



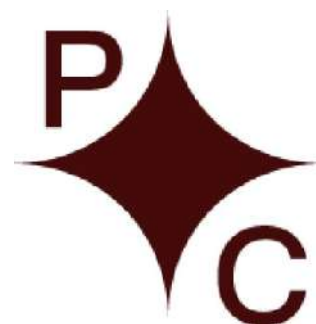
**WATER SECTOR TRUST FUND**

**CONSULTANCY SERVICES TO CONDUCT SURVEY  
AND DEVELOPMENT OF DESIGNS FOR TAKABA  
WATER SUPPLY PROJECT IN MANDERA COUNTY**

**REFERENCE NO. WSTF/EU/RFP/10/2022-2023**

**BOOK OF DRAWINGS**

**OCTOBER 2023**




DRAWING No.	TITLE.
PC-TKB-000	List of Drawings.
PC-TKB-001	General Layout Plan.
	<b>WATER PANS.</b>
PC-TKB-002	Garalle Water Pan – Plan and Section.
PC-TKB-003	Tubadi Water Pan – Plan and Section.
PC-TKB-004	Sigenge Water Pan – Plan and Section.
	<b>TREATMENT WORKS.</b>
PC-TKB-005	Treatment Works – Site Layout Plan.
PC-TKB-033	Treatment Plant Cross-section
PC-TKB-006	24m <sup>3</sup> Elevated Backwash Tank
PC-TKB-007	Inlet Chamber/Sump.
PC-TKB-008	Plan and Section Details of Chemical Mixing Platform
PC-TKB-009	Section Details of Chemical Mixing Platform
PC-TKB-010	Bar Bending Schedule for Chemical Mixing Platform.
PC-TKB-011	25m <sup>3</sup> /hr Capacity Composite Filtration Unit
PC-TKB-012	25m <sup>3</sup> /hr Capacity Composite Filtration Unit
PC-TKB-013	25m <sup>3</sup> /hr Capacity Composite Filtration Unit
PC-TKB-014	25m <sup>3</sup> /hr Capacity Composite Filtration Unit
PC-TKB-015	225m <sup>3</sup> Masonry Tank Details
PC-TKB-016	225m <sup>3</sup> Masonry Tank Half Floor and Section Through Wall
PC-TKB-017	225m <sup>3</sup> Masonry Tank Overflow and Description
PC-TKB-018	225m <sup>3</sup> Masonry Tank Section and Tank Details
PC-TKB-019	225m <sup>3</sup> Masonry Tank Roof Slab and Columns Reinforcement
PC-TKB-020	225m <sup>3</sup> Masonry Tank Bar Schedule
PC-TKB-030	Pump House Ground Plan
PC-TKB-031	Pump House Elevations
PC-TKB-032	Pump House Section Details
	<b>STANDARD DRAWINGS.</b>
PC-TKB-021	Thrust Block Details.
PC-TKB-022	Thrust Block Details.
PC-TKB-023	River and Road Crossing Details.
PC-TKB-024	Indicator and Marker Posts Details.
PC-TKB-025	Washout Details.
PC-TKB-026	Gate and Fencing Details.
PC-TKB-027	Sign Board Details.
PC-TKB-028	Valve Chamber Details.
PC-TKB-029	Tank Level Indicator and Hand Rail Details.
	<b>RISE MAIN FROM DARWED BOREHOLE TO TAKABA HILL TANK.</b>
PC-TKB-034	Darwed BH2 to Takaba Hills Tank – Plan and Profile (Sheet 1 of 7).
PC-TKB-035	Darwed BH2 to Takaba Hills Tank – Plan and Profile (Sheet 2 of 7).
PC-TKB-036	Darwed BH2 to Takaba Hills Tank – Plan and Profile (Sheet 3 of 7).
PC-TKB-037	Darwed BH2 to Takaba Hills Tank – Plan and Profile (Sheet 4 of 7).
PC-TKB-038	Darwed BH2 to Takaba Hills Tank – Plan and Profile (Sheet 5 of 7).
PC-TKB-039	Darwed BH2 to Takaba Hills Tank – Plan and Profile (Sheet 6 of 7).
PC-TKB-040	Darwed BH2 to Takaba Hills Tank – Plan and Profile (Sheet 7 of 7).

**NOTES**

1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE STATED.

REV	REVISIONS	SIGN	DATE	APPROVED
REV-4	BY			
	CHECKED			
REV-3	BY			
	CHECKED			
REV-2	BY			
	CHECKED			
REV-1	BY			
	CHECKED			

Client




**WaterFund**  
Financing the Water Sector

**WATER SECTOR TRUST FUND**

Project

CONSULTANCY SERVICES TO CONDUCT SURVEY AND DEVELOPMENT OF DESIGNS FOR TAKABA WATER SUPPLY PROJECT IN MANDERA COUNTY, REFERENCE NO. WSTF/EU/RFP/10/2022-2023

PROFESSIONAL CONSULTANTS



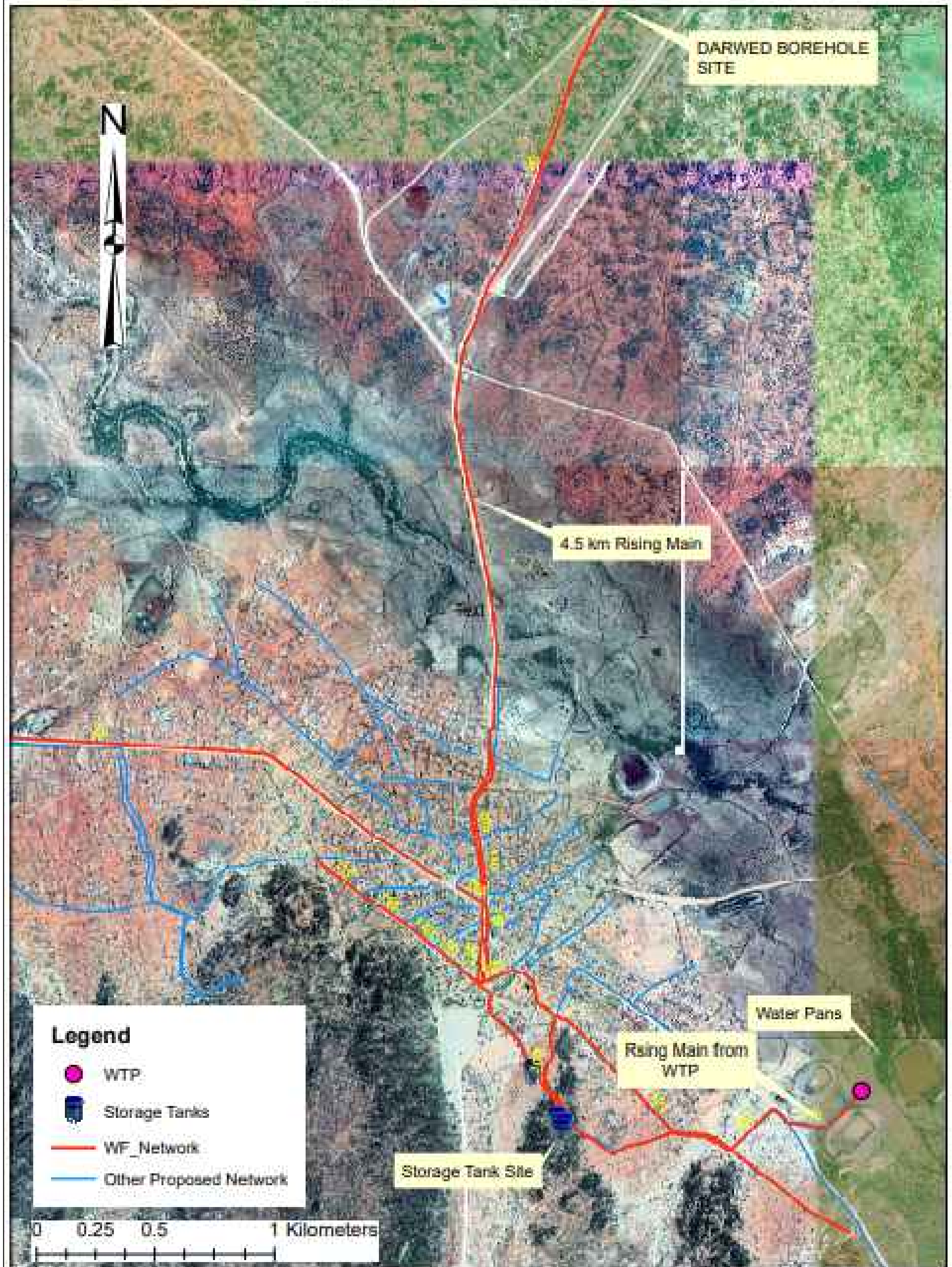
Professional House  
Kufuga Raod, Off Lang'ata Rd  
P.O Box 24996-00502 Nrb  
+254 202016322



Drawing Title

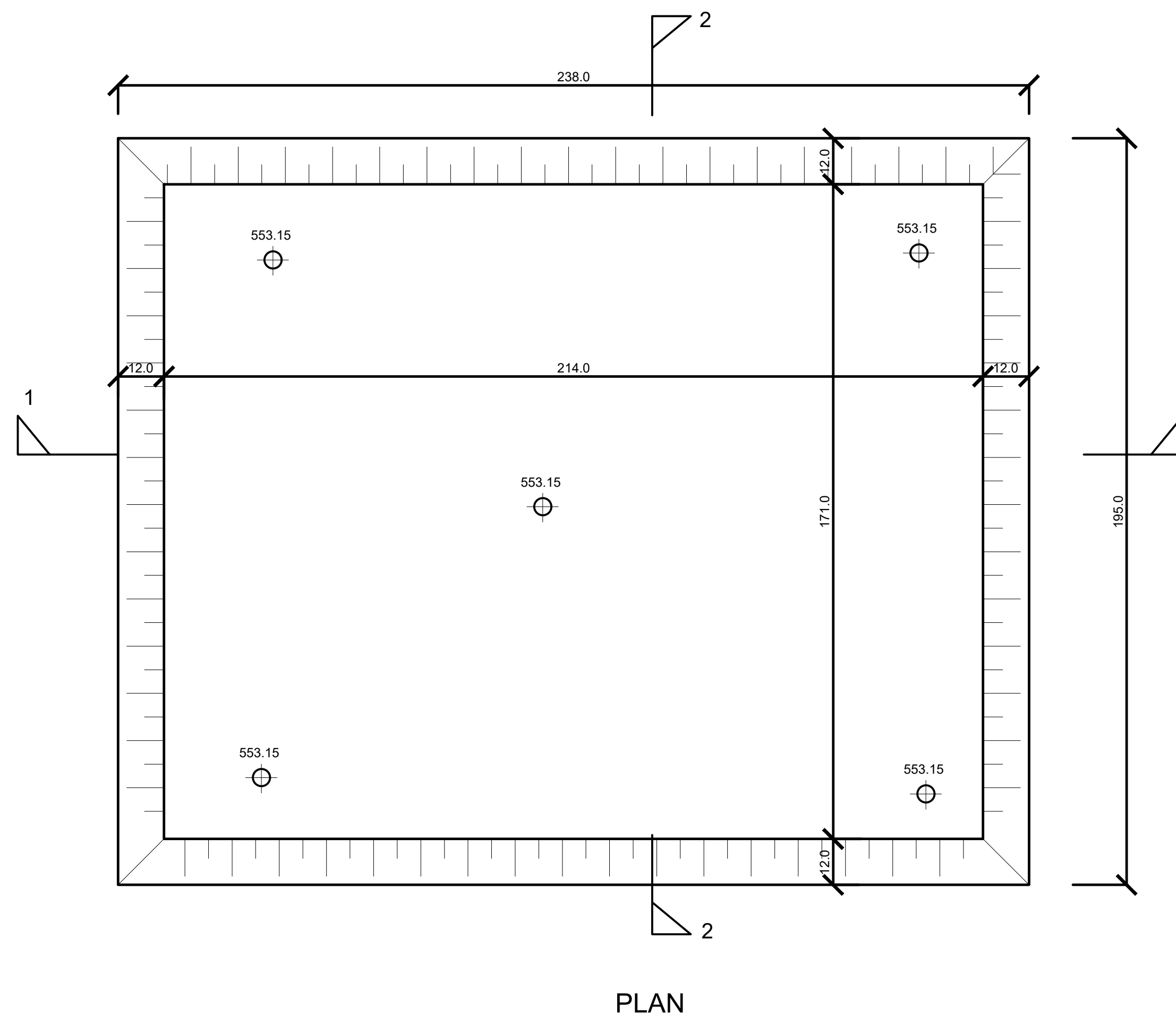
**LIST OF DRAWINGS**

Designed by	ENG.GM	Drawn by	R.F.J
Checked by	ENG.GOM	Approved by	ENG.GOM
Scale		Date	OCTOBER 2023
Job No.		ACAD File:	
STATUS	DRAWING No. PC - TKB - 000		REV

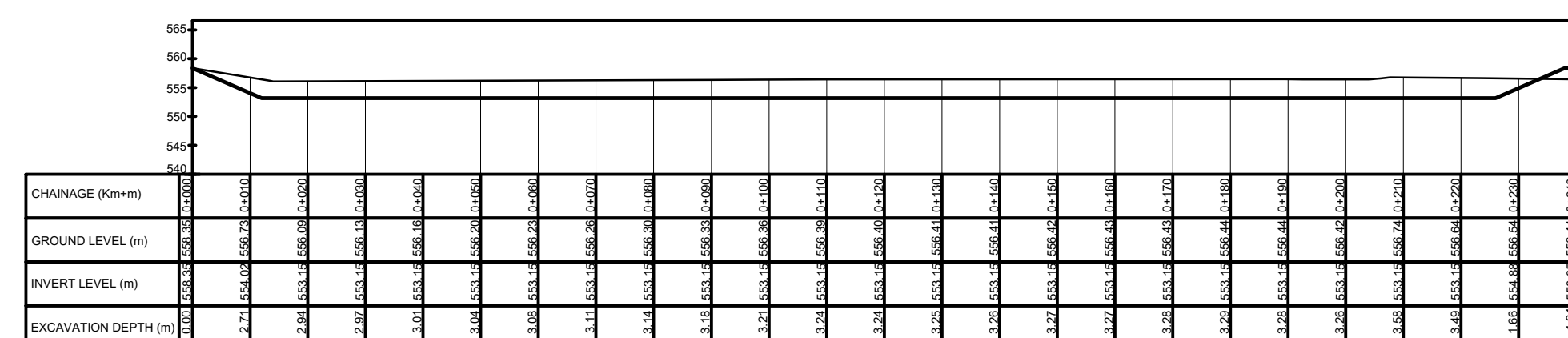
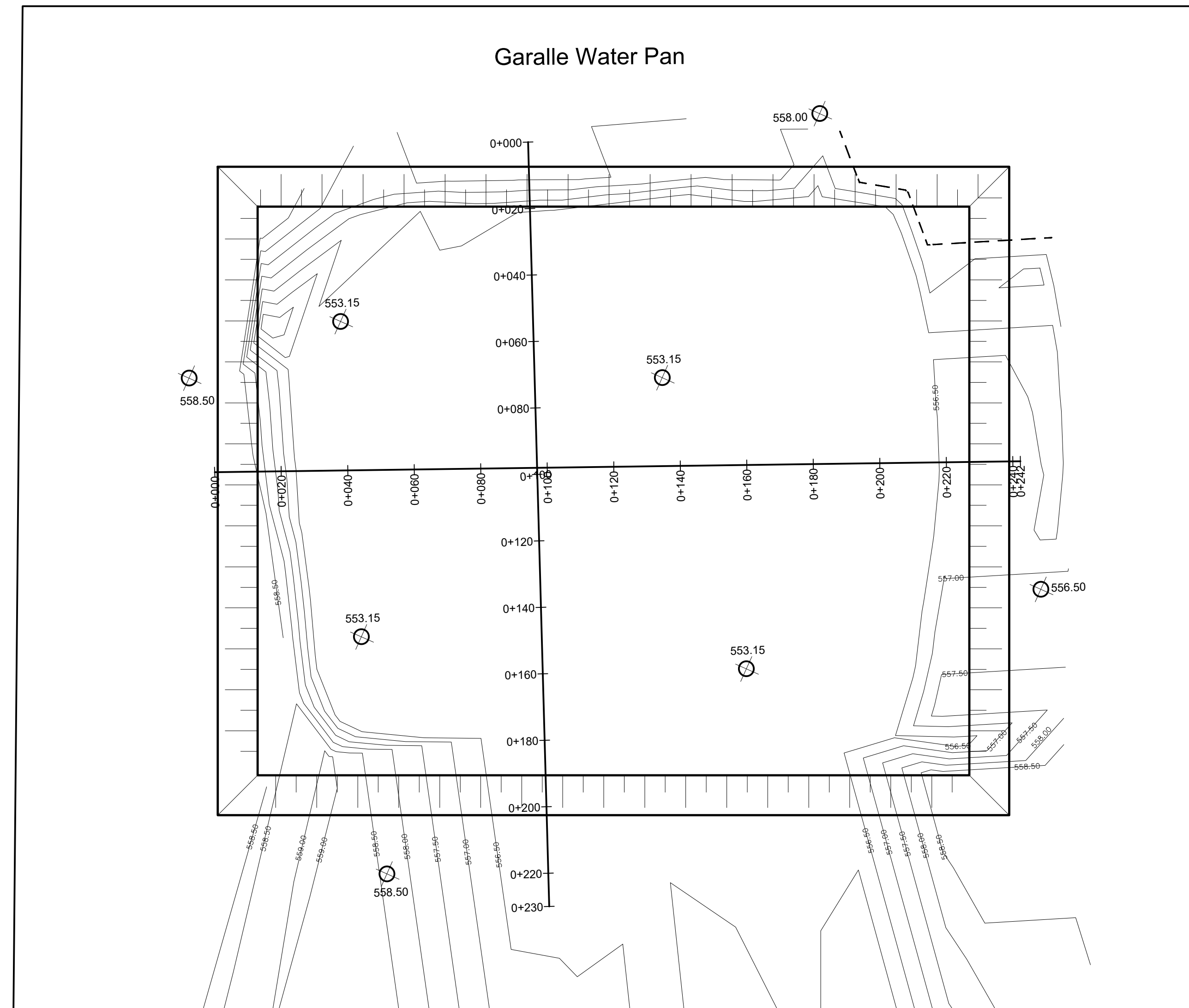
# Takaba Proposed Interventions



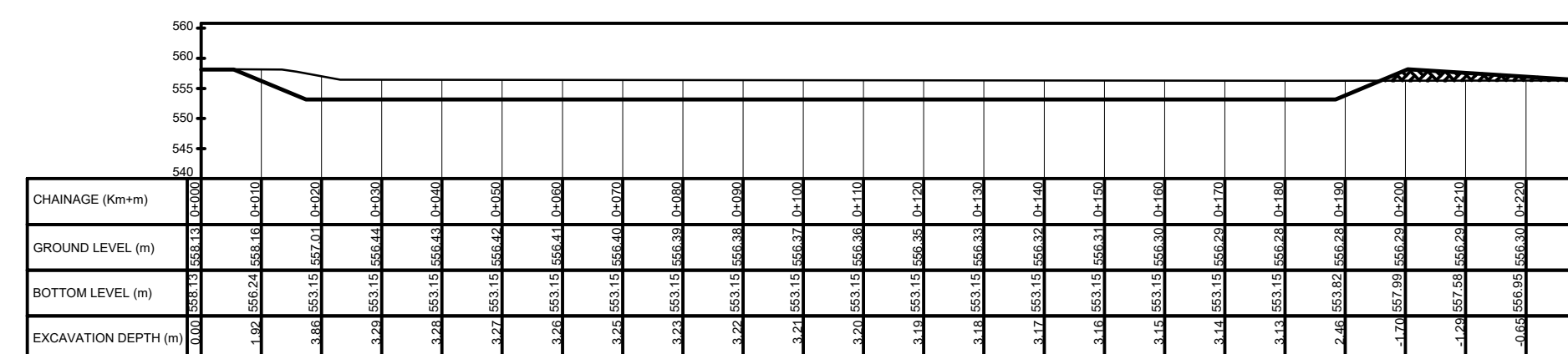
REVISIONS			Project: CONSULTANCY SERVICES TO CONDUCT SURVEY AND DEVELOPMENT OF DESIGNS FOR TAKABA WATER SUPPLY PROJECT IN MANDERA COUNTY, REFERENCE NO. WSTF/EU/RFP/10/2022-2023	CLIENT  WATER SECTOR TRUST FUND	DRAWING TITLE GENERAL LAYOUT PLAN	CIVIL/STRUCTURAL ENGINEER  PROFESSIONAL CONSULTANTS Professional House Kilgus Road Off Lang'ata Rd P.O. Box 24996-00502 Nrb +254 202016322	Drawn	E,J	Scale(s)	
Date	Suffix	Descriptions					Designed	GMC	Date	OCTOBER 2023
			Approved		Date		JOB No.		DRG No: PC - TKB - 001	



PLAN



SECTION 1 - 1



SECTION 2-2

**NOTES:**

- ALL DIMENSIONS ARE IN MILLIMETRES UNLESS STATED OTHERWISE.
- THIS DRAWING IS TO BE READ IN CONJUNCTION WITH OTHER LAYOUT DRAWINGS
- CONCRETE CLASS:  
BASES AND BEAMS = 25/20  
LEAN CONCRETE = 15/20

4. CONCRETE COVER = 40mm

**LEGEND:**

GL - GROUND LEVEL  
DN - NOMINAL DIAMETER

**REVISIONS**

Date	Suffix	Descriptions

Project:  
CONSULTANCY SERVICES TO CONDUCT SURVEY AND DEVELOPMENT OF DESIGNS FOR TAKABA WATER SUPPLY PROJECT IN MANDERA COUNTY,  
REFERENCE NO. WSTF/EU/RFP/10/2022-2023

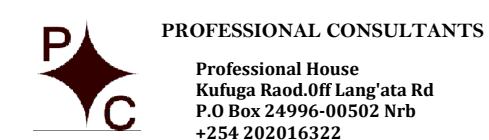
**CLIENT**



**DRAWING TITLE**

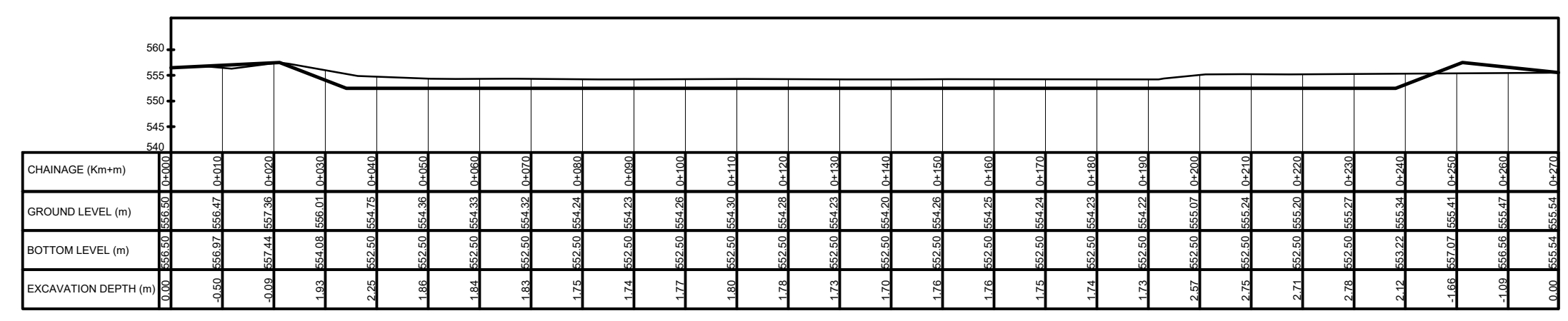
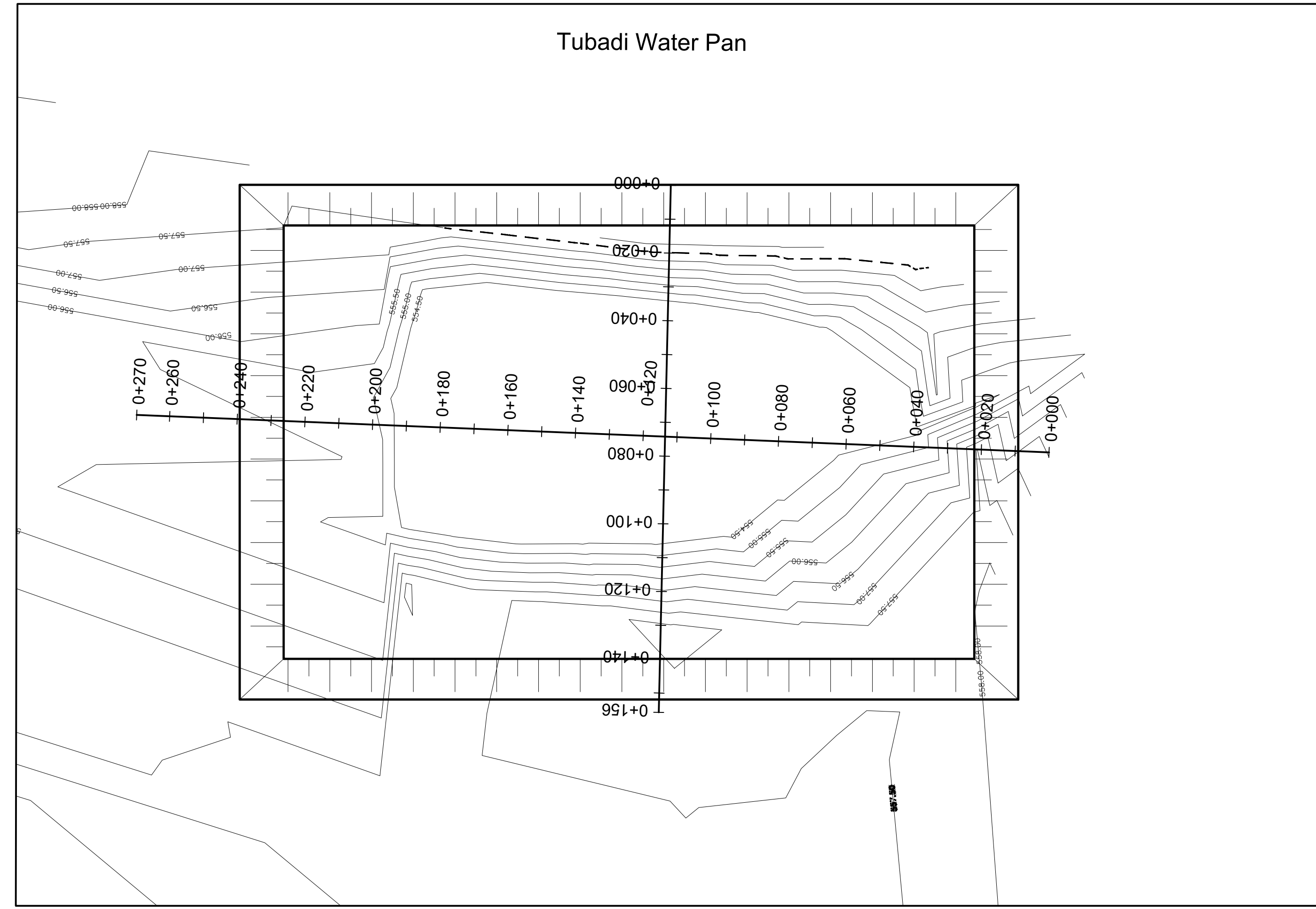
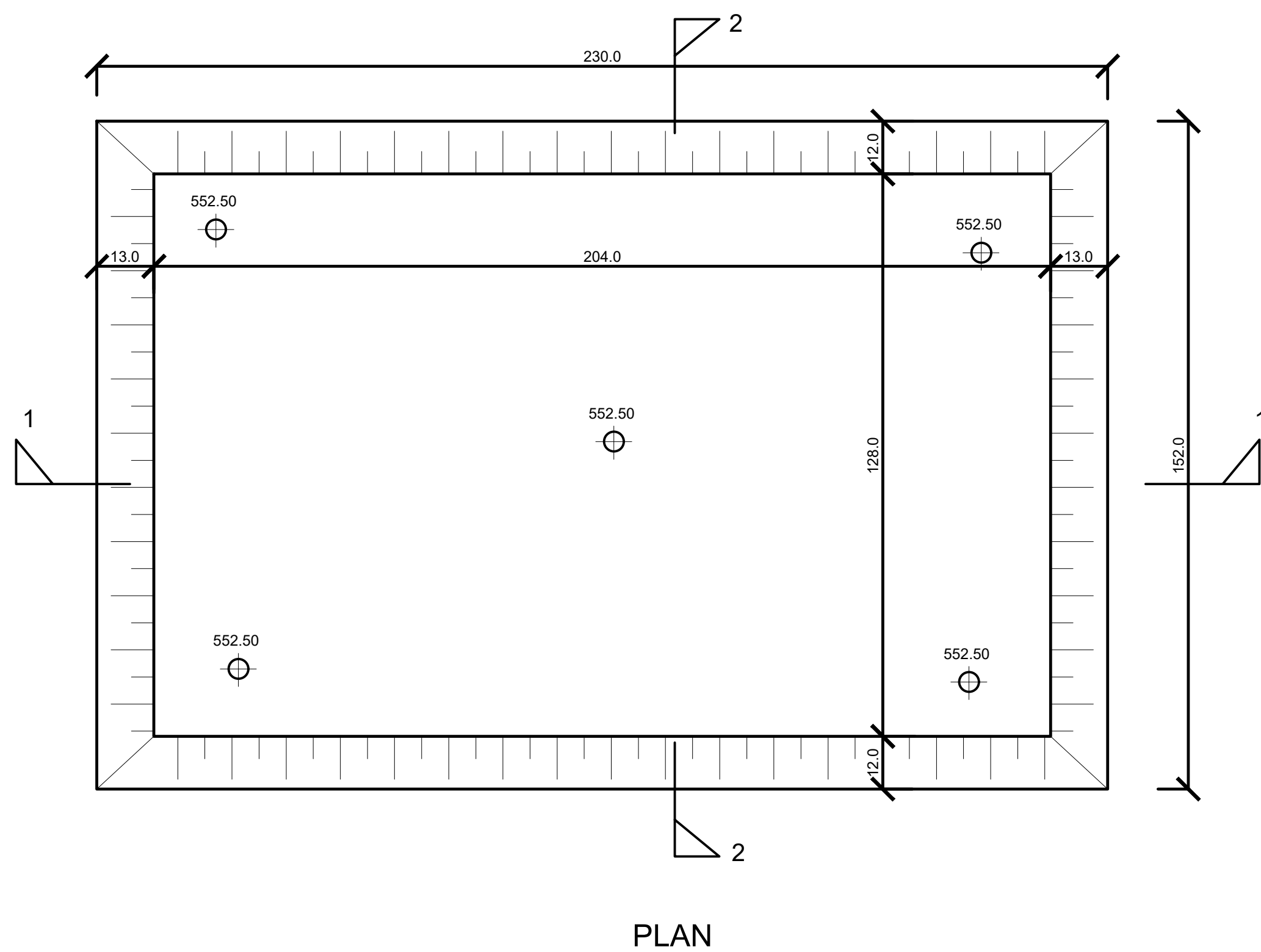
GARALLE WATER PAN  
PLAN AND SECTION

**CIVIL/STRUCTURAL ENGINEER**

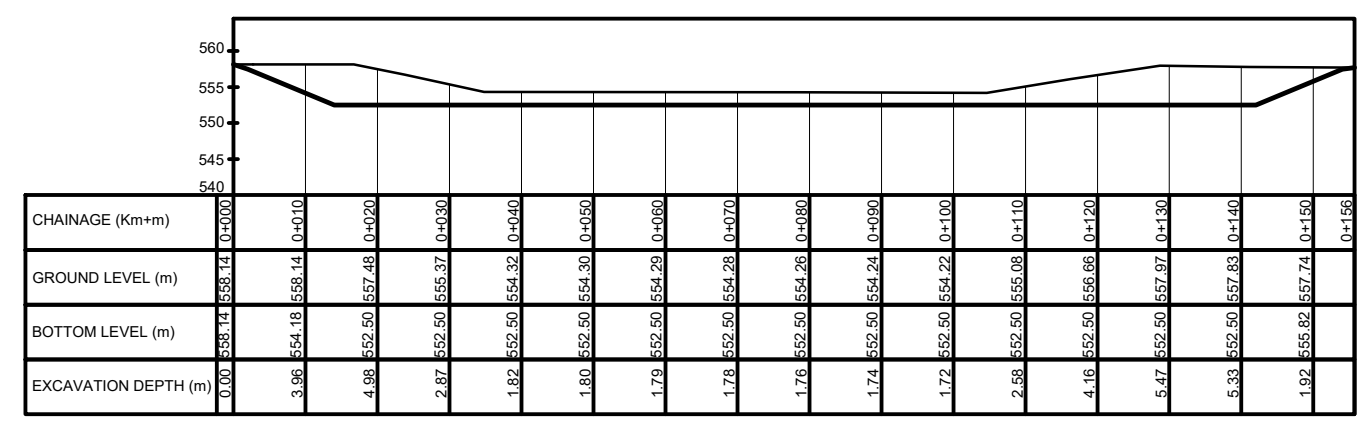


Drawn	R.F	Scale(s)
Designed	GMC	Date OCTOBER 2023
Checked	ENG. G.O.M	Date OCTOBER 2023
Approved		Date
<b>JOB No.</b>		<b>DRG No. PC - TKB - 002</b>





SECTION 1 - 1



SECTION 2-2

**NOTES:**  
 1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS STATED OTHERWISE.  
 2. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH OTHER LAYOUT DRAWINGS  
 3. CONCRETE CLASS:  
 BASES AND BEAMS = 25/20  
 LEAN CONCRETE = 15/20

4. CONCRETE COVER = 40mm  
**LEGEND:**  
 GL - GROUND LEVEL  
 DN - NOMINAL DIAMETER

REVISIONS		
Date	Suffix	Descriptions

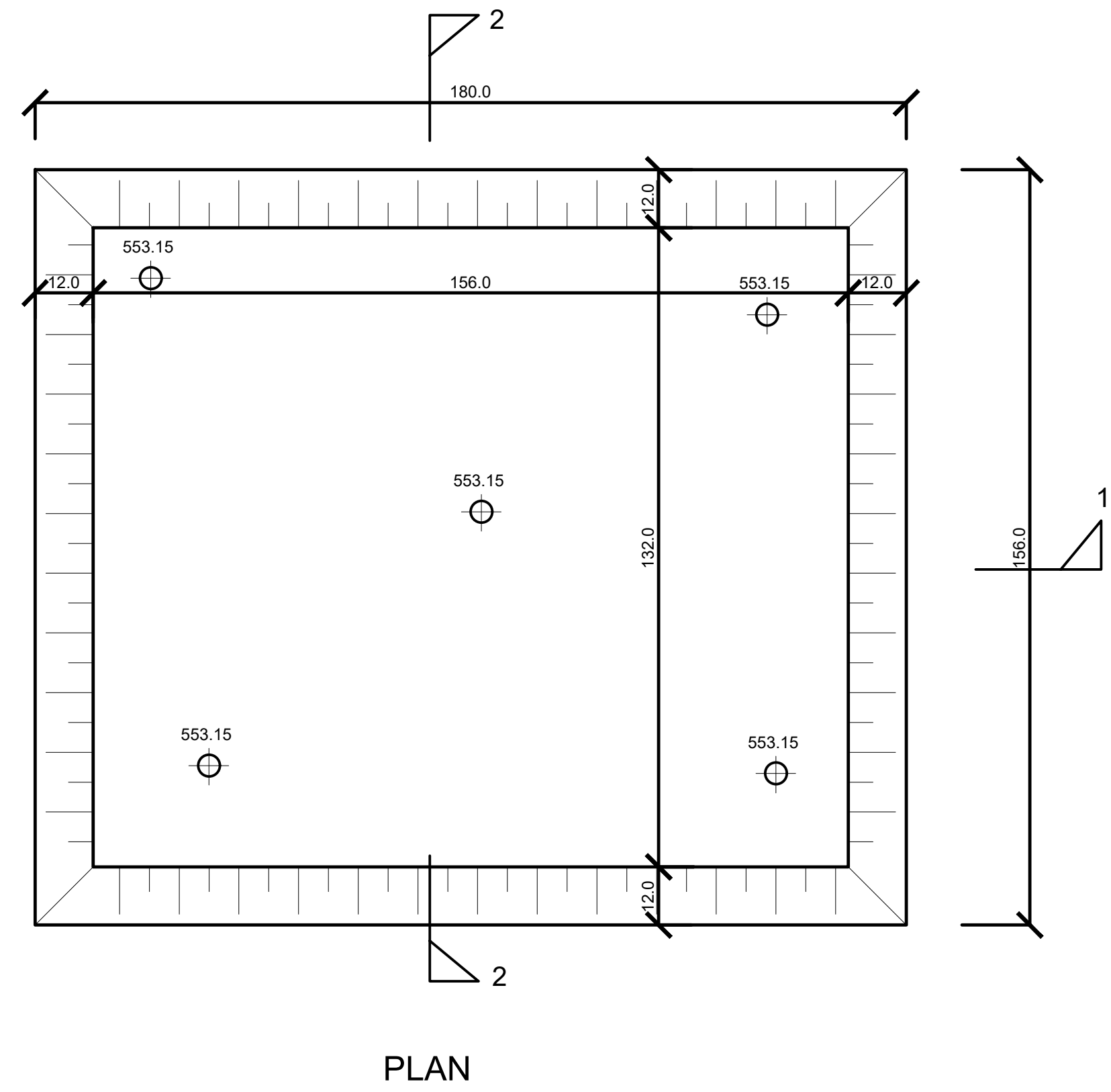
Project:  
 CONSULTANCY SERVICES TO CONDUCT SURVEY AND DEVELOPMENT OF DESIGNS FOR TAKABA WATER SUPPLY PROJECT IN MANDERA COUNTY,  
 REFERENCE NO. WSTF/EU/RFP/10/2022-2023

**CLIENT**  
  
 WATER SECTOR TRUST FUND

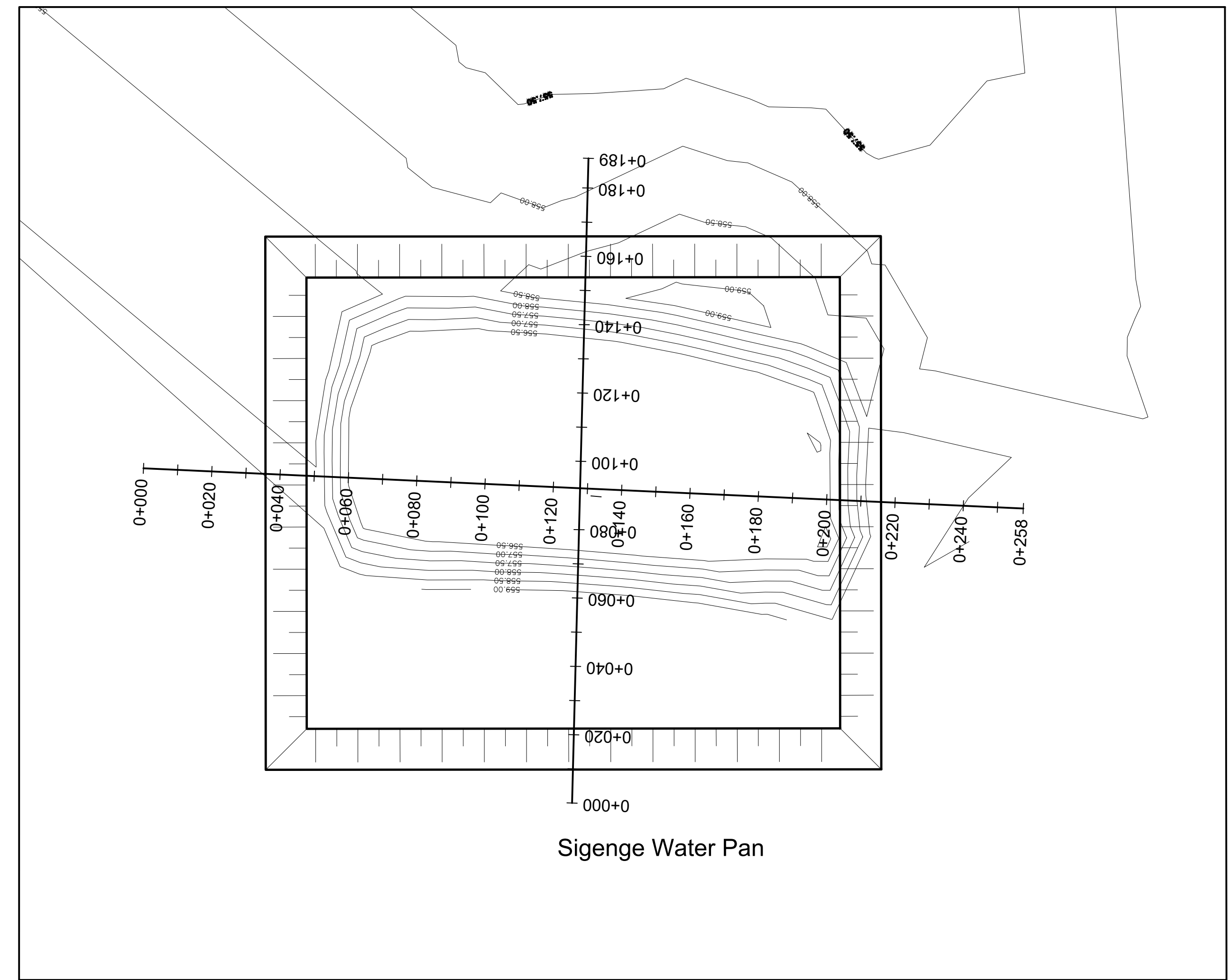
**DRAWING TITLE**  
 TUBADI WATER PAN  
 PLAN AND SECTION

**CIVIL/STRUCTURAL ENGINEER**  
  
 PROFESSIONAL CONSULTANTS  
 Professional House  
 Kufuga Road Off Lang'ata Rd  
 P.O. Box 24996-010502 Nrb  
 +254 202016322

Drawn	R.F	Scale(s)	
Designed	GMC	Date	OCTOBER 2023
Checked	ENG. G.O.M	Date	OCTOBER 2023
Approved		Date	
<b>JOB No.</b>		<b>DRG No. : PC - TKB - 003</b>	



PLAN



Sigenge Water Pan

CHANNAGE (km+m)	GROUND LEVEL (m)	BOTTOM LEVEL (m)	EXCAVATION DEPTH (m)
0+000	553.15	553.15	0.00
0+005	553.15	553.15	0.00
0+010	553.15	553.15	0.00
0+015	553.15	553.15	0.00
0+020	553.15	553.15	0.00
0+025	553.15	553.15	0.00
0+030	553.15	553.15	0.00
0+035	553.15	553.15	0.00
0+040	553.15	553.15	0.00
0+045	553.15	553.15	0.00
0+050	553.15	553.15	0.00
0+055	553.15	553.15	0.00
0+060	553.15	553.15	0.00
0+065	553.15	553.15	0.00
0+070	553.15	553.15	0.00
0+075	553.15	553.15	0.00
0+080	553.15	553.15	0.00
0+085	553.15	553.15	0.00
0+090	553.15	553.15	0.00
0+095	553.15	553.15	0.00
0+100	553.15	553.15	0.00
0+105	553.15	553.15	0.00
0+110	553.15	553.15	0.00
0+115	553.15	553.15	0.00
0+120	553.15	553.15	0.00
0+125	553.15	553.15	0.00
0+130	553.15	553.15	0.00
0+135	553.15	553.15	0.00
0+140	553.15	553.15	0.00
0+145	553.15	553.15	0.00
0+150	553.15	553.15	0.00
0+155	553.15	553.15	0.00
0+160	553.15	553.15	0.00
0+165	553.15	553.15	0.00
0+170	553.15	553.15	0.00
0+175	553.15	553.15	0.00
0+180	553.15	553.15	0.00
0+185	553.15	553.15	0.00
0+190	553.15	553.15	0.00
0+195	553.15	553.15	0.00
0+200	553.15	553.15	0.00
0+205	553.15	553.15	0.00
0+210	553.15	553.15	0.00
0+215	553.15	553.15	0.00
0+220	553.15	553.15	0.00
0+225	553.15	553.15	0.00
0+230	553.15	553.15	0.00
0+235	553.15	553.15	0.00
0+240	553.15	553.15	0.00
0+245	553.15	553.15	0.00
0+250	553.15	553.15	0.00
0+255	553.15	553.15	0.00
0+260	553.15	553.15	0.00
0+265	553.15	553.15	0.00
0+270	553.15	553.15	0.00
0+275	553.15	553.15	0.00
0+280	553.15	553.15	0.00
0+285	553.15	553.15	0.00
0+290	553.15	553.15	0.00
0+295	553.15	553.15	0.00
0+300	553.15	553.15	0.00

SECTION 1 - 1

CHANNAGE (km+m)	GROUND LEVEL (m)	BOTTOM LEVEL (m)	EXCAVATION DEPTH (m)
0+000	553.15	553.15	0.00
0+005	553.15	553.15	0.00
0+010	553.15	553.15	0.00
0+015	553.15	553.15	0.00
0+020	553.15	553.15	0.00
0+025	553.15	553.15	0.00
0+030	553.15	553.15	0.00
0+035	553.15	553.15	0.00
0+040	553.15	553.15	0.00
0+045	553.15	553.15	0.00
0+050	553.15	553.15	0.00
0+055	553.15	553.15	0.00
0+060	553.15	553.15	0.00
0+065	553.15	553.15	0.00
0+070	553.15	553.15	0.00
0+075	553.15	553.15	0.00
0+080	553.15	553.15	0.00
0+085	553.15	553.15	0.00
0+090	553.15	553.15	0.00
0+095	553.15	553.15	0.00
0+100	553.15	553.15	0.00
0+105	553.15	553.15	0.00
0+110	553.15	553.15	0.00
0+115	553.15	553.15	0.00
0+120	553.15	553.15	0.00
0+125	553.15	553.15	0.00
0+130	553.15	553.15	0.00
0+135	553.15	553.15	0.00
0+140	553.15	553.15	0.00
0+145	553.15	553.15	0.00
0+150	553.15	553.15	0.00
0+155	553.15	553.15	0.00
0+160	553.15	553.15	0.00
0+165	553.15	553.15	0.00
0+170	553.15	553.15	0.00
0+175	553.15	553.15	0.00
0+180	553.15	553.15	0.00
0+185	553.15	553.15	0.00
0+190	553.15	553.15	0.00
0+195	553.15	553.15	0.00
0+200	553.15	553.15	0.00
0+205	553.15	553.15	0.00
0+210	553.15	553.15	0.00
0+215	553.15	553.15	0.00
0+220	553.15	553.15	0.00
0+225	553.15	553.15	0.00
0+230	553.15	553.15	0.00
0+235	553.15	553.15	0.00
0+240	553.15	553.15	0.00
0+245	553.15	553.15	0.00
0+250	553.15	553.15	0.00
0+255	553.15	553.15	0.00
0+260	553.15	553.15	0.00
0+265	553.15	553.15	0.00
0+270	553.15	553.15	0.00
0+275	553.15	553.15	0.00
0+280	553.15	553.15	0.00
0+285	553.15	553.15	0.00
0+290	553.15	553.15	0.00
0+295	553.15	553.15	0.00
0+300	553.15	553.15	0.00

SECTION 2-2

**NOTES:**  
 1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS STATED OTHERWISE.  
 2. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH OTHER LAYOUT DRAWINGS  
 3. CONCRETE CLASS:  
 BASES AND BEAMS = 25/20  
 LEAN CONCRETE = 15/20

4. CONCRETE COVER = 40mm  
**LEGEND:**  
 GL - GROUND LEVEL  
 DN - NOMINAL DIAMETER

REVISIONS		
Date	Suffix	Descriptions

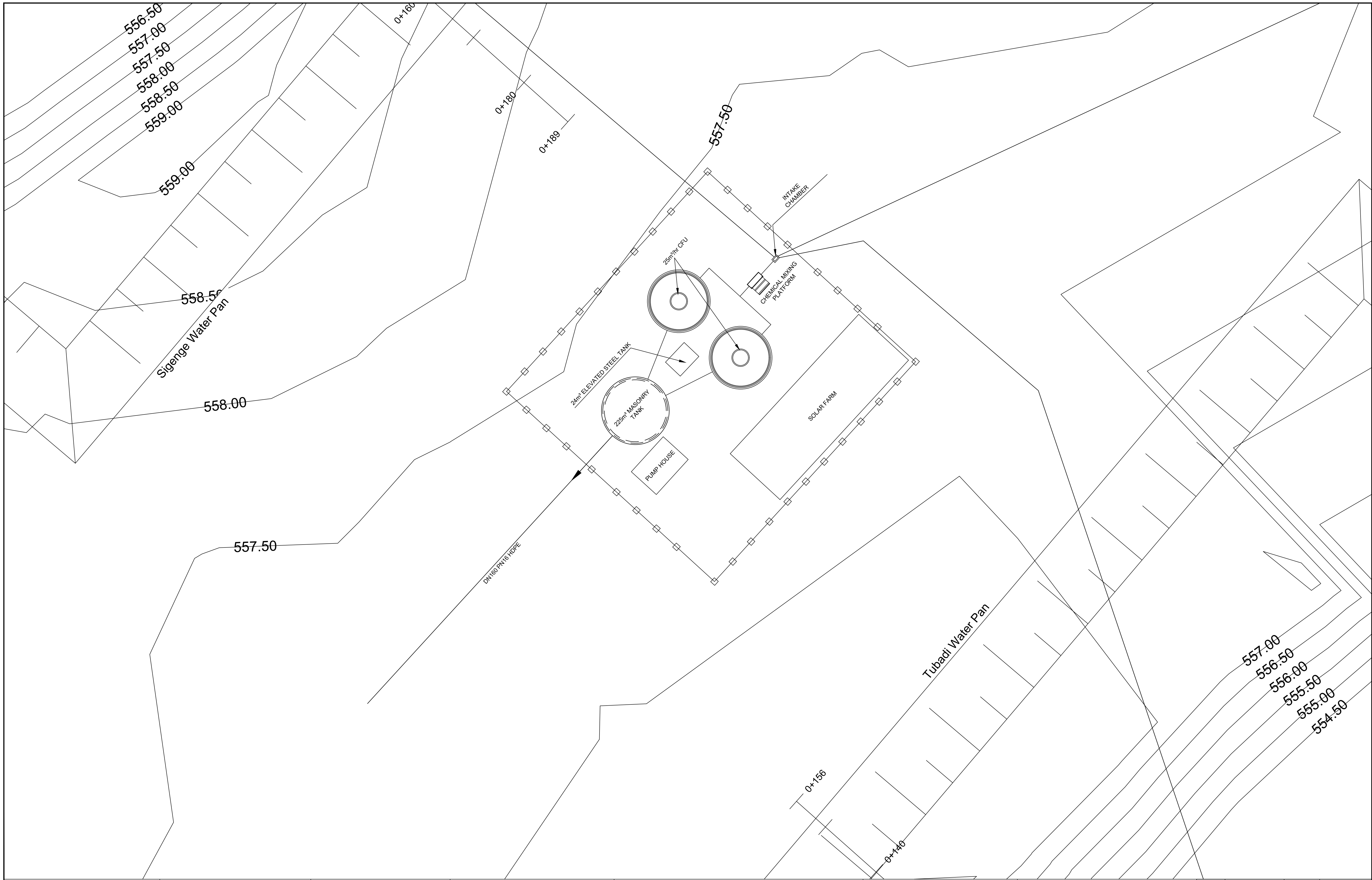
Project:  
 CONSULTANCY SERVICES TO CONDUCT SURVEY AND DEVELOPMENT OF DESIGNS FOR TAKABA WATER SUPPLY PROJECT IN MANDERA COUNTY.  
 REFERENCE NO. WSTF/EU/RFP/10/2022-2023



DRAWING TITLE  
 SIGENGE WATER PAN  
 PLAN AND SECTION

CIVIL/STRUCTURAL ENGINEER  
  
 PROFESSIONAL CONSULTANTS  
 Professional House  
 Kufuga Road, Off Lang'ata Rd  
 P.O. Box 24996-00502 Nrb  
 +254 202016122

Drawn	R.F	Scale(s)	
Designed	GMC	Date	OCTOBER 2023
Checked	ENG. G.O.M	Date	OCTOBER 2023
Approved		Date	
JOB No.		DRG No. : PC - TKB - 004	



**NOTES:**

- ALL DIMENSIONS ARE IN MILLIMETRES UNLESS STATED OTHERWISE.
- THIS DRAWING IS TO BE READ IN CONJUNCTION WITH OTHER LAYOUT DRAWINGS
- CONCRETE CLASS:  
BASES AND BEAMS = 25/20  
LEAN CONCRETE = 15/20

4. CONCRETE COVER = 40mm

**LEGEND:**

GL - GROUND LEVEL  
DN - NOMINAL DIAMETER

REVISIONS		
Date	Suffix	Descriptions

**Project:**  
CONSULTANCY SERVICES TO CONDUCT SURVEY AND DEVELOPMENT OF DESIGNS FOR TAKABA WATER SUPPLY PROJECT IN MANDERA COUNTY,  
REFERENCE NO. WSTF/EU/RFP/10/2022-2023

**CLIENT**



WaterFund  
Financing the Water Sector

WATER SECTOR TRUST FUND

**DRAWING TITLE**

TREATMENT WORKS - SITE LAYOUT PLAN

**CIVIL/STRUCTURAL ENGINEER**

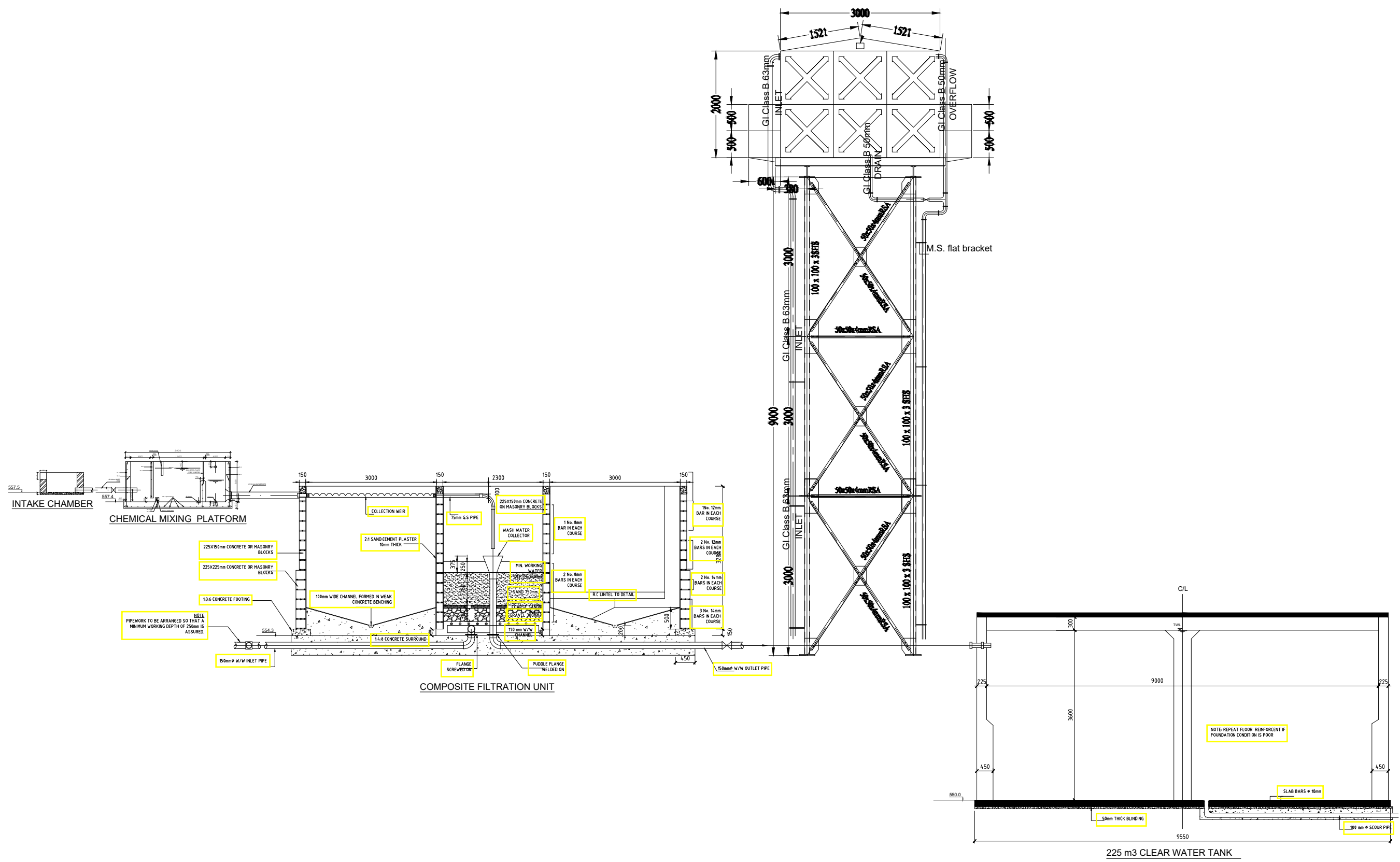


PROFESSIONAL CONSULTANTS

Professional House  
Kufuga Road Off Lang'ata Rd  
P.O. Box 24996-00502 Nrb  
+254 202016322

Drawn	E.J	Scale(s)	
Designed	GMC	Date	OCTOBER 2023
Checked	ENG. G.O.M	Date	OCTOBER 2023
Approved		Date	
<b>JOB No.</b>		DRG No: PC - TKB - 005	





**NOTES:**

1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS STATED OTHERWISE.
2. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH OTHER LAYOUT DRAWINGS
3. CONCRETE CLASS:  
BASES AND BEAMS = 25/20  
LEAN CONCRETE = 15/20

4. CONCRETE COVER = 40mm

**LEGEND:**

GL - GROUND LEVEL  
DN - NOMINAL DIAMETER

REVISIONS		
Date	Suffix	Descriptions

Project:  
CONSULTANCY SERVICES TO CONDUCT SURVEY AND DEVELOPMENT OF DESIGNS FOR TAKABA WATER SUPPLY PROJECT IN MANDERA COUNTY, REFERENCE NO. WSTF/EU/RFP/10/2022-2023

**CLIENT**



WATER SECTOR TRUST FUND

**DRAWING TITLE**

TREATMENT PLANT CROSS-SECTION

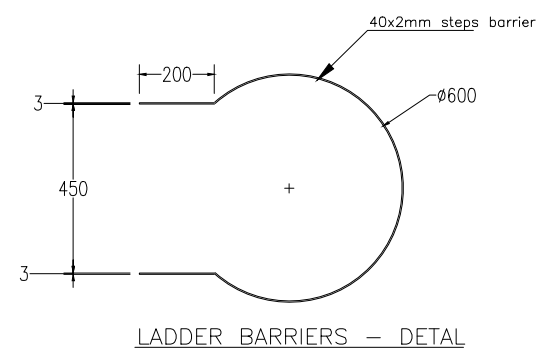
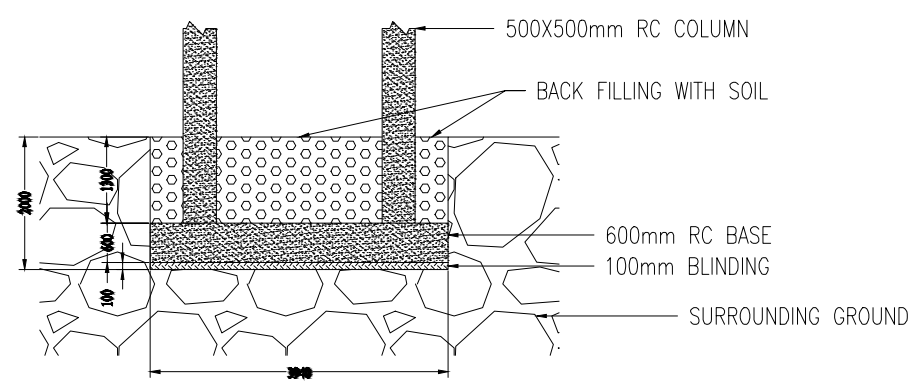
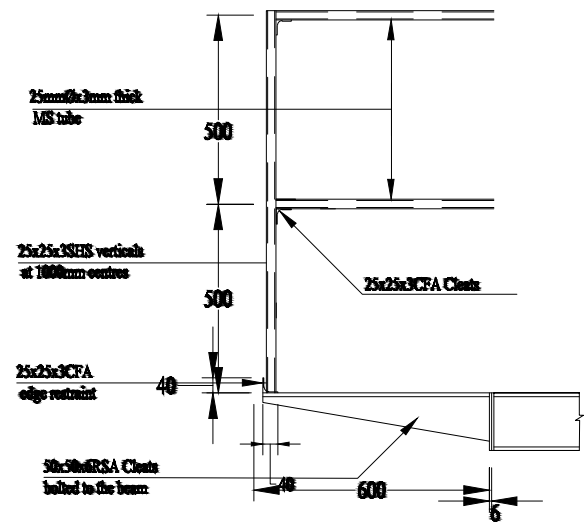
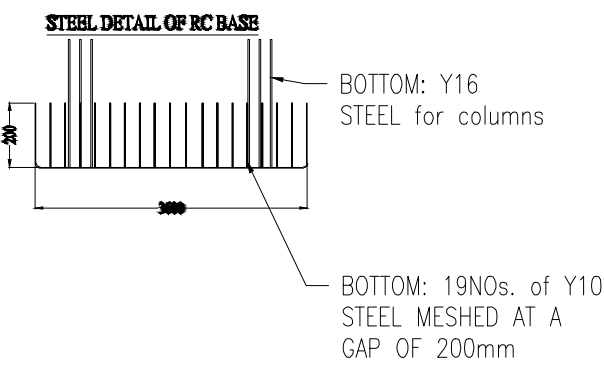
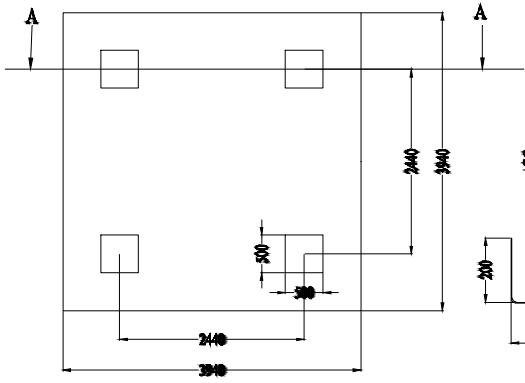
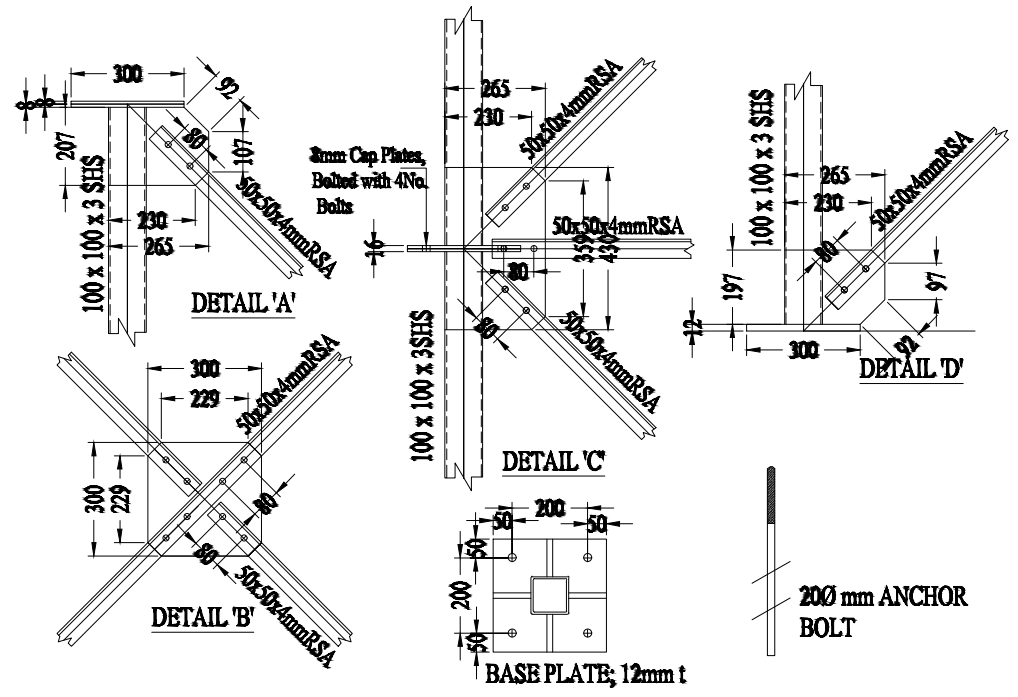
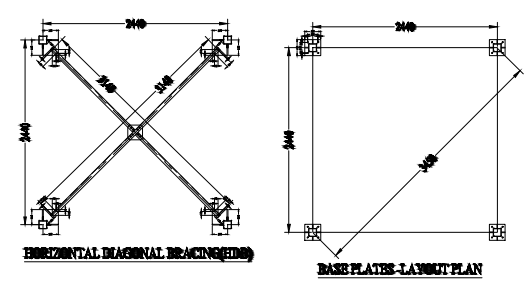
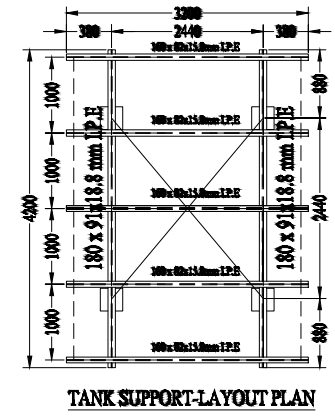
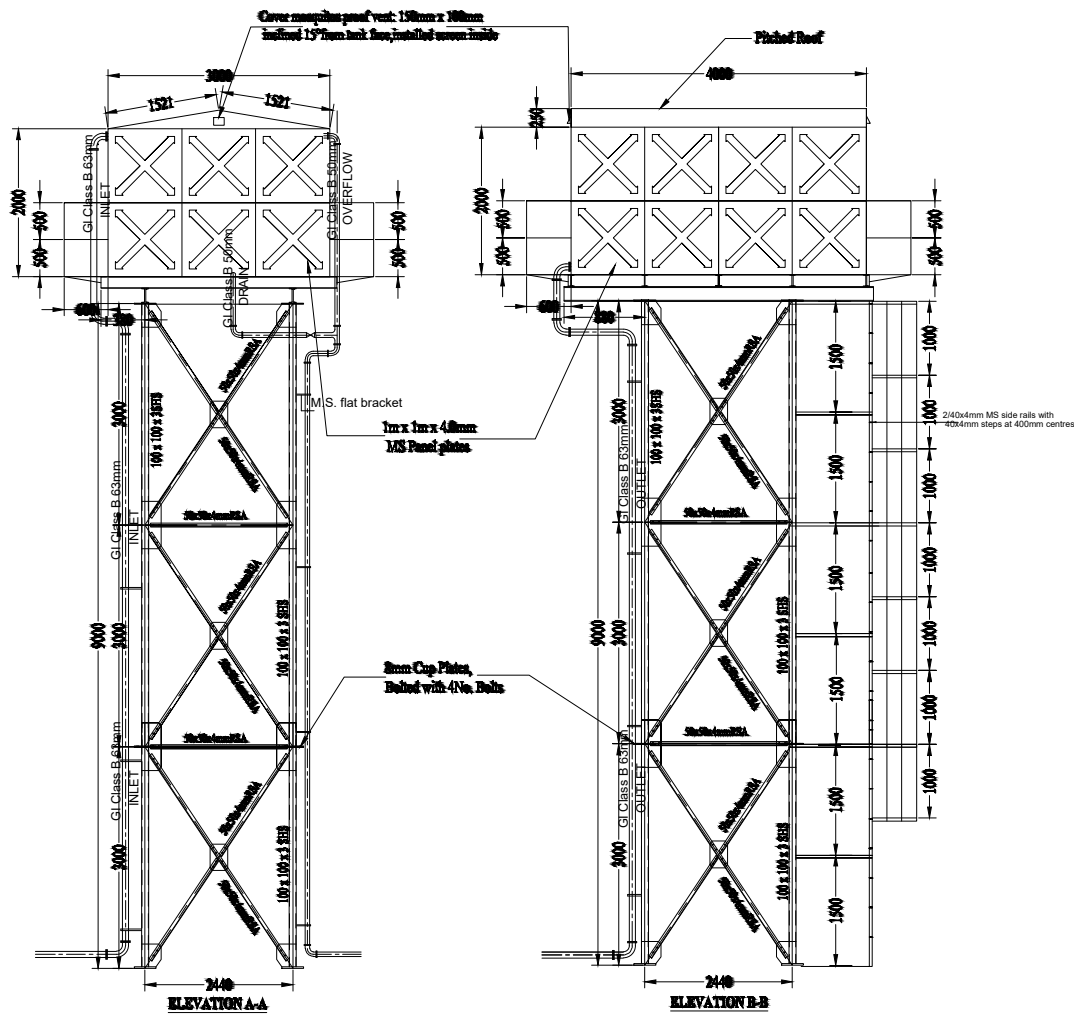
**CIVIL/STRUCTURAL ENGINEER**



PROFESSIONAL CONSULTANTS  
Kufuga Road, Off Lang'ata Rd  
P.O. Box 24996-00502 Nrb  
+254 202016322

Drawn	E.J	Scale(s)	
Designed	GMC	Date	OCTOBER 2023
Checked	ENG. G.O.M	Date	OCTOBER 2023
Approved		Date	
<b>JOB No.</b>		<b>DRG No: PC - TKB - 033</b>	





No.	ITEMS	DESCRIPTIONS
7.	Column	100 x 100 x 3 SHS
6.	Vertical diagonal Bracing	50 x 50 x 4 RSA
5.	Horizontal Bracing	50 x 50 x 4 RSA
4.	Main Beam	180 x 91 x 18.8 mm L.P.E
3.	Secondary Beam	100 x 82 x 15.8 mm L.P.E
2.	Base Plate, 12mm	300 x 300 x 12mm, Thick
1.	Anchor Bolts	20mm Ø, 500mm Long (det. on site)

Tank Size: 4m x 3m x 2m, GN 9M TOWER  
Tank Capacity: 24 Cubic Meters

**NOTES:**

- ALL DIMENSIONS ARE IN MILLIMETRES UNLESS STATED OTHERWISE.
- THIS DRAWING IS TO BE READ IN CONJUNCTION WITH OTHER LAYOUT DRAWINGS
- CONCRETE CLASS:  
BASES AND BEAMS = 25/20  
LEAN CONCRETE = 15/20

4. CONCRETE COVER = 40mm

**LEGEND:**

GL - GROUND LEVEL  
DN - NOMINAL DIAMETER

REVISIONS		
Date	Suffix	Descriptions

Project: CONSULTANCY SERVICES TO CONDUCT SURVEY AND DEVELOPMENT OF DESIGNS FOR TAKABA WATER SUPPLY PROJECT IN MANDERA COUNTY, REFERENCE NO. WSTF/EU/RFP/10/2022-2023

CLIENT

WATER SECTOR TRUST FUND

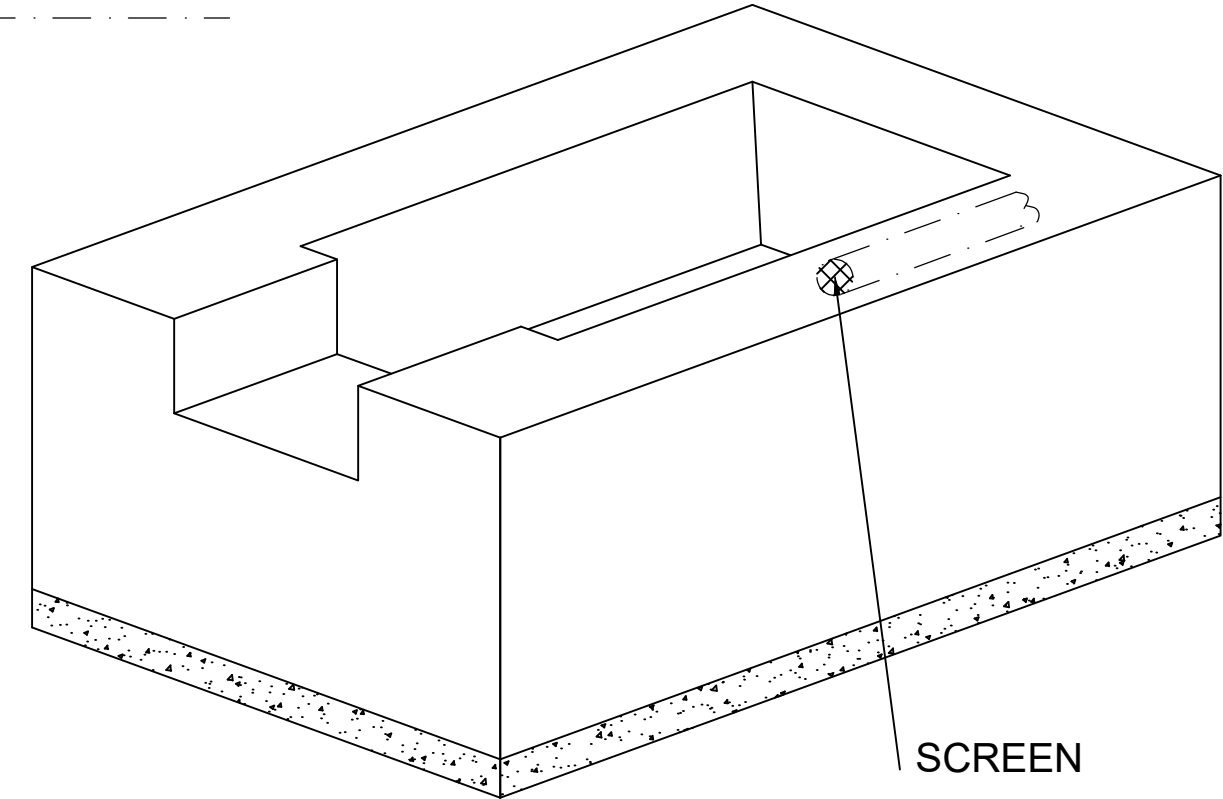
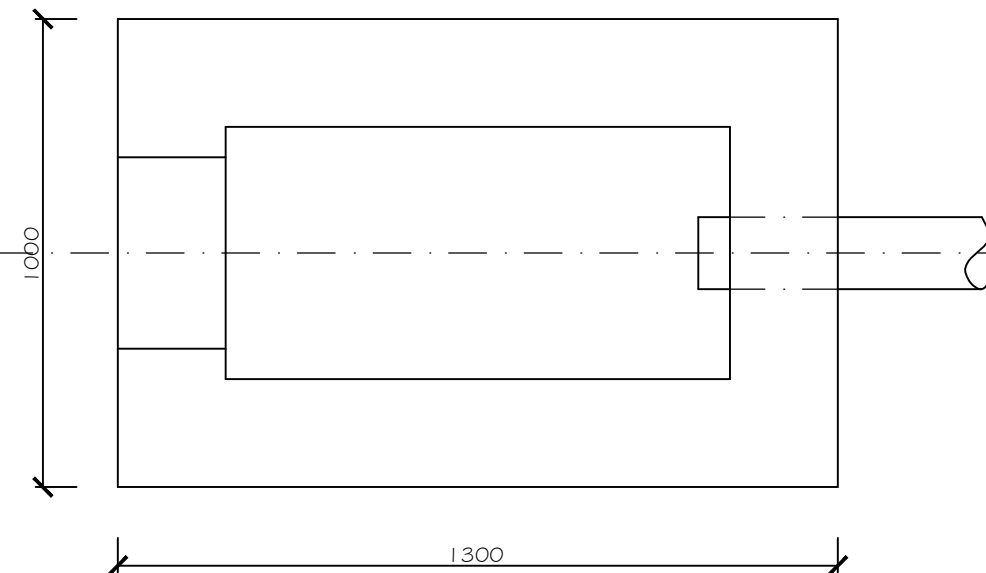
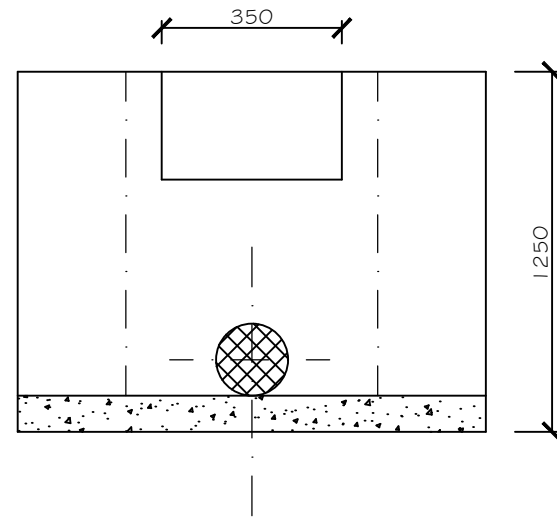
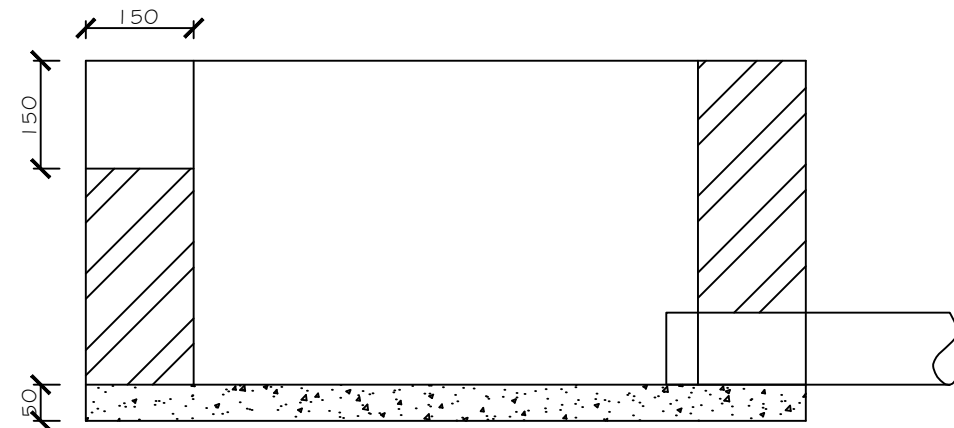
DRAWING TITLE

24 m3 ELEVATED BACKWASH TANK

CIVIL/STRUCTURAL ENGINEER

PROFESSIONAL CONSULTANTS  
Professional House  
Hafaga Road Off Lang'ata Rd  
P.O. Box 24996-00502 Nrb  
+254 202016322

Drawn	E.J	Scale(s)	
Designed	GMC	Date	OCTOBER 2023
Checked	ENG. G.O.M	Date	OCTOBER 2023
Approved		Date	
JOB No.		DRG No: PC - TKB - 008	



**NOTES:**

1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS STATED OTHERWISE.
2. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH OTHER LAYOUT DRAWINGS
3. CONCRETE CLASS:  
BASES AND BEAMS = 25/20  
LEAN CONCRETE = 15/20

4. CONCRETE COVER = 40mm

**LEGEND:**

GL - GROUND LEVEL  
DN - NOMINAL DIAMETER

**REVISIONS**

Date	Suffix	Descriptions

Project:  
CONSULTANCY SERVICES TO CONDUCT SURVEY AND DEVELOPMENT OF DESIGNS FOR TAKABA WATER SUPPLY PROJECT IN MANDERA COUNTY.  
REFERENCE NO. WSTF/EU/RFP/10/2022-2023

**CLIENT**



**DRAWING TITLE**

LAYOUT AND SECTIONS OF INTAKE CHAMBER

**CIVIL/STRUCTURAL ENGINEER**

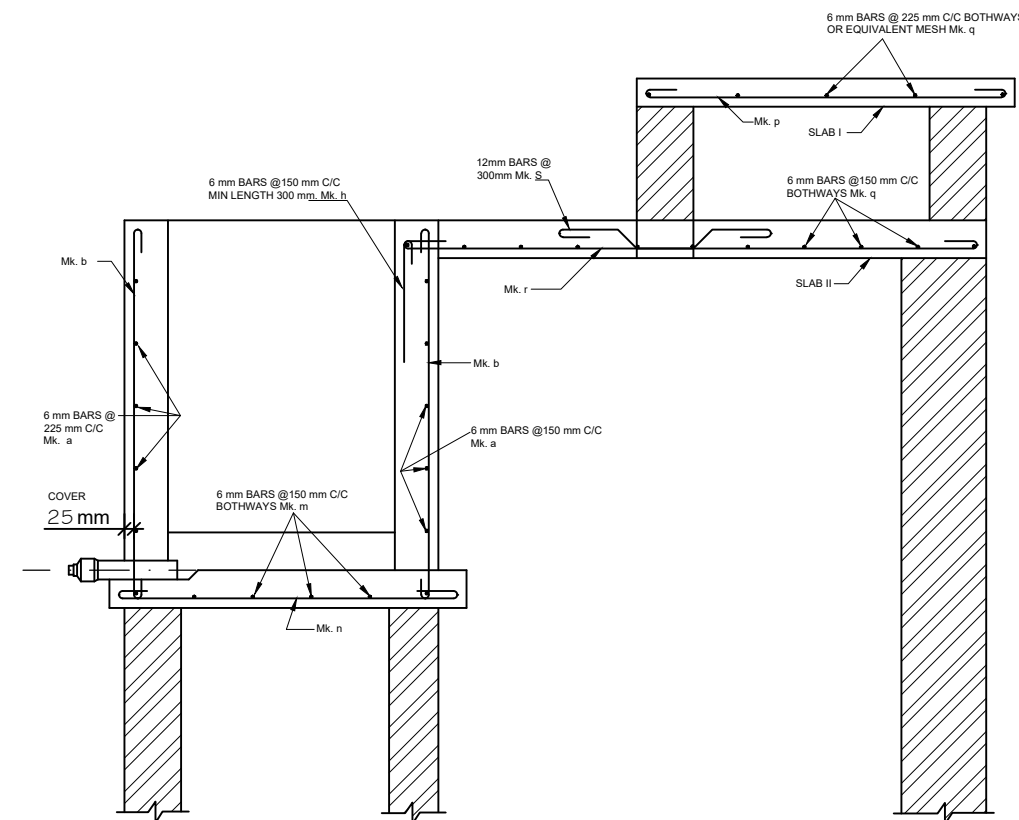


Drawn	E.J	Scale(s)	
Designed	GMC	Date	OCTOBER 2023
Checked	ENG. G.O.M	Date	OCTOBER 2023
Approved		Date	
<b>JOB No.</b>	<b>DRG No: PC - TKB - 007</b>		

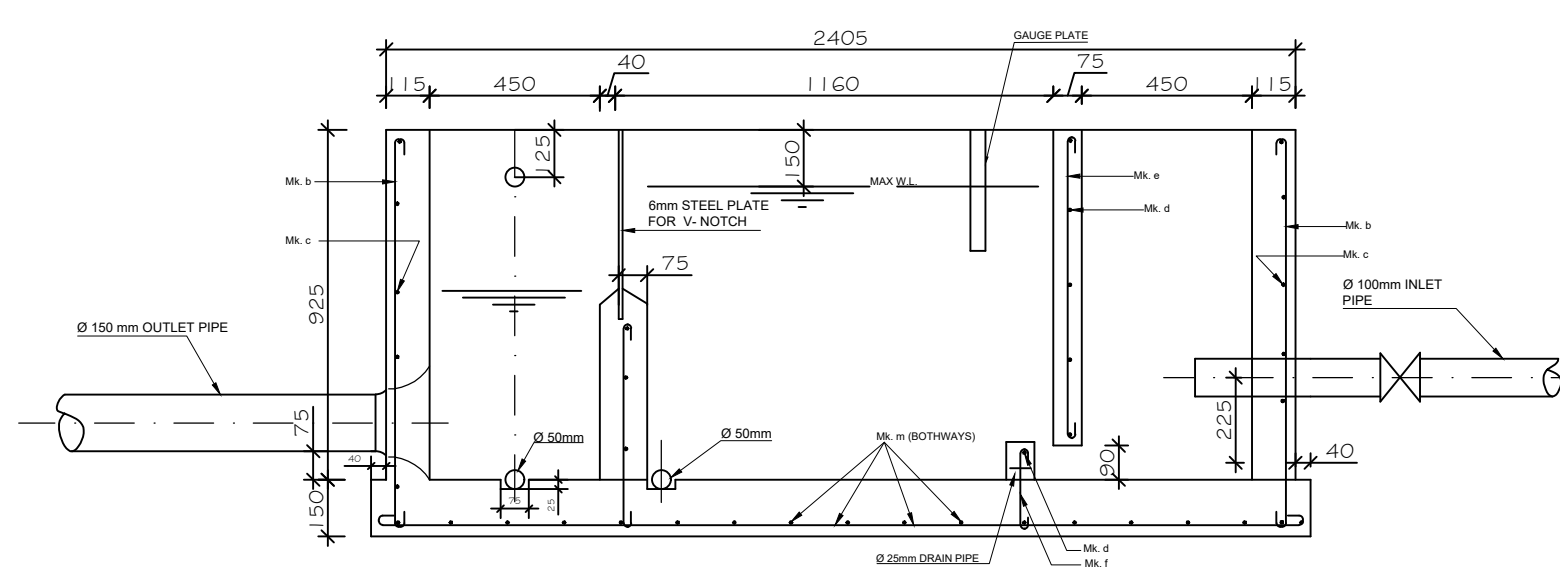


## NOTES

1. All dimensions are in millimetres unless specified otherwise.
2. All levels are indicated in m unless specified otherwise.
3. All structural concrete to be Class 35 (1:1:2) unless stated otherwise.
4. Maximum tolerance on concrete cover is +/- 5mm.
5. All high tensile (Y) and mild steel (R) bars to be in accordance with BS 4449 and fabric mesh to be made from cold worked steel bars in accordance with BS 4483.
6. Minimum laps to all bars to be 55 $\phi$  unless stated otherwise.
7. Only figured dimensions to be read, **no scaling** is allowed on this drawing.



**SECTION B-B**



**SECTION A-A**

### NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS STATED OTHERWISE.
2. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH OTHER LAYOUT DRAWINGS
3. CONCRETE CLASS:  
BASES AND BEAMS = 25/20  
LEAN CONCRETE = 15/20

4. CONCRETE COVER = 40mm

### LEGEND:

GL - GROUND LEVEL  
DN - NOMINAL DIAMETER

### REVISIONS

Date	Suffix	Descriptions

Project:  
CONSULTANCY SERVICES TO CONDUCT SURVEY AND DEVELOPMENT OF DESIGNS FOR TAKABA WATER SUPPLY PROJECT IN MANDERA COUNTY,  
REFERENCE NO. WSTF/EU/RFP/10/2022-2023

### CLIENT



### DRAWING TITLE

SECTION DETAILS OF CHEMICAL MIXING PLATFORM

### CIVIL/STRUCTURAL ENGINEER



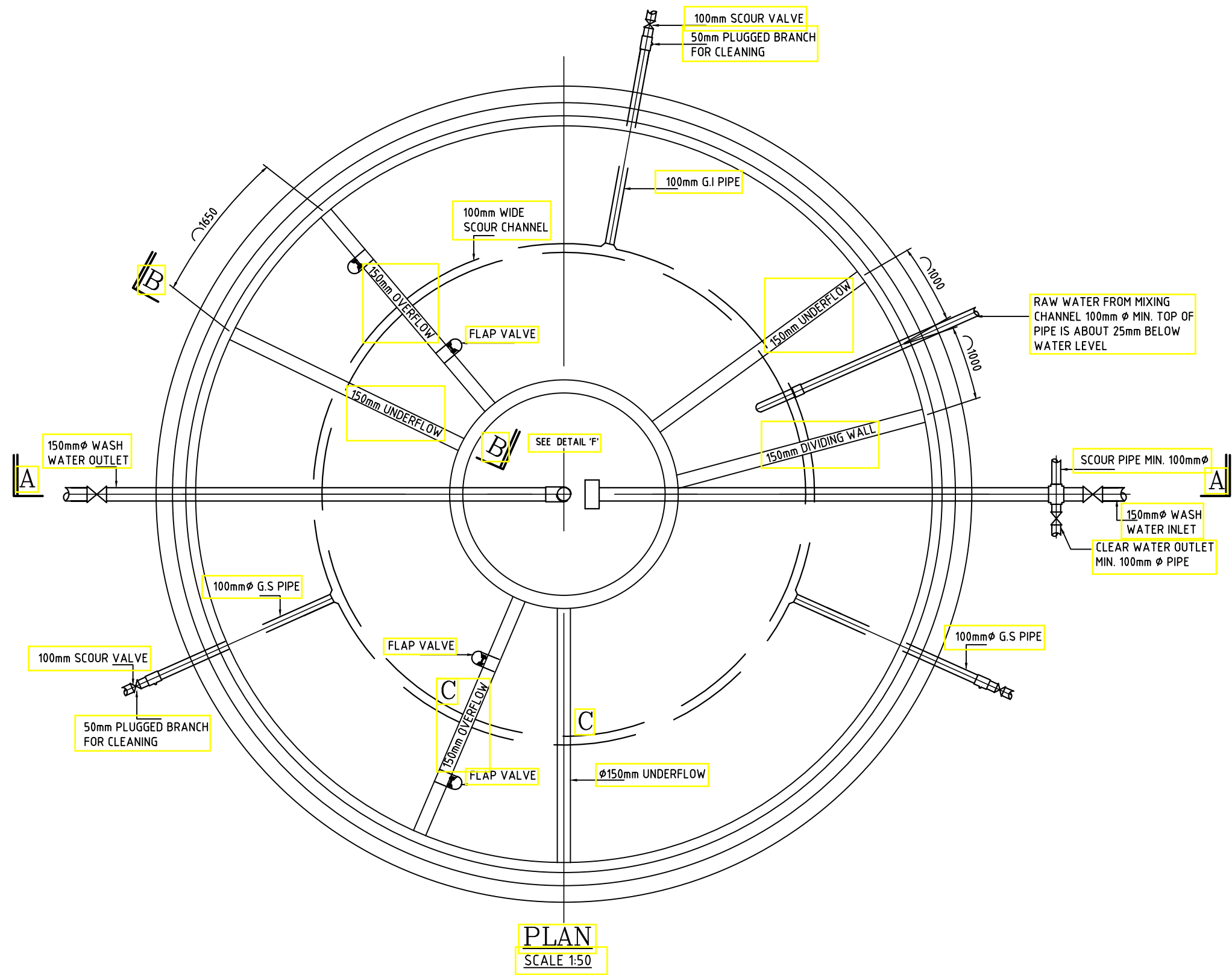
Drawn	E.J	Scale(s)	
Designed	GMC	Date	OCTOBER 2023
Checked	ENG. G.O.M	Date	OCTOBER 2023
Approved		Date	
JOB No.	DRG No: PC - TKB - 009		



# BAR BENDING SCHEDULE

POSITION IN STRUCTURE	MARK	SIZE OF BAR	No. OFF	LENGTH OF BAR IN mm	BENDING	TOTAL LENGTH IN METRES
WALLS	a	Ø 6 MM	10	2250	2250	22.50
	b	Ø 6 MM	46	525	375 75 75	24.20
	c	Ø 6 MM	10	1500	800 350 350	15.00
	d	Ø 6 MM	9	950	800 75 75	8.60
	e	Ø 6 MM	6	950	800 75 75	5.70
	f	Ø 6 MM	6	300	150 75 75	1.80
	g	Ø 6 MM	6	650	500 75 75	3.90
	h	Ø 6 MM	11	375	300 75 75	4.20
BOX FLOOR	m	Ø 6 MM	7	2590	2440 75 75	17.90
	n	Ø 6 MM	17	1050	900 75 75	17.90
SLAB I	o	Ø 6 MM	5	2310	2160 75 75	11.60
	p	Ø 6 MM	11	1100	950 75 75	12.10
SLAB II	r	Ø 6 MM	11	1660	1510 75 75	18.30
	q	Ø 6 MM	11	2310	2160 75 75	25.60
	s	Ø 12 MM	8	855	150 150 115 75 175 75 115	6.90
REQUIRED		Ø 6 MM	-	189.3 M		
		Ø 12 MM	-	6.9 M		

<b>NOTES:</b> 1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS STATED OTHERWISE. 2. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH OTHER LAYOUT DRAWINGS. 3. CONCRETE CLASS: BASES AND BEAMS = 25/20 LEAN CONCRETE = 15/20	4. CONCRETE COVER = 40mm  <b>LEGEND:</b> GL - GROUND LEVEL DN - NOMINAL DIAMETER	REVISIONS	Project: CONSULTANCY SERVICES TO CONDUCT SURVEY AND DEVELOPMENT OF DESIGNS FOR TAKABA WATER SUPPLY PROJECT IN MANDERA COUNTY, REFERENCE NO. WSTF/EU/RFP/10/2022-2023	<b>CLIENT</b>   WATER SECTOR TRUST FUND	<b>DRAWING TITLE</b>  BAR BENDING SCHEDULE FOR CHEMICAL MIXING PLATFORM	<b>CIVIL/STRUCTURAL ENGINEER</b>   PROFESSIONAL CONSULTANTS Professional House Kufuga Road Off Lang'ata Rd P.O. Box 24996-00502 Nrb +254 202016322	Drawn	E.J	Scale(s)			
		Date					Suffix	Descriptions	Designed	GMC	Date	OCTOBER 2023
									Checked	ENG. G.O.M	Date	OCTOBER 2023
									Approved		Date	
								JOB No.	DRG No: PC - TKB - 010			



**NOTES:**

- ALL DIMENSIONS ARE IN MILLIMETRES UNLESS STATED OTHERWISE.
- THIS DRAWING IS TO BE READ IN CONJUNCTION WITH OTHER LAYOUT DRAWINGS
- CONCRETE CLASS:  
BASES AND BEAMS = 25/20  
LEAN CONCRETE = 15/20

4. CONCRETE COVER = 40mm

**LEGEND:**

GL - GROUND LEVEL  
DN - NOMINAL DIAMETER

REVISIONS		
Date	Suffix	Descriptions

Project:  
CONSULTANCY SERVICES TO CONDUCT SURVEY AND DEVELOPMENT OF DESIGNS FOR TAKABA WATER SUPPLY PROJECT IN MANDERA COUNTY.  
REFERENCE NO. WSTF/EU/RFP/10/2022-2023



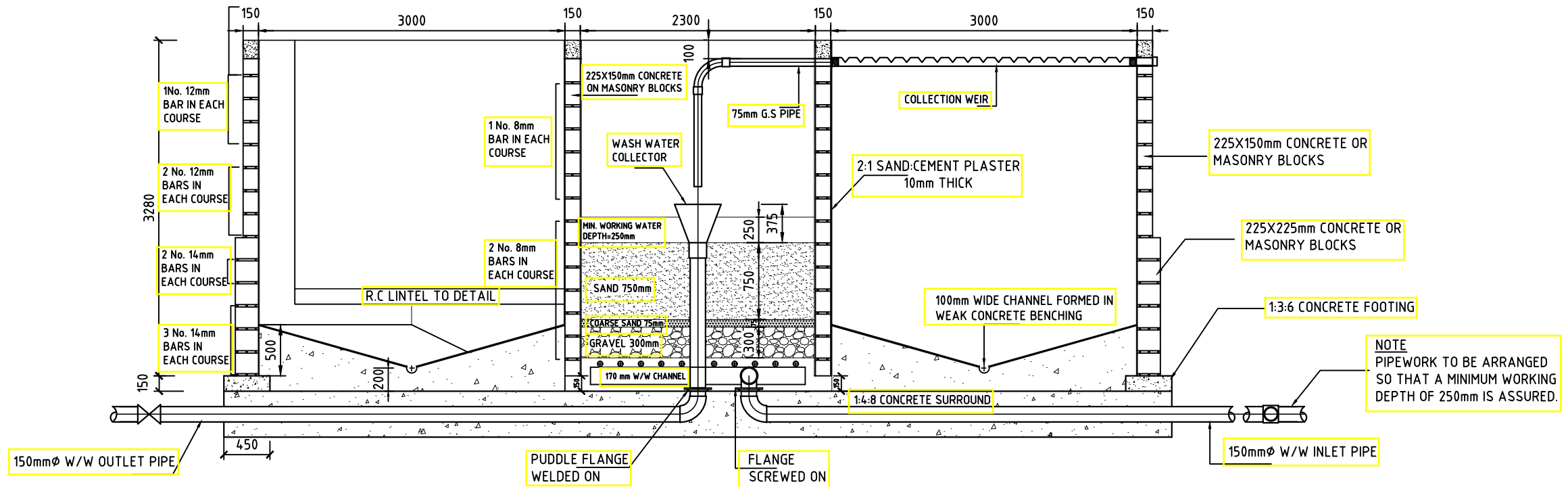
**DRAWING TITLE**

25 m<sup>3</sup>/HR CAPACITY COMPOSITE FILTRATION UNIT

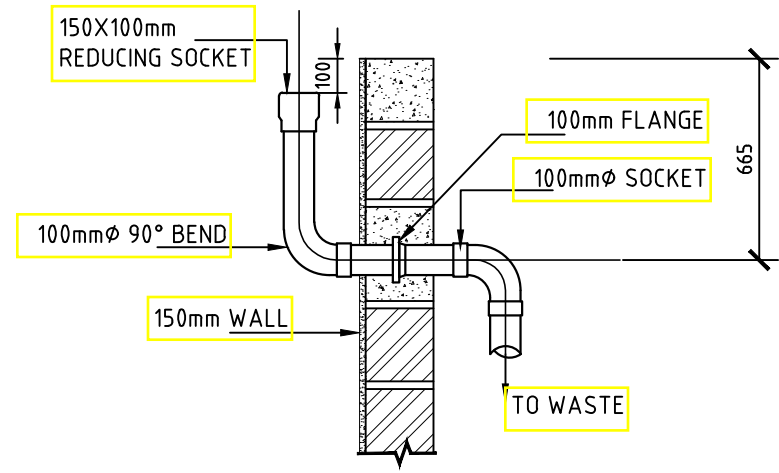
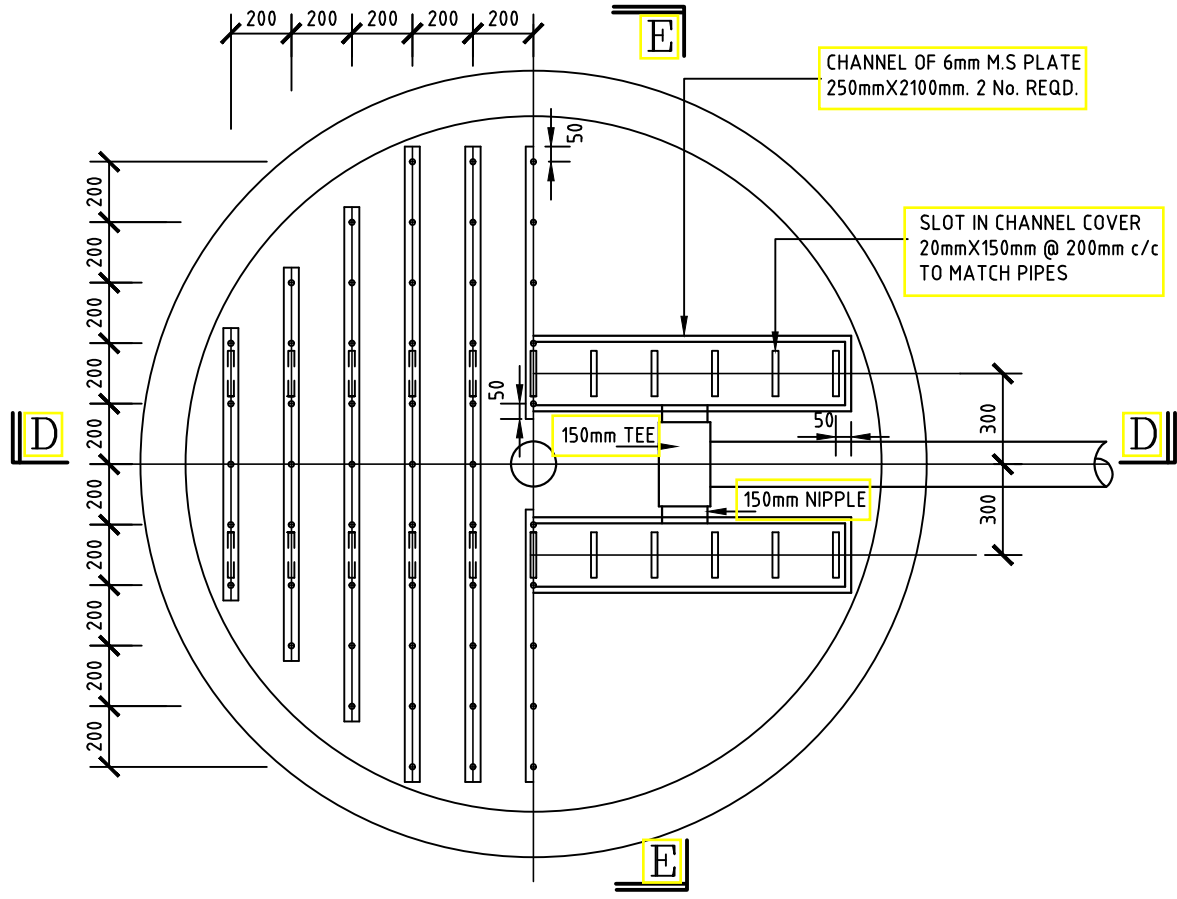
**CIVIL/STRUCTURAL ENGINEER**

PROFESSIONAL CONSULTANTS  
Professional House  
Kadoga Road, Off Lamu'ata Rd  
P.O. Box 24996-00502 Nrb  
+254 202016322

Drawn	E.J	Scale(s)	
Designed	GMC	Date	OCTOBER 2023
Checked	ENG. G.O.M	Date	OCTOBER 2023
Approved		Date	
<b>JOB No.</b>	<b>DRG No: PC - TKB - 011</b>		



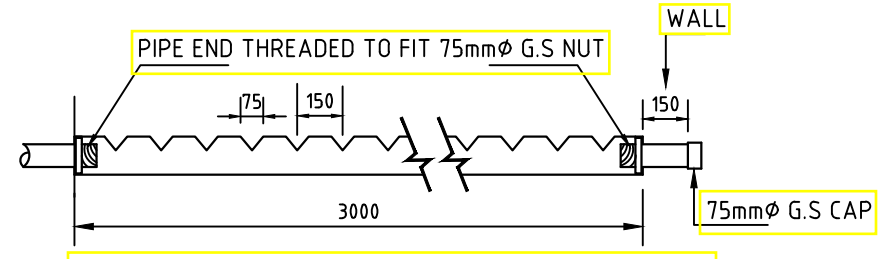
NOTE  
PIPEWORK TO BE ARRANGED  
SO THAT A MINIMUM WORKING  
DEPTH OF 250mm IS ASSURED.



TO BE SITUATED AT ANY CONVENIENT POSITION IN THE PERIMETER WALL

DETAIL OF OVERFLOW PIPE

SCALE 1:25



INLET PIPE TO BE SET AT LEAST 25mm ABOVE OUTLET PIPE

COLLECTION WEIR

SCALE 1:25

- NOTES:**
- ALL DIMENSIONS ARE IN MILLIMETRES UNLESS STATED OTHERWISE.
  - THIS DRAWING IS TO BE READ IN CONJUNCTION WITH OTHER LAYOUT DRAWINGS
  - CONCRETE CLASS:  
BASES AND BEAMS = 25/20  
LEAN CONCRETE = 15/20

4. CONCRETE COVER = 40mm

**LEGEND:**

GL - GROUND LEVEL  
DN - NOMINAL DIAMETER

REVISIONS		
Date	Suffix	Descriptions

**Project:**  
CONSULTANCY SERVICES TO CONDUCT SURVEY AND DEVELOPMENT OF DESIGNS FOR TAKABA WATER SUPPLY PROJECT IN MANDERA COUNTY, REFERENCE NO. WSTF/EU/RFP/10/2022-2023

**CLIENT**

WATER SECTOR TRUST FUND

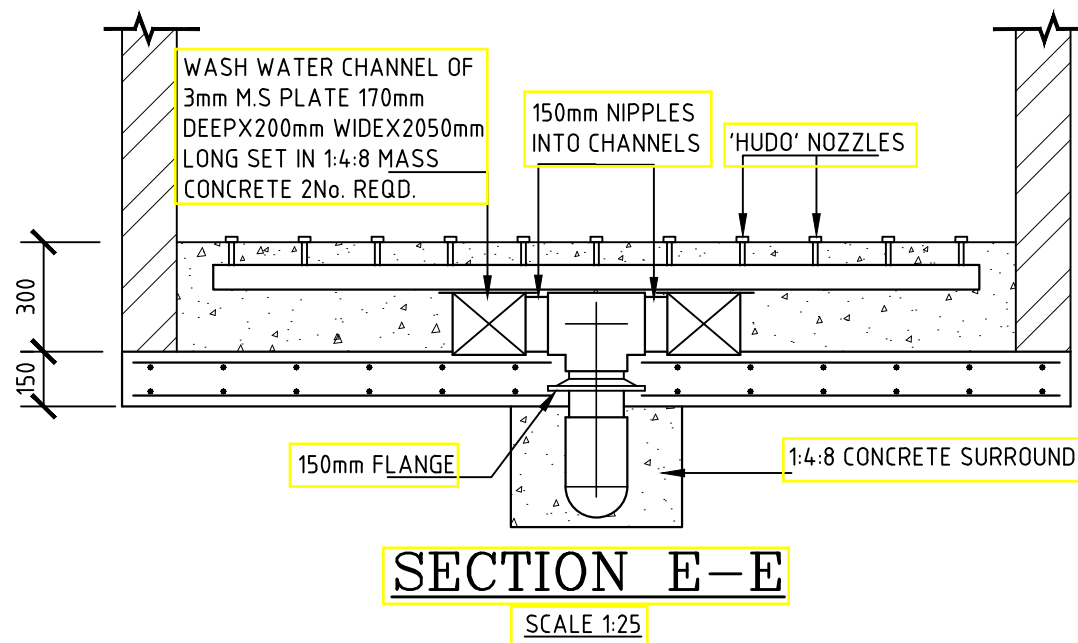
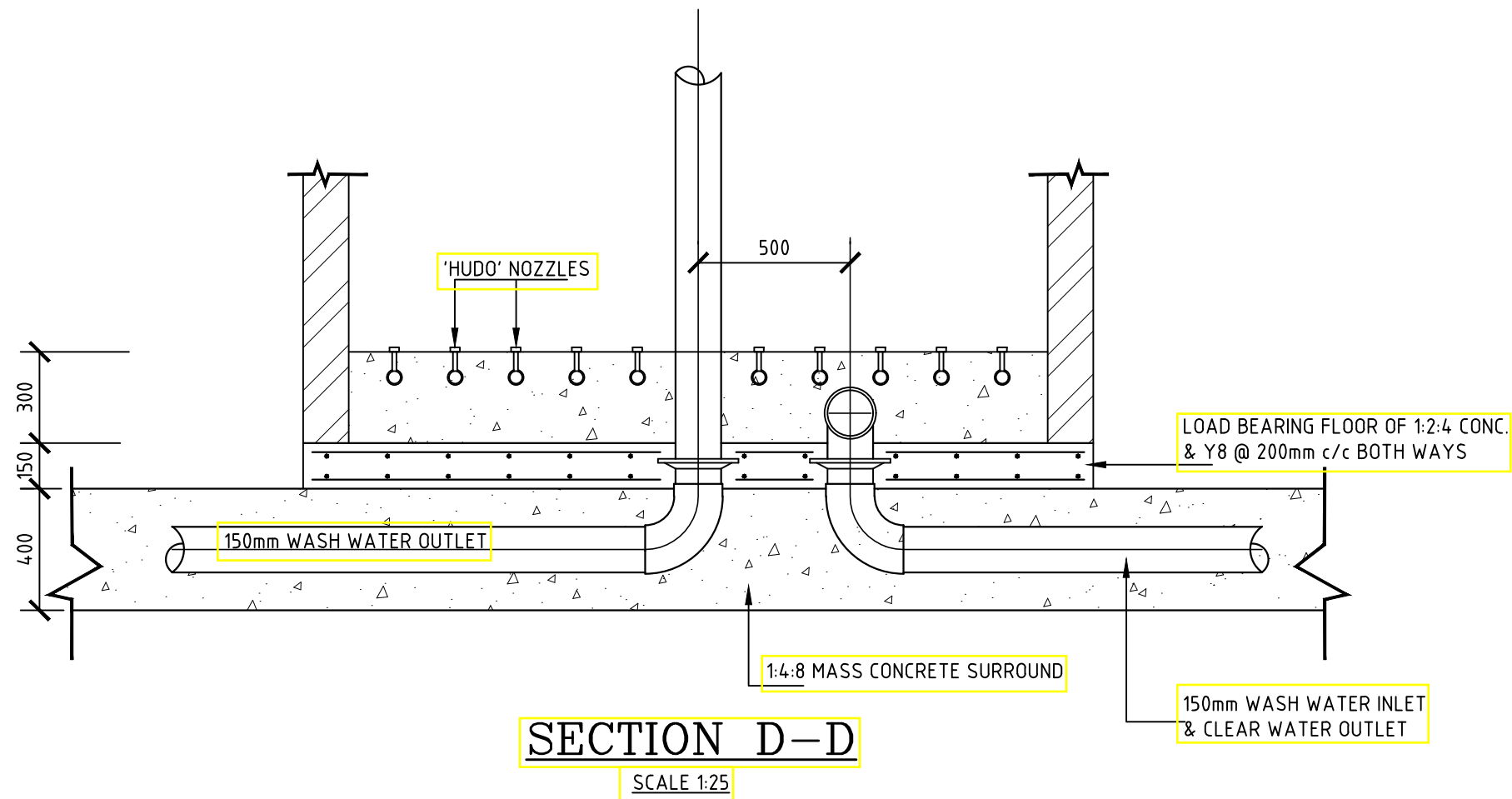
**DRAWING TITLE**

25 m<sup>3</sup>/HR CAPACITY COMPOSITE FILTRATION UNIT

**CIVIL/STRUCTURAL ENGINEER**

PROFESSIONAL CONSULTANTS  
Professional House  
Ruhiga Road, Off Langata Rd  
P.O. Box 24916-00102 Nairobi  
+254 202016322

Drawn	E.J	Scale(s)	
Designed	GMC	Date	OCTOBER 2023
Checked	ENG. G.O.M	Date	OCTOBER 2023
Approved		Date	
<b>JOB No.</b>		<b>DRG No: PC - TKB - 012</b>	



**NOTE**  
UNDERDRAIN PIPES & CHANNELS TO BE SECURED AS DIRECTED BY THE ENGINEER WITH No. 8 GAUGE WIRE STIRRUPS PRIOR TO PLACEMENT OF MASS CONCRETE.

**NOTES:**

- ALL DIMENSIONS ARE IN MILLIMETRES UNLESS STATED OTHERWISE.
- THIS DRAWING IS TO BE READ IN CONJUNCTION WITH OTHER LAYOUT DRAWINGS
- CONCRETE CLASS:  
BASES AND BEAMS = 25/20  
LEAN CONCRETE = 15/20

4. CONCRETE COVER = 40mm

**LEGEND:**

GL - GROUND LEVEL  
DN - NOMINAL DIAMETER

**REVISIONS**

Date	Suffix	Descriptions

Project:  
CONSULTANCY SERVICES TO CONDUCT SURVEY AND DEVELOPMENT OF DESIGNS FOR TAKABA WATER SUPPLY PROJECT IN MANDERA COUNTY.  
REFERENCE NO. WSTF/EU/RFP/10/2022-2023

**CLIENT**



**DRAWING TITLE**

25 m<sup>3</sup>/HR CAPACITY COMPOSITE FILTRATION UNIT

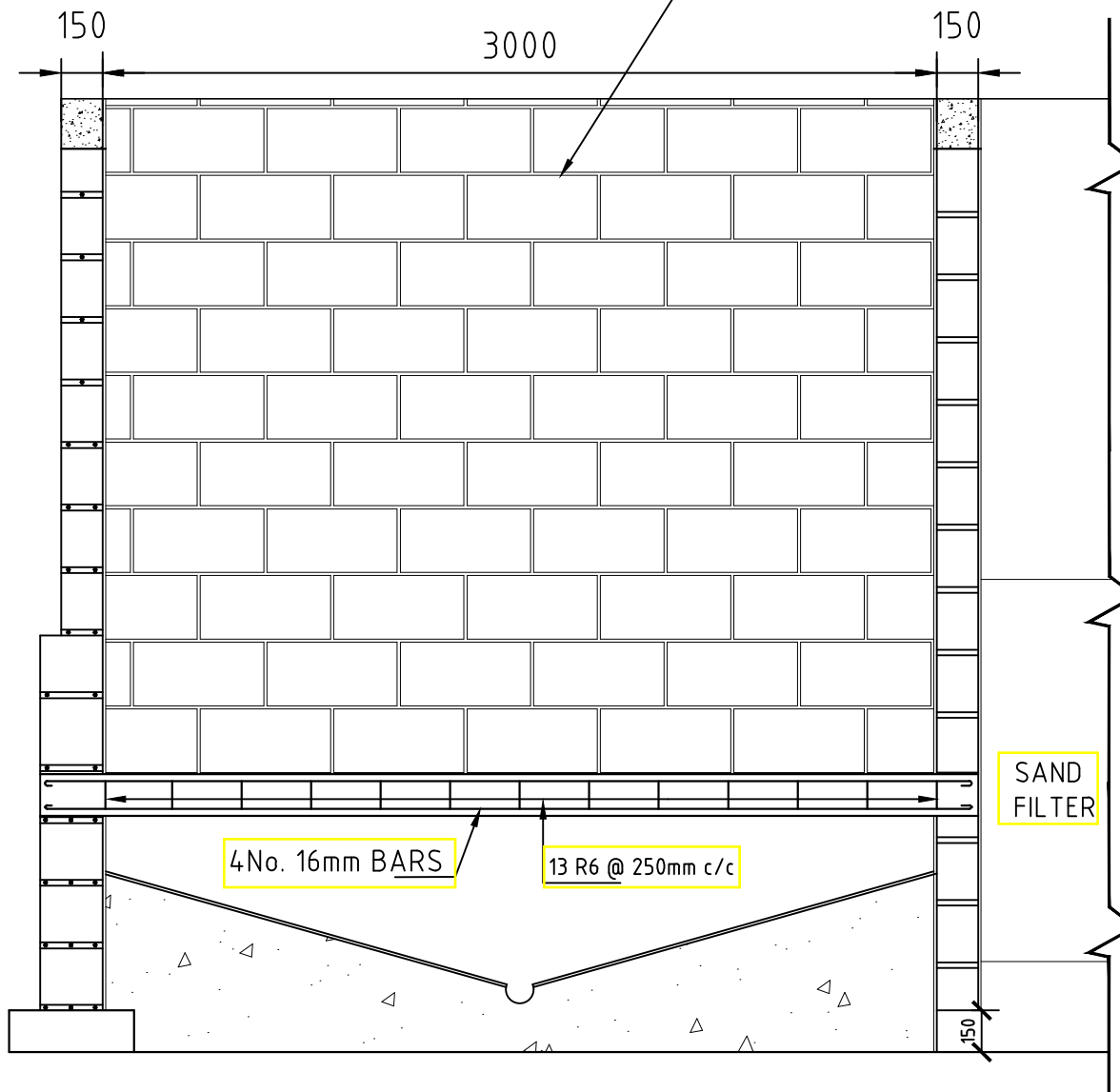
**CIVIL/STRUCTURAL ENGINEER**



Drawn	E.J	Scale(s)	
Designed	GMC	Date	OCTOBER 2023
Checked	ENG. G.O.M	Date	OCTOBER 2023
Approved		Date	
JOB No.	DRG No: PC - TKB - 013		

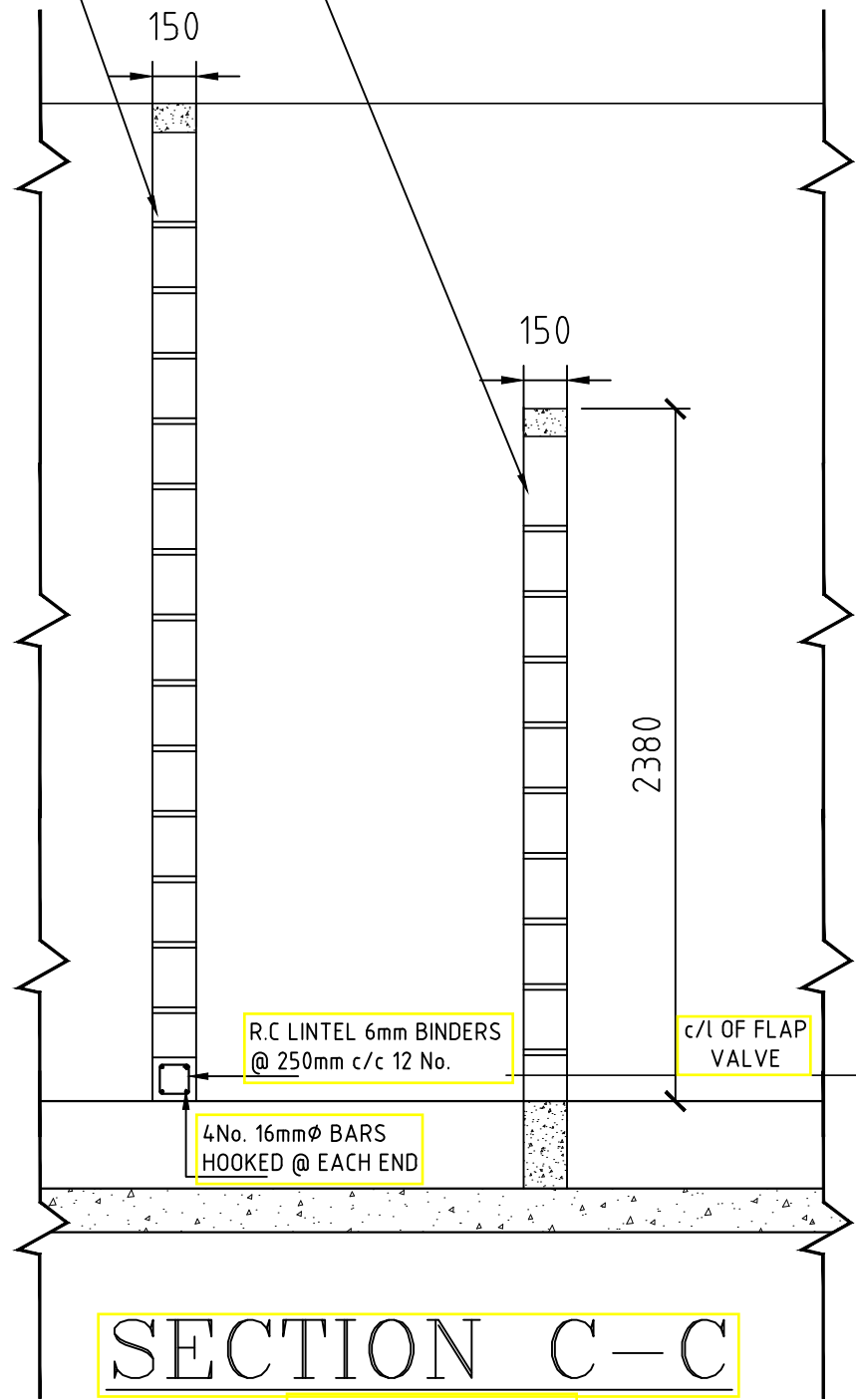


THIS WALLS NOT TO BE BUILT UNTIL PERIMETER WALLS HAVE BEEN PLASTERED.



**SECTION B-B**

SCALE 1:50



**SECTION C-C**

SCALE 1:50

50mm $\phi$ G.I PIPES REQUIRED		
OVERALL LENGTH	NO. OF HOLES PER PIPE	NUMBER REQUIRED
900mm	5	4
1300mm	7	2
1700mm	9	2
2100mm	11	4
TOTAL NUMBER OF NOZZLES REQUIRED = 96		

FILTER CONSTRUCTION			
MATERIAL	DIA. (mm)	DEPTH (mm)	LOCATION
GRAVEL	38-20	75	BOTTOM
	20-12	75	"
	12-5	75	"
	5-2	75	"
COARSE SAND	1.0	75	MIDDLE
SAND EFFECTIVE SIZE	0.5	750	TOP
UNIFORMITY COEFFICIENT	1.5		
TOTAL THICKNESS OF STRUCTURE		1125	

150mm DIA. FLAP VALVE 1 No. SUCH VALVE ON EACH SIDE OF WALL (see plan)

- NOTES:**
- ALL DIMENSIONS ARE IN MILLIMETRES UNLESS STATED OTHERWISE.
  - THIS DRAWING IS TO BE READ IN CONJUNCTION WITH OTHER LAYOUT DRAWINGS
  - CONCRETE CLASS:  
BASES AND BEAMS = 25/20  
LEAN CONCRETE = 15/20

4. CONCRETE COVER = 40mm


**LEGEND:**

GL - GROUND LEVEL  
DN - NOMINAL DIAMETER

REVISIONS		
Date	Suffix	Descriptions

Project:  
CONSULTANCY SERVICES TO CONDUCT SURVEY AND DEVELOPMENT OF DESIGNS FOR TAKABA WATER SUPPLY PROJECT IN MANDERA COUNTY,  
REFERENCE NO. WSTF/EU/RFP/10/2022-2023

**CLIENT**



WATER SECTOR TRUST FUND

**DRAWING TITLE**

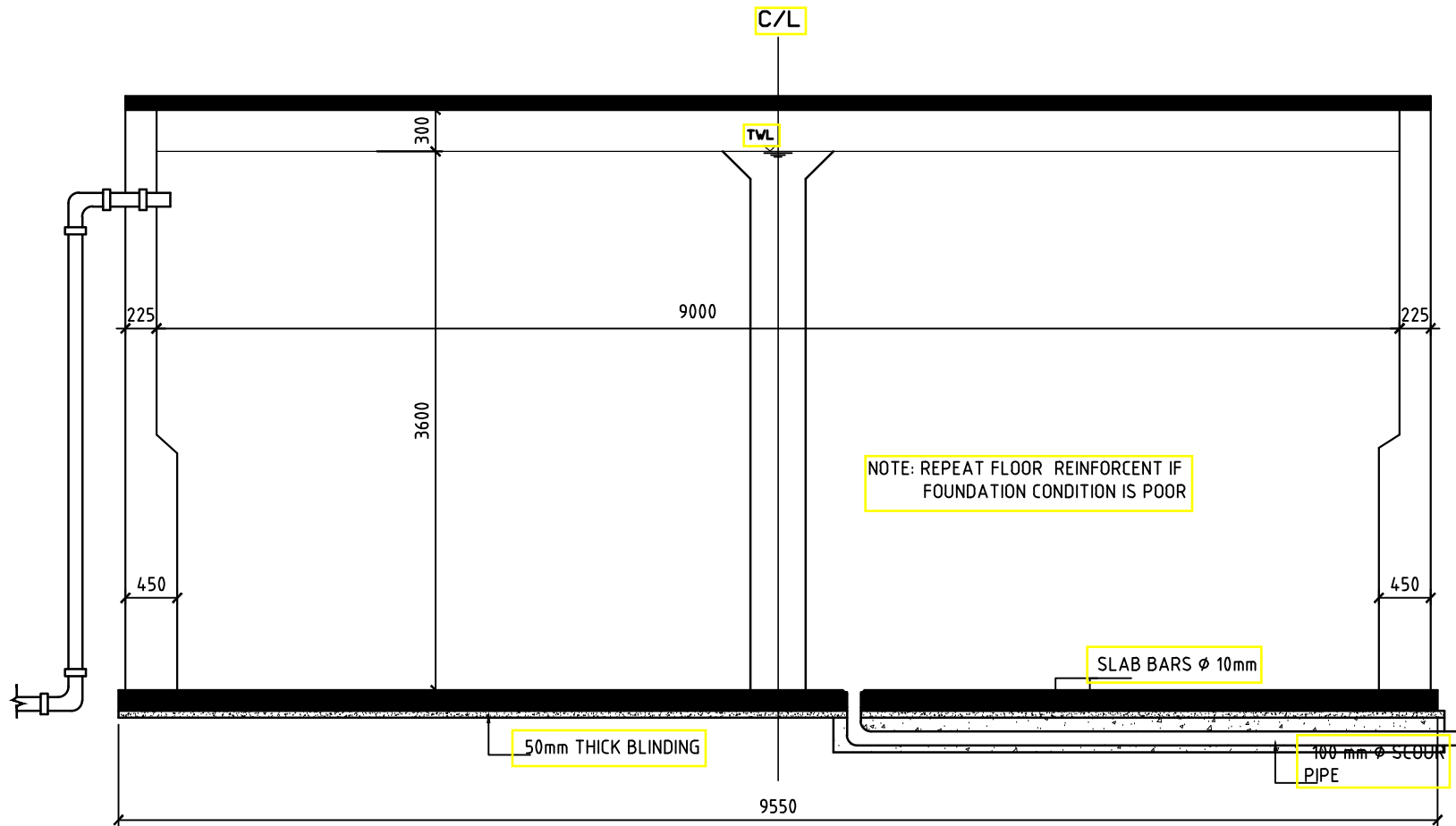
25 m<sup>3</sup>/HR CAPACITY COMPOSITE FILTRATION UNIT

**CIVIL/STRUCTURAL ENGINEER**



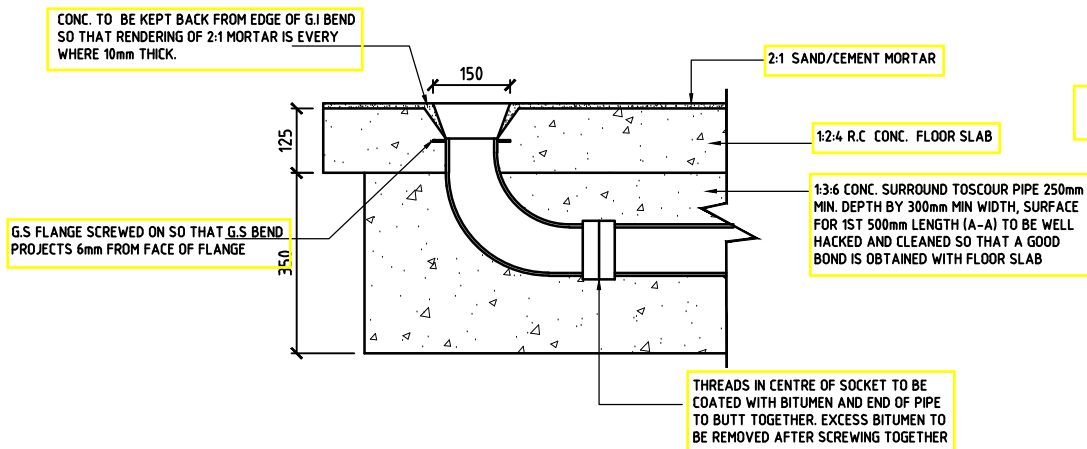
PROFESSIONAL CONSULTANTS  
Professional House  
Kufuga Road, Off Lang'ata Rd  
P.O. Box 24999-00202 Nrb  
+254 202616322

Drawn	E.J	Scale(s)	
Designed	GMC	Date	OCTOBER 2023
Checked	ENG. G.O.M	Date	OCTOBER 2023
Approved		Date	
<b>JOB No.</b>		DRG No: PC - TKB - 014	



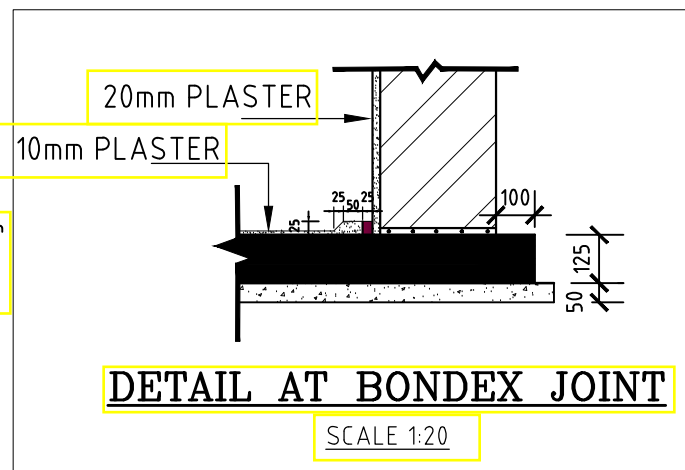
**SECTION THRO' TANK ON CENTRE LINE**

SCALE 1:50



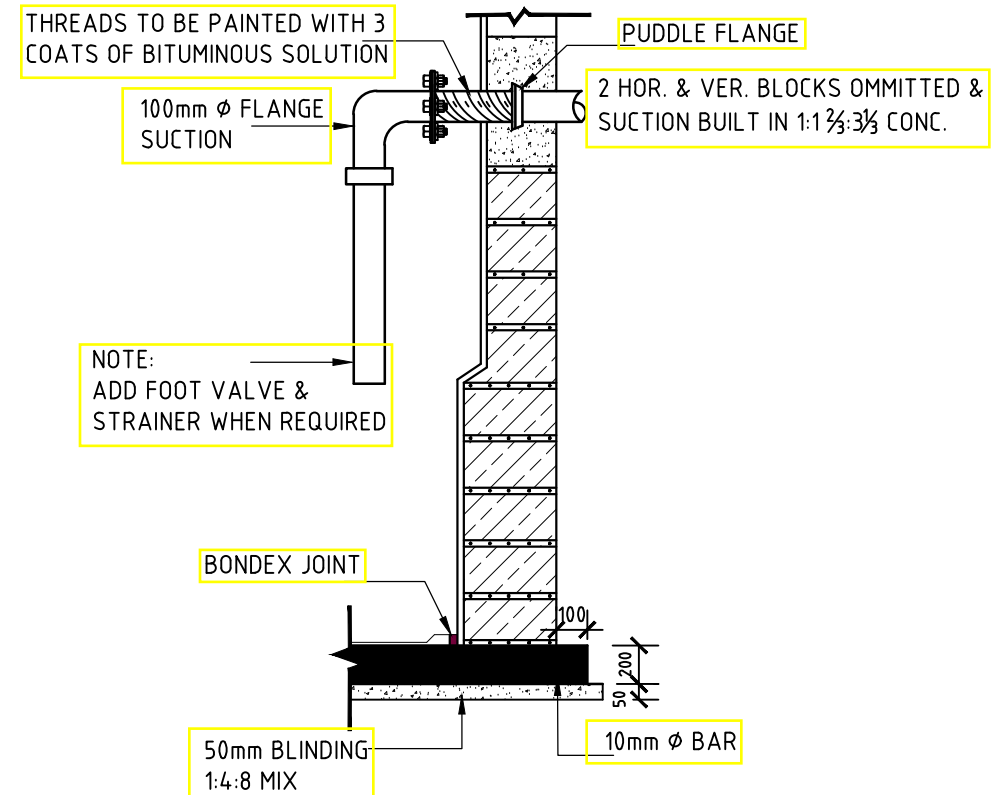
**DETAIL OF 100mm SCOUR PIPE**

SCALE 1:15



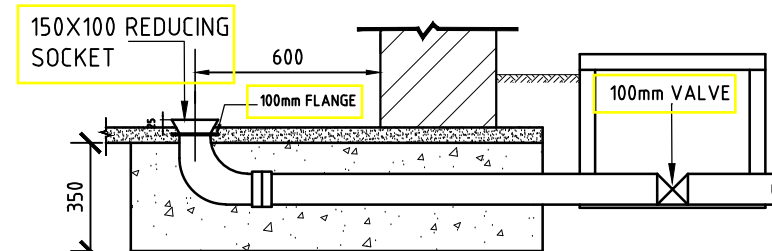
**DETAIL AT BONDEX JOINT**

SCALE 1:20



**SUCTION PIPE ARRANGEMENT**

SCALE 1:25



**TYPICAL ARRANGEMENT OF 100mm OUTLET**

SCALE 1:25

- NOTES:**
- ALL DIMENSIONS ARE IN MILLIMETRES UNLESS STATED OTHERWISE.
  - THIS DRAWING IS TO BE READ IN CONJUNCTION WITH OTHER LAYOUT DRAWINGS
  - CONCRETE CLASS:  
BASES AND BEAMS = 25/20  
LEAN CONCRETE = 15/20

4. CONCRETE COVER = 40mm

**LEGEND:**

- GL - GROUND LEVEL  
DN - NOMINAL DIAMETER

REVISIONS		
Date	Suffix	Descriptions

Project:  
CONSULTANCY SERVICES TO CONDUCT SURVEY AND DEVELOPMENT OF DESIGNS FOR TAKABA WATER SUPPLY PROJECT IN MANDERA COUNTY, REFERENCE NO. WSTF/EU/RFP/10/2022-2023

**CLIENT**



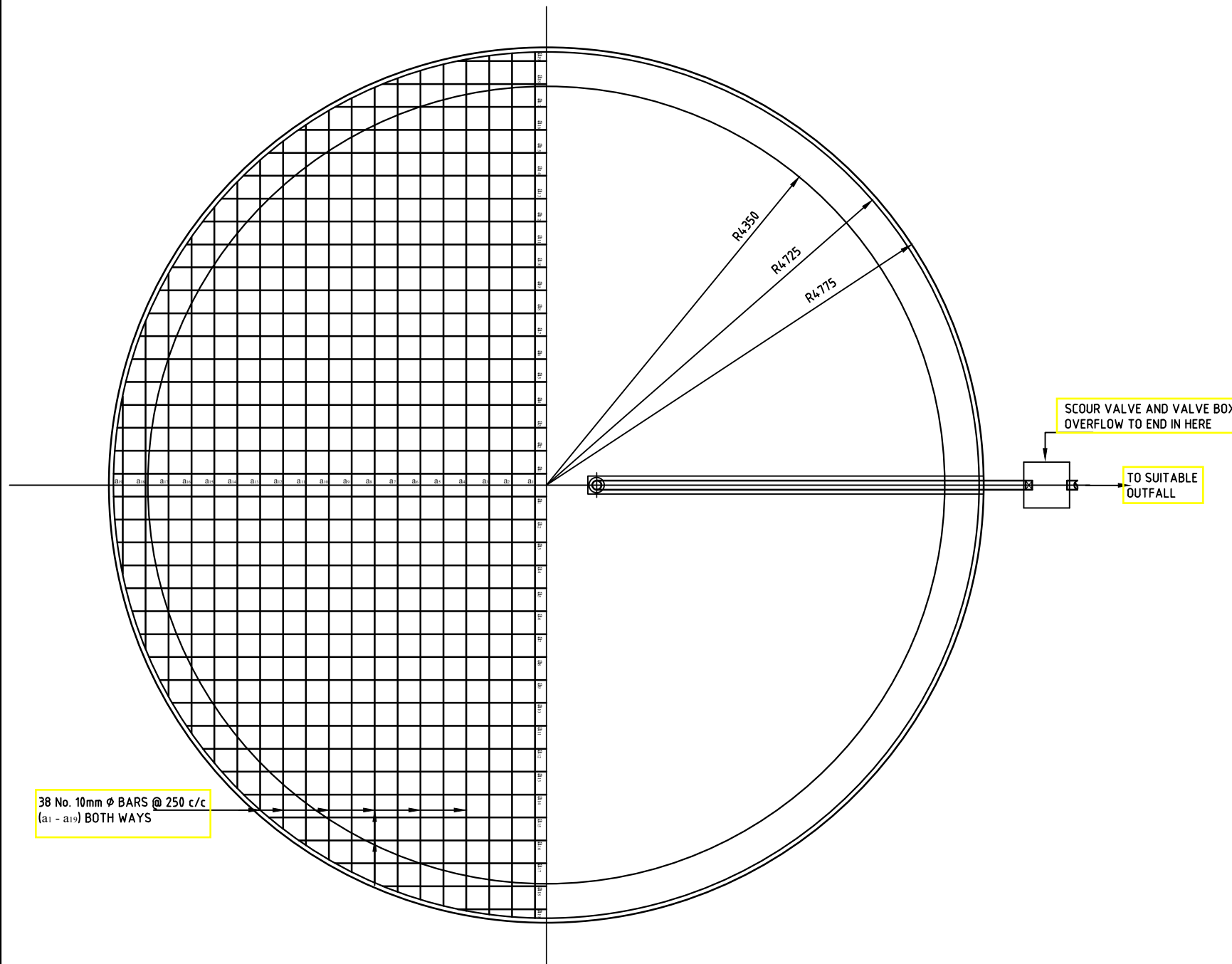
**DRAWING TITLE**

225M3 MASONRY TANK DETAILS

**CIVIL/STRUCTURAL ENGINEER**

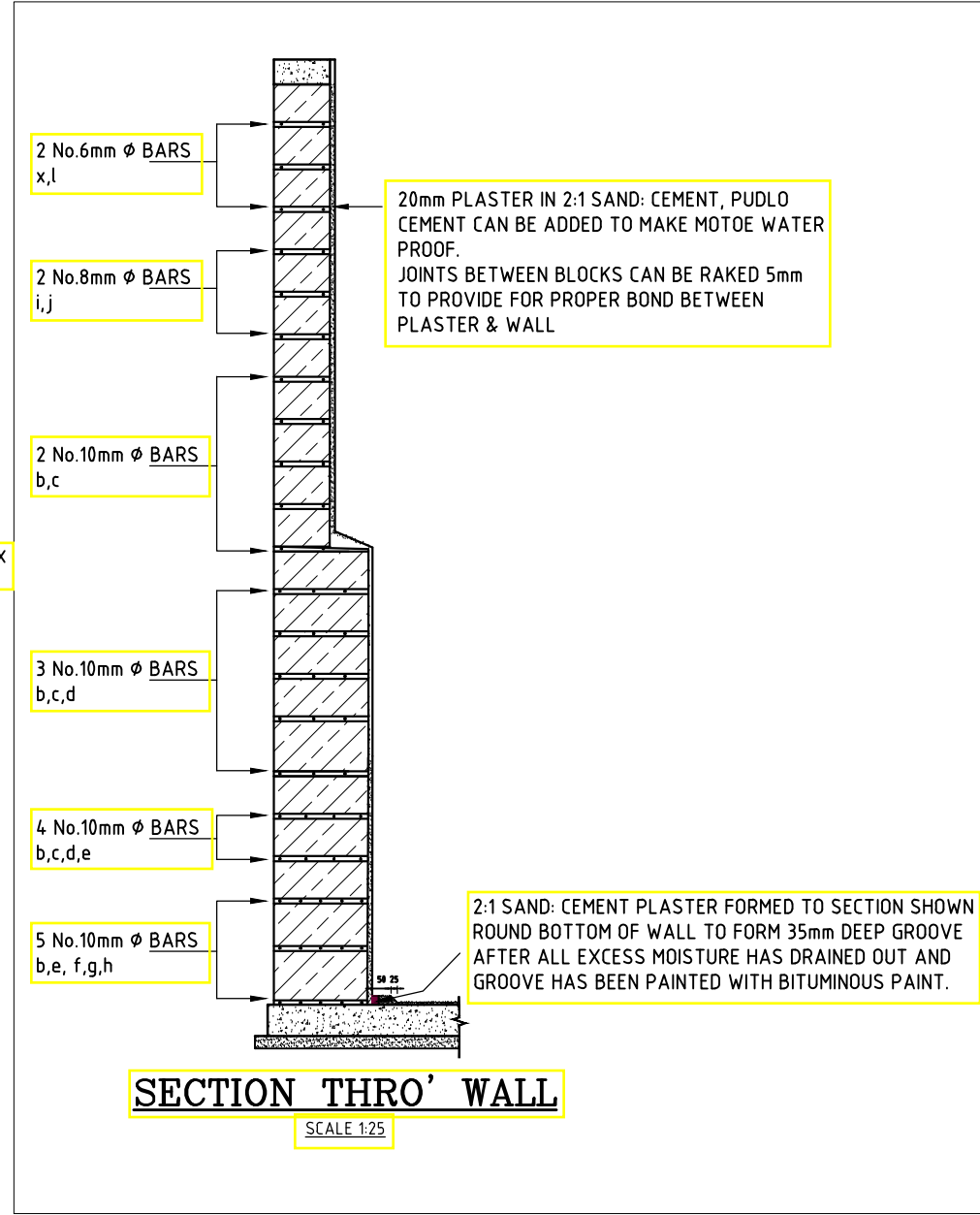
Professional House  
Kufuga Road, Off Lang'ata Rd  
P.O. Box 24996-00502 Nrb  
+254 202016322

Drawn	R.F	Scale(s)	
Designed	GMC	Date	OCTOBER 2023
Checked	ENG. G.O.M	Date	OCTOBER 2023
Approved		Date	
<b>JOB No.</b>		<b>DRG No: PC - TKB - 015</b>	



38 No. 10mm  $\phi$  BARS @ 250 c/c (a1 - a19) BOTH WAYS

**HALF FLOOR PLAN**  
SCALE 1:50



**SECTION THRO' WALL**  
SCALE 1:25

**NOTES:**  
1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS STATED OTHERWISE.  
2. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH OTHER LAYOUT DRAWINGS  
3. CONCRETE CLASS:  
BASES AND BEAMS = 25/20  
LEAN CONCRETE = 15/20

4. CONCRETE COVER = 40mm  
**LEGEND:**  
GL - GROUND LEVEL  
DN - NOMINAL DIAMETER

REVISIONS		
Date	Suffix	Descriptions

Project:  
CONSULTANCY SERVICES TO CONDUCT SURVEY AND DEVELOPMENT OF DESIGNS FOR TAKABA WATER SUPPLY PROJECT IN MANDERA COUNTY,  
REFERENCE NO. WSTF/EU/RFP/10/2022-2023

**CLIENT**



WATER SECTOR TRUST FUND

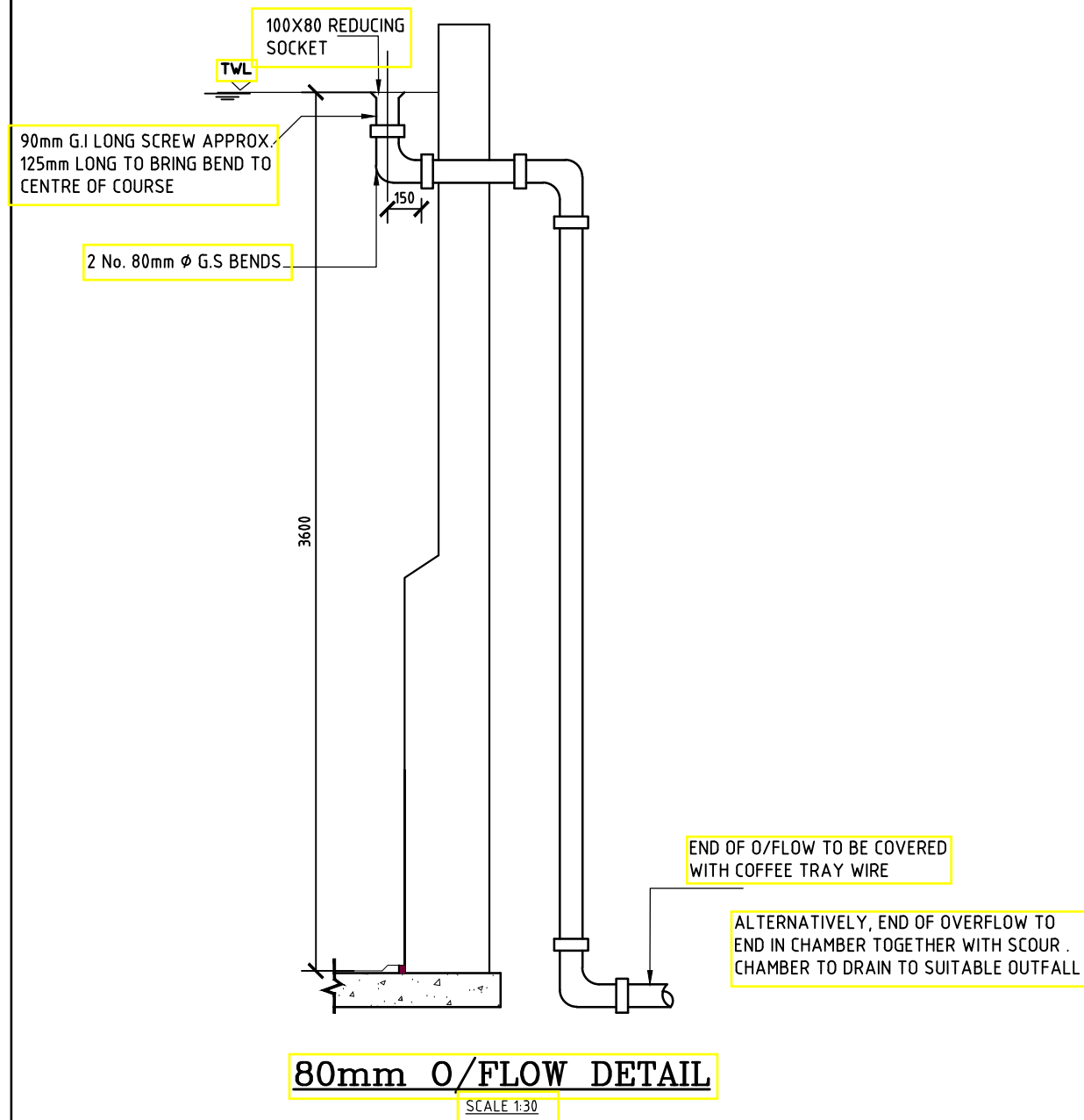
**DRAWING TITLE**  
225M3 MASONRY TANK  
HALF FLOOR AND SECTION  
THROUGH WALL

**CIVIL/STRUCTURAL ENGINEER**



PROFESSIONAL CONSULTANTS  
Professional House  
Kofuqa Road, Off Lang'ata Rd  
P.O Box 24996-00502 Nrb  
+254 202016322

Drawn	R.F	Scale(s)	
Designed	GMC	Date	OCTOBER 2023
Checked	ENG. G.O.M	Date	OCTOBER 2023
Approved		Date	
<b>JOB No.</b>		<b>DRG No: PC - TKB - 016</b>	



COMPONENT	No.	BAR MARK	No.	BAR DIA.	UNBENT LENGTH	BENDING	REMARKS
FLOOR SLAB	1		a1	4	2250	STRAIGHT	
			a2	4	3750		
			a3	4	4725		
			a4	4	5475		
			a5	4	6150		
			a6	4	6750		
			a7	4	7125		
			a8	4	7500		
			a9	4	7875		
			a10	4	8175		
			a11	4	8475		
			a12	4	8750		
			a13	4	8900		
			a14	4	9075		
			a15	4	9225		
			a16	4	9300		
			a17	4	9400		
			a18	4	9500		
			a19	4	9525		
WALL			b	15	3100	BENT TO INT. RADIUS OF 4690 2 LENGTHS 1150 1 LENGTH 8200 WITH 3 LAPS OF 600 EACH (NET LENGTH OF BAR 29200)	CIRCUMFERENTIAL BARS
			c	14	30550	BENT TO INT. RADIUS OF 4775 2 LENGTHS 10500 1 LENGTH 7750 WITH 3 LAPS OF 600 EACH (NET LENGTH OF BAR 28750)	
			d	9	29976	BENT TO INT. RADIUS OF 4500 2 LENGTHS 7175 WITH 3 LAPS OF 600 EACH (NET LENGTH OF 1 BAR 28175)	
			e	4	30675	BENT TO INT. RADIUS OF 4425 2 LENGTHS 11500 1 LENGTH 6675 WITH 3 LAPS OF 600 EACH (NET LENGTH OF 1 BAR 27675)	
			f	2	30275	BENT TO INT. RADIUS OF 4610 2 LENGTHS 11500 1 LENGTH 7875 WITH 3 LAPS OF 600 EACH (NET LENGTH OF 1 BAR 28875)	
			g	2	29800	BENT TO INT. RADIUS OF 4537 2 LENGTHS 11500 1 LENGTH 7475 WITH 3 LAPS OF 600 EACH (NET LENGTH OF 1 BAR 28475)	
			h	2	30250	BENT TO INT. RADIUS OF 4460 2 LENGTHS 11500 1 LENGTH 7000 WITH 3 LAPS OF 600 EACH (NET LENGTH OF 1 BAR 28300)	
			i	3	30250	BENT TO INT. RADIUS OF 4665 2 LENGTHS 11500 1 LENGTH 8200 WITH 3 LAPS OF 450 EACH (NET LENGTH OF 1 BAR 29200)	
			j	3	30250	BENT TO INT. RADIUS OF 4575 2 LENGTHS 11500 1 LENGTH 7750 WITH 3 LAPS OF 450 EACH (NET LENGTH OF 1 BAR 28750)	
			x	3	30400	BENT TO INT. RADIUS OF 4665 2 LENGTHS 11500 1 LENGTH 6400 WITH 3 LAPS OF 400 EACH (NET LENGTH OF 1 BAR 29200)	
			l	3	29950	BENT TO INT. RADIUS OF 4575 2 LENGTHS 11500 1 LENGTH 7750 WITH 3 LAPS OF 400 EACH (NET LENGTH OF 1 BAR 28750)	

- GENERAL NOTES**
1. THE 10mm THICK 2:1 SAND:CEMENT PLASTER TO BE FLOATED TO A SMOOTH FINISH WITH A STEEL STRAIGHT EDGE UNTIL A DENSE SURFACE RICH IN CEMENT IS OBTAINED. GROOVE FOR BONDEX JOINT TO BE FORMED AT THE SAME TIME
  2. THE TANK WALL MUST NOT BE BONDED TO THE FLOOR SLAB. TO ENSURE THIS, BEFORE COMMENCING TO BUILD THE TANK WALL THE SURFACE TO THE FLOOR SLAB IS TO BE WELL COATED WITH BITUMEN(UNDER WALL ONLY)
  3. ALL BALLAST FOR CONCRETE TO BE BROKEN FROM SOUND ROCK TO A MINIMUM SIZE OF 20mm. IT MUST PASS THROUGH A 22mm MESH SCREEN AND SHOULD BE EVENLY GRADED TO 6mm SIZE SO THAT APPROX. 50% IS RETAINED ON A 13mm MESH AND NOT LESS THAN 15% PASSES A 10mm MESH.
  4. ALL SAND USED MUST BE CLEAN, SHARP AND FREE FROM ALL EARTH, CLAY, VEGETATION AND OTHER DELETERIOUS MATTER.
  5. WALL STONE IS TO BE SOAKED FOR 24HRS IN WATER BEFORE LAYING.
  6. PARTICULAR CARE SHOULD BE TAKEN TO ENSURE THAT ALL JOINTS BTWN STONES IN THE WALL ARE FILLED WITH MORTAR. ALL JOINTS ESTIMATED AS 25mm.
  7. 30mm MIN COVER TO ALL REINFORCEMENT TO BE PROVIDED.

**NOTES:**

1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS STATED OTHERWISE.
2. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH OTHER LAYOUT DRAWINGS
3. CONCRETE CLASS:  
BASES AND BEAMS = 25/20  
LEAN CONCRETE = 15/20

4. CONCRETE COVER = 40mm

**LEGEND:**

GL - GROUND LEVEL  
DN - NOMINAL DIAMETER

REVISIONS		
Date	Suffix	Descriptions

Project:  
CONSULTANCY SERVICES TO CONDUCT SURVEY AND DEVELOPMENT OF DESIGNS FOR TAKABA WATER SUPPLY PROJECT IN MANDERA COUNTY.  
REFERENCE NO. WSTF/EU/RFP/10/2022-2023

**CLIENT**



WATER SECTOR TRUST FUND

**DRAWING TITLE**

225M3 MASONRY TANK OVERFLOW AND DESCRIPTION

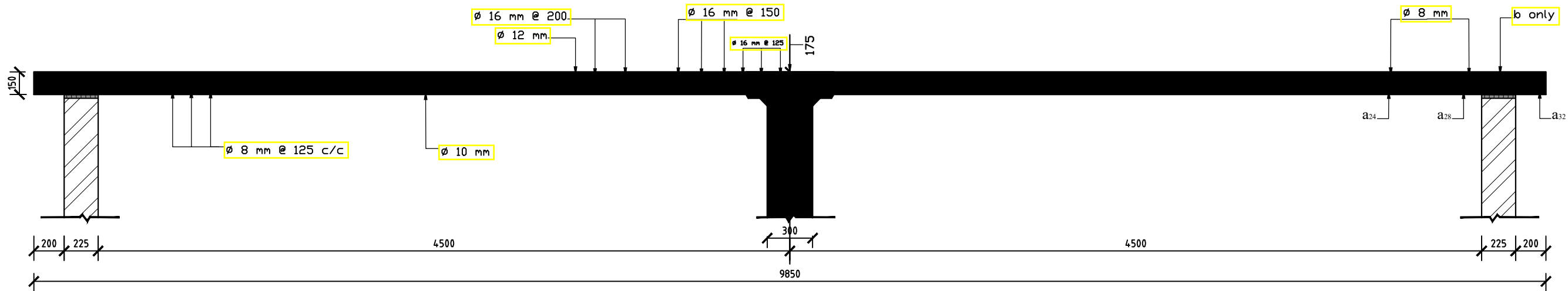
**CIVIL/STRUCTURAL ENGINEER**



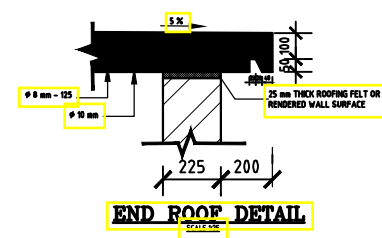
PROFESSIONAL CONSULTANTS  
Professional House  
Karfaga Road, Off Lang'ata Rd  
P.O. Box 24996-00502 Nrb  
+254 202016322

Drawn	R.F	Scale(s)	
Designed	GMC	Date	OCTOBER 2023
Checked	ENG. G.O.M	Date	OCTOBER 2023
Approved		Date	
<b>JOB No.</b>		DRG No: PC - TKB - 017	

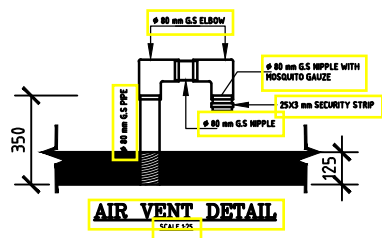




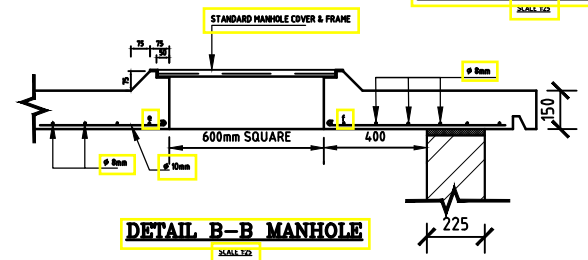
**SECTION A-A**



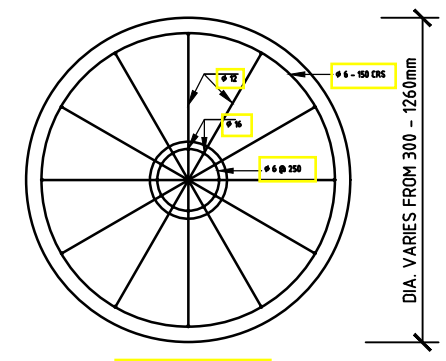
**END ROOF DETAIL**



**AIR VENT DETAIL**

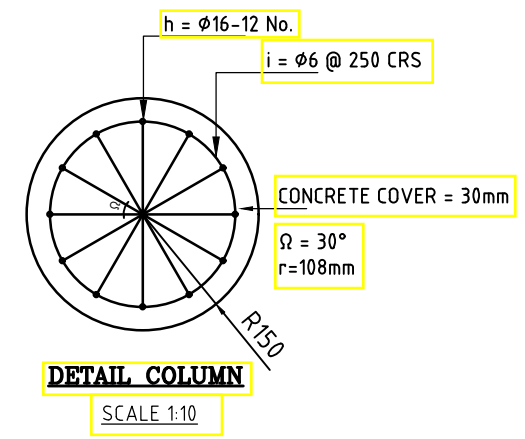


**DETAIL B-B MANHOLE**



**SECTION C-C**

**NOTES:**  
 BOTTOM STEEL: ø 8 - ø 16-125  
 LOOP STEEL: at R=300 ø 16-125  
 RADIAL STEEL: ø 12 - ø 16-200  
 BARS: ø 6 - ø 16-250  
 c-c - c-c EVERY 2°30' c-c 0°  
 ø 6 - ø 16-250  
 ø 6 - ø 16-250  
 TOP STEEL: ø 16 - ø 16-125  
 LOOP STEEL: ø 8 - ø 16-150  
 ø 8 - ø 16-200  
 RADIAL STEEL: ø 12 - ø 16-200  
 ø 12 - ø 16-200  
 ø 12 - ø 16-200  
 ø 12 - ø 16-200  
 MIDDLE RING ø 16 WITH 10 BARS ø 12 AS INDICATED ON IT (SEE DETAIL)



**DETAIL COLUMN**  
SCALE 1:10

**NOTES:**  
 1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS STATED OTHERWISE.  
 2. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH OTHER LAYOUT DRAWINGS.  
 3. CONCRETE CLASS:  
 BASES AND BEAMS = 25/20  
 LEAN CONCRETE = 15/20

4. CONCRETE COVER = 40mm  
**LEGEND:**  
 GL - GROUND LEVEL  
 DN - NOMINAL DIAMETER

REVISIONS		
Date	Suffix	Descriptions

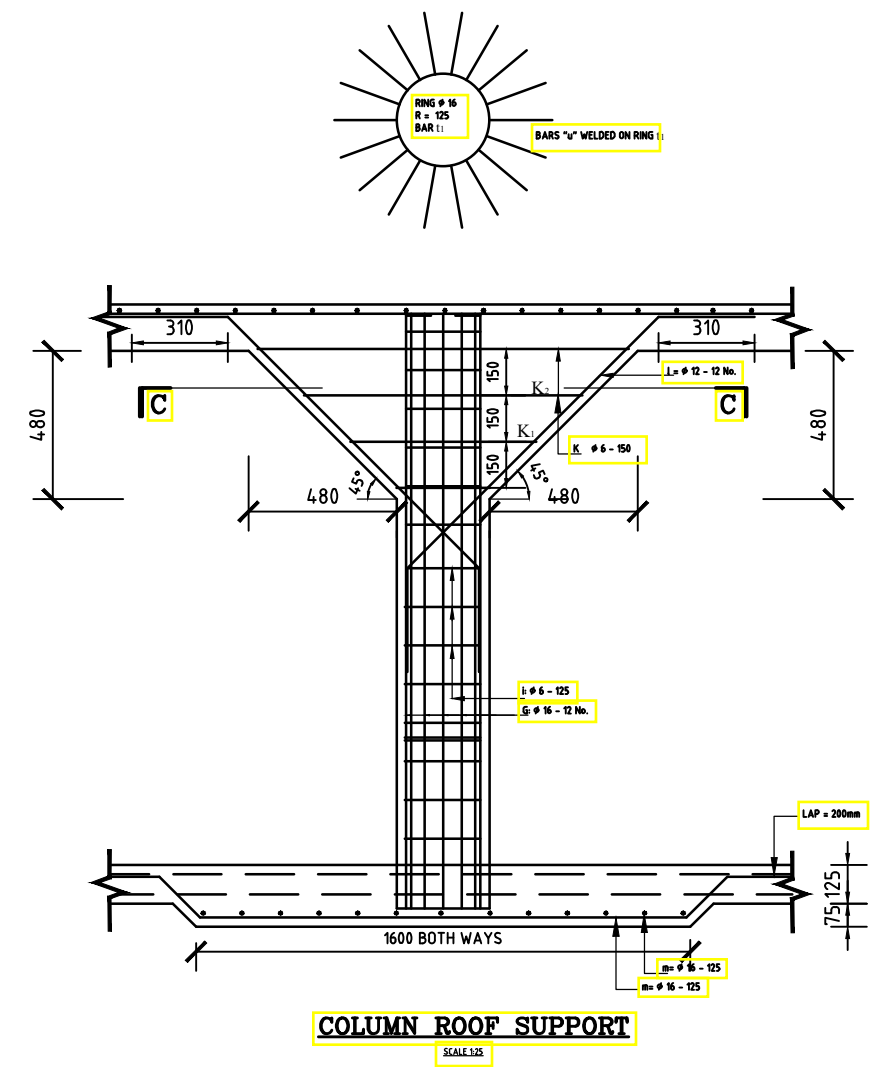
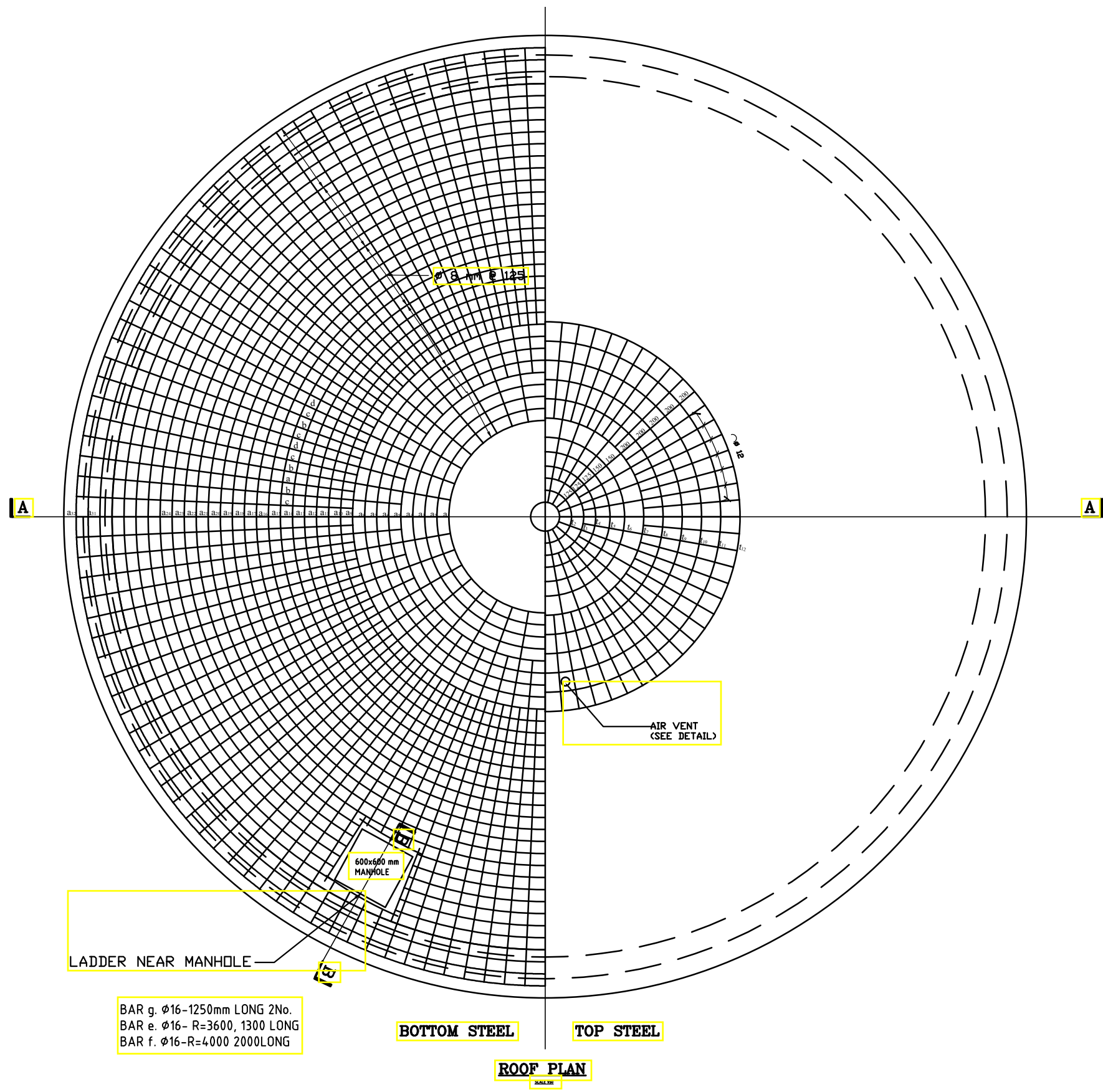
**Project:**  
 CONSULTANCY SERVICES TO CONDUCT SURVEY AND DEVELOPMENT OF DESIGNS FOR TAKABA WATER SUPPLY PROJECT IN MANDERA COUNTY,  
 REFERENCE NO. WSTF/EU/RFP/10/2022-2023

**CLIENT**  
  
 WATER SECTOR TRUST FUND

**DRAWING TITLE**  
 225M3 MASONRY TANK SECTION AND TANK DETAILS

**CIVIL/STRUCTURAL ENGINEER**  
  
 PROFESSIONAL CONSULTANTS  
 Rufuqa Road Off Lang'ata Rd  
 P.O. Box 24996-00502 Nrb  
 +254 202016322

Drawn	R.F	Scale(s)	
Designed	GMC	Date	OCTOBER 2023
Checked	ENG. G.O.M	Date	OCTOBER 2023
Approved		Date	
<b>JOB No.</b>		DRG No: PC - TKB - 018	



**NOTES:**

- ALL DIMENSIONS ARE IN MILLIMETRES UNLESS STATED OTHERWISE.
- THIS DRAWING IS TO BE READ IN CONJUNCTION WITH OTHER LAYOUT DRAWINGS
- CONCRETE CLASS:  
BASES AND BEAMS = 25/20  
LEAN CONCRETE = 15/20

4. CONCRETE COVER = 40mm

**LEGEND:**

GL - GROUND LEVEL  
DN - NOMINAL DIAMETER

REVISIONS		
Date	Suffix	Descriptions

Project:  
CONSULTANCY SERVICES TO CONDUCT SURVEY AND DEVELOPMENT OF DESIGNS FOR TAKABA WATER SUPPLY PROJECT IN MANDERA COUNTY, REFERENCE NO. WSTF/EU/RFP/10/2022-2023



**DRAWING TITLE**

225M3 MASONRY TANK  
ROOF SLAB AND COLUMNS  
REINFORCEMENT

**CIVIL/STRUCTURAL ENGINEER**

PROFESSIONAL CONSULTANTS  
Professional House  
Kufuga Road, Off Lang'ata Rd  
P.O. Box 24996-00502 Nrb  
+254 202016322

Drawn	R.F	Scale(s)	
Designed	GMC	Date	OCTOBER 2023
Checked	ENG. G.O.M	Date	OCTOBER 2023
Approved		Date	
<b>JOB No.</b>		DRG No: PC - TKB - 019	

BAR BENDING SCHEDULE										
DESTINATION	BAR MARK	TOTAL No.	BAR DIA. mm	LENGTH PER BAR (mm)	TOTAL LENGTH PER BAR MARK (mm)					BENDING
					∅ 6	∅ 8	∅ 10	∅ 12	∅ 16	
BOTTOM RADIAL	b	37	10	5100			183.60			 STRAIGHT "
	c	60	10	3400			122.40			
	d	72	10	2800			201.60			
TOP RADIAL	u	18	16	1900				34.20		"
	v	36	16	1000				36.00		
	w	18	16	1700				30.60		
BOTTOM LOOP	a1	32	8	6,283						 a: R1= 1000 R2= 1125 R32=4875 per lap 200mm
	a32			7,069			681.90			
NOTE: a24, a28, a32 2No. each				30,630						
TOP LOOP	t1	12	16	785					73,95	 R1= 125 R2= 250 R3= 500 R4= 650 R5= 800 R7= 1000 R8= 2000 per lap 400mm
	t2			12,567						
at MANHOLE	e	1	8	1700		1,70				 e- R= 3600 f- R= 4500 g: STRAIGHT
	f	1	8	2000		2,00	4,00			
	g	2	10	2000						
COLUMN	b	12	16	4,450					53,40	
	i			16	6	800	12,80			
COLUMN TOP	k	3	6	2060						 l: R = 120 R=280 R=450 R=590 laps = 300mm
	l			12	12	3130	9,20			
COLUMN BOTTOM	m	26	16	2350					61,10	
TOTAL LENGTH					2200	685,60	511,60	121,80	186,45	(IN METERS)
TOTAL WEIGHT					5kg	271kg	316kg	109kg	298kg	TOTAL 999 kg - 1.0 TON

**NOTES:**  
1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS STATED OTHERWISE.  
2. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH OTHER LAYOUT DRAWINGS  
3. CONCRETE CLASS:  
BASES AND BEAMS = 25/20  
LEAN CONCRETE = 15/20

4. CONCRETE COVER = 40mm  
**LEGEND:**  
GL - GROUND LEVEL  
DN - NOMINAL DIAMETER

REVISIONS		
Date	Suffix	Descriptions

**Project:**  
CONSULTANCY SERVICES TO CONDUCT SURVEY AND DEVELOPMENT OF DESIGNS FOR TAKABA WATER SUPPLY PROJECT IN MANDERA COUNTY.  
REFERENCE NO. WSTF/EU/RFP/10/2022-2023



**DRAWING TITLE**  
225M3 MASONRY TANK BAR SCHEDULE

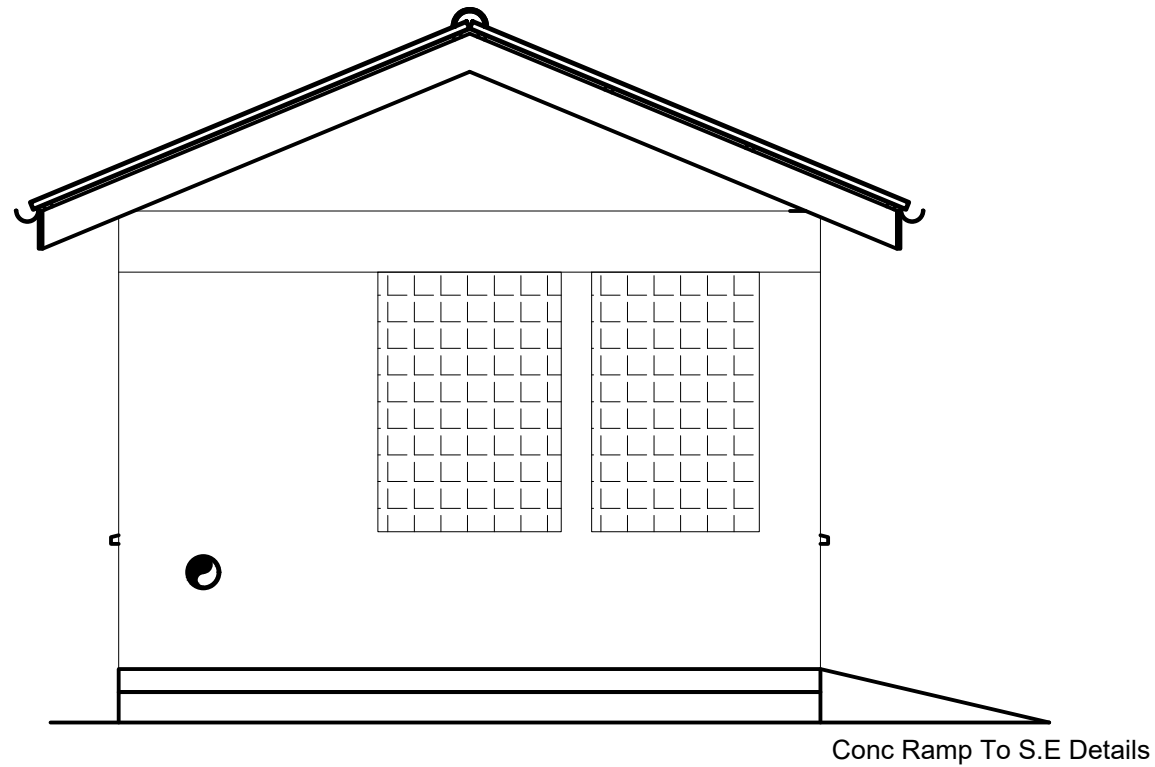
**CIVIL/STRUCTURAL ENGINEER**

PROFESSIONAL CONSULTANTS  
Professional House  
Kofege Road off Langata Rd  
P.O Box 24996-00502 Nrb  
+254 202016322

Drawn	R.F	Scale(s)	
Designed	GMC	Date	OCTOBER 2023
Checked	ENG. G.O.M	Date	OCTOBER 2023
Approved		Date	
<b>JOB No.</b>		DRG No: PC - TKB - 020	

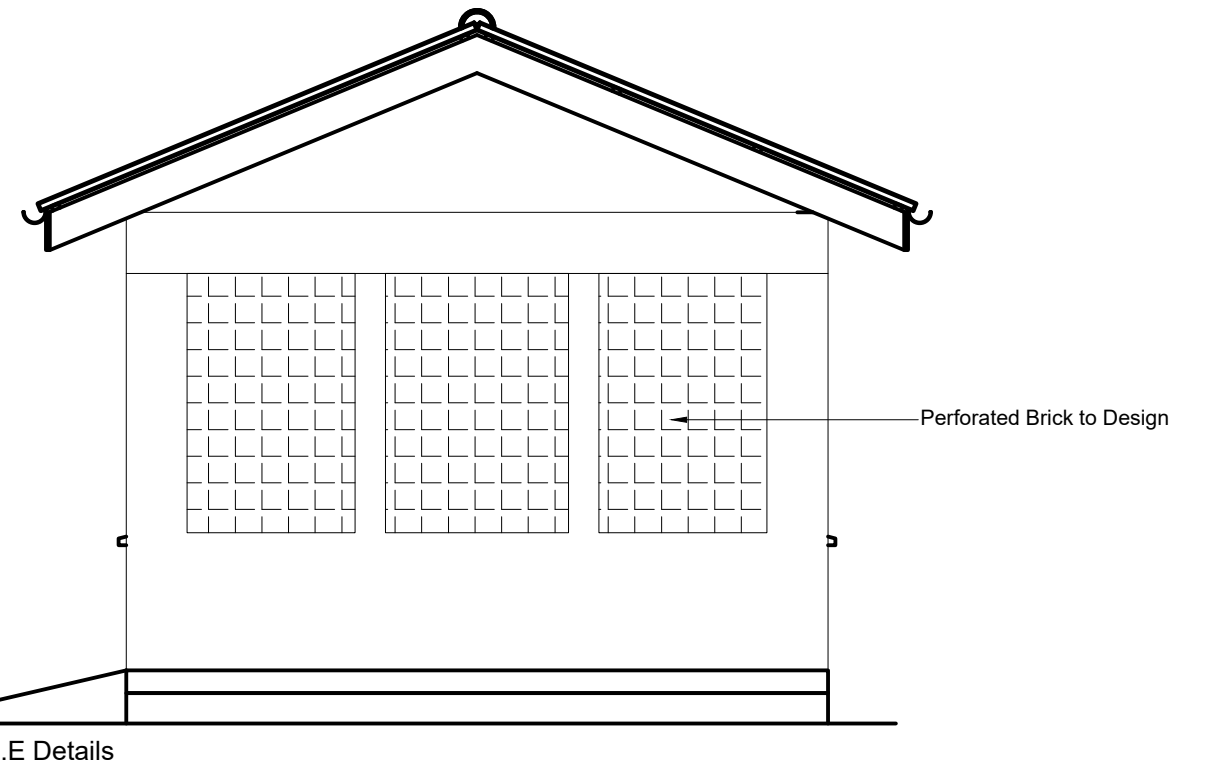






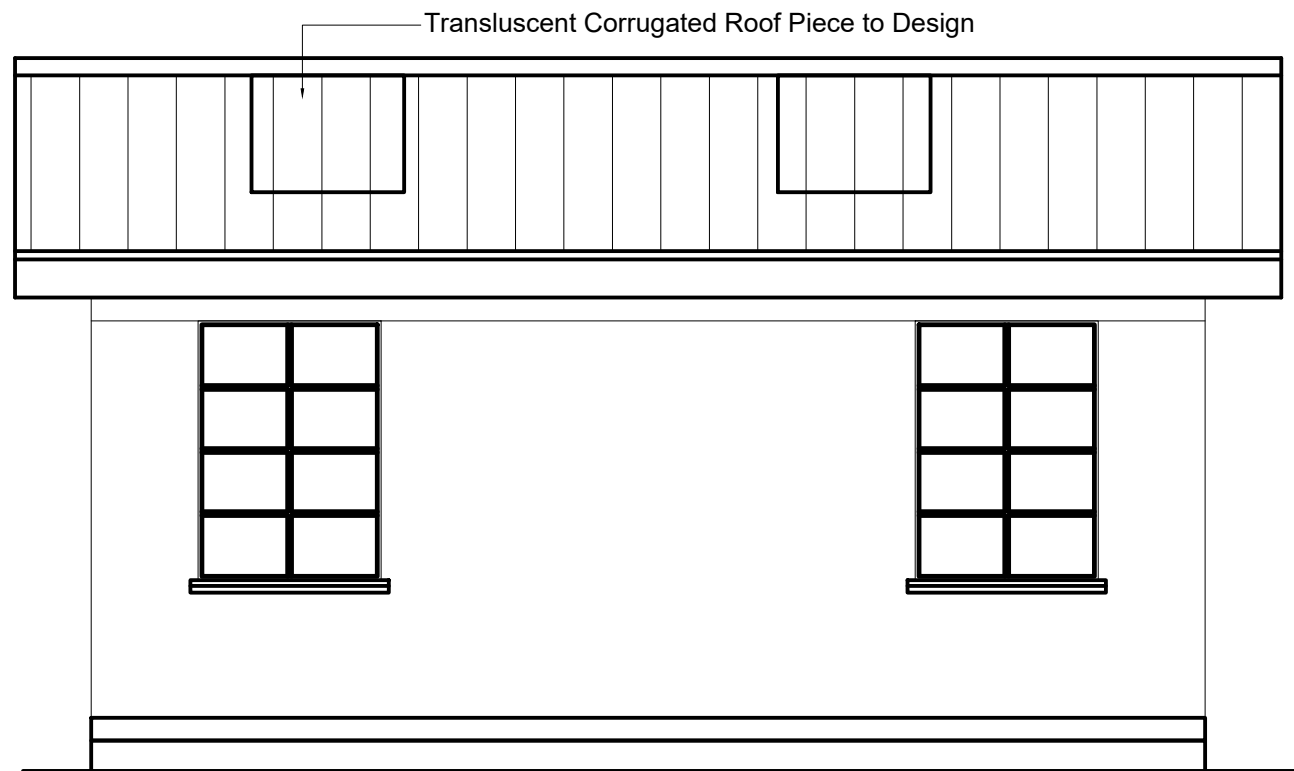
**ELEVATION 01**  
Scale 1:50 (A3)

Conc Ramp To S.E Details



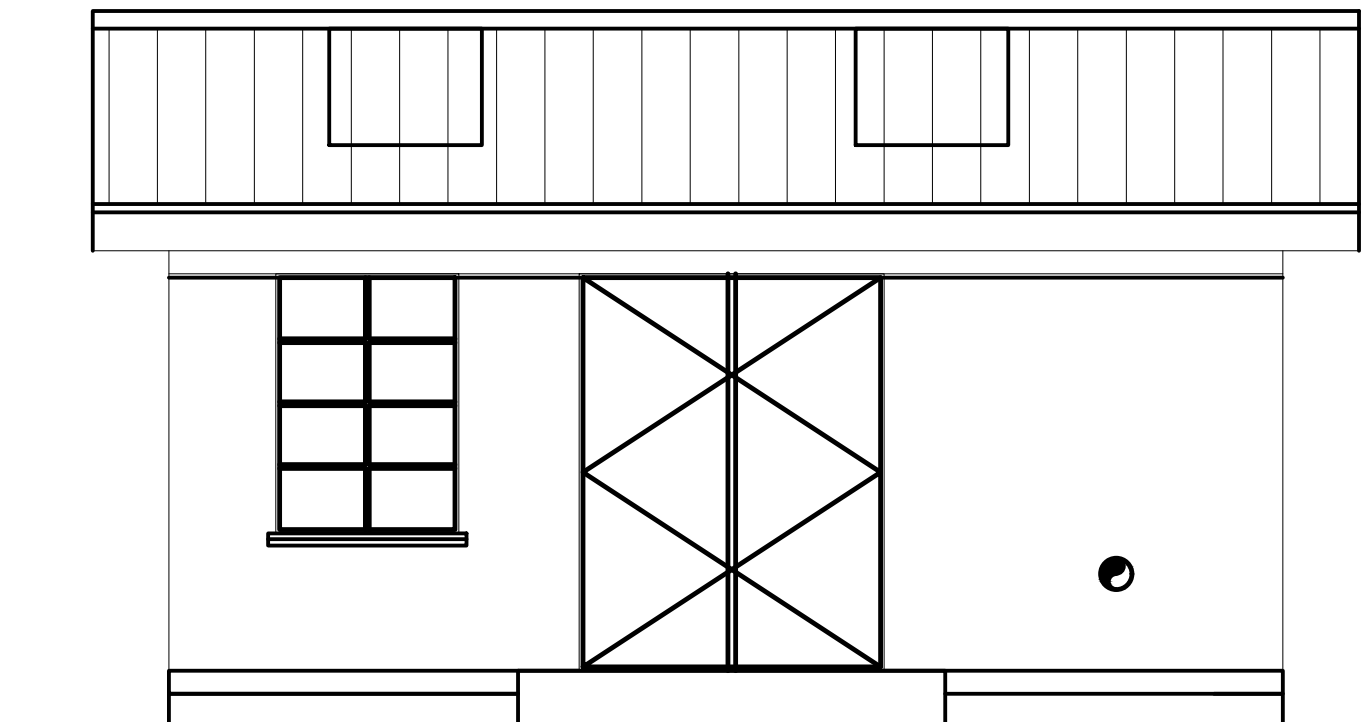
**ELEVATION 03**  
Scale 1:50 (A3)

Conc Ramp To S.E Details



**ELEVATION 02**  
Scale 1:50 (A3)

Translucent Corrugated Roof Piece to Design



**ELEVATION 04**  
Scale 1:50 (A3)

**NOTES:**

- ALL DIMENSIONS ARE IN MILLIMETRES UNLESS STATED OTHERWISE.
- THIS DRAWING IS TO BE READ IN CONJUNCTION WITH OTHER LAYOUT DRAWINGS
- CONCRETE CLASS:  
BASES AND BEAMS = 25/20  
LEAN CONCRETE = 15/20

4. CONCRETE COVER = 40mm

**LEGEND:**

- GL - GROUND LEVEL
- DN - NOMINAL DIAMETER

**REVISIONS**

Date	Suffix	Descriptions

Project:  
CONSULTANCY SERVICES TO CONDUCT SURVEY AND DEVELOPMENT OF DESIGNS FOR TAKABA WATER SUPPLY PROJECT IN MANDERA COUNTY,  
REFERENCE NO. WSTF/EU/RFP/10/2022-2023

**CLIENT**



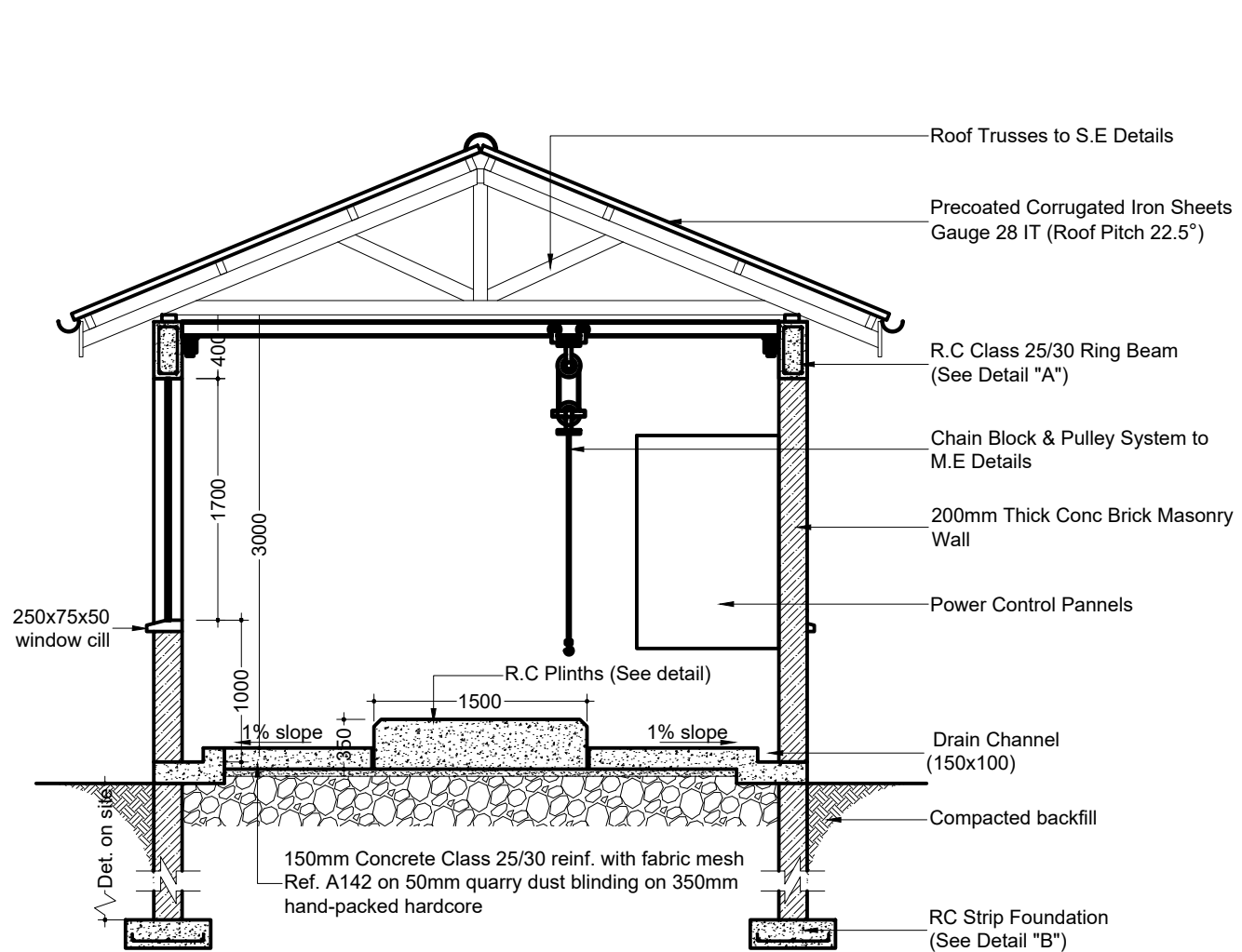
**DRAWING TITLE**

PUMP HOUSE ELEVATIONS

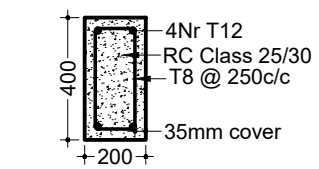
**CIVIL/STRUCTURAL ENGINEER**



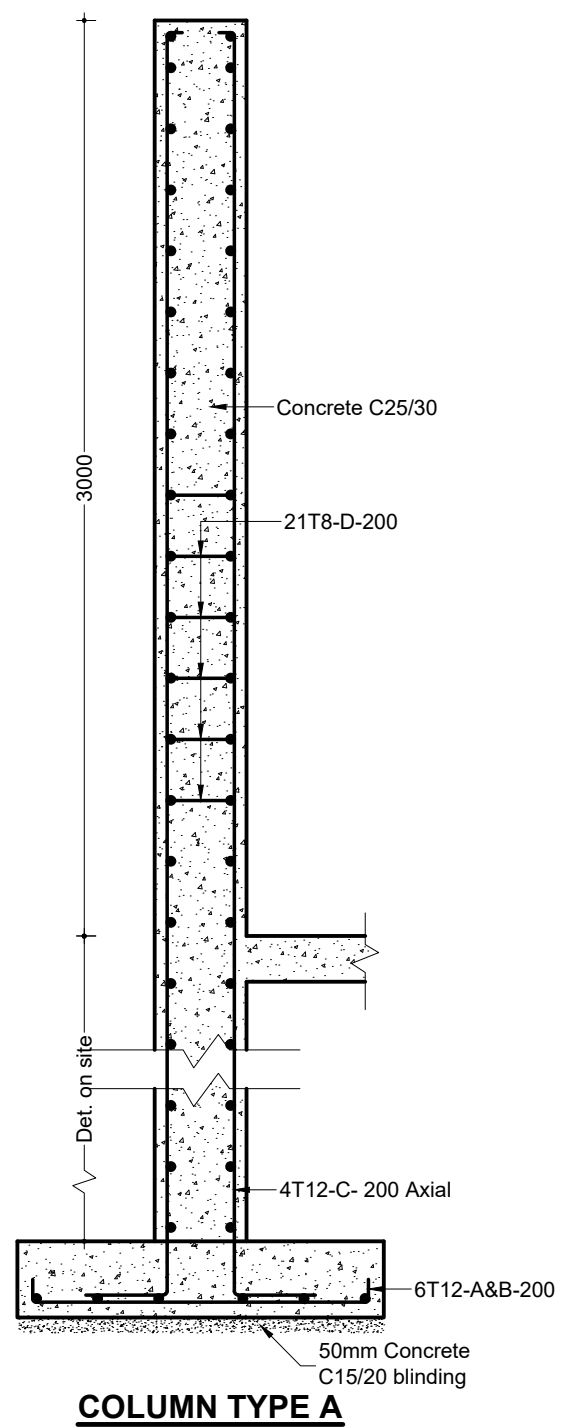
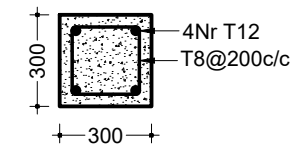
Drawn	R.F	Scale(s)	
Designed	GMC	Date	OCTOBER 2023
Checked	ENG. G.O.M	Date	OCTOBER 2023
Approved		Date	
<b>JOB No.</b>		<b>DRG No: PC - TKB - 031</b>	



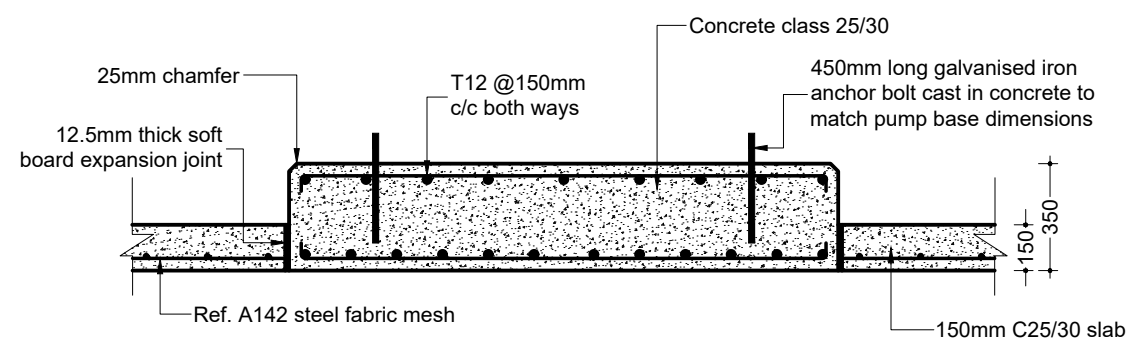
**SECTION "A-A"**  
Scale 1:50 (A3)



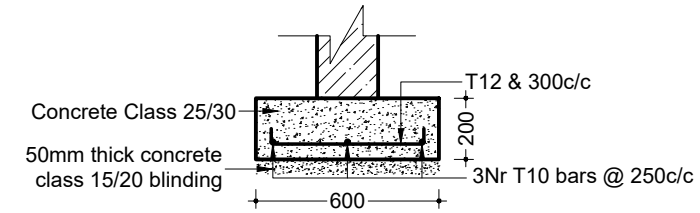
**DETAIL "A"**  
Scale 1:25 (A3)



**COLUMN TYPE A**  
Scale 1:50



**SECTION THROUGH "A-A"**  
Scale 1:25 (A3)



**DETAIL "B"**  
Scale 1:25 (A3)

**NOTES:**  
1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS STATED OTHERWISE.  
2. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH OTHER LAYOUT DRAWINGS  
3. CONCRETE CLASS:  
BASES AND BEAMS = 25/20  
LEAN CONCRETE = 15/20

4. CONCRETE COVER = 40mm  
**LEGEND:**  
GL - GROUND LEVEL  
DN - NOMINAL DIAMETER

REVISIONS		
Date	Suffix	Descriptions

Project:  
CONSULTANCY SERVICES TO CONDUCT SURVEY AND DEVELOPMENT OF DESIGNS FOR TAKABA WATER SUPPLY PROJECT IN MANDERA COUNTY.  
REFERENCE NO. WSTF/EU/RFP/10/2022-2023

**CLIENT**

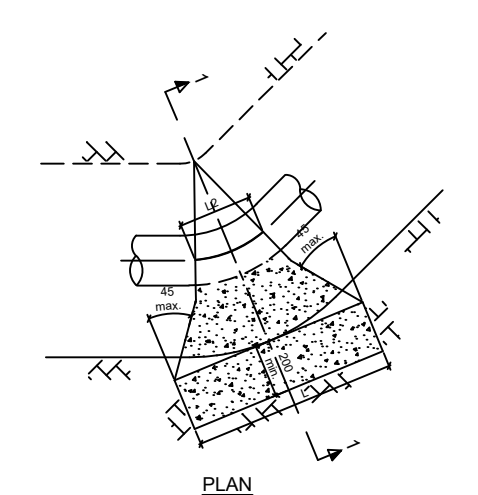
WATER SECTOR TRUST FUND

**DRAWING TITLE**  
PUMP HOUSE SECTION DETAILS

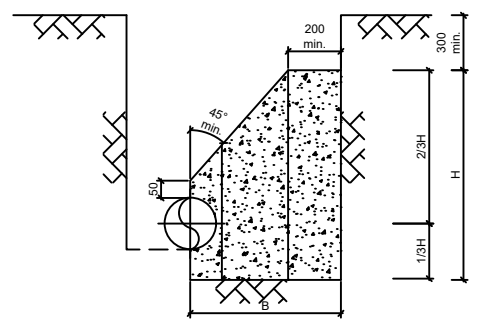
**CIVIL/STRUCTURAL ENGINEER**

PROFESSIONAL CONSULTANTS  
Professional House  
Koroga Road, Old Langata Rd  
P.O. Box 24996-00502 Nrb  
+254 202016322

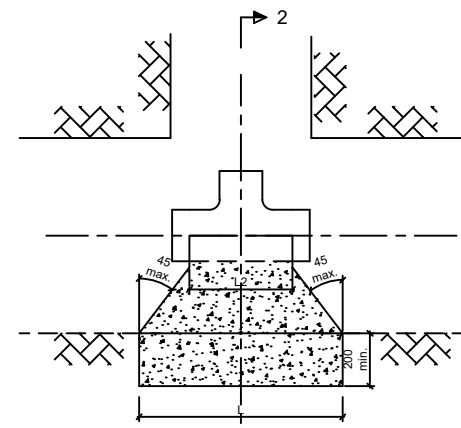
Drawn	R.F	Scale(s)	
Designed	GMC	Date	OCTOBER 2023
Checked	ENG. G.O.M	Date	OCTOBER 2023
Approved		Date	
<b>JOB No.</b>		<b>DRG No: PC - TKB - 032</b>	



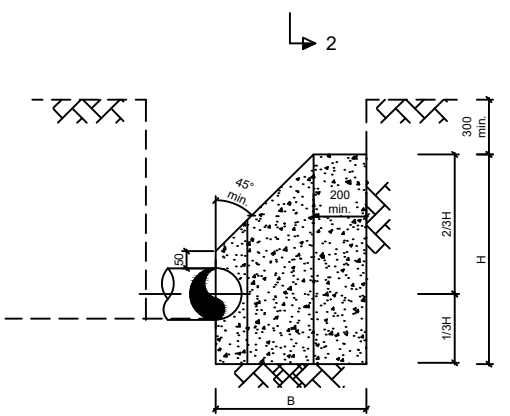
PLAN



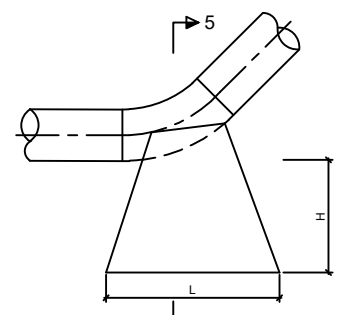
SECTION 1 - 1  
HORIZONTAL BENDS



PLAN

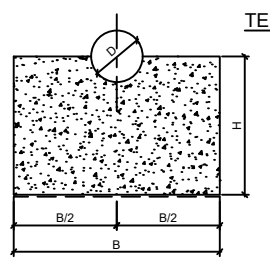


SECTION 2 - 2  
TEES

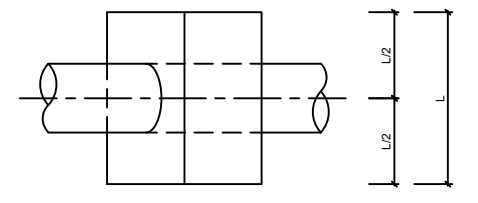


ELEVATION

VERTICAL ANCHOR BLOCKS AT DEPRESSIONS



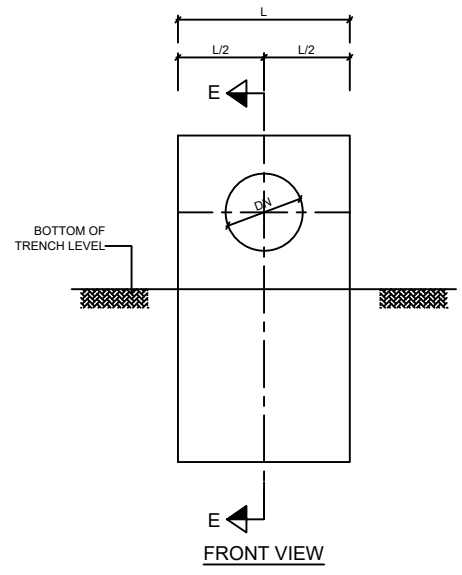
SECTION 5 - 5



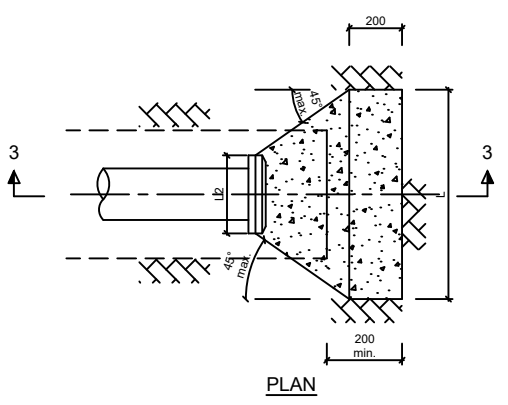
PLAN

NOTE

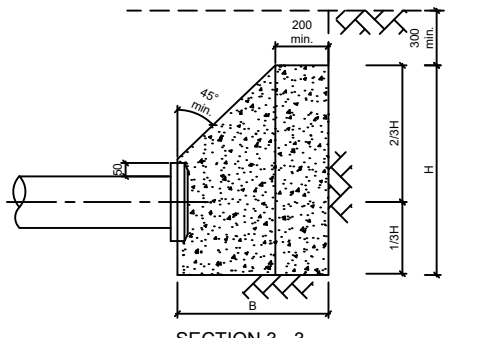
- ANCHOR BLOCK TO BE POSITIONED BEHIND COLLAR AS SHOWN



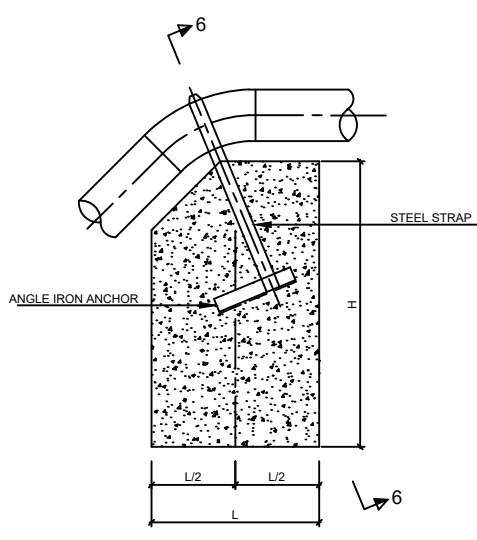
FRONT VIEW



PLAN

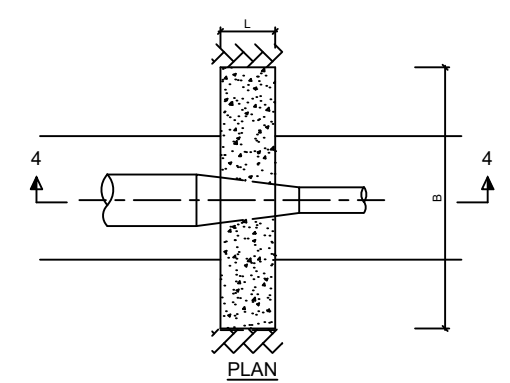


SECTION 3 - 3  
END CAPS

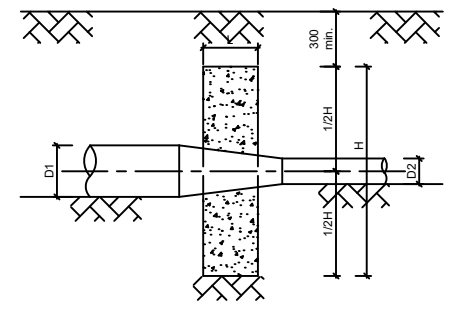


ELEVATION

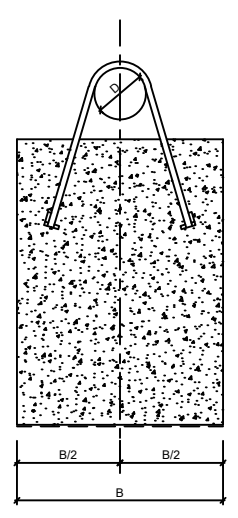
VERTICAL ANCHOR BLOCKS AT CRESTS



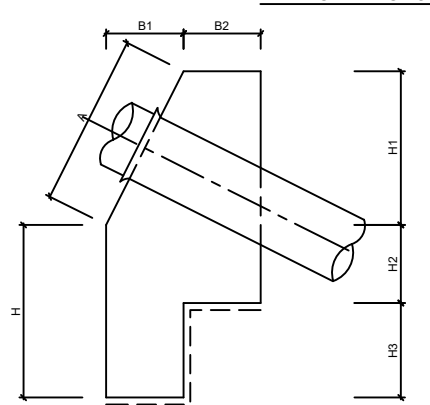
PLAN



SECTION 4 - 4  
REDUCERS



SECTION 6 - 6



SECTION E - E

ANCHOR BLOCKS ON GRADIENTS

GRADIENT	SPACING OF ANCHOR BLOCKS (m)
1 IN 2	5.5
1 IN 3	11.0
1 IN 4	11.0
1 IN 5	16.5
1 IN 6	22.0
1 IN 7 - 10	27.5

PIPE DIAMETER DN (mm)	DIMENSIONS (m)							
	A	L	H	H1	H2	H3	B1	B2
200	0.8	0.8	0.8	0.7	0.35	0.45	0.35	0.35
300	0.9	1.0	1.0	0.8	0.4	0.6	0.4	0.4
400	1.0	1.0	1.0	0.9	0.45	0.55	0.45	0.45
500	1.1	1.2	1.2	1.0	0.5	0.7	0.5	0.5
600	1.2	1.2	1.2	1.1	0.55	0.65	0.55	0.55
800	1.4	1.4	1.4	1.3	0.65	0.75	0.65	0.65

- NOTES
- ALL DIMENSIONS ARE IN MILLIMETERS UNLESS STATED OTHERWISE.
  - ANCHOR BLOCKS TO BE CONSTRUCTED FROM UNREINFORCED CONCRETE CLASS 20
  - 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.
  - BENDS LESS THAN 6° TO BE TAKEN UP BY THE FLEXIBLE PIPE JOINTS WHERE PRACTICABLE.
  - 11 1/4° BENDS TO BE USED FOR BENDS GREATER THAN OR EQUAL TO 6° AND LESS THAN OR EQUAL TO 16°.
  - ALL ANCHOR BLOCKS TO BE CAST LEAVING ALL PIPE JOINTS FREE.
  - DIAMETERS GIVEN ON THE TABLES ARE PIPE NOMINAL BORE SIZES.
  - REFER TO SHEET 2 FOR TABLES OF DIMENSIONS FOR ANCHOR BLOCKS.
  - ALL BENDS, TAPERS AND TEES TO BE WRAPPED WITH POLYTHENE SHEET GAUGE 500.

	REVISIONS			Project: CONSULTANCY SERVICES TO CONDUCT SURVEY AND DEVELOPMENT OF DESIGNS FOR TAKABA WATER SUPPLY PROJECT IN MANDERA COUNTY, REFERENCE NO. WSTF/EU/RFP/10/2022-2023	 WATER SECTOR TRUST FUND	DRAWING TITLE  STANDARD DRAWINGS THRUST BLOCK DETAILS	CIVIL/STRUCTURAL ENGINEER  PROFESSIONAL CONSULTANTS Professional House Kufuga Road off Lang'ata Rd P.O. Box 24996-00502 Nrb +254 202016322	Drawn	L.C	Scale(s)		
	Date	Suffix	Descriptions					Designed	GMC	Date	OCTOBER 2023	
							Checked	ENG. G.O.M	Date	OCTOBER 2023		
							Approved		Date			
								JOB No.	DRG No: PC - TKB - 021			



VERTICAL BENDS (TYPE DV) - DEPRESSIONS (dimensions in metres)

Pipe Diameter (mm)	Test Pressure (m)	45 deg					22.5 deg					11.25 deg				
		H (m)	L (m)	B (m)	L2 (m)	Vol (m³)	H (m)	L (m)	B (m)	L2 (m)	Vol (m³)	H (m)	L (m)	B (m)	L2 (m)	Vol (m³)
80	90	0.50	0.40	0.30	0.10	0.04	0.50	0.40	0.30	0.10	0.04	0.50	0.40	0.20	0.10	0.03
	150	0.50	0.40	0.30	0.10	0.04	0.50	0.40	0.30	0.10	0.04	0.50	0.40	0.20	0.10	0.03
	240	0.50	0.40	0.30	0.10	0.04	0.50	0.40	0.30	0.10	0.04	0.50	0.40	0.20	0.10	0.03

VERTICAL BENDS (TYPE CV) - CREST (dimensions in metres)

Pipe Diameter (mm)	Test Pressure (m)	45 deg					22.5 deg					11.25 deg				
		H (m)	L (m)	B (m)	Strap (mm)	Vol (m³)	H (m)	L (m)	B (m)	Strap (mm)	Vol (m³)	H (m)	L (m)	B (m)	Strap (mm)	Vol (m³)
80	90	0.80	0.80	0.70	30x4	0.28	0.50	0.50	0.50	30x4	0.12	0.40	0.40	0.40	30x4	0.07

REDUCERS- TYPE RD (dimensions in metres)

Pipe Diameter (mm)	Test Pressure (m)	Reducer Dimensions			
		L (m)	B (m)	H (m)	Vol (m³)
100/80	90	0.35	0.50	0.40	0.07
	150	0.35	0.55	0.45	0.09

HORIZONTAL BENDS - TYPE HB (dimensions in metres)

Pipe Diameter (mm)	Test Pressure (m)	90 deg					45 deg					22.5 deg					11.25 deg						
		H (m)	L (m)	B (m)	L2 (m)	Vol (m³)	H (m)	L (m)	B (m)	L2 (m)	Vol (m³)	H (m)	L (m)	B (m)	L2 (m)	Vol (m³)	H (m)	L (m)	B (m)	L2 (m)	Vol (m³)		
65	90	0.21	0.21	0.55	0.10	0.02	0.15	0.16	0.55	0.10	0.01												

TEES AND ENDS - TYPE TY (dimensions in metres)

Branch Diameter (mm)	Test Pressure (m)	Tees and Ends				
		H (m)	L (m)	B (m)	L2 (m)	Vol (m³)
65	90	0.17	0.18	0.55	0.07	0.01

REVISIONS

Date	Suffix	Descriptions

Project: CONSULTANCY SERVICES TO CONDUCT SURVEY AND DEVELOPMENT OF DESIGNS FOR TAKABA WATER SUPPLY PROJECT IN MANDERA COUNTY, REFERENCE NO. WSTF/EU/RFP/10/2022-2023

CLIENT



WATER SECTOR TRUST FUND

DRAWING TITLE

Thrust Block Details

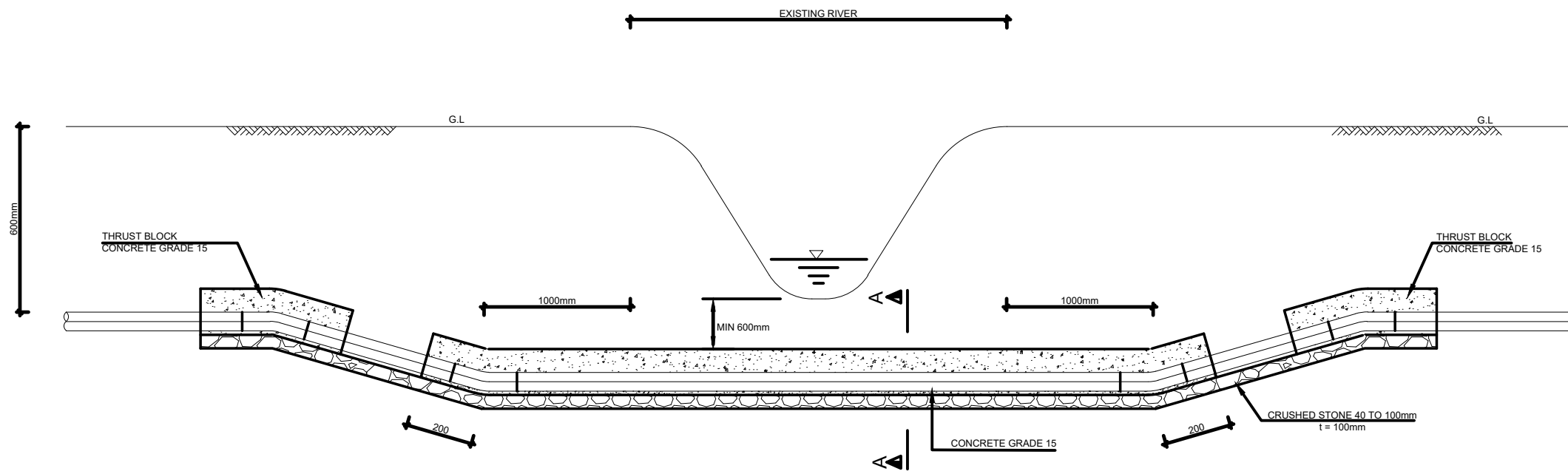
CIVIL/STRUCTURAL ENGINEER



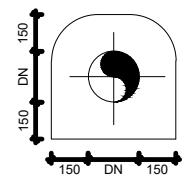
Drawn	L.C	Scale(s)	
Designed	GMC	Date	OCTOBER 2023
Checked	ENG. G.O.M	Date	OCTOBER 2023
Approved		Date	

JOB No. DRG No: PC - TKB - 022





**RIVER CROSSING**  
SCALE 1:100



**SECTION A - A**  
SCALE 1:50

**NOTES:**  
 1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS STATED OTHERWISE.  
 2. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH OTHER LAYOUT DRAWINGS  
 3. CONCRETE CLASS:  
 BASES AND BEAMS = 25/20  
 LEAN CONCRETE = 15/20

4. CONCRETE COVER = 40mm  
  
**LEGEND:**  
 GL - GROUND LEVEL  
 DN - NOMINAL DIAMETER

REVISIONS		
Date	Suffix	Descriptions

Project:  
 CONSULTANCY SERVICES TO CONDUCT SURVEY AND DEVELOPMENT OF DESIGNS FOR TAKABA WATER SUPPLY PROJECT IN MANDERA COUNTY.  
 REFERENCE NO. WSTF/EU/RFP/10/2022-2023

**CLIENT**



WATER SECTOR TRUST FUND

**DRAWING TITLE**

STANDARD DRAWINGS  
 River & Road Crossing Details

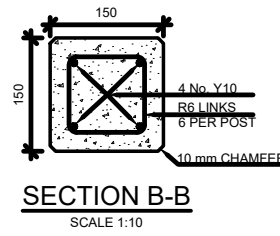
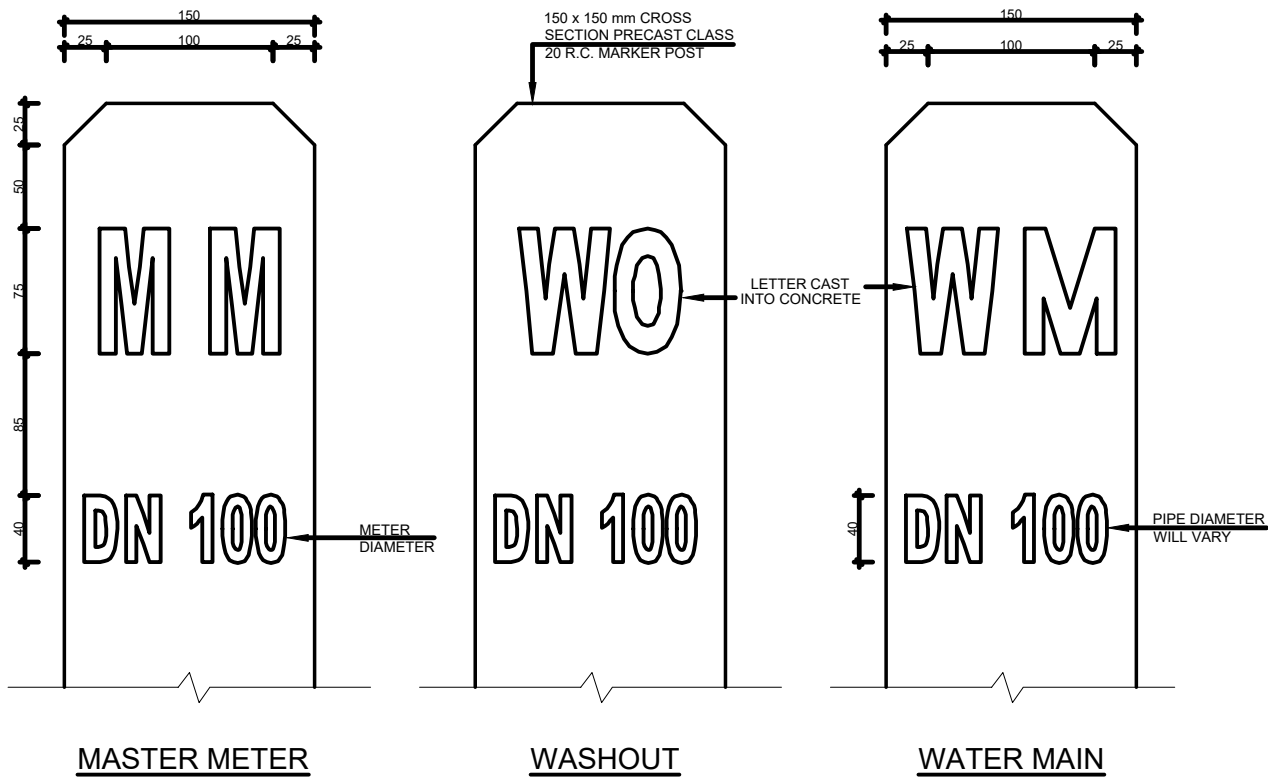
**CIVIL/STRUCTURAL ENGINEER**



PROFESSIONAL CONSULTANTS  
 Professional House  
 Kufuga Road, Off Lang'ata Rd  
 P.O. Box 24996-00502 Nrb  
 +254 202016322

Drawn	L.C	Scale(s)	
Designed	GMC	Date	OCTOBER 2023
Checked	ENG. G.O.M	Date	OCTOBER 2023
Approved		Date	
<b>JOB No.</b>		<b>DRG No.: PC - TKB - 23</b>	





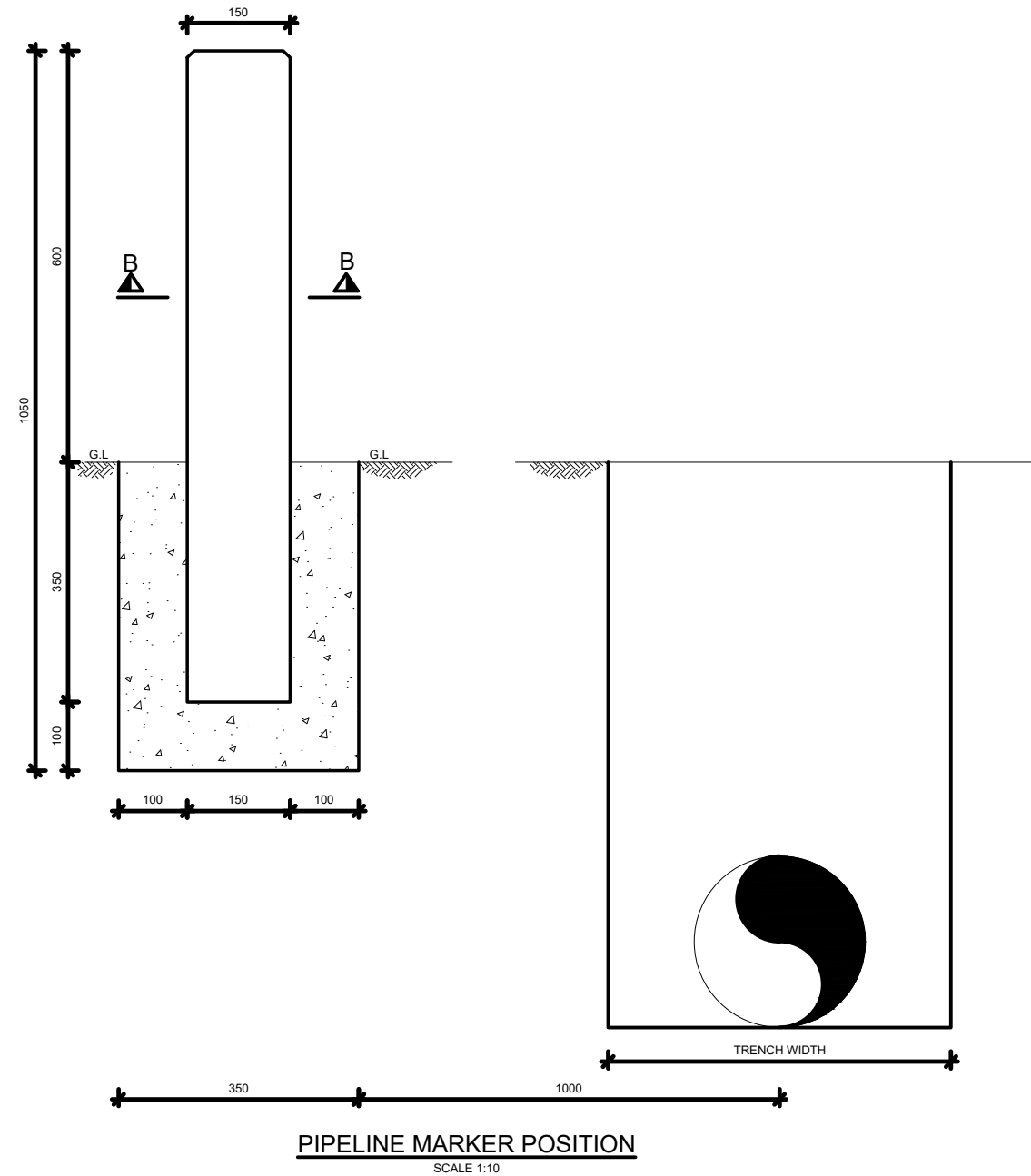
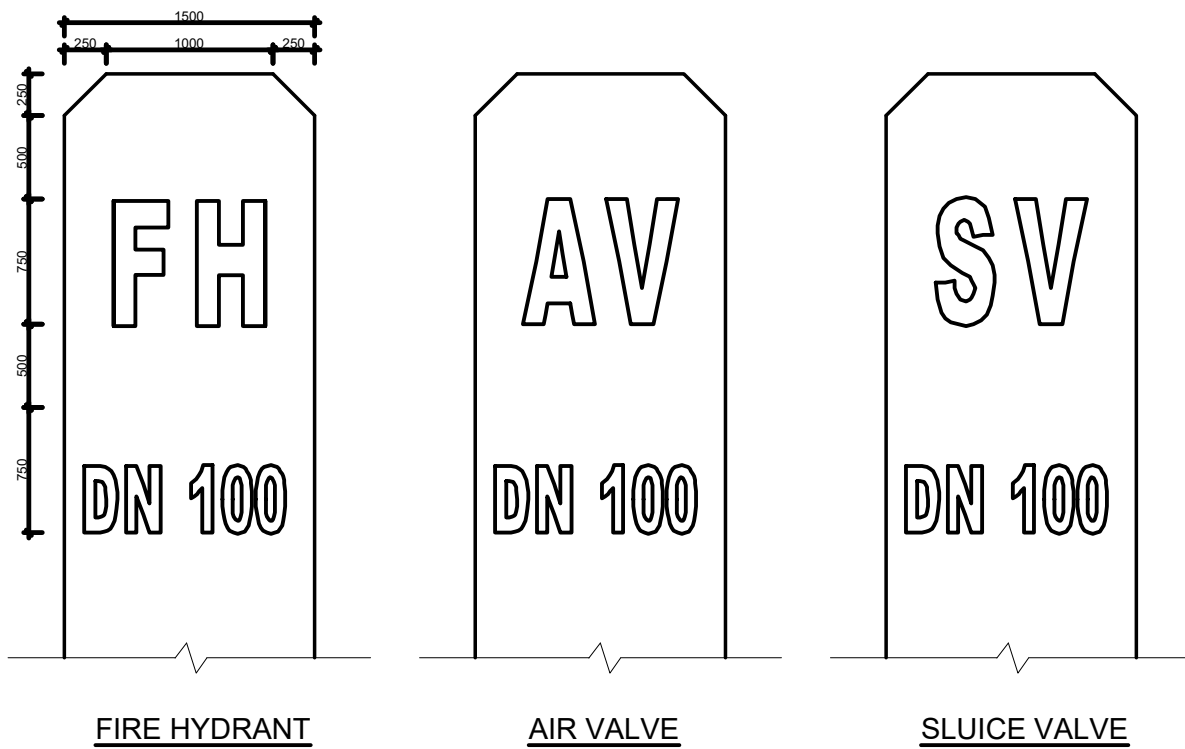
**BAR BENDING SCHEDULE**

BAR	No. OFF	TYPE	LENGTH
Y10	4	STRAIGHT	1000
R6	6		500

- NOTES:**
- ALL DIMENSIONS ARE IN MILLIMETRES UNLESS STATED OTHERWISE
  - THE RESPECTIVE INSCRIPTION TO BE MADE ONLY ON ONE FACE OF INDICATOR POST FACING THE ACCESS ROAD.
  - ALL STRUCTURAL CONCRETE TO BE CLASS 20 ALL OTHER CONCRETE TO BE CLASS 15.
  - INDICATOR POST TO BE PLACED AT ALL APPURTENANCE LOCATIONS, AND AT INTERVALS OF 250 m ALONG WATER MAINS.
  - LETTERS TO BE INSCRIBED ON INDICATOR POLES SHOULD FACE ACCESS ROAD AND READ AS FOLLOWS:

- AV FOR AIR VALVE  
 SV FOR SECTION VALVE  
 WO FOR WASHOUT  
 FH FOR FIRE HYDRANT  
 MM FOR MASTER METER  
 WM FOR WATER MAIN

**LEGEND:**  
 G.L. GROUND LEVEL



**MARKER POST DETAILS**  
 SCALE 1:5

- All dimensions are in millimeters, unless otherwise stated.
- This drawing must not be scaled, only figured dimensions should be used.
- This drawing must be read in conjunction with relevant Architectural drawings.

REVISIONS		
Date	Suffix	Descriptions

Project:  
 CONSULTANCY SERVICES TO CONDUCT SURVEY AND DEVELOPMENT OF DESIGNS FOR TAKABA WATER SUPPLY PROJECT IN MANDERA COUNTY.  
 REFERENCE NO. WSTF/EU/FP/10/2022-2023

**CLIENT**

WATER SECTOR TRUST FUND

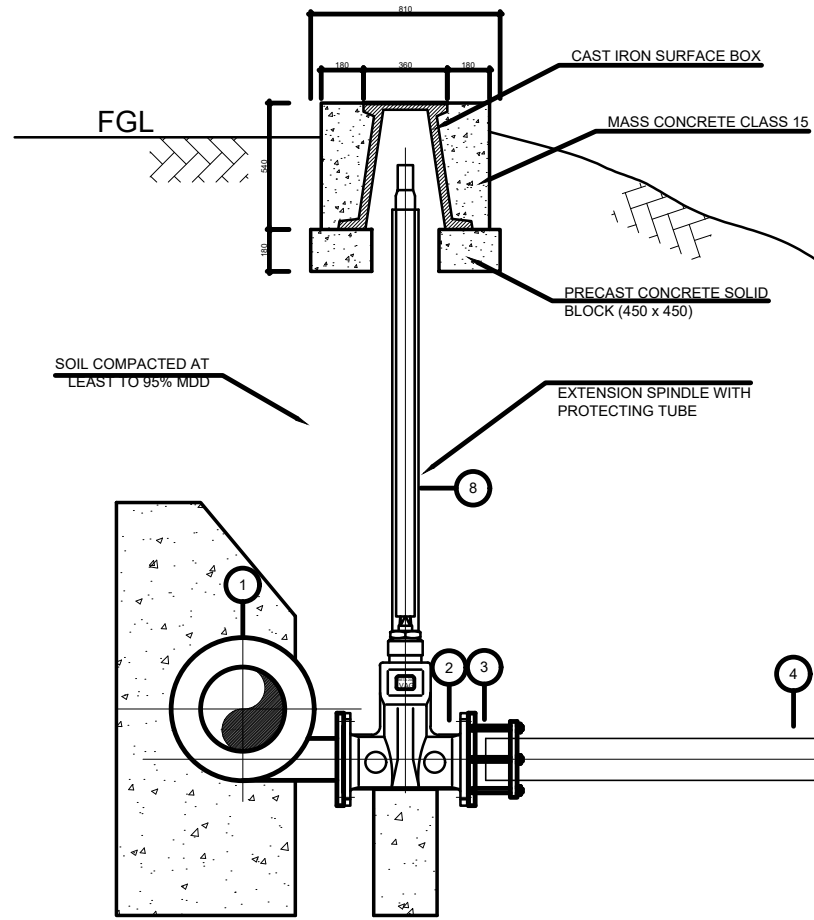
**DRAWING TITLE**

STANDARD DRAWINGS  
 INDICATOR & MARKER POST DETAILS

**CIVIL/STRUCTURAL ENGINEER**

PROFESSIONAL CONSULTANTS  
 Professional House  
 Kitfiga Road-Off Lang'ata Rd  
 P.O. Box 24998-00502 Nrb  
 +254 202016322

Drawn	L.C	Scale(s)	
Designed	GMC	Date	OCTOBER 2023
Checked	ENG. G.O.M	Date	OCTOBER 2023
Approved		Date	
<b>JOB No.</b>		DRG No: PC - TKB - 024	



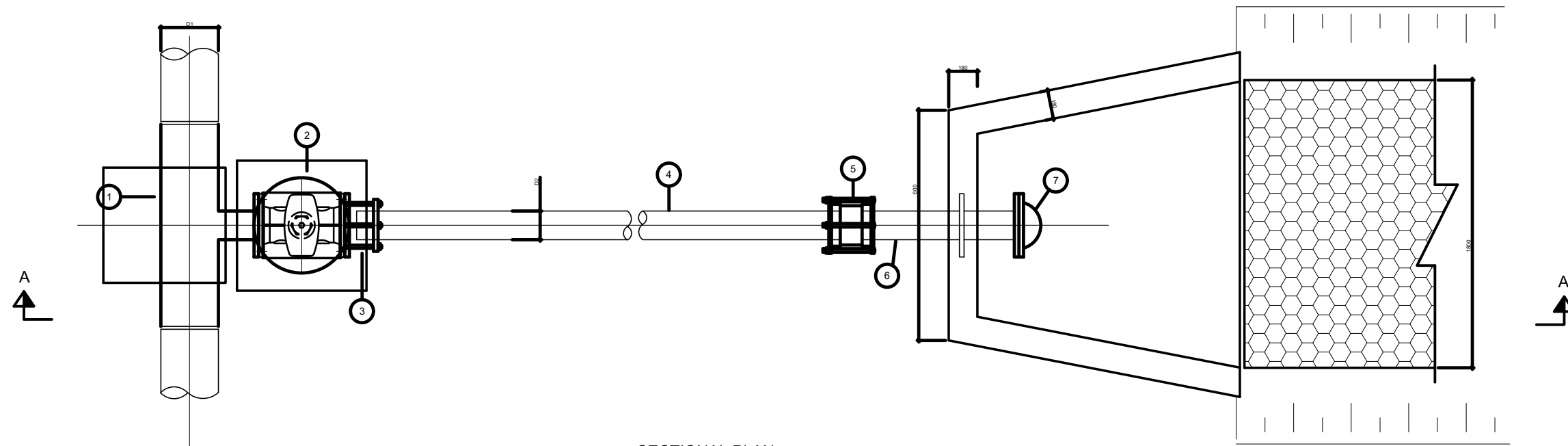
SCHEDULE OF WASHOUTS

WASHOUT TYPE	DIAMETER MAIN (D1)	DIAMETER BRANCH (D2)	TOTAL
1	200	80	-
2	250	100	-
3	300	150	-
4	350	150	-
5	400	200	5
6	450	200	6
TOTAL			11

SCHEDULE OF PIPEWORK & FITTINGS

ITEM No.	DIAMETER (mm)	DESCRIPTION	No.
1	D1/D2	PLAIN ENDED INVERT LEVEL TEE WITH FLANGED BRANCH	1
2	D2	DOUBLE FLANGED SLUICE VALVE	1
3	D2	FLANGED STEPPED ADAPTOR TO SUIT uPVC	1
4	D2	uPVC PIPES, LENGTH = 30 m	-
5	D2	STEPPED COUPLING TO SUIT FERROUS/uPVC	1
6	D2	SINGLE FLANGED SPIGOT, L = 600 c/w PUDDLE FLANGE	1
7	D2	FLANGED FLAP VALVE	1

SECTIONAL ELEVATION A - A  
1:10 (A1 SIZE)



SECTIONAL PLAN  
1:10 (A1 SIZE)

1. All dimensions are in millimeters, unless otherwise stated.

REVISIONS		
Date	Suffix	Descriptions

Project: CONSULTANCY SERVICES TO CONDUCT SURVEY AND DEVELOPMENT OF DESIGNS FOR TAKABA WATER SUPPLY PROJECT IN MANDERA COUNTY, REFERENCE NO. WSTF/EU/RFP/10/2022-2023

CLIENT



WATER SECTOR TRUST FUND

DRAWING TITLE  
WASHOUT DETAILS

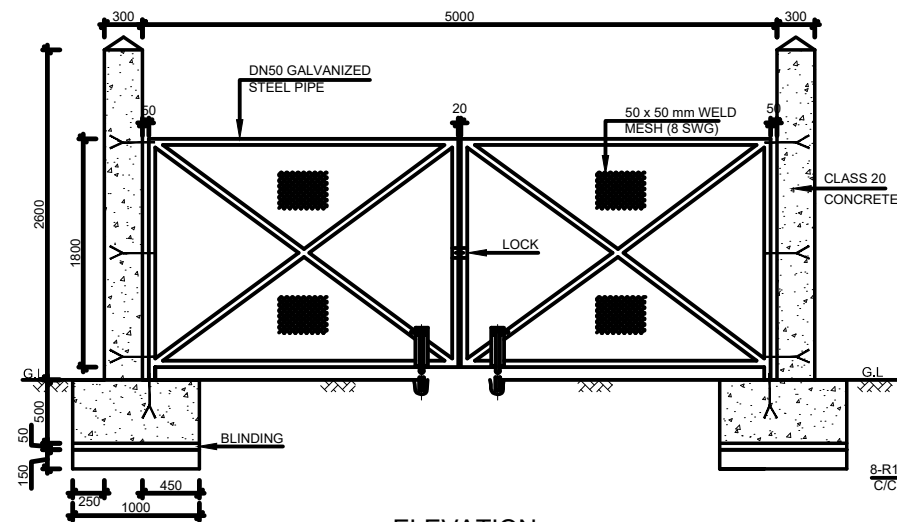
CIVIL/STRUCTURAL ENGINEER

PROFESSIONAL CONSULTANTS

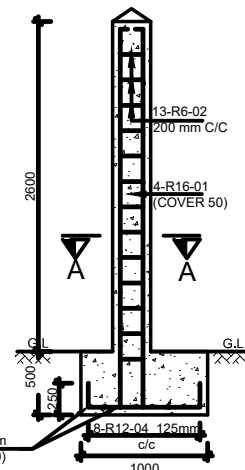


Professional House  
Kufunga Road, Off Lang'ata Rd  
P.O. Box 24996-00502 Nrb  
+254 202016322

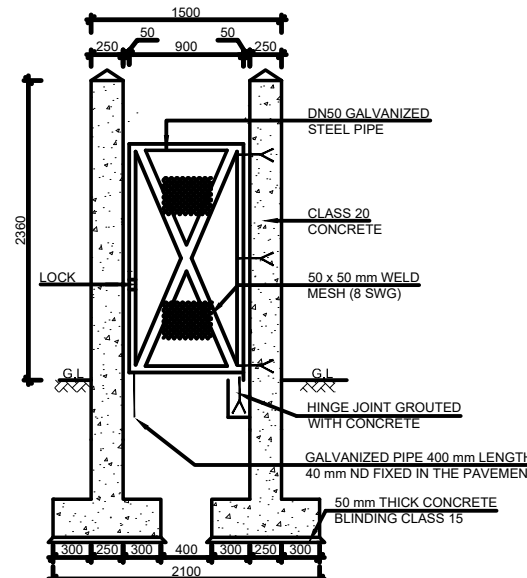
Drawn	L.C	Scale(s)	
Designed	GMC	Date	OCTOBER 2023
Checked	ENG. G.O.M	Date	OCTOBER 2023
Approved		Date	
JOB No.		DRG No: PC - TKB - 025	



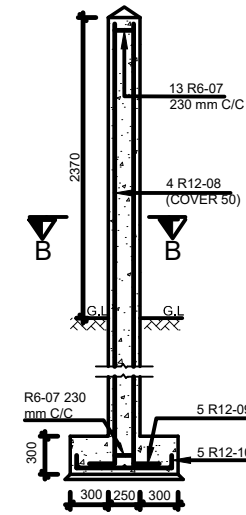
**ELEVATION**  
SCALE 1:2.5



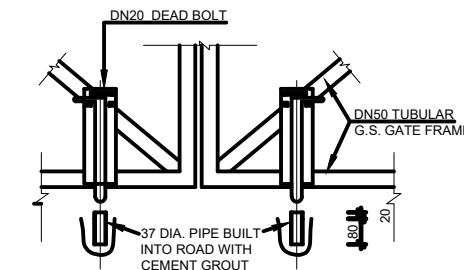
**GATE POST -C1**  
SCALE 1:2.5



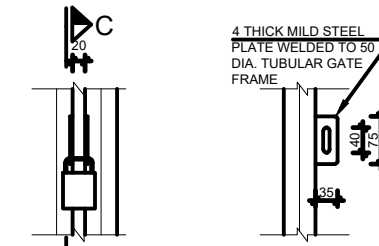
**SIDE GATE ELEVATION**  
SCALE 1:2.5



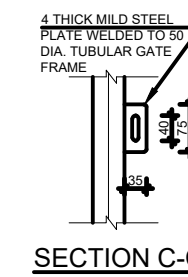
**GATE POST**  
SCALE 1:2.5



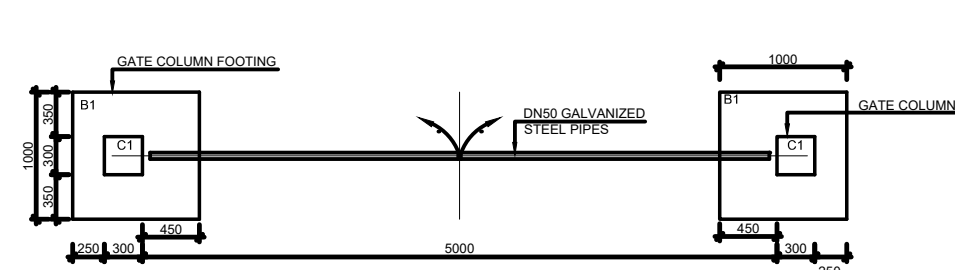
**MAIN GATE BOLTING  
DETAIL 1**  
SCALE 1:10



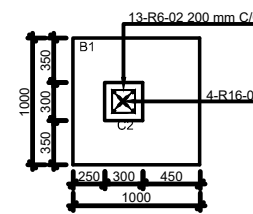
**MAIN GATE  
DETAIL 2**  
SCALE 1:2.5



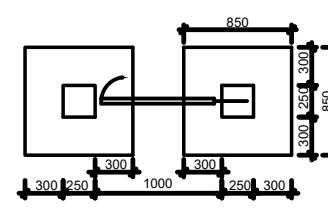
**SECTION C-C**



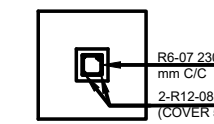
**ENTRANCE GATE  
PLAN**  
SCALE 1:2.5



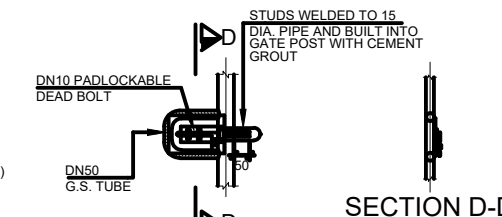
**SECTION A-A**  
SCALE 1:2.5



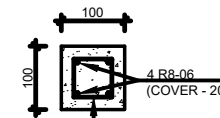
**SIDE GATE  
PLAN**  
SCALE 1:2.5



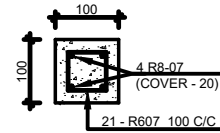
**SECTION B-B**  
SCALE 1:2.5



**SIDE GATE LOCKING  
DETAIL 3**  
SCALE 1:2.5

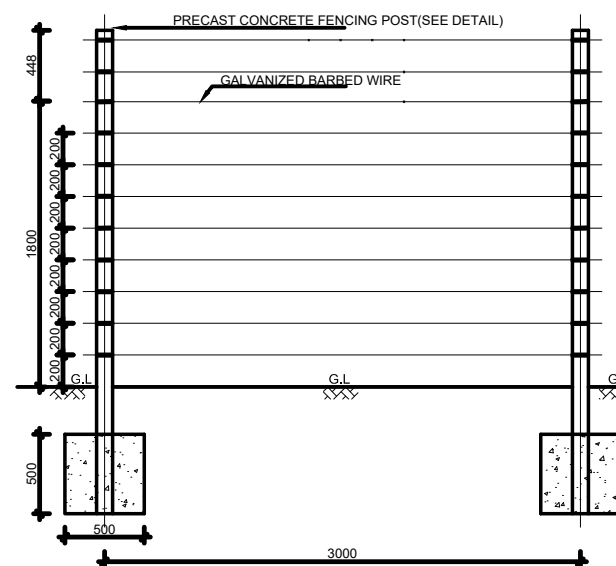


**SECTION E-E**  
SCALE 1:2.5

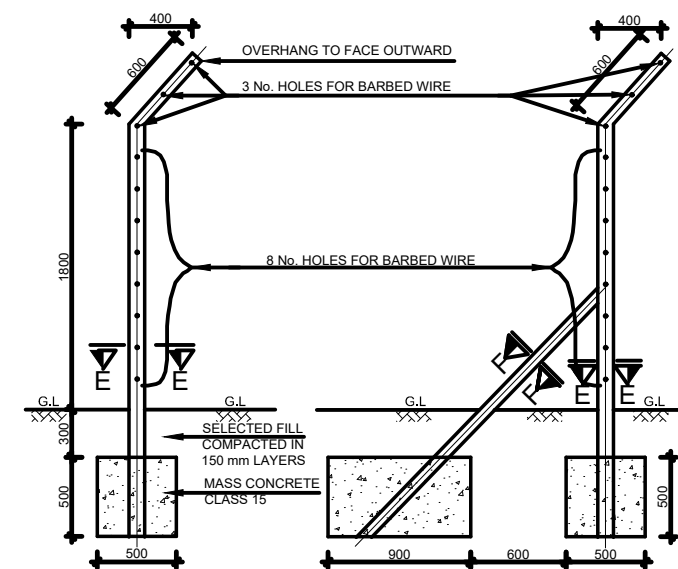


**SECTION F-F**  
SCALE 1:2.5

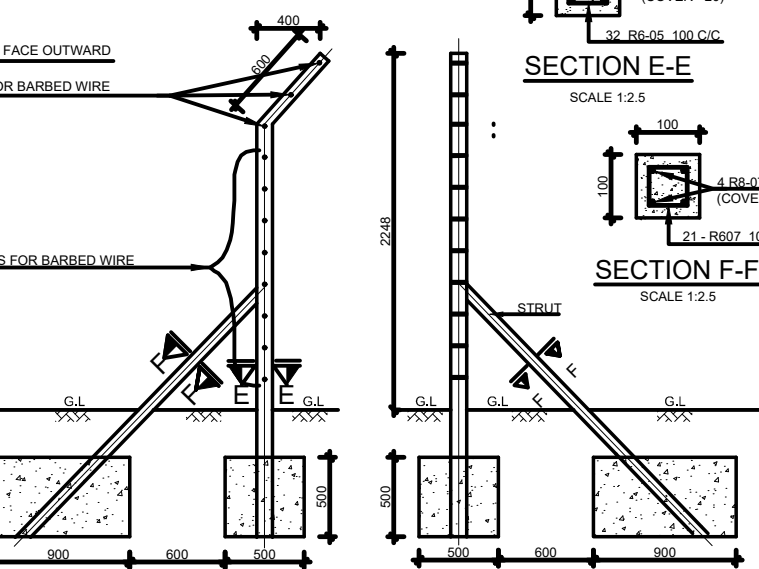
**GATE DETAILS**



**LONGITUDINAL DETAIL**  
SCALE 1:2.5



**CROSS SECTION DETAIL  
NON-STRUTTED  
FENCING POST**  
SCALE 1:2.5



**CROSS SECTION DETAIL  
STRUTTED FENCING POST**  
SCALE 1:2.5

**CROSS SECTION DETAIL  
STRUTTED FENCING POST**  
SCALE 1:2.5

**FENCING DETAILS**

**BAR BENDING SCHEDULE**

LOCATION	BAR MARK	TYPE AND SIZE	No. IN EACH	TOTAL No.	CUT LENGTH METRES	TOTAL LENGTH METRES	SHAPE CODE	A	B	C	D	WEIGHT KG
ENTRANCE GATE 5m WIDE	1601	R16	4	8	3.050	24.400	37	0.050	3.000			38.527
	602	R6	13	26	1.050	27.300	60	0.200	0.200			6.060
	1203	R12	8	8	1.400	11.200	38	0.250	0.900			9.945
	1204	R12	8	8	1.400	11.200	38	0.250	0.900			9.945
ENTRANCE GATE 1.0 m WIDE	607	R6	-	-	0.950	-	60	0.150	0.150			-
	1208	R12	4	4	-	-	37	0.200	-			-
	1209	R12	5	5	1.000	5.000	35	0.770			4.440	
	1210	R12	5	5	1.000	5.000	35	0.770			4.440	
CHAIN LINK FENCING POST	605	R6	32	15.68	0.456	715.00	60	0.600	0.600			158.73
	806	R8	4	196	3.160	619.36	62	0.580	0.385	2.580		244.65
PRECAST CONCRETE STRUT	607	R6	21	126	0.450	56.70	60	0.600	0.600			12.59
	807	R8	4	24	2.100	50.40	20	2.100				19.19

ALL BENDING DIMENSIONS ARE IN ACCORDANCE WITH SSRN 129

- All dimensions are in millimeters, unless otherwise stated.
- This drawing must not be scaled, only figured dimensions should be used.
- This drawing must be read in conjunction with relevant Architectural drawings.

**REVISIONS**

Date	Suffix	Descriptions

Project:  
CONSULTANCY SERVICES TO CONDUCT SURVEY AND DEVELOPMENT OF DESIGNS FOR TAKABA WATER SUPPLY PROJECT IN MANDERA COUNTY, REFERENCE NO. WSTF/EU/RFP/10/2022-2023

**CLIENT**



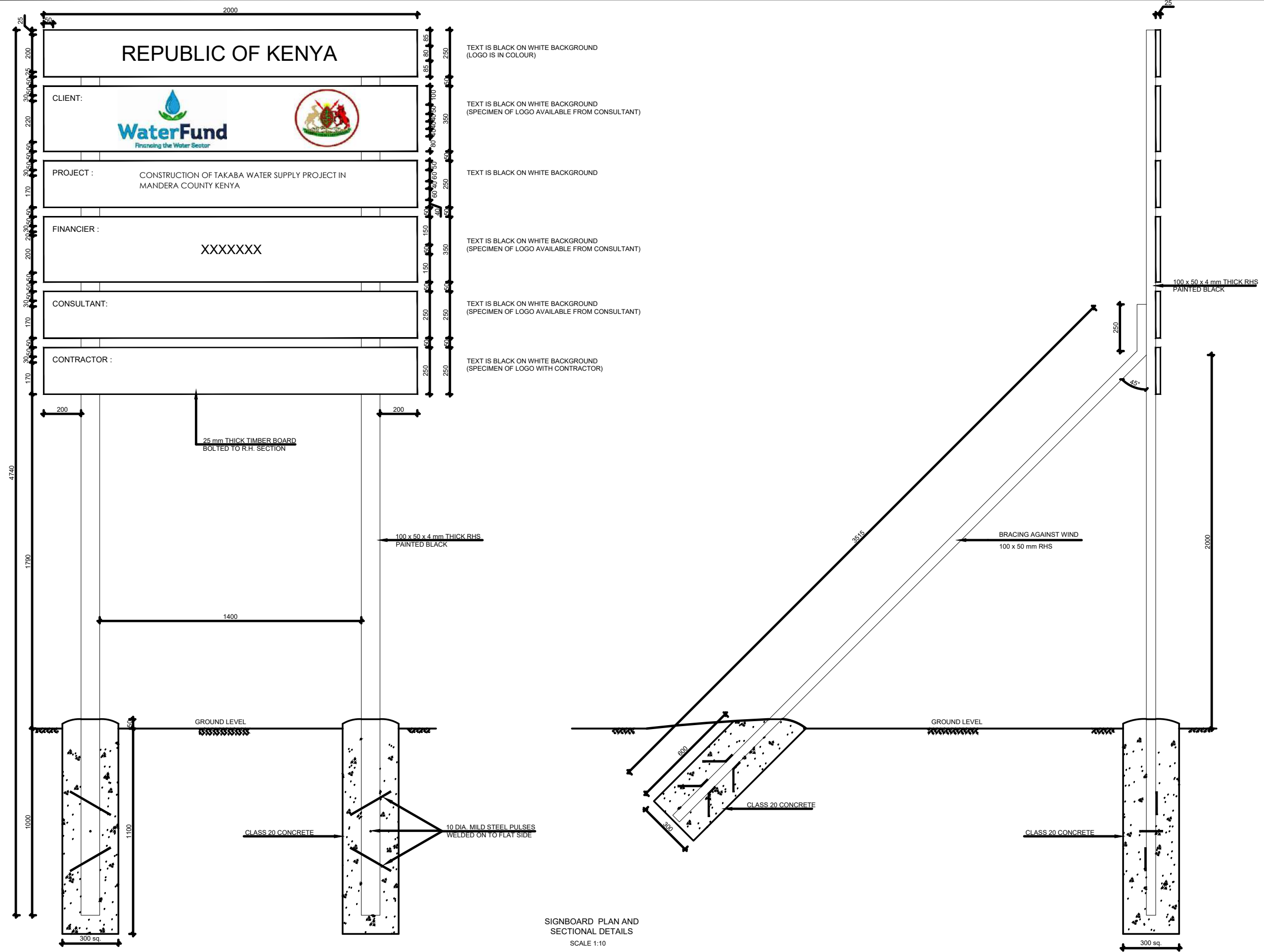
**DRAWING TITLE**

GENERAL DRAWINGS  
GATE AND FENCING DETAILS

**CIVIL/STRUCTURAL ENGINEER**



Drawn	R.F	Scale(s)	
Designed	GMC	Date	OCTOBER 2023
Checked	ENG. G.O.M	Date	OCTOBER 2023
Approved		Date	
<b>JOB No.</b>		<b>DRG No: PC - TKB - 026</b>	



SIGNBOARD PLAN AND SECTIONAL DETAILS  
SCALE 1:10

**NOTES:**

1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS STATED OTHERWISE
2. FINAL WORDING ON ALL SIGNBOARDS TO BE DECIDED/ APPROVED BY THE EMPLOYER BEFORE FABRICATION

**LEGEND:**

RHS - RECTANGULAR HOLLOW SECTION

**REVISIONS**

Date	Suffix	Descriptions

Project:  
CONSULTANCY SERVICES TO CONDUCT SURVEY AND DEVELOPMENT OF DESIGNS FOR TAKABA WATER SUPPLY PROJECT IN MANDERA COUNTY,  
REFERENCE NO. WSTF/EU/RFP/10/2022-2023

**CLIENT**



WATER SECTOR TRUST FUND

**DRAWING TITLE**

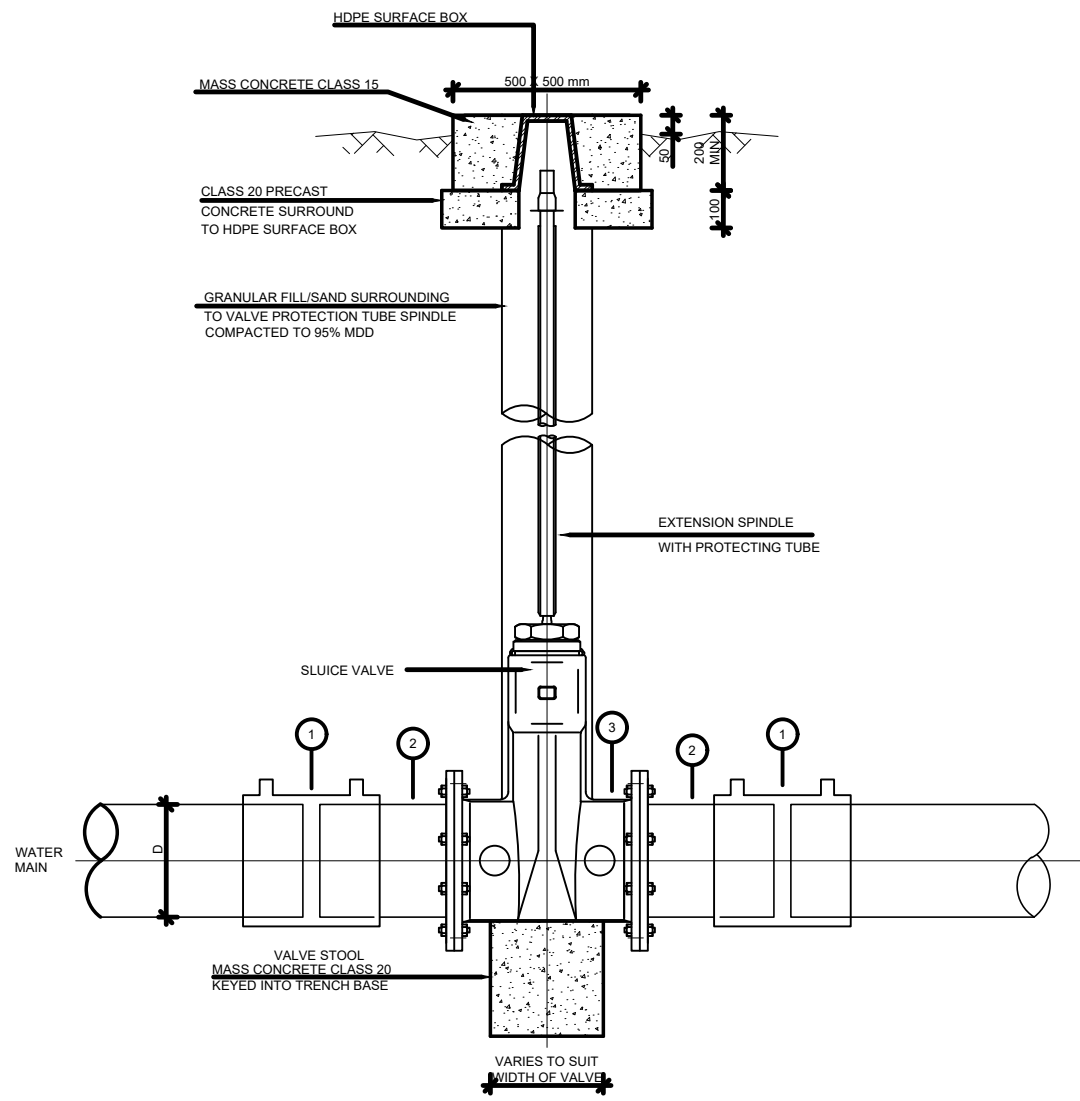
STANDARD DRAWINGS  
SIGNBOARD DETAILS

**CIVIL/STRUCTURAL ENGINEER**

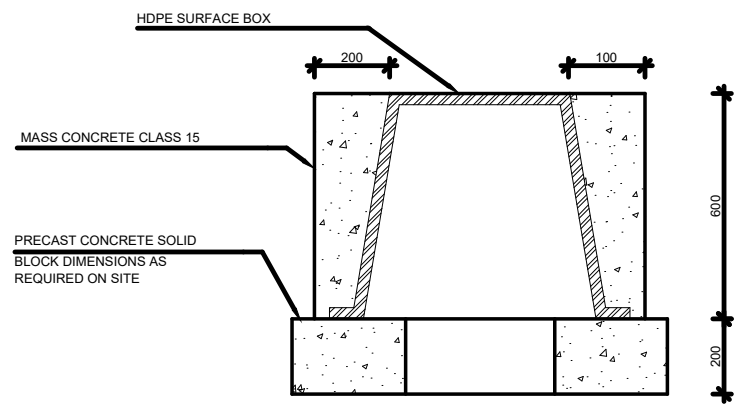


PROFESSIONAL CONSULTANTS  
Professional House  
Kufuga Road Off Lang'ata Rd  
P.O Box 24996-00502 Nrb  
+254 202016322

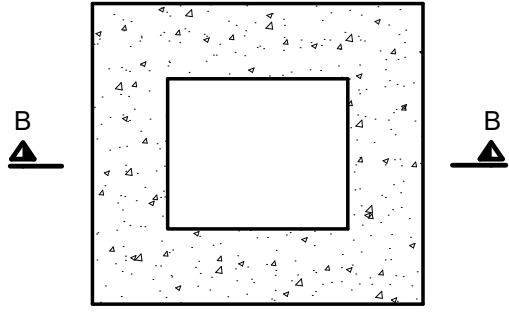
Drawn	L.C	Scale(s)	
Designed	GMC	Date	OCTOBER 2023
Checked	ENG. G.O.M	Date	OCTOBER 2023
Approved		Date	
<b>JOB No.</b>		<b>DRG No: PC - TKB - 027</b>	



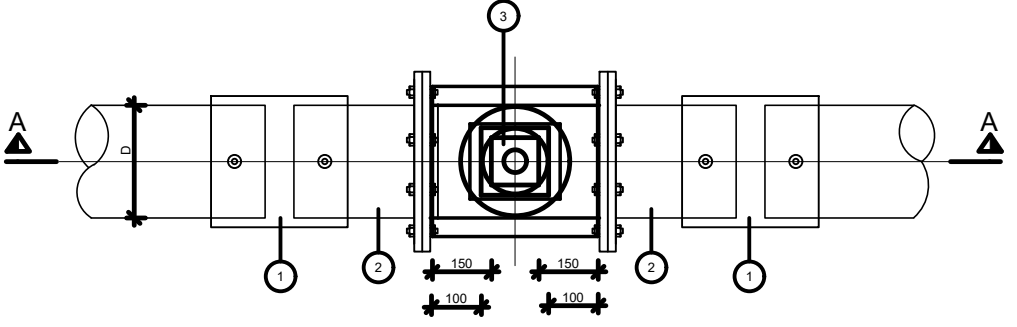
**SECTION A - A**  
SCALE 1:20



**SECTION B-B**  
SCALE 1:20



**PLAN**  
SCALE 1:20



**PLAN VIEW**  
SCALE 1:20

**SCHEDULE OF PIPEWORK & FITTINGS**

ITEM	DESCRIPTION	DIAMETER	No.
1	ELECTRO-FUSION COUPLER	D	2
2	HDPE FLANGE ADAPTOR c/w BACKING FLANGE	D	2
3	ALL FLANGED SLUICE VALVE	D	1

1. All dimensions are in millimeters, unless otherwise stated.

REVISIONS		
Date	Suffix	Descriptions

Project:  
CONSULTANCY SERVICES TO CONDUCT SURVEY AND DEVELOPMENT OF DESIGNS FOR TAKABA WATER SUPPLY PROJECT IN MANDERA COUNTY, REFERENCE NO. WSTF/EU/RFP/10/2022-2023

**CLIENT**



WATER SECTOR TRUST FUND

**DRAWING TITLE**

Valve Chamber Details

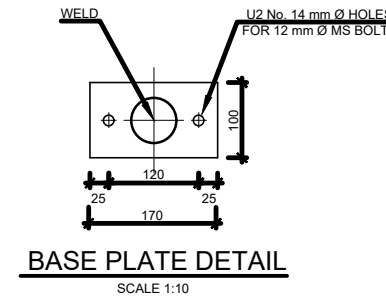
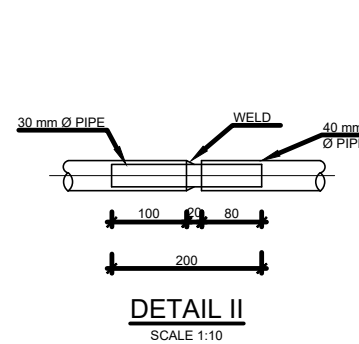
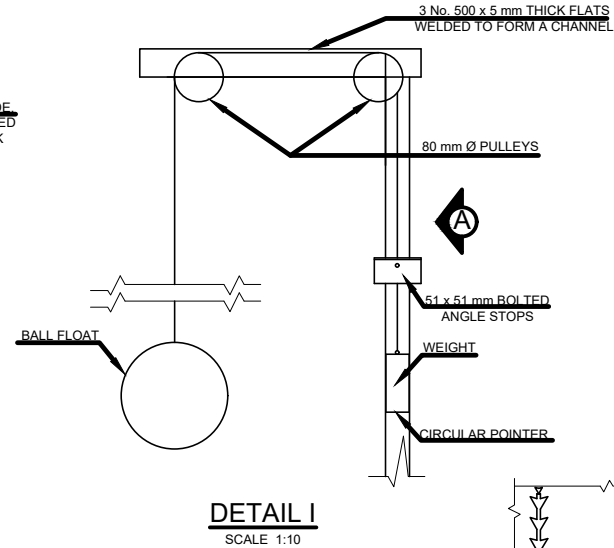
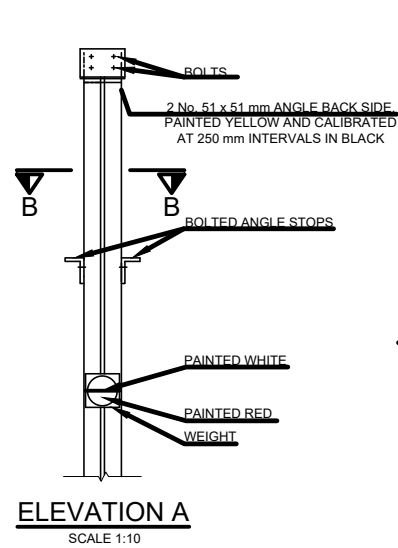
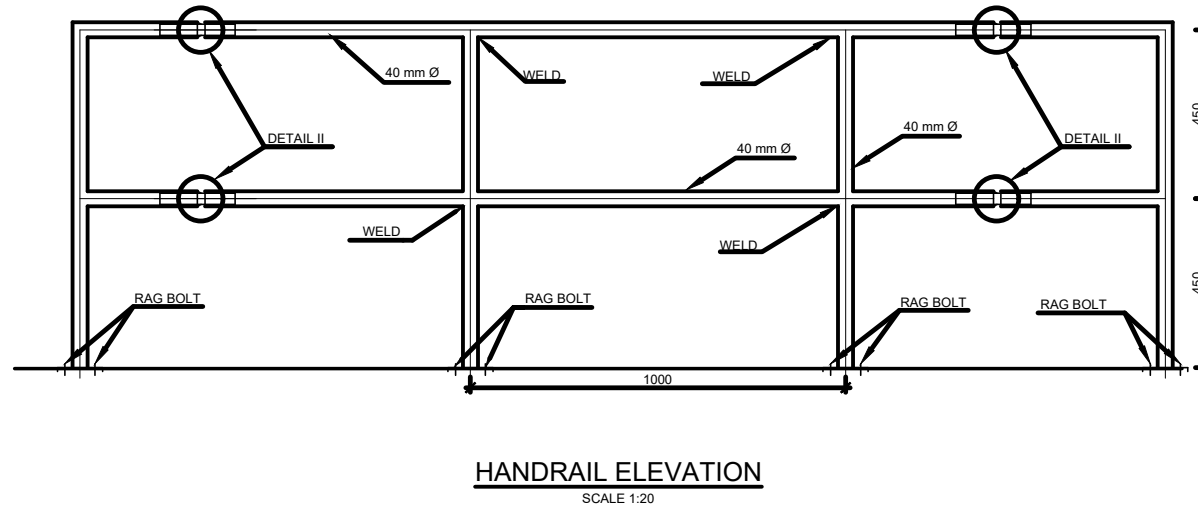
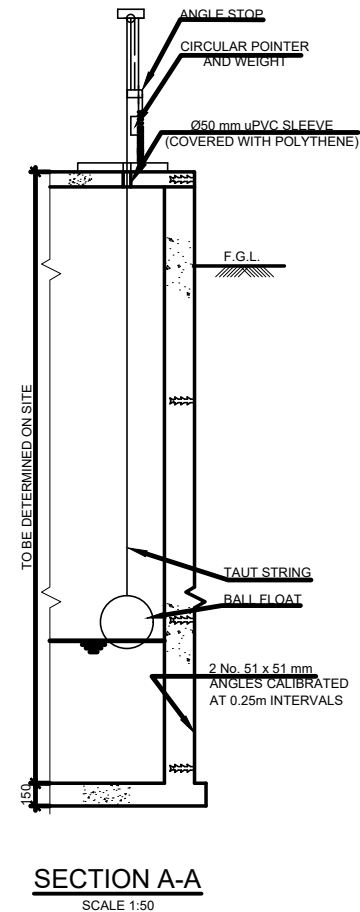
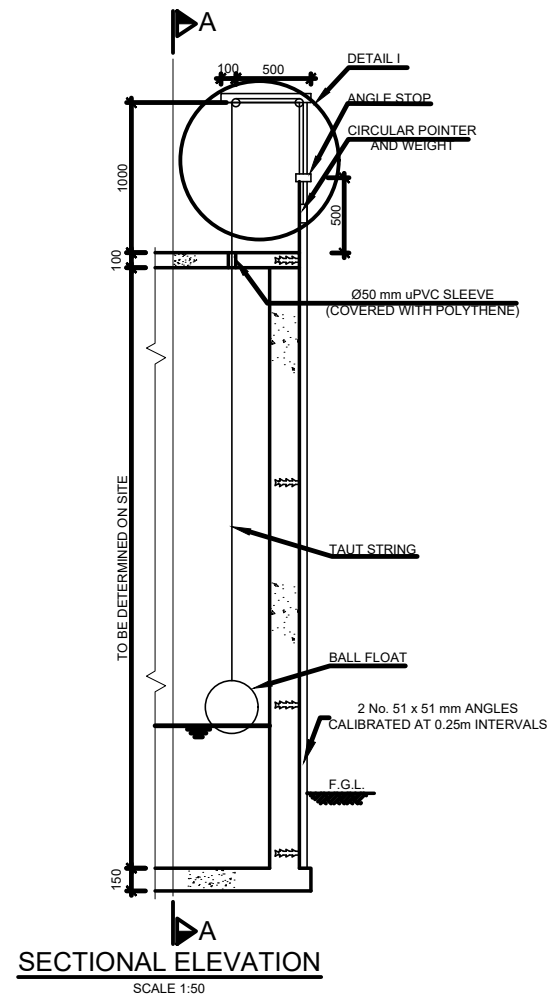
**CIVIL/STRUCTURAL ENGINEER**



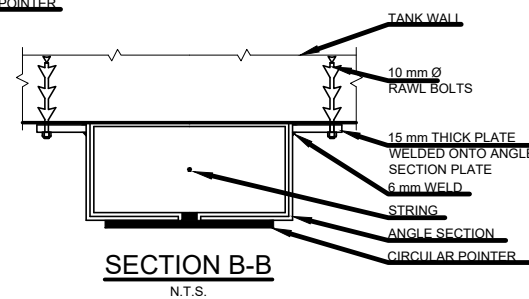
PROFESSIONAL CONSULTANTS  
Professional House  
Kufuga Road Off Lang'ata Rd  
P.O Box 24996-00502 Nrb  
+254 202016322

Drawn	LC	Scale(s)	
Designed	GMC	Date	OCTOBER 2023
Checked	ENG. G.O.M	Date	OCTOBER 2023
Approved		Date	
<b>JOB No.</b>	<b>DRG No: PC - TKB - 028</b>		





**DETAILS OF HANDRAIL**



**TANK LEVEL INDICATOR**

**NOTES:**  
1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS STATED OTHERWISE.

**LEGEND:**  
FGL FINISHED GROUND LEVEL

REVISIONS		
Date	Suffix	Descriptions

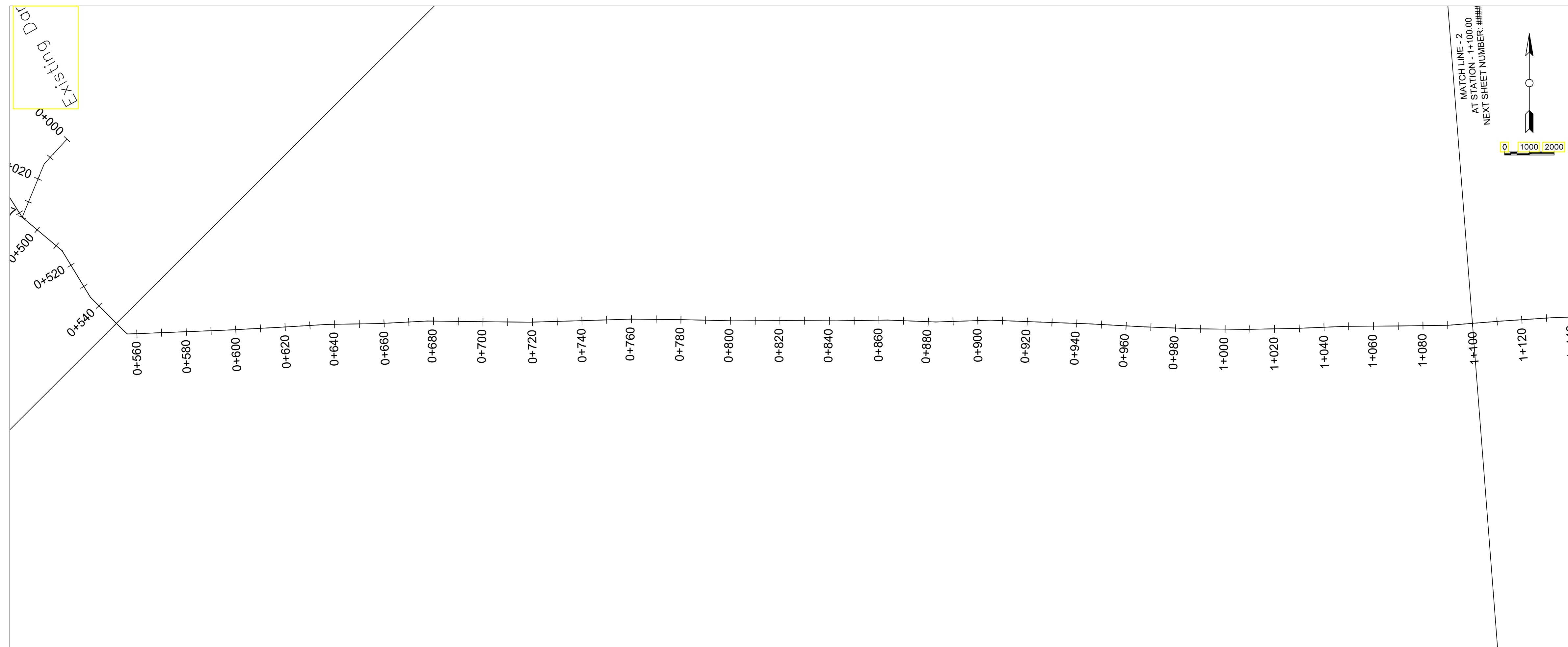
Project: CONSULTANCY SERVICES TO CONDUCT SURVEY AND DEVELOPMENT OF DESIGNS FOR TAKABA WATER SUPPLY PROJECT IN MANDERA COUNTY. REFERENCE NO. WSTF/EU/RFP/10/2022-2023

**CLIENT**  
  
WATER SECTOR TRUST FUND

**DRAWING TITLE**  
STANDARD DRAWINGS  
TANK LEVEL INDICATOR AND  
HANDRAIL DETAILS

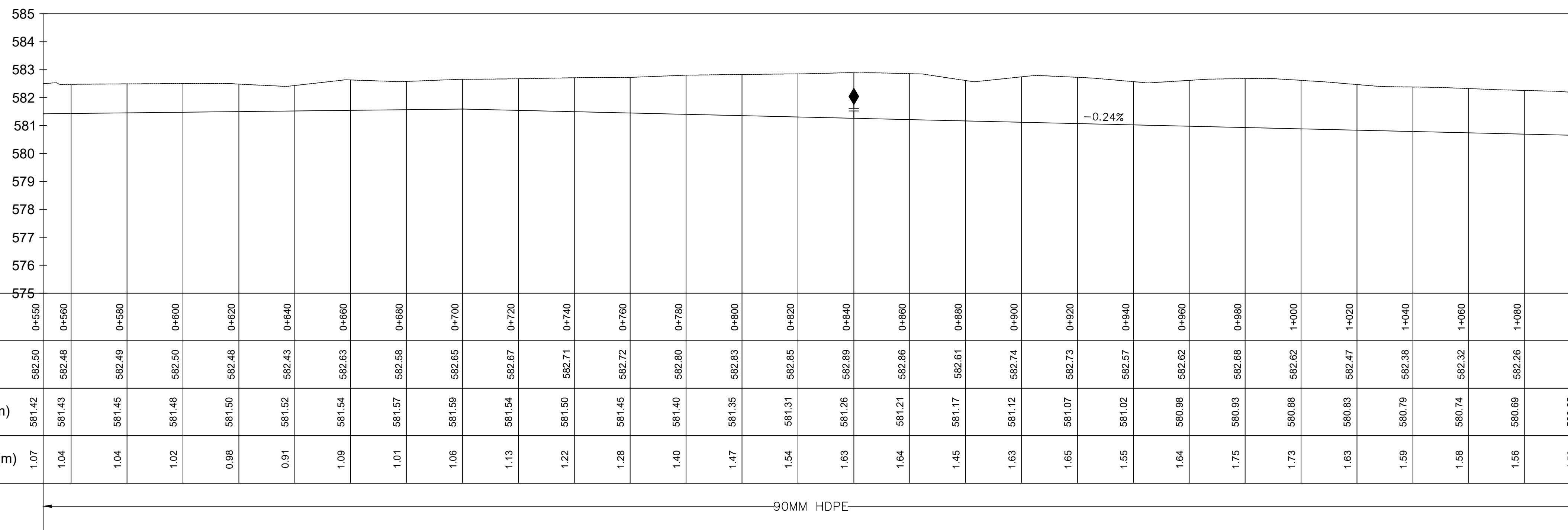
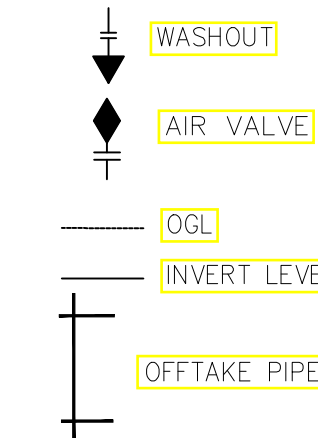
**CIVIL/STRUCTURAL ENGINEER**  
  
PROFESSIONAL CONSULTANTS  
Professional House  
Kufuga Road, Off Lang'ata Rd  
P.O. Box 24996-00502 Nrb  
+254 202016122

Drawn	LC	Scale(s)	
Designed	GMC	Date	OCTOBER 2023
Checked	ENG. G.O.M	Date	OCTOBER 2023
Approved		Date	
<b>JOB No.</b>		<b>DRG No: PC - TKB - 029</b>	



**NOTES:**

1. THIS DRAWING MUST BE READ IN CONJUNCTION WITH ALL RELEVANT CONTRACT DRAWINGS
2. PIPE LINE TO BE ALIGNED UPON CONFIRMATION OF FINAL WAYLEAVES
3. INVERT LEVELS TO BE CONFIRMED BEFORE INSTALLATIONS
4. ALL LEVELS ARE IN METERS AND BASED ON A NATIONAL DATUM
5. ALL DISTANCES ARE IN METERS UNLESS STATED OTHERWISE
6. THE ACTUAL SETTING OUT TO BE CONFIRMED ON SITE BY THE ENGINEER
7. BEDDING AND SURROUND MATERIAL TO THE APPROVAL OF THE ENGINEER
8. PIPELINE MATERIAL TO BE HDPE EXCEPT AT RIVER AND ROAD CROSSINGS WHERE GI PIPES WILL BE USED
9. CLASS 15 CONCRETE TO BE USED IN THRUST AND ANCHOR BLOCKS



1. All dimensions are in millimeters, unless otherwise stated.  
 2. This drawing must not be scaled, only figured dimensions should be used.  
 3. This drawing must be read in conjunction with relevant Architectural drawings.

4. Reinforced concrete to be grade 25/20 for all structural elements.

REVISIONS		
Date	Suffix	Descriptions

**Project:**  
 DEVELOPMENT OF 25 YEAR WATER SUPPLY MASTER PLAN AND ENGINEERING COSTED DESIGN FOR TAKABA TOWN, MANDERA COUNTY KENYA

**CLIENT**

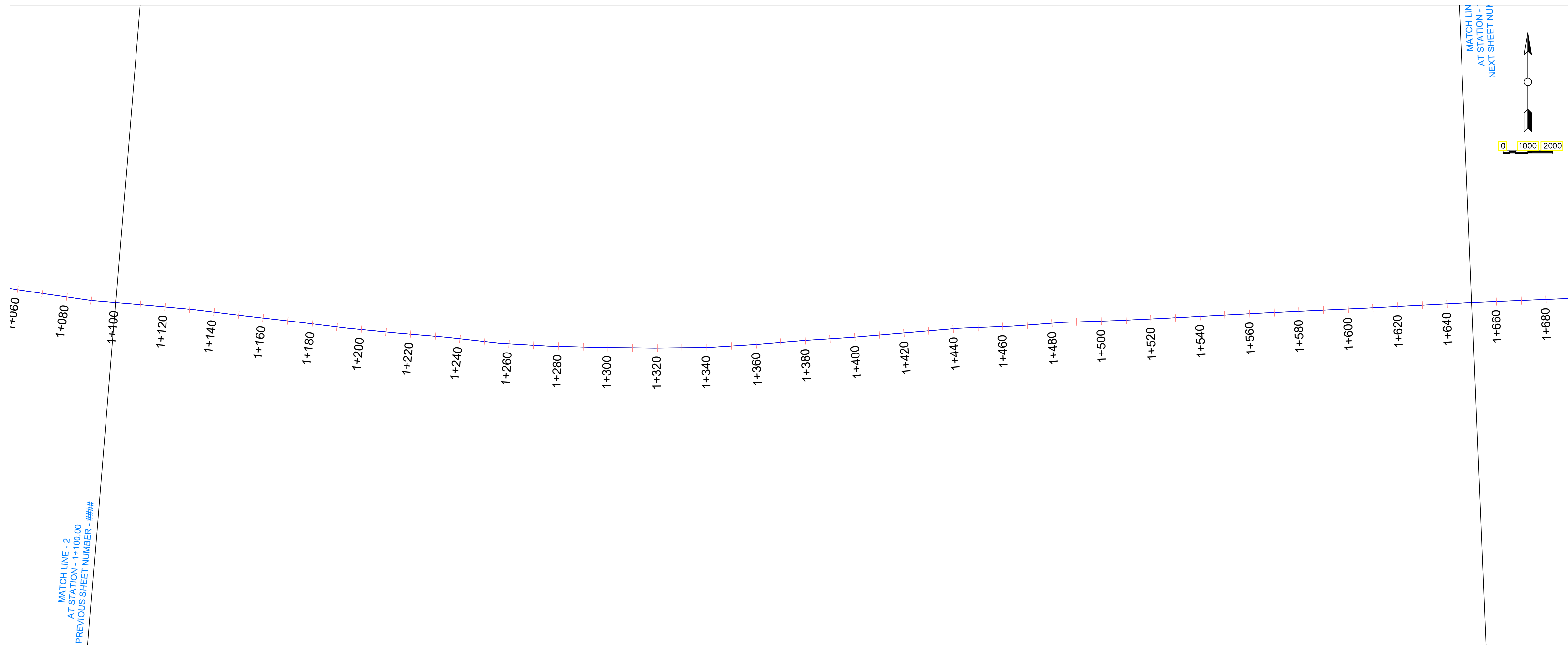
WATER SECTOR TRUST FUND

**DRAWING TITLE**  
 DARWED BHs RISING MAIN  
 PLAN AND LONGITUDINAL PROFILE

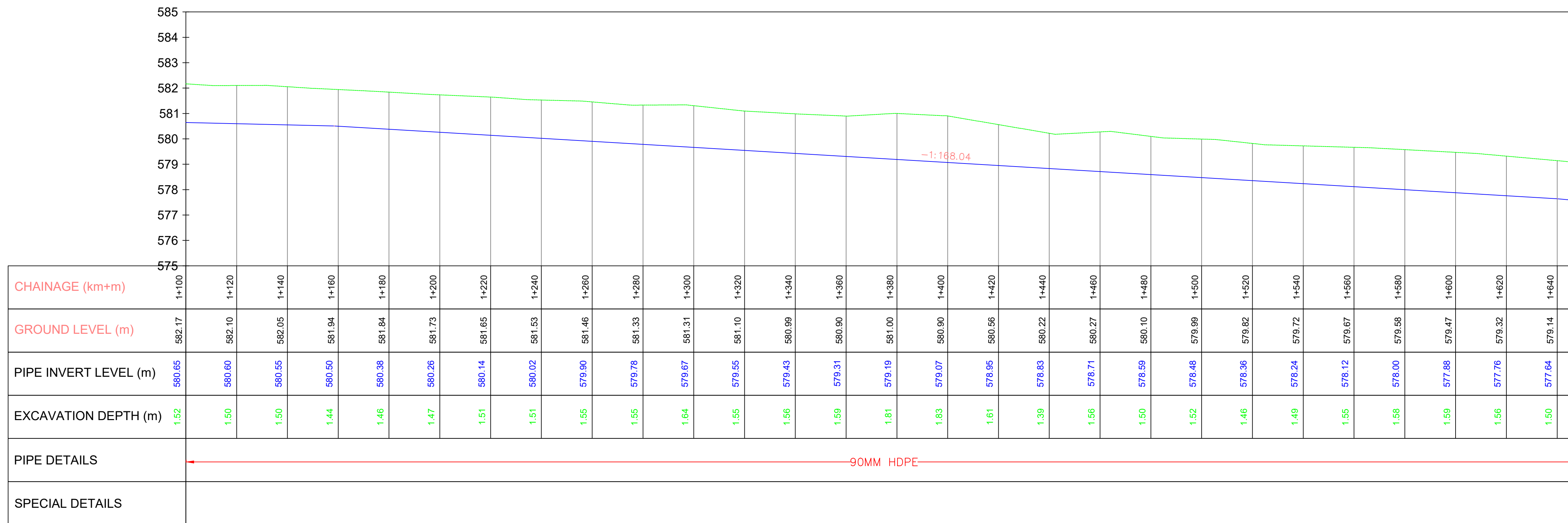
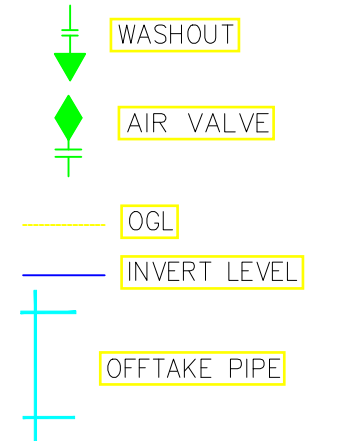
**CIVIL/STRUCTURAL ENGINEER**

PROFESSIONAL CONSULTANTS  
 Professional House  
 Kufuga Road, Off Lang'ata Rd  
 P.O Box 24996-00502 Nrb  
 +254 202016322

Drawn	L.C	Scale(s)	
Designed	GMC	Date	OCTOBER 2023
Checked	ENG. G.O.M	Date	OCTOBER 2023
Approved		Date	Sheet No. 1/7
<b>JOB No.</b>		<b>DRG No. PC - TKB - 034</b>	



- NOTES:**
1. THIS DRAWING MUST BE READ IN CONJUNCTION WITH ALL RELEVANT CONTRACT DRAWINGS
  2. PIPE LINE TO BE ALIGNED UPON CONFIRMATION OF FINAL WAYLEAVES
  3. INVERT LEVELS TO BE CONFIRMED BEFORE INSTALLATIONS
  4. ALL LEVELS ARE IN METERS AND BASED ON A NATIONAL DATUM
  5. ALL DISTANCES ARE IN METERS UNLESS STATED OTHERWISE
  6. THE ACTUAL SETTING OUT TO BE CONFIRMED ON SITE BY THE ENGINEER
  7. BEDDING AND SURROUND MATERIAL TO THE APPROVAL OF THE ENGINEER
  8. PIPELINE MATERIAL TO BE HDPE EXCEPT AT RIVER AND ROAD CROSSINGS WHERE GI PIPES WILL BE USED
  9. CLASS 15 CONCRETE TO BE USED IN THRUST AND ANCHOR BLOCKS



CHAINAGE (km+m)	GROUND LEVEL (m)	PIPE INVERT LEVEL (m)	EXCAVATION DEPTH (m)
1+100	582.17	580.65	1.52
1+120	582.10	580.60	1.50
1+140	582.05	580.55	1.50
1+160	581.94	580.50	1.44
1+180	581.84	580.38	1.46
1+200	581.73	580.26	1.47
1+220	581.65	580.14	1.51
1+240	581.53	580.02	1.51
1+260	581.46	579.90	1.55
1+280	581.33	579.78	1.55
1+300	581.31	579.67	1.64
1+320	581.10	579.55	1.55
1+340	580.99	579.43	1.56
1+360	580.90	579.31	1.59
1+380	581.00	579.19	1.81
1+400	580.90	579.07	1.83
1+420	580.56	578.95	1.61
1+440	580.22	578.83	1.39
1+460	580.27	578.71	1.56
1+480	580.10	578.59	1.50
1+500	579.99	578.48	1.52
1+520	579.82	578.36	1.46
1+540	579.72	578.24	1.49
1+560	579.67	578.12	1.55
1+580	579.58	578.00	1.58
1+600	579.47	577.88	1.59
1+620	579.32	577.76	1.56
1+640	579.14	577.64	1.50
1+650	579.06	577.55	1.50

PIPE DETAILS: 90MM HDPE (from station 1+100 to 1+650)

SPECIAL DETAILS:

LONGITUDINAL PROFILE

1. All dimensions are in millimeters, unless otherwise stated.
2. This drawing must not be scaled, only figured dimensions should be used.
3. This drawing must be read in conjunction with relevant Architectural drawings.

4. Reinforced concrete to be grade 25/20 for all structural elements.

REVISIONS		
Date	Suffix	Descriptions

**Project:**  
DEVELOPMENT OF 25 YEAR WATER SUPPLY MASTER PLAN AND ENGINEERING COSTED DESIGN FOR TAKABA TOWN, MANDERA COUNTY KENYA

**CLIENT**



**DRAWING TITLE**

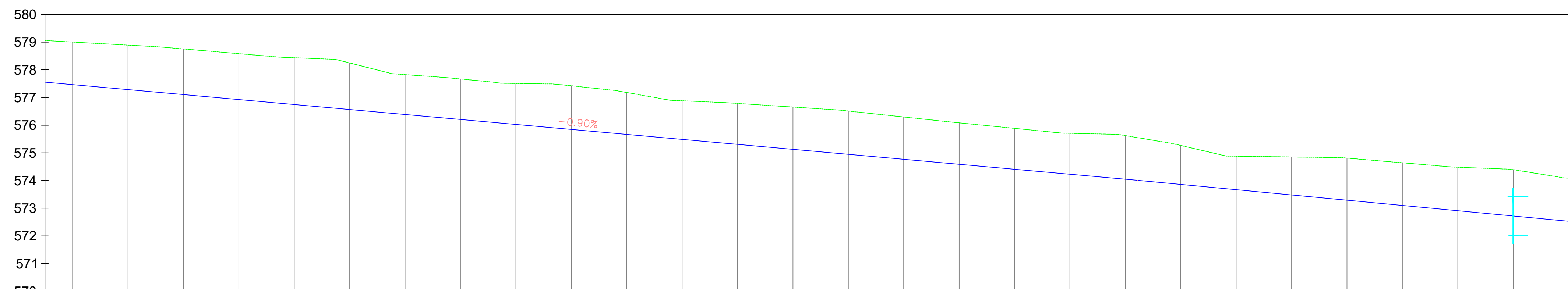
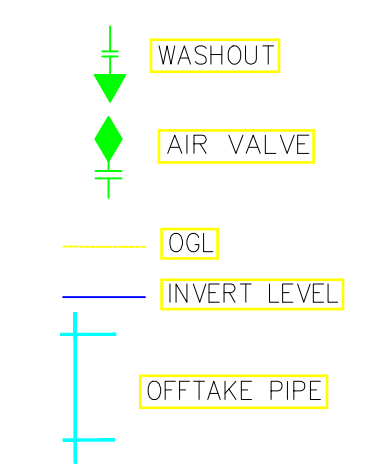
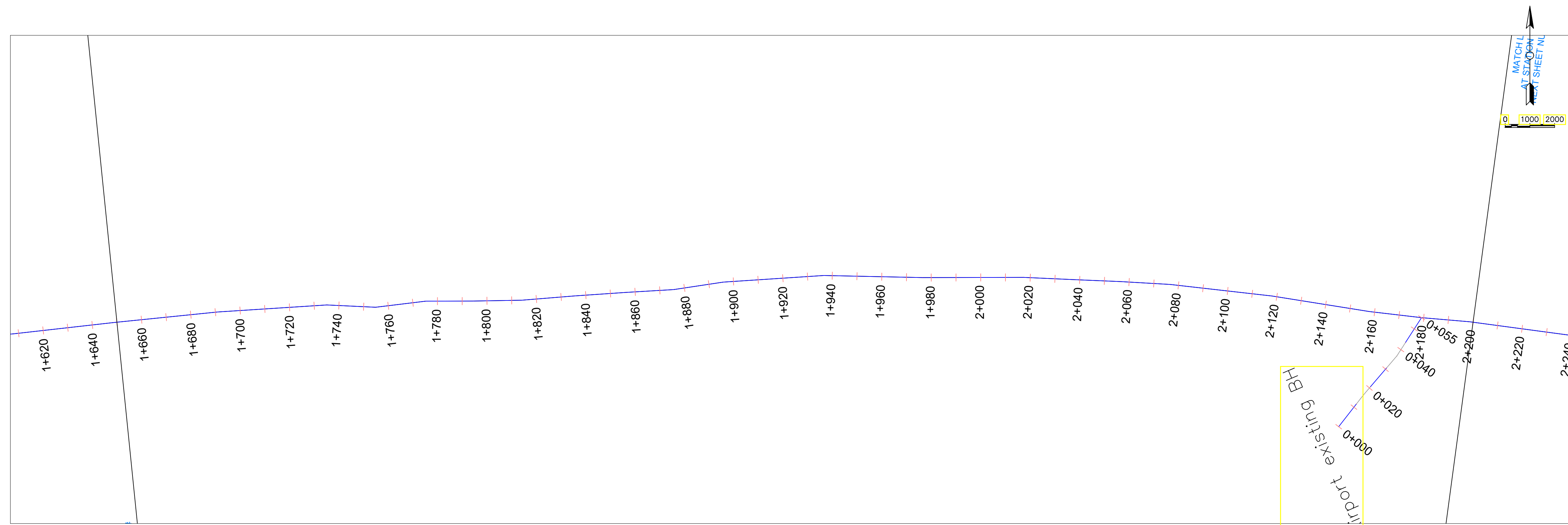
DARWED BHs RISING MAIN  
PLAN AND LONGITUDINAL PROFILE

**CIVIL/STRUCTURAL ENGINEER**

**PC** PROFESSIONAL CONSULTANTS  
Professional House  
Kufuga Road, Off Lang'ata Rd  
P.O. Box 24996-00502 Nrb  
+254 202016322

Drawn	L.C	Scale(s)	
Designed	GMC	Date	OCTOBER 2023
Checked	ENG. G.O.M	Date	OCTOBER 2023
Approved		Date	Sheet No. 2/7
JOB No.		DRG No. PC - TKB - 035	

- NOTES:**
- THIS DRAWING MUST BE READ IN CONJUNCTION WITH ALL RELEVANT CONTRACT DRAWINGS
  - PIPE LINE TO BE ALIGNED UPON CONFIRMATION OF FINAL WAYLEAVES
  - INVERT LEVELS TO BE CONFIRMED BEFORE INSTALLATIONS
  - ALL LEVELS ARE IN METERS AND BASED ON A NATIONAL DATUM
  - ALL DISTANCES ARE IN METERS UNLESS STATED OTHERWISE
  - THE ACTUAL SETTING OUT TO BE CONFIRMED ON SITE BY THE ENGINEER
  - BEDDING AND SURROUND MATERIAL TO THE APPROVAL OF THE ENGINEER
  - PIPELINE MATERIAL TO BE HDPE EXCEPT AT RIVER AND ROAD CROSSINGS WHERE GI PIPES WILL BE USED
  - CLASS 15 CONCRETE TO BE USED IN THRUST AND ANCHOR BLOCKS



CHAINAGE (km+m)	1+650	1+660	1+680	1+700	1+720	1+740	1+760	1+780	1+800	1+820	1+840	1+860	1+880	1+900	1+920	1+940	1+960	1+980	2+000	2+020	2+040	2+060	2+080	2+100	2+120	2+140	2+160	2+180	2+200			
GROUND LEVEL (m)	579.06	579.00	578.89	578.75	578.58	578.43	578.25	577.83	577.67	577.51	577.42	577.18	576.88	576.78	576.65	576.51	576.30	576.08	575.88	575.71	575.62	575.27	574.88	574.85	574.81	574.64	574.48	574.39	574.09			
PIPE INVERT LEVEL (m)	577.55	577.46	577.28	577.10	576.92	576.74	576.56	576.38	576.20	576.03	575.85	575.67	575.49	575.31	575.13	574.95	574.77	574.59	574.41	574.23	574.05	573.86	573.67	573.48	573.29	573.10	572.91	572.72	572.53			
EXCAVATION DEPTH (m)	1.50	1.54	1.61	1.65	1.66	1.69	1.69	1.44	1.46	1.48	1.58	1.51	1.40	1.48	1.53	1.56	1.53	1.50	1.48	1.48	1.57	1.41	1.21	1.37	1.52	1.54	1.57	1.68	1.56			
PIPE DETAILS	90MM HDPE																															

- All dimensions are in millimeters, unless otherwise stated.
- This drawing must not be scaled, only figured dimensions should be used.
- This drawing must be read in conjunction with relevant Architectural drawings.

4. Reinforced concrete to be grade 25/20 for all structural elements.

REVISIONS		
Date	Suffix	Descriptions

**Project:**  
DEVELOPMENT OF 25 YEAR WATER SUPPLY MASTER PLAN AND ENGINEERING COSTED DESIGN FOR TAKABA TOWN, MANDERA COUNTY KENYA

**CLIENT**

WATER SECTOR TRUST FUND

**DRAWING TITLE**

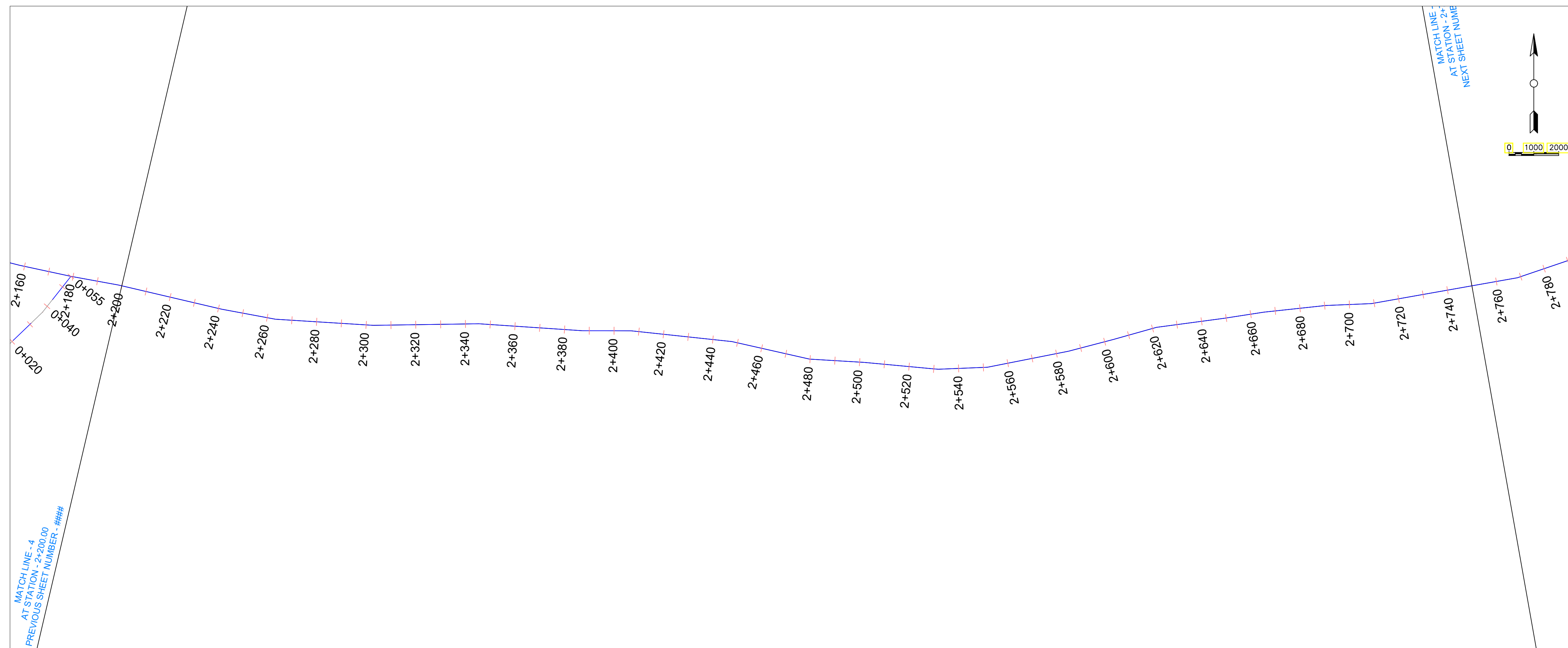
DARWED BHs RISING MAIN  
PLAN AND LONGITUDINAL PROFILE

**CIVIL/STRUCTURAL ENGINEER**

PROFESSIONAL CONSULTANTS  
Professional House  
Kufuga Road, Off Lang'ata Rd  
P.O Box 24996-00502 Nrb  
+254 202016322

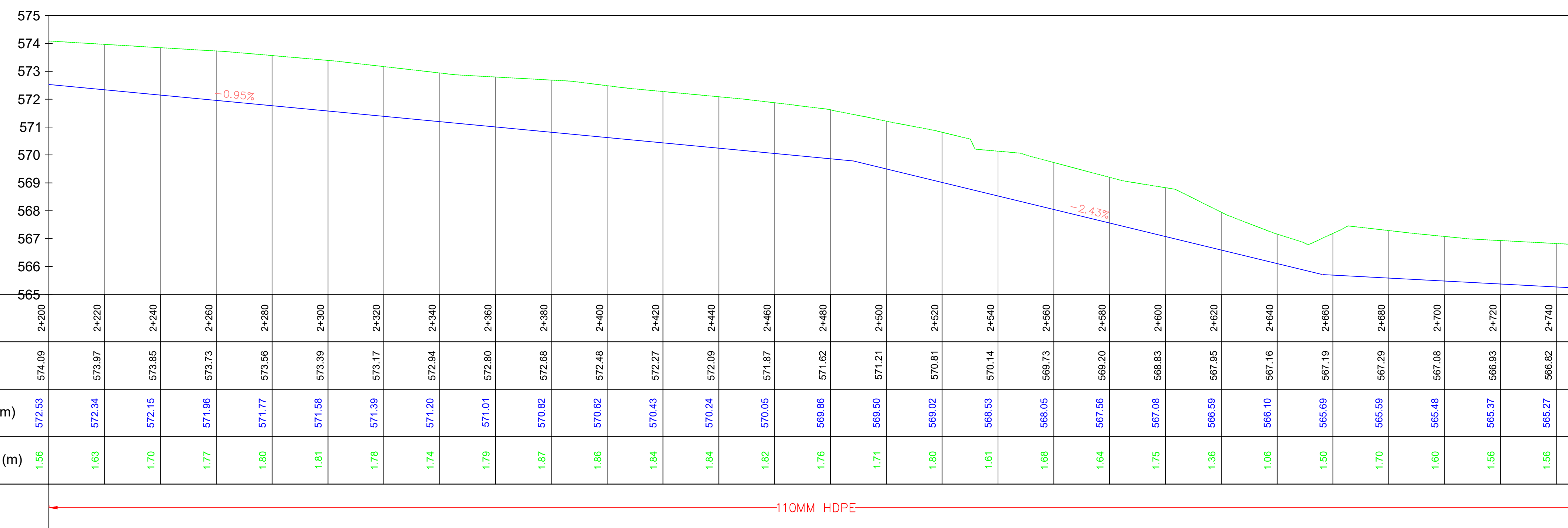
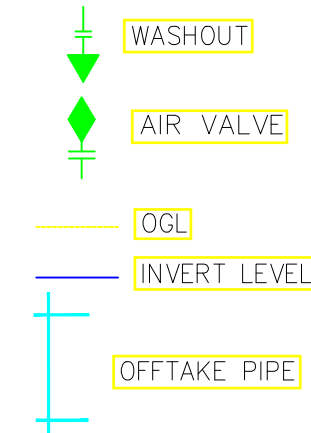
Drawn	LC	Scale(s)	
Designed	GMC	Date	OCTOBER 2023
Checked	ENG. G.O.M	Date	OCTOBER 2023
Approved		Date	Sheet No. 3/7
<b>JOB No.</b>	<b>DRG No. PC - TKB - 036</b>		





**NOTES:**

1. THIS DRAWING MUST BE READ IN CONJUNCTION WITH ALL RELEVANT CONTRACT DRAWINGS
2. PIPE LINE TO BE ALIGNED UPON CONFIRMATION OF FINAL WAYLEAVES
3. INVERT LEVELS TO BE CONFIRMED BEFORE INSTALLATIONS
4. ALL LEVELS ARE IN METERS AND BASED ON A NATIONAL DATUM
5. ALL DISTANCES ARE IN METERS UNLESS STATED OTHERWISE
6. THE ACTUAL SETTING OUT TO BE CONFIRMED ON SITE BY THE ENGINEER
7. BEDDING AND SURROUND MATERIAL TO THE APPROVAL OF THE ENGINEER
8. PIPELINE MATERIAL TO BE HDPE EXCEPT AT RIVER AND ROAD CROSSINGS WHERE GI PIPES WILL BE USED
9. CLASS 15 CONCRETE TO BE USED IN THRUST AND ANCHOR BLOCKS



CHAINAGE (km+m)	GROUND LEVEL (m)	PIPE INVERT LEVEL (m)	EXCAVATION DEPTH (m)
2+200	574.09	572.53	1.56
2+220	573.97	572.34	1.63
2+240	573.85	572.15	1.70
2+260	573.73	571.96	1.77
2+280	573.56	571.77	1.80
2+300	573.39	571.58	1.81
2+320	573.17	571.39	1.78
2+340	572.94	571.20	1.74
2+360	572.80	571.01	1.79
2+380	572.68	570.82	1.87
2+400	572.48	570.62	1.86
2+420	572.27	570.43	1.84
2+440	572.09	570.24	1.84
2+460	571.87	570.05	1.82
2+480	571.62	569.86	1.76
2+500	571.21	569.50	1.71
2+520	570.81	569.02	1.80
2+540	570.14	568.53	1.61
2+560	569.73	568.05	1.68
2+580	569.20	567.56	1.64
2+600	568.83	567.08	1.75
2+620	567.95	566.59	1.36
2+640	567.16	566.10	1.06
2+660	567.19	565.69	1.50
2+680	567.29	565.59	1.70
2+700	567.08	565.48	1.60
2+720	566.93	565.37	1.56
2+740	566.82	565.27	1.56
2+750	566.77	565.22	1.56

PIPE DETAILS: 110MM HDPE

1. All dimensions are in millimeters, unless otherwise stated.
2. This drawing must not be scaled, only figured dimensions should be used.
3. This drawing must be read in conjunction with relevant Architectural drawings.

4. Reinforced concrete to be grade 25/20 for all structural elements.

REVISIONS		
Date	Suffix	Descriptions

**Project:**  
 DEVELOPMENT OF 25 YEAR WATER SUPPLY MASTER PLAN AND ENGINEERING COSTED DESIGN FOR TAKABA TOWN, MANDERA COUNTY KENYA

**CLIENT**

WATER SECTOR TRUST FUND

**DRAWING TITLE**

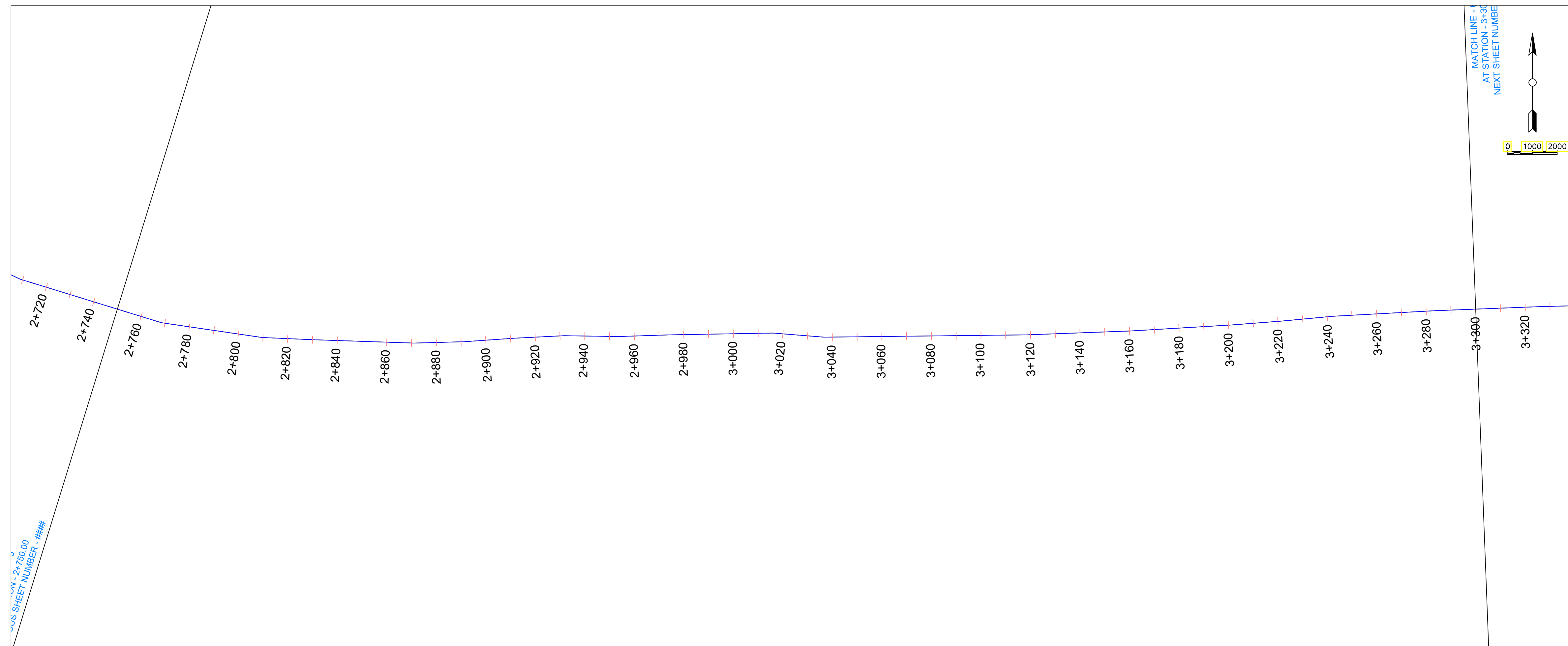
DARWED BHs RISING MAIN  
 PLAN AND LONGITUDINAL PROFILE

**CIVIL/STRUCTURAL ENGINEER**

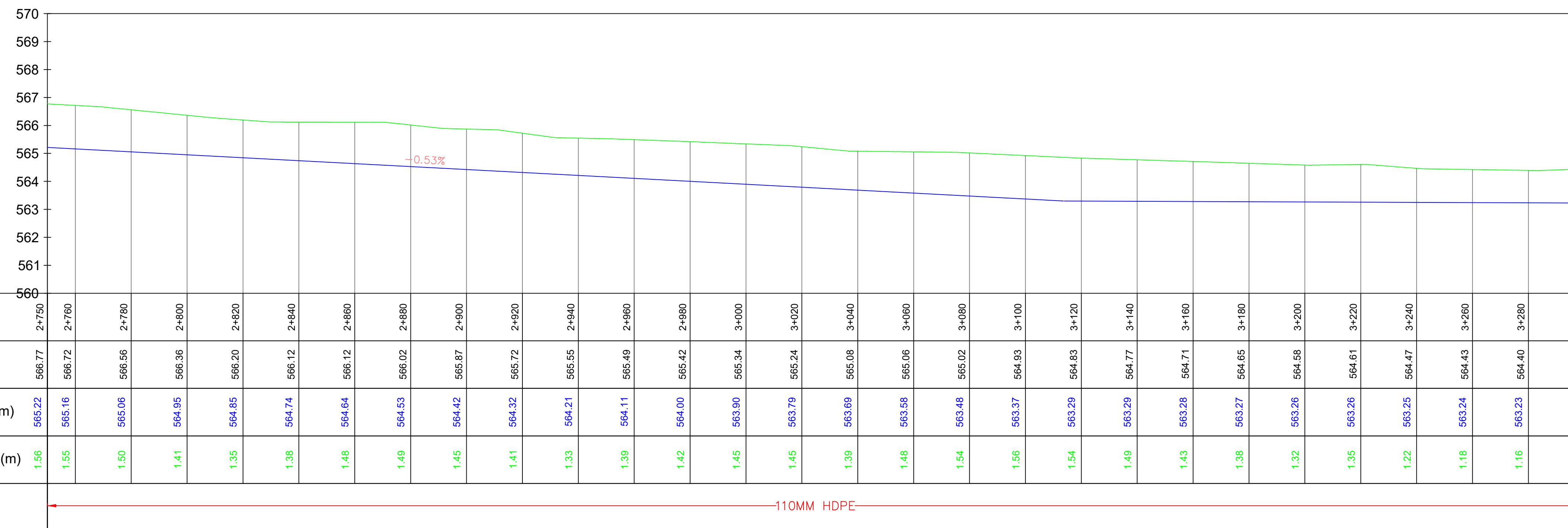
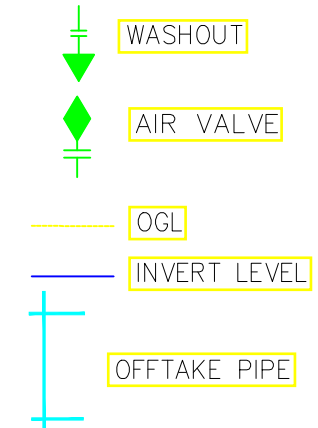
PROFESSIONAL CONSULTANTS  
 Professional House  
 Kufuga Road, Off Lang'ata Rd  
 P.O Box 24996-00502 Nrb  
 +254 202016322

Drawn	LC	Scale(s)	
Designed	GMC	Date	OCTOBER 2023
Checked	ENG. G.O.M	Date	OCTOBER 2023
Approved		Date	Sheet No. 4/7
<b>JOB No.</b>		<b>DRG No. PC - TKB - 037</b>	





- NOTES:**
1. THIS DRAWING MUST BE READ IN CONJUNCTION WITH ALL RELEVANT CONTRACT DRAWINGS
  2. PIPE LINE TO BE ALIGNED UPON CONFIRMATION OF FINAL WAYLEAVES
  3. INVERT LEVELS TO BE CONFIRMED BEFORE INSTALLATIONS
  4. ALL LEVELS ARE IN METERS AND BASED ON A NATIONAL DATUM
  5. ALL DISTANCES ARE IN METERS UNLESS STATED OTHERWISE
  6. THE ACTUAL SETTING OUT TO BE CONFIRMED ON SITE BY THE ENGINEER
  7. BEDDING AND SURROUND MATERIAL TO THE APPROVAL OF THE ENGINEER
  8. PIPELINE MATERIAL TO BE HDPE EXCEPT AT RIVER AND ROAD CROSSINGS WHERE GI PIPES WILL BE USED
  9. CLASS 15 CONCRETE TO BE USED IN THRUST AND ANCHOR BLOCKS



CHAINAGE (km+m)	GROUND LEVEL (m)	PIPE INVERT LEVEL (m)	EXCAVATION DEPTH (m)
2+750	566.77	565.22	1.56
2+760	566.72	565.16	1.55
2+780	566.56	565.06	1.50
2+800	566.36	564.95	1.41
2+820	566.20	564.85	1.35
2+840	566.12	564.74	1.38
2+860	566.12	564.64	1.48
2+880	566.02	564.53	1.49
2+900	565.87	564.42	1.45
2+920	565.72	564.32	1.41
2+940	565.55	564.21	1.33
2+960	565.49	564.11	1.39
2+980	565.42	564.00	1.42
3+000	565.34	563.90	1.45
3+020	565.24	563.79	1.45
3+040	565.08	563.69	1.39
3+060	565.06	563.58	1.48
3+080	565.02	563.48	1.54
3+100	564.93	563.37	1.56
3+120	564.83	563.29	1.54
3+140	564.77	563.29	1.49
3+160	564.71	563.28	1.43
3+180	564.65	563.27	1.38
3+200	564.58	563.26	1.32
3+220	564.61	563.26	1.35
3+240	564.47	563.25	1.22
3+260	564.43	563.24	1.18
3+280	564.40	563.23	1.16
3+300	564.45	563.23	1.22

PIPE DETAILS: 110MM HDPE

1. All dimensions are in millimeters, unless otherwise stated.
2. This drawing must not be scaled, only figured dimensions should be used.
3. This drawing must be read in conjunction with relevant Architectural drawings.

4. Reinforced concrete to be grade 25/20 for all structural elements.

REVISIONS		
Date	Suffix	Descriptions

**Project:**  
DEVELOPMENT OF 25 YEAR WATER SUPPLY MASTER PLAN AND ENGINEERING COSTED DESIGN FOR TAKABA TOWN, MANDERA COUNTY KENYA

**CLIENT**

WATER SECTOR TRUST FUND

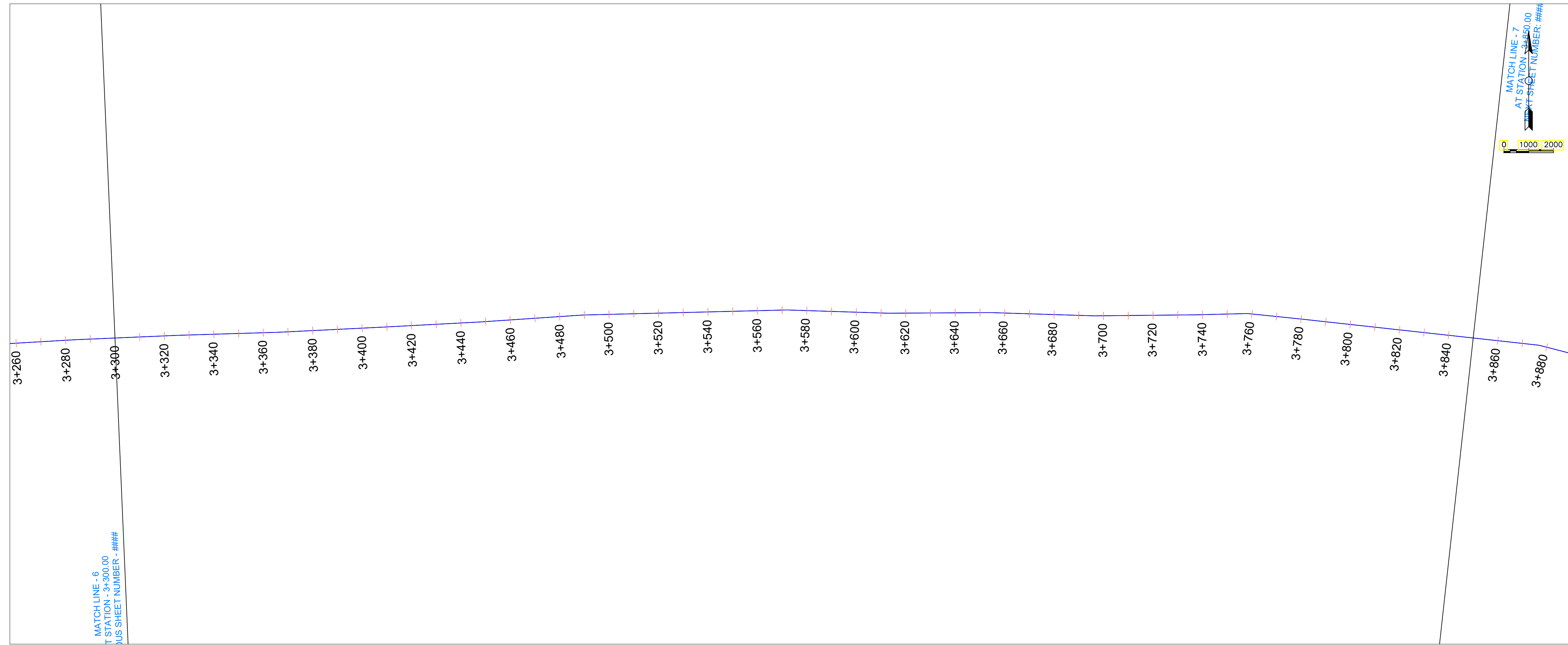
**DRAWING TITLE**

DARWED BHs RISING MAIN PLAN AND LONGITUDINAL PROFILE

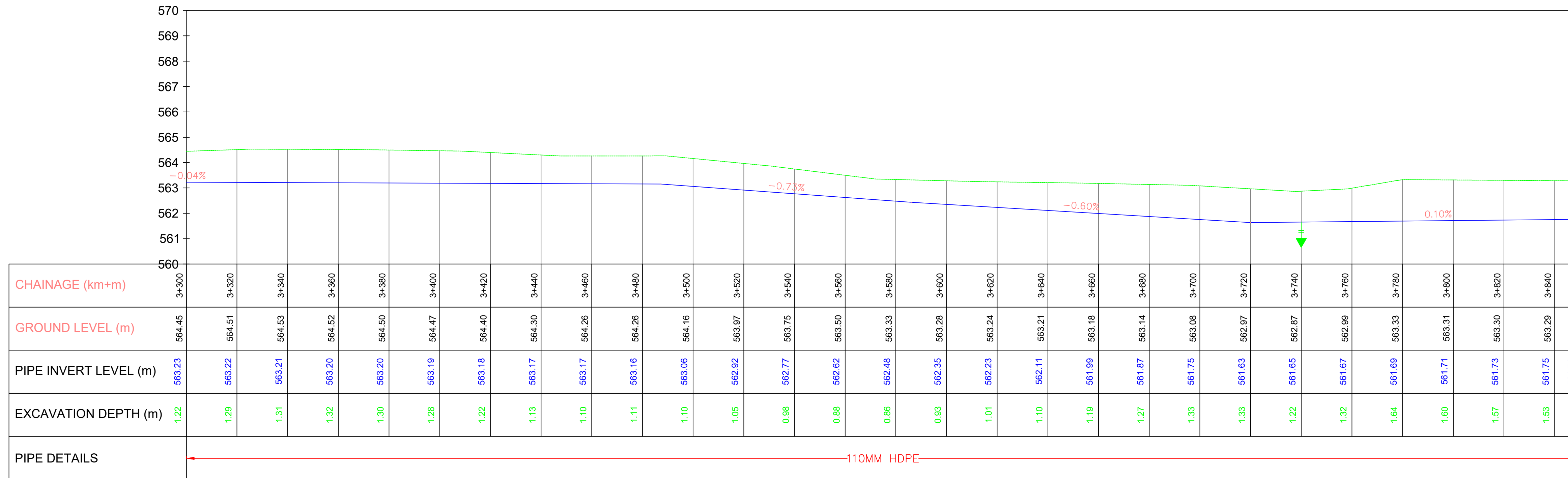
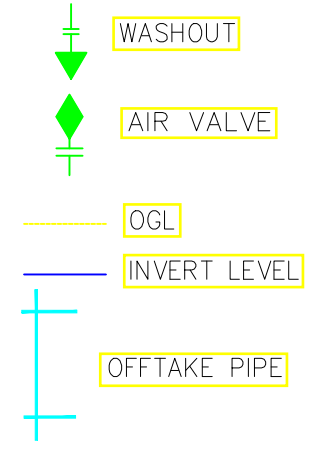
**CIVIL/STRUCTURAL ENGINEER**

PROFESSIONAL CONSULTANTS  
Kufuga Road, Off Lang'ata Rd  
P.O. Box 24996-00502 Nrb  
+254 202016322

Drawn	L.C	Scale(s)	
Designed	GMC	Date	OCTOBER 2023
Checked	ENG. G.O.M	Date	OCTOBER 2023
Approved		Date	Sheet No. 5/7
<b>JOB No.</b>		<b>DRG No. PC - TKB - 038</b>	



- NOTES:**
- THIS DRAWING MUST BE READ IN CONJUNCTION WITH ALL RELEVANT CONTRACT DRAWINGS
  - PIPE LINE TO BE ALIGNED UPON CONFIRMATION OF FINAL WAYLEAVES
  - INVERT LEVELS TO BE CONFIRMED BEFORE INSTALLATIONS
  - ALL LEVELS ARE IN METERS AND BASED ON A NATIONAL DATUM
  - ALL DISTANCES ARE IN METERS UNLESS STATED OTHERWISE
  - THE ACTUAL SETTING OUT TO BE CONFIRMED ON SITE BY THE ENGINEER
  - BEDDING AND SURROUND MATERIAL TO THE APPROVAL OF THE ENGINEER
  - PIPELINE MATERIAL TO BE HDPE EXCEPT AT RIVER AND ROAD CROSSINGS WHERE GI PIPES WILL BE USED
  - CLASS 15 CONCRETE TO BE USED IN THRUST AND ANCHOR BLOCKS



- All dimensions are in millimeters, unless otherwise stated.
- This drawing must not be scaled, only figured dimensions should be used.
- This drawing must be read in conjunction with relevant Architectural drawings.

4. Reinforced concrete to be grade 25/20 for all structural elements.

REVISIONS		
Date	Suffix	Descriptions

**Project:**  
DEVELOPMENT OF 25 YEAR WATER SUPPLY MASTER PLAN AND ENGINEERING COSTED DESIGN FOR TAKABA TOWN, MANDERA COUNTY KENYA



**CLIENT**

**DRAWING TITLE**  
DARWED BHs RISING MAIN PLAN AND LONGITUDINAL PROFILE

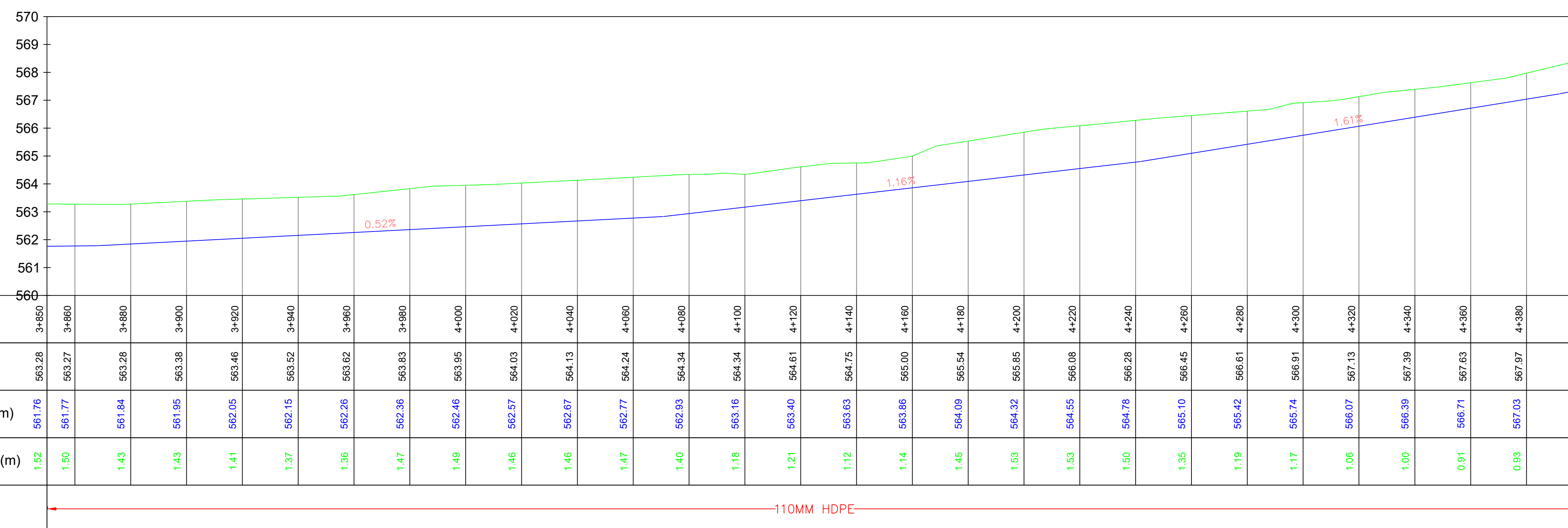
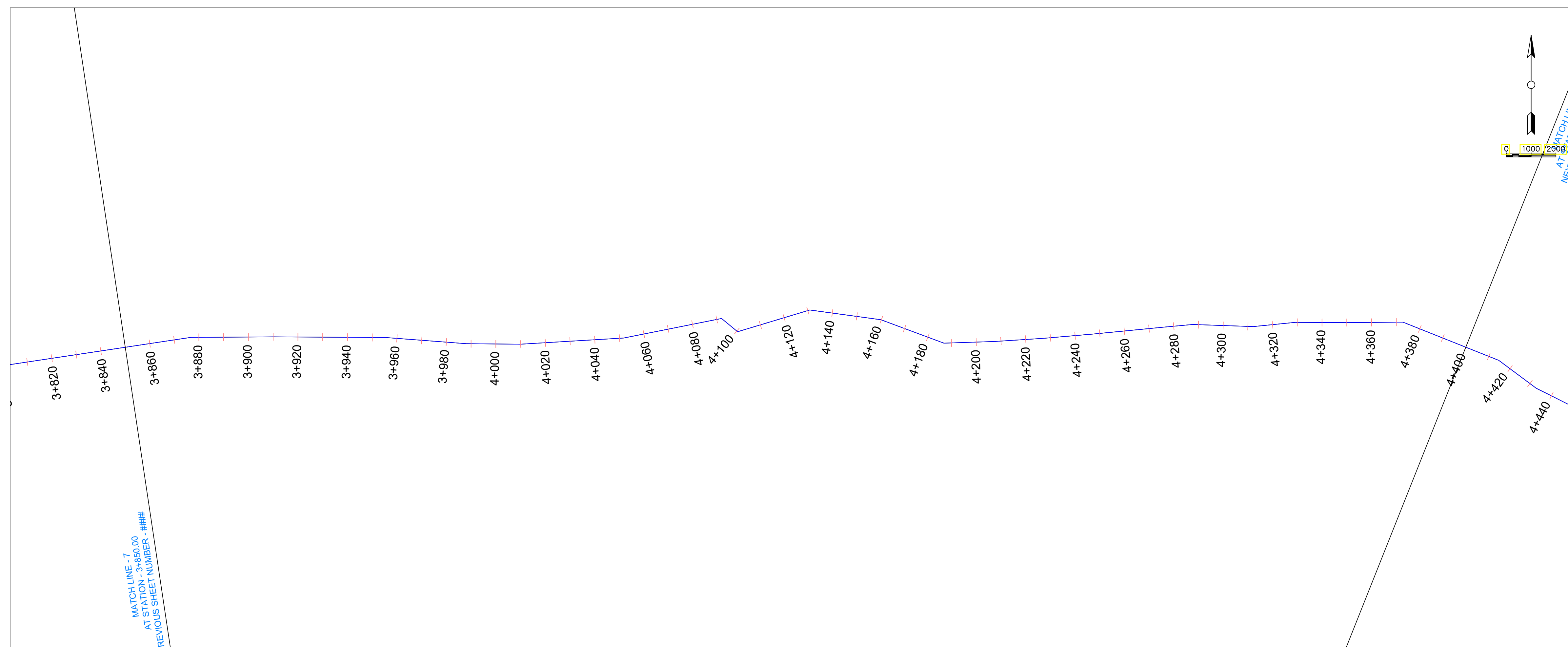
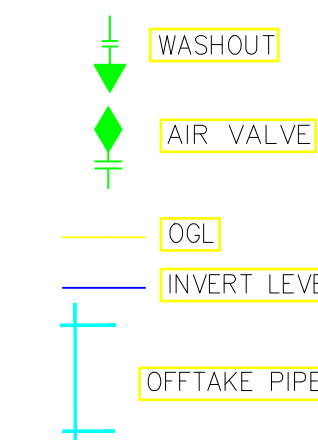
**CIVIL/STRUCTURAL ENGINEER**

**PROFESSIONAL CONSULTANTS**  
Professional House  
Kufuga Road, Off Lang'ata Rd  
P.O. Box 24996-00502 Nrb  
+254 202016322

Drawn	LC	Scale(s)	
Designed	GMC	Date	OCTOBER 2023
Checked	ENG. G.O.M	Date	OCTOBER 2023
Approved		Date	Sheet No. 6/7
<b>JOB No.</b>		<b>DRG No. PC - TKB - 039</b>	

**NOTES:**

1. THIS DRAWING MUST BE READ IN CONJUNCTION WITH ALL RELEVANT CONTRACT DRAWINGS
2. PIPE LINE TO BE ALIGNED UPON CONFIRMATION OF FINAL WAYLEAVES
3. INVERT LEVELS TO BE CONFIRMED BEFORE INSTALLATIONS
4. ALL LEVELS ARE IN METERS AND BASED ON A NATIONAL DATUM
5. ALL DISTANCES ARE IN METERS UNLESS STATED OTHERWISE
6. THE ACTUAL SETTING OUT TO BE CONFIRMED ON SITE BY THE ENGINEER
7. BEDDING AND SURROUND MATERIAL TO THE APPROVAL OF THE ENGINEER
8. PIPELINE MATERIAL TO BE HDPE EXCEPT AT RIVER AND ROAD CROSSINGS WHERE GI PIPES WILL BE USED
9. CLASS 15 CONCRETE TO BE USED IN THRUST AND ANCHOR BLOCKS



CHAINAGE (km+m)	GROUND LEVEL (m)	PIPE INVERT LEVEL (m)	EXCAVATION DEPTH (m)
3+860	563.28	561.76	1.52
3+880	563.28	561.84	1.43
3+900	563.38	561.95	1.43
3+920	563.46	562.05	1.41
3+940	563.52	562.15	1.37
3+960	563.62	562.26	1.36
3+980	563.83	562.36	1.47
4+000	563.95	562.46	1.49
4+020	564.03	562.57	1.46
4+040	564.13	562.67	1.46
4+060	564.24	562.77	1.47
4+080	564.34	562.83	1.40
4+100	564.34	563.16	1.18
4+120	564.61	563.40	1.21
4+140	564.75	563.63	1.12
4+160	565.00	563.86	1.14
4+180	565.54	564.09	1.45
4+200	565.85	564.32	1.53
4+220	566.08	564.55	1.53
4+240	566.28	564.78	1.50
4+260	566.45	565.10	1.35
4+280	566.61	565.42	1.19
4+300	566.91	565.74	1.17
4+320	567.13	566.07	1.06
4+340	567.39	566.39	1.00
4+360	567.63	566.71	0.91
4+380	567.97	567.03	0.93
4+400	568.45	567.39	1.06

PIPE DETAILS: 110MM HDPE

1. All dimensions are in millimeters, unless otherwise stated.
2. This drawing must not be scaled, only figured dimensions should be used.
3. This drawing must be read in conjunction with relevant Architectural drawings.

4. Reinforced concrete to be grade 25/20 for all structural elements.

REVISIONS		
Date	Suffix	Descriptions

**Project:**  
DEVELOPMENT OF 25 YEAR WATER SUPPLY MASTER PLAN AND ENGINEERING COSTED DESIGN FOR TAKABA TOWN, MANDERA COUNTY KENYA

**CLIENT**

WATER SECTOR TRUST FUND

**DRAWING TITLE**

DARWED BHs RISING MAIN PLAN AND LONGITUDINAL PROFILE

**CIVIL/STRUCTURAL ENGINEER**

PROFESSIONAL CONSULTANTS  
Professional House  
Kufuga Road Off Langata Rd  
P.O Box 24996-00502 Nrb  
+254 202016322

Drawn	LC	Scale(s)	
Designed	GMC	Date	OCTOBER 2023
Checked	ENG. G.O.M	Date	OCTOBER 2023
Approved		Date	Sheet No. 7/7
<b>JOB No.</b>		<b>DRG No. PC - TKB - 040</b>	