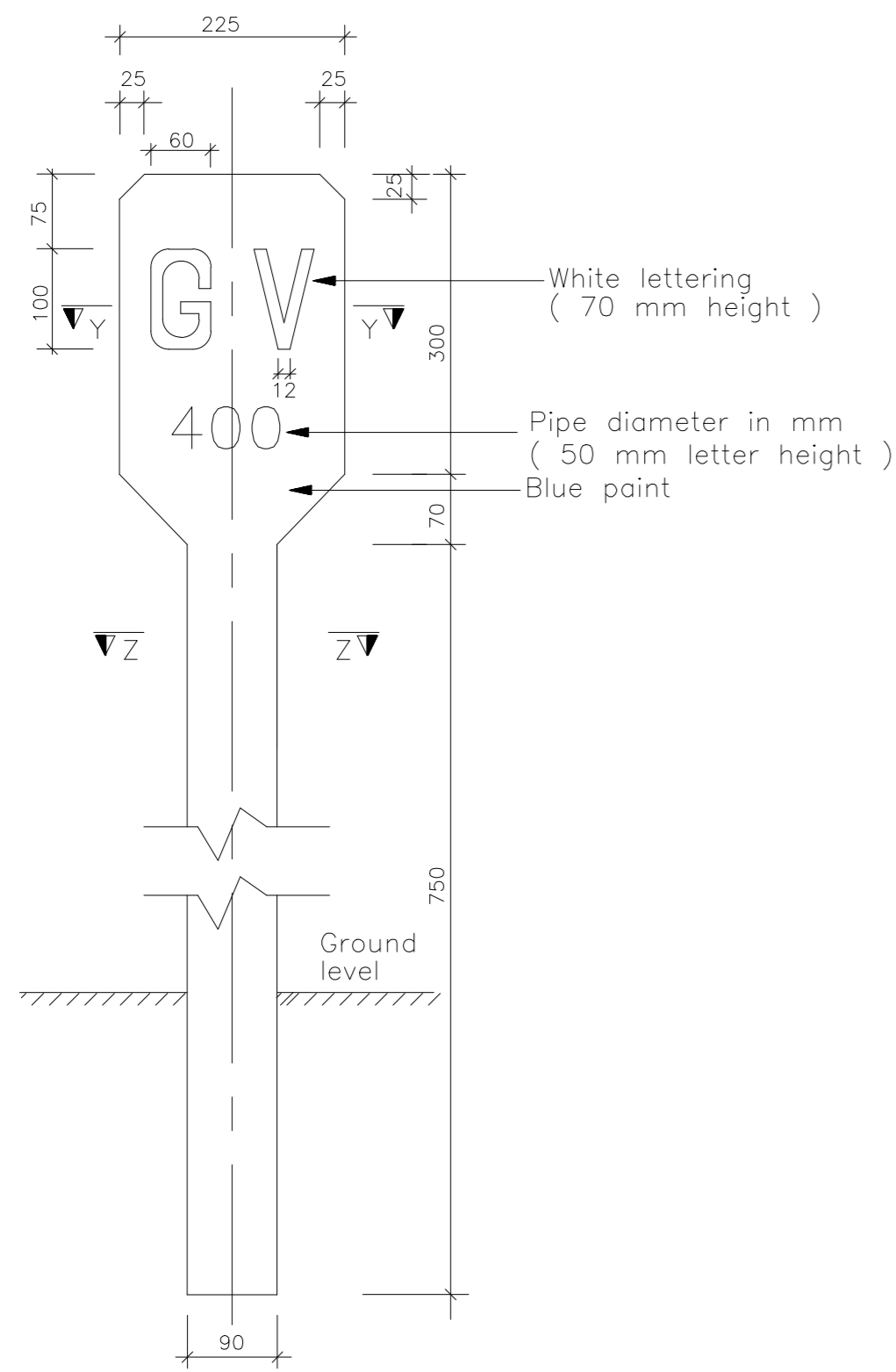
Dwg. No. **KAM/DD/203** Sheet No. **1/1**

Designed: <b>RONALD K</b>	Date: <b>Aug 2023</b>
Drawn: <b>MMN</b>	Date: <b>Aug 2023</b>
Checked: <b>ENG. A. MESSO</b>	Date: <b>Aug 2023</b>
Approved: <b>ENG ANDREW MESSO (A3007)</b>	Date: <b>Aug 2023</b>

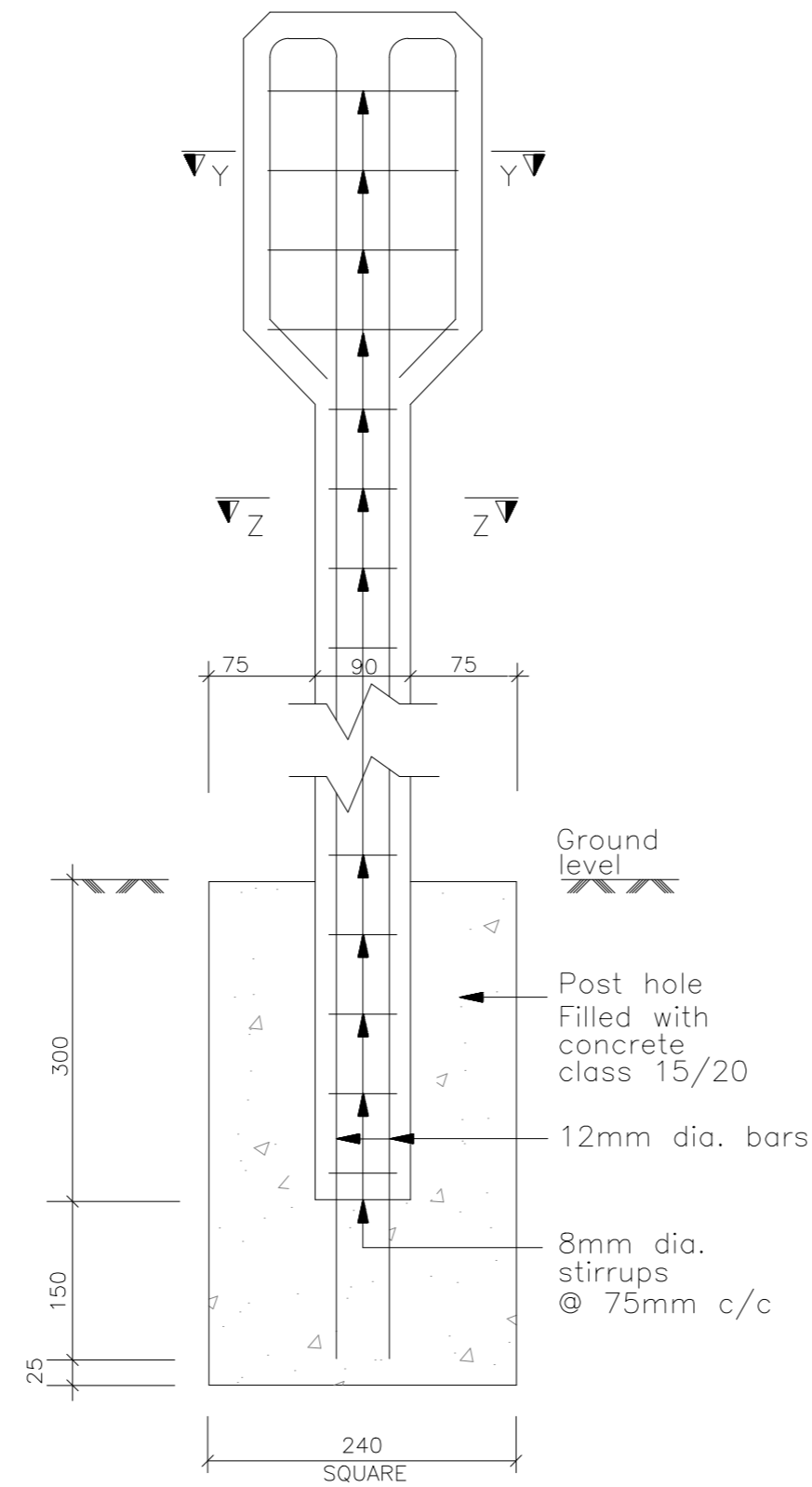
**NOTES**

- All dimensions are in mm unless otherwise stated.
- Details for indicator posts to be as for gate valve but lettering to be as follows
 

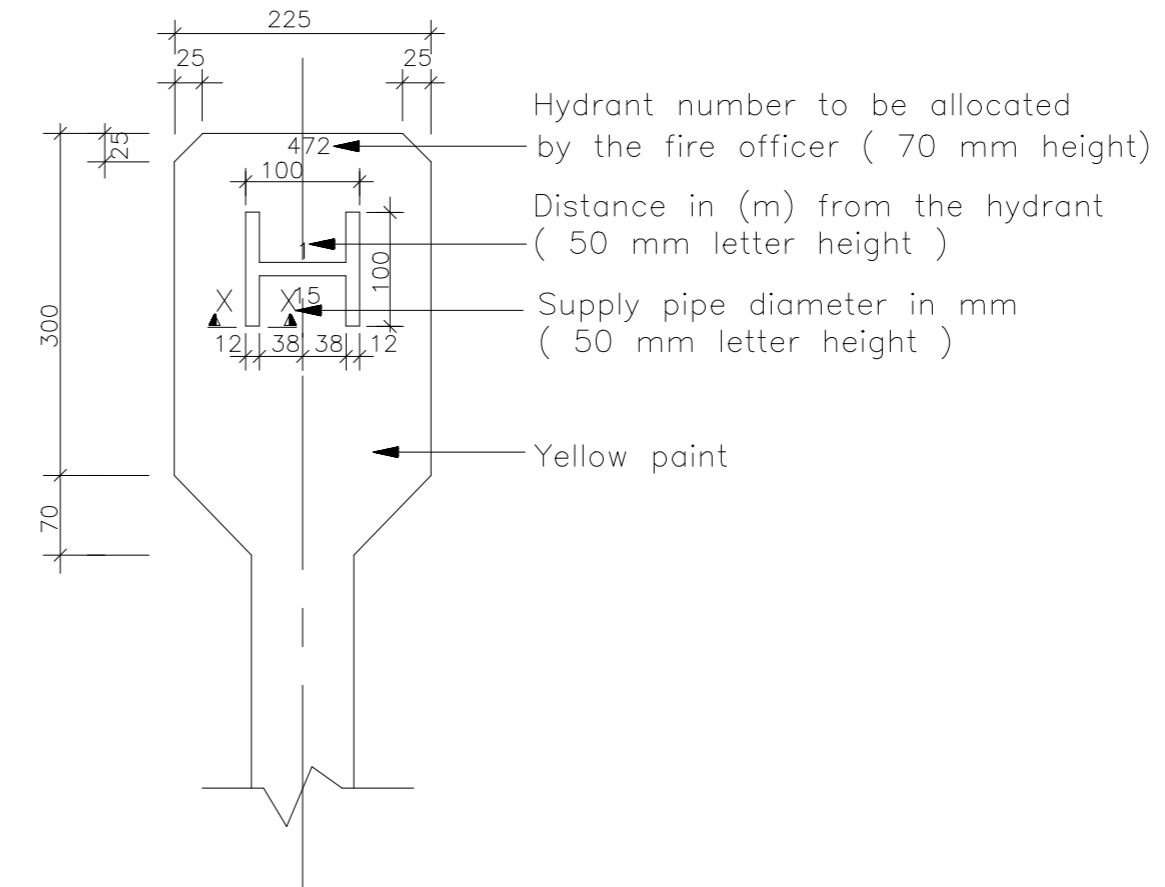
FOR	USE
gate valve	GV
air valve	AV
washout	WO
fire hydrant	H
water main	WM
bulk meter	M
- All indicator posts except fire hydrant posts to be painted with 2 coats blue oil based paint and lettering to engineer's approval.
- Marker posts to be positioned in safe locations where possible against boundary of road reserve



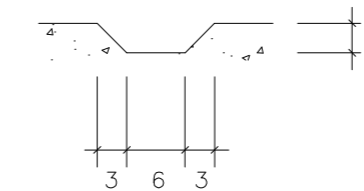
**GATE VALVE INDICATOR POST**  
SCALE 1:10



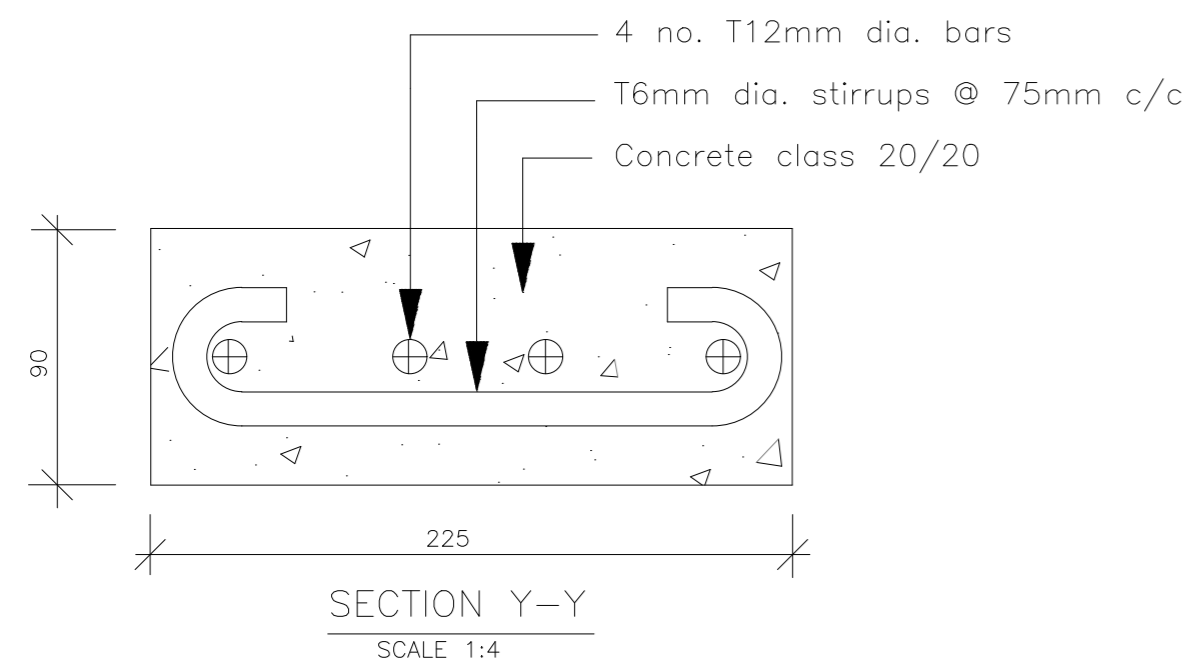
**INDICATOR POST REINFORCEMENT DETAILS**  
SCALE 1:10



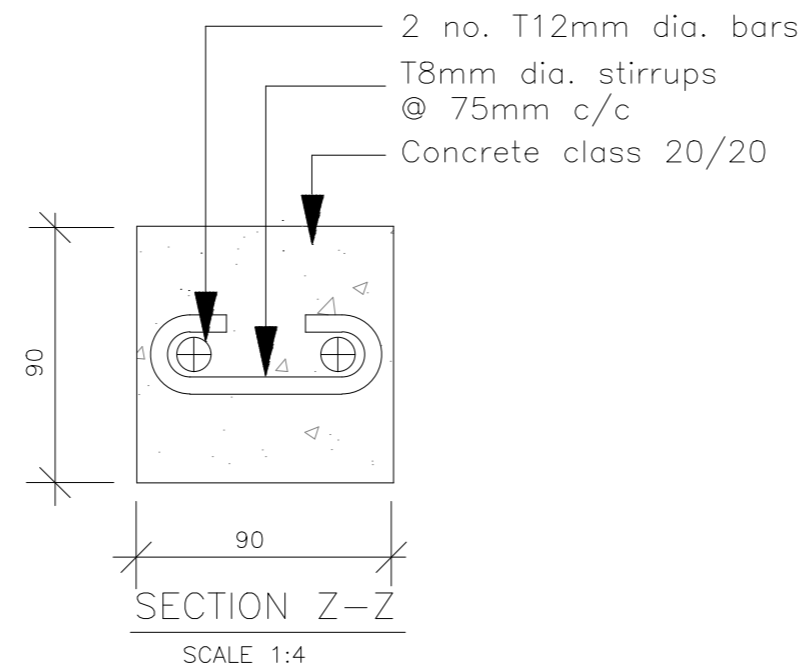
**FIRE HYDRANT POST**  
SCALE 1:10



**SECTION X-X**  
N.T.S.



**SECTION Y-Y**  
SCALE 1:4



**SECTION Z-Z**  
SCALE 1:4

DRAWING TO SCALE IN A1 SIZE



MARSABIT COUNTY

No.	APPROVAL	DATE	REFERENCE

CLIENT:  
**CONCERN WORLDWIDE**

in conjunction with  
**WaterFund**  
Financing the Water Sector

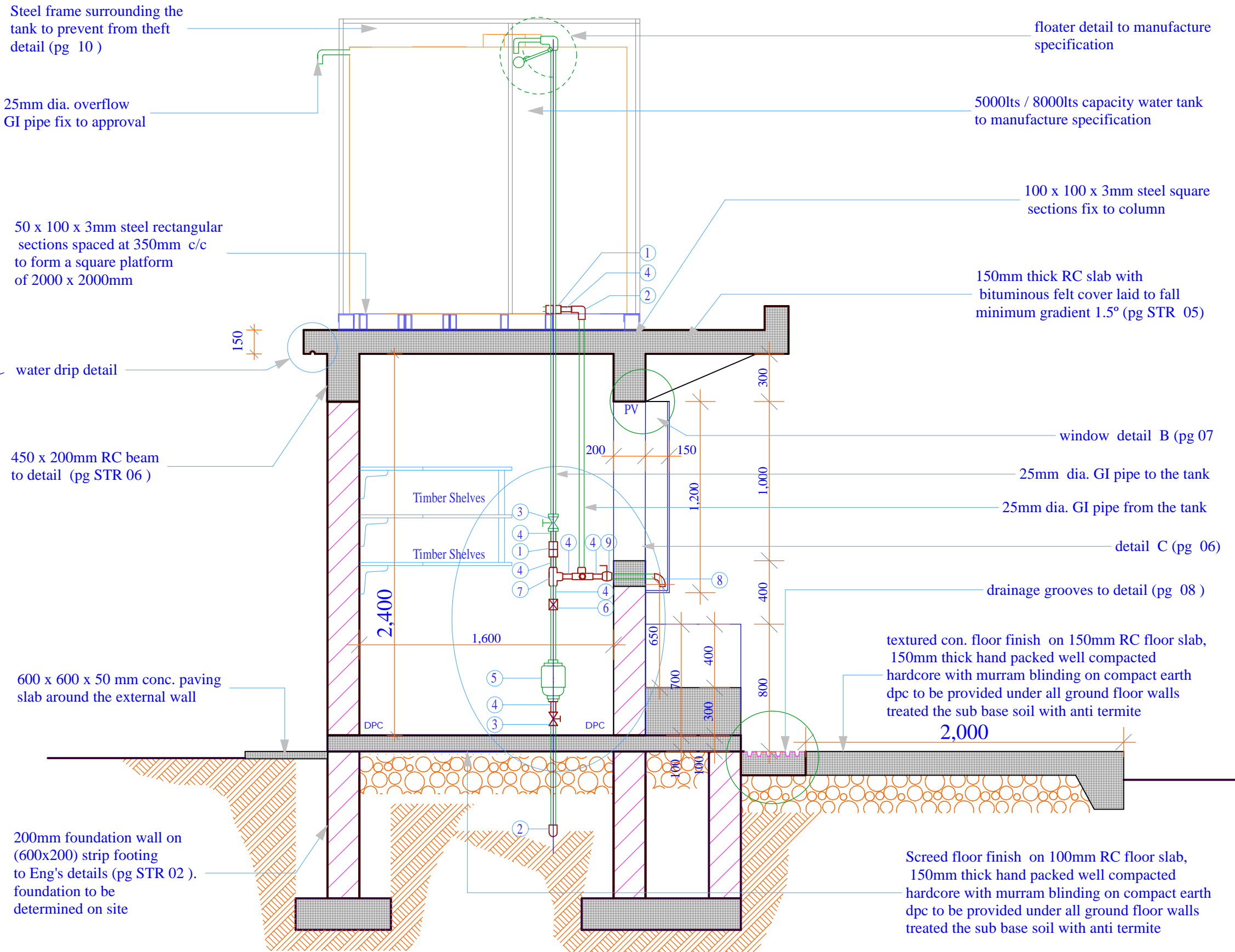
CONSULTANT:  
**GEO CONSULTANTS**

PROJECT TITLE:  
**PROJECT**

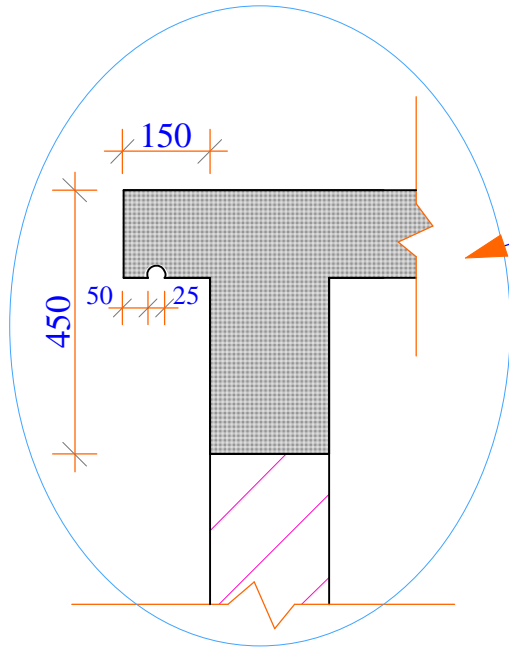
TITLE OF DRAWING:  
**MARKER POSTS DETAILS**

DWG. No. **KAM/DD/203** Sheet No. **1/1**

Designed: <b>P. K.W</b>	Date: <b>Aug 2023</b>
Drawn: <b>MMN</b>	Date: <b>Aug 2023</b>
Checked: <b>P. K.W</b>	Date: <b>Aug 2023</b>
Approved: <b>ENG ANDREW MESSO (A3007)</b>	Date: <b>Aug 2023</b>



**SECTION - X**



**water drip detail**

**Project Title:**  
WATER KIOSK  
(Type Closed)  
PREFABRICATED

**Client:**  
WATER SERVICES  
TRUST FUND (WSTF)

**drq title:**  
SECTION

**drq no.:**  
ARC 02

**Consultant:**  
Edward Kung'u

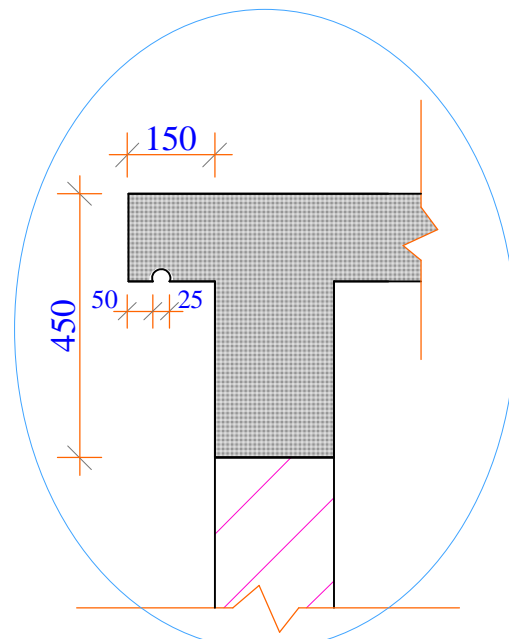
**Designed By**  
Eden Mati

**Checked By**  
John Orwa

**Approved by**  
CEO - Water Services Trust Fund  
Signature.....

**Scale** 1 : 25  
**Date:**  
FEBRUARY 2009  
**page** 02





water drip detail

Steel frame surrounding the tank to prevent from theft detail (pg 10)

5000lts capacity water tank to manufacture specification

25mm dia. galvanised iron inlet pipe to tank

50 x 100mm steel rectangular sections spaced at 350mm c/c to form a square platform of 2000 x 2000mm

water drip detail

150mm thick RC slab with bituminous felt cover laid to fall minimum gradient 1.5°

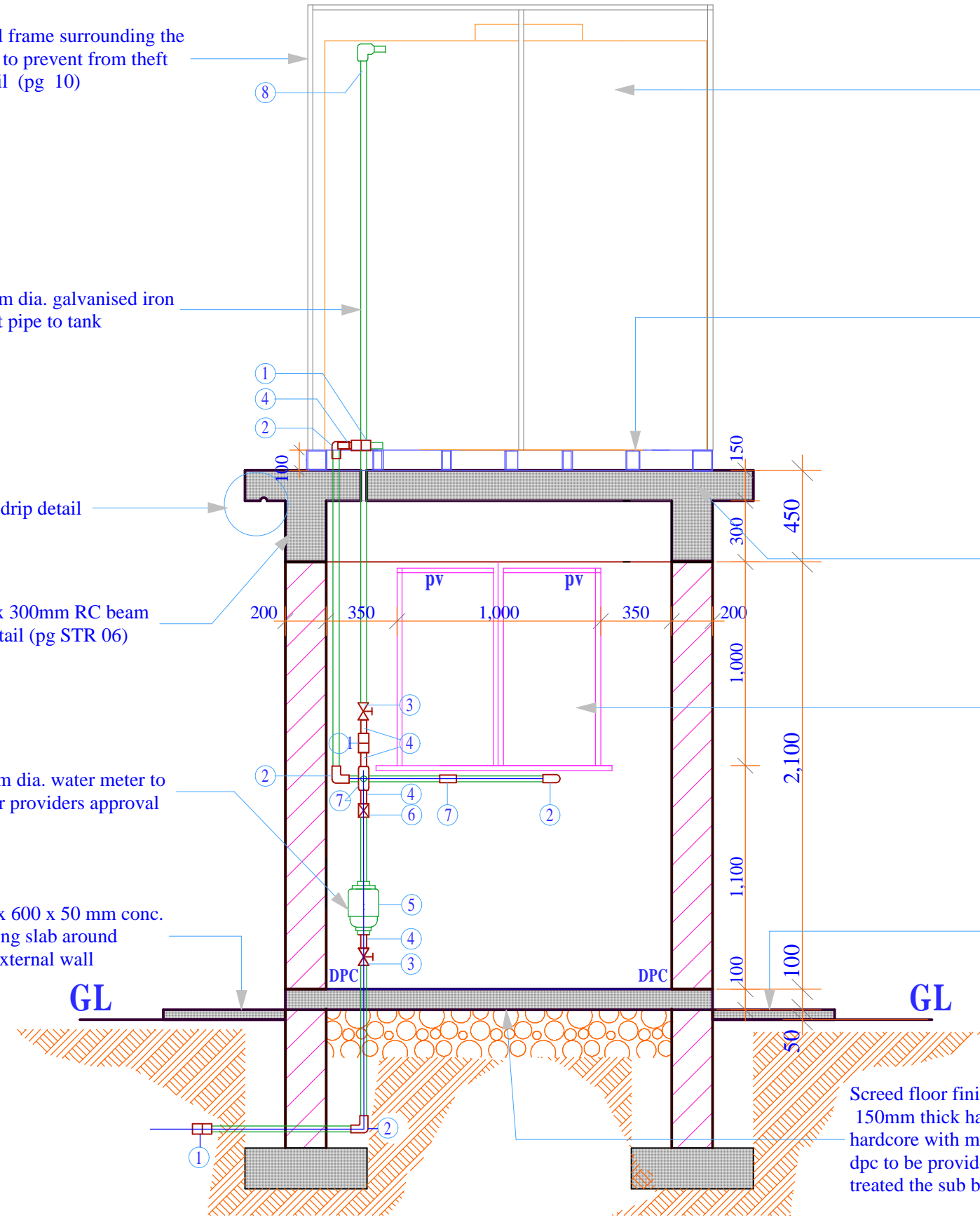
450 x 300mm RC beam to detail (pg STR 06)

steel lockable window plain on the inside to detail (pg 07)

25mm dia. water meter to water providers approval

600 x 600 x 50 mm conc. paving slab around the external wall

600 x 600 x 50 mm conc. paving slab around the external wall



SECTION - Y

**Project Title:**  
WATER KIOSK  
(Type Closed)  
PREFABRICATED

**Client:**  
WATER SERVICES  
TRUST FUND (WSTF)

**drq title:**  
SECTION

**drq no.:**  
ARC 03

**Consultant:**  
Edward Kung'u

**Designed By**  
Eden Mati

**Checked By**  
John Orwa

**Approved by**  
CEO - Water Services Trust Fund  
Signature.....

Scale 1 : 25  
Date: FEBRUARY 2009  
page 03

tank to prevent from theft.  
detail (pg 10)

5000lts / 8000lts capacity  
water tank to manufacture  
specification

25mm dia. galvanised  
iron pipe

masonry wall keyed  
to approval

steel lockable window  
plain on the inside to  
detail (pg 07 )

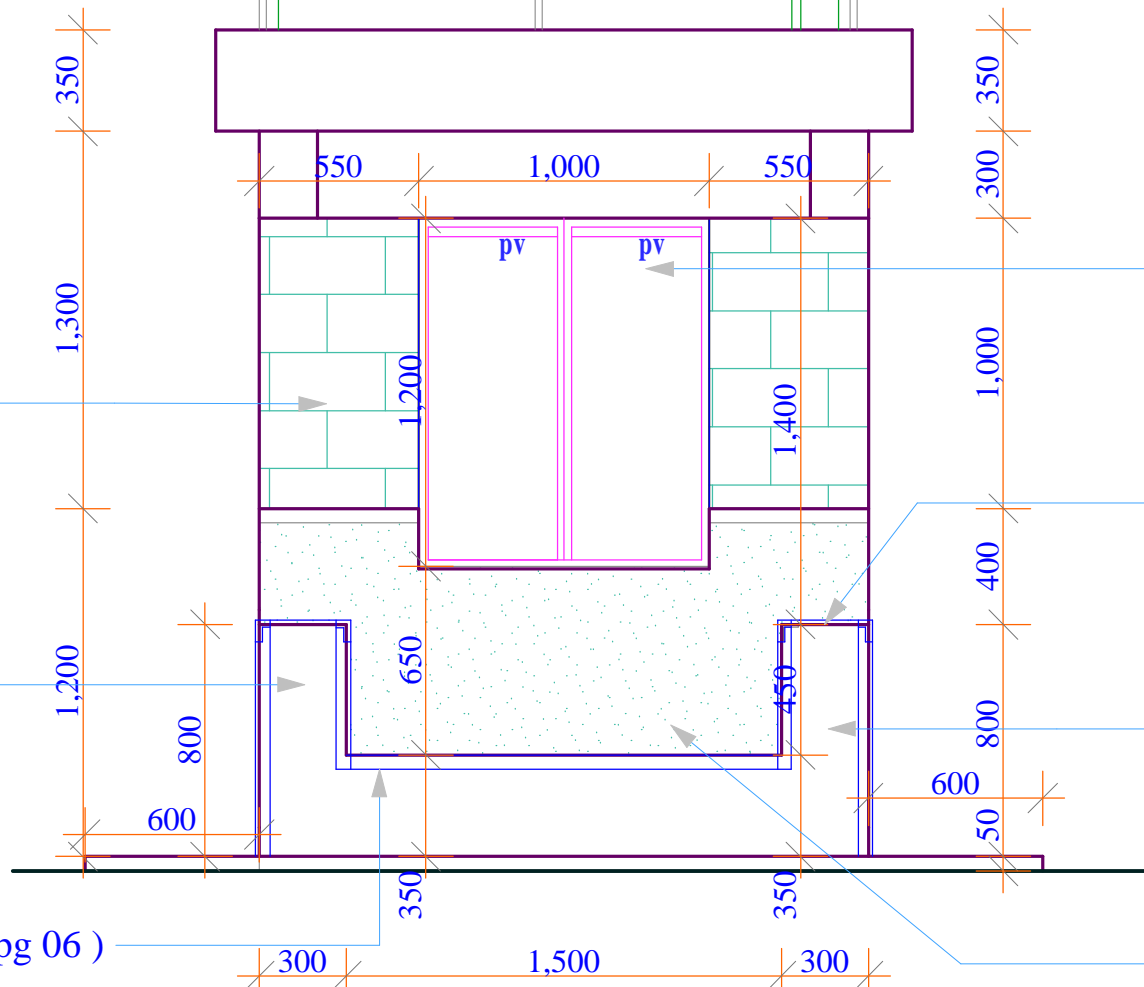
800mm high RC wall  
bucket placing bay

50 x 50mm angle section  
fixed all round to  
detail (pg 06 )

800mm high RC wall  
bucket placing bay

50 x 50mm angle section  
fixed to approval detail (pg 06 )

plaster to approval



**FRONT ELEVATION**

Project Title:  
WATER KIOSK  
(Type Closed)  
PREFABRICATED

Client:  
WATER SERVICES  
TRUST FUND (WSTF)

drq title:  
FRONT ELEVATION

drq no.:  
ARC 04

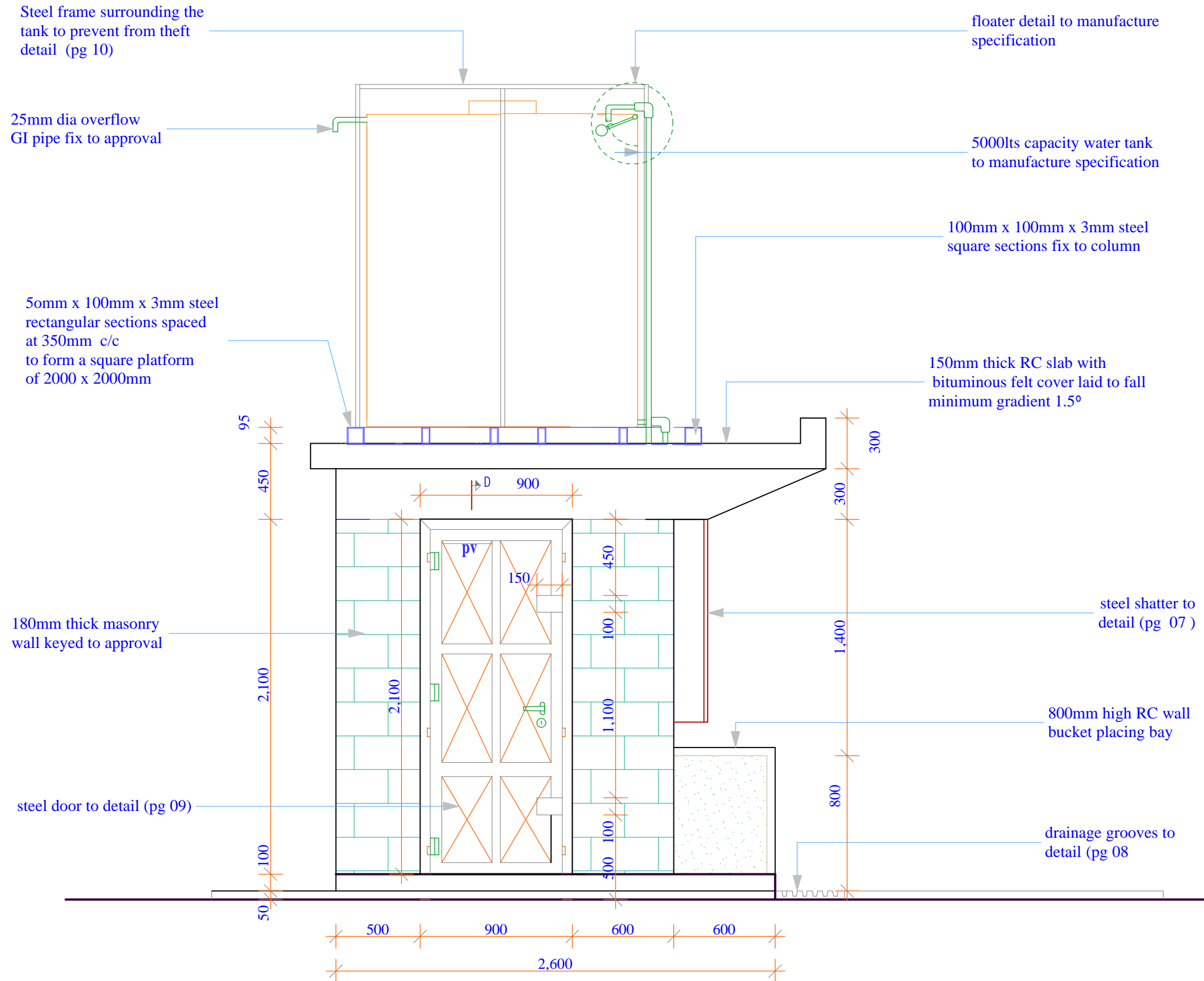
Consultant:  
Edward Kung'u

Designed By  
Eden Mati

Checked By  
John Orwa

Approved by  
CEO - Water Services Trust Fund  
Signature.....

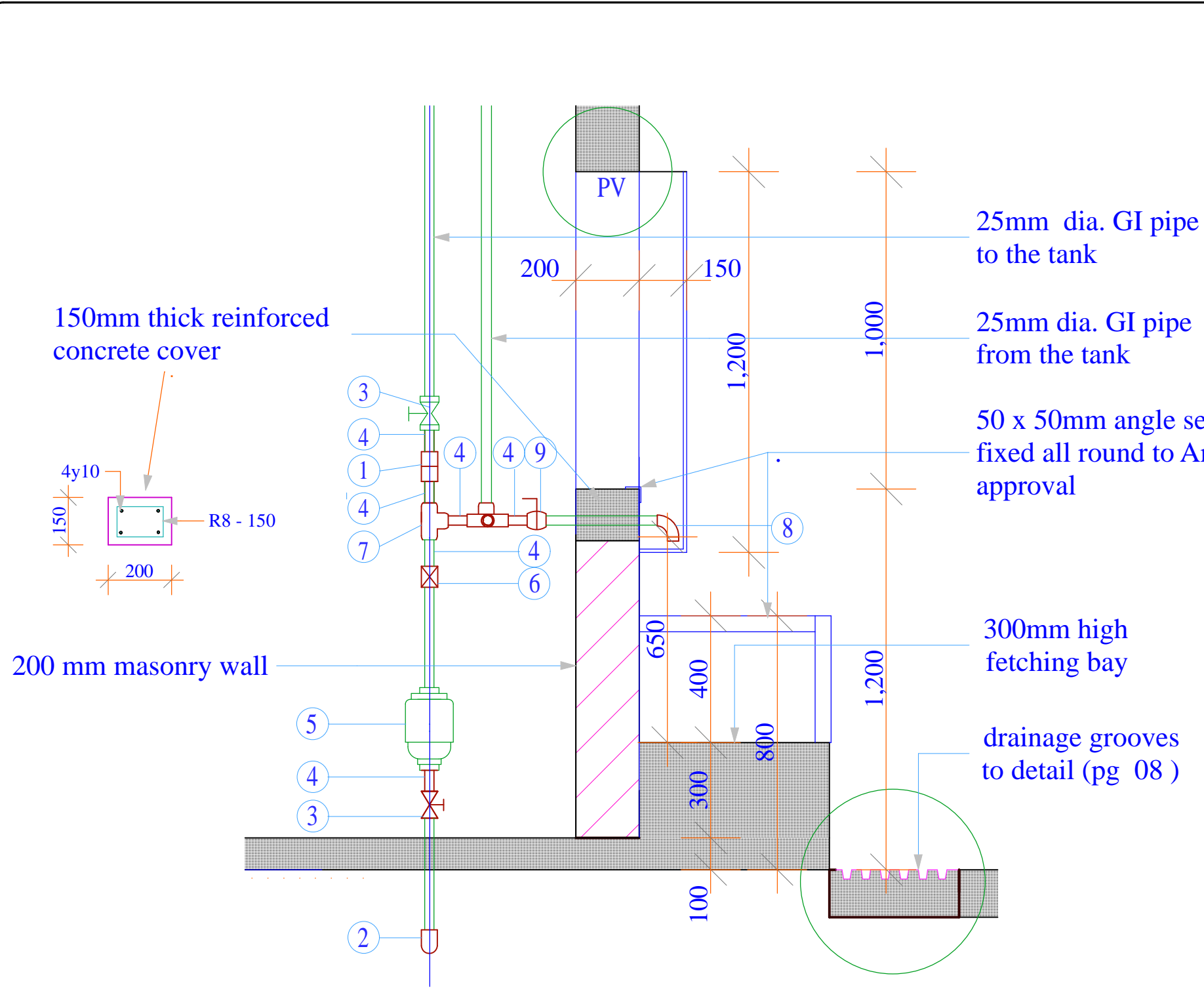
Scale 1 : 25  
Date:  
FEBRUARY 2009  
page 04



**SIDE ELEVATION**

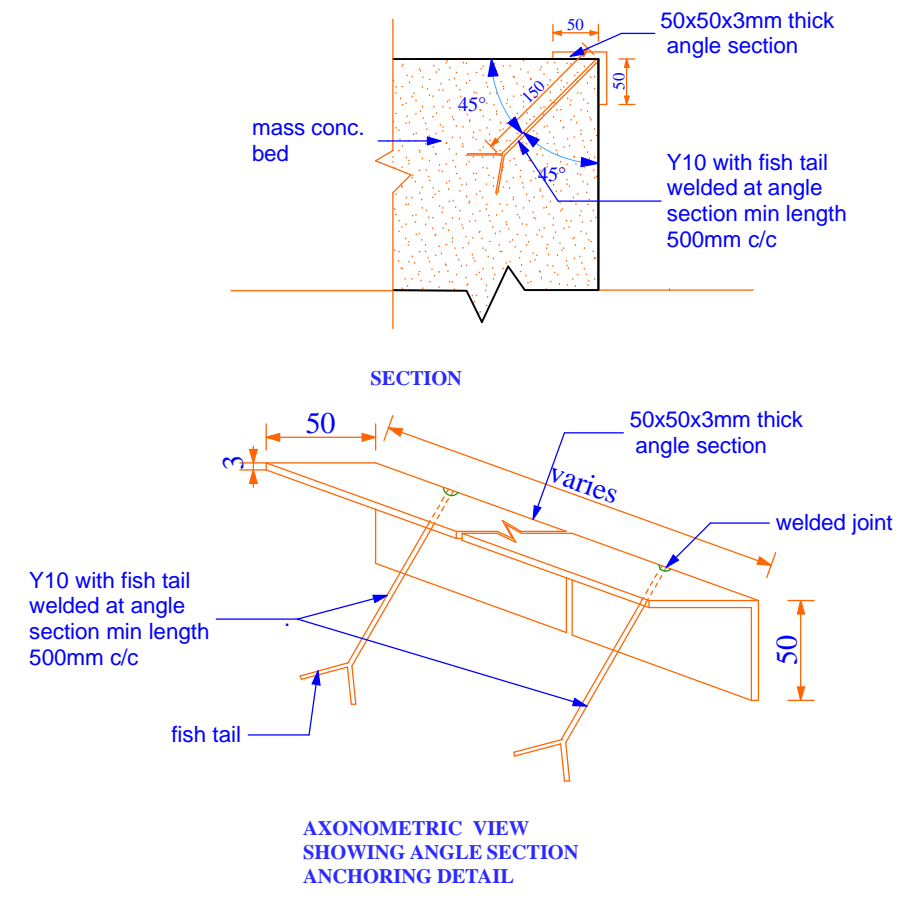
<p><u>Project Title:</u> WATER KIOSK (Type Closed) PREFABRICATED</p>	<p><u>Client:</u> WATER SERVICES TRUST FUND (WSTF)</p>	<p><u>drq title:</u> SIDE ELEVATION</p>	<p><u>drq no.:</u> ARC 05</p>	<p><u>Consultant:</u> Edward Kung'u</p>	<p><u>Designed By</u> Eden Mati</p>	<p><u>Checked By</u> John Orwa</p>	<p><u>Approved by</u> CEO - Water Services Trust Fund Signature.....</p>	<p>Scale 1 : 25 Date: FEBRUARY 2009 page 05</p>
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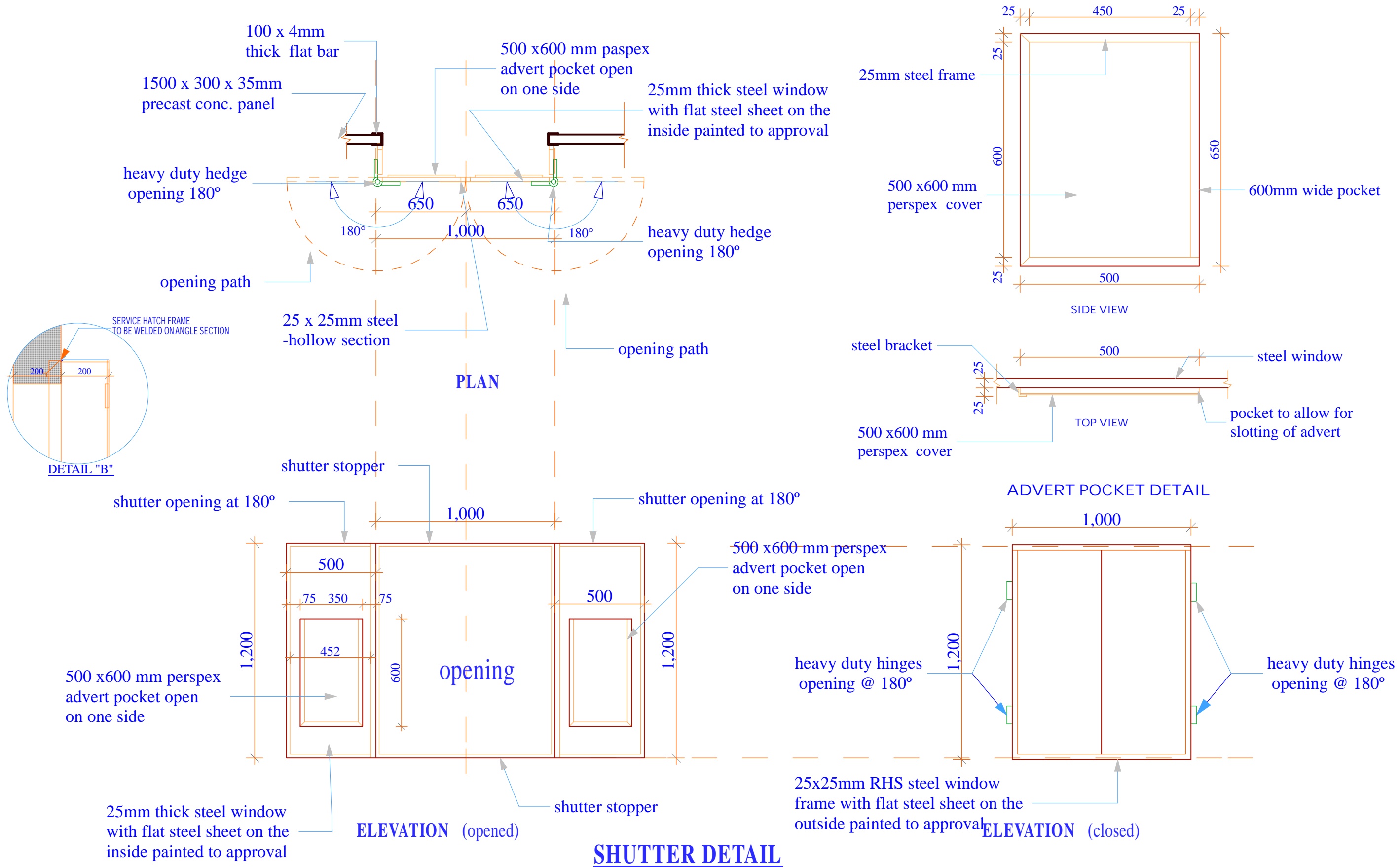


**DETAIL C**

ITEM NO.	DESCRIPTION (ALL 25NN DIA)	UNIT)	QTY
1	Galvanised Iron Union	No.	3
2	Galvanised Iron Elbows	No.	3
3	Galvanised Iron Gate Valve (Pegler)	No.	2
4	Galvanised Iron Nipples	No.	11
5	Water Meter	No.	1
6	Non Return Valve	No.	1
7	Galvanised Iron Equal Tee	No.	5
8	Galvanised Iron Bend	No.	4
9	Ball Cock Water Taps	No.	3
10	Galvanised Iron Long Thread Nipples	No.	2
17	Galvanised Iron Black Nuts	No.	4
12	Galvanised Iron Class B Pipe (per metres)	No.	4
13	Boss white (400g)	No.	3
14	Temp Thread	LM..	2

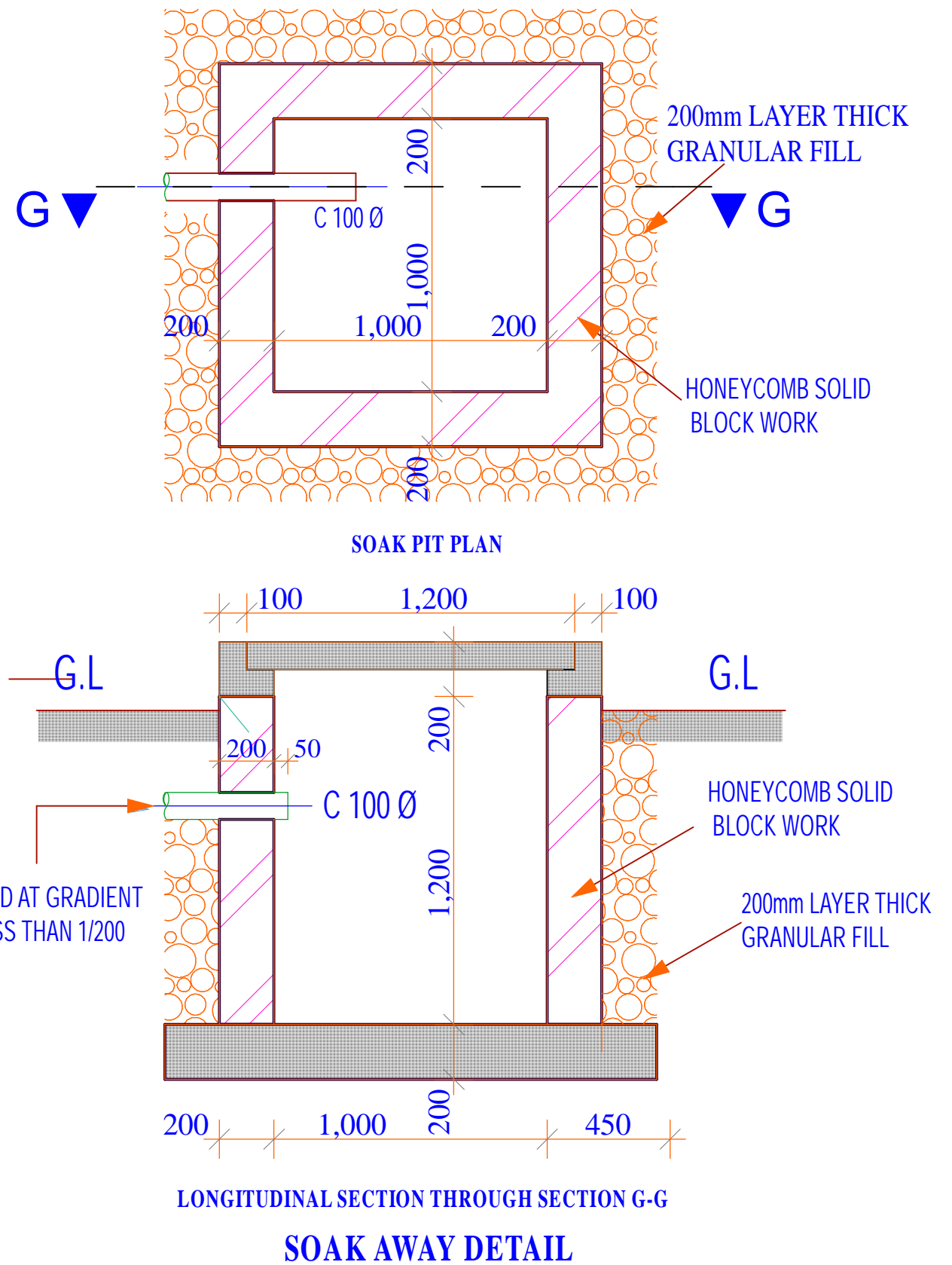
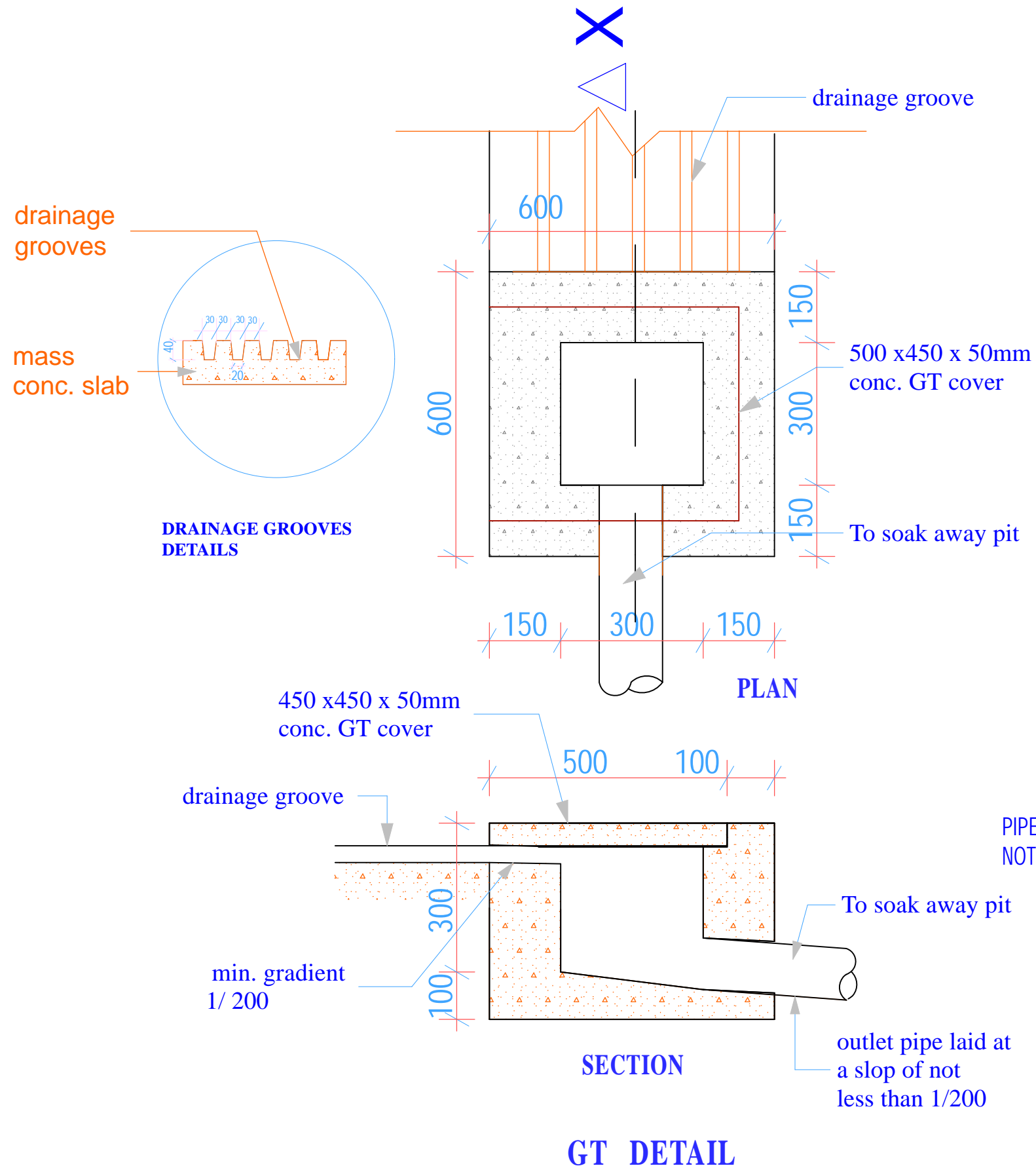


<b>Project Title:</b> WATER KIOSK (Type Closed) PREFABRICATED	<b>Client:</b> WATER SERVICES TRUST FUND (WSTF)	<b>drq title:</b> PLUMBING DETAIL	<b>drq no.:</b> ARC 06	<b>Consultant:</b> Edward Kung'u	<b>Designed By</b> Eden Mati	<b>Checked By</b> John Orwa	<b>Approved by</b> CEO - Water Services Trust Fund Signature.....	Scale 1 : 10 Date: FEBRUARY 2009 page 06
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**SHUTTER DETAIL**

<b>Project Title:</b> WATER KIOSK (Type Closed) PREFABRICATED	<b>Client:</b> WATER SERVICES TRUST FUND (WSTF)	<b>drq title:</b> SHUTTER DETAIL	<b>drq no.:</b> ARC 07	<b>Consultant:</b> Edward Kung'u	<b>Designed By</b> Eden Mati	<b>Checked By</b> John Orwa	<b>Approved by</b> CEO - Water Services Trust Fund Signature.....	Scale 1 : 20 Date: FEBRUARY 2009 page 07
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**Project Title:**  
WATER KIOSK  
(Type Closed)  
PREFABRICATED

**Client:**  
WATER SERVICES  
TRUST FUND (WSTF)

**drq title:**  
DRAINAGE DETAILS

**drq no.:**  
ARC 08

**Consultant:**  
Edward Kung'u

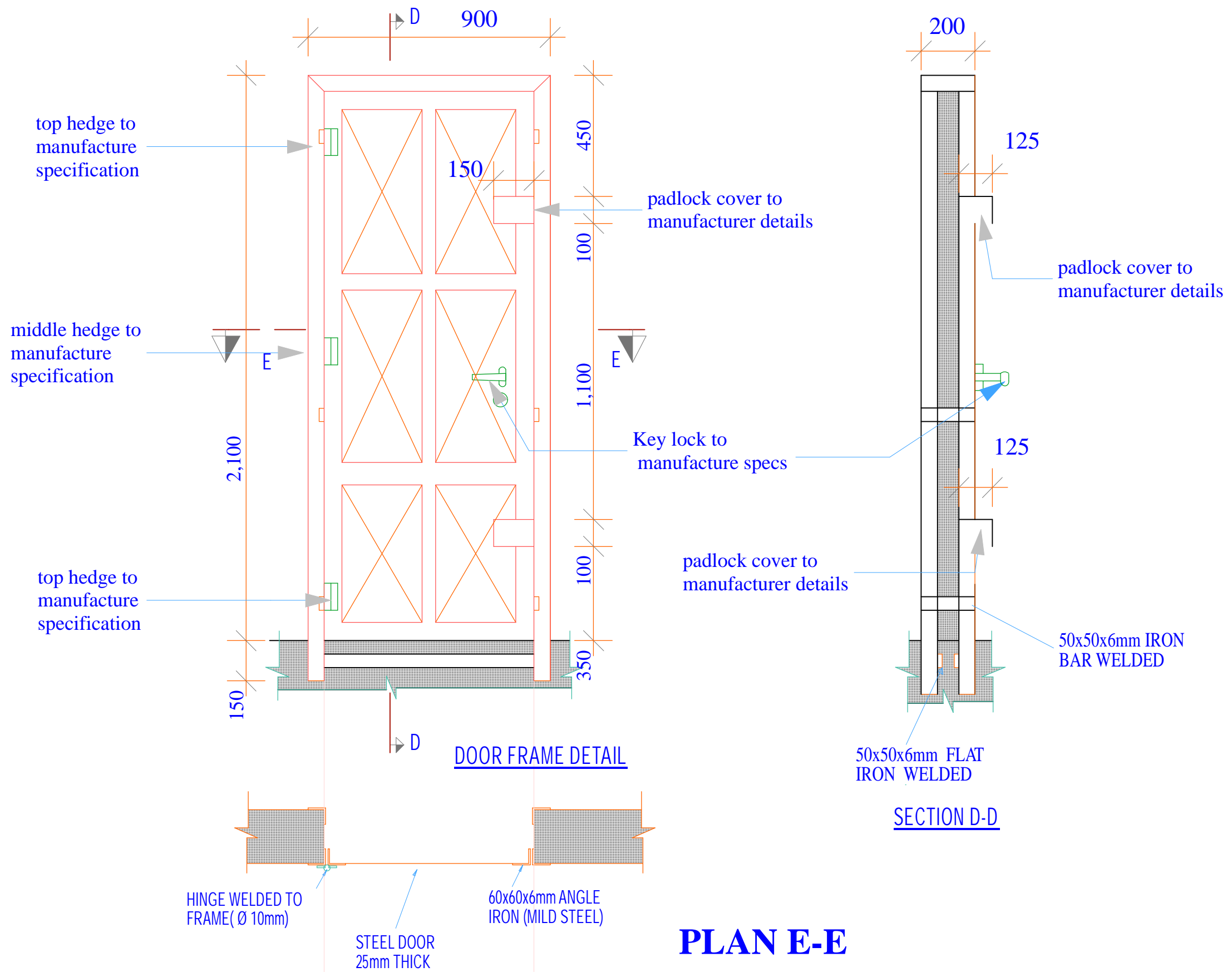
**Designed By**  
Eden Mati

**Checked By**  
John Orwa

**Approved by**  
CEO - Water Services Trust Fund  
Signature.....

**Scale 1 : 10 1 : 20**  
**Date:**  
FEBRUARY 2009  
**page** 08





**PLAN E-E**

Project Title:  
 WATER KIOSK  
 (Type Closed)  
 PREFABRICATED

Client:  
 WATER SERVICES  
 TRUST FUND (WSTF)

drq title:  
 STEEL DOOR DETAIL

drq no.:  
 ARC 9

Consultant:  
 Edward Kung'u

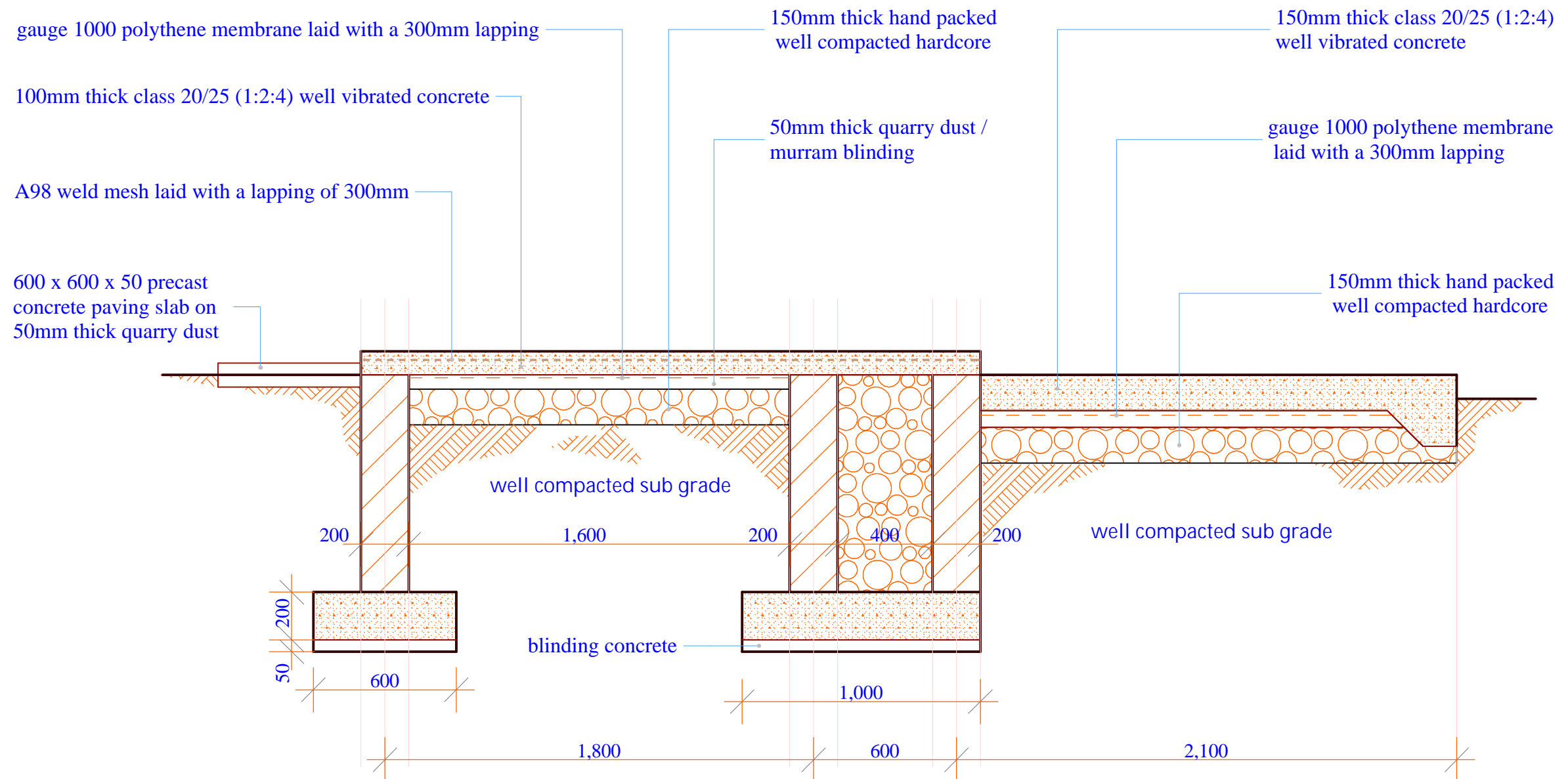
Designed By  
 Eden Mati

Checked By  
 John Orwa

Approved by  
 CEO - Water Services Trust Fund  
 Signature.....

Scale 1 : 15  
 Date: FEBRUARY 2009  
 page 09

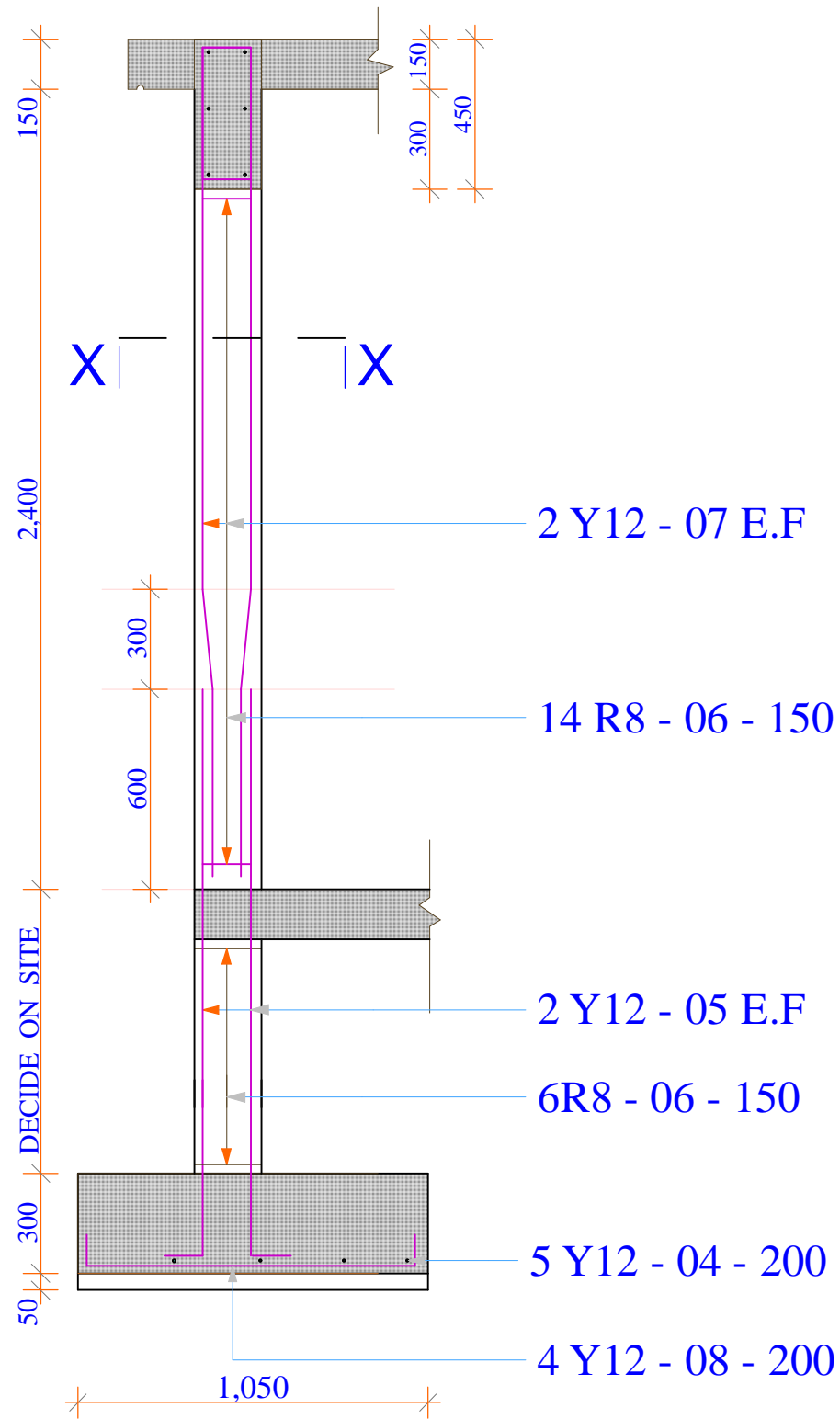




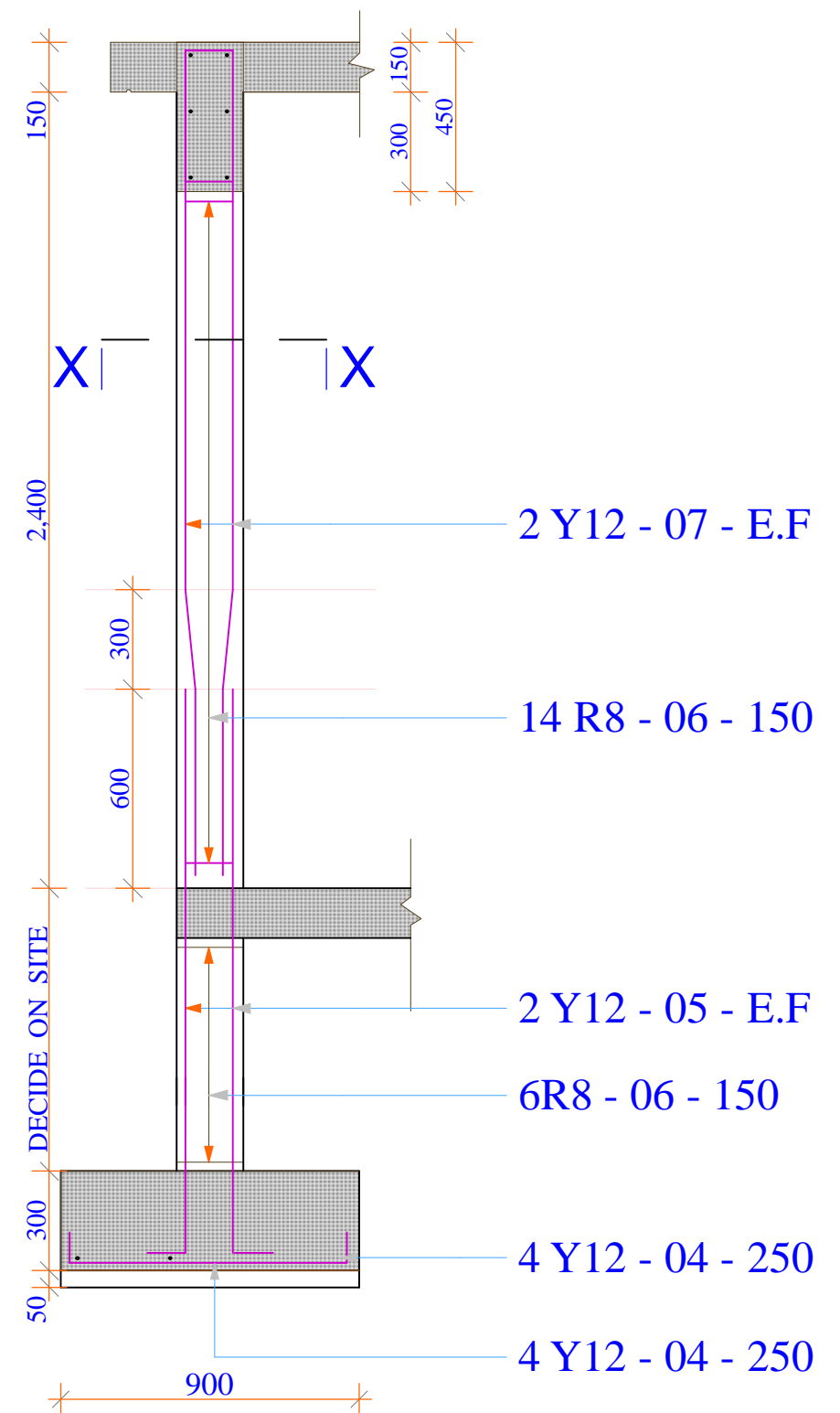
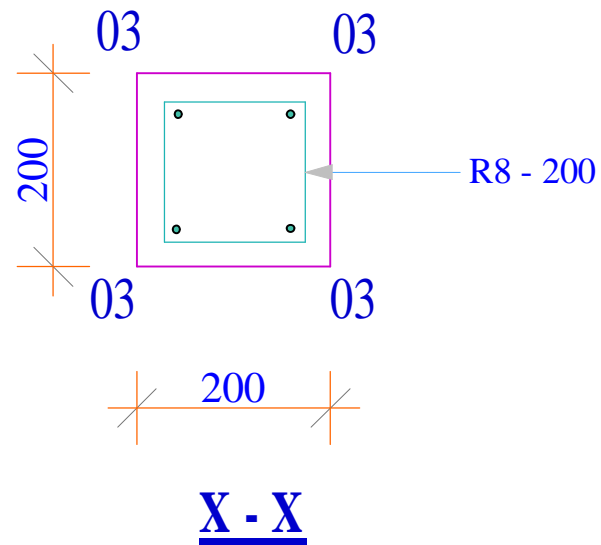
## FOUNDATION SECTION

<u>Project Title:</u> <b>WATER KIOSK          (Type Closed)          PREFABRICATED</b>	<u>Client:</u> <b>WATER SERVICES          TRUST FUND (WSTF)</b>	<u>drq title:</u> <b>FOUNDATION SECTION</b>	<u>drq no.:</u> <b>STR 02</b>	<u>Consultant:</u> <b>Edward Kung'u</b>	<u>Designed By</u> <b>Eden Mati</b>	<u>Checked By</u> <b>John Orwa</b>	<u>Approved by</u> <b>CEO - Water Services Trust Fund</b>  Signature.....	<u>Scale</u> <b>1 : 20</b> <u>Date:</u> <b>FEBRUARY 2009</b> <u>page</u> <b>02</b>
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**DETAIL FOR COLUMN & COL. BASE**  
**SHOWN THUS D 2no.**



**DETAIL FOR COLUMN & COL. BASE**  
**SHOWN THUS C 2no.**

Project Title:  
 WATER KIOSK  
 (Type Closed)  
 PREFABRICATED

Client:  
 WATER SERVICES  
 TRUST FUND (WSTF)

drq title:  
 COLUMNS REINFORCEMENT  
 DETAIL

drq no:  
 STR 03

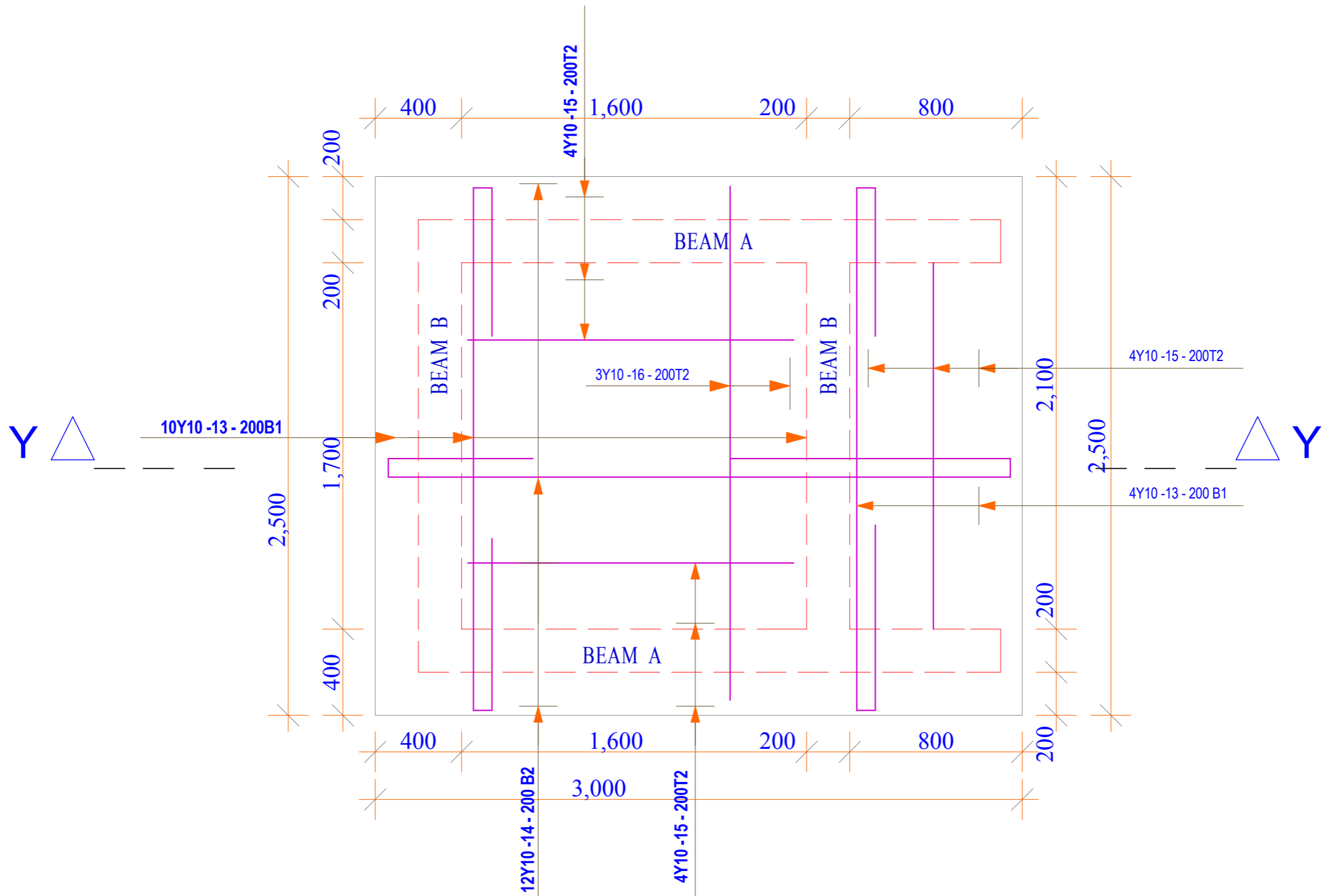
Consultant:  
 Edward Kung'u

Designed By  
 Eden Mati

Checked By  
 John Orwa

Approved by  
 CEO - Water Services Trust Fund  
 Signature.....

Scale 1 : 20  
 Date:  
 FEBRUARY 2009  
 page 03



## R. C. SLAB DETAILS

**Project Title:**

**WATER KIOSK  
(Type Closed)  
PREFABRICATED**

**Client:**

**WATER SERVICES  
TRUST FUND (WSTF)**

**drq title:**

**SLAB REINFORCEMENT  
DETAIL**

**drq no:**

**STR 04**

**Consultant:**

**Edward Kung'u**

**Designed By**

**Eden Mati**

**Checked By**

**John Orwa**

**Approved by**

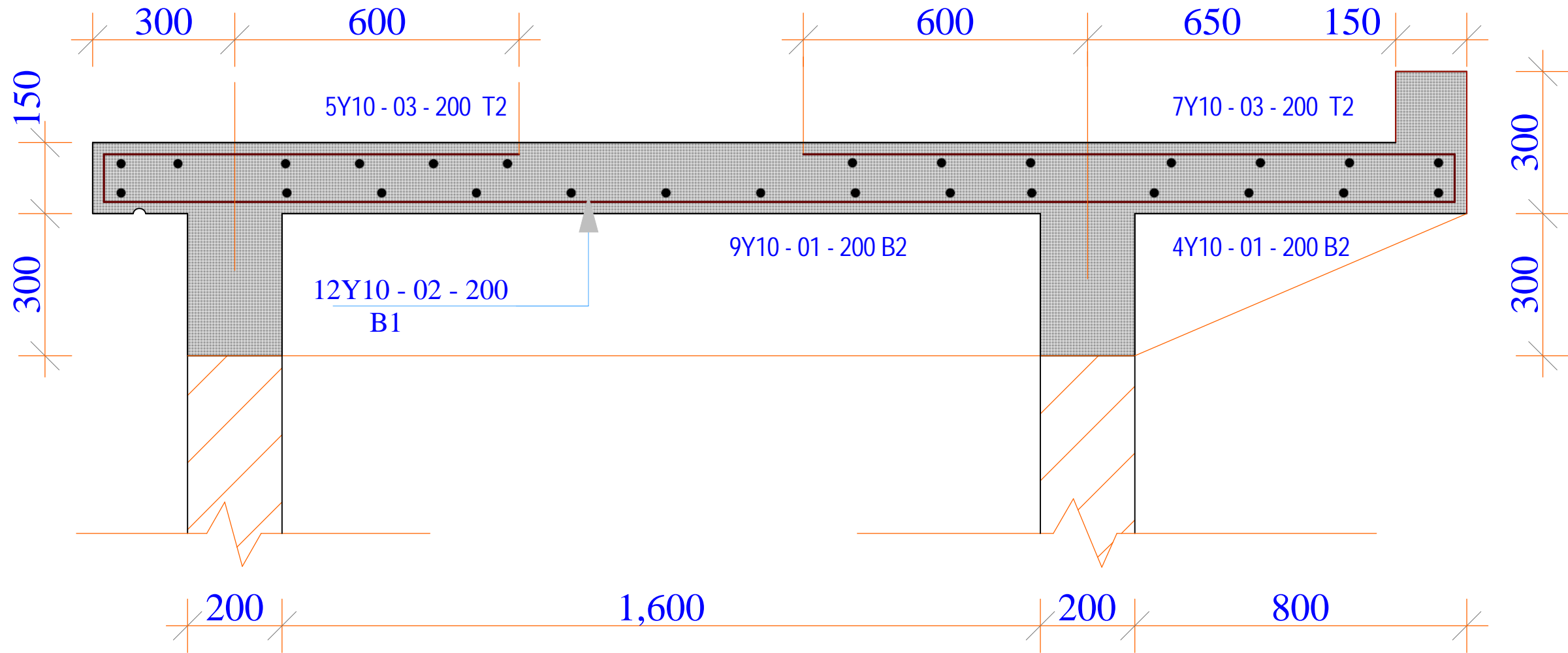
**CEO - Water Services Trust Fund**

Signature.....

**Scale** 1 : 20

**Date:**  
FEBRUARY 2009

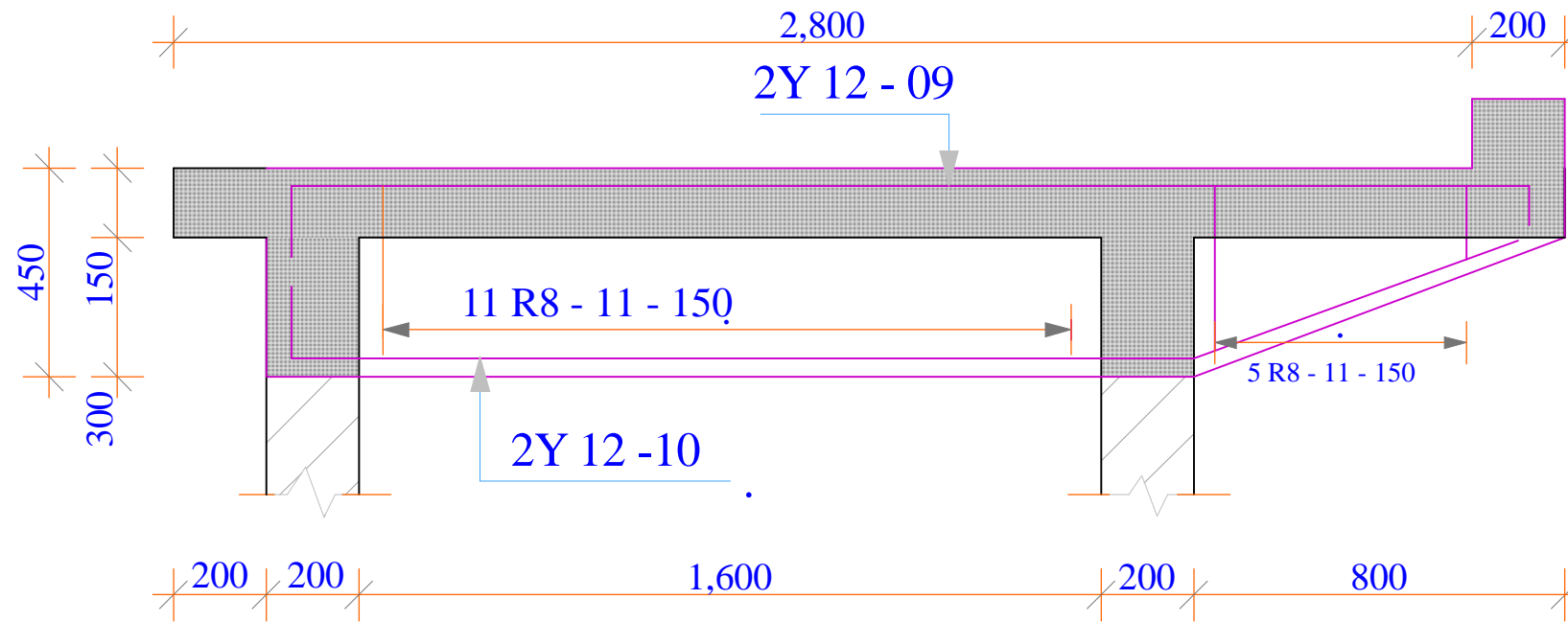
**page** 04



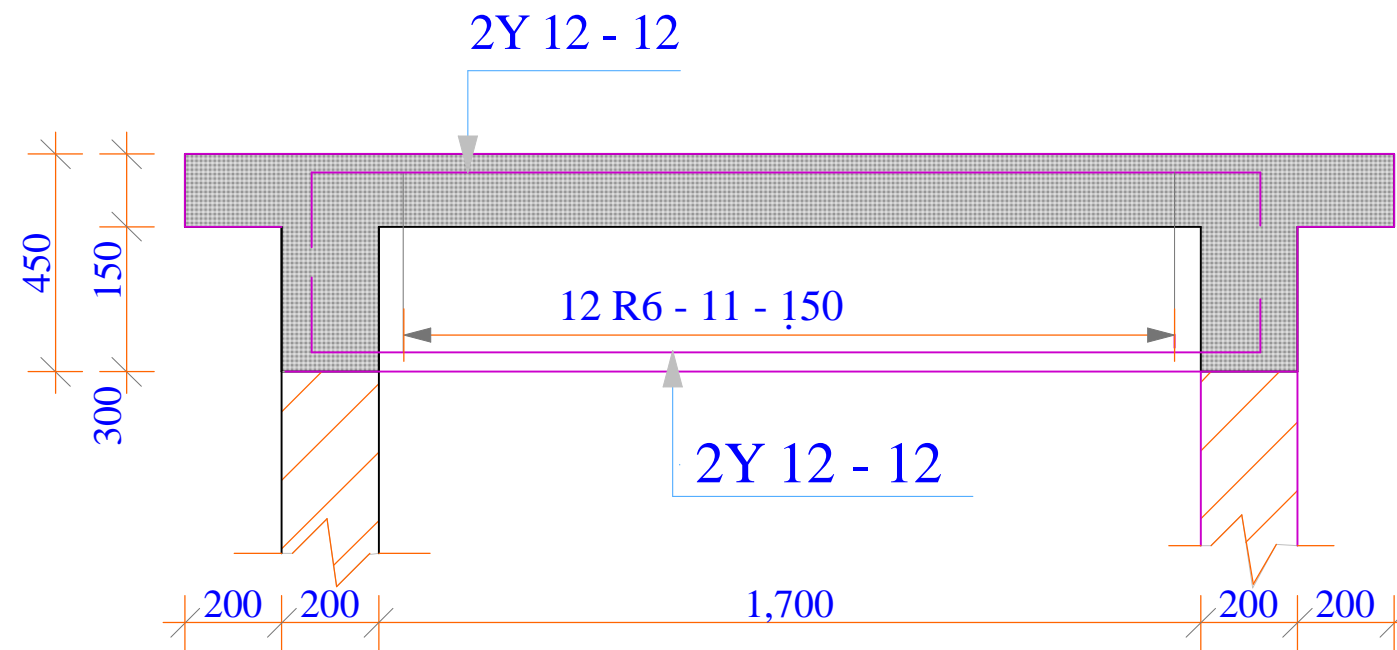
**R. C. SLAB SECTION Y-Y**

<p><u>Project Title:</u> WATER KIOSK (Type Closed) PREFABRICATED</p>	<p><u>Client:</u> WATER SERVICES TRUST FUND (WSTF)</p>	<p><u>drq title:</u> RC SLAB SECTION</p>	<p><u>drq no.:</u> STR 05</p>	<p><u>Consultant:</u> Edward Kung'u</p>	<p><u>Designed By</u> Eden Mati</p>	<p><u>Checked By</u> John Orwa</p>	<p><u>Approved by</u> CEO - Water Services Trust Fund Signature.....</p>	<p>Scale 1 : 20 Date: FEBRUARY 2009 page 05</p>
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**BEAM A 2No.**



**BEAM B 2No.**

**Project Title:**  
WATER KIOSK  
(Type Closed)  
PREFABRICATED

**Client:**  
WATER SERVICES  
TRUST FUND (WSTF)

**drq title:**  
BEAMS REINFORCEMENT  
DETAILS

**drq no:**  
STR 06

**Consultant:**  
Edward Kung'u

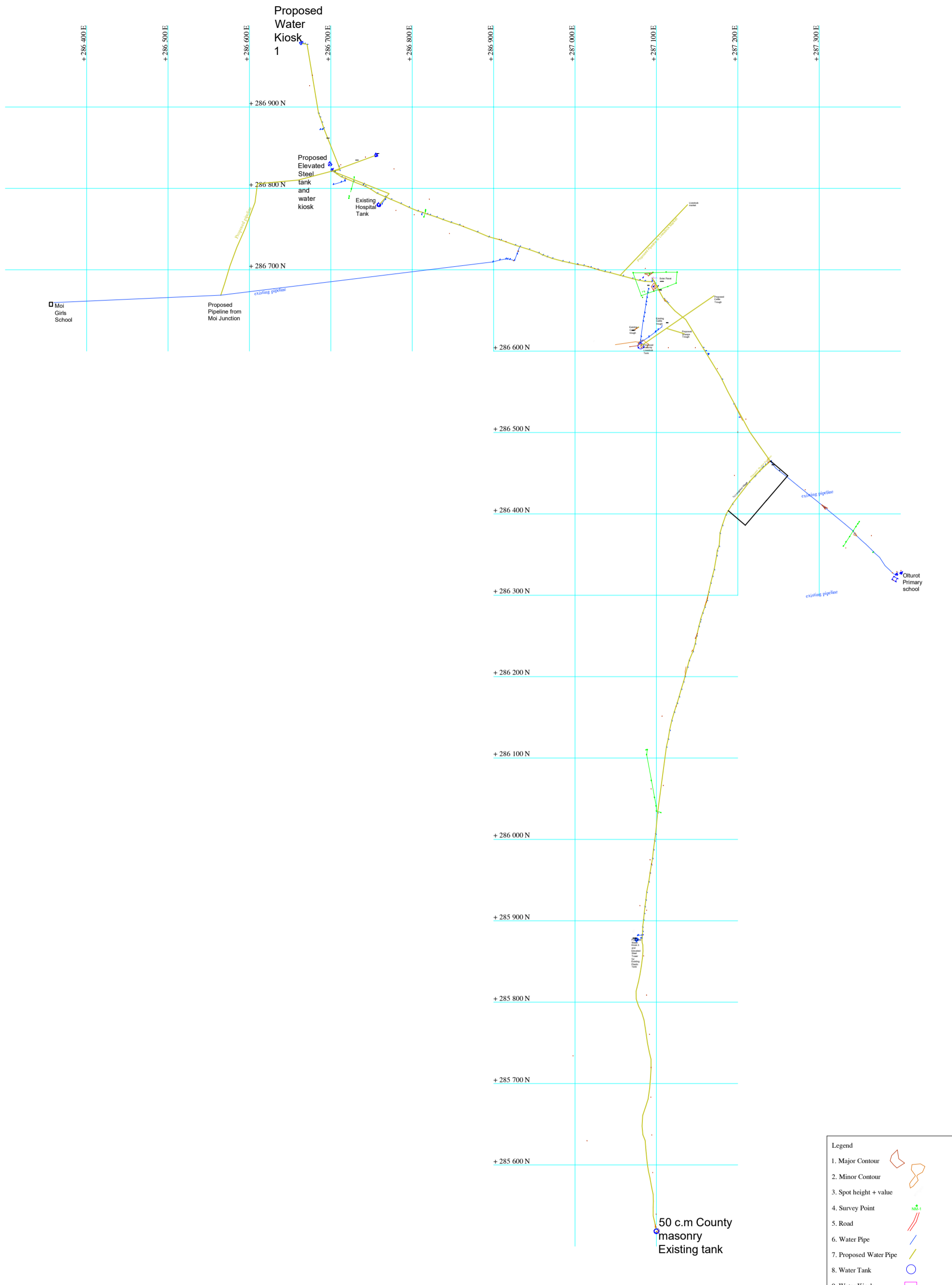
**Designed By**  
Eden Mati

**Checked By**  
John Orwa

**Approved by**  
CEO - Water Services Trust Fund  
Signature.....

**Scale** 1 : 15  
**Date:**  
FEBRUARY 2009  
**page** 06

TOPOGRAPHICAL SURVEY LAYOUT OF OLTOROT PIPELINE



Legend

1. Major Contour	
2. Minor Contour	
3. Spot height + value	
4. Survey Point	
5. Road	
6. Water Pipe	
7. Proposed Water Pipe	
8. Water Tank	
9. Water Kiosk	

NOTES  
 1. All measurements are in metres  
 2. Contour interval is 0.2m

Consultant:  
 GEO Consultants  
 0727 456089  
 P.O BOX 103677-00101  
 consultantsgeo47@gmail.com

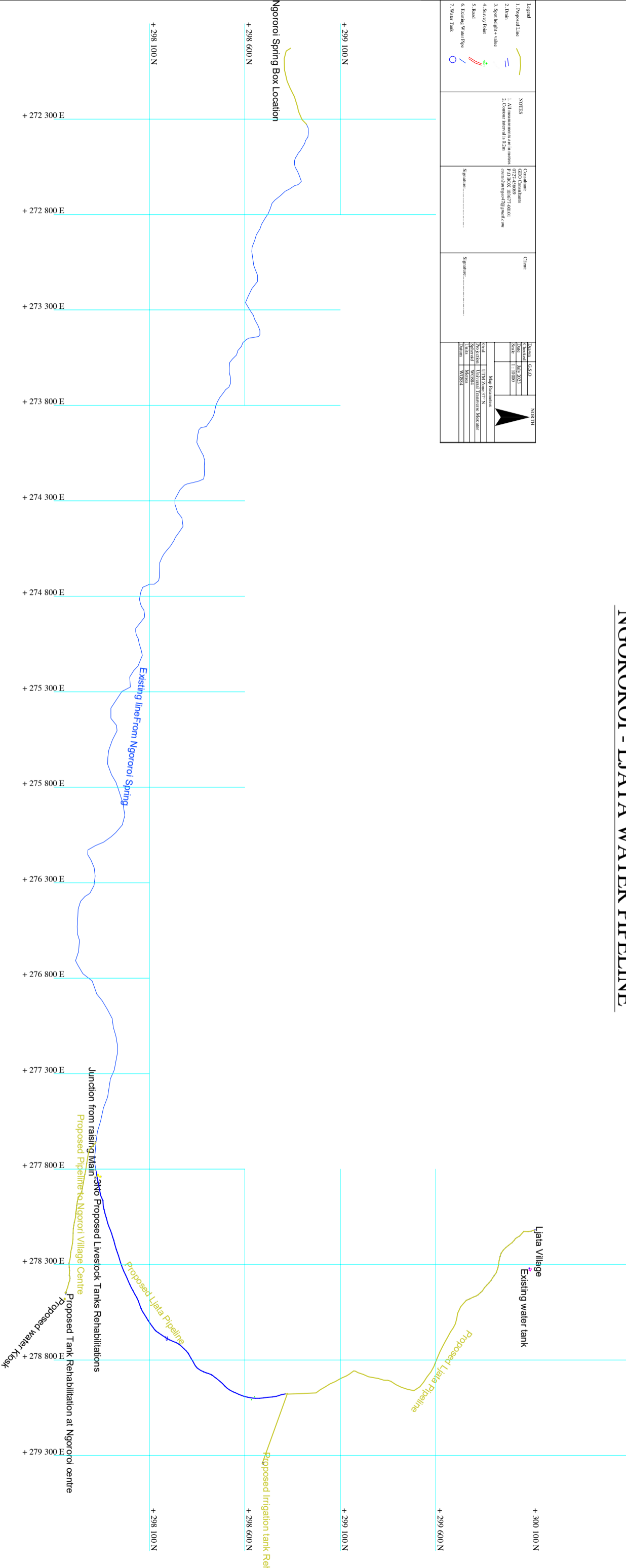
Signature:.....

Client:

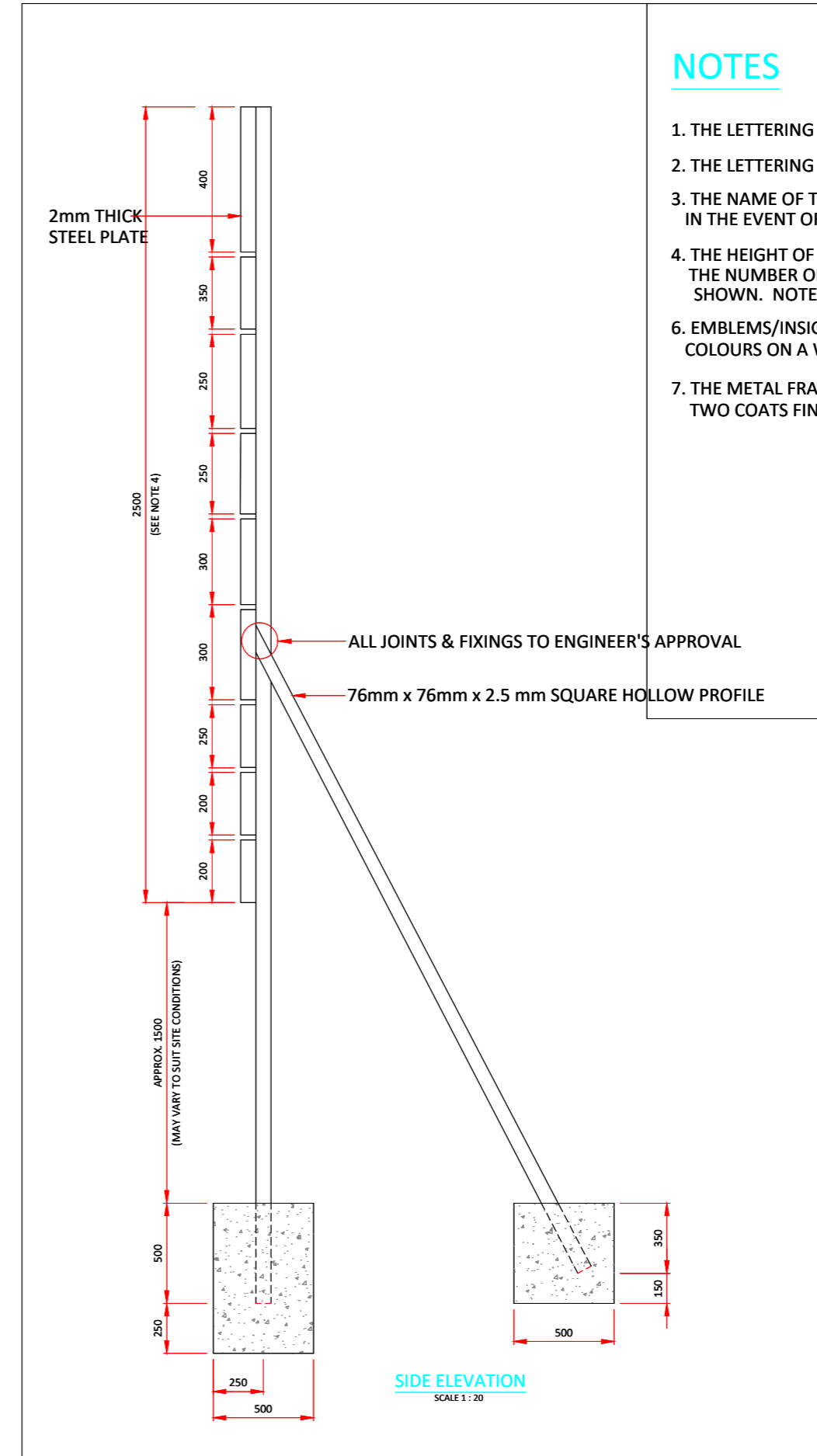
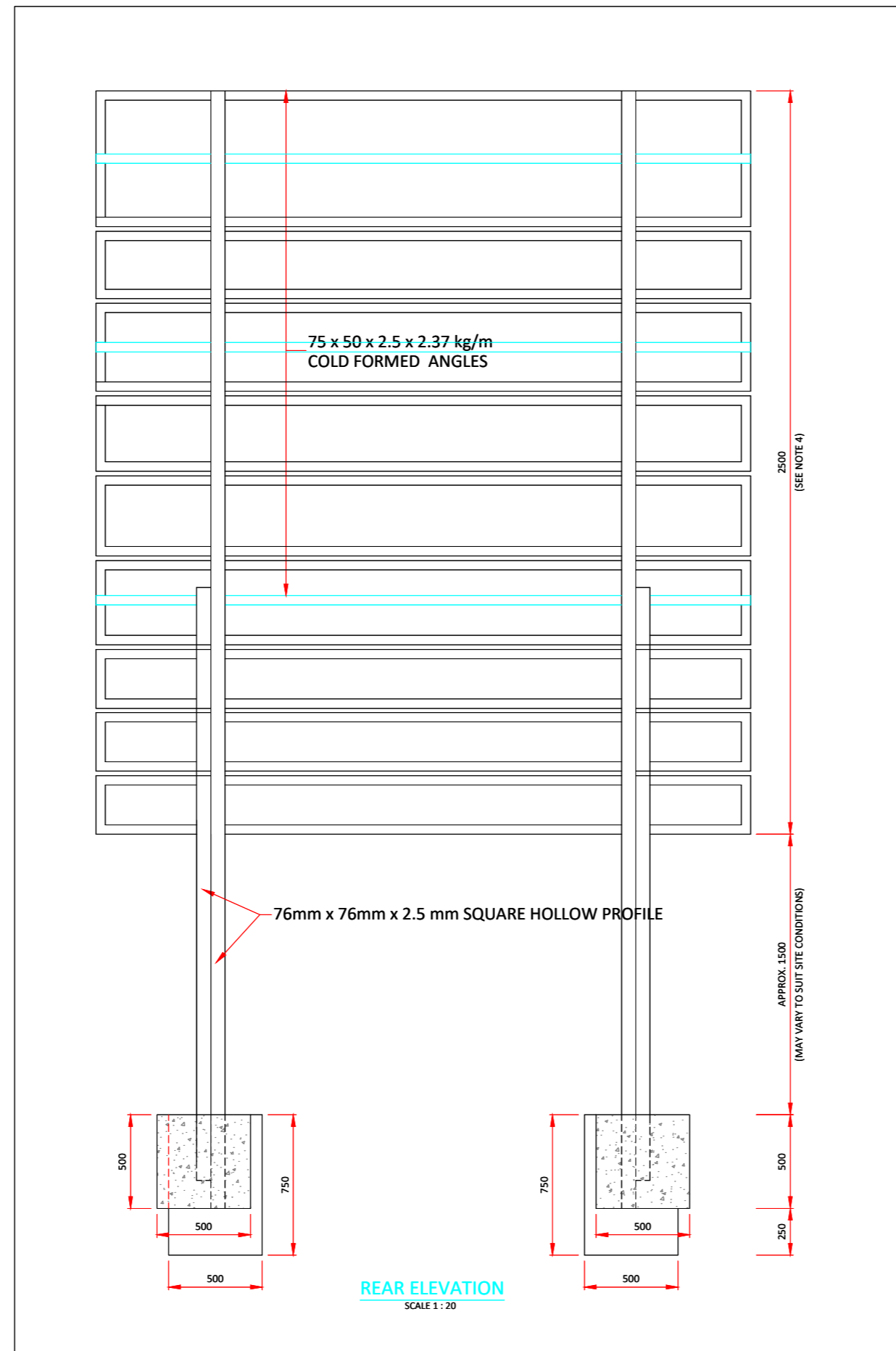
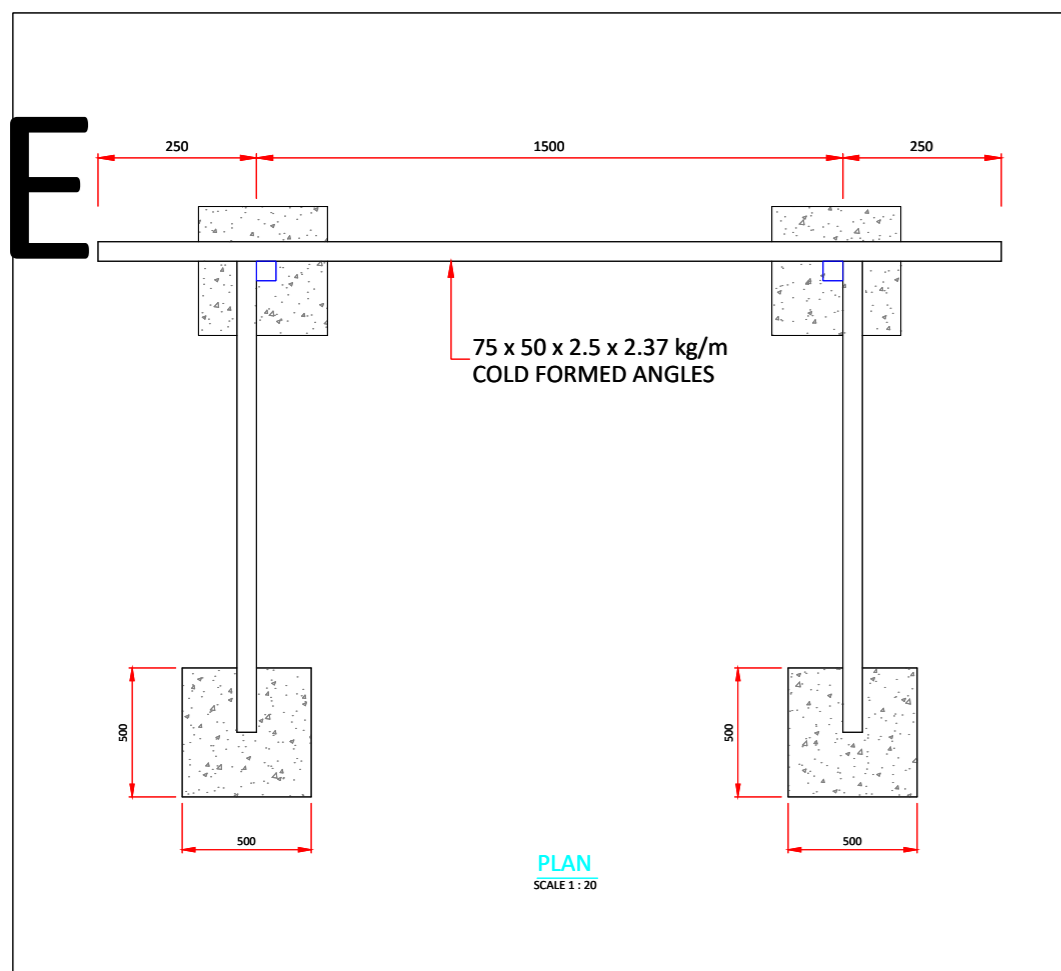
Signature:.....

Drawn	G.S.O	NORTH 
Checked		
Date	July 2023	
Scale	1 : 10000	
Map Parameters		
Grid	UTM Zone 36° N	
Projection	Universal Transverse Mercator	
Spheroid	WGS84	
Units	Metres	
Datum	WGS84	

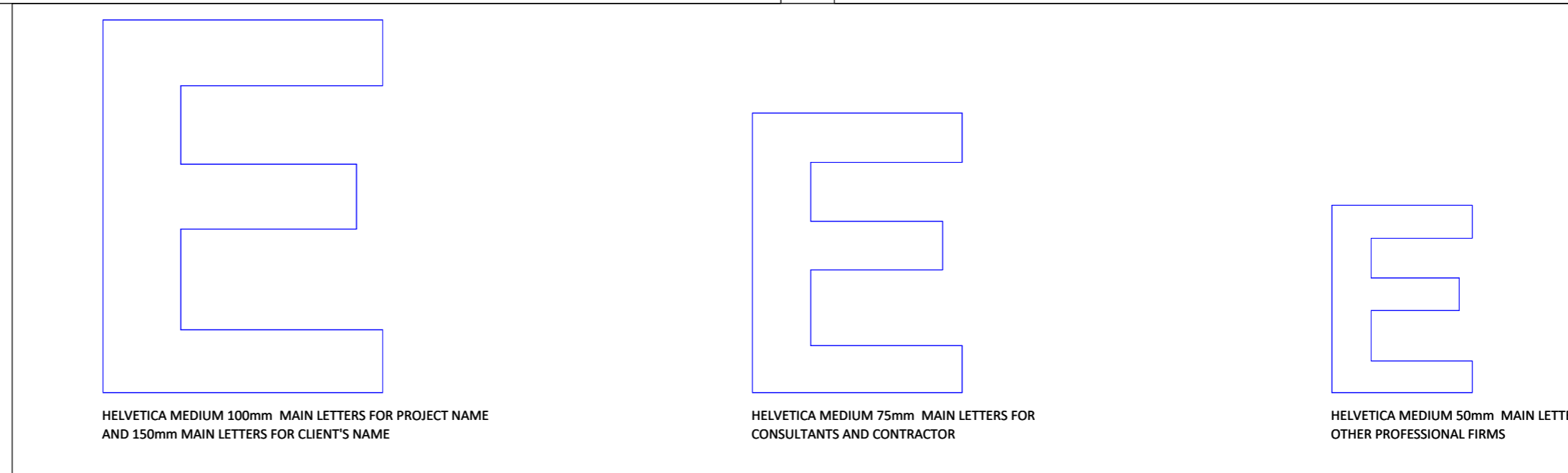
# NGOROROI - LJATA WATER PIPELINE







- ### NOTES
1. THE LETTERING TYPE TO BE USED IS HELVETICA MEDIUM.
  2. THE LETTERING SIZE AND DIMENSIONS ARE AS SHOWN.
  3. THE NAME OF THE PROJECT AND CLIENT MAY BE RE-SIZED PROPORTIONATE IN THE EVENT OF IT BEING TOO LONG.
  4. THE HEIGHT OF THE SIGN BOARD MAY VARY DEPENDING ON THE NUMBER OF PROFESSIONAL SERVICES THAT ARE TO BE SHOWN. NOTE THAT ALL THE PROFESSIONAL SERVICES ARE TO BE SHOWN.
  5. EMBLEMS/INSIGNIA/COMPANY LOGOS ARE TO BE IN THEIR CORRECT RESPECTIVE COLOURS ON A WHITE BACKGROUND AND ARE TO BE PLACED AS SHOWN.
  6. THE METAL FRAME AND SUPPORTS TO BE PAINTED WITH ONE COAT PRIMER AND TWO COATS FINISH. PAINT TO THE ENGINEER'S APPROVAL.



DRAWING TO SCALE IN A1 SIZE

<p>MARSABIT COUNTY</p>	No.	APPROVAL	DATE	REFERENCE	CLIENT: <b>CONCERN WORLDWIDE</b>	CONSULTANT: <b>GEO CONSULTANTS</b>	PROJECT TITLE: <b>PROJECT</b>	TITLE OF DRAWING: <b>SIGN BOARD DETAILS</b>	Designed: <b>P. WAGURAH</b>	Date: <b>Aug 2023</b>
					<b>CONCERN worldwide</b> in conjunction with <b>WaterFund</b>			Drawn: <b>MMN</b>	Date: <b>Aug 2023</b>	
								Checked: <b>. P. W</b>	Date: <b>Aug 2023</b>	
								Approved: <b>ENG ANDREW MESSO (A3007)</b>	Date: <b>Aug 2023</b>	
								DWG. No. <b>KAM/DD/203</b>	Sheet No. <b>1/1</b>	