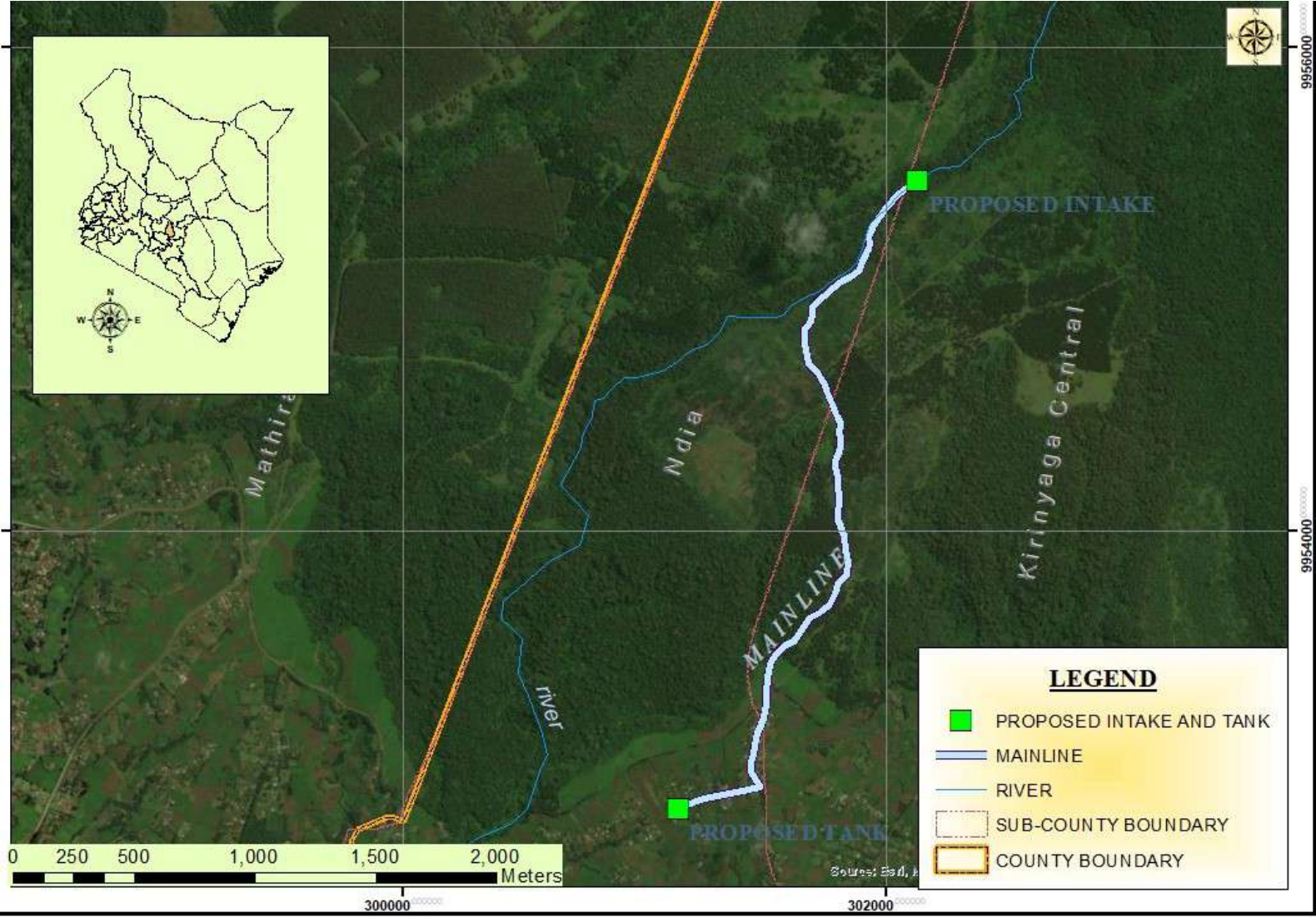


KIAMUCHUKU WATER PROJECT

BOOK OF DRAWINGS

APRIL 2026



LEGEND

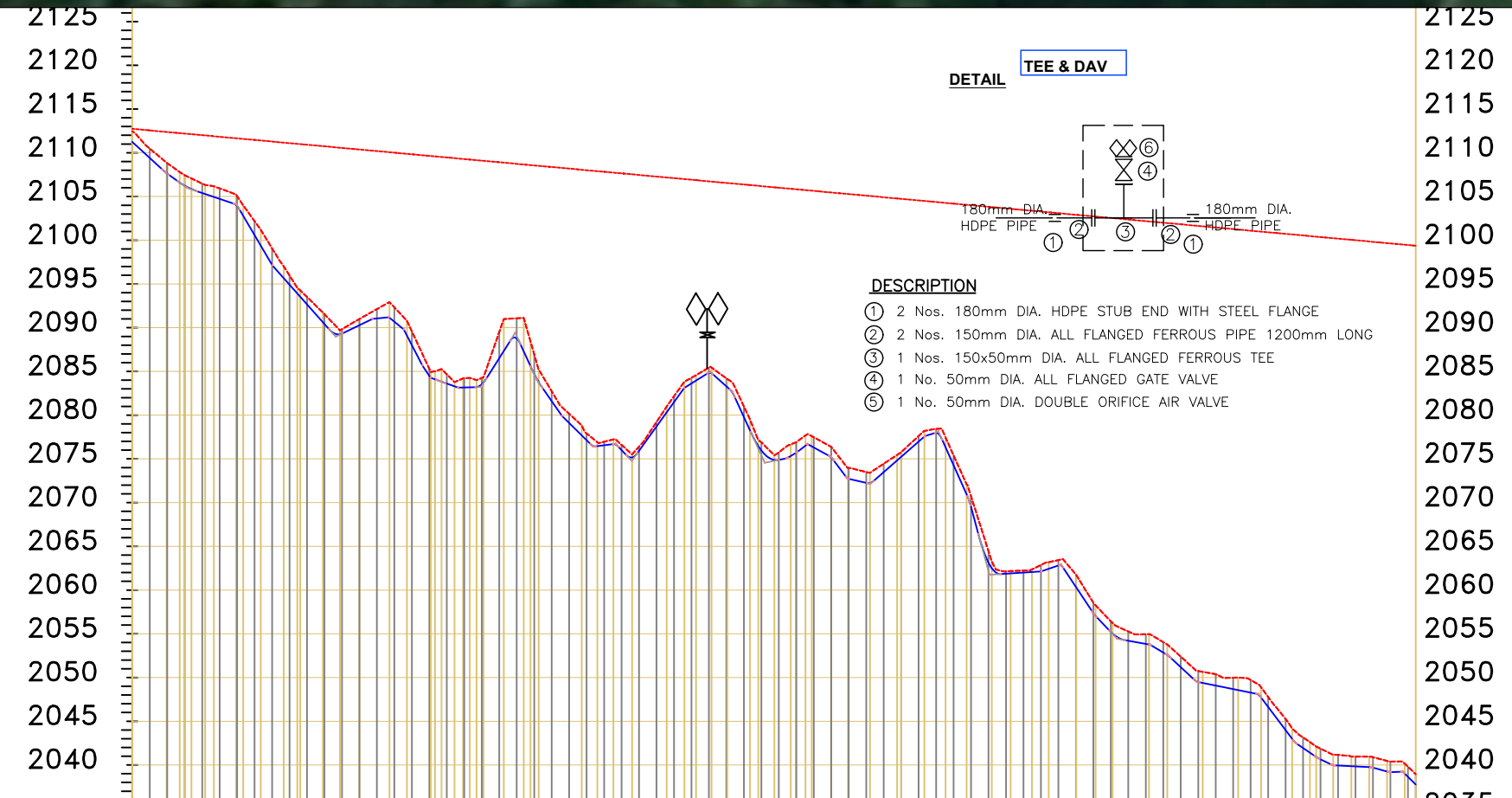
- PROPOSED INTAKE AND TANK
- MAINLINE
- RIVER
- SUB-COUNTY BOUNDARY
- COUNTY BOUNDARY

9956000

9954000

300000

302000



DISTANCE DATUM (m)	GROUND LEVELS (m)	INVERT LEVELS(m)	DEPTH FROM GROUND LEVEL TO INVERT LEVEL (m)	HGL(m)	FLOW DATA	TYPE OF PIPE AND SIZE
2112.56	2109.40	2110.48	0+020.00	2112.56	0.03 M3/S, 1.513M/S	OD 180mm PN 10 HDPE PIPE
2112.38	2107.61	2108.81	0+040.00	2112.38		
2112.19	2106.24	2107.44	0+060.00	2112.19		
2112.01	2105.40	2106.48	0+080.00	2112.01		
2111.83	2104.73	2105.93	0+100.00	2111.83		
2111.65	2103.90	2105.05	0+120.00	2111.65		
2111.47	2103.58	2104.18	0+140.00	2111.47		
2111.28	2097.19	2099.07	0+160.00	2111.28		
2111.10	2094.92	2095.97	0+180.00	2111.10		
2110.92	2092.67	2093.5	0+200.00	2110.92		
2110.74	2090.42	2091.53	0+220.00	2110.74		
2110.56	2089.32	2089.83	0+240.00	2110.56		
2110.37	2090.28	2091.00	0+260.00	2110.37		
2110.19	2091.05	2092.12	0+280.00	2110.19		
2109.83	2088.01	2089.53	0+300.00	2109.83		
2109.65	2084.50	2085.23	0+320.00	2109.65		
2109.46	2083.62	2084.66	0+340.00	2109.46		
2109.28	2083.17	2084.22	0+360.00	2109.28		
2109.10	2083.53	2084.25	0+380.00	2109.10		
2108.92	2088.5	2089.50	0+400.00	2108.92		
2108.74	2088.77	2089.07	0+420.00	2108.74		
2108.55	2084.72	2086.96	0+440.00	2108.55		
2108.37	2081.60	2082.74	0+460.00	2108.37		
2108.19	2079.10	2080.16	0+480.00	2108.19		
2108.01	2077.13	2077.96	0+500.00	2108.01		
2107.83	2076.58	2076.98	0+520.00	2107.83		
2107.64	2076.01	2076.60	0+540.00	2107.64		
2107.46	2075.92	2076.40	0+560.00	2107.46		
2107.28	2078.70	2079.22	0+580.00	2107.28		
2107.10	2077.48	2078.16	0+600.00	2107.10		
2106.92	2083.62	2084.28	0+620.00	2106.92		
2106.73	2084.84	2085.43	0+640.00	2106.73		
2106.55	2083.23	2084.2	0+660.00	2106.55		
2106.37	2079.80	2080.99	0+680.00	2106.37		
2106.19	2075.96	2076.91	0+700.00	2106.19		
2106.01	2074.88	2075.74	0+720.00	2106.01		
2105.82	2075.7	2076.9	0+740.00	2105.82		
2105.64	2076.30	2077.47	0+760.00	2105.64		
2105.46	2075.15	2076.35	0+780.00	2105.46		
2105.28	2072.71	2073.97	0+800.00	2105.28		
2105.10	2072.25	2073.50	0+820.00	2105.10		
2104.9	2073.48	2074.4	0+840.00	2104.9		
2104.73	2075.23	2075.77	0+860.00	2104.73		
2104.55	2076.98	2077.6	0+880.00	2104.55		
2104.37	2077.99	2078.42	0+900.00	2104.37		
2104.19	2074.27	2075.41	0+920.00	2104.19		
2104.01	2069.48	2070.72	0+940.00	2104.01		
2103.82	2063.14	2064.44	0+960.00	2103.82		
2103.64	2061.87	2062.14	0+980.00	2103.64		
2103.46	2062.00	2062.23	0+1000.00	2103.46		
2103.28	2062.13	2062.86	0+1020.00	2103.28		
2103.09	2062.81	2063.43	0+1040.00	2103.09		
2102.9	2060.37	2061.72	0+1060.00	2102.9		
2102.73	2057.37	2058.57	0+1080.00	2102.73		
2102.55	2055.20	2056.43	0+1100.00	2102.55		
2102.37	2054.20	2055.26	0+1120.00	2102.37		
2102.18	2053.84	2054.95	0+1140.00	2102.18		
2102.0	2051.19	2052.33	0+1160.00	2102.0		
2101.82	2049.48	2050.75	0+1180.00	2101.82		
2101.64	2049.07	2050.38	0+1200.00	2101.64		
2101.46	2048.67	2049.98	0+1220.00	2101.46		
2101.27	2048.27	2049.72	0+1240.00	2101.27		
2101.09	2046.64	2047.72	0+1260.00	2101.09		
2100.9	2043.99	2045.26	0+1280.00	2100.9		
2100.73	2041.93	2043.15	0+1300.00	2100.73		
2100.55	2040.65	2041.87	0+1320.00	2100.55		
2100.36	2039.94	2041.15	0+1340.00	2100.36		
2100.18	2039.80	2040.96	0+1360.00	2100.18		
2100.0	2039.70	2040.83	0+1380.00	2100.0		
2099.82	2039.70	2040.83	0+1400.00	2099.82		
2099.64	2039.18	2040.38	0+1420.00	2099.64		
2099.45	2038.65	2039.81	0+1440.00	2099.45		
2099.27	2038.12	2039.24	0+1460.00	2099.27		

kiamuchuku alignment
SCALE: HOR 1:2000 VERT 1:1000

- NOTES**
- ALL LEVELS ARE IN METERS ABOVE SEA LEVEL.
 - COORDINATES ARE BASED ON UTM.
 - LOCATION OF AIR VALVES, WASHOUTS, BENDS AND OTHER FITTINGS AS SHOWN UNLESS OTHERWISE DIRECTED BY THE ENGINEER ON SITE.
 - GROUND AND INVERT LEVEL SHOWN ARE AS SHOWN ON DRAWING UNLESS OTHERWISE INDICATED ON SITE BY THE ENGINEER.
 - PIPES ARE TO BE LAID TO EVEN GRADIENTS WITH A MINIMUM COVER OF 1.0M. WHERE COVER IS LESS THAN THIS, PIPE TO BE SURROUNDED WITH CONCRETE.
 - ALL BENDS ARE HORIZONTAL UNLESS OTHERWISE STATED.
 - IN WATER LOGGED AREAS, PIPES TO BE BEDDED WITH SINGLE SIZED OR GRADED AGGREGATES AS PER CLAUSE 4.30.1 AND 216 OF TECHNICAL SPECIFICATIONS AND/OR ANCHOR BLOCKS AS MAY BE DIRECTED ON SITE BY THE ENGINEER.
- LEGEND:**
- PROPOSED PIPELINE
 - EXISTING GROUND PROFILE
 - PIPE INVERT PROFILE
 - EXISTING ROAD
 - AIR VALVE
 - DOUBLE AIR VALVE
 - WASHOUT
 - WASHOUT TYPE 1
 - WASHOUT TYPE 2
 - NOMINAL DIAMETER
 - NOMINAL PRESSURE
 - VERTICAL BEND
 - HORIZONTAL BEND
 - EXISTING STRUCTURE
 - EARTH ROAD
 - GRAVEL ROAD
 - CUT

FOR TENDER
signed CMTS

REV	REVISIONS	SIGN	DATE	APPROVED
	BY			
	CHECKED			
	BY			
	CHECKED			
	BY			
	CHECKED			
CO	ISSUED FOR CONSTRUCTION	BY		
		CHECKED		

CLIENT
TANA WATER WORKS DEVELOPMENT AGENCY
P. O. BOX 1292-10100 NYERI

PROJECT
DESIGN FOR KIAMUCHUKU WATER PROJECT

ENGINEER
TANA WATER WORKS DEVELOPMENT AGENCY
P. O. BOX 1292-10100 NYERI

Drawing Title
KIAMUCHUKU WATER PROJECT
RAW WATER MAINLINE
PLAN AND PROFILE (SHEET 1 OF 3)

Designed by MMM	Drawn by MMM
Checked by EWW	Approved by DMN
Scale AS SHOWN (A1)	Date APRIL 2026
Job No. 1	ACAD File:
PD STATUS	DRAWING No. TWWDA/KWP/ML-1
	CO REV



NOTES

1. ALL LEVELS ARE IN METERS ABOVE SEA LEVEL.
2. COORDINATES ARE BASED ON UTM.
3. LOCATION OF AIR VALVES, WASHOUTS, BENDS AND OTHER FITTINGS AS SHOWN UNLESS OTHERWISE DIRECTED BY THE ENGINEER ON SITE.
4. GROUND AND INVERT LEVEL SHOWN ARE AS SHOWN ON DRAWING UNLESS OTHERWISE INDICATED ON SITE BY THE ENGINEER.
5. PIPES ARE TO BE LAID TO EVEN GRADIENTS WITH A MINIMUM COVER OF 1.0M. WHERE COVER IS LESS THAN THIS, PIPE TO BE SURROUNDED WITH CONCRETE.
6. ALL BENDS ARE HORIZONTAL UNLESS OTHERWISE STATED.
7. IN WATER LOGGED AREAS, PIPES TO BE BEDDED WITH SINGLE SIZED OR GRADED AGGREGATES AS PER CLAUSE 430.1 AND 216 OF TECHNICAL SPECIFICATIONS AND/OR ANCHOR BLOCKS AS MAY BE DIRECTED ON SITE BY THE ENGINEER.

- LEGEND:**
- PROPOSED PIPELINE
 - - - EXISTING GROUND PROFILE
 - PIPE INVERT PROFILE
 - EXISTING ROAD

- ⊕ — AIR VALVE
- ⊕ — DAV — DOUBLE AIR VALVE
- ▽ — WASHOUT
- WO1 — WASHOUT TYPE 1
- WO2 — WASHOUT TYPE 2
- DN — NOMINAL DIAMETER
- PN — NOMINAL PRESSURE
- VB — VERTICAL BEND
- HB — HORIZONTAL BEND
- ▨ — EXISTING STRUCTURE
- ER — EARTH ROAD
- GR — GRAVEL ROAD
- CUT

FOR TENDER
signed CMTS

REV	REVISIONS	SIGN	DATE	APPROVED
	BY			
	CHECKED			
	BY			
	CHECKED			
	BY			
	CHECKED			
CO	ISSUED FOR CONSTRUCTION	BY		
		CHECKED		

CLIENT




TANA WATER WORKS DEVELOPMENT AGENCY
P. O. BOX 1292-10100
NYERI

PROJECT

DESIGN FOR KIAMUCHUKU WATER PROJECT

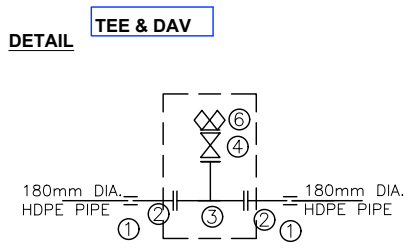
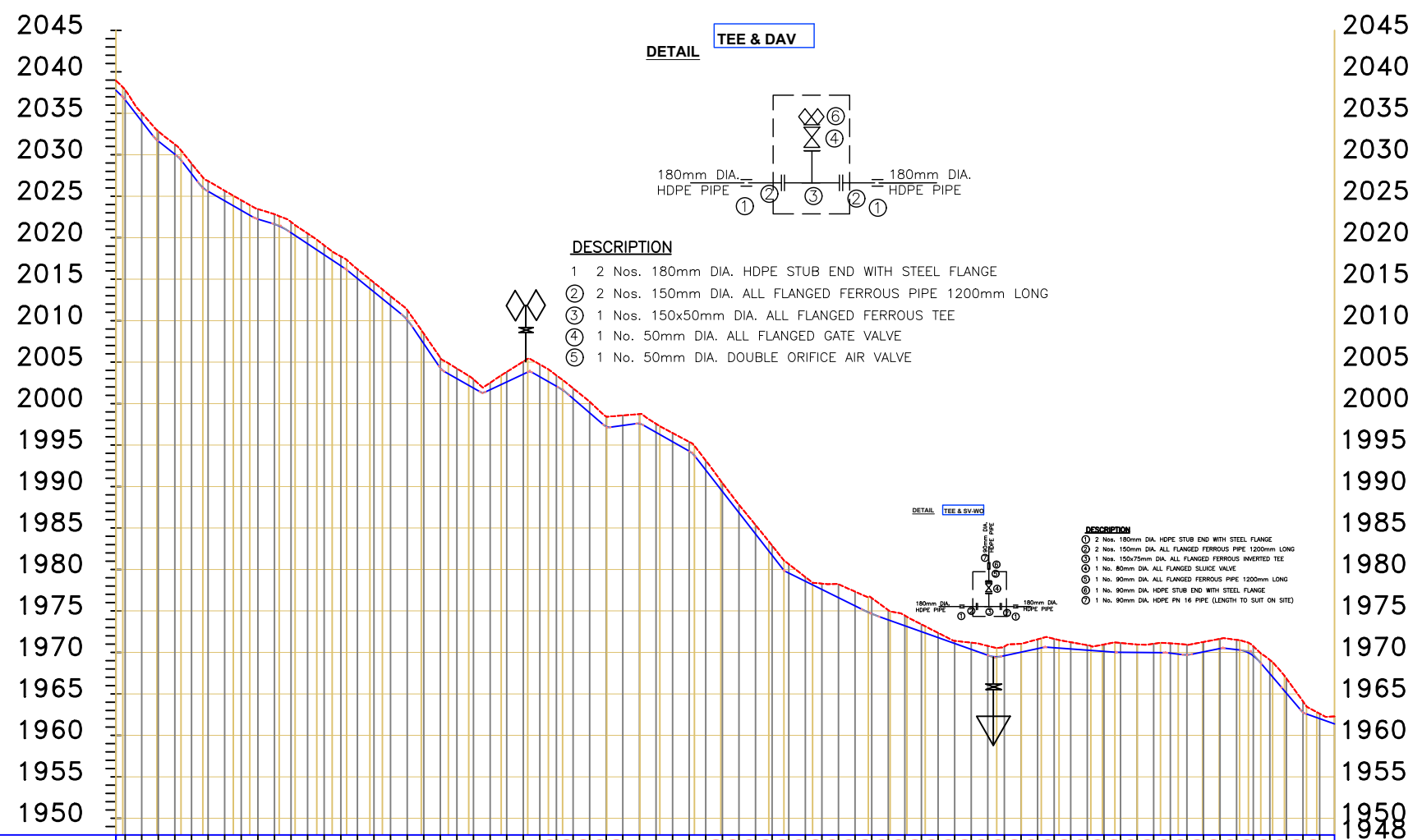
ENGINEER



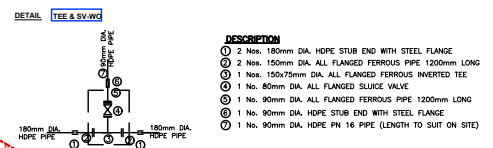
TANA WATER WORKS DEVELOPMENT AGENCY
P. O. BOX 1292-10100
NYERI

Drawing Title
**KIAMUCHUKU WATER PROJECT
RAW WATER MAINLINE
PLAN AND PROFILE (SHEET 2 OF 3)**

Designed by MMM	Drawn by MMM
Checked by EWW	Approved by DMN
Scale AS SHOWN (A1)	Date APRIL 2026
Job No. 1	ACAD File:
PD STATUS	DRAWING No. TWWD/KWP/ML-2
	CO REV



- DESCRIPTION**
- 1 2 Nos. 180mm DIA. HDPE STUB END WITH STEEL FLANGE
 - 2 2 Nos. 150mm DIA. ALL FLANGED FERROUS PIPE 1200mm LONG
 - 3 1 Nos. 150x50mm DIA. ALL FLANGED FERROUS TEE
 - 4 1 No. 50mm DIA. ALL FLANGED GATE VALVE
 - 5 1 No. 50mm DIA. DOUBLE ORIFICE AIR VALVE



- DESCRIPTION**
- 1 2 Nos. 180mm DIA. HDPE STUB END WITH STEEL FLANGE
 - 2 2 Nos. 150mm DIA. ALL FLANGED FERROUS PIPE 1200mm LONG
 - 3 1 Nos. 150mm DIA. ALL FLANGED FERROUS INVERTED TEE
 - 4 1 No. 90mm DIA. ALL FLANGED FERROUS PIPE 1200mm LONG
 - 5 1 No. 90mm DIA. HDPE STUB END WITH STEEL FLANGE
 - 6 1 No. 90mm DIA. HDPE PN 16 PIPE (LENGTH TO SUIT ON SITE)

DISTANCE DATUM (m)	GROUND LEVELS (m)	INVERT LEVELS(m)	DEPTH FROM GROUND LEVEL TO INVERT LEVEL (m)	HGL(m)	FLOW DATA	TYPE OF PIPE AND SIZE
0+000	2038.00	2038.00	0.00	2038.00	0.03 M3/S, 1.513M/S	OD 180mm PN 10 HDPE PIPE
0+200	2034.05	2035.02	1+500.00	2034.05	0.03 M3/S, 1.618M/S	OD 180mm PN 12.5 HDPE PIPE
0+400	2031.63	2032.84	1+520.00	2031.63		
0+600	2028.73	2031.23	1+540.00	2028.73	0.03 M3/S, 1.757M/S	OD 180mm PN 16 HDPE PIPE
0+800	2027.72	2028.95	1+560.00	2027.72		
1+000	2025.58	2026.83	1+580.00	2025.58		
1+200	2024.44	2025.67	1+600.00	2024.44		
1+400	2023.30	2024.52	1+620.00	2023.30		
1+600	2022.24	2023.45	1+640.00	2022.24		
1+800	2021.16	2022.38	1+660.00	2021.16		
2+000	2020.08	2021.30	1+680.00	2020.08		
2+200	2019.01	2020.21	1+700.00	2019.01		
2+400	2017.94	2019.08	1+720.00	2017.94		
2+600	2016.87	2017.94	1+740.00	2016.87		
2+800	2015.80	2016.81	1+760.00	2015.80		
3+000	2014.73	2015.68	1+780.00	2014.73		
3+200	2013.66	2014.55	1+800.00	2013.66		



NOTES

1. ALL LEVELS ARE IN METERS ABOVE SEA LEVEL.
2. COORDINATES ARE BASED ON UTM.
3. LOCATION OF AIR VALVES, WASHOUTS, BENDS AND OTHER FITTINGS AS SHOWN UNLESS OTHERWISE DIRECTED BY THE ENGINEER ON SITE.
4. GROUND AND INVERT LEVEL SHOWN ARE AS SHOWN ON DRAWING UNLESS OTHERWISE INDICATED ON SITE BY THE ENGINEER.
5. PIPES ARE TO BE LAID TO EVEN GRADIENTS WITH A MINIMUM COVER OF 1.0M. WHERE COVER IS LESS THAN THIS, PIPE TO BE SURROUNDED WITH CONCRETE.
6. ALL BENDS ARE HORIZONTAL UNLESS OTHERWISE STATED.
7. IN WATER LOGGED AREAS, PIPES TO BE BEDDED WITH SINGLE SIZED OR GRADED AGGREGATES AS PER CLAUSE 430.1 AND 216 OF TECHNICAL SPECIFICATIONS AND/OR ANCHOR BLOCKS AS MAY BE DIRECTED ON SITE BY THE ENGINEER.


LEGEND:

- PROPOSED PIPELINE
- EXISTING GROUND PROFILE
- PIPE INVERT PROFILE
- EXISTING ROAD
- AIR VALVE
- DOUBLE AIR VALVE
- WASHOUT
- WASHOUT TYPE 1
- WASHOUT TYPE 2
- NOMINAL DIAMETER
- NOMINAL PRESSURE
- VERTICAL BEND
- HORIZONTAL BEND
- EXISTING STRUCTURE
- EARTH ROAD
- GRAVEL ROAD
- CUT

FOR TENDER
signed CMTS

REV	REVISIONS	SIGN	DATE	APPROVED
	BY			
	CHECKED			
	BY			
	CHECKED			
	BY			
	CHECKED			
CO	ISSUED FOR CONSTRUCTION	BY		
		CHECKED		

CLIENT




TANA WATER WORKS DEVELOPMENT AGENCY
P. O. BOX 1292-10100
NYERI

PROJECT

DESIGN FOR KIAMUCHUKU WATER PROJECT

ENGINEER

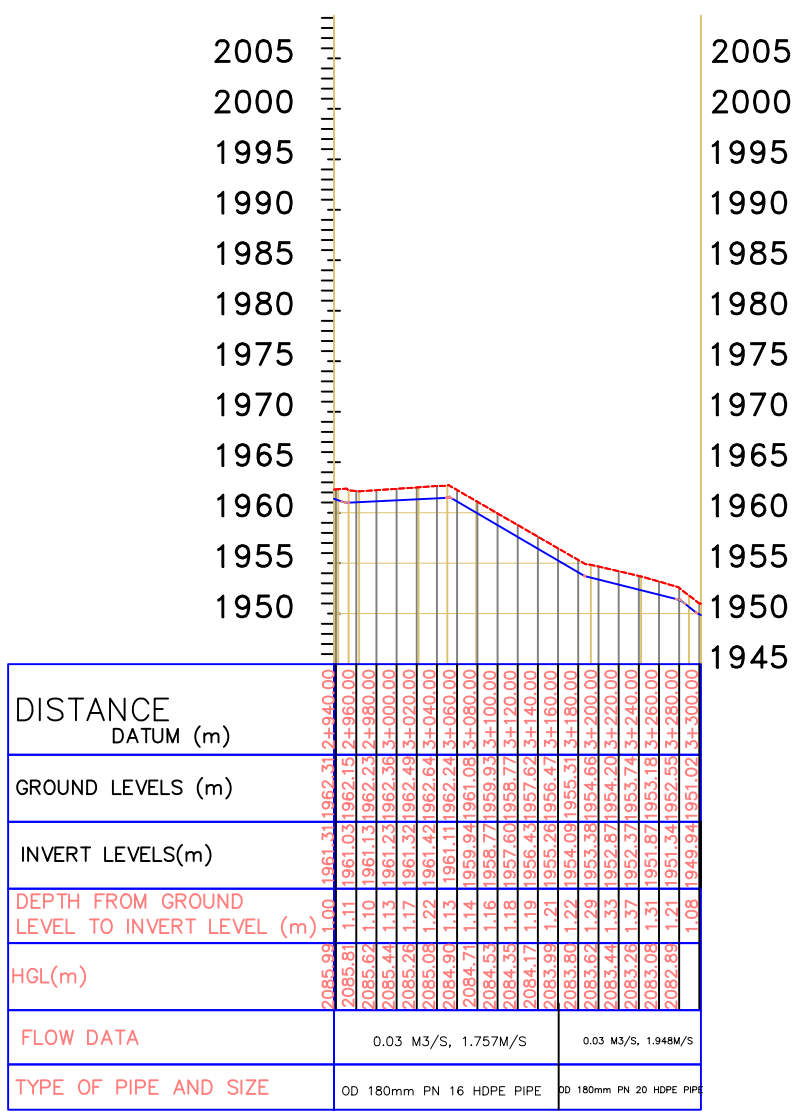


TANA WATER WORKS DEVELOPMENT AGENCY
P. O. BOX 1292-10100
NYERI

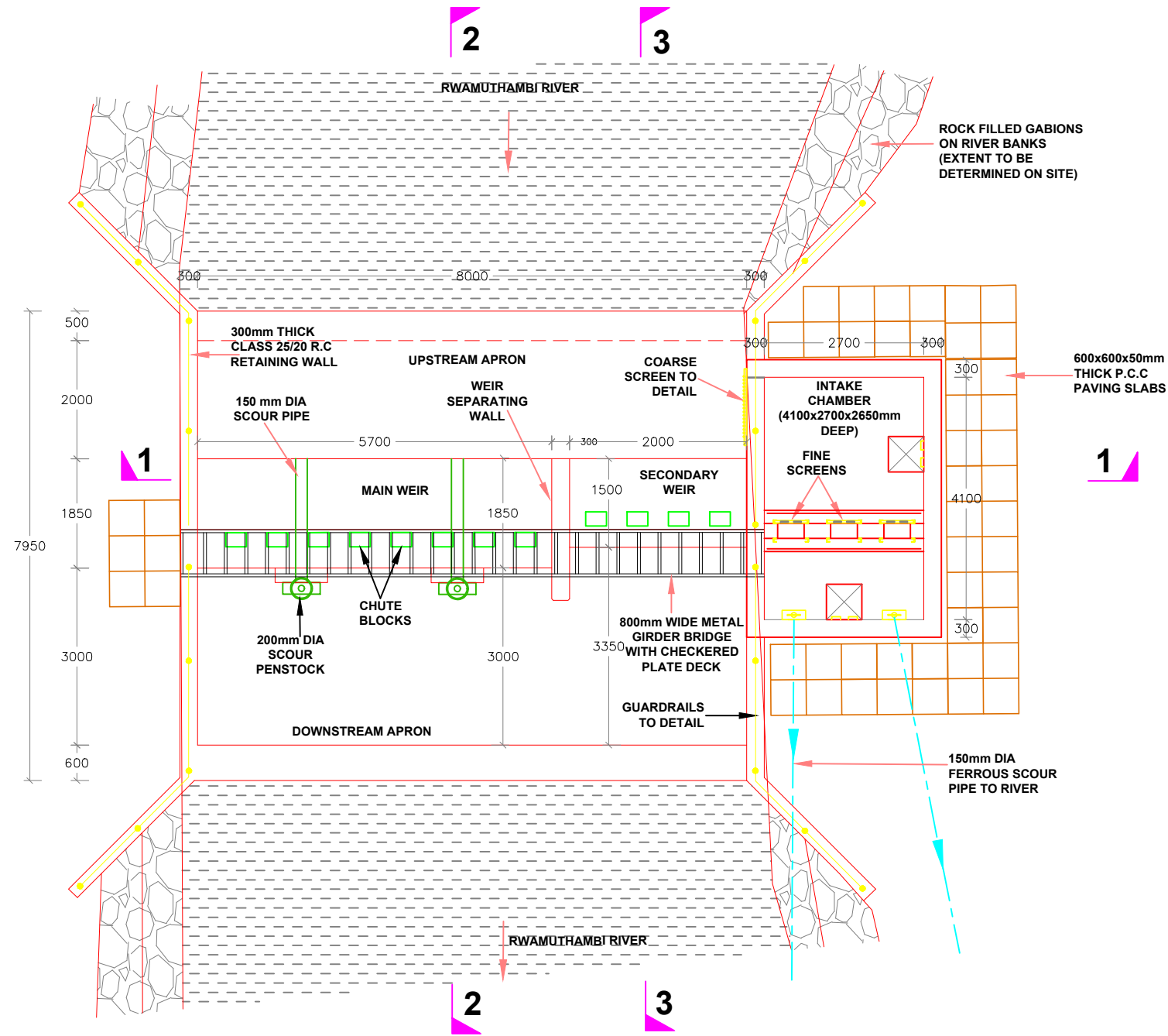
Drawing Title

KIAMUCHUKU WATER PROJECT
RAW WATER MAINLINE
PLAN AND PROFILE (SHEET 3 OF 3)

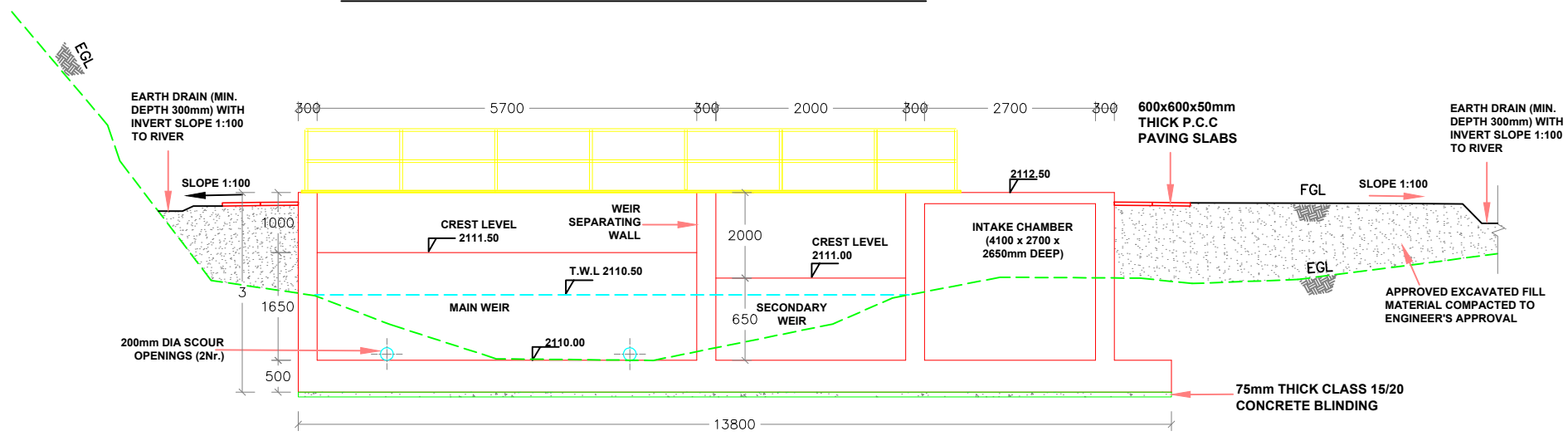
Designed by	MMM	Drawn by	MMM
Checked by	EWW	Approved by	DMN
Scale	AS SHOWN (A1)	Date	APRIL 2026
Job No.	1	ACAD File:	
PD STATUS	DRAWING No. TWWDA/KWP/ML-3	CO REV	



kiamuchuku alignment
SCALE: HOR 1:2000 VERT 1:1000



INTAKE WEIR AND INTAKE CHAMBER - PLAN




INTAKE WEIR AND INTAKE CHAMBER SECTION 1-1


NOTES

1. ALL DIMENSIONS ARE IN MM UNLESS OTHERWISE STATED
2. ALL LEVELS ARE IN METERS
3. ALL EXPOSED CONCRETE EDGES TO HAVE 25mm x 25mm CHAMFER
4. SETTING OUT AND LEVELS TO BE APPROVED BY THE ENGINEER PRIOR TO COMMENCEMENT OF CONSTRUCTION
5. ABBREVIATIONS:
EGL - EXISTING GROUND LEVEL
FGL - FINISHED GROUND LEVEL
RC - REINFORCED CONCRETE

ISSUED FOR TENDERING

REVISIONS	SIGN	DATE	APPROVED
	CHECKED		
	CHECKED		
	CHECKED		
	CHECKED		

CLIENT:

TANA WATER WORKS DEVELOPMENT AGENCY
 P.O BOX 1292 - 10100,
 NYERI, KENYA

EMPLOYER:

THE CHIEF EXECUTIVE OFFICER
TANA WATER WORKS DEVELOPMENT AGENCY
 P.O BOX 1292 - 10100,
 NYERI, KENYA

PROJECT TITLE:
KIAMUCHUKU WATER PROJECT

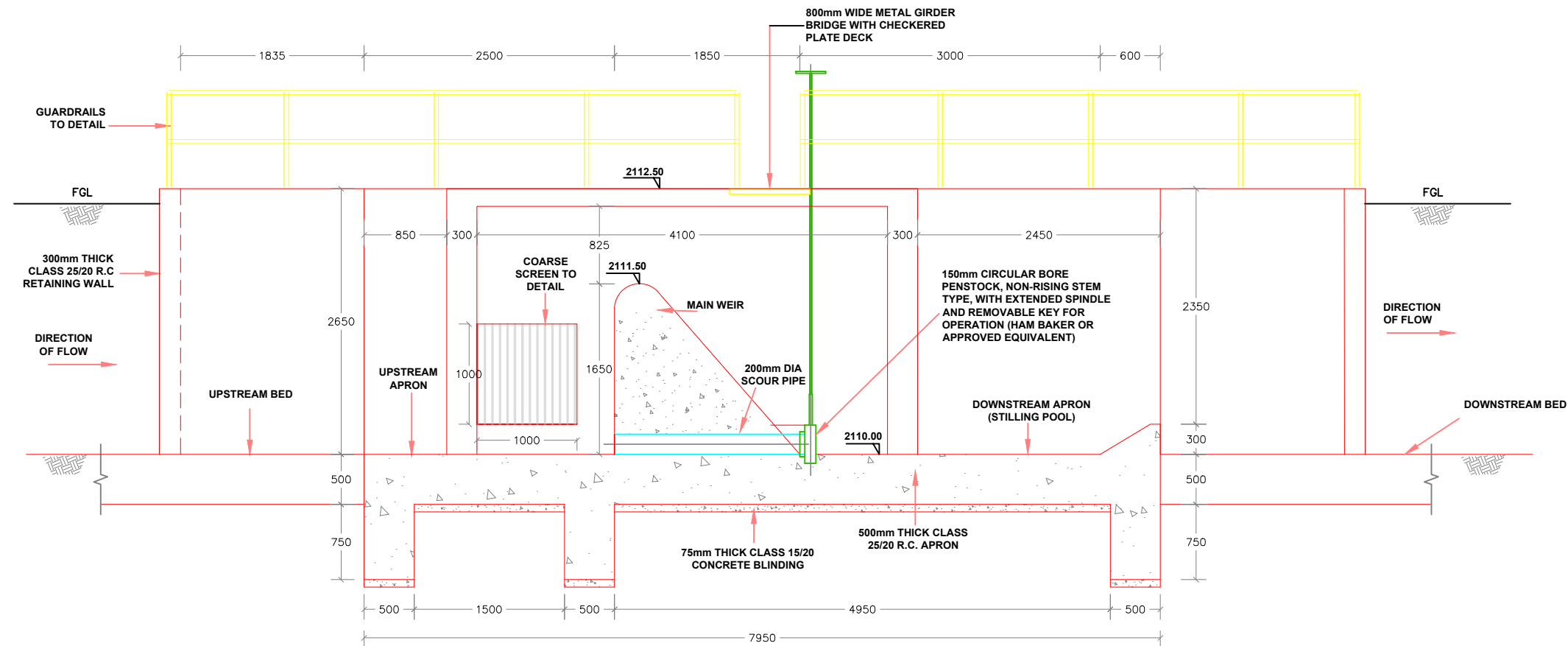
CONSTRUCTION OF KIAMUCHUKU WATER PROJECT

DRAWING TITLE:
INTAKE WORKS
INTAKE WEIR & CHAMBER
PLAN AND SECTION 1-1

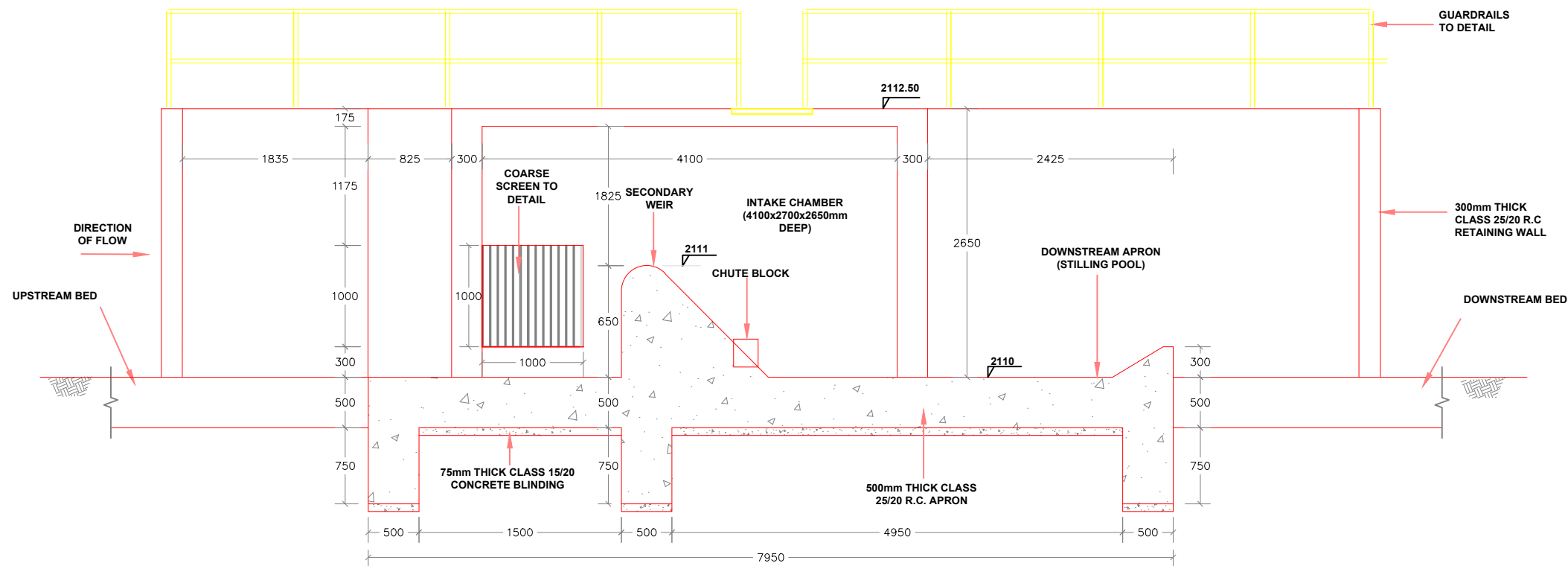
Designed by: M.M.M Drawn by: E.W.N
 Checked by: E.W.W Approved by: D.M.N

Scale: 1:100 Date: APRIL 2026

DRG No. TWWDA/KWP/I-W/02 REV



SECTION 2-2
SECTION THROUGH MAIN WEIR




SECTION 3-3
SECTION THROUGH SECONDARY WEIR


NOTES

1. ALL DIMENSIONS ARE IN MM UNLESS OTHERWISE STATED
2. ALL LEVELS ARE IN METERS
3. ALL EXPOSED CONCRETE EDGES TO HAVE 25mm x 25mm CHAMFER
4. SETTING OUT AND LEVELS TO BE APPROVED BY THE ENGINEER PRIOR TO COMMENCEMENT OF CONSTRUCTION
5. ABBREVIATIONS:
EGL - EXISTING GROUND LEVEL
FGL - FINISHED GROUND LEVEL
RC - REINFORCED CONCRETE

ISSUED FOR TENDERING

REVISIONS	CHECKED	SIGN	DATE	APPROVED

CLIENT:

TANA WATER WORKS DEVELOPMENT AGENCY
 P.O BOX 1292 - 10100, NYERI, KENYA

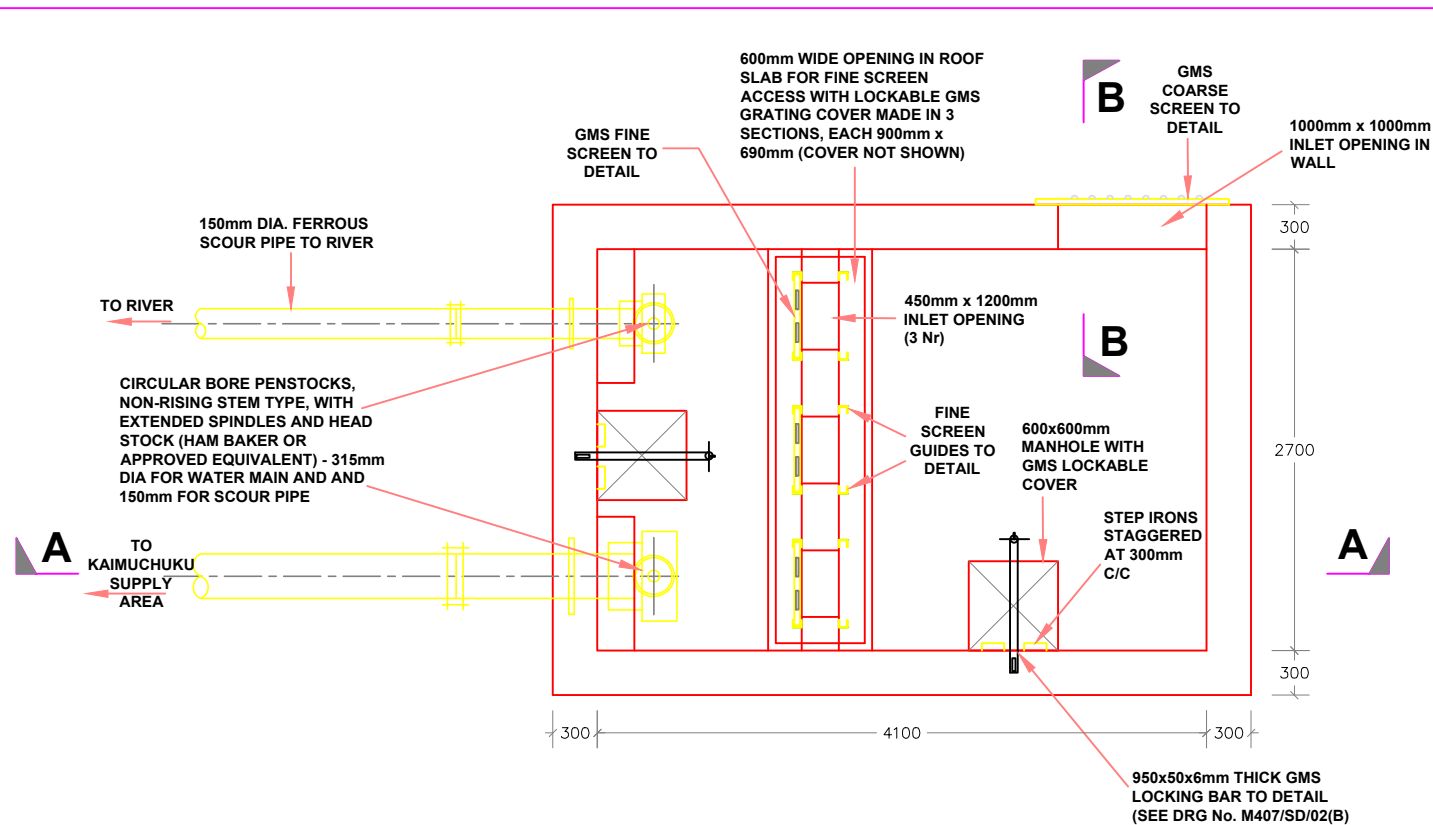
EMPLOYER:

THE CHIEF EXECUTIVE OFFICER TANA WATER WORKS DEVELOPMENT AGENCY
 P.O BOX 1292 - 10100, NYERI, KENYA

PROJECT TITLE:
KIAMUCHUKU WATER PROJECT

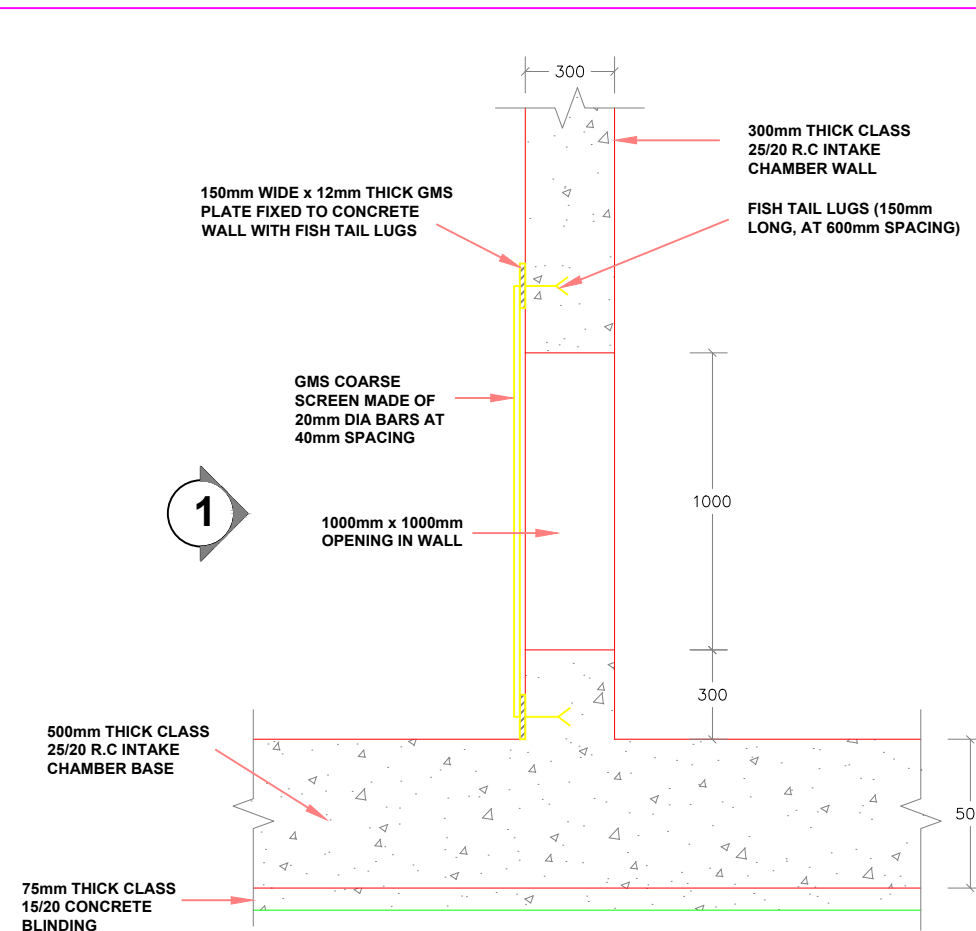
CONSTRUCTION OF KIAMUCHUKU WATER PROJECT

DRAWING TITLE:
INTAKE WORKS
INTAKE WEIR & CHAMBER
SECTIONS 2-2 & 3-3

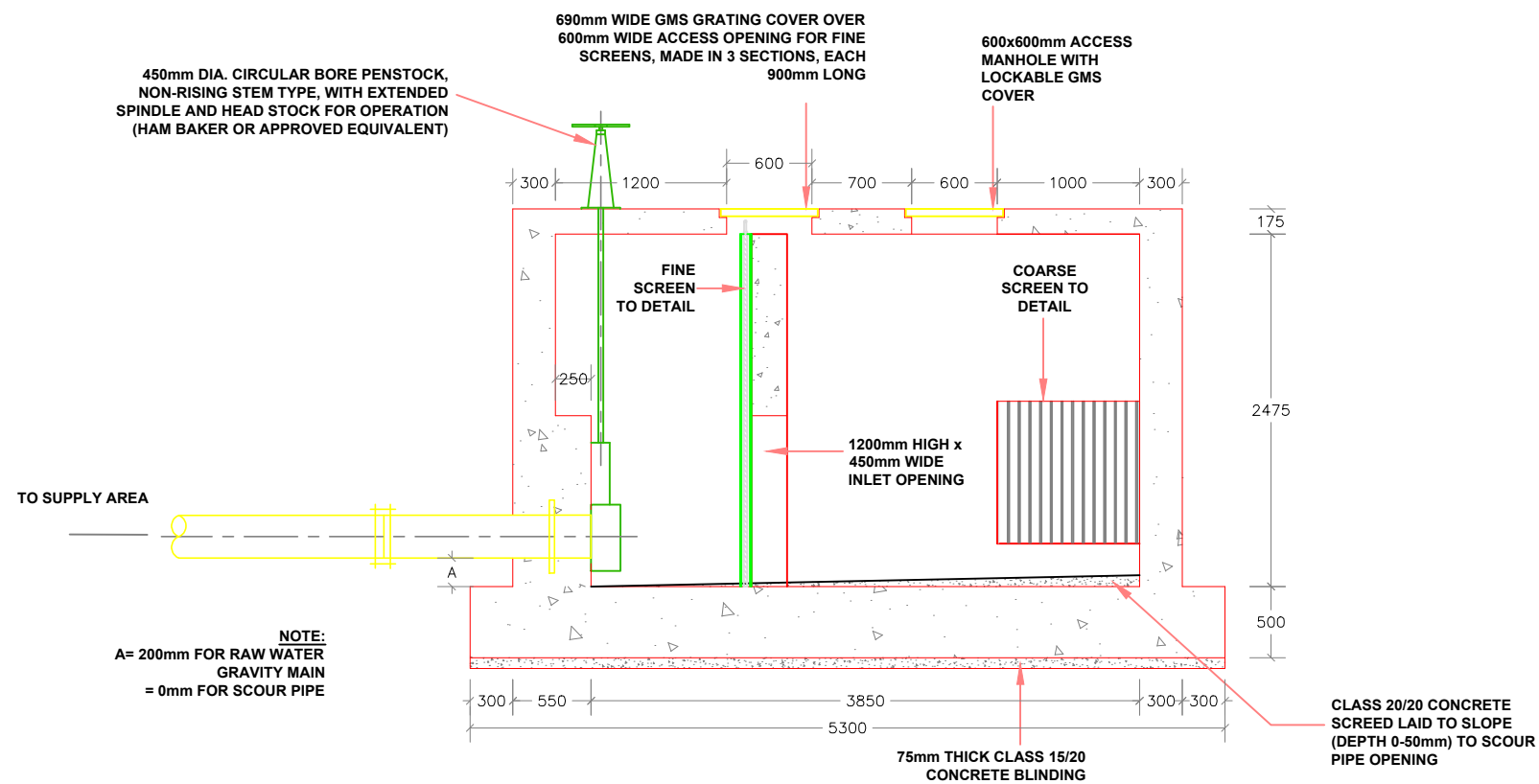
Designed by: M.M.M	Drawn by: E.W.N
Checked by: E.W.W	Approved by: D.M.N
Scale: 1:50	Date: APRIL 2026
DRG No. TWWDA/KWP/I-W/03	REV



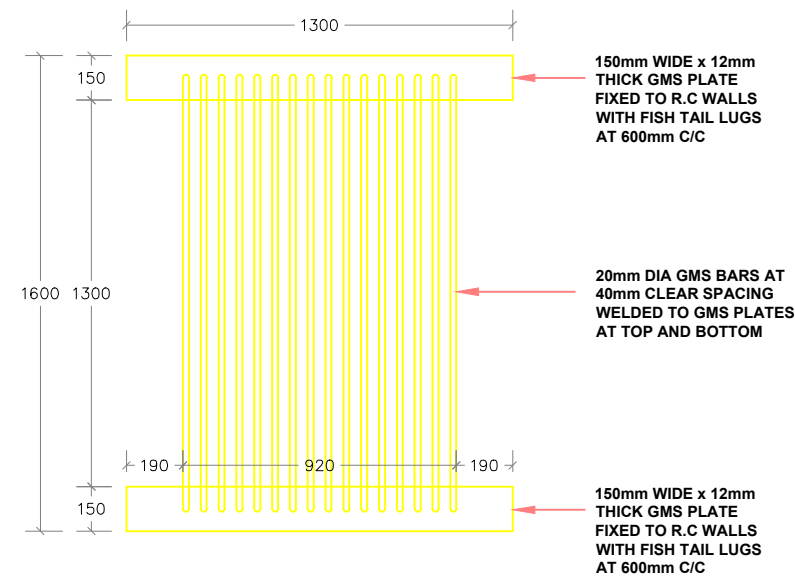
**INTAKE CHAMBER
PLAN
SCALE 1:50**



**SECTION B-B
COARSE SCREEN
SCALE 1:25**



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




**ELEVATION 1
COARSE SCREEN DETAIL
SCALE 1:25**


NOTES

1. ALL DIMENSIONS ARE IN MM UNLESS OTHERWISE STATED
2. ALL LEVELS ARE IN METERS
3. ALL EXPOSED CONCRETE EDGES TO HAVE 25mm x 25mm CHAMFER
4. ALL STEEL WORKS AFTER FABRICATION TO BE CLEANED IN ACCORDANCE WITH THE SPECIFICATIONS AND HOT DIPPED GALVANIZED
5. STEEL SECTION SIZES ARE AS TAKEN FROM BROLLO COLD ROLLED PROFILES CATALOG BY BROLLO KENYA LTD.
6. ABBREVIATIONS:
EGL - EXISTING GROUND LEVEL
FGL - FINISHED GROUND LEVEL
RC - REINFORCED CONCRETE
GMS - GALVANIZED MILD STEEL

ISSUED FOR TENDERING

REVISIONS	SIGN	DATE	APPROVED

CLIENT:

TANA WATER WORKS DEVELOPMENT AGENCY
 P.O BOX 1292 - 10100, NYERI, KENYA

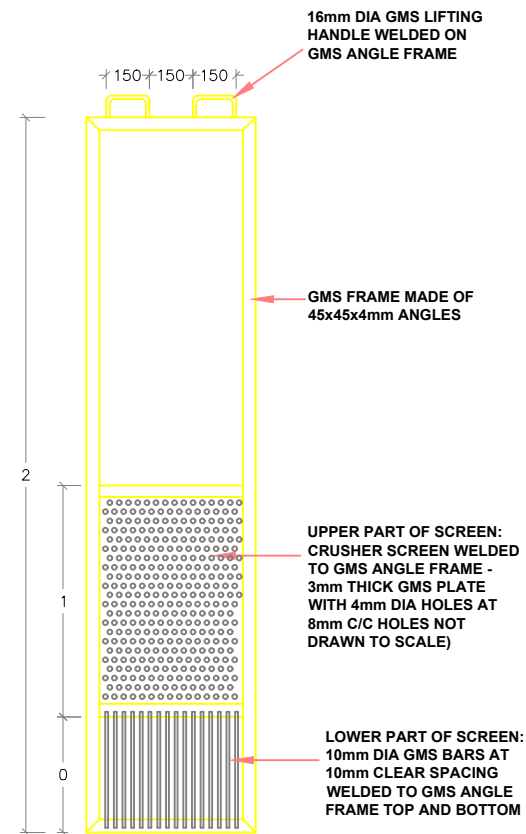
EMPLOYER:

THE CHIEF EXECUTIVE OFFICER TANA WATER WORKS DEVELOPMENT AGENCY
 P.O BOX 1292 - 10100, NYERI, KENYA

PROJECT TITLE:
KIAMUCHUKU WATER PROJECT

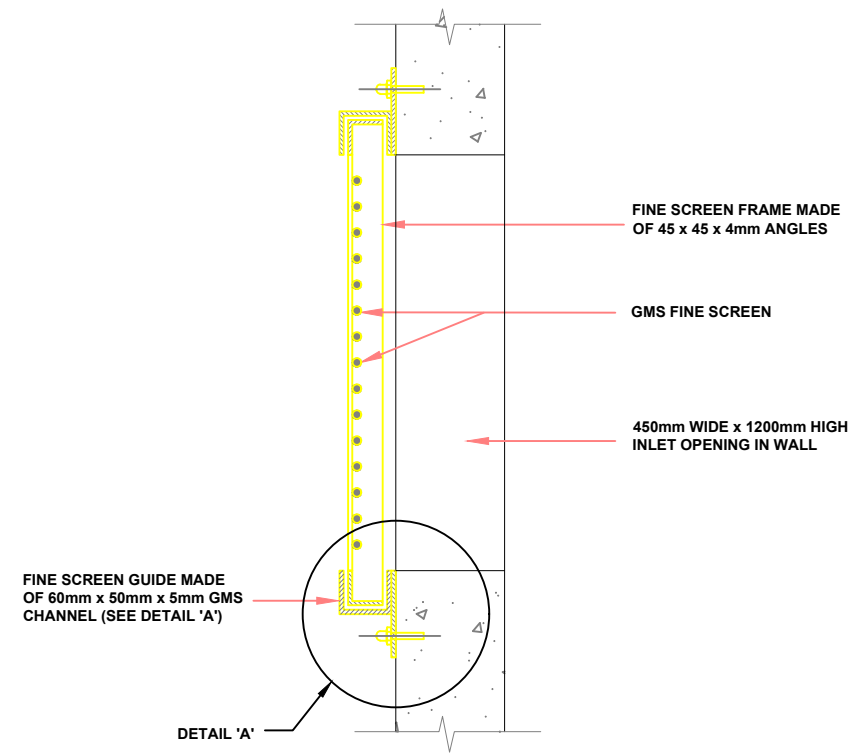
CONSTRUCTION OF KIAMUCHUKU WATER PROJECT

DRAWING TITLE:
**INTAKE WORKS
 INTAKE CHAMBER AND COARSE SCREEN DETAILS**

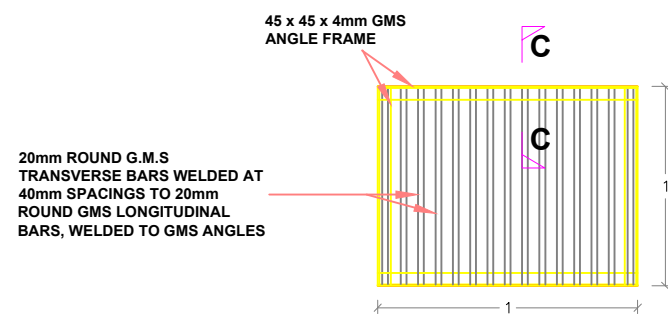
Designed by: M.M.M	Drawn by: E.W.N
Checked by: E.W.W	Approved by: D.M.N
Scale: 1:50	Date: APRIL 2026
DRG No. TWWDA/KWP/I-W/04	REV



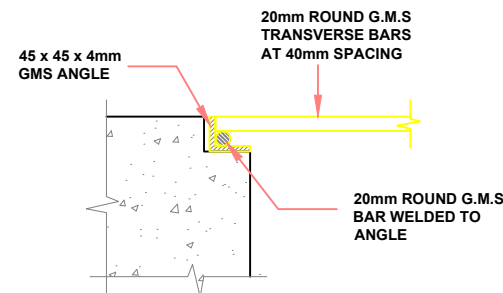
FINE BAR SCREEN ELEVATION
SCALE 1:25



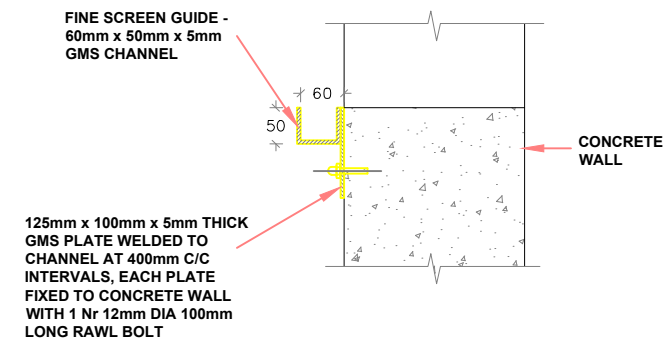
FINE SCREEN & GUIDES SECTIONAL PLAN
NTS



GMS GRATING COVER OVER FINE SCREEN ACCESS OPENING PLAN
SCALE 1:25



SECTION C-C
NTS



DETAIL 'A' FINE SCREEN GUIDE FIXING DETAIL
SCALE 1:10

NOTES

- ALL DIMENSIONS ARE IN MM UNLESS OTHERWISE STATED
- ALL LEVELS ARE IN METERS
- ALL EXPOSED CONCRETE EDGES TO HAVE 25mm x 25mm CHAMFER
- ALL STEEL WORKS AFTER FABRICATION TO BE CLEANED IN ACCORDANCE WITH THE SPECIFICATIONS AND HOT DIPPED GALVANIZED
- STEEL SECTION SIZES ARE AS TAKEN FROM BROLLO COLD ROLLED PROFILES CATALOG BY BROLLO KENYA LTD.
- ABBREVIATIONS:
EGL - EXISTING GROUND LEVEL
FGL - FINISHED GROUND LEVEL
RC - REINFORCED CONCRETE
GMS - GALVANIZED MILD STEEL

ISSUED FOR TENDERING

REVISIONS	SIGN	DATE	APPROVED
	CHECKED		
	CHECKED		
	CHECKED		

CLIENT:
TANA WATER WORKS DEVELOPMENT AGENCY
P.O BOX 1292 - 10100, NYERI, KENYA

EMPLOYER:
THE CHIEF EXECUTIVE OFFICER TANA WATER WORKS DEVELOPMENT AGENCY
P.O BOX 1292 - 10100, NYERI, KENYA

PROJECT TITLE:
KIAMUCHUKU WATER PROJECT

CONSTRUCTION OF KIAMUCHUKU WATER PROJECT

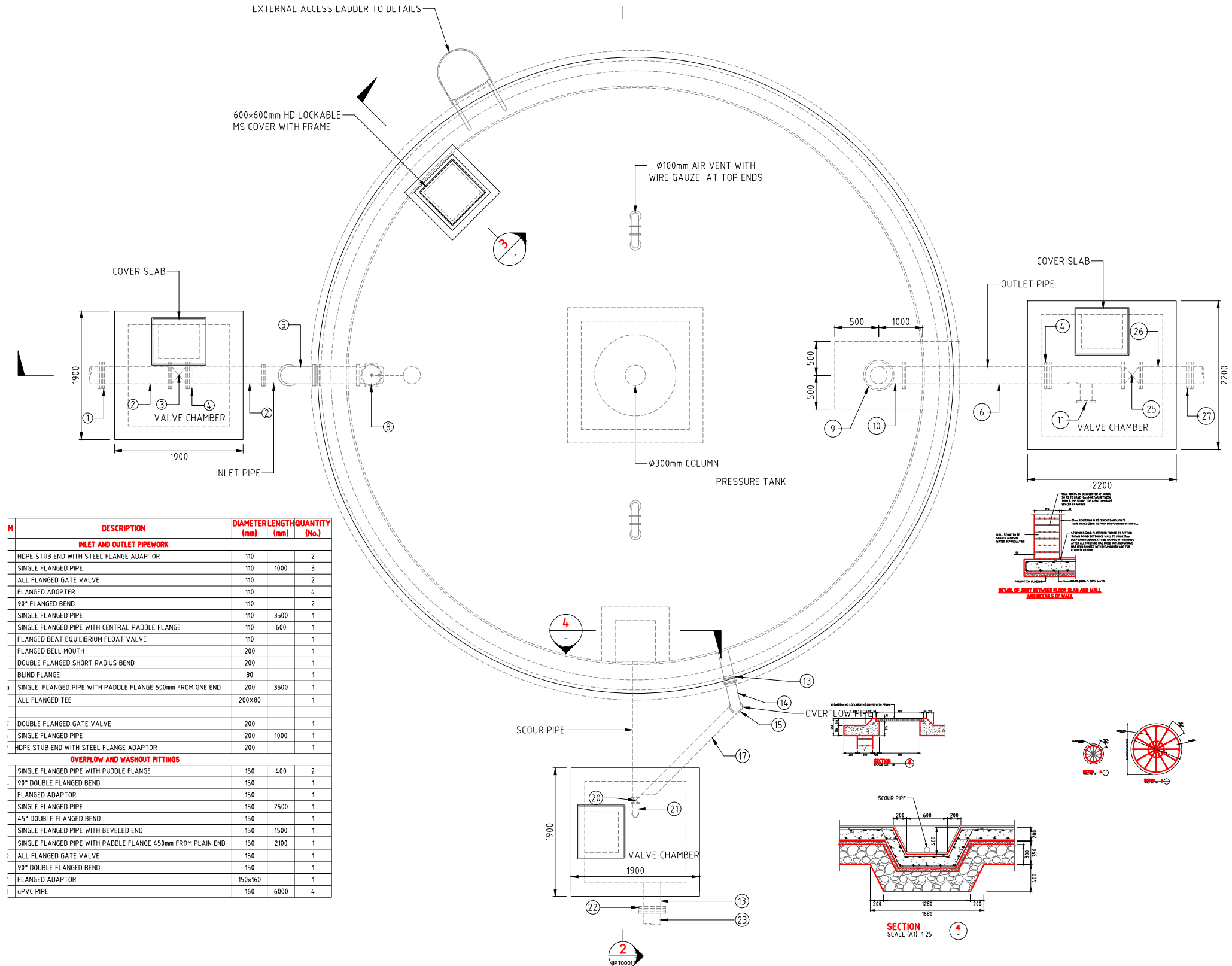
DRAWING TITLE:
INTAKE WORKS FINE SCREEN DETAILS

Designed by: M.M.M Drawn by: E.W.N

Checked by: E.W.W Approved by: D.M.N

Scale: AS SHOWN Date: APRIL 2026

DRG No. TWWDA/KWPII-W/05 REV



M	DESCRIPTION	DIAMETER		LENGTH	QUANTITY
		(mm)	(mm)		
INLET AND OUTLET PIPEWORK					
	HOPE STUB END WITH STEEL FLANGE ADAPTOR	110			2
	SINGLE FLANGED PIPE	110	1000	3	
	ALL FLANGED GATE VALVE	110		2	
	FLANGED ADAPTOR	110		4	
	90° FLANGED BEND	110		2	
	SINGLE FLANGED PIPE	110	3500	1	
	SINGLE FLANGED PIPE WITH CENTRAL PADDLE FLANGE	110	600	1	
	FLANGED BEAT EQUILIBRIUM FLOAT VALVE	110		1	
	FLANGED BELL MOUTH	200		1	
	DOUBLE FLANGED SHORT RADIUS BEND	200		1	
	BLIND FLANGE	80		1	
	SINGLE FLANGED PIPE WITH PADDLE FLANGE 500mm FROM ONE END	200	3500	1	
	ALL FLANGED TEE	200x80		1	
	DOUBLE FLANGED GATE VALVE	200		1	
	SINGLE FLANGED PIPE	200	1000	1	
	HOPE STUB END WITH STEEL FLANGE ADAPTOR	200		1	
OVERFLOW AND WASHOUT FITTINGS					
	SINGLE FLANGED PIPE WITH PUDDLE FLANGE	150	400	2	
	90° DOUBLE FLANGED BEND	150		1	
	FLANGED ADAPTOR	150		1	
	SINGLE FLANGED PIPE	150	2500	1	
	45° DOUBLE FLANGED BEND	150		1	
	SINGLE FLANGED PIPE WITH BEVELED END	150	1500	1	
	SINGLE FLANGED PIPE WITH PADDLE FLANGE 450mm FROM PLAIN END	150	2100	1	
	ALL FLANGED GATE VALVE	150		1	
	90° DOUBLE FLANGED BEND	150		1	
	FLANGED ADAPTOR	150x160		1	
	UPVC PIPE	160	6000	4	

- PROGRAMME, METHOD OF CONSTRUCTION AND SETTING OUT OF WORK TO BE APPROVED BY THE ENGINEER BEFORE COMMENCEMENT OF WORK**
- DESIGN CRITERIA**
 - DESIGN CODES B.S. 5951 & B.S. 5110
 - UNIFORM NON-COMPRESSIBLE FOUNDATION WITH MINIMUM BEARING CAPACITY 30kN/m²
- CONCRETE**
 - CEMENT TO BE CEM 1 - 42.5 TO KEESAS 10-T AND KEESAS 10-3
 - CONCRETE AGGREGATE TO COMPLY WITH B.S. 688
 - WATER IN CONCRETE TO B.S. 5148
 - CONCRETE CLASSES TO BE AS FOLLOWS:
 - MASS CONCRETE FILL AND BLINDING MIX, CLASS 16/20
 - REINFORCED CONCRETE CLASS 25/30
 - MINIMUM COVER TO ALL REINFORCEMENT TO BE 40mm UNLESS AS SPECIFIED BELOW FOR BUILDINGS:
 - MEMBERS OF BUILDINGS:
 - SLABS - 30mm
 - BEAMS - 25mm
 - COLUMNS - 40mm
 - FOUNDATIONS AND FOOTINGS - 50mm
 - WALLS/COLUMNS SHOULD BE POURED, IF POSSIBLE IN A FULL HEIGHT POUR AS SOON AS POSSIBLE AFTER THE BASE HAS BEEN CONCRETED (2 TO 3 DAYS)
- REINFORCEMENT:**
 - REINFORCEMENT TO BE HIGH YIELD SQUARE TWISTED BARS TO B.S. 4461
 - BENDING DIMENSIONS TO B.S. 4466
 - THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING ALL THE SPACER BLOCKS, CHAIRS AND TYING WIRE
 - EXAMPLE: 10 T12 @ 100 IDENTIFICATION MARK AT 100mm CENTRE TO CENTRE SPACING
- JOINTS:**
 - THE POSITION AND NUMBER OF INTERMEDIATE JOINTS TO BE AS DIRECTED BY THE ENGINEER AS SHOWN IN THE DRAWINGS
 - BEFORE PLACING FRESH CONCRETE THE OLD SURFACE SHALL BE ROUGHENED AND ALL LAITANCE AND LOOSE MATERIAL REMOVED
 - THE SURFACE SHALL BE THOROUGHLY WETTED EXCESS WATER SHOULD BE REMOVED SO THAT CONSTRUCTION JOINTS ARE IN A SATURATED BUT SURFACE DRY CONDITION
 - ALL WALL/COLUMN BASE CONNECTIONS SHOULD HAVE 100mm KOCKER UNLESS OTHERWISE SPECIFIED
 - THE UPVC WATER STOP SHALL BE 300mm WIDE UNLESS OTHERWISE SPECIFIED
 - JOINT FILLER TO B.S. 5252 AND TO BE APPROVED BY THE ENGINEER
- ABBREVIATIONS:**
 - T - TOP
 - N.F. - NEAR FACE
 - E.F. - EACH FACE
 - B - BOTTOM
 - F.F. - FAR FACE
 - E.W. - EACH WAY

ISSUED FOR TENDERING

CLIENT:
 THE CHIEF EXECUTIVE OFFICER
 TANA WATER WORKS
 DEVELOPMENT AGENCY
 P.O BOX 1292 - 10100,
 NYERI, KENYA

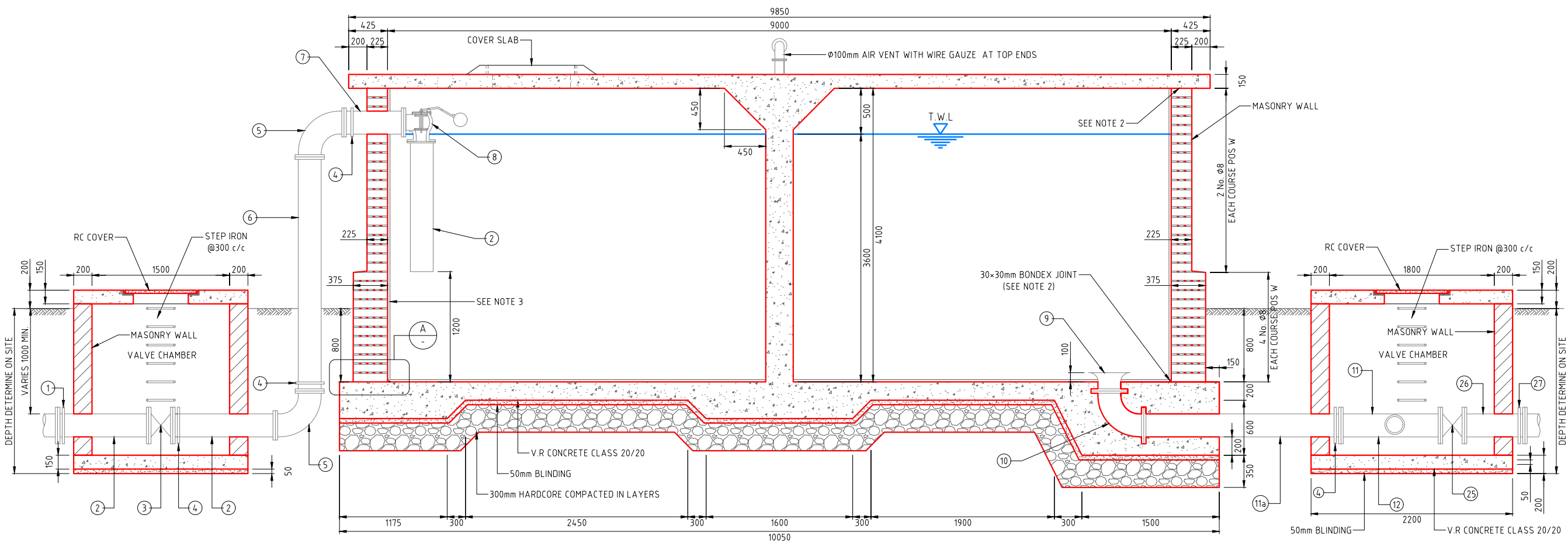
ENGINEER:
 THE CHIEF EXECUTIVE OFFICER
 TANA WATER WORKS
 DEVELOPMENT AGENCY
 P.O BOX 1292 - 10100,
 NYERI, KENYA

PROJECT TITLE:
 KIAMUCHUKU WATER PROJECT

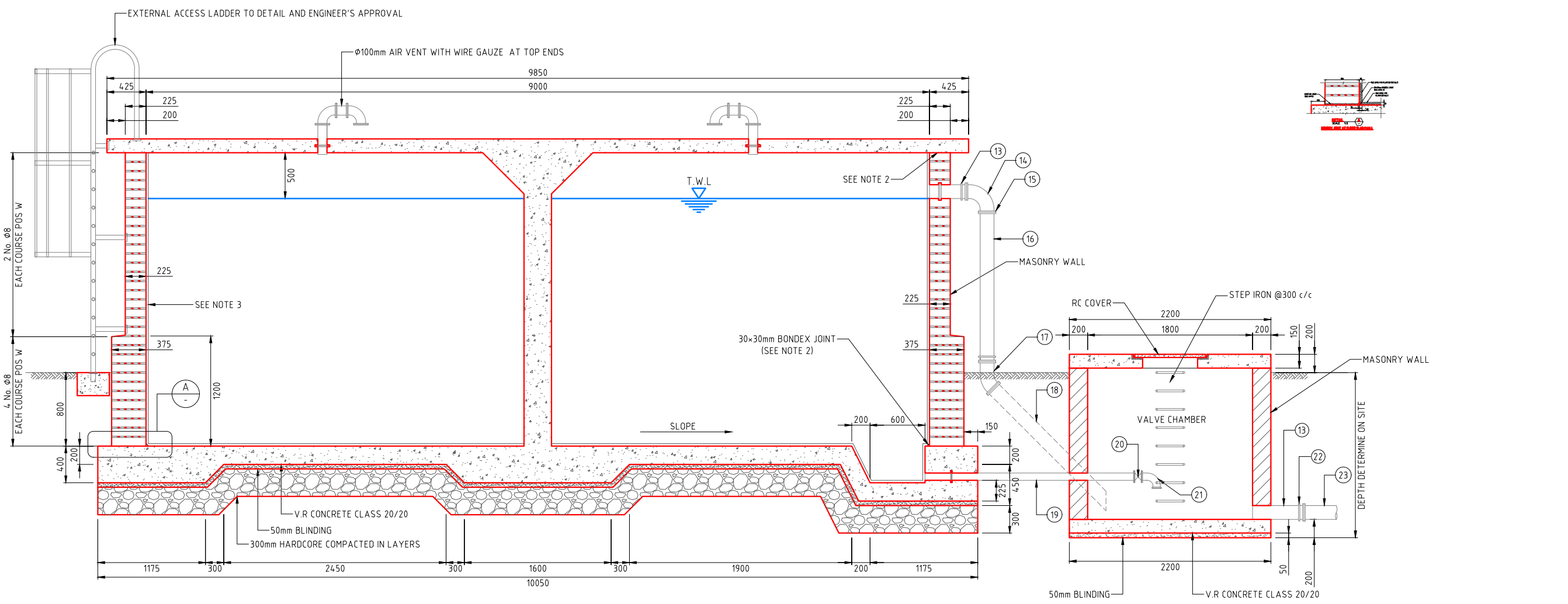
CONSTRUCTION OF KIAMUCHUKU WATER PROJECT

DRAWING TITLE:
 225M3 TANK
 PLAN

Designed by: M.M.M	Drawn by: E.W.N
Checked by: E.W.W	Approved by: D.M.N
	Date: APRIL 2026
DRG No. TWWDA/KWP/T/01	REV



SECTION 1
SCALE (A1) 1:25
08040




SECTION 2
SCALE (A1) 1:25
08040

- PROGRAMME, METHOD OF CONSTRUCTION AND SETTING-OUT OF WORK TO BE APPROVED BY THE ENGINEER BEFORE COMMENCEMENT OF WORK**
- DESIGN CRITERIA**
 - DESIGN CODES B.S. 8007 & B.S. 8110
 - UNIFORM NON-COMPRESSIBLE FOUNDATION WITH MINIMUM BEARING CAPACITY 30kN/m²
- CONCRETE**
 - CEMENT TO BE CEM 1 - 42.5 TO KE-ES 10-T AND KE-ES 10-S
 - CONCRETE AGGREGATE TO COMPLY WITH B.S. 688
 - WATER IN CONCRETE TO B.S. 3148
 - CONCRETE CLASSES TO BE AS FOLLOWS:
 - MASS CONCRETE FILL AND BLINDING MIX, CLASS 10/20
 - REINFORCED CONCRETE CLASS 20/20
 - MINIMUM COVER TO ALL REINFORCEMENT TO BE 40mm UNLESS AS SPECIFIED BELOW FOR BUILDINGS:
 - MEMBERS OF BUILDINGS:
 - SLABS - 30mm
 - BEAMS - 25mm
 - COLUMNS - 40mm
 - FOUNDATIONS AND FOOTINGS - 50mm
 - WALLS/COLUMNS SHOULD BE POURED, IF POSSIBLE IN A FULL HEIGHT POUR AS SOON AS POSSIBLE AFTER THE BASE HAS BEEN CONCRETED (2 TO 3 DAYS)
- REINFORCEMENT:**
 - REINFORCEMENT TO BE HIGH YIELD SQUARE TWISTED BARS TO B.S. 4461
 - BENDING DIMENSIONS TO B.S. 4466
 - THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING ALL THE SPACER BLOCKS, CHAIRS AND TYING WIRE
 - EXAMPLE: 10 T12 @ 100 SPACINGS WITH HIGH TENSILE 12mm DIA. BARS IDENTIFICATION MARK AT 100mm CENTRE TO CENTRE SPACING
- JOINTS:**
 - THE POSITION AND NUMBER OF INTERMEDIATE JOINTS TO BE AS DIRECTED BY THE ENGINEER AS SHOWN IN THE DRAWINGS
 - BEFORE PLACING FRESH CONCRETE THE OLD SURFACE SHALL BE ROUGHENED AND ALL LAITANCE AND LOOSE MATERIAL REMOVED
 - THE SURFACE SHALL BE THOROUGHLY WETTED EXCESS WATER SHOULD BE REMOVED SO THAT CONSTRUCTION JOINTS ARE IN A SATURATED BUT SURFACE DRY CONDITION
 - ALL WALL/COLUMN BASE CONNECTIONS SHOULD HAVE 100mm KICKER UNLESS OTHERWISE SPECIFIED
 - THE UPVC WATER STOP SHALL BE 300mm WIDE UNLESS OTHERWISE SPECIFIED
 - JOINT FILLER TO B.S. 6222 AND TO BE APPROVED BY THE ENGINEER
- ABBREVIATIONS:**
 - T - TOP
 - N.F. - NEAR FACE
 - E.F. - EACH FACE
 - B - BOTTOM
 - F.F. - FAR FACE
 - E.W. - EACH WAY

ISSUED FOR TENDERING

CLIENT:

THE CHIEF EXECUTIVE OFFICER
 TANA WATER WORKS
 DEVELOPMENT AGENCY
 P.O BOX 1292 - 10100,
 NYERI, KENYA

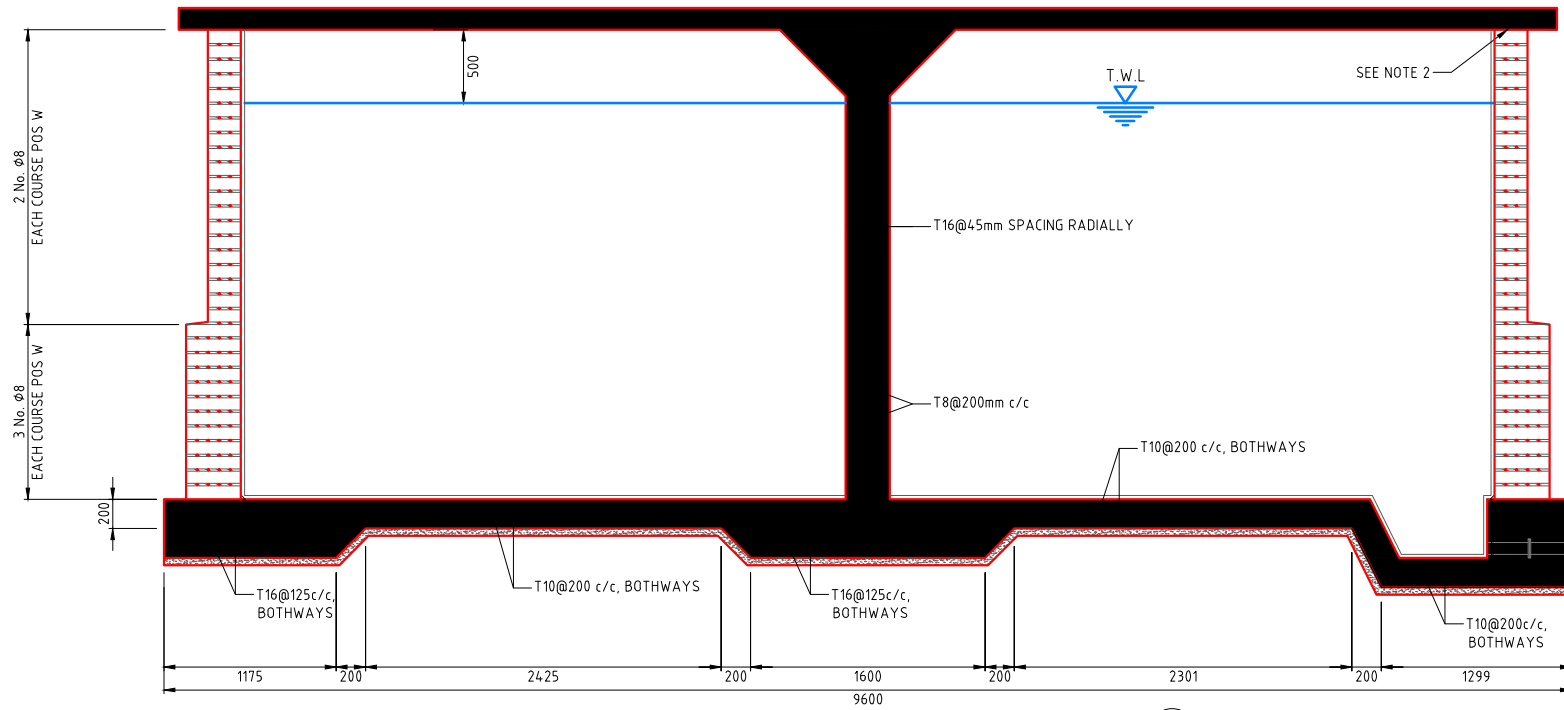
ENGINEER:

THE CHIEF EXECUTIVE OFFICER
 TANA WATER WORKS
 DEVELOPMENT AGENCY
 P.O BOX 1292 - 10100,
 NYERI, KENYA

PROJECT TITLE:
KIAMUCHUKU WATER PROJECT

CONSTRUCTION OF KIAMUCHUKU WATER PROJECT

DRAWING TITLE:
225M3 TANK
SECTION AND DETAILS

Designed by: M.M.M	Drawn by: E.W.N
Checked by: E.W.W	Approved by: D.M.N
Date: APRIL 2026	
DRG No. TWWDA/KWP/T/02	REV



SECTION 2
SCALE (A1) 1:25
BRT00010

BAR BENDING SCHEDULE												
LOCATION	BAR MARK	BAR DIA. mm	TOTAL No.	LENGTH		CUT LENGTH (mm)	TOTAL LENGTH (m)	TYPE OF	SKETCH OF BAR SHAPE			
				A (mm)	B(mm)							
WALL	1	10	77	11800		12000	924.0	A	 			
	2	8	59	11800		12000	708.0	A				
ROOF	3	16	28	5700		6000	168.0	B				
	4	"	8	5650		5950	47.6	B				
	5	"	8	5150		5450	43.6	B				
	6	"	4	4820		5120	20.5	B				
	7	"	8	4450		4750	38.0	B				
	8	"	4	3990		4290	17.2	B				
	9	"	4	3430		3730	15.0	B				
	10	"	4	2700		3000	12.0	B				
	11	"	4	1580		1880	7.6	B				
	12	8	80	1000		1200	96.0	B				
	13	6	6	11800		12000	72.0	A				
	FLOOR	14	10	72	5800		6000	432.0	B			
		15	10	16	5440		5440	87.1	B			
16		"	16	4690		4690	75.1	B				
17		"	8	4200		4200	33.6	B				
18		"	8	3590		3590	28.8	B				
19		"	8	2790		2790	22.4	B				
20		"	8	1460		1460	11.7	B				
FLOOR REINFORCEMENT FOR BLACK COTTON SOIL OR SIMILAR CONDITIONS * DENOTES BOTTOM REINFORCEMENT b DENOTES TOP REINFORCEMENT		14a	10	36	5800		6000	216.0	B			
	15a	10	8	5240		5440	43.6	B				
	16a	"	8	4490		4690	37.6	B				
	17a	"	4	4000		4200	16.8	B				
	18a	"	4	3390		3590	14.4	B				
	19a	"	4	2590		2760	11.2	B				
	20a	"	4	1260		1460	5.9	B				
	14b	20	36	5640		6000	216.0	B				
	15b	20	8	5240		5600	44.8	B				
	16b	"	8	4490		4850	38.8	B				
	17b	"	4	4000		4360	17.5	B				
	18b	"	4	3390		3750	15.0	B				
	19b	"	4	2590		2950	11.8	B				
	20b	"	4	1260		1620	6.5	B				
SUMP	21	8	5	820	370	1760	8.8	C				
	22	8	4	1080	360	2000	8.0	C				
	23	8	2	800	1080	3160	6.4	C				
SUMMARY (TOTAL LENGTH IN METERS)	BAR DIAMETER							6	8	10	16	20
								72	828	1615	370	351

NOTES
HOOK ALLOWANCES
φ 6,8,10 2X100mm
φ 16 2X150mm
φ 20 2X180mm
MINIMUM OVERLAP
φ 6,8,10 400mm
LAPS IN CIRCUMFERENTIAL BARS ARE TO BE STAGGERED

NOTES

- HARD-CORE LAYER THICKNESS SHALL BE DETERMINED BY THE ENGINEER, BUT NOT LESS THAN 200mm
- MASONRY WALL SHALL NOT BE CONNECTED TO EITHER THE FLOOR SLAB NOR THE ROOF SLAB. THE WALL SUPPORTING AREA OF THE FLOOR SLAB AS WELL AS THE TOP OF THE WALL SHALL BE TROWEL FINISHED AND BE PAINTED WITH THREE COATS OF BITUMINOUS PAINT.
- THE MASONRY WALL SHALL BE BUILT OF GOOD QUALITY LOCAL BUILDING STONES OR CONCRETE BLOCKS. THE SIZE OF THE STONES SHALL BE:
WIDTH: NOT LESS THAN 225MM RESP. 300mm
LENGTH: BETWEEN 200 AND 300 mm
HEIGHT: NOT MORE THAN 150 mm
THE STONES SHALL BE SOAKED IN WATER FOR 24HRS BEFORE BEING BUILT INTO THE WALL . PARTICULAR CARE MUST BE TAKEN TO FILL ALL THE JOINTS COMPLETELY WITH MOTAR.(MOTAR MIXTURE 3:1, SAND: CEMENT)
- CONCRETE
CONCRETE CLASS 20/20 (MIXTURE 1:2:4) FOR FLOOR SLAB AS WELL AS CONCRETE BLOCKS.
CONCRETE CLASS Q (MIXTURE 1:3:6) FOR BLINDING.
- REINFORCEMENT
MILD STEELBARS TO BS 4449
MINIMUM CONCRETE COVER OF THE OF REINFORCEMENT 40mm
- FLOOR SLAB
OF THE TANK MUST BE 350mm IF THE TANK IS SITED ON BLACK COTTON SOIL OR SIMILAR SOIL CONDITON. THE REINFORCEMENT MUST BE DIAM. 20mm BARS C/C 200 ON THE TOP AND DIAM. 10mm BARS C/C 200 ON THE BOTTOM.(CROSSWISE) AS PER BAR BENDING SCHEDULE.
- CONSTRUCTION JOINTS.
ARE NOT PERMITTED ,THE SLABS MUST BE CASTED IN ONE TIME.
- FORMWORK
FOR THE ROOF SLAB MUST HAVE A CAMBER OF 30mm AT THE CENTRE
- EXTERIOR SURFACE
OF THE TANK SHALL RECEIVE ONE COAT 20mm THICK SUPHATE RESISTING PLASTER IN 1:2 CEMENT-SAND MOTAR MIX INCLUDING WATER PROOFING ADDITIVES.
- INTERIOR SURFACE
OF THE TANK SHALL BE PLASTERED THICKNESS 15MM WITH 2 MOTAR MIXTURE 2:1(SAND:CEMENT) TO OBTAIN A WATER PROOF PLASTERING; PUDLO CEMENT SHOULD BE ADDED.
- TANK ACCESS LADDER
SHALL BE GALVANIZED STEEL OR APPROVED EQUIVALENT, TO BE PROVIDED BOTH EXTERNALLY AND INTERNALLY
- TANK SITE ACCESS
TO BE 1.5m WIDE,MADE BY BENCHING NATURAL GROUND TO FORM STAIRWAY FREE OF LOOSE GRAVEL AND STONES, TO BE USED FOR (PEDESTRIAN) TEMPORARY WATER TANK ACCESS FROM FOOT OF HILL. THE SLOPE SHALL NOT EXCEED 1:3.17, AND DEPTH OF EXCAVATION SHALL NOT EXCEED 1.50M COMMENCING GROUND LEVEL.

- PROGRAMME, METHOD OF CONSTRUCTION AND SETTING OUT OF WORK TO BE APPROVED BY THE ENGINEER BEFORE COMMENCEMENT OF WORK
- DESIGN CRITERIA
DESIGN CODES B.S. 8007 & B.S. 8110
UNIFORM NON-COMPRESSIBLE FOUNDATION WITH MINIMUM BEARING CAPACITY 30KN/m²
- CONCRETE
CEMENT TO BE CEM 1 - 42.5 TO KESEAS 10-T AND KESEAS 10-3
CONCRETE AGGREGATE TO COMPLY WITH B.S. 688
WATER IN CONCRETE TO B.S. 3148
CONCRETE CLASSES TO BE AS FOLLOWS:-
MASS CONCRETE FILL AND BLINDING MIX, CLASS 10/20
REINFORCED CONCRETE CLASS 20/20
MINIMUM COVER TO ALL REINFORCEMENT TO BE 40mm UNLESS AS SPECIFIED BELOW FOR BUILDINGS:-
MEMBERS OF BUILDINGS:
- SLABS - 30mm
- BEAMS - 25mm
- COLUMNS - 40mm
- FOUNDATIONS AND FOOTINGS - 50mm
WALLS/COLUMNS SHOULD BE POURED, IF POSS IN A FULL HEIGHT POUR AS SOON AS POSSIBLE AFTER THE BASE HAS BEEN CONCRETED @ 7-3 DAYS
- REINFORCEMENT
REINFORCEMENT TO BE HIGH YIELD SQUARE TWISTED BARS TO B.S. 4461
BENDING DIMENSIONS TO B.S. 4466
THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING ALL THE SPACER BLOCKS, CHAIRS AND TYING WIRE
EXAMPLE: T12 @ 100 SIGNIFIES 12mm HIGH TENSILE 12mm DIA. BARS IDENTIFICATION MARK AT 100mm CENTRE TO CENTRE SPACING
- JOINTS
THE POSITION AND NUMBER OF INTERMEDIATE JOINTS TO BE AS DIRECTED BY THE ENGINEER AS SHOWN IN THE DRAWINGS
BEFORE PLACING FRESH CONCRETE THE OLD SURFACE SHALL BE ROUGHENED AND ALL LAITANCE AND LOOSE MATERIAL REMOVED
THE SURFACE SHALL BE THOROUGHLY WETTED EXCESS WATER SHOULD BE REMOVED SO THAT CONSTRUCTION JOINTS ARE IN A SATURATED BUT SURFACE DRY CONDITION
ALL WALL/COLUMN BASE CONNECTIONS SHOULD HAVE 100mm KICKER UNLESS OTHERWISE SPECIFIED
THE UPVC WATER STOP SHALL BE 300mm WIDE UNLESS OTHERWISE SPECIFIED
JOINT FILLER TO B.S. 5222 AND TO BE APPROVED BY THE ENGINEER
- ABBREVIATIONS
T - TOP
N.F. - NEAR FACE
E.F. - EACH FACE
B - BOTTOM
F.F. - FAR FACE
E.W. - EACH WAY

ISSUED FOR TENDERING

CLIENT:
THE CHIEF EXECUTIVE OFFICER
TANA WATER WORKS
DEVELOPMENT AGENCY
P.O BOX 1292 - 10100,
NYERI, KENYA

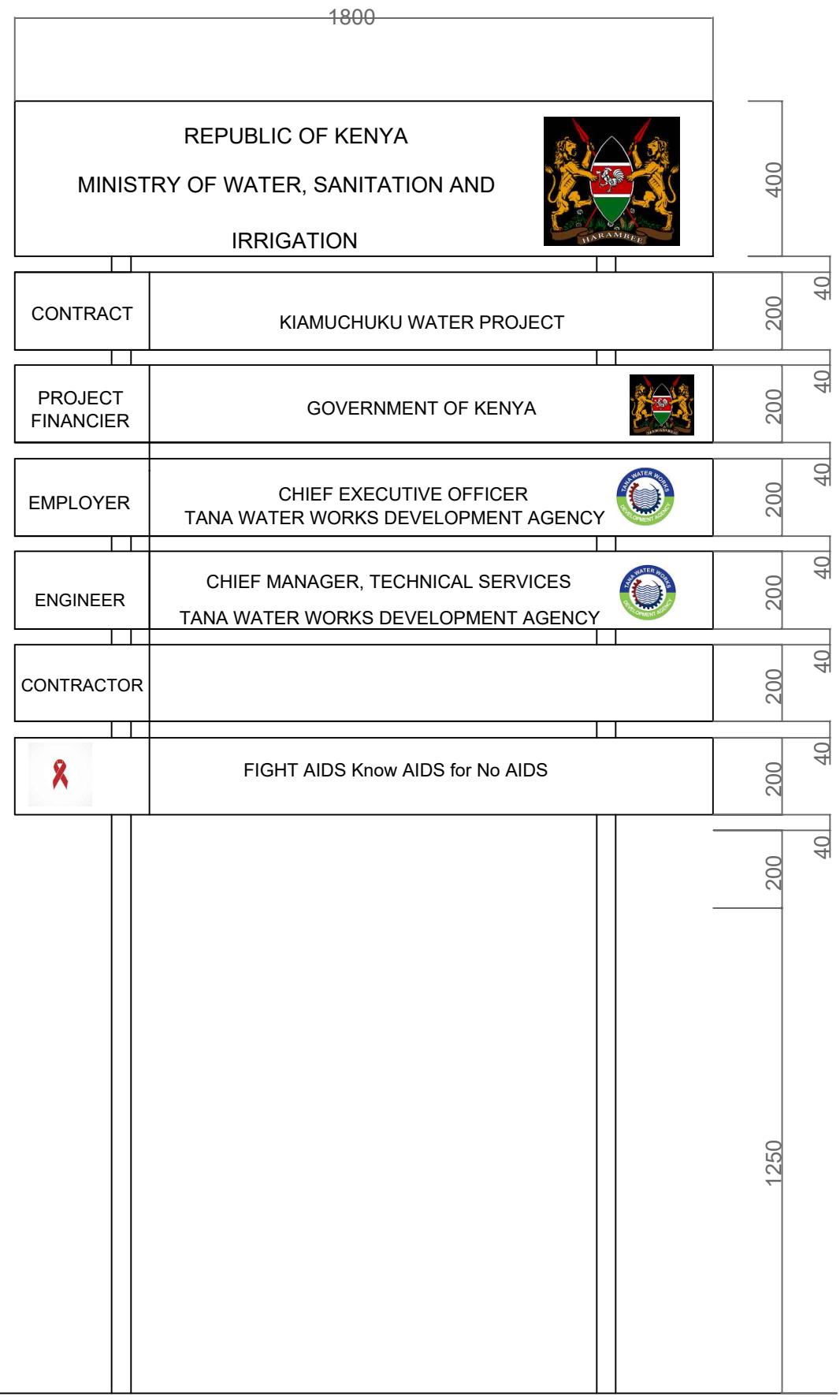
ENGINEER:
THE CHIEF EXECUTIVE OFFICER
TANA WATER WORKS
DEVELOPMENT AGENCY
P.O BOX 1292 - 10100,
NYERI, KENYA

PROJECT TITLE:
KIAMUCHUKU WATER PROJECT

CONSTRUCTION OF KIAMUCHUKU
WATER
PROJECT

DRAWING TITLE:
225M3 TANK
STRUCTURAL DETAILS

Designed by: M.M.M
Checked by: E.W.W
Drawn by: E.W.N
Approved by: D.M.N
Date: APRIL 2026
DRG No. TWWDA/KWP/T/02
REV




NOTES

1. ALL DIMENSIONS IN MILLIMETRES UNLESS OTHERWISE STATED
2. THE BOARD TO BE HIGH QUALITY BLOCKBOARD WITH HARDWOOD LIPPING ALL ROUND

NOTES

REVISIONS					
REV	DESCRIPTION	DESIGNATION	DATE	CHECKED BY	APPROVED BY


CLIENT:



TANA WATER WORKS DEVELOPMENT AGENCY
MAJI HOUSE, BADEN POWELL ROAD
P.O.Box 1292 - 10100
NYERI, KENYA

PROPOSED PROJECT:
KIAMUCHUKU WATER SUPPLY PROJECT

ENGINEER:

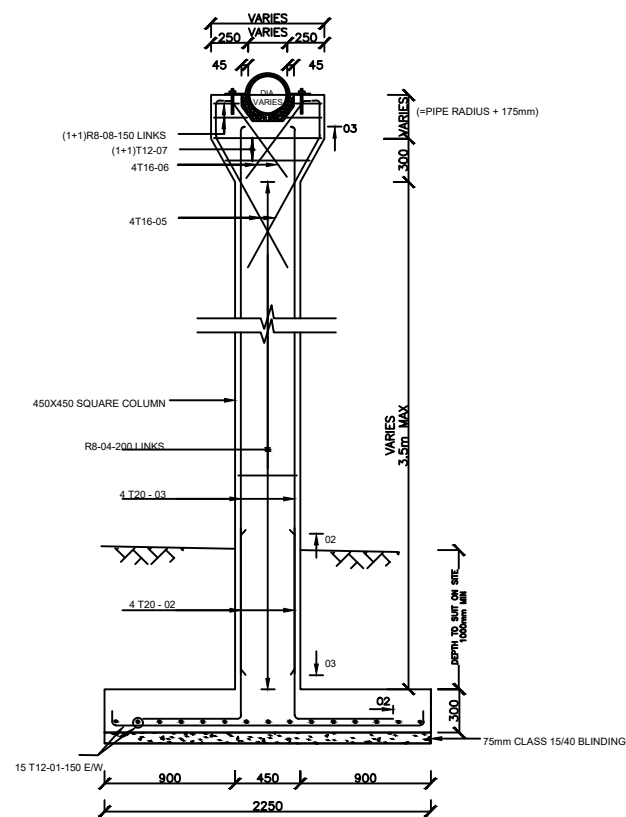


CHIEF MANAGER TECHNICAL SERVICES
TANA WATER WORKS DEVELOPMENT AGENCY
MAJI HOUSE, BADEN POWELL ROAD
P.O.Box 1292 - 10100
NYERI, KENYA

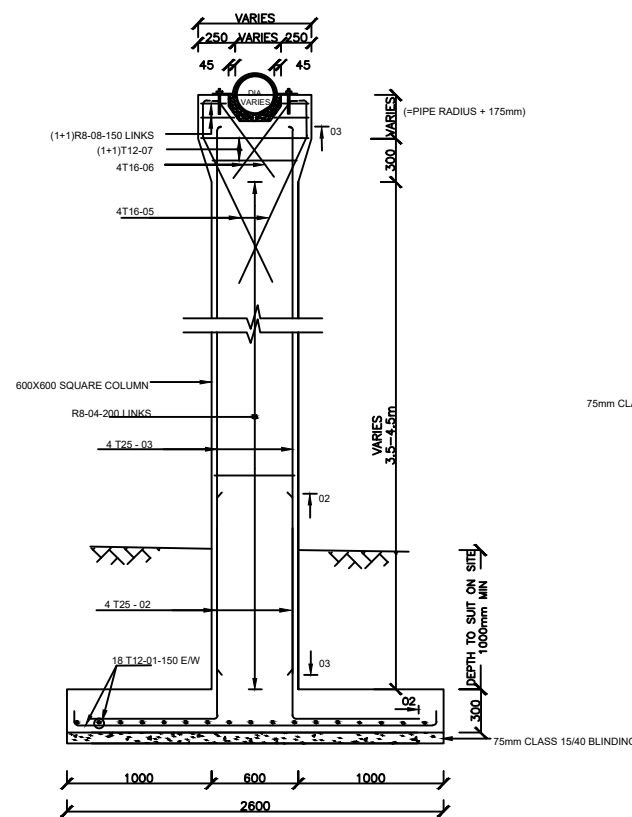
DRG No. **KWP/TWWD/STD/01**
SHEET No. **SHEET 1 OF 6**

DRAWING TITLE:
**STANDARD DRAWINGS:
PROJECT SIGN BOARD**

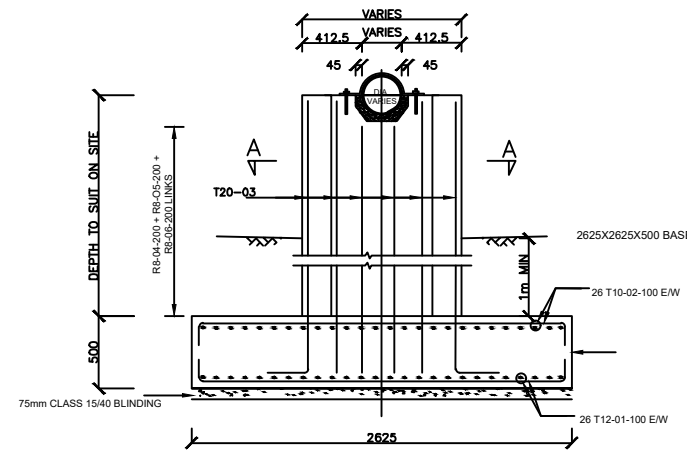
Designed by: M.M.M	Drawn by: E.W.N
Checked by: E.W.W	Approved by: D.M.N
Scale: 1 : 2000	Date: APRIL 2026



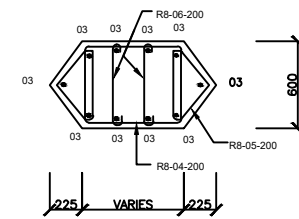
PIER TYPE 'A'
(HEIGHT UPTO 3.5m)
SCALE 1:40



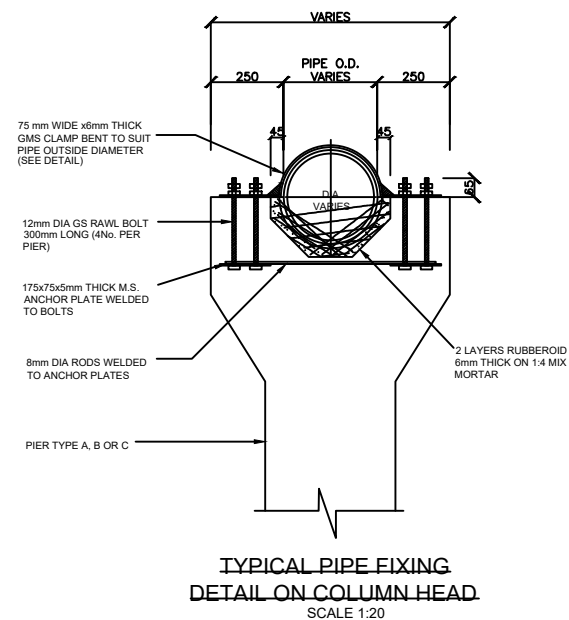
PIER TYPE 'B'
(HEIGHT 3.5-4.5m)
SCALE 1:40



PIER TYPE 'C' (4m HIGH MAX)
(TO BE USED AT RIVER CROSSINGS)
SCALE 1:40

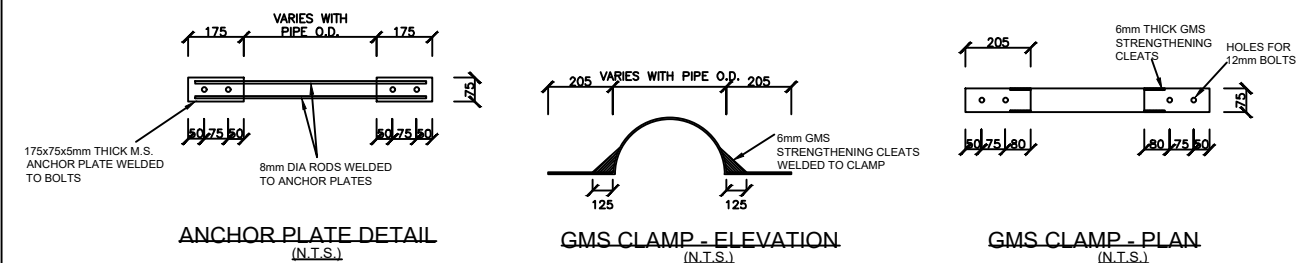


SECTION A-A
PIER TYPE 'C' (4m HIGH MAX)
(TO BE USED AT RIVER CROSSINGS)
SCALE 1:40



TYPICAL PIPE FIXING
DETAIL ON COLUMN HEAD
SCALE 1:20

ANCHOR PLATES & GMS CLAMP DETAILS



NOTES

- PROGRAMME, METHOD OF CONSTRUCTION AND SETTING OUT OF WORK TO BE APPROVED BY THE ENGINEER BEFORE COMMENCEMENT OF WORK
- DESIGN CRITERIA:
 - DESIGN CODES B.S. 8007 & B.S. 8110
 - UNIFORM NON-COMPRESSIBLE FOUNDATION WITH BEARING CAPACITY 80kN/m²
- CONCRETE:
 - CEMENT TO BE ORDINARY PORTLAND CEMENT TO B.S. 12
 - CONCRETE AGGREGATE TO COMPLY WITH B.S. 882
 - WATER IN CONCRETE MIXES TO B.S. 3148
 - CONCRETE CLASSES TO BE AS FOLLOWS:-
MASS CONCRETE FILL AND BLINDING MIX, CLASS 15/40
REINFORCED CONCRETE, CLASS 25/20
 - MINIMUM COVER TO ALL REINFORCEMENT TO BE 40mm UNLESS AS SPECIFIED BELOW FOR BUILDINGS: MEMBERS OF BUILDINGS:
- SLABS - 20 mm
- BEAMS - 25 mm
- COLUMNS - 40 mm
FOUNDATIONS & FOOTINGS - 50 mm
 - WALLS/COLUMNS SHOULD BE POURED, IF POSSIBLE, IN A FULL HEIGHT POUR AS SOON AS POSSIBLE AFTER THE BASE HAS BEEN CONCRETED (2 TO 3 DAYS)
- REINFORCEMENT:
 - REINFORCEMENT TO BE HIGH YIELD SQUARE TWISTED BARS TO B.S. 4461
 - BENDING DIMENSIONS TO B.S. 4466
 - THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING ALL SPACER BLOCKS, CHAIRS AND TYING WIRE
 - EXAMPLE: 16 T12 - 07 - 150 SIGNIFIES 16 No. HIGH TENSILE 12mm DIA. BARS IDENTIFICATION MARK 07 AT 150mm CENTRE TO CENTRE SPACING
- JOINTS:
 - THE POSITION AND NUMBER OF INTERMEDIATE JOINTS TO BE AS DIRECTED BY THE ENGINEER OR AS SHOWN IN THE DRAWINGS. BEFORE PLACING FRESH CONCRETE THE OLD SURFACE SHALL BE ROUGHENED AND ALL LAITANCE AND LOOSE MATERIAL REMOVED. THE SURFACE SHALL BE THOROUGHLY WETTED BUT EXCESS WATER SHOULD BE REMOVED SO THAT THE CONSTRUCTION JOINTS ARE IN A SATURATED BUT SURFACE DRY CONDITION
 - ALL WALL/COLUMN BASE CONNECTIONS SHOULD HAVE 100mm KICKER UNLESS OTHERWISE SPECIFIED
 - THE uPVC WATER STOP SHALL BE 200mm WIDE UNLESS OTHERWISE SPECIFIED
 - JOINT FILLER TO B.S. 5292 AND TO BE APPROVED BY THE ENGINEER

REVISIONS

REV	DESCRIPTION	DESIGNATION	DATE	CHECKED BY	APPROVED BY

CLIENT:



TANA WATER WORKS DEVELOPMENT AGENCY
MAJI HOUSE, BADEN POWELL ROAD
P.O.Box 1292 - 10100
NYERI, KENYA

PROPOSED PROJECT:

KIAMUCHUKU WATER PROJECT

ENGINEERS:



CHIEF MANAGER TECHNICAL SERVICES
TANA WATER WORKS DEVELOPMENT AGENCY
MAJI HOUSE, BADEN POWELL ROAD
P.O.Box 1292 - 10100
NYERI, KENYA

DRG No. **KWP/TWWD/STD/03**

SHEET No. **SHEET 3 OF 6**

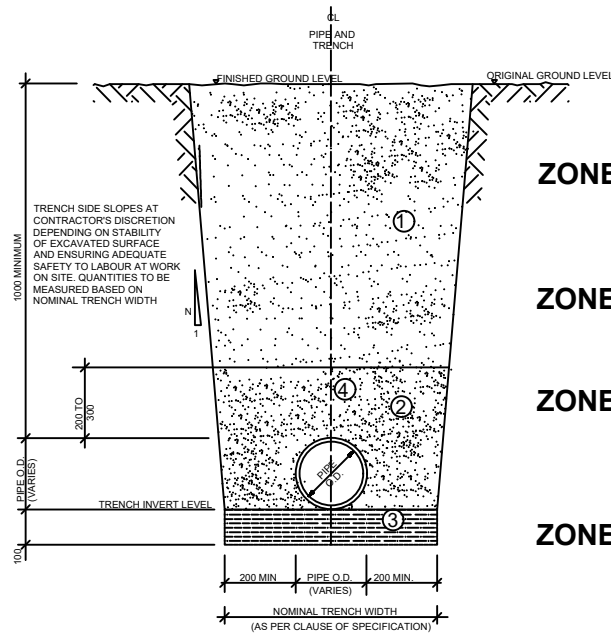
DRAWING TITLE:

STANDARD DRAWINGS: DETAILS OF PIERS FOR PIPE AERIAL CROSSINGS

Designed by: M.M.M Drawn by: E.W.N

Checked by: E.W.W Approved by: D.M.N

Scale: 1 : 2000 Date: APRIL 2026



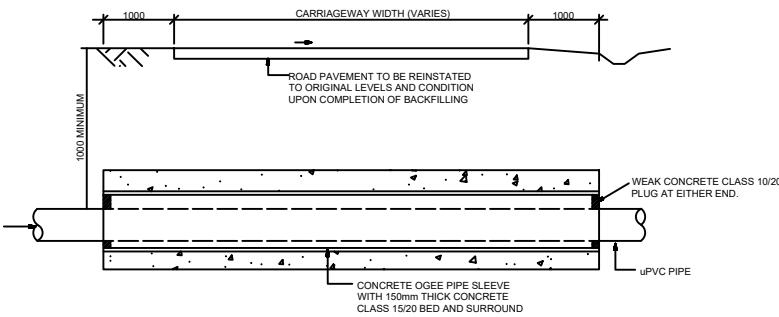
- ZONE 1
- ZONE 2
- ZONE 3
- ZONE 4

NOTES

SOIL TO BE USED MAY INCLUDE FREE-DRAINING COARSE SAND, GRAVEL, LOAM AND SOIL OF A FRIABLE NATURE. PARTICAL 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.
 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
 IF ROCK SHARP 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 THE ENGINEER UPTO TRENCH INVERT LEVEL.
 THOROUGHLY COMPACT SOIL BY HAND TO GIVE A UNIFORM GRADIENT ALONG PIPE TRENCH, LEAVING RECESSES FOR PIPE JOINTS.
 SIMILAR REQUIREMENTS TO ZONE 2 EXCEPT NO EXCESS TAMPING IS PERMITTED OVER PIPE.

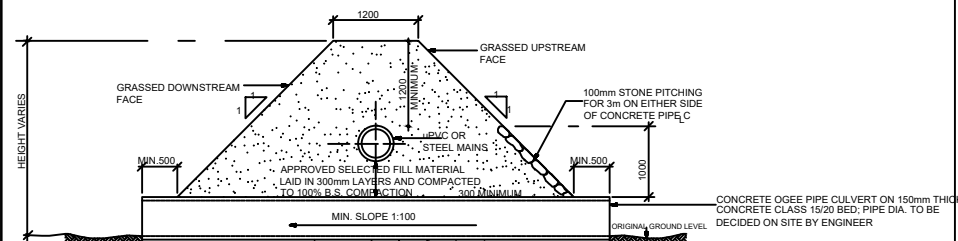
TYPICAL TRENCH DETAIL FOR RETICULATION PIPES (uPVC OR C/L FERROUS PIPES)

SCALE 1:100



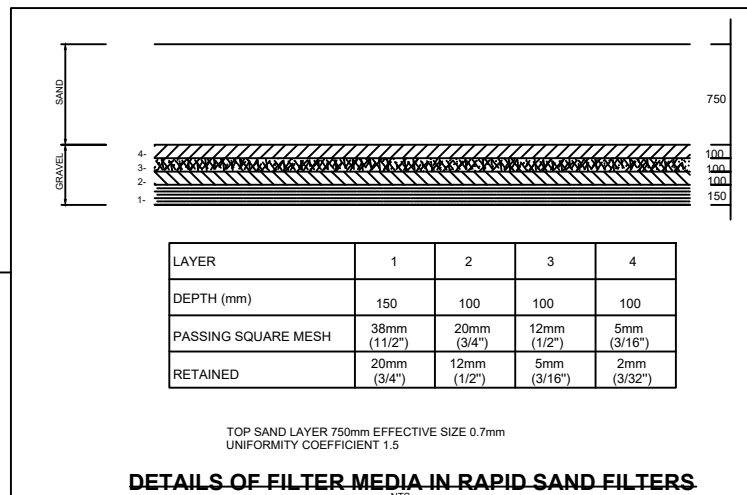
TYPICAL ROAD PIPE CROSSING DETAIL FOR uPVC PIPES

SCALE A1: 1: 100

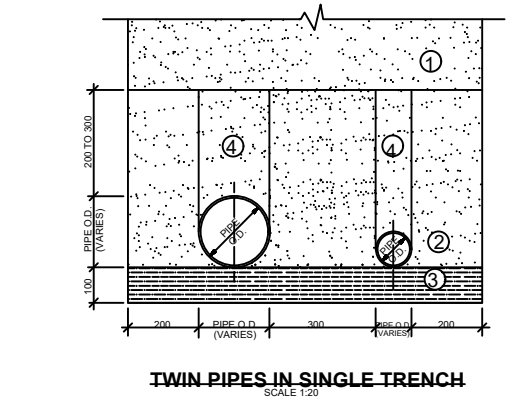


TYPICAL DETAIL OF PIPE CROSSING SEASONAL STREAM / DRAINAGE DITCH

SCALE 1 : 100

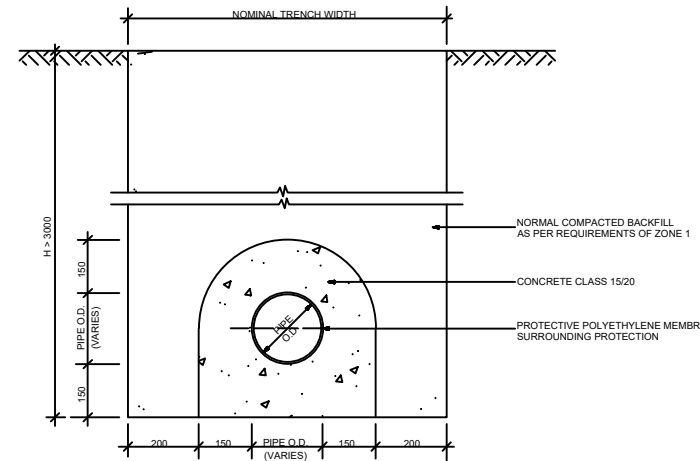


DETAILS OF FILTER MEDIA IN RAPID SAND FILTERS



TWIN PIPES IN SINGLE TRENCH

SCALE 1:20



CONCRETE PROTECTION TO uPVC PIPES LAID AT DEPTHS GREATER THAN 3.0m

SCALE 1: 20

PIPE DIAMETER SCHEDULES

NOMINAL OUTSIDE DIAMETER (mm)	CORRESPONDING OUTSIDE DIAMETER AS PER KS. 06-149 PART 2, 2000 (mm)		WALL THICKNESS (mm)							
			PN = 8 BAR		PN = 10 BAR		PN = 12.5 BAR		PN = 16 BAR	
			CLASS 'B'	CLASS 'C'	CLASS 'D'	CLASS 'E'	MIN.	MAX.	MIN.	MAX.
63	63	63.3	1.70	2.1	2.70	3.2	3.40	3.9	4.30	4.9
75	75	75.3	2.00	2.4	3.30	3.8	4.00	4.6	5.10	5.8
90	90	90.3	2.40	2.8	3.90	4.5	4.80	5.5	6.10	6.9
110	110	110.4	2.90	3.4	4.80	5.5	5.90	6.7	7.50	8.5
125	125	125.4	3.30	3.8	5.40	6.1	6.70	7.6	8.50	9.6
140	140	140.4	3.70	4.3	6.00	6.8	7.50	8.5	9.50	10.7
160	160	160.5	4.20	4.8	7.00	7.9	8.60	9.7	10.80	12.1
200	200	200.6	4.80	5.5	7.80	8.8	9.70	10.9	12.20	13.6
225	225	225.7	5.40	6.1	8.80	9.9	10.90	12.2	13.70	15.3
250	250	250.8	6.00	6.8	9.80	11.0	12.10	13.5	15.30	17.0
280	280	280.9	6.70	7.6	10.90	12.2	13.50	15.1	17.10	19.0
315	315	316.0	7.50	8.5	12.30	13.7	15.20	16.9	19.20	21.3

NOMINAL INTERNAL DIAMETER (mm)	CORRESPONDING OUTSIDE PIPE DIAMETER AS PER B.S. 534:1981 (mm)
65	76.1
80	88.9
100	114.3
125	139.7
150	168.3
175	193.7
200	219.1
225	244.5
250	273.0
300	323.9
350	355.6
400	406.4
450	457.0
500	508.0
550	559.0
600	610.0

NOMINAL INTERNAL DIAMETER (mm)	CORRESPONDING OUTSIDE DIAMETER AS PER B.S. 4772:1980 (mm)
65 *	82 *
80	98
100	118
125 *	144 *
150	170
200	222
250	274
300	326
350	378
400	429
450	480
500	532
600	635

* NOT IN B.S. 4772: DATA FROM HALBERGER HUTTE TABLES

NOTE

ALL DIMENSIONS SHOWN ABOVE ARE BASED ON THE CURRENT RELEVANT KENYAN OR BRITISH STANDARDS AND ARE FOR THE TENDERER'S INFORMATION. TENDERERS ARE FREE TO QUOTE FOR PIPES TO ANY OTHER APPROVED EQUIVALENT SRN NUMBER. THE TENDERER'S ATTENTION IS ALSO DRAWN TO CLAUSE 36 OF PREAMBLE TO THE BILL OF QUANTITIES, REGARDING ALTERNATIVE PIPE AND JOINTING TYPES.

NOTES:
 ALL DIMENSIONS ARE IN mm UNLESS OTHERWISE STATED
ABBREVIATIONS
 O.D. - Outside Diameter
 uPVC - Unplasticised Polyvinyl Chloride
 C or C/L - Centre line
 mm - Millimeter
 m - Meter
 > - Greater Than
 KS - Kenya Standard
 B.S. - British Standard
 SRN - Standard Reference Number
 MIN - Minimum

REVISIONS					
REV	DESCRIPTION	DESIGNATION	DATE	CHECKED BY	APPROVED BY

CLIENT:

TANA WATER WORKS DEVELOPMENT AGENCY
 MAJI HOUSE, BADEN POWELL ROAD
 P.O.Box 1292 - 10100
 NYERI, KENYA

PROPOSED PROJECT:
KIAMUCHUKU WATER PROJECT

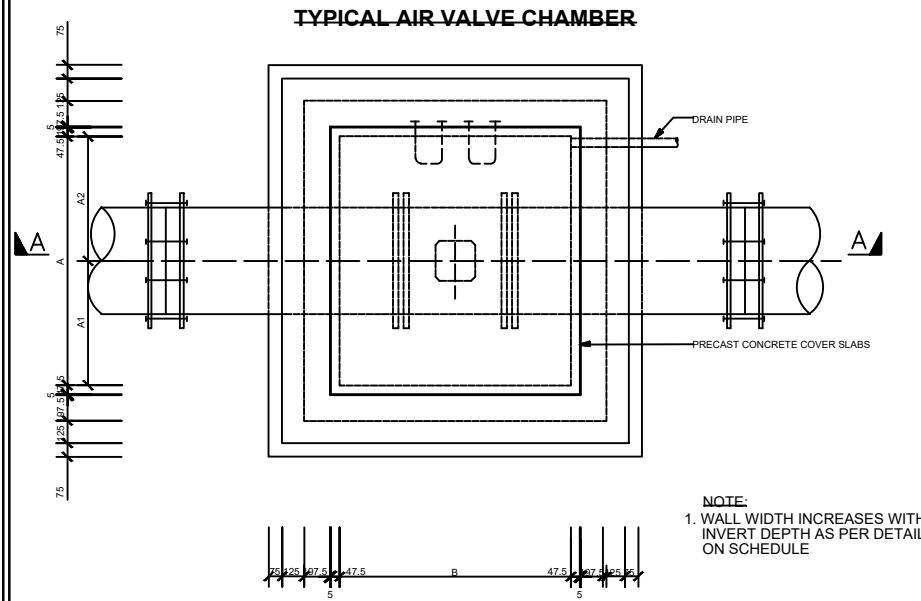
ENGINEER:

CHIEF MANAGER TECHNICAL SERVICES
TANA WATER WORKS DEVELOPMENT AGENCY
 MAJI HOUSE, BADEN POWELL ROAD
 P.O.Box 1292 - 10100
 NYERI, KENYA

DRG No. **KWP/TWWD/STD/02**
 SHEET No. **SHEET 2 OF 6**

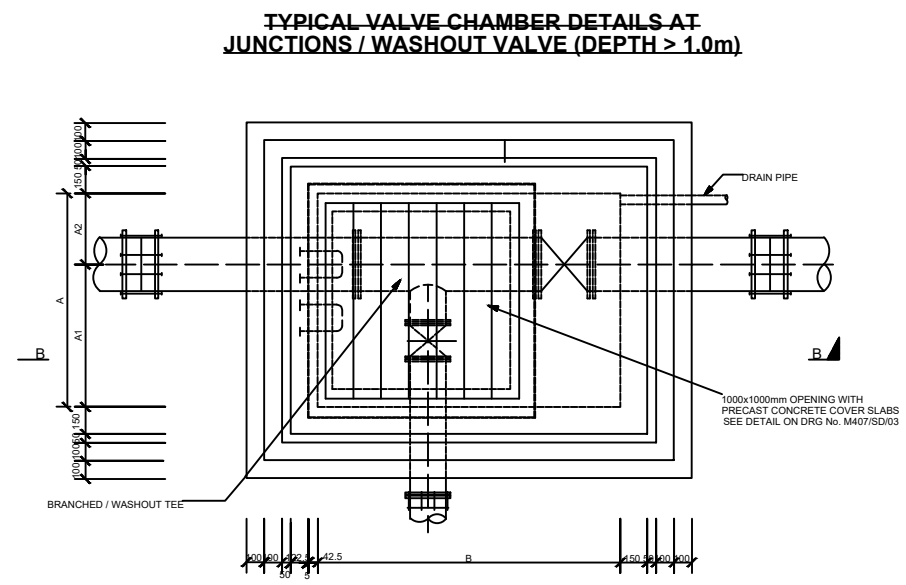
DRAWING TITLE:
STANDARD DRAWINGS: DETAILS OF TRENCH AND PIPE CROSSINGS FOR WATER PIPES

Designed by: M.M.M	Drawn by: E.W.N
Checked by: E.W.W	Approved by: D.M.N
Scale: 1 : 2000	Date: APRIL 2026



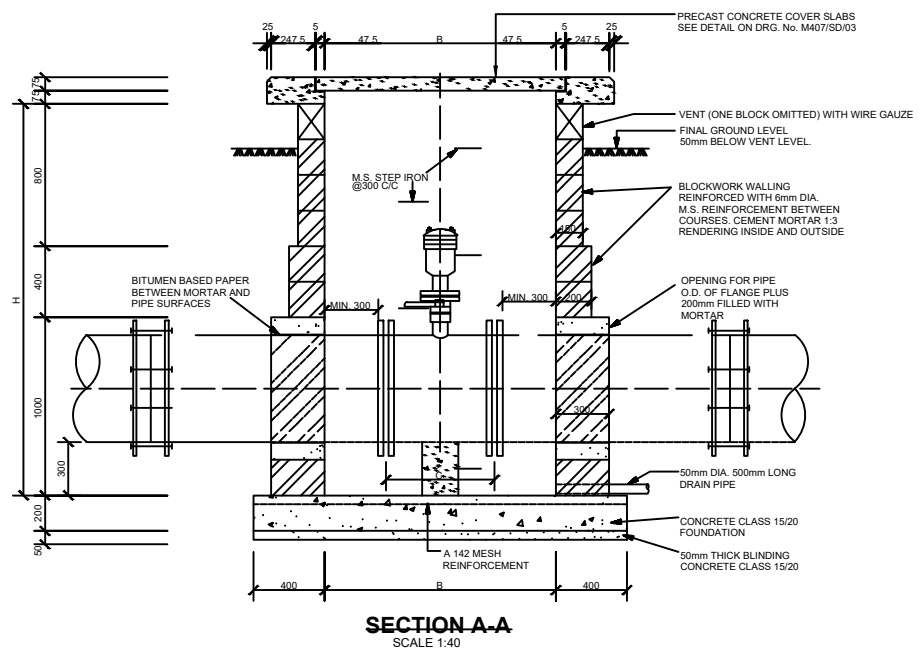
PLAN OF CHAMBER
SCALE 1:40

NOTE:
1. WALL WIDTH INCREASES WITH INVERT DEPTH AS PER DETAIL ON SCHEDULE

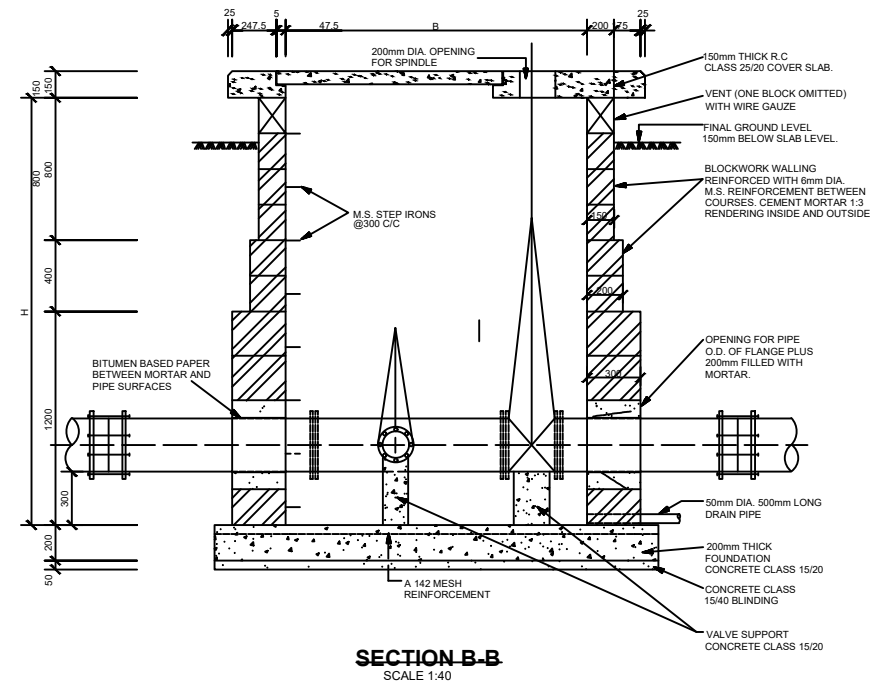


PLAN OF CHAMBER
SCALE 1:40

NOTE:
1. WALL WIDTH INCREASES WITH INVERT DEPTH AS PER DETAIL ON SCHEDULE



SECTION A-A
SCALE 1:40



SECTION B-B
SCALE 1:40

CONSTRUCTION DETAILS FOR VALVE CHAMBERS

MAINS DIAMETER (mm)	PLAN SIZE OF CHAMBER (INTERNAL DIMENSIONS) A(mm) x B(mm)
100	1200 x 1200
150	1200 x 1200
200	1400 x 1200
250	1500 x 1200
300	1500 x 1200
350	1800 x 1200
400	1800 x 1200
450	1800 x 1400
500	1800 x 1400

CHAMBER SIZE SCHEDULE FOR VARIOUS PIPE SIZES

INVERT DEPTHS (mm)	HEIGHT OF WALL (mm)	WALL WIDTH (mm)
0 - 800	800	150 - MASONRY WALL
800 - 1200	400	200 - MASONRY WALL
1200 - 2400	1200	300 - MASONRY WALL
2400 - 3000	600	350 - MASONRY WALL
DEPTH MORE THAN 3000		300mm REINFORCED CONCRETE (CLASS 25/20) WALL

CHAMBER DEPTHS & WALL THICKNESS SCHEDULE

SECTION C-C
SCALE 1:20

NOTES :


- ALL DIMENSIONS ARE IN mm UNLESS OTHERWISE STATED

ABBREVIATIONS

M.S. = MILD STEEL
mm = MILIMETER
Dia. = DIAMETER
NTS = NOT TO SCALE
Nr. = NUMBER

REVISIONS					
REV	DESCRIPTION	DESIGNATION	DATE	CHECKED BY	APPROVED BY

CLIENT:



TANA WATER WORKS DEVELOPMENT AGENCY
MAJI HOUSE, BADEN POWELL ROAD
P.O.Box 1292 - 10100
NYERI, KENYA

PROPOSED PROJECT:

KIAMUCHUKU WATER PROJECT

ENGINEERS:

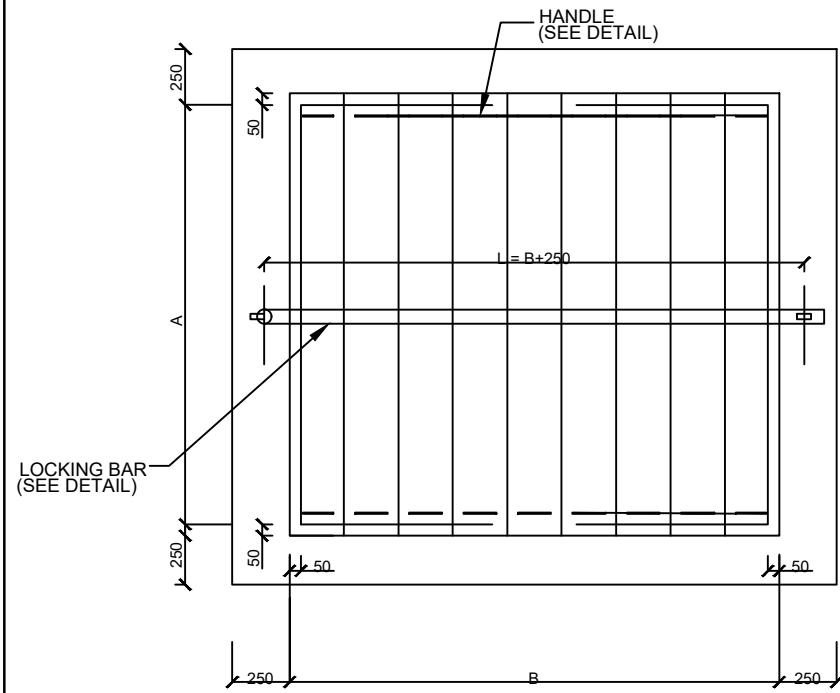


CHIEF MANAGER TECHNICAL SERVICES
TANA WATER WORKS DEVELOPMENT AGENCY
MAJI HOUSE, BADEN POWELL ROAD
P.O.Box 1292 - 10100
NYERI, KENYA

DRG No. **KWP/TWWDA/STD/04**
SHEET No. **SHEET 4 OF 6**

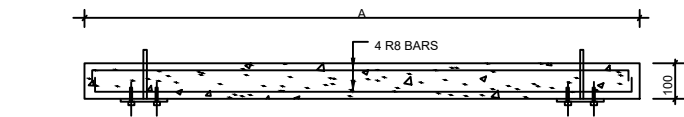
DRAWING TITLE:
STANDARD DRAWINGS: DETAILS OF VALVE CHAMBERS

Designed by: M.M.M	Drawn by: E.W.N
Checked by: E.W.W	Approved by: D.M.N
Scale: 1 : 2000	Date: APRIL 2026

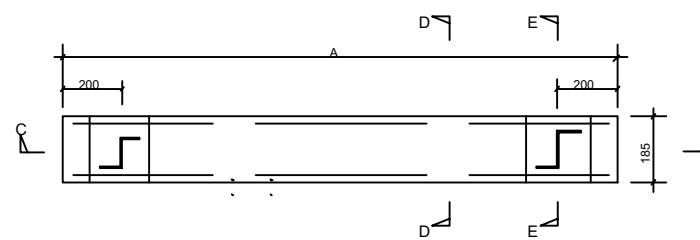


COVER FOR AIR VALVE CHAMBERS

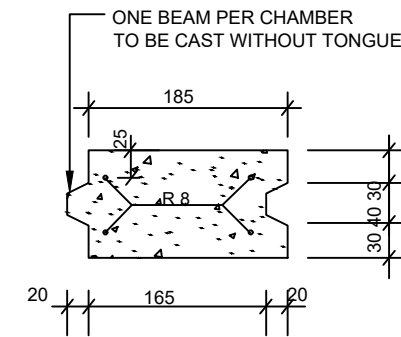
SCALE A1 - 1:10
A3 - 1:20



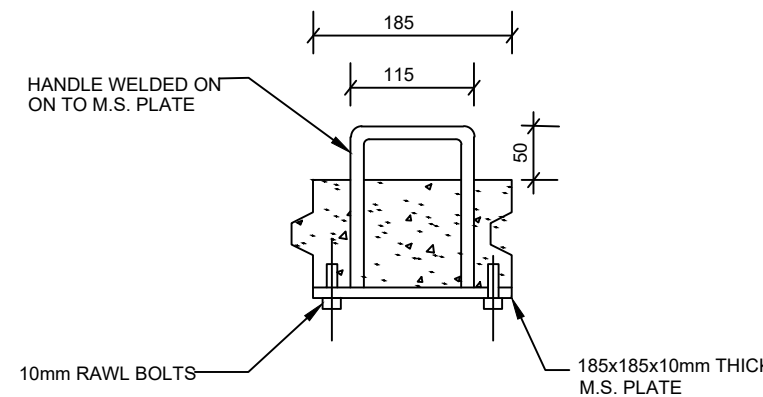
SECTION C-C
SCALE A1 - 1:10
A3 - 1:20



PLAN

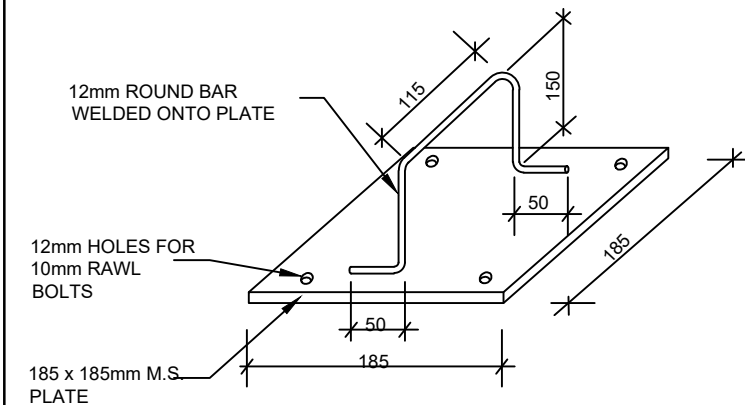


SECTION D-D
NTS

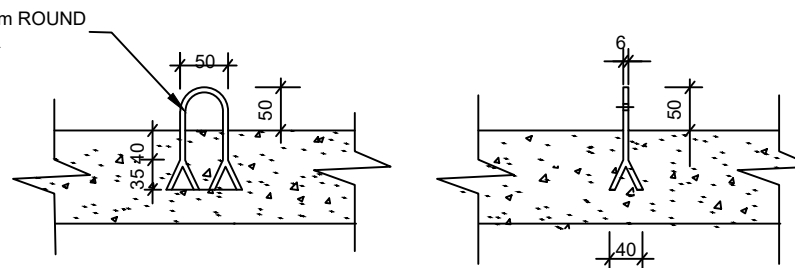
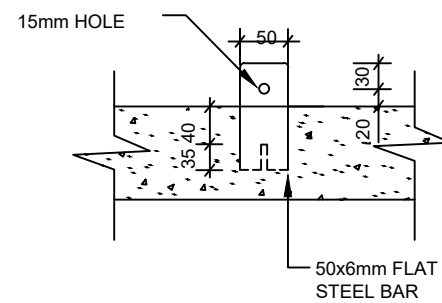


SECTION E-E
NTS

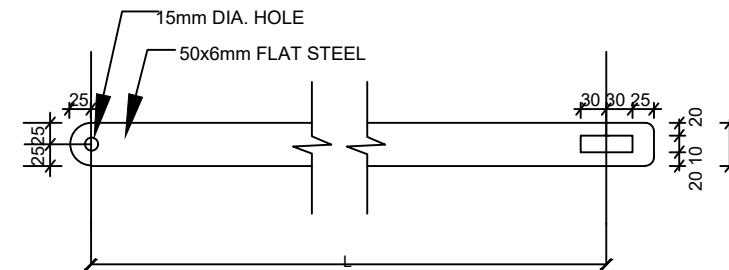
DETAIL OF PRECAST CONCRETE COVER SLAB



DETAIL OF HANDLE
NTS



SECTIONS



DETAILS OF LOCKING BAR
NTS

COVER SIZE SCHEDULE

CHAMBER INTERNAL DIMENSIONS (mm)	SIZE OF COVER A (mm) x B (mm)
1200 X 1200	1300 X 1300
1200 X 1200	1300 X 1300
1400 X 1200	1500 X 1500
1500 X 1200	1600 X 1300
1500 X 1200	1600 X 1300
1800 X 1200	1900 X 1300
1800 X 1200	1900 X 1300
1400 X 1400	1500 X 1500
1400 X 1200	1500 X 1300

NOTES :

1. ALL DIMENSIONS ARE IN mm UNLESS OTHERWISE STATED

ABBREVIATIONS

M.S. = MILD STEEL

mm = MILIMETER

Dia. = DIAMETER

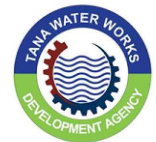
NTS = NOT TO SCALE

Nr. = NUMBER

REVISIONS

REV	DESCRIPTION	DESIGNATION	DATE	CHECKED BY	APPROVED BY

CLIENT:



TANA WATER WORKS DEVELOPMENT AGENCY
MAJI HOUSE, BADEN POWELL ROAD
P.O.Box 1292 - 10100
NYERI, KENYA

PROPOSED PROJECT:

KIAMUCHUKU WATER PROJECT

ENGINEER:



CHIEF MANAGER TECHNICAL SERVICES
TANA WATER WORKS DEVELOPMENT AGENCY
MAJI HOUSE, BADEN POWELL ROAD
P.O.Box 1292 - 10100
NYERI, KENYA

DRG No. KWP/TWWD/STD/05

SHEET No. SHEET 5 OF 6

DRAWING TITLE:

STANDARD DRAWINGS: DETAILS OF PRECAST
CONCRETE COVERS FOR VALVE CHAMBERS

Designed by: A.K.W

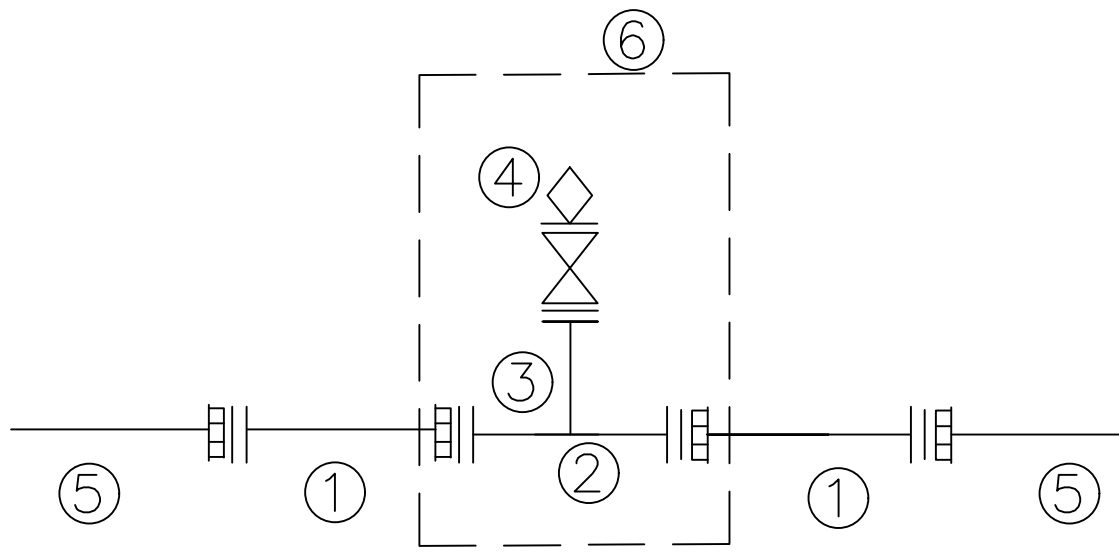
Drawn by: A.K.W

Checked by: E.W.W

Approved by: D.M.N

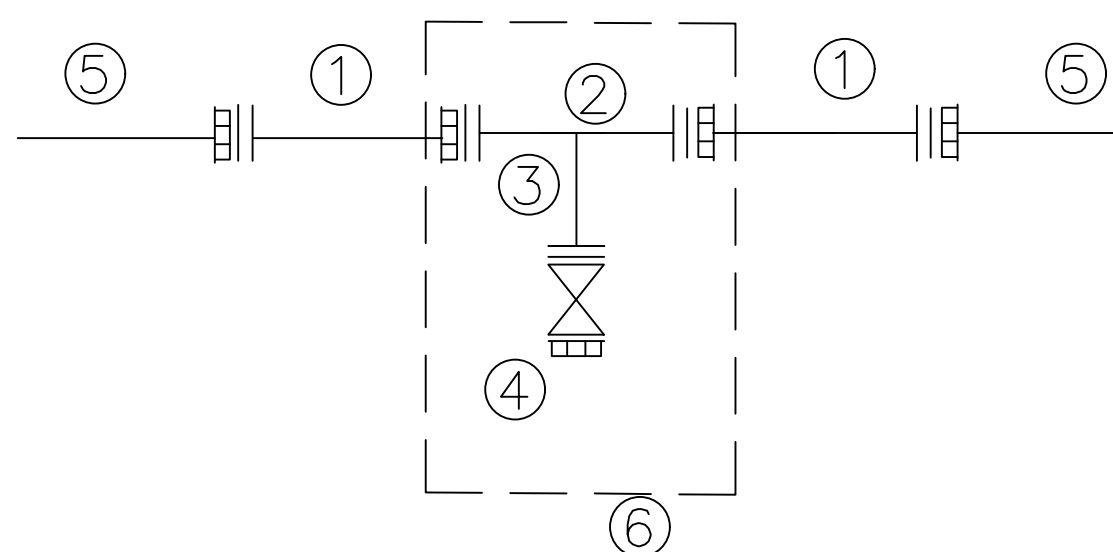
Scale: 1 : 2000

Date: MARCH 2026



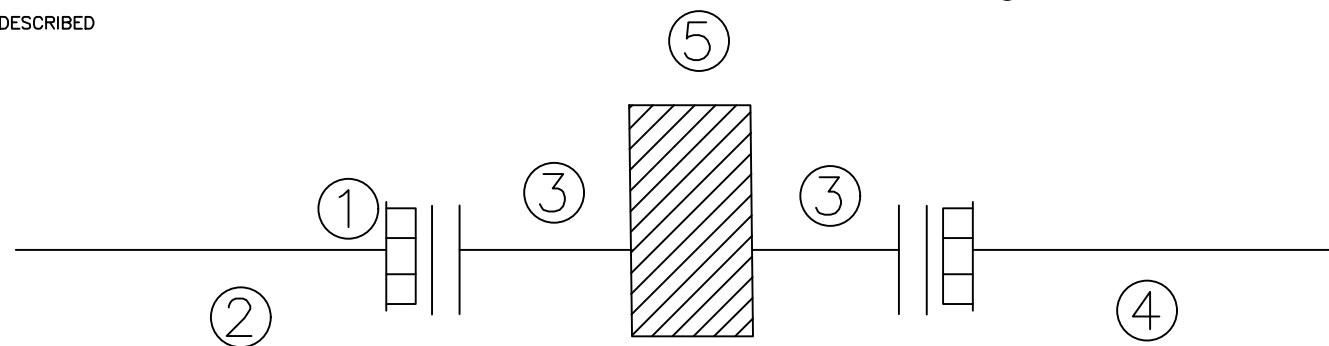
DESCRIPTION

- ① DOUBLE FLANGED STEEL PIPE
- ② ALL FLANGED G.I TEE
- ③ STUB END WITH STEEL FLANGE
- ④ ALL FLANGED AIR VALVE
- ⑤ UPVC / HDPE PIPE AS DESCRIBED
- ⑥ VALVE CHAMBERS AS DESCRIBED



DESCRIPTION

- ① DOUBLE FLANGED STEEL PIPE
- ② ALL FLANGED G.I TEE
- ③ STUB END WITH STEEL FLANGE
- ④ ALL FLANGED SLUIICE VALVE
- ⑤ UPVC / HDPE PIPE AS DESCRIBED
- ⑥ VALVE CHAMBERS AS DESCRIBED




DESCRIPTION

- ① VJ FLANGED ADAPTOR
- ② UPVC PIPE
- ③ G.I STUB END WITH STEEL FLANGE
- ④ HDPE PIPE
- ⑤ ANCHOR BLOCK AS DESCRIBED

REVISIONS					
REV	DESCRIPTION	DESIGNATION	DATE	CHECKED BY	APPROVED BY

CLIENT:



TANA WATER WORKS DEVELOPMENT AGENCY
MAJI HOUSE, BADEN POWELL ROAD
P.O.Box 1292 - 10100
NYERI, KENYA

PROPOSED PROJECT:
KIAMUCHUKU WATER PROJECT

ENGINEER:



CHIEF MANAGER TECHNICAL SERVICES
TANA WATER WORKS DEVELOPMENT AGENCY
MAJI HOUSE, BADEN POWELL ROAD
P.O.Box 1292 - 10100
NYERI, KENYA

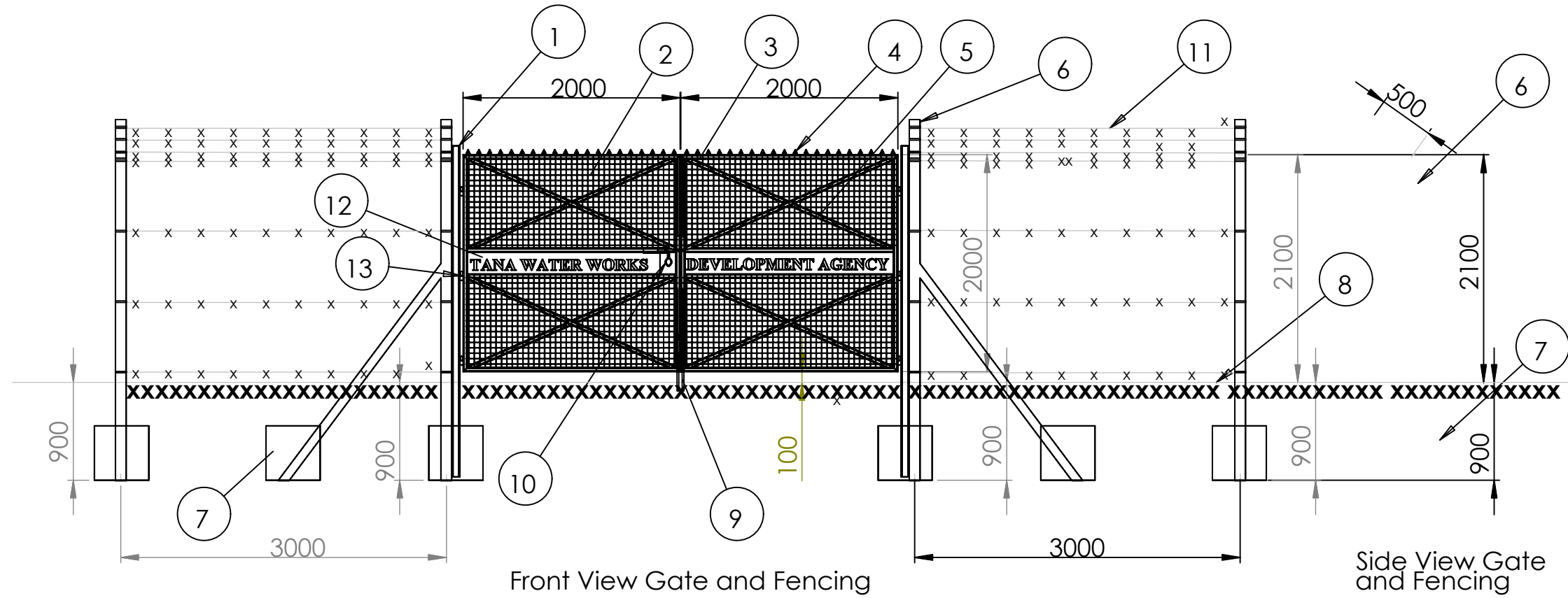
DRG No. **KWP/TWWD/STD/06**
 SHEET No. **SHEET 6 OF 6**

DRAWING TITLE:
STANDARD DRAWINGS: VALVE ARRANGEMENT

Designed by: M.M.M	Drawn by: E.W.N
Checked by: E.W.W	Approved by: D.M.N
Scale: 1 : 2000	Date: APRIL 2026

NOTES

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE STATED
2. CONCRETE POST LENGTH - 3000MM
CONCRETE CRANK - 500MM
3. 4 No. LINES THROUGH CONCRETE POST AND 4 No. LINES THROUGH CRANK
4. CONCRETE POST AT 3000MM CENTRES MORTISED AT 900MM BELOW GROUND INCLUDING CONCRETE STRAININGPOST AT CORNERS AND AT 30,000MM INTERVALS
5. CHAIN LINK HEIGHT > 2100 MM
CHAIN LINK SIZE - 12.5 GAUGE




Front View Gate and Fencing

Side View Gate and Fencing

Item no.	Description
1	75x75x5mm x 3000mm long SHS Column capped with a 3mm plate
2	50 sq. Weld Mesh, 8 Gauge
3	40x40x3mm SHS Frame
4	Security Gate Spikes
5	40x40x3mm SHS Brasings
6	100x100mm concrete posts C15 1:3:6
7	Foundation Concrete C15 1:3:6
8	Ground Level
9	DN10 dropbolt
10	DN10 Padlockable dead bolt
11	Galvanised double strand reverse twisted barb wire - 12.5 Gauge
12	3mm mild steel plate painted the TWWDA Logo
13	Heavy Duty Hinges 6No.

REVISIONS					
REV	DESCRIPTION	DESIGNATION	DATE	CHECKED BY	APPROVED BY

CLIENT:



TANA WATER WORKS DEVELOPMENT AGENCY
MAJI HOUSE, BADEN POWELL ROAD
P.O.Box 1292 - 10100
NYERI, KENYA

PROPOSED PROJECT:
KIAMUCHUKU WATER SUPPLY PROJECT

ENGINEERS:



CHIEF MANAGER TECHNICAL SERVICES
TANA WATER WORKS DEVELOPMENT AGENCY
MAJI HOUSE, BADEN POWELL ROAD
P.O.Box 1292 - 10100
NYERI, KENYA

DRG No. **TWWDA/KWP/STDF/01**
SHEET No. **SHEET 1 OF 1**

DRAWING TITLE:
DETAILS OF FENCING POSTS

Designed by: A.K.W	Drawn by: A.K.W
Checked by: E.W.W	Approved by: D.M.N
Scale: 1 : 2000	Date: MARCH 2026