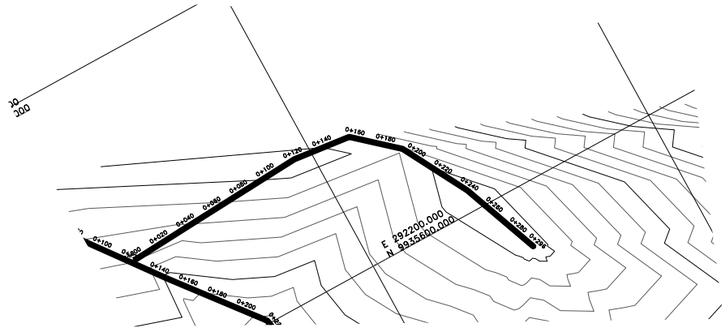
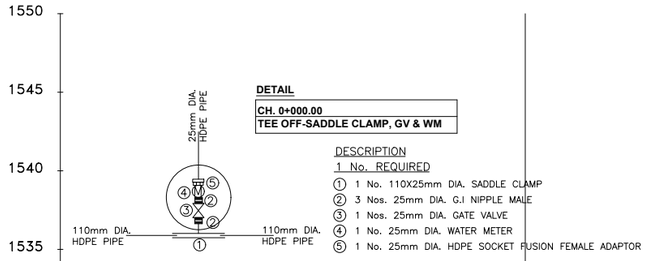


PLAN SECTION



DISTANCE IN KILOMETERS	0+000.00	0+020.00	0+040.00	0+060.00	0+080.00	0+100.00	0+120.00	0+140.00	0+160.00	0+180.00	0+200.00	0+220.00	0+240.00	0+260.00	0+280.00	0+296.05
EXISTING GROUND LEVEL (m)	1514.15	1514.97	1515.83	1517.35	1518.88	1520.40	1521.84	1519.93	1518.29	1518.30	1518.92	1520.47	1522.02	1521.79	1521.46	1521.20
INVERT LEVELS (m)		1513.97	1514.82	1516.34	1517.86	1519.38	1520.90	1518.96	1517.31	1517.26	1517.87	1519.45	1521.04	1520.78	1520.46	
DEPTH OF INVERT (m)		1.00	1.01	1.01	1.02	1.02	0.94	0.97	0.98	1.04	1.05	1.02	0.98	1.01	1.00	
HGL (m) DATUM (m)	1530.00	1529.88	1529.76	1529.64	1529.52	1529.40	1529.28	1529.16	1529.04	1528.92	1528.80	1528.68	1528.56	1528.44	1528.32	1528.23
TYPE OF PIPE AND SIZE	OD 25 MM HDPE PIPE (PN10)															
GEOLOGICAL CONDITION	SANDY CLAY SOIL															
SLOPE OF HGL (H/V)	-1:167.09															

LONGITUDINAL SECTION

0 100 200m

NOTES:

1. CONTOUR LEVELS ARE IN METERS AT TWO METER INTERVALS
2. GRID VALUES ARE IN METERS AT 200 METER INTERVALS
3. GEOLOGICAL CONDITIONS INDICATED ON DRAWING ARE FOR GENERAL GUIDANCE ONLY
4. FOR FITTING DETAILS SEE DRG. NO. MWSP/TWKU/07

LEGEND:

- PROPOSED TREATED WATER GRAVITY MAIN
- DOUBLE ORIFICE AIRVALVE
- WASHOUT
- PRV — PRESSURE REDUCING VALVE

CLIENT:

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

ENGINEER:

CHIEF MANAGER TECHNICAL SERVICES
TANA WATER WORKS DEVELOPMENT AGENCY
P.O BOX 1292 - 10100,
NYERI, KENYA

PROJECT TITLE:

EXTENSION OF WATER SUPPLY PIPELINES IN MUKURWEINI

DRAWING TITLE:

LATERAL A-MUTUNDU

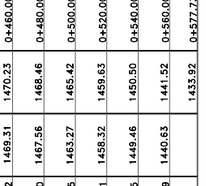
CH. 0+000.00 - 0+296.05
SHEET 1 OF 1

Designed by:	A.M.M	Drawn by:	A.M.M
Checked by:	K.N.G	Approved by:	D.N.M
Scale:	1:1000	Date:	JAN 2024

DRG No. EXT-MUK/LAT-A/01

DISTANCE IN KILOMETERS	0+000.00	0+020.00	0+040.00	0+060.00	0+080.00	0+100.00	0+120.00	0+140.00	0+160.00	0+180.00	0+200.00	0+220.00	0+240.00	0+260.00	0+280.00	0+300.00	0+320.00	0+340.00	0+360.00	0+380.00	0+400.00	0+420.00	0+440.00	0+460.00	0+480.00	0+500.00	0+520.00	0+540.00	0+560.00	0+577.73
EXISTING GROUND LEVEL (m)	1481.62	1485.01	1485.24	1481.50	1477.43	1475.08	1476.15	1477.21	1478.51	1479.83	1481.19	1481.85	1482.41	1482.88	1483.67	1482.69	1481.35	1480.02	1478.68	1477.32	1475.55	1473.78	1472.00	1470.23	1468.46	1465.42	1459.63	1450.50	1441.52	1435.92
INVERT LEVELS (m)		1484.01	1484.23	1480.43	1476.30	1474.11	1475.16	1476.20	1477.57	1478.93	1480.20	1480.74	1481.28	1481.82	1482.68	1481.52	1480.19	1478.87	1477.55	1476.22	1474.56	1472.81	1471.06	1469.31	1467.56	1463.27	1458.32	1449.46	1440.63	
DEPTH OF INVERT (m)		1.00	1.00	1.07	1.13	0.97	0.99	1.01	0.95	0.90	0.98	1.10	1.13	1.05	0.99	1.17	1.16	1.15	1.14	1.10	0.99	0.96	0.94	0.92	0.90	2.15	1.31	1.05	0.89	
HGL (m) DATUM (m)	1511.66	1511.61	1511.55	1511.49	1511.43	1511.38	1511.32	1511.28	1511.20	1511.15	1511.09	1511.03	1510.97	1510.92	1510.86	1510.80	1510.74	1510.68	1510.63	1510.57	1510.51	1510.45	1510.40	1510.34	1510.28	1510.22	1510.17	1510.11	1510.05	1510.00
TYPE OF PIPE AND SIZE	OD 32 MM HDPE PIPE (PN10)																													
GEOLOGICAL CONDITION	SANDY CLAY SOIL																													
SLOPE OF HGL (H/V)	– 1:347.22																													

LONGITUDINAL SECTION



DETAIL

CH. 0+000.00
TEE OFF-SADDLE CLAMP, GV & WM

DESCRIPTION
1 No. REQUIRED

1. 1 No. 110X32mm DIA. SADDLE CLAMP
2. 3 Nos. 32mm DIA. G.I NIPPLE MALE
3. 1 Nos. 32mm DIA. GATE VALVE
4. 1 No. 32mm DIA. WATER METER
5. 1 No. 32mm DIA. HDPE SOCKET FUSION FEMALE ADAPTOR

NOTES:

1. CONTOUR LEVELS ARE IN METERS AT TWO METER INTERVALS
2. GRID VALUES ARE IN METERS AT 200 METER INTERVALS
3. GEOLOGICAL CONDITIONS INDICATED ON DRAWING ARE FOR GENERAL GUIDANCE ONLY
4. FOR FITTING DETAILS SEE DRG. NO. MWSP/TWKU/07

LEGEND:

- PROPOSED TREATED WATER GRAVITY MAIN
- DOUBLE ORIFICE AIRVALVE
- WASHOUT
- PRV — PRESSURE REDUCING VALVE

0 100 200m

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

ENGINEER:
CHIEF MANAGER TECHNICAL SERVICES
TANA WATER WORKS DEVELOPMENT AGENCY
P.O BOX 1292 - 10100,
NYERI, KENYA

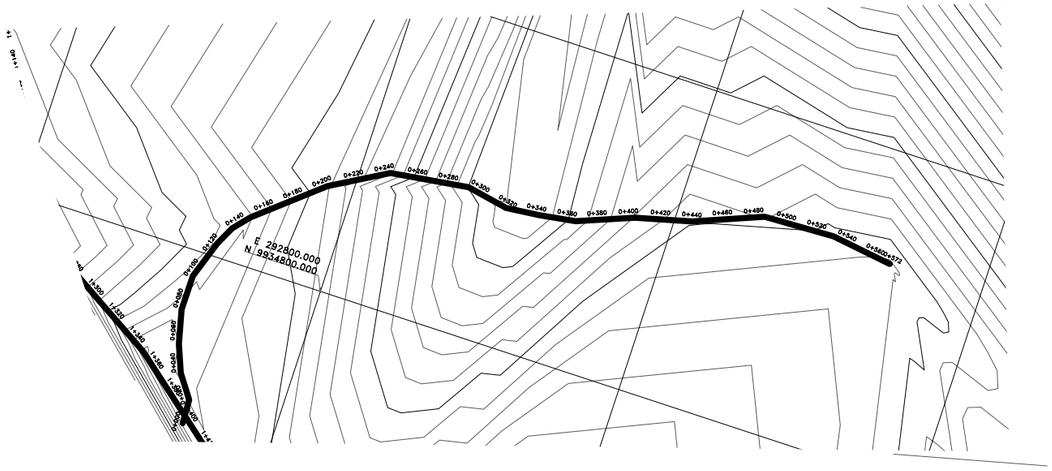
PROJECT TITLE:
EXTENSION OF WATER SUPPLY PIPELINES IN MUKURWEINI

DRAWING TITLE:
LATERAL B-MUTUNDU

CH. 0+000.00 - 0+577.73
SHEET 1 OF 1

Designed by: A.M.M	Drawn by: A.M.M
Checked by: K.N.G	Approved by: D.N.M
Scale: 1:1000	Date: JAN 2024

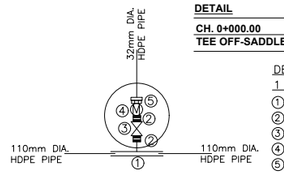
DRG No. **EXT-MUK/LAT-B/01**



PLAN SECTION

DETAIL

CH. 0+000.00
TEE OFF-SADDLE CLAMP, GV & WM



DESCRIPTION
1 No. REQUIRED

1. 1 No. 110X32mm DIA. SADDLE CLAMP
2. 3 Nos. 32mm DIA. G.I NIPPLE MALE
3. 1 Nos. 32mm DIA. GATE VALVE
4. 1 No. 32mm DIA. WATER METER
5. 1 No. 32mm DIA. HDPE SOCKET FUSION FEMALE ADAPTOR

DISTANCE IN KILOMETERS	0+000.00	0+020.00	0+040.00	0+060.00	0+080.00	0+100.00	0+120.00	0+140.00	0+160.00	0+180.00	0+200.00	0+220.00	0+240.00	0+260.00	0+280.00	0+300.00	0+320.00	0+340.00	0+360.00	0+380.00	0+400.00	0+420.00	0+440.00	0+460.00	0+480.00	0+500.00	0+520.00	0+540.00	0+560.00	0+572.15
EXISTING GROUND LEVEL (m)	1470.98	1474.38	1474.34	1474.28	1475.40	1477.18	1477.65	1476.96	1474.60	1471.58	1468.56	1466.55	1464.66	1459.56	1453.83	1449.16	1446.83	1446.43	1449.73	1452.83	1455.60	1457.77	1459.81	1458.99	1458.12	1458.71	1460.04	1461.16	1461.93	
INVERT LEVELS (m)		1473.38	1473.33	1473.27	1474.40	1476.18	1476.65	1475.95	1473.58	1470.58	1467.58	1465.57	1463.68	1458.66	1453.06	1448.00	1445.79	1445.45	1448.81	1451.92	1454.69	1456.77	1458.83	1457.99	1457.12	1457.74	1459.07	1460.20	1460.95	
DEPTH OF INVERT (m)		1.00	1.01	1.01	1.00	1.00	1.00	1.01	1.02	1.00	0.98	0.98	0.98	0.89	0.77	1.18	1.04	0.93	0.93	0.92	0.91	1.01	0.97	1.00	1.00	0.97	0.97	0.96	0.98	
HGL (m) DATUM (m)	1505.00	1504.85	1504.69	1504.54	1504.39	1504.23	1504.08	1503.93	1503.77	1503.62	1503.47	1503.31	1503.16	1503.01	1502.85	1502.70	1502.55	1502.39	1502.24	1502.09	1501.93	1501.78	1501.63	1501.47	1501.32	1501.17	1501.01	1500.86	1500.71	1500.61
TYPE OF PIPE AND SIZE	OD 32 MM HDPE PIPE (PN10)																													
GEOLOGICAL CONDITION	SANDY CLAY SOIL																													
SLOPE OF HGL (H/V)	−1:130.45																													

LONGITUDINAL SECTION

0 100 200m

NOTES:

1. CONTOUR LEVELS ARE IN METERS AT TWO METER INTERVALS
2. GRID VALUES ARE IN METERS AT 200 METER INTERVALS
3. GEOLOGICAL CONDITIONS INDICATED ON DRAWING ARE FOR GENERAL GUIDANCE ONLY
4. FOR FITTING DETAILS SEE DRG. NO. MWSP/TWKU/07

LEGEND:

- PROPOSED TREATED WATER GRAVITY MAIN
- DOUBLE ORIFICE AIRVALVE
- WASHOUT
- PRV — PRESSURE REDUCING VALVE

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

ENGINEER:
CHIEF MANAGER TECHNICAL SERVICES
TANA WATER WORKS DEVELOPMENT AGENCY
P.O BOX 1292 - 10100,
NYERI, KENYA

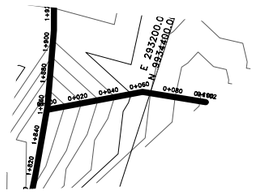
PROJECT TITLE:
EXTENSION OF WATER SUPPLY PIPELINES IN MUKURWEINI

DRAWING TITLE:
LATERAL C-MUTUNDU

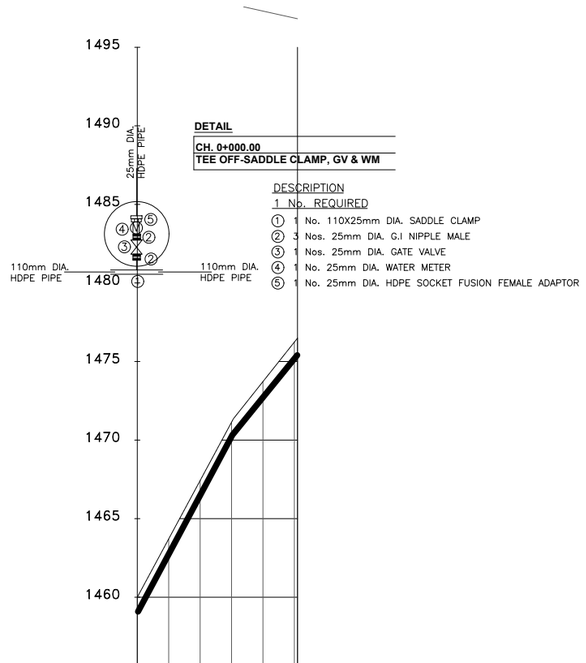
CH. 0+000.00 - 0+572.15
SHEET 1 OF 1

Designed by:	A.M.M	Drawn by:	A.M.M
Checked by:	K.N.G	Approved by:	D.N.M
Scale:	1:1000	Date:	JAN 2024

DRG No. **EXT-MUK/LAT-C/01**



PLAN SECTION



DISTANCE IN KILOMETERS	0+000.00	0+020.00	0+040.00	0+060.00	0+080.00	0+101.99
EXISTING GROUND LEVEL (m)	1460.00	1463.71	1467.42	1471.14	1473.72	1476.49
INVERT LEVELS (m)		1462.74	1466.48	1470.22	1472.72	1475.18
DEPTH OF INVERT (m)		0.97	0.94	0.91	1.01	1.06
HGL (m) DATUM (m)	1498.08	1498.63	1498.19	1497.75	1497.30	1496.86
TYPE OF PIPE AND SIZE	OD 25 MM HDPE PIPE (PN10)					
GEOLOGICAL CONDITION	SANDY CLAY SOIL					
SLOPE OF HGL (H/V)	–1:45.09					

LONGITUDINAL SECTION

0 100 200m

NOTES:

1. CONTOUR LEVELS ARE IN METERS AT TWO METER INTERVALS
2. GRID VALUES ARE IN METERS AT 200 METER INTERVALS
3. GEOLOGICAL CONDITIONS INDICATED ON DRAWING ARE FOR GENERAL GUIDANCE ONLY
4. FOR FITTING DETAILS SEE DRG. NO. MWSP/TWKU/07

LEGEND:

- PROPOSED TREATED WATER GRAVITY MAIN
- DOUBLE ORIFICE AIRVALVE
- WASHOUT
- PRV — PRESSURE REDUCING VALVE

CLIENT:

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

ENGINEER:

CHIEF MANAGER TECHNICAL SERVICES
TANA WATER WORKS DEVELOPMENT AGENCY
P.O BOX 1292 - 10100,
NYERI, KENYA

PROJECT TITLE:

EXTENSION OF WATER SUPPLY PIPELINES IN MUKURWEINI

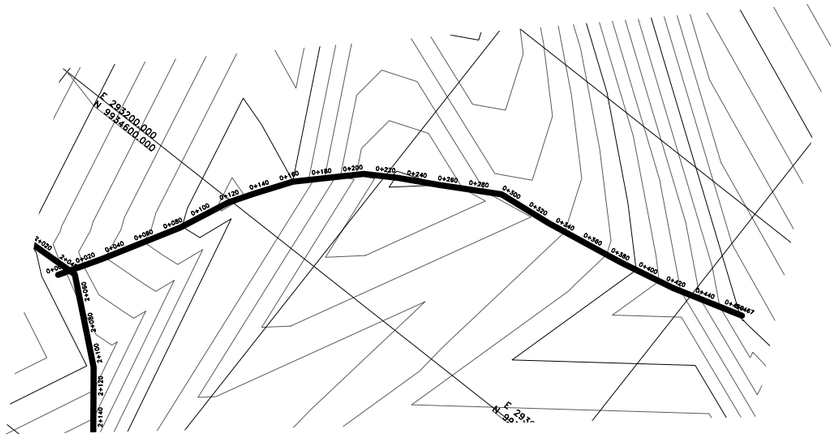
DRAWING TITLE:

LATERAL D-MUTUNDU

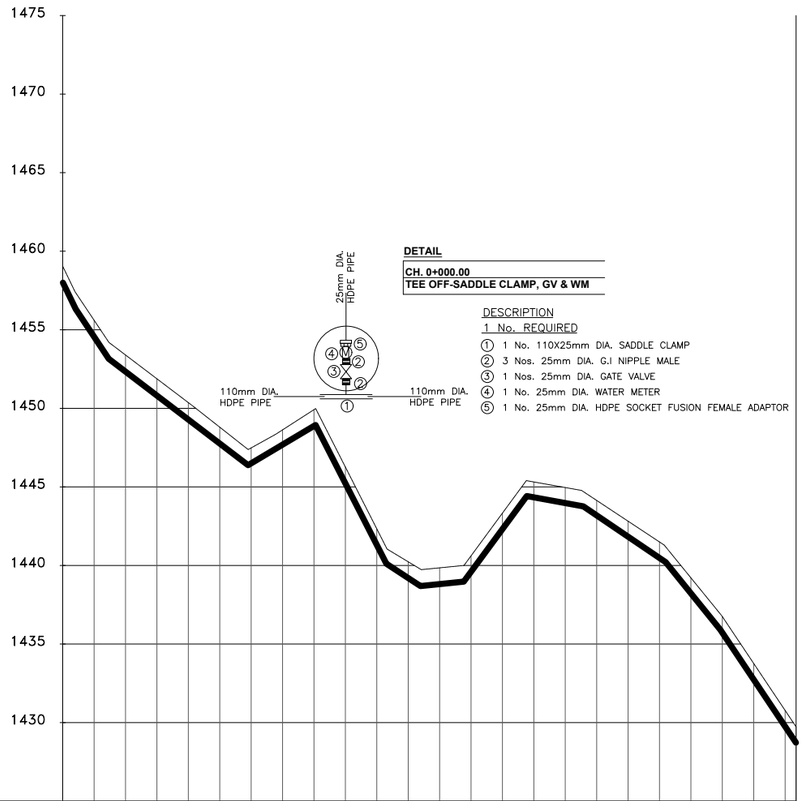
CH. 0+000.00 - 0+101.99
SHEET 1 OF 1

Designed by:	A.M.M	Drawn by:	A.M.M
Checked by:	K.N.G	Approved by:	D.N.M
Scale:	1:1000	Date:	JAN 2024

DRG No. EXT-MUK/LAT-D/01



PLAN SECTION



DISTANCE IN KILOMETERS	0+000.00	0+020.00	0+040.00	0+060.00	0+080.00	0+100.00	0+120.00	0+140.00	0+160.00	0+180.00	0+200.00	0+220.00	0+240.00	0+260.00	0+280.00	0+300.00	0+320.00	0+340.00	0+360.00	0+380.00	0+400.00	0+420.00	0+440.00	0+460.00	0+466.98
EXISTING GROUND LEVEL (m)	1459.05	1455.61	1453.40	1451.88	1450.36	1448.80	1447.48	1448.63	1449.92	1446.26	1442.33	1440.23	1439.85	1440.61	1443.33	1445.31	1444.96	1444.14	1442.82	1441.50	1439.21	1436.75	1433.76	1430.77	1429.73
INVERT LEVELS (m)		1454.56	1452.34	1450.81	1449.29	1447.76	1446.50	1447.69	1448.88	1445.22	1441.31	1439.20	1438.81	1439.60	1442.32	1444.34	1443.97	1443.19	1441.83	1440.48	1438.23	1435.72	1432.74	1429.75	
DEPTH OF INVERT (m)		1.05	1.06	1.07	1.08	1.04	0.98	0.94	1.04	1.04	1.02	1.03	1.04	1.01	1.02	0.98	0.99	0.95	0.99	1.02	0.99	1.03	1.02	1.02	
HGL (m) DATUM (m)	1495.07	1495.51	1494.94	1494.38	1493.81	1493.25	1492.69	1492.12	1491.56	1490.99	1490.43	1489.86	1489.30	1488.74	1488.17	1487.61	1487.04	1486.48	1485.91	1485.35	1484.78	1484.22	1483.66	1483.09	1482.89
TYPE OF PIPE AND SIZE	OD 25 MM HDPE PIPE (PN10)																								
GEOLOGICAL CONDITION	SANDY CLAY SOIL																								
SLOPE OF HGL (H/V)	-1:35.44																								

LONGITUDINAL SECTION

0 100 200m

NOTES:

1. CONTOUR LEVELS ARE IN METERS AT TWO METER INTERVALS
2. GRID VALUES ARE IN METERS AT 200 METER INTERVALS
3. GEOLOGICAL CONDITIONS INDICATED ON DRAWING ARE FOR GENERAL GUIDANCE ONLY
4. FOR FITTING DETAILS SEE DRG. NO. MWSP/TWKU/07

LEGEND:

- PROPOSED TREATED WATER GRAVITY MAIN
- DOUBLE ORIFICE AIRVALVE
- WASHOUT
- PRV — PRESSURE REDUCING VALVE

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

ENGINEER:
CHIEF MANAGER TECHNICAL SERVICES
TANA WATER WORKS DEVELOPMENT AGENCY
P.O BOX 1292 - 10100,
NYERI, KENYA

PROJECT TITLE:
EXTENSION OF WATER SUPPLY PIPELINES IN MUKURWEINI

DRAWING TITLE:
LATERAL E-MUTUNDU

CH. 0+000.00 - 0+466.98
SHEET 1 OF 1

Designed by: A.M.M	Drawn by: A.M.M
Checked by: K.N.G	Approved by: D.N.M
Scale: 1:1000	Date: JAN 2024

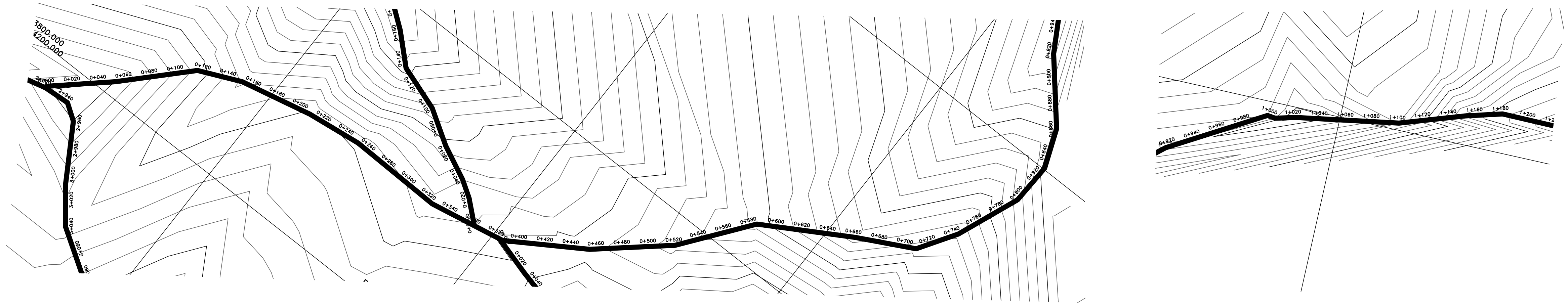
DRG No. **EXT-MUK/LAT-E/01**

NOTES:

1. CONTOUR LEVELS ARE IN METERS AT TWO METER INTERVALS
2. GRID VALUES ARE IN METERS AT 200 METER INTERVALS
3. GEOLOGICAL CONDITIONS INDICATED ON DRAWING ARE FOR GENERAL GUIDANCE ONLY
4. FOR FITTING DETAILS SEE DRG. NO. MWSP/TWKU/07

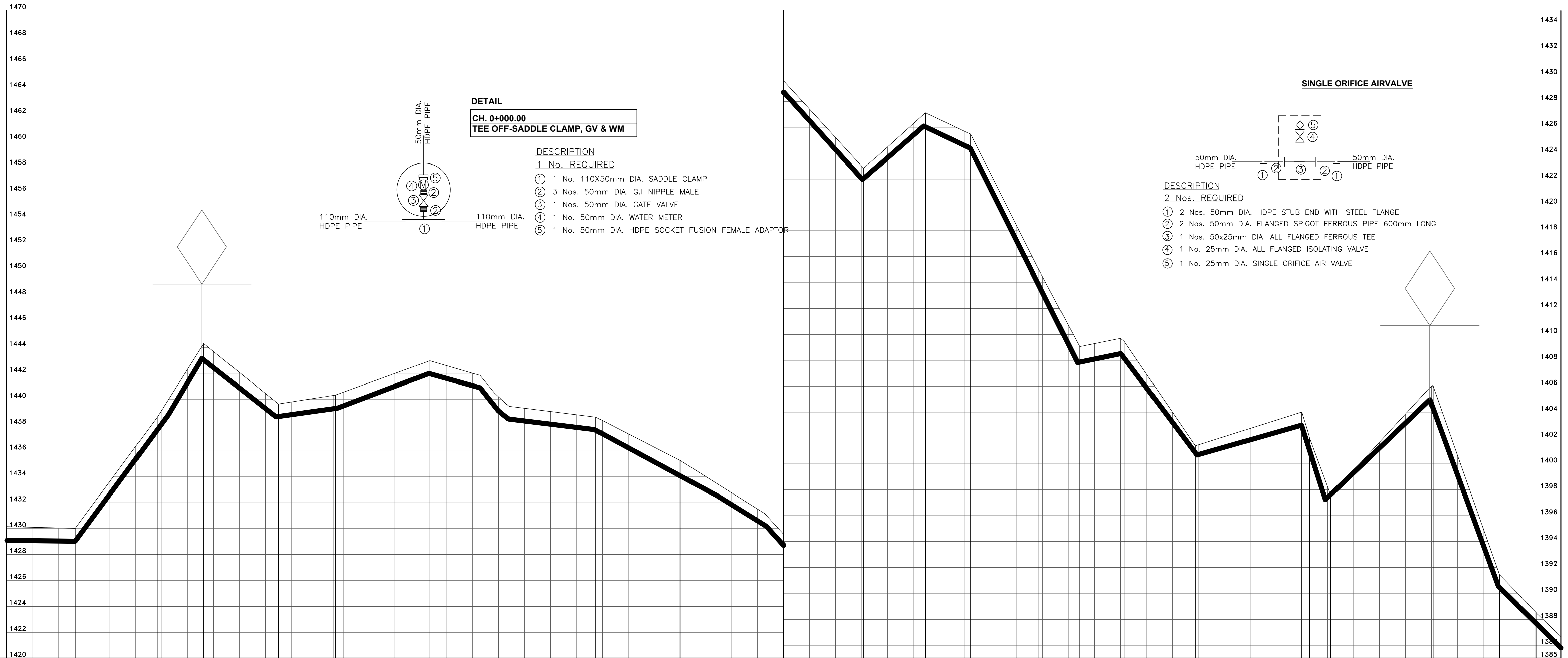
LEGEND:

- PROPOSED TREATED WATER GRAVITY MAIN
- DOUBLE ORIFICE AIRVALVE
- WASHOUT
- PRV — PRESSURE REDUCING VALVE



PLAN SECTION

LATERAL F PROFILE



DETAIL

CH. 0+000.00
TEE OFF-SADDLE CLAMP, GV & WM

50mm DIA. HDPE PIPE
110mm DIA. HDPE PIPE
110mm DIA. HDPE PIPE

DESCRIPTION
1 No. REQUIRED

1. 1 No. 110X50mm DIA. SADDLE CLAMP
2. 3 Nos. 50mm DIA. G.I NIPPLE MALE
3. 1 Nos. 50mm DIA. GATE VALVE
4. 1 No. 50mm DIA. WATER METER
5. 1 No. 50mm DIA. HDPE SOCKET FUSION FEMALE ADAPTOR

SINGLE ORIFICE AIRVALVE

50mm DIA. HDPE PIPE
50mm DIA. HDPE PIPE

DESCRIPTION
2 Nos. REQUIRED

1. 2 Nos. 50mm DIA. HDPE STUB END WITH STEEL FLANGE
2. 2 Nos. 50mm DIA. FLANGED SPIGOT FERROUS PIPE 600mm LONG
3. 1 Nos. 50x25mm DIA. ALL FLANGED FERROUS TEE
4. 1 No. 25mm DIA. ALL FLANGED ISOLATING VALVE
5. 1 No. 25mm DIA. SINGLE ORIFICE AIR VALVE

DISTANCE IN KILOMETERS	EXISTING GROUND LEVEL (m)	INVERT LEVELS (m)	DEPTH OF INVERT (m)	HGL (m) DATUM (m)
0+000.00	1430.15			1485.00
0+020.00	1430.10	1429.06	1.04	1484.86
0+040.00	1430.06	1429.04	1.01	1484.73
0+060.00	1430.95	1429.96	0.99	1484.59
0+080.00	1433.66	1432.67	0.99	1484.45
0+100.00	1436.37	1435.39	0.98	1484.31
0+120.00	1439.16	1438.10	1.05	1484.18
0+140.00	1442.33	1441.30	1.04	1484.04
0+160.00	1443.68	1442.43	1.24	1483.90
0+180.00	1442.06	1440.86	1.20	1483.76
0+200.00	1440.44	1439.28	1.16	1483.63
0+220.00	1439.78	1438.80	0.98	1483.49
0+240.00	1440.10	1439.09	1.01	1483.35
0+260.00	1440.53	1439.47	1.06	1483.21
0+280.00	1441.26	1440.23	1.03	1483.08
0+300.00	1441.99	1440.99	1.00	1482.94
0+320.00	1442.72	1441.75	0.97	1482.80
0+340.00	1442.58	1441.59	0.99	1482.66
0+360.00	1442.00	1441.03	0.96	1482.53
0+380.00	1440.18	1439.09	1.09	1482.39
0+400.00	1439.30	1438.31	0.98	1482.25
0+420.00	1439.05	1438.07	0.98	1482.11
0+440.00	1438.80	1437.82	0.97	1481.98
0+460.00	1438.35	1437.33	1.02	1481.84
0+480.00	1437.33	1436.25	1.08	1481.70
0+500.00	1436.30	1435.17	1.13	1481.56
0+520.00	1435.27	1434.09	1.18	1481.43
0+540.00	1434.02	1433.01	1.01	1481.29
0+560.00	1432.76	1431.84	0.92	1481.15
0+580.00	1431.51	1430.60	0.91	1481.01
0+600.00	1429.58	1428.71	0.87	1480.88
0+620.00	1427.40	1426.50	0.90	1480.74
0+640.00	1425.21	1424.28	0.93	1480.60
0+660.00	1423.03	1422.06	0.97	1480.46
0+680.00	1424.47	1423.63	0.84	1480.33
0+700.00	1426.27	1425.38	0.89	1480.19
0+720.00	1426.62	1425.53	1.09	1480.05
0+740.00	1425.67	1424.58	1.09	1479.91
0+760.00	1422.36	1421.18	1.18	1479.78
0+780.00	1418.37	1417.19	1.19	1479.64
0+800.00	1414.43	1413.19	1.24	1479.50
0+820.00	1410.67	1409.20	1.47	1479.36
0+840.00	1409.29	1408.10	1.19	1479.23
0+860.00	1409.70	1408.51	1.18	1479.09
0+880.00	1406.95	1405.89	1.06	1478.95
0+900.00	1404.01	1403.23	0.78	1478.81
0+920.00	1401.47	1400.72	0.75	1478.68
0+940.00	1402.10	1401.29	0.81	1478.54
0+960.00	1402.74	1401.86	0.88	1478.40
0+980.00	1403.37	1402.43	0.94	1478.26
1+000.00	1403.98	1402.91	1.08	1478.13
1+020.00	1398.21	1397.41	0.79	1477.99
1+040.00	1399.51	1399.33	0.19	1477.85
1+060.00	1401.68	1401.24	0.44	1477.72
1+080.00	1403.84	1403.15	0.69	1477.58
1+100.00	1406.01	1404.63	1.38	1477.44
1+120.00	1400.69	1399.18	1.50	1477.30
1+140.00	1395.01	1393.73	1.27	1477.17
1+160.00	1390.67	1389.73	0.94	1477.03
1+180.00	1388.61	1387.76	0.85	1476.89
1+200.00	1386.67	1385.79	0.88	1476.75

TYPE OF PIPE AND SIZE	**OD 50 MM HDPE PIPE (PN16)**
GEOLOGICAL CONDITION	**SANDY CLAY SOIL**
SLOPE OF HGL (H/V)	−1:145.51

LONGITUDINAL SECTION

0 100 200m

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

ENGINEER:
CHIEF MANAGER TECHNICAL SERVICES
TANA WATER WORKS DEVELOPMENT AGENCY
P.O BOX 1292 - 10100,
NYERI, KENYA

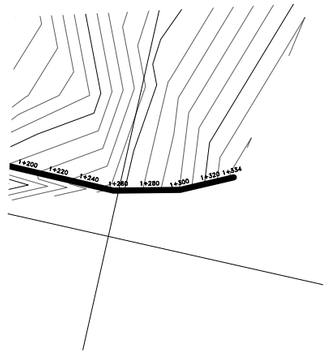
PROJECT TITLE:
EXTENSION OF WATER SUPPLY PIPELINES IN MUKURWEINI

DRAWING TITLE:
LATERAL F-MUTUNDU

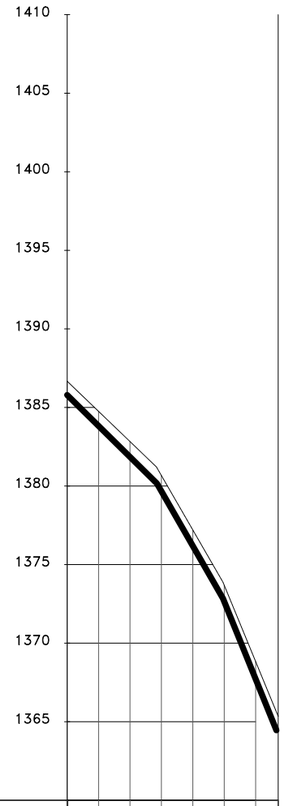
CH. 0+000.00 - 1+200.00
SHEET 1 OF 2

Designed by:	A.M.M	Drawn by:	A.M.M
Checked by:	K.N.G	Approved by:	D.N.M
Scale:	1:1000	Date:	JAN 2024

DRG No. EXT-MUK/LAT-F/01



PLAN SECTION



DISTANCE IN KILOMETERS	1+200.00	1+220.00	1+240.00	1+260.00	1+280.00	1+300.00	1+320.00	1+334.36
EXISTING GROUND LEVEL (m)	1386.67	1384.75	1382.83	1380.67	1377.20	1373.69	1368.83	
INVERT LEVELS (m)	1385.79	1383.82	1381.85	1379.67	1376.19	1372.65	1367.72	
DEPTH OF INVERT (m)	0.88	0.93	0.98	1.00	1.02	1.04	1.11	
HGL (m) DATUM (m)	1386.67	1384.75	1382.83	1380.67	1377.20	1373.69	1368.83	
TYPE OF PIPE AND SIZE	OD 50 MM HDPE PIPE (PN16)							
GEOLOGICAL CONDITION	SANDY CLAY SOIL							
SLOPE OF HGL (H/V)	-1:10.15			-1:5.74			-1:4.06	

LONGITUDINAL SECTION

0 100 200m

NOTES:

1. CONTOUR LEVELS ARE IN METERS AT TWO METER INTERVALS
2. GRID VALUES ARE IN METERS AT 200 METER INTERVALS
3. GEOLOGICAL CONDITIONS INDICATED ON DRAWING ARE FOR GENERAL GUIDANCE ONLY
4. FOR FITTING DETAILS SEE DRG. NO. MWSP/TWKU/07

LEGEND:

- PROPOSED TREATED WATER GRAVITY MAIN
- DOUBLE ORIFICE AIRVALVE
- WASHOUT
- PRV — PRESSURE REDUCING VALVE

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

ENGINEER:
CHIEF MANAGER TECHNICAL SERVICES
TANA WATER WORKS DEVELOPMENT AGENCY
P.O BOX 1292 - 10100,
NYERI, KENYA

PROJECT TITLE:
EXTENSION OF WATER SUPPLY PIPELINES IN MUKURWEINI

DRAWING TITLE:
LATERAL F-MUTUNDU

CH. 1+200.00 - 1+334.36
SHEET 2 OF 2

Designed by:	A.M.M	Drawn by:	A.M.M
Checked by:	K.N.G	Approved by:	D.N.M
Scale:	1:1000	Date:	JAN 2024

DRG No. EXT-MUK/LAT-F/02

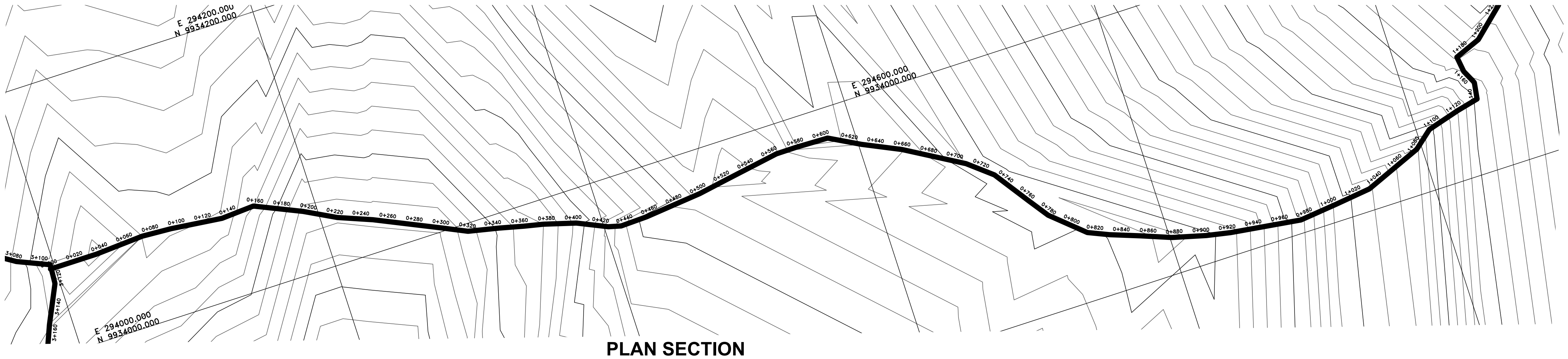
NOTES:
1. CONTOUR LEVELS ARE IN METERS AT TWO METER INTERVALS
2. GRID VALUES ARE IN METERS AT 200 METER INTERVALS
3. GEOLOGICAL CONDITIONS INDICATED ON DRAWING ARE FOR GENERAL GUIDANCE ONLY
4. FOR FITTING DETAILS SEE DRG. NO. MWSP/TWKU/07

LEGEND:
PROPOSED TREATED WATER GRAVITY MAIN

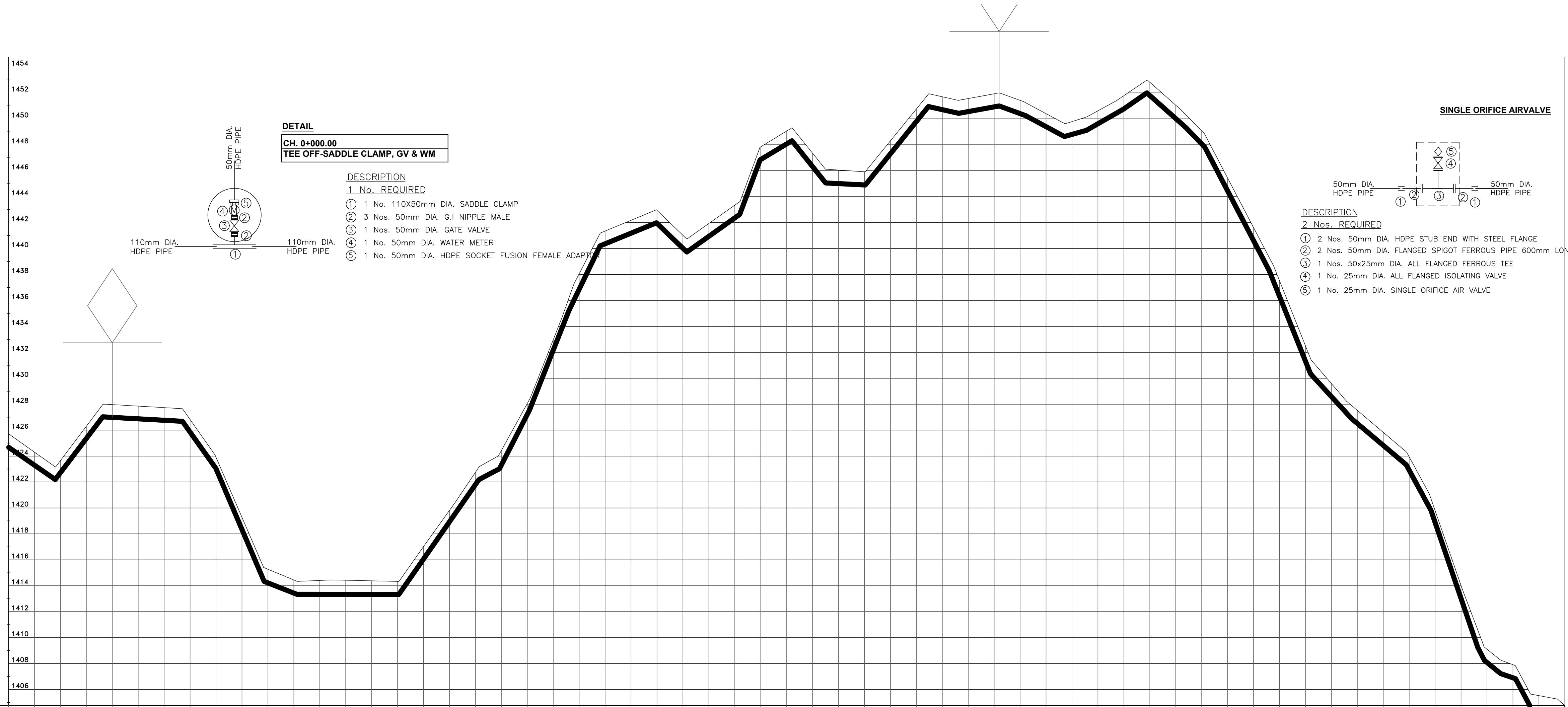
DOUBLE ORIFICE AIRVALVE

WASHOUT

PRV — PRESSURE REDUCING VALVE



PLAN SECTION



DETAIL

CH. 0+000.00
TEE OFF-SADDLE CLAMP, GV & WM

DESCRIPTION
1 No. REQUIRED
1. 1 No. 110X50mm DIA. SADDLE CLAMP
2. 3 Nos. 50mm DIA. G.I NIPPLE MALE
3. 1 Nos. 50mm DIA. GATE VALVE
4. 1 No. 50mm DIA. WATER METER
5. 1 No. 50mm DIA. HDPE SOCKET FUSION FEMALE ADAPTOR

SINGLE ORIFICE AIRVALVE

DESCRIPTION
2 Nos. REQUIRED
1. 2 Nos. 50mm DIA. HDPE STUB END WITH STEEL FLANGE
2. 2 Nos. 50mm DIA. FLANGED SPIGOT FERROUS PIPE 600mm LONG
3. 1 Nos. 50x25mm DIA. ALL FLANGED FERROUS TEE
4. 1 No. 25mm DIA. ALL FLANGED ISOLATING VALVE
5. 1 No. 25mm DIA. SINGLE ORIFICE AIR VALVE

DISTANCE IN KILOMETERS	EXISTING GROUND LEVEL (m)	INVERT LEVELS (m)	DEPTH OF INVERT (m)	HGL (m) DATUM (m)
0+000.00	1425.72			1481.32
0+020.00	1424.30	1423.30	1.00	1481.19
0+040.00	1423.65	1422.72	0.93	1481.06
0+060.00	1426.30	1425.35	0.94	1480.94
0+080.00	1427.97	1426.98	0.99	1480.81
0+100.00	1427.85	1426.87	0.98	1480.68
0+120.00	1427.73	1426.76	0.98	1480.56
0+140.00	1426.82	1425.85	0.97	1480.43
0+160.00	1423.91	1423.03	0.88	1480.30
0+180.00	1419.28	1418.34	0.93	1480.18
0+200.00	1415.28	1414.22	1.05	1480.05
0+220.00	1414.45	1413.44	1.01	1479.92
0+240.00	1414.41	1413.34	1.07	1479.80
0+260.00	1414.43	1413.34	1.09	1479.67
0+280.00	1414.38	1413.34	1.05	1479.54
0+300.00	1414.34	1413.33	1.00	1479.42
0+320.00	1417.02	1416.06	0.96	1479.29
0+340.00	1419.81	1418.93	0.88	1479.16
0+360.00	1422.75	1421.80	0.95	1479.04
0+380.00	1424.42	1423.30	1.12	1478.91
0+400.00	1428.06	1427.21	0.84	1478.78
0+420.00	1432.96	1432.16	0.80	1478.66
0+440.00	1438.05	1436.86	1.20	1478.53
0+460.00	1441.35	1440.36	0.98	1478.40
0+480.00	1442.18	1441.18	0.99	1478.28
0+500.00	1442.95	1441.94	1.00	1478.15
0+520.00	1441.02	1440.02	1.00	1478.02
0+540.00	1441.93	1440.94	0.99	1477.90
0+560.00	1443.34	1442.36	0.98	1477.77
0+580.00	1447.84	1446.86	0.98	1477.64
0+600.00	1449.06	1448.07	0.99	1477.52
0+620.00	1447.34	1446.32	1.03	1477.39
0+640.00	1446.05	1445.00	1.05	1477.26
0+660.00	1445.92	1444.90	1.02	1477.14
0+680.00	1448.30	1447.31	1.00	1477.01
0+700.00	1450.76	1449.79	0.97	1476.88
0+720.00	1451.70	1450.71	0.99	1476.76
0+740.00	1451.56	1450.56	1.01	1476.63
0+760.00	1451.93	1450.92	1.01	1476.50
0+780.00	1451.42	1450.40	1.02	1476.38
0+800.00	1450.40	1449.40	1.00	1476.25
0+820.00	1449.79	1448.80	0.99	1476.12
0+840.00	1450.62	1449.62	1.00	1476.00
0+860.00	1451.79	1450.77	1.02	1475.87
0+880.00	1452.82	1451.80	1.02	1475.74
0+900.00	1451.05	1450.02	1.03	1475.62
0+920.00	1449.07	1448.06	1.01	1475.49
0+940.00	1445.44	1444.44	0.99	1475.36
0+960.00	1441.62	1440.61	1.00	1475.24
0+980.00	1437.52	1436.32	1.21	1475.11
1+000.00	1432.51	1431.32	1.18	1474.98
1+020.00	1429.59	1428.59	1.00	1474.86
1+040.00	1427.52	1426.51	1.01	1474.73
1+060.00	1425.83	1424.82	1.00	1474.60
1+080.00	1423.94	1422.91	1.03	1474.48
1+100.00	1419.79	1418.88	0.91	1474.35
1+120.00	1414.02	1413.02	1.00	1474.22
1+140.00	1409.11	1408.09	1.02	1474.10
1+160.00	1407.92	1406.90	1.01	1473.97
1+180.00	1405.53	1404.54	0.99	1473.84
1+200.00	1404.76	1403.76	1.01	1473.72

TYPE OF PIPE AND SIZE	**OD 50 MM HDPE PIPE (PN16)**
GEOLOGICAL CONDITION	**SANDY CLAY SOIL**
SLOPE OF HGL (H/V)	−1:157.85

LONGITUDINAL SECTION

0 100 200m

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

ENGINEER:
CHIEF MANAGER TECHNICAL SERVICES TANA WATER WORKS DEVELOPMENT AGENCY
P.O BOX 1292 - 10100,
NYERI, KENYA

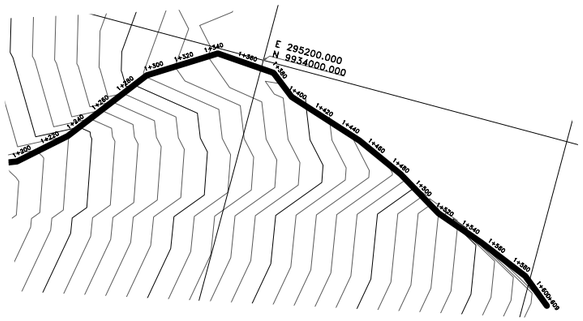
PROJECT TITLE:
EXTENSION OF WATER SUPPLY PIPELINES IN MUKURWEINI

DRAWING TITLE:
LATERAL G-MUTUNDU

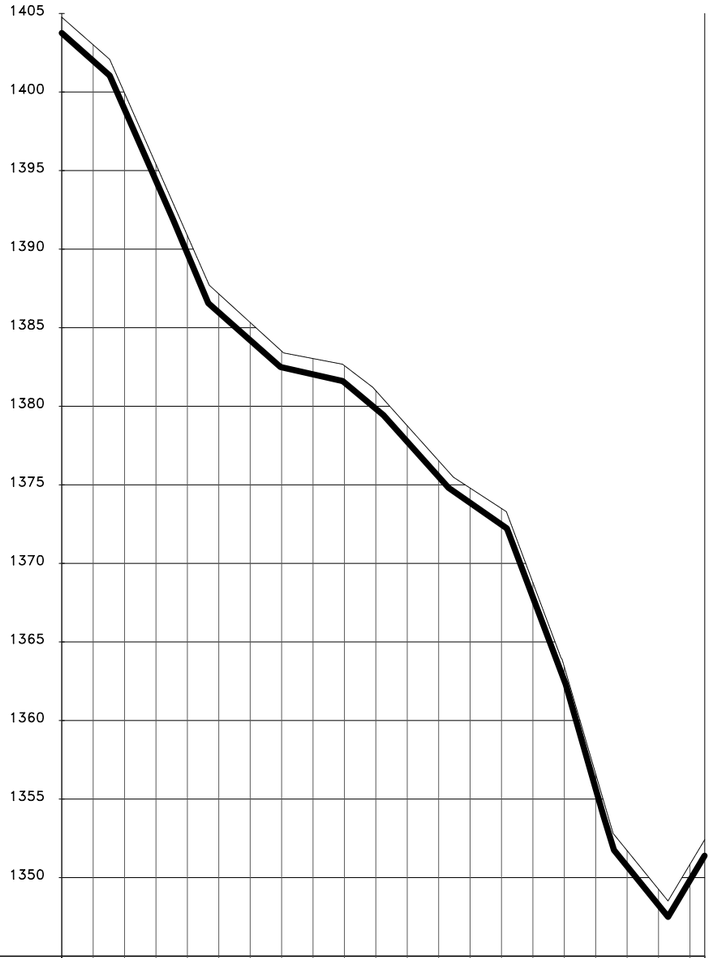
CH. 0+000.00 - 1+200.00
SHEET 1 OF 2

Designed by:	A.M.M	Drawn by:	A.M.M
Checked by:	K.N.G	Approved by:	D.N.M
Scale:	1:1000	Date:	JAN 2024

DRG No. **EXT-MUK/LAT-G/01**



PLAN SECTION



DISTANCE IN KILOMETERS	1+200.00	1+220.00	1+240.00	1+260.00	1+280.00	1+300.00	1+320.00	1+340.00	1+360.00	1+380.00	1+400.00	1+420.00	1+440.00	1+460.00	1+480.00	1+500.00	1+520.00	1+540.00	1+560.00	1+580.00	1+600.00	1+609.43
EXISTING GROUND LEVEL (m)	1404.76	1403.00	1399.93	1395.40	1390.86	1387.15	1385.33	1383.51	1383.04	1382.58	1380.99	1378.76	1376.53	1374.80	1373.49	1368.78	1363.41	1356.59	1351.72	1349.26	1350.85	
INVERT LEVELS (m)	1403.76	1401.98	1398.90	1394.36	1389.72	1385.97	1384.20	1382.48	1382.03	1381.51	1379.84	1377.74	1375.51	1373.86	1372.47	1367.84	1362.54	1355.64	1350.72	1348.25	1349.83	
DEPTH OF INVERT (m)	1.01	1.02	1.03	1.04	1.14	1.18	1.13	1.03	1.01	1.07	1.15	1.02	1.02	0.94	1.03	0.93	0.87	0.93	1.00	1.01	1.02	
HGL (m) DATUM (m)	1473.72	1473.59	1473.46	1473.34	1473.21	1473.08	1472.96	1472.83	1472.70	1472.58	1472.45	1472.32	1472.20	1472.07	1471.94	1471.82	1471.69	1471.56	1471.44	1471.31	1471.18	1471.12
TYPE OF PIPE AND SIZE	OD 32 MM HDPE PIPE (PN16)													OD 32 MM HDPE PIPE (PN20)								
GEOLOGICAL CONDITION	SANDY CLAY SOIL																					
SLOPE OF HGL (H/V)	-1:157.85																					

LONGITUDINAL SECTION

0 100 200m

NOTES:

1. CONTOUR LEVELS ARE IN METERS AT TWO METER INTERVALS
2. GRID VALUES ARE IN METERS AT 200 METER INTERVALS
3. GEOLOGICAL CONDITIONS INDICATED ON DRAWING ARE FOR GENERAL GUIDANCE ONLY
4. FOR FITTING DETAILS SEE DRG. NO. MWSP/TWKU/07

LEGEND:

- PROPOSED TREATED WATER GRAVITY MAIN
- DOUBLE ORIFICE AIRVALVE
- WASHOUT
- PRV — PRESSURE REDUCING VALVE

CLIENT:

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

ENGINEER:

CHIEF MANAGER TECHNICAL SERVICES
TANA WATER WORKS DEVELOPMENT AGENCY
P.O BOX 1292 - 10100,
NYERI, KENYA

PROJECT TITLE:

EXTENSION OF WATER SUPPLY PIPELINES IN MUKURWEINI

DRAWING TITLE:

LATERAL G-MUTUNDU

CH. 1+200.00 - 1+609.43
SHEET 2 OF 2

Designed by:	A.M.M	Drawn by:	A.M.M
Checked by:	K.N.G	Approved by:	D.N.M
Scale:	1:1000	Date:	JAN 2024
DRG No.	EXT-MUK/LAT-G/02		

PLAN SECTION

NOTES:

1. CONTOUR LEVELS ARE IN METERS AT TWO METER INTERVALS
2. GRID VALUES ARE IN METERS AT 200 METER INTERVALS
3. GEOLOGICAL CONDITIONS INDICATED ON DRAWING ARE FOR GENERAL GUIDANCE ONLY
4. FOR FITTING DETAILS SEE DRG. NO. MWSP/TWKU/07

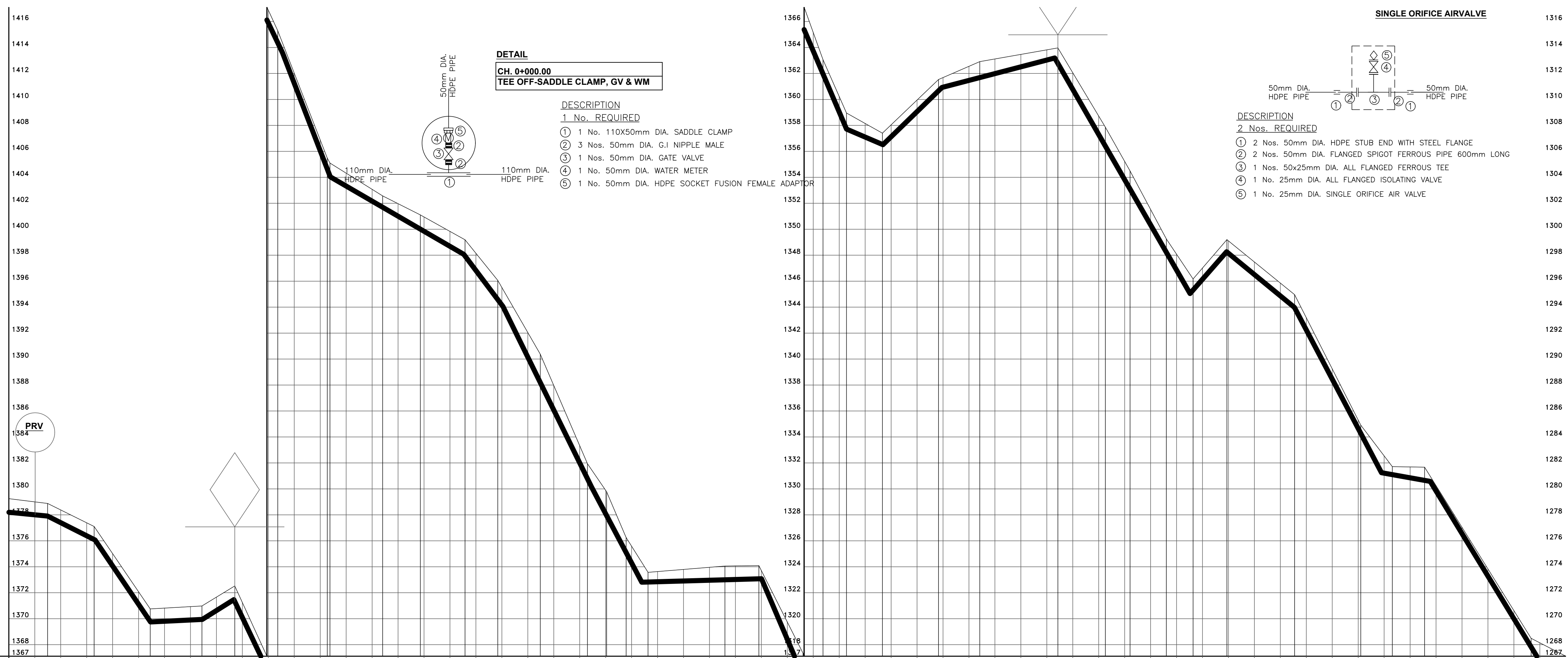
LEGEND:

PROPOSED TREATED WATER GRAVITY MAIN

DOUBLE ORIFICE AIRVALVE

WASHOUT

PRV PRESSURE REDUCING VALVE



DETAIL

CH. 0+000.00
TEE OFF-SADDLE CLAMP, GV & WM

DESCRIPTION
1 No. REQUIRED

① 1 No. 110X50mm DIA. SADDLE CLAMP
② 3 Nos. 50mm DIA. G.I NIPPLE MALE
③ 1 Nos. 50mm DIA. GATE VALVE
④ 1 No. 50mm DIA. WATER METER
⑤ 1 No. 50mm DIA. HDPE SOCKET FUSION FEMALE ADAPTOR

SINGLE ORIFICE AIRVALVE

50mm DIA. HDPE PIPE — 50mm DIA. HDPE PIPE

DESCRIPTION
2 Nos. REQUIRED

① 2 Nos. 50mm DIA. HDPE STUB END WITH STEEL FLANGE
② 2 Nos. 50mm DIA. FLANGED SPIGOT FERROUS PIPE 600mm LONG
③ 1 Nos. 50x25mm DIA. ALL FLANGED FERROUS TEE
④ 1 No. 25mm DIA. ALL FLANGED ISOLATING VALVE
⑤ 1 No. 25mm DIA. SINGLE ORIFICE AIR VALVE

DISTANCE IN KILOMETERS	0+000.00	0+020.00	0+040.00	0+060.00	0+080.00	0+100.00	0+120.00	0+140.00	0+160.00	0+180.00	0+200.00
EXISTING GROUND LEVEL (m)	1379.25	1379.00	1378.38	1377.39	1375.01	1372.07	1370.82	1370.93	1371.66	1371.24	1366.88
INVERT LEVELS (m)		1378.00	1377.40	1376.39	1374.07	1371.11	1369.80	1369.90	1370.63	1370.09	1365.89
DEPTH OF INVERT (m)		1.00	0.98	1.00	0.95	0.96	1.01	1.03	1.03	1.15	0.98
HGL (m) DATUM (m)	1441.38	1441.33	1441.27	1441.22	1441.17	1441.12	1441.07	1441.01	1440.96	1440.91	1440.86

DISTANCE IN KILOMETERS	0+220.00	0+240.00	0+260.00	0+280.00	0+300.00	0+320.00	0+340.00	0+360.00	0+380.00	0+400.00	0+420.00
EXISTING GROUND LEVEL (m)	1362.02	1356.88	1354.32	1353.07	1351.97	1350.95	1349.83	1348.15	1345.51	1342.04	1337.96
INVERT LEVELS (m)	1361.24	1356.05	1353.33	1352.17	1351.01	1349.85	1348.68	1346.82	1344.16	1340.15	1336.07
DEPTH OF INVERT (m)	0.78	0.83	0.99	0.91	0.96	1.10	1.15	1.32	1.35	1.89	1.89
HGL (m) DATUM (m)	1440.81	1440.75	1440.70	1440.65	1440.60	1440.55	1440.50	1440.44	1440.39	1440.34	1440.29

DISTANCE IN KILOMETERS	0+440.00	0+460.00	0+480.00	0+500.00	0+520.00	0+540.00	0+560.00	0+580.00	0+600.00	0+620.00	0+640.00
EXISTING GROUND LEVEL (m)	1333.32	1329.89	1325.58	1323.63	1323.80	1323.96	1324.07	1323.71	1319.74	1315.15	1310.23
INVERT LEVELS (m)	1332.00	1328.08	1324.29	1322.85	1322.91	1322.96	1323.02	1323.08	1318.41	1313.72	1309.04
DEPTH OF INVERT (m)	1.32	1.80	1.29	0.78	0.89	1.00	1.05	0.63	1.33	1.42	1.19
HGL (m) DATUM (m)	1440.24	1440.18	1440.13	1440.08	1440.03	1439.98	1439.92	1439.87	1439.82	1439.77	1439.72

DISTANCE IN KILOMETERS	0+660.00	0+680.00	0+700.00	0+720.00	0+740.00	0+760.00	0+780.00	0+800.00	0+820.00	0+840.00	0+860.00
EXISTING GROUND LEVEL (m)	1308.15	1308.04	1309.95	1311.68	1312.55	1313.12	1313.47	1313.82	1312.06	1308.72	1305.23
INVERT LEVELS (m)	1307.10	1307.12	1309.06	1310.94	1311.47	1311.99	1312.51	1313.03	1310.78	1307.30	1303.82
DEPTH OF INVERT (m)	1.05	0.92	0.89	0.74	1.08	1.13	0.96	0.79	1.28	1.42	1.41
HGL (m) DATUM (m)	1439.66	1439.61	1439.56	1439.51	1439.46	1439.41	1439.35	1439.30	1439.25	1439.20	1439.15

DISTANCE IN KILOMETERS	0+880.00	0+900.00	0+920.00	0+940.00	0+960.00	0+980.00	1+000.00	1+020.00	1+040.00	1+060.00	1+080.00
EXISTING GROUND LEVEL (m)	1301.52	1298.08	1297.01	1299.10	1297.48	1295.85	1293.18	1289.24	1285.30	1282.54	1281.69
INVERT LEVELS (m)	1300.34	1296.86	1296.15	1298.15	1296.51	1294.87	1292.25	1288.45	1284.65	1281.21	1280.85
DEPTH OF INVERT (m)	1.19	1.22	0.87	0.95	0.97	0.98	0.94	0.79	0.65	1.33	0.84
HGL (m) DATUM (m)	1439.09	1439.04	1438.99	1438.94	1438.89	1438.83	1438.78	1438.73	1438.68	1438.63	1438.58

DISTANCE IN KILOMETERS	1+100.00	1+120.00	1+140.00	1+160.00	1+180.00	1+200.00
EXISTING GROUND LEVEL (m)	1280.25	1277.04	1273.83	1270.62	1268.14	1267.11
INVERT LEVELS (m)	1279.84	1276.56	1273.28	1270.00	1266.97	1265.99
DEPTH OF INVERT (m)	0.41	0.48	0.55	0.62	1.17	1.12
HGL (m) DATUM (m)	1438.52	1438.47	1438.42	1438.37	1438.32	1438.26

TYPE OF PIPE AND SIZE	OD 50 MM HDPE PIPE (PN16)	OD 50 MM HDPE PIPE (PN16)
GEOLOGICAL CONDITION	SANDY CLAY SOIL	
SLOPE OF HGL (H/V)	−1:385.34	

LONGITUDINAL SECTION

0 100 200m

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

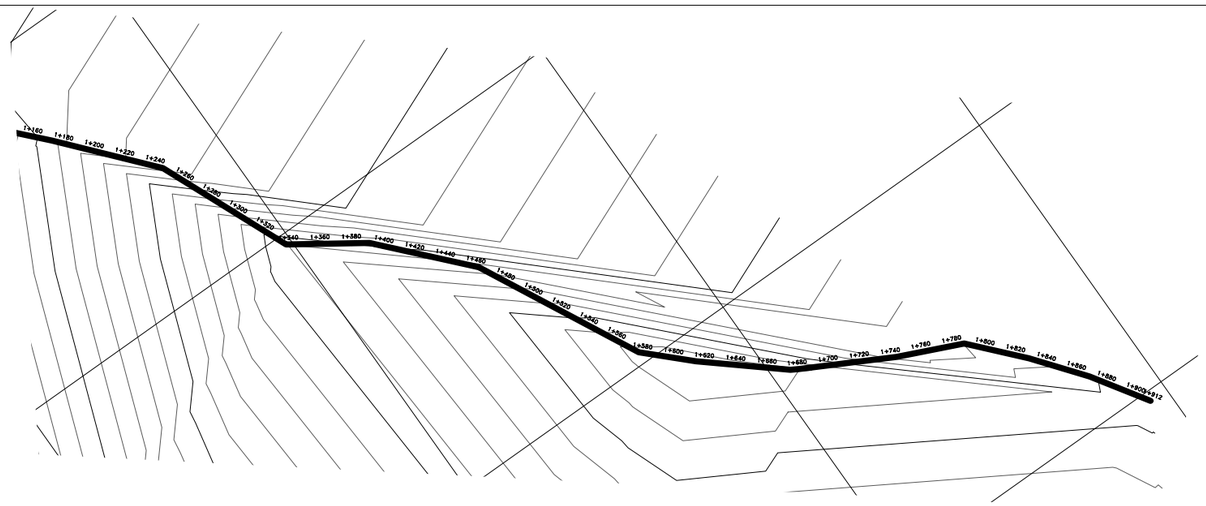
ENGINEER:
CHIEF MANAGER TECHNICAL SERVICES TANA WATER WORKS DEVELOPMENT AGENCY
P.O BOX 1292 - 10100,
NYERI, KENYA

PROJECT TITLE:
EXTENSION OF WATER SUPPLY PIPELINES IN MUKURWEINI

DRAWING TITLE:
LATERAL L-MUTUNDU

CH. 0+000.00 - 1+200.00
SHEET 1 OF 2

Designed by:	A.M.M	Drawn by:	A.M.M
Checked by:	K.N.G	Approved by:	D.N.M
Scale:	1:1000	Date:	JAN 2024
DRG No.	EXT-MUK/LAT-L/01		



PLAN SECTION

DISTANCE IN KILOMETERS	1+200.00	1+220.00	1+240.00	1+260.00	1+280.00	1+300.00	1+320.00	1+340.00	1+360.00	1+380.00	1+400.00	1+420.00	1+440.00	1+460.00	1+480.00	1+500.00	1+520.00	1+540.00	1+560.00	1+580.00	1+600.00	1+620.00	1+640.00	1+660.00	1+680.00	1+700.00	1+720.00	1+740.00	1+760.00	1+780.00	1+800.00	1+820.00	1+840.00	1+880.00	1+880.00	1+900.00	1+911.63
EXISTING GROUND LEVEL (m)	1267.11	1266.08	1265.05	1262.21	1258.59	1254.98	1251.36	1248.15	1249.21	1250.26	1250.38	1249.29	1248.20	1247.11	1245.21	1243.20	1241.18	1239.16	1237.15	1235.26	1234.54	1234.08	1234.39	1234.71	1235.78	1238.65	1241.49	1244.33	1244.49	1244.12	1243.83	1243.58	1242.62	1240.99	1239.86	1239.20	1238.82
INVERT LEVELS (m)	1265.99	1265.02	1264.04	1261.03	1257.39	1253.75	1250.10	1247.33	1248.32	1249.32	1249.32	1248.19	1247.07	1245.94	1244.10	1242.07	1240.04	1238.02	1235.99	1233.97	1233.39	1233.16	1233.46	1233.76	1234.64	1237.49	1240.34	1243.19	1243.63	1243.30	1242.98	1242.65	1241.69	1239.97	1238.73	1238.15	
DEPTH OF INVERT (m)	1.12	1.06	1.01	1.17	1.20	1.23	1.26	0.83	0.88	0.94	1.06	1.10	1.13	1.16	1.12	1.13	1.14	1.15	1.15	1.29	1.14	0.82	0.93	0.95	1.14	1.16	1.15	1.14	0.86	0.82	0.85	0.93	0.93	1.02	1.13	1.06	
HGL (m) DATUM (m)	1438.26	1438.21	1438.16	1438.11	1438.06	1438.00	1437.95	1437.90	1437.85	1437.80	1437.74	1437.69	1437.64	1437.59	1437.54	1437.49	1437.43	1437.38	1437.33	1437.28	1437.23	1437.17	1437.12	1437.07	1437.02	1436.97	1436.91	1436.86	1436.81	1436.76	1436.71	1436.65	1436.60	1436.55	1436.50	1436.45	1436.42
TYPE OF PIPE AND SIZE	OD 50 MM HDPE PIPE (PN20)																																				
GEOLOGICAL CONDITION	SANDY CLAY SOIL																																				
SLOPE OF HGL (H/V)	-1:385.34																																				

LONGITUDINAL SECTION

0 100 200m

NOTES:

1. CONTOUR LEVELS ARE IN METERS AT TWO METER INTERVALS
2. GRID VALUES ARE IN METERS AT 200 METER INTERVALS
3. GEOLOGICAL CONDITIONS INDICATED ON DRAWING ARE FOR GENERAL GUIDANCE ONLY
4. FOR FITTING DETAILS SEE DRG. NO. MWSP/TWKU/07

LEGEND:

- PROPOSED TREATED WATER GRAVITY MAIN
- DOUBLE ORIFICE AIRVALVE
- WASHOUT
- PRV — PRESSURE REDUCING VALVE

CLIENT:

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

ENGINEER:

CHIEF MANAGER TECHNICAL SERVICES
TANA WATER WORKS DEVELOPMENT AGENCY
P.O BOX 1292 - 10100,
NYERI, KENYA

PROJECT TITLE:

EXTENSION OF WATER SUPPLY PIPELINES IN MUKURWEINI

DRAWING TITLE:

LATERAL L-MUTUNDU

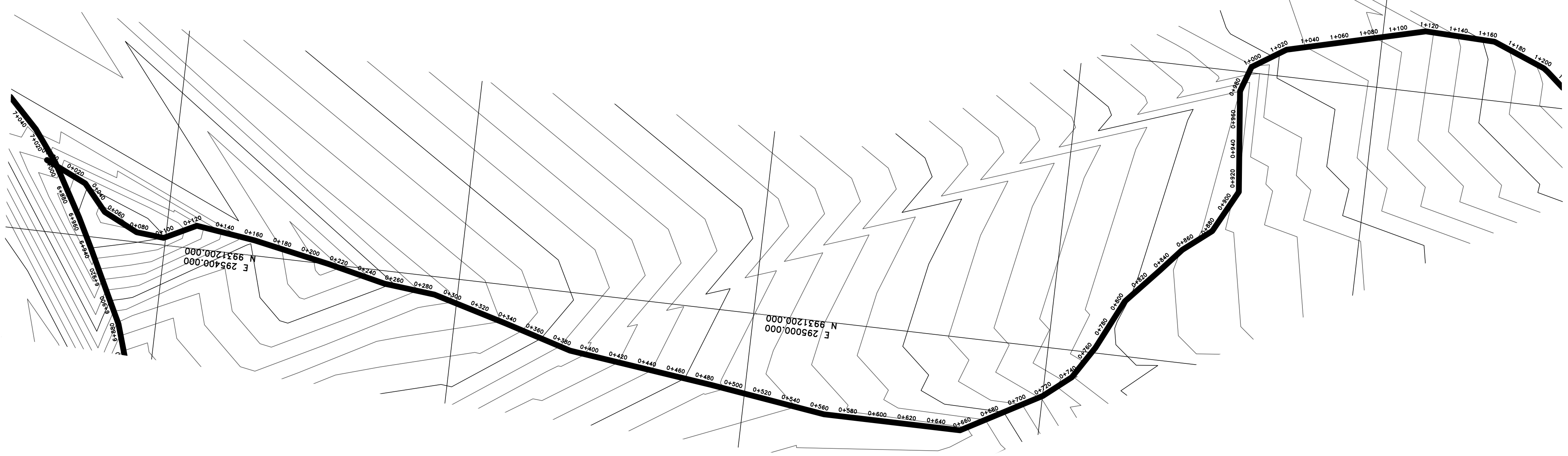
CH. 1+200.00 - 1+911.63
SHEET 2 OF 2

Designed by: A.M.M	Drawn by: A.M.M
Checked by: K.N.G	Approved by: D.N.M
Scale: 1:1000	Date: JAN 2024

DRG No. EXT-MUK/LAT-L/02

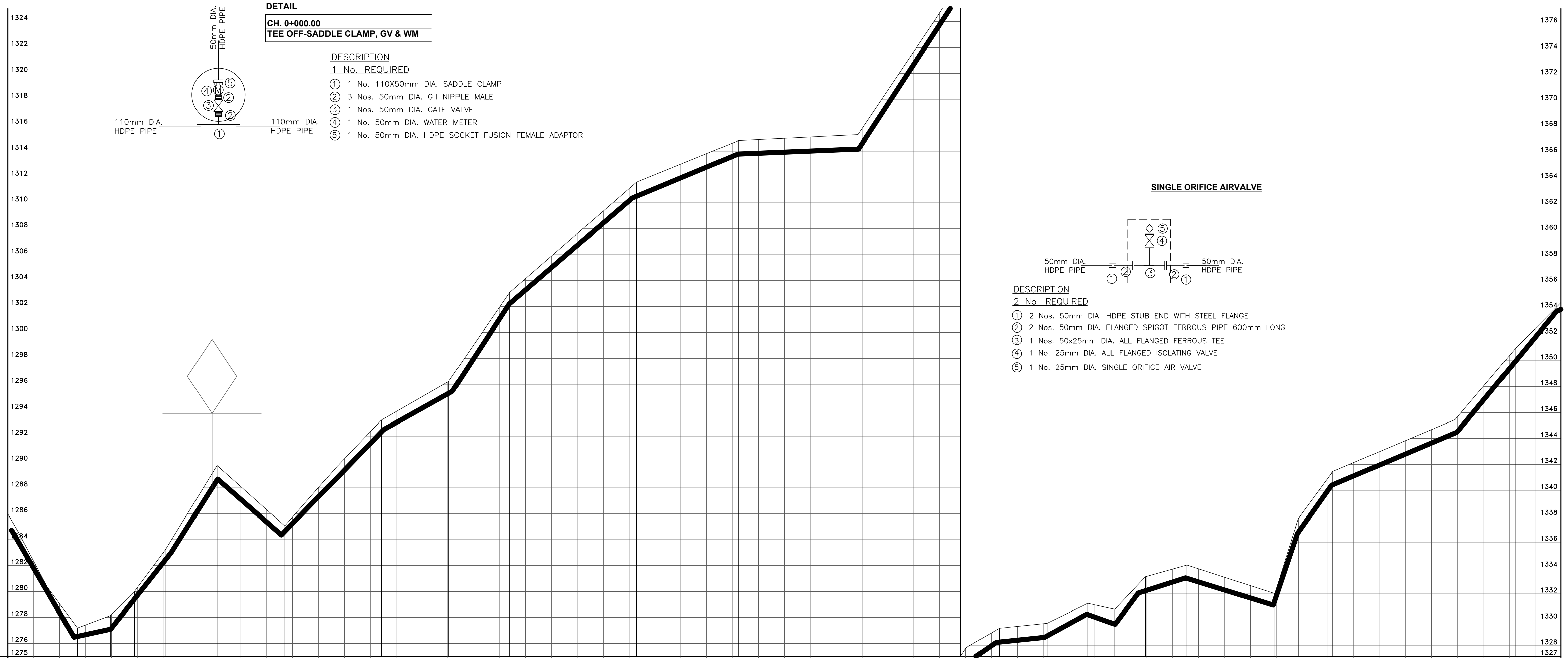
NOTES:
1. CONTOUR LEVELS ARE IN METERS AT TWO METER INTERVALS
2. GRID VALUES ARE IN METERS AT 200 METER INTERVALS
3. GEOLOGICAL CONDITIONS INDICATED ON DRAWING ARE FOR GENERAL GUIDANCE ONLY
4. FOR FITTING DETAILS SEE DRG. NO. MWSP/TWKU/07

LEGEND:
- PROPOSED TREATED WATER GRAVITY MAIN
- DOUBLE ORIFICE AIRVALVE
- WASHOUT
- PRV — PRESSURE REDUCING VALVE



PLAN SECTION

LATERAL K PROFILE



DETAIL

CH. 0+000.00
TEE OFF-SADDLE CLAMP, GV & WM

50mm DIA. HDPE PIPE
110mm DIA. HDPE PIPE
110mm DIA. HDPE PIPE

DESCRIPTION
1 No. REQUIRED
1. 1 No. 110X50mm DIA. SADDLE CLAMP
2. 3 Nos. 50mm DIA. G.I NIPPLE MALE
3. 1 Nos. 50mm DIA. GATE VALVE
4. 1 No. 50mm DIA. WATER METER
5. 1 No. 50mm DIA. HDPE SOCKET FUSION FEMALE ADAPTOR

SINGLE ORIFICE AIRVALVE

50mm DIA. HDPE PIPE
50mm DIA. HDPE PIPE

DESCRIPTION
2 No. REQUIRED
1. 2 Nos. 50mm DIA. HDPE STUB END WITH STEEL FLANGE
2. 2 Nos. 50mm DIA. FLANGED SPIGOT FERROUS PIPE 600mm LONG
3. 1 Nos. 50x25mm DIA. ALL FLANGED FERROUS TEE
4. 1 No. 25mm DIA. ALL FLANGED ISOLATING VALVE
5. 1 No. 25mm DIA. SINGLE ORIFICE AIR VALVE

DISTANCE IN KILOMETERS	0+000.00	0+020.00	0+040.00	0+060.00	0+080.00	0+100.00	0+120.00	0+140.00	0+160.00	0+180.00
EXISTING GROUND LEVEL (m)	1285.98	1282.33	1279.05	1277.42	1278.23	1280.30	1282.99	1286.21	1289.47	1288.09
INVERT LEVELS (m)		1281.79	1278.36	1276.67	1277.17	1279.70	1282.22	1285.19	1288.36	1287.11
DEPTH OF INVERT (m)		0.53	0.69	0.75	1.05	0.61	0.77	1.02	1.12	0.98
HGL (m) DATUM (m)	1409.06	1408.93	1408.80	1408.68	1408.55	1408.42	1408.29	1408.16	1408.03	1407.90

DISTANCE IN KILOMETERS	0+200.00	0+220.00	0+240.00	0+260.00	0+280.00	0+300.00	0+320.00	0+340.00	0+360.00	0+380.00
EXISTING GROUND LEVEL (m)	1286.31	1285.75	1288.03	1290.25	1292.34	1293.89	1295.04	1296.18	1299.05	1301.97
INVERT LEVELS (m)	1285.36	1285.25	1287.31	1289.37	1291.43	1293.04	1294.15	1295.27	1298.00	1301.07
DEPTH OF INVERT (m)	0.95	0.50	0.71	0.88	0.91	0.85	0.88	0.91	1.05	0.90
HGL (m) DATUM (m)	1407.77	1407.64	1407.51	1407.38	1407.25	1407.12	1406.99	1406.86	1406.73	1406.60

DISTANCE IN KILOMETERS	0+400.00	0+420.00	0+440.00	0+460.00	0+480.00	0+500.00	0+520.00	0+540.00	0+560.00	0+580.00
EXISTING GROUND LEVEL (m)	1304.15	1305.89	1307.63	1309.37	1311.11	1312.19	1313.00	1313.81	1314.62	1314.88
INVERT LEVELS (m)	1303.28	1305.00	1306.72	1308.44	1310.16	1311.11	1311.94	1312.77	1313.60	1313.84
DEPTH OF INVERT (m)	0.88	0.89	0.91	0.92	0.94	1.08	1.06	1.04	1.02	1.04
HGL (m) DATUM (m)	1406.48	1406.35	1406.22	1406.09	1405.96	1405.83	1405.70	1405.57	1405.44	1405.31

DISTANCE IN KILOMETERS	0+600.00	0+620.00	0+640.00	0+660.00	0+680.00	0+700.00	0+720.00	0+740.00	0+760.00	0+780.00
EXISTING GROUND LEVEL (m)	1314.98	1315.08	1315.18	1315.74	1318.71	1321.69	1324.68	1327.78	1328.99	1329.50
INVERT LEVELS (m)	1313.92	1314.01	1314.09	1314.59	1317.64	1320.69	1323.75	1326.63	1328.01	1328.43
DEPTH OF INVERT (m)	1.05	1.07	1.09	1.16	1.07	0.99	0.93	1.15	0.99	1.07
HGL (m) DATUM (m)	1405.18	1405.05	1404.92	1404.79	1404.66	1404.53	1404.41	1404.28	1404.15	1404.02

DISTANCE IN KILOMETERS	0+800.00	0+820.00	0+840.00	0+860.00	0+880.00	0+900.00	0+920.00	0+940.00	0+960.00	0+980.00
EXISTING GROUND LEVEL (m)	1329.70	1330.57	1331.15	1331.32	1333.35	1333.92	1333.94	1333.29	1332.64	1332.36
INVERT LEVELS (m)	1328.64	1329.69	1330.21	1330.27	1332.28	1332.92	1332.92	1332.30	1331.68	1331.83
DEPTH OF INVERT (m)	1.06	0.88	0.94	1.06	1.07	1.00	1.01	0.98	0.95	0.54
HGL (m) DATUM (m)	1403.89	1403.76	1403.63	1403.50	1403.37	1403.24	1403.11	1402.98	1402.85	1402.72

DISTANCE IN KILOMETERS	1+000.00	1+020.00	1+040.00	1+060.00	1+080.00	1+100.00	1+120.00	1+140.00	1+160.00	1+180.00	1+200.00
EXISTING GROUND LEVEL (m)	1338.22	1340.93	1342.15	1342.99	1343.84	1344.68	1345.66	1348.02	1350.37	1352.47	1354.48
INVERT LEVELS (m)	1337.17	1339.99	1341.11	1341.96	1342.80	1343.65	1344.52	1346.94	1349.37	1351.80	1353.95
DEPTH OF INVERT (m)	1.05	0.94	1.03	1.03	1.03	1.03	1.15	1.07	1.00	0.68	0.53
HGL (m) DATUM (m)	1402.59	1402.46	1402.34	1402.21	1402.08	1401.95	1401.82	1401.69	1401.56	1401.43	1401.30

TYPE OF PIPE AND SIZE	OD 50 MM HDPE PIPE (PN25) / OD 50 MM HDPE PIPE (PN25)
GEOLOGICAL CONDITION	SANDY CLAY SOIL
SLOPE OF HGL (H/V)	−1:154.57

LONGITUDINAL SECTION

0 100 200m

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

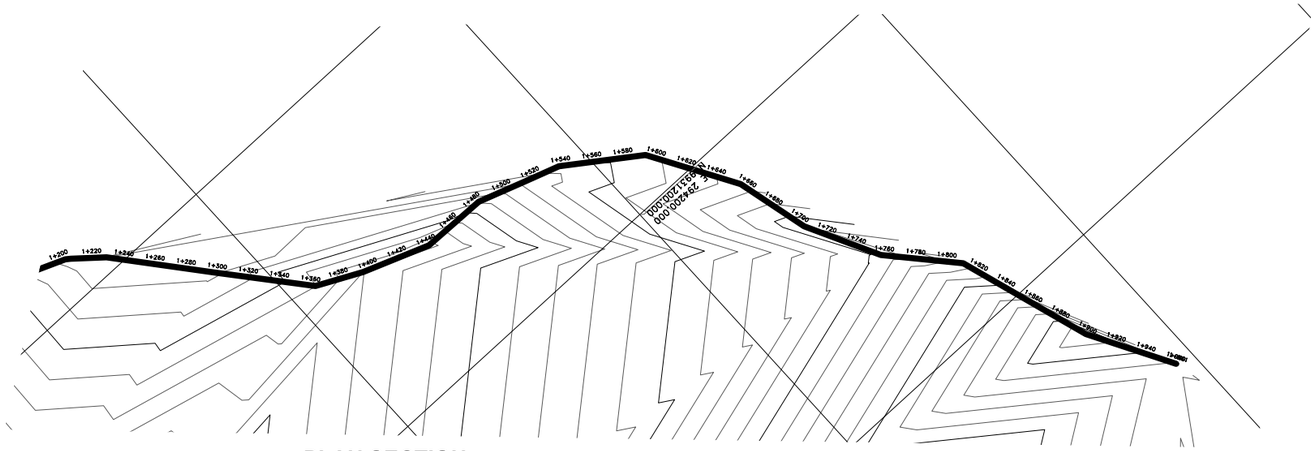
ENGINEER: **CHIEF MANAGER TECHNICAL SERVICES TANA WATER WORKS DEVELOPMENT AGENCY**
P.O BOX 1292 - 10100,
NYERI, KENYA

PROJECT TITLE:
EXTENSION OF WATER SUPPLY PIPELINES IN MUKURWEINI

DRAWING TITLE:
LATERAL K-MUTUNDU

CH. 0+000.00 - 1+200.00
SHEET 1 OF 2

Designed by:	A.M.M	Drawn by:	A.M.M
Checked by:	K.N.G	Approved by:	D.N.M
Scale:	1:1000	Date:	JAN 2024
DRG No.	**EXT-MUK/LAT-K/01**		



PLAN SECTION

DISTANCE IN KILOMETERS	1+200.00	1+220.00	1+240.00	1+260.00	1+280.00	1+300.00	1+320.00	1+340.00	1+360.00	1+380.00	1+400.00	1+420.00	1+440.00	1+460.00	1+480.00	1+500.00	1+520.00	1+540.00	1+560.00	1+580.00	1+600.00	1+620.00	1+640.00	1+660.00	1+680.00	1+700.00	1+720.00	1+740.00	1+760.00	1+780.00	1+800.00	1+820.00	1+840.00	1+860.00	1+880.00	1+900.00	1+920.00	1+940.00	1+961.37
EXISTING GROUND LEVEL (m)	1354.48	1355.56	1355.82	1355.38	1354.94	1354.35	1352.37	1350.39	1348.41	1345.95	1343.93	1343.70	1343.46	1347.52	1351.69	1354.59	1357.16	1359.26	1360.06	1360.85	1361.74	1362.84	1363.93	1365.25	1368.02	1370.79	1371.32	1370.93	1370.78	1372.41	1374.04	1376.60	1380.30	1384.68	1389.07	1393.42	1391.75	1389.82	1387.99
INVERT LEVELS (m)	1353.95	1354.78	1354.99	1354.50	1354.02	1353.23	1351.08	1348.93	1346.77	1344.62	1342.66	1342.66	1342.66	1346.63	1351.62	1354.34	1356.49	1358.38	1359.24	1360.10	1360.96	1361.82	1362.68	1363.54	1366.58	1369.91	1370.34	1369.97	1369.77	1371.45	1373.13	1376.26	1380.43	1384.59	1388.76	1392.92	1391.18	1388.68	
DEPTH OF INVERT (m)	0.53	0.79	0.83	0.88	0.92	1.12	1.29	1.46	1.64	1.33	1.28	1.04	0.81	0.89	0.07	0.25	0.67	0.88	0.82	0.76	0.78	1.02	1.25	1.71	1.44	0.89	0.98	0.96	1.01	0.96	0.92	0.34	−0.12	0.09	0.31	0.49	0.57	1.14	
HGL (m) DATUM (m)	1401.30	1401.17	1401.04	1400.91	1400.78	1400.65	1400.52	1400.39	1400.26	1400.14	1400.01	1399.88	1399.75	1398.62	1399.49	1399.36	1399.23	1399.10	1398.97	1398.84	1398.71	1398.58	1398.45	1398.32	1398.19	1398.07	1397.94	1397.81	1397.68	1397.55	1397.42	1397.29	1397.16	1397.03	1396.90	1396.77	1396.64	1396.51	1396.38
TYPE OF PIPE AND SIZE	OD 50 MM HDPE PIPE (PN20)																																						
GEOLOGICAL CONDITION	SANDY CLAY SOIL																																						
SLOPE OF HGL (H/V)	−1:154.57																																						

LONGITUDINAL SECTION

0 100 200m

NOTES:

1. CONTOUR LEVELS ARE IN METERS AT TWO METER INTERVALS
2. GRID VALUES ARE IN METERS AT 200 METER INTERVALS
3. GEOLOGICAL CONDITIONS INDICATED ON DRAWING ARE FOR GENERAL GUIDANCE ONLY
4. FOR FITTING DETAILS SEE DRG. NO. MWSP/TWKU/07

LEGEND:

- PROPOSED TREATED WATER GRAVITY MAIN
- DOUBLE ORIFICE AIRVALVE
- WASHOUT
- PRV — PRESSURE REDUCING VALVE

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

ENGINEER:
CHIEF MANAGER TECHNICAL SERVICES
TANA WATER WORKS DEVELOPMENT AGENCY
P.O BOX 1292 - 10100,
NYERI, KENYA

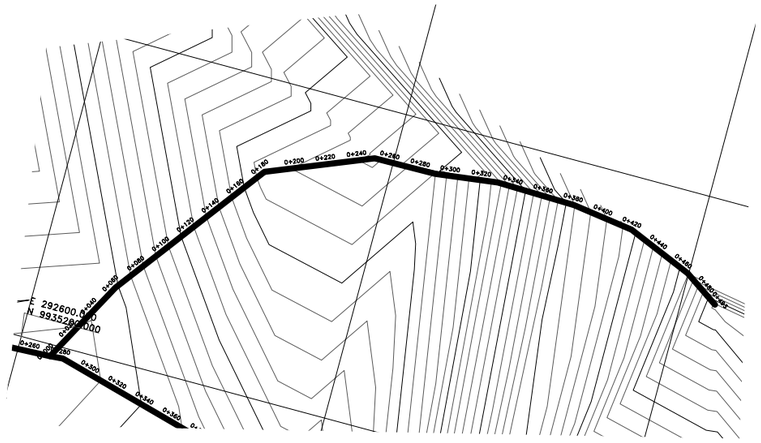
PROJECT TITLE:
EXTENSION OF WATER SUPPLY PIPELINES IN MUKURWEINI

DRAWING TITLE:
LATERAL K-MUTUNDU

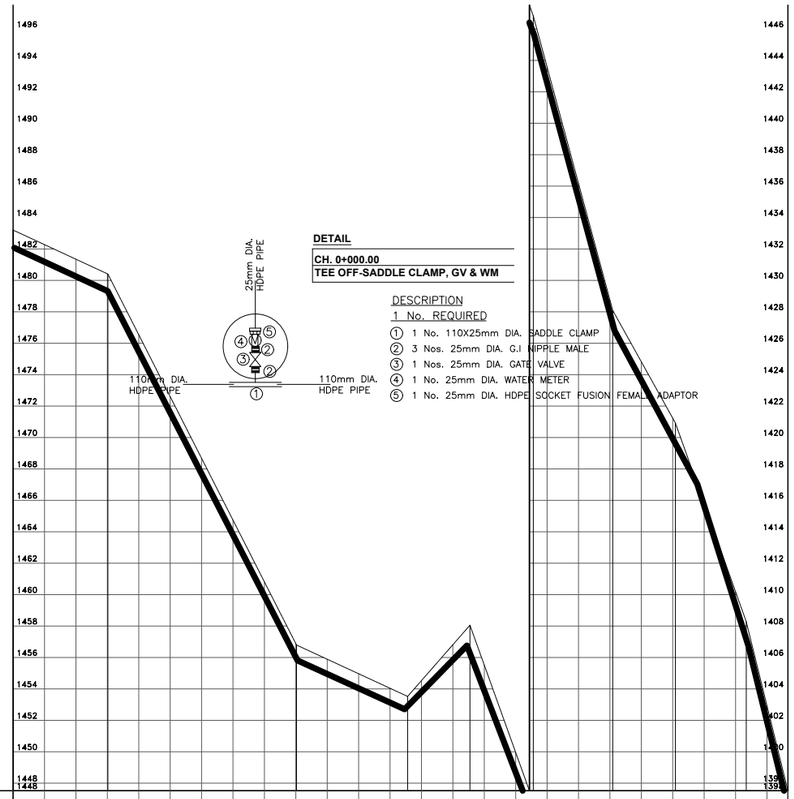
CH. 1+200.00 - 1+961.37
SHEET 2 OF 2

Designed by:	A.M.M	Drawn by:	A.M.M
Checked by:	K.N.G	Approved by:	D.N.M
Scale:	1:1000	Date:	JAN 2024

DRG No. EXT-MUK/LAT-K/02



PLAN SECTION



DISTANCE IN KILOMETERS	0+000.00	0+020.00	0+040.00	0+060.00	0+080.00	0+100.00	0+120.00	0+140.00	0+160.00	0+180.00	0+200.00	0+220.00	0+240.00	0+260.00	0+280.00	0+300.00	0+320.00	0+340.00	0+360.00	0+380.00	0+400.00	0+420.00	0+440.00	0+460.00	0+480.00	0+493.33
EXISTING GROUND LEVEL (m)	1483.20	1482.27	1481.35	1480.42	1476.54	1472.61	1468.67	1464.74	1460.81	1456.88	1455.89	1454.96	1454.04	1454.53	1456.81	1455.52	1449.95	1443.58	1436.17	1428.75	1424.82	1421.23	1415.79	1410.19	1402.93	1397.52
INVERT LEVELS (m)		1481.18	1480.25	1479.33	1475.47	1471.58	1467.69	1463.80	1459.91	1456.02	1454.95	1454.04	1453.13	1453.80	1455.84	1453.89	1448.68	1442.58	1435.23	1427.88	1423.64	1419.93	1415.66	1409.35	1401.94	
DEPTH OF INVERT (m)		1.09	1.09	1.09	1.07	1.03	0.98	0.94	0.90	0.86	0.94	0.92	0.91	0.73	0.97	1.63	1.27	1.00	0.94	0.87	1.18	1.30	0.13	0.88	0.98	
HGL (m) DATUM (m)	1510.75	1510.52	1510.28	1510.05	1509.82	1509.58	1509.35	1509.12	1508.89	1508.65	1508.42	1508.19	1507.95	1507.72	1507.49	1507.25	1507.02	1506.79	1506.55	1506.32	1506.09	1505.85	1505.62	1505.39	1505.16	1505.00
TYPE OF PIPE AND SIZE		OD 25 MM HDPE PIPE (PN10)																							OD 25 MM HDPE PIPE (PN16)	
GEOLOGICAL CONDITION		SANDY CLAY SOIL																								
SLOPE OF HGL (H/V)		-1:85.80																								

LONGITUDINAL SECTION

0 100 200m

NOTES:

1. CONTOUR LEVELS ARE IN METERS AT TWO METER INTERVALS
2. GRID VALUES ARE IN METERS AT 200 METER INTERVALS
3. GEOLOGICAL CONDITIONS INDICATED ON DRAWING ARE FOR GENERAL GUIDANCE ONLY
4. FOR FITTING DETAILS SEE DRG. NO. MWSP/TWKU/07

LEGEND:

- PROPOSED TREATED WATER GRAVITY MAIN
- DOUBLE ORIFICE AIRVALVE
- WASHOUT
- PRV — PRESSURE REDUCING VALVE

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

ENGINEER:
CHIEF MANAGER TECHNICAL SERVICES
TANA WATER WORKS DEVELOPMENT AGENCY
P.O BOX 1292 - 10100,
NYERI, KENYA

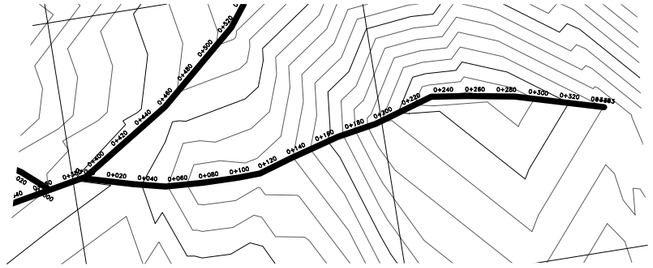
PROJECT TITLE:
EXTENSION OF WATER SUPPLY PIPELINES IN MUKURWEINI

DRAWING TITLE:
TERTIARY B-MUTUNDU

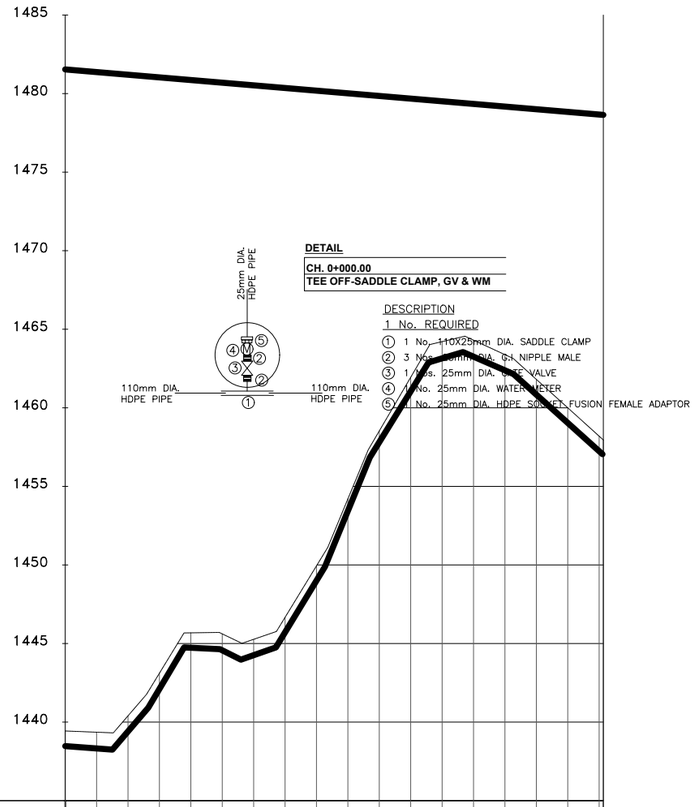
CH. 0+000.00 - 0+493.33
SHEET 1 OF 1

Designed by:	A.M.M	Drawn by:	A.M.M
Checked by:	K.N.G	Approved by:	D.N.M
Scale:	1:1000	Date:	JAN 2024

DRG No. EXT-MUK/TER-B/02



PLAN SECTION



DISTANCE IN KILOMETERS	0+000.00	0+020.00	0+040.00	0+060.00	0+080.00	0+100.00	0+120.00	0+140.00	0+160.00	0+180.00	0+200.00	0+220.00	0+240.00	0+260.00	0+280.00	0+300.00	0+320.00	0+342.65
EXISTING GROUND LEVEL (m)	1439.43	1439.35	1440.40	1443.11	1445.68	1445.61	1445.27	1446.67	1449.94	1454.20	1458.53	1461.94	1464.21	1464.31	1463.38	1461.81	1460.00	1458.18
INVERT LEVELS (m)		1438.32	1439.41	1442.11	1444.73	1444.57	1444.26	1445.71	1449.00	1453.44	1457.82	1461.05	1463.15	1463.26	1462.39	1460.84	1459.04	1457.24
DEPTH OF INVERT (m)		1.03	0.99	1.00	0.95	1.05	1.01	0.95	0.94	0.76	0.71	0.89	1.07	1.05	1.00	0.97	0.96	0.95
HGL (m) DATUM (m)	1481.54	1481.37	1481.20	1481.03	1480.86	1480.69	1480.52	1480.35	1480.19	1480.02	1479.85	1479.68	1479.51	1479.34	1479.17	1479.00	1478.83	1478.66
TYPE OF PIPE AND SIZE	OD 25 MM HDPE PIPE (PN10)																	
GEOLOGICAL CONDITION	SANDY CLAY SOIL																	
SLOPE OF HGL (H/V)	-1:118.34																	

LONGITUDINAL SECTION

0 100 200m

NOTES:

1. CONTOUR LEVELS ARE IN METERS AT TWO METER INTERVALS
2. GRID VALUES ARE IN METERS AT 200 METER INTERVALS
3. GEOLOGICAL CONDITIONS INDICATED ON DRAWING ARE FOR GENERAL GUIDANCE ONLY
4. FOR FITTING DETAILS SEE DRG. NO. MWSP/TWKU/07

LEGEND:

- PROPOSED TREATED WATER GRAVITY MAIN
- DOUBLE ORIFICE AIRVALVE
- WASHOUT
- PRV — PRESSURE REDUCING VALVE

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

ENGINEER:
CHIEF MANAGER TECHNICAL SERVICES
TANA WATER WORKS DEVELOPMENT AGENCY
P.O BOX 1292 - 10100,
NYERI, KENYA

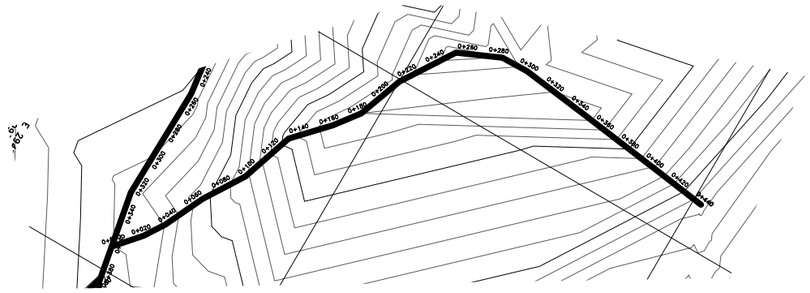
PROJECT TITLE:
EXTENSION OF WATER SUPPLY PIPELINES IN MUKURWEINI

DRAWING TITLE:
TERTIARY F1-MUTUNDU

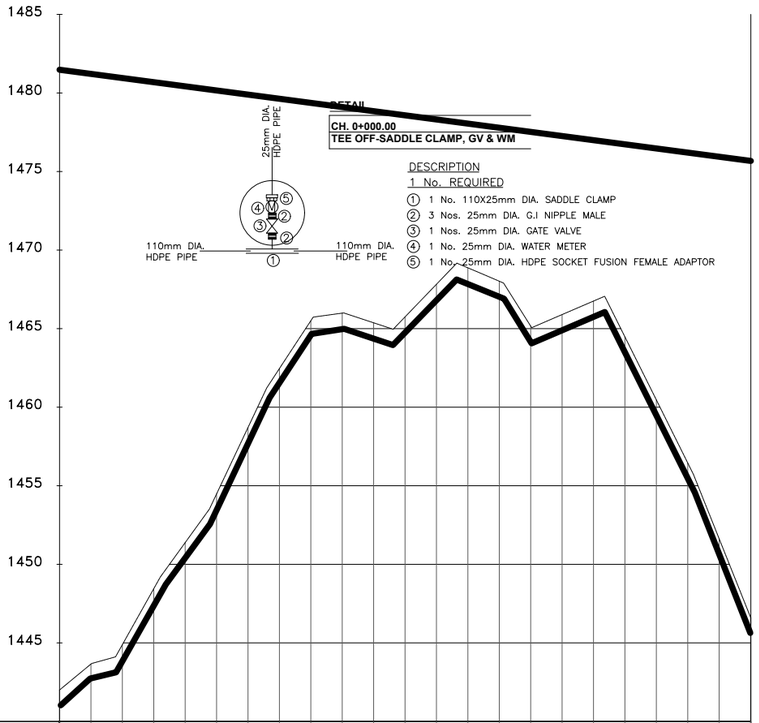
CH. 0+000.00 - 0+342.65
SHEET 1 OF 1

Designed by:	A.M.M	Drawn by:	A.M.M
Checked by:	K.N.G	Approved by:	D.N.M
Scale:	1:1000	Date:	JAN 2024

DRG No. **EXT-MUK/TER-F1/02**



PLAN SECTION



DISTANCE IN KILOMETERS	0+000.00	0+020.00	0+040.00	0+060.00	0+080.00	0+100.00	0+120.00	0+140.00	0+160.00	0+180.00	0+200.00	0+220.00	0+240.00	0+260.00	0+280.00	0+300.00	0+320.00	0+340.00	0+360.00	0+380.00	0+400.00	0+420.00	0+440.20
EXISTING GROUND LEVEL (m)	1442.00	1443.65	1444.89	1448.45	1451.38	1454.48	1458.71	1462.46	1465.50	1465.99	1465.37	1465.75	1467.82	1468.87	1468.02	1465.16	1465.90	1466.75	1464.48	1460.47	1456.45	1451.63	1446.68
INVERT LEVELS (m)		1442.74	1443.83	1447.36	1450.40	1453.45	1457.69	1461.55	1464.58	1464.97	1464.36	1464.75	1466.81	1467.84	1467.03	1464.16	1464.89	1465.75	1463.49	1459.48	1455.47	1450.65	
DEPTH OF INVERT (m)		0.91	1.05	1.08	0.98	1.03	1.02	0.91	0.92	1.02	1.01	1.00	1.02	1.03	0.99	1.00	1.00	1.01	0.98	0.98	0.98	0.98	
HGL (m) DATUM (m)	1481.48	1481.21	1480.95	1480.69	1480.42	1480.16	1479.89	1479.63	1479.37	1479.10	1478.84	1478.58	1478.31	1478.05	1477.79	1477.52	1477.26	1476.99	1476.73	1476.47	1476.20	1475.94	1475.68
TYPE OF PIPE AND SIZE	OD 25 MM HDPE PIPE (PN10)																						
GEOLOGICAL CONDITION	SANDY CLAY SOIL																						
SLOPE OF HGL (H/V)	-1:75.85																						

LONGITUDINAL SECTION

0 100 200m

NOTES:

1. CONTOUR LEVELS ARE IN METERS AT TWO METER INTERVALS
2. GRID VALUES ARE IN METERS AT 200 METER INTERVALS
3. GEOLOGICAL CONDITIONS INDICATED ON DRAWING ARE FOR GENERAL GUIDANCE ONLY
4. FOR FITTING DETAILS SEE DRG. NO. MWSP/TWKU/07

LEGEND:

- PROPOSED TREATED WATER GRAVITY MAIN
- DOUBLE ORIFICE AIRVALVE
- WASHOUT
- PRV — PRESSURE REDUCING VALVE

CLIENT:

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

ENGINEER:

CHIEF MANAGER TECHNICAL SERVICES
TANA WATER WORKS DEVELOPMENT AGENCY
P.O BOX 1292 - 10100,
NYERI, KENYA

PROJECT TITLE:

EXTENSION OF WATER SUPPLY PIPELINES IN MUKURWEINI

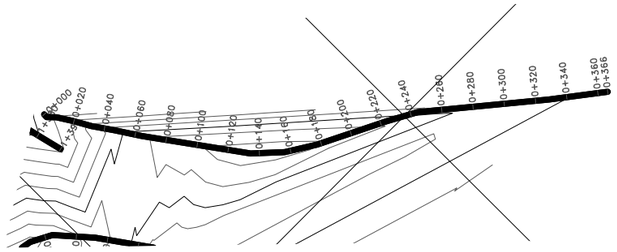
DRAWING TITLE:

TERTIARY F2-MUTUNDU

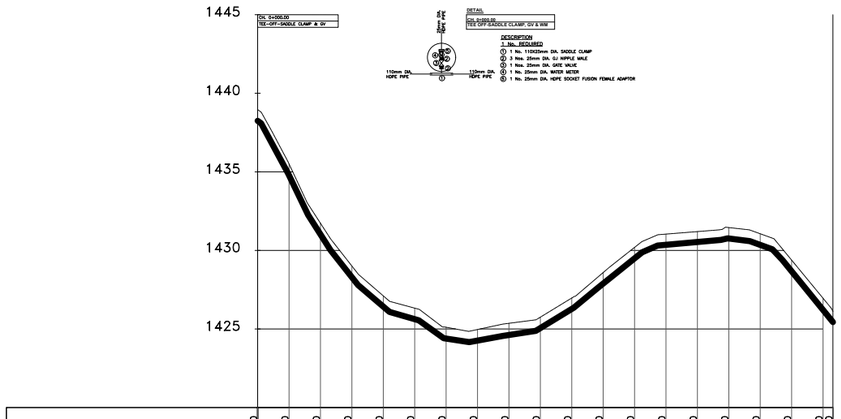
CH. 0+000.00 - 0+440.20
SHEET 1 OF 1

Designed by:	A.M.M	Drawn by:	A.M.M
Checked by:	K.N.G	Approved by:	D.N.M
Scale:	1:1000	Date:	JAN 2024

DRG No. EXT-MUK/TER-F2/02



PLAN SECTION



DISTANCE IN KILOMETERS	0+000.00	0+020.00	0+040.00	0+060.00	0+080.00	0+100.00	0+120.00	0+140.00	0+160.00	0+180.00	0+200.00	0+220.00	0+240.00	0+260.00	0+280.00	0+300.00	0+320.00	0+340.00	0+360.00	0+366.30
EXISTING GROUND LEVEL (m)	1438.96	1435.50	1431.73	1429.01	1427.11	1426.33	1425.11	1424.97	1425.36	1425.75	1425.75	1426.97	1428.59	1430.19	1431.04	1431.20	1431.45	1431.06	1429.38	1426.96
INVERT LEVELS (m)	1438.25	1434.78	1431.02	1428.29	1426.42	1425.63	1424.39	1424.26	1424.62	1425.05	1426.27	1427.89	1429.49	1430.36	1430.53	1430.76	1430.35	1428.67	1426.21	
DEPTH OF INVERT (m)	0.72	0.73	0.71	0.71	0.68	0.70	0.72	0.71	0.74	0.70	0.70	0.70	0.70	0.68	0.66	0.70	0.71	0.71	0.74	
HGL (m) DATUM (m)	1487.29	1487.11	1486.93	1486.75	1486.57	1486.39	1486.21	1486.03	1485.85	1485.67	1485.49	1485.32	1485.14	1484.96	1484.78	1484.60	1484.42	1484.24	1484.06	
TYPE OF PIPE AND SIZE	OD 25 MM HDPE PIPE (PN16)																			
GEOLOGICAL CONDITION	SANDY CLAY SOIL																			
SLOPE OF HGL (H/V)	-1:111.68																			

LONGITUDINAL SECTION

0 100 200m

NOTES:

1. CONTOUR LEVELS ARE IN METERS AT TWO METER INTERVALS
2. GRID VALUES ARE IN METERS AT 200 METER INTERVALS
3. GEOLOGICAL CONDITIONS INDICATED ON DRAWING ARE FOR GENERAL GUIDANCE ONLY
4. FOR FITTING DETAILS SEE DRG. NO. MWSP/TWKU/07

LEGEND:

- PROPOSED TREATED WATER GRAVITY MAIN
- DOUBLE ORIFICE AIRVALVE
- WASHOUT
- PRV — PRESSURE REDUCING VALVE

CLIENT:

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

ENGINEER:

CHIEF MANAGER TECHNICAL SERVICES
TANA WATER WORKS DEVELOPMENT AGENCY
P.O BOX 1292 - 10100,
NYERI, KENYA

PROJECT TITLE:

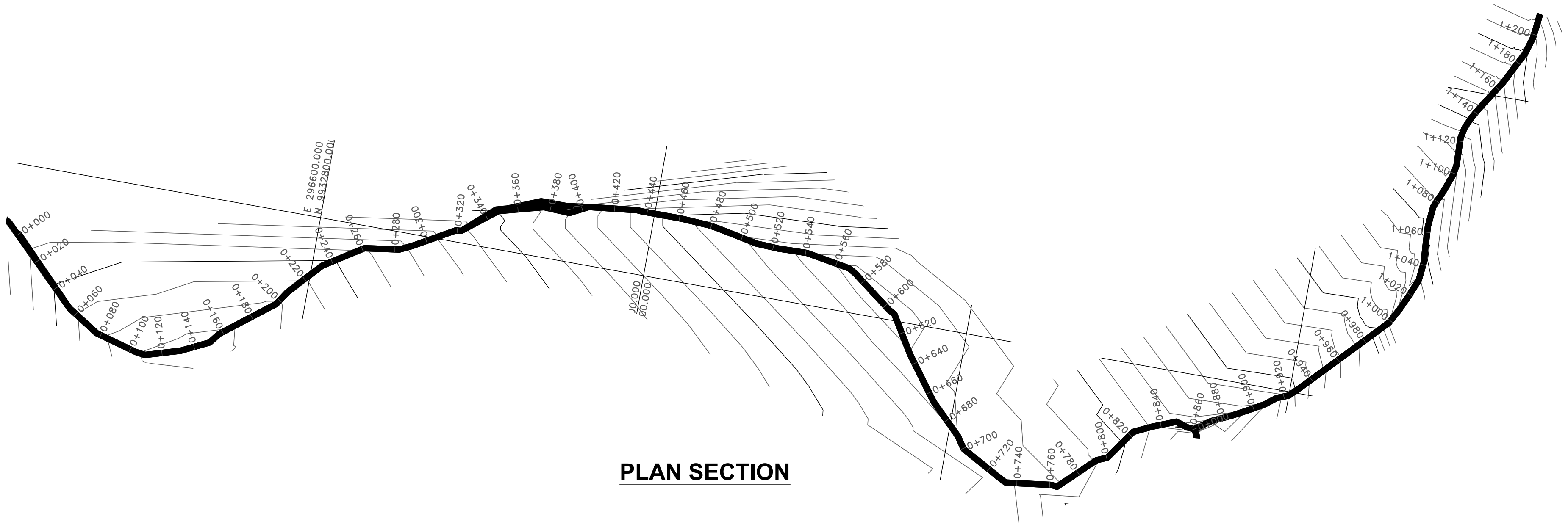
EXTENSION OF WATER SUPPLY PIPELINES IN MUKURWEINI

DRAWING TITLE:

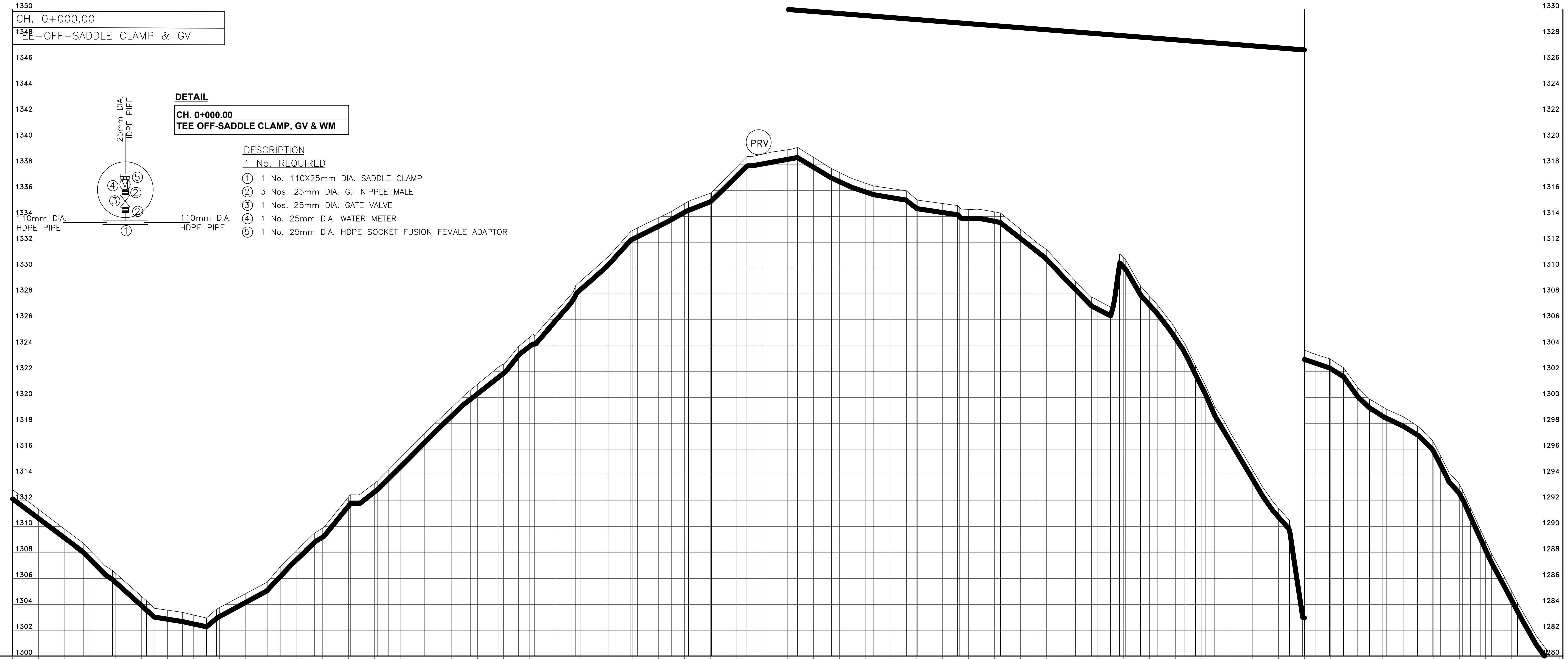
KAIGUNYO LINE

CH. 0+000.00 - 0+366.3
SHEET 1 OF 1

Designed by:	A.M.M	Drawn by:	A.M.M
Checked by:	K.N.G	Approved by:	D.N.M
Scale:	1:1000	Date:	JAN 2024
DRG No.	EXT-MUK/KAI/01		



PLAN SECTION



DISTANCE IN KILOMETERS	EXISTING GROUND LEVEL (m)	INVERT LEVELS (m)	DEPTH OF INVERT (m)	HGL (m) DATUM (m)
0+000.00	1312.86	1312.15	0.71	1372.28
0+020.00	1311.34	1310.64	0.70	1371.95
0+040.00	1309.83	1309.14	0.68	1371.62
0+060.00	1308.19	1307.50	0.68	1371.30
0+080.00	1306.39	1305.69	0.70	1370.97
0+100.00	1304.62	1303.90	0.72	1370.64
0+120.00	1303.55	1302.85	0.70	1370.31
0+140.00	1303.18	1302.48	0.70	1369.98
0+160.00	1303.75	1303.05	0.69	1369.65
0+180.00	1304.82	1304.14	0.68	1369.32
0+200.00	1306.08	1305.40	0.68	1369.00
0+220.00	1308.17	1307.48	0.69	1368.67
0+240.00	1309.89	1309.19	0.70	1368.34
0+260.00	1312.30	1311.59	0.70	1368.01
0+280.00	1313.35	1312.67	0.67	1367.68
0+300.00	1315.31	1314.60	0.71	1367.35
0+320.00	1317.32	1316.61	0.71	1367.03
0+340.00	1319.23	1318.58	0.65	1366.70
0+360.00	1321.03	1320.29	0.74	1366.37
0+380.00	1322.60	1321.86	0.74	1366.04
0+400.00	1324.63	1323.93	0.70	1365.71
0+420.00	1326.55	1325.88	0.67	1365.38
0+440.00	1329.00	1328.35	0.65	1365.05
0+460.00	1330.80	1330.14	0.66	1364.73
0+480.00	1332.93	1332.24	0.68	1364.40
0+500.00	1333.90	1333.24	0.66	1364.07
0+520.00	1334.99	1334.32	0.67	1363.74
0+540.00	1335.80	1335.14	0.67	1363.41
0+560.00	1337.79	1337.08	0.71	1363.08
0+580.00	1338.81	1338.06	0.75	1362.75
0+600.00	1339.17	1338.43	0.74	1350.01
0+620.00	1338.57	1337.81	0.76	1349.85
0+640.00	1337.41	1336.70	0.71	1349.69
0+660.00	1336.58	1335.90	0.68	1349.54
0+680.00	1336.16	1335.46	0.70	1349.38
0+700.00	1335.29	1334.60	0.69	1349.22
0+720.00	1335.00	1334.30	0.69	1349.07
0+740.00	1334.53	1333.83	0.70	1348.91
0+760.00	1334.36	1333.62	0.73	1348.75
0+780.00	1333.01	1332.30	0.71	1348.60
0+800.00	1331.45	1330.71	0.74	1348.44
0+820.00	1329.27	1328.60	0.67	1348.28
0+840.00	1327.50	1326.81	0.69	1348.13
0+860.00	1330.79	1330.07	0.72	1347.97
0+880.00	1327.84	1327.14	0.70	1347.81
0+900.00	1325.30	1324.61	0.70	1347.66
0+920.00	1321.61	1320.90	0.71	1347.50
0+940.00	1317.76	1317.01	0.75	1347.34
0+960.00	1314.37	1313.66	0.71	1347.19
0+980.00	1311.42	1310.73	0.69	1347.03
1+000.00	1303.67	1302.95	0.72	1346.87
1+020.00	1302.97	1302.26	0.71	1346.72
1+040.00	1300.96	1300.25	0.71	1346.56
1+060.00	1299.29	1298.57	0.72	1346.40
1+080.00	1298.27	1297.55	0.72	1346.25
1+100.00	1296.48	1295.79	0.69	1346.09
1+120.00	1293.23	1292.51	0.72	1345.93
1+140.00	1288.94	1288.23	0.71	1345.78
1+160.00	1285.08	1284.38	0.70	1345.62
1+180.00	1281.48	1280.79	0.69	1345.46
1+200.00	1278.22	1277.53	0.69	1345.31

	0+000 – 0+600	0+600 – 1+200
TYPE OF PIPE AND SIZE	OD 25 MM HDPE PIPE (PN25)	OD 25 MM HDPE PIPE (PN12.5)
GEOLOGICAL CONDITION	SANDY CLAY SOIL	
SLOPE OF HGL (H/V)	−1:60.88 / −1:1.57	−1:127.72

LONGITUDINAL SECTION

0 100 200m

NOTES:

1. CONTOUR LEVELS ARE IN METERS AT TWO METER INTERVALS
2. GRID VALUES ARE IN METERS AT 200 METER INTERVALS
3. GEOLOGICAL CONDITIONS INDICATED ON DRAWING ARE FOR GENERAL GUIDANCE ONLY
4. FOR FITTING DETAILS SEE DRG. NO. MWSP/TWKU/07

LEGEND:

PROPOSED TREATED WATER GRAVITY MAIN

DOUBLE ORIFICE AIRVALVE

WASHOUT

PRESSURE REDUCING VALVE

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

ENGINEER:
CHIEF MANAGER TECHNICAL SERVICES
TANA WATER WORKS DEVELOPMENT AGENCY
P.O BOX 1292 - 10100,
NYERI, KENYA

PROJECT TITLE:

EXTENSION OF WATER SUPPLY PIPELINES IN MUKURWEINI

DRAWING TITLE:

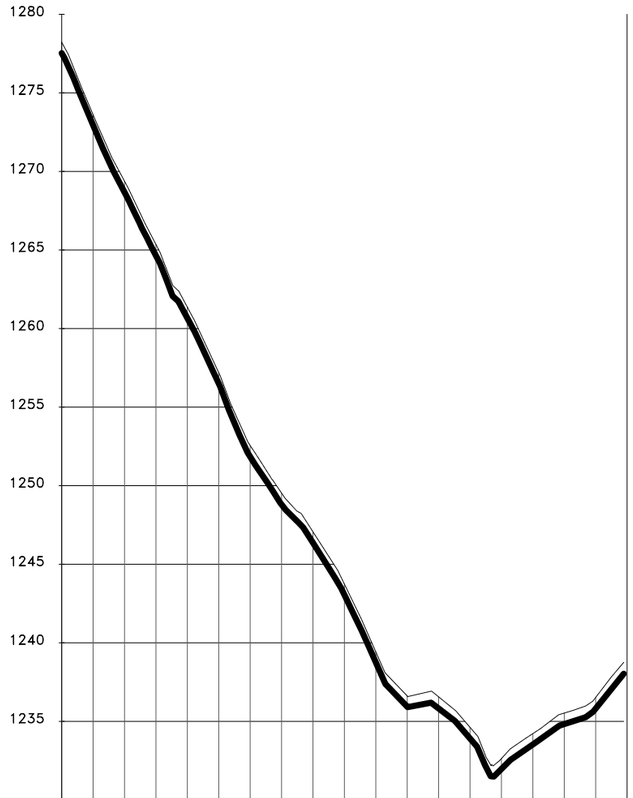
KINYOTA LINE

CH. 0+000 - 1+200
SHEET 1 OF 2

Designed by:	A.M.M	Drawn by:	A.M.M
Checked by:	K.N.G	Approved by:	D.N.M
Scale:	1:1000	Date:	JAN 2024

DRG No. EXT-MUK/KINY/01

PLAN SECTION



DISTANCE IN KILOMETERS	1+200.00	1+220.00	1+240.00	1+260.00	1+280.00	1+300.00	1+320.00	1+340.00	1+360.00	1+380.00	1+400.00	1+420.00	1+440.00	1+460.00	1+480.00	1+500.00	1+520.00	1+540.00	1+560.00
EXISTING GROUND LEVEL (m)	1278.22	1273.61	1269.38	1265.35	1261.36	1257.19	1252.56	1249.53	1247.06	1243.74	1239.43	1236.62	1236.56	1234.62	1232.63	1234.22	1235.53	1236.52	
INVERT LEVELS (m)	1277.53	1272.94	1268.67	1264.64	1260.67	1256.50	1251.85	1248.80	1246.36	1243.06	1238.76	1235.93	1235.82	1233.91	1231.97	1233.53	1234.83	1235.82	
DEPTH OF INVERT (m)	0.69	0.67	0.71	0.72	0.70	0.69	0.71	0.73	0.70	0.68	0.67	0.68	0.74	0.71	0.66	0.69	0.70	0.71	
HGL (m) DATUM (m)	1345.31	1345.15	1344.99	1344.84	1344.68	1344.52	1344.37	1344.21	1344.05	1343.90	1343.74	1343.59	1343.43	1343.27	1343.12	1342.96	1342.80	1342.65	
TYPE OF PIPE AND SIZE	OD 25 MM HDPE PIPE (PN12.5)																		
GEOLOGICAL CONDITION	SANDY CLAY SOIL																		
SLOPE OF HGL (H/V)	-1:127.72																		

LONGITUDINAL SECTION

NOTES:

1. CONTOUR LEVELS ARE IN METERS AT TWO METER INTERVALS
2. GRID VALUES ARE IN METERS AT 200 METER INTERVALS
3. GEOLOGICAL CONDITIONS INDICATED ON DRAWING ARE FOR GENERAL GUIDANCE ONLY
4. FOR FITTING DETAILS SEE DRG. NO. MWSP/TWKU/07

LEGEND:

PROPOSED TREATED WATER GRAVITY MAIN

DOUBLE ORIFICE AIRVALVE

WASHOUT

PRV — PRESSURE REDUCING VALVE

CLIENT:

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

ENGINEER:

CHIEF MANAGER TECHNICAL SERVICES
TANA WATER WORKS DEVELOPMENT AGENCY
P.O BOX 1292 - 10100,
NYERI, KENYA

PROJECT TITLE:

EXTENSION OF WATER SUPPLY PIPELINES IN MUKURWEINI

DRAWING TITLE:

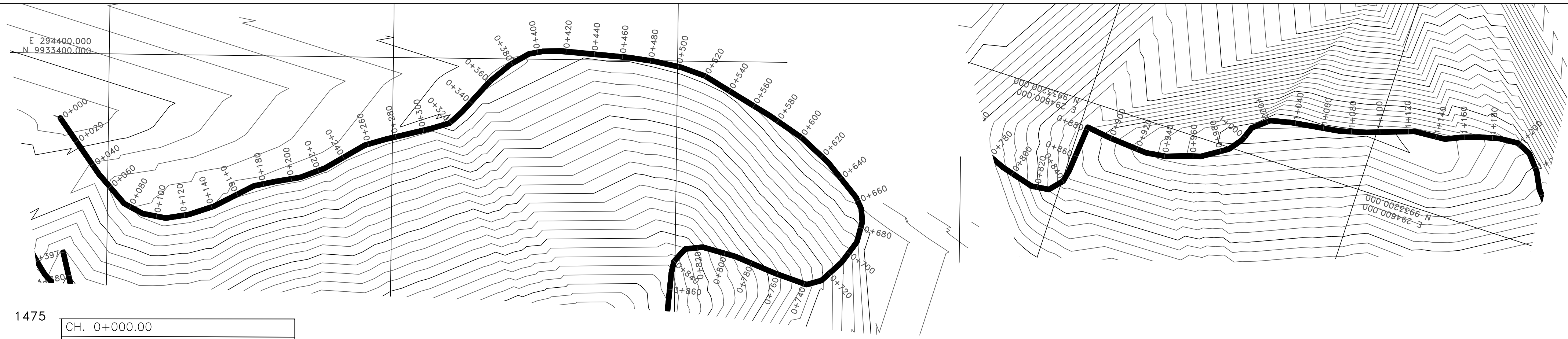
KINYOTA LINE

CH. 1+200 - 1+558
SHEET 2 OF 2

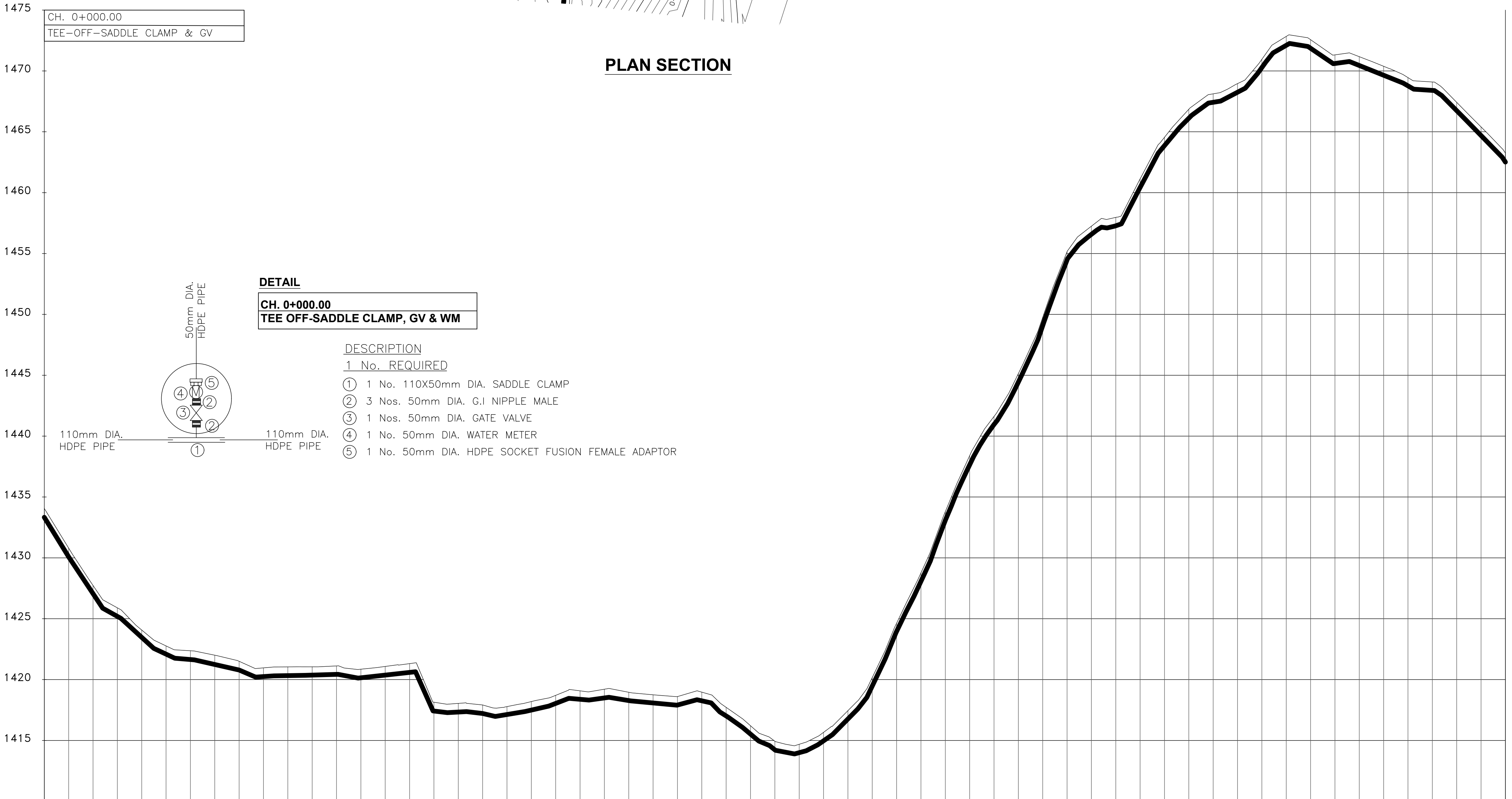
Designed by: A.M.M	Drawn by: A.M.M
Checked by: K.N.G	Approved by: D.N.M
Scale: 1:1000	Date: JAN 2024

DRG No. EXT-MUK/KINY/02

0 100 200m



PLAN SECTION



CH. 0+000.00
TEE–OFF–SADDLE CLAMP & GV

DETAIL

CH. 0+000.00
TEE OFF-SADDLE CLAMP, GV & WM

50mm DIA. HDPE PIPE
110mm DIA. HDPE PIPE
110mm DIA. HDPE PIPE

DESCRIPTION
1 No. REQUIRED

1. 1 No. 110X50mm DIA. SADDLE CLAMP
2. 3 Nos. 50mm DIA. G.I NIPPLE MALE
3. 1 Nos. 50mm DIA. GATE VALVE
4. 1 No. 50mm DIA. WATER METER
5. 1 No. 50mm DIA. HDPE SOCKET FUSION FEMALE ADAPTOR

DISTANCE IN KILOMETERS	EXISTING GROUND LEVEL (m)	INVERT LEVELS (m)	DEPTH OF INVERT (m)	HGL (m) DATUM (m)
0+000.00	1434.06	1433.33	0.72	1488.64
0+020.00	1430.80	1430.08	0.72	1488.53
0+040.00	1427.74	1427.06	0.67	1488.42
0+060.00	1425.89	1425.19	0.70	1488.31
0+080.00	1424.07	1423.47	0.60	1488.20
0+100.00	1422.77	1422.09	0.67	1488.09
0+120.00	1422.37	1421.65	0.72	1487.98
0+140.00	1422.00	1421.24	0.76	1487.88
0+160.00	1421.50	1420.79	0.72	1487.77
0+180.00	1420.96	1420.25	0.71	1487.66
0+200.00	1421.04	1420.33	0.72	1487.55
0+220.00	1421.05	1420.37	0.68	1487.44
0+240.00	1421.12	1420.43	0.69	1487.33
0+260.00	1420.85	1420.15	0.70	1487.22
0+280.00	1421.08	1420.37	0.71	1487.11
0+300.00	1421.31	1420.59	0.72	1487.00
0+320.00	1418.14	1417.42	0.72	1486.89
0+340.00	1418.04	1417.33	0.71	1486.78
0+360.00	1417.92	1417.22	0.70	1486.67
0+380.00	1417.78	1417.13	0.65	1486.56
0+400.00	1418.19	1417.49	0.70	1486.45
0+420.00	1418.71	1418.04	0.66	1486.34
0+440.00	1419.08	1418.38	0.69	1486.23
0+460.00	1419.21	1418.49	0.72	1486.13
0+480.00	1418.96	1418.28	0.68	1486.02
0+500.00	1418.75	1418.08	0.67	1485.91
0+520.00	1418.60	1417.91	0.69	1485.80
0+540.00	1418.97	1418.26	0.71	1485.69
0+560.00	1417.72	1417.01	0.71	1485.58
0+580.00	1416.21	1415.52	0.69	1485.47
0+600.00	1414.94	1414.23	0.71	1485.36
0+620.00	1414.69	1414.00	0.69	1485.25
0+640.00	1415.67	1414.97	0.70	1485.14
0+660.00	1417.45	1416.76	0.68	1485.03
0+680.00	1420.17	1419.47	0.70	1484.92
0+700.00	1424.63	1423.96	0.67	1484.81
0+720.00	1428.76	1428.07	0.69	1484.70
0+740.00	1433.79	1433.08	0.71	1484.59
0+760.00	1438.39	1437.64	0.75	1484.49
0+780.00	1441.62	1440.96	0.66	1484.38
0+800.00	1445.14	1444.44	0.70	1484.27
0+820.00	1449.76	1449.08	0.68	1484.16
0+840.00	1455.15	1454.48	0.67	1484.05
0+860.00	1457.25	1456.58	0.67	1483.94
0+880.00	1457.97	1457.28	0.69	1483.83
0+900.00	1461.13	1460.43	0.70	1483.72
0+920.00	1464.55	1463.86	0.68	1483.61
0+940.00	1466.85	1466.12	0.74	1483.50
0+960.00	1468.12	1467.42	0.70	1483.39
0+980.00	1468.96	1468.25	0.71	1483.28
1+000.00	1470.96	1470.28	0.68	1483.17
1+020.00	1472.83	1472.10	0.73	1483.06
1+040.00	1472.57	1471.86	0.70	1482.95
1+060.00	1471.32	1470.61	0.71	1482.84
1+080.00	1471.17	1470.45	0.72	1482.74
1+100.00	1470.38	1469.65	0.74	1482.63
1+120.00	1469.45	1468.77	0.68	1482.52
1+140.00	1469.09	1468.40	0.69	1482.41
1+160.00	1467.42	1466.74	0.68	1482.30
1+180.00	1465.40	1464.70	0.71	1482.19
1+200.00	1463.25	1462.51	0.73	1482.08

TYPE OF PIPE AND SIZE	OD 50 MM HDPE PIPE (PN16) (0+000 – 0+760); OD 50 MM HDPE PIPE (PN12.5) (0+760 – 1+200)
GEOLOGICAL CONDITION	SANDY CLAY SOIL
SLOPE OF HGL (H/V)	-1:182.88

LONGITUDINAL SECTION

0 100 200m

NOTES:

1. CONTOUR LEVELS ARE IN METERS AT TWO METER INTERVALS
2. GRID VALUES ARE IN METERS AT 200 METER INTERVALS
3. GEOLOGICAL CONDITIONS INDICATED ON DRAWING ARE FOR GENERAL GUIDANCE ONLY
4. FOR FITTING DETAILS SEE DRG. NO. MWSP/TWKU/07

LEGEND:

PROPOSED TREATED WATER GRAVITY MAIN
DOUBLE ORIFICE AIRVALVE
WASHOUT
PRV PRESSURE REDUCING VALVE

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

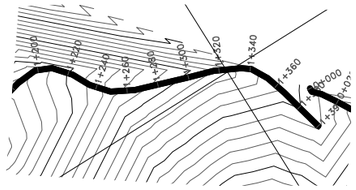
ENGINEER: **CHIEF MANAGER TECHNICAL SERVICES TANA WATER WORKS DEVELOPMENT AGENCY**
P.O BOX 1292 - 10100,
NYERI, KENYA

PROJECT TITLE:
EXTENSION OF WATER SUPPLY PIPELINES IN MUKURWEINI

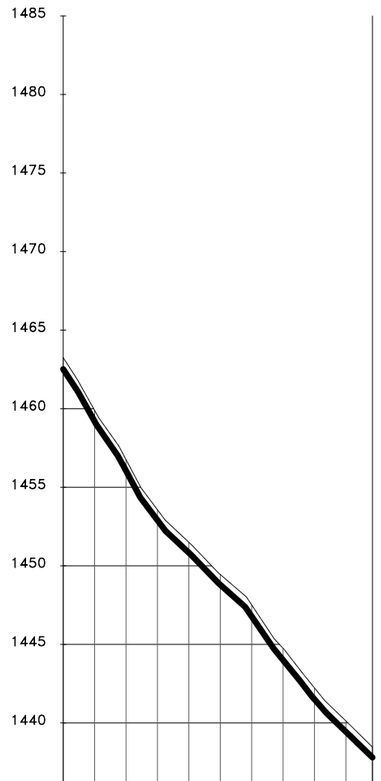
DRAWING TITLE:
NDUNE LINE
CH. 0+000 - 1+200
SHEET 1 OF 2

Designed by:	A.M.M	Drawn by:	A.M.M
Checked by:	K.N.G	Approved by:	D.N.M
Scale:	1:1000	Date:	JAN 2024

DRG No. **EXT-MUK/NDU/01**



PLAN SECTION



DISTANCE IN KILOMETERS	1+200.00	1+220.00	1+240.00	1+260.00	1+280.00	1+300.00	1+320.00	1+340.00	1+360.00	1+380.00	1+396.90
EXISTING GROUND LEVEL (m)	1463.25	1459.89	1456.76	1453.57	1451.50	1449.45	1447.51	1444.75	1442.23	1440.13	1438.46
INVERT LEVELS (m)	1462.51	1459.19	1456.05	1452.90	1450.83	1448.79	1446.78	1444.00	1441.50	1439.43	1437.80
DEPTH OF INVERT (m)	0.73	0.70	0.71	0.67	0.67	0.65	0.74	0.75	0.73	0.69	0.66
HGL (m) DATUM (m)	1482.08	1481.97	1481.86	1481.75	1481.64	1481.53	1481.42	1481.31	1481.20	1481.09	1481.00
TYPE OF PIPE AND SIZE	OD 50 MM HDPE PIPE (PN12.5)										
GEOLOGICAL CONDITION	SANDY CLAY SOIL										
SLOPE OF HGL (H/V)											

LONGITUDINAL SECTION

0 100 200m

NOTES:

1. CONTOUR LEVELS ARE IN METERS AT TWO METER INTERVALS
2. GRID VALUES ARE IN METERS AT 200 METER INTERVALS
3. GEOLOGICAL CONDITIONS INDICATED ON DRAWING ARE FOR GENERAL GUIDANCE ONLY
4. FOR FITTING DETAILS SEE DRG. NO. MWSP/TWKU/07

LEGEND:

- PROPOSED TREATED WATER GRAVITY MAIN
- DOUBLE ORIFICE AIRVALVE
- WASHOUT
- PRV — PRESSURE REDUCING VALVE

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

ENGINEER:
CHIEF MANAGER TECHNICAL SERVICES
TANA WATER WORKS DEVELOPMENT AGENCY
P.O BOX 1292 - 10100,
NYERI, KENYA

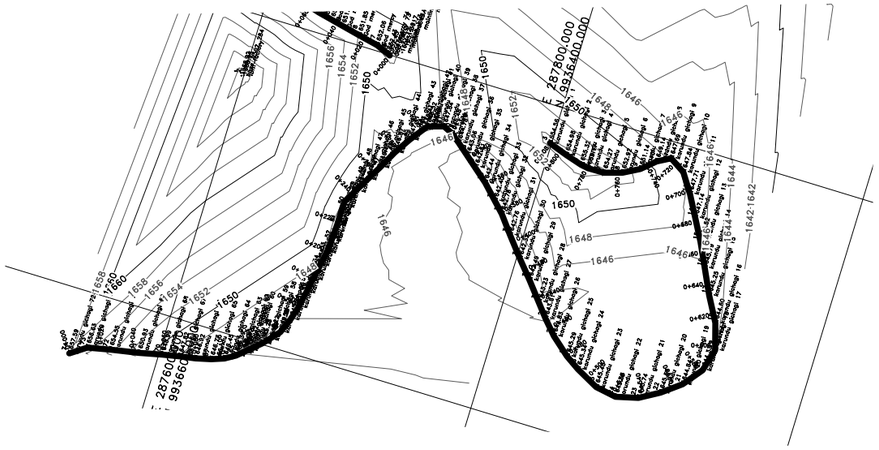
PROJECT TITLE:
EXTENSION OF WATER SUPPLY PIPELINES IN MUKURWEINI

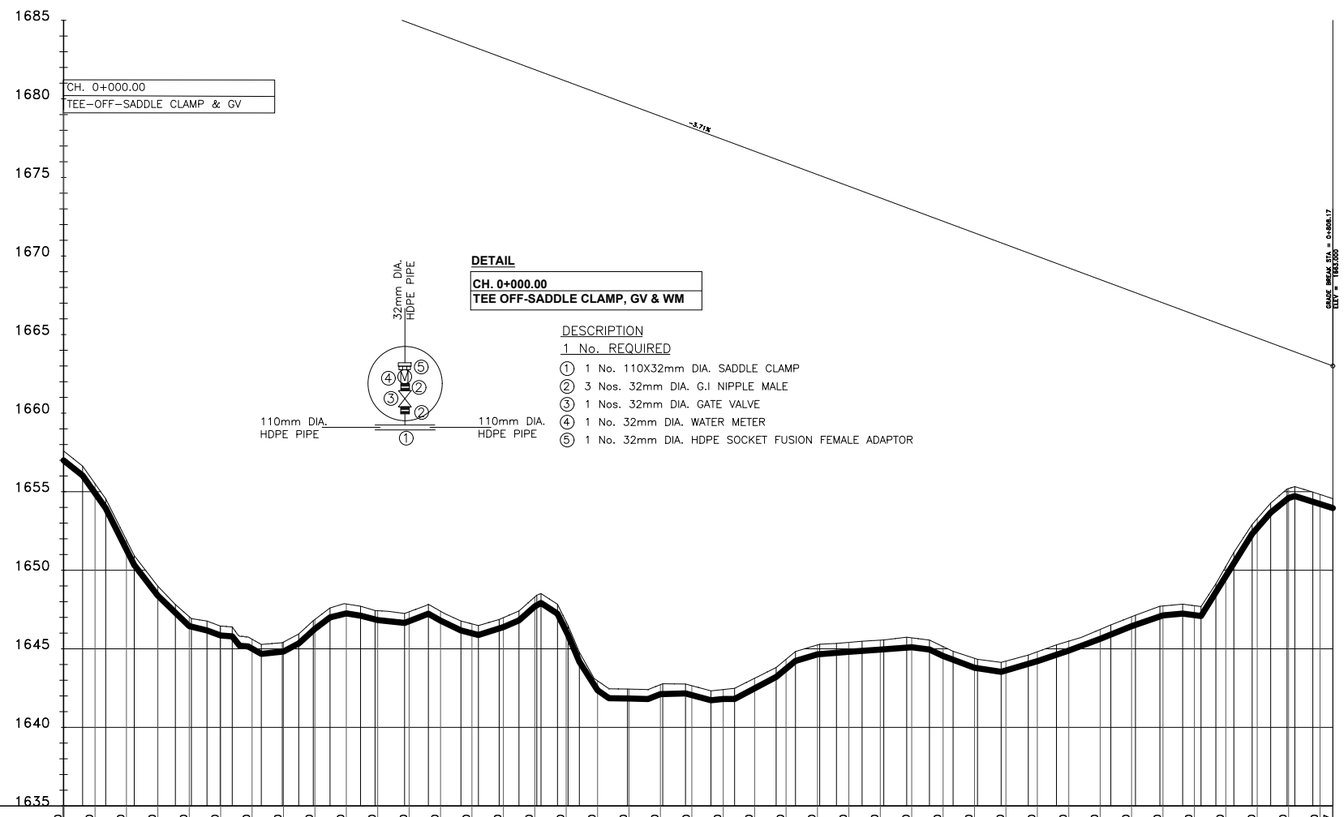
DRAWING TITLE:
NDUNE LINE

CH. 1+200 - 1+396.90
SHEET 2 OF 2

Designed by:	A.M.M	Drawn by:	A.M.M
Checked by:	K.N.G	Approved by:	D.N.M
Scale:	1:1000	Date:	JAN 2024

DRG No. **EXT-MUK/NDU/02**





DETAIL

CH. 0+000.00
TEE OFF-SADDLE CLAMP, GV & WM

DESCRIPTION

1 No. REQUIRED

1. 1 No. 110X32mm DIA. SADDLE CLAMP
2. 3 Nos. 32mm DIA. G.I NIPPLE MALE
3. 1 Nos. 32mm DIA. GATE VALVE
4. 1 No. 32mm DIA. WATER METER
5. 1 No. 32mm DIA. HDPE SOCKET FUSION FEMALE ADAPTOR

CHAINAGE (m)	0+000.00	0+020.00	0+040.00	0+060.00	0+080.00	0+100.00	0+120.00	0+140.00	0+160.00	0+180.00	0+200.00	0+220.00	0+240.00	0+260.00	0+280.00	0+300.00	0+320.00	0+340.00	0+360.00	0+380.00	0+400.00	0+420.00	0+440.00	0+460.00	0+480.00	0+500.00	0+520.00	0+540.00	0+560.00	0+580.00	0+600.00	0+620.00	0+640.00	0+660.00	0+680.00	0+700.00	0+720.00	0+740.00	0+760.00	0+780.00	0+800.00	0+808.17
EXISTING GROUND LEVEL (m)	1657.59	1655.51	1651.92	1648.98	1647.04	1646.45	1645.61	1645.43	1646.87	1647.85	1647.43	1647.36	1647.39	1646.59	1646.98	1648.30	1646.72	1642.96	1642.44	1642.72	1642.65	1642.41	1643.13	1644.33	1645.25	1645.41	1645.55	1645.70	1645.14	1644.39	1644.22	1644.81	1645.49	1646.23	1647.04	1647.73	1647.74	1650.24	1653.29	1655.20	1654.82	1654.56
INVERT LEVELS (m)	1656.99	1654.91	1651.32	1648.38	1646.44	1645.85	1645.01	1644.83	1646.27	1647.25	1646.83	1646.76	1646.79	1645.99	1646.38	1647.70	1646.12	1642.36	1641.84	1642.12	1642.05	1641.81	1642.48	1643.73	1644.65	1644.81	1644.95	1645.10	1644.54	1643.79	1643.62	1644.21	1644.89	1645.63	1646.44	1647.13	1647.14	1649.82	1652.69	1654.60	1654.21	1653.96
DEPTH OF INVERT (m)	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.64	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.59	0.60	0.60	0.60	0.60	0.60	0.60	0.62	0.60	0.60	0.61	0.60
HGL DATUM (m)	1693.00	1692.26	1691.52	1690.77	1690.03	1689.29	1688.55	1687.80	1687.06	1686.32	1685.58	1684.83	1684.09	1683.35	1682.61	1681.86	1681.12	1680.38	1679.64	1678.89	1678.15	1677.41	1676.67	1675.92	1675.18	1674.44	1673.70	1672.95	1672.21	1671.47	1670.73	1669.99	1669.24	1668.50	1667.76	1667.02	1666.27	1665.53	1664.79	1664.05	1663.30	1663.00
TYPE OF PIPE AND SIZE	32mm OD HDPE PIPE PN 10
GEOLOGICAL CONDITION	RED LOAM SOIL
SLOPE OF HGL (H/V)	-1:26.94

0 100 200m

LONGITUDINAL SECTION

NOTES:

1. CONTOUR LEVELS ARE IN METERS AT TWO METER INTERVALS
2. GRID VALUES ARE IN METERS AT 200 METER INTERVALS
3. GEOLOGICAL CONDITIONS INDICATED ON DRAWING ARE FOR GENERAL GUIDANCE ONLY
4. MINIMUM PIPELINE SLOPES TO BE 1:500
5. DRAWING TO BE READ IN CONJUCTION WITH STANDARD DRAWINGS

LEGEND:

- ROAD (TARMAC)
- ROAD / TRACK (EARTH / MURRAM)
- FENCE / HEDGE
- 1480 CONTOURS
- ELECTRIC POST
- CULVERT
- GATE
- TEMPORARY STRUCTURES
- BUILDINGS
- KeNHA / KeRRA ROAD BEACON
- PROPOSED TREATED WATER GRAVITY MAIN
- TP10 TRAVERSE POINT & No.
- TRIAL HOLE
- 30° HORIZONTAL BEND (H) OR VERTICAL BEND (V) WITH ANGLE INDICATED
- RIVER/STREAM
- V.J. VIKING JOHNSON
- GV GATE VALVE
- SV-01 SECTIONAL VALVE & No.
- WO-01 WASHOUT VALVE & No.
- DAV-01 AIR VALVE & No.
- WM WATER METER
- PROPOSED MASONRY CHAMBER
- PROPOSED VALVE BOX
- n PIPELINE GRADIENT WITH SLOPE DIRECTION (SLOPE MIN. OR 1 IN n)

ISSUED FOR CONSTRUCTION

REVISIONS		SIGN	DATE	APPROVED
	BY			
	CHECKED			
	BY			
	CHECKED			
	BY			
	CHECKED			
	BY			
	CHECKED			

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

ENGINEER:
CHIEF MANAGER TECHNICAL SERVICES
TANA WATER WORKS DEVELOPMENT AGENCY
P.O BOX 1292 - 10100,
NYERI, KENYA

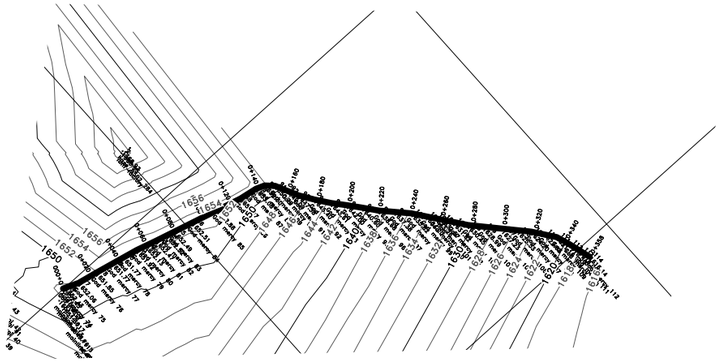
PROJECT TITLE:

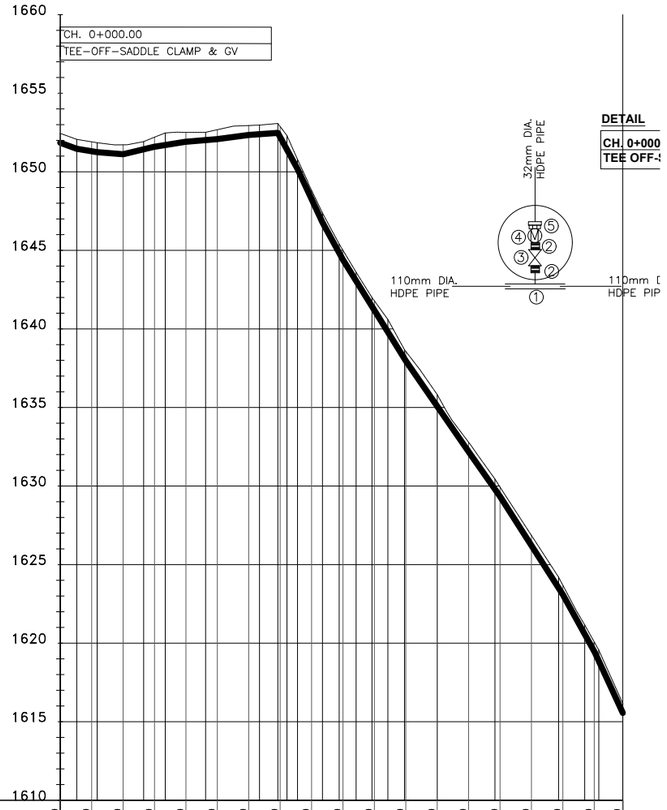
EXTENSION OF WATER SUPPLY PIPELINES IN MUKURWEINI

DRAWING TITLE:
KARUNDU GICHAGI LINE

CH. 0+000.00 - 0+808.17
SHEET 1 OF 1

Designed by:	A.M.M	Drawn by:	A.M.M
Checked by:	K.N.G	Approved by:	D.N.M
Scale:	H- 1:4000, V- 1:400	Date:	JAN 2024
DRG No.	EXT-MUK/KAR/01		





CHAINAGE (m)	0+000.00	0+020.00	0+040.00	0+060.00	0+080.00	0+100.00	0+120.00	0+140.00	0+160.00	0+180.00	0+200.00	0+220.00	0+240.00	0+260.00	0+280.00	0+300.00	0+320.00	0+340.00	0+358.19
EXISTING GROUND LEVEL (m)	1652.45	1651.91	1651.72	1652.20	1652.51	1652.68	1652.94	1652.88	1648.82	1645.00	1641.79	1638.57	1635.82	1632.79	1629.94	1626.86	1623.69	1620.08	1616.16
INVERT LEVELS (m)	1651.85	1651.31	1651.12	1651.59	1651.91	1652.08	1652.34	1652.21	1648.27	1644.40	1641.19	1637.97	1635.08	1632.19	1629.34	1626.21	1623.09	1619.48	1615.56
DEPTH OF INVERT (m)	0.60	0.60	0.60	0.61	0.60	0.60	0.60	0.67	0.55	0.60	0.60	0.60	0.75	0.60	0.60	0.64	0.60	0.60	0.60
HGL DATUM (m)	1695.00	1694.22	1693.44	1692.65	1691.87	1691.09	1690.31	1689.53	1688.75	1687.96	1687.18	1686.40	1685.62	1684.84	1684.06	1683.27	1682.49	1681.71	1681.00
TYPE OF PIPE AND SIZE	32mm OD HDPE PIPE PN 10																		
GEOLOGICAL CONDITION	RED LOAM SOIL																		
SLOPE OF HGL (H/V)	1:25.58																		

LONGITUDINAL SECTION

0 100 200m

NOTES:

1. CONTOUR LEVELS ARE IN METERS AT TWO METER INTERVALS
2. GRID VALUES ARE IN METERS AT 200 METER INTERVALS
3. GEOLOGICAL CONDITIONS INDICATED ON DRAWING ARE FOR GENERAL GUIDANCE ONLY
4. MINIMUM PIPELINE SLOPES TO BE 1:500
5. DRAWING TO BE READ IN CONJUCTION WITH STANDARD DRAWINGS

LEGEND:

- ROAD (TARMAC)
- ROAD / TRACK (EARTH / MURRAM)
- FENCE / HEDGE
- 1480 CONTOURS
- ELECTRIC POST
- CULVERT
- GATE
- TEMPORARY STRUCTURES
- BUILDINGS
- KeNHA / KeRRA ROAD BEACON
- PROPOSED TREATED WATER GRAVITY MAIN
- TP10 TRAVERSE POINT & No.
- TRIAL HOLE
- 30° HORIZONTAL BEND (H) OR VERTICAL BEND (V) WITH ANGLE INDICATED
- RIVER/STREAM
- V.J. VIKING JOHNSON
- GV GATE VALVE
- SV-01 SECTIONAL VALVE & No.
- WO-01 WASHOUT VALVE & No.
- DAV-01 AIR VALVE & No.
- WM WATER METER
- PROPOSED MASONRY CHAMBER
- PROPOSED VALVE BOX
- n PIPELINE GRADIENT WITH SLOPE DIRECTION (SLOPE MIN. OR 1 IN n)

ISSUED FOR CONSTRUCTION

	REVISIONS	SIGN	DATE	APPROVED
	BY			
	CHECKED			
	BY			
	CHECKED			
	BY			
	CHECKED			
	BY			
	CHECKED			

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

ENGINEER:
CHIEF MANAGER TECHNICAL SERVICES
TANA WATER WORKS DEVELOPMENT AGENCY
P.O BOX 1292 - 10100,
NYERI, KENYA

PROJECT TITLE:

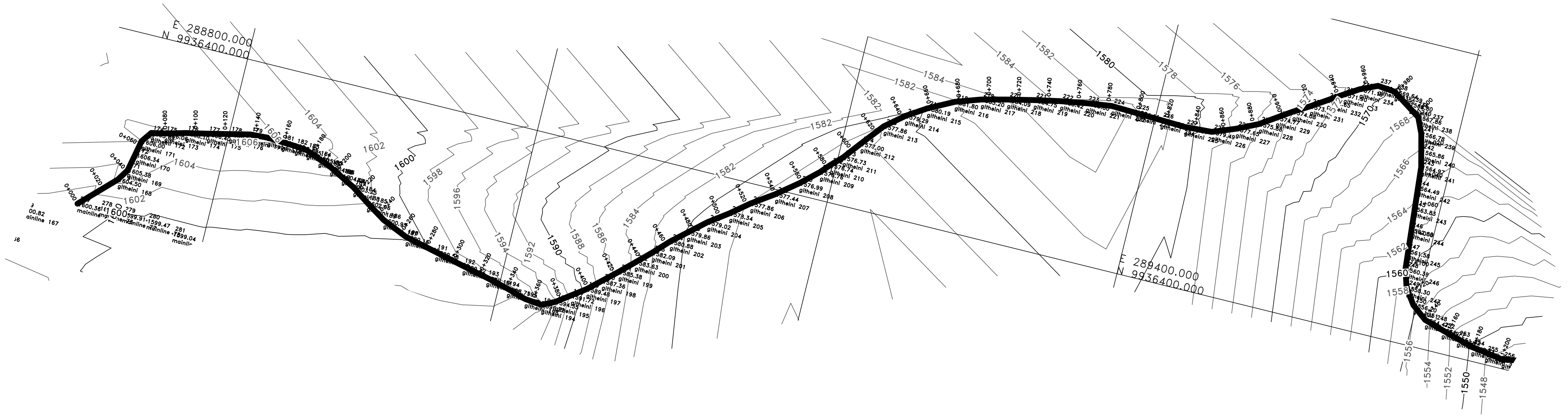
EXTENSION OF WATER SUPPLY PIPELINES IN MUKURWEINI

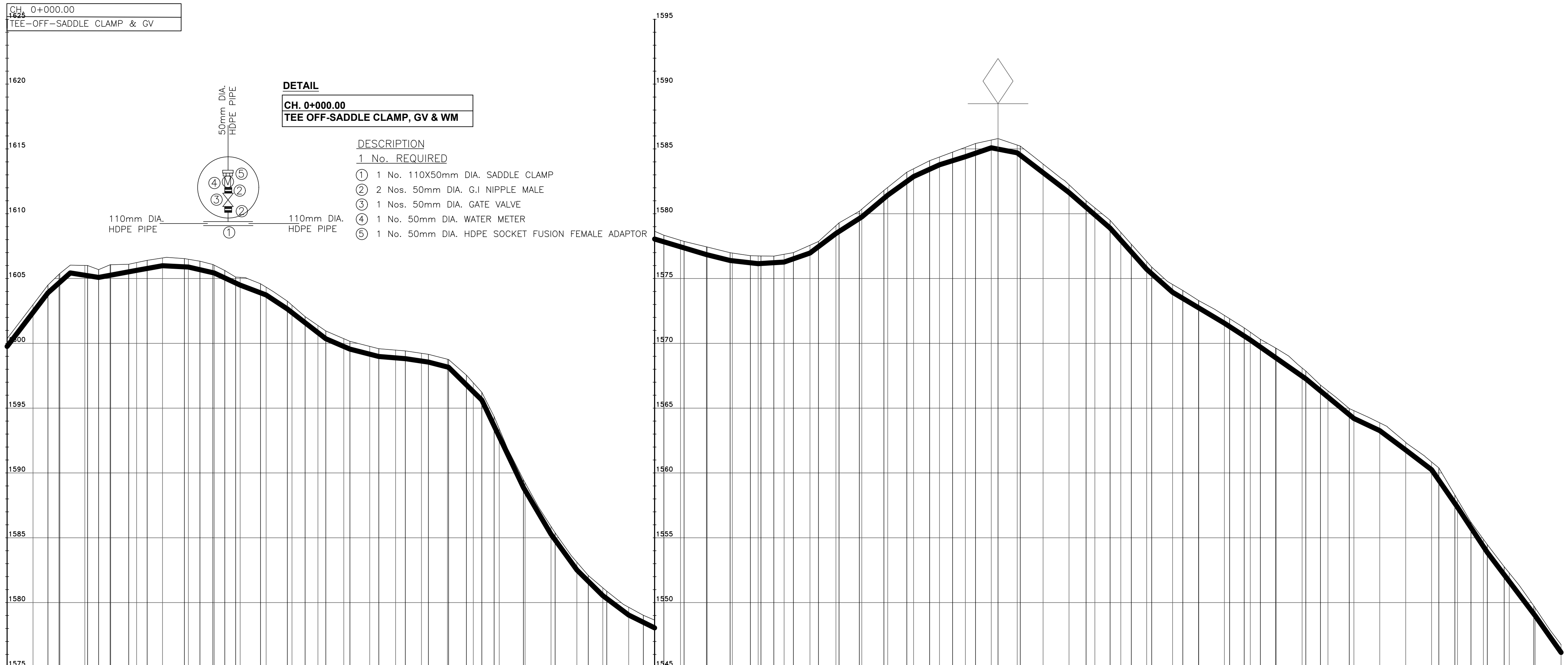
DRAWING TITLE:
MERCY CHURCH LINE

CH. 0+000.00 - 0+358.19
SHEET 1 OF 1

Designed by:	A.M.M	Drawn by:	A.M.M
Checked by:	K.N.G	Approved by:	D.N.M
Scale:	H- 1:4000, V- 1:400	Date:	JAN 2024

DRG No. **EXT-MUK/MER/01**





CHAINAGE (m)	0+000.00	0+020.00	0+040.00	0+060.00	0+080.00	0+100.00	0+120.00	0+140.00	0+160.00	0+180.00	0+200.00	0+220.00	0+240.00	0+260.00	0+280.00	0+300.00	0+320.00	0+340.00	0+360.00	0+380.00	0+400.00
EXISTING GROUND LEVEL (m)	1600.36	1602.98	1605.32	1606.01	1606.07	1606.23	1606.59	1606.49	1606.03	1605.09	1604.33	1602.94	1601.38	1600.36	1599.76	1599.48	1599.23	1598.78	1596.96	1593.42	1589.25
INVERT LEVELS (m)	1599.76	1602.38	1604.65	1605.25	1605.26	1605.63	1605.99	1605.89	1605.43	1604.49	1603.73	1602.38	1600.83	1599.76	1599.16	1598.88	1598.63	1598.18	1596.27	1592.81	1588.66
DEPTH OF INVERT (m)	0.60	0.60	0.67	0.75	0.81	0.60	0.60	0.60	0.60	0.60	0.60	0.57	0.55	0.60	0.60	0.60	0.60	0.60	0.68	0.61	0.58
HGL DATUM (m)	1685.00	1684.36	1683.73	1683.09	1682.45	1681.82	1681.18	1680.54	1679.91	1679.27	1678.63	1677.99	1677.36	1676.72	1676.08	1675.45	1674.81	1674.17	1673.54	1672.90	1672.26

CHAINAGE (m)	0+420.00	0+440.00	0+460.00	0+480.00	0+500.00	0+520.00	0+540.00	0+560.00	0+580.00	0+600.00	0+620.00	0+640.00	0+660.00	0+680.00	0+700.00	0+720.00	0+740.00	0+760.00	0+780.00	0+800.00
EXISTING GROUND LEVEL (m)	1585.88	1583.12	1581.14	1579.64	1578.65	1577.95	1577.45	1576.97	1576.75	1576.87	1577.57	1579.07	1580.35	1582.03	1583.47	1584.38	1585.12	1585.68	1585.30	1583.83
INVERT LEVELS (m)	1585.28	1582.52	1580.54	1579.04	1578.05	1577.45	1576.85	1576.37	1576.15	1576.27	1576.97	1578.47	1579.75	1581.43	1582.87	1583.78	1584.40	1585.08	1584.70	1583.17
DEPTH OF INVERT (m)	0.60	0.60	0.60	0.60	0.60	0.50	0.60	0.59	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.72	0.60	0.60	0.66
HGL DATUM (m)	1671.63	1670.99	1670.35	1669.72	1669.08	1668.44	1667.81	1667.17	1666.53	1665.90	1665.26	1664.62	1663.98	1663.35	1662.71	1662.07	1661.44	1660.80	1660.16	1659.53

CHAINAGE (m)	0+820.00	0+840.00	0+860.00	0+880.00	0+900.00	0+920.00	0+940.00	0+960.00	0+980.00	1+000.00	1+020.00	1+040.00	1+060.00	1+080.00	1+100.00	1+120.00	1+140.00	1+160.00	1+180.00	1+200.00
EXISTING GROUND LEVEL (m)	1582.24	1580.45	1578.56	1576.32	1574.54	1573.31	1572.16	1570.86	1569.61	1568.10	1566.32	1564.81	1563.87	1562.36	1560.85	1557.96	1554.89	1552.28	1549.59	1546.75
INVERT LEVELS (m)	1581.64	1579.91	1577.97	1575.72	1573.94	1572.75	1571.56	1570.26	1568.86	1567.47	1565.85	1564.21	1563.27	1561.77	1560.25	1557.36	1554.33	1551.63	1548.99	1546.15
DEPTH OF INVERT (m)	0.60	0.54	0.60	0.60	0.60	0.56	0.60	0.60	0.75	0.63	0.47	0.60	0.60	0.59	0.60	0.60	0.56	0.65	0.60	0.60
HGL DATUM (m)	1658.89	1658.25	1657.62	1656.98	1656.34	1655.71	1655.07	1654.43	1653.80	1653.16	1652.52	1651.89	1651.25	1650.61	1649.97	1649.34	1648.70	1648.06	1647.43	1646.79

TYPE OF PIPE AND SIZE	50mm OD HDPE PIPE PN 16
GEOLOGICAL CONDITION	RED LOAM SOIL
SLOPE OF HGL (H/V)	−1:31.41

0 100 200m

LONGITUDINAL SECTION

NOTES:

1. CONTOUR LEVELS ARE IN METERS AT TWO METER INTERVALS
2. GRID VALUES ARE IN METERS AT 200 METER INTERVALS
3. GEOLOGICAL CONDITIONS INDICATED ON DRAWING ARE FOR GENERAL GUIDANCE ONLY
4. MINIMUM PIPELINE SLOPES TO BE 1:500
5. DRAWING TO BE READ IN CONJUCTION WITH STANDARD DRAWINGS

LEGEND:

- ROAD (TARMAC)
- ROAD / TRACK (EARTH / MURRAM)
- FENCE / HEDGE
- 1480 CONTOURS
- ELECTRIC POST
- CULVERT
- GATE
- TEMPORARY STRUCTURES
- BUILDINGS
- KeNHA / KeRRA ROAD BEACON
- PROPOSED TREATED WATER GRAVITY MAIN
- TP10 TRAVERSE POINT & No.
- TRIAL HOLE
- 30° HORIZONTAL BEND (H) OR VERTICAL BEND (V) WITH ANGLE INDICATED
- RIVER/STREAM
- V.J. VIKING JOHNSON
- GV GATE VALVE
- SV-01 SECTIONAL VALVE & No.
- WO-01 WASHOUT VALVE & No.
- DAV-01 AIR VALVE & No.
- WM WATER METER
- PROPOSED MASONRY CHAMBER
- PROPOSED VALVE BOX
- n PIPELINE GRADIENT WITH SLOPE DIRECTION (SLOPE MIN. OR 1 IN n)

ISSUED FOR CONSTRUCTION

	REVISIONS		SIGN	DATE	APPROVED
		BY			
		CHECKED			
		BY			
		CHECKED			
		BY			
		CHECKED			
		BY			
		CHECKED			

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

ENGINEER: **CHIEF MANAGER TECHNICAL SERVICES TANA WATER WORKS DEVELOPMENT AGENCY**
P.O BOX 1292 - 10100,
NYERI, KENYA

PROJECT TITLE:

EXTENSION OF WATER SUPPLY PIPELINES IN MUKURWEINI

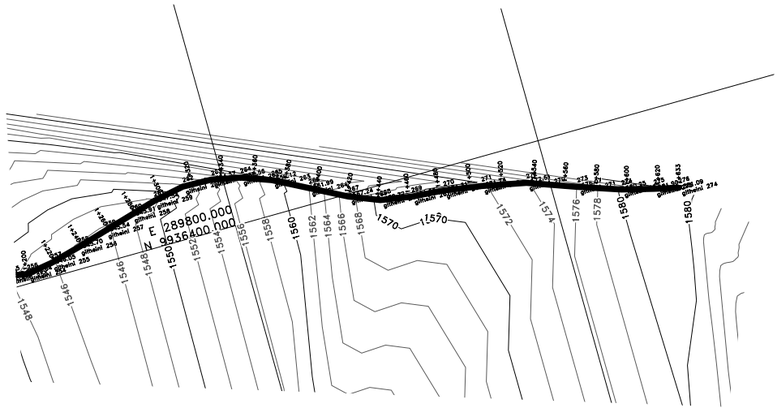
DRAWING TITLE:

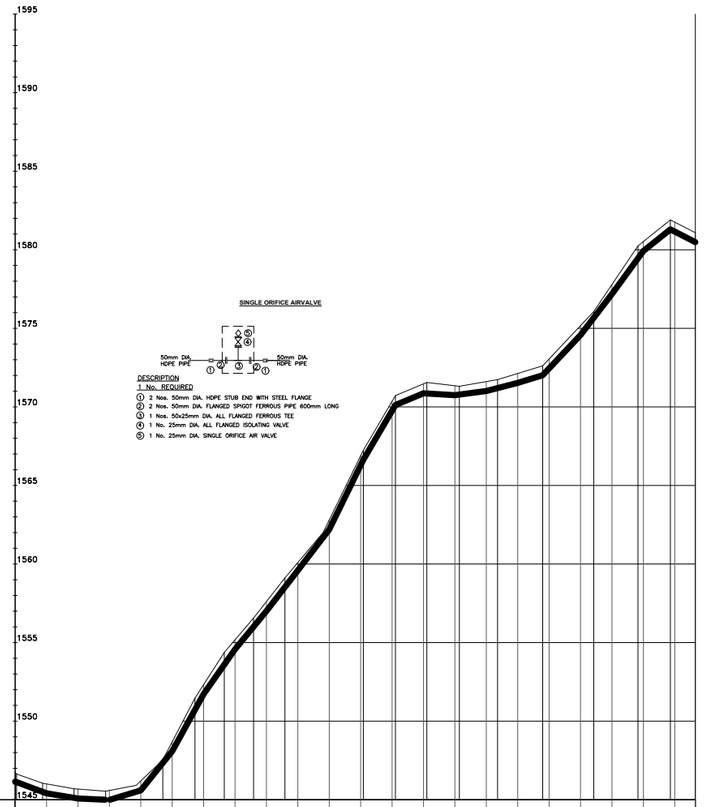
GITHIINI LINE

CH. 0+000.00 - 1+200.00

SHEET 1 OF 2

Designed by:	A.M.M	Drawn by:	A.M.M
Checked by:	K.N.G	Approved by:	D.N.M
Scale:	H- 1:4000, V- 1:400	Date:	JAN 2024
DRG No.	EXT-MUK/GITH/01		





CHAINAGE (m)	1+200.00	1+220.00	1+240.00	1+260.00	1+280.00	1+300.00	1+320.00	1+340.00	1+360.00	1+380.00	1+400.00	1+420.00	1+440.00	1+460.00	1+480.00	1+500.00	1+520.00	1+540.00	1+560.00	1+580.00	1+600.00	1+620.00	1+633.11
EXISTING GROUND LEVEL (m)	1546.75	1546.01	1545.68	1545.59	1546.20	1548.69	1552.32	1555.17	1557.61	1560.09	1562.80	1566.89	1570.36	1571.47	1571.35	1571.61	1572.13	1573.05	1575.17	1577.79	1580.52	1581.76	1581.09
INVERT LEVELS (m)	1546.15	1545.41	1545.08	1544.99	1545.60	1548.09	1551.72	1554.57	1557.01	1559.59	1562.20	1566.29	1569.76	1570.87	1570.75	1571.01	1571.53	1572.45	1574.57	1577.19	1579.92	1581.16	1580.49
DEPTH OF INVERT (m)	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.50	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60
HGL DATUM (m)	1646.79	1646.15	1645.52	1644.88	1644.24	1643.61	1642.97	1642.33	1641.70	1641.06	1640.42	1639.79	1639.15	1638.51	1637.88	1637.24	1636.60	1635.96	1635.33	1634.69	1634.05	1633.42	1633.00
TYPE OF PIPE AND SIZE	50mm OD HDPE PIPE PN 16																						
GEOLOGICAL CONDITION	RED LOAM SOIL																						
SLOPE OF HGL (H/V)	-1:31.41																						

LONGITUDINAL SECTION

0 100 200m

NOTES:

1. CONTOUR LEVELS ARE IN METERS AT TWO METER INTERVALS
2. GRID VALUES ARE IN METERS AT 200 METER INTERVALS
3. GEOLOGICAL CONDITIONS INDICATED ON DRAWING ARE FOR GENERAL GUIDANCE ONLY
4. MINIMUM PIPELINE SLOPES TO BE 1:500
5. DRAWING TO BE READ IN CONJUCTION WITH STANDARD DRAWINGS

LEGEND:

- ROAD (TARMAC)
- ROAD / TRACK (EARTH / MURRAM)
- FENCE / HEDGE
- 1480 CONTOURS
- ELECTRIC POST
- CULVERT
- GATE
- TEMPORARY STRUCTURES
- BUILDINGS
- KeNHA / KeRRA ROAD BEACON
- PROPOSED TREATED WATER GRAVITY MAIN
- TP10 TRAVERSE POINT & No.
- TRIAL HOLE
- 30° HORIZONTAL BEND (H) OR VERTICAL BEND (V) WITH ANGLE INDICATED
- RIVER/STREAM
- V.J. VIKING JOHNSON
- GV GATE VALVE
- SV-01 SECTIONAL VALVE & No.
- WO-01 WASHOUT VALVE & No.
- DAV-01 AIR VALVE & No.
- WM WATER METER
- PROPOSED MASONRY CHAMBER
- PROPOSED VALVE BOX
- n PIPELINE GRADIENT WITH SLOPE DIRECTION (SLOPE MIN. OR 1 IN n)

ISSUED FOR CONSTRUCTION

REVISIONS		SIGN	DATE	APPROVED
	BY			
	CHECKED			
	BY			
	CHECKED			
	BY			
	CHECKED			
	BY			
	CHECKED			

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

ENGINEER:
CHIEF MANAGER TECHNICAL SERVICES
TANA WATER WORKS DEVELOPMENT AGENCY
P.O BOX 1292 - 10100,
NYERI, KENYA

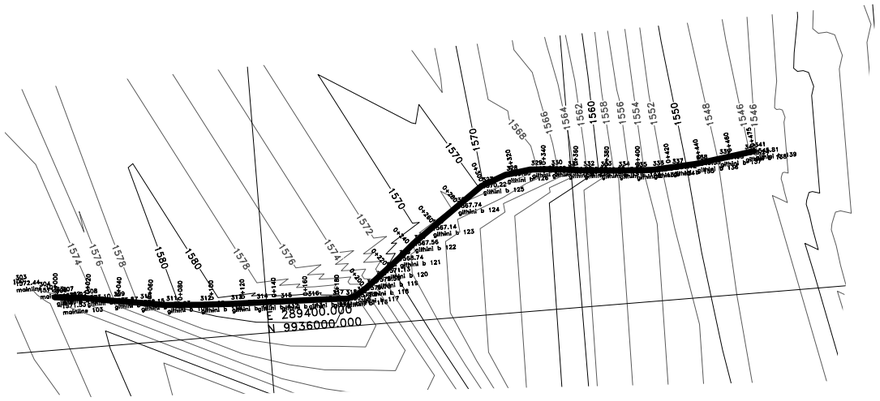
PROJECT TITLE:

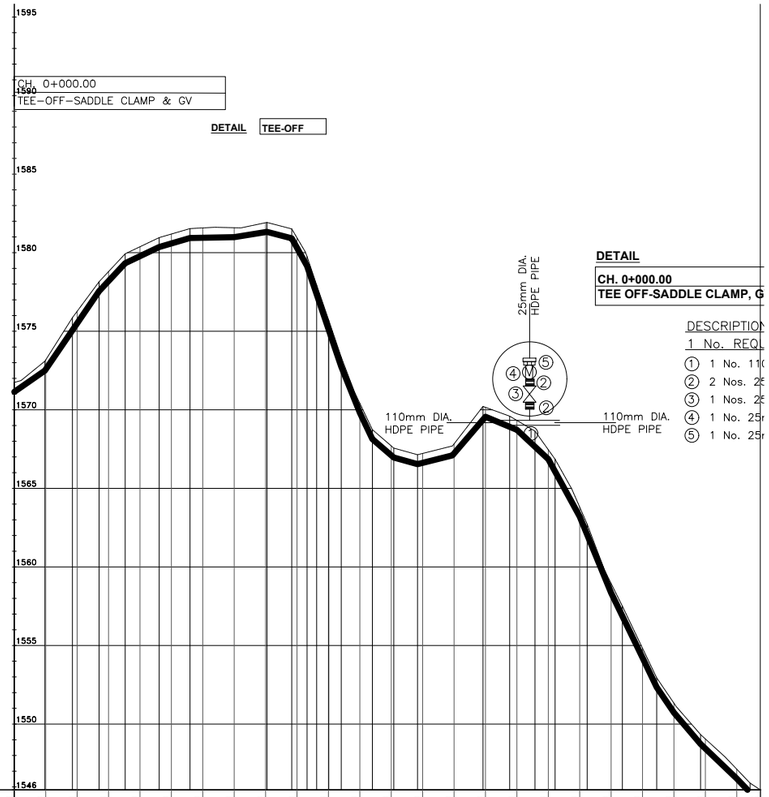
EXTENSION OF WATER SUPPLY PIPELINES IN MUKURWEINI

DRAWING TITLE:
GITHIINI LINE

CH. 1+200.00 - 1+633.11
SHEET 1 OF 2

Designed by:	A.M.M	Drawn by:	A.M.M
Checked by:	K.N.G	Approved by:	D.N.M
Scale:	H- 1:4000, V- 1:400	Date:	JAN 2024
DRG No.	EXT-MUK/GITH/01		





CHAINAGE (m)	0+000.00	0+020.00	0+040.00	0+060.00	0+080.00	0+100.00	0+120.00	0+140.00	0+160.00	0+180.00	0+200.00	0+220.00	0+240.00	0+260.00	0+280.00	0+300.00	0+320.00	0+340.00	0+360.00	0+380.00	0+400.00	0+420.00	0+440.00	0+460.00	0+474.98
EXISTING GROUND LEVEL (m)	1571.74	1573.18	1576.27	1578.80	1580.38	1581.19	1581.58	1581.59	1581.91	1580.94	1575.76	1570.41	1567.70	1567.22	1567.83	1570.16	1569.32	1567.46	1563.81	1558.95	1554.82	1551.33	1549.05	1547.13	1545.81
INVERT LEVELS (m)	1571.14	1572.57	1575.50	1578.20	1579.78	1580.59	1580.95	1580.99	1581.31	1580.31	1575.15	1569.81	1567.10	1566.62	1567.22	1569.56	1568.72	1566.86	1563.21	1558.35	1554.22	1550.73	1548.44	1546.53	1545.21
DEPTH OF INVERT (m)	0.60	0.61	0.77	0.60	0.60	0.60	0.63	0.60	0.60	0.64	0.61	0.60	0.60	0.60	0.61	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.61	0.60	0.60
HGL DATUM (m)	1673.47	1672.73	1671.99	1671.26	1670.52	1669.79	1669.05	1668.32	1667.58	1666.85	1666.11	1665.38	1664.64	1663.90	1663.17	1662.43	1661.70	1660.96	1660.23	1659.49	1658.76	1658.02	1657.29	1656.55	1656.00
TYPE OF PIPE AND SIZE	25mm OD HDPE PIPE PN 16																								
GEOLOGICAL CONDITION	SANDY LOAM SOIL																								
SLOPE OF HGL (H/V)	–1:27.20																								

LONGITUDINAL SECTION

0 100 200m

NOTES:

1. CONTOUR LEVELS ARE IN METERS AT TWO METER INTERVALS
2. GRID VALUES ARE IN METERS AT 200 METER INTERVALS
3. GEOLOGICAL CONDITIONS INDICATED ON DRAWING ARE FOR GENERAL GUIDANCE ONLY
4. MINIMUM PIPELINE SLOPES TO BE 1:500
5. DRAWING TO BE READ IN CONJUCTION WITH STANDARD DRAWINGS

LEGEND:

- ROAD (TARMAC)
- ROAD / TRACK (EARTH / MURRAM)
- FENCE / HEDGE
- 1480 CONTOURS
- ELECTRIC POST
- CULVERT
- GATE
- TEMPORARY STRUCTURES
- BUILDINGS
- KeNHA / KeRRA ROAD BEACON
- PROPOSED TREATED WATER GRAVITY MAIN
- TP10 TRAVERSE POINT & No.
- TRIAL HOLE
- 30° HORIZONTAL BEND (H) OR VERTICAL BEND (V) WITH ANGLE INDICATED
- RIVER/STREAM
- V.J. VIKING JOHNSON
- GV GATE VALVE
- SV-01 SECTIONAL VALVE & No.
- WO-01 WASHOUT VALVE & No.
- DAV-01 AIR VALVE & No.
- WM WATER METER
- PROPOSED MASONRY CHAMBER
- PROPOSED VALVE BOX
- n PIPELINE GRADIENT WITH SLOPE DIRECTION (SLOPE MIN. OR 1 IN n)

ISSUED FOR CONSTRUCTION

REVISIONS		SIGN	DATE	APPROVED
	BY			
	CHECKED			
	BY			
	CHECKED			
	BY			
	CHECKED			
	BY			
	CHECKED			

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

ENGINEER:
CHIEF MANAGER TECHNICAL SERVICES
TANA WATER WORKS DEVELOPMENT AGENCY
P.O BOX 1292 - 10100,
NYERI, KENYA

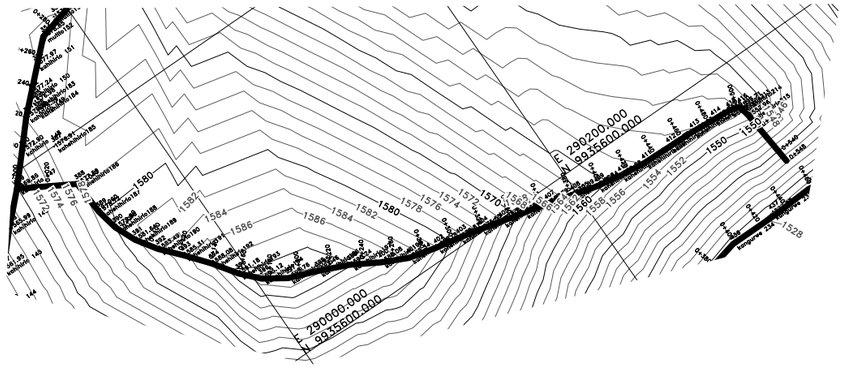
PROJECT TITLE:

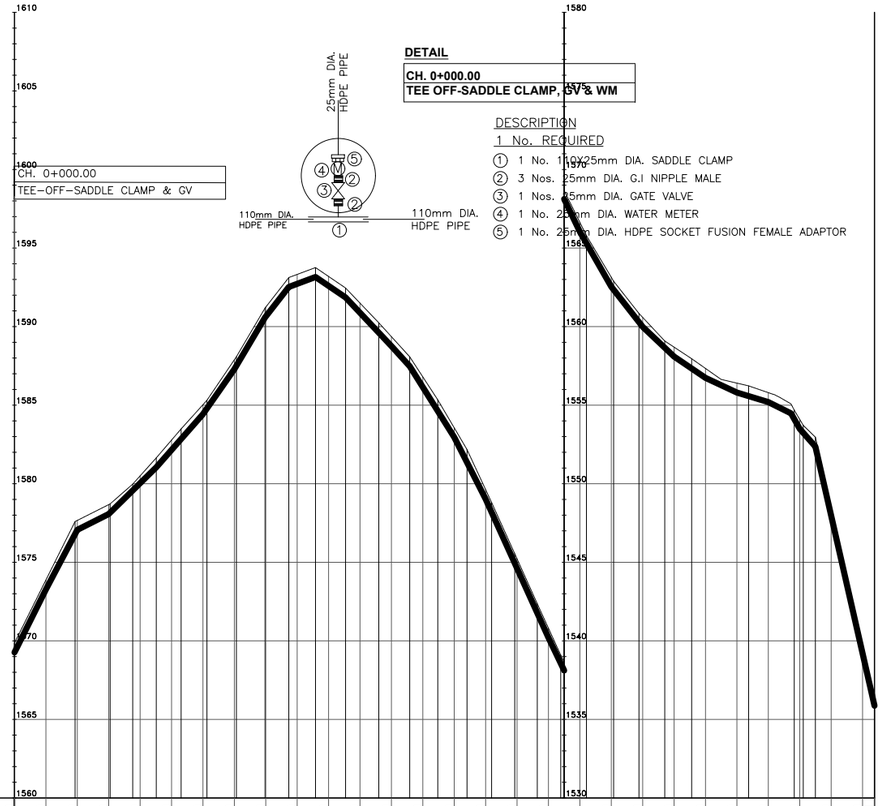
EXTENSION OF WATER SUPPLY PIPELINES IN MUKURWEINI

DRAWING TITLE:
KIRITI LINE

CH. 0+000.00 - 0+474.98
SHEET 1 OF 1

Designed by:	A.M.M	Drawn by:	A.M.M
Checked by:	K.N.G	Approved by:	D.N.M
Scale:	H- 1:4000, V- 1:400	Date:	JAN 2024
DRG No.	EXT-MUK/KIR/01		





CHAINAGE (m)	0+000.00	0+020.00	0+040.00	0+060.00	0+080.00	0+100.00	0+120.00	0+140.00	0+160.00	0+180.00	0+200.00	0+220.00	0+240.00	0+260.00	0+280.00	0+300.00	0+320.00	0+340.00	0+360.00	0+380.00	0+400.00	0+420.00	0+440.00	0+460.00	0+480.00	0+500.00	0+520.00	0+540.00	0+547.61
EXISTING GROUND LEVEL (m)	1569.86	1573.87	1577.66	1578.67	1580.50	1582.78	1585.03	1587.89	1591.24	1593.32	1593.19	1591.50	1589.36	1586.80	1583.56	1579.62	1575.22	1570.80	1566.63	1563.14	1560.58	1558.69	1557.34	1556.40	1555.80	1554.09	1548.57	1539.81	1536.47
INVERT LEVELS (m)	1569.26	1573.27	1577.06	1578.07	1580.04	1582.15	1584.43	1587.29	1590.64	1592.72	1592.59	1590.88	1588.76	1586.15	1582.96	1579.02	1574.62	1570.20	1566.03	1562.54	1559.98	1558.09	1556.74	1555.80	1555.20	1553.49	1547.97	1539.21	1535.87
DEPTH OF INVERT (m)	0.60	0.60	0.60	0.60	0.46	0.63	0.60	0.60	0.60	0.60	0.60	0.61	0.60	0.65	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60
HGL DATUM (m)	1642.00	1641.63	1641.27	1640.90	1640.54	1640.17	1639.81	1639.44	1639.08	1638.71	1638.35	1637.98	1637.62	1637.25	1636.89	1636.52	1636.16	1635.79	1635.43	1635.06	1634.70	1634.33	1633.97	1633.60	1633.23	1632.87	1632.50	1632.14	1632.00
TYPE OF PIPE AND SIZE	25mm OD HDPE PIPE PN 16																												
GEOLOGICAL CONDITION	SANDY CLAY SOIL																												
SLOPE OF HGL (H/V)	-1:54.76																												

LONGITUDINAL SECTION

0 100 200m

NOTES:

1. CONTOUR LEVELS ARE IN METERS AT TWO METER INTERVALS
2. GRID VALUES ARE IN METERS AT 200 METER INTERVALS
3. GEOLOGICAL CONDITIONS INDICATED ON DRAWING ARE FOR GENERAL GUIDANCE ONLY
4. MINIMUM PIPELINE SLOPES TO BE 1:500
5. DRAWING TO BE READ IN CONJUCTION WITH STANDARD DRAWINGS

LEGEND:

- ROAD (TARMAC)
- ROAD / TRACK (EARTH / MURRAM)
- FENCE / HEDGE
- 1480 CONTOURS
- ELECTRIC POST
- CULVERT
- GATE
- TEMPORARY STRUCTURES
- BUILDINGS
- KeNHA / KeRRA ROAD BEACON
- PROPOSED TREATED WATER GRAVITY MAIN
- TP10 TRAVERSE POINT & No.
- TRIAL HOLE
- 30° HORIZONTAL BEND (H) OR VERTICAL BEND (V) WITH ANGLE INDICATED
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- WM WATER METER
- PROPOSED MASONRY CHAMBER
- PROPOSED VALVE BOX
- n PIPELINE GRADIENT WITH SLOPE DIRECTION (SLOPE MIN. OR 1 IN n)

ISSUED FOR CONSTRUCTION

REVISIONS		SIGN	DATE	APPROVED
	BY			
	CHECKED			
	BY			
	CHECKED			
	BY			
	CHECKED			
	BY			
	CHECKED			

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

ENGINEER:
CHIEF MANAGER TECHNICAL SERVICES
TANA WATER WORKS DEVELOPMENT AGENCY
P.O BOX 1292 - 10100,
NYERI, KENYA

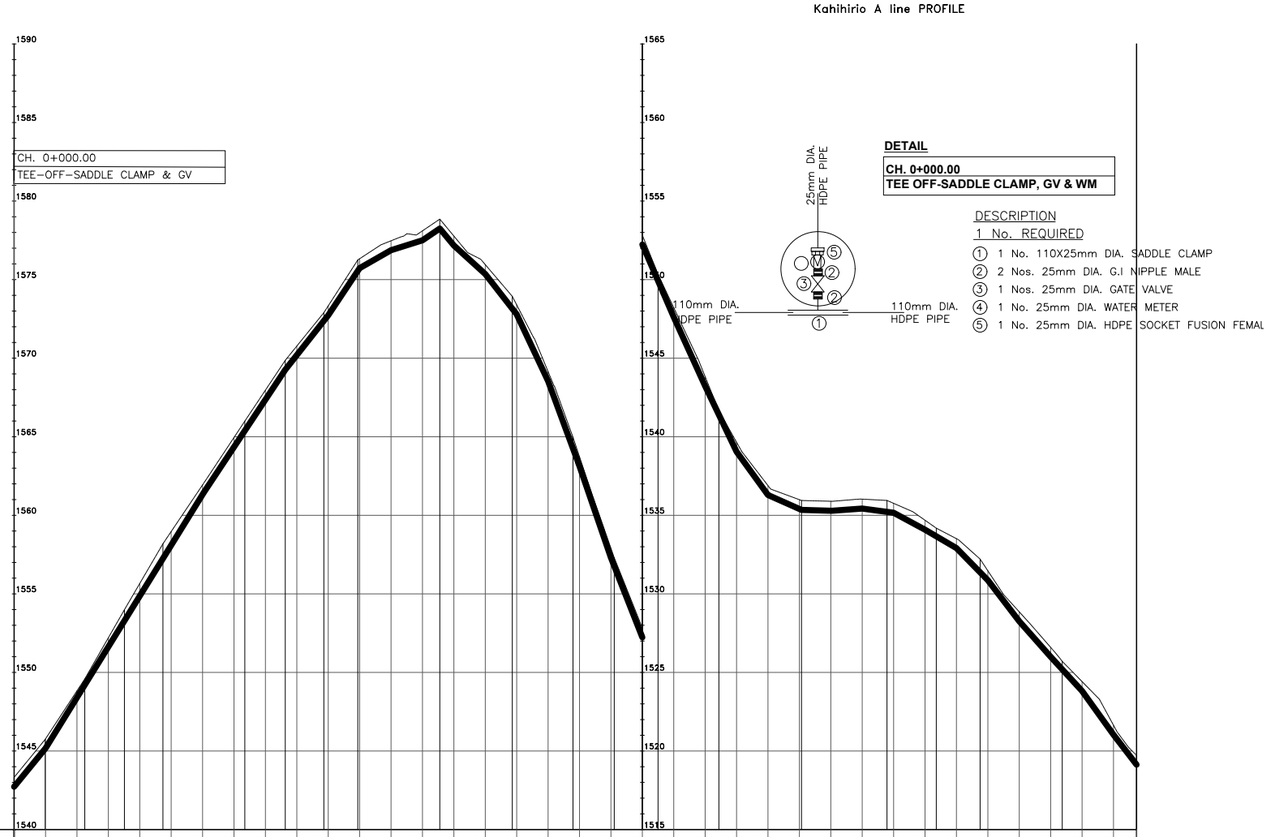
PROJECT TITLE:

EXTENSION OF WATER SUPPLY PIPELINES IN MUKURWEINI

DRAWING TITLE:
KAHIHIRO A LINE

CH. 0+000.00 - 0+547.61
SHEET 1 OF 1

Designed by:	A.M.M	Drawn by:	A.M.M
Checked by:	K.N.G	Approved by:	D.N.M
Scale:	H- 1:4000, V- 1:400	Date:	JAN 2024
DRG No.	EXT-MUK/KAH/01		



DETAIL

CH. 0+000.00
TEE OFF-SADDLE CLAMP, GV & WM

DESCRIPTION
1 No. REQUIRED

1. 1 No. 110X25mm DIA. SADDLE CLAMP
2. 2 Nos. 25mm DIA. G.I NIPPLE MALE
3. 1 Nos. 25mm DIA. GATE VALVE
4. 1 No. 25mm DIA. WATER METER
5. 1 No. 25mm DIA. HDPE SOCKET FUSION FEMAL

CHAINAGE (m)	0+000.00	0+020.00	0+040.00	0+060.00	0+080.00	0+100.00	0+120.00	0+140.00	0+160.00	0+180.00	0+200.00	0+220.00	0+240.00	0+260.00	0+280.00	0+300.00	0+320.00	0+340.00	0+360.00	0+380.00	0+400.00	0+420.00	0+440.00	0+460.00	0+480.00	0+500.00	0+520.00	0+540.00	0+560.00	0+580.00	0+600.00	0+620.00	0+640.00	0+660.00	0+680.00	0+700.00	0+714.68
EXISTING GROUND LEVEL (m)	1543.32	1545.77	1548.83	1552.21	1555.66	1558.97	1561.94	1564.95	1567.96	1570.77	1573.33	1576.33	1577.47	1578.10	1577.77	1575.95	1573.39	1569.14	1563.73	1557.90	1552.83	1548.22	1543.83	1539.65	1536.89	1535.99	1535.89	1536.03	1535.76	1534.68	1533.51	1531.47	1528.86	1526.59	1524.42	1521.64	1519.73
INVERT LEVELS (m)	1542.72	1545.17	1548.40	1551.64	1554.87	1558.10	1561.33	1564.35	1567.36	1570.20	1572.73	1575.73	1576.87	1577.50	1577.17	1575.35	1572.79	1568.54	1563.13	1557.30	1552.23	1547.62	1543.23	1539.05	1536.29	1535.40	1535.29	1535.43	1535.16	1534.08	1532.91	1530.87	1528.26	1525.99	1523.82	1521.04	1519.13
DEPTH OF INVERT (m)	0.60	0.60	0.42	0.57	0.80	0.87	0.61	0.61	0.60	0.58	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.59	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60
HGL DATUM (m)	1653.00	1651.74	1650.48	1649.22	1647.96	1646.70	1645.44	1644.18	1642.93	1641.67	1640.41	1639.15	1637.89	1636.63	1635.37	1634.11	1632.85	1631.59	1630.33	1629.07	1627.81	1626.55	1625.30	1624.04	1622.78	1621.52	1620.26	1619.00	1617.74	1616.48	1615.22	1813.96	1612.70	1611.44	1610.18	1808.92	1608.00
TYPE OF PIPE AND SIZE	25mm OD HDPE PIPE PN 16																									25mm OD HDPE PIPE PN 20											
GEOLOGICAL CONDITION	SANDY CLAY SOIL																																				
SLOPE OF HGL (H/V)	-1:15.88																																				

0 100 200m

LONGITUDINAL SECTION

NOTES:

1. CONTOUR LEVELS ARE IN METERS AT TWO METER INTERVALS
2. GRID VALUES ARE IN METERS AT 200 METER INTERVALS
3. GEOLOGICAL CONDITIONS INDICATED ON DRAWING ARE FOR GENERAL GUIDANCE ONLY
4. MINIMUM PIPELINE SLOPES TO BE 1:500
5. DRAWING TO BE READ IN CONJUCTION WITH STANDARD DRAWINGS

LEGEND:

- ROAD (TARMAC)
- ROAD / TRACK (EARTH / MURRAM)
- FENCE / HEDGE
- 1480 CONTOURS
- ELECTRIC POST
- CULVERT
- GATE
- TEMPORARY STRUCTURES
- BUILDINGS
- KeNHA / KeRRA ROAD BEACON
- PROPOSED TREATED WATER GRAVITY MAIN
- TP10 TRAVERSE POINT & No.
- TRIAL HOLE
- 30° HORIZONTAL BEND (H) OR VERTICAL BEND (V) WITH ANGLE INDICATED
- RIVER/STREAM
- V.J. VIKING JOHNSON
- GV GATE VALVE
- SV-01 SECTIONAL VALVE & No.
- WO-01 WASHOUT VALVE & No.
- DAV-01 AIR VALVE & No.
- WM WATER METER
- PROPOSED MASONRY CHAMBER
- PROPOSED VALVE BOX
- n PIPELINE GRADIENT WITH SLOPE DIRECTION (SLOPE MIN. OR 1 IN n)

ISSUED FOR CONSTRUCTION

REVISIONS		SIGN	DATE	APPROVED
	BY			
	CHECKED			
	BY			
	CHECKED			
	BY			
	CHECKED			
	BY			
	CHECKED			

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

ENGINEER:
CHIEF MANAGER TECHNICAL SERVICES
TANA WATER WORKS DEVELOPMENT AGENCY
P.O BOX 1292 - 10100,
NYERI, KENYA

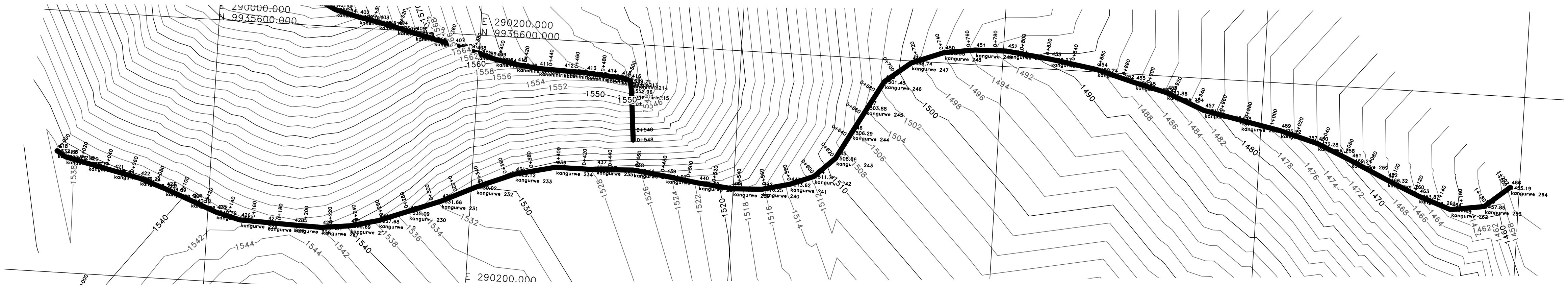
PROJECT TITLE:

EXTENSION OF WATER SUPPLY PIPELINES IN MUKURWEINI

DRAWING TITLE:
KIRITI LINE

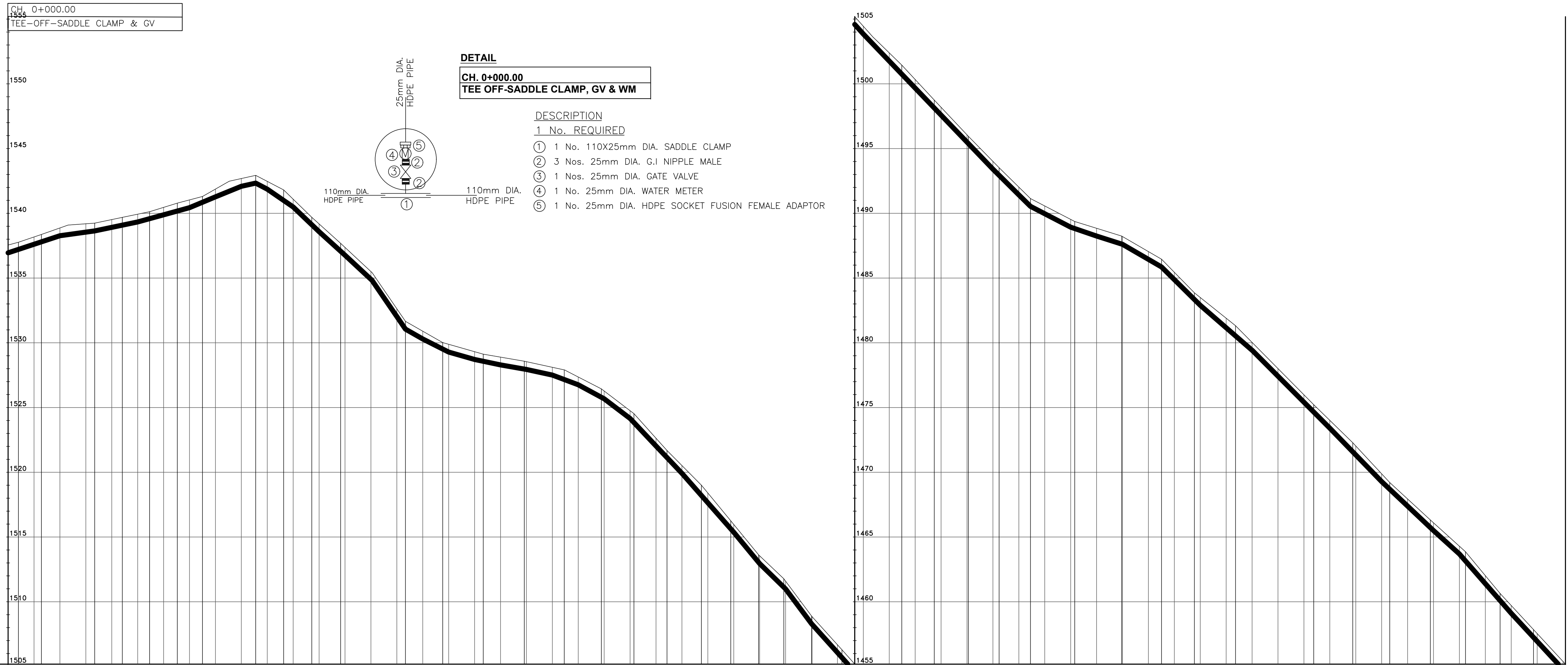
CH. 0+000.00 - 0+714.68
SHEET 1 OF 1

Designed by:	A.M.M	Drawn by:	A.M.M
Checked by:	K.N.G	Approved by:	D.N.M
Scale:	H- 1:4000, V- 1:400	Date:	JAN 2024
DRG No.	EXT-MUK/KIR/01		



Kangurwe line PROFILE

CH. 0+000.00
TEE-OFF-SADDLE CLAMP & GV



DETAIL

CH. 0+000.00
TEE OFF-SADDLE CLAMP, GV & WM

DESCRIPTION

1 No. REQUIRED

1. 1 No. 110X25mm DIA. SADDLE CLAMP
2. 3 Nos. 25mm DIA. G.I NIPPLE MALE
3. 1 Nos. 25mm DIA. GATE VALVE
4. 1 No. 25mm DIA. WATER METER
5. 1 No. 25mm DIA. HDPE SOCKET FUSION FEMALE ADAPTOR

CHAINAGE (m)	EXISTING GROUND LEVEL (m)	INVERT LEVELS (m)	DEPTH OF INVERT (m)	HGL DATUM (m)
0+000.00	1537.55	1536.95	0.60	1655.00
0+020.00	1538.17	1537.61	0.56	1653.20
0+040.00	1538.87	1538.27	0.60	1651.41
0+060.00	1539.19	1538.55	0.64	1649.61
0+080.00	1539.52	1538.92	0.60	1647.81
0+100.00	1539.93	1539.33	0.60	1646.01
0+120.00	1540.46	1539.88	0.57	1644.22
0+140.00	1541.04	1540.44	0.60	1642.42
0+160.00	1541.87	1541.27	0.60	1640.62
0+180.00	1542.69	1542.09	0.60	1638.82
0+200.00	1542.47	1541.87	0.60	1637.03
0+220.00	1541.09	1540.49	0.60	1635.23
0+240.00	1539.18	1538.58	0.60	1633.43
0+260.00	1537.37	1536.77	0.60	1631.64
0+280.00	1535.50	1534.91	0.60	1629.84
0+300.00	1532.63	1532.03	0.60	1628.04
0+320.00	1530.89	1530.29	0.60	1626.24
0+340.00	1529.88	1529.28	0.60	1624.45
0+360.00	1529.31	1528.71	0.60	1622.65
0+380.00	1528.89	1528.29	0.60	1620.85
0+400.00	1528.54	1527.94	0.60	1619.05
0+420.00	1528.11	1527.51	0.60	1617.26
0+440.00	1527.36	1526.76	0.60	1615.46
0+460.00	1526.28	1525.68	0.60	1613.66
0+480.00	1524.76	1524.16	0.60	1611.87
0+500.00	1522.63	1522.03	0.60	1610.07
0+520.00	1520.52	1519.92	0.60	1608.27
0+540.00	1518.40	1517.65	0.76	1606.47
0+560.00	1515.97	1515.37	0.60	1604.68
0+580.00	1513.55	1512.95	0.60	1602.88
0+600.00	1511.59	1510.99	0.60	1601.08
0+620.00	1508.91	1508.31	0.60	1599.28
0+640.00	1506.68	1506.08	0.60	1597.49
0+660.00	1504.44	1503.84	0.60	1595.69
0+680.00	1502.39	1501.76	0.63	1593.89
0+700.00	1500.33	1499.67	0.66	1592.10
0+720.00	1498.19	1497.59	0.60	1590.30
0+740.00	1496.06	1495.50	0.56	1588.50
0+760.00	1494.01	1493.41	0.60	1586.70
0+780.00	1492.02	1491.42	0.60	1584.91
0+800.00	1490.57	1489.97	0.60	1583.11
0+820.00	1489.53	1488.93	0.60	1581.31
0+840.00	1488.84	1488.24	0.60	1579.51
0+860.00	1488.21	1487.61	0.60	1577.72
0+880.00	1487.04	1486.44	0.60	1575.92
0+900.00	1485.44	1484.88	0.57	1574.12
0+920.00	1483.50	1482.90	0.60	1572.33
0+940.00	1481.90	1481.16	0.74	1570.53
0+960.00	1480.03	1479.42	0.60	1568.73
0+980.00	1478.01	1477.42	0.59	1566.93
1+000.00	1475.98	1475.41	0.57	1565.14
1+020.00	1474.01	1473.41	0.60	1563.34
1+040.00	1472.03	1471.34	0.69	1561.54
1+060.00	1469.88	1469.28	0.60	1559.74
1+080.00	1467.94	1467.39	0.55	1557.95
1+100.00	1466.10	1465.50	0.60	1556.15
1+120.00	1464.29	1463.69	0.60	1554.35
1+140.00	1462.02	1461.40	0.62	1552.56
1+160.00	1459.71	1459.11	0.60	1550.76
1+180.00	1457.55	1456.95	0.60	1548.96
1+200.00 / 1+201.83	1455.38 / 1455.19	1454.78 / 1454.59	0.60 / 0.60	1547.16 / 1547.09

TYPE OF PIPE AND SIZE: 25mm OD HDPE PIPE PN 20 (CH. 0+000.00 – 0+700.00); 25mm OD HDPE PIPE PN 25 (CH. 0+700.00 – 1+201.83)

GEOLOGICAL CONDITION: SANDY CLAY SOIL

SLOPE OF HGL (H/V): −1:11.13

0 100 200m

LONGITUDINAL SECTION

NOTES:

1. CONTOUR LEVELS ARE IN METERS AT TWO METER INTERVALS
2. GRID VALUES ARE IN METERS AT 200 METER INTERVALS
3. GEOLOGICAL CONDITIONS INDICATED ON DRAWING ARE FOR GENERAL GUIDANCE ONLY
4. MINIMUM PIPELINE SLOPES TO BE 1:500
5. DRAWING TO BE READ IN CONJUCTION WITH STANDARD DRAWINGS

LEGEND:

	ROAD (TARMAC)
	ROAD / TRACK (EARTH / MURRAM)
	FENCE / HEDGE
1480	CONTOURS
	ELECTRIC POST
	CULVERT
	GATE
	TEMPORARY STRUCTURES
	BUILDINGS
	KeNHA / KeRRA ROAD BEACON
	PROPOSED TREATED WATER GRAVITY MAIN
TP10	TRAVERSE POINT & No.
	TRIAL HOLE
30°	HORIZONTAL BEND (H) OR VERTICAL BEND (V) WITH ANGLE INDICATED
	RIVER/STREAM
V.J.	VIKING JOHNSON
GV	GATE VALVE
SV-01	SECTIONAL VALVE & No.
WO-01	WASHOUT VALVE & No.
DAV-01	AIR VALVE & No.
WM	WATER METER
	PROPOSED MASONRY CHAMBER
	PROPOSED VALVE BOX
n	PIPELINE GRADIENT WITH SLOPE DIRECTION (SLOPE MIN. OR 1 IN n)

ISSUED FOR CONSTRUCTION

	REVISIONS		SIGN	DATE	APPROVED
		BY			
		CHECKED			
		BY			
		CHECKED			
		BY			
		CHECKED			
		BY			
		CHECKED			

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

ENGINEER: **CHIEF MANAGER TECHNICAL SERVICES TANA WATER WORKS DEVELOPMENT AGENCY**
P.O BOX 1292 - 10100,
NYERI, KENYA

PROJECT TITLE:

EXTENSION OF WATER SUPPLY PIPELINES IN MUKURWEINI

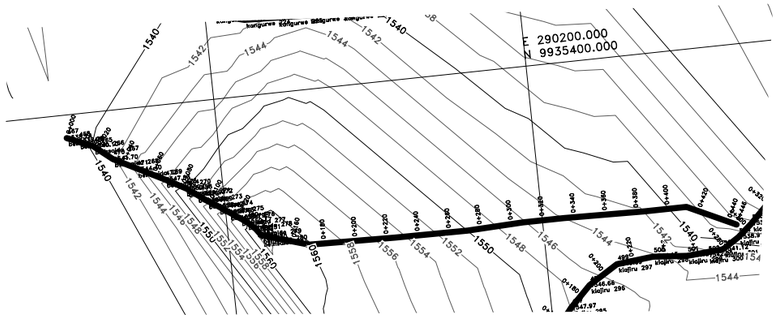
DRAWING TITLE:

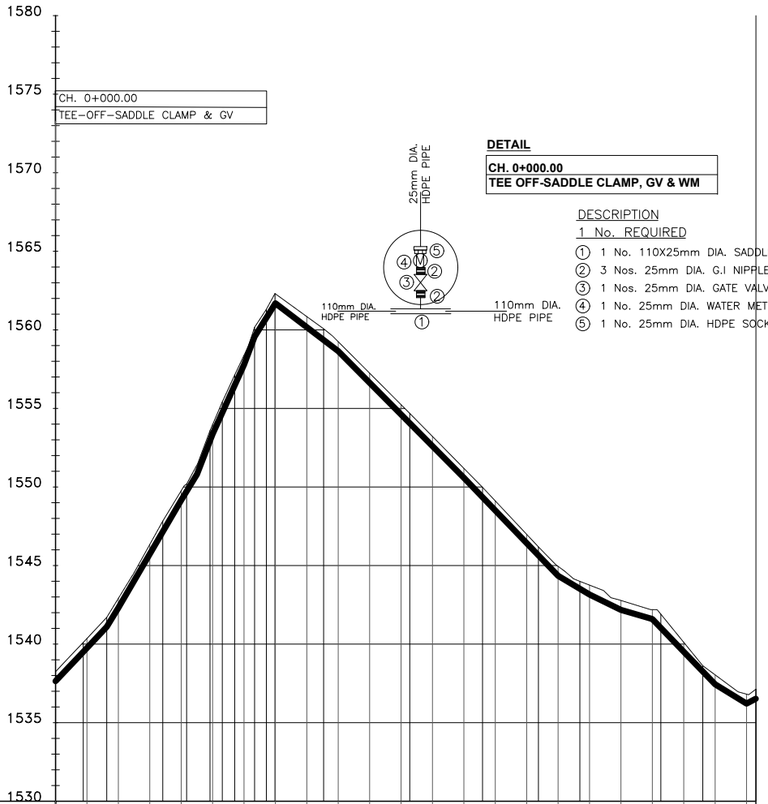
KANGURWE LINE

CH. 0+000.00 - 1+201.83

SHEET 1 OF 1

Designed by:	A.M.M	Drawn by:	A.M.M
Checked by:	K.N.G	Approved by:	D.N.M
Scale:	H- 1:4000, V- 1:400	Date:	JAN 2024
DRG No.	EXT-MUK/KANG/01		





CHAINAGE (m)	0+000.00	0+020.00	0+040.00	0+060.00	0+080.00	0+100.00	0+120.00	0+140.00	0+160.00	0+180.00	0+200.00	0+220.00	0+240.00	0+260.00	0+280.00	0+300.00	0+320.00	0+340.00	0+360.00	0+380.00	0+400.00	0+420.00	0+440.00	0+445.96
EXISTING GROUND LEVEL (m)	1538.24	1540.36	1542.91	1546.34	1549.76	1553.97	1558.38	1562.29	1560.84	1559.25	1557.24	1555.24	1553.22	1551.19	1549.11	1546.98	1544.95	1543.76	1542.78	1542.20	1540.11	1538.04	1536.81	1537.13
INVERT LEVELS (m)	1537.64	1539.76	1542.31	1545.73	1549.16	1553.37	1557.78	1561.69	1560.17	1558.65	1556.63	1554.62	1552.60	1550.59	1548.51	1546.43	1544.35	1543.16	1542.18	1541.60	1539.51	1537.44	1536.21	
DEPTH OF INVERT (m)	0.60	0.60	0.60	0.61	0.60	0.60	0.60	0.60	0.67	0.60	0.61	0.62	0.62	0.60	0.61	0.56	0.60	0.60	0.60	0.60	0.60	0.60	0.60	
HGL DATUM (m)	1653.00	1652.64	1652.28	1651.92	1651.56	1651.21	1650.85	1650.49	1650.13	1649.77	1649.41	1649.05	1648.69	1648.34	1647.98	1647.62	1647.26	1646.90	1646.54	1646.18	1645.82	1645.47	1645.11	1645.00
TYPE OF PIPE AND SIZE	25mm OD HDPE PIPE PN 20																							
GEOLOGICAL CONDITION	SANDY CLAY SOIL																							
SLOPE OF HGL (H/V)	-1:55.74																							

LONGITUDINAL SECTION

0 100 200m

NOTES:

1. CONTOUR LEVELS ARE IN METERS AT TWO METER INTERVALS
2. GRID VALUES ARE IN METERS AT 200 METER INTERVALS
3. GEOLOGICAL CONDITIONS INDICATED ON DRAWING ARE FOR GENERAL GUIDANCE ONLY
4. MINIMUM PIPELINE SLOPES TO BE 1:500
5. DRAWING TO BE READ IN CONJUCTION WITH STANDARD DRAWINGS

LEGEND:

- ROAD (TARMAC)
- ROAD / TRACK (EARTH / MURRAM)
- FENCE / HEDGE
- 1480 CONTOURS
- ELECTRIC POST
- CULVERT
- GATE
- TEMPORARY STRUCTURES
- BUILDINGS
- KeNHA / KeRRA ROAD BEACON
- PROPOSED TREATED WATER GRAVITY MAIN
- TP10 TRAVERSE POINT & No.
- TRIAL HOLE
- 30° HORIZONTAL BEND (H) OR VERTICAL BEND (V) WITH ANGLE INDICATED
- RIVER/STREAM
- V.J. VIKING JOHNSON
- GV GATE VALVE
- SV-01 SECTIONAL VALVE & No.
- WO-01 WASHOUT VALVE & No.
- DAV-01 AIR VALVE & No.
- WM WATER METER
- PROPOSED MASONRY CHAMBER
- PROPOSED VALVE BOX
- n PIPELINE GRADIENT WITH SLOPE DIRECTION (SLOPE MIN. OR 1 IN n)

ISSUED FOR CONSTRUCTION

REVISIONS		SIGN	DATE	APPROVED
	BY			
	CHECKED			
	BY			
	CHECKED			
	BY			
	CHECKED			
	BY			
	CHECKED			

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

ENGINEER:
CHIEF MANAGER TECHNICAL SERVICES
TANA WATER WORKS DEVELOPMENT AGENCY
P.O BOX 1292 - 10100,
NYERI, KENYA

PROJECT TITLE:

EXTENSION OF WATER SUPPLY PIPELINES IN MUKURWEINI

DRAWING TITLE:
KANGURWE LINE

CH. 0+000.00 - 1+201.83
SHEET 1 OF 1

Designed by:	A.M.M	Drawn by:	A.M.M
Checked by:	K.N.G	Approved by:	D.N.M
Scale:	H- 1:4000, V- 1:400	Date:	JAN 2024
DRG No.	EXT-MUK/KANG/01		

NOTES:

1. CONTOUR LEVELS ARE IN METERS AT TWO METER INTERVALS
2. GRID VALUES ARE IN METERS AT 200 METER INTERVALS
3. GEOLOGICAL CONDITIONS INDICATED ON DRAWING ARE FOR GENERAL GUIDANCE ONLY
4. MINIMUM PIPELINE SLOPES TO BE 1:500
5. DRAWING TO BE READ IN CONJUCTION WITH STANDARD DRAWINGS

LEGEND:

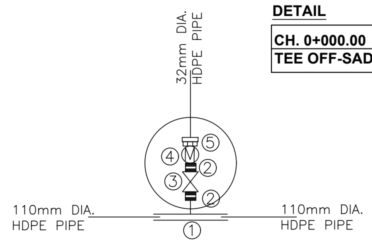
Symbol	Meaning
----------	ROAD (TARMAC)
— — — —	ROAD / TRACK (EARTH / MURRAM)
-x-x-x-x-	FENCE / HEDGE
——1480——	CONTOURS
◎	ELECTRIC POST
(symbol)	CULVERT
(symbol)	GATE
(hatched box)	TEMPORARY STRUCTURES
(box)	BUILDINGS
■	KeNHA / KeRRA ROAD BEACON
(thick line)	PROPOSED TREATED WATER GRAVITY MAIN
TP10	TRAVERSE POINT & No.
⊗	TRIAL HOLE
30°	HORIZONTAL BEND (H) OR VERTICAL BEND (V) WITH ANGLE INDICATED
— — — —	RIVER/STREAM
V.J.	VIKING JOHNSON
GV	GATE VALVE
SV-01	SECTIONAL VALVE & No.
WO-01	WASHOUT VALVE & No.
DAV-01	AIR VALVE & No.
WM	WATER METER
(dashed square)	PROPOSED MASONRY CHAMBER
(dashed circle)	PROPOSED VALVE BOX
n	PIPELINE GRADIENT WITH SLOPE DIRECTION (SLOPE MIN. OR 1 IN n)

ISSUED FOR CONSTRUCTION

	REVISIONS		SIGN	DATE	APPROVED
		BY			
		CHECKED			
		BY			
		CHECKED			
		BY			
		CHECKED			
		BY			
		CHECKED			

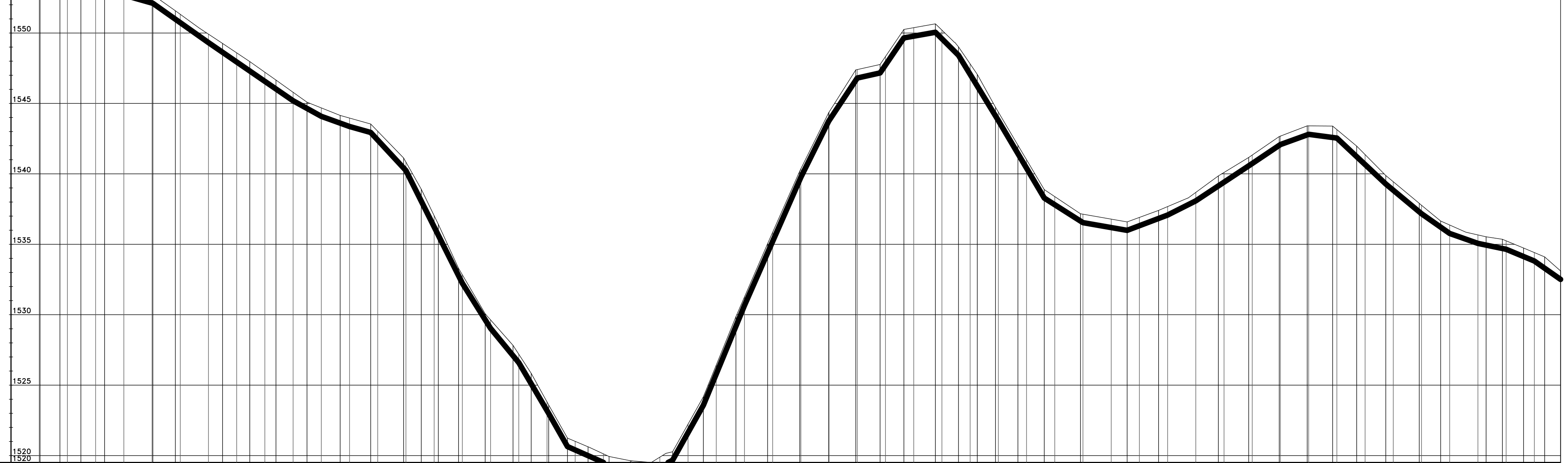
DETAIL

CH. 0+000.00
TEE OFF-SADDLE CLAMP, GV & WM



DESCRIPTION
1 No. REQUIRED

1. 1 No. 110X32mm DIA. SADDLE CLAMP
2. 2 Nos. 32mm DIA. G.I NIPPLE MALE
3. 1 Nos. 32mm DIA. GATE VALVE
4. 1 No. 32mm DIA. WATER METER
5. 1 No. 32mm DIA. HDPE SOCKET FUSION FEMALE ADAPTOR



CHAINAGE (m)	EXISTING GROUND LEVEL (m)	INVERT LEVELS (m)	DEPTH OF INVERT (m)	HGL DATUM (m)
0+000.00	1554.61	1554.01	0.60	1645.00
0+020.00	1553.50	1552.90	0.60	1643.63
0+040.00	1553.35	1552.75	0.60	1642.27
0+060.00	1553.34	1552.72	0.62	1640.90
0+080.00	1553.29	1552.69	0.60	1639.54
0+100.00	1552.73	1552.12	0.60	1638.17
0+120.00	1551.33	1550.73	0.59	1636.81
0+140.00	1549.92	1549.32	0.60	1635.44
0+160.00	1548.59	1547.94	0.65	1634.08
0+180.00	1547.21	1546.57	0.65	1632.71
0+200.00	1545.79	1545.19	0.60	1631.35
0+220.00	1544.68	1544.08	0.60	1629.98
0+240.00	1543.96	1543.36	0.60	1628.62
0+260.00	1543.02	1542.40	0.62	1627.25
0+280.00	1540.84	1540.24	0.60	1625.88
0+300.00	1537.03	1536.24	0.79	1624.52
0+320.00	1532.83	1532.23	0.60	1623.15
0+340.00	1529.63	1529.03	0.60	1621.79
0+360.00	1527.20	1526.60	0.60	1620.42
0+380.00	1523.81	1523.20	0.61	1619.06
0+400.00	1521.01	1520.40	0.61	1617.69
0+420.00	1520.12	1519.51	0.61	1616.33
0+440.00	1519.63	1519.03	0.60	1614.96
0+460.00	1519.89	1519.22	0.67	1613.60
0+480.00	1522.23	1521.63	0.60	1612.23
0+500.00	1526.43	1525.80	0.63	1610.87
0+520.00	1531.26	1530.66	0.60	1609.50
0+540.00	1535.85	1535.21	0.65	1608.13
0+560.00	1540.36	1539.76	0.60	1606.77
0+580.00	1544.39	1543.78	0.60	1605.40
0+600.00	1547.40	1546.80	0.60	1604.04
0+620.00	1548.33	1547.73	0.60	1602.67
0+640.00	1550.38	1549.78	0.60	1601.31
0+660.00	1550.20	1549.59	0.61	1599.94
0+680.00	1547.81	1547.06	0.74	1598.58
0+700.00	1544.39	1543.79	0.60	1597.21
0+720.00	1541.00	1540.40	0.60	1595.85
0+740.00	1538.38	1537.81	0.58	1594.48
0+760.00	1537.14	1536.54	0.60	1593.12
0+780.00	1536.79	1536.19	0.60	1591.75
0+800.00	1536.91	1536.32	0.59	1590.39
0+820.00	1537.68	1537.08	0.60	1589.02
0+840.00	1538.68	1538.08	0.60	1587.65
0+860.00	1540.10	1539.41	0.69	1586.29
0+880.00	1541.33	1540.73	0.60	1584.92
0+900.00	1542.68	1542.08	0.60	1583.56
0+920.00	1543.41	1542.81	0.60	1582.19
0+940.00	1543.14	1542.54	0.60	1580.83
0+960.00	1541.37	1540.66	0.71	1579.46
0+980.00	1539.44	1538.84	0.60	1578.10
1+000.00	1537.77	1537.17	0.60	1576.73
1+020.00	1536.37	1535.77	0.60	1575.37
1+040.00	1535.66	1535.06	0.60	1574.00
1+060.00	1535.25	1534.65	0.60	1572.64
1+080.00	1534.41	1533.81	0.60	1571.27
1+098.60	1533.11	1532.51	0.60	1570.00

TYPE OF PIPE AND SIZE			
	32mm OD HDPE PIPE PN 16 (0+000.00 – 0+280.00)	32mm OD HDPE PIPE PN 20 (0+280.00 – 0+560.00)	32mm OD HDPE PIPE PN 16 (0+560.00 – 1+098.60)
GEOLOGICAL CONDITION	SANDY CLAY SOIL		
SLOPE OF HGL (H/V)	−1:14.65		

LONGITUDINAL SECTION

0 100 200m

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

ENGINEER: **CHIEF MANAGER TECHNICAL SERVICES**
TANA WATER WORKS DEVELOPMENT AGENCY
P.O BOX 1292 - 10100,
NYERI, KENYA

PROJECT TITLE:

EXTENSION OF WATER SUPPLY PIPELINES IN MUKURWEINI

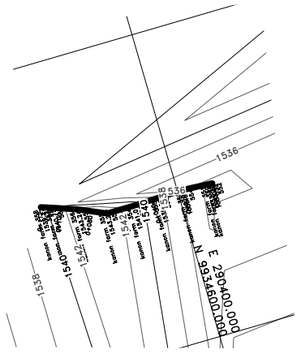
DRAWING TITLE:

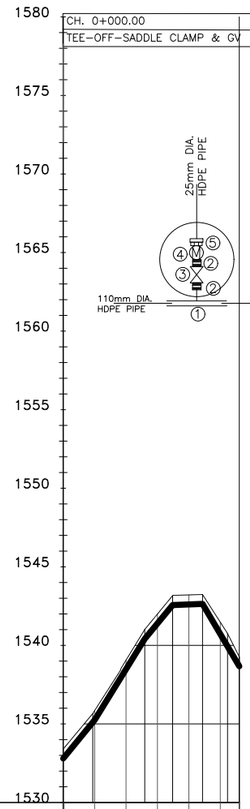
KIANJIRU LINE

CH. 0+000.00 - 1+098.60

SHEET 1 OF 1

Designed by:	A.M.M	Drawn by:	A.M.M
Checked by:	K.N.G	Approved by:	D.N.M
Scale:	H- 1:4000, V- 1:400	Date:	JAN 2024
DRG No.	EXT-MUK/KIA/01		





DETAIL

CH. 0+000.00
TEE OFF-SADDLE CLAMP, GV & WM

DESCRIPTION
1 No. REQUIRED

1. 1 No. 110X25mm DIA. SADDLE CLAMP
2. 3 Nos. 25mm DIA. G.I NIPPLE MALE
3. 1 Nos. 25mm DIA. GATE VALVE
4. 1 No. 25mm DIA. WATER METER
5. 1 No. 25mm DIA. HDPE SOCKET FUSION FEMALE ADAPTOR

CHAINAGE (m)	0+000.00	0+020.00	0+040.00	0+060.00	0+080.00	0+100.00	0+112.11
EXISTING GROUND LEVEL (m)	1533.40	1535.85	1539.06	1541.99	1543.21	1541.48	1539.27
INVERT LEVELS (m)	1532.80	1535.25	1538.49	1541.39	1542.60	1540.72	1538.67
DEPTH OF INVERT (m)	0.60	0.60	0.57	0.60	0.61	0.75	0.60
HGL DATUM (m)	1653.00	1652.64	1652.29	1651.93	1651.57	1651.22	1651.00
TYPE OF PIPE AND SIZE	25mm OD HDPE PIPE PN 16						
GEOLOGICAL CONDITION	SANDY CLAY SOIL						
SLOPE OF HGL (H/V)	1:56.06						

LONGITUDINAL SECTION

0 100 200m

NOTES:

1. CONTOUR LEVELS ARE IN METERS AT TWO METER INTERVALS
2. GRID VALUES ARE IN METERS AT 200 METER INTERVALS
3. GEOLOGICAL CONDITIONS INDICATED ON DRAWING ARE FOR GENERAL GUIDANCE ONLY
4. MINIMUM PIPELINE SLOPES TO BE 1:500
5. DRAWING TO BE READ IN CONJUCTION WITH STANDARD DRAWINGS

LEGEND:

	ROAD (TARMAC)
	ROAD / TRACK (EARTH / MURRAM)
	FENCE / HEDGE
1480	CONTOURS
	ELECTRIC POST
	CULVERT
	GATE
	TEMPORARY STRUCTURES
	BUILDINGS
	KeNHA / KeRRA ROAD BEACON
	PROPOSED TREATED WATER GRAVITY MAIN
TP10	TRAVERSE POINT & No.
	TRIAL HOLE
30°	HORIZONTAL BEND (H) OR VERTICAL BEND (V) WITH ANGLE INDICATED
	RIVER/STREAM
V.J.	VIKING JOHNSON
GV	GATE VALVE
SV-01	SECTIONAL VALVE & No.
WO-01	WASHOUT VALVE & No.
DAV-01	AIR VALVE & No.
WM	WATER METER
	PROPOSED MASONRY CHAMBER
	PROPOSED VALVE BOX
n	PIPELINE GRADIENT WITH SLOPE DIRECTION (SLOPE MIN. OR 1 IN n)

ISSUED FOR CONSTRUCTION

	REVISIONS		SIGN	DATE	APPROVED
		BY			
		CHECKED			
		BY			
		CHECKED			
		BY			
		CHECKED			
		BY			
		CHECKED			

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

ENGINEER:
CHIEF MANAGER TECHNICAL SERVICES
TANA WATER WORKS DEVELOPMENT AGENCY
P.O BOX 1292 - 10100,
NYERI, KENYA

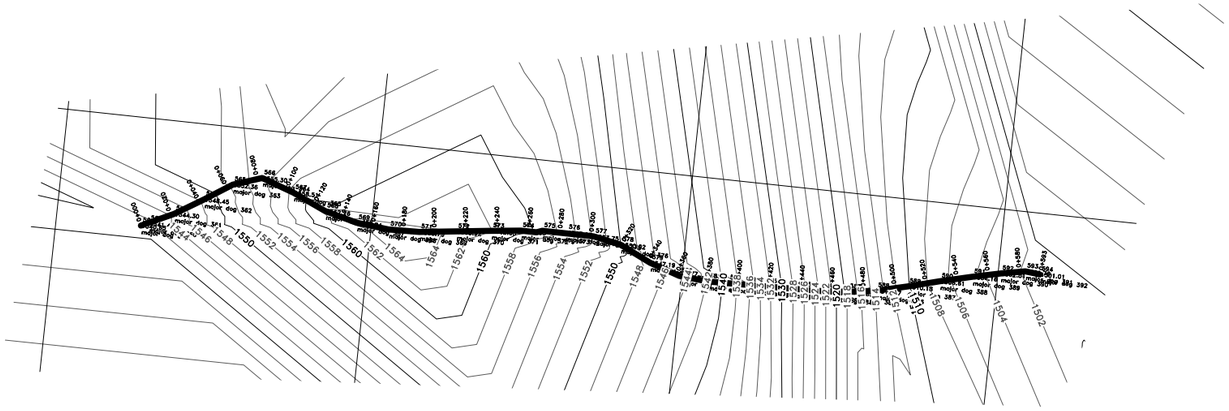
PROJECT TITLE:

EXTENSION OF WATER SUPPLY PIPELINES IN MUKURWEINI

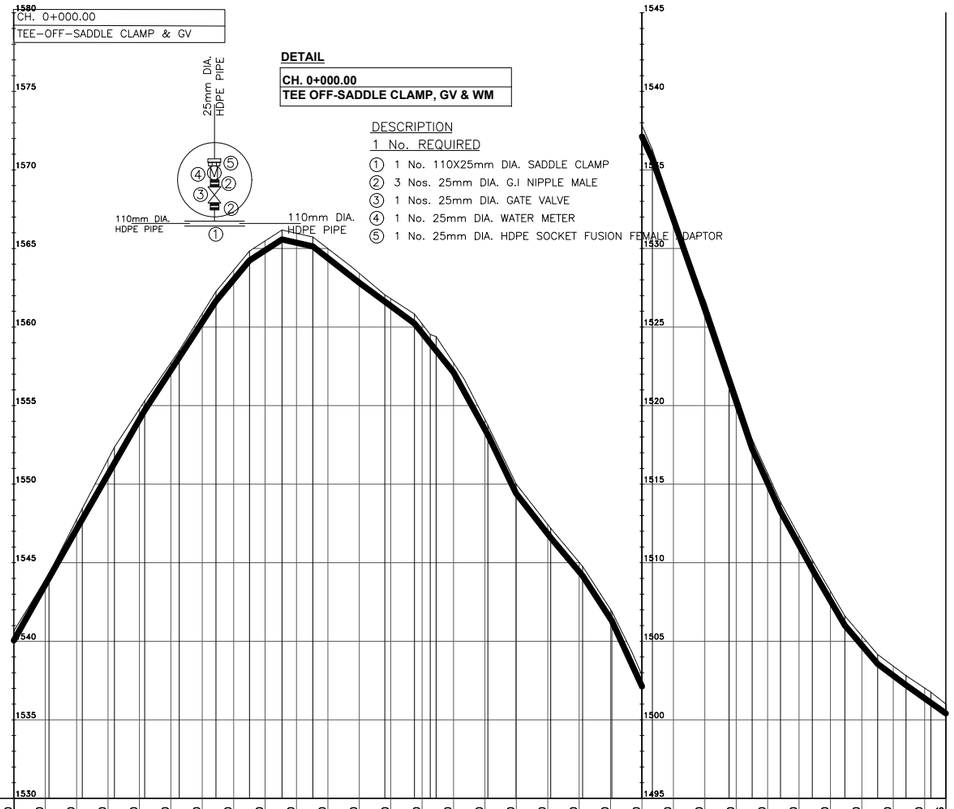
DRAWING TITLE:
CANAAN LINE

CH. 0+000.00 - 0+112.11
SHEET 1 OF 1

Designed by:	A.M.M	Drawn by:	A.M.M
Checked by:	K.N.G	Approved by:	D.N.M
Scale:	H- 1:4000, V- 1:400	Date:	JAN 2024
DRG No.	EXT-MUK/CAN/01		



Major line PROFILE



CHAINAGE (m)	0+000.00	0+020.00	0+040.00	0+060.00	0+080.00	0+100.00	0+120.00	0+140.00	0+160.00	0+180.00	0+200.00	0+220.00	0+240.00	0+260.00	0+280.00	0+300.00	0+320.00	0+340.00	0+360.00	0+380.00	0+400.00	0+420.00	0+440.00	0+460.00	0+480.00	0+500.00	0+520.00	0+540.00	0+560.00	0+580.00	0+593.46
EXISTING GROUND LEVEL (m)	1540.65	1543.91	1547.74	1551.58	1554.79	1557.72	1560.86	1563.62	1565.48	1565.97	1564.99	1563.42	1561.81	1560.20	1557.71	1554.11	1549.99	1547.43	1545.03	1542.02	1537.83	1532.25	1526.74	1520.85	1515.68	1511.71	1508.19	1505.34	1503.42	1502.02	1501.01
INVERT LEVELS (m)	1540.05	1543.59	1547.14	1550.63	1554.11	1557.25	1560.32	1563.02	1564.88	1565.37	1564.38	1562.82	1561.34	1559.62	1557.11	1553.49	1549.39	1546.83	1544.43	1541.42	1537.13	1531.86	1526.14	1520.25	1515.08	1511.12	1507.59	1504.74	1502.82	1501.37	1500.41
DEPTH OF INVERT (m)	0.60	0.31	0.60	0.95	0.67	0.47	0.54	0.60	0.60	0.60	0.61	0.60	0.46	0.58	0.60	0.63	0.60	0.60	0.60	0.60	0.70	0.38	0.60	0.60	0.60	0.59	0.60	0.60	0.60	0.66	0.60
HGL DATUM (m)	1630.00	1629.26	1628.52	1627.78	1627.03	1626.29	1625.55	1624.81	1624.07	1623.33	1622.59	1621.84	1621.10	1620.36	1619.62	1618.88	1618.14	1617.40	1616.65	1615.91	1615.17	1614.43	1613.69	1612.95	1612.21	1611.46	1610.72	1609.98	1609.24	1608.50	1608.00
TYPE OF PIPE AND SIZE	25mm OD HDPE PIPE PN 16																					25mm OD HDPE PIPE PN 20									
GEOLOGICAL CONDITION	SANDY CLAY SOIL																													
SLOPE OF HGL (H/V)	-1:26.98																													

LONGITUDINAL SECTION

0 100 200m

NOTES:

1. CONTOUR LEVELS ARE IN METERS AT TWO METER INTERVALS
2. GRID VALUES ARE IN METERS AT 200 METER INTERVALS
3. GEOLOGICAL CONDITIONS INDICATED ON DRAWING ARE FOR GENERAL GUIDANCE ONLY
4. MINIMUM PIPELINE SLOPES TO BE 1:500
5. DRAWING TO BE READ IN CONJUCTION WITH STANDARD DRAWINGS

LEGEND:

- ROAD (TARMAC)
- ROAD / TRACK (EARTH / MURRAM)
- FENCE / HEDGE
- 1480 CONTOURS
- ELECTRIC POST
- CULVERT
- GATE
- TEMPORARY STRUCTURES
- BUILDINGS
- KeNHA / KeRRA ROAD BEACON
- PROPOSED TREATED WATER GRAVITY MAIN
- TP10 TRIAL HOLE
- 30° HORIZONTAL BEND (H) OR VERTICAL BEND (V) WITH ANGLE INDICATED
- RIVER/STREAM
- V.J. VIKING JOHNSON
- GV GATE VALVE
- SV-01 SECTIONAL VALVE & No.
- WO-01 WASHOUT VALVE & No.
- DAV-01 AIR VALVE & No.
- WM WATER METER
- PROPOSED MASONRY CHAMBER
- PROPOSED VALVE BOX
- n PIPELINE GRADIENT WITH SLOPE DIRECTION (SLOPE MIN. OR 1 IN n)

ISSUED FOR CONSTRUCTION

	REVISIONS		SIGN	DATE	APPROVED
		BY			
		CHECKED			
		BY			
		CHECKED			
		BY			
		CHECKED			
		BY			
		CHECKED			

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

ENGINEER:
CHIEF MANAGER TECHNICAL SERVICES
TANA WATER WORKS DEVELOPMENT AGENCY
P.O BOX 1292 - 10100,
NYERI, KENYA

PROJECT TITLE:

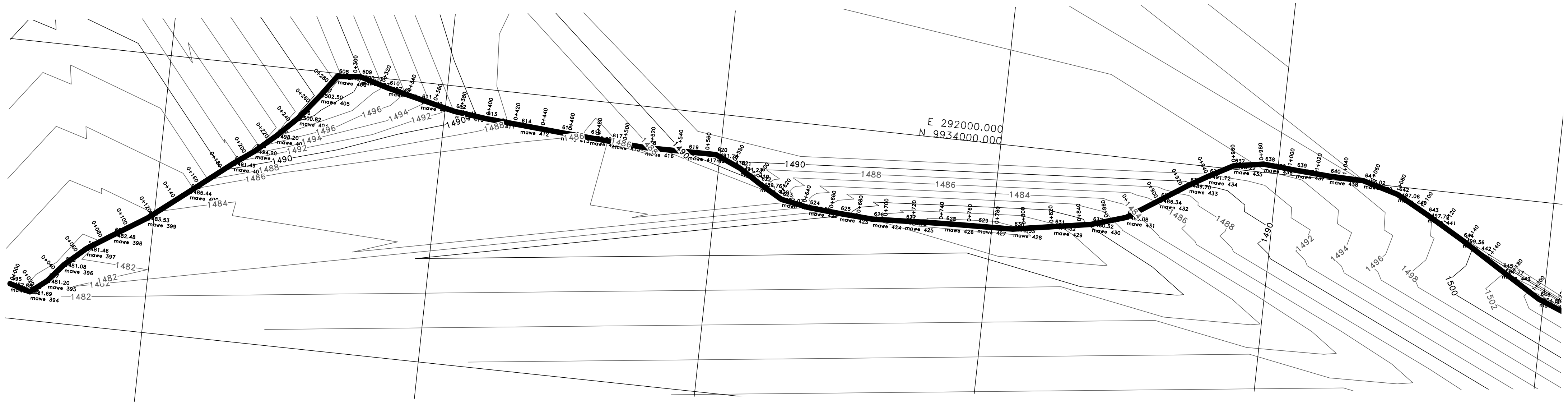
EXTENSION OF WATER SUPPLY PIPELINES IN MUKURWEINI

DRAWING TITLE:
MAJOR LINE

CH. 0+000.00 - 0+593.46
SHEET 1 OF 1

Designed by:	A.M.M	Drawn by:	A.M.M
Checked by:	K.N.G	Approved by:	D.N.M
Scale:	H- 1:4000, V- 1:400	Date:	JAN 2024

DRG No. **EXT-MUK/MJ/01**

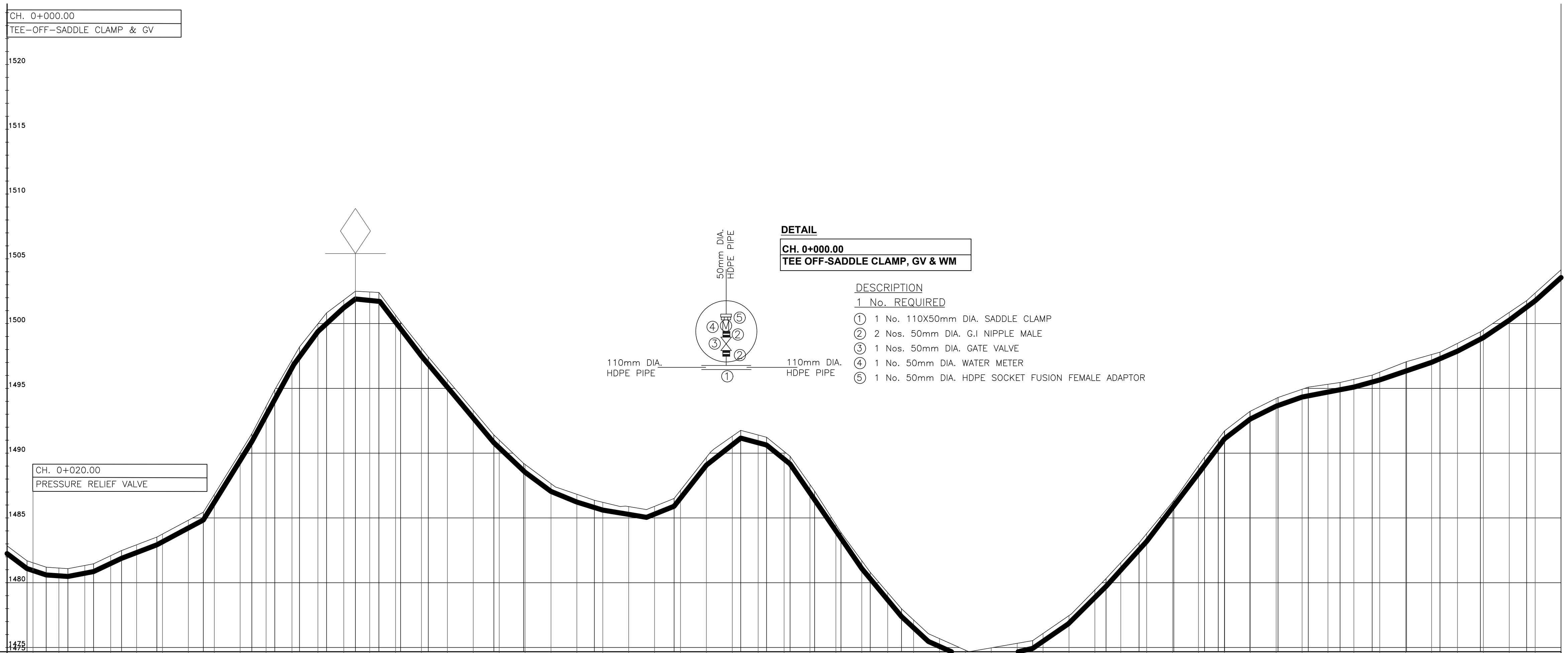


NOTES:

1. CONTOUR LEVELS ARE IN METERS AT TWO METER INTERVALS
2. GRID VALUES ARE IN METERS AT 200 METER INTERVALS
3. GEOLOGICAL CONDITIONS INDICATED ON DRAWING ARE FOR GENERAL GUIDANCE ONLY
4. MINIMUM PIPELINE SLOPES TO BE 1:500
5. DRAWING TO BE READ IN CONJUCTION WITH STANDARD DRAWINGS

LEGEND:

ROAD (TARMAC)
ROAD / TRACK (EARTH / MURRAM)
FENCE / HEDGE
1480 CONTOURS
ELECTRIC POST
CULVERT
GATE
TEMPORARY STRUCTURES
BUILDINGS
KeNHA / KeRRA ROAD BEACON
PROPOSED TREATED WATER GRAVITY MAIN
TP10
TRIAL HOLE
30° HORIZONTAL BEND (H) OR VERTICAL BEND (V) WITH ANGLE INDICATED
RIVER/STREAM
V.J. VIKING JOHNSON
GV GATE VALVE
SV-01 SECTIONAL VALVE & No.
WO-01 WASHOUT VALVE & No.
DAV-01 AIR VALVE & No.
WM WATER METER
PROPOSED MASONRY CHAMBER
PROPOSED VALVE BOX
n PIPELINE GRADIENT WITH SLOPE DIRECTION (SLOPE MIN. OR 1 IN n)



DETAIL

CH. 0+000.00
TEE OFF-SADDLE CLAMP, GV & WM

DESCRIPTION
1 No. REQUIRED

1. 1 No. 110X50mm DIA. SADDLE CLAMP
2. 2 Nos. 50mm DIA. G.I NIPPLE MALE
3. 1 Nos. 50mm DIA. GATE VALVE
4. 1 No. 50mm DIA. WATER METER
5. 1 No. 50mm DIA. HDPE SOCKET FUSION FEMALE ADAPTOR

CHAINAGE (m)	EXISTING GROUND LEVEL (m)	INVERT LEVELS (m)	DEPTH OF INVERT (m)	HGL DATUM (m)
0+000.00	1482.85	1482.25	0.60	1645.00
0+020.00	1481.54	1480.94	0.60	1564.78
0+040.00	1481.13	1480.53	0.60	1564.57
0+060.00	1481.33	1480.73	0.60	1564.35
0+080.00	1482.09	1481.49	0.60	1564.13
0+100.00	1482.93	1482.33	0.60	1563.91
0+120.00	1483.76	1483.16	0.60	1563.70
0+140.00	1484.82	1484.22	0.60	1563.48
0+160.00	1486.81	1486.21	0.60	1563.26
0+180.00	1490.04	1489.44	0.60	1563.05
0+200.00	1493.61	1492.91	0.70	1562.83
0+220.00	1497.19	1496.58	0.62	1562.61
0+240.00	1499.98	1499.38	0.60	1562.40
0+260.00	1501.82	1501.22	0.60	1562.18
0+280.00	1502.44	1501.79	0.65	1561.96
0+300.00	1500.65	1500.11	0.54	1561.74
0+320.00	1498.09	1497.49	0.60	1561.53
0+340.00	1495.68	1495.10	0.58	1561.31
0+360.00	1493.30	1492.71	0.59	1561.09
0+380.00	1491.01	1490.42	0.60	1560.88
0+400.00	1489.13	1488.53	0.60	1560.66
0+420.00	1487.65	1487.05	0.60	1560.44
0+440.00	1486.83	1486.23	0.60	1560.23
0+460.00	1486.21	1485.61	0.60	1560.01
0+480.00	1485.88	1485.28	0.60	1559.79
0+500.00	1485.89	1485.29	0.60	1559.57
0+520.00	1487.13	1486.53	0.60	1559.36
0+540.00	1489.67	1489.07	0.60	1559.14
0+560.00	1491.30	1490.65	0.66	1558.92
0+580.00	1491.40	1490.80	0.60	1558.71
0+600.00	1490.14	1489.54	0.60	1558.49
0+620.00	1487.58	1486.92	0.65	1558.27
0+640.00	1484.50	1484.01	0.49	1558.05
0+660.00	1481.70	1481.10	0.60	1557.84
0+680.00	1479.24	1478.68	0.56	1557.62
0+700.00	1477.13	1476.53	0.60	1557.40
0+720.00	1475.68	1475.08	0.60	1557.19
0+740.00	1474.80	1474.20	0.60	1556.97
0+760.00	1474.97	1474.20	0.78	1556.75
0+780.00	1475.32	1474.66	0.67	1556.54
0+800.00	1476.08	1475.48	0.60	1556.32
0+820.00	1477.46	1476.88	0.59	1556.10
0+840.00	1479.44	1478.86	0.58	1555.88
0+860.00	1481.55	1480.98	0.57	1555.67
0+880.00	1483.79	1483.19	0.60	1555.45
0+900.00	1486.23	1485.81	0.41	1555.23
0+920.00	1489.03	1488.43	0.60	1555.02
0+940.00	1491.70	1491.10	0.60	1554.80
0+960.00	1493.23	1492.63	0.60	1554.58
0+980.00	1494.23	1493.63	0.60	1554.36
1+000.00	1494.93	1494.33	0.60	1554.15
1+020.00	1495.32	1494.72	0.60	1553.93
1+040.00	1495.70	1495.10	0.60	1553.71
1+060.00	1496.25	1495.65	0.60	1553.50
1+080.00	1497.04	1496.33	0.71	1553.28
1+100.00	1497.61	1497.01	0.60	1553.06
1+120.00	1498.47	1497.87	0.60	1552.85
1+140.00	1499.52	1498.92	0.60	1552.63
1+160.00	1500.87	1500.27	0.60	1552.41
1+180.00	1502.36	1501.76	0.60	1552.19
1+200.00	1504.15	1503.55	0.60	1551.98

TYPE OF PIPE AND SIZE: 50mm OD HDPE PIPE PN 25 — 50mm OD HDPE PIPE PN 16

GEOLOGICAL CONDITION

SLOPE OF HGL (H/V): −1:0.12 — −1:92.15

0 — 100 — 200m

LONGITUDINAL SECTION

ISSUED FOR CONSTRUCTION

REVISIONS		SIGN	DATE	APPROVED
	BY			
	CHECKED			
	BY			
	CHECKED			
	BY			
	CHECKED			
	BY			
	CHECKED			

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

ENGINEER: **CHIEF MANAGER TECHNICAL SERVICES TANA WATER WORKS DEVELOPMENT AGENCY**
P.O BOX 1292 - 10100,
NYERI, KENYA

PROJECT TITLE:

EXTENSION OF WATER SUPPLY PIPELINES IN MUKURWEINI

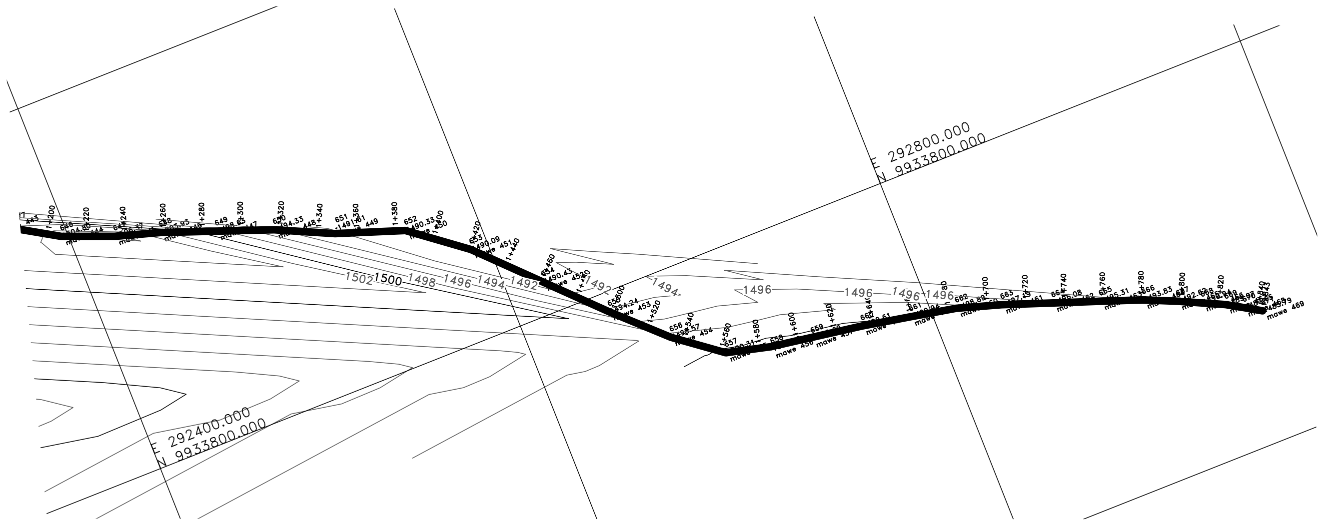
DRAWING TITLE:

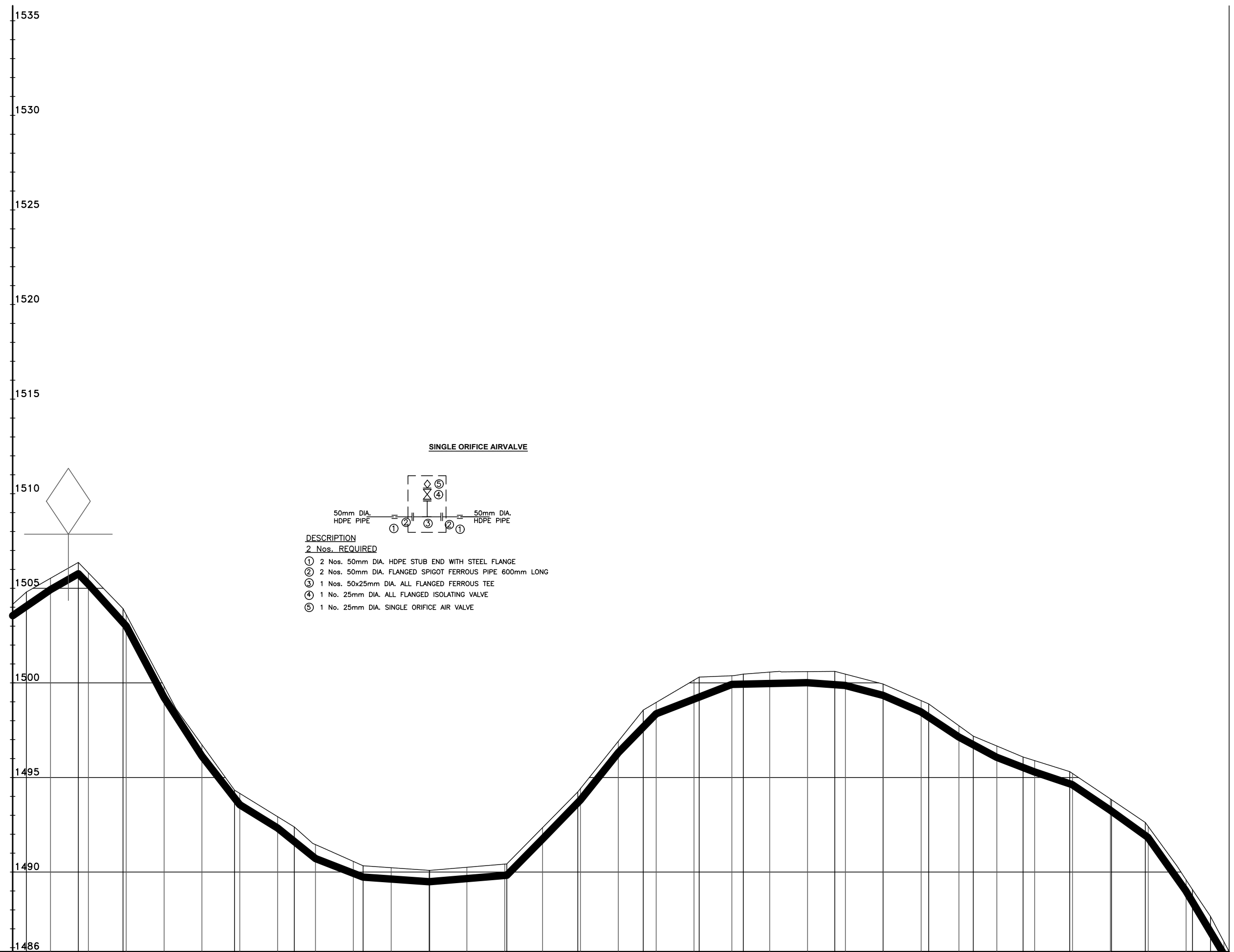
MAWE LINE

CH. 0+000.00 - 1+200.00

SHEET 1 OF 2

Designed by:	A.M.M	Drawn by:	A.M.M
Checked by:	K.N.G	Approved by:	D.N.M
Scale:	H- 1:4000, V- 1:400	Date:	JAN 2024
DRG No.	**EXT-MUK/MJ/01**		





CHAINAGE (m)	1+200.00	1+220.00	1+240.00	1+260.00	1+280.00	1+300.00	1+320.00	1+340.00	1+360.00	1+380.00	1+400.00
EXISTING GROUND LEVEL (m)	1504.15	1505.53	1505.82	1503.61	1499.83	1496.73	1494.16	1492.93	1491.45	1490.56	1490.23
INVERT LEVELS (m)	1503.55	1504.93	1505.22	1503.01	1499.23	1496.13	1493.56	1492.33	1490.71	1489.93	1489.63
DEPTH OF INVERT (m)	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.74	0.63	0.60
HGL DATUM (m)	1551.98	1551.76	1551.54	1551.33	1551.11	1550.89	1550.68	1550.46	1550.24	1550.02	1549.81

CHAINAGE (m)	1+420.00	1+440.00	1+460.00	1+480.00	1+500.00	1+520.00	1+540.00	1+560.00	1+580.00	1+600.00	1+620.00
EXISTING GROUND LEVEL (m)	1490.09	1490.25	1490.42	1492.35	1494.41	1496.91	1498.97	1500.15	1500.38	1500.57	1500.60
INVERT LEVELS (m)	1489.49	1489.66	1489.82	1491.75	1493.81	1496.31	1498.37	1499.14	1499.92	1499.97	1500.01
DEPTH OF INVERT (m)	0.60	0.60	0.60	0.60	0.60	0.60	0.60	1.00	0.46	0.60	0.59
HGL DATUM (m)	1549.59	1549.37	1549.16	1548.94	1548.72	1548.50	1548.29	1548.07	1547.85	1547.64	1547.42

CHAINAGE (m)	1+640.00	1+660.00	1+680.00	1+700.00	1+720.00	1+740.00	1+760.00	1+780.00	1+800.00	1+820.00	1+840.00 / 1+842.75
EXISTING GROUND LEVEL (m)	1500.46	1499.94	1499.06	1497.73	1496.66	1495.89	1495.21	1493.87	1492.41	1489.59	1486.31
INVERT LEVELS (m)	1499.86	1499.34	1498.46	1497.14	1496.06	1495.29	1494.61	1493.27	1491.81	1488.99	1485.65
DEPTH OF INVERT (m)	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.66
HGL DATUM (m)	1547.20	1546.99	1546.77	1546.55	1546.33	1546.12	1545.90	1545.68	1545.47	1545.25	1545.03 / 1545.00

TYPE OF PIPE AND SIZE	50mm OD HDPE PIPE PN 16
GEOLOGICAL CONDITION	
SLOPE OF HGL (H/V)	

LONGITUDINAL SECTION

0 100 200m

NOTES:

1. CONTOUR LEVELS ARE IN METERS AT TWO METER INTERVALS
2. GRID VALUES ARE IN METERS AT 200 METER INTERVALS
3. GEOLOGICAL CONDITIONS INDICATED ON DRAWING ARE FOR GENERAL GUIDANCE ONLY
4. MINIMUM PIPELINE SLOPES TO BE 1:500
5. DRAWING TO BE READ IN CONJUCTION WITH STANDARD DRAWINGS

LEGEND:

- ROAD (TARMAC)
- ROAD / TRACK (EARTH / MURRAM)
- FENCE / HEDGE
- 1480 CONTOURS
- ELECTRIC POST
- CULVERT
- GATE
- TEMPORARY STRUCTURES
- BUILDINGS
- KeNHA / KeRRA ROAD BEACON
- PROPOSED TREATED WATER GRAVITY MAIN
- TP10
- TRIAL HOLE
- 30° HORIZONTAL BEND (H) OR VERTICAL BEND (V) WITH ANGLE INDICATED
- RIVER/STREAM
- V.J. VIKING JOHNSON
- GV GATE VALVE
- SV-01 SECTIONAL VALVE & No.
- WO-01 WASHOUT VALVE & No.
- DAV-01 AIR VALVE & No.
- WM WATER METER
- PROPOSED MASONRY CHAMBER
- PROPOSED VALVE BOX
- n PIPELINE GRADIENT WITH SLOPE DIRECTION (SLOPE MIN. OR 1 IN n)

ISSUED FOR CONSTRUCTION

	REVISIONS		SIGN	DATE	APPROVED
		BY			
		CHECKED			
		BY			
		CHECKED			
		BY			
		CHECKED			
		BY			
		CHECKED			

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

ENGINEER: **CHIEF MANAGER TECHNICAL SERVICES**
TANA WATER WORKS
DEVELOPMENT AGENCY
P.O BOX 1292 - 10100,
NYERI, KENYA

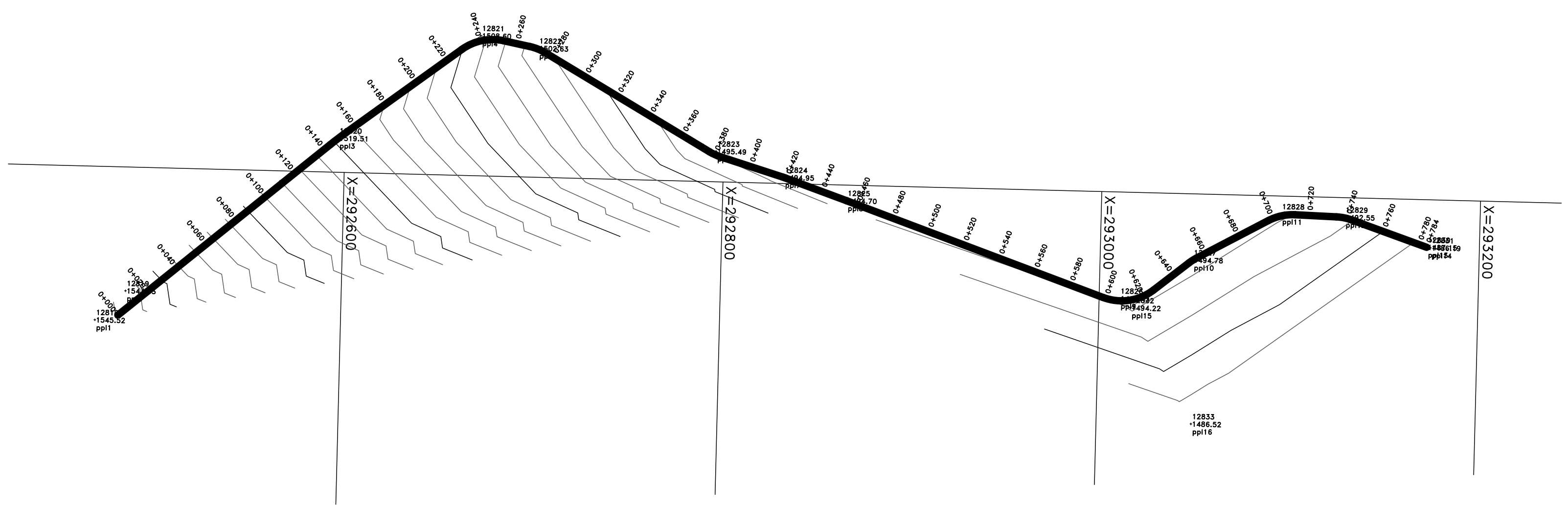
PROJECT TITLE:

EXTENSION OF WATER SUPPLY PIPELINES IN MUKURWEINI

DRAWING TITLE:
MAWE LINE

CH. 1+200.00 - 1+845.75
SHEET 1 OF 2

Designed by:	A.M.M	Drawn by:	A.M.M
Checked by:	K.N.G	Approved by:	D.N.M
Scale:	H- 1:4000, V- 1:400	Date:	JAN 2024
DRG No.	EXT-MUK/MAW/02		



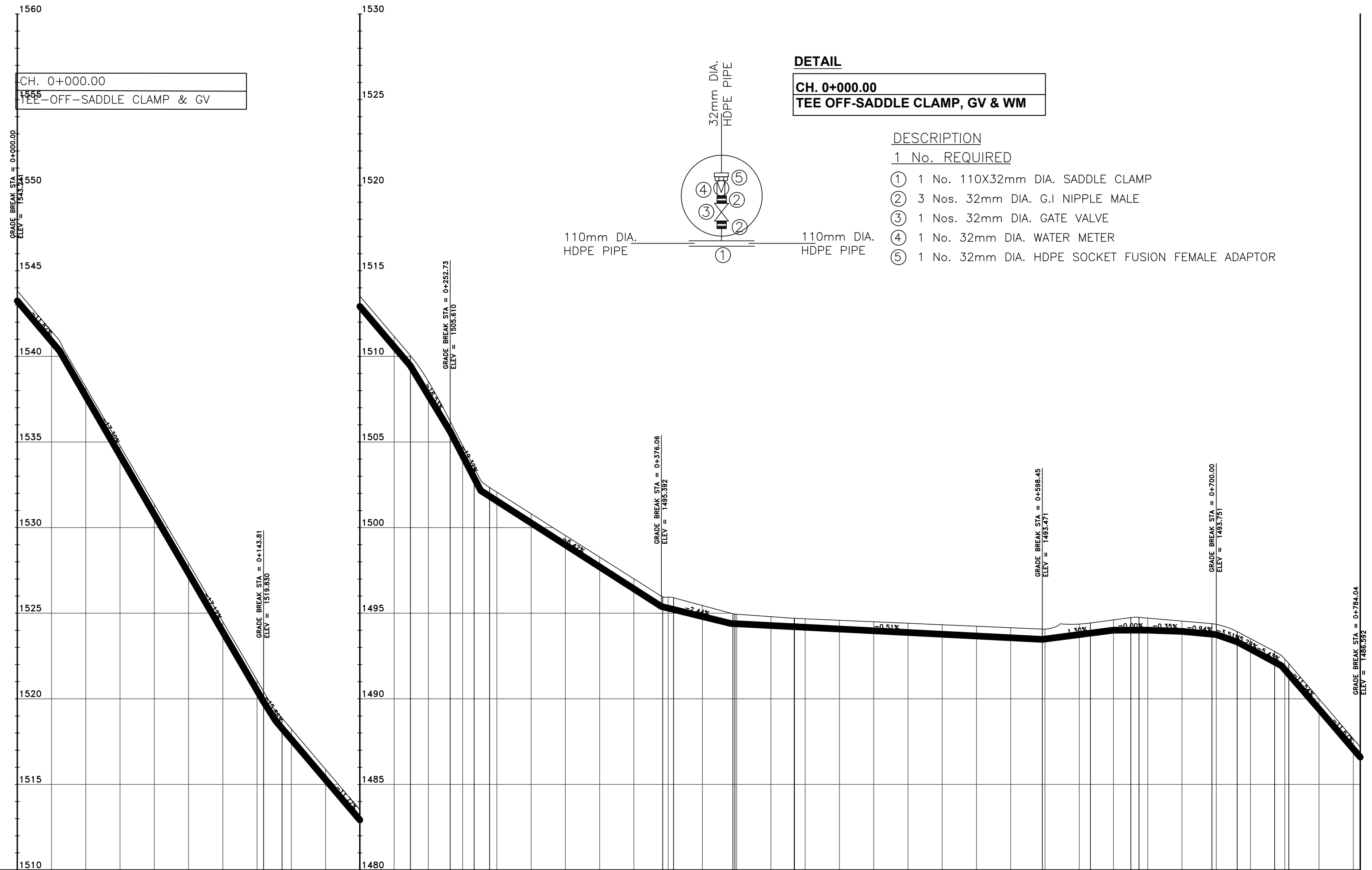
ruthanju line PROFILE

DETAIL

CH. 0+000.00
TEE OFF-SADDLE CLAMP, GV & WM

DESCRIPTION
1 No. REQUIRED

1. 1 No. 110X32mm DIA. SADDLE CLAMP
2. 3 Nos. 32mm DIA. G.I NIPPLE MALE
3. 1 Nos. 32mm DIA. GATE VALVE
4. 1 No. 32mm DIA. WATER METER
5. 1 No. 32mm DIA. HDPE SOCKET FUSION FEMALE ADAPTOR



CHAINAGE (m)	EXISTING GROUND LEVEL (m)	INVERT LEVELS (m)	DEPTH OF INVERT (m)
0+000.00	1543.84	1543.24	0.60
0+020.00	1541.47	1540.88	0.60
0+040.00	1538.20	1537.68	0.53
0+060.00	1534.78	1534.22	0.56
0+080.00	1531.36	1530.76	0.60
0+100.00	1527.93	1527.33	0.60
0+120.00	1524.51	1523.91	0.60
0+140.00	1521.08	1520.48	0.60
0+160.00	1518.24	1517.63	0.60
0+180.00	1515.88	1515.28	0.60
0+200.00	1513.52	1512.92	0.60
0+220.00	1511.17	1510.57	0.60
0+240.00	1508.54	1507.71	0.82
0+260.00	1504.81	1504.21	0.60
0+280.00	1502.07	1501.56	0.52
0+300.00	1500.81	1500.27	0.53
0+320.00	1499.54	1498.99	0.55
0+340.00	1498.27	1497.71	0.57
0+360.00	1497.01	1496.42	0.59
0+380.00	1495.94	1495.30	0.65
0+400.00	1495.45	1494.81	0.64
0+420.00	1494.94	1494.38	0.56
0+440.00	1494.80	1494.28	0.52
0+460.00	1494.67	1494.18	0.49
0+480.00	1494.59	1494.08	0.51
0+500.00	1494.50	1493.97	0.52
0+520.00	1494.41	1493.87	0.54
0+540.00	1494.32	1493.77	0.56
0+560.00	1494.24	1493.67	0.57
0+580.00	1494.15	1493.57	0.59
0+600.00	1494.07	1493.49	0.58
0+620.00	1494.37	1493.75	0.62
0+640.00	1494.61	1494.01	0.60
0+660.00	1494.71	1494.01	0.70
0+680.00	1494.54	1493.94	0.60
0+700.00	1494.35	1493.75	0.60
0+720.00	1493.51	1492.91	0.60
0+740.00	1492.32	1491.71	0.62
0+760.00	1490.00	1489.40	0.60
0+780.00	1487.66	1487.06	0.60
0+784.04	1487.19	1486.59	0.60

DATUM (m)

TYPE OF PIPE AND SIZE: **32mm OD HDPE PIPE PN 10**

GEOLOGICAL CONDITION: **RED LOAM SOIL**

SLOPE OF HGL (H/V): -1:8.46, -1:5.78, -1:5.84, -1:6.31, -1:8.50, -1:6.05, 1:5.18, -1:15.58, -1:40.80, -1:195.71, 1:77.22, Horizontal, -1:8.66, -1:8.57

LONGITUDINAL SECTION

0 100 200m

NOTES:

1. CONTOUR LEVELS ARE IN METERS AT TWO METER INTERVALS
2. GRID VALUES ARE IN METERS AT 200 METER INTERVALS
3. GEOLOGICAL CONDITIONS INDICATED ON DRAWING ARE FOR GENERAL GUIDANCE ONLY
4. MINIMUM PIPELINE SLOPES TO BE 1:500
5. DRAWING TO BE READ IN CONJUCTION WITH STANDARD DRAWINGS

LEGEND:

- ROAD (TARMAC)
- ROAD / TRACK (EARTH / MURRAM)
- FENCE / HEDGE
- 1480 CONTOURS
- ELECTRIC POST
- CULVERT
- GATE
- TEMPORARY STRUCTURES
- BUILDINGS
- KeNHA / KeRRA ROAD BEACON
- PROPOSED TREATED WATER GRAVITY MAIN
- TP10 TRIAL HOLE
- 30° HORIZONTAL BEND (H) OR VERTICAL BEND (V) WITH ANGLE INDICATED
- RIVER/STREAM
- V.J. VIKING JOHNSON
- GV GATE VALVE
- SV-01 SECTIONAL VALVE & No.
- WO-01 WASHOUT VALVE & No.
- DAV-01 AIR VALVE & No.
- WM WATER METER
- PROPOSED MASONRY CHAMBER
- PROPOSED VALVE BOX
- n PIPELINE GRADIENT WITH SLOPE DIRECTION (SLOPE MIN. OR 1 IN n)

ISSUED FOR CONSTRUCTION

REVISIONS		SIGN	DATE	APPROVED
	BY			
	CHECKED			
	BY			
	CHECKED			
	BY			
	CHECKED			
	BY			
	CHECKED			

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

ENGINEER: **CHIEF MANAGER TECHNICAL SERVICES TANA WATER WORKS DEVELOPMENT AGENCY**
P.O BOX 1292 - 10100,
NYERI, KENYA

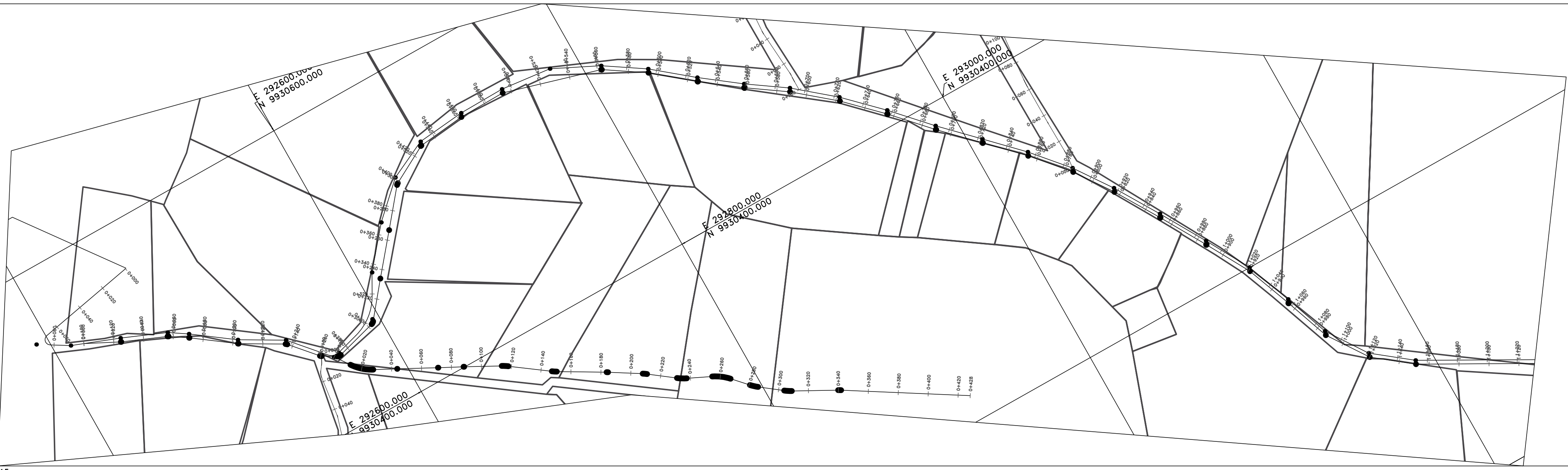
PROJECT TITLE:

EXTENSION OF WATER SUPPLY PIPELINES IN MUKURWEINI

DRAWING TITLE:
RUTHANJU LINE

CH. 0+000.00 - 0+784.04
SHEET 1 OF 1

Designed by:	A.M.M	Drawn by:	A.M.M
Checked by:	K.N.G	Approved by:	D.N.M
Scale:	H- 1:4000, V- 1:400	Date:	JAN 2024
DRG No.	EXT-MUK/RUT/01		

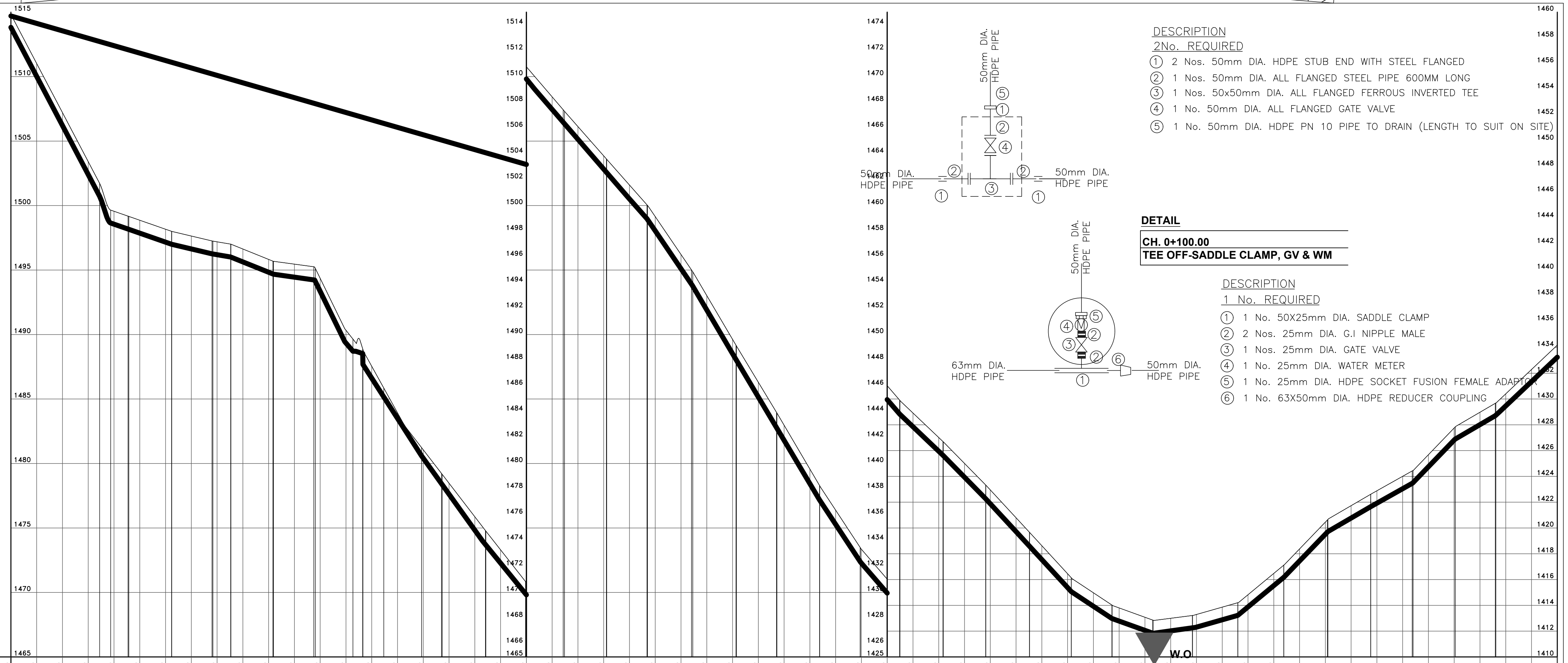


NOTES:

1. CONTOUR LEVELS ARE IN METERS AT TWO METER INTERVALS
2. GRID VALUES ARE IN METERS AT 200 METER INTERVALS
3. GEOLOGICAL CONDITIONS INDICATED ON DRAWING ARE FOR GENERAL GUIDANCE ONLY

LEGEND:

—1480—	CONTOURS
(thick line)	PROPOSED TREATED WATER GRAVITY MAIN
V.J.	VIKING JOHNSON
GV	GATE VALVE
SV-01	SECTIONAL VALVE & No.
WO-01	WASHOUT VALVE & No.
SAV-01	AIR VALVE & No.
WM	WATER METER
(dashed square)	PROPOSED MASONRY CHAMBER
(dashed circle)	PROPOSED VALVE BOX
n	PIPELINE GRADIENT WITH SLOPE DIRECTION (SLOPE MIN. OR 1 IN n)



DESCRIPTION
2No. REQUIRED

1. 2 Nos. 50mm DIA. HDPE STUB END WITH STEEL FLANGED
2. 1 Nos. 50mm DIA. ALL FLANGED STEEL PIPE 600MM LONG
3. 1 Nos. 50x50mm DIA. ALL FLANGED FERROUS INVERTED TEE
4. 1 No. 50mm DIA. ALL FLANGED GATE VALVE
5. 1 No. 50mm DIA. HDPE PN 10 PIPE TO DRAIN (LENGTH TO SUIT ON SITE)

DETAIL

CH. 0+100.00
TEE OFF-SADDLE CLAMP, GV & WM

DESCRIPTION
1 No. REQUIRED

1. 1 No. 50X25mm DIA. SADDLE CLAMP
2. 2 Nos. 25mm DIA. G.I NIPPLE MALE
3. 1 Nos. 25mm DIA. GATE VALVE
4. 1 No. 25mm DIA. WATER METER
5. 1 No. 25mm DIA. HDPE SOCKET FUSION FEMALE ADAPTOR
6. 1 No. 63X50mm DIA. HDPE REDUCER COUPLING

DISTANCE IN KILOMETERS	EXISTING GROUND LEVEL (m)	INVERT LEVELS (m)	DEPTH OF INVERT (m)	HGL (m)
0+000.00	1514.82	1513.82	1.00	1514.70
0+020.00	1511.01	1510.01	1.00	1514.13
0+040.00	1507.21	1506.21	1.00	1513.55
0+060.00	1503.40	1502.40	1.00	1512.97
0+080.00	1499.56	1498.56	1.00	1512.40
0+100.00	1498.86	1497.86	1.00	1511.82
0+120.00	1498.17	1497.16	1.00	1511.25
0+140.00	1497.64	1496.64	1.00	1510.67
0+160.00	1497.19	1496.19	1.00	1510.09
0+180.00	1496.63	1495.63	1.00	1509.52
0+200.00	1495.82	1494.83	1.00	1508.94
0+220.00	1495.46	1494.45	1.01	1508.37
0+240.00	1494.36	1493.35	1.01	1507.79
0+260.00	1490.33	1489.34	0.99	1507.22
0+280.00	1487.54	1486.62	0.92	1506.64
0+300.00	1483.93	1483.50	0.43	1506.06
0+320.00	1481.06	1480.41	0.65	1505.49
0+340.00	1478.47	1477.62	0.85	1504.91
0+360.00	1475.87	1474.83	1.04	1504.34
0+380.00	1473.30	1472.27	1.03	1503.76
0+400.00	1470.76	1469.82	0.95	1503.18
0+420.00	1468.43	1467.45	0.97	1502.61
0+440.00	1466.12	1465.14	0.98	1502.03
0+460.00	1463.85	1462.83	1.03	1501.46
0+480.00	1461.59	1460.51	1.08	1500.88
0+500.00	1459.14	1458.04	1.10	1500.31
0+520.00	1456.20	1455.10	1.10	1499.73
0+540.00	1453.02	1451.90	1.12	1499.15
0+560.00	1449.62	1448.51	1.11	1498.58
0+580.00	1446.30	1445.15	1.15	1498.00
0+600.00	1442.97	1441.80	1.17	1497.43
0+620.00	1439.57	1438.44	1.13	1496.85
0+640.00	1436.38	1435.28	1.10	1496.27
0+660.00	1433.35	1432.27	1.08	1495.70
0+680.00	1431.03	1429.95	1.08	1495.12
0+700.00	1428.91	1427.85	1.06	1494.55
0+720.00	1427.01	1425.95	1.07	1493.97
0+740.00	1425.00	1423.94	1.07	1493.40
0+760.00	1422.95	1421.88	1.07	1492.82
0+780.00	1420.79	1419.72	1.07	1492.24
0+800.00	1418.62	1417.55	1.08	1491.67
0+820.00	1416.45	1415.38	1.07	1491.09
0+840.00	1414.98	1413.93	1.04	1490.52
0+860.00	1413.80	1412.78	1.02	1489.94
0+880.00	1413.08	1412.06	1.02	1489.36
0+900.00	1413.00	1412.02	0.98	1488.79
0+920.00	1413.29	1412.31	0.98	1488.21
0+940.00	1413.86	1412.88	0.98	1487.64
0+960.00	1414.82	1413.88	0.94	1487.06
0+980.00	1416.48	1415.53	0.94	1486.49
1+000.00	1418.38	1417.44	0.93	1485.91
1+020.00	1420.45	1419.51	0.94	1485.33
1+040.00	1421.73	1420.77	0.96	1484.76
1+060.00	1422.88	1421.92	0.96	1484.18
1+080.00	1424.01	1423.05	0.96	1483.61
1+100.00	1425.68	1424.75	0.93	1483.03
1+120.00	1427.76	1426.82	0.93	1482.45
1+140.00	1428.97	1428.01	0.96	1481.88
1+160.00	1430.40	1429.46	0.94	1481.30
1+180.00	1432.29	1431.35	0.94	1480.73
1+200.00	1434.18	1433.24	0.94	1480.15

DATUM (m)

TYPE OF PIPE AND SIZE: 63mm Hdpe PN 10 — 50mm Hdpe PN 10 — 50mm Hdpe PN 16

GEOLOGICAL CONDITION: RED LOAM SOIL

SLOPE OF HGL (H/V): −1:34.73

LONGITUDINAL SECTION

0 100 200m

ISSUED FOR CONSTRUCTION

	REVISIONS		SIGN	DATE	APPROVED
		BY			
		CHECKED			
		BY			
		CHECKED			
		BY			
		CHECKED			
		BY			
		CHECKED			

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

ENGINEER: **CHIEF MANAGER TECHNICAL SERVICES, TANA WATER WORKS DEVELOPMENT AGENCY**
P.O BOX 1292 - 10100,
NYERI, KENYA

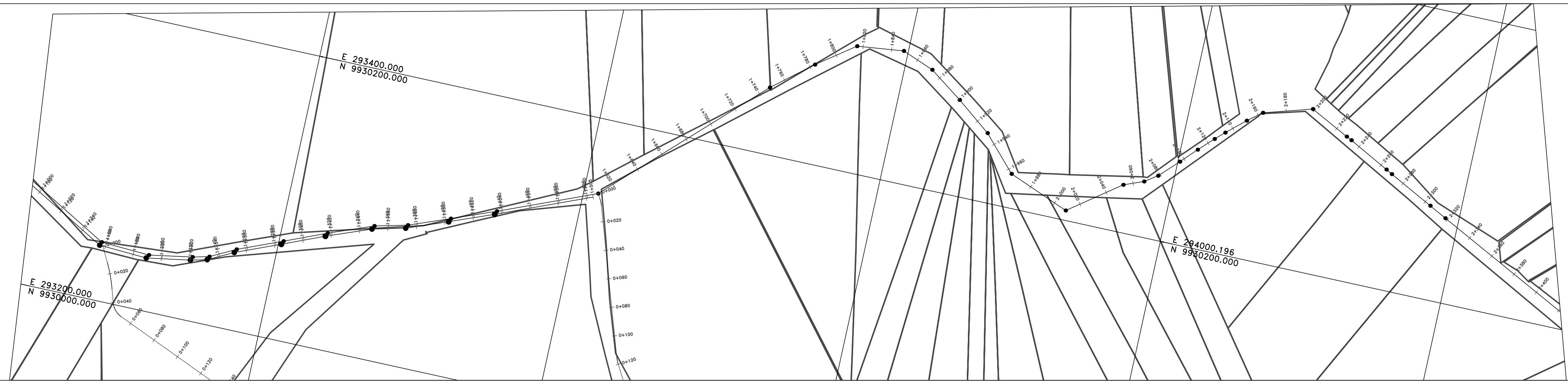
PROJECT TITLE:

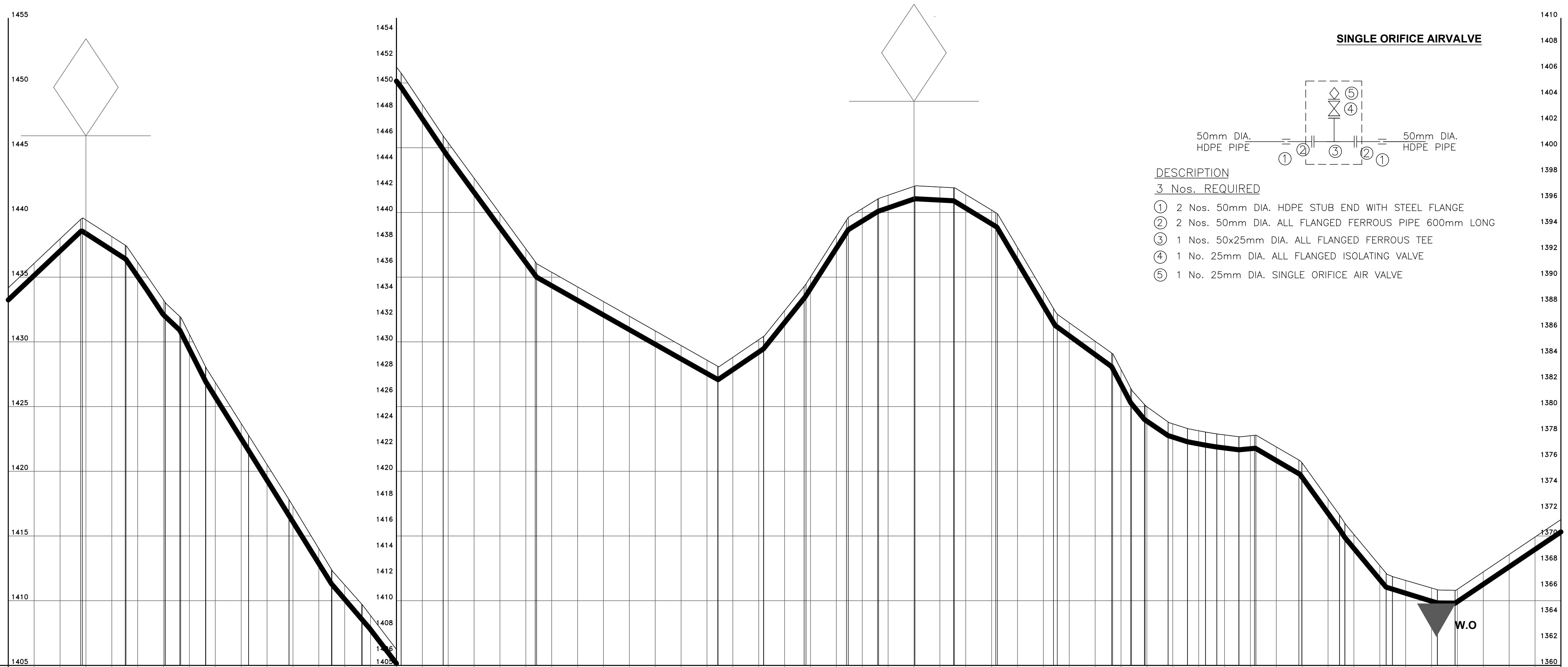
EXTENSION OF WATER SUPPLY PIPELINES IN MUKURWEINI

DRAWING TITLE:
MAINLINE 1-NGAMWA

CH. 0+000.00 - 1+200.00
SHEET 1 OF 3

Designed and Drawn by: A.M.M	Surveyed by: J.W.W
Checked by: K.N.G	Approved by: D.N.M
Scale: H- 1:4000, V- 1:400	Date: JANUARY 2024
DRG No.	**EX-MUK/ML1/01**





SINGLE ORIFICE AIRVALVE

50mm DIA. HDPE PIPE
50mm DIA. HDPE PIPE

DESCRIPTION

3 Nos. REQUIRED

1. 2 Nos. 50mm DIA. HDPE STUB END WITH STEEL FLANGE
2. 2 Nos. 50mm DIA. ALL FLANGED FERROUS PIPE 600mm LONG
3. 1 Nos. 50x25mm DIA. ALL FLANGED FERROUS TEE
4. 1 No. 25mm DIA. ALL FLANGED ISOLATING VALVE
5. 1 No. 25mm DIA. SINGLE ORIFICE AIR VALVE

DISTANCE IN KILOMETERS	1+200.00	1+220.00	1+240.00	1+260.00	1+280.00	1+300.00	1+320.00	1+340.00	1+360.00	1+380.00	1+400.00
EXISTING GROUND LEVEL (m)	1434.18	1436.07	1437.96	1439.42	1438.14	1436.15	1433.24	1430.58	1426.86	1423.69	1420.51
INVERT LEVELS (m)	1433.24	1435.13	1437.02	1438.38	1437.09	1435.05	1432.10	1429.42	1425.74	1422.52	1419.31
DEPTH OF INVERT (m) DATUM (m)	0.94	0.94	0.94	1.04	1.05	1.10	1.14	1.16	1.12	1.17	1.20
HGL (m) DATUM (m)	1480.15	1479.58	1479.00	1478.42	1477.85	1477.27	1476.70	1476.12	1475.54	1474.97	1474.39

DISTANCE IN KILOMETERS	1+420.00	1+440.00	1+460.00	1+480.00	1+500.00	1+520.00	1+540.00	1+560.00	1+580.00	1+600.00
EXISTING GROUND LEVEL (m)	1417.32	1414.03	1411.22	1408.86	1406.24	1403.33	1400.38	1397.65	1394.92	1392.19
INVERT LEVELS (m)	1416.09	1412.88	1410.11	1407.77	1405.15	1402.25	1399.29	1396.56	1393.83	1391.13
DEPTH OF INVERT (m) DATUM (m)	1.22	1.15	1.11	1.09	1.09	1.08	1.09	1.09	1.09	1.06
HGL (m) DATUM (m)	1473.82	1473.24	1472.67	1472.09	1471.51	1470.94	1470.36	1469.79	1469.21	1468.63

DISTANCE IN KILOMETERS	1+620.00	1+640.00	1+660.00	1+680.00	1+700.00	1+720.00	1+740.00	1+760.00	1+780.00	1+800.00
EXISTING GROUND LEVEL (m)	1390.38	1389.25	1388.11	1386.98	1385.85	1384.72	1383.58	1383.81	1385.17	1387.40
INVERT LEVELS (m)	1389.34	1388.21	1387.08	1385.94	1384.81	1383.68	1382.56	1382.85	1384.21	1386.49
DEPTH OF INVERT (m) DATUM (m)	1.04	1.04	1.04	1.04	1.04	1.04	1.03	0.95	0.95	0.91
HGL (m) DATUM (m)	1468.06	1467.48	1466.91	1466.33	1465.76	1465.18	1464.60	1464.03	1463.45	1462.88

DISTANCE IN KILOMETERS	1+820.00	1+840.00	1+860.00	1+880.00	1+900.00	1+920.00	1+940.00	1+960.00	1+980.00	2+000.00
EXISTING GROUND LEVEL (m)	1390.02	1393.17	1395.29	1396.33	1397.01	1396.96	1396.39	1395.18	1392.29	1388.91
INVERT LEVELS (m)	1389.11	1392.23	1394.33	1395.35	1396.04	1395.96	1395.33	1394.11	1391.17	1387.80
DEPTH OF INVERT (m) DATUM (m)	0.90	0.94	0.96	0.98	0.98	1.00	1.06	1.06	1.11	1.11
HGL (m) DATUM (m)	1462.30	1461.72	1461.15	1460.57	1460.00	1459.42	1458.85	1458.27	1457.69	1457.12

DISTANCE IN KILOMETERS	2+020.00	2+040.00	2+060.00	2+080.00	2+100.00	2+120.00	2+140.00	2+160.00	2+180.00	2+200.00
EXISTING GROUND LEVEL (m)	1386.47	1385.05	1382.87	1379.99	1378.67	1378.13	1377.81	1377.75	1376.88	1375.65
INVERT LEVELS (m)	1385.47	1384.02	1381.72	1378.87	1377.64	1377.12	1376.80	1376.74	1375.83	1374.53
DEPTH OF INVERT (m) DATUM (m)	1.00	1.03	1.15	1.12	1.02	1.01	1.01	1.00	1.05	1.12
HGL (m) DATUM (m)	1456.54	1455.97	1455.39	1454.81	1454.24	1453.66	1453.09	1452.51	1451.94	1451.36

DISTANCE IN KILOMETERS	2+220.00	2+240.00	2+260.00	2+280.00	2+300.00	2+320.00	2+340.00	2+360.00	2+380.00	2+400.00
EXISTING GROUND LEVEL (m)	1372.86	1370.12	1367.71	1366.57	1365.98	1365.88	1367.23	1368.57	1369.92	1371.27
INVERT LEVELS (m)	1371.75	1369.04	1366.63	1365.58	1364.96	1364.92	1366.27	1367.62	1368.97	1370.31
DEPTH OF INVERT (m) DATUM (m)	1.10	1.08	1.08	0.99	1.02	0.96	0.95	0.95	0.95	0.95
HGL (m) DATUM (m)	1450.78	1450.21	1449.63	1449.06	1448.48	1447.90	1447.33	1446.75	1446.18	1445.60

TYPE OF PIPE AND SIZE	50mm Hdpe PN 16
GEOLOGICAL CONDITION	RED LOAM SOIL
SLOPE OF HGL (H/V)	−1:34.73

0 100 200m

LONGITUDINAL SECTION

NOTES:

1. CONTOUR LEVELS ARE IN METERS AT TWO METER INTERVALS
2. GRID VALUES ARE IN METERS AT 200 METER INTERVALS
3. GEOLOGICAL CONDITIONS INDICATED ON DRAWING ARE FOR GENERAL GUIDANCE ONLY

LEGEND:

——1480——	CONTOURS
	PROPOSED TREATED WATER GRAVITY MAIN
V.J.	VIKING JOHNSON
GV	GATE VALVE
SV-01	SECTIONAL VALVE & No.
WO-01	WASHOUT VALVE & No.
SAV-01	AIR VALVE & No.
WM	WATER METER
	PROPOSED MASONRY CHAMBER
	PROPOSED VALVE BOX
n	PIPELINE GRADIENT WITH SLOPE DIRECTION (SLOPE MIN. OR 1 IN n)

ISSUED FOR CONSTRUCTION

	REVISIONS		SIGN	DATE	APPROVED
		BY			
		CHECKED			
		BY			
		CHECKED			
		BY			
		CHECKED			
		BY			
		CHECKED			

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

ENGINEER: **CHIEF MANAGER TECHNICAL SERVICES, TANA WATER WORKS DEVELOPMENT AGENCY**
P.O BOX 1292 - 10100,
NYERI, KENYA

PROJECT TITLE:

EXTENSION OF WATER SUPPLY PIPELINES IN MUKURWEINI

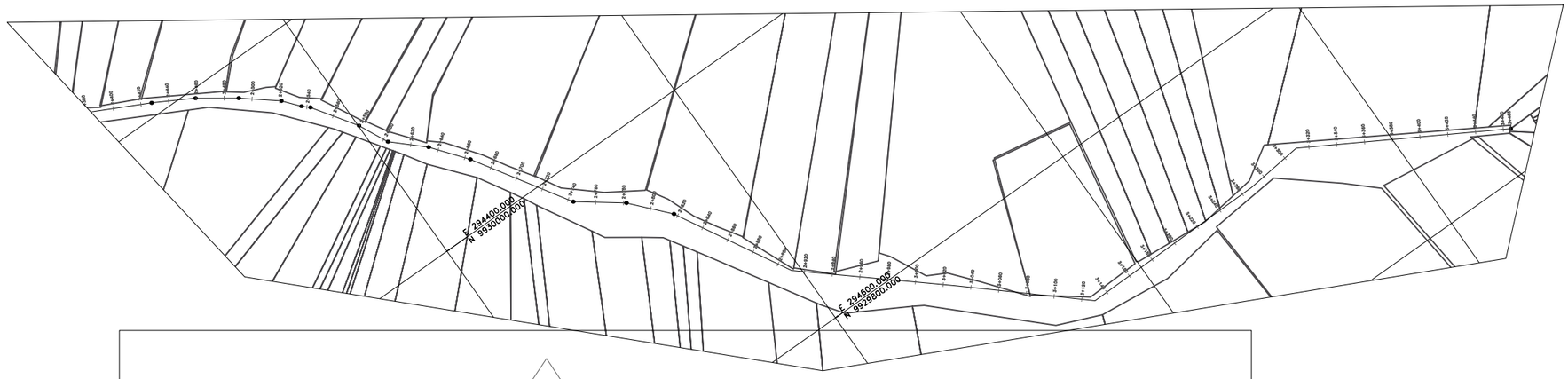
DRAWING TITLE:

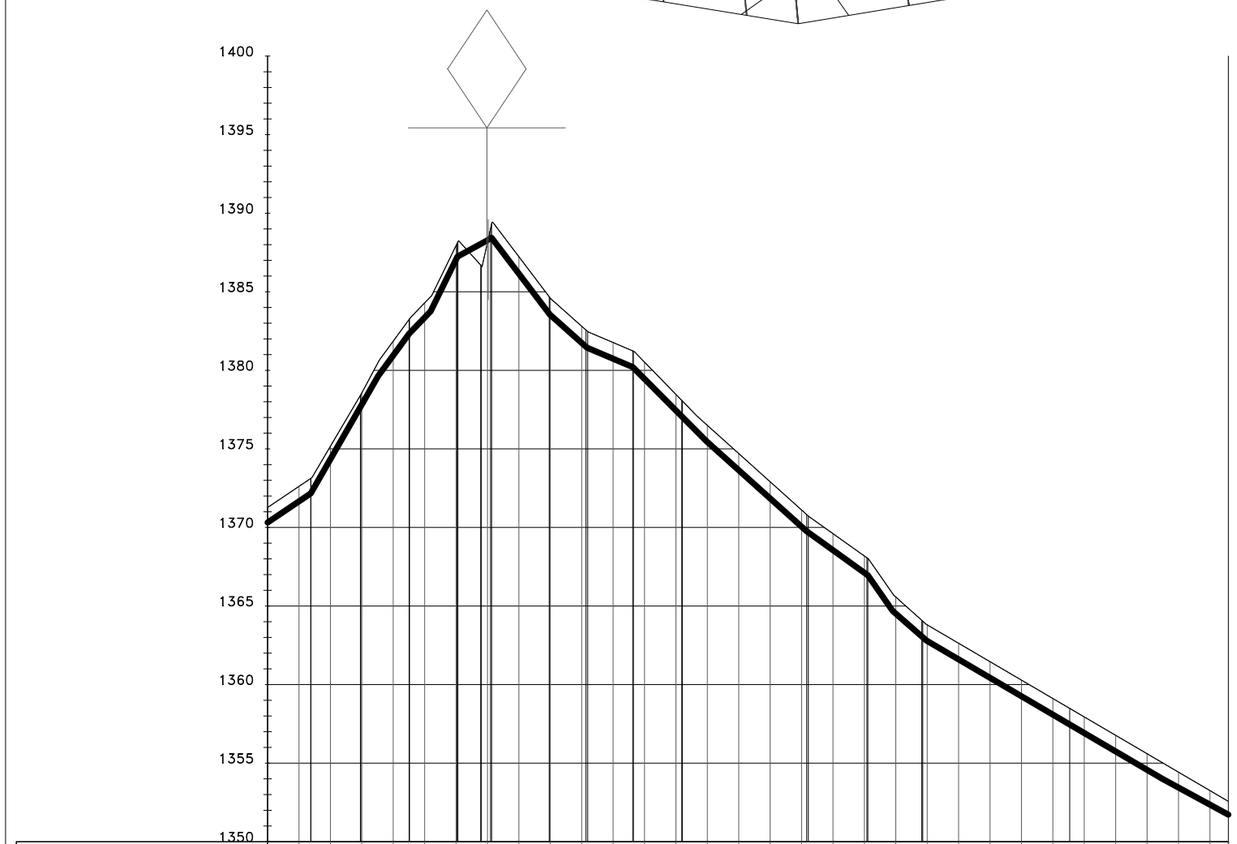
MAINLINE 1-NGAMWA LONGITUDINAL SECTION

CH. 1+000.00 - 2+400.00

SHEET 2 OF 3

Designed and Drawn by: A.M.M	Surveyed by: J.W.W
Checked by: K.N.G	Approved by: D.N.M
Scale: H- 1:4000, V- 1:400	Date: JANUARY 2024
DRG No.	EX-MUK/ML1/02





DISTANCE IN KILOMETERS	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+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+780.00	2+800.00	2+820.00	2+840.00	2+860.00	2+880.00	2+900.00	2+920.00	2+940.00	2+960.00	2+980.00	3+000.00	3+011.77
EXISTING GROUND LEVEL (m)	1371.27	1372.62	1375.17	1378.56	1381.86	1384.29	1387.94	1388.14	1387.23	1384.59	1382.81	1381.77	1380.52	1378.47	1376.50	1374.70	1372.91	1371.11	1369.61	1368.18	1365.57	1363.80	1362.63	1361.46	1360.29	1359.11	1357.94	1356.77	1355.60	1354.43	1353.25	
INVERT LEVELS (m)	1370.31	1371.66	1374.35	1377.83	1380.95	1383.36	1387.05	1388.28	1386.15	1383.52	1381.75	1380.74	1379.45	1377.44	1375.44	1373.64	1371.85	1370.05	1368.55	1367.12	1364.51	1362.77	1361.60	1360.43	1359.26	1358.09	1356.92	1355.74	1354.57	1353.44	1352.36	1351.72
DEPTH OF INVERT (m) DATUM (m)	0.95	0.95	0.82	0.74	0.91	0.93	0.88	-0.14	1.09	1.07	1.06	1.03	1.07	1.03	1.06	1.06	1.06	1.06	1.05	1.07	1.06	1.03	1.03	1.03	1.03	1.03	1.03	1.03	1.03	0.98	0.90	
HGL (m) DATUM (m)	1445.60	1445.03	1444.45	1443.87	1443.30	1442.72	1442.15	1441.57	1440.99	1440.42	1439.84	1439.27	1438.69	1438.12	1437.54	1436.96	1436.39	1435.81	1435.24	1434.66	1434.08	1433.51	1432.93	1432.36	1431.78	1431.21	1430.63	1430.05	1429.48	1428.90	1428.33	
TYPE OF PIPE AND SIZE	50mm Hdpe PN 16																															
GEOLOGICAL CONDITION	RED LOAM SOIL																															
SLOPE OF HGL (H/V)	-1:34.73																															

LONGITUDINAL SECTION

0 100 200m

NOTES:

1. CONTOUR LEVELS ARE IN METERS AT TWO METER INTERVALS
2. GRID VALUES ARE IN METERS AT 200 METER INTERVALS
3. GEOLOGICAL CONDITIONS INDICATED ON DRAWING ARE FOR GENERAL GUIDANCE ONLY

LEGEND:

1480	CONTOURS
	PROPOSED TREATED WATER GRAVITY MAIN
V.J.	VIKING JOHNSON
GV	GATE VALVE
SV-01	SECTIONAL VALVE & No.
WO-01	WASHOUT VALVE & No.
SAV-01	AIR VALVE & No.
WM	WATER METER
	PROPOSED MASONRY CHAMBER
	PROPOSED VALVE BOX
n	PIPELINE GRADIENT WITH SLOPE DIRECTION (SLOPE MIN. OR 1 IN n)

ISSUED FOR CONSTRUCTION

REVISIONS		SIGN	DATE	APPROVED
	BY			
	CHECKED			
	BY			
	CHECKED			
	BY			
	CHECKED			
	BY			
	CHECKED			

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

ENGINEER:
CHIEF MANAGER TECHNICAL SERVICES, TANA WATER WORKS DEVELOPMENT AGENCY
P.O BOX 1292 - 10100,
NYERI, KENYA

PROJECT TITLE:

EXTENSION OF WATER SUPPLY PIPELINES IN MUKURWEINI

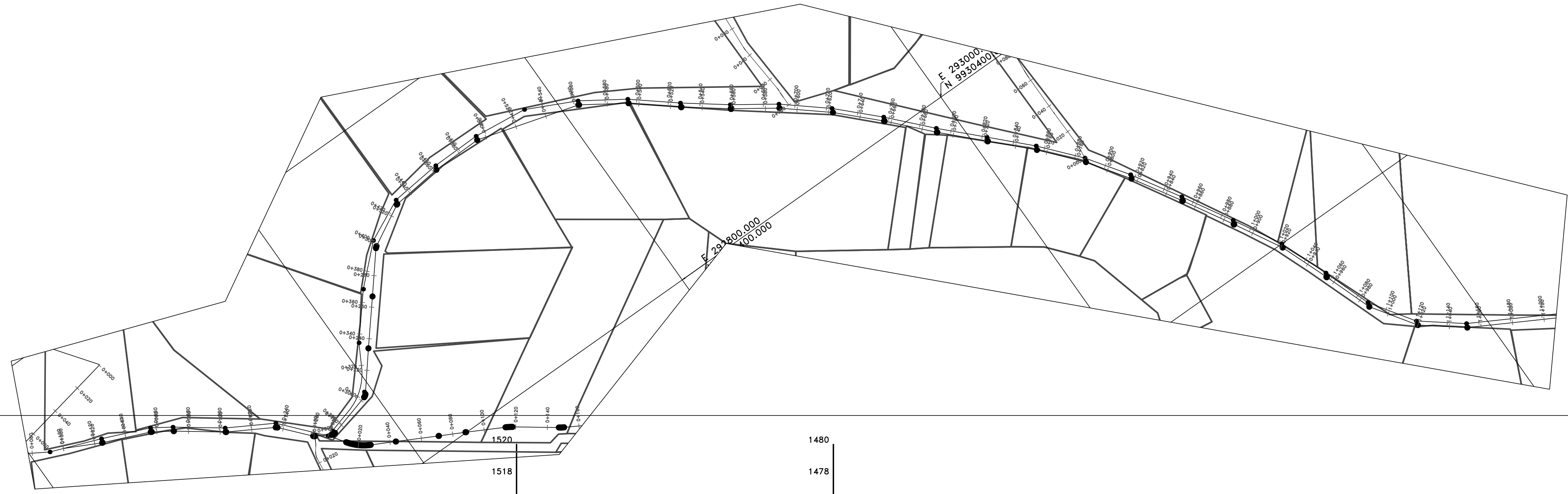
DRAWING TITLE:
MAINLINE 1-NGAMWA

CH. 2+400.00 - 3+011.77
SHEET 3 OF 3

Designed and Drawn by:A.M.M	Surveyed by: J.W.W
Checked by: K.N.G	Approved by: D.N.M
Scale: H- 1:4000, V- 1:400	Date: JANUARY 2024
DRG No. EX-MUK/ML1/03	

NOTES:

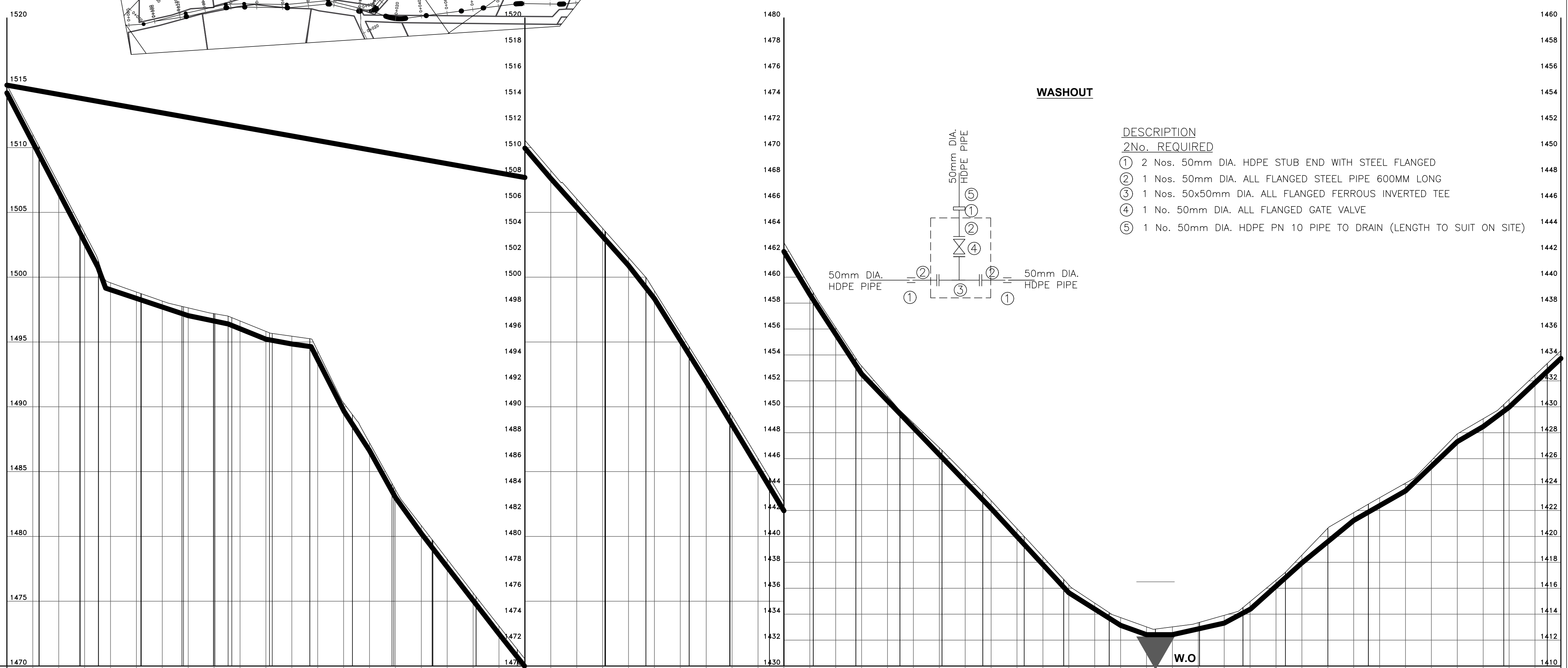
1. CONTOUR LEVELS ARE IN METERS AT TWO METER INTERVALS
2. GRID VALUES ARE IN METERS AT 200 METER INTERVALS
3. GEOLOGICAL CONDITIONS INDICATED ON DRAWING ARE FOR GENERAL GUIDANCE ONLY



LEGEND:

——1480——	CONTOURS
(heavy line)	PROPOSED TREATED WATER GRAVITY MAIN
V.J.	VIKING JOHNSON
GV	GATE VALVE
SV-01	SECTIONAL VALVE & No.
WO-01	WASHOUT VALVE & No.
SAV-01	AIR VALVE & No.
WM	WATER METER
(dashed square)	PROPOSED MASONRY CHAMBER
(dashed circle)	PROPOSED VALVE BOX
(n)	PIPELINE GRADIENT WITH SLOPE DIRECTION (SLOPE MIN. OR 1 IN n)

WASHOUT



DESCRIPTION
2No. REQUIRED

1. 2 Nos. 50mm DIA. HDPE STUB END WITH STEEL FLANGED
2. 1 Nos. 50mm DIA. ALL FLANGED STEEL PIPE 600MM LONG
3. 1 Nos. 50x50mm DIA. ALL FLANGED FERROUS INVERTED TEE
4. 1 No. 50mm DIA. ALL FLANGED GATE VALVE
5. 1 No. 50mm DIA. HDPE PN 10 PIPE TO DRAIN (LENGTH TO SUIT ON SITE)

DISTANCE IN KILOMETERS	EXISTING GROUND LEVEL (m)	INVERT LEVELS (m)	DEPTH OF INVERT (m)	HGL (m) DATUM (m)
0+000.00	1514.82	1514.22	0.60	1514.81
0+020.00	1511.01	1510.39	0.62	1514.46
0+040.00	1507.21	1506.56	0.65	1514.10
0+060.00	1503.40	1502.73	0.67	1513.75
0+080.00	1499.57	1499.03	0.54	1513.39
0+100.00	1498.86	1498.36	0.49	1513.03
0+120.00	1498.16	1497.70	0.46	1512.68
0+140.00	1497.63	1497.03	0.60	1512.32
0+160.00	1497.18	1496.62	0.57	1511.96
0+180.00	1496.62	1496.02	0.60	1511.61
0+200.00	1495.82	1495.22	0.60	1511.25
0+220.00	1495.45	1494.85	0.60	1510.90
0+240.00	1494.30	1493.64	0.66	1510.54
0+260.00	1490.30	1489.72	0.58	1510.18
0+280.00	1487.22	1486.62	0.60	1509.83
0+300.00	1483.61	1483.01	0.60	1509.47
0+320.00	1480.83	1480.23	0.60	1509.11
0+340.00	1478.24	1477.64	0.60	1508.76
0+360.00	1475.64	1475.06	0.58	1508.40
0+380.00	1473.08	1472.48	0.60	1508.05
0+400.00	1470.56	1469.96	0.60	1507.69
0+420.00	1468.22	1467.62	0.60	1507.33
0+440.00	1466.04	1465.38	0.66	1506.98
0+460.00	1463.77	1463.14	0.62	1506.62
0+480.00	1461.50	1460.90	0.60	1506.26
0+500.00	1458.95	1458.35	0.60	1505.91
0+520.00	1455.73	1455.13	0.60	1505.55
0+540.00	1452.52	1451.92	0.60	1505.20
0+560.00	1449.31	1448.61	0.70	1504.84
0+580.00	1446.01	1445.29	0.71	1504.48
0+600.00	1442.67	1441.98	0.69	1504.13
0+620.00	1439.27	1438.67	0.60	1503.77
0+640.00	1436.11	1435.60	0.51	1503.41
0+660.00	1433.14	1432.54	0.60	1503.06
0+680.00	1430.83	1430.47	0.36	1502.70
0+700.00	1428.75	1428.39	0.36	1502.35
0+720.00	1426.85	1426.31	0.53	1501.99
0+740.00	1424.82	1424.24	0.59	1501.63
0+760.00	1422.76	1422.16	0.60	1501.28
0+780.00	1420.60	1419.99	0.61	1500.92
0+800.00	1418.43	1417.82	0.61	1500.56
0+820.00	1416.26	1415.66	0.60	1500.21
0+840.00	1414.86	1414.40	0.46	1499.85
0+860.00	1413.74	1413.14	0.60	1499.50
0+880.00	1413.02	1412.42	0.60	1499.14
0+900.00	1413.02	1412.42	0.60	1498.78
0+920.00	1413.34	1412.87	0.48	1498.43
0+940.00	1413.91	1413.31	0.60	1498.07
0+960.00	1414.97	1414.38	0.59	1497.71
0+980.00	1416.62	1416.16	0.46	1497.36
1+000.00	1418.56	1417.96	0.60	1497.00
1+020.00	1420.64	1419.59	1.04	1496.65
1+040.00	1421.83	1421.23	0.60	1496.29
1+060.00	1422.98	1422.37	0.61	1495.93
1+080.00	1424.11	1423.51	0.60	1495.58
1+100.00	1425.86	1425.41	0.45	1495.22
1+120.00	1427.91	1427.31	0.60	1494.86
1+140.00	1429.08	1428.48	0.60	1494.51
1+160.00	1430.57	1429.97	0.60	1494.15
1+180.00	1432.45	1431.85	0.60	1493.80
1+200.00	1434.33	1433.73	0.60	1493.44

TYPE OF PIPE AND SIZE	50mm Hdpe PN 10 (0+000 – 0+820); 50mm Hdpe PN 12.5; 50mm Hdpe PN 10
GEOLOGICAL CONDITION	RED LOAM SOIL
SLOPE OF HGL (H/V)	−1:56.14

0 100 200m

LONGITUDINAL SECTION

ISSUED FOR CONSTRUCTION

	REVISIONS		SIGN	DATE	APPROVED
		BY			
		CHECKED			
		BY			
		CHECKED			
		BY			
		CHECKED			
		BY			
		CHECKED			

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

ENGINEER: **CHIEF MANAGER TECHNICAL SERVICES, TANA WATER WORKS DEVELOPMENT AGENCY**
P.O BOX 1292 - 10100,
NYERI, KENYA

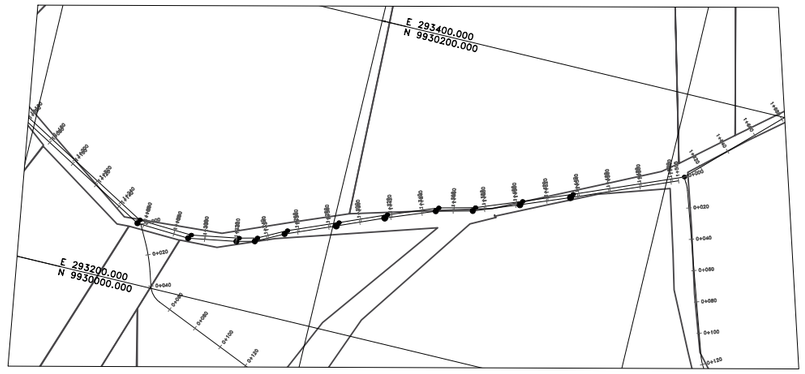
PROJECT TITLE:

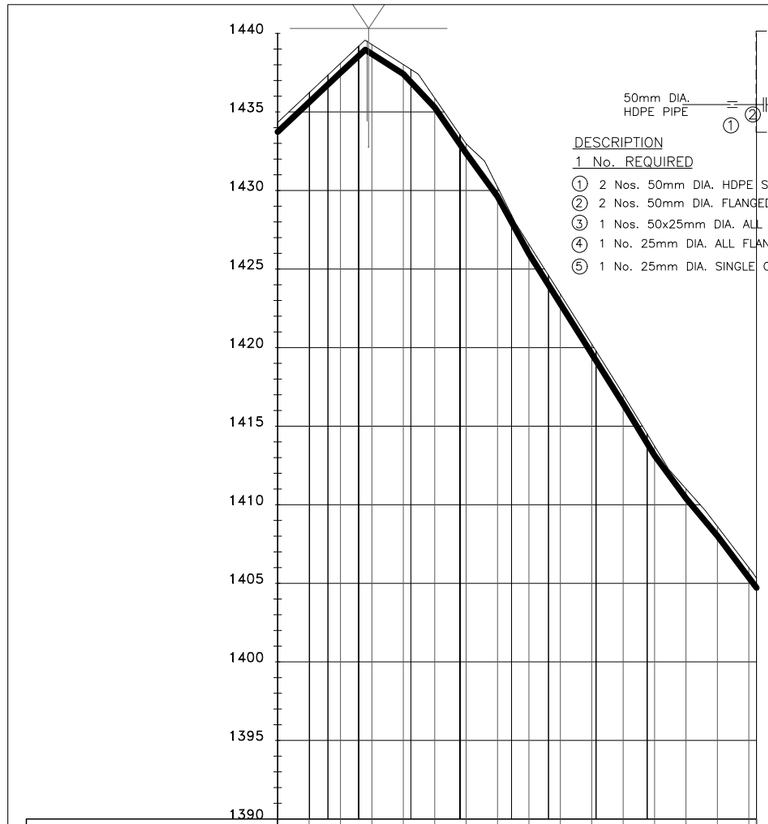
EXTENSION OF WATER SUPPLY PIPELINES IN MUKURWEINI

DRAWING TITLE:
MAINLINE 2-NGAMWA

CH. 0+000.00 - 1+200.00
SHEET 1 OF 2

Designed and Drawn by: A.M.M	Surveyed by: J.W.W
Checked by: K.N.G	Approved by: D.N.M
Scale: H- 1:4000, V- 1:400	Date: JANUARY 2024
DRG No. **EX-MUK/ML2/01**	





DISTANCE IN KILOMETERS	1+200.00	1+220.00	1+240.00	1+260.00	1+280.00	1+300.00	1+320.00	1+340.00	1+360.00	1+380.00	1+400.00	1+420.00	1+440.00	1+460.00	1+480.00	1+500.00 1+504.90
EXISTING GROUND LEVEL (m)	1434.33	1436.21	1438.10	1439.29	1436.02	1435.88	1432.98	1430.22	1426.57	1423.41	1420.22	1417.02	1413.73	1411.01	1408.62	1406.00 1405.92
INVERT LEVELS (m)	1433.73	1435.61	1437.50	1438.69	1437.42	1435.28	1432.38	1429.62	1425.97	1422.79	1419.61	1416.42	1413.13	1410.41	1408.02	1405.37 1404.72
DEPTH OF INVERT (m) DATUM (m)	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.62	0.62	0.60	0.60	0.60	0.60	0.64 0.60
HGL (m) DATUM (m)	1493.44	1493.08	1492.73	1492.37	1492.02	1491.66	1491.30	1490.95	1490.59	1490.23	1489.88	1489.52	1489.17	1488.81	1488.45	1488.10 1488.01
TYPE OF PIPE AND SIZE	32mm Hdpe PN 10															
GEOLOGICAL CONDITION	RED LOAM SOIL															
SLOPE OF HGL (H/V)	-1:56.14															

LONGITUDINAL SECTION

NOTES:

1. CONTOUR LEVELS ARE IN METERS AT TWO METER INTERVALS
2. GRID VALUES ARE IN METERS AT 200 METER INTERVALS
3. GEOLOGICAL CONDITIONS INDICATED ON DRAWING ARE FOR GENERAL GUIDANCE ONLY

LEGEND:

1480	CONTOURS
	PROPOSED TREATED WATER GRAVITY MAIN
V.J.	VIKING JOHNSON
GV	GATE VALVE
SV-01	SECTIONAL VALVE & No.
WO-01	WASHOUT VALVE & No.
SAV-01	AIR VALVE & No.
WM	WATER METER
	PROPOSED MASONRY CHAMBER
	PROPOSED VALVE BOX
n	PIPELINE GRADIENT WITH SLOPE DIRECTION (SLOPE MIN. OR 1 IN n)

0 100 200m

ISSUED FOR CONSTRUCTION

	REVISIONS		SIGN	DATE	APPROVED
		BY			
		CHECKED			
		BY			
		CHECKED			
		BY			
		CHECKED			
		BY			
		CHECKED			

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

ENGINEER:
CHIEF MANAGER TECHNICAL SERVICES, TANA WATER WORKS DEVELOPMENT AGENCY
P.O BOX 1292 - 10100,
NYERI, KENYA

PROJECT TITLE:

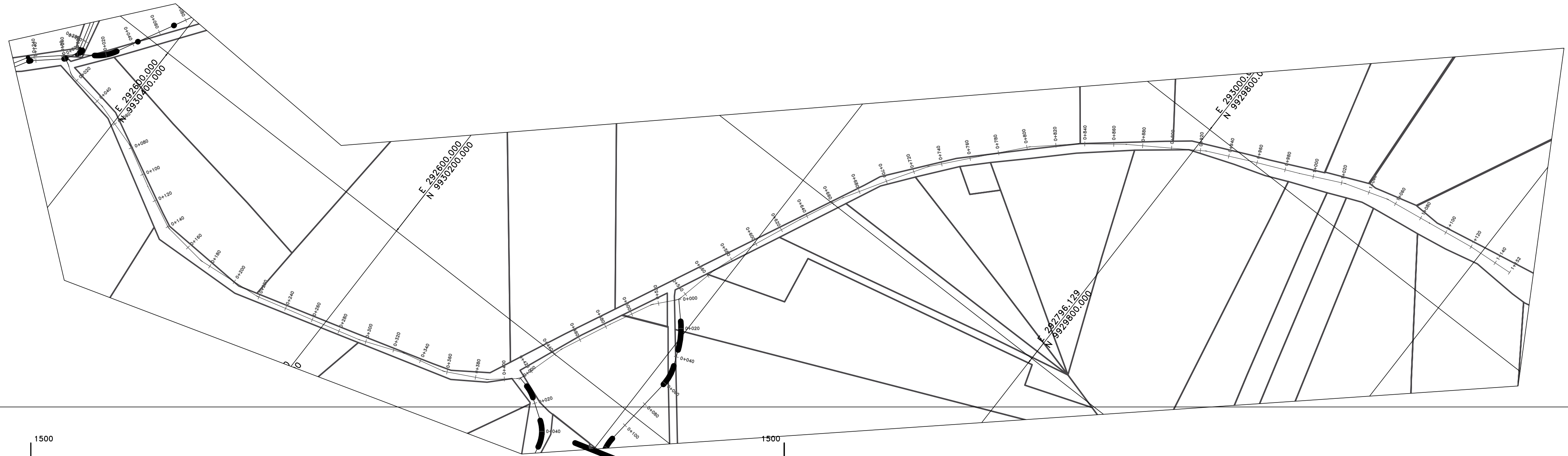
EXTENSION OF WATER SUPPLY PIPELINES IN MUKURWEINI

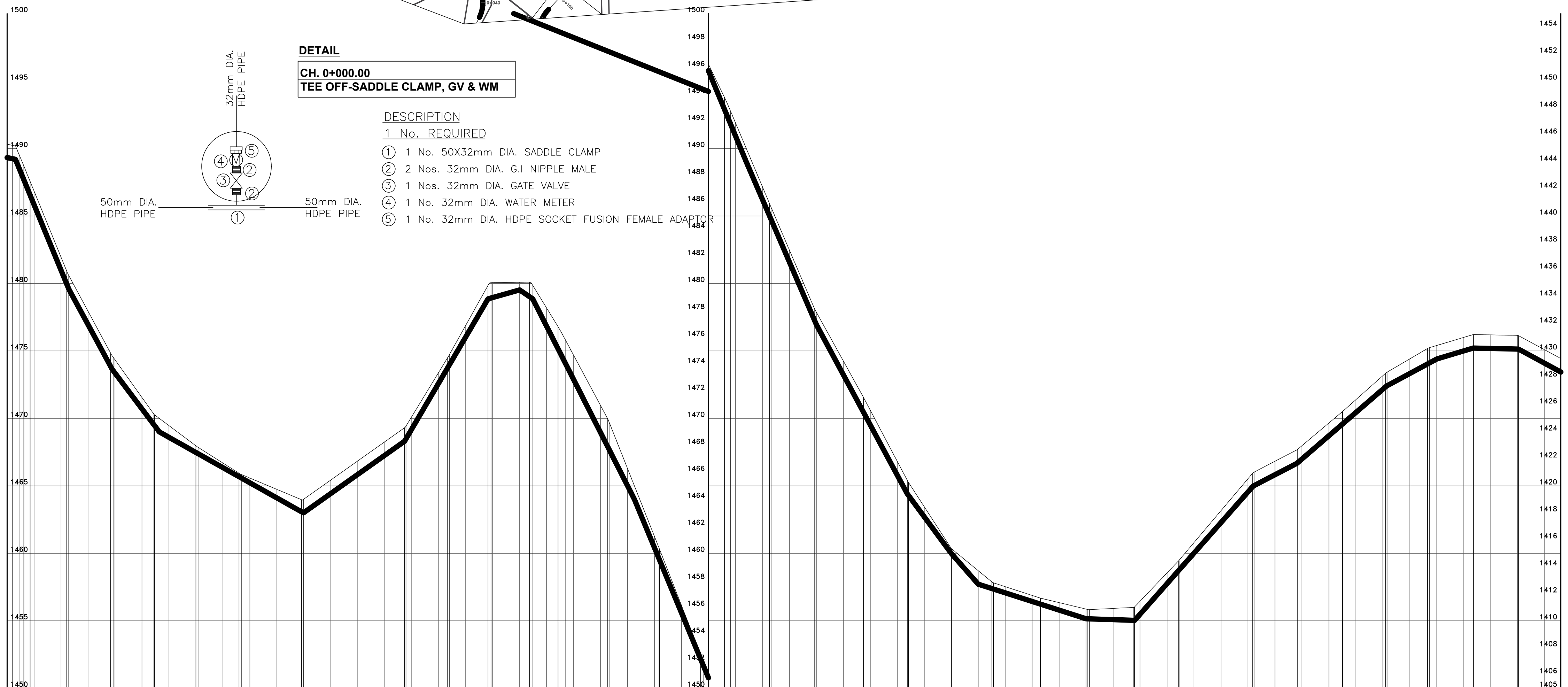
DRAWING TITLE:
MAINLINE 2-NGAMWA

CH. 1+200.00 - 1+504.90
SHEET 1 OF 2

Designed and Drawn by:A.M.M	Surveyed by: J.W.W
Checked by: K.N.G	Approved by: D.N.M
Scale: H- 1:4000, V- 1:400	Date: JANUARY 2024

DRG No. EX-MUK/ML2/02





DETAIL

CH. 0+000.00
TEE OFF-SADDLE CLAMP, GV & WM

32mm DIA. HDPE PIPE

50mm DIA. HDPE PIPE — 50mm DIA. HDPE PIPE

DESCRIPTION

1 No. REQUIRED

1. 1 No. 50X32mm DIA. SADDLE CLAMP
2. 2 Nos. 32mm DIA. G.I NIPPLE MALE
3. 1 Nos. 32mm DIA. GATE VALVE
4. 1 No. 32mm DIA. WATER METER
5. 1 No. 32mm DIA. HDPE SOCKET FUSION FEMALE ADAPTOR

DISTANCE IN KILOMETERS	EXISTING GROUND LEVEL (m)	INVERT LEVELS (m)	DEPTH OF INVERT (m)	HGL (m)
0+000.00	1490.33	1489.33	1.00	1515.00
0+020.00	1486.85	1485.84	1.01	1514.20
0+040.00	1481.95	1480.98	0.97	1513.41
0+060.00	1477.95	1476.95	0.99	1512.61
0+080.00	1474.34	1473.36	0.98	1511.81
0+100.00	1471.55	1470.71	0.84	1511.01
0+120.00	1469.47	1468.60	0.87	1510.21
0+140.00	1467.97	1467.48	0.49	1509.41
0+160.00	1466.69	1466.35	0.34	1508.61
0+180.00	1465.58	1465.23	0.35	1507.81
0+200.00	1464.74	1464.10	0.64	1507.01
0+220.00	1464.02	1463.02	1.00	1506.22
0+240.00	1465.43	1464.43	1.00	1505.42
0+260.00	1466.85	1465.85	1.00	1504.62
0+280.00	1468.27	1467.27	1.00	1503.82
0+300.00	1470.13	1469.21	0.92	1503.02
0+320.00	1473.41	1472.62	0.79	1502.22
0+340.00	1476.89	1476.03	0.86	1501.42
0+360.00	1480.06	1478.96	1.10	1500.62
0+380.00	1480.09	1479.52	0.57	1499.83
0+400.00	1478.18	1476.83	1.35	1499.03
0+420.00	1474.69	1472.89	1.80	1498.23
0+440.00	1470.95	1468.95	2.01	1497.43
0+460.00	1466.28	1465.00	1.28	1496.63
0+480.00	1461.24	1460.41	0.84	1495.83
0+500.00	1456.14	1455.59	0.55	1495.03
0+520.00	1451.25	1450.77	0.48	1494.23
0+540.00	1446.92	1445.95	0.97	1493.44
0+560.00	1442.17	1441.23	0.94	1492.64
0+580.00	1437.48	1436.59	0.89	1491.84
0+600.00	1432.87	1431.95	0.92	1491.04
0+620.00	1429.26	1428.23	1.03	1490.24
0+640.00	1425.60	1424.51	1.09	1489.44
0+660.00	1421.82	1420.79	1.02	1488.64
0+680.00	1418.45	1417.71	0.75	1487.84
0+700.00	1415.36	1415.00	0.37	1487.04
0+720.00	1413.71	1412.71	1.00	1486.25
0+740.00	1412.53	1412.07	0.46	1485.45
0+760.00	1411.88	1411.43	0.45	1484.65
0+780.00	1411.35	1410.79	0.55	1483.85
0+800.00	1410.87	1410.15	0.72	1483.05
0+820.00	1410.92	1410.08	0.83	1482.25
0+840.00	1411.45	1410.49	0.97	1481.45
0+860.00	1413.55	1412.75	0.80	1480.65
0+880.00	1415.80	1415.02	0.78	1479.86
0+900.00	1418.16	1417.28	0.88	1479.06
0+920.00	1420.53	1419.55	0.98	1478.26
0+940.00	1421.82	1420.82	1.00	1477.46
0+960.00	1422.98	1421.99	0.99	1476.66
0+980.00	1424.66	1423.71	0.95	1475.86
1+000.00	1426.39	1425.44	0.95	1475.06
1+020.00	1428.17	1427.16	1.00	1474.26
1+040.00	1429.41	1428.33	1.08	1473.46
1+060.00	1430.41	1429.41	1.00	1472.67
1+080.00	1431.00	1430.00	1.00	1471.87
1+100.00	1431.19	1430.18	1.01	1471.07
1+120.00	1431.15	1430.14	1.02	1470.27
1+140.00	1430.08	1429.08	1.00	1469.47
1+151.99	1429.43	1428.43	1.00	1468.99

DATUM (m)

TYPE OF PIPE AND SIZE: 32mm Hdpe PN 10 (0+000.00 – 0+700.00) | 32mm Hdpe PN 12.5 (0+700.00 – 0+880.00) | 32mm Hdpe PN 10 (0+880.00 – 1+151.99)

GEOLOGICAL CONDITION: RED LOAM SOIL

SLOPE OF HGL (H/V): −1:25.04

LONGITUDINAL SECTION

0 100 200m

NOTES:

1. CONTOUR LEVELS ARE IN METERS AT TWO METER INTERVALS
2. GRID VALUES ARE IN METERS AT 200 METER INTERVALS
3. GEOLOGICAL CONDITIONS INDICATED ON DRAWING ARE FOR GENERAL GUIDANCE ONLY

LEGEND:

Symbol	Description
—1480—	CONTOURS
(thick line)	PROPOSED TREATED WATER GRAVITY MAIN
V.J.	VIKING JOHNSON
GV	GATE VALVE
SV-01	SECTIONAL VALVE & No.
WO-01	WASHOUT VALVE & No.
SAV-01	AIR VALVE & No.
WM	WATER METER
(dashed square)	PROPOSED MASONRY CHAMBER
(dashed circle)	PROPOSED VALVE BOX
n	PIPELINE GRADIENT WITH SLOPE DIRECTION (SLOPE MIN. OR 1 IN n)

ISSUED FOR CONSTRUCTION

	REVISIONS		SIGN	DATE	APPROVED
		BY			
		CHECKED			
		BY			
		CHECKED			
		BY			
		CHECKED			
		BY			
		CHECKED			

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

ENGINEER: **CHIEF MANAGER TECHNICAL SERVICES, TANA WATER WORKS DEVELOPMENT AGENCY**
P.O BOX 1292 - 10100,
NYERI, KENYA

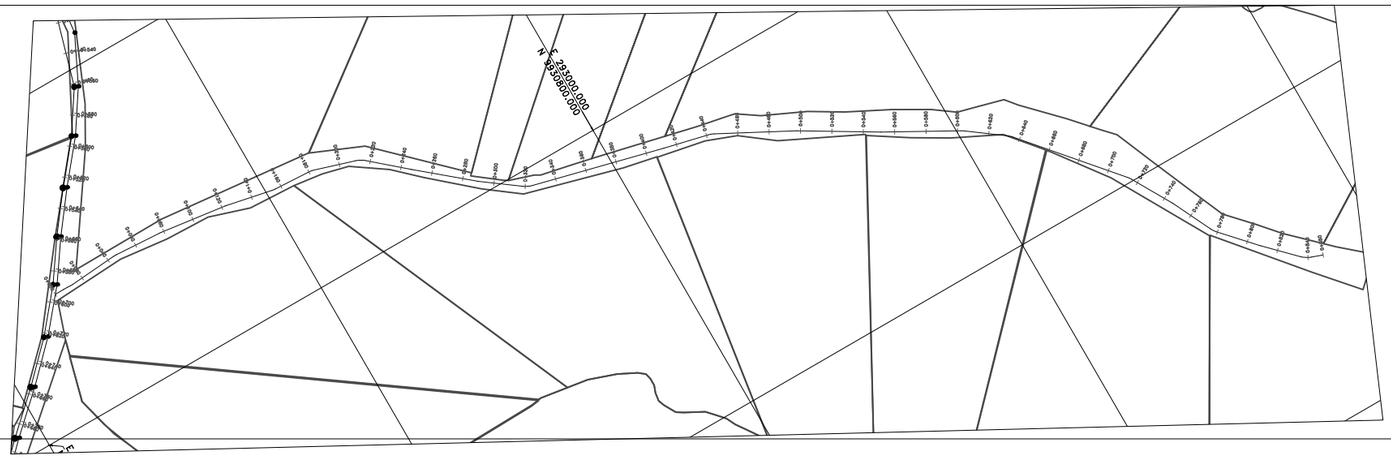
PROJECT TITLE:

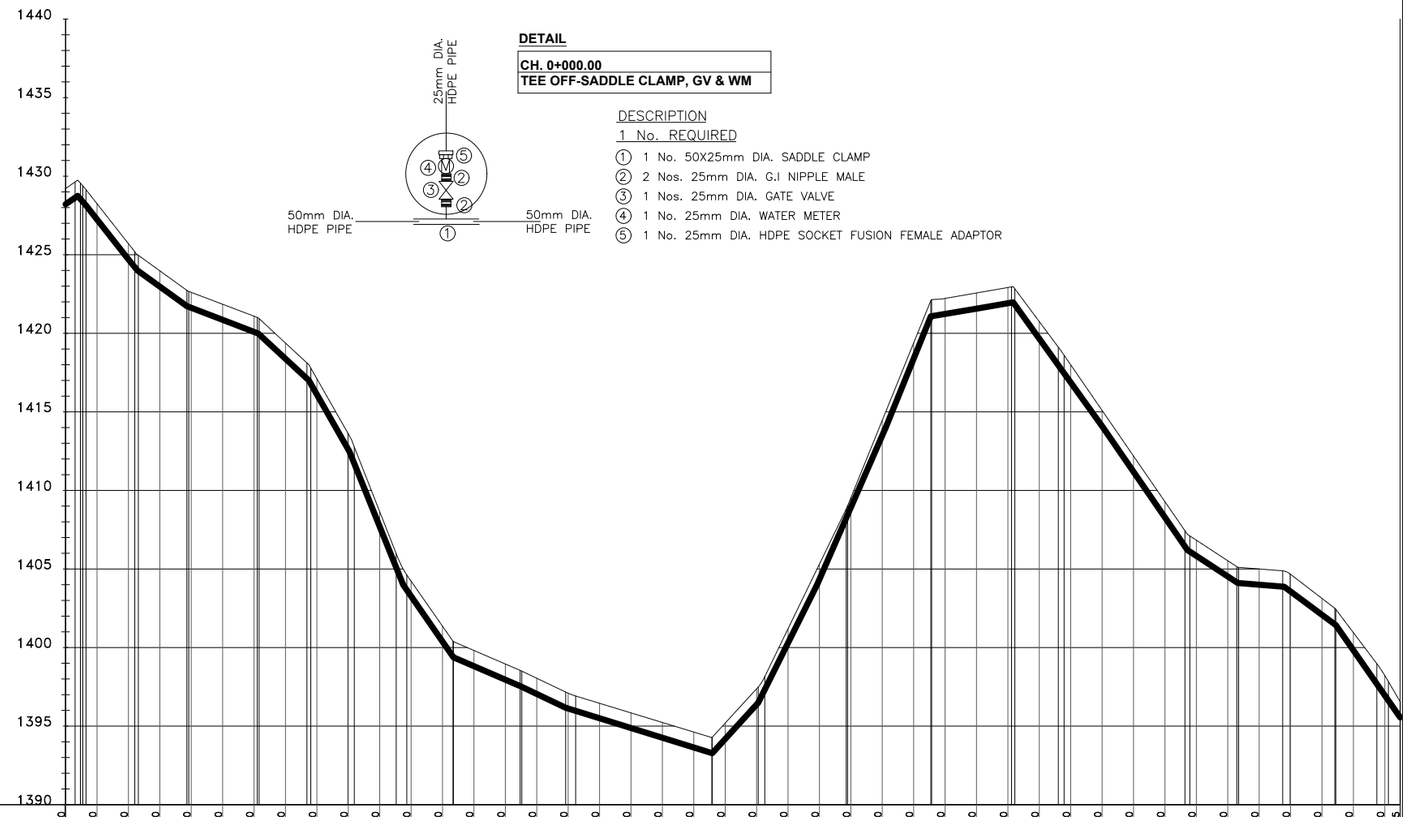
EXTENSION OF WATER SUPPLY PIPELINES IN MUKURWEINI

DRAWING TITLE:
LATERAL 1-NGAMWA

CH. 0+000.00 - 1+151.99
SHEET 1 OF 1

Designed and Drawn by: A.M.M	Surveyed by: J.W.W
Checked by: K.N.G	Approved by: D.N.M
Scale: H- 1:4000, V- 1:400	Date: JANUARY 2024
DRG No. EX-MUK/L1/01	





DETAIL

CH. 0+000.00
TEE OFF-SADDLE CLAMP, GV & WM

DESCRIPTION
1 No. REQUIRED

1. 1 No. 50X25mm DIA. SADDLE CLAMP
2. 2 Nos. 25mm DIA. G.I NIPPLE MALE
3. 1 Nos. 25mm DIA. GATE VALVE
4. 1 No. 25mm DIA. WATER METER
5. 1 No. 25mm DIA. HDPE SOCKET FUSION FEMALE ADAPTOR

DISTANCE IN KILOMETERS	0+000.00	0+020.00	0+040.00	0+060.00	0+080.00	0+100.00	0+120.00	0+140.00	0+160.00	0+180.00	0+200.00	0+220.00	0+240.00	0+260.00	0+280.00	0+300.00	0+320.00	0+340.00	0+360.00	0+380.00	0+400.00	0+420.00	0+440.00	0+460.00	0+480.00	0+500.00	0+520.00	0+540.00	0+560.00	0+580.00	0+600.00	0+620.00	0+640.00	0+660.00	0+680.00	0+700.00	0+720.00	0+740.00	0+760.00	0+780.00	0+800.00	0+820.00	0+840.00	0+849.75
EXISTING GROUND LEVEL (m)	1429.21	1428.25	1425.70	1423.98	1422.61	1421.85	1421.09	1419.38	1417.11	1413.60	1408.65	1404.22	1401.36	1399.81	1398.95	1398.05	1397.09	1396.45	1395.84	1395.23	1394.62	1395.19	1397.38	1401.20	1405.31	1409.53	1414.46	1419.39	1422.22	1422.57	1422.91	1420.74	1417.99	1415.09	1412.19	1409.28	1406.83	1405.52	1405.00	1404.66	1403.12	1400.95	1398.22	1396.55
INVERT LEVELS (m)	1428.21	1427.25	1424.70	1422.97	1421.62	1420.86	1420.09	1418.38	1416.11	1412.60	1407.70	1403.27	1400.38	1398.81	1397.95	1397.05	1396.12	1395.50	1394.88	1394.26	1393.64	1394.18	1396.38	1400.29	1404.35	1408.92	1413.50	1418.39	1421.23	1421.57	1421.91	1419.65	1416.87	1414.09	1411.19	1408.28	1405.83	1404.53	1404.00	1403.57	1402.08	1399.82	1396.95	1395.55
DEPTH OF INVERT (m)	1.00	1.00	1.00	1.00	0.98	0.99	1.00	1.00	1.00	1.00	0.95	0.96	0.98	1.00	1.00	1.00	0.98	0.95	0.96	0.97	0.98	1.01	1.00	0.90	0.97	0.61	0.96	1.00	0.99	1.00	1.00	1.09	1.12	1.00	1.00	1.00	1.00	1.00	1.00	1.09	1.04	1.12	1.26	1.00
DATUM (m)																																												
HGL (m)	1501.63	1501.31	1500.99	1500.67	1500.35	1500.02	1499.70	1499.38	1499.06	1498.74	1498.42	1498.10	1497.78	1497.45	1497.13	1496.81	1496.49	1496.17	1495.85	1495.53	1495.20	1494.88	1494.56	1494.24	1493.92	1493.60	1493.28	1492.96	1492.63	1492.31	1491.99	1491.67	1491.35	1491.03	1490.71	1490.39	1490.06	1489.74	1489.42	1489.10	1488.78	1488.46	1488.14	1487.98
DATUM (m)																																												
TYPE OF PIPE AND SIZE	25mm Hdpe PN 12.5																																											
GEOLOGICAL CONDITION	RED LOAM SOIL																																											
SLOPE OF HGL (H/V)	-1:62.25																																											

LONGITUDINAL SECTION

100 200m

NOTES:

1. CONTOUR LEVELS ARE IN METERS AT TWO METER INTERVALS
2. GRID VALUES ARE IN METERS AT 200 METER INTERVALS
3. GEOLOGICAL CONDITIONS INDICATED ON DRAWING ARE FOR GENERAL GUIDANCE ONLY

LEGEND:

1480	CONTOURS
	PROPOSED TREATED WATER GRAVITY MAIN
V.J.	VIKING JOHNSON
GV	GATE VALVE
SV-01	SECTIONAL VALVE & No.
WO-01	WASHOUT VALVE & No.
SAV-01	AIR VALVE & No.
WM	WATER METER
	PROPOSED MASONRY CHAMBER
	PROPOSED VALVE BOX
n	PIPELINE GRADIENT WITH SLOPE DIRECTION (SLOPE MIN. OR 1 IN n)

ISSUED FOR CONSTRUCTION

	REVISIONS		SIGN	DATE	APPROVED
		BY			
		CHECKED			
		BY			
		CHECKED			
		BY			
		CHECKED			
		BY			
		CHECKED			

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

ENGINEER:
CHIEF MANAGER TECHNICAL SERVICES, TANA WATER WORKS DEVELOPMENT AGENCY
P.O BOX 1292 - 10100,
NYERI, KENYA

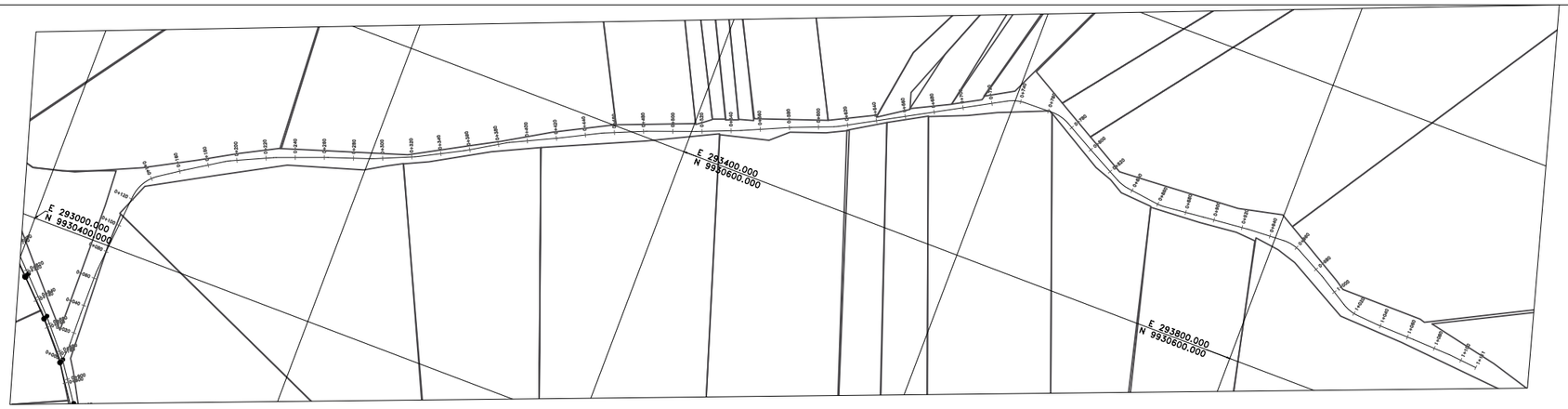
PROJECT TITLE:

EXTENSION OF WATER SUPPLY PIPELINES IN MUKURWEINI

DRAWING TITLE:
LATERAL 2-NGAMWA

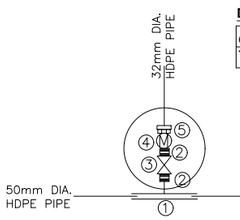
CH. 0+000.00 - 0+849.75
SHEET 1 OF 1

Designed and Drawn by:A.M.M	Surveyed by: J.W.W
Checked by: K.N.G	Approved by: D.N.M
Scale: H- 1:4000, V- 1:400	Date: JANUARY 2024
DRG No. EX-MUK/L2/01	



DETAIL

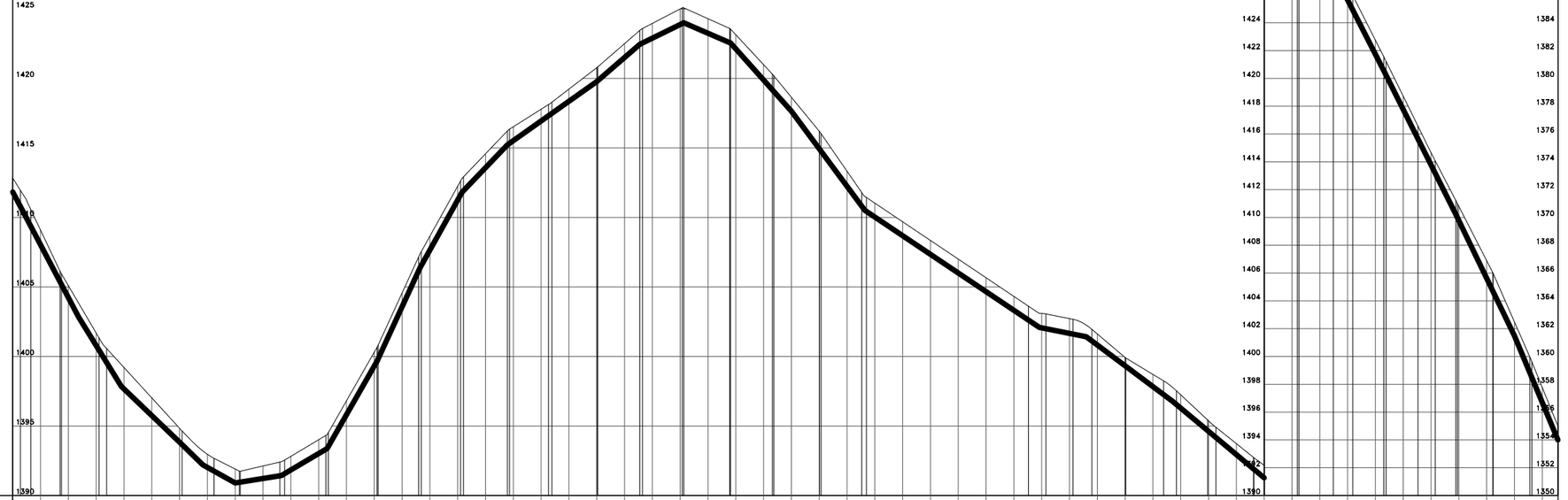
CH. 0+000.00
TEE OFF-SADDLE CLAMP, GV & WM



DESCRIPTION

1 No. REQUIRED

1. 1 No. 50X32mm DIA. SADDLE CLAMP
2. 2 Nos. 32mm DIA. G.I NIPPLE MALE
3. 1 Nos. 32mm DIA. GATE VALVE
4. 1 No. 32mm DIA. WATER METER
5. 1 No. 32mm DIA. HDPE SOCKET FUSION FEMALE ADAPTOR



LATERAL 3 PROFILE

DISTANCE IN KILOMETERS	0+000.00	0+020.00	0+040.00	0+060.00	0+080.00	0+100.00	0+120.00	0+140.00	0+160.00	0+180.00	0+200.00	0+220.00	0+240.00	0+260.00	0+280.00	0+300.00	0+320.00	0+340.00	0+360.00	0+380.00	0+400.00	0+420.00	0+440.00	0+460.00	0+480.00	0+500.00	0+520.00	0+540.00	0+560.00	0+580.00	0+600.00	0+620.00	0+640.00	0+660.00	0+680.00	0+700.00	0+720.00	0+740.00	0+760.00	0+780.00	0+800.00	0+820.00	0+840.00	0+860.00	0+880.00	0+900.00	0+920.00	0+940.00	0+960.00	0+980.00	1+000.00	1+020.00	1+040.00	1+060.00	1+080.00	1+100.00	1+111.39
EXISTING GROUND LEVEL (m)	1412.83	1409.09	1405.09	1401.69	1399.21	1397.02	1394.83	1392.96	1391.90	1392.13	1392.82	1394.01	1396.81	1400.31	1404.57	1408.65	1412.25	1414.58	1416.52	1417.78	1419.23	1420.77	1422.50	1423.95	1424.99	1424.29	1423.14	1420.98	1418.64	1416.20	1413.32	1411.03	1409.69	1408.35	1407.00	1405.66	1404.32	1403.09	1402.72	1401.62	1399.93	1398.71	1397.24	1395.37	1393.73	1392.17	1390.68	1388.93	1386.65	1382.74	1378.72	1374.66	1370.80	1366.89	1362.48	1357.77	1354.96
INVERT LEVELS (m)	1411.83	1408.03	1404.24	1400.79	1397.66	1395.75	1393.83	1392.02	1390.90	1391.23	1391.84	1393.02	1395.81	1399.31	1403.57	1407.65	1411.25	1413.58	1415.52	1416.94	1418.35	1419.77	1421.50	1422.89	1423.87	1423.25	1422.12	1419.88	1417.64	1414.94	1412.24	1410.03	1408.69	1407.35	1406.00	1404.66	1403.32	1402.06	1401.66	1400.83	1399.33	1397.83	1396.29	1394.62	1392.94	1391.27	1389.60	1387.93	1385.64	1381.73	1377.77	1373.78	1369.77	1365.63	1361.48	1356.69	
DEPTH OF INVERT (m) DATUM (m)	1.00	1.05	0.86	0.90	1.54	1.27	1.00	0.94	1.00	0.90	0.98	0.99	1.00	1.00	0.99	1.00	1.00	1.00	1.00	0.84	0.88	1.00	1.00	1.06	1.12	1.05	1.02	1.10	1.00	1.26	1.08	1.00	1.00	1.00	1.00	1.00	1.00	1.03	1.06	0.79	0.60	0.88	0.95	0.76	0.79	0.90	1.08	1.00	1.01	1.02	0.96	0.88	1.03	1.27	1.00	1.08	
HGL (m) DATUM (m)	1495.97	1495.39	1494.81	1494.24	1493.66	1493.08	1492.50	1491.93	1491.35	1490.77	1490.20	1489.62	1489.04	1488.47	1487.89	1487.31	1486.74	1486.16	1485.58	1485.01	1484.43	1483.85	1483.28	1482.70	1482.12	1481.54	1480.97	1480.39	1479.81	1479.24	1478.66	1478.08	1477.51	1476.93	1476.35	1475.78	1475.20	1474.62	1474.05	1473.47	1472.89	1472.32	1471.74	1471.16	1470.58	1470.01	1469.43	1468.85	1468.28	1467.70	1467.12	1466.55	1465.97	1465.39	1464.82	1464.24	1463.91
TYPE OF PIPE AND SIZE	32mm Hdpe PN 12.5																																														32mm Hdpe PN 16									
GEOLOGICAL CONDITION	RED LOAM SOIL																																																								
SLOPE OF HGL (H/V)	-1:34.67																																																								

0 100 200m

LONGITUDINAL SECTION

NOTES:

1. CONTOUR LEVELS ARE IN METERS AT TWO METER INTERVALS
2. GRID VALUES ARE IN METERS AT 200 METER INTERVALS
3. GEOLOGICAL CONDITIONS INDICATED ON DRAWING ARE FOR GENERAL GUIDANCE ONLY

LEGEND:

1480	CONTOURS
	PROPOSED TREATED WATER GRAVITY MAIN
V.J.	VIKING JOHNSON
GV	GATE VALVE
SV-01	SECTIONAL VALVE & No.
WO-01	WASHOUT VALVE & No.
SAV-01	AIR VALVE & No.
WM	WATER METER
	PROPOSED MASONRY CHAMBER
	PROPOSED VALVE BOX
n	PIPELINE GRADIENT WITH SLOPE DIRECTION (SLOPE MIN. OR 1 IN n)

ISSUED FOR CONSTRUCTION

	REVISIONS		SIGN	DATE	APPROVED
		BY			
		CHECKED			
		BY			
		CHECKED			
		BY			
		CHECKED			
		BY			
		CHECKED			

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

ENGINEER:
CHIEF MANAGER TECHNICAL SERVICES, TANA WATER WORKS DEVELOPMENT AGENCY
P.O BOX 1292 - 10100,
NYERI, KENYA

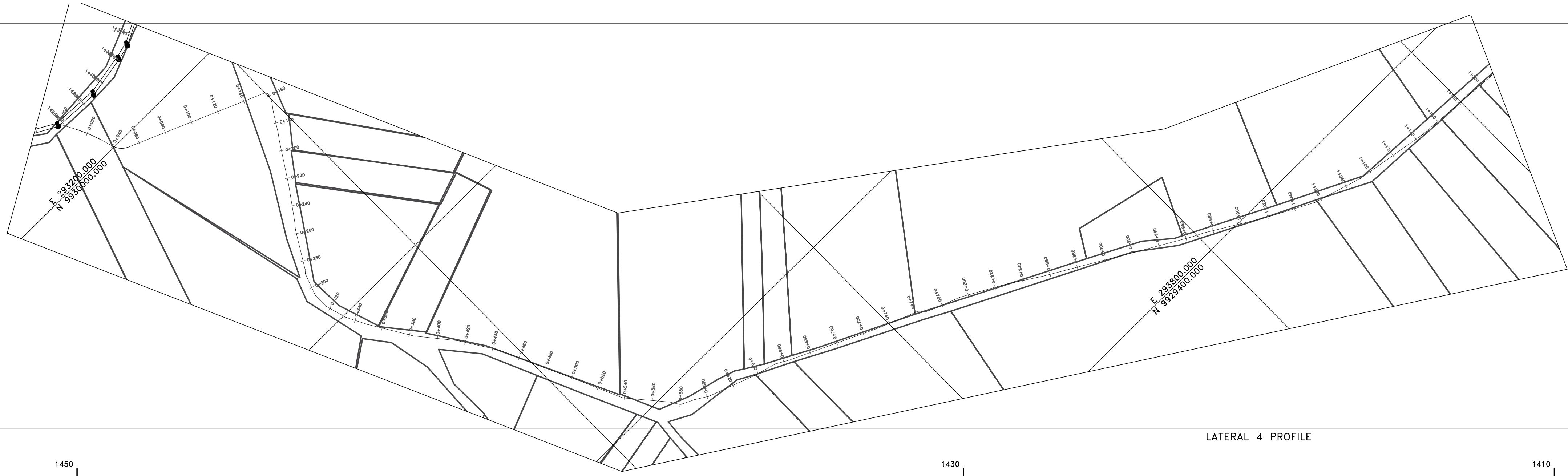
PROJECT TITLE:

EXTENSION OF WATER SUPPLY PIPELINES IN MUKURWEINI

DRAWING TITLE:
LATERAL 3-NGAMWA

CH. 0+000.00 - 1+111.39
SHEET 1 OF 1

Designed and Drawn by:A.M.M	Surveyed by: J.W.W
Checked by: K.N.G	Approved by: D.N.M
Scale: H- 1:4000, V- 1:400	Date: JANUARY 2024
DRG No. EX-MUK/L3/01	



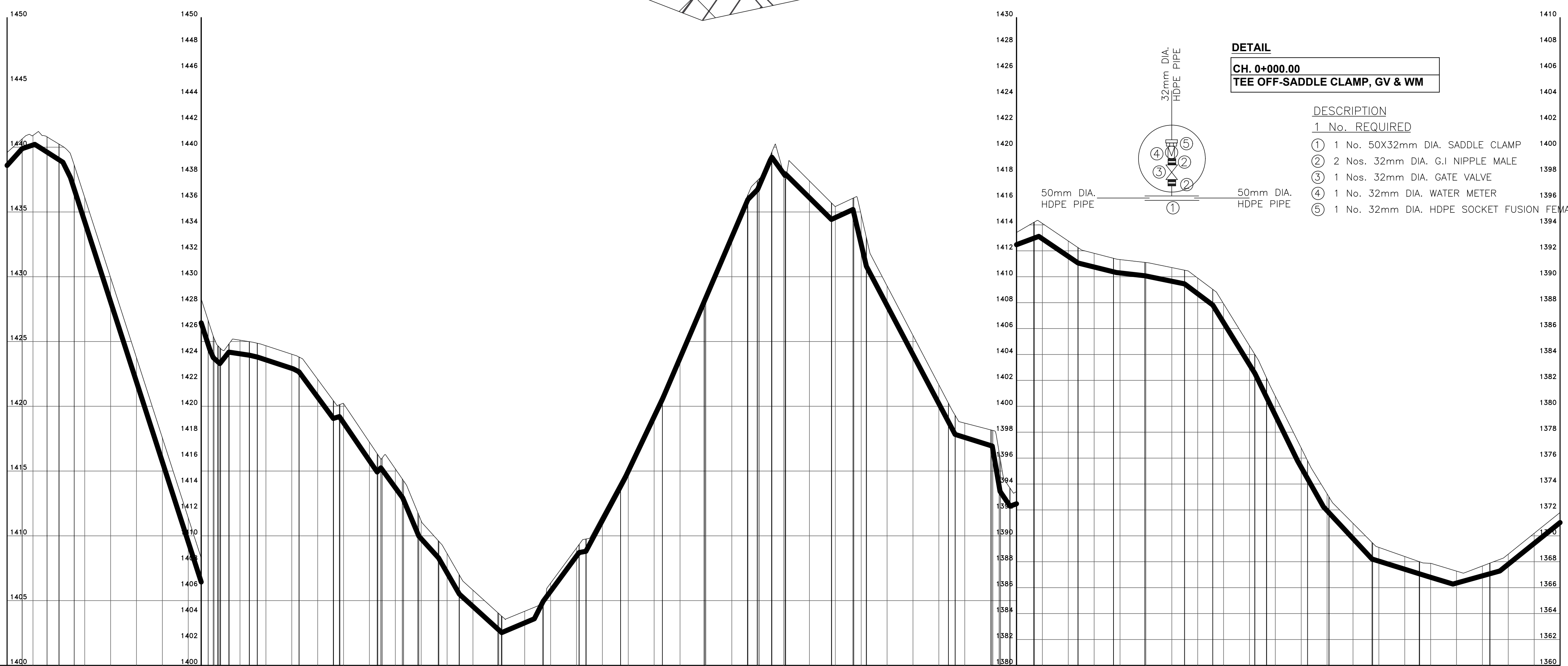
NOTES:

1. CONTOUR LEVELS ARE IN METERS AT TWO METER INTERVALS
2. GRID VALUES ARE IN METERS AT 200 METER INTERVALS
3. GEOLOGICAL CONDITIONS INDICATED ON DRAWING ARE FOR GENERAL GUIDANCE ONLY

LEGEND:

—1480—	CONTOURS
(thick line)	PROPOSED TREATED WATER GRAVITY MAIN
V.J.	VIKING JOHNSON
GV	GATE VALVE
SV-01	SECTIONAL VALVE & No.
WO-01	WASHOUT VALVE & No.
SAV-01	AIR VALVE & No.
WM	WATER METER
(dashed square)	PROPOSED MASONRY CHAMBER
(dashed circle)	PROPOSED VALVE BOX
n	PIPELINE GRADIENT WITH SLOPE DIRECTION (SLOPE MIN. OR 1 IN n)

LATERAL 4 PROFILE



DETAIL

CH. 0+000.00
TEE OFF-SADDLE CLAMP, GV & WM

32mm DIA. HDPE PIPE
50mm DIA. HDPE PIPE
50mm DIA. HDPE PIPE

DESCRIPTION
1 No. REQUIRED

1. 1 No. 50X32mm DIA. SADDLE CLAMP
2. 2 Nos. 32mm DIA. G.I NIPPLE MALE
3. 1 Nos. 32mm DIA. GATE VALVE
4. 1 No. 32mm DIA. WATER METER
5. 1 No. 32mm DIA. HDPE SOCKET FUSION FEMALE ADAPTOR

DISTANCE IN KILOMETERS	EXISTING GROUND LEVEL (m)	INVERT LEVELS (m)	DEPTH OF INVERT (m)	HGL (m) DATUM (m)
0+000.00	1439.59	1438.59	1.00	1487.95
0+020.00	1440.91	1440.17	0.74	1487.18
0+040.00	1440.24	1439.04	1.21	1486.40
0+060.00	1436.11	1434.25	1.86	1485.62
0+080.00	1429.93	1428.07	1.86	1484.84
0+100.00	1423.75	1421.89	1.86	1484.06
0+120.00	1417.56	1415.71	1.86	1483.28
0+140.00	1411.38	1409.53	1.85	1482.50
0+160.00	1405.23	1403.70	1.54	1481.72
0+180.00	1405.10	1404.05	1.05	1480.94
0+200.00	1404.67	1403.58	1.09	1480.17
0+220.00	1404.02	1402.93	1.09	1479.39
0+240.00	1402.08	1400.70	1.38	1478.61
0+260.00	1400.20	1398.73	1.47	1477.83
0+280.00	1397.23	1395.80	1.43	1477.05
0+300.00	1395.17	1393.71	1.46	1476.27
0+320.00	1391.16	1389.78	1.38	1475.49
0+340.00	1388.63	1387.15	1.48	1474.71
0+360.00	1385.80	1384.55	1.26	1473.93
0+380.00	1383.99	1382.73	1.26	1473.16
0+400.00	1384.18	1383.28	0.89	1472.38
0+420.00	1386.35	1385.73	0.62	1471.60
0+440.00	1389.06	1388.44	0.62	1470.82
0+460.00	1391.63	1391.19	0.44	1470.04
0+480.00	1395.40	1394.99	0.41	1469.26
0+500.00	1399.62	1399.20	0.41	1468.48
0+520.00	1404.07	1403.72	0.35	1467.70
0+540.00	1408.74	1408.39	0.35	1466.92
0+560.00	1413.42	1413.06	0.36	1466.15
0+580.00	1417.45	1416.75	0.70	1465.37
0+600.00	1418.01	1417.97	0.04	1464.59
0+620.00	1417.39	1416.10	1.29	1463.81
0+640.00	1415.42	1414.56	0.86	1463.03
0+660.00	1414.78	1412.50	2.28	1462.25
0+680.00	1409.28	1407.78	1.51	1461.47
0+700.00	1405.47	1403.99	1.48	1460.69
0+720.00	1401.65	1400.21	1.45	1459.91
0+740.00	1398.70	1397.60	1.10	1459.14
0+760.00	1398.18	1396.97	1.21	1458.36
0+780.00	1393.42	1392.47	0.94	1457.58
0+800.00	1394.11	1392.92	1.19	1456.80
0+820.00	1392.76	1391.57	1.19	1456.02
0+840.00	1391.81	1390.75	1.06	1455.24
0+860.00	1391.32	1390.29	1.03	1454.46
0+880.00	1391.10	1390.06	1.04	1453.68
0+900.00	1390.71	1389.65	1.06	1452.90
0+920.00	1389.90	1388.69	1.21	1452.13
0+940.00	1387.92	1386.46	1.45	1451.35
0+960.00	1384.68	1383.22	1.46	1450.57
0+980.00	1380.78	1379.30	1.47	1449.79
1+000.00	1376.78	1375.29	1.49	1449.01
1+020.00	1373.24	1371.94	1.30	1448.23
1+040.00	1370.97	1369.79	1.18	1447.45
1+060.00	1369.11	1368.05	1.06	1446.67
1+080.00	1368.40	1367.42	0.98	1445.89
1+100.00	1367.88	1366.80	1.08	1445.12
1+120.00	1367.28	1366.35	0.92	1444.34
1+140.00	1367.67	1366.91	0.76	1443.56
1+160.00	1368.59	1367.81	0.78	1442.78
1+180.00	1370.19	1369.42	0.78	1442.00
1+200.00	1371.80	1371.03	0.78	1441.22

TYPE OF PIPE AND SIZE: 32mm Hdpe PN 10 (0+000.00 – 0+160.00); 32mm Hdpe PN 16 (0+160.00 – 1+200.00)

GEOLOGICAL CONDITION: RED LOAM SOIL

SLOPE OF HGL (H/V): −1:25.68

0 100 200m

LONGITUDINAL SECTION

ISSUED FOR CONSTRUCTION

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

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

ENGINEER: **CHIEF MANAGER TECHNICAL SERVICES, TANA WATER WORKS DEVELOPMENT AGENCY**
P.O BOX 1292 - 10100,
NYERI, KENYA

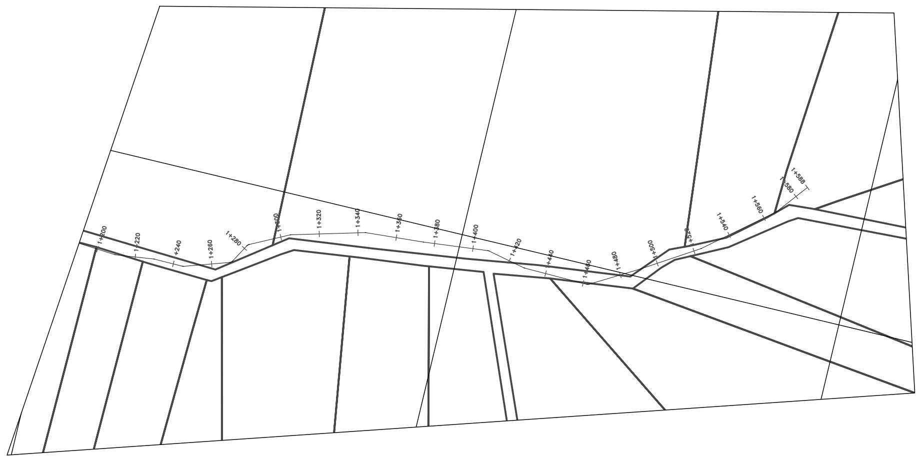
PROJECT TITLE:

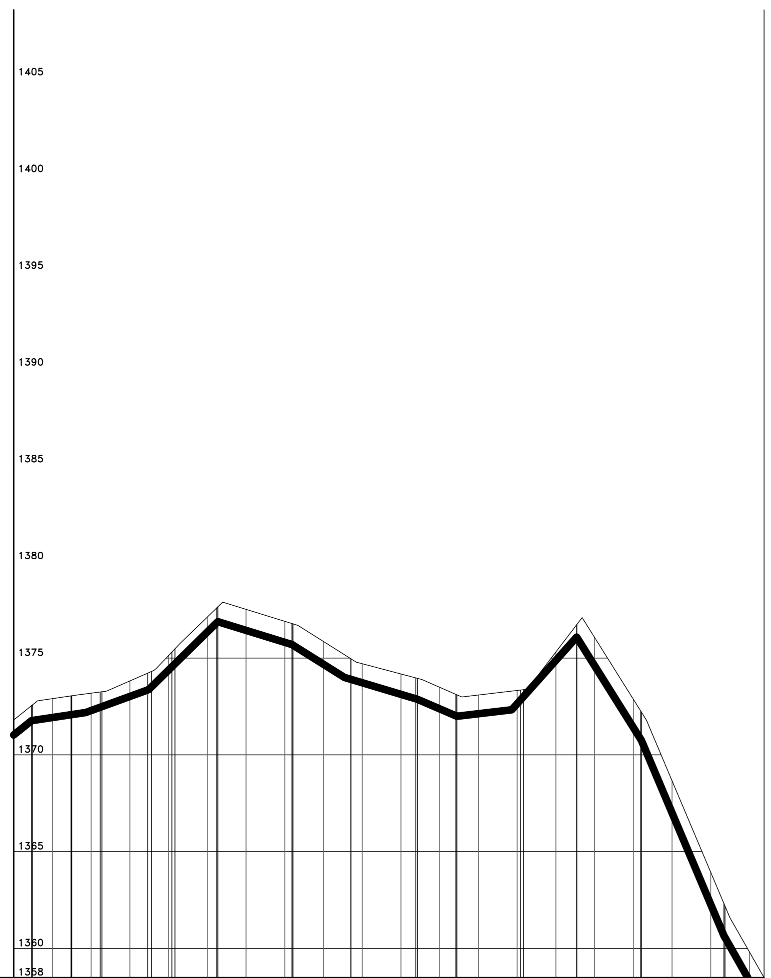
EXTENSION OF WATER SUPPLY PIPELINES IN MUKURWEINI

DRAWING TITLE:
LATERAL 4-NGAMWA

CH. 0+000.00 - 1+200.00
SHEET 1 OF 2

Designed and Drawn by: A.M.M	Surveyed by: J.W.W
Checked by: K.N.G	Approved by: D.N.M
Scale: H- 1:4000, V- 1:400	Date: JANUARY 2024
DRG No.	**EX-MUK/L4/01**





DISTANCE IN KILOMETERS	1+200.00	1+220.00	1+240.00	1+260.00	1+280.00	1+300.00	1+320.00	1+340.00	1+360.00	1+380.00	1+400.00	1+420.00	1+440.00	1+460.00	1+480.00	1+500.00	1+520.00	1+540.00	1+560.00	1+580.00	1+587.52
EXISTING GROUND LEVEL (m)	1371.80	1372.90	1373.19	1373.82	1375.13	1377.12	1377.52	1376.90	1375.86	1374.71	1374.18	1373.49	1373.09	1373.33	1375.31	1376.06	1372.87	1368.66	1363.92	1359.81	1358.49
INVERT LEVELS (m)	1371.03	1371.93	1372.29	1373.02	1374.38	1376.35	1376.43	1375.81	1374.68	1373.72	1373.13	1372.38	1372.12	1372.64	1374.88	1374.60	1371.41	1367.00	1362.26	1358.33	
DEPTH OF INVERT (m) DATUM (m)	0.78	0.97	0.90	0.80	0.75	0.77	1.09	1.09	1.18	0.98	1.05	1.11	0.97	0.69	0.43	1.46	1.46	1.66	1.66	1.48	
HGL (m) DATUM (m)	1441.22	1440.44	1439.66	1438.88	1438.11	1437.33	1436.55	1435.77	1434.99	1434.21	1433.43	1432.65	1431.88	1431.10	1430.32	1429.54	1428.76	1427.98	1427.20	1426.42	1426.13
TYPE OF PIPE AND SIZE	32mm Hdpe PN 16																				
GEOLOGICAL CONDITION	RED LOAM SOIL																				
SLOPE OF HGL (H/V)	−1:25.68																				

LONGITUDINAL SECTION

0 100 200m

NOTES:

1. CONTOUR LEVELS ARE IN METERS AT TWO METER INTERVALS
2. GRID VALUES ARE IN METERS AT 200 METER INTERVALS
3. GEOLOGICAL CONDITIONS INDICATED ON DRAWING ARE FOR GENERAL GUIDANCE ONLY

LEGEND:

Symbol	Description
—1480—	CONTOURS
(thick line)	PROPOSED TREATED WATER GRAVITY MAIN
V.J.	VIKING JOHNSON
GV	GATE VALVE
SV-01	SECTIONAL VALVE & No.
WO-01	WASHOUT VALVE & No.
SAV-01	AIR VALVE & No.
WM	WATER METER
(dashed square)	PROPOSED MASONRY CHAMBER
(dashed circle)	PROPOSED VALVE BOX
n	PIPELINE GRADIENT WITH SLOPE DIRECTION (SLOPE MIN. OR 1 IN n)

ISSUED FOR CONSTRUCTION

	REVISIONS		SIGN	DATE	APPROVED
		BY			
		CHECKED			
		BY			
		CHECKED			
		BY			
		CHECKED			
		BY			
		CHECKED			

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

ENGINEER:
**CHIEF MANAGER TECHNICAL SERVICES,
TANA WATER WORKS
DEVELOPMENT AGENCY**
P.O BOX 1292 - 10100,
NYERI, KENYA

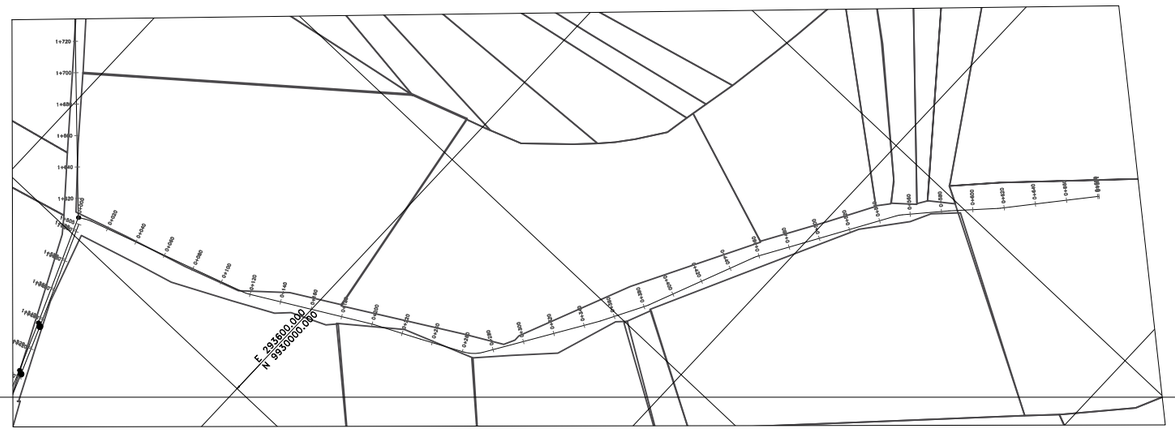
PROJECT TITLE:

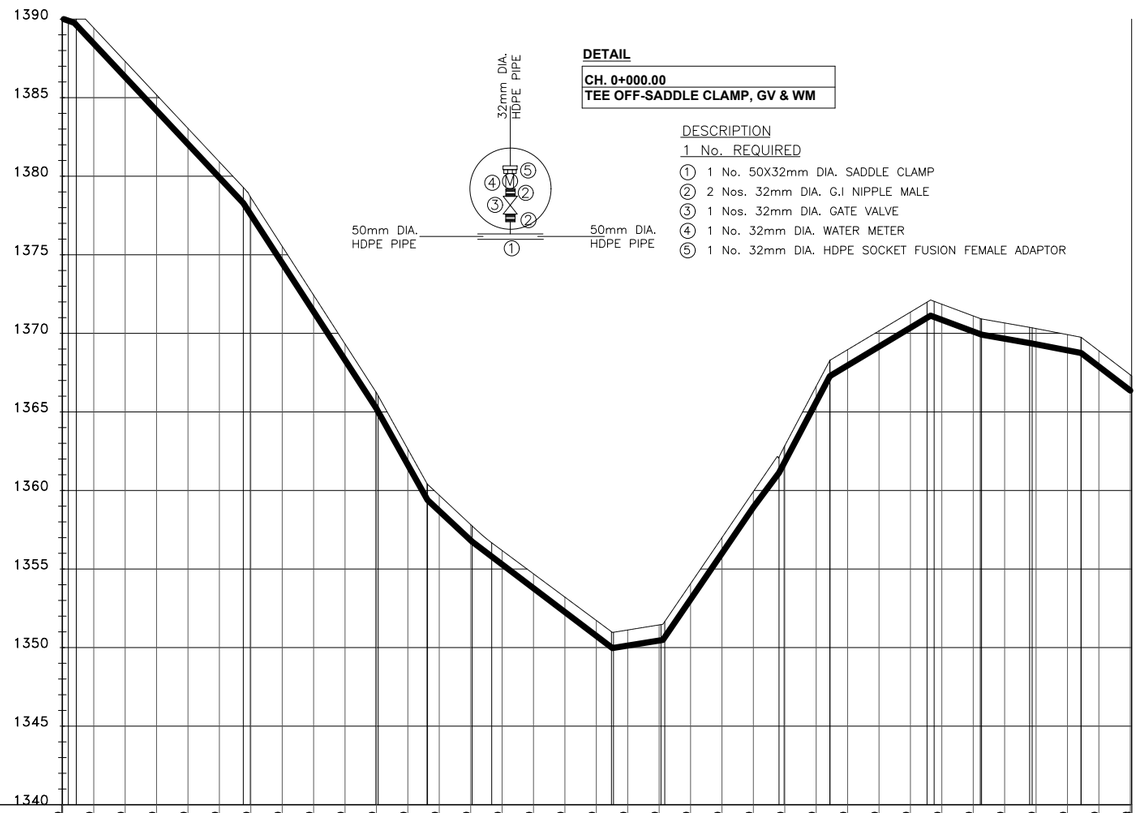
EXTENSION OF WATER SUPPLY PIPELINES IN MUKURWEINI

DRAWING TITLE:
LATERAL 4-NGAMWA

CH. 1+200.00 - 1+587.00
SHEET 1 OF 2

Designed and Drawn by: A.M.M	Surveyed by: J.W.W
Checked by: K.N.G	Approved by: D.N.M
Scale: H- 1:4000, V- 1:400	Date: JANUARY 2024
DRG No. **EX-MUK/L4/02**	





DETAIL

CH. 0+000.00
TEE OFF-SADDLE CLAMP, GV & WM

DESCRIPTION
1 No. REQUIRED

1. 1 No. 50X32mm DIA. SADDLE CLAMP
2. 2 Nos. 32mm DIA. G.I NIPPLE MALE
3. 1 Nos. 32mm DIA. GATE VALVE
4. 1 No. 32mm DIA. WATER METER
5. 1 No. 32mm DIA. HDPE SOCKET FUSION FEMALE ADAPTOR

DISTANCE IN KILOMETERS	0+000.00	0+020.00	0+040.00	0+060.00	0+080.00	0+100.00	0+120.00	0+140.00	0+160.00	0+180.00	0+200.00	0+220.00	0+240.00	0+260.00	0+280.00	0+300.00	0+320.00	0+340.00	0+360.00	0+380.00	0+400.00	0+420.00	0+440.00	0+460.00	0+480.00	0+500.00	0+520.00	0+540.00	0+560.00	0+580.00	0+600.00	0+620.00	0+640.00	0+660.00	0+680.88
EXISTING GROUND LEVEL (m)	1391.03	1389.44	1387.31	1385.18	1383.04	1380.91	1378.64	1375.54	1372.43	1369.32	1366.22	1362.63	1359.69	1357.83	1356.18	1354.69	1353.21	1351.73	1351.12	1351.44	1354.07	1357.00	1359.93	1362.85	1366.63	1368.96	1370.15	1371.35	1371.85	1371.11	1370.66	1370.30	1369.92	1368.89	1367.35
INVERT LEVELS (m)	1390.03	1388.44	1386.31	1384.18	1382.04	1379.91	1377.55	1374.47	1371.38	1368.30	1365.21	1361.63	1358.69	1356.83	1355.29	1353.78	1352.26	1350.75	1350.13	1350.45	1353.07	1356.00	1358.93	1361.82	1365.62	1367.96	1369.16	1370.35	1370.86	1370.11	1369.66	1369.30	1368.92	1367.89	1366.36
DEPTH OF INVERT (m) DATUM (m)	1.00	1.00	1.00	1.00	1.00	1.00	1.09	1.07	1.04	1.02	1.01	1.00	1.00	1.00	0.88	0.92	0.95	0.98	0.99	0.99	1.00	1.00	1.00	1.02	1.01	1.00	1.00	1.00	0.99	0.99	1.00	1.00	1.00	1.00	1.00
HGL (m) DATUM (m)	1476.03	1475.71	1475.38	1475.05	1474.73	1474.40	1474.08	1473.75	1473.42	1473.10	1472.77	1472.45	1472.12	1471.79	1471.47	1471.14	1470.82	1470.49	1470.16	1469.84	1469.51	1469.19	1468.86	1468.53	1468.21	1467.88	1467.56	1467.23	1466.90	1466.58	1466.25	1465.93	1465.60	1465.27	1464.93
TYPE OF PIPE AND SIZE	32mm Hdpe PN 16																																		
GEOLOGICAL CONDITION	RED LOAM SOIL																																		
SLOPE OF HGL (H/V)	−1:61.36																																		

LONGITUDINAL SECTION

0 100 200m

NOTES:

1. CONTOUR LEVELS ARE IN METERS AT TWO METER INTERVALS
2. GRID VALUES ARE IN METERS AT 200 METER INTERVALS
3. GEOLOGICAL CONDITIONS INDICATED ON DRAWING ARE FOR GENERAL GUIDANCE ONLY

LEGEND:

1480	CONTOURS
	PROPOSED TREATED WATER GRAVITY MAIN
V.J.	VIKING JOHNSON
GV	GATE VALVE
SV-01	SECTIONAL VALVE & No.
WO-01	WASHOUT VALVE & No.
SAV-01	AIR VALVE & No.
WM	WATER METER
	PROPOSED MASONRY CHAMBER
	PROPOSED VALVE BOX
n	PIPELINE GRADIENT WITH SLOPE DIRECTION (SLOPE MIN. OR 1 IN n)

ISSUED FOR CONSTRUCTION

	REVISIONS		SIGN	DATE	APPROVED
		BY			
		CHECKED			
		BY			
		CHECKED			
		BY			
		CHECKED			
		BY			
		CHECKED			

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

ENGINEER:
CHIEF MANAGER TECHNICAL SERVICES, TANA WATER WORKS DEVELOPMENT AGENCY
P.O BOX 1292 - 10100,
NYERI, KENYA

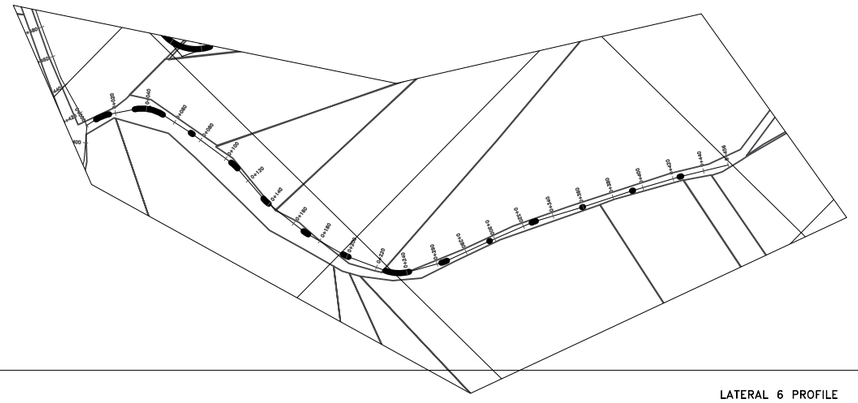
PROJECT TITLE:

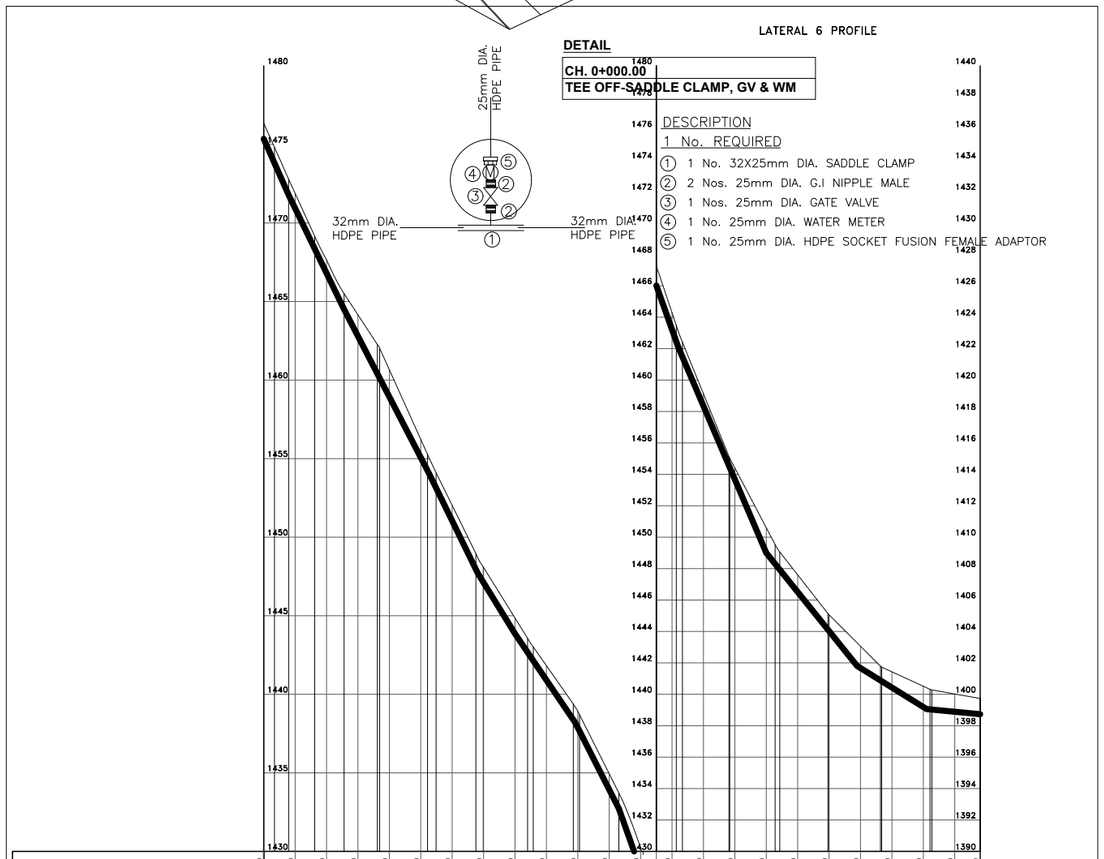
EXTENSION OF WATER SUPPLY PIPELINES IN MUKURWEINI

DRAWING TITLE:
LATERAL 5-NGAMWA

CH. 0+000.00 - 0+680.88
SHEET 1 OF 1

Designed and Drawn by:A.M.M	Surveyed by: J.W.W
Checked by: K.N.G	Approved by: D.N.M
Scale: H- 1:4000, V- 1:400	Date: JANUARY 2024
DRG No.	**EX-MUK/L5/01**





DETAIL

CH. 0+000.00

TEE OFF-SADDLE CLAMP, GV & WM

DESCRIPTION

1 No. REQUIRED

1. 1 No. 32X25mm DIA. SADDLE CLAMP
2. 2 Nos. 25mm DIA. G.I NIPPLE MALE
3. 1 Nos. 25mm DIA. GATE VALVE
4. 1 No. 25mm DIA. WATER METER
5. 1 No. 25mm DIA. HDPE SOCKET FUSION FEMALE ADAPTOR

LATERAL 6 PROFILE

DISTANCE IN KILOMETERS	0+000.00	0+020.00	0+040.00	0+060.00	0+080.00	0+100.00	0+120.00	0+140.00	0+160.00	0+180.00	0+200.00	0+220.00	0+240.00	0+260.00	0+280.00	0+300.00	0+320.00	0+340.00	0+360.00	0+380.00	0+400.00	0+420.00	0+440.00	0+456.19
EXISTING GROUND LEVEL (m)	1476.36	1471.88	1467.65	1464.15	1460.66	1456.22	1452.02	1448.07	1444.86	1441.82	1438.91	1434.94	1430.22	1424.28	1419.12	1414.41	1410.60	1407.60	1405.06	1403.06	1401.43	1400.51	1400.02	1399.73
INVERT LEVELS (m)	1475.36	1470.93	1466.80	1462.79	1458.93	1455.07	1451.04	1447.11	1443.86	1440.90	1437.88	1433.93	1428.83	1423.21	1418.35	1413.67	1409.00	1406.51	1404.02	1401.67	1400.43	1399.19	1398.89	1398.73
DEPTH OF INVERT (m) DATUM (m)	1.00	0.95	0.85	1.36	1.73	1.15	0.98	0.96	1.00	0.92	1.03	1.01	1.39	1.07	0.78	0.73	1.60	1.09	1.03	1.39	1.00	1.32	1.13	1.00
HGL (m) DATUM (m)	1493.04	1498.81	1498.59	1498.36	1498.14	1497.92	1497.69	1497.47	1497.24	1497.02	1496.79	1496.57	1496.35	1496.12	1495.90	1495.67	1495.45	1495.23	1495.00	1494.78	1494.55	1494.33	1494.11	1493.92
TYPE OF PIPE AND SIZE	25mm Hdpe PN 10													25mm Hdpe PN 12.5										
GEOLOGICAL CONDITION	RED LOAM SOIL																							
SLOPE OF HGL (H/V)	-1:89.25																							

LONGITUDINAL SECTION

0 100 200m

NOTES:

1. CONTOUR LEVELS ARE IN METERS AT TWO METER INTERVALS
2. GRID VALUES ARE IN METERS AT 200 METER INTERVALS
3. GEOLOGICAL CONDITIONS INDICATED ON DRAWING ARE FOR GENERAL GUIDANCE ONLY

LEGEND:

1480	CONTOURS
	PROPOSED TREATED WATER GRAVITY MAIN
V.J.	VIKING JOHNSON
GV	GATE VALVE
SV-01	SECTIONAL VALVE & No.
WO-01	WASHOUT VALVE & No.
SAV-01	AIR VALVE & No.
WM	WATER METER
	PROPOSED MASONRY CHAMBER
	PROPOSED VALVE BOX
n	PIPELINE GRADIENT WITH SLOPE DIRECTION (SLOPE MIN. OR 1 IN n)

ISSUED FOR CONSTRUCTION

REVISIONS		SIGN	DATE	APPROVED
	BY			
	CHECKED			
	BY			
	CHECKED			
	BY			
	CHECKED			
	BY			
	CHECKED			

CLIENT:

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

ENGINEER:

CHIEF MANAGER TECHNICAL SERVICES, TANA WATER WORKS DEVELOPMENT AGENCY
P.O BOX 1292 - 10100,
NYERI, KENYA

PROJECT TITLE:

EXTENSION OF WATER SUPPLY PIPELINES IN MUKURWEINI

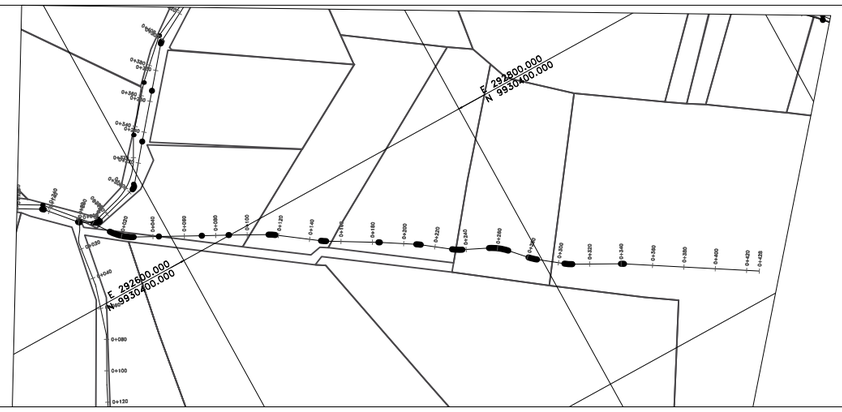
DRAWING TITLE:

LATERAL 6-NGAMWA

CH. 0+000.00 - 0+456.19

SHEET 1 OF 1

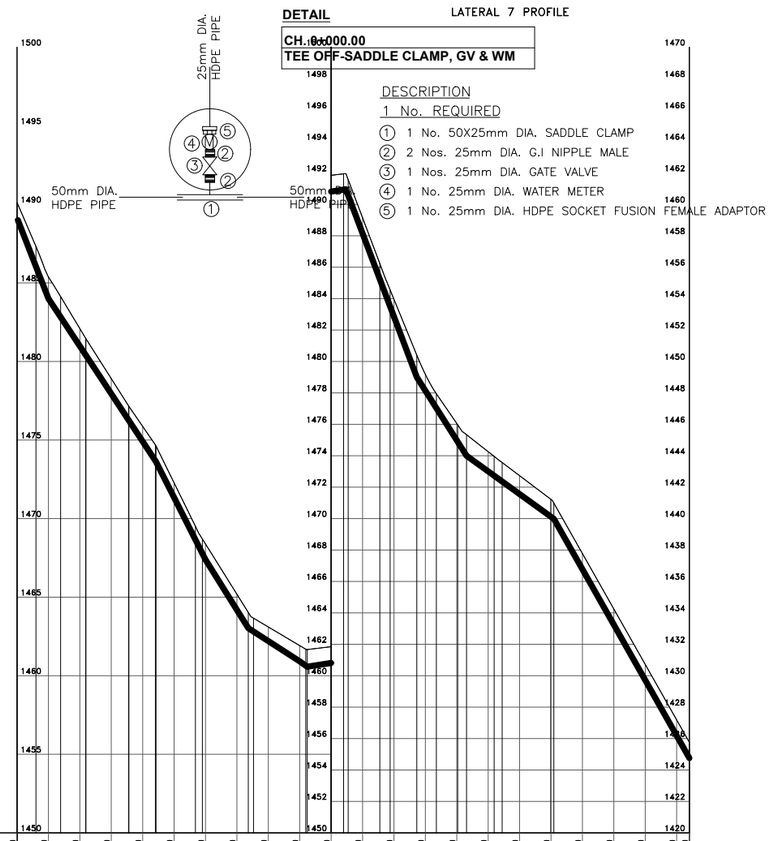
Designed and Drawn by:A.M.M	Surveyed by: J.W.W
Checked by: K.N.G	Approved by: D.N.M
Scale: H- 1:4000, V- 1:400	Date: JANUARY 2024
DRG No. EX-MUK/L4/01	



DETAIL LATERAL 7 PROFILE

CH. 0+000.00

TEE OFF-SADDLE CLAMP, GV & WM



DESCRIPTION

1 No. REQUIRED

1. 1 No. 50X25mm DIA. SADDLE CLAMP
2. 2 Nos. 25mm DIA. G.I NIPPLE MALE
3. 1 Nos. 25mm DIA. GATE VALVE
4. 1 No. 25mm DIA. WATER METER
5. 1 No. 25mm DIA. HDPE SOCKET FUSION FEMALE ADAPTOR

DISTANCE IN KILOMETERS	0+000.00	0+020.00	0+040.00	0+060.00	0+080.00	0+100.00	0+120.00	0+140.00	0+160.00	0+180.00	0+200.00	0+220.00	0+240.00	0+260.00	0+280.00	0+300.00	0+320.00	0+340.00	0+360.00	0+380.00	0+400.00	0+420.00	0+428.10
EXISTING GROUND LEVEL (m)	1490.04	1485.37	1482.09	1478.91	1475.87	1472.28	1468.39	1465.19	1463.10	1461.91	1461.85	1459.15	1453.96	1449.18	1446.05	1444.26	1442.73	1441.22	1437.78	1434.25	1430.72	1427.19	1425.76
INVERT LEVELS (m)		1484.00	1480.98	1477.95	1474.91	1471.34	1467.39	1464.19	1462.20	1460.91	1460.81	1458.15	1452.85	1448.14	1444.98	1443.00	1441.56	1440.12	1436.78	1433.25	1429.72	1426.19	1424.76
DEPTH OF INVERT (m) DATUM (m)		1.37	1.11	0.96	0.96	0.93	1.00	1.00	0.90	1.00	1.03	1.00	1.11	1.04	1.07	1.25	1.17	1.11	1.00	1.00	1.00	1.00	1.00
HGL (m) DATUM (m)	1512.84	1512.56	1512.28	1512.00	1511.72	1511.44	1511.16	1510.89	1510.61	1510.33	1510.05	1509.77	1509.49	1509.21	1508.93	1508.65	1508.38	1508.10	1507.82	1507.54	1507.26	1506.98	1506.87
TYPE OF PIPE AND SIZE	25mm Hdpe PN 10																						
GEOLOGICAL CONDITION	RED LOAM SOIL																						
SLOPE OF HGL (H/V)	-1:71.71																						

LONGITUDINAL SECTION

0 100 200m

NOTES:

1. CONTOUR LEVELS ARE IN METERS AT TWO METER INTERVALS
2. GRID VALUES ARE IN METERS AT 200 METER INTERVALS
3. GEOLOGICAL CONDITIONS INDICATED ON DRAWING ARE FOR GENERAL GUIDANCE ONLY

LEGEND:

1480	CONTOURS
	PROPOSED TREATED WATER GRAVITY MAIN
V.J.	VIKING JOHNSON
GV	GATE VALVE
SV-01	SECTIONAL VALVE & No.
WO-01	WASHOUT VALVE & No.
SAV-01	AIR VALVE & No.
WM	WATER METER
	PROPOSED MASONRY CHAMBER
	PROPOSED VALVE BOX
n	PIPELINE GRADIENT WITH SLOPE DIRECTION (SLOPE MIN. OR 1 IN n)

ISSUED FOR CONSTRUCTION

	REVISIONS		SIGN	DATE	APPROVED
		BY			
		CHECKED			
		BY			
		CHECKED			
		BY			
		CHECKED			
		BY			
		CHECKED			

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

ENGINEER:
CHIEF MANAGER TECHNICAL SERVICES, TANA WATER WORKS DEVELOPMENT AGENCY
P.O BOX 1292 - 10100,
NYERI, KENYA

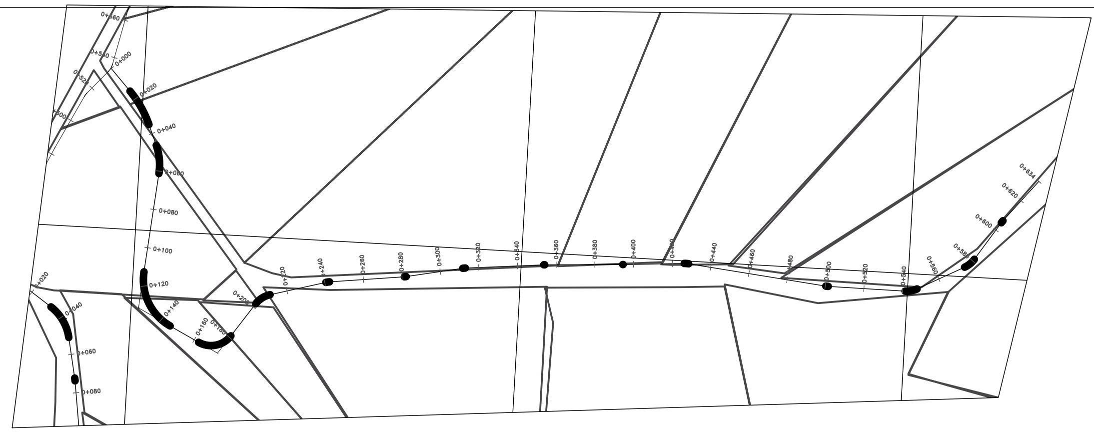
PROJECT TITLE:

EXTENSION OF WATER SUPPLY PIPELINES IN MUKURWEINI

DRAWING TITLE:
LATERAL 7-NGAMWA

CH. 0+000.00 - 0+428.10
SHEET 1 OF 1

Designed and Drawn by:A.M.M	Surveyed by: J.W.W
Checked by: K.N.G	Approved by: D.N.M
Scale: H- 1:4000, V- 1:400	Date: JANUARY 2024
DRG No. EX-MUK/L7/01	



NOTES:

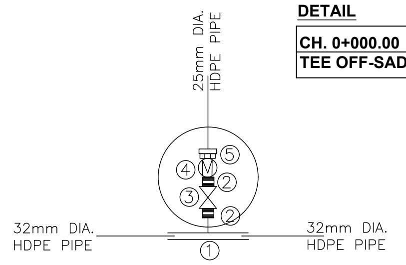
1. CONTOUR LEVELS ARE IN METERS AT TWO METER INTERVALS
2. GRID VALUES ARE IN METERS AT 200 METER INTERVALS
3. GEOLOGICAL CONDITIONS INDICATED ON DRAWING ARE FOR GENERAL GUIDANCE ONLY

LEGEND:

——1480——	CONTOURS
(heavy line)	PROPOSED TREATED WATER GRAVITY MAIN
V.J.	VIKING JOHNSON
GV	GATE VALVE
SV-01	SECTIONAL VALVE & No.
WO-01	WASHOUT VALVE & No.
SAV-01	AIR VALVE & No.
WM	WATER METER
(dashed square)	PROPOSED MASONRY CHAMBER
(dashed circle)	PROPOSED VALVE BOX
(n)	PIPELINE GRADIENT WITH SLOPE DIRECTION (SLOPE MIN. OR 1 IN n)

DETAIL

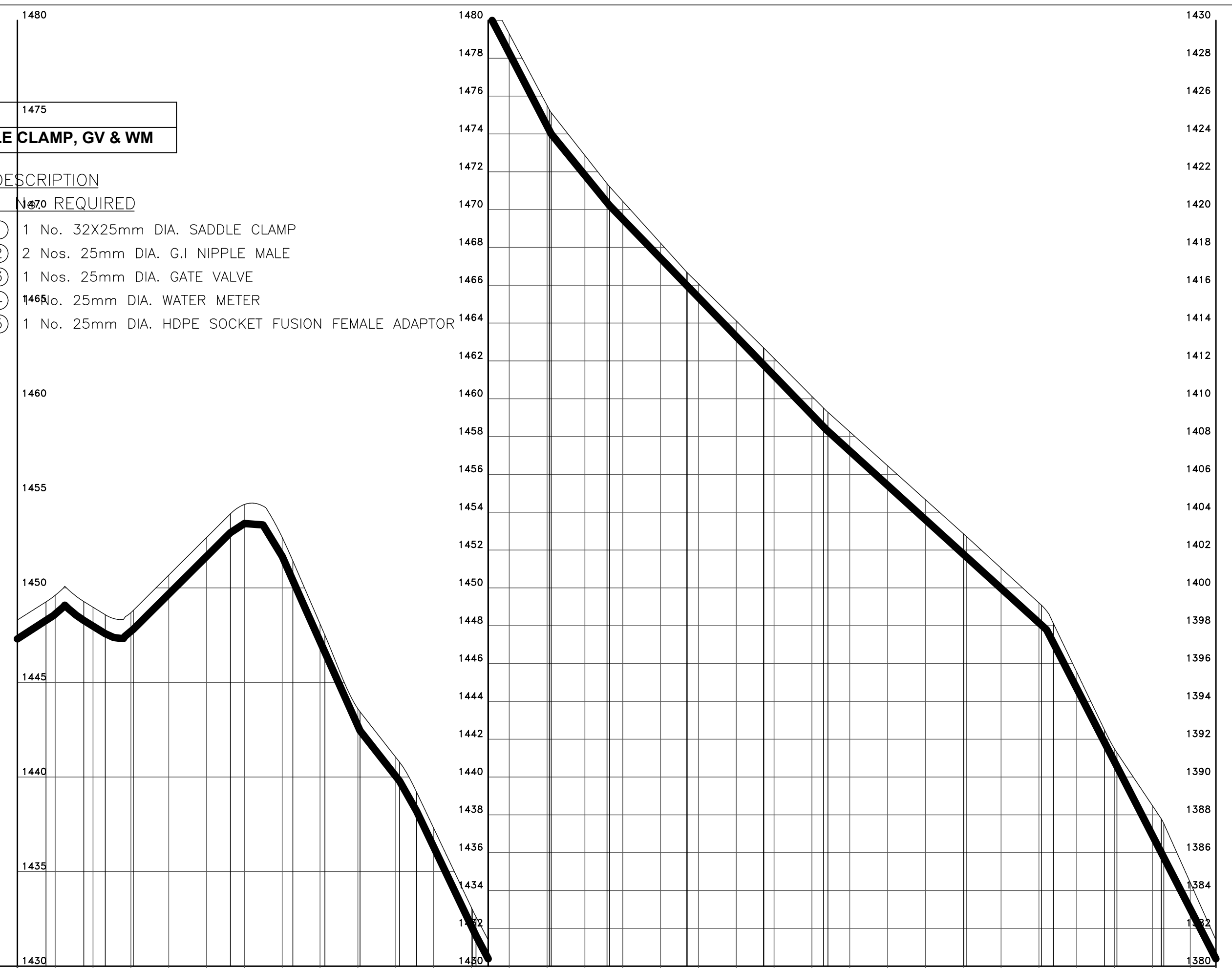
CH. 0+000.00
TEE OFF-SADDLE CLAMP, GV & WM



DESCRIPTION

1 No. REQUIRED

1. 1 No. 32X25mm DIA. SADDLE CLAMP
2. 2 Nos. 25mm DIA. G.I NIPPLE MALE
3. 1 Nos. 25mm DIA. GATE VALVE
4. 1 No. 25mm DIA. WATER METER
5. 1 No. 25mm DIA. HDPE SOCKET FUSION FEMALE ADAPTOR



DISTANCE IN KILOMETERS	EXISTING GROUND LEVEL (m)	INVERT LEVELS (m)	DEPTH OF INVERT (m)	HGL (m) DATUM (m)
0+000.00	1448.30	1447.30	1.00	1494.12
0+020.00	1449.61	1448.62	0.99	1493.96
0+040.00	1448.98	1447.98	1.00	1493.79
0+060.00	1448.69	1447.70	0.99	1493.63
0+080.00	1450.67	1449.67	1.00	1493.47
0+100.00	1452.66	1451.66	1.00	1493.30
0+120.00	1454.41	1453.40	1.01	1493.14
0+140.00	1452.67	1451.67	1.00	1492.98
0+160.00	1448.10	1447.17	0.93	1492.81
0+180.00	1443.61	1442.70	0.90	1492.65
0+200.00	1441.04	1440.04	1.00	1492.48
0+220.00	1437.31	1436.32	0.99	1492.32
0+240.00	1433.10	1432.12	0.98	1492.16
0+260.00	1429.29	1428.28	1.01	1491.99
0+280.00	1425.51	1424.42	1.09	1491.83
0+300.00	1422.86	1421.81	1.05	1491.67
0+320.00	1420.44	1419.49	0.95	1491.50
0+340.00	1418.23	1417.43	0.80	1491.34
0+360.00	1416.08	1415.36	0.73	1491.18
0+380.00	1414.12	1413.29	0.83	1491.01
0+400.00	1412.14	1411.22	0.92	1490.85
0+420.00	1410.13	1409.15	0.98	1490.68
0+440.00	1408.25	1407.24	1.02	1490.52
0+460.00	1406.46	1405.42	1.04	1490.36
0+480.00	1404.66	1403.60	1.06	1490.19
0+500.00	1402.87	1401.79	1.08	1490.03
0+520.00	1401.04	1399.97	1.07	1489.87
0+540.00	1399.21	1398.15	1.05	1489.70
0+560.00	1395.54	1394.68	0.86	1489.54
0+580.00	1391.48	1390.80	0.69	1489.38
0+600.00	1388.49	1386.91	1.58	1489.21
0+620.00	1384.42	1383.02	1.39	1489.05
0+633.55	1381.39	1380.39	1.00	1488.94

TYPE OF PIPE AND SIZE: 25mm Hdpe PN 10 | 25mm Hdpe PN 12.5 | 25mm Hdpe PN 16

GEOLOGICAL CONDITION: RED LOAM SOIL

SLOPE OF HGL (H/V): −1:122.23

LONGITUDINAL SECTION

0 100 200m

ISSUED FOR CONSTRUCTION

	REVISIONS		SIGN	DATE	APPROVED
		BY			
		CHECKED			
		BY			
		CHECKED			
		BY			
		CHECKED			
		BY			
		CHECKED			

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

ENGINEER: **CHIEF MANAGER TECHNICAL SERVICES, TANA WATER WORKS DEVELOPMENT AGENCY**
P.O BOX 1292 - 10100,
NYERI, KENYA

PROJECT TITLE:

EXTENSION OF WATER SUPPLY PIPELINES IN MUKURWEINI

DRAWING TITLE:
LATERAL 8-NGAMWA

CH. 0+000.00 - 0+633.55
SHEET 1 OF 1

Designed and Drawn by: A.M.M	Surveyed by: J.W.W
Checked by: K.N.G	Approved by: D.N.M
Scale: H- 1:4000, V- 1:400	Date: JANUARY 2024
DRG No.	EX-MUK/L8/01