

IGITUDINAL SECTION OF ABWETENE RETICULATION LINE

NOTES

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

LEGEND:

- PROPOSED PIPELINE
- EXISTING GROUND PROFILE
- - PIPE INVERT PROFILE



- DOUBLE AIR VALVE

- WASHOUT

- WASHOUT TYPE 2 WO2 NOMINAL DIAMETER DN

- HORIZONTAL BEND

- EXISTING STRUCTURE

- NOMINAL PRESSURE

ER - EARTH ROAD - GRAVEL ROAD

signed CMTS

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CLIENT



OFFICER
TANA WATER WORKS
DEVELOPMENT AGENCY

PROJECT

DESIGN FOR KAARI WATER SUPPLY PROJECT

Civil/Structural Engineers



Drawing Title

CH.0+000.00-0+752.00 SHEET 1 OF 1

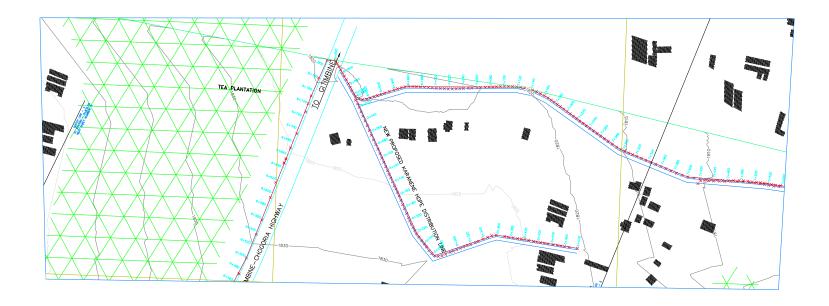
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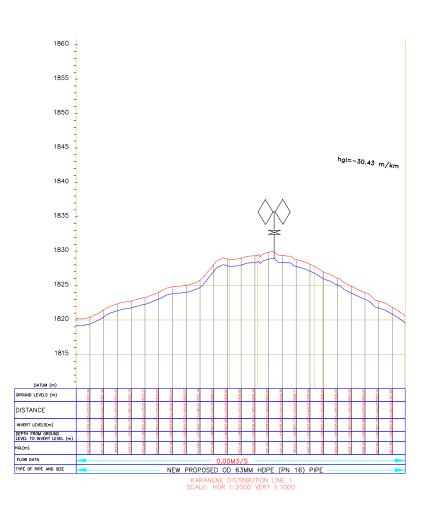
Designed by G.M.G Drawn by G.M.G

ABWETENE RETICULATION LINE FROM

Checked byJMM/KNG Approved by D.N.M Scale 1:3750 Date MARCH-2024

Job No. 1.0 ACAD File: ACADFILENAME





ONGITUDINAL SECTION OF KARANENE RETICULATION LINE

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- HORIZONTAL BEND

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- NOMINAL PRESSURE

ER - EARTH ROAD - GRAVEL ROAD

signed CMTS

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

PROJECT

DESIGN FOR KAARI WATER SUPPLY PROJECT

Civil/Structural Engineers



Drawing Title

KARANENE RETICULATION LINE FROM CH.0+000.00-0+460.00 SHEET 1 OF 1

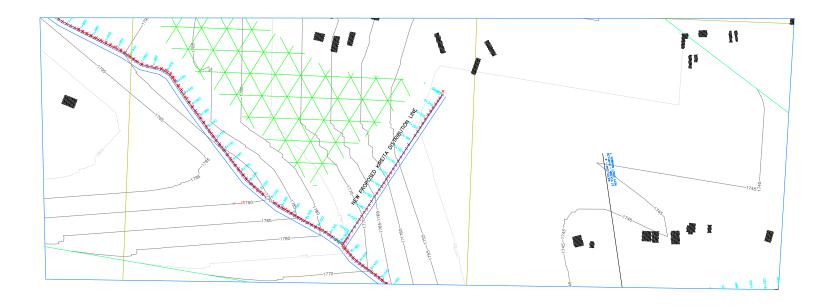
PLAN AND PROFILE DRAWINGS

Surveyed by N.G.W

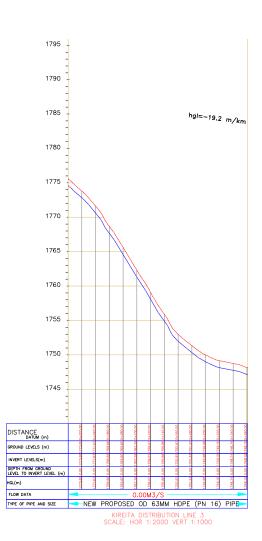
Designed by G.M.G Drawn by G.M.G

Checked byJMM/KNG Approved by D.N.M Scale 1:3750 Date MARCH-2024 Job No. 1.0 ACAD File: ACADFILENAME

PD DRAWING No. TWWDA/KSWP



PLAN



LONGITUDINAL SECTION OF KIREITA RETICULATION LINE

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LEGEND:

- PROPOSED PIPELINE
- EXISTING GROUND PROFILE
- PIPE INVERT PROFILE



AV - DOUBLE AIR VALVE



WO2 - WASHOUT TYPE 2
DN - NOMINAL DIAMETER

HB - HORIZONTAL BEND

- EXISTING STRUCTURE

- NOMINAL PRESSURE

ER — EARTH ROAD GR — GRAVEL ROAD

FOR CONSTRUCTION

signed CMTS

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

PROJECT

DESIGN FOR KAARI WATER SUPPLY PROJECT

Civil/Structural Engineers



Drawing Title

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

KIREITA RETICULATION LINE FROM CH.0+000.00-0+260.00 SHEET 1 OF 1

PLAN AND PROFILE DRAWINGS

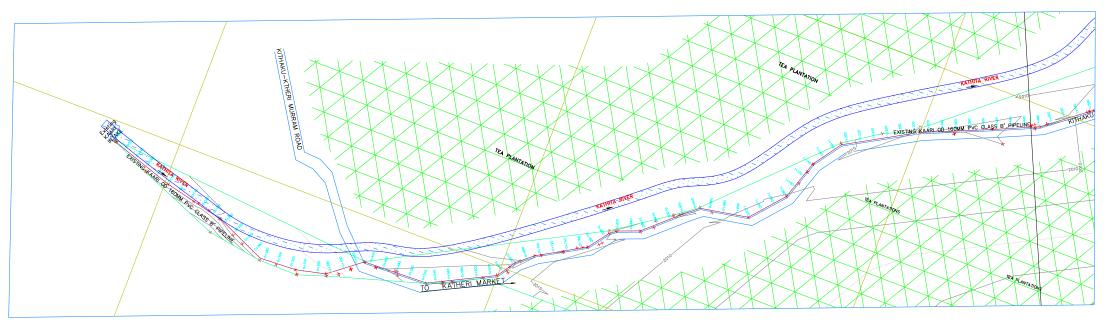
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Designed by G.M.G Drawn by G.M.G

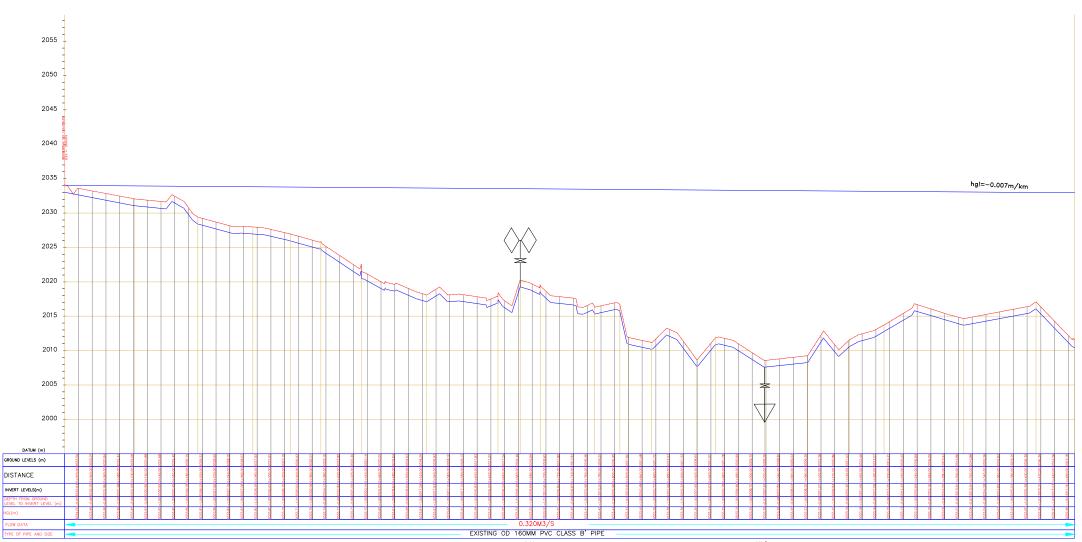
Checked byJMM/KNG Approved by D.N.M

Scale 1:3750 Date MARCH—2024

Job No. 1.0 ACAD File: ACADFILENAME



PLAN



A. Kaari Transmission Main SCALE: HOR 1:2000 VERT 1:1000 W.0

INGITUDINAL SECTION OF KAARI TRANSMISSION MAIN

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LEGEND:

- PROPOSED PIPELINE
- EXISTING GROUND PROFILE
- PIPE INVERT PROFILE

- AIR VALVE

V - DOUBLE AIR VALVE

- WASHOUT

WO2 - WASHOUT TYPE 2
DN - NOMINAL DIAMETER

HB – HORIZONTAL BEND

- EXISTING STRUCTURE

- NOMINAL PRESSURE

ER — EARTH ROAD GR — GRAVEL ROAD

OR CONSTRUCTION

signed CMTS

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

PROJECT

DESIGN FOR KAARI WATER SUPPLY PROJECT

Civil/Structural Engineers



CHIEF MANAGER TECHNIC SERVICES TANA WATER WORKS DEVELOPMENT AGENCY P. O. BOX 1292-10100

Drawing Title

KAARI WATER TRANSMISSION MAIN FROM CH.0+000.00-1+460.00
SHEET 1 OF 7

PLAN AND PROFILE DRAWINGS

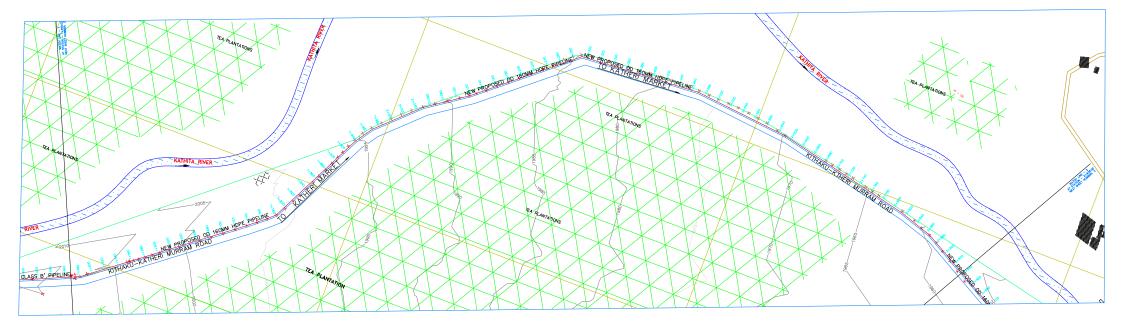
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Designed by G.M.G

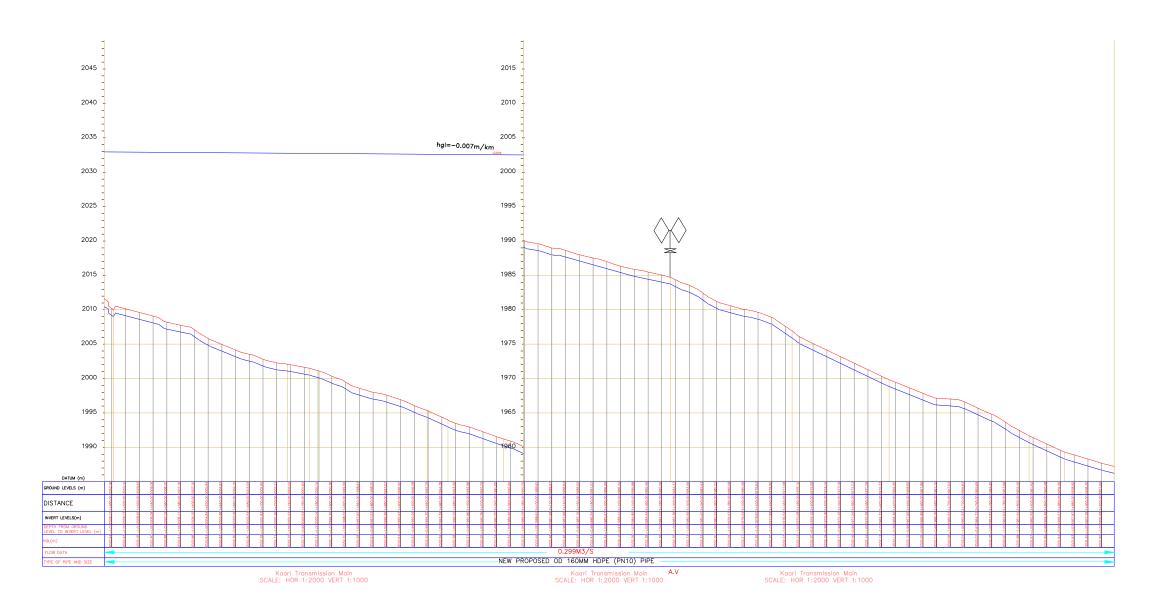
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Scale 1:3750 Date MARCH—2024

Job No. 1.0 ACAD File: ACADFILENAME



PLAN



ONGITUDINAL SECTION OF KAARI TRANSMISSION MAIN

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- PROPOSED PIPELINE
- EXISTING GROUND PROFILE
- PIPE INVERT PROFILE



AV - DOUBLE AIR VALVE

- WASHOUT

WO2 — WASHOUT TYPE 2
DN — NOMINAL DIAMETER
PN — NOMINAL PRESSURE

HB - HORIZONTAL BEND - EXISTING STRUCTUR

EXISTING STRUCTUREEARTH ROAD

GR - GRAVEL ROAD

OR CONSTRUCTION

signed CMTS

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OFFICER
TANA WATER WORKS
DEVELOPMENT AGENCY
P. O. BOX 1292-1010
NYFRI

PROJECT

DESIGN FOR KAARI WATER SUPPLY PROJECT

Civil/Structural Engineers



CHIEF MANAGER TECHNI SERVICES TANA WATER WORKS DEVELOPMENT AGENCY P. O. BOX 1292-10100

Drawing Title

KAARI WATER TRANSMISSION MAIN FROM CH.1+460.00-2+940.00
SHEET 2 OF 7

PLAN AND PROFILE DRAWINGS

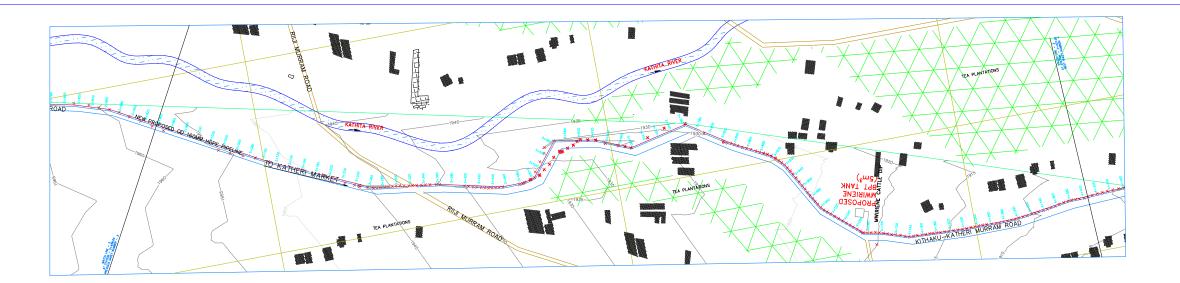
Surveyed by N.G.W

Designed by G.M.G

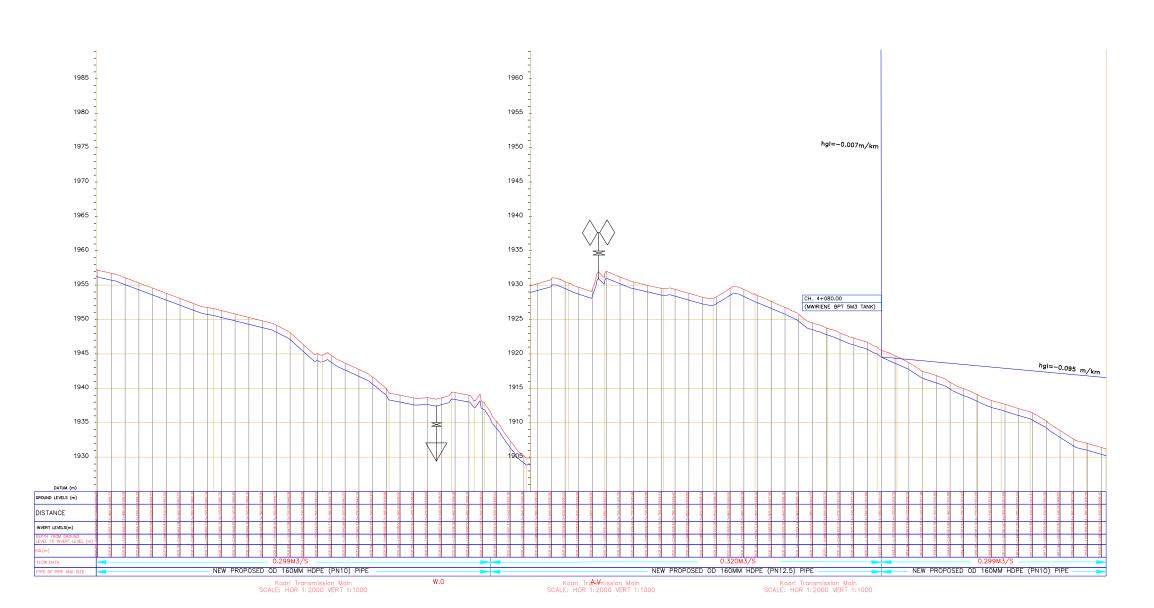
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Scale 1:3750 Date MARCH-2024

Job No. 1.0 ACAD File: ACADFILENAME







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LEGEND:

- PROPOSED PIPELINE
- EXISTING GROUND PROFILE
- PIPE INVERT PROFILE



- DOUBLE AIR VALVE

- WASHOUT

- WASHOUT TYPE 2 WO2 DN NOMINAL DIAMETER

- NOMINAL PRESSURE

- HORIZONTAL BEND

- EXISTING STRUCTURE

ER - EARTH ROAD - GRAVEL ROAD

signed CMTS

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OFFICER
TANA WATER WORKS
DEVELOPMENT AGENCY

PROJECT

DESIGN FOR KAARI WATER SUPPLY PROJECT

Civil/Structural Engineers



Drawing Title

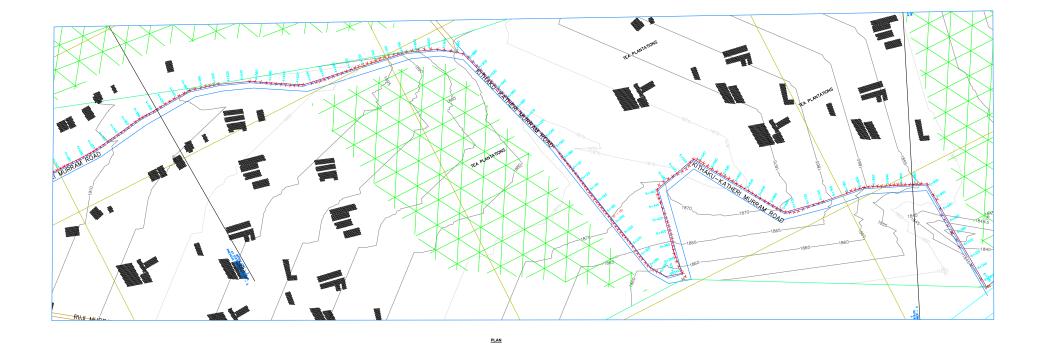
KAARI WATER TRANSMISSION MAIN FROM CH.2+940.00-4+420.00 SHEET 3 OF 7

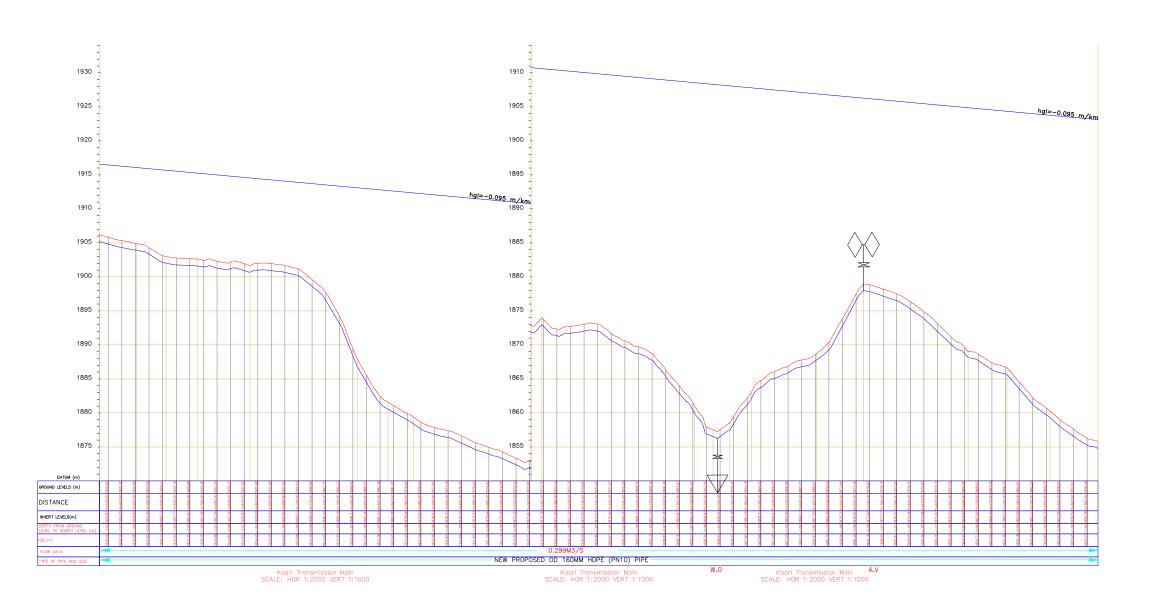
PLAN AND PROFILE DRAWINGS

Surveyed by N.G.W

Designed by G.M.G Drawn by G.M.G

Checked byJMM/KNG Approved by D.N.M Scale 1:3750 Date MARCH-2024 Job No. 1.0 ACAD File: ACADFILENAME





ONGITUDINAL SECTION OF KAARI TRANSMISSION MAIN

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- EXISTING GROUND PROFILE
- PIPE INVERT PROFILE



- AIR VALVE

- DOUBLE AIR VALVE

- WASHOUT

WO2 - WASHOUT TYPE 2
DN - NOMINAL DIAMETER

HB - HORIZONTAL BEND

- NOMINAL PRESSURE

- EXISTING STRUCTURE

ER — EARTH ROAD

GR - GRAVEL ROAD

FOR CONSTRUCTION

signed CMTS

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

PROJECT

DESIGN FOR KAARI WATER SUPPLY PROJECT

Civil/Structural Engineers



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

Drawing Title

KAARI WATER TRANSMISSION MAIN FROM CH.4+420.00-5+880.00
SHEET 4 OF 7

PLAN AND PROFILE DRAWINGS

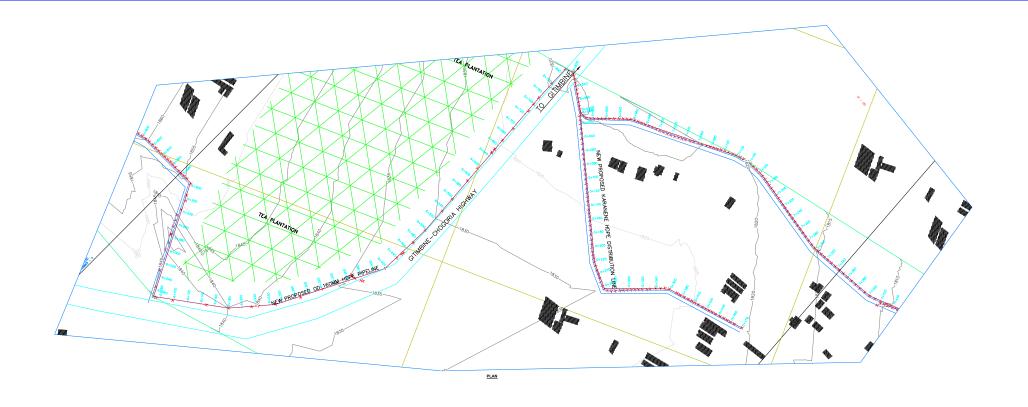
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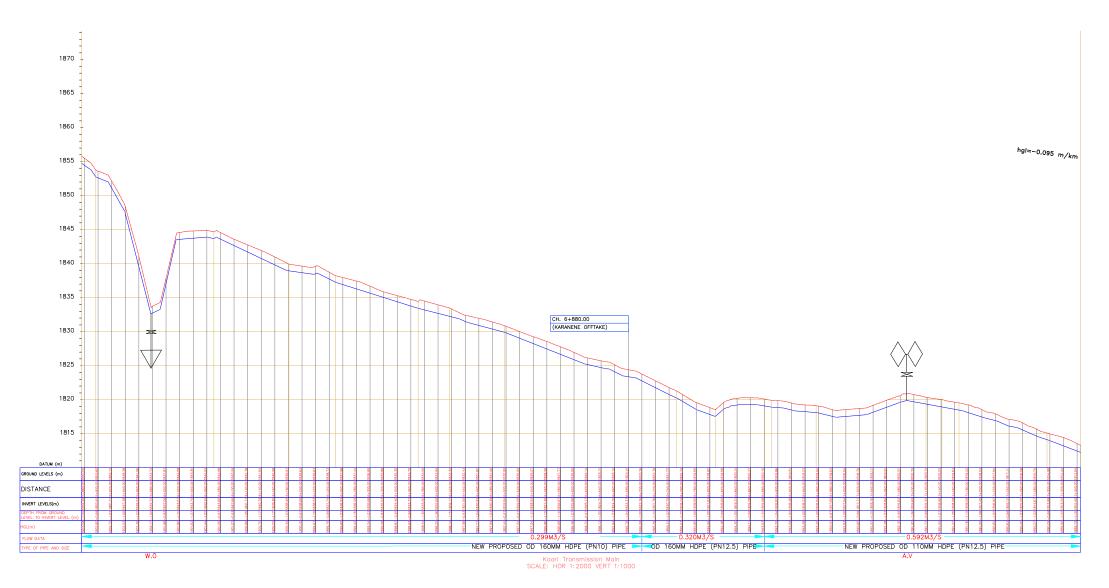
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- EXISTING GROUND PROFILE
- PIPE INVERT PROFILE
 - AIR VALVE
- 7.011
- DOUBLE AIR VALVE
- WASHOUT
- WO2 WASHOUT TYPE 2
- DN NOMINAL DIAMETER

- NOMINAL PRESSURE

- HB HORIZONTAL BEND - EXISTING STRUCTUR
 - EXISTING STRUCTUREEARTH ROAD
- GR GRAVEL ROAD

FOR CONSTRUCTION

signed CMTS

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

PROJECT

DESIGN FOR KAARI WATER SUPPLY PROJECT

Civil/Structural Engineers



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

Drawing Title

KAARI WATER TRANSMISSION MAIN FROM CH.5+880.00-7+340.00
SHEET 5 OF 7

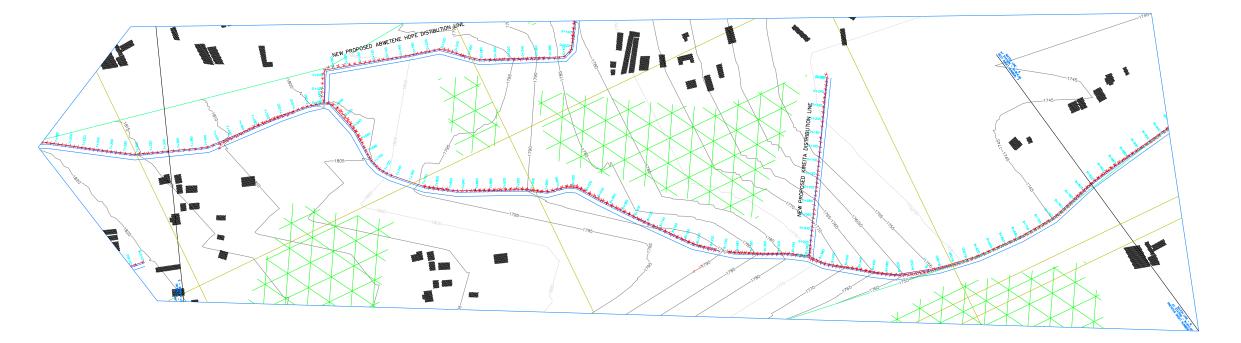
PLAN AND PROFILE DRAWINGS

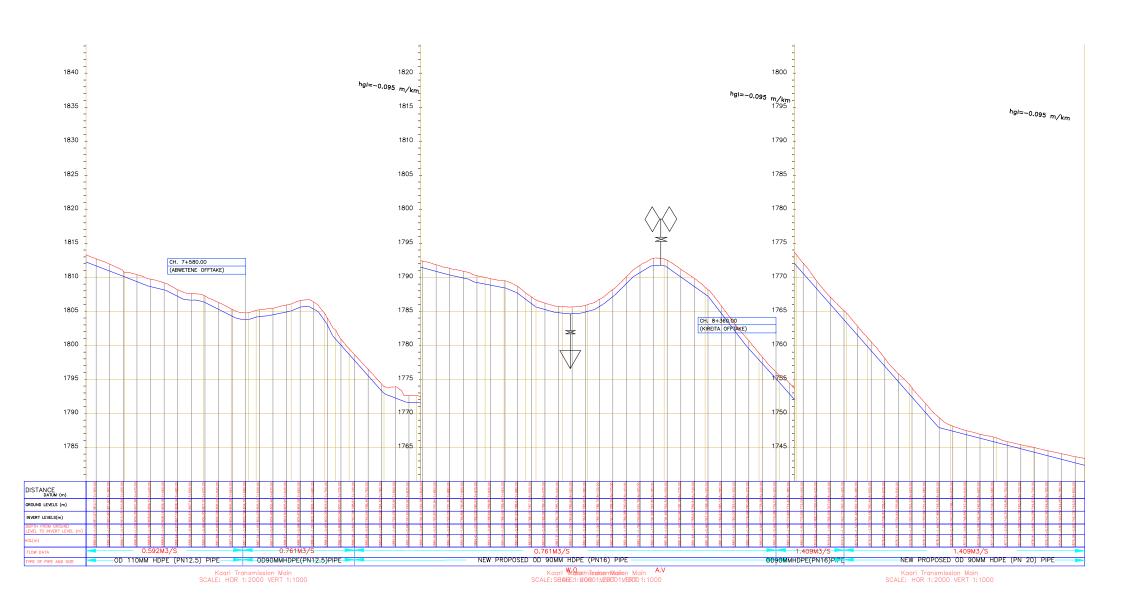
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| Scale 1:3750 | Date MARCH-2024 | Job No. | 1.0 | ACAD File: ACADFILENAME





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LEGEND:

- PROPOSED PIPELINE
- EXISTING GROUND PROFILE
- PIPE INVERT PROFILE
 - AIR VALVE
- DOUBLE AIR VALVE
- WASHOUT
- WASHOUT TYPE 2 WO2
- NOMINAL DIAMETER DN - NOMINAL PRESSURE
- HORIZONTAL BEND
- EXISTING STRUCTURE
- ER - EARTH ROAD - GRAVEL ROAD

signed CMTS

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Civil/Structural Engineers



Drawing Title

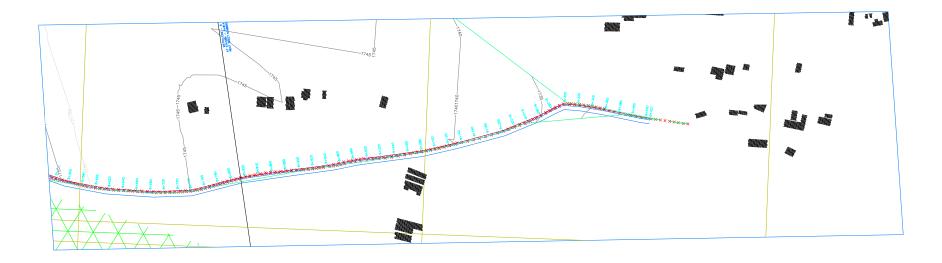
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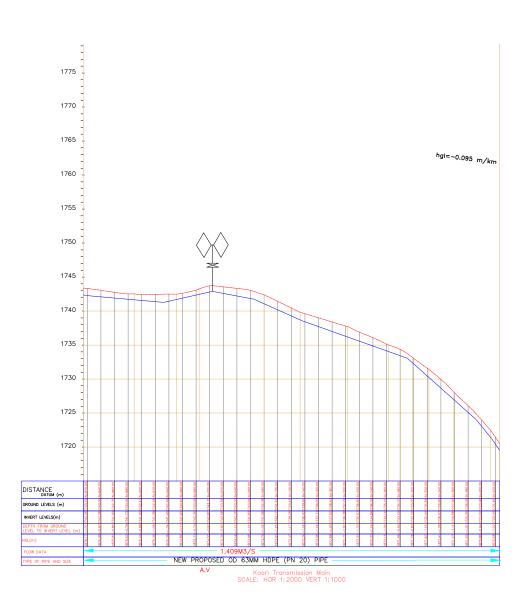
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Surveyed	by	N.G.
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- - PIPE INVERT PROFILE



- DOUBLE AIR VALVE

- WASHOUT

- WASHOUT TYPE 2 WO2 - NOMINAL DIAMETER DN

- HORIZONTAL BEND

- EXISTING STRUCTURE

- NOMINAL PRESSURE

ER - EARTH ROAD - GRAVEL ROAD

signed CMTS

REV	REVISIONS		SIGN	DATE	APPROVED	
REV-	4	BY				
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CLIENT



OFFICER
TANA WATER WORKS
DEVELOPMENT AGENCY

PROJECT

DESIGN FOR KAARI WATER SUPPLY PROJECT

Civil/Structural Engineers



Drawing Title

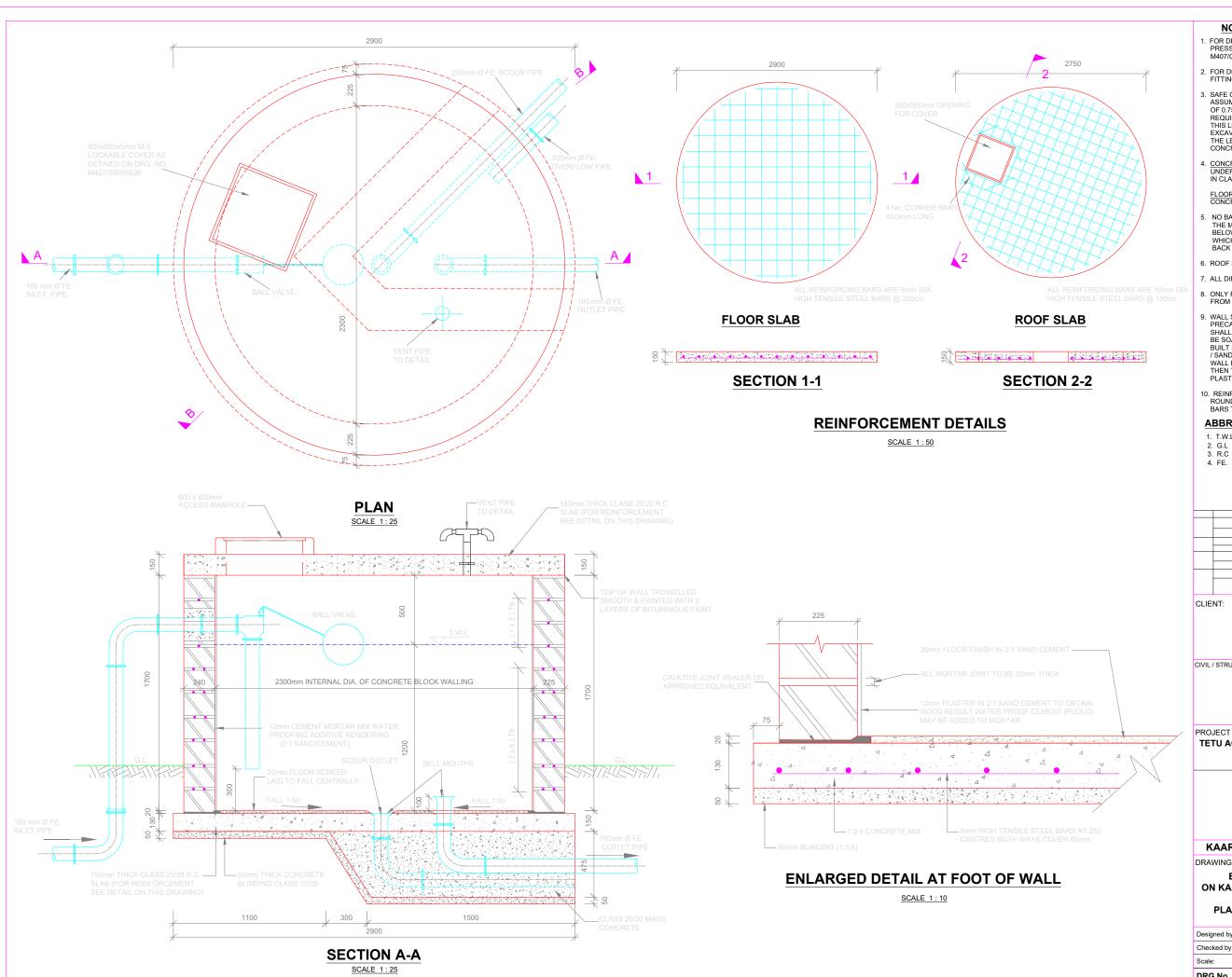
KAARI WATER TRANSMISSION MAIN FROM CH.7+340.00-9+420.00 SHEET 7 OF 7

PLAN AND PROFILE DRAWINGS

Surveyed by N.G.W

Designed by G.M.G Drawn by G.M.G

Checked byJMM/KNG Approved by D.N.M Scale 1:3750 Date MARCH-2024 Job No. 1.0 ACAD File: ACADFILENAME



- 1. FOR DETAILS OF SITE LAYOUT OF THE BREAK PRESSURE TANKS, REFER TO DRG. Nos.
- 2. FOR DETAILS OF ALL PIPE CONNECTIONS AND FITTINGS, REFER DRG. No.M407/CG/BPT-3/03
- 3. SAFE GROUND BEARING PRESSURE HAS BEEN ASSUMED AT 80KN/m² (3/4 TON/S.FT) AT A DEPTH OF 0.75m BELOW EXISTING GROUND LEVEL. IF REQUISITE BEARING STRATA IS NOT OBTAINED AT THIS LEVEL, THE WEAKER MATERIAL IS TO BE EXCAVATED DOWN TO APPROVED BOTTOM AND THE LEVEL MADE UP IN CLASS 10 MASS CONCRETE.
- CONCRETE MIXES, BLINDING CONCRETE TO UNDERSIDE OF TANK TO BE MINIMUM 50mm THICK IN CLASS 15/20 NOMINAL MIX

FLOOR, COLUMNS, ROOF SLAB AND BEAMS. CONCRETE TO BE NOMINAL CLASS 25/20

- 5. NO BACK FILLING IS TO BE ALLOWED OUTSIDE THE MASS CONCRETE LAID TO PIPES RUNNING BELOW THE TANK FLOOR. THE TRENCHES IN WHICH THESE PIPES ARE LAID MUST BE FILLED BACK WITH MASS CONCRETE CLASS 15/20
- 6. ROOF SLAB TO BE CAST SLOPING OUTSIDE
- 7. ALL DIMENSIONS IN mm UNLESS SPECIFIED.
- 8. ONLY FIGURED DIMENSIONS TO BE TAKEN FROM THIS DRAWING
- 9. WALL SHALL EITHER BE DRESSED STONES OR PRECAST CONCRETE BLOCKS. EACH BLOCK SHALL BE 225 WIDE x 150 DEEP. ALL BLOCKS TO BE SOAKED IN WATER FOR 24 HOURS BEFORE BUILT INTO WALL. JOINTS SHALL BE IN 1:3 CEMENT / SAND MORTAR NOT LESS THAN 20mm THICK. IF WALL IS CONSTRUCTED WITH CONCRETE BLOCKS THEN THE OUTSIDE OF THE WALL SHALL ALSO BE PLASTERED.
- 10. REINFORCEMENT: 'M' DENOTES MILD STEEL ROUND BARS & 'T' DENOTES HIGH TENSILE STEEL BARS TO B.S. 4449.

ABBREVIATIONS

1. T.W.L - TOP WATER LEVEL - GROUND LEVEL

- REINFORCED CONCRETE - FERROUS

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THE CHIEF EXECUTIVE OFFICER TANA WATER WORKS DEVELOPMENT AGENCY

NYERI, KENYA

CIVIL / STRUCTURAL ENGINEERS:
THE CHIEF TECHNICAL MANAGER TANA WATER WORKS **DEVELOPMENT AGENCY**

P.O BOX 1292 - 10100 NYERI, KENYA

PROJECT TITLE:

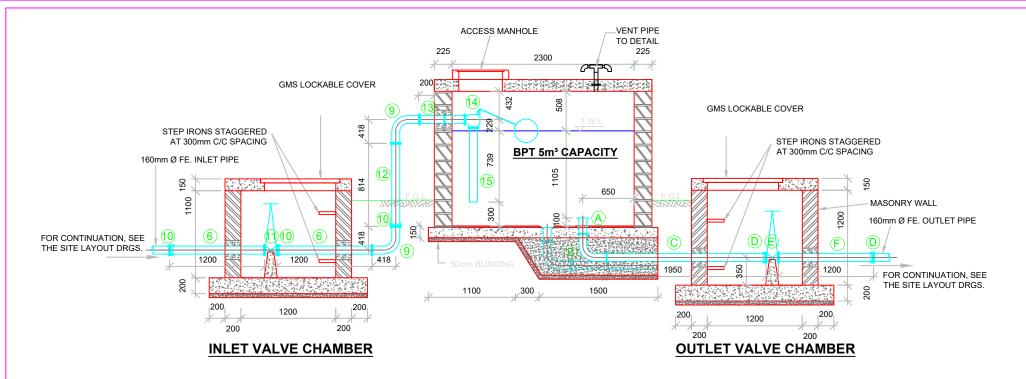
TETU AGUTHI WATER SUPPLY PROJECT

KAARI WATER SUPPLY PROJECT

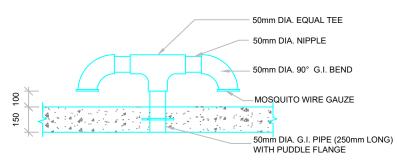
DRAWING TITLE:

BREAK PRESSURE TANK ON KAARI TRANSMISSION MAIN LINE (CAPACITY 5m³) PLAN, SECTION & R.C. DETAILS

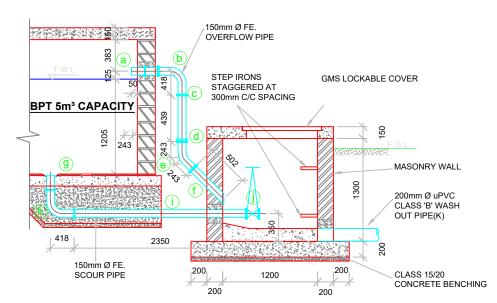
DRG No. KWSP/BPT/1				RFV
Scale:	1:25	Date:	MARCH	2024
Checked by:	J.M.M/K.N.G	Approved by:	D.N.M	
Designed by:	G.M.G	Drawn by:	G.M.G	



SECTION A-A INLET & OUTLET PIPEWORK DETAILS



VENT PIPE DETAIL



OVERFLOW & WASHOUT CHAMBER

SECTION B-B OVERFLOW & WASHOUT PIPEWORK DETAILS

SCALE 1:50

BPT No. 1

OVERFLOW AND SCOUR PIPEWORK DETAILS APPROVED LINED FERROUS PIPES AND FITTINGS

OVERFLOW PIPE WORK

(2	150 mm DIA. FLANGED SPIGOT PIPE 425mm LONG WITH A PUDDLE FLANGE AT 162.5mm FROM THE SPIGOT END	1
(150 mm DIA. ALL FLANGED 90° BEND	1 N
(150 mm DIA. FLANGED SPIGOT PIPE 439mm LONG (CUT TO SUIT ON SITE)	1 N
6	150 mm DIA. FLANGE ADAPTOR	1 N
(150 mm DIA. ALL FLANGED 45° BEND	1 N
Œ	150 mm DIA. FLANGED SPIGOT PIPE 502mm LONG WITH A SPIGOT END BEVELLED (CUT TO SUIT ON SITE)	1 N
	WASHOUT/SCOUR PIPE WORK	

WASHOUT/SCOUR PIPE WORK

150 mm DIA. FLANGED BELLMOUTH	1 Nr.
h 150 mm DIA. ALL FLANGED 90° BEND	1 Nr.
i 150 mm DIA. DOUBLE FLANGED PIPE 2350mm LONG	1 Nr.
150 mm DIA. ALL FLANGED GATE VALVE TO EURO 20	
SERIES, TYPE 23 OR APPROVED EQUIVALENT	1 Nr.
	1 Nr.

BPT No. 1

INLET PIPEWORK DETAILS APPROVED LINED FERROUS PIPES AND FITTINGS

1 160Vmm DIA. COUPLING	1 Nr. 1 Nr.
6 160 mm DIA. FLANGED SPIGOT PIPE 1200mm LONG	2 Nr. TE)1 Nr. 3 Nr. 3 Nr.
12 160 mm DIA. FLANGED SPIGOT PIPE 814mm LONG (CUT TO SUIT ON SITE)	1 Nr. 1 Nr. 1 Nr.

BPT No. 1

OUTLET PIPEWORK DETAILS APPROVED LINED FERROUS PIPES AND FITTINGS

160 mm DIA. FLANGED BELLMOUTH	1 Nr
3 160 mm DIA. ALL FLANGED 90° BEND	2 Nı
160 mm DIA. FLANGED SPIGOT PIPE 1950mm LONG	
(CUT TO SUIT ON SITE)	1 Nr.
160 mm DIA. FLANGE ADAPTOR	2 Nı
160 mm DIA. ALL FLANGED GATE VALVE	1 Nı
160 mm DIA. FLANGED SPIGOT PIPE 1200mm LONG	3 N
160 mm DIA. COUPLING	2 Nr
160 mm DIA. PLAIN ENDED PIPE 8m LONG(CUT TO SUIT	Γ ON SITE)1 Nr
160 mm DIA. BLANK FLANGE	1 Nr.
160 x 160mm DIA. ALL FLANGED RADIAL TEE	1 Nr.
160mm DIA. FLANGED SPIGOT PIPE 1200mm LONG	1 Nr.
160 mm DIA. COUPLING	1 Nr

NOTES

- ALL PIPE, FITTINGS AND VALVE DIAMETER
 ARE NOMINAL DIAMETERS & OF CLASS NP 16
- 2. OTHER PIPES AND FITTINGS ARE SHOWN ON
- 3. ALL DIMENSIONS ARE IN MM UNLESS OTHERWISE STATED
- 4. ONLY FIGURED DIMENSIONS TO BE TAKEN FROM THIS DRAWING
- 5. PIPE AND FITTINGS DIMENSIONS ARE BASED ON STEEL PIPES AND FITTINGS AS MADE BY ASP (K) LTD.
- 6. VALVES DIMENSIONS ARE BASED ON EURO 20 SERIES, TYPE 23 (SHORT FACE TO FACE TYPE VALVES) AS MADE BY
 PONT-A-MOUSSON (SAINT GOBAIN PAM).

ABBREVIATIONS

1. T.W.L

2.	F.G.L	- FINISHED GROUND LEVE
3.	G.I	- GALVANISED IRON
4.	R.C	- REINFORCED CONCRETE

- TOP WATER LEVEL

- MILD STEEL

- BREAK PRESSURE TANK 6. BPT

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		BY			
		CHECKED			

CLIENT:

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

NYERI, KENYA

NYERI, KENYA

CIVIL / STRUCTURAL ENGINEERS:
THE CHIEF TECHNICAL MANAGER **TANA WATER WORKS** DEVELOPMENT AGENCY P.O BOX 1292 - 10100,

PROJECT TITLE:

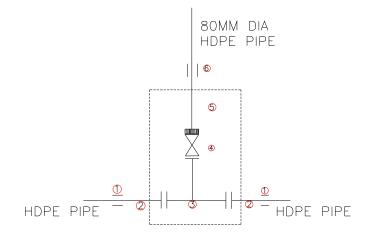
KAARI WATER SUPPLY PROJECT

KAARI WATER SUPPLY PROJECT

BREAK PRESSURE TANK ON KAARI TRANSMISSION MAINLINE (CAPACITY 5m³) **PIPEWORK DETAILS**

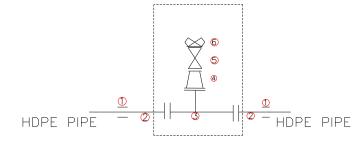
DRG No.KWSP/BPT/2				REV
Scale: 1:50		Date:	MARCH	2024
Checked by: J.M.M/K.N.G		Approved by:	J.M.M	
Designed by: G.M.G		Drawn by:	G.M.G	

TEE & WO DETAIL



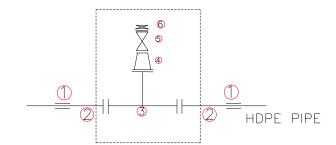
- 2 Nos 140MM DIA ADOPTER
- 2 2 Nos 140MM DIA SINGLE FLANGED SPIGOT FERROUS PIPE 1200 MM LONG
- 1 Nos 140MMX80MM DIA FLANGED FERROUS TEE
- 4 1 Nos 80MM DIA FLANGED GATE VALVE
- 1 Nos 80MM DIA SINGLE FLANGED SPIGOT FERROUS PIPE
- 1 Nos 80MM DIA ADOPTER

TEE & DAV DETAIL



- 2 Nos 140MM DIA ADOPTER
- 2 Nos 140MM DIA SINGLE FLANGED SPIGOT FERROUS PIPE
- 1 Nos 140MMX140MM DIA ALL FLANGED FERROUS TEE
- 4 1 Nos 140MMX80MM DIA FLANGED CONCENTRIC TAPER
- 1 Nos 80MM DIA GATE VALVE
- 1 Nos 80MM DIA DOUBLE AIR VALVE

TEE& SLUICE VALVE

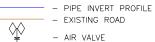


HDPE PIPE

- 1 2 Nos 140MM DIA ADOPTER
- 2 Nos 140MM DIA SINGLE FLANGED SPIGOT FERROUS PIPE 1200MM LONG
- 3 1 NOS 140MMX140MM DIA ALL FLANGED FERROUS TEE
- 4) 1 Nos 140MMX80MM DIA FLANGED CONCENTRIC TAPER
- (5)1 NOs 80MM DIA FLANGED GATE VALVE
- 6 1 NOs 80MM DIA SLUICE VALVE

NOTES

- PROPOSED PIPELINE -- - EXISTING GROUND PROFILE



- AIR VALVE

- DOUBLE AIR VALVE

- WASHOUT



- PRESSURE REDUCING VALVE



- SLUICE VALVE

- WASHOUT TYPE - PRESSURE RELIEF VALVE

- NOMINAL DIAMETER

- NOMINAL PRESSURE - CHECK VALVE

- VERTICAL BEND

- HORIZONTAL BEND - EXISTING STRUCTURE

- EARTH ROAD

- GRAVEL ROAD



signed CMTS

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

CLIENT



KAARI WATER SUPPLY PROJECT

Civil/Structural Engineers



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

VALVE CHAMBERS ARRANGEMENTS FOR KAARI WATER SUPPLY

Designed by GMG	Drawn by GMG
Checked by KNG	Approved by DMN
Scale	Date APRIL2024
Job No.	ACAD File: ACADFILENAME
DRAWING No. TWW	DA/K-MWP/VC-01