

REPUBLIC OF KENYA
COAST WATER WORKS DEVELOPMENT AGENCY



IMPROVEMENT OF DRINKING WATER AND SANITATION
SYSTEMS IN MOMBASA;
MWACHE CKE 1103

LOT 1 – CONSTRUCTION OF THE MWACHE TRUNK MAIN (SECTION 1),
SOUTH MAINLAND TRANSMISSION MAIN AND DONGO KUNDU RESERVOIR

BID No. CWWDA/AfD/PQ/W4/2022-2023

BIDDING DOCUMENT
VOLUME III

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BOOK OF DRAWINGS

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AUGUST 2024

IMPROVEMENT OF DRINKING WATER AND SANITATION SYSTEMS IN MOMBASA: MWACHE CKE 1103

LOT 1: CONSTRUCTION OF THE MWACHE TWIN TRUNK MAIN (SECTION 1), THE SOUTH MAINLAND TRANSMISSION PIPELINE AND DONGO KUNDU RESERVOIR

BID No. CWWDA/AFD/PQ/W4/2022-2023

SCHEDULE OF CONSTRUCTION DRAWINGS

DRG NO.	DESCRIPTION	DRG NO.	DESCRIPTION
	GENERAL LAYOUT		CHLORINE STORAGE AND MIXING BUILDING
M430/MP/G/01	PROJECT LOCATION PLAN	M430/MP/SR/DK/CSMB/01	CHLORINE STORAGE AND MIXING BUILDING - FLOOR PLANS
		M430/MP/SR/DK/CSMB/02	CHLORINE STORAGE AND MIXING BUILDING - SECTIONS
		M430/MP/SR/DK/CSMB/03	CHLORINE STORAGE AND MIXING BUILDING - MISCELLANEOUS
		M430/MP/SR/DK/CSMB/04	CHLORINE STORAGE AND MIXING BUILDING - ELEVATIONS
	MWACHE TWIN TRUNK MAIN (SECTION 1) TRANSMISSION PIPELINE (LINE TM1) - PLAN AND LONGITUDINAL SECTION		
M430/MP/TM/G/01	MWACHE TWIN TRUNK MAIN (SECTION 1) TRANSMISSION PIPELINE (LINE TM1) - KEY PLAN AND HYDRAULIC PROFILE		
M430/MP/TM/01	TRUNK MAIN (LINE TM1) PLAN AND LONGITUDINAL SECTION - SHEET 1 OF 5 - CH 0+000 - CH 1+200		
M430/MP/TM/02	TRUNK MAIN (LINE TM1) PLAN AND LONGITUDINAL SECTION - SHEET 2 OF 5 - CH 1+200 - CH 2+400		
M430/MP/TM/03	TRUNK MAIN (LINE TM1) PLAN AND LONGITUDINAL SECTION - SHEET 3 OF 5 - CH 2+400 - CH 2+927.65	M430/MP/SR/DK/GR/01	OPERATOR'S OFFICE/GUARD ROOM OPERATOR'S OFFICE/GUARD ROOM - PLAN, SECTION AND ELEVATION
M430/MP/TM/04	TRUNK MAIN (LINE TM1) PLAN AND LONGITUDINAL SECTION - SHEET 4 OF 5 - FITTINGS DETAILS		
M430/MP/TM/05	TRUNK MAIN (LINE TM1) PLAN AND LONGITUDINAL SECTION - SHEET 5 OF 5 - FITTINGS DETAILS		
			ADMINISTRATION BLOCK/ RESIDENT ENGINEER'S OFFICE (LOCATED AT DONGO KUNDU TANK SITE)
		M430/DK-REO/01	RESIDENT ENGINEER'S OFFICE PLAN, SECTION AND ELEVATIONS
		M430/DK-REO/02	RESIDENT ENGINEER'S OFFICE ROOF TRUSS DETAILS
		M430/DK-REO/03	RESIDENT ENGINEER'S OFFICE ELECTRICAL INSTALLATION-PLAN
		M430/DK-REO/04	RESIDENT ENGINEER'S OFFICE ELECTRICAL INSTALLATION WIRING DIAGRAM
	SOUTH MAINLAND TRANSMISSION PIPELINE (LINE SM) - PLAN AND LONGITUDINAL SECTION		
M430/MP/SM/G/01	SOUTH MAINLAND TRANSMISSION PIPELINE (LINE SM) - KEY PLAN AND HYDRAULIC PROFILE		
M430/MP/SM/01	SOUTH MAINLAND TRANSMISSION PIPELINE (LINE SM) PLAN AND LONGITUDINAL SECTION - SHEET 1 OF 25 - CH 0+000 - CH 1+200		
M430/MP/SM/02	SOUTH MAINLAND TRANSMISSION PIPELINE (LINE SM) PLAN AND LONGITUDINAL SECTION - SHEET 2 OF 25 - CH 1+200 - CH 2+400		
M430/MP/SM/03	SOUTH MAINLAND TRANSMISSION PIPELINE (LINE SM) PLAN AND LONGITUDINAL SECTION - SHEET 3 OF 25 - CH 2+400 - CH 3+600		
M430/MP/SM/04	SOUTH MAINLAND TRANSMISSION PIPELINE (LINE SM) PLAN AND LONGITUDINAL SECTION - SHEET 4 OF 25 - CH 3+600 - CH 4+800	M430/MP/SR/DKR/01	DONGO KUNDU RESERVOIR STAFF HOUSE (LOCATED AT DONGO KUNDU TANK SITE) STAFF HOUSE PLAN, SECTION AND ELEVATIONS
M430/MP/SM/05	SOUTH MAINLAND TRANSMISSION PIPELINE (LINE SM) PLAN AND LONGITUDINAL SECTION - SHEET 5 OF 25 - CH 4+800 - CH 6+000	M430/MP/SR/DKR/02	STAFF HOUSE KITCHEN FITTING DETAILS
M430/MP/SM/06	SOUTH MAINLAND TRANSMISSION PIPELINE (LINE SM) PLAN AND LONGITUDINAL SECTION - SHEET 6 OF 25 - CH 6+000 - CH 7+200	M430/MP/SR/DKR/03	STAFF HOUSE DOORS AND WINDOW SCHEDULE
M430/MP/SM/07	SOUTH MAINLAND TRANSMISSION PIPELINE (LINE SM) PLAN AND LONGITUDINAL SECTION - SHEET 7 OF 25 - CH 7+200 - CH 8+400	M430/MP/SR/DKR/04	STAFF HOUSE ELECTRICAL INSTALLATION LAYOUT PLAN
M430/MP/SM/08	SOUTH MAINLAND TRANSMISSION PIPELINE (LINE SM) PLAN AND LONGITUDINAL SECTION - SHEET 8 OF 25 - CH 8+400 - CH 9+600		
M430/MP/SM/09	SOUTH MAINLAND TRANSMISSION PIPELINE (LINE SM) PLAN AND LONGITUDINAL SECTION - SHEET 9 OF 25 - CH 9+600 - CH 10+800		
M430/MP/SM/10	SOUTH MAINLAND TRANSMISSION PIPELINE (LINE SM) PLAN AND LONGITUDINAL SECTION - SHEET 10 OF 25 - CH 10+800 - CH 12+000	M430/MP/SR/DKR/WP/01	WORKS PIPELINES WORKS PIPELINES SHEET 1 OF 1
M430/MP/SM/11	SOUTH MAINLAND TRANSMISSION PIPELINE (LINE SM) PLAN AND LONGITUDINAL SECTION - SHEET 11 OF 25 - CH 12+000 - CH 13+200		
M430/MP/SM/12	SOUTH MAINLAND TRANSMISSION PIPELINE (LINE SM) PLAN AND LONGITUDINAL SECTION - SHEET 12 OF 25 - CH 13+200 - CH 14+400		
M430/MP/SM/13	SOUTH MAINLAND TRANSMISSION PIPELINE (LINE SM) PLAN AND LONGITUDINAL SECTION - SHEET 13 OF 25 - CH 14+400 - CH 15+600	M430/SD/01	STANDARD DRAWINGS STANDARD DETAILS - PROJECT SIGN BOARD
M430/MP/SM/14	SOUTH MAINLAND TRANSMISSION PIPELINE (LINE SM) PLAN AND LONGITUDINAL SECTION - SHEET 14 OF 25 - CH 15+600 - CH 16+800	M430/SD/02-1	STANDARD DETAILS - AIR VALVE CHAMBERS AND FITTINGS SHEET 1 OF 2
M430/MP/SM/15	SOUTH MAINLAND TRANSMISSION PIPELINE (LINE SM) PLAN AND LONGITUDINAL SECTION - SHEET 15 OF 25 - CH 16+800 - CH 18+000	M430/SD/02-2	STANDARD DETAILS - AIR VALVE CHAMBERS AND FITTINGS SHEET 2 OF 2
M430/MP/SM/16	SOUTH MAINLAND TRANSMISSION PIPELINE (LINE SM) PLAN AND LONGITUDINAL SECTION - SHEET 16 OF 25 - CH 18+000 - CH 19+200	M430/SD/03	STANDARD DETAILS - WASHOUT CHAMBERS AND FITTINGS SHEET 1 OF 2
M430/MP/SM/17	SOUTH MAINLAND TRANSMISSION PIPELINE (LINE SM) PLAN AND LONGITUDINAL SECTION - SHEET 17 OF 25 - CH 19+200 - CH 20+400	M430/SD/04	STANDARD DETAILS - WASHOUT CHAMBERS AND FITTINGS SHEET 2 OF 2
M430/MP/SM/18	SOUTH MAINLAND TRANSMISSION PIPELINE (LINE SM) PLAN AND LONGITUDINAL SECTION - SHEET 18 OF 25 - CH 20+400 - CH 21+600	M430/SD/05-1	STANDARD DETAILS - INLINE/OFFTAKE VALVE CHAMBER FITTINGS AND ACCESS LADDER SHEET 1 OF 2
M430/MP/SM/19	SOUTH MAINLAND TRANSMISSION PIPELINE (LINE SM) PLAN AND LONGITUDINAL SECTION - SHEET 19 OF 25 - CH 21+600 - CH 22+800	M430/SD/05-2	STANDARD DETAILS - INLINE/OFFTAKE VALVE CHAMBER FITTINGS AND ACCESS LADDER SHEET 2 OF 2
M430/MP/SM/20	SOUTH MAINLAND TRANSMISSION PIPELINE (LINE SM) PLAN AND LONGITUDINAL SECTION - SHEET 20 OF 25 - CH 22+800 - CH 24+000	M430/SD/06	STANDARD DETAILS - ELECTROMAGNETIC METER CHAMBER
M430/MP/SM/21	SOUTH MAINLAND TRANSMISSION PIPELINE (LINE SM) PLAN AND LONGITUDINAL SECTION - SHEET 21 OF 25 - CH 24+000 - CH 25+200	M430/SD/07	STANDARD DETAILS - CHAMBER COVERS
M430/MP/SM/22	SOUTH MAINLAND TRANSMISSION PIPELINE (LINE SM) PLAN AND LONGITUDINAL SECTION - SHEET 22 OF 25 - CH 25+200 - CH 26+400	M430/SD/08	STANDARD DETAILS - THRUST BLOCKS SHEET 1 OF 2
M430/MP/SM/23	SOUTH MAINLAND TRANSMISSION PIPELINE (LINE SM) PLAN AND LONGITUDINAL SECTION - SHEET 23 OF 25 - CH 26+400 - CH 27+600	M430/SD/09	STANDARD DETAILS - ANCHOR BLOCKS AND INDICATOR POSTS SHEET 2 OF 2
M430/MP/SM/24	SOUTH MAINLAND TRANSMISSION PIPELINE (LINE SM) PLAN AND LONGITUDINAL SECTION - SHEET 24 OF 25 - CH 27+600 - CH 27+750.61	M430/SD/10	STANDARD DETAILS - PIPE TRENCH AND CONCRETE SORROUND
M430/MP/SM/25	SOUTH MAINLAND TRANSMISSION PIPELINE (LINE SM) PLAN AND LONGITUDINAL SECTION - SHEET 25 OF 25 - FITTINGS DETAILS	M430/SD/11	STANDARD DETAILS - TRENCHLESS ROAD CROSSING
		M430/SD/12	STANDARD DETAILS - PERMANENT REINSTATEMENT OF PAVEMENTS
		M430/SD/13	STANDARD DETAILS - PIERS AND PIER SUPPORTS
		M430/SD/14-1	STANDARD DETAILS - DETAILS OF FENCING POSTS
		M430/SD/14-2	STANDARD DETAILS - TYPICAL PERIMETER WALL DETAIL
M430/MP/NKT/01	DONGO KUNDU STORAGE RESERVOIR (28,000m³) - SITE LAYOUT PLAN	M430/SD/15	STANDARD DETAILS - DETAILS OF GATES SHEET 1 OF 2
M430/MP/NKT/02	DONGO KUNDU STORAGE RESERVOIR (28,000m³) - SECTION A-A & B-B	M430/SD/16	STANDARD DETAILS - DETAILS OF GATES SHEET 2 OF 2
M430/MP/SR/DKR/01	DONGO KUNDU STORAGE RESERVOIR (28,000m³) - LAYOUT PLAN	M430/SD/17	STANDARD DETAILS - DETAILS OF CHECKERED PLATE COVERS FOR CHAMBERS SHEET 1 OF 2
M430/MP/SR/DKR/02	DONGO KUNDU STORAGE RESERVOIR (28,000m³) - TYPICAL ROOF PLAN	M430/SD/18	STANDARD DETAILS - DETAILS OF CHECKERED PLATE COVERS FOR CHAMBERS SHEET 2 OF 2
M430/MP/SR/DKR/03	DONGO KUNDU STORAGE RESERVOIR (28,000m³) - BASE SLAB PLAN	M430/SD/19	STANDARD DETAILS - DETAILS OF STORMWATER CATCH PIT AND EARTH DRAINS
M430/MP/SR/DKR/04	DONGO KUNDU STORAGE RESERVOIR (28,000m³) - TYPICAL SECTIONS	M430/SD/20	STANDARD DETAILS - TYPICAL ROAD CROSS SECTION DETAILS
M430/MP/SR/DKR/05	DONGO KUNDU STORAGE RESERVOIR (28,000m³) - INLET PIPEWORK DETAILS	M430/SD/21	STANDARD DETAILS - DETAILS OF INVERTED BLOCK DRAINS AND HEADWALL
M430/MP/SR/DKR/06	DONGO KUNDU STORAGE RESERVOIR (28,000m³) - OUTLET PIPEWORK DETAILS	M430/SD/22	STANDARD DETAILS - DETAILS OF SEPTIC TANK
M430/MP/SR/DKR/07	DONGO KUNDU STORAGE RESERVOIR (28,000m³) - SCOUR AND OVERFLOW PIPEWORK DETAILS	M430/SD/23	STANDARD DETAILS - DONGO KUNDU STORAGE RESERVOIR SITE SIGNBOARD DETAILS
M430/MP/SR/DKR/08	DONGO KUNDU STORAGE RESERVOIR (28,000m³) - MISCELLANEOUS DETAILS AT JOINTS		

GENERAL LAYOUT

PROJECT LAYOUT PLAN



Legend

Scope of Works under this Contract/ Lot

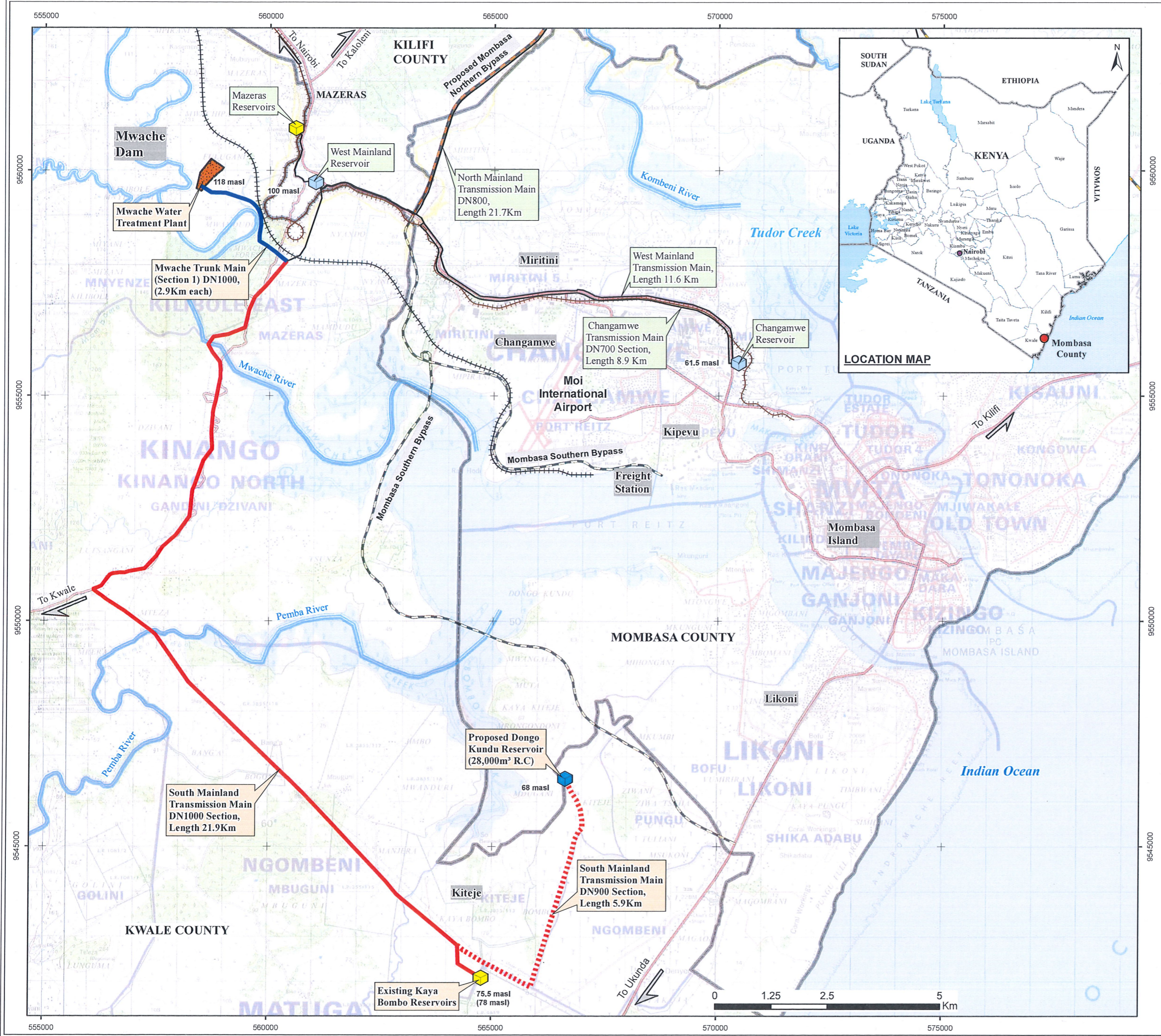
- Proposed Reservoir
- Mwache Trunk Main (Section 1)
- South Mainland Transmission Pipeline (DN1000 Section)
- South Mainland Transmission Pipeline (DN900 Section)

Works to be Constructed under other Contracts/ Lots

- Mwache WTP
- Other Transmission Pipelines

Other Features

- Existing Reservoir
- Standard Gauge Railway (SGR)
- Meter Gauge Railway
- Major Roads
- Rivers
- Proposed Mombasa Northern Bypass
- Mombasa Southern Bypass
- Proposed Bamburi Link Road
- County Boundary



REVISIONS	SIGN	DATE	APPROVED
	BY		
	CHECKED		
	BY		
	CHECKED		
	BY		
	CHECKED		
	BY		

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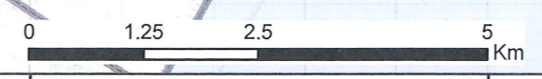
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PROJECT NAME: **IMPROVEMENT OF DRINKING WATER AND SANITATION SYSTEMS IN MOMBASA: MWACHE CKE 1103**

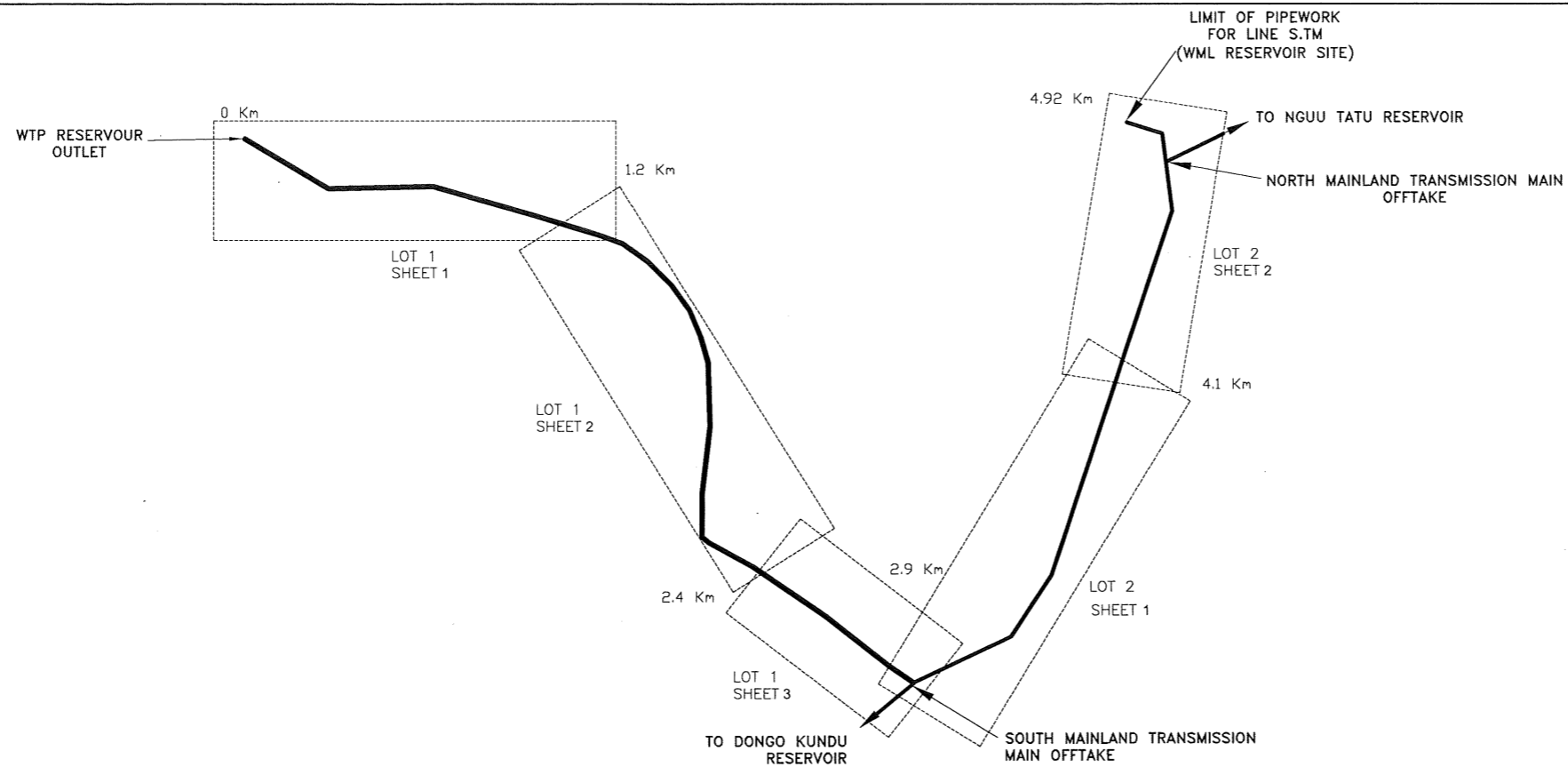
BID No. CWWDA/AFD/PQ/W4/2022-2023
LOT 1: CONSTRUCTION OF THE MWACHE TRUNK MAIN (SECTION 1), SOUTH MAINLAND TRANSMISSION PIPELINE AND DONGO KUNDU STORAGE RESERVOIR

DRAWING TITLE: **PROJECT LAYOUT PLAN**

Designed by: J.M.K	Drawn by: S.J.O
Checked by: E.I.M/R.S.R	Approved by: B.D
Scale: AS SHOWN	Date: APR. 2024
DRG No. M430/MP/SM/LP/01	
REV.0	



**MWACHE TWIN TRUNK MAIN
(TM1) TRANSMISSION
PIPELINE**



KEY PLAN
SCALE 1:20000

NOTES:
1. THIS DRAWING TO BE READ IN CONJUNCTION WITH DRG. No. M430/MP/TM/01-5

LEGEND:

	PROPOSED WATER MAIN
	STATIC PRESSURE LINE
	HYDRAULIC GRADIENT LINE
	SHEET & SHEET NUMBER
	BV BUTTERFLY VALVE
	LV LINE VALVE
	WM WATER METER
	METRES ABOVE SEA LEVEL

REVISIONS	SIGN	DATE	APPROVED
	BY		
	CHECKED		
	BY		
	CHECKED		
	BY		
	CHECKED		

CLIENT:
THE CHIEF EXECUTIVE OFFICER
 COAST WATER WORKS DEVELOPMENT AGENCY
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 MOMBASA, KENYA

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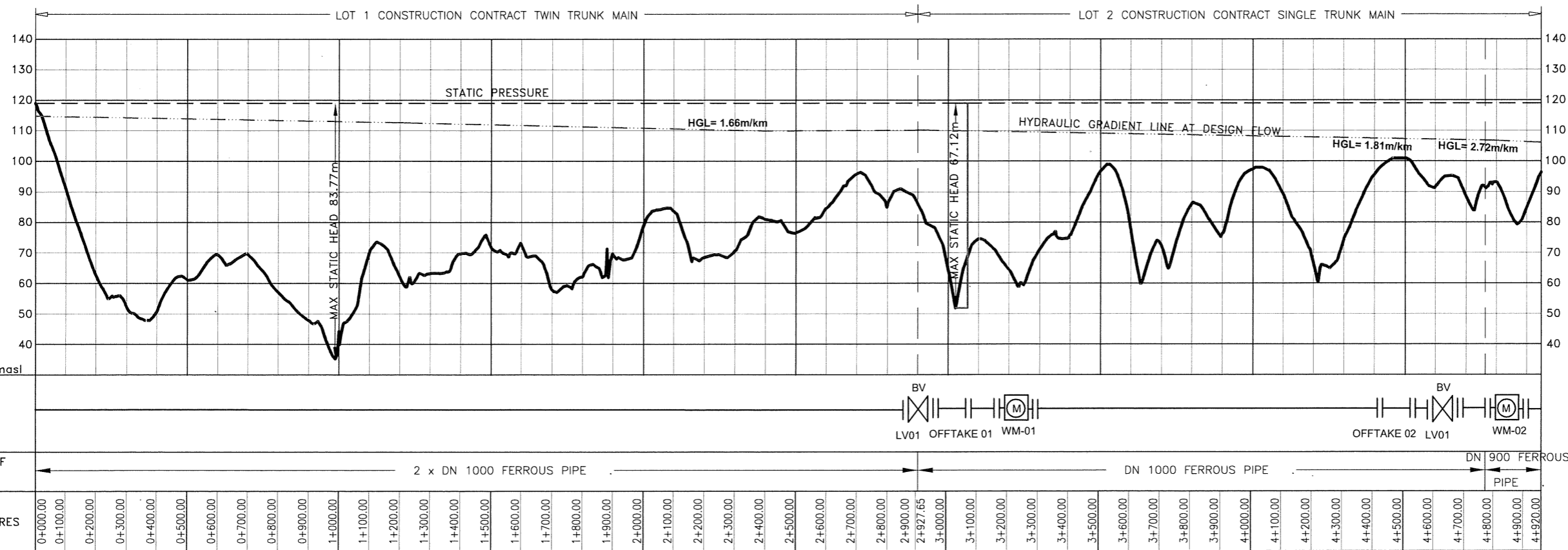
PROJECT NAME:
 IMPROVEMENT OF DRINKING WATER AND SANITATION SYSTEMS IN MOMBASA: MWACHE CKE 1103

BID No. CWWDA/AFD/PQ/W4/2022-2023

LOT 1: CONSTRUCTION OF THE MWACHE TWIN TRUNK MAIN (SECTION 1), THE SOUTH MAINLAND TRANSMISSION PIPELINE AND DONGO KUNDU RESERVOIR

DRAWING TITLE:
 TRUNK MAIN TRANSMISSION PIPELINE (LINE TM & S.TM)
 KEY PLAN AND HYDRAULIC PROFILE

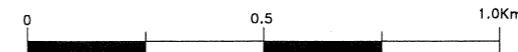
Designed by: J.M.K	Drawn by: V.K
Checked by: R.S.R	Approved by: B.D
Scale: AS SHOWN	Date: APRIL 2024
DRG No. M430/MP/TM/G/01	REV. 0



SCHEMATIC PLAN		
TYPE AND SIZE OF PIPELINE	2 x DN 1000 FERROUS PIPE	DN 1000 FERROUS PIPE
CHAINAGE IN METRES	0+000.00 to 2+900.00	2+900.00 to 4+920.00

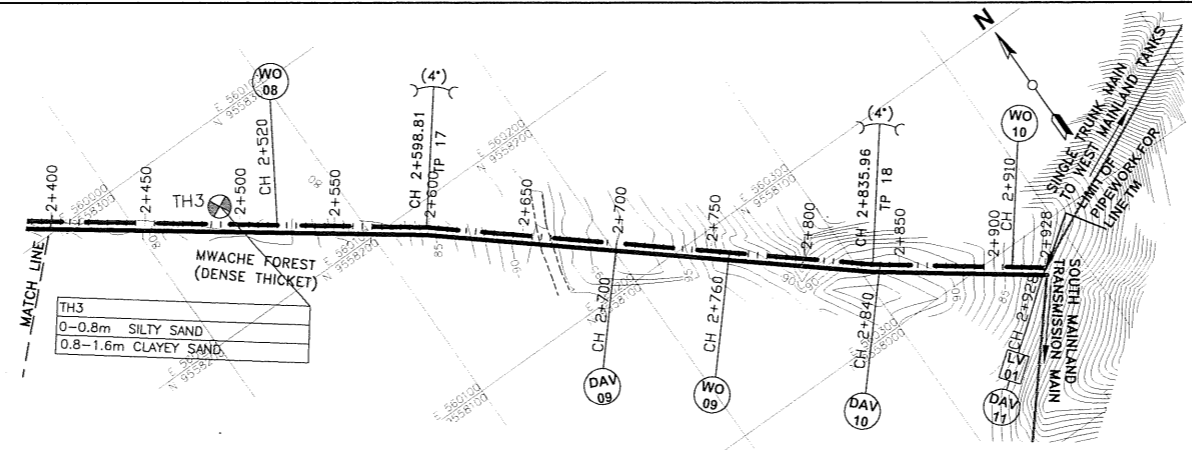
HYDRAULIC PROFILE

H- 1:16000, V-1600



NOTES
 -LINE TM2 TO BE CONSTRUCTED UNDER LOT 2 CONTRACT
 -PROVIDE ANCHOR BLOCKS FOR GRADIENTS 1:10
 -PROFILE AT CENTRE LINE OF PIPES
 -FOR BRANCHING DETAILS AT CH. 2+928 SEE DRG. No. M430/MP/TM/05

NOTE
 Joints: FIELD BUTT-WELDED JOINT FOR STEEL PIPES
 OR STANDARD PUSH-ON SPIGOT-SOCKET JOINT FOR DUCTILE IRON PIPES

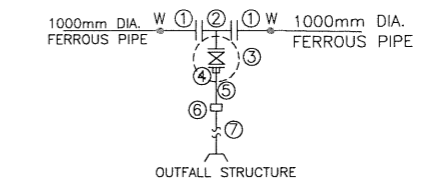


PLAN

DETAIL
 CH. 2+520.00, 2+700.00, 2+760.00
 2+840.00 & 2+900.00
 LINE TM 1 - 11.25° V-BEND

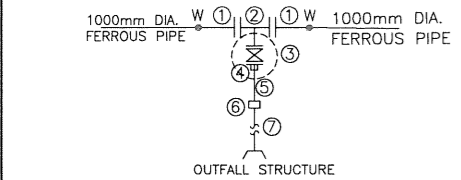
DESCRIPTION
 1x5Nos. REQUIRED FOR TWIN MAIN SECTION
 ① 1 No. 1000mm DIA. PLAIN ENDED FERROUS 11.25° BEND

DETAIL
 CH. 2+520.00, 2+760.00 & 2+910.00
 LINE TM 1 - WO - 08, 09, 10



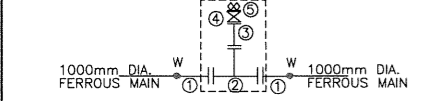
DESCRIPTION
 1x3Nos. REQUIRED FOR TWIN MAIN SECTION
 ① 2 No. 1000mm DIA. FLANGED SPIGOT PIPE 1.5m LONG
 ② 1 No. 1000x200mm DIA. ALL FLANGED LEVEL INVERT TEE
 ③ 1 No. 200mm DIA. ALL FLANGED GATE VALVE
 ④ 1 No. 200mm DIA. FLANGE ADAPTOR
 ⑤ 1 No. 200mm DIA. PLAIN ENDED PIPE 1.2m LONG
 ⑥ 1 No. 200mm DIA. STEPPED COUPLING
 ⑦ 1 No. 225mm DIA. PN 16 HDPE PIPE WITH BUTT FUSION WELDED JOINTS, LENGTH TO BE DETERMINED ON SITE, TO AN OUTFALL STRUCTURE

DETAIL
 CH. 1+229.00, 1+566.23, 1+706.00
 & 2+160.00
 LINE TM 1 - WO - 04, 05, 06 & 07



DESCRIPTION
 2x2Nos. REQUIRED
 ① 2 No. 1000mm DIA. FLANGED SPIGOT PIPE 1.5m LONG
 ② 1 No. 1000x200mm DIA. ALL FLANGED LEVEL INVERT TEE
 ③ 1 No. 200mm DIA. ALL FLANGED GATE VALVE
 ④ 1 No. 200mm DIA. FLANGE ADAPTOR
 ⑤ 1 No. 200mm DIA. PLAIN ENDED PIPE 1.2m LONG
 ⑥ 1 No. 200mm DIA. STEPPED COUPLING
 ⑦ 1 No. 225mm DIA. PN 16 HDPE PIPE WITH BUTT FUSION WELDED JOINTS, LENGTH TO BE DETERMINED ON SITE, TO AN OUTFALL STRUCTURE

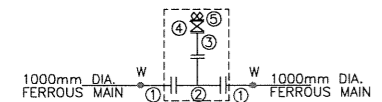
DETAIL
 CH. 1+480.00, 1+600.00, 2+100.00 & 2+380.00
 LINE TM 1 - DAV - 05, 06, 07 & 08



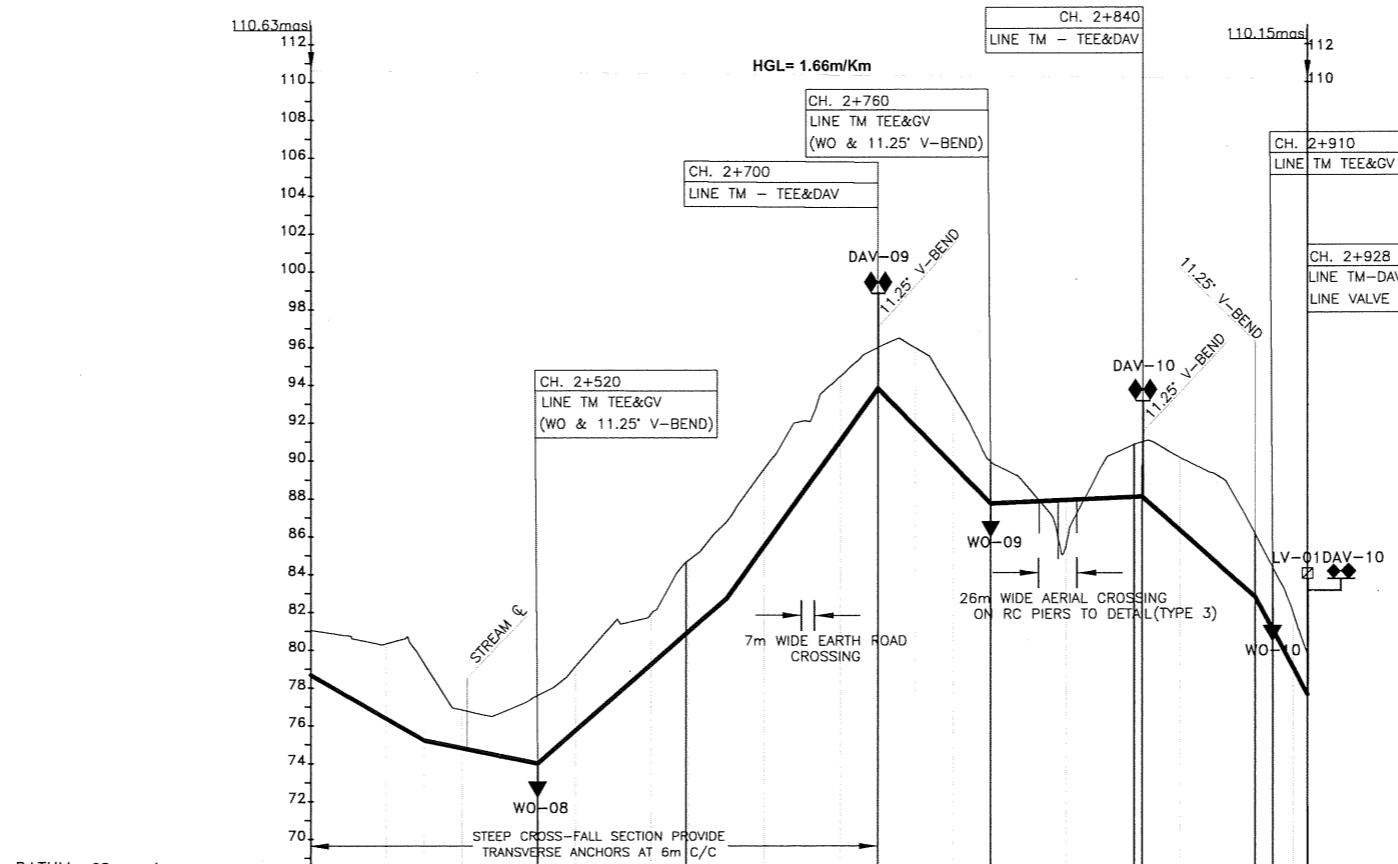
DESCRIPTION
 1x4Nos. REQUIRED
 ① 2 No. 1000mm DIA. FLANGED SPIGOT PIPE 1.5m LONG WITH PUDDLE FLANGE 625mm FROM FLANGED END
 ② 1 No. 1000x800mm DIA. ALL FLANGED SPECIAL TEE
 ③ 1 No. 200mm DIA. SPECIAL PIPE 325mm LONG WITH FLANGE TO SUIT 800mm DIA. TEE ON ONE END AND NORMAL FLANGE ON THE OTHER END
 ④ 1 No. 200mm DIA. ALL FLANGED GATE VALVE (ISOLATING VALVE)
 ⑤ 1 No. 200mm DIA. DOUBLE ORIFICE AIR VALVE

PART FITTING DETAILS FOR DRG No. M430/MP/TM/02

DETAIL
 CH. 2+700.00 & 2+840.00
 LINE TM 1 - DAV - 09 & 10



DESCRIPTION
 1x2Nos. REQUIRED
 ① 2 No. 1000mm DIA. FLANGED SPIGOT PIPE 1.5m LONG WITH PUDDLE FLANGE 625mm FROM FLANGED END
 ② 1 No. 1000x800mm DIA. ALL FLANGED SPECIAL TEE
 ③ 1 No. 200mm DIA. SPECIAL PIPE 325mm LONG WITH FLANGE TO SUIT 800mm DIA. TEE ON ONE END AND NORMAL FLANGE ON THE OTHER END
 ④ 1 No. 200mm DIA. ALL FLANGED GATE VALVE (ISOLATING VALVE)
 ⑤ 1 No. 200mm DIA. DOUBLE ORIFICE AIR VALVE



TYPE AND SIZE OF PIPE	DN 1000 FERROUS PIPE																								
GEOLOGICAL CONDITION	CLAYEY SAND																								
EXISTING GROUND LEVEL (m)	81.05	80.77	80.34	79.28	76.85	76.67	77.60	79.13	81.39	81.91	84.66	84.75	86.78	89.59	91.80	93.47	89.95	88.55	85.56	89.91	90.86	90.16	88.21	86.13	79.75
INVERT LEVELS (m)	78.69	77.54	76.38	75.23	74.82	74.41	74.00	75.75	77.49	79.24	80.88	80.98	82.72	85.50	88.28	91.05	93.83	91.80	87.92	86.01	88.08	86.33	84.55	82.77	79.05
CHAINAGE (m)	2+400.00	2+420.00	2+440.00	2+460.00	2+480.00	2+500.00	2+520.00	2+540.00	2+560.00	2+580.00	2+598.81	2+600.00	2+620.00	2+640.00	2+660.00	2+680.00	2+700.00	2+720.00	2+740.00	2+760.00	2+800.00	2+835.96	2+860.00	2+880.00	2+900.00
DEPTH OF INVERT (m)	2.36	3.23	3.98	4.05	2.03	2.28	3.60	3.39	3.90	2.67	3.79	3.77	4.08	4.09	3.81	3.42	2.16	4.17	3.70	2.22	0.73	-2.35	1.89	2.78	3.84
SLOPE OF PIPE (1/n)		-1:17		-1:49			1:11			1:7						-1:10		1:216			-1:11			-1:15	
REFERENCE PEG NO.											TP 17										TP 18				

LONGITUDINAL SECTION

NOTES:
 1. CONTOUR LEVELS ARE IN METERS AT 1m INTERVALS
 2. GRID VALUES ARE IN METERS AT 100 METER INTERVALS
 3. ALL PIPE FITTINGS TO BE CONFIRMED ON SITE DURING SETTING OUT

LEGEND:
 PAVED ROAD
 MURRAM/EARTH ROAD
 RAILWAY
 FENCE / HEDGE
 CONTOURS, 1m INTERVAL
 RIVER/STREAM
 BUILDINGS
 TEMPORARY STRUCTURE } EXISTING
 MANHOLE/CHAMBER
 ROCK OUTCROP
 EXISTING WATER MAIN
 PROPOSED WATER MAIN
 HORIZONTAL BEND (H) OR VERTICAL BEND (V) ANGLE INDICATED
 TH1 TRIAL HOLE
 CONCRETE SURROUND
 PROPOSED CHAMBER
 PROPOSED SURFACE BOX
 TP10 TRAVERSE POINT & No.
 GV GATE VALVE
 WO WASH OUT
 LV LINE VALVE
 HGL HYDRAULIC GRADE LINE
 DAV DOUBLE ORIFICE AIR VALVE
 masl METRES ABOVE SEA LEVEL
 91.96 BENCHMARK WITH ELEVATION
 MD18

REVISIONS	NO.	DATE	APPROVED

CLIENT:
 THE CHIEF EXECUTIVE OFFICER
 COAST WATER WORKS DEVELOPMENT AGENCY
 P.O. BOX 90417 - 80100
 MOMBASA, KENYA

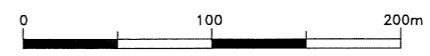
CONSULTING ENGINEERS:
 JOINT VENTURE
ARTELIA
 6 RUE DE LORRAINE
 38130 ECHIROLLES, FRANCE
 E-MAIL: artelia@arteliagroup.com
 TEL: +33 (0)4 76 33 40 00
MIBP MANGAT I.B. PATEL (MIBP) LIMITED
 P.O. BOX 48674, 00100-GPO,
 NAIROBI, KENYA
 E-MAIL: mibp.nairobi@mibpp.com
 TEL: +254-2-2710500

PROJECT NAME:
 IMPROVEMENT OF DRINKING WATER AND SANITATION SYSTEMS IN MOMBASA: MWACHE CKE 1103

BID No. CWWDA/AFD/PQ/W4/2022-2023
LOT 1: CONSTRUCTION OF THE MWACHE TRUNK MAIN (SECTION 1), THE SOUTH MAINLAND TRANSMISSION PIPELINE AND DONGO KUNDU RESERVOIR

DRAWING TITLE:
 TRUNK SECTION 1 MAIN (LINE TM 1)
 PLAN & LONGITUDINAL SECTION
 (CH 2+400.00 - 2+927.65)
 SHEET 3 OF 5

Designed by: J.M.K. Drawn by: C.N.M.
 Checked by: R.S.R. Approved by: B.D.
 Scale: H- 1:4000, V- 1:400 Date: APRIL 2024
 DRG No. M430/MP/TM/03 REV. 0



NOTE
 Joints: FIELD BUTT-WELDED JOINT FOR STEEL PIPES OR STANDARD PUSH-ON SPIGOT-SOCKET JOINT FOR DUCTILE IRON PIPES

DETAIL
 CH. 0+020.00, 0+580.00, 0+700.00 & 1+114.55
 LINE TM 1 - DAV - 01, 02, 03 & 04

1000mm DIA. FERROUS MAIN

DESCRIPTION
 1x4Nos. REQUIRED

- ① 2 No. 1000mm DIA. FLANGED SPIGOT PIPE 1.5m LONG WITH PUDDLE FLANGE 625mm FROM FLANGED END
- ② 1 No. 1000x800mm DIA. ALL FLANGED SPECIAL TEE
- ③ 1 No. 200mm DIA. SPECIAL PIPE 325mm LONG WITH FLANGE TO SUIT 800mm DIA. TEE ON ONE END AND NORMAL FLANGE ON THE OTHER END
- ④ 1 No. 200mm DIA. ALL FLANGED GATE VALVE (ISOLATING VALVE)
- ⑤ 1 No. 200mm DIA. DOUBLE ORIFICE AIR VALVE

DETAIL
 CH. 0+180.00, 0+240.00, 0+380.00, 0+440.00, 0+520.00, 0+700.00, 0+960.00, 1+000.00, 1+020.00, 1+080.00, 1+160.00 & 1+200.00
 LINE TM 1 - 11.25° V.BEND

1000mm DIA. FERROUS PIPE

DESCRIPTION
 1x12Nos. REQUIRED

- ① 1 No. 1000mm DIA. PLAIN ENDED FERROUS 11.25° BEND

DETAIL
 CH. 0+291.10
 LINE TM1 - 22.5° & 11.25° H.BEND

1000mm DIA. FERROUS PIPE

DESCRIPTION
 1x1Nos. REQUIRED

- ① 1 No. 800mm DIA. PLAIN ENDED FERROUS 22.5° BEND
- ② 1 No. 800mm DIA. PLAIN ENDED FERROUS 11.25° BEND

DETAIL
 CH. 0+380.00, 0+640.00, 0+960.00
 LINE TM 1 - WO - 01, 02 & 03

1000mm DIA. FERROUS PIPE

OUTFALL STRUCTURE

DESCRIPTION
 1x3Nos. REQUIRED

- ① 2 No. 1000mm DIA. FLANGED SPIGOT PIPE 1.5m LONG
- ② 1 No. 1000x200mm DIA. ALL FLANGED LEVEL INVERT TEE
- ③ 1 No. 200mm DIA. ALL FLANGED GATE VALVE
- ④ 1 No. 200mm DIA. FLANGE ADAPTOR
- ⑤ 1 No. 200mm DIA. PLAIN ENDED PIPE 1.2m LONG
- ⑥ 1 No. 200mm DIA. STEPPED COUPLING
- ⑦ 1 No. 225mm DIA. PN 16 HDPE PIPE WITH BUTT FUSION WELDED JOINTS, LENGTH TO BE DETERMINED ON SITE, TO AN OUTFALL STRUCTURE

DETAIL
 CH. 0+601.99, 1+060.00 & 1+114.55
 LINE TM1 - 22.5° V.BEND

1000mm DIA. FERROUS PIPE

DESCRIPTION
 1x3Nos. REQUIRED

- ① 1 No. 1000mm DIA. PLAIN ENDED FERROUS 22.5° BEND

- LEGEND:**
1. CONTOUR LEVELS ARE IN METERS AT 1m INTERVALS
 2. GRID VALUES ARE IN METERS AT 100 METER INTERVALS
 3. DRAWING TO BE READ IN CONJUNCTION WITH STANDARD DRAWINGS
 4. ALL PIPE FITTINGS TO BE CONFIRMED ON SITE DURING PIPE SETTING OUT

- LEGEND:**
- PROPOSED WATER MAIN
 - - - - - EXISTING WATER MAIN
 - V.J. VIKING JOHNSON
 - DAV DOUBLE ORIFICE AIR VALVE
 - LV LINE VALVE
 - WO WASHOUT VALVE
 - WM WATER METER
 - PROPOSED CHAMBER
 - PROPOSED SURFACE BOX

REVISIONS	SIGN	DATE	APPROVED
BY			
CHECKED			
BY			
CHECKED			
BY			
CHECKED			

CLIENT:
 THE CHIEF EXECUTIVE OFFICER
 COAST WATER WORKS DEVELOPMENT AGENCY
 P.O. BOX 90417 - 80100
 MOMBASA, KENYA

CONSULTING ENGINEERS:
 JOINT VENTURE
ARTELIA
 6 RUE DE LORRAINE
 38130 ECHIROLLES, FRANCE
 E-MAIL: artelia@arteliagroup.com
 TEL: +33 (0)4 76 33 40 00

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 CONSULTING ENGINEERS
 P.O BOX 48674, 00100-GPO,
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 E-MAIL: mibp.nairobi@mibpp.com
 TEL: +254-2-2710500

PROJECT NAME:
 IMPROVEMENT OF DRINKING WATER AND SANITATION SYSTEMS IN MOMBASA: MWACHE CKE 1103

BID No. CWWDA/AFD/PQ/W4/2022-2023
 LOT 1: CONSTRUCTION OF THE MWACHE TWIN TRUNK MAIN (SECTION 1), THE SOUTH MAINLAND TRANSMISSION PIPELINE AND DONGO KUNDU RESERVOIR

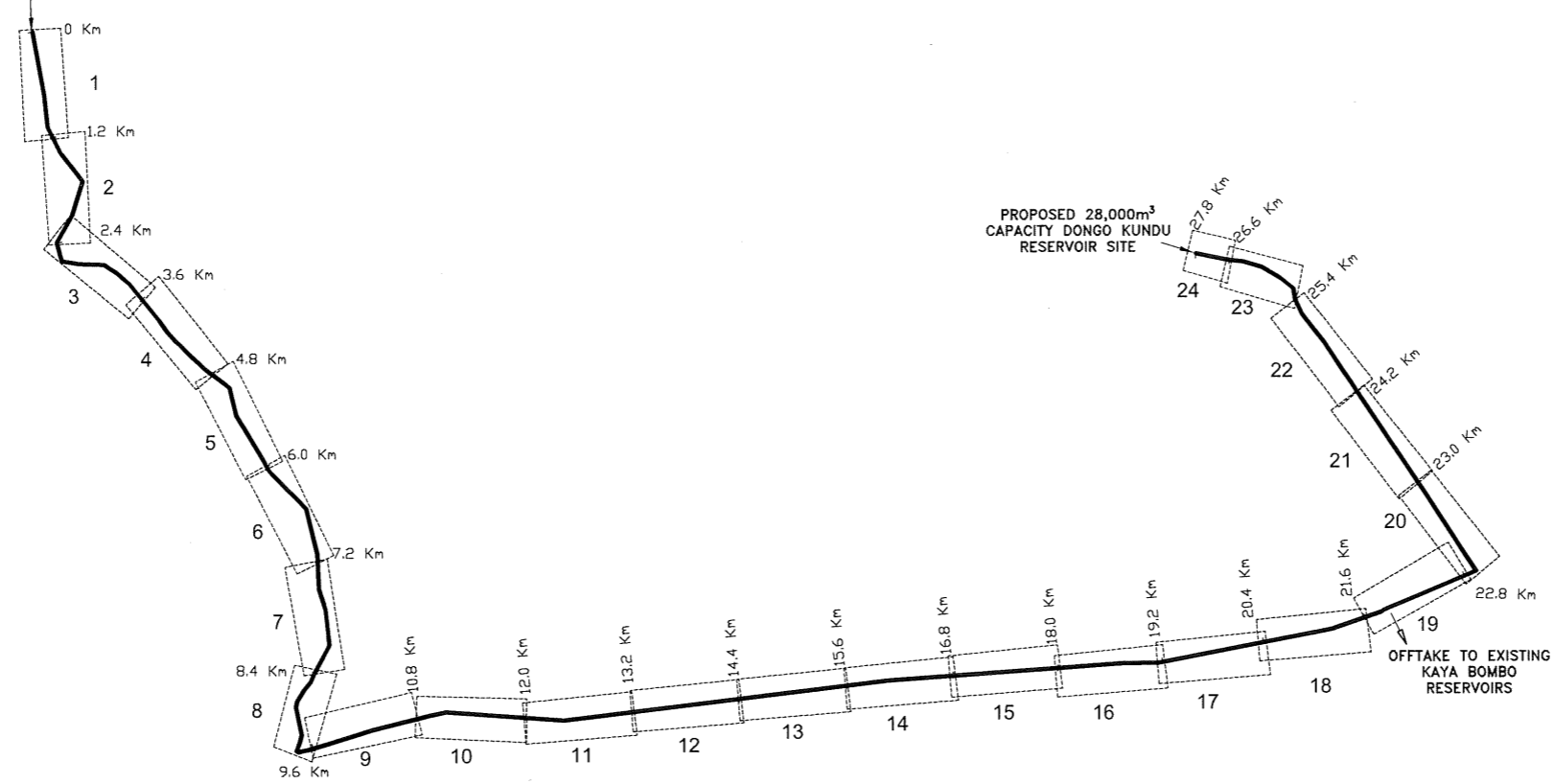
DRAWING TITLE:
 TRUNK MAIN SECTION 1 (LINE TM 1)
 FITTINGS DETAILS
 SHEET 4 OF 5

Designed by: J.M.K	Drawn by: C.N.M
Checked by: N.H	Approved by: R.S.R
Scale: H- 1:4000, V- 1:400	Date: APRIL 2024
DRG No. M430/MP/TM/04	REV. 0

PART FITTING DETAILS FOR DRG No. M430/MP/TM/01

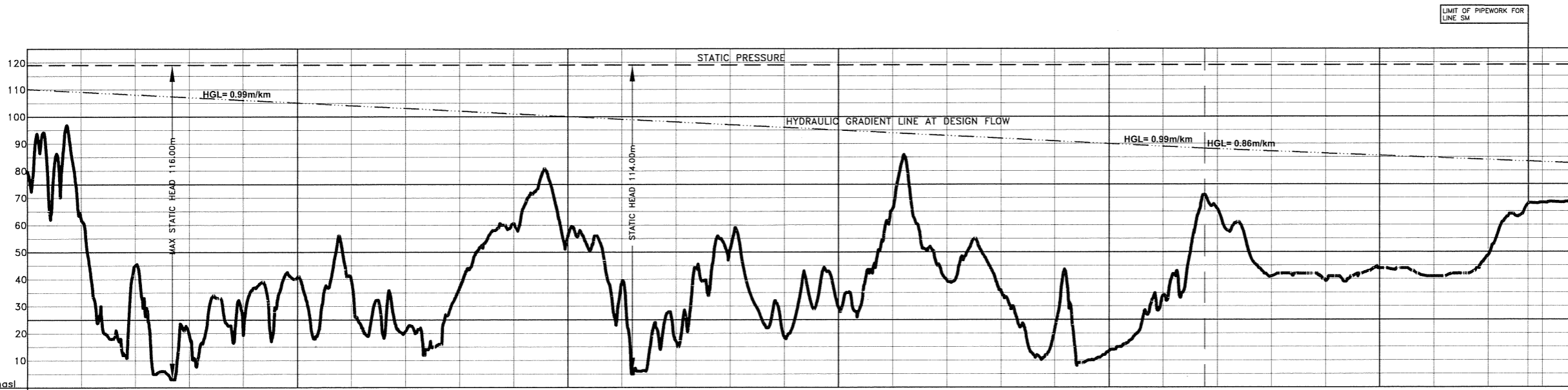
**SOUTH MAINLAND
TRANSMISSION PIPELINE**

LIMIT OF PIPEWORK FOR LINE SM (OFFTAKE FROM TRUNK MAIN)



KEY PLAN

SCALE 1:60000

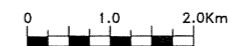


TYPE AND SIZE OF PIPELINE: DN 1000 FERROUS PIPE (0+000 to 21+000), DN 900 FERROUS PIPE (21+000 to 28+530)

CHAINAGE IN METRES	0+000	1+000	2+000	3+000	4+000	5+000	6+000	7+000	8+000	9+000	10+000	11+000	12+000	13+000	14+000	15+000	16+000	17+000	18+000	19+000	20+000	21+000	22+000	23+000	24+000	25+000	26+000	27+000	27+751	28+000	28+530
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HYDRAULIC PROFILE

H-1:90000, V-1:1800



NOTES:

1. THIS DRAWING TO BE READ IN CONJUNCTION WITH DRG. No. M430/MP/SM/01-25

LEGEND:

- PROPOSED WATER MAIN
- STATIC PRESSURE LINE
- HYDRAULIC GRADIENT LINE
- SHEET & SHEET NUMBER
- BV BUTTERFLY VALVE
- LV LINE VALVE
- WM WATER METER
- masl METRES ABOVE SEA LEVEL

REVISIONS	SIGN	DATE	APPROVED
BY			
CHECKED			
BY			
CHECKED			
BY			
CHECKED			

CLIENT:

THE CHIEF EXECUTIVE OFFICER
COAST WATER WORKS DEVELOPMENT AGENCY
 P.O. BOX 90417 - 80100
 MOMBASA, KENYA

CONSULTING ENGINEERS:

ARTELIA
 JOINT VENTURE
 6 RUE DE LORRAINE
 38130 ECHIROLLES, FRANCE
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 E-MAIL: mibp.nairobi@mibpp.com
 TEL: +254-2-2710500

PROJECT NAME:
 IMPROVEMENT OF DRINKING WATER AND
 SANITATION SYSTEMS IN MOMBASA:
 MWACHE CKE 1103

BID No.CWWDA/AFD/PQ/W4/2022-2023

LOT 1: CONSTRUCTION OF THE MWACHE TWIN TRUNK MAIN (SECTION 1), THE SOUTH MAINLAND TRANSMISSION PIPELINE AND DONGO KUNDU RESERVOIR

DRAWING TITLE:
 SOUTH MAINLAND TRANSMISSION PIPELINE (LINE SM)
 KEY PLAN AND HYDRAULIC PROFILE

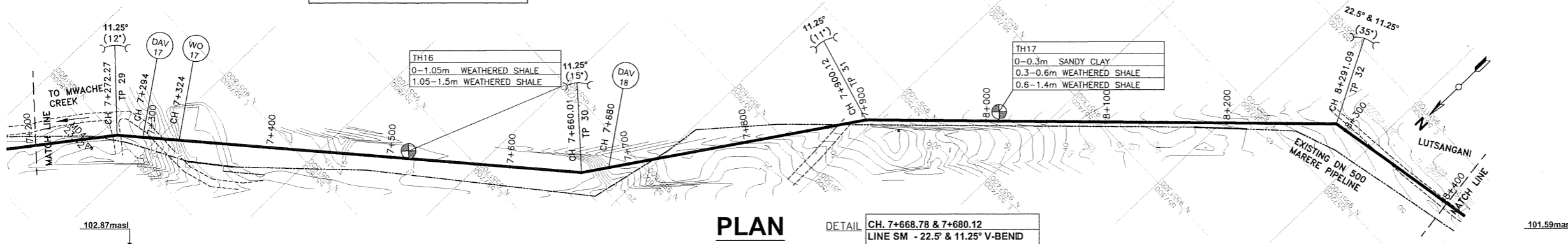
Designed by: J.M.K	Drawn by: V.K
Checked by: R.S.R	Approved by: B.D
Scale: AS SHOWN	Date: APRIL 2024
DRG No. M430/MP/SM/G/01	REV. 0

- NOTES**
- PROVIDE ANCHOR BLOCKS FOR GRADIENTS UPTO 1:10

NOTE

W

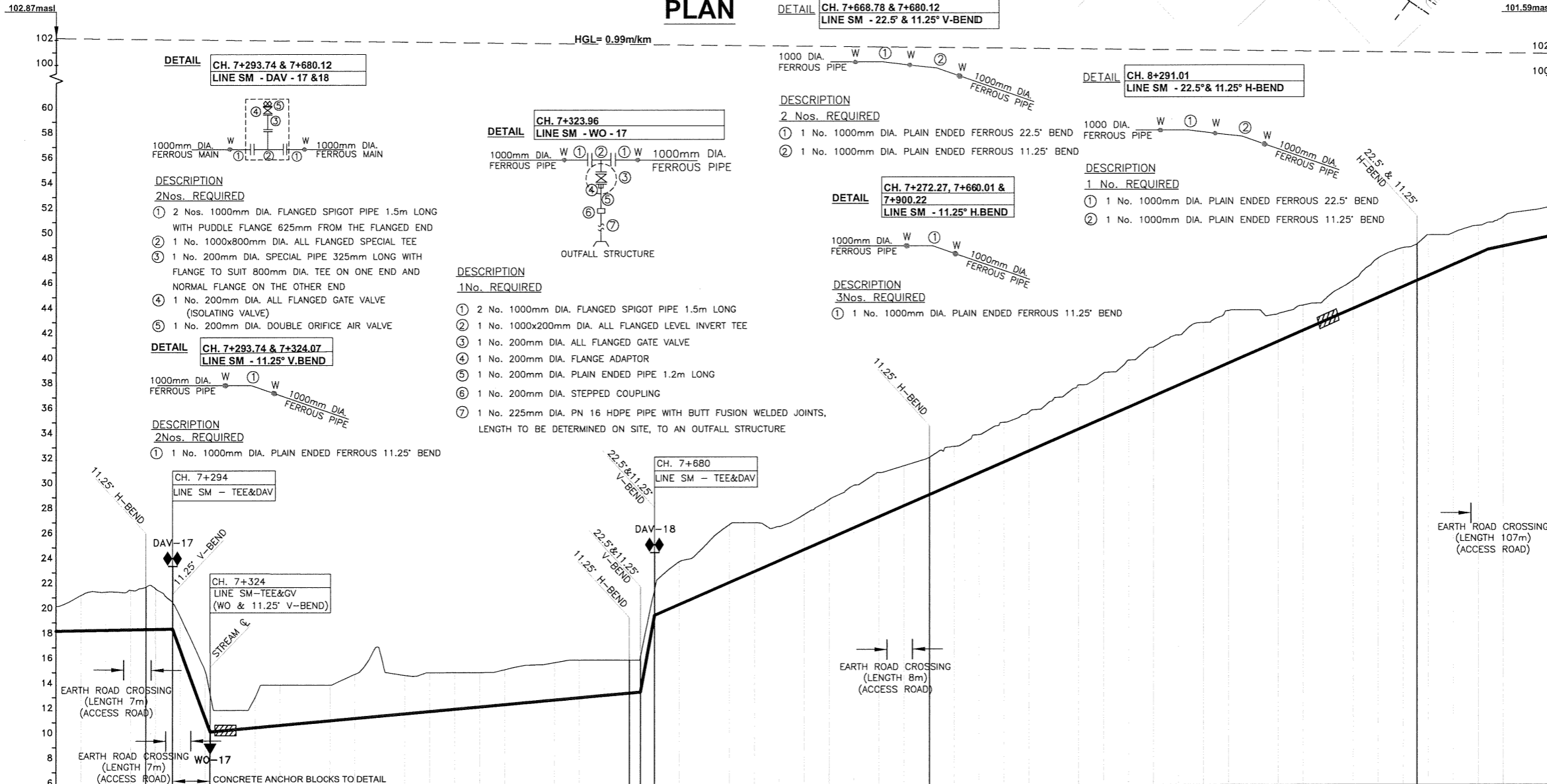
Joints: FIELD BUTT-WELDED JOINT FOR STEEL PIPES OR STANDARD PUSH-ON SPIGOT SOCKET JOINT FOR DUCTILE IRON PIPES



PLAN

DETAIL CH. 7+668.78 & 7+680.12
LINE SM - 22.5° & 11.25° V-BEND

- NOTES:**
- CONTOUR LEVELS ARE IN METERS AT 1m INTERVALS
 - GRID VALUES ARE IN METERS AT 100 METER INTERVALS
 - MINIMUM PIPELINE SLOPES TO BE 1:500 (PROVISIONAL)
 - ALL PIPE FITTINGS TO BE CONFIRMED ON SITE DURING SETTING OUT
- LEGEND:**
- MURRAM/EARTH ROAD
 - FENCE / HEDGE
 - CONTOURS, 1m INTERVAL
 - RIVER/STREAM
 - BUILDINGS
 - EXISTING WATER MAIN
 - HORIZONTAL BEND (H) OR VERTICAL BEND (V) ANGLE INDICATED
 - TEMPORARY STRUCTURE
 - MANHOLE/CHAMBER
 - ROCK OUTCROP
 - PROPOSED WATER MAIN
 - TRIAL HOLE
 - CONCRETE SURROUND
 - PROPOSED CHAMBER
 - PROPOSED SURFACE BOX
 - TP10 TRAVERSE POINT & No.
 - GV GATE VALVE
 - BV BUTTERFLY VALVE
 - WO WASH OUT
 - HGL HYDRAULIC GRADE LINE
 - LV LINE VALVE
 - DAV DOUBLE ORIFICE AIR VALVE
 - masl METRES ABOVE SEA LEVEL
 - 91.96 BENCHMARK WITH ELEVATION
 - MD18 BENCHMARK WITH ELEVATION



LONGITUDINAL SECTION

DATUM	6 masl	
TYPE AND SIZE OF PIPE	DN 1000 FERROUS PIPES	
GEOLOGICAL CONDITION	WEATHERED SHALE	
EXISTING GROUND LEVEL (m)	SANDY CLAY	
INVERT LEVELS (m)		
CHAINAGE (m)		
DEPTH OF INVERT (m)		
SLOPE OF PIPE (1/n)		
REFERENCE PEG NO.		

REVISIONS

NO.	BY	CHECKED	DATE	APPROVED
1				
2				
3				
4				
5				

CLIENT:

THE CHIEF EXECUTIVE OFFICER
COAST WATER WORKS DEVELOPMENT AGENCY
P.O. BOX 90417 - 80100
MOMBASA, KENYA

CONSULTING ENGINEERS:

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E-MAIL: mibp.nairobi@mibpp.com
TEL: +254-2-2710500

PROJECT NAME:

IMPROVEMENT OF DRINKING WATER AND SANITATION SYSTEMS IN MOMBASA: MWACHE CKE 1103

BID No. CWWDA/AFD/PQ/W4/2022-2023

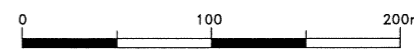
LOT 1: CONSTRUCTION OF THE MWACHE TWIN TRUNK MAIN (SECTION 1), THE SOUTH MAINLAND TRANSMISSION PIPELINE AND DONGO KUNDU RESERVOIR

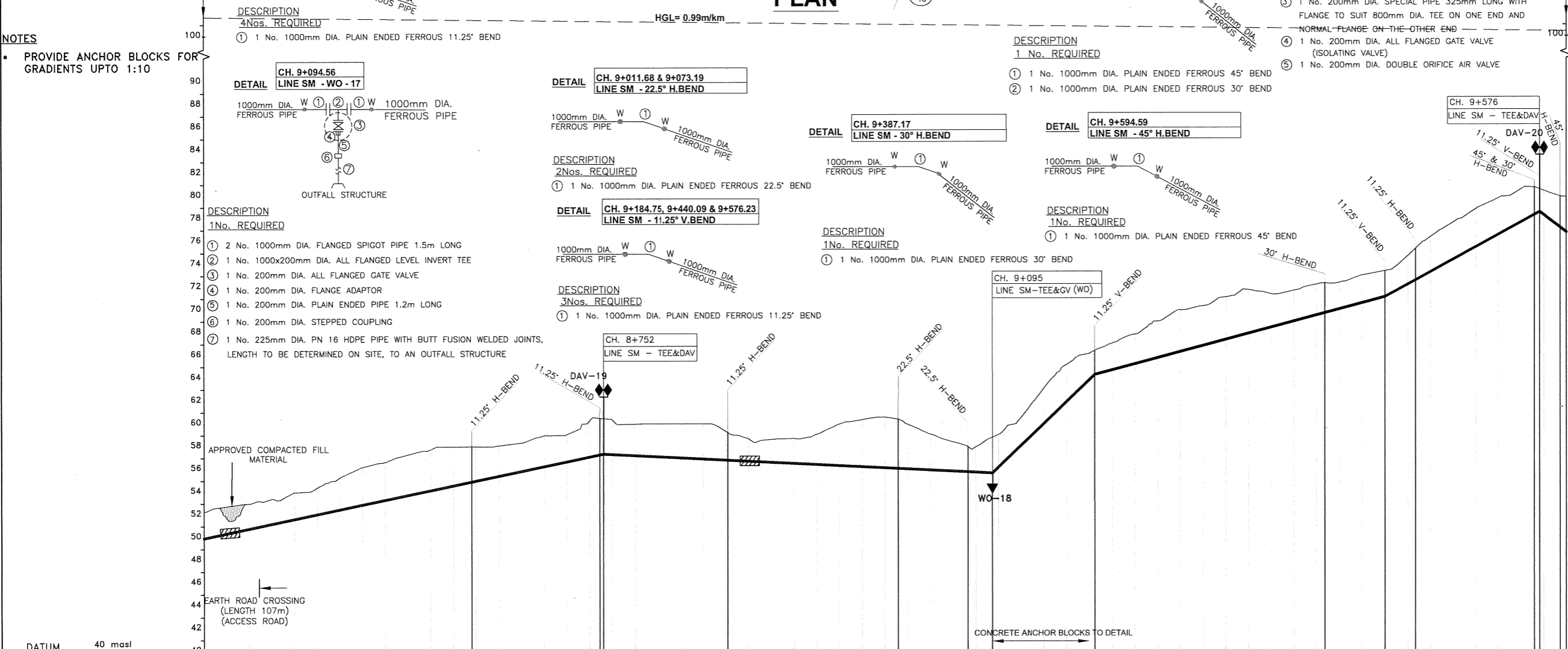
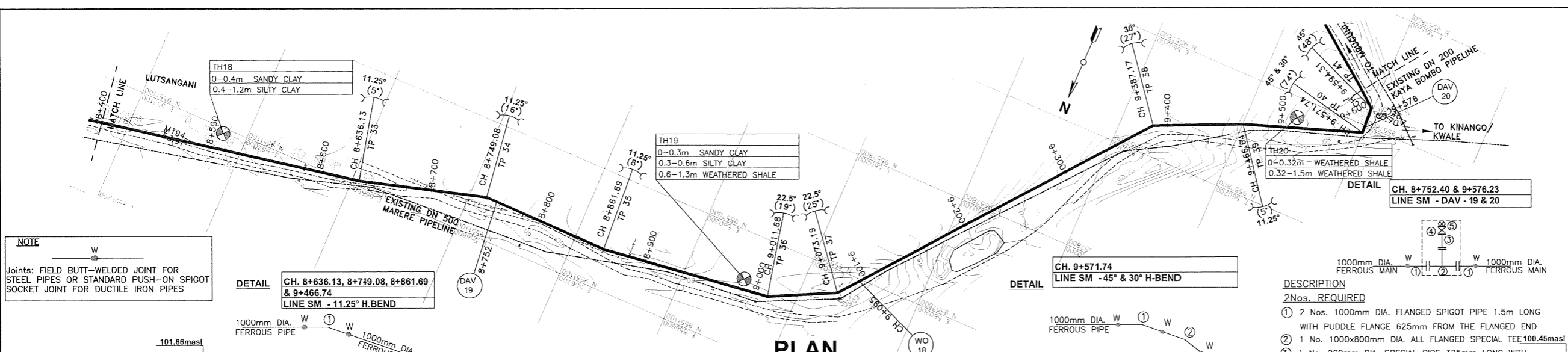
DRAWING TITLE:

SOUTH MAINLAND TRANSMISSION PIPELINE (LINE SM)
PLAN & LONGITUDINAL SECTION
(CH 7+200.00 - 8+400.00)
SHEET 7 OF 25

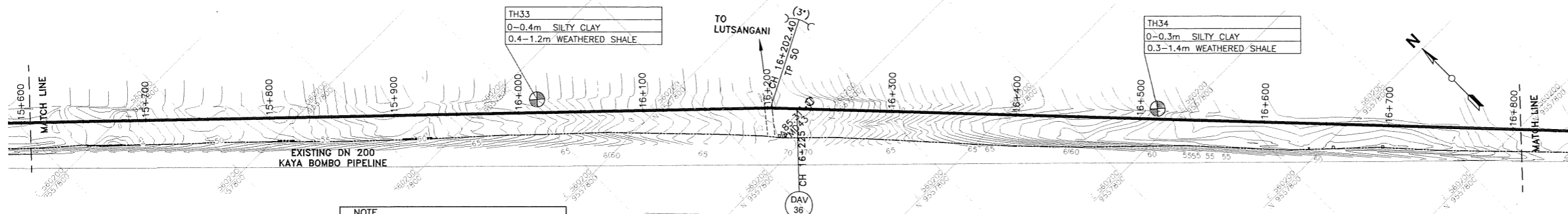
Designed by: J.M.K
Checked by: R.S.R
Scale: H- 1:4000, V- 1:400
DRG No. M430/MP/SM/07

Drawn by: V.K
Approved by: B.D
Date: APRIL 2024
REV. 0





TYPE AND SIZE OF PIPE	DN 1000 FERROUS PIPES																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
GEOLOGICAL CONDITION	SANDY CLAY																				WEATHERED SHALE																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
EXISTING GROUND LEVEL (m)	49.94	52.29	51.73	51.99	52.99	53.40	53.97	54.39	55.27	56.19	56.62	57.29	57.75	58.00	58.00	58.07	58.33	58.33	58.96	59.08	60.26	60.34	60.48	59.99	60.00	60.00	60.00	60.37	60.58	60.41	59.95	59.09	58.99	58.42	58.00	63.15	65.21	66.18	66.42	67.09	67.87	68.01	70.00	70.35	71.13	71.77	71.39	71.71	72.24	73.37	72.39	73.04	73.42	74.73	75.38	76.41	77.69	78.86	79.81	80.61	80.77	80.46	80.80	81.22	81.62	81.99																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
INVERT LEVELS (m)	50.36	50.78	51.21	51.63	52.05	52.47	52.89	53.31	53.73	54.15	54.57	54.99	55.41	55.83	56.25	56.67	57.09	57.51	57.93	58.35	58.77	59.19	59.61	60.03	60.45	60.87	61.29	61.71	62.13	62.55	62.97	63.39	63.81	64.23	64.65	65.07	65.49	65.91	66.33	66.75	67.17	67.59	68.01	68.43	68.85	69.27	69.69	70.11	70.53	70.95	71.37	71.79	72.21	72.63	73.05	73.47	73.89	74.31	74.73	75.15	75.57	75.99	76.41	76.83	77.25	77.67	78.09	78.51	78.93	79.35	79.77	80.19	80.61	81.03	81.45	81.87	82.29	82.71	83.13	83.55	83.97	84.39	84.81	85.23	85.65	86.07	86.49	86.91	87.33	87.75	88.17	88.59	89.01	89.43	89.85	90.27	90.69	91.11	91.53	91.95	92.37	92.79	93.21	93.63	94.05	94.47	94.89	95.31	95.73	96.15	96.57	96.99	97.41	97.83	98.25	98.67	99.09	99.51	99.93	100.35	100.77	101.19	101.61	102.03	102.45	102.87	103.29	103.71	104.13	104.55	104.97	105.39	105.81	106.23	106.65	107.07	107.49	107.91	108.33	108.75	109.17	109.59	110.01	110.43	110.85	111.27	111.69	112.11	112.53	112.95	113.37	113.79	114.21	114.63	115.05	115.47	115.89	116.31	116.73	117.15	117.57	117.99	118.41	118.83	119.25	119.67	120.09	120.51	120.93	121.35	121.77	122.19	122.61	123.03	123.45	123.87	124.29	124.71	125.13	125.55	125.97	126.39	126.81	127.23	127.65	128.07	128.49	128.91	129.33	129.75	130.17	130.59	131.01	131.43	131.85	132.27	132.69	133.11	133.53	133.95	134.37	134.79	135.21	135.63	136.05	136.47	136.89	137.31	137.73	138.15	138.57	138.99	139.41	139.83	140.25	140.67	141.09	141.51	141.93	142.35	142.77	143.19	143.61	144.03	144.45	144.87	145.29	145.71	146.13	146.55	146.97	147.39	147.81	148.23	148.65	149.07	149.49	149.91	150.33	150.75	151.17	151.59	152.01	152.43	152.85	153.27	153.69	154.11	154.53	154.95	155.37	155.79	156.21	156.63	157.05	157.47	157.89	158.31	158.73	159.15	159.57	159.99	160.41	160.83	161.25	161.67	162.09	162.51	162.93	163.35	163.77	164.19	164.61	165.03	165.45	165.87	166.29	166.71	167.13	167.55	167.97	168.39	168.81	169.23	169.65	170.07	170.49	170.91	171.33	171.75	172.17	172.59	173.01	173.43	173.85	174.27	174.69	175.11	175.53	175.95	176.37	176.79	177.21	177.63	178.05	178.47	178.89	179.31	179.73	180.15	180.57	180.99	181.41	181.83	182.25	182.67	183.09	183.51	183.93	184.35	184.77	185.19	185.61	186.03	186.45	186.87	187.29	187.71	188.13	188.55	188.97	189.39	189.81	190.23	190.65	191.07	191.49	191.91	192.33	192.75	193.17	193.59	194.01	194.43	194.85	195.27	195.69	196.11	196.53	196.95	197.37	197.79	198.21	198.63	199.05	199.47	199.89	200.31	200.73	201.15	201.57	201.99	202.41	202.83	203.25	203.67	204.09	204.51	204.93	205.35	205.77	206.19	206.61	207.03	207.45	207.87	208.29	208.71	209.13	209.55	209.97	210.39	210.81	211.23	211.65	212.07	212.49	212.91	213.33	213.75	214.17	214.59	215.01	215.43	215.85	216.27	216.69	217.11	217.53	217.95	218.37	218.79	219.21	219.63	220.05	220.47	220.89	221.31	221.73	222.15	222.57	222.99	223.41	223.83	224.25	224.67	225.09	225.51	225.93	226.35	226.77	227.19	227.61	228.03	228.45	228.87	229.29	229.71	230.13	230.55	230.97	231.39	231.81	232.23	232.65	233.07	233.49	233.91	234.33	234.75	235.17	235.59	236.01	236.43	236.85	237.27	237.69	238.11	238.53	238.95	239.37	239.79	240.21	240.63	241.05	241.47	241.89	242.31	242.73	243.15	243.57	243.99	244.41	244.83	245.25	245.67	246.09	246.51	246.93	247.35	247.77	248.19	248.61	249.03	249.45	249.87	250.29	250.71	251.13	251.55	251.97	252.39	252.81	253.23	253.65	254.07	254.49	254.91	255.33	255.75	256.17	256.59	257.01	257.43	257.85	258.27	258.69	259.11	259.53	259.95	260.37	260.79	261.21	261.63	262.05	262.47	262.89	263.31	263.73	264.15	264.57	264.99	265.41	265.83	266.25	266.67	267.09	267.51	267.93	268.35	268.77	269.19	269.61	270.03	270.45	270.87	271.29	271.71	272.13	272.55	272.97	273.39	273.81	274.23	274.65	275.07	275.49	275.91	276.33	276.75	277.17	277.59	278.01	278.43	278.85	279.27	279.69	280.11	280.53	280.95	281.37	281.79	282.21	282.63	283.05	283.47	283.89	284.31	284.73	285.15	285.57	285.99	286.41	286.83	287.25	287.67	288.09	288.51	288.93	289.35	289.77	290.19	290.61	291.03	291.45	291.87	292.29	292.71	293.13	293.55	293.97	294.39	294.81	295.23	295.65	296.07	296.49	296.91	297.33	297.75	298.17	298.59	299.01	299.43	299.85	300.27	300.69	301.11	301.53	301.95	302.37	302.79	303.21	303.63	304.05	304.47	304.89	305.31	305.73	306.15	306.57	306.99	307.41	307.83	308.25	308.67	309.09	309.51	309.93	310.35	310.77	311.19	311.61	312.03	312.45	312.87	313.29	313.71	314.13	314.55	314.97	315.39	315.81	316.23	316.65	317.07	317.49	317.91	318.33	318.75	319.17	319.59	320.01	320.43	320.85	321.27	321.69	322.11	322.53	322.95	323.37	323.79	324.21	324.63	325.05	325.47	325.89	326.31	326.73	327.15	327.57	327.99	328.41	328.83	329.25	329.67	330.09	330.51	330.93	331.35	331.77	332.19	332.61	333.03	333.45	333.87	334.29	334.71	335.13	335.55	335.97	336.39	336.81	337.23	337.65	338.07	338.49	338.91	339.33	339.75	340.17	340.59	341.01	341.43	341.85	342.27	342.69	343.11	343.53	343.95	344.37	344.79	345.21	345.63	346.05	346.47	346.89	347.31	347.73	348.15	348.57	348.99	349.41	349.83	350.25	350.67	351.09	351.51	351.93	352.35	352.77	353.19	353.61	354.03	354.45	354.87	355.29	355.71	356.13	356.55	356.97	357.39	357.81	358.23	358.65	359.07	359.49	359.91	360.33	360.75	361.17	361.59	362.01	362.43	362.85	363.27	363.69	364.11	364.53	364.95	365.37	365.79	366.21	366.63	367.05	367.47	367.89	368.31	368.73	369.15	369.57	370.00	370.42	370.84	371.26	371.68	372.10	372.52	372.94	373.36	373.78	374.20	374.62	375.04	375.46	375.88	376.30	376.72	377.14	377.56	377.98	378.40	378.82	379.24	379.66	380.08	380.50	380.92	381.34	381.76	382.18	382.60	383.02	383.44	383.86	384.28	384.70	385.12	385.54	385.96	386.38	386.80	387.22	387.64	388.06	388.48	388.90	389.32	389.74	390.16	390.58	391.00	391.42	391.84	392.26	392.68	393.10	393.52	393.94	394.36	394.78	395.20	395.62	396.04	396.46	396.88	397.30	397.72	398.14	398.56	398.98	399.40	399.82	400.24	400.66	401.08	401.50	401.92	402.34	402.76	403.18	403.60	404.02	404.44	404.86	405.28	405.70	406.12	406.54	406.96	407.38	407.80	408.22	408.64	409.06	409.48	409.90	410.32	410.74	411.16	411.58	412.00	412.42	412.84	413.26	413.68	414.10	414.52	414.94	415.36	415.78	416.20	416.62	417.04	417.46	417.88	418.30	418.72	419.14	419.56	419.98	420.40	420.82	421.24	421.66	422.08	422.50	422.92	423.34	423.76	424.18	424.60	425.02	425.44	425.86	426.28	426.70	427.12	427.54	427.96	428.38	428.80	429.22	429.64	430.06	430.48	430.90	431.32	431.74	432.16	432.58	433.00	433.42	433.84	434.26	434.68	435.10	435.52	435.94	436.36	436.78	437.20	437.62	438.04	438.46	438.88	439.30	439.72	440.14	440.56	440.98	441.40	441.82	442.24	442.66	443.08	443.50	443.92	444.34	444.76	445.18	445.60	446.02	446.44	446.86	447.28	447.70	448.12	448.54	448.96	449.38	449.80	450.22	450.64	451.06	451.48	451.90	452.32	452.74	453.16	453.58	454.00	454.42	454.84	455.26	455.68	456.10	456.52	456.94	457.36	457.78	458.20	458.62	459.04	459.46	459.88	460.30	460.72	461.14	461.56	461.98	462.40	462.82	463.24	463.66	464.08	464.50	464.92	465.34	465.76	466.18	466.60	467.02	467.44	467.86	468.28	468.70	469.12	469.54	469.96	470.38	470.80	471.22	471.64	472.06	472.48	472.90	473.32	473.74	474.16	474.58	475.00	475.42	475.84	476.26	476.68	477.10	477.52	477.94	478.36	478.78	479.20	479.62	480.04	480.46	480.88	481.30	481.72	482.14	482.56	482.98	483.40	483.82	484.24	484.66	485.08	485.50	485.92	486.34	486.76	487.18	487.60	4

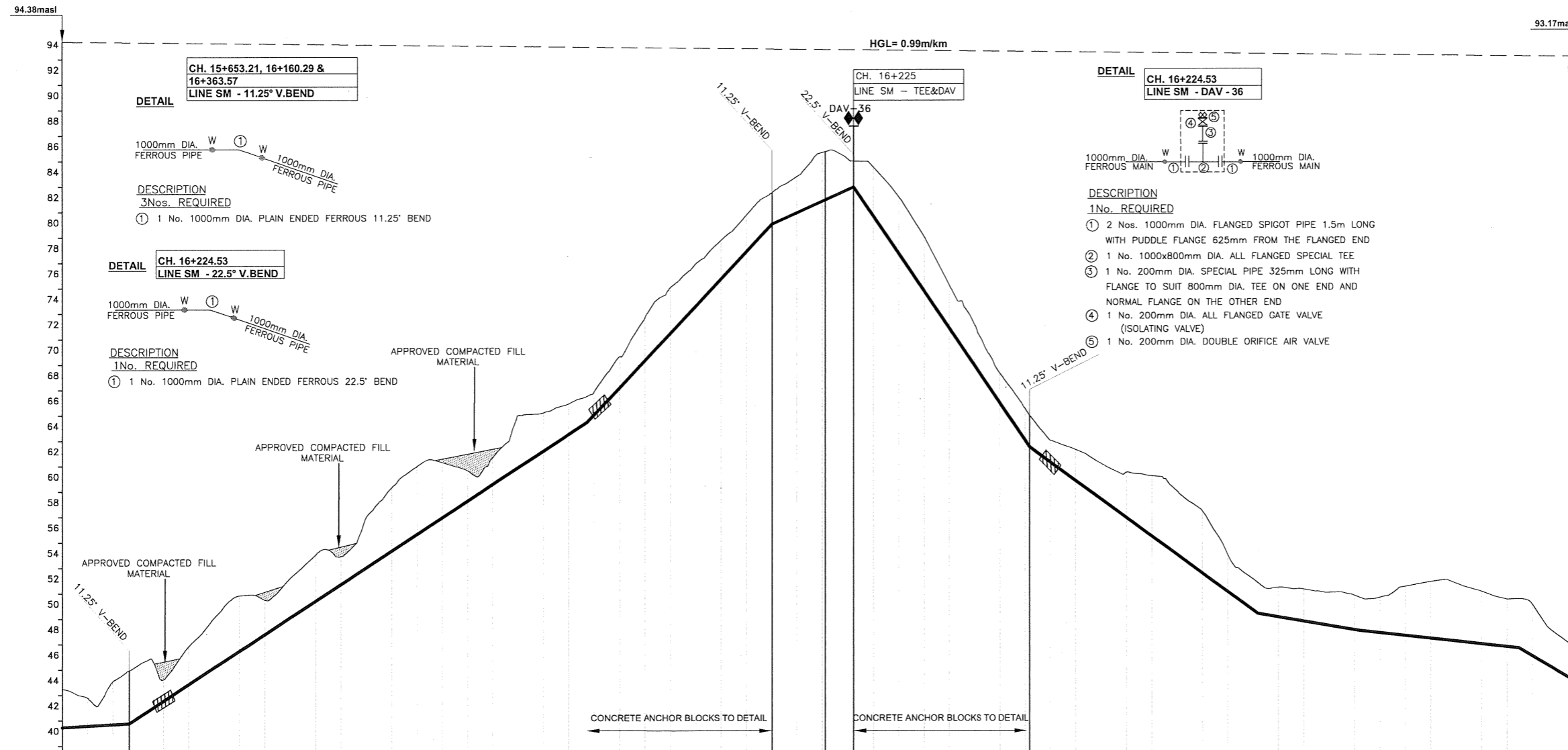


- NOTES**
- PROVIDE ANCHOR BLOCKS FOR GRADIENTS UPTO 1:10

NOTE

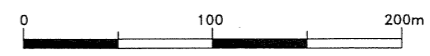
Joints: FIELD BUTT-WELDED JOINT FOR STEEL PIPES OR STANDARD PUSH-ON SPIGOT SOCKET JOINT FOR DUCTILE IRON PIPES

PLAN



TYPE AND SIZE OF PIPE	WEATHERED SHALE		SANDY CLAY	
	CH. 15+653.21, 16+160.29 & 16+363.57	CH. 16+224.53	CH. 16+224.53	CH. 16+224.53
GEOLOGICAL CONDITION	WEATHERED SHALE		SANDY CLAY	
EXISTING GROUND LEVEL (m)	43.49	43.49	43.49	43.49
INVERT LEVELS (m)	40.46	40.46	40.46	40.46
CHAINAGE (m)	15+600.00	16+800.00	16+800.00	16+800.00
DEPTH OF INVERT (m)	3.03	3.03	3.03	3.03
SLOPE OF PIPE (1/n)	1:176	1:15	1:9	1:17
REFERENCE PEG NO.				

LONGITUDINAL SECTION



- NOTES:**
- CONTOUR LEVELS ARE IN METERS AT 1m INTERVALS
 - GRID VALUES ARE IN METERS AT 100 METER INTERVALS
 - MINIMUM PIPELINE SLOPES TO BE 1:500 (PROVISIONAL)
 - ALL PIPE FITTINGS TO BE CONFIRMED ON SITE DURING SETTING OUT
- LEGEND:**
- MURRAM/EARTH ROAD
 - FENCE / HEDGE
 - CONTOURS, 1m INTERVAL
 - RIVER/STREAM
 - BUILDINGS
 - EXISTING WATER MAIN
 - HORIZONTAL BEND (H) OR VERTICAL BEND (V) ANGLE INDICATED
 - TEMPORARY STRUCTURE
 - MANHOLE/CHAMBER
 - ROCK OUTCROP
 - PROPOSED WATER MAIN
 - TRIAL HOLE
 - CONCRETE SURROUND
 - PROPOSED CHAMBER
 - PROPOSED SURFACE BOX
 - TP10 TRAVERSE POINT & No.
 - GV GATE VALVE
 - BV BUTTERFLY VALVE
 - WO WASH OUT
 - HGL HYDRAULIC GRADE LINE
 - LV LINE VALVE
 - DAV DOUBLE ORIFICE AIR VALVE
 - masl METRES ABOVE SEA LEVEL
 - 91.96 BENCHMARK WITH ELEVATION
 - MD18

REVISIONS	SIGN	DATE	APPROVED

CLIENT:

THE CHIEF EXECUTIVE OFFICER
COAST WATER WORKS DEVELOPMENT AGENCY
 P.O. BOX 90417 - 80100
 MOMBASA, KENYA

CONSULTING ENGINEERS:

JOINT VENTURE

ARTELIA
 6 RUE DE LORRAINE
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 TEL: +33 (0)4 76 33 40 00

MIBP MANGAT I.B. PATEL (MIBP) LIMITED
 P.O. BOX 48674, 00100-GPO,
 NAIROBI, KENYA
 E-MAIL: mibp.nairobi@mibpp.com
 TEL: +254-2-2710500

PROJECT NAME:

IMPROVEMENT OF DRINKING WATER AND SANITATION SYSTEMS IN MOMBASA: MWACHE CKE 1103

BID No. CWWDA/AFD/PQ/W4/2022-2023

LOT 1: CONSTRUCTION OF THE MWACHE TWIN TRUNK MAIN (SECTION 1), THE SOUTH MAINLAND TRANSMISSION PIPELINE AND DONGO KUNDU RESERVOIR

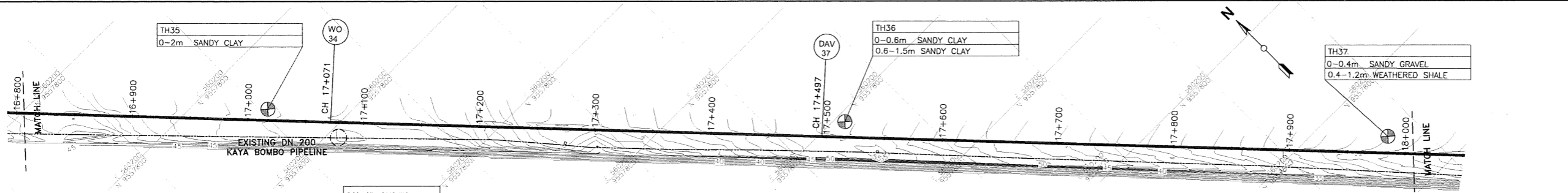
DRAWING TITLE:

SOUTH MAINLAND TRANSMISSION PIPELINE (LINE SM)

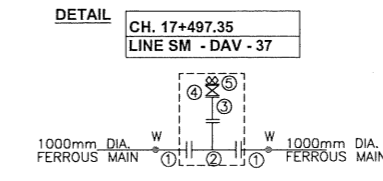
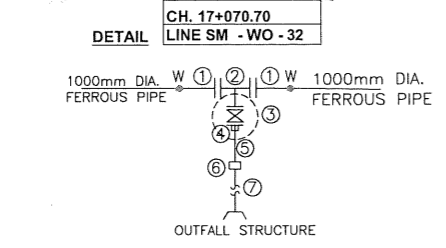
PLAN & LONGITUDINAL SECTION (CH 15+600.00 - 16+800.00)

SHEET 14 OF 25

Designed by: J.M.K Drawn by: V.K
 Checked by: R.S.R Approved by: B.D
 Scale: H- 1:4000, V- 1:400 Date: APRIL 2024
DRG No. M430/MP/SM/14 REV. 0



NOTE
 Joints: FIELD BUTT-WELDED JOINT FOR STEEL PIPES OR STANDARD PUSH-ON SPIGOT SOCKET JOINT FOR DUCTILE IRON PIPES

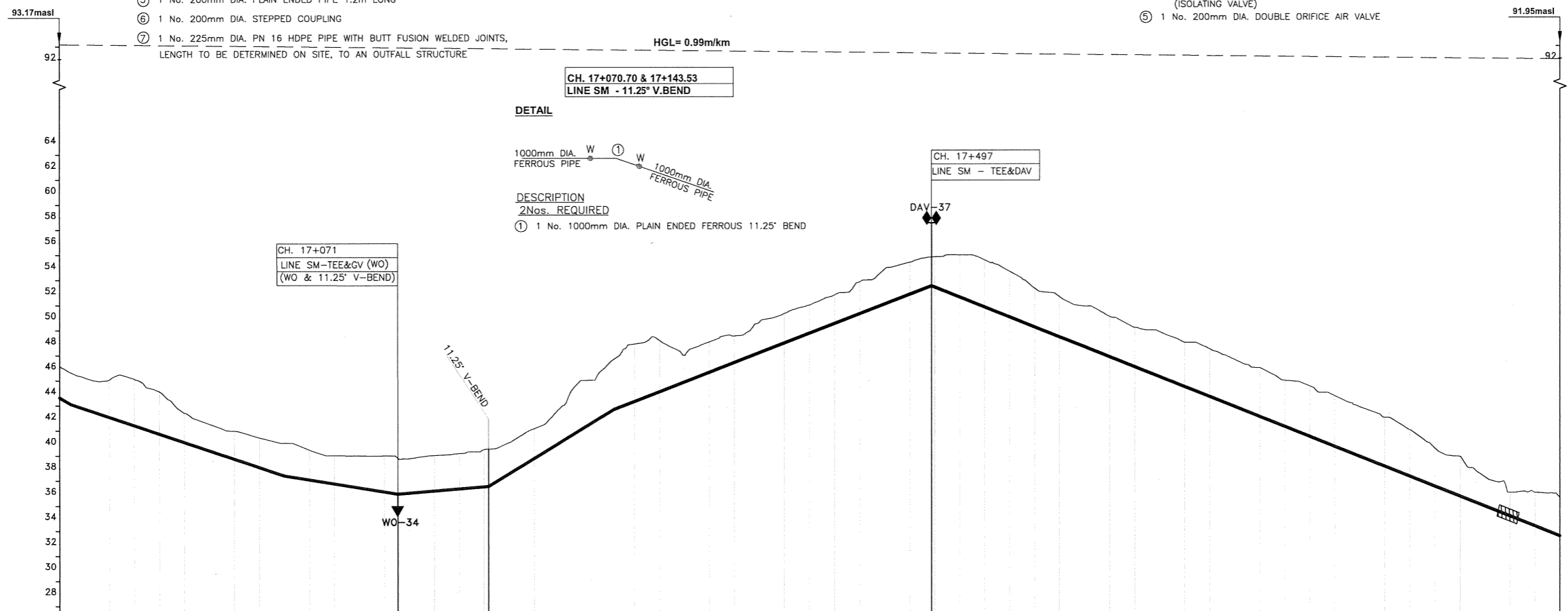


- NOTES**
- PROVIDE ANCHOR BLOCKS FOR GRADIENTS UPTO 1:10

- DESCRIPTION**
 1 No. REQUIRED
- 2 No. 1000mm DIA. FLANGED SPIGOT PIPE 1.5m LONG
 - 1 No. 1000x200mm DIA. ALL FLANGED LEVEL INVERT TEE
 - 1 No. 200mm DIA. ALL FLANGED GATE VALVE
 - 1 No. 200mm DIA. FLANGE ADAPTOR
 - 1 No. 200mm DIA. PLAIN ENDED PIPE 1.2m LONG
 - 1 No. 200mm DIA. STEPPED COUPLING
 - 1 No. 225mm DIA. PN 16 HDPE PIPE WITH BUTT FUSION WELDED JOINTS, LENGTH TO BE DETERMINED ON SITE, TO AN OUTFALL STRUCTURE

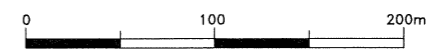
- DESCRIPTION**
 1 No. REQUIRED
- 2 Nos. 1000mm DIA. FLANGED SPIGOT PIPE 1.5m LONG WITH PUDDLE FLANGE 625mm FROM THE FLANGED END
 - 1 No. 1000x800mm DIA. ALL FLANGED SPECIAL TEE
 - 1 No. 200mm DIA. SPECIAL PIPE 325mm LONG WITH FLANGE TO SUIT 800mm DIA. TEE ON ONE END AND NORMAL FLANGE ON THE OTHER END
 - 1 No. 200mm DIA. ALL FLANGED GATE VALVE (ISOLATING VALVE)
 - 1 No. 200mm DIA. DOUBLE ORIFICE AIR VALVE

PLAN



TYPE AND SIZE OF PIPE	DN 1000 FERROUS PIPES																																																												
GEOLOGICAL CONDITION	SANDY CLAY																																																												
EXISTING GROUND LEVEL (m)	45.65	45.64	45.25	45.07	45.12	44.11	42.41	41.52	40.97	40.43	40.00	39.46	39.00	38.99	38.98	38.81	38.76	39.02	39.17	39.49	39.52	40.04	41.16	42.73	45.01	46.39	46.88	47.90	48.19	47.00	48.07	48.54	49.63	53.87	54.41	54.83	54.99	54.99	53.68	52.35	51.65	50.90	50.08	49.19	48.85	48.00	44.97	44.51	43.73	42.84	42.01	41.00	39.56	38.89	37.24	36.00	35.61				
INVERT LEVELS (m)	43.65	43.12	42.75	42.08	41.41	40.74	40.07	39.40	38.73	38.07	37.40	37.07	36.75	36.43	36.11	35.84	36.01	36.19	36.36	36.53	36.58	37.57	40.04	41.16	42.73	45.01	46.39	46.88	47.90	48.19	47.00	48.07	48.54	49.63	53.87	54.41	54.83	54.99	53.68	52.35	51.65	50.90	50.08	49.19	48.85	48.00	44.97	44.51	43.73	42.84	42.01	41.00	39.56	38.89	37.24	36.00	35.61				
DEPTH OF INVERT (m)	2.52	2.52	2.50	2.99	3.71	3.36	2.34	2.11	2.23	2.36	2.60	2.38	2.25	2.56	2.88	2.87	2.75	2.83	2.82	2.97	2.97	2.48	2.37	2.72	3.77	3.63	4.00	4.58	4.09	2.13	2.42	2.11	2.43	2.79	2.56	2.30	3.36	3.76	3.64	3.11	3.21	3.25	3.22	3.13	3.59	3.53	3.80	3.73	3.88	3.68	4.01	4.03	3.94	3.90	3.69	3.04	3.17	2.31	1.87	2.67	3.07
SLOPE OF PIPE (1/n)	-1:17, -1:30, -1:62, 1:17, 1:16, 1:26, -1:25																																																												
REFERENCE PEG NO.																																																													

LONGITUDINAL SECTION



- NOTES:**
- CONTOUR LEVELS ARE IN METERS AT 1m INTERVALS
 - GRID VALUES ARE IN METERS AT 100 METER INTERVALS
 - MINIMUM PIPELINE SLOPES TO BE 1:500 (PROVISIONAL)
 - ALL PIPE FITTINGS TO BE CONFIRMED ON SITE DURING SETTING OUT
- LEGEND:**
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 - HGL HYDRAULIC GRADE LINE
 - LV LINE VALVE
 - DAV DOUBLE ORIFICE AIR VALVE
 - masl METRES ABOVE SEA LEVEL
 - 91.96 BENCHMARK WITH ELEVATION
 - MD18

REVISIONS				
NO.	DATE	SIGN	BY	APPROVED

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 THE CHIEF EXECUTIVE OFFICER
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 E-MAIL: artelia@arteliagroup.com
 TEL: +33 (0)4 76 33 40 00

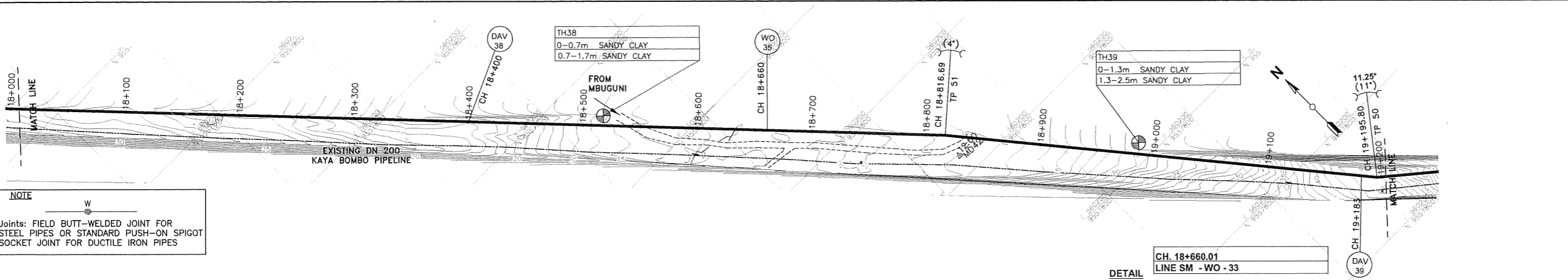
MIBP MANGAT I.B PATEL (MIBP) LIMITED
 P.O BOX 48674, 00100-GPO,
 NAIROBI, KENYA
 E-MAIL: mibp.nairobi@mibpp.com
 TEL: +254-2-2710500

PROJECT NAME:
 IMPROVEMENT OF DRINKING WATER AND SANITATION SYSTEMS IN MOMBASA: MWACHE CKE 1103

BID No. CWWDA/AFD/PQ/W4/2022-2023
LOT 1: CONSTRUCTION OF THE MWACHE TWIN TRUNK MAIN (SECTION 1), THE SOUTH MAINLAND TRANSMISSION PIPELINE AND DONGO KUNDU RESERVOIR

DRAWING TITLE:
 SOUTH MAINLAND TRANSMISSION PIPELINE (LINE SM)
 PLAN & LONGITUDINAL SECTION
 (CH 16+800.00 - 18+000.00)
 SHEET 15 OF 25

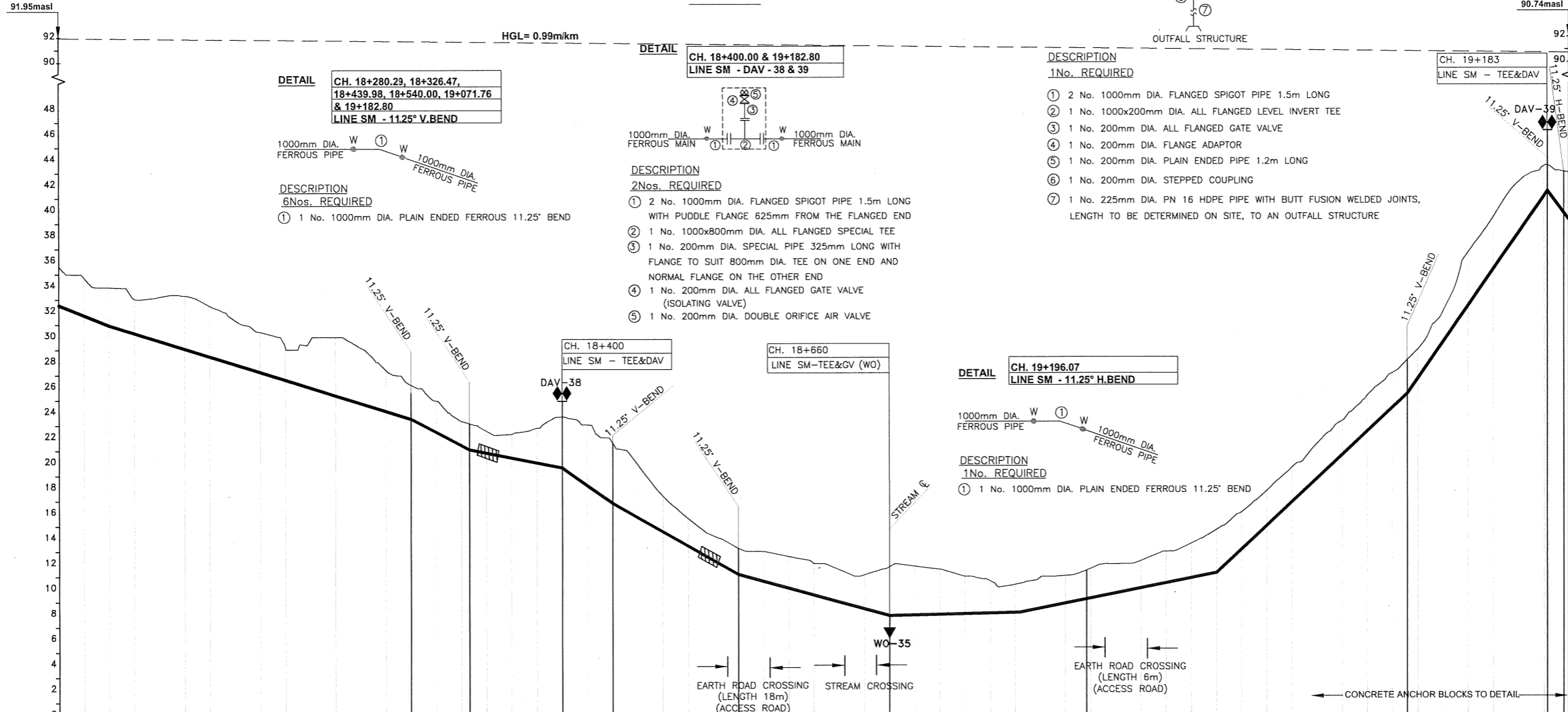
Designed by: J.M.K Drawn by: V.K
 Checked by: R.S.R Approved by: B.D
 Scale: H-1:4000, V-1:400 Date: APRIL 2024
 DRG No. M430/MP/SM/15 REV. 0



NOTE
 Joints: FIELD BUTT-WELDED JOINT FOR STEEL PIPES OR STANDARD PUSH-ON SPIGOT SOCKET JOINT FOR DUCTILE IRON PIPES

NOTES
 • PROVIDE ANCHOR BLOCKS FOR GRADIENTS UP TO 1:10

PLAN



LONGITUDINAL SECTION

- NOTES:**
- CONTOUR LEVELS ARE IN METERS AT 1m INTERVALS
 - GRID VALUES ARE IN METERS AT 100 METER INTERVALS
 - MINIMUM PIPELINE SLOPES TO BE 1:500 (PROVISIONAL)
 - ALL PIPE FITTINGS TO BE CONFIRMED ON SITE DURING SETTING OUT
- LEGEND:**
- MURRAM/EARTH ROAD
 - FENCE / HEDGE
 - CONTOURS, 1m INTERVAL
 - RIVER/STREAM
 - BUILDINGS
 - EXISTING WATER MAIN
 - HORIZONTAL BEND (H) OR VERTICAL BEND (V) ANGLE INDICATED
 - TEMPORARY STRUCTURE
 - MANHOLE/CHAMBER
 - ROCK OUTCROP
 - PROPOSED WATER MAIN
 - TRIAL HOLE
 - CONCRETE SURROUND
 - PROPOSED CHAMBER
 - PROPOSED SURFACE BOX
 - TRAVERSE POINT & No. GATE VALVE
 - BUTTERFLY VALVE
 - WASH OUT
 - HYDRAULIC GRADE LINE
 - LINE VALVE
 - DOUBLE ORIFICE AIR VALVE
 - METRES ABOVE SEA LEVEL
 - BENCHMARK WITH ELEVATION

REVISIONS			
NO.	BY	DATE	APPROVED
	CHECKED		
	BY		
	CHECKED		
	BY		
	CHECKED		

CLIENT:
 THE CHIEF EXECUTIVE OFFICER
 COAST WATER WORKS DEVELOPMENT AGENCY
 P.O. BOX 90417 - 80100
 MOMBASA, KENYA

CONSULTING ENGINEERS:
 JOINT VENTURE
ARTELIA
 6 RUE DE LORRAINE
 38130 ECHIROLLES, FRANCE
 E-MAIL: artelia@arteliagroup.com
 TEL: +33 (0)4 76 33 40 00

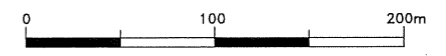
MIBP MANGAT I.B PATEL (MIBP) LIMITED
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 NAIROBI, KENYA
 E-MAIL: mibp.nairobi@mibpp.com
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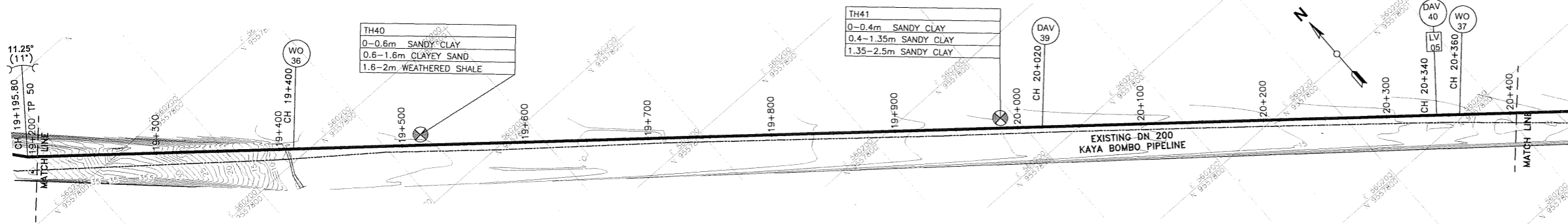
PROJECT NAME:
 IMPROVEMENT OF DRINKING WATER AND SANITATION SYSTEMS IN MOMBASA: MWACHE CKE 1103

BID No. CWWDA/AFD/PQ/W4/2022-2023
LOT 1: CONSTRUCTION OF THE MWACHE TWIN TRUNK MAIN (SECTION 1), THE SOUTH MAINLAND TRANSMISSION PIPELINE AND DONGO KUNDU RESERVOIR

DRAWING TITLE:
 SOUTH MAINLAND TRANSMISSION PIPELINE (LINE SM)
 PLAN & LONGITUDINAL SECTION
 (CH 18+000.00 - 19+200.00)
 SHEET 16 OF 25

Designed by: J.M.K	Drawn by: V.K
Checked by: R.S.R	Approved by: B.D
Scale: H-1:4000, V-1:400	Date: APRIL 2024
DRG No. M430/MP/SM/16	REV. 0

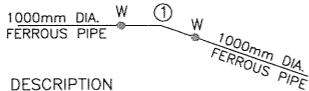




PLAN

NOTE
 Joints: FIELD BUTT-WELDED JOINT FOR STEEL PIPES OR STANDARD PUSH-ON SPIGOT SOCKET JOINT FOR DUCTILE IRON PIPES

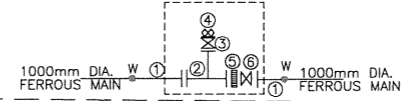
DETAIL
 CH. 19+257.59, 19+300.29
 LINE SM - 11.25° V.BEND



DESCRIPTION
 2Nos. REQUIRED
 ① 1 No. 1000mm DIA. PLAIN ENDED FERROUS 11.25° BEND

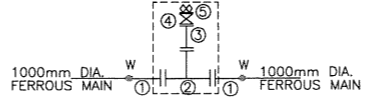
NOTES
 • PROVIDE ANCHOR BLOCKS FOR GRADIENTS UPTO 1:10

DETAIL
 CH. 20+340
 LINE SM - LV-05 & DAV -41



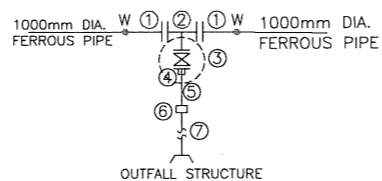
DESCRIPTION
 1No. REQUIRED
 ① 2 No. 1000mm DIA. FLANGED SPIGOT PIPE 1.5m LONG WITH PUDDLE FLANGE 625mm FROM THE FLANGED END
 ② 1 No. 1000x200mm DIA. ALL FLANGED TEE
 ③ 1 No. 200mm DIA. ALL FLANGED GATE VALVE WITH OPERATION WHEEL
 ④ 1 No. 200mm DIA. DOUBLE ORIFICE AIR VALVE
 ⑤ 1 No. 1000mm DIA DISMANTLING PIECE
 ⑥ 1 No. 1000mm DIA. ALL FLANGED BUTTERFLY VALVE WITH IN-BUILT BYPASS AND GEAR MECHANISM

DETAIL
 CH. 20+020.00
 LINE SM - DAV - 40

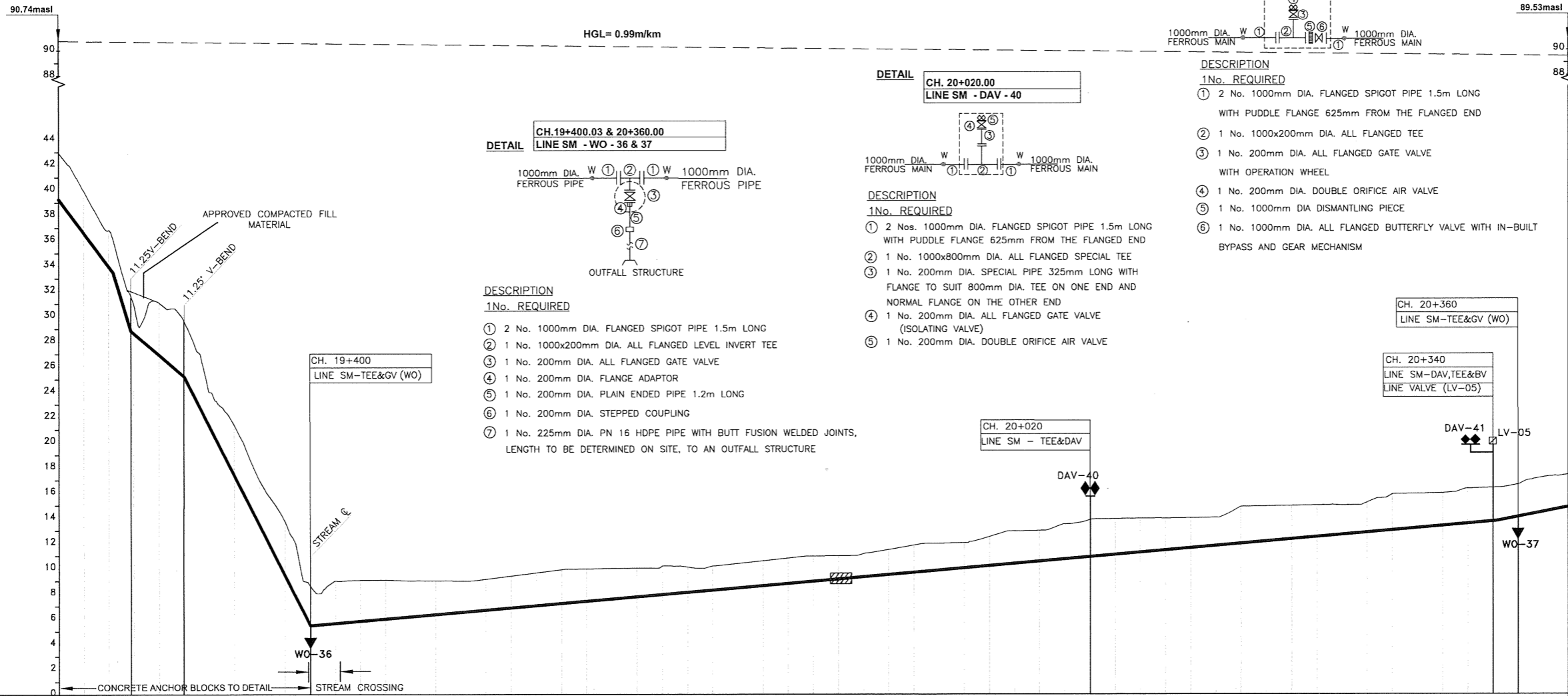


DESCRIPTION
 1No. REQUIRED
 ① 2 Nos. 1000mm DIA. FLANGED SPIGOT PIPE 1.5m LONG WITH PUDDLE FLANGE 625mm FROM THE FLANGED END
 ② 1 No. 1000x800mm DIA. ALL FLANGED SPECIAL TEE
 ③ 1 No. 200mm DIA. SPECIAL PIPE 325mm LONG WITH FLANGE TO SUIT 800mm DIA. TEE ON ONE END AND NORMAL FLANGE ON THE OTHER END
 ④ 1 No. 200mm DIA. ALL FLANGED GATE VALVE (ISOLATING VALVE)
 ⑤ 1 No. 200mm DIA. DOUBLE ORIFICE AIR VALVE

DETAIL
 CH. 19+400.03 & 20+360.00
 LINE SM - WO - 36 & 37

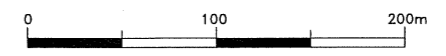


DESCRIPTION
 1No. REQUIRED
 ① 2 No. 1000mm DIA. FLANGED SPIGOT PIPE 1.5m LONG
 ② 1 No. 1000x200mm DIA. ALL FLANGED LEVEL INVERT TEE
 ③ 1 No. 200mm DIA. ALL FLANGED GATE VALVE
 ④ 1 No. 200mm DIA. FLANGE ADAPTOR
 ⑤ 1 No. 200mm DIA. PLAIN ENDED PIPE 1.2m LONG
 ⑥ 1 No. 200mm DIA. STEPPED COUPLING
 ⑦ 1 No. 225mm DIA. PN 16 HDPE PIPE WITH BUTT FUSION WELDED JOINTS, LENGTH TO BE DETERMINED ON SITE, TO AN OUTFALL STRUCTURE



TYPE AND SIZE OF PIPE	DN 1000 FERROUS PIPES	
GEOLOGICAL CONDITION	SANDY CLAY	SANDY CLAY
EXISTING GROUND LEVEL (m)	42.96, 39.99, 36.83, 33.96, 31.64, 28.84, 26.84, 24.95, 23.07, 21.37, 19.85, 18.42, 17.15, 16.05, 15.14, 14.38, 13.75, 13.21, 12.75, 12.35, 12.00, 11.70, 11.45, 11.20, 11.00, 10.85, 10.70, 10.60, 10.50, 10.40, 10.30, 10.20, 10.10, 10.00, 9.90, 9.80, 9.70, 9.60, 9.50, 9.40, 9.30, 9.20, 9.10, 9.00, 8.90, 8.80, 8.70, 8.60, 8.50, 8.40, 8.30, 8.20, 8.10, 8.00, 7.90, 7.80, 7.70, 7.60, 7.50, 7.40, 7.30, 7.20, 7.10, 7.00, 6.90, 6.80, 6.70, 6.60, 6.50, 6.40, 6.30, 6.20, 6.10, 6.00, 5.90, 5.80, 5.70, 5.60, 5.50, 5.40, 5.30, 5.20, 5.10, 5.00, 4.90, 4.80, 4.70, 4.60, 4.50, 4.40, 4.30, 4.20, 4.10, 4.00, 3.90, 3.80, 3.70, 3.60, 3.50, 3.40, 3.30, 3.20, 3.10, 3.00, 2.90, 2.80, 2.70, 2.60, 2.50, 2.40, 2.30, 2.20, 2.10, 2.00, 1.90, 1.80, 1.70, 1.60, 1.50, 1.40, 1.30, 1.20, 1.10, 1.00, 0.90, 0.80, 0.70, 0.60, 0.50, 0.40, 0.30, 0.20, 0.10, 0.00	90.74masl, 89.53masl, 89.00, 88.50, 88.00, 87.50, 87.00, 86.50, 86.00, 85.50, 85.00, 84.50, 84.00, 83.50, 83.00, 82.50, 82.00, 81.50, 81.00, 80.50, 80.00, 79.50, 79.00, 78.50, 78.00, 77.50, 77.00, 76.50, 76.00, 75.50, 75.00, 74.50, 74.00, 73.50, 73.00, 72.50, 72.00, 71.50, 71.00, 70.50, 70.00, 69.50, 69.00, 68.50, 68.00, 67.50, 67.00, 66.50, 66.00, 65.50, 65.00, 64.50, 64.00, 63.50, 63.00, 62.50, 62.00, 61.50, 61.00, 60.50, 60.00, 59.50, 59.00, 58.50, 58.00, 57.50, 57.00, 56.50, 56.00, 55.50, 55.00, 54.50, 54.00, 53.50, 53.00, 52.50, 52.00, 51.50, 51.00, 50.50, 50.00, 49.50, 49.00, 48.50, 48.00, 47.50, 47.00, 46.50, 46.00, 45.50, 45.00, 44.50, 44.00, 43.50, 43.00, 42.50, 42.00, 41.50, 41.00, 40.50, 40.00, 39.50, 39.00, 38.50, 38.00, 37.50, 37.00, 36.50, 36.00, 35.50, 35.00, 34.50, 34.00, 33.50, 33.00, 32.50, 32.00, 31.50, 31.00, 30.50, 30.00, 29.50, 29.00, 28.50, 28.00, 27.50, 27.00, 26.50, 26.00, 25.50, 25.00, 24.50, 24.00, 23.50, 23.00, 22.50, 22.00, 21.50, 21.00, 20.50, 20.00, 19.50, 19.00, 18.50, 18.00, 17.50, 17.00, 16.50, 16.00, 15.50, 15.00, 14.50, 14.00, 13.50, 13.00, 12.50, 12.00, 11.50, 11.00, 10.50, 10.00, 9.50, 9.00, 8.50, 8.00, 7.50, 7.00, 6.50, 6.00, 5.50, 5.00, 4.50, 4.00, 3.50, 3.00, 2.50, 2.00, 1.50, 1.00, 0.50, 0.00
INVERT LEVELS (m)	39.25, 36.80, 33.96, 31.64, 28.84, 26.84, 24.95, 23.07, 21.37, 19.85, 18.42, 17.15, 16.05, 15.14, 14.38, 13.75, 13.21, 12.75, 12.35, 12.00, 11.70, 11.45, 11.20, 11.00, 10.85, 10.70, 10.60, 10.50, 10.40, 10.30, 10.20, 10.10, 10.00, 9.90, 9.80, 9.70, 9.60, 9.50, 9.40, 9.30, 9.20, 9.10, 9.00, 8.90, 8.80, 8.70, 8.60, 8.50, 8.40, 8.30, 8.20, 8.10, 8.00, 7.90, 7.80, 7.70, 7.60, 7.50, 7.40, 7.30, 7.20, 7.10, 7.00, 6.90, 6.80, 6.70, 6.60, 6.50, 6.40, 6.30, 6.20, 6.10, 6.00, 5.90, 5.80, 5.70, 5.60, 5.50, 5.40, 5.30, 5.20, 5.10, 5.00, 4.90, 4.80, 4.70, 4.60, 4.50, 4.40, 4.30, 4.20, 4.10, 4.00, 3.90, 3.80, 3.70, 3.60, 3.50, 3.40, 3.30, 3.20, 3.10, 3.00, 2.90, 2.80, 2.70, 2.60, 2.50, 2.40, 2.30, 2.20, 2.10, 2.00, 1.90, 1.80, 1.70, 1.60, 1.50, 1.40, 1.30, 1.20, 1.10, 1.00, 0.90, 0.80, 0.70, 0.60, 0.50, 0.40, 0.30, 0.20, 0.10, 0.00	90.74masl, 89.53masl, 89.00, 88.50, 88.00, 87.50, 87.00, 86.50, 86.00, 85.50, 85.00, 84.50, 84.00, 83.50, 83.00, 82.50, 82.00, 81.50, 81.00, 80.50, 80.00, 79.50, 79.00, 78.50, 78.00, 77.50, 77.00, 76.50, 76.00, 75.50, 75.00, 74.50, 74.00, 73.50, 73.00, 72.50, 72.00, 71.50, 71.00, 70.50, 70.00, 69.50, 69.00, 68.50, 68.00, 67.50, 67.00, 66.50, 66.00, 65.50, 65.00, 64.50, 64.00, 63.50, 63.00, 62.50, 62.00, 61.50, 61.00, 60.50, 60.00, 59.50, 59.00, 58.50, 58.00, 57.50, 57.00, 56.50, 56.00, 55.50, 55.00, 54.50, 54.00, 53.50, 53.00, 52.50, 52.00, 51.50, 51.00, 50.50, 50.00, 49.50, 49.00, 48.50, 48.00, 47.50, 47.00, 46.50, 46.00, 45.50, 45.00, 44.50, 44.00, 43.50, 43.00, 42.50, 42.00, 41.50, 41.00, 40.50, 40.00, 39.50, 39.00, 38.50, 38.00, 37.50, 37.00, 36.50, 36.00, 35.50, 35.00, 34.50, 34.00, 33.50, 33.00, 32.50, 32.00, 31.50, 31.00, 30.50, 30.00, 29.50, 29.00, 28.50, 28.00, 27.50, 27.00, 26.50, 26.00, 25.50, 25.00, 24.50, 24.00, 23.50, 23.00, 22.50, 22.00, 21.50, 21.00, 20.50, 20.00, 19.50, 19.00, 18.50, 18.00, 17.50, 17.00, 16.50, 16.00, 15.50, 15.00, 14.50, 14.00, 13.50, 13.00, 12.50, 12.00, 11.50, 11.00, 10.50, 10.00, 9.50, 9.00, 8.50, 8.00, 7.50, 7.00, 6.50, 6.00, 5.50, 5.00, 4.50, 4.00, 3.50, 3.00, 2.50, 2.00, 1.50, 1.00, 0.50, 0.00
DEPTH OF INVERT (m)	3.71, 3.38, 2.87, 2.66, 2.78, 2.31, 4.14, 4.39, 4.36, 2.68, 3.98, 3.54, 4.29, 3.13, 3.14, 3.37, 3.26, 3.10, 2.87, 2.68, 2.50, 2.46, 2.33, 2.61, 2.68, 2.57, 2.43, 2.27, 2.27, 2.01, 1.91, 1.93, 1.82, 1.97, 1.88, 2.16, 2.13, 1.99, 2.31, 2.58, 2.43, 2.77, 2.84, 2.84, 2.69, 2.52, 2.38, 2.35, 2.38, 2.65, 2.77, 2.63, 2.49, 2.33, 2.38, 2.85, 2.71, 2.59, 2.75, 2.66, 2.55, 2.58, 2.75, 2.57, 2.57	3.71, 3.38, 2.87, 2.66, 2.78, 2.31, 4.14, 4.39, 4.36, 2.68, 3.98, 3.54, 4.29, 3.13, 3.14, 3.37, 3.26, 3.10, 2.87, 2.68, 2.50, 2.46, 2.33, 2.61, 2.68, 2.57, 2.43, 2.27, 2.27, 2.01, 1.91, 1.93, 1.82, 1.97, 1.88, 2.16, 2.13, 1.99, 2.31, 2.58, 2.43, 2.77, 2.84, 2.84, 2.69, 2.52, 2.38, 2.35, 2.38, 2.65, 2.77, 2.63, 2.49, 2.33, 2.38, 2.85, 2.71, 2.59, 2.75, 2.66, 2.55, 2.58, 2.75, 2.57, 2.57
SLOPE OF PIPE (1/n)	-1:18, -1:12, -1:12, -1:15	-1:14, -1:92
REFERENCE PEG NO.		

LONGITUDINAL SECTION



- NOTES:**
- CONTOUR LEVELS ARE IN METERS AT 1m INTERVALS
 - GRID VALUES ARE IN METERS AT 100 METER INTERVALS
 - MINIMUM PIPELINE SLOPES TO BE 1:500 (PROVISIONAL)
 - ALL PIPE FITTINGS TO BE CONFIRMED ON SITE DURING SETTING OUT
- LEGEND:**
- MURRAM/EARTH ROAD
 - FENCE / HEDGE
 - CONTOURS, 1m INTERVAL
 - RIVER/STREAM
 - BUILDINGS
 - EXISTING WATER MAIN
 - HORIZONTAL BEND (H) OR VERTICAL BEND (V) ANGLE INDICATED
 - TEMPORARY STRUCTURE
 - MANHOLE/CHAMBER
 - ROCK OUTCROP
 - PROPOSED WATER MAIN
 - TRIAL HOLE
 - CONCRETE SURROUND
 - PROPOSED CHAMBER
 - PROPOSED SURFACE BOX
 - TP10 TRAVERSE POINT & No.
 - GV GATE VALVE
 - BV BUTTERFLY VALVE
 - WO WASH OUT
 - HGL HYDRAULIC GRADE LINE
 - LV LINE VALVE
 - DAV DOUBLE ORIFICE AIR VALVE
 - masl METRES ABOVE SEA LEVEL
 - 91.96 MD18 BENCHMARK WITH ELEVATION

REVISIONS	SIGN	DATE	APPROVED

CLIENT:
 THE CHIEF EXECUTIVE OFFICER
 COAST WATER WORKS DEVELOPMENT AGENCY
 P.O. BOX 90417 - 80100
 MOMBASA, KENYA

CONSULTING ENGINEERS:
 JOINT VENTURE
ARTELIA
 6 RUE DE LORRAINE
 38130 ECHIROLLES, FRANCE
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 TEL: +33 (0)4 76 33 40 00

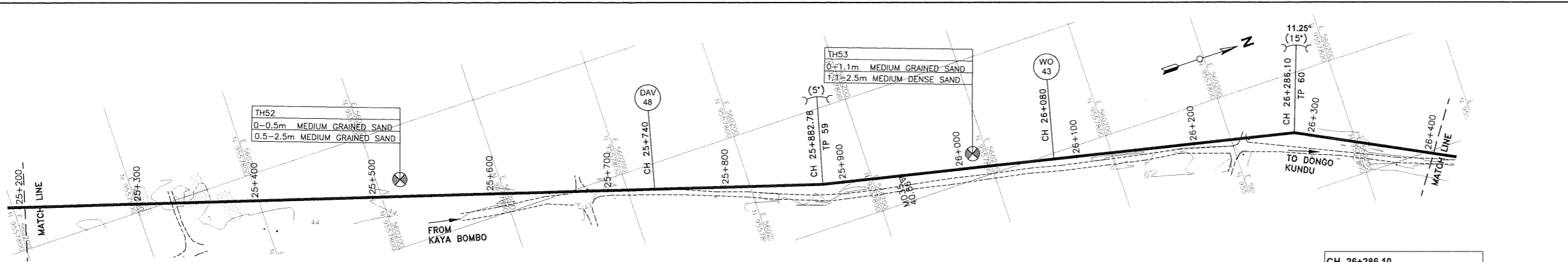
MIBP MANGAT I.B PATEL (MIBP) LIMITED
 P.O. BOX 48674, 00100-GPO,
 NAIROBI, KENYA
 E-MAIL: mibp.nairobi@mibpp.com
 TEL: +254-2-27110500

PROJECT NAME:
 IMPROVEMENT OF DRINKING WATER AND SANITATION SYSTEMS IN MOMBASA: MWACHE CKE 1103

BID No. CWWDA/AFD/PQ/W4/2022-2023
 LOT 1: CONSTRUCTION OF THE MWACHE TWIN TRUNK MAIN (SECTION 1), THE SOUTH MAINLAND TRANSMISSION PIPELINE AND DONGO KUNDU RESERVOIR

DRAWING TITLE:
 SOUTH MAINLAND TRANSMISSION PIPELINE (LINE SM)
 PLAN & LONGITUDINAL SECTION
 (CH 19+200.00 - 20+400.00)
 SHEET 17 OF 25

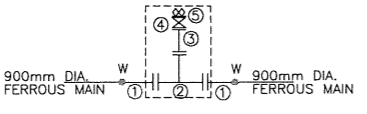
Designed by: J.M.K Drawn by: V.K
 Checked by: R.S.R Approved by: B.D
 Scale: H-1:4000, V-1:400 Date: APRIL 2024
 DRG No. M430/MP/SM/17 REV. 0



PLAN

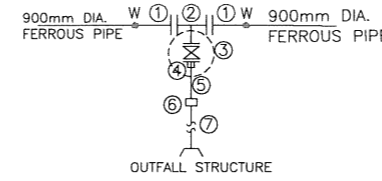
NOTE
 Joints: FIELD BUTT-WELDED JOINT FOR STEEL PIPES OR STANDARD PUSH-ON SPIGOT SOCKET JOINT FOR DUCTILE IRON PIPES

DETAIL
 CH. 25+740.00
 LINE SM - DAV - 48



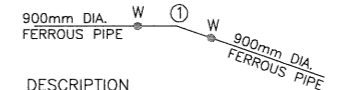
DESCRIPTION
 1 No. REQUIRED
 ① 2 Nos. 900mm DIA. FLANGED SPIGOT PIPE 1.5m LONG WITH PUDDLE FLANGE 650mm FROM THE FLANGED END
 ② 1 No. 900x800mm DIA. ALL FLANGED SPECIAL TEE
 ③ 1 No. 200mm DIA. SPECIAL PIPE 325mm LONG WITH FLANGE TO SUIT 800mm DIA. TEE ON ONE END AND NORMAL FLANGE ON THE OTHER END
 ④ 1 No. 200mm DIA. ALL FLANGED GATE VALVE (ISOLATING VALVE)
 ⑤ 1 No. 200mm DIA. DOUBLE ORIFICE AIR VALVE

DETAIL
 CH. 26+080.27
 LINE SM - WO - 43



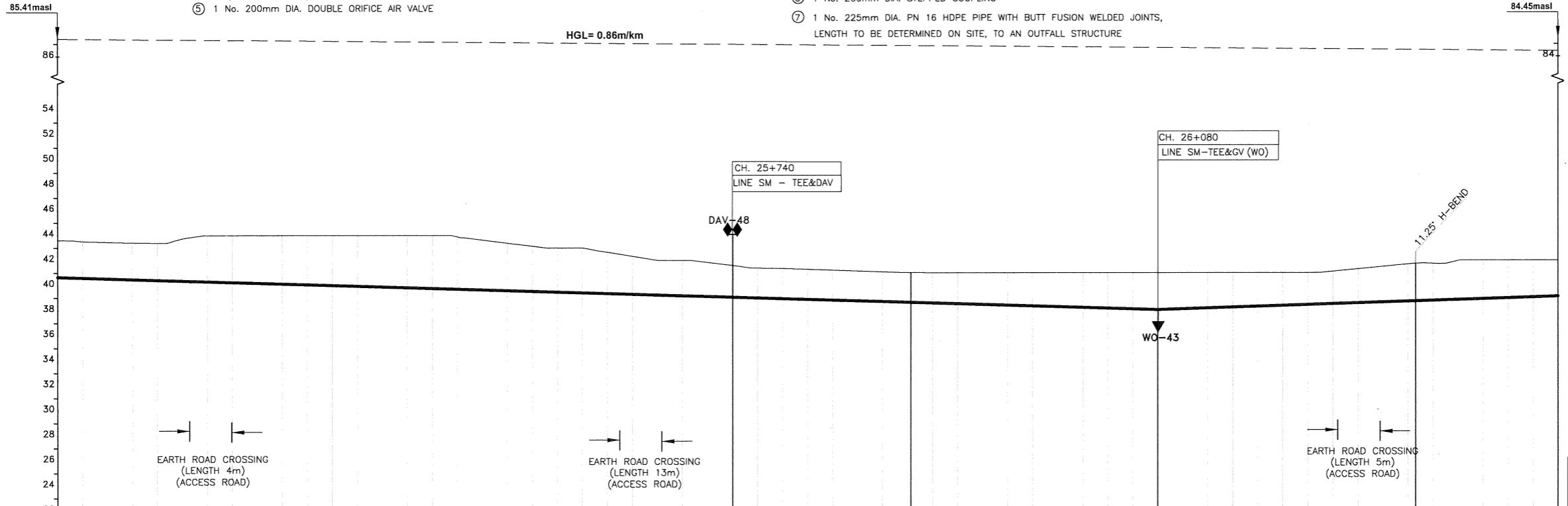
DESCRIPTION
 1 No. REQUIRED
 ① 2 No. 900mm DIA. FLANGED SPIGOT PIPE 1.5m LONG
 ② 1 No. 900x200mm DIA. ALL FLANGED LEVEL INVERT TEE
 ③ 1 No. 200mm DIA. ALL FLANGED GATE VALVE
 ④ 1 No. 200mm DIA. FLANGE ADAPTOR
 ⑤ 1 No. 200mm DIA. PLAIN ENDED PIPE 1.2m LONG
 ⑥ 1 No. 200mm DIA. STEPPED COUPLING
 ⑦ 1 No. 225mm DIA. PN 16 HDPE PIPE WITH BUTT FUSION WELDED JOINTS, LENGTH TO BE DETERMINED ON SITE, TO AN OUTFALL STRUCTURE

DETAIL
 CH. 26+286.10
 LINE SM - 11.25° H.BEND



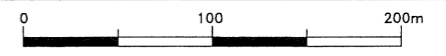
DESCRIPTION
 1 No. REQUIRED
 ① 1 No. 900mm DIA. PLAIN ENDED FERROUS 11.25° BEND

NOTES
 • PROVIDE ANCHOR BLOCKS FOR GRADIENTS UPTO 1:10



TYPE AND SIZE OF PIPE	DN 900 FERROUS PIPES																					
GEOLOGICAL CONDITION	MEDIUM GRAINED SAND																					
EXISTING GROUND LEVEL (m)	45.62	43.52	43.46	43.42	43.38	43.74	44.00	44.00	44.00	44.00	44.00	44.00	44.00	44.00	44.00	44.00	44.00	44.00	44.00	44.00		
INVERT LEVELS (m)	40.67	40.61	40.55	40.48	40.43	40.37	40.31	40.25	40.19	40.13	40.07	40.01	39.95	39.89	39.83	39.77	39.71	39.65	39.59	39.53	39.47	
CHAINAGE (m)	25+200.00	25+220.00	25+240.00	25+260.00	25+280.00	25+300.00	25+320.00	25+340.00	25+360.00	25+380.00	25+400.00	25+420.00	25+440.00	25+460.00	25+480.00	25+500.00	25+520.00	25+540.00	25+560.00	25+580.00	25+600.00	
DEPTH OF INVERT (m)	2.95	2.91	2.91	2.93	2.96	3.37	3.69	3.75	3.81	3.87	3.93	3.98	4.04	4.10	4.16	4.22	4.18	3.98	3.80	3.61	3.52	
SLOPE OF PIPE (1/n)	-1:338																					
REFERENCE PEG NO.											TP 59											TP 60

LONGITUDINAL SECTION



- NOTES:**
 1. CONTOUR LEVELS ARE IN METERS AT 1m INTERVALS
 2. GRID VALUES ARE IN METERS AT 100 METER INTERVALS
 3. MINIMUM PIPELINE SLOPES TO BE 1:500 (PROVISIONAL)
 4. ALL PIPE FITTINGS TO BE CONFIRMED ON SITE DURING SETTING OUT
- LEGEND:**
- MURRAM/EARTH ROAD
 - FENCE / HEDGE
 - CONTOURS, 1m INTERVAL
 - RIVER/STREAM
 - BUILDINGS
 - EXISTING WATER MAIN
 - HORIZONTAL BEND (H) OR VERTICAL BEND (V) ANGLE INDICATED
 - TEMPORARY STRUCTURE
 - MANHOLE/CHAMBER
 - ROCK OUTCROP
 - PROPOSED WATER MAIN
 - TH1 TRIAL HOLE
 - CONCRETE SURROUND
 - PROPOSED CHAMBER
 - PROPOSED SURFACE BOX
 - TP10 TRAVERSE POINT & No.
 - GV GATE VALVE
 - BV BUTTERFLY VALVE
 - WO WASH OUT
 - HGL HYDRAULIC GRADE LINE
 - LV LINE VALVE
 - DAV DOUBLE ORIFICE AIR VALVE
 - masl METRES ABOVE SEA LEVEL
 - 91.96 MD18 BENCHMARK WITH ELEVATION

REVISIONS

NO.	BY	DATE	APPROVED
1	CHECKED		
2	CHECKED		
3	CHECKED		

CLIENT:
 THE CHIEF EXECUTIVE OFFICER
 COAST WATER WORKS DEVELOPMENT AGENCY
 P.O. BOX 90417 - 80100 MOMBASA, KENYA

CONSULTING ENGINEERS:
 JOINT VENTURE
ARTELIA
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 TEL: +254-2-2710500

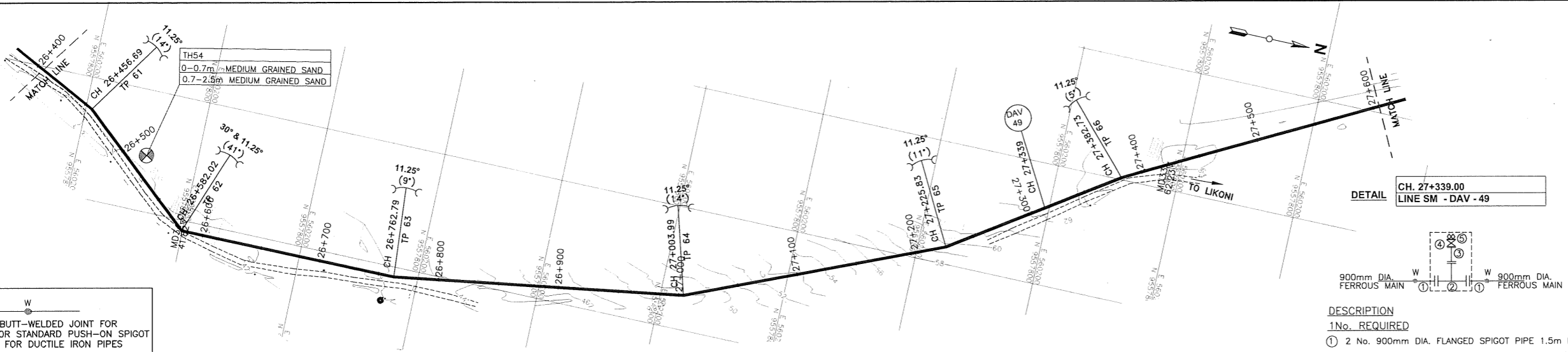
PROJECT NAME:
 IMPROVEMENT OF DRINKING WATER AND SANITATION SYSTEMS IN MOMBASA: MWACHE CKE 1103

BID No. CWWDA/AFD/PQ/W4/2022-2023
LOT 1: CONSTRUCTION OF THE MWACHE TWIN TRUNK MAIN (SECTION 1), THE SOUTH MAINLAND TRANSMISSION PIPELINE AND DONGO KUNDU RESERVOIR

DRAWING TITLE:
 SOUTH MAINLAND TRANSMISSION PIPELINE (LINE SM)
 PLAN & LONGITUDINAL SECTION (CH 25+200.00 - 26+400.00)
 SHEET 22 OF 25

Designed by: J.M.K
 Checked by: R.S.R
 Scale: H- 1:4000, V- 1:400
 DRG No. M430/MP/SM/22

Drawn by: V.K
 Approved by: B.D
 Date: APRIL 2024
 REV. 0



NOTE

Joins: FIELD BUTT-WELDED JOINT FOR STEEL PIPES OR STANDARD PUSH-ON SPIGOT SOCKET JOINT FOR DUCTILE IRON PIPES

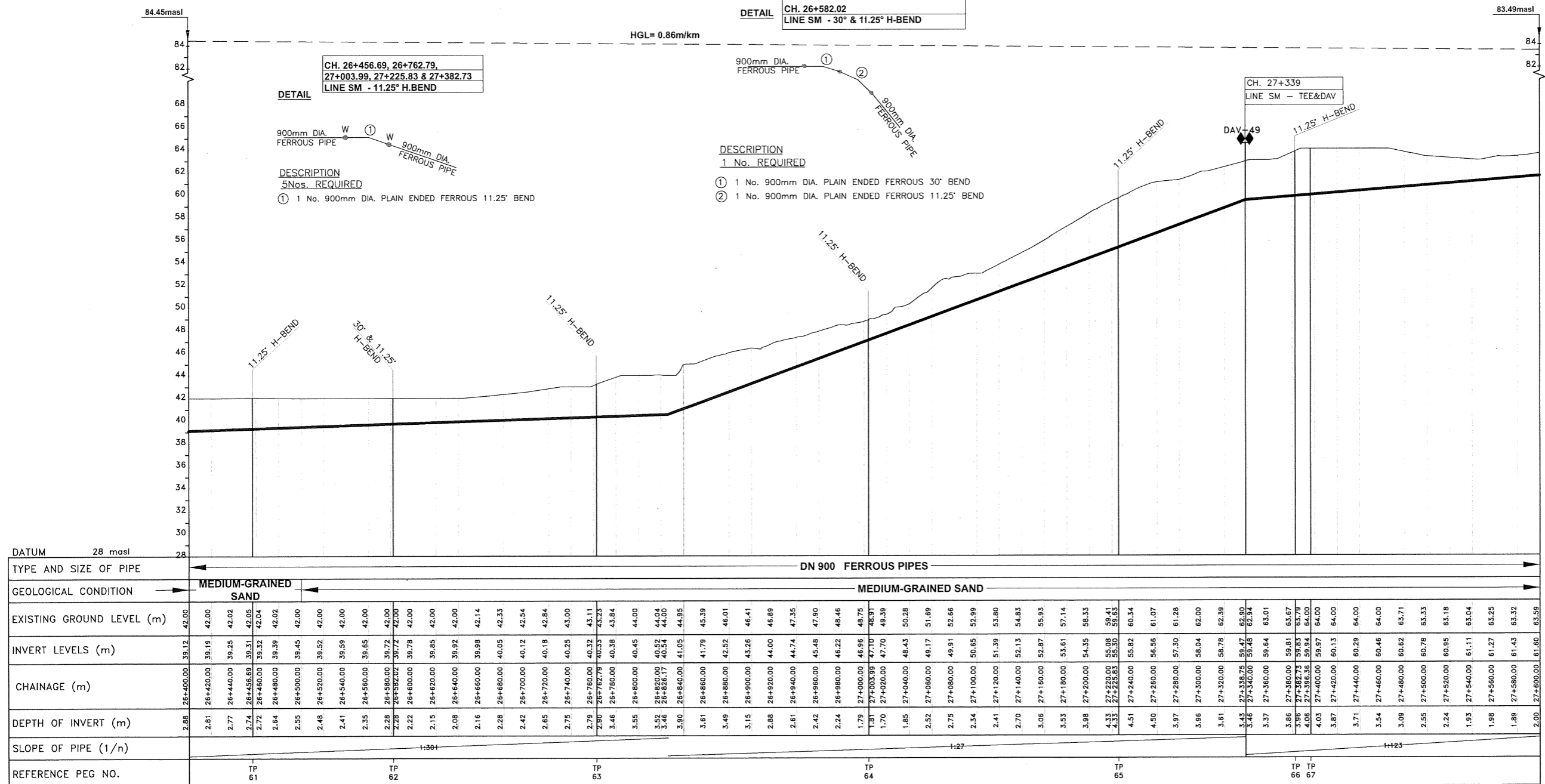
NOTES

- PROVIDE ANCHOR BLOCKS FOR GRADIENTS UPTO 1:10

- NOTES:**
- CONTOUR LEVELS ARE IN METERS AT 1m INTERVALS
 - GRID VALUES ARE IN METERS AT 100 METER INTERVALS
 - MINIMUM PIPELINE SLOPES TO BE 1:500 (PROVISIONAL)
 - ALL PIPE FITTINGS TO BE CONFIRMED ON SITE DURING SETTING OUT
- LEGEND:**
- MURRAM/EARTH ROAD
 - FENCE / HEDGE
 - CONTOURS, 1m INTERVAL
 - RIVER/STREAM
 - BUILDINGS
 - EXISTING WATER MAIN
 - HORIZONTAL BEND (H) OR VERTICAL BEND (V) ANGLE INDICATED
 - TEMPORARY STRUCTURE
 - MANHOLE/CHAMBER
 - ROCK OUTCROP
 - PROPOSED WATER MAIN
 - TRIAL HOLE
 - CONCRETE SURROUND
 - PROPOSED CHAMBER
 - PROPOSED SURFACE BOX
 - TRaverse Point & No. GATE VALVE
 - BUTTERFLY VALVE
 - WASH OUT
 - HYDRAULIC GRADE LINE
 - LINE VALVE
 - DOUBLE ORIFICE AIR VALVE
 - METRES ABOVE SEA LEVEL
 - BENCHMARK WITH ELEVATION

- DESCRIPTION**
- 1 No. REQUIRED**
- 2 No. 900mm DIA. FLANGED SPIGOT PIPE 1.5m LONG WITH PUDDLE FLANGE 650mm FROM THE FLANGED END
 - 1 No. 900x800mm DIA. ALL FLANGED SPECIAL TEE
 - 1 No. 200mm DIA. SPECIAL PIPE 325mm LONG WITH FLANGE TO SUIT 800mm DIA. TEE ON ONE END AND NORMAL FLANGE ON THE OTHER END
 - 1 No. 200mm DIA. ALL FLANGED GATE VALVE (ISOLATING VALVE)
 - 1 No. 200mm DIA. DOUBLE ORIFICE AIR VALVE

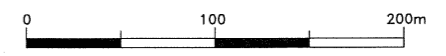
PLAN



- DESCRIPTION**
- 1 No. REQUIRED**
- 1 No. 900mm DIA. PLAIN ENDED FERROUS 30° BEND
 - 1 No. 900mm DIA. PLAIN ENDED FERROUS 11.25° BEND

DATUM	28 masl	
TYPE AND SIZE OF PIPE	DN 900 FERROUS PIPES	
GEOLOGICAL CONDITION	MEDIUM-GRAINED SAND	
EXISTING GROUND LEVEL (m)	42.00	63.59
INVERT LEVELS (m)	39.12	61.60
CHAINAGE (m)	26+400.00	27+600.00
DEPTH OF INVERT (m)	2.88	2.00
SLOPE OF PIPE (1/n)	1:361	1:27
REFERENCE PEG NO.	61, 62, 63, 64, 65, 66, 67	

LONGITUDINAL SECTION



REVISIONS

NO.	BY	DATE	APPROVED
1	CHECKED		
2	CHECKED		
3	CHECKED		
4	CHECKED		

CLIENT:

THE CHIEF EXECUTIVE OFFICER
COAST WATER WORKS DEVELOPMENT AGENCY
 P.O. BOX 90417 - 80100
 MOMBASA, KENYA

CONSULTING ENGINEERS:

JOINT VENTURE

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 TEL: +254-2-2710500

PROJECT NAME:

IMPROVEMENT OF DRINKING WATER AND SANITATION SYSTEMS IN MOMBASA: MWACHE CKE 1103

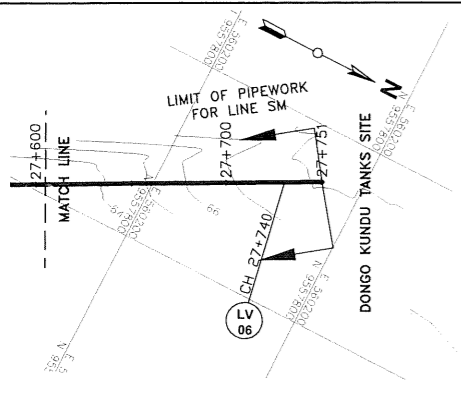
BID No. CWWDA/AFD/PQ/W4/2022-2023

LOT 1: CONSTRUCTION OF THE MWACHE TWIN TRUNK MAIN (SECTION 1), THE SOUTH MAINLAND TRANSMISSION PIPELINE AND DONGO KUNDU RESERVOIR

DRAWING TITLE:

SOUTH MAINLAND TRANSMISSION PIPELINE (LINE SM)
PLAN & LONGITUDINAL SECTION
 (CH 26+400.00 - 27+600.00)
SHEET 23 OF 25

Designed by: J.M.K Drawn by: V.K
 Checked by: R.S.R Approved by: B.D
 Scale: H-1:4000, V-1:400 Date: APRIL 2024
DRG No. M430/MP/SM/23 REV. 0



PLAN

DETAIL
CH. 27+740.00
LINE SM - LV-06

DESCRIPTION
1No. REQUIRED

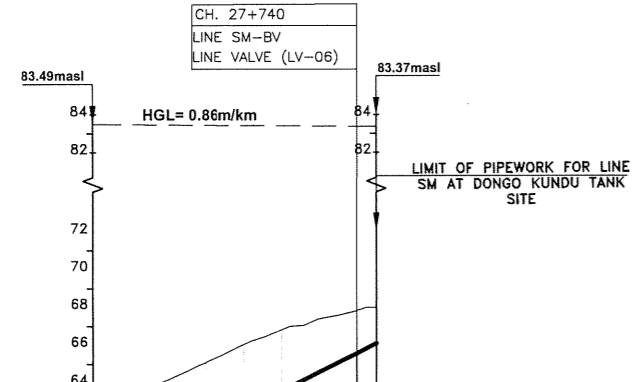
- 1 No. 900mm DIA. FLANGED SPIGOT PIPE 1.5m LONG WITH PUDDLE FLANGE AT 650mm FROM THE FLANGED END
- 1 No. 900mm DIA. ALL FLANGED BUTTERFLY VALVE WITH BYPASS AND GEAR MECHANISM
- 1 No. 900mm DIA. DISMANTLING PIECE
- 1 No. 900mm DIA. FLANGED SPIGOT PIPE 1.5m LONG WITH PUDDLE FLANGE AT 750mm FROM FLANGED END

NOTE

Joints: FIELD BUTT-WELDED JOINT FOR STEEL PIPES OR STANDARD PUSH-ON SPIGOT SOCKET JOINT FOR DUCTILE IRON PIPES

NOTES

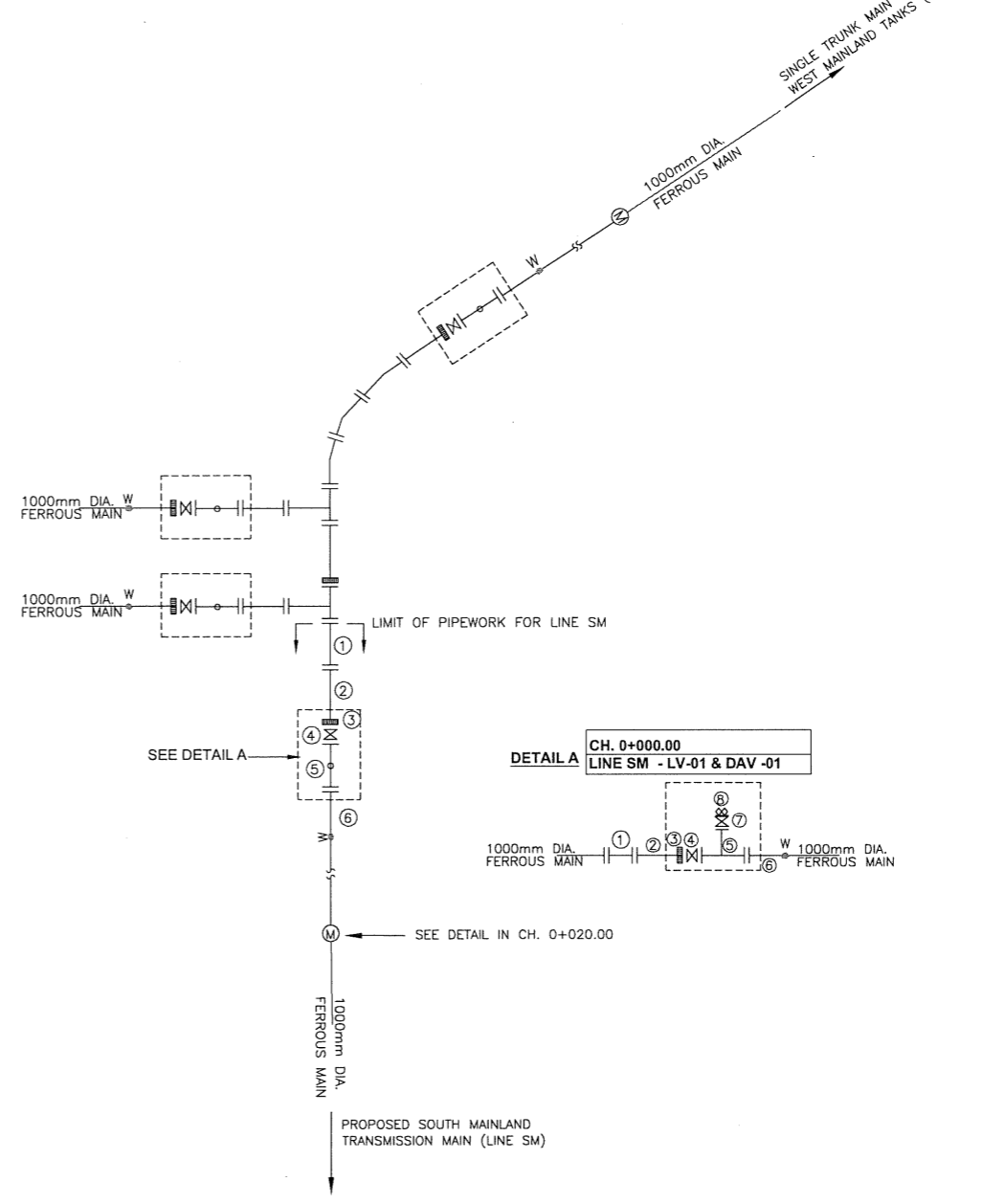
- PROVIDE ANCHOR BLOCKS FOR GRADIENTS UPTO 1:10



DATUM 52 masl	
TYPE AND SIZE OF PIPE	DN 900 FERROUS PIPES
GEOLOGICAL CONDITION	MEDIUM-GRAINED SAND
EXISTING GROUND LEVEL (m)	63.59 63.91 64.19 65.10 65.67 66.04 66.80 67.38 67.84 68.00
INVERT LEVELS (m)	61.60 61.76 61.92 62.08 62.18 62.57 62.57 66.80 64.57 65.57 66.10 66.00
CHAINAGE (m)	27+600.00 27+620.00 27+640.00 27+660.00 27+672.31 27+680.00 27+700.00 27+720.00 27+740.00 27+750.61 27+750.61
DEPTH OF INVERT (m)	2.00 2.16 2.27 3.01 3.49 3.48 3.23 2.81 2.27 1.90
SLOPE OF PIPE (1/n)	1:23 1:20
REFERENCE PEG NO.	

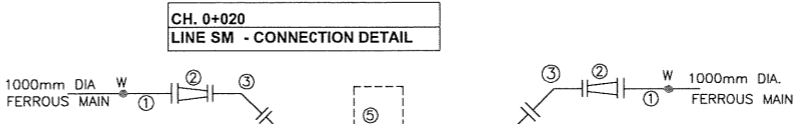
LONGITUDINAL SECTION

PIPEWORK DETAIL AT CH. 0+000.00 - TRANSITION FROM TWIN TRUNK MAIN TO SINGLE TRUNK MAIN AND OFFTAKE TO SOUTH MAINLAND



DESCRIPTION
1No. REQUIRED

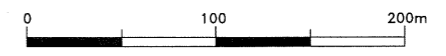
- 1 No. 1000mm DIA. ALL FLANGED PIPE 1.5m LONG
- 1 No. 1000mm DIA. ALL FLANGED PIPE 1.5m LONG WITH PUDDLE FLANGE 750mm FROM ONE END
- 1 No. 1000mm DIA. DISMANTLING PIECE
- 1 No. 1000mm DIA. ALL FLANGED BUTTERFLY VALVE WITH IN-BUILT BYPASS AND GEAR MECHANISM
- 1 No. 1000x200mm DIA. ALL FLANGED TEE
- 1 No. 1000mm DIA. FLANGED SPIGOT PIPE 1.5m LONG WITH PUDDLE FLANGE 750mm FROM FLANGED END
- 1 No. 200mm DIA. ALL FLANGED GATE VALVE WITH OPERATION WHEEL
- 1 No. 200mm DIA. DOUBLE ORIFICE AIR VALVE



DESCRIPTION
1No. REQUIRED

- 2 Nos. 1000mm DIA. FLANGED SPIGOT PIPE 1.5m LONG (CUT TO SUIT ON SITE)
- 2 No. 1000x900mm DIA. ALL FLANGED CONCENTRIC TAPER
- 4 Nos. 900mm DIA. ALL FLANGED 45° BEND
- 1 No. 900mm DIA. ALL FLANGED PIPE 9m LONG WITH PUDDLE FLANGE AT 720mm FROM THE FLANGED END
- 1 No. 900mm DIA. ALL FLANGED ELECTROMAGNETIC WATER METER
- 1 No. 900mm DIA. DISMANTLING PIECE
- 1 No. 900mm DIA. ALL FLANGED PIPE 4.5m LONG WITH PUDDLE FLANGE AT 720mm FROM THE FLANGED END

PART FITTING DETAILS FOR DRG No. M430/MP/SM/01



NOTES:

- CONTOUR LEVELS ARE IN METERS AT 1m INTERVALS
- GRID VALUES ARE IN METERS AT 100 METER INTERVALS
- MINIMUM PIPELINE SLOPES TO BE 1:500 (PROVISIONAL)
- ALL PIPE FITTINGS TO BE CONFIRMED ON SITE DURING SETTING OUT

LEGEND:

- MURRAM/EARTH ROAD
- FENCE / HEDGE
- CONTOURS, 1m INTERVAL
- RIVER/STREAM
- BUILDINGS
- EXISTING WATER MAIN
- HORIZONTAL BEND (H) OR VERTICAL BEND (V) ANGLE INDICATED
- TEMPORARY STRUCTURE
- MANHOLE/CHAMBER
- ROCK OUTCROP
- PROPOSED WATER MAIN
- TRIAL HOLE
- CONCRETE SURROUND
- PROPOSED CHAMBER
- PROPOSED SURFACE BOX
- TP10 TRAVERSE POINT & No.
- GV GATE VALVE
- BV BUTTERFLY VALVE
- WO WASH OUT
- HGL HYDRAULIC GRADE LINE
- LV LINE VALVE
- DAV DOUBLE ORIFICE AIR VALVE
- masl METRES ABOVE SEA LEVEL
- 91.96 BENCHMARK WITH ELEVATION
- MD18 BENCHMARK WITH ELEVATION

REVISIONS				SIGN	DATE	APPROVED

CLIENT:

THE CHIEF EXECUTIVE OFFICER
 COAST WATER WORKS DEVELOPMENT AGENCY
 P.O. BOX 90417 - 80100
 MOMBASA, KENYA

CONSULTING ENGINEERS:
 JOINT VENTURE

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 TEL: +254-2-2710500

PROJECT NAME:
 IMPROVEMENT OF DRINKING WATER AND SANITATION SYSTEMS IN MOMBASA: MWACHE CKE 1103

BID No. CWWDA/AFD/PQ/W4/2022-2023

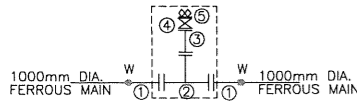
LOT 1: CONSTRUCTION OF THE MWACHE TWIN TRUNK MAIN (SECTION 1), THE SOUTH MAINLAND TRANSMISSION PIPELINE AND DONGO KUNDU RESERVOIR

DRAWING TITLE:
 SOUTH MAINLAND TRANSMISSION PIPELINE (LINE SM)
 PLAN & LONGITUDINAL SECTION
 (CH 27+600.00 - 27+750.61)
 SHEET 24 OF 25

Designed by: J.M.K	Drawn by: V.K
Checked by: R.S.R	Approved by: B.D
Scale: H-1:4000, V-1:400	Date: APRIL 2024
DRG No. M430/MP/SM/24	REV. 0

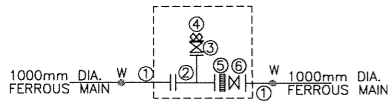
NOTE
 Joints: FIELD BUTT-WELDED JOINT FOR STEEL PIPES OR STANDARD PUSH-ON SPIGOT SOCKET JOINT FOR DUCTILE IRON PIPES

DETAIL CH. 0+168.00,0+297.00, 0+549.00 & 0+729.00
 LINE SM - DAV - 02, 03, 04 & 05



DESCRIPTION
4Nos. REQUIRED
 ① 2 Nos. 1000mm DIA. FLANGED SPIGOT PIPE 1.5m LONG WITH PUDDLE FLANGE 625mm FROM THE FLANGED END
 ② 1 No. 1000x800mm DIA. ALL FLANGED SPECIAL TEE
 ③ 1 No. 200mm DIA. SPECIAL PIPE 325mm LONG WITH FLANGE TO SUIT 800mm DIA. TEE ON ONE END AND NORMAL FLANGE ON THE OTHER END
 ④ 1 No. 200mm DIA. ALL FLANGED GATE VALVE (ISOLATING VALVE)
 ⑤ 1 No. 200mm DIA. DOUBLE ORIFICE AIR VALVE

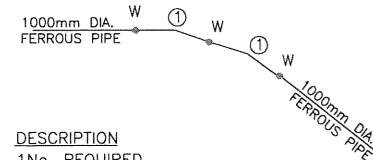
PART FITTING DETAILS FOR DRG No. M430/MP/SM/01



DESCRIPTION
1No. REQUIRED
 ① 2 No. 1000mm DIA. FLANGED SPIGOT PIPE 1.5m LONG WITH PUDDLE FLANGE 625mm FROM THE FLANGED END
 ② 1 No. 1000x200mm DIA. ALL FLANGED TEE
 ③ 1 No. 200mm DIA. ALL FLANGED GATE VALVE WITH OPERATION WHEEL
 ④ 1 No. 200mm DIA. DOUBLE ORIFICE AIR VALVE
 ⑤ 1 No. 1000mm DIA. DISMANTLING PIECE
 ⑥ 1 No. 1000mm DIA. ALL FLANGED BUTTERFLY VALVE WITH IN-BUILT BYPASS AND GEAR MECHANISM

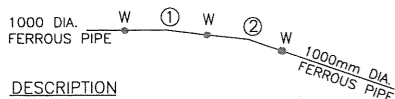
PART FITTING DETAILS FOR DRG No. M430/MP/SM/04

DETAIL CH. 10+900.47
 LINE SM - 30°&30° V.BEND



DESCRIPTION
1No. REQUIRED
 ① 2 Nos. 1000mm DIA. PLAIN ENDED FERROUS 30° BEND

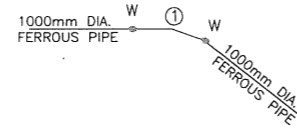
DETAIL CH. 10+919.96
 LINE SM - 22.5° 11.25° V-BEND



DESCRIPTION
1 No. REQUIRED
 ① 1 No. 1000mm DIA. PLAIN ENDED FERROUS 22.5° BEND
 ② 1 No. 1000mm DIA. PLAIN ENDED FERROUS 11.25° BEND

PART FITTING DETAILS FOR DRG No. M430/MP/SM/10

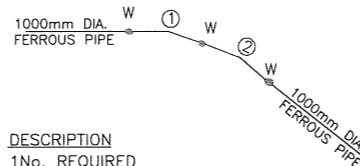
DETAIL CH. 11+134.98
 LINE SM - 30° V.BEND



DESCRIPTION
1No. REQUIRED
 ① 1 No. 1000mm DIA. PLAIN ENDED FERROUS 30° BEND

PART FITTING DETAILS FOR DRG No. M430/MP/SM/10

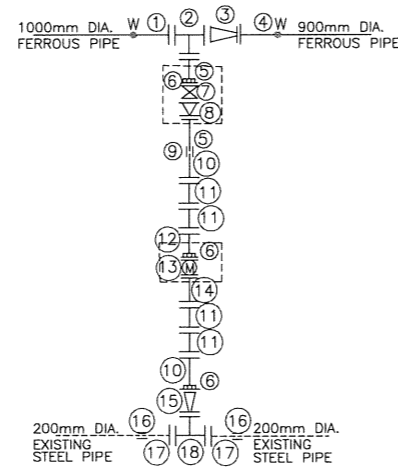
DETAIL CH. 12+732.15
 LINE SM - 30° & 11.25° V.BEND



DESCRIPTION
1No. REQUIRED
 ① 1 No. 1000mm DIA. PLAIN ENDED FERROUS 30° BEND
 ② 1 No. 1000mm DIA. PLAIN ENDED FERROUS 11.25° BEND

PART FITTING DETAILS FOR DRG No. M430/MP/SM/11

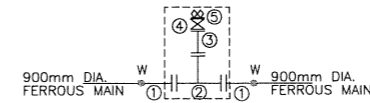
DETAIL CH. 21+764.00
 LINE SM - INTERCONNECTION



DESCRIPTION
1No. REQUIRED
 ① 1 No. 1000mm DIA. FLANGED SPIGOT PIPE 1.5m LONG
 ② 1 No. 1000x250mm DIA. ALL FLANGED TEE
 ③ 1 No. 1000mm x 900mm DIA. ALL FLANGED CONCENTRIC TAPER
 ④ 1 No. 900mm DIA. FLANGED SPIGOT PIPE 1.5m LONG
 ⑤ 2 Nos. 250mm DIA FLANGED SPIGOT PIPE 1.2m LONG WITH PUDDLE FLANGE 550mm FROM FLANGED END
 ⑥ 3 Nos. 250mm DIA. FLANGE ADAPTOR
 ⑦ 1 No. 250mm DIA. ALL FLANGED GATE VALVE
 ⑧ 1 No. 250mm DIA. ALL FLANGED CHECK VALVE (NON RETURN VALVE)
 ⑨ 1 No. 250mm DIA COUPLING
 ⑩ 2 Nos. 250mm DIA FLANGED SPIGOT PIPE 1.2m LONG
 ⑪ 4 Nos. 250mm DIA. ALL FLANGED 45° BEND
 ⑫ 1 No. 250mm DIA. FLANGED SPIGOT PIPE 2.5m LONG WITH PUDDLE FLANGE 550mm FROM FLANGED END
 ⑬ 1 No. 250mm DIA. ALL FLANGED ELECTROMAGNETIC WATER METER
 ⑭ 1 No. 250mm DIA. ALL FLANGED PIPE 1.25m LONG WITH PUDDLE FLANGE 550mm FROM FLANGED END
 ⑮ 1 No. 250mm x 200mm DIA. ALL FLANGED CONCENTRIC TAPER
 ⑯ 2 Nos. 200mm DIA COUPLING
 ⑰ 2 Nos. 200mm DIA FLANGED SPIGOT PIPE 1.2m LONG
 ⑱ 1 No. 200x200mm DIA. ALL FLANGED TEE

PART FITTING DETAILS FOR DRG No. M430/MP/SM/19

DETAIL CH. 22+400.00
 LINE SM - DAV - 44



DESCRIPTION
1No. REQUIRED
 ① 2 No. 900mm DIA. FLANGED SPIGOT PIPE 1.5m LONG WITH PUDDLE FLANGE 650mm FROM THE FLANGED END
 ② 1 No. 900x800mm DIA. ALL FLANGED SPECIAL TEE
 ③ 1 No. 200mm DIA. SPECIAL PIPE 325mm LONG WITH FLANGE TO SUIT 800mm DIA. TEE ON ONE END AND NORMAL FLANGE ON THE OTHER END
 ④ 1 No. 200mm DIA. ALL FLANGED GATE VALVE (ISOLATING VALVE)
 ⑤ 1 No. 200mm DIA. DOUBLE ORIFICE AIR VALVE

PART FITTING DETAILS FOR DRG No. M430/MP/SM/19

NOTES:

- CONTOUR LEVELS ARE IN METERS AT 1m INTERVALS
- GRID VALUES ARE IN METERS AT 100 METER INTERVALS
- MINIMUM PIPELINE SLOPES TO BE 1:500 (PROVISIONAL)
- ALL PIPE FITTINGS TO BE CONFIRMED ON SITE DURING SETTING OUT

LEGEND:

- MURRAM/EARTH ROAD
- FENCE / HEDGE
- CONTOURS, 1m INTERVAL
- RIVER/STREAM
- BUILDINGS
- EXISTING WATER MAIN
- HORIZONTAL BEND (H) OR VERTICAL BEND (V) ANGLE INDICATED
- TEMPORARY STRUCTURE } EXISTING
- MANHOLE/CHAMBER } EXISTING
- ROCK OUTCROP
- PROPOSED WATER MAIN
- TRIAL HOLE
- CONCRETE SURROUND
- PROPOSED CHAMBER
- PROPOSED SURFACE BOX
- TP10 TRAVERSE POINT & No.
- GV GATE VALVE
- BV BUTTERFLY VALVE
- WO WASH OUT
- HGL HYDRAULIC GRADE LINE
- LV LINE VALVE
- DAV DOUBLE ORIFICE AIR VALVE
- masl METRES ABOVE SEA LEVEL
- 91.96 BENCHMARK WITH ELEVATION
- MD18

REVISIONS				SIGN	DATE	APPROVED
		BY				
		CHECKED				
		BY				
		CHECKED				
		BY				
		CHECKED				

CLIENT:
 THE CHIEF EXECUTIVE OFFICER
 COAST WATER WORKS DEVELOPMENT AGENCY
 P.O. BOX 90417 - 80100
 MOMBASA, KENYA

CONSULTING ENGINEERS:
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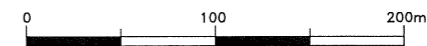
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PROJECT NAME:
 IMPROVEMENT OF DRINKING WATER AND SANITATION SYSTEMS IN MOMBASA: MWACHE CKE 1103

BID No. CWWDA/AFD/PQ/W4/2022-2023
LOT 1: CONSTRUCTION OF THE MWACHE TWIN TRUNK MAIN (SECTION 1), THE SOUTH MAINLAND TRANSMISSION PIPELINE AND DONGO KUNDU RESERVOIR

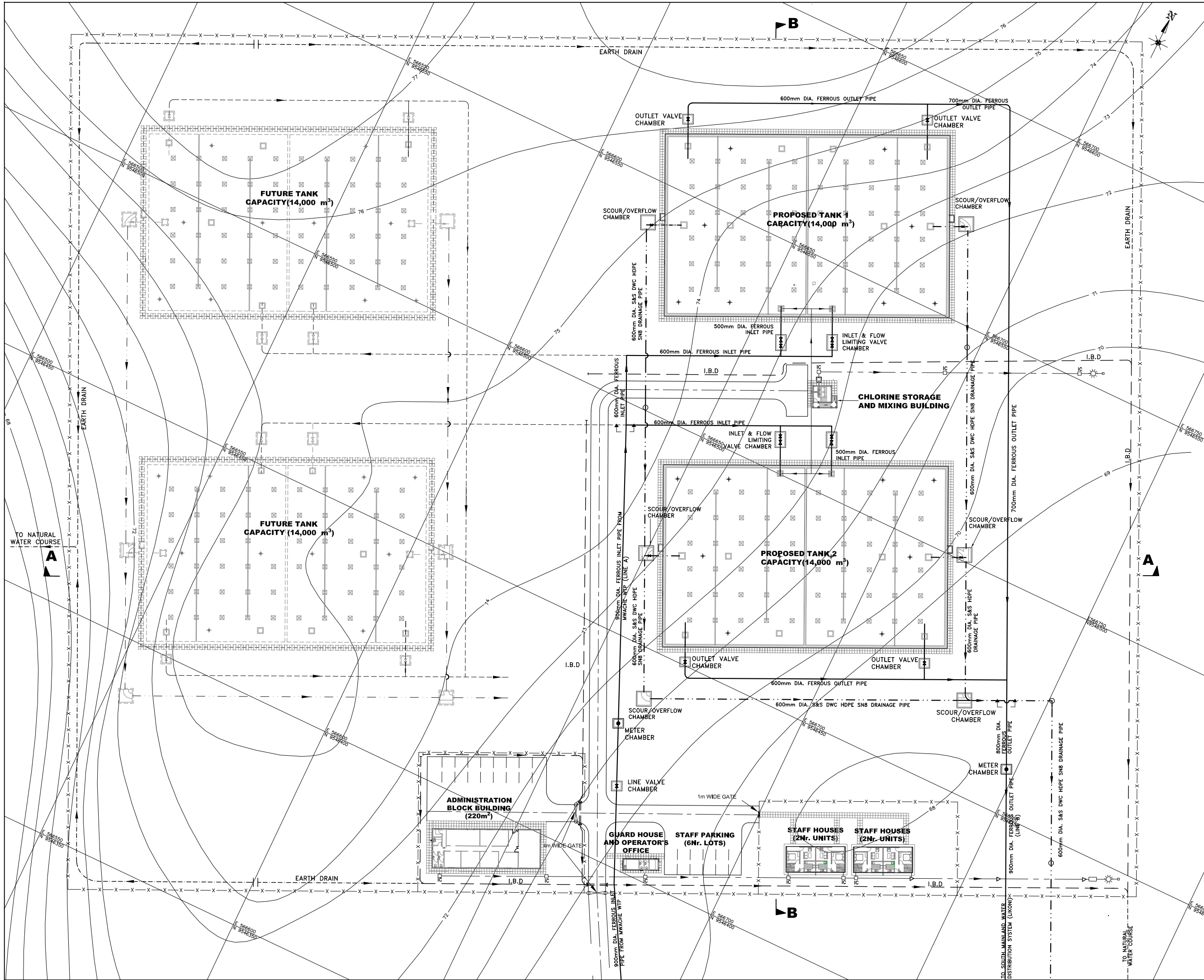
DRAWING TITLE:
 SOUTH MAINLAND TRANSMISSION PIPELINE (LINE SM)
 PLAN & LONGITUDINAL SECTION
 FITTINGS DETAILS
 SHEET 25 OF 25

Designed by: J.M.K	Drawn by: V.K
Checked by: R.S.R	Approved by: B.D
Scale: H- 1:4000, V- 1:400	Date: APRIL 2024
DRG No. M430/MP/SM/25	REV. 0



**DONGO KUNDU STORAGE
RESERVOIR SITE**

**28,000m³ CAPACITY R.C
STORAGE RESERVOIR**



NOTES:

- CONTOUR LEVELS ARE IN METERS AT 1 METER INTERVALS.
- GRID VALUES ARE IN METERS AT 50 METER INTERVALS

LEGEND

- MURRAM ROAD
- PROPOSED STRUCTURES
- FUTURE STRUCTURES
- PROPOSED PIPELINE
- FUTURE PIPELINE
- SCOUR / OVERFLOW PIPE
- EARTH DRAIN
- INVERTED BLOCK DRAIN (IBD)
- BUTTERFLY / GATE VALVE
- CULVERT WITH HEAD WALLS
- PERIMETER WALL
- SOAK PIT
- SEPTIC TANK
- IC INSPECTION CHAMBER(IC)
- DRAINAGE MANHOLE
- SEWER WITH INSPECTION CHAMBER
- SEWER MANHOLE
- CONTOURS
- GATE
- REINFORCED CONCRETE CHAMBER
- PRECAST CONCRETE PAVED FOOTPATHS

REVISIONS			
NO.	BY	DATE	APPROVED
	CHECKED		
	BY		
	CHECKED		
	BY		

CLIENT:

THE CHIEF EXECUTIVE OFFICER
COAST WATER WORKS DEVELOPMENT AGENCY
 P.O. BOX 90417 - 80100
 MOMBASA, KENYA

CONSULTING ENGINEERS:
JOINT VENTURE

ARTELIA
 6 RUE DE LORRAINE
 38130 ECHIROLLES, FRANCE
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 TEL: +254-2-2710500

PROJECT NAME:
IMPROVEMENT OF DRINKING WATER AND SANITATION SYSTEMS IN MOMBASA: MWACHE CKE 1103

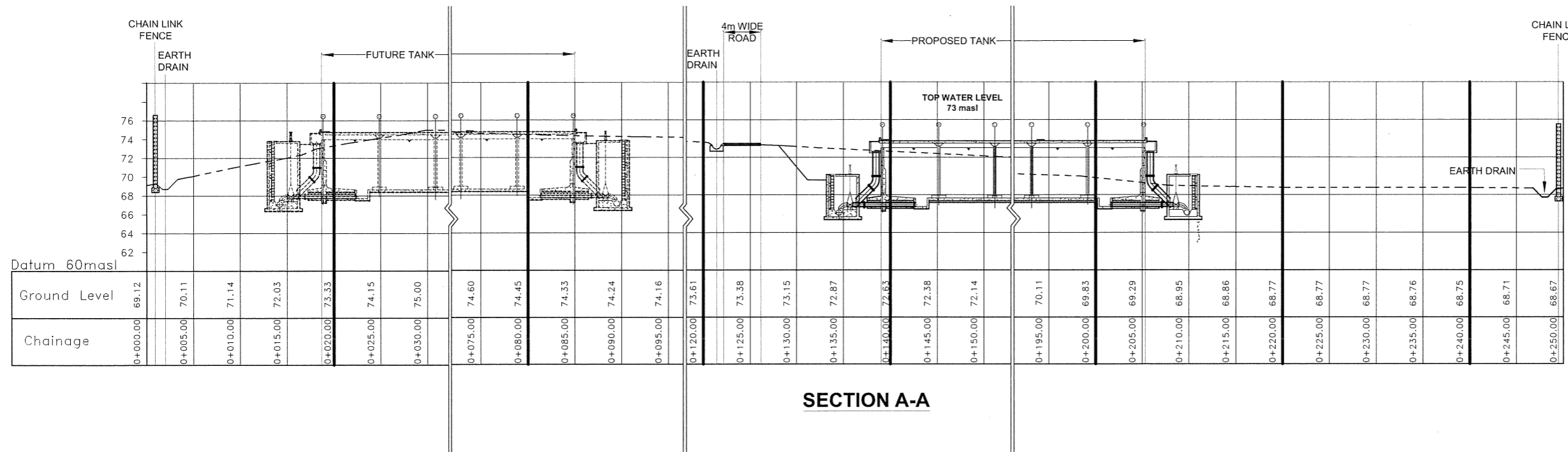
BID No. CWWDA/AFD/PQ/W4/2022-2023

LOT 1: CONSTRUCTION OF THE MWACHE TWIN TRUNK MAIN (SECTION 1), THE SOUTH MAINLAND TRANSMISSION PIPELINE AND DONGO KUNDU RESERVOIR

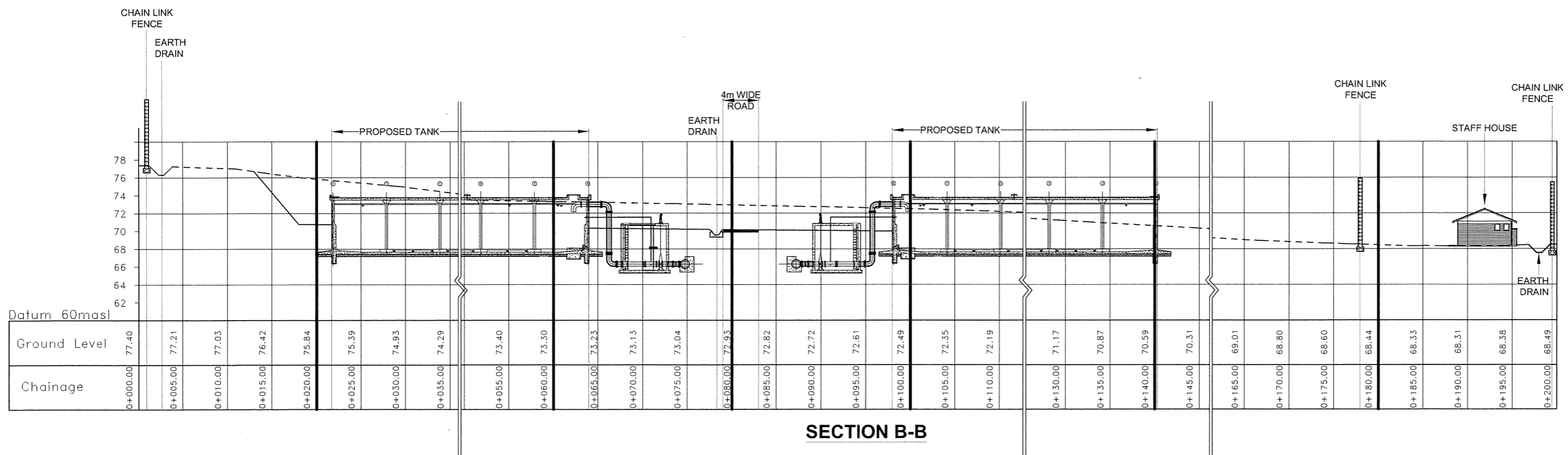
DRAWING TITLE:
DONGO KUNDU TANKS
SITE LAYOUT PLAN
SHEET 1 OF 1

Designed by: E.O.A	Drawn by: F.M.G
Checked by: N.H	Approved by: R.S.R
Scale: 1:800	Date: APRIL, 2024

DRG No. M430/MP/NKT/01 REV. 0



SECTION A-A



SECTION B-B

LEGEND

- PROPOSED STRUCTURES
- EXISTING GROUND LEVEL
- TOP WATER LEVEL - 101masl
- FINISHED GROUND LEVEL
- FINISHED ROAD LEVEL

REVISIONS	SIGN	DATE	APPROVED

CLIENT:
THE CHIEF EXECUTIVE OFFICER
COAST WATER WORKS DEVELOPMENT
AGENCY
 P.O. BOX 90417 - 80100
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PROJECT NAME:
IMPROVEMENT OF DRINKING WATER AND
SANITATION SYSTEMS IN MOMBASA:
MWACHE CKE 1103

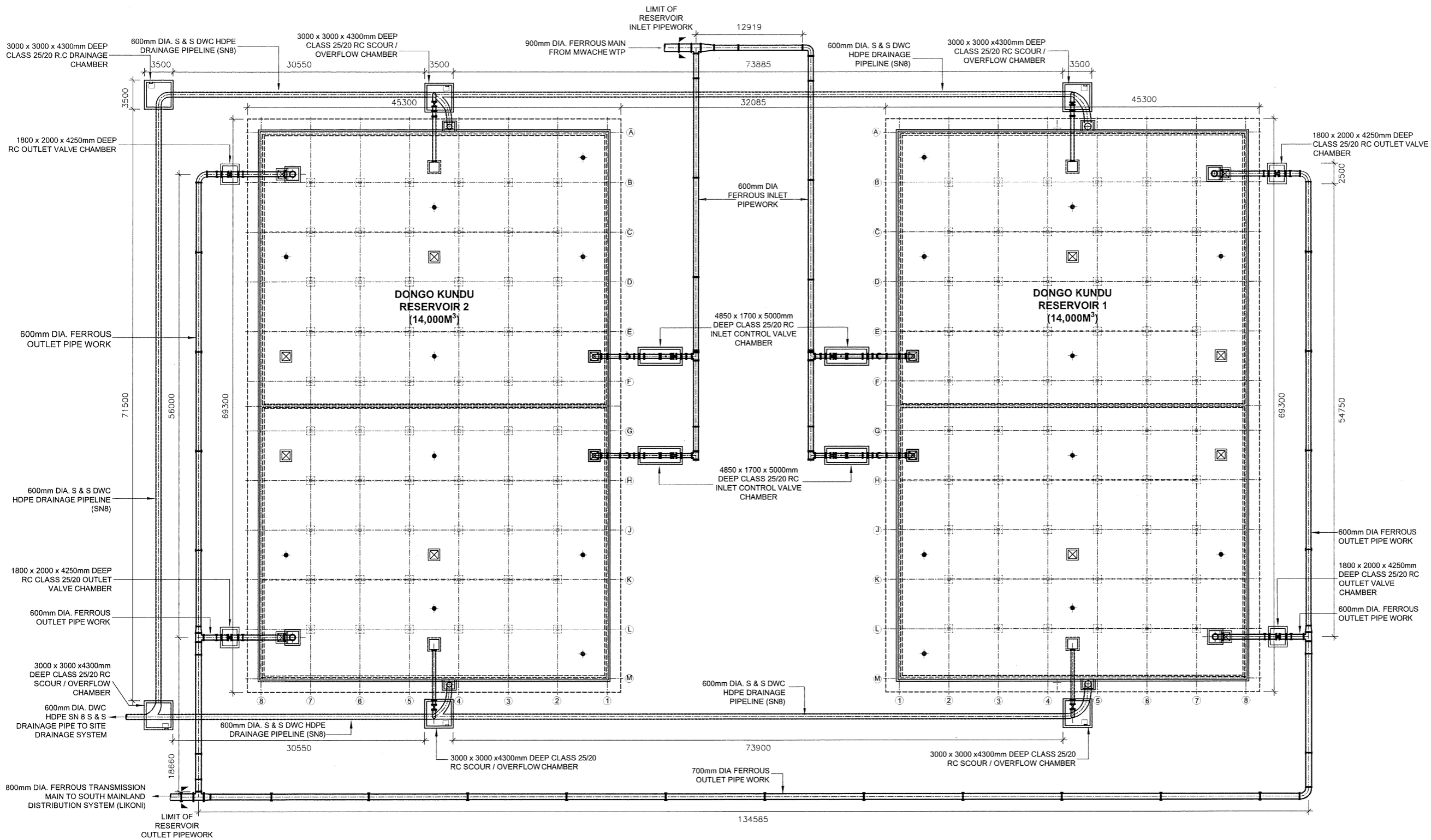
BID No. CWWDA/AFD/PQ/W4/2022-2023

LOT 1: CONSTRUCTION OF THE MWACHE TWIN
 TRUNK MAIN (SECTION 1), THE SOUTH
 MAINLAND TRANSMISSION PIPELINE AND
 DONGO KUNDU RESERVOIR

DRAWING TITLE:
PROPOSED DONGO KUNDU
TANKS
SECTION A-A & B-B

Designed by: E.A.O	Drawn by: F.M.G
Checked by: N.H	Approved by: R.S.R
Scale: 1:1250	Date: APRIL 2024

DRG No. M430/MP/NKT/02 REV. 0



**DONGO KUNDU STORAGE RESERVOIR TOTAL
CAPACITY (28,000m³)
LAYOUT PLAN**

- NOTES:**
1. ALL DIMENSIONS IN mm UNLESS OTHERWISE STATED
 2. FITTINGS SHALL BE AS PER SPECIFICATIONS
 3. FOR COVER DETAILS, SEE DRG. No. M430/MP/SD/17-18
 4. FOR PIPEWORK DETAILS SEE DRG. Nos. M430/MP/SR/DKR/05-07
 5. FOR STAINLESS STEEL LADDER DETAILS, SEE DRG. No. M430/MP/SD/05-2
 6. ALL REINFORCED CONCRETE IS CLASS 25/20 UNLESS OTHERWISE STATED
 7. ALL EXPOSED CONCRETE EDGES TO HAVE A 25x25mm CHAMFER
 8. VENT PIPES TO BE INSTALLED AT EVERY ALTERNATE PANEL

- ABBREVIATIONS**
- mm - MILLIMETRES
 - FGL - FINISHED GROUND LEVEL
 - PIL - PIPE INVERT LEVEL
 - DIA - DIAMETER
 - Ø - DIAMETER
 - R.C. - REINFORCED CONCRETE
 - M.S. - MILD STEEL
 - c/c - CENTER TO CENTRE
 - No. - NUMBER
 - L - LENGTH
 - DWC - DOUBLE WALLED CORRUGATED

REVISIONS		SIGN	DATE	APPROVED

CLIENT:

**THE CHIEF EXECUTIVE OFFICER
COAST WATER WORKS DEVELOPMENT
AGENCY**

P.O. BOX 90417 - 80100
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TEL: +254-2-2710500

PROJECT NAME:
**IMPROVEMENT OF DRINKING WATER AND
SANITATION SYSTEMS IN MOMBASA:
MWACHE CKE 1103**

BID No. CWWDA/AFD/PQ/W4/2022-2023

LOT 1: CONSTRUCTION OF THE MWACHE TWIN
TRUNK MAIN (SECTION 1), THE SOUTH
MAINLAND TRANSMISSION PIPELINE AND
DONGO KUNDU RESERVOIR

DRAWING TITLE:
**DONGO KUNDU RESERVOIRS
(28,000m³)**

LAYOUT PLAN

Designed by: E.O.A	Drawn by: V.K
Checked by: R.S.R	Approved by: B.D
Scale: 1:500	Date: APRIL 2024

- NOTES:**
1. ALL DIMENSIONS IN mm UNLESS OTHERWISE STATED
 2. FOR COVER DETAILS, SEE DRG. No. M430/MP/SD/17-18
 3. FOR PIPEWORK DETAILS SEE DRG. Nos. M430/MP/SR/DKR/05-07
 4. FOR STAINLESS STEEL LADDER DETAILS, SEE DRG. No. M430/MP/SD/05-2
 5. ALL REINFORCED CONCRETE IS CLASS 25/20 UNLESS OTHERWISE STATED
 6. ALL EXPOSED CONCRETE EDGES TO HAVE A 25x25mm CHAMFER
 7. VENT PIPES TO BE INSTALLED AT EVERY ALTERNATE PANEL

- ABBREVIATIONS**
- mm - MILLIMETRES
 - FGL - FINISHED GROUND LEVEL
 - PIL - PIPE INVERT LEVEL
 - DIA - DIAMETER
 - Ø - DIAMETER
 - R.C. - REINFORCED CONCRETE
 - M.S. - MILD STEEL
 - c/c - CENTER TO CENTRE
 - No. - NUMBER
 - L - LENGTH

REVISIONS	SIGN	DATE	APPROVED

CLIENT:

THE CHIEF EXECUTIVE OFFICER
COAST WATER WORKS DEVELOPMENT AGENCY
 P.O. BOX 90417 - 80100
 MOMBASA, KENYA

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 E-MAIL: mibp.nairobi@mibpp.com
 TEL: +254-2-2710500

PROJECT NAME:

IMPROVEMENT OF DRINKING WATER AND SANITATION SYSTEMS IN MOMBASA: MWACHE CKE 1103

BID No. CWWDA/AFD/PQ/W4/2022-2023

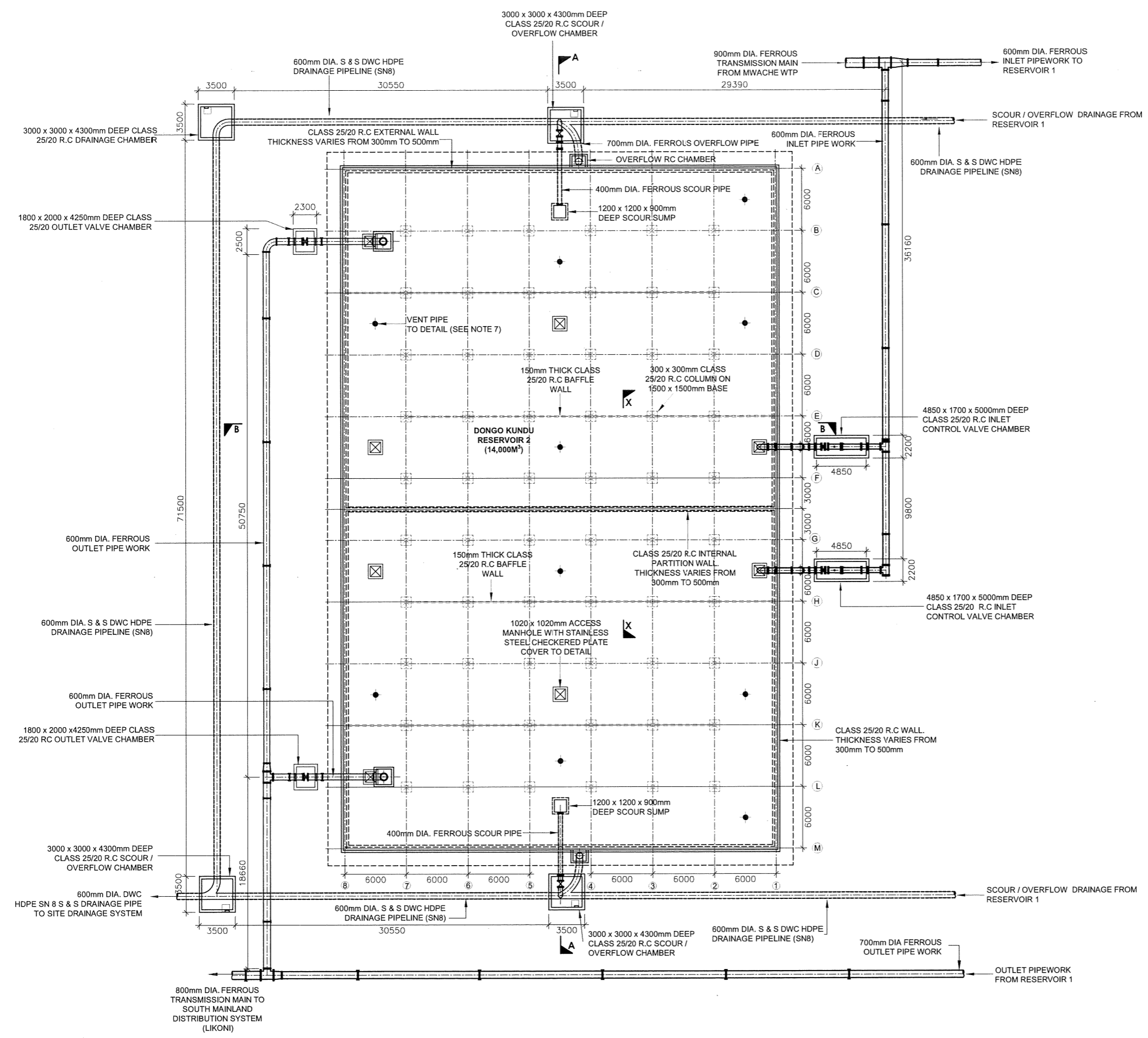
LOT 1: CONSTRUCTION OF THE MWACHE TWIN TRUNK MAIN (SECTION 1), THE SOUTH MAINLAND TRANSMISSION PIPELINE AND DONGO KUNDU RESERVOIR

DRAWING TITLE:

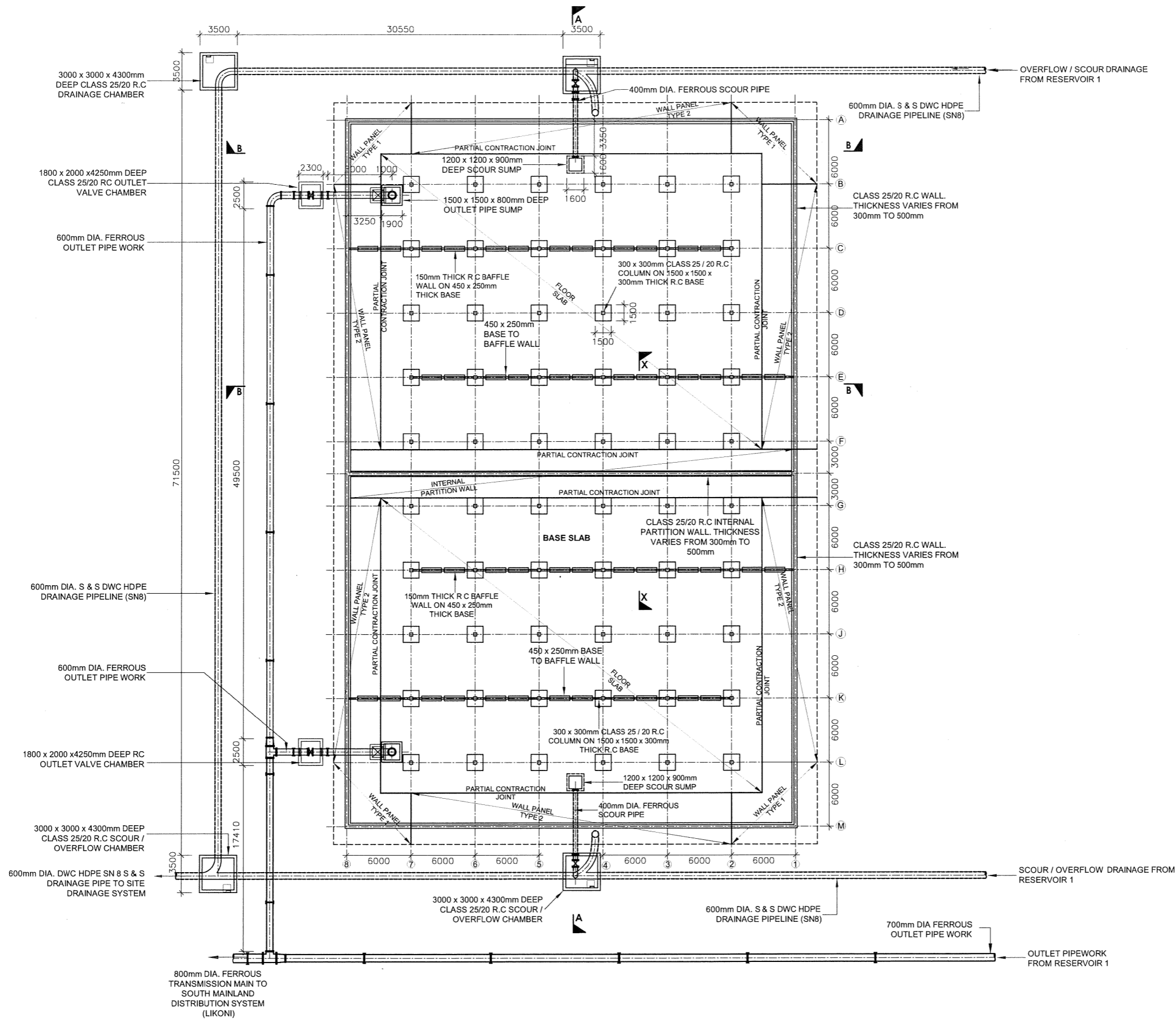
DONGO KUNDU RESERVOIRS (28,000m³)

TYPICAL ROOF SLAB PLAN

Designed by: E.O.A	Drawn by: V.K
Checked by: R.S.R	Approved by: B.D
Scale: 1:400	Date: APRIL 2024
DRAWING No. M430/MP/SR/DKR/02 REV. 0	



STORAGE RESERVOIR (14000m³)
TYPICAL ROOF SLAB




**STORAGE RESERVOIR (14000m³)
TYPICAL BASE SLAB**

- NOTES:**
1. ALL DIMENSIONS IN mm UNLESS OTHERWISE STATED
 2. FOR COVER DETAILS, SEE DRG. No. M430/MP/SD/17-18
 3. FOR PIPEWORK DETAILS SEE DRG. Nos. M430/MP/SR/DKR/05-07
 4. FOR STAINLESS STEEL LADDER DETAILS, SEE DRG. No. M430/MP/SD/05-2
 5. ALL REINFORCED CONCRETE IS CLASS 25/20 UNLESS OTHERWISE STATED
 6. ALL EXPOSED CONCRETE EDGES HAVE A 25x25mm CHAMFER

ABBREVIATIONS

- mm - MILLIMETRES
- FGL - FINISHED GROUND LEVEL
- PIL - PIPE INVERT LEVEL
- DIA - DIAMETER
- Ø - DIAMETER
- R.C. - REINFORCED CONCRETE
- M.S. - MILD STEEL
- c/c - CENTER TO CENTRE
- No. - NUMBER
- L - LENGTH

REVISIONS		SIGN	DATE	APPROVED
	BY			
	CHECKED			
	BY			
	CHECKED			
	BY			
	CHECKED			

CLIENT:

**THE CHIEF EXECUTIVE OFFICER
COAST WATER WORKS DEVELOPMENT
AGENCY**
 P.O. BOX 90417 - 80100
 MOMBASA, KENYA

CONSULTING ENGINEERS:
 JOINT VENTURE

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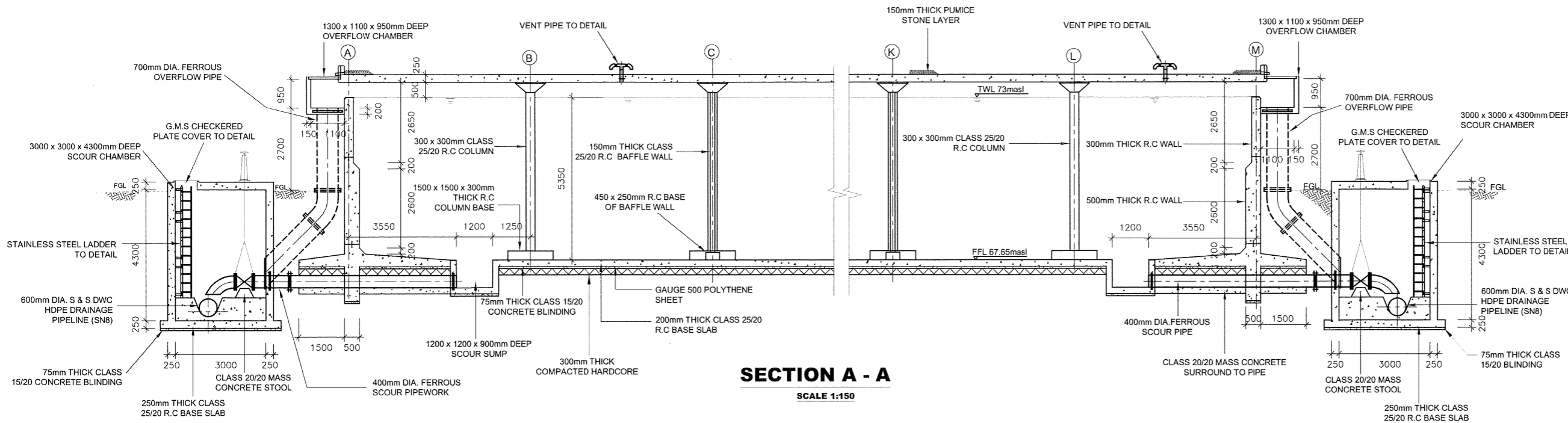
PROJECT NAME:
**IMPROVEMENT OF DRINKING WATER AND
SANITATION SYSTEMS IN MOMBASA:
MWACHE CKE 1103**

BID No. CWWDA/AFD/PQ/W4/2022-2023

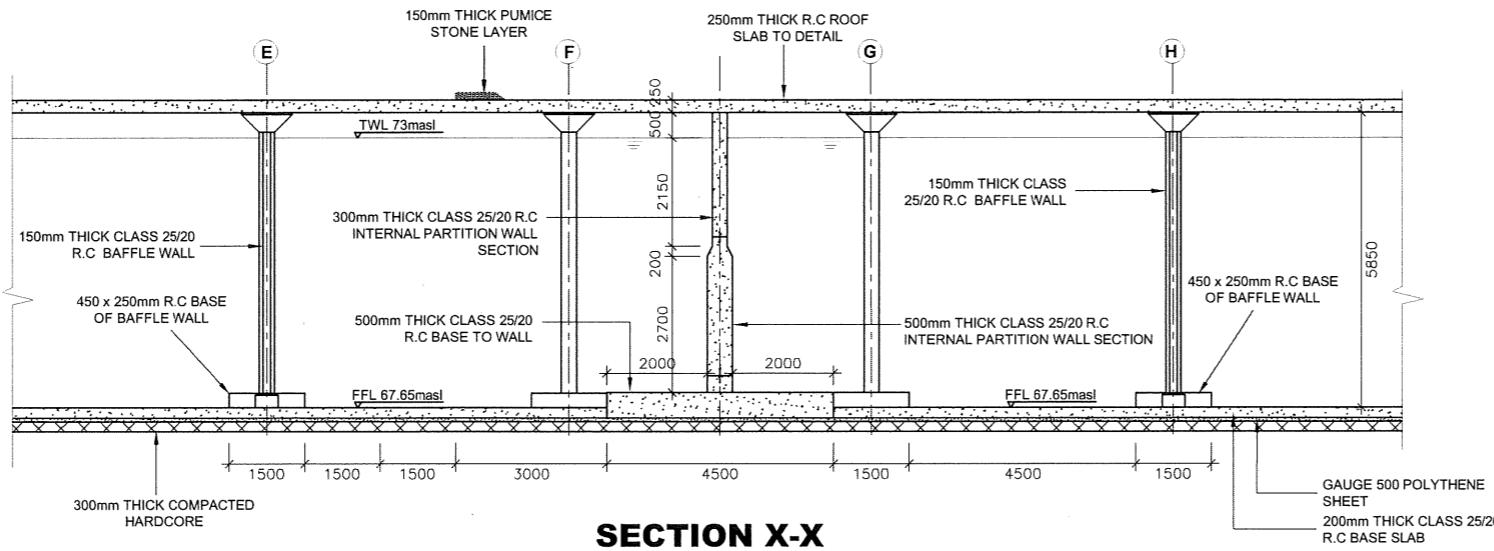
LOT 1: CONSTRUCTION OF THE MWACHE TWIN
TRUNK MAIN (SECTION 1), THE SOUTH
MAINLAND TRANSMISSION PIPELINE AND
DONGO KUNDU RESERVOIR

DRAWING TITLE:
**DONGO KUNDU RESERVOIR 2
(28,000m³)
BASE SLAB
PLAN**

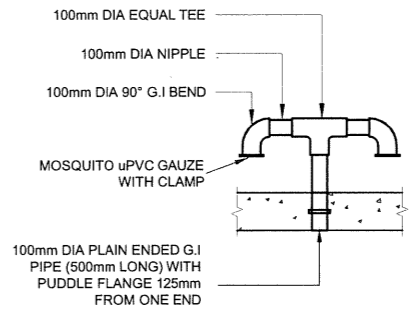
Designed by: E.O.A	Drawn by: V.K
Checked by: R.S.R	Approved by: B.D
Scale: 1:400	Date: APRIL 2024



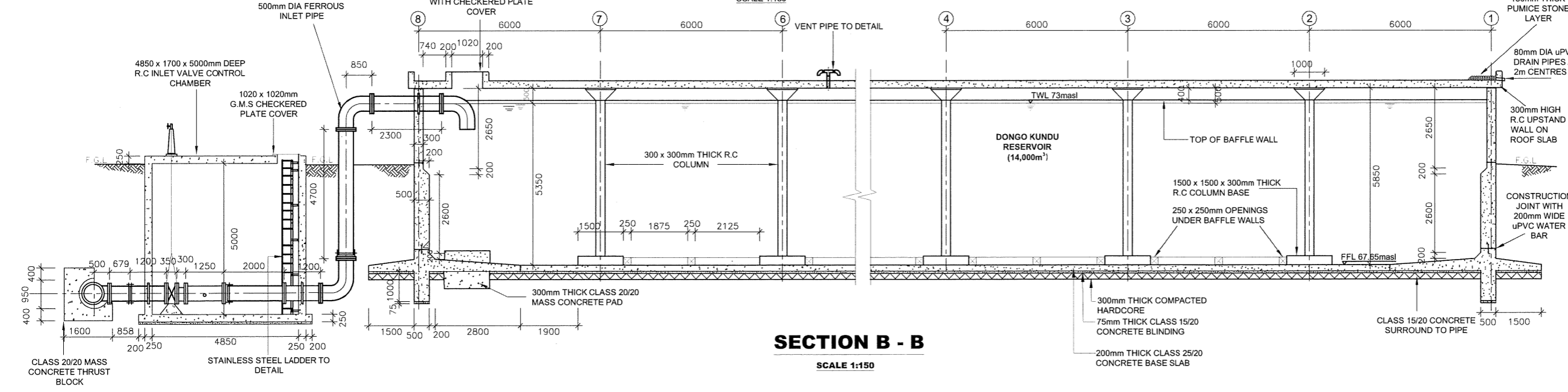
SECTION A - A
SCALE 1:150



SECTION X-X
SCALE 1:150



VENT PIPE DETAIL
SCALE 1:50



SECTION B - B
SCALE 1:150

- NOTES:**
1. ALL DIMENSIONS IN mm UNLESS OTHERWISE STATED
 2. FOR COVER DETAILS, SEE DRG. No. M430/MP/SD/17-18
 3. FOR PIPEWORK DETAILS SEE DRG. Nos. M430/MP/SR/DKR/05-07
 4. FOR STAINLESS STEEL LADDER DETAILS, SEE DRG. No. M430/MP/SD/05-2
 5. ALL REINFORCED CONCRETE IS CLASS 25/20 UNLESS OTHERWISE STATED
 6. ALL EXPOSED CONCRETE EDGES HAVE A 25x25mm CHAMFER
 7. VENT PIPES TO BE INSTALLED AT EVERY ALTERNATE PANEL
 8. ALL ACCESS LADDERS IN STAINLESS STEEL TO SPECIFICATION

ABBREVIATIONS

mm	-	MILLIMETRES
FGL	-	FINISHED GROUND LEVEL
PIL	-	PIPE INVERT LEVEL
DIA	-	DIAMETER
Ø	-	DIAMETER
R.C.	-	REINFORCED CONCRETE
M.S.	-	MILD STEEL
G.M.S.	-	GALVANIZED MILD STEEL
c/c	-	CENTER TO CENTRE
No.	-	NUMBER
TWL	-	TOP WATER LEVEL
masl	-	METRES ABOVE SEA LEVEL
L	-	LENGTH
FFL	-	FINISHED FLOOR LEVEL

REVISIONS				SIGN.	DATE	APPROVED

CLIENT:

THE CHIEF EXECUTIVE OFFICER
COAST WATER WORKS DEVELOPMENT AGENCY
P.O. BOX 90417 - 80100
MOMBASA, KENYA

CONSULTING ENGINEERS:

JOINT VENTURE

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TEL: +254-2-2710500

PROJECT NAME:

IMPROVEMENT OF DRINKING WATER AND SANITATION SYSTEMS IN MOMBASA: MWACHE CKE 1103

BID No. CWWDA/AFD/PQ/W4/2022-2023

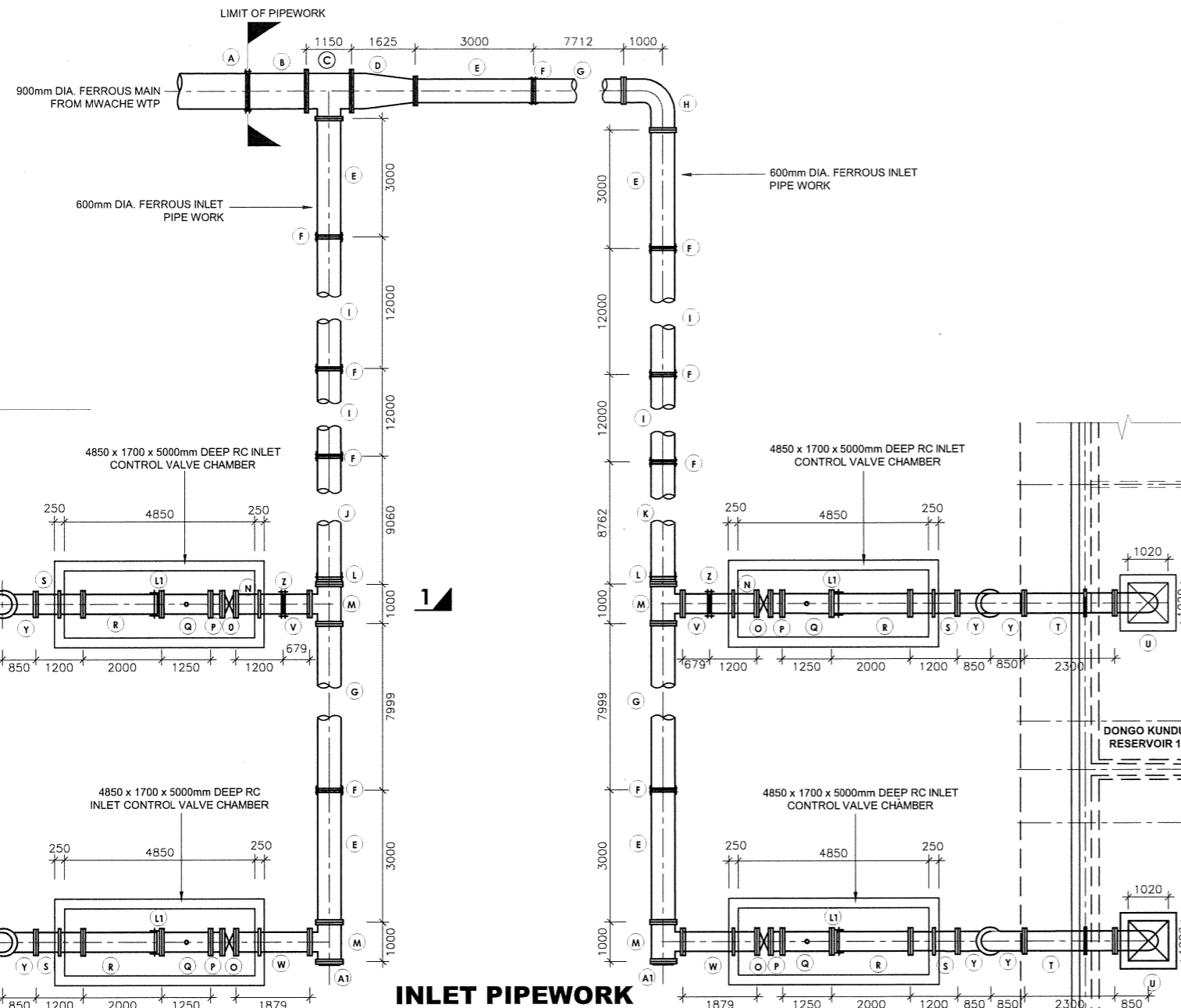
LOT 1: CONSTRUCTION OF THE MWACHE TWIN TRUNK MAIN (SECTION 1), THE SOUTH MAINLAND TRANSMISSION PIPELINE AND DONGO KUNDU RESERVOIR

DRAWING TITLE:

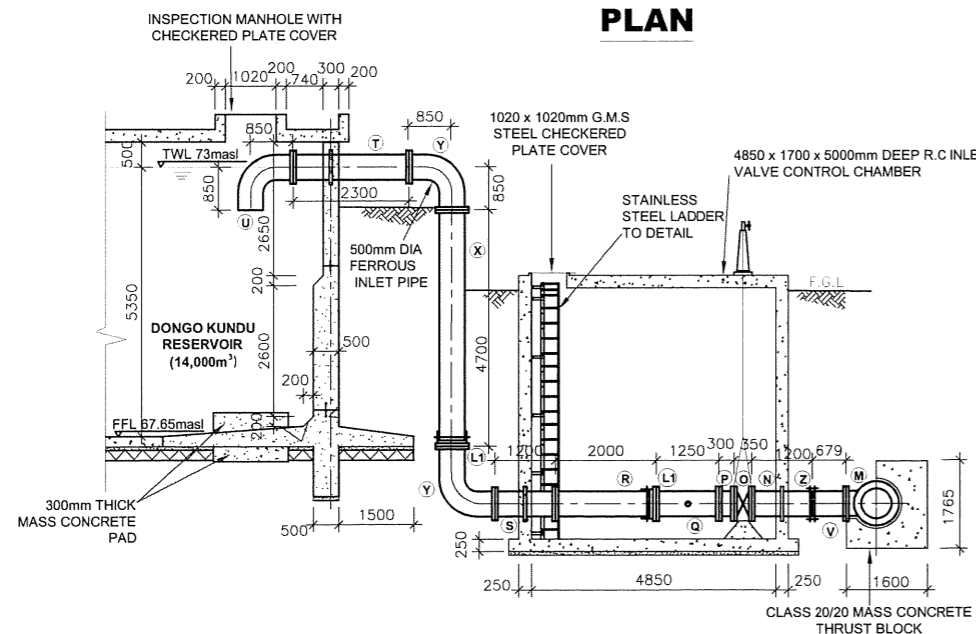
DONGO KUNDU RESERVOIRS (28,000m³)

TYPICAL SECTIONS

Designed by: E.O.A	Drawn by: V.K
Checked by: R.S.R	Approved by: B.D
Scale: AS SHOWN	Date: APRIL 2024
DRAWING No. M430/MP/SR/DKR/04 REV. 0	



INLET PIPEWORK PLAN



SECTION 1 - 1

**INLET PIPEWORK SCHEDULE
(APPROVED LINED FERROUS PIPES AND FITTINGS)**

ITEM No.	DESCRIPTION	DIA. (mm)	LENGTH (mm)	QUANTITY (No.)
A	COUPLING	900	-	1
B	FLANGED SPIGOT PIPE	900	1500	1
C	ALL FLANGED SPECIAL TEE	900Ø	600Ø x 900Ø x 1150	1
D	ALL FLANGED CONCENTRIC TAPER	600Ø	1625 x 900Ø	1
E	FLANGED SPIGOT PIPE	600	3000	5
F	COUPLING	600	-	9
G	FLANGED SPIGOT PIPE (CUT TO SUIT)	600	8000	3
H	ALL FLANGED 90° BEND	600Ø	1000 x 600Ø	1
I	PLAIN ENDED PIPE	600	12000	4
J	PLAIN ENDED PIPE	600	9500	1
K	PLAIN ENDED PIPE	600	9000	1
L	FLANGE ADAPTOR	600	-	2
M	ALL FLANGED SPECIAL TEE	600Ø	500Ø x 600Ø x 920	2
N	FLANGED SPIGOT PIPE WITH PUDDLE FLANGE 600mm FROM FLANGED END	500	1200	2
O	ALL FLANGED BUTTERFLY VALVE WITH EXTENSION SPINDLE, HEADSTOCK AND HANDWHEEL	500	350	4
P	ALL FLANGED DISMANTLING JOINT	500	300	4
Q	ALL FLANGED FLOW CONTROL VALVE WITH INTEGRATED ALTITUDE VALVE FUNCTION	500	1250	4
R	FLANGED SPIGOT PIPE	500	2000	4
S	ALL FLANGED PIPE WITH PUDDLE FLANGE 600mm FROM ONE END	500	1200	4
T	ALL FLANGED PIPE WITH PUDDLE FLANGE 750mm FROM ONE END	500	2300	4
U	FLANGED SPIGOT 90° BEND	500Ø	850 x 500Ø	4
V	FLANGED SPIGOT PIPE (CUT TO SUIT)	500	800	2
W	ALL FLANGED PIPE WITH PUDDLE FLANGE AT 600mm FROM ONE END	500	1900	2
X	FLANGED SPIGOT PIPE	500	4700	4
Y	ALL FLANGED 90° BEND	500Ø	850 x 500Ø	8
Z	COUPLING	500	-	2
A1	BLANK FLANGE	600	-	2
L1	FLANGE ADAPTOR	500	-	8

NOTES:

- ALL DIMENSIONS IN mm UNLESS OTHERWISE STATED
- FOR COVER DETAILS, SEE DRG. No. M430/MP/SD/17-18
- FOR PIPEWORK DETAILS SEE DRG. Nos. M430/MP/SR/DKR/05-07
- FOR STAINLESS STEEL LADDER DETAILS, SEE DRG. No. M430/MP/SD/05-2
- ALL REINFORCED CONCRETE IS CLASS 25/20 UNLESS OTHERWISE STATED
- ALL EXPOSED CONCRETE EDGES HAVE A 25x25mm CHAMFER
- FITTINGS DIMENSIONS BASED ON BS 534 (1990) WHERE APPLICABLE

ABBREVIATIONS

- mm - MILLIMETRES
- FGL - FINISHED GROUND LEVEL
- PIL - PIPE INVERT LEVEL
- DIA - DIAMETER
- Ø - DIAMETER
- R.C. - REINFORCED CONCRETE
- M.S. - MILD STEEL
- G.M.S - GALVANIZED MILD STEEL
- c/c - CENTER TO CENTRE
- No. - NUMBER
- TWL - TOP WATER LEVEL
- masl - METRES ABOVE SEA LEVEL
- L - LENGTH
- FFL - FINISHED FLOOR LEVEL

REVISIONS		SIGN	DATE	APPROVED

CLIENT:

**THE CHIEF EXECUTIVE OFFICER
COAST WATER WORKS DEVELOPMENT
AGENCY**
P.O. BOX 90417 - 80100
MOMBASA, KENYA

CONSULTING ENGINEERS:

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PROJECT NAME:

**IMPROVEMENT OF DRINKING WATER AND
SANITATION SYSTEMS IN MOMBASA:
MWACHE CKE 1103**

BID No. CWWDA/AFD/PQ/W4/2022-2023

**LOT 1: CONSTRUCTION OF THE MWACHE TWIN
TRUNK MAIN (SECTION 1), THE SOUTH
MAINLAND TRANSMISSION PIPELINE AND
DONGO KUNDU RESERVOIR**

DRAWING TITLE:

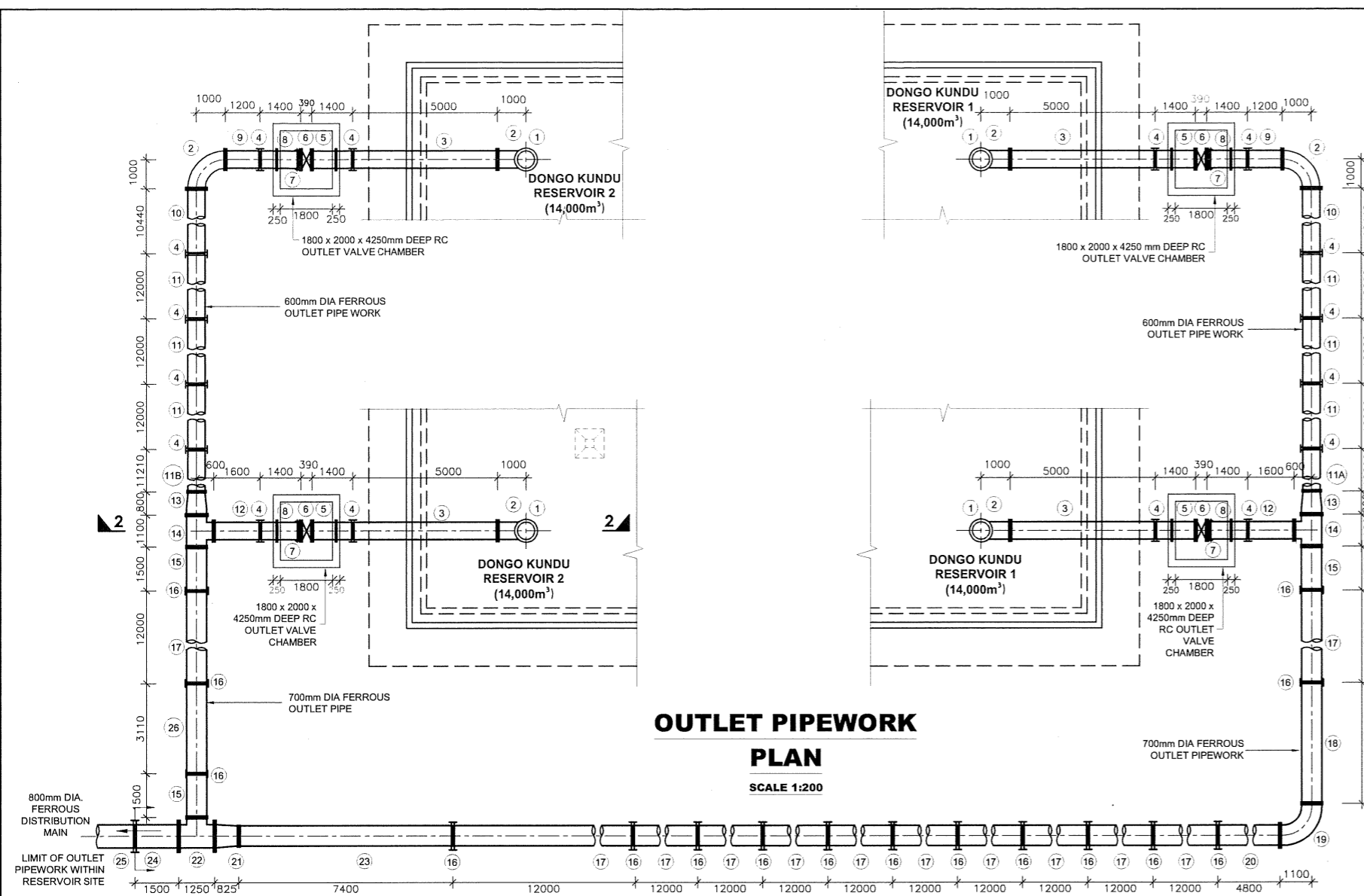
**DONGO KUNDU RESERVOIRS
(28,000m³)**

**INLET PIPEWORK
DETAILS**

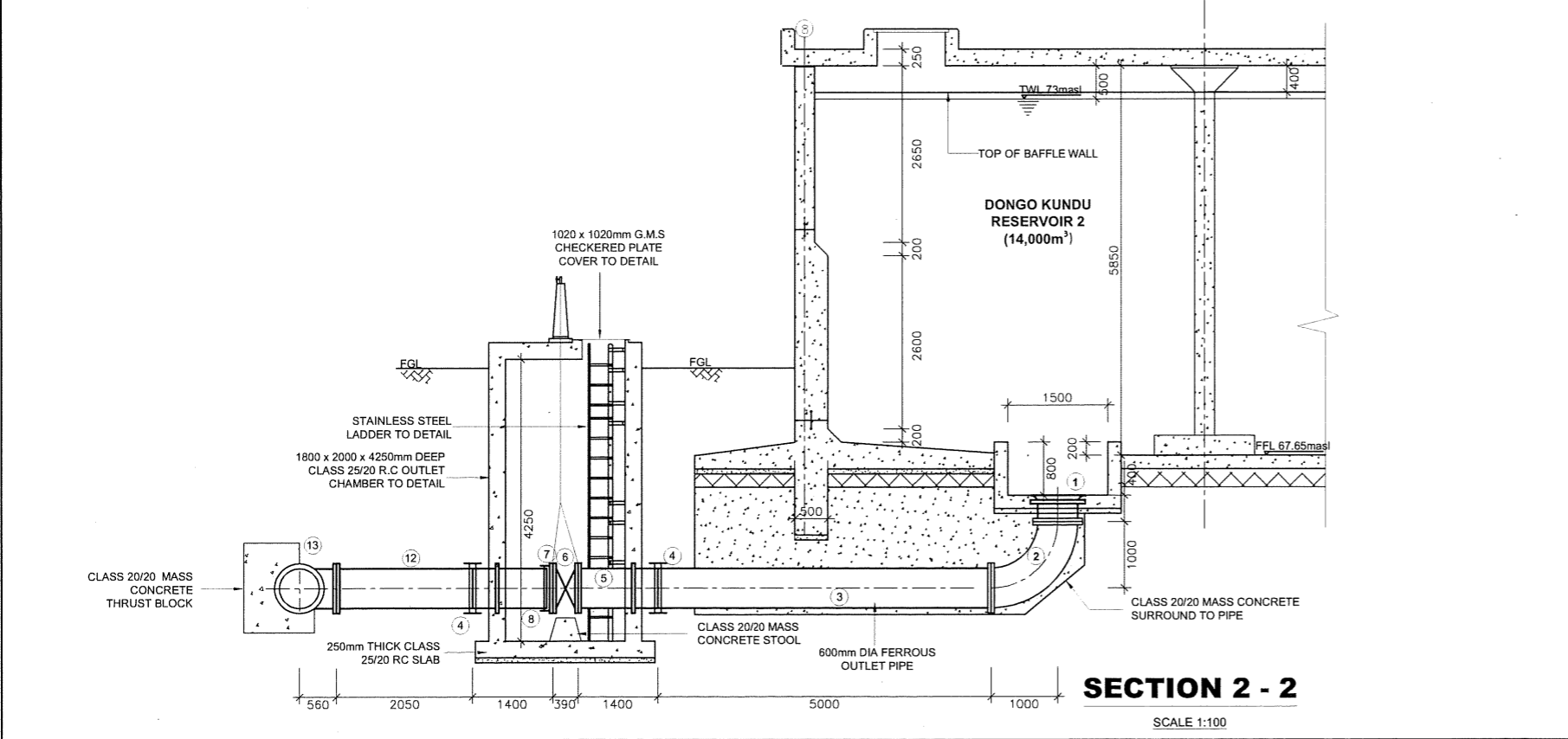
Designed by: E.O.A Drawn by: V.K
Checked by: R.S.R Approved by: B.D

Scale: 1:150 Date: APRIL 2024

DRAWING No. **M430/MP/SR/DKR/05** REV. 0



OUTLET PIPEWORK PLAN
SCALE 1:200



SECTION 2 - 2
SCALE 1:100

OUTLET PIPEWORK SCHEDULE (APPROVED LINED FERROUS PIPES AND FITTINGS)

ITEM No.	DESCRIPTION	DIA. (mm)	LENGTH (mm)	QUANTITY (No.)
1	SPECIAL FLANGED BELLMOUTH WITH PUDDLE FLANGE 300mm FROM FLANGED END	600	400	4
2	ALL FLANGED 90° BEND	600	1000	6
3	FLANGED SPIGOT PIPE	600	5000	4
4	COUPLING	600	-	15
5	FLANGED SPIGOT PIPE WITH A PUDDLE FLANGE 800mm FROM FLANGED END	600	1400	4
6	ALL FLANGED BUTTERFLY VALVE WITH EXTENSION SPINDLE, HEADSTOCK AND HANDWHEEL	600	390	4
7	FLANGE ADAPTOR	600	-	4
8	PLAIN ENDED PIPE WITH A PUDDLE FLANGE 800mm FROM ONE END	600	1400	4
9	FLANGED SPIGOT PIPE	600	1200	2
10	FLANGED SPIGOT PIPE (CUT TO SUIT)	600	10600	2
11	PLAIN ENDED PIPE	600	12000	6
11A	FLANGED SPIGOT PIPE	600	12000	1
11B	FLANGED SPIGOT PIPE	600	11300	1
12	FLANGED SPIGOT PIPE (CUT TO SUIT)	600	2000	2
13	ALL FLANGED CONCENTRIC TAPER	700	800	2
14	ALL FLANGED SPECIAL TEE	700	1100	2
15	FLANGED SPIGOT PIPE	700	1500	3
16	COUPLING	700	-	16
17	PLAIN ENDED PIPE	700	12000	12
18	FLANGED SPIGOT PIPE (CUT TO SUIT)	700	4300	1
19	ALL FLANGED 90° BEND	700	1100	1
20	FLANGED SPIGOT PIPE (CUT TO SUIT)	700	5000	1
21	ALL FLANGED CONCENTRIC TAPER	800	825	1
22	ALL FLANGED SPECIAL TEE	800	1250	1
23	FLANGED SPIGOT PIPE	700	7400	1
24	FLANGED SPIGOT PIPE	800	1500	1
25	COUPLING	800	-	1
26	PLAIN ENDED PIPE	600	3200	1

- NOTES:**
- ALL DIMENSIONS IN mm UNLESS OTHERWISE STATED
 - FOR COVER DETAILS, SEE DRG. No. M430/MP/SD/17-18
 - FOR PIPEWORK DETAILS SEE DRG. Nos. M430/MP/SR/DKR/05-07
 - FOR STAINLESS STEEL LADDER DETAILS, SEE DRG. No. M430/MP/SD/05-2
 - ALL REINFORCED CONCRETE IS CLASS 25/20 UNLESS OTHERWISE STATED
 - ALL EXPOSED CONCRETE EDGES HAVE A 25x25mm CHAMFER
 - FITTINGS DIMENSIONS BASED ON BS 534 (1990) WHERE APPLICABLE

- ABBREVIATIONS**
- mm - MILLIMETRES
 - FGL - FINISHED GROUND LEVEL
 - PIL - PIPE INVERT LEVEL
 - DIA - DIAMETER
 - Ø - DIAMETER
 - R.C. - REINFORCED CONCRETE
 - M.S. - MILD STEEL
 - c/c - CENTER TO CENTRE
 - No. - NUMBER
 - L - LENGTH
 - G.M.S. - GALVANIZED MILD STEEL
 - FFL - FINISHED FLOOR LEVEL

REVISIONS		SN	DATE	APPROVED

CLIENT:

THE CHIEF EXECUTIVE OFFICER
COAST WATER WORKS DEVELOPMENT AGENCY
P.O. BOX 90417 - 80100
MOMBASA, KENYA

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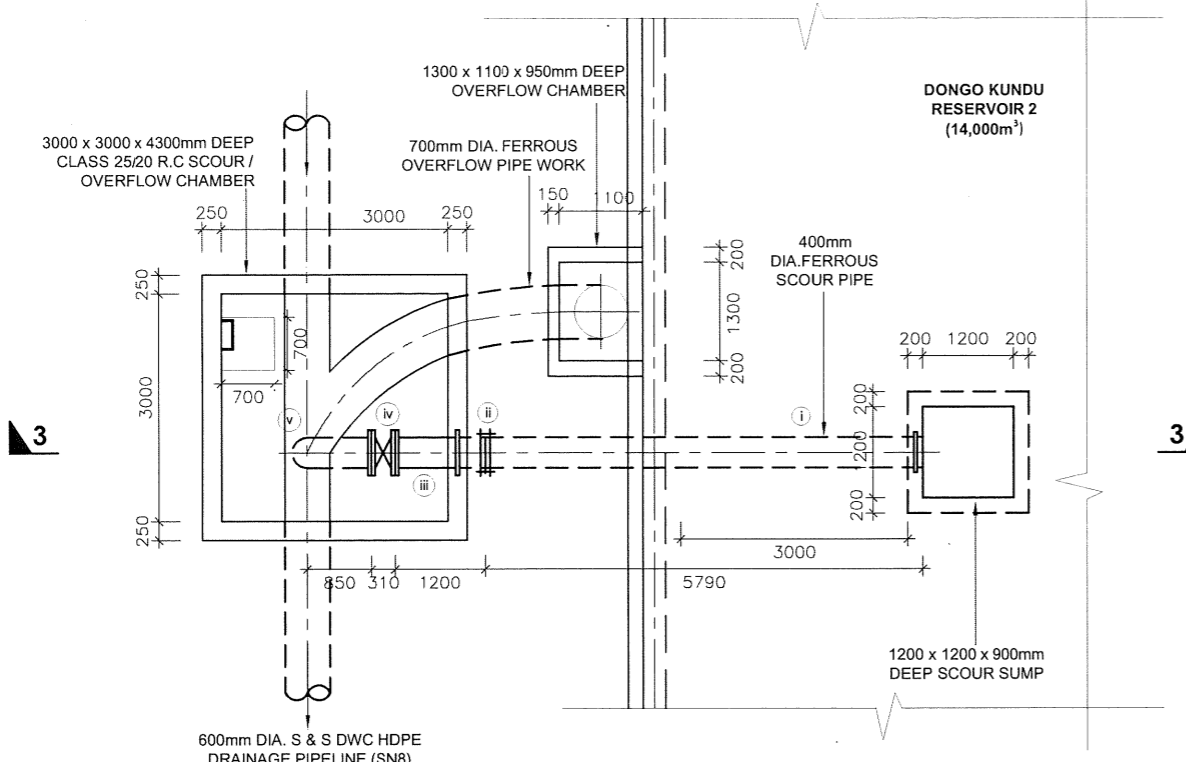
PROJECT NAME:
IMPROVEMENT OF DRINKING WATER AND SANITATION SYSTEMS IN MOMBASA: MWACHE CKE 1103

BID No. CWWDA/AFD/PQ/W4/2022-2023

LOT 1: CONSTRUCTION OF THE MWACHE TWIN TRUNK MAIN (SECTION 1), THE SOUTH MAINLAND TRANSMISSION PIPELINE AND DONGO KUNDU RESERVOIR

DRAWING TITLE:
DONGO KUNDU RESERVOIRS (28,000m³)
OUTLET PIPEWORK DETAILS

Designed by: E.O.A Drawn by: V.K
Checked by: R.S.R Approved by: B.D
Scale: AS SHOWN Date: APRIL 2024
DRAWING No. **M430/MP/SR/DKR/06** REV. 0



SCOUR AND OVERFLOW PIPEWORK PLAN

**SCOUR PIPEWORK SCHEDULE
(APPROVED LINED FERROUS PIPES AND FITTINGS)**

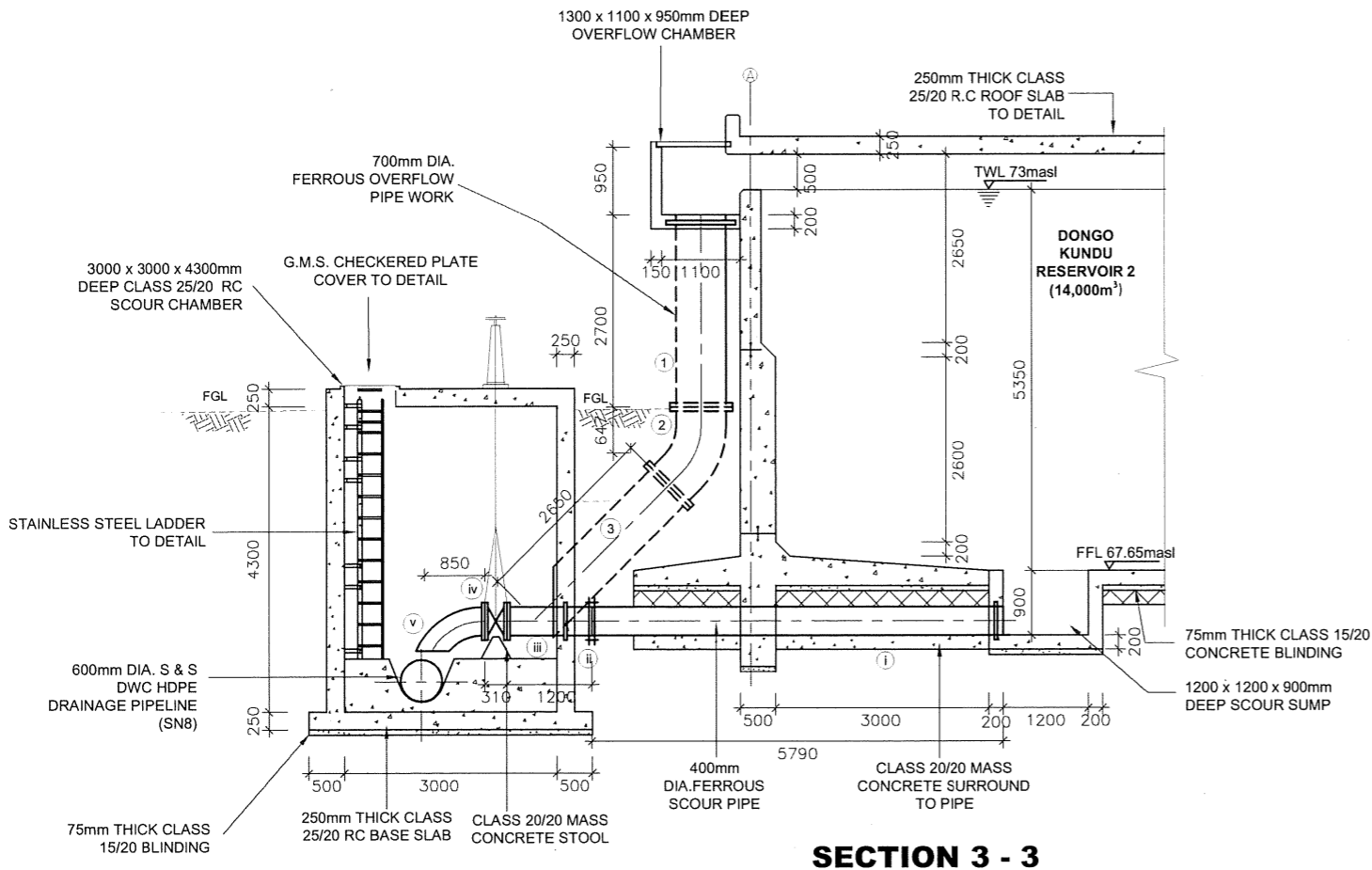
ITEM No.	DESCRIPTION	DIA. (mm)	LENGTH (mm)	QUANTITY (No.)
(i)	PLAIN ENDED PIPE WITH PUDDLE FLANGE AT 100mm FROM ONE END	400	5500	4
(ii)	COUPLING	400	-	4
(iii)	FLANGED SPIGOT PIPE WITH PUDDLE FLANGE AT 540mm FROM FLANGED END	400	1200	4
(iv)	ALL FLANGED BUTTERFLY VALVE WITH EXTENSION SPINDLE, HEADSTOCK AND HANDWHEEL	400	310	4
(v)	FLANGED SPIGOT 90° BEND (PLAIN END CUT TO SUIT)		-	4

NOTES:

- ALL DIMENSIONS IN mm UNLESS OTHERWISE STATED
- FOR COVER DETAILS, SEE DRG. No. M430/MP/SD/17-18
- FOR PIPEWORK DETAILS SEE DRG. Nos.M430/MP/SR/DKR/05-07
- FOR STAINLESS STEEL LADDER DETAILS, SEE DRG. No. M430/MP/SD/05-2
- ALL REINFORCED CONCRETE IS CLASS 25/20 UNLESS OTHERWISE STATED
- ALL EXPOSED CONCRETE EDGES HAVE A 25x25mm CHAMFER

ABBREVIATIONS

mm	-	MILLIMETRES
FGL	-	FINISHED GROUND LEVEL
PIL	-	PIPE INVERT LEVEL
DIA	-	DIAMETER
Ø	-	DIAMETER
R.C.	-	REINFORCED CONCRETE
M.S.	-	MILD STEEL
c/c	-	CENTER TO CENTRE
No.	-	NUMBER
TWL	-	TOP WATER LEVEL
masl	-	METRES ABOVE SEA LEVEL
G.M.S	-	GALVANIZED MILD STEEL
L	-	LENGTH
FFL	-	FINISHED FLOOR LEVEL



SECTION 3 - 3

**OVERFLOW PIPEWORK SCHEDULE
(APPROVED LINED FERROUS PIPES AND FITTINGS)**

ITEM No.	DESCRIPTION	DIA. (mm)	LENGTH (mm)	QUANTITY (No.)
(1)	FLANGED SPIGOT PIPE WITH PUDDLE FLANGE AT 100mm FROM SPIGOT END	700	2700	4
(2)	ALL FLANGED SPECIAL 45° BEND		-	4
(3)	FLANGED SPIGOT PIPE WITH SPIGOT END BEVELED	700	2650	4

CLIENT:

**THE CHIEF EXECUTIVE OFFICER
COAST WATER WORKS DEVELOPMENT
AGENCY**
P.O. BOX 90417 - 80100
MOMBASA, KENYA

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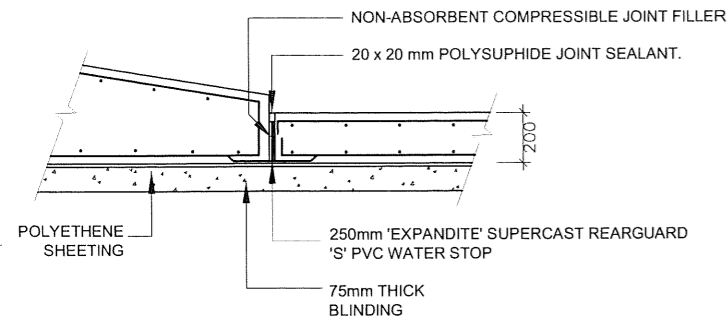
PROJECT NAME:
**IMPROVEMENT OF DRINKING WATER AND
SANITATION SYSTEMS IN MOMBASA:
MWACHE CKE 1103**

BID No. CWWDA/AFD/PQ/W4/2022-2023

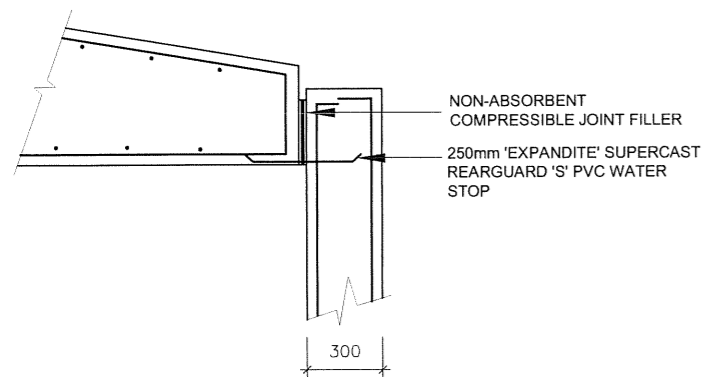
**LOT 1: CONSTRUCTION OF THE MWACHE TWIN
TRUNK MAIN (SECTION 1), THE SOUTH
MAINLAND TRANSMISSION PIPELINE AND
DONGO KUNDU RESERVOIR**

DRAWING TITLE:
**DONGO KUNDU RESERVOIRS
(28,000m³)**
**SCOUR AND OVERFLOW
PIPEWORK DETAILS**

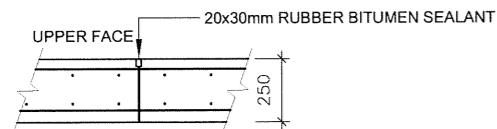
Designed by: E.O.A	Drawn by: V.K
Checked by: R.S.R	Approved by: B.D
Scale: 1:100	Date: APRIL 2024
Drawing No. M430/MP/SR/DKR/07	REV. 0



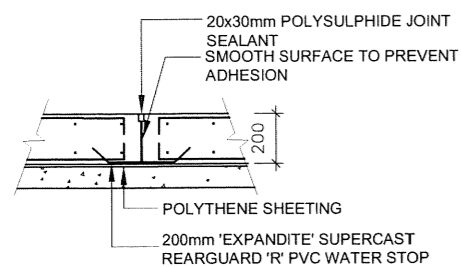
**EXPANSION JOINT WALL
BASE/ FLOOR**



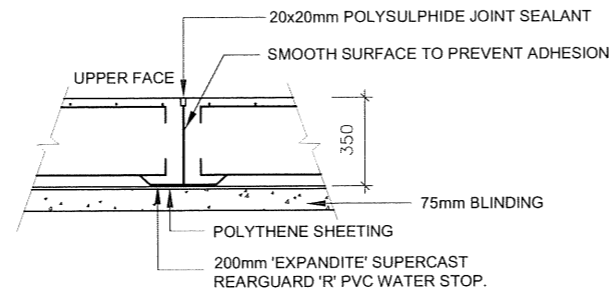
**EXPANSION JOINT WALL BASE/
SUMP**



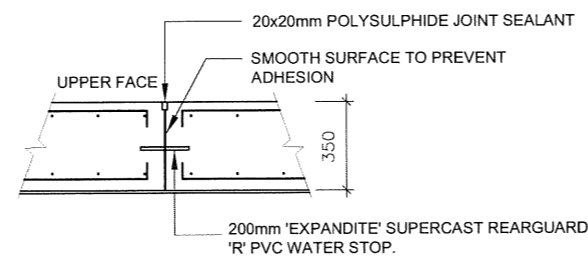
**CONSTRUCTION JOINT IN
ROOF**



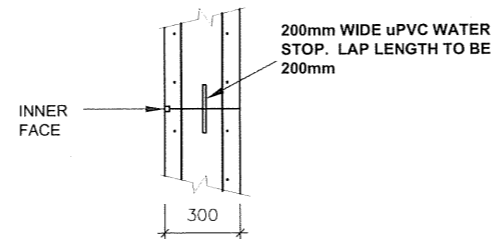
**FULL CONTRACTION JOINT IN
FLOOR**



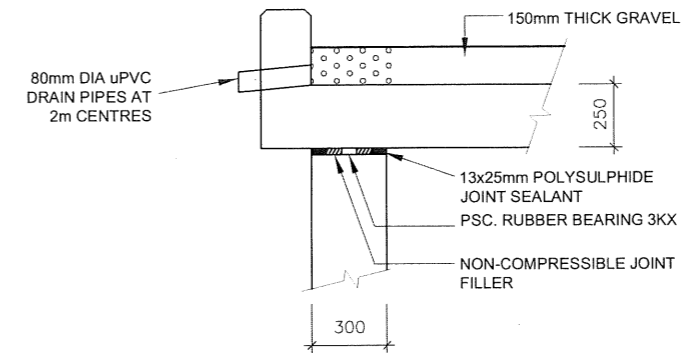
**FULL CONTRACTION JOINT IN
WALL BASE**



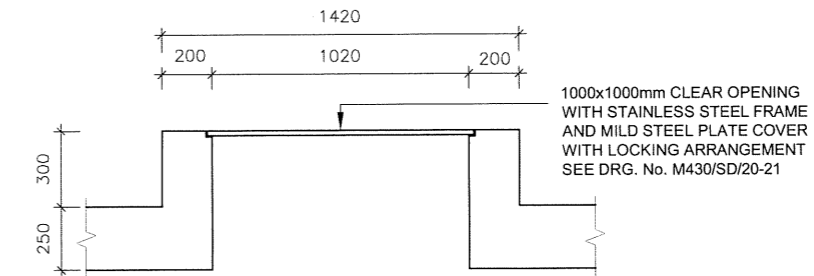
**FULL CONTRACTION JOINT IN
WALL**



**HORIZONTAL CONSTRUCTION
JOINT IN WALL**



WALL - ROOF JOINT




**TYPICAL ACCESS MANHOLE
DETAIL**

NOTES:

1. ALL DIMENSIONS IN mm UNLESS OTHERWISE STATED
2. WATER STOPS USED DURING CONSTRUCTION
 - CONSTRUCTION JOINTS ON FLOOR SLAB -
 - CONSTRUCTION JOINTS ON VERTICAL WALLS -
 - CONSTRUCTION JOINTS ON ROOF SLAB
 - PARTIAL CONTRACTION JOINT ON WALL BASE -
 - EXPANSION JOINT ON WALL BASE -
 - EXPANSION JOINT ON VERTICAL WALLS -

R E V I S I O N S		SIGN	DATE	APPROVED
	BY	CHECKED		
	BY	CHECKED		
	BY	CHECKED		
	BY	CHECKED		

CLIENT:

THE CHIEF EXECUTIVE OFFICER
 COAST WATER WORKS DEVELOPMENT AGENCY
 P.O. BOX 90417 - 80100
 MOMBASA, KENYA

CONSULTING ENGINEERS:
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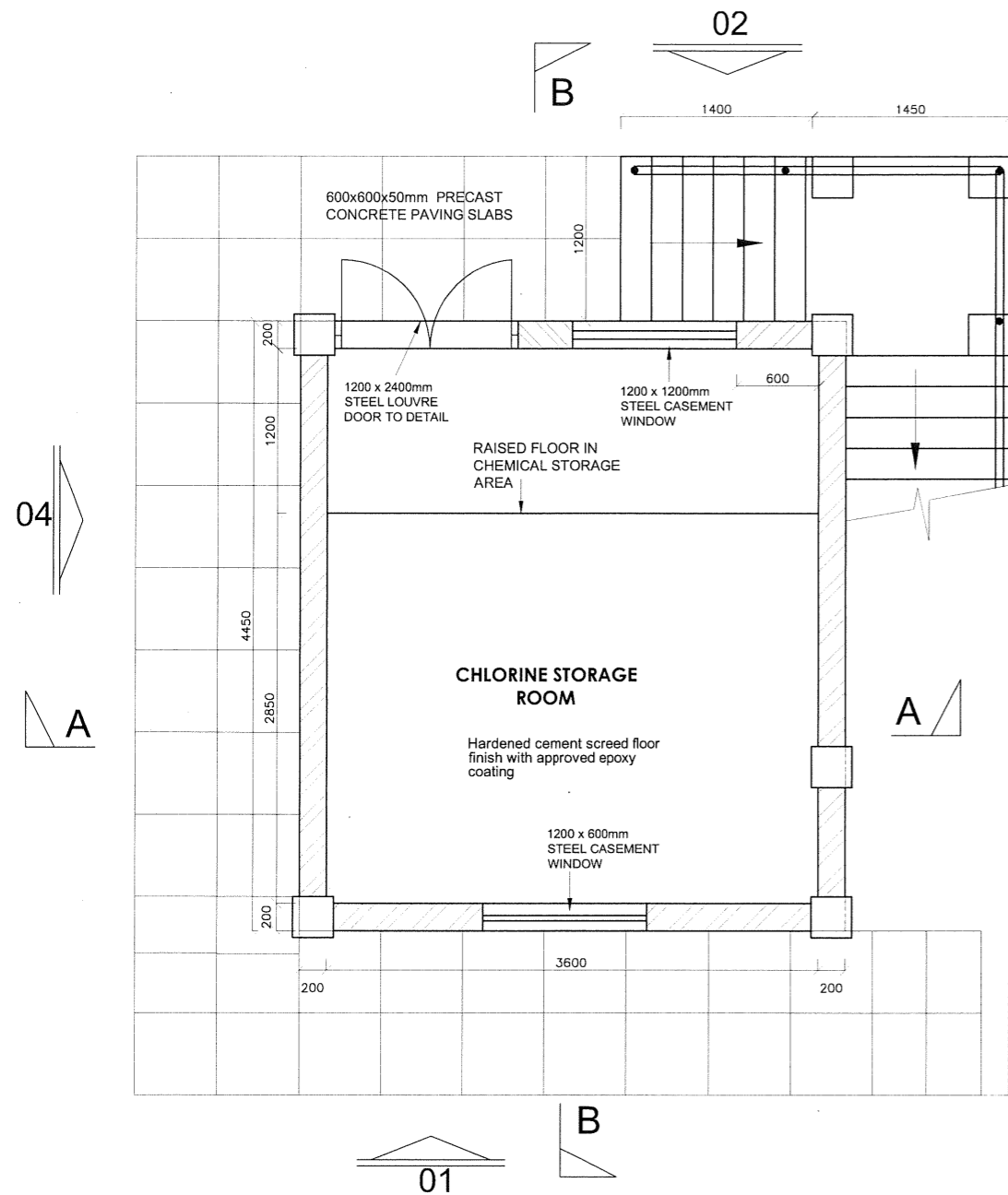
PROJECT NAME:
**IMPROVEMENT OF DRINKING WATER AND
 SANITATION SYSTEMS IN MOMBASA:
 MWACHE CKE 1103**

BID No. CWWDA/AFD/PQ/W4/2022-2023
 LOT 1: CONSTRUCTION OF THE MWACHE
 TWIN TRUNK MAIN (SECTION 1), THE SOUTH
 MAINLAND TRANSMISSION PIPELINE AND
 DONGO KUNDU RESERVOIR

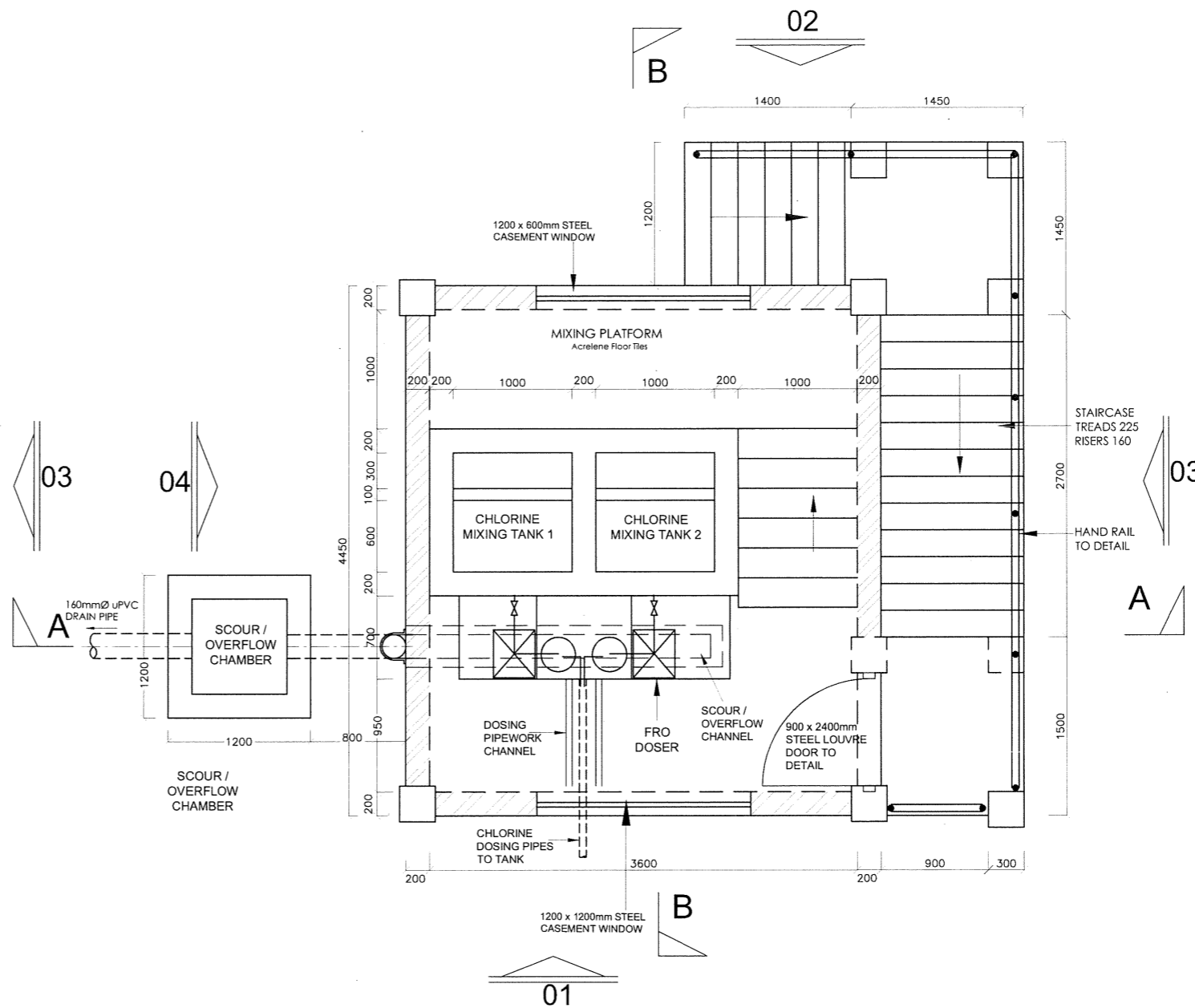
DRAWING TITLE:
**DONGO KUNDU RESERVOIRS
 (14,000m³)**
 MISCELLANEOUS DETAILS AT
 JOINTS

Designed by: E.O.A	Drawn by: V.K
Checked by: R.S.R	Approved by: B.D
Scale: 1:30	Date: APRIL 2024
DRAWING No. M430/MP/SR/DKR/08 REV. 0	

**CHLORINE STORAGE AND
MIXING BUILDING**



**GROUND FLOOR PLAN
(CHLORINE STORAGE ROOM)**





**FIRST FLOOR PLAN
(CHLORINE MIXING AREA)**

NOTES:

1. DIMENSIONS IN mm UNLESS OTHERWISE SPECIFIED
2. ALL EXPOSED CONCRETE EDGES TO HAVE A 25mm x 25mm CHAMFER
3. CONCRETE WORKS: ALL REINFORCED CONCRETE TO BE CLASS 25/20 EXCEPT WHERE OTHERWISE SPECIFIED
4. EDGES OF TREADS AND RISERS IN CONCRETE STAIRCASE TO BE PROTECTED WITH 40 x 40 x 3mm M.S. ANGLE FIXED WITH FISH TAIL LUGS EMBEDDED IN CONCRETE
5. FLOOR FINISHES - APPROVED CERAMIC FLOOR TILES.
6. ALL CONCRETE SURFACES IN CONTACT WITH CHEMICALS SUCH AS INTERNAL TANK SURFACES SHALL BE LINED WITH APPROVED 20mm EPOXY APPLICATION OR APPROVED EQUIVALENT
7. ALL FLOORS AND LANDINGS IN THE CHEMICAL MIXING AREA TO BE FINISHED WITH ACIRELENE TILES EXCEPT THE FLOOR UNDER THE MIXING PLATFORM WHICH IS TO BE PAINTED WITH APPROVED SOLVENT FREE HIGHLY CHEMICAL RESISTANT EPOXY PAINT

REVISIONS		SIGN	DATE	APPROVED
BY	CHECKED			
BY	CHECKED			
BY	CHECKED			

CLIENT:

THE CHIEF EXECUTIVE OFFICER
COAST WATER WORKS DEVELOPMENT AGENCY
 P.O. BOX 90417 - 80100
 MOMBASA, KENYA

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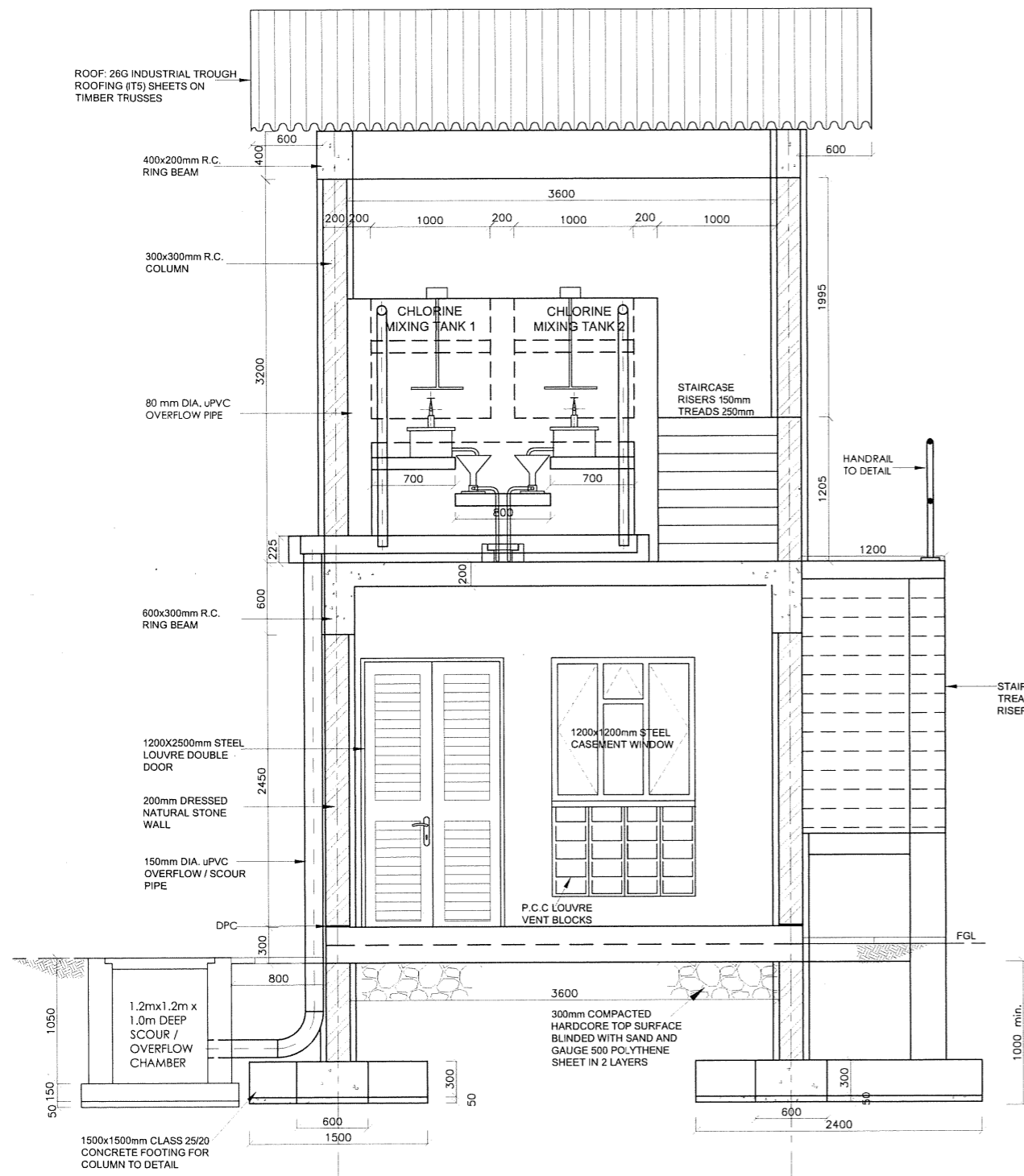
PROJECT NAME:
IMPROVEMENT OF DRINKING WATER AND SANITATION SYSTEMS IN MOMBASA: MWACHE CKE 1103

TENDER No. CWWDA/AFD/PQ/W4/2022-2023
CONSTRUCTION OF THE MWACHE TRUNK MAIN(SECTION 1) AND SOUTH MAINLAND TRANSMISSION MAIN

DETAILED DESIGN
 DRAWING TITLE:
**DONGO KUNDU RESERVOIR SITE
 CHLORINE STORAGE AND MIXING BUILDING
 FLOOR PLANS**

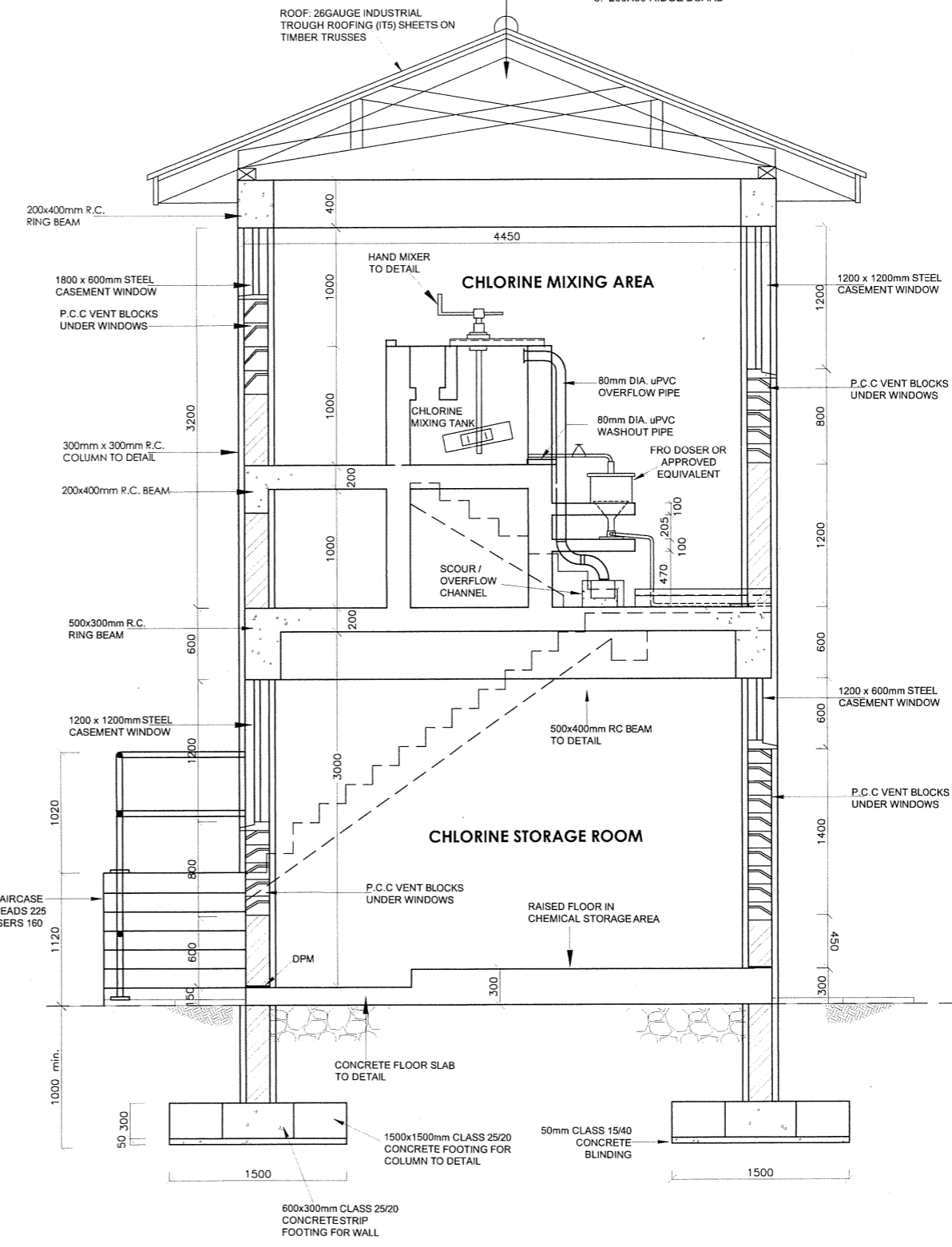
Designed by: E.O.A.	Drawn by: P.N.M
Checked by: N.H	Approved by: R.S.R
Scale: 1:50	Date: APRIL 2024

ROOF: 26G INDUSTRIAL TROUGH ROOFING (ITS) SHEETS ON TIMBER TRUSSES



SECTION A-A


- ROOF**
ROOF: 26G INDUSTRIAL TROUGH ROOFING (ITS) SHEETS ON:
1. TIMBER TRUSSES AT APPROX. 1800 C/C
- 150X50 RAFTERS AND TIE BEAM
- 100X50 STRUTS
 2. 150X50 PURLINS AT 1500 C/C
 3. 150X50 INTERMEDIATE RAFTERS BETWEEN TRUSSES AT 600 C/C
 4. 40X40 BATTENS AT 300 C/C
 5. 200X50 RIDGE BOARD



SECTION B-B

- NOTES:**
1. DIMENSIONS IN mm UNLESS OTHERWISE SPECIFIED
 2. ALL EXPOSED CONCRETE EDGES TO HAVE A 25mm x 25mm CHAMFER
 3. CONCRETE WORKS: ALL REINFORCED CONCRETE TO BE CLASS 25/20 EXCEPT WHERE OTHERWISE SPECIFIED
 4. ABBREVIATIONS
R.C - REINFORCED CONCRETE
D.P.C - DAMP PROOF COURSE
E.G.L - EXISTING GROUND LEVEL
F.G.L - FINISHED GROUND LEVEL
F.F.L - FINISHED FLOOR LEVEL
P.C.C - PRECAST CONCRETE
G.C.I - GALVANIZED CORRUGATED IRON
 5. EDGES OF TREADS AND RISERS IN CONCRETE STAIRCASE TO BE PROTECTED WITH 40 x 40 x 3mm M.S. ANGLE FIXED WITH FISH TAIL LUGS EMBEDDED IN CONCRETE
 6. ALL VENT BLOCKS UNDER WINDOWS TO BE PROVIDED WITH PVC GAUZE IN TIMBER FRAMING
 7. ALL INTERNAL SURFACES OF MIXING TANKS TO BE LINED WITH THREE COATS OF APPROVED EPOXY LINING
 8. DETAIL OF DOSER PLATFORM IS SHOWN FOR FRO TYPE DOSERS. IF DIFFERENT TYPE OF DOSER IS PROPOSED, CONTRACTOR TO SUBMIT TO ENGINEER DETAILS OF DOSER AND SUITABLE PLATFORM(S) BEFORE COMMENCING CONSTRUCTION OF MIXING TANK WALLS.

REVISIONS				
NO.	DESCRIPTION	SIGN	DATE	APPROVED

CLIENT:
 **THE CHIEF EXECUTIVE OFFICER**
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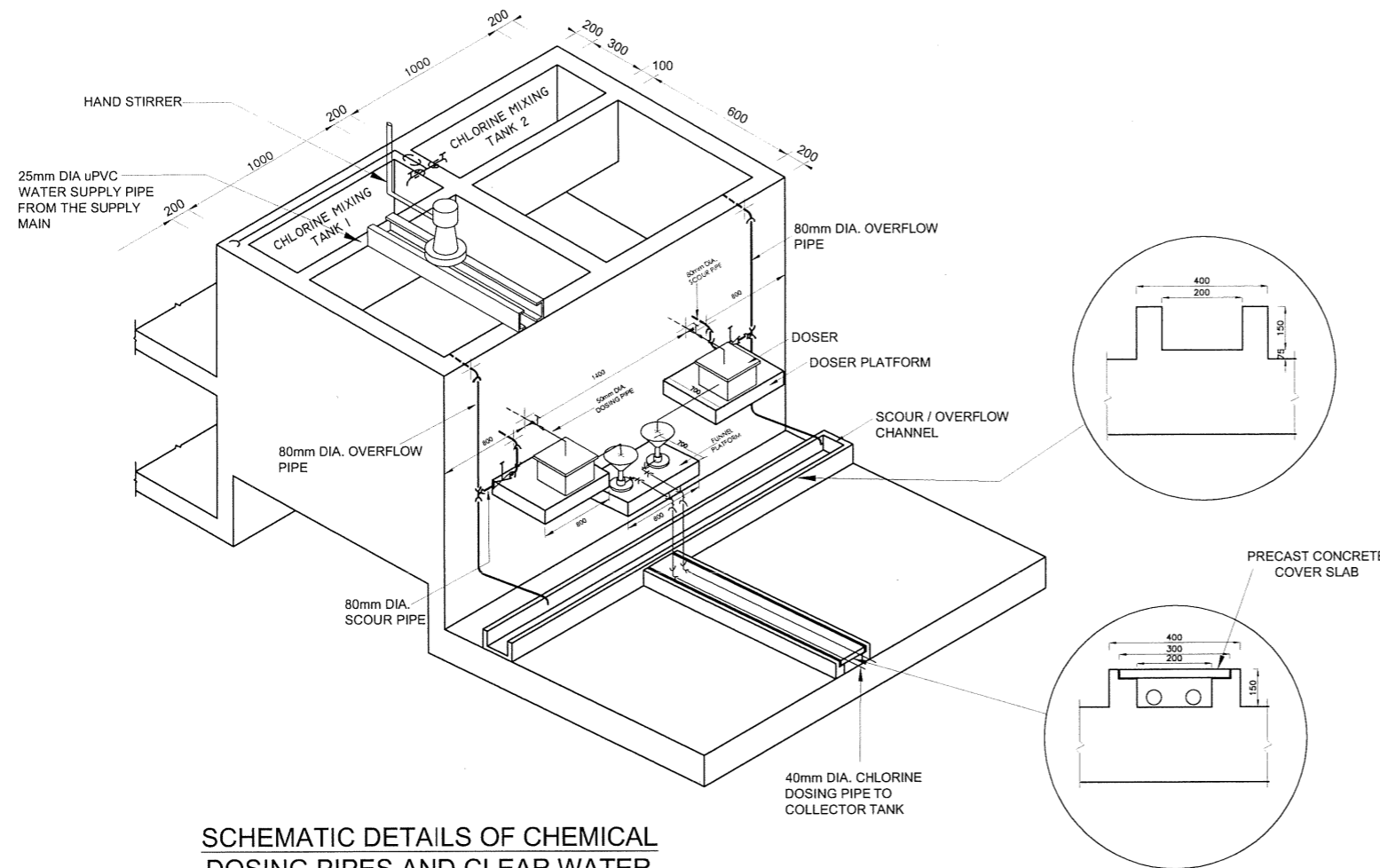
PROJECT NAME:
IMPROVEMENT OF DRINKING WATER AND SANITATION SYSTEMS IN MOMBASA: MWACHE CKE 1103

TENDER No. CWWDAJAFD/PQ/W4/2022-2023
CONSTRUCTION OF THE MWACHE TRUNK MAIN(SECTION 1) AND SOUTH MAINLAND TRANSMISSION MAIN

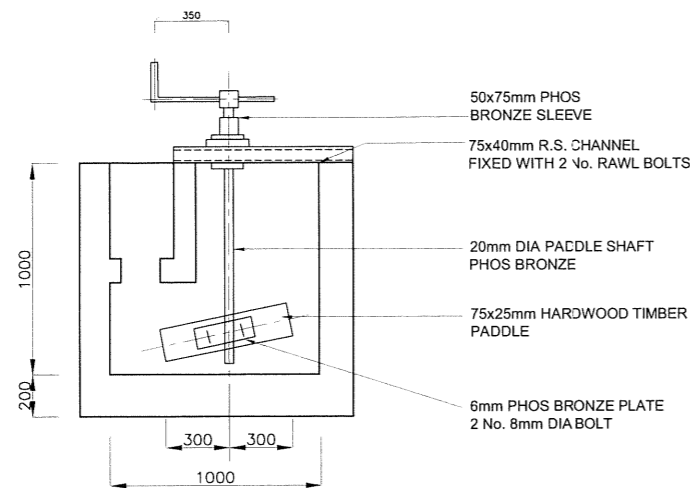
DETAILED DESIGN
DRAWING TITLE:
DONGO KUNDU RESERVOIR SITE
CHLORINE STORAGE AND MIXING BUILDING SECTIONS

Designed by: E.O.A.	Drawn by: P.N.M
Checked by: N.H	Approved by: R.S.R
Scale: 1:50	Date: APRIL 2024

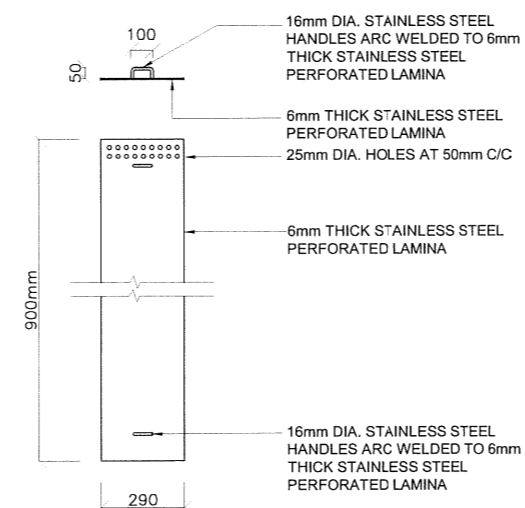
PROJECT NO: **M430/MP/SR/DK/CSMB/02** | REV. 0



SCHEMATIC DETAILS OF CHEMICAL DOSING PIPES AND CLEAR WATER SUPPLY TO MIXING TANKS



DETAILS OF HAND STIRRER IN MIXING TANKS



SECTION AND PLAN OF CHEMICAL MIXING TRAY

NOTES:

1. CHLORINE DOSING PIPES SHALL BE REINFORCED NYLON PIPES OR UPVC AS INDICATED ON DETAILS
2. SHOP DRAWINGS FOR PIPEWORK TO BE SUBMITTED TO THE ENGINEER FOR APPROVAL BEFORE FABRICATION

LEGEND FOR ISOMETRIC DETAILS OF CLEAR WATER SUPPLY TO CHEMICAL MIXING TANKS

- UPVC PIPE
- ⌋ UPVC SOCKETED TEE
- ⌋ UPVC SOCKETED BEND
- = SOCKET OR COUPLER
- ⌋ UPVC TAP

LEGEND FOR ISOMETRIC DETAILS OF CHEMICAL DOSING PIPEWORK

- UPVC PIPE
- ⌋ UPVC FEMALE THREADED STOP VALVE (SAUNDERS VALVES)
- ⌋ UPVC SOCKETED TEE
- ⌋ UPVC SOCKETED BEND WITH RODING EYE

LEGEND FOR ISOMETRIC DETAILS OF OVERFLOW PIPEWORK

- UPVC PIPE
- ⌋ UPVC SOCKETED BEND (90°)


LEGEND FOR ISOMETRIC DETAILS OF SCOUR PIPEWORK

- UPVC PIPE
- ⌋ UPVC FEMALE THREADED STOP VALVE (SAUNDERS VALVES)
- ⌋ UPVC SOCKETED BEND
- ⌋ UPVC SIGOT BEND WITH ONE END THREADED

NOTES:

1. DIMENSIONS IN mm UNLESS OTHERWISE SPECIFIED
2. ALL EXPOSED CONCRETE EDGES TO HAVE A 25mm x 25mm CHAMFER
3. CONCRETE WORKS: ALL REINFORCED CONCRETE TO BE CLASS 25/20 EXCEPT WHERE OTHERWISE SPECIFIED
4. ABBREVIATIONS
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P.C.C - PRECAST CONCRETE
G.C.I - GALVANIZED CORRUGATED IRON
5. EDGES OF TREADS AND RISERS IN CONCRETE STAIRCASE TO BE PROTECTED WITH 40 x 40 x 3mm M.S. ANGLE FIXED WITH FISH TAIL LUGS EMBEDDED IN CONCRETE
6. ALL VENT BLOCKS UNDER WINDOWS TO BE PROVIDED WITH PVC GAUZE IN TIMBER FRAMING
7. ALL INTERNAL SURFACES OF MIXING TANKS TO BE LINED WITH THREE COATS OF APPROVED EPOXY LINING
8. DETAIL OF DOSER PLATFORM IS SHOWN FOR FRO TYPE DOSERS. IF DIFFERENT TYPE OF DOSER IS PROPOSED, CONTRACTOR TO SUBMIT TO ENGINEER DETAILS OF DOSER AND SUITABLE PLATFORM(S) BEFORE COMMENCING CONSTRUCTION OF MIXING TANK WALLS.

REVISIONS				SIGN	DATE	APPROVED

CLIENT:
 **THE CHIEF EXECUTIVE OFFICER**
COAST WATER WORKS DEVELOPMENT AGENCY
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MOMBASA, KENYA

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PROJECT NAME:
IMPROVEMENT OF DRINKING WATER AND SANITATION SYSTEMS IN MOMBASA: MWACHE CKE 1103

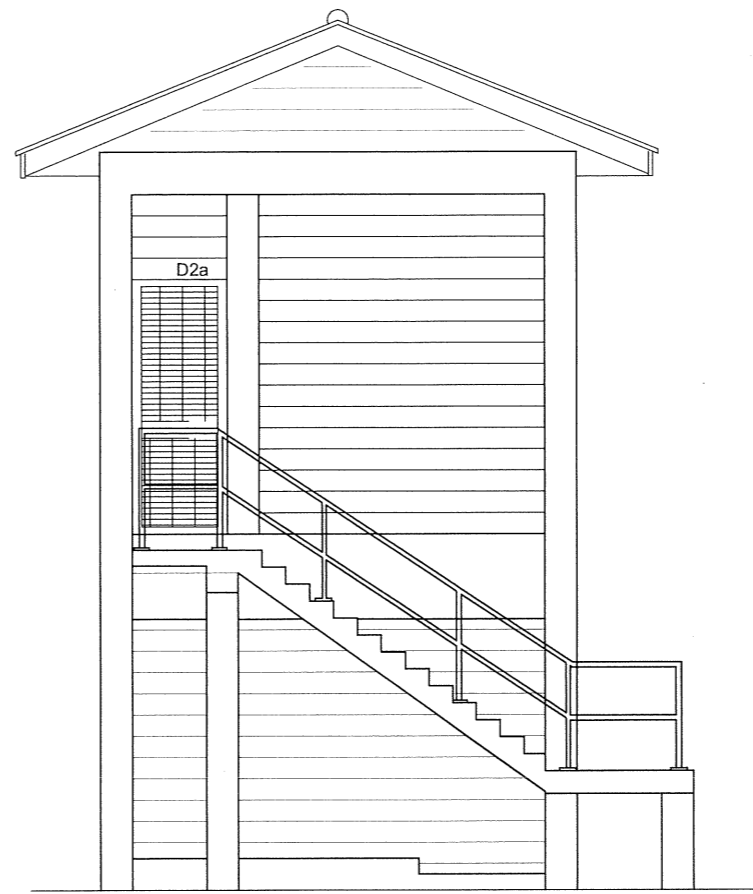
TENDER No. CWWDA/AFD/PQ/W4/2022-2023
CONSTRUCTION OF THE MWACHE TRUNK MAIN(SECTION 1) AND SOUTH MAINLAND TRANSMISSION MAIN

DETAILED DESIGN
DRAWING TITLE:
DONGO KUNDU RESERVOIR SITE
CHLORINE STORAGE AND MIXING BUILDING MISCELLANEOUS

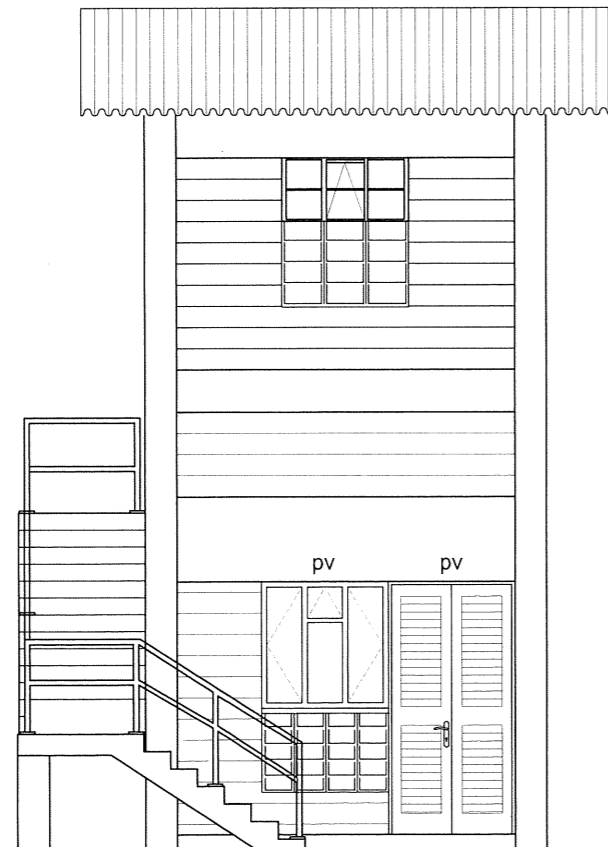
Designed by: E.O.A.	Drawn by: P.N.M
Checked by: N.H	Approved by: R.S.R
Scale: NTS	Date: APRIL 2024



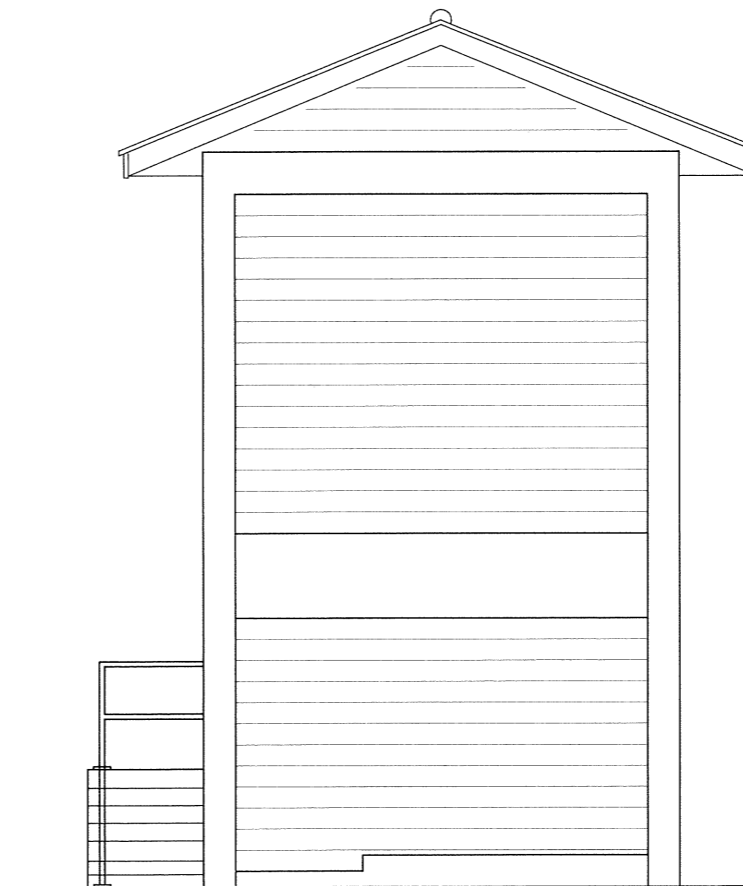
ELEVATION 01



ELEVATION 03



ELEVATION 02




ELEVATION 04

NOTES:

1. DIMENSIONS IN mm UNLESS OTHERWISE SPECIFIED
2. ALL EXPOSED CONCRETE EDGES TO HAVE A 25mm x 25mm CHAMFER
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5. EDGES OF TREADS AND RISERS IN CONCRETE STAIRCASE TO BE PROTECTED WITH 40 x 40 x 3mm M.S. ANGLE FIXED WITH FISH TAIL LUGS EMBEDDED IN CONCRETE
6. ALL VENT BLOCKS UNDER WINDOWS TO BE PROVIDED WITH PVC GAUZE IN TIMBER FRAMING
7. ALL INTERNAL SURFACES OF MIXING TANKS TO BE LINED WITH THREE COATS OF APPROVED EPOXY LINING
8. DETAIL OF DOSER PLATFORM IS SHOWN FOR FRO TYPE DOSERS. IF DIFFERENT TYPE OF DOSER IS PROPOSED, CONTRACTOR TO SUBMIT TO ENGINEER DETAILS OF DOSER AND SUITABLE PLATFORM(S) BEFORE COMMENCING CONSTRUCTION OF MIXING TANK WALLS.

REVISIONS		SIGN	DATE	APPROVED
	BY			
	CHECKED			
	BY			
	CHECKED			
	BY			
	CHECKED			

CLIENT:


THE CHIEF EXECUTIVE OFFICER
COAST WATER WORKS DEVELOPMENT AGENCY
 P.O. BOX 90417 - 80100
 MOMBASA, KENYA

CONSULTING ENGINEERS:

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PROJECT NAME:
IMPROVEMENT OF DRINKING WATER AND SANITATION SYSTEMS IN MOMBASA: MWACHE CKE 1103

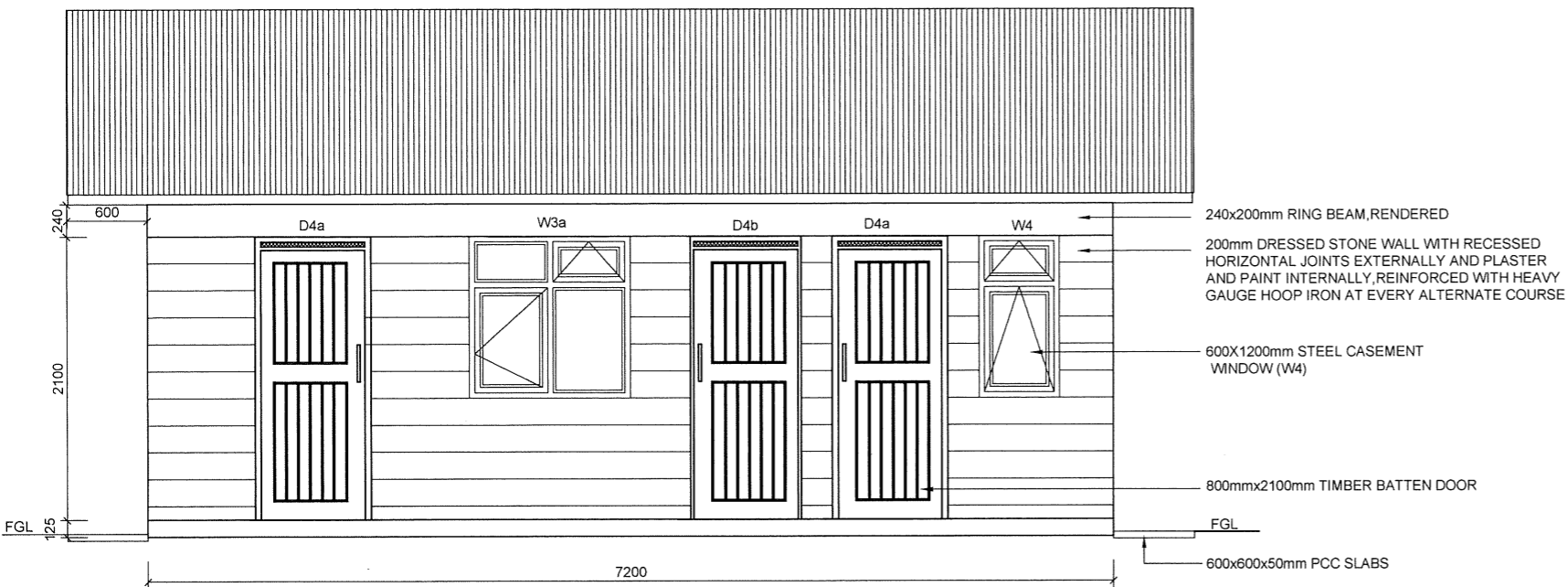
TENDER No. CWWDA/AFD/PQ/W4/2022-2023
CONSTRUCTION OF THE MWACHE TRUNK MAIN(SECTION 1) AND SOUTH MAINLAND TRANSMISSION MAIN

DETAILED DESIGN

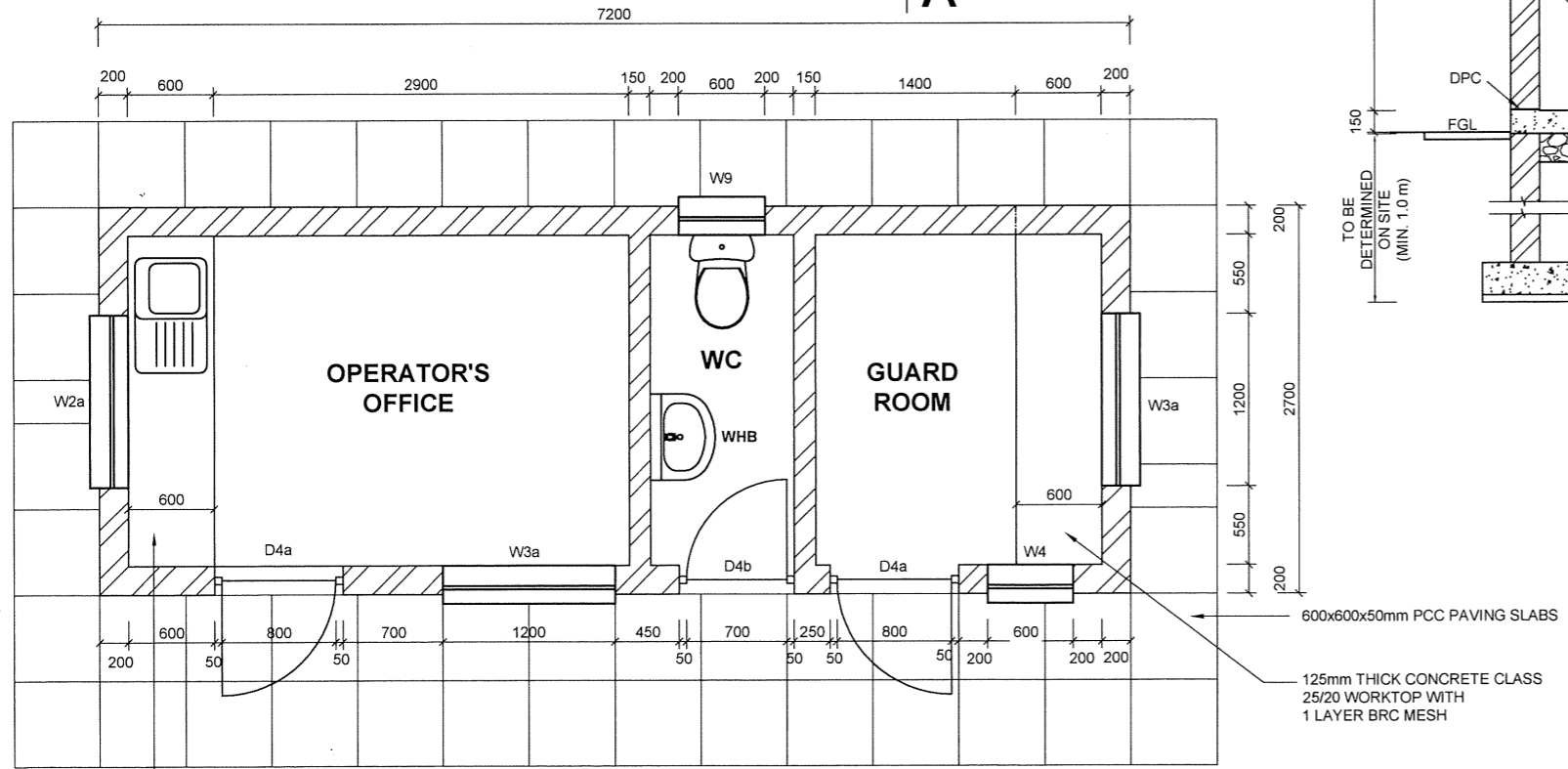
DRAWING TITLE:
DONGO KUNDU RESERVOIR SITE
CHLORINE STORAGE AND MIXING BUILDING ELEVATIONS

Designed by: E.O.A.	Drawn by: P.N.M
Checked by: N.H	Approved by: R.S.R
Scale: 1:50	Date: APRIL 2024
DRAWING No: M430/MP/SR/DK/CSMB/04 REV. 0	

**OPERATOR'S OFFICE /
GUARD HOUSE**



ELEVATION 01



PLAN

125mm THICK CONCRETE CLASS 25/20 WORKTOP WITH 1 LAYER BRC MESH FINISHED WITH APPROVED CERAMIC TILES WITH STAINLESS STEEL SINK AND LOCKABLE CUPBOARDS WITH 25mm BLOCKBOARD SHELVES UNDER.

NOTES:

DOORS

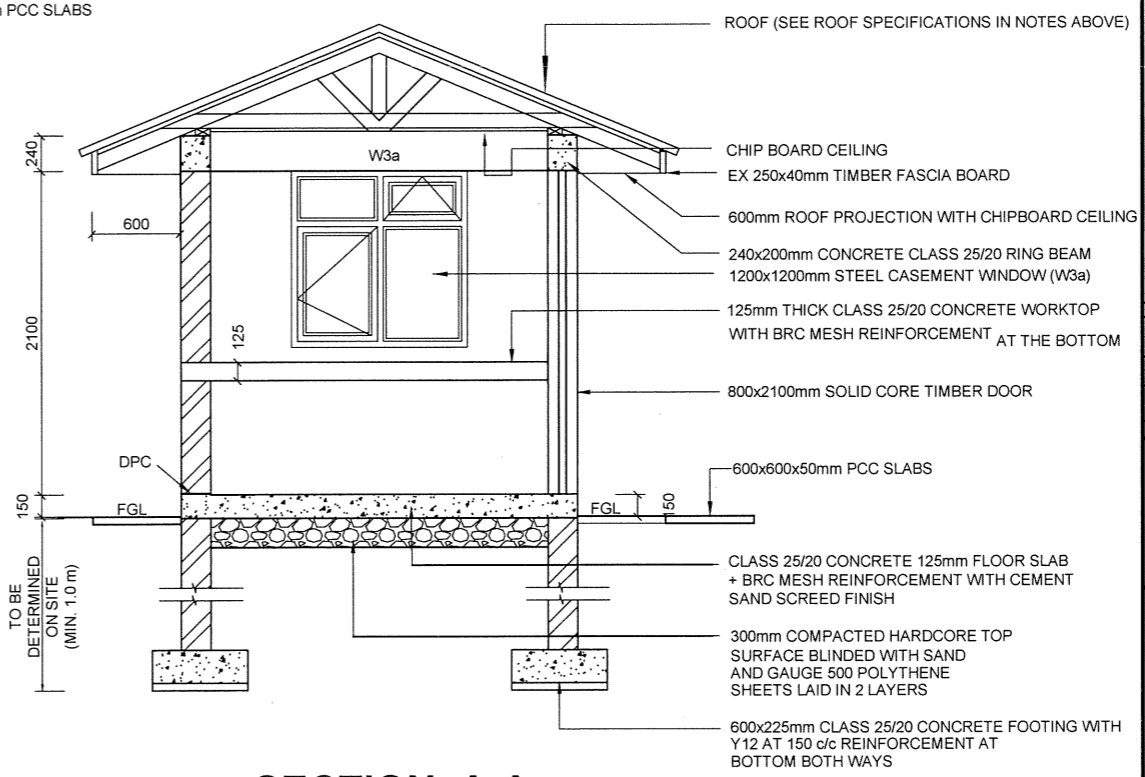
EXTERNAL DOOR TO BE SOLID CORE TIMBER DOOR WITH EX 100X50mm STILES AND TOP RAILS, EX 150X50mm MIDDLE AND BOTTOM RAILS, AND INFILL PANELS IN EX 100X50mm T&G BATTENS, ALL IN PRIME GRADE CYPRESS, PAINTED
 EXTERNAL DOOR ON OPERATOR'S OFFICE TO HAVE SECONDARY METAL SECURITY GRILLED DOORS

WINDOWS

METAL CASEMENT WINDOWS, SIZES AS FOLLOWS
 W3a - 1200x1200
 W4 - 600x1200
 W9 - 600x600

ROOF SPECIFICATIONS

COLOURED CONCRETE TILES LAID AT 22.5 DEGREES ON GAUGE 28 GI SHEETS UNDERLAY ON:
 1. 150x50 PURLINS AT 1500/C
 2. TIMBER TRUSSES AT APPROXIMATE 1800C/C WITH:
 - 150x50 RAFTERS AND TIE BEAM
 - 100x50 STRUTS
 3. 150x50 INTERMEDIATE RAFTERS AT 600C/C
 4. 40x40 BATTERN AT 300C/C
 5. 100x50 WALL PLATE
 6. 50x25 CORNICE
 7. 250x40mm FASCIA BOARD
 8. 12mm THICK CHIPBOARD CEILING



SECTION A-A

NOTES:

- DIMENSIONS IN mm UNLESS OTHERWISE SPECIFIED
- ALL EXPOSED CONCRETE EDGES TO HAVE A 25mm X 25mm CHAMFER
- CONCRETE WORKS: ALL REINFORCED CONCRETE TO BE CLASS 25/20 EXCEPT WHERE OTHERWISE SPECIFIED
- ABBREVIATIONS
 R.C - REINFORCED CONCRETE
 D.P.C - DAMP PROOF COURSE
 E.G.L - EXISTING GROUND LEVEL
 F.G.L - FINISHED GROUND LEVEL
 F.F.L - FINISHED FLOOR LEVEL
 P.C.C - PRECAST CONCRETE
 G.C.I - GALVANIZED CORRUGATED IRON
 W.H.B - WASH HAND BASIN
- DRESSED STONE OR PCC WINDOW CILLS WITH 25mm DRIP TO BE PROVIDED FOR ALL WINDOWS
- FLOOR FINISHES - APPROVED CERAMIC FLOOR TILES.
- FOR COSTING PURPOSES, STEEL REINFORCEMENT TO BE ESTIMATED AT 120kg/m³ OF REINFORCED CONCRETE.
- ALL WINDOWS TO BE PROVIDED WITH BURGLAR PROOFING MADE OF 12mm SQUARE M.S BARS AT 150mm CENTRES HORIZONTALLY AND VERTICALLY FIXED TO WALL WITH M.S FISH TAIL LUGS AT 600mm CENTRES AND PAINTED.

REVISIONS				SIGN	DATE	APPROVED

CLIENT:
 THE CHIEF EXECUTIVE OFFICER
 COAST WATER WORKS DEVELOPMENT AGENCY
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PROJECT NAME:
 IMPROVEMENT OF DRINKING WATER AND SANITATION SYSTEMS IN MOMBASA: MWACHE CKE 1103

TENDER No. CWWDA/AFD/PQ/W4/2022-2023

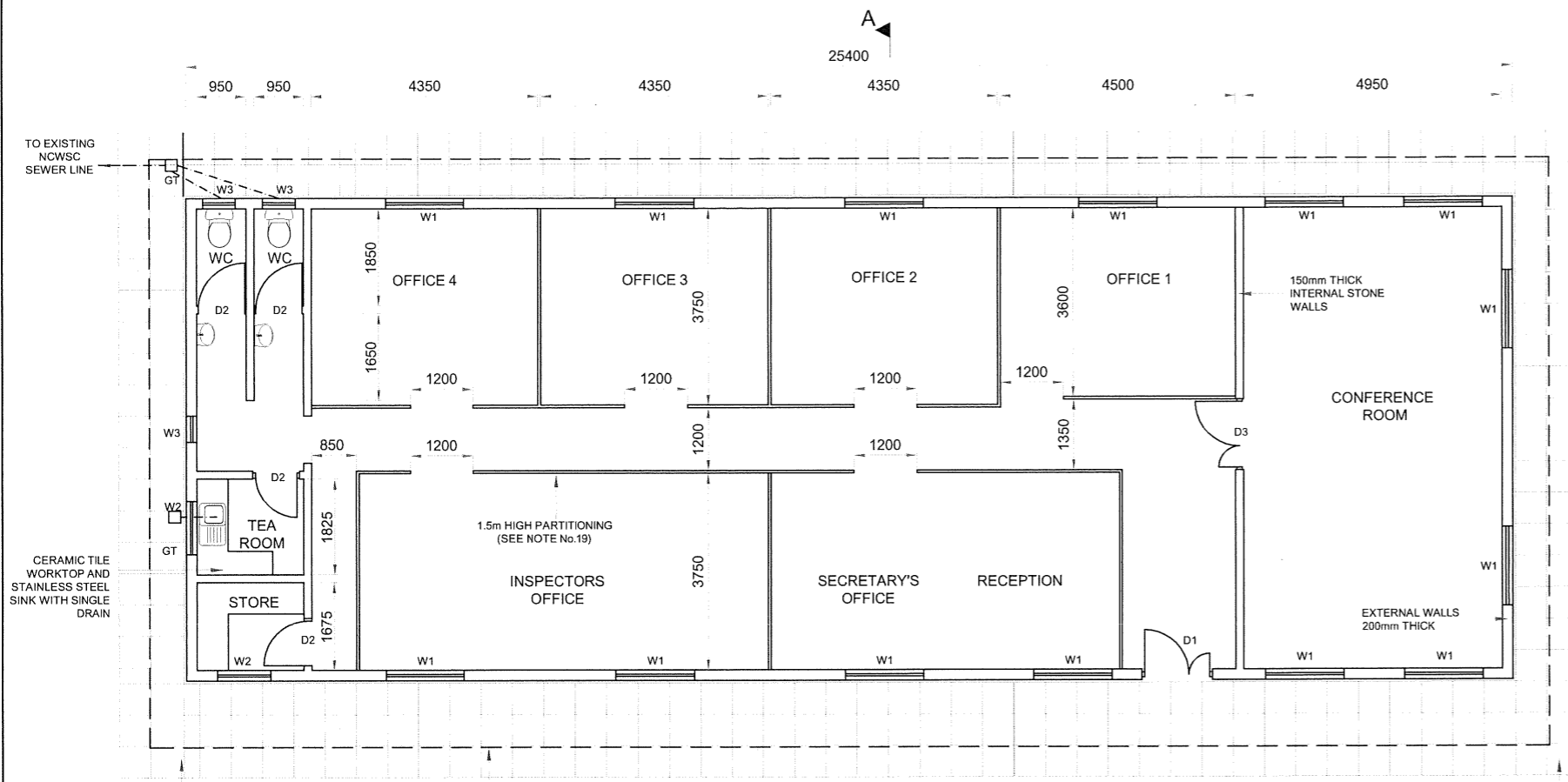
LOT 1: CONSTRUCTION OF THE MWACHE TWIN TRUNK MAIN (SECTION 1) AND SOUTH MAINLAND TRANSMISSION PIPELINE

DETAILED DESIGN
DRAWING TITLE:
 DONGO KUNDU RESERVOIRS SITE
 OPERATOR'S OFFICE / GUARD ROOM
 PLAN, SECTION AND ELEVATION

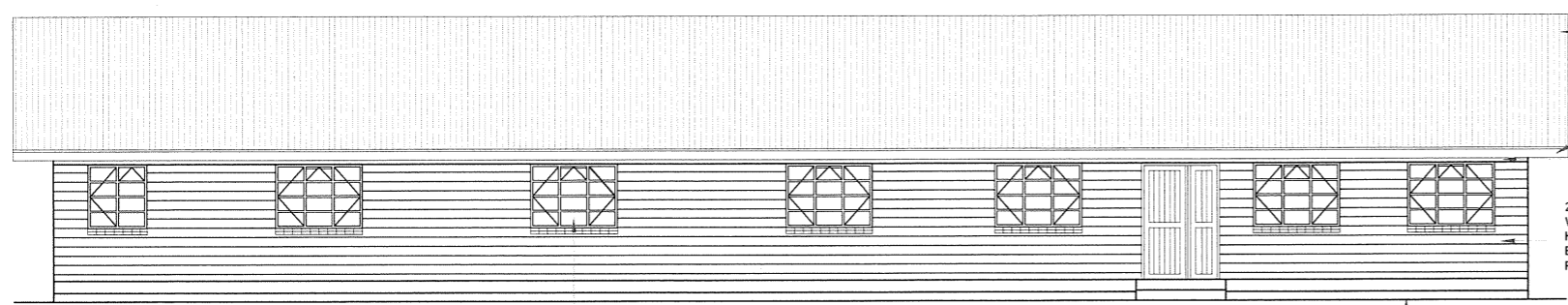
Designed by: EAO	Drawn by: KMK
Checked by: N.H	Approved by: R.S.R
Scale: 1:50	Date: APRIL 2024

DRAWING No. M430/MP/SR/DK/GR/01 REV. 0

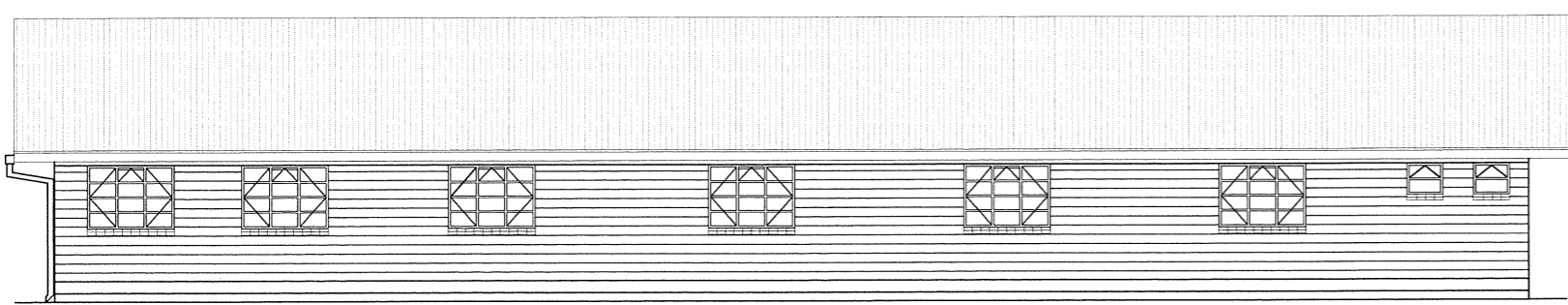
**ADMINISTRATION BUILDING /
RESIDENT ENGINEER'S
OFFICE**



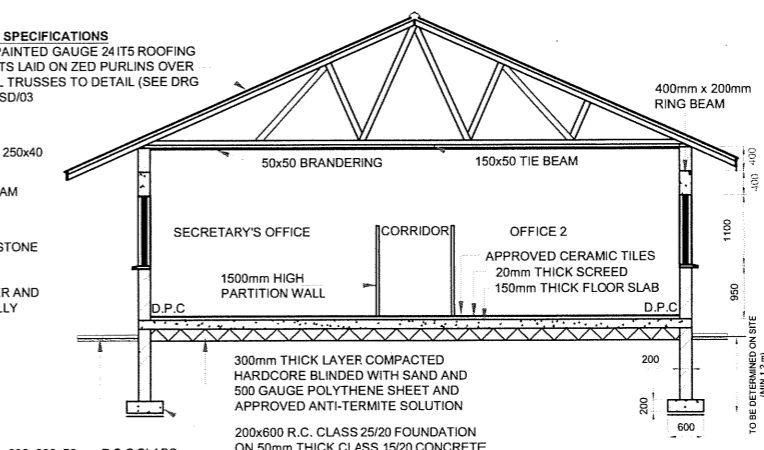
PLAN



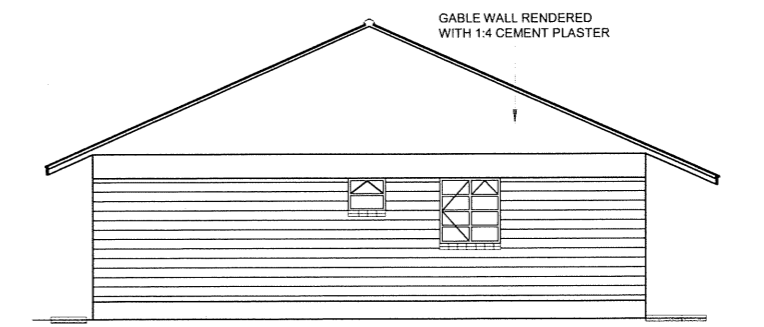
FRONT ELEVATION



REAR ELEVATION



SECTION A-A



SIDE ELEVATION

NOTES:

- Doors**
- External Door (D1) solid core timber door in two panels with ex100x50mm stiles and top rails, ex 150x50mm middle and bottom rails, and infill panels in ex100x50mm t&g battens, all in prime grade cypress, painted
 - Internal door (D2) semi solid core flush door with hardwood lipping all round, painted
 - External Door (D3) solid core timber door in two panels with ex100x50mm stiles and top rails, ex 150x50mm middle and bottom rails, and infill panels in ex100x50mm t&g battens, all in prime grade cypress, painted
 - External Door with Secondary Metal Security Grilled Door fabricated from square tubes

Windows

- Metal casement windows with permanent vents
- Burglar proofing made of 12mm square M.S Bars at 150mm c/c both ways, fixed to wall with fish tail lugs at 600mm c/c, Painted.

Window Schedule

- W1 - 1500 X 1085
- W2 - 1000 X 1085
- W3 - 500 X 500

Roof Water Storage Tank

400 Litres uPVC Water Tank provided in Roof Space

Colour Scheme

1. Walls (Internal Faces)	Soft White	Silk Vinyl
2. Timber Doors	Clear Varnish on Vernier Doors	
3. Metal Security Grills (Doors & Windows)	Brilliant White	Super Gloss Enamel
4. Metal Window Frames	Peacock Blue	Super Gloss Enamel
5. Ceilings	Brilliant White (10B15)	Matt Emulsion
6. Timber Fascia Board	Brilliant White (10B15)	Super Gloss Enamel
7. External Wall Recessed Plinth (300mm wide)	Peacock Blue	Super Gloss Enamel
8. Floor Tiles	Summer Blue Ceramic Tiles	
9. Wall Tiles (wet areas)	Brilliant White Ceramic Tiles	

NOTES:

- All dimensions in mm unless otherwise specified.
- Sanitary fittings; white vitreous high level washdown w.c suite complete as "TWYFCRDS CLASSIC 10003" comprising closet with "s" tap, no. 12030 cistern 9 litres capacity, no. 52120 valveless fittings with plastic syphon and flush bend, cistern supports, no. 50219 inlet connection and no. 50302 plastic seat and cover; pan plugged and screwed to floor and cistern to wall.
- White vitreous china washbasin complete as "TWYFCRDS CLASSIC 14003" with one no. 54200 aztec tap 15mm, no. 54351 chain waste, no. 56905 fixing brackets including all necessary fixing.
- All walls reinforced with heavy duty gauge hoop iron at every alternative course and jointed in 1:3 cement sand mortar.
- All sanitary works carried out in accordance to the County rules and regulations.
- Reinforced concrete work as follows:
 - Blinding under foundation class 15/20
 - Foundation class 25/20 reinforced with T12 @ 200mm both ways
 - Floor slab class 25/20 reinforced with BRC mesh A142
 - Ring beam class 25/20 reinforced with 4 Nr. T12 and R 8 @ 150mm c/c
- 600x450mm mirrors over all W.H.B.s.
- Concrete window cills to have drips.
- Roof eaves soffits 50x50mm timber battens and T&G filling.
- Rain water harvesting; Rear gutter and down pipe and a 3000 Litres plastic tank on a plinth.
- All timber works have primer and painted with 3 coats Gloss paint.
- Finishes schedule
- Internal Finishes
 - Floor - 300x300 Ceramic tiles
 - Skirtings - Ceramic tiles (150mm high)
 - Walls - Plastered with 12.5mm thick cement paste and painted with three coats of paint
 - Ceiling - 12mm thick chipboard(480 - 640kg/m²) painted
 - Cornices - Timber and painted
- External Finishes
 - Natural stone with horizontal joints raked
 - Walls below windows, ring beam and gable walls rendered with 1:4 cement sand plaster
- 1.5m high partitioning wall, 25mm thick MDF board on aluminium frame.

ABBREVIATIONS:

- D.P.C. - Damp Proof Course
- W.C. - Water Closet
- W.H.B.s. - Wash Hand Basins
- M.S. - Mild Steel
- CHS - Circular Hollow Section
- IC - Inspection Chamber
- GT - Gully Trap

REVISIONS	BY	SIGN	DATE	APPROVED
	CHECKED			
	BY			
	CHECKED			

THE CHIEF EXECUTIVE OFFICER
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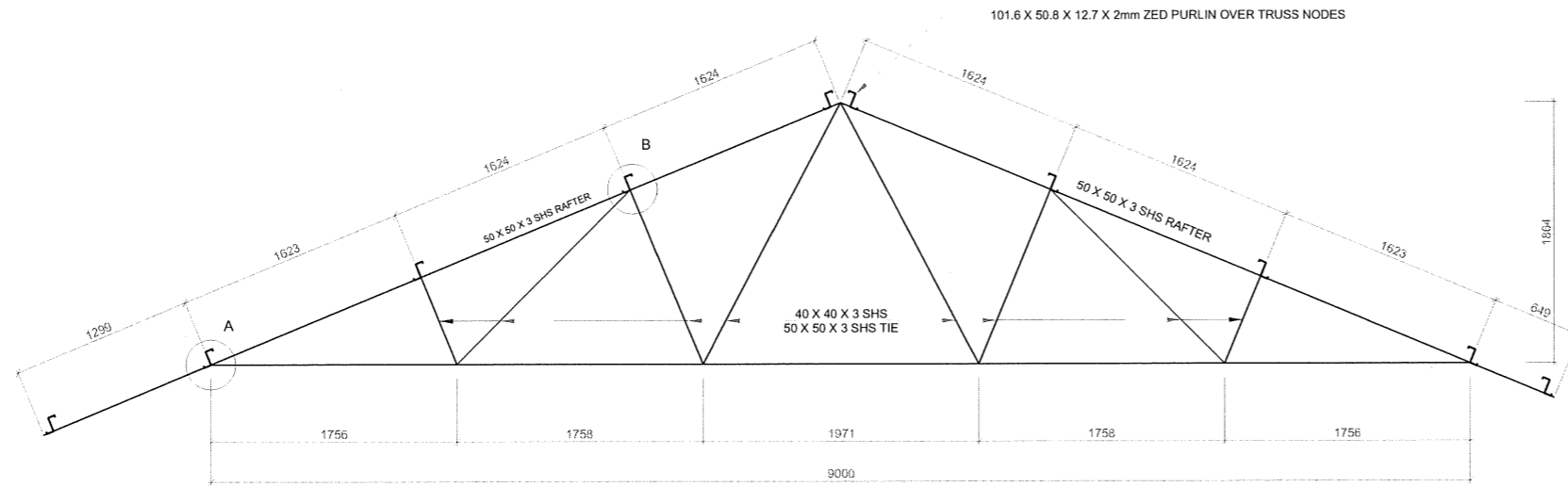
IMPROVEMENT OF DRINKING WATER AND SANITATION SYSTEMS IN MOMBASA: MWACHE CKE 1103

BID No.CWWDA/AFD/PQ/W4/2022-2023

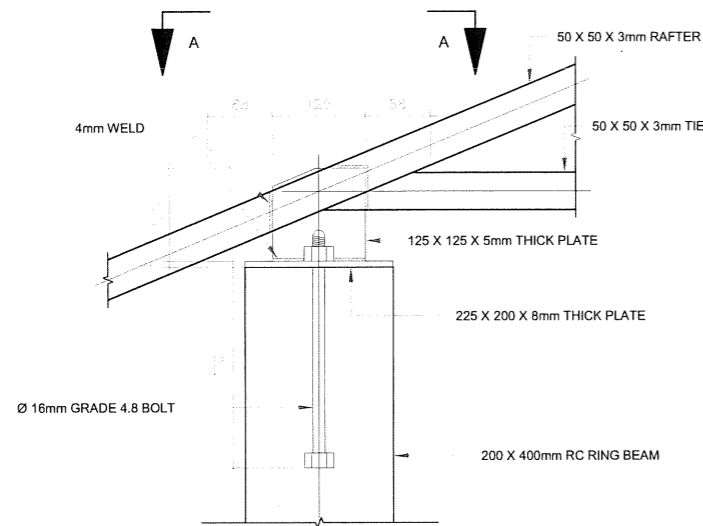
LOT 1: CONSTRUCTION OF THE MWACHE TWIN TRUNK MAIN (SECTION 1), THE SOUTH MAINLAND TRANSMISSION PIPELINE AND DONGO KUNDU RESERVOIR

DRAWING TITLE:
**ADMINISTRATION BUILDING/
 RESIDENT ENGINEER'S OFFICE
 PLAN, SECTIONS AND
 ELEVATIONS**

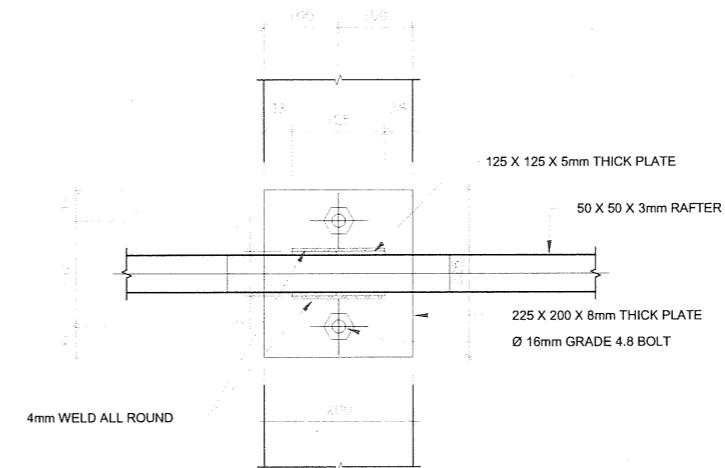
J.M.K	DRAWN BY: V.K
R.S.R	APPROVED BY: B.D
1:125	DATE: APRIL 2024
M430/DK-REO/01	



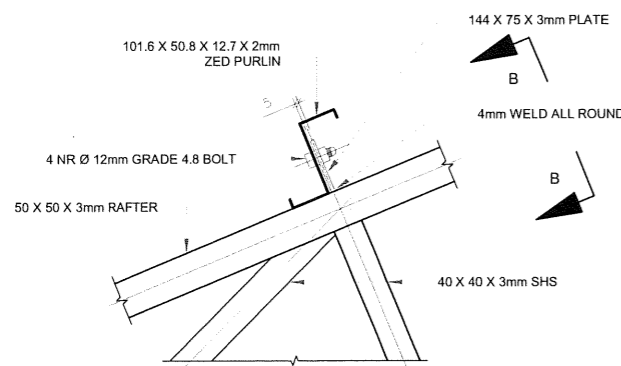
TYPICAL TRUSS
SCALE 1:50



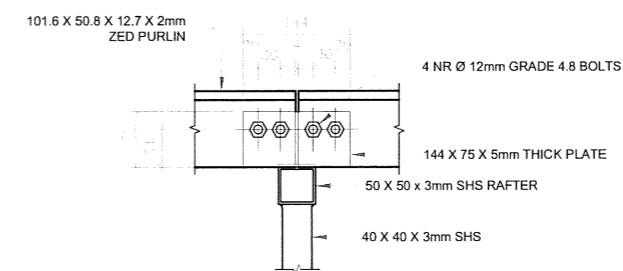
DETAIL A
SCALE 1:10



SECTION A-A
SCALE 1:10



DETAIL B
SCALE 1:10




SECTION B-B
SCALE 1:10

NOTES:

1. ALL DIMENSIONS IN mm UNLESS OTHERWISE STATED
2. ALL METAL SURFACES PAINTED WITH ONE COAT OF PRIMER AND 3 COATS OF GLOSS PAINT
3. STEEL GRADE TO GRADE 43

REV	REVISIONS	BY	SIGN	DATE	APPROVED
		CHECKED			
		BY			
		CHECKED			

CLIENT:

THE CHIEF EXECUTIVE OFFICER
COAST WATER WORKS DEVELOPMENT AGENCY
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 MOMBASA, KENYA

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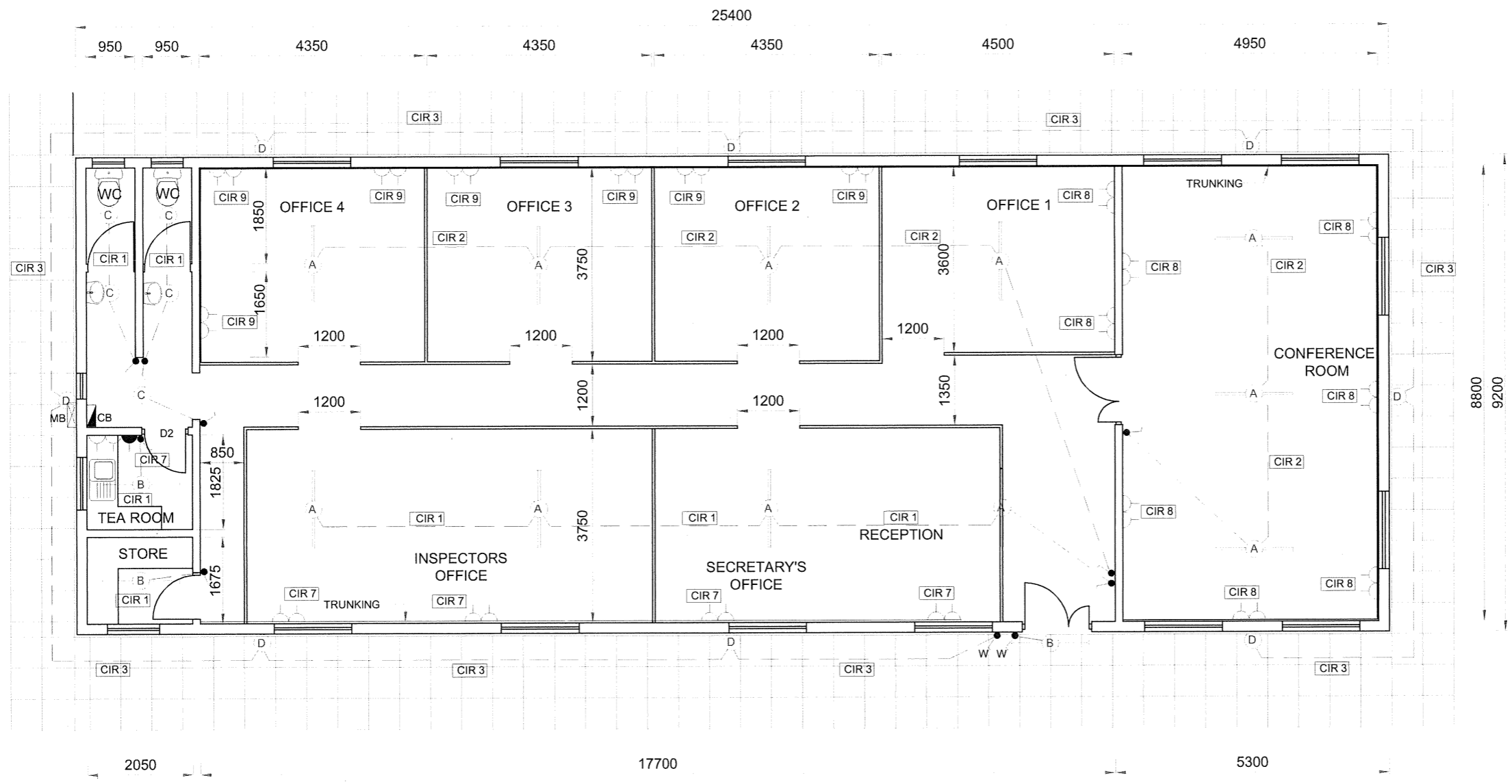
PROJECT:
IMPROVEMENT OF DRINKING WATER AND SANITATION SYSTEMS IN MOMBASA: MWACHE CKE 1103

BID No. CWWDA/AFD/PQ/W4/2022-2023












LOT 1: CONSTRUCTION OF THE MWACHE TWIN TRUNK MAIN (SECTION 1), THE SOUTH MAINLAND TRANSMISSION PIPELINE AND DONGO KUNDU RESERVOIR

DRAWING TITLE:
**ADMINISTRATION BUILDING/
 RESIDENT ENGINEER'S OFFICE
 ROOF TRUSS DETAILS**

DESIGNED BY: J.M.K	DRAWN BY: V.K
CHECKED BY: R.S.R	APPROVED BY: B.D
SCALE: AS SHOWN	DATE: APRIL 2024
DRAWING No. M430/DK-REO/02	




**ELECTRICAL INSTALLATION
PLAN**


- LEGEND:-**
-  WEATHER PROOF METER BOX
 -  CONSUMER UNIT
 -  1 GANG 1 WAY LIGHTING SWITCH
 -  1 GANG 2 WAY LIGHTING SWITCH (WEATHERPROOF)
 -  13 AMP. TWIN SWITCHED SOCKET OUTLET
 - 
 -  15 AMP. SINGLE SWITCHED SOCKET OUTLET
 -  2x58 WATT - 1500mm TWIN FLOURESCENT BATTEN FITTING
 -  2x58 WATT - 1500mm SINGLE FLOURESCENT BATTEN FITTING
 -  60 WATT BALL FITTING WITH OPAL
 -  BULKHEAD FITTING FOR EXTERNAL APPLICATION WITH LAMP 20-16WATT LONG LIFE AND LOW ENERGY CONSUMPTION

NOTES:-
1. ALL DIMENSIONS ARE IN mm UNLESS OTHERWISE SPECIFIED

REV	REVISIONS	BY	DATE	APPROVED
		CHECKED		
		BY		
		CHECKED		

CLIENT:

**THE CHIEF EXECUTIVE OFFICER
COAST WATER WORKS DEVELOPMENT AGENCY**
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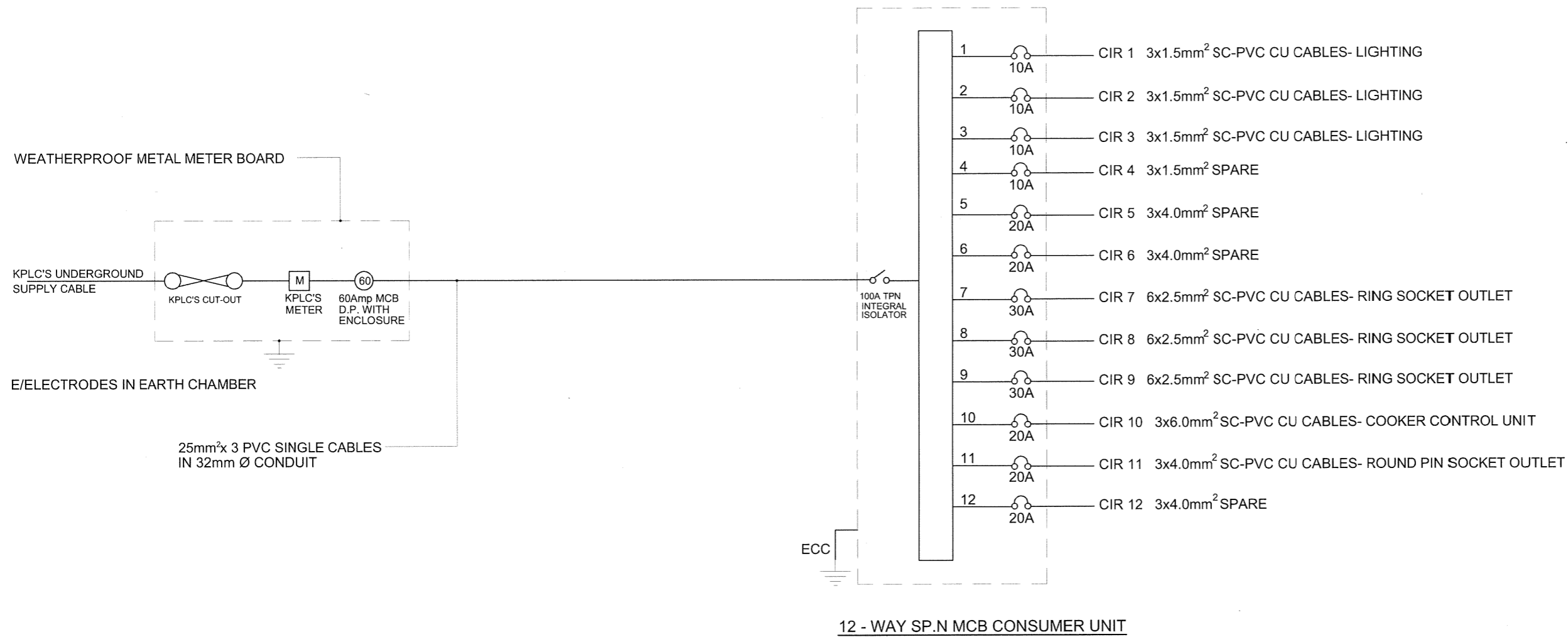
PROJECT:
IMPROVEMENT OF DRINKING WATER AND SANITATION SYSTEMS IN MOMBASA: MWACHE CKE 1103

BID No. CWWDA/AFD/PQ/W4/2022-2023

LOT 1: CONSTRUCTION OF THE MWACHE TWIN TRUNK MAIN (SECTION 1), THE SOUTH MAINLAND TRANSMISSION PIPELINE AND DONGO KUNDU RESERVOIR

DRAWING TITLE:
 ADMINISTRATION BUILDING/
 RESIDENT ENGINEER'S OFFICE
 ELECTRICAL INSTALLATION
 PLAN


DESIGNED BY: J.M.K	DRAWN BY: V.K
CHECKED BY: R.S.R	APPROVED BY: B.D
SCALE: 1:100	DATE: APRIL 2024
DRAWING No. M430/DK-REO/03	



WIRING DIAGRAM

NOTES:-
1.THIS DRAWING WAS USED FOR ELECTRICAL WORKS ONLY

REV	REVISIONS	BY	SIGN	DATE	APPROVED
		CHECKED			
		BY			
		CHECKED			

CLIENT:

THE CHIEF EXECUTIVE OFFICER
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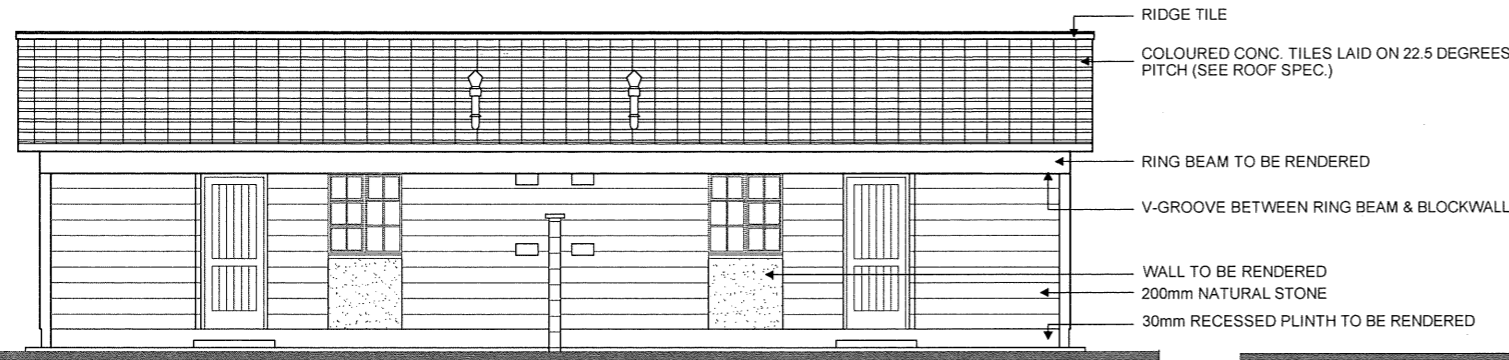
PROJECT:
IMPROVEMENT OF DRINKING WATER AND SANITATION SYSTEMS IN MOMBASA: MWACHE CKE 1103

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 LOT 1: CONSTRUCTION OF THE MWACHE TWIN TRUNK MAIN (SECTION 1), THE SOUTH MAINLAND TRANSMISSION PIPELINE AND DONGO KUNDU RESERVOIR

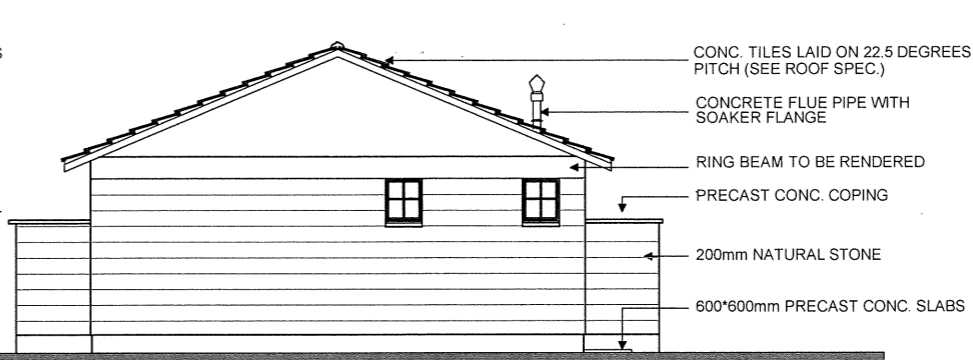
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 ADMINISTRATION BUILDING/
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 ELECTRICAL INSTALLATION
 WIRING DIAGRAM

DESIGNED BY: J.M.K	DRAWN BY: V.K
CHECKED BY: R.S.R	APPROVED BY: B.D
SCALE: NTS	DATE: APRIL 2024
DRAWING No. M430/DK-REO/04	

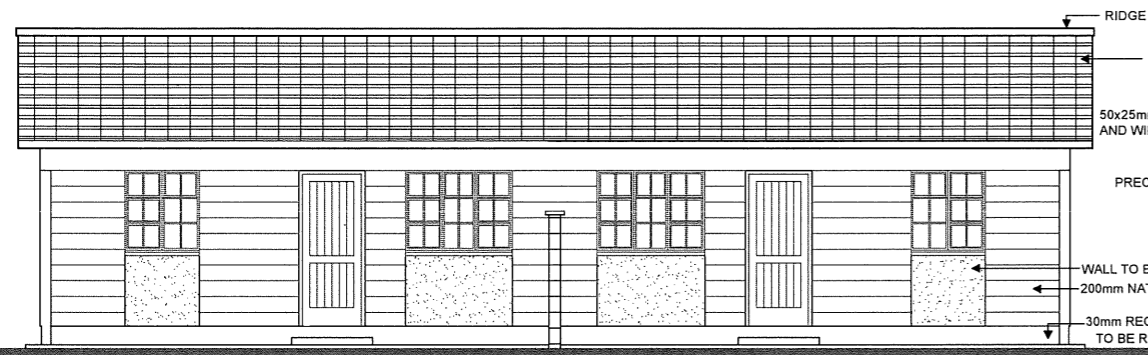
**DONGO KUNDU RESERVOIR
STAFF HOUSE**



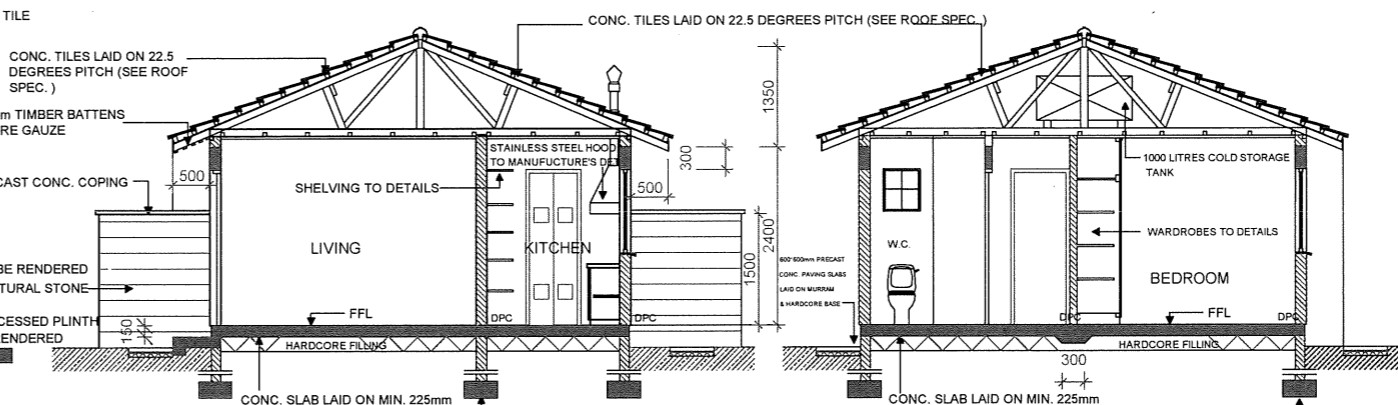
REAR ELEVATION



SIDE ELEVATION

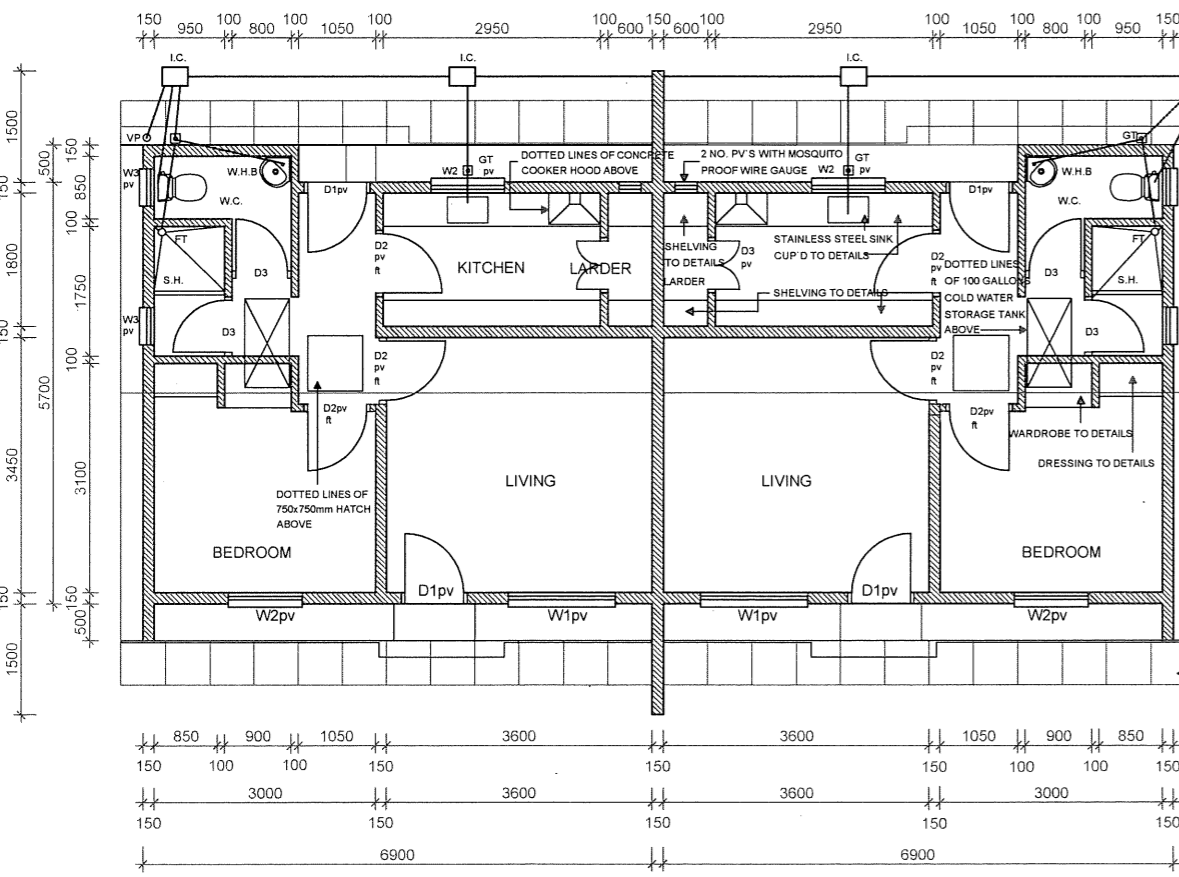


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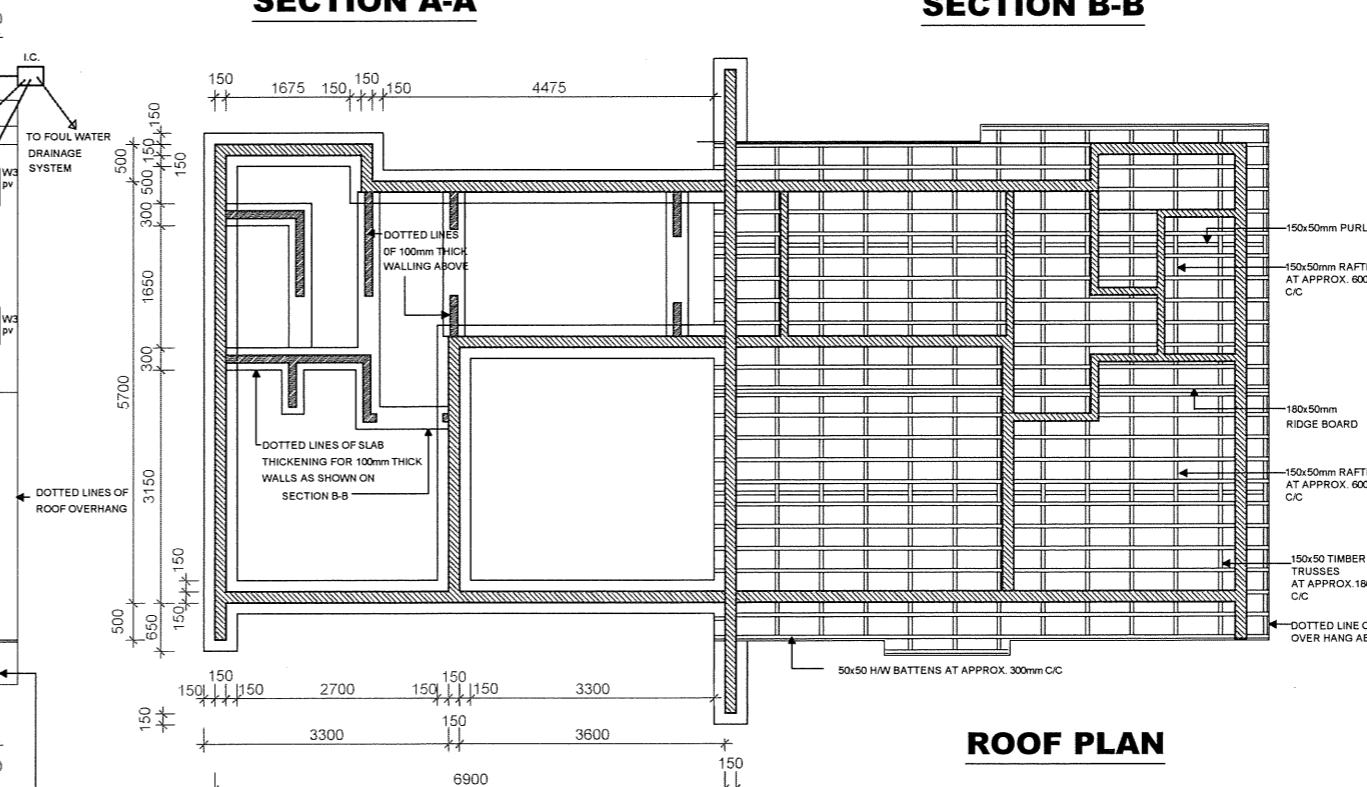


SECTION A-A

SECTION B-B



PLAN



FOUNDATION PLAN

ROOF PLAN

ROOF SPECIFICATIONS

- COLOURED CONC. TILES LAID AT A 22.5 DEG. AN ONE LAYER GAUGE 750mm POLYTHENE ON:
- 150*50mm RAFTERS AT APPROX. 600 C/C
- 100*75mm PURLINS
- 100*50mm STRUTS
- 150*50mm TIE BEAM
- TIMBER TRUSSES AT APPROX. 1800mm C/C (NO TRUSSES ALONG END WALLS, END WALL LOAD BEARING)
- 100*50mm WALL PLATE
- 50*50mm BRANDING AT APPROX. 600 C/C
- CELOTEX CEILING
- EX. 75*25mm CORNICE
- EX. 250*40mm H/W FASCIA

NOTES:

- 1 ALL DIMENSIONS AND CONDITIONS MUST BE CHECKED ON SITE AND ANY DISCREPANCIES REFERRED TO THE ENGINEER
- 2 ALL LEVELS TO BE CHECKED ON SITE BEFORE COMMENCEMENT OF WORK.
- 3 DEPTH OF FOUNDATION TO BE DETERMINED ON SITE. FOUNDATION TO BE CARRIED DOWN TO HARD BASE TO THE APPROVAL OF THE ENGINEER AND ALL SOILS TO BE EXCAVATED AND THE OPENING FILLED WITH HARD CORE.
- 4 FIGURED DIMENSIONS TO BE TO BE TAKEN IN PREFERENCE TO SCALE.
- 5 THREE PLY TROPICAL 'PLUVEX' BITUMINOUS FELT D.P.C. UNDER ALL WALLS TO BE RENDERED IN HOT BITUMEN.
- 6 ALL MANSORY WALLS LESS TO BE REINFORCED WITH HEAVY GAUGE HOOP IRON AT EVERY ALTERNATIVE COURSE.
- 7 P.V. DENOTES PERMANENT VENT TO BE PROVIDED TO ALL HABITABLE ROOMS AS SHOWN ON PLAN.
- 8 ALL DRAIN PIPES TO ENGINEER'S SATISFACTION.
- 9 WHERE DRAIN PASSES UNDER THE BUILDING OR DRIVEWAY IT SHALL BE CLASS 15/20 CONCRETE SURROUND.
- 10 ALL SANITARY WORK TO BE CARRIED OUT IN ACCORDANCE TO THE CITY COUNCIL'S RULES AND REGULATION.
- 11 MANHOLES IN DRIVEWAY TO HAVE HEAVY DUTY COVERS SET IN CART GREASE.
- 12 ALL REINFORCED CONCRETE WORK TO STRUCTURAL ENGINEER'S DETAIL DRGS.
- 13 ALL STEEL GLAZED WINDOWS TO HAVE BUGLAR PROOFING TO DETAIL.
- 14 EXTERNAL DOORS (D, 1) TO HAVE DRIPS.
- 15 600X450mm MIRRORS OVER ALL W.H.B.s.
- 16 CONCRETE WINDOW CILLS TO HAVE DRIPS.
- 17 FOR ALL WINDOWS PROVIDE 150X150mm CYPRESS FELMET BOXES PAINTED AND WITH CURTAIN RAILS.
- 18 ALL STEEL GLAZED WINDOWS TO HAVE BUILT-IN MOSQUITO PROOF 'GREENVAC' PERMANENT VENTS.
- 19 ROOF EAVES SOFIT 50X25mm TIMBER BATTENS AND WIRE GAUZE WITH COFFEE TRAY WIRE.
- 20 1000 GAUGE POLYTHENE SHEET BELOW FLOOR SLAB.
- 21 B.R.C. IN FLOOR SLAB TO STRUCTURAL ENGINEER'S DETAIL.
- 22 REINFORCED CONCRETE WORK AS FOLLOWS:
 - BLINDING UNDER FOUNDATION CLASS 15/20
 - FOUNDATION CLASS 25/20 REINFORCED WITH T10 @ 200mm BOTH WAYS
 - FLOOR SLAB CLASS 25/20 REINFORCED WITH BRC MESH A12
 - RING BEAM CLASS 25/20 REINFORCED WITH 4# N: T12 AND R 8 @ 150mm C/C

FINISHES SCHEDULE

- INTERNAL FINISHES**
- FLOOR - 300x300mm CERAMIC TILES
 - SKIRTINGS - 150mm CERAMIC TILES
 - WALLS - PLASTERED AND PAINTED CEILING
 - 12mm THICK CHIPBOARD (480 - 640kg/m²) painted
 - CORNICES - TIMBER AND PAINTED

EXTERNAL FINISHES

- *NATURAL STONE WITH HORIZONTAL JOINTS RAKED
- *WALLS BELOW WINDOWS, RING BEAMS AND GABLE WALLS TO BE RENDERED

CLIENT:

**THE CHIEF EXECUTIVE OFFICER
COAST WATER WORKS DEVELOPMENT
AGENCY**
P.O. BOX 90417 - 80100
MOMBASA, KENYA

CONSULTING ENGINEERS:

JOINT VENTURE
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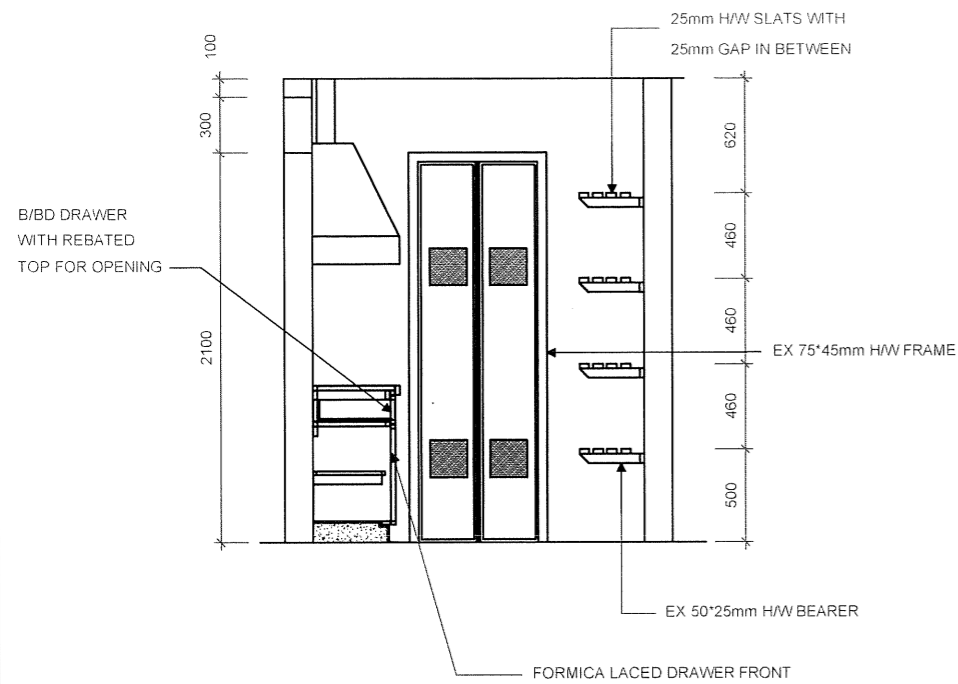
PROJECT NAME:
**IMPROVEMENT OF DRINKING WATER AND
SANITATION SYSTEMS IN MOMBASA:**
MWACHE CKE 1103

BID No. CWWDA/AFD/PQ/W4/2022-2023

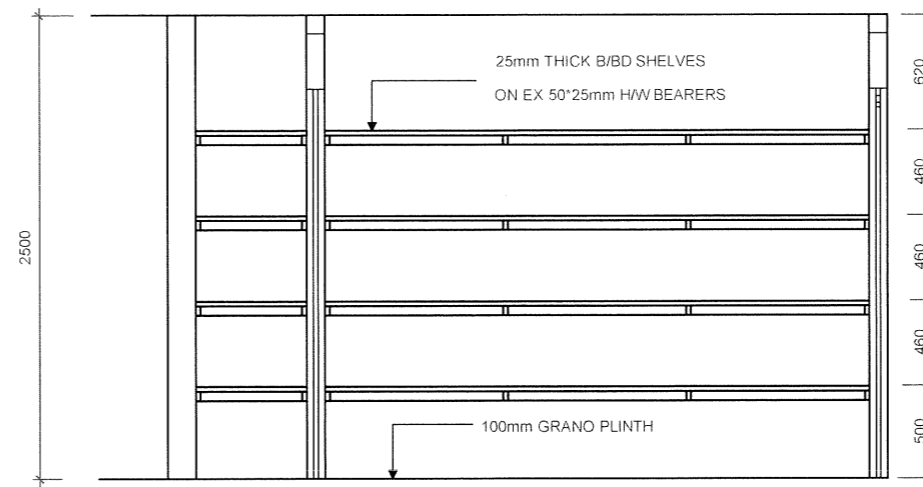
**LOT 1: CONSTRUCTION OF THE MWACHE TWIN
TRUNK MAIN (SECTION 1), THE SOUTH
MAINLAND TRANSMISSION PIPELINE AND
DONGO KUNDU RESERVOIR**

DRAWING TITLE:
**DONGO KUNDU RESERVOIR SITE
STAFF HOUSE (TYPE C)
PLAN, ELEVATIONS AND SECTION**

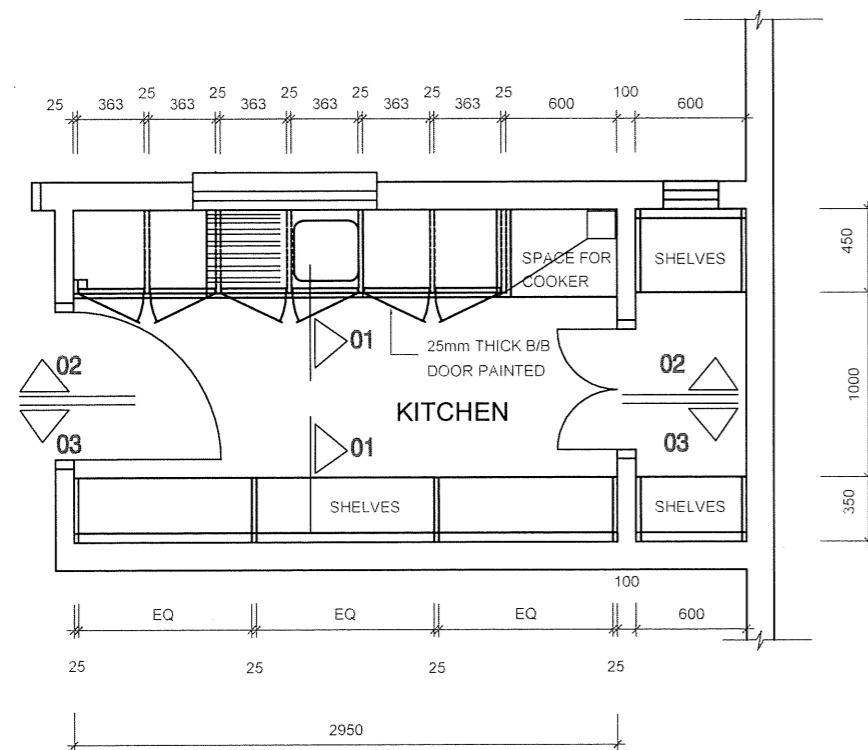
Designed by: J.M.K	Drawn by: O.J.O
Checked by: R.S.R	Approved by: B.D
Scale: 1:100	Date: APRIL 2024



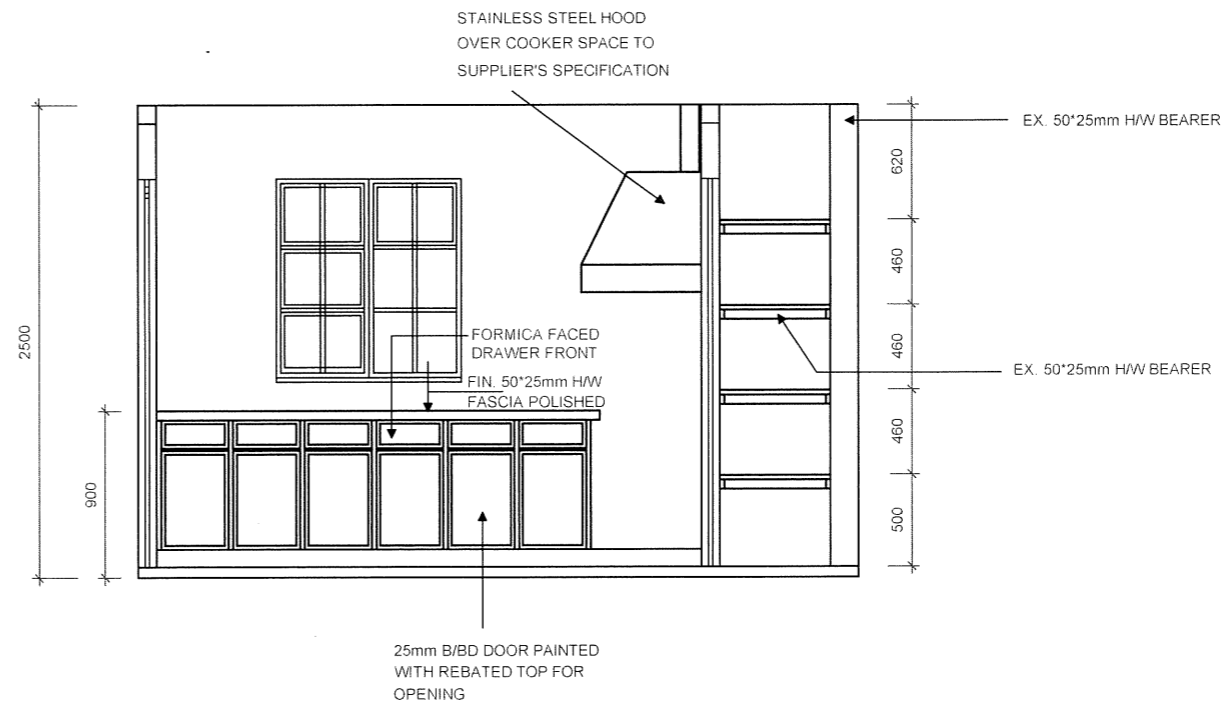
SECTIONAL ELEV. 01



SECTIONAL ELEV. 03



PLAN



SECTIONAL ELEV. 02

NOTES:

1. ALL B/BD DOORS AND SHELVES TO BE PAINTED WITH ONE COAT WOOD PRIMER AND TWO COATS OF FIRST QUALITY GLOSS PAINT.
2. ALL CUPBOARD DOORS TO HAVE ALUMINIUM 100mm 'D' HANDLES AND 2 NOS. 100mm BRASS BOLTS TO ENGINEER'S DETAIL.

REVISIONS		SIGN
BY	CHECKED	
BY	CHECKED	
BY	CHECKED	
BY	CHECKED	
BY	CHECKED	
BY	CHECKED	

CLIENT:

THE CHIEF EXECUTIVE OFFICER
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TEL: +254-2-2710500

PROJECT NAME:

IMPROVEMENT OF DRINKING WATER AND SANITATION SYSTEMS IN MOMBASA: MWACHE CKE 1103

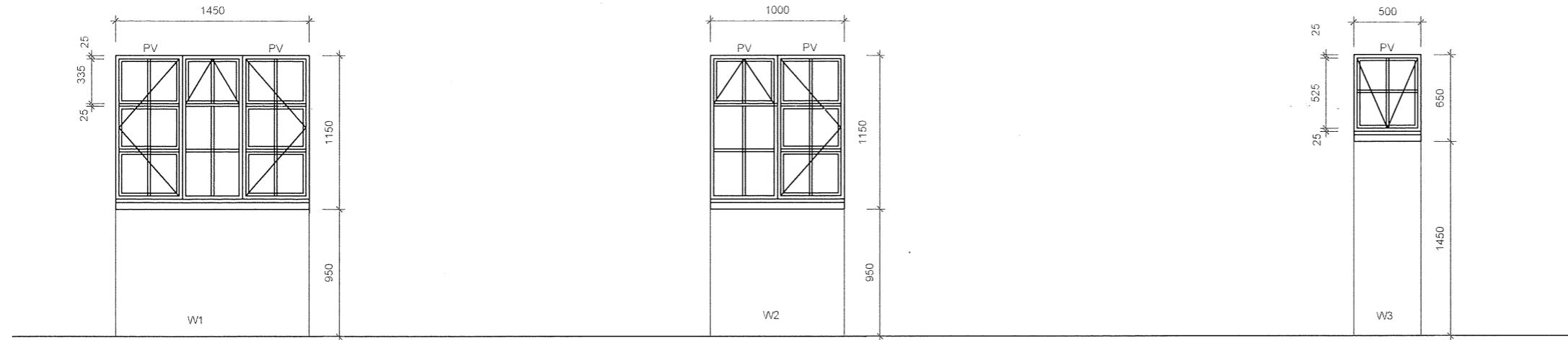
BID No. CWWDA/AFD/PQ/W4/2022-2023

LOT 1: CONSTRUCTION OF THE MWACHE TWIN TRUNK MAIN (SECTION 1), THE SOUTH MAINLAND TRANSMISSION PIPELINE AND DONGO KUNDU RESERVOIR

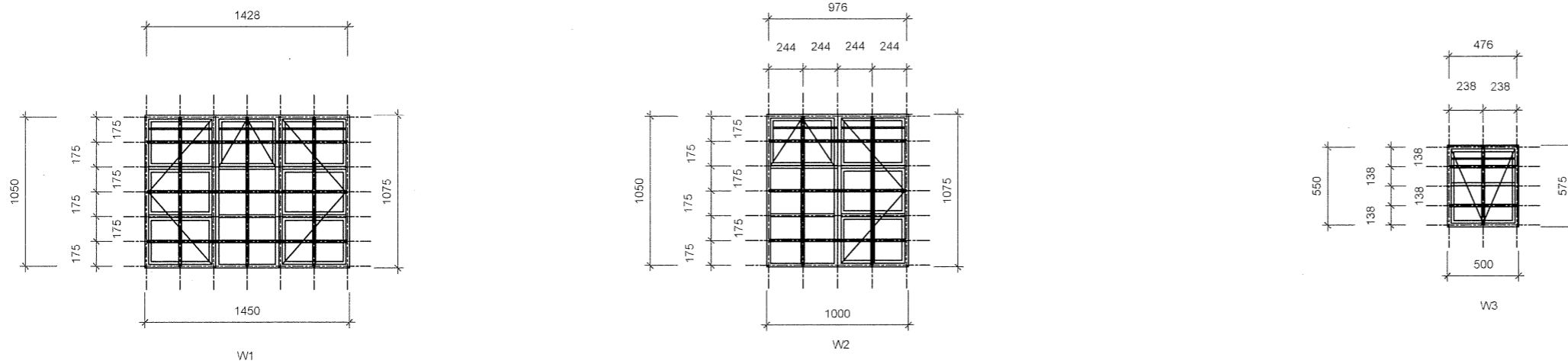
DRAWING TITLE:

**DONGO KUNDU RESERVOIR SITE
STAFF HOUSE (TYPE C)
KITCHEN FITTING DETAILS**

Designed by: J.M.K	Drawn by: O.J.O
Checked by: R.S.R	Approved by: B.D
Scale: 1:40	Date: APRIL 2024
DRAWING No. M430/MP/SR/DKR/02 REV. 0	

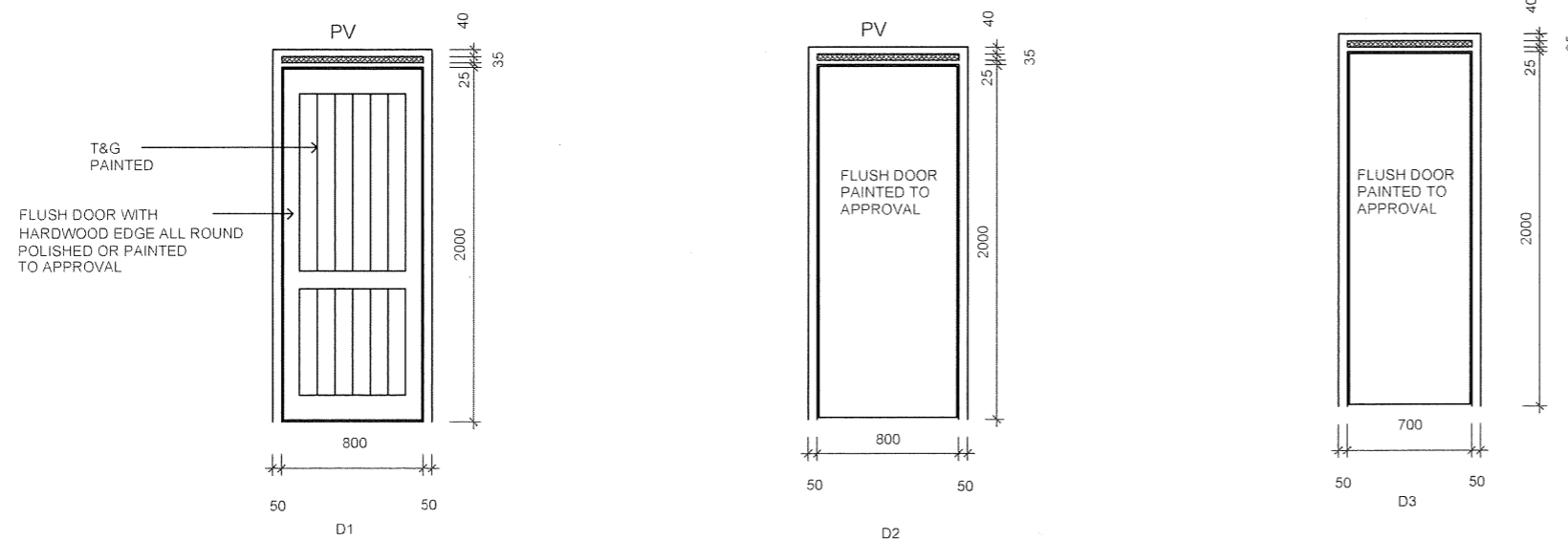


WINDOW SCHEDULE



BURGLAR PROOFING

NOTE:
CONSISTS OF 16*16mm SOLID METAL BARS WITH WELDED JOINTS
BURGLAR PROOFING WELDED TO METAL CASEMENT WINDOW



DOOR SCHEDULE

NOTES:

1. ALL DIMENSIONS AND CONDITIONS MUST BE CHECKED ON SITE AND ANY DISCREPANCIES REFERRED TO THE ENGINEER.
2. ALL STEEL GLAZED WINDOWS TO HAVE BUGLAR PROOFING TO DETAILS.
3. CONC. WINDOWS CILLS TO HAVE DRIPS.
4. FOR ALL WINDOWS PROVIDES 150mm*150mm CEDAR PELMET BOX (PAINTED).
5. ALL STEEL GLAZED WINDOWS TO HAVE BUILT-IN MOSQUITO PROOF "GREENVAC" PERMANENT VENTS.
6. EXTERNAL DOORS (D,1.) TO HAVE DRIPS.

SANITARY FITTINGS

- WHITE VITEROUS HIGH LEVEL WASHDOWN W.C SUITE COMPLETE AS "TWYFORDS CLASSIC 10003" COMPRISING CLOSET WITH "S" TRAP, NO. 12030 CISTERN 9 LITRES CAPACITY, NO. 52120 VALVELESS FITTINGS WITH PLASTIC SYPHON AND FLUSH BEND, CISTERN SUPPORTS, NO. 50219 INLET CONNECTION AND NO. 50302 PLASTIC SEAT AND COVER OR APPROVED EQUIVALENT, PAN PLUGGED AND SCREWED TO FLOOR AND CISTERN TO WALL.
- WHITE VITEROUS CHINA WASHBASIN COMPLETE AS "TWYFORDS CLASSIC 14003" WITH ONE NO. 54200 AZTEC TAP 15MM, NO. 54351 CHAIN WASTE, NO. 56005 FIXING BRACKETS OR APPROVED EQUIVALENT INCLUDING ALL NECESSARY FIXING.

REVISIONS		SIGN
BY	CHECKED	
BY	CHECKED	
BY	CHECKED	
BY	CHECKED	
BY	CHECKED	

CLIENT:

THE CHIEF EXECUTIVE OFFICER
COAST WATER WORKS DEVELOPMENT AGENCY
P.O. BOX 90417 - 80100
MOMBASA, KENYA

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PROJECT NAME:

IMPROVEMENT OF DRINKING WATER AND SANITATION SYSTEMS IN MOMBASA: MWACHE CKE 1103

BID No. CWWDA/AFD/PQ/W4/2022-2023

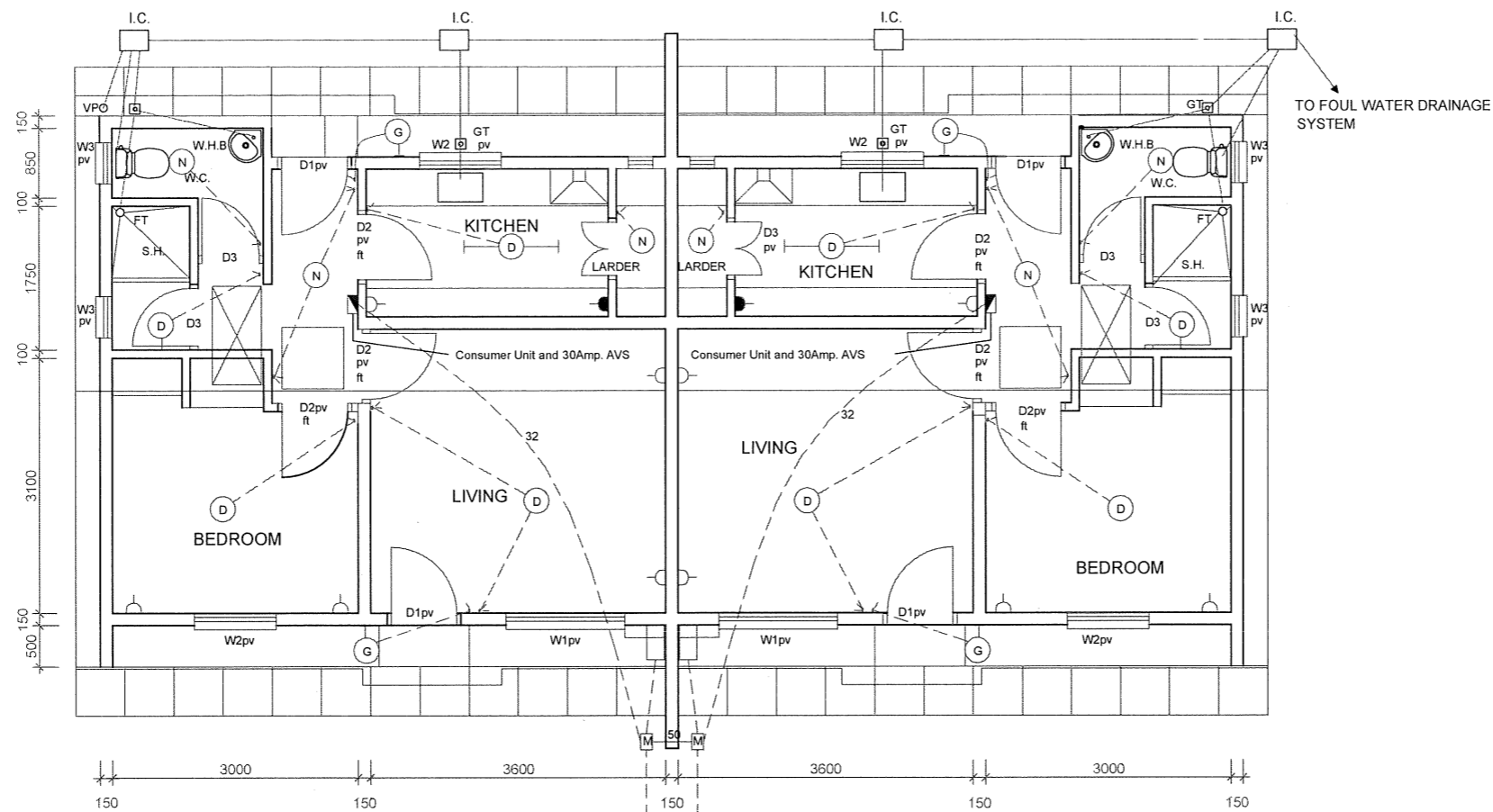
LOT 1: CONSTRUCTION OF THE MWACHE TWIN TRUNK MAIN (SECTION 1), THE SOUTH MAINLAND TRANSMISSION PIPELINE AND DONGO KUNDU RESERVOIR

DRAWING TITLE:

DONGO KUNDU RESERVOIR SITE
STAFF HOUSE (TYPE C)
DOORS AND WINDOW SCHEDULE

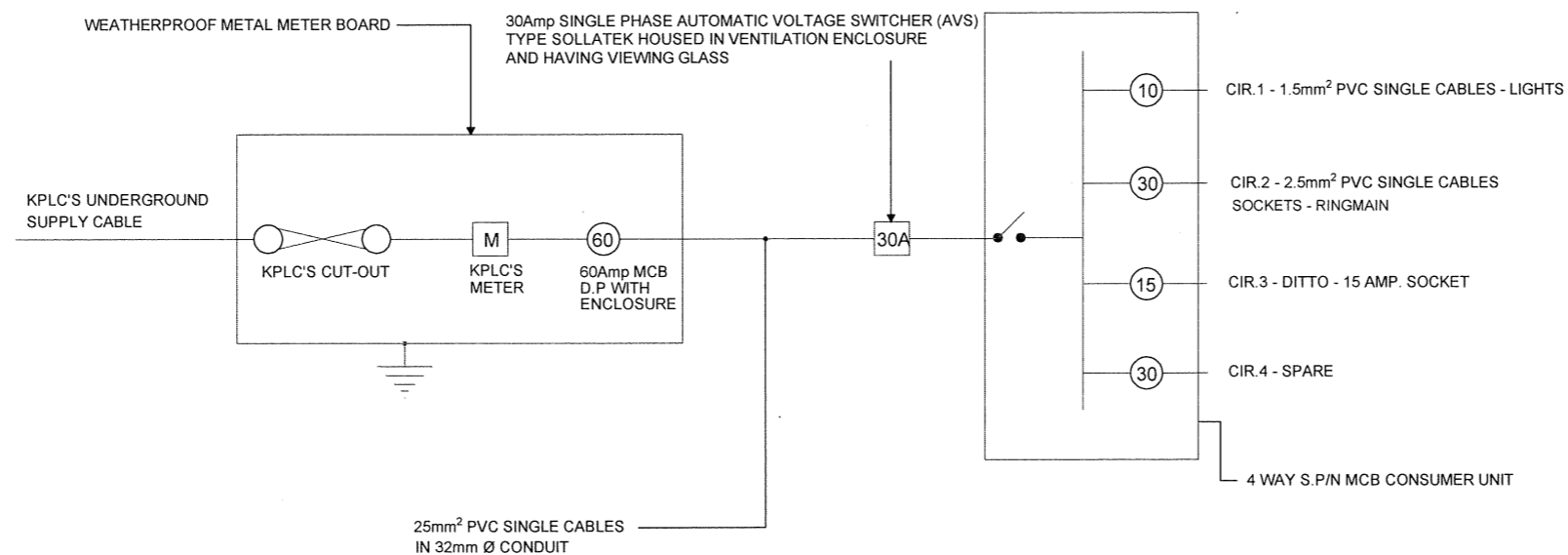
Designed by: J.M.K	Drawn by: O.J.O
Checked by: R.S.R	Approved by: B.D
Scale: 1:40	Date: APRIL 2024

DRAWING No. **M430/MP/SR/DKR/03** REV. 0



PLAN

50mm DIAMETER CONDUIT FOR POWER CABLES
25mm DIAMETER CONDUIT FOR EARTHING CABLES



WIRING DIAGRAM

NOTES:

1. THIS DRAWING TO BE USED FOR ELECTRICAL WORKS ONLY

CLIENT:

THE CHIEF EXECUTIVE OFFICER
COAST WATER WORKS DEVELOPMENT AGENCY
P.O. BOX 90417 - 80100
MOMBASA, KENYA

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PROJECT NAME:
IMPROVEMENT OF DRINKING WATER AND SANITATION SYSTEMS IN MOMBASA: MWACHE CKE 1103

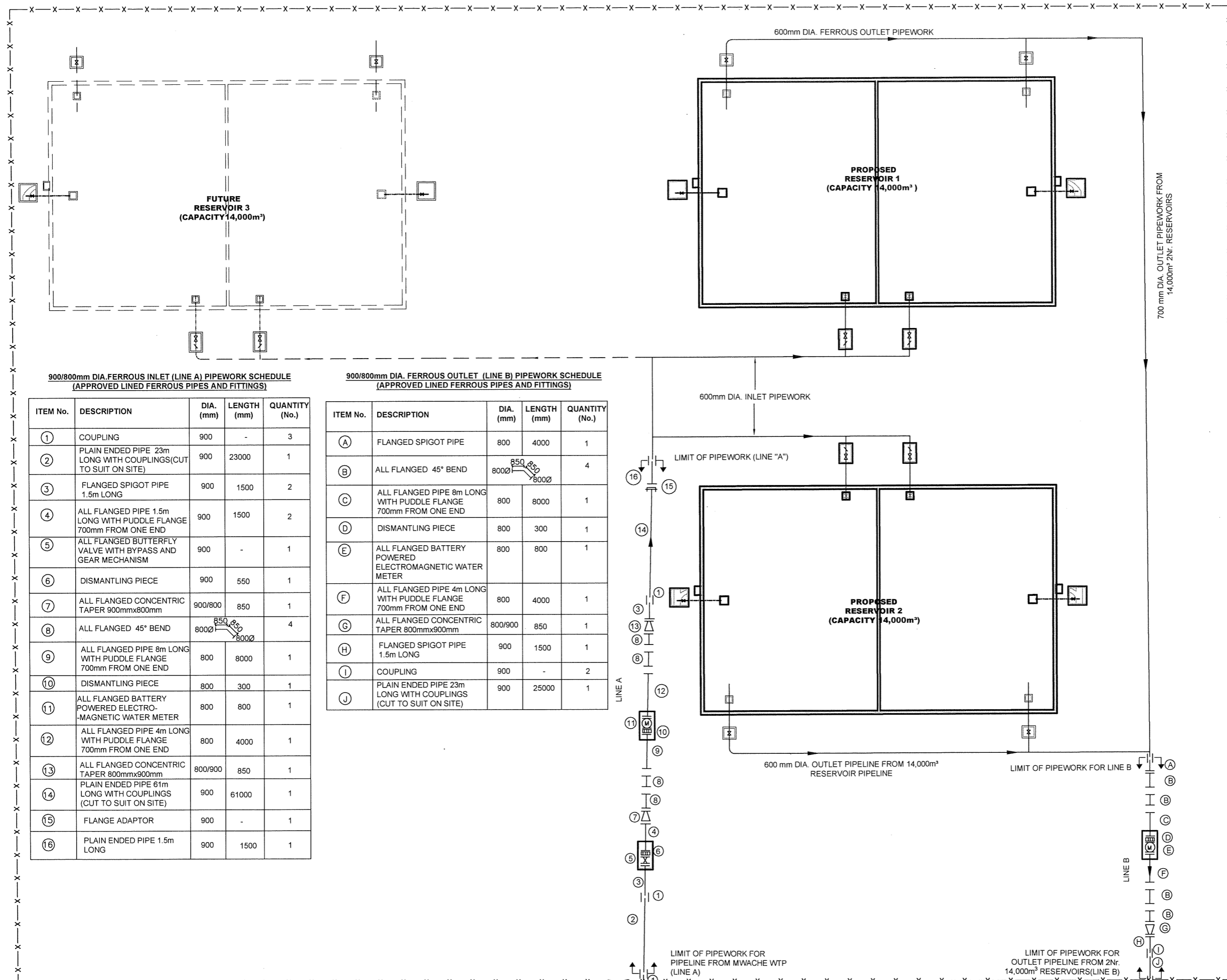
BID No. CWWDA/AFD/PQ/W4/2022-2023
LOT 1: CONSTRUCTION OF THE MWACHE TWIN TRUNK MAIN (SECTION 1), THE SOUTH MAINLAND TRANSMISSION PIPELINE AND DONGO KUNDU RESERVOIR

DRAWING TITLE:
DONGO KUNDU RESERVOIR SITE
STAFF HOUSE (TYPE C)
ELECTRICAL INSTALLATION LAYOUT PLAN

Designed by: J.M.K	Drawn by: O.J.O
Checked by: R.S.R	Approved by: B.D
Scale: 1:100	Date: APRIL 2024

DRAWING No. **M430/MP/SR/DKR/04** | REV. 0

WORKS PIPELINES



- LEGEND:**
- PROPOSED PIPELINES
 - - - FUTURE PIPELINES
 - PROPOSED CONCRETE STRUCTURES
 - - - FUTURE CONCRETE STRUCTURES
 - ↔ PIPEWORK LIMIT
 - x-x- EXISTING FENCELINE
 - ⊗ BUTTERFLY / GATE VALVE

**900/800mm DIA. FERROUS INLET (LINE A) PIPEWORK SCHEDULE
(APPROVED LINED FERROUS PIPES AND FITTINGS)**

ITEM No.	DESCRIPTION	DIA. (mm)	LENGTH (mm)	QUANTITY (No.)
1	COUPLING	900	-	3
2	PLAIN ENDED PIPE 23m LONG WITH COUPLINGS (CUT TO SUIT ON SITE)	900	23000	1
3	FLANGED SPIGOT PIPE 1.5m LONG	900	1500	2
4	ALL FLANGED PIPE 1.5m LONG WITH PUDDLE FLANGE 700mm FROM ONE END	900	1500	2
5	ALL FLANGED BUTTERFLY VALVE WITH BYPASS AND GEAR MECHANISM	900	-	1
6	DISMANTLING PIECE	900	550	1
7	ALL FLANGED CONCENTRIC TAPER 900mmx800mm	900/800	850	1
8	ALL FLANGED 45° BEND	800/800	850	4
9	ALL FLANGED PIPE 8m LONG WITH PUDDLE FLANGE 700mm FROM ONE END	800	8000	1
10	DISMANTLING PIECE	800	300	1
11	ALL FLANGED BATTERY POWERED ELECTRO-MAGNETIC WATER METER	800	800	1
12	ALL FLANGED PIPE 4m LONG WITH PUDDLE FLANGE 700mm FROM ONE END	800	4000	1
13	ALL FLANGED CONCENTRIC TAPER 800mmx900mm	800/900	850	1
14	PLAIN ENDED PIPE 61m LONG WITH COUPLINGS (CUT TO SUIT ON SITE)	900	61000	1
15	FLANGE ADAPTOR	900	-	1
16	PLAIN ENDED PIPE 1.5m LONG	900	1500	1

**900/800mm DIA. FERROUS OUTLET (LINE B) PIPEWORK SCHEDULE
(APPROVED LINED FERROUS PIPES AND FITTINGS)**

ITEM No.	DESCRIPTION	DIA. (mm)	LENGTH (mm)	QUANTITY (No.)
A	FLANGED SPIGOT PIPE	800	4000	1
B	ALL FLANGED 45° BEND	800/800	850	4
C	ALL FLANGED PIPE 8m LONG WITH PUDDLE FLANGE 700mm FROM ONE END	800	8000	1
D	DISMANTLING PIECE	800	300	1
E	ALL FLANGED BATTERY POWERED ELECTROMAGNETIC WATER METER	800	800	1
F	ALL FLANGED PIPE 4m LONG WITH PUDDLE FLANGE 700mm FROM ONE END	800	4000	1
G	ALL FLANGED CONCENTRIC TAPER 800mmx900mm	800/900	850	1
H	FLANGED SPIGOT PIPE 1.5m LONG	900	1500	1
I	COUPLING	900	-	2
J	PLAIN ENDED PIPE 23m LONG WITH COUPLINGS (CUT TO SUIT ON SITE)	900	25000	1

**DONGO KUNDU RESERVOIRS SITE
LAYOUT PLAN - WORKS PIPELINES
NTS**

REVISIONS	SIGN	DATE	APPROVED

CLIENT:

THE CHIEF EXECUTIVE OFFICER
 COAST WATER WORKS DEVELOPMENT AGENCY
 P.O. BOX 90417 - 80100
 MOMBASA, KENYA

CONSULTING ENGINEERS:
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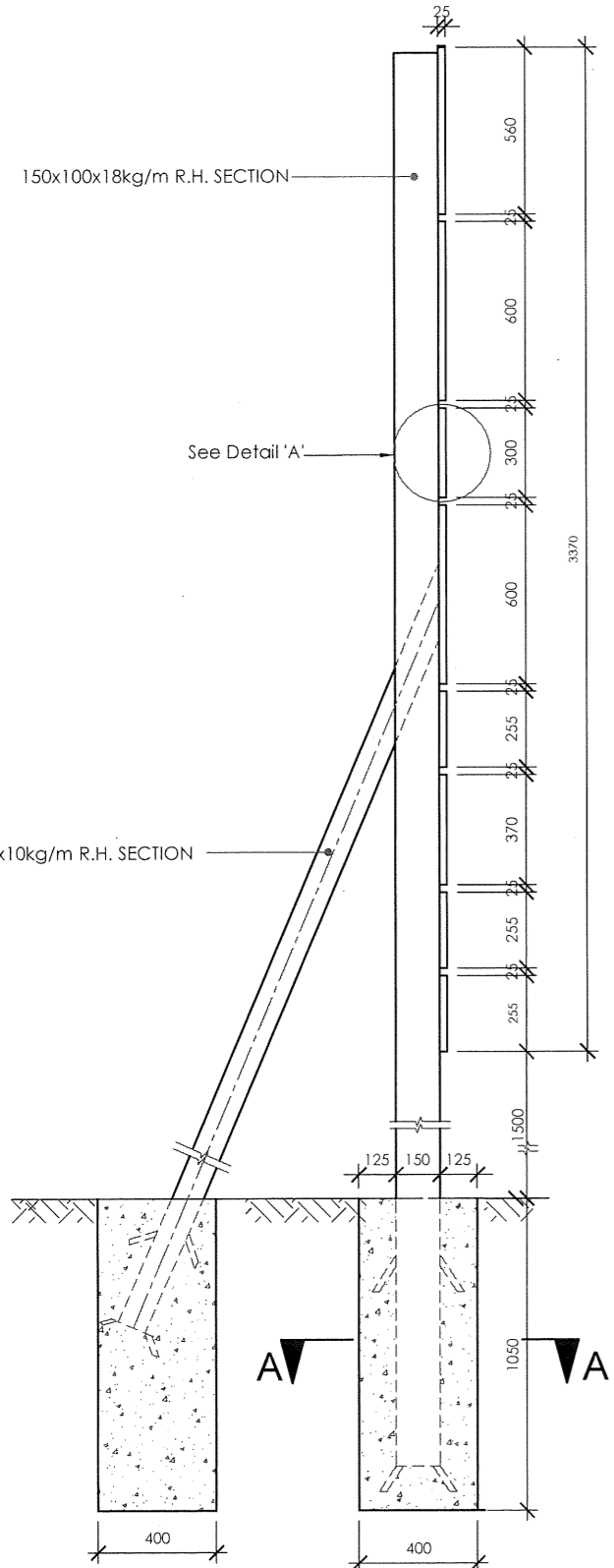
PROJECT NAME:
 IMPROVEMENT OF DRINKING WATER AND
 SANITATION SYSTEMS IN MOMBASA:
 MWACHE CKE 1103

BID No. CWWDA/AFD/PQ/W4/2022-2023
LOT 1: CONSTRUCTION OF THE MWACHE TRUNK MAIN (SECTION 1) AND SOUTH MAINLAND TRANSMISSION MAIN.

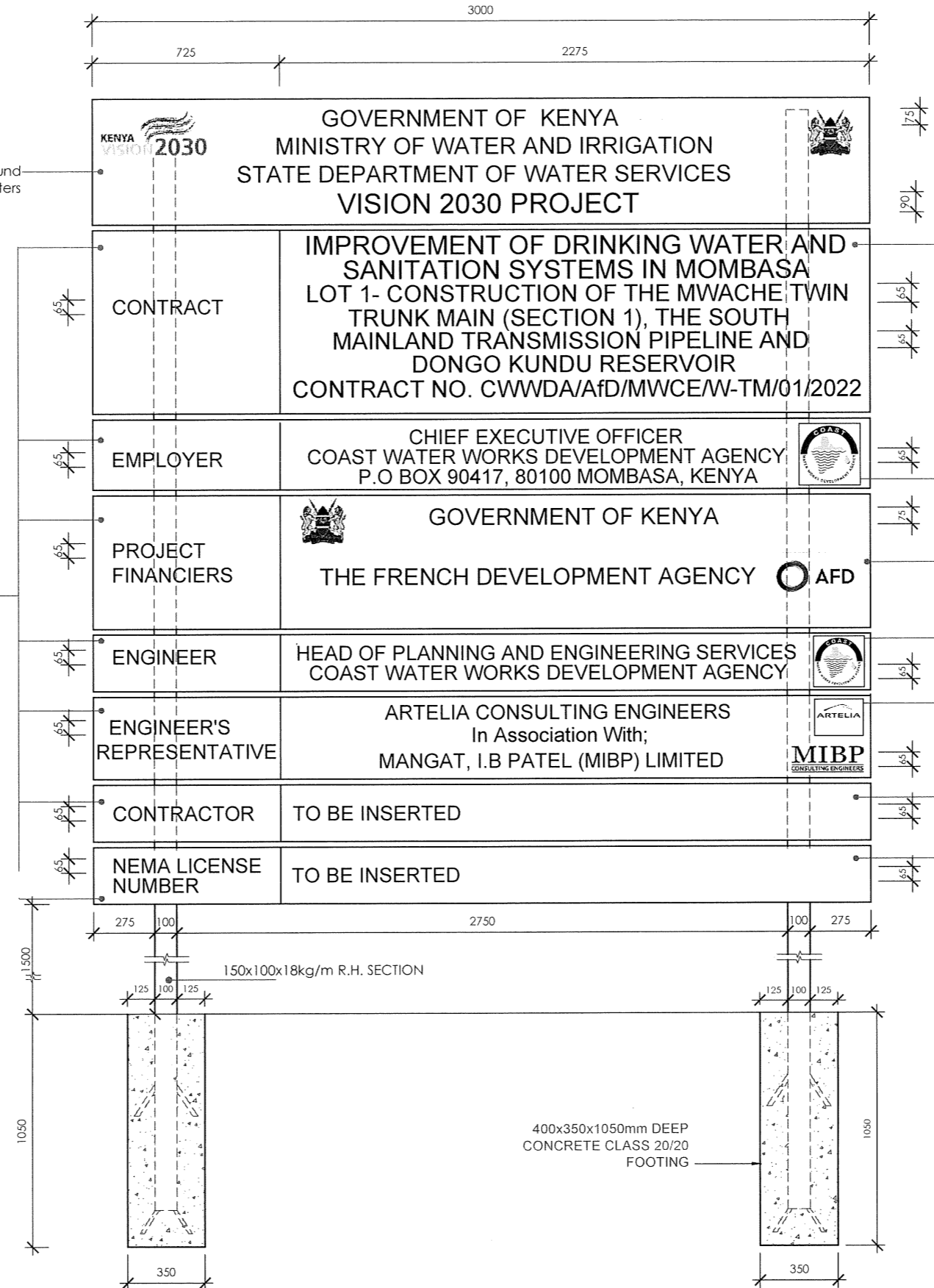
DRAWING TITLE:
**DONGO KUNDU RESERVOIR SITE
 (14,000m³)
 WORKS PIPELINE
 SHEET 1 OF 1**

Designed by: J.M.K	Drawn by: L.G
Checked by: R.S.R	Approved by: B.D
Scale: NTS	Date: APRIL 2024
DRAWING No. M430/MP/SR/DKR/WP/01	
REV. 0	

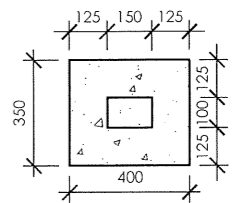
STANDARD DRAWINGS



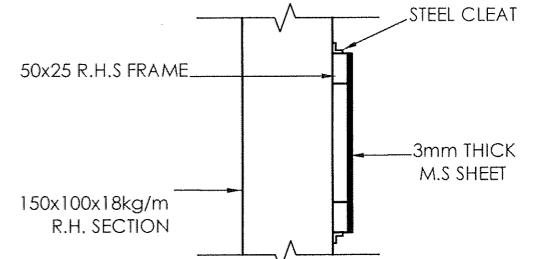
SIDE ELEVATION



400x350x1050mm DEEP
CONCRETE CLASS 20/20
FOOTING



SECTION A - A



DETAIL 'A'
N.T.S

White background
with black letters

Pebble 00A01
background
with black letters

Pebble 00A01
background with
black letters

True blue 20E51
background with
white letters

White background
with black letters

True blue 20E51
background with
white letters

Peanut Butter 06c33
background with
black letters


Pebble 00A01
background with
black letters

Lollipop 12E51
background with
black letters

- NOTES**
- DIMENSIONS ARE IN MM UNLESS OTHERWISE STATED
 - INSTALLATION LOCATIONS
 - TO BE INSERTED
 - TO BE INSERTED
 - TO BE INSERTED

AS BUILT

REVISION	DESCRIPTION	DATE

CLIENT:
 THE CHIEF EXECUTIVE OFFICER
 COAST WATER WORKS DEVELOPMENT
 AGENCY
 P.O. BOX 90417 - 80100
 MOMBASA, KENYA

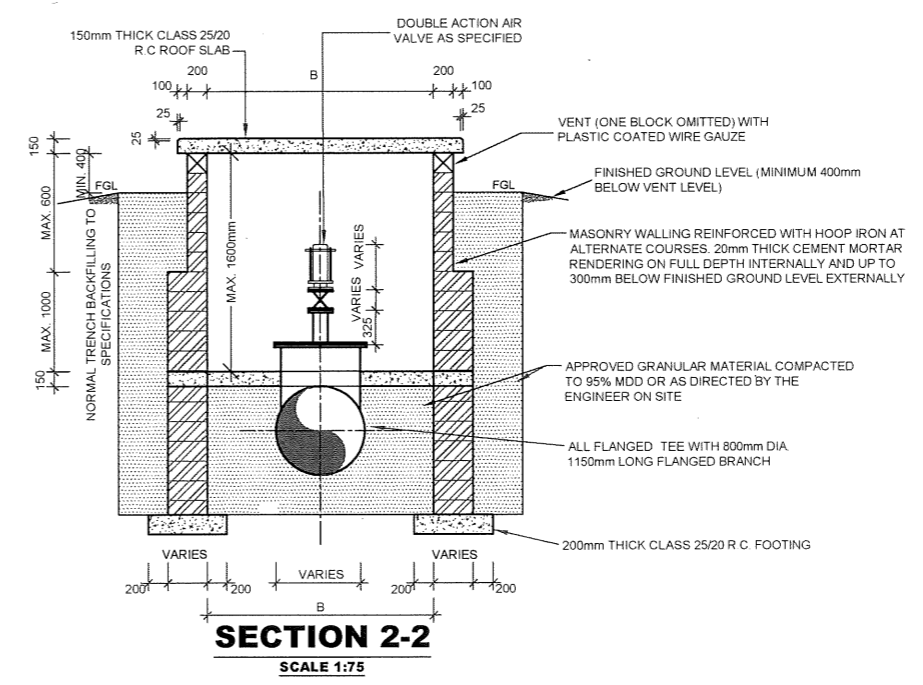
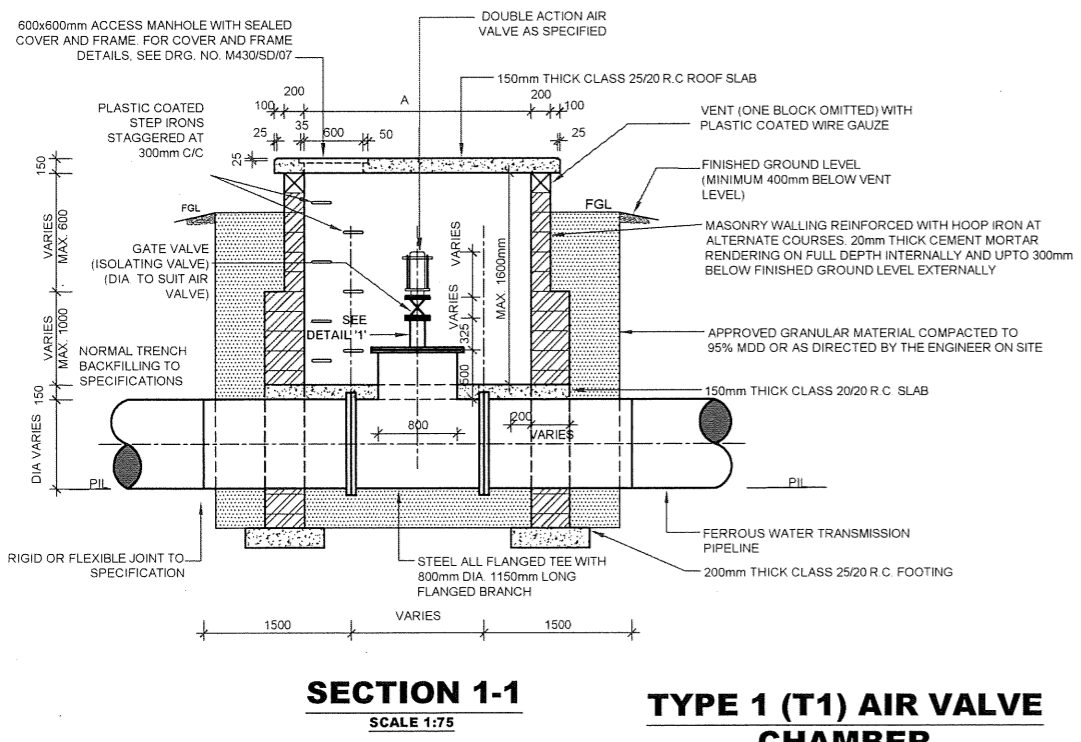
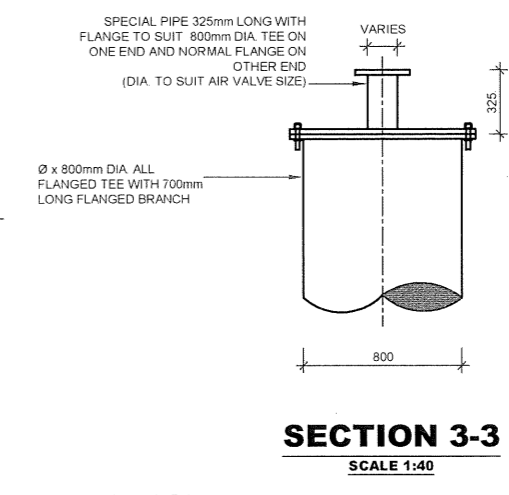
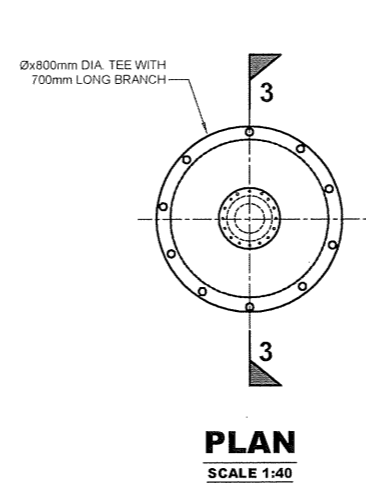
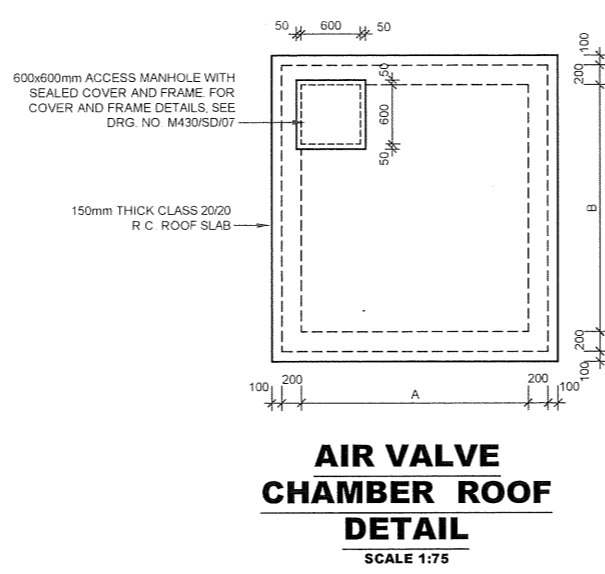
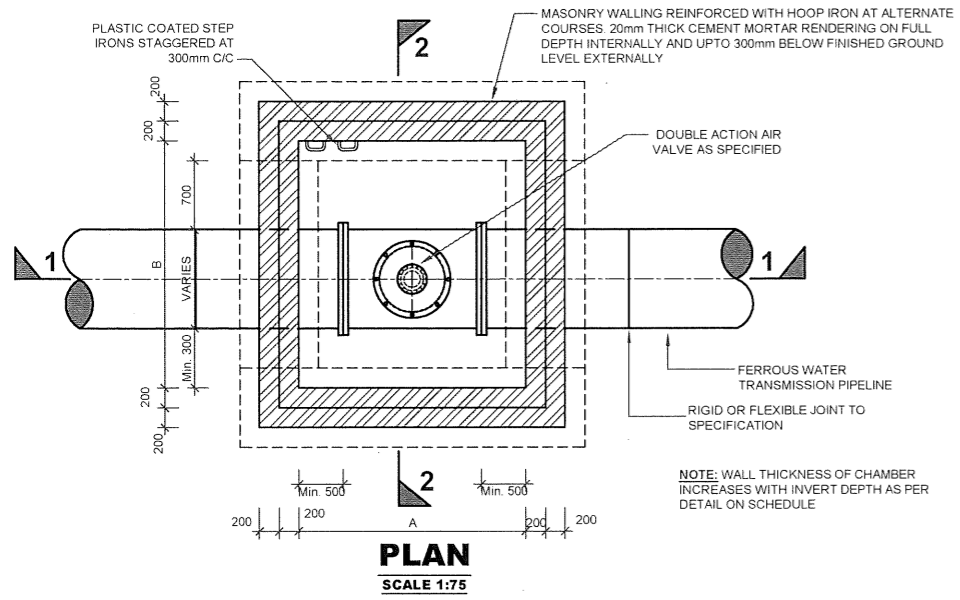
CONSULTING ENGINEERS:
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 TEL: +254-2-2710500

PROJECT:
**IMPROVEMENT OF DRINKING WATER
 AND SANITATION SYSTEMS IN
 MOMBASA: MWACHE CKE 1103**
 BID No.CWWDA/AFD/PQ/W4/2022-2023
 LOT 1: CONSTRUCTION OF THE MWACHE
 TWIN TRUNK MAIN (SECTION 1), THE SOUTH
 MAINLAND TRANSMISSION PIPELINE AND
 DONGO KUNDU RESERVOIR

DRAWING TITLE:
 STANDARD DETAIL
PROJECT SIGNBOARD DETAILS

DESIGNED BY: J.M.K	DRAWN BY: O.J.O
CHECKED BY: R.S.R	APPROVED BY: B.D
SCALE: 1:25	DATE: APRIL 2024
DRAWING No. M430/SD/01	



- NOTES:**
1. ALL DIMENSIONS IN mm UNLESS OTHERWISE STATED
 2. FOR COVER DETAILS, SEE DRG. No. M430/SD/07
 3. ALL REINFORCED CONCRETE IN CLASS 25/20 UNLESS OTHERWISE STATED
 4. ALL EXPOSED CONCRETE EDGES HAVE A 25x25mm CHAMFER
 5. ALL FITTINGS ARE FERROUS TYPE RIGID JOINTED BY BUTT-WELDING AND/OR MECHANICAL/FLEXIBLE JOINTED (FLANGED, COUPLING OR SOCKET AND SPIGOT JOINT)

- ABBREVIATIONS**
- mm - MILLIMETRES
 - FGL - FINISHED GROUND LEVEL
 - PIL - PIPE INVERT LEVEL
 - DIA - DIAMETER
 - Ø - DIAMETER
 - R.C. - REINFORCED CONCRETE
 - G.M.S. - GALVANIZED MILD STEEL
 - M.S. - MILD STEEL
 - c/c - CENTER TO CENTRE
 - No. - NUMBER
 - L - LENGTH

REV	REVISIONS	SIGN	DATE	APPROVED

CLIENT:
 THE CHIEF EXECUTIVE OFFICER
 COAST WATER WORKS DEVELOPMENT AGENCY
 P.O. BOX 90417 - 80100
 MOMBASA, KENYA

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 TEL: +254-2-2710500

PROJECT:
 IMPROVEMENT OF DRINKING WATER AND SANITATION SYSTEMS IN MOMBASA: MWACHE CKE 1103

BID No.CWWDA/AFD/PQW4/2022-2023

LOT 1: CONSTRUCTION OF THE MWACHE TWIN TRUNK MAIN (SECTION 1) AND SOUTH MAINLAND TRANSMISSION PIPELINE

DRAWING TITLE:
 STANDARD DETAILS
 AIR VALVE CHAMBERS AND FITTINGS
 (SHEET 1 OF 2)

DESIGNED BY: J.M.K	DRAWN BY: V.K
CHECKED BY: R.S.R	APPROVED BY: B.D
SCALE: AS SHOWN	DATE: APRIL 2024
DRAWING No. M430/SD/02-1	

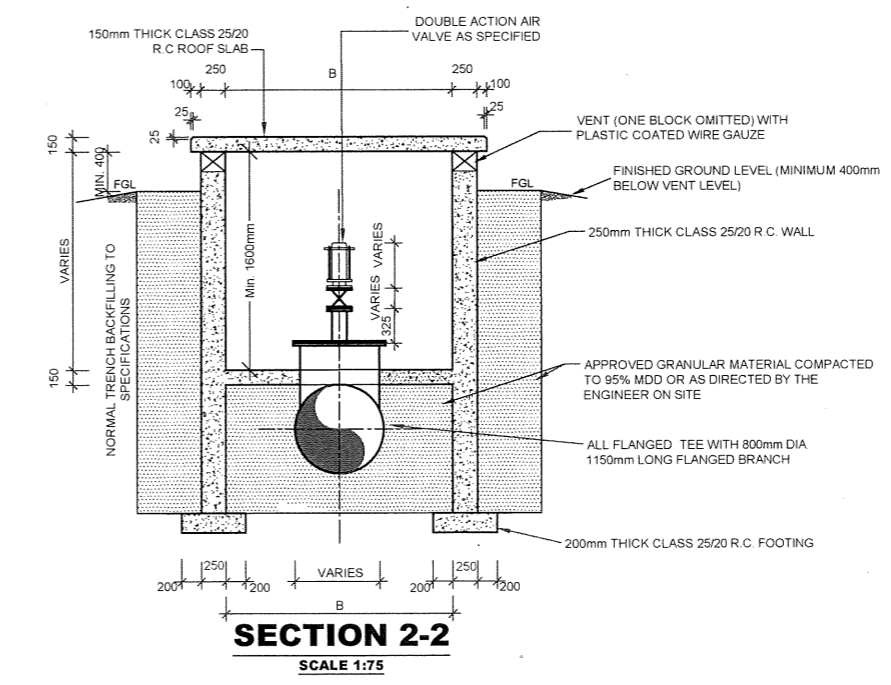
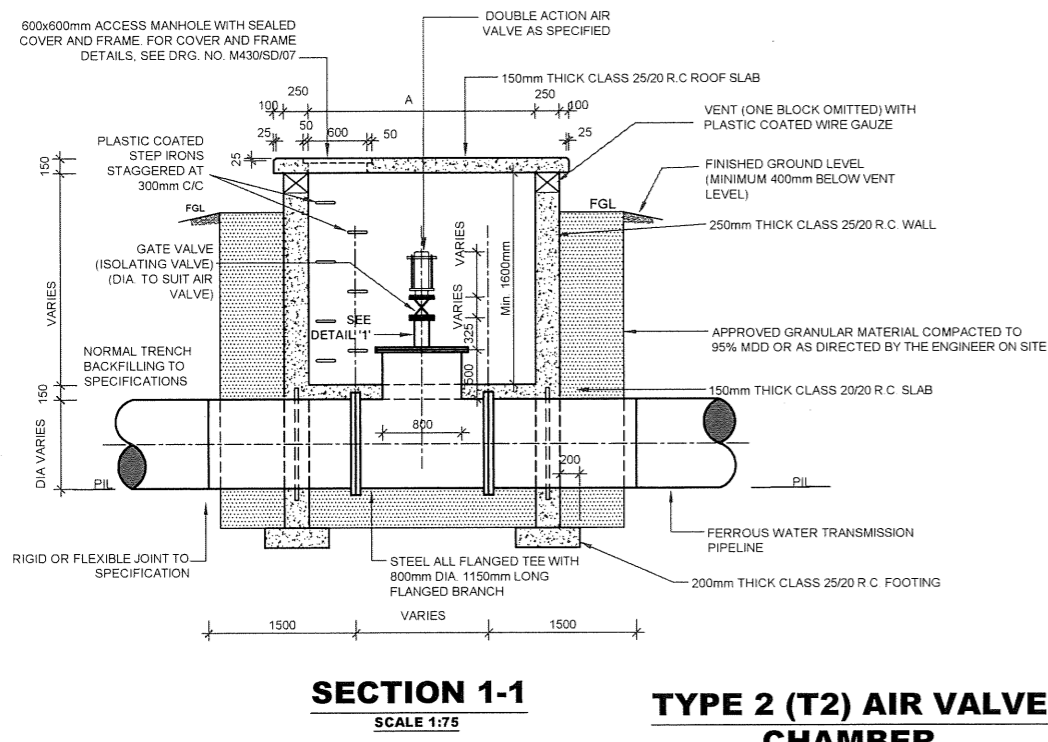
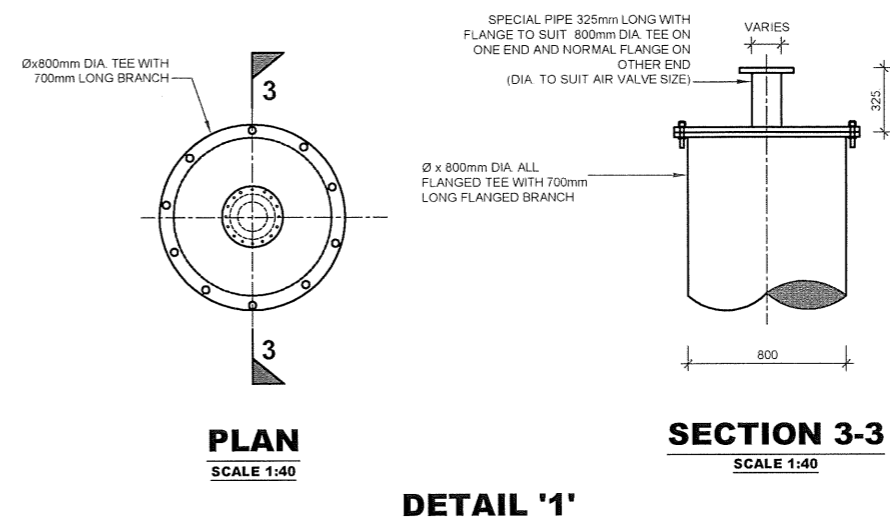
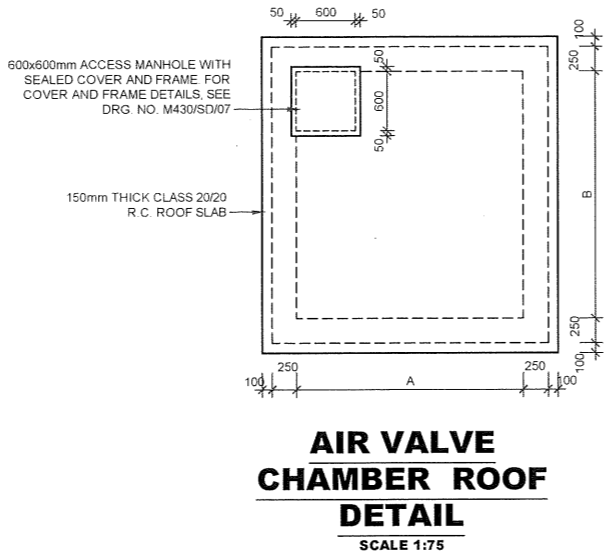
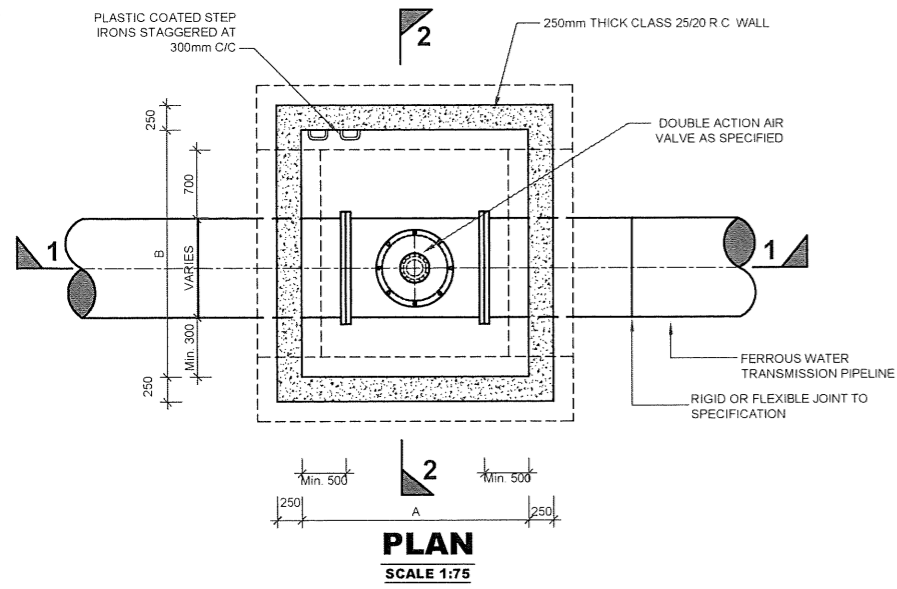
STANDARD AIR VALVE CHAMBER DIMENSIONS SCHEDULE

MAIN PIPE DIA Ø (mm)	PLAN SIZE (INTERNAL DIMENSIONS) A(mm) x B(mm)
900	2400 x 2000
1000	2400 x 2000

STANDARD AIR VALVE CHAMBER WALLING TYPE

INVERT DEPTHS (mm)	HEIGHT OF WALL (mm)	WALL WIDTH/ TYPE (mm)
0 - 600	600	200mm - MASONRY WALL
600 - 1600	1000	400mm - MASONRY WALL
>1600		250mm - CLASS 25/20 R.C. WALL

- GENERAL NOTES:**
1. PRESSURE RATING FOR ALL AIR VALVE PIPEWORK AND FITTINGS TO PN 16
 2. THE PIPEWORK MATERIAL PIPELINE IS FERROUS TYPE TO DESIGN PRESSURE RATING, AS SPECIFIED
 3. RIGID JOINT REFERS TO BUTT WELDED JOINT WHILE FLEXIBLE JOINT REFERS TO COUPLING, FLANGED OR SOCKET AND SPIGOT JOINT
 4. FOR FITTINGS SCHEDULES, SEE RESPECTIVE PLAN AND PROFILE DRAWINGS AT LOCATION OF AIR VALVES



- NOTES:**
1. ALL DIMENSIONS IN mm UNLESS OTHERWISE STATED
 2. FOR COVER DETAILS, SEE DRG. No. M430/SD/07
 3. ALL REINFORCED CONCRETE IN CLASS 25/20 UNLESS OTHERWISE STATED
 4. ALL EXPOSED CONCRETE EDGES HAVE A 25x25mm CHAMFER
 5. ALL FITTINGS ARE FERROUS TYPE RIGID JOINED BY BUTT-WELDING AND/OR MECHANICAL/FLEXIBLE JOINTED (FLANGED, COUPLING OR SOCKET AND SPIGOT JOINT)

- ABBREVIATIONS**
- mm - MILLIMETRES
 - FGL - FINISHED GROUND LEVEL
 - PIL - PIPE INVERT LEVEL
 - DIA - DIAMETER
 - Ø - DIAMETER
 - R.C. - REINFORCED CONCRETE
 - G.M.S - GALVANIZED MILD STEEL
 - M.S. - MILD STEEL
 - c/c - CENTER TO CENTRE
 - No. - NUMBER
 - L - LENGTH

REV	REVISIONS	SIGN	DATE	APPROVED

CLIENT:
 THE CHIEF EXECUTIVE OFFICER
 COAST WATER WORKS DEVELOPMENT AGENCY
 P.O. BOX 90417 - 80100
 MOMBASA, KENYA

CONSULTING ENGINEERS:
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 TEL: +254-2-2710500

PROJECT:
 IMPROVEMENT OF DRINKING WATER AND SANITATION SYSTEMS IN MOMBASA: MWACHE CKE 1103
 BID No.CWWDA/AFD/PQ/W4/2022-2023
 LOT 1: CONSTRUCTION OF THE MWACHE TWIN TRUNK MAIN (SECTION 1), THE SOUTH MAINLAND TRANSMISSION PIPELINE AND DONGO KUNDU RESERVOIR

DRAWING TITLE:
 STANDARD DETAILS
 AIR VALVE CHAMBERS AND FITTINGS
 (SHEET 2 OF 2)

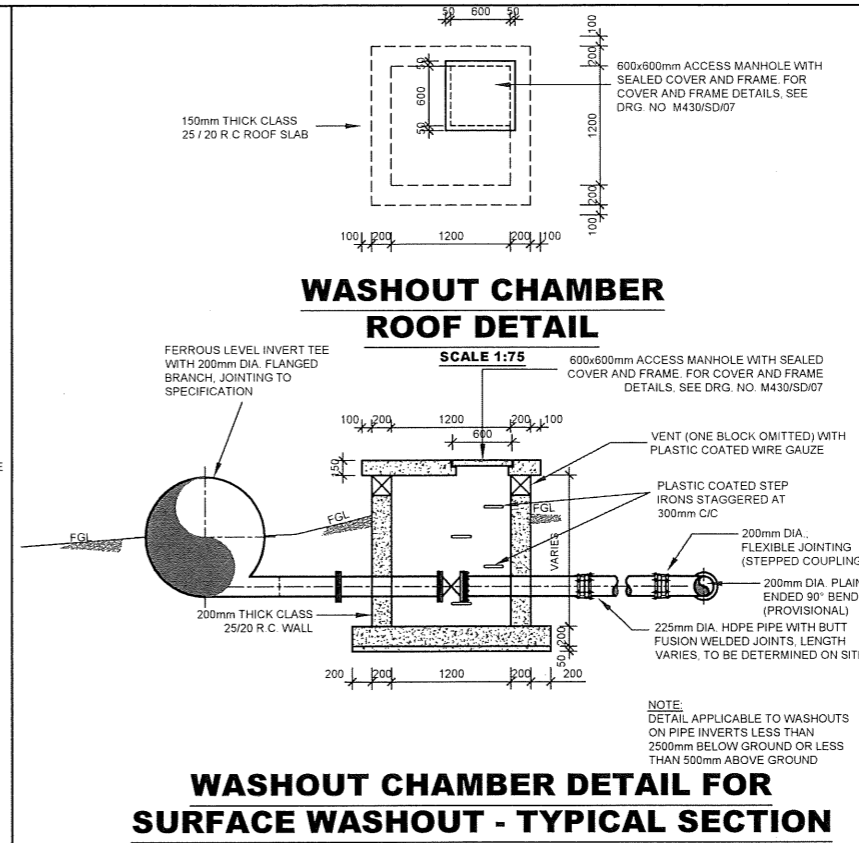
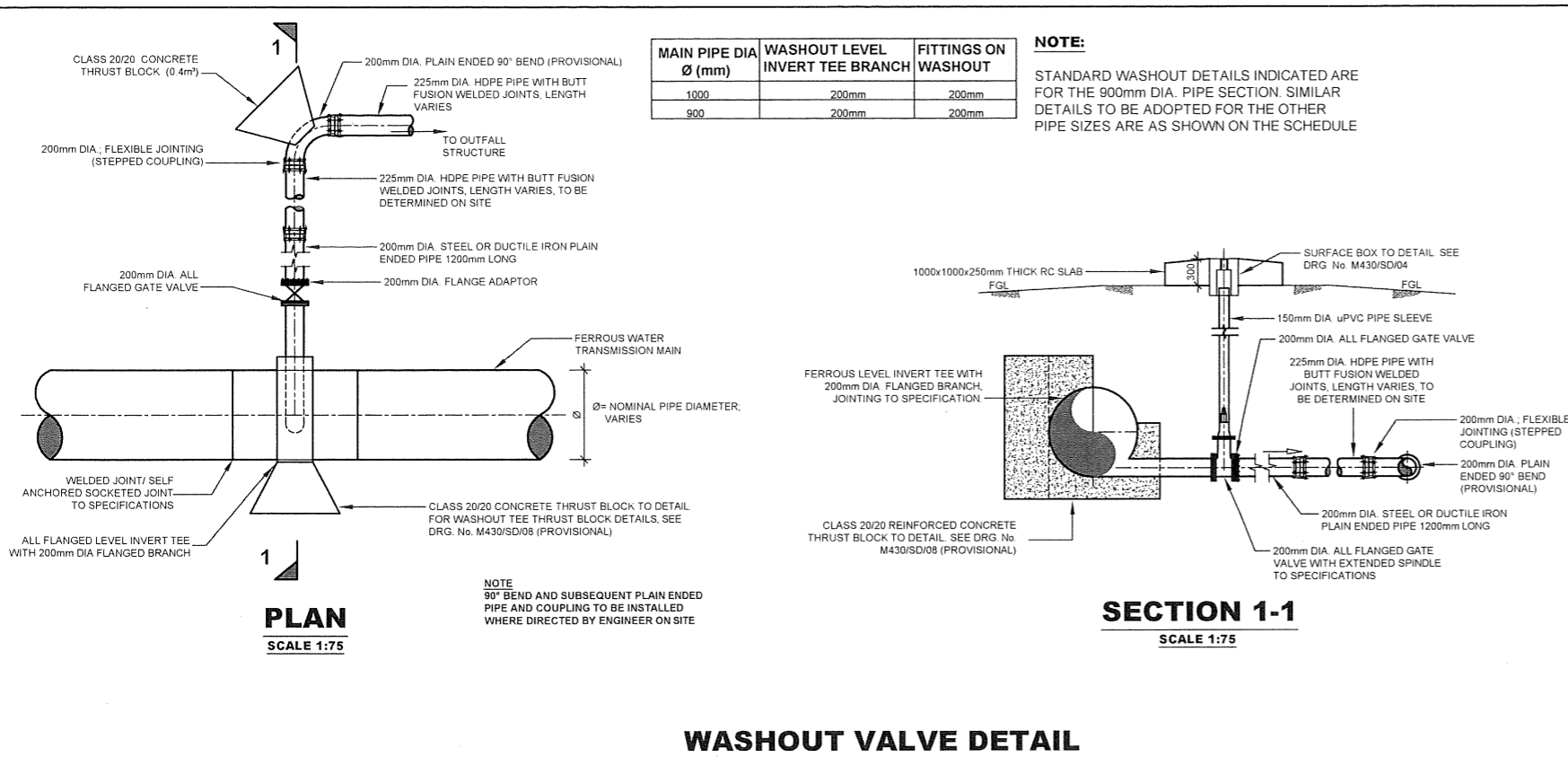
DESIGNED BY: J.M.K	DRAWN BY: V.K
CHECKED BY: R.S.R	APPROVED BY: B.D
SCALE: AS SHOWN	DATE: APRIL 2024
DRAWING No. M430/SD/02-2	

STANDARD AIR VALVE CHAMBER DIMENSIONS SCHEDULE

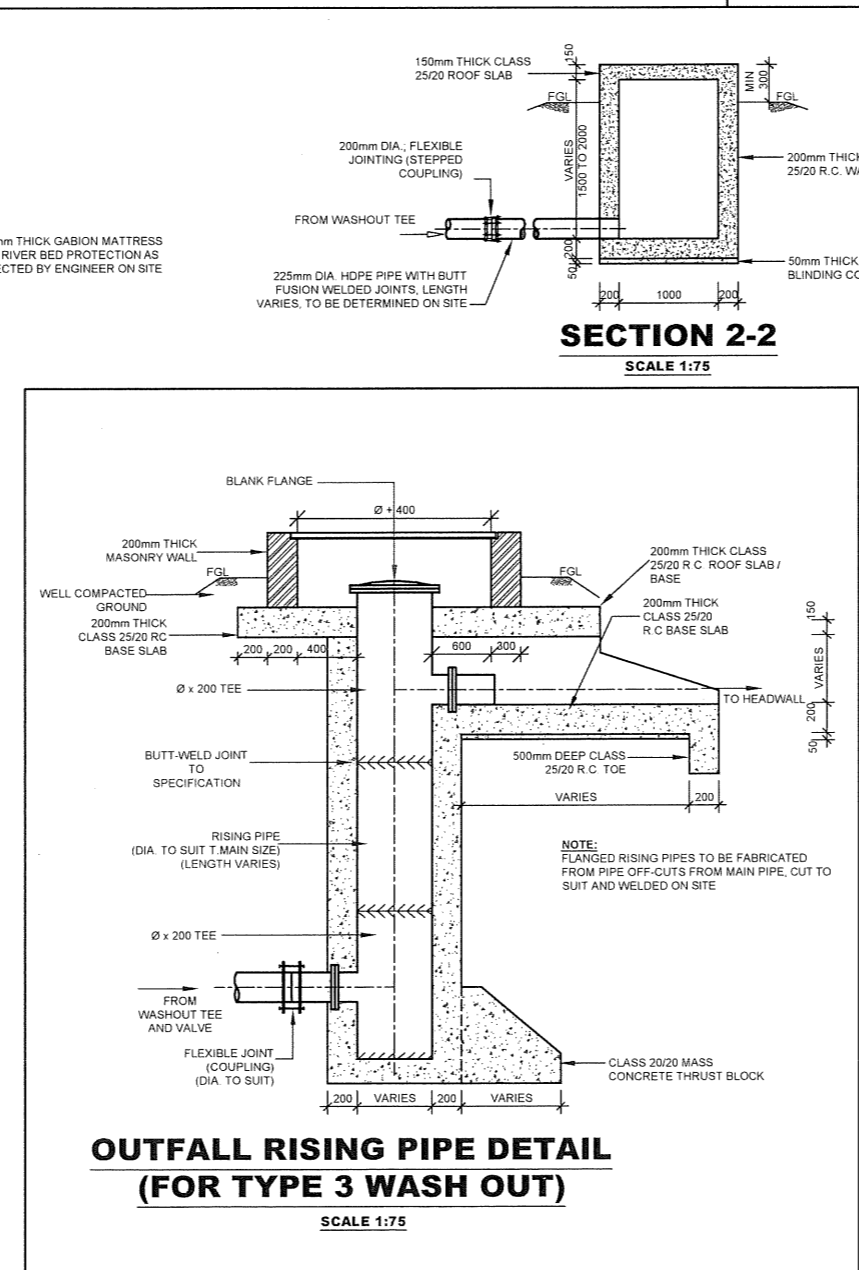
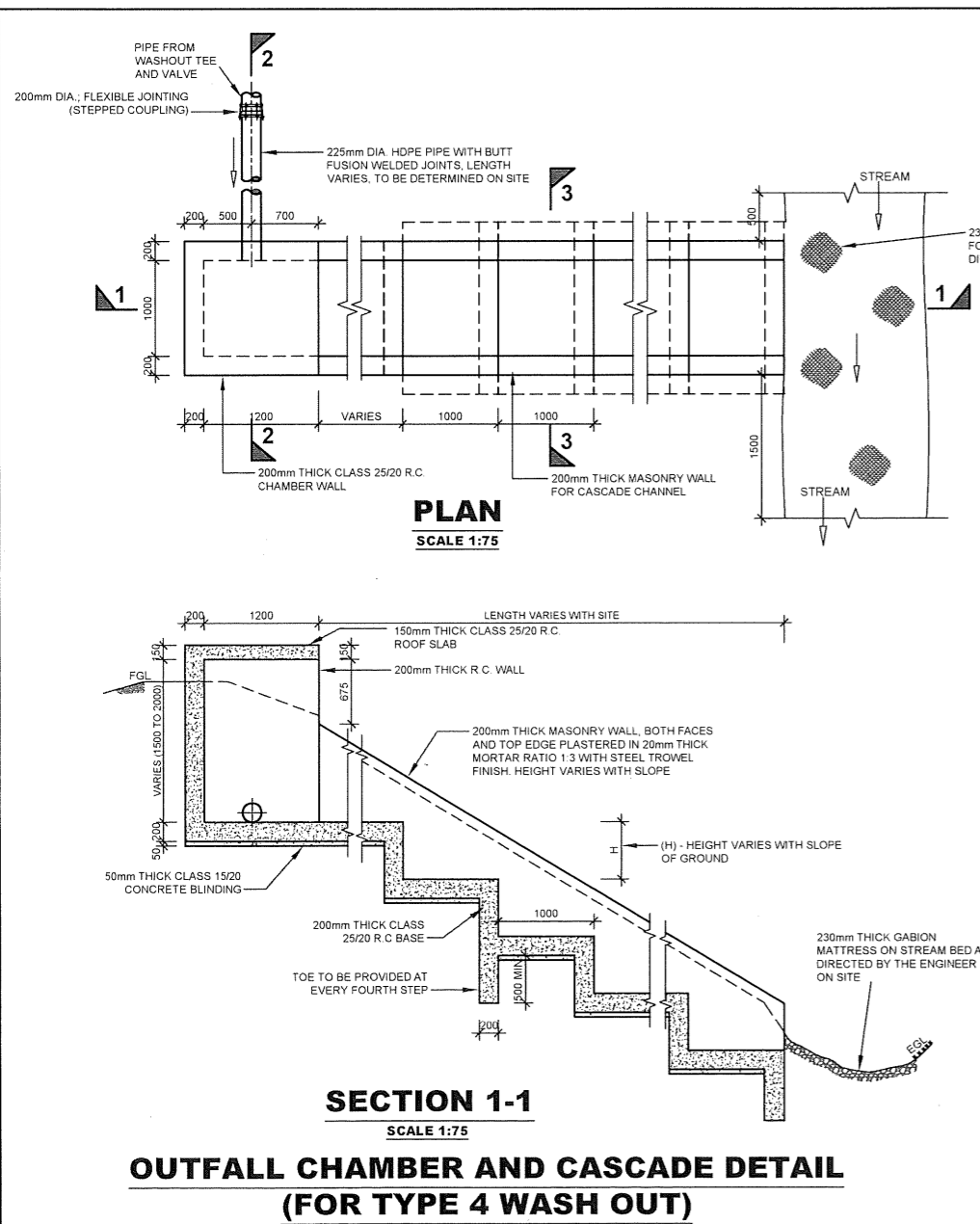
MAIN PIPE DIA Ø (mm)	PLAN SIZE (INTERNAL DIMENSIONS) A(mm) x B(mm)
900	2400 x 2000
1000	2400 x 2000

NOTE:
 FOR CHAMBER DEPTHS >1600mm, R.C. CHAMBER TO BE ADOPTED

- GENERAL NOTES:**
1. PRESSURE RATING FOR ALL AIR VALVE PIPEWORK AND FITTINGS TO PN 16
 2. THE PIPEWORK MATERIAL PIPELINE IS FERROUS TYPE TO DESIGN PRESSURE RATING, AS SPECIFIED
 3. RIGID JOINT REFERS TO BUTT WELDED JOINT WHILE FLEXIBLE JOINT REFERS TO COUPLING, FLANGED OR SOCKET AND SPIGOT JOINT
 4. FOR FITTINGS SCHEDULES, SEE RESPECTIVE PLAN AND PROFILE DRAWINGS AT LOCATION OF AIR VALVES



- NOTES:**
- ALL DIMENSIONS IN mm UNLESS OTHERWISE STATED
 - ALL REINFORCED CONCRETE IN CLASS 25/20 UNLESS OTHERWISE STATED
 - FOR THRUST BLOCK DETAILS, REFER TO DRG. No. M430/SD/08
 - ALL EXPOSED CONCRETE EDGES HAVE A 25x25mm CHAMFER
 - PRESSURE RATING FOR ALL WASHOUT PIPEWORK AND FITTINGS CORRESPOND TO THE PRESSURE RATING OF THE MAIN PIPELINE
 - ALL FITTINGS ARE FERROUS TYPE RIGID JOINED BY BUTT-WELDING AND/OR MECHANICAL/FLEXIBLE JOINED (FLANGED, COUPLING OR SOCKET AND SPIGOT JOINT)
- ABBREVIATIONS**
- mm - MILLIMETRES
 FGL - FINISHED GROUND LEVEL
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 PIL - PIPE INVERT LEVEL
 DIA - DIAMETER
 R.C. - REINFORCED CONCRETE
 M.S. - MILD STEEL
 c/c - CENTER TO CENTRE
 No. - NUMBER



WASHOUT ARRANGEMENT SCHEDULE

WASHOUT TYPE	USE	SCHEMATIC ARRANGEMENT
1	WASHOUT PIPE ABOVE WATERCOURSE LEVEL WITH HEADWALL DISCHARGE	
2	WASHOUT PIPE BELOW WATER LEVEL - RISING CHAMBER	
3	WASHOUT BELOW WATER LEVEL - RISING PIPE	
4	SPECIAL WASHOUT PIPE ARRANGEMENT TO BE USED AT AERIAL CROSSINGS	

REV	REVISIONS	SIGN	DATE	APPROVED

CLIENT: THE CHIEF EXECUTIVE OFFICER
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 P.O. BOX 90417 - 80100
 MOMBASA, KENYA

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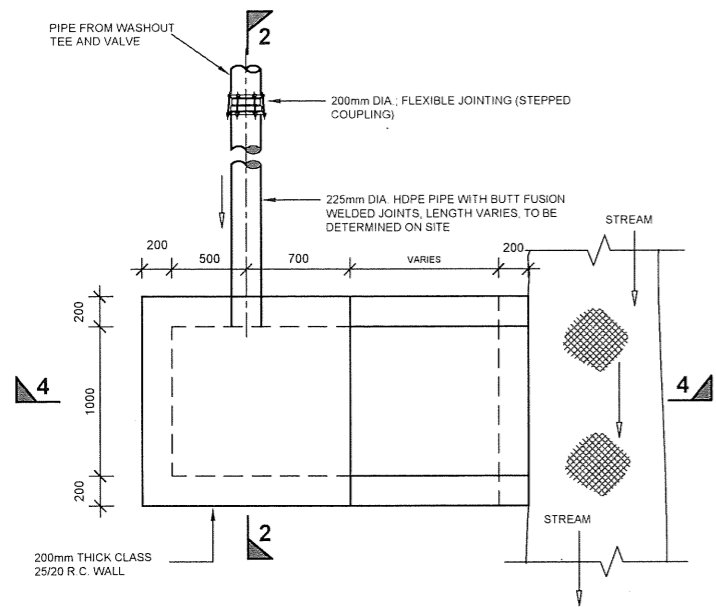
PROJECT: IMPROVEMENT OF DRINKING WATER AND SANITATION SYSTEMS IN MOMBASA: MWACHE CKE 1103
 BID No. CWWDA/AFD/PQ/W4/2022-2023

LOT 1: CONSTRUCTION OF THE MWACHE TWIN TRUNK MAIN (SECTION 1), THE SOUTH MAINLAND TRANSMISSION PIPELINE AND DONGO KUNDU RESERVOIR

DRAWING TITLE: STANDARD DETAILS
 WASHOUT CHAMBERS AND FITTINGS

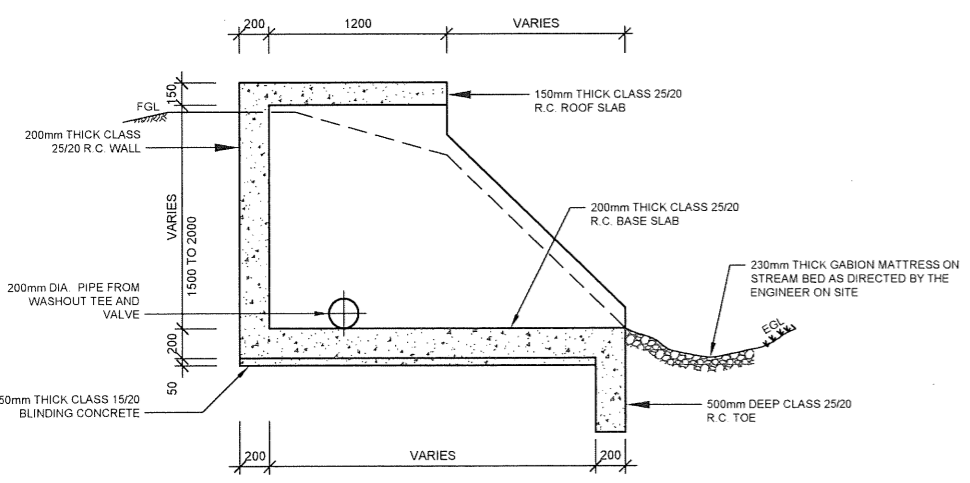
SHEET 1 OF 2

DESIGNED BY: J.M.K DRAWN BY: V.K
 CHECKED BY: R.S.R APPROVED BY: B.D
 SCALE: AS SHOWN DATE: APRIL 2024
 DRAWING No. M430/SD/03

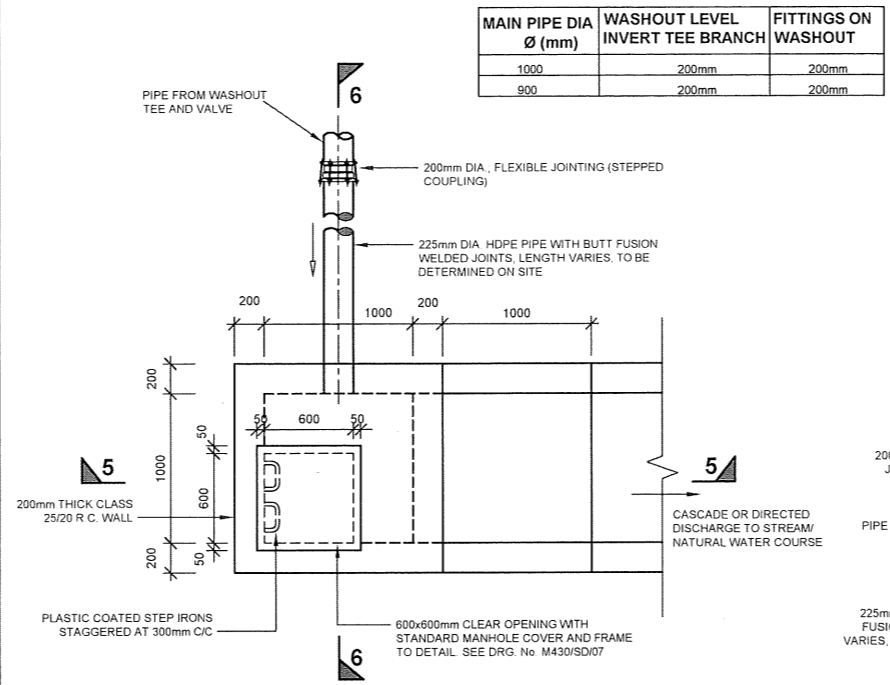


PLAN
SCALE 1:50

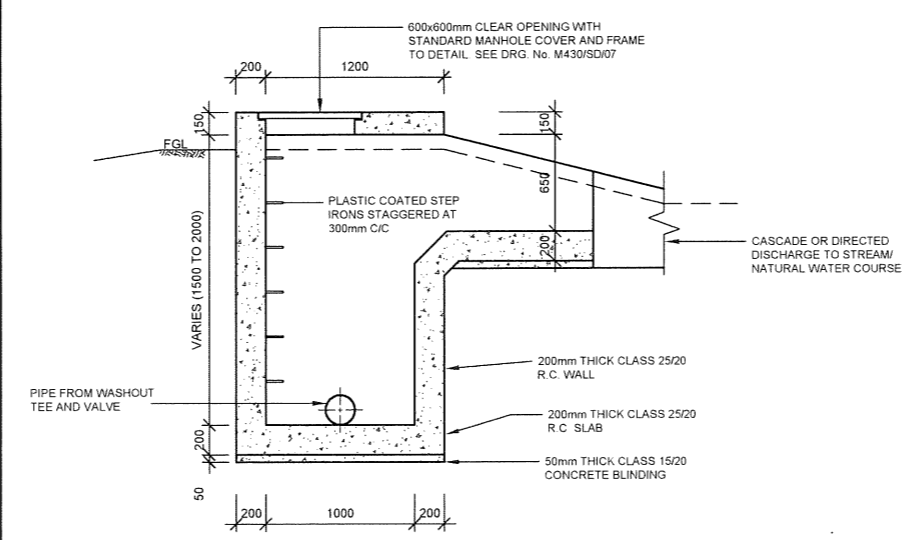
**HEADWALL DETAIL
(FOR TYPE 1 WASH OUT)**



SECTION 4-4
SCALE 1:50



PLAN
SCALE 1:50



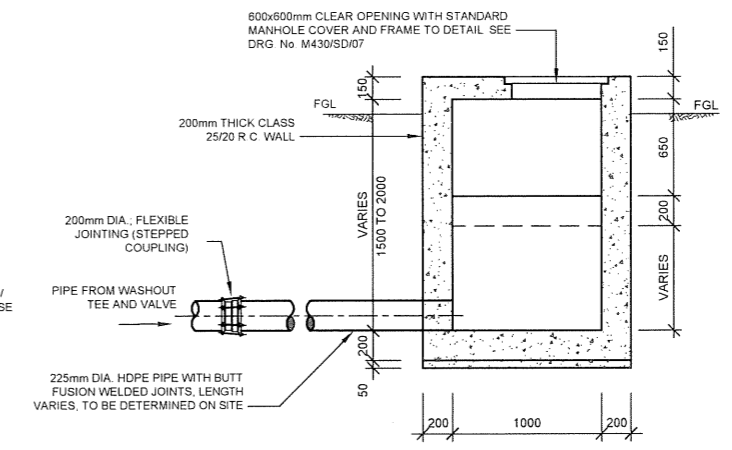
SECTION 5-5
SCALE 1:50

**RIISING OUTLET CHAMBER DETAIL
(FOR TYPE 2 WASH OUT)**

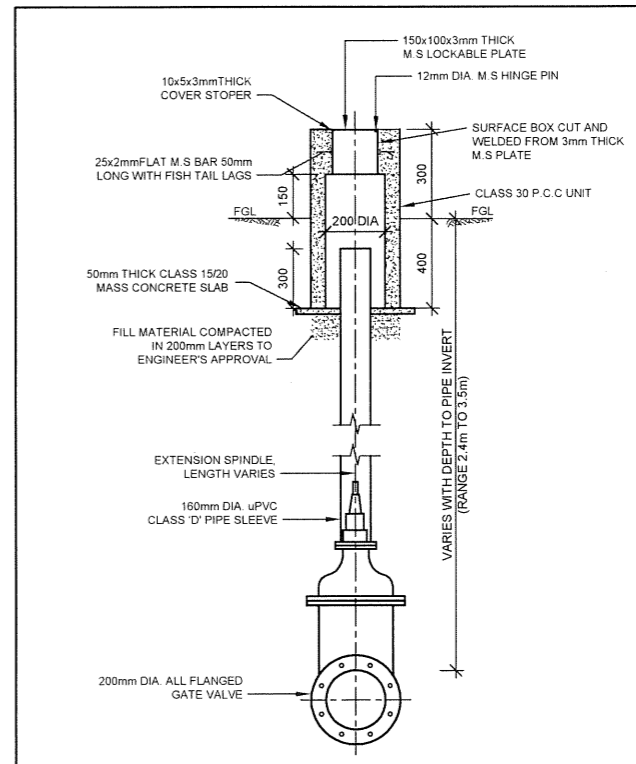
NOTE:-
APPLICABLE WHERE WASHOUT OUTLET
IS BELOW WATER COURSE LEVEL

MAIN PIPE DIA Ø (mm)	WASHOUT LEVEL INVERT TEE BRANCH	FITTINGS ON WASHOUT
1000	200mm	200mm
900	200mm	200mm

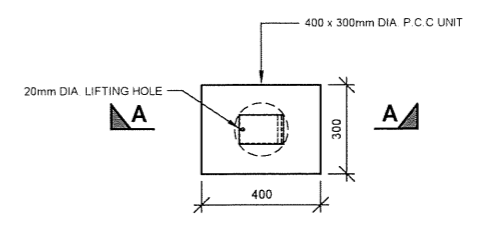
NOTE:
STANDARD WASHOUT DETAILS INDICATED ARE
FOR THE 900mm DIA. PIPE SECTION. SIMILAR
DETAILS TO BE ADOPTED FOR THE OTHER
PIPE SIZE ARE AS SHOWN ON THE SCHEDULE



SECTION 6-6
SCALE 1:50



SECTION A-A
SCALE 1:25



PLAN
SCALE 1:25

DETAIL 1 - SURFACE BOX DETAIL

- NOTES:**
- ALL DIMENSIONS IN mm UNLESS OTHERWISE STATED
 - ALL REINFORCED CONCRETE IN CLASS 25/20 UNLESS OTHERWISE STATED
 - FOR THRUST BLOCK DETAILS, REFER TO DRG. No. M430/SD/08
 - ALL EXPOSED CONCRETE EDGES HAVE A 25x25mm CHAMFER
 - PRESSURE RATING FOR ALL WASHOUT PIPEWORK AND FITTINGS CORRESPOND TO THE PRESSURE RATING OF THE MAIN PIPELINE
 - ALL FITTINGS ARE FERROUS TYPE RIGID JOINED BY BUTT-WELDING AND/OR MECHANICAL/FLEXIBLE JOINED (FLANGED, COUPLING OR SOCKET AND SPIGOT JOINT)

ABBREVIATIONS

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DIA - DIAMETER
R.C. - REINFORCED CONCRETE
M.S. - MILD STEEL
c/c - CENTER TO CENTRE
No. - NUMBER

REV	REVISIONS	SIGN	DATE	APPROVED

CLIENT:
THE CHIEF EXECUTIVE OFFICER
COAST WATER WORKS DEVELOPMENT
AGENCY
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MOMBASA, KENYA

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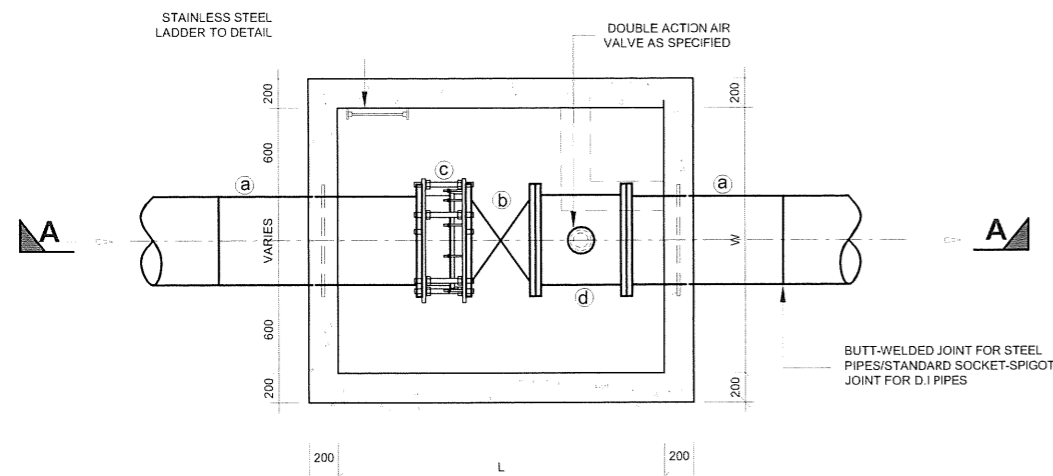
PROJECT:
**IMPROVEMENT OF DRINKING WATER
AND SANITATION SYSTEMS IN
MOMBASA: MWACHE CKE 1103**

BID No.CWWDA/AFD/PQ/W4/2022-2023

**LOT 1: CONSTRUCTION OF THE MWACHE
TWIN TRUNK MAIN (SECTION 1), THE SOUTH
MAINLAND TRANSMISSION PIPELINE AND
DONGO KUNDU RESERVOIR**

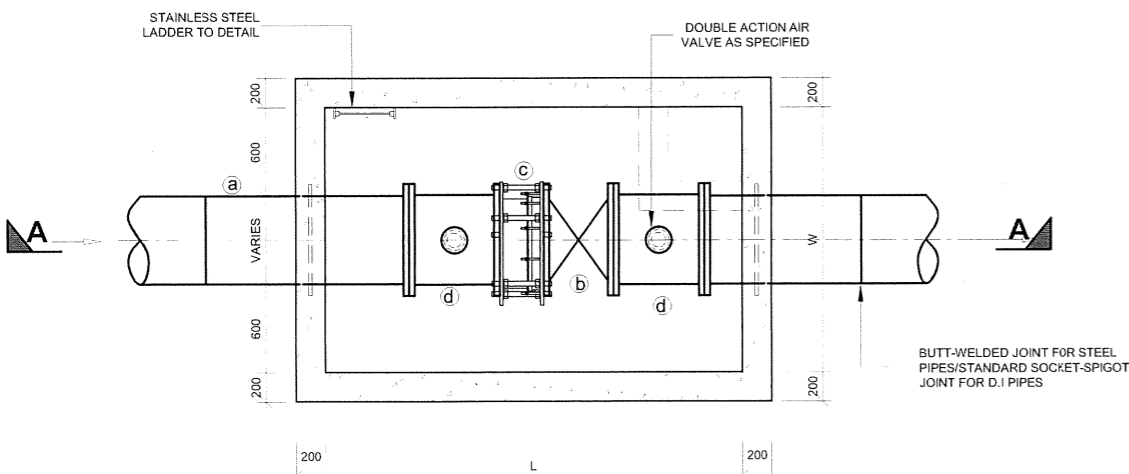
DRAWING TITLE:
STANDARD DETAILS
**WASHOUT CHAMBERS AND
FITTINGS**
SHEET 2 OF 2

DESIGNED BY: J.M.K	DRAWN BY: V.K
CHECKED BY: R.S.R	APPROVED BY: B.D
SCALE: AS SHOWN	DATE: APRIL 2024
DRAWING No. M430/SD/04	



TYPE 1 INLINE VALVE CHAMBER PLAN

SCALE 1:50

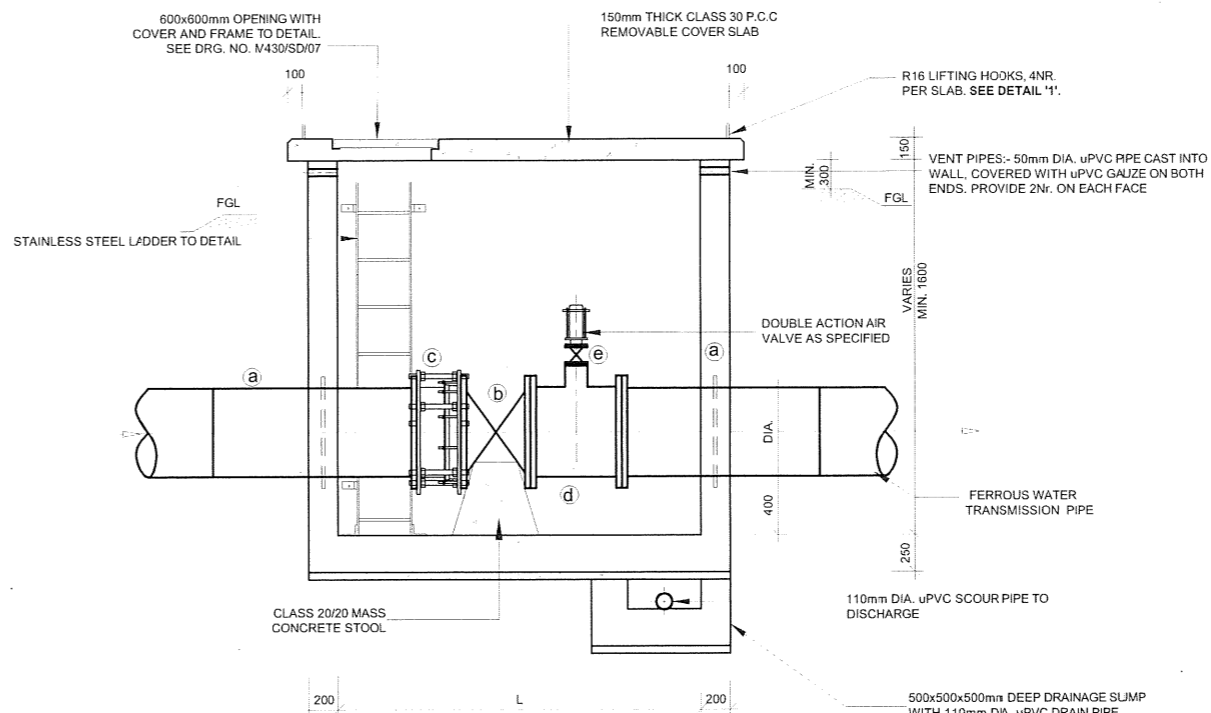


TYPE 2 INLINE VALVE CHAMBER PLAN

SCALE 1:50

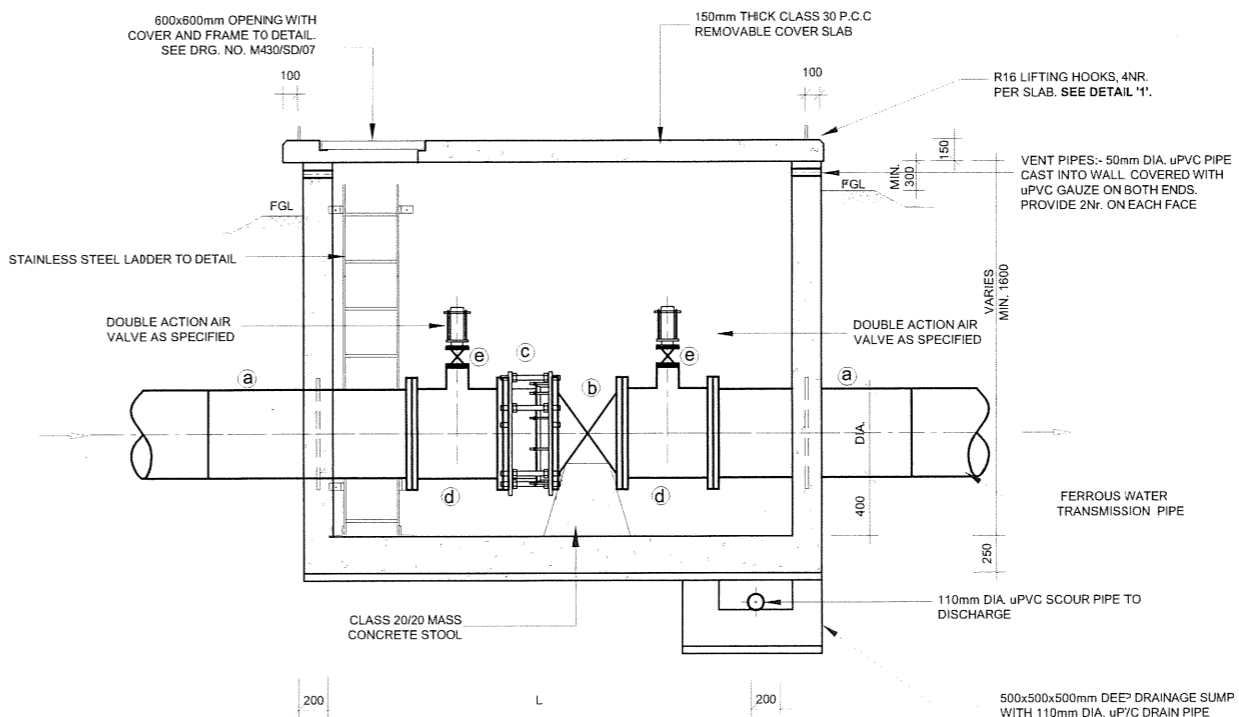
CHAMBER INTERNAL PLAN DIMENSIONS

PIPE DIA. (mm)	OFF TAKE GATE VALVE CHAMBER L(mm) x W(mm)	LINE VALVE CHAMBER (TYPE1) L(mm) x W(mm)	LINE VALVE CHAMBER(TYPE 2) L(mm) x W(mm)	LINE VALVE CHAMBER(TYPE 3) L(mm) x W(mm)
1000	-	2700 x 2400	3500 x 2400	-
900	-	2700 x 2400	-	1900 x 2200
250	1600 x 1300	-	-	-



SECTION A-A

SCALE 1:50



SECTION A-A

SCALE 1:50

SCHEDULE OF FITTINGS FOR INLINE VALVE CHAMBER (TYPE 1, 2 AND 3)

S/Nr.	DESCRIPTION	Nr.
a	FLANGED SPIGOT 1500/1200mm LONG WITH PUDDLE FLANGE (LOCATION OF PUDDLE FLANGE VARIES)	2
b	ALL FLANGED BUTTERFLY VALVE	1
c	DISMANTLING PIECE	1
d	ALL FLANGED TEE (DIA TO SUIT T. PIPELINE)	1
e	ALL FLANGED GATE VALVE (DIA. TO SUIT AIR VALVE)	1

NOTES:

- ALL DIMENSIONS IN mm UNLESS OTHERWISE STATED
- FOR COVER DETAILS, SEE DRG. No. M430/SD/07
- ALL REINFORCED CONCRETE IN CLASS 25/20 UNLESS OTHERWISE STATED
- ALL EXPOSED CONCRETE EDGES HAVE A 20x25mm CHAMFER
- GATE VALVES HAVE IN-BUILT ISOLATING VALVES
- PRESSURE RATING FOR ALL PIPEWORK AND FITTINGS CORRESPOND TO THE PRESSURE RATING OF THE MAIN PIPELINE
- ALL FITTINGS ARE FERROUS TYPE JOINED BY BUTT WELDING AND/OR MECHANICAL/FLEXIBLE JOINTED (FLANGED, COUPLING OR SOCKET AND SPIGOT JOINT)

ABBREVIATIONS

mm	-	MILLIMETRES
FGL	-	FINISHED GROUND LEVEL
PIL	-	PIPE INVERT LEVEL
DIA	-	DIAMETER
Ø	-	DIAMETER
R.C.	-	REINFORCED CONCRETE
G.M.S	-	GALVANIZED MILD STEEL
M.S.	-	MILD STEEL
c/c	-	CENTER TO CENTRE
No.	-	NUMBER
L	-	LENGTH

CLIENT:

**THE CHIEF EXECUTIVE OFFICER
COAST WATER WORKS DEVELOPMENT
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CONSULTING ENGINEERS:

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PROJECT:

**IMPROVEMENT OF DRINKING WATER
AND SANITATION SYSTEMS IN
MOMBASA: MWACHE CKE 1103**

BID No.CWWDA/AFD/PQ/W4/2022-2023

**LOT 1: CONSTRUCTION OF THE MWACHE
TWIN TRUNK MAIN (SECTION 1), THE SOUTH
MAINLAND TRANSMISSION PIPELINE AND
DONGO KUNDU RESERVOIR**

DRAWING TITLE:

STANDARD DETAILS

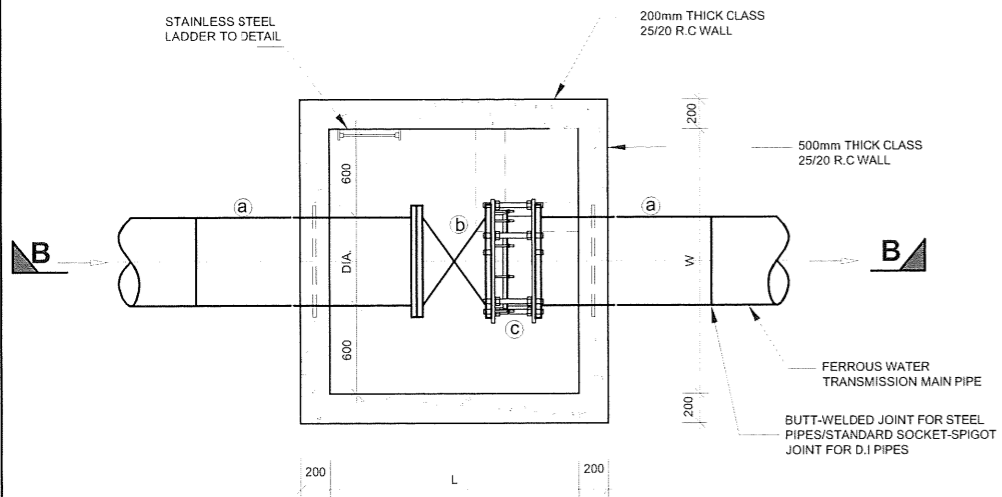
**INLINE/OFFTAKE VALVE CHAMBER, FITTINGS
AND ACCESS LADDER
(SHEET 1 OF 2)**

DESIGNED BY: J.M.K DRAWN BY: V.K

CHECKED BY: R.S.R APPROVED BY: B.D

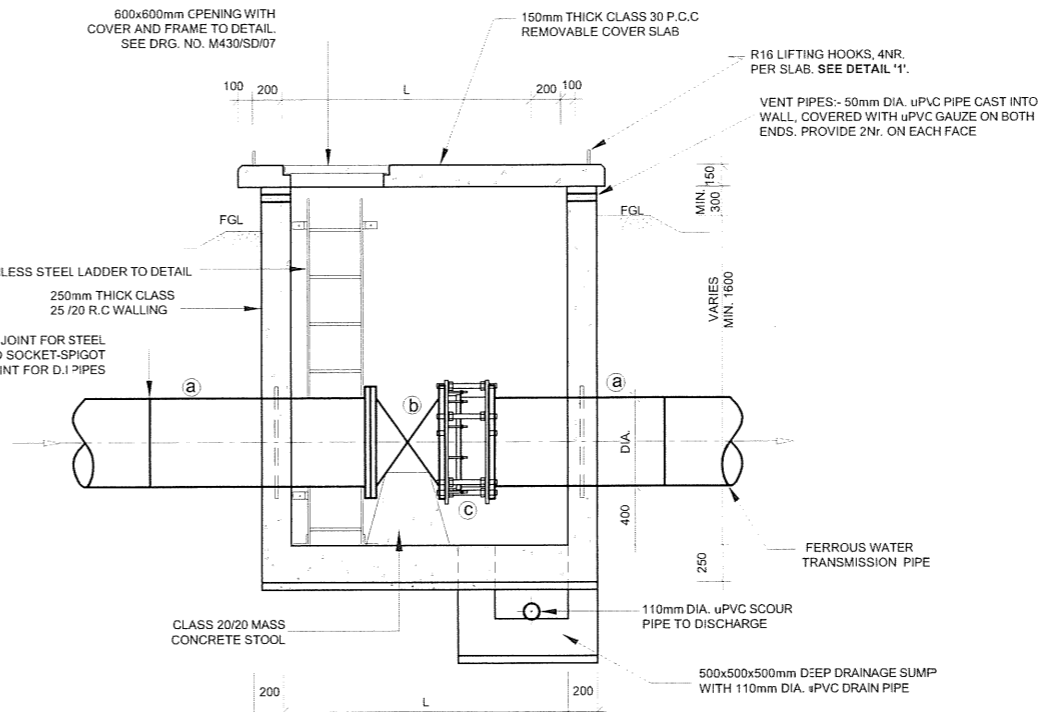
SCALE: AS SHOWN DATE: APRIL 2024

DRAWING No. **M430/SD/05-1**



TYPE 3 INLINE VALVE CHAMBER PLAN

SCALE 1:50



SECTION B-B

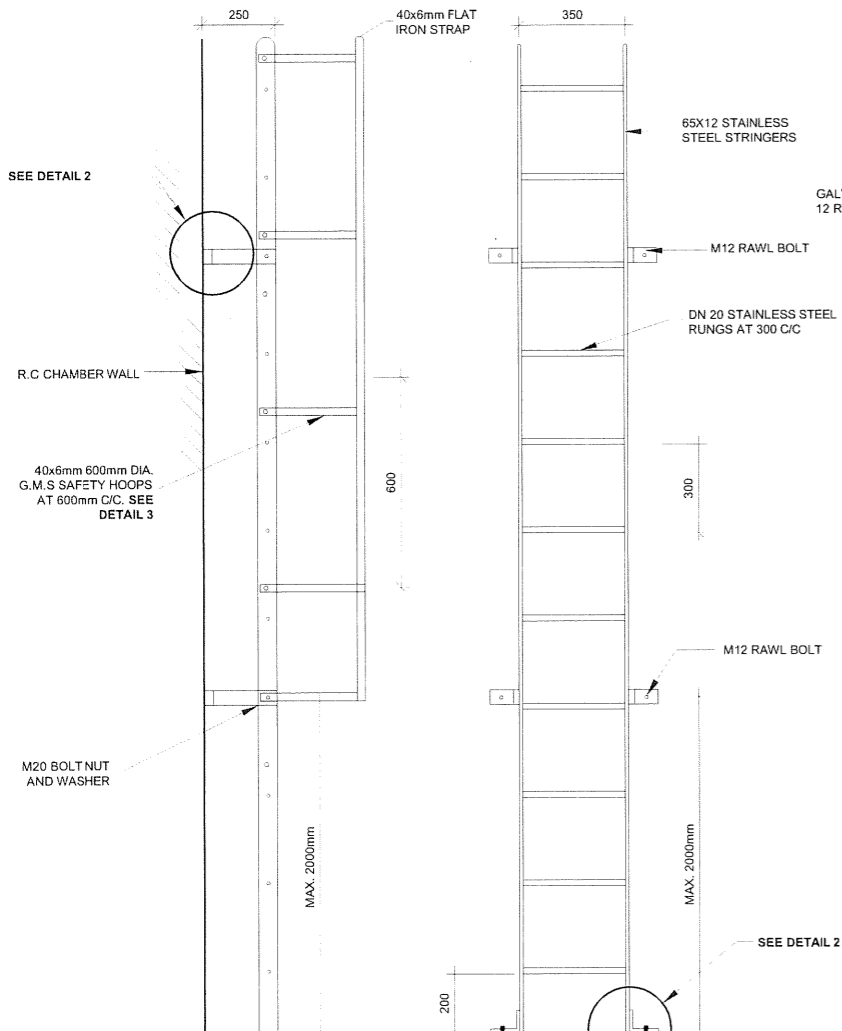
SCALE 1:50

NOTES:

1. ALL DIMENSIONS IN mm UNLESS OTHERWISE STATED
2. FOR COVER DETAILS, SEE DRG. No. M430/SD/07
3. ALL REINFORCED CONCRETE IN CLASS 25/20 UNLESS OTHERWISE STATED
4. ALL EXPOSED CONCRETE EDGES HAVE A 20x25mm CHAMFER
5. GATE VALVES HAVE IN-BUILT ISOLATING VALVES
6. PRESSURE RATING FOR ALL PIPEWORK AND FITTINGS CORRESPOND TO THE PRESSURE RATING OF THE MAIN PIPELINE
7. ALL FITTINGS ARE FERROUS TYPE RIGID JOINED BY BUTT WELDING AND/OR MECHANICAL/FLEXIBLE JOINTED (FLANGED, COUPLING OR SOCKET AND SPIGOT JOINT)

ABBREVIATIONS

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- M.S. - MILD STEEL
- c/c - CENTER TO CENTRE
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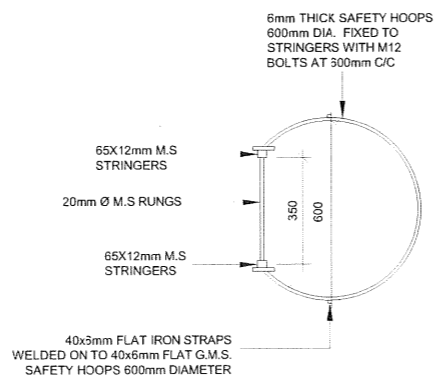


LADDER DETAIL

SCALE 1:25

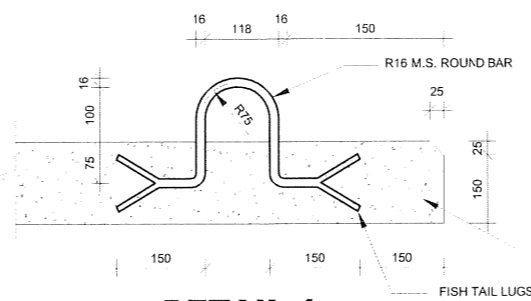
DETAIL 2 - AT WALL & BASE

SCALE 1:5



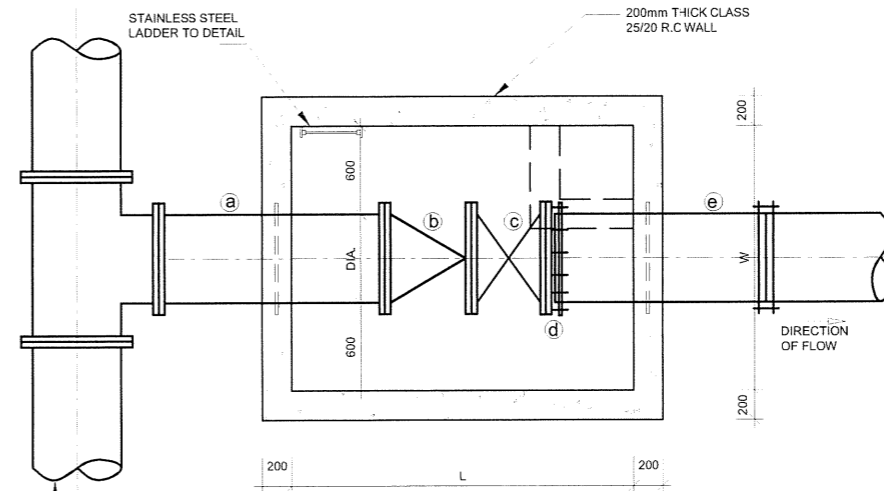
DETAIL 3 - SAFETY HOOPS

SCALE 1:25



DETAIL 1 LIFTING EYE DETAIL

SCALE 1:20



OFFTAKE VALVE CHAMBER PLAN

SCALE 1:50

SCHEDULE OF FITTINGS FOR OFFTAKE VALVE CHAMBER

S/Nr.	DESCRIPTION	Nr.
a	ALL FLANGED PIPE 1500/1200mm LONG WITH PUDDLE FLANGE (LOCATION OF PUDDLE FLANGE VARIES)	1
b	ALL FLANGED CHECK VALVE (NON-RETURN VALVE)	1
c	ALL FLANGED GATE VALVE	1
d	FLANGE ADAPTOR	1
e	FLANGED SPIGOT PIPE 1500/1200mm LONG WITH PUDDLE FLANGE (LOCATION OF PUDDLE FLANGE VARIES)	1

CLIENT: THE CHIEF EXECUTIVE OFFICER
COAST WATER WORKS DEVELOPMENT AGENCY
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PROJECT: IMPROVEMENT OF DRINKING WATER AND SANITATION SYSTEMS IN MOMBASA: MWACHE CKE 1103

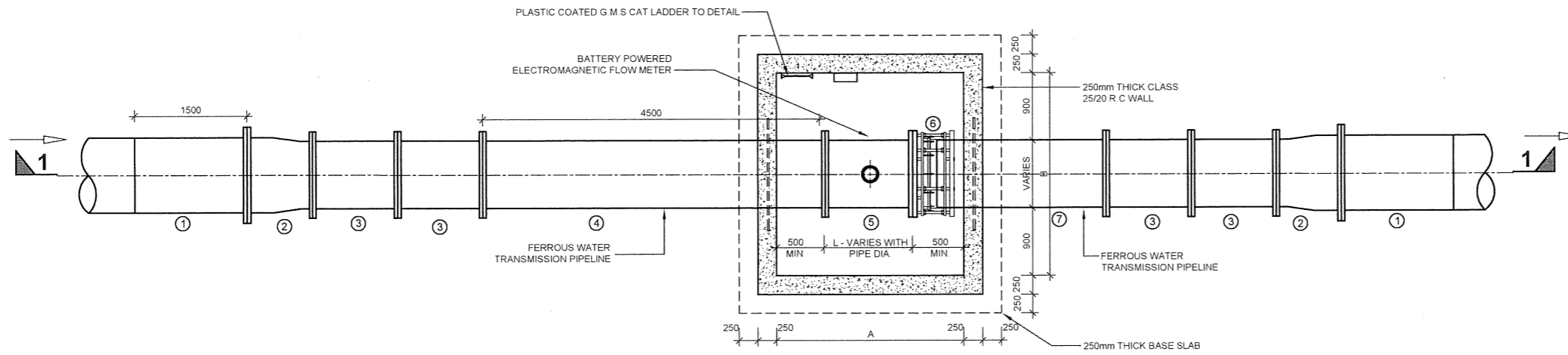
BID No.CWWDA/AFD/PQ/W4/2022-2023

LOT 1: CONSTRUCTION OF THE MWACHE TWIN TRUNK MAIN (SECTION 1), THE SOUTH MAINLAND TRANSMISSION PIPELINE AND DONGO KUNDU RESERVOIR

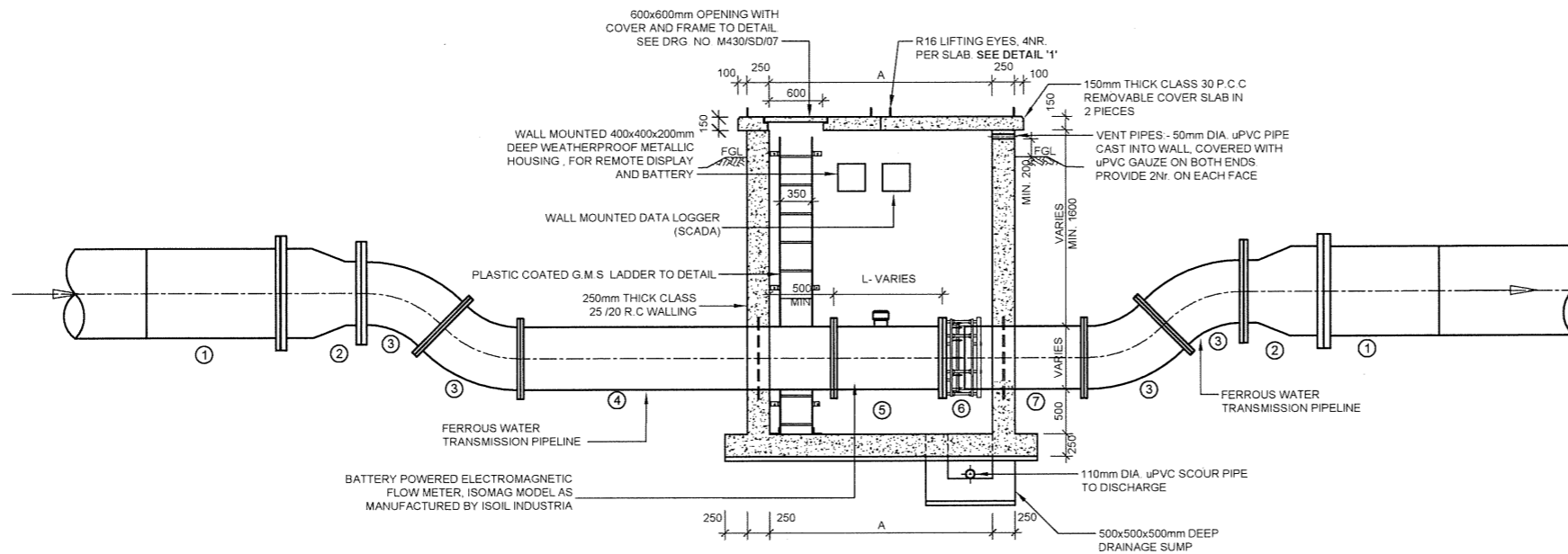
DRAWING TITLE: STANDARD DETAILS

INLINE/OFFTAKE VALVE CHAMBER, FITTINGS AND ACCESS LADDER (SHEET 2 OF 2)

DESIGNED BY: J.M.K DRAWN BY: V.K
CHECKED BY: R.S.R APPROVED BY: B.D
SCALE: AS SHOWN DATE: APRIL 2024
DRAWING No. M430/SD/05-2



PLAN
SCALE 1:75



SECTION 1-1
SCALE 1:75

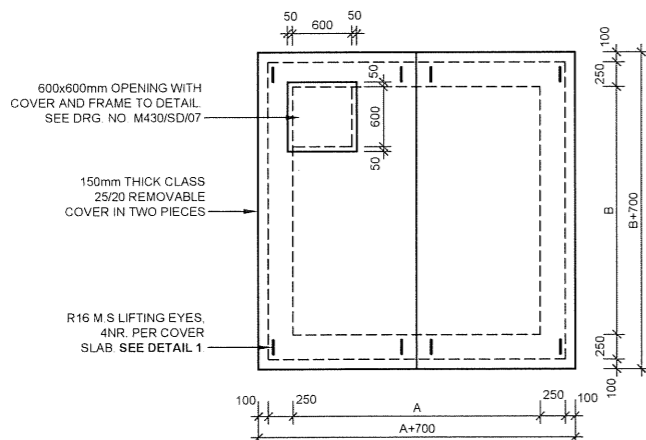
ELECTROMAGNETIC METER CHAMBER

**TYPICAL ELECTROMAGNETIC METER CHAMBER
SCHEDULE OF FITTINGS**

S/Nr.	DESCRIPTION	Nr.
1	FLANGED SPIGOT PIPE 1500/1200mm LONG	2
2	1000 x 900mm ALL FLANGED CONCENTRIC TAPER	2
3	ALL FLANGED 45° BEND	4
4	DOUBLE FLANGED PIPE WITH PUDDLE FLANGE (MIN. LENGTH 5 x DIA.). LOCATION OF PUDDLE FLANGE VARIES	2
5	ALL FLANGED BATTERY POWERED ELECTROMAGNETIC WATER METER, COMPLETE WITH REMOTE LED DISPLAY AND REQUISITE FITTINGS	1
6	DISMANTLING PIECE	1
7	FLANGED SPIGOT PIPE WITH PUDDLE FLANGE (MIN. LENGTH 2.5 x DIA.). LOCATION OF PUDDLE FLANGE VARIES	1

**STANDARD ELECTROMAGNETIC METER CHAMBER
DIMENSIONS SCHEDULE**

MAIN PIPE DIA Ø (mm)	PLAN SIZE (INTERNAL DIMENSIONS) A(mm) x B(mm)
1000	2400 x 2800
900	2400 x 2800
250	1500 x 1300



**METER CHAMBER ROOF
DETAIL**
SCALE 1:75

NOTES:

1. ALL DIMENSIONS IN mm UNLESS OTHERWISE STATED
2. FOR COVER DETAILS, SEE DRG. No. M430/SD/07
3. ALL REINFORCED CONCRETE IN CLASS 25/20 UNLESS OTHERWISE STATED
4. ALL EXPOSED CONCRETE EDGES HAVE A 25x25mm CHAMFER
5. ALL FITTINGS ARE FERROUS TYPE RIGID JOINED BY BUTT-WELDING AND/OR MECHANICAL/FLEXIBLE JOINED (FLANGED, COUPLING OR SOCKET AND SPIGOT JOINT)

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REV	REVISIONS	SIGN	DATE	APPROVED
		BY		
		CHECKED		
		BY		
		CHECKED		

CLIENT:
 THE CHIEF EXECUTIVE OFFICER
 COAST WATER WORKS DEVELOPMENT AGENCY
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PROJECT:
 IMPROVEMENT OF DRINKING WATER AND SANITATION SYSTEMS IN MOMBASA: MWACHE CKE 1103

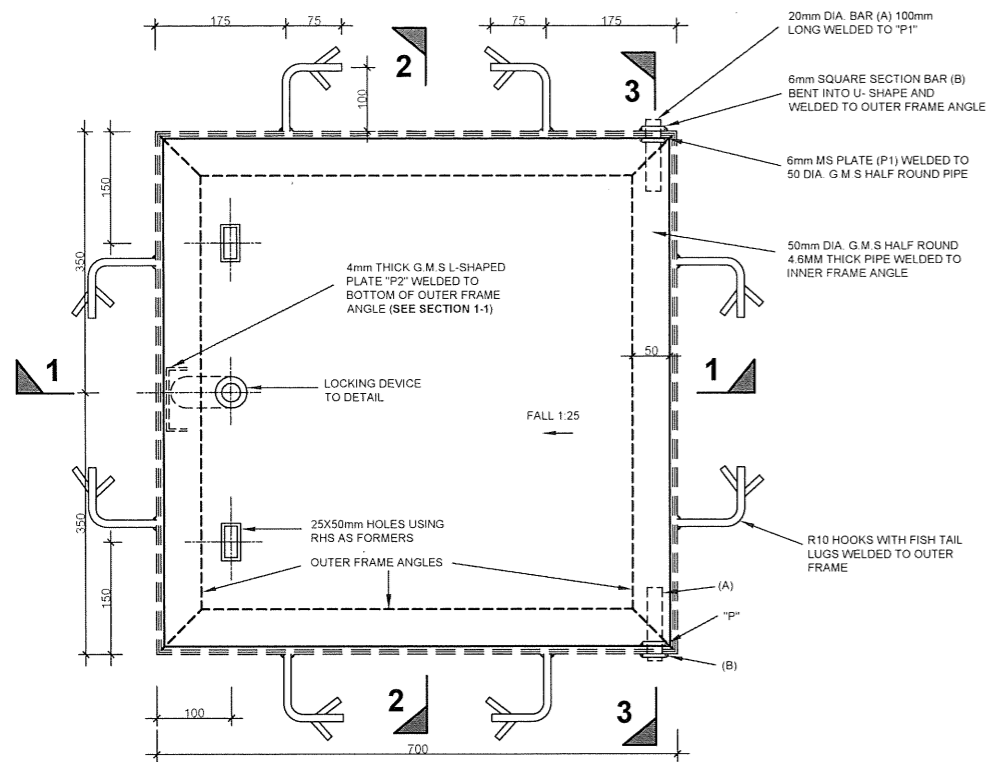
BID No.CWWDA/AFD/PQ/W4/2022-2023

LOT 1: CONSTRUCTION OF THE MWACHE TWIN TRUNK MAIN (SECTION 1), THE SOUTH MAINLAND TRANSMISSION PIPELINE AND DONGO KUNDU RESERVOIR

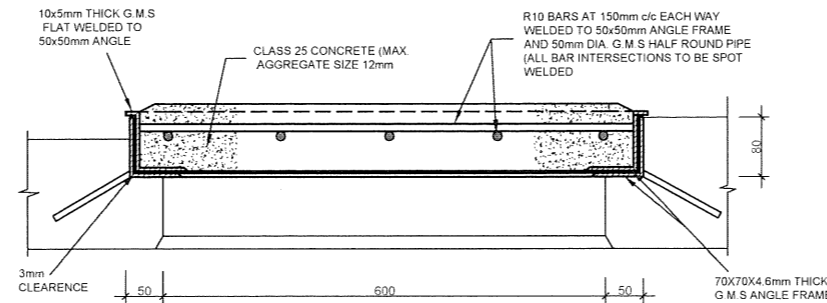
DRAWING TITLE:

STANDARD DETAILS
 ELECTROMAGNETIC METER CHAMBER AND FITTINGS

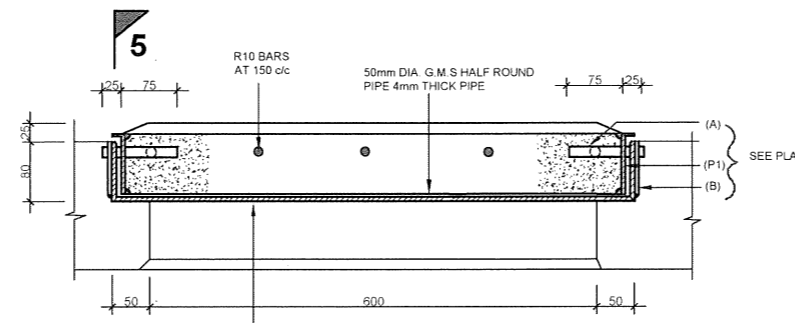
DESIGNED BY: J.M.K	DRAWN BY: V.K
CHECKED BY: R.S.R	APPROVED BY: B.D
SCALE: AS SHOWN	DATE: APRIL 2024
DRAWING No. M430/SD/06	



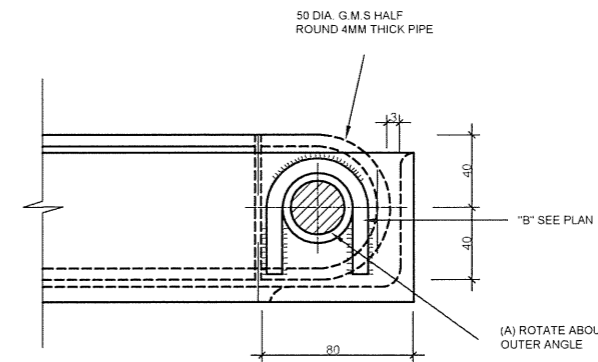
PLAN
SCALE 1:10



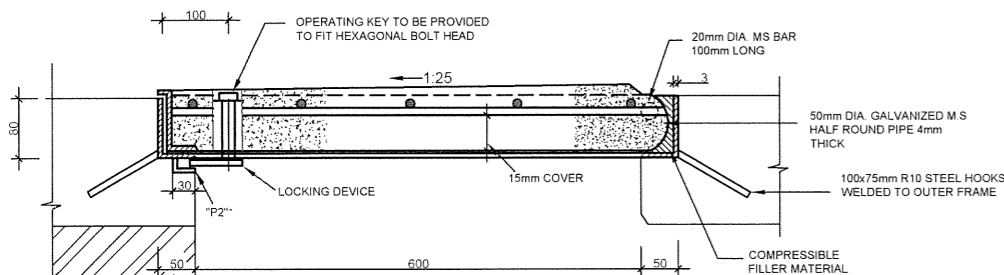
SECTION 2 - 2
SCALE 1:10



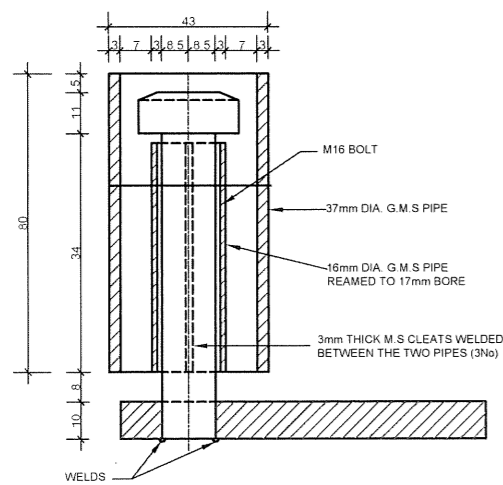
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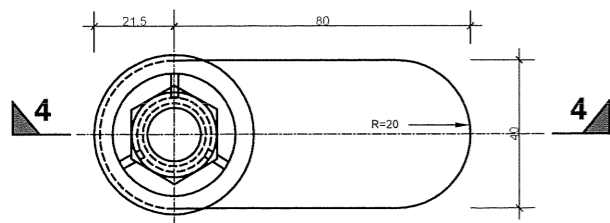
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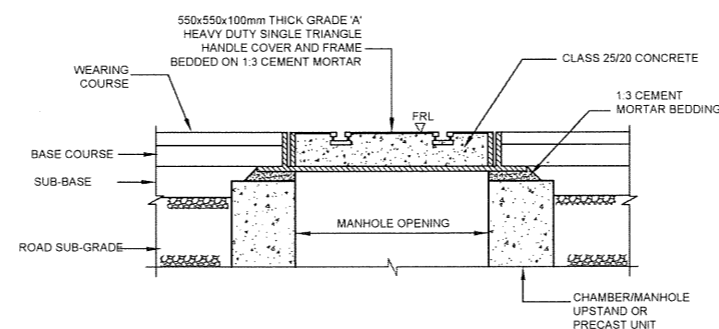
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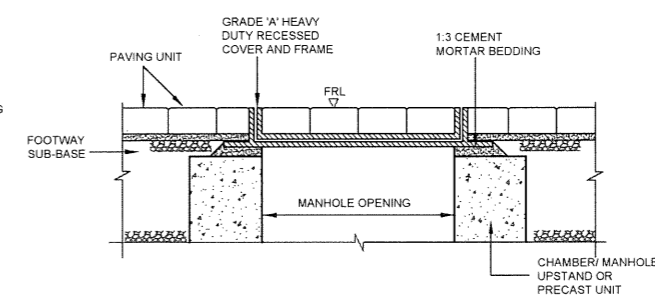
SECTION 4-4
N.T.S



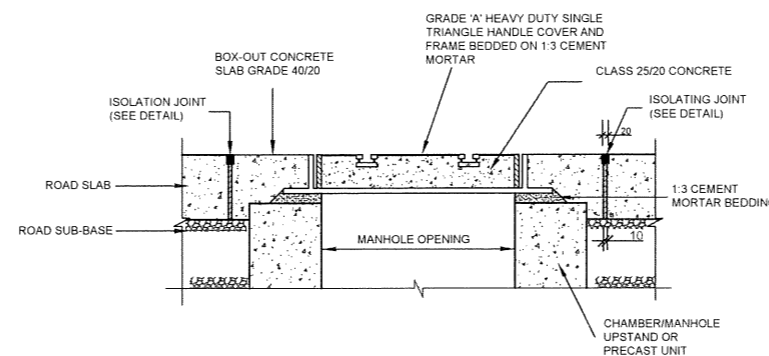
LOCKING DEVICE DETAIL PLAN
N.T.S



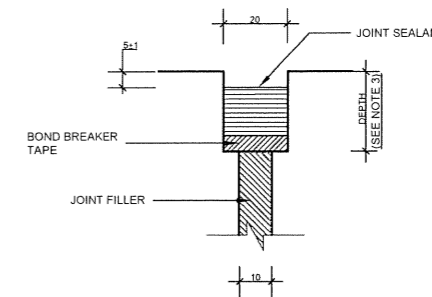
DETAIL OF COVER APPLIED TO FLEXIBLE ROAD SURFACE
N.T.S



TOP TREATMENT APPLIED TO PAVING UNIT FOOTWAY SURFACE
N.T.S



TOP TREATMENT APPLIED TO CONCRETE ROAD SURFACE
N.T.S



ISOLATION JOINT
SCALE 1:2.5

NOTES

1. ALL DIMENSIONS IN mm UNLESS OTHERWISE STATED

ABBREVIATIONS

- mm - MILLIMETRES
- FGL - FINISHED GROUND LEVEL
- EGL - EXISTING GROUND LEVEL
- FRL - FINISHED ROAD LEVEL
- DIA - DIAMETER
- R.C. - REINFORCED CONCRETE
- M.S. - MILD STEEL
- c/c - CENTER TO CENTRE
- No. - NUMBER

REV	REVISIONS	SIGN	DATE	APPROVED
	BY			
	CHECKED			
	BY			
	CHECKED			

CLIENT:
THE CHIEF EXECUTIVE OFFICER
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PROJECT:
IMPROVEMENT OF DRINKING WATER AND SANITATION SYSTEMS IN MOMBASA: MWACHE CKE 1103

BID No.CWWDA/AFD/PQ/W4/2022-2023

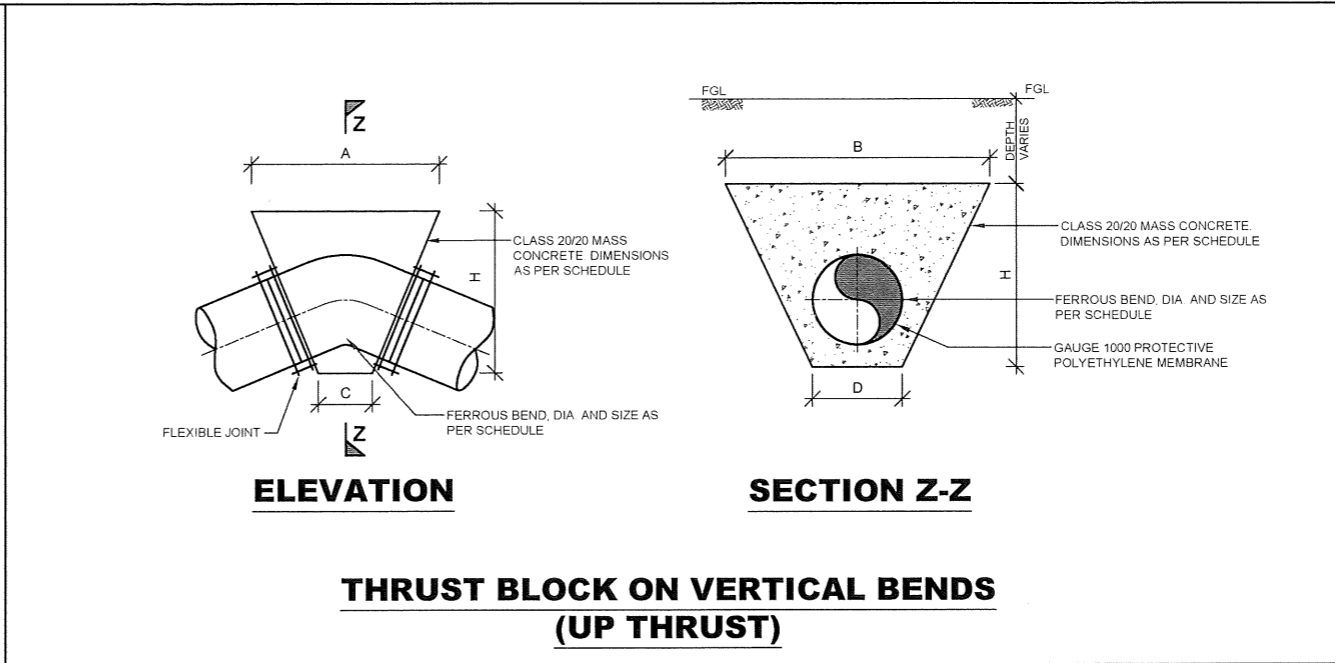
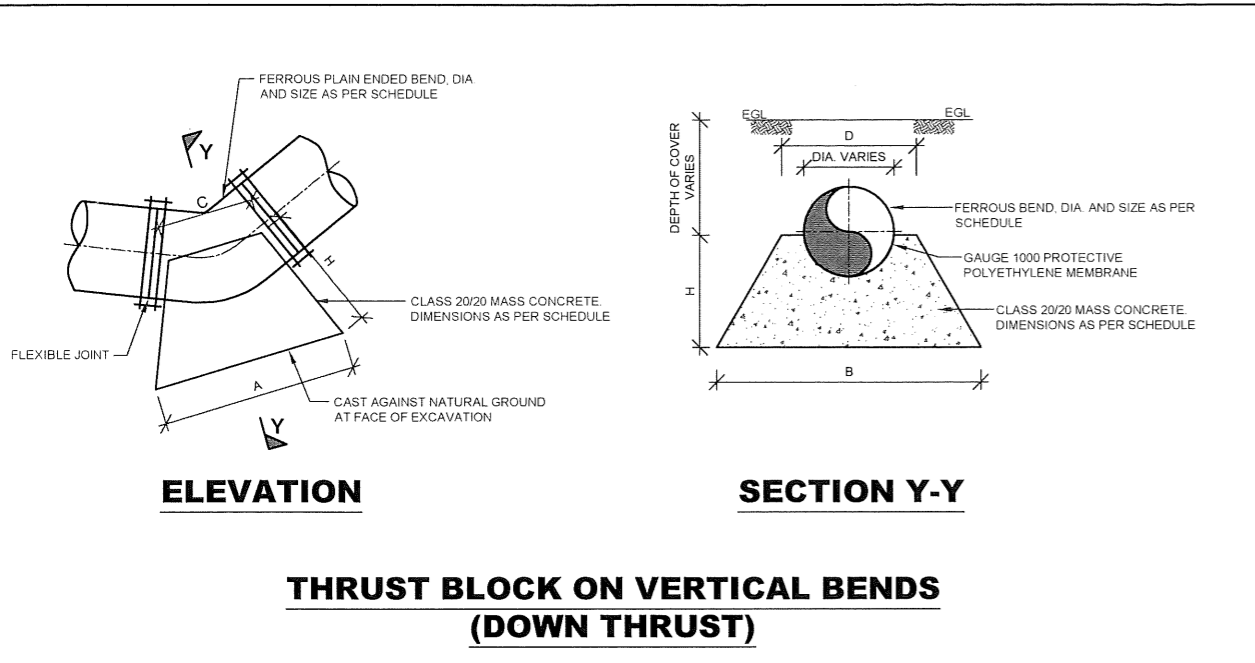
LOT 1: CONSTRUCTION OF THE MWACHE TWIN TRUNK MAIN (SECTION 1), THE SOUTH MAINLAND TRANSMISSION PIPELINE AND DONGO KUNDU RESERVOIR

DRAWING TITLE:

STANDARD DETAILS

CHAMBER COVERS

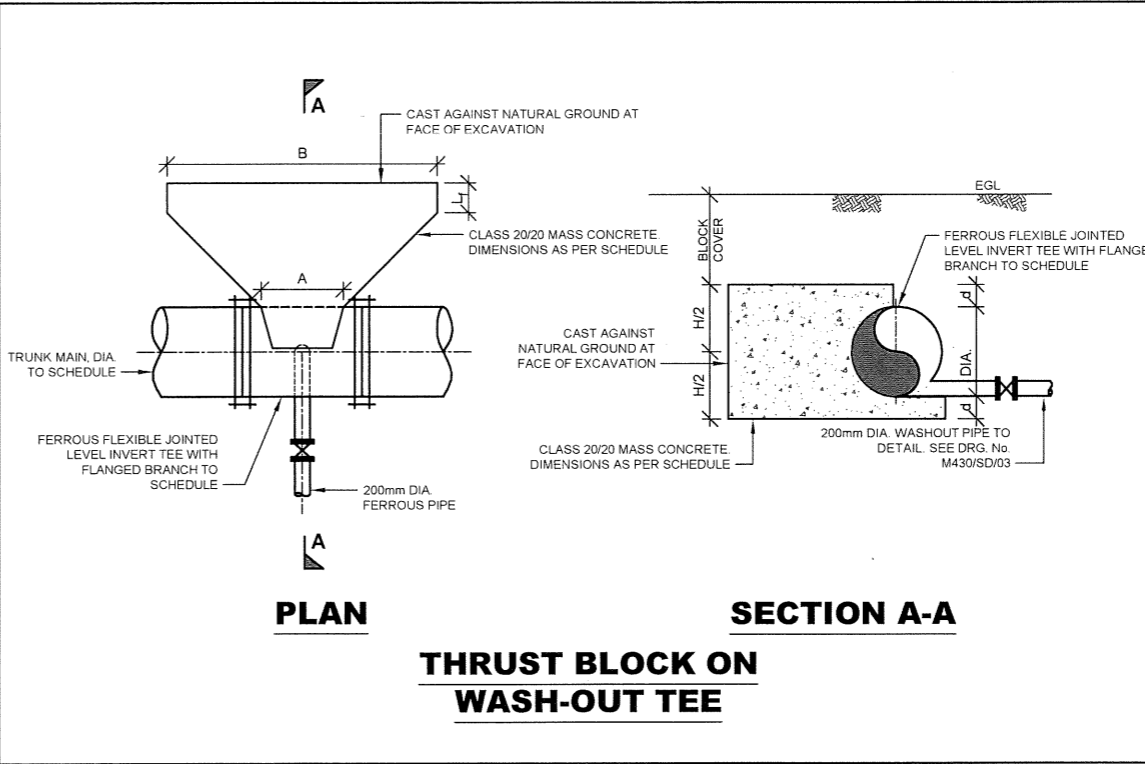
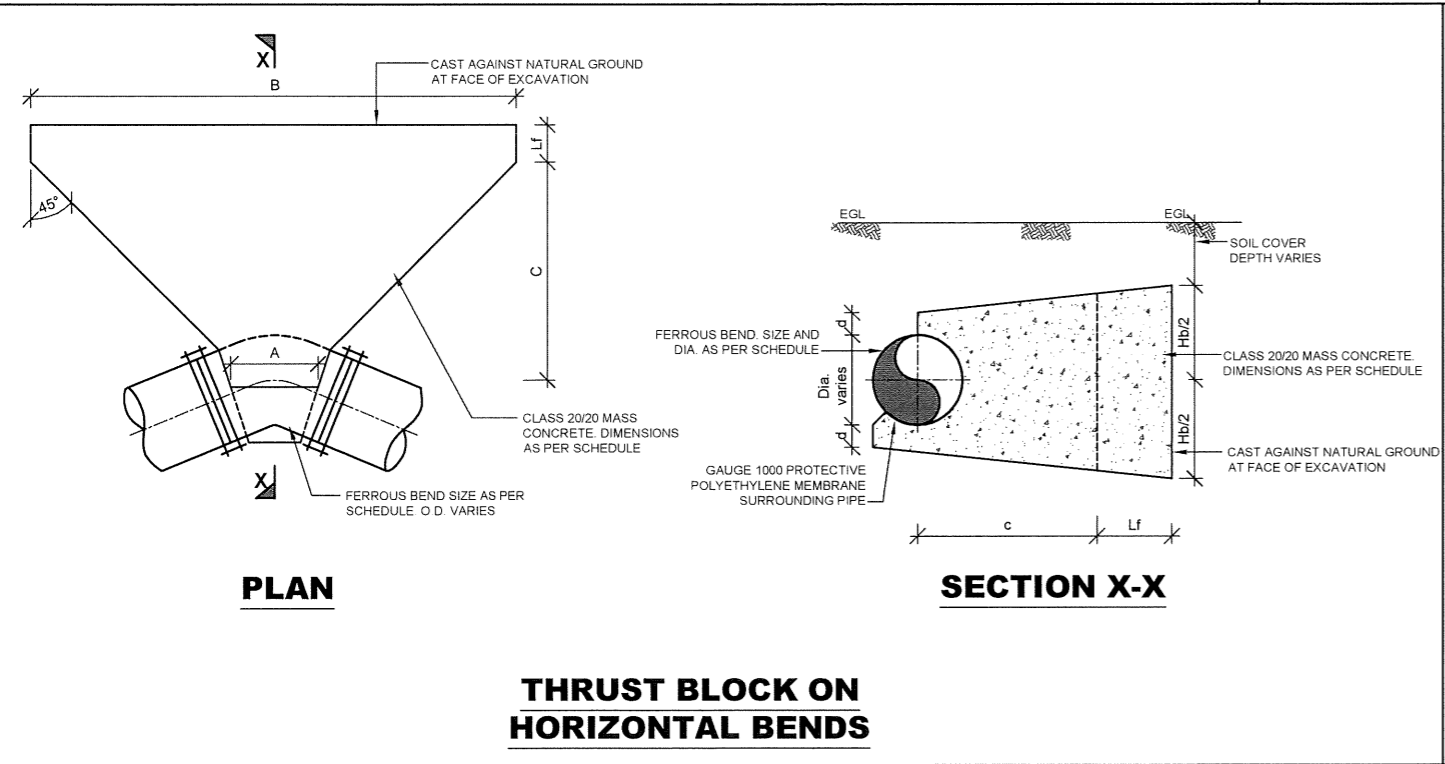
DESIGNED BY: J.M.K	DRAWN BY: V.K
CHECKED BY: R.S.R	APPROVED BY: B.D
SCALE: AS SHOWN	DATE: APRIL 2024
DRAWING No. M430/SD/07	



- NOTES**
1. ALL DIMENSIONS IN MM UNLESS OTHERWISE STATED
 2. ANCHOR BLOCKS TO BE INSTALLED FOR PIPES LAID AT SLOPES EXCEEDING 1:6 SLOPE
 3. THRUST BLOCKS INSTALLED AT ALL FLEXIBLE JOINTED HORIZONTAL AND VERTICAL BENDS, CAPPED ENDS, TEES, TAPERS AND GATE VALVES
 4. ALL FITTINGS ARE FERROUS TYPE RIGID JOINTED BY BUTT-WELDING AND/OR MECHANICAL/FLEXIBLE JOINTED (FLANGED, COUPLING OR SOCKET AND SPIGOT JOINT)
 5. ALL PIPE SURFACES IN CONTACT WITH CONCRETE WRAPPED WITH GAUGE 1000 POLYTHENE MEMBRANE PROTECTIVE LAYER

ABBREVIATIONS

MM	-	MILLIMETRES
FGL	-	FINISHED GROUND LEVEL
EGL	-	EXISTING GROUND LEVEL
PIL	-	PIPE INVERT LEVEL
DIA	-	DIAMETER
R.C.	-	REINFORCED CONCRETE
M.S.	-	MILD STEEL
c/c	-	CENTER TO CENTRE
No.	-	NUMBER
m ³	-	CUBIC METER



REV	REVISIONS	SIGN	DATE	APPROVED
	By			
	Checked			
	By			
	Checked			

CLIENT:

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PROJECT:

IMPROVEMENT OF DRINKING WATER AND SANITATION SYSTEMS IN MOMBASA: MWACHE CKE 1103

BID No.CWWDA/AFD/PQ/W4/2022-2023

LOT 1: CONSTRUCTION OF THE MWACHE TWIN TRUNK MAIN (SECTION 1), THE SOUTH MAINLAND TRANSMISSION PIPELINE AND DONGO KUNDU RESERVOIR

DRAWING TITLE:

STANDARD DETAILS

THRUST BLOCKS
 SHEET 1 OF 2

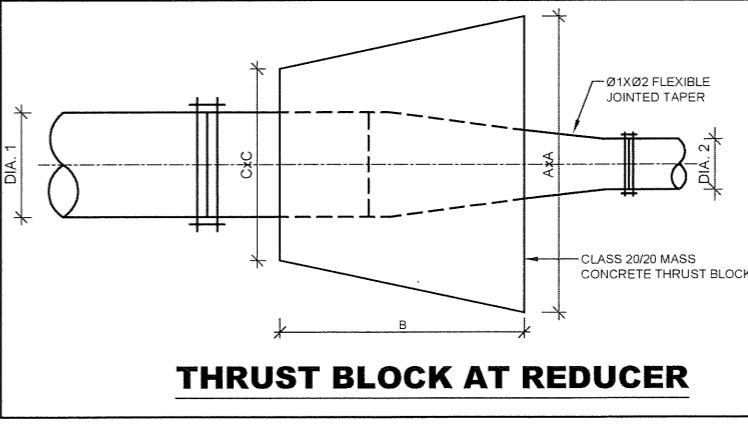
DESIGNED BY: J.M.K **DRAWN BY:** V.K
CHECKED BY: R.S.R **APPROVED BY:** B.D
SCALE: 1:100 **DATE:** APRIL 2024
DRAWING No. M430/SD/08

THRUST BLOCK DIMENSIONS

PIPE DIA Ø(mm)	PRESSURE RATING (Bar)	ANGLE OF BEND (Deg)	HORIZONTAL BENDS							VERTICAL BENDS - DOWN THRUST					
			DIMENSIONS (mm)							DIMENSIONS (mm)					
			A	B	C	d	L _r	H _b	VOLUME (m ³)	A	B	C	D	H _b	MIN. VOLUME (m ³)
1000	16	11.25	600	1500	1500	200	200	1400	2.21	1600	1600	700	1400	800	0.8
		22.5	800	2200	2200	400	400	1500	4.95	1600	1600	700	1400	1300	2.4
		30	1000	2500	2500	400	400	2000	8.75	2000	2000	700	1600	2000	7.2
		45	1000	3000	3000	600	600	2200	13.25	2500	2500	700	1800	2900	15.7
900	16	90	1000	4000	4500	800	1000	3000	33.75	3000	3000	700	2200	4000	31.7
		11.25	600	1000	1000	300	200	1500	1.68	1000	1000	600	1000	1000	0.35
		22.5	800	1600	1600	400	400	1700	4.48	1200	1200	600	1000	1000	1.26
		30	1000	2200	2200	400	400	2000	7.22	1200	1200	600	1000	1600	2.16
800	16	45	1000	2200	2200	600	600	2200	12.65	1400	1400	600	1200	2400	4.5
		90	1200	3200	3200	800	1000	3000	31	2500	2500	600	1200	2400	11.2
800	16	45	1000	2000	2000	400	400	2000	6.0	1500	1500	550	1200	1500	3.26

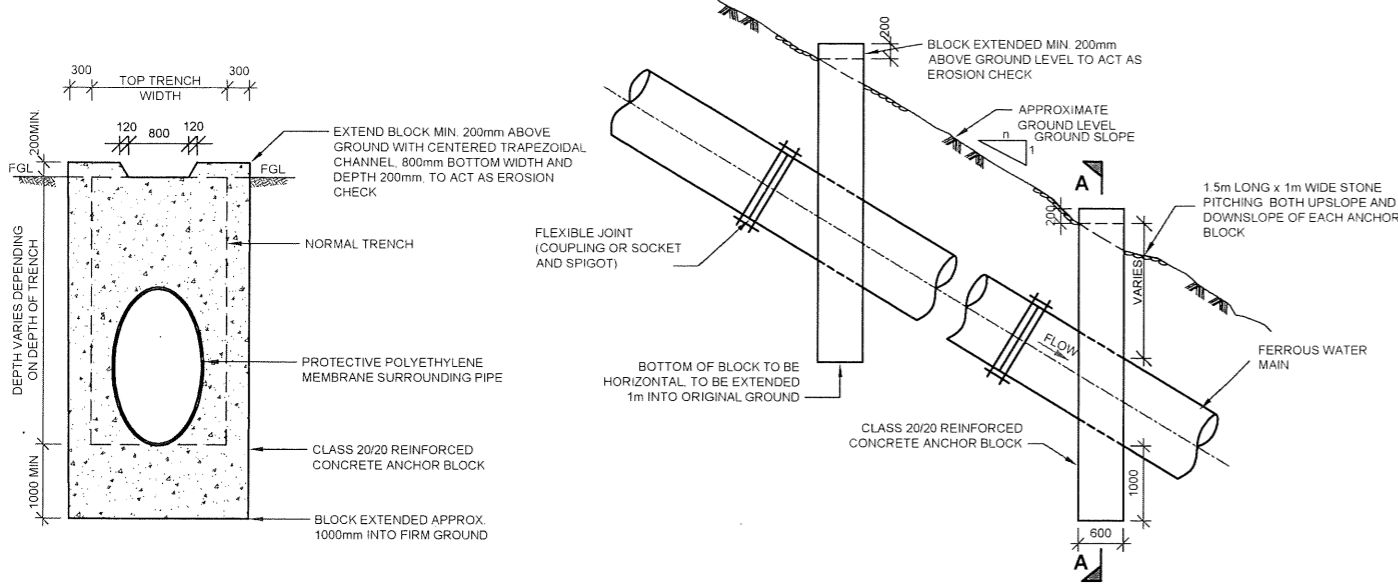
THRUST BLOCK ON TEES

MAIN PIPE DIA Ø(mm)	BRANCHING PIPE DIA (mm)	PRESSURE RATING (Bar)	DIMENSIONS (mm)					
			A	B	H _b	L	L _r	VOLUME (m ³)
1000	1000	16	1200	7000	3500	3500	400	50.23
1000	800	16	1100	6550	2400	2000	400	35.5
1000	250	16	700	1000	1500	1200	400	1.5
1000	200	16	700	1000	1500	1200	400	1.5
1000	150	16	700	1000	1500	1200	400	1.5
900	500	16	600	2500	1700	2000	200	5.3
900	200	16	600	1200	1500	1000	200	1.35



THRUST BLOCKS ON TAPERS

Ø ₁ (mm)	Ø ₂ (mm)	TEST PRESSURE (Bar)	DIMENSIONS (mm)			
			A	B	C	VOLUME (m ³)
1000	900	16	1800	2200	1400	3.5
900	800	16	1600	1000	1400	2.2
250	200	16	700	400	450	160



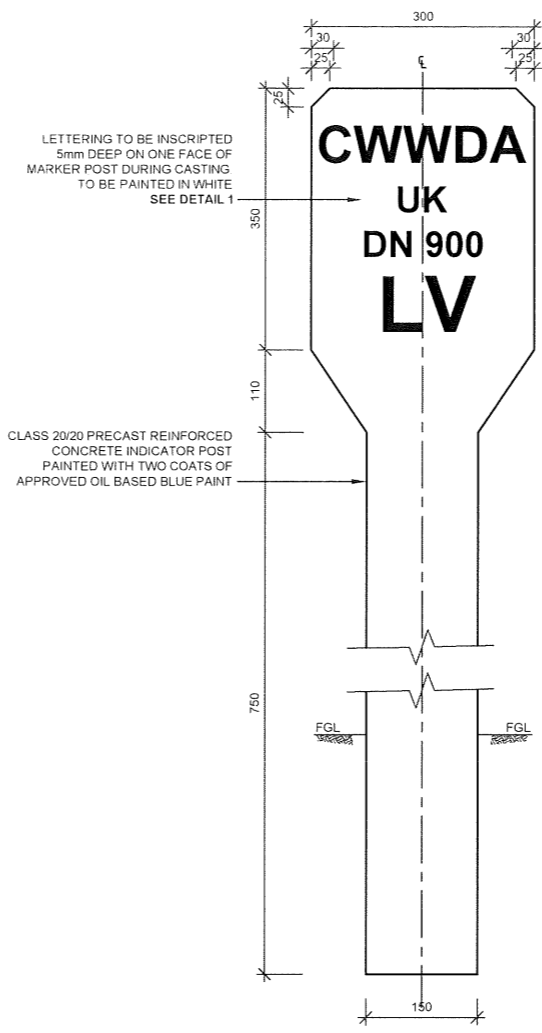
SECTION A-A
SCALE 1:100

SIDE ELEVATION
SCALE 1:100

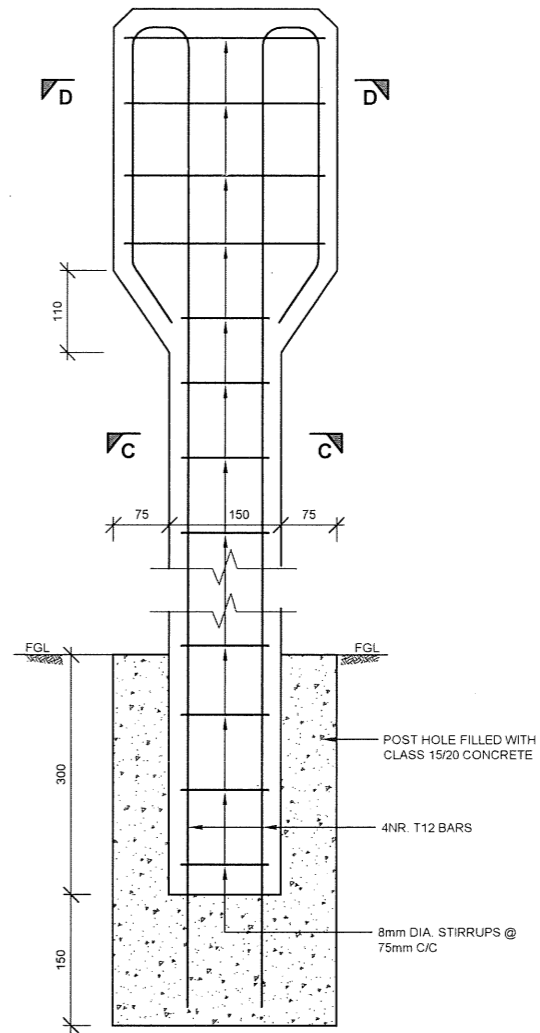
- NOTES**
- SAME ARRANGEMENT CAN BE USED AS SUPPORTS FOR PIPES LAID IN VERY SOFT GROUND BUT BLOCKS TO BE CAST ON SOUND ROCK OR HARD STRATUM
 - ANCHOR BLOCKS TO BE CONSTRUCTED ON LOWER SIDE OF JOINT
 - UNLESS OTHERWISE INSTRUCTED, BUTT WELD JOINED PIPES FOR STEEL AND SELF ANCHORING JOINED PIPES FOR DUCTILE IRON WILL NOT REQUIRE ANCHOR BLOCKS

ANCHOR BLOCK TYPE 1
PIPE LAID ALONG SLOPE (GRADIENT > 1:8)

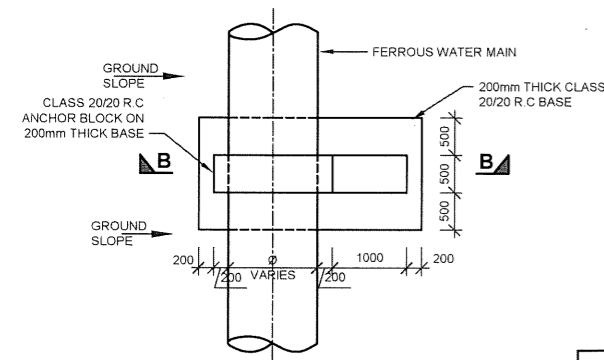
RANGE OF GROUND SLOPE 1:n	MAXIMUM DISTANCE BETWEEN ANCHOR BLOCKS TYPE 1 (ALONG SLOPE) (m)
<1:8	-
1:10 - 1:6	36
1:6 - 1:5	24
1:5 - 1:4	18
1:4 - 1:2	12
>1:2	EVERY PIPE LENGTH TO BE ANCHORED (BASED ON PIPE LENGTH OF 6m)



LINE VALVE INDICATOR POST
SCALE 1:10

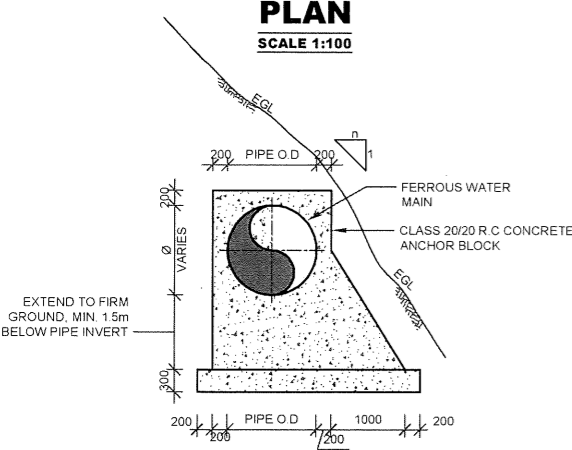


INDICATOR POST REINFORCEMENT DETAILS
SCALE 1:10



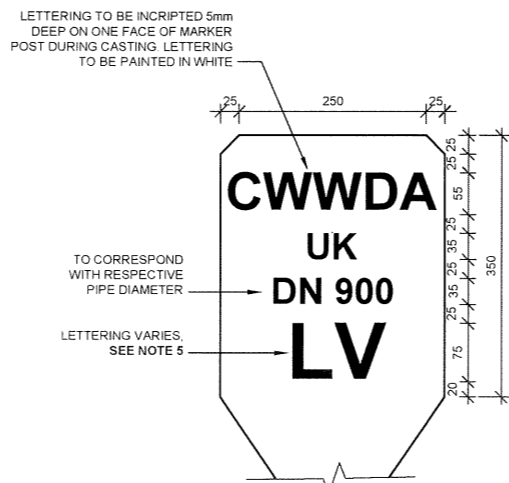
PLAN
SCALE 1:100

RANGE OF GROUND SLOPE 1:n	MAXIMUM DISTANCE BETWEEN ANCHOR BLOCKS TYPE 2 (ACROSS SLOPE) (m)
<1:4	-
1:4 - 1:2	12
>1:2	6



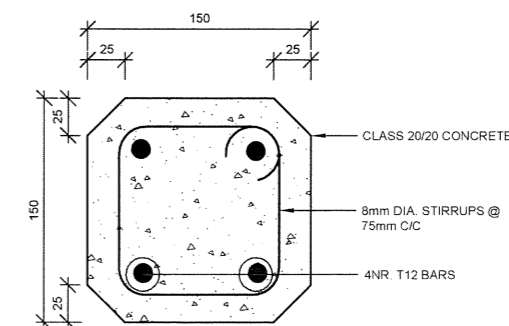
SECTION B-B
SCALE 1:100

ANCHOR BLOCK TYPE 2
PIPE LAID ACROSS SLOPE (GRADIENT > 1:4)

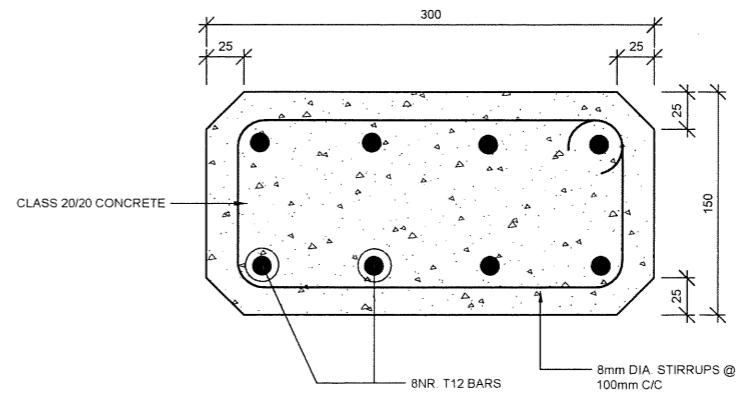


DETAIL 1 LETTERING DETAIL
SCALE 1:10

- NOTES:**
- ALL INDICATOR POSTS TO BE PAINTED WITH TWO COATS OF BLUE OIL BASED PAINT AND WHITE LETTERING TO ENGINEER'S APPROVAL
 - INDICATOR POSTS TO BE PLACED AT ALL APPURTENANCE LOCATIONS, AND AT INTERVALS OF 250m, WITH THE UNSCRIPTED LETTERING FACING THE ACCESS ROAD



SECTION C-C
SCALE 1:5



SECTION D-D
SCALE 1:5

- NOTES**
- ALL DIMENSIONS IN mm UNLESS OTHERWISE STATED
 - ALL FITTINGS ARE FERROUS TYPE RIGID JOINED BY BUTT-WELDING AND/OR MECHANICAL/FLEXIBLE JOINED (FLANGED, COUPLING OR SOCKET AND SPIGOT JOINT)
 - ANCHOR BLOCKS INSTALLED FOR PIPES LAID AT SLOPES EXCEEDING 1:8 FOR TYPE 1 BLOCKS AND SLOPES EXCEEDING 1:4 FOR TYPE 2 BLOCKS
 - DETAILS OF ALL INDICATOR POSTS ARE AS FOR LINE VALVE BUT LETTERING TO BE AS FOLLOWS:-

FOR	USE
LINE VALVE	LV
AIR VALVE	AV
WASHOUT	WO
WATER MAIN	WM
BULK METER	M

- ABBREVIATIONS**
- mm - MILLIMETRES
 - FGL - FINISHED GROUND LEVEL
 - EGL - EXISTING GROUND LEVEL
 - PIL - PIPE INVERT LEVEL
 - DIA - DIAMETER
 - O.D - OUTER DIAMETER
 - R.C. - REINFORCED CONCRETE
 - M.S. - MILD STEEL
 - c/c - CENTER TO CENTRE
 - No. - NUMBER
 - m³ - CUBIC METER
 - CWWDA - COAST WATER WORKS DEVELOPMENT AGENCY

REV	REVISIONS	BY	CHECKED	SIGN	DATE	APPROVED

CLIENT:
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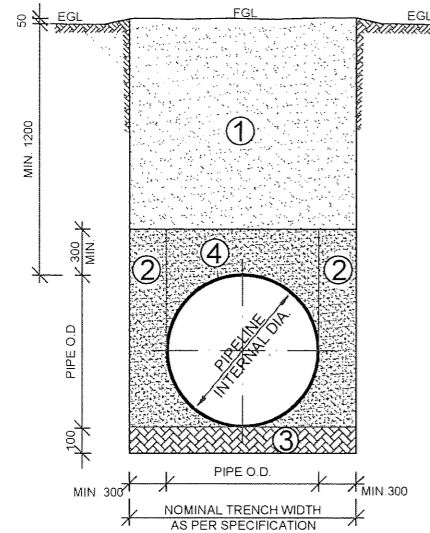
PROJECT:
IMPROVEMENT OF DRINKING WATER AND SANITATION SYSTEMS IN MOMBASA: MWACHE CKE 1103

BID No.CWWDA/AFD/PQ/W4/2022-2023

LOT 1; CONSTRUCTION OF THE MWACHE TWIN TRUNK MAIN (SECTION 1), THE SOUTH MAINLAND TRANSMISSION PIPELINE AND DONGO KUNDU RESERVOIR

DRAWING TITLE:
STANDARD DETAILS
ANCHOR BLOCKS AND INDICATOR POSTS
SHEET 2 OF 2

DESIGNED BY: J.M.K	DRAWN BY: V.K
CHECKED BY: R.S.R	APPROVED BY: B.D
SCALE: AS SHOWN	DATE: APRIL 2024
DRAWING No. M430/SD/09	



TYPICAL NORMAL TRENCH DETAILS FOR WATER MAINS (FERROUS PIPES)

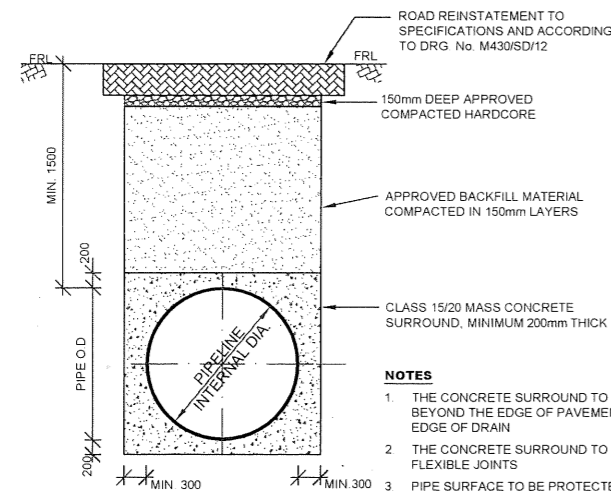
SCALE 1:100

- ZONE 1** SOIL TO BE USED MAY INCLUDE FREE-DRAINING COARSE SAND, GRAVEL, LOAM AND SOIL OF A FRIABLE NATURE. PARTICULAR SIZE NOT TO EXCEED 20mm. BACKFILL IN LAYERS NOT EXCEEDING 300mm UPTO FINISHED GROUND LEVEL. EACH LAYER BEING WELL COMPACTED TO LIMIT VOIDS. MECHANICAL COMPACTION EQUIPMENT MAY BE USED IF APPROVED BY ENGINEER.
- ZONE 2** BACKFILL WITH SOIL APPROVED BY THE ENGINEER, IN LAYERS NOT EXCEEDING 200mm. THOROUGHLY COMPACT SOIL, TAMPING EQUALLY ON EITHER SIDE AND ALONG LOWER EDGE OF PIPE. ONLY HAND TAMPING TO BE USED.
- ZONE 3** IF SHARP ROCK PROJECTIONS, TREE ROOTS OR OTHER UNSUITABLE MATERIAL IS ENCOUNTERED AT TRENCH INVERT LEVEL, A FURTHER 100mm DEPTH OF MATERIAL IS TO BE EXCAVATED. BACKFILL WITH SOIL APPROVED BY ENGINEER UPTO TRENCH INVERT LEVEL. THOROUGHLY COMPACT SOIL BY HAND TO GIVE A UNIFORM GRADIENT ALONG PIPE TRENCH, LEAVING RECESSES FOR PIPE JOINTS.
- ZONE 4** SIMILAR REQUIREMENTS TO ZONE 2 EXCEPT NO EXCESS TAMPING IS PERMITTED OVER PIPE.

NOTE:
TRENCH SIDE SLOPES AND EXTENDED WIDTH AT CONTRACTOR'S DISCRETION DEPENDING ON STABILITY OF EXCAVATED SURFACE TO ENSURE ADEQUATE SAFETY TO LABOUR AT WORK ON SITE. QUANTITIES TO BE MEASURED BASED ON NOMINAL TRENCH WIDTH.

STANDARD TRENCH WIDTH

PIPE DIA (mm)	TRENCH WIDTH (mm)
900	1500
1000	1600

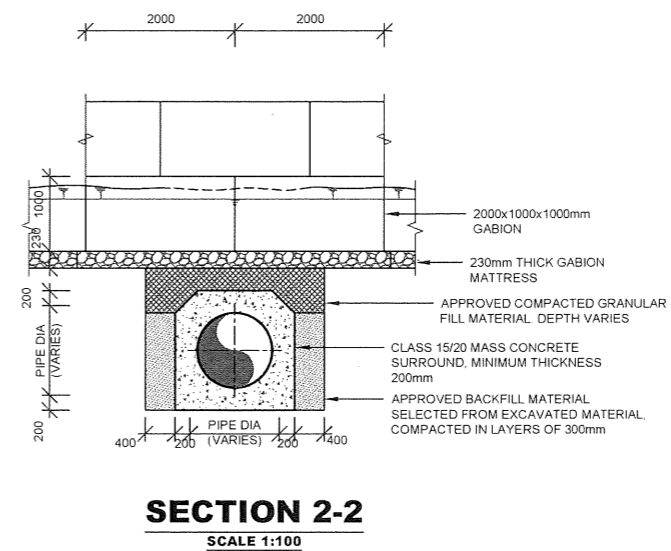
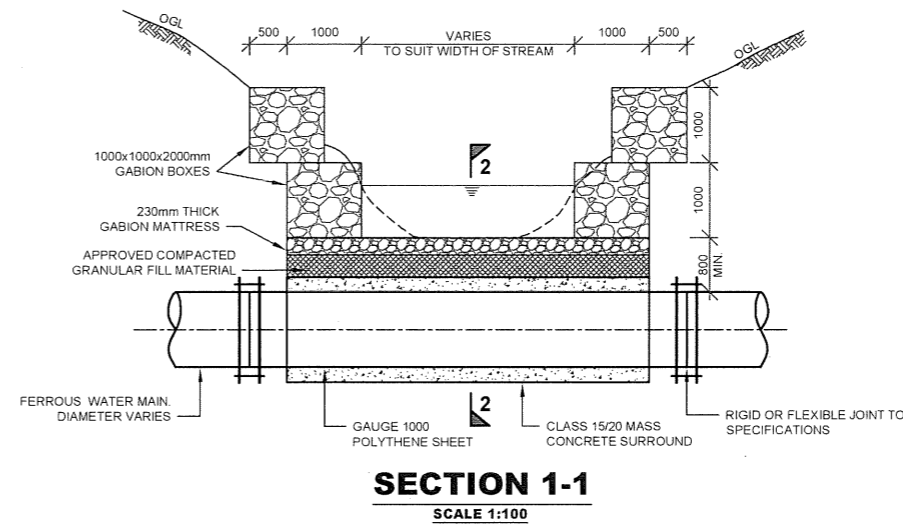
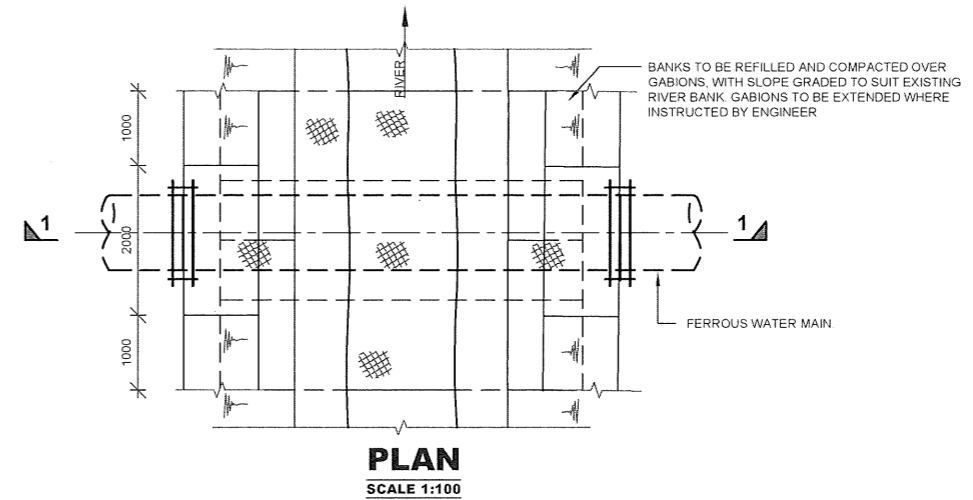


TYPICAL TRENCH REINSTATEMENT DETAIL AT ROAD CROSSINGS

SCALE 1:100

NOTES

1. THE CONCRETE SURROUND TO BE EXTENDED 1m BEYOND THE EDGE OF PAVEMENT OR IF APPLICABLE EDGE OF DRAIN
2. THE CONCRETE SURROUND TO BE BROKEN AT FLEXIBLE JOINTS
3. PIPE SURFACE TO BE PROTECTED WITH GAUGE 1000 POLYTHENE SHEET



TYPICAL UNDER-RIVER CROSSING

NOTES

1. ALL DIMENSIONS IN mm UNLESS OTHERWISE STATED
2. ALL PIPE SURFACES IN CONTACT WITH CONCRETE ARE WRAPPED IN GAUGE 1000 POLYTHENE SHEET
3. MASS CONCRETE SURROUND IN CLASS 15/20 UNLESS OTHERWISE STATED
4. ALL FITTINGS ARE FERROUS TYPE RIGID JOINTED BY BUTT-WELDING AND/OR MECHANICAL/FLEXIBLE JOINTED (FLANGED, COUPLING OR SOCKET AND SPIGOT JOINT)

ABBREVIATIONS

- mm - MILLIMETRES
 FGL - FINISHED GROUND LEVEL
 EGL - EXISTING GROUND LEVEL
 O.G.L - ORIGINAL GROUND LEVEL
 DIA - DIAMETER
 FRL - FINISHED ROAD LEVEL
 CL - CENTER LINE

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	BY	CHECKED		
	BY	CHECKED		
	BY	CHECKED		

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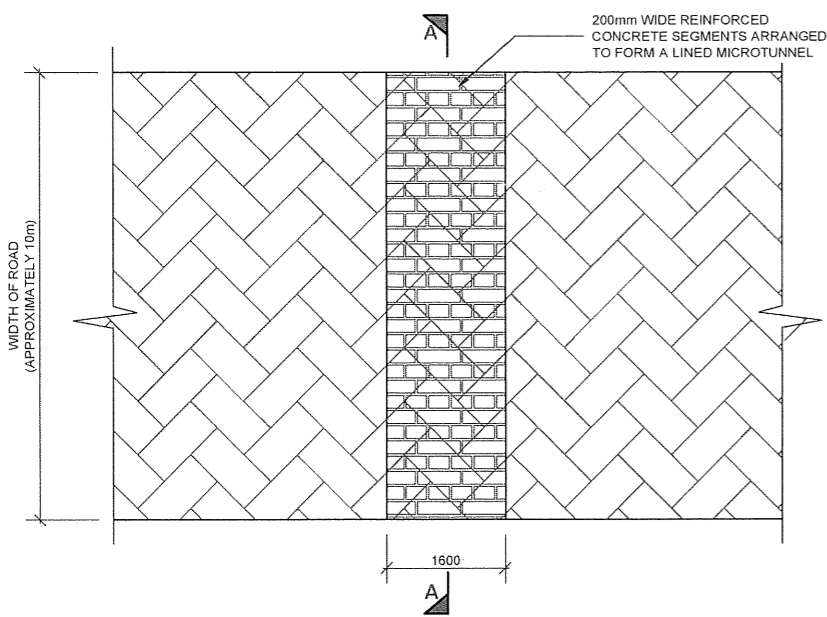
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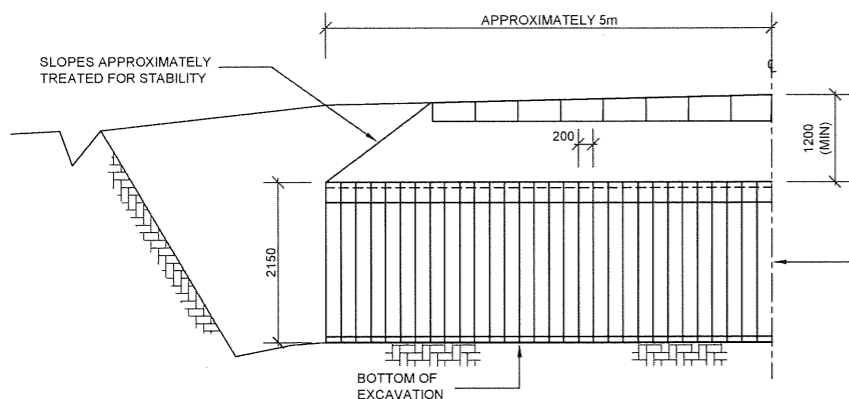
LOT 1: CONSTRUCTION OF THE MWACHE TWIN TRUNK MAIN (SECTION 1), THE SOUTH MAINLAND TRANSMISSION PIPELINE AND DONGO KUNDU RESERVOIR

DRAWING TITLE:
 STANDARD DETAILS
 PIPE TRENCH & CONCRETE SURROUND

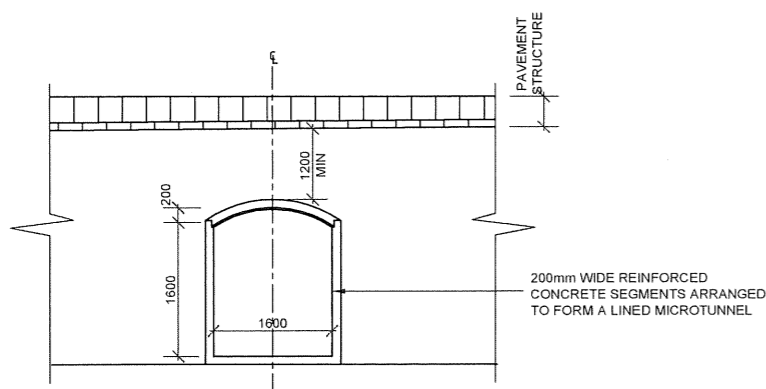
DESIGNED BY: J.M.K	DRAWN BY: V.K
CHECKED BY: R.S.R	APPROVED BY: B.D
SCALE: AS SHOWN	DATE: APRIL 2024
DRAWING No. M430/SD/10	



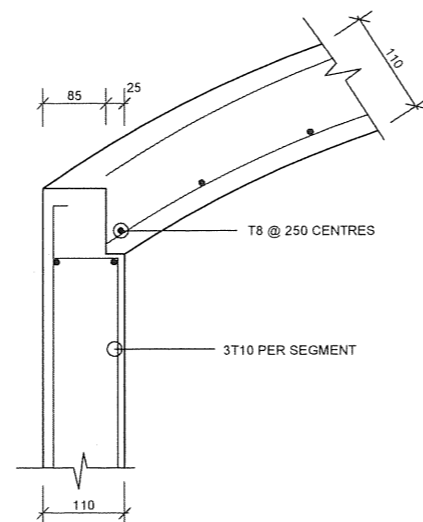
PLAN VIEW ON ROAD
SCALE 1:100



SECTION A-A
SCALE 1:100



SECTION B-B
SCALE 1:100



DETAIL 1
SCALE 1:10

200mm WIDE x 75mm THICK PRECAST CONCRETE SIDE SEGMENT 'B' REINFORCED WITH 3 T10 (MAIN BARS) + T8 @ 250 CENTRES (DISTRIBUTION BARS)

T8 @ 250 CENTRES (8x160mm LONG PER SEGMENT)

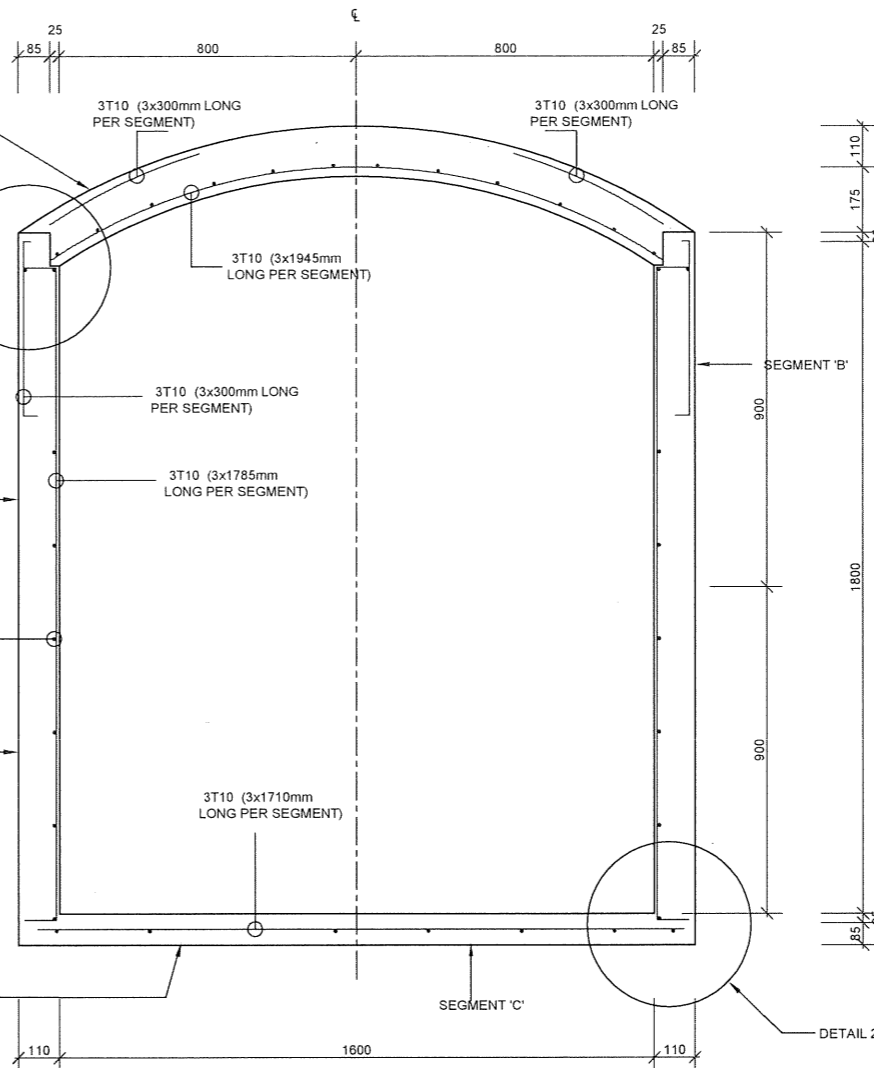
SEGMENT 'B'

200mm WIDE x 75mm THICK PRECAST CONCRETE SIDE SEGMENT 'B' REINFORCED WITH 3 T10 (MAIN BARS) + T8 @ 250 CENTRES (DISTRIBUTION BARS)

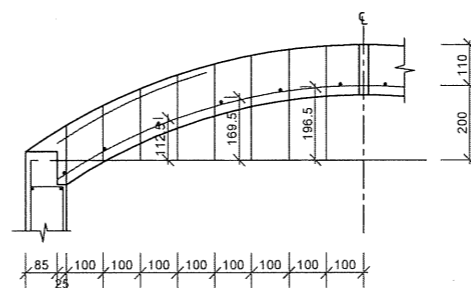
200mm WIDE x 75mm THICK PRECAST CONCRETE SIDE SEGMENT 'B' REINFORCED WITH 3 T10 (MAIN BARS) + T8 @ 250 CENTRES (DISTRIBUTION BARS)

DETAIL 1

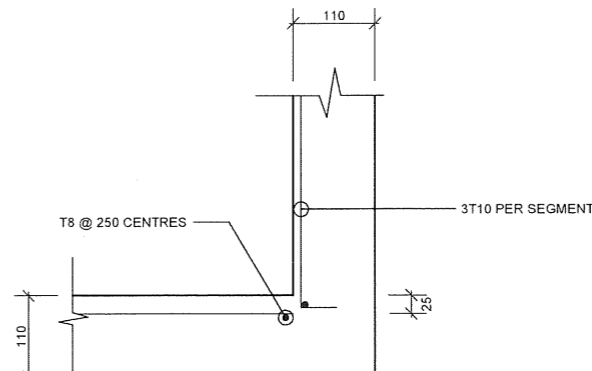
200mm WIDE x 75mm THICK PRECAST CONCRETE BOTTOM SEGMENT 'C' REINFORCED WITH 3 T10 (MAIN BARS) + T8 @ 250 CENTRES (DISTRIBUTION BARS)



TUNNEL LINING DETAILS
SCALE 1:20



CROWN SEGMENT 'A' DETAIL
SCALE 1:20



DETAIL 2
SCALE 1:10

ABBREVIATIONS

- mm - MILLIMETRES
- FGL - FINISHED GROUND LEVEL
- EGL - EXISTING GROUND LEVEL
- PIL - PIPE INVERT LEVEL
- DIA - DIAMETER
- R.C. - REINFORCED CONCRETE
- M.S. - MILD STEEL
- c/c - CENTER TO CENTRE
- No. - NUMBER


NOTES

1. ALL DIMENSIONS IN mm UNLESS OTHERWISE STATED
2. ALL REINFORCED CONCRETE IN CLASS 25/20 UNLESS OTHERWISE STATED
3. ALL HIGH TENSILE (T) BARS IN ACCORDANCE WITH BS 4449
4. MINIMUM COVER TO ALL REINFORCEMENTS FROM INSIDE FACES IS 20mm

SPECIFICATIONS:

1. TYPICAL DETAILS ARE SUITABLE FOR SOFT MATERIAL SUCH AS RED COFFEE SOIL, CLAY SOILS AND GRAVELLY SOILS.
2. PRECAST SEGMENTS DESIGNED FOR THE FOLLOWING LOADING ASSUMPTIONS:
 - TRAFFIC WHEEL LOAD OF 100KN DIRECTLY ABOVE TUNNEL AND APPLIED ON THE PAVEMENT SURFACE WITH A CONTACT AREA OF 300mm x 300mm
 - UNIFORM SURCHARGE LOAD OF 20KN/m² APPLIED ON PAVEMENT SURFACE
 - MINIMUM OVERBURDEN OF 1200mm FROM THE ROAD PAVEMENT SURFACE TO CROWN OF THE SEGMENTS
 - SPACES BEHIND PRECAST CONCRETE LINING AND EXCAVATION GROUTED (BY CONTACT GROUTING) ON COMPLETION OF PLACING THE SEGMENTS.
 - MAXIMUM LENGTH OF THE TUNNEL EXCAVATED EACH TIME BEFORE INSTALLING THE PRECAST SEGMENTS IS 500mm.
 - CROWN SEGMENT OF THE TUNNEL LINING IS OF ARCH PROFILE AS PER THE SETTING OUT DIMENSIONS TABULATED.
3. TYPICAL WEIGHTS OF THE SEGMENTS:
 - SEGMENT A: 136.8Kgs
 - CROWN SEGMENT B: 129.6Kgs
 - BOTTOM SEGMENT C: 115.2Kgs

REV	REVISIONS	SIGN	DATE	APPROVED
	BY			
	CHECKED			
	BY			
	CHECKED			

CLIENT:

THE CHIEF EXECUTIVE OFFICER
COAST WATER WORKS DEVELOPMENT AGENCY
 P.O. BOX 90417 - 80100
 MOMBASA, KENYA

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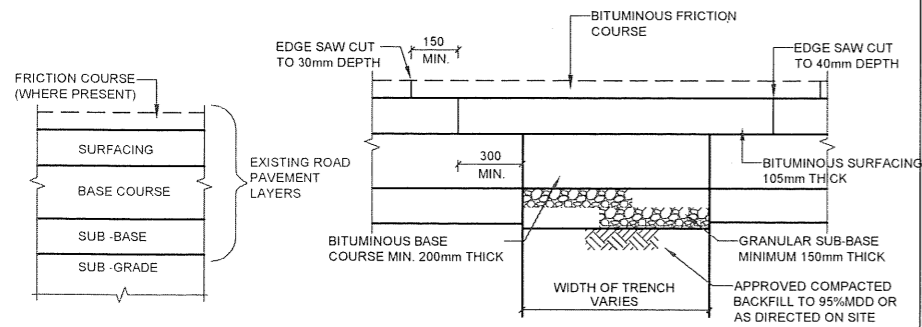
PROJECT:
IMPROVEMENT OF DRINKING WATER AND SANITATION SYSTEMS IN MOMBASA: MWACHE CKE 1103

BID No.CWWDA/AFD/PQ/W4/2022-2023
 LOT 1 - CONSTRUCTION OF THE MWACHE TWIN TRUNK MAIN (SECTION 1), THE SOUTH MAINLAND TRANSMISSION PIPELINE AND DONGO KUNDU RESERVOIR

DRAWING TITLE:
 STANDARD DETAIL
 TRENCHLESS ROAD AND RAILWAY CROSSING

DESIGNED BY: J.M.K	DRAWN BY: O.J.O
CHECKED BY: E.I.M	APPROVED BY: R.S.R
SCALE: AS SHOWN	DATE: APRIL 2024
DRAWING No. M430/SD/11	

1. BITUMINOUS CARRIAGEWAY



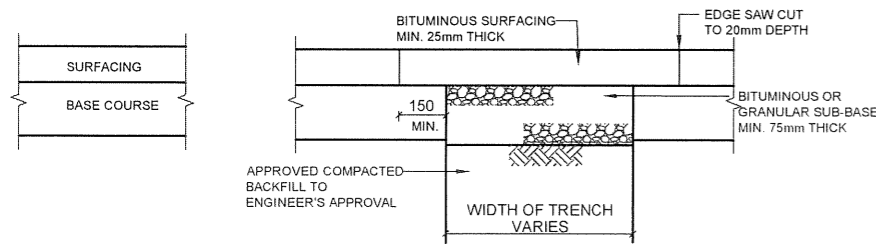
EXISTING CONSTRUCTION
(MAY VARY ON SITE)

PERMANENT REINSTATEMENT

NOTES:

1. THE REINSTATEMENT SUB-BASE MATERIAL TO BE PUT BACK SHALL BE OF THE SAME THICKNESS AS THE ORIGINAL ADJOINING PAVEMENT SUBJECT TO A MINIMUM OF 150mm.
2. THE REINSTATEMENT ROAD-BASE TO BE PUT BACK SHALL BE OF APPROVED BITUMINOUS MATERIAL AND OF THE SAME THICKNESS AS THE ADJOINING PAVEMENT SUBJECT TO A MINIMUM OF 200mm.
3. THE APPROVED BITUMINOUS SURFACING LAYER TO BE PUT BACK SHALL BE 105mm THICK AND SHALL CONSIST OF A 65mm THICK BASE COURSE AND A 40mm THICK WEARING COURSE.
4. FRICTION COURSE MAY BE ABSENT IN MOST URBAN ROADS, BUT WHERE A FRICTION COURSE IS PRESENT IN THE ORIGINAL ROAD PAVEMENT, A FRICTION COURSE LAYER OF THE SAME THICKNESS SHALL BE PUT BACK.
5. MATERIAL SPECIFICATION SHALL BE IN ACCORDANCE WITH GENERAL SPECIFICATIONS. A TYPICAL PAVEMENT SECTION CONSTRUCTION MAY CONSIST OF
 FRICTION COURSE - 10mm NOMINAL SIZE FRICTION COURSE MATERIAL
 WEARING COURSE - 10 OR 20mm NOMINAL SIZE WEARING COURSE MATERIAL
 BASE COURSE - 28 OR 37.5mm NOMINAL SIZE BASE COURSE MATERIAL
 ROAD-BASE - 37.5mm NOMINAL SIZE ROAD-BASE COURSE MATERIAL
 SUB-BASE - GRANULAR SUB-BASE
6. FOR LIMITS OF REINSTATEMENT REFER TO THE RULES IN MIDDLE COLUMN OF THIS DRAWING

2. BITUMINOUS FOOTWAY AND CYCLETRACK



EXISTING CONSTRUCTION
(MAY VARY ON SITE)

PERMANENT REINSTATEMENT

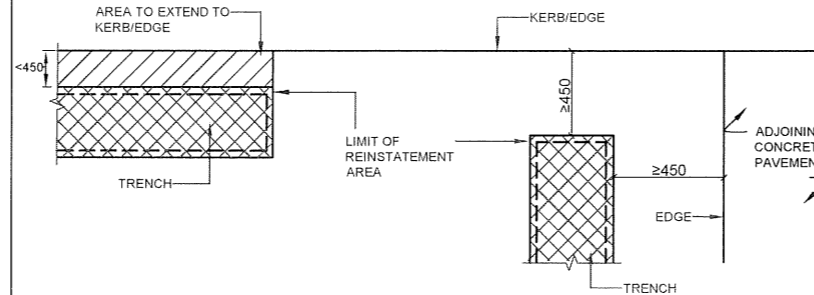
NOTES:

1. THE SUB-BASE TO BE PUT BACK SHALL BE OF EITHER APPROVED GRANULAR MATERIAL SPECIFICATIONS OR BITUMINOUS MATERIAL AND SHALL BE OF THE SAME THICKNESS AS THE ADJOINING ORIGINAL FOOTWAY OR CYCLETRACK SUBJECT TO A MINIMUM THICKNESS OF 75mm.
2. THE SURFACING TO BE PUT BACK SHALL BE 10mm NOMINAL SIZE WEARING COURSE MATERIAL AND SHALL BE OF THE SAME THICKNESS AS THE ADJOINING ORIGINAL FOOTWAY OR CYCLETRACK SUBJECT TO A MINIMUM OF 25mm.
3. FOR LIMITS OF REINSTATEMENT REFER TO THE RULES IN MIDDLE COLUMN OF THIS DRAWING

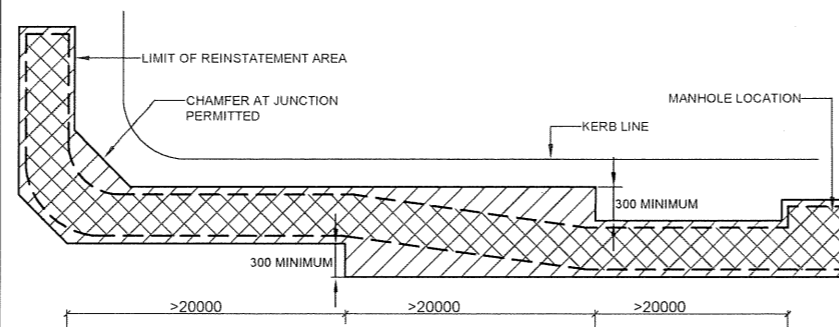
RULES TO DETERMINE THE LIMIT OF REINSTATEMENT IN BITUMINOUS CARRIAGEWAY, FOOTWAY AND CYCLETRACK

A. CARRIAGEWAY CONSTRUCTED MORE THAN 5 YEARS AGO, CARRIAGEWAY RE-SURFACED MORE THAN 1 YEAR AGO AND FOOTWAY OR CYCLETRACK CONSTRUCTED MORE THAN 1 YEAR AGO

1. THE REINSTATEMENT AREA (TRENCH WIDTH SHALL BE OF SUFFICIENT WIDTH TO ALLOW THE USE OF PROPER COMPACTING EQUIPMENT).
2. THE REINSTATEMENT AREA SHALL EITHER
 (a) BE AT AN EDGE (THE KERB LINE, THE BUILDING LINE OR ADJOINING CONCRETE PAVEMENT) OF THE BITUMINOUS PAVEMENT; OR
 (b) BE AT A MINIMUM DISTANCE (MEASURED FROM ANY PART OF THE REINSTATEMENT AREA AT RIGHT ANGLE TO THE EDGE) OF 450mm FROM AN EDGE

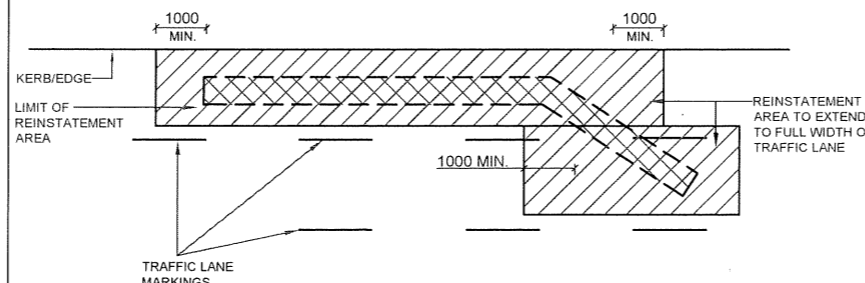


3. THE REINSTATEMENT AREA SHALL BE RECTANGULAR IN PLAN WITH THE SIDES EITHER PARALLEL OR PERPENDICULAR TO THE NEAREST EDGE OF THE BITUMINOUS PAVEMENT. STEPPED OR L-SHAPED REINSTATEMENT AREA IS PERMITTED ONLY IF:-
 (a) THE REINSTATEMENT AREA RUNS ALONG THE LENGTH OF THE CARRIAGEWAY, FOOTWAY OR CYCLETRACK, IN SUCH CASES
 - THE LENGTH OF EACH STEP ALONG THE LENGTH OF THE CARRIAGEWAY, FOOTWAY OR CYCLETRACK IS NOT LESS THAN 20m EXCEPT AT LOCATION OF MANHOLES OR JUNCTION BOXES;
 - THE LENGTH OF EACH STEP PERPENDICULAR TO THE LENGTH OF THE CARRIAGEWAY, FOOTWAY OR CYCLETRACK IS NOT LESS 300mm; OR
 (b) THE TRENCH GOES ROUND A ROAD JUNCTION, IN SUCH CASES A CHAMFER AT THE CORNER IS PERMITTED.

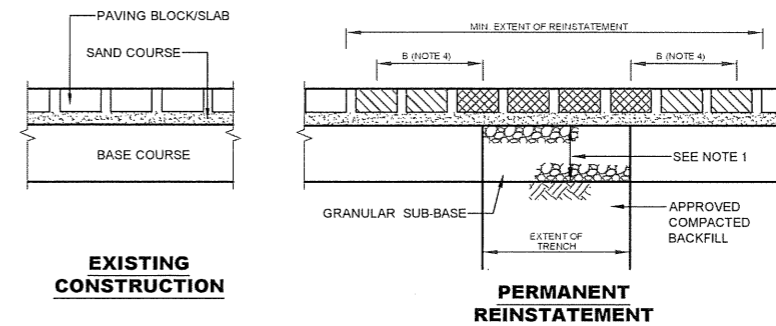
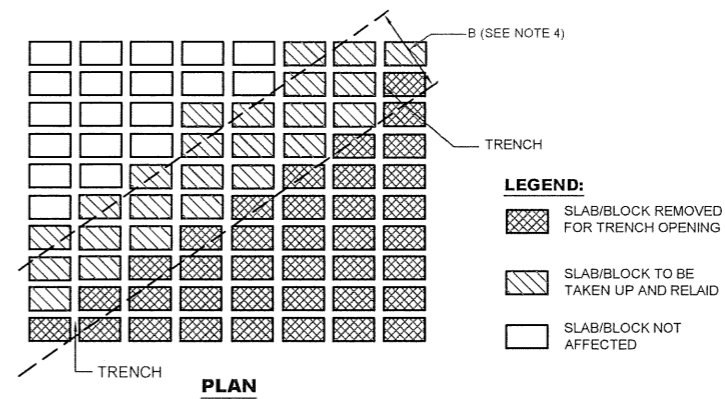


B. CARRIAGEWAY CONSTRUCTED WITHIN THE LAST 5 YEARS, CARRIAGEWAY RE-SURFACED WITHIN THE LAST 1 YEAR AND FOOTWAY OR CYCLETRACK CONSTRUCTED WITHIN THE LAST 1 YEAR

1. IN ADDITION TO THE RULES MENTIONED IN A ABOVE, THE REINSTATEMENT AREA SHALL EXTEND TO THE FULL WIDTH OF THE TRAFFIC LANE(S) IN WHICH THE TRENCH IS SITUATED. ANY EXTENSION OF THE REINSTATEMENT AREA BEYOND THE MINIMUM LIMIT CAN BE DONE BY COLD MILLING AND RESURFACING THE WEARING COURSE WITHIN THE EXTENDED AREA.



3. PAVING SLAB/BLOCK CONSTRUCTION



EXISTING CONSTRUCTION

PERMANENT REINSTATEMENT

NOTES:

1. THE SUB-BASE TO BE PUT BACK SHALL BE OF GRANULAR MATERIAL TO GENERAL SPECIFICATIONS AND SHALL BE OF THE SAME THICKNESS AS THE ADJOINING PAVEMENT SUBJECT TO A MINIMUM OF 75mm IN FOOTWAY AND 150mm IN RUN-IN AND CARRIAGEWAY.
2. THE SAND COURSE TO BE PUT BACK SHALL EXCEED 20mm AND NOT EXCEED 30mm THICKNESS
3. THE PAVING SLABS/BLOCKS SHALL BE OF THE SAME THICKNESS AS THE ADJOINING PAVEMENT SUBJECT TO A MINIMUM OF 60mm IN FOOTWAY AND 80mm IN CARRIAGEWAY OR RUN-IN.
4. ALL PAVING SLABS/BLOCKS WITHIN A DISTANCE OF B MILLIMETERS FROM THE SIDE OF A TRENCH OR DISTURBED AS A RESULT OF THE TRENCH WORKS SHALL BE TAKEN UP AND RELAID TOGETHER WITH THE OTHER SLABS/BLOCKS REMOVED FOR THE TRENCHING WORK. B SHALL BE AT LEAST 300mm OR TWICE THE LARGEST LATERAL DIMENSION OF THE PAVING SLABS/BLOCKS USED IN THE PAVING PATTERN (THE PATTERN MAY INVOLVE SLABS/BLOCKS OF A FEW DIFFERENT SIZES), WHICHEVER IS THE GREATER. IF NECESSARY, FURTHER SLABS/BLOCKS SHOULD BE LIFTED AND REINSTATED.
5. THE PAVING SLABS/BLOCKS SHALL BE RELAID ACCORDING TO THE ORIGINAL PATTERN. ANY SLABS/BLOCKS DAMAGED OR LOST SHALL BE REPLACED.

NOTES

1. ALL DIMENSIONS IN mm UNLESS OTHERWISE STATED

ABBREVIATIONS

- mm - MILLIMETRES
- FGL - FINISHED GROUND LEVEL
- EGL - EXISTING GROUND LEVEL
- DIA - DIAMETER
- CL - CENTER LINE

REV	DESCRIPTION	BY	DATE	APPROVED

CLIENT:
 THE CHIEF EXECUTIVE OFFICER
 COAST WATER WORKS DEVELOPMENT AGENCY
 P.O. BOX 90417 - 80100
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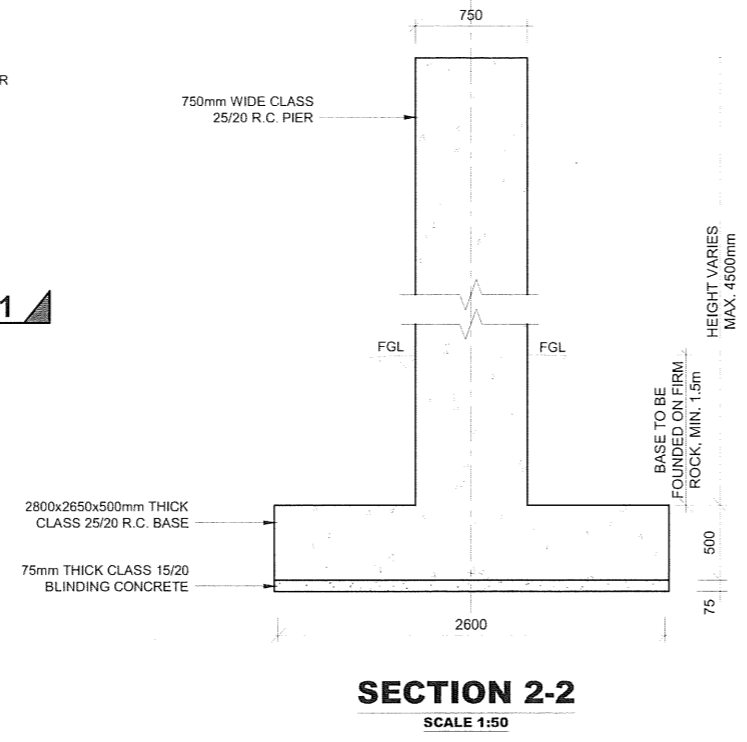
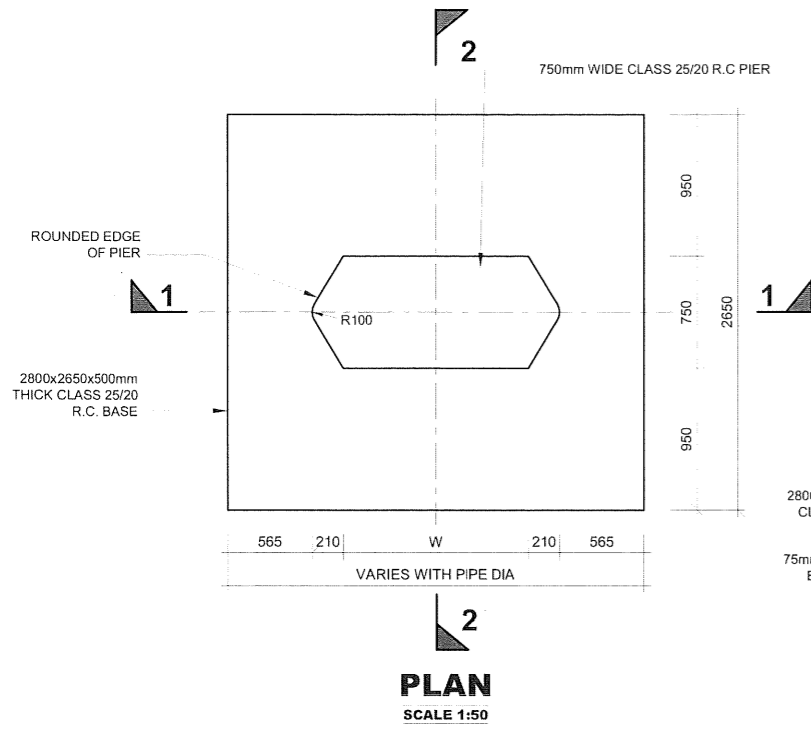
PROJECT:
 IMPROVEMENT OF DRINKING WATER AND SANITATION SYSTEMS IN MOMBASA: MWACHE CKE 1103

BID No.CWWDA/AFD/PQ/W4/2022-2023

LOT 1: CONSTRUCTION OF THE MWACHE TWIN TRUNK MAIN (SECTION 1), THE SOUTH MAINLAND TRANSMISSION PIPELINE AND DONGO KUNDU RESERVOIR

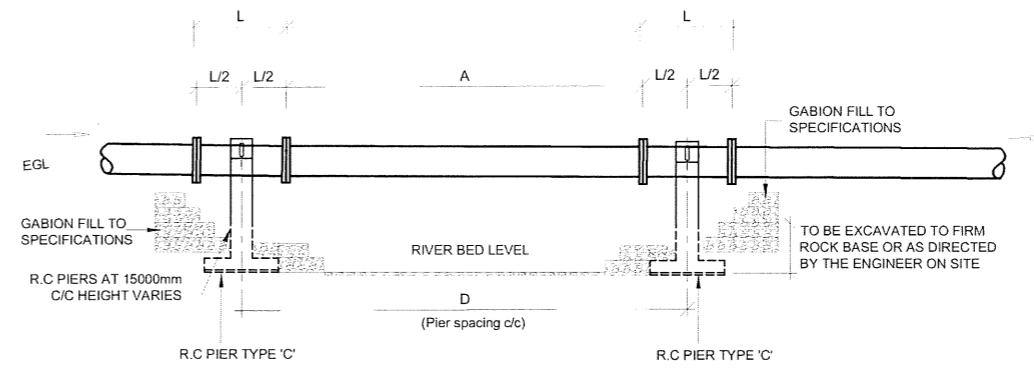
DRAWING TITLE:
 STANDARD DETAILS
 PERMANENT REINSTATEMENT OF PAVEMENTS

DESIGNED BY: J.M.K	DRAWN BY: V.K
CHECKED BY: R.S.R	APPROVED BY: B.D
SCALE: AS SHOWN	DATE: APRIL 2024
DRAWING No. M430/SD/12	



TYPICAL DIMENSIONS

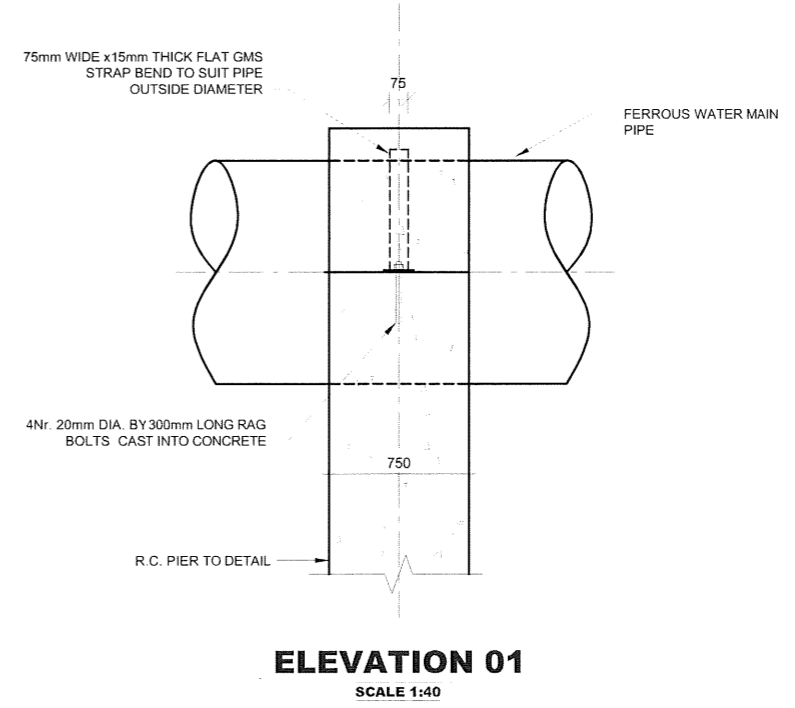
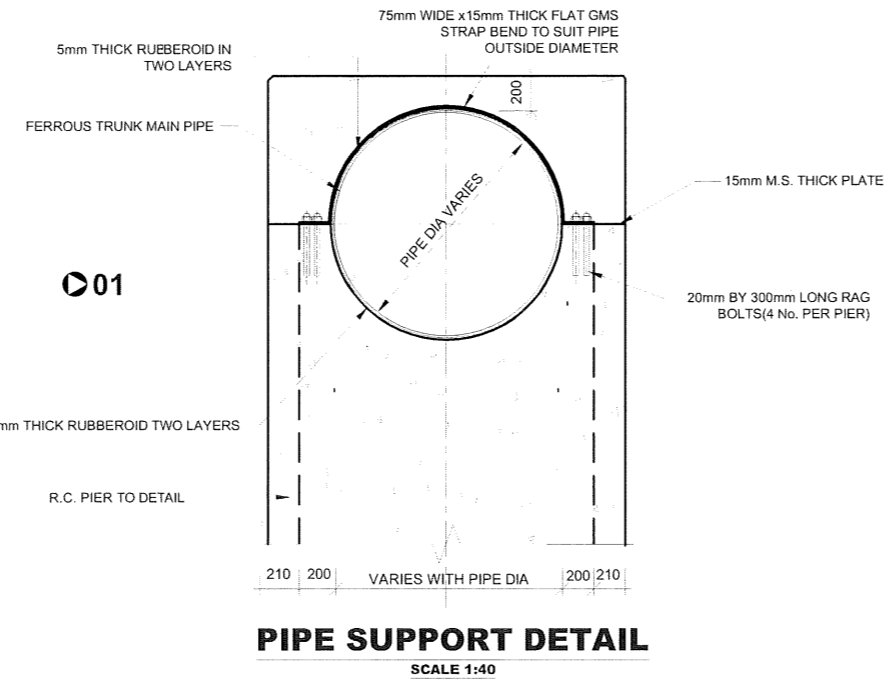
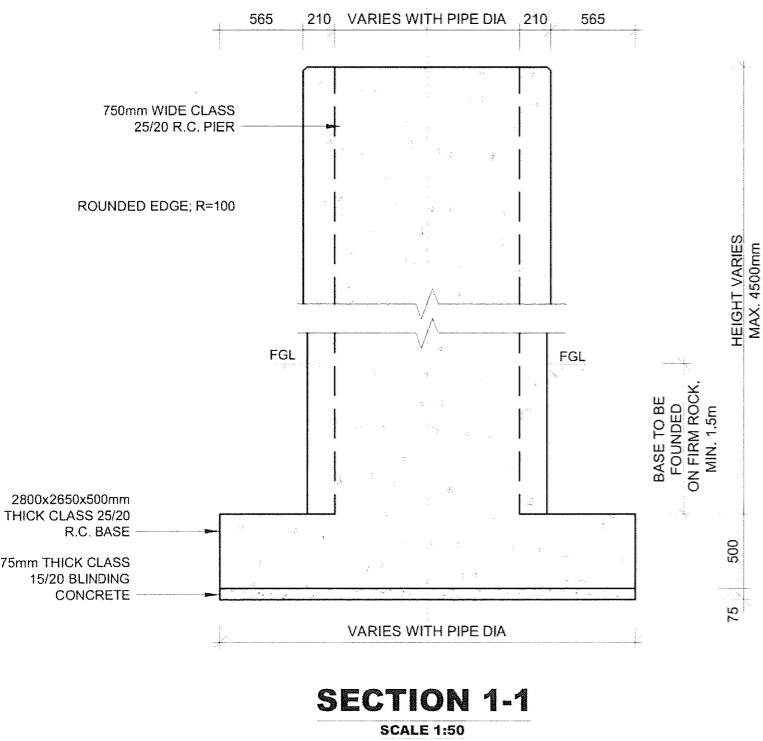
TYPE	D (mm)	L (mm)	A (mm)	Nr.
1	15000	5000	10000	
2	12000	4000	8000	
3	9000	3000	6000	



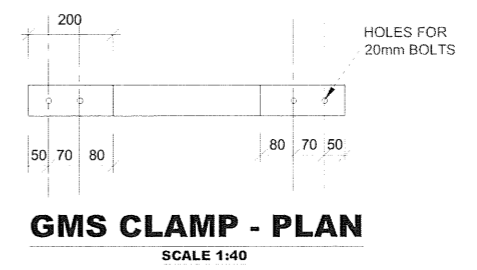
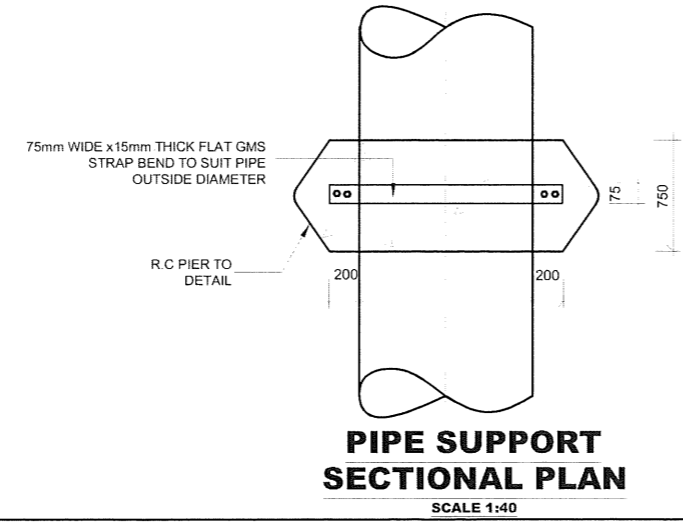
- NOTES**
- ALL DIMENSIONS IN mm UNLESS OTHERWISE STATED
 - ALL REINFORCED CONCRETE IN CLASS 25/20 UNLESS OTHERWISE STATED
 - ALL EXPOSED CONCRETE EDGES HAVE A 25x25mm CHAMFER
 - BOLTS AND NUTS ARE GALVANIZED
 - BOLTS AND NUTS ON PIPE SUPPORTS ARE SPOT WELDED AFTER INSTALLATION
 - ALL FITTINGS ARE FERROUS TYPE RIGID JOINTED BY BUTT-WELDING AND/OR MECHANICAL/FLEXIBLE JOINTED (FLANGED, COUPLING OR SOCKET AND SPIGOT JOINT)

ABBREVIATIONS

- mm - MILLIMETRES
- FGL - FINISHED GROUND LEVEL
- EGL - EXISTING GROUND LEVEL
- PIL - PIPE INVERT LEVEL
- DIA - DIAMETER
- R.C. - REINFORCED CONCRETE
- M.S. - MILD STEEL
- c/c - CENTER TO CENTRE
- No. - NUMBER
- No. - NUMBER
- W - PIPE DIAMETER



TYPICAL PIER DETAIL ON AERIAL CROSSINGS
SEE SCHEDULE FOR VARYING DIMENSIONS



REV	REVISIONS	BY	SIGN	DATE	APPROVED
		CHECKED			
		BY			
		CHECKED			

CLIENT:
THE CHIEF EXECUTIVE OFFICER
COAST WATER WORKS DEVELOPMENT AGENCY
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PROJECT:
IMPROVEMENT OF DRINKING WATER AND SANITATION SYSTEMS IN MOMBASA: MWACHE CKE 1103

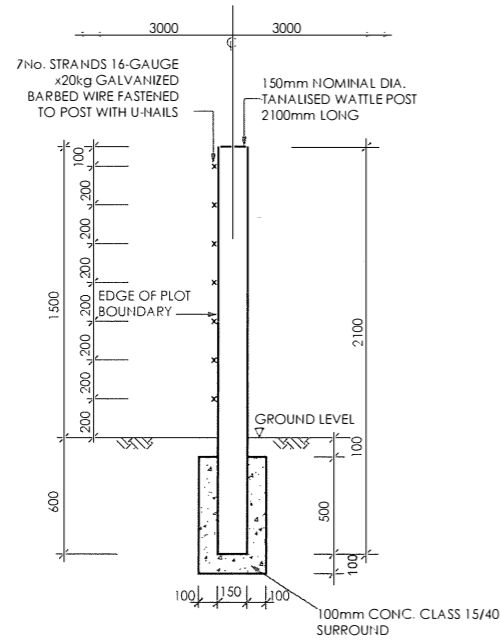
BID No. CWWDA/AFD/PQ/W4/2022-2023

LOT 1: CONSTRUCTION OF THE MWACHE TWIN TRUNK MAIN (SECTION 1), THE SOUTH MAINLAND TRANSMISSION PIPELINE AND DONGO KUNDU RESERVOIR

DRAWING TITLE:
STANDARD DETAILS
PIERS AND PIPE SUPPORTS

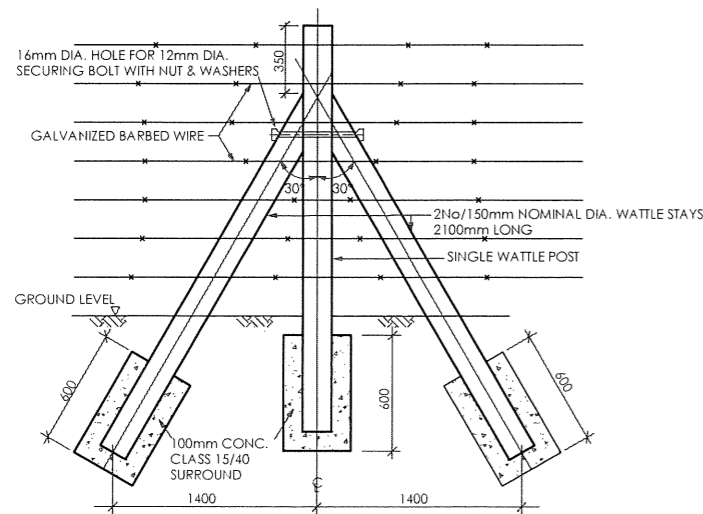
DESIGNED BY: J.M.K	DRAWN BY: O.J.O
CHECKED BY: R.S.R	APPROVED BY: B.D
SCALE: AS SHOWN	DATE: APRIL 2024
DRAWING No. M430/SD/13	

DETAILS OF WATTLE POSTS FOR BARBED WIRE FENCE



**TYPICAL END ELEVATION - SINGLE POST
(TO BE AT 3.0m CENTRES)**

(N.T.S)



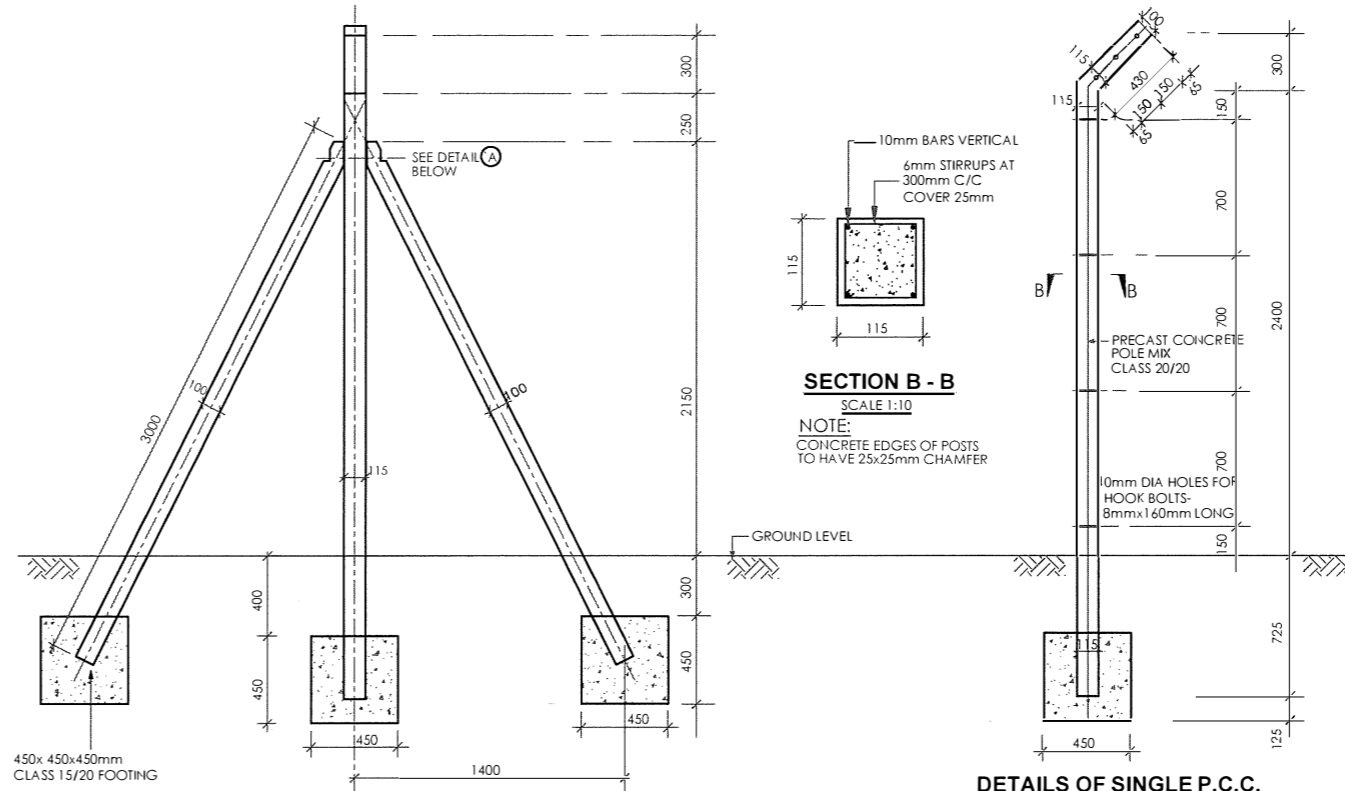
**TYPICAL FRONT ELEVATION - STAYED POST
(STAYS TO BE PROVIDED AT 30.0m c/c AND AT
CORNERS)**

(N.T.S)

NOTES

- ALL CORNER POSTS AND EVERY 10th SINGLE POST TO HAVE 2 No. STAYS
- POSTS TO BE AT 3000mm CENTRES
- TOP OF ALL POSTS TO BE KEPT IN UNIFORM LINE
- EXTENT OF FENCING IS SHOWN ON THE LAYOUT PLAN
- N.T.S = NOT TO SCALE

DETAILS OF PRECAST CONCRETE POSTS FOR CHAIN LINK FENCE



SECTION B - B

SCALE 1:10

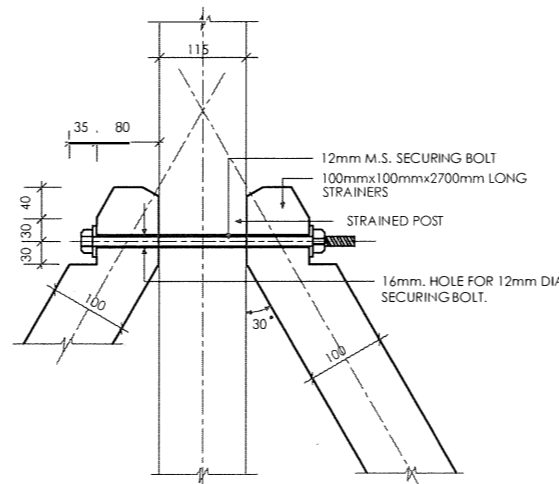
NOTE:
CONCRETE EDGES OF POSTS
TO HAVE 25x25mm CHAMFER

**DETAILS OF SINGLE P.C.C.
POST AT 3.30m Cts.**

SCALE 1:40

**DETAILS OF STRAINING POST FOR
CHAIN LINK FENCE AT 33.3m Cts.**

SCALE 1:40

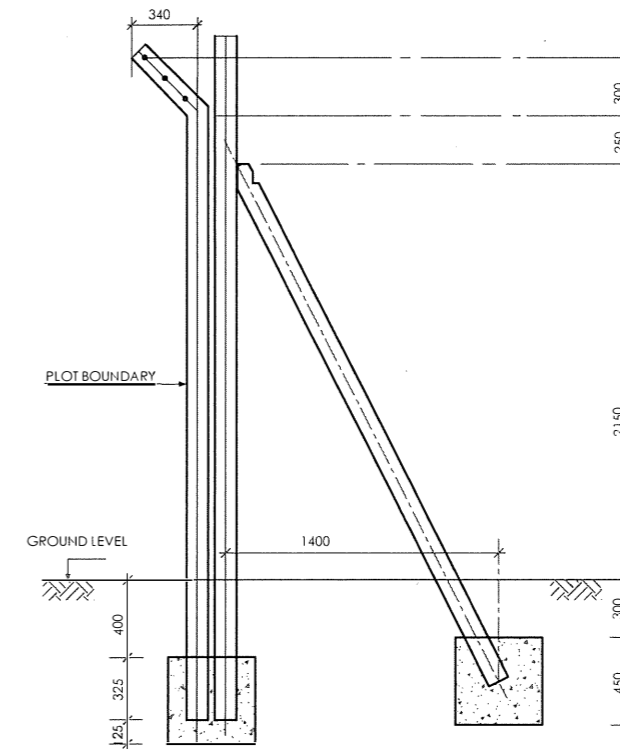


DETAIL (A)

SCALE 1:10

NOTES

- APPROXIMATELY EVERY 10th POST AND ALL CORNER POST TO BE STRAINED
- POST TO BE AT 3300mm CENTRES
- TOP OF ALL POSTS TO BE KEPT IN UNIFORM LINE



DETAILS OF CORNER POSTS

SCALE 1:40

NOTES

- CONCRETE MIXES ARE AS FOLLOWS:
1. POSTS CLASS 20/20
2. STRAINER POSTS CLASS 20/20
3. FOUNDATION BLOCK CLASS 15/20 CONC.
- CHAIN LINK IN GAUGE 12 GALVANISED STEEL WIRE.
- STRAINING WIRES IN 12 GAUGE GALVANISED STEEL PLAIN WIRES.
- WIRES ON CRANK IN 12 GAUGE GALVANISED STEEL BARBED WIRE.
- STRAINING WIRES FIXED TO POST WITH GALVANIZED HOOK BOLTS 8mm DIA. x 60mm LONG
- ALL DIMENSIONS ARE IN mm. UNLESS OTHERWISE STATED.
- ALL EXPOSED CONCRETE EDGES OF POSTS HAVE 25x25mm CHAMFER

ABBREVIATIONS

C/C = CENTRE TO CENTRE.
Cts. = CENTRES.
M.S. = MILD STEEL.
P.C.C. = PRECAST CEMENT CONCRETE.
CONC. = CONCRETE
mm - MILLIMETER
UPVC - UNPLASTICISED POLYVINYL CHLORIDE
Dia. - DIAMETER
Kg - KILOGRAMME
C - CENTRE LINE
m - METRE
NTS - NOT TO SCALE

REV	REVISIONS	SIGN	DATE	APPROVE
		BY		
		CHECKED		
		BY		
		CHECKED		

CLIENT:
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PROJECT:
**IMPROVEMENT OF DRINKING WATER
AND SANITATION SYSTEMS IN
MOMBASA: MWACHE CKE 1103**

BID No.CWVDA/AFD/PQ/W4/2022-2023

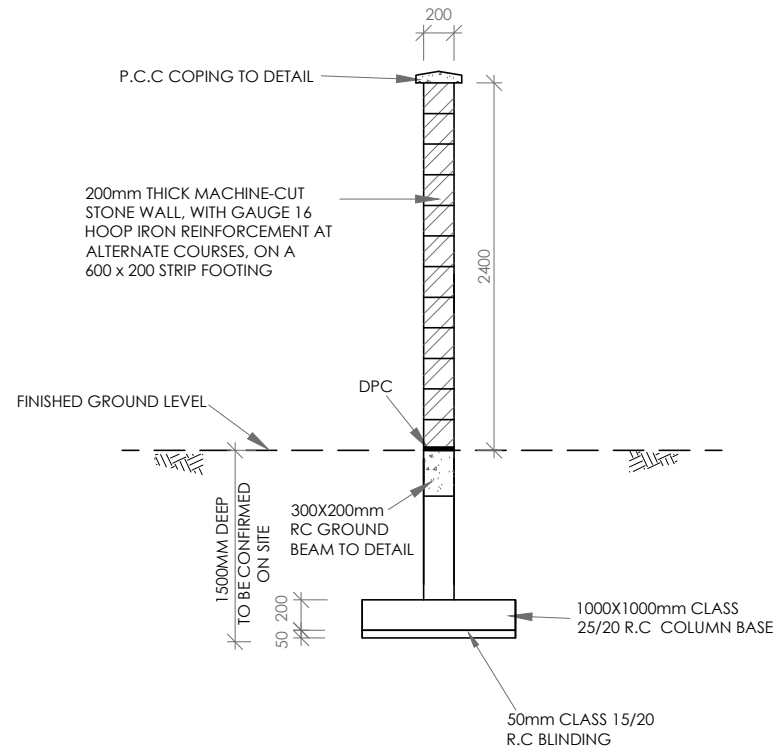
**LOT 1: CONSTRUCTION OF THE MWACHE
TWIN TRUNK MAIN (SECTION 1), THE SOUTH
MAINLAND TRANSMISSION PIPELINE AND
DONGO KUNDU RESERVOIR**

DRAWING TITLE:

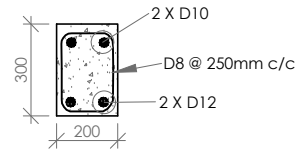
STANDARD DETAILS

DETAILS OF FENCING POSTS

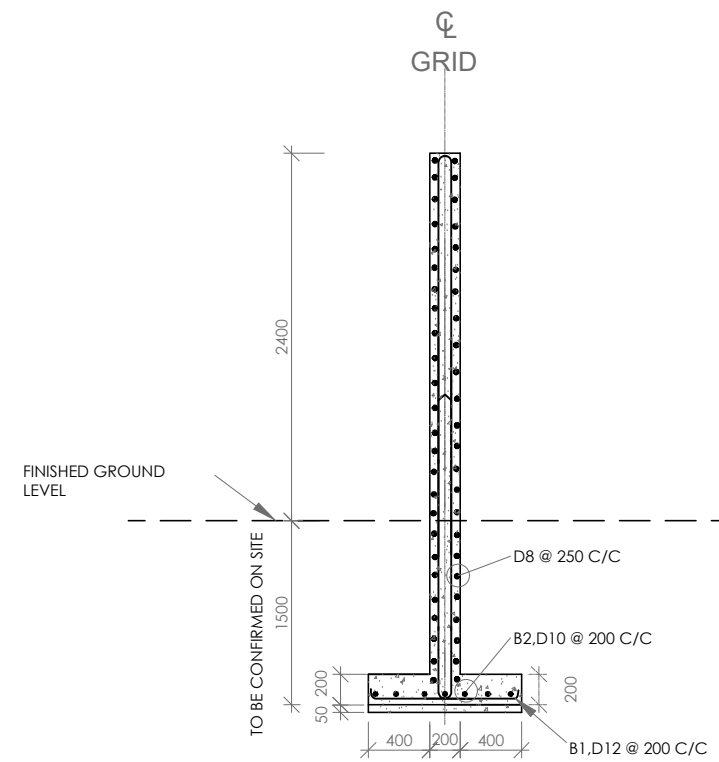
DESIGNED BY: J.M.K	DRAWN BY: V.K
CHECKED BY: R.S.R	APPROVED BY: B.D
SCALE: AS SHOWN	DATE: APRIL 2024
DRAWING No. M430/SD/14-1	



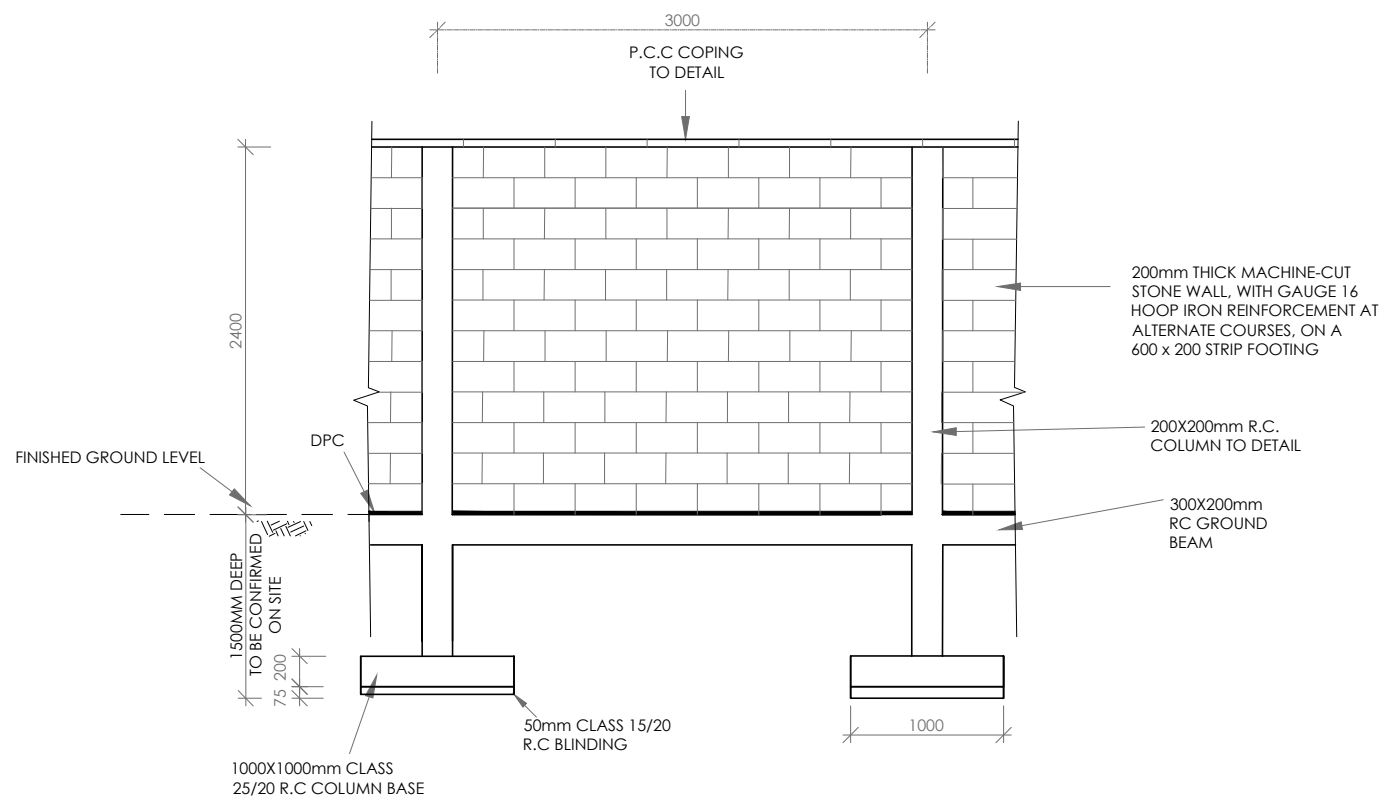
**MASONRY WALL
TYPICAL SECTION**
SCALE 1:50



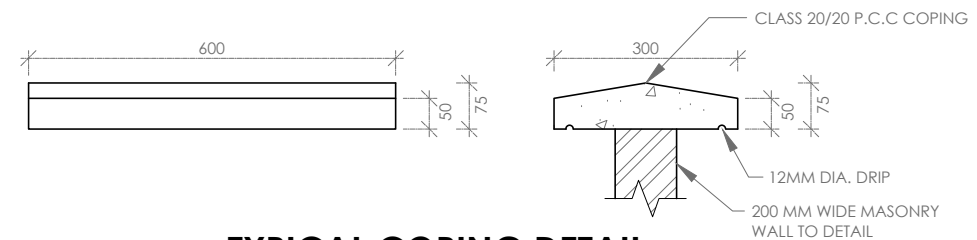
**TYPICAL GROUND BEAM
CROSS SECTION**
SCALE 1:25



TYPICAL COLUMN DETAIL
SCALE 1:50



TYPICAL WALL ELEVATION
SCALE 1:50



TYPICAL COPING DETAIL
SCALE 1:12.5

NOTES:

1. DIMENSIONS IN mm UNLESS OTHERWISE SPECIFIED
2. ALL EXPOSED CONCRETE EDGES TO HAVE A 25mm x 25mm CHAMFER
3. CONCRETE WORKS: ALL REINFORCED CONCRETE TO BE CLASS 25/20 EXCEPT WHERE OTHERWISE SPECIFIED
4. MASONRY WALL TO BE REINFORCED WITH GAUGE 16 HOOP IRON AT EVERY ALTERNATE COURSE
5. MASONRY WALL TO BE APPLIED WITH APPROVED WATER REPELLANT ON BOTH FACES

ABBREVIATIONS

- R.C - REINFORCED CONCRETE
- P.C.C - PRECAST CONCRETE
- C/C - CENTRE TO CENTRE
- MM - MILLIMETERS
- DPC - DAMP PROOF COURSE


REV	REVISIONS	SIGN	DATE	APPROVED
	BY			
	CHECKED			
	BY			
	CHECKED			

CLIENT:

**THE CHIEF EXECUTIVE OFFICER
 COAST WATER WORKS DEVELOPMENT
 AGENCY**
 P.O. BOX 90417 - 80100
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 TEL: +254-2-2710500

PROJECT:
**IMPROVEMENT OF DRINKING WATER
 AND SANITATION SYSTEMS IN
 MOMBASA: MWACHE CKE 1103**

BID No. CWWDA/AFD/PQ/W4/2022-2023

**LOT 1: CONSTRUCTION OF THE MWACHE
 TWIN TRUNK MAIN (SECTION 1), THE SOUTH
 MAINLAND TRANSMISSION PIPELINE AND
 DONGO KUNDU RESERVOIR**

DRAWING TITLE:
 STANDARD DETAILS
 TYPICAL MASONRY WALL DETAIL

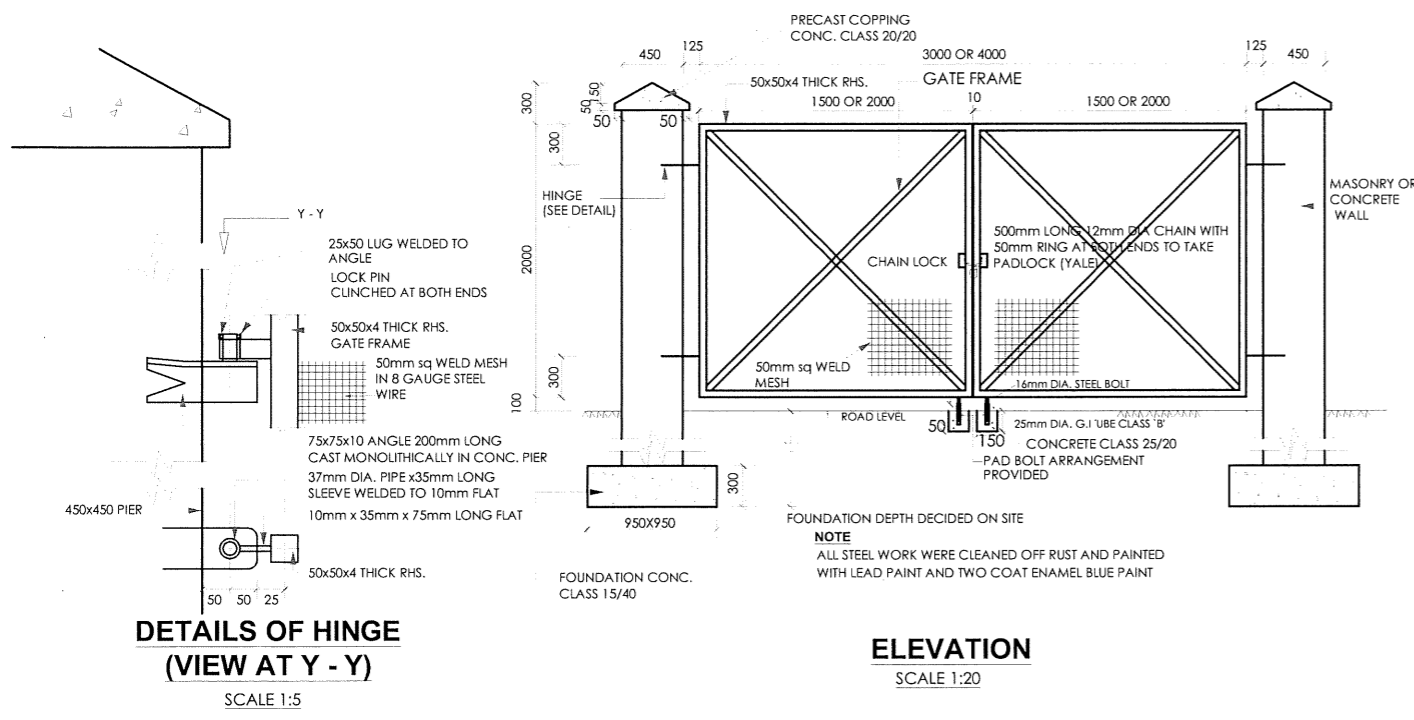
DESIGNED BY: P.K.G	DRAWN BY: P.K.G
CHECKED BY: J.M.K	APPROVED BY: B.D
SCALE: AS SHOWN	DATE: AUGUST 2024
DRAWING No. M430/SD/14-2	

NOTES

1. ALL DIMENSIONS ARE IN MM UNLESS OTHERWISE STATED

ABBREVIATIONS

mm - MILLIMETER
 DIA. - DIAMETER
 G.L. - GROUND LEVEL
 E.Q. - EQUAL
 sq - SQUARE
 CONC. - CONCRETE



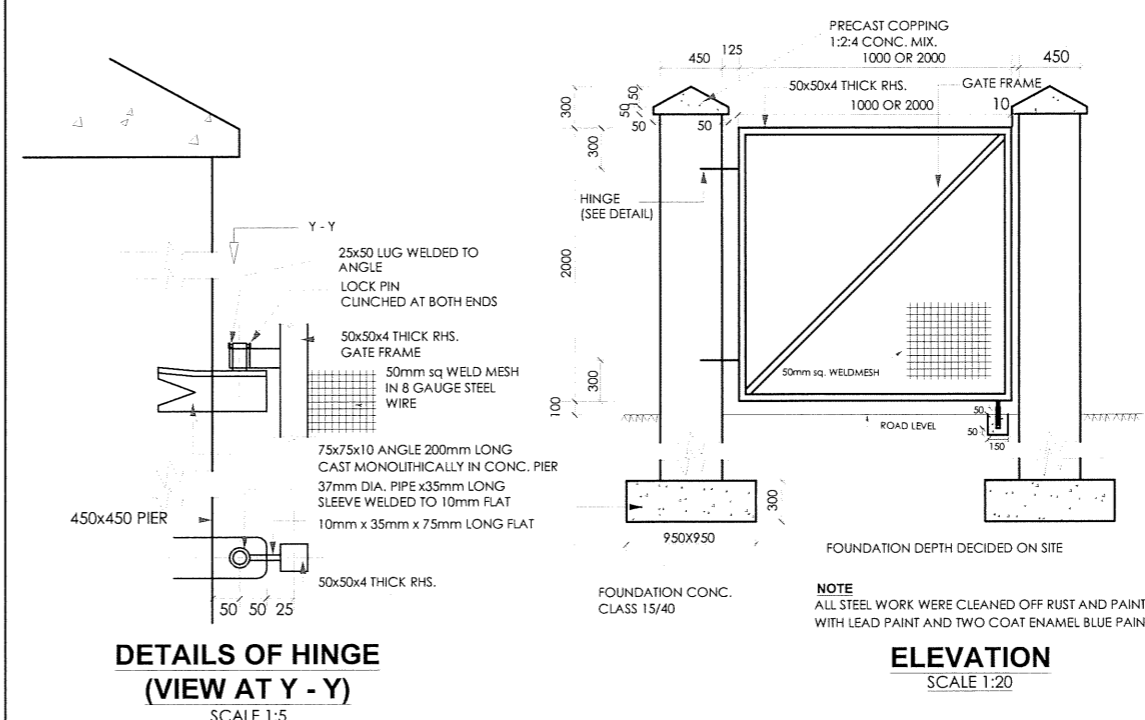
**DETAILS OF HINGE
 (VIEW AT Y - Y)**

SCALE 1:5

ELEVATION

SCALE 1:20

DETAILS OF 4m WIDE GATE



**DETAILS OF HINGE
 (VIEW AT Y - Y)**

SCALE 1:5

ELEVATION


SCALE 1:20

DETAILS OF 1m WIDE & 2m WIDE GATE

NOTE:
 -FOR DETAILS OF HINGES AND LOCKING CLEATS SEE DRG. M430/SD/16

AS BUILT

REV	REVISIONS	BY	SIGN	DATE	APPROVED
		CHECKED			
		BY			
		CHECKED			

CLIENT:
 **THE CHIEF EXECUTIVE OFFICER
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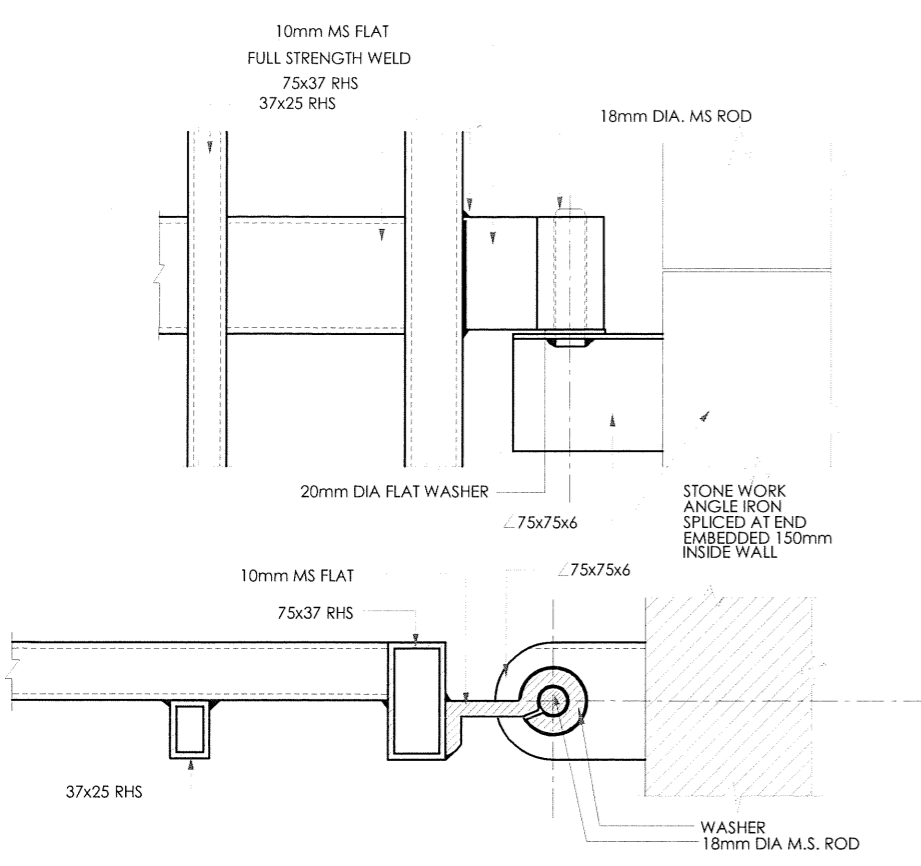
PROJECT:
**IMPROVEMENT OF DRINKING WATER
 AND SANITATION SYSTEMS IN
 MOMBASA: MWACHE CKE 1103**

BID No.CWWDA/AFD/PQ/W4/2022-2023

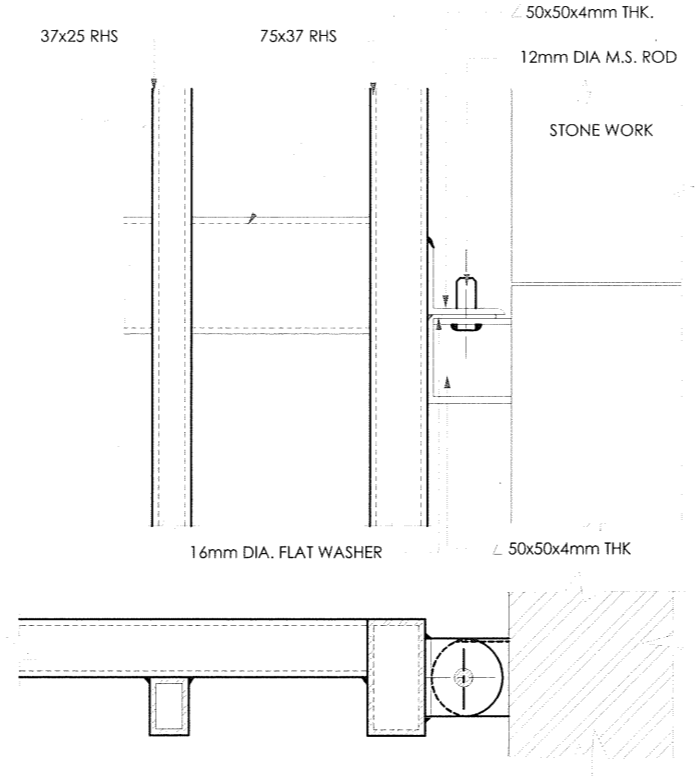
LOT 1: CONSTRUCTION OF THE MWACHE
 TWIN TRUNK MAIN (SECTION 1), THE SOUTH
 MAINLAND TRANSMISSION PIPELINE AND
 DONGO KUNDU RESERVOIR

DRAWING TITLE:
 STANDARD DETAILS
 DETAILS OF GATES
 (SHEET 1 OF 2)

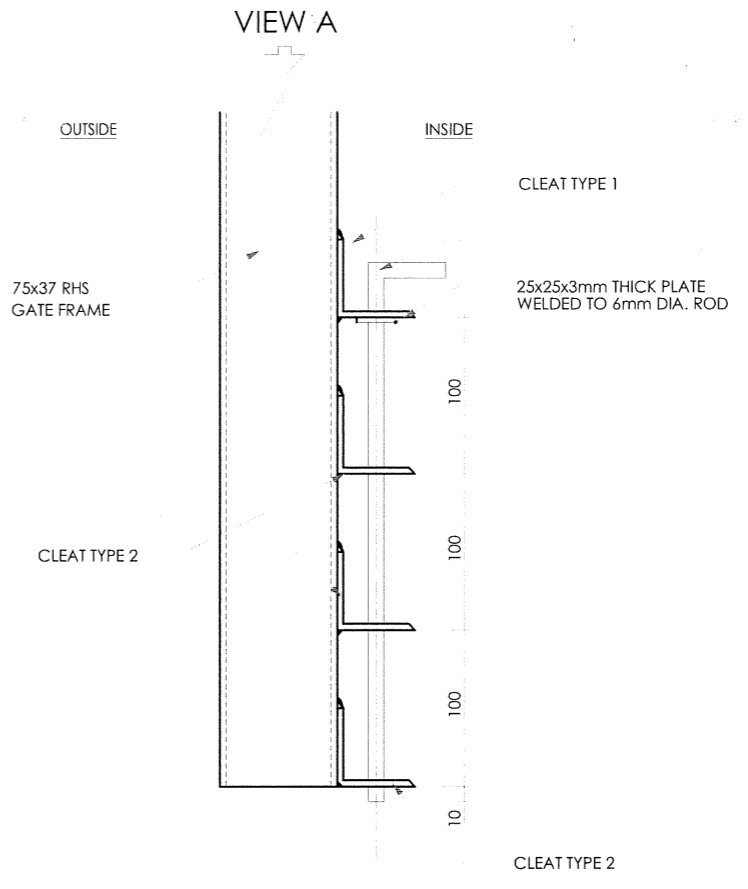
DESIGNED BY: J.M.K	DRAWN BY: O.J.O
CHECKED BY: R.S.R	APPROVED BY: B.D
SCALE: AS SHOWN	DATE: APRIL 2024
DRAWING No. M430/SD/15	



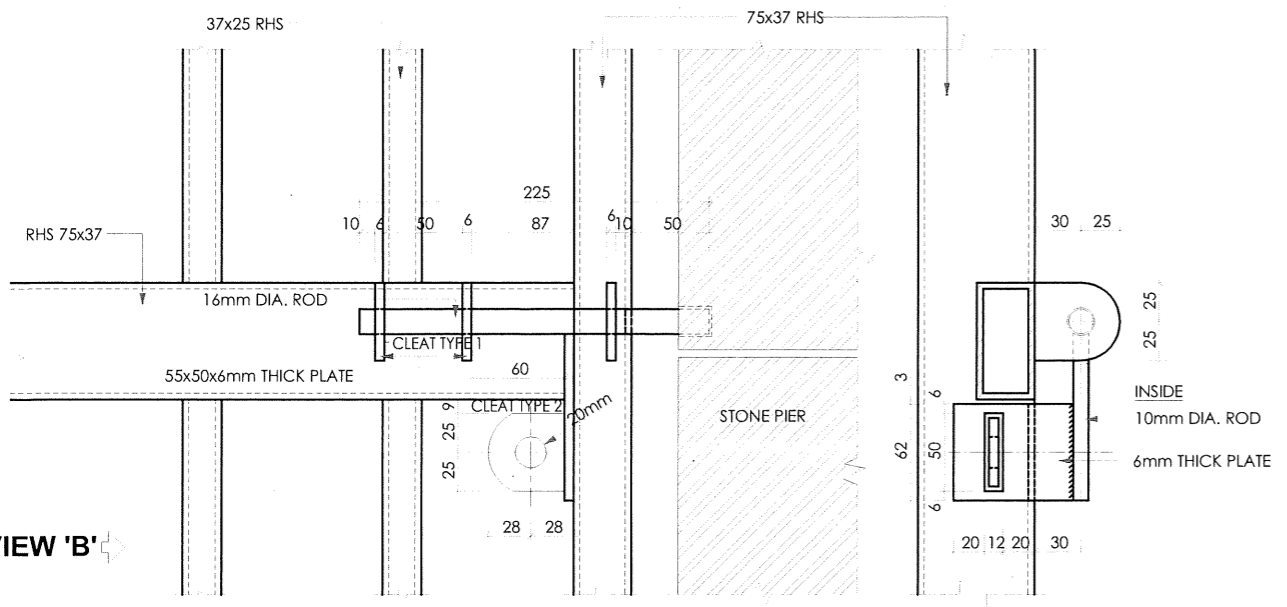
DETAIL OF HINGE FOR LARGE GATE
SCALE: 1:5



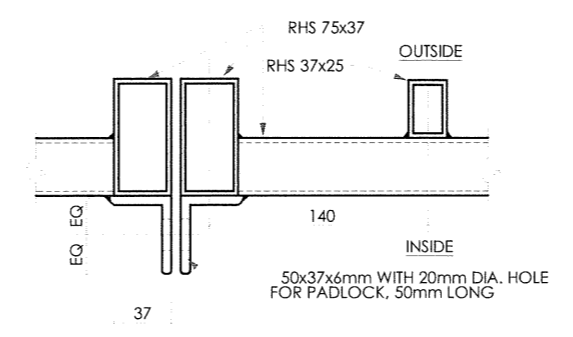
DETAIL OF HINGE FOR SMALL GATE
SCALE: 1:5



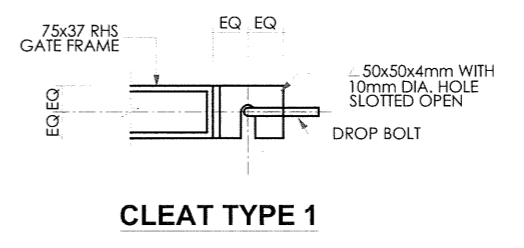
DETAIL OF DROP BOLT FOR LARGE GATE
SCALE: 1:5



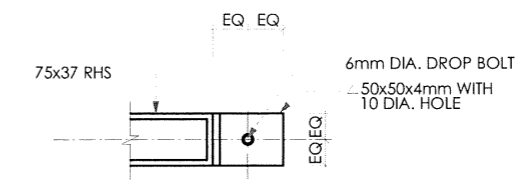
DETAIL OF LOCKING BOLT FOR SMALL GATE
SCALE: 1:5



DETAIL OF LOCKING CLEATS FOR LARGE GATE
SCALE: 1:5



CLEAT TYPE 1



CLEAT TYPE 2

DETAIL OF LOCKING BOLT FOR LARGE GATE
VIEW A
SCALE: 1:5

NOTES
1. ALL DIMENSIONS ARE IN MM UNLESS OTHERWISE STATED

ABBREVIATIONS
mm - MILLIMETER
DIA. - DIAMETER
M.S. - MILD STEEL
E.Q. - EQUAL
∠ - ANGLE IRON
THK. - CONCRETE

AS BUILT

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		CHECKED			
		BY			
		CHECKED			

CLIENT:
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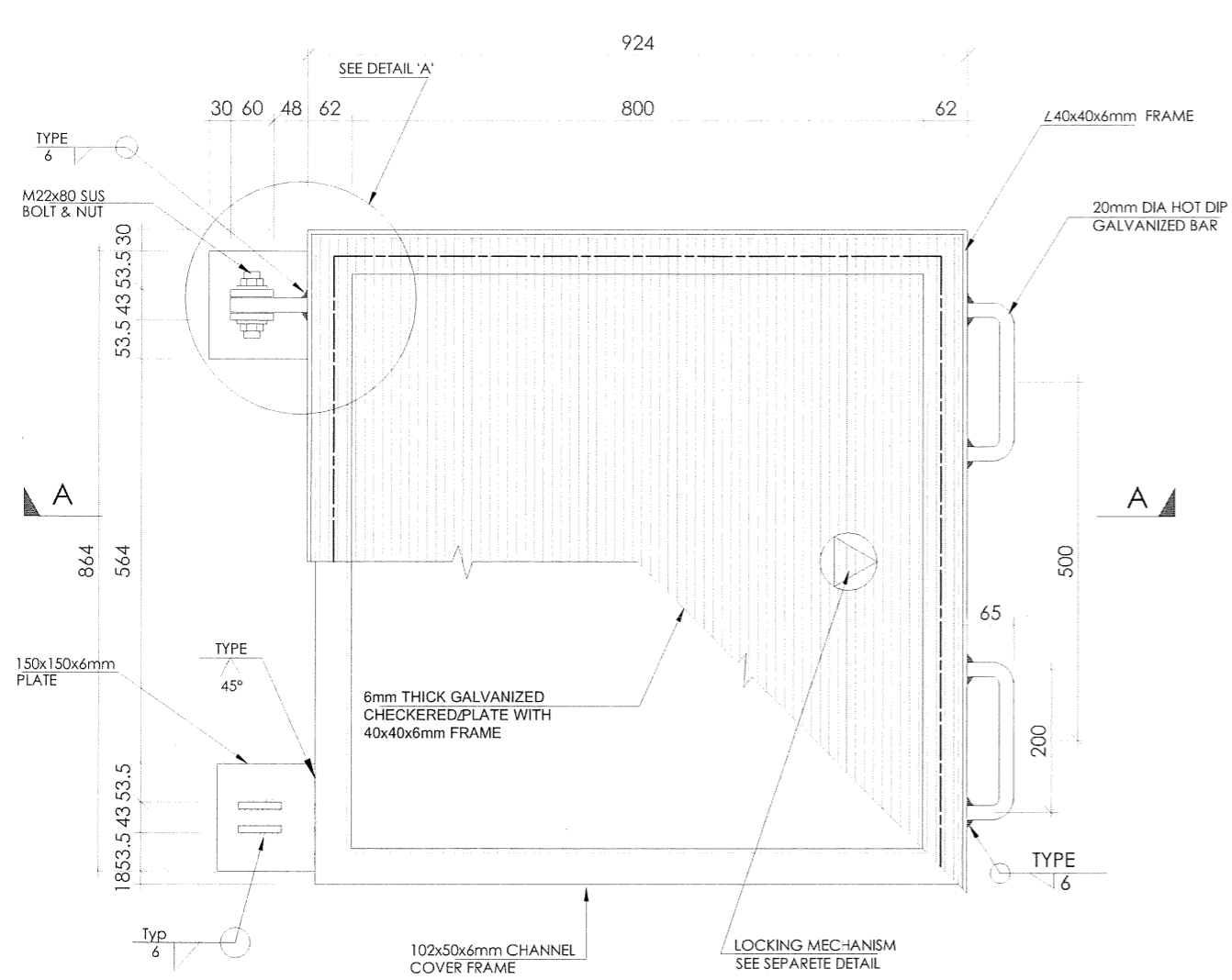
PROJECT:
**IMPROVEMENT OF DRINKING WATER
AND SANITATION SYSTEMS IN
MOMBASA: MWACHE CKE 1103**

BID No. CWWDA/AFD/PQ/W4/2022-2023

LOT 1: CONSTRUCTION OF THE MWACHE
TWIN TRUNK MAIN (SECTION 1) AND SOUTH
MAINLAND TRANSMISSION PIPELINE

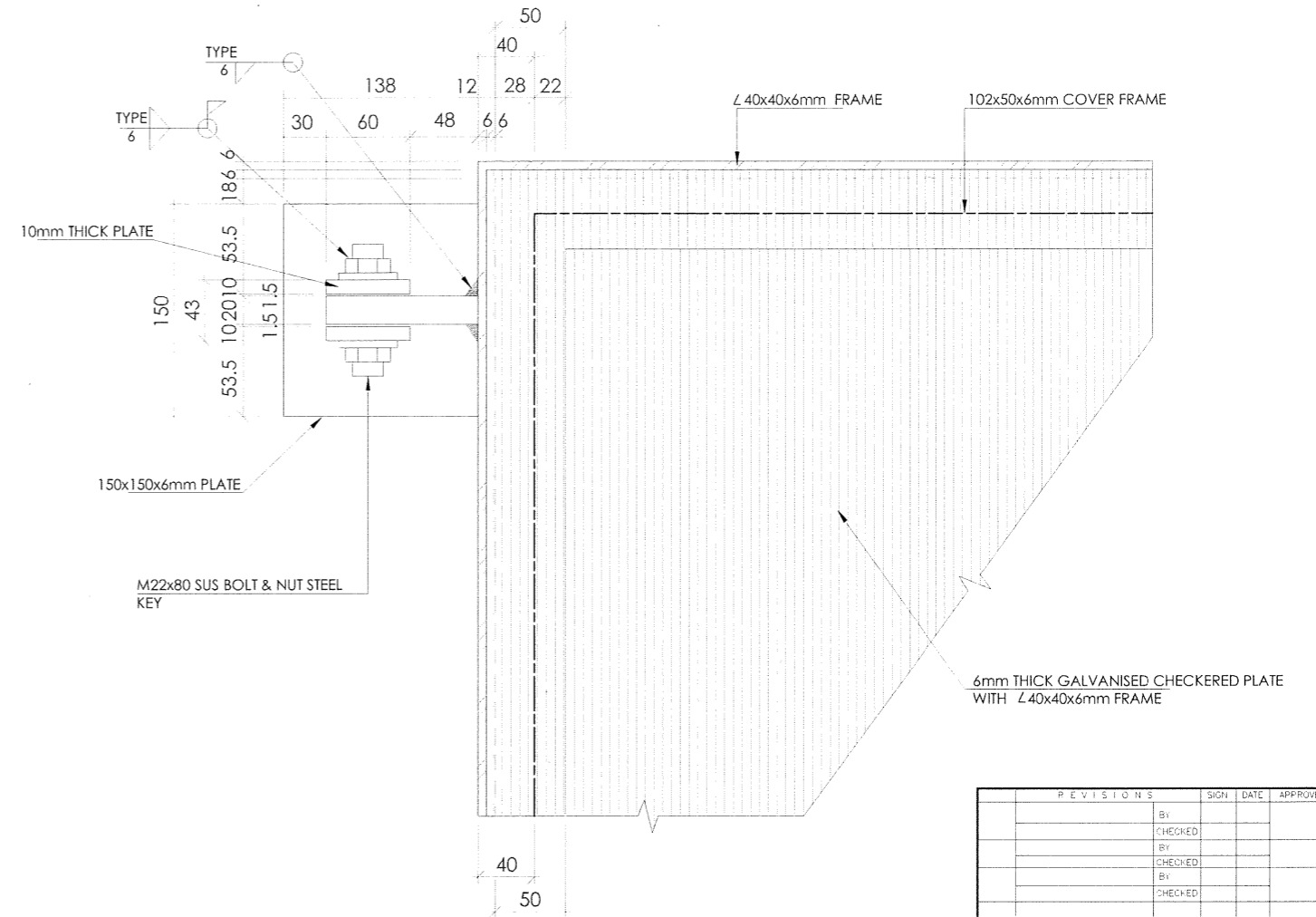
DRAWING TITLE:
**STANDARD DETAILS
DETAILS OF GATES
(SHEET 2 OF 2)**

DESIGNED BY: J.M.K	DRAWN BY: O.J.O
CHECKED BY: R.S.R	APPROVED BY: B.D
SCALE: AS SHOWN	DATE: APRIL 2024
DRAWING No. M430/SD/16	



PLAN OF CHECKERED PLATE COVER FOR CHAMBERS

SCALE 1:10



DETAIL 'A'

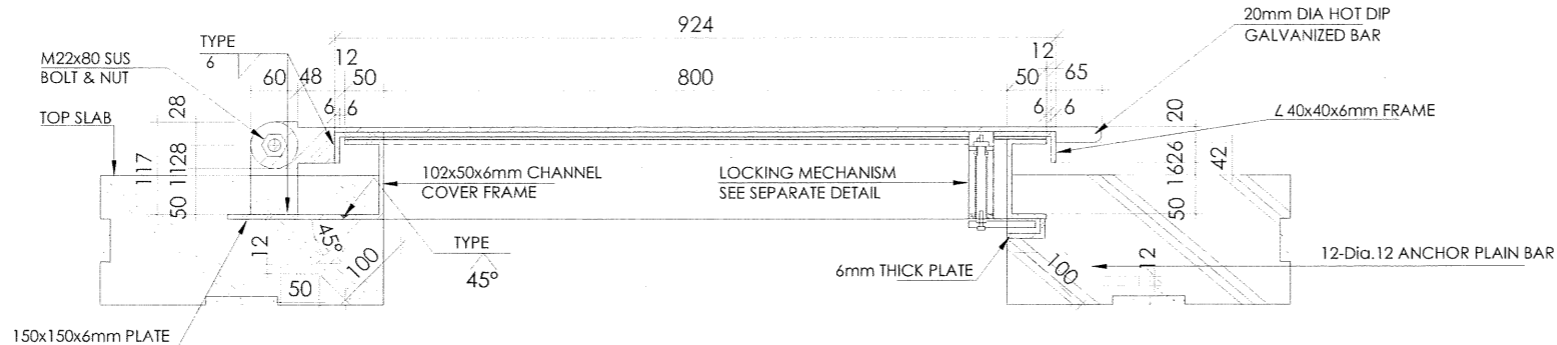
SCALE 1:5

NOTES

ALL DIMENSIONS ARE IN MILLIMETRES (mm) UNLESS OTHERWISE STATED

ABBREVIATIONS

- SUS - STAINLESS STEEL
- thk - THICK
- Typ - TYPE
- Dia. - DIAMETER
- L - ANGLE IRON



SECTION A-A

SCALE 1:10

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BY			
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CHECKED			
BY			
CHECKED			

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PROJECT NAME:
IMPROVEMENT OF DRINKING WATER AND SANITATION SYSTEMS IN MOMBASA: MWACHE CKE 1103

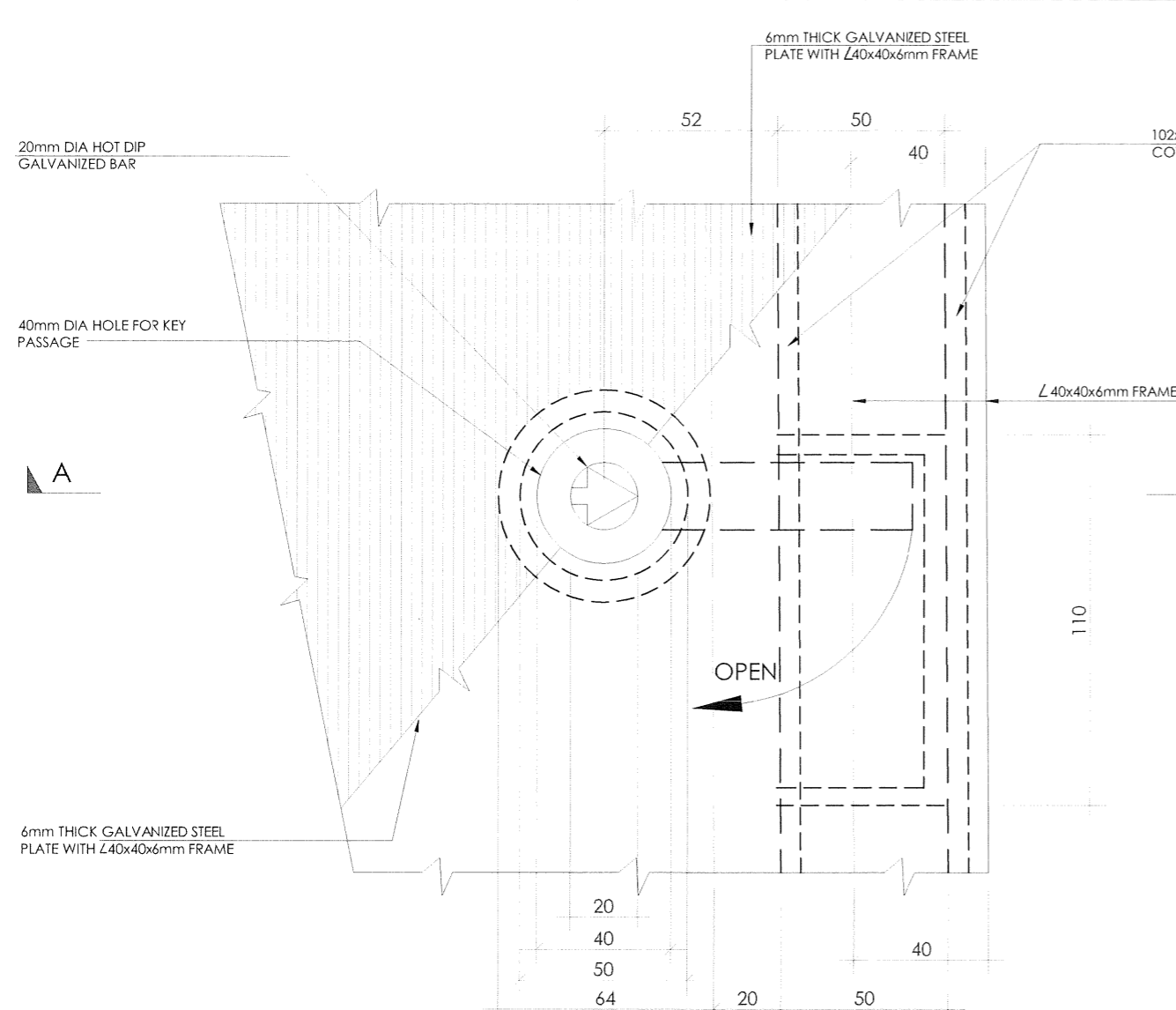
BID No.CWWDA/AFD/PQ/W4/2022-2023
 LOT 1: CONSTRUCTION OF THE MWACHE TWIN TRUNK MAIN (SECTION 1), THE SOUTH MAINLAND TRANSMISSION PIPELINE AND DONGO KUNDU RESERVOIR

DRAWING TITLE:
STANDARD DETAILS
DETAILS OF CHECKERED PLATE COVERS FOR CHAMBERS

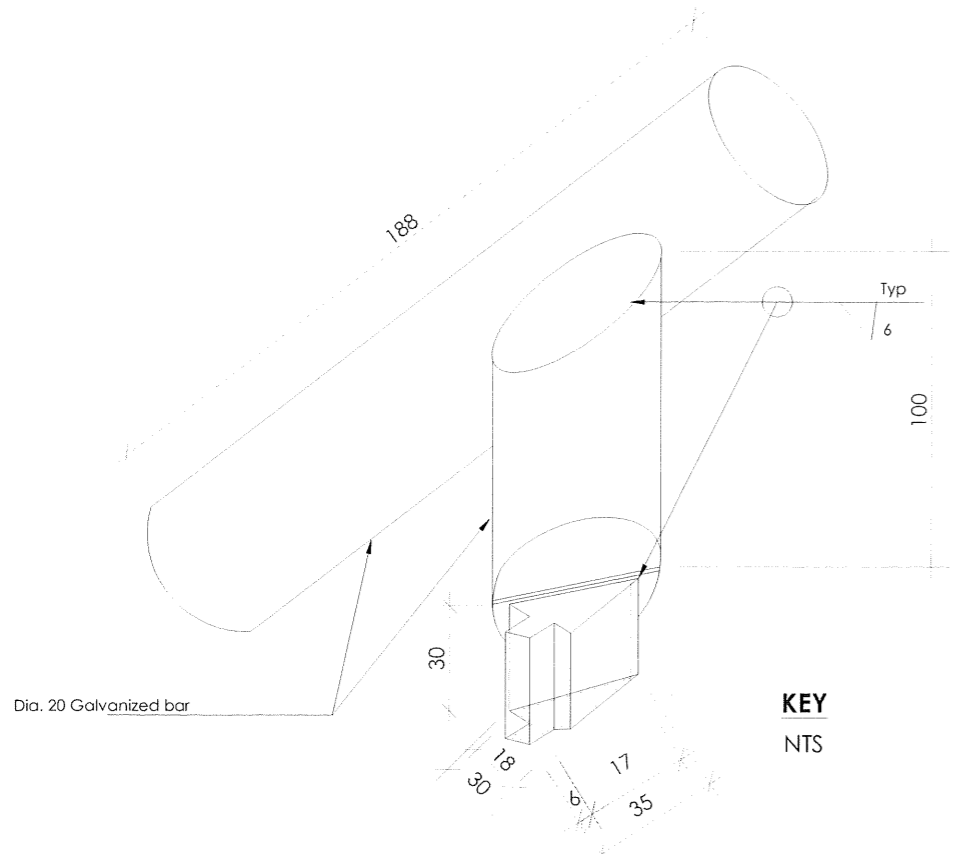
(SHEET 1 OF 2)

DESIGNED BY: J.M.K	DRAWN BY: V.K
CHECKED BY: R.S.R	APPROVED BY: B.D
SCALE: AS SHOWN	DATE: APRIL 2024

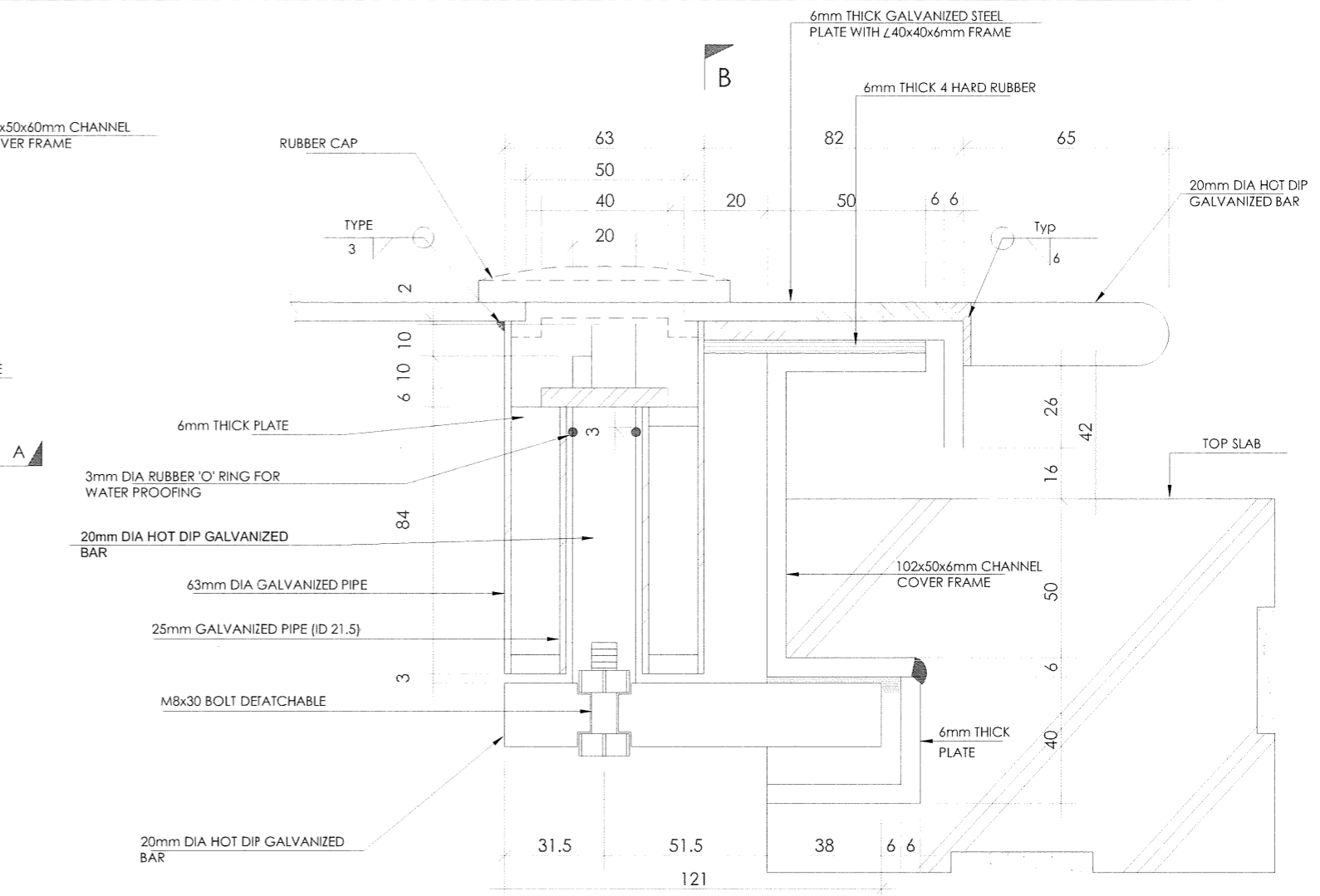
DRG No. M430/SD/17



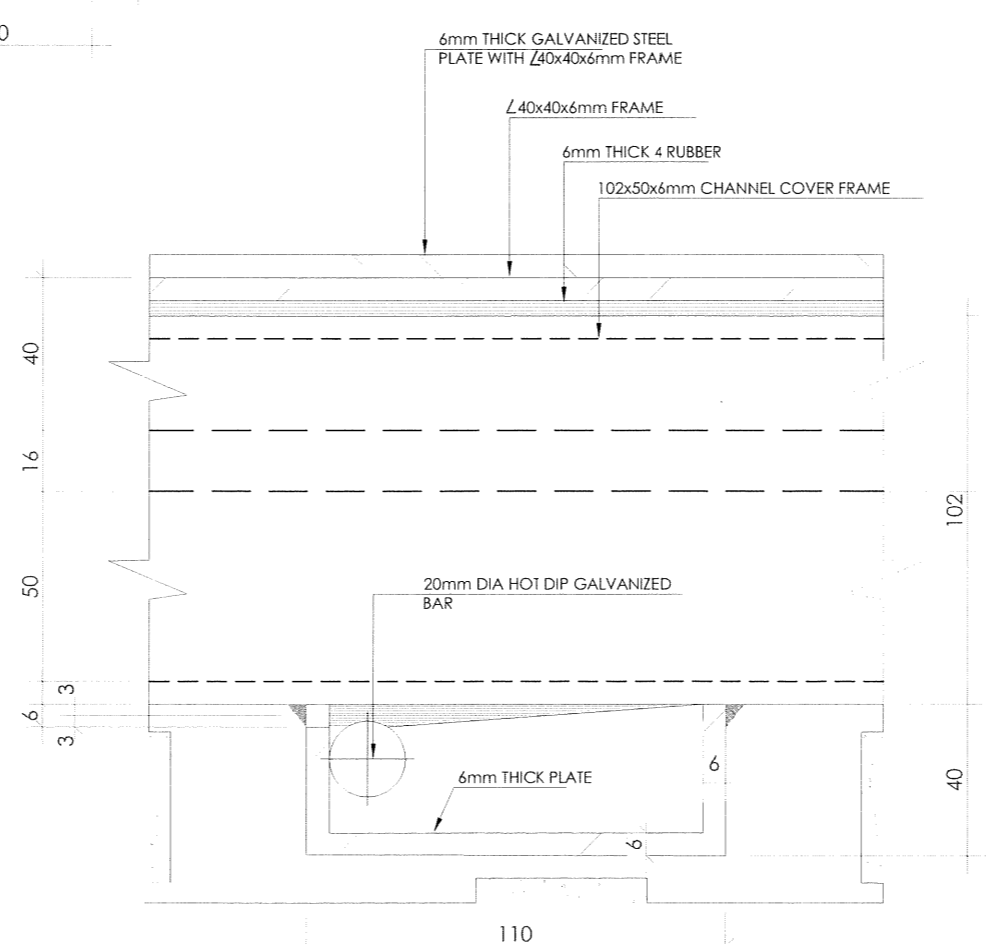
PLAN OF LOCKING MECHANISM
SCALE 1:2



KEY
NTS



SECTION A - A
SCALE 1:2



SECTION B - B
SCALE 1:2

NOTES

ALL DIMENSIONS ARE IN MILLIMETERS (mm) UNLESS OTHERWISE STATED

ABBREVIATIONS

- T - Thick
- SUS - Stainless Steel
- thk - Thick
- Typ - Type
- L - Angle Iron
- Ø - Diameter

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	BY			
	CHECKED			
	BY			
	CHECKED			

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COAST WATER WORKS DEVELOPMENT AGENCY
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PROJECT NAME:
IMPROVEMENT OF DRINKING WATER AND SANITATION SYSTEMS IN MOMBASA: MWACHE CKE 1103

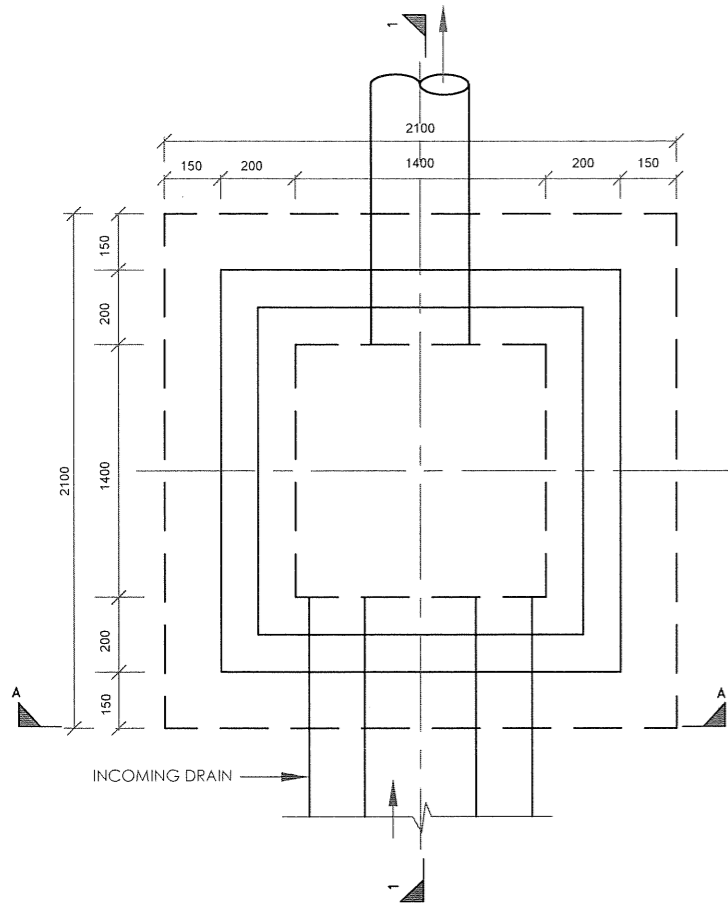
BID No. CwwDA/AFD/PQ/W4/2022-2023

LOT 1: CONSTRUCTION OF THE MWACHE TWIN TRUNK MAIN (SECTION 1), THE SOUTH MAINLAND TRANSMISSION PIPELINE AND DONGO KUNDU RESERVOIR

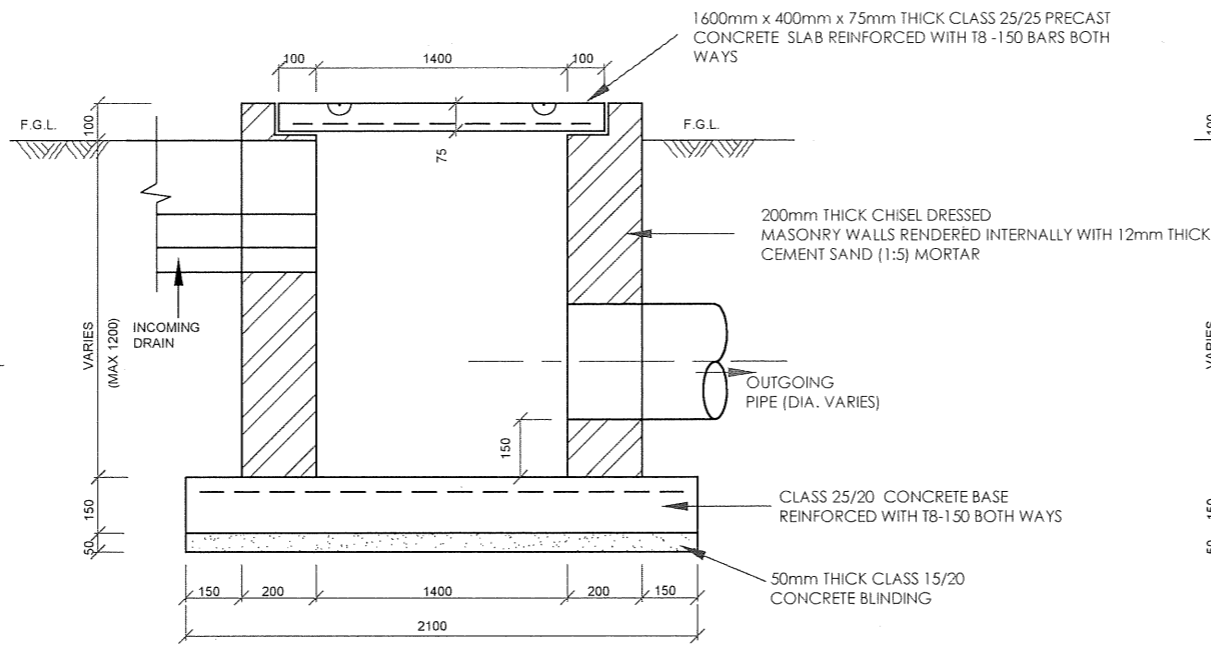
DRAWING TITLE:
STANDARD DETAILS
DETAILS OF CHECKERED PLATE COVERS FOR CHAMBERS
 (SHEET 2 OF 2)

DESIGNED BY: J.M.K	DRAWN BY: V.K
CHECKED BY: R.S.R	APPROVED BY: B.D
AS SHOWN	DATE: APRIL 2024
DRG No. M430/SD/18	

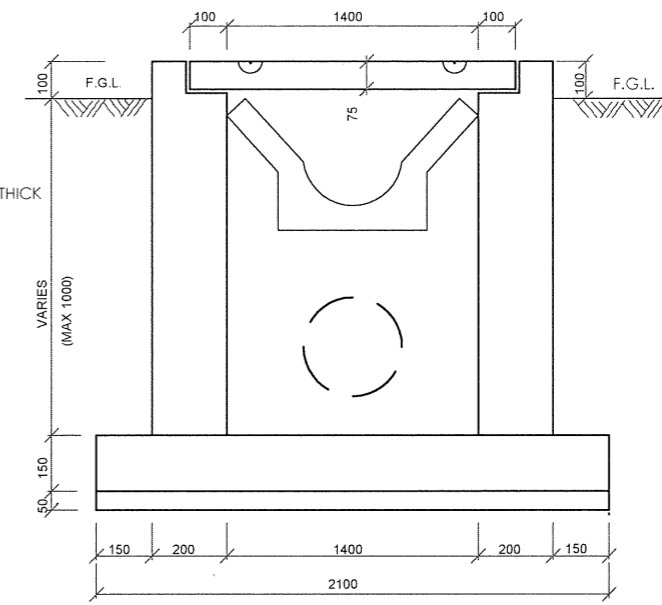
DETAILS OF STORM WATER CATCHPIT



PLAN
TYPICAL STORM WATER CATCHPIT
SCALE 1:20



SECTION 1-1
SCALE 1:20



ELEVATION A-A
SCALE 1:20

NOTES

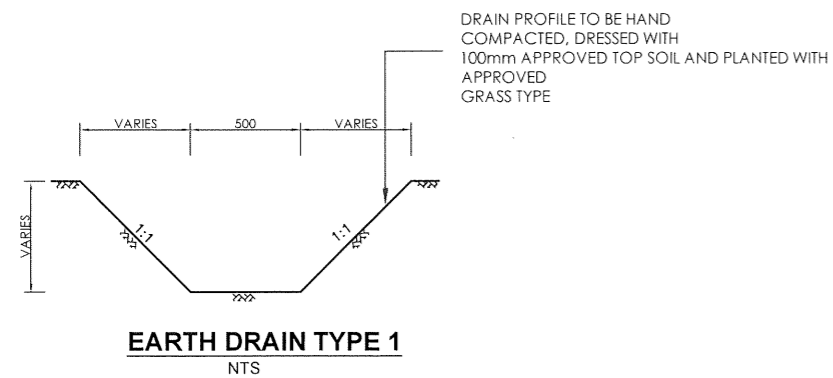
1. ALL DIMENSIONS ARE IN MM UNLESS OTHERWISE STATED
2. LENGTH OF EACH CASCADE IS 1000mm

ABBREVIATIONS

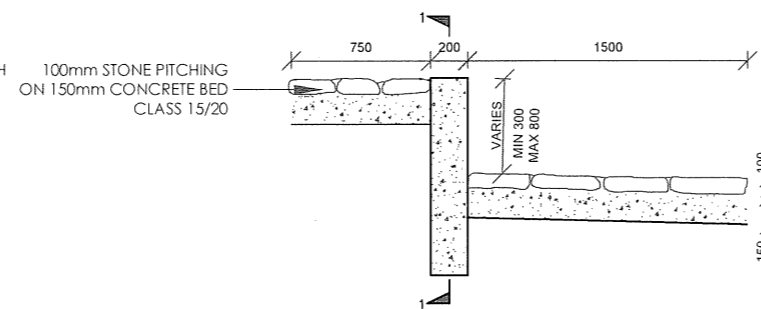
- I.B. - INVERT BLOCK
- I.B.D. - INVERT BLOCK DRAIN
- DIA - DIAMETER
- mm - MILLIMETER
- F.G.L. - FINISHED GROUND LEVEL

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	CHECKED			
	BY			
	CHECKED			

DETAILS OF EARTH DRAIN TYPE '1'

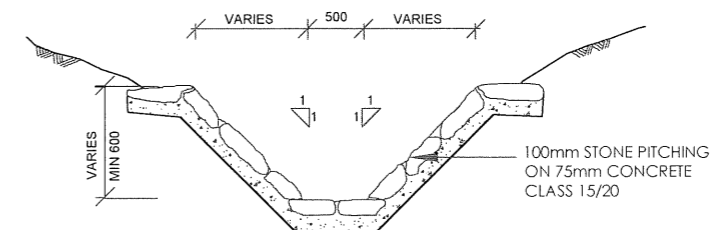


EARTH DRAIN TYPE 1
NTS

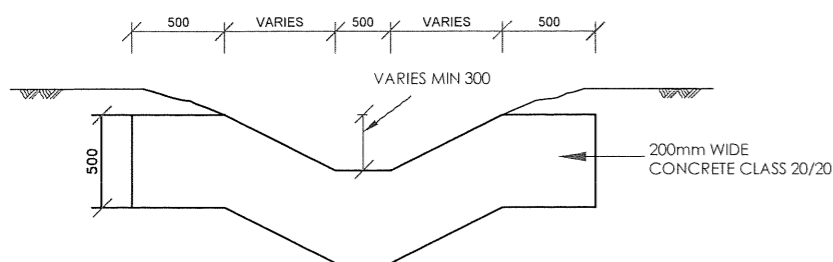


SECTION SILL FOR DRAIN TYPE 1
SCALE 1:40

DETAILS OF DRAIN TYPE '2' (STONE PITCHED DRAIN)



DRAIN TYPE 2 (STONE PITCHED DRAIN)
SCALE 1:40



ELEVATION 1-1
SCALE 1:40

CLIENT:

THE CHIEF EXECUTIVE OFFICER
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PROJECT:

IMPROVEMENT OF DRINKING WATER AND
SANITATION SYSTEMS IN MOMBASA: MWACHE
CKE 1103

BID No. CWWDA/AFD/PQ/W4/2022-2023

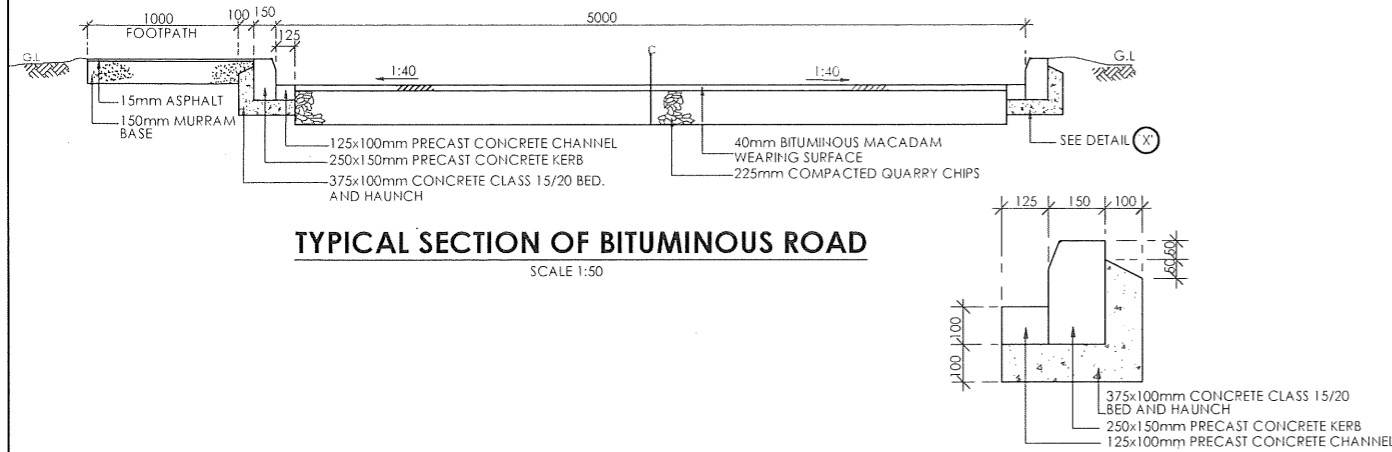
LOT 1: CONSTRUCTION OF THE MWACHE
TWIN TRUNK MAIN (SECTION 1), THE SOUTH
MAINLAND TRANSMISSION PIPELINE AND
DONGO KUNDU RESERVOIR

DRAWING TITLE:

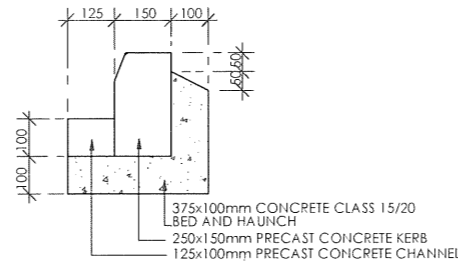
STANDARD DETAILS
DETAILS OF STORMWATER
CATCH PIT AND EARTH DRAINS

DESIGNED BY: J.M.K	DRAWN BY: V.K
CHECKED BY: R.S.R	APPROVED BY: B.D
SCALE: AS SHOWN	DATE: APRIL 2024
DRAWING No. M430/SD/19	

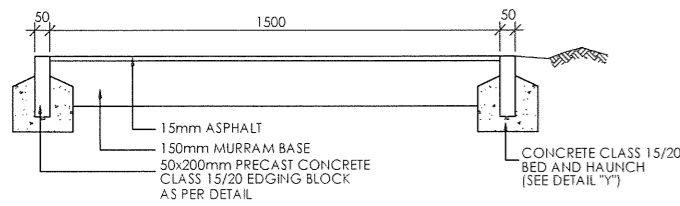
TYPICAL BITUMINOUS ROAD DETAILS



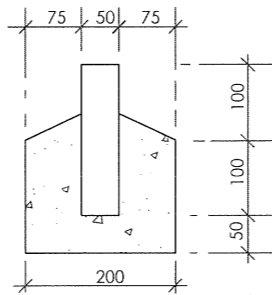
TYPICAL SECTION OF BITUMINOUS ROAD
SCALE 1:50



DETAIL 'X'
SCALE 1:20

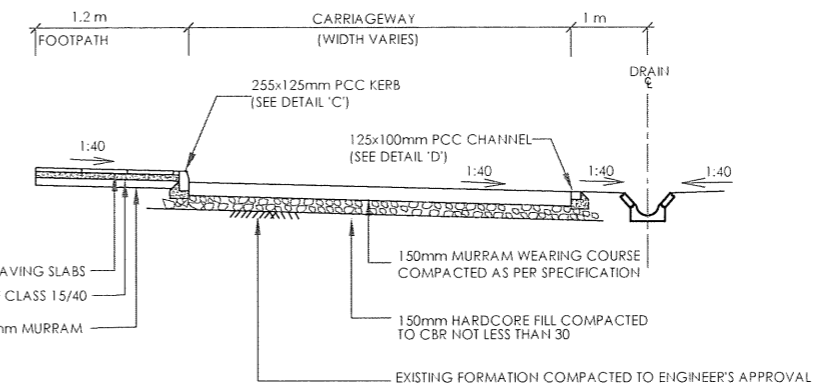


TYPICAL SECTION OF FOOTPATH
SCALE 1:25

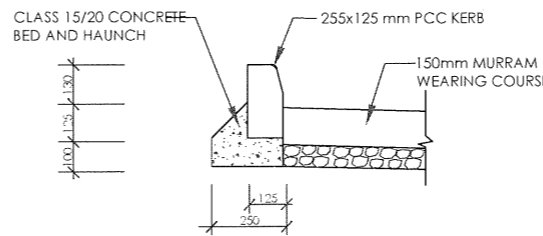


DETAIL 'Y'
SCALE 1:10

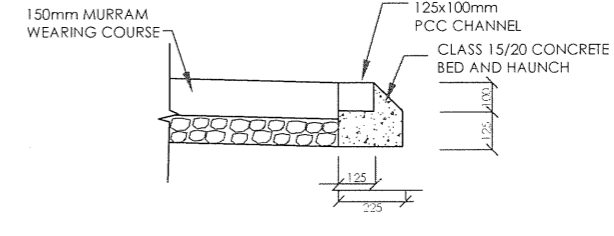
TYPICAL MURRAM ROAD DETAILS



TYPICAL SECTION OF MURRAM ROAD
SCALE 1:50



DETAIL 'C'
TYPICAL DETAIL OF KERB
SCALE 1:25



DETAIL 'D'
TYPICAL DETAIL OF CHANNEL
SCALE 1:25

NOTE
ALL DIMENSIONS ARE IN mm UNLESS OTHERWISE STATED

ABBREVIATIONS

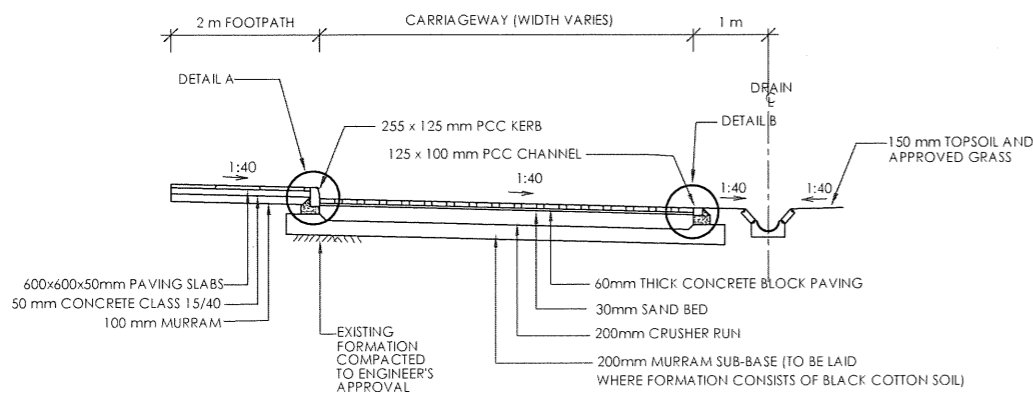
C - CENTRE LINE
mm - MILLIMETER
G.L. - GROUND LEVEL
m - METER
PCC - PRECAST CEMENT CONCRETE

ABBREVIATIONS

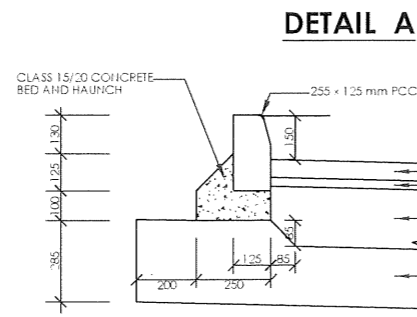
mm - MILLIMETRES
FGL - FINISHED GROUND LEVEL
PIL - PIPE INVERT LEVEL
DIA - DIAMETER
Ø - DIAMETER
R.C.- REINFORCED CONCRETE
G.M.S - GALVANIZED MILD STEEL
M.S. - MILD STEEL
c/c - CENTER TO CENTRE
No. - NUMBER
L - LENGTH

REV	REVISIONS	SIGN	DATE	APPROVED
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		CHECKED		
		BY		
		CHECKED		

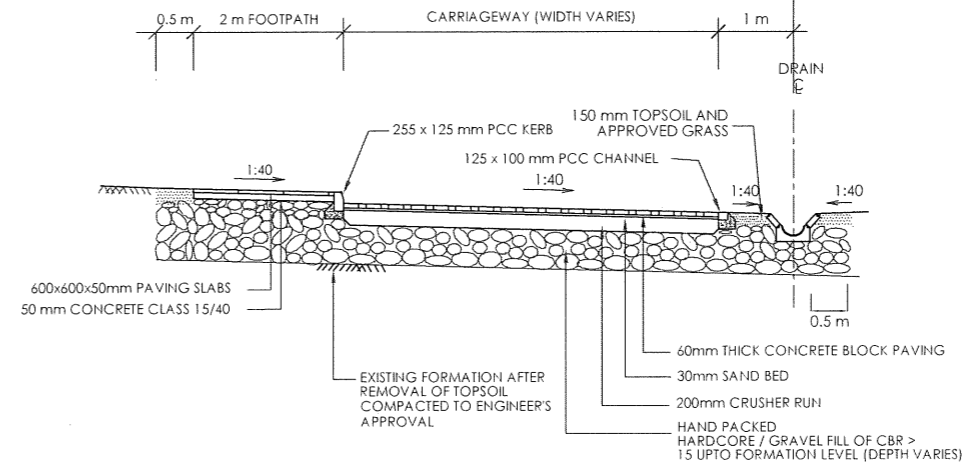
TYPICAL CONCRETE BLOCKS SURFACE ROAD DETAILS



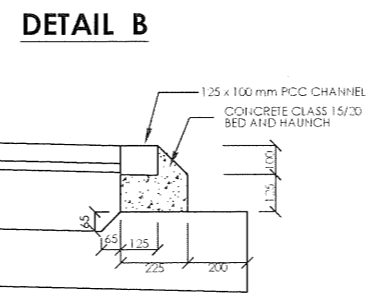
TYPICAL CROSS SECTION FOR CARRIAGEWAY IN CUT
SCALE 1:100



DETAIL OF KERB
SCALE 1:25



TYPICAL CROSS SECTION FOR CARRIAGEWAY IN FILL
SCALE 1:100



DETAIL OF CHANNEL
SCALE 1:25

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PROJECT:
IMPROVEMENT OF DRINKING WATER AND SANITATION SYSTEMS IN MOMBASA: MWACHE CKE 1103

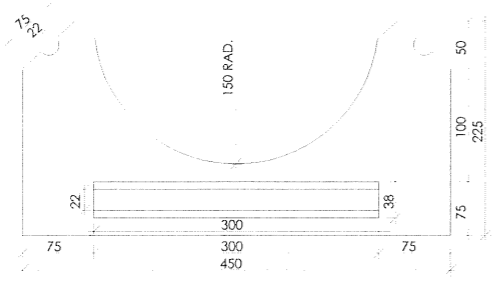
BID No.CWWDA/AFD/PQ/W4/2022-2023

LOT 1: CONSTRUCTION OF THE MWACHE TWIN TRUNK MAIN (SECTION 1), THE SOUTH MAINLAND TRANSMISSION PIPELINE AND DONGO KUNDU RESERVOIR

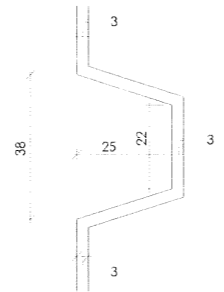
DRAWING TITLE:

STANDARD DETAILS
TYPICAL ROAD CROSS SECTION DETAILS

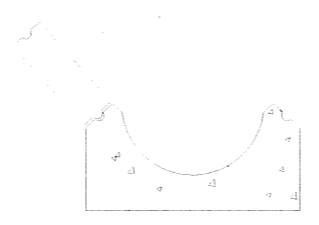
DESIGNED BY: J.M.K	DRAWN BY: V.K
CHECKED BY: R.S.R	APPROVED BY: B.D
SCALE: AS SHOWN	DATE: APRIL 2024
DRAWING No. M430/SD/20	



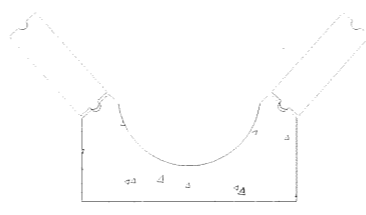
**PRECAST CONCRETE
TYPE 'A' INVERT BLOCK**
SCALE 1:4



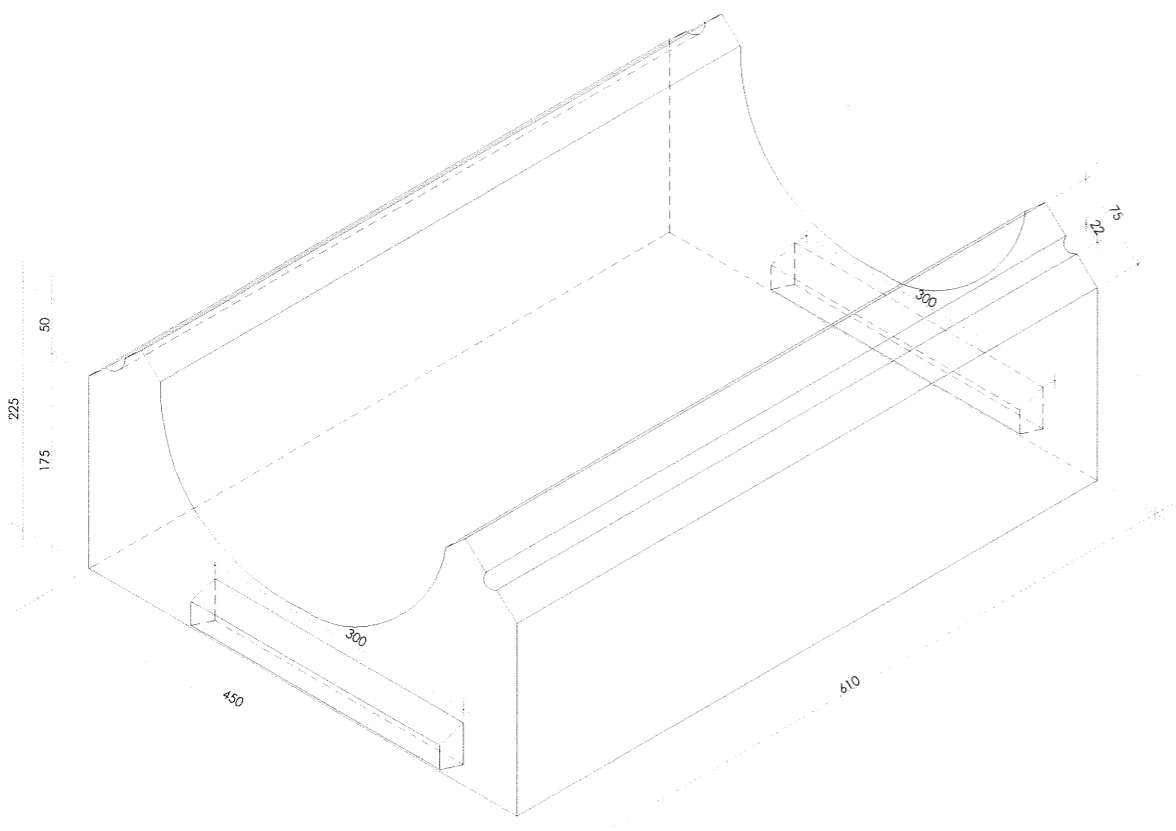
DETAIL OF JOINT
SCALE: 1:1



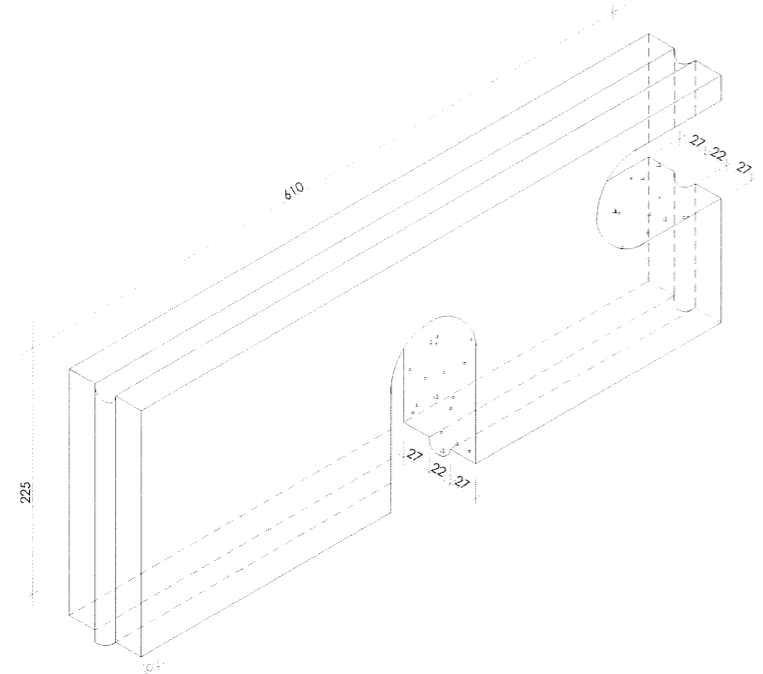
**TYPE 'A' INVERT BLOCK
AND ONE COURSE**
SCALE 1:8



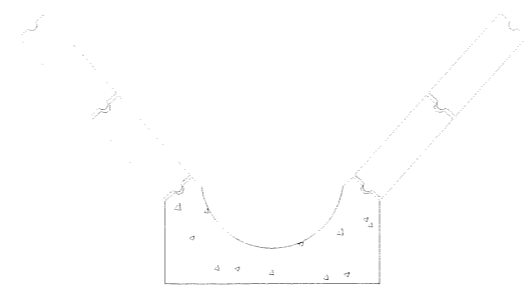
**INVERT BLOCK TYPE 'A'
AND TWO COURSES**
SCALE 1:8



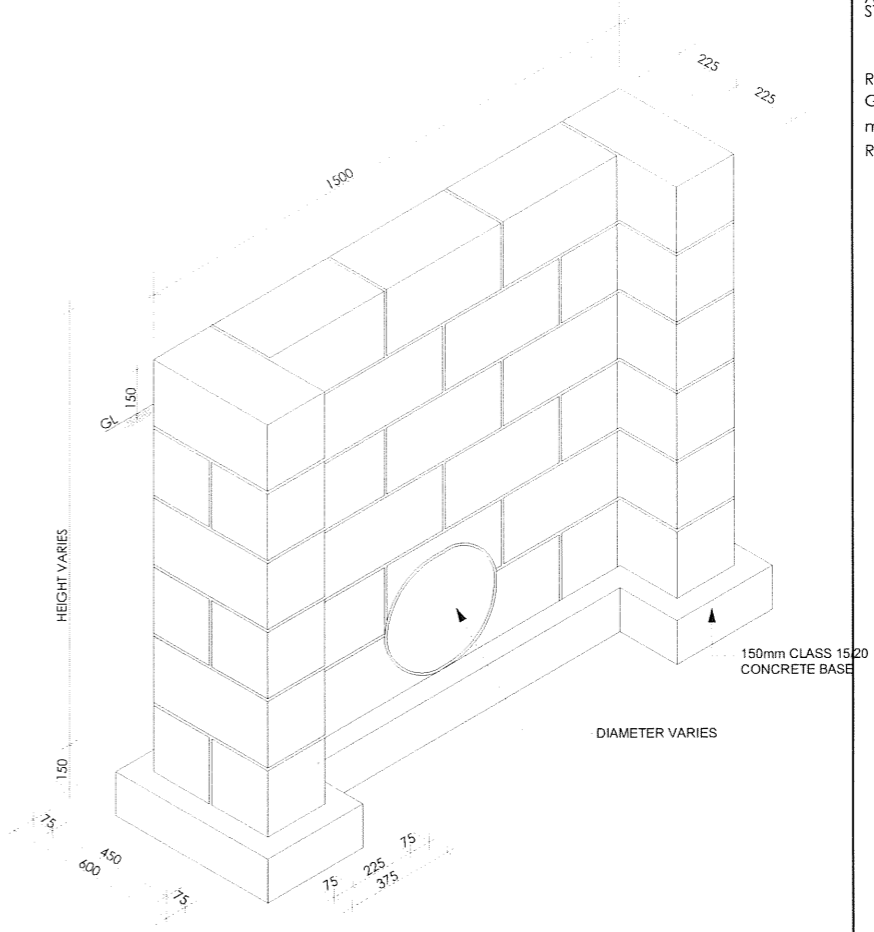
ISOMETRIC VIEW OF INVERT BLOCK TYPE 'A'
NTS



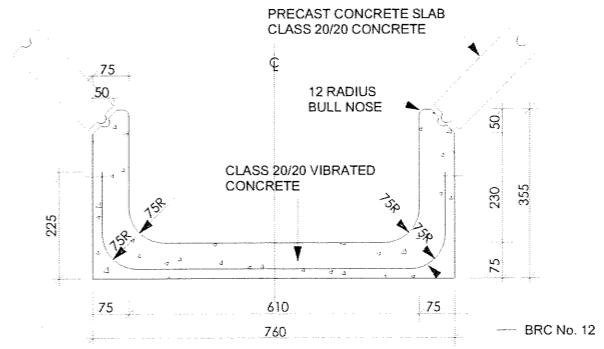
**PRECAST CONCRETE
SLAB DETAIL**
NTS



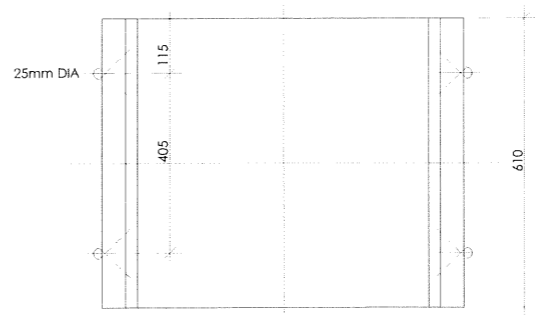
**INVERT BLOCK TYPE 'A'
AND FOUR COURSES**
SCALE 1:16



DETAIL OF HEAD WALL
SCALE 1:30



SECTION - I.B.D. TYPE 'B'
SCALE 1:8



**PLAN
DETAILS OF INVERT BLOCK TYPE 'B'**
SCALE 1:8

NOTES
ALL DIMENSIONS ARE IN MM UNLESS OTHERWISE STATED

ABBREVIATIONS
RAD - Radius
G.L. - Ground Level
mm - Millimetres
R - Radius

REV	DESCRIPTION	SIGN	DATE	APPROVED

CLIENT:
THE CHIEF EXECUTIVE OFFICER
COAST WATER WORKS DEVELOPMENT AGENCY
P.O. BOX 90417 - 80100
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PROJECT:
IMPROVEMENT OF DRINKING WATER AND SANITATION SYSTEMS IN MOMBASA: MWACHE CKE 1103

BID No. CWWDA/AFD/PQ/W4/2022-2023

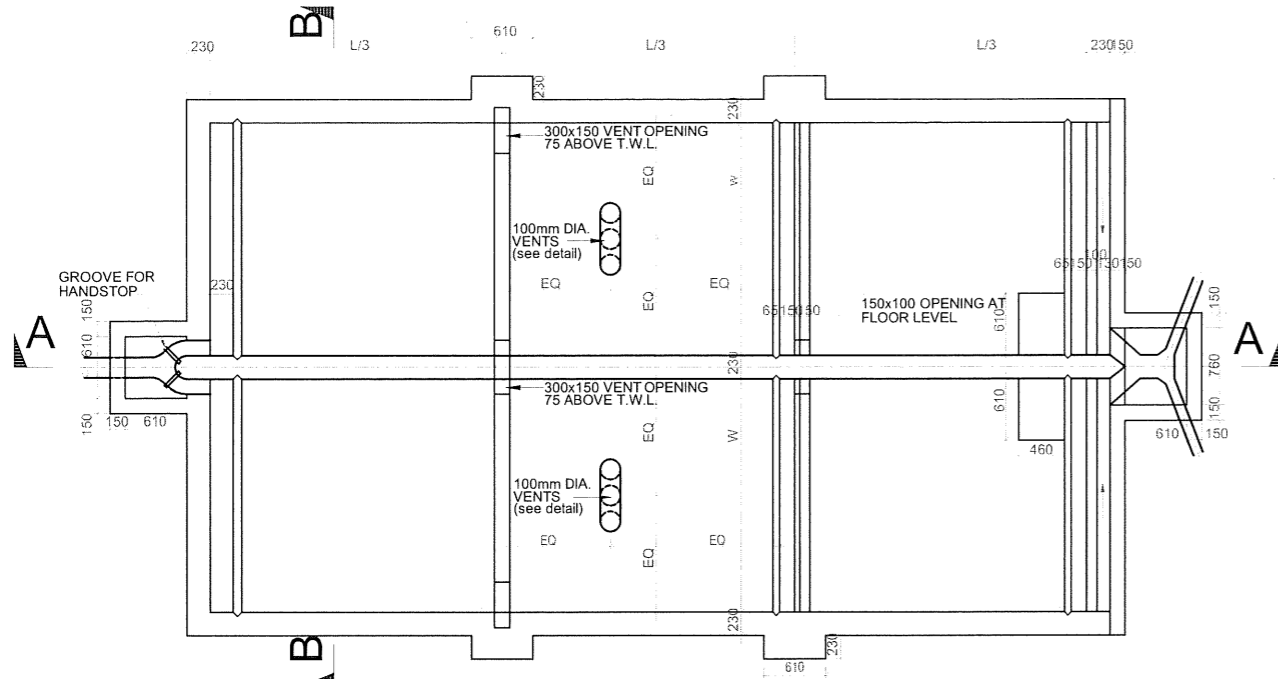
LOT 1: CONSTRUCTION OF THE MWACHE TWIN TRUNK MAIN (SECTION 1), THE SOUTH MAINLAND TRANSMISSION PIPELINE AND DONGO KUNDU RESERVOIR

DRAWING TITLE:

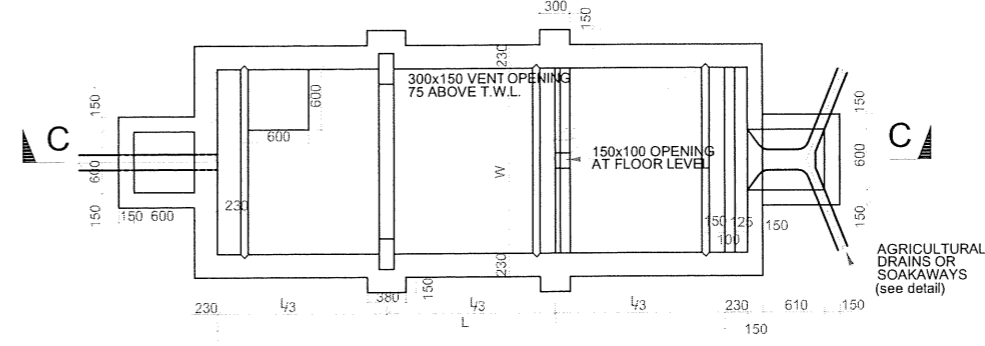
STANDARD DETAILS

DETAILS OF INVERT BLOCK DRAINS AND HEADWALL

DESIGNED BY: J.M.K	DRAWN BY: V.K
CHECKED BY: R.S.R	APPROVED BY: B.D
SCALE: AS SHOWN	DATE: APRIL 2024
DRAWING No. M430/SD/21	



PLAN OF TWIN SEPTIC TANK
SCALE: 1:75



PLAN OF SINGLE SEPTIC TANK
SCALE: 1:75

NOTES

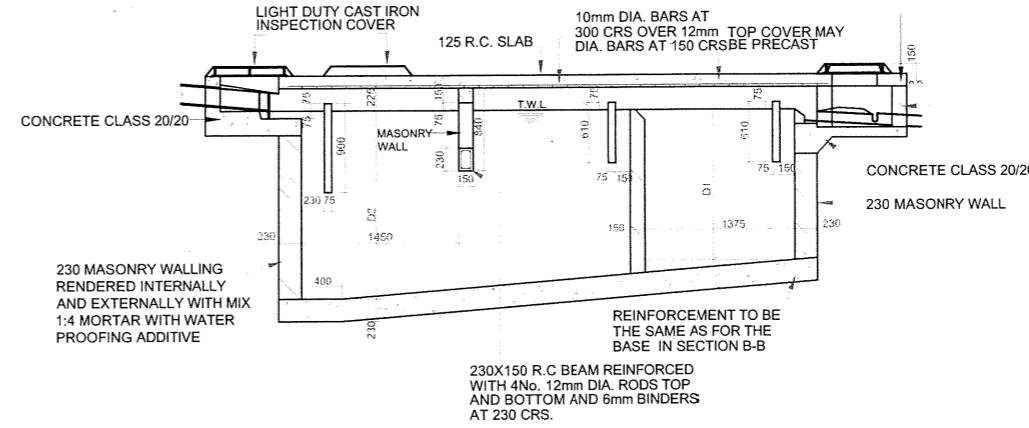
- ALL DETAILS AS FOR LARGE TANK
SIZE OF TANK TO BE DETERMINED AS FOLLOWS:
- CAPACITY = 0.36 x NUMBER OF PERSONS SERVED + 1.82 Cubic Metres.
 - FOR POPULATION OVER 100, PROVIDE TWIN TANKS WITH CAPACITY CALCULATED AS ABOVE

NOTES

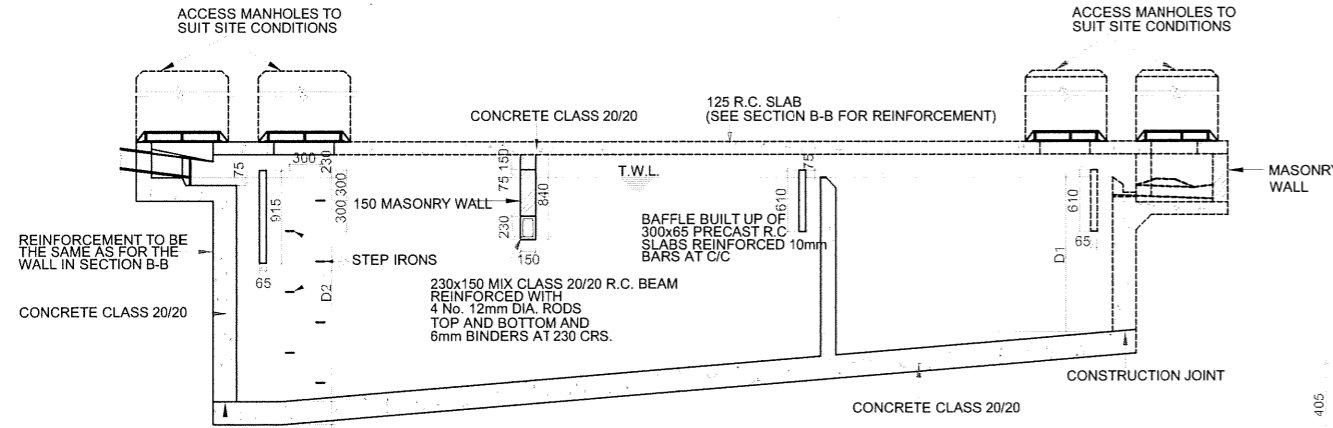
- ALL DIMENSIONS ARE IN MM UNLESS OTHERWISE STATED
- ALL CONCRETE TO BE CLASS 20/20
- ALL PRECAST CONCRETE UNITS TO BS 556
- CONCRETE FILLING CLASS 25/20 VIBRATED AND CURED IN ACCORDANCE WITH THE APPROPRIATE SPECIFICATION CLAUSES.
- TOLERANCE ON OVERALL SIZE 3mm
- ALL HAUNCHES ARE CLASS 15/40 CONCRETE AS INDICATED ON THE SPECIFICATION OVER EXCAVATION TO BE MADE GOOD IN CONCRETE CLASS 15/40.

ABBREVIATIONS

- n.e. - NOT EXCEEDING
c/c - CENTRE TO CENTRE
MIN - MINIMUM
G.L. - GROUND LEVEL
mm - MILIMETER
m - METRE
EXT. DIA. - EXTERNAL DIAMETER
OD - OUTSIDE DIAMETER
ND - NOMINAL DIAMETER
RC - REINFORCED CONCRETE
T10 - TWISTED BAR 10mm SIZE
NTS - NOT TO SCALE
CU.M PER LIN. METER -CUBIC METER PER
CI - CAST IRON LINEAR METER



SECTION C - C
SCALE: 1:75

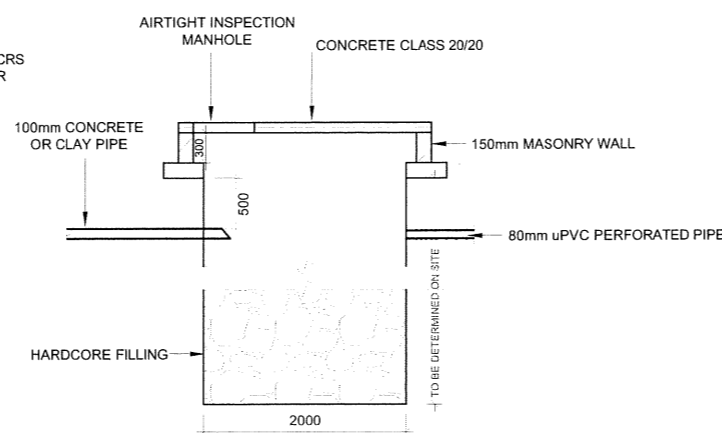


SECTION A - A
SCALE: 1:75

SECTION AT AGRICULTURAL DRAIN
NTS

NOTES

- ALL CONCRETE TO BE CLASS 20/20.
- COVERS TO MAIN REINFORCEMENT 38mm.

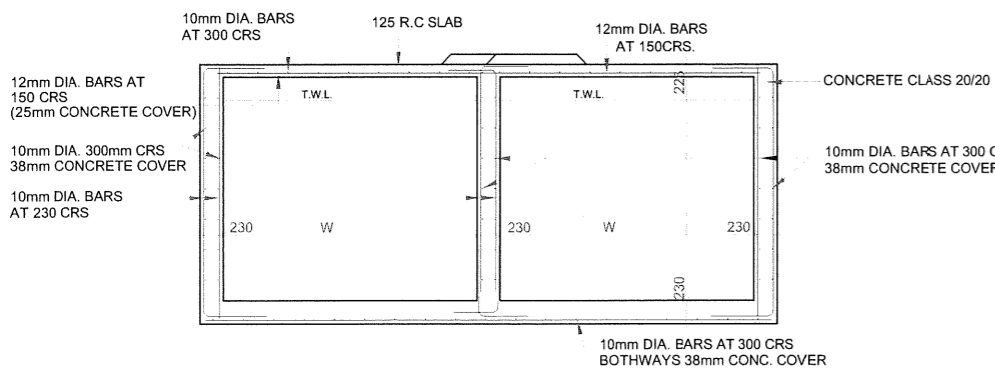


TYPICAL SOAKPIT DETAIL
SCALE: 1:75

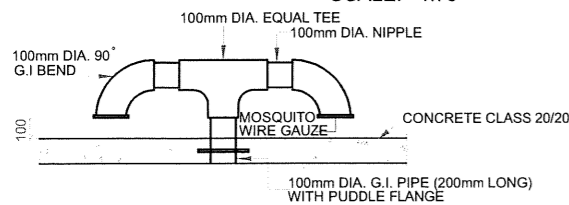
SINGLE TANK CAPACITY CU METRES	TWIN TANK CAPACITY				
	L/3	W	D1	D2	CU METRES
4.75	915	1070	1525	1715	9.50
6.50	1070	1220	1525	1755	13.00
8.40	1220	1220	1525	1790	16.80
10.50	1370	1525	1525	1830	21.00
13.15	1525	1675	1525	1865	26.30
15.90	1675	1830	1525	1905	31.80
18.85	1830	1980	1525	1940	37.70
21.50	1980	2055	1525	1980	43.00
24.30	2135	2135	1525	2020	48.60
27.25	2210	2210	1525	2060	54.50
30.45	2440	2285	1525	2095	60.90
33.65	2570	2360	1525	2135	67.30
37.30	2740	2440	1525	2170	74.60
41.00	2895	2515	1525	2210	82.00
44.80	3050	2590	1525	2245	89.60
48.45	3200	2665	1525	2285	97.70

NOTES

- ALL CONCRETE MIX TO BE CLASS 20/20 UNLESS OTHERWISE SPECIFIED
- COVER TO ALL REINFORCEMENT 40mm WALLS AND BASE, 25mm ROOF SLAB.



SECTION B - B
SCALE: 1:75



VENT PIPE DETAIL
NTS

REV	REVISIONS	BY	DATE	APPROVED

CLIENT: **THE CHIEF EXECUTIVE OFFICER
COAST WATER WORKS DEVELOPMENT AGENCY**
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PROJECT: **IMPROVEMENT OF DRINKING WATER AND SANITATION SYSTEMS IN MOMBASA: MWACHE CKE 1103**

BID No.CWWDA/AFD/PO/W4/2022-2023

LOT 1: CONSTRUCTION OF THE MWACHE TWIN TRUNK MAIN (SECTION 1), THE SOUTH MAINLAND TRANSMISSION PIPELINE AND DONGO KUNDU RESERVOIR

DRAWING TITLE: **STANDARD DRAWINGS
DETAILS OF SEPTIC TANK**

DESIGNED BY: J.M.K	DRAWN BY: A.M
CHECKED BY: R.S.R	APPROVED BY: B.D
SCALE: AS SHOWN	DATE: APRIL 2024
DRAWING No. M430/SD/22	

COLOUR -
WHITE GLOSS WITH
BLUE LETTERING

4mm THICK G.M.S SHEET WELDED TO RHS

90 x 50 x 5mm RHS

E.G.L

150

300

300

300

300 x 300 x 600 DEEP CONCRETE
CLASS 20/20 FOUNDATION

**DONGO KUNDU STORAGE RESERVOIR
SIGNBOARD DETAILS**

1550



**COAST WATER WORKS
DEVELOPMENT AGENCY**

DONGO KUNDU STORAGE RESERVOIR

OWNED BY :

OPERATED AND MANAGED BY :

COAST WATER WORKS
DEVELOPMENT AGENCY
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MOMBASA, KENYA
TEL:+254-041-2315230
E-MAIL: info@cwsb.go.ke

MOMBASA WATER SUPPLY AND
SANITATION COMPANY LIMITED
P.O.Box 1100, 80100
MOMBASA, KENYA
TEL: +254-041-2222700
E-MAIL: info@mombasawater.co.ke

45
45
25
25
25
25
25
25
40

1200

600

1050

NOTES
1. ALL DIMENSIONS ARE IN MM UNLESS OTHERWISE STATED
ABBREVIATIONS
mm - MILLIMETER
G.M.S. - GALVANISED MILD STEEL
E.G.L. - EXISTING GROUND LEVEL

REV	REVISIONS	SIGN	DATE	APPROVED
		BY		
		CHECKED		
		BY		
		CHECKED		

CLIENT:
THE CHIEF EXECUTIVE OFFICER
COAST WATER WORKS DEVELOPMENT AGENCY
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MOMBASA, KENYA

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BID No.CWWDA/AFD/PQ/W4/2022-2023

LOT 1; CONSTRUCTION OF THE MWACHE TWIN TRUNK MAIN (SECTION 1), THE SOUTH MAINLAND TRANSMISSION PIPELINE AND DONGO KUNDU RESERVOIR

DRAWING TITLE:
STANDARD DETAIL
DONGO KUNDU STORAGE RESERVOIR SITE SIGNBOARD DETAILS

DESIGNED BY: J.M.K	DRAWN BY: O.J.O
CHECKED BY: R.S.R	APPROVED BY: B.D
SCALE: 1:10	DATE: APRIL 2024
DRAWING No. M430/SD/23	