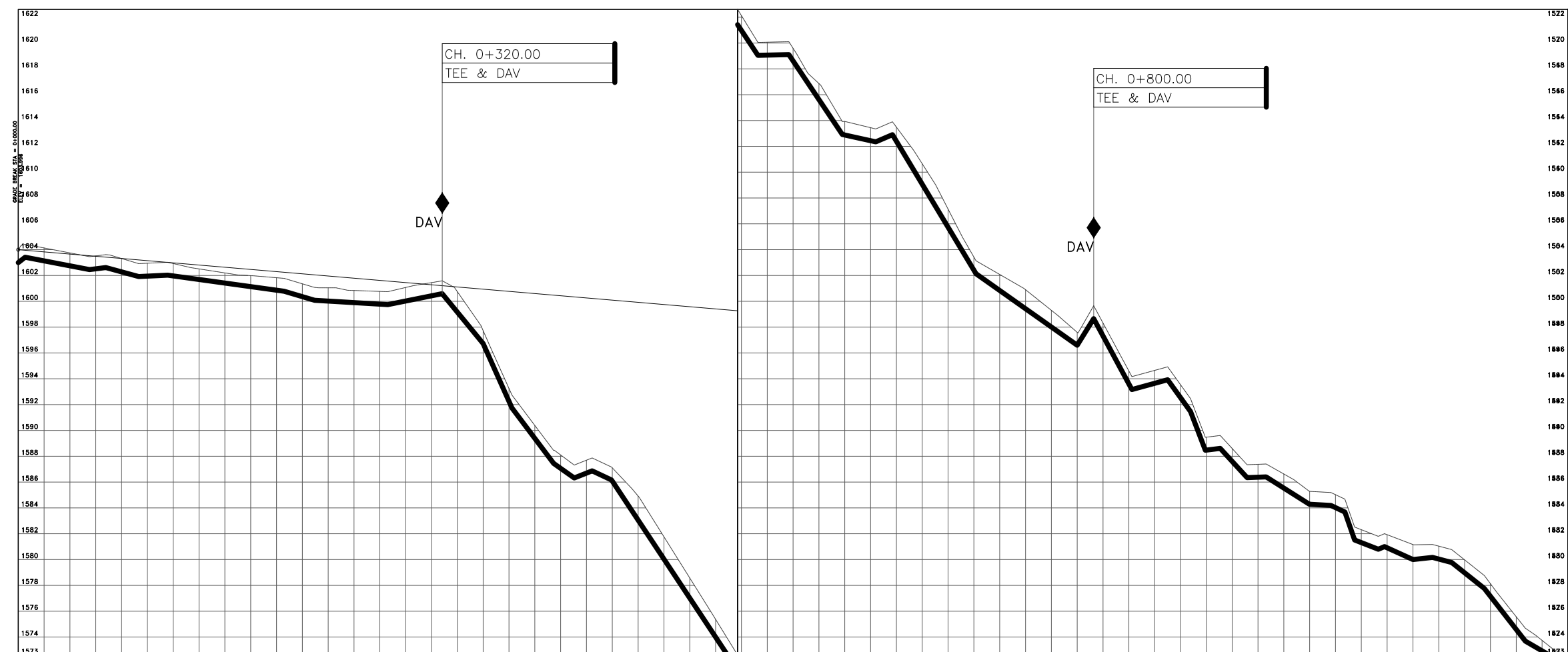


KMGO (1) PI

- NOTES:**
1. CONTOUR LEVELS ARE IN METERS AT TWO METER INTERVALS
  2. GRID VALUES ARE IN METERS AT 100 METER INTERVALS
  3. GEOLOGICAL CONDITIONS INDICATED ON DRAWING ARE FOR GENERAL GUIDANCE ONLY

- LEGEND:**
- PROPOSED TREATED WATER GRAVITY MAIN
  - ⤵ 30° HORIZONTAL BEND (H) OR VERTICAL BEND (V) WITH ANGLE INDICATED
  - EX. EXISTING
  - DAV DOUBLE ORIFICE AIR VALVE
  - GV GATE VALVE
  - SV SECTIONAL VALVE
  - WO WASHOUT VALVE
  - LAV LARGE AIR VALVE
  - SAV SMALL ORIFICE AIRVALVE
  - PROPOSED MASONRY CHAMBER
  - ↘ n DIRECTION (SLOPE MIN. OR 1 IN n)



DISTANCE IN KILOMETERS	EXISTING GROUND LEVEL (m)	INVERT LEVELS (m)	DEPTH OF INVERT (m)	HGL (m) DATUM (m)
0+000.00	1604.00	1603.00	1.00	1604.00
0+020.00	1604.13	1603.13	1.00	1603.83
0+040.00	1603.75	1602.75	1.00	1603.66
0+060.00	1603.52	1602.52	1.00	1603.49
0+080.00	1603.31	1602.28	1.03	1603.32
0+100.00	1602.95	1601.95	1.00	1603.15
0+120.00	1602.93	1601.97	0.86	1602.89
0+140.00	1602.51	1601.69	0.82	1602.81
0+160.00	1602.20	1601.41	0.79	1602.64
0+180.00	1601.99	1601.14	0.85	1602.47
0+200.00	1601.83	1600.86	0.97	1602.30
0+220.00	1601.35	1600.36	0.99	1602.13
0+240.00	1601.04	1600.02	1.02	1601.96
0+260.00	1600.84	1599.90	0.94	1601.79
0+280.00	1600.77	1599.78	0.99	1601.62
0+300.00	1601.07	1600.02	1.05	1601.45
0+320.00	1601.45	1600.43	1.02	1601.28
0+340.00	1600.75	1599.16	1.59	1601.11
0+360.00	1597.73	1596.73	1.00	1600.94
0+380.00	1593.25	1592.25	1.00	1600.77
0+400.00	1590.39	1589.39	1.00	1600.60
0+420.00	1588.10	1587.06	1.04	1600.43
0+440.00	1587.69	1586.69	1.00	1600.26
0+460.00	1587.10	1586.08	1.03	1600.09
0+480.00	1584.92	1583.06	1.86	1599.92
0+500.00	1581.76	1580.04	1.73	1599.75
0+520.00	1578.57	1577.02	1.55	1599.58
0+540.00	1575.37	1574.00	1.37	1599.41
0+560.00	1572.12	1570.98	1.15	1599.24
0+580.00	1570.07	1569.07	1.00	1599.07
0+600.00	1569.59	1568.61	0.98	1598.90
0+620.00	1566.87	1565.62	1.24	1598.73
0+640.00	1563.93	1562.88	1.05	1598.56
0+660.00	1563.45	1562.44	1.01	1598.39
0+680.00	1563.49	1562.39	1.10	1598.22
0+700.00	1560.65	1559.07	1.59	1598.05
0+720.00	1557.14	1555.74	1.40	1597.88
0+740.00	1553.43	1552.41	1.01	1597.71
0+760.00	1552.08	1550.84	1.24	1597.54
0+780.00	1550.90	1549.42	1.47	1597.37
0+800.00	1549.30	1548.01	1.29	1597.20
0+820.00	1547.60	1546.60	1.00	1597.03
0+840.00	1546.31	1547.31	1.00	1596.86
0+860.00	1544.60	1543.60	1.00	1596.69
0+880.00	1544.65	1543.65	1.00	1596.52
0+900.00	1543.54	1542.54	1.00	1596.35
0+920.00	1539.48	1538.48	1.00	1596.18
0+940.00	1538.60	1537.60	1.00	1596.01
0+960.00	1537.38	1536.38	1.00	1595.84
0+980.00	1536.63	1535.63	1.00	1595.67
1+000.00	1535.28	1534.28	1.00	1595.50
1+020.00	1535.02	1534.02	1.00	1595.33
1+040.00	1532.31	1531.31	1.00	1595.17
1+060.00	1531.92	1530.91	1.02	1595.00
1+080.00	1531.16	1530.00	1.16	1594.83
1+100.00	1531.04	1530.04	1.00	1594.66
1+120.00	1529.98	1528.98	1.00	1594.49
1+140.00	1528.13	1527.15	0.97	1594.32
1+160.00	1525.57	1524.58	0.88	1594.15
1+180.00	1523.74	1522.93	0.81	1593.98
1+200.00	1522.60	1521.76	0.84	1593.81

OD 225 MM HDPE PIPE (PN10)  
Q=0.03M3/S  
RED LOAM SOIL

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

PROJECT TITLE:  
**KIAMUGUONGO WATER PTOJECT**

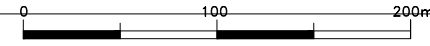
DRAWING TITLE:  
**KIAMUGUONGO MAIN  
TRANSMISSION LINE**

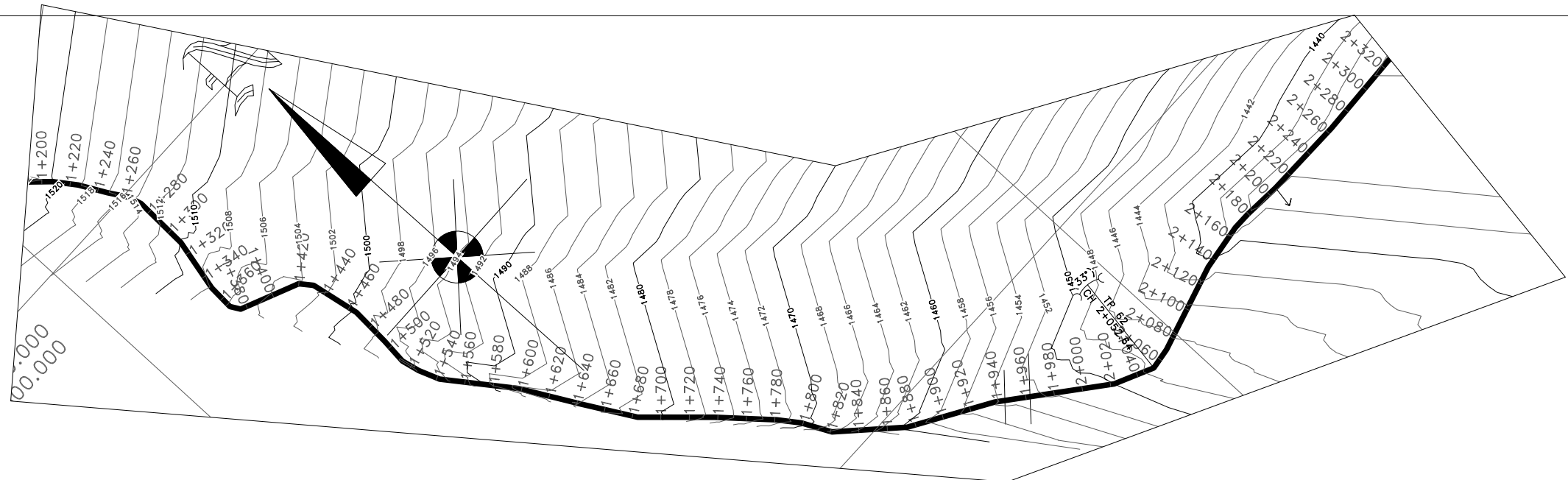
**CH. 0+000.00 - 1+200.00  
SHEET 1 OF 11**

Designed by: D.N.W      Drawn by: A.M.M  
Checked by: J.M.M      Approved by: D.N.M  
Scale: H- 1:4000, V- 1:400      Date: AUGUST 2022

DRG No. **KMGO/GM/01**

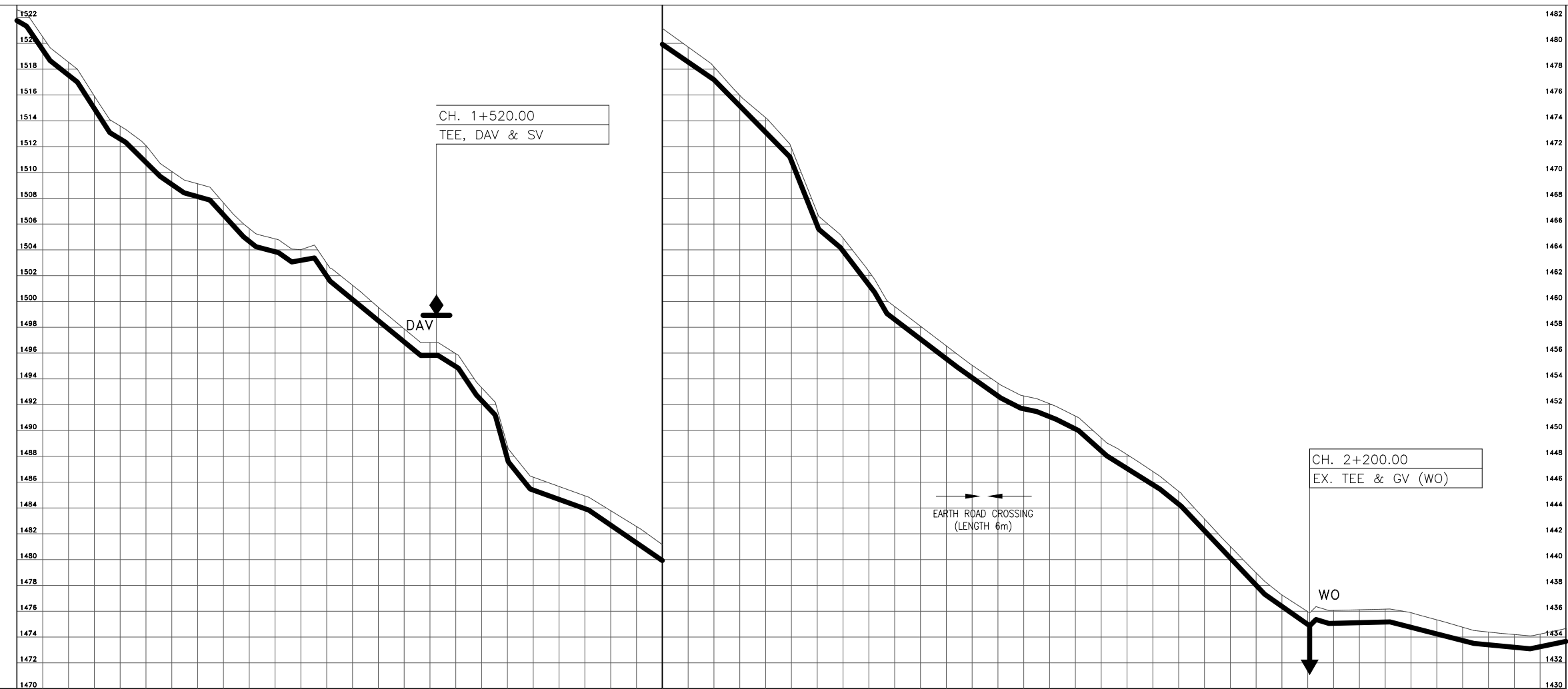
**LONGITUDINAL SECTION**





- NOTES:**
1. CONTOUR LEVELS ARE IN METERS AT TWO METER INTERVALS
  2. GRID VALUES ARE IN METERS AT 100 METER INTERVALS
  3. GEOLOGICAL CONDITIONS INDICATED ON DRAWING ARE FOR GENERAL GUIDANCE ONLY

- LEGEND:**
- PROPOSED TREATED WATER GRAVITY MAIN
  - ⤵ 30° HORIZONTAL BEND (H) OR VERTICAL BEND (V) WITH ANGLE INDICATED
  - EX. EXISTING
  - DAV DOUBLE ORIFICE AIR VALVE
  - GV GATE VALVE
  - SV SECTIONAL VALVE
  - WO WASHOUT VALVE
  - LAV LARGE AIR VALVE
  - SAV SMALL ORIFICE AIRVALVE
  - PROPOSED MASONRY CHAMBER
  - ↘ n DIRECTION (SLOPE MIN. OR 1 IN n)



DISTANCE IN KILOMETERS	EXISTING GROUND LEVEL (m)	INVERT LEVELS (m)	DEPTH OF INVERT (m)	HGL (m) DATUM (m)	TYPE OF PIPE AND SIZE FLOW PARAMETERS	GEOLOGICAL CONDITIONS	GRADIENT
1+200.00	1522.60	1521.76	0.84	1593.81	OD 225 MM HDPE PIPE (PN16)	RED LOAM SOIL	1:18.83
1+220.00	1520.50	1519.50	1.00	1593.64			1:12.68
1+240.00	1518.54	1517.54	1.00	1593.47	OD 225 MM HDPE PIPE (PN20)	RED LOAM SOIL	1:6.42
1+260.00	1515.92	1514.95	0.97	1593.30			1:16.38
1+280.00	1513.59	1512.59	1.00	1593.13	OD 225 MM HDPE PIPE (PN20)	RED LOAM SOIL	1:10.12
1+300.00	1510.07	1510.07	0.00	1592.98			1:14.34
1+320.00	1509.12	1508.12	1.00	1592.82	OD 225 MM HDPE PIPE (PN20)	RED LOAM SOIL	1:35.60
1+340.00	1507.65	1506.71	0.94	1592.45			1:18.12
1+360.00	1505.65	1504.66	0.99	1592.28	OD 225 MM HDPE PIPE (PN20)	RED LOAM SOIL	1:12.61
1+380.00	1504.85	1503.85	1.00	1592.11			1:17.81
1+400.00	1504.02	1503.19	0.83	1591.94	OD 225 MM HDPE PIPE (PN20)	RED LOAM SOIL	1:14.27
1+420.00	1502.97	1501.97	1.00	1591.77			1:15.83
1+440.00	1501.26	1500.15	1.11	1591.60	OD 225 MM HDPE PIPE (PN20)	RED LOAM SOIL	1:18.72
1+460.00	1499.55	1498.51	1.04	1591.43			1:27.71
1+480.00	1497.88	1496.87	1.01	1591.26	OD 225 MM HDPE PIPE (PN20)	RED LOAM SOIL	1:14.58
1+500.00	1496.82	1495.82	1.00	1591.09			1:9.83
1+520.00	1495.96	1494.96	1.00	1590.92	OD 225 MM HDPE PIPE (PN20)	RED LOAM SOIL	1:13.99
1+540.00	1493.32	1492.32	1.00	1590.75			1:11.82
1+560.00	1488.81	1487.81	1.00	1590.58	OD 225 MM HDPE PIPE (PN20)	RED LOAM SOIL	1:7.85
1+580.00	1486.39	1485.39	1.00	1590.41			1:15.13
1+600.00	1485.67	1484.67	1.00	1590.24	OD 225 MM HDPE PIPE (PN20)	RED LOAM SOIL	1:12.43
1+620.00	1484.94	1483.94	1.00	1590.07			1:8.48
1+640.00	1483.79	1482.67	1.12	1589.90	OD 225 MM HDPE PIPE (PN20)	RED LOAM SOIL	1:11.17
1+660.00	1481.16	1479.93	1.23	1589.73			1:15.96
1+680.00	1479.72	1478.56	1.16	1589.56	OD 225 MM HDPE PIPE (PN20)	RED LOAM SOIL	1:12.43
1+700.00	1478.18	1477.18	1.00	1589.39			1:8.48
1+720.00	1475.97	1475.15	0.82	1589.22	OD 225 MM HDPE PIPE (PN20)	RED LOAM SOIL	1:11.32
1+740.00	1474.25	1473.11	1.14	1589.05			1:9.97
1+760.00	1471.90	1470.90	1.00	1588.88	OD 225 MM HDPE PIPE (PN20)	RED LOAM SOIL	1:11.32
1+780.00	1468.88	1468.88	0.00	1588.71			1:15.96
1+800.00	1465.61	1465.61	0.00	1588.54	OD 225 MM HDPE PIPE (PN20)	RED LOAM SOIL	1:12.43
1+820.00	1462.33	1461.29	1.04	1588.37			1:8.48
1+840.00	1459.61	1458.61	1.00	1588.20	OD 225 MM HDPE PIPE (PN20)	RED LOAM SOIL	1:11.32
1+860.00	1455.08	1454.08	1.00	1588.03			1:15.96
1+880.00	1452.68	1451.68	1.00	1587.86	OD 225 MM HDPE PIPE (PN20)	RED LOAM SOIL	1:12.43
1+900.00	1452.68	1451.68	1.00	1587.69			1:8.48
1+920.00	1450.06	1449.06	0.99	1587.52	OD 225 MM HDPE PIPE (PN20)	RED LOAM SOIL	1:11.32
1+940.00	1445.67	1444.30	1.37	1587.35			1:9.97
1+960.00	1443.67	1442.24	1.43	1587.18	OD 225 MM HDPE PIPE (PN20)	RED LOAM SOIL	1:11.32
1+980.00	1441.02	1440.13	0.89	1587.01			1:15.96
2+000.00	1438.97	1438.02	0.95	1586.84	OD 225 MM HDPE PIPE (PN20)	RED LOAM SOIL	1:12.43
2+020.00	1437.26	1436.38	0.88	1586.67			1:8.48
2+040.00	1435.97	1434.97	1.00	1586.50	OD 225 MM HDPE PIPE (PN20)	RED LOAM SOIL	1:11.32
2+060.00	1435.06	1435.06	0.00	1586.33			1:15.96
2+080.00	1435.11	1435.11	0.00	1586.16	OD 225 MM HDPE PIPE (PN20)	RED LOAM SOIL	1:12.43
2+100.00	1435.16	1435.16	0.00	1586.00			1:8.48
2+120.00	1435.89	1434.75	1.14	1585.83	OD 225 MM HDPE PIPE (PN20)	RED LOAM SOIL	1:11.32
2+140.00	1435.33	1434.24	1.09	1585.66			1:15.96
2+160.00	1434.76	1433.73	1.03	1585.49	OD 225 MM HDPE PIPE (PN20)	RED LOAM SOIL	1:12.43
2+180.00	1434.39	1433.40	0.99	1585.32			1:8.48
2+200.00	1434.20	1433.21	0.99	1585.15	OD 225 MM HDPE PIPE (PN20)	RED LOAM SOIL	1:11.32
2+220.00	1434.23	1433.25	0.98	1585.00			1:15.96
2+240.00	1434.66	1433.66	1.00	1584.83	OD 225 MM HDPE PIPE (PN20)	RED LOAM SOIL	1:12.43
2+260.00	1434.39	1433.40	0.99	1584.66			1:8.48
2+280.00	1434.39	1433.40	0.99	1584.49	OD 225 MM HDPE PIPE (PN20)	RED LOAM SOIL	1:11.32
2+300.00	1434.20	1433.21	0.99	1584.32			1:15.96
2+320.00	1434.23	1433.25	0.98	1584.15	OD 225 MM HDPE PIPE (PN20)	RED LOAM SOIL	1:12.43
2+340.00	1434.23	1433.25	0.98	1584.00			1:8.48
2+360.00	1434.66	1433.66	1.00	1583.83	OD 225 MM HDPE PIPE (PN20)	RED LOAM SOIL	1:11.32
2+380.00	1434.39	1433.40	0.99	1583.66			1:15.96
2+400.00	1434.39	1433.40	0.99	1583.50	OD 225 MM HDPE PIPE (PN20)	RED LOAM SOIL	1:12.43

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

PROJECT TITLE:  
**KIAMUGUONGO WATER PTOJECT**

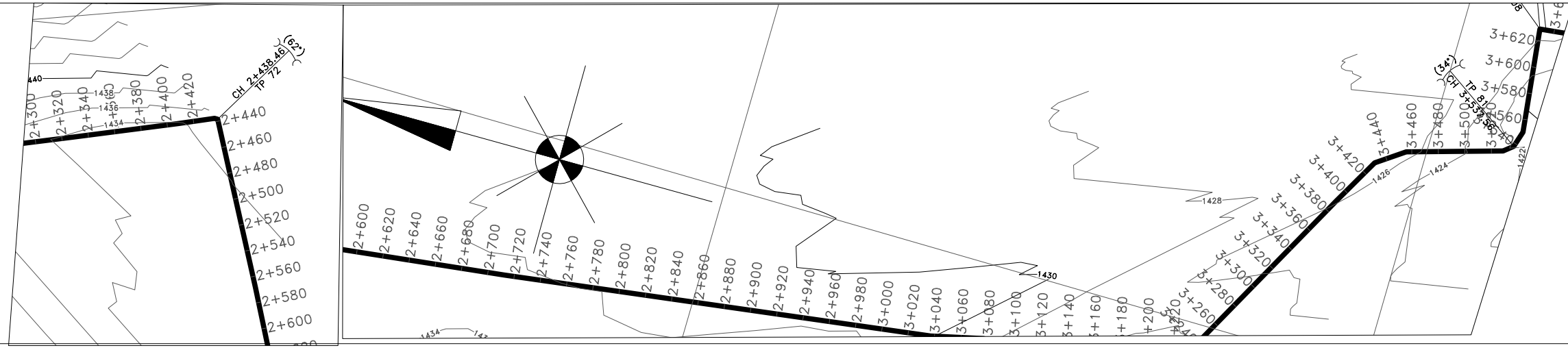
DRAWING TITLE:  
**KIAMUGUONGO MAIN  
TRANSMISSION LINE**

**CH. 1+200.00 - 2+400.00  
SHEET 2 OF 11**

Designed by: D.N.W      Drawn by: A.M.M  
Checked by: J.M.M      Approved by: D.N.M  
Scale: H- 1:4000, V- 1:400      Date: AUGUST 2022

DRG No. **KMG0/GM/02**

**LONGITUDINAL SECTION**



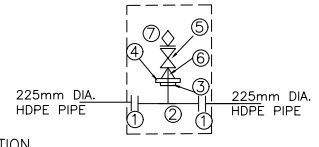
- NOTES:**
1. CONTOUR LEVELS ARE IN METERS AT TWO METER INTERVALS
  2. GRID VALUES ARE IN METERS AT 100 METER INTERVALS
  3. GEOLOGICAL CONDITIONS INDICATED ON DRAWING ARE FOR GENERAL GUIDANCE ONLY

- LEGEND:**
- PROPOSED TREATED WATER GRAVITY MAIN
  - ⤵ 30° HORIZONTAL BEND (H) OR VERTICAL BEND (V) WITH ANGLE INDICATED
  - EX. EXISTING
  - DAV DOUBLE ORIFICE AIR VALVE
  - GV GATE VALVE
  - SV SECTIONAL VALVE
  - WO WASHOUT VALVE
  - LAV LARGE AIR VALVE
  - SAV SMALL ORIFICE AIRVALVE
  - PROPOSED MASONRY CHAMBER
  - ↘ n DIRECTION (SLOPE MIN. OR 1 IN n)

**KMGO (1)**

CH. 2+440.00  
TEE, DAV

DETAIL CH. 0+320, 0+800, 2+440, 3+420, 3+620, 10+460  
TEE & DAV

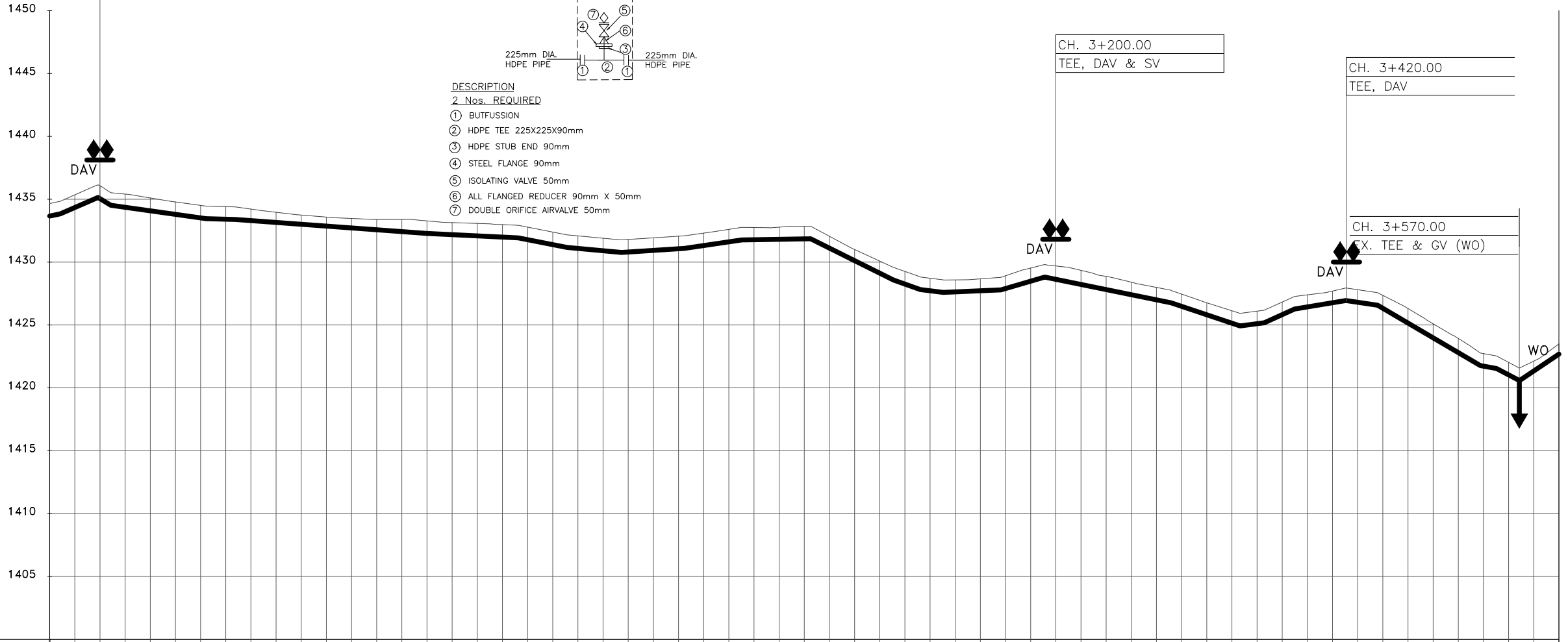


- DESCRIPTION**  
2 Nos. REQUIRED
- 1 BUTFUSSION
  - 2 HDPE TEE 225X225X90mm
  - 3 HDPE STUB END 90mm
  - 4 STEEL FLANGE 90mm
  - 5 ISOLATING VALVE 50mm
  - 6 ALL FLANGED REDUCER 90mm X 50mm
  - 7 DOUBLE ORIFICE AIRVALVE 50mm

CH. 3+200.00  
TEE, DAV & SV

CH. 3+420.00  
TEE, DAV

CH. 3+570.00  
EX. TEE & GV (WO)



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

**PROJECT TITLE:**  
**KIAMUGUONGO WATER PTOJECT**

**DRAWING TITLE:**  
**KIAMUGUONGO MAIN TRANSMISSION LINE**

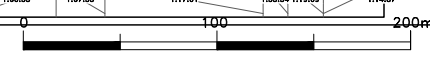
**CH. 2+400.00 - 3+600.00**  
**SHEET 3 OF 11**

Designed by: D.N.W      Drawn by: A.M.M  
Checked by: J.M.M      Approved by: D.N.M  
Scale: H- 1:4000, V- 1:400      Date: AUGUST 2022

**DRG No. KMGO/GM/03**

DISTANCE IN KILOMETERS	EXISTING GROUND LEVEL (m)	INVERT LEVELS (m)	DEPTH OF INVERT (m)	HGL (m) DATUM (m)	TYPE OF PIPE AND SIZE FLOW PARAMETERS	GEOLOGICAL CONDITIONS	GRADIENT
2+400.00	1434.66	1433.66	0.99	1583.62	OD 225 MM HDPE PIPE (PN20) Q=0.03M3/S	RED LOAM SOIL	1:23.01
2+420.00	1435.35	1434.34	1.01	1583.45			1:16.24
2+440.00	1436.07	1435.05	1.02	1583.28		1:17.16	
2+460.00	1435.41	1434.36	1.05	1583.11		1:36.79	
2+480.00	1435.10	1434.08	1.02	1582.94		1:206.62	
2+500.00	1434.79	1433.80	0.99	1582.77		1:137.11	
2+520.00	1434.51	1433.52	1.00	1582.60		1:206.62	
2+540.00	1434.41	1433.41	1.00	1582.43		1:30.87	
2+560.00	1434.22	1433.30	0.92	1582.26		1:1108.45	
2+580.00	1433.96	1433.15	0.81	1582.09		1:154.00	
2+600.00	1433.74	1433.01	0.73	1581.92		1:87.79	
2+620.00	1433.58	1432.86	0.72	1581.75		1:181.40	
2+640.00	1433.47	1432.72	0.75	1581.58		1:20.08	
2+660.00	1433.39	1432.57	0.82	1581.41		1:28.03	
2+680.00	1433.40	1432.42	0.97	1581.24		1:80.88	
2+700.00	1433.28	1432.28	1.00	1581.07		1:229.16	
2+720.00	1433.14	1432.18	0.96	1580.90		1:34.07	
2+740.00	1433.08	1432.09	0.99	1580.73		1:49.07	
2+760.00	1432.98	1431.99	0.99	1580.56		1:29.81	
2+780.00	1432.78	1431.78	1.00	1580.39		1:76.46	
2+800.00	1432.59	1431.59	1.00	1580.22		1:23.00	
2+820.00	1432.09	1431.09	1.00	1580.05		1:80.55	
2+840.00	1431.90	1430.90	1.00	1579.88		1:149.07	
2+860.00	1431.80	1430.80	1.00	1579.71		1:29.81	
2+880.00	1431.93	1430.93	1.00	1579.54		1:76.46	
2+900.00	1432.06	1431.06	1.00	1579.37		1:23.00	
2+920.00	1432.31	1431.32	0.99	1579.20		1:80.55	
2+940.00	1432.60	1431.61	0.99	1579.03		1:149.07	
2+960.00	1432.75	1431.78	0.97	1578.86		1:29.81	
2+980.00	1432.78	1431.81	0.97	1578.69		1:76.46	
3+000.00	1432.85	1431.85	1.00	1578.52		1:23.00	
3+020.00	1432.05	1431.11	0.94	1578.35		1:80.55	
3+040.00	1431.00	1430.11	0.89	1578.18		1:149.07	
3+060.00	1430.08	1429.12	0.96	1578.01		1:29.81	
3+080.00	1429.26	1428.25	1.01	1577.84		1:76.46	
3+100.00	1428.72	1427.72	1.00	1577.67		1:23.00	
3+120.00	1428.59	1427.63	0.96	1577.50		1:80.55	
3+140.00	1428.67	1427.72	0.95	1577.33		1:149.07	
3+160.00	1428.91	1427.90	1.02	1577.16		1:29.81	
3+180.00	1429.53	1428.48	1.04	1576.99		1:76.46	
3+200.00	1429.69	1428.63	1.06	1576.82		1:23.00	
3+220.00	1429.34	1428.22	1.12	1576.65		1:80.55	
3+240.00	1428.86	1427.81	1.05	1576.48		1:149.07	
3+260.00	1428.40	1427.41	1.00	1576.31		1:29.81	
3+280.00	1427.99	1427.00	0.99	1576.14		1:76.46	
3+300.00	1427.46	1426.48	0.97	1575.97		1:23.00	
3+320.00	1426.76	1425.81	0.95	1575.80		1:80.55	
3+340.00	1426.13	1425.14	0.99	1575.63		1:149.07	
3+360.00	1426.10	1425.10	1.00	1575.47		1:29.81	
3+380.00	1426.82	1425.82	1.00	1575.30		1:76.46	
3+400.00	1427.39	1426.44	0.96	1575.13		1:23.00	
3+420.00	1427.70	1426.77	0.93	1574.96		1:80.55	
3+440.00	1427.80	1426.80	1.00	1574.79		1:149.07	
3+460.00	1427.36	1426.33	1.03	1574.62		1:29.81	
3+480.00	1426.31	1425.15	1.16	1574.45		1:76.46	
3+500.00	1425.09	1423.98	1.12	1574.28		1:23.00	
3+520.00	1423.93	1422.80	1.13	1574.11		1:80.55	
3+540.00	1422.72	1421.72	1.00	1573.94		1:149.07	
3+560.00	1422.02	1421.03	0.99	1573.77		1:29.81	
3+580.00	1422.12	1421.34	0.79	1573.60		1:76.46	
3+600.00	1423.49	1422.68	0.81	1573.43		1:23.00	

**LONGITUDINAL SECTION**

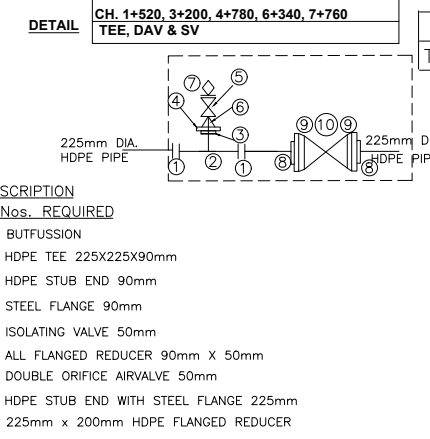
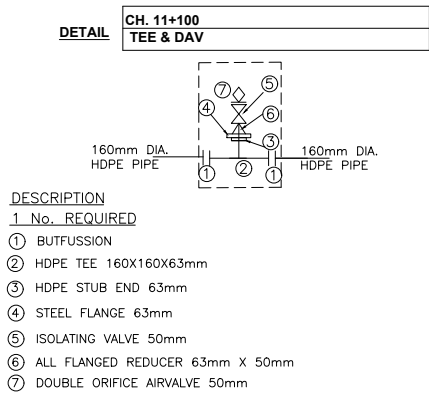
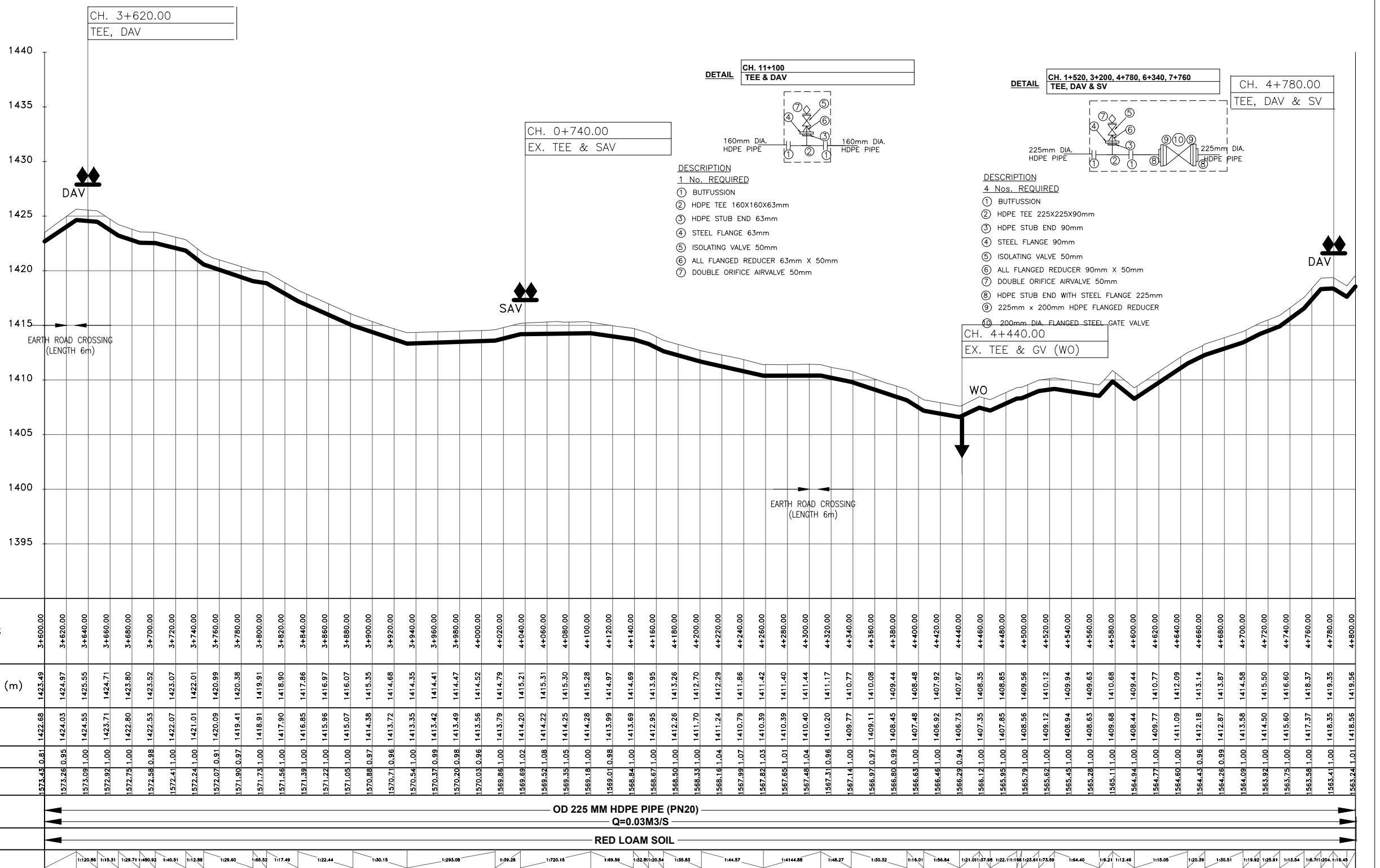
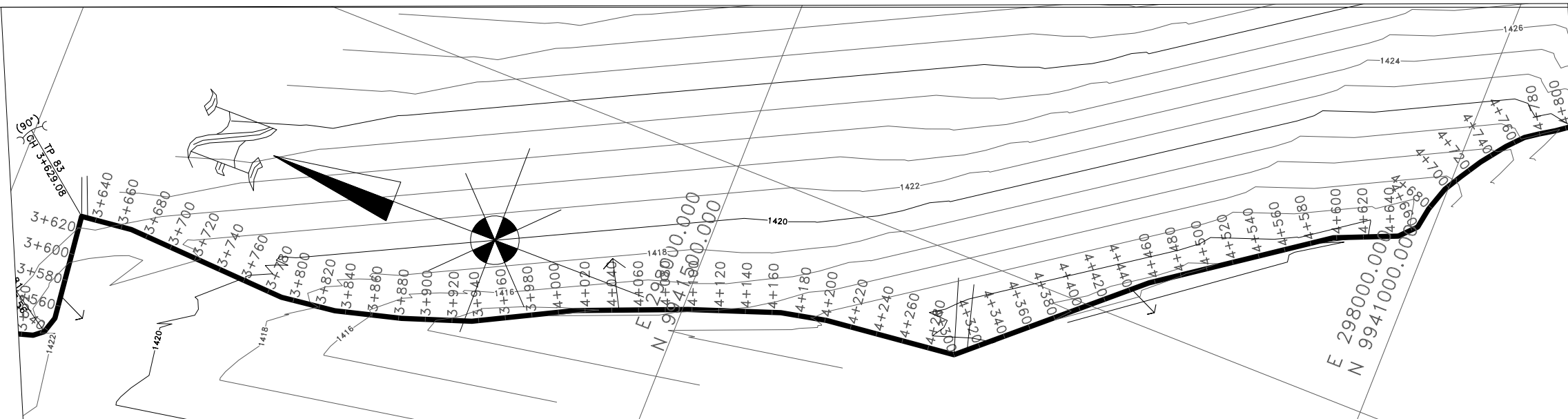




- NOTES:**
1. CONTOUR LEVELS ARE IN METERS AT TWO METER INTERVALS
  2. GRID VALUES ARE IN METERS AT 100 METER INTERVALS
  3. GEOLOGICAL CONDITIONS INDICATED ON DRAWING ARE FOR GENERAL GUIDANCE ONLY

**LEGEND:**

- PROPOSED TREATED WATER GRAVITY MAIN
- HORIZONTAL BEND (H) OR VERTICAL BEND (V) WITH ANGLE INDICATED
- EX. EXISTING
- DAV DOUBLE ORIFICE AIR VALVE
- GV GATE VALVE
- SV SECTIONAL VALVE
- WO WASHOUT VALVE
- LAV LARGE AIR VALVE
- SAV SMALL ORIFICE AIRVALVE
- PROPOSED MASONRY CHAMBER
- DIRECTION (SLOPE MIN. OR 1 IN n)



**ISSUED FOR CONSTRUCTION**

REVISIONS	SIGN	DATE	APPROVED

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

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

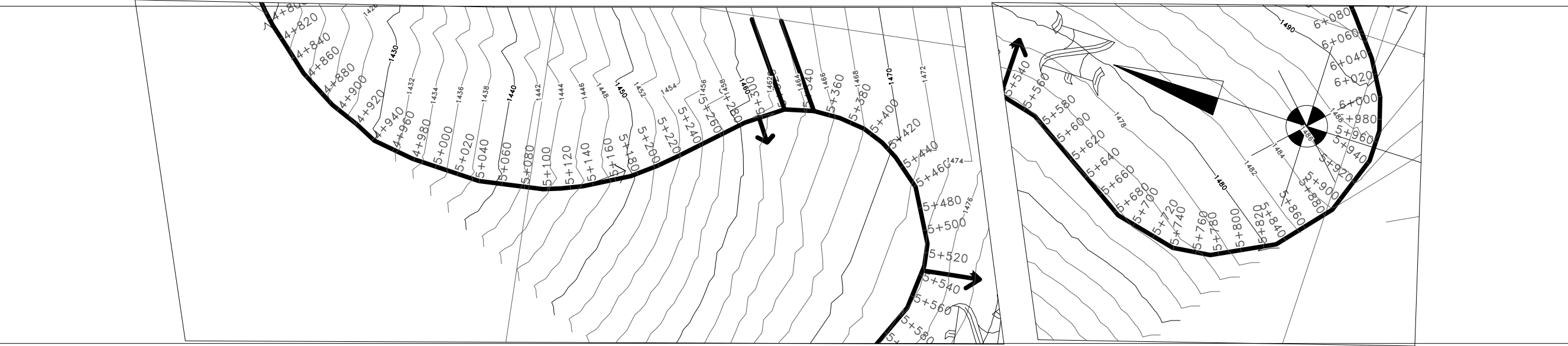
**PROJECT TITLE:** KIAMUGUONGO WATER PTOJECT

**DRAWING TITLE:** KIAMUGUONGO MAIN TRANSMISSION LINE

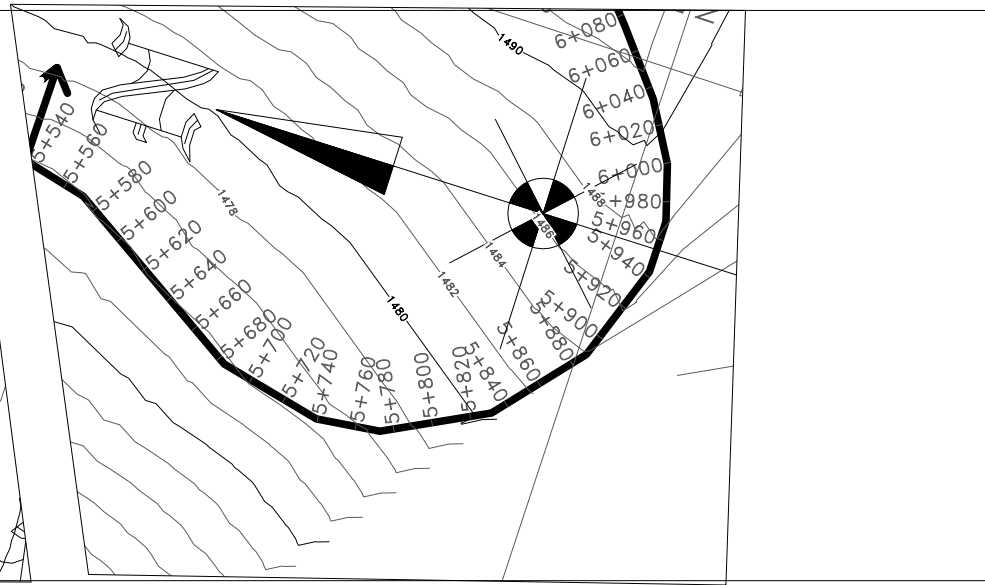
**CH. 3+600.00 - 4+800.00**  
**SHEET 4 OF 11**

Designed by: D.N.W      Drawn by: A.M.M  
Checked by: J.M.M      Approved by: D.N.M  
Scale: H- 1:4000, V- 1:400      Date: AUGUST 2022  
DRG No. **KMG0/GM/04**

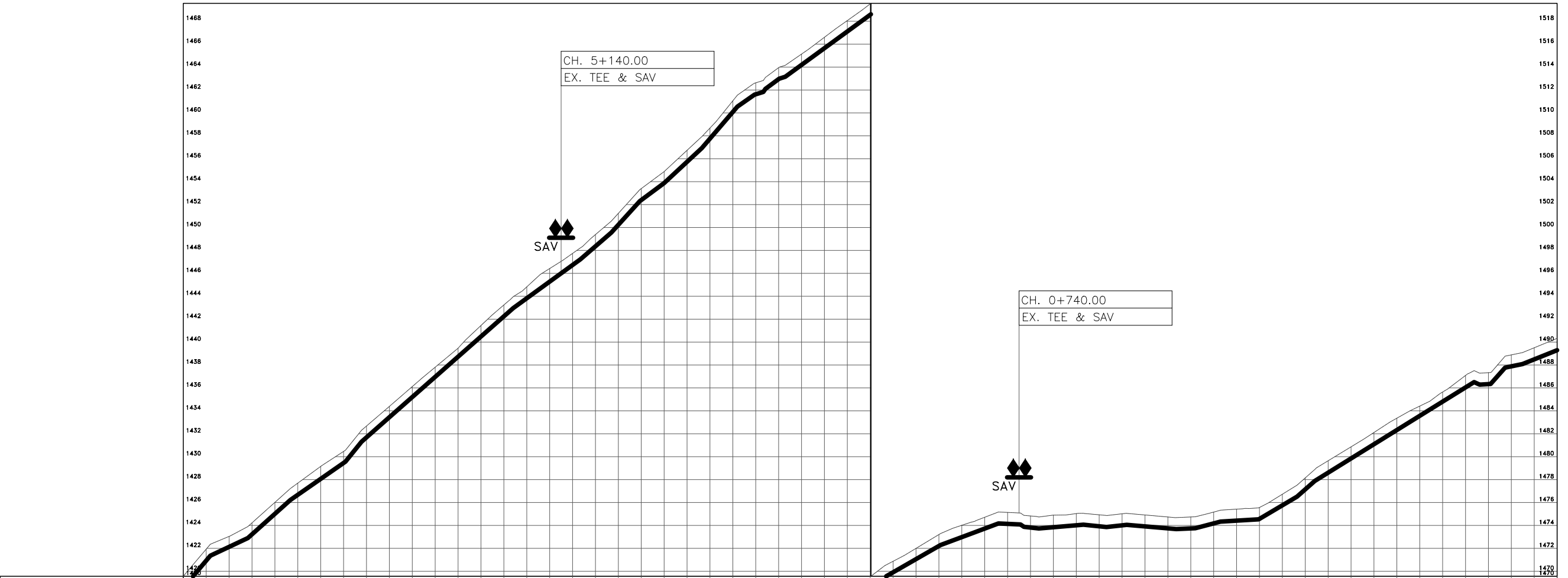
**LONGITUDINAL SECTION**



KMGO (1)



KMGO (1) PROFILE



DISTANCE IN KILOMETERS	EXISTING GROUND LEVEL (m)	INVERT LEVELS (m)	DEPTH OF INVERT (m)	HGL (m) DATUM (m)	TYPE OF PIPE AND SIZE FLOW PARAMETERS	GEOLOGICAL CONDITIONS	GRADIENT
4+800.00	1419.56	1418.56	1.01	1563.24	OD 225 MM HDPE PIPE (PN20)	RED LOAM SOIL	1:8.43
4+820.00	1421.93	1420.93	1.00	1563.07			1:21.28
4+840.00	1423.04	1422.13	0.91	1562.90	OD 225 MM HDPE PIPE (PN16)	RED LOAM SOIL	1:11.19
4+860.00	1424.23	1423.23	1.00	1562.73			1:14.59
4+880.00	1426.01	1425.01	1.00	1562.98	OD 225 MM HDPE PIPE (PN16)	RED LOAM SOIL	1:8.07
4+900.00	1427.89	1426.67	1.02	1562.39			1:11.36
4+920.00	1429.15	1428.06	1.09	1562.22	OD 225 MM HDPE PIPE (PN16)	RED LOAM SOIL	1:13.78
4+940.00	1430.46	1429.45	1.01	1562.05			1:11.36
4+960.00	1432.68	1431.69	0.99	1561.88	OD 225 MM HDPE PIPE (PN16)	RED LOAM SOIL	1:13.78
4+980.00	1434.39	1433.45	0.94	1561.71			1:11.36
5+000.00	1436.12	1435.21	0.91	1561.54	OD 225 MM HDPE PIPE (PN16)	RED LOAM SOIL	1:9.07
5+020.00	1437.81	1436.97	0.84	1561.37			1:11.36
5+040.00	1439.47	1438.73	0.74	1561.20	OD 225 MM HDPE PIPE (PN16)	RED LOAM SOIL	1:13.78
5+060.00	1441.45	1440.49	0.96	1561.03			1:11.36
5+080.00	1443.24	1442.25	1.00	1560.86	OD 225 MM HDPE PIPE (PN16)	RED LOAM SOIL	1:13.78
5+100.00	1444.82	1443.82	0.99	1560.69			1:11.36
5+120.00	1446.42	1445.27	1.14	1560.52	OD 225 MM HDPE PIPE (PN16)	RED LOAM SOIL	1:13.78
5+140.00	1447.74	1446.73	1.01	1560.35			1:11.36
5+160.00	1449.38	1448.36	1.02	1560.18	OD 225 MM HDPE PIPE (PN16)	RED LOAM SOIL	1:13.78
5+180.00	1451.24	1450.24	1.00	1560.01			1:11.36
5+200.00	1453.40	1452.40	1.00	1559.84	OD 225 MM HDPE PIPE (PN16)	RED LOAM SOIL	1:13.78
5+220.00	1454.88	1453.88	1.00	1559.67			1:11.36
5+240.00	1456.74	1455.75	0.99	1559.50	OD 225 MM HDPE PIPE (PN16)	RED LOAM SOIL	1:13.78
5+260.00	1458.68	1457.76	0.92	1559.33			1:11.36
5+280.00	1461.06	1460.09	0.97	1559.16	OD 225 MM HDPE PIPE (PN16)	RED LOAM SOIL	1:13.78
5+300.00	1462.83	1461.63	1.00	1558.99			1:11.36
5+320.00	1463.95	1462.95	1.00	1558.82	OD 225 MM HDPE PIPE (PN16)	RED LOAM SOIL	1:13.78
5+340.00	1465.13	1464.19	0.94	1558.65			1:11.36
5+360.00	1466.50	1465.65	0.85	1558.48	OD 225 MM HDPE PIPE (PN16)	RED LOAM SOIL	1:13.78
5+380.00	1468.06	1467.11	0.95	1558.31			1:11.36
5+400.00	1469.52	1468.56	0.96	1558.14	OD 225 MM HDPE PIPE (PN16)	RED LOAM SOIL	1:13.78
5+420.00	1470.87	1469.91	0.96	1557.97			1:11.36
5+440.00	1472.00	1471.06	0.94	1557.80	OD 225 MM HDPE PIPE (PN16)	RED LOAM SOIL	1:13.78
5+460.00	1473.20	1472.21	1.00	1557.63			1:11.36
5+480.00	1474.01	1472.98	1.03	1557.46	OD 225 MM HDPE PIPE (PN16)	RED LOAM SOIL	1:13.78
5+500.00	1474.71	1473.73	0.98	1557.29			1:11.36
5+520.00	1475.14	1474.14	1.00	1557.12	OD 225 MM HDPE PIPE (PN16)	RED LOAM SOIL	1:13.78
5+540.00	1474.83	1473.82	1.01	1556.95			1:11.36
5+560.00	1474.90	1473.84	1.05	1556.78	OD 225 MM HDPE PIPE (PN16)	RED LOAM SOIL	1:13.78
5+580.00	1475.03	1474.01	1.02	1556.61			1:11.36
5+600.00	1474.93	1473.92	1.00	1556.44	OD 225 MM HDPE PIPE (PN16)	RED LOAM SOIL	1:13.78
5+620.00	1475.02	1474.01	1.01	1556.27			1:11.36
5+640.00	1474.91	1473.92	1.00	1556.10	OD 225 MM HDPE PIPE (PN16)	RED LOAM SOIL	1:13.78
5+660.00	1474.74	1473.75	0.99	1555.94			1:11.36
5+680.00	1474.74	1473.74	1.00	1555.77	OD 225 MM HDPE PIPE (PN16)	RED LOAM SOIL	1:13.78
5+700.00	1475.17	1474.18	0.99	1555.60			1:11.36
5+720.00	1475.42	1474.42	1.00	1555.43	OD 225 MM HDPE PIPE (PN16)	RED LOAM SOIL	1:13.78
5+740.00	1475.57	1474.57	0.99	1555.26			1:11.36
5+760.00	1476.72	1475.76	0.97	1555.09	OD 225 MM HDPE PIPE (PN16)	RED LOAM SOIL	1:13.78
5+780.00	1478.15	1477.15	1.00	1554.92			1:11.36
5+800.00	1479.84	1478.61	1.04	1554.75	OD 225 MM HDPE PIPE (PN16)	RED LOAM SOIL	1:13.78
5+820.00	1480.86	1479.85	1.01	1554.58			1:11.36
5+840.00	1482.11	1481.09	1.02	1554.41	OD 225 MM HDPE PIPE (PN16)	RED LOAM SOIL	1:13.78
5+860.00	1483.36	1482.33	1.03	1554.24			1:11.36
5+880.00	1484.41	1483.57	0.85	1554.07	OD 225 MM HDPE PIPE (PN16)	RED LOAM SOIL	1:13.78
5+900.00	1485.64	1484.81	0.84	1553.90			1:11.36
5+920.00	1487.09	1486.05	1.04	1553.73	OD 225 MM HDPE PIPE (PN16)	RED LOAM SOIL	1:13.78
5+940.00	1487.33	1486.33	1.00	1553.56			1:11.36
5+960.00	1488.88	1487.88	1.00	1553.39	OD 225 MM HDPE PIPE (PN16)	RED LOAM SOIL	1:13.78
5+980.00	1489.50	1488.49	1.01	1553.22			1:11.36
6+000.00	1490.33	1489.29	1.03	1553.05	OD 225 MM HDPE PIPE (PN16)	RED LOAM SOIL	1:28.08

LONGITUDINAL SECTION

- NOTES:**
1. CONTOUR LEVELS ARE IN METERS AT TWO METER INTERVALS
  2. GRID VALUES ARE IN METERS AT 100 METER INTERVALS
  3. GEOLOGICAL CONDITIONS INDICATED ON DRAWING ARE FOR GENERAL GUIDANCE ONLY

- LEGEND:**
- PROPOSED TREATED WATER GRAVITY MAIN
  - EX. EXISTING
  - DAV DOUBLE ORIFICE AIR VALVE
  - GV GATE VALVE
  - SV SECTIONAL VALVE
  - WO WASHOUT VALVE
  - LAV LARGE AIR VALVE
  - SAV SMALL ORIFICE AIRVALVE
  - PROPOSED MASONRY CHAMBER
  - /— 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: **THE CHIEF EXECUTIVE OFFICER  
TANA WATER WORKS DEVELOPMENT  
AGENCY**  
P.O BOX 1292 - 10100,  
NYERI, KENYA

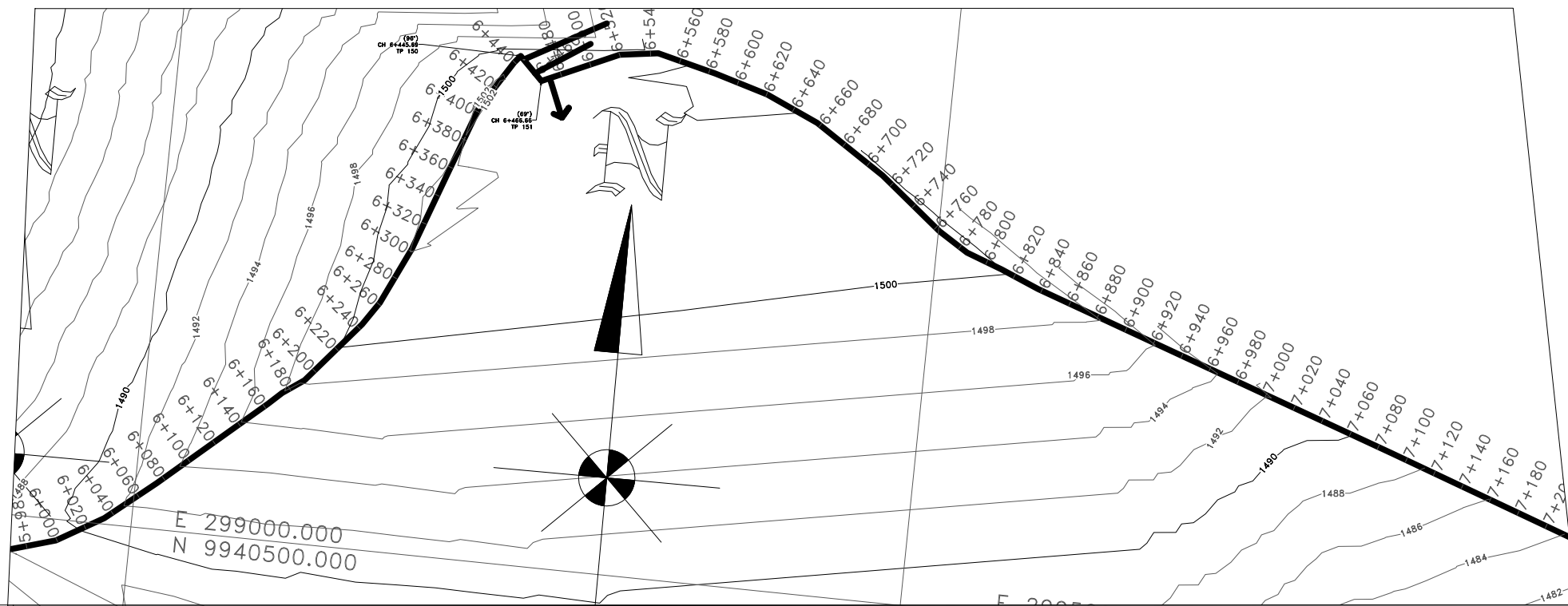
PROJECT TITLE:  
**KIAMUGUONGO WATER PTOJECT**

DRAWING TITLE:  
**KIAMUGUONGO MAIN  
TRANSMISSION LINE**

**CH. 4+800.00 - 6+000.00  
SHEET 5 OF 11**

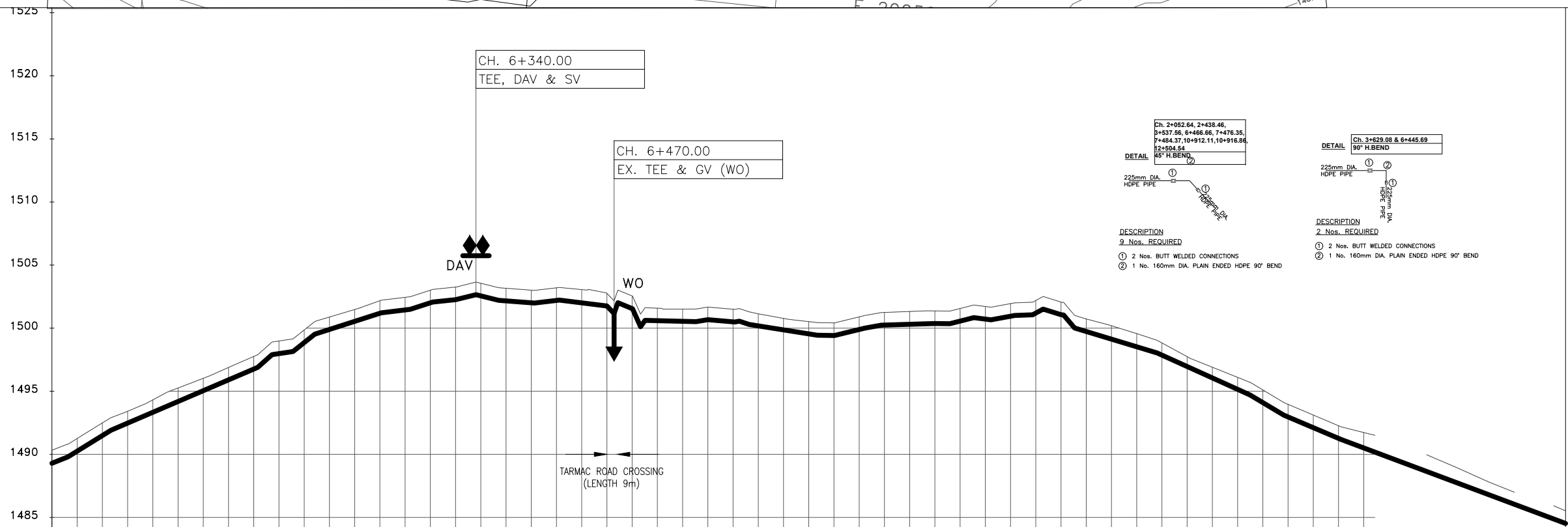
Designed by: D.N.W      Drawn by: A.M.M  
Checked by: J.M.M      Approved by: D.N.M  
Scale: H- 1:4000, V- 1:400      Date: AUGUST 2022

DRG No. **KMGO/GM/05**



- NOTES:**
1. CONTOUR LEVELS ARE IN METERS AT TWO METER INTERVALS
  2. GRID VALUES ARE IN METERS AT 100 METER INTERVALS
  3. GEOLOGICAL CONDITIONS INDICATED ON DRAWING ARE FOR GENERAL GUIDANCE ONLY

- LEGEND:**
- PROPOSED TREATED WATER GRAVITY MAIN
  - 30° HORIZONTAL BEND (H) OR VERTICAL BEND (V) WITH ANGLE INDICATED
  - EX. EXISTING
  - DAV DOUBLE ORIFICE AIR VALVE
  - GV GATE VALVE
  - SV SECTIONAL VALVE
  - WO WASHOUT VALVE
  - LAV LARGE AIR VALVE
  - SAV SMALL ORIFICE AIRVALVE
  - PROPOSED MASONRY CHAMBER
  - ▭ DIRECTION (SLOPE MIN. OR 1 IN n)



DESCRIPTION	2 Nos. REQUIRED
① 2 Nos. BUTT WELDED CONNECTIONS	① 2 Nos. BUTT WELDED CONNECTIONS
② 1 No. 160mm DIA. PLAIN ENDED HDPE 90° BEND	② 1 No. 160mm DIA. PLAIN ENDED HDPE 90° BEND

DISTANCE IN KILOMETERS	EXISTING GROUND LEVEL (m)	INVERT LEVELS (m)	DEPTH OF INVERT (m)	HGL (m) DATUM (m)	TYPE OF PIPE AND SIZE FLOW PARAMETERS	GEOLOGICAL CONDITIONS	GRADIENT
6+000.00	1490.33	1489.29	1.03	1553.05	OD 225 MM HDPE PIPE (PN16) Q=0.03M3/S	RED LOAM SOIL	1:16.17
6+020.00	1491.25	1490.25	1.00	1552.88			1:23.34
6+040.00	1492.49	1491.49	1.00	1552.71			1:11.254
6+060.00	1493.41	1492.47	0.94	1552.54			1:31.13
6+080.00	1494.32	1493.33	1.00	1552.37			1:82.97
6+100.00	1495.26	1494.19	1.07	1552.20			1:30.86
6+120.00	1496.03	1495.04	0.99	1552.03			1:41.17
6+140.00	1496.89	1495.90	0.99	1551.86			1:40.19
6+160.00	1497.76	1496.76	1.00	1551.69			1:151.21
6+180.00	1498.98	1497.98	1.00	1551.52			1:84.47
6+200.00	1499.86	1498.86	1.00	1551.35			1:80.73
6+220.00	1500.88	1499.90	0.98	1551.18			1:113.24
6+240.00	1501.48	1500.54	0.94	1551.01			1:116.94
6+260.00	1502.18	1501.18	1.00	1550.84			1:395.88
6+280.00	1502.44	1501.44	1.00	1550.67			1:80.52
6+300.00	1503.01	1502.01	1.00	1550.50			1:117.21
6+320.00	1503.26	1502.26	1.00	1550.33			1:21.78
6+340.00	1503.56	1502.56	1.00	1550.16			1:63.56
6+360.00	1503.16	1502.16	1.00	1549.99			1:249.54
6+380.00	1503.01	1502.01	1.00	1549.82			1:141.17
6+400.00	1503.20	1502.20	1.00	1549.65			1:156.16
6+420.00	1503.06	1502.01	1.05	1549.48			1:327.61
6+440.00	1502.76	1501.76	1.00	1549.31			1:1018.61
6+460.00	1502.55	1501.55	1.00	1549.14			1:178.83
6+480.00	1501.58	1500.59	0.99	1548.97	1:154.69		
6+500.00	1501.51	1500.54	0.97	1548.80	1:118.11		
6+520.00	1501.67	1500.67	1.00	1548.63	1:131.71		
6+540.00	1501.90	1500.90	1.00	1548.46	1:133.09		
6+560.00	1501.13	1500.18	0.96	1548.29	1:22.12		
6+580.00	1500.77	1499.86	0.91	1548.12	1:116.78		
6+600.00	1500.52	1499.55	0.97	1547.95	1:23.58		
6+620.00	1500.42	1499.42	1.00	1547.78	1:115.78		
6+640.00	1500.89	1499.89	1.00	1547.61	1:123.58		
6+660.00	1501.25	1500.24	1.01	1547.44	1:126.79		
6+680.00	1501.32	1500.31	1.01	1547.27			
6+700.00	1501.37	1500.37	1.00	1547.10			
6+720.00	1501.56	1500.56	1.00	1546.93			
6+740.00	1501.72	1500.72	1.00	1546.76			
6+760.00	1501.94	1500.94	1.00	1546.59			
6+780.00	1502.19	1501.19	1.00	1546.42			
6+800.00	1502.07	1501.07	1.00	1546.25			
6+820.00	1500.73	1499.73	1.00	1546.08			
6+840.00	1500.19	1499.13	1.06	1545.92			
6+860.00	1499.57	1498.52	1.04	1545.75			
6+880.00	1498.83	1497.86	0.97	1545.58			
6+900.00	1497.74	1496.96	0.78	1545.41			
6+920.00	1496.90	1496.05	0.85	1545.24			
6+940.00	1496.10	1495.15	0.95	1545.07			
6+960.00	1495.11	1494.10	1.01	1544.90			
6+980.00	1493.96	1492.96	1.00	1544.73			
7+000.00	1493.11	1492.11	1.00	1544.56			
7+020.00	1492.27	1491.27	1.00	1544.39			
7+040.00	1491.73	1490.51	1.22	1544.22			
7+060.00	1489.76	1489.76	0.00	1544.05			
7+080.00	1489.01	1489.01	0.00	1543.88			
7+100.00	1488.26	1488.26	0.00	1543.71			
7+120.00	1488.67	1487.52	1.15	1543.54			
7+140.00	1487.77	1486.77	1.00	1543.37			
7+160.00	1486.02	1486.02	0.00	1543.20			
7+180.00	1485.27	1485.27	0.00	1543.03			
7+200.00	1485.53	1484.88	0.65	1542.86			

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

PROJECT TITLE:  
**KIAMUGUONGO WATER PTOJECT**

DRAWING TITLE:  
**KIAMUGUONGO MAIN  
TRANSMISSION LINE**

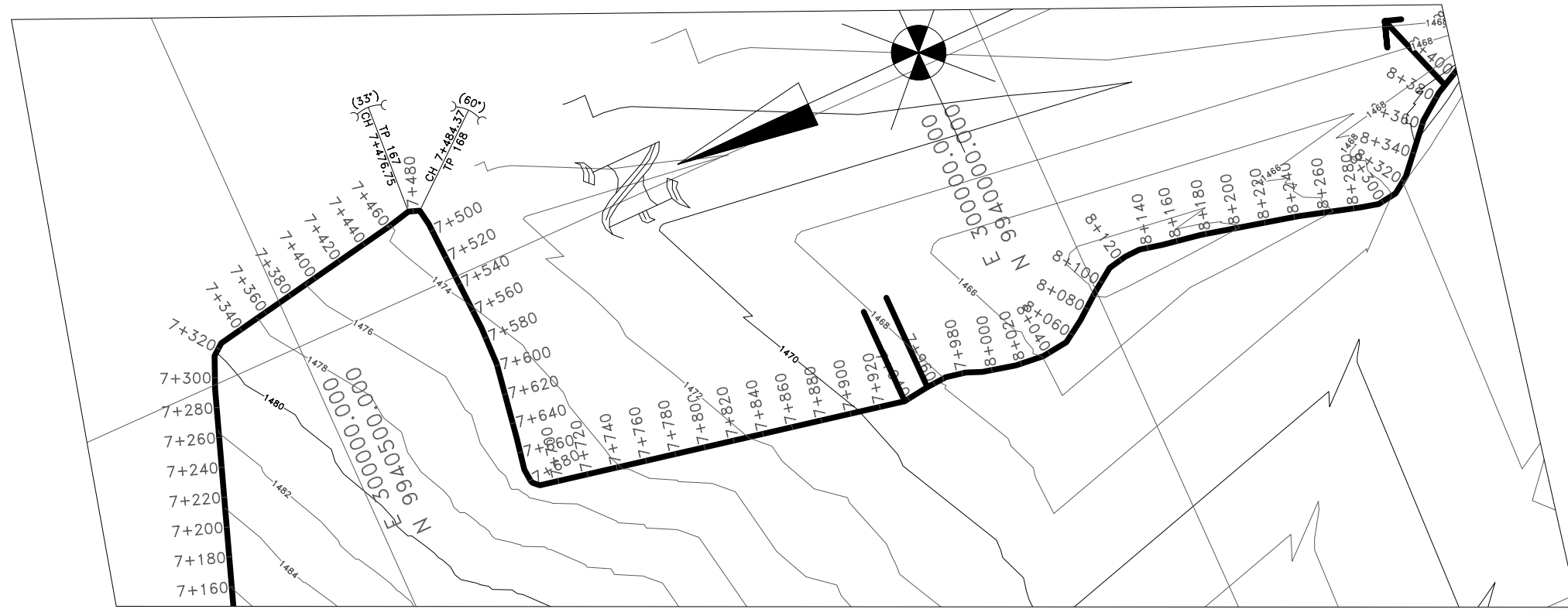
**CH. 6+000.00 - 7+200.00  
SHEET 6 OF 11**

Designed by: D.N.W      Drawn by: A.M.M  
Checked by: J.M.M      Approved by: D.N.M  
Scale: H- 1:4000, V- 1:400      Date: AUGUST 2022

DRG No. **KMG0/GM/06**

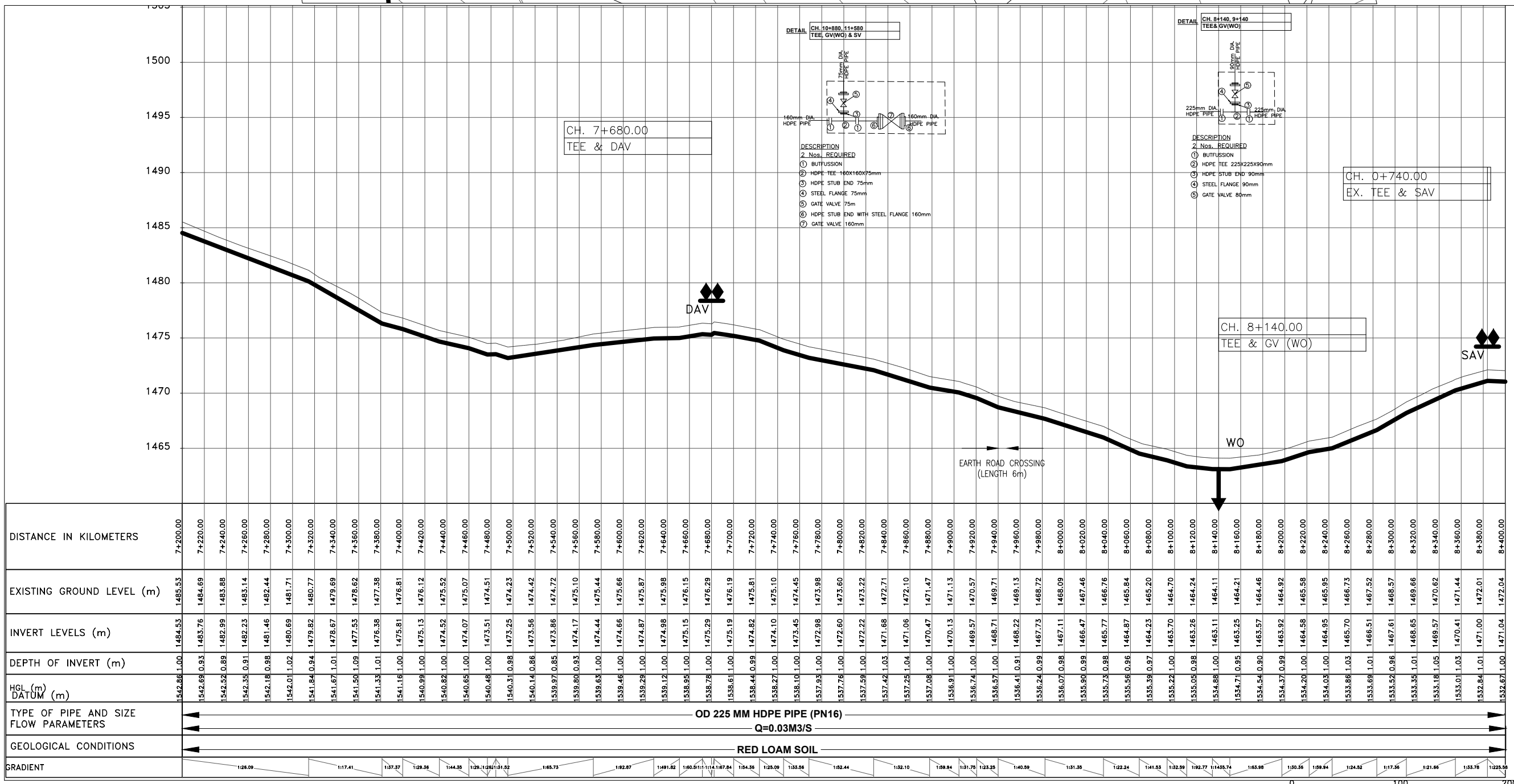
**LONGITUDINAL SECTION**



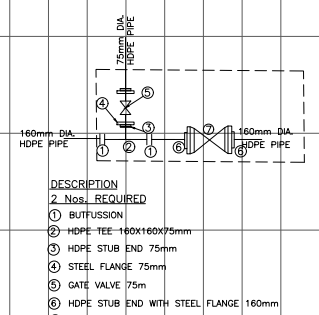


- NOTES:**
1. CONTOUR LEVELS ARE IN METERS AT TWO METER INTERVALS
  2. GRID VALUES ARE IN METERS AT 100 METER INTERVALS
  3. GEOLOGICAL CONDITIONS INDICATED ON DRAWING ARE FOR GENERAL GUIDANCE ONLY

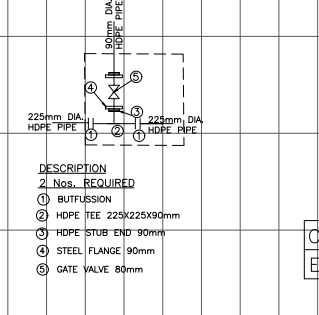
- LEGEND:**
- PROPOSED TREATED WATER GRAVITY MAIN
  - 30° HORIZONTAL BEND (H) OR VERTICAL BEND (V) WITH ANGLE INDICATED
  - EX. EXISTING
  - DAV DOUBLE ORIFICE AIR VALVE
  - GV GATE VALVE
  - SV SECTIONAL VALVE
  - WO WASHOUT VALVE
  - LAV LARGE AIR VALVE
  - SAV SMALL ORIFICE AIRVALVE
  - PROPOSED MASONRY CHAMBER
  - ↘ DIRECTION (SLOPE MIN. OR 1 IN n)



DETAIL CH. 7+680.00  
TEE, GV(WO) & SV



DETAIL CH. 8+140.00  
TEE & GV(WO)



**ISSUED FOR CONSTRUCTION**

REVISIONS	SIGN	DATE	APPROVED

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

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

**PROJECT TITLE:**  
KIAMUGUONGO WATER PTOJECT

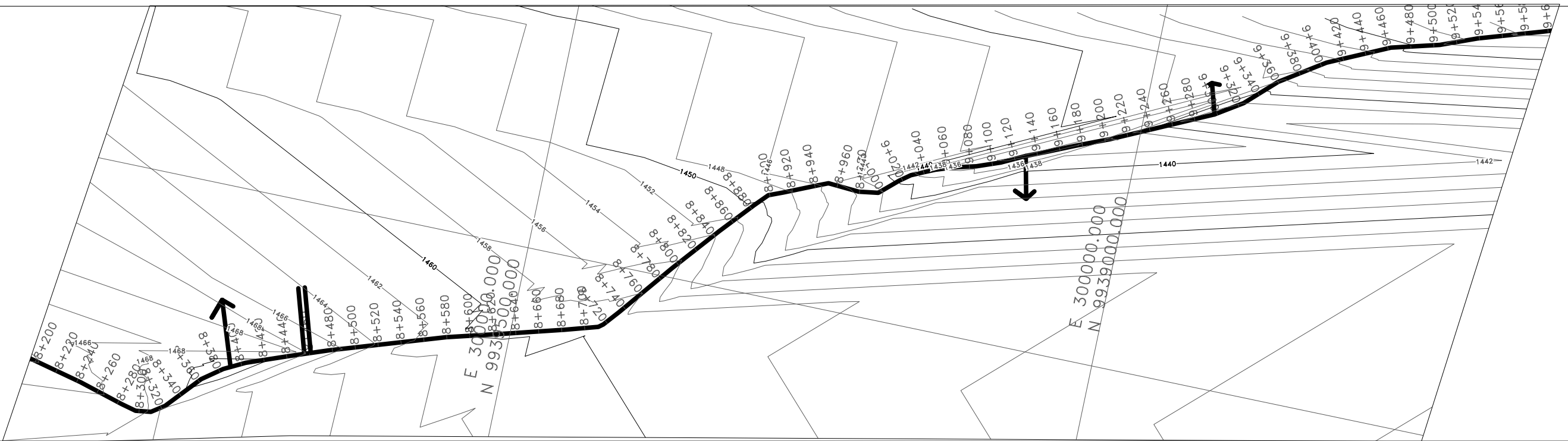
**DRAWING TITLE:**  
KIAMUGUONGO MAIN  
TRANSMISSION LINE

**CH. 7+200.00 - 8+400.00**  
SHEET 7 OF 11

Designed by: D.N.W      Drawn by: A.M.M  
Checked by: J.M.M      Approved by: D.N.M  
Scale: H- 1:4000, V- 1:400      Date: AUGUST 2022

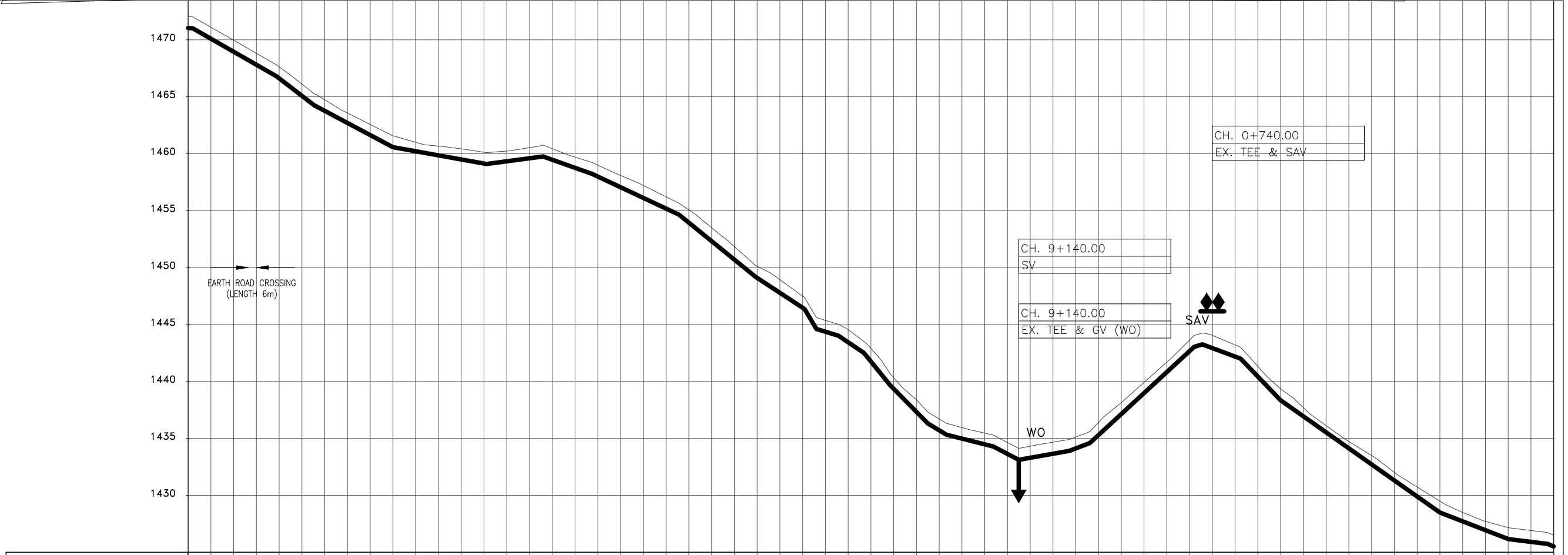
**DRG No. KMG0/GM/07**

**LONGITUDINAL SECTION**



- NOTES:**
1. CONTOUR LEVELS ARE IN METERS AT TWO METER INTERVALS
  2. GRID VALUES ARE IN METERS AT 100 METER INTERVALS
  3. GEOLOGICAL CONDITIONS INDICATED ON DRAWING ARE FOR GENERAL GUIDANCE ONLY

- LEGEND:**
- PROPOSED TREATED WATER GRAVITY MAIN
  - ⤵ 30° HORIZONTAL BEND (H) OR VERTICAL BEND (V) WITH ANGLE INDICATED
  - EX. EXISTING
  - DAV DOUBLE ORIFICE AIR VALVE
  - GV GATE VALVE
  - SV SECTIONAL VALVE
  - WO WASHOUT VALVE
  - LAV LARGE AIR VALVE
  - SAV SMALL ORIFICE AIRVALVE
  - PROPOSED MASONRY CHAMBER
  - ↘ DIRECTION (SLOPE MIN. OR 1 IN n)



DISTANCE IN KILOMETERS	EXISTING GROUND LEVEL (m)	INVERT LEVELS (m)	DEPTH OF INVERT (m)	HGL (m) DATUM (m)
8+400.00	1472.04	1471.04	1.00	1522.67
8+420.00	1471.10	1470.10	1.01	1522.50
8+440.00	1469.97	1468.95	1.01	1522.33
8+460.00	1468.82	1467.81	1.01	1522.16
8+480.00	1467.63	1466.62	1.01	1521.99
8+500.00	1466.11	1465.08	1.03	1521.82
8+520.00	1464.74	1463.77	1.03	1521.65
8+540.00	1463.57	1462.70	1.03	1521.48
8+560.00	1462.57	1461.64	1.03	1521.31
8+580.00	1461.57	1460.57	1.00	1521.14
8+600.00	1461.00	1460.21	0.79	1520.97
8+620.00	1460.67	1459.85	0.81	1520.80
8+640.00	1460.42	1459.49	0.93	1520.63
8+660.00	1460.13	1459.14	0.99	1520.46
8+680.00	1460.23	1459.33	0.90	1520.29
8+700.00	1460.53	1459.60	0.93	1520.12
8+720.00	1460.44	1459.47	0.97	1520.05
8+740.00	1459.70	1458.76	1.04	1520.28
8+760.00	1459.00	1457.99	1.00	1520.61
8+780.00	1458.09	1457.06	1.03	1520.94
8+800.00	1457.21	1456.12	1.09	1521.27
8+820.00	1456.21	1455.18	1.03	1521.60
8+840.00	1455.06	1453.94	1.12	1521.93
8+860.00	1453.50	1452.32	1.18	1522.26
8+880.00	1451.84	1450.70	1.14	1522.59
8+900.00	1450.11	1449.10	1.02	1522.92
8+920.00	1448.94	1447.78	1.15	1523.25
8+940.00	1447.48	1446.47	1.01	1523.58
8+960.00	1445.37	1444.37	1.00	1523.91
8+980.00	1444.55	1443.44	1.11	1524.24
9+000.00	1442.90	1441.75	1.15	1524.57
9+020.00	1440.32	1439.35	0.97	1524.90
9+040.00	1438.41	1437.33	1.08	1525.23
9+060.00	1436.71	1435.71	1.00	1525.56
9+080.00	1435.95	1434.98	0.97	1525.89
9+100.00	1435.46	1434.48	0.98	1526.22
9+120.00	1434.84	1433.64	1.00	1526.55
9+140.00	1434.31	1433.30	1.02	1526.88
9+160.00	1434.67	1433.65	1.02	1527.21
9+180.00	1435.12	1434.12	1.00	1527.54
9+200.00	1436.41	1435.29	1.11	1527.87
9+220.00	1438.14	1437.13	1.01	1528.20
9+240.00	1439.91	1438.98	0.94	1528.53
9+260.00	1441.69	1440.82	0.87	1528.86
9+280.00	1443.63	1442.66	0.97	1529.19
9+300.00	1444.05	1442.93	1.12	1529.52
9+320.00	1443.21	1442.19	1.02	1529.85
9+340.00	1441.33	1440.43	0.90	1530.18
9+360.00	1439.35	1438.35	1.00	1530.51
9+380.00	1437.70	1436.94	0.76	1530.84
9+400.00	1436.12	1435.53	0.59	1531.17
9+420.00	1434.73	1434.12	0.60	1531.50
9+440.00	1433.49	1432.71	0.78	1531.83
9+460.00	1432.01	1431.31	0.70	1532.16
9+480.00	1430.73	1429.90	0.83	1532.49
9+500.00	1429.49	1428.49	1.00	1532.82
9+520.00	1428.50	1427.72	0.78	1533.15
9+540.00	1427.71	1426.94	0.77	1533.48
9+560.00	1427.16	1426.17	1.00	1533.81
9+580.00	1426.91	1425.91	1.00	1534.14
9+600.00	1426.49	1425.51	0.98	1534.47

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

**PROJECT TITLE:**  
KIAMUGUONGO WATER PTOJECT

**DRAWING TITLE:**  
KIAMUGUONGO MAIN TRANSMISSION LINE

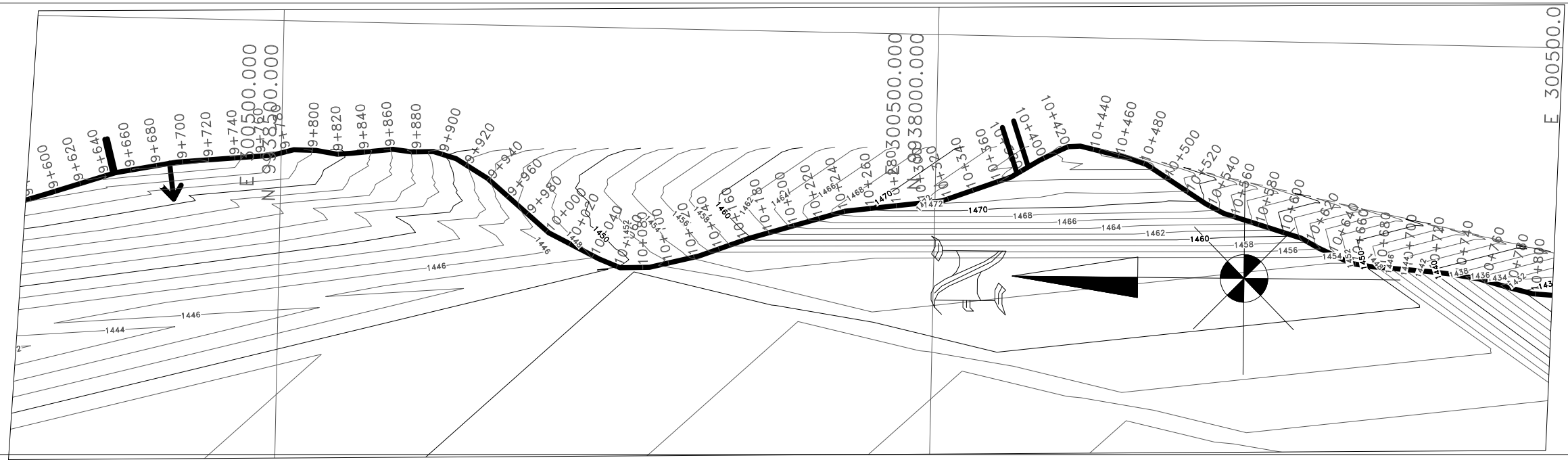
**CH. 8+400.00 - 9+600.00**  
**SHEET 8 OF 11**

Designed by: D.N.W      Drawn by: A.M.M  
Checked by: J.M.M      Approved by: D.N.M  
Scale: H- 1:4000, V- 1:400      Date: AUGUST 2022

**DRG No. KMG0/GM/08**

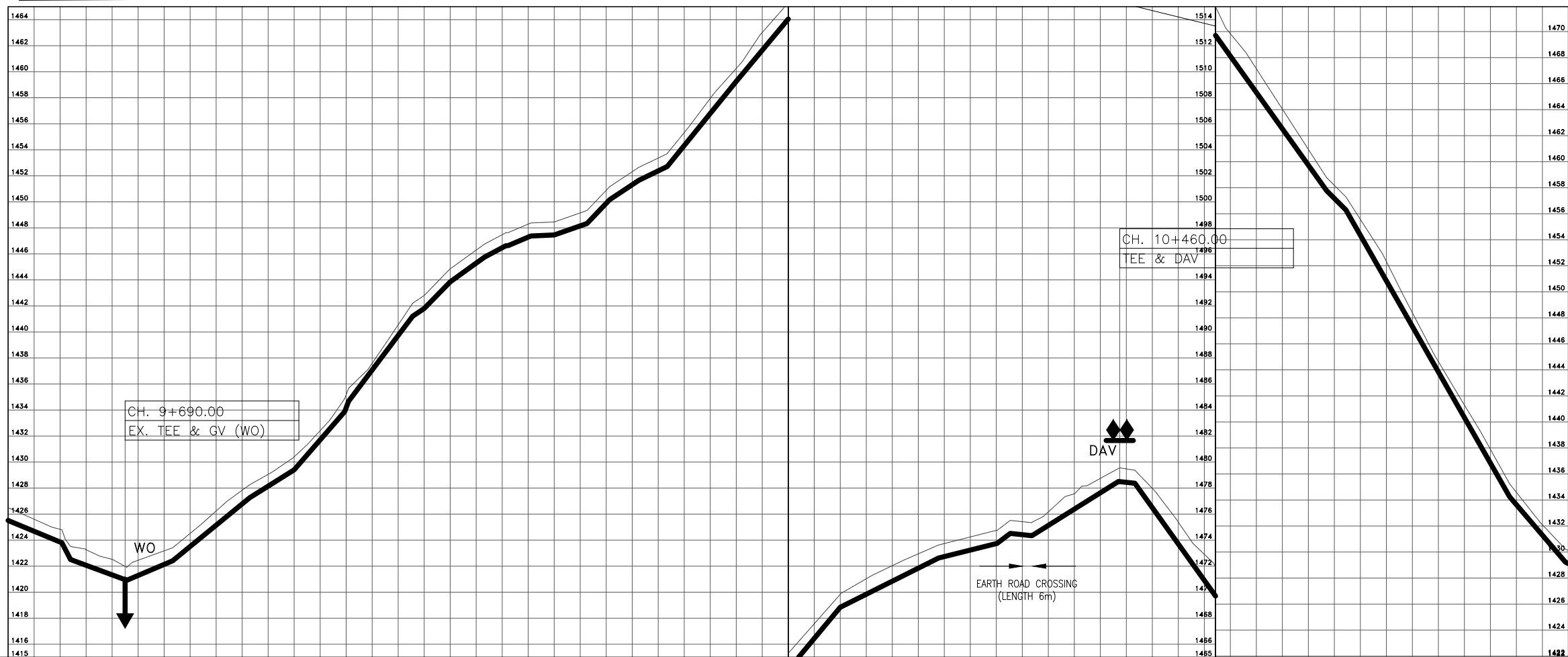
**LONGITUDINAL SECTION**





- NOTES:**
- 1. CONTOUR LEVELS ARE IN METERS AT TWO METER INTERVALS
  - 2. GRID VALUES ARE IN METERS AT 100 METER INTERVALS
  - 3. GEOLOGICAL CONDITIONS INDICATED ON DRAWING ARE FOR GENERAL GUIDANCE ONLY

- LEGEND:**
- PROPOSED TREATED WATER GRAVITY MAIN
  - HORIZONTAL BEND (H) OR VERTICAL BEND (V) WITH ANGLE INDICATED
  - EX. EXISTING
  - DAV DOUBLE ORIFICE AIR VALVE
  - GV GATE VALVE
  - SV SECTIONAL VALVE
  - WO WASHOUT VALVE
  - LAV LARGE AIR VALVE
  - SAV SMALL ORIFICE AIRVALVE
  - PROPOSED MASONRY CHAMBER
  - DIRECTION (SLOPE MIN. OR 1 IN n)



DISTANCE IN KILOMETERS	EXISTING GROUND LEVEL (m)	INVERT LEVELS (m)	DEPTH OF INVERT (m)	HGL (m) DATUM (m)	TYPE OF PIPE AND SIZE FLOW PARAMETERS	GEOLOGICAL CONDITIONS	GRADIENT
9+600.00	1426.49	1425.51	0.98	1522.48	OD 225 MM HDPE PIPE (PN20) Q=0.03M3/S	RED LOAM SOIL	1:24.16
9+620.00	1425.61	1424.68	0.93	1522.31			
9+640.00	1424.83	1423.85	0.98	1522.14			
9+660.00	1423.26	1422.07	1.19	1521.97			
9+680.00	1422.52	1421.33	1.19	1521.80			
9+700.00	1422.45	1421.29	1.17	1521.63			
9+720.00	1423.18	1422.14	1.04	1521.46			
9+740.00	1424.52	1423.51	1.01	1521.28			
9+760.00	1426.24	1425.15	1.09	1521.12			
9+780.00	1427.84	1426.79	1.05	1520.85			
9+800.00	1429.06	1428.15	0.91	1520.78			
9+820.00	1430.40	1429.40	1.00	1520.61			
9+840.00	1432.41	1431.71	0.71	1520.44			
9+860.00	1435.18	1434.18	1.00	1520.27			
9+880.00	1437.60	1437.08	0.52	1520.10			
9+900.00	1440.55	1439.73	0.81	1519.93	OD 225 MM HDPE PIPE (PN16) Q=0.02M3/S	1:15.84	
9+920.00	1442.80	1441.80	1.00	1519.76			
9+940.00	1444.85	1443.85	1.00	1519.59			
9+960.00	1446.29	1445.29	1.00	1519.42			
9+980.00	1447.48	1446.48	1.00	1519.25			
10+000.00	1448.29	1447.29	1.00	1519.08			
10+020.00	1448.45	1447.45	1.00	1518.91			
10+040.00	1449.15	1448.15	1.00	1518.74			
10+060.00	1449.89	1448.89	1.00	1518.57			
10+080.00	1452.32	1451.32	1.00	1518.40			
10+100.00	1453.37	1452.37	1.00	1518.23			
10+120.00	1455.32	1454.32	1.00	1518.06			
10+140.00	1457.95	1456.79	1.16	1517.89			
10+160.00	1460.26	1459.26	1.00	1517.72			
10+180.00	1463.02	1461.65	1.37	1517.55			
10+200.00	1465.31	1464.05	1.26	1517.38	OD 160 MM HDPE PIPE (PN16) Q=0.02M3/S	1:18.35	
10+220.00	1467.57	1466.44	1.13	1517.21			
10+240.00	1469.84	1468.84	1.00	1517.04			
10+260.00	1471.03	1469.84	1.19	1516.88			
10+280.00	1472.04	1470.84	1.19	1516.71			
10+300.00	1472.95	1471.84	1.10	1516.54			
10+320.00	1473.74	1472.74	1.00	1516.37			
10+340.00	1474.25	1473.24	1.01	1516.20			
10+360.00	1474.74	1473.74	1.00	1516.03			
10+380.00	1475.42	1474.42	1.00	1515.86			
10+400.00	1476.17	1475.13	1.04	1515.69			
10+420.00	1477.56	1476.38	1.17	1515.52			
10+440.00	1478.74	1477.64	1.11	1515.35			
10+460.00	1479.48	1478.44	1.04	1515.18			
10+480.00	1477.98	1476.50	1.48	1514.70			
10+500.00	1475.38	1473.70	1.68	1514.21	OD 160 MM HDPE PIPE (PN20) Q=0.02M3/S	1:15.97	
10+520.00	1472.91	1470.91	2.00	1513.72			
10+540.00	1469.84	1468.12	1.72	1513.23			
10+560.00	1467.14	1465.32	1.82	1512.74			
10+580.00	1464.05	1462.53	1.52	1512.25			
10+600.00	1460.95	1459.74	1.21	1511.76			
10+620.00	1458.18	1457.18	1.00	1511.27			
10+640.00	1455.57	1454.35	1.22	1510.78			
10+660.00	1452.33	1450.84	1.49	1510.29			
10+680.00	1448.39	1447.34	1.05	1509.80			
10+700.00	1444.64	1443.84	0.80	1509.31			
10+720.00	1441.30	1440.34	0.96	1508.81			
10+740.00	1437.90	1436.83	1.06	1508.32			
10+760.00	1434.59	1433.64	0.95	1507.83			
10+780.00	1431.30	1431.30	0.80	1507.34			
10+800.00	1430.11	1429.11	1.00	1506.85			

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

**PROJECT TITLE:**  
**KIAMUGUONGO WATER PTOJECT**

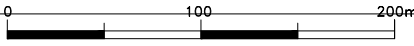
**DRAWING TITLE:**  
**KIAMUGUONGO MAIN  
 TRANSMISSION LINE**

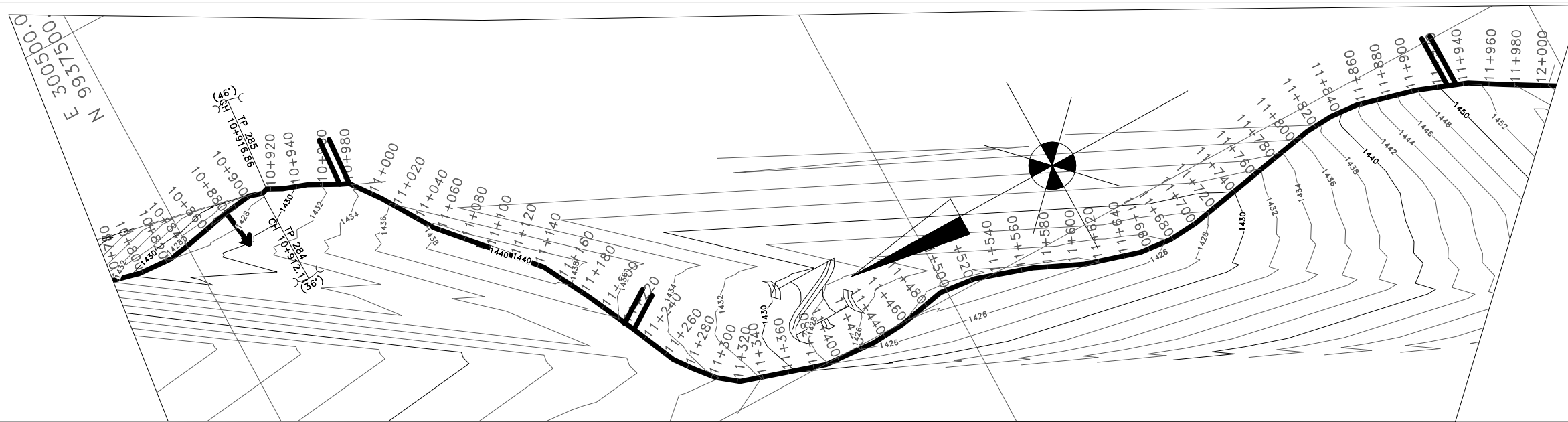
**CH. 9+600.00 - 10+800.00**  
**SHEET 9 OF 11**

Designed by: D.N.W      Drawn by: A.M.M  
 Checked by: J.M.M      Approved by: D.N.M  
 Scale: H- 1:4000, V- 1:400      Date: AUGUST 2022

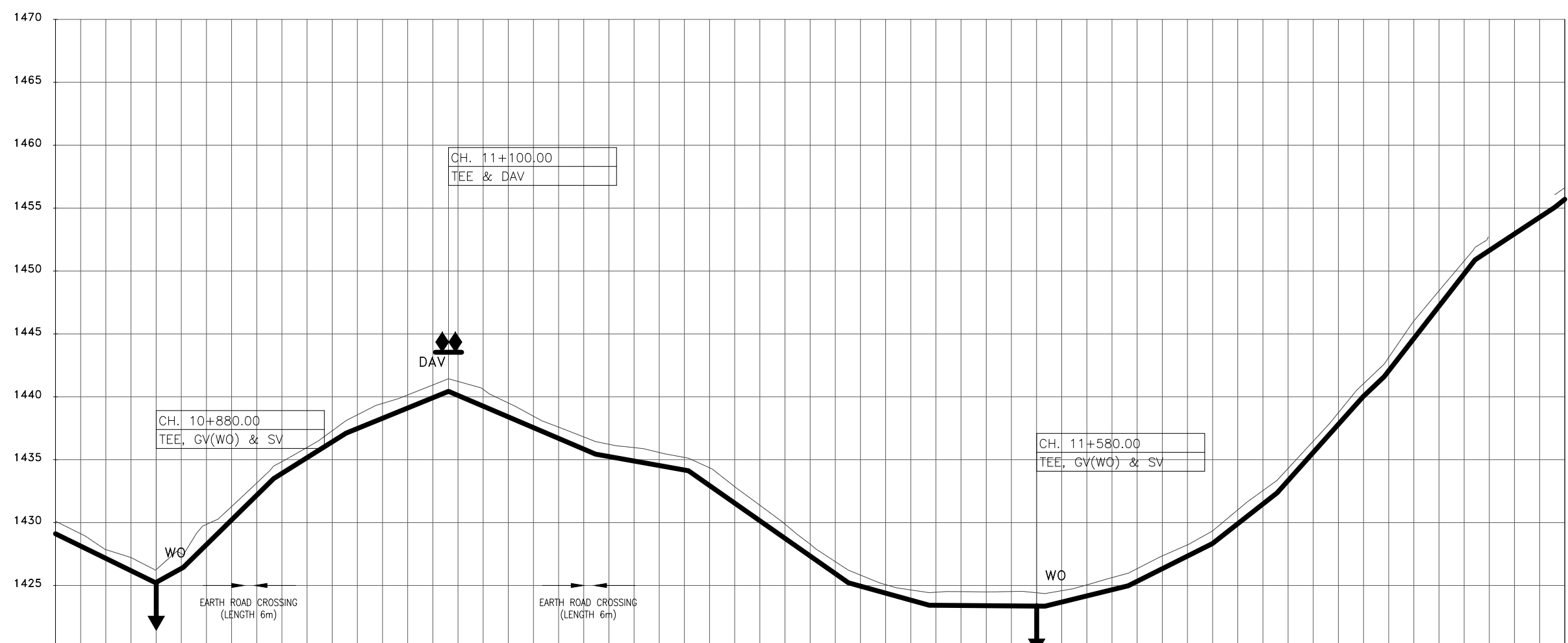
**DRG No. KMG0/GM/09**

**LONGITUDINAL SECTION**





- NOTES:**
1. CONTOUR LEVELS ARE IN METERS AT TWO METER INTERVALS
  2. GRID VALUES ARE IN METERS AT 100 METER INTERVALS
  3. GEOLOGICAL CONDITIONS INDICATED ON DRAWING ARE FOR GENERAL GUIDANCE ONLY
- LEGEND:**
- PROPOSED TREATED WATER GRAVITY MAIN
  - HORIZONTAL BEND (H) OR VERTICAL BEND (V) WITH ANGLE INDICATED
  - EX. EXISTING
  - DAV DOUBLE ORIFICE AIR VALVE
  - GV GATE VALVE
  - SV SECTIONAL VALVE
  - WO WASHOUT VALVE
  - LAV LARGE AIR VALVE
  - SAV SMALL ORIFICE AIRVALVE
  - PROPOSED MASONRY CHAMBER
  - DIRECTION (SLOPE MIN. OR 1 IN n)



DISTANCE IN KILOMETERS	EXISTING GROUND LEVEL (m)	INVERT LEVELS (m)	DEPTH OF INVERT (m)	HGL (m) DATUM (m)	TYPE OF PIPE AND SIZE FLOW PARAMETERS	GEOLOGICAL CONDITIONS	GRADIENT
10+800.00	1430.11	1429.11	1.00	1506.85	OD 160 MM HDPE PIPE (PN20) Q=0.02M3/S	RED LOAM SOIL	1:20.44
10+820.00	1428.13	1428.13	0.98	1506.36			1:18.03
10+840.00	1427.85	1427.15	0.70	1505.87			1:10.18
10+860.00	1427.22	1426.18	1.05	1505.38			1:15.94
10+880.00	1426.26	1425.24	1.01	1504.88			1:24.51
10+900.00	1427.53	1426.35	1.18	1504.40			1:23.42
10+920.00	1429.86	1428.25	1.61	1503.91			1:35.99
10+940.00	1431.28	1430.21	1.06	1503.42			1:14.28
10+960.00	1433.15	1432.18	0.97	1502.93			1:35.99
10+980.00	1434.84	1433.91	0.93	1502.44			1:112.42
11+000.00	1435.98	1435.16	0.81	1501.95			1:140.96
11+020.00	1437.50	1436.42	1.08	1501.46			1:119.95
11+040.00	1438.57	1437.48	1.09	1500.97			1:112.76
11+060.00	1439.47	1438.29	1.18	1500.48			1:18.94
11+080.00	1440.15	1439.11	1.04	1499.99			1:17.78
11+100.00	1440.94	1439.92	1.01	1499.50			1:115.16
11+120.00	1441.22	1440.11	1.11	1499.01			1:177.92
11+140.00	1440.59	1439.26	1.34	1498.52			1:177.92
11+160.00	1439.51	1438.40	1.11	1498.02			1:177.92
11+180.00	1438.46	1437.55	0.91	1497.53			1:177.92
11+200.00	1437.59	1436.69	0.89	1497.04	1:177.92		
11+220.00	1436.81	1435.84	0.97	1496.55	1:177.92		
11+240.00	1436.22	1435.25	0.97	1496.06	1:177.92		
11+260.00	1435.96	1434.89	1.07	1495.57	1:177.92		
11+280.00	1435.57	1434.54	1.04	1495.08	1:177.92		
11+300.00	1435.18	1434.18	1.00	1494.59	1:177.92		
11+320.00	1434.36	1432.95	1.41	1494.10	1:177.92		
11+340.00	1432.86	1431.55	1.31	1493.61	1:177.92		
11+360.00	1431.38	1430.15	1.24	1493.12	1:177.92		
11+380.00	1429.88	1428.75	1.13	1492.63	1:177.92		
11+400.00	1428.29	1427.35	0.94	1492.14	1:177.92		
11+420.00	1426.90	1425.94	0.95	1491.65	1:177.92		
11+440.00	1425.83	1424.95	0.88	1491.16	1:177.92		
11+460.00	1425.07	1424.39	0.67	1490.67	1:177.92		
11+480.00	1424.65	1423.84	0.81	1490.18	1:177.92		
11+500.00	1424.46	1423.43	1.04	1489.68	1:177.92		
11+520.00	1424.51	1423.41	1.10	1489.20	1:177.92		
11+540.00	1424.49	1423.39	1.10	1488.71	1:177.92		
11+560.00	1424.52	1423.36	1.14	1488.22	1:177.92		
11+580.00	1424.42	1423.36	1.06	1487.73	1:177.92		
11+600.00	1424.59	1423.68	0.90	1487.23	1:177.92		
11+620.00	1425.05	1424.17	0.88	1486.74	1:177.92		
11+640.00	1425.62	1424.66	0.95	1486.25	1:177.92		
11+660.00	1426.34	1425.33	1.01	1485.76	1:177.92		
11+680.00	1427.35	1426.33	1.02	1485.27	1:177.92		
11+700.00	1428.23	1427.34	0.89	1484.78	1:177.92		
11+720.00	1429.34	1428.34	1.00	1484.28	1:177.92		
11+740.00	1431.01	1429.91	1.10	1483.80	1:177.92		
11+760.00	1432.54	1431.48	1.07	1483.31	1:177.92		
11+780.00	1434.31	1433.34	0.97	1482.82	1:177.92		
11+800.00	1436.47	1435.58	0.89	1482.33	1:177.92		
11+820.00	1438.74	1437.81	0.92	1481.84	1:177.92		
11+840.00	1441.04	1440.04	1.00	1481.35	1:177.92		
11+860.00	1443.15	1442.06	1.06	1480.86	1:177.92		
11+880.00	1446.03	1444.63	1.40	1480.37	1:177.92		
11+900.00	1448.42	1447.20	1.22	1479.88	1:177.92		
11+920.00	1450.80	1449.77	1.02	1479.39	1:177.92		
11+940.00	1451.63	1451.63	0.00	1478.90	1:177.92		
11+960.00	1452.95	1452.95	0.00	1478.41	1:177.92		
11+980.00	1454.27	1454.27	0.00	1477.92	1:177.92		
12+000.00	1456.61	1455.70	0.92	1477.43	1:177.92		

**ISSUED FOR CONSTRUCTION**

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

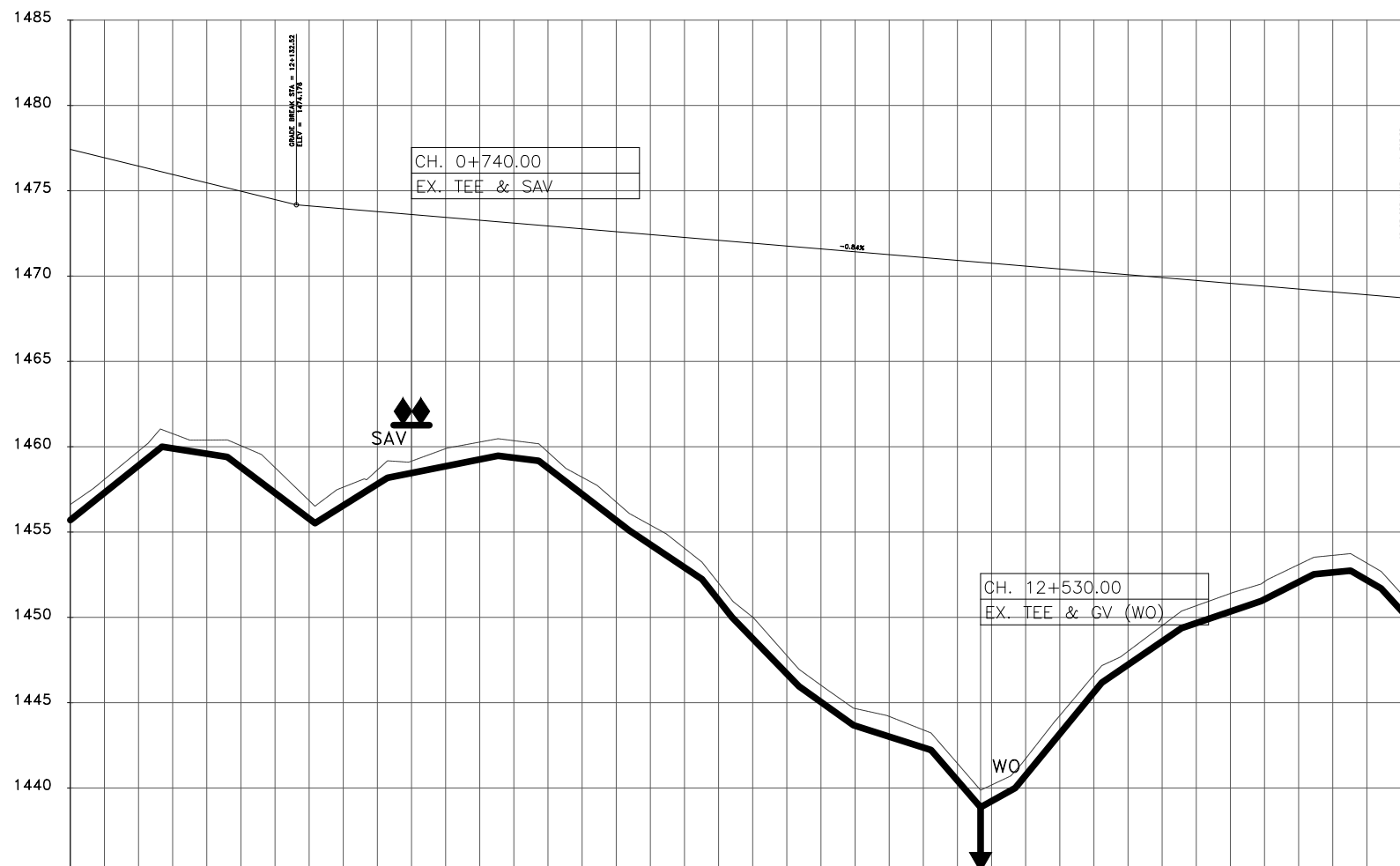
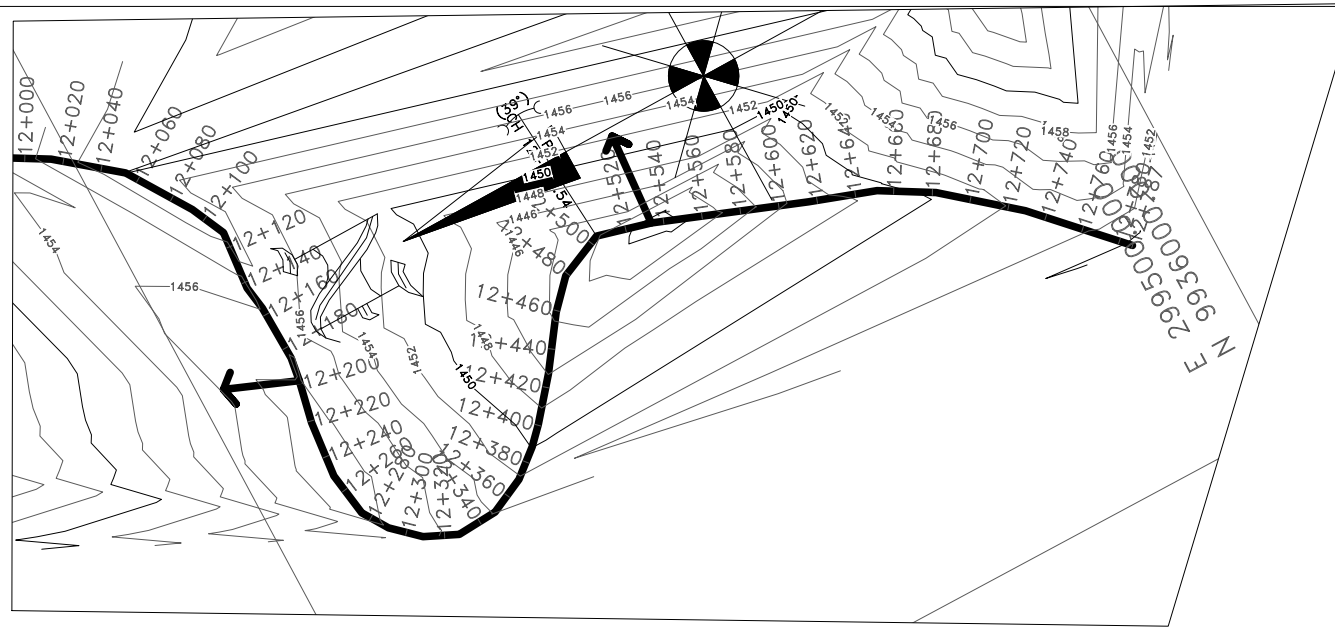
CLIENT: **THE CHIEF EXECUTIVE OFFICER  
TANA WATER WORKS  
DEVELOPMENT AGENCY**  
P.O BOX 1292 - 10100,  
NYERI, KENYA

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

PROJECT TITLE:  
**KIAMUGUONGO WATER PTOJECT**

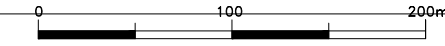
DRAWING TITLE:  
**KIAMUGUONGO MAIN  
TRANSMISSION LINE**

**CH. 10+800.00 - 12+000.00**  
**SHEET 10 OF 11**  
Designed by: D.N.W      Drawn by: A.M.M  
Checked by: J.M.M      Approved by: D.N.M  
Scale: H- 1:4000, V- 1:400      Date: AUGUST 2022  
DRG No. **KMG0/GM/10**



DISTANCE IN KILOMETERS	12+000.00	12+020.00	12+040.00	12+060.00	12+080.00	12+100.00	12+120.00	12+140.00	12+160.00	12+180.00	12+200.00	12+220.00	12+240.00	12+260.00	12+280.00	12+300.00	12+320.00	12+340.00	12+360.00	12+380.00	12+400.00	12+420.00	12+440.00	12+460.00	12+480.00	12+500.00	12+520.00	12+540.00	12+560.00	12+580.00	12+600.00	12+620.00	12+640.00	12+660.00	12+680.00	12+700.00	12+720.00	12+740.00	12+760.00	12+787.13																					
EXISTING GROUND LEVEL (m)	1456.61	1458.09	1459.74	1460.76	1460.39	1460.06	1458.78	1456.84	1457.63	1458.64	1459.15	1459.89	1460.27	1460.35	1459.68	1458.21	1456.76	1455.41	1454.26	1452.92	1451.00	1448.75	1447.76	1446.02	1444.66	1444.19	1443.40	1441.44	1440.17	1441.72	1444.24	1446.62	1448.01	1449.51	1450.68	1451.40	1452.09	1453.09	1453.63	1453.18	1451.41																				
INVERT LEVELS (m)	1455.70	1457.30	1458.90	1459.90	1459.59	1458.80	1457.29	1455.78	1456.55	1457.81	1458.46	1458.86	1459.26	1459.35	1458.76	1457.22	1455.68	1454.26	1440.74	1442.37	1440.44	1439.23	1440.69	1445.04	1443.65	1443.01	1442.37	1440.44	1439.23	1440.74	1443.18	1445.61	1447.22	1448.59	1449.66	1450.34	1451.05	1452.07	1452.63	1452.18	1450.41																				
DEPTH OF INVERT (m)	0.92	0.79	0.84	0.86	0.80	1.26	1.49	1.06	1.07	0.83	0.70	1.03	1.02	1.00	0.93	1.00	1.08	1.15	1.13	1.00	1.26	0.77	0.07	0.98	1.01	1.19	1.03	1.00	0.95	0.98	1.07	1.02	1.02	1.02	1.02	1.06	1.04	1.02	1.00	1.00	1.00	1.00																			
HGL (m) DATUM (m)	1477.43	1476.94	1476.44	1475.95	1475.46	1474.97	1474.48	1473.99	1473.50	1473.01	1472.52	1472.03	1471.54	1471.05	1470.56	1470.07	1469.58	1469.09	1468.60	1468.11	1467.62	1467.13	1466.64	1466.15	1465.66	1465.17	1464.68	1464.19	1463.70	1463.21	1462.72	1462.23	1461.74	1461.25	1460.76	1460.27	1459.78	1459.29	1458.80	1458.31	1457.82																				
TYPE OF PIPE AND SIZE FLOW PARAMETERS	Q=0.02M3/S																					OD 160 MM HDPE PIPE (PN20)																				Q=0.01M3/S																			
GEOLOGICAL CONDITIONS	RED LOAM SOIL																																																												
GRADIENT	1:12.90	1:83.83	1:13.24	1:15.98	1:50.09	1:80.33	1:12.99	1:11.84	1:7.89	1:8.89	1:11.01	1:31.31	1:8.68	1:18.00	1:8.22	1:14.82	1:28.43	1:19.71	1:101.99	1:17.18	1:8.11																																								

LONGITUDINAL SECTION



- NOTES:**
1. CONTOUR LEVELS ARE IN METERS AT TWO METER INTERVALS
  2. GRID VALUES ARE IN METERS AT 100 METER INTERVALS
  3. GEOLOGICAL CONDITIONS INDICATED ON DRAWING ARE FOR GENERAL GUIDANCE ONLY

- LEGEND:**
- PROPOSED TREATED WATER GRAVITY MAIN
  - ⤵ 30° HORIZONTAL BEND (H) OR VERTICAL BEND (V) WITH ANGLE INDICATED
  - EX. EXISTING
  - DAV DOUBLE ORIFICE AIR VALVE
  - GV GATE VALVE
  - SV SECTIONAL VALVE
  - WO WASHOUT VALVE
  - LAV LARGE AIR VALVE
  - SAV SMALL ORIFICE AIRVALVE
  - PROPOSED MASONRY CHAMBER
  - ↘ n 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: **THE CHIEF EXECUTIVE OFFICER TANA WATER WORKS DEVELOPMENT AGENCY**  
P.O BOX 1292 - 10100, NYERI, KENYA

PROJECT TITLE: **KIAMUGUONGO WATER PTOJECT**

DRAWING TITLE: **KIAMUGUONGO MAIN TRANSMISSION LINE**

**CH. 12+000.00 - 12+787.13**  
**SHEET 11 OF 11**

Designed by: D.N.W	Drawn by: A.M.M
Checked by: J.M.M	Approved by: D.N.M
Scale: H- 1:4000, V- 1:400	Date: AUGUST 2022

DRG No. **KMGO/GM/11**



**NOTES:**

1. CONTOUR LEVELS ARE IN METERS AT TWO METER INTERVALS
2. GRID VALUES ARE IN METERS AT 100 METER INTERVALS
3. GEOLOGICAL CONDITIONS INDICATED ON DRAWING ARE FOR GENERAL GUIDANCE ONLY
4. MINIMUM PIPELINE SLOPES TO BE 1:200
5. DRAWING TO BE READ IN CONJUNCTION WITH STANDARD DRAWINGS

**LEGEND:**

- MURRAM ROAD
- ===== FENCE / HEDGE
- 1480—— CONTOURS
- ===== RIVER/STREAM
- 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
- PROPOSED WATER LINE

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

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

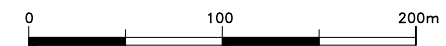
PROJECT TITLE:  
**KIBUNG'A KAKIMIKI PIPELINE  
RELOCATION PROJECT**

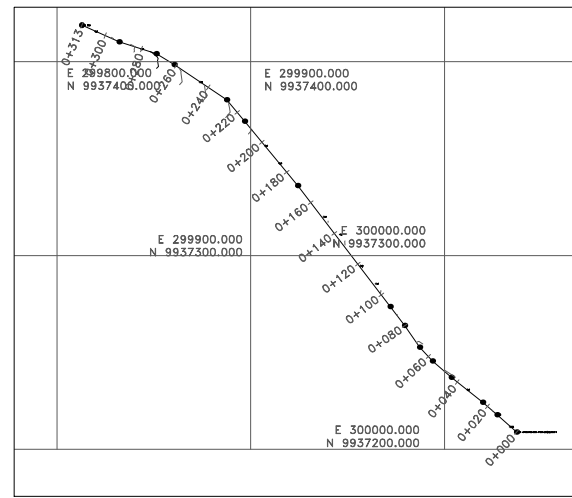
DRAWING TITLE:  
**KIBUNG'A TO NKUNDI PLAN AND  
PROFILE SECTION**  
**CH. 12+000.00 - 12+151.09**  
**SHEET 11 OF 11**

Designed by: A.M.M	Drawn by: A.M.M
Checked by: D.N.W	Approved by: D.N.W
Scale: H- 1:4000, V- 1:400	Date: MAY 2022

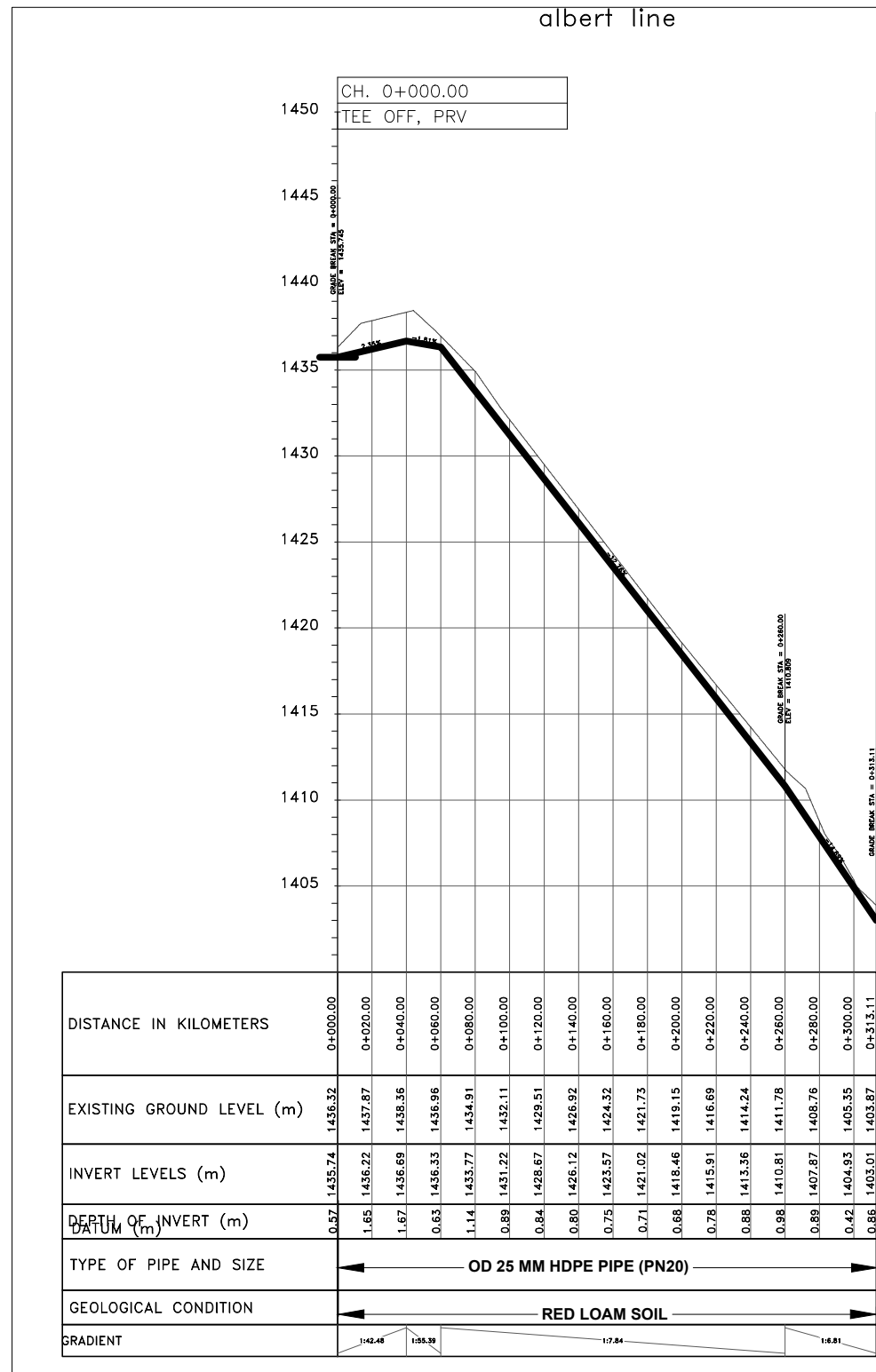
DRG No.	<b>KINKU/11</b>	REV
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**LONGITUDINAL SECTION**





LAYOUT



- NOTES:**
- CONTOUR LEVELS ARE IN METERS AT TWO METER INTERVALS
  - GRID VALUES ARE IN METERS AT 100 METER INTERVALS
  - GEOLOGICAL CONDITIONS INDICATED ON DRAWING ARE FOR GENERAL GUIDANCE ONLY

- LEGEND:**
- PROPOSED TREATED WATER GRAVITY MAIN
  - HORIZONTAL BEND (H) OR VERTICAL BEND (V) WITH ANGLE INDICATED
  - EX. EXISTING
  - PRV. PRESSURE REDUCING VALVE
  - DAV. DOUBLE ORIFICE AIR VALVE
  - GV. GATE VALVE
  - SV. SECTIONAL VALVE
  - WO. WASHOUT VALVE
  - LAV. LARGE AIR VALVE
  - SAV. SMALL ORIFICE AIRVALVE
  - PROPOSED MASONRY CHAMBER
  - 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: **THE CHIEF EXECUTIVE OFFICER  
TANA WATER WORKS DEVELOPMENT  
AGENCY**  
P.O BOX 1292 - 10100,  
NYERI, KENYA

PROJECT TITLE:  
**KIAMUGUONGO WATER PTOJECT**

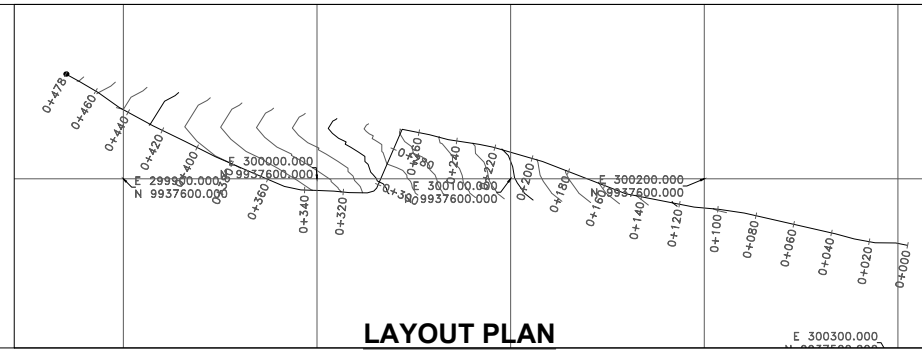
DRAWING TITLE:  
**ALBERT DISTRIBUTION LINE**

**CH. 0+000.00 - 0+313.11  
SHEET 1 OF 1**

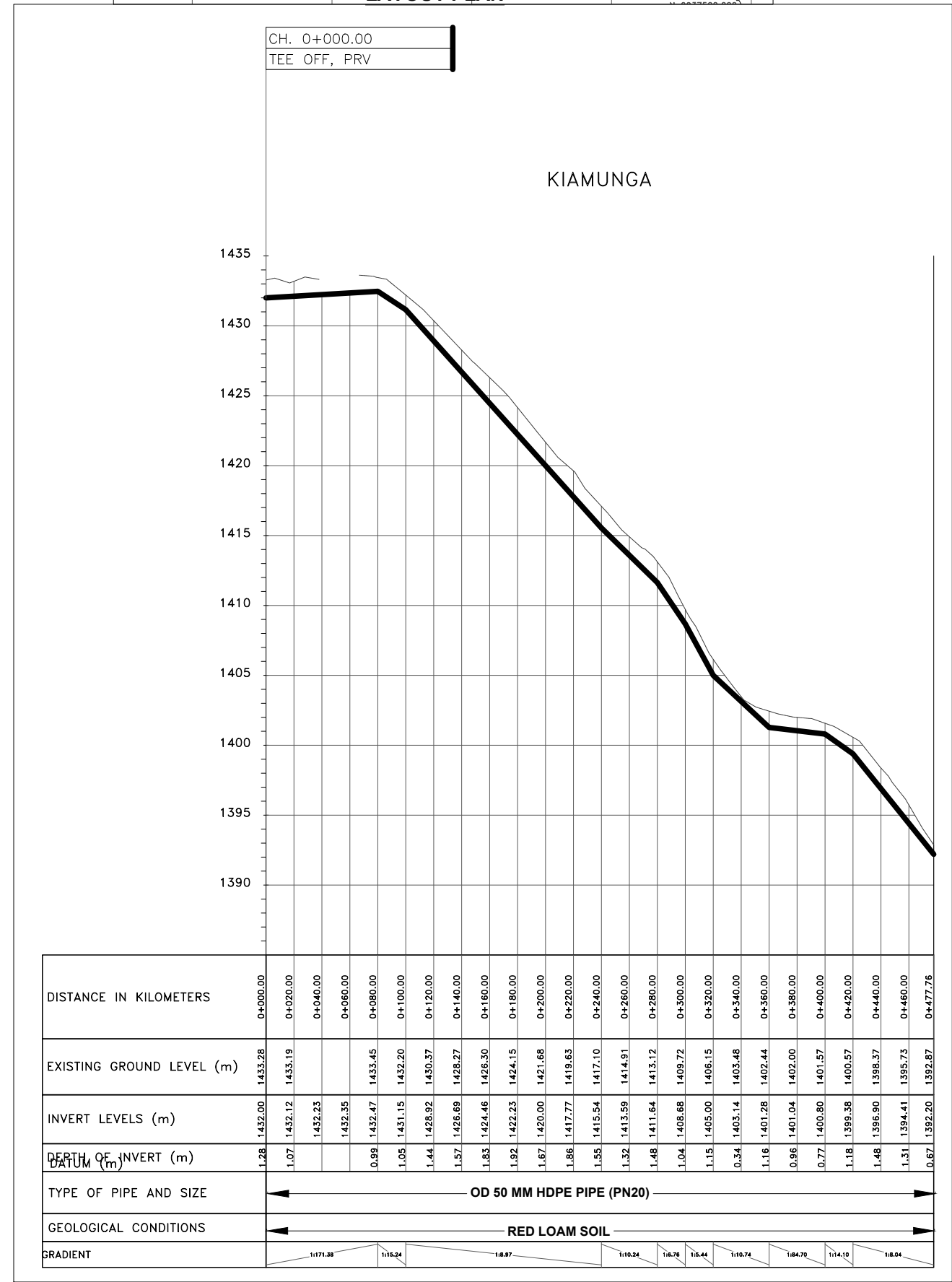
Designed by: D.N.W	Drawn by: A.M.M
Checked by: J.M.M	Approved by: D.N.M
Scale: H: 1:4000, V: 1:400	Date: AUGUST 2022



DRG No. **KMGO/AD/01**



LAYOUT PLAN



LONGITUDINAL SECTION

- NOTES:**
1. CONTOUR LEVELS ARE IN METERS AT TWO METER INTERVALS
  2. GRID VALUES ARE IN METERS AT 100 METER INTERVALS
  3. GEOLOGICAL CONDITIONS INDICATED ON DRAWING ARE FOR GENERAL GUIDANCE ONLY

- LEGEND:**
- PROPOSED TREATED WATER GRAVITY MAIN
  - HORIZONTAL BEND (H) OR VERTICAL BEND (V) WITH ANGLE INDICATED
  - EX. EXISTING
  - PRV PRESSURE REDUCING VALVE
  - DAV DOUBLE ORIFICE AIR VALVE
  - GV GATE VALVE
  - SV SECTIONAL VALVE
  - WO WASHOUT VALVE
  - LAV LARGE AIR VALVE
  - SAV SMALL ORIFICE AIRVALVE
  - PROPOSED MASONRY CHAMBER
  - 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

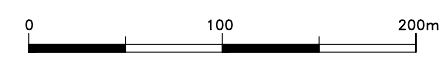
ENGINEER: **THE CHIEF EXECUTIVE OFFICER  
TANA WATER WORKS DEVELOPMENT  
AGENCY**  
P.O BOX 1292 - 10100,  
NYERI, KENYA

PROJECT TITLE:  
**KIAMUGUONGO WATER PTOJECT**

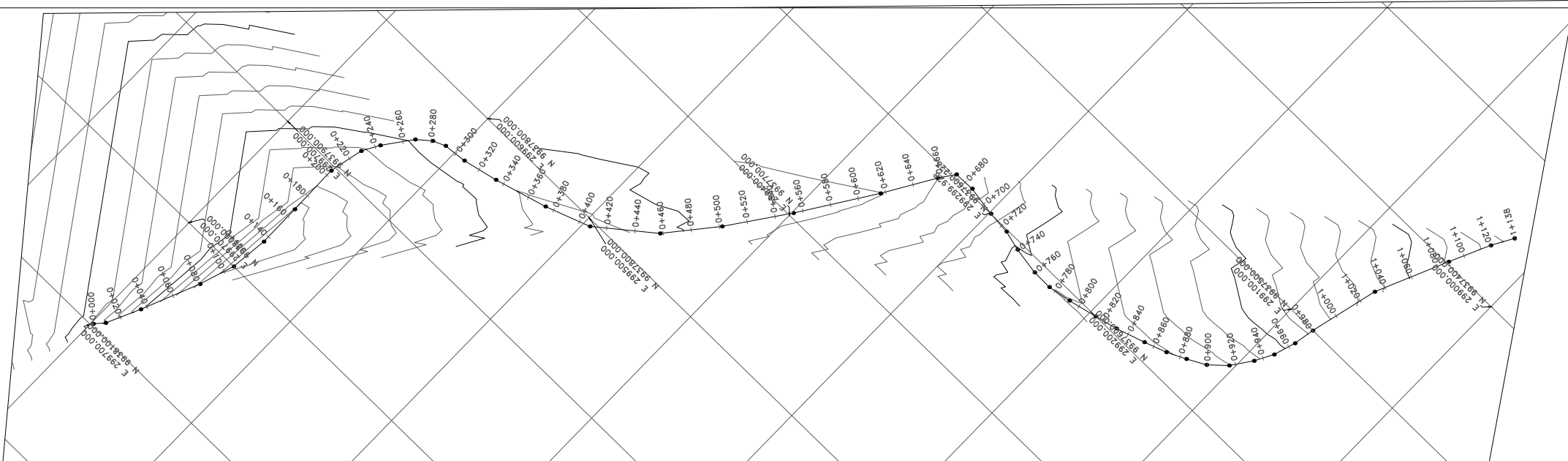
DRAWING TITLE:  
**KIAMUNGA DISTRIBUTION LINE**

**CH.0+000.00 - 0+477.76  
SHEET 1 OF 1**

Designed by: D.N.W Drawn by: A.M.M  
Checked by: J.M.M Approved by: D.N.M  
Scale: H- 1:4000, V- 1:400 Date: AUGUST 2022  
DRG No. **KMGO/KMD/01**







DISTANCE IN KILOMETERS	EXISTING GROUND LEVEL (m)	INVERT LEVELS (m)	DEPTH OF INVERT (m)	TYPE OF PIPE AND SIZE	GEOLOGICAL CONDITIONS	GRADIENT
0+000.00	1417.58	1416.00	1.57	OD 50 MM HDPE PIPE (PN20)		1:6.89
0+020.00	1413.95	1412.61	1.34			1:7.10
0+040.00	1409.94	1409.21	0.72	OD 25 MM HDPE PIPE (PN25)		1:11.28
0+060.00	1406.76	1405.82	0.94			1:12.15
0+080.00	1403.85	1403.00	0.85	0		1:16.45
0+100.00	1401.85	1401.23	0.62			1:11.46
0+120.00	1400.14	1399.58	0.56	1:28.06		1:25.75
0+140.00	1400.39	1400.37	1.02			1:15.51
0+160.00	1401.47	1400.59	0.88	1:75.30		1:25.96
0+180.00	1402.78	1401.80	0.98			1:6.82
0+200.00	1405.09	1403.02	2.08	1:65.10		1:45.47
0+220.00	1406.95	1404.76	2.19			1:9.66
0+240.00	1408.46	1406.51	1.95	0		1:11.29
0+260.00	1409.76	1408.25	1.51			2.14
0+280.00	1410.97	1410.00	0.97	1:37.86		1:375.02
0+300.00	1411.48	1410.33	1.15			1:376.83
0+320.00	1411.55	1410.65	0.90	1:375.36		1:373.22
0+340.00	1411.78	1410.98	0.80			1:23
0+360.00	1412.37	1411.31	1.06	1:372.82		1:371.59
0+380.00	1413.15	1411.65	1.51			
0+400.00	1413.46	1412.55	1.12			
0+420.00	1412.76	1411.50	1.25			
0+440.00	1411.54	1410.21	1.32			
0+460.00	1410.53	1408.92	1.60			
0+480.00	1409.82	1408.66	1.16			
0+500.00	1409.61	1408.39	1.22			
0+520.00	1409.12	1408.13	0.99			
0+540.00	1408.89	1407.86	1.02			
0+560.00	1408.76	1407.60	1.17			
0+580.00	1408.61	1407.33	1.28			
0+600.00	1408.40	1407.07	1.34			
0+620.00	1407.87	1406.30	1.58			
0+640.00	1406.86	1405.52	1.33			
0+660.00	1405.98	1404.75	1.22			
0+680.00	1405.22	1403.98	1.24			
0+700.00	1403.56	1401.91	1.65			
0+720.00	1401.53	1399.83	1.70			
0+740.00	1399.74	1397.75	1.99			
0+760.00	1398.39	1397.55	1.04			
0+780.00	1397.98	1396.95	1.03			
0+800.00	1397.71	1396.55	1.16			
0+820.00	1397.35	1396.15	1.19			
0+840.00	1396.84	1395.71	1.13			
0+860.00	1396.34	1395.27	1.07			
0+880.00	1395.87	1394.83	1.03			
0+900.00	1395.43	1394.39	1.04			
0+920.00	1393.69	1392.52	1.36			
0+940.00	1391.79	1390.25	1.54			
0+960.00	1389.69	1388.18	1.51			
0+980.00	1387.63	1386.11	1.52			
1+000.00	1385.60	1384.04	1.56			
1+020.00	1383.82	1382.24	1.58			
1+040.00	1382.02	1380.43	1.59			
1+060.00	1379.86	1378.63	1.22			
1+080.00	1377.86	1376.83				
1+100.00	1375.02	1375.02				
1+120.00	1373.36	1373.22	2.14			
1+138.13	1372.82	1371.59	1.23			

- NOTES:**
- CONTOUR LEVELS ARE IN METERS AT TWO METER INTERVALS
  - GRID VALUES ARE IN METERS AT 100 METER INTERVALS
  - GEOLOGICAL CONDITIONS INDICATED ON DRAWING ARE FOR GENERAL GUIDANCE ONLY

- LEGEND:**
- PROPOSED TREATED WATER GRAVITY MAIN
  - HORIZONTAL BEND (H) OR VERTICAL BEND (V) WITH ANGLE INDICATED
  - EX. EXISTING
  - PRV PRESSURE REDUCING VALVE
  - DAV DOUBLE ORIFICE AIR VALVE
  - GV GATE VALVE
  - SV SECTIONAL VALVE
  - WO WASHOUT VALVE
  - LAV LARGE AIR VALVE
  - SAV SMALL ORIFICE AIRVALVE
  - PROPOSED MASONRY CHAMBER
  - 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

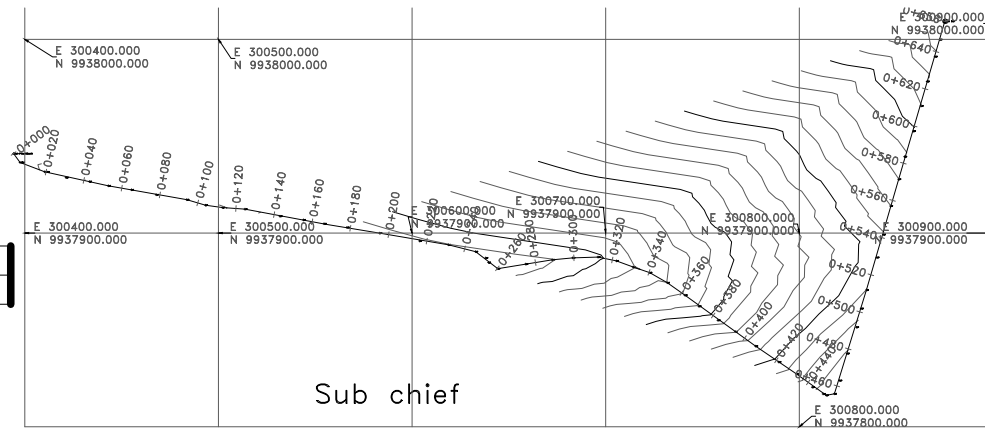
ENGINEER: **THE CHIEF EXECUTIVE OFFICER  
TANA WATER WORKS DEVELOPMENT  
AGENCY**  
P.O BOX 1292 - 10100,  
NYERI, KENYA

PROJECT TITLE:  
**KIAMUGUONGO WATER PTOJECT**

DRAWING TITLE:  
**NGATI DISTRIBUTION LINE**

**CH.0+000.00 - 1+138.13  
SHEET 1 OF 1**

Designed by: D.N.W      Drawn by: A.M.M  
Checked by: J.M.M      Approved by: D.N.M  
Scale: H: 1:4000, V: 1:400      Date: AUGUST 2022  
DRG No. **KMGO/ND/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+580.00	0+600.00	0+620.00	0+640.00	0+656.32		
EXISTING GROUND LEVEL (m)	1475.27	1473.64	1472.01			1468.88	1467.54				1462.59	1462.18	1462.31	1463.65	1462.73	1461.28	1459.47	1457.84	1454.12	1449.69	1444.57	1439.77	1435.33	1432.46	1434.10	1436.78	1438.31	1438.29		1432.82	1429.92	1427.08	1424.06	1422.16		
INVERT LEVELS (m)	1474.00	1472.56	1472.01			1468.88	1467.54				1462.59	1462.18	1462.31	1463.65	1462.73	1461.28	1459.47	1457.84	1454.12	1449.69	1444.57	1439.77	1435.33	1432.46	1434.10	1436.78	1438.31	1438.29		1432.82	1429.92	1427.08	1424.06	1422.16		
DEPTH OF INVERT (m)	1.27	1.28	1.29			1.24	0.92				1.09	0.59	0.64	1.88	1.85	1.28	1.30	1.50	1.18	1.48	1.21	1.25	1.63	1.33	0.96	1.62	1.14	0.78	1.39	1.54	1.75	2.01	0.85			
TYPE OF PIPE AND SIZE	← OD 40 MM HDPE PIPE (PN20) →																																			
GEOLOGICAL CONDITIONS	← RED LOAM SOIL →																																			
GRADIENT	1:112.18	1:119.52	1:115.64	1:225.50	1:22.64	1:110.93	1:8.88	1:4.33	1:4.13	1:4.15	1:7.80	1:8.93	1:8.55	1:4.57	1:6.10	1:22.26																				

**LONGITUDINAL SECTION**

- NOTES:**
1. CONTOUR LEVELS ARE IN METERS AT TWO METER INTERVALS
  2. GRID VALUES ARE IN METERS AT 100 METER INTERVALS
  3. GEOLOGICAL CONDITIONS INDICATED ON DRAWING ARE FOR GENERAL GUIDANCE ONLY

**LEGEND:**

	PROPOSED TREATED WATER GRAVITY MAIN
	HORIZONTAL BEND (H) OR VERTICAL BEND (V) WITH ANGLE INDICATED
EX.	EXISTING
PRV	PRESSURE REDUCING VALVE
DAV	DOUBLE ORIFICE AIR VALVE
GV	GATE VALVE
SV	SECTIONAL VALVE
WO	WASHOUT VALVE
LAV	LARGE AIR VALVE
SAV	SMALL ORIFICE AIRVALVE
	PROPOSED MASONRY CHAMBER
	DIRECTION (SLOPE MIN. OR 1 IN n)

**ISSUED FOR CONSTRUCTION**

REVISIONS		SIGN	DATE	APPROVED
BY	CHECKED			
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

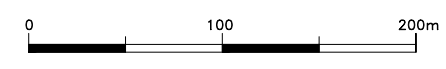
ENGINEER: **THE CHIEF EXECUTIVE OFFICER  
TANA WATER WORKS DEVELOPMENT  
AGENCY**  
P.O BOX 1292 - 10100,  
NYERI, KENYA

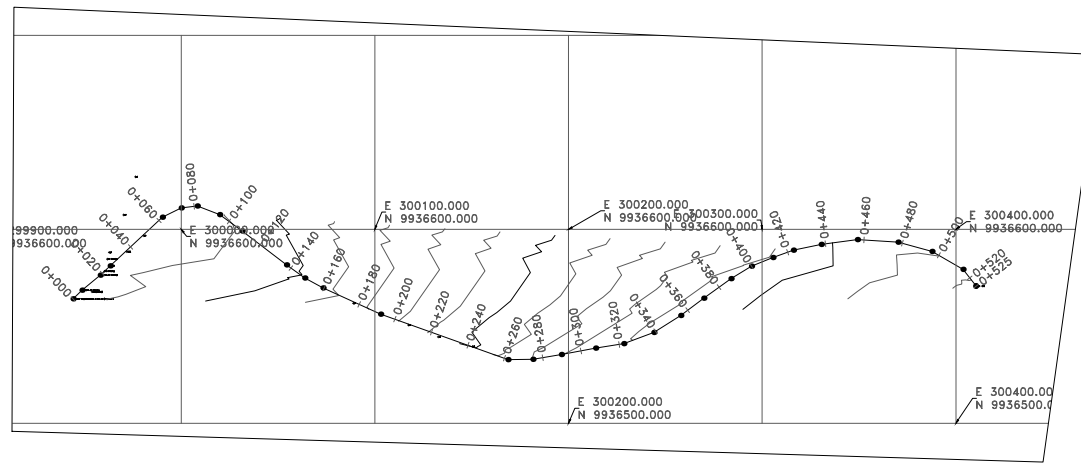
PROJECT TITLE:  
**KIAMUGUONGO WATER PTOJECT**

DRAWING TITLE:  
**SUB CHIEF DISTRIBUTION LINE**

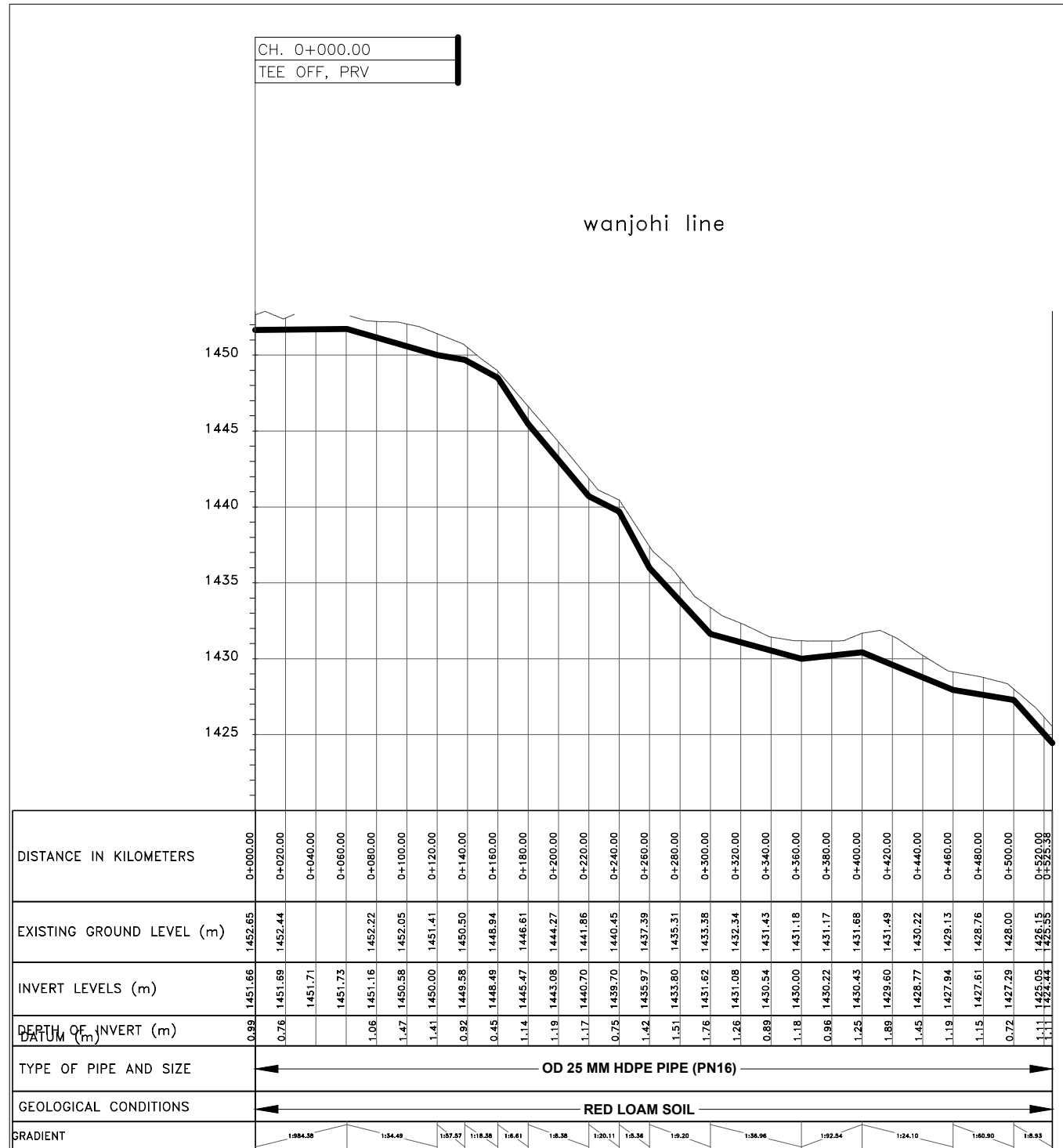
**CH.0+000.00 - 0+656.32  
SHEET 1 OF 1**

Designed by: D.N.W	Drawn by: A.M.M
Checked by: J.M.M	Approved by: D.N.M
Scale: H- 1:4000, V- 1:400	Date: AUGUST 2022
DRG No. <b>KMGO/SCD/01</b>	

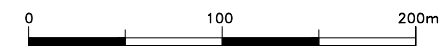




**LAYOUT**



**LONGITUDINAL SECTION**



- NOTES:**
1. CONTOUR LEVELS ARE IN METERS AT TWO METER INTERVALS
  2. GRID VALUES ARE IN METERS AT 100 METER INTERVALS
  3. GEOLOGICAL CONDITIONS INDICATED ON DRAWING ARE FOR GENERAL GUIDANCE ONLY

- LEGEND:**
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  - HORIZONTAL BEND (H) OR VERTICAL BEND (V) WITH ANGLE INDICATED
  - EX. EXISTING
  - PRV PRESSURE REDUCING VALVE
  - DAV DOUBLE ORIFICE AIR VALVE
  - GV GATE VALVE
  - SV SECTIONAL VALVE
  - WO WASHOUT VALVE
  - LAV LARGE AIR VALVE
  - SAV SMALL ORIFICE AIRVALVE
  - PROPOSED MASONRY CHAMBER
  - DIRECTION (SLOPE MIN. OR 1 IN n)

**ISSUED FOR CONSTRUCTION**

REVISIONS	SIGN	DATE	APPROVED

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

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

PROJECT TITLE:  
**KIAMUGUONGO WATER PTOJECT**

DRAWING TITLE:  
**WANJOHI DISTRIBUTION LINE**

**CH. 0+000.00 - 0+525.38  
SHEET 1 OF 1**

Designed by: D.N.W      Drawn by: A.M.M

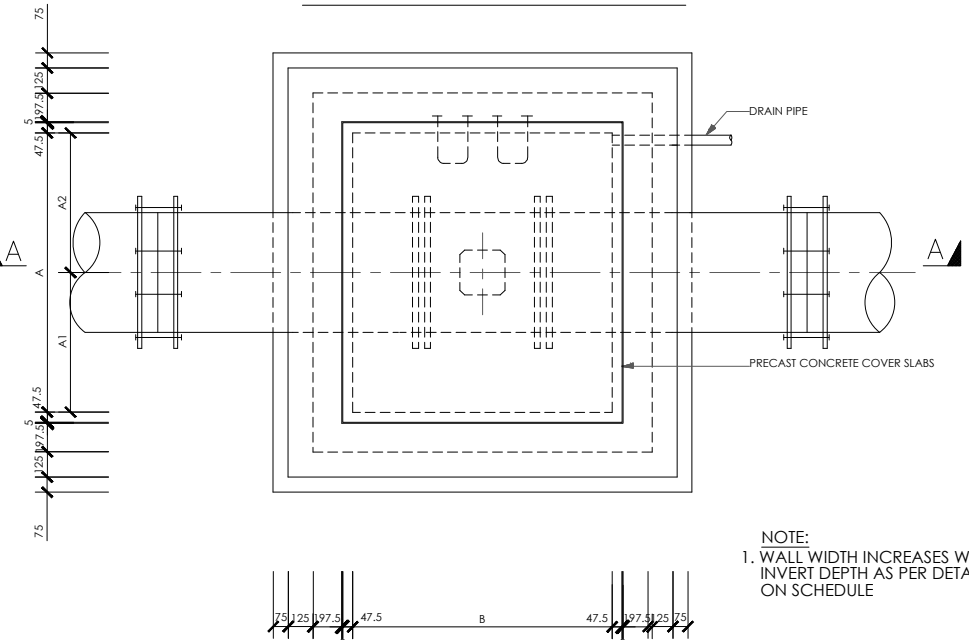
Checked by: J.M.M      Approved by: D.N.M

Scale: H- 1:4000, V- 1:400      Date: AUGUST 2022

DRG No. **KMGOWD/01**



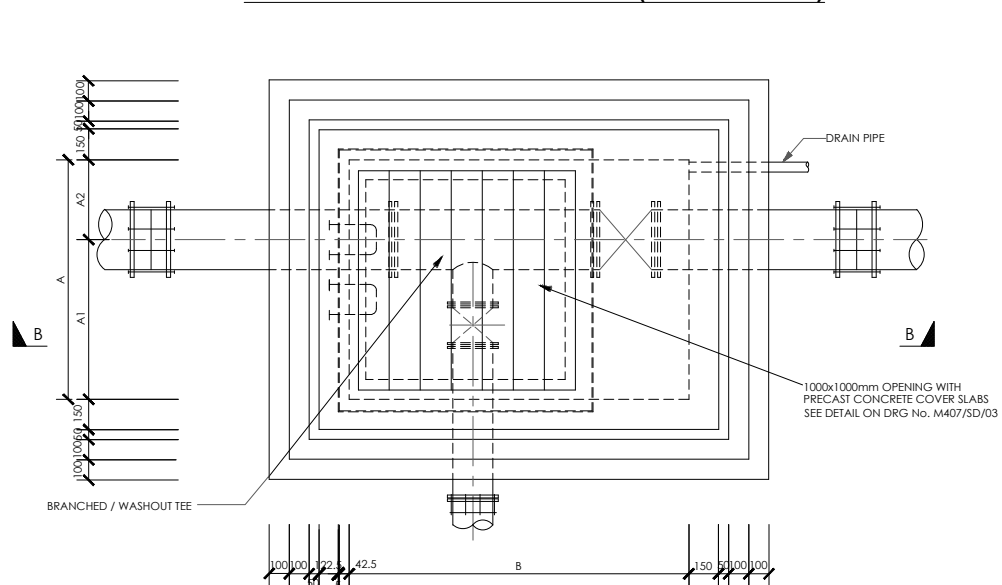
**TYPICAL AIR VALVE CHAMBER**



**PLAN OF CHAMBER**  
SCALE 1:40

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

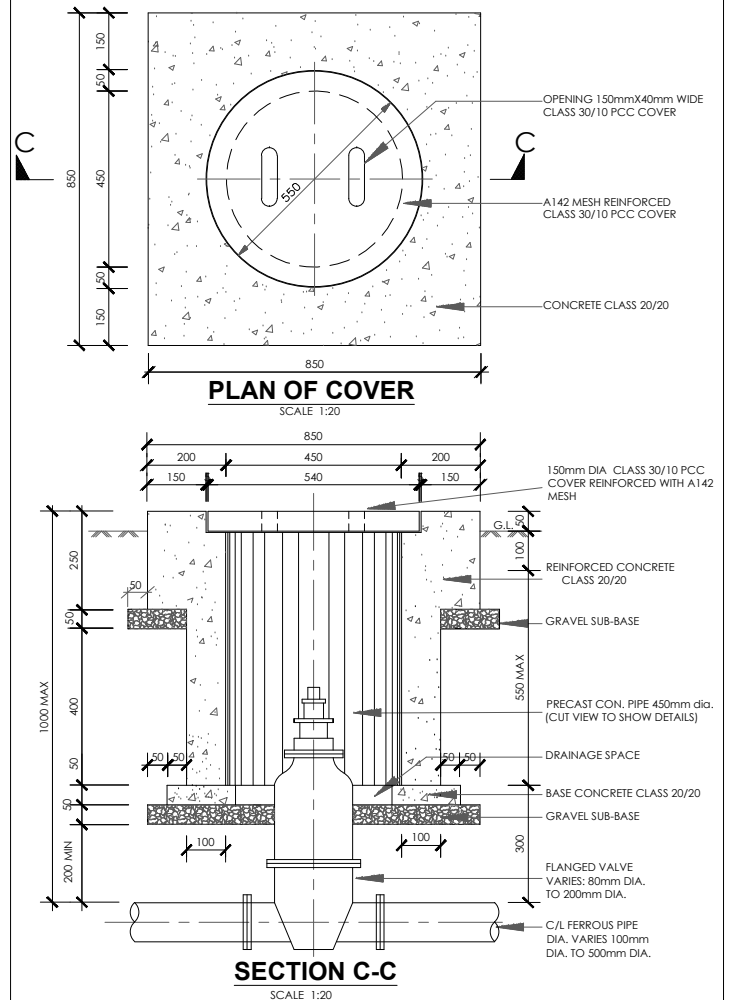
**TYPICAL VALVE CHAMBER DETAILS AT JUNCTIONS / WASHOUT VALVE (DEPTH > 1.0m)**



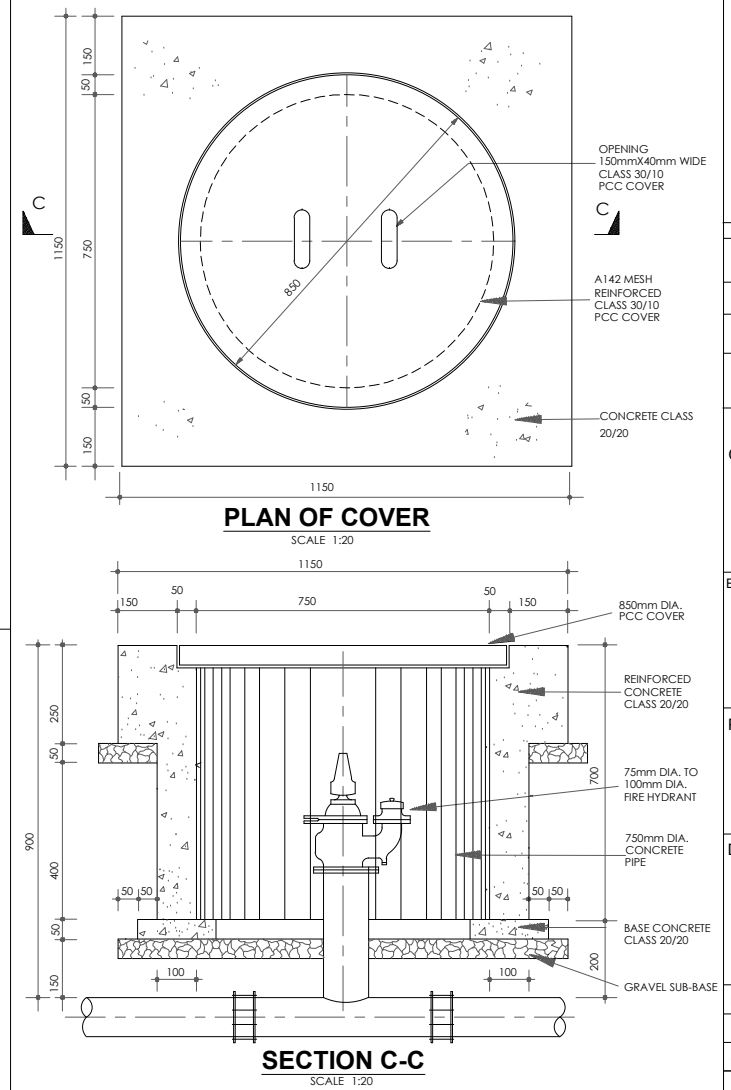
**PLAN OF CHAMBER**  
SCALE 1:40

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

**TYPICAL VALVE BOX DETAIL FOR WASHOUT / VALVE (DEPTH < 1.0m)**

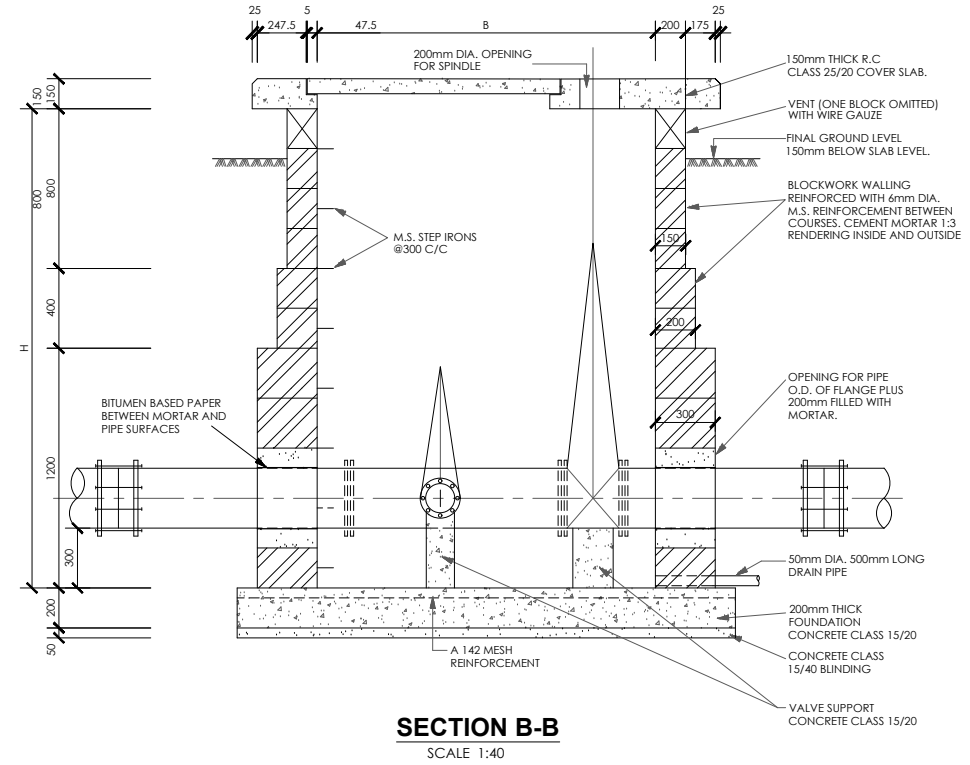
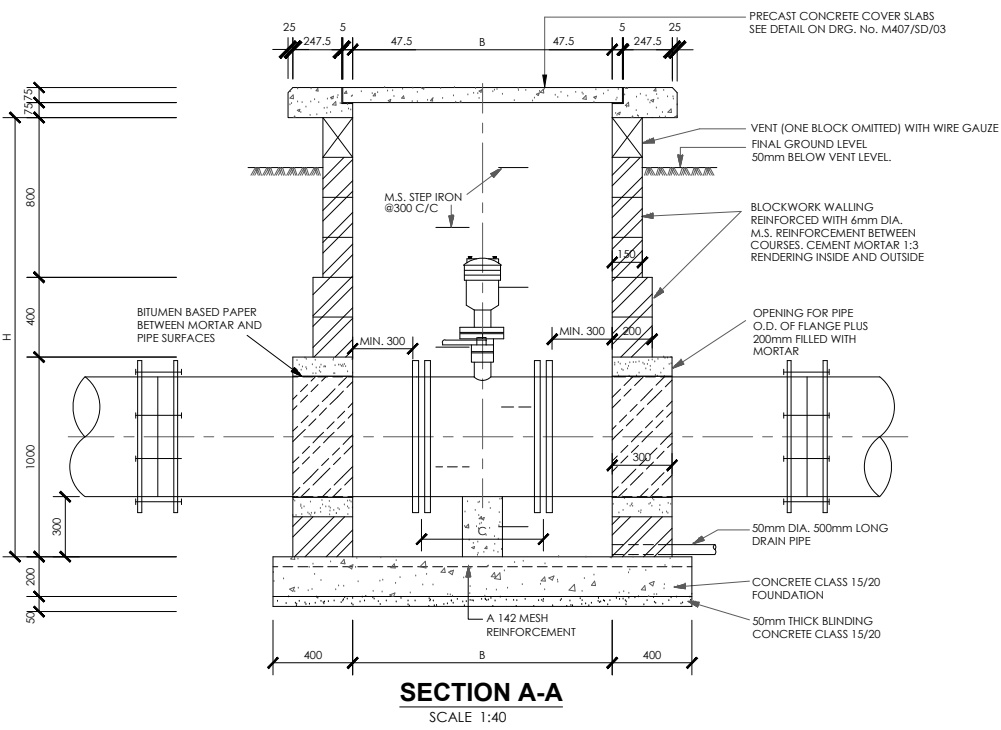


**TYPICAL VALVE BOX DETAIL FOR FIRE HYDRANT**



**NOTES**  
1. DIMENSIONS ARE SHOWN IN MILLIMETRES UNLESS OTHERWISE STATED

**ABBREVIATIONS**  
P.C.C. - PRECAST CONCRETE  
mm - MILLIMETRES  
O.D. - OUTSIDE DIAMETER  
M.S. - MILD STEEL  
DIA. - DIAMETER  
NO. - NUMBER  
R.C. - REINFORCED CONCRETE  
c/c - CENTRE TO CENTRE



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

PROJECT TITLE: **KIAMUGUONGO WATER PROJECT**

DRAWING TITLE: **STANDARD DRAWINGS**

**DETAILS OF VALVE CHAMBERS**

Designed by: D.N.W Drawn by: A.M.M  
Checked by: J.M.M Approved by: D.N.M  
Scale: AS SHOWN Date: AUGUST 2022  
DRG No. **KWP/CH/01**

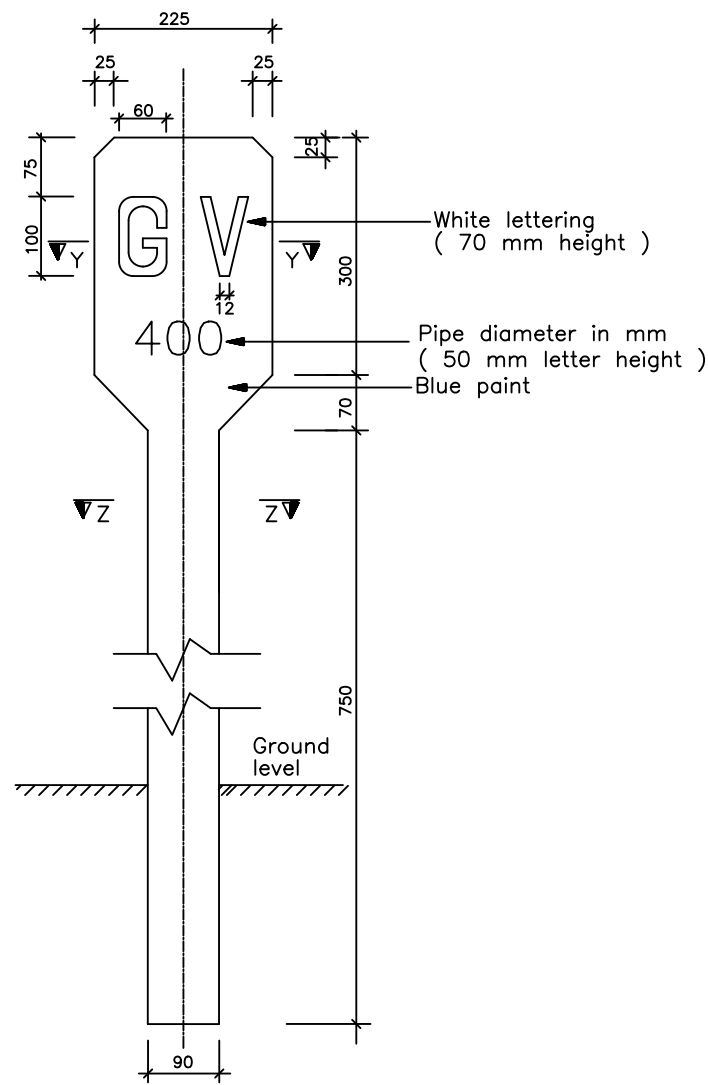
**CONSTRUCTION DETAILS FOR VALVE CHAMBERS**

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

**CHAMBER SIZE SCHEDULE FOR VARIOUS PIPE SIZES**

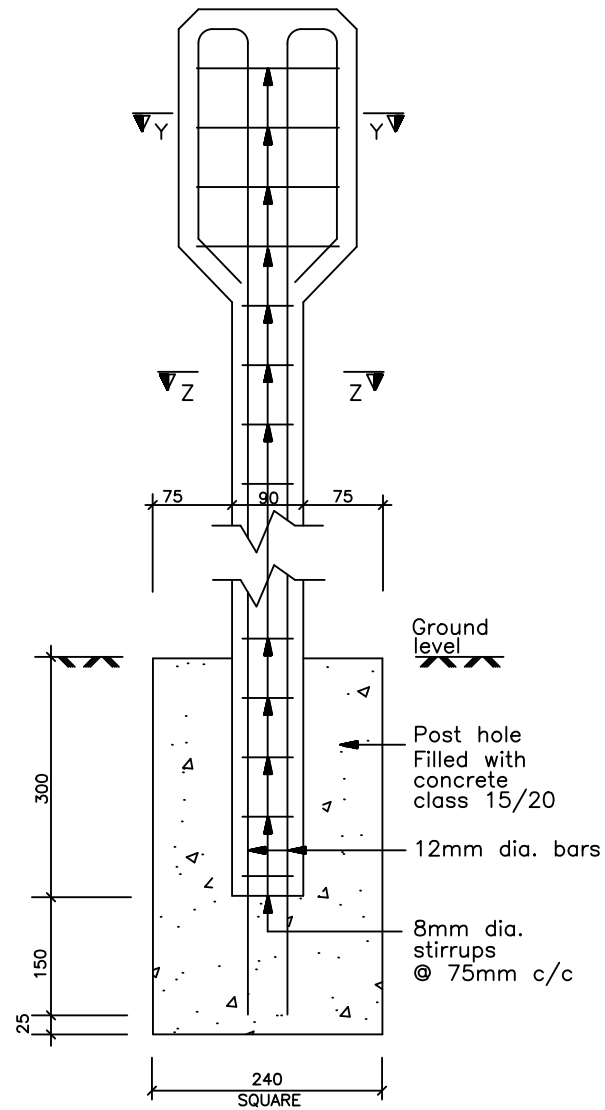
INVERT DEPTHS (mm)	HEIGHT OF WALL (mm)	WALL WIDTH (mm)
0 - 800	800	150 - MASONRY WALL
800 - 1200	400	200 - MASONRY WALL
1200 - 2400	1200	300 - MASONRY WALL
2400 - 3000	600	350 - MASONRY WALL
DEPTH MORE THAN 3000	-	300mm REINFORCED CONCRETE (CLASS 25/20) WALL

**CHAMBER DEPTHS & WALL THICKNESS SCHEDULE**



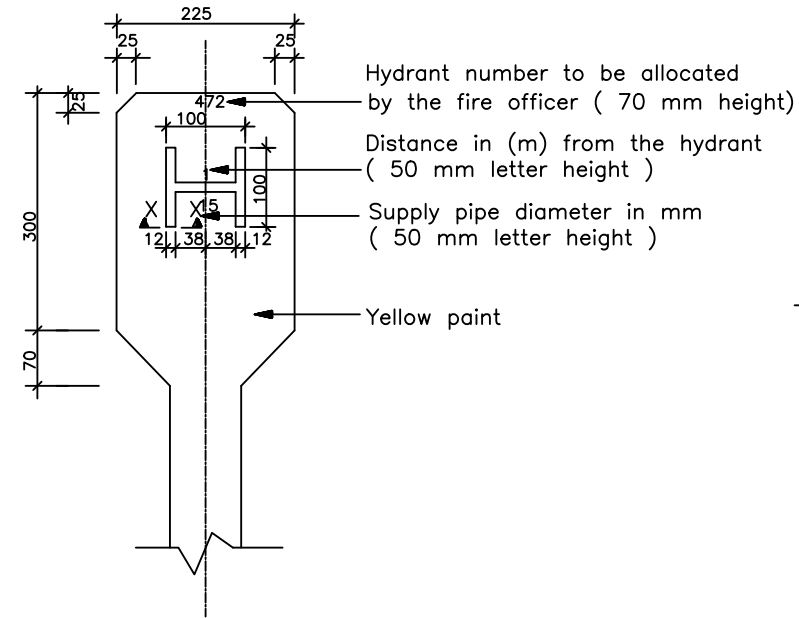
GATE VALVE INDICATOR POST

SCALE 1:10



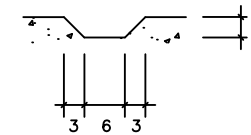
INDICATOR POST REINFORCEMENT DETAILS

SCALE 1:10



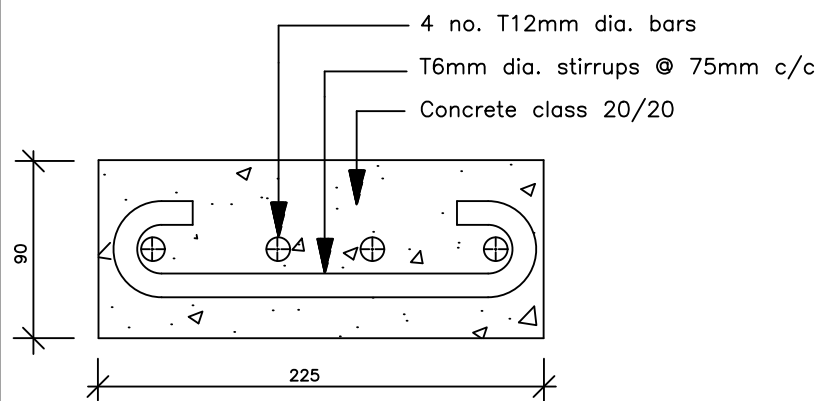
FIRE HYDRANT POST

SCALE 1:10



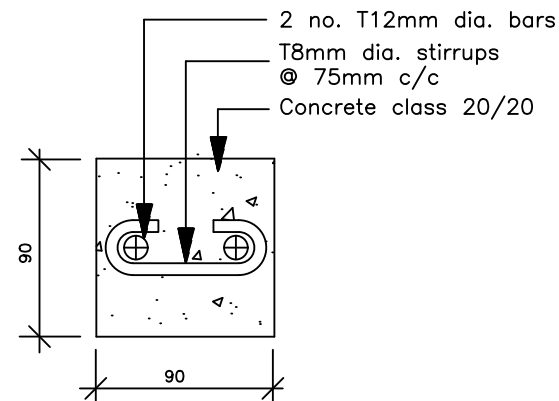
SECTION X-X

N.T.S.



SECTION Y-Y

SCALE 1:4



SECTION Z-Z

SCALE 1:4

- NOTES:**
1. CONTOUR LEVELS ARE IN METERS AT TWO METER INTERVALS
  2. GRID VALUES ARE IN METERS AT 100 METER INTERVALS
  3. GEOLOGICAL CONDITIONS INDICATED ON DRAWING ARE FOR GENERAL GUIDANCE ONLY

**LEGEND:**

- PROPOSED TREATED WATER GRAVITY MAIN
- HORIZONTAL BEND (H) OR VERTICAL BEND (V) WITH ANGLE INDICATED
- EX. EXISTING
- DAV DOUBLE ORIFICE AIR VALVE
- GV GATE VALVE
- SV SECTIONAL VALVE
- WO WASHOUT VALVE
- LAV LARGE AIR VALVE
- SAV SMALL ORIFICE AIRVALVE
- PROPOSED MASONRY CHAMBER
- 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: **THE CHIEF EXECUTIVE OFFICER  
TANA WATER WORKS DEVELOPMENT  
AGENCY**  
P.O BOX 1292 - 10100,  
NYERI, KENYA

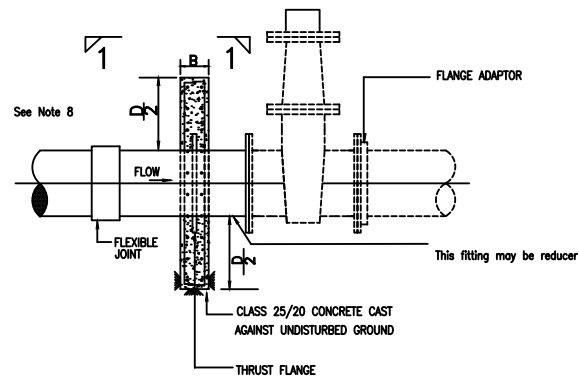
PROJECT TITLE:  
**KIAMUGUONGO WATER PTOJECT**

DRAWING TITLE:

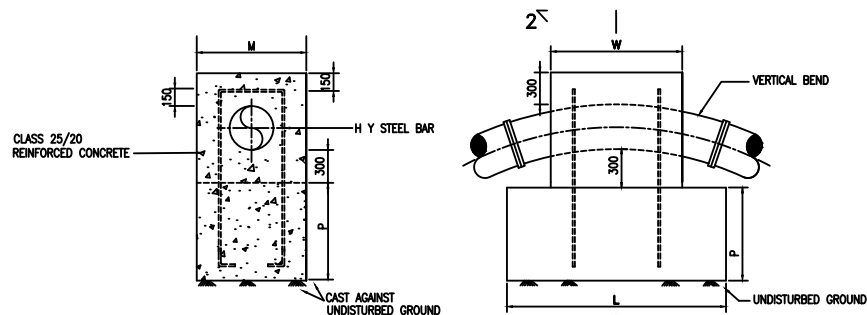
**MARKER POST**

Designed by: D.N.W	Drawn by: A.M.M
Checked by: J.M.M	Approved by: D.N.M
Scale: H- 1:4000, V- 1:400	Date: AUGUST 2022

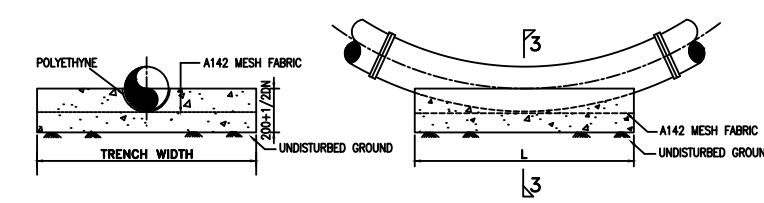
DRG No. **KMGO/MP/01**



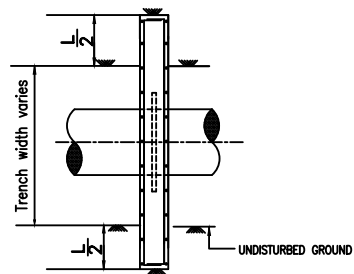
**ELEVATION  
ANCHOR BLOCK  
FOR GATE VALVES**



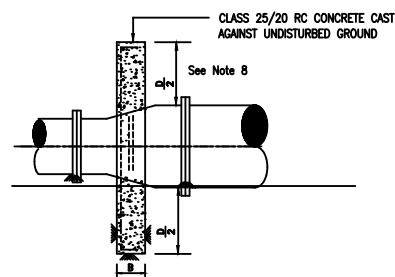
**SECTION 2 - 2  
UPTHRUST THRUST  
UPVERTICAL BENDS - TYPICAL**



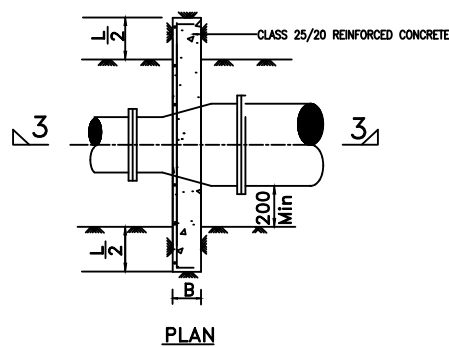
**SECTION 3 - 3  
DOWNTHRUST VERTICAL  
BENDS - TYPICAL**



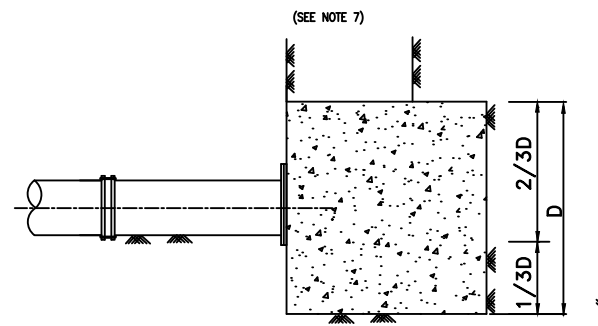
**SECTION 1 - 1**



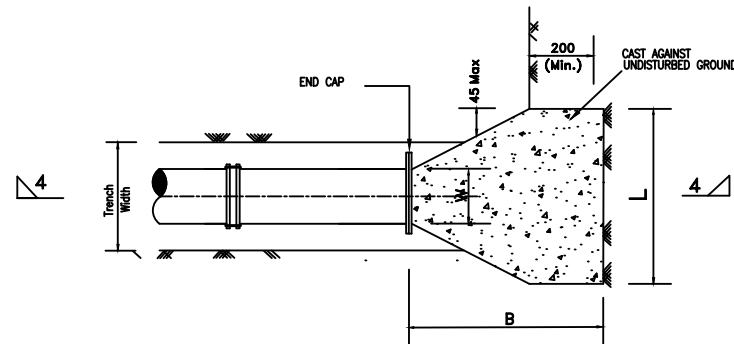
**SECTION 3 - 3  
THRUST BLOCKS FOR TAPERS**



**PLAN**



**Section 4 - 4**



**Plan  
Thrust Block for Blank Ends**

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

**Table of Anchor Blocks  
For Gate Valves**

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

**TABLE OF ANCHOR BLOCKS FOR BLANK ENDS**

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

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

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

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

- NOTES:**
1. CONTOUR LEVELS ARE IN METERS AT TWO METER INTERVALS
  2. GRID VALUES ARE IN METERS AT 100 METER INTERVALS
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- LEGEND:**
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  - 30° HORIZONTAL BEND (H) OR VERTICAL BEND (V) WITH ANGLE INDICATED
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  - DAV DOUBLE ORIFICE AIR VALVE
  - GV GATE VALVE
  - SV SECTIONAL VALVE
  - WO WASHOUT VALVE
  - LAV LARGE AIR VALVE
  - SAV SMALL ORIFICE AIRVALVE
  - PROPOSED MASONRY CHAMBER
  - DIRECTION (SLOPE MIN. OR 1 IN n)

**ISSUED FOR CONSTRUCTION**

REVISIONS				SIGN	DATE	APPROVED
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	CHECKED					
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	CHECKED					
	BY					
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CLIENT: **THE CHIEF EXECUTIVE OFFICER  
TANA WATER WORKS  
DEVELOPMENT AGENCY**  
P.O BOX 1292 - 10100,  
NYERI, KENYA

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

PROJECT TITLE:  
**KIAMUGUONGO WATER PTOJECT**

DRAWING TITLE:  
**ANCHOR AND THRUST BLOCKS**

Designed by: D.N.W      Drawn by: A.M.M  
Checked by: J.M.M      Approved by: D.N.M  
Scale: H- 1:4000, V- 1:400      Date: AUGUST 2022

DRG No. **KMGO/AT/01**