



**THE REPUBLIC OF UGANDA
MINISTRY OF WATER AND ENVIRONMENT**

INTEGRATED WATER MANAGEMENT AND DEVELOPMENT PROJECT (PROJECT ID NO: P163782)

FINANCED BY THE WORLD BANK & GOVERNMENT OF UGANDA

CO-FINANCED BY



THE WORLD BANK

AND



GOVERNMENT OF UGANDA

**CONSTRUCTION OF MUTUNDA RGC SOLAR POWERED PIPED WATER SUPPLY AND
SANITATION SYSTEM**

REFERENCE NO.: MWE/WRKS/22-23/00005

BIDDING DOCUMENT

VOLUME IV

DRAWINGS

OCTOBER 2022

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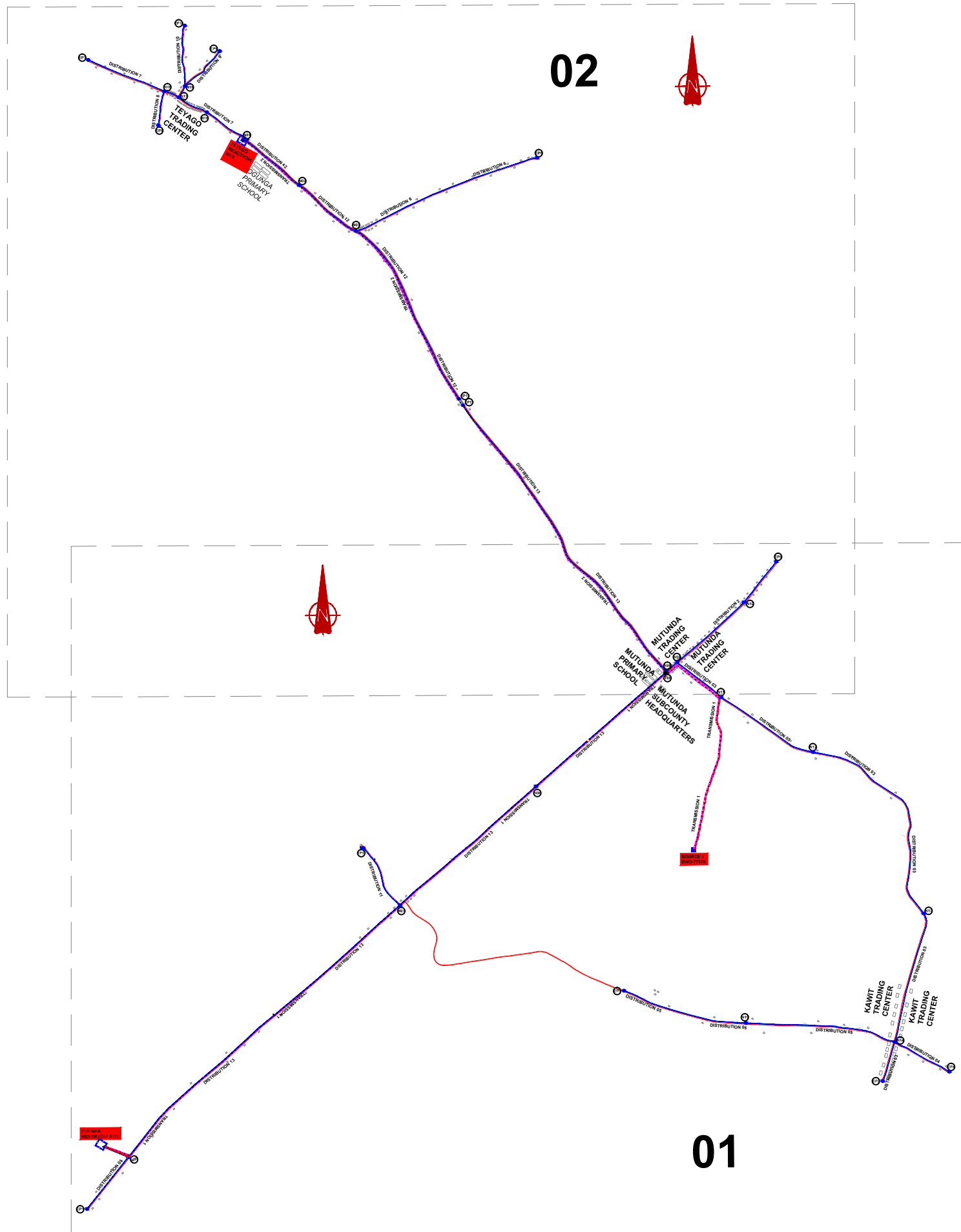
DRAWING No	DRAWING TITLE	DRAWING No	DRAWING TITLE
MUT/WS/0.0.0	GENERAL LAYOUT (TRANSMISSION AND DISTIRBUTION)	MUT/WS/2.2.3	TRANSMISSION LINE 02 (1+200.00 – 1+800.00)
MUT/WS/0.0.1	GENERAL LAYOUT (SHEET 01 OF 02)	MUT/WS/2.2.4	TRANSMISSION LINE 02 (1+800.00 – 2+400.00)
MUT/WS/0.0.2	GENERAL LAYOUT (SHEET 02 OF 02)	MUT/WS/2.2.5	TRANSMISSION LINE 02 (2+400.00 – 3+000.00)
		MUT/WS/2.2.6	TRANSMISSION LINE 02 (3+000.00 – 3+600.00)
		MUT/WS/2.2.7	TRANSMISSION LINE 02 (3+600.00 – 4+200.00)
MUT/WS/1.1.0	TYPICAL BOREHOLE PUMP HOUSE & SOLAR ARRAY (SITE PLAN LAYOUT)	MUT/WS/2.2.8	TRANSMISSION LINE 02 (4+200.00 – 4+800.00)
MUT/WS/1.1.1	TYPICAL BOREHOLE PUMP HOUSE (PLAN AND SECTION)	MUT/WS/2.2.9	TRANSMISSION LINE 02 (4+800.00 – 5+400.00)
MUT/WS/1.1.2	TYPICAL BOREHOLE PUMP HOUSE (DETAILS)	MUT/WS/2.2.10	TRANSMISSION LINE 02 (5+400.00 – 6+000.00)
MUT/WS/1.1.3	TYPICAL BOREHOLE PUMP HOUSE (ELECTRICAL INSTALLATION)	MUT/WS/2.2.11	TRANSMISSION LINE 02 (6+000.00 – 6+381.70)
MUT/WS/1.1.4	SOLAR ARRAY (ELECTRICAL LAYOUT)		
MUT/WS/1.1.5	SOLAR ARRAY (SOLAR PANEL LAYOUT, ELEVATIONS AND DETAILS)	MUT/WS/3.1.1	250M3 POPARA RESERVOIR – PLAN LAYOUT
		MUT/WS/3.1.2	250M3 POPARA RESERVOIR – SECTION A-A & SECTION B-B
MUT/WS/1.2.1	BOREHOLE PUMP ATTENDANT, GUARD HOUSE & ECOSAN (PLAN & SECTION)	MUT/WS/3.1.3	250M3 POPARA RESERVOIR – FOUNDATION LAYOUT AND DETAILS
MUT/WS/1.2.2	BOREHOLE PUMP ATTENDANT, GUARD HOUSE & ECOSAN (ELEVATION)	MUT/WS/3.1.4	250M3 POPARA RESERVOIR – STRUCTURAL DETAILS
MUT/WS/2.0.0	GENERAL LAYOUT TRANSMISSION NETWORK	MUT/WS/3.2.1	100M3 TEYEGO RESERVOIR – PLAN LAYOUT
MUT/WS/2.0.1	GENERAL LAYOUT TRANSMISSION NETWORK (SHEET 01 OF 02)	MUT/WS/3.2.2	100M3 TEYEGO RESERVOIR – SECTION A-A & SECTION B-B
MUT/WS/2.0.2	GENERAL LAYOUT TRANSMISSION NETWORK (SHEET 02 OF 02)	MUT/WS/3.2.3	100M3 TEYEGO RESERVOIR – FOUNDATION LAYOUT AND DETAILS
		MUT/WS/3.2.4	100M3 TEYEGO RESERVOIR – STRUCTURAL DETAILS
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MUT/WS/5.3.4	DISTRIBUTION LINE 03 (1+800.00 – 2+400.00)
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MUT/WS/5.3.6	DISTRIBUTION LINE 03 (3+000.00 – 3+600.00)
MUT/WS/5.3.7	DISTRIBUTION LINE 03 (3+600.00 – 4+200.00)
MUT/WS/5.3.8	DISTRIBUTION LINE 03 (4+200.00 – 4+800.00)
MUT/WS/5.3.9	DISTRIBUTION LINE 03 (4+800.00 – 5+207.30)
MUT/WS/5.4.1	DISTRIBUTION LINE 04 (0+000.00 – 0+571.00)
MUT/WS/5.5.1	DISTRIBUTION LINE 05 (0+000.00 – 0+600.00)
MUT/WS/5.5.2	DISTRIBUTION LINE 05 (0+600.00 – 1+200.00)
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MUT/WS/5.5.5	DISTRIBUTION LINE 05 (2+400.00 – 2+575.90)
MUT/WS/5.6.1	DISTRIBUTION LINE 06 (0+000.00 – 0+600.00)
MUT/WS/5.6.2	DISTRIBUTION LINE 06 (0+600.00 – 1+200.00)
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MUT/WS/5.7.2	DISTRIBUTION LINE 07 (0+600.00 – 1+200.00)
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MUT/WS/5.8.1	DISTRIBUTION LINE 08 (0+000.00 – 0+320.60)
MUT/WS/5.9.1	DISTRIBUTION LINE 09 (0+000.00 – 0+585.00)
MUT/WS/5.10.1	DISTRIBUTION LINE 10 (0+000.00 – 0+563.80)
MUT/WS/5.11.1	DISTRIBUTION LINE 11 (0+000.00 – 0+641.10)
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MUT/WS/5.12.2	DISTRIBUTION LINE 12 (0+600.00 – 1+200.00)
MUT/WS/5.12.3	DISTRIBUTION LINE 12 (1+200.00 – 1+800.00)
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MUT/WS/5.12.5	DISTRIBUTION LINE 12 (2+400.00 – 3+000.00)
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DRAWING No	DRAWING TITLE
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MUT/WS/5.13.3	DISTRIBUTION LINE 13 (1+200.00 – 1+800.00)
MUT/WS/5.13.4	DISTRIBUTION LINE 13 (1+800.00 – 2+400.00)
MUT/WS/5.13.5	DISTRIBUTION LINE 13 (2+400.00 – 3+000.00)
MUT/WS/5.13.6	DISTRIBUTION LINE 13 (3+000.00 – 3+600.00)
MUT/WS/5.13.7	DISTRIBUTION LINE 13 (3+600.00 – 4+200.00)
MUT/WS/5.13.8	DISTRIBUTION LINE 13 (4+200.00 – 4+800.00)
MUT/WS/5.13.9	DISTRIBUTION LINE 13 (4+800.00 – 5+400.00)
MUT/WS/5.13.10	DISTRIBUTION LINE 13 (5+400.00 – 6+000.00)
MUT/WS/5.13.11	DISTRIBUTION LINE 13 (6+000.00 – 6+600.00)
MUT/WS/5.13.12	DISTRIBUTION LINE 13 (6+600.00 – 7+200.00)
MUT/WS/5.13.13	DISTRIBUTION LINE 13 (7+200.00 – 7+800.00)
MUT/WS/5.13.14	DISTRIBUTION LINE 13 (7+800.00 – 8+400.00)
MUT/WS/5.13.15	DISTRIBUTION LINE 13 (8+400.00 – 9+000.00)
MUT/WS/5.13.16	DISTRIBUTION LINE 13 (9+000.00 – 9+600.00)
MUT/WS/5.13.17	DISTRIBUTION LINE 13 (9+600.00 – 9+824.52)
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DRAWING No	DRAWING TITLE
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SD106B	FORCED STEEL STANCHIONS FOR PLATFORMS AND WALKWAYS-1
SD106C	FORCED STEEL STANCHIONS FOR PLATFORMS AND WALKWAYS-2
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SD113B	FIRE HYDRANT CHAMBER
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SD114B	WASHOUT – PIPEWORK WITH CHAMBER
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SD117	MARKER POST
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SD118B	ANCHOR BLOCKS FOR BENDS-1
SD118C	ANCHOR BLOCKS FOR BENDS-2
SD118D	ANCHOR BLOCKS FOR BENDS-3
SD118E	ANCHOR BLOCKS FOR BENDS -4
SD118F	ANCHOR BLOCKS FOR BENDS -5
SD118G	ANCHOR BLOCKS FOR BENDS -6
SD118H	ANCHOR BLOCKS FOR BENDS -7
SD118I	ANCHOR BLOCKS FOR BENDS -8
SD118J	ANCHOR BLOCKS FOR TEES AND DEAD ENDS – 1
SD118K	ANCHOR BLOCKS FOR TEES AND DEAD ENDS - 2
SD118L	ANCHOR BLOCKS FOR TEES AND DEAD ENDS - 3
SD121	PIPE BEDDING
SD122	SURFACE BOX AND FIELD DRAIN
SD124	FIELD DRAIN
SD126	DUCT COVERS

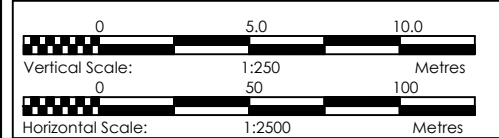
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SD130	DRAW PITS
SD132	TRENCH CUTOFF
SD135A	WASHOUT/GATE VALVE CHAMBER – R.C DETAILS
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NOTES

LEGEND

- Transmission Pipeline
- Distribution Pipeline
- Ground Level
- Building/House
- Contours
- Road
- DAV Double Orifice Air Valve
- End pipe
- Node N01
- WO-1 Washout Type1
- WO-2 Washout Type2



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PROJECT
 CONSULTANCY SERVICES FOR FEASIBILITY STUDY, DETAILED ENGINEERING DESIGN AND CONSTRUCTION SUPERVISION OF SOLAR POWERED PIPED WATER SUPPLY SYSTEMS AND SANITATION FACILITIES IN REFUGEE SETTLEMENTS AND HOST DISTRICTS IN WEST NILE AND NORTHERN UGANDA IN KIRYANDONGO DISTRICT

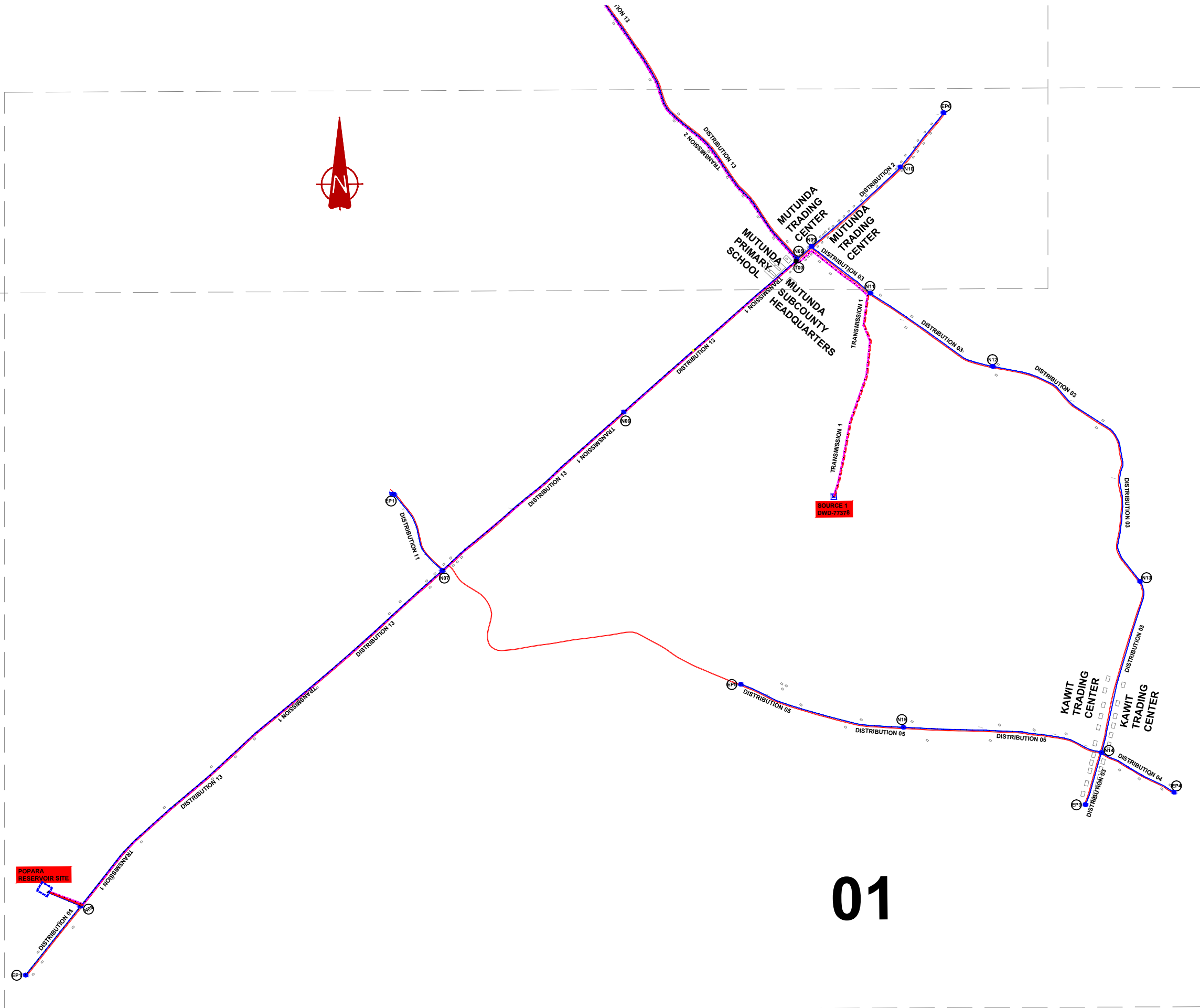
MUTUNDA WATER SUPPLY SYSTEM

CONSULTANT
 SARI In Joint Venture with
 Corporate Headquarter
 10 Philpott Lane, 1st Floor,
 London EC3M 8AA,
 United Kingdom

CONTRACTOR

DETAILED ENGINEERING DESIGN
 DRAWING TITLE **GENERAL LAYOUT**
TRANSMISSION AND DISTRIBUTION NETWORK

SCALE	DRAWING No.	MUT/WS/0.0.0
SURVEYED	Evans Mpanga	DESIGNED Otwane Dan.
DRAWN	Joshua Nyarwanda	CHECKED Rodney Barugahare
DATE	April 2021	APPROVED Rodney Barugahare.

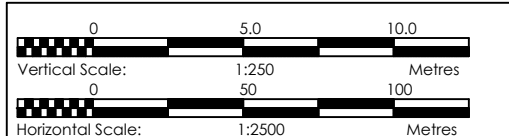


01

NOTES

LEGEND

- Transmission Pipeline
- Distribution Pipeline
- Ground Level
- Building/House
- Contours
- Road
- DAV Double Orifice Air Valve
- End pipe
- Node N01
- Washout Type1
- Washout Type2



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MUTUNDA WATER SUPPLY SYSTEM

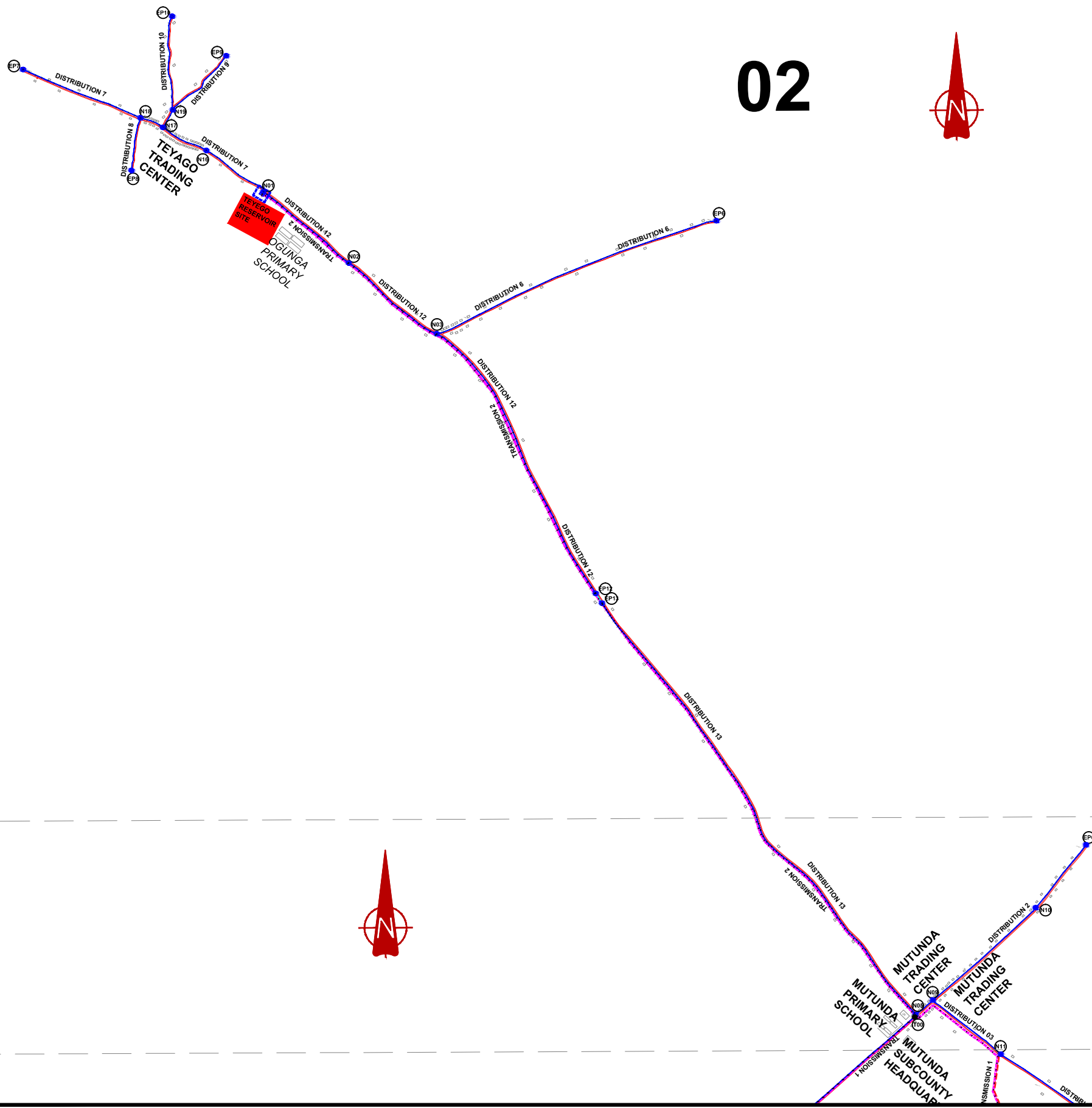
CONSULTANT
 In Joint Venture with
 Corporate Headquarter
 10 Philip Lane, 1st Floor,
 London EC3M 8AA,
 United Kingdom

CONTRACTOR

DETAILED ENGINEERING DESIGN
 DRAWING TITLE **GENERAL LAYOUT TRANSMISSION AND DISTRIBUTION NETWORK (Sheet 01 of 02)**

SCALE	DRAWING No.	MUT/WS/0.0.1
SURVEYED	Evans Mpanga	DESIGNED Otwane Dan.
DRAWN	Joshua Nyarwanda	CHECKED Rodney Barugahare
DATE	April 2021	APPROVED Rodney Barugahare.

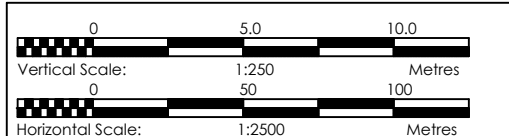
02



NOTES

LEGEND

- - - Transmission Pipeline
- Distribution Pipeline
- Ground Level
- Building/House
- Contours
- Road
- DAV Double Orifice Air Valve
- EP End pipe
- N01 Node N01
- WO-1 Washout Type1
- WO-2 Washout Type2



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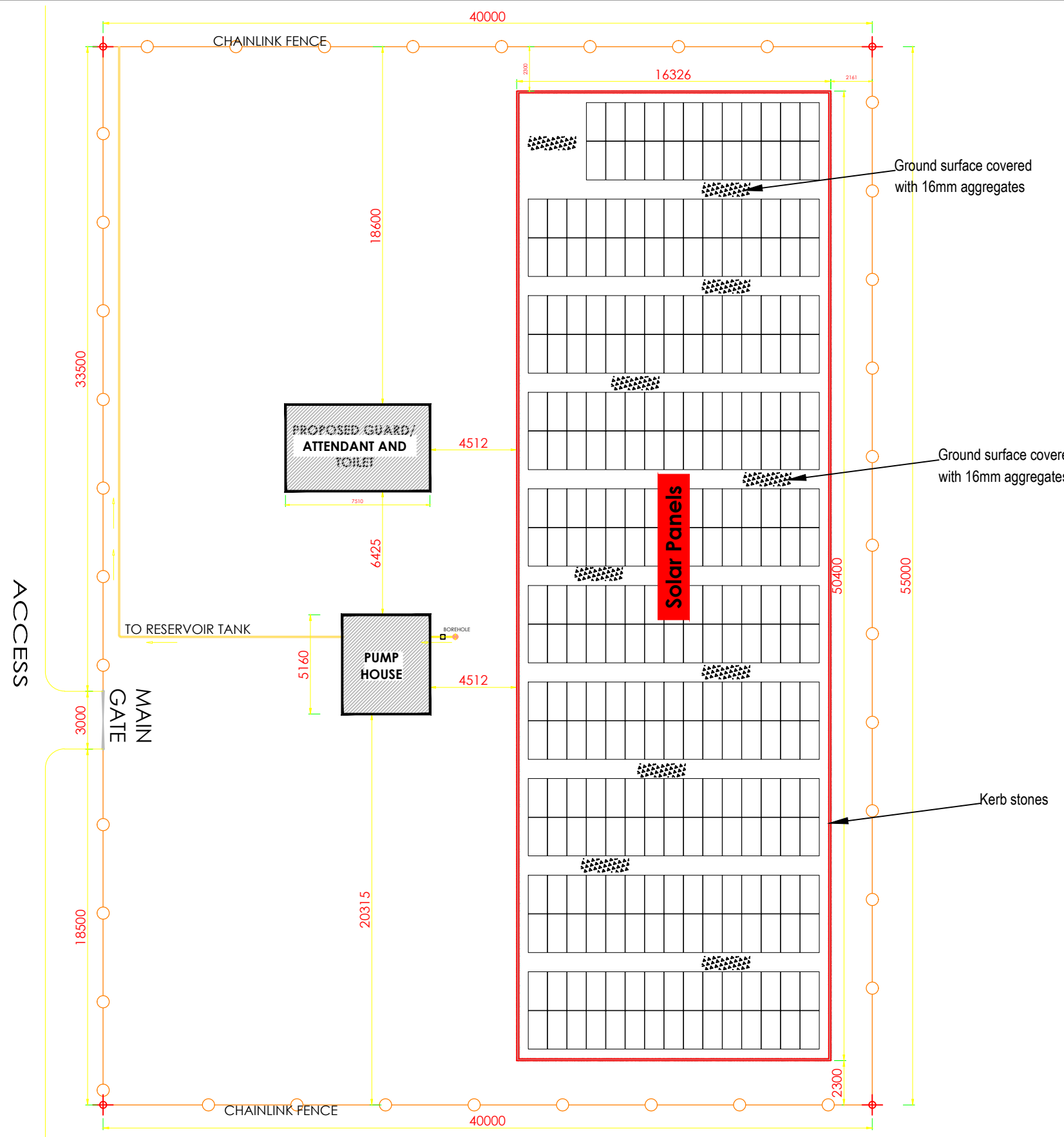
MUTUNDA WATER SUPPLY SYSTEM

CONSULTANT
SARI In Joint Venture with
 Corporate Headquarter
 10 Philip Lane, 1st Floor,
 London EC3M 8AA,
 United Kingdom

CONTRACTOR

DETAILED ENGINEERING DESIGN
 DRAWING TITLE **GENERAL LAYOUT TRANSMISSION AND DISTRIBUTION NETWORK (Sheet 02 of 02)**

SCALE	DRAWING No. MUT/WS/0.0.2
SURVEYED Evans Mpanga	DESIGNED Otwane Dan.
DRAWN Joshua Nyarwanda	CHECKED Rodney Barugahare
DATE April 2021	APPROVED Rodney Barugahare.





SITE LAYOUT
Scale 1:250

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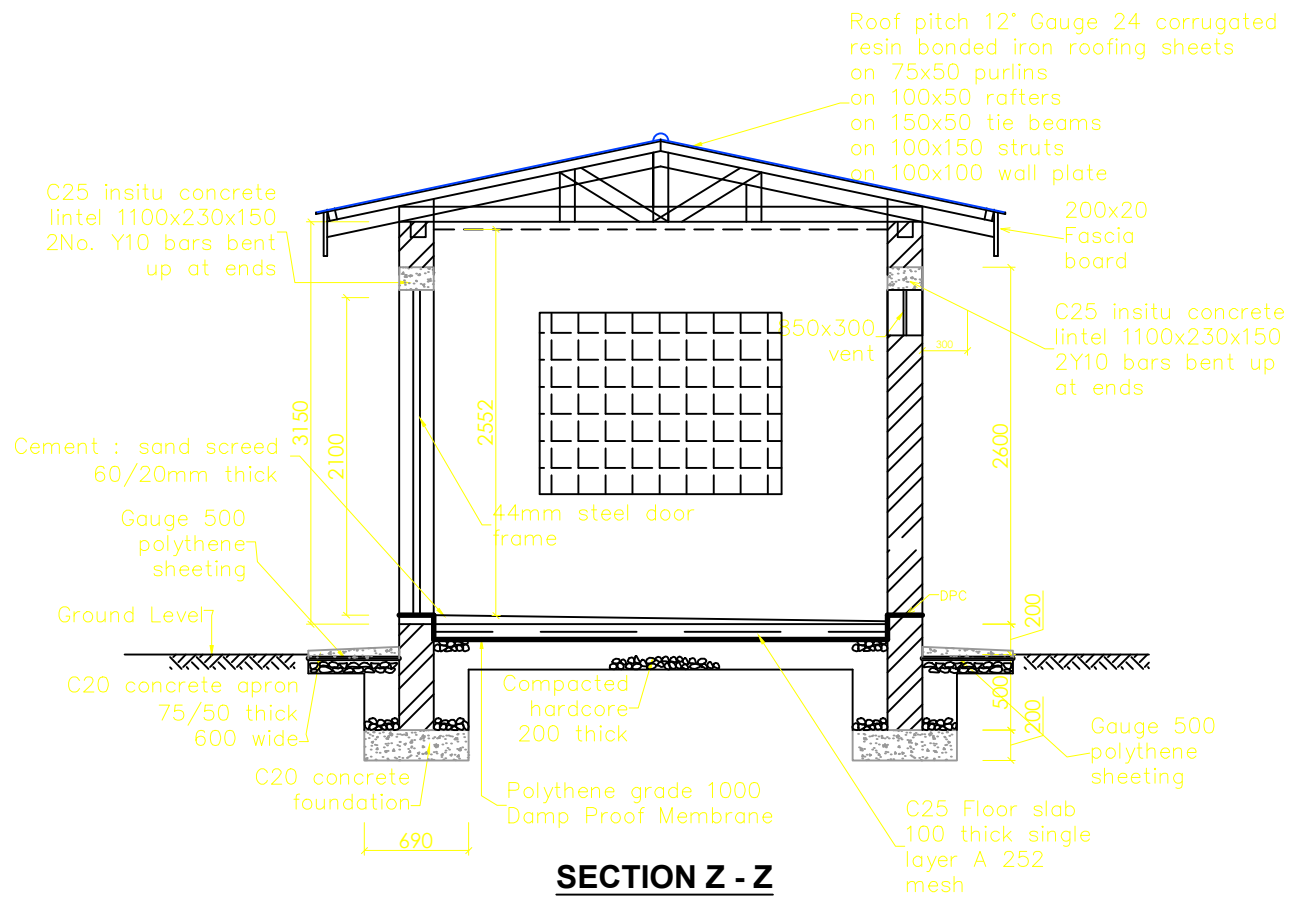
MUTUNDA WATER SUPPLY SYSTEM

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 Corporate Headquarter
 10 Philpot Lane, 1st Floor,
 London EC3M 8AA,
 United Kingdom

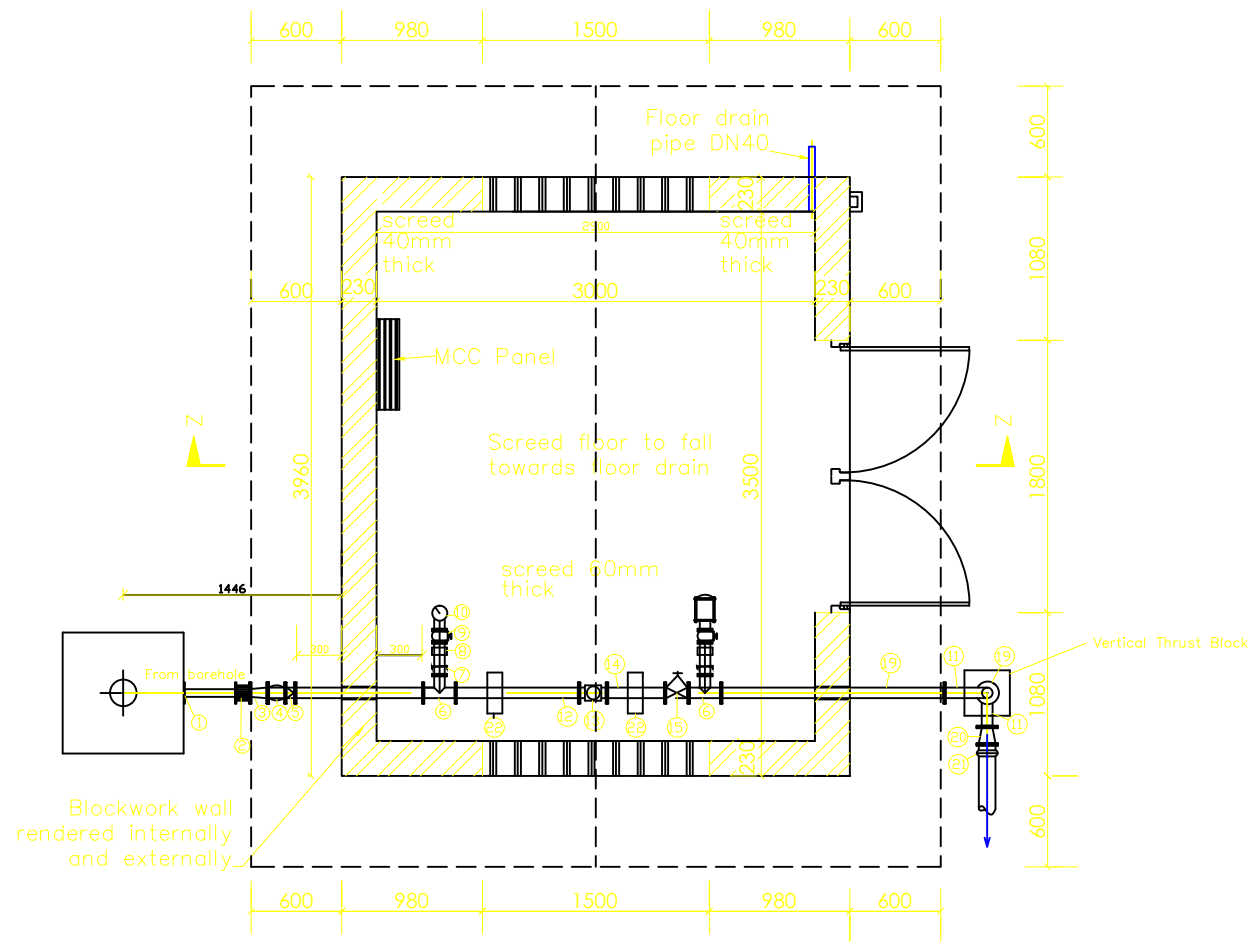
CONTRACTOR

DETAILED ENGINEERING DESIGN
 DRAWING TITLE
PUMP HOUSE AND SOLAR ARRAY
 SITE PLAN LAYOUT

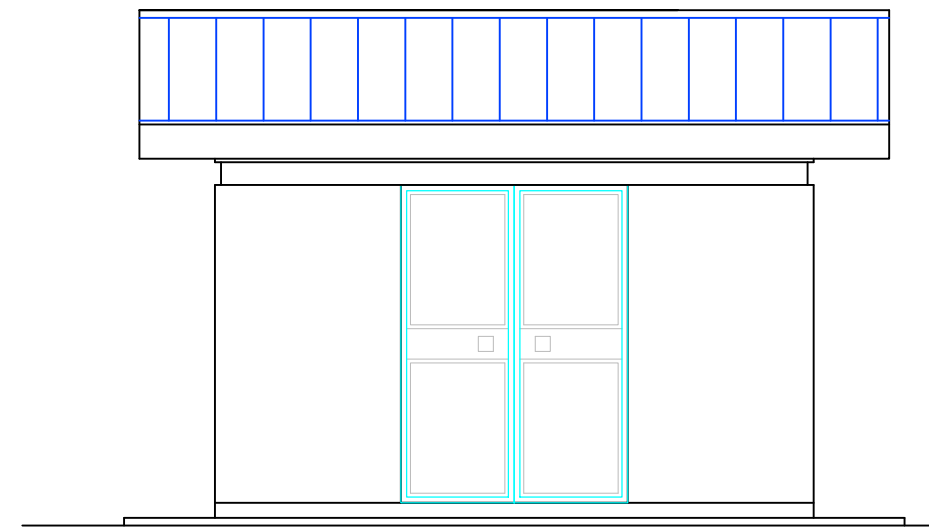
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SURVEYED		DESIGNED	Otwane Dan.
DRAWN	Joshua Nyarwanda	CHECKED	Rodney Barugahare
DATE	JUNE 2022	APPROVED	Rodney Barugahare.



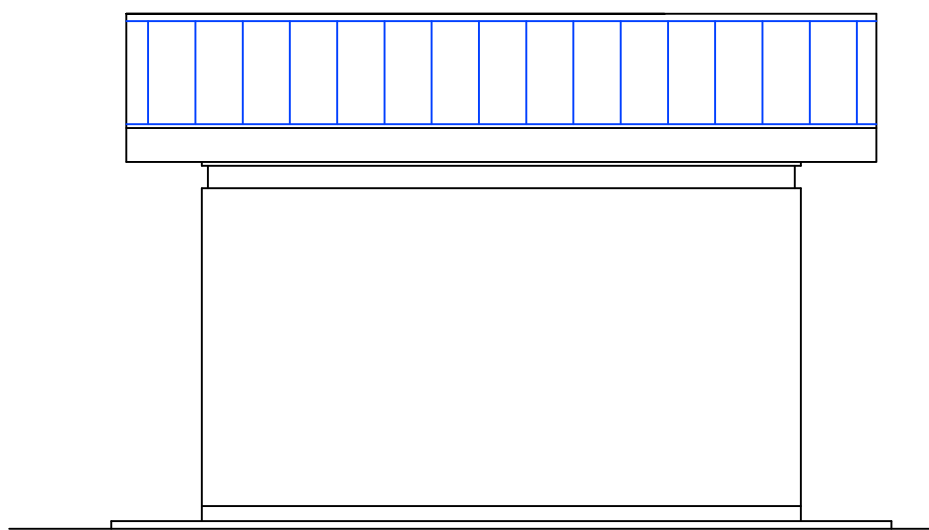
SECTION Z - Z



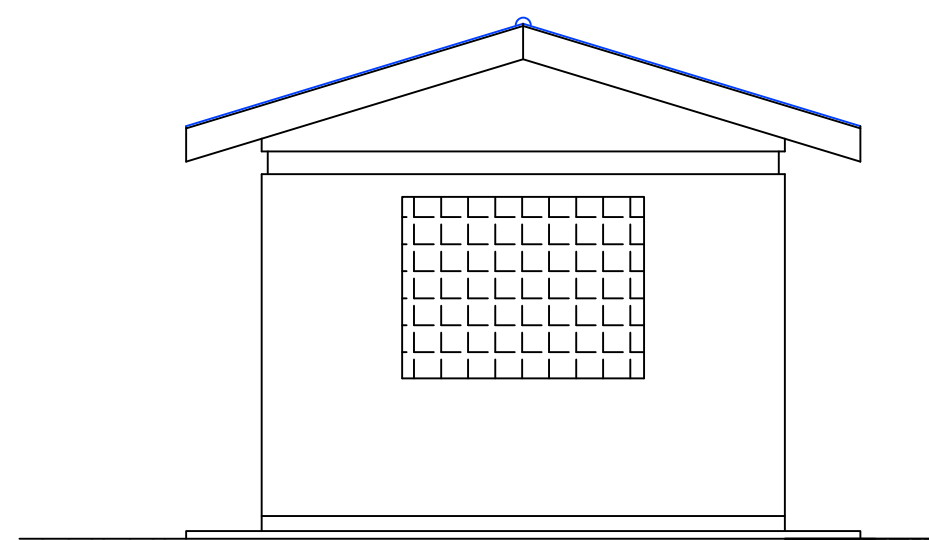
PLAN
Scale:1:50



FRONT ELEVATION



REAR ELEVATION



TYPICAL SIDE VIEW

NOTES

1. Unless otherwise stated, all dimensions are in mm
2. Concrete grade to be C30/20.

PIPEWORK FITTINGS SCHEDULE

- BH1. Steel Pipe Both Ends Plate Threaded.
- BH2. Cast Iron Flanged Adaptor.
- BH3. Double Flanged Steel Pipe Reducer To Match Pump Outlet Size & Pump House Pipework.
- BH4. Double Flexible Rubber Pipe Flanged Coupling.
- BH5. Duo-chek II (SPUTOISK) Non-Return Valve, Wafer Type.
- BH6. Double Flanged Tee with 25mm Female Threaded Branch on 150 x150mm Grade 25/19 Concrete Support.
- BH7. 25 To 15mm Steel Reducing Bush.
- BH8. 15mm Hexagon Nipple.
- BH9. 15mm Brass Stopcock.
- BH10. Wika Pressure Gauge, 100mm Ø Case Glycerine Filled With 15mm Male Thread.
- BH11. 90°x50mmØ Double Flanged Steel Bend Small Radius.
- BH12. Double Flanged Steel Pipe.
- BH13. Double Flanged Meincke Cosmos NP Water Meter For 50 and 80mmØ and Double Flanged Meincke Cosmos NS Water Meter (Verticle Spindle) For 100mmØ Pipework.
- BH14. Double Flanged Steel Pipe.
- BH15. Flanged RSV Rising Spindle, Clockwise Closing Complete with Handwheel To SABS 555.
- BH16. 25mmØ Hexagon Nipple.
- BH17. 25mmØ Brass Stopcock.
- BH18. Vent-O-MAT 25mm No Anti-Shock Air Valve

CLIENT: RSX 2511.
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 CONSULTANCY SERVICES FOR FEASIBILITY STUDY, DETAILED ENGINEERING DESIGN AND CONSTRUCTION SUPERVISION OF SOLAR POWERED PIPED WATER SUPPLY SYSTEMS AND SANITATION FACILITIES IN REFUGEE SETTLEMENTS AND HOST DISTRICTS IN WEST NILE AND NORTHERN UGANDA IN KIRYANDONGO DISTRICT

MUTUNDA WATER SUPPLY SYSTEM

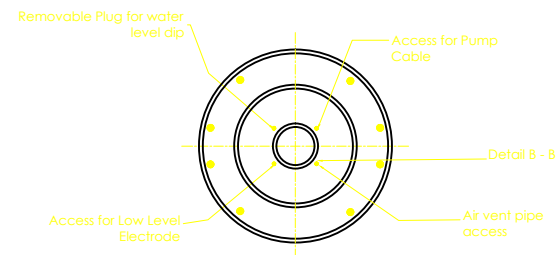
CONSULTANT
 In Joint Venture with 
 Corporate Headquarter
 10 Philpot Lane, 1st Floor,
 London EC3M 8AA,
 United Kingdom

CONTRACTOR

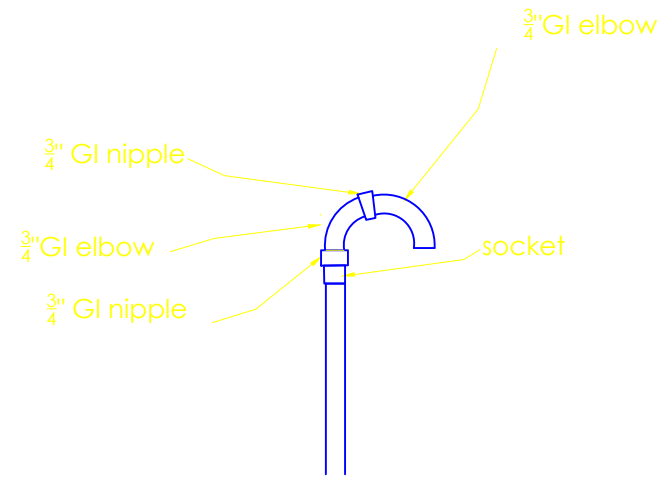
DETAILED ENGINEERING DESIGN
 DRAWING TITLE
TYPICAL BOREHOLE PUMP HOUSE
PLAN, SECTION Z-Z & ELEVATIONS

SCALE	AS SHOWN	DRAWING No.	MUT/WS/1.1.1
SURVEYED		DESIGNED	Otwane Dan.
DRAWN	Joshua Nyarwanda	CHECKED	Rodney Barugahare
DATE	OCT 2021	APPROVED	Rodney Barugahare.

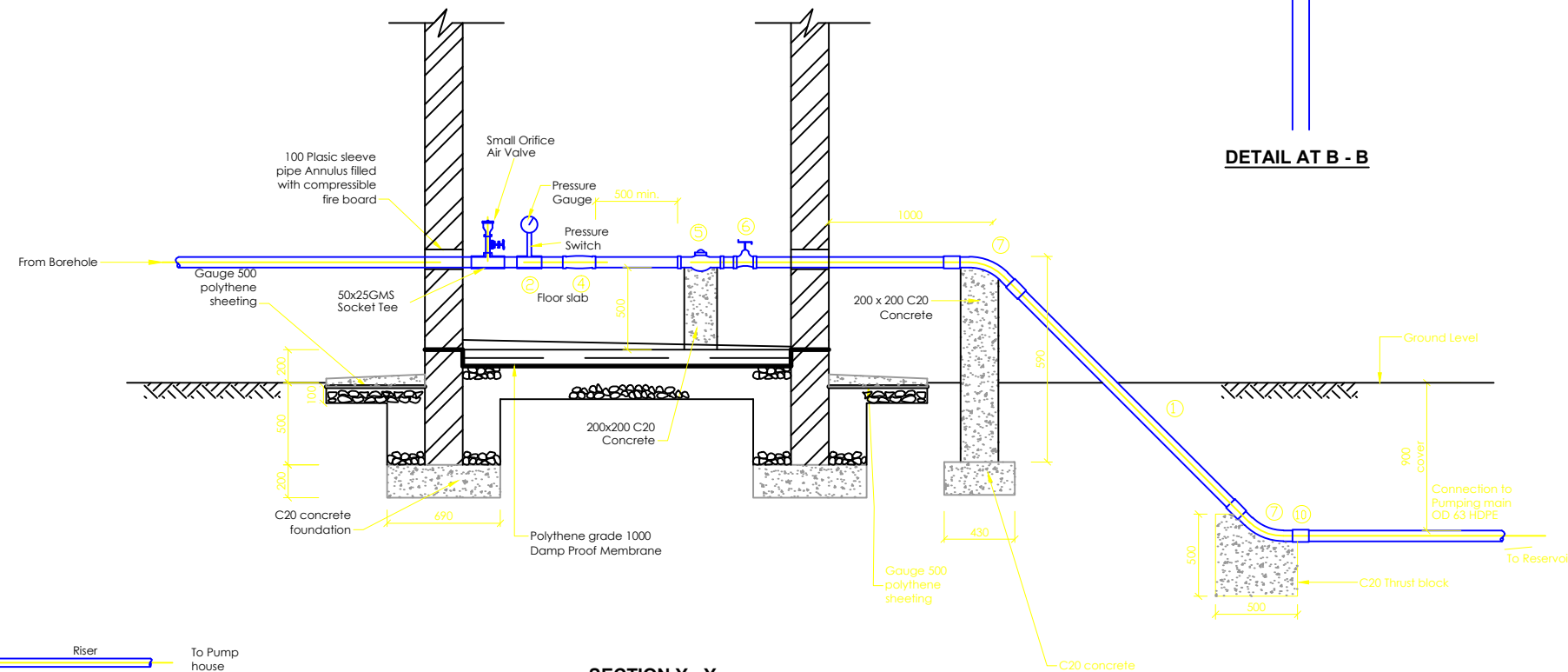
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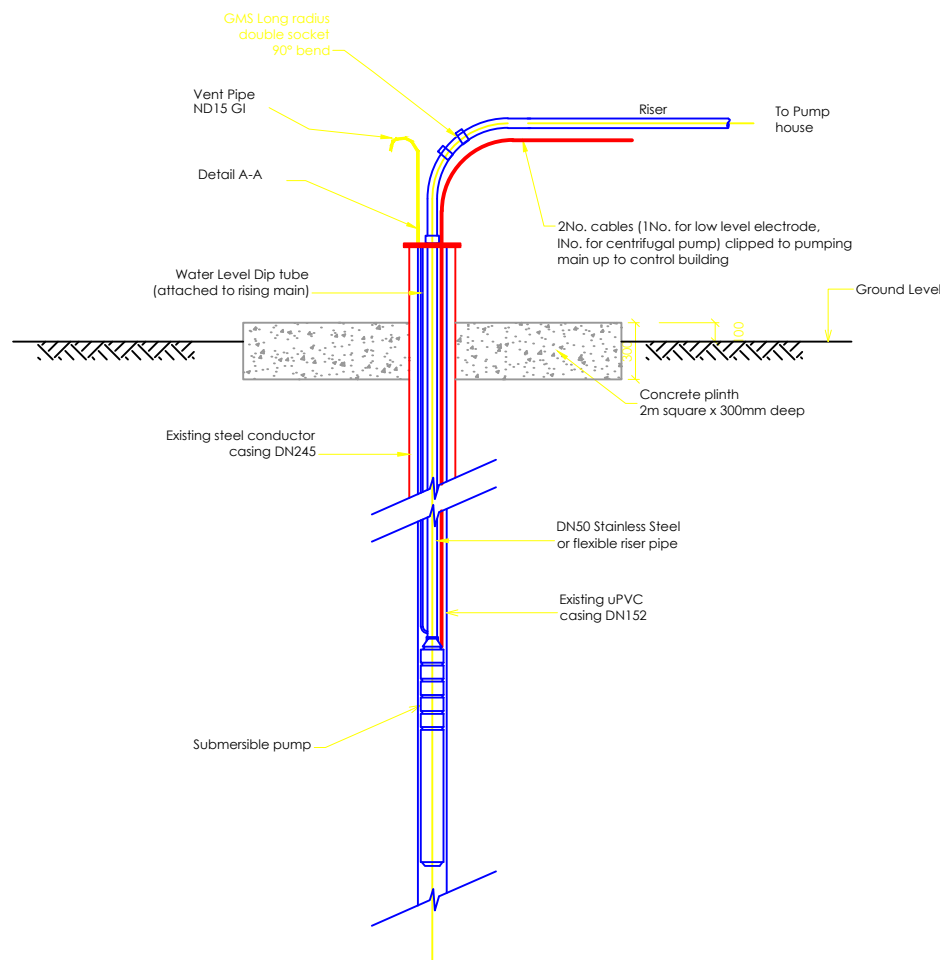
DETAIL AT A-A
Scale: 1:20



DETAIL AT B - B



SECTION Y - Y
Scale: 1:40



FITTINGS SCHEDULE

- 2) 1No. DN50/25/50 gms tee for pressure pauge
- 3) 1No. DN50/50/50 gms Socket tee
- 4) 1No. 50mm non return valve (socketed flap valve)
- 5) 1DN 50mm flanged bulk meter
- 6) 2No. DN50 double socket gatevalve
- 7) 1No. DN50 45 gms double socket long radius bend
- 8) 1No. DN50 90 gms double socket long radius bend
- 9) 2No. DN50 Screw on flanges
- 10) Male Adaptor DN 50 x 2" to PN 16

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PROJECT

CONSULTANCY SERVICES FOR FEASIBILITY STUDY, DETAILED ENGINEERING DESIGN AND CONSTRUCTION SUPERVISION OF SOLAR POWERED PIPED WATER SUPPLY SYSTEMS AND SANITATION FACILITIES IN REFUGEE SETTLEMENTS AND HOST DISTRICTS IN WEST NILE AND NORTHERN UGANDA IN KIRYANDONGO DISTRICT

MUTUNDA WATER SUPPLY SYSTEM

CONSULTANT



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London EC3M 8AA,
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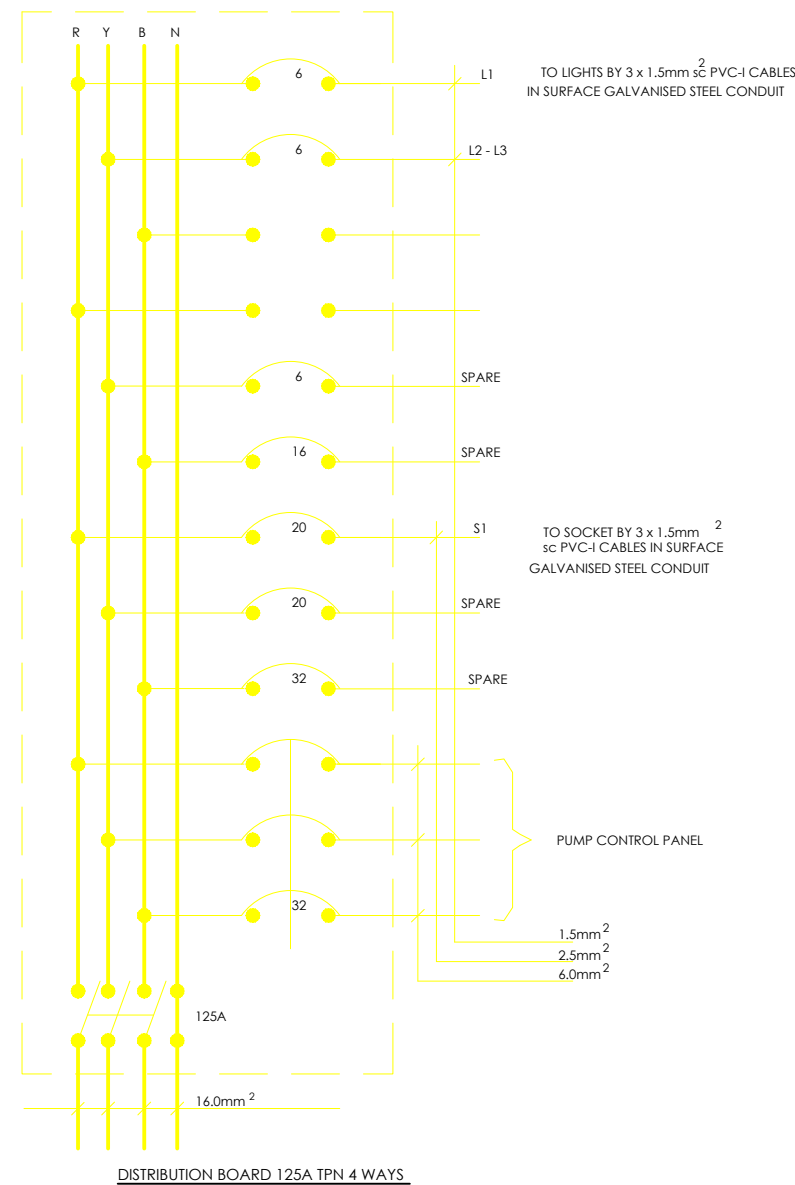
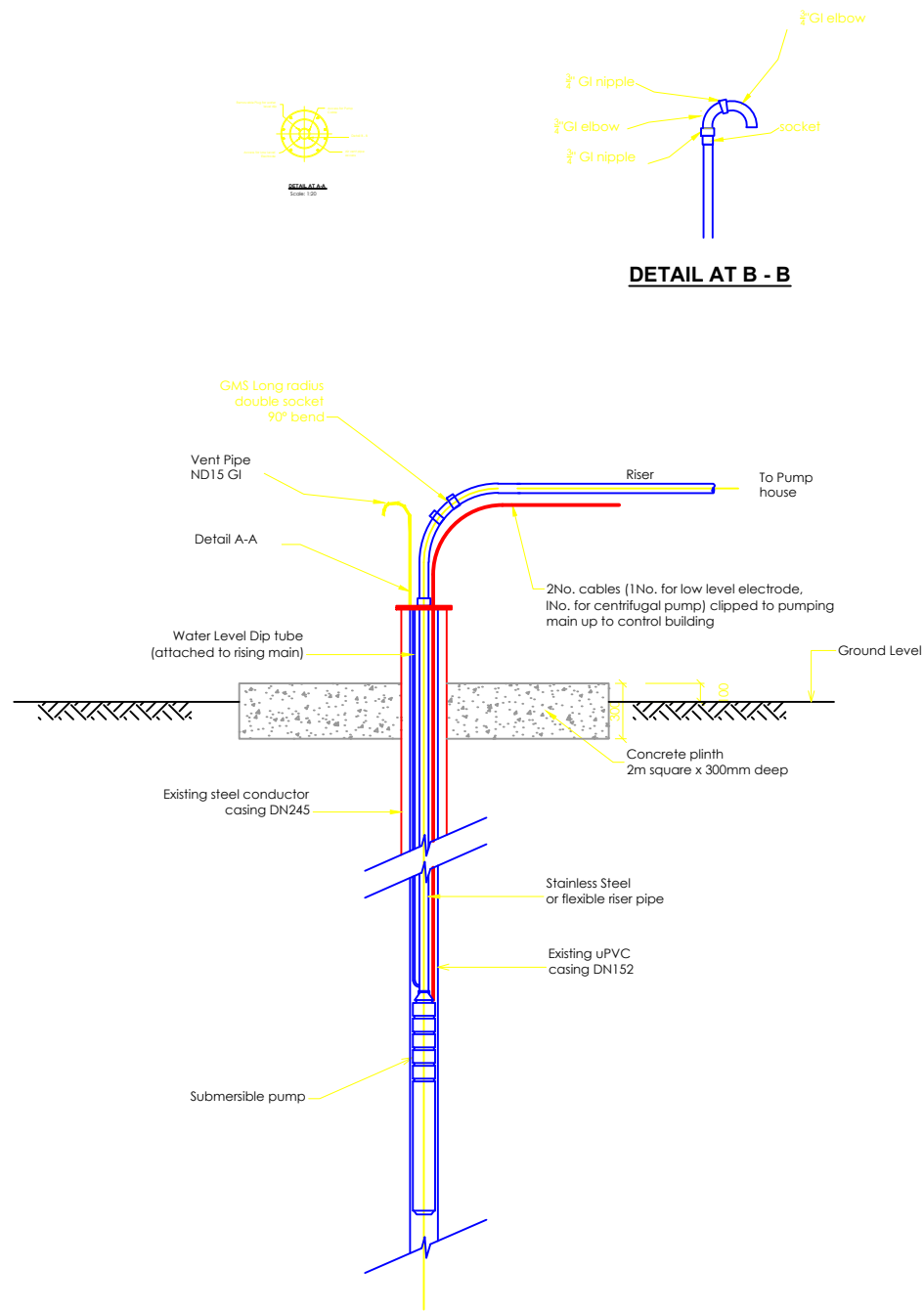
DETAILED ENGINEERING DESIGN

DRAWING TITLE

TYPICAL BOREHOLE PUMP HOUSE
(DWD-77378) PIPE DETAILS

SCALE	AS SHOWN	DRAWING No.	MUT/WS/1.1.2
SURVEYED		DESIGNED	Otwane Dan.
DRAWN	Joshua Nyarwanda	CHECKED	Rodney Barugahare
DATE	OCT 2021	APPROVED	Rodney Barugahare.

NOTES



- LEGEND**
- Luminaire type A, 1X18W f600mm waterproof fluorescent bulk head
 - Luminaire type B, 100W GLS with corner bracket
 - Distribution Board 125A TPN 4-Way
 - Socket outlet 13A switched 1-gang metal clad
 - Switch 6A sp 2Gang 1way metal clad flush
 - UMEME Meter box, 3-phase
- Dimensions in mm

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MUTUNDA WATER SUPPLY SYSTEM

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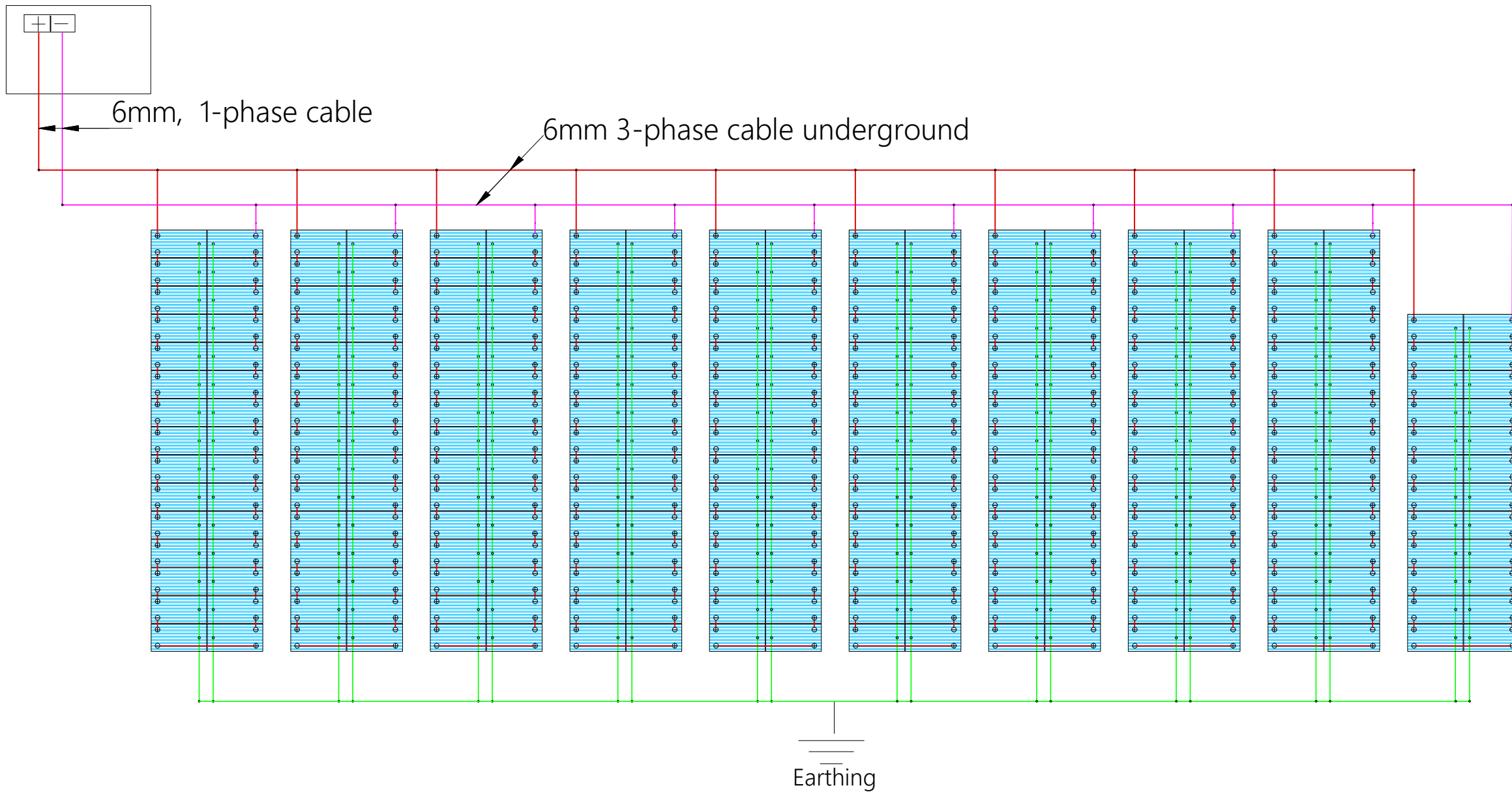
CONTRACTOR

DETAILED ENGINEERING DESIGN
DRAWING TITLE
TYPICAL BOREHOLE PUMP HOUSE
 ELECTRICAL INSTALLATION

SCALE	AS SHOWN	DRAWING No.	MUT/WS/1.1.3
SURVEYED		DESIGNED	Otwane Dan.
DRAWN	Joshua Nyarwanda	CHECKED	Rodney Barugahare
DATE	OCT 2021	APPROVED	Rodney Barugahare.

Controller

1 set 1-phase cable Well Probe V2, 2x PV
 Disconnect 1000-40-5, PV Combiner
 1000-125-4, PV Protect 1000-125,
 SmartPSUk2-40, SmartStart, Surge Protector2





SOLAR ARRAY ELECTRICAL LAYOUT

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 SUPERVISION OF SOLAR POWERED PIPED WATER SUPPLY
 SYSTEMS AND SANITATION FACILITIES IN REFUGEE
 SETTLEMENTS AND HOST DISTRICTS IN WEST NILE AND
 NORTHERN UGANDA IN KIRYANDONGO DISTRICT

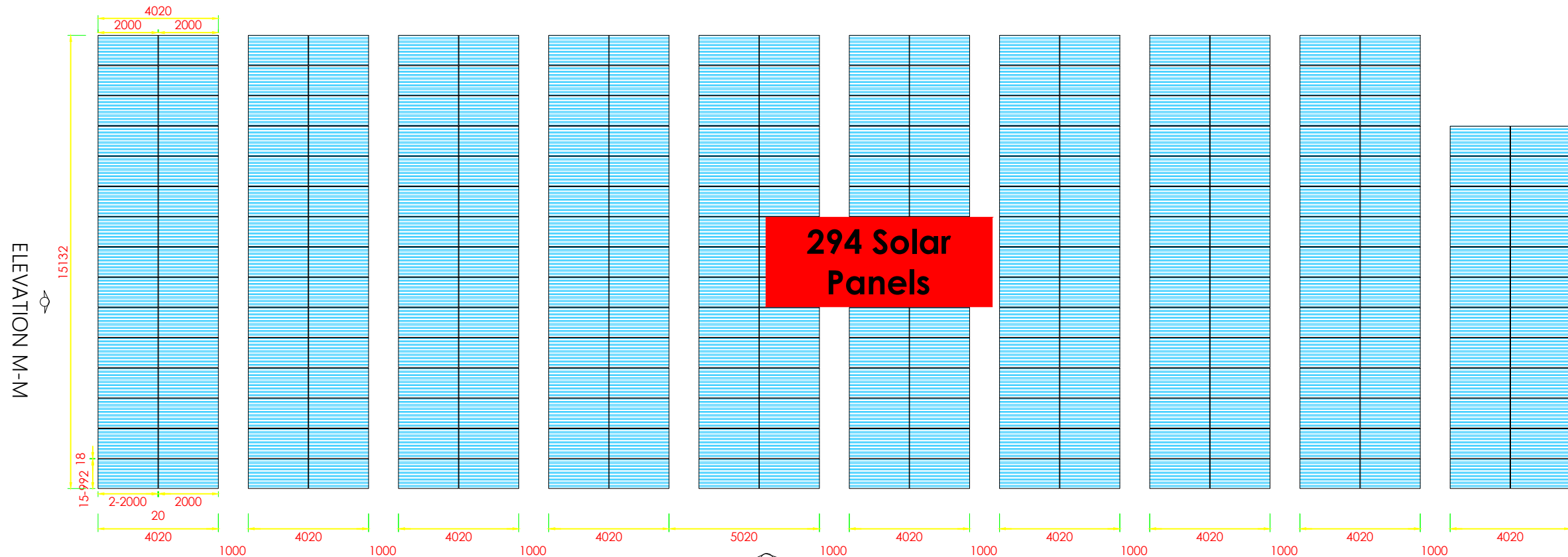
MUTUNDA WATER SUPPLY SYSTEM

CONSULTANT
 SARI
 Corporate Headquarter
 10 Philpot Lane, 1st Floor,
 London EC3M 8AA,
 United Kingdom
 In Joint Venture with  SGAPI

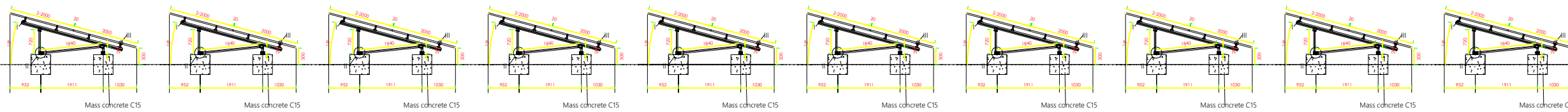
CONTRACTOR

DETAILED ENGINEERING DESIGN
 DRAWING TITLE
SOLAR ARRAY
 Electrical Layout

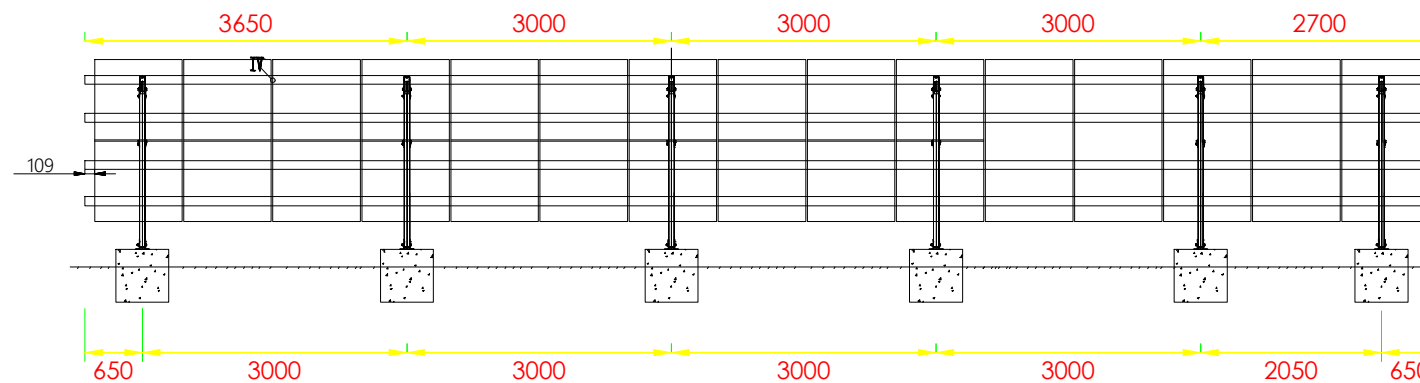
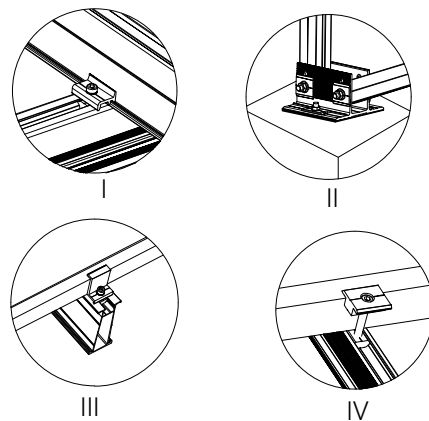
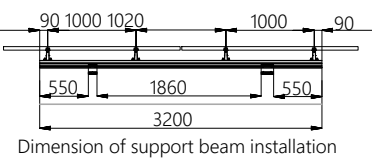
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SURVEYED		DESIGNED	Otwane Dan.
DRAWN	Joshua Nyarwanda	CHECKED	Rodney Barugahare
DATE	JUNE 2022	APPROVED	Rodney Barugahare.



ELEVATION Y-Y
SOLAR PANELS LAYOUT



ELEVATION Y-Y



ELEVATION M-M



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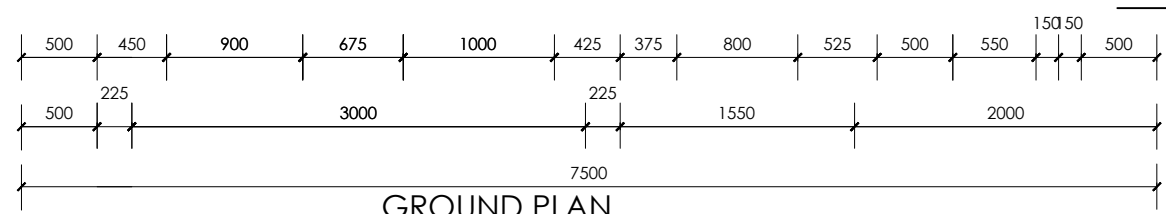
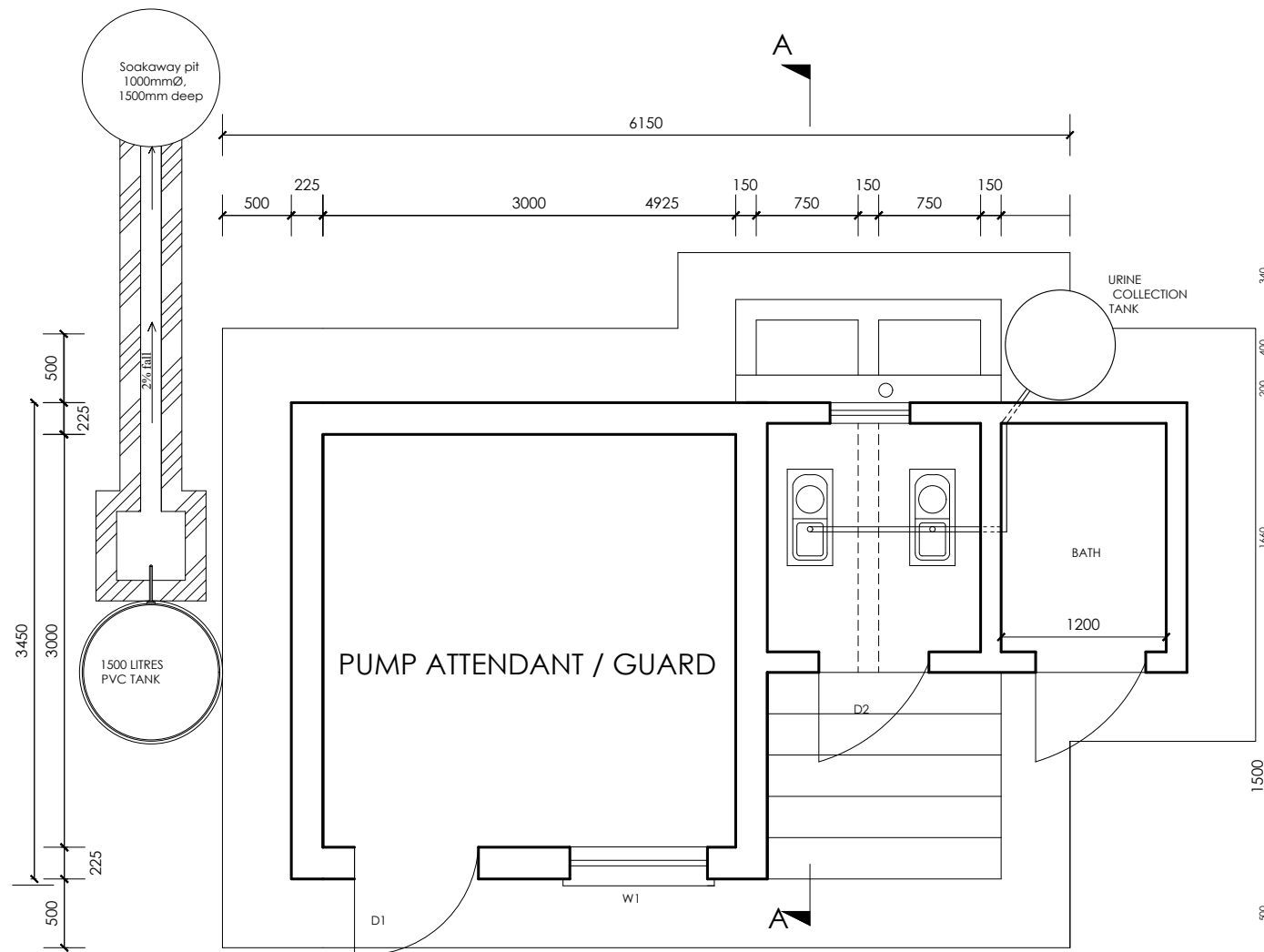
MUTUNDA WATER SUPPLY SYSTEM

CONSULTANT
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 Corporate Headquarter
 10 Philpott Lane, 1st Floor,
 London EC3M 8AA,
 United Kingdom

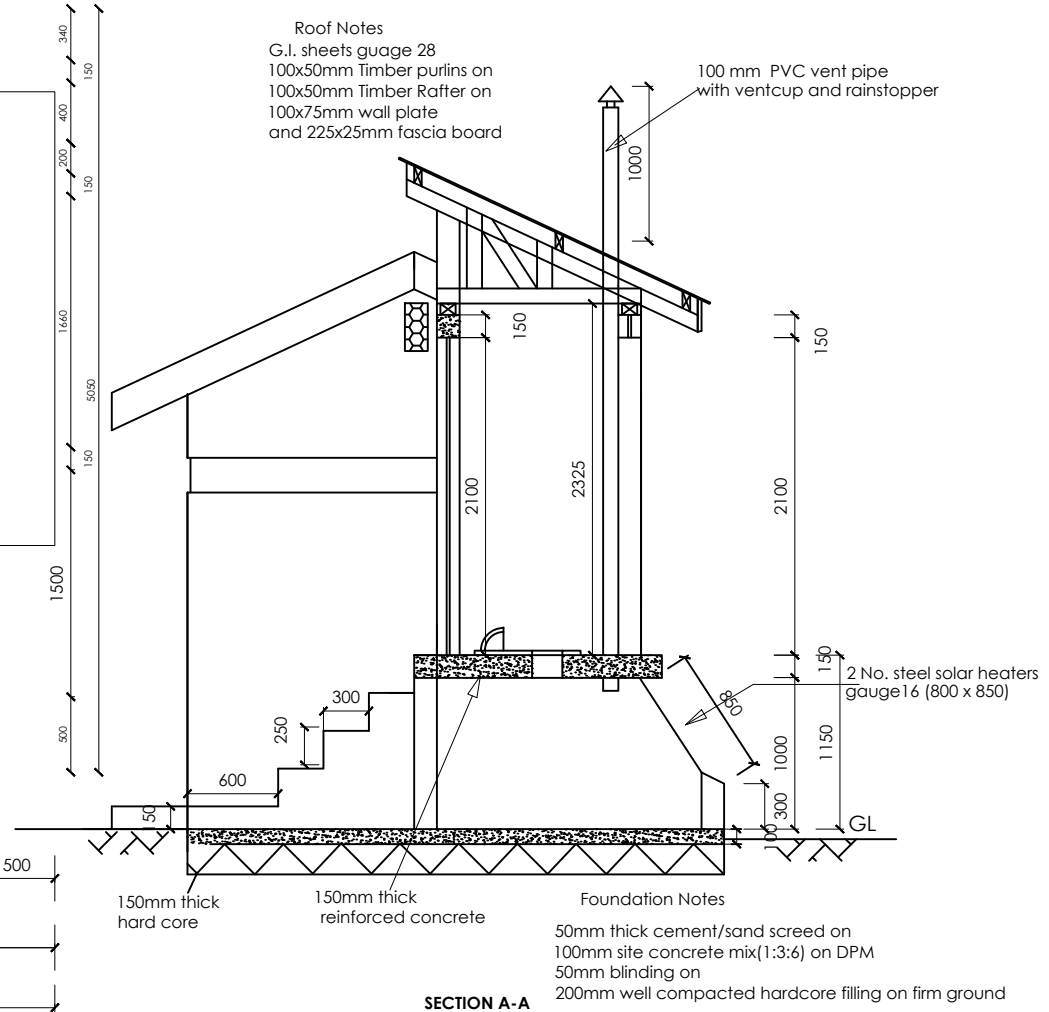
CONTRACTOR

DETAILED ENGINEERING DESIGN
 DRAWING TITLE
SOLAR ARRAY
 Solar Panel Plan Layout, Elevations and Details

SCALE	AS SHOWN	DRAWING No.	MUT/WS/10.1.5
SURVEYED		DESIGNED	Otwane Dan.
DRAWN	Joshua Nyarwanda	CHECKED	Rodney Barugahare
DATE	JUNE 2022	APPROVED	Rodney Barugahare.



GROUND PLAN
Scale 1:50




SECTION A-A

PIPE FITTING SCHEDULE


1. All dimensions are in mm unless stated otherwise.
2. All levels are in metres above sea level.
3. Structural details are not included.
4. All structural concrete is Class 25/10.
5. All mass concrete is Class 15/10.

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MUTUNDA WATER SUPPLY SYSTEM

CONSULTANT



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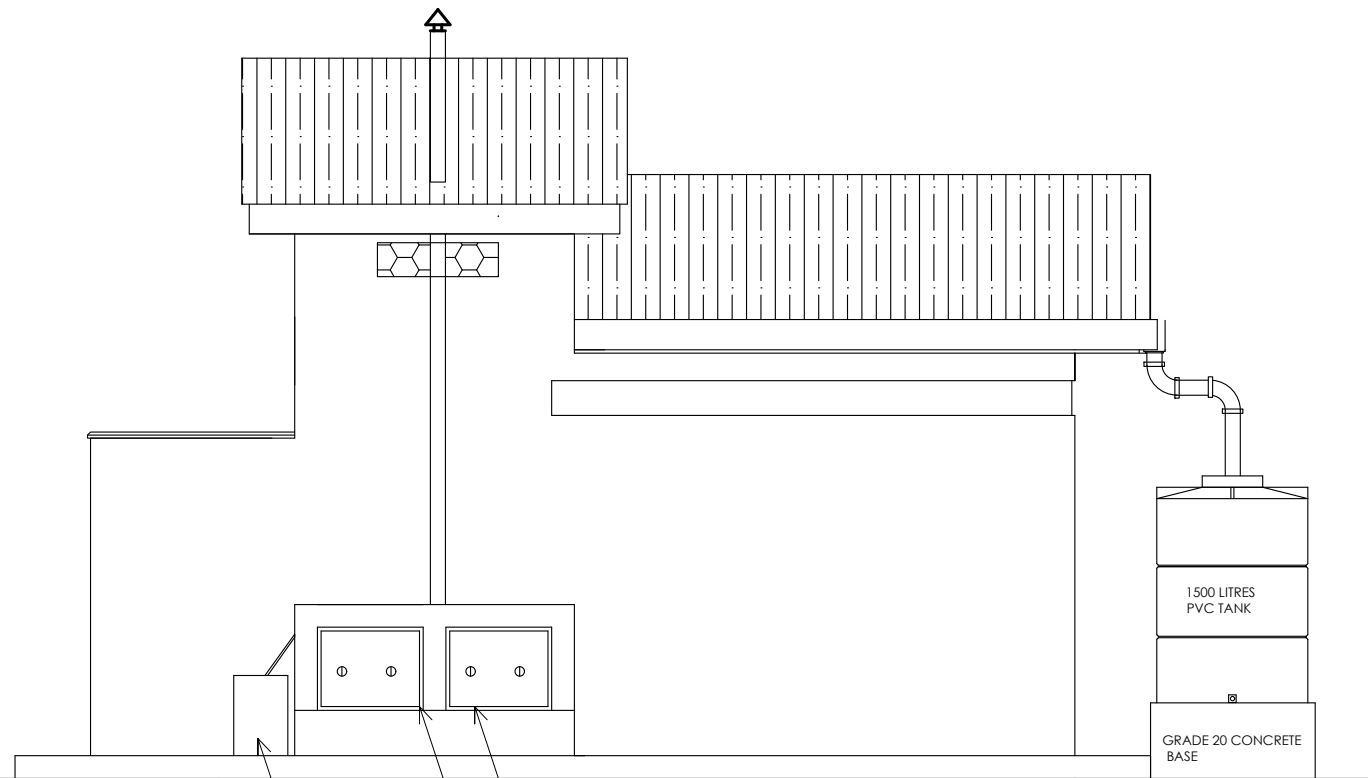
SARI
Corporate Headquarters
19 Plot 1/10, 1st Floor,
Lusaka ECSP/04A,
United Kingdom

CONTRACTOR

DETAILED ENGINEERING DESIGN

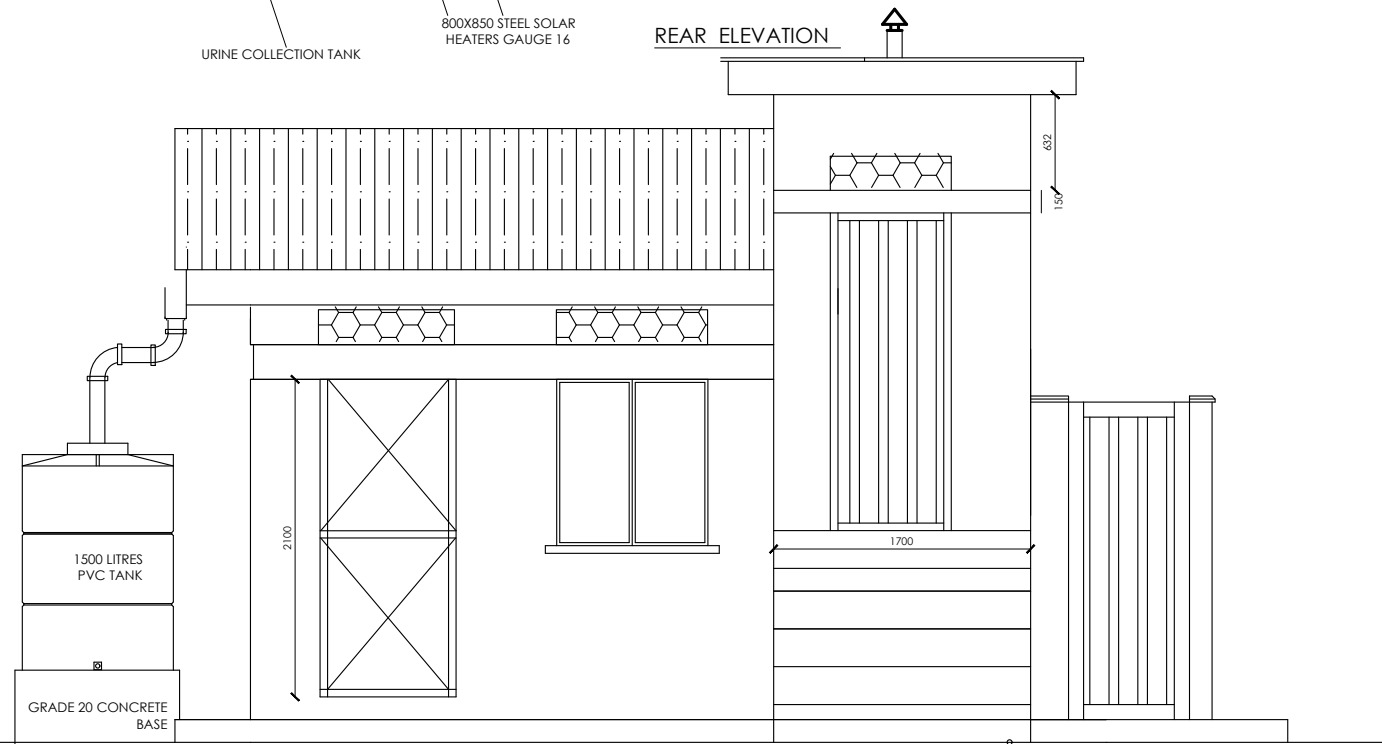
DRAWING TITLE
PUMP ATTENDANT / GUARD + ECOSAN
PLAN AND SECTION A-A

SCALE	AS SHOWN	DRAWING No.	MUT/WS/4.1.1
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DRAWN	Joshua Nyarwanda	CHECKED	Rodney Barugahare
DATE	OCT 2021	APPROVED	Rodney Barugahare.

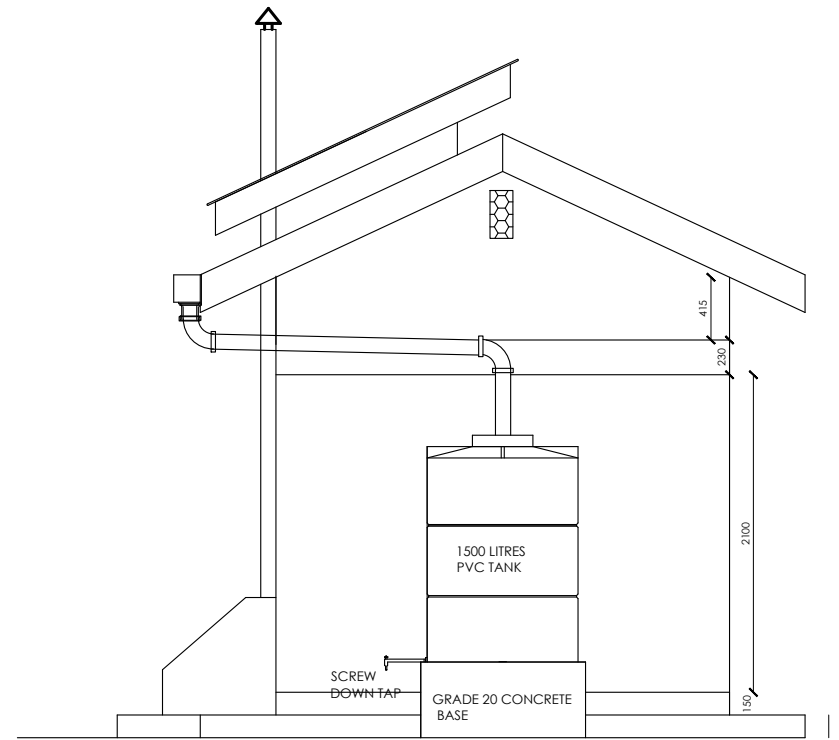


URINE COLLECTION TANK
800X850 STEEL SOLAR HEATERS GAUGE 16

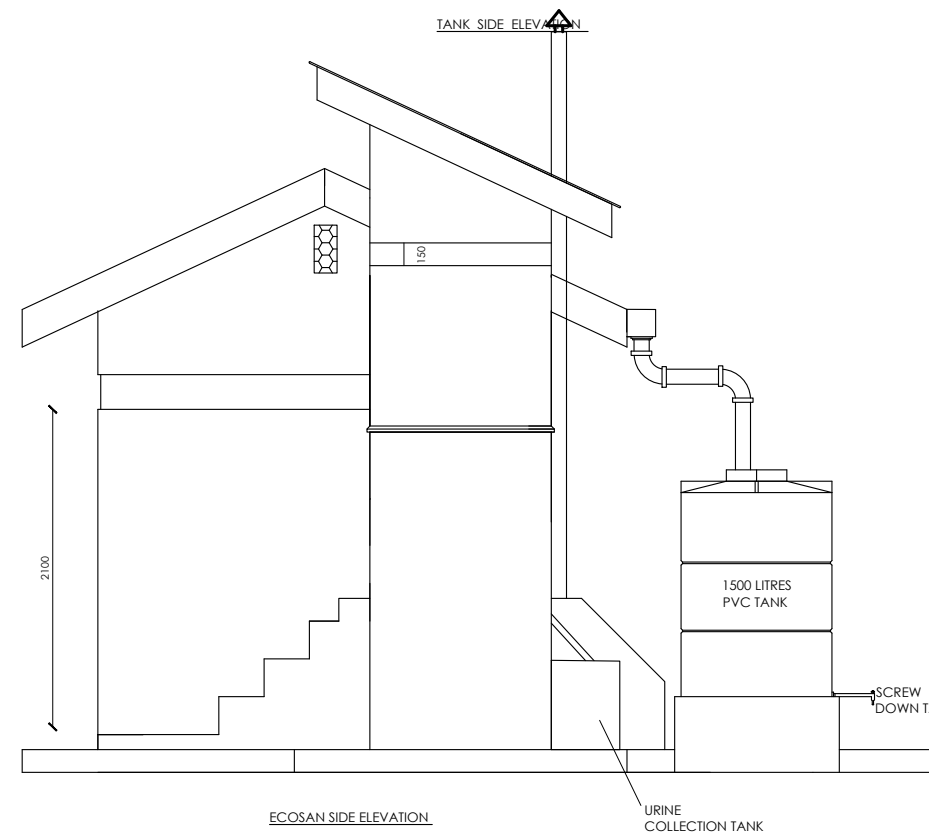
REAR ELEVATION



FRONT ELEVATION



TANK SIDE ELEVATION



ECOSAN SIDE ELEVATION

URINE COLLECTION TANK

PIPE FITTING SCHEDULE

1. All dimensions are in mm unless stated otherwise.
2. All levels are in metres above sea level.
3. Structural details are not included.
4. All structural concrete is Class 25/10.
5. All mass concrete is Class 15/10.

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MUTUNDA WATER SUPPLY SYSTEM

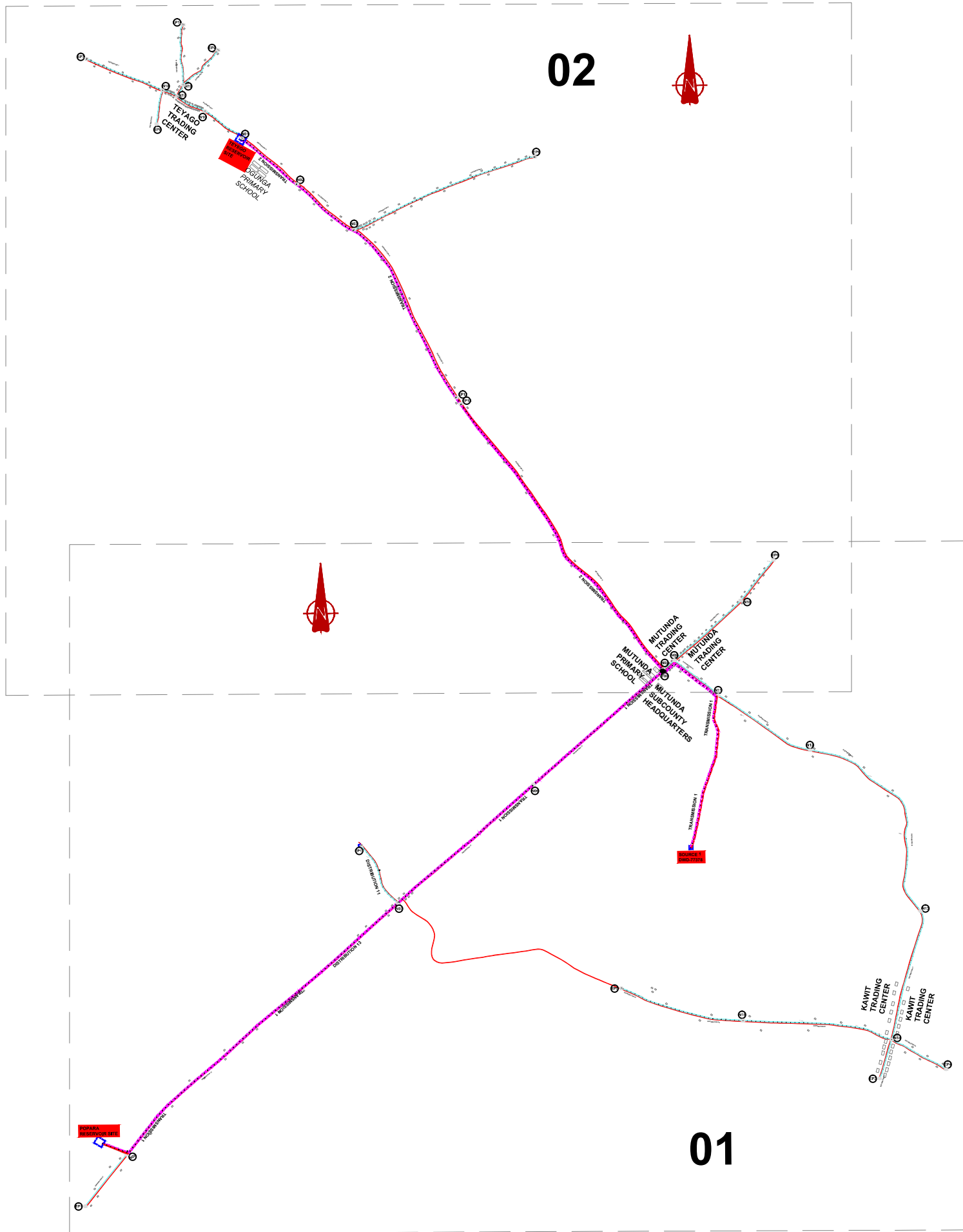
CONSULTANT
 **SARI** *In Joint Venture with*  **SGAPI**
Corporate Headquarter
10 Pipet Lane, 1st Floor,
London EC3N 3BA,
United Kingdom

CONTRACTOR

DETAILED ENGINEERING DESIGN

DRAWING TITLE
PUMP ATTENDANT / GUARD + ECOSAN ELEVATIONS

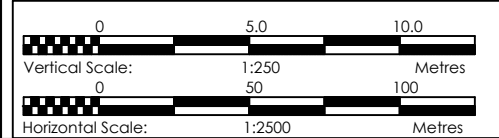
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SURVEYED		DESIGNED	Otwane Dan.
DRAWN	Joshua Nyarwanda	CHECKED	Rodney Barugahare
DATE	OCT 2021	APPROVED	Rodney Barugahare.



NOTES

LEGEND

- Transmission Pipeline
- Distribution Pipeline
- Ground Level
- Building/House
- Contours
- Road
- DAV Double Orifice Air Valve
- EP End pipe
- N01 Node N01
- WO-1 Washout Type1
- WO-2 Washout Type2



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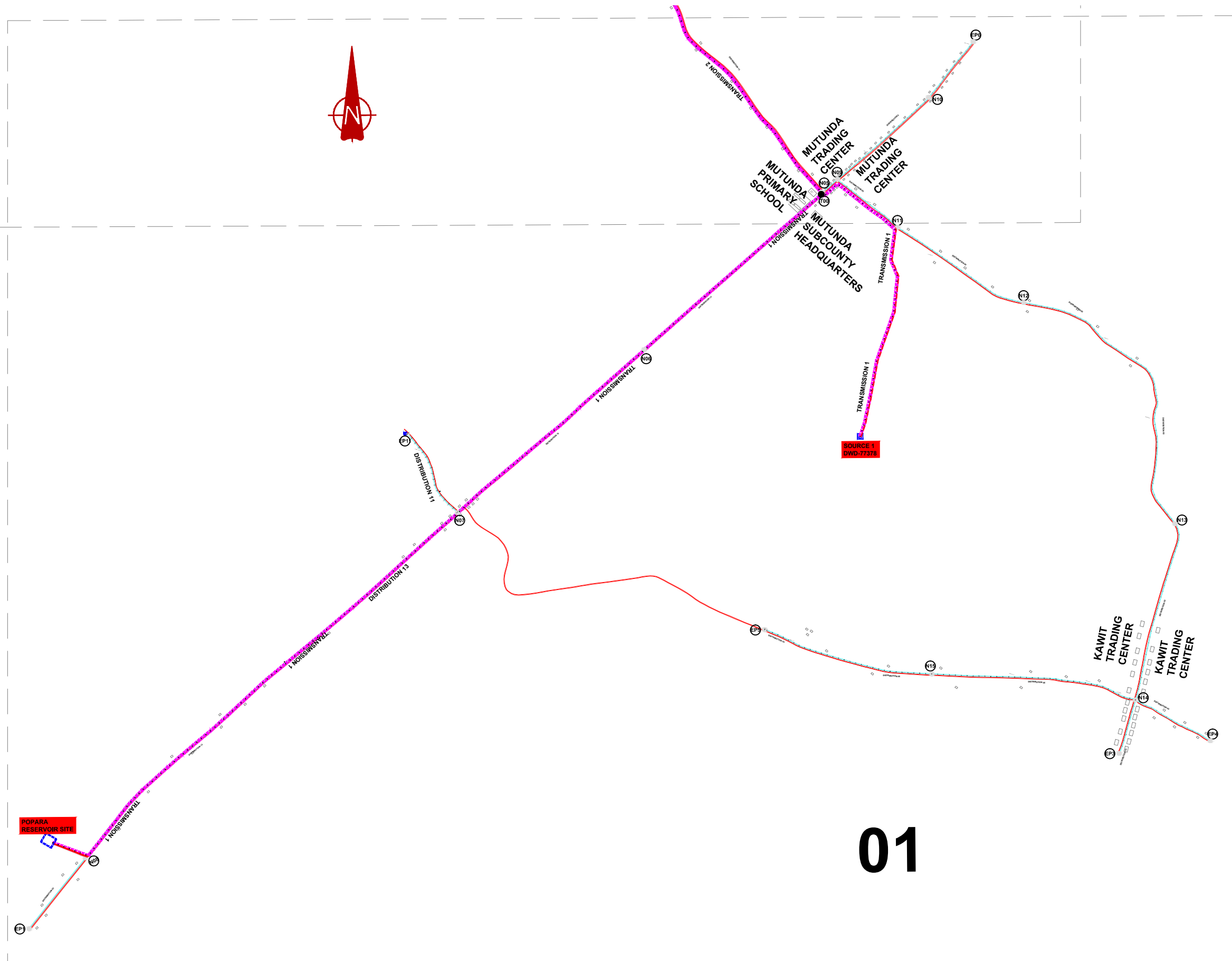
MUTUNDA WATER SUPPLY SYSTEM

CONSULTANT
SARI In Joint Venture with
 Corporate Headquarter
 10 Philip's Lane, 1st Floor,
 London EC3M 8AA,
 United Kingdom

CONTRACTOR

DETAILED ENGINEERING DESIGN
 DRAWING TITLE **GENERAL LAYOUT TRANSMISSION NETWORK**

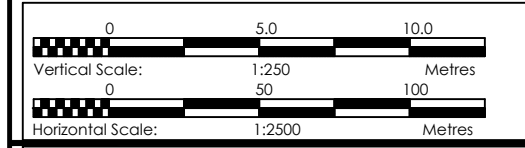
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SURVEYED	Evans Mpanga	DESIGNED Otwane Dan.
DRAWN	Joshua Nyarwanda	CHECKED Rodney Barugahare
DATE	April 2021	APPROVED Rodney Barugahare.



NOTES

LEGEND

- Transmission Pipeline
- Distribution Pipeline
- Ground Level
- Building/House
- Contours
- Road
- DAV Double Orifice Air Valve
- End pipe
- Node N01
- Washout Type1
- Washout Type2



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MUTUNDA WATER SUPPLY SYSTEM

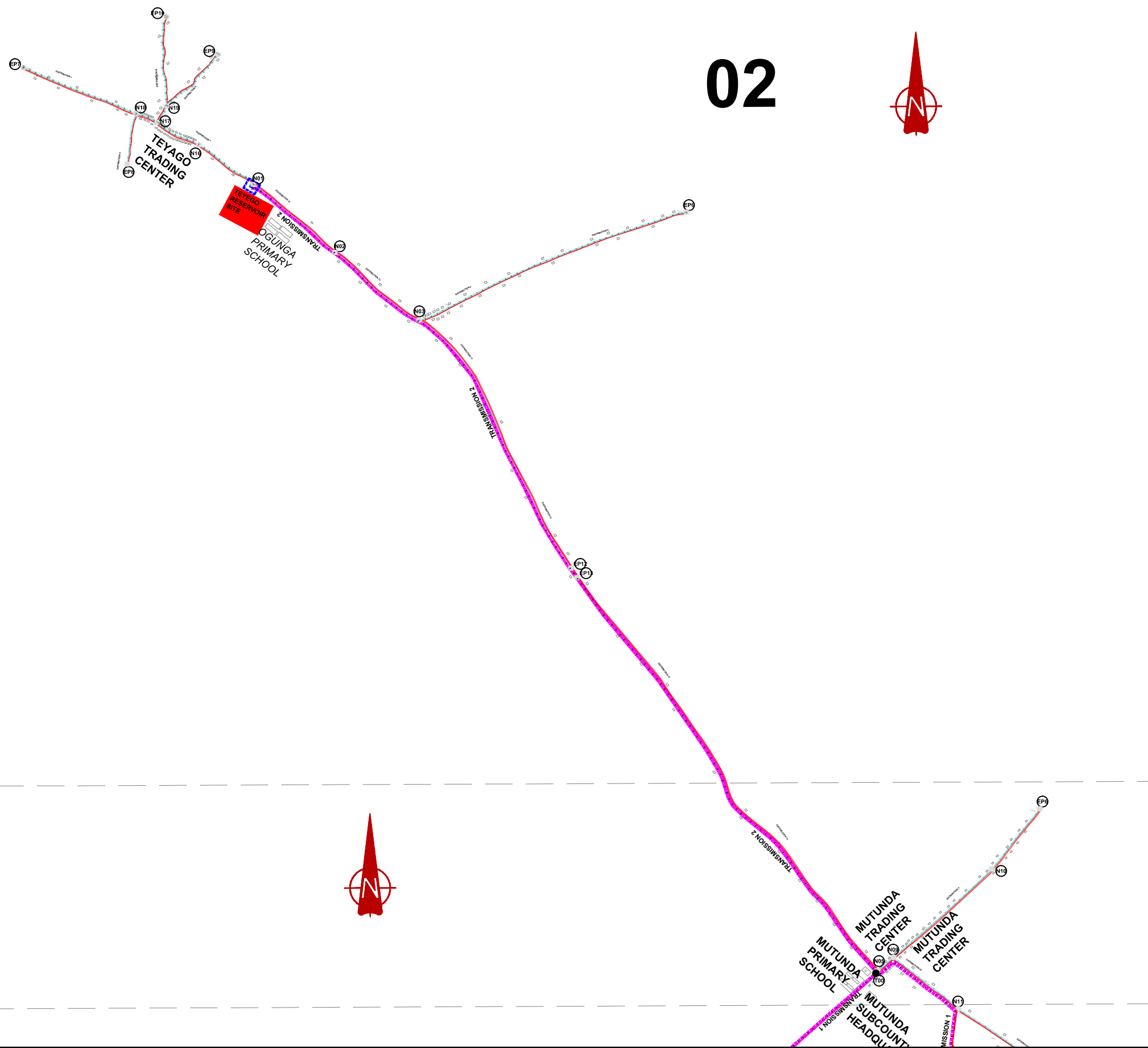
CONSULTANT
SARI In Joint Venture with
 Corporate Headquarter
 10 Philpott Lane, 1st Floor,
 London EC3M 8AA,
 United Kingdom

CONTRACTOR

DETAILED ENGINEERING DESIGN
 DRAWING TITLE **GENERAL LAYOUT TRANSMISSION NETWORK (Sheet 01 of 02)**










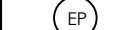

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SURVEYED	Evans Mpanga	DESIGNED Otwane Dan.
DRAWN	Joshua Nyarwanda	CHECKED Rodney Barugahare
DATE	April 2021	APPROVED Rodney Barugahare.

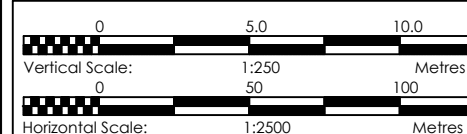
02



NOTES

LEGEND

-  Transmission Pipeline
-  Distribution Pipeline
-  Ground Level
-  Building/House
-  Contours
-  Road
-  DAV Double Orifice Air Valve
-  End pipe
-  Node N01
-  Washout Type1
-  Washout Type2





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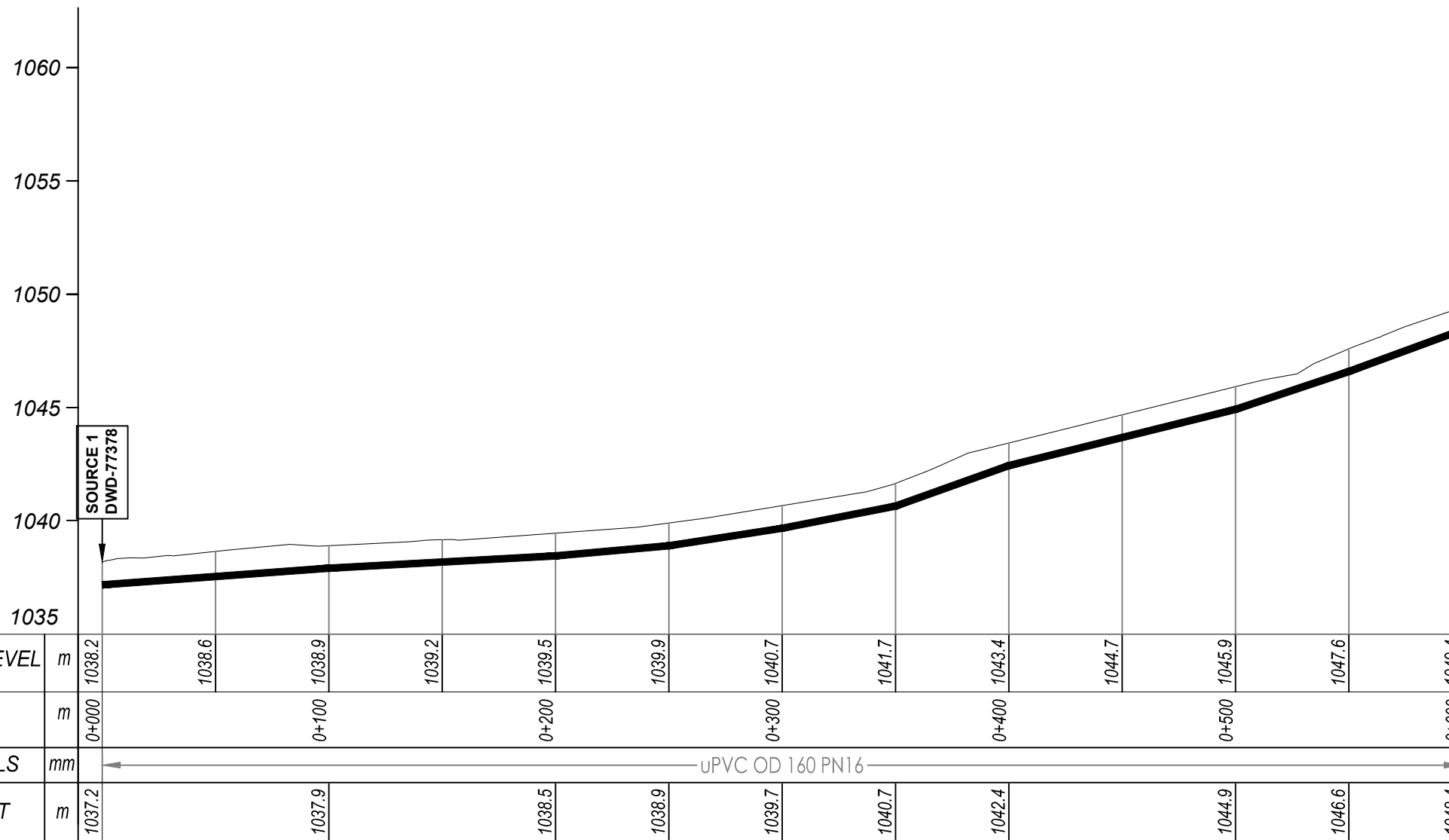
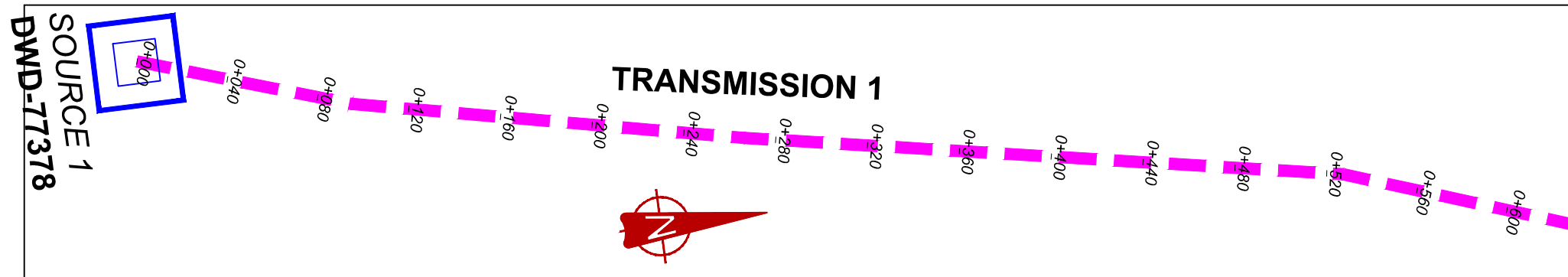
MUTUNDA WATER SUPPLY SYSTEM

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 **SARI** In Joint Venture with  **SGAPI**
 Corporate Headquarter
 10 Philip's Lane, 1st Floor,
 London EC3M 8AA,
 United Kingdom

CONTRACTOR

DETAILED ENGINEERING DESIGN
 DRAWING TITLE **GENERAL LAYOUT TRANSMISSION NETWORK (Sheet 02 of 02)**

SCALE	DRAWING No.	MUT/WS/2.0.2	
SURVEYED	Evans Mpanga	DESIGNED	Otwane Dan.
DRAWN	Joshua Nyarwanda	CHECKED	Rodney Barugahare
DATE	April 2021	APPROVED	Rodney Barugahare.

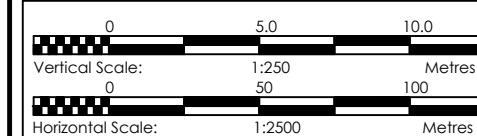


TRANSMISSION 1 (0+000.00 - 0+600.00)

NOTES

LEGEND

- Transmission Pipeline
- Distribution Pipeline
- Ground Level
- Building/House
- Contours
- Road
- DAV Double Orifice Air Valve
- EP End pipe
- N01 Node N01
- WO-1 Washout Type1
- WO-2 Washout Type2



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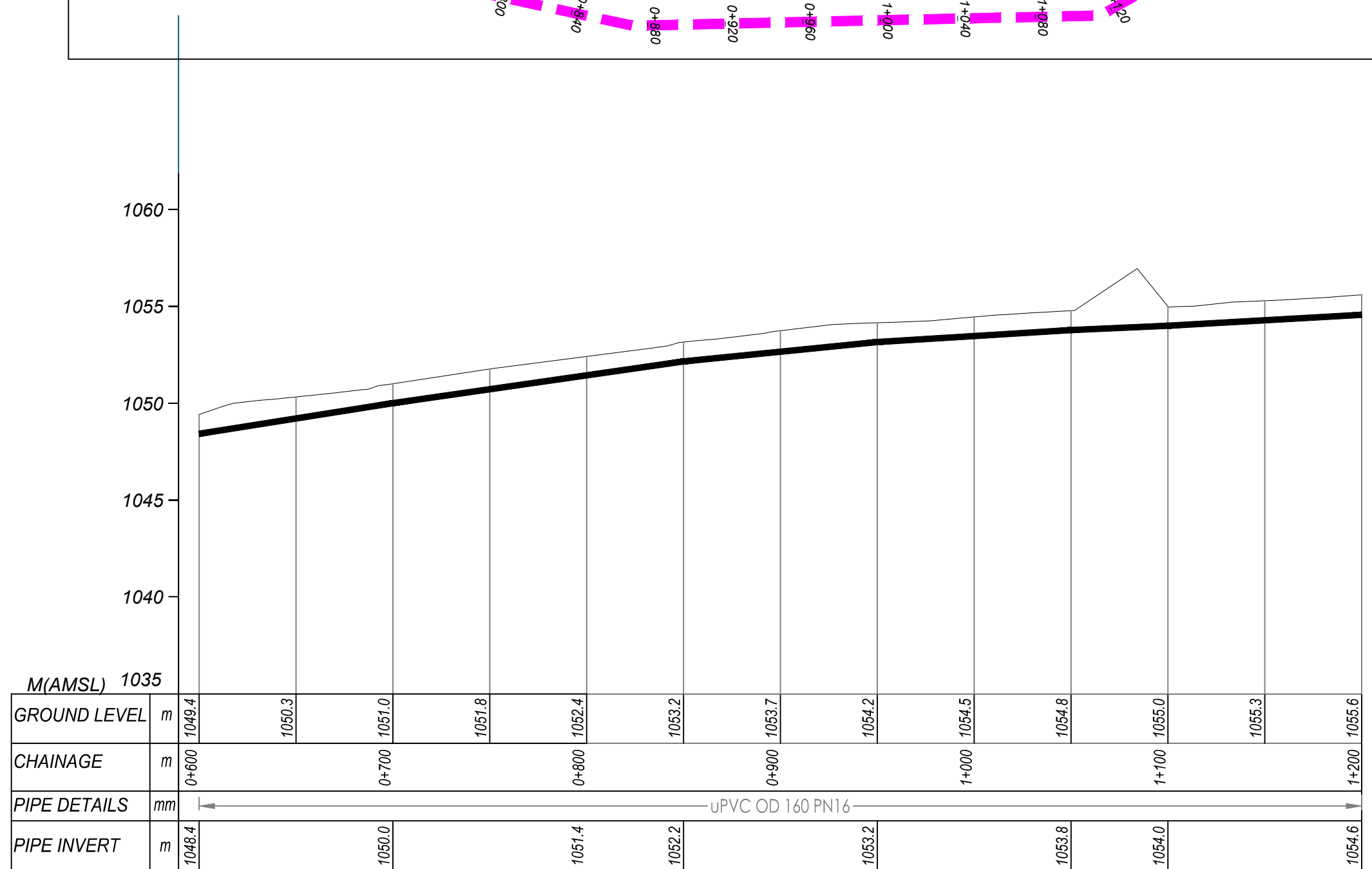
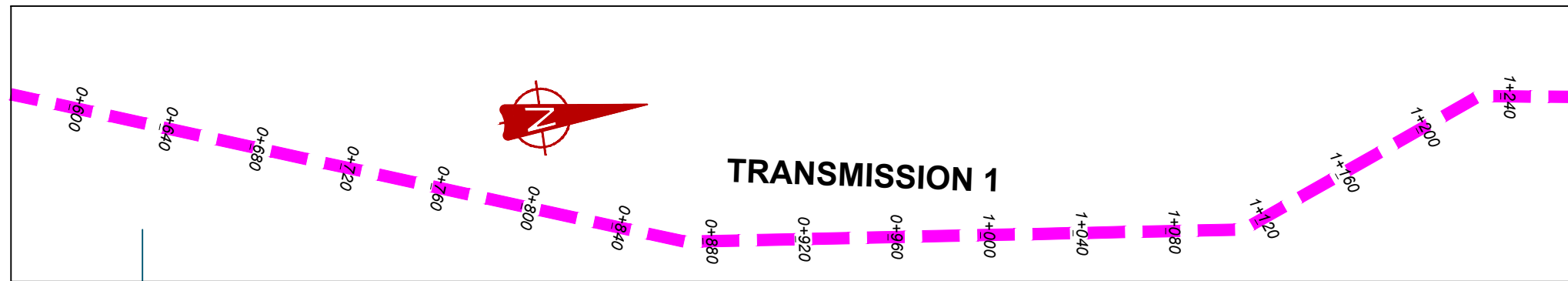
MUTUNDA WATER SUPPLY SYSTEM

CONSULTANT
SARI In Joint Venture with **SGAPI**
 Corporate Headquarter
 10 Philpott Lane, 1st Floor,
 London EC3M 8AA,
 United Kingdom

CONTRACTOR

DETAILED ENGINEERING DESIGN
 DRAWING TITLE
TRANSMISSION LINE 01
(0+000.00 - 0+600.00)

SCALE VERT: 1:250 DRAWING No. MUT/WS/2.1.1
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 SURVEYED Evans Mpanga DESIGNED Otwane Dan.
 DRAWN Joshua Nyarwanda CHECKED Rodney Barugahare
 DATE April 2021 APPROVED Rodney Barugahare.

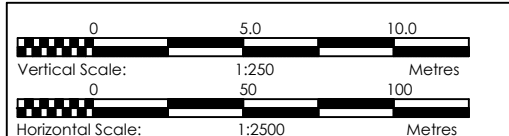


TRANSMISSION 1 (0+600.00 - 1+200.00)

NOTES

LEGEND

- Transmission Pipeline
- Distribution Pipeline
- Ground Level
- Building/House
- Contours
- Road
- DAV Double Orifice Air Valve
- End pipe
- Node N01
- WO-1 Washout Type1
- WO-2 Washout Type2



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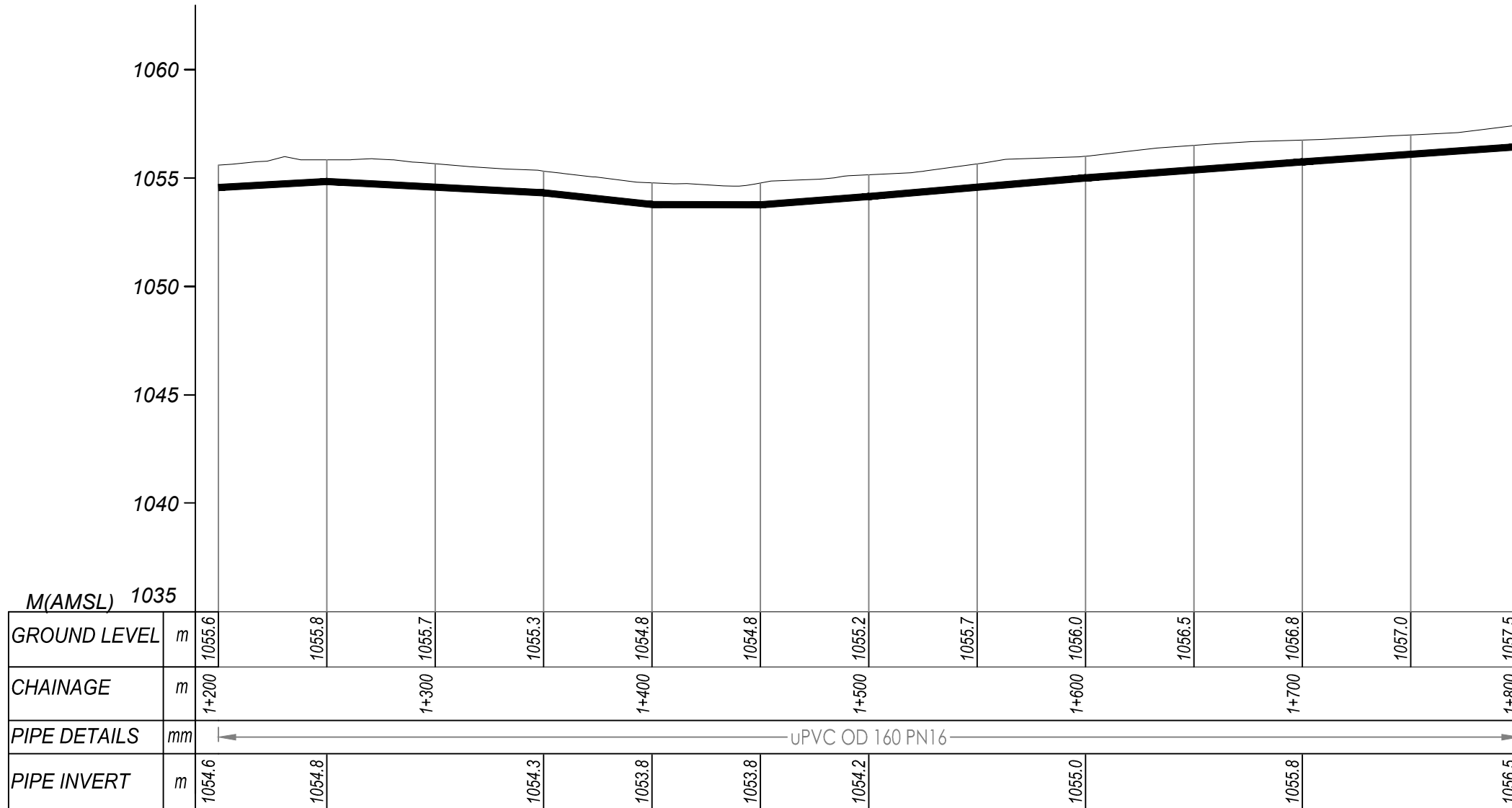
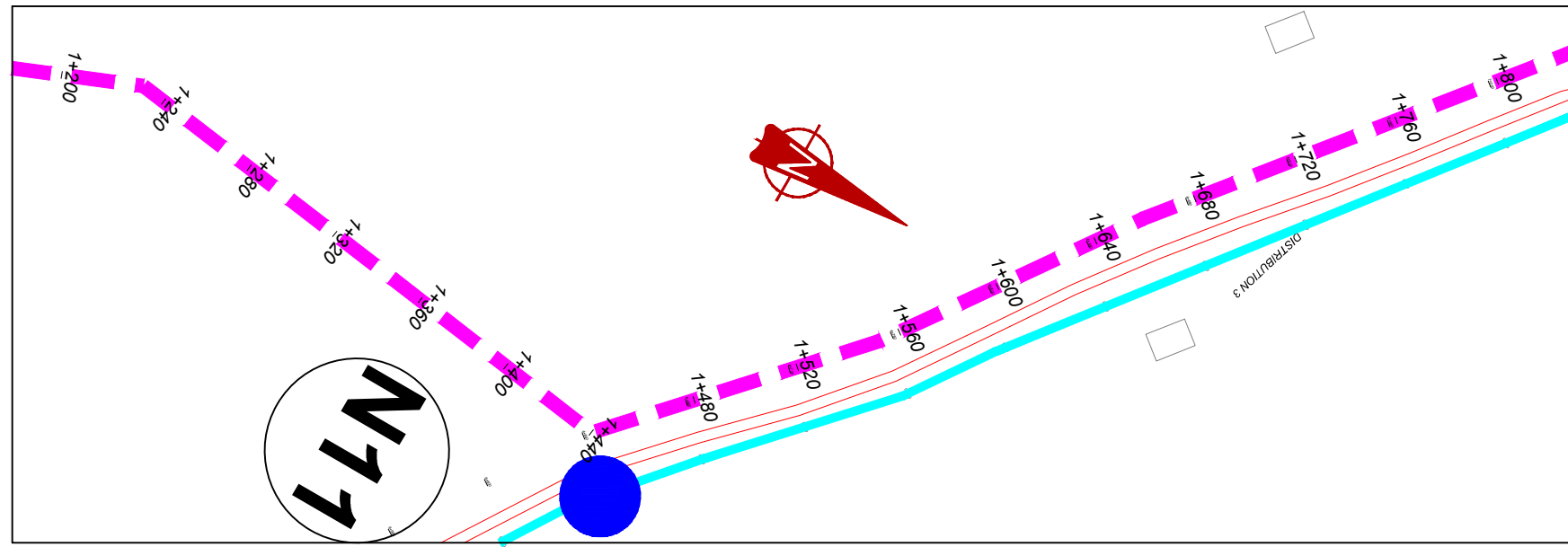
MUTUNDA WATER SUPPLY SYSTEM

CONSULTANT
SARI In Joint Venture with **SGAPI**
 Corporate Headquarter
 10 Philpot Lane, 1st Floor,
 London EC3M 8AA,
 United Kingdom

CONTRACTOR

DETAILED ENGINEERING DESIGN
 DRAWING TITLE
TRANSMISSION LINE 01
(0+600.00 - 1+200.00)

SCALE	VERT: 1:250 HOR: 1:2500	DRAWING No.	MUT/WS/2.1.2
SURVEYED	Evans Mpanga	DESIGNED	Otwane Dan.
DRAWN	Joshua Nyarwanda	CHECKED	Rodney Barugahare
DATE	April 2021	APPROVED	Rodney Barugahare.

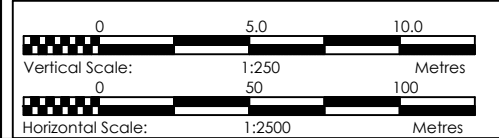


TRANSMISSION 1 (1+200.00 - 1+800.00)

NOTES

LEGEND

- Transmission Pipeline
- Distribution Pipeline
- Ground Level
- Building/House
- Contours
- Road
- DAV Double Orifice Air Valve
- End pipe
- Node N01
- WO-1 Washout Type1
- WO-2 Washout Type2



CLIENT
GOVERNMENT OF UGANDA
 MINISTRY OF WATER AND ENVIRONMENT

CO-FINANCED BY:
 AND **THE WORLD BANK** AND **GOVERNMENT OF UGANDA**

PROJECT
 CONSULTANCY SERVICES FOR FEASIBILITY STUDY, DETAILED ENGINEERING DESIGN AND CONSTRUCTION SUPERVISION OF SOLAR POWERED PIPED WATER SUPPLY SYSTEMS AND SANITATION FACILITIES IN REFUGEE SETTLEMENTS AND HOST DISTRICTS IN WEST NILE AND NORTHERN UGANDA IN KIRYANDONGO DISTRICT

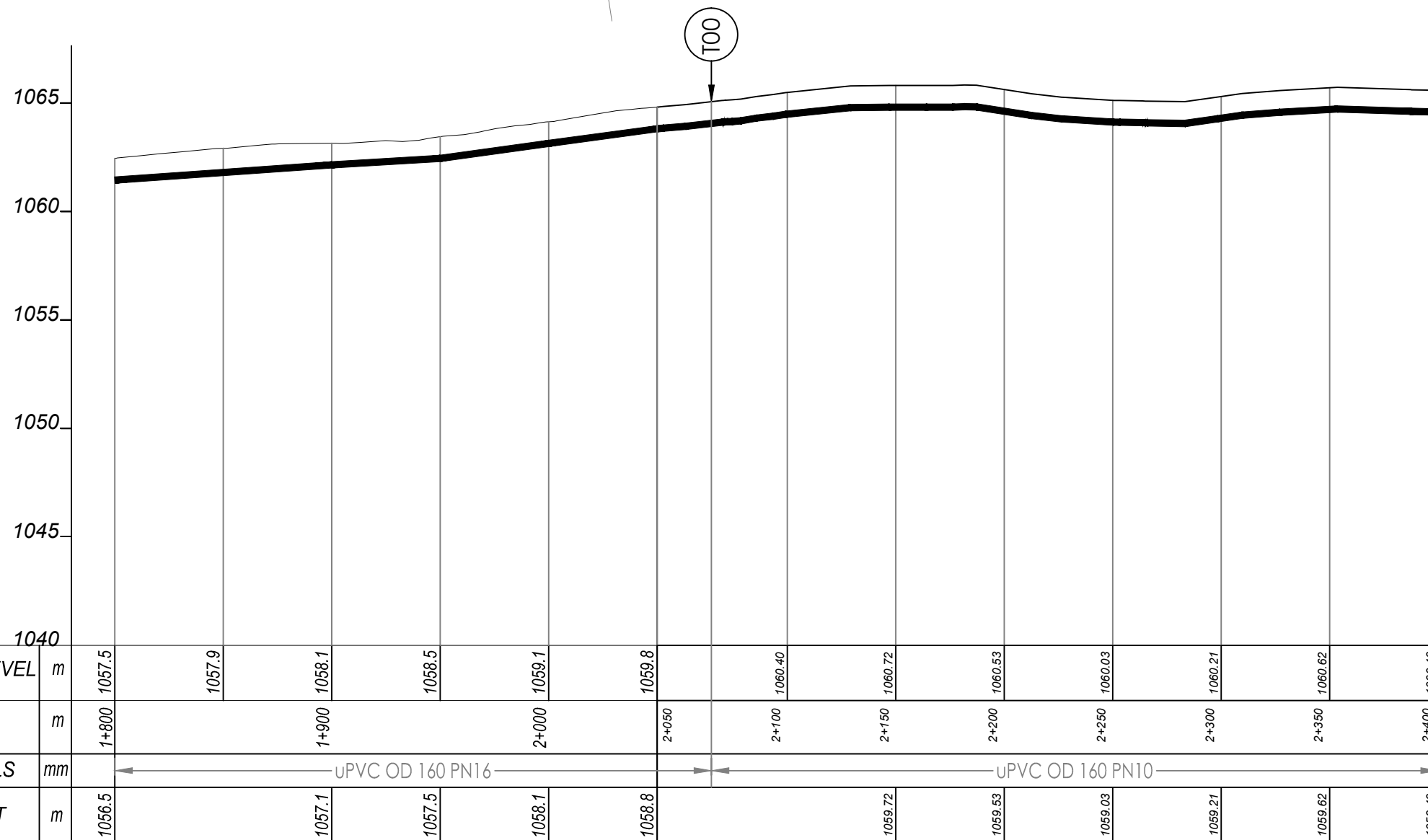
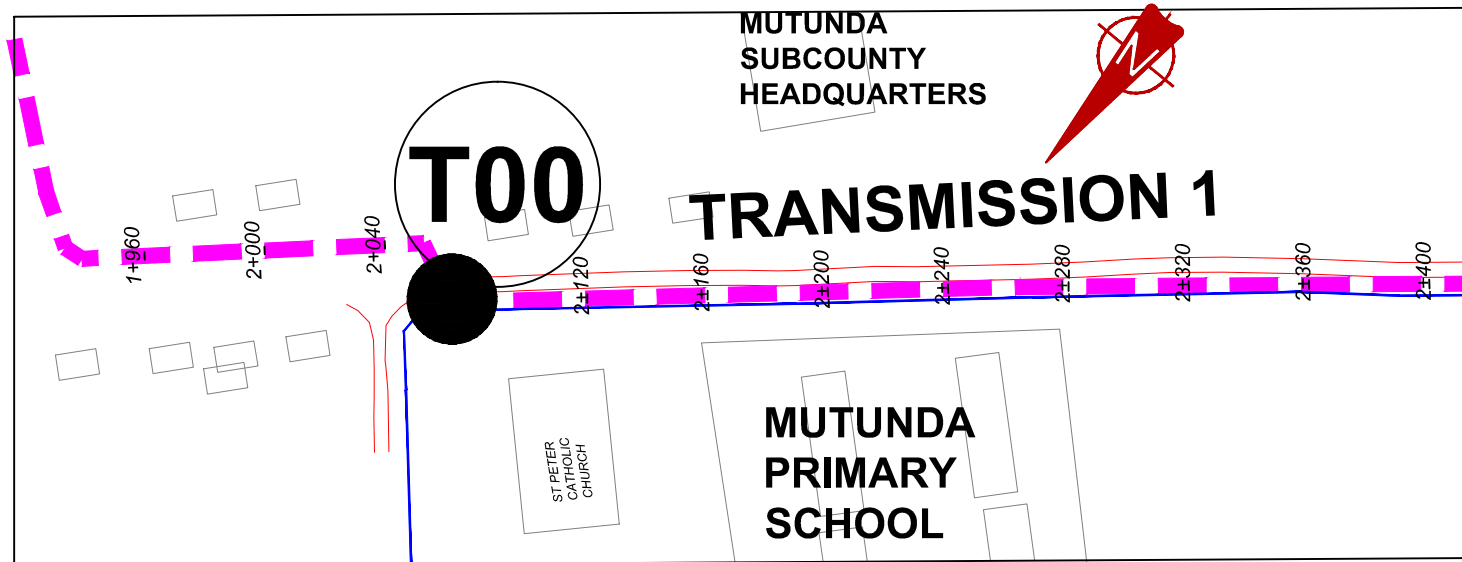
MUTUNDA WATER SUPPLY SYSTEM

CONSULTANT
SARI In Joint Venture with **SGAPI**
 Corporate Headquarter
 10 Philpot Lane, 1st Floor,
 London EC3M 8AA,
 United Kingdom

CONTRACTOR

DETAILED ENGINEERING DESIGN
 DRAWING TITLE
TRANSMISSION LINE 01
(1+200.00 - 1+800.00)

SCALE VERT: 1:250 DRAWING No. MUT/WS/2.1.3
 HOR: 1:2500
 SURVEYED Evans Mpanga DESIGNED Otwane Dan.
 DRAWN Joshua Nyarwanda CHECKED Rodney Barugahare
 DATE April 2021 APPROVED Rodney Barugahare.

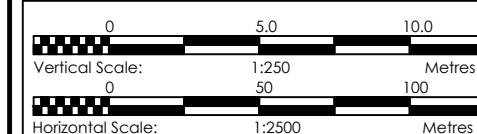


TRANSMISSION 1 (1+800.00 - 2+400.00)

NOTES

LEGEND

- Transmission Pipeline
- Distribution Pipeline
- Ground Level
- Building/House
- Contours
- Road
- DAV Double Orifice Air Valve
- EP End pipe
- N01 Node N01
- WO-1 Washout Type1
- WO-2 Washout Type2



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GOVERNMENT OF UGANDA
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 CONSULTANCY SERVICES FOR FEASIBILITY STUDY, DETAILED ENGINEERING DESIGN AND CONSTRUCTION SUPERVISION OF SOLAR POWERED PIPED WATER SUPPLY SYSTEMS AND SANITATION FACILITIES IN REFUGEE SETTLEMENTS AND HOST DISTRICTS IN WEST NILE AND NORTHERN UGANDA IN KIRYANDONGO DISTRICT

MUTUNDA WATER SUPPLY SYSTEM

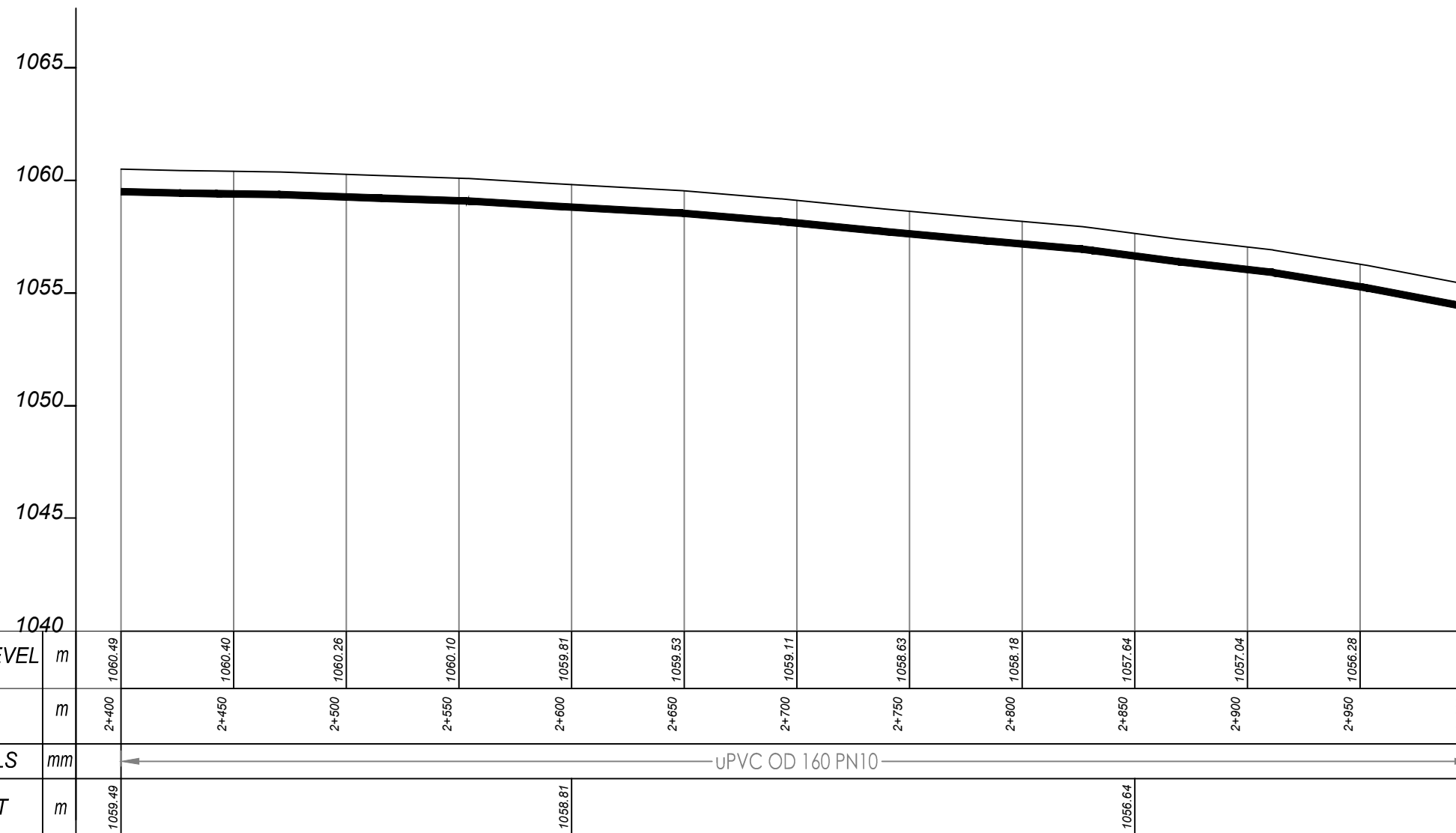
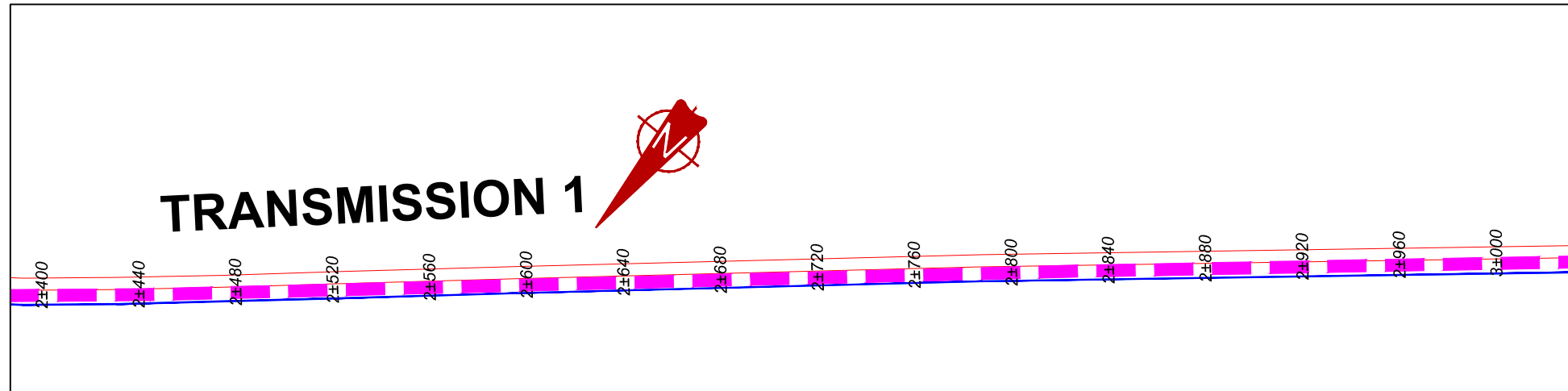
CONSULTANT
SARI In Joint Venture with **SGAPI**
 Corporate Headquarter
 10 Philjof Lane, 1st Floor,
 London EC3M 8AA,
 United Kingdom

CONTRACTOR

DETAILED ENGINEERING DESIGN
 DRAWING TITLE
TRANSMISSION LINE 01
(1+800.00 - 2+400.00)

SCALE VERT: 1:250 DRAWING No. MUT/WS/2.1.4
 HOR: 1:2500
 SURVEYED Evans Mpanga DESIGNED Otwane Dan.
 DRAWN Joshua Nyarwanda CHECKED Rodney Barugahare
 DATE April 2021 APPROVED Rodney Barugahare.

TRANSMISSION 1

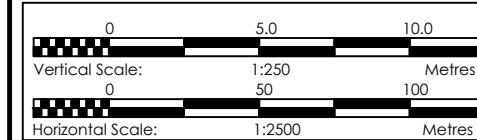


TRANSMISSION 1 (2+400.00 - 3+000.00)

NOTES

LEGEND

- Transmission Pipeline
- Distribution Pipeline
- Ground Level
- Building/House
- Contours
- Road
- DAV Double Orifice Air Valve
- EP End pipe
- N01 Node N01
- WO-1 Washout Type1
- WO-2 Washout Type2



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GOVERNMENT OF UGANDA
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 AND **THE WORLD BANK** AND **GOVERNMENT OF UGANDA**

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 CONSULTANCY SERVICES FOR FEASIBILITY STUDY, DETAILED ENGINEERING DESIGN AND CONSTRUCTION SUPERVISION OF SOLAR POWERED PIPED WATER SUPPLY SYSTEMS AND SANITATION FACILITIES IN REFUGEE SETTLEMENTS AND HOST DISTRICTS IN WEST NILE AND NORTHERN UGANDA IN KIRYANDONGO DISTRICT

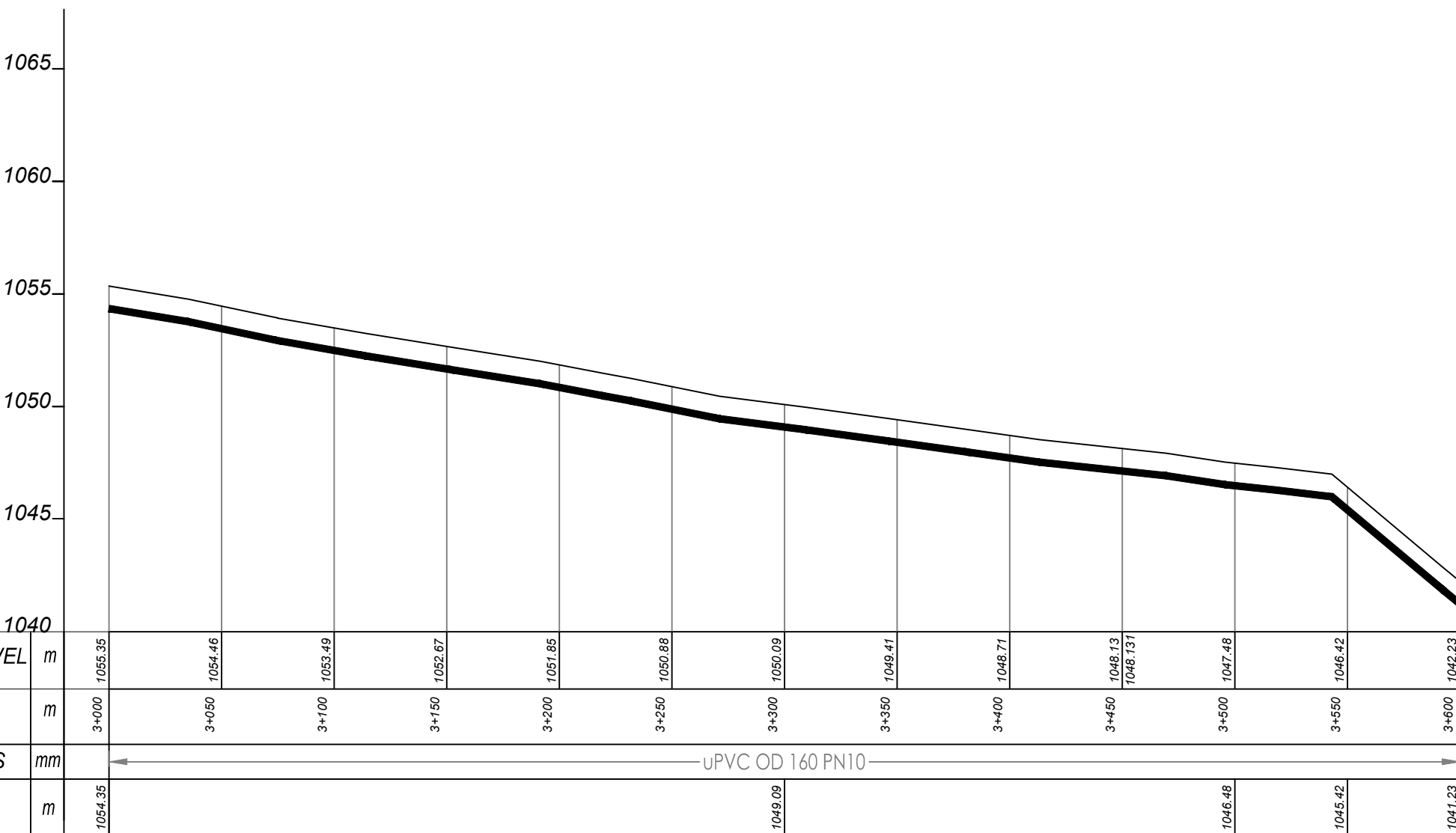
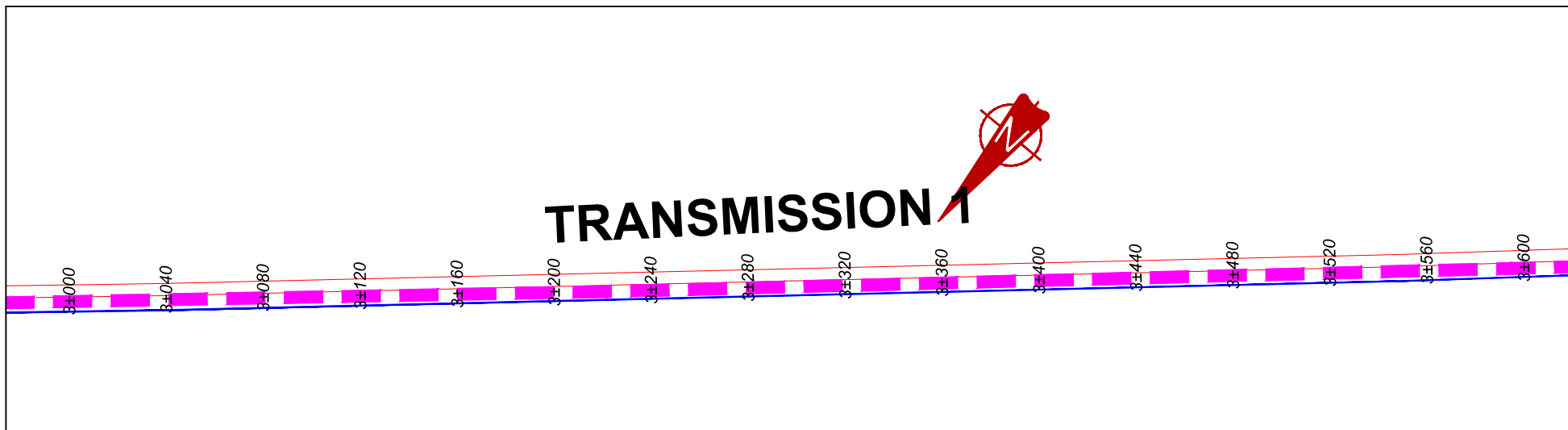
MUTUNDA WATER SUPPLY SYSTEM

CONSULTANT
SARI In Joint Venture with **SGAPI**
 Corporate Headquarter
 10 Philpott Lane, 1st Floor,
 London EC3M 8AA,
 United Kingdom

CONTRACTOR

DETAILED ENGINEERING DESIGN
 DRAWING TITLE
TRANSMISSION LINE 01 (2+400.00 - 3+000.00)

SCALE	VERT: 1:250 HOR: 1:2500	DRAWING No.	MUT/WS/2.1.5
SURVEYED	Evans Mpanga	DESIGNED	Otwane Dan.
DRAWN	Joshua Nyarwanda	CHECKED	Rodney Barugahare
DATE	April 2021	APPROVED	Rodney Barugahare.

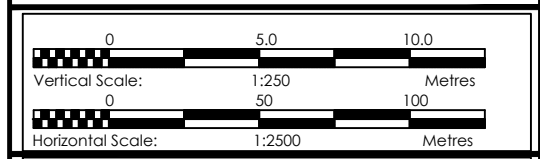


TRANSMISSION 1 (3+000.00 - 3+600.00)

NOTES

LEGEND

- - - Transmission Pipeline
- Distribution Pipeline
- Ground Level
- Building/House
- Contours
- Road
- DAV Double Orifice Air Valve
- End pipe
- Node N01
- WO-1 Washout Type1
- WO-2 Washout Type2



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GOVERNMENT OF UGANDA
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 CONSULTANCY SERVICES FOR FEASIBILITY STUDY, DETAILED ENGINEERING DESIGN AND CONSTRUCTION SUPERVISION OF SOLAR POWERED PIPED WATER SUPPLY SYSTEMS AND SANITATION FACILITIES IN REFUGEE SETTLEMENTS AND HOST DISTRICTS IN WEST NILE AND NORTHERN UGANDA IN KIRYANDONGO DISTRICT

MUTUNDA WATER SUPPLY SYSTEM

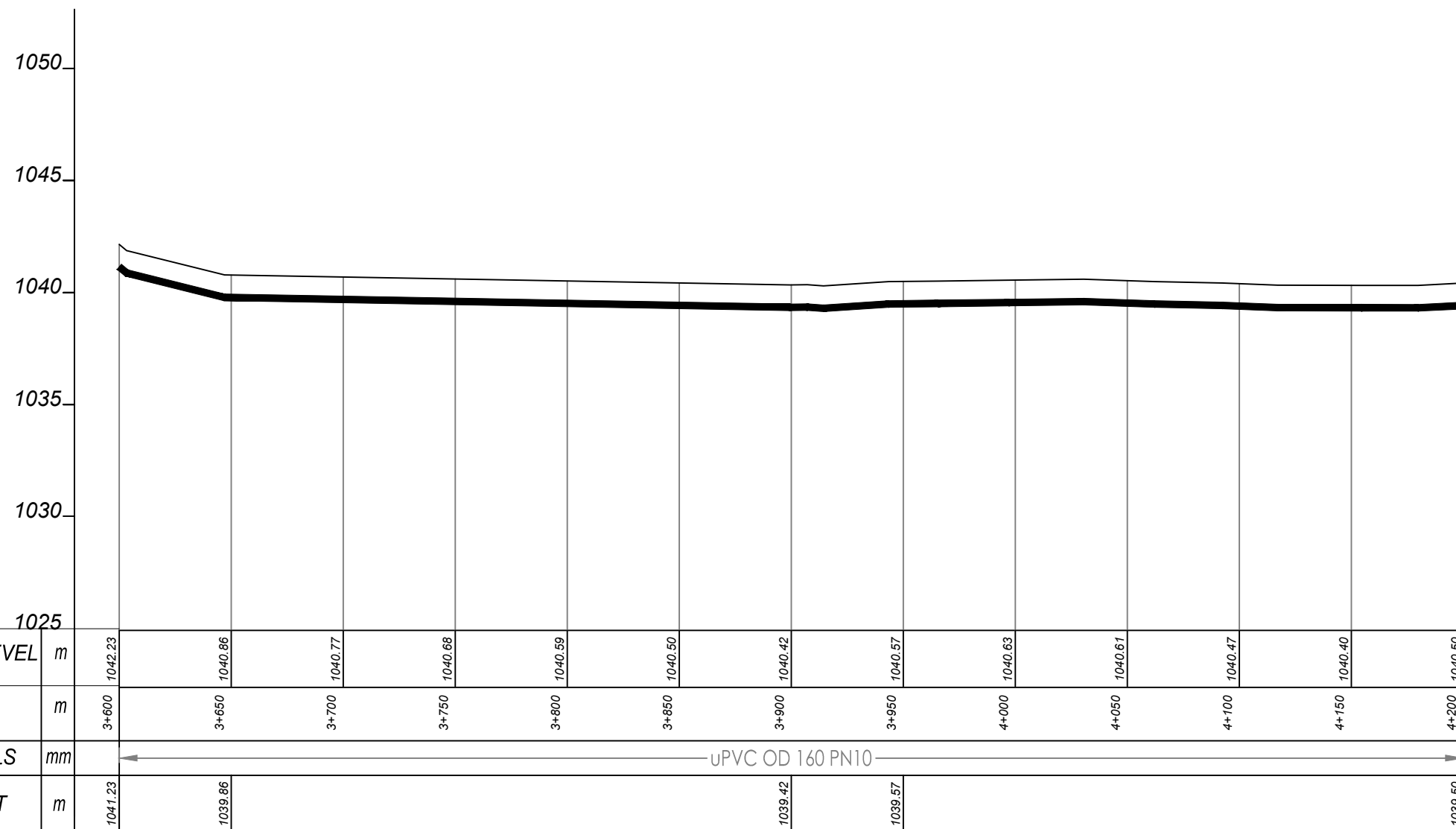
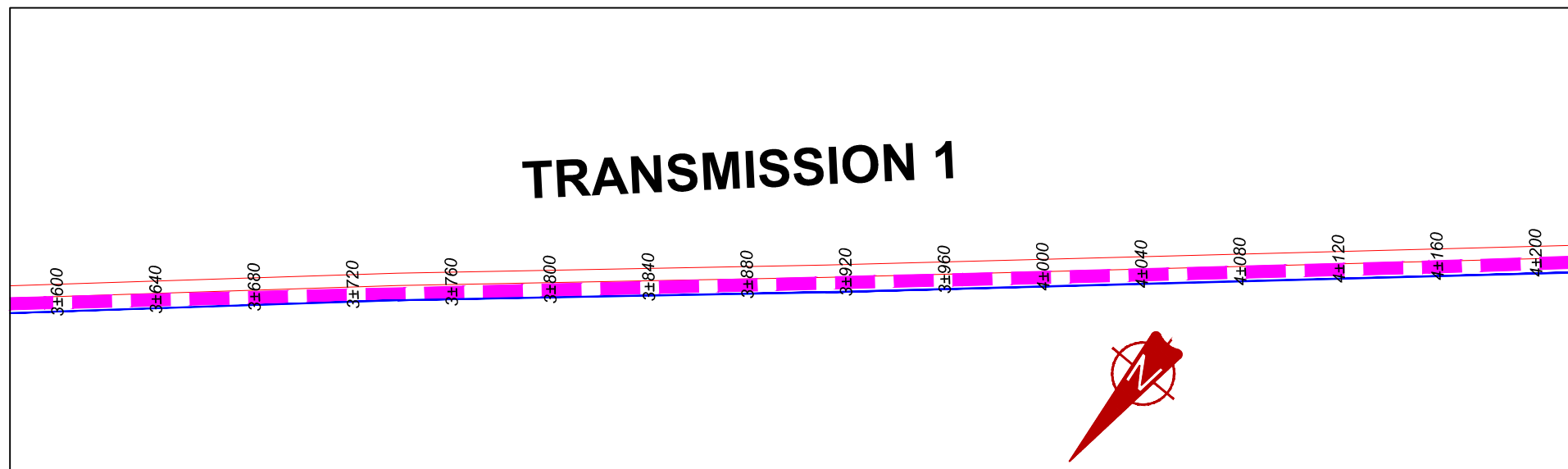
CONSULTANT
SARI In Joint Venture with **SGAPI**
 Corporate Headquarter
 10 Philipot Lane, 1st Floor,
 London EC3M 8AA,
 United Kingdom

CONTRACTOR

DETAILED ENGINEERING DESIGN

DRAWING TITLE
**TRANSMISSION LINE 01
 (3+000.00 - 3+600.00)**

SCALE	VERT: 1:250 HOR: 1:2500	DRAWING No.	MUT/WS/2.1.6
SURVEYED	Evans Mpanga	DESIGNED	Otwane Dan.
DRAWN	Joshua Nyarwanda	CHECKED	Rodney Barugahare
DATE	April 2021	APPROVED	Rodney Barugahare.

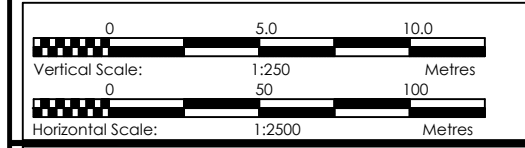


TRANSMISSION 1 (3+600.00 - 4+200.00)

NOTES

LEGEND

- Transmission Pipeline
- Distribution Pipeline
- Ground Level
- Building/House
- Contours
- Road
- DAV Double Orifice Air Valve
- End pipe
- Node N01
- WO-1 Washout Type1
- WO-2 Washout Type2



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GOVERNMENT OF UGANDA
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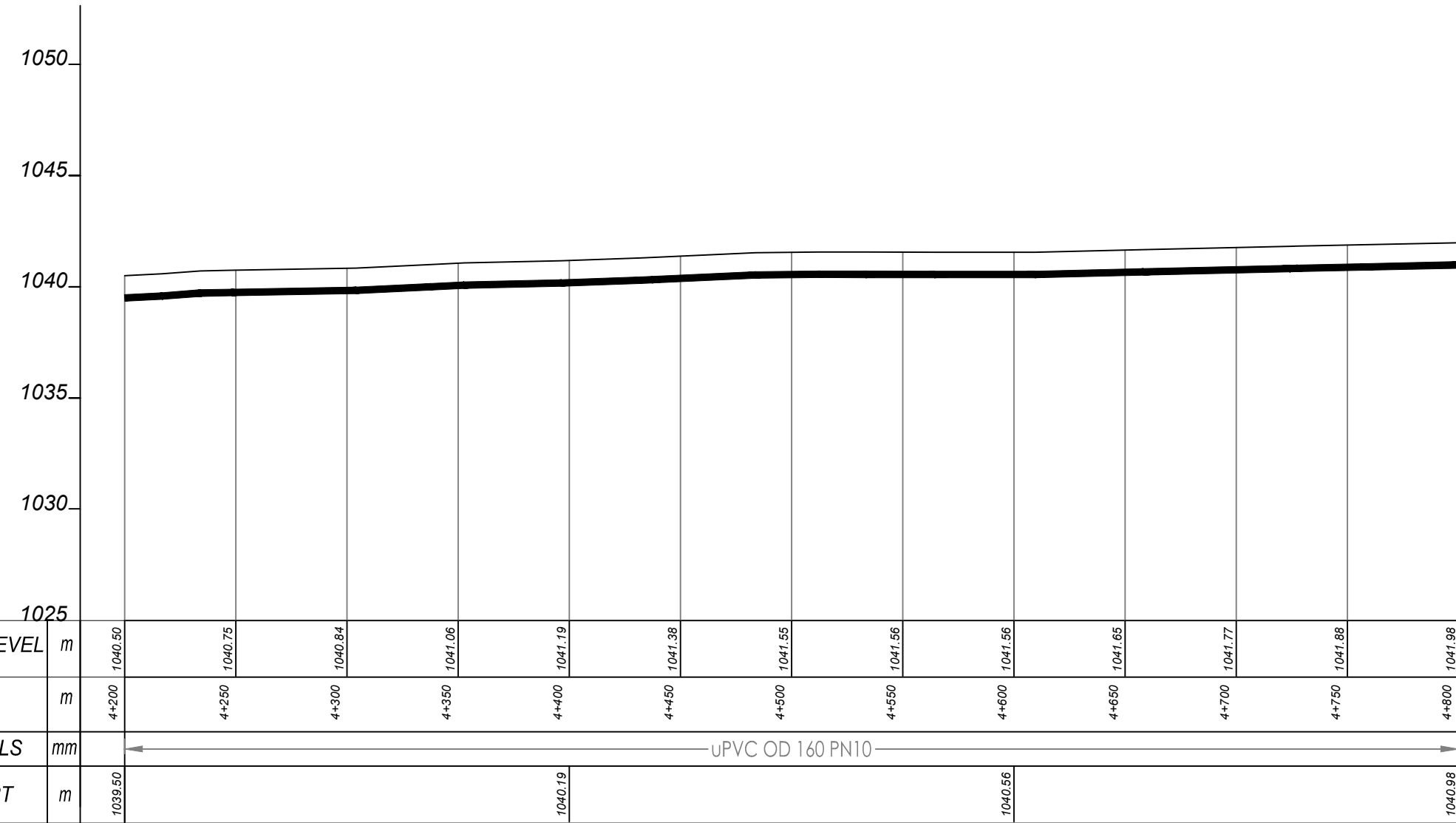
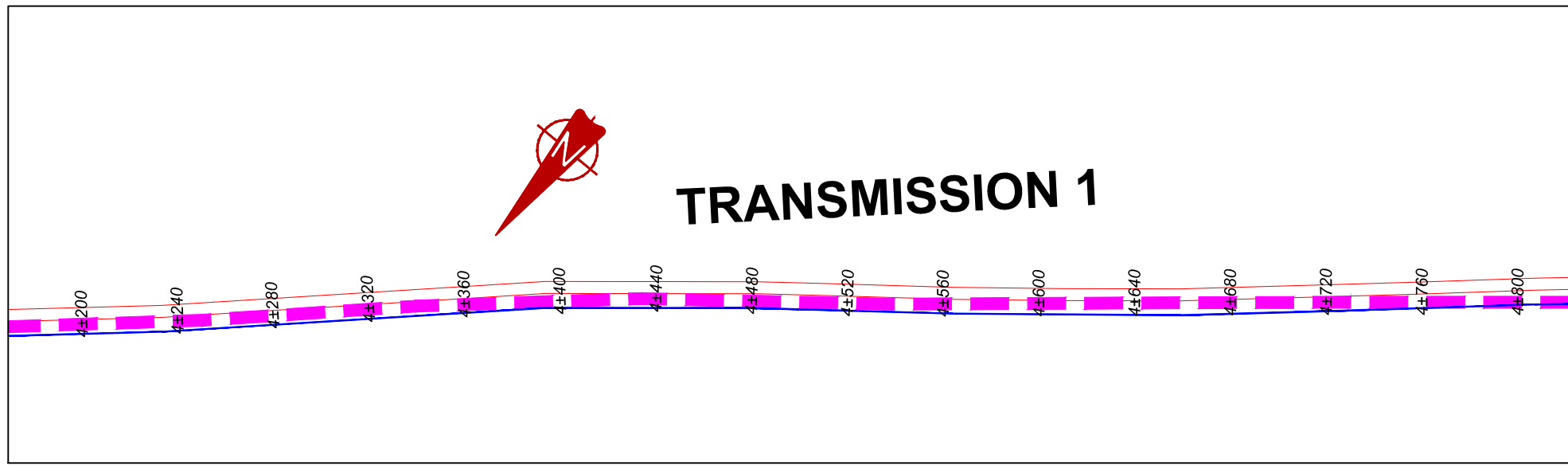
MUTUNDA WATER SUPPLY SYSTEM

CONSULTANT
SARI In Joint Venture with **SGAPI**
 Corporate Headquarter
 10 Philpott Lane, 1st Floor,
 London EC3M 8AA,
 United Kingdom

CONTRACTOR

DETAILED ENGINEERING DESIGN
 DRAWING TITLE
TRANSMISSION LINE 01
(3+600.00 - 4+200.00)

SCALE VERT: 1:250 DRAWING No. MUT/WS/2.1.7
 HOR: 1:2500
 SURVEYED Evans Mpanga DESIGNED Otwane Dan.
 DRAWN Joshua Nyarwanda CHECKED Rodney Barugahare
 DATE April 2021 APPROVED Rodney Barugahare.

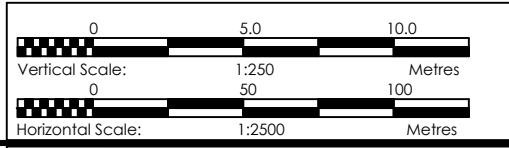


TRANSMISSION 1 (4+200.00 - 4+800.00)

NOTES

LEGEND

- Transmission Pipeline
- Distribution Pipeline
- Ground Level
- Building/House
- Contours
- Road
- DAV Double Orifice Air Valve
- End pipe
- Node N01
- WO-1 Washout Type1
- WO-2 Washout Type2



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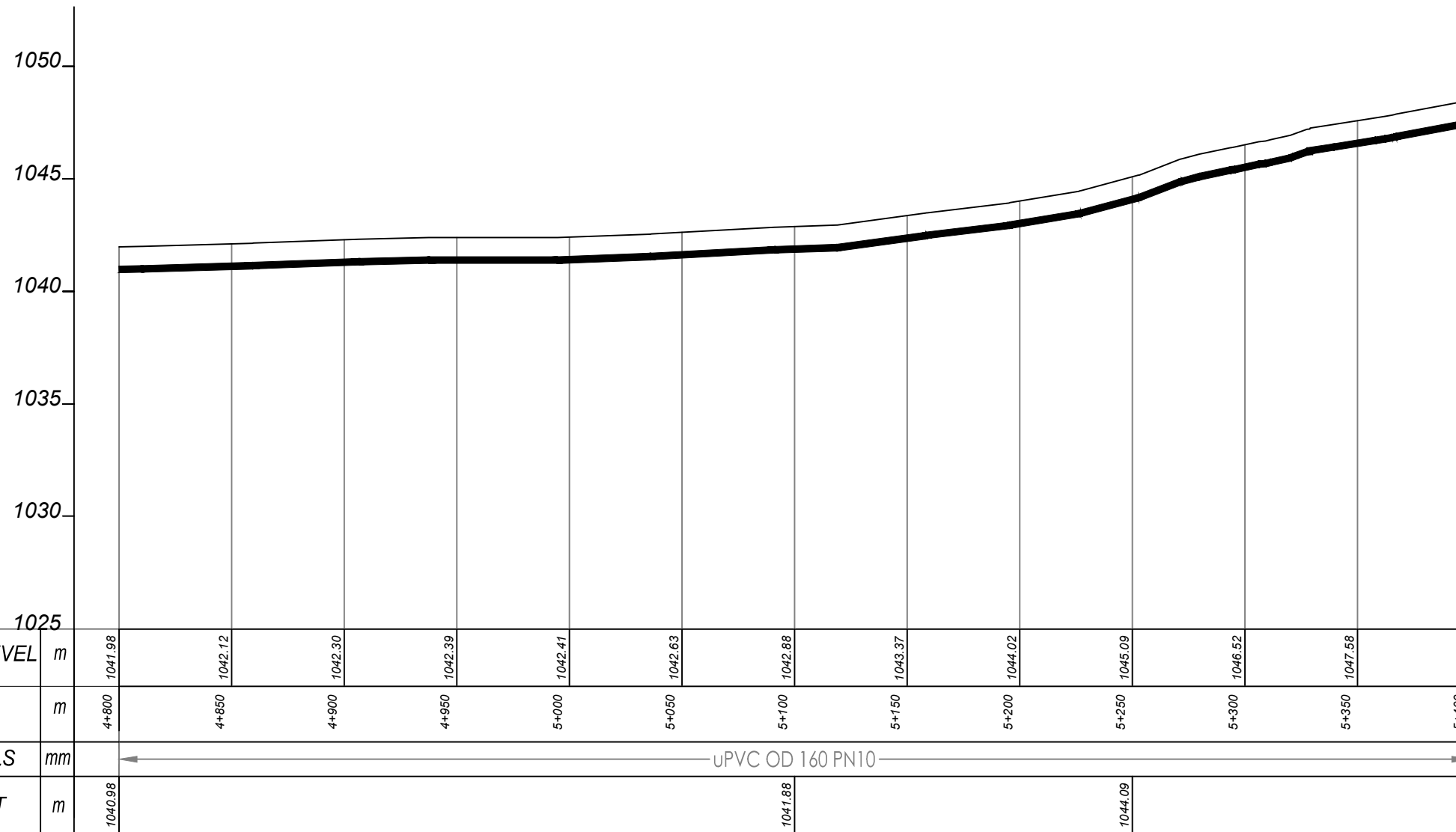
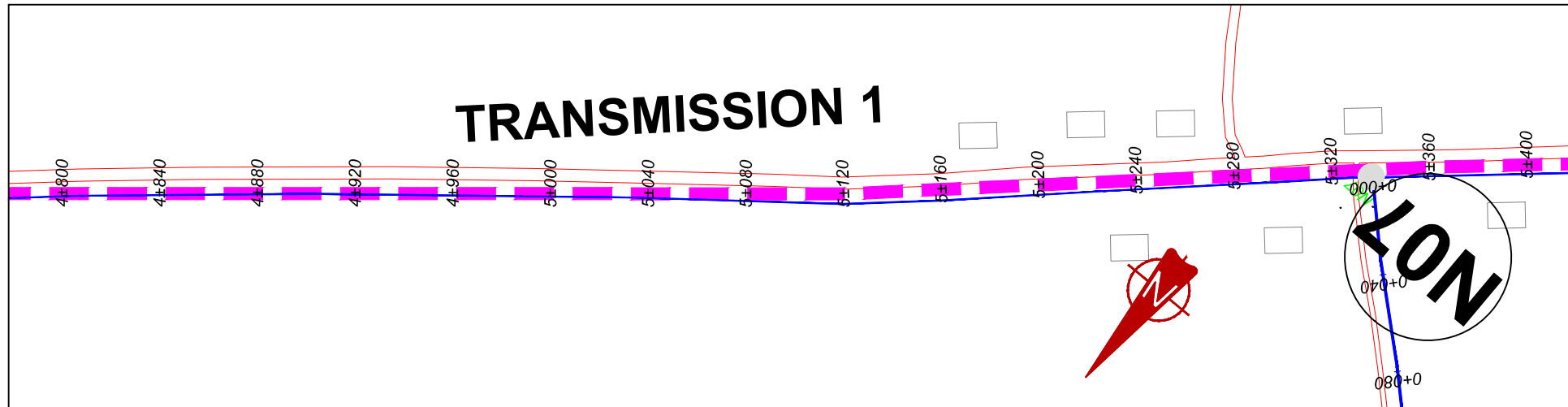
MUTUNDA WATER SUPPLY SYSTEM

CONSULTANT
SARI In Joint Venture with **SGAPI**
 Corporate Headquarter
 10 Philpott Lane, 1st Floor,
 London EC3M 8AA,
 United Kingdom

CONTRACTOR

DETAILED ENGINEERING DESIGN
 DRAWING TITLE
TRANSMISSION LINE 01
(4+200.00 - 4+800.00)

SCALE	VERT: 1:250 HOR: 1:2500	DRAWING No.	MUT/WS/2.1.8
SURVEYED	Evans Mpanga	DESIGNED	Otwane Dan.
DRAWN	Joshua Nyarwanda	CHECKED	Rodney Barugahare
DATE	April 2021	APPROVED	Rodney Barugahare.

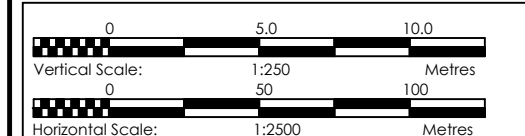


TRANSMISSION 1 (4+800.00 - 5+400.00)

NOTES

LEGEND

- Transmission Pipeline
- Distribution Pipeline
- Ground Level
- Building/House
- Contours
- Road
- DAV Double Orifice Air Valve
- End pipe
- Node N01
- WO-1 Washout Type1
- WO-2 Washout Type2



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GOVERNMENT OF UGANDA
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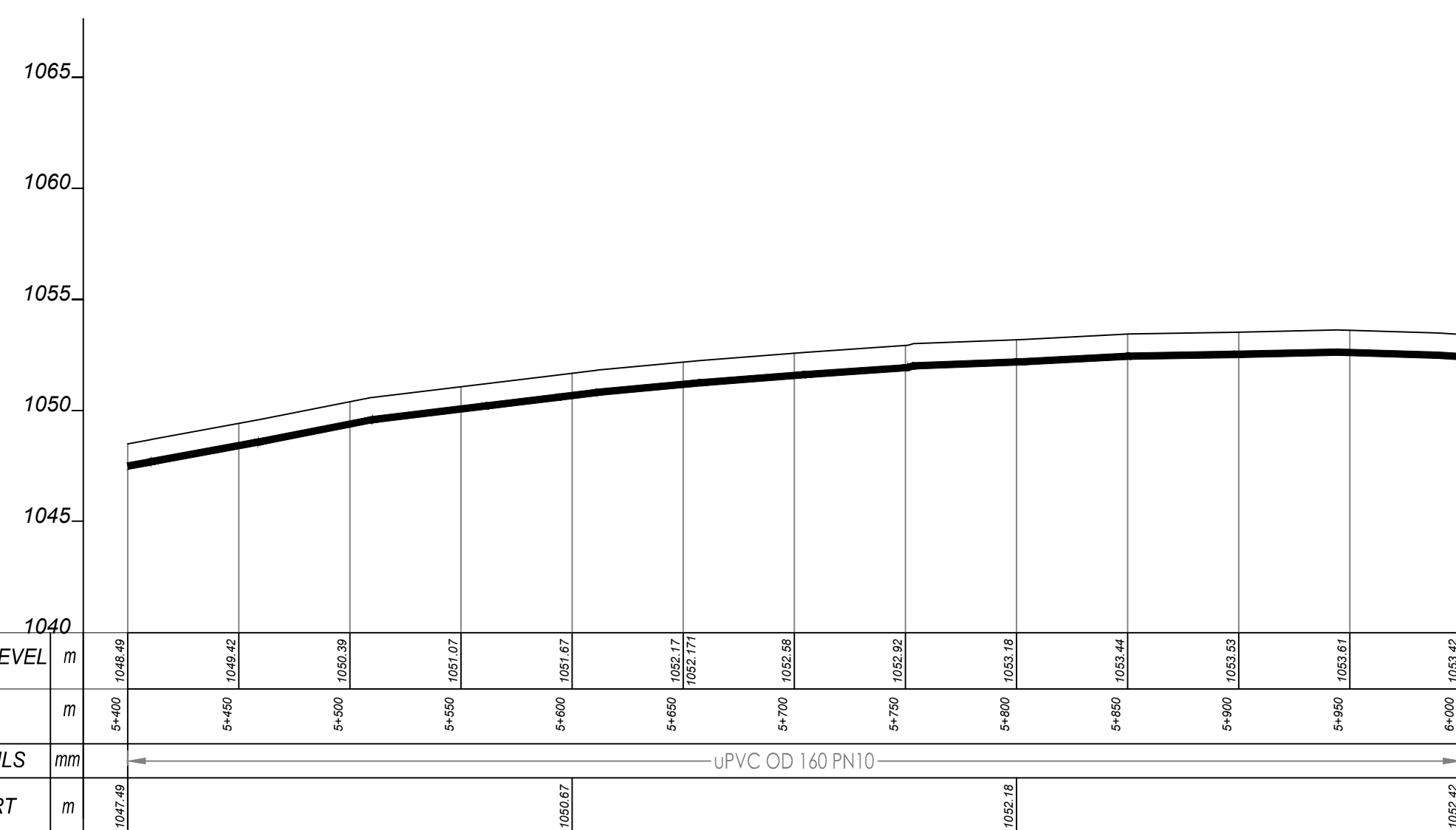
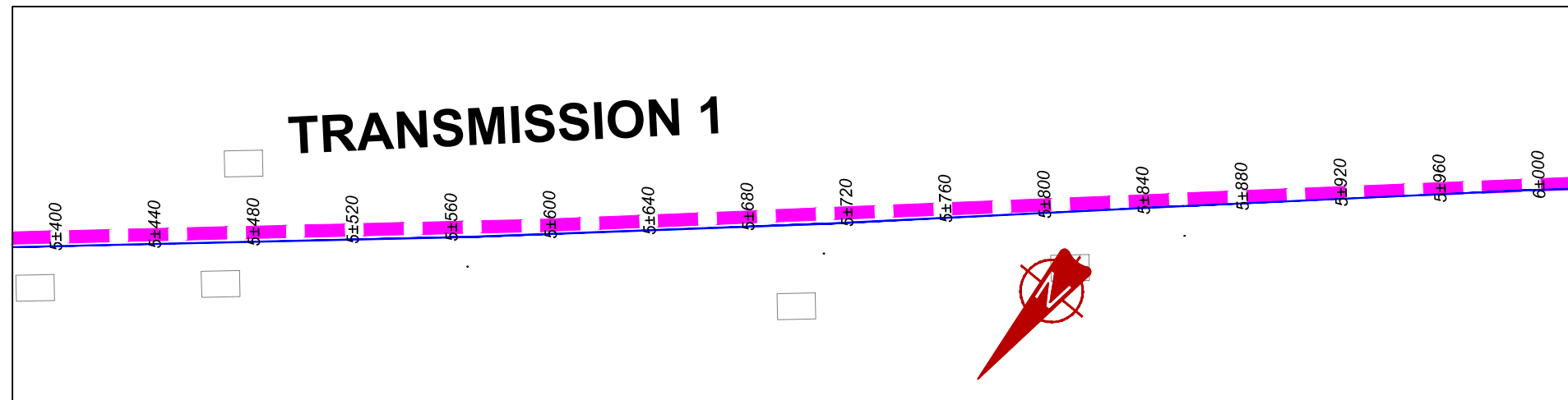
MUTUNDA WATER SUPPLY SYSTEM

CONSULTANT
SARI In Joint Venture with **SGAPI**
 Corporate Headquarter
 10 Philpot Lane, 1st Floor,
 London EC3M 8AA,
 United Kingdom

CONTRACTOR

DETAILED ENGINEERING DESIGN
 DRAWING TITLE
TRANSMISSION LINE 01 (4+800.00 - 5+400.00)

SCALE	VERT: 1:250 HOR: 1:2500	DRAWING No.	MUT/WS/2.1.9
SURVEYED	Evans Mpanga	DESIGNED	Otwane Dan.
DRAWN	Joshua Nyarwanda	CHECKED	Rodney Barugahare
DATE	April 2021	APPROVED	Rodney Barugahare.

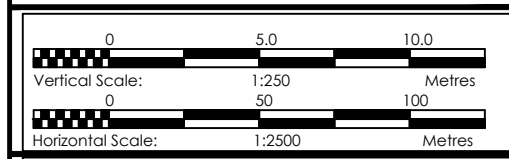


TRANSMISSION 1 (5+400.00 - 6+000.00)

NOTES

LEGEND

- Transmission Pipeline
- Distribution Pipeline
- Ground Level
- Building/House
- Contours
- Road
- DAV Double Orifice Air Valve
- EP End pipe
- N01 Node N01
- WO-1 Washout Type1
- WO-2 Washout Type2



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GOVERNMENT OF UGANDA
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 CONSULTANCY SERVICES FOR FEASIBILITY STUDY, DETAILED ENGINEERING DESIGN AND CONSTRUCTION SUPERVISION OF SOLAR POWERED PIPED WATER SUPPLY SYSTEMS AND SANITATION FACILITIES IN REFUGEE SETTLEMENTS AND HOST DISTRICTS IN WEST NILE AND NORTHERN UGANDA IN KIRYANDONGO DISTRICT

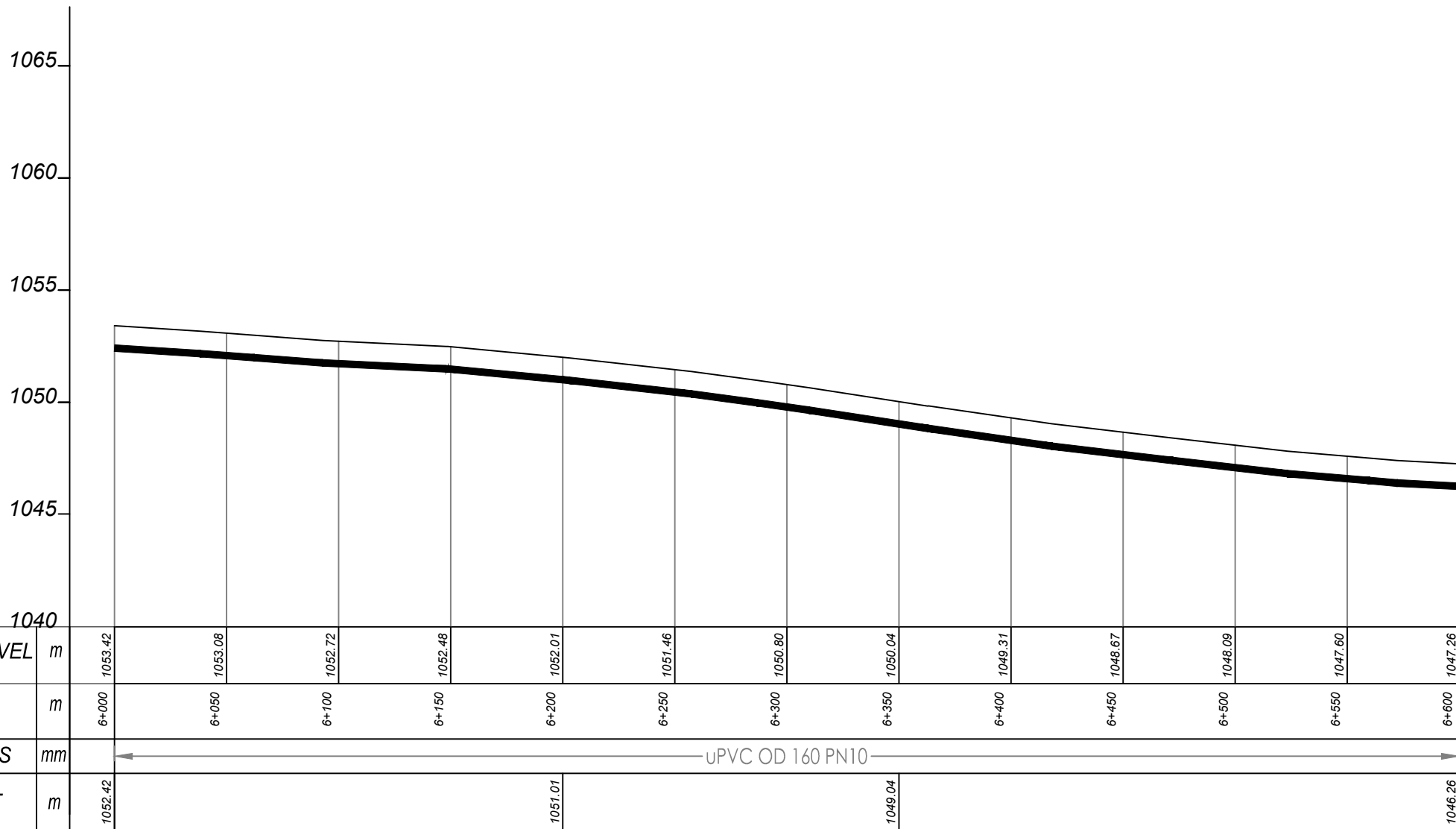
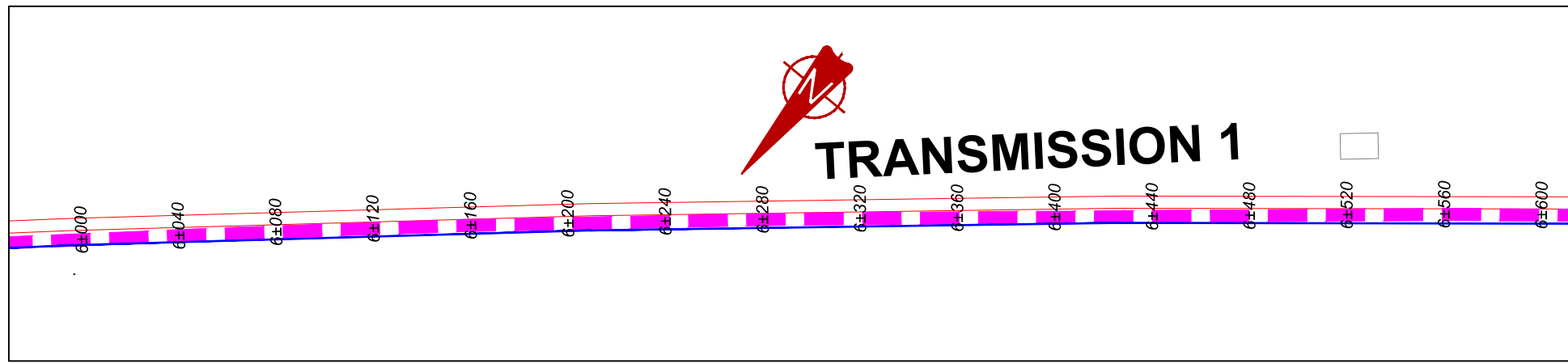
MUTUNDA WATER SUPPLY SYSTEM

CONSULTANT
SARI In Joint Venture with **SGAPI**
 Corporate Headquarter
 10 Philpott Lane, 1st Floor,
 London EC3M 8AA,
 United Kingdom

CONTRACTOR

DETAILED ENGINEERING DESIGN
 DRAWING TITLE
TRANSMISSION LINE 01
(5+400.00 - 6+000.00)

SCALE VERT: 1:250 DRAWING No. MUT/WS/2.1.10
 HOR: 1:2500
 SURVEYED Evans Mpanga DESIGNED Otwane Dan.
 DRAWN Joshua Nyarwanda CHECKED Rodney Barugahare
 DATE April 2021 APPROVED Rodney Barugahare.

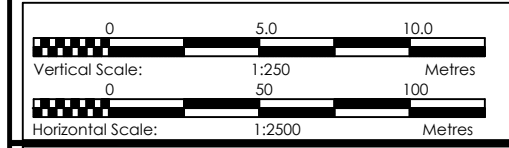


TRANSMISSION 1 (6+000.00 - 6+600.00)

NOTES

LEGEND

- Transmission Pipeline
- Distribution Pipeline
- Ground Level
- Building/House
- Contours
- Road
- DAV Double Orifice Air Valve
- EP End pipe
- N01 Node N01
- WO-1 Washout Type1
- WO-2 Washout Type2



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GOVERNMENT OF UGANDA
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CO-FINANCED BY:
 AND
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PROJECT
 CONSULTANCY SERVICES FOR FEASIBILITY STUDY, DETAILED ENGINEERING DESIGN AND CONSTRUCTION SUPERVISION OF SOLAR POWERED PIPED WATER SUPPLY SYSTEMS AND SANITATION FACILITIES IN REFUGEE SETTLEMENTS AND HOST DISTRICTS IN WEST NILE AND NORTHERN UGANDA IN KIRYANDONGO DISTRICT

MUTUNDA WATER SUPPLY SYSTEM

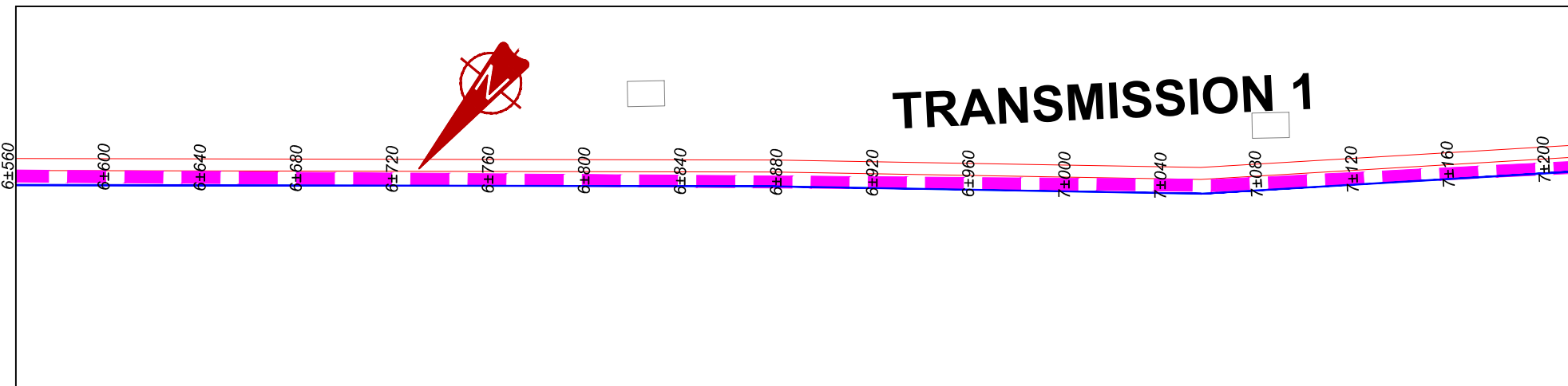
CONSULTANT
SARI In Joint Venture with
 Corporate Headquarter
 10 Philpott Lane, 1st Floor,
 London EC3M 8AA,
 United Kingdom

CONTRACTOR

DETAILED ENGINEERING DESIGN

DRAWING TITLE
TRANSMISSION LINE 01
(6+000.00 - 6+600.00)

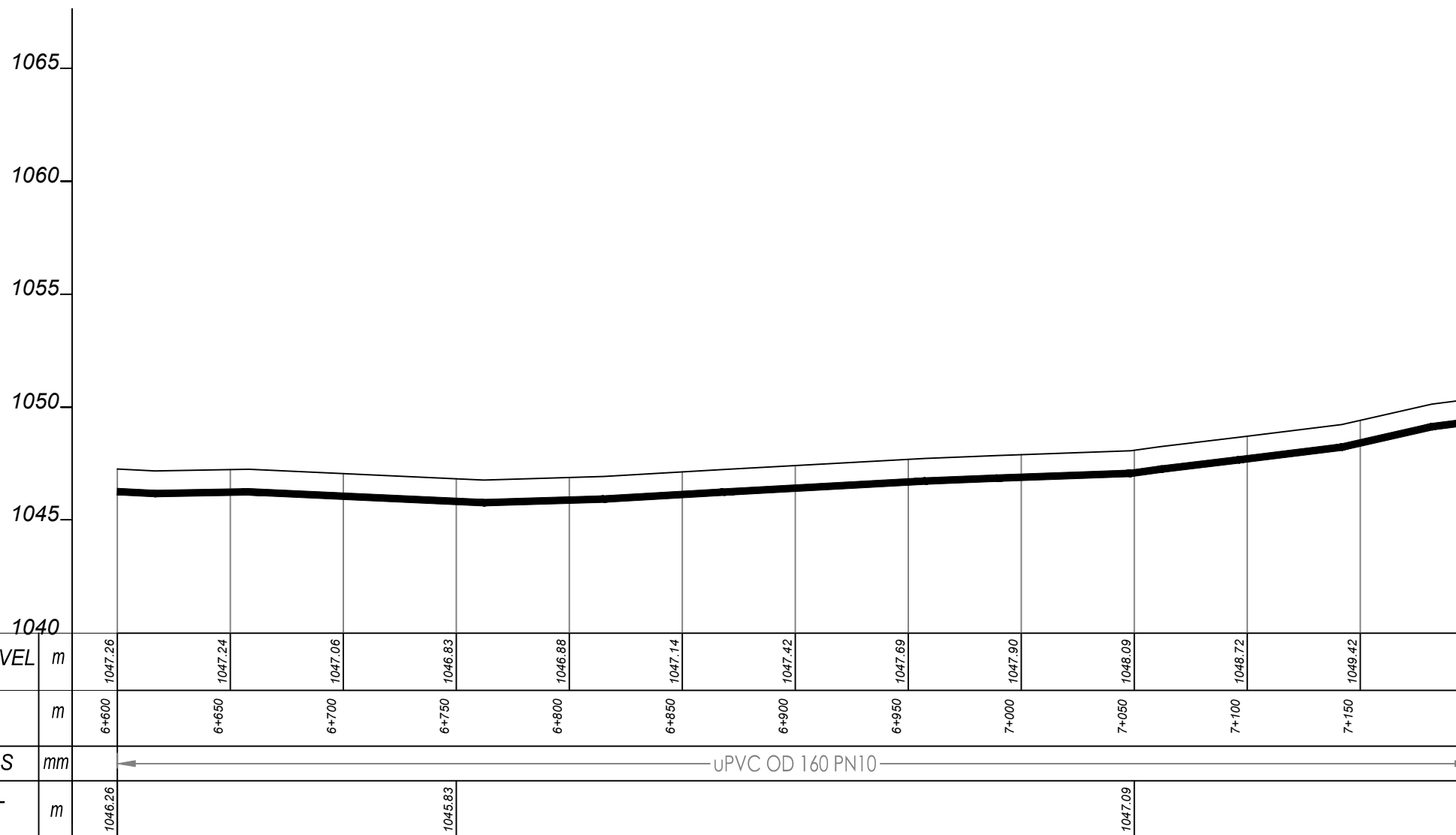
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SURVEYED	Evans Mpanga	DESIGNED	Otwane Dan.
DRAWN	Joshua Nyarwanda	CHECKED	Rodney Barugahare
DATE	April 2021	APPROVED	Rodney Barugahare.



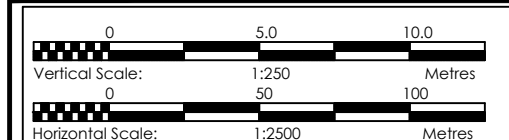
NOTES

LEGEND

- - - Transmission Pipeline
- Distribution Pipeline
- Ground Level
- Building/House
- Contours
- Road
- DAV Double Orifice Air Valve
- EP End pipe
- N01 Node N01
- WO-1 Washout Type1
- WO-2 Washout Type2



TRANSMISSION 1 (6+600.00 - 7+200.00)



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GOVERNMENT OF UGANDA
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 CONSULTANCY SERVICES FOR FEASIBILITY STUDY, DETAILED ENGINEERING DESIGN AND CONSTRUCTION SUPERVISION OF SOLAR POWERED PIPED WATER SUPPLY SYSTEMS AND SANITATION FACILITIES IN REFUGEE SETTLEMENTS AND HOST DISTRICTS IN WEST NILE AND NORTHERN UGANDA IN KIRYANDONGO DISTRICT

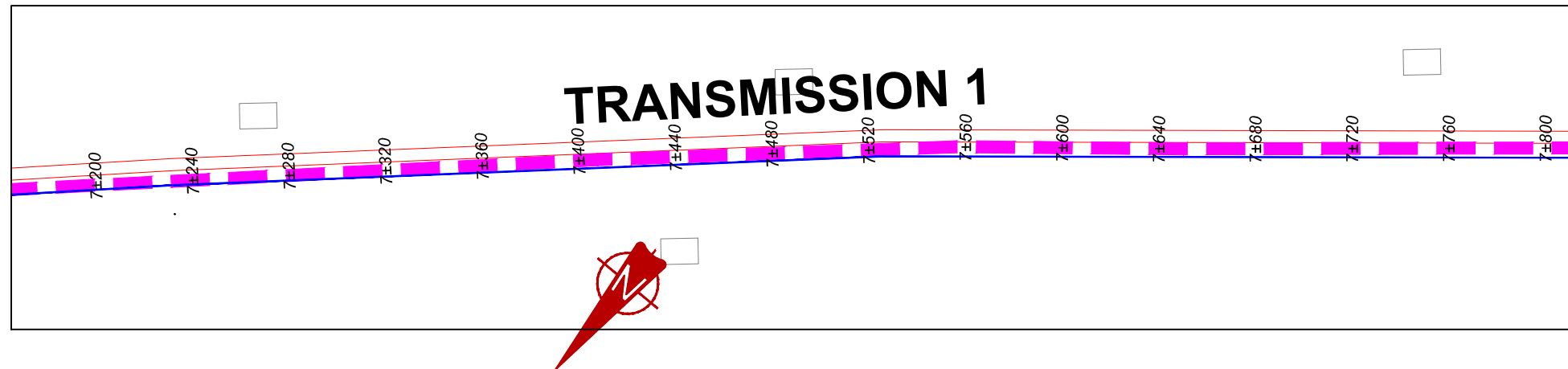
MUTUNDA WATER SUPPLY SYSTEM

CONSULTANT
SARI In Joint Venture with
 Corporate Headquarter
 10 Philpot Lane, 1st Floor,
 London EC3M 8AA,
 United Kingdom

CONTRACTOR

DETAILED ENGINEERING DESIGN
 DRAWING TITLE
TRANSMISSION LINE 01
6+600.00 - 7+200.00)

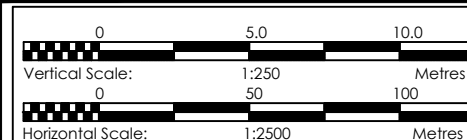
SCALE	VERT: 1:250 HOR: 1:2500	DRAWING No.	MUT/WS/2.1.12
SURVEYED	Evans Mpanga	DESIGNED	Otwane Dan.
DRAWN	Joshua Nyarwanda	CHECKED	Rodney Barugahare
DATE	April 2021	APPROVED	Rodney Barugahare.



NOTES

LEGEND

- Transmission Pipeline
- Distribution Pipeline
- Ground Level
- Building/House
- Contours
- Road
- DAV Double Orifice Air Valve
- End pipe
- Node N01
- Washout Type1
- Washout Type2



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GOVERNMENT OF UGANDA
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CO-FINANCED BY:
 AND
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PROJECT
 CONSULTANCY SERVICES FOR FEASIBILITY STUDY, DETAILED ENGINEERING DESIGN AND CONSTRUCTION SUPERVISION OF SOLAR POWERED PIPED WATER SUPPLY SYSTEMS AND SANITATION FACILITIES IN REFUGEE SETTLEMENTS AND HOST DISTRICTS IN WEST NILE AND NORTHERN UGANDA IN KIRYANDONGO DISTRICT

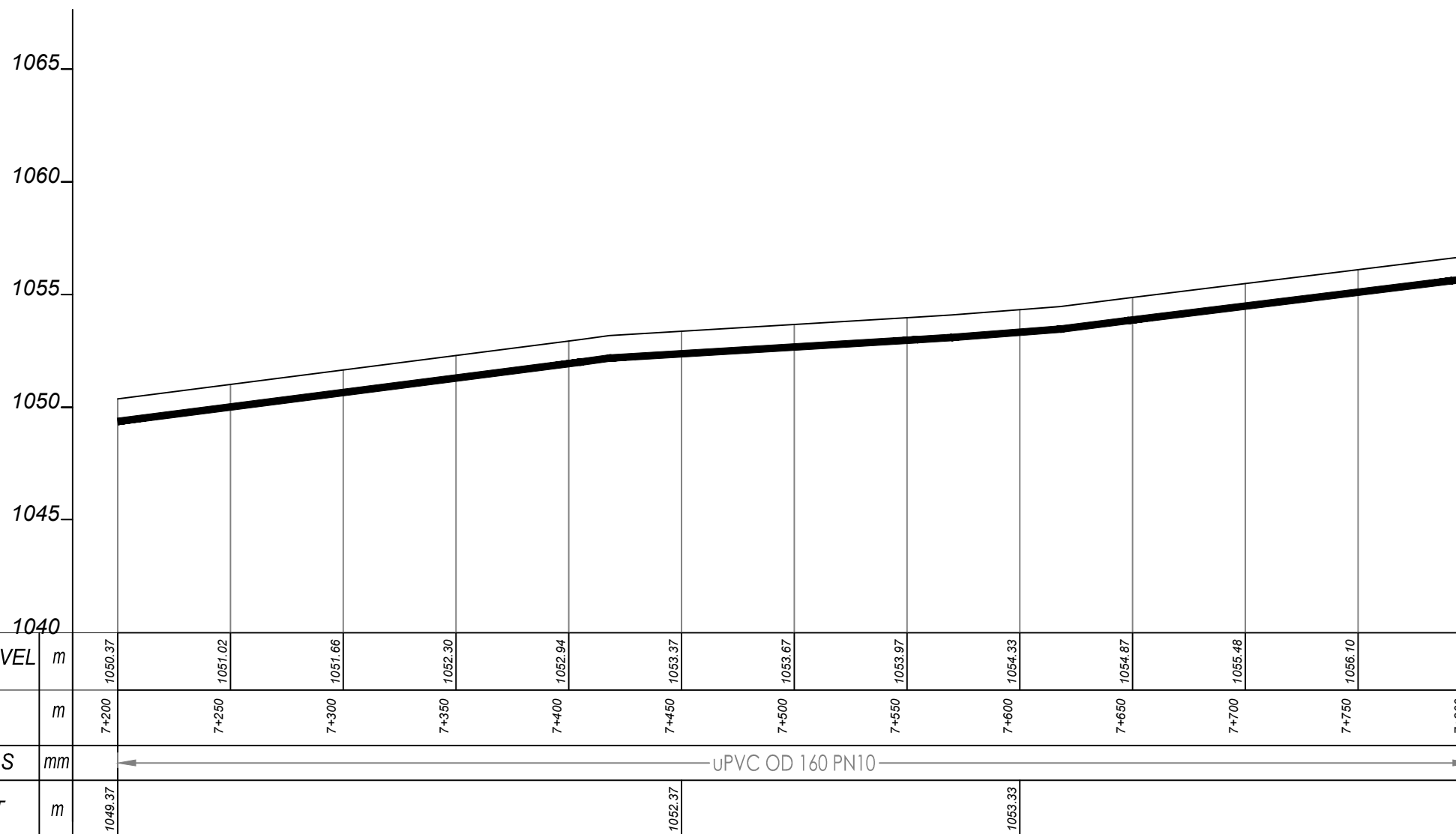
MUTUNDA WATER SUPPLY SYSTEM

CONSULTANT
 In Joint Venture with
 Corporate Headquarter
 10 Philpott Lane, 1st Floor,
 London EC3M 8AA,
 United Kingdom

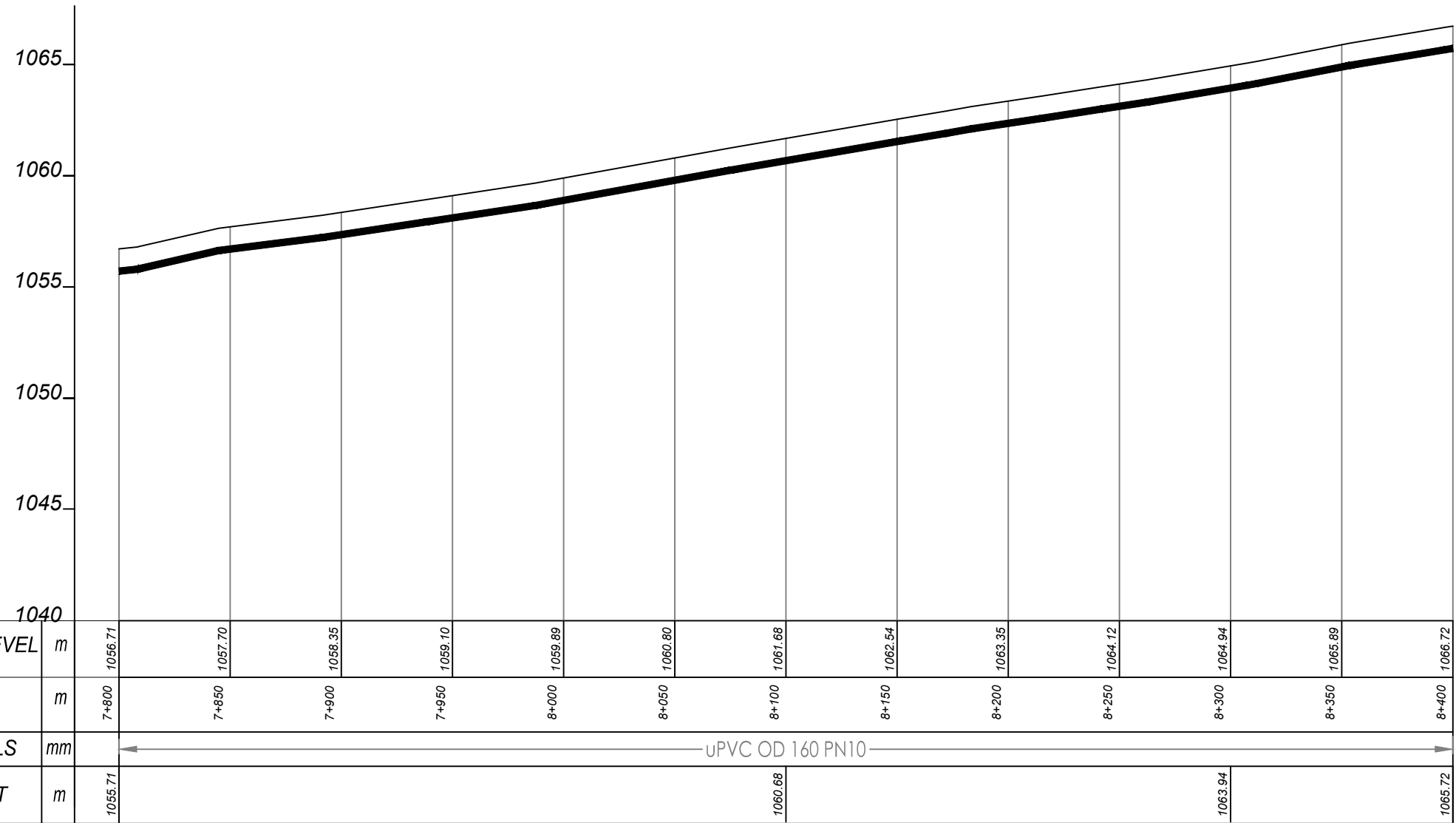
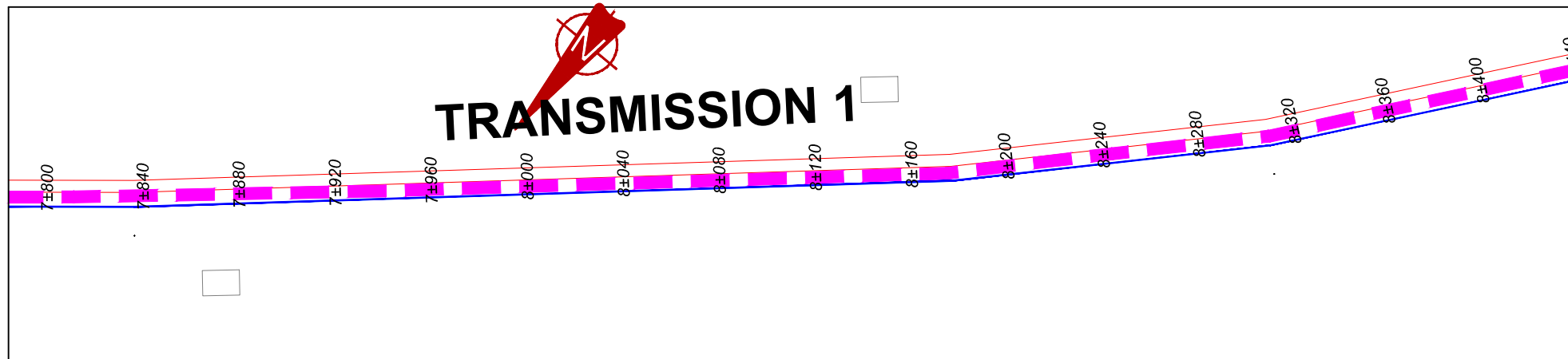
CONTRACTOR

DETAILED ENGINEERING DESIGN
DRAWING TITLE
TRANSMISSION LINE 01
(7+200.00 - 7+800.00)

SCALE VERT: 1:250 DRAWING No. MUT/WS/2.1.13
 HOR: 1:2500
SURVEYED Evans Mpanga **DESIGNED** Otwane Dan.
DRAWN Joshua Nyarwanda **CHECKED** Rodney Barugahare
DATE April 2021 **APPROVED** Rodney Barugahare.



TRANSMISSION 1 (7+200.00 - 7+800.00)



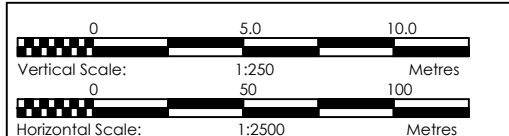
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GROUND LEVEL	m	1056.71	1057.70	1058.35	1059.10	1059.89	1060.80	1061.68	1062.54	1063.35	1064.12	1064.94	1065.89	1066.72					
CHAINAGE	m	7+800	7+850	7+900	7+950	8+000	8+050	8+100	8+150	8+200	8+250	8+300	8+350	8+400					
PIPE DETAILS	mm	← UPVC OD 160 PN10 →																	
PIPE INVERT	m	1055.71						1060.68				1063.94							1065.72

TRANSMISSION 1 (7+800.00 - 8+400.00)

NOTES

LEGEND

- Transmission Pipeline
- Distribution Pipeline
- Ground Level
- Building/House
- Contours
- Road
- DAV Double Orifice Air Valve
- End pipe
- Node N01
- WO-1 Washout Type1
- WO-2 Washout Type2



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GOVERNMENT OF UGANDA
 MINISTRY OF WATER AND ENVIRONMENT

CO-FINANCED BY:
 AND **THE WORLD BANK** AND **GOVERNMENT OF UGANDA**

PROJECT
 CONSULTANCY SERVICES FOR FEASIBILITY STUDY, DETAILED ENGINEERING DESIGN AND CONSTRUCTION SUPERVISION OF SOLAR POWERED PIPED WATER SUPPLY SYSTEMS AND SANITATION FACILITIES IN REFUGEE SETTLEMENTS AND HOST DISTRICTS IN WEST NILE AND NORTHERN UGANDA IN KIRYANDONGO DISTRICT

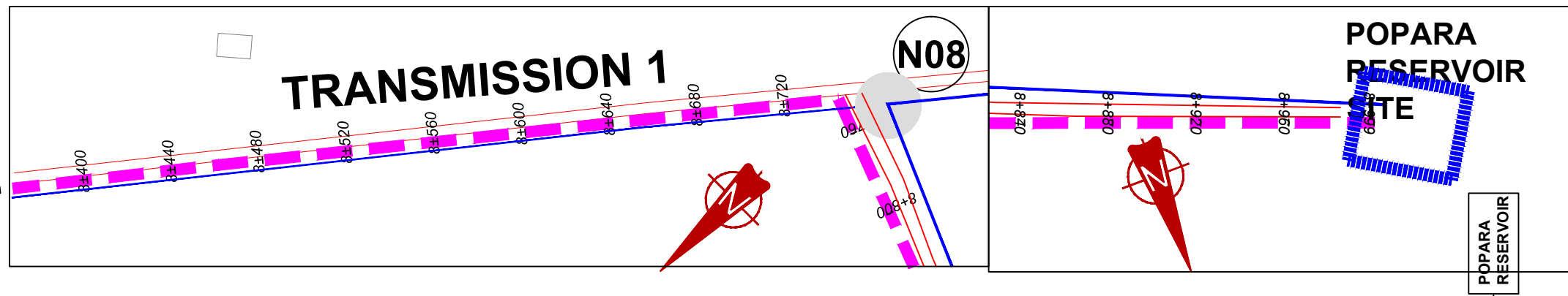
MUTUNDA WATER SUPPLY SYSTEM

CONSULTANT
SARI In Joint Venture with **SGAPI**
 Corporate Headquarter
 10 Philpott Lane, 1st Floor,
 London EC3M 8AA,
 United Kingdom

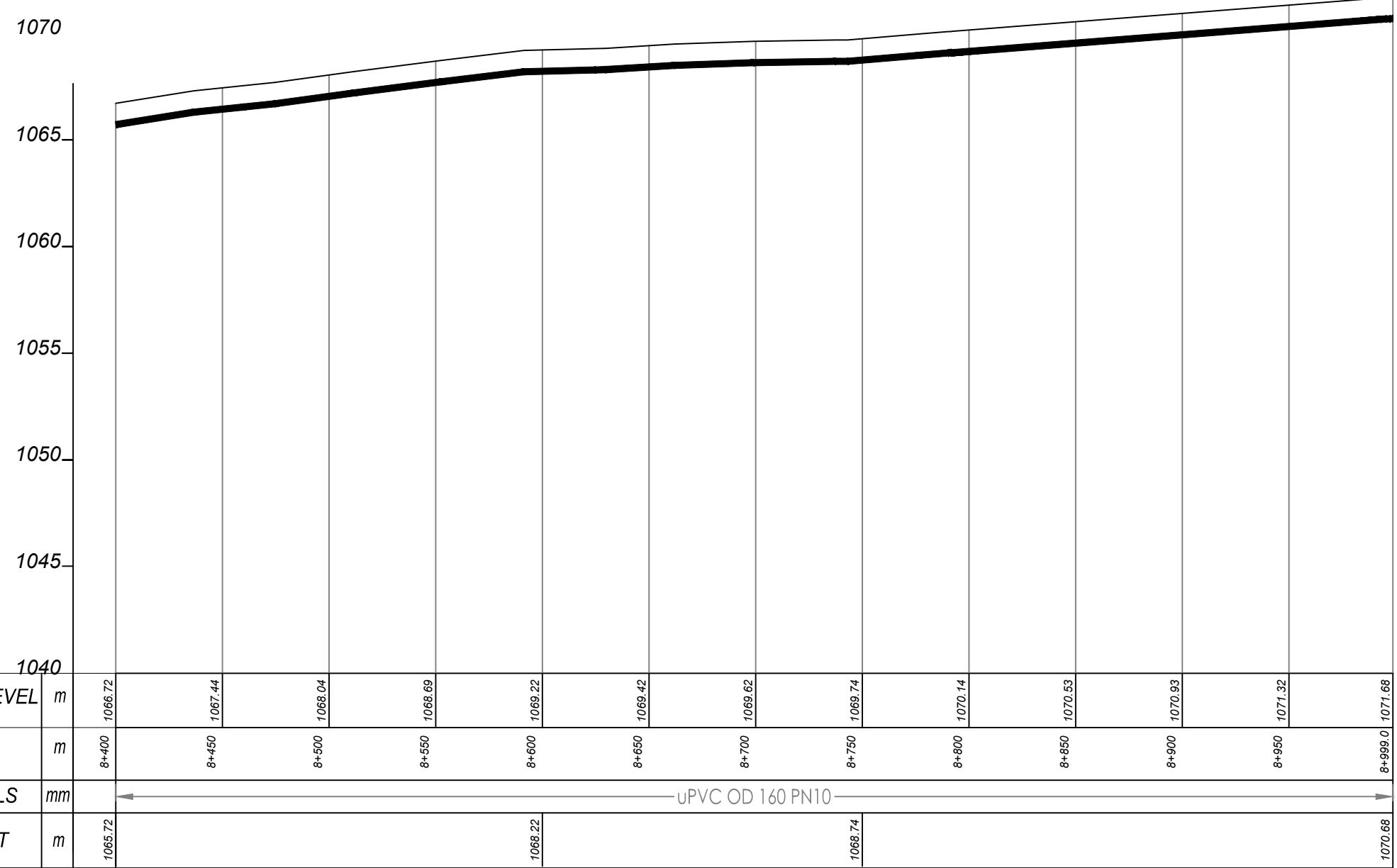
CONTRACTOR

DETAILED ENGINEERING DESIGN
 DRAWING TITLE
TRANSMISSION LINE 01
(7+800.00 - 8+400.00)

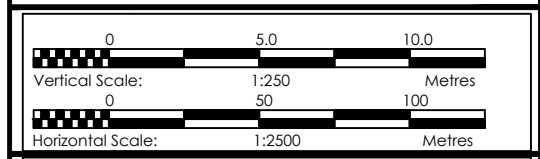
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SURVEYED	Evans Mpanga	DESIGNED	Otwane Dan.
DRAWN	Joshua Nyarwanda	CHECKED	Rodney Barugahare
DATE	April 2021	APPROVED	Rodney Barugahare.



- ### NOTES
- #### LEGEND
- Transmission Pipeline
 - Distribution Pipeline
 - Ground Level
 - Building/House
 - Contours
 - Road
 - DAV Double Orifice Air Valve
 - EP End pipe
 - N01 Node N01
 - WO-1 Washout Type1
 - WO-2 Washout Type2



TRANSMISSION 1 (8+400.00 - 8+999.00)



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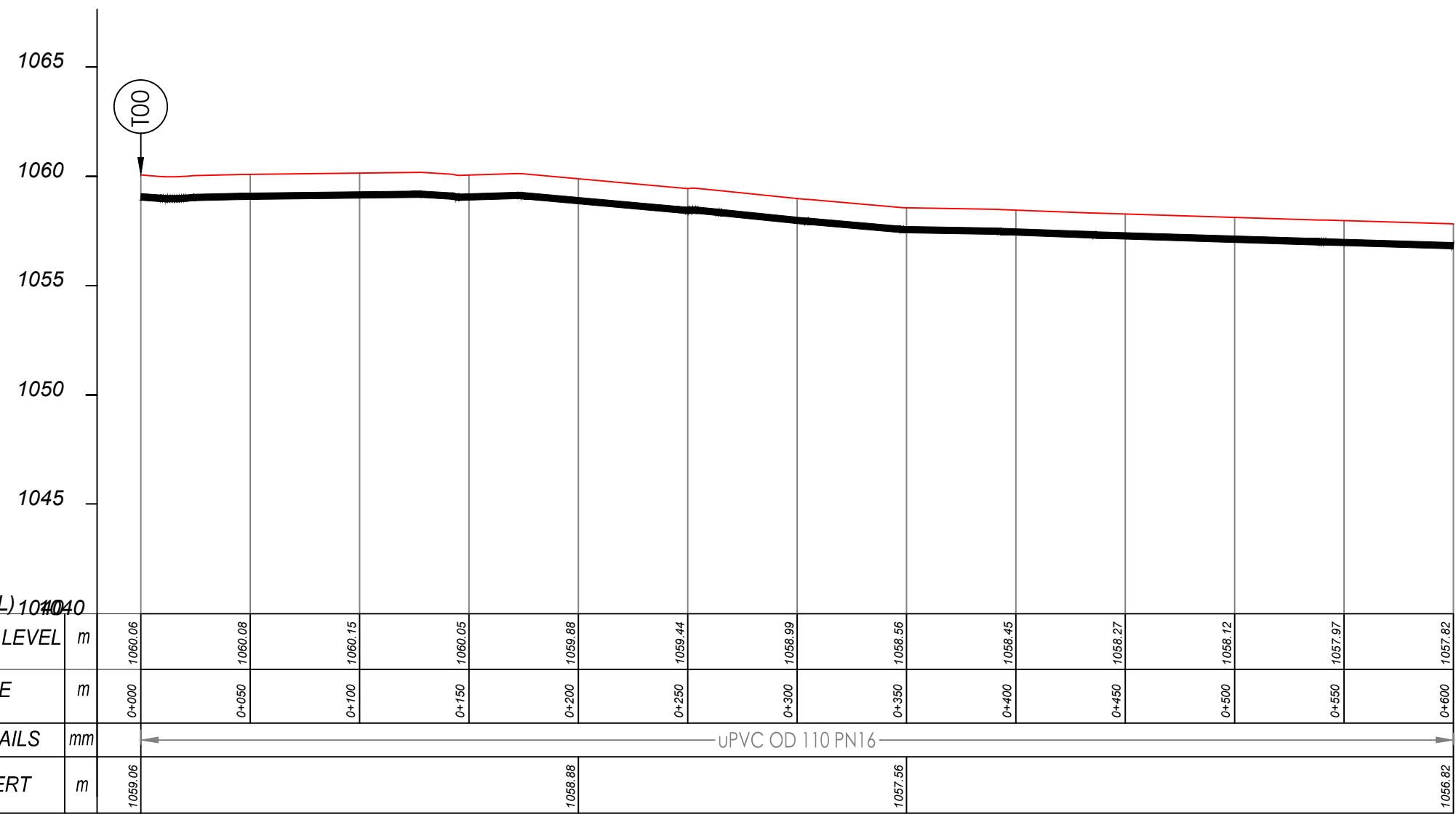
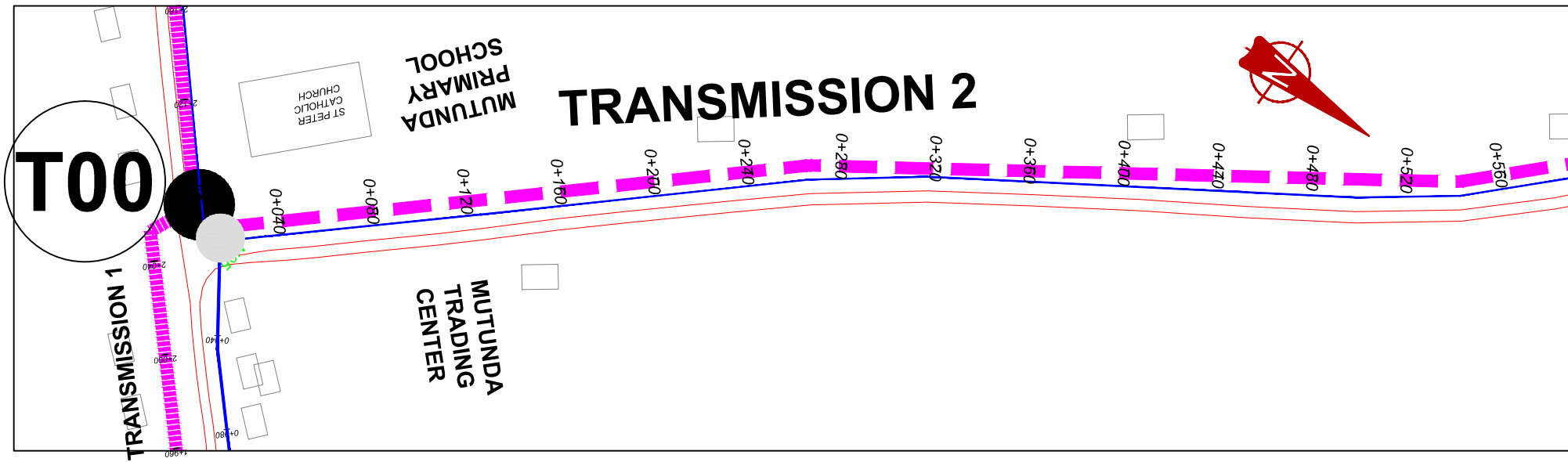
MUTUNDA WATER SUPPLY SYSTEM

CONSULTANT
SARI In Joint Venture with **SGAPI**
 Corporate Headquarter
 10 Philpott Lane, 1st Floor,
 London EC3M 8AA,
 United Kingdom

CONTRACTOR

DETAILED ENGINEERING DESIGN
 DRAWING TITLE
TRANSMISSION LINE 01
(8+400.00 - 8+999.00)

SCALE	VERT: 1:250 HOR: 1:2500	DRAWING No.	MUT/WS/2.1.15
SURVEYED	Evans Mpanga	DESIGNED	Otwane Dan.
DRAWN	Joshua Nyarwanda	CHECKED	Rodney Barugahare
DATE	April 2021	APPROVED	Rodney Barugahare.

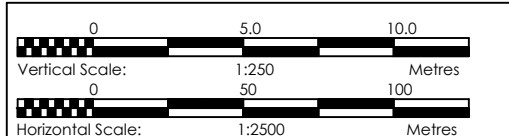


TRANSMISSION 2 (0+000.00 - 0+600.00)

NOTES

LEGEND

- Transmission Pipeline
- Distribution Pipeline
- Ground Level
- Building/House
- Contours
- Road
- DAV Double Orifice Air Valve
- End pipe
- Node N01
- Washout Type1
- Washout Type2



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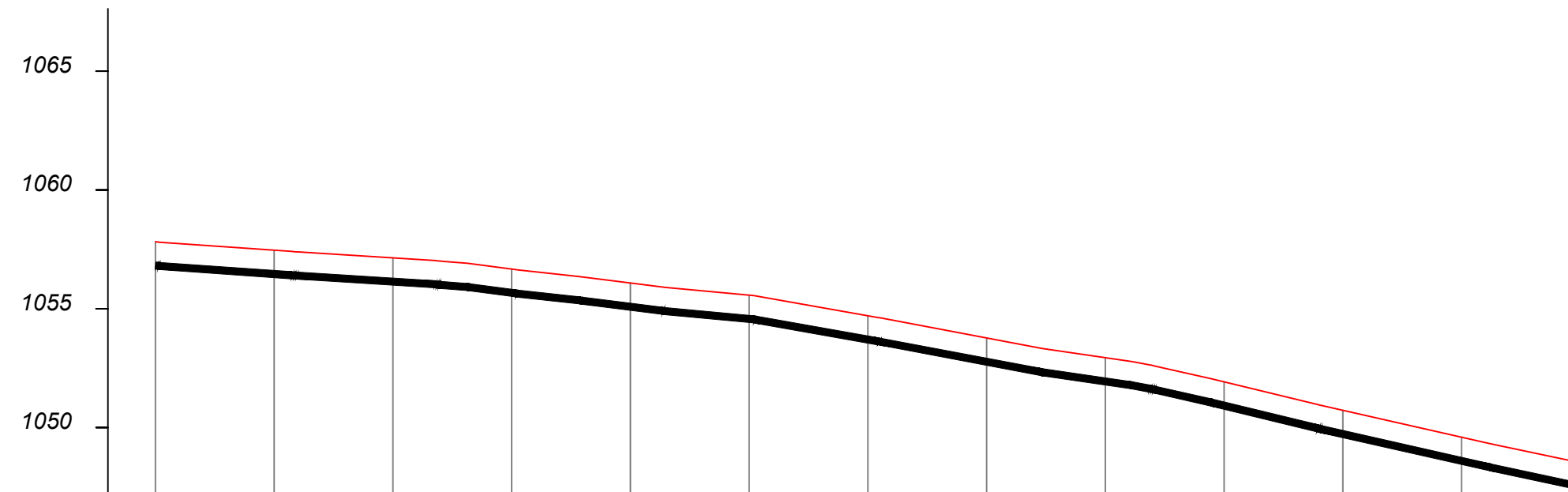
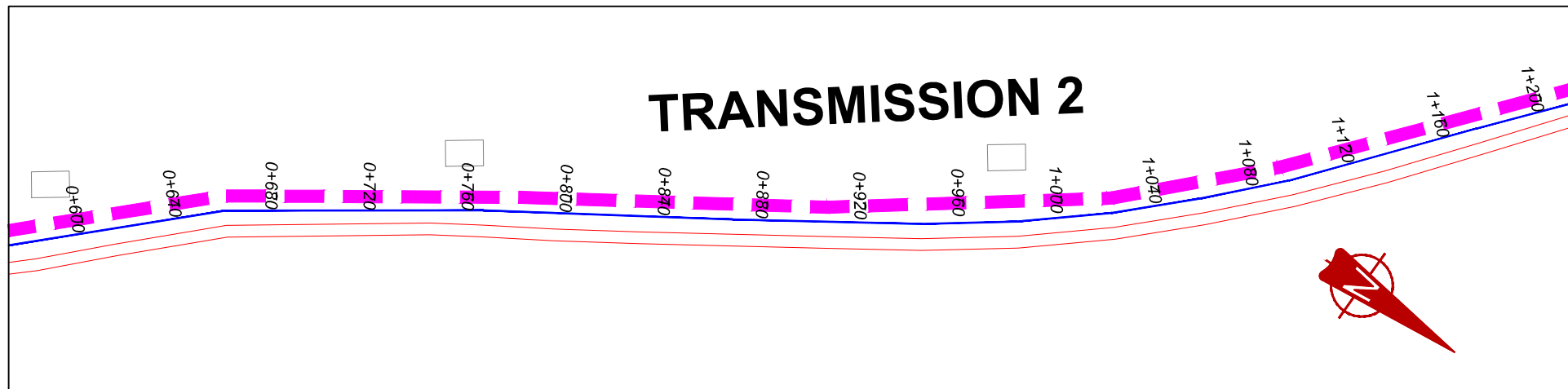
MUTUNDA WATER SUPPLY SYSTEM

CONSULTANT
SARI In Joint Venture with **SGAPI**
 Corporate Headquarter
 10 Philpott Lane, 1st Floor,
 London EC3M 8AA,
 United Kingdom

CONTRACTOR

DETAILED ENGINEERING DESIGN
 DRAWING TITLE
TRANSMISSION LINE 02
(0+000.00 - 0+600.00)

SCALE	VERT: 1:250 HOR: 1:2500	DRAWING No.	MUT/WS/2.2.1
SURVEYED	Evans Mpanga	DESIGNED	Otwane Dan.
DRAWN	Joshua Nyarwanda	CHECKED	Rodney Barugahare
DATE	April 2021	APPROVED	Rodney Barugahare.



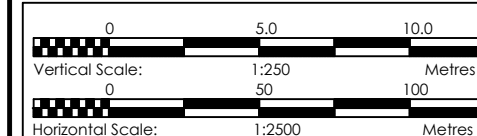
M(AMSL) 1040.40																										
GROUND LEVEL	m	1057.82		1057.47		1057.15		1056.67		1056.09		1055.58		1054.71		1053.78		1052.95		1051.93		1050.73		1049.60		1048.52
CHAINAGE	m	0+600		0+650		0+700		0+750		0+800		0+850		0+900		0+950		1+000		1+050		1+100		1+150		1+200
PIPE DETAILS	mm	← uPVC OD 110 PN16 →																								
PIPE INVERT	m	1056.82										1054.58						1051.95								1047.52

TRANSMISSION 2 (0+600.00 - 1+200.00)

NOTES

LEGEND

- Transmission Pipeline
- Distribution Pipeline
- Ground Level
- Building/House
- Contours
- Road
- DAV Double Orifice Air Valve
- EP End pipe
- N01 Node N01
- WO-1 Washout Type1
- WO-2 Washout Type2



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MUTUNDA WATER SUPPLY SYSTEM

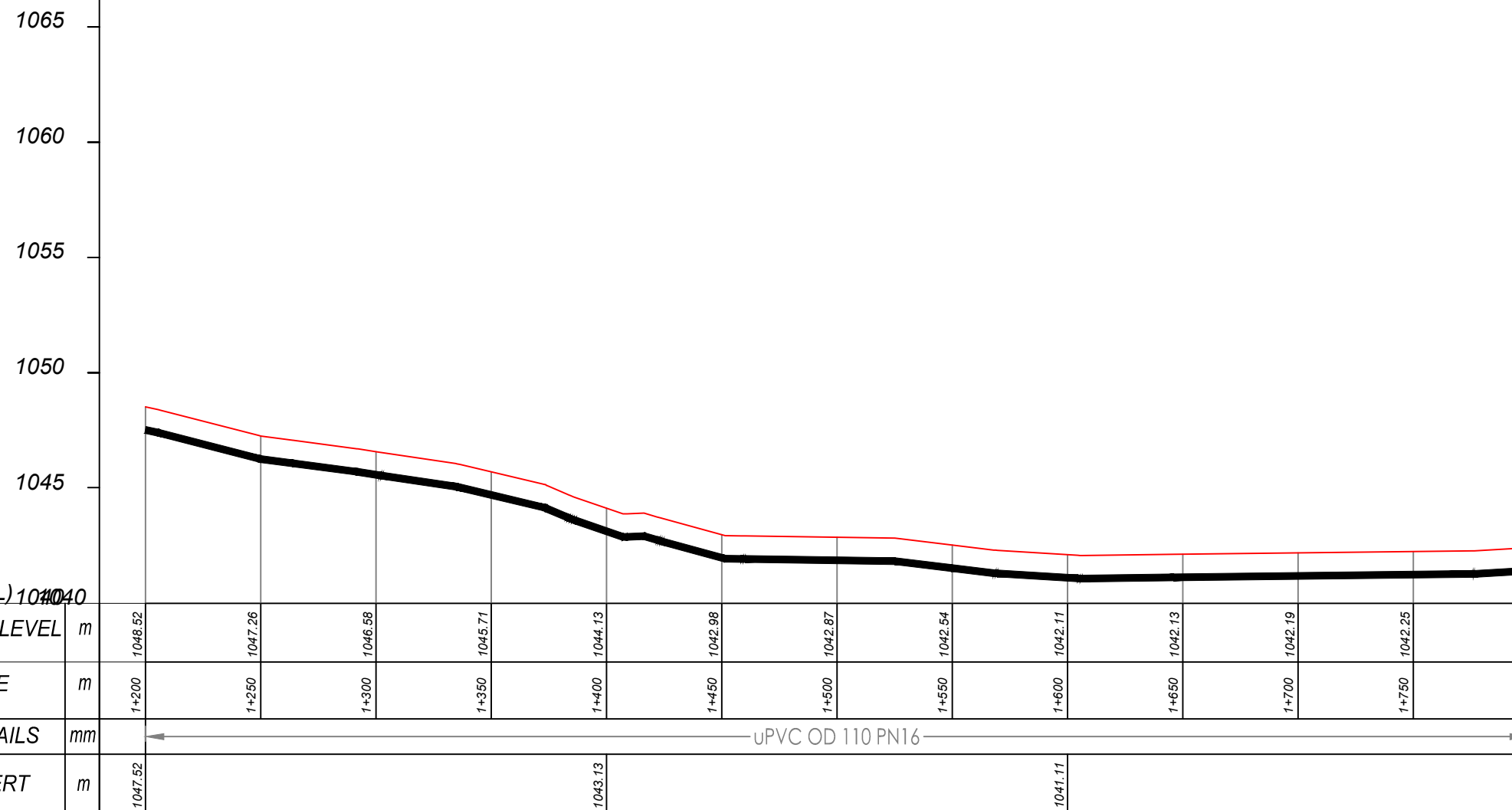
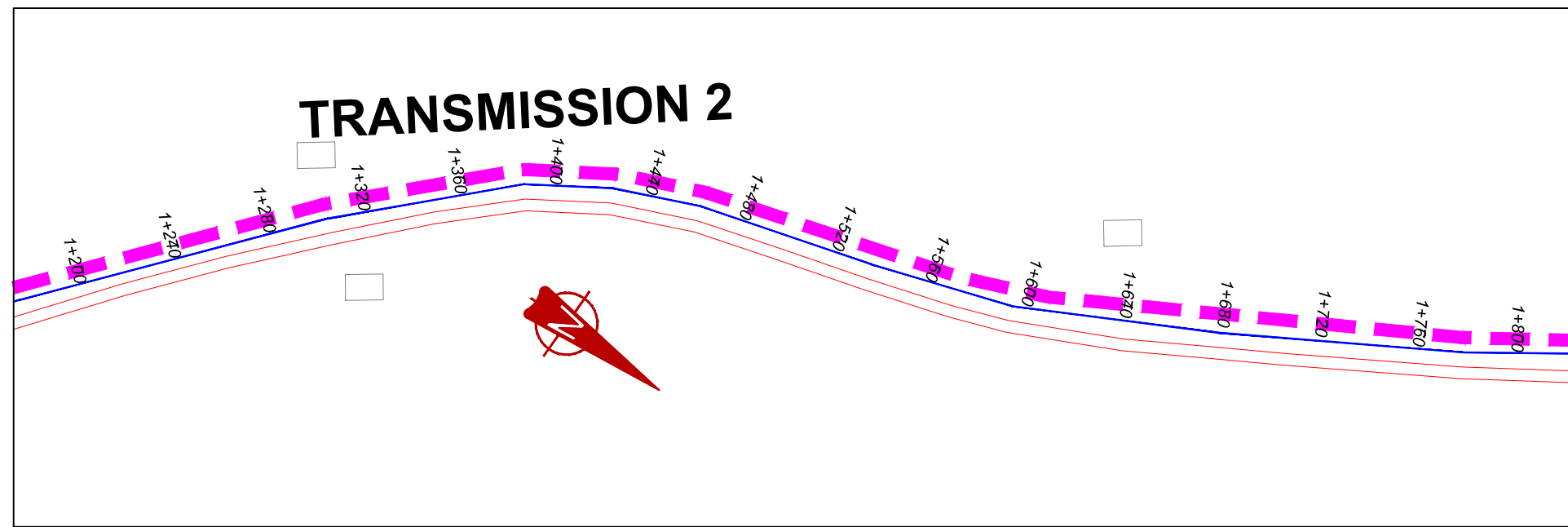
CONSULTANT
SARI In Joint Venture with
 Corporate Headquarter
 10 Philpot Lane, 1st Floor,
 London EC3M 8AA,
 United Kingdom

CONTRACTOR

DETAILED ENGINEERING DESIGN

DRAWING TITLE
TRANSMISSION LINE 02
(0+600.00 - 1+200.00)

SCALE	VERT: 1:250 HOR: 1:2500	DRAWING No.	MUT/WS/2.2.2
SURVEYED	Evans Mpanga	DESIGNED	Otwane Dan.
DRAWN	Joshua Nyarwanda	CHECKED	Rodney Barugahare
DATE	April 2021	APPROVED	Rodney Barugahare.

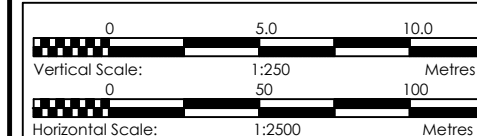


TRANSMISSION 2 (1+200.00 - 1+800.00)

NOTES

LEGEND

- Transmission Pipeline
- Distribution Pipeline
- Ground Level
- Building/House
- Contours
- Road
- DAV Double Orifice Air Valve
- End pipe
- Node N01
- WO-1 Washout Type1
- WO-2 Washout Type2



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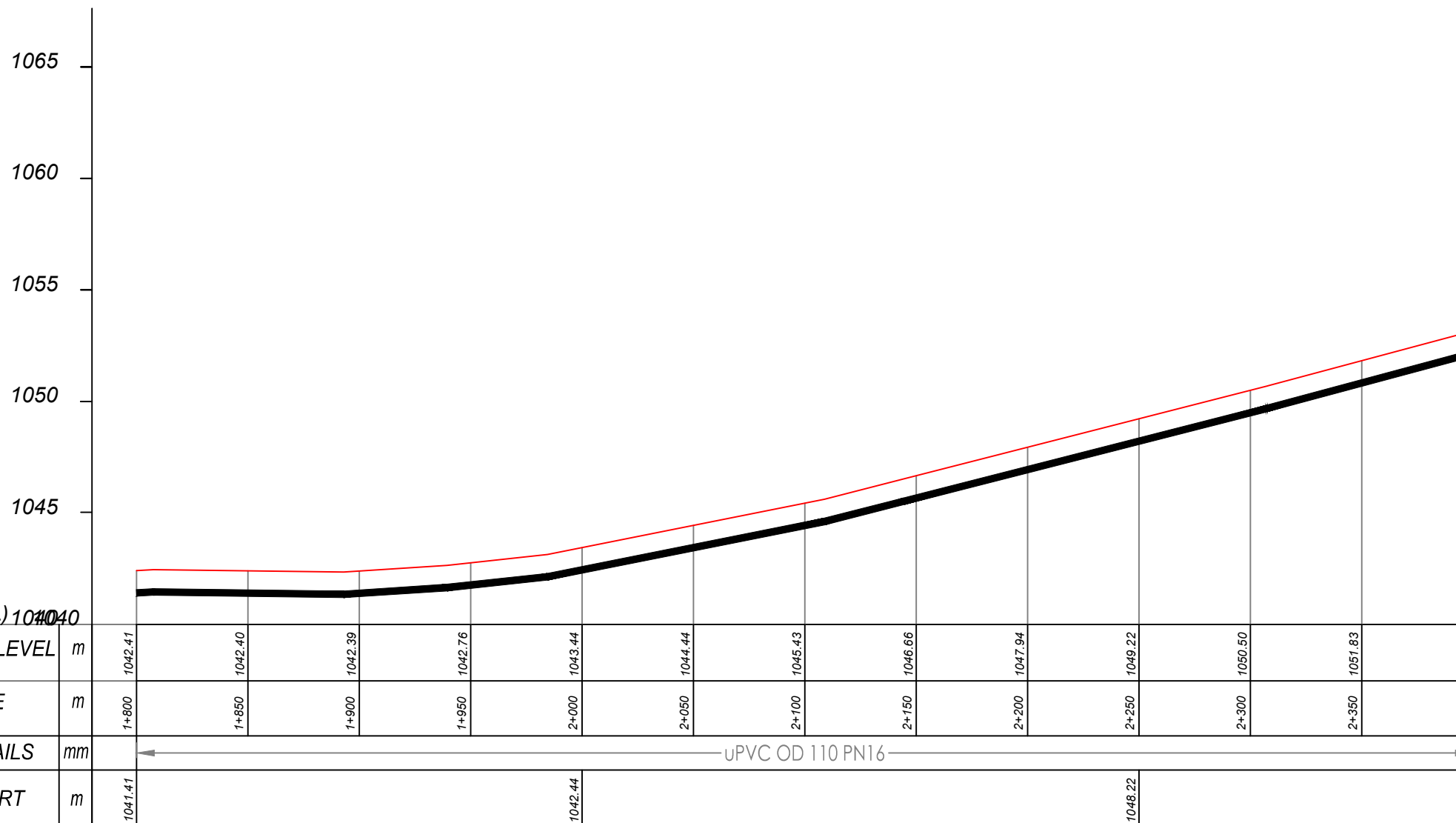
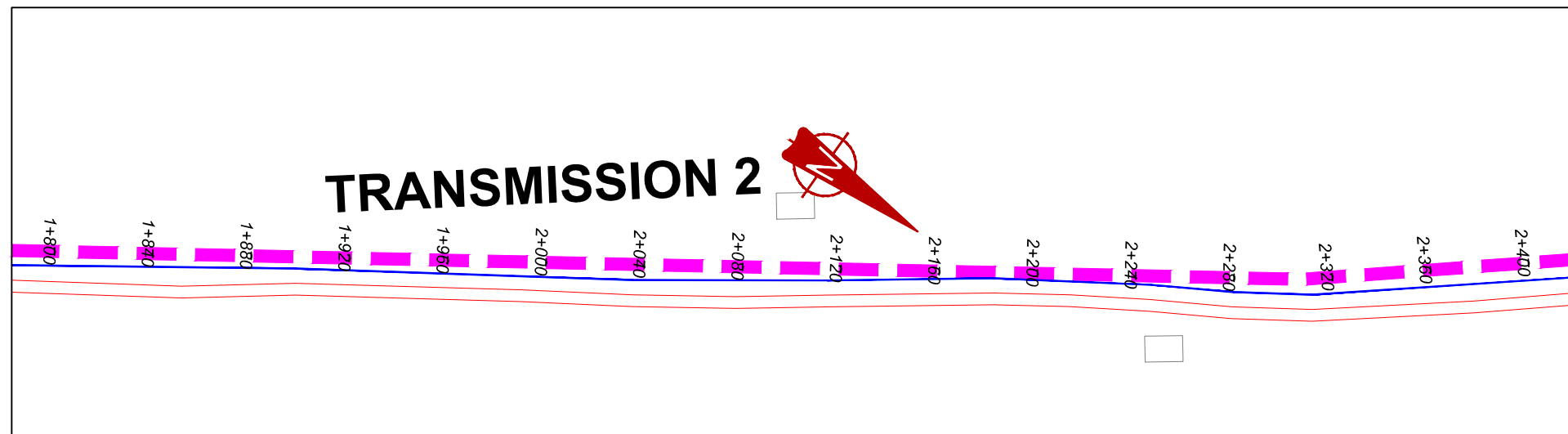
MUTUNDA WATER SUPPLY SYSTEM

CONSULTANT
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 London EC3M 8AA,
 United Kingdom

CONTRACTOR

DETAILED ENGINEERING DESIGN
 DRAWING TITLE
TRANSMISSION LINE 02
(1+200.00 - 1+800.00)

SCALE VERT: 1:250 DRAWING No. MUT/WS/2.2.3
 HOR: 1:2500
 SURVEYED Evans Mpanga DESIGNED Otwane Dan.
 DRAWN Joshua Nyarwanda CHECKED Rodney Barugahare
 DATE April 2021 APPROVED Rodney Barugahare.

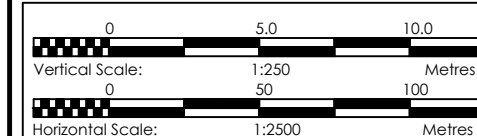


TRANSMISSION 2 (1+800.00 - 2+400.00)

NOTES

LEGEND

- Transmission Pipeline
- Distribution Pipeline
- Ground Level
- Building/House
- Contours
- Road
- DAV Double Orifice Air Valve
- End pipe
- Node N01
- WO-1 Washout Type1
- WO-2 Washout Type2



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 DETAILED ENGINEERING DESIGN AND CONSTRUCTION
 SUPERVISION OF SOLAR POWERED PIPED WATER SUPPLY
 SYSTEMS AND SANITATION FACILITIES IN REFUGEE
 SETTLEMENTS AND HOST DISTRICTS IN WEST NILE AND
 NORTHERN UGANDA IN KIRYANDONGO DISTRICT

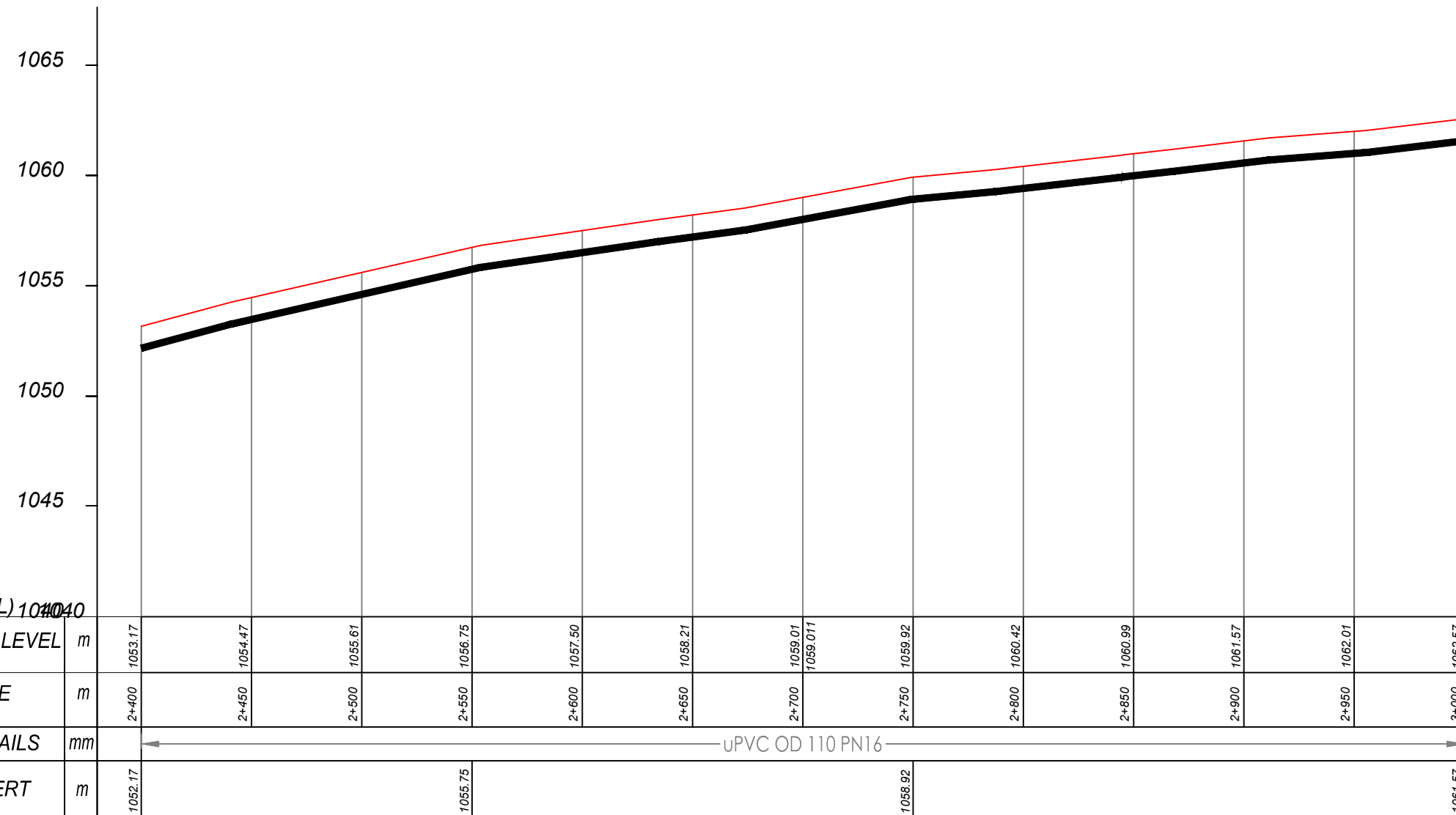
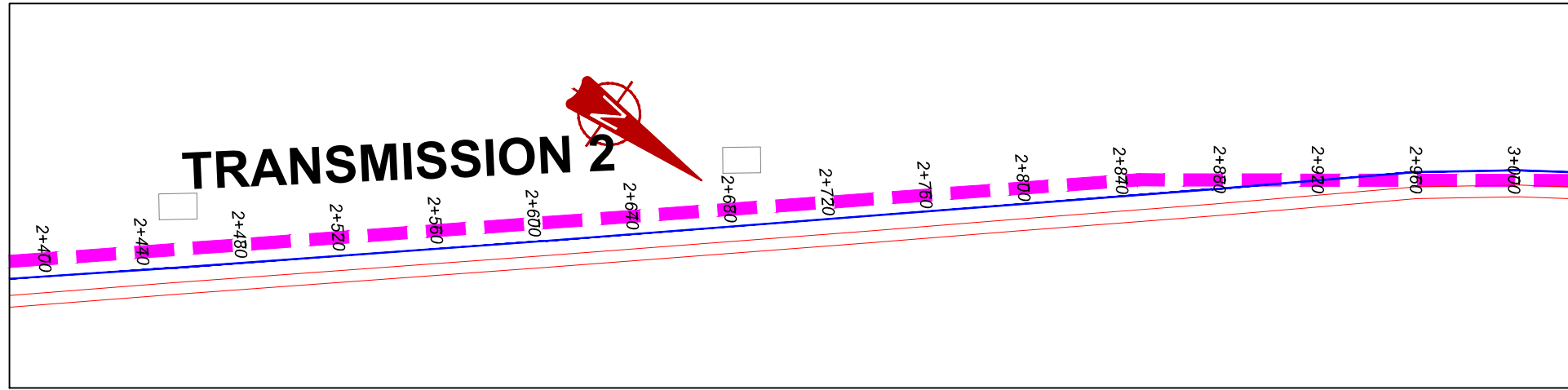
MUTUNDA WATER SUPPLY SYSTEM

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SARI In Joint Venture with
 Corporate Headquarter
 10 Philip Lane, 1st Floor,
 London EC3M 8AA,
 United Kingdom

CONTRACTOR

DETAILED ENGINEERING DESIGN
 DRAWING TITLE
TRANSMISSION LINE 02
(1+800.00 - 2+400.00)

SCALE	VERT: 1:250 HOR: 1:2500	DRAWING No.	MUT/WS/2.2.4
SURVEYED	Evans Mpanga	DESIGNED	Otwane Dan.
DRAWN	Joshua Nyarwanda	CHECKED	Rodney Barugahare
DATE	April 2021	APPROVED	Rodney Barugahare.

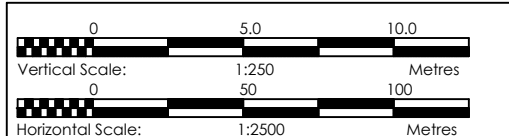


TRANSMISSION 2 (2+400.00 - 3+000.00)

NOTES

LEGEND

- Transmission Pipeline
- Distribution Pipeline
- Ground Level
- Building/House
- Contours
- Road
- DAV Double Orifice Air Valve
- End pipe
- Node N01
- WO-1 Washout Type1
- WO-2 Washout Type2



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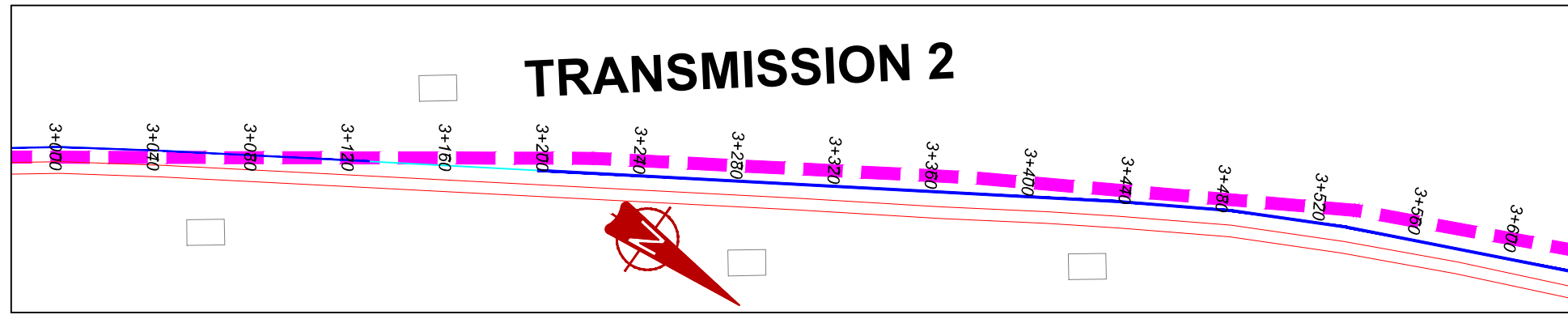
MUTUNDA WATER SUPPLY SYSTEM

CONSULTANT
SARI In Joint Venture with **SGAPI**
 Corporate Headquarter
 10 Philpott Lane, 1st Floor,
 London EC3M 8AA,
 United Kingdom

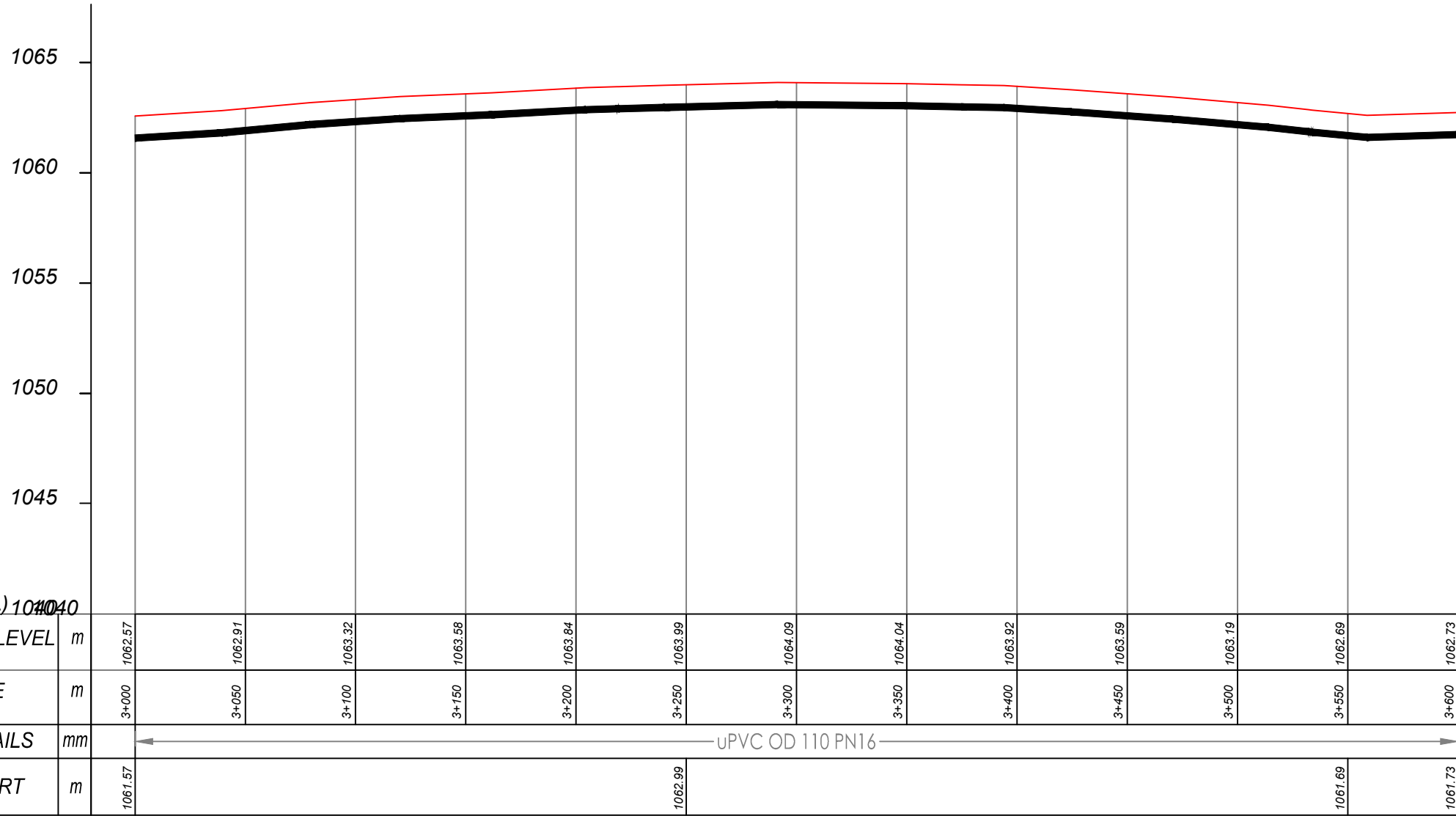
CONTRACTOR

DETAILED ENGINEERING DESIGN
 DRAWING TITLE
TRANSMISSION LINE 02
(2+400.00 - 3+000.00)

SCALE	VERT: 1:250 HOR: 1:2500	DRAWING No.	MUT/WS/2.2.5
SURVEYED	Evans Mpanga	DESIGNED	Otwane Dan.
DRAWN	Joshua Nyarwanda	CHECKED	Rodney Barugahare
DATE	April 2021	APPROVED	Rodney Barugahare.



TRANSMISSION 2

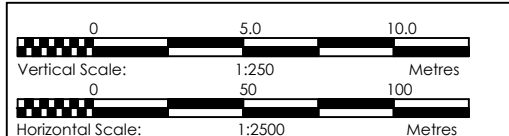


TRANSMISSION 2 (3+000.00 - 3+600.00)

NOTES

LEGEND

- Transmission Pipeline
- Distribution Pipeline
- Ground Level
- Building/House
- Contours
- Road
- DAV Double Orifice Air Valve
- EP End pipe
- N01 Node N01
- WO-1 Washout Type1
- WO-2 Washout Type2



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MUTUNDA WATER SUPPLY SYSTEM

CONSULTANT
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 United Kingdom









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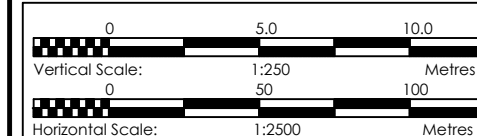
DETAILED ENGINEERING DESIGN
 DRAWING TITLE
TRANSMISSION LINE 02
(3+000.00 - 3+600.00)

SCALE	VERT: 1:250 HOR: 1:2500	DRAWING No.	MUT/WS/2.2.6
SURVEYED	Evans Mpanga	DESIGNED	Otwane Dan.
DRAWN	Joshua Nyarwanda	CHECKED	Rodney Barugahare
DATE	April 2021	APPROVED	Rodney Barugahare.

NOTES

LEGEND

-  Transmission Pipeline
-  Distribution Pipeline
-  Ground Level
-  Building/House
-  Contours
-  Road
- DAV Double Orifice Air Valve
-  End pipe
-  Node N01
- WO-1 Washout Type1
- WO-2 Washout Type2



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MUTUNDA WATER SUPPLY SYSTEM

CONSULTANT
 **SARI** In Joint Venture with 
 Corporate Headquarter
 10 Philpot Lane, 1st Floor,
 London EC3M 8AA,
 United Kingdom

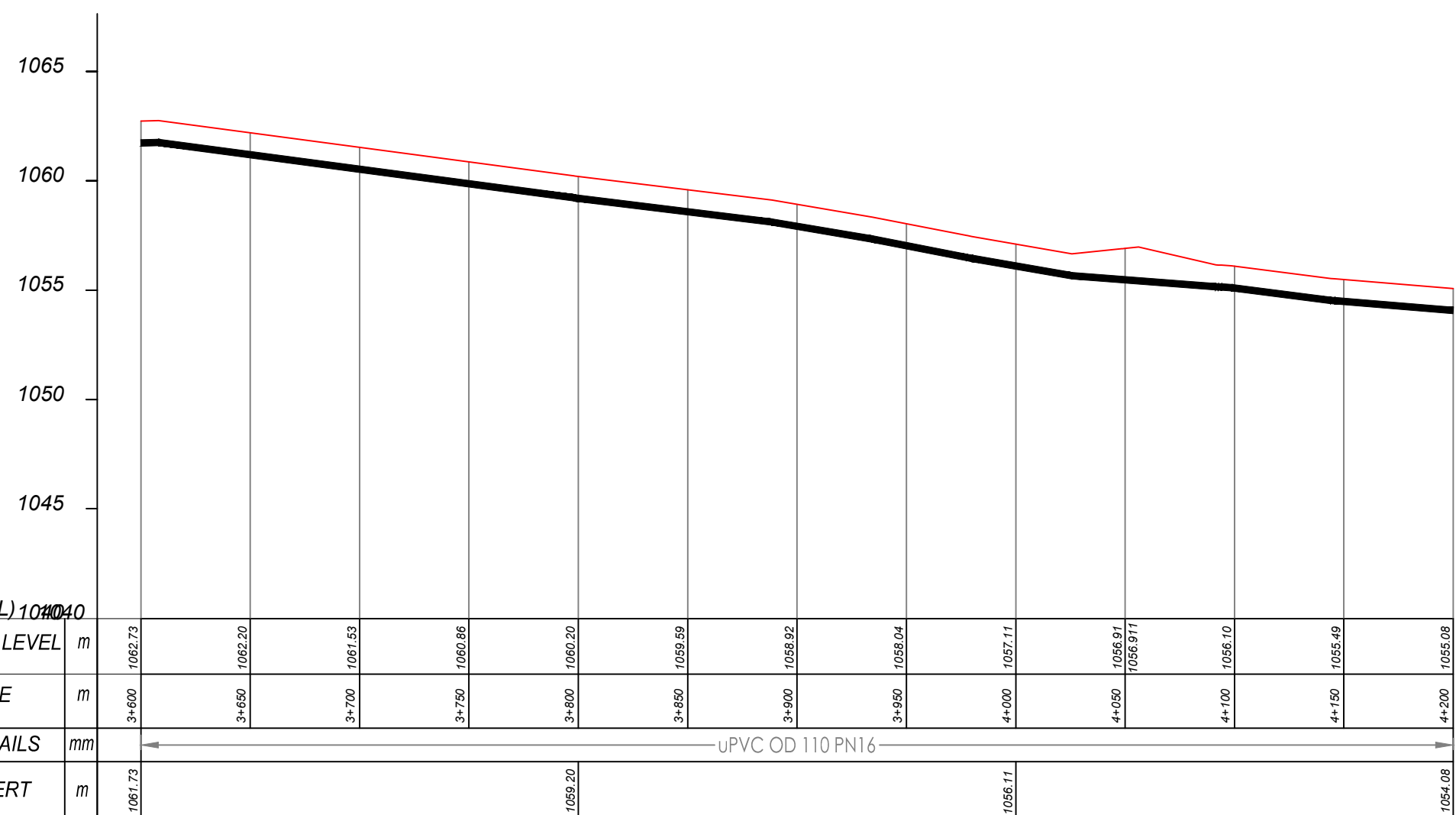
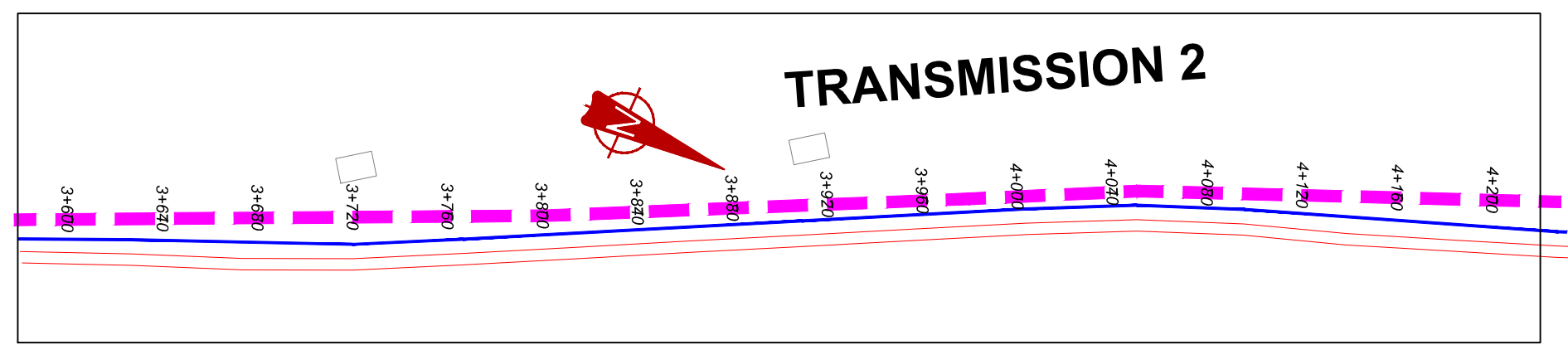
CONTRACTOR

DETAILED ENGINEERING DESIGN

DRAWING TITLE
TRANSMISSION LINE 02
(3+600.00 - 4+200.00)

SCALE	VERT: 1:250 HOR: 1:2500	DRAWING No.	MUT/WS/2.2.7
SURVEYED	Evans Mpanga	DESIGNED	Otwane Dan.
DRAWN	Joshua Nyarwanda	CHECKED	Rodney Barugahare
DATE	April 2021	APPROVED	Rodney Barugahare.

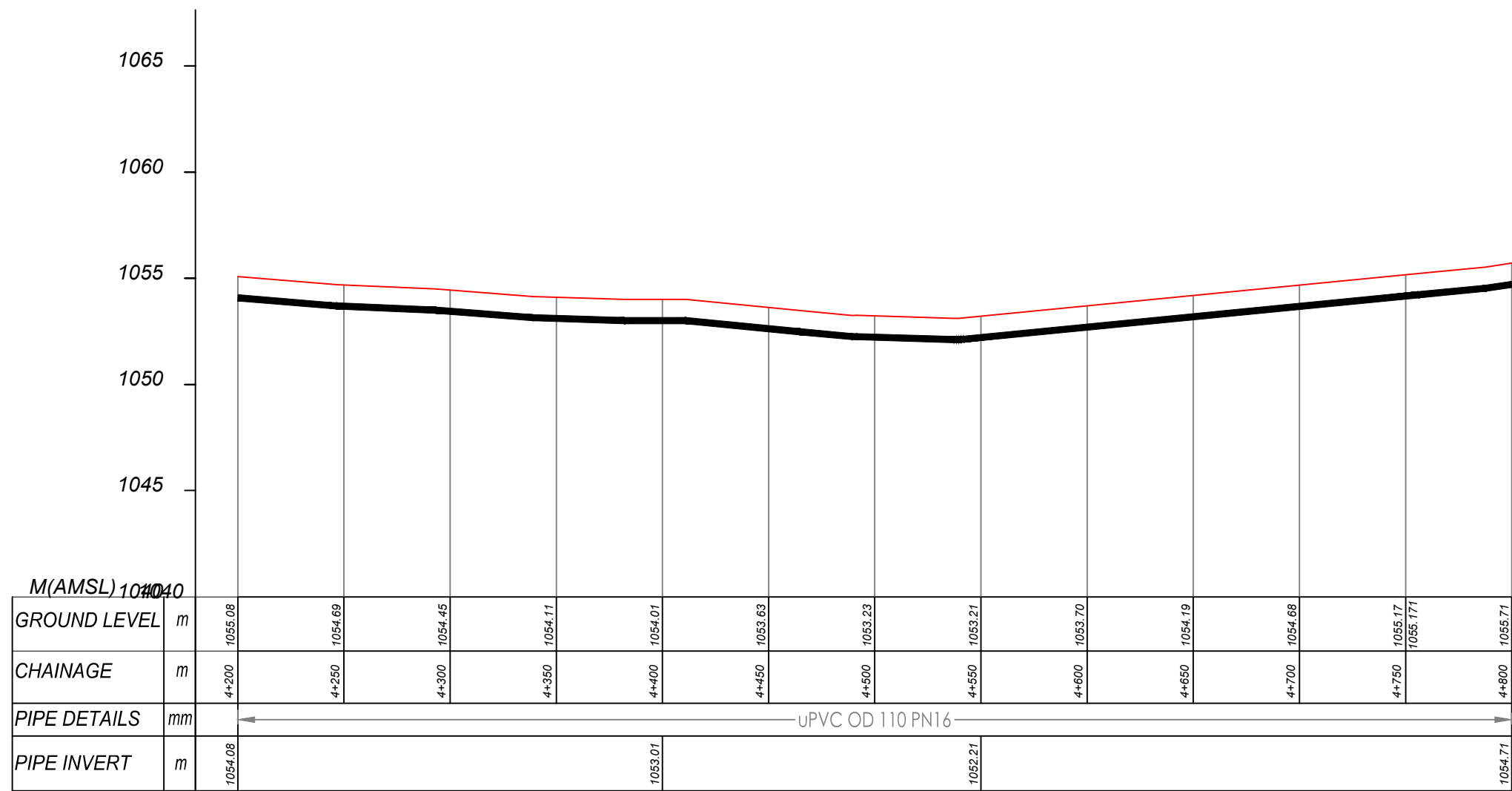
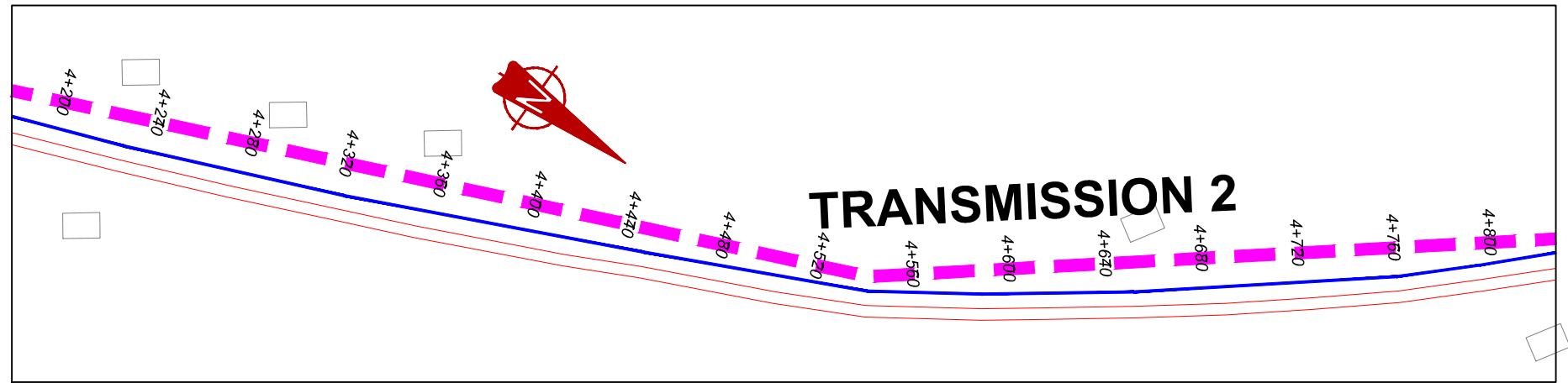
TRANSMISSION 2



TRANSMISSION 2 (3+600.00 - 4+200.00)

M(AMSL)	1064.0
GROUND LEVEL	m
CHAINAGE	m
PIPE DETAILS	mm
PIPE INVERT	m

UPVC OD 110 PN16

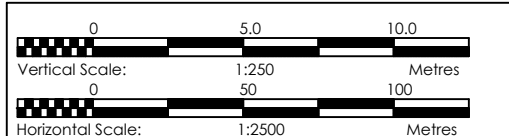


TRANSMISSION 2 (4+200.00 - 4+800.00)

NOTES

LEGEND

- Transmission Pipeline
- Distribution Pipeline
- Ground Level
- Building/House
- Contours
- Road
- DAV Double Orifice Air Valve
- EP End pipe
- N01 Node N01
- WO-1 Washout Type1
- WO-2 Washout Type2



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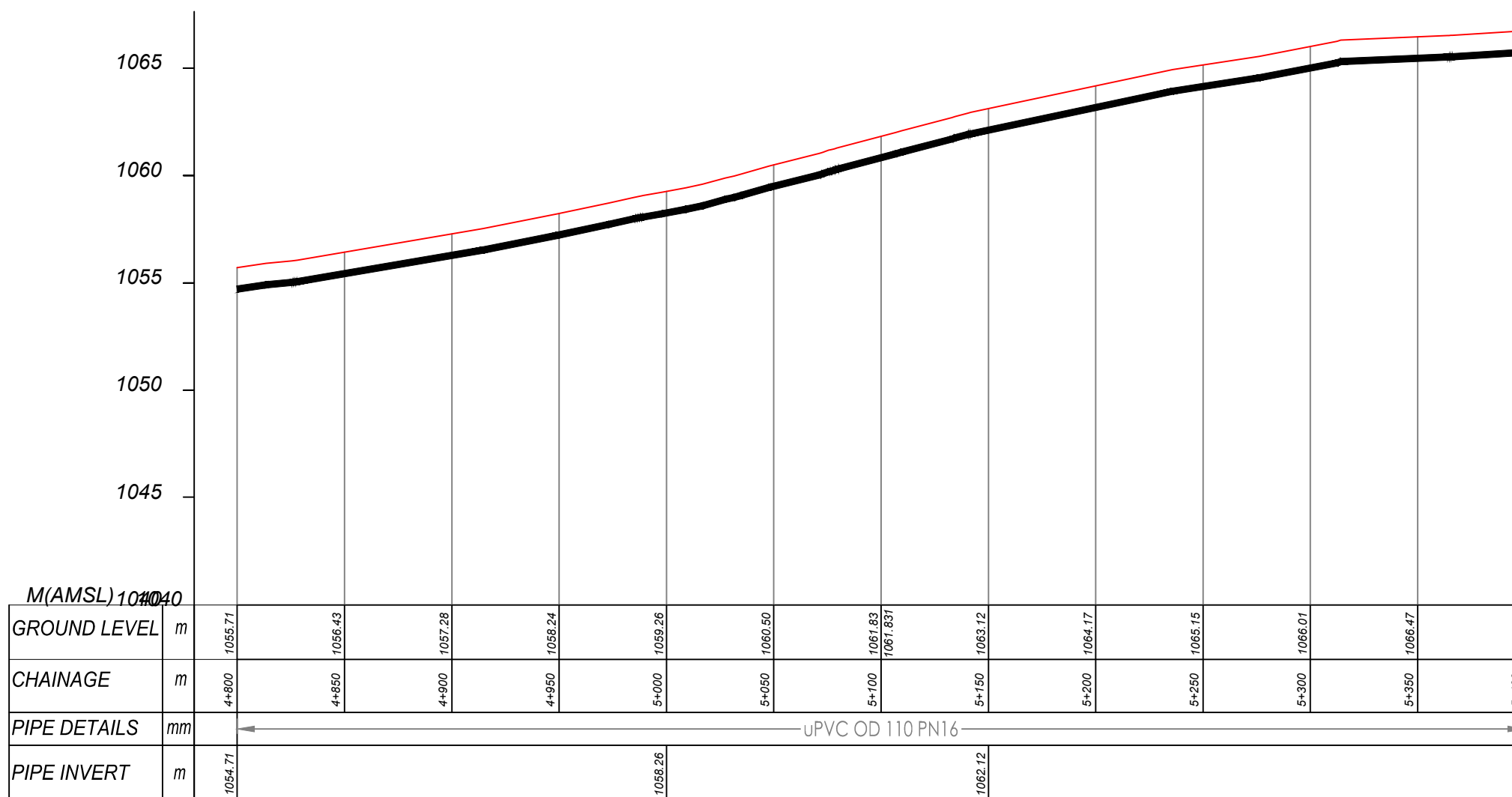
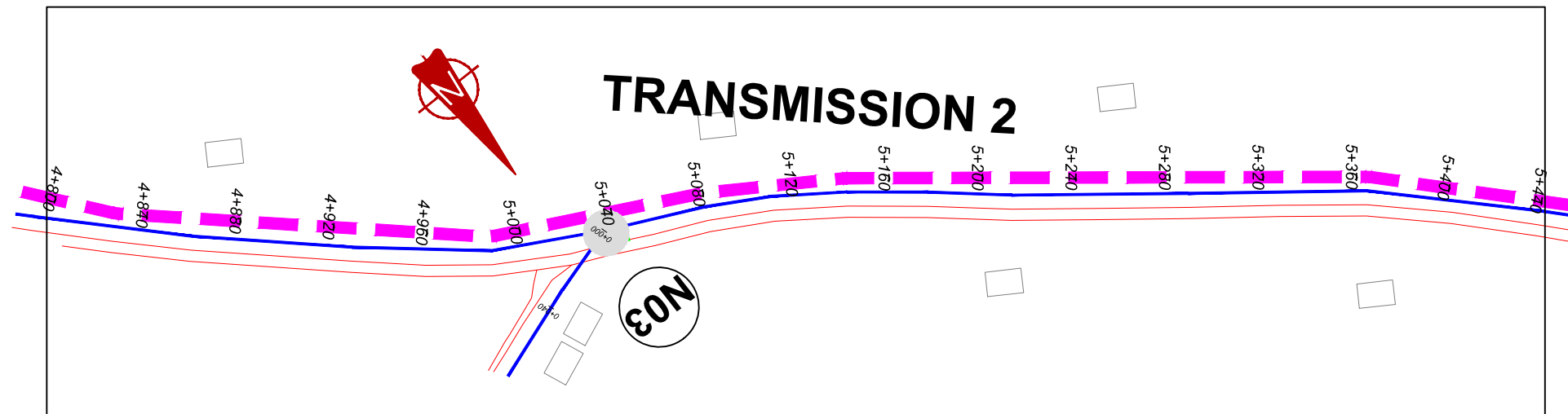
MUTUNDA WATER SUPPLY SYSTEM

CONSULTANT
SARI In Joint Venture with
 Corporate Headquarter
 10 Philpot Lane, 1st Floor,
 London EC3M 8AA,
 United Kingdom

CONTRACTOR

DETAILED ENGINEERING DESIGN
 DRAWING TITLE
TRANSMISSION LINE 02
(4+200.00 - 4+800.00)

SCALE	VERT: 1:250 HOR: 1:2500	DRAWING No.	MUT/WS/2.2.8
SURVEYED	Evans Mpanga	DESIGNED	Otwane Dan.
DRAWN	Joshua Nyarwanda	CHECKED	Rodney Barugahare
DATE	April 2021	APPROVED	Rodney Barugahare.

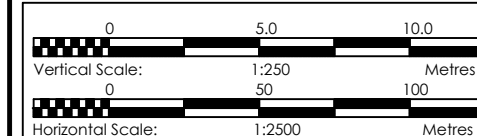


TRANSMISSION 2 (4+800.00 - 5+400.00)

NOTES

LEGEND

- Transmission Pipeline
- Distribution Pipeline
- Ground Level
- Building/House
- Contours
- Road
- DAV Double Orifice Air Valve
- EP End pipe
- N01 Node N01
- WO-1 Washout Type1
- WO-2 Washout Type2



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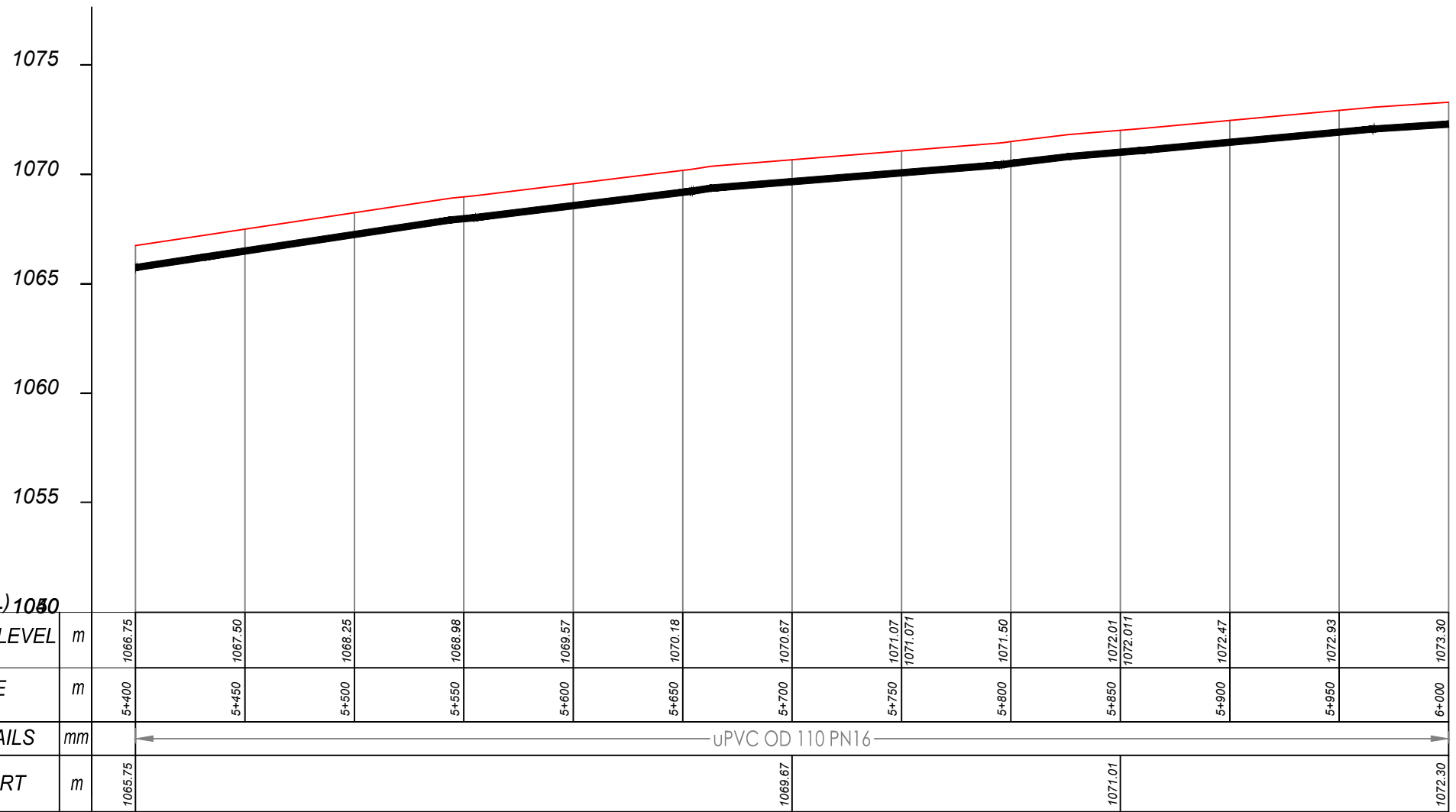
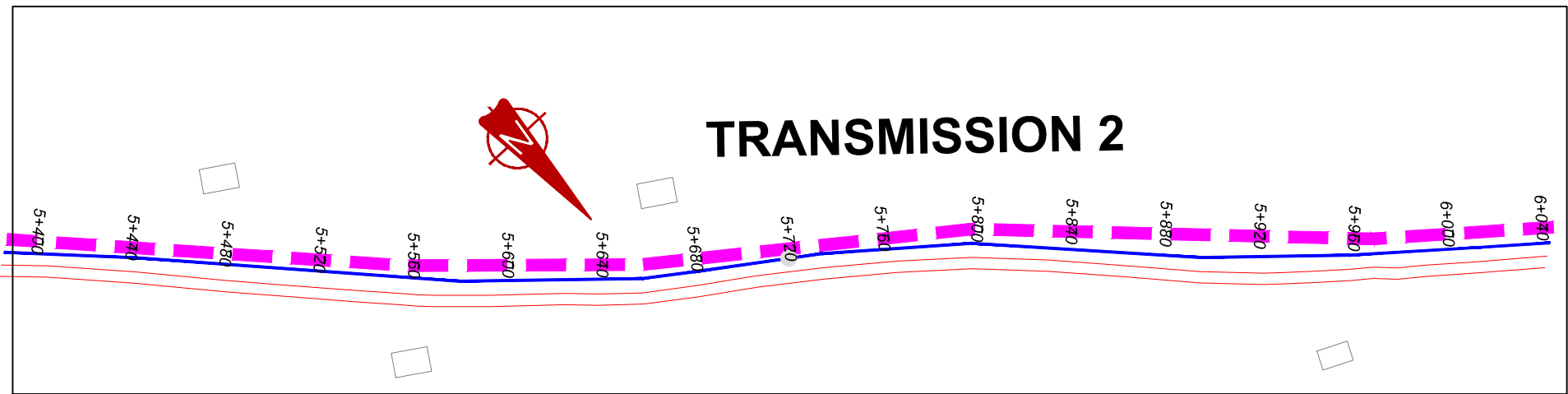
MUTUNDA WATER SUPPLY SYSTEM

CONSULTANT
SARI In Joint Venture with **SGAPI**
 Corporate Headquarter
 10 Philpott Lane, 1st Floor,
 London EC3M 8AA,
 United Kingdom

CONTRACTOR

DETAILED ENGINEERING DESIGN
 DRAWING TITLE
TRANSMISSION LINE 02
(4+800.00 - 5+400.00)

SCALE VERT: 1:250 DRAWING No. MUT/WS/2.2.9
 HOR: 1:2500
 SURVEYED Evans Mpanga DESIGNED Otwane Dan.
 DRAWN Joshua Nyarwanda CHECKED Rodney Barugahare
 DATE April 2021 APPROVED Rodney Barugahare.

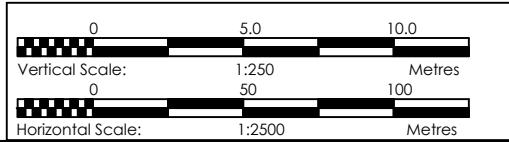


TRANSMISSION 2 (5+400.00 - 6+000.00)

NOTES

LEGEND

- Transmission Pipeline
- Distribution Pipeline
- Ground Level
- Building/House
- Contours
- Road
- DAV Double Orifice Air Valve
- EP End pipe
- N01 Node N01
- WO-1 Washout Type1
- WO-2 Washout Type2



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GOVERNMENT OF UGANDA
 MINISTRY OF WATER AND ENVIRONMENT

CO-FINANCED BY:
 AND **THE WORLD BANK** AND **GOVERNMENT OF UGANDA**

PROJECT
 CONSULTANCY SERVICES FOR FEASIBILITY STUDY, DETAILED ENGINEERING DESIGN AND CONSTRUCTION SUPERVISION OF SOLAR POWERED PIPED WATER SUPPLY SYSTEMS AND SANITATION FACILITIES IN REFUGEE SETTLEMENTS AND HOST DISTRICTS IN WEST NILE AND NORTHERN UGANDA IN KIRYANDONGO DISTRICT

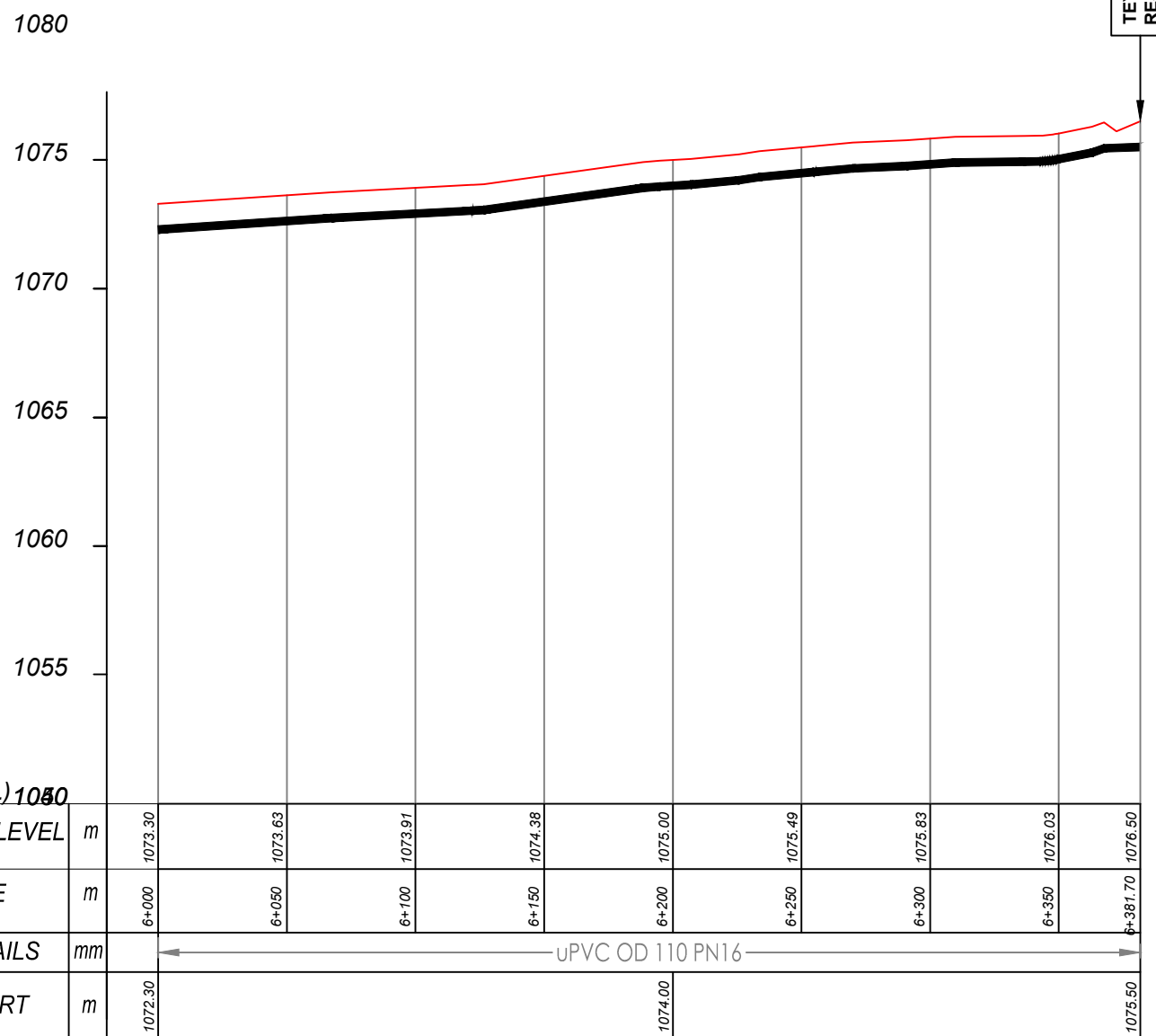
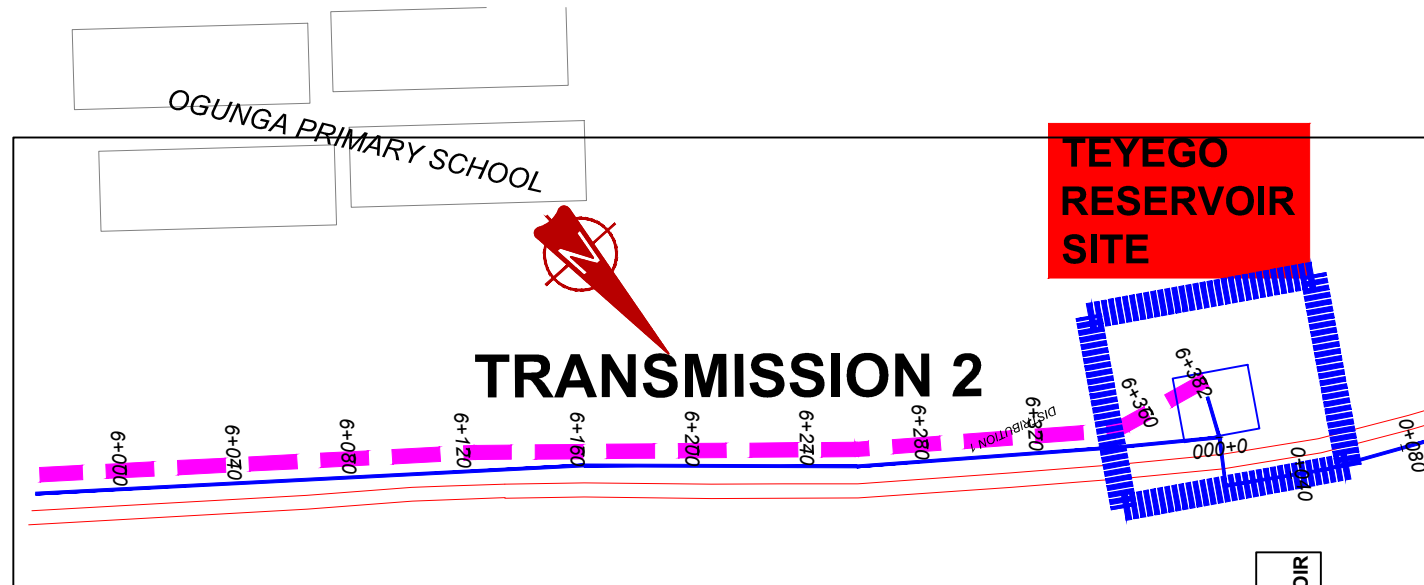
MUTUNDA WATER SUPPLY SYSTEM

CONSULTANT
SARI In Joint Venture with **SGAPI**
 Corporate Headquarter
 10 Philpot Lane, 1st Floor,
 London EC3M 8AA,
 United Kingdom

CONTRACTOR

DETAILED ENGINEERING DESIGN
 DRAWING TITLE
TRANSMISSION LINE 02
(5+400.00 - 6+000.00)

SCALE VERT: 1:250 DRAWING No. MUT/WS/2.2.10
 HOR: 1:2500
 SURVEYED Evans Mpanga DESIGNED Otwane Dan.
 DRAWN Joshua Nyarwanda CHECKED Rodney Barugahare
 DATE April 2021 APPROVED Rodney Barugahare.



TRANSMISSION 2 (6+000.00 - 6+381.70)

NOTES

LEGEND

- Transmission Pipeline
- Distribution Pipeline
- Ground Level
- Building/House
- Contours
- Road
- DAV Double Orifice Air Valve
- EP End pipe
- N01 Node N01
- WO-1 Washout Type1
- WO-2 Washout Type2



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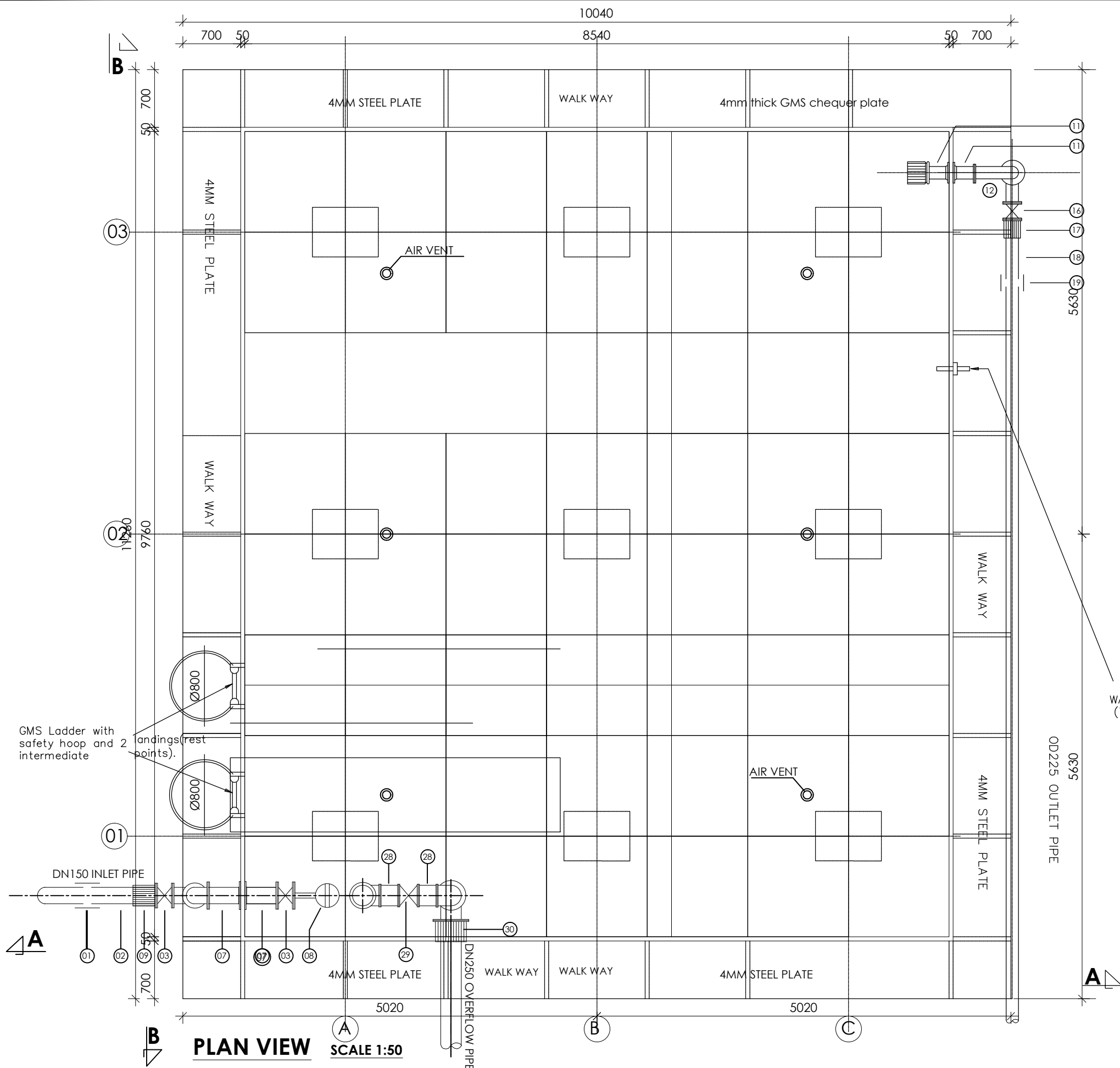
MUTUNDA WATER SUPPLY SYSTEM

CONSULTANT
SARI In Joint Venture with **SGAPI**
 Corporate Headquarter
 10 Philpot Lane, 1st Floor,
 London EC3M 8AA,
 United Kingdom

CONTRACTOR

DETAILED ENGINEERING DESIGN
 DRAWING TITLE
TRANSMISSION LINE 02
(6+000.00 - 6+381.70)

SCALE	VERT: 1:250 HOR: 1:2500	DRAWING No.	MUT/WS/2.2.11
SURVEYED	Evans Mpanga	DESIGNED	Otwane Dan.
DRAWN	Joshua Nyarwanda	CHECKED	Rodney Barugahare
DATE	April 2021	APPROVED	Rodney Barugahare.



PLAN VIEW SCALE 1:50

NOTES

- 1). All dimensions in millimetres unless otherwise indicated
- 2). All levels in metres above sea level
- 3). Structural details are not included
- 4). All structural concrete is class 25/10mm aggregate
- 5). All mass concrete is class 15/10mm aggregate

PIPE FITTING SCHEDULE

1. 1No.DN150 Vicking Johnson or Similar Coupling.
2. 1No.DN150 Pipe not exceeding 2.0m.
3. 1No.DN150 All Flanged Gate Valve.
4. 1No.DN150 All Flanged Duck foot 90° bend.
5. 3No.DN150 Double Flanged Pipe not exceeding 6.0m.
6. 1No.DN150 All Flanged 90° bend.
7. 2No.DN150 Double Flanged Pipe not exceeding 0.6m.
8. 1No.DN150 Flanged Ball Float Valve.
9. 1No.DN150 Flanged Adaptor, Maxi type or similar.
10. 1No.DN200 Flanged Outlet Pipe Strainer.
11. 2No.DN200 Double Flanged Pipe not exceeding 0.6m.
12. 1No.DN200 All Flanged 90° bend.
13. 2No.DN200 Double Flanged Pipe not exceeding 6.0m.
14. 1No.DN200 Double Flanged Pipe not exceeding 2.0m.
15. 1No.DN200 All Flanged Duck foot 90° bend.
16. 1No.DN200 Flanged Gate Valve.
17. 1No.DN200 Flanged Adaptor, Maxi type or similar.
18. 1No.DN200 Double Flanged Pipe not exceeding 2.0m.
19. 1No.DN200 Vicking Johnson or Similar Coupling.
20. 1No.DN250 Flanged Bell Mouth.
21. 1No.DN250 Double Flanged Pipe not exceeding 2.8m.
22. 1No.DN250 Double Flanged Pipe not exceeding 2.0m.
23. 1No.DN250/100 All Flanged Tee.
24. 2No.DN250 Double Flanged Pipe not exceeding 6.0m.
25. 1No.DN250 All Flanged Duck foot 90° bend.
26. 1No.DN100 All Flanged Pipe with puddle flange n.e 2.0m.
27. 1No.DN100 All Flanged 90° bend.
28. 1No.DN100 Double Flanged Pipe not exceeding 0.4m.
29. 1No.DN100 Flanged Gate Valve.
30. 1No.DN100 Flanged Adaptor, Maxi type or similar.

WATER LEVEL INDICATOR
(To Engineer's approval).



PROJECT
CONSULTANCY SERVICES FOR FEASIBILITY STUDY,
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SYSTEMS AND SANITATION FACILITIES IN REFUGEE
SETTLEMENTS AND HOST DISTRICTS IN WEST NILE AND
NORTHERN UGANDA IN KIRYANDONGO DISTRICT

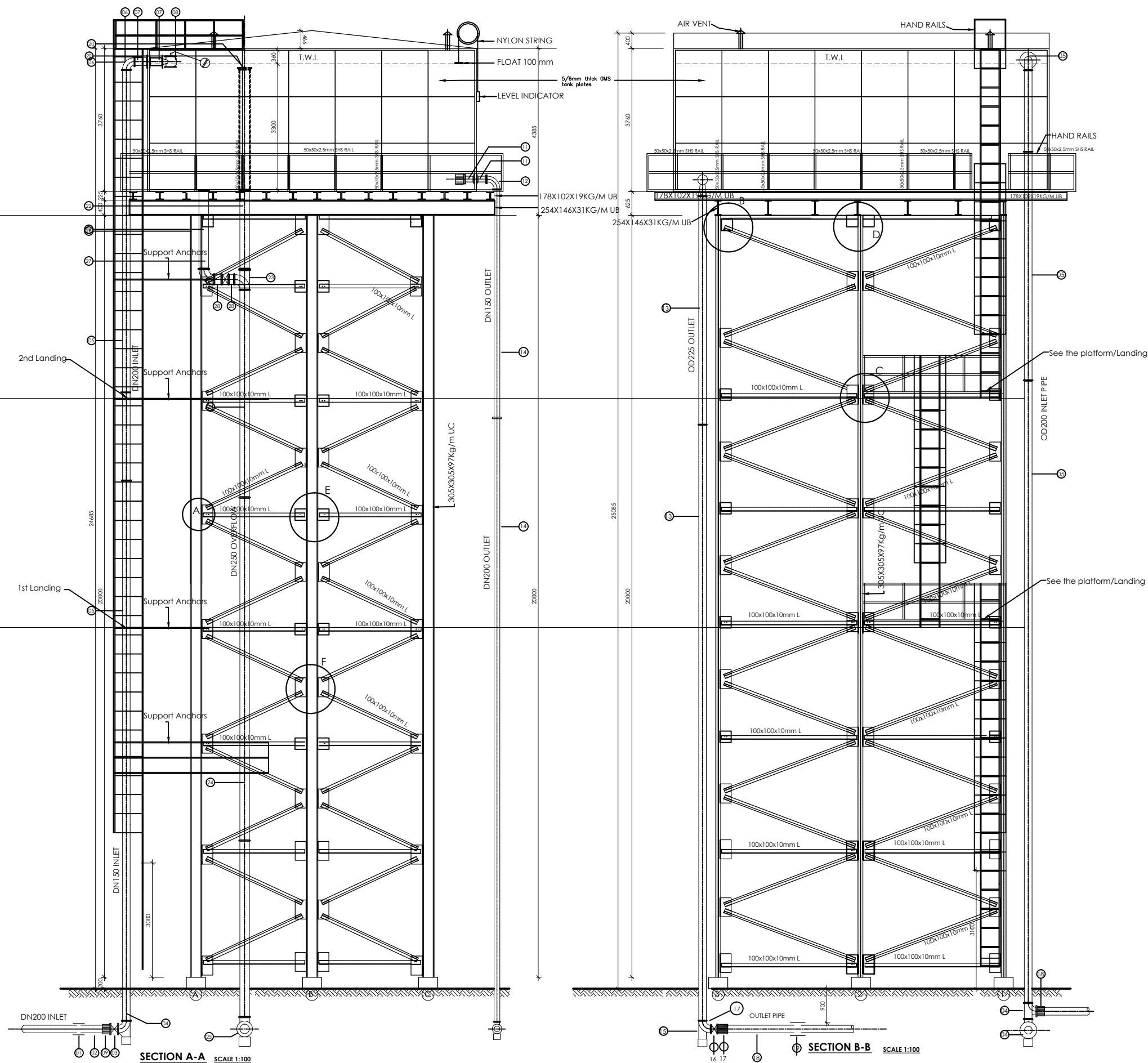
MUTUNDA WATER SUPPLY SYSTEM



CONTRACTOR

DETAILED ENGINEERING DESIGN
DRAWING TITLE
250M³ POPARA RESERVOIR TANK
PLAN LAYOUT

SCALE	As Shown	DRAWING No.	MUT/WS/3.1.1
SURVEYED		DESIGNED	Othmane Dan.
DRAWN	Joshua Nyarwanda	CHECKED	Rodney Barugahare
DATE	OCT 2021	APPROVED	Rodney Barugahare.



NOTES

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- 5). All mass concrete is class 15/10mm aggregate

PIPE FITTING SCHEDULE

1. 1No. DN150 Vicking Johnson or Similar Coupling.
2. 1No. DN150 Pipe not exceeding 2.0m.
3. 1No. DN150 All Flanged Gate Valve.
4. 1No. DN150 All Flanged Duck foot 90° bend.
5. 3No. DN150 Double Flanged Pipe not exceeding 6.0m.
6. 1No. DN150 All Flanged 90° bend.
7. 2No. DN150 Double Flanged Pipe not exceeding 0.6m.
8. 1No. DN150 Flanged Ball Float Valve.
9. 1No. DN150 Flanged Adaptor, Maxi type or similar.
10. 1No. DN200 Flanged Outlet Pipe Strainer.
11. 2No. DN200 Double Flanged Pipe not exceeding 0.6m.
12. 1No. DN200 All Flanged 90° bend.
13. 2No. DN200 Double Flanged Pipe not exceeding 6.0m.
14. 1No. DN200 Double Flanged Pipe not exceeding 2.0m.
15. 1No. DN200 All Flanged Duck foot 90° bend.
16. 1No. DN200 Flanged Gate Valve.
17. 1No. DN200 Flanged Adaptor, Maxi type or similar.
18. 1No. DN200 Double Flanged Pipe not exceeding 2.0m.
19. 1No. DN200 Vicking Johnson or Similar Coupling.
20. 1No. DN250 Flanged Bell Mouth.
21. 1No. DN250 Double Flanged Pipe not exceeding 2.8m.
22. 1No. DN250 Double Flanged Pipe not exceeding 2.0m.
23. 1No. DN250/100 All Flanged Tee.
24. 2No. DN250 Double Flanged Pipe not exceeding 6.0m.
25. 1No. DN250 All Flanged Duck foot 90° bend.
26. 1No. DN100 All Flanged Pipe with puddle flange n.e 2.0m.
27. 1No. DN100 All Flanged 90° bend.
28. 1No. DN100 Double Flanged Pipe not exceeding 0.4m.
29. 1No. DN100 Flanged Gate Valve.
30. 1No. DN100 Flanged Adaptor, Maxi type or similar.



PROJECT
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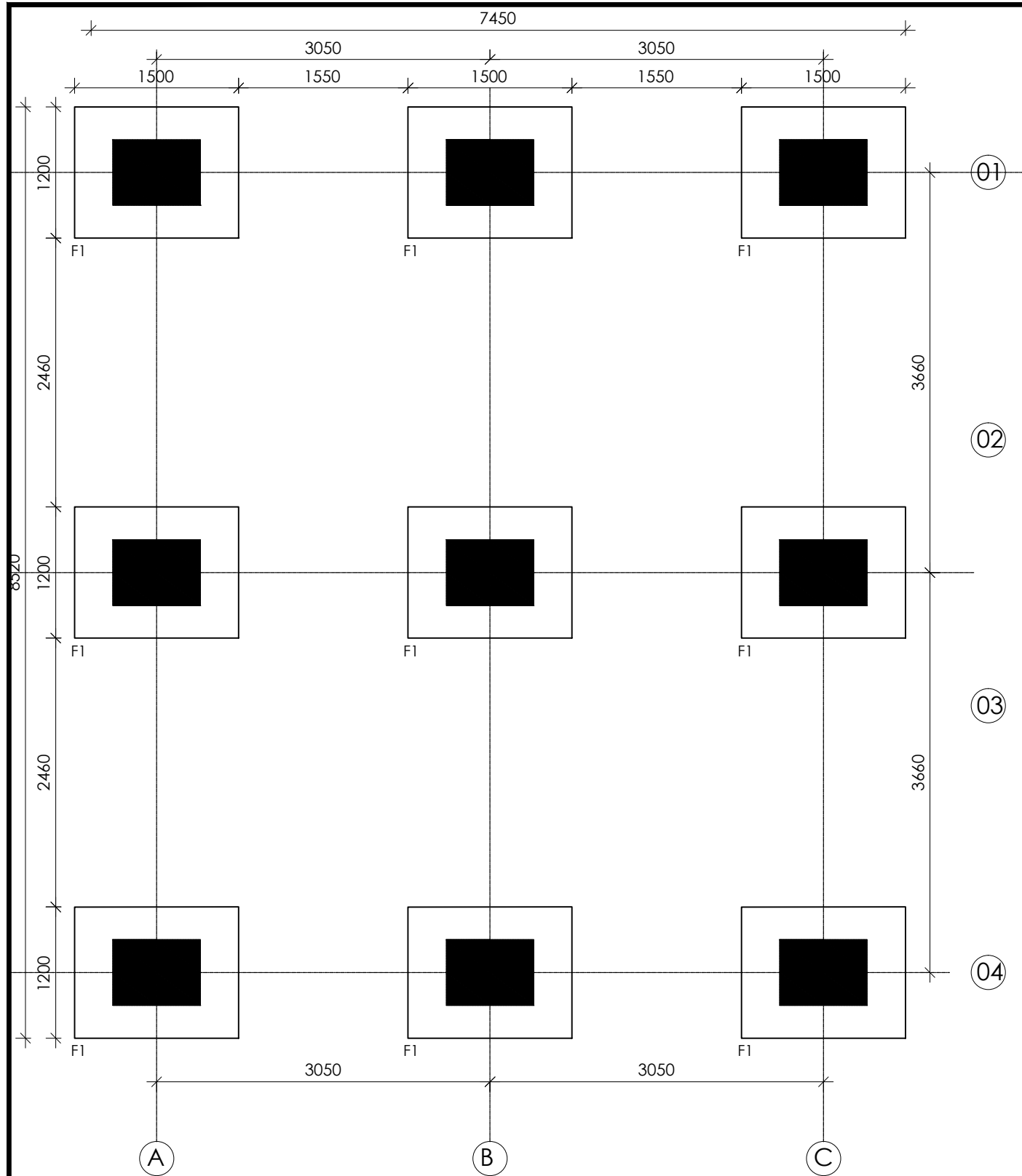
MUTUNDA WATER SUPPLY SYSTEM

CONSULTANT
 SARI
 Corporate Headquarter
 10 Philpot Lane, 1st Floor,
 London EC3M 8AA,
 United Kingdom
 In Joint Venture with
 SGAPI

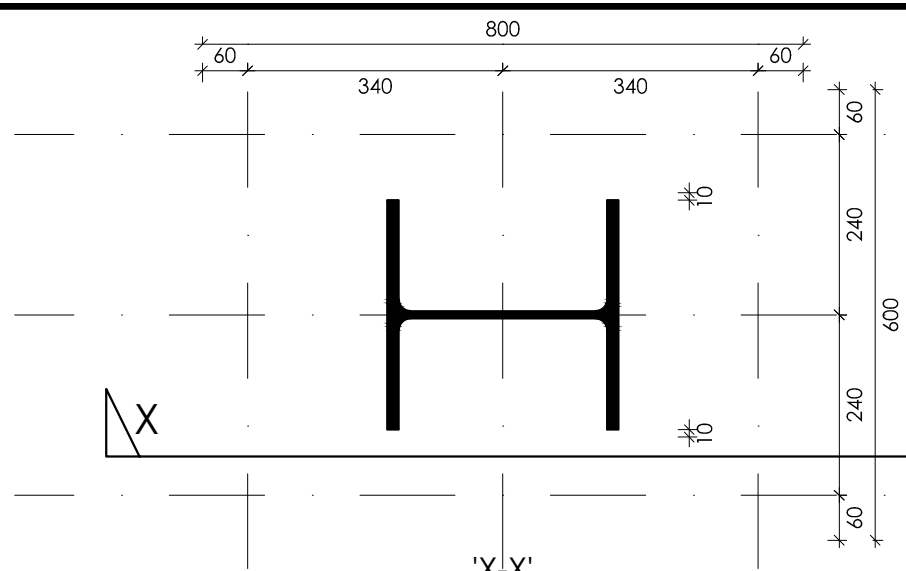
CONTRACTOR

DETAILED ENGINEERING DESIGN
DRAWING TITLE
250M³ POPARA RESERVOIR TANK
 SECTION A-A & SECTION B-B

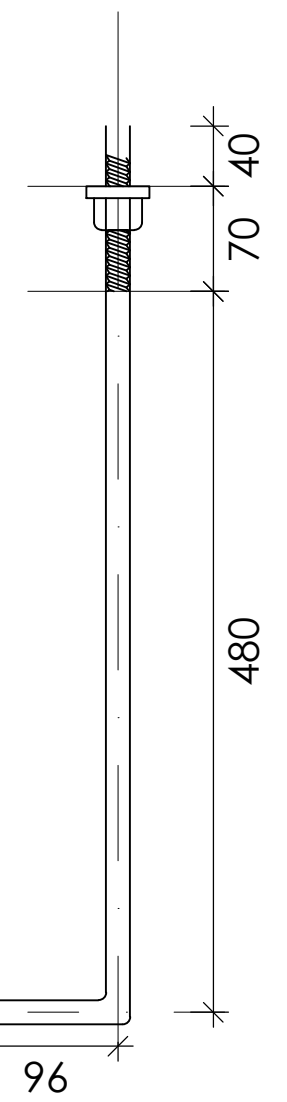
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SURVEYED		DESIGNED	Othwane Dan.
DRAWN	Joshua Nyarwanda	CHECKED	Rodney Barugahare
DATE	OCT 2021	APPROVED	Rodney Barugahare.



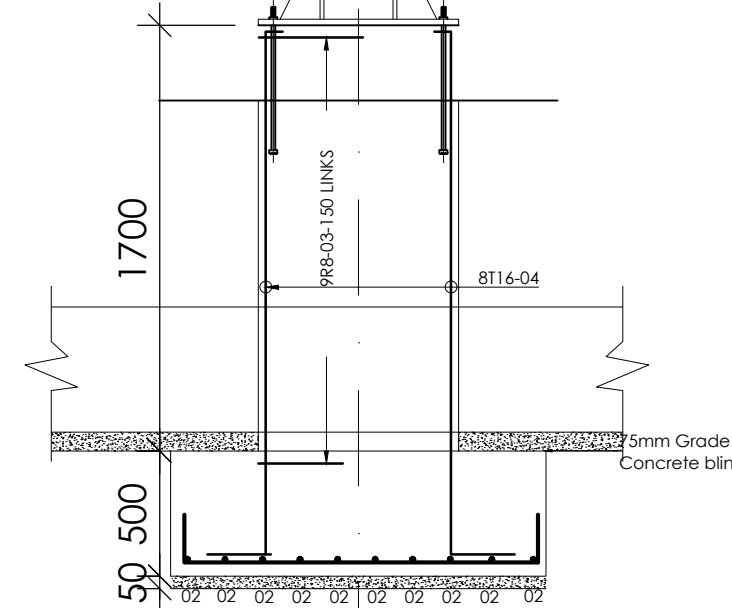
LAYOUT OF FOUNDATIONS SCALE 1:50



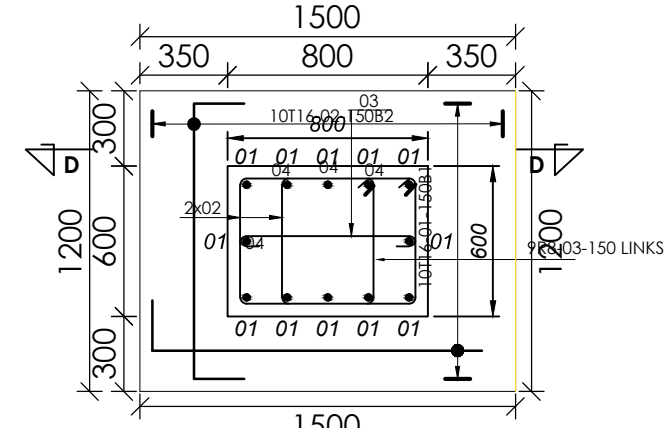
'X-X'
SCALE 1:10



M24 Anchor bolts
Scale 1:5



SECTION D - D Scale 1:30



FOOTING DETAIL
SCALE 1:30

NOTES

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- 5). All mass concrete is class 15/10mm aggregate

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MUTUNDA WATER SUPPLY SYSTEM

CONSULTANT
SARI In Joint Venture with **SGAPI**
Corporate Headquarter
10 Philip Lane, 1st Floor,
London EC3M 8AA,
United Kingdom

CONTRACTOR

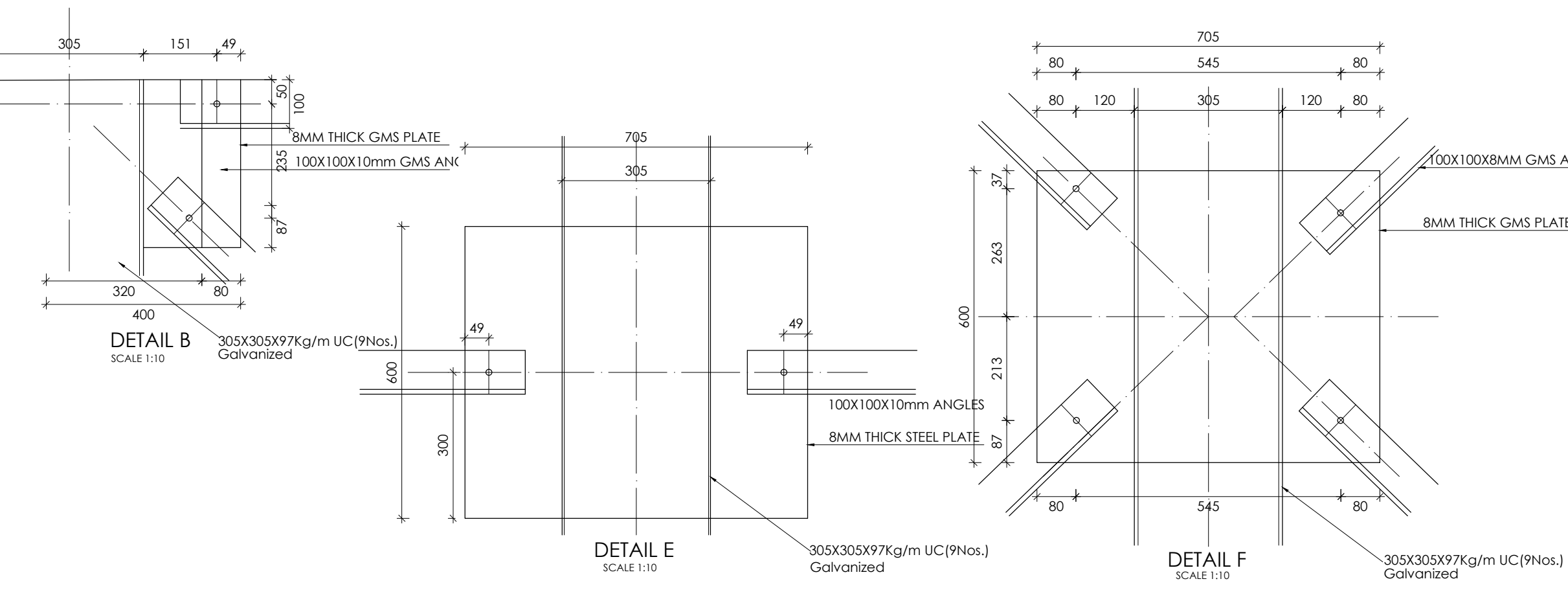
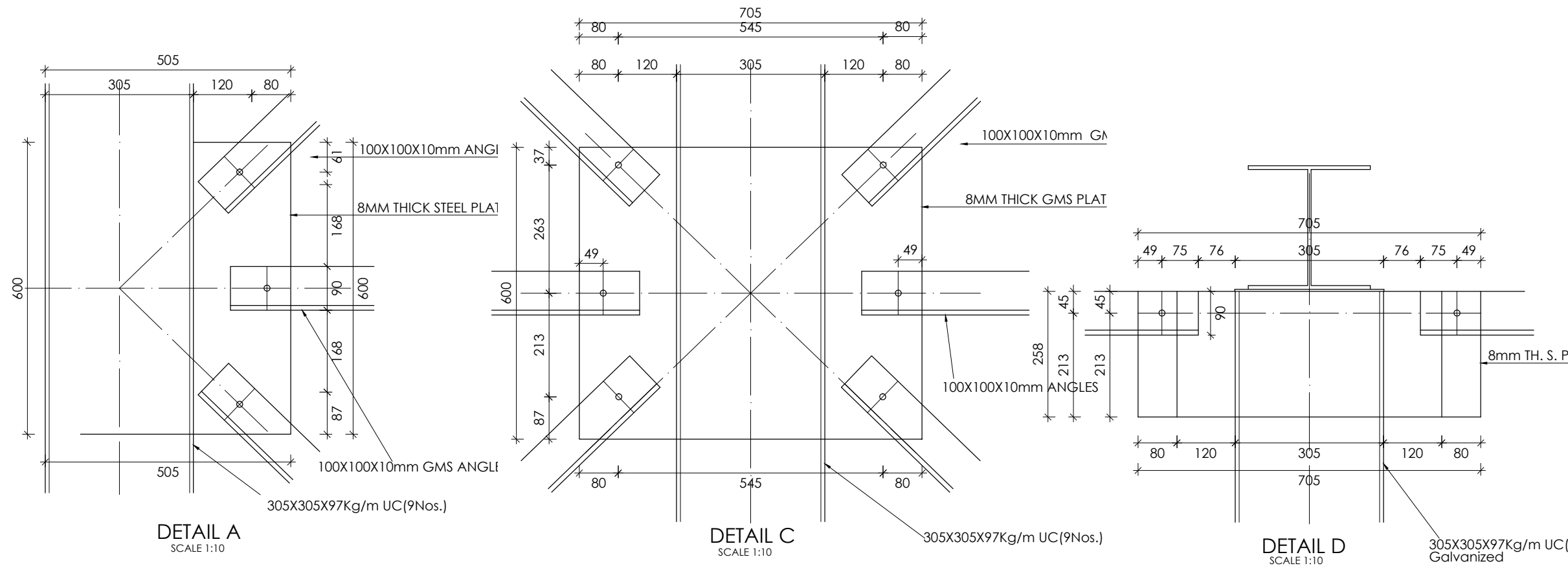
DETAILED ENGINEERING DESIGN

DRAWING TITLE
250M³ POPARA RESERVOIR TANK
FOUNDATION LAYOUT AND DETAILS

SCALE	As Shown	DRAWING No.	MUT/WS/3.1.3
SURVEYED		DESIGNED	Otwane Dan.
DRAWN	Joshua Nyarwanda	CHECKED	Rodney Barugahare
DATE	OCT 2021	APPROVED	Rodney Barugahare.

NOTES

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- 5). All mass concrete is class 15/10mm aggregate



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MUTUNDA WATER SUPPLY SYSTEM

CONSULTANT

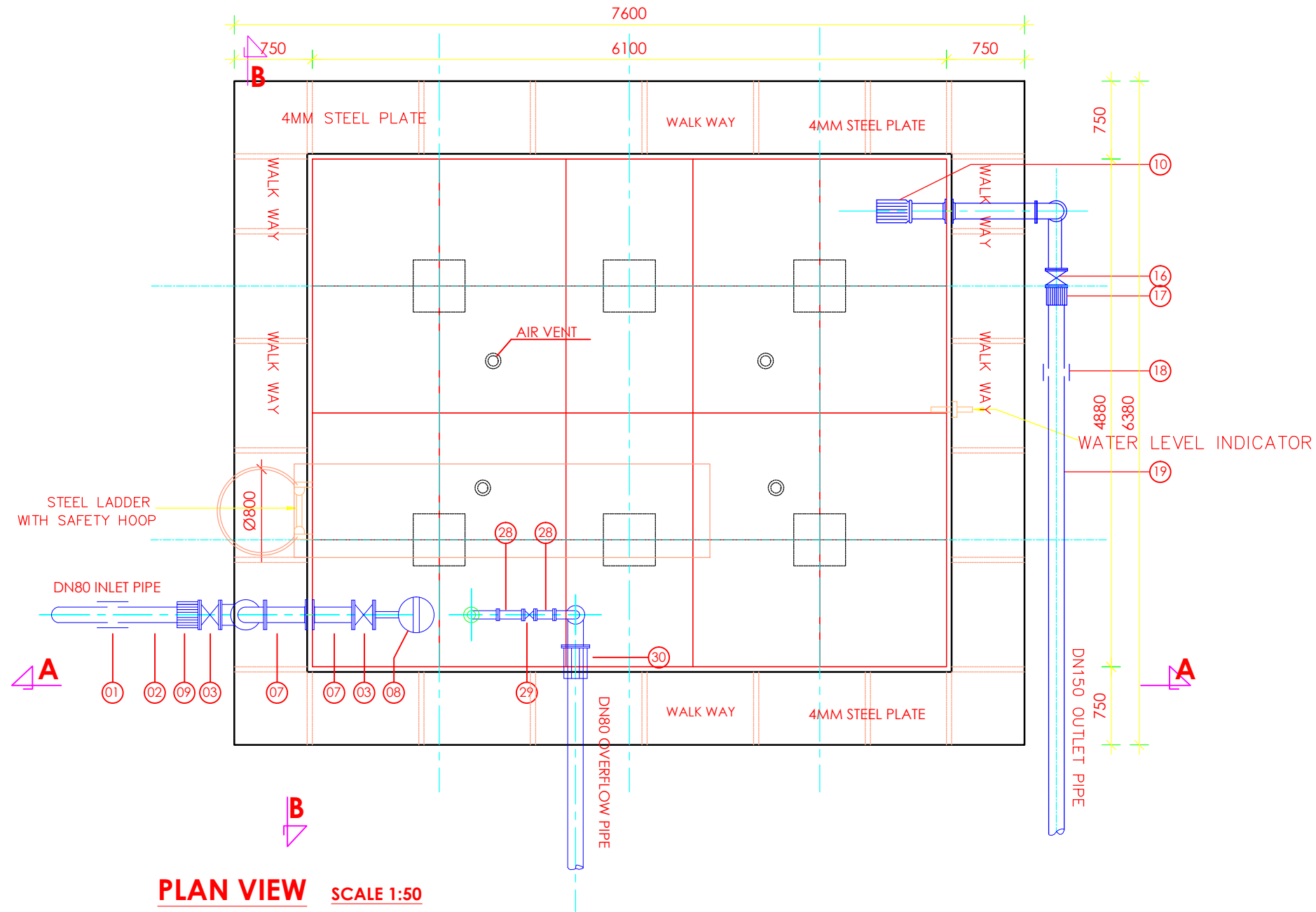
 In Joint Venture with

 Corporate Headquarter
 10 Philip Lane, 1st Floor,
 London EC3M 8AA,
 United Kingdom

CONTRACTOR

DETAILED ENGINEERING DESIGN
 DRAWING TITLE
250M³ POPARA RESERVOIR TANK
 DETAILS A, B, C, D, E AND F

SCALE	As Shown	DRAWING No.	MUT/WS/3.1.4
SURVEYED		DESIGNED	Otwane Dan.
DRAWN	Joshua Nyarwanda	CHECKED	Rodney Barugahare
DATE	OCT 2021	APPROVED	Rodney Barugahare.



PIPE FITTING SCHEDULE

1. 1No. DN80 Vicking Johnson or Similar Coupling.
2. 1No. DN80 Pipe not exceeding 2.0m.
3. 1No. DN80 All Flanged Gate Valve.
4. 1No. DN80 All Flanged Duck foot 90° bend.
5. 3No. DN80 Double Flanged Pipe not exceeding 6.0m.
6. 1No. DN80 All Flanged 90° bend.
7. 2No. DN80 Double Flanged Pipe not exceeding 0.6m.
8. 1No. DN80 Flanged Ball Float Valve.
9. 1No. DN80 Flanged Adaptor, Maxi type or similar.
10. 1No. DN150 Flanged Outlet Pipe Strainer.
11. 2No. DN150 Double Flanged Pipe not exceeding 0.6m.
12. 1No. DN150 All Flanged 90° bend.
13. 2No. DN150 Double Flanged Pipe not exceeding 6.0m.
14. 1No. DN150 Double Flanged Pipe not exceeding 2.0m.
15. 1No. DN150 All Flanged Duck foot 90° bend.
16. 1No. DN150 Flanged Gate Valve.
17. 1No. DN150 Flanged Adaptor, Maxi type or similar.
18. 1No. DN150 Double Flanged Pipe not exceeding 2.0m.
19. 1No. DN150 Vicking Johnson or Similar Coupling.
20. 1No. DN80 Flanged Bell Mouth.
21. 1No. DN80 Double Flanged Pipe not exceeding 3.0m.
22. 2No. DN80 Double Flanged Pipe not exceeding 6.0m.
23. 1No. DN80/50 All Flanged Tee.
24. 1No. DN80 Double Flanged Pipe not exceeding 3.0m.
25. 1No. DN80 All Flanged Duck foot 90° bend.
26. 1No. DN80 All Flanged Pipe with puddle flange n.e 6.0m.
27. 1No. DN50 All Flanged 90° bend.
28. 1No. DN50 Double Flanged Pipe not exceeding 0.4m.
29. 1No. DN50 Flanged Gate Valve.
30. 1No. DN50 Flanged Adaptor, Maxi type or similar.

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GOVERNMENT OF UGANDA
MINISTRY OF WATER AND ENVIRONMENT

CO-FINANCED BY:



AND



THE WORLD BANK GOVERNMENT OF UGANDA

PROJECT

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MUTUNDA WATER SUPPLY SYSTEM

CONSULTANT



In Joint Venture with



SARI
Corporate Headquarter
10 Philpot Lane, 1st Floor,
London EC3M 8AA,
United Kingdom

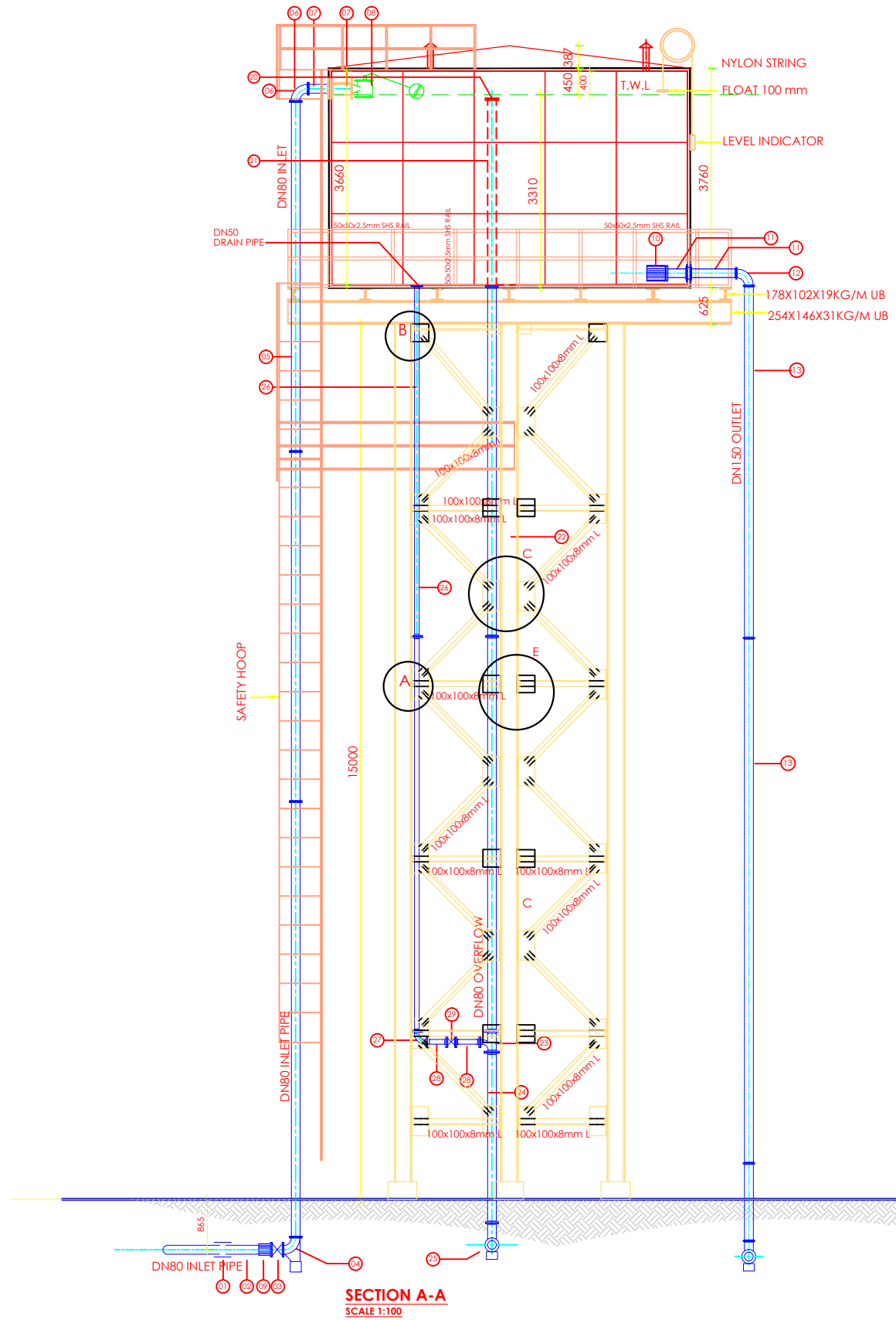
CONTRACTOR

DETAILED ENGINEERING DESIGN

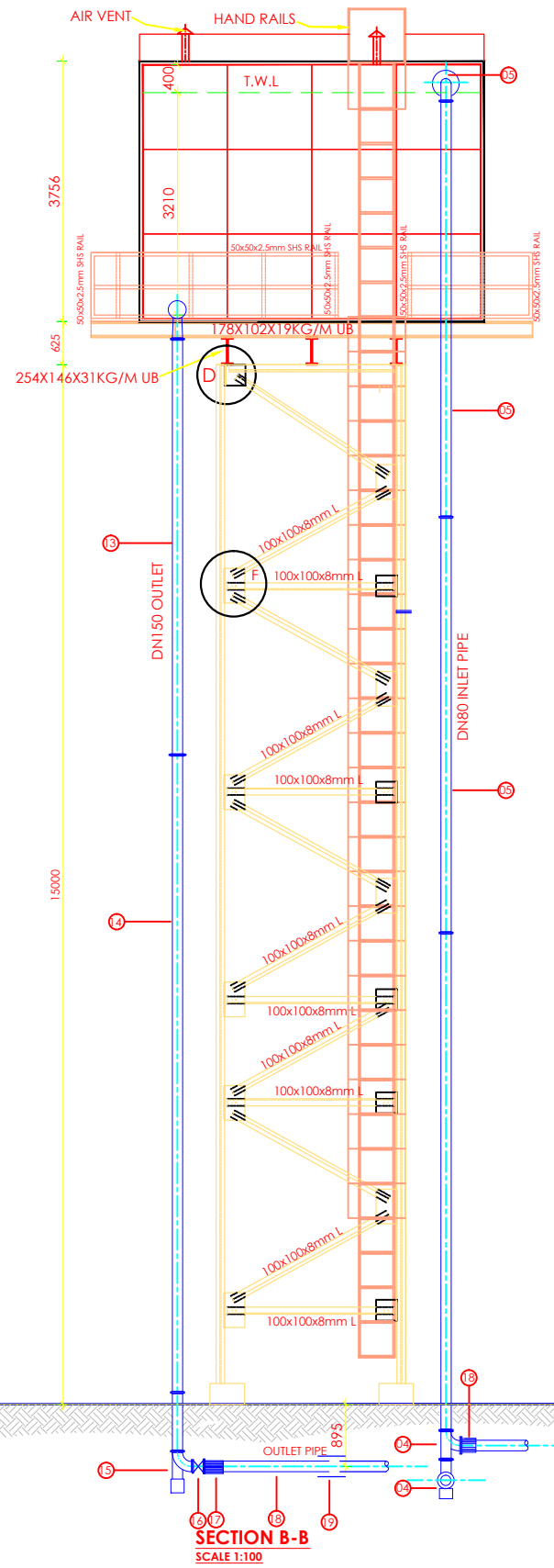
DRAWING TITLE

100M³ TEYEGO RESERVOIR TANK
PLAN LAYOUT

SCALE	As Shown	DRAWING No.	MUT/WS/3.2.1
SURVEYED		DESIGNED	Otwane Dan.
DRAWN	Joshua Nyarwanda	CHECKED	Rodney Barugahare
DATE	OCT 2021	APPROVED	Rodney Barugahare.



SECTION A-A
SCALE 1:100



SECTION B-B
SCALE 1:100

PIPE FITTING SCHEDULE

1. 1No.DN80 Vicking Johnson or Similar Coupling.
2. 1No.DN80 Pipe not exceeding 2.0m.
3. 1No.DN80 All Flanged Gate Valve.
4. 1No.DN80 All Flanged Duck foot 90° bend.
5. 3No.DN80 Double Flanged Pipe not exceeding 6.0m.
6. 1No.DN80 All Flanged 90° bend.
7. 2No.DN80 Double Flanged Pipe not exceeding 0.6m.
8. 1No.DN80 Flanged Ball Float Valve.
9. 1No.DN80 Flanged Adaptor, Maxi type or similar.
10. 1No.DN150 Flanged Outlet Pipe Strainer.
11. 2No.DN150 Double Flanged Pipe not exceeding 0.6m.
12. 1No.DN150 All Flanged 90° bend.
13. 2No.DN150 Double Flanged Pipe not exceeding 6.0m.
14. 1No.DN150 Double Flanged Pipe not exceeding 2.0m.
15. 1No.DN150 All Flanged Duck foot 90° bend.
16. 1No.DN150 Flanged Gate Valve.
17. 1No.DN150 Flanged Adaptor, Maxi type or similar.
18. 1No.DN150 Double Flanged Pipe not exceeding 2.0m.
19. 1No.DN150 Vicking Johnson or Similar Coupling.
20. 1No.DN80 Flanged Bell Mouth.
21. 1No.DN80 Double Flanged Pipe not exceeding 3.0m.
22. 2No.DN80 Double Flanged Pipe not exceeding 6.0m.
23. 1No.DN80/50 All Flanged Tee.
24. 1No.DN80 Double Flanged Pipe not exceeding 3.0m.
25. 1No.DN80 All Flanged Duck foot 90° bend.
26. 1No.DN80 All Flanged Pipe with puddle flange n.e 6.0m.
27. 1No.DN50 All Flanged 90° bend.
28. 1No.DN50 Double Flanged Pipe not exceeding 0.4m.
29. 1No.DN50 Flanged Gate Valve.
30. 1No.DN50 Flanged Adaptor, Maxi type or similar.

CLIENT



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MINISTRY OF WATER AND ENVIRONMENT

CO-FINANCED BY:



AND




THE WORLD BANK AND GOVERNMENT OF UGANDA

PROJECT


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MUTUNDA WATER SUPPLY SYSTEM

CONSULTANT



In Joint Venture with



Corporate Headquarter:
10 Priolot Lane, 1st Floor,
London EC3M 8AA,
United Kingdom

CONTRACTOR

DETAILED ENGINEERING DESIGN

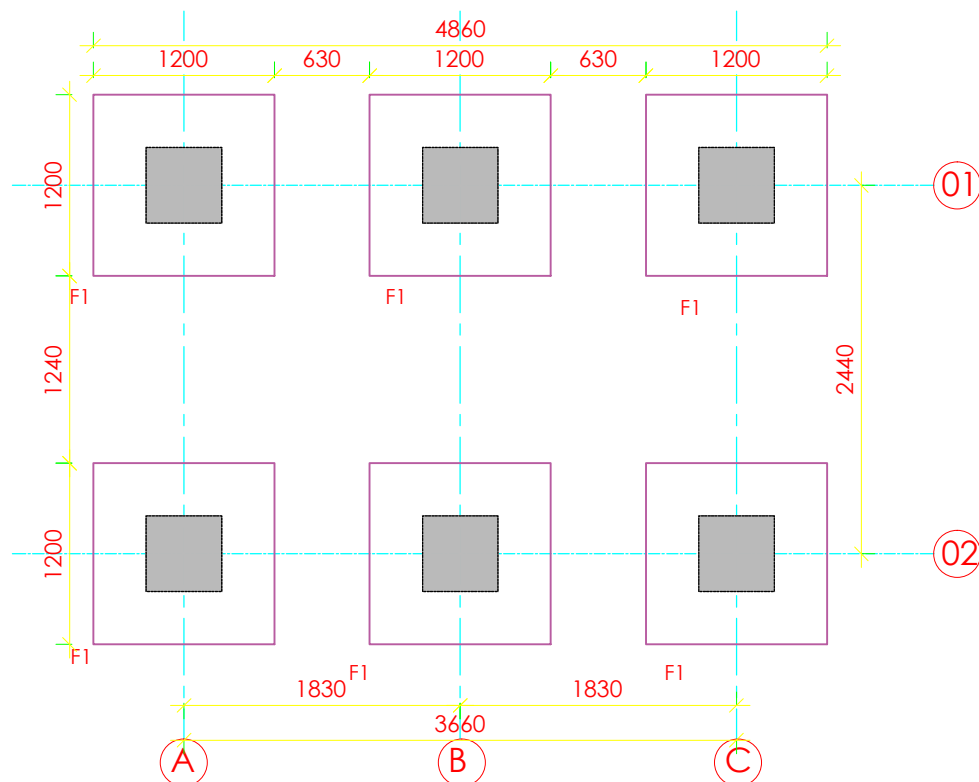
DRAWING TITLE

100M³ TEYEGO RESERVOIR TANK
SECTION 'A-A' AND SECTION 'B-B'

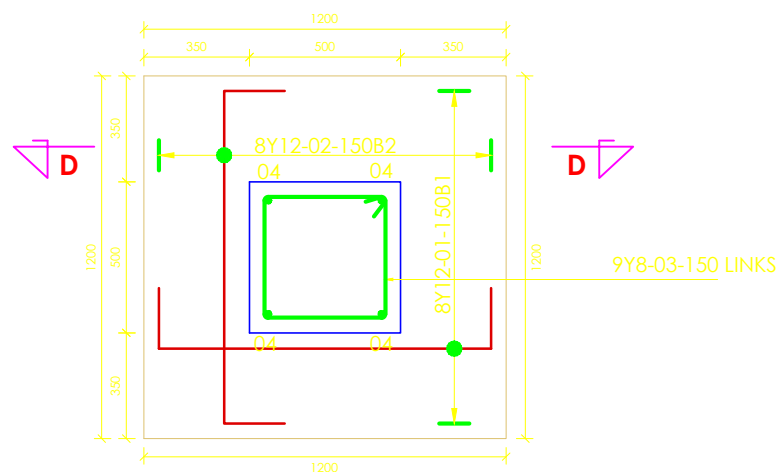
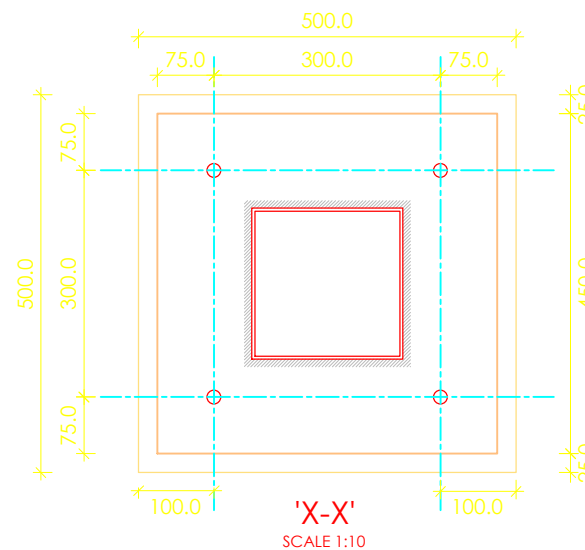
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SURVEYED		DESIGNED	Otwane Dan.
DRAWN	Joshua Nyarwanda	CHECKED	Rodney Barugahare
DATE	OCT 2021	APPROVED	Rodney Barugahare.

NOTES

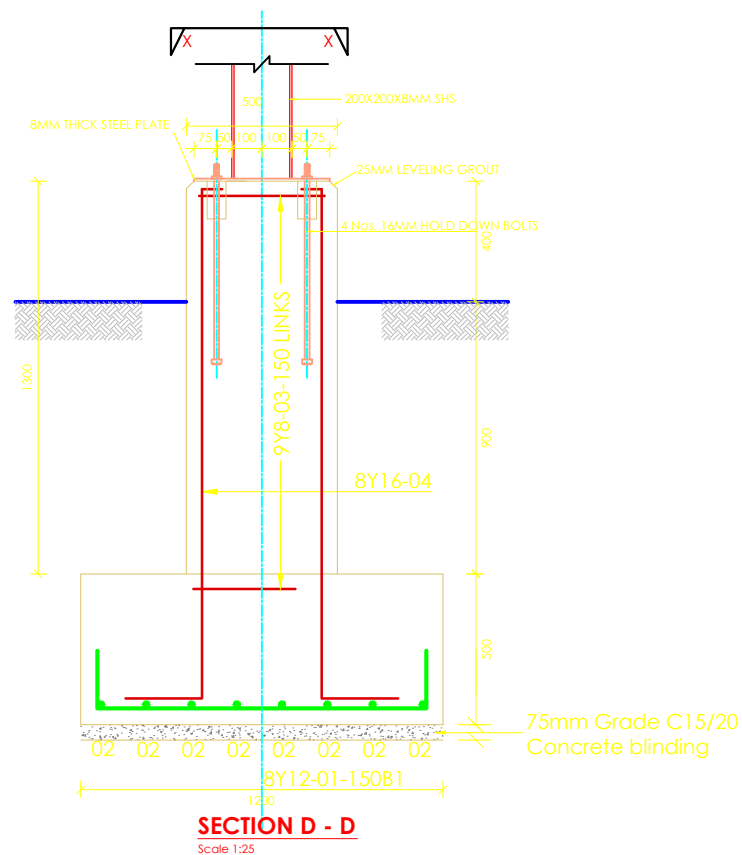
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- 5). All mass concrete is class 15/10mm aggregate



LAYOUT OF FOUNDATIONS
SCALE 1:50



FOOTING DETAIL
SCALE 1:25



SECTION D - D
Scale 1:25

CLIENT



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MINISTRY OF WATER AND ENVIRONMENT

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AND




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MUTUNDA WATER SUPPLY SYSTEM

CONSULTANT



In Joint Venture with



Corporate Headquarter
10 Princes Lane, 1st Floor,
London EC3M 8AA,
United Kingdom

CONTRACTOR

DETAILED ENGINEERING DESIGN

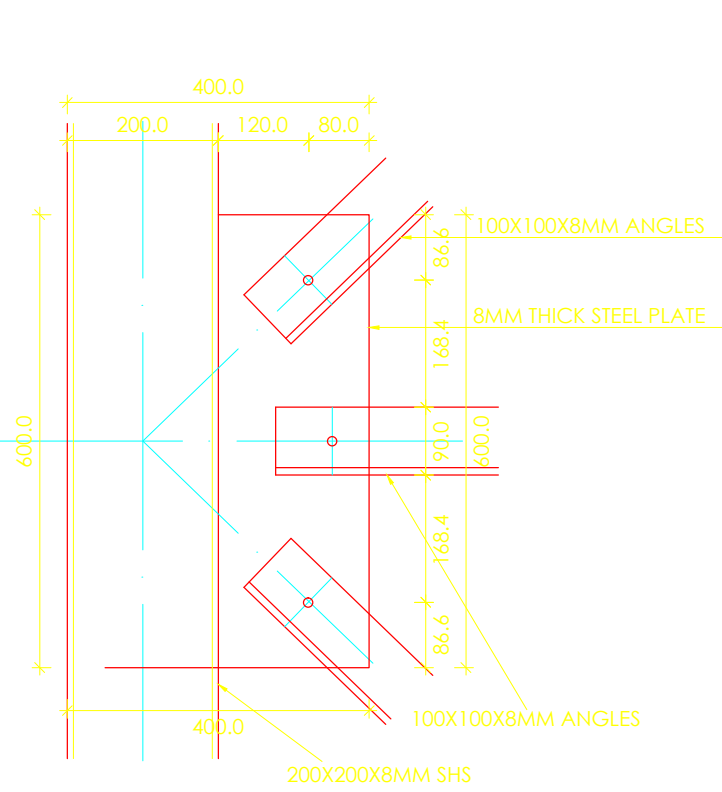
DRAWING TITLE

100M³ TEYEGO RESERVOIR TANK
FOUNDATION LAYOUT AND DETAILS

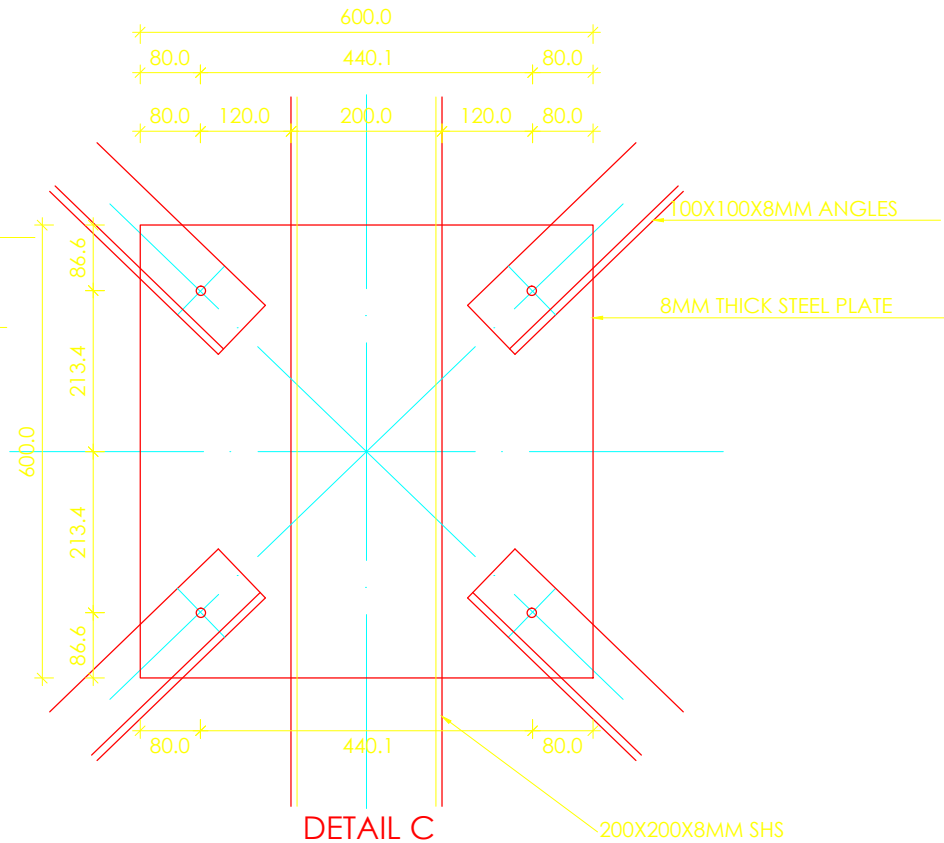
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SURVEYED		DESIGNED	Otwane Dan.
DRAWN	Joshua Nyarwanda	CHECKED	Rodney Barugahare
DATE	OCT 2021	APPROVED	Rodney Barugahare.

NOTES

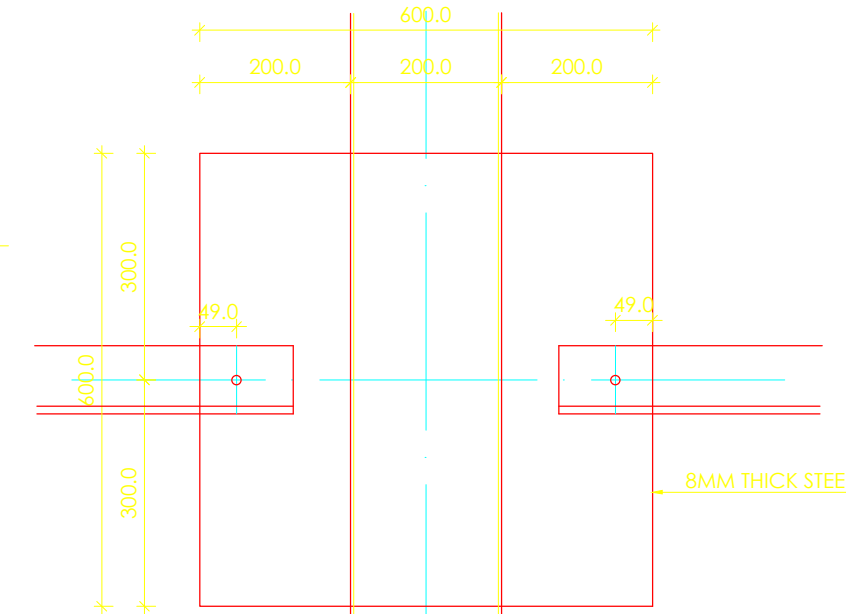
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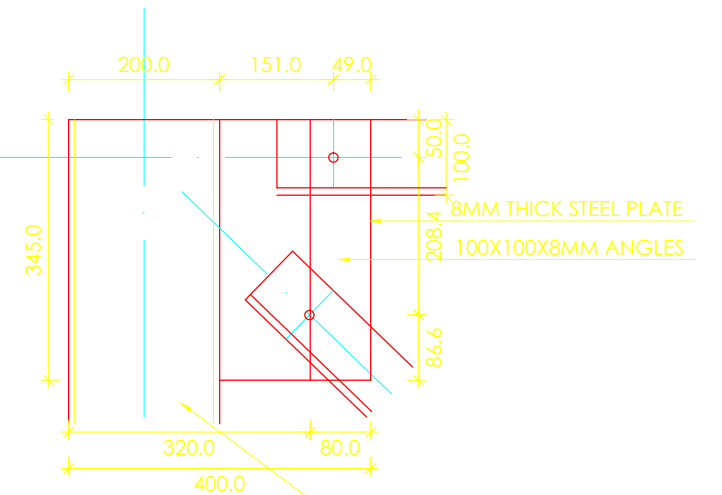
DETAIL A
SCALE 1:10



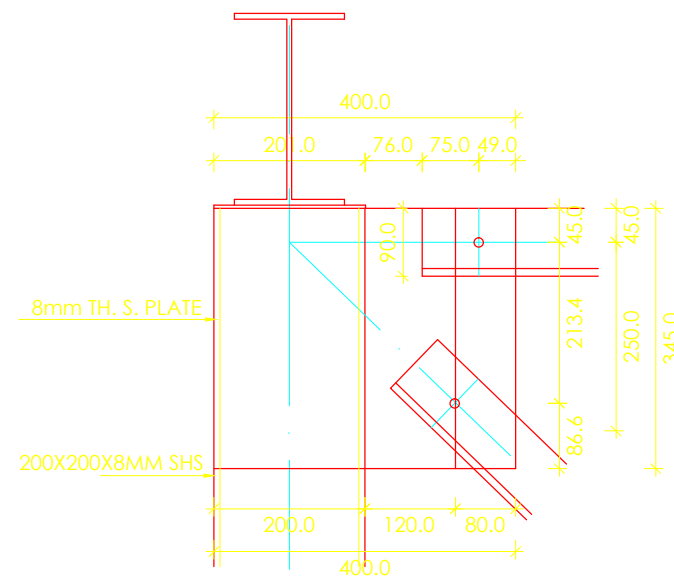
DETAIL C
SCALE 1:10



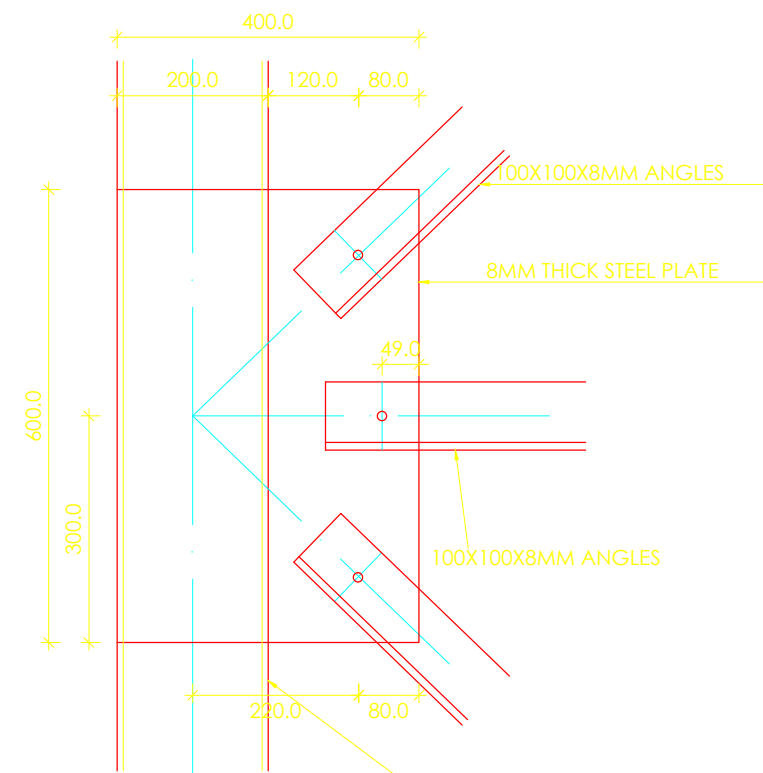
DETAIL E
SCALE 1:10



DETAIL B
SCALE 1:10



DETAIL D
SCALE 1:10



DETAIL F
SCALE 1:10

CLIENT



GOVERNMENT OF UGANDA
MINISTRY OF WATER AND ENVIRONMENT

CO-FINANCED BY:



AND



THE WORLD BANK AND GOVERNMENT OF UGANDA

PROJECT

CONSULTANCY SERVICES FOR FEASIBILITY STUDY, DETAILED ENGINEERING DESIGN AND CONSTRUCTION SUPERVISION OF SOLAR POWERED PIPED WATER SUPPLY SYSTEMS AND SANITATION FACILITIES IN REFUGEE SETTLEMENTS AND HOST DISTRICTS IN WEST NILE AND NORTHERN UGANDA IN KIRYANDONGO DISTRICT

MUTUNDA WATER SUPPLY SYSTEM

CONSULTANT



In Joint Venture with



Corporate Headquarter:
10 Priolot Lane, 1st Floor,
London EC3M 8AA,
United Kingdom

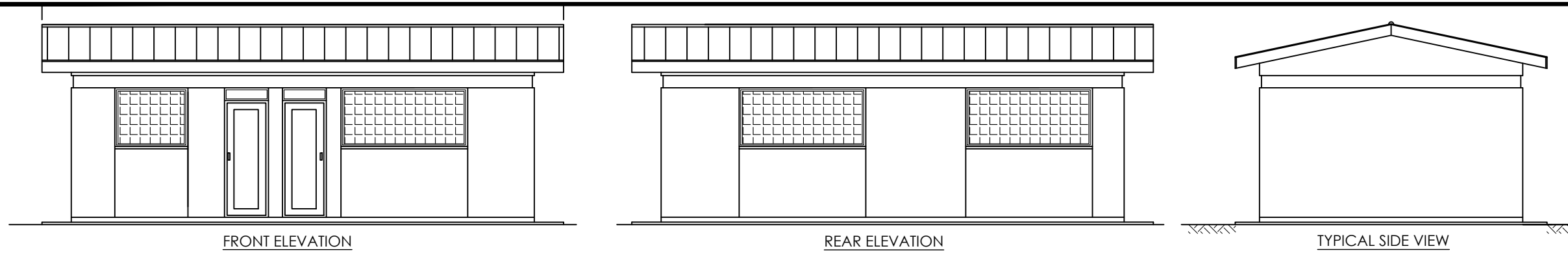
CONTRACTOR

DETAILED ENGINEERING DESIGN

DRAWING TITLE

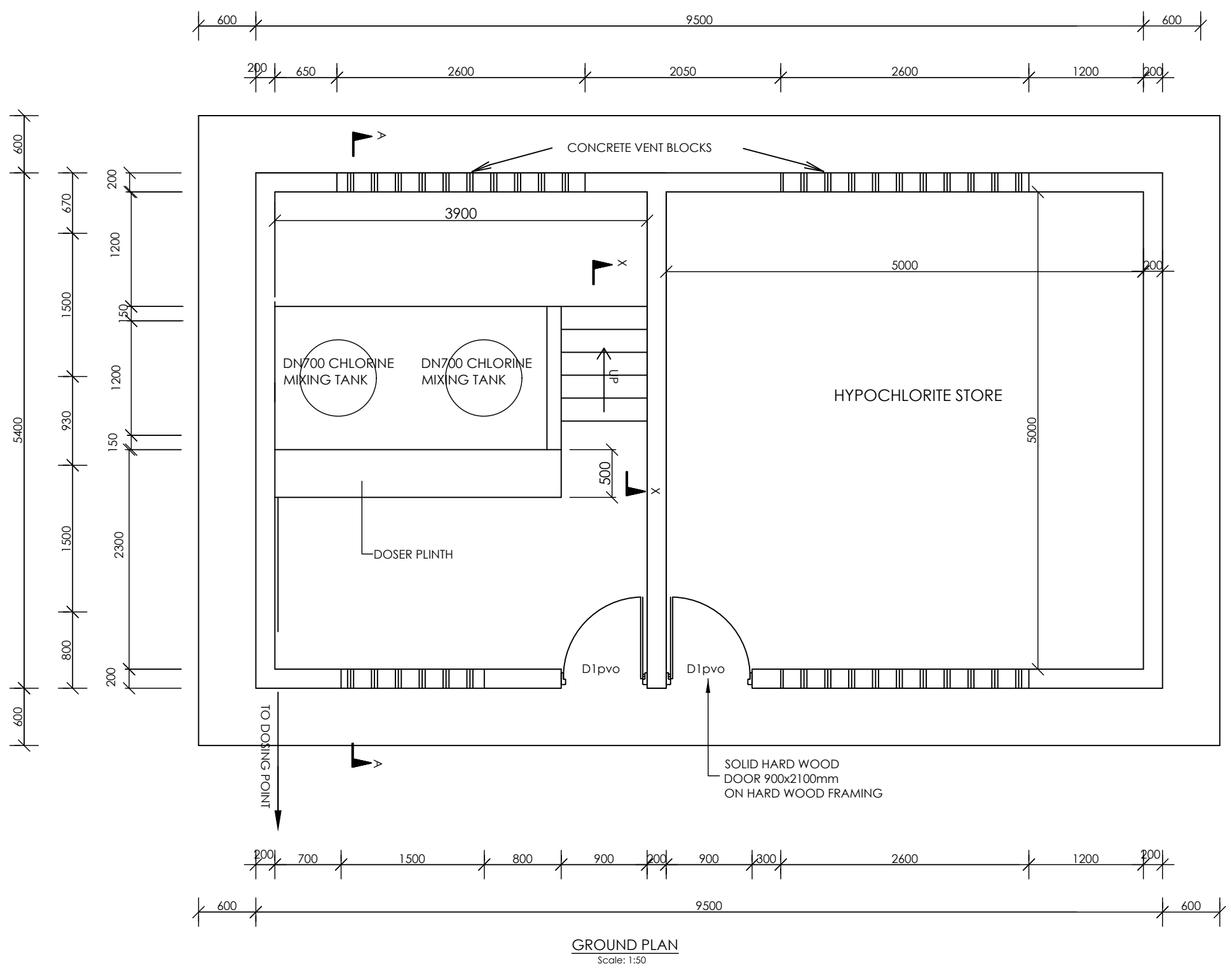
100M³ TEYEGO RESERVOIR TANK
STRUCTURAL DETAILS

SCALE	As Shown	DRAWING No.	MUT/WS/3.2.4
SURVEYED		DESIGNED	Otwane Dan.
DRAWN	Joshua Nyarwanda	CHECKED	Rodney Barugahare
DATE	OCT 2021	APPROVED	Rodney Barugahare.



NOTES

1. Unless otherwise stated, all dimensions are in mm
2. Concrete grade to be C30/20.



GROUND PLAN
Scale: 1:50

CLIENT



GOVERNMENT OF UGANDA
MINISTRY OF WATER AND ENVIRONMENT

CO-FINANCED BY:



AND



THE WORLD BANK AND GOVERNMENT OF UGANDA

PROJECT

CONSULTANCY SERVICES FOR FEASIBILITY STUDY, DETAILED ENGINEERING DESIGN AND CONSTRUCTION SUPERVISION OF SOLAR POWERED PIPED WATER SUPPLY SYSTEMS AND SANITATION FACILITIES IN REFUGEE SETTLEMENTS AND HOST DISTRICTS IN WEST NILE AND NORTHERN UGANDA IN KIRYANDONGO DISTRICT

MUTUNDA WATER SUPPLY SYSTEM

CONSULTANT



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Corporate Headquarter
10 Philip Lane, 1st Floor,
London EC3M 8AA,
United Kingdom

CONTRACTOR

DETAILED ENGINEERING DESIGN

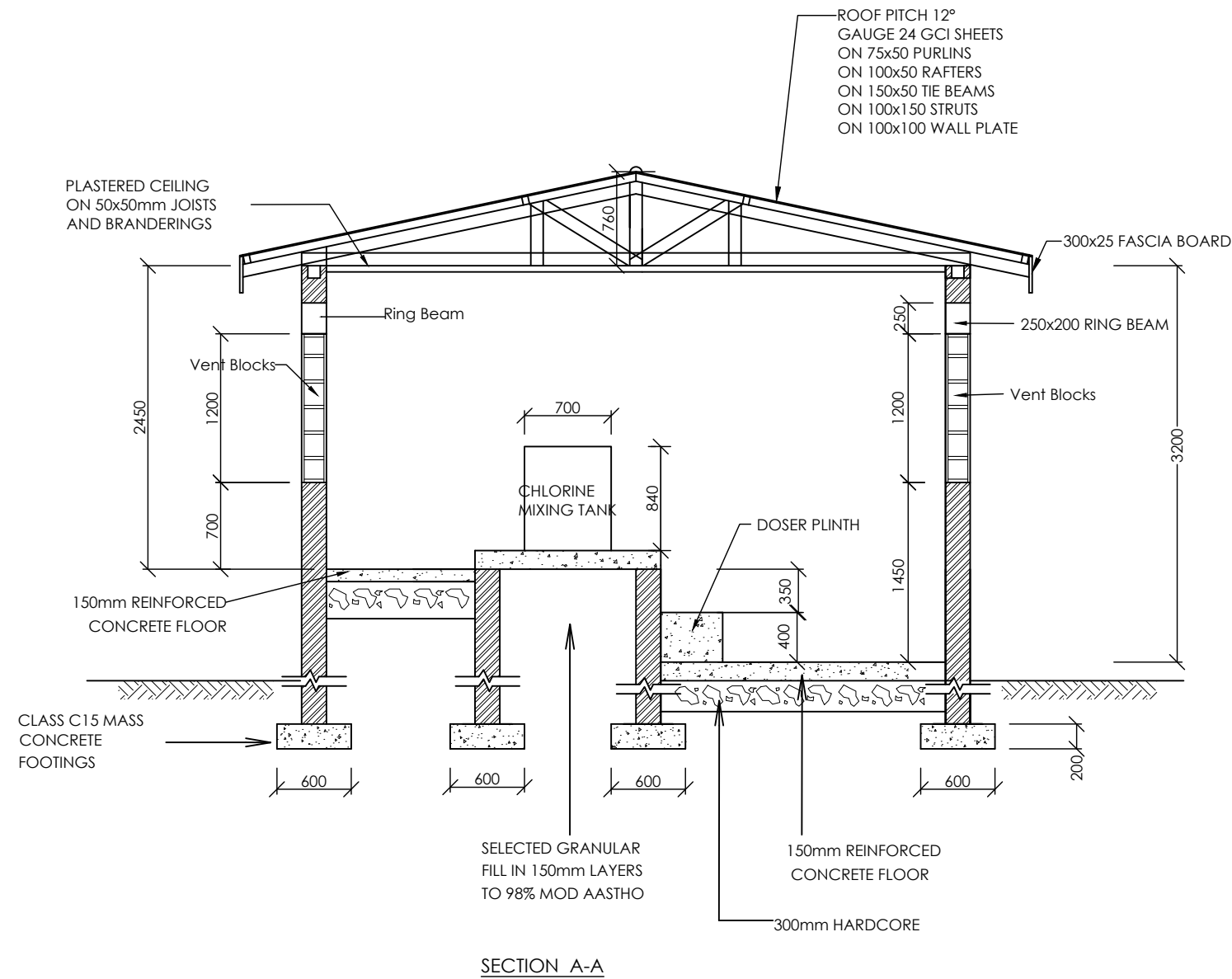
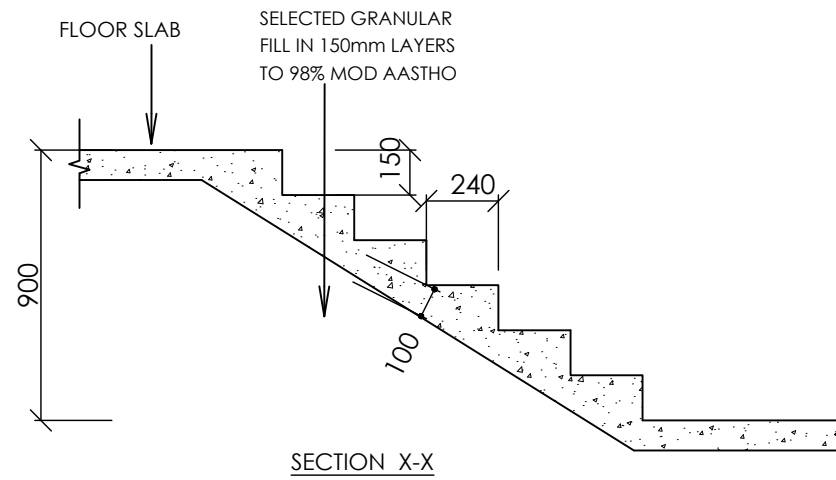
DRAWING TITLE

CHEMICAL DOSING HOUSE
PLAN AND ELEVATIONS

SCALE	AS SHOWN	DRAWING No.	MUT/WS/4.1.1
SURVEYED		DESIGNED	Otwane Dan.
DRAWN	Joshua Nyarwanda	CHECKED	Rodney Barugahare
DATE	OCT 2021	APPROVED	Rodney Barugahare.

DOOR SCHEDULE				
MARK	WIDTH	HEIGHT	No.	DESCRIPTION
D1	900	2100	02	SINGLE LEAF HARDWOOD TIMBER DOORS

DOOR SCHEDULE



NOTES

1. Unless otherwise stated, all dimensions are in mm
2. Concrete grade to be C30/20.
3. All levels in metres above mean sea level.

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MUTUNDA WATER SUPPLY SYSTEM

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London EC3M 8AA,
United Kingdom

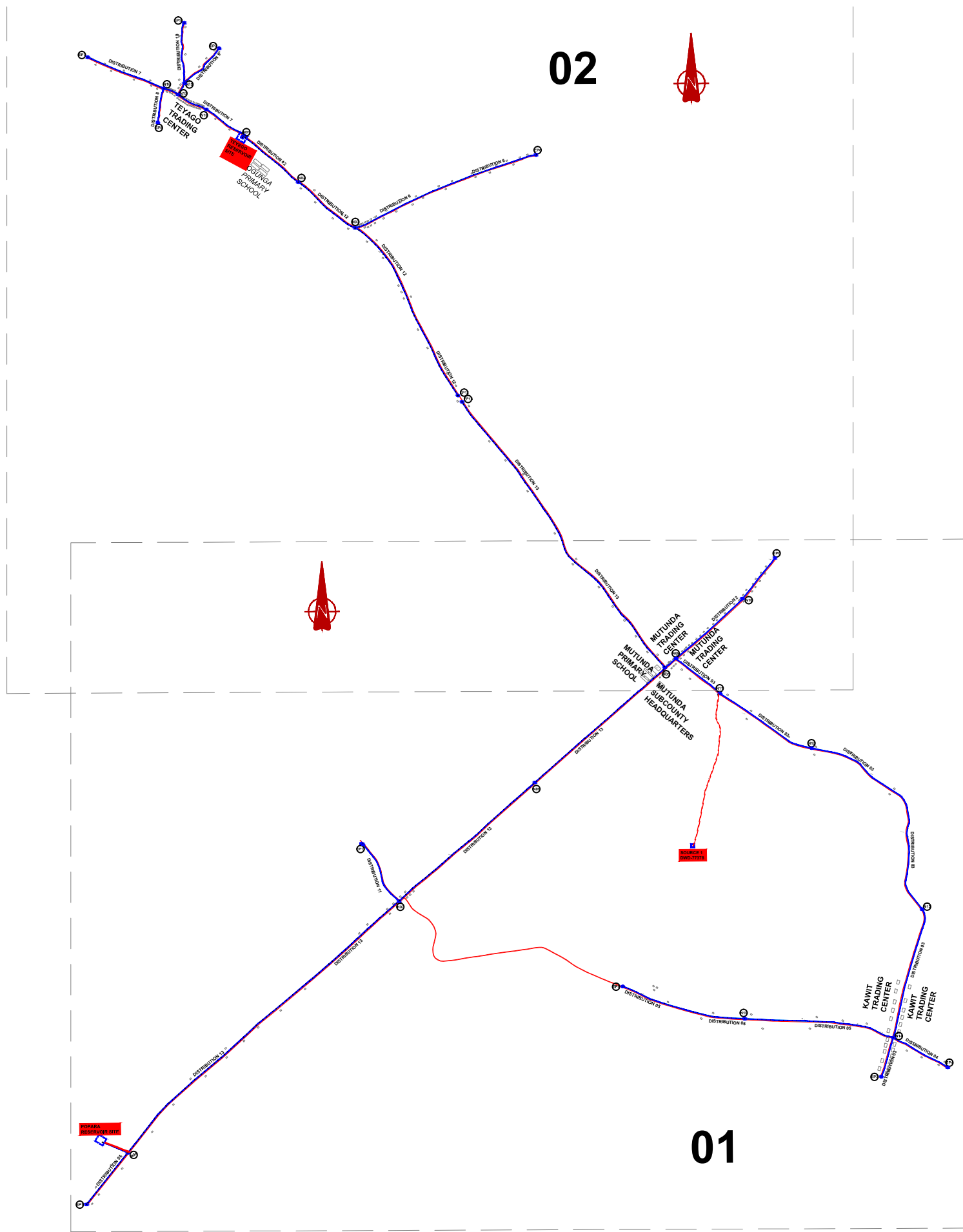
CONTRACTOR

DETAILED ENGINEERING DESIGN

DRAWING TITLE

CHEMICAL DOSING HOUSE SECTIONS

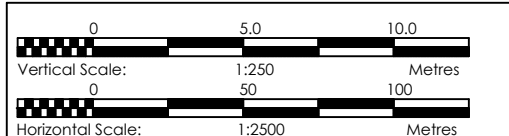
SCALE	AS SHOWN	DRAWING No.	MUT/WS/4.1.2
SURVEYED		DESIGNED	Otwane Dan.
DRAWN	Joshua Nyarwanda	CHECKED	Rodney Barugahare
DATE	OCT 2021	APPROVED	Rodney Barugahare.



NOTES

LEGEND

- Transmission Pipeline
- Distribution Pipeline
- Ground Level
- Building/House
- Contours
- Road
- DAV Double Orifice Air Valve
- End pipe
- Node N01
- Washout Type1
- Washout Type2



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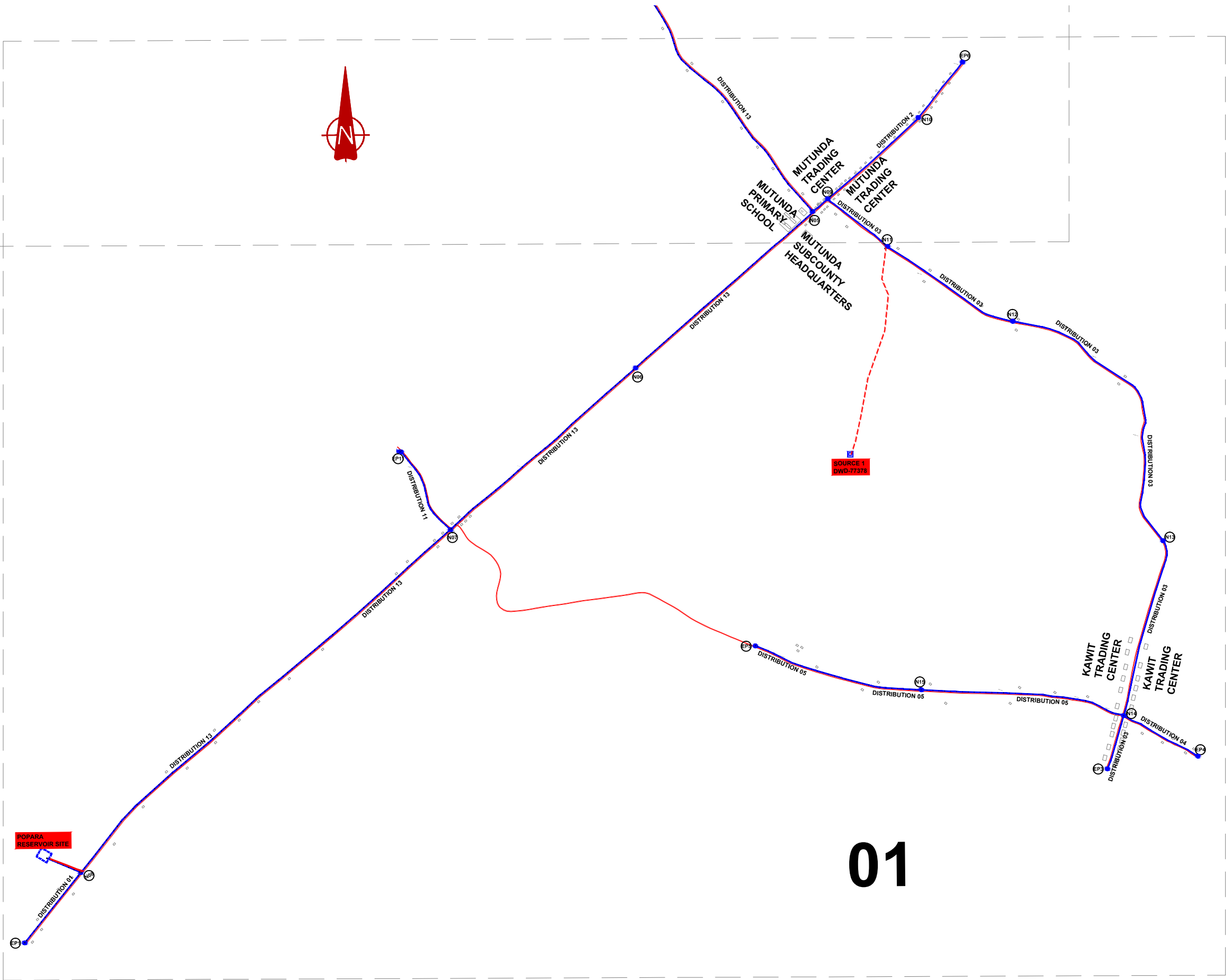
MUTUNDA WATER SUPPLY SYSTEM

CONSULTANT
SARI In Joint Venture with **SGAPI**
 Corporate Headquarter
 10 Philpott Lane, 1st Floor,
 London EC3M 8AA,
 United Kingdom

CONTRACTOR

DETAILED ENGINEERING DESIGN
 DRAWING TITLE **GENERAL LAYOUT DISTRIBUTION NETWORK**

SCALE	DRAWING No.	MUT/WS/5.0.0	
SURVEYED	Evans Mpanga	DESIGNED	Otwane Dan.
DRAWN	Joshua Nyarwanda	CHECKED	Rodney Barugahare
DATE	April 2021	APPROVED	Rodney Barugahare.

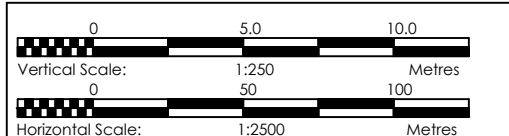


01

NOTES

LEGEND

- Transmission Pipeline
- Distribution Pipeline
- Ground Level
- Building/House
- Contours
- Road
- DAV Double Orifice Air Valve
- End pipe
- Node N01
- Washout Type1
- Washout Type2



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MUTUNDA WATER SUPPLY SYSTEM

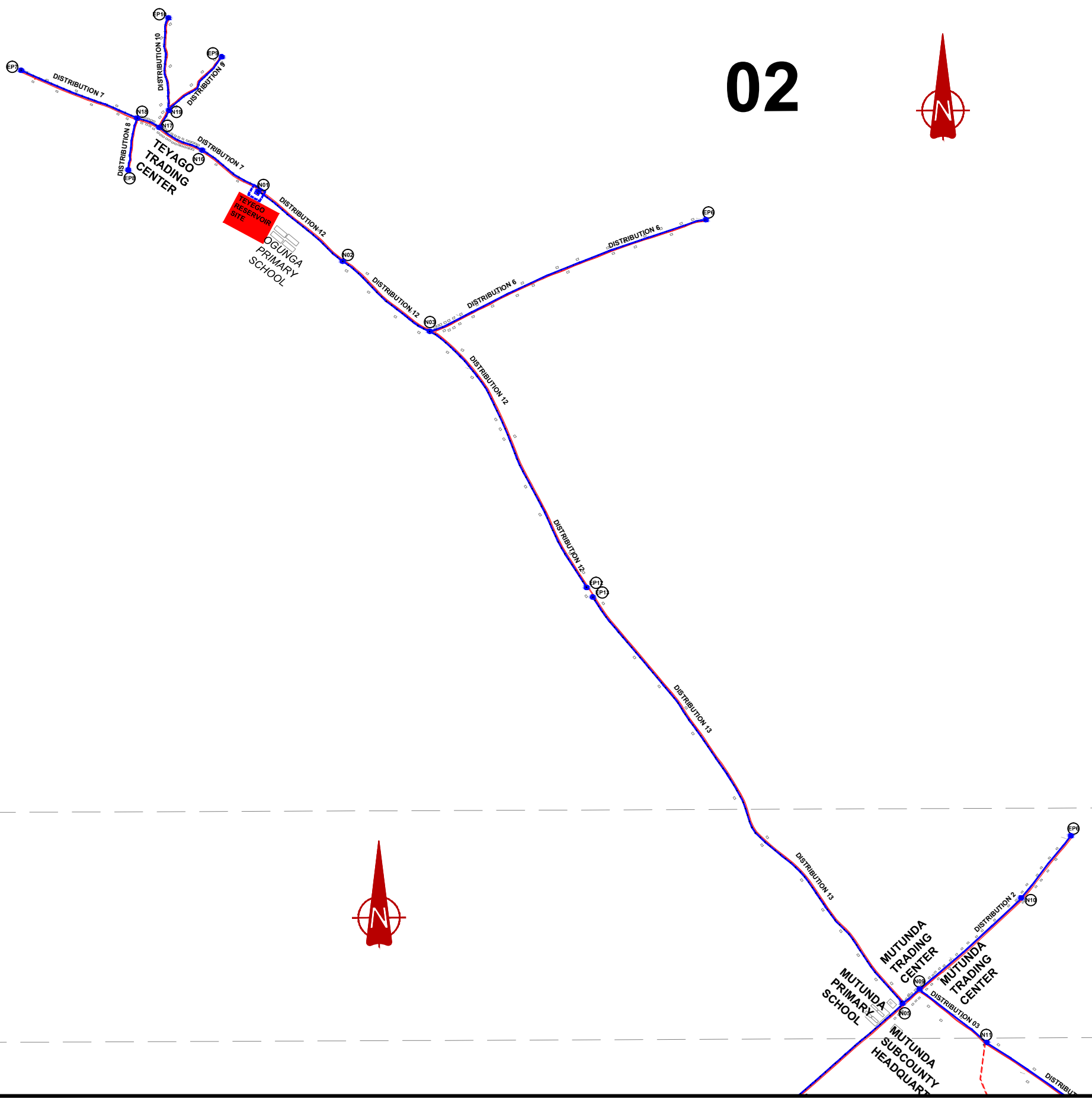
CONSULTANT
SARI In Joint Venture with
 Corporate Headquarter
 10 Philpott Lane, 1st Floor,
 London EC3M 8AA,
 United Kingdom

CONTRACTOR

DETAILED ENGINEERING DESIGN
 DRAWING TITLE **GENERAL LAYOUT DISTRIBUTION NETWORK (Sheet 01 of 02)**

SCALE	DRAWING No.	MUT/WS/5.0.1
SURVEYED	Evans Mpanga	DESIGNED Otwane Dan.
DRAWN	Joshua Nyarwanda	CHECKED Rodney Barugahare
DATE	April 2021	APPROVED Rodney Barugahare.

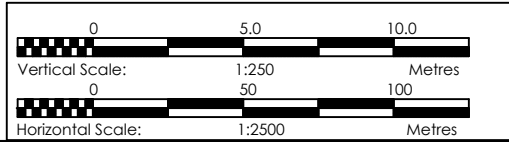
02



NOTES

LEGEND

- Transmission Pipeline
- Distribution Pipeline
- Ground Level
- Building/House
- Contours
- Road
- DAV Double Orifice Air Valve
- End pipe
- Node N01
- WO-1 Washout Type1
- WO-2 Washout Type2



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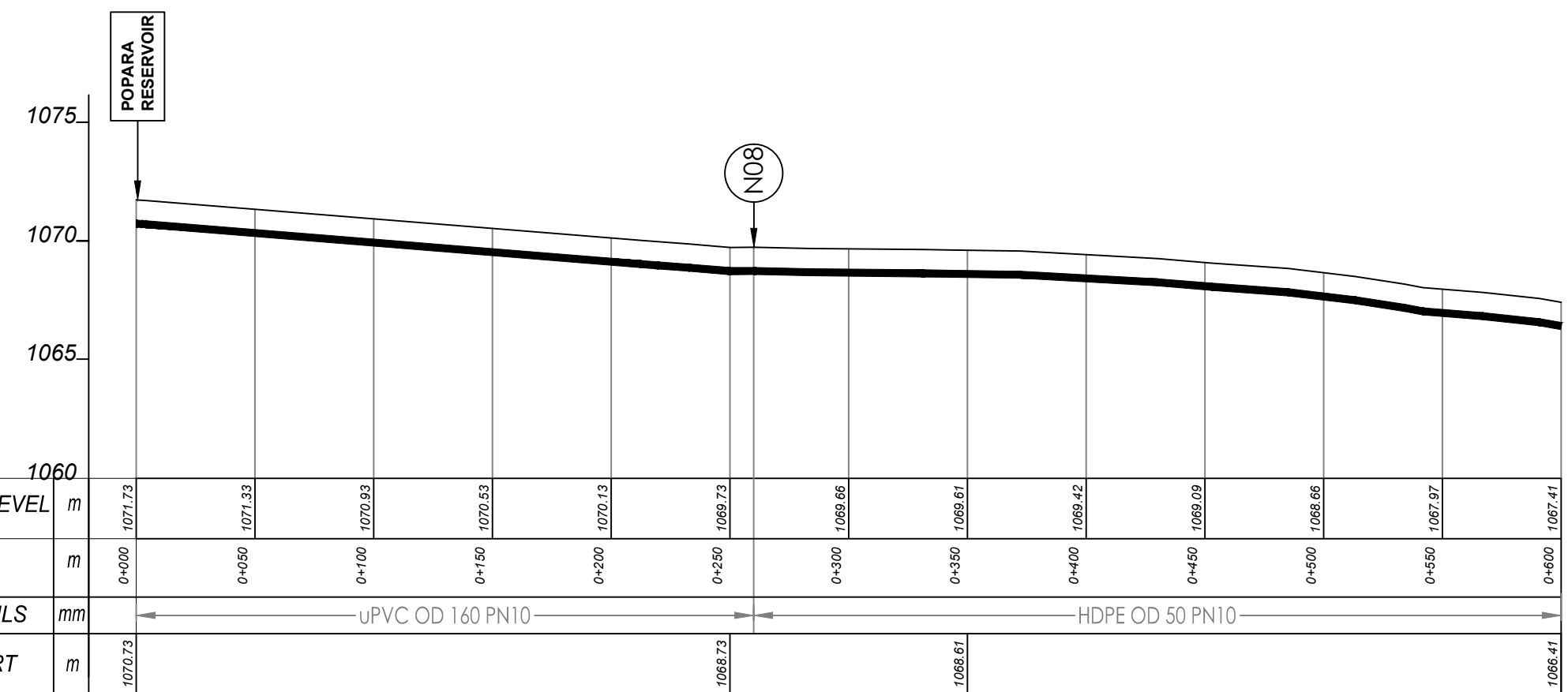
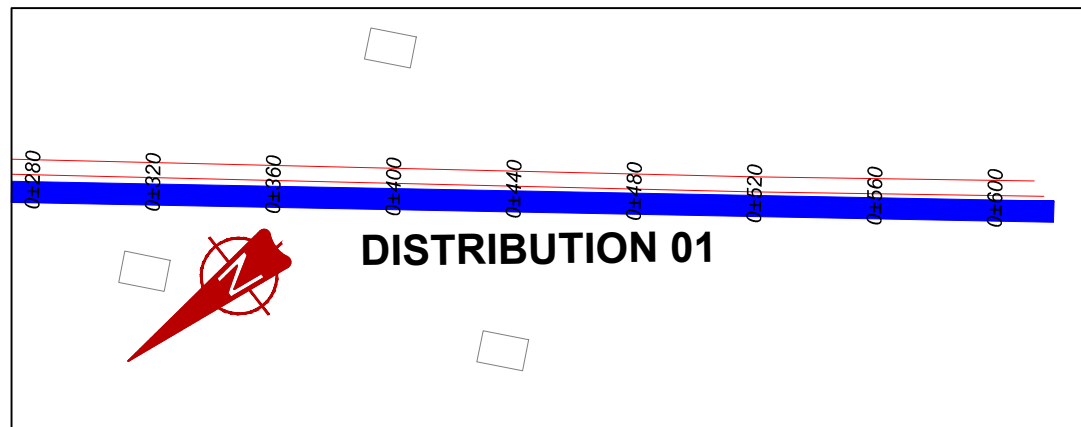
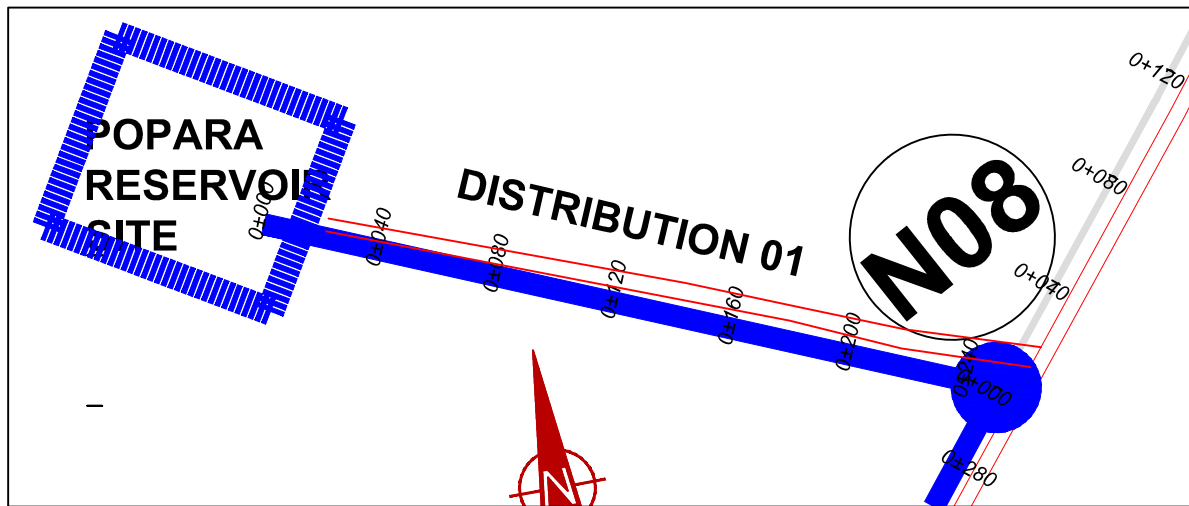
MUTUNDA WATER SUPPLY SYSTEM

CONSULTANT
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 Corporate Headquarter
 10 Philpott Lane, 1st Floor,
 London EC3M 8AA,
 United Kingdom

CONTRACTOR

DETAILED ENGINEERING DESIGN
 DRAWING TITLE **GENERAL LAYOUT DISTRIBUTION NETWORK (Sheet 02 of 02)**

SCALE	DRAWING No.	MUT/WS/5.0.2
SURVEYED	Evans Mpanga	DESIGNED Otwane Dan.
DRAWN	Joshua Nyarwanda	CHECKED Rodney Barugahare
DATE	April 2021	APPROVED Rodney Barugahare.

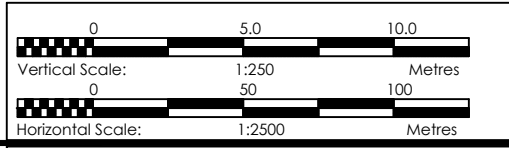


DISTRIBUTION 01 (0+000.00 - 0+600.00)

NOTES

LEGEND

- Transmission Pipeline
- Distribution Pipeline
- Ground Level
- Building/House
- Contours
- Road
- DAV Double Orifice Air Valve
- EP End pipe
- N01 Node N01
- WO-1 Washout Type1
- WO-2 Washout Type2



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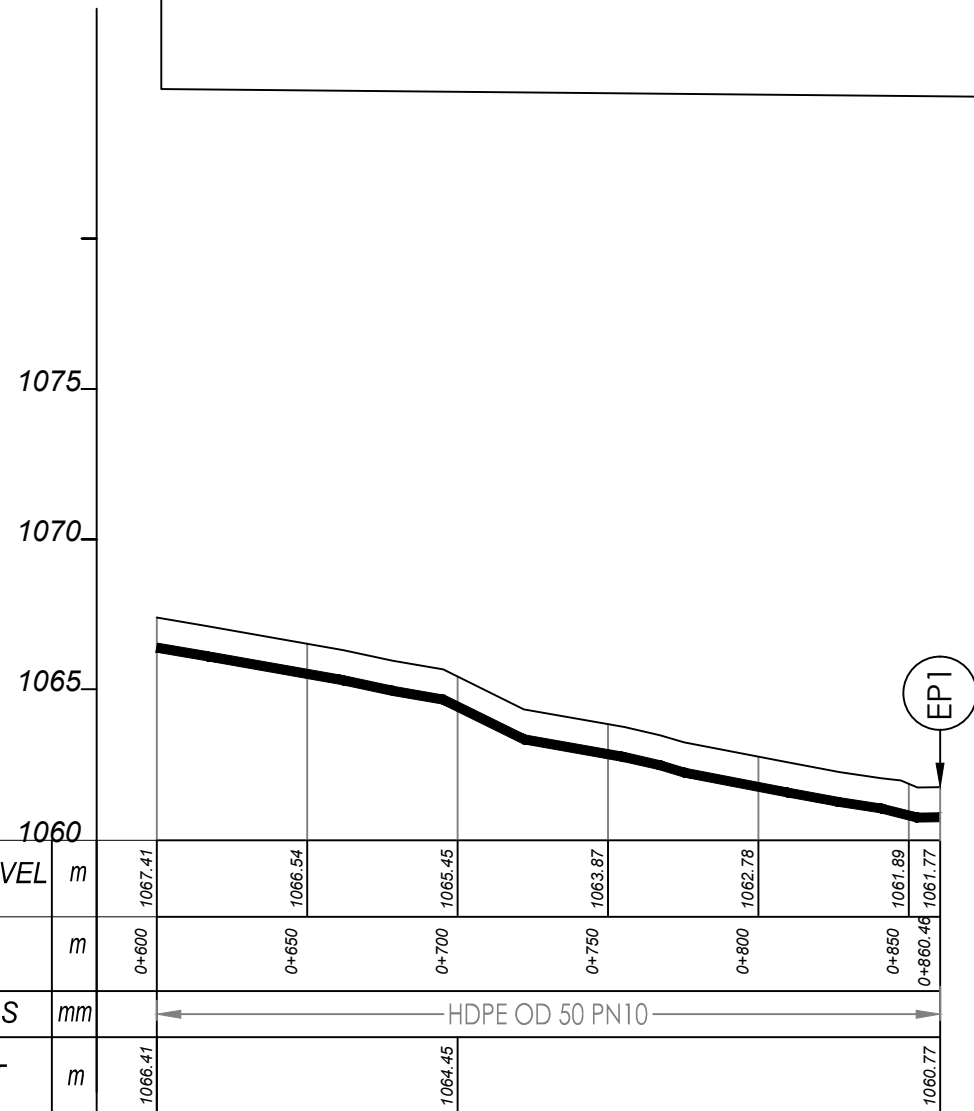
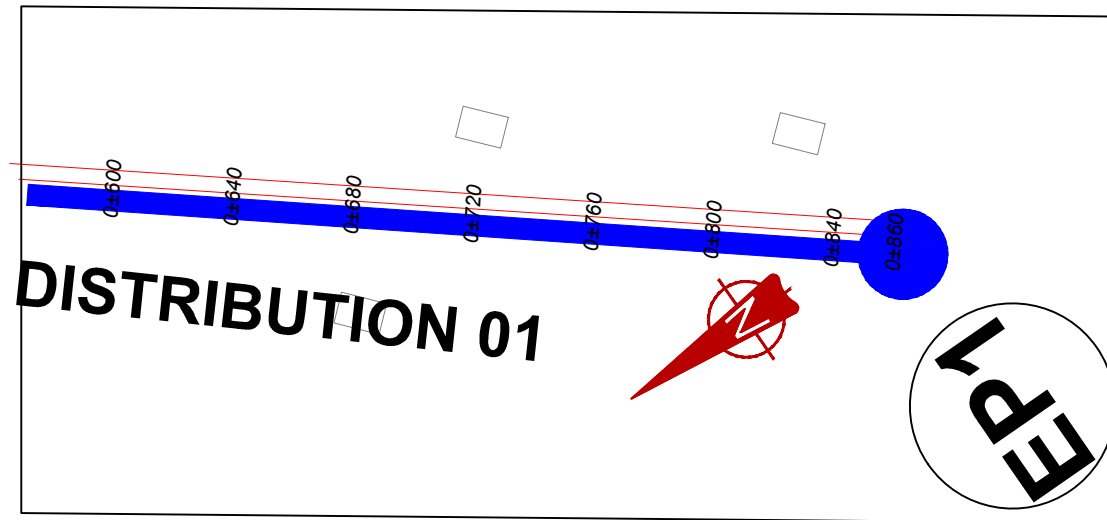
MUTUNDA WATER SUPPLY SYSTEM

CONSULTANT
 SARI In Joint Venture with SGAPI
 Corporate Headquarter
 10 Philip Lane, 1st Floor,
 London EC3M 8AA,
 United Kingdom

CONTRACTOR

DETAILED ENGINEERING DESIGN
 DRAWING TITLE
DISTRIBUTION LINE 01
(0+000.00 - 0+600.00)

SCALE	VERT: 1:250 HOR: 1:2500	DRAWING No.	MUT/WS/5.1.1
SURVEYED	Evans Mpanga	DESIGNED	Otwane Dan.
DRAWN	Joshua Nyarwanda	CHECKED	Rodney Barugahare
DATE	April 2021	APPROVED	Rodney Barugahare.

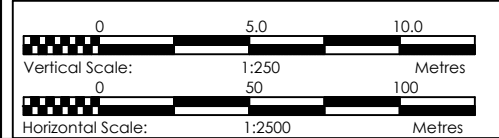


DISTRIBUTION 01 (0+600.00 - 0+860.46)

NOTES

LEGEND

- Transmission Pipeline
- Distribution Pipeline
- Ground Level
- Building/House
- Contours
- Road
- DAV Double Orifice Air Valve
- End pipe
- Node N01
- WO-1 Washout Type1
- WO-2 Washout Type2



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MUTUNDA WATER SUPPLY SYSTEM

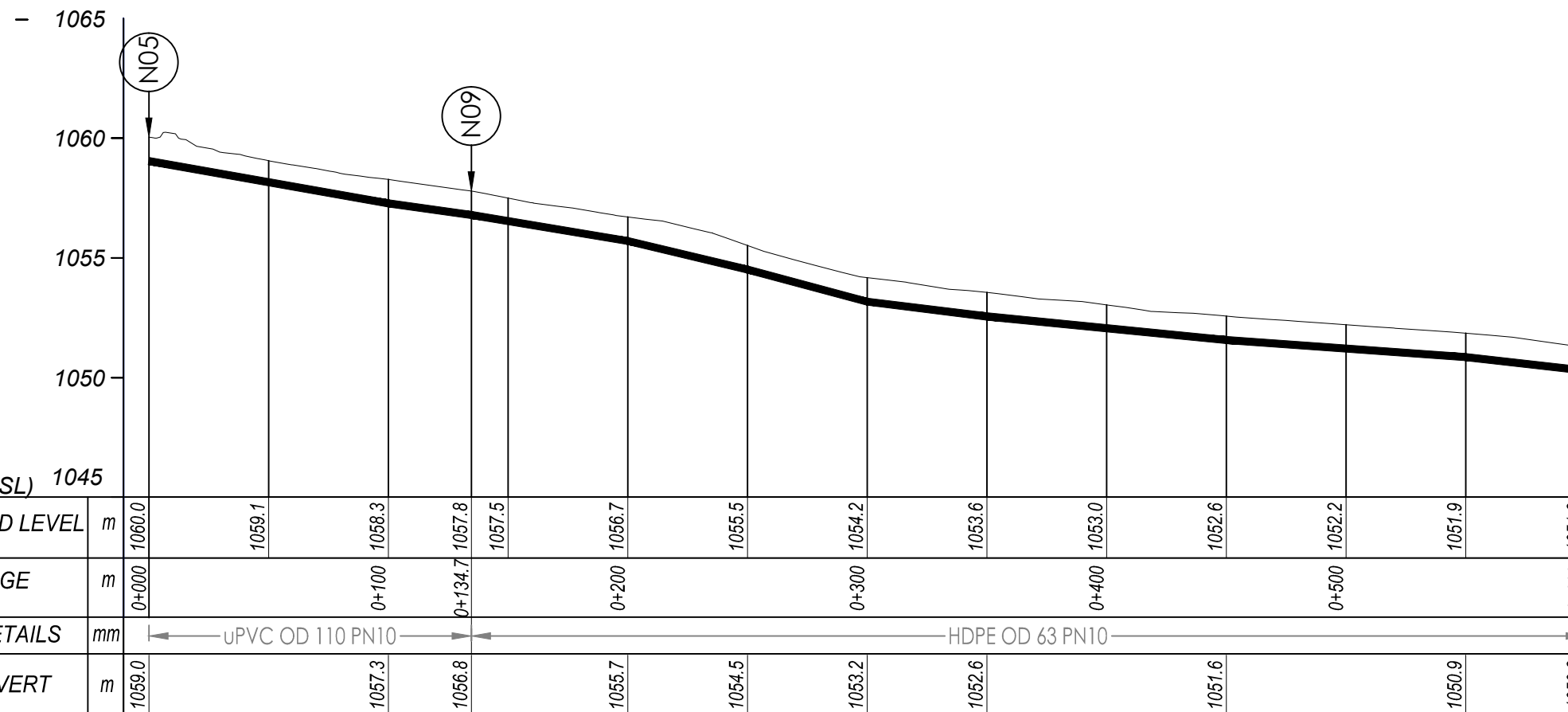
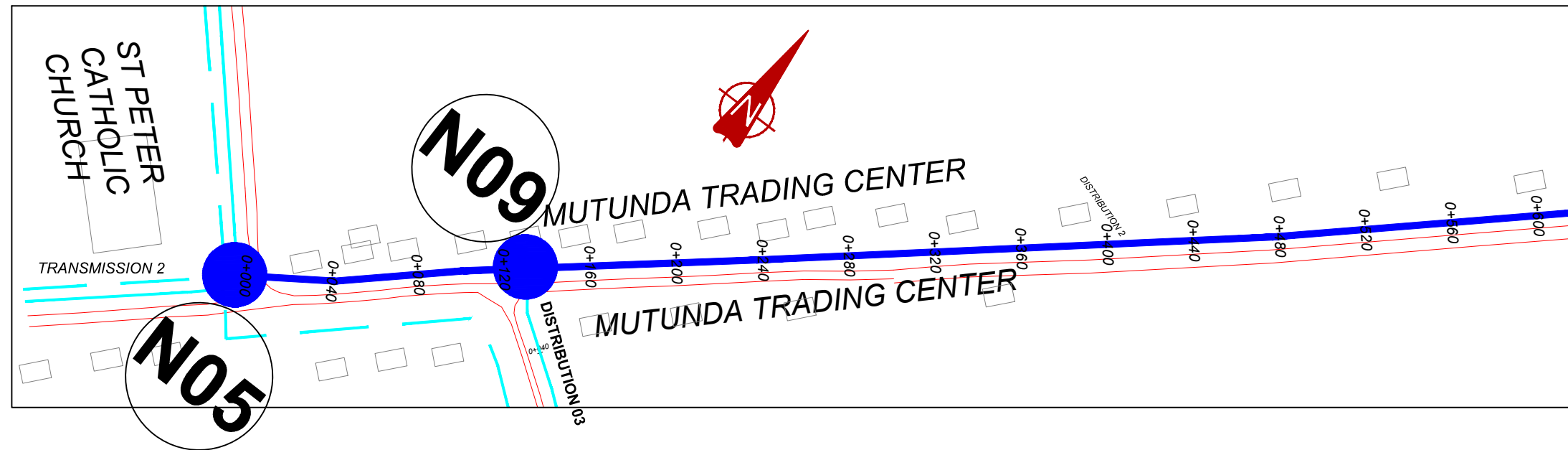
CONSULTANT
SARI In Joint Venture with **SGAPI**
 Corporate Headquarter
 10 Philip's Lane, 1st Floor,
 London EC3M 8AA,
 United Kingdom

CONTRACTOR

DETAILED ENGINEERING DESIGN

DRAWING TITLE
**DISTRIBUTION LINE 01
 (0+600.00 - 1+200.00)**

SCALE	VERT: 1:250 HOR: 1:2500	DRAWING No.	MUT/WS/5.1.2
SURVEYED	Evans Mpanga	DESIGNED	Otwane Dan.
DRAWN	Joshua Nyarwanda	CHECKED	Rodney Barugahare
DATE	April 2021	APPROVED	Rodney Barugahare.

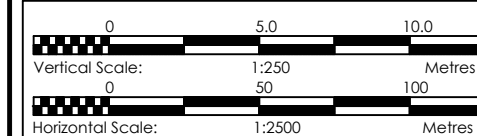


DISTRIBUTION 02 (0+000.00 - 0+600.00)

NOTES

LEGEND

- Transmission Pipeline
- Distribution Pipeline
- Ground Level
- Building/House
- Contours
- Road
- DAV Double Orifice Air Valve
- EP End pipe
- N01 Node N01
- WO-1 Washout Type1
- WO-2 Washout Type2



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MUTUNDA WATER SUPPLY SYSTEM

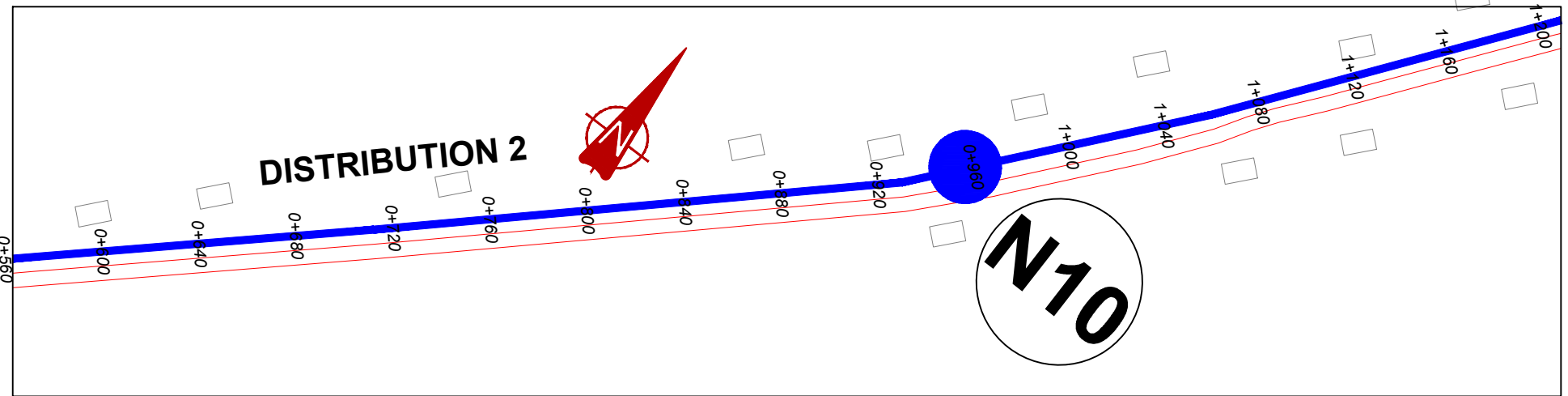
CONSULTANT
SARI CONSULTING LTD
 Corporate Headquarter
 10 Philip Lane, 1st Floor,
 London EC3M 8AA,
 United Kingdom
 In Joint Venture with

CONTRACTOR

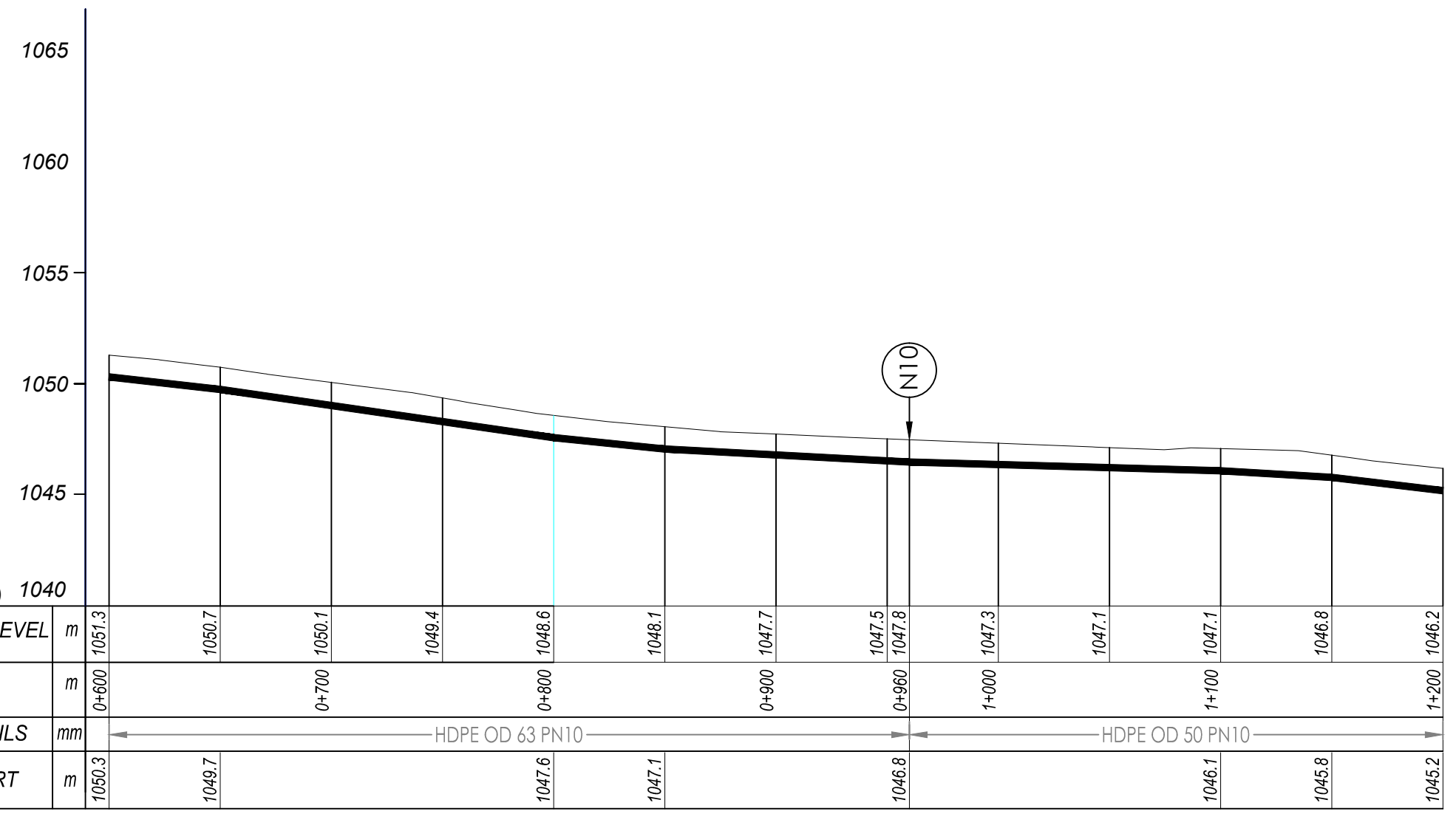
DETAILED ENGINEERING DESIGN

DRAWING TITLE
DISTRIBUTION LINE 02
(0+000.00 - 0+600.00)

SCALE	VERT: 1:250 HOR: 1:2500	DRAWING No.	MUT/WS/5.2.1
SURVEYED	Evans Mpanga	DESIGNED	Otwane Dan.
DRAWN	Joshua Nyarwanda	CHECKED	Rodney Barugahare
DATE	April 2021	APPROVED	Rodney Barugahare.



- NOTES**
- LEGEND**
- Transmission Pipeline
 - Distribution Pipeline
 - Ground Level
 - Building/House
 - Contours
 - Road
 - DAV Double Orifice Air Valve
 - EP End pipe
 - N01 Node N01
 - WO-1 Washout Type1
 - WO-2 Washout Type2



GROUND LEVEL	m	1051.3	1050.7	1050.1	1049.4	1048.6	1048.1	1047.7	1047.5	1047.8	1047.3	1047.1	1047.1	1046.8	1046.2
CHAINAGE	m	0+600	0+700	0+800	0+900	0+960	1+000	1+100	1+200						
PIPE DETAILS	mm	HDPE OD 63 PN10						HDPE OD 50 PN10							
PIPE INVERT	m	1050.3	1049.7	1047.6	1047.1	1046.8	1046.1	1045.8	1045.2						

0 5.0 10.0
Vertical Scale: 1:250 Metres
0 50 100
Horizontal Scale: 1:2500 Metres

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CONSULTANCY SERVICES FOR FEASIBILITY STUDY, DETAILED ENGINEERING DESIGN AND CONSTRUCTION SUPERVISION OF SOLAR POWERED PIPED WATER SUPPLY SYSTEMS AND SANITATION FACILITIES IN REFUGEE SETTLEMENTS AND HOST DISTRICTS IN WEST NILE AND NORTHERN UGANDA IN KIRYANDONGO DISTRICT

MUTUNDA WATER SUPPLY SYSTEM

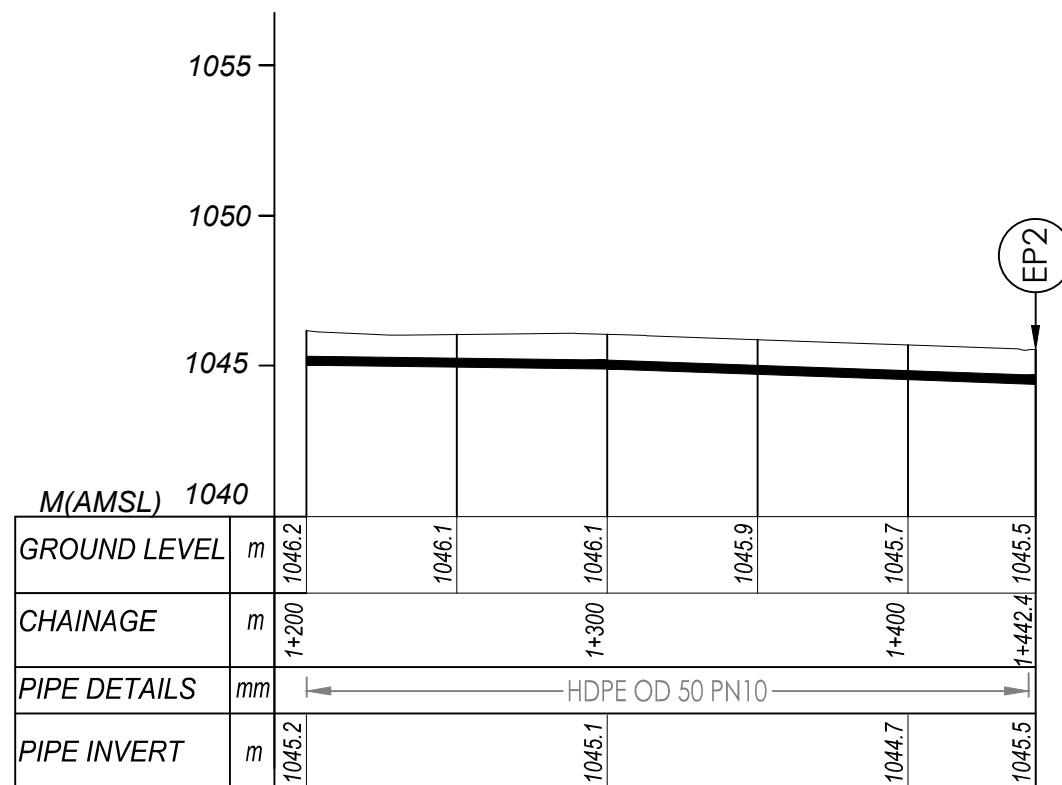
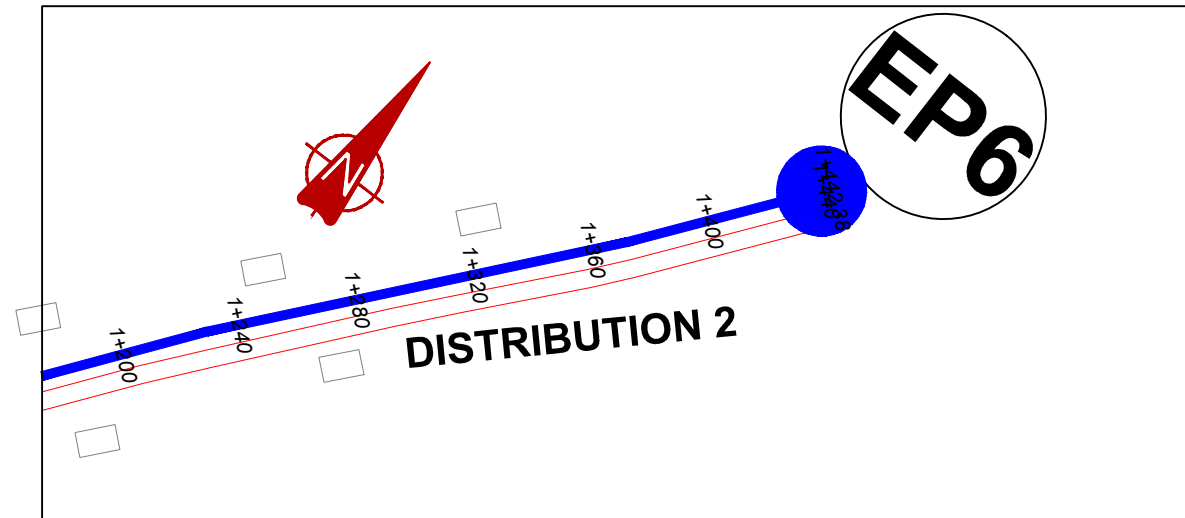
CONSULTANT
SARI In Joint Venture with **SGAPI**
Corporate Headquarter
10 Philpott Lane, 1st Floor,
London EC3M 8AA,
United Kingdom

CONTRACTOR

DETAILED ENGINEERING DESIGN

DRAWING TITLE
DISTRIBUTION LINE 02 (0+600.00 - 1+200.00)

SCALE VERT: 1:250 DRAWING No. MUT/WS/5.2.2
HOR: 1:2500
SURVEYED Evans Mpanga DESIGNED Otwane Dan.
DRAWN Joshua Nyarwanda CHECKED Rodney Barugahare
DATE April 2021 APPROVED Rodney Barugahare.



DISTRIBUTION 02 (1+200.00 - 1+442.40)

NOTES

LEGEND

- Transmission Pipeline
- Distribution Pipeline
- Ground Level
- Building/House
- Contours
- Road
- DAV Double Orifice Air Valve
- End pipe
- Node N01
- WO-1 Washout Type1
- WO-2 Washout Type2



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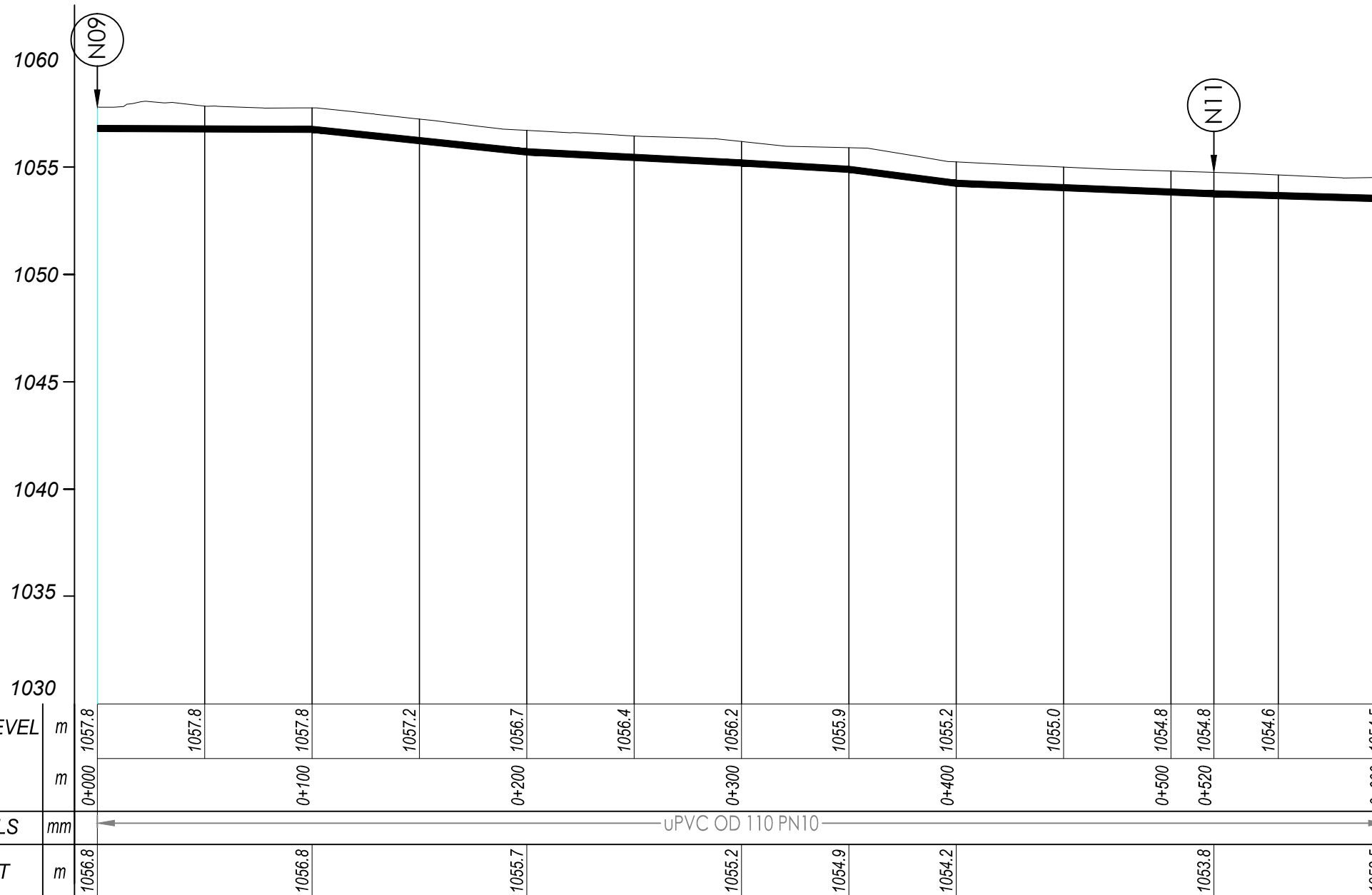
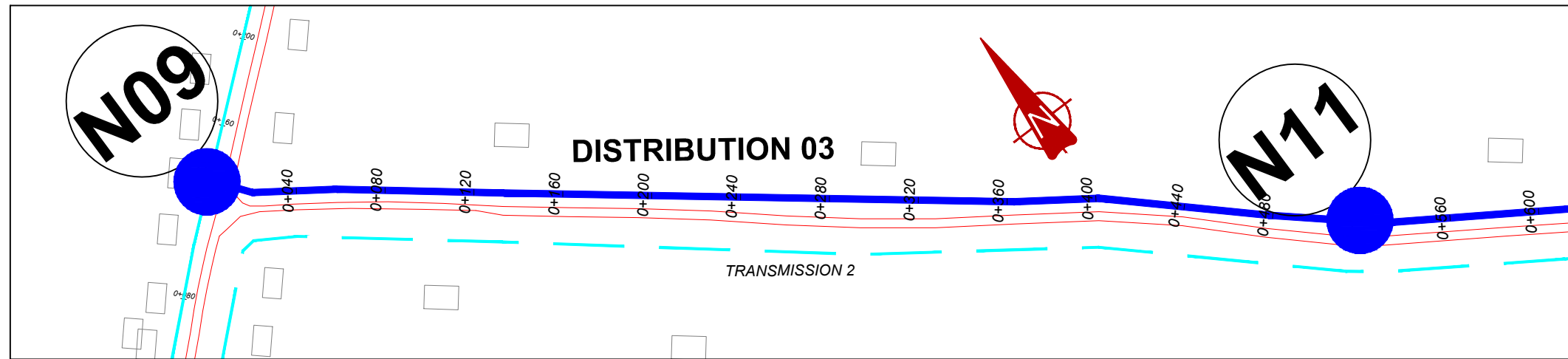
MUTUNDA WATER SUPPLY SYSTEM

CONSULTANT
SARI In Joint Venture with
 Corporate Headquarter
 10 Philip Lane, 1st Floor,
 London EC3M 8AA,
 United Kingdom

CONTRACTOR

DETAILED ENGINEERING DESIGN
 DRAWING TITLE
DISTRIBUTION LINE 02
(1+200.00 - 1+442.40)

SCALE	VERT: 1:250 HOR: 1:2500	DRAWING No.	MUT/WS/5.2.3
SURVEYED	Evans Mpanga	DESIGNED	Otwane Dan.
DRAWN	Joshua Nyarwanda	CHECKED	Rodney Barugahare
DATE	April 2021	APPROVED	Rodney Barugahare.

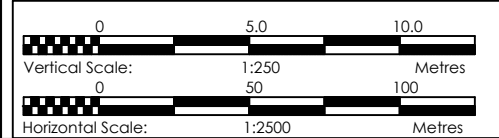


DISTRIBUTION 03 (0+000.00 - 0+600.00)

NOTES

LEGEND

- Transmission Pipeline
- Distribution Pipeline
- Ground Level
- Building/House
- Contours
- Road
- DAV Double Orifice Air Valve
- EP End pipe
- N01 Node N01
- WO-1 Washout Type1
- WO-2 Washout Type2



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MUTUNDA WATER SUPPLY SYSTEM

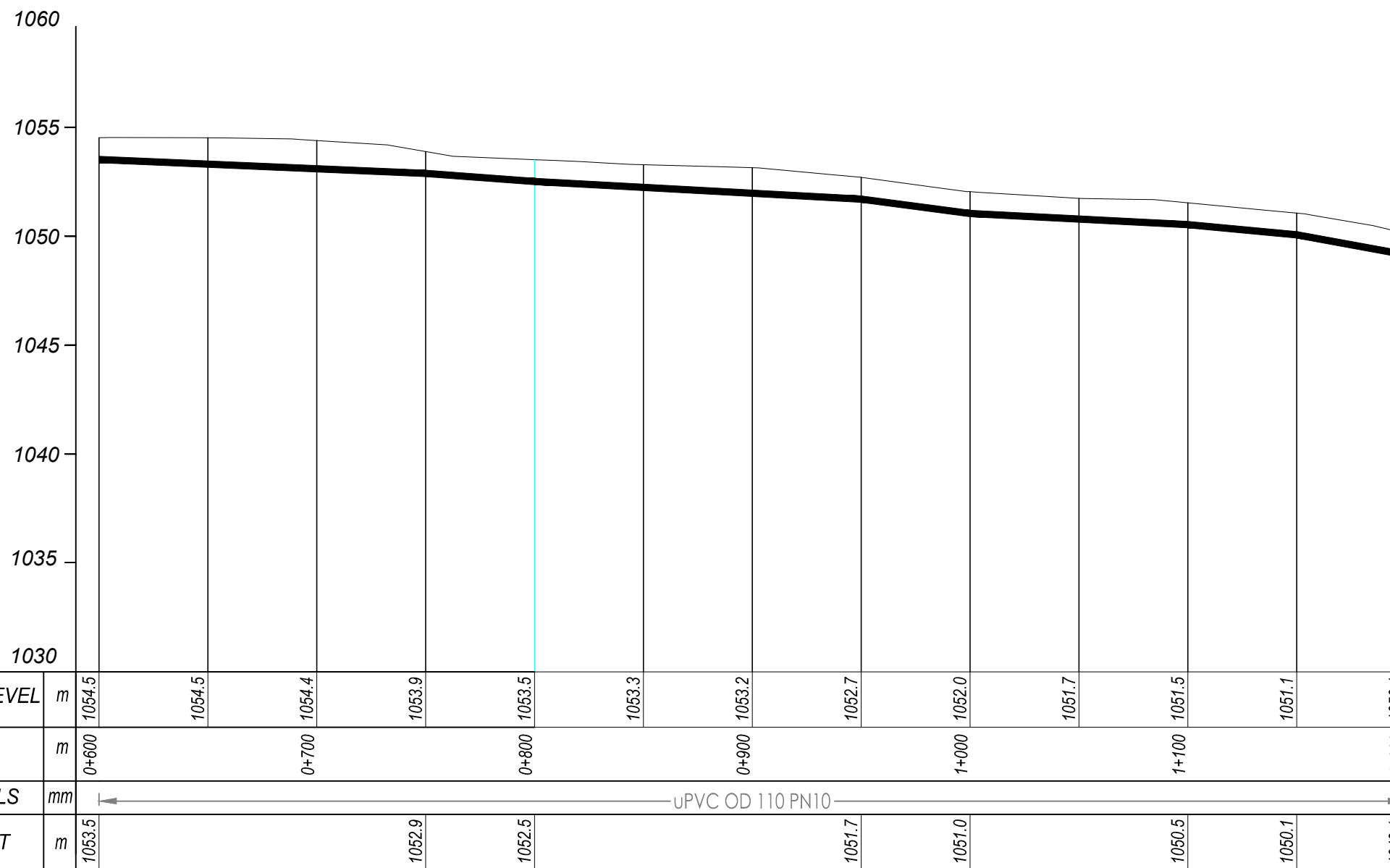
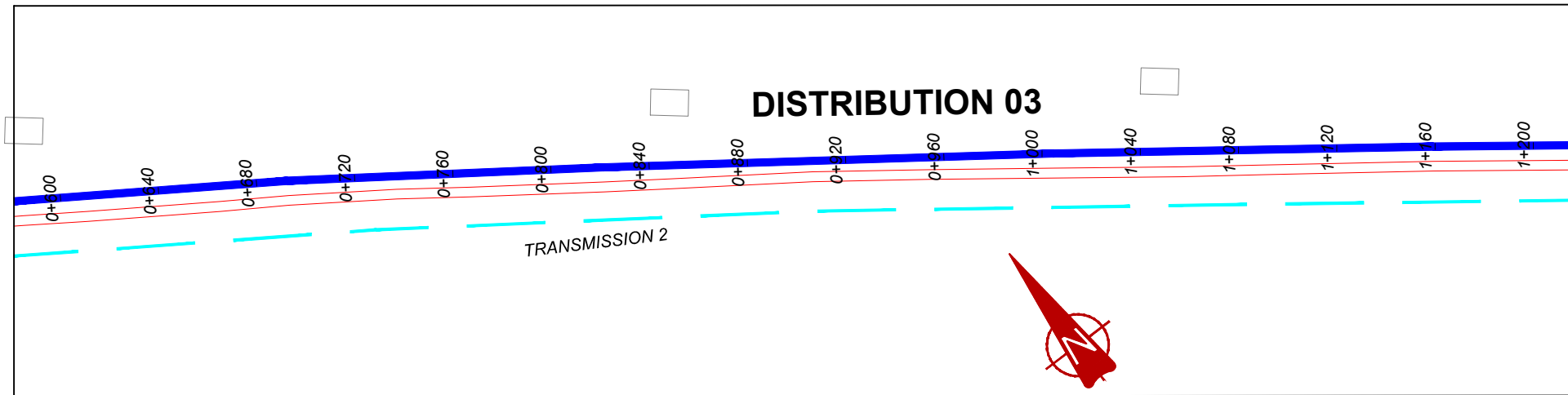
CONSULTANT
 SARI In Joint Venture with SGAPI
 Corporate Headquarter
 10 Philip Lane, 1st Floor,
 London EC3M 8AA,
 United Kingdom

CONTRACTOR

DETAILED ENGINEERING DESIGN

DRAWING TITLE
DISTRIBUTION LINE 03
 (0+000.00 - 0+600.00)

SCALE VERT: 1:250 DRAWING No. MUT/WS/5.3.1
 HOR: 1:2500
 SURVEYED Evans Mpanga DESIGNED Otwane Dan.
 DRAWN Joshua Nyarwanda CHECKED Rodney Barugahare
 DATE April 2021 APPROVED Rodney Barugahare.

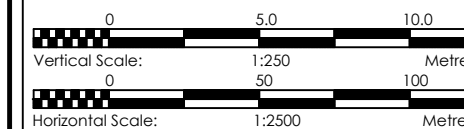


DISTRIBUTION 03 (0+600.00 - 1+200.00)

NOTES

LEGEND

- Transmission Pipeline
- Distribution Pipeline
- Ground Level
- Building/House
- Contours
- Road
- DAV Double Orifice Air Valve
- End pipe
- Node N01
- WO-1 Washout Type1
- WO-2 Washout Type2



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 CONSULTANCY SERVICES FOR FEASIBILITY STUDY, DETAILED ENGINEERING DESIGN AND CONSTRUCTION SUPERVISION OF SOLAR POWERED PIPED WATER SUPPLY SYSTEMS AND SANITATION FACILITIES IN REFUGEE SETTLEMENTS AND HOST DISTRICTS IN WEST NILE AND NORTHERN UGANDA IN KIRYANDONGO DISTRICT

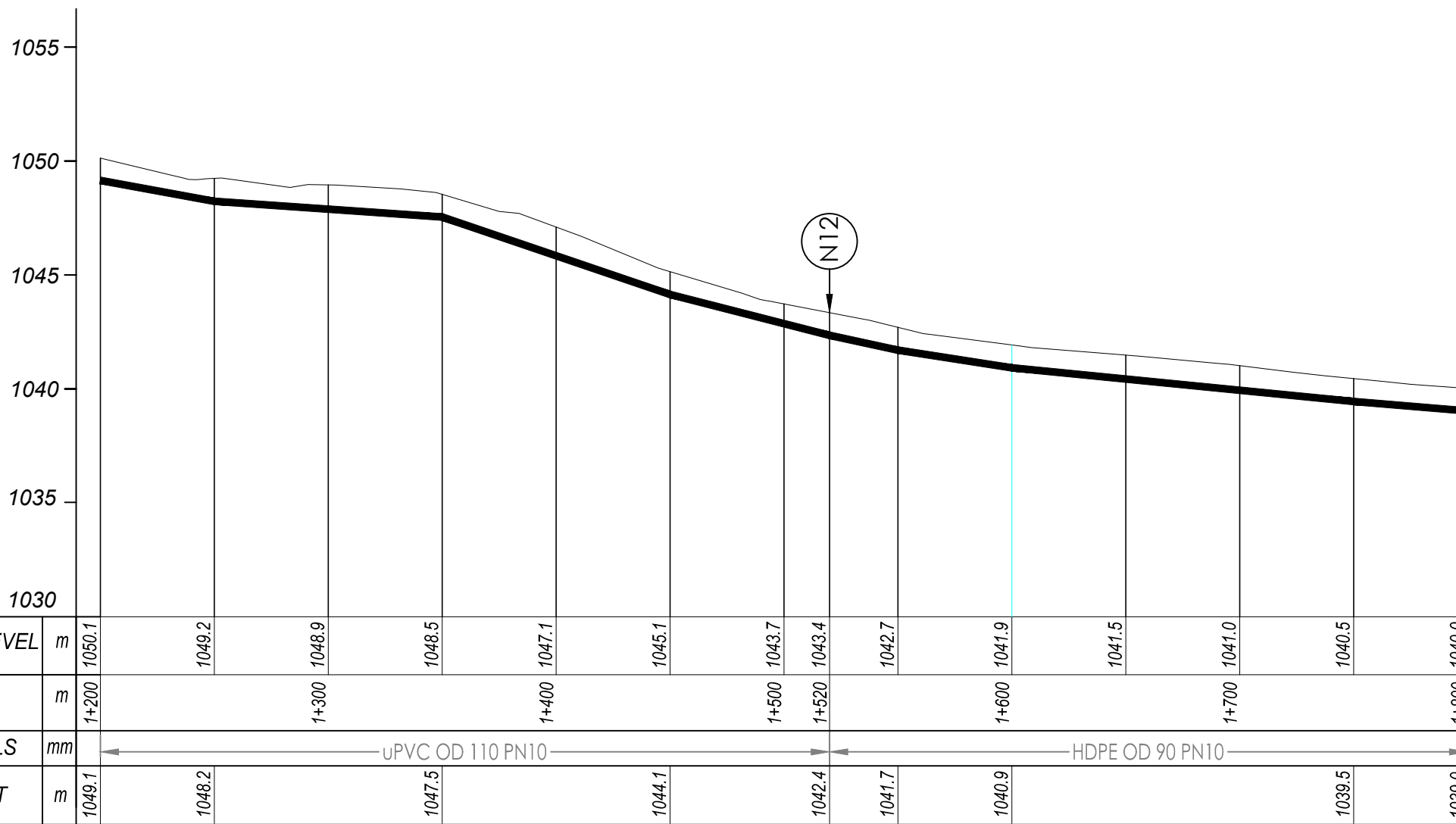
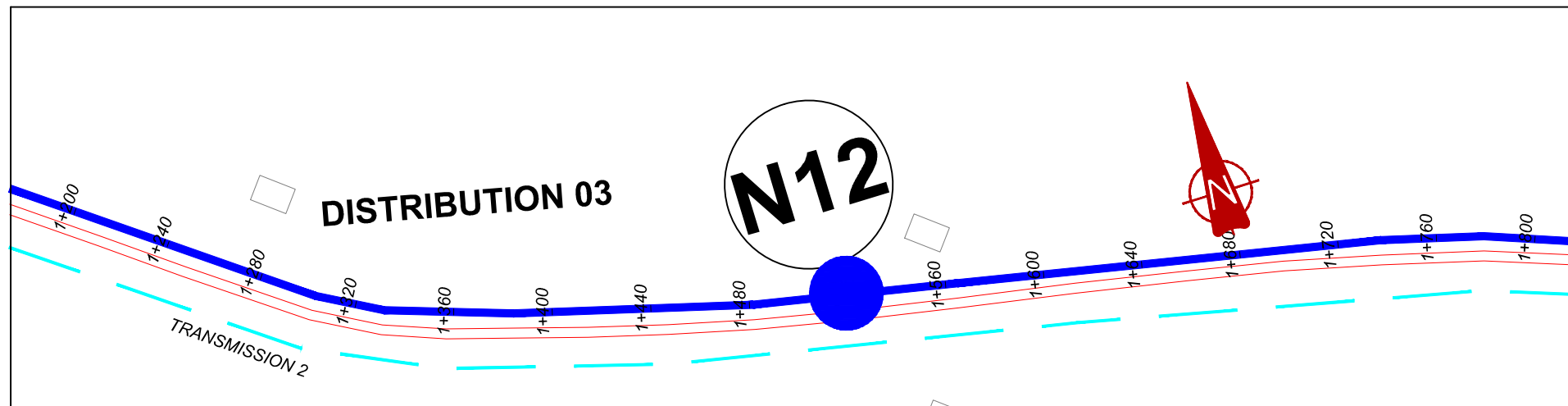
MUTUNDA WATER SUPPLY SYSTEM

CONSULTANT
SARI In Joint Venture with **SGAPI**
 Corporate Headquarter
 10 Philpot Lane, 1st Floor,
 London EC3M 8AA,
 United Kingdom

CONTRACTOR

DETAILED ENGINEERING DESIGN
 DRAWING TITLE
DISTRIBUTION LINE 03
(0+600.00 - 1+200.00)

SCALE VERT: 1:250 DRAWING No. MUT/WS/5.3.2
 HOR: 1:2500
 SURVEYED Evans Mpanga DESIGNED Otwane Dan.
 DRAWN Joshua Nyarwanda CHECKED Rodney Barugahare
 DATE April 2021 APPROVED Rodney Barugahare.

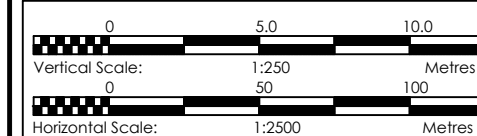


DISTRIBUTION 03 (1+200.00 - 1+800.00)

NOTES

LEGEND

- Transmission Pipeline
- Distribution Pipeline
- Ground Level
- Building/House
- Contours
- Road
- DAV Double Orifice Air Valve
- EP End pipe
- N01 Node N01
- WO-1 Washout Type1
- WO-2 Washout Type2



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MUTUNDA WATER SUPPLY SYSTEM

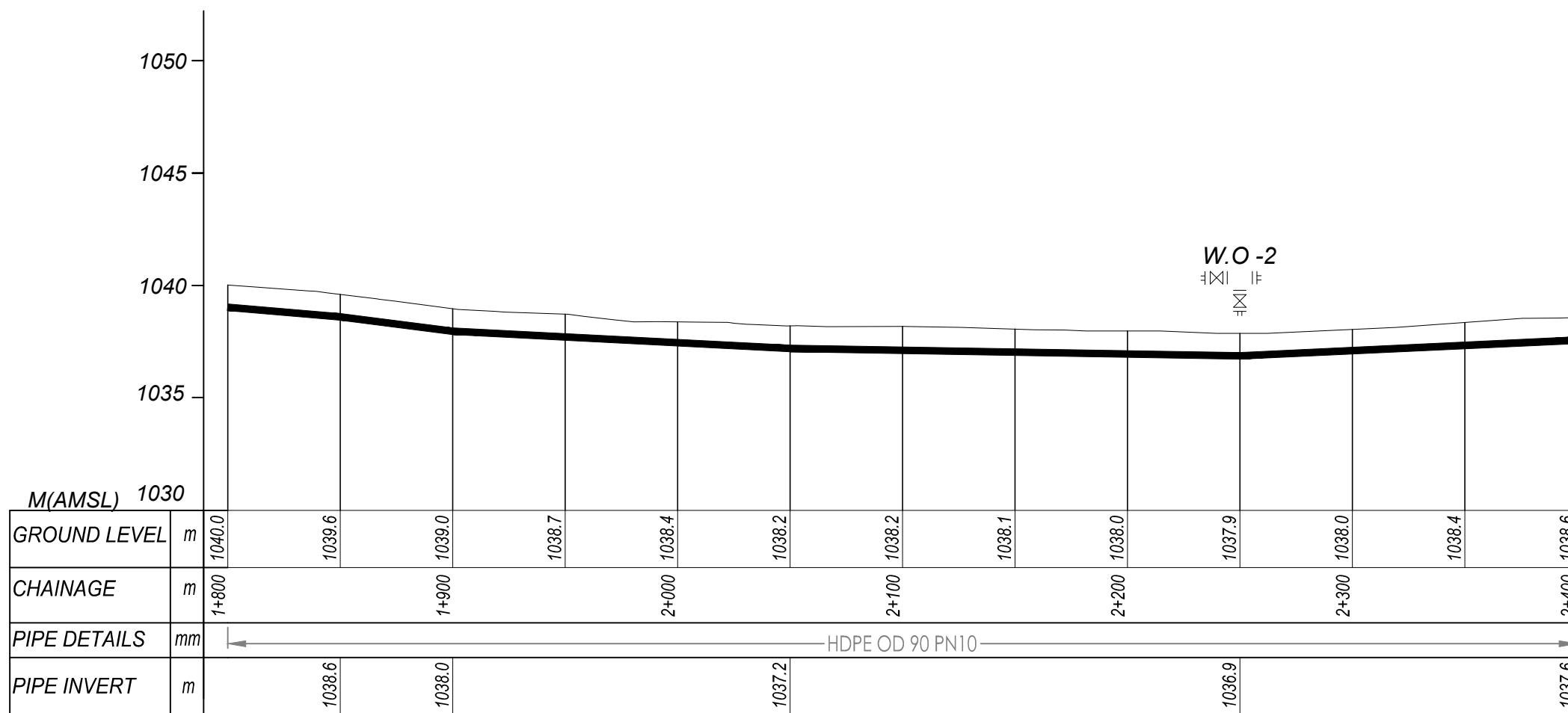
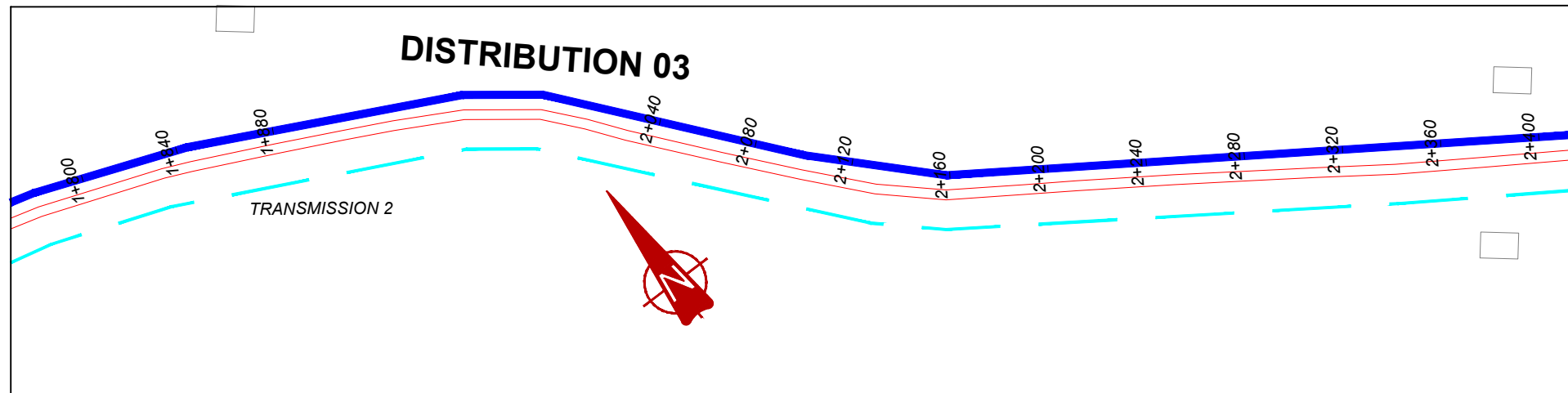
CONSULTANT
SARI CONSULTING LTD. In Joint Venture with **SGAPI**
 Corporate Headquarter
 10 Philpott Lane, 1st Floor,
 London EC3M 8AA,
 United Kingdom

CONTRACTOR

DETAILED ENGINEERING DESIGN

DRAWING TITLE
DISTRIBUTION LINE 03
(1+200.00 - 1+800.00)

SCALE VERT: 1:250 DRAWING No. MUT/WS/5.3.3
 HOR: 1:2500
 SURVEYED Evans Mpinga DESIGNED Otwane Dan.
 DRAWN Joshua Nyarwanda CHECKED Rodney Barugahare
 DATE April 2021 APPROVED Rodney Barugahare.



DISTRIBUTION 03 (1+800.00 - 2+400.00)

NOTES

LEGEND

- Transmission Pipeline
- Distribution Pipeline
- Ground Level
- Building/House
- Contours
- Road
- DAV Double Orifice Air Valve
- EP End pipe
- N01 Node N01
- WO-1 Washout Type1
- WO-2 Washout Type2



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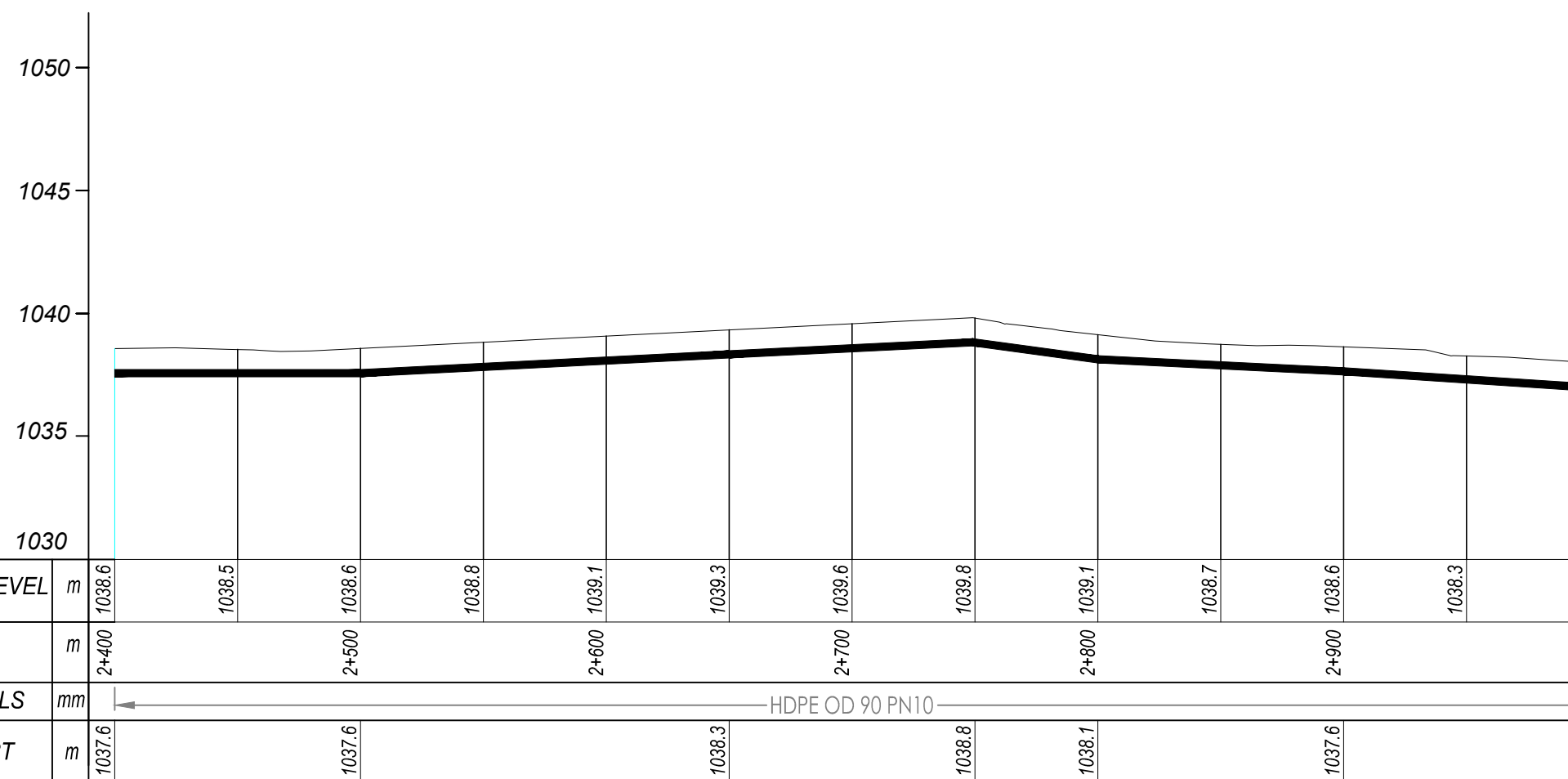
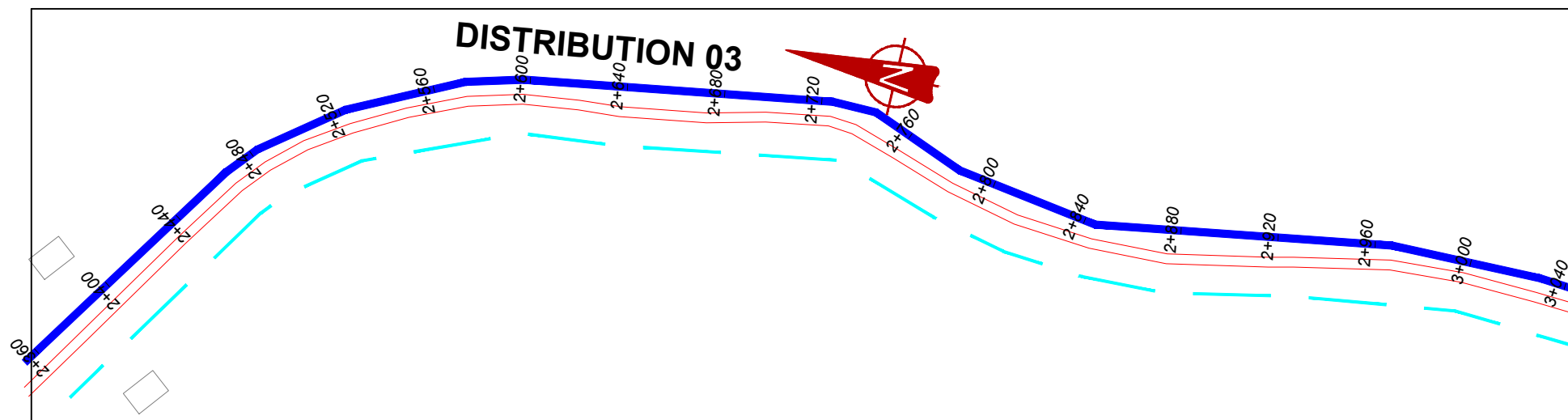
MUTUNDA WATER SUPPLY SYSTEM

CONSULTANT
SARI In Joint Venture with **SGAPI**
 Corporate Headquarter
 10 Philpot Lane, 1st Floor,
 London EC3M 8AA,
 United Kingdom

CONTRACTOR

DETAILED ENGINEERING DESIGN
 DRAWING TITLE
DISTRIBUTION LINE 03
(1+800.00 - 2+400.00)

SCALE	VERT: 1:250 HOR: 1:2500	DRAWING No.	MUT/WS/5.3.4
SURVEYED	Evans Mpanga	DESIGNED	Otwane Dan.
DRAWN	Joshua Nyarwanda	CHECKED	Rodney Barugahare
DATE	April 2021	APPROVED	Rodney Barugahare.

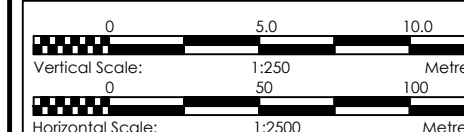


DISTRIBUTION 03 (2+400.00 - 3+000.00)

NOTES

LEGEND

- Transmission Pipeline
- Distribution Pipeline
- Ground Level
- Building/House
- Contours
- Road
- DAV Double Orifice Air Valve
- End pipe
- Node N01
- WO-1 Washout Type1
- WO-2 Washout Type2



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MUTUNDA WATER SUPPLY SYSTEM

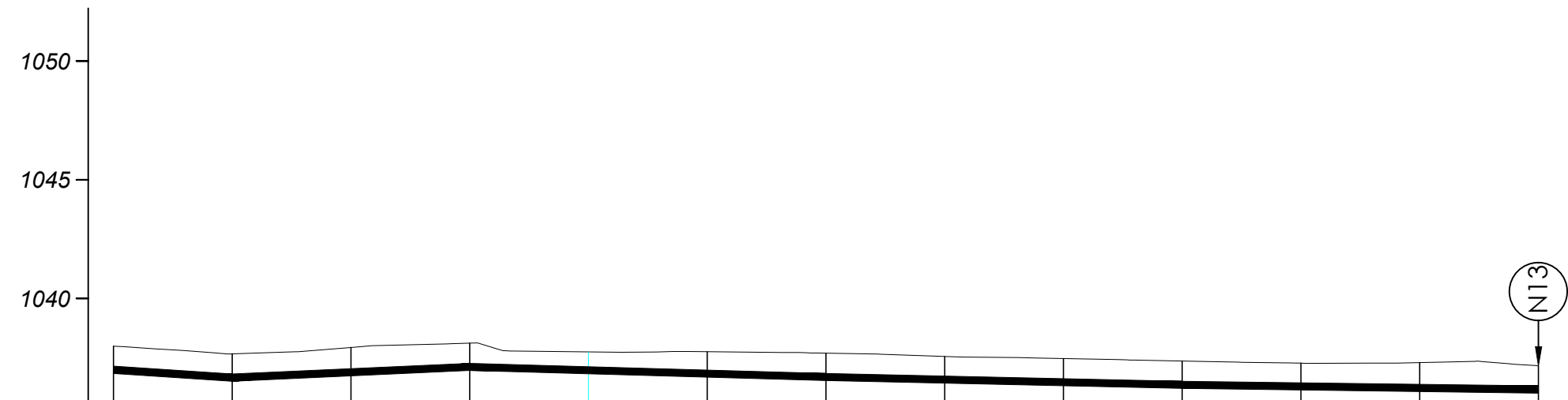
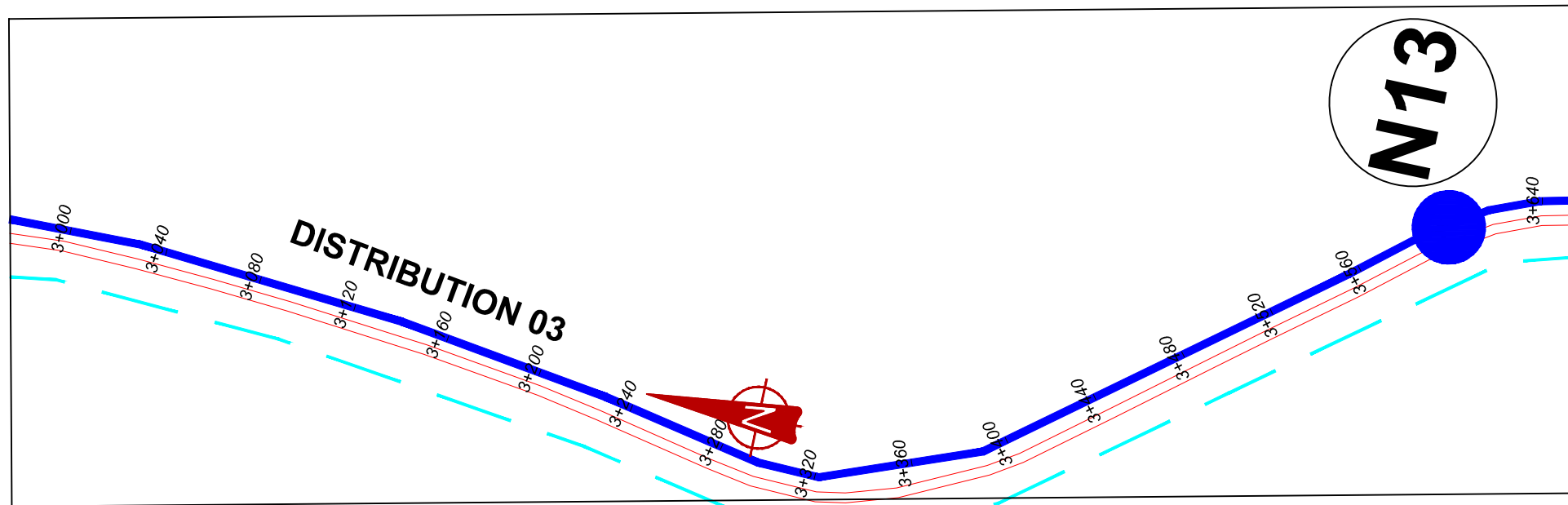
CONSULTANT
SARI In Joint Venture with **SGAPI**
 Corporate Headquarter
 10 Philpott Lane, 1st Floor,
 London EC3M 8AA,
 United Kingdom

CONTRACTOR

DETAILED ENGINEERING DESIGN

DRAWING TITLE
DISTRIBUTION LINE 03
(2+400.00 - 3+000.00)

SCALE	VERT: 1:250 HOR: 1:2500	DRAWING No.	MUT/WS/5.3.5
SURVEYED	Evans Mpanga	DESIGNED	Otwane Dan.
DRAWN	Joshua Nyarwanda	CHECKED	Rodney Barugahare
DATE	April 2021	APPROVED	Rodney Barugahare.



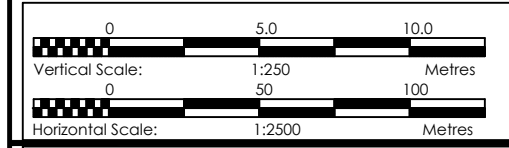
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GROUND LEVEL	m	1038.0		1037.7		1037.9		1038.1		1037.7		1037.8		1037.7		1037.6		1037.5		1037.4		1037.3		1037.3		1037.2
CHAINAGE	m	3+000				3+100				3+200				3+300				3+400				3+500				3+600
PIPE DETAILS	mm	HDPE OD 90 PN10																								
PIPE INVERT	m	1037.0		1036.7				1037.1		1036.7				1036.7				1036.4								1036.2

DISTRIBUTION 03 (3+000.00 - 3+600.00)

NOTES

LEGEND

- Transmission Pipeline
- Distribution Pipeline
- Ground Level
- Building/House
- Contours
- Road
- DAV Double Orifice Air Valve
- End pipe
- Node N01
- WO-1 Washout Type1
- WO-2 Washout Type2



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MUTUNDA WATER SUPPLY SYSTEM

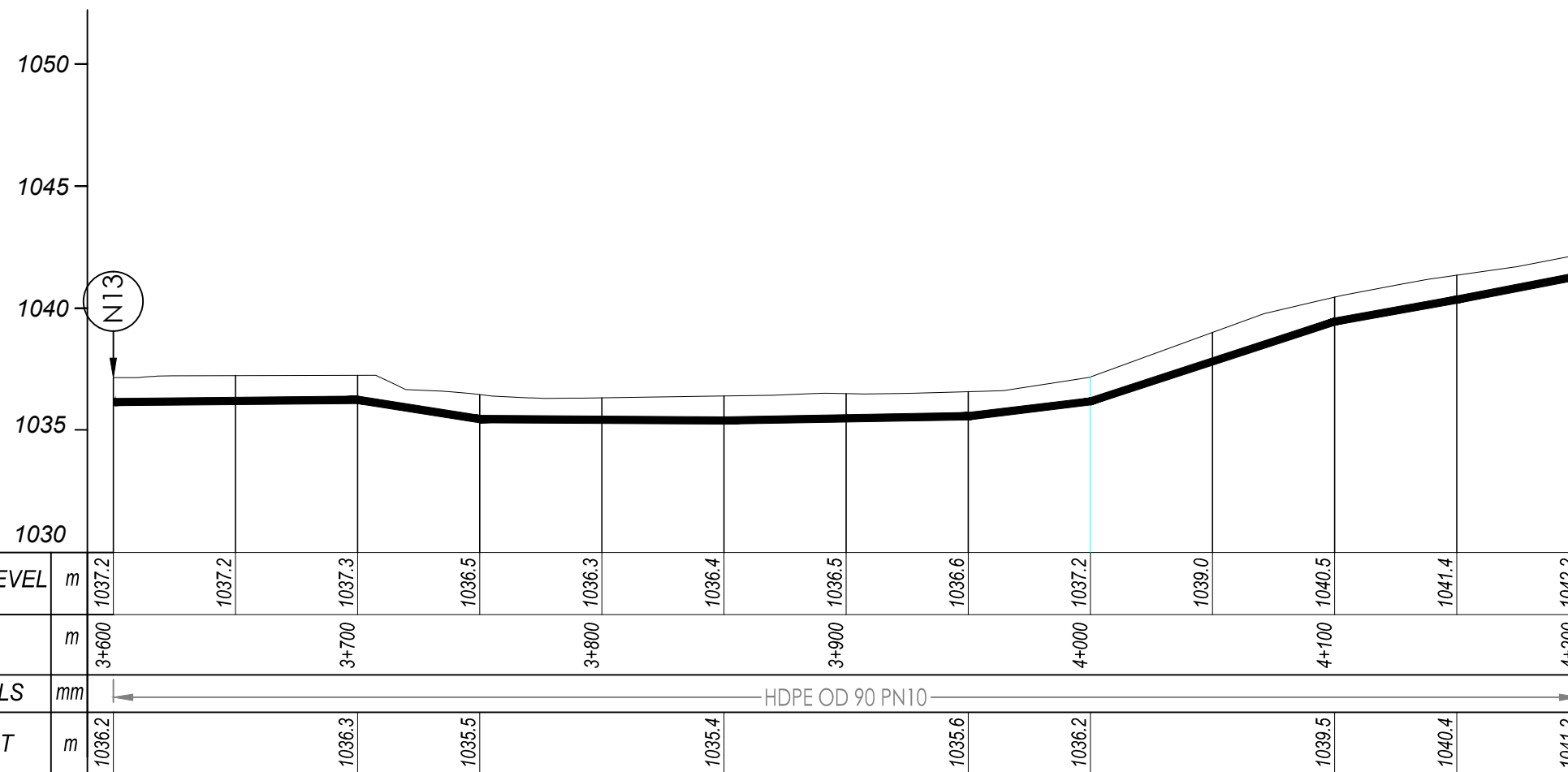
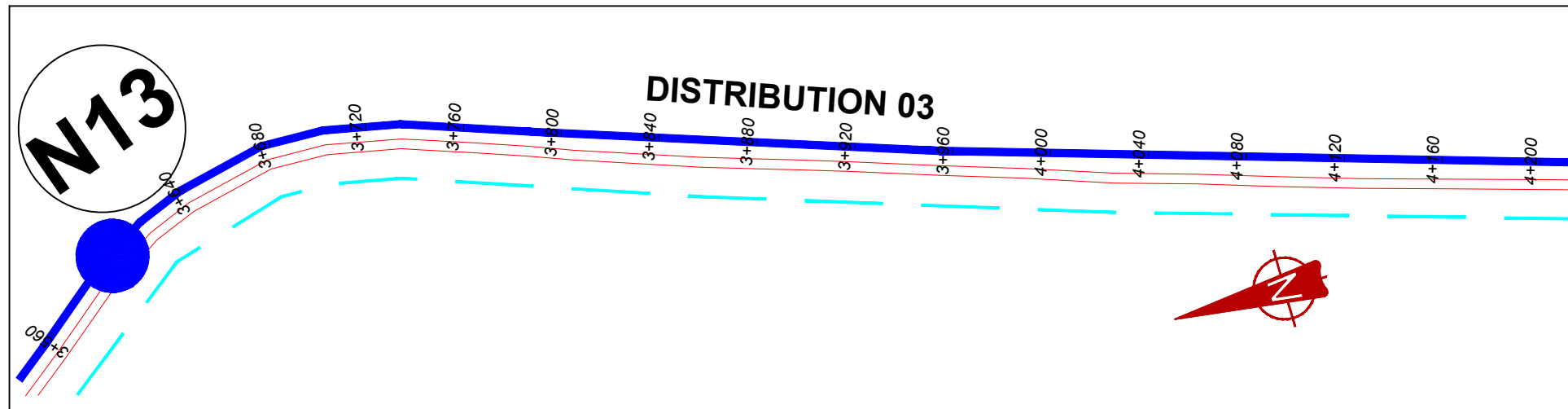
CONSULTANT
SARI In Joint Venture with
 Corporate Headquarter
 10 Philpott Lane, 1st Floor,
 London EC3M 8AA,
 United Kingdom

CONTRACTOR

DETAILED ENGINEERING DESIGN

DRAWING TITLE
DISTRIBUTION LINE 03
(3+000.00 - 3+600.00)

SCALE	VERT: 1:250 HOR: 1:2500	DRAWING No.	MUT/WS/5.3.6
SURVEYED	Evans Mpanga	DESIGNED	Otwane Dan.
DRAWN	Joshua Nyarwanda	CHECKED	Rodney Barugahare
DATE	April 2021	APPROVED	Rodney Barugahare.

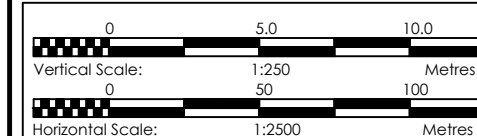


DISTRIBUTION 03 (3+600.00 - 4+200.00)

NOTES

LEGEND

- Transmission Pipeline
- Distribution Pipeline
- Ground Level
- Building/House
- Contours
- Road
- DAV Double Orifice Air Valve
- End pipe
- Node N01
- WO-1 Washout Type1
- WO-2 Washout Type2



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 DETAILED ENGINEERING DESIGN AND CONSTRUCTION,
 SUPERVISION OF SOLAR POWERED PIPED WATER SUPPLY
 SYSTEMS AND SANITATION FACILITIES IN REFUGEE
 SETTLEMENTS AND HOST DISTRICTS IN WEST NILE AND
 NORTHERN UGANDA IN KIRYANDONGO DISTRICT

MUTUNDA WATER SUPPLY SYSTEM

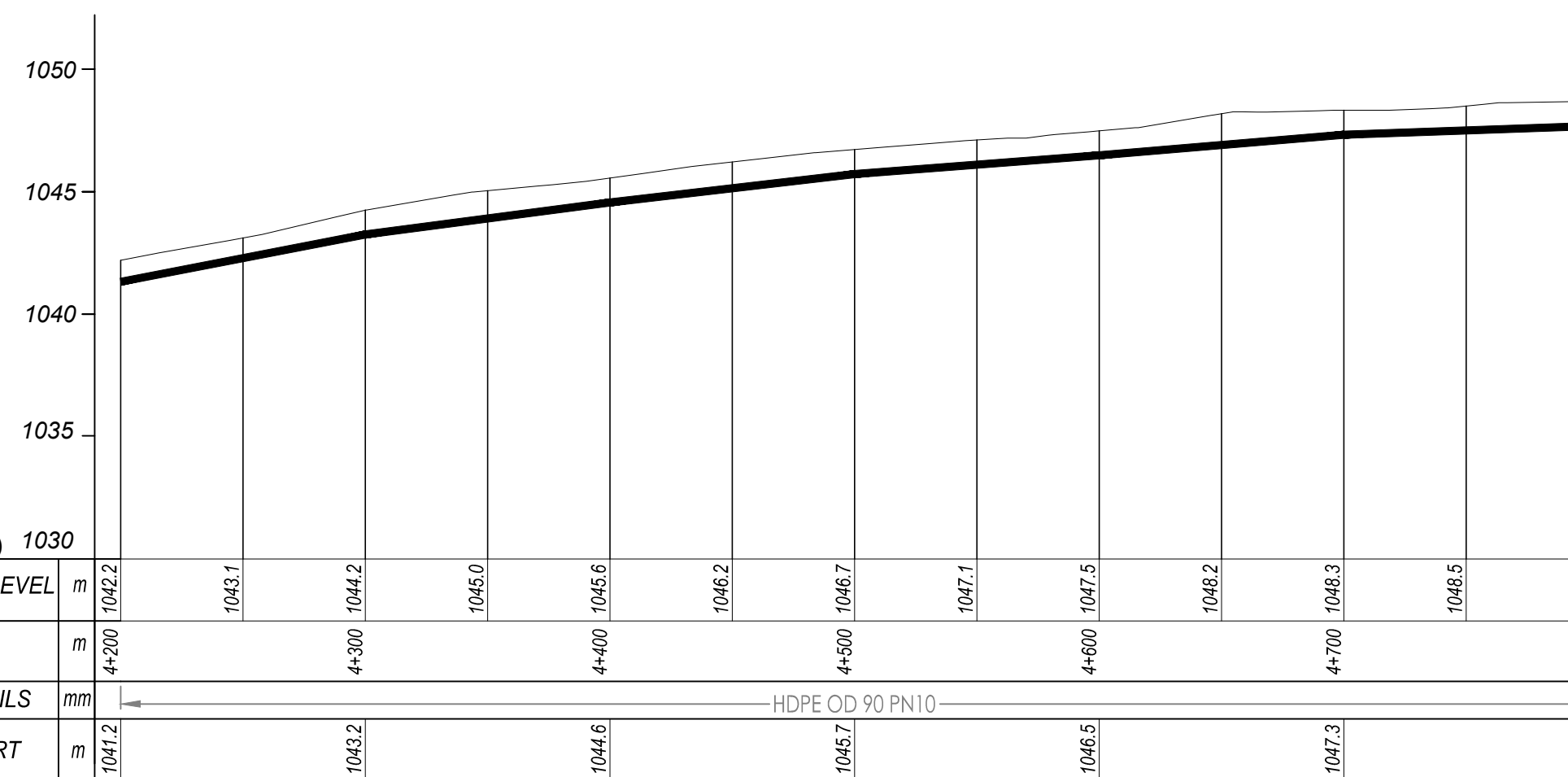
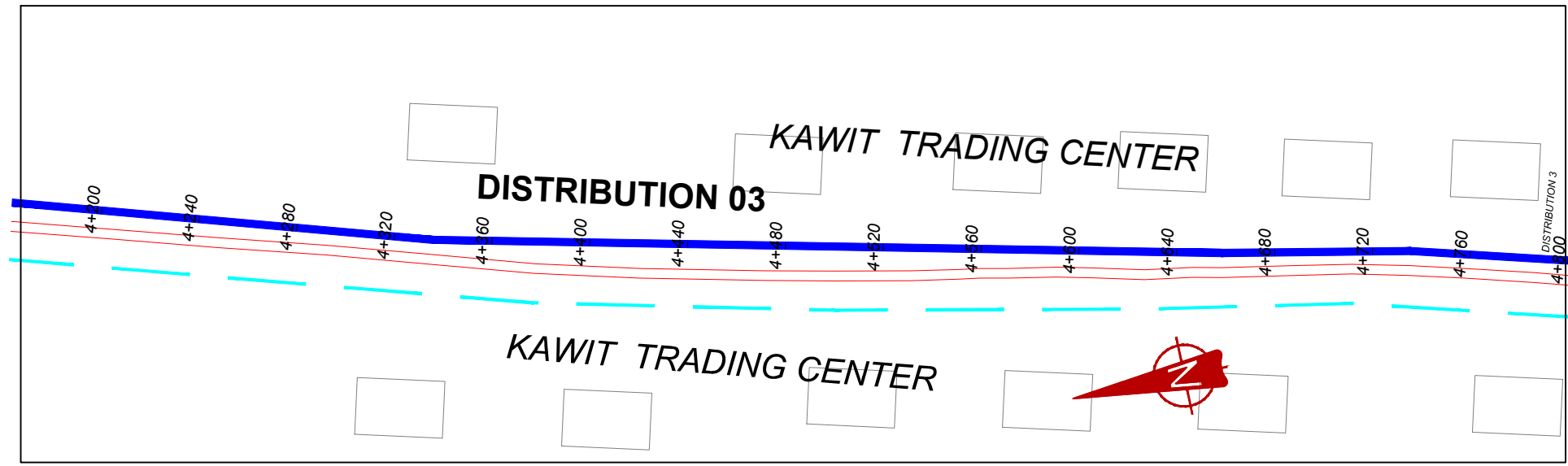
CONSULTANT
 In Joint Venture with
 Corporate Headquarter
 10 Philpot Lane, 1st Floor,
 London EC3M 8AA,
 United Kingdom

CONTRACTOR

DETAILED ENGINEERING DESIGN

DRAWING TITLE
**DISTRIBUTION LINE 03
 (3+600.00 - 4+200.00)**

SCALE	VERT: 1:250 HOR: 1:2500	DRAWING No.	MUT/WS/5.3.7
SURVEYED	Evans Mpanga	DESIGNED	Otwane Dan.
DRAWN	Joshua Nyarwanda	CHECKED	Rodney Barugahare
DATE	April 2021	APPROVED	Rodney Barugahare.

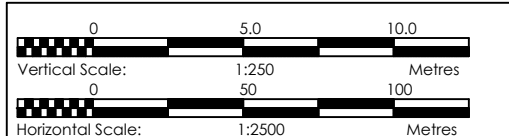


DISTRIBUTION 03 (4+200.00 - 4+800.00)

NOTES

LEGEND

- Transmission Pipeline
- Distribution Pipeline
- Ground Level
- Building/House
- Contours
- Road
- DAV Double Orifice Air Valve
- End pipe
- Node N01
- WO-1 Washout Type1
- WO-2 Washout Type2



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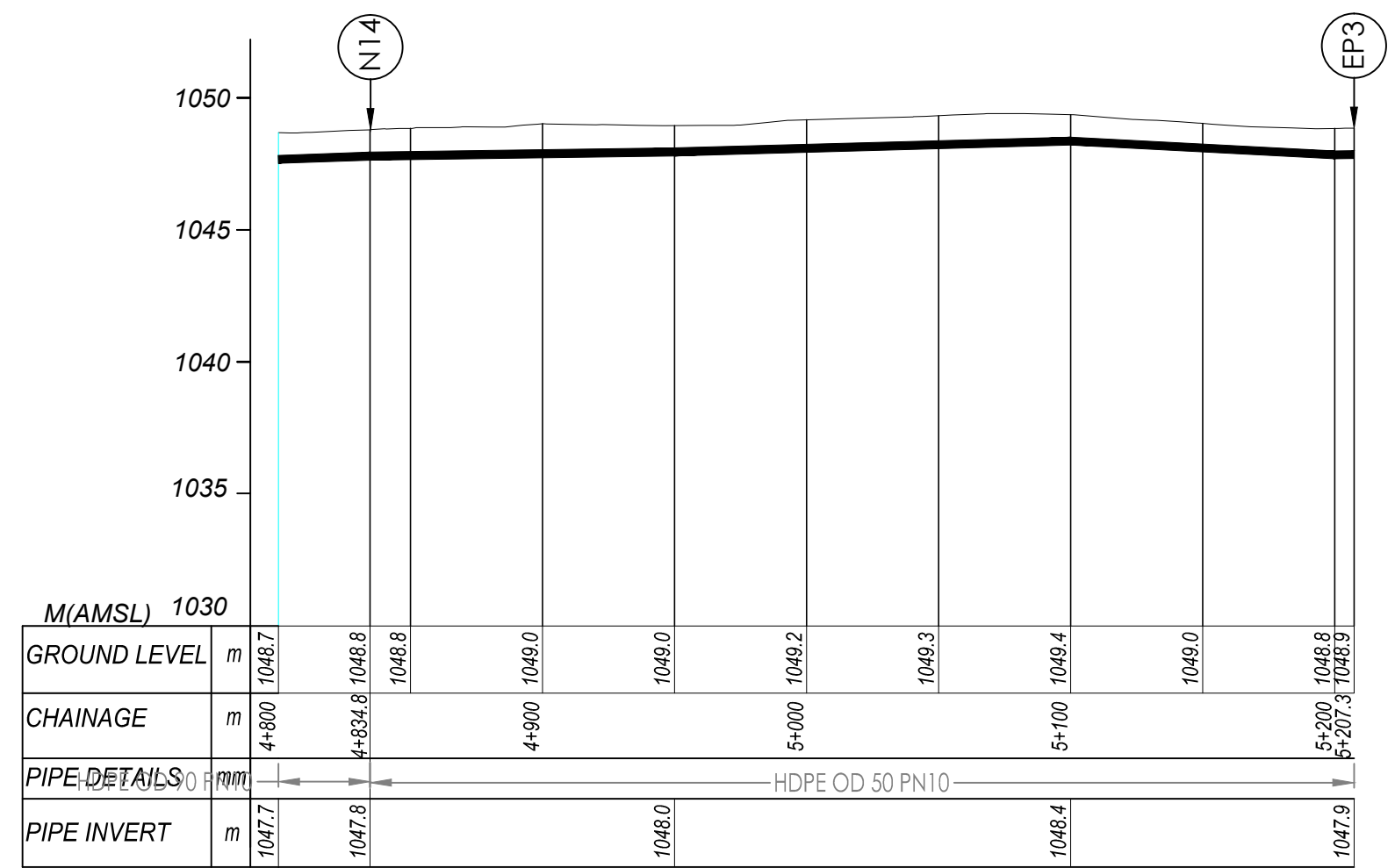
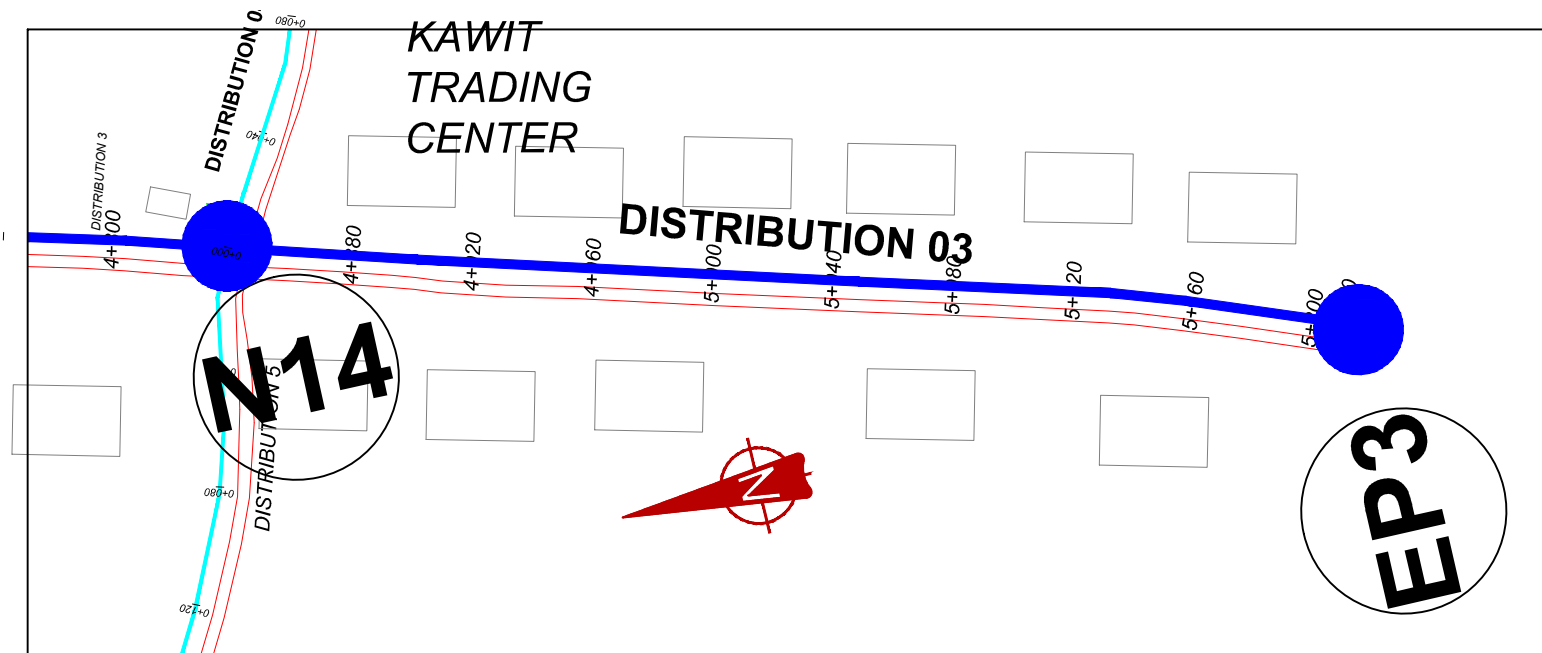
MUTUNDA WATER SUPPLY SYSTEM

CONSULTANT
SARI In Joint Venture with **SGAPI**
 Corporate Headquarter
 10 Philpott Lane, 1st Floor,
 London EC3M 8AA,
 United Kingdom

CONTRACTOR

DETAILED ENGINEERING DESIGN
 DRAWING TITLE
DISTRIBUTION LINE 03 (4+200.00 - 4+800.00)

SCALE	VERT: 1:250 HOR: 1:2500	DRAWING No.	MUT/WS/5.3.8
SURVEYED	Evans Mpanga	DESIGNED	Otwane Dan.
DRAWN	Joshua Nyarwanda	CHECKED	Rodney Barugahare
DATE	April 2021	APPROVED	Rodney Barugahare.

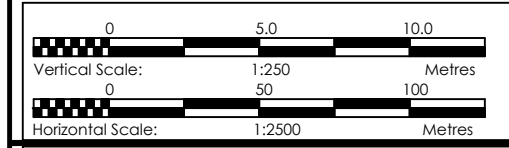


DISTRIBUTION 03 (4+200.00 - 5+207.30)

NOTES

LEGEND

- Transmission Pipeline
- Distribution Pipeline
- Ground Level
- Building/House
- Contours
- Road
- DAV Double Orifice Air Valve
- EP End pipe
- N01 Node N01
- WO-1 Washout Type1
- WO-2 Washout Type2



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GOVERNMENT OF UGANDA
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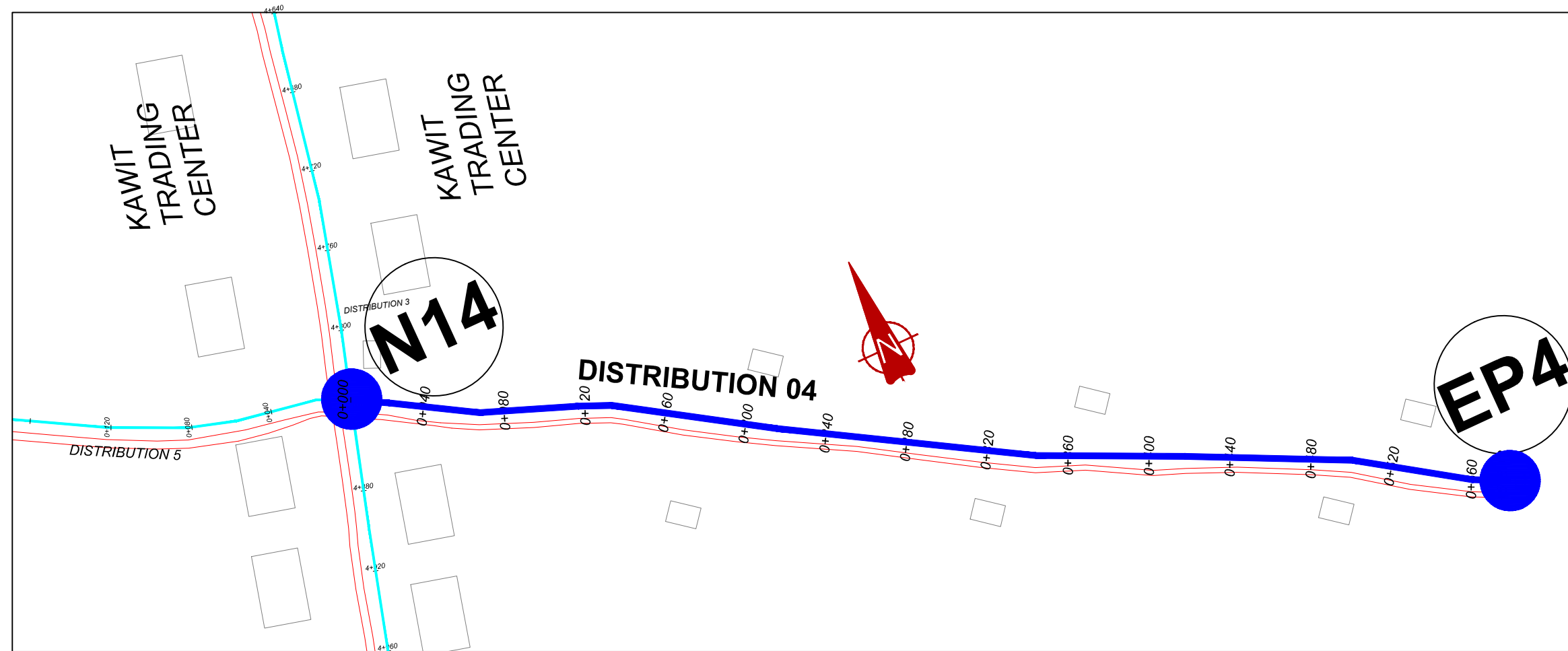
MUTUNDA WATER SUPPLY SYSTEM

CONSULTANT
SARI CONSULTING LTD. In Joint Venture with **SGAPI**
 Corporate Headquarter
 10 Philpot Lane, 1st Floor,
 London EC3M 8AA,
 United Kingdom

CONTRACTOR

DETAILED ENGINEERING DESIGN
 DRAWING TITLE
DISTRIBUTION LINE 03 (4+200.00 - 5+207.30)

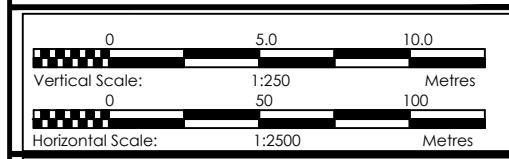
SCALE	VERT: 1:250 HOR: 1:2500	DRAWING No.	MUT/WS/5.3.9
SURVEYED	Evans Mpanga	DESIGNED	Otwane Dan.
DRAWN	Joshua Nyarwanda	CHECKED	Rodney Barugahare
DATE	April 2021	APPROVED	Rodney Barugahare.



NOTES

LEGEND

- Transmission Pipeline
- Distribution Pipeline
- Ground Level
- Building/House
- Contours
- Road
- DAV Double Orifice Air Valve
- EP End pipe
- N01 Node N01
- WO-1 Washout Type1
- WO-2 Washout Type2



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GOVERNMENT OF UGANDA
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 CONSULTANCY SERVICES FOR FEASIBILITY STUDY, DETAILED ENGINEERING DESIGN AND CONSTRUCTION SUPERVISION OF SOLAR POWERED PIPED WATER SUPPLY SYSTEMS AND SANITATION FACILITIES IN REFUGEE SETTLEMENTS AND HOST DISTRICTS IN WEST NILE AND NORTHERN UGANDA IN KIRYANDONGO DISTRICT

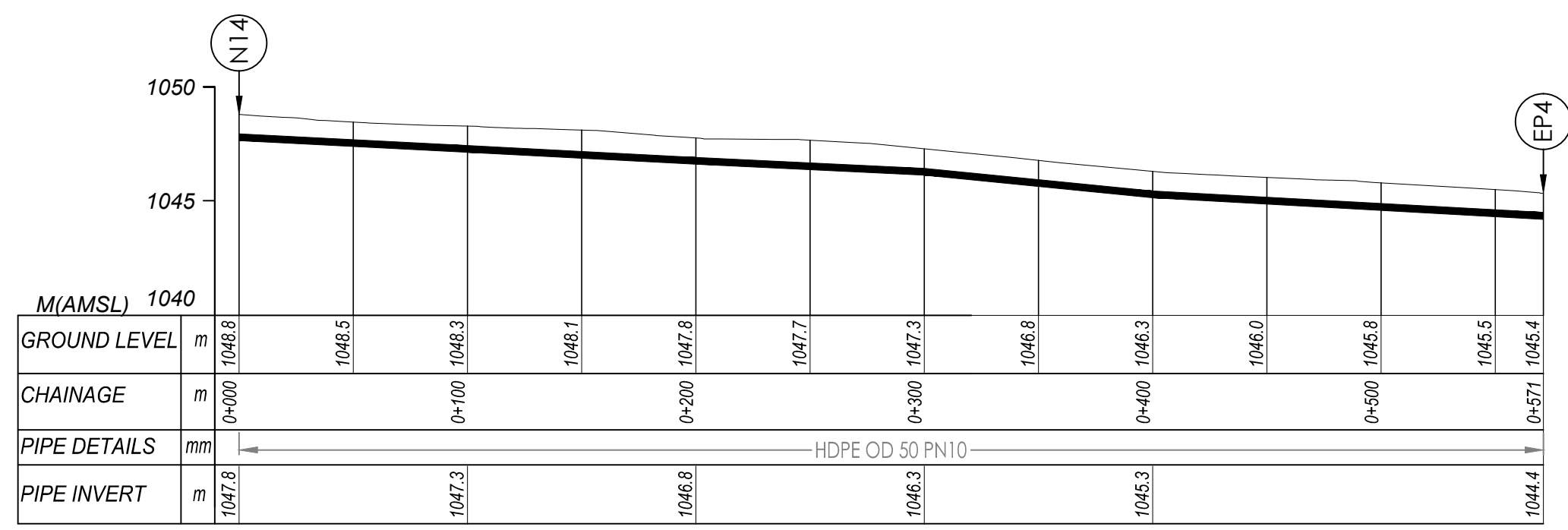
MUTUNDA WATER SUPPLY SYSTEM

CONSULTANT
SARI In Joint Venture with
 Corporate Headquarter
 10 Philpot Lane, 1st Floor,
 London EC3M 8AA,
 United Kingdom

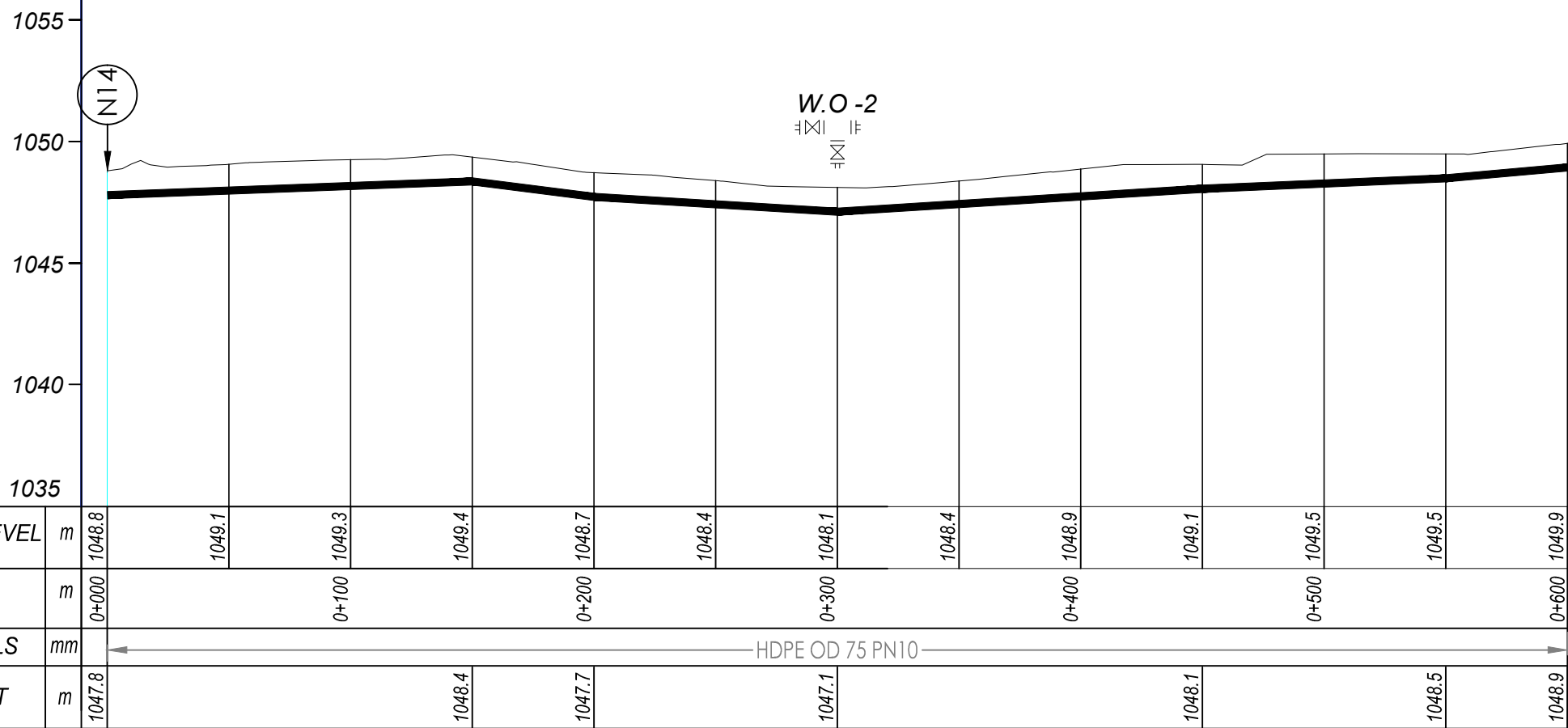
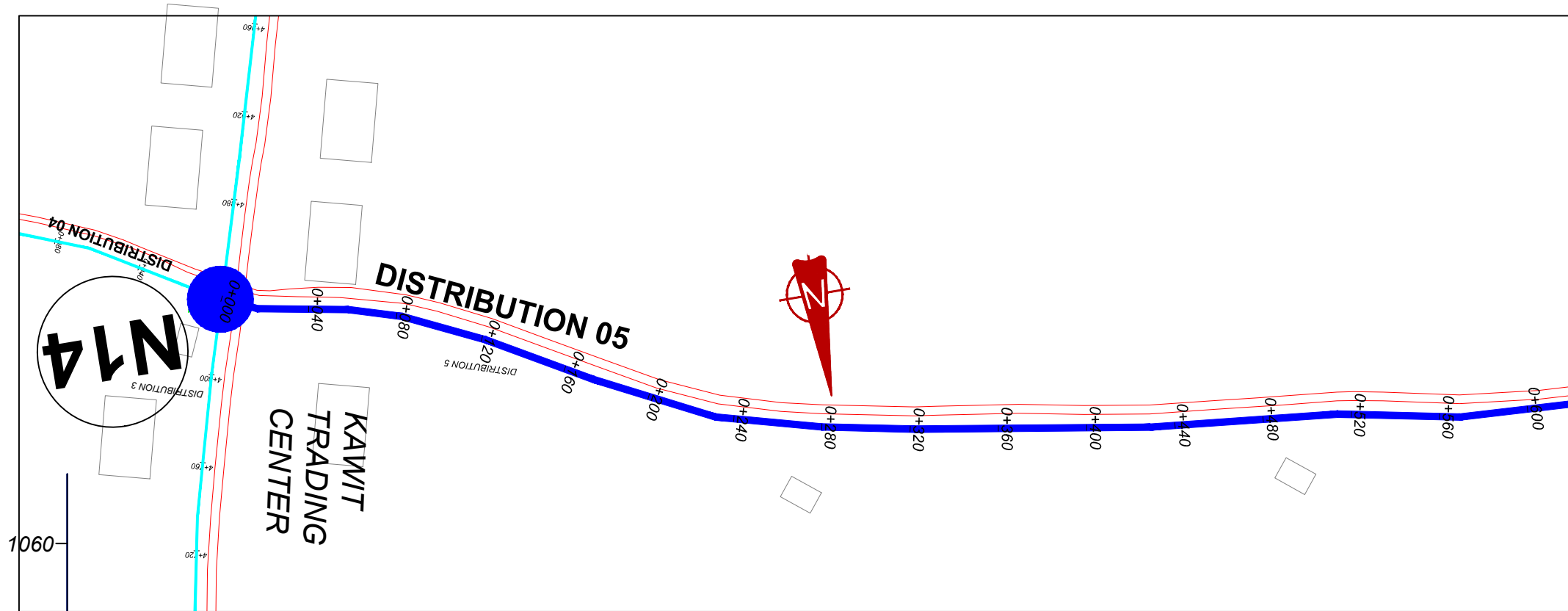
CONTRACTOR

DETAILED ENGINEERING DESIGN
 DRAWING TITLE
DISTRIBUTION LINE 04
(0+000.00 - 0+571.00)

SCALE	VERT: 1:250 HOR: 1:2500	DRAWING No.	MUT/WS/5.4.1
SURVEYED	Evans Mpanga	DESIGNED	Otwane Dan.
DRAWN	Joshua Nyarwanda	CHECKED	Rodney Barugahare
DATE	April 2021	APPROVED	Rodney Barugahare.



DISTRIBUTION 04 (0+000.00 - 0+571.00)



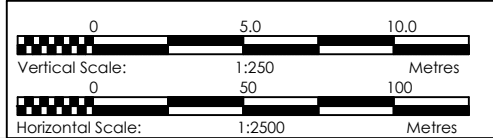
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GROUND LEVEL	m	1048.8	1049.1	1049.3	1049.4	1048.7	1048.4	1048.9	
CHAINAGE	m	0+000	0+100	0+200	0+300	0+400	0+500	0+600	
PIPE DETAILS	mm	← HDPE OD 75 PN10 →							
PIPE INVERT	m	1047.8	1048.4	1047.7	1047.1	1048.1	1048.5	1048.9	

DISTRIBUTION 05 (0+000.00 - 0+600.00)

NOTES

LEGEND

- Transmission Pipeline
- Distribution Pipeline
- Ground Level
- Building/House
- Contours
- Road
- DAV Double Orifice Air Valve
- EP End pipe
- N01 Node N01
- WO-1 Washout Type1
- WO-2 Washout Type2



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MUTUNDA WATER SUPPLY SYSTEM

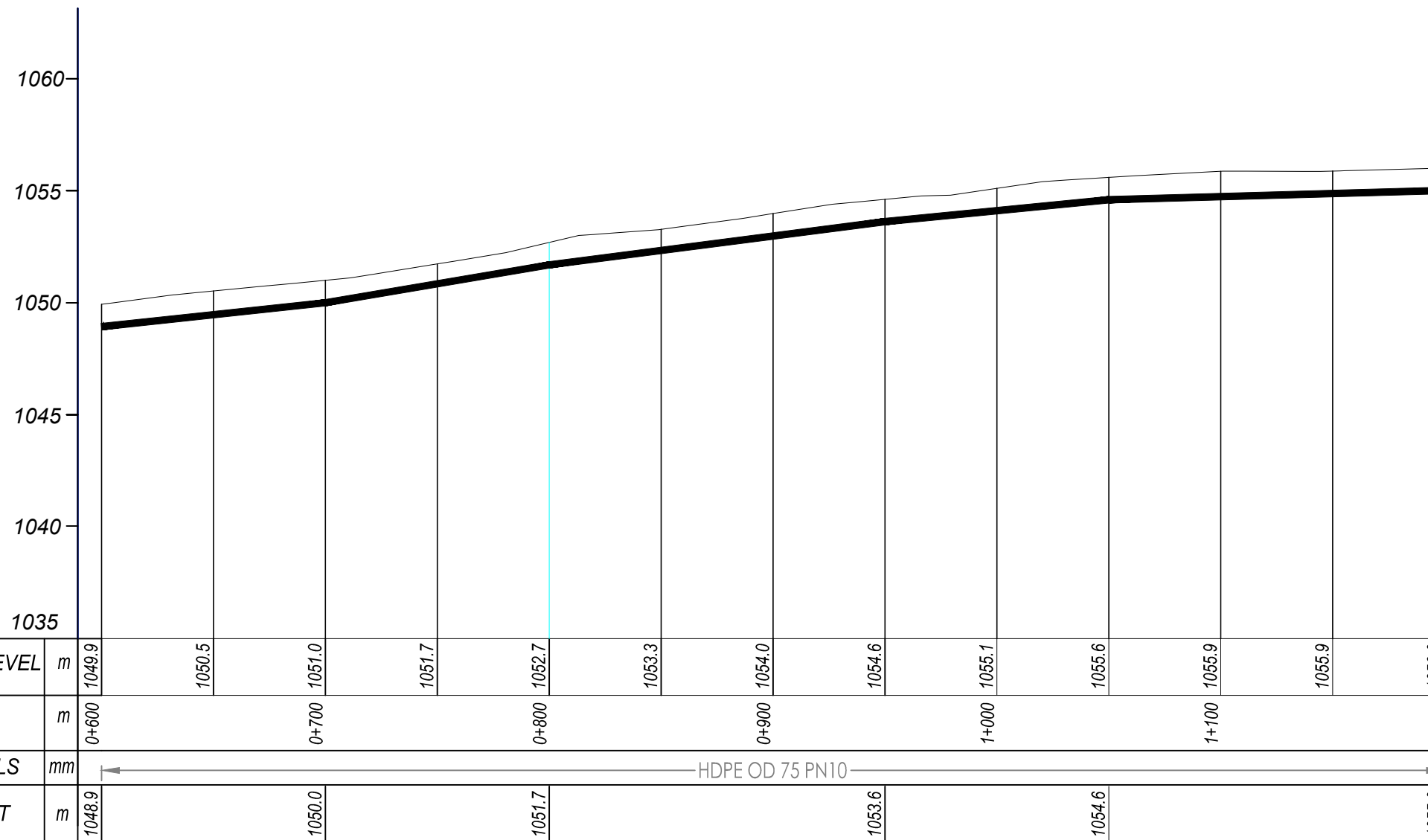
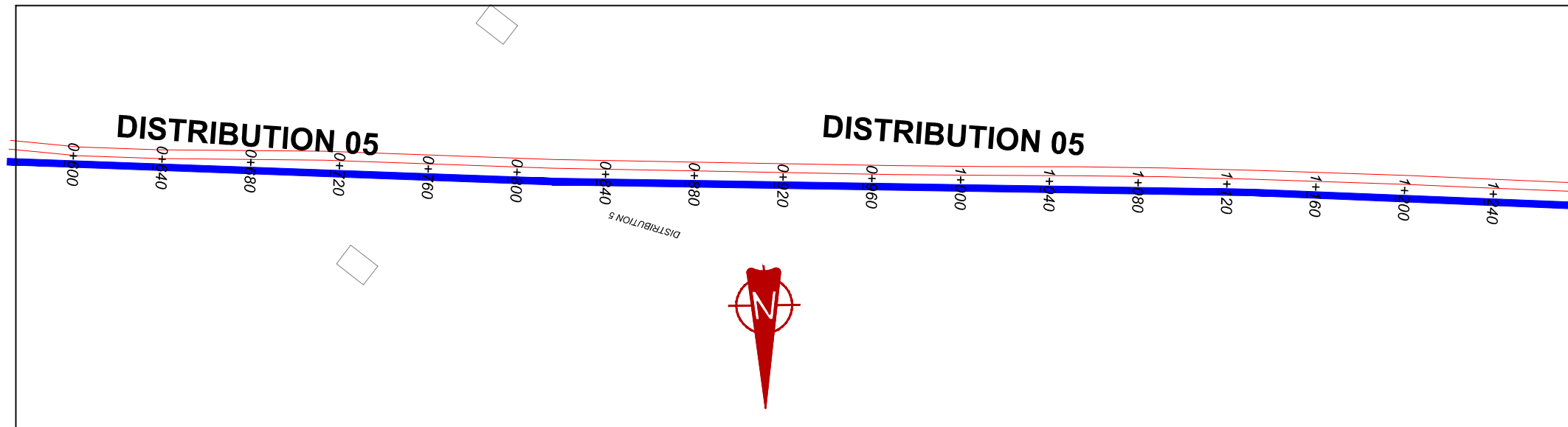
CONSULTANT
SARI In Joint Venture with **SGAPI**
 Corporate Headquarter
 10 Philpott Lane, 1st Floor,
 London EC3M 8AA,
 United Kingdom

CONTRACTOR

DETAILED ENGINEERING DESIGN

DRAWING TITLE
DISTRIBUTION LINE 05 (0+000.00 - 0+600.00)

SCALE VERT: 1:250 DRAWING No. MUT/WS/5.5.1
 HOR: 1:2500
 SURVEYED Evans Mpanga DESIGNED Otwane Dan.
 DRAWN Joshua Nyarwanda CHECKED Rodney Barugahare
 DATE April 2021 APPROVED Rodney Barugahare.

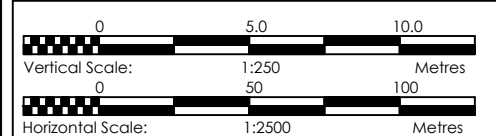


DISTRIBUTION 05 (0+600.00 - 1+200.00)

NOTES

LEGEND

- Transmission Pipeline
- Distribution Pipeline
- Ground Level
- Building/House
- Contours
- Road
- DAV Double Orifice Air Valve
- End pipe
- Node N01
- WO-1 Washout Type1
- WO-2 Washout Type2



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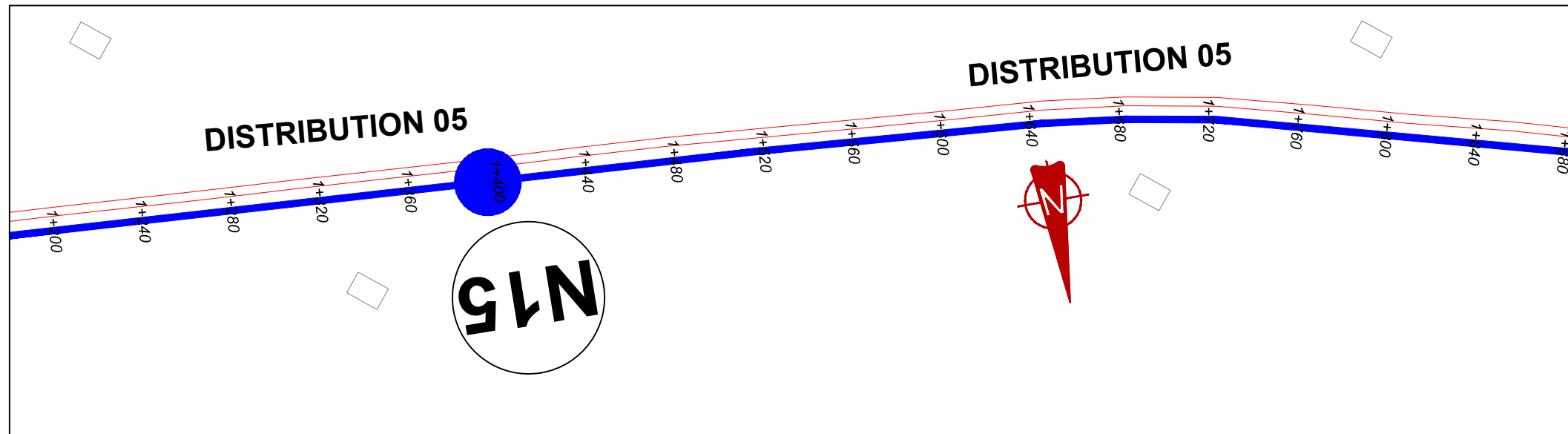
MUTUNDA WATER SUPPLY SYSTEM

CONSULTANT
SARI In Joint Venture with **SGAPI**
 Corporate Headquarter
 10 Philip Lane, 1st Floor,
 London EC3M 8AA,
 United Kingdom

CONTRACTOR

DETAILED ENGINEERING DESIGN
 DRAWING TITLE
DISTRIBUTION LINE 05
(0+600.00 - 1+200.00)

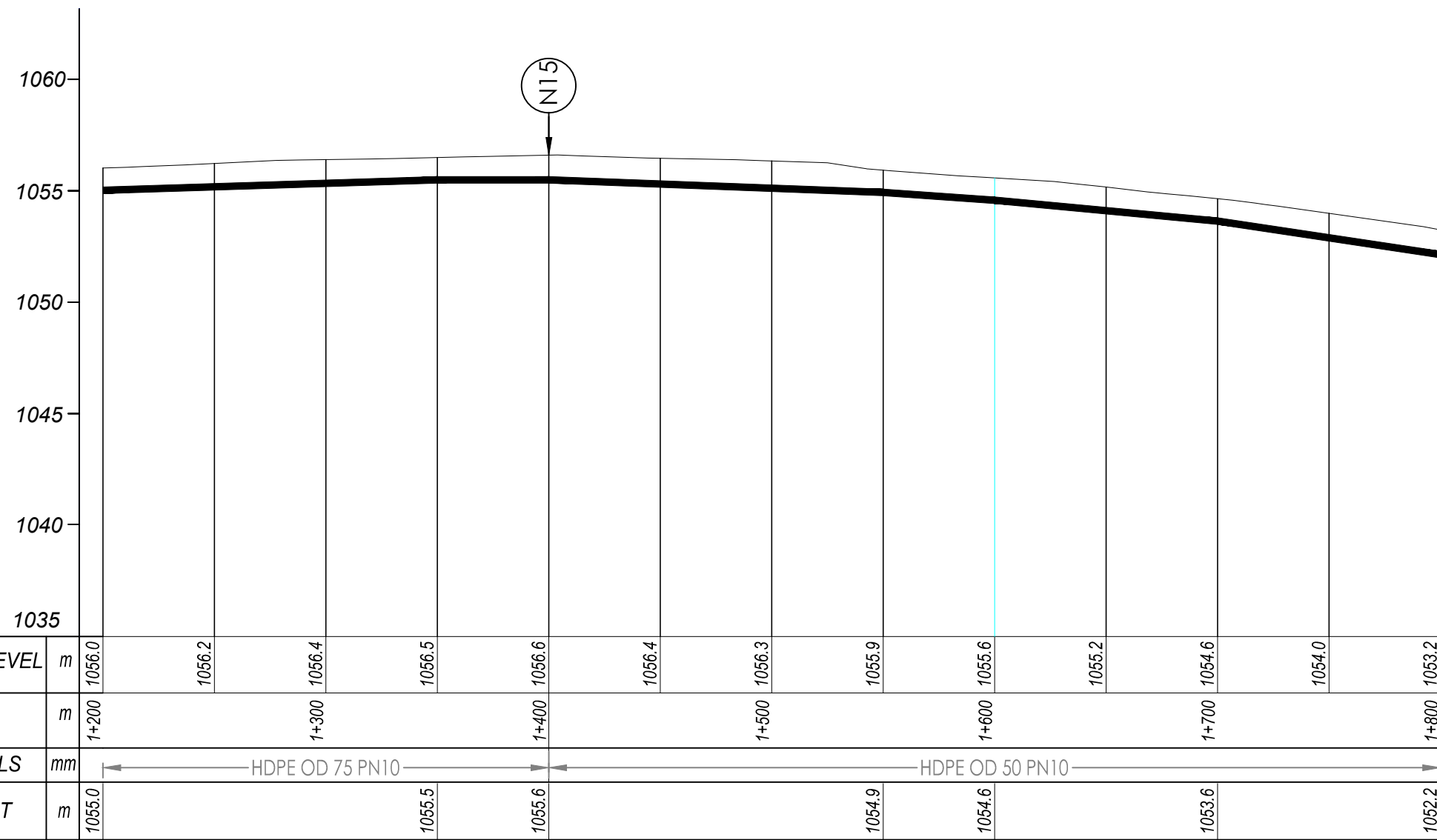
SCALE VERT: 1:250 DRAWING No. MUT/WS/5.5.2
 HOR: 1:2500
 SURVEYED Evans Mpanga DESIGNED Otwane Dan.
 DRAWN Joshua Nyarwanda CHECKED Rodney Barugahare
 DATE April 2021 APPROVED Rodney Barugahare.



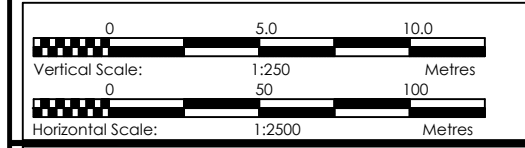
NOTES

LEGEND

- Transmission Pipeline
- Distribution Pipeline
- Ground Level
- Building/House
- Contours
- Road
- DAV Double Orifice Air Valve
- End pipe
- Node N01
- WO-1 Washout Type1
- WO-2 Washout Type2



DISTRIBUTION 05 (1+200.00 - 1+800.00)



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MUTUNDA WATER SUPPLY SYSTEM

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 London EC3M 8AA,
 United Kingdom







CONTRACTOR

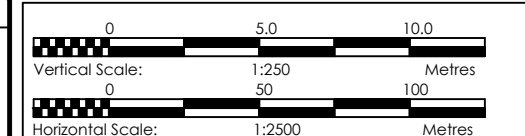
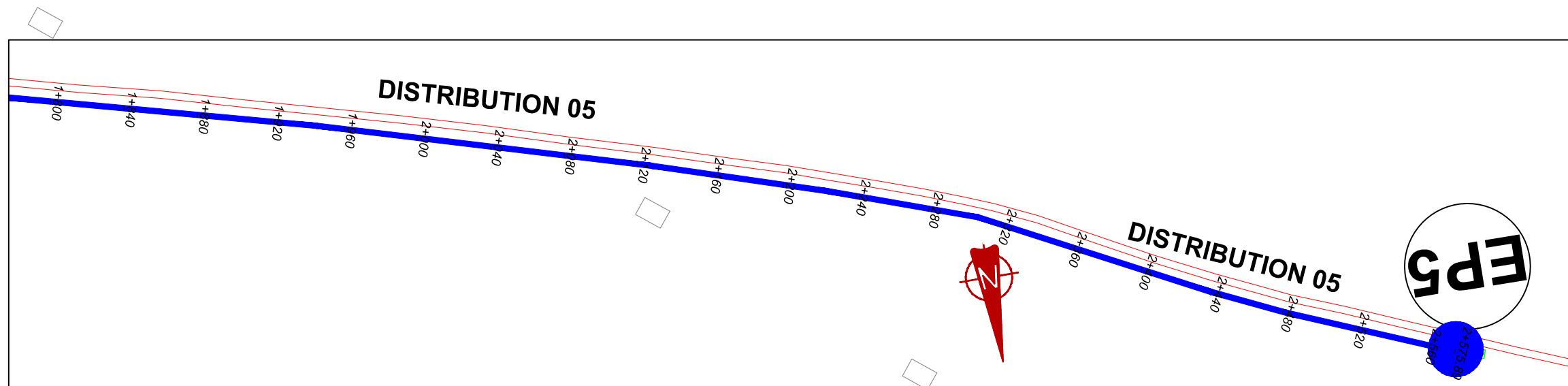
DETAILED ENGINEERING DESIGN
 DRAWING TITLE
DISTRIBUTION LINE 05 (1+200.00 - 1+800.00)

SCALE	VERT: 1:250 HOR: 1:2500	DRAWING No.	MUT/WS/5.5.3
SURVEYED	Evans Mpanga	DESIGNED	Otwane Dan.
DRAWN	Joshua Nyarwanda	CHECKED	Rodney Barugahare
DATE	April 2021	APPROVED	Rodney Barugahare.

NOTES

LEGEND

-  Transmission Pipeline
-  Distribution Pipeline
-  Ground Level
-  Building/House
-  Contours
-  Road
- DAV Double Orifice Air Valve
- EP End pipe
- N01 Node N01
- WO-1 Washout Type1
- WO-2 Washout Type2



CLIENT
 **GOVERNMENT OF UGANDA**
 MINISTRY OF WATER AND ENVIRONMENT

CO-FINANCED BY:
 AND 
 THE WORLD BANK GOVERNMENT OF UGANDA

PROJECT
 CONSULTANCY SERVICES FOR FEASIBILITY STUDY, DETAILED ENGINEERING DESIGN AND CONSTRUCTION SUPERVISION OF SOLAR POWERED PIPED WATER SUPPLY SYSTEMS AND SANITATION FACILITIES IN REFUGEE SETTLEMENTS AND HOST DISTRICTS IN WEST NILE AND NORTHERN UGANDA IN KIRYANDONGO DISTRICT

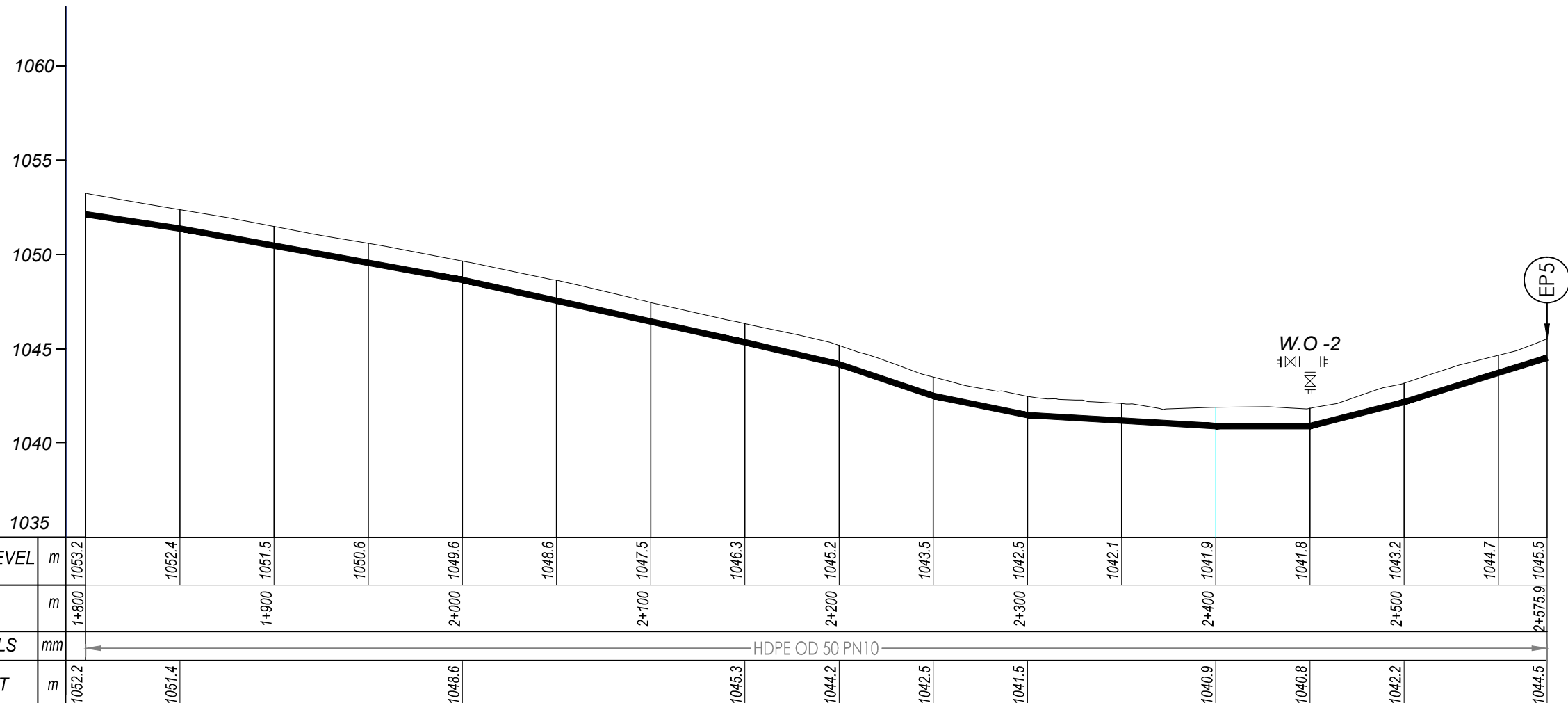
MUTUNDA WATER SUPPLY SYSTEM

CONSULTANT
 SARI 
 In Joint Venture with
 Corporate Headquarter
 10 Philpott Lane, 1st Floor,
 London EC3M 8AA,
 United Kingdom

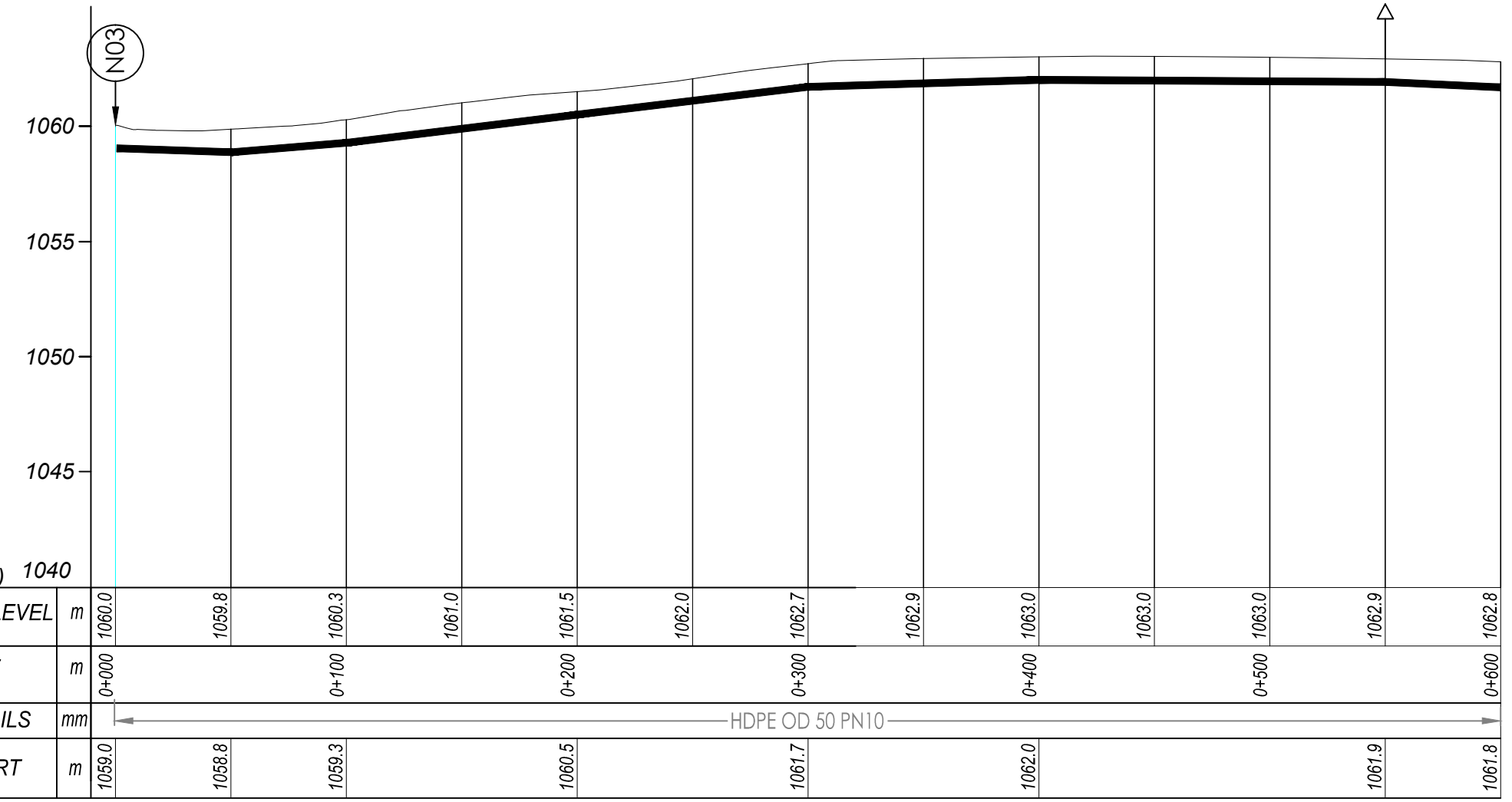
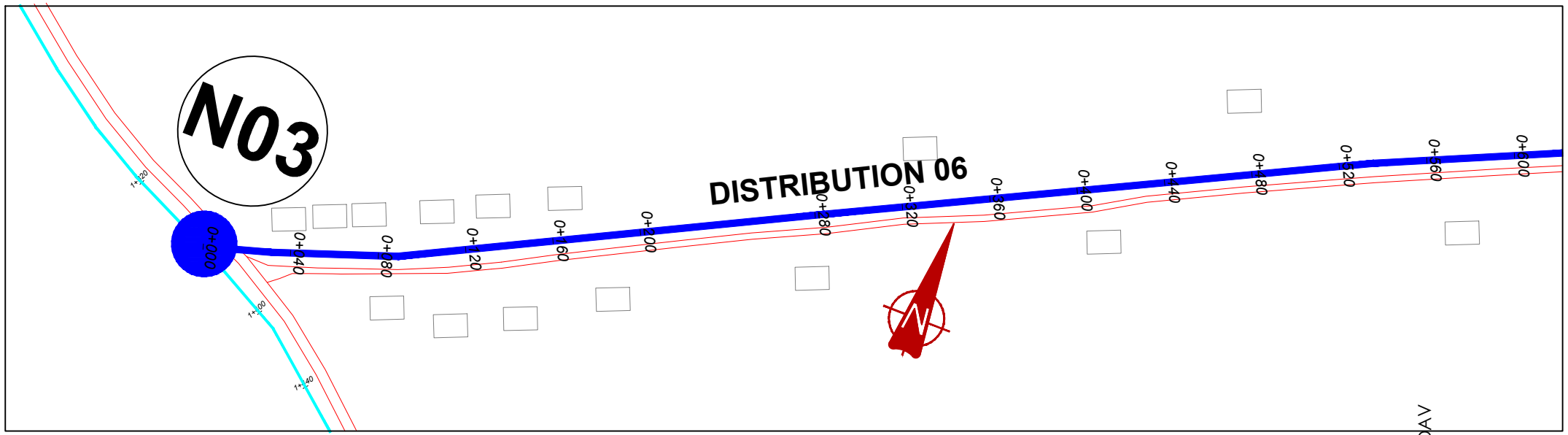
CONTRACTOR

DETAILED ENGINEERING DESIGN
 DRAWING TITLE
DISTRIBUTION LINE 05
(1+800.00 - 2+575.90)

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 HOR: 1:2500
 SURVEYED Evans Mpanga DESIGNED Otwane Dan.
 DRAWN Joshua Nyarwanda CHECKED Rodney Barugahare
 DATE April 2021 APPROVED Rodney Barugahare.



DISTRIBUTION 05 (1+800.00 - 2+575.90)

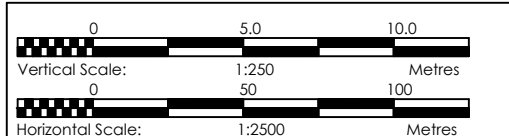


DISTRIBUTION 06 (0+000.00 - 0+600.00)

NOTES

LEGEND

- Transmission Pipeline
- Distribution Pipeline
- Ground Level
- Building/House
- Contours
- Road
- DAV Double Orifice Air Valve
- EP End pipe
- N01 Node N01
- WO-1 Washout Type1
- WO-2 Washout Type2



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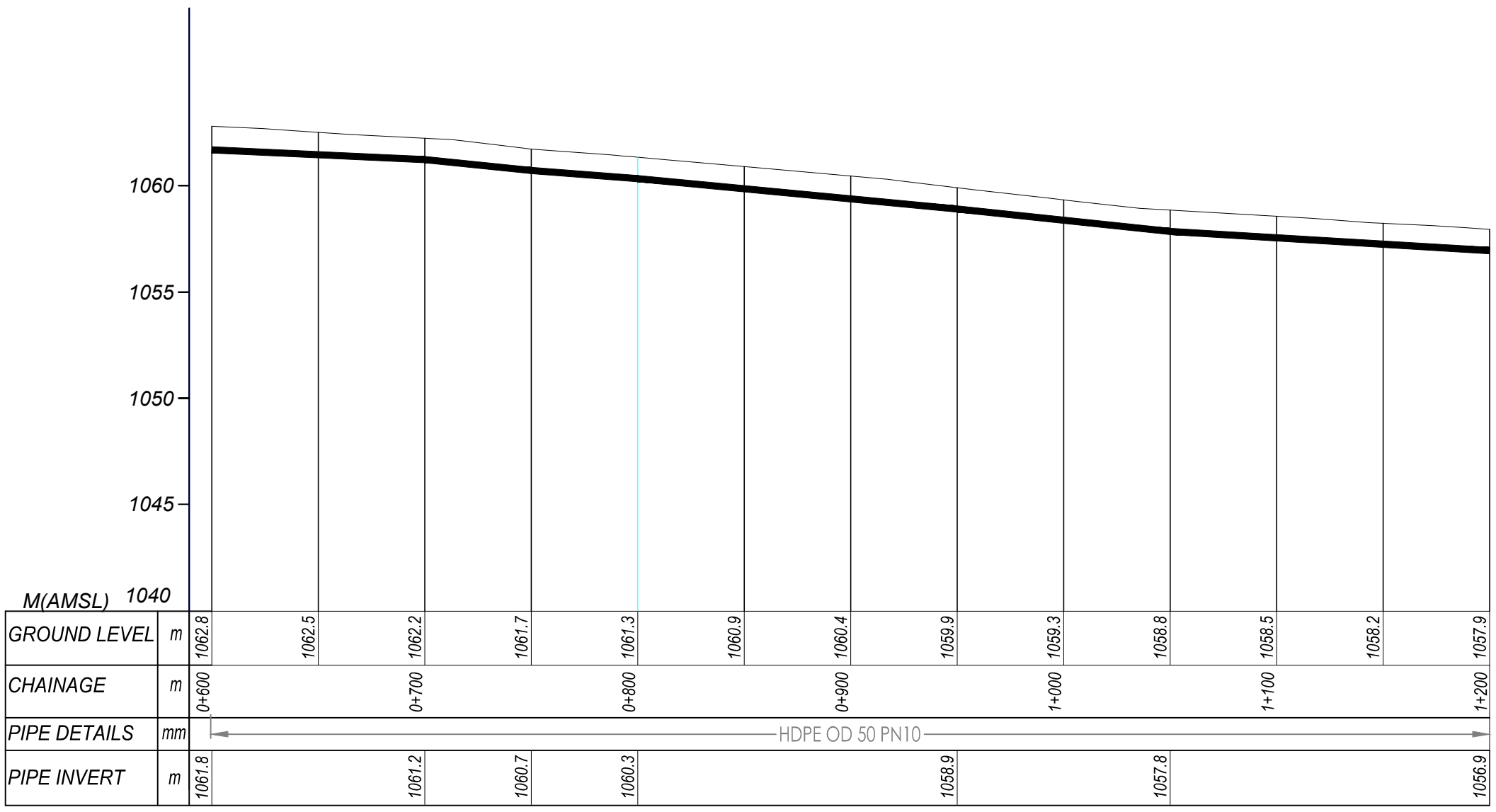
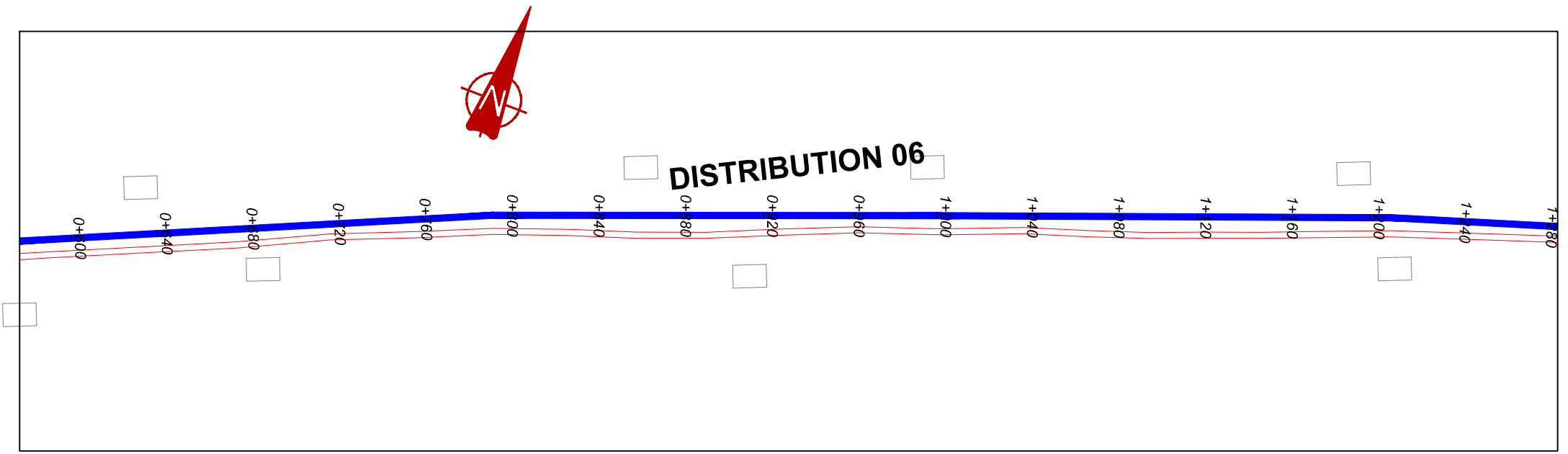
MUTUNDA WATER SUPPLY SYSTEM

CONSULTANT
SARI In Joint Venture with **SGAPI**
 Corporate Headquarter
 10 Philpot Lane, 1st Floor,
 London EC3M 8AA,
 United Kingdom

CONTRACTOR

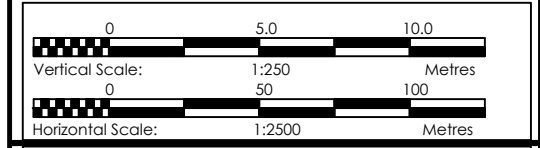
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SURVEYED	Evans Mpanga	DESIGNED	Otwane Dan.
DRAWN	Joshua Nyarwanda	CHECKED	Rodney Barugahare
DATE	April 2021	APPROVED	Rodney Barugahare.



DISTRIBUTION 06 (0+600.00 - 1+200.00)

- NOTES**
- LEGEND**
- Transmission Pipeline
 - Distribution Pipeline
 - Ground Level
 - Building/House
 - Contours
 - Road
 - DAV Double Orifice Air Valve
 - End pipe
 - Node N01
 - Washout Type1
 - Washout Type2



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CONSULTANCY SERVICES FOR FEASIBILITY STUDY,
DETAILED ENGINEERING DESIGN AND CONSTRUCTION
SUPERVISION OF SOLAR POWERED PIPED WATER SUPPLY
SYSTEMS AND SANITATION FACILITIES IN REFUGEE
SETTLEMENTS AND HOST DISTRICTS IN WEST NILE AND
NORTHERN UGANDA IN KIRYANDONGO DISTRICT

MUTUNDA WATER SUPPLY SYSTEM

CONSULTANT

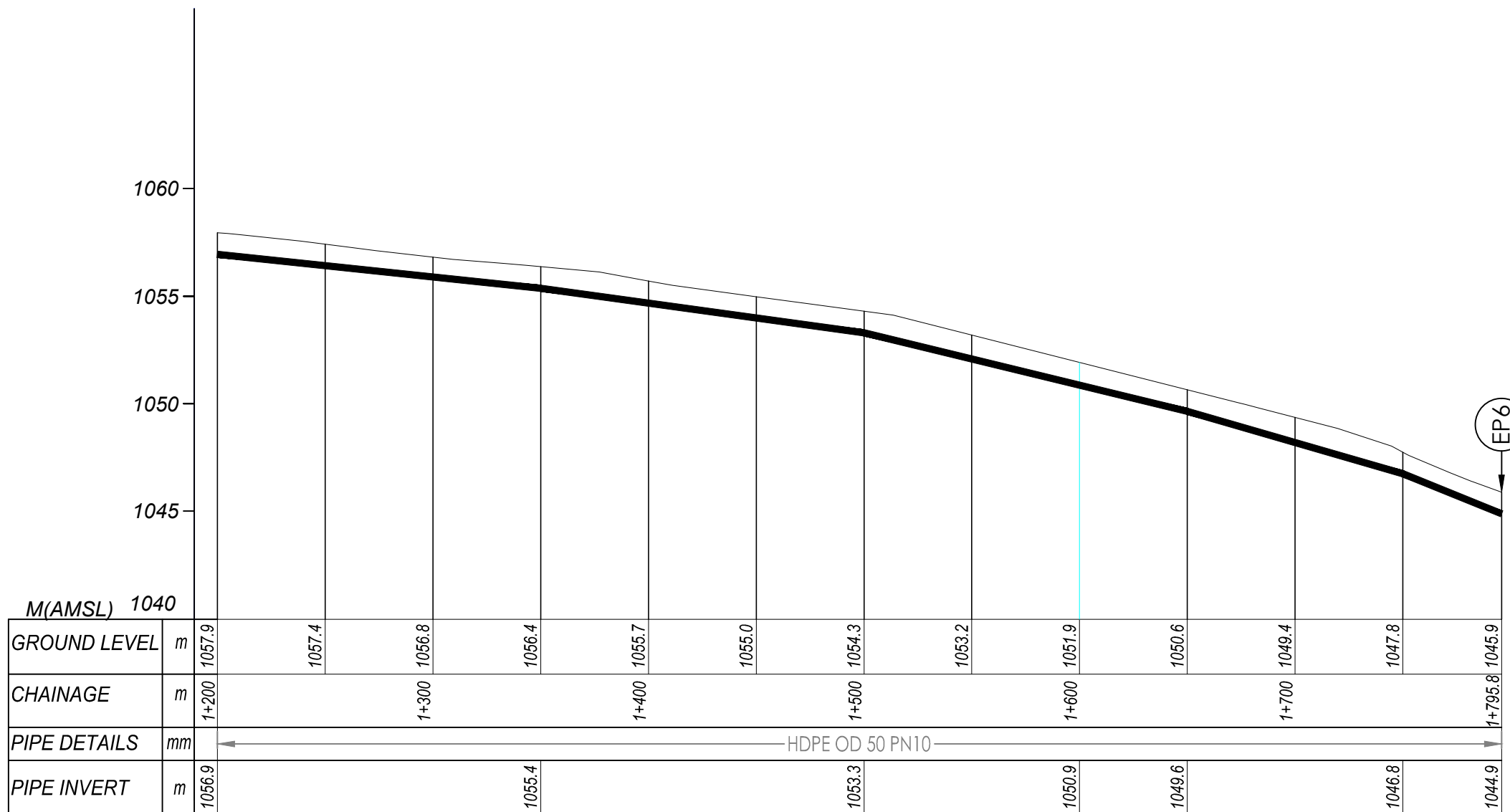
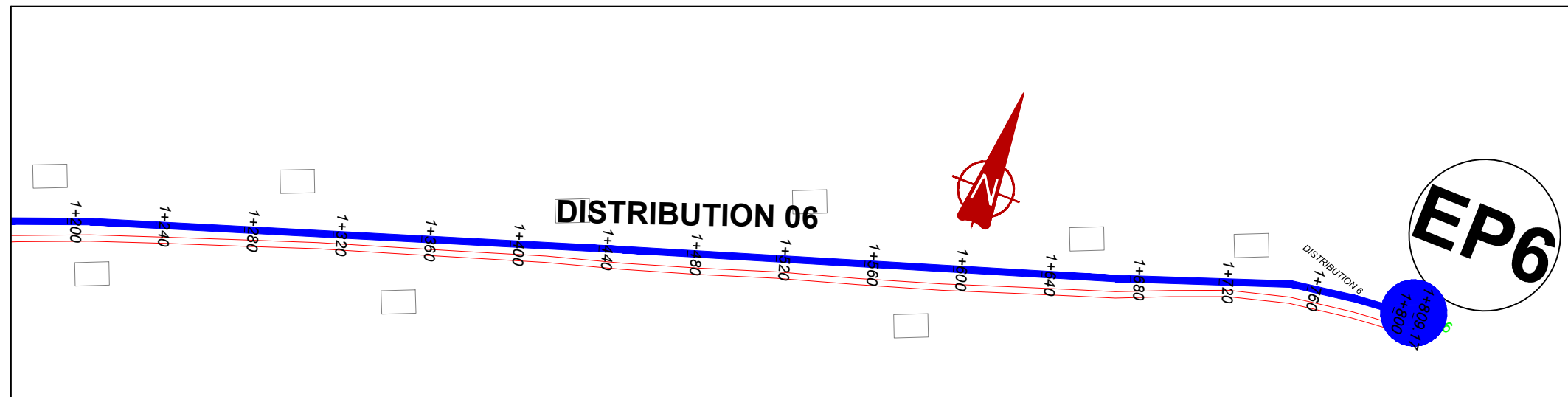
SARI In Joint Venture with **SGAPI**
Corporate Headquarter
10 Philpott Lane, 1st Floor,
London EC3M 8AA,
United Kingdom

CONTRACTOR

DETAILED ENGINEERING DESIGN

DRAWING TITLE
**DISTRIBUTION LINE 06
(0+600.00 - 1+200.00)**

SCALE	VERT: 1:250 HOR: 1:2500	DRAWING No.	MUT/WS/5.6.2
SURVEYED	Evans Mpanga	DESIGNED	Otwane Dan.
DRAWN	Joshua Nyarwanda	CHECKED	Rodney Barugahare
DATE	April 2021	APPROVED	Rodney Barugahare.

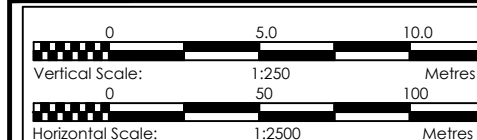


DISTRIBUTION 06 (1+200.00 - 1+795.80)

NOTES

LEGEND

- Transmission Pipeline
- Distribution Pipeline
- Ground Level
- Building/House
- Contours
- Road
- DAV Double Orifice Air Valve
- EP End pipe
- N01 Node N01
- WO-1 Washout Type1
- WO-2 Washout Type2



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MUTUNDA WATER SUPPLY SYSTEM

CONSULTANT
SARI In Joint Venture with **SGAPI**
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 10 Philpot Lane, 1st Floor,
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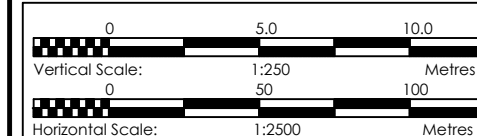
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DISTRIBUTION LINE 06 (1+200.00 - 1+795.80)

SCALE VERT: 1:250 HOR: 1:2500 DRAWING No. MUT/WS/5.6.3
 SURVEYED Evans Mpanga DESIGNED Otwane Dan.
 DRAWN Joshua Nyarwanda CHECKED Rodney Barugahare
 DATE April 2021 APPROVED Rodney Barugahare.

NOTES

LEGEND

-  Transmission Pipeline
-  Distribution Pipeline
-  Ground Level
-  Building/House
-  Contours
-  Road
- DAV Double Orifice Air Valve
- EP End pipe
- N01 Node N01
- WO-1 Washout Type1
- WO-2 Washout Type2



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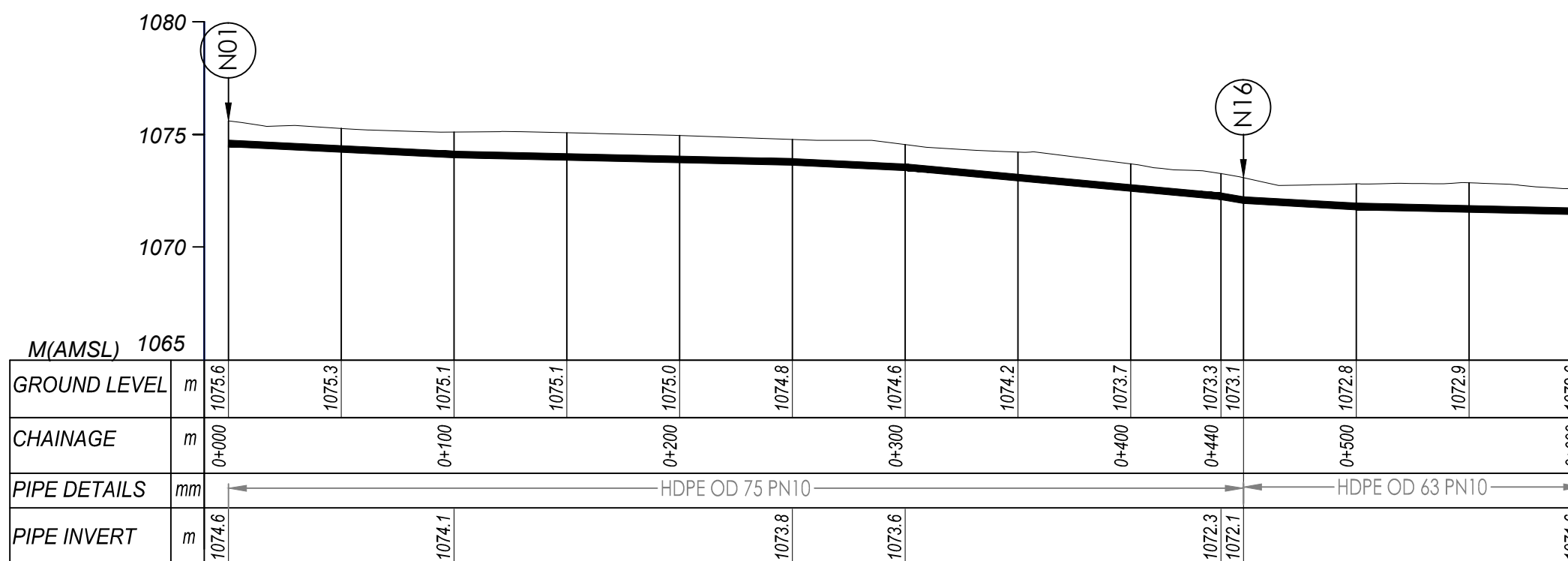
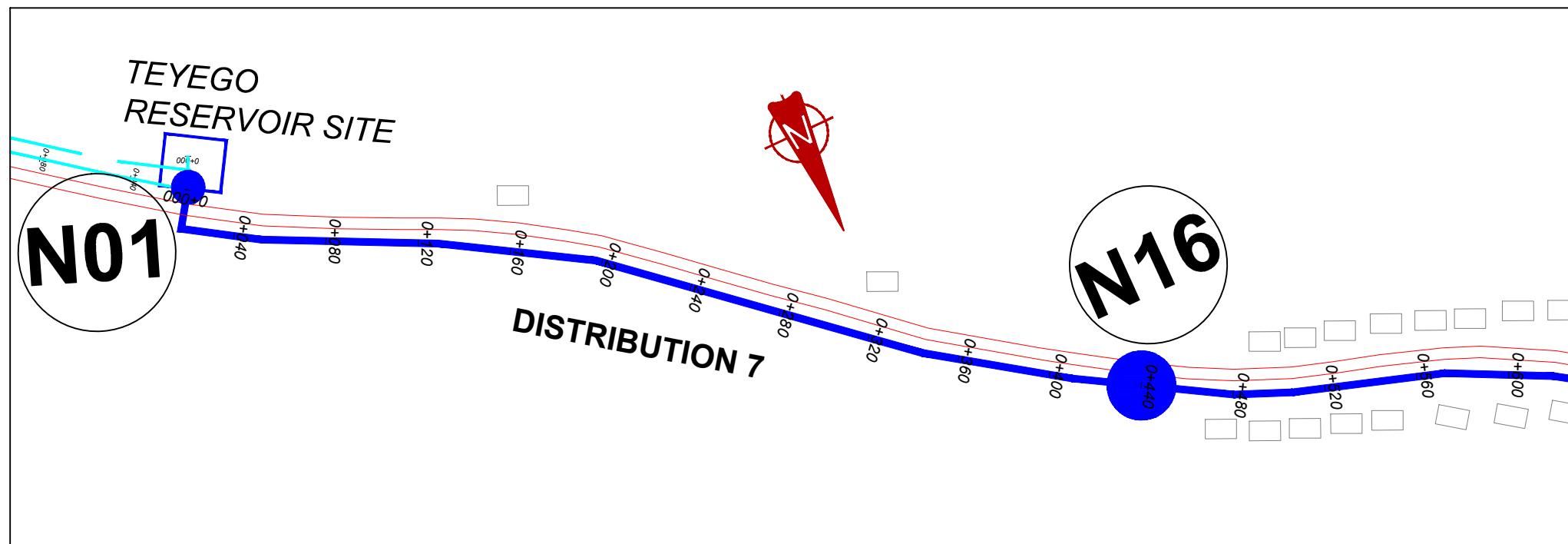
MUTUNDA WATER SUPPLY SYSTEM

CONSULTANT
 **SARI** In Joint Venture with  **SGAPI**
 Corporate Headquarter
 10 Philip Lane, 1st Floor,
 London EC3M 8AA,
 United Kingdom

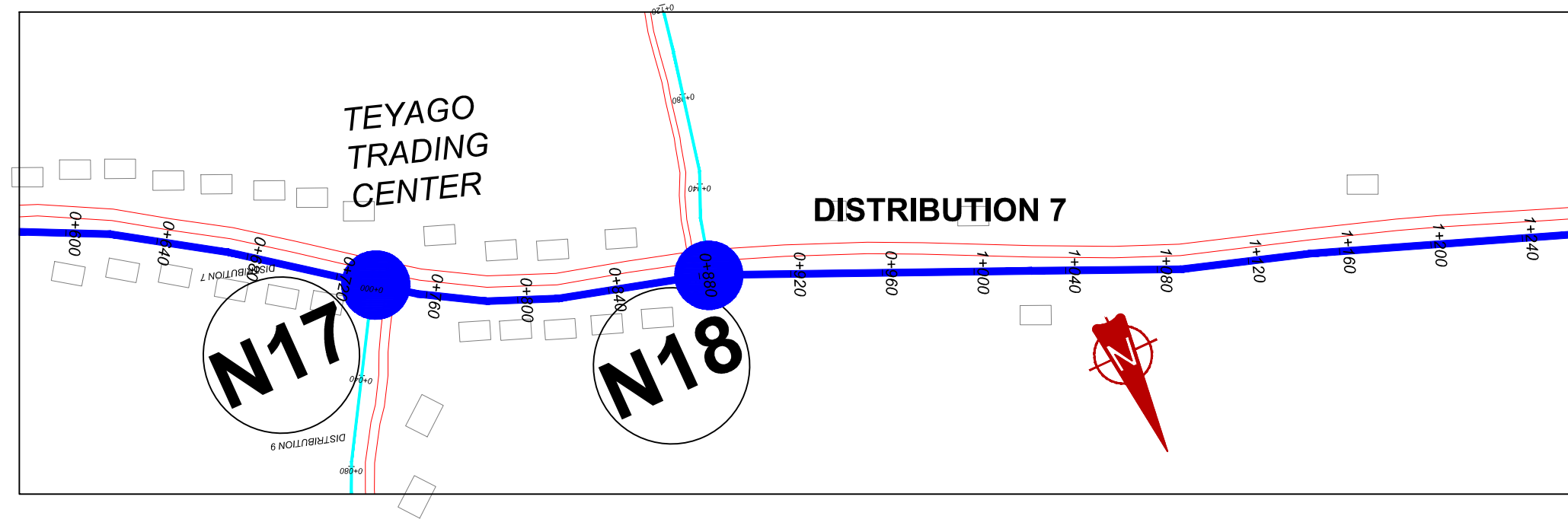
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DETAILED ENGINEERING DESIGN
 DRAWING TITLE
DISTRIBUTION LINE 07
(0+000.00 - 0+600.00)

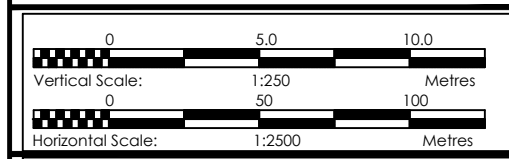
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 SURVEYED Evans Mpanga DESIGNED Otwane Dan.
 DRAWN Joshua Nyarwanda CHECKED Rodney Barugahare
 DATE April 2021 APPROVED Rodney Barugahare.



DISTRIBUTION 07 (0+000.00 - 0+600.00)



- NOTES**
- LEGEND**
- Transmission Pipeline
 - Distribution Pipeline
 - Ground Level
 - Building/House
 - Contours
 - Road
 - DAV Double Orifice Air Valve
 - EP End pipe
 - N01 Node N01
 - WO-1 Washout Type1
 - WO-2 Washout Type2



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MUTUNDA WATER SUPPLY SYSTEM

CONSULTANT

SARI In Joint Venture with **SGAPI**

Corporate Headquarter
10 Philip Lane, 1st Floor,
London EC3M 8AA,
United Kingdom

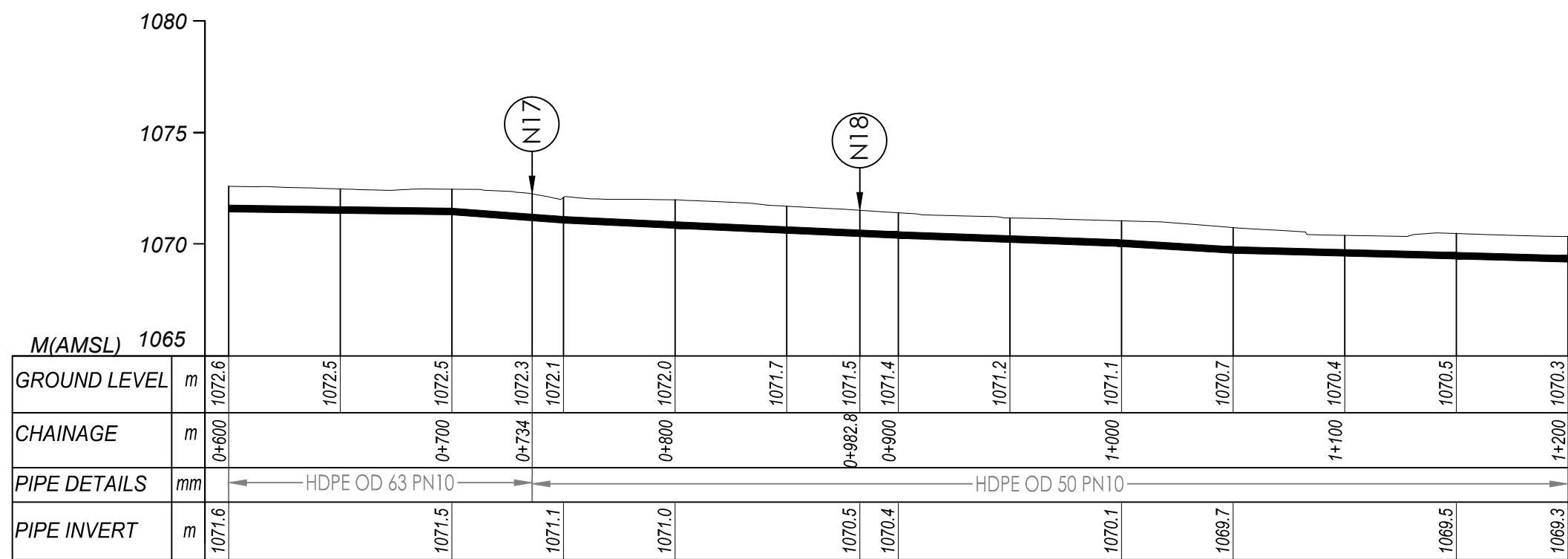
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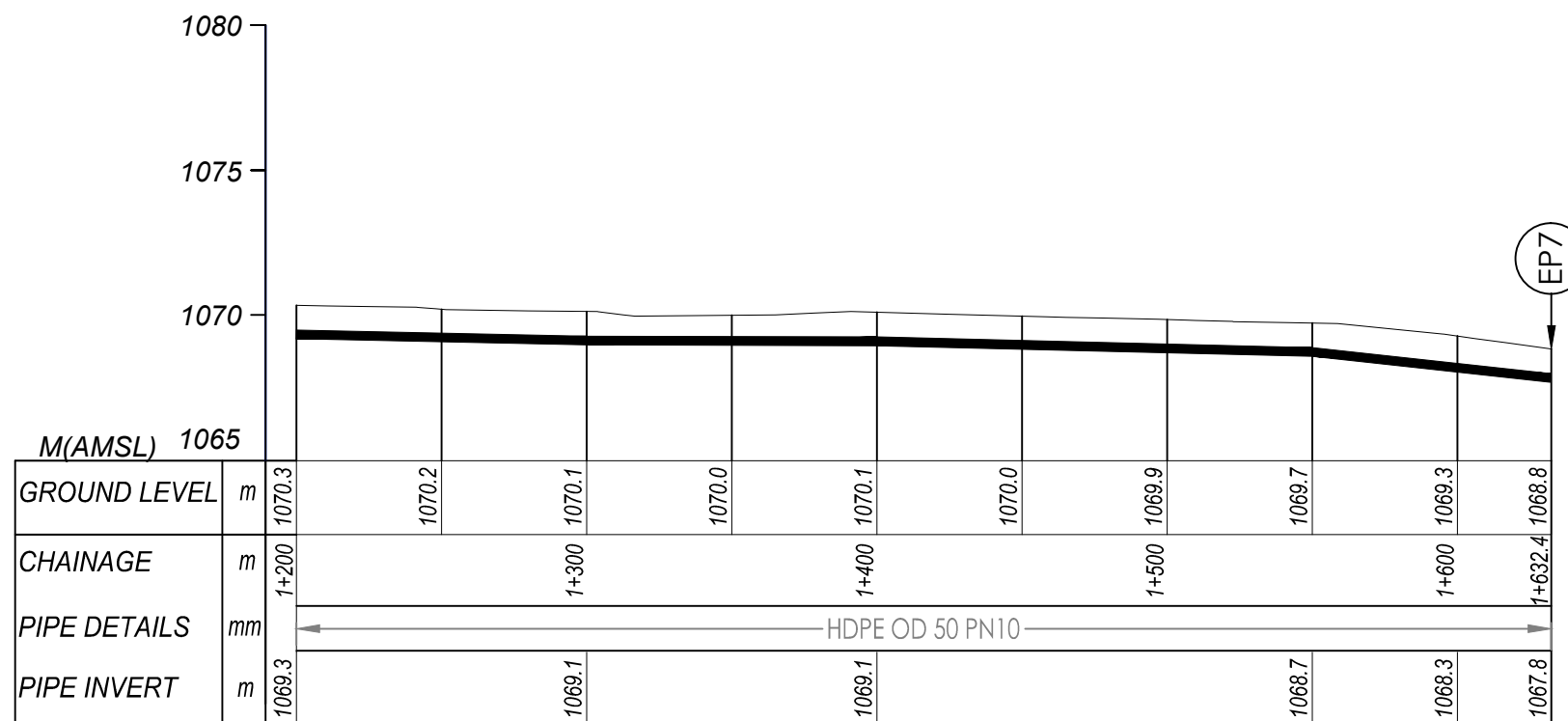
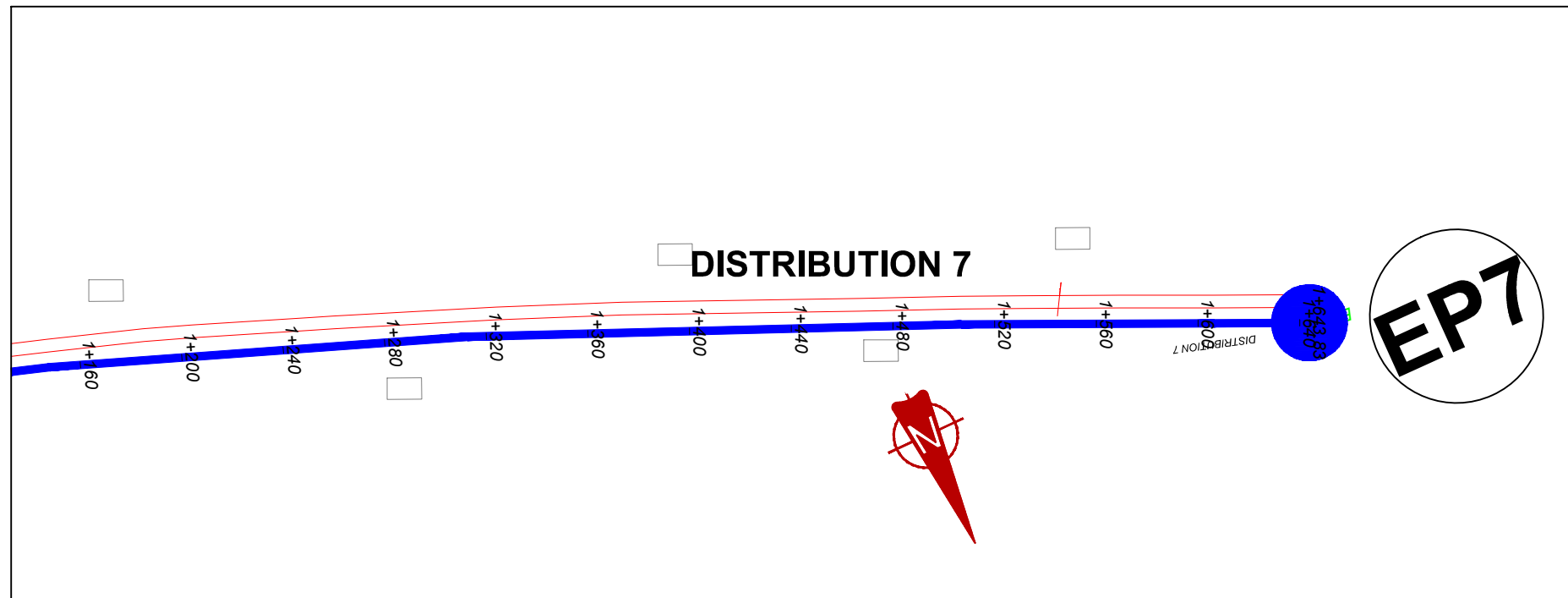
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DISTRIBUTION LINE 07 (0+600.00 - 1+200.00)

SCALE	VERT: 1:250 HOR: 1:2500	DRAWING No.	MUT/WS/5.7.2
SURVEYED	Evans Mpanga	DESIGNED	Otwane Dan.
DRAWN	Joshua Nyarwanda	CHECKED	Rodney Barugahare
DATE	April 2021	APPROVED	Rodney Barugahare.



DISTRIBUTION 07 (0+600.00 - 1+200.00)

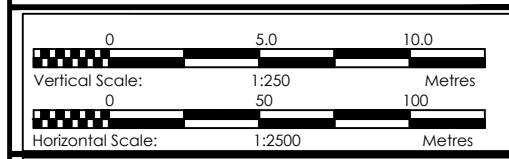


DISTRIBUTION 07 (1+200.00 - 1+632.40)

NOTES

LEGEND

- Transmission Pipeline
- Distribution Pipeline
- Ground Level
- Building/House
- Contours
- Road
- DAV Double Orifice Air Valve
- EP End pipe
- N01 Node N01
- WO-1 Washout Type1
- WO-2 Washout Type2



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GOVERNMENT OF UGANDA
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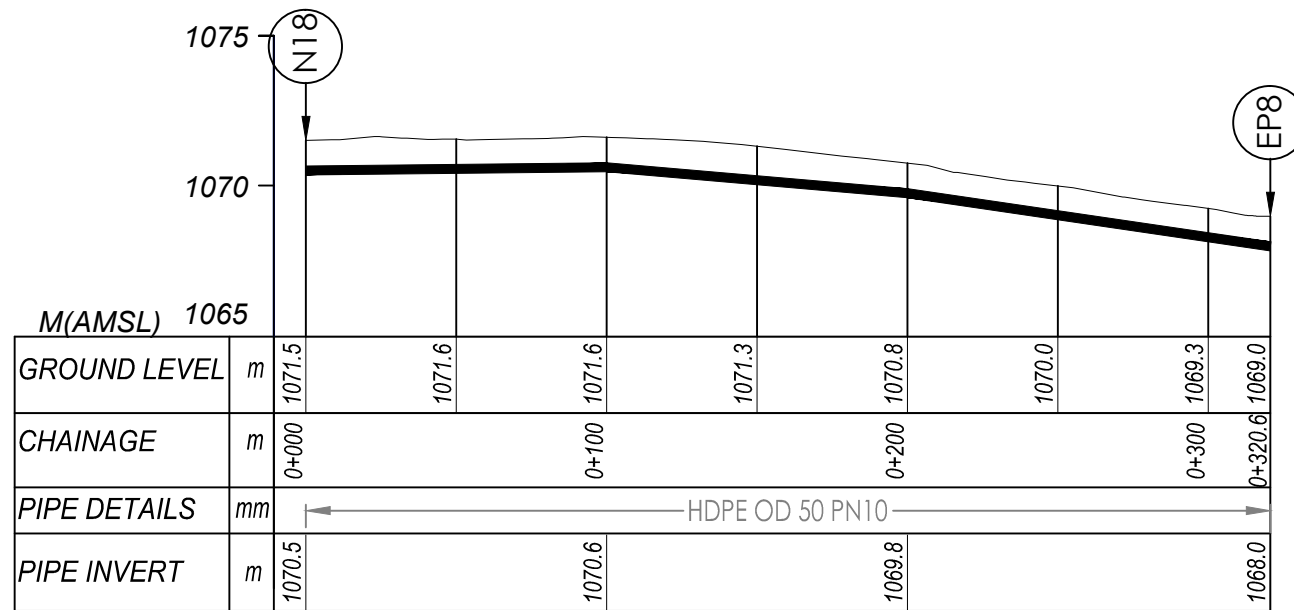
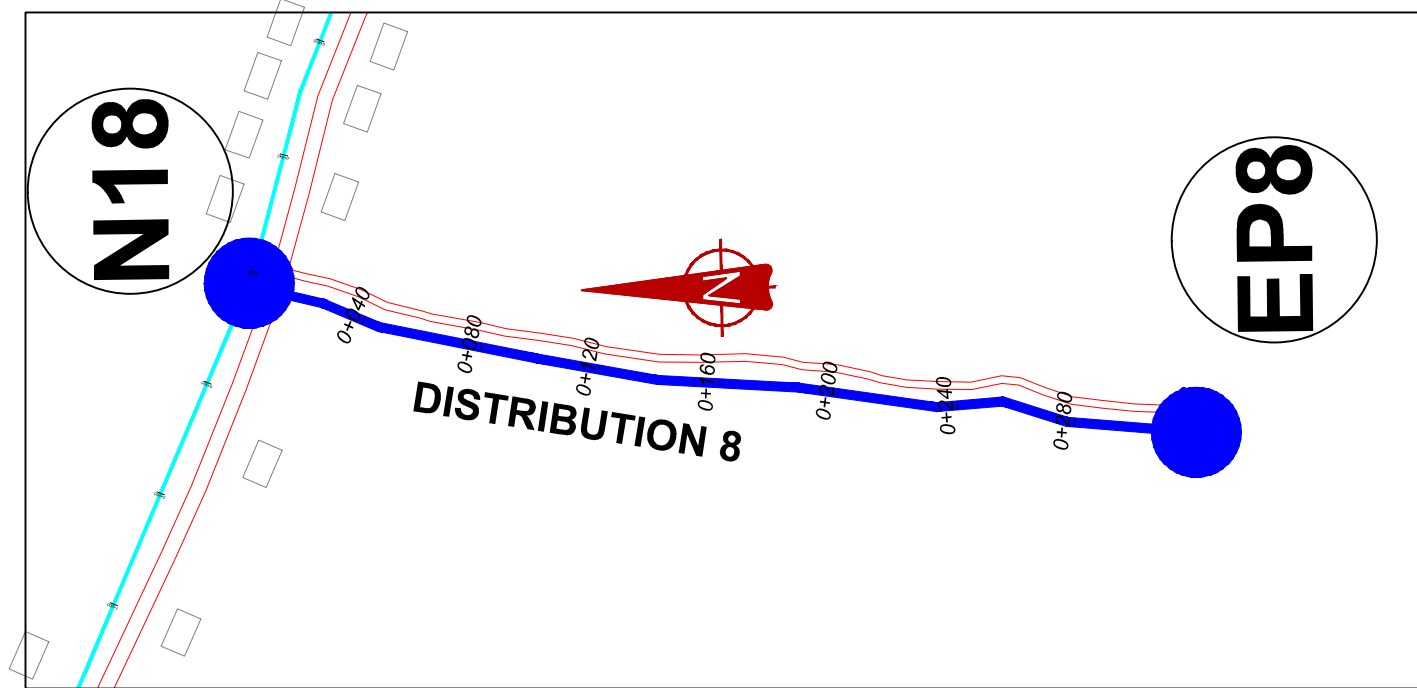
MUTUNDA WATER SUPPLY SYSTEM

CONSULTANT
 SARI In Joint Venture with SGAPI
 Corporate Headquarter
 10 Philpot Lane, 1st Floor,
 London EC3M 8AA,
 United Kingdom

CONTRACTOR

DETAILED ENGINEERING DESIGN
 DRAWING TITLE
DISTRIBUTION LINE 07 (1+200.00 - 1+632.40)

SCALE	VERT: 1:250 HOR: 1:2500	DRAWING No.	MUT/WS/5.7.3
SURVEYED	Evans Mpanga	DESIGNED	Otwane Dan.
DRAWN	Joshua Nyarwanda	CHECKED	Rodney Barugahare
DATE	April 2021	APPROVED	Rodney Barugahare.

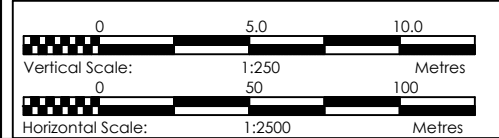


DISTRIBUTION 08 (0+000.00 - 0+320.60)

NOTES

LEGEND

- Transmission Pipeline
- Distribution Pipeline
- Ground Level
- Building/House
- Contours
- Road
- DAV Double Orifice Air Valve
- EP End pipe
- N01 Node N01
- WO-1 Washout Type1
- WO-2 Washout Type2



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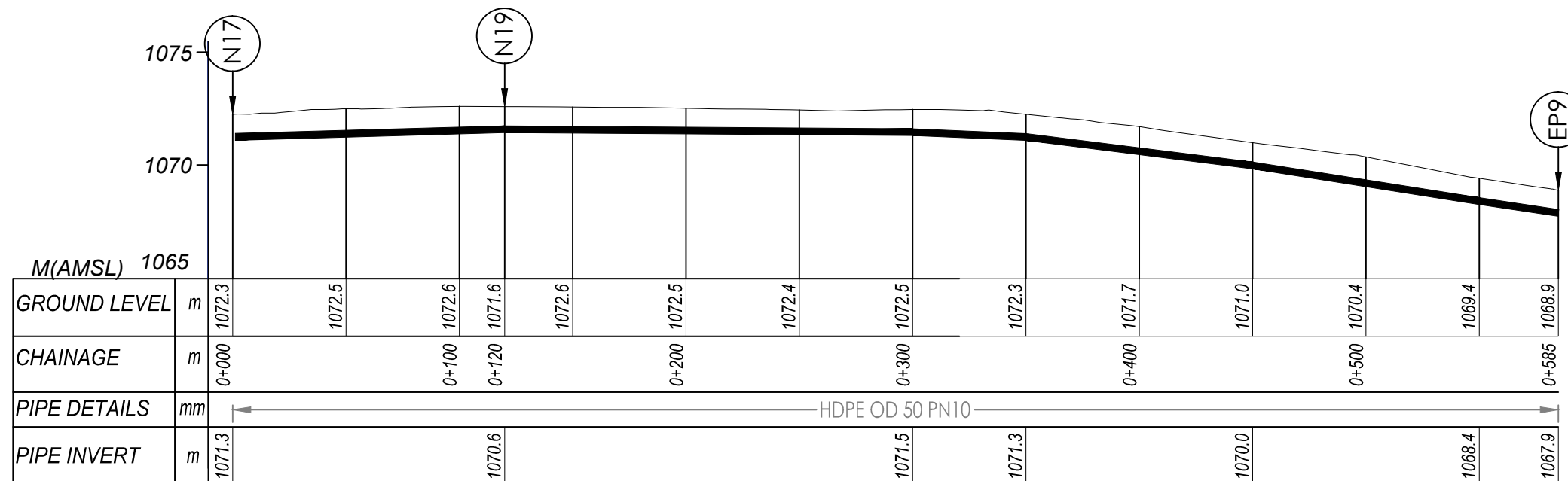
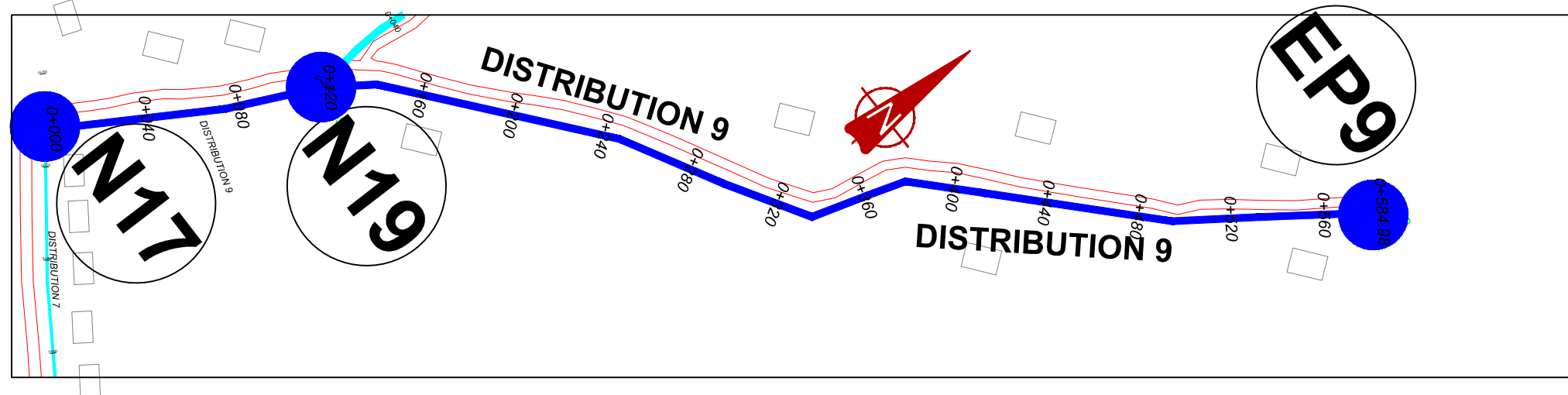
MUTUNDA WATER SUPPLY SYSTEM

CONSULTANT
SARI In Joint Venture with **SGAPI**
 Corporate Headquarter
 10 Philip Lane, 1st Floor,
 London EC3M 8AA,
 United Kingdom

CONTRACTOR

DETAILED ENGINEERING DESIGN
 DRAWING TITLE
DISTRIBUTION LINE 08
(0+000.00 - 0+320.60)

SCALE	VERT: 1:250 HOR: 1:2500	DRAWING No.	MUT/WS/5.8.1
SURVEYED	Evans Mpanga	DESIGNED	Otwane Dan.
DRAWN	Joshua Nyarwanda	CHECKED	Rodney Barugahare
DATE	April 2021	APPROVED	Rodney Barugahare.

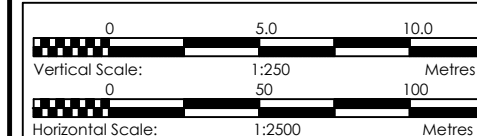


DISTRIBUTION 09 (0+000.00 - 0+585.00)

NOTES

LEGEND

- Transmission Pipeline
- Distribution Pipeline
- Ground Level
- Building/House
- Contours
- Road
- DAV Double Orifice Air Valve
- EP End pipe
- N01 Node N01
- WO-1 Washout Type1
- WO-2 Washout Type2



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MUTUNDA WATER SUPPLY SYSTEM

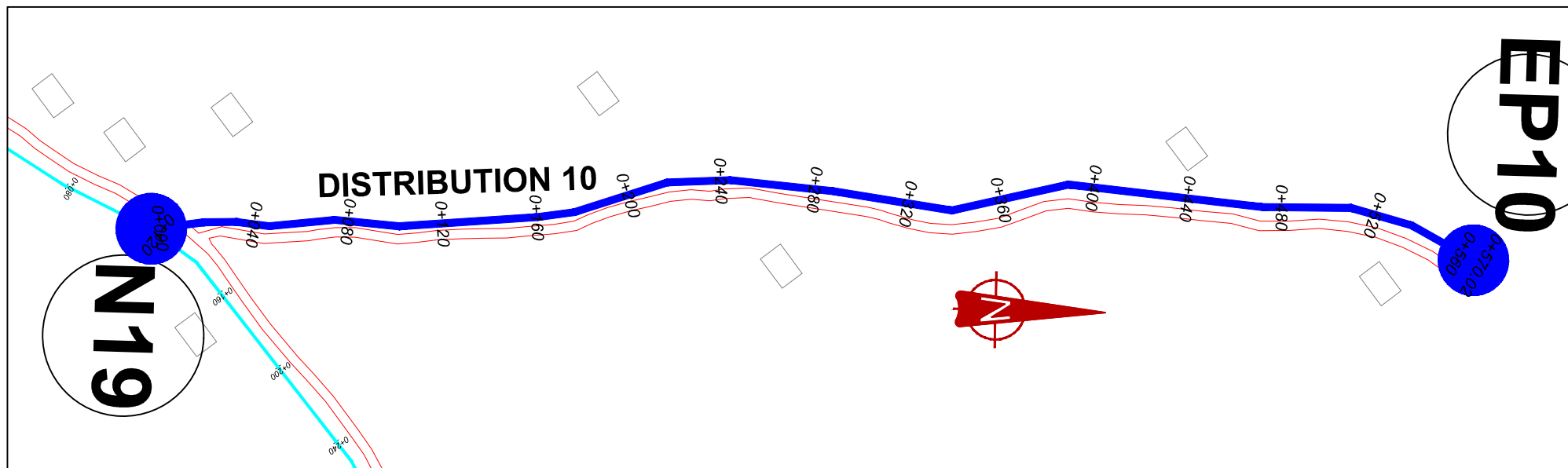
CONSULTANT
SARI In Joint Venture with **SGAPI**
 Corporate Headquarter
 10 Philip's Lane, 1st Floor,
 London EC3M 8AA,
 United Kingdom

CONTRACTOR

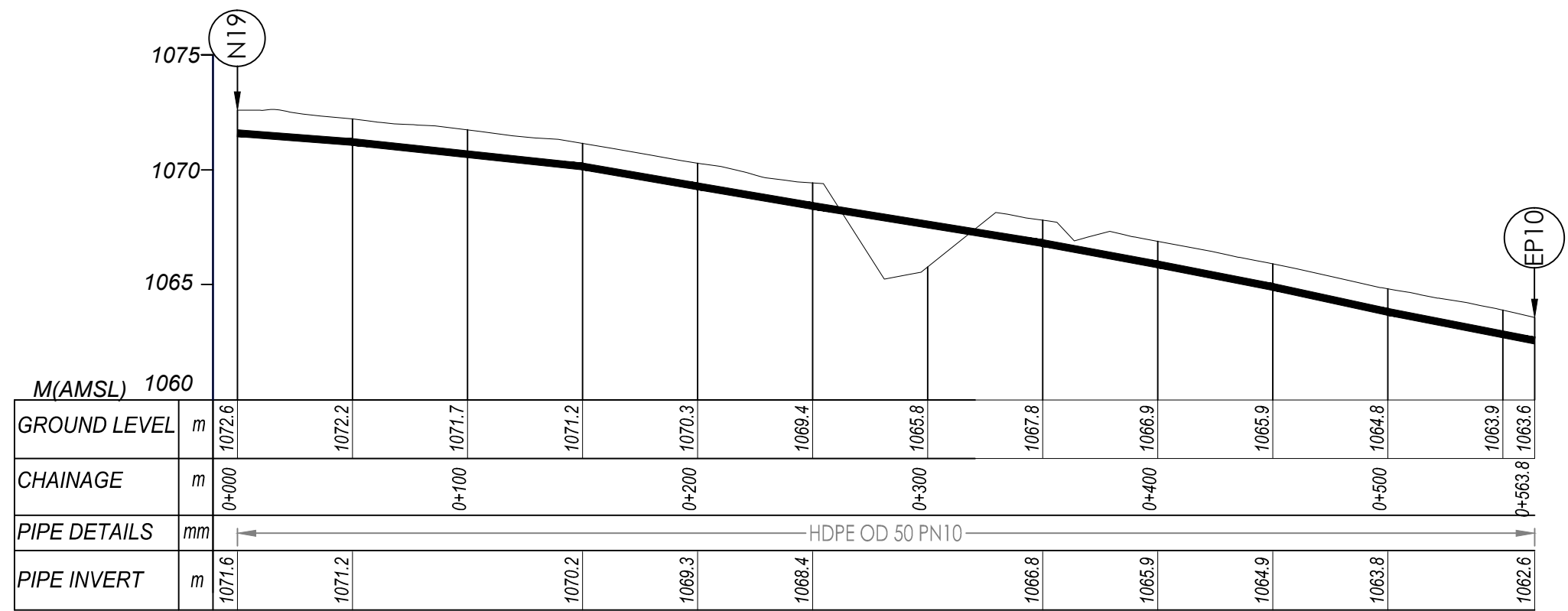
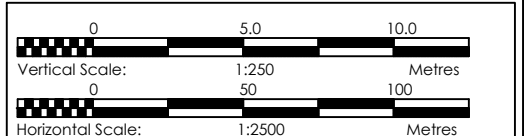
DETAILED ENGINEERING DESIGN

DRAWING TITLE
DISTRIBUTION LINE 09
(0+000.00 - 0+585.00)

SCALE	VERT: 1:250 HOR: 1:2500	DRAWING No.	MUT/WS/5.9.1
SURVEYED	Evans Mpanga	DESIGNED	Otwane Dan.
DRAWN	Joshua Nyarwanda	CHECKED	Rodney Barugahare
DATE	April 2021	APPROVED	Rodney Barugahare.



- NOTES**
- LEGEND**
- Transmission Pipeline
 - Distribution Pipeline
 - Ground Level
 - Building/House
 - Contours
 - Road
 - DAV Double Orifice Air Valve
 - EP End pipe
 - N01 Node N01
 - WO-1 Washout Type1
 - WO-2 Washout Type2



DISTRIBUTION 10 (0+000.00 - 0+563.80)

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 CONSULTANCY SERVICES FOR FEASIBILITY STUDY, DETAILED ENGINEERING DESIGN AND CONSTRUCTION SUPERVISION OF SOLAR POWERED PIPED WATER SUPPLY SYSTEMS AND SANITATION FACILITIES IN REFUGEE SETTLEMENTS AND HOST DISTRICTS IN WEST NILE AND NORTHERN UGANDA IN KIRYANDONGO DISTRICT

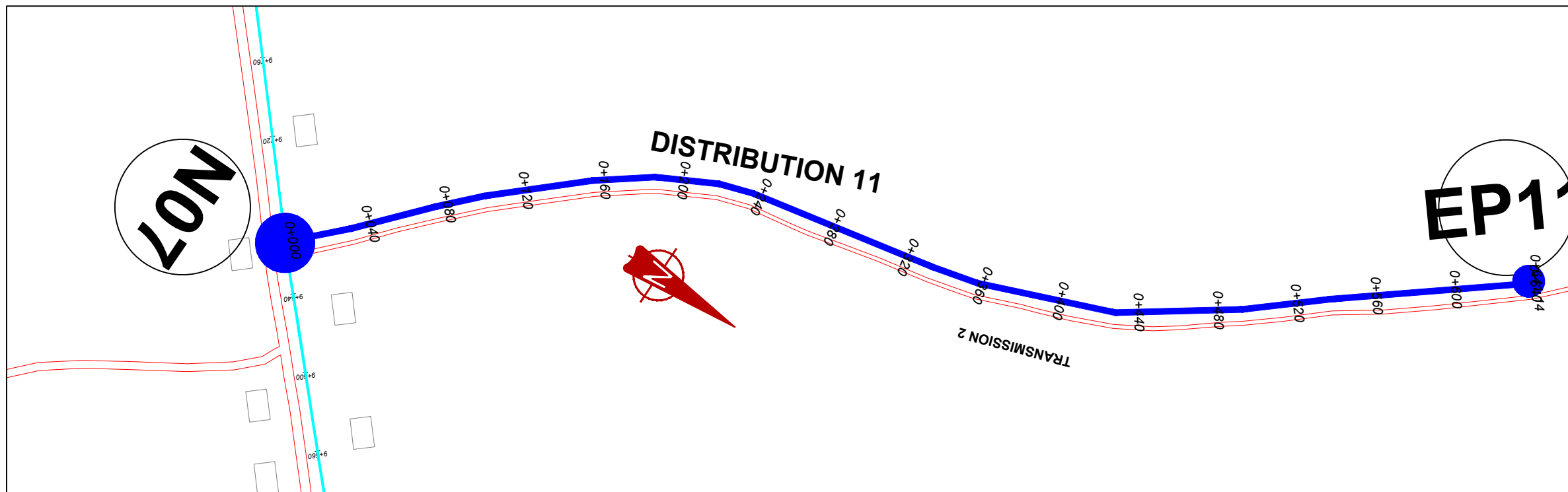
MUTUNDA WATER SUPPLY SYSTEM

CONSULTANT
 SARI In Joint Venture with SGAPI
 Corporate Headquarter
 10 Philip Lane, 1st Floor,
 London EC3M 8AA,
 United Kingdom

CONTRACTOR

DETAILED ENGINEERING DESIGN
 DRAWING TITLE
DISTRIBUTION LINE 10 (0+000.00 - 0+563.80)

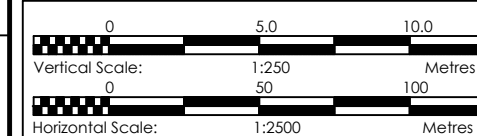
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SURVEYED	Evans Mpanga	DESIGNED	Otwane Dan.
DRAWN	Joshua Nyarwanda	CHECKED	Rodney Barugahare
DATE	April 2021	APPROVED	Rodney Barugahare.



NOTES

LEGEND

- Transmission Pipeline
- Distribution Pipeline
- Ground Level
- Building/House
- Contours
- Road
- DAV Double Orifice Air Valve
- End pipe
- Node N01
- Washout Type1
- Washout Type2



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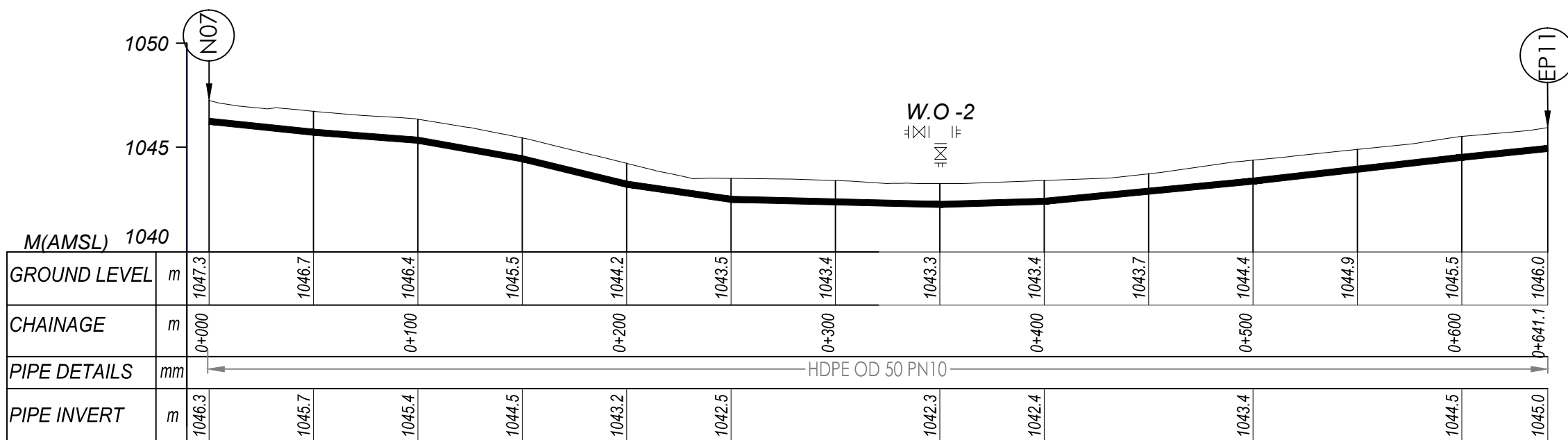
MUTUNDA WATER SUPPLY SYSTEM

CONSULTANT
SARI CONSULTING LTD In Joint Venture with **SGAPI**
 Corporate Headquarter
 10 Philip Lane, 1st Floor,
 London EC3M 8AA,
 United Kingdom

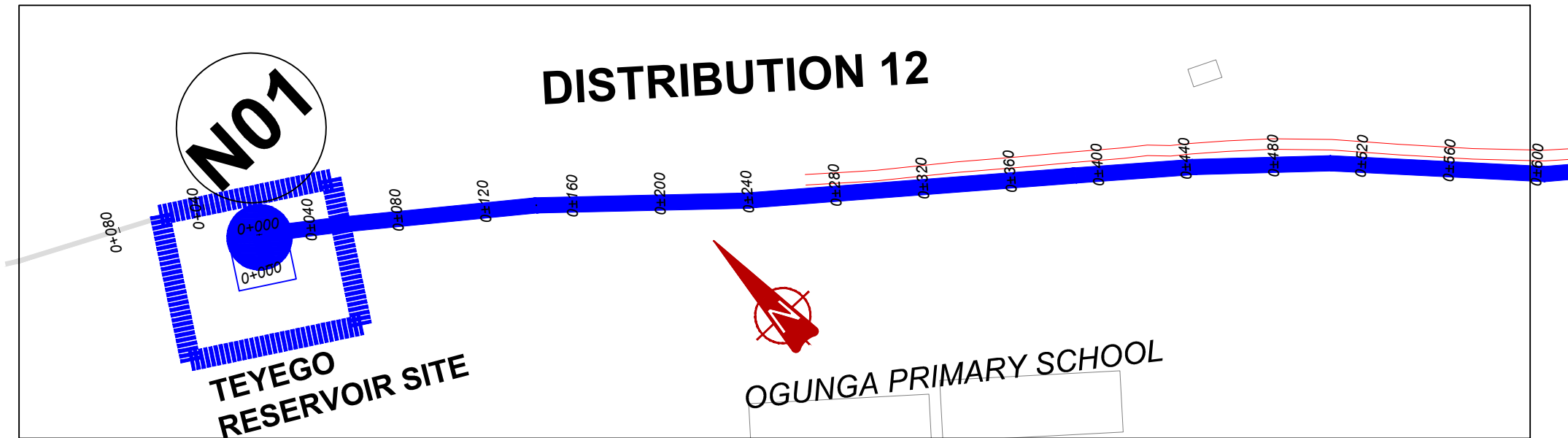
CONTRACTOR

DETAILED ENGINEERING DESIGN
DRAWING TITLE
DISTRIBUTION LINE 11
(0+000.00 - 0+641.10)

SCALE	VERT: 1:250 HOR: 1:2500	DRAWING No.	MUT/WS/5.11.1
SURVEYED	Evans Mpanga	DESIGNED	Otwane Dan.
DRAWN	Joshua Nyarwanda	CHECKED	Rodney Barugahare
DATE	April 2021	APPROVED	Rodney Barugahare.



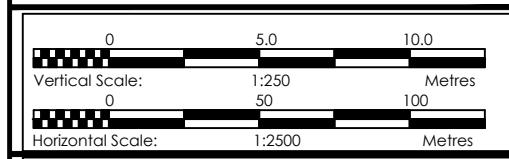
DISTRIBUTION 11 (0+000.00 - 0+641.10)



NOTES

LEGEND

- Transmission Pipeline
- Distribution Pipeline
- Ground Level
- Building/House
- Contours
- Road
- DAV Double Orifice Air Valve
- End pipe
- Node N01
- Washout Type1
- Washout Type2



CLIENT
GOVERNMENT OF UGANDA
 MINISTRY OF WATER AND ENVIRONMENT

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 CONSULTANCY SERVICES FOR FEASIBILITY STUDY, DETAILED ENGINEERING DESIGN AND CONSTRUCTION SUPERVISION OF SOLAR POWERED PIPED WATER SUPPLY SYSTEMS AND SANITATION FACILITIES IN REFUGEE SETTLEMENTS AND HOST DISTRICTS IN WEST NILE AND NORTHERN UGANDA IN KIRYANDONGO DISTRICT

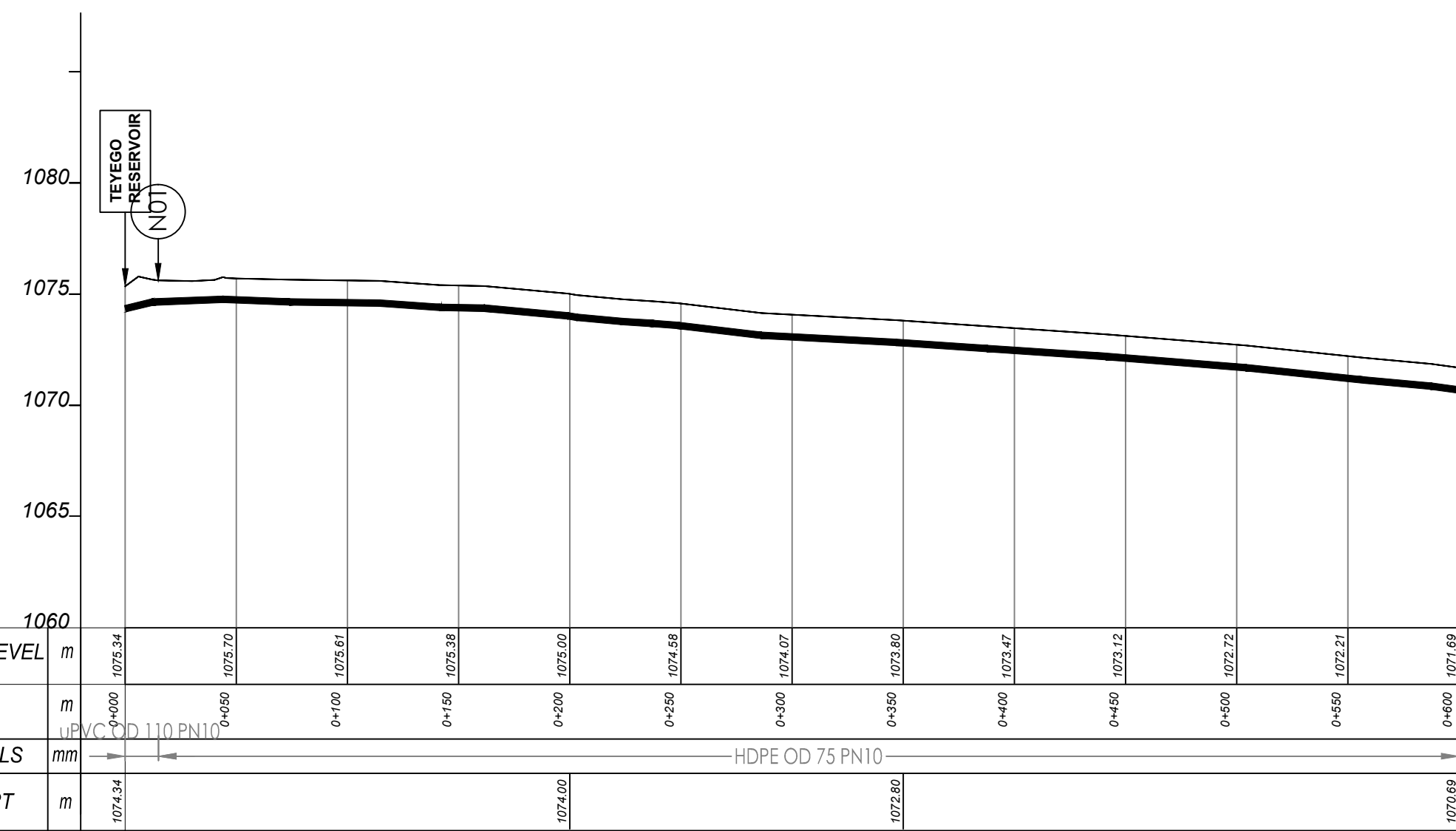
MUTUNDA WATER SUPPLY SYSTEM

CONSULTANT
 In Joint Venture with
 Corporate Headquarter
 10 Philpott Lane, 1st Floor,
 London EC3M 8AA,
 United Kingdom

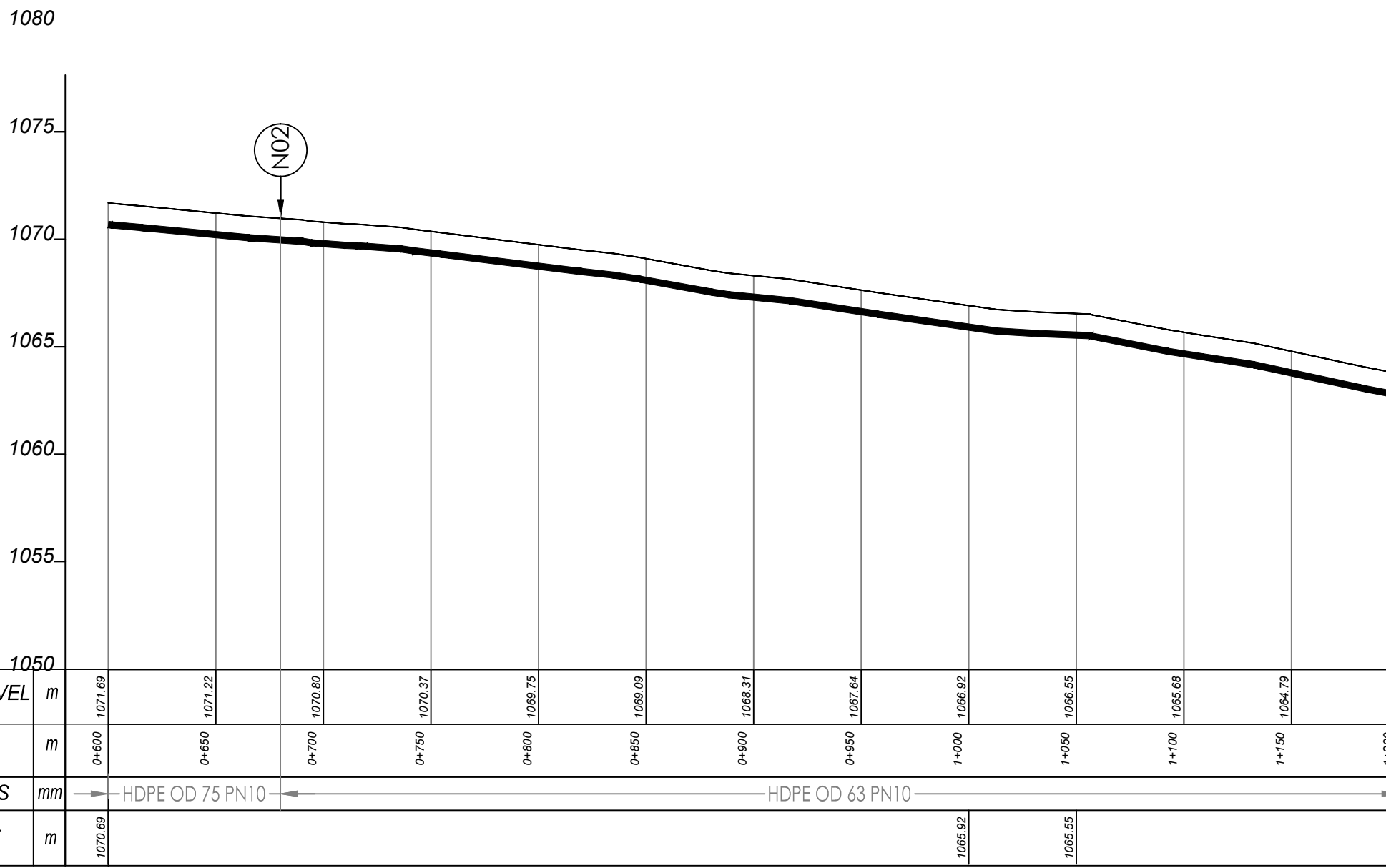
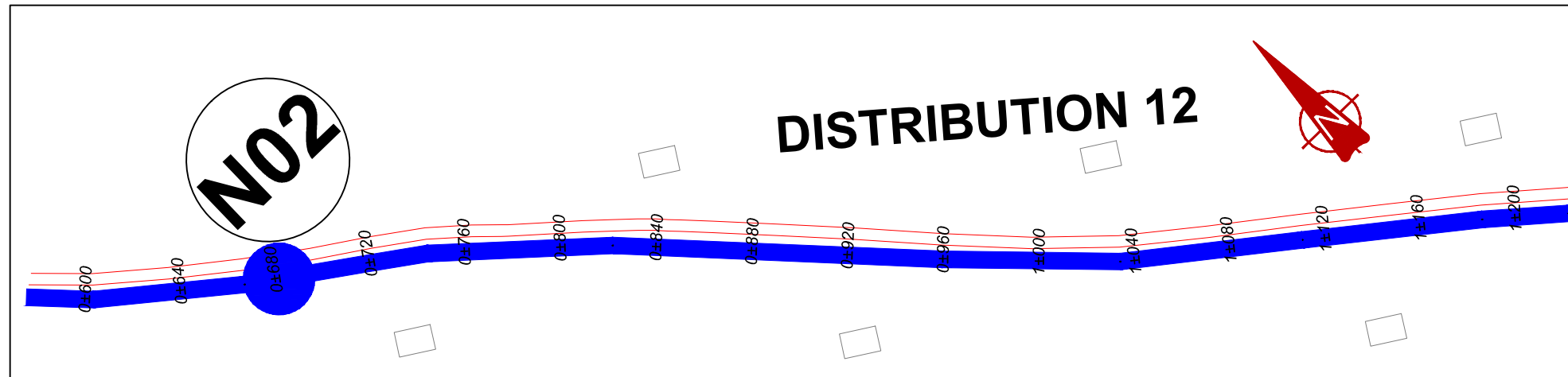
CONTRACTOR

DETAILED ENGINEERING DESIGN
 DRAWING TITLE
DISTRIBUTION LINE 12
(0+000.00 - 0+600.00)

SCALE	VERT: 1:250 HOR: 1:2500	DRAWING No.	MUT/WS/5.12.1
SURVEYED	Evans Mpanga	DESIGNED	Otwane Dan.
DRAWN	Joshua Nyarwanda	CHECKED	Rodney Barugahare
DATE	April 2021	APPROVED	Rodney Barugahare.



DISTRIBUTION 12 (0+000.00 - 0+600.00)

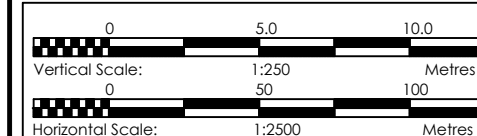


DISTRIBUTION 12 (0+600.00 - 1+200.00)

NOTES

LEGEND

- Transmission Pipeline
- Distribution Pipeline
- Ground Level
- Building/House
- Contours
- Road
- DAV Double Orifice Air Valve
- EP End pipe
- N01 Node N01
- WO-1 Washout Type1
- WO-2 Washout Type2



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MUTUNDA WATER SUPPLY SYSTEM

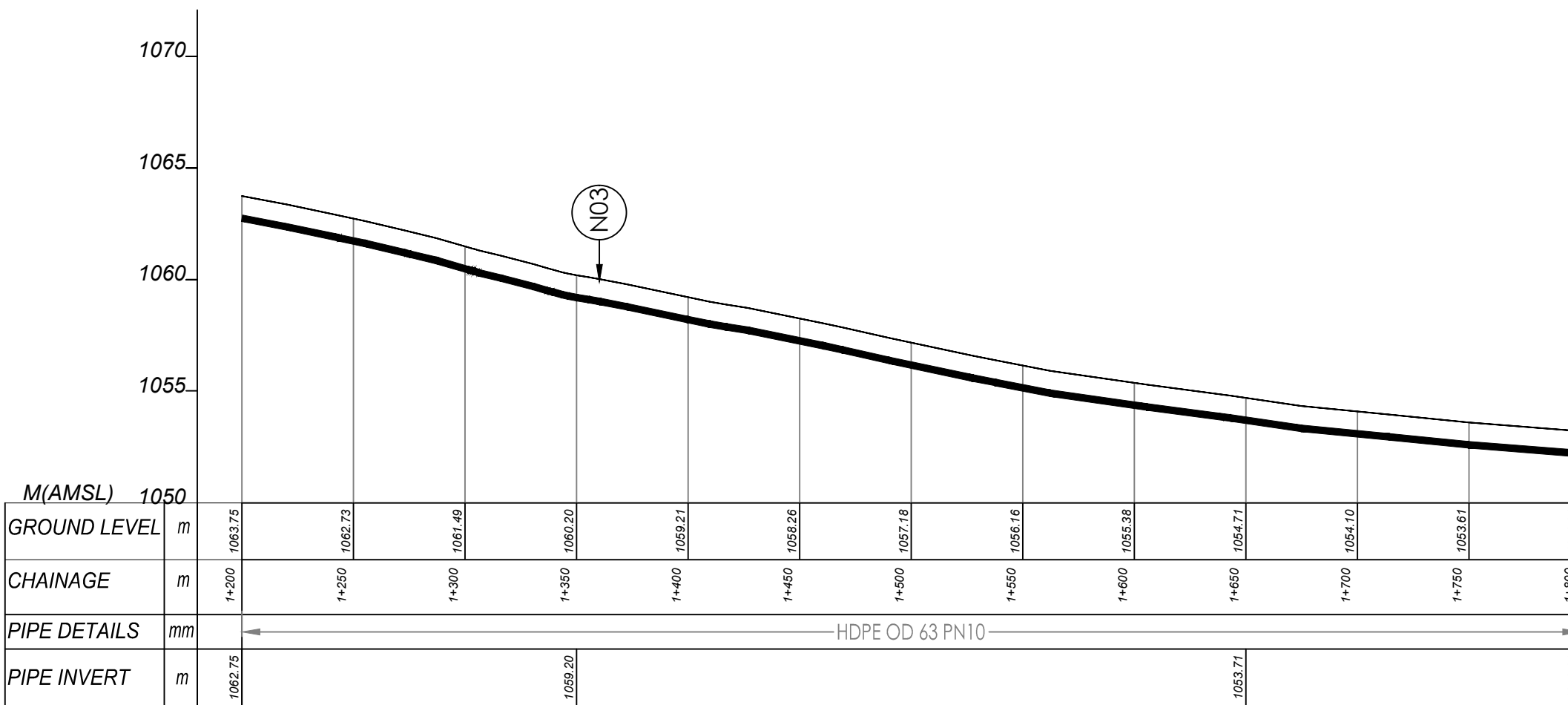
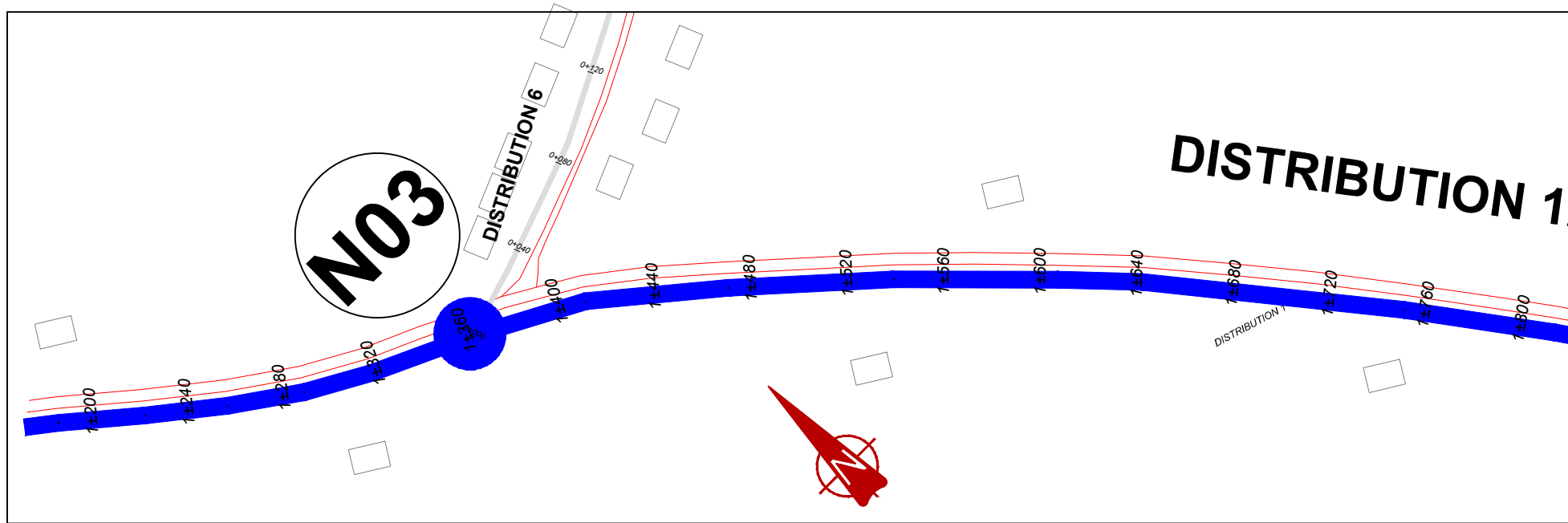
CONSULTANT
SARI In Joint Venture with **SGAPI**
 Corporate Headquarter
 10 Philpott Lane, 1st Floor,
 London EC3M 8AA,
 United Kingdom

CONTRACTOR

DETAILED ENGINEERING DESIGN

DRAWING TITLE
DISTRIBUTION LINE 12
(0+600.00 - 1+200.00)

SCALE VERT: 1:250 DRAWING No. MUT/WS/5.12.2
 HOR: 1:2500
 SURVEYED Evans Mpanga DESIGNED Otwane Dan.
 DRAWN Joshua Nyarwanda CHECKED Rodney Barugahare
 DATE April 2021 APPROVED Rodney Barugahare.

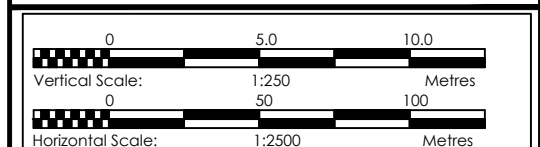


DISTRIBUTION 12 (1+200.00 - 1+800.00)

NOTES

LEGEND

- Transmission Pipeline
- Distribution Pipeline
- Ground Level
- Building/House
- Contours
- Road
- DAV Double Orifice Air Valve
- EP End pipe
- N01 Node N01
- WO-1 Washout Type1
- WO-2 Washout Type2



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MUTUNDA WATER SUPPLY SYSTEM

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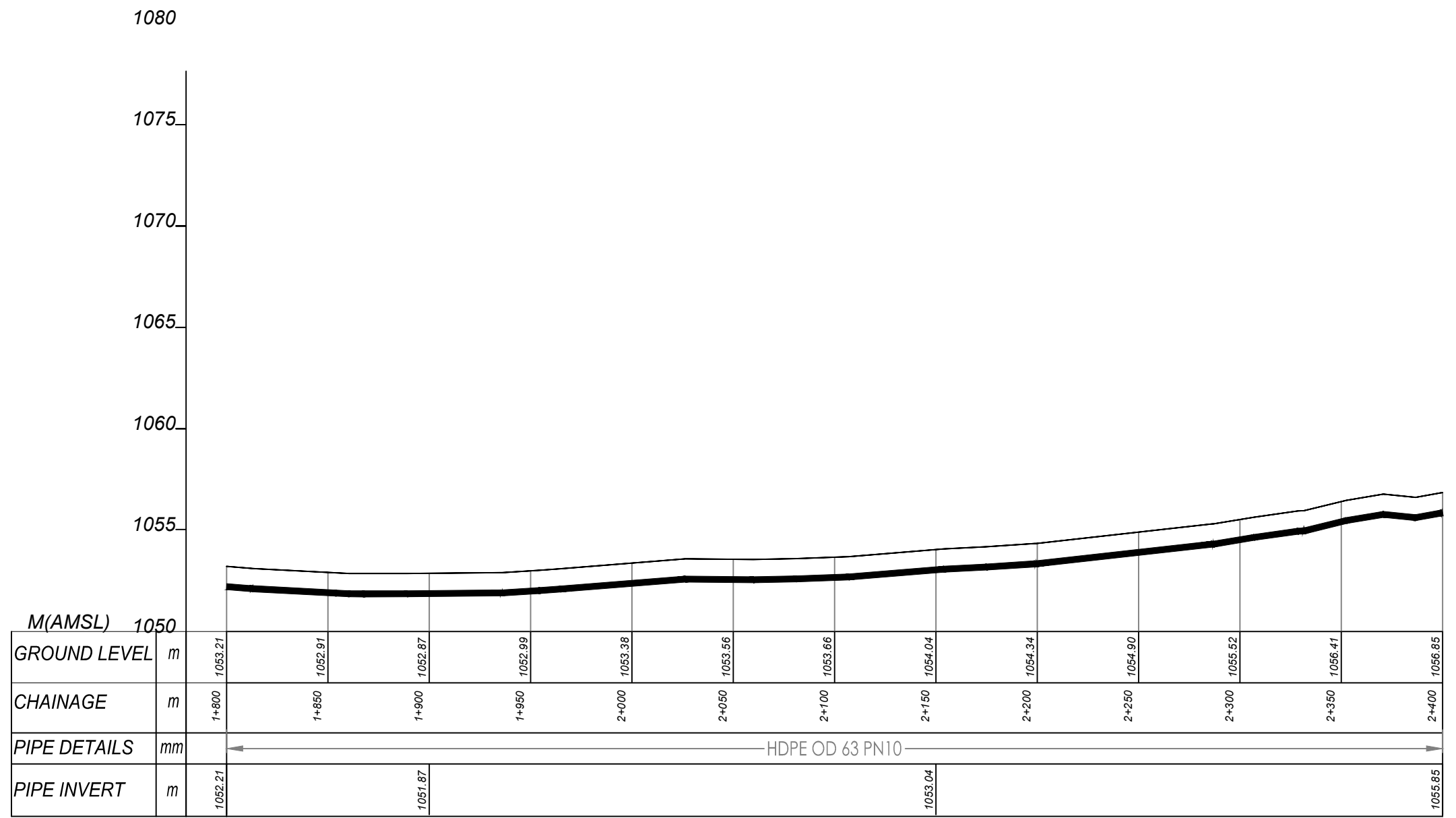
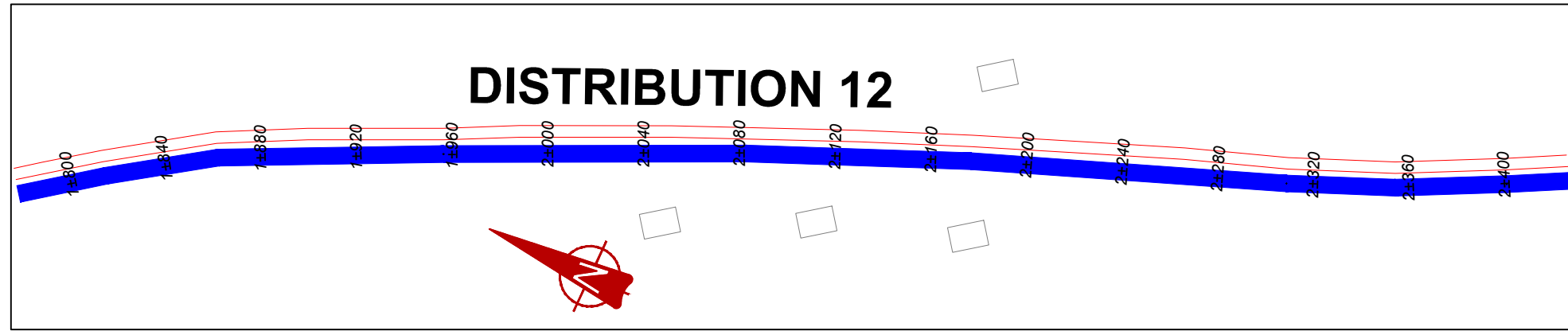
Corporate Headquarter
10 Philpott Lane, 1st Floor,
London EC3M 8AA,
United Kingdom

CONTRACTOR

DETAILED ENGINEERING DESIGN

DRAWING TITLE
DISTRIBUTION LINE 12
(1+200.00 - 1+800.00)

SCALE	VERT: 1:250 HOR: 1:2500	DRAWING No.	MUT/WS/5.12.3
SURVEYED	Evans Mpanga	DESIGNED	Otwane Dan.
DRAWN	Joshua Nyarwanda	CHECKED	Rodney Barugahare
DATE	April 2021	APPROVED	Rodney Barugahare.

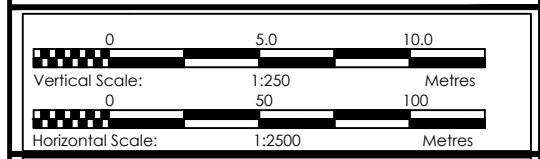


DISTRIBUTION 12 (1+800.00 - 2+400.00)

NOTES

LEGEND

- Transmission Pipeline
- Distribution Pipeline
- Ground Level
- Building/House
- Contours
- Road
- DAV Double Orifice Air Valve
- End pipe
- Node N01
- WO-1 Washout Type1
- WO-2 Washout Type2



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MUTUNDA WATER SUPPLY SYSTEM

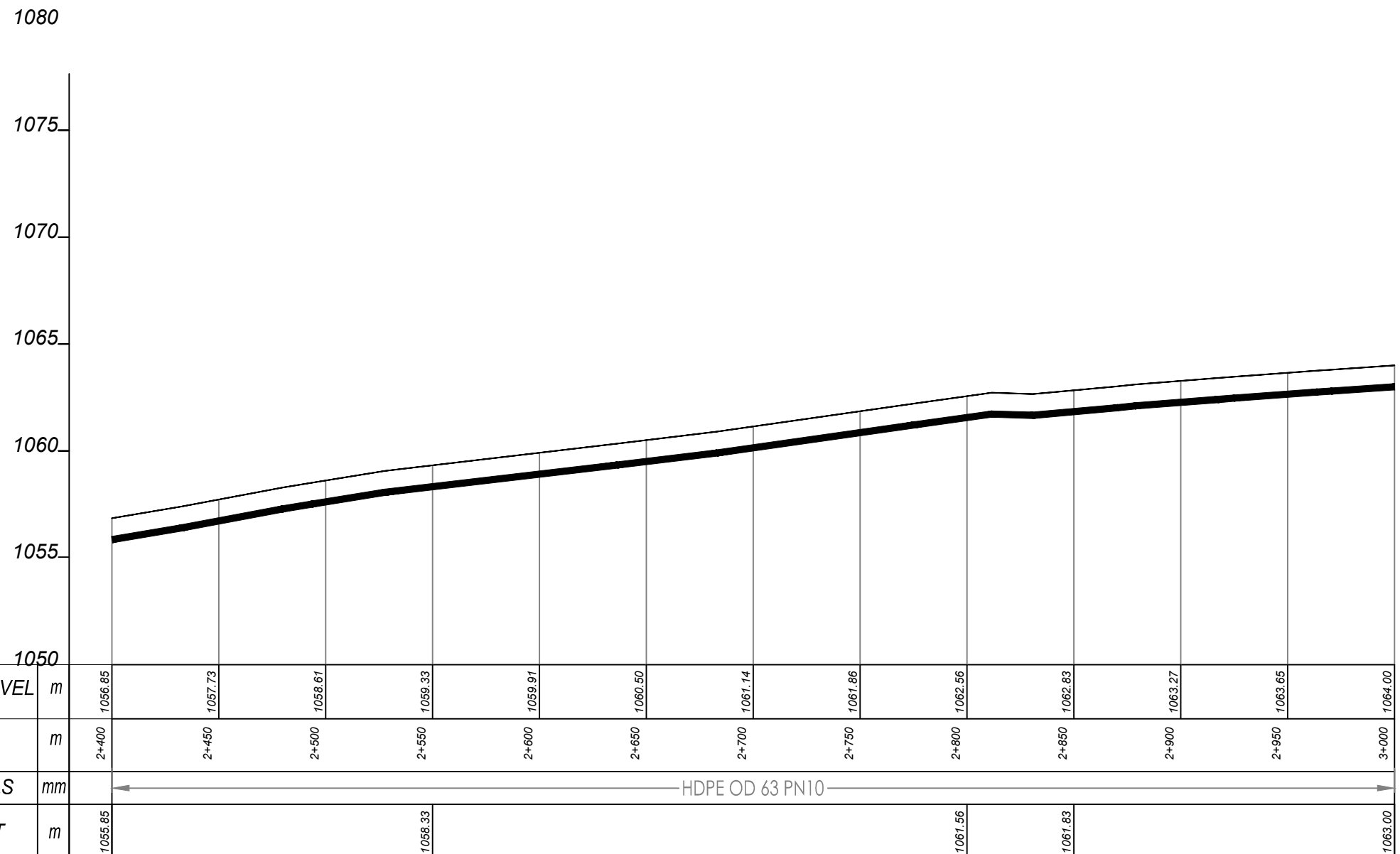
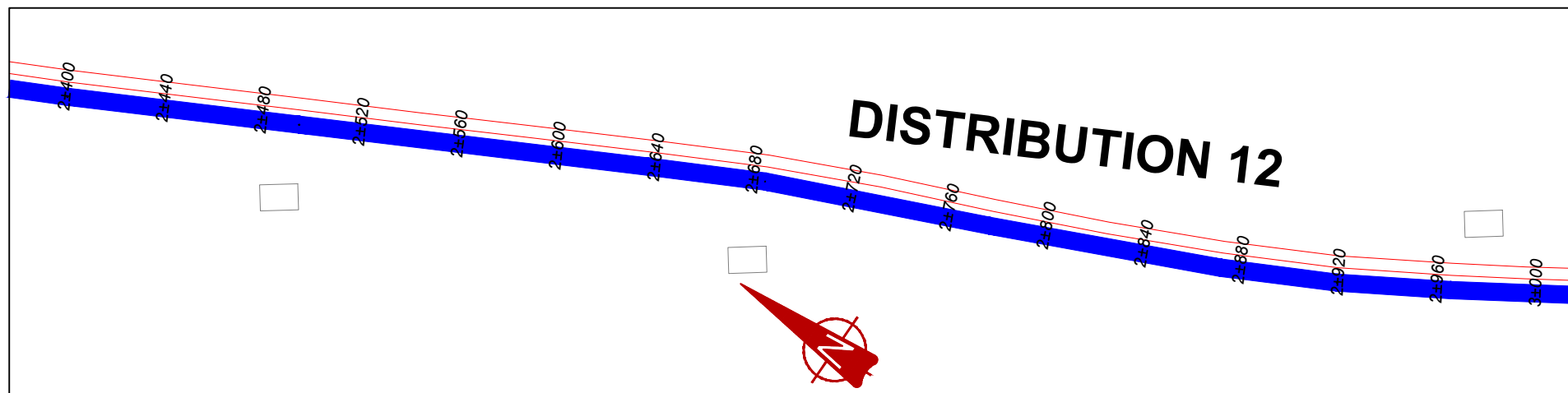
CONSULTANT
SARI In Joint Venture with **SGAPI**
 Corporate Headquarter
 10 Philpot Lane, 1st Floor,
 London EC3M 8AA,
 United Kingdom

CONTRACTOR

DETAILED ENGINEERING DESIGN

DRAWING TITLE
DISTRIBUTION LINE 12
(1+800.00 - 2+400.00)

SCALE	VERT: 1:250 HOR: 1:2500	DRAWING No.	MUT/WS/5.12.4
SURVEYED	Evans Mpanga	DESIGNED	Otwane Dan.
DRAWN	Joshua Nyarwanda	CHECKED	Rodney Barugahare
DATE	April 2021	APPROVED	Rodney Barugahare.



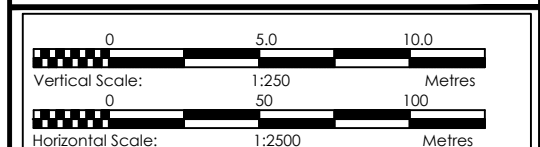
DISTRIBUTION 12 (2+400.00 - 3+000.00)

NOTES

LEGEND

- Transmission Pipeline
- Distribution Pipeline
- Ground Level
- Building/House
- Contours
- Road

- DAV Double Orifice Air Valve
- EP End pipe
- N01 Node N01
- WO-1 Washout Type1
- WO-2 Washout Type2



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MUTUNDA WATER SUPPLY SYSTEM

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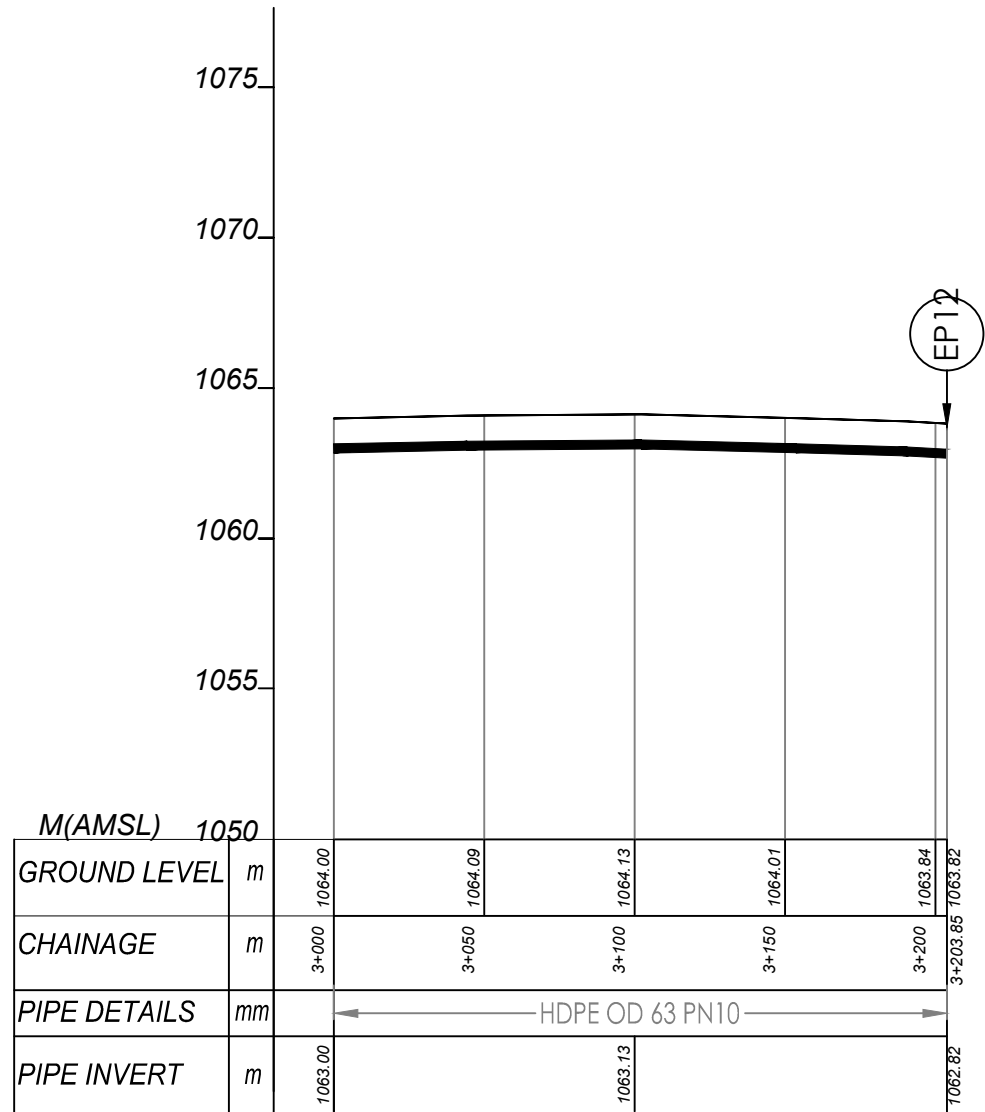
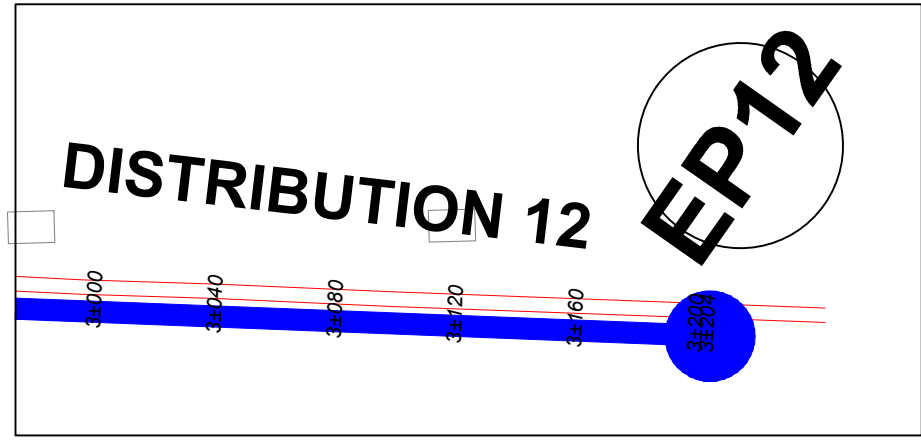
CONTRACTOR

DETAILED ENGINEERING DESIGN

DRAWING TITLE

**DISTRIBUTION LINE 12
(2+400.00 - 3+000.00)**

SCALE	VERT: 1:250 HOR: 1:2500	DRAWING No.	MUT/WS/5.12.5
SURVEYED	Evans Mpanga	DESIGNED	Otwane Dan.
DRAWN	Joshua Nyarwanda	CHECKED	Rodney Barugahare
DATE	April 2021	APPROVED	Rodney Barugahare.

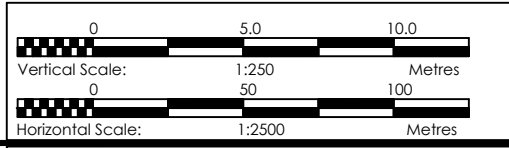


DISTRIBUTION 12 (3+000.00 - 3+203.85)

NOTES

LEGEND

- Transmission Pipeline
- Distribution Pipeline
- Ground Level
- Building/House
- Contours
- Road
- DAV Double Orifice Air Valve
- End pipe
- Node N01
- WO-1 Washout Type1
- WO-2 Washout Type2



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MUTUNDA WATER SUPPLY SYSTEM

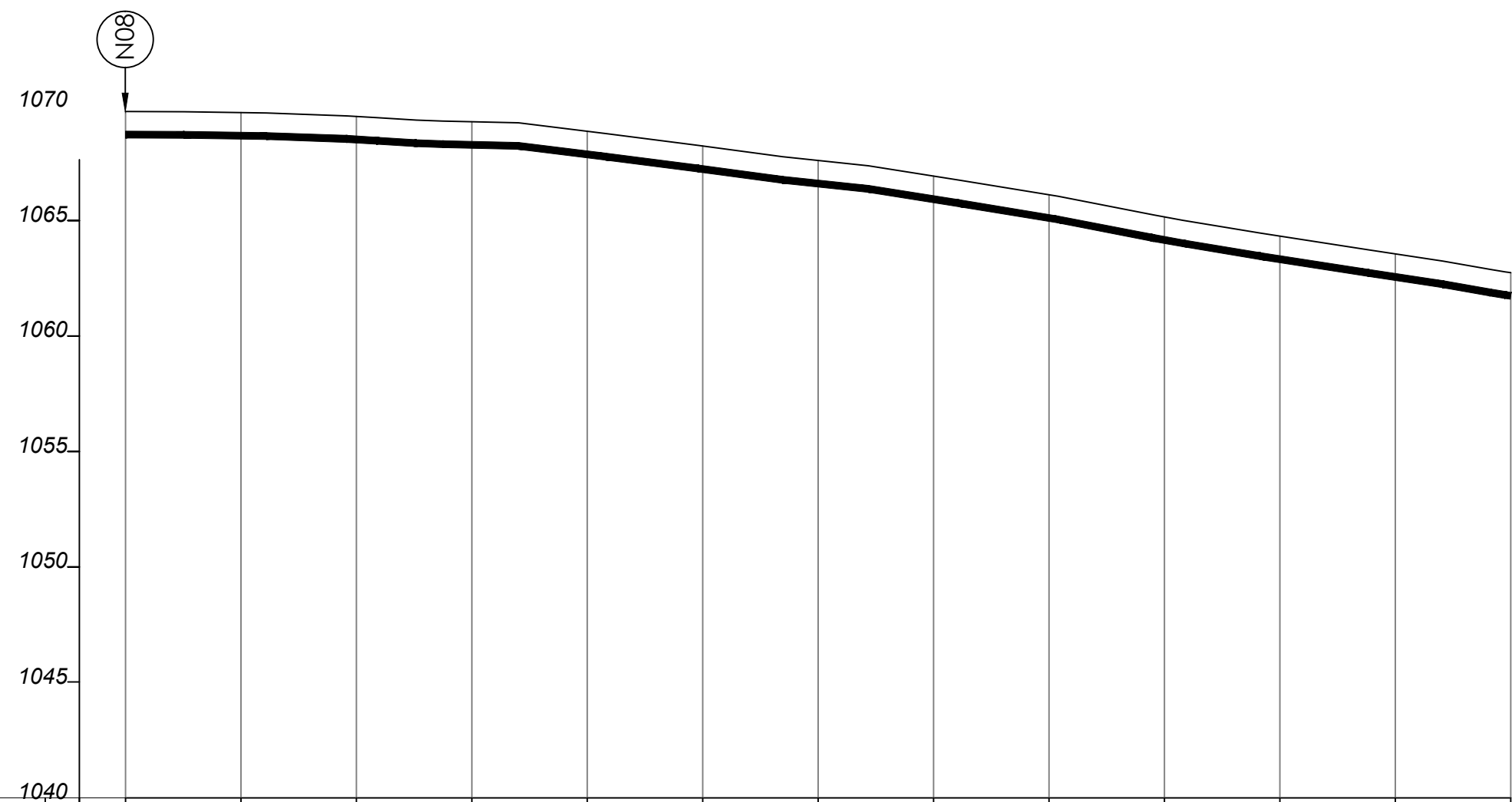
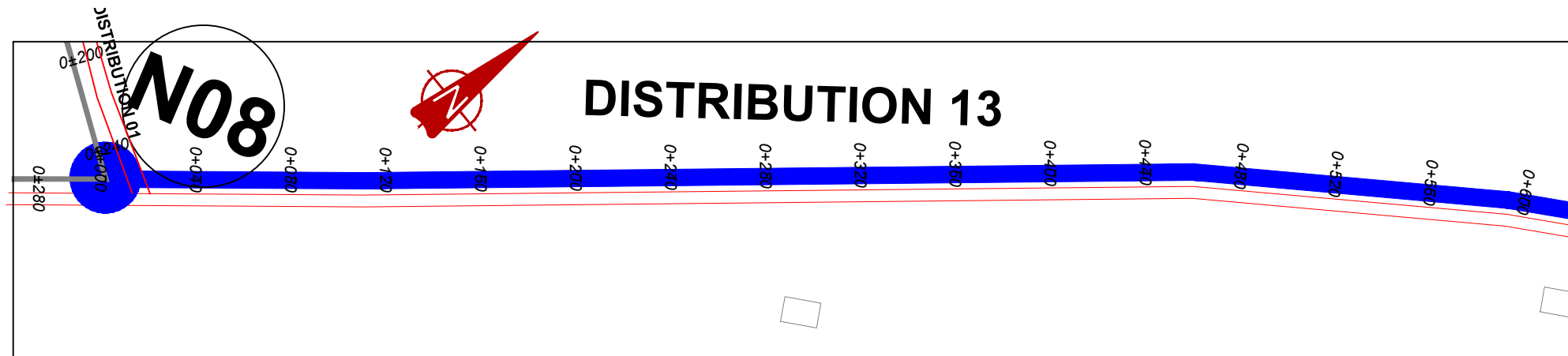
CONSULTANT
SARI In Joint Venture with
 Corporate Headquarter
 10 Philip's Lane, 1st Floor,
 London EC3M 8AA,
 United Kingdom

CONTRACTOR

DETAILED ENGINEERING DESIGN

DRAWING TITLE
DISTRIBUTION LINE 12
(3+000.00 - 3+203.85)

SCALE	VERT: 1:250 HOR: 1:2500	DRAWING No.	MUT/WS/5.12.6
SURVEYED	Evans Mpanga	DESIGNED	Otwane Dan.
DRAWN	Joshua Nyarwanda	CHECKED	Rodney Barugahare
DATE	April 2021	APPROVED	Rodney Barugahare.



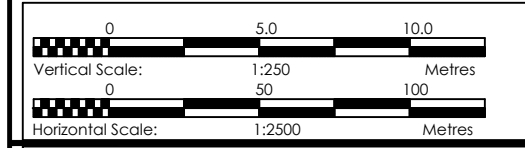
M(AMSL)	1040																									
GROUND LEVEL	m	1068.73		1069.68		1069.51		1069.28		1068.87		1068.23		1067.61		1066.93		1066.12		1065.16		1064.33		1063.56		1062.74
CHAINAGE	m	0+000		0+050		0+100		0+150		0+200		0+250		0+300		0+350		0+400		0+450		0+500		0+550		0+600
PIPE DETAILS	mm	← uPVC OD 160 PN10 →																								
PIPE INVERT	m	1068.73				1068.51								1066.61												1061.74

DISTRIBUTION 13 (0+000.00 - 0+600.00)

NOTES

LEGEND

- Transmission Pipeline
- Distribution Pipeline
- Ground Level
- Building/House
- Contours
- Road
- DAV Double Orifice Air Valve
- End pipe
- Node N01
- WO-1 Washout Type1
- WO-2 Washout Type2



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 CONSULTANCY SERVICES FOR FEASIBILITY STUDY, DETAILED ENGINEERING DESIGN AND CONSTRUCTION SUPERVISION OF SOLAR POWERED PIPED WATER SUPPLY SYSTEMS AND SANITATION FACILITIES IN REFUGEE SETTLEMENTS AND HOST DISTRICTS IN WEST NILE AND NORTHERN UGANDA IN KIRYANDONGO DISTRICT

MUTUNDA WATER SUPPLY SYSTEM

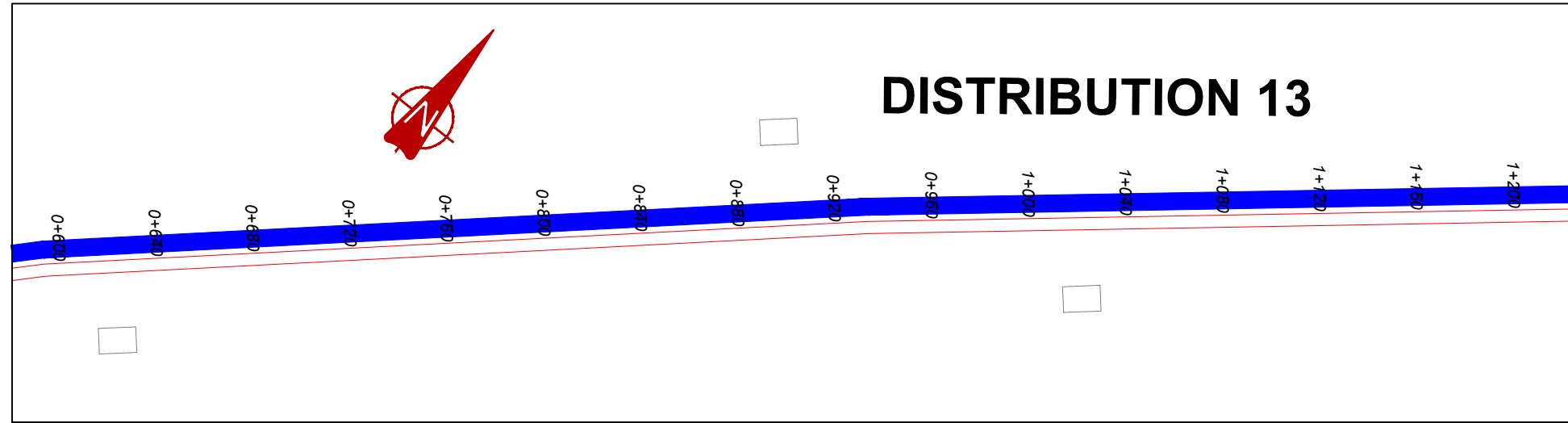
CONSULTANT
SARI In Joint Venture with
 Corporate Headquarter
 10 Philpot Lane, 1st Floor,
 London EC3M 8AA,
 United Kingdom

CONTRACTOR

DETAILED ENGINEERING DESIGN

DRAWING TITLE
**DISTRIBUTION LINE 13
 (0+000.00 - 0+600.00)**

SCALE	VERT: 1:250 HOR: 1:2500	DRAWING No.	MUT/WS/5.13.1
SURVEYED	Evans Mpanga	DESIGNED	Otwane Dan.
DRAWN	Joshua Nyarwanda	CHECKED	Rodney Barugahare
DATE	April 2021	APPROVED	Rodney Barugahare.

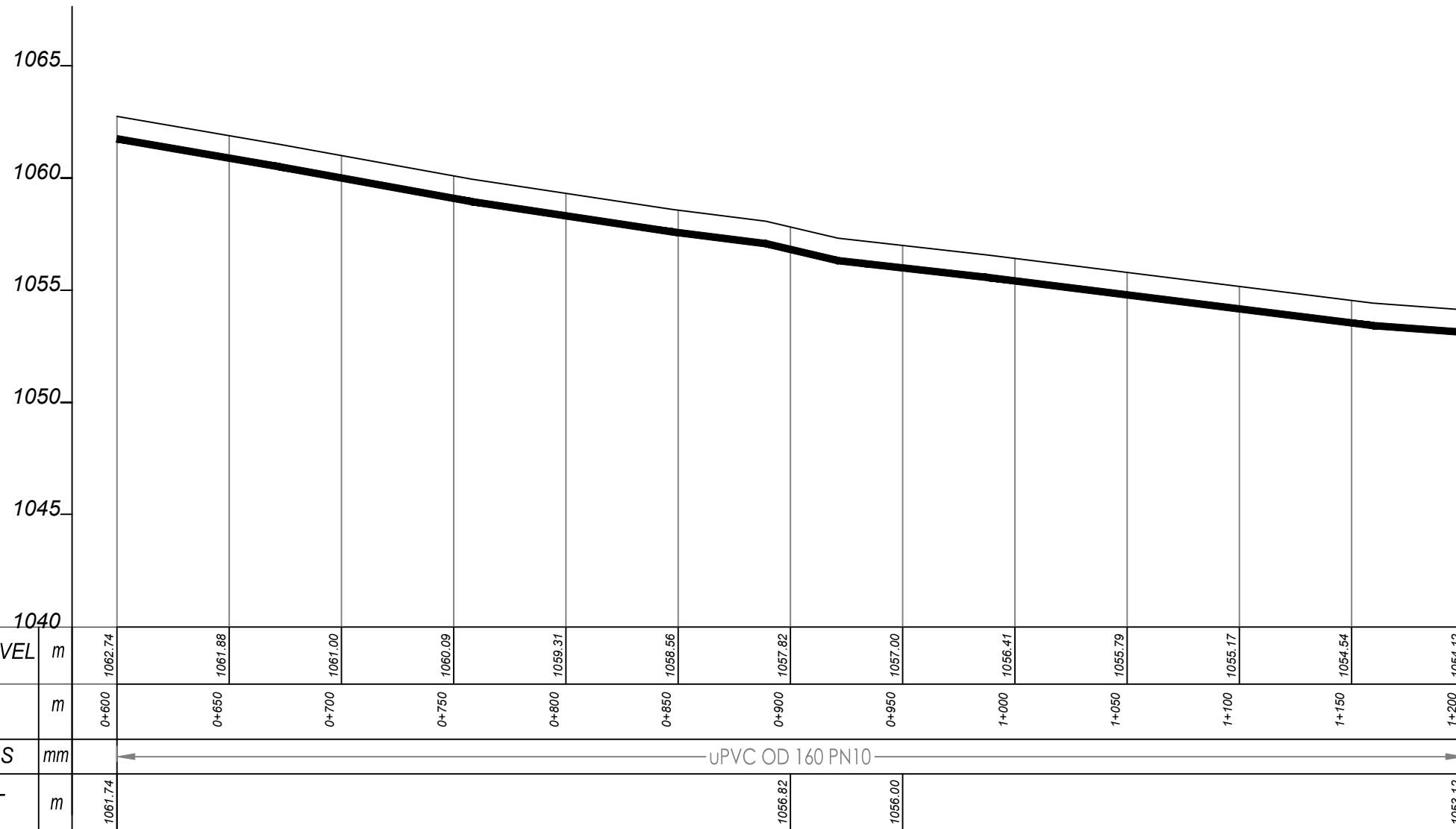


DISTRIBUTION 13

NOTES

LEGEND

- Transmission Pipeline
- Distribution Pipeline
- Ground Level
- Building/House
- Contours
- Road
- DAV Double Orifice Air Valve
- End pipe
- Node N01
- WO-1 Washout Type1
- WO-2 Washout Type2



DISTRIBUTION 13 (0+600.00 - 1+200.00)



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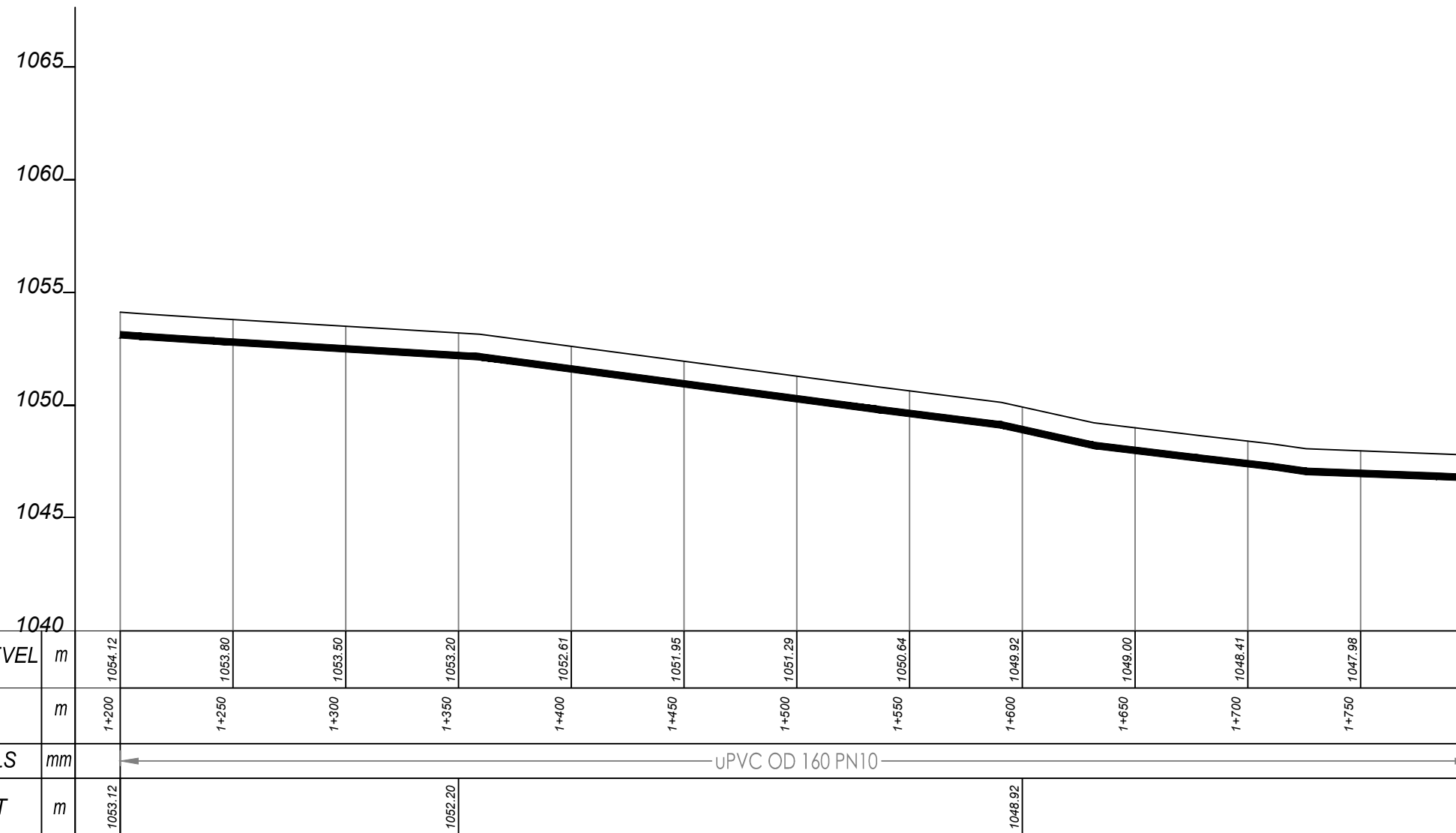
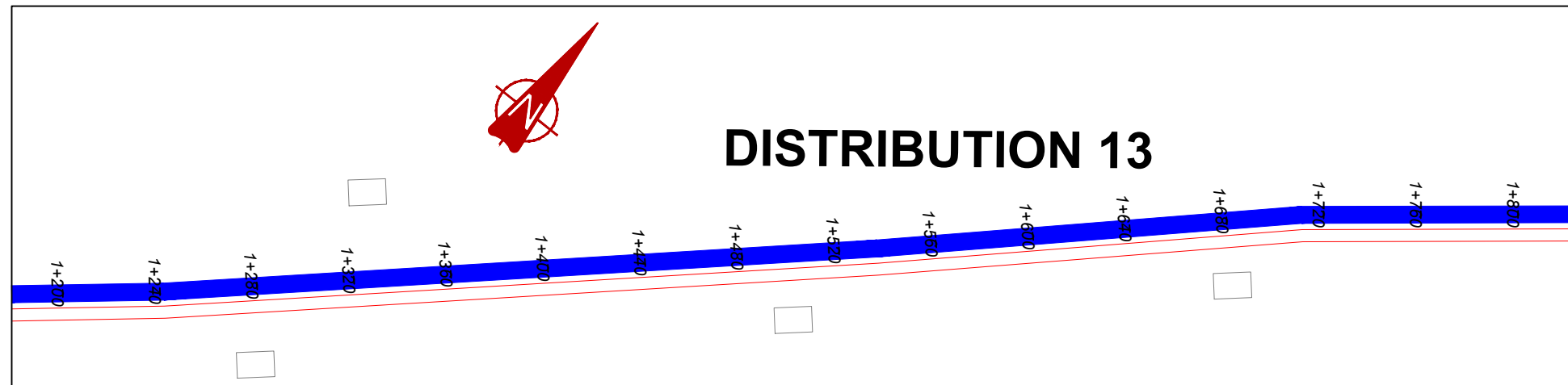
MUTUNDA WATER SUPPLY SYSTEM

CONSULTANT
SARI In Joint Venture with **SGAPI**
 Corporate Headquarter
 10 Philpot Lane, 1st Floor,
 London EC3M 8AA,
 United Kingdom

CONTRACTOR

DETAILED ENGINEERING DESIGN
 DRAWING TITLE
DISTRIBUTION LINE 13 (0+600.00 - 1+200.00)

SCALE VERT: 1:250 DRAWING No. MUT/WS/5.13.2
 HOR: 1:2500
 SURVEYED Evans Mpanga DESIGNED Otwane Dan.
 DRAWN Joshua Nyarwanda CHECKED Rodney Barugahare
 DATE April 2021 APPROVED Rodney Barugahare.

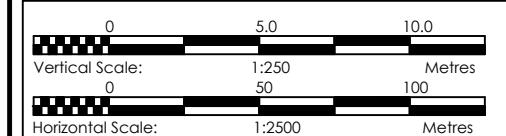


DISTRIBUTION 13 (1+200.00 - 1+800.00)

NOTES

LEGEND

- Transmission Pipeline
- Distribution Pipeline
- Ground Level
- Building/House
- Contours
- Road
- DAV Double Orifice Air Valve
- End pipe
- Node N01
- WO-1 Washout Type1
- WO-2 Washout Type2



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GOVERNMENT OF UGANDA
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MUTUNDA WATER SUPPLY SYSTEM

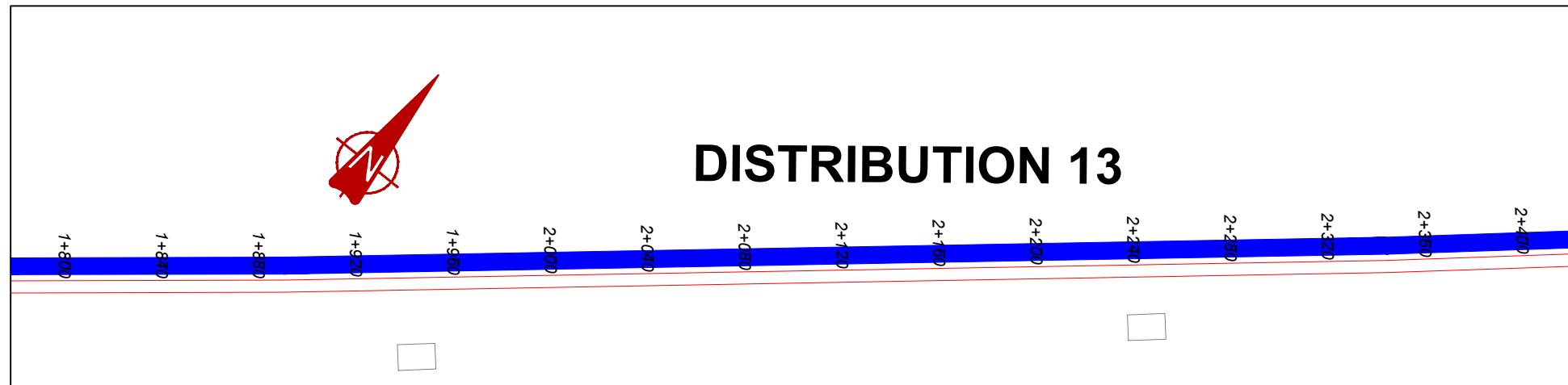
CONSULTANT
SARI In Joint Venture with **SGAPI**
 Corporate Headquarter
 10 Philpott Lane, 1st Floor,
 London EC3M 8AA,
 United Kingdom

CONTRACTOR

DETAILED ENGINEERING DESIGN

DRAWING TITLE
DISTRIBUTION LINE 13
(1+200.00 - 1+800.00)

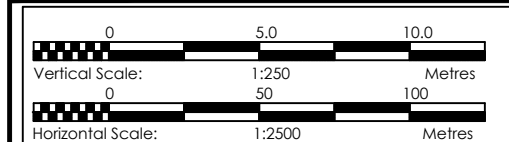
SCALE VERT: 1:250 DRAWING No. MUT/WS/5.13.3
 HOR: 1:2500
 SURVEYED Evans Mpanga DESIGNED Otwane Dan.
 DRAWN Joshua Nyarwanda CHECKED Rodney Barugahare
 DATE April 2021 APPROVED Rodney Barugahare.



NOTES

LEGEND

- Transmission Pipeline
- Distribution Pipeline
- Ground Level
- Building/House
- Contours
- Road
- DAV Double Orifice Air Valve
- End pipe
- Node N01
- WO-1 Washout Type1
- WO-2 Washout Type2



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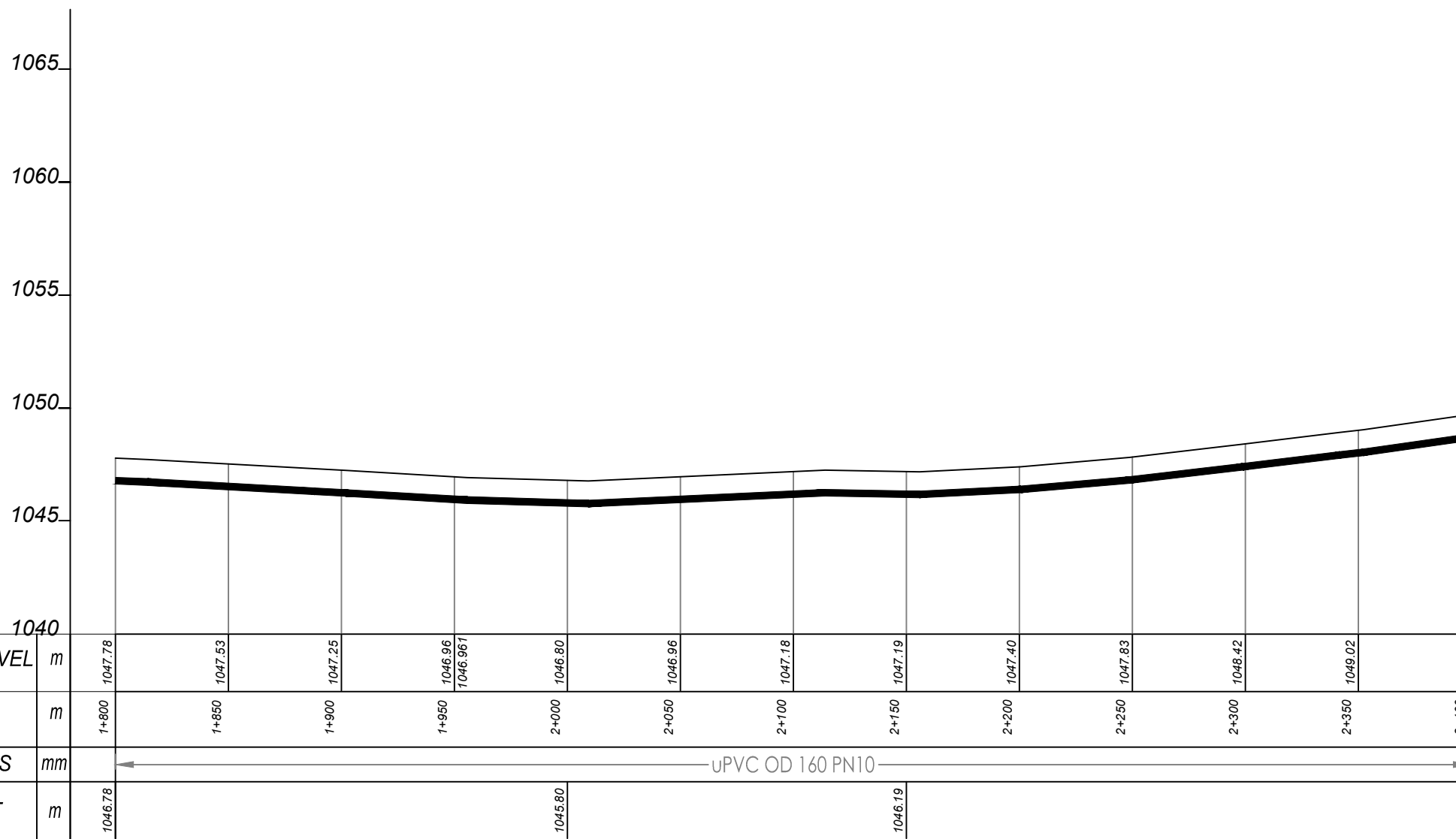
MUTUNDA WATER SUPPLY SYSTEM

CONSULTANT
 In Joint Venture with
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 10 Philpot Lane, 1st Floor,
 London EC3M 8AA,
 United Kingdom

CONTRACTOR

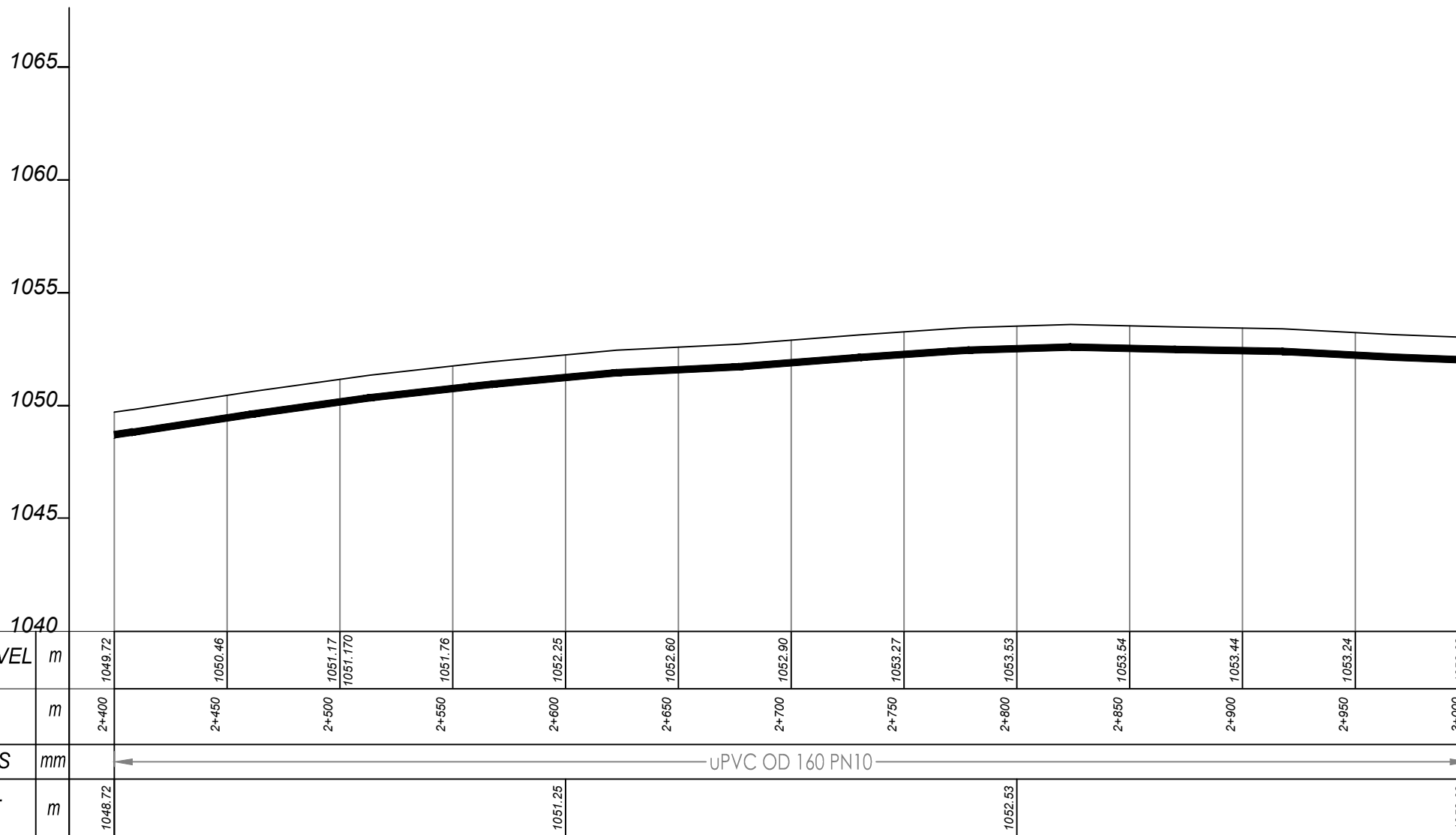
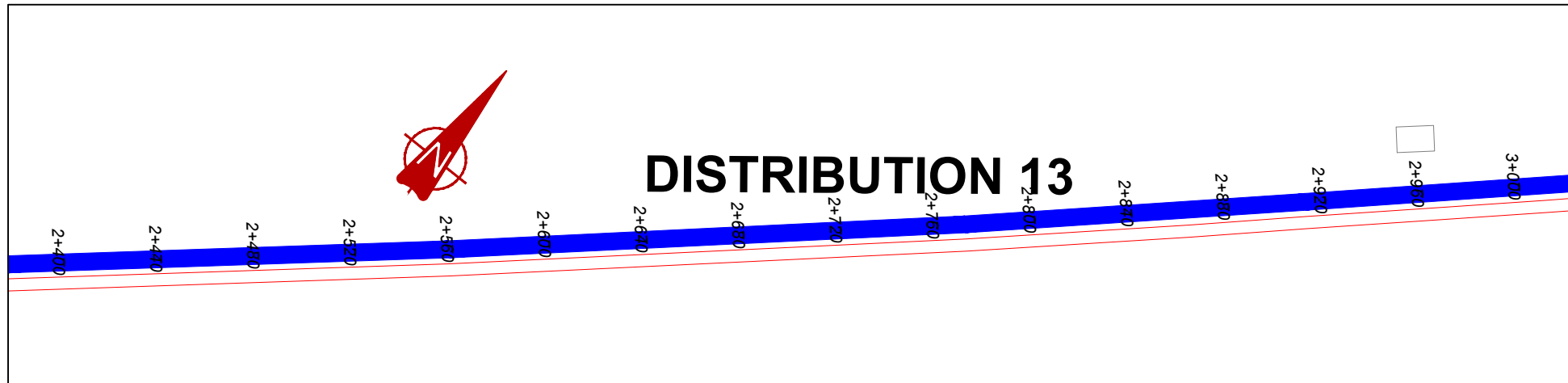
DETAILED ENGINEERING DESIGN
DRAWING TITLE
DISTRIBUTION LINE 13
(1+800.00 - 2+400.00)

SCALE VERT: 1:250 DRAWING No. MUT/WS/5.13.4
 HOR: 1:2500
SURVEYED Evans Mpanga **DESIGNED** Otwane Dan.
DRAWN Joshua Nyarwanda **CHECKED** Rodney Barugahare
DATE April 2021 **APPROVED** Rodney Barugahare.



GROUND LEVEL	m	1047.78	1047.53	1047.25	1046.96	1046.96	1046.80	1046.96	1047.18	1047.19	1047.40	1047.83	1048.42	1049.02	1049.72
CHAINAGE	m	1+800	1+850	1+900	1+950	2+000	2+050	2+100	2+150	2+200	2+250	2+300	2+350	2+400	
PIPE DETAILS	mm	← UPVC OD 160 PN10 →													
PIPE INVERT	m	1046.78				1045.80				1046.19					1046.72

DISTRIBUTION 13 (1+800.00 - 2+400.00)

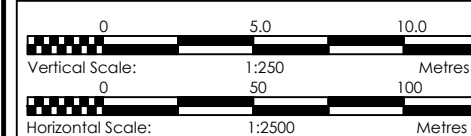


DISTRIBUTION 13 (2+400.00 - 3+000.00)

NOTES

LEGEND

- Transmission Pipeline
- Distribution Pipeline
- Ground Level
- Building/House
- Contours
- Road
- DAV Double Orifice Air Valve
- End pipe
- Node N01
- WO-1 Washout Type1
- WO-2 Washout Type2



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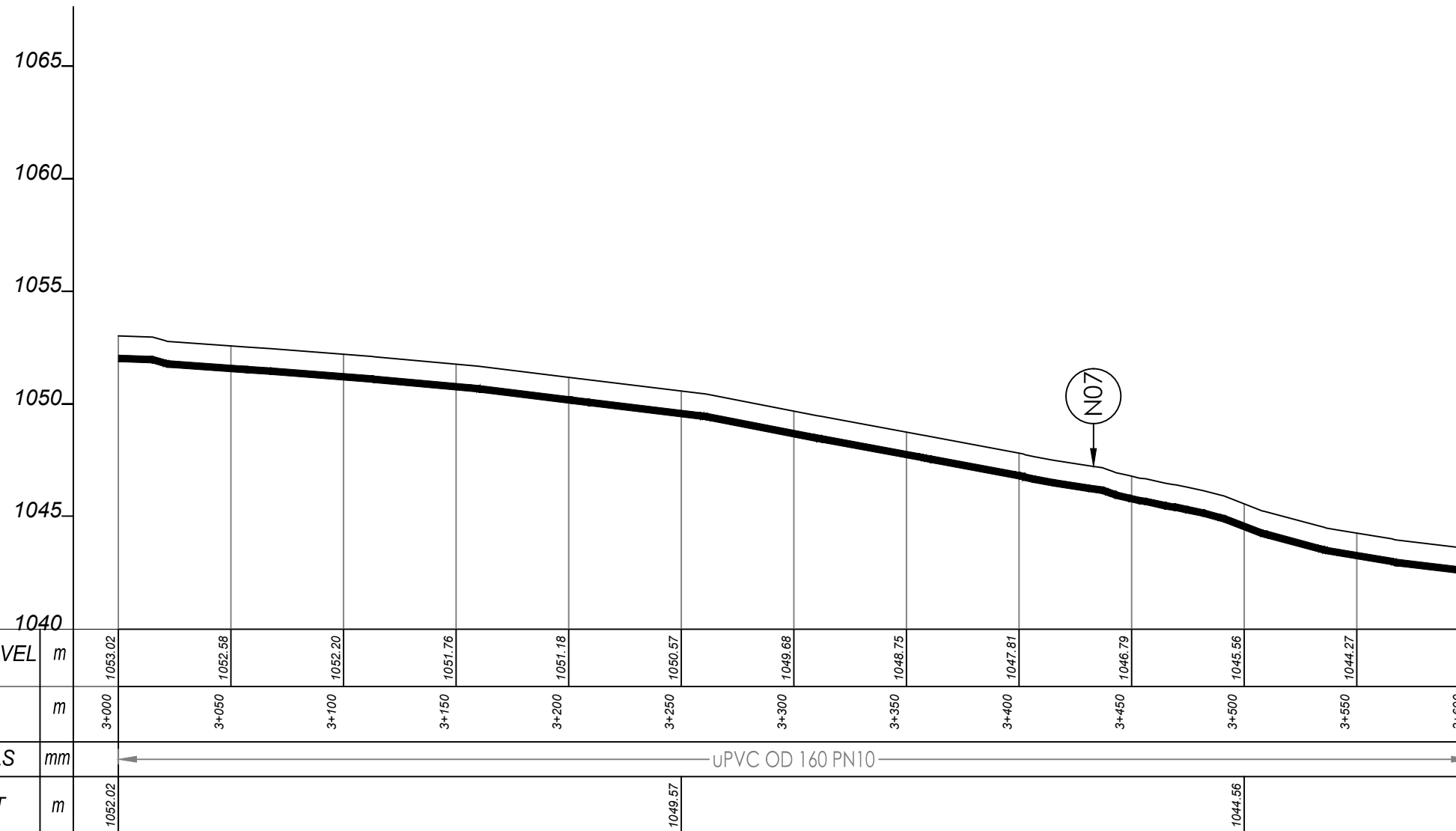
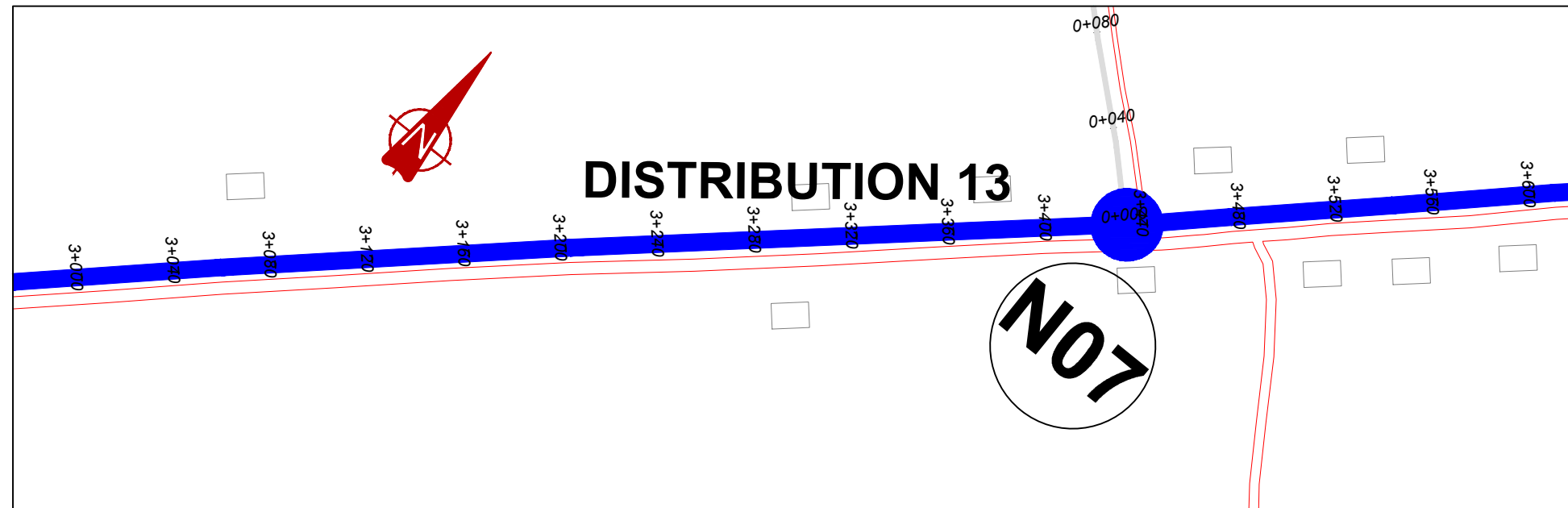
MUTUNDA WATER SUPPLY SYSTEM

CONSULTANT
 In Joint Venture with
 Corporate Headquarter
 10 Philpot Lane, 1st Floor,
 London EC3M 8AA,
 United Kingdom

CONTRACTOR

DETAILED ENGINEERING DESIGN
 DRAWING TITLE
DISTRIBUTION LINE 13
(2+400.00 - 3+000.00)

SCALE	VERT: 1:250 HOR: 1:2500	DRAWING No.	MUT/WS/5.13.5
SURVEYED	Evans Mpanga	DESIGNED	Otwane Dan.
DRAWN	Joshua Nyarwanda	CHECKED	Rodney Barugahare
DATE	April 2021	APPROVED	Rodney Barugahare.

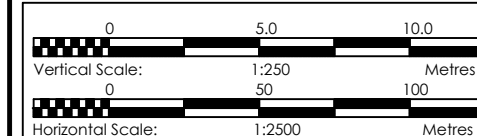


DISTRIBUTION 13 (3+000.00 - 3+600.00)

NOTES

LEGEND

- Transmission Pipeline
- Distribution Pipeline
- Ground Level
- Building/House
- Contours
- Road
- DAV Double Orifice Air Valve
- End pipe
- Node N01
- WO-1 Washout Type1
- WO-2 Washout Type2



CLIENT
GOVERNMENT OF UGANDA
 MINISTRY OF WATER AND ENVIRONMENT

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 AND

PROJECT
 CONSULTANCY SERVICES FOR FEASIBILITY STUDY, DETAILED ENGINEERING DESIGN AND CONSTRUCTION SUPERVISION OF SOLAR POWERED PIPED WATER SUPPLY SYSTEMS AND SANITATION FACILITIES IN REFUGEE SETTLEMENTS AND HOST DISTRICTS IN WEST NILE AND NORTHERN UGANDA IN KIRYANDONGO DISTRICT

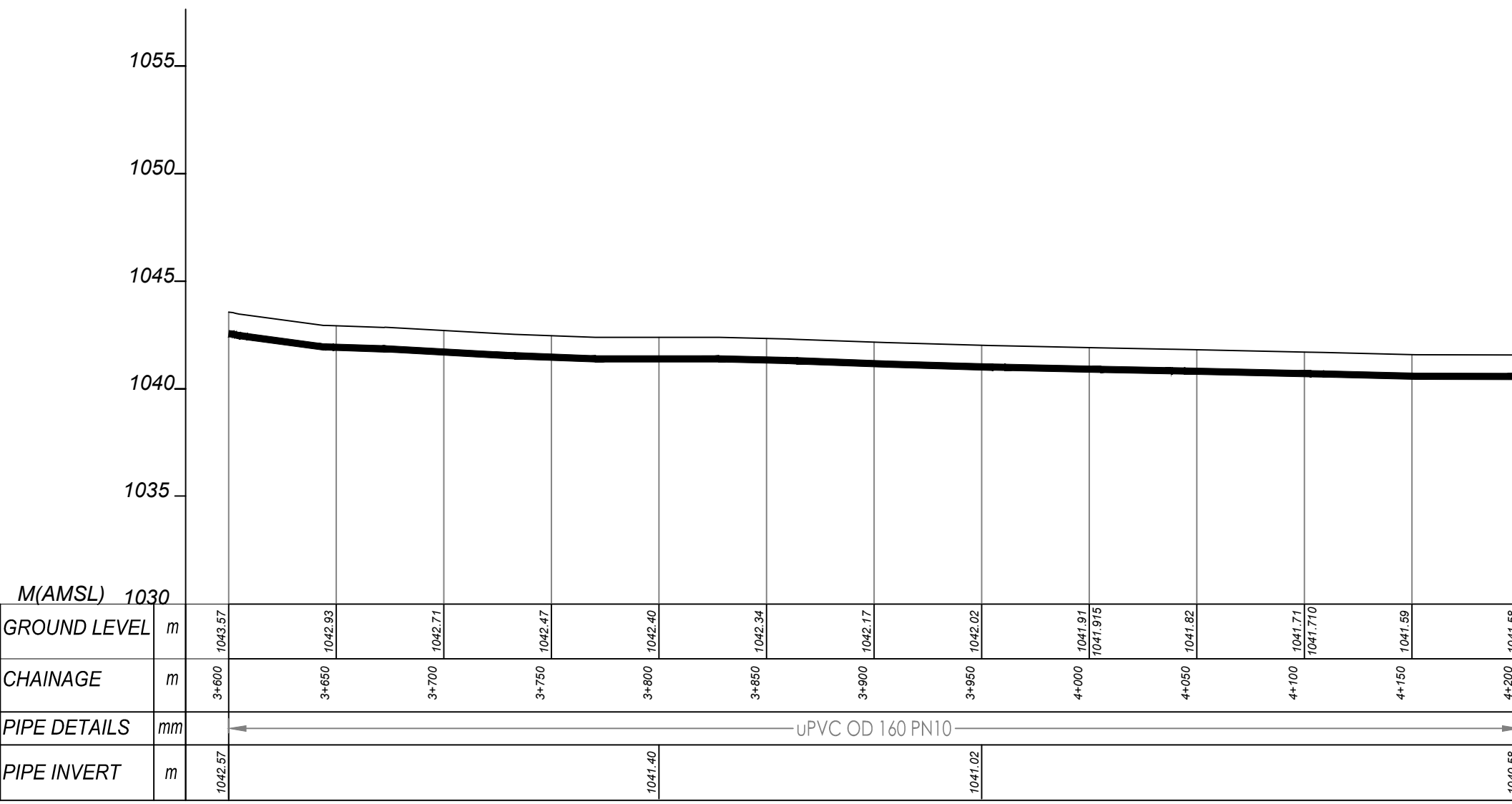
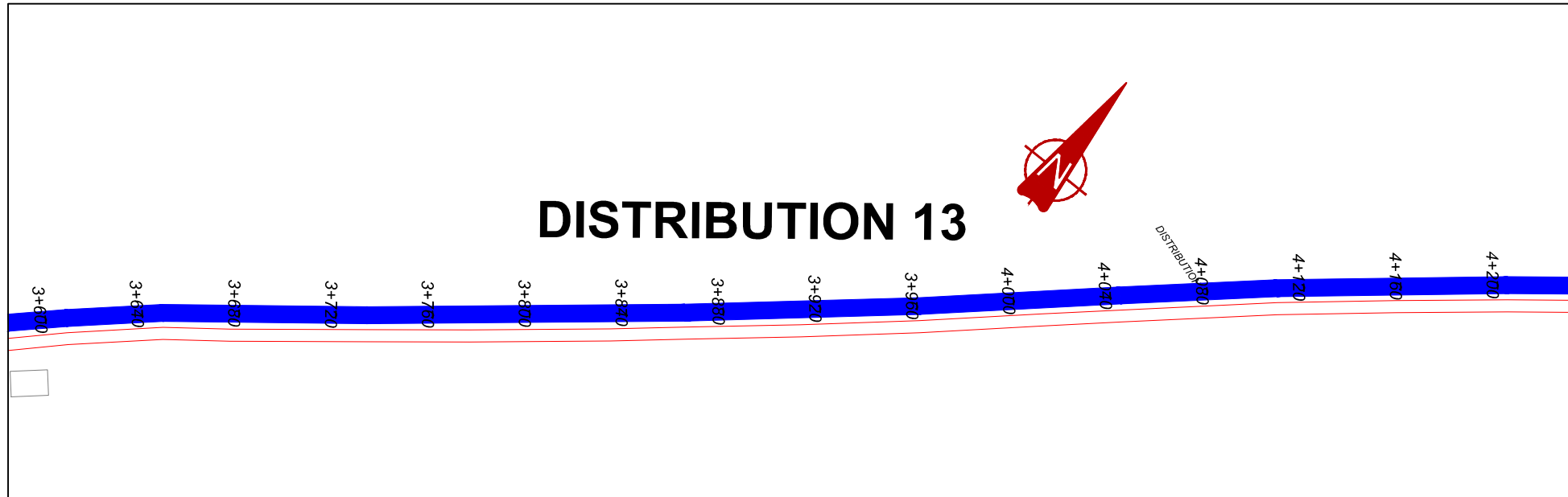
MUTUNDA WATER SUPPLY SYSTEM

CONSULTANT
SARI In Joint Venture with **SGAPI**
 Corporate Headquarter
 10 Philpot Lane, 1st Floor,
 London EC3M 8AA,
 United Kingdom

CONTRACTOR

DETAILED ENGINEERING DESIGN
 DRAWING TITLE
DISTRIBUTION LINE 13
(3+000.00 - 3+600.00)

SCALE VERT: 1:250 DRAWING No. MUT/WS/5.13.6
 HOR: 1:2500
 SURVEYED Evans Mpanga DESIGNED Otwane Dan.
 DRAWN Joshua Nyarwanda CHECKED Rodney Barugahare
 DATE April 2021 APPROVED Rodney Barugahare.

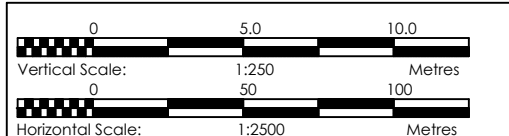


DISTRIBUTION 13 (3+600.00 - 4+200.00)

NOTES

LEGEND

- Transmission Pipeline
- Distribution Pipeline
- Ground Level
- Building/House
- Contours
- Road
- DAV Double Orifice Air Valve
- EP End pipe
- N01 Node N01
- WO-1 Washout Type1
- WO-2 Washout Type2



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GOVERNMENT OF UGANDA
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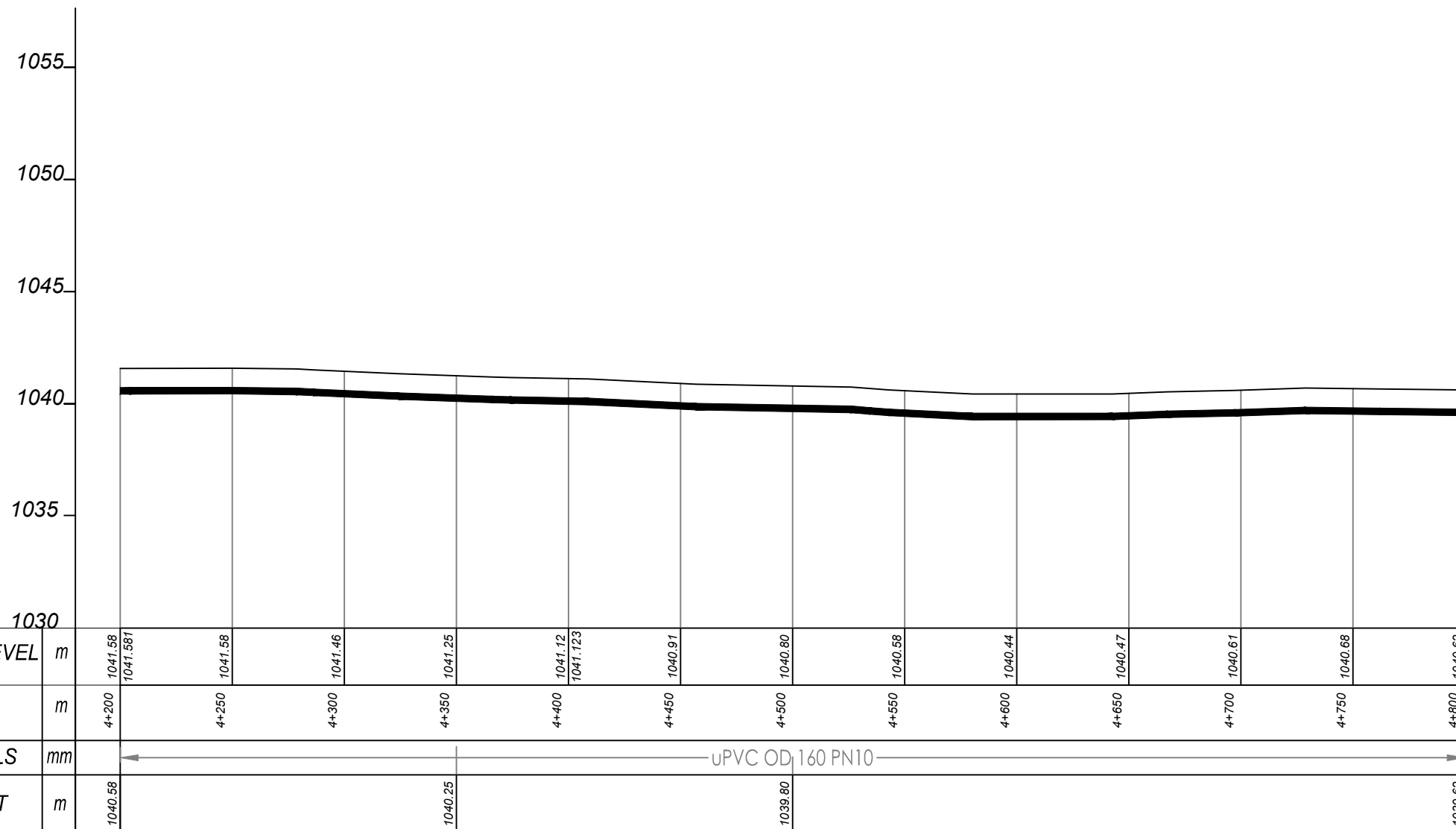
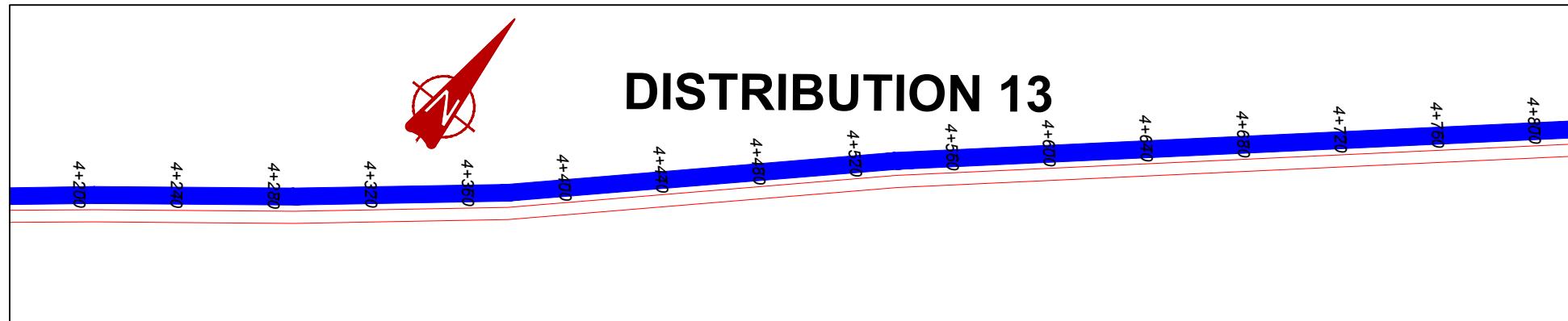
MUTUNDA WATER SUPPLY SYSTEM

CONSULTANT
SARI In Joint Venture with **SGAPI**
 Corporate Headquarter
 10 Philpot Lane, 1st Floor,
 London EC3M 8AA,
 United Kingdom

CONTRACTOR

DETAILED ENGINEERING DESIGN
 DRAWING TITLE
DISTRIBUTION LINE 13
(3+600.00 - 4+200.00)

SCALE	VERT: 1:250 HOR: 1:2500	DRAWING No.	MUT/WS/5.13.7
SURVEYED	Evans Mpanga	DESIGNED	Otwane Dan.
DRAWN	Joshua Nyarwanda	CHECKED	Rodney Barugahare
DATE	April 2021	APPROVED	Rodney Barugahare.

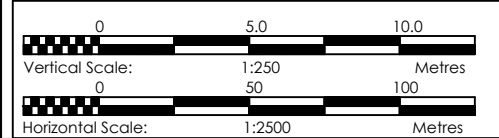


DISTRIBUTION 13 (4+200.00 - 4+800.00)

NOTES

LEGEND

- Transmission Pipeline
- Distribution Pipeline
- Ground Level
- Building/House
- Contours
- Road
- DAV Double Orifice Air Valve
- End pipe
- Node N01
- WO-1 Washout Type1
- WO-2 Washout Type2



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GOVERNMENT OF UGANDA
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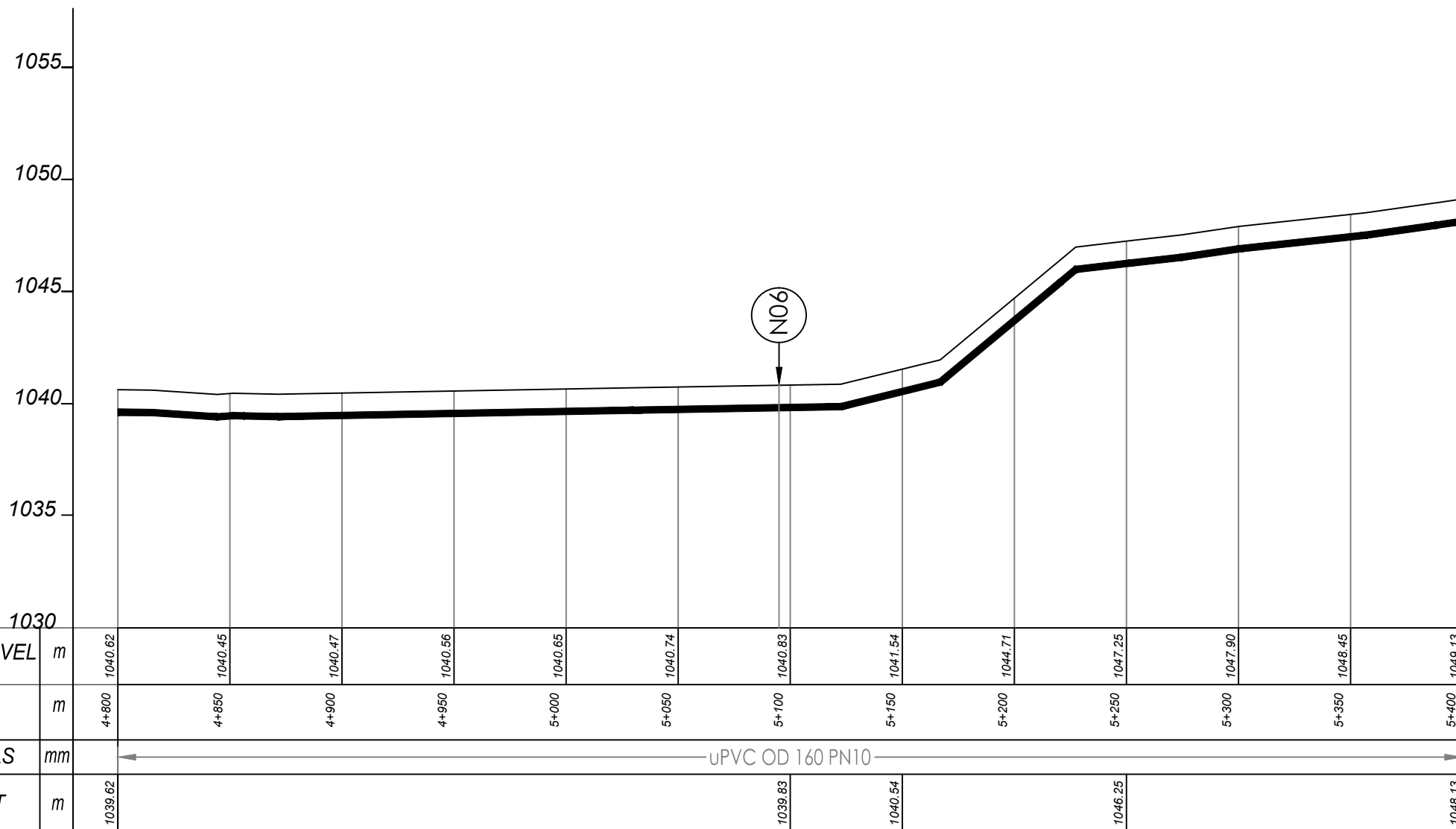
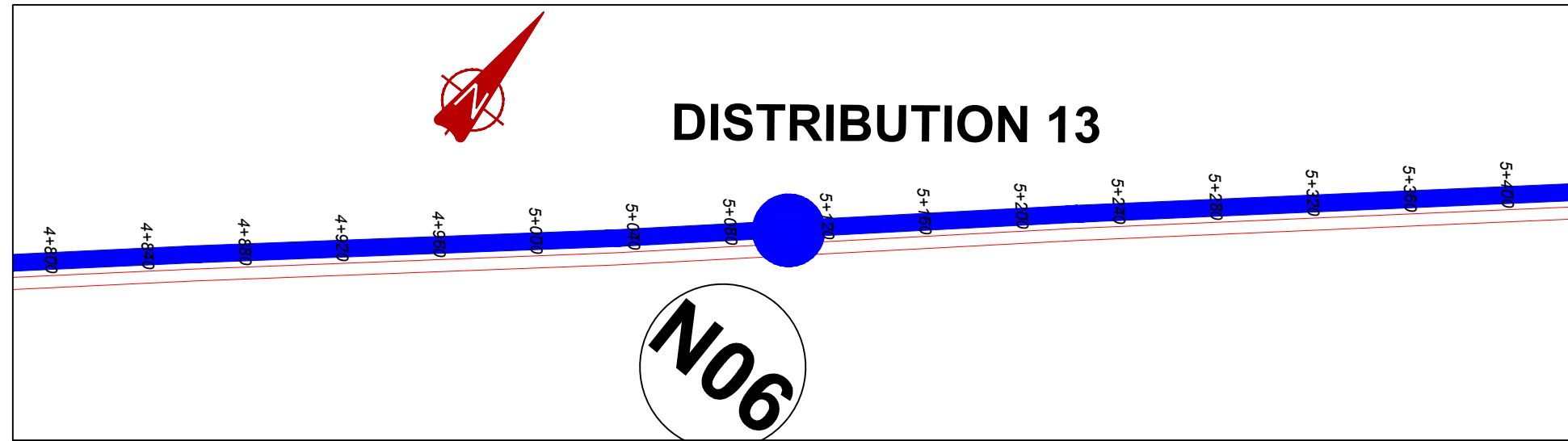
MUTUNDA WATER SUPPLY SYSTEM

CONSULTANT
SARI In Joint Venture with
 Corporate Headquarter
 10 Philpot Lane, 1st Floor,
 London EC3M 8AA,
 United Kingdom

CONTRACTOR

DETAILED ENGINEERING DESIGN
 DRAWING TITLE
DISTRIBUTION LINE 13
(4+200.00 - 4+800.00)

SCALE	VERT: 1:250 HOR: 1:2500	DRAWING No.	MUT/WS/5.13.8
SURVEYED	Evans Mpanga	DESIGNED	Otwane Dan.
DRAWN	Joshua Nyarwanda	CHECKED	Rodney Barugahare
DATE	April 2021	APPROVED	Rodney Barugahare.

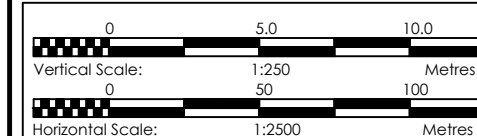


DISTRIBUTION 13 (4+800.00 - 5+400.00)

NOTES

LEGEND

- Transmission Pipeline
- Distribution Pipeline
- Ground Level
- Building/House
- Contours
- Road
- DAV Double Orifice Air Valve
- End pipe
- Node N01
- WO-1 Washout Type1
- WO-2 Washout Type2



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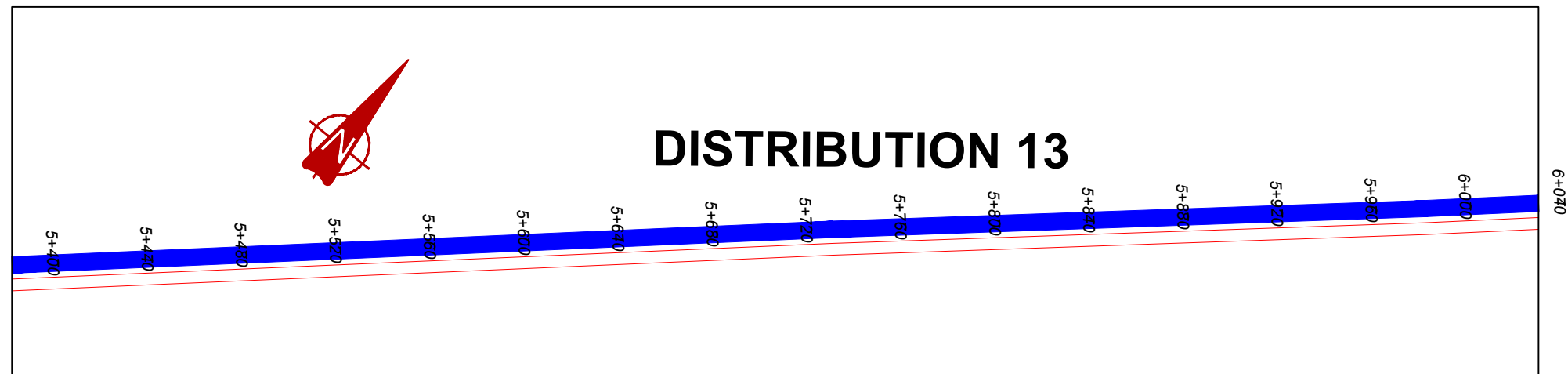
MUTUNDA WATER SUPPLY SYSTEM

CONSULTANT
SARI In Joint Venture with **SGAPI**
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 10 Philpott Lane, 1st Floor,
 London EC3M 8AA,
 United Kingdom

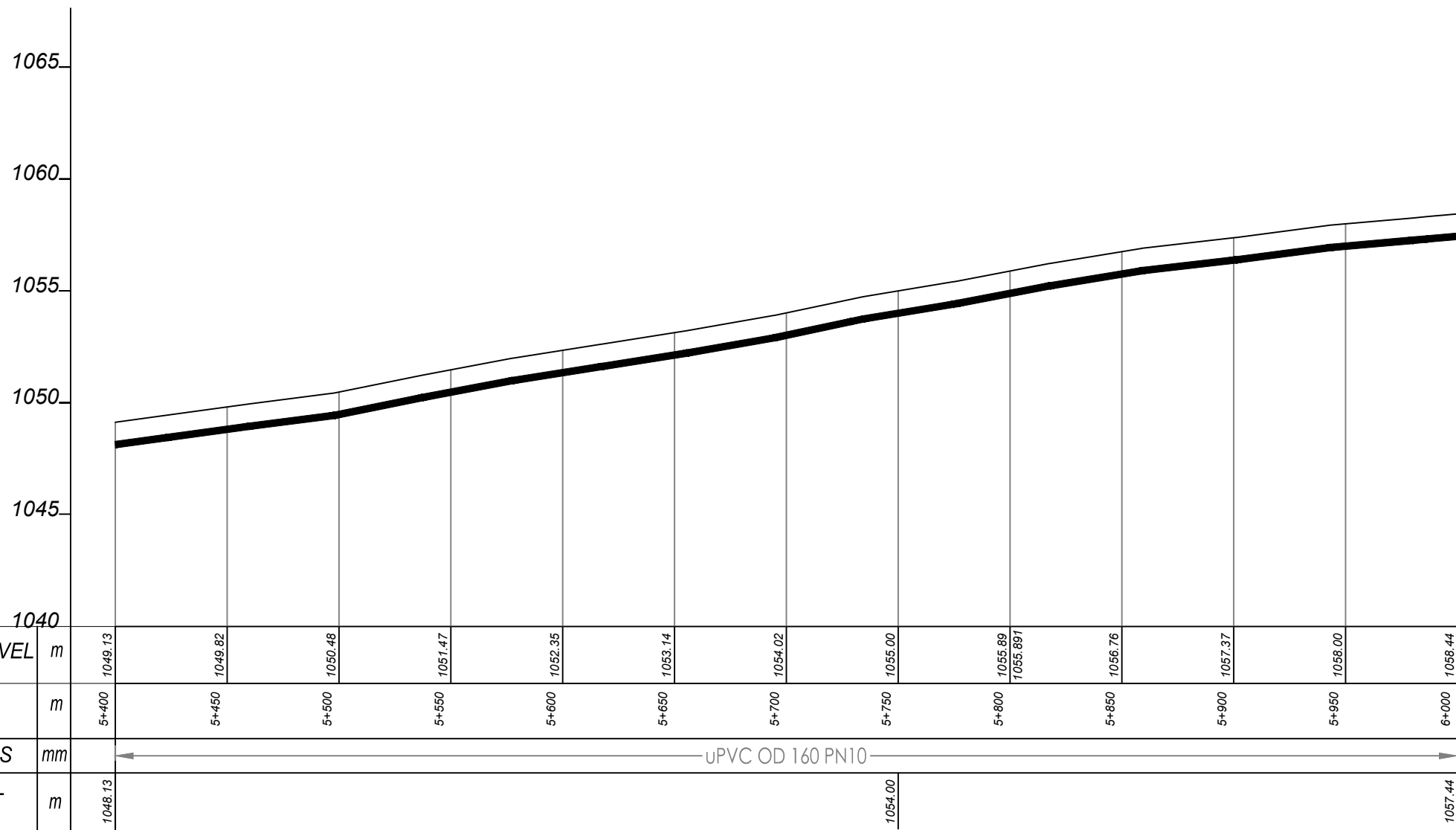
CONTRACTOR

DETAILED ENGINEERING DESIGN
 DRAWING TITLE
DISTRIBUTION LINE 13 (4+800.00 - 5+400.00)

SCALE	VERT: 1:250 HOR: 1:2500	DRAWING No.	MUT/WS/5.13.9
SURVEYED	Evans Mpanga	DESIGNED	Otwane Dan.
DRAWN	Joshua Nyarwanda	CHECKED	Rodney Barugahare
DATE	April 2021	APPROVED	Rodney Barugahare.



1070

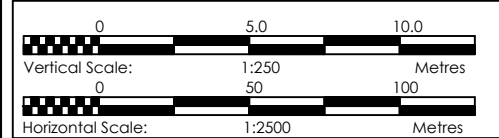


DISTRIBUTION 13 (5+400.00 - 6+000.00)

NOTES

LEGEND

- Transmission Pipeline
- Distribution Pipeline
- Ground Level
- Building/House
- Contours
- Road
- DAV Double Orifice Air Valve
- End pipe
- Node N01
- WO-1 Washout Type1
- WO-2 Washout Type2



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GOVERNMENT OF UGANDA
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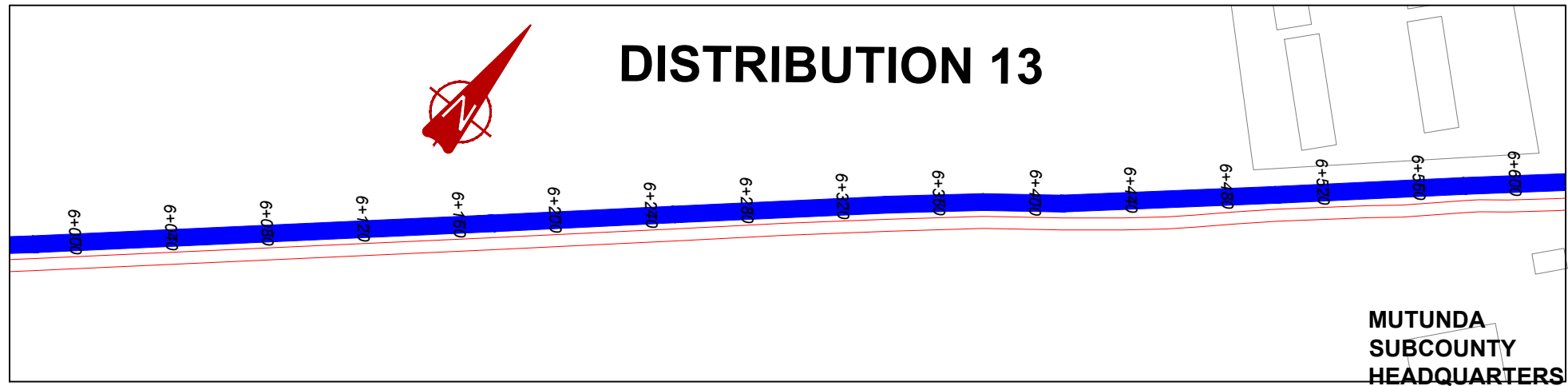
MUTUNDA WATER SUPPLY SYSTEM

CONSULTANT
SARI In Joint Venture with **SGAPI**
 Corporate Headquarter
 10 Philpot Lane, 1st Floor,
 London EC3M 8AA,
 United Kingdom

CONTRACTOR

DETAILED ENGINEERING DESIGN
 DRAWING TITLE
DISTRIBUTION LINE 13
(5+400.00 - 6+000.00)

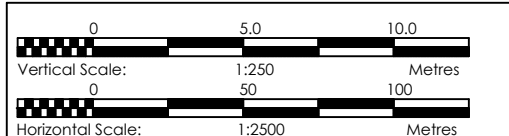
SCALE VERT: 1:250 DRAWING No. MUT/WS/5.13.10
 HOR: 1:2500
 SURVEYED Evans Mpanga DESIGNED Otwane Dan.
 DRAWN Joshua Nyarwanda CHECKED Rodney Barugahare
 DATE April 2021 APPROVED Rodney Barugahare.



NOTES

LEGEND

- Transmission Pipeline
- Distribution Pipeline
- Ground Level
- Building/House
- Contours
- Road
- DAV Double Orifice Air Valve
- End pipe
- Node N01
- WO-1 Washout Type1
- WO-2 Washout Type2



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MUTUNDA WATER SUPPLY SYSTEM

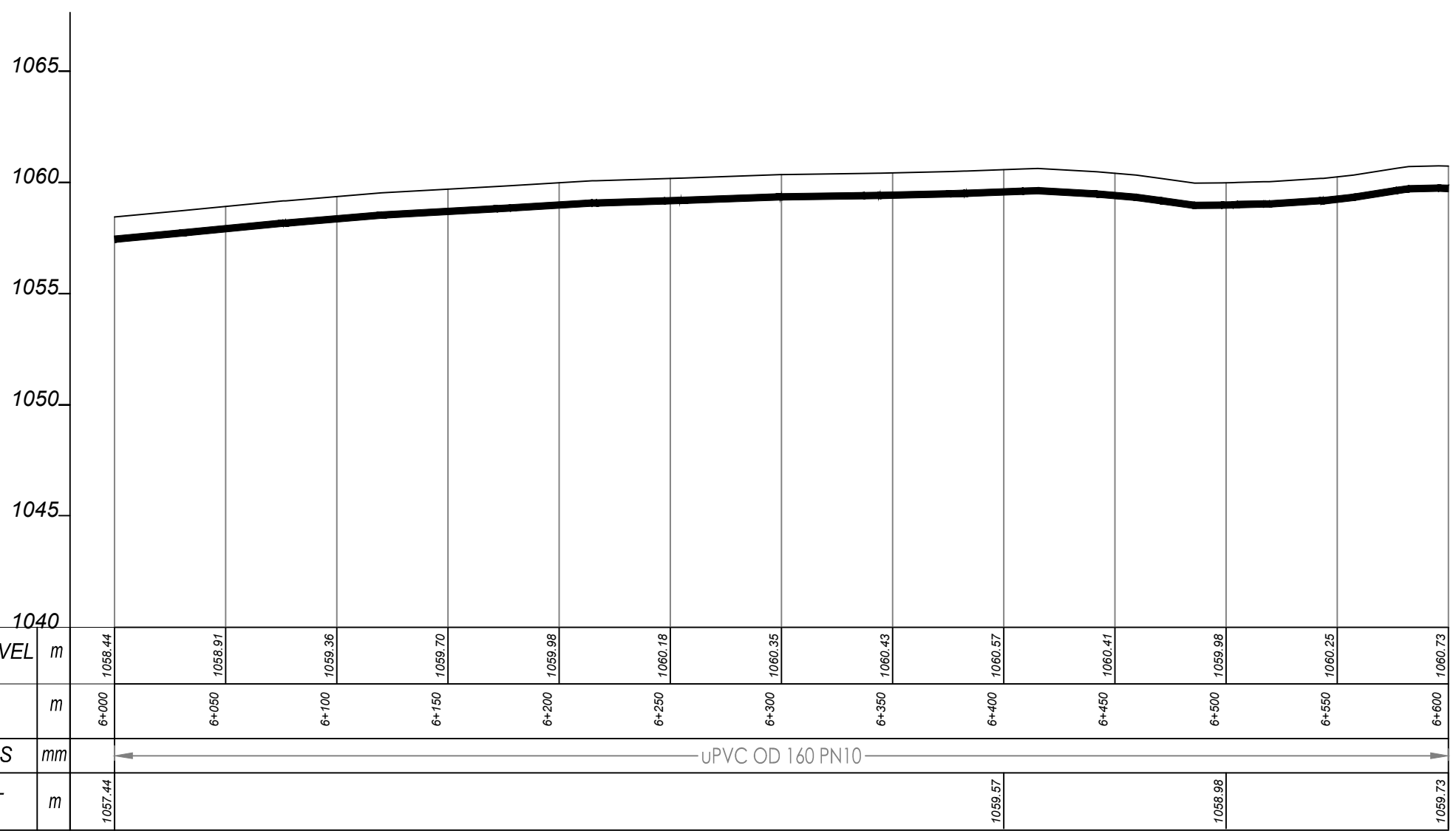
CONSULTANT
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 10 Philpot Lane, 1st Floor,
 London EC3M 8AA,
 United Kingdom

CONTRACTOR

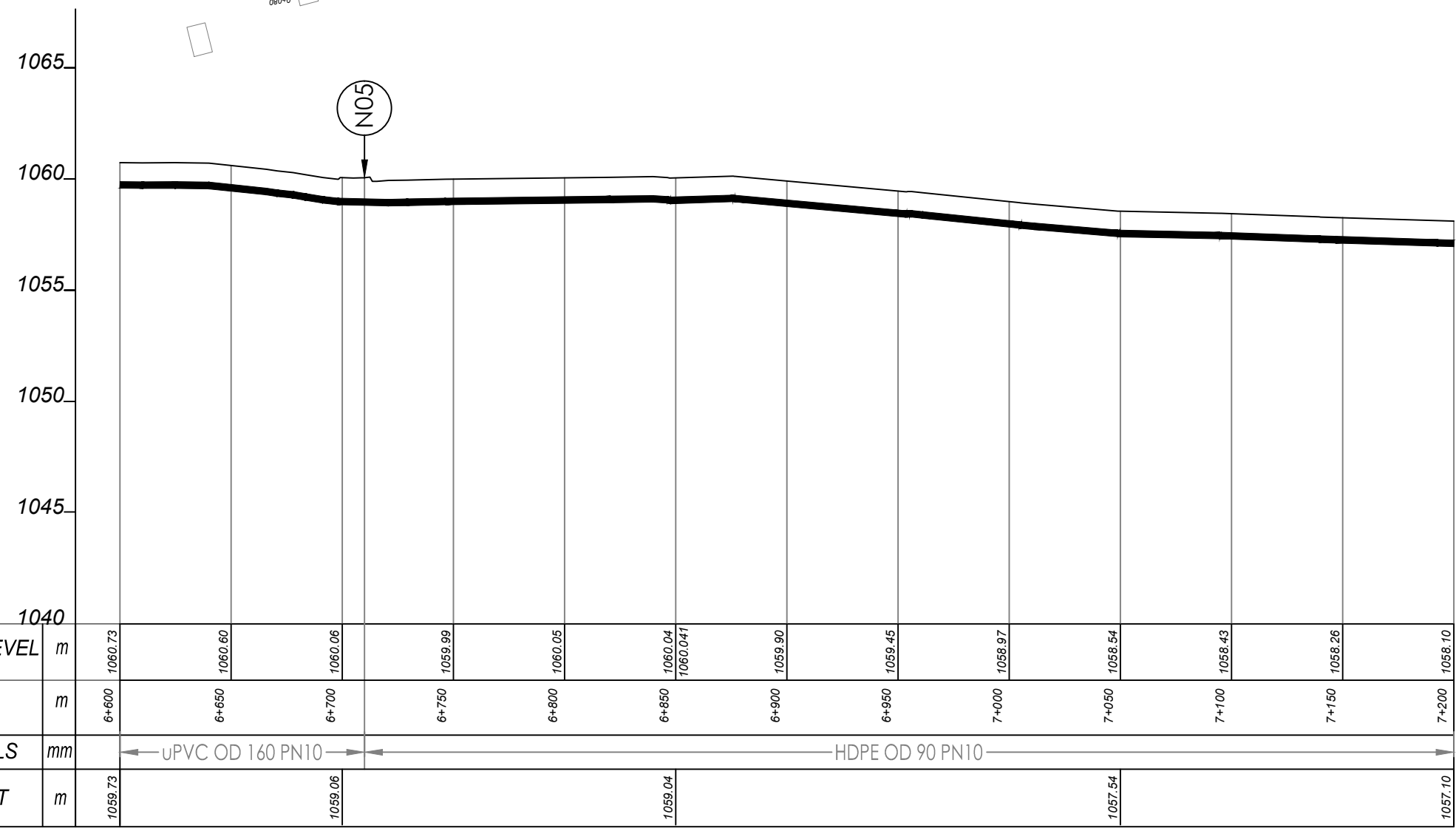
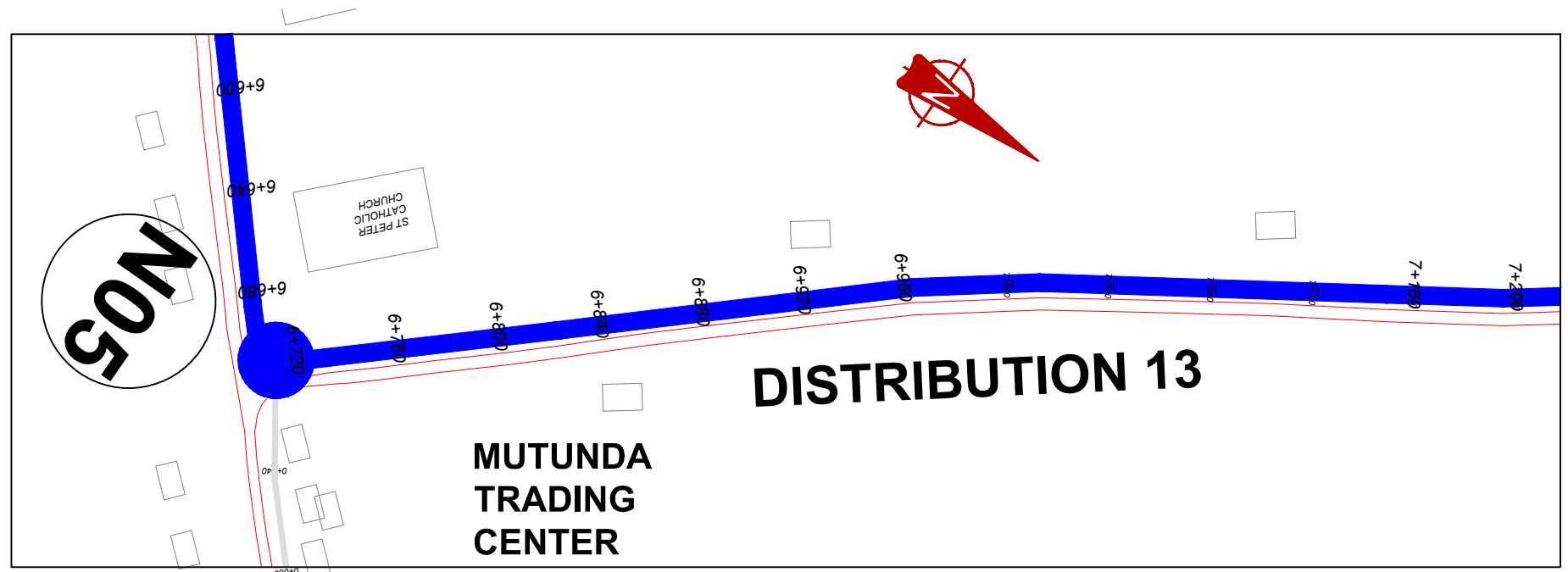
DETAILED ENGINEERING DESIGN
 DRAWING TITLE
DISTRIBUTION LINE 13
(6+000.00 - 6+600.00)

SCALE VERT: 1:250 DRAWING No. MUT/WS/5.13.11
 HOR: 1:2500
 SURVEYED Evans Mpanga DESIGNED Otwane Dan.
 DRAWN Joshua Nyarwanda CHECKED Rodney Barugahare
 DATE April 2021 APPROVED Rodney Barugahare.

1070



DISTRIBUTION 13 (6+000.00 - 6+600.00)

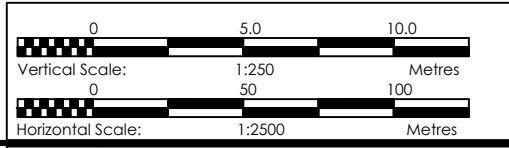


DISTRIBUTION 13 (6+600.00 - 7+200.00)

NOTES

LEGEND

- Transmission Pipeline
- Distribution Pipeline
- Ground Level
- Building/House
- Contours
- Road
- DAV Double Orifice Air Valve
- EP End pipe
- N01 Node N01
- WO-1 Washout Type1
- WO-2 Washout Type2



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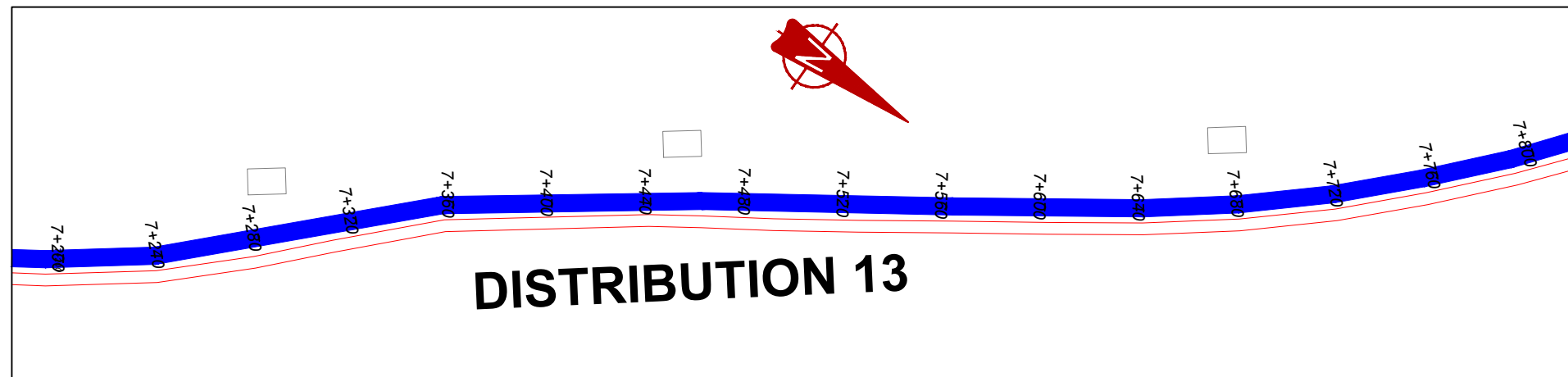
MUTUNDA WATER SUPPLY SYSTEM

CONSULTANT
SARI In Joint Venture with **SGAPI**
 Corporate Headquarter
 10 Philpott Lane, 1st Floor,
 London EC3M 8AA,
 United Kingdom

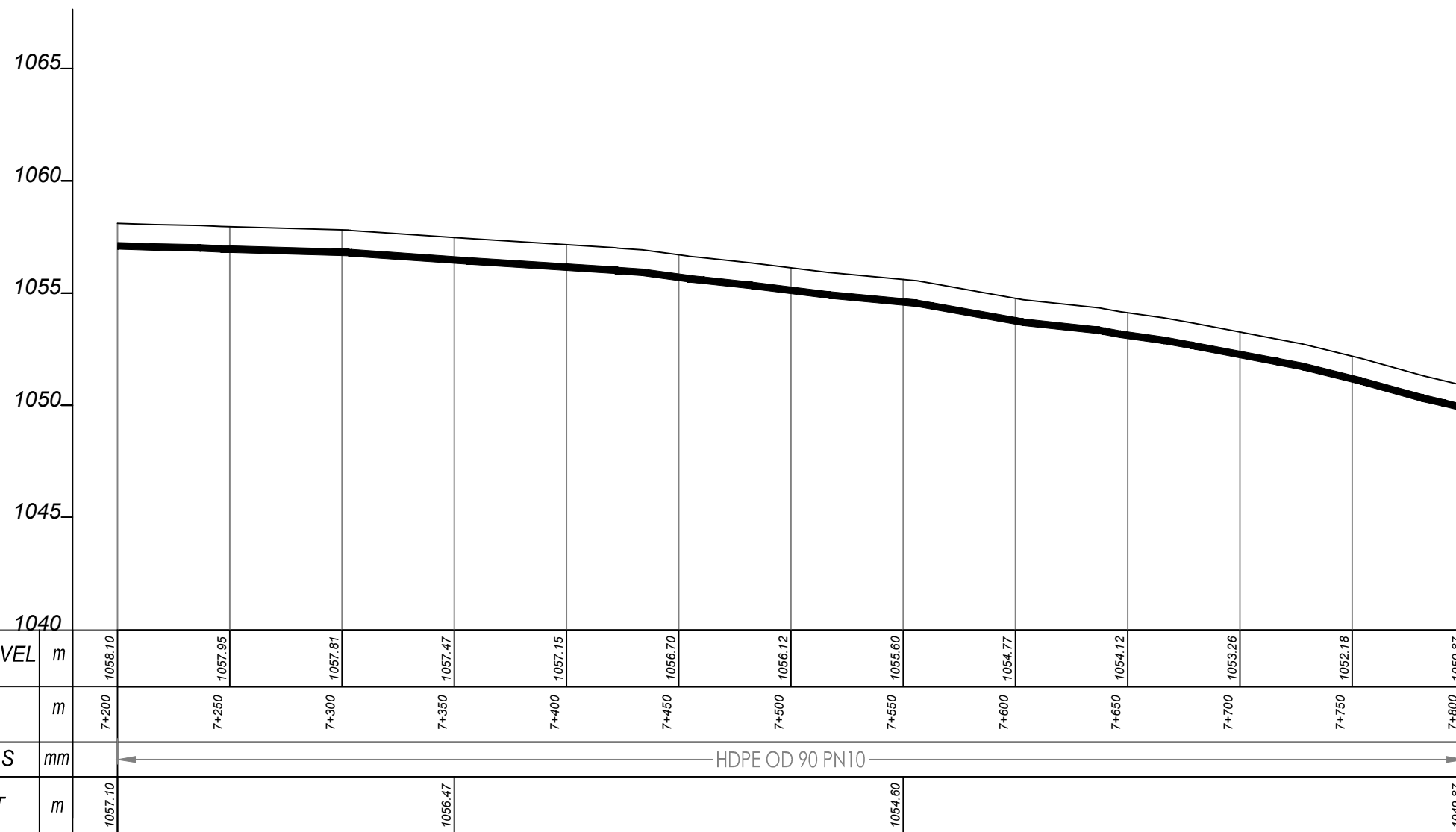
CONTRACTOR

DETAILED ENGINEERING DESIGN
 DRAWING TITLE
DISTRIBUTION LINE 13 (6+600.00 - 7+200.00)

SCALE	VERT: 1:250 HOR: 1:2500	DRAWING No.	MUT/WS/5.13.12
SURVEYED	Evans Mpanga	DESIGNED	Otwane Dan.
DRAWN	Joshua Nyarwanda	CHECKED	Rodney Barugahare
DATE	April 2021	APPROVED	Rodney Barugahare.



DISTRIBUTION 13

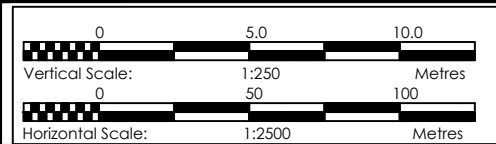


DISTRIBUTION 13 (7+200.00 - 7+800.00)

NOTES

LEGEND

- Transmission Pipeline
- Distribution Pipeline
- Ground Level
- Building/House
- — — Contours
- = = = Road
- DAV Double Orifice Air Valve
- EP End pipe
- N01 Node N01
- WO-1 Washout Type1
- WO-2 Washout Type2



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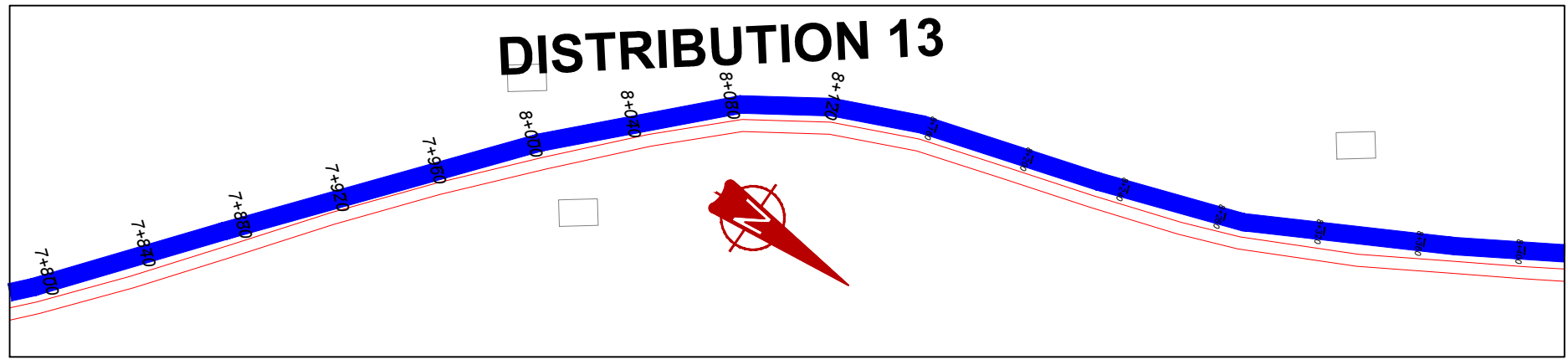
MUTUNDA WATER SUPPLY SYSTEM

CONSULTANT
 SARI In Joint Venture with
 Corporate Headquarter
 10 Philpott Lane, 1st Floor,
 London EC3M 8AA,
 United Kingdom

CONTRACTOR

DETAILED ENGINEERING DESIGN
 DRAWING TITLE
DISTRIBUTION LINE 13
(7+200.00 - 7+800.00)

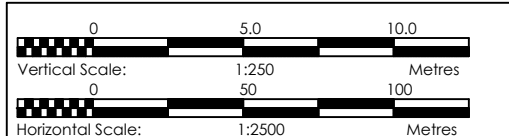
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SURVEYED	Evans Mpanga	DESIGNED	Otwane Dan.
DRAWN	Joshua Nyarwanda	CHECKED	Rodney Barugahare
DATE	April 2021	APPROVED	Rodney Barugahare.



NOTES

LEGEND

- Transmission Pipeline
- Distribution Pipeline
- Ground Level
- Building/House
- Contours
- Road
- DAV Double Orifice Air Valve
- End pipe
- Node N01
- WO-1 Washout Type1
- WO-2 Washout Type2



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GOVERNMENT OF UGANDA
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PROJECT
 CONSULTANCY SERVICES FOR FEASIBILITY STUDY,
 DETAILED ENGINEERING DESIGN AND CONSTRUCTION
 SUPERVISION OF SOLAR POWERED PIPED WATER SUPPLY
 SYSTEMS AND SANITATION FACILITIES IN REFUGEE
 SETTLEMENTS AND HOST DISTRICTS IN WEST NILE AND
 NORTHERN UGANDA IN KIRYANDONGO DISTRICT

MUTUNDA WATER SUPPLY SYSTEM

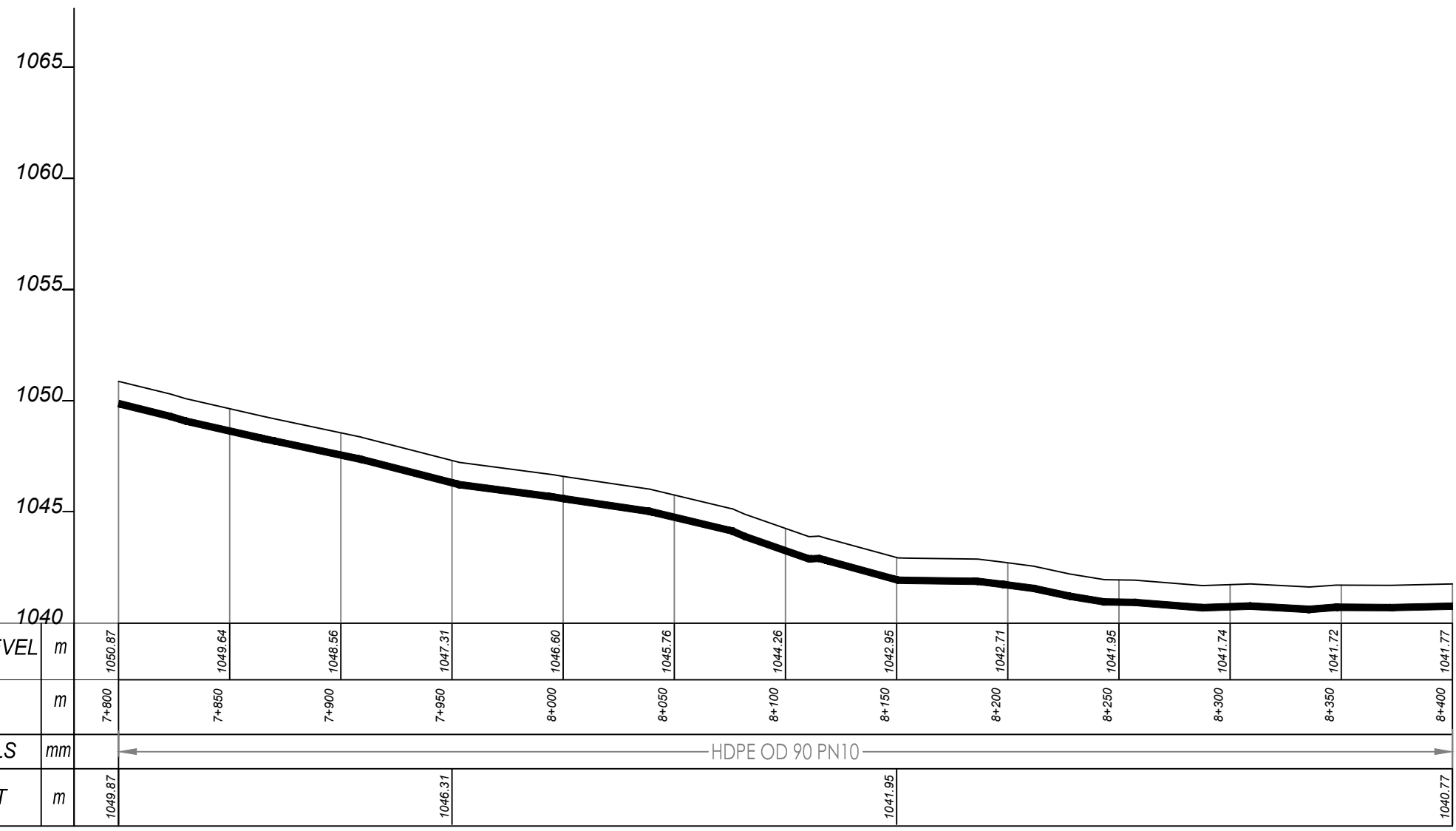
CONSULTANT
 In Joint Venture with
 Corporate Headquarter
 10 Philip Lane, 1st Floor,
 London EC3M 8AA,
 United Kingdom

CONTRACTOR

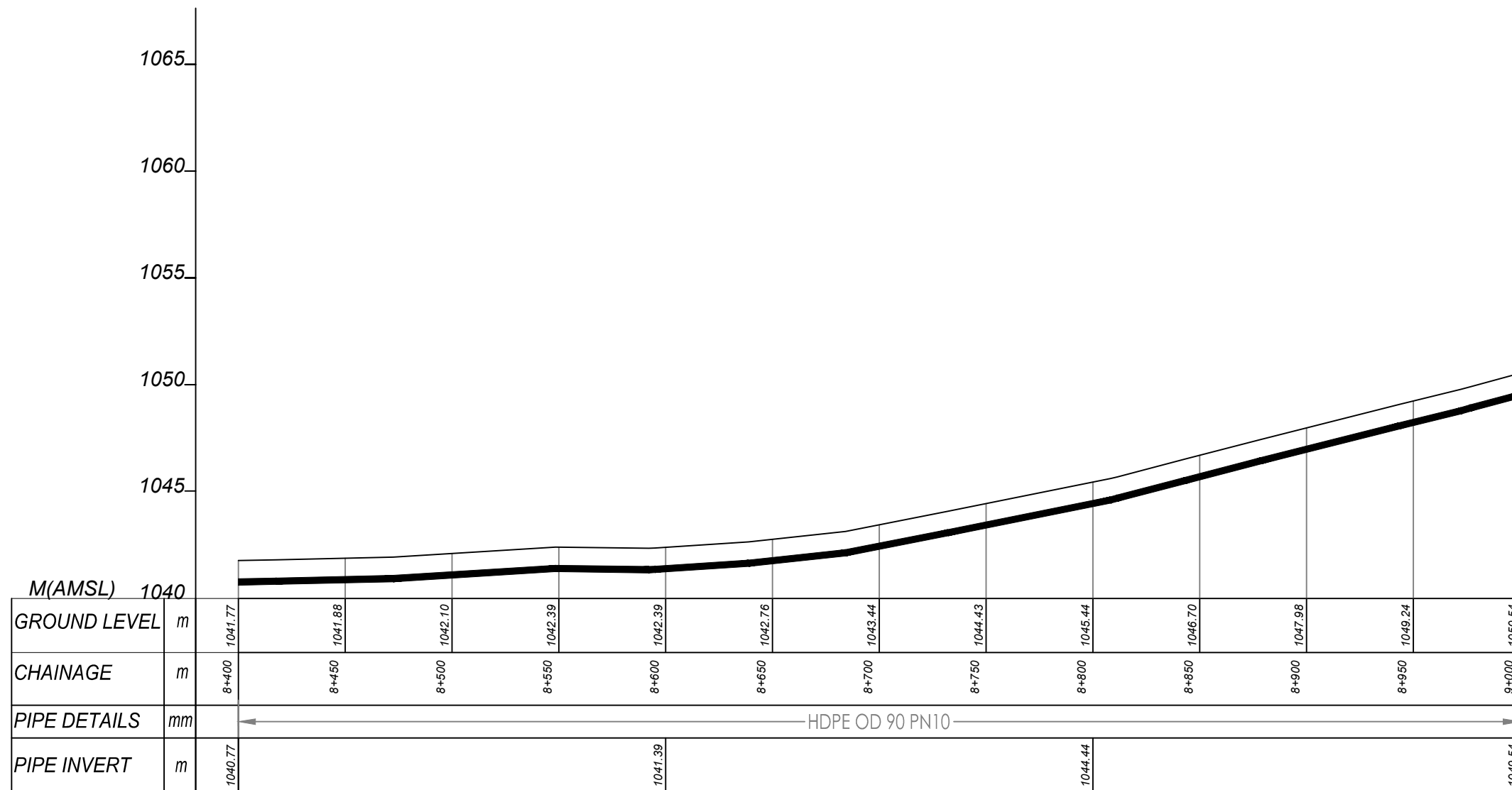
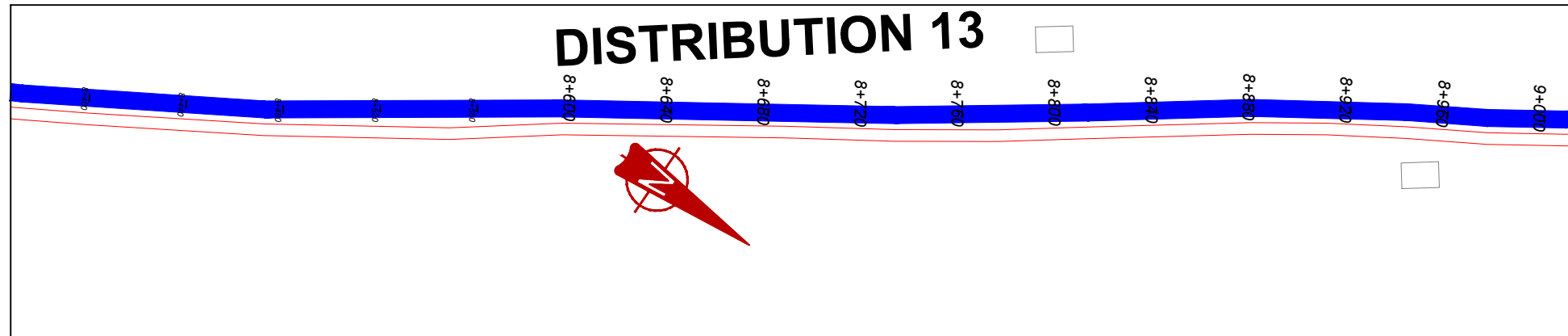
DETAILED ENGINEERING DESIGN

DRAWING TITLE
DISTRIBUTION LINE 13
(7+800.00 - 8+400.00)

SCALE	VERT: 1:250 HOR: 1:2500	DRAWING No.	MUT/WS/5.13.14
SURVEYED	Evans Mpanga	DESIGNED	Otwane Dan.
DRAWN	Joshua Nyarwanda	CHECKED	Rodney Barugahare
DATE	April 2021	APPROVED	Rodney Barugahare.



DISTRIBUTION 13 (7+800.00 - 8+400.00)

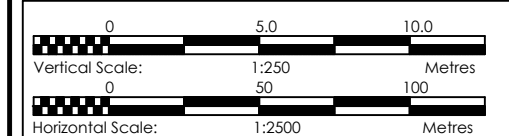


DISTRIBUTION 13 (8+400.00 - 9+000.00)

NOTES

LEGEND

- Transmission Pipeline
- Distribution Pipeline
- Ground Level
- Building/House
- Contours
- Road
- DAV Double Orifice Air Valve
- EP End pipe
- N01 Node N01
- WO-1 Washout Type1
- WO-2 Washout Type2



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MUTUNDA WATER SUPPLY SYSTEM

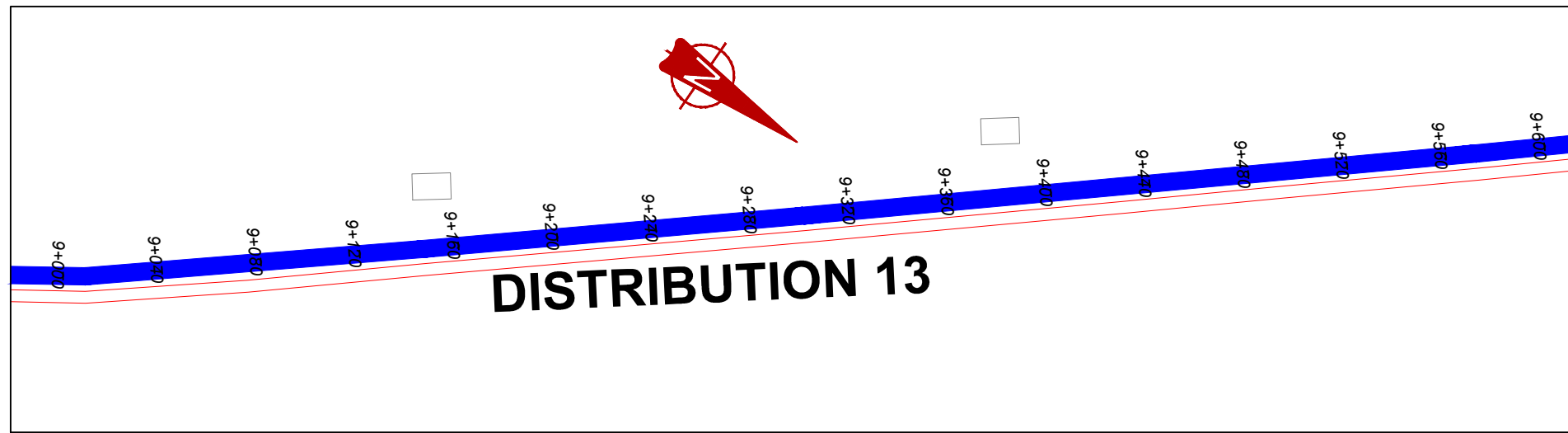
CONSULTANT
SARI In Joint Venture with **SGAPI**
 Corporate Headquarter
 10 Philpot Lane, 1st Floor,
 London EC3M 8AA,
 United Kingdom

CONTRACTOR

DETAILED ENGINEERING DESIGN

DRAWING TITLE
DISTRIBUTION LINE 13
(8+400.00 - 9+000.00)

SCALE VERT: 1:250 DRAWING No. MUT/WS/5.13.15
 HOR: 1:2500
 SURVEYED Evans Mpanga DESIGNED Otwane Dan.
 DRAWN Joshua Nyarwanda CHECKED Rodney Barugahare
 DATE April 2021 APPROVED Rodney Barugahare.



NOTES

LEGEND

- Transmission Pipeline
- Distribution Pipeline
- Ground Level
- Building/House
- Contours
- Road
- DAV Double Orifice Air Valve
- EP End pipe
- N01 Node N01
- WO-1 Washout Type1
- WO-2 Washout Type2



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CONSULTANCY SERVICES FOR FEASIBILITY STUDY,
DETAILED ENGINEERING DESIGN AND CONSTRUCTION,
SUPERVISION OF SOLAR POWERED PIPED WATER SUPPLY
SYSTEMS AND SANITATION FACILITIES IN REFUGEE
SETTLEMENTS AND HOST DISTRICTS IN WEST NILE AND
NORTHERN UGANDA IN KIRYANDONGO DISTRICT

MUTUNDA WATER SUPPLY SYSTEM

CONSULTANT

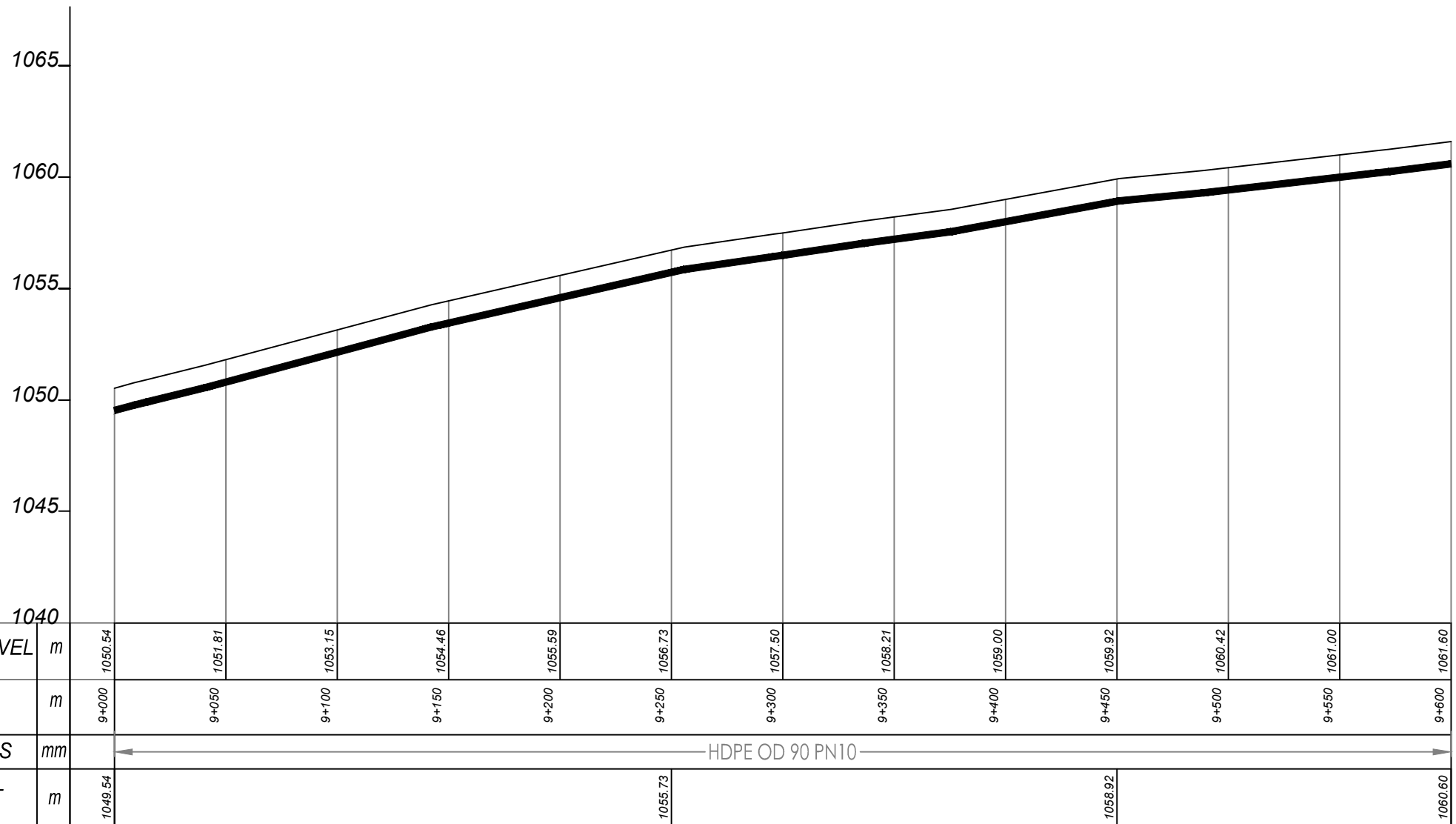
In Joint Venture with
Corporate Headquarter
10 Philpot Lane, 1st Floor,
London EC3M 8AA,
United Kingdom

CONTRACTOR

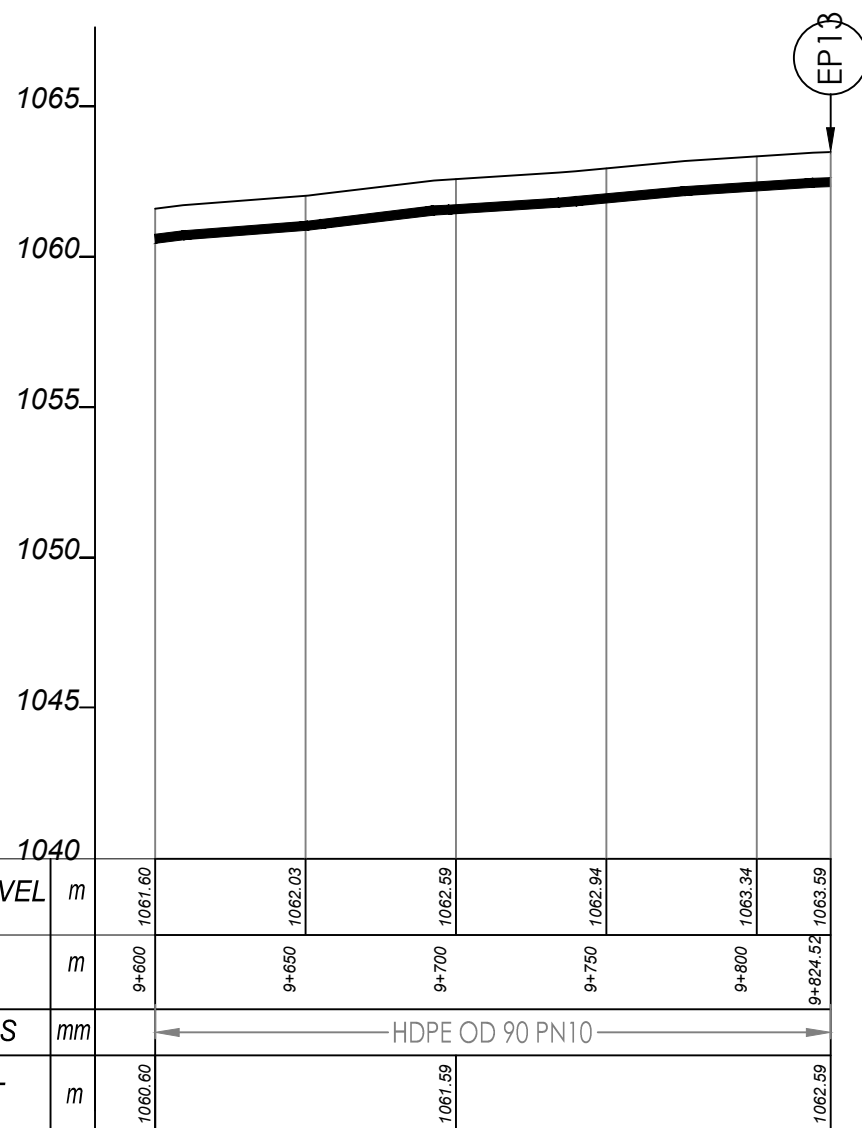
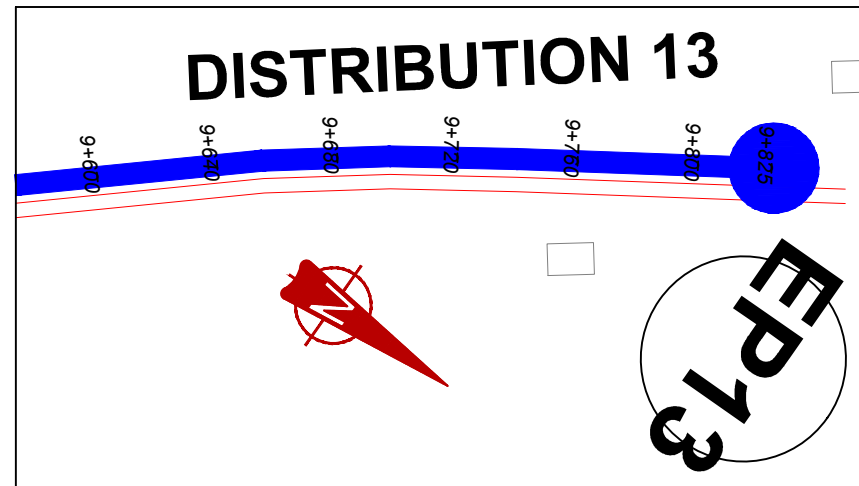
DETAILED ENGINEERING DESIGN

DRAWING TITLE
DISTRIBUTION LINE 13
(9+000.00 - 9+600.00)

SCALE	VERT: 1:250 HOR: 1:2500	DRAWING No.	MUT/WS/5.13.16
SURVEYED	Evans Mpanga	DESIGNED	Otwane Dan.
DRAWN	Joshua Nyarwanda	CHECKED	Rodney Barugahare
DATE	April 2021	APPROVED	Rodney Barugahare.



DISTRIBUTION 13 (9+000.00 - 9+600.00)

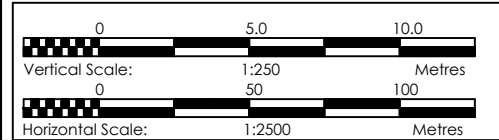


DISTRIBUTION 13 (9+600.00 - 9+824.52)

NOTES

LEGEND

- Transmission Pipeline
- Distribution Pipeline
- Ground Level
- Building/House
- Contours
- Road
- DAV Double Orifice Air Valve
- End pipe
- Node N01
- WO-1 Washout Type1
- WO-2 Washout Type2



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GOVERNMENT OF UGANDA
 MINISTRY OF WATER AND ENVIRONMENT

CO-FINANCED BY:
 AND
 THE WORLD BANK GOVERNMENT OF UGANDA

PROJECT
 CONSULTANCY SERVICES FOR FEASIBILITY STUDY, DETAILED ENGINEERING DESIGN AND CONSTRUCTION, SUPERVISION OF SOLAR POWERED PIPED WATER SUPPLY SYSTEMS AND SANITATION FACILITIES IN REFUGEE SETTLEMENTS AND HOST DISTRICTS IN WEST NILE AND NORTHERN UGANDA IN KIRYANDONGO DISTRICT

MUTUNDA WATER SUPPLY SYSTEM

CONSULTANT
SARI In Joint Venture with **SGAPI**
 Corporate Headquarter
 10 Philpott Lane, 1st Floor,
 London EC3M 8AA,
 United Kingdom

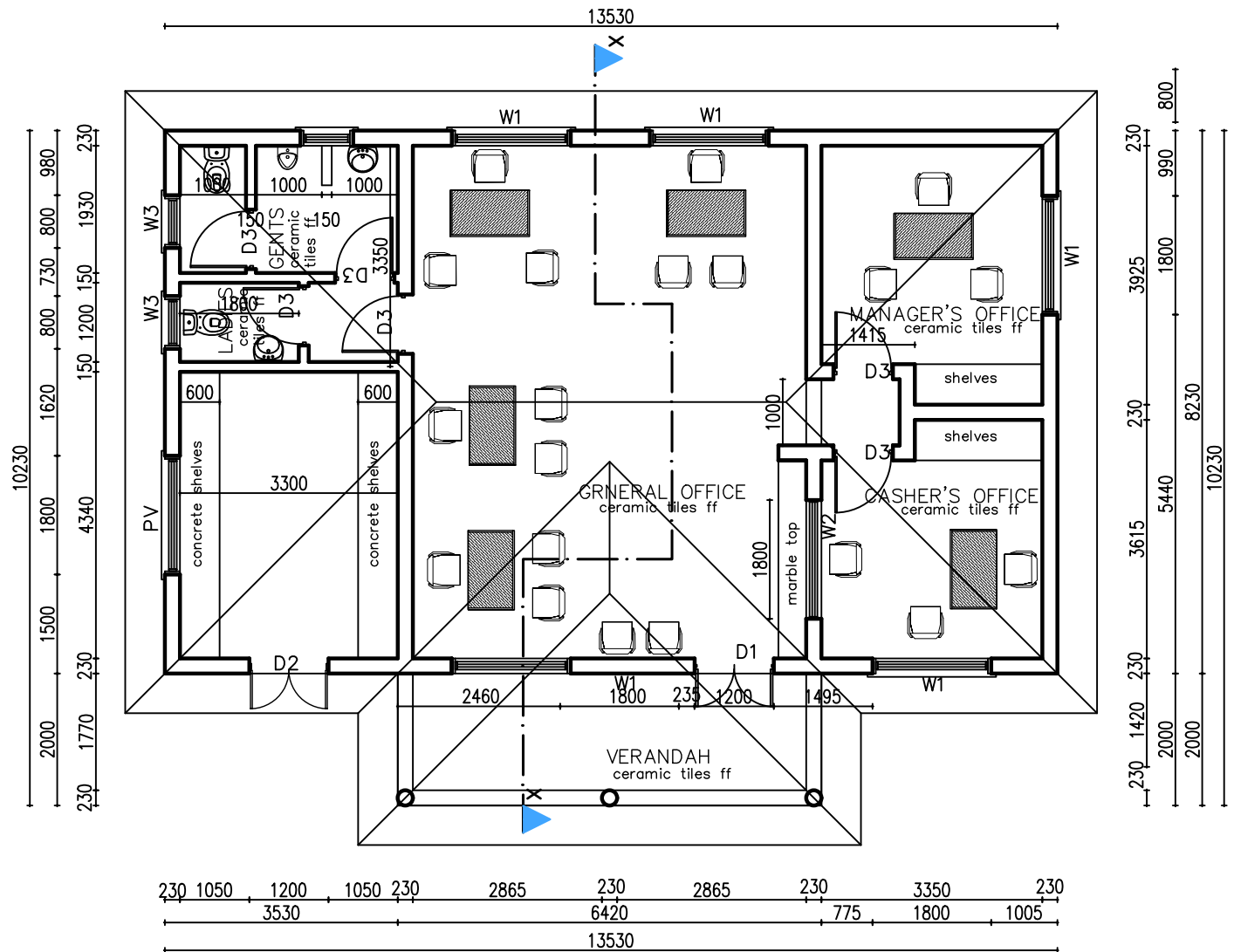
CONTRACTOR

DETAILED ENGINEERING DESIGN
 DRAWING TITLE
DISTRIBUTION LINE 13
(9+600.00 - 9+824.52)

SCALE	VERT: 1:250 HOR: 1:2500	DRAWING No.	MUT/WS/5.13.17
SURVEYED	Evans Mpanga	DESIGNED	Otwane Dan.
DRAWN	Joshua Nyarwanda	CHECKED	Rodney Barugahare
DATE	April 2021	APPROVED	Rodney Barugahare.

NOTES

1. All dimensions are in mm unless stated otherwise.
2. All levels are in metres above sea level.
3. For Site location see Dwg. GOD/0.0.0
4. Structural details are not included.
5. All structural concrete is Class 25/10.
6. All mass concrete is Class 15/10.



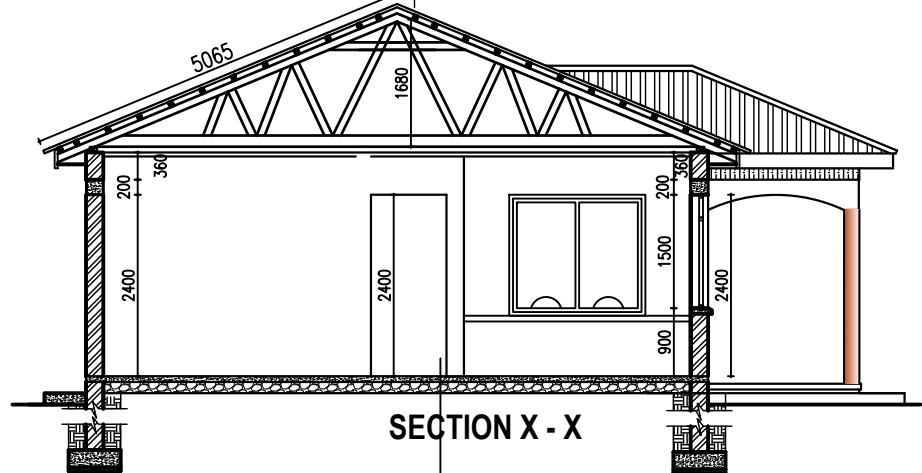
FLOOR PLAN scale 1:100

DOOR AND WINDOW SCHEDULES

DOOR SCHEDULE				
MARK	WIDTH	HEIGHT	No.	DESCRIPTION
D1	1200	2400	01	Steel Casement door, with 300mm vent over with clear glass panels, 4mm thick
D2	1200	2400	01	Steel Casement louver door, with 300mm vent over with mild steel plate panels, 1.5mm thick
D3	1500	2100	06	Solid Flush Door
WINDOW SCHEDULE				
W1	1800	1500	04	Casement steel window, with 300mm vent over with clear glass panels, 4mm thick
W2	1800	1500	01	Casement Aluminum window with 4mm thick glass panel and service opening
W3	800	900	01	Casement steel window, with 300mm vent over with frosted glass panels, 4mm thick
PV	1800	900	01	Casement steel Permanent Vent

GENERAL CEILING: 12.5mm thick CEMENT-SAND (mix 1:3) CAST ON EXPANDED METAL WIRE NAILED ONTO 100 x 50 TIMBER JOISTS AT 600 c/c AND 50 x 50 BRANDERINGS AT 600 c/c 12.5mm thick STEEL FLOAT FINISHED PLASTERED SOFFIT (mix 1:3)

ROOF SPECIFICATIONS: pitch=22.5° APPROVED PREPAINTED HALF ROUND RIDGE ON Gauge 28, PREPAINTED ROOFING IRON TILE SHEETS ON 75 x 50 TIMBER PURLINS AT 450 c/c ON 100 x 50 RAFTERS, TIES & STRUTS SUPPORTED ON 150 x 50 TIE BEAMS AT 1800 c/c ON 100 x 75 WALL PLATE 25x230mm PLASTIC FACIA BOARD



FOUNDATION CONSTRUCTION NOTES: 100mm high CERAMIC TILE SKIRTING ON APPROVED FLOOR TILES FINISH ON 25mm thick CEMENT-SAND SCREED (Mix 1:3) wood float ON 100mm thick OVERSITE CONCRETE SLAB (Mix 1:3:6) ON 1000 gauge POLYETHENE DPM ON 150 Minimum SAND BLINDED HARDCORE ON COMPACTED EARTH / MURRAM

FOUNDATION DETAILS: 200mm THICK PLINTH WALL ON 200X690mm STRIP CONCRETE FOUNDATION ON 50mm CONCRETE BLINDING ON APPROVED LOAD BEARING SOIL FOUNDATION DEPTH TO BE DETERMINED ON SITE

CLIENT **GOVERNMENT OF UGANDA**
MINISTRY OF WATER AND ENVIRONMENT

CO-FINANCED BY: AND THE WORLD BANK AND GOVERNMENT OF UGANDA

PROJECT CONSULTANCY SERVICES FOR FEASIBILITY STUDY, DETAILED ENGINEERING DESIGN AND CONSTRUCTION SUPERVISION OF SOLAR POWERED PIPED WATER SUPPLY SYSTEMS AND SANITATION FACILITIES IN REFUGEE SETTLEMENTS AND HOST DISTRICTS IN WEST NILE AND NORTHERN UGANDA IN KIRYANDONGO DISTRICT

MUTUNDA WATER SUPPLY SYSTEM

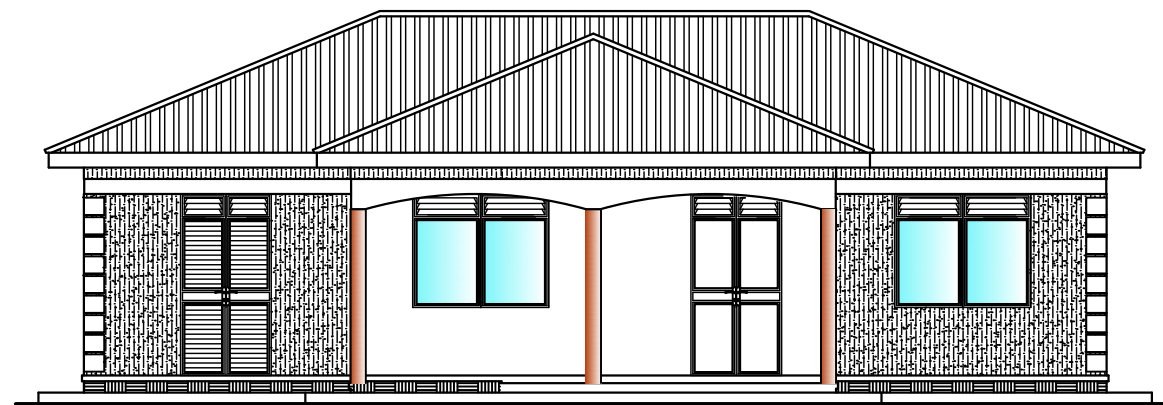
CONSULTANT In Joint Venture with **SARI** SGAPI
Corporate Headquarter
10 Philpot Lane, 1st Floor,
London EC3M 8AA,
United Kingdom

CONTRACTOR

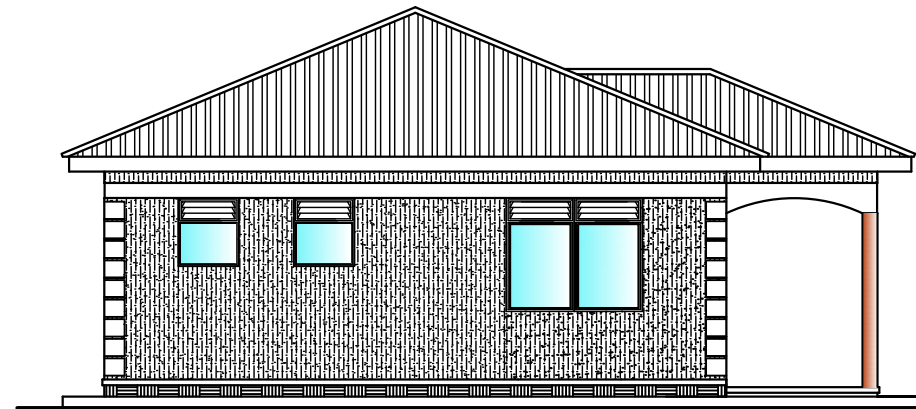
DETAILED ENGINEERING DESIGN

DRAWING TITLE **WATER OFFICE FLOOR PLAN & SECTION**

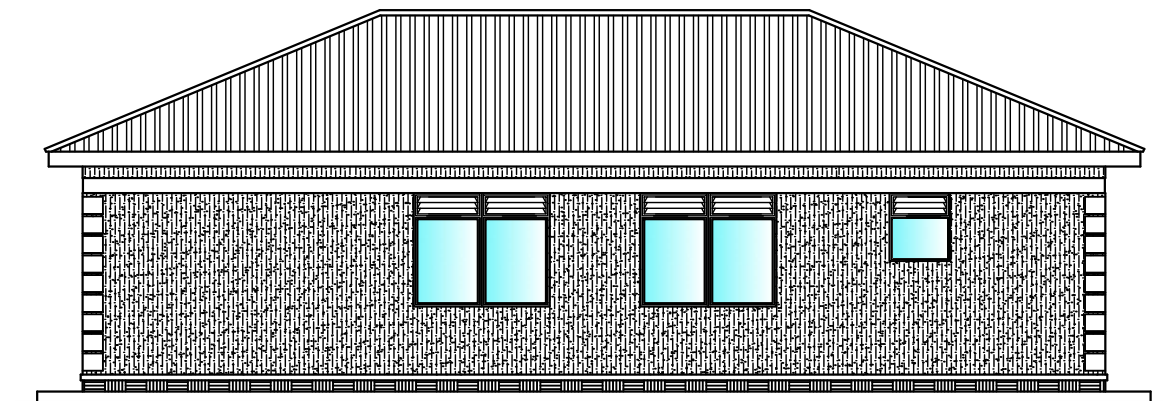
SCALE	As Shown	DRAWING No.	MUT/WS/7.1
SURVEYED		DESIGNED	Otwane Dan.
DRAWN	Jashua Nyarwanda	CHECKED	Rodney Barugahare
DATE	OCT 2021	APPROVED	Rodney Barugahare.



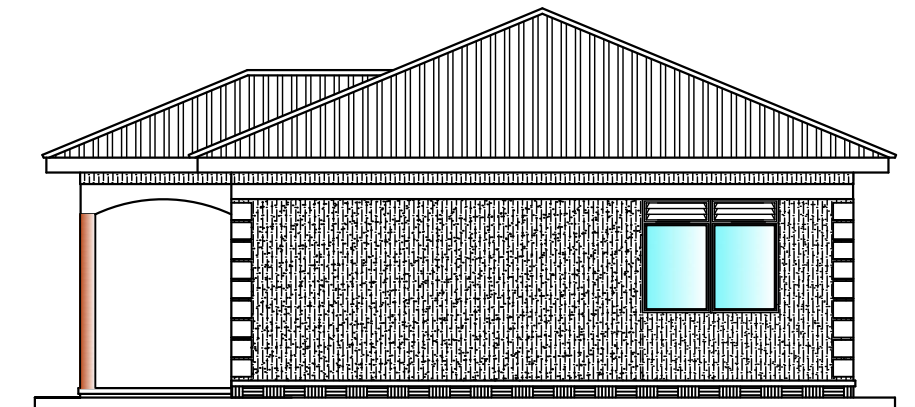
FRONT ELEVATION scale 1:100



LEFT END ELEVATION scale 1:100



BACK ELEVATION scale 1:100





RIGHT END ELEVATION scale 1:100

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MUTUNDA WATER SUPPLY SYSTEM

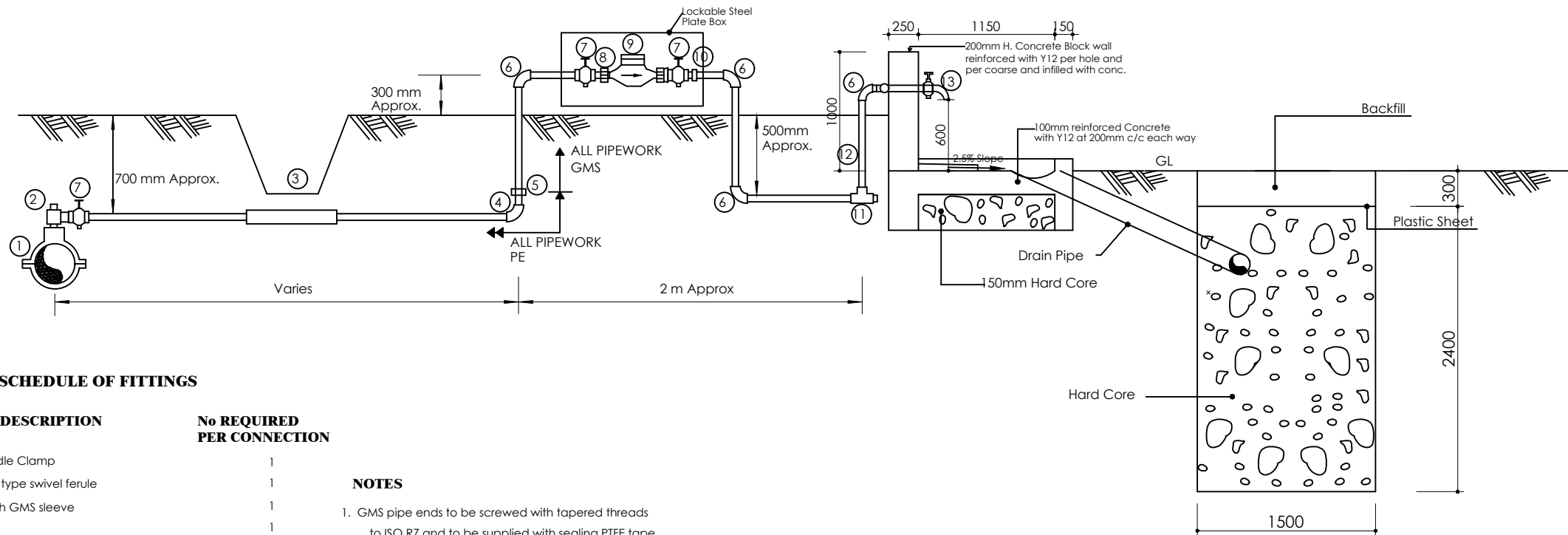
CONSULTANT
 In Joint Venture with 
 Corporate Headquarter
 10 Pinpoint Lane, 1st Floor,
 London EC3M 8AA,
 United Kingdom

CONTRACTOR

DETAILED ENGINEERING DESIGN

DRAWING TITLE
WATER OFFICE ELEVATIONS

SCALE	As Shown	DRAWING No.	MUT/WS/7.2
SURVEYED		DESIGNED	Otwane Dan.
DRAWN	Joshua Nyarwanda	CHECKED	Rodney Barugahare
DATE	OCT 2021	APPROVED	Rodney Barugahare.



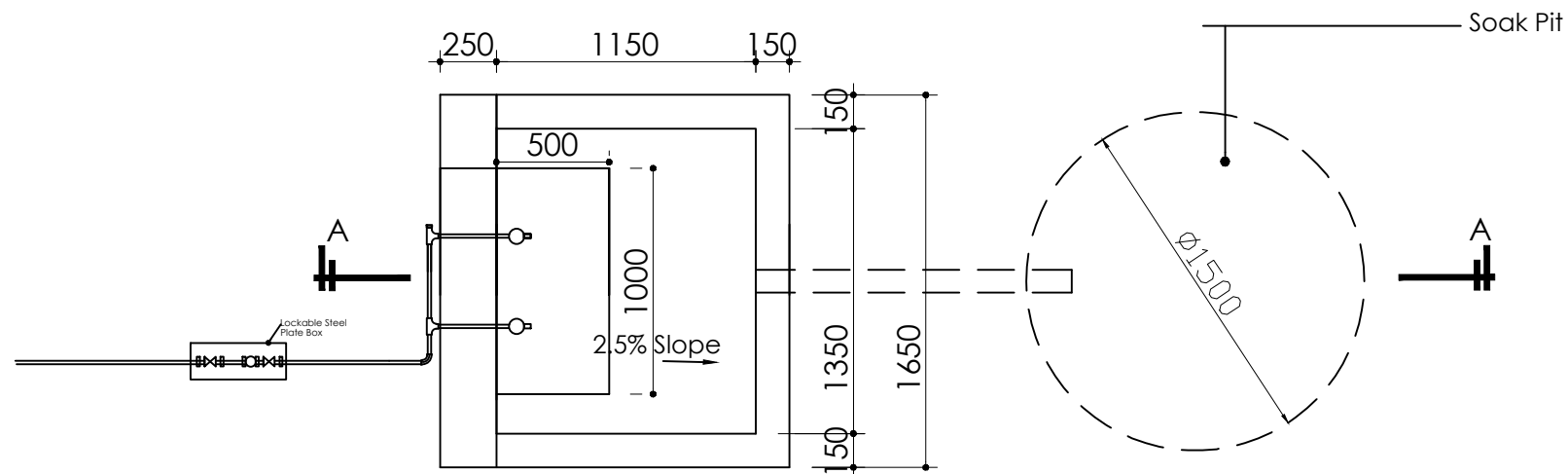
SCHEDULE OF FITTINGS

ITEM No	DESCRIPTION	No REQUIRED PER CONNECTION
1.	PVC Saddle Clamp	1
2.	PE Outlet type swivel ferule	1
3.	1m Length GMS sleeve	1
4.	PE Elbow	1
5.	PE/GMS Adaptor	1
6.	GMS Elbow	4
7.	Stop tap	3
8.	Male threaded connector	1
9.	Water meter	1
10.	Adjusting coupling	1
11.	GMS equal tee	1
12.	Plug	1
13.	Tap	1

NOTES

- GMS pipe ends to be screwed with tapered threads to ISO R7 and to be supplied with sealing PTFE tape
- GMS pipe fittings to be malleable cast iron to BS 143 and BS 1256 with female threaded ends
- The adjusting coupling shall be made of bronze or brass with a threaded female connection at the outlet end. It shall incorporate sufficient adjustment to permit removal at the meter
- All PE connections shall be of the push fit type
- Diameter of pipe varies

SECTION A-A



Standpost With 2 No. Faucets
PLAN

NOTES

- For site location see dwg. MUT/WS/0.0.0
- All levels in metres above mean sea level
- Unless otherwise stated, all dimensions are in mm
- Check all dimensions and elevations on site



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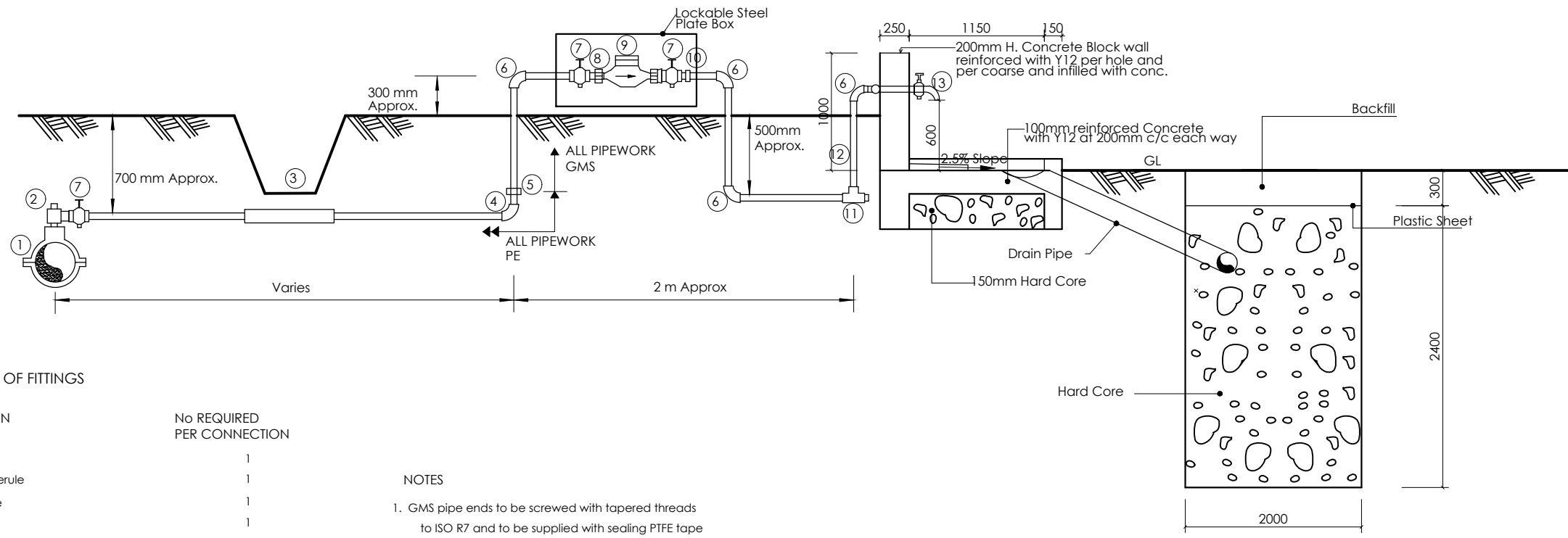
MUTUNDA WATER SUPPLY SYSTEM

CONSULTANT
 In Joint Venture with 
 Corporate Headquarter
 10 Philip Lane, 1st Floor,
 London EC3M 8AA,
 United Kingdom

CONTRACTOR

DETAILED ENGINEERING DESIGN
 DRAWING TITLE
PUBLIC STAND POST
 CONNECTION AND SOAK PIT DETAILS

SCALE DRAWING No. MUT/WS/8.1.1
 SURVEYED DESIGNED Otwane Dan.
 DRAWN Joshua Nyarwanda CHECKED Rodney Barugahare
 DATE OCT 2021 APPROVED Rodney Barugahare.



NOTES

1. For site location see dwg. MUT/WS/0.0.0
2. All levels in metres above mean sea level
3. Unless otherwise stated, all dimensions are in mm
4. Check all dimensions and elevations on site

SCHEDULE OF FITTINGS

ITEM No	DESCRIPTION	No REQUIRED PER CONNECTION
1.	PVC Saddle Clamp	1
2.	PE Outlet type swivel ferule	1
3.	1m Length GMS sleeve	1
4.	PE Elbow	1
5.	PE/GMS Adaptor	1
6.	GMS Elbow	4
7.	Stop tap	3
8.	Male threaded connector	1
9.	Water meter	1
10.	Adjusting coupling	1
11.	GMS equal tee	1
12.	Plug	1
13.	Tap	1

NOTES

1. GMS pipe ends to be screwed with tapered threads to ISO R7 and to be supplied with sealing PTFE tape
2. GMS pipe fittings to be malleable cast iron to BS 143 and BS 1256 with female threaded ends
3. The adjusting coupling shall be made of bronze or brass with a threaded female connection at the outlet end. It shall incorporate sufficient adjustment to permit removal at the meter
4. All PE connections shall be of the push fit type
5. Diameter of pipe varies

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MUTUNDA WATER SUPPLY SYSTEM

CONSULTANT



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United Kingdom

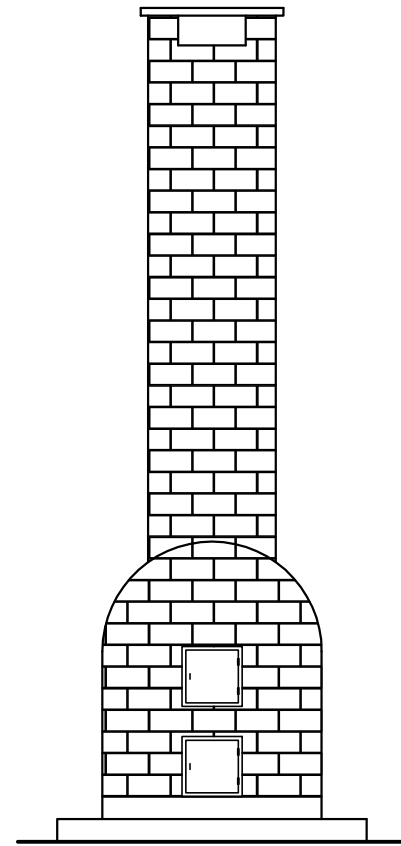
CONTRACTOR

DETAILED ENGINEERING DESIGN

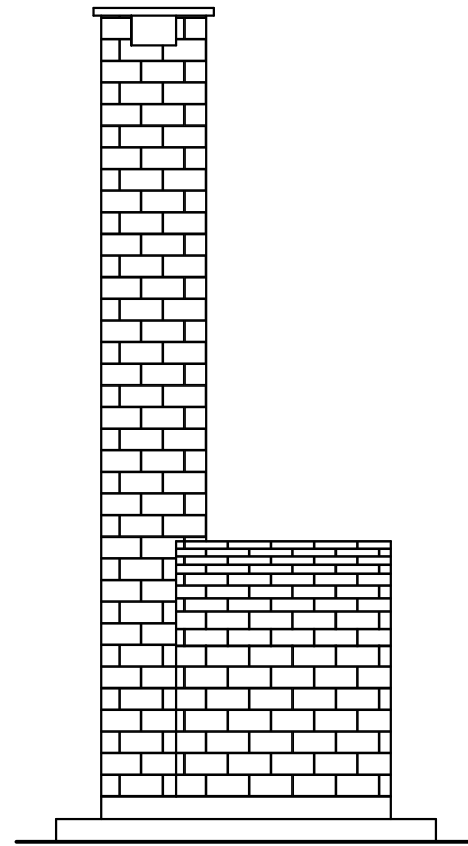
DRAWING TITLE

TYPICAL YARD CONNECTION CONNECTION AND SOAK PIT DETAILS

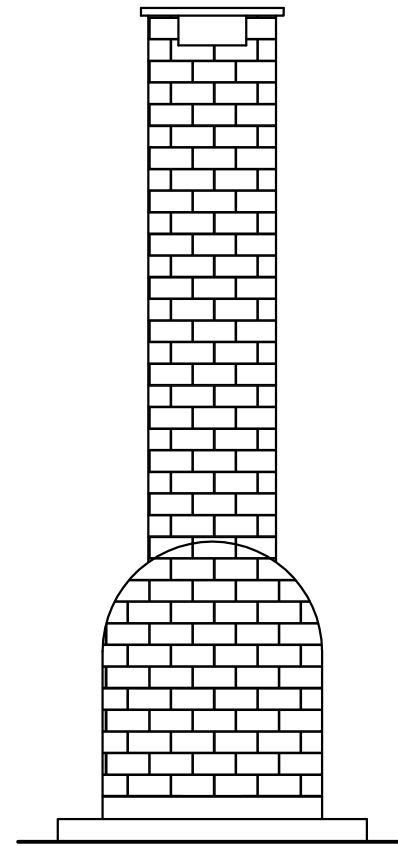
SCALE	As Shown	DRAWING No.	MUT/W/8.1.2
SURVEYED		DESIGNED	Othmane Dan.
DRAWN	Joshua Nyarwanda	CHECKED	Rodney Barugahare
DATE	OCT 2021	APPROVED	Rodney Barugahare.



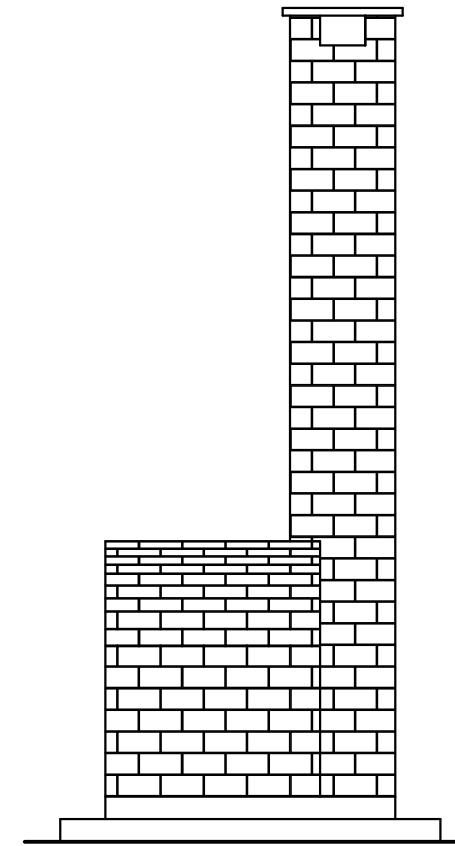
ELEVATION A



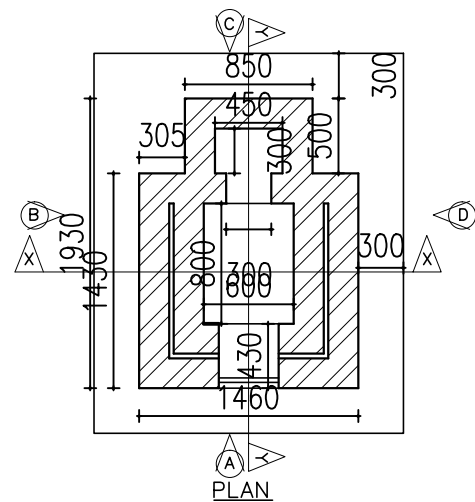
ELEVATION B



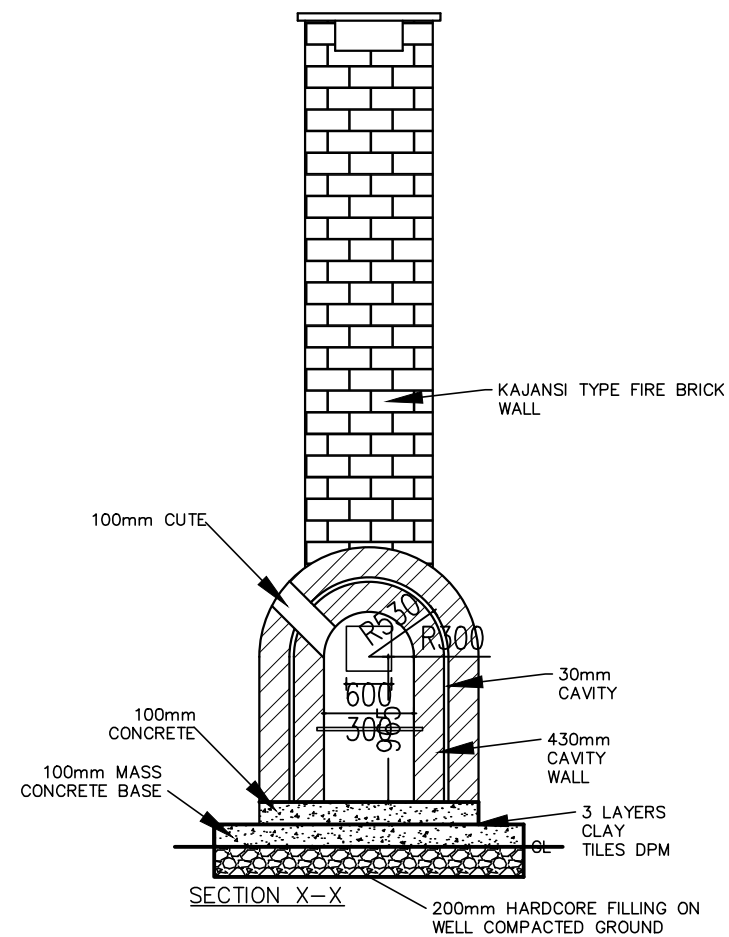
ELEVATION C



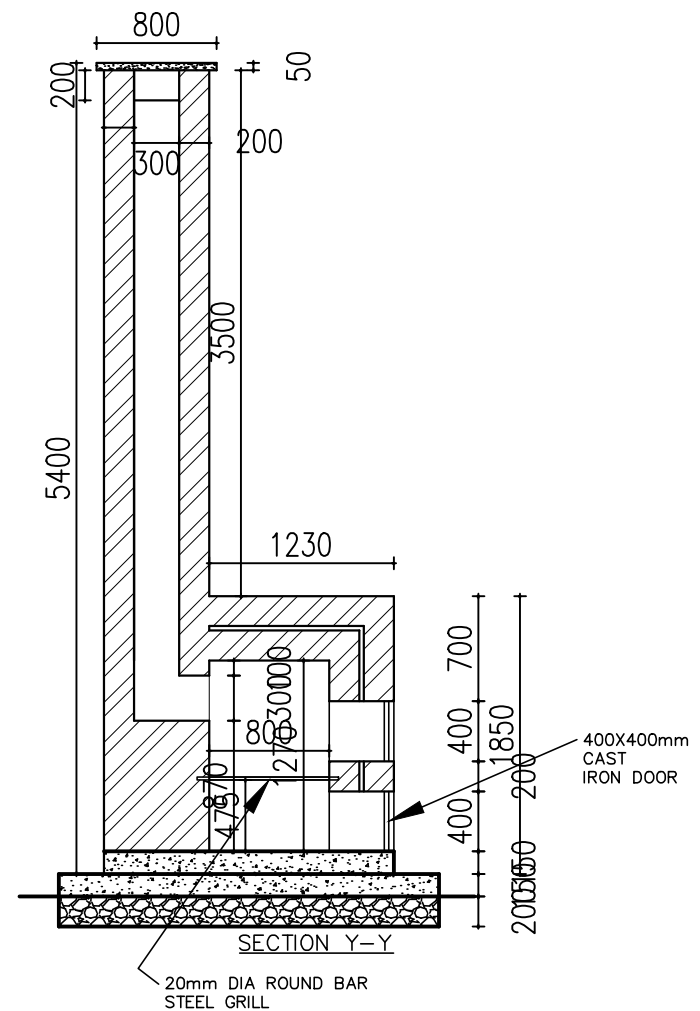
ELEVATION D



PLAN



SECTION X-X



SECTION Y-Y

NOTES

1. Unless otherwise stated, all dimensions are in mm
2. Concrete grade to be C20/10.
3. All levels in metres above mean sea level.

CLIENT **GOVERNMENT OF UGANDA**
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PROJECT
CONSULTANCY SERVICES FOR FEASIBILITY STUDY, DETAILED ENGINEERING DESIGN AND CONSTRUCTION SUPERVISION OF SOLAR POWERED PIPED WATER SUPPLY SYSTEMS AND SANITATION FACILITIES IN REFUGEE SETTLEMENTS AND HOST DISTRICTS IN WEST NILE AND NORTHERN UGANDA IN KIRYANDONGO DISTRICT

MUTUNDA WATER SUPPLY SYSTEM

CONSULTANT In Joint Venture with
Corporate Headquarter
10 Philpot Lane, 1st Floor,
London EC3M 8AA,
United Kingdom

CONTRACTOR

DETAILED ENGINEERING DESIGN

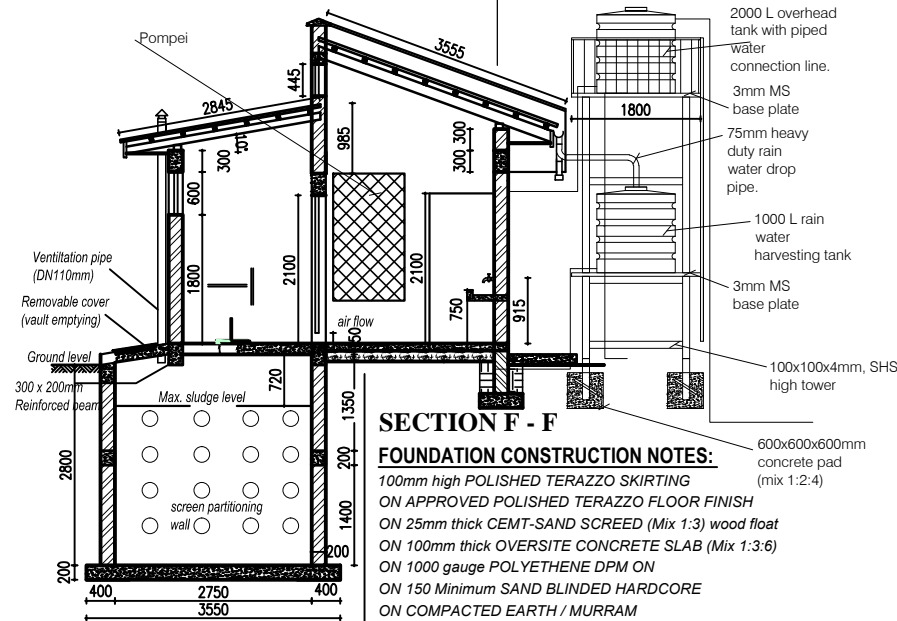
DRAWING TITLE
INSTITUTIONAL TOILET - INCINERATOR

SCALE	As Shown	DRAWING No.	MUT/S/1.1.1
SURVEYED		DESIGNED	Otwane Dan.
DRAWN	Joshua Nyarwanda	CHECKED	Rodney Barugahare
DATE	OCT 2022	APPROVED	Rodney Barugahare.

NOTES

1. Unless otherwise stated, all dimensions are in mm
2. Concrete grade to be C20/10.
3. All levels in metres above mean sea level.

ROOF SPECIFICATIONS: pitch=10/20°
 200mm HIGH PARAPET WALL /
 28 Gauge V-SHAPED RIDGES ON
 Gauge 28, PREPAINTED ROOFING IT4 IRON SHEETS
 ON 75 x 50 TIMBER PURLINS AT 450 c/c
 ON 150 x 50 RAFTERS SUPPORTED AT 900 c/c
 ON 100 x 75 WALL PLATE
 25x230mm PLASTIC FACIA BOARD



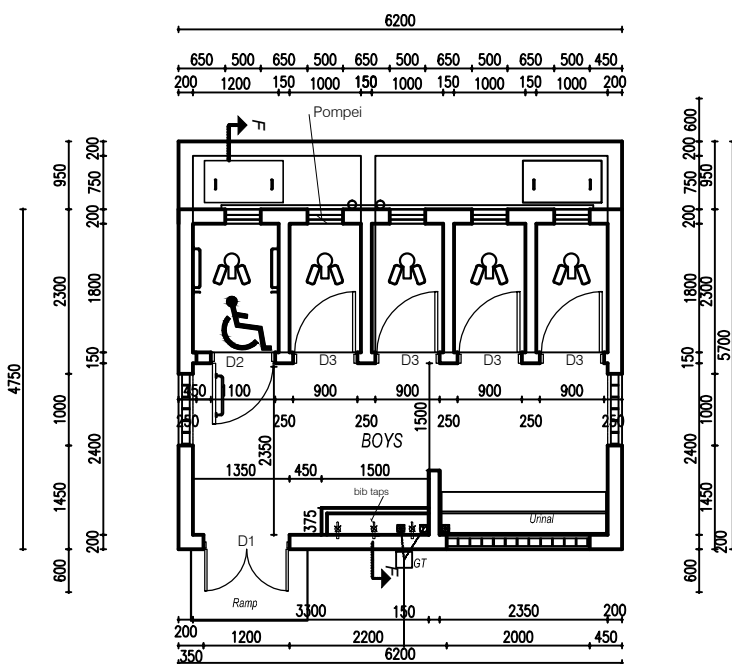
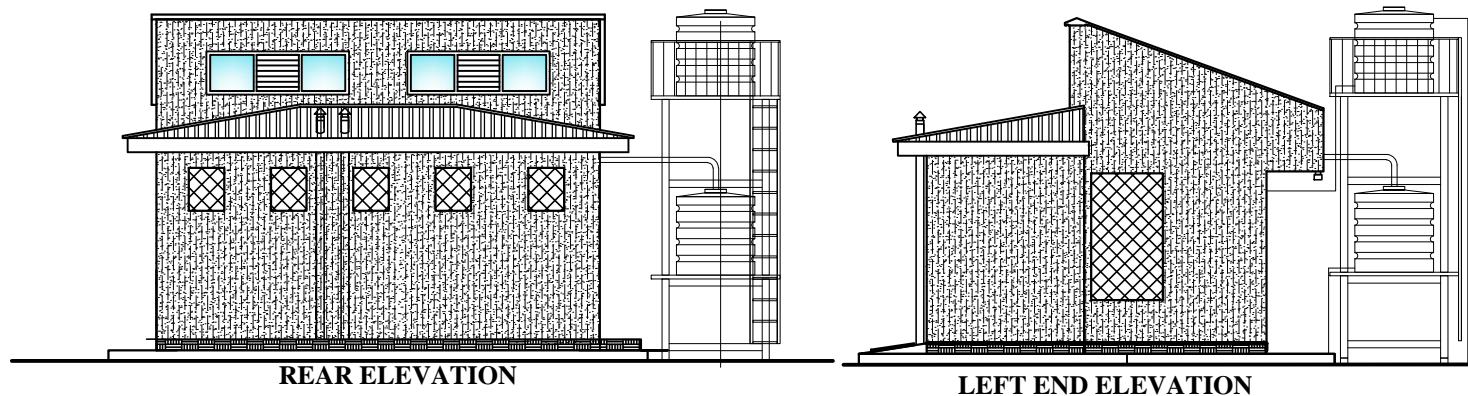
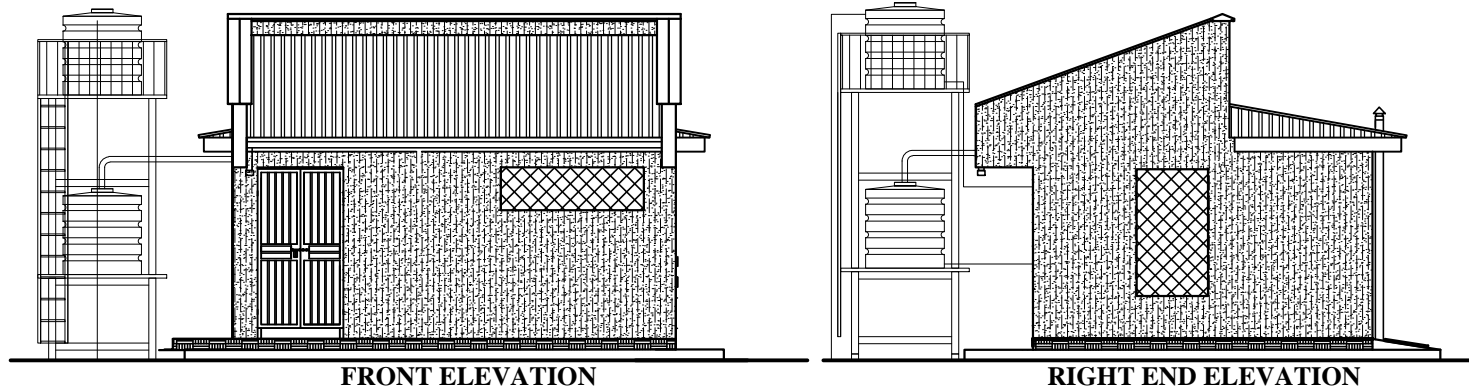
SECTION F - F

FOUNDATION CONSTRUCTION NOTES:

100mm high POLISHED TERRAZZO SKIRTING
 ON APPROVED POLISHED TERRAZZO FLOOR FINISH
 ON 25mm thick CEMENT-SAND SCREED (Mix 1:3) wood float
 ON 100mm thick OVERSITE CONCRETE SLAB (Mix 1:3:6)
 ON 1000 gauge POLYETHENE DPM ON
 ON 150 Minimum SAND BLINDED HARDCORE
 ON COMPACTED EARTH / MURRAM

FOUNDATION DETAILS:

230mm THICK BLOCK PLINTH WALL ON
 250X690mm REINFORCED STRIP CONCRETE FOUNDATION ON
 50mm CONCRETE BLINDING ON
 APPROVED LOAD BEARING SOIL
 FOUNDATION DEPTH TO BE DETERMINED ON SITE
 BUT NOT LESS THAN 900MM FROM SGL



Door Schedule (Scale 1:100)

Mark	D1/pv	D2	D3	W3/pv
Quantity	2 No.	1 No.	6 No.	02 No.
Type & Remarks	Lockable, mahogany hardwood timber-frame and solid TNG door.	Standard solid flush door lockable both internally and externally with low level indicator locks complete with grab bar both internally and externally	Standard solid flush door lockable both internally and externally with indicator locks	40x40x2mm SHS framed, Steel casement profile window with 4mm clear glass panels & internally fixed burglar proofs with centered permanent vent.

DOOR AND WINDOW SCHEDULE

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PROJECT
 CONSULTANCY SERVICES FOR FEASIBILITY STUDY,
 DETAILED ENGINEERING DESIGN AND CONSTRUCTION
 SUPERVISION OF SOLAR POWERED PIPED WATER SUPPLY
 SYSTEMS AND SANITATION FACILITIES IN REFUGEE
 SETTLEMENTS AND HOST DISTRICTS IN WEST NILE AND
 NORTHERN UGANDA IN KIRYANDONGO DISTRICT

MUTUNDA WATER SUPPLY SYSTEM

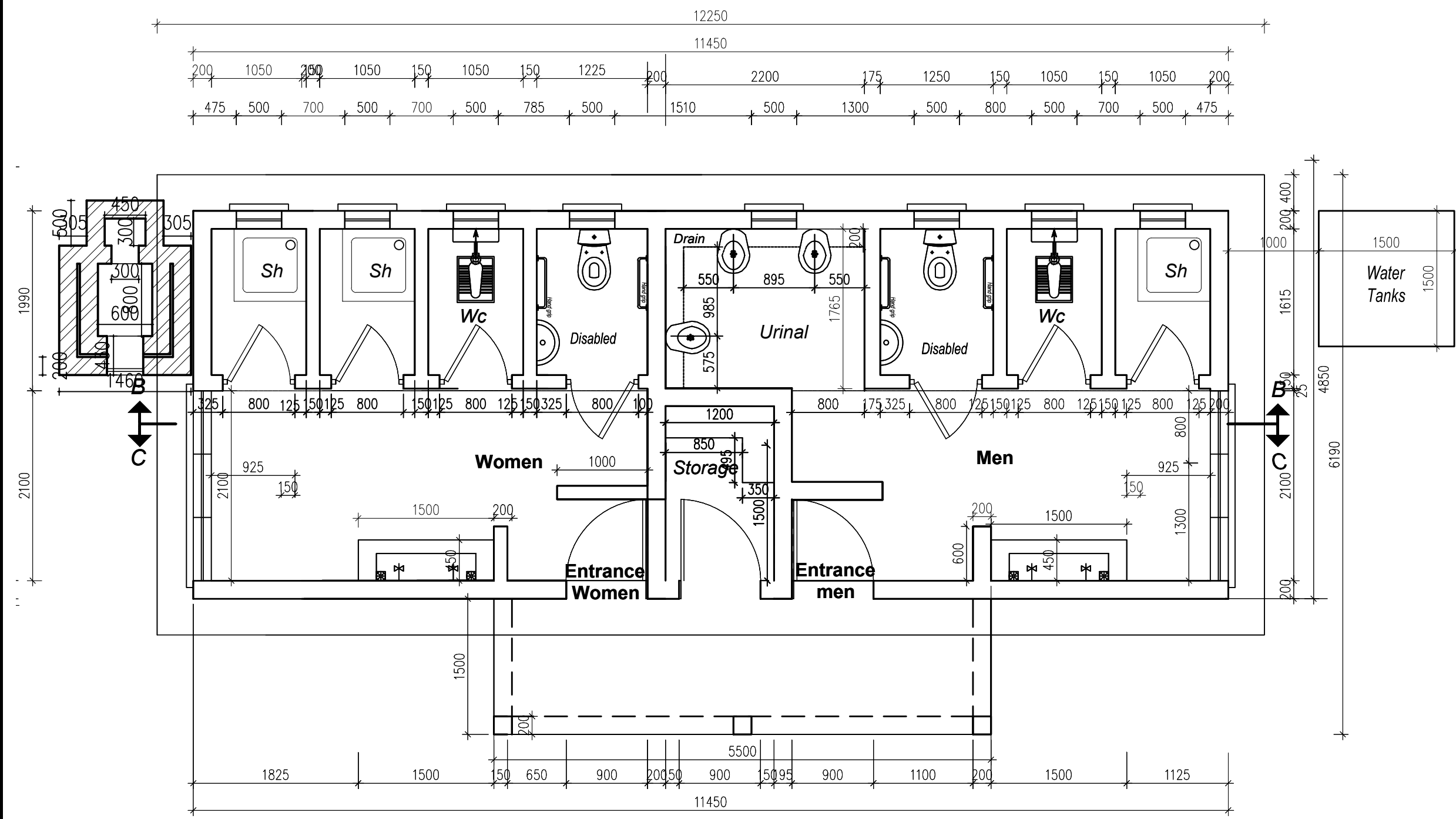
CONSULTANT
 In Joint Venture with
 Corporate Headquarter
 10 Philpot Lane, 1st Floor,
 London EC3M 8AA,
 United Kingdom

CONTRACTOR

DETAILED ENGINEERING DESIGN
 DRAWING TITLE
INSTITUTIONAL TOILET - BOYS

SCALE	As Shown	DRAWING No.	MUT/S/1.1.2
SURVEYED		DESIGNED	Otwane Dan.
DRAWN	Joshua Nyarwanda	CHECKED	Rodney Barugahare
DATE	OCT 2022	APPROVED	Rodney Barugahare.

1) All dimension are in mm



**scale 1:50
GROUND PLAN**

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MUTUNDA WATER SUPPLY SYSTEM

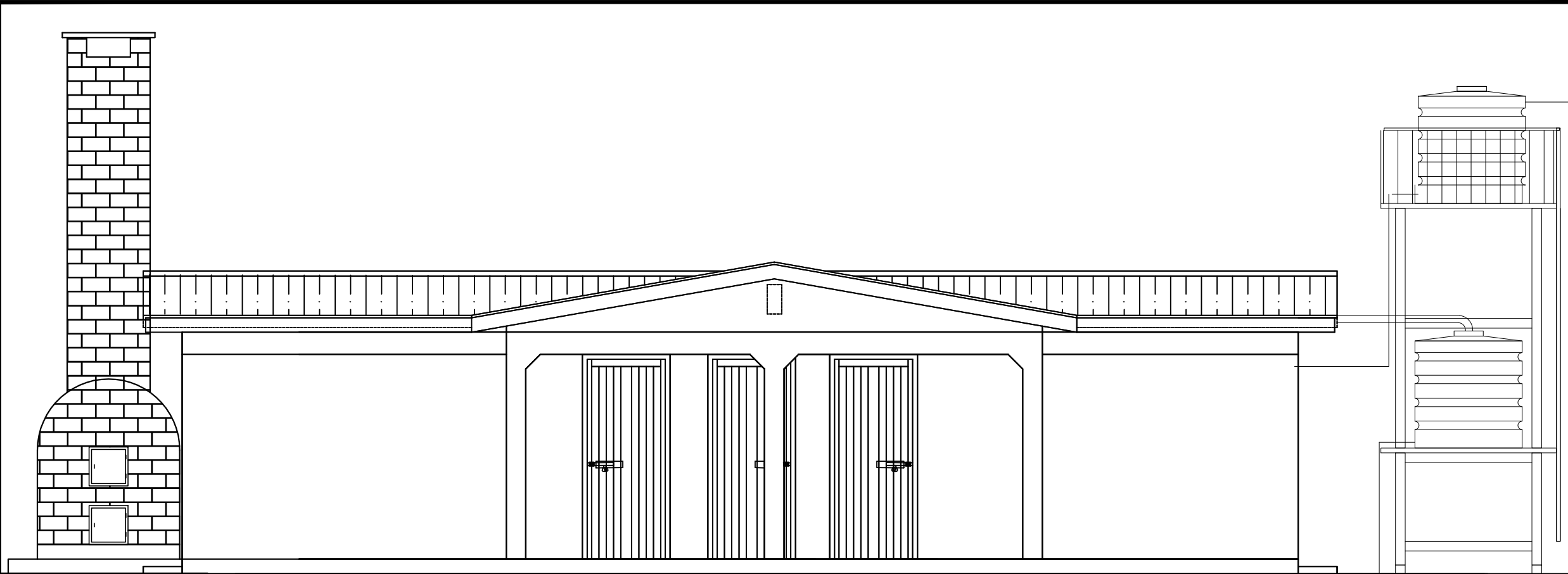
CONSULTANT
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 London EC3M 8AA,
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CONTRACTOR

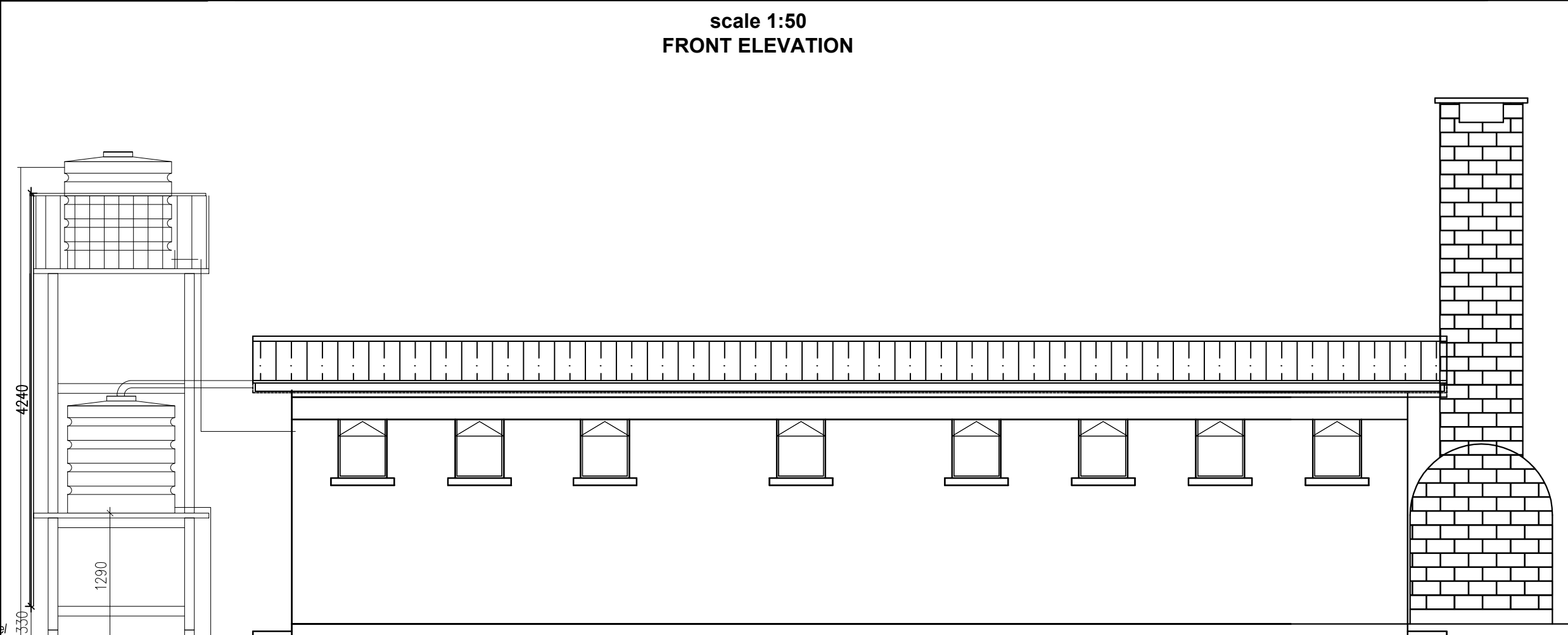
DETAILED ENGINEERING DESIGN
 DRAWING TITLE
**4 STANCE WATER BORNE TOILETS
 FLOOR PLAN**

SCALE	As Shown	DRAWING No.	MUT/S/2.1.1
SURVEYED		DESIGNED	Otwane Dan.
DRAWN	Joshua Nyarwanda	CHECKED	Rodney Barugahare
DATE	OCT 2022	APPROVED	Rodney Barugahare.

1) All dimension are in mm



scale 1:50
FRONT ELEVATION





scale 1:50
REAR ELEVATION

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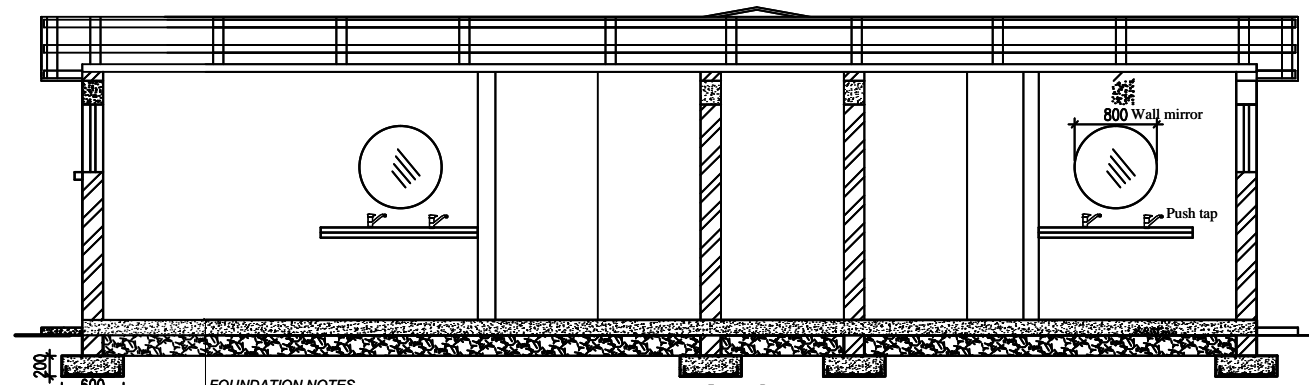
MUTUNDA WATER SUPPLY SYSTEM

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 London EC3M 8AA,
 United Kingdom

CONTRACTOR

DETAILED ENGINEERING DESIGN
 DRAWING TITLE
4 STANCE WATER BORNE TOILETS ELEVATIONS

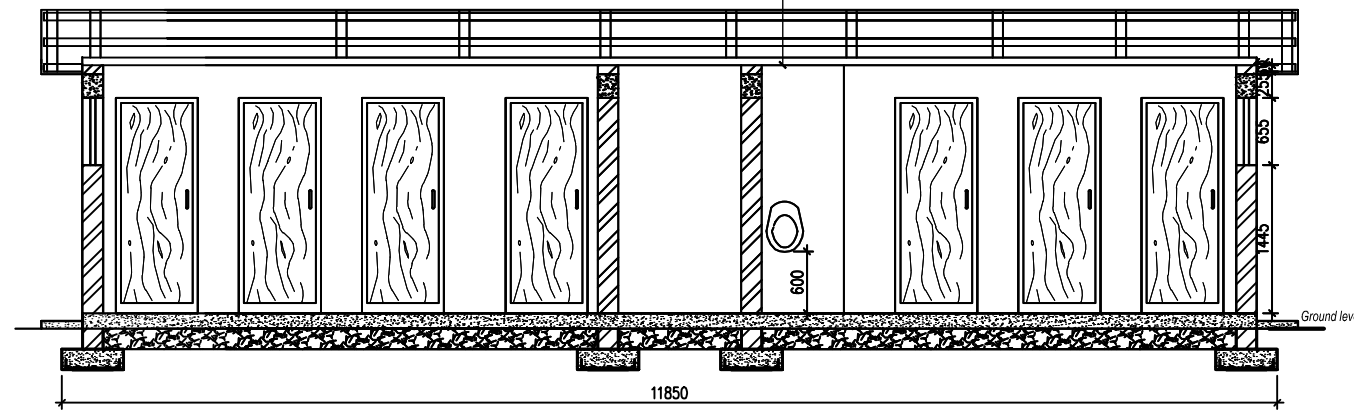
SCALE	As Shown	DRAWING No.	MUT/S/2.1.2
SURVEYED		DESIGNED	Otwane Dan.
DRAWN	Joshua Nyarwanda	CHECKED	Rodney Barugahare
DATE	OCT 2022	APPROVED	Rodney Barugahare.



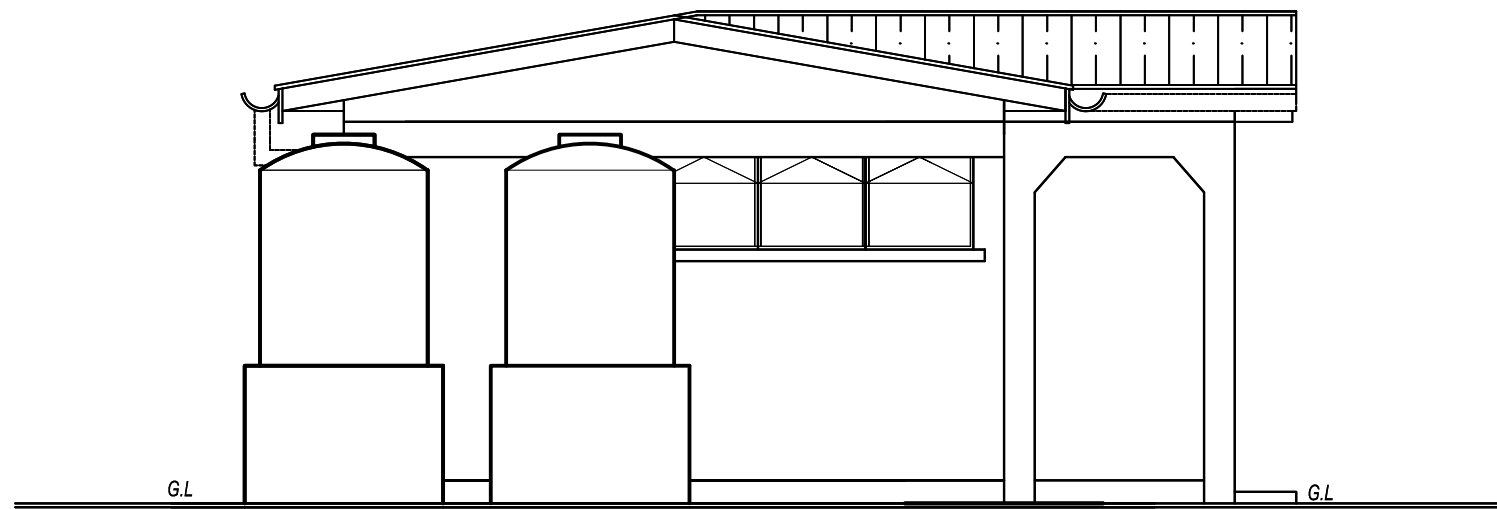
FOUNDATION NOTES
 Floor finish as specified on
 25mm thick cement screed on
 150mm thick concrete floor slab C20/10 agg on
 200mm thick well compacted & approved hardcore filling on
 well compacted and levelled ground

**scale 1:75
SECTION C-C**

ROOF DETAILS
 10 Deg. Roof Pitch
 Galvanised prepainted Iron Sheet on
 75 X 50mm Purlins spaced at 1200mm C/C on
 100 X 50mm Tie Beam on
 100 X 50mm Wall Plate



scale 1:75 SECTION B-B



scale 1:50 SIDE VIEW

1) All dimension are in mm

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MUTUNDA WATER SUPPLY SYSTEM

CONSULTANT



In Joint Venture with



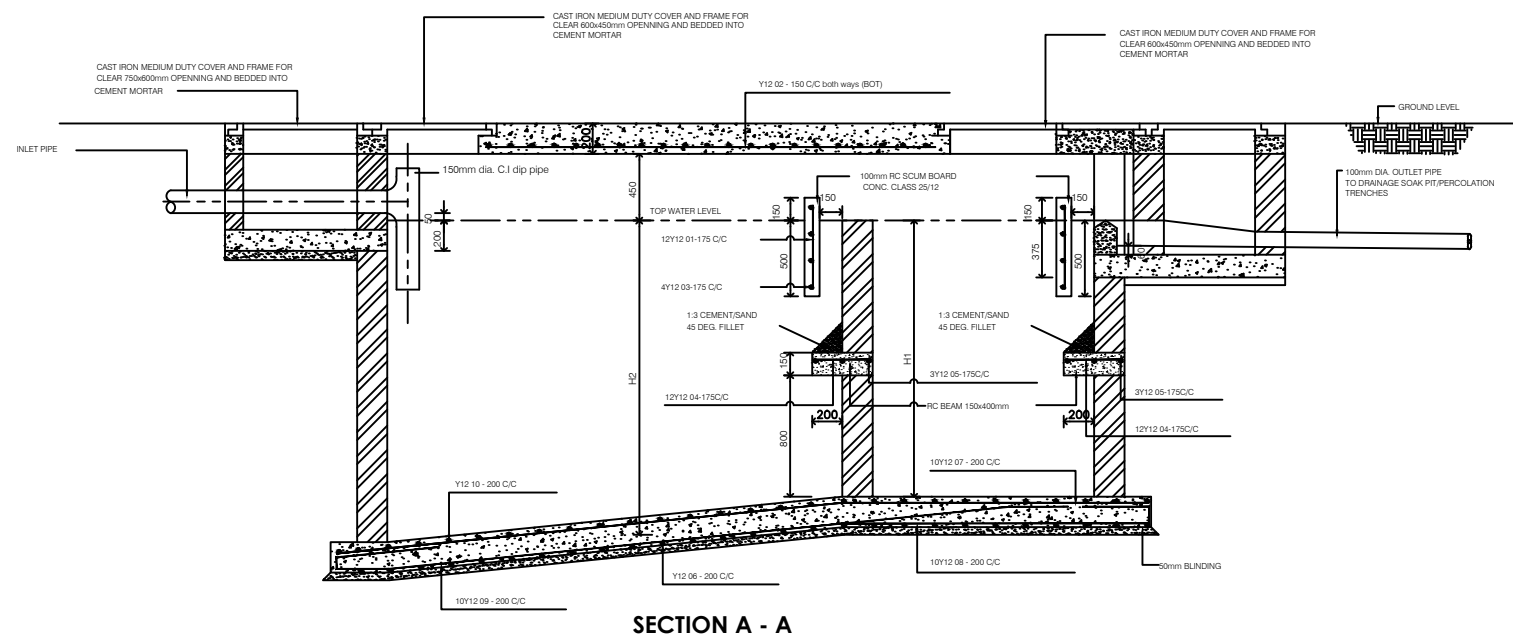
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 10 Philpot Lane, 1st Floor,
 London EC3M 8AA,
 United Kingdom

CONTRACTOR

DETAILED ENGINEERING DESIGN

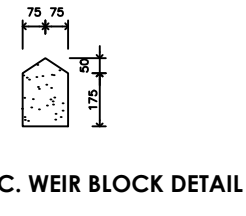
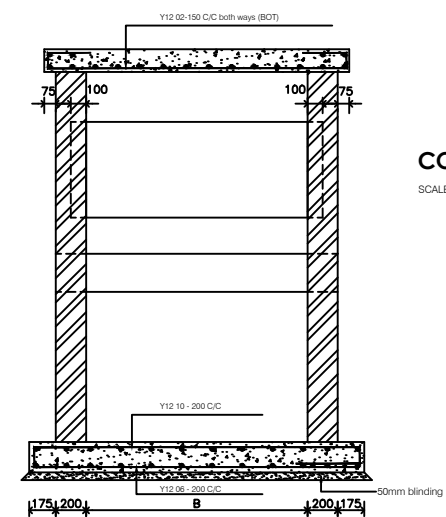
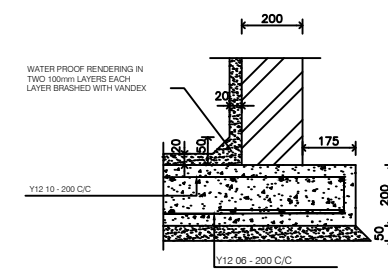
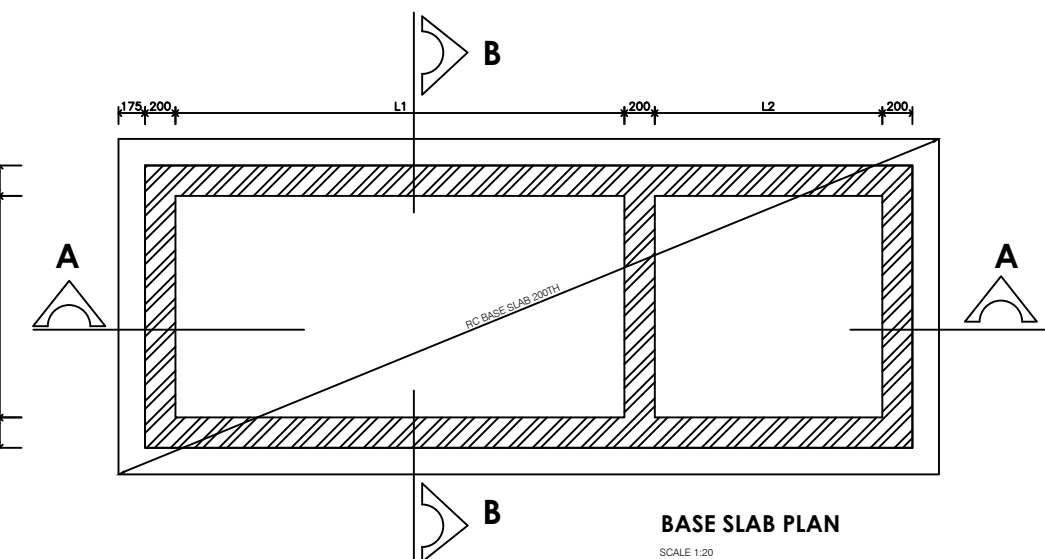
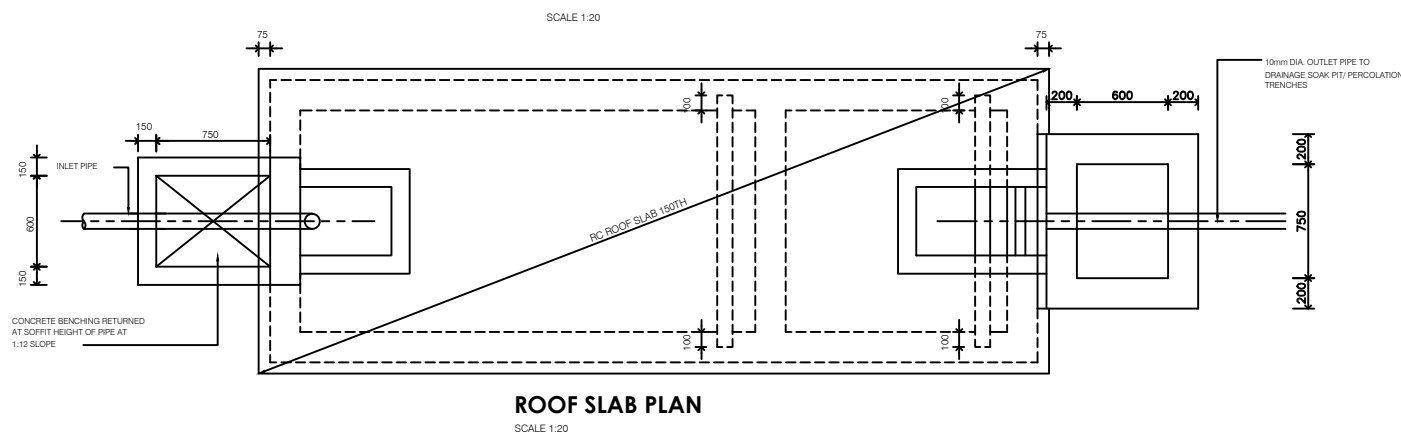
DRAWING TITLE
**4 STANCE WATER BORNE TOILETS
 SECTIONS AND ELEVATIONS**

SCALE	As Shown	DRAWING No.	MUT/S/2.1.3
SURVEYED		DESIGNED	Otwane Dan.
DRAWN	Joshua Nyarwanda	CHECKED	Rodney Barugahare
DATE	OCT 2022	APPROVED	Rodney Barugahare.



INTERNAL DIMENSIONS					CAPACITY	NO. OF USERS
L1	L2	H1	H2	B	Cu. M	
1540mm	760mm	1600mm	1750mm	760mm	3.2	10
1900mm	900mm	1800mm	2000mm	900mm	4.5	20
2000mm	1000mm	1800mm	2100mm	1100mm	5.9	30
2400mm	1100mm	1800mm	2100mm	1150mm	7.24	40
2500mm	1200mm	1800mm	2100mm	1300mm	8.6	50
2700mm	1300mm	1800mm	2100mm	1400mm	10	60
2900mm	1400mm	1800mm	2100mm	1450mm	11.3	70
3000mm	1500mm	1800mm	2100mm	1560mm	12.7	80
3200mm	1600mm	1800mm	2100mm	1600mm	14	90
3300mm	1700mm	1800mm	2100mm	1700mm	15.4	100
4000mm	2200mm	1800mm	2100mm	2190mm	24	150
4500mm	2700mm	1800mm	2100mm	2650mm	34.3	200

1) All dimension are in mm



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 CONSULTANCY SERVICES FOR FEASIBILITY STUDY, DETAILED ENGINEERING DESIGN AND CONSTRUCTION SUPERVISION OF SOLAR POWERED PIPED WATER SUPPLY SYSTEMS AND SANITATION FACILITIES IN REFUGEE SETTLEMENTS AND HOST DISTRICTS IN WEST NILE AND NORTHERN UGANDA IN KIRYANDONGO DISTRICT

MUTUNDA WATER SUPPLY SYSTEM

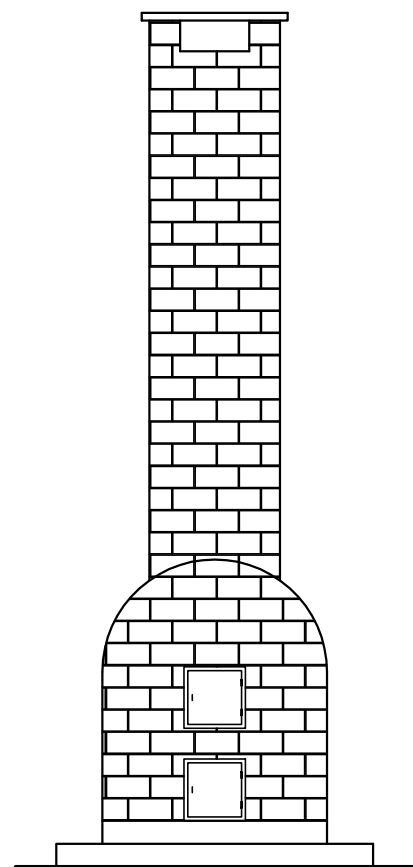
CONSULTANT
SARI In Joint Venture with **SGAPI**
 Corporate Headquarter
 10 Philpot Lane, 1st Floor,
 London EC3M 8AA,
 United Kingdom

CONTRACTOR

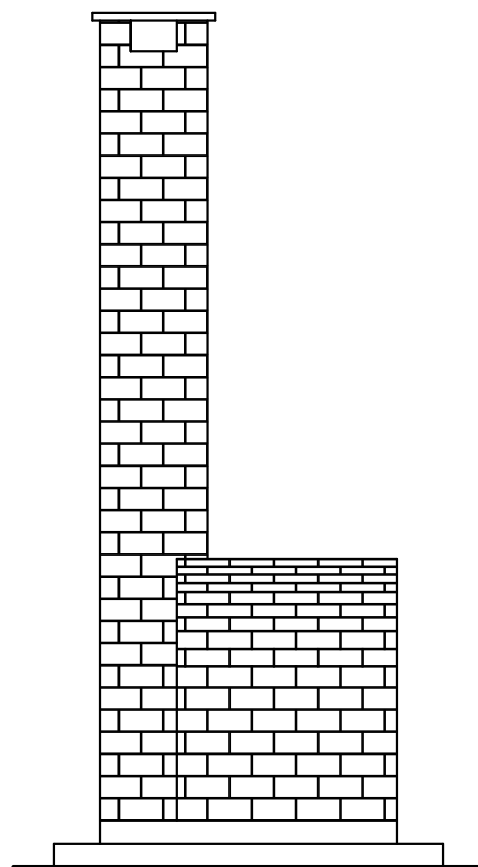
DETAILED ENGINEERING DESIGN
 DRAWING TITLE
WATER BORNE TOILETS SEPTIC TANK DETAILS

SCALE As Shown DRAWING No. MUT/S/2.1.4
 SURVEYED DESIGNED Otwane Dan.
 DRAWN Joshua Nyarwanda CHECKED Rodney Barugahare
 DATE OCT 2022 APPROVED Rodney Barugahare.

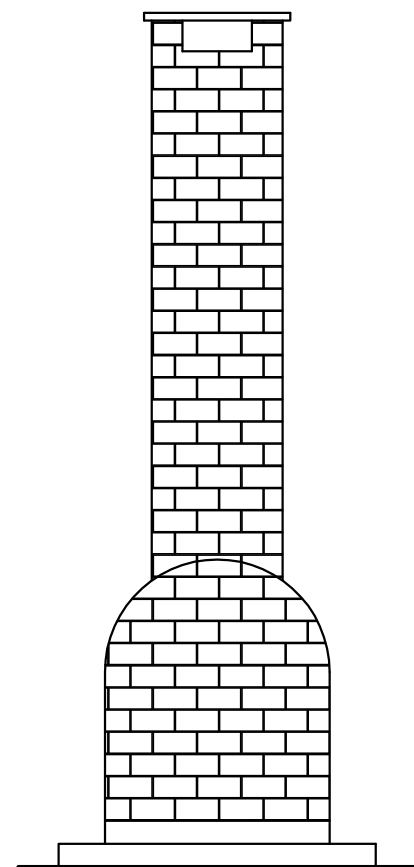
1) All dimension are in mm



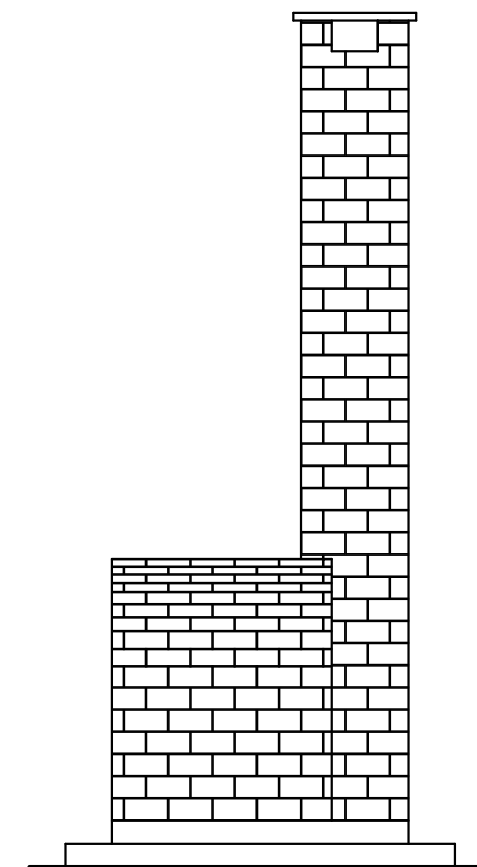
ELEVATION A



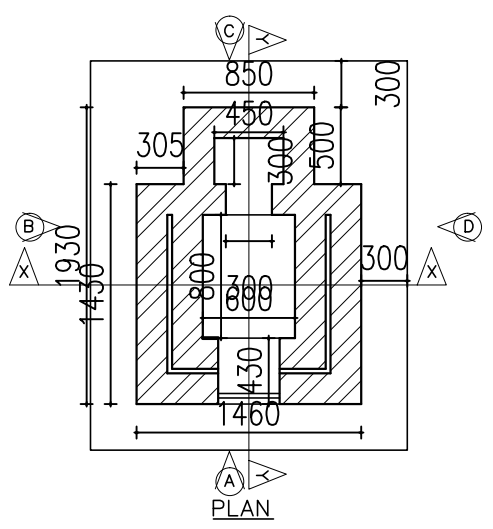
ELEVATION B



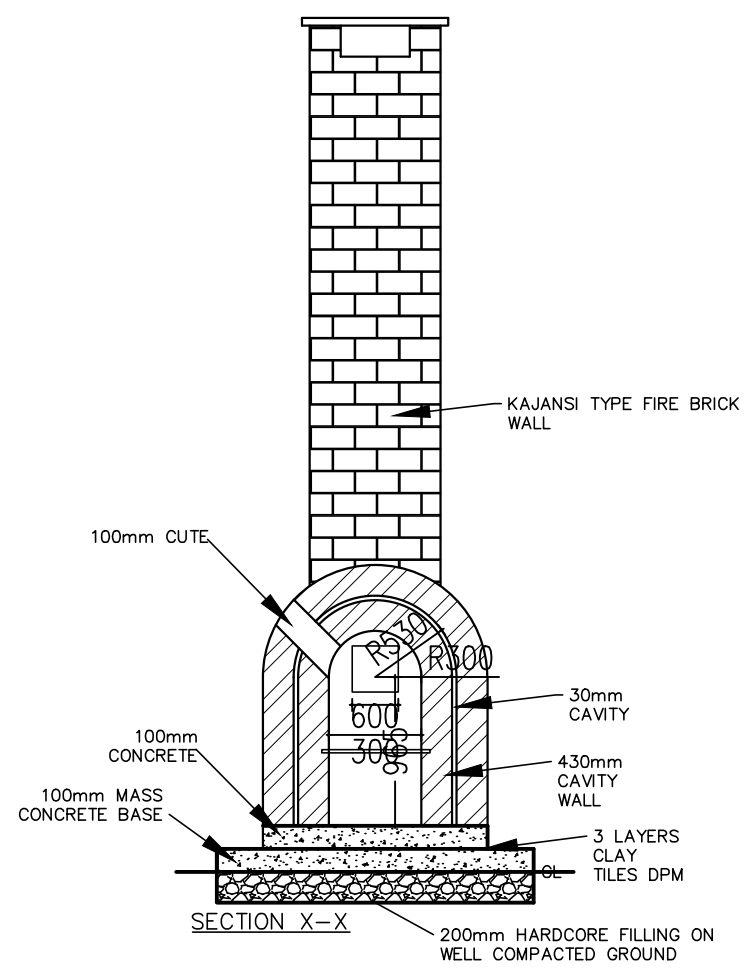
ELEVATION C



ELEVATION D

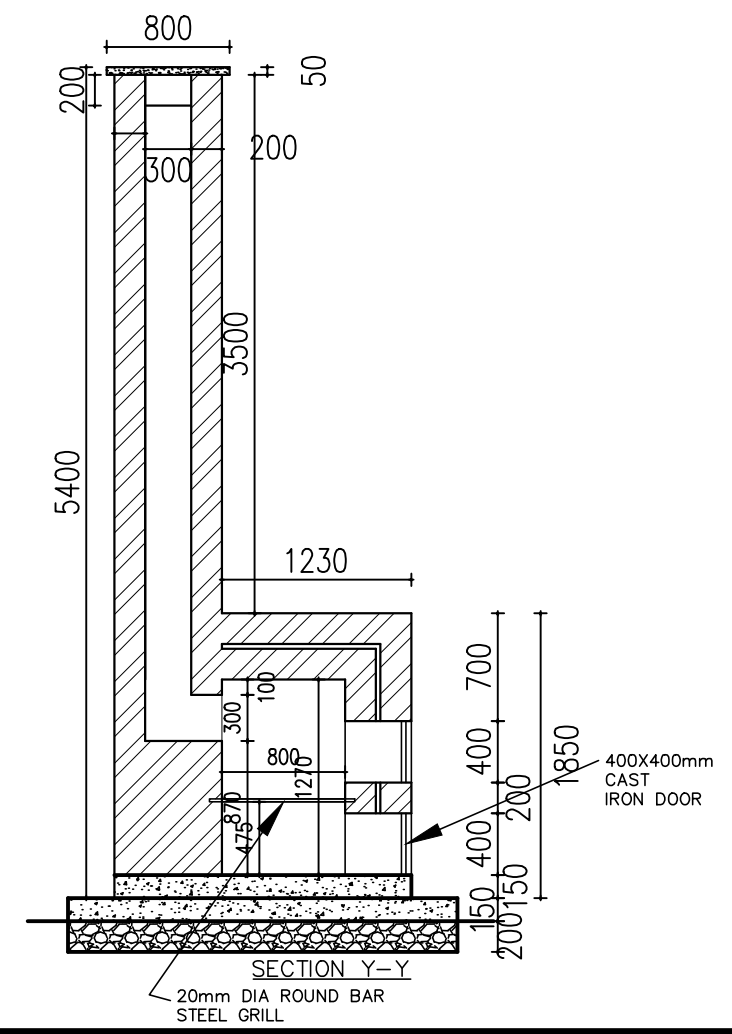


PLAN



SECTION X-X

200



SECTION Y-Y

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MUTUNDA WATER SUPPLY SYSTEM

CONSULTANT



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United Kingdom

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DETAILED ENGINEERING DESIGN

DRAWING TITLE

WATER BORNE TOILETS
Incinerator

SCALE	As Shown	DRAWING No.	MUT/S/2.1.5
SURVEYED		DESIGNED	Otwane Dan.
DRAWN	Joshua Nyarwanda	CHECKED	Rodney Barugahare
DATE	OCT 2022	APPROVED	Rodney Barugahare.

GENERAL NOTES FOR STANDARD DETAIL DRAWINGS

- 1) Unless flexibility is otherwise provided, where pipes enter or leave concrete structures, or anchor blocks, flexible joints are to be provided as shown in standard Detail Nr SD 137 .
- 2) Anchor block designs are based on the following ground conditions.
 - Dry soil density: 1800 kg/m³
 - Submerged soil density: 1090 kg/m³
 - Angle of internal friction: 30°
 - Passive resistance factor: 3

Where considerably better ground conditions, such as rock, are encountered, the dimensions of anchor blocks may be reduced. Supporting calculations for any reduced size anchor blocks must be submitted to the Project Manager 48 hours before construction of the particular anchor block commences and may be concreted only after his approval.

- 3) Bases and thrust faces of anchor blocks are to be cast against undisturbed ground, or against blinding cast against undisturbed ground.
- 4) Pipework joints as shown for the water supply details are diagrammatic only.
- 5) The following notes apply to reinforced concrete chambers.
 - a) Concrete in walls and base and cover slab
 - Characteristic strength (N/mm²): 30
 - Maximum aggregate size (mm): 20
 - Cement type: SR
 - Minimum cement content (kg/m³): 330
 - Maximum cement content (kg/m³): 400
 - Maximum free water/cement ratio: 0.47
 - b) Concrete in blinding
 - Characteristic strength (N/mm²): 1030
 - Maximum aggregate size (mm): 40
 - Cement type: SR
 - Minimum cement content (kg/m³): 230
 - c) Cover to reinforcement 40mm unless positioned centrally

- d) Minimum reinforcement lap 300 mm
- e) For details of step irons see Standard Detail Nr SD 136
- f) Corners of rectangular openings to have T8 bars 500 mm long set diagonally
- 6) All dimensions are in millimetres unless shown otherwise.
- 7) Do not scale dimensions from standard Detail drawings.

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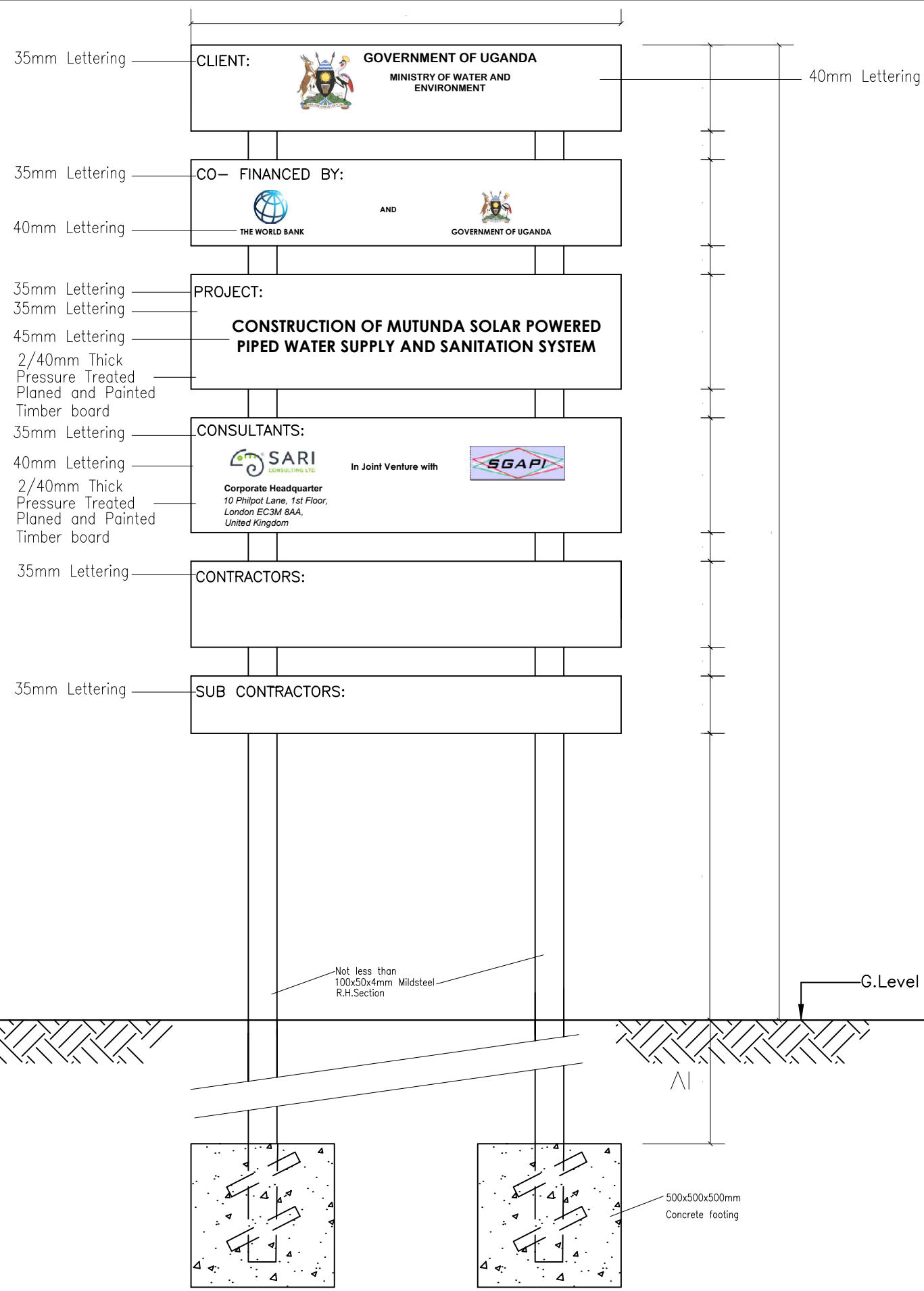
CONTRACTOR

DETAILED ENGINEERING DESIGN

DRAWING TITLE

GENERAL NOTES FOR STANDARD DRAWINGS

SCALE	As Shown	DRAWING No.	SD100
SURVEYED		DESIGNED	Otwane Dan.
DRAWN	Joshua Nyarwanda	CHECKED	Rodney Barugahare
DATE	OCT 2021	APPROVED	Rodney Barugahare.



NOTES

1. Each sign board shall have two faces.
2. The contractor shall use a black lettering on white back ground.
3. The contractor shall use a sticker measuring 350 x 200, to display her particulars and contract number on the sign board.

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MUTUNDA WATER SUPPLY SYSTEM

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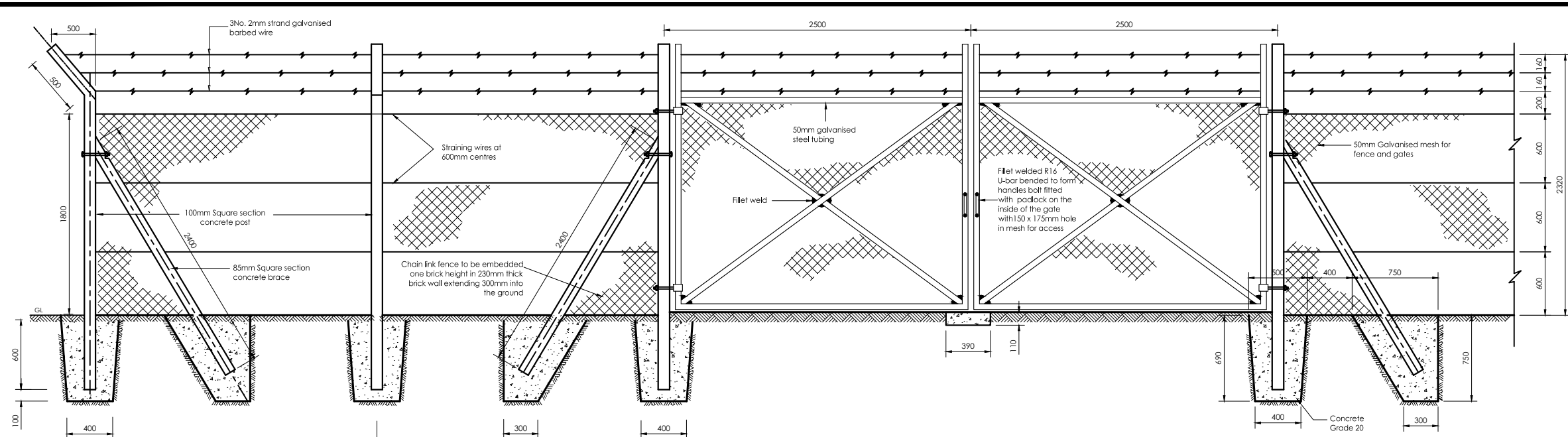
CONTRACTOR

DETAILED ENGINEERING DESIGN

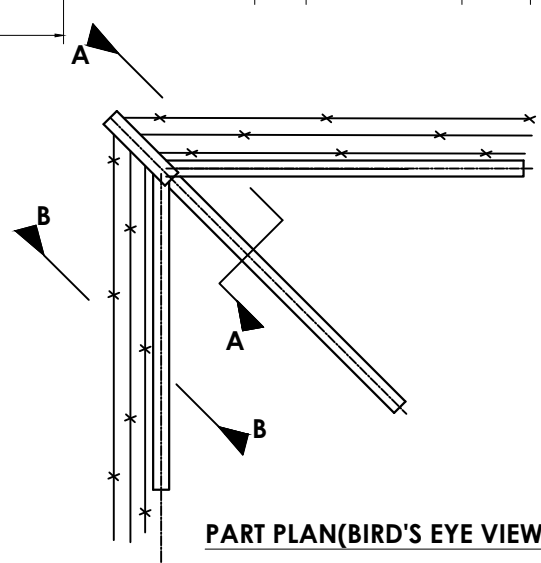
DRAWING TITLE

CONTRACT SIGN BOARD

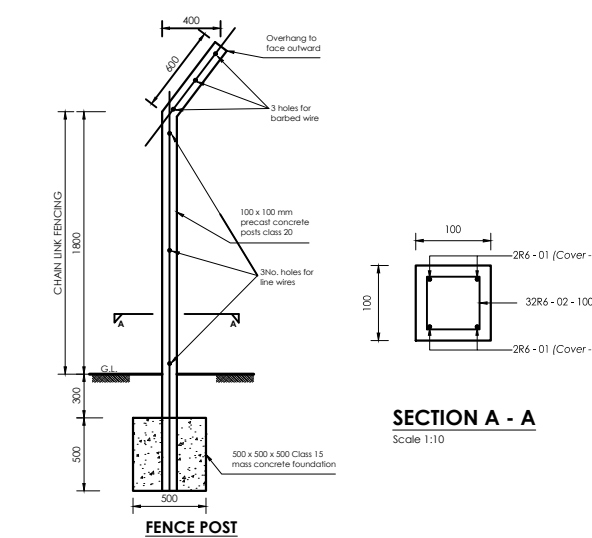
SCALE	As Shown	DRAWING No.	SD101
SURVEYED		DESIGNED	Otwane Dan.
DRAWN	Joshua Nyarwanda	CHECKED	Rodney Barugahare
DATE	OCT 2021	APPROVED	Rodney Barugahare.



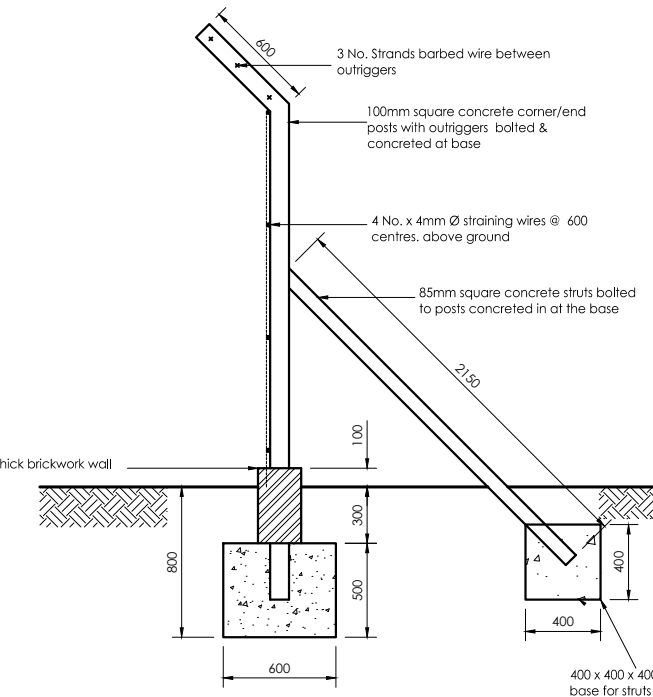
DOUBLE GATE AND FENCE DETAILS
1800mm HIGH



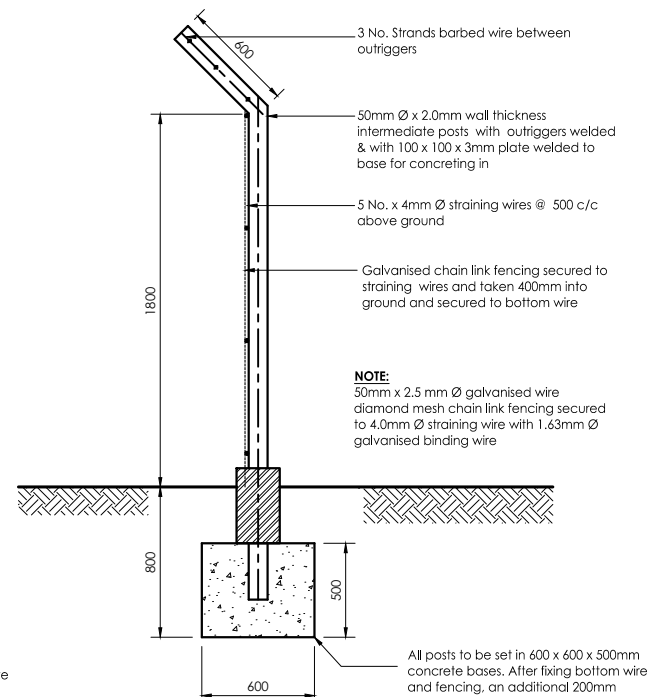
PART PLAN (BIRD'S EYE VIEW)



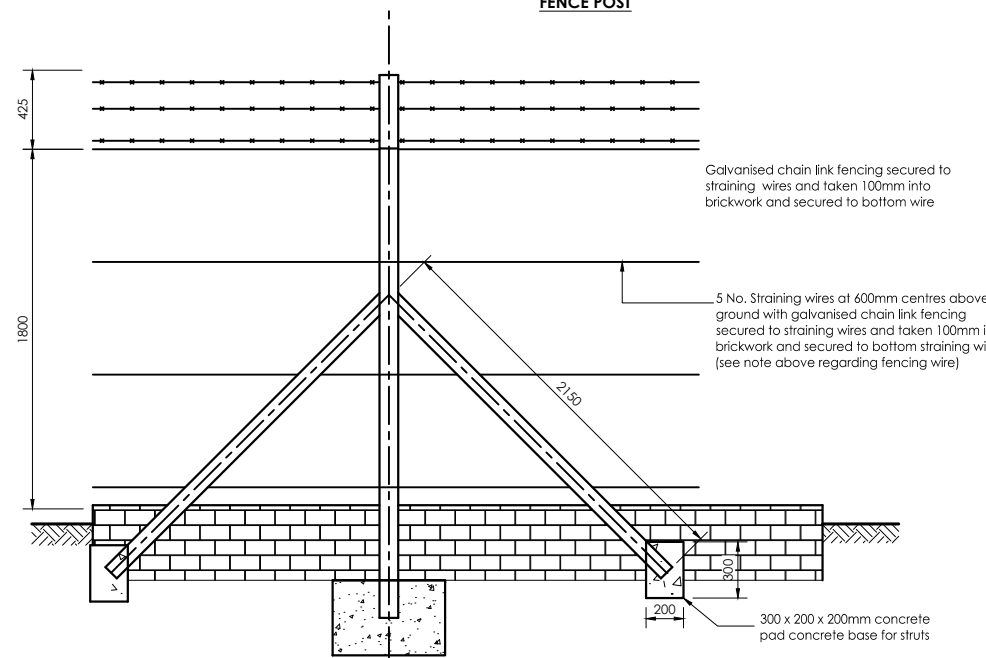
SECTION A - A
Scale 1:10



CORNER/END POSTS



INTERMEDIATE POST WITH STRUTS - ELEVATION (30.00m c/c)



NOTES

1. All dimensions are in millimetres unless stated otherwise.
2. Figured dimensions are to be taken in preference to scaling
3. Blinding concrete to be Class 15/20.
4. Concrete to chamber bases and support/anchor blocks to be Class 25/20
5. Concrete to precast concrete cover slabs to be Class 25/20.
6. All exposed angles on concrete surfaces to have a 25mm chamfer.
7. All pipes to be wrapped with 2 layers of pvc 10 micron sheeting through walls

ABBREVIATIONS

- G.S. GALVANISED STEEL
- V.J.C. VIKING JOHNSON COUPLING
- C.I. CAST IRON
- D.I. DUCTILE IRON

Concrete

Brickwork

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MUTUNDA WATER SUPPLY SYSTEM

CONSULTANT

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United Kingdom

CONTRACTOR

DETAILED ENGINEERING DESIGN

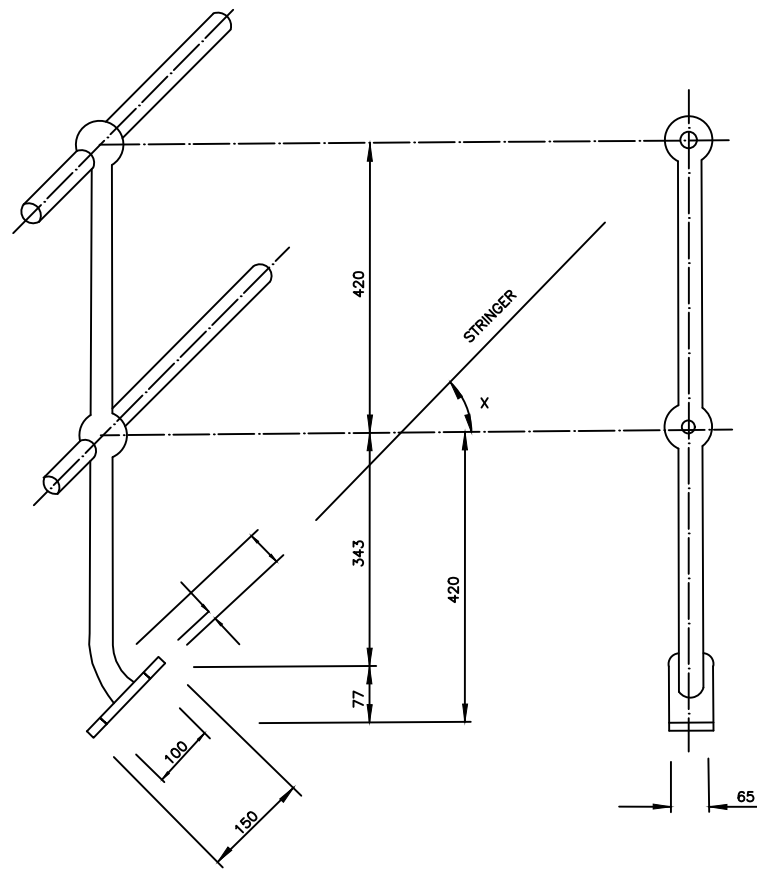
DRAWING TITLE
CHAIN LINK FENCE DETAILS

SCALE As Shown **DRAWING No.** SD104

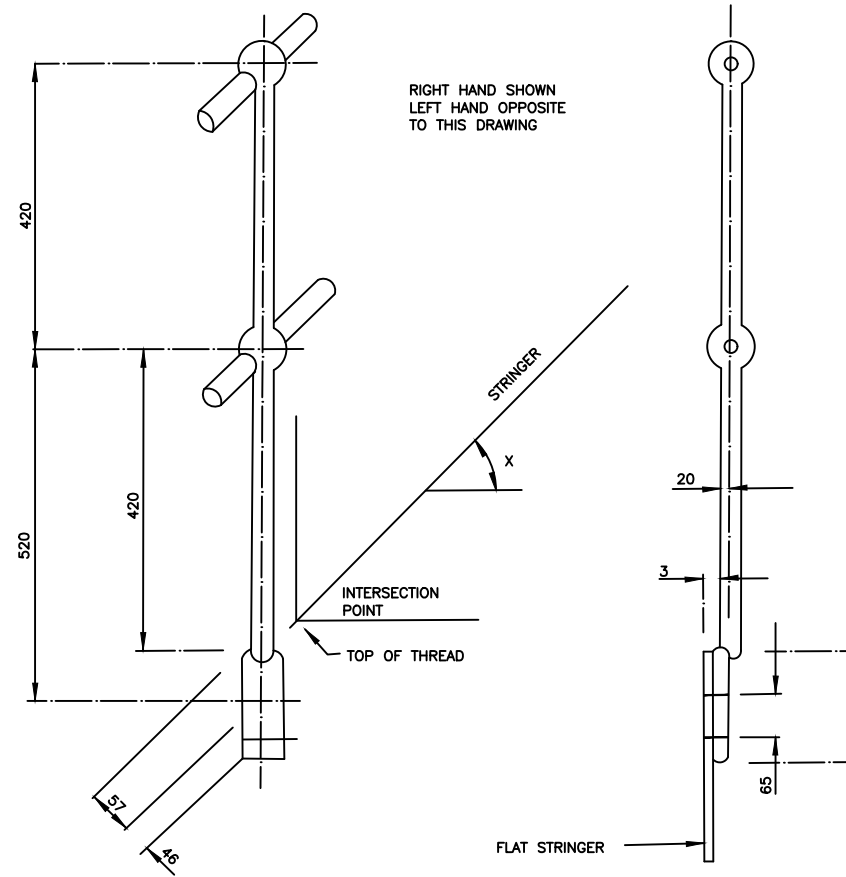
SURVEYED **DESIGNED** Otwane Dan.

DRAWN Joshua Nyarwanda **CHECKED** Rodney Barugahare

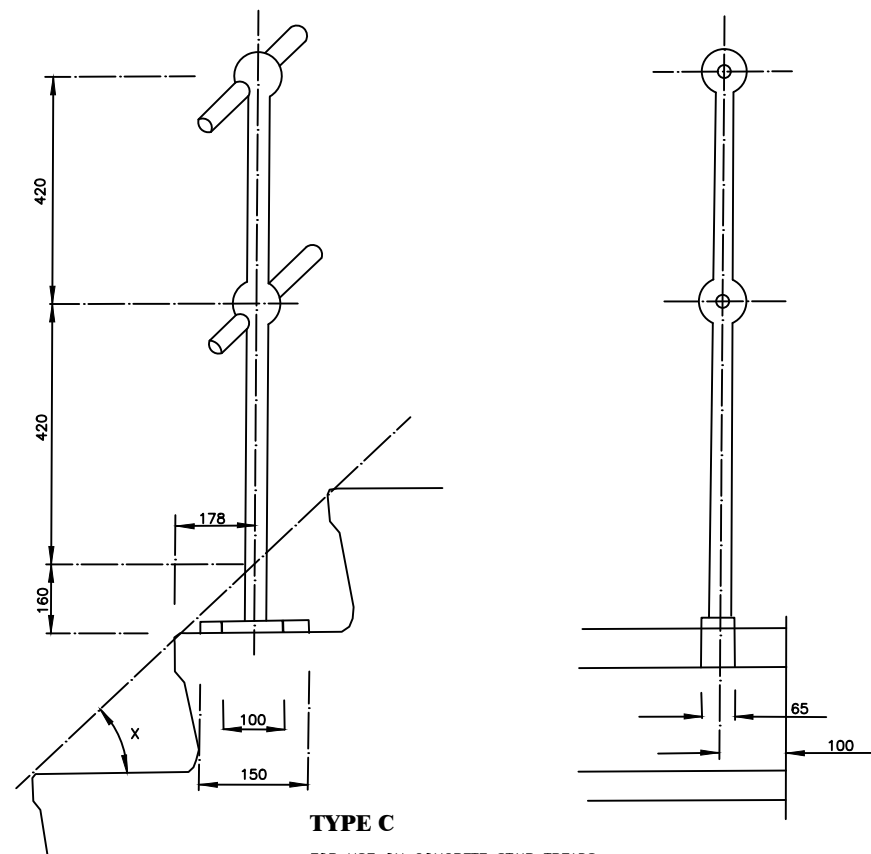
DATE OCT 2021 **APPROVED** Rodney Barugahare.



TYPE A
FOR USE ON STAIR CASES



TYPE B
FOR USE ON FLAT STAIR CASE STRINGER



TYPE C
FOR USE ON CONCRETE STAIR TREADS

ALL STANCHIONS TO BE SOLID FORGED STEEL TO BS 4360 OR BS 24 PART 4
 MINIMUM DIAMETER 32mm, MIN. BALL. DIA. 60mm DRILLED 35mm FOR HAND RAIL
 ALL FIXING HOLES 18mm DIAMETER FOR M16 BOLTS.
 MAXIMUM SPACING OF VERTICALS 1830mm

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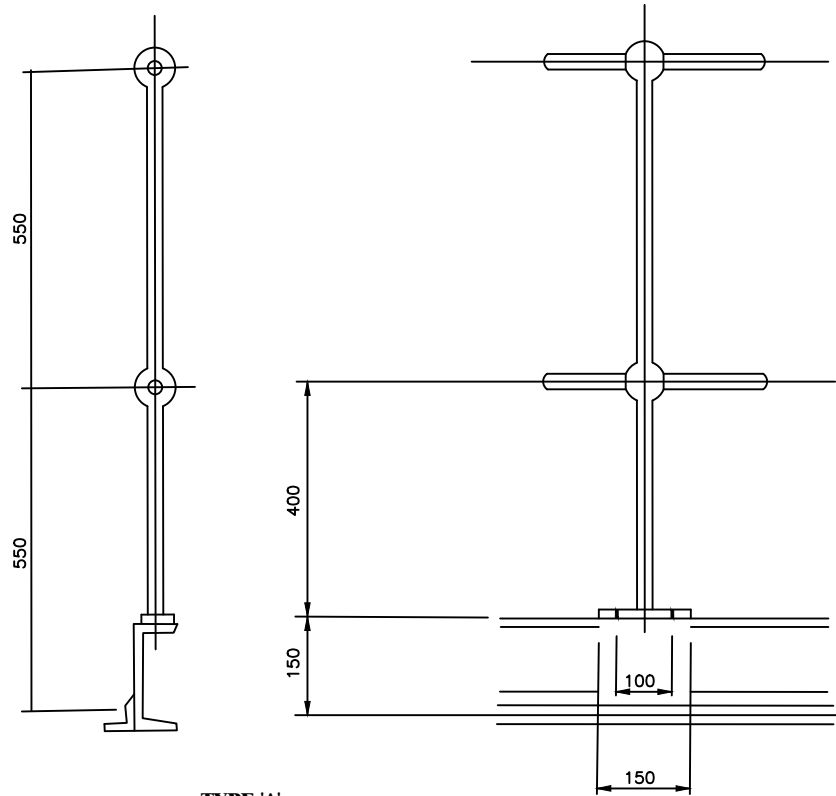
MUTUNDA WATER SUPPLY SYSTEM

CONSULTANT
 **SARI** In Joint Venture with  **SGAPI**
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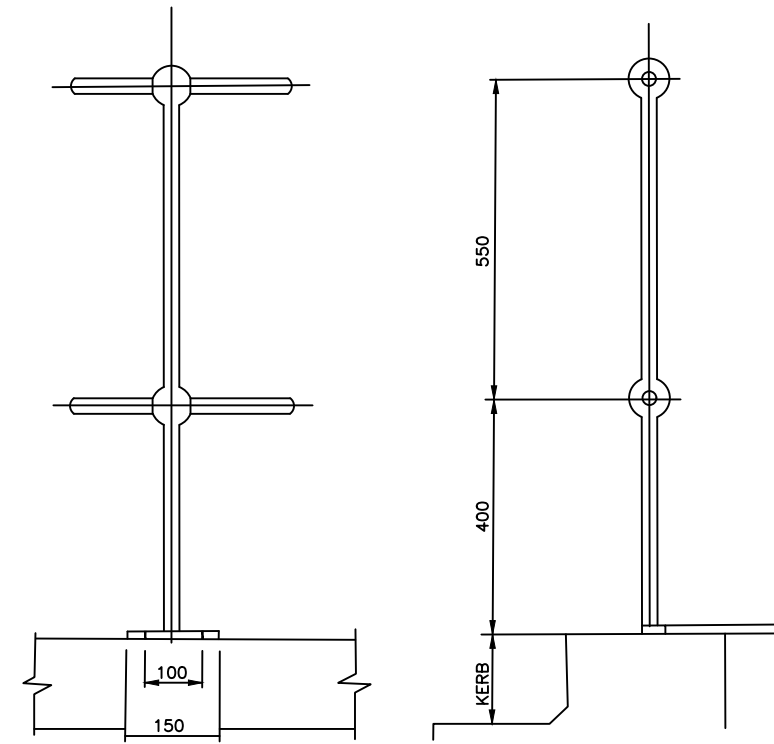
CONTRACTOR

DETAILED ENGINEERING DESIGN
 DRAWING TITLE
FORGED STEEL STANCHIONS FOR STAIRWAYS

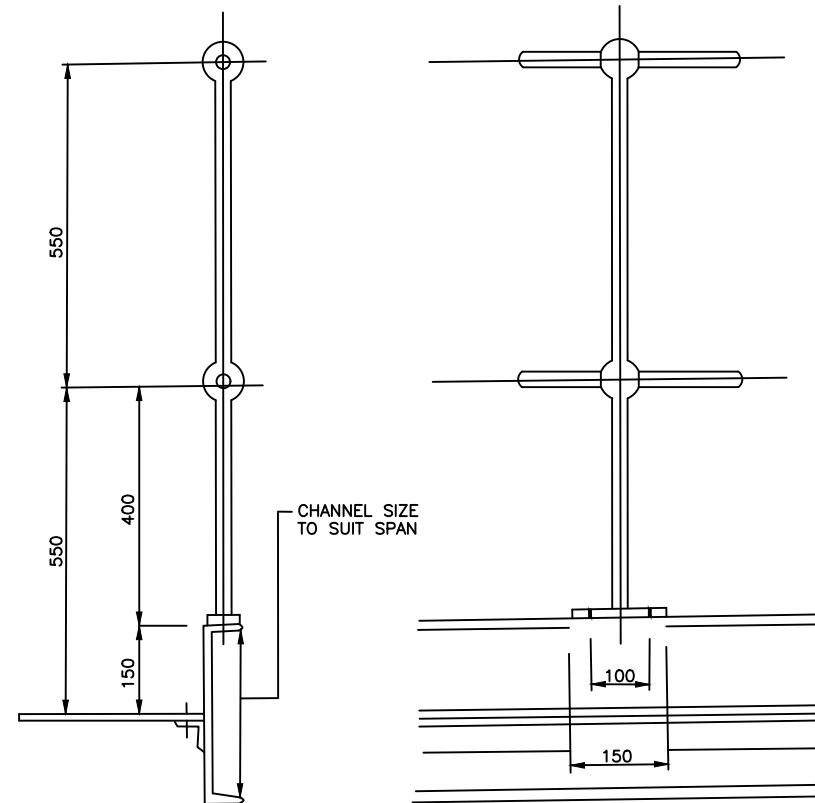
SCALE	As Shown	DRAWING No.	SD106A
SURVEYED		DESIGNED	Otwane Dan.
DRAWN	Joshua Nyarwanda	CHECKED	Rodney Barugahare
DATE	OCT 2021	APPROVED	Rodney Barugahare.



TYPE 'A'
FOR USE ON WALKWAYS AND LANDINGS



TYPE 'B'
FOR USE WITH 150 HIGH CONCRETE KERB



TYPE 'C'
FOR USE ON LONG SPAN WALKWAYS

ALL STANCHIONS TO BE SOLID FORGED STEEL TO BS.4360 OR BS.24 PART 4, MIN DIA. 60mm, DRILLED 35mm DIA. FOR HANDRAIL. ALL FIXING HOLES 18mm DIA. FOR M16 BOLTS. MAXIMUM SPACING OF VERTICALS 1830mm.

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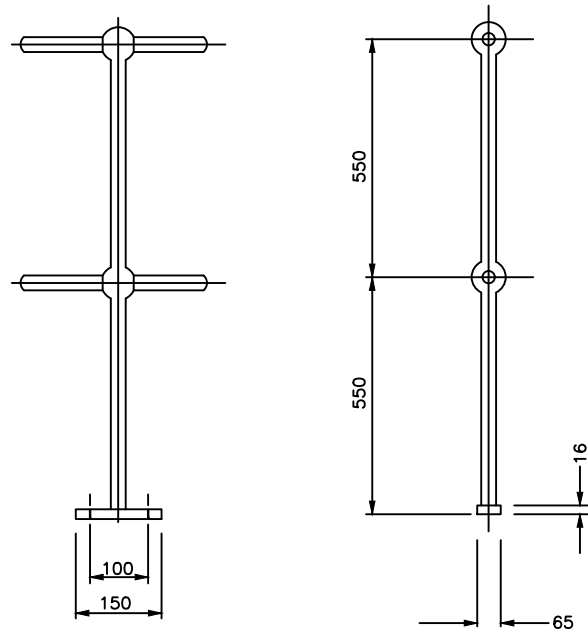
MUTUNDA WATER SUPPLY SYSTEM

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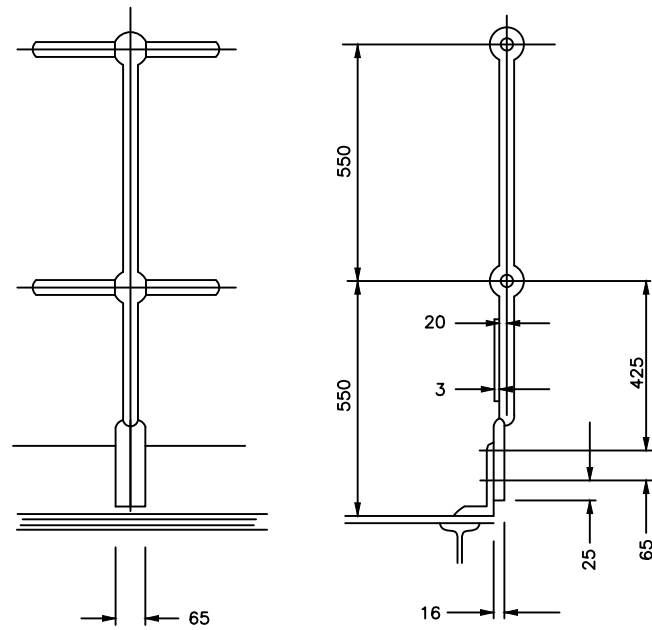
CONTRACTOR

DETAILED ENGINEERING DESIGN
 DRAWING TITLE **FORCED STEEL STANCHIONS FOR PLATFORMS AND WALKWAYS-1**

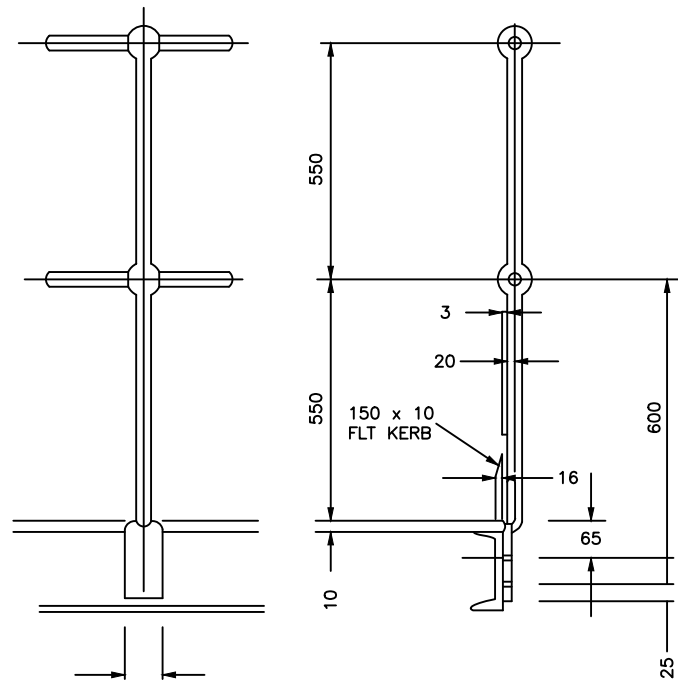
SCALE	As Shown	DRAWING No.	SD106B
SURVEYED		DESIGNED	Otwane Dan.
DRAWN	Joshua Nyarwanda	CHECKED	Rodney Barugahare
DATE	OCT 2021	APPROVED	Rodney Barugahare.



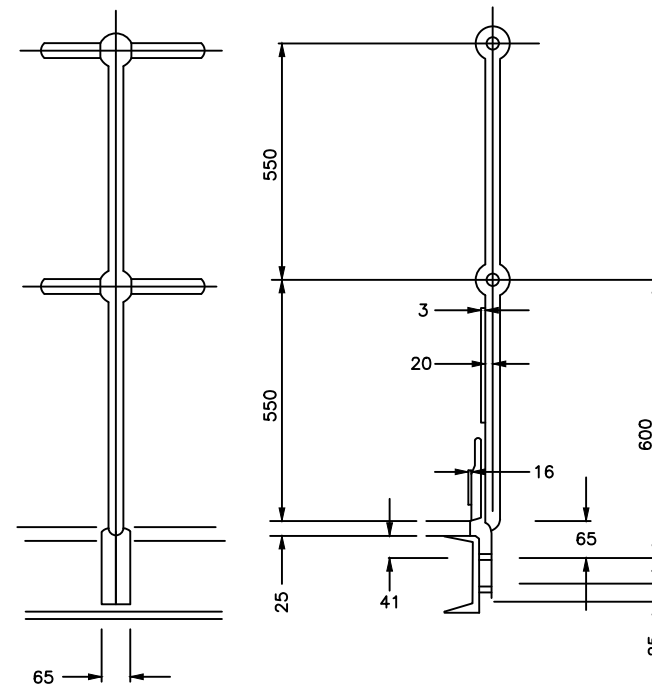
TYPE 'D'
FOR USE ON FLAT SURFACES



TYPE 'E'
FOR USE ON KERB ANGLES





TYPE 'F'
FOR USE ON PLATFORMS
HAVING 10 THK. CHEQUER
PLATE DECKING



TYPE 'H'
FOR USE ON PLATFORMS
HAVING 20 THK. OPEN
GRILL DECKING



ALL STANCHIONS TO BE SOLID FORGED STEEL TO BSS. 4360 OR BS.24 PART 4
MIN DIA. 32mm MIN BALL DIA. 60mm. DRILLED 35mm DIA. FOR HANDRAIL
ALL FIXING HOLES 18mm DIA. FOR M16 BOLTS.
MAXIMUM SPACING OF VERTICALS 1830mm.

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DETAILED ENGINEERING DESIGN AND CONSTRUCTION
SUPERVISION OF SOLAR POWERED PIPED WATER SUPPLY
SYSTEMS AND SANITATION FACILITIES IN REFUGEE
SETTLEMENTS AND HOST DISTRICTS IN WEST NILE AND
NORTHERN UGANDA IN KIRYANDONGO DISTRICT

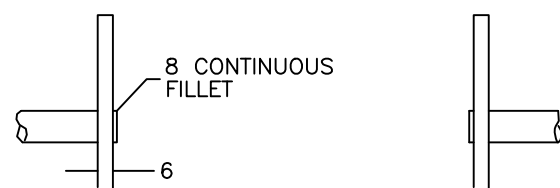
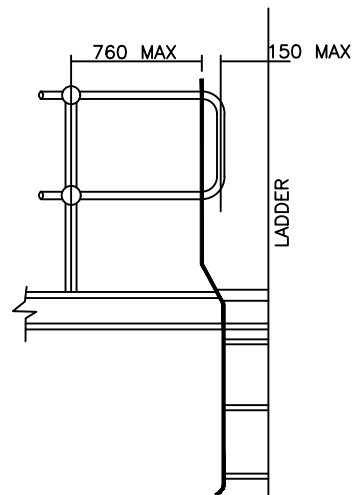
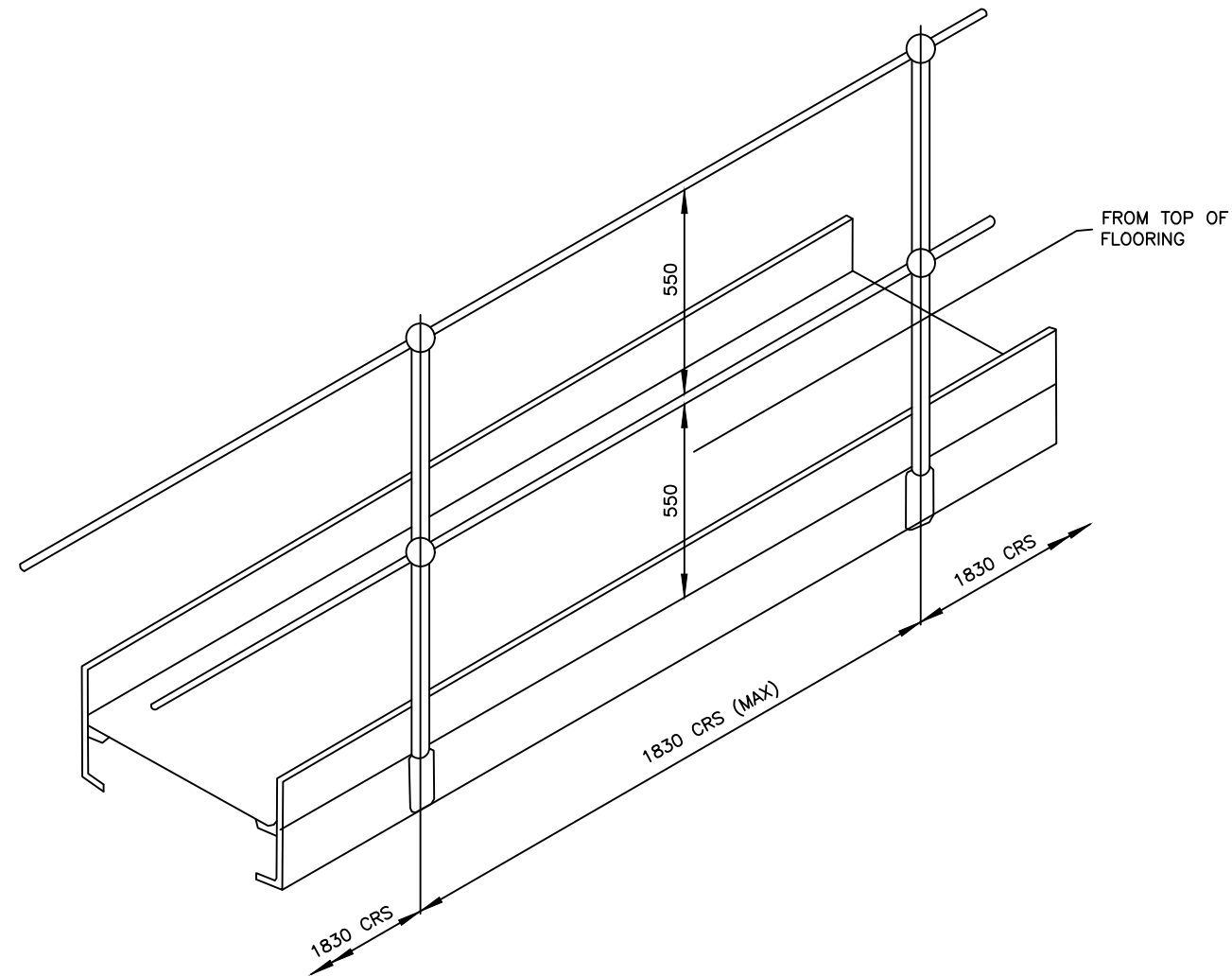
MUTUNDA WATER SUPPLY SYSTEM

CONSULTANT
 SARI
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10 Philip Lane, 1st Floor,
London EC3M 8AA,
United Kingdom
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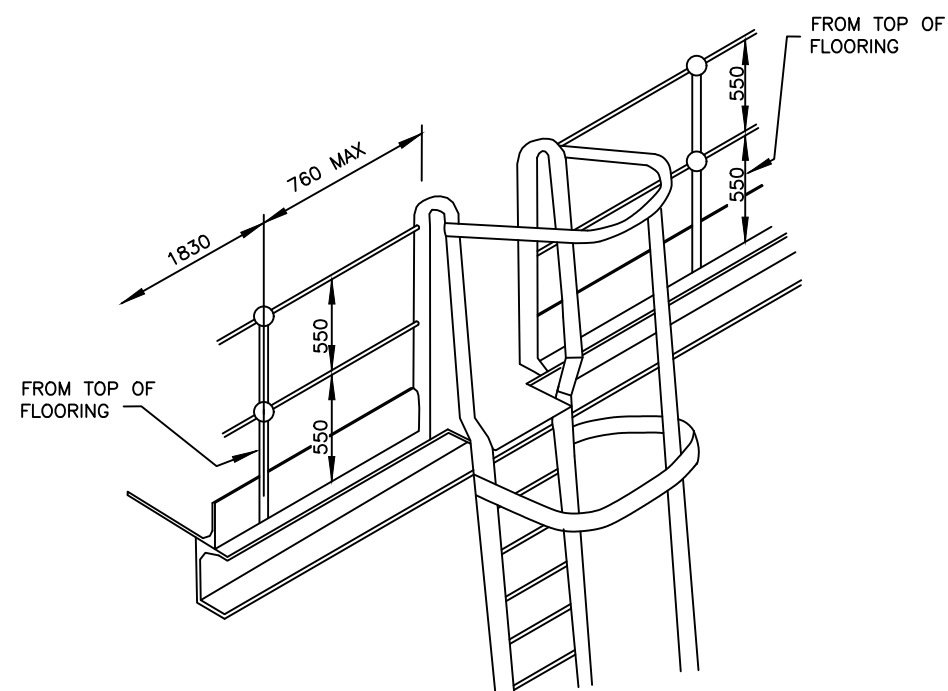
CONTRACTOR

DETAILED ENGINEERING DESIGN
DRAWING TITLE
**FORCED STEEL STANCHIONS
FOR PLATFORMS AND
WALKWAYS-2**

SCALE	As Shown	DRAWING No.	SD106C
SURVEYED		DESIGNED	Otwane Dan.
DRAWN	Joshua Nyarwanda	CHECKED	Rodney Barugahare
DATE	OCT 2021	APPROVED	Rodney Barugahare.



DETAIL OF RUNG WELDING



HANDRAILING TUBING 1" NOM. BOREx1.28" THICK M
TO BS 1387 CLASS B OR FOR CORROSIVE CONTION
BS 1387 CLASS B OR C GALVANIZED. STANCHIONS
AS MES 1010 OR 1011

ALL JOINTS IN PIPE FORMING
TOP RAIL SHOULD BE MADE AT
STANCHION POINTS TO AVOID
POSSIBLE HAND INJURY

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DETAILED ENGINEERING DESIGN AND CONSTRUCTION
SUPERVISION OF SOLAR POWERED PIPED WATER SUPPLY
SYSTEMS AND SANITATION FACILITIES IN REFUGEE
SETTLEMENTS AND HOST DISTRICTS IN WEST NILE AND
NORTHERN UGANDA IN KIRYANDONGO DISTRICT

MUTUNDA WATER SUPPLY SYSTEM

CONSULTANT



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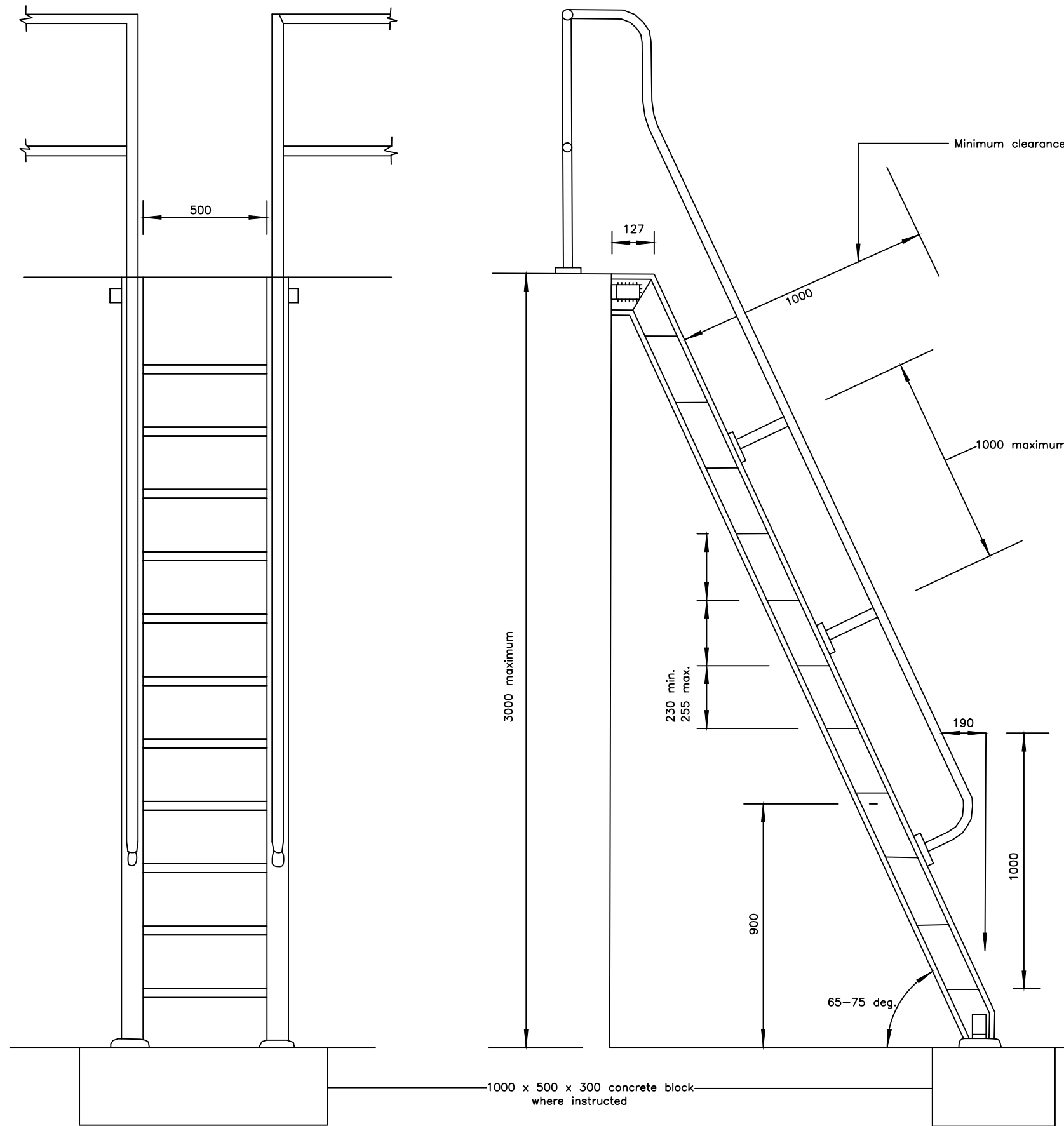
CONTRACTOR

DETAILED ENGINEERING DESIGN

DRAWING TITLE

**ARRANGEMENT OF HANDRAILING ON
WALKWAYS AND TOP OF LADDERS**

SCALE	As Shown	DRAWING No.	SD106D
SURVEYED		DESIGNED	Otwane Dan.
DRAWN	Joshua Nyarwanda	CHECKED	Rodney Barugahare
DATE	OCT 2021	APPROVED	Rodney Barugahare.



NOTES

1. Stringers 127 x 64 x 14.9 kg/m rolled steel
2. Steps 8 mm thick chequer plate with nosed
3. Step supports 30 x 30 x 5 angle welded to fixed to stringers with 12 dia bolts and nuts.
4. All welds to be 8 mm fillet welds.
5. Cleats 90 x 90 x 10 angle.
6. Holding down bolts 20 dia.
7. Handrailing in accordance with the specification
8. For details see SD107B.

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MUTUNDA WATER SUPPLY SYSTEM

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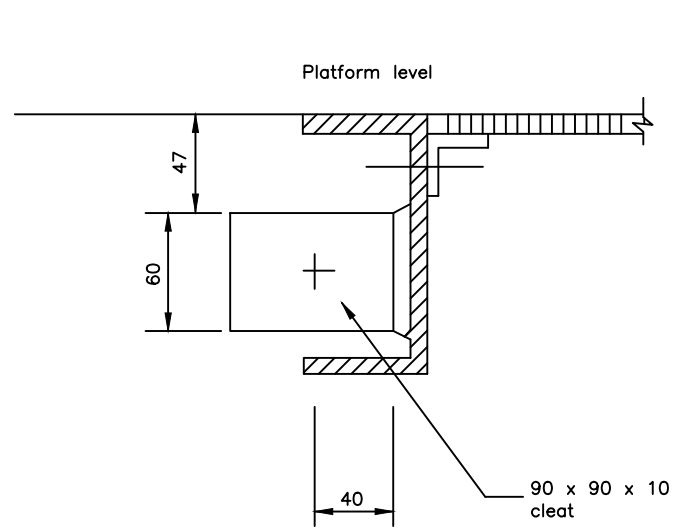
CONTRACTOR

DETAILED ENGINEERING DESIGN

DRAWING TITLE

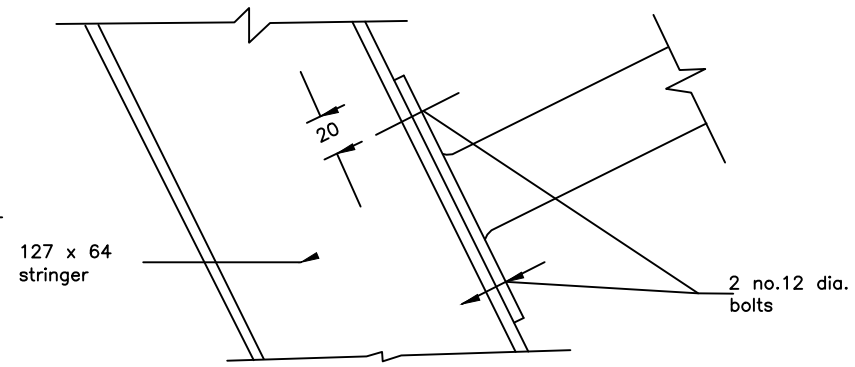
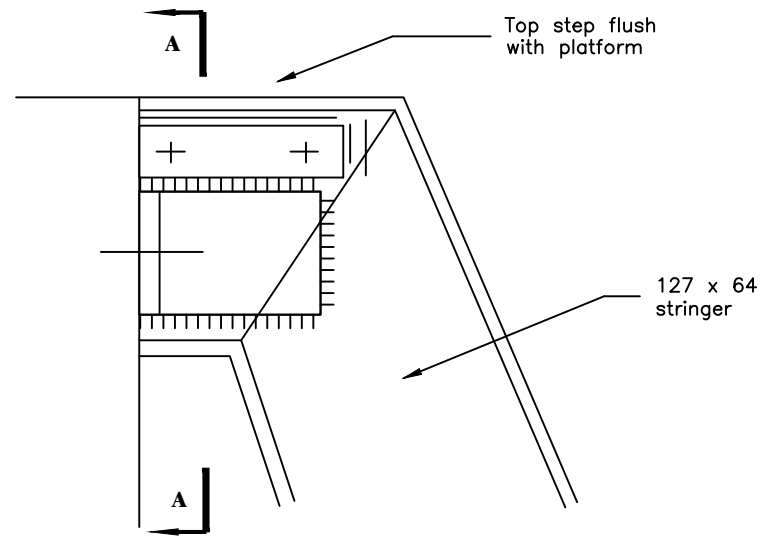
ARRANGEMENT OF HANDRAILING ON WALKWAYS AND TOP OF LADDERS

SCALE	As Shown	DRAWING No.	SD107A
SURVEYED		DESIGNED	Otwane Dan.
DRAWN	Joshua Nyarwanda	CHECKED	Rodney Barugahare
DATE	OCT 2021	APPROVED	Rodney Barugahare.

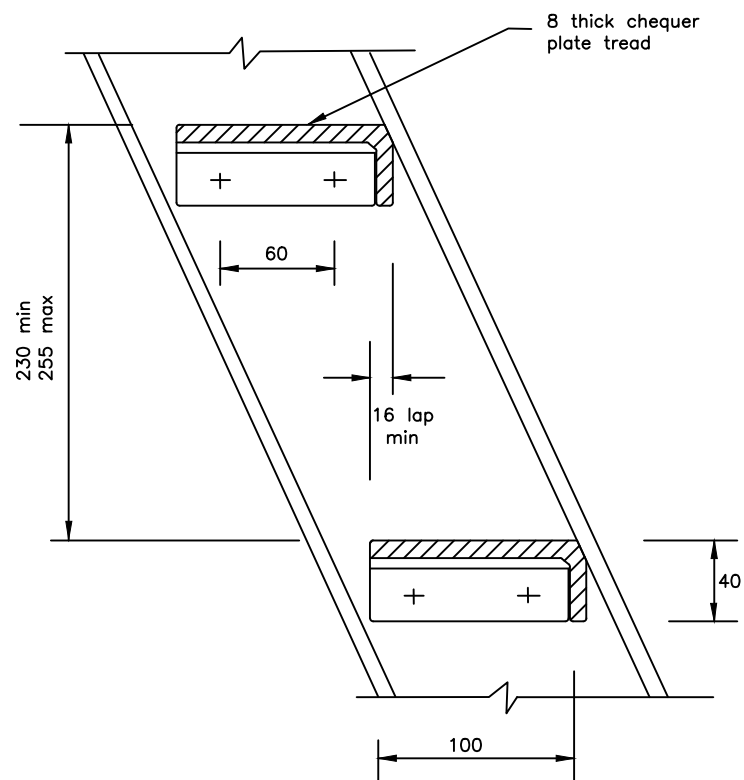


SECTION A-A

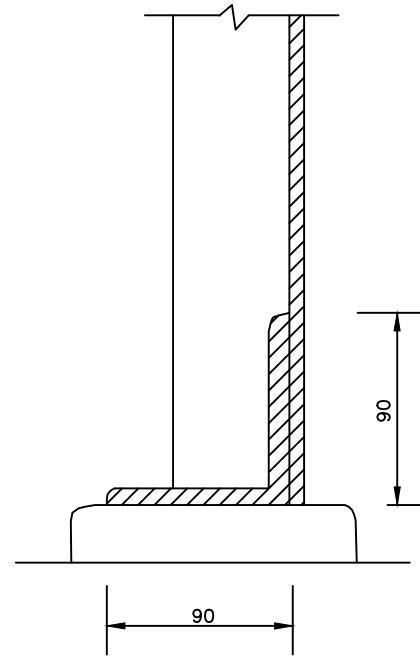
DETAIL AT HEAD



HANDRAIL FIXING

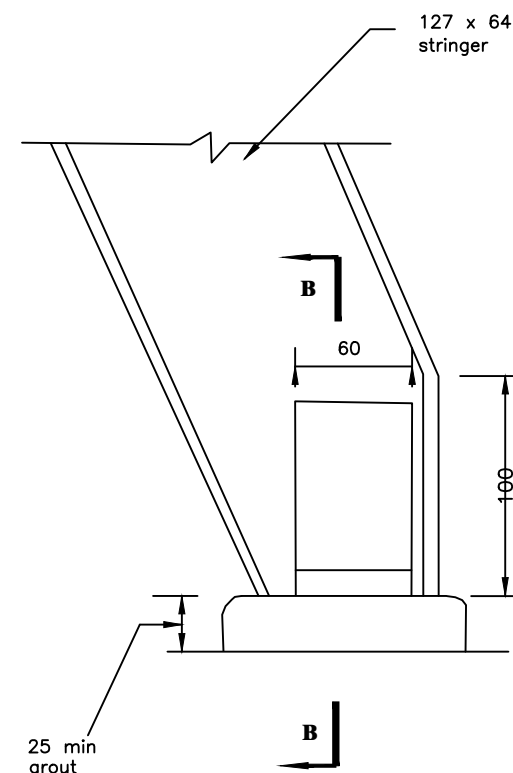


TREAD DETAIL



SECTION B-B

DETAIL AT FOOT



NOTES

1. All welds to be Blown welds
2. Holding down bolts

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PROJECT

CONSULTANCY SERVICES FOR FEASIBILITY STUDY, DETAILED ENGINEERING DESIGN AND CONSTRUCTION SUPERVISION OF SOLAR POWERED PIPED WATER SUPPLY SYSTEMS AND SANITATION FACILITIES IN REFUGEE SETTLEMENTS AND HOST DISTRICTS IN WEST NILE AND NORTHERN UGANDA IN KIRYANDONGO DISTRICT

MUTUNDA WATER SUPPLY SYSTEM

CONSULTANT



In Joint Venture with



Corporate Headquarter
10 Philipot Lane, 1st Floor,
London EC3M 8AA,
United Kingdom

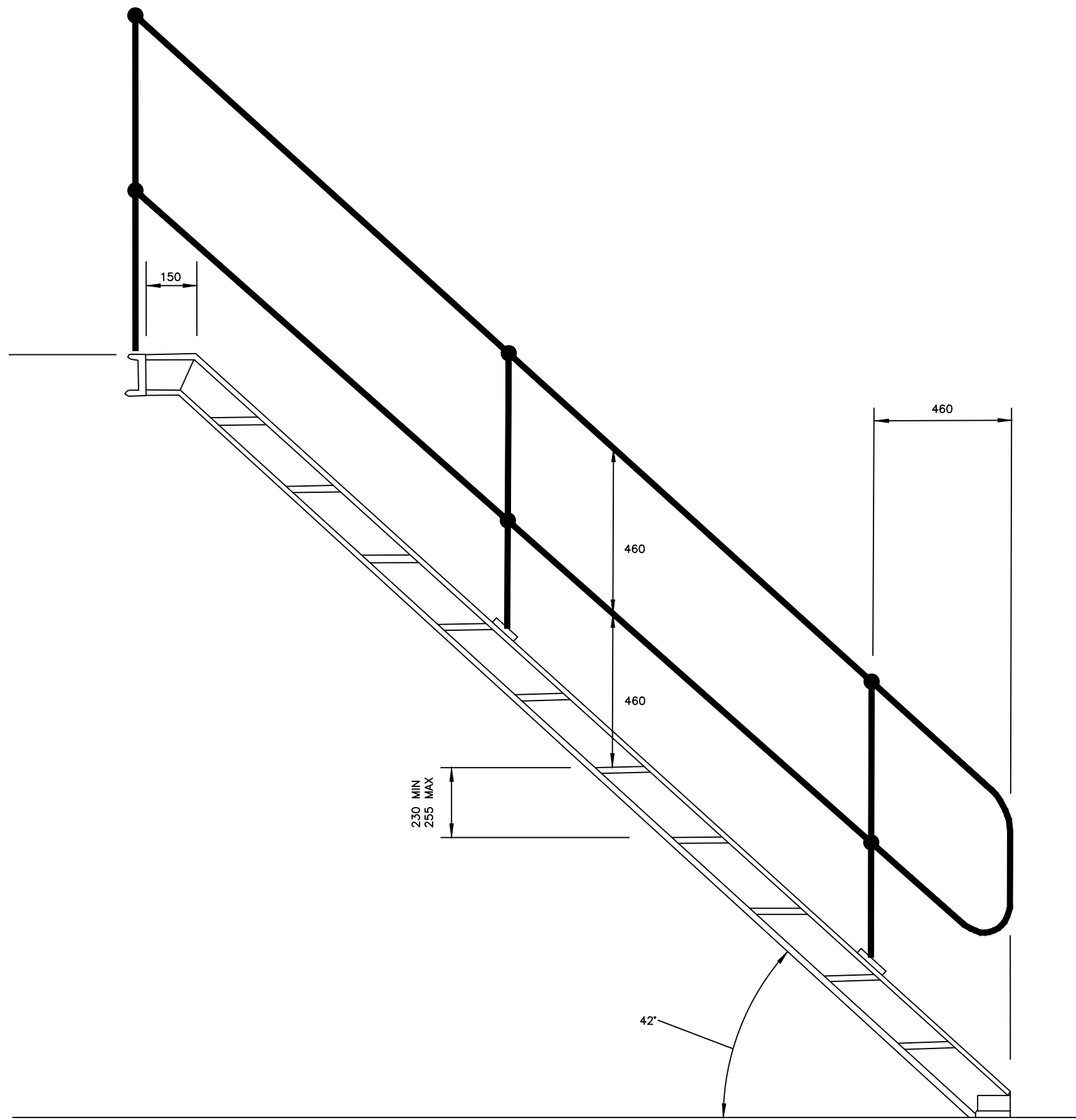
CONTRACTOR

DETAILED ENGINEERING DESIGN

DRAWING TITLE

MILD STEEL SHIPTYPE LADDER - DETAIL

SCALE	As Shown	DRAWING No.	SD107B
SURVEYED		DESIGNED	Otwane Dan.
DRAWN	Joshua Nyarwanda	CHECKED	Rodney Barugahare
DATE	OCT 2021	APPROVED	Rodney Barugahare.



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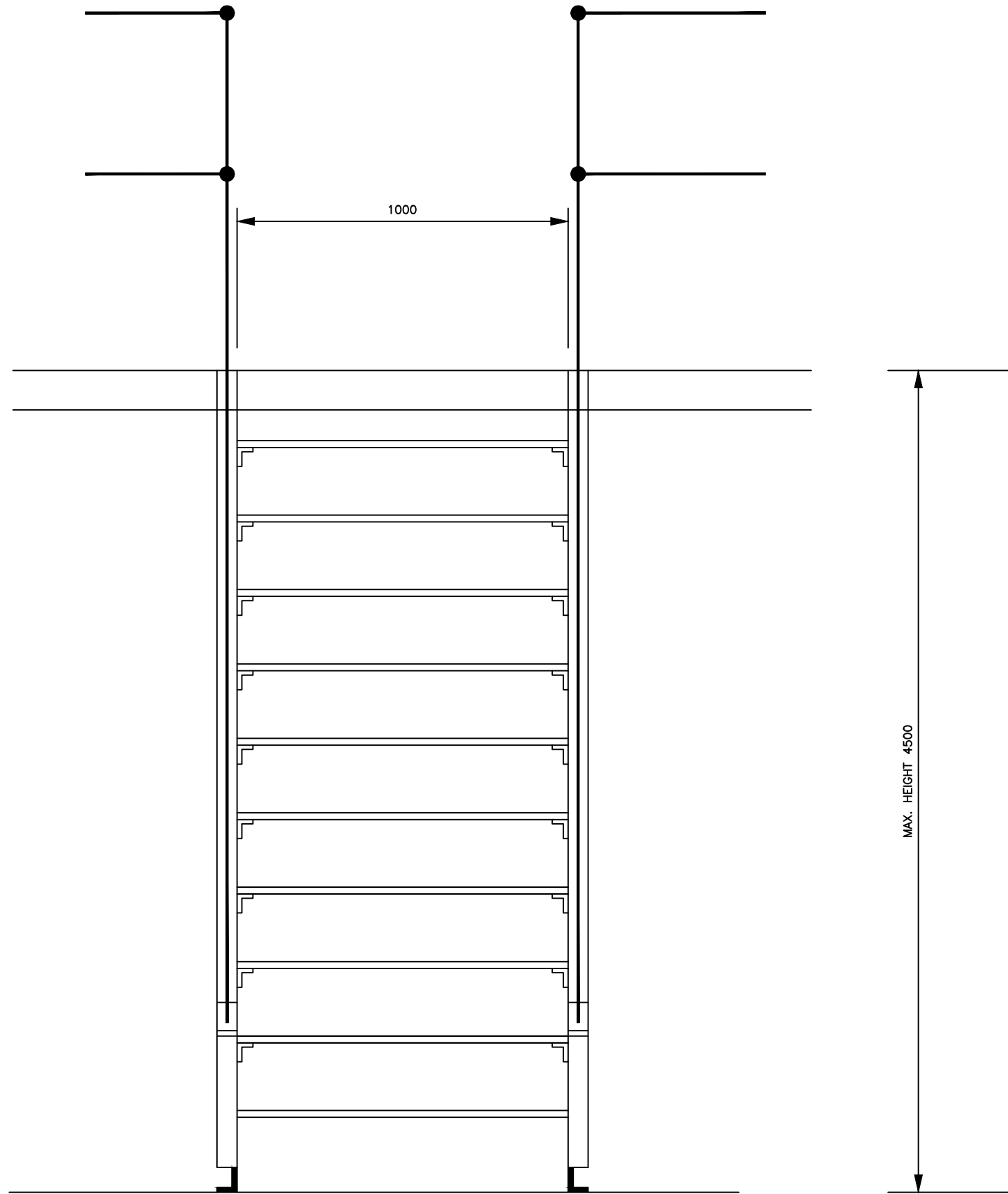
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CONTRACTOR

DETAILED ENGINEERING DESIGN
 DRAWING TITLE
**MILD STEEL STAIRWAY
 SIDE ELEVATION**

SCALE	As Shown	DRAWING No.	SD107C
SURVEYED		DESIGNED	Otwane Dan.
DRAWN	Joshua Nyarwanda	CHECKED	Rodney Barugahare
DATE	OCT 2021	APPROVED	Rodney Barugahare.



NOTES

1. STRINGERS 152 X 76 X 17.88 kg/m ROLLED STEEL
2. STEPS 10 mm THICK CHEQUER PLATE WITH NOSED
3. STEPS SUPPORTS 50 X 50 X 5 THK. ANGLE WELDED FIXED TO STRINGERS WITH M12 BOLTS AND NUTS
4. ALL WELDS TO BE 8 mm FILLET
5. CLEATS 90 X 90 X 10 ANGLE
6. HOLDING DOWN BOLTS 20 DIA.
7. HANDRAILS IN ACCORDANCE WITH SPECIFICATION
8. SURFACE FINISH IN ACCORDANCE WITH SPECIFICATION

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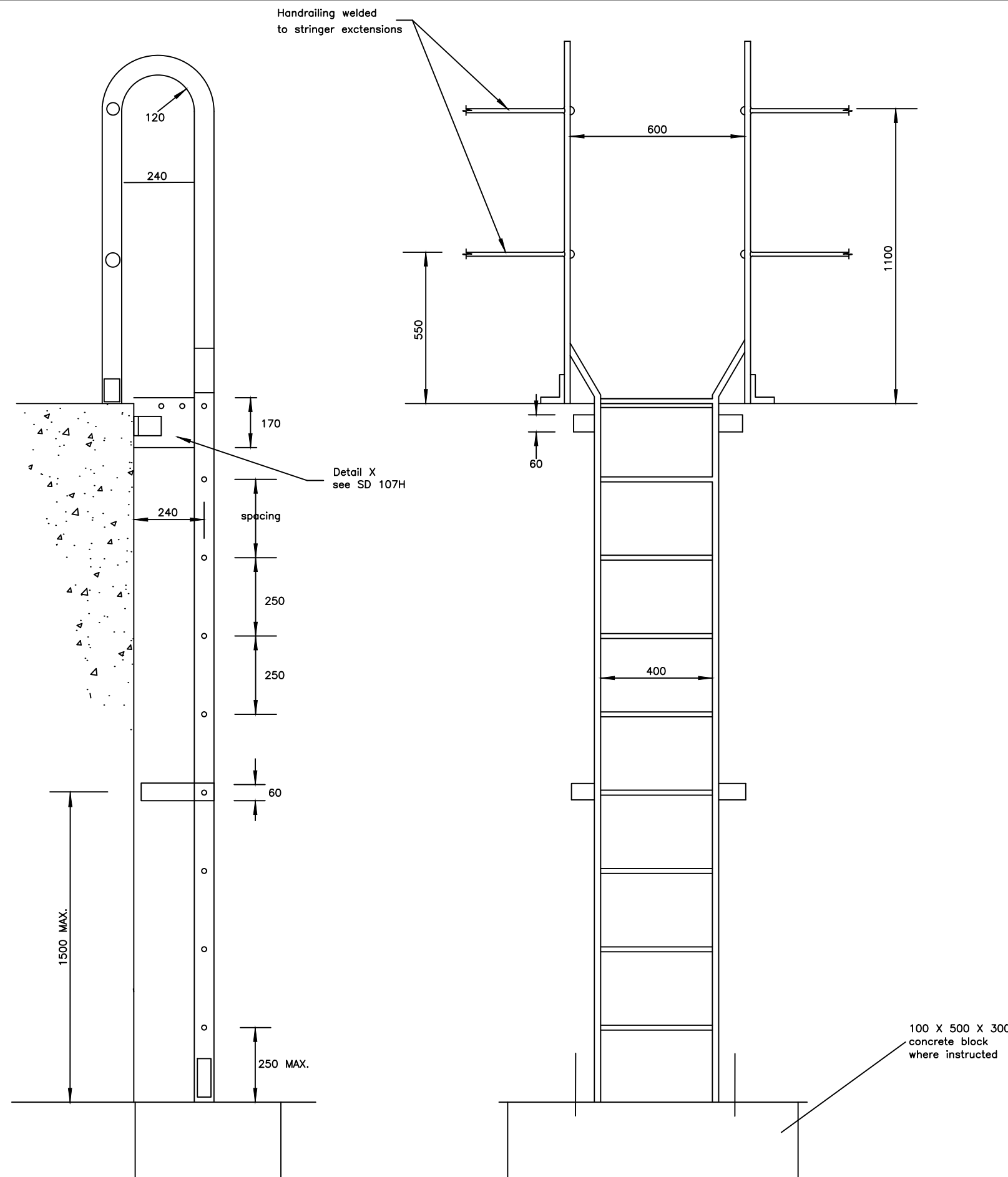
MUTUNDA WATER SUPPLY SYSTEM

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 London EC3M 8AA,
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CONTRACTOR

DETAILED ENGINEERING DESIGN
 DRAWING TITLE
 MILD STEEL STAIRWAY
 FRONT ELEVATION

SCALE	As Shown	DRAWING No.	SD107D
SURVEYED		DESIGNED	Otwane Dan.
DRAWN	Joshua Nyarwanda	CHECKED	Rodney Barugahare
DATE	OCT 2021	APPROVED	Rodney Barugahare.



NOTES

NOTES

1. Stringers 65 x 10 flat
2. Rungs 20 dia. solid bar
3. Cleats 90 x 90 x 10 angle
4. All welds to be 8 mm fillet welds
5. holding down bolts 20 dia.
6. Surface finish in accordance with the specification
7. For details see SD 107H

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MUTUNDA WATER SUPPLY SYSTEM

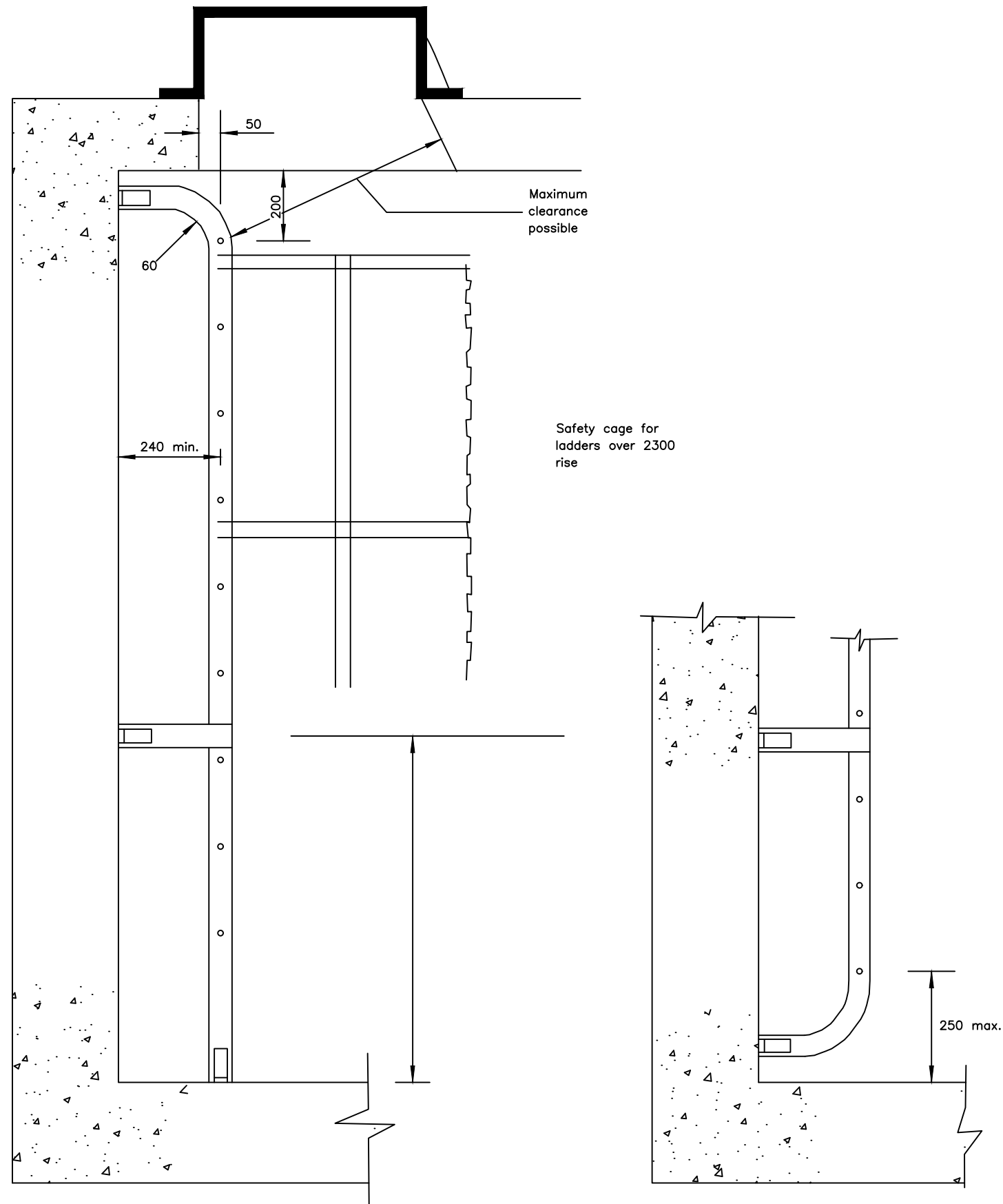
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 United Kingdom

CONTRACTOR

DETAILED ENGINEERING DESIGN
 DRAWING TITLE
**MILD STEEL ACCESS LADDER - TYPE A
 (NOT EXCEEDING 2.3 RISE)**

SCALE	As Shown	DRAWING No.	SD107E
SURVEYED		DESIGNED	Otwane Dan.
DRAWN	Joshua Nyarwanda	CHECKED	Rodney Barugahare
DATE	OCT 2021	APPROVED	Rodney Barugahare.

TYPE C – INSIDE COVERED
TANKS AND CHAMBERS





NOTES

1. Stringers 65 x 10 flat
2. Rungs 20 dia solid bar
3. Cleats 90 x 90 x 10 angle
4. All welds to be 8 mm fillet welds
5. Holding down bolts 20 dia
6. Surface finish in accordance with the specification
7. For details see SD 107H



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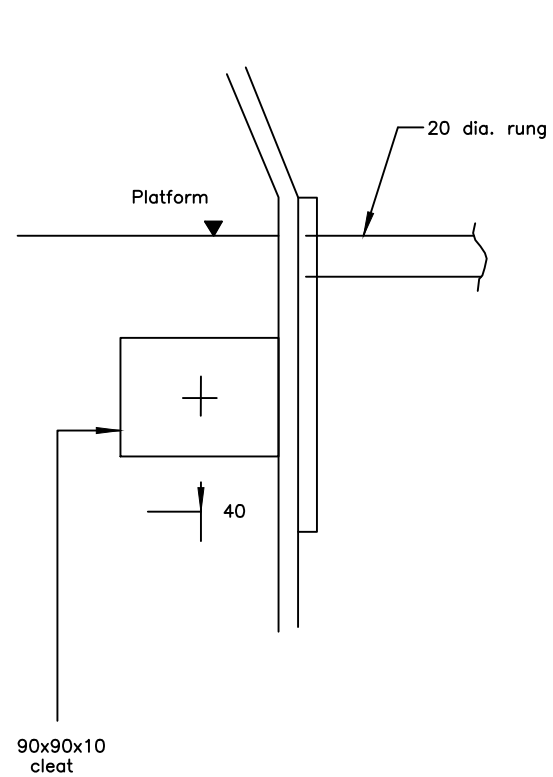
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DETAILED ENGINEERING DESIGN
 DRAWING TITLE
MILD STEEL ACCESS LADDERS - TYPE C

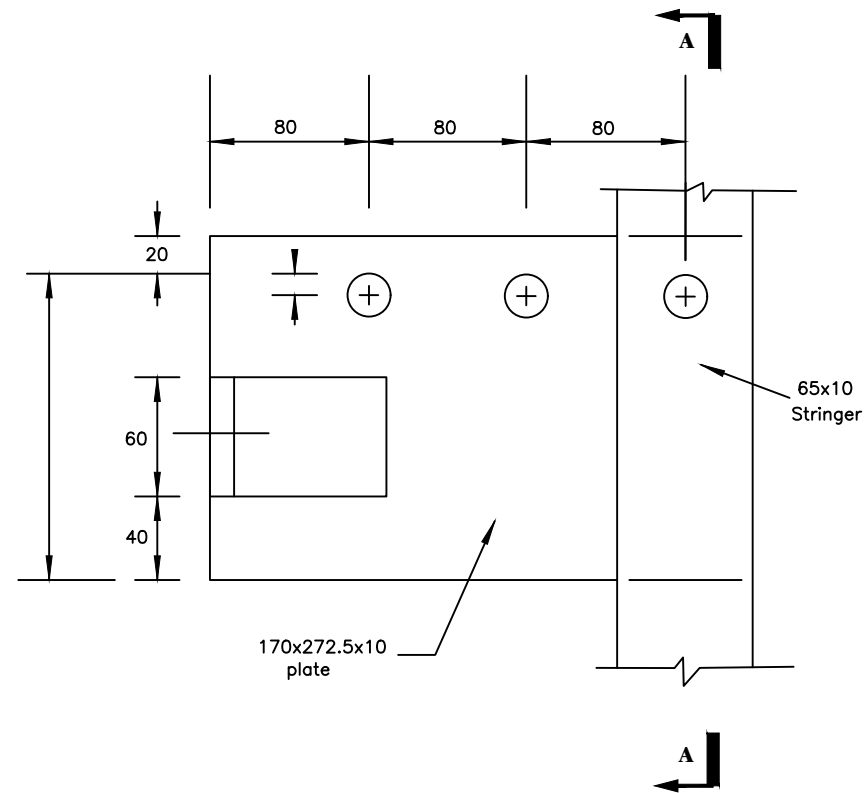
SCALE	As Shown	DRAWING No.	SD107G
SURVEYED		DESIGNED	Otwane Dan.
DRAWN	Joshua Nyarwanda	CHECKED	Rodney Barugahare
DATE	OCT 2021	APPROVED	Rodney Barugahare.

NOTES

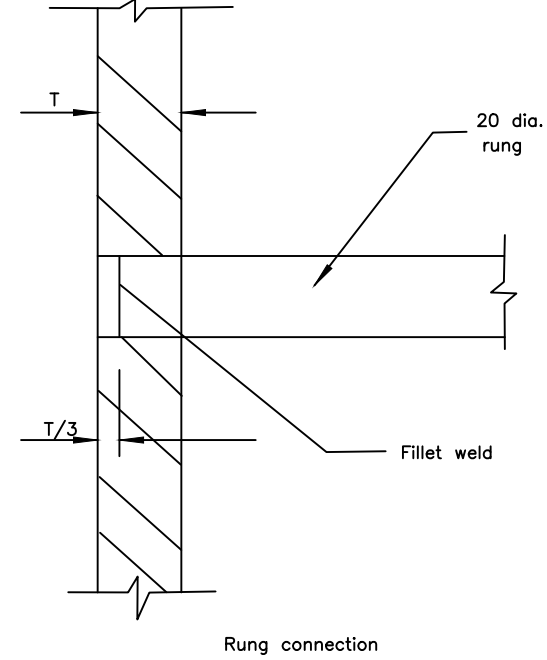
1. All welds to be 8 mm fillet welds
2. Hoops and vertical cage members to be 50x10 flat welded together or fixed with 12 dia. bolts and nuts
3. Holding down bolts 20 dia.



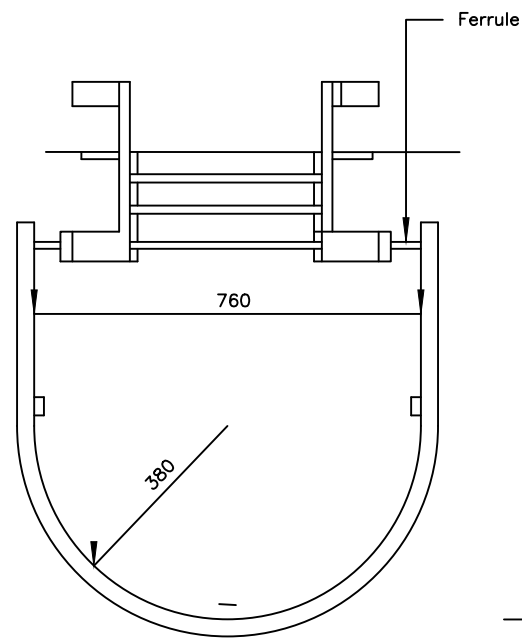
SECTION A - A



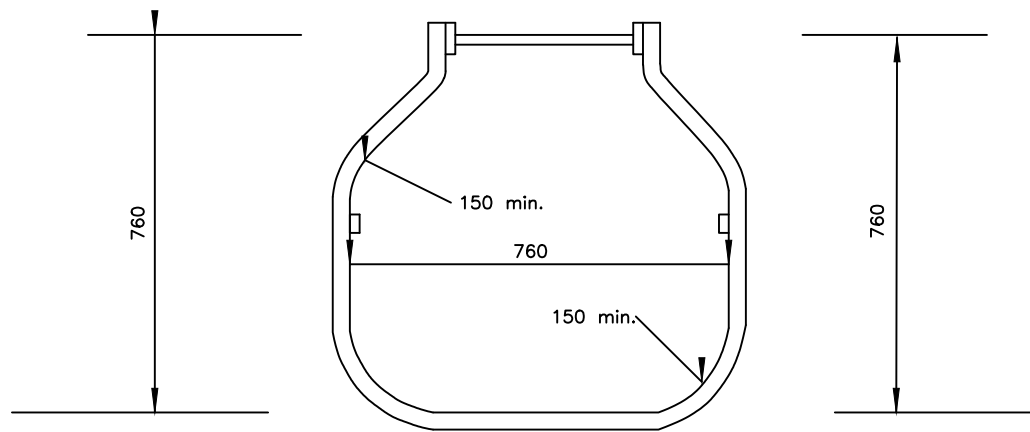
Detail "X" at platform level



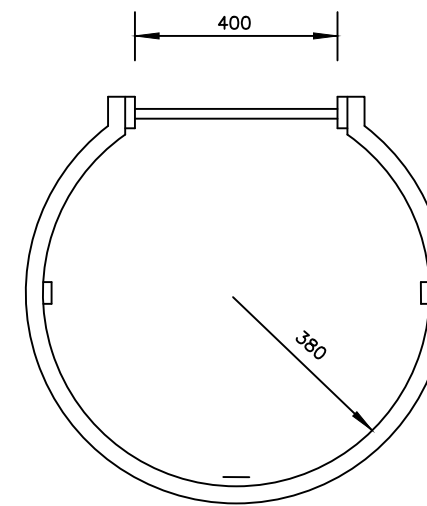
Rung connection



Semi circular hoop



Rectangular hoop




Circular hoop

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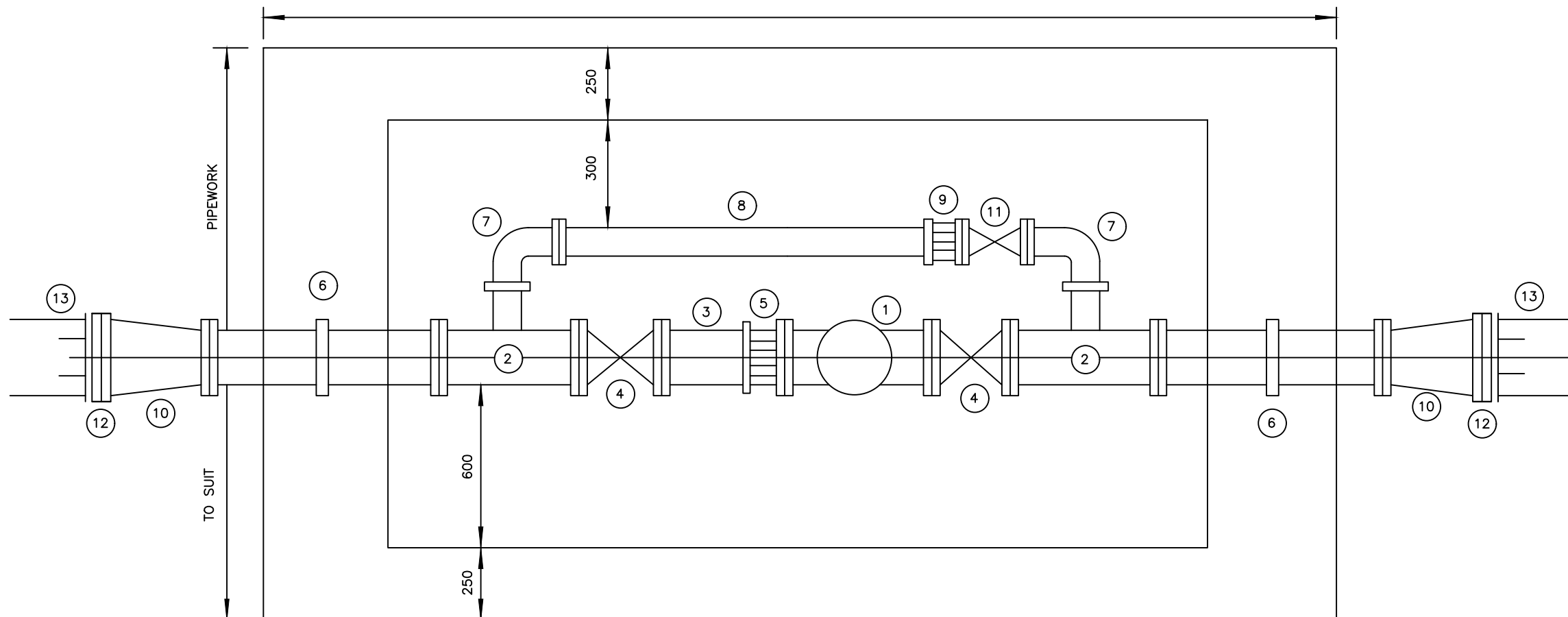
CONTRACTOR

DETAILED ENGINEERING DESIGN

DRAWING TITLE

MILD STEEL ACCESS LADDERS - DETAILS

SCALE	As Shown	DRAWING No.	SD107H
SURVEYED		DESIGNED	Otwane Dan.
DRAWN	Joshua Nyarwanda	CHECKED	Rodney Barugahare
DATE	OCT 2021	APPROVED	Rodney Barugahare.



(SD 131 PRV CHAMBER)

MAIN SIZE (mm DIAMETER)	PRV SIZE (mm DIAMETER)
100	80
150	100
200	150
250	200
300	250
350	300

NOTES

- 1 All dimensions in millimetres
 - 2 For details of reinforced concrete chamber see SD 132
 - 3 See general notes
- ITEM
- 1 Pressure reducing valve
 - 2 All flanged tee (DN100 branch)
 - 3 Flanged spigot pipe
 - 4 Flanged gate valve
 - 5 Flange adaptor
 - 6 Flange spigot pipe with puddle Flange
 - 7 Flanged 90° bend DN100
 - 8 Flanged spigot pipe cut to fit
 - 9 Flanged adaptor DN100
 - 10 Flanged taper
 - 11 Gate valve DN100
 - 12 Flange adaptor (Viking Johnson 'maxi' or similar approved)
 - 13 Distribution main

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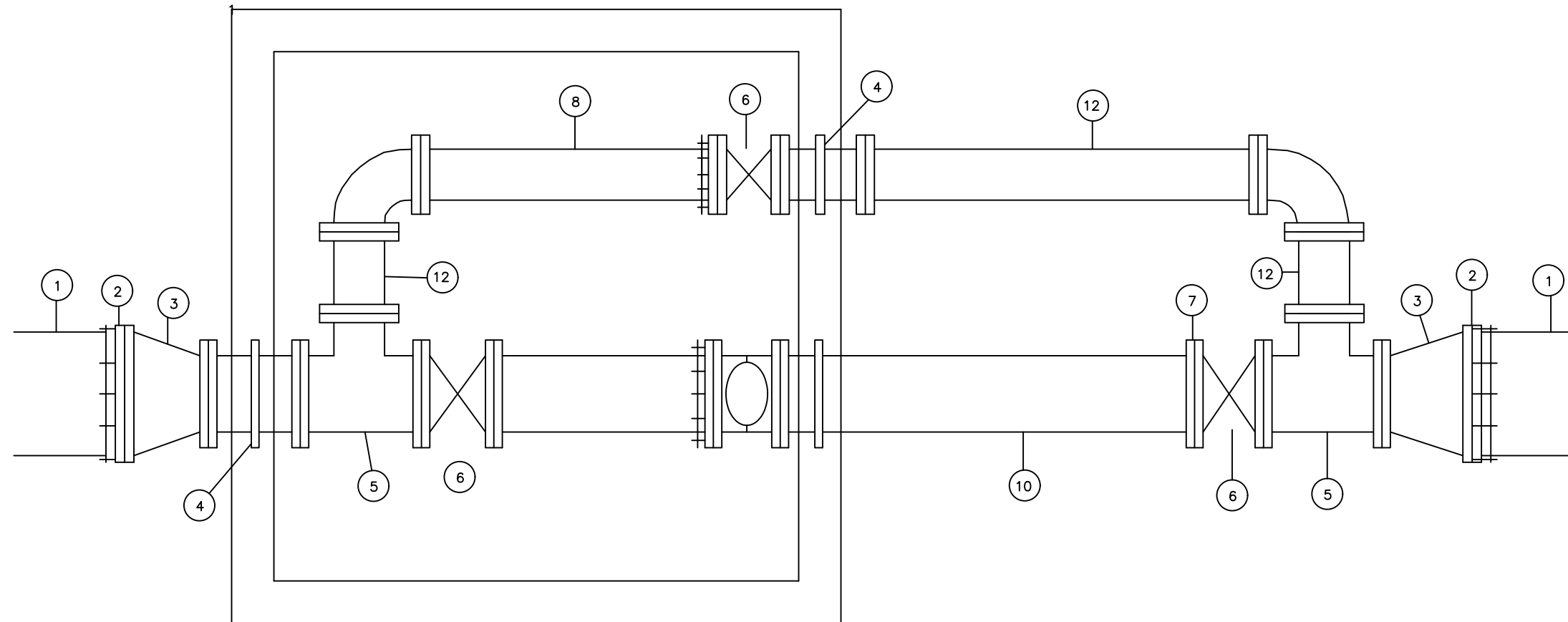
CONTRACTOR

DETAILED ENGINEERING DESIGN

DRAWING TITLE

PRESSURE REDUCING VALVE - PIPEWORK

SCALE	As Shown	DRAWING No.	SD109
SURVEYED		DESIGNED	Otwane Dan.
DRAWN	Joshua Nyarwanda	CHECKED	Rodney Barugahare
DATE	OCT 2021	APPROVED	Rodney Barugahare.



MAIN SIZE (mm DIAMETER)	FLOWMETER SIZE (mm DIAMETER)
100	80
150	100
200	150
250	200
300	250
350	300

NOTES

- 1 All dimensions in millimetres
- 2 For details of reinforced concrete chamber see SD 132
- 3 Length of each item of pipework shall be specified by the Project Manager
- 4 See general notes

ITEM

- 1 Distribution main
- 2 Flange adaptor (Viking Johnson 'maxi' or similar approved)
- 3 Flanged taper
- 4 All flanged piece with central thrust flange
- 5 All flanged equal tee
- 6 Flange gate valve
- 7 Flanged adaptor
- 8 Flanged spigot pipe
- 9 Water meter
- 10 Flanged spigot with thrust flange 500mm from flanged end
- 11 Flanged 90° bend
- 12 Double flanged pipe

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CONTRACTOR

DETAILED ENGINEERING DESIGN

DRAWING TITLE

FLOWMETER - PIPEWORK

SCALE

As Shown

DRAWING No. SD110

SURVEYED

DESIGNED Otwane Dan.

DRAWN

Joshua Nyarwanda

CHECKED

Rodney Barugahare

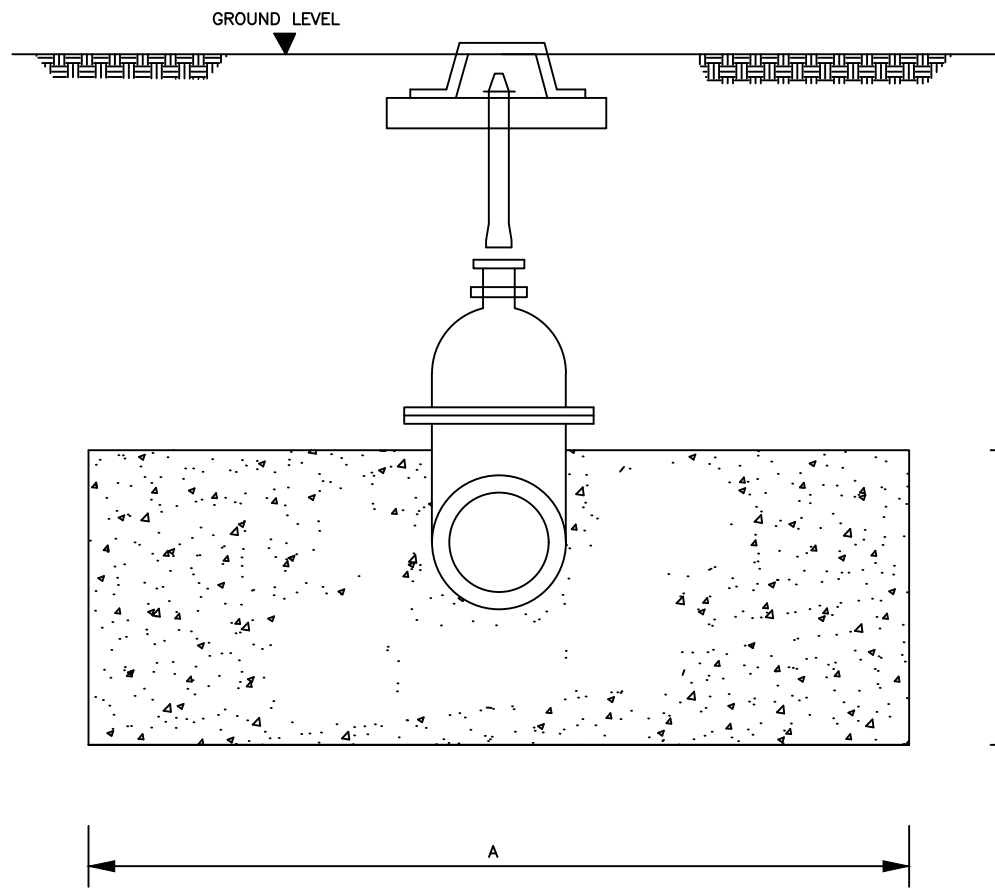
DATE

OCT 2021

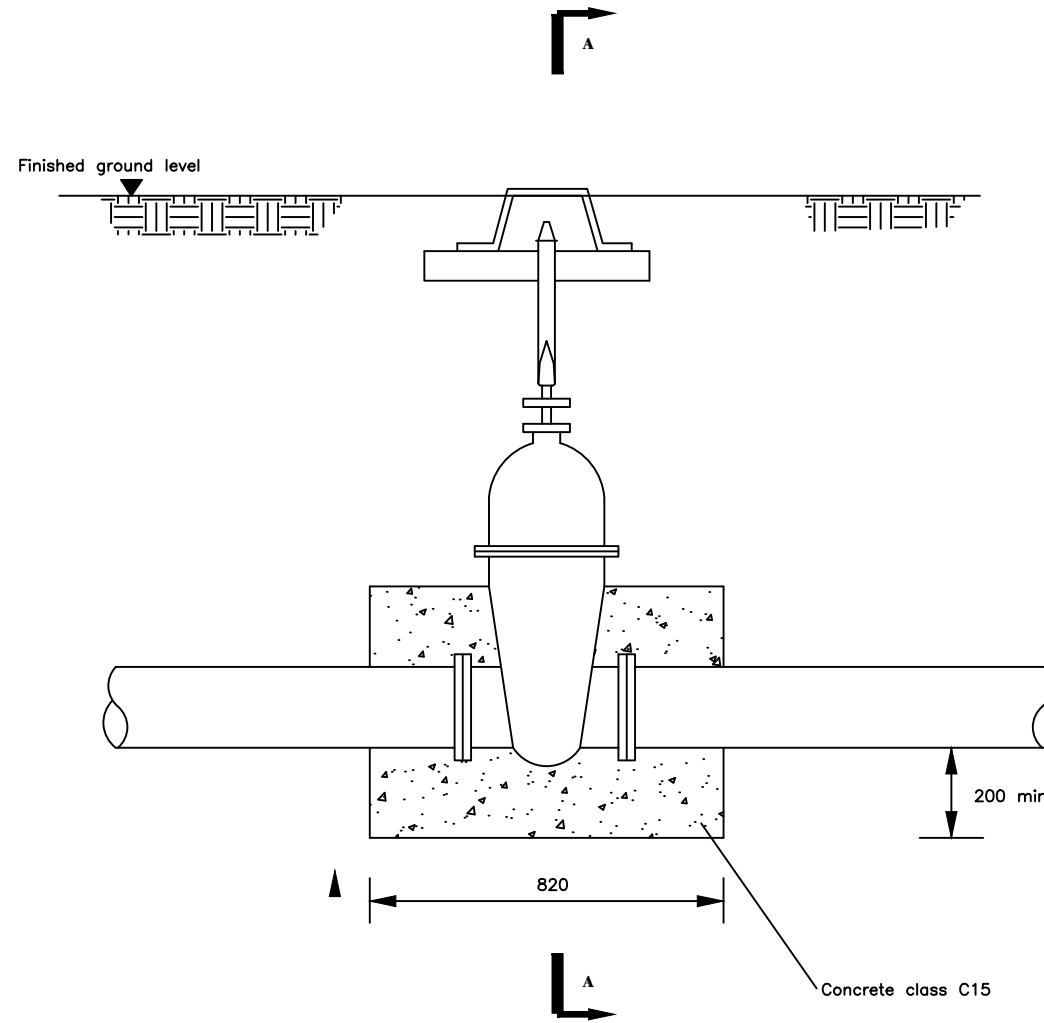
APPROVED

Rodney Barugahare.

NOTES



SECTION A-A



D+400 min.

NOTES

1. For details of Valve box see SD122
2. For dimension A see S.T. 111 D and E

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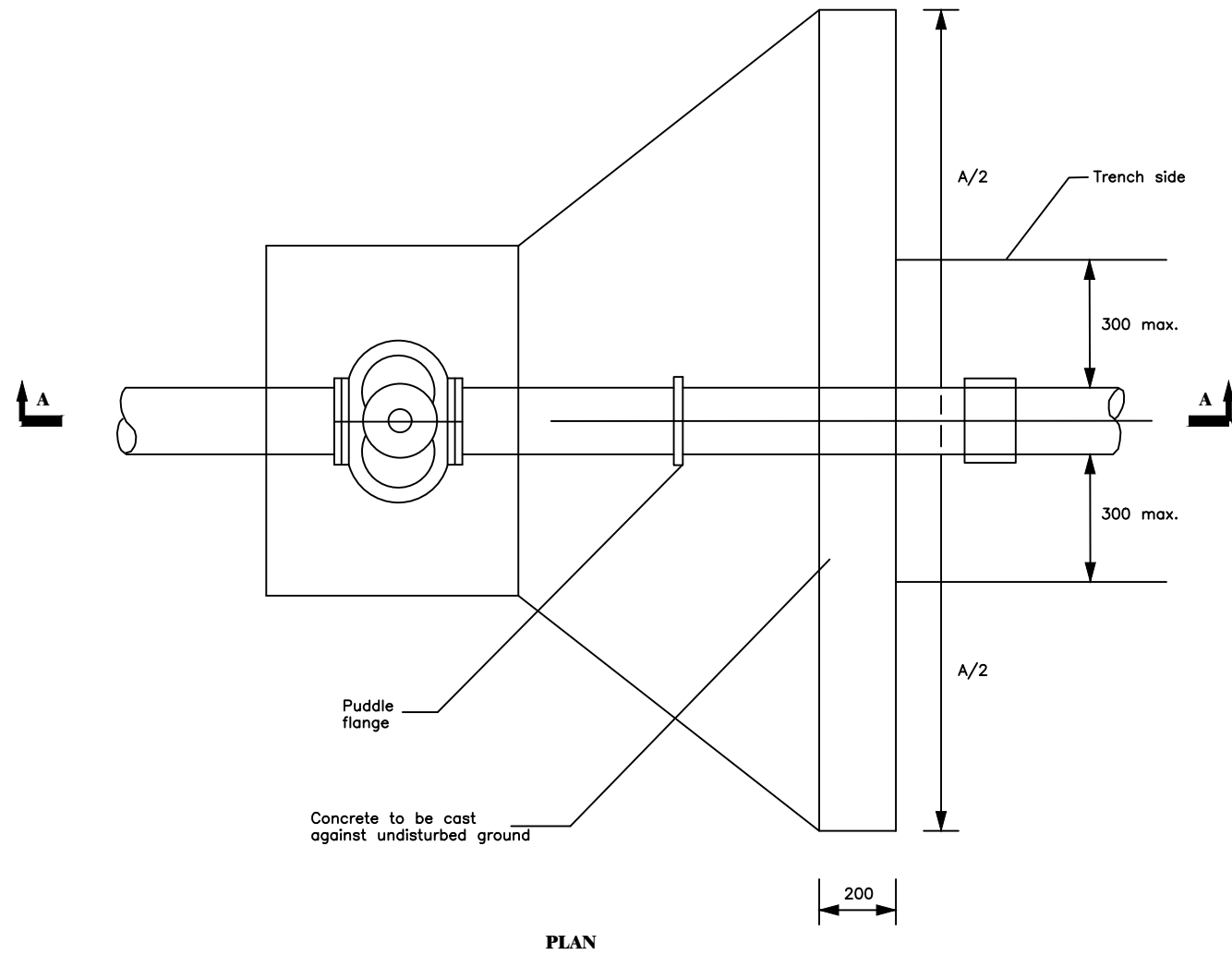
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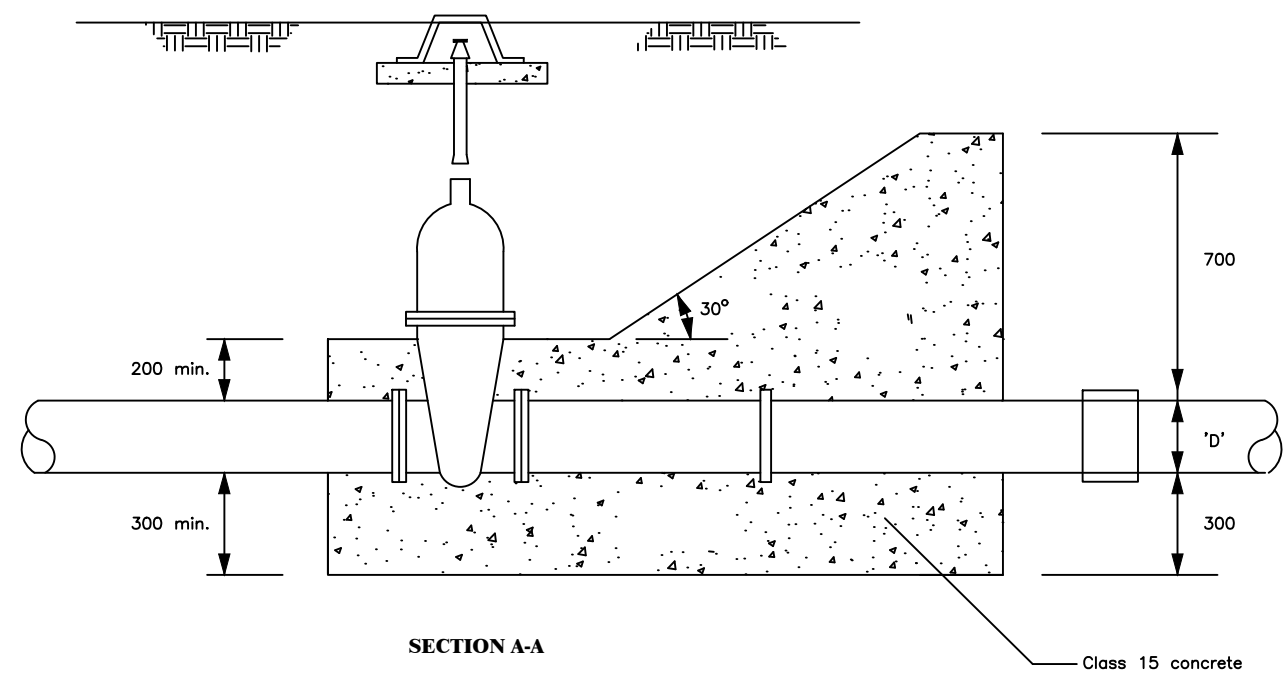
CONTRACTOR

DETAILED ENGINEERING DESIGN
 DRAWING TITLE
FLOWMETER - PIPEWORK

SCALE	As Shown	DRAWING No.	SD111A
SURVEYED		DESIGNED	Otwane Dan.
DRAWN	Joshua Nyarwanda	CHECKED	Rodney Barugahare
DATE	OCT 2021	APPROVED	Rodney Barugahare.



PLAN



SECTION A-A

NOTES

1. For details of surface box see SD122
2. For dimension 'A' see SD 111 D and E

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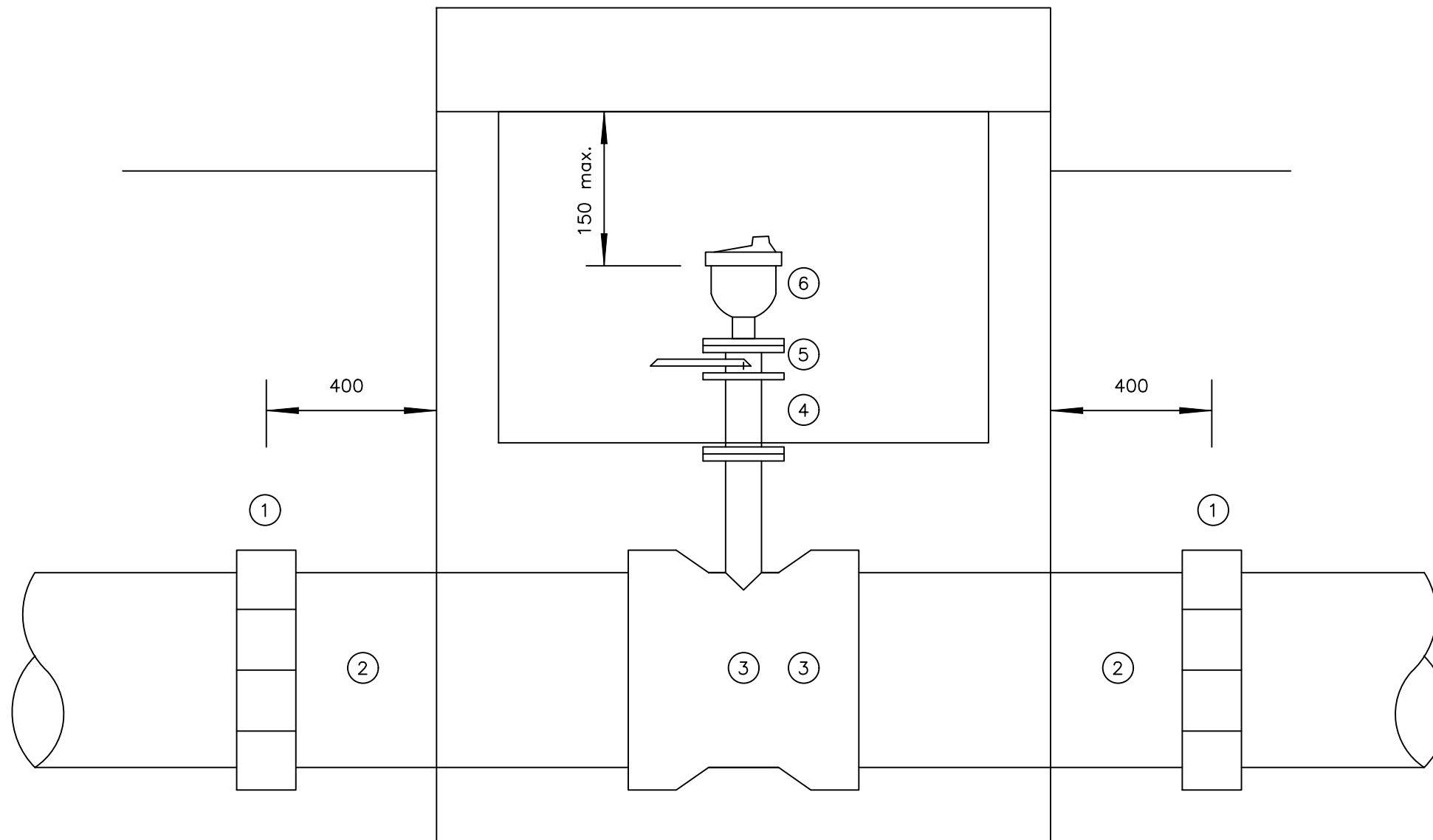
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 London EC3M 8EA,
 United Kingdom

CONTRACTOR

DETAILED ENGINEERING DESIGN
 DRAWING TITLE
GATE VALVE - TYPE 2

SCALE	As Shown	DRAWING No.	SD111B
SURVEYED		DESIGNED	Otwane Dan.
DRAWN	Joshua Nyarwanda	CHECKED	Rodney Barugahare
DATE	OCT 2021	APPROVED	Rodney Barugahare.



NOTES

- 1 All dimensions are in millimetres
- 2 Flanged pipework to be ductile iron
- 3 Make up pipes to be ductile iron
- 4 Chamber to be 1200x900 internal dimensions
For details see standard drawing SD 112D
- 5 See General Notes

SCHEDULE

ITEM	DESCRIPTION
1	Flexible adaptor if required
2	Make-up pipe
3	Socket tee flanged branch 80/50 dia as required
4	Flanged pipe 80/50 dia as required
5	Isolating valve main 100-300dia valve 50 dia
6	Air valve main 350-600dia valve 80dia

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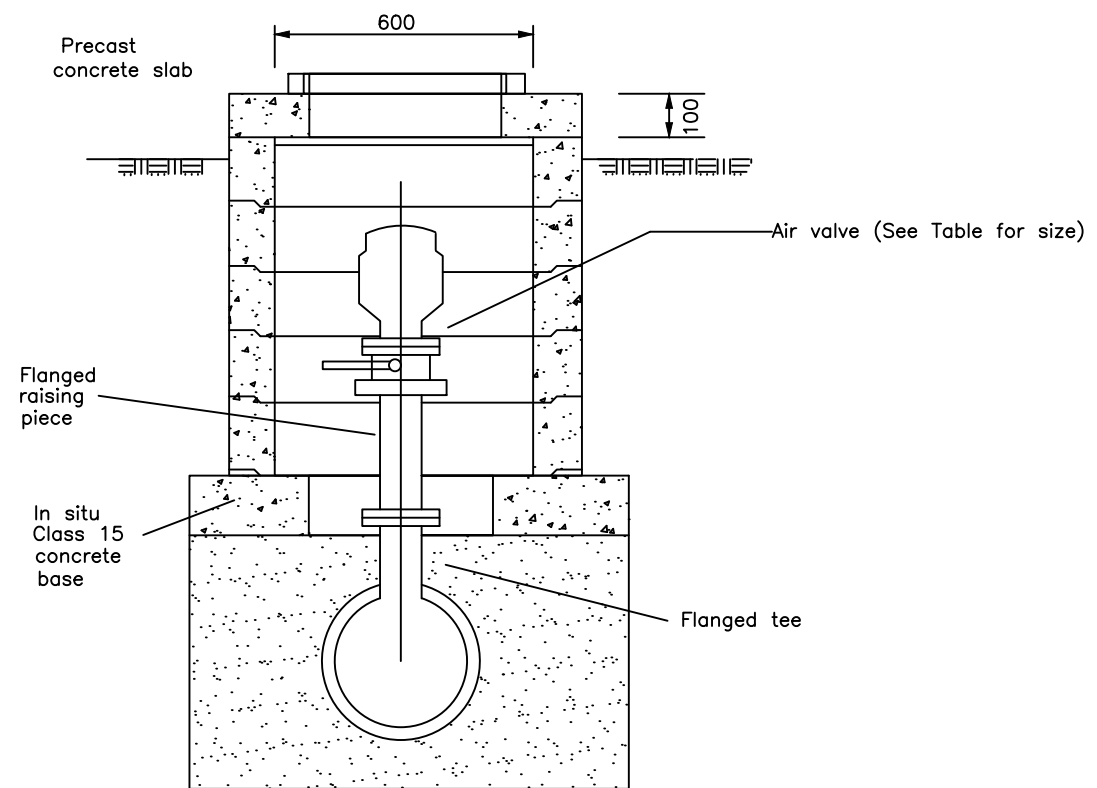
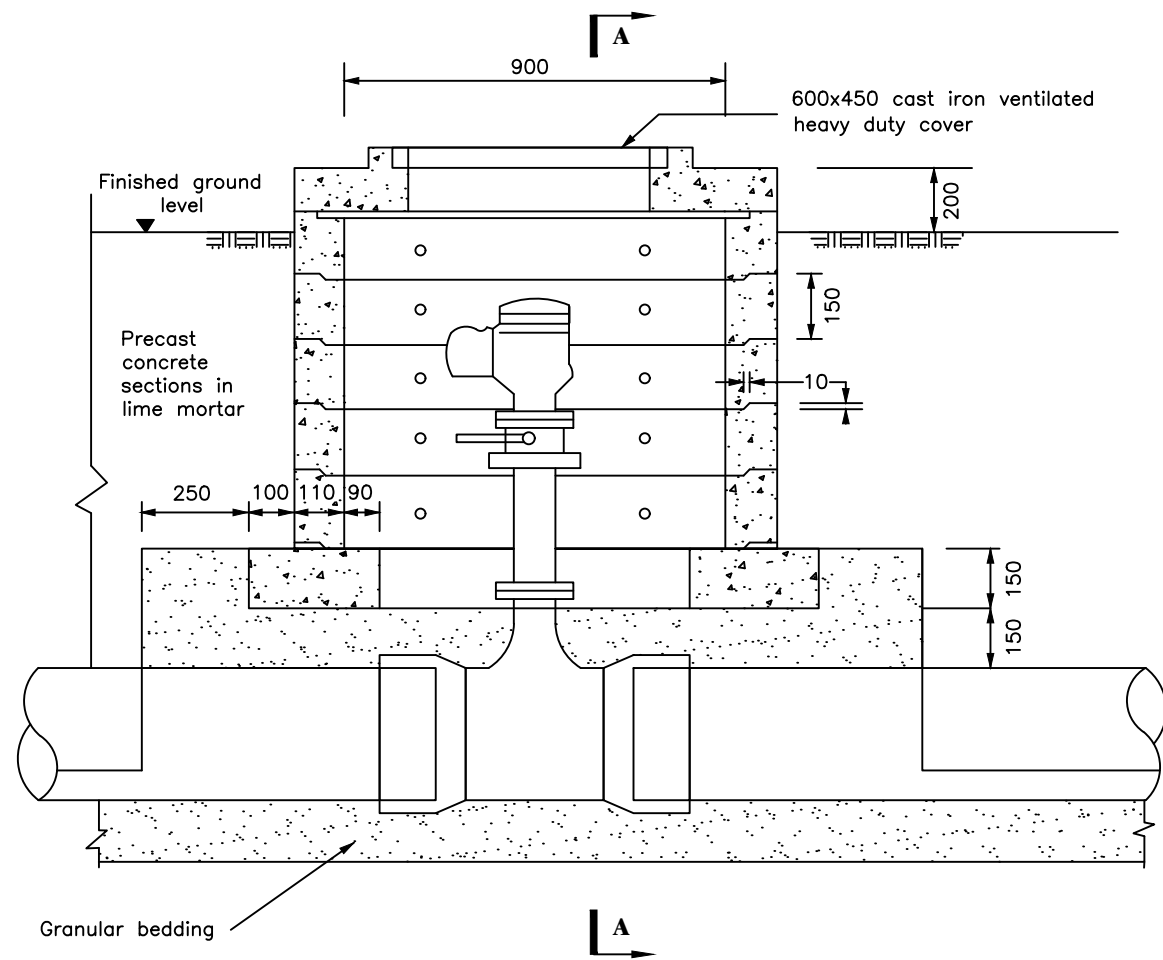
DETAILED ENGINEERING DESIGN

DRAWING TITLE

AIR VALVE PIPEWORK

SCALE	As Shown	DRAWING No.	SD112A
SURVEYED		DESIGNED	Otwane Dan.
DRAWN	Joshua Nyarwanda	CHECKED	Rodney Barugahare
DATE	OCT 2021	APPROVED	Rodney Barugahare.

NOTES



Main dia.	Air valve inlet dia.
100-300	50
350-500	80

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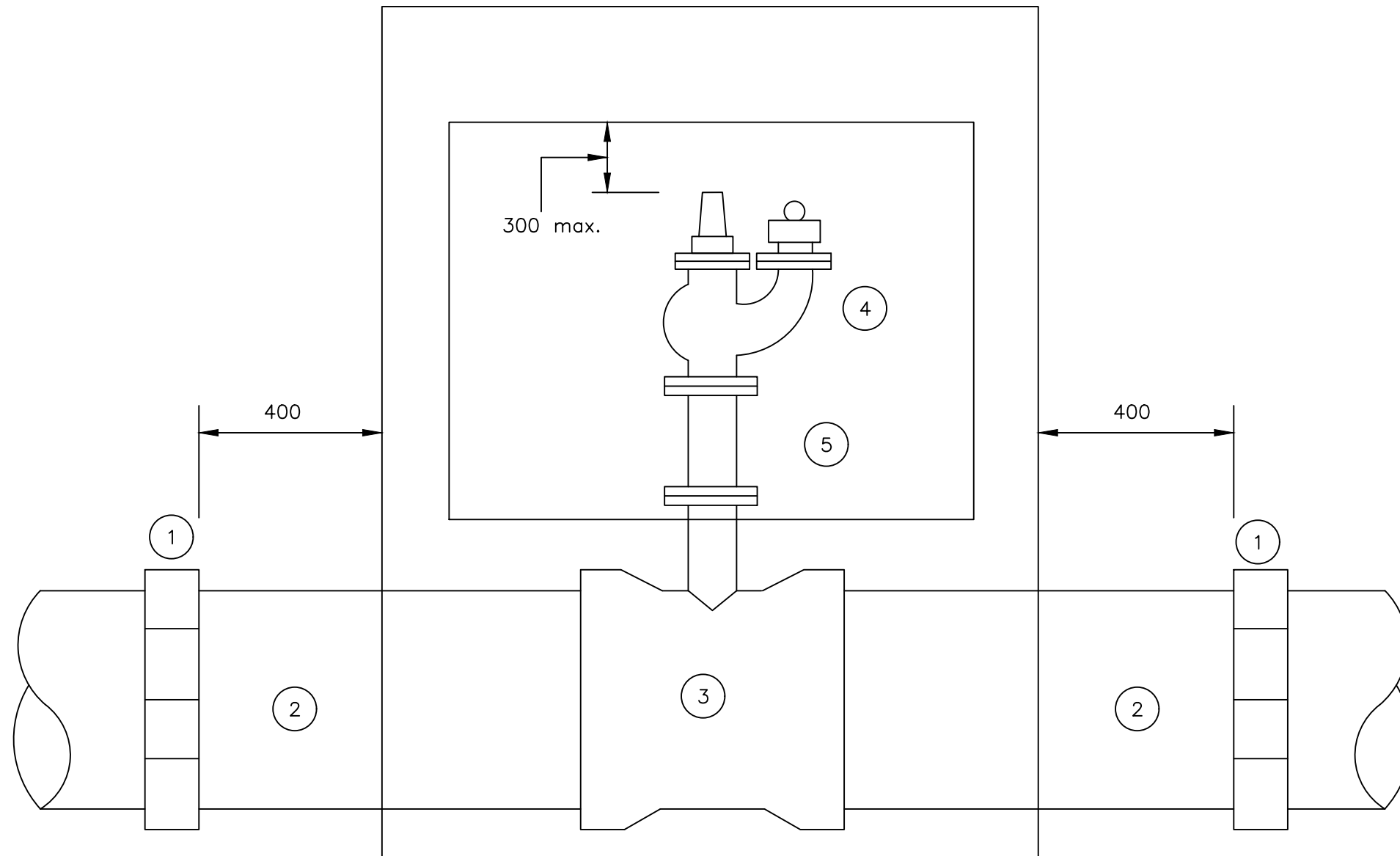
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 United Kingdom

CONTRACTOR

DETAILED ENGINEERING DESIGN
 DRAWING TITLE
AIR VALVE CHAMBER

SCALE As Shown DRAWING No. SD112B
 SURVEYED DESIGNED Otwane Dan.
 DRAWN Joshua Nyarwanda CHECKED Rodney Barugahare
 DATE OCT 2021 APPROVED Rodney Barugahare.



SCHEDULE

ITEM	DESCRIPTION
1	Flexible adaptor if required
2	Make-up pipe
3	Socket tee flanged branch 80 dia.
4	Flanged pipe 80 dia. As required
5	Screwdown hydrant

NOTES

1. Flanged pipework to be ductile iron
2. Make up pipes to be ductile iron or asbestos cement
3. For chamber details see SD113 B

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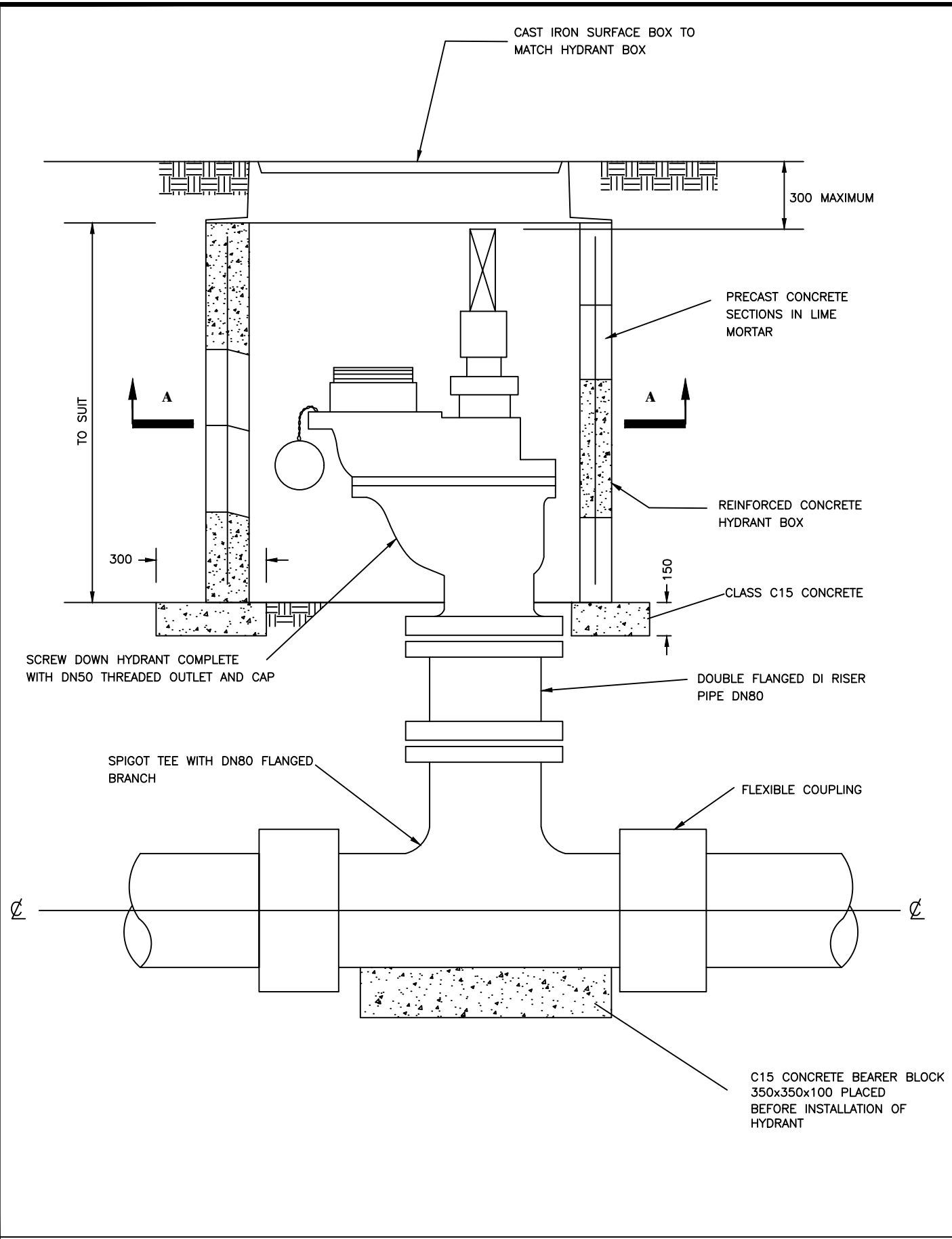
CONTRACTOR

DETAILED ENGINEERING DESIGN

DRAWING TITLE

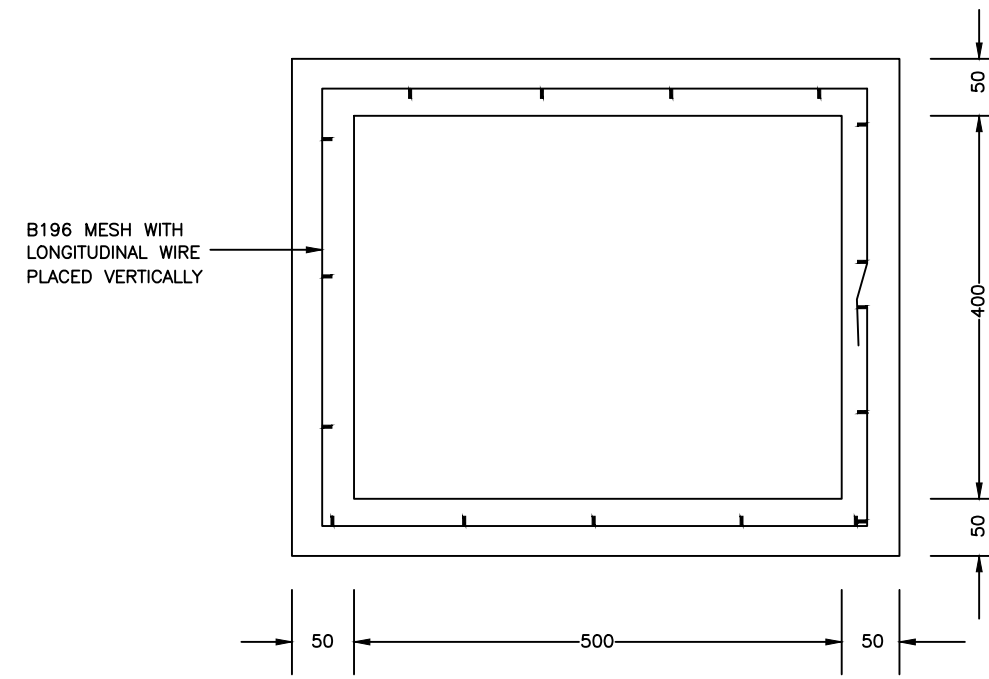
FIRE HYDRANT - PIPEWORK

SCALE	As Shown	DRAWING No.	SD113A
SURVEYED		DESIGNED	Otwane Dan.
DRAWN	Joshua Nyarwanda	CHECKED	Rodney Barugahare
DATE	OCT 2021	APPROVED	Rodney Barugahare.



NOTE:

TWO LAYERS OF WATER PROOF PAPER TO BE PLACED BETWEEN CONCRETE AND HYDRANT



SECTION A-A

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MUTUNDA WATER SUPPLY SYSTEM

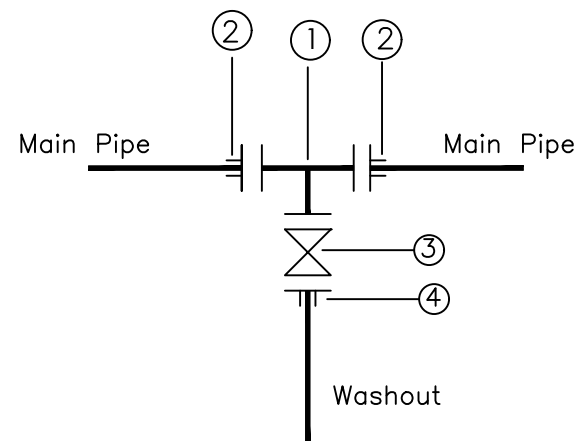
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CONTRACTOR

DETAILED ENGINEERING DESIGN
 DRAWING TITLE
FIRE HYDRANT CHAMBER

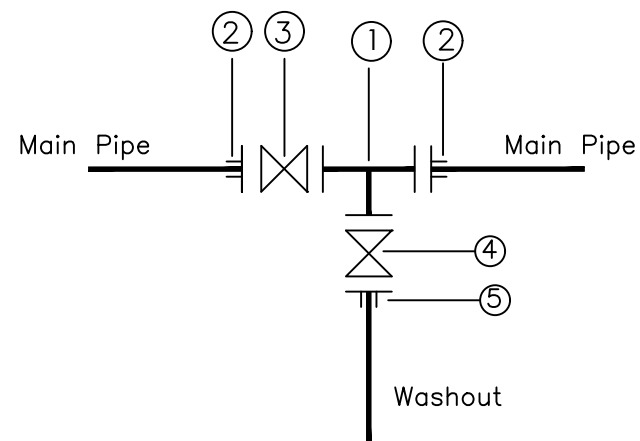
SCALE	As Shown	DRAWING No.	SD113B
SURVEYED		DESIGNED	Otwane Dan.
DRAWN	Joshua Nyarwanda	CHECKED	Rodney Barugahare
DATE	OCT 2021	APPROVED	Rodney Barugahare.

WO TYPE 1



- ① 1No CI Flanged Tee DN A/B
- ② 2No DI Flange Adaptor, Maxi type or similar type DN A
- ③ 1No CI Flanged Gate Valve DN A
- ④ 1No DI Flange Adaptor, Maxi type or similar DN B

WO TYPE 2



- ① 1No CI Flanged Tee DN A/B
- ② 2No DI Flange Adaptor, Maxi type or similar type DN A
- ③ 1No CI Flanged Gate Valve DN A
- ④ 1No DI Flanged Gate Valve DN B
- ⑤ 1No DI Flange Adaptor, Maxi type or similar DN B

Pipe Diameter		Fittings Diameter	
Main Pipe	Washout	A	B
OD 50	OD 50	DN 40	DN 40
OD 63	OD 63	DN 50	OD 50
OD 90	OD 63	DN 80	OD 50
OD 110	OD 63	DN 100	OD 50
OD 160	OD 63	DN 150	OD 50
OD 218	OD 110	DN 200	OD 100
OD 250	OD 110	DN 250	OD 100
OD 300	OD 110	DN 300	OD 100
OD 350	OD 110	DN 350	OD 100
OD 400	OD 110	DN 400	OD 100
OD 500	OD 110	DN 450	OD 100

NOTE: Pressure ratings of Washouts and Fittings shall be similar to those of the main pipe on which the washout is to be installed

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MUTUNDA WATER SUPPLY SYSTEM

CONSULTANT



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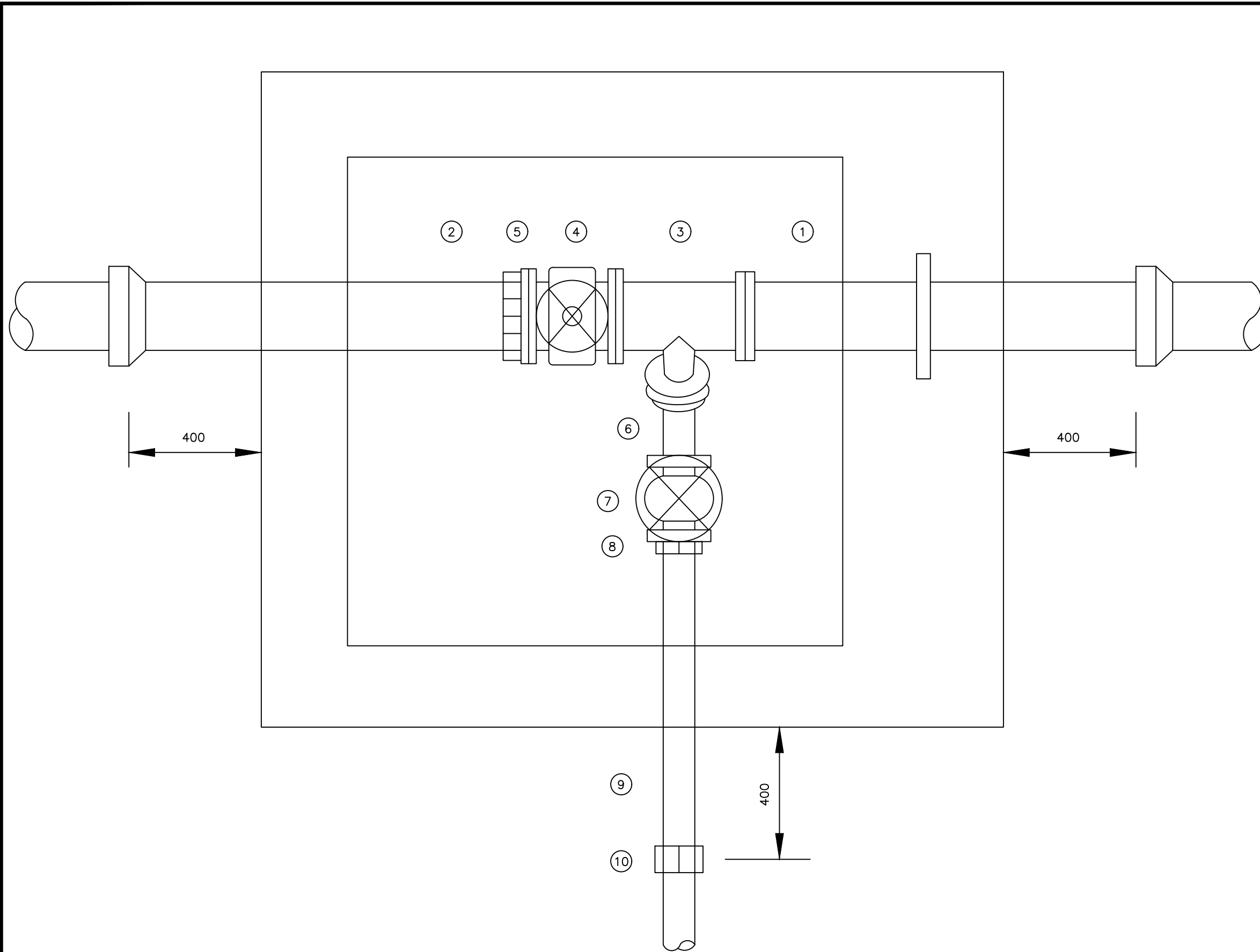
CONTRACTOR

DETAILED ENGINEERING DESIGN

DRAWING TITLE

**WASHOUT DETAILS
TYPE 1 & 2**

SCALE	As Shown	DRAWING No.	SD114A
SURVEYED		DESIGNED	Otwane Dan.
DRAWN	Joshua Nyarwanda	CHECKED	Rodney Barugahare
DATE	OCT 2021	APPROVED	Rodney Barugahare.



SCHEDULE

ITEM	DESCRIPTION
1	Flanged spigot pipe 1200 long with thrust flange
2	Make-up pipe
3	All flanged tee, branch DN 80
4	Flanged in-line gate valve
5	Flange adaptor
6	Flanged 45o bend DN 80
7	Flanged gate valve DN 80
8	Flanged adaptor DN 80
9	Spigot pipe DN 80
10	Flexible adaptor if required

NOTES

- 1 Dimension in millimetres
- 2 Max. main size DN 500
- 3 Pipework within chamber to be ductile iron
- 4 For details of chamber see standard detail drawing SD13

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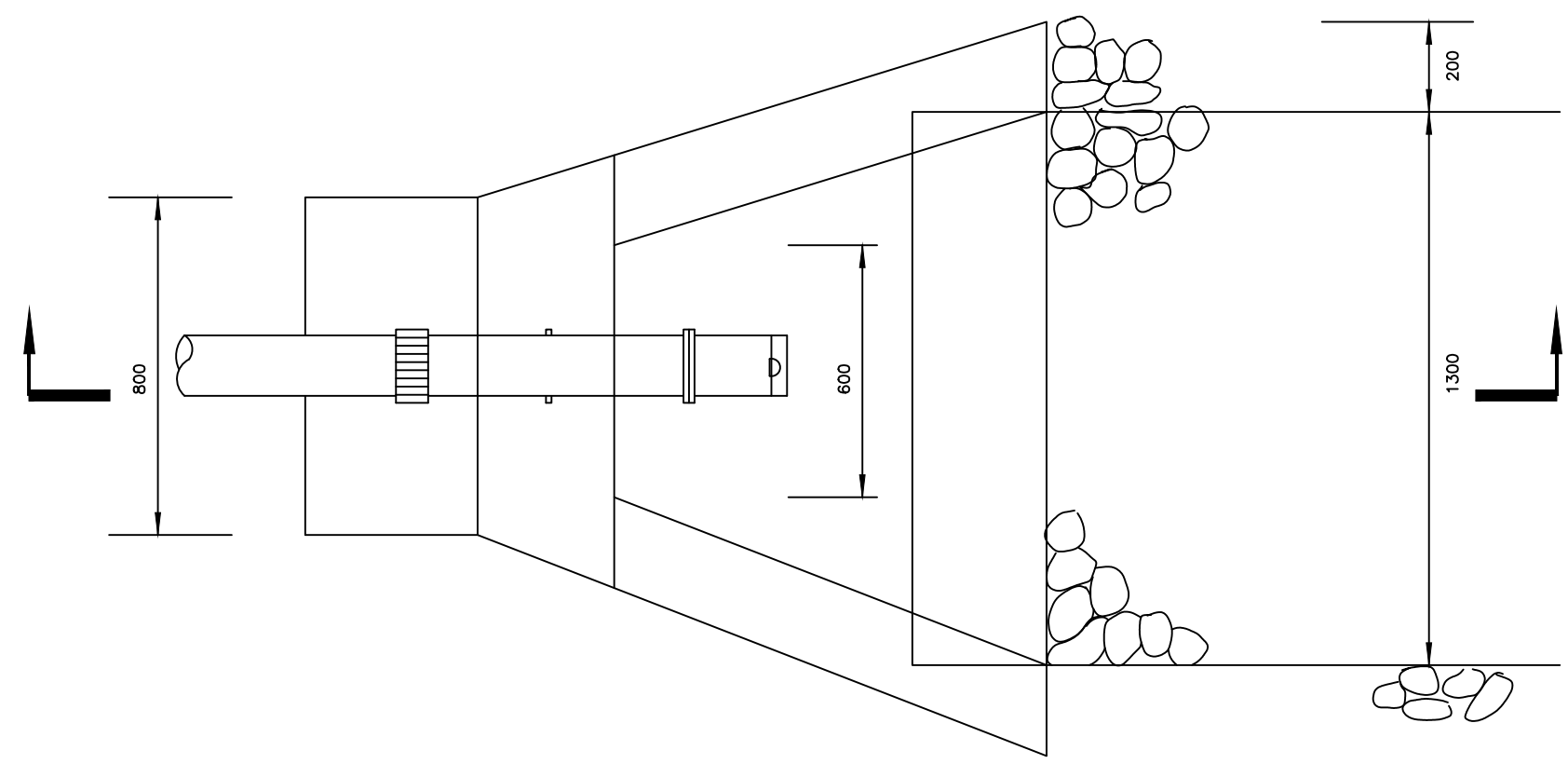
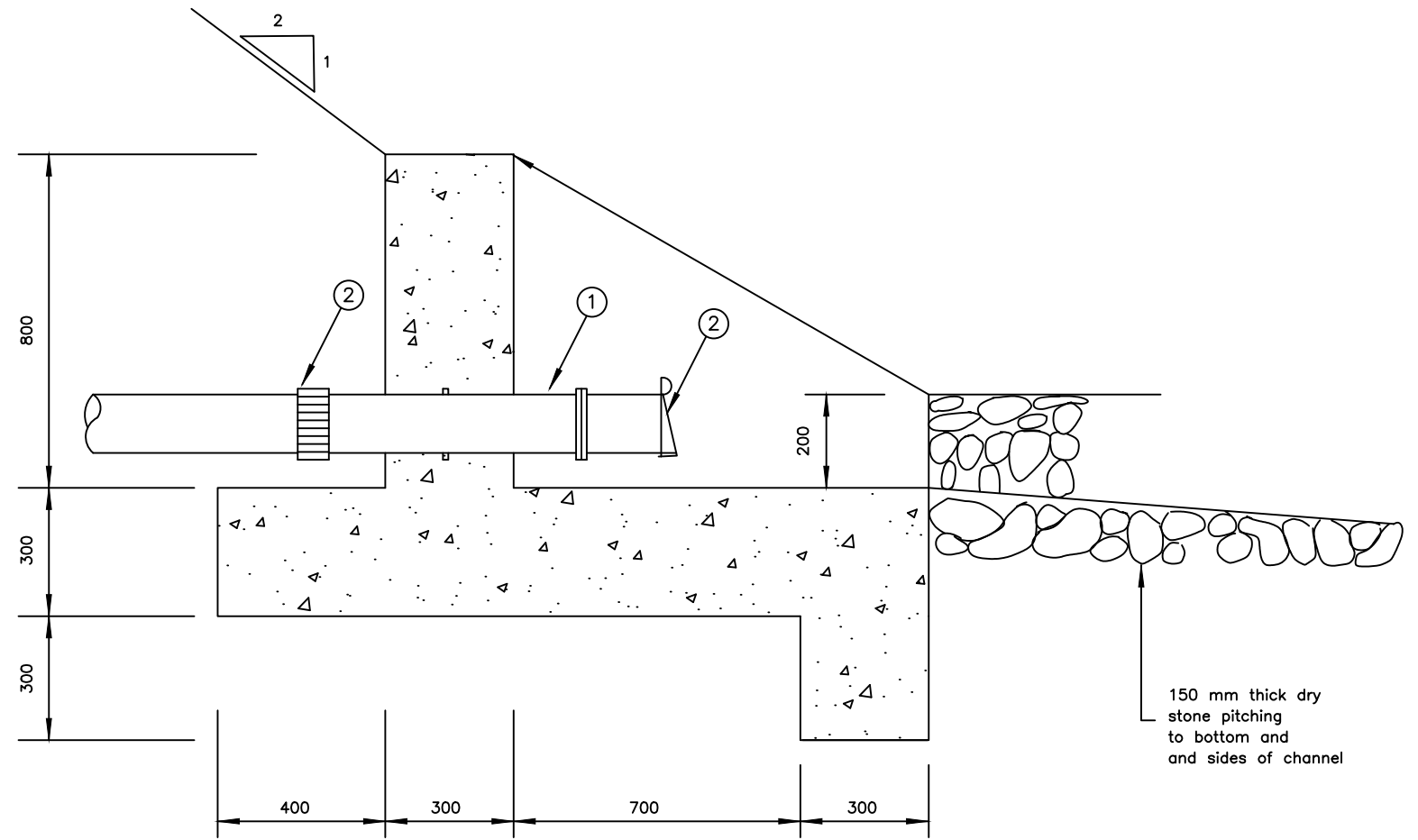
CONTRACTOR

DETAILED ENGINEERING DESIGN

DRAWING TITLE

WASHOUT - PIPEWORK WITH CHAMBER

SCALE	As Shown	DRAWING No.	SD114B
SURVEYED		DESIGNED	Otwane Dan.
DRAWN	Joshua Nyarwanda	CHECKED	Rodney Barugahare
DATE	OCT 2021	APPROVED	Rodney Barugahare.



NOTES

Reinforcement to be one layer A252 mesh throughout

For Pipe fittings diameter and pressure ratings, see drawing No. SD 114

① 1No. Flanged socket piece with paddle flange 350mm from flange, length not exceeding 750mm

② 1No. Flange flap valve

③ 1No. Viking Johnson flexible coupling

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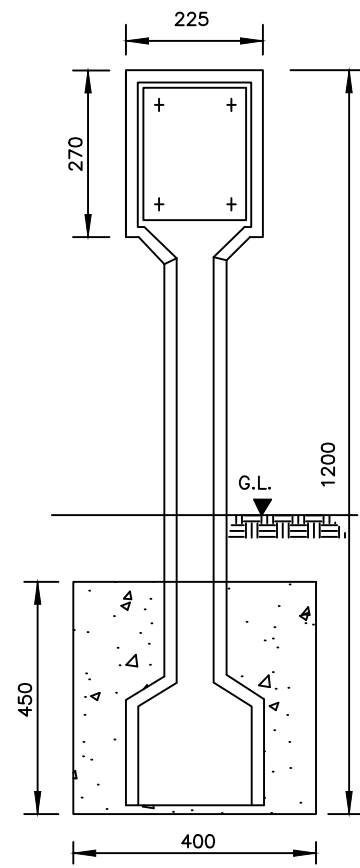
CONTRACTOR

DETAILED ENGINEERING DESIGN

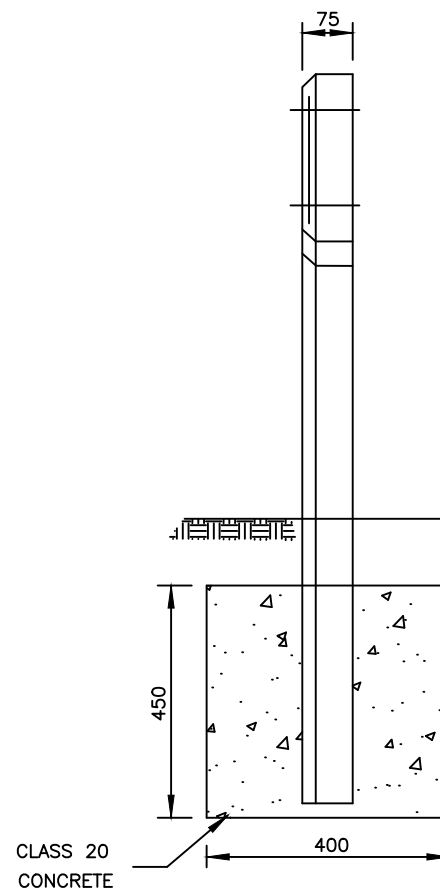
DRAWING TITLE

OUTFALL

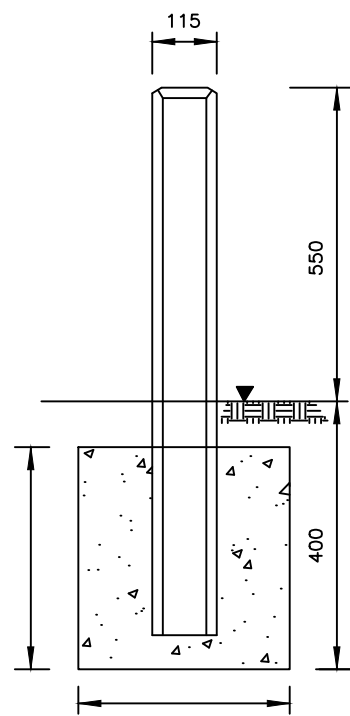
SCALE	As Shown	DRAWING No.	SD116
SURVEYED		DESIGNED	Otwane Dan.
DRAWN	Joshua Nyarwanda	CHECKED	Rodney Barugahare
DATE	OCT 2021	APPROVED	Rodney Barugahare.



FRONT ELEVATION

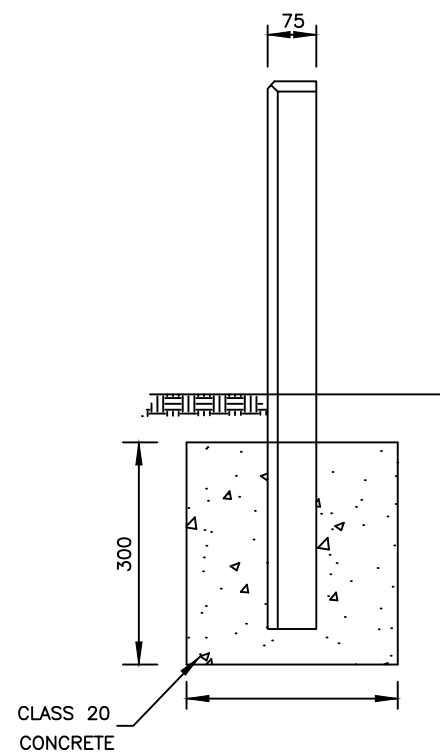


SIDE ELEVATION




FRONT ELEVATION

MAKER POSTS



SIDE ELEVATION

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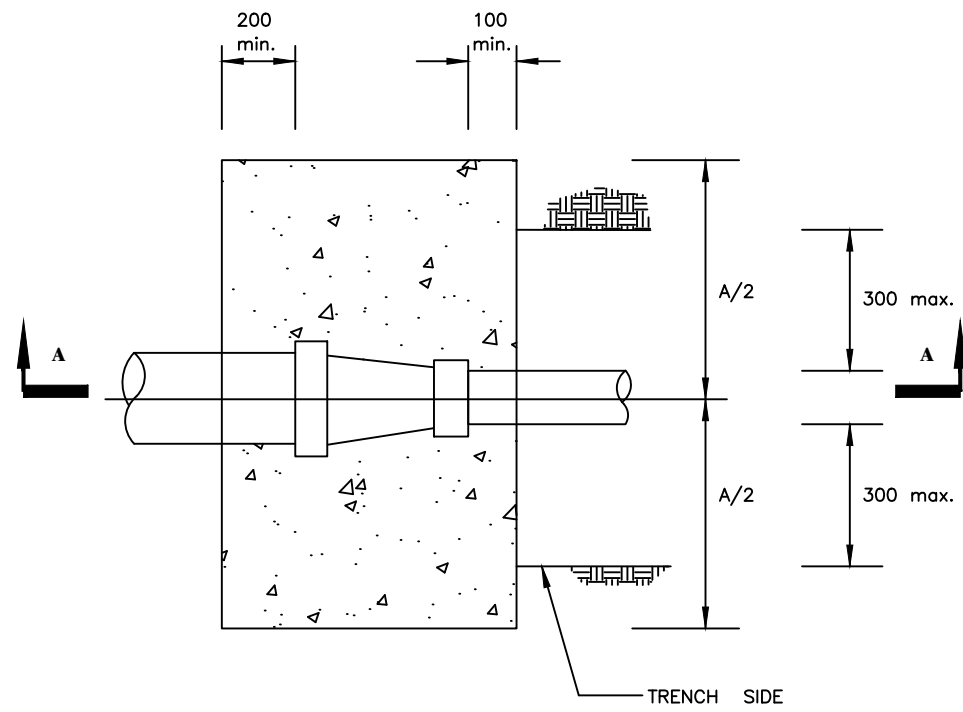
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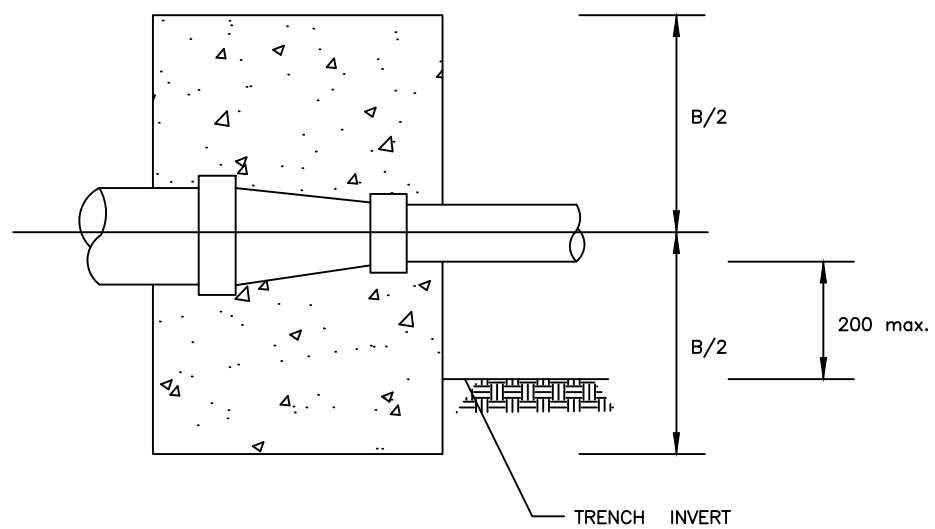
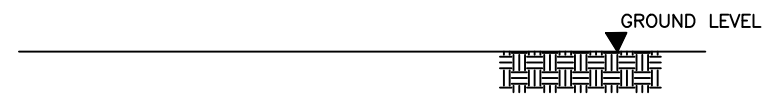
CONTRACTOR

DETAILED ENGINEERING DESIGN
 DRAWING TITLE
MARKER POSTS

SCALE	As Shown	DRAWING No.	SD117
SURVEYED		DESIGNED	Otwane Dan.
DRAWN	Joshua Nyarwanda	CHECKED	Rodney Barugahare
DATE	OCT 2021	APPROVED	Rodney Barugahare.



PLAN



SECTION A-A

GROUND CONDITION			DRY	SUBMERGED
TEST PRESSURE (BAR)			15	15
80 - 50	A		850	850
	B		650	650
100 - 50	A		1020	1020
	B		680	680
150 - 100	A		1300	1300
	B		700	1000
200 - 100	A		1700	1900
	B		700	1000
200 - 150	A		1350	1350
	B		750	950
250 - 100	A		2150	2250
	B		750	1250
250 - 150	A		1950	1950
	B		750	1250
250 - 200	A		1400	1400
	B		800	1200
300 - 200	A		2050	2050
	B		1000	1600
300 - 250	A		1450	1450
	B		850	1350
350 - 300	A		1250	1650
	B		1000	1200
500 - 400	A		2000	2300
	B		1400	1800

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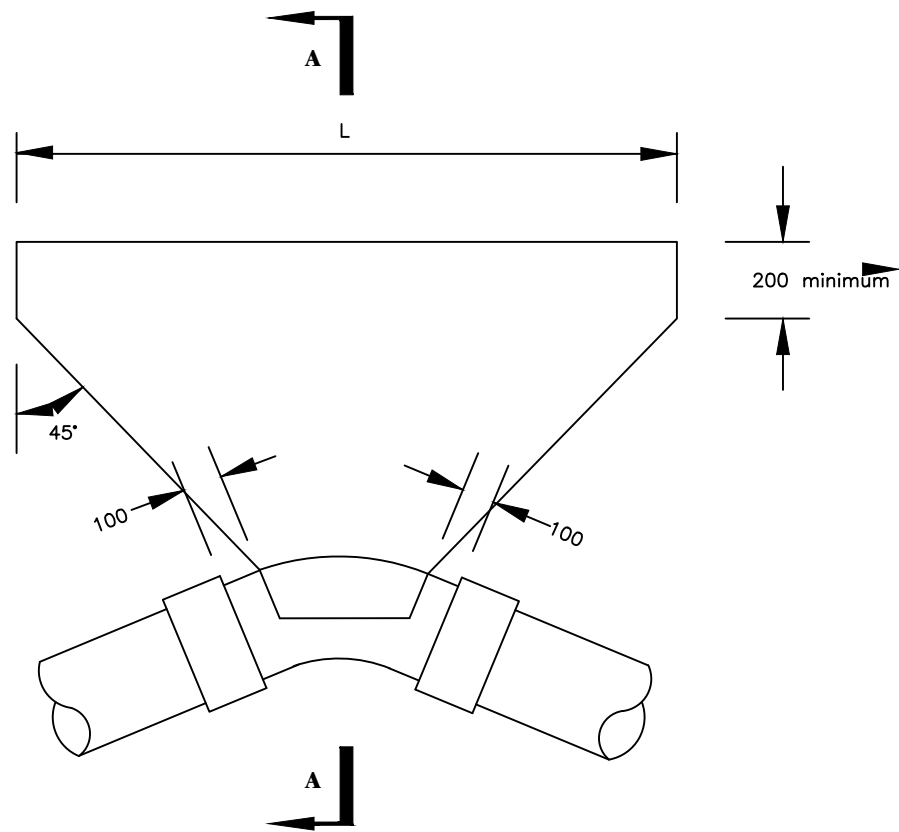
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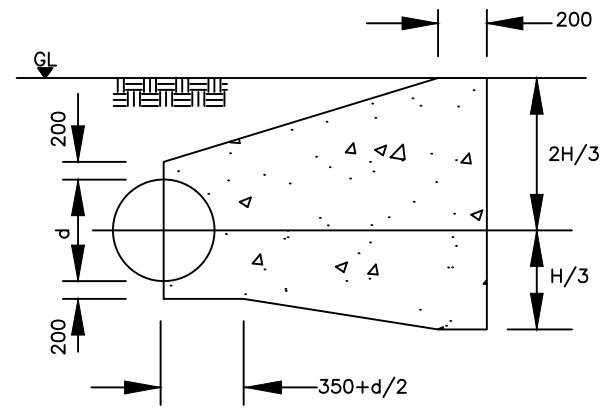
CONTRACTOR

DETAILED ENGINEERING DESIGN
 DRAWING TITLE
ANCHOR BLOCKS FOR TAPERS

SCALE As Shown DRAWING No. SD118A
 SURVEYED DESIGNED Otwane Dan.
 DRAWN Joshua Nyarwanda CHECKED Rodney Barugahare
 DATE OCT 2021 APPROVED Rodney Barugahare.



PLAN



SECTION A-A

Ground Condition		DRY				
Test Pressure (Bar)		15				
Bend Angle		11¼°	22½°	45°	90°	
PIPE DIAMETER (mm)	80	H	SEE SD 118C			
		L				
	80 < d < 150	H				
		L				
	150 < d < 300	H				
		L				
	300 < d < 400	H	1600	1600		
		L	2450	4530		
	450	H	1650	1650		
		L	2900	5330		
	500	H	1000	1350	1800	1800
		L	1250	1950	3050	5650

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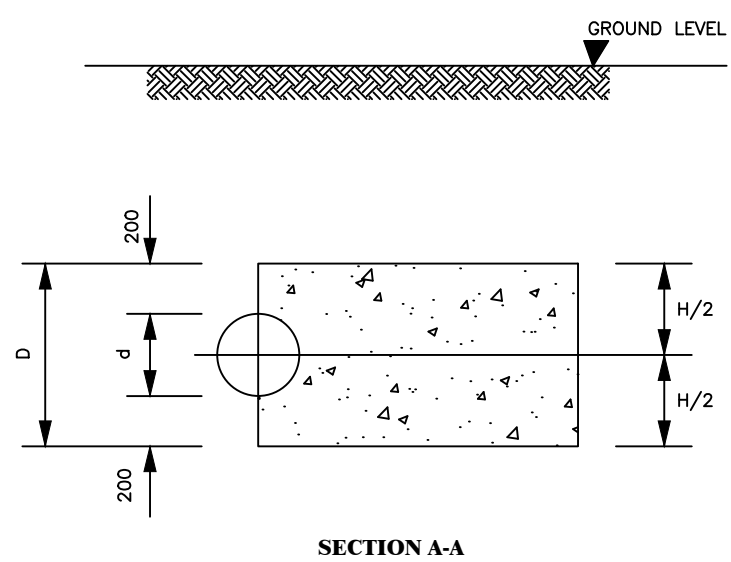
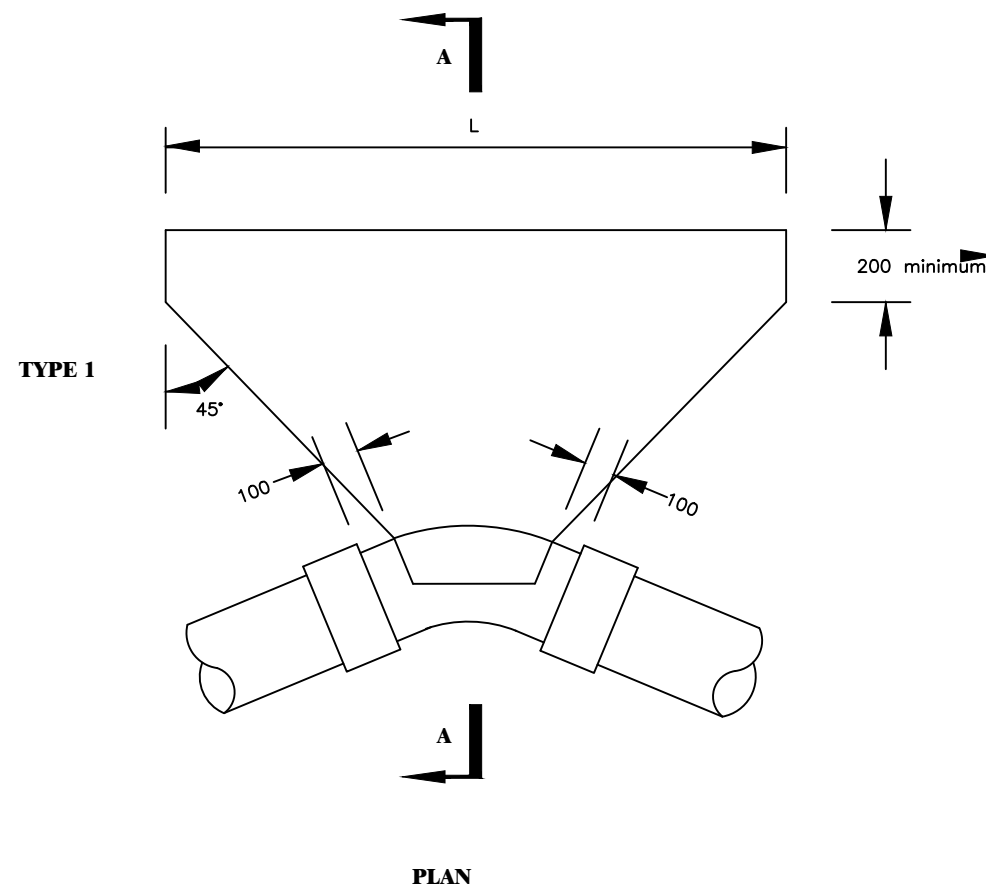
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CONTRACTOR

DETAILED ENGINEERING DESIGN
 DRAWING TITLE
ANCHOR BLOCKS FOR BENDS - 1

SCALE As Shown DRAWING No. SD118B
 SURVEYED DESIGNED Otwane Dan.
 DRAWN Joshua Nyarwanda CHECKED Rodney Barugahare
 DATE OCT 2021 APPROVED Rodney Barugahare.



PLAN

SECTION A-A

GROUND CONDITION		DRY				
TEST PRESSURE(Bar)		15				
BEND ANGLE		11¼°	22½°	45°	90°	
PIPE DIAMETER (mm)	80	H	480	460	480	460
		L	200	300	350	700
	80 < d < 150	H	550	550	550	550
		L	300	750	900	1700
	150 < d < 300	H	700	700	700	
		L	650	1250	2500	
300 < d < 400	H	800	800			
	L	900	1800			
450	H	900	900			
	L	2500	5000			
500		SEE SD 118A				

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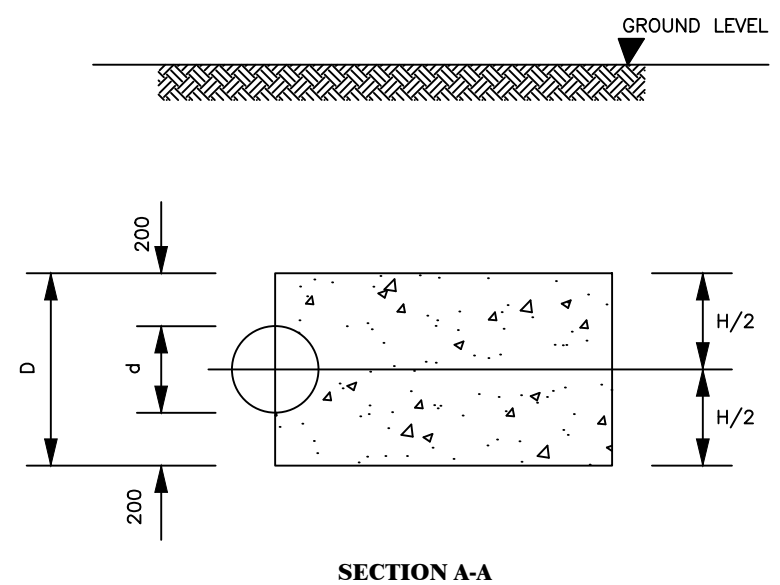
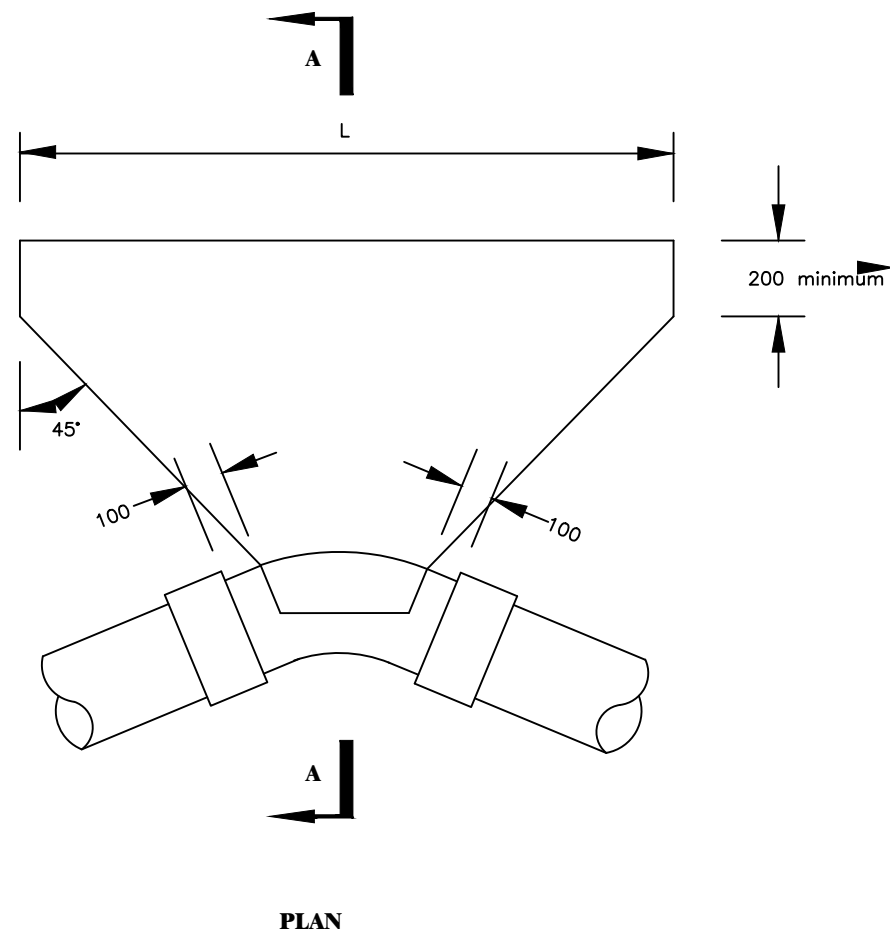
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CONTRACTOR

DETAILED ENGINEERING DESIGN
 DRAWING TITLE
ANCHOR BLOCKS FOR BENDS - 2

SCALE As Shown DRAWING No. SD118C
 SURVEYED DESIGNED Otwane Dan.
 DRAWN Joshua Nyarwanda CHECKED Rodney Barugahare
 DATE OCT 2021 APPROVED Rodney Barugahare.



NOTE:
Two layers of water proof paper to be placed between concrete fitting

PLAN

SECTION A-A

GROUND CONDITION			SUBMERGED			
TEST PRESSURE (Bar)			15			
BEND ANGLE			11¼°	22½°	45°	90°
PIPE DIAMETER (mm)	80	H	450	480	480	480
		L	250	300	600	1100
	80 < d < 150	H	550	550	550	
		L	400	750	1500	
	150 < d < 300	H	700	700		
		L	1050	2050		
300 < d < 400	H	800	800			
	L	1500	1500			
450	H	900				
	L	4200				
500	H					
	L				SEE SD 118E	

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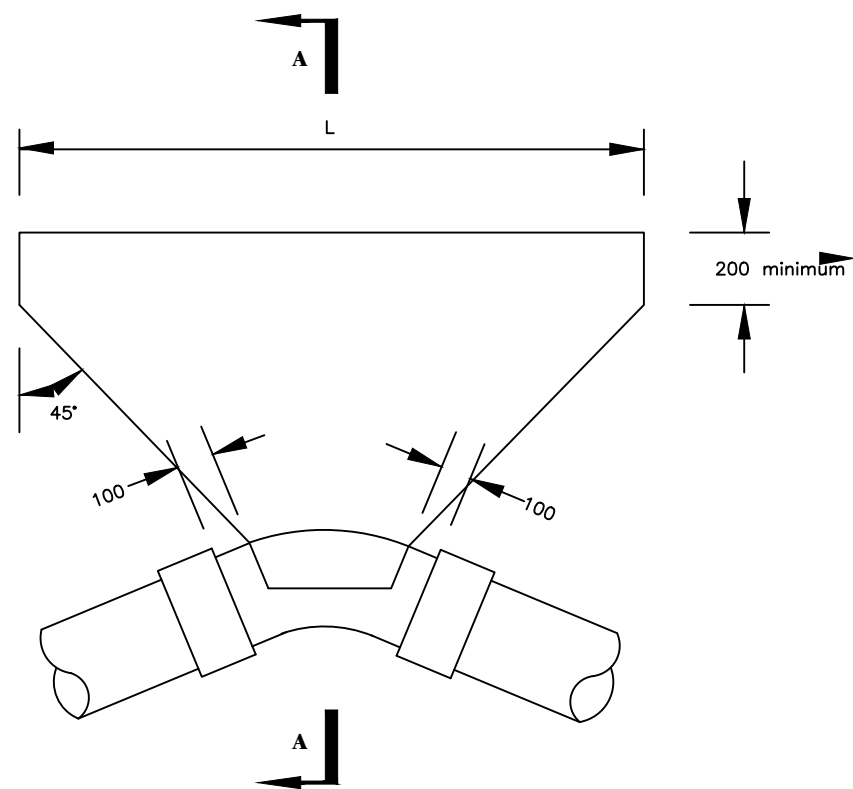
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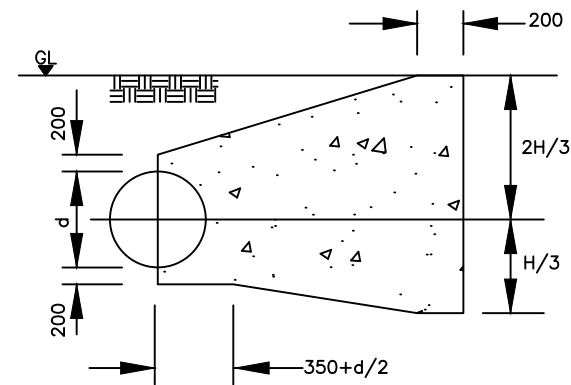
CONTRACTOR

DETAILED ENGINEERING DESIGN
 DRAWING TITLE
ANCHOR BLOCKS FOR BENDS - 3

SCALE As Shown DRAWING No. SD118D
 SURVEYED DESIGNED Otwane Dan.
 DRAWN Joshua Nyarwanda CHECKED Rodney Barugahare
 DATE OCT 2021 APPROVED Rodney Barugahare.



PLAN



SECTION A-A

Ground Condition			SUBMERGED			
Test Pressure (Bar)			15			
Bend Angle			11¼°	22½°	45°	90°
PIPE DIAMETER (mm)	80	H L	SEE SD 118D		1350	
	80 < d < 150	H			1650	
		L				
	150 < d < 300	H		1500	1500	
		L		2650	4900	
	300 < d < 400	H		1600	1700	
		L		4050	6650	
450	H	1650	1650	1800		
	L	2450	4750	6650		
500	H	1400	1800	1800	1800	
	L	1650	2850	5450	10150	

NOTE:


Two layers of water proof paper to be placed between concrete fitting

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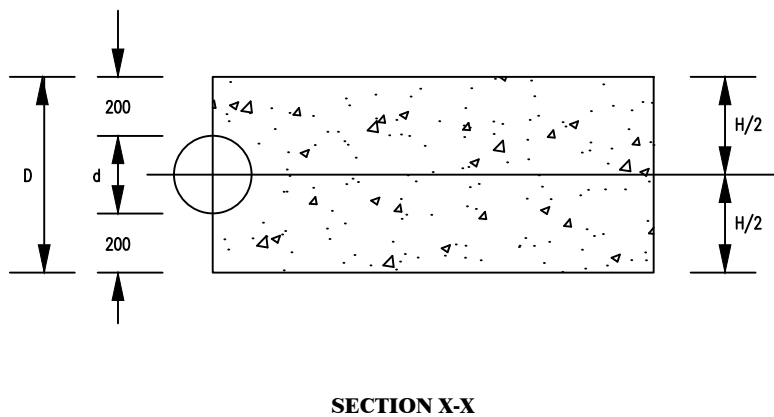
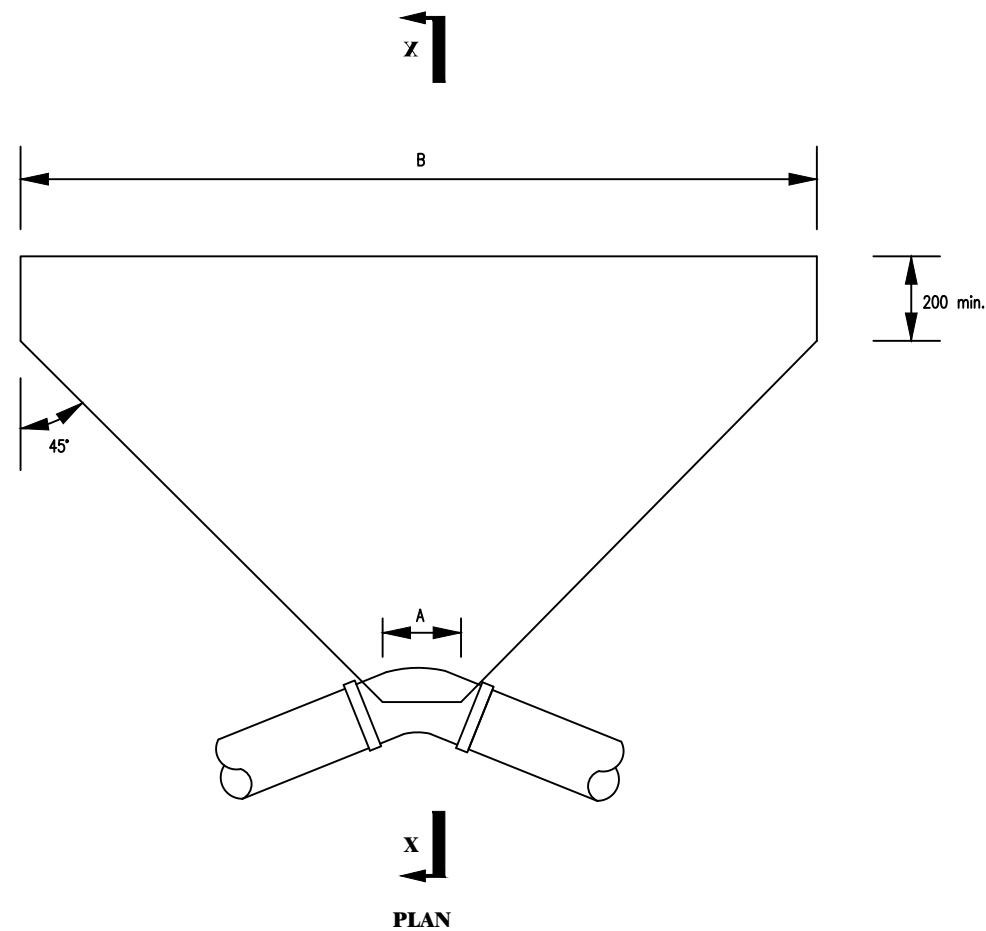
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DETAILED ENGINEERING DESIGN
DRAWING TITLE
ANCHOR BLOCKS FOR BENDS - 4

SCALE	As Shown	DRAWING No.	SD118E
SURVEYED		DESIGNED	Otwane Dan.
DRAWN	Joshua Nyarwanda	CHECKED	Rodney Barugahare
DATE	OCT 2021	APPROVED	Rodney Barugahare.



GROUND CONDITION		DRY							
TEST PRESSURE		18				24			
PIPE DIA (mm)	BEND	11¼°	22½°	45°	90°	11¼°	22½°	45°	90°
	90	H	480	480	480	480	480	480	480
	A	150	200	200	250	150	200	200	250
	B	200	300	450	800	200	300	600	1100
100-150	H	550	550	550	550	550	550	550	
	A	200	200	250	300	200	200	250	
	B	300	950	1100	2050	400	1250	1500	
200-300	H	700	700			700	700		
	A	200	250			200	250		
	B	750	1500			1000	2000		
350-400	H	800	800			800	800		
	A	250	350			250	350		
	B	1100	2200			1450	2900		
450	H	900		SEE SD 118G		900		SEE SD 118G	
	A	300				300			
	B	3000				4050			

NOTE:
Two layers of water proof paper to be placed between concrete fitting

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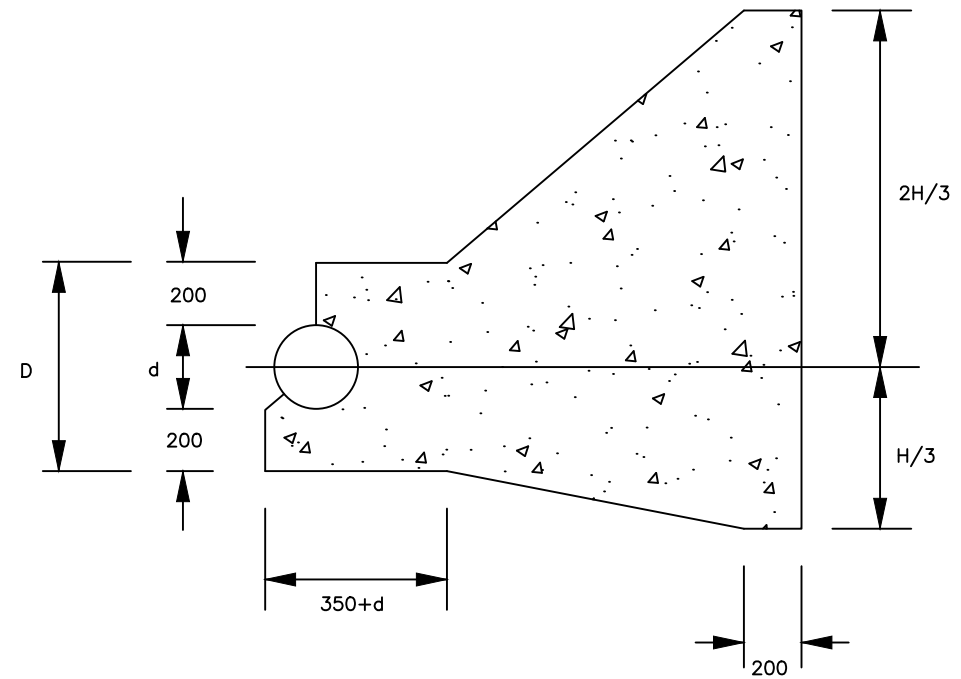
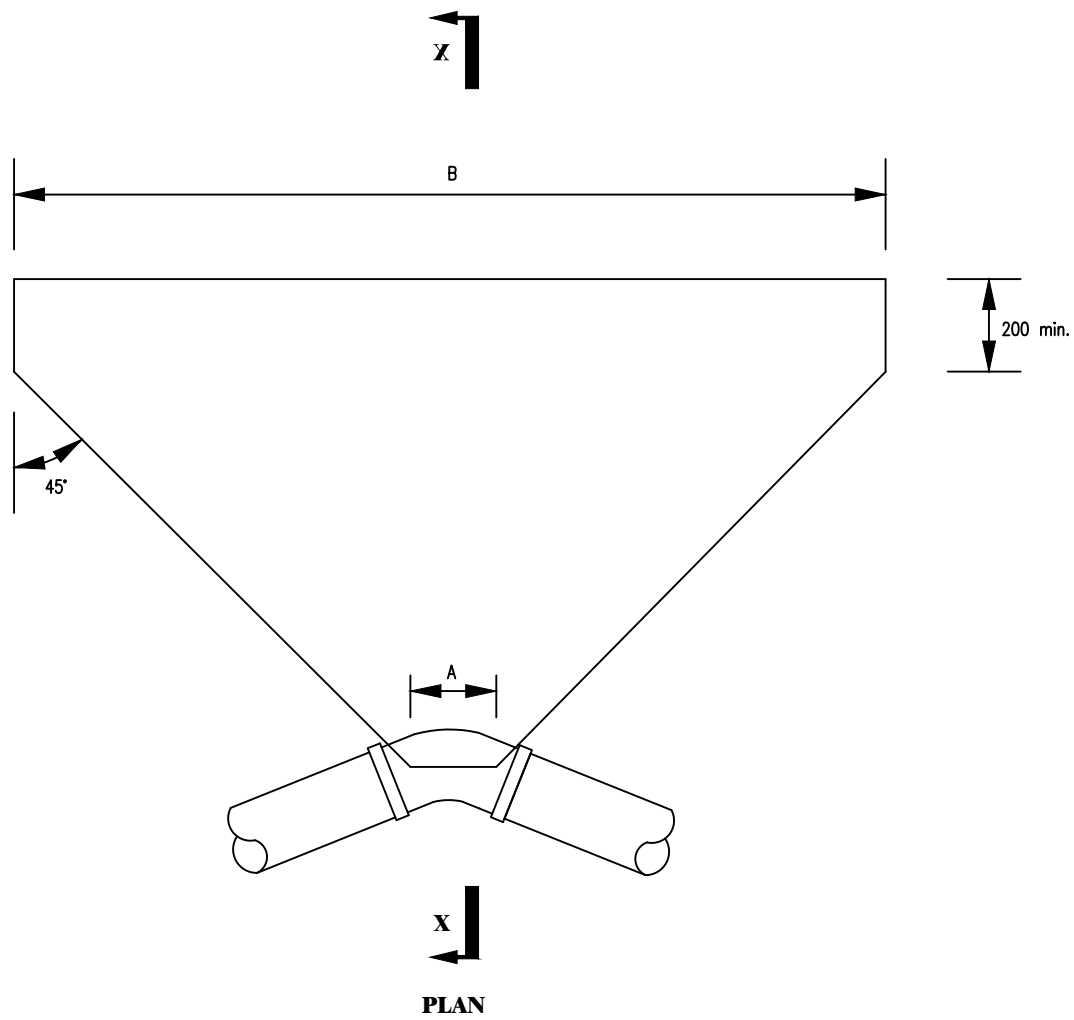
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CONTRACTOR

DETAILED ENGINEERING DESIGN
 DRAWING TITLE
ANCHOR BLOCKS FOR BENDS - 5

SCALE As Shown DRAWING No. SD118F
 SURVEYED DESIGNED Otwane Dan.
 DRAWN Joshua Nyarwanda CHECKED Rodney Barugahare
 DATE OCT 2021 APPROVED Rodney Barugahare.




SECTION X-X

Ground Condition		DRY								
Test Pressure		18				24				
Pipe Dia (mm)	Bend	11¼°	22½°	45°	90°	11¼°	22½°	45°	90°	
		100 - 150	H A B	SEE SD 118C				SEE SD 118C		
200-300	H			1500	1500			1500	1500	
	A			350	500			350	500	
350 - 400	B			1930	3560			3520	4760	
	H			1600	1600			1600	1800	
450	A			550	850			550	850	
	B			2950	5440			3920	5700	
450	H		1650	1650	1650		1650	1650	1900	
	A		400	650	1050		400	650	1050	
	B		1760	346	6400		2350	4600	6450	

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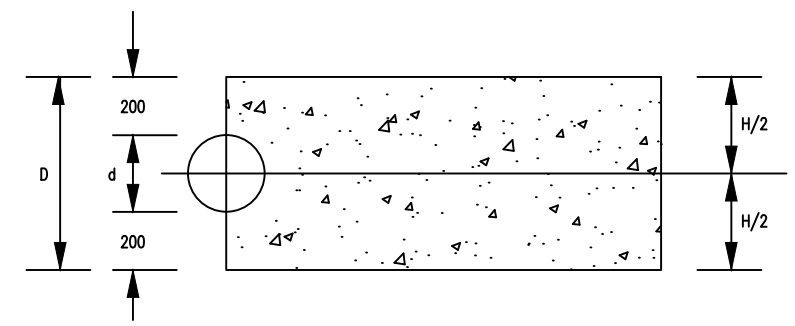
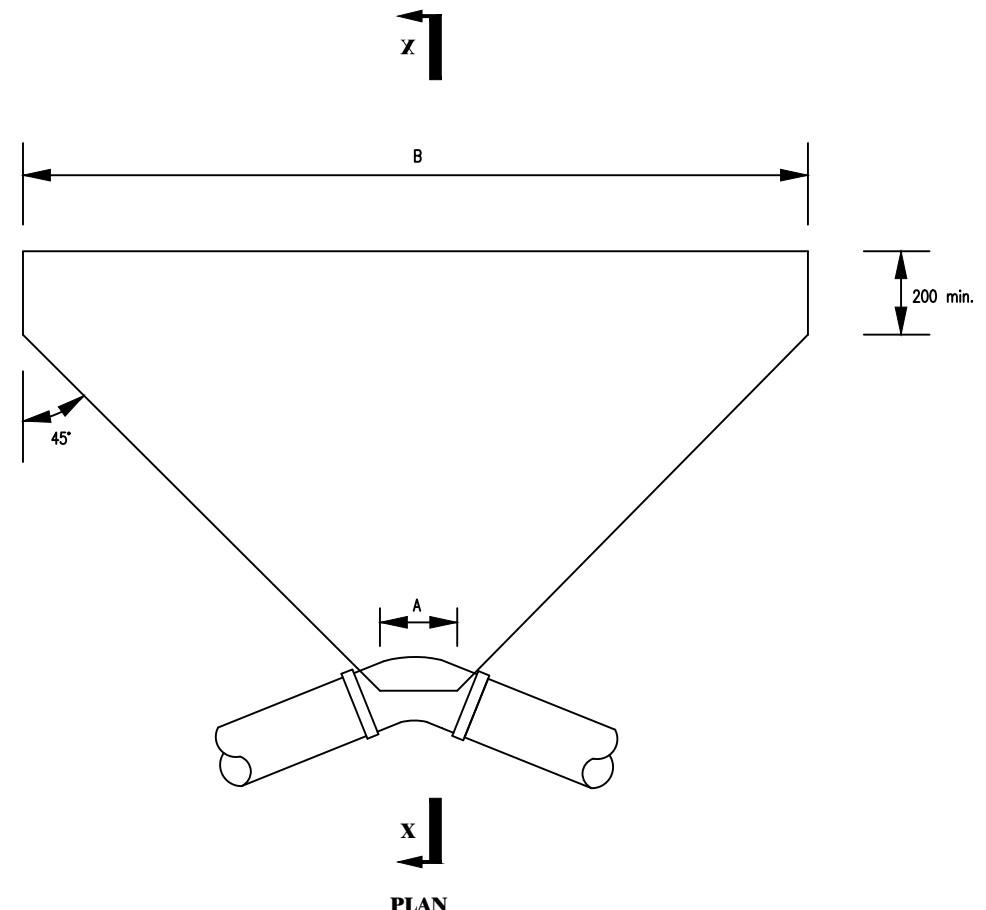
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CONTRACTOR

DETAILED ENGINEERING DESIGN
 DRAWING TITLE
ANCHOR BLOCKS FOR BENDS - 6

SCALE As Shown DRAWING No. SD118G
 SURVEYED DESIGNED Otwane Dan.
 DRAWN Joshua Nyarwanda CHECKED Rodney Barugahare
 DATE OCT 2021 APPROVED Rodney Barugahare.




SECTION X-X

GROUND CONDITION		SUBMERGED							
TEST PRESSURE (BAR)		18				24			
PIPE DIA	BEND	11¼°	22½°	45°	90°	11¼°	22½°	45°	90°
		80	H	480	480	480	480	480	480
	A	150	200	200	250	150	200	200	250
	B	250	400	700	1350	250	500	950	1750
100 – 150	H	D	D	D		D	D	D	
	A	200	200	250		200	200	250	
	B	450	950	1850		600	1250	9000	
200–300	H	D	D			D			
	A	200	250			200			
	B	1250	2520			1650			
350 – 400	H	D				D			
	A	250				250			
	B	1800		SEE SD118 I		2480		SEE SD118 I	
450	H	900							
	A	300							
	B	5000							

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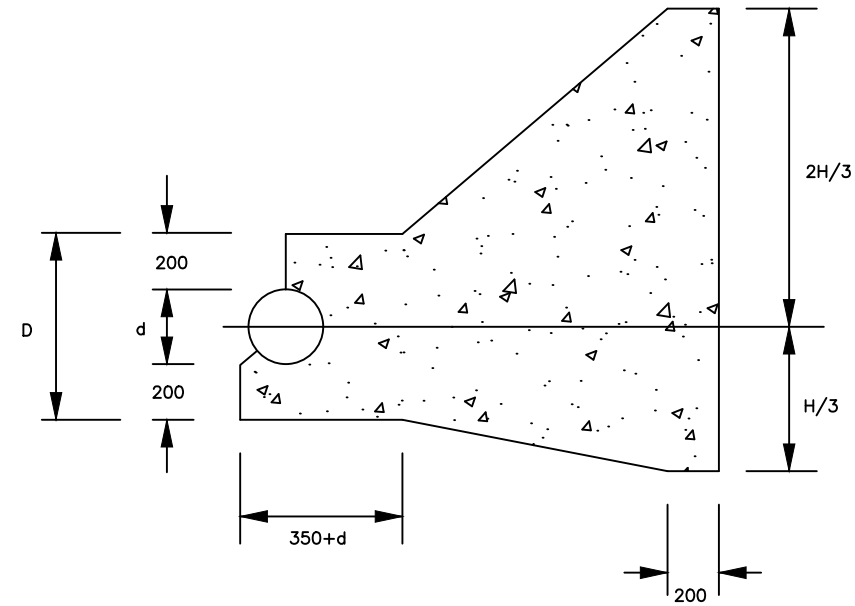
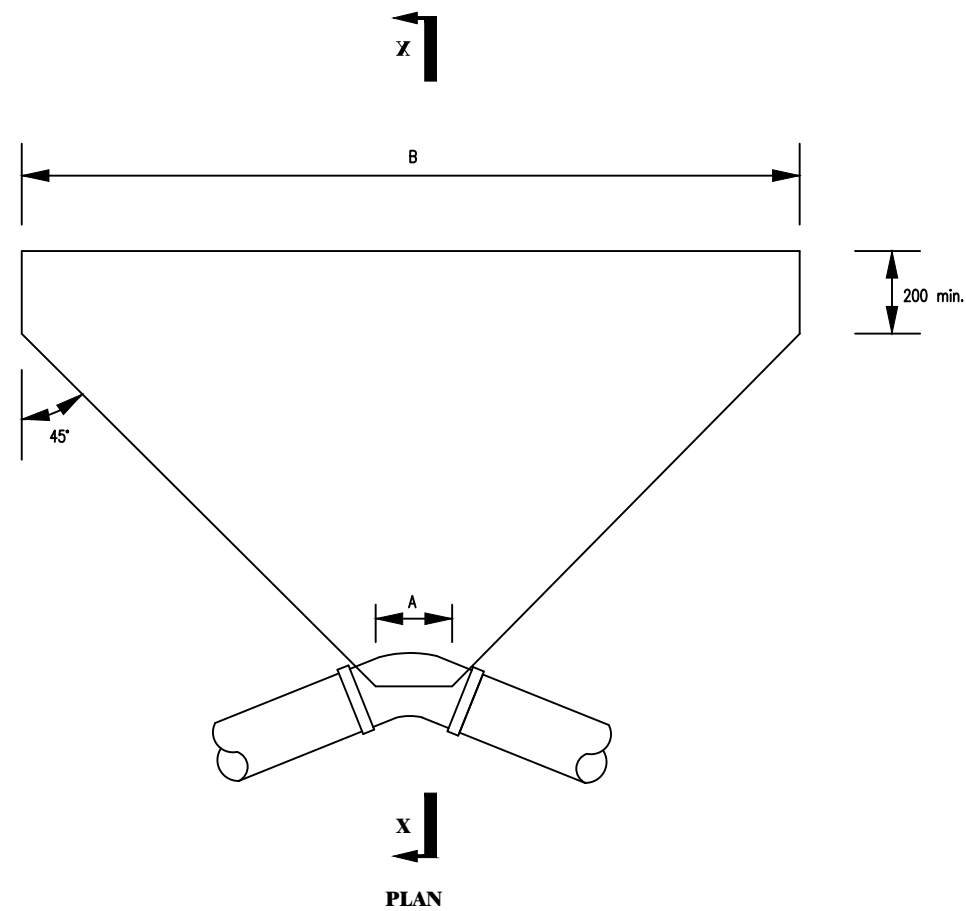
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CONTRACTOR

DETAILED ENGINEERING DESIGN
 DRAWING TITLE
ANCHOR BLOCKS FOR BENDS - 7

SCALE As Shown DRAWING No. SD118H
 SURVEYED DESIGNED Otwane Dan.
 DRAWN Joshua Nyarwanda CHECKED Rodney Barugahare
 DATE OCT 2021 APPROVED Rodney Barugahare.



SECTION X-X

Ground Condition		SUBMERGED							
Test Pressure		18				24			
Bend		11¼°	22½°	45°	90°	11¼°	22½°	45°	90°
Pipe Dia (mm)									
100 - 150	H				1350				1350
	A				300				300
	B	SEE SD 118D				2000	SEE SD 118D		
200-300	H			1500	1500			1500	1500
	A			350	500			250	350
	B			3200	5900			2150	4250
350 - 400	H		1600	1600	1800			1600	1600
	A		350	550	850			350	550
	B		2500	4850	7100			3300	6500
450	H		1650	1650	2000	1650	1650	1650	2200
	A		400	650	1050	250	400	650	1050
	B		2900	5700	7200	1950	3900	7600	7900

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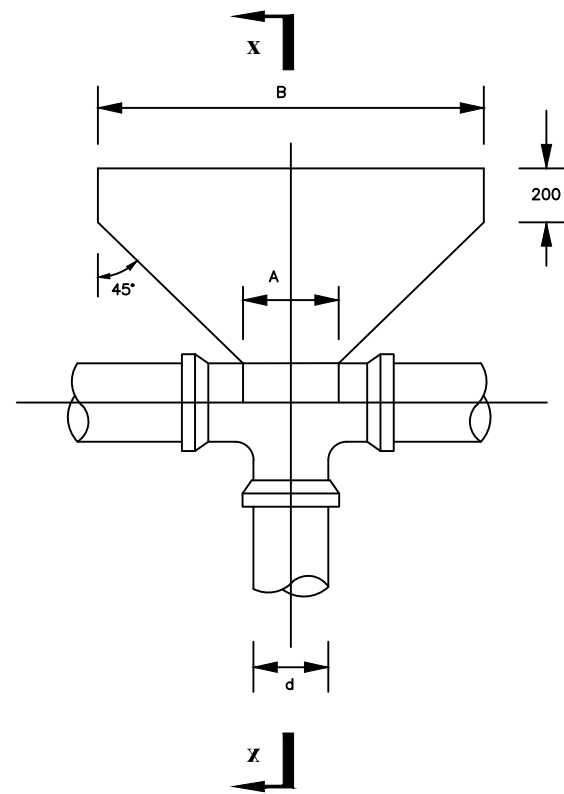
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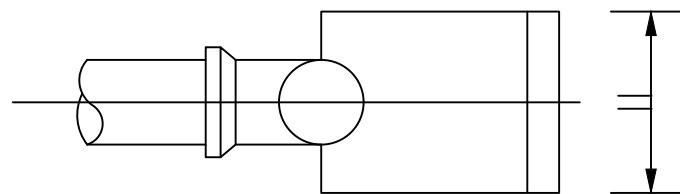
CONTRACTOR

DETAILED ENGINEERING DESIGN
 DRAWING TITLE
ANCHOR BLOCKS FOR BENDS - 8

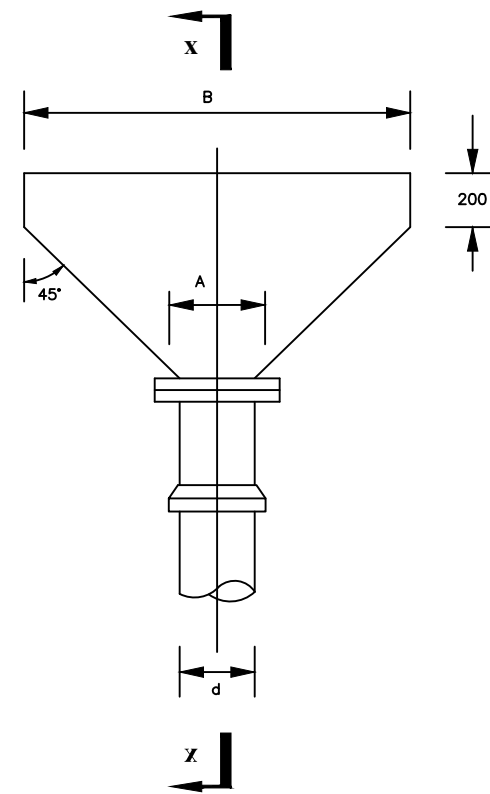
SCALE As Shown DRAWING No. SD1181
 SURVEYED DESIGNED Otwane Dan.
 DRAWN Joshua Nyarwanda CHECKED Rodney Barugahare
 DATE OCT 2021 APPROVED Rodney Barugahare.



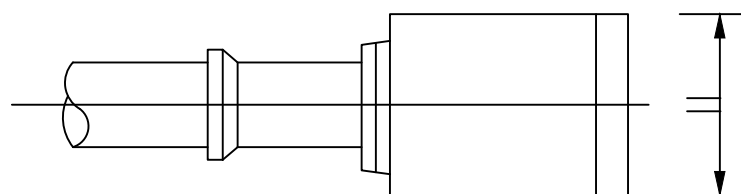
PLAN



SECTION X-X

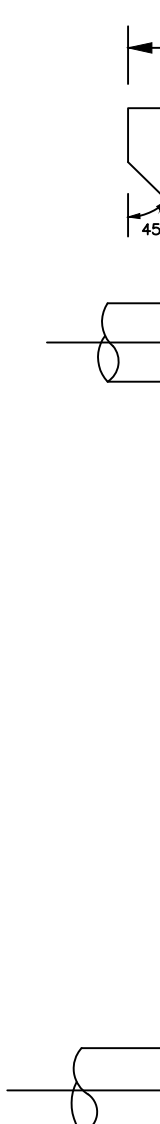


PLAN



SECTION X-X

GROUND CONDITION		DRY						
TEST PRESSURE (Bar)		12	15	18	24	30	36	
PIPE DIAMETER (mm)	80	H	480	480	480	480	480	480
		A	250	250	250	250	250	250
	B	400	500	600	800	950	1150	
	100-150	H	550	550	550	550	550	
		A	300	300	300	300	300	
B	1000	1200	1500	2000	2500			
200-300	H	550	SEE SD 118K					
	A	300						
B	1000							
350-400	H	SEE SD 118K						
	A							
B								
450	H	SEE SD 118K						
	A							
B								



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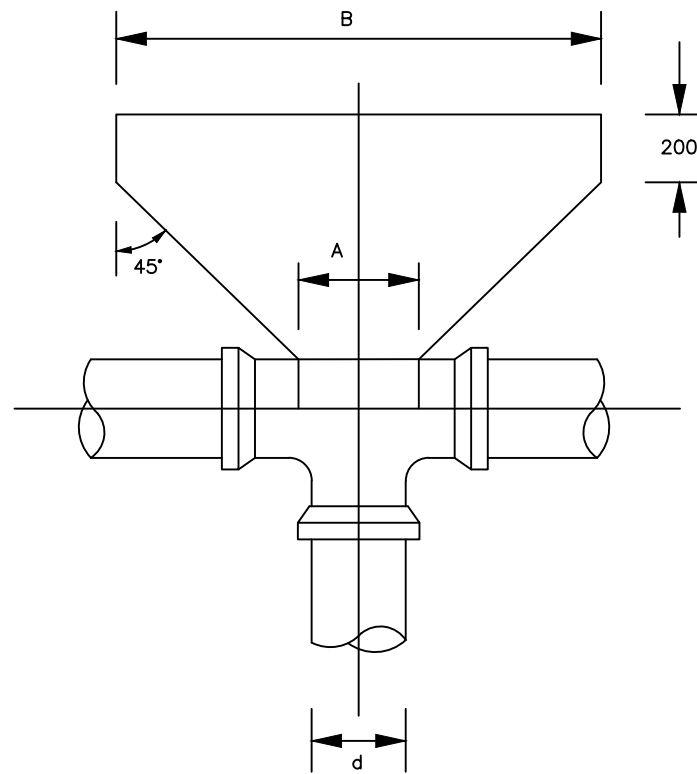
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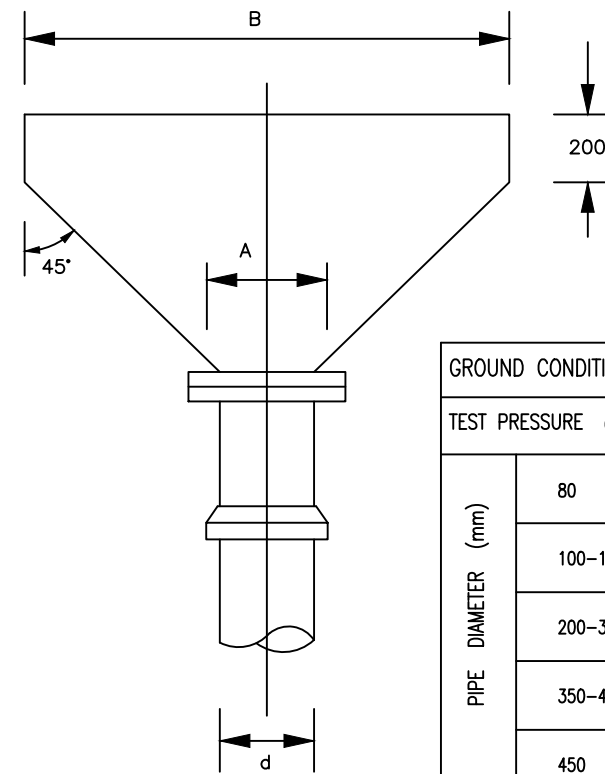
CONTRACTOR

DETAILED ENGINEERING DESIGN
 DRAWING TITLE
ANCHOR BLOCKS FOR TEES AND DEAD ENDS - 1

SCALE As Shown DRAWING No. SD118J
 SURVEYED DESIGNED Otwane Dan.
 DRAWN Joshua Nyarwanda CHECKED Rodney Barugahare
 DATE OCT 2021 APPROVED Rodney Barugahare.

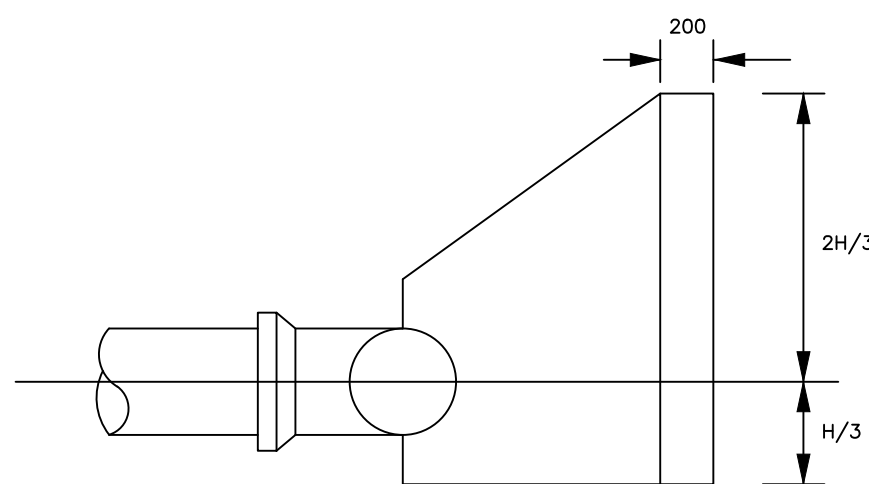


PLAN

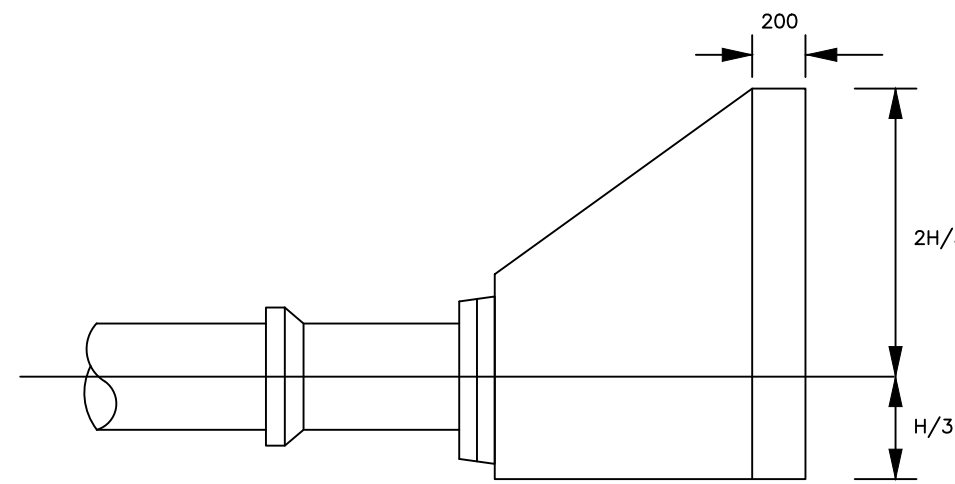


PLAN

GROUND CONDITION		DRY					
TEST PRESSURE (Bar)		12	15	18	24	30	36
PIPE DIAMETER (mm)	80	SEE SD 118E					
	100-150	1500 350 1100					
	200-300	1450 450 2200		1500 450 2450		1650 450 2800	
	350-400	1600 600 2550	1750 600 2700	1750 600 3250	1750 600 4300	1750 600 5000	1750 600 6000
	450	1750 750 2700	1800 750 3150	1800 750 3800	1800 750 5050	1800 750 6100	1800 750 7300



SECTION X-X



SECTION X-X

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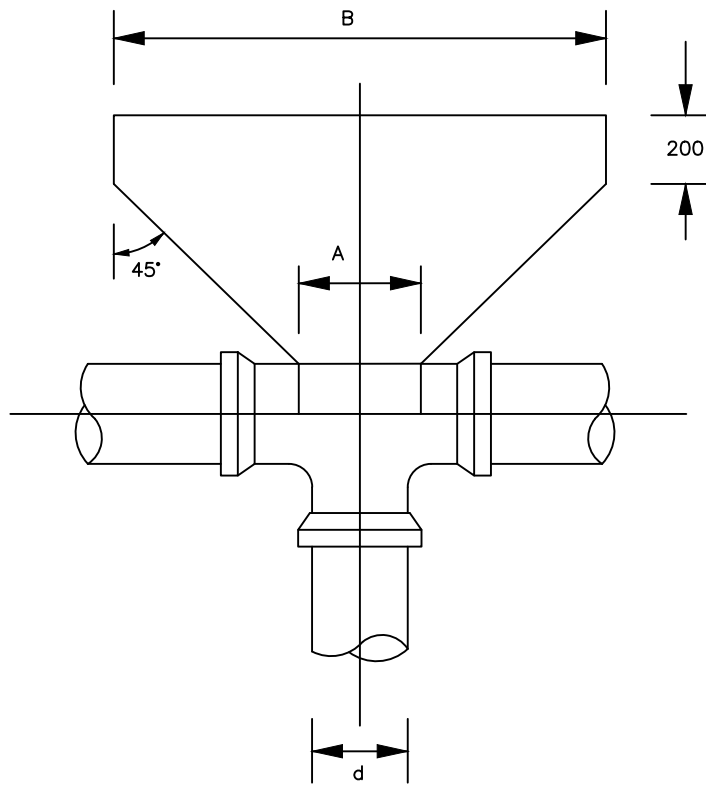
CONTRACTOR

DETAILED ENGINEERING DESIGN

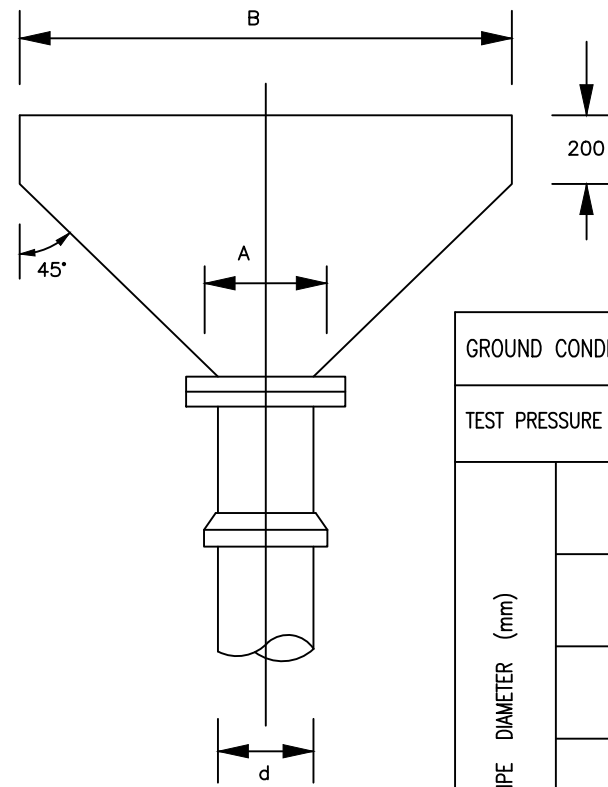
DRAWING TITLE

ANCHOR BLOCKS FOR TEES AND DEAD ENDS - 2

SCALE	As Shown	DRAWING No.	SD118K
SURVEYED		DESIGNED	Otwane Dan.
DRAWN	Joshua Nyarwanda	CHECKED	Rodney Barugahare
DATE	OCT 2021	APPROVED	Rodney Barugahare.

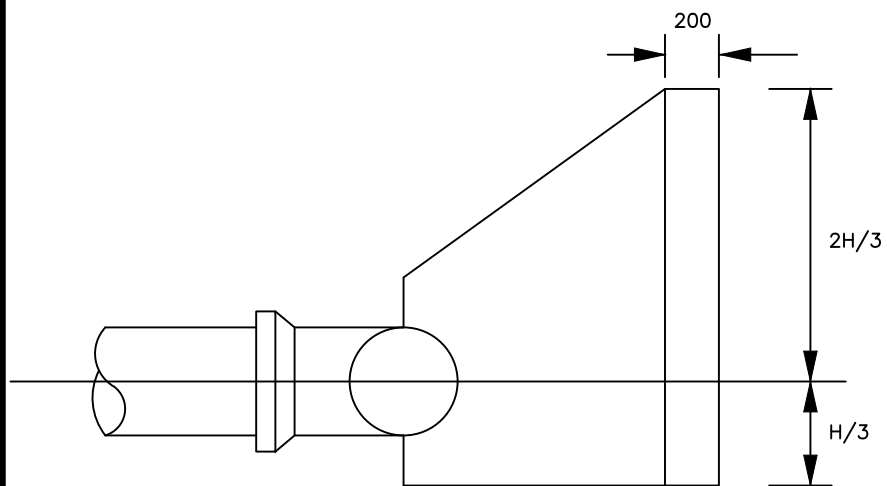


PLAN

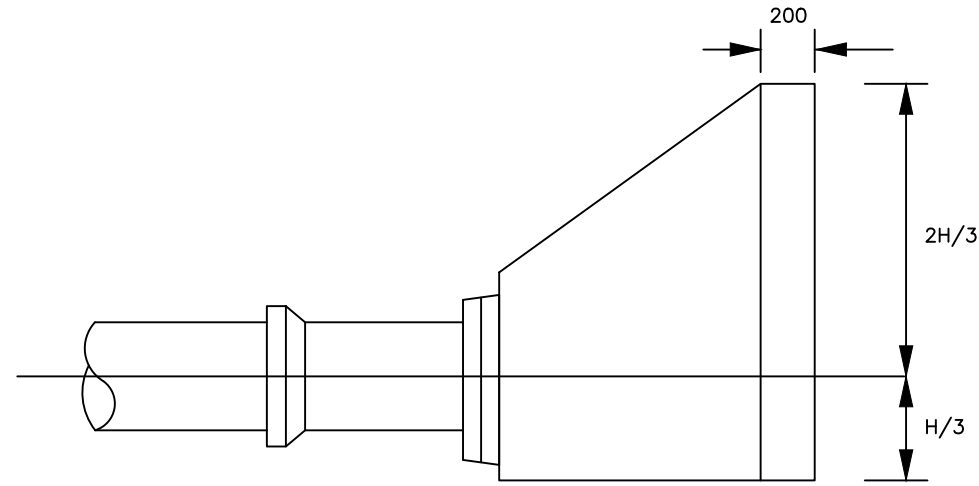


PLAN

GROUND CONDITION			SUBMERGED					
TEST PRESSURE (Bar)			12	15	18	24	30	36
PIPE DIAMETER (mm)	80	H	480	480	480	480		
		A	250	250	250	250		
		B	700	800	1000	1300		
	100-150	H	550	550	550	550		
		A	300	300	300	300		
		B	1600	2000	2400	3200		
	200-300	H	1650	1650	1500	1650		
		A	450	450	450	450		
		B	2350	2900	3450	4650		
	350-400	H	1750	1750	1750	1750		
		A	600	600	600	600		
		B	3550	4450	5300	7900		
450	H	1800	1800	1800	1800			
	A	750	750	750	750			
	B	4200	5250	6300	8400			




SECTION X-X



SECTION X-X

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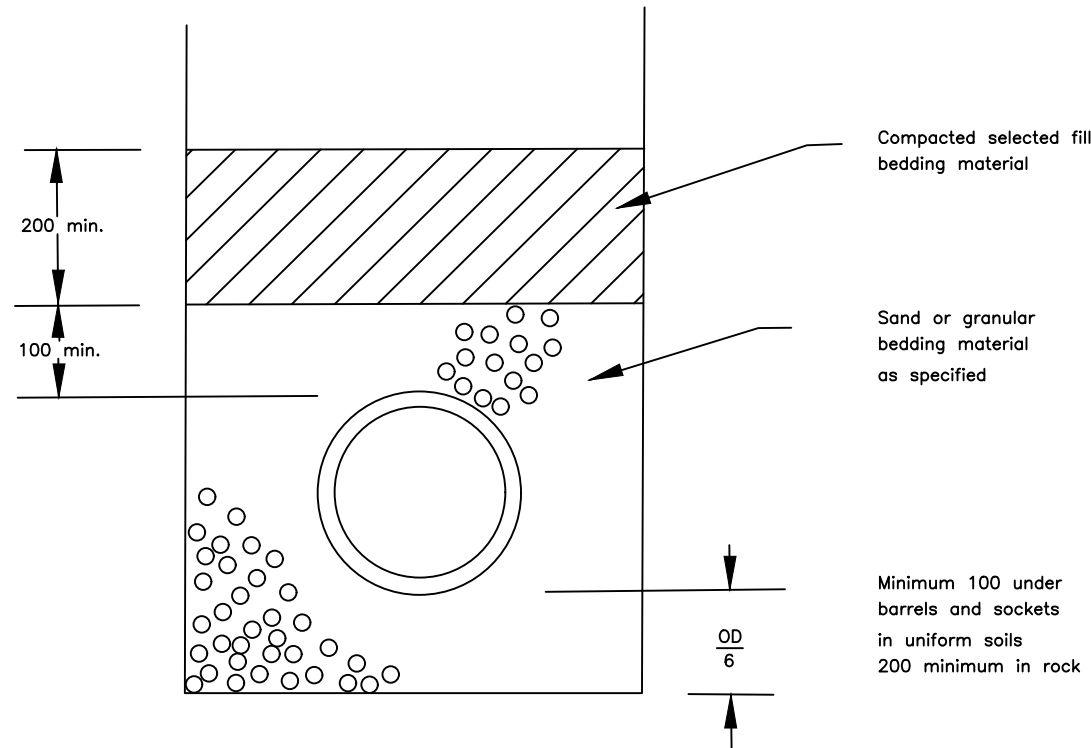
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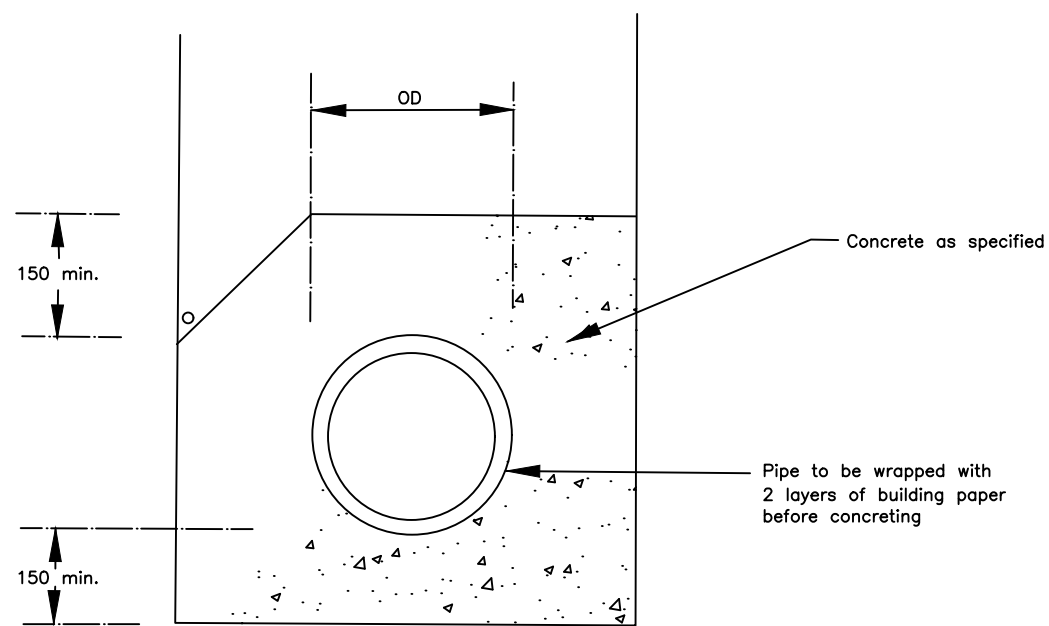
CONTRACTOR

DETAILED ENGINEERING DESIGN
 DRAWING TITLE
ANCHOR BLOCKS FOR TEES AND DEAD ENDS - 3

SCALE As Shown DRAWING No. SD118L
 SURVEYED DESIGNED Otwane Dan.
 DRAWN Joshua Nyarwanda CHECKED Rodney Barugahare
 DATE OCT 2021 APPROVED Rodney Barugahare.



CLASS B BED



CONCRETE SURROUND

Notes

1. OD = Outside diameter pipe
2. o Indicates cable position where cable is to be laid in pipe trench
3. Minimum trench width for uPVC pipes = OD + 300 (to a minimum width of 600)
4. Minimum trench width for Ductile Iron pipes = OD + 600

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SYSTEMS AND SANITATION FACILITIES IN REFUGEE
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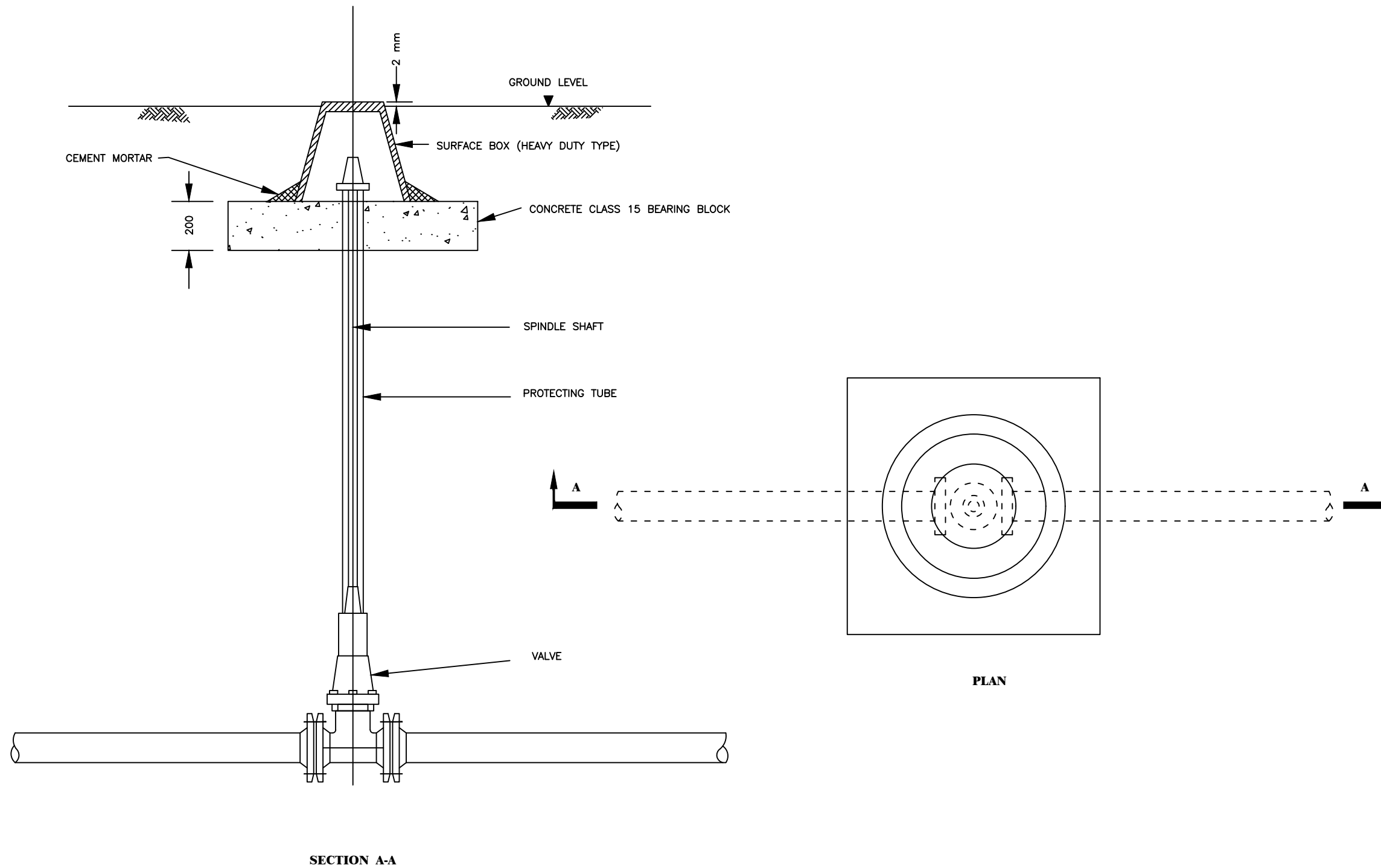
DETAILED ENGINEERING DESIGN

DRAWING TITLE

PIPE BEDDING

SCALE	As Shown	DRAWING No.	SD121
SURVEYED		DESIGNED	Otwane Dan.
DRAWN	Joshua Nyarwanda	CHECKED	Rodney Barugahare
DATE	OCT 2021	APPROVED	Rodney Barugahare.

TYPICAL GATE VALVE, EXTENSION SPINDLE, PROTECTION TUBE
AND SURFACE BOX





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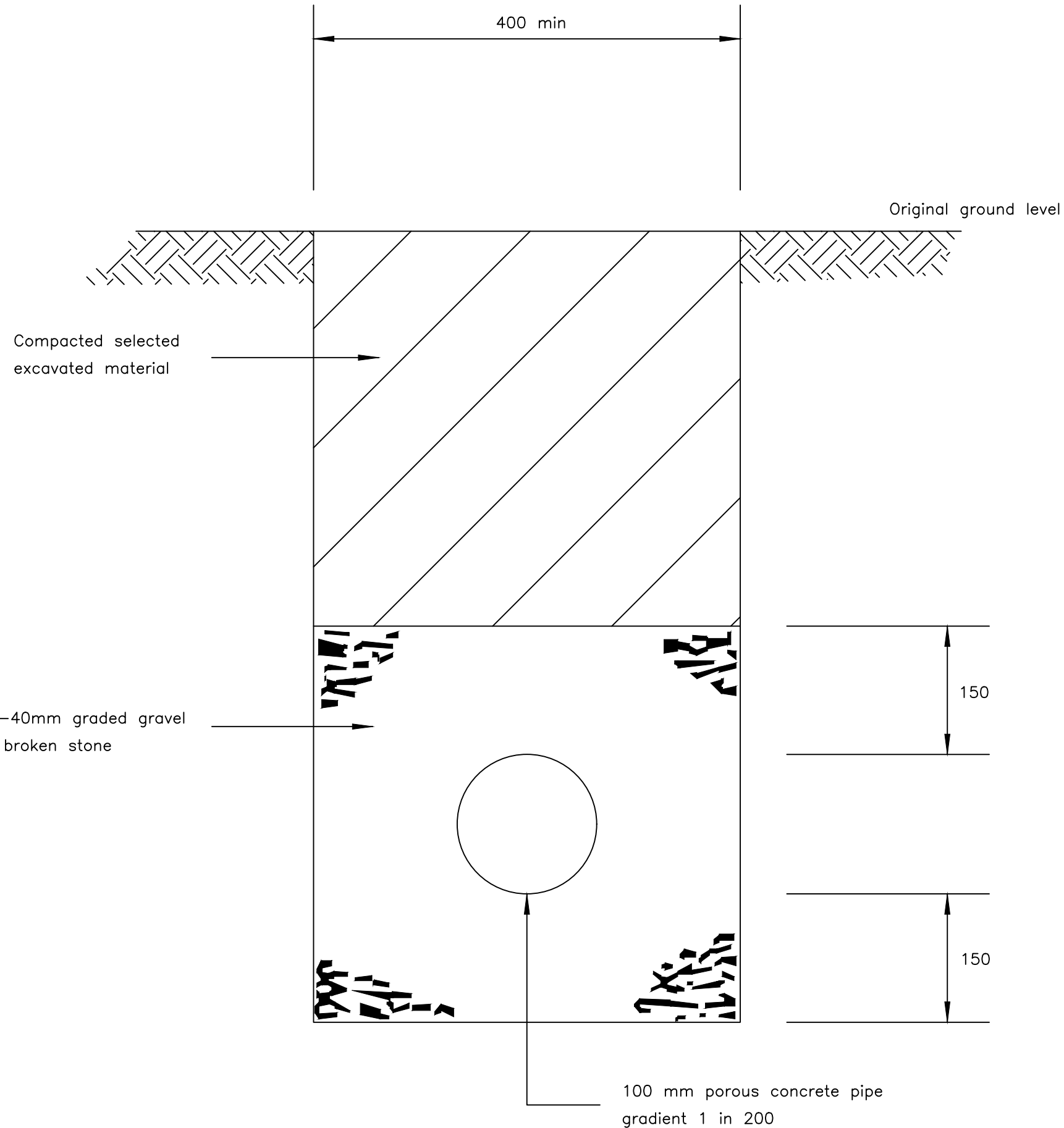
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CONTRACTOR

DETAILED ENGINEERING DESIGN
 DRAWING TITLE
SURFACE BOX AND FIELD DRAIN

SCALE	As Shown	DRAWING No.	SD122
SURVEYED		DESIGNED	Otwane Dan.
DRAWN	Joshua Nyarwanda	CHECKED	Rodney Barugahare
DATE	OCT 2021	APPROVED	Rodney Barugahare.





NOTE
 1. Open jointed non porous pipes may be used provided joints are at a maximum of 500 mm centres.

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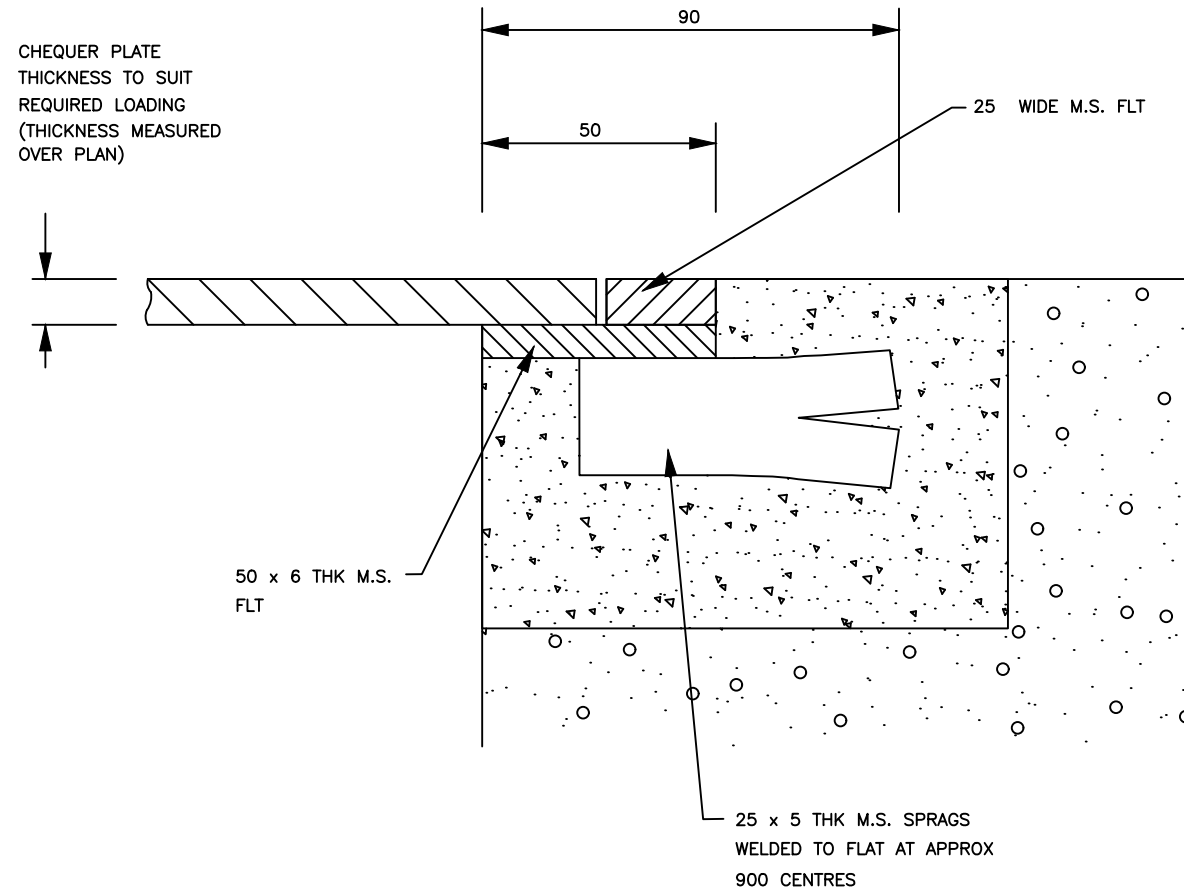
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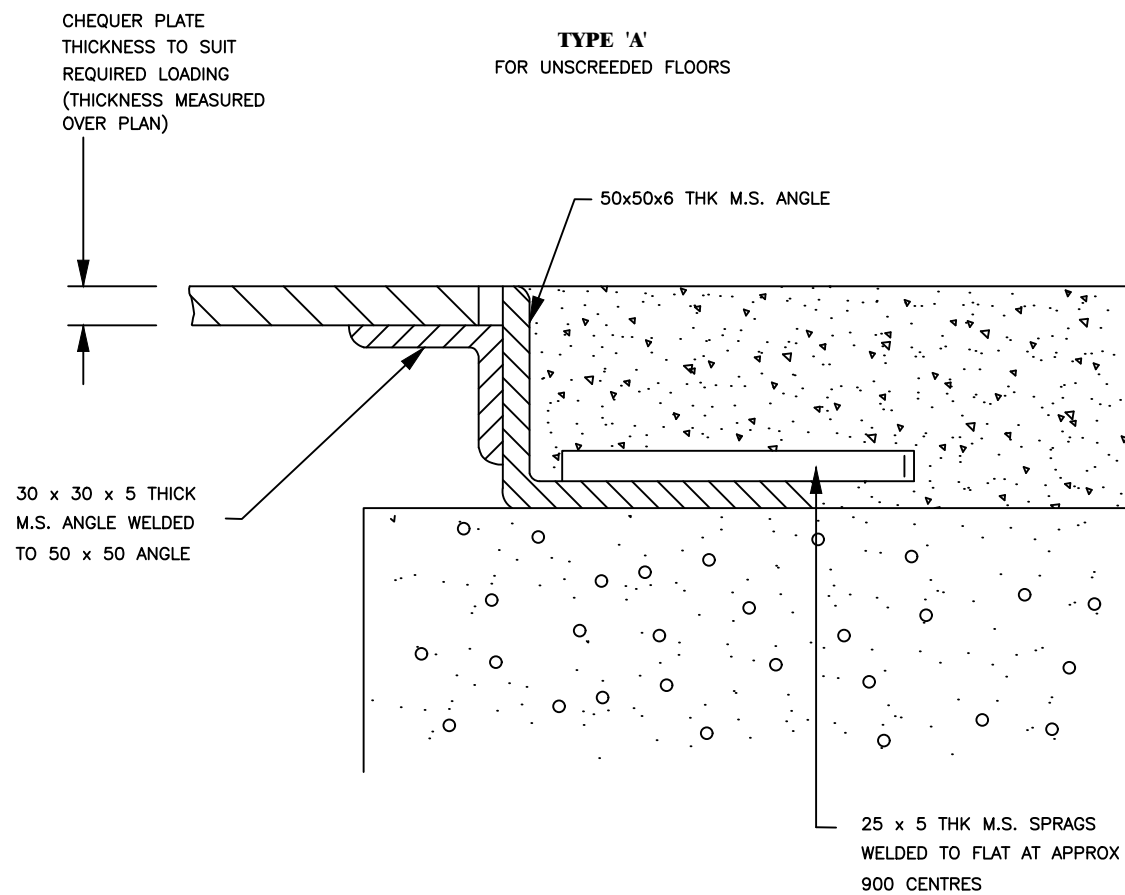
CONTRACTOR

DETAILED ENGINEERING DESIGN
 DRAWING TITLE
FIELD DRAIN

SCALE	As Shown	DRAWING No.	SD124
SURVEYED		DESIGNED	Otwane Dan.
DRAWN	Joshua Nyarwanda	CHECKED	Rodney Barugahare
DATE	OCT 2021	APPROVED	Rodney Barugahare.



TYPE 'A'
FOR UNSCREENED FLOORS



TYPE 'B'
FOR UNSCREENED FLOORS

NOTE

CONSTRUCT TO SUIT THICKNESS OF FLOOR PLATES AND
SCREED SPECIFIED

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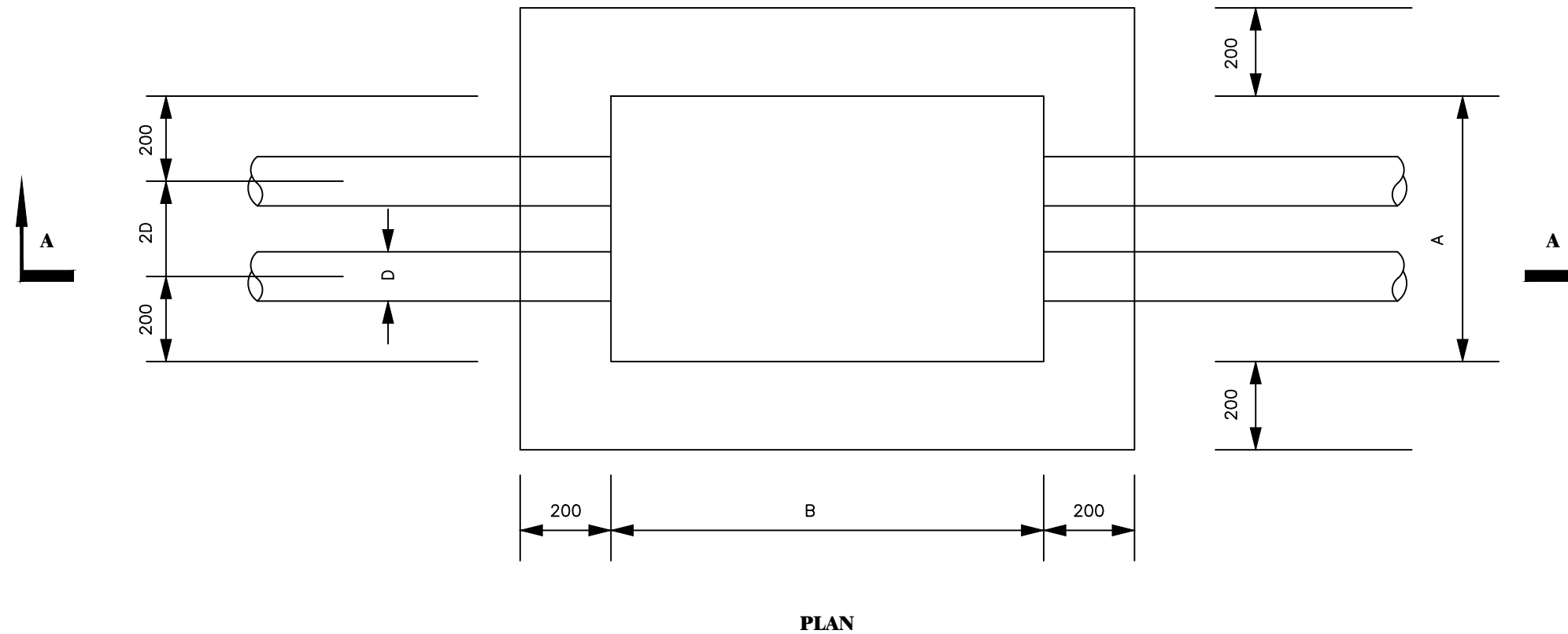
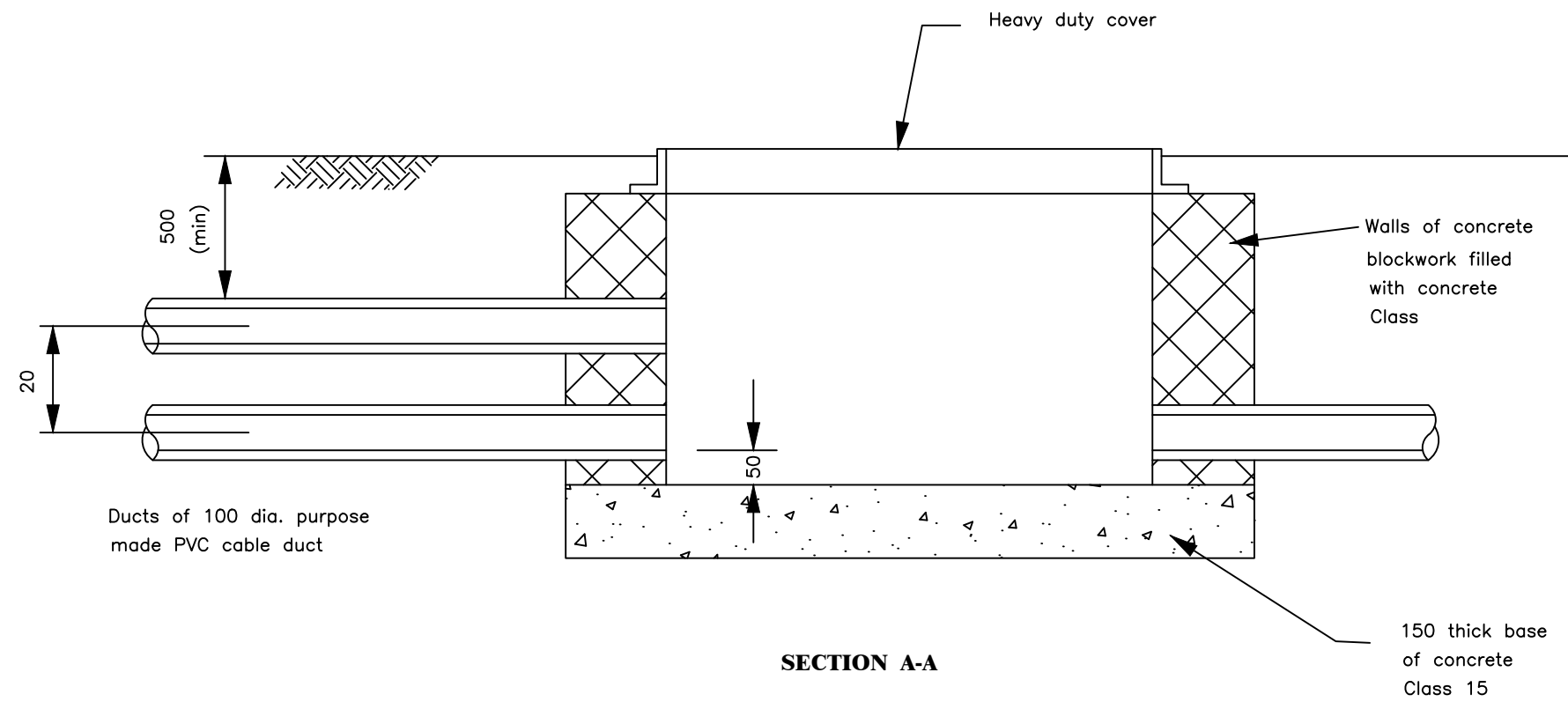
CONTRACTOR

DETAILED ENGINEERING DESIGN

DRAWING TITLE

DUCT COVERS

SCALE	As Shown	DRAWING No.	SD126
SURVEYED		DESIGNED	Otwane Dan.
DRAWN	Joshua Nyarwanda	CHECKED	Rodney Barugahare
DATE	OCT 2021	APPROVED	Rodney Barugahare.



	A	B
1 Way 50 mm. dia. duct	400	500
1 Way 100 mm. dia. duct	400	600
4 & 2 Way 100 mm. dia. ducts	600	900
6 & 3 Way 100 mm. dia. ducts	800	1000

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DETAILED ENGINEERING DESIGN

DRAWING TITLE

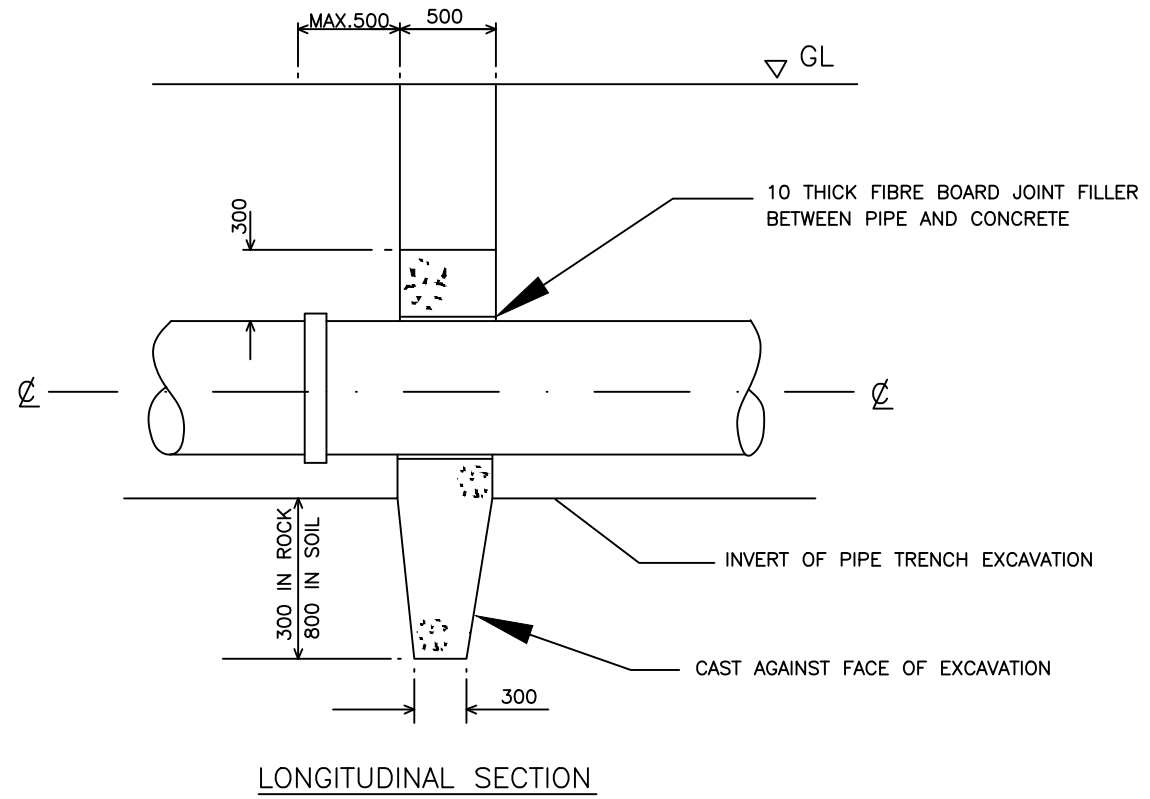
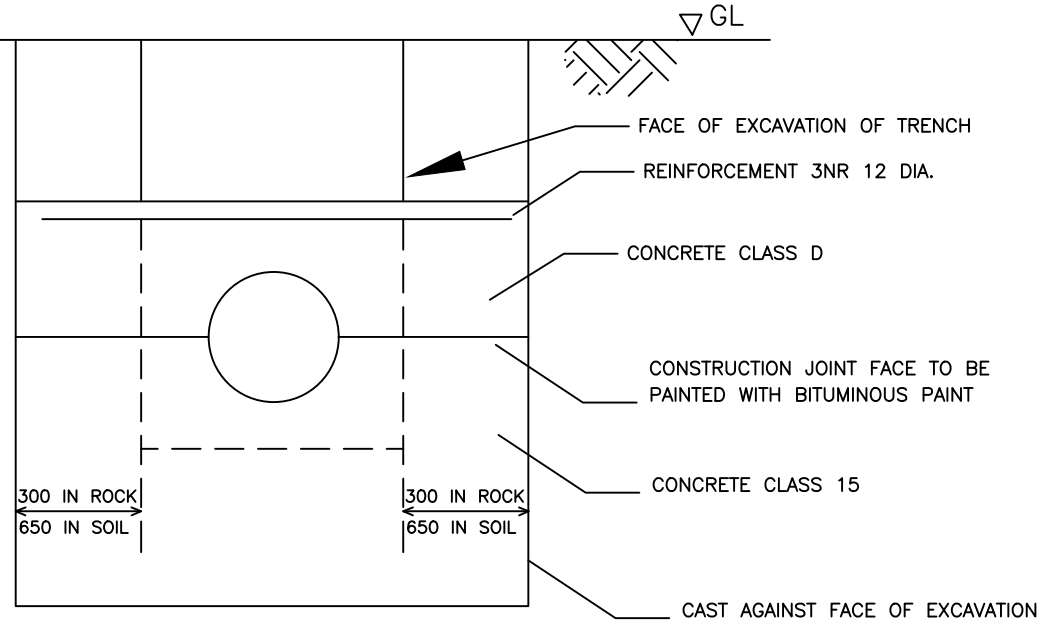
DRAW PITS

SCALE As Shown DRAWING No. SD130

SURVEYED DESIGNED Otwane Dan.

DRAWN Joshua Nyarwanda CHECKED Rodney Barugahare

DATE OCT 2021 APPROVED Rodney Barugahare.



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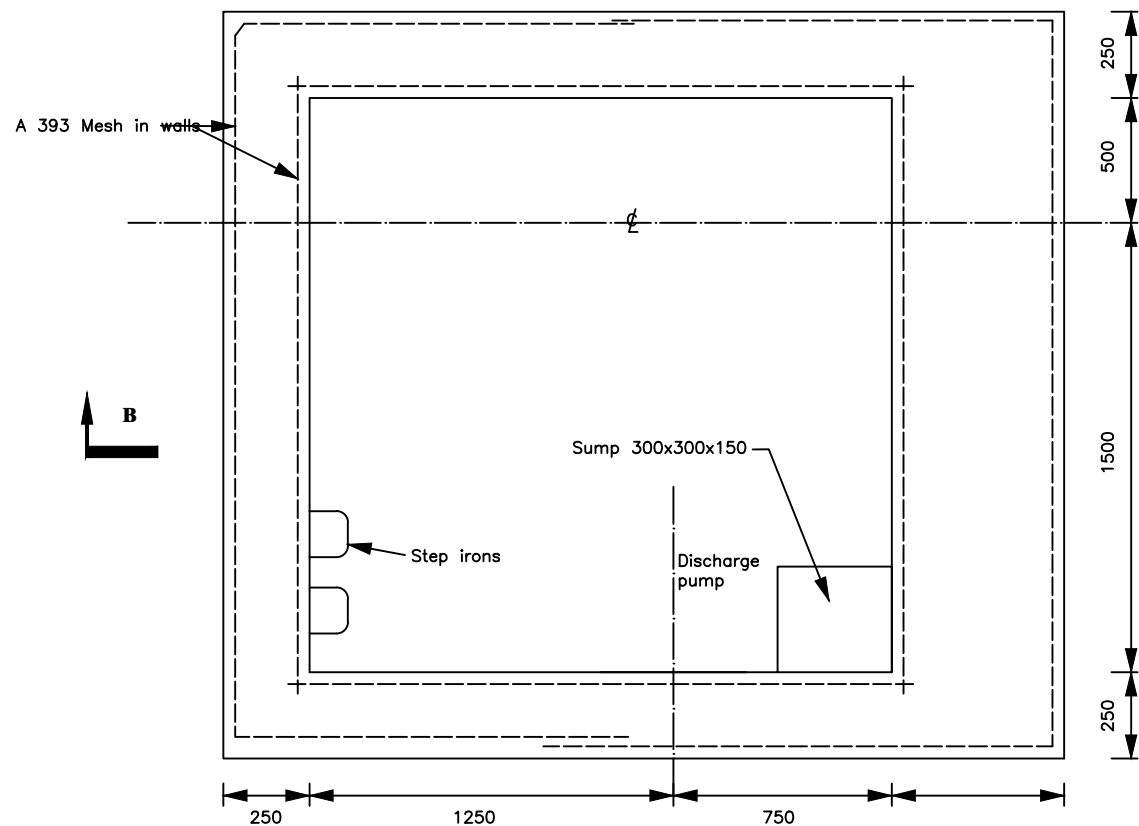
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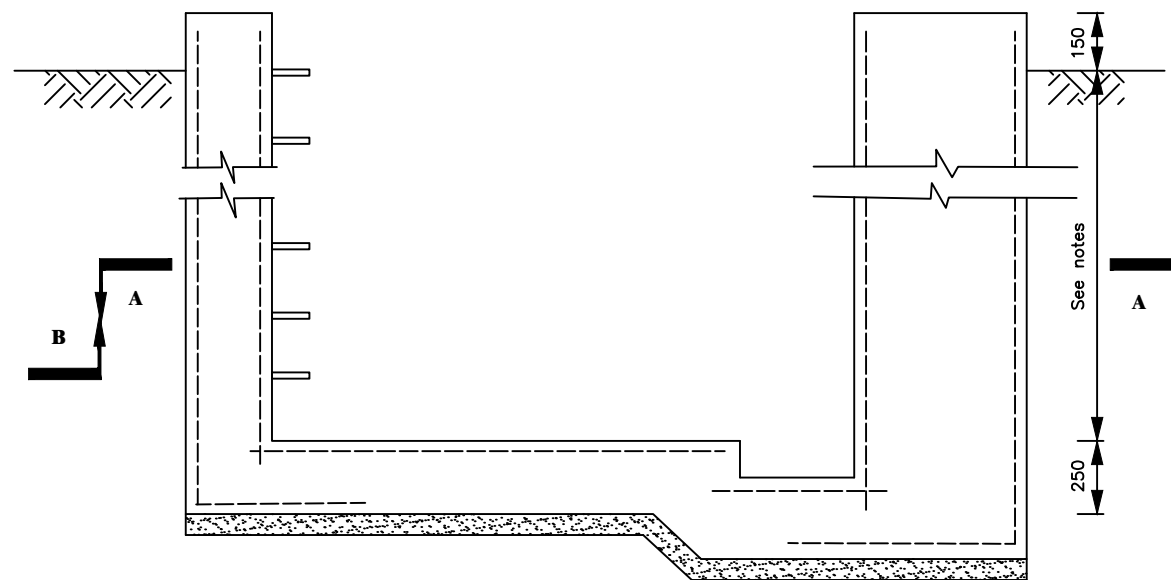
CONTRACTOR

DETAILED ENGINEERING DESIGN
 DRAWING TITLE
TRENCH CUT OFF

SCALE	As Shown	DRAWING No.	SD132
SURVEYED		DESIGNED	Otwane Dan.
DRAWN	Joshua Nyarwanda	CHECKED	Rodney Barugahare
DATE	OCT 2021	APPROVED	Rodney Barugahare.



SECTION A-A



SECTION B-B

NOTES

1. Floor of chamber to be 250 below pipe IL ? min depth 1700 below ground level.
2. Fore details of cover slab see Drawing SD 135C
3. See General notes.
4. Use SD 135b if additional thrust block is required



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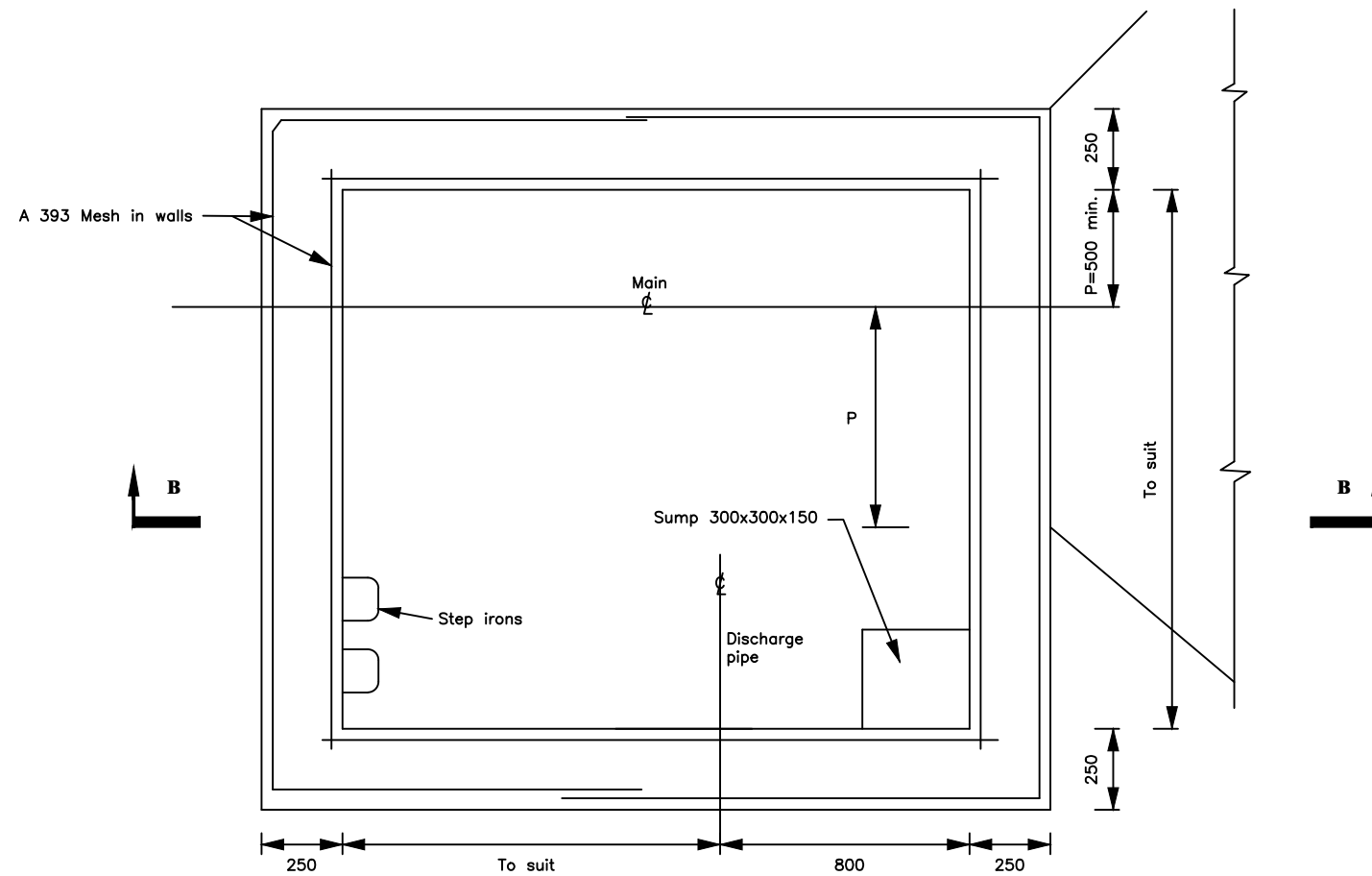
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CONTRACTOR

DETAILED ENGINEERING DESIGN
 DRAWING TITLE
WASHOUT/GATE VALVE CHAMBER- R.C. DETAILS

SCALE	As Shown	DRAWING No.	SD135A
SURVEYED		DESIGNED	Otwane Dan.
DRAWN	Joshua Nyarwanda	CHECKED	Rodney Barugahare
DATE	OCT 2021	APPROVED	Rodney Barugahare.



SECTION A-A



SECTION B-B

NOTES

1. Floor of chamber to be 250 below pipe IL ? min depth 1700 below ground level.
2. Fore details of cover slab see Drawing SD 135C
3. See General notes.

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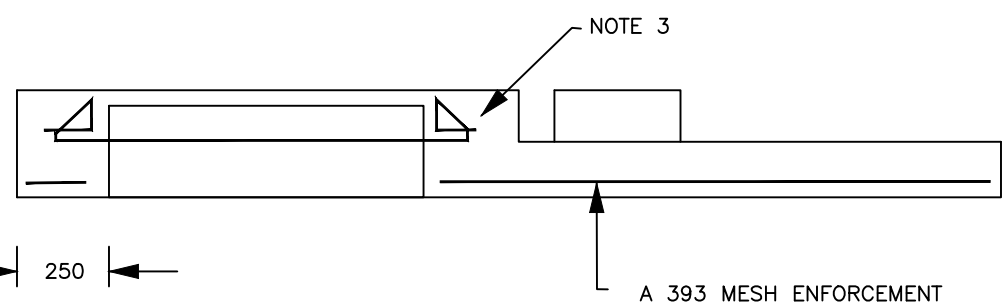
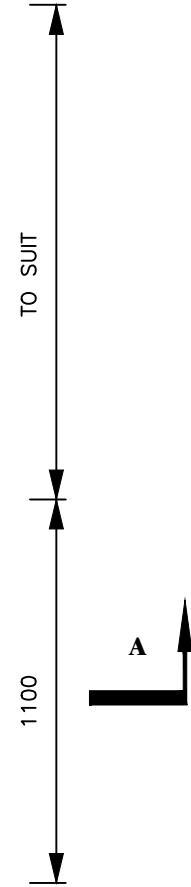
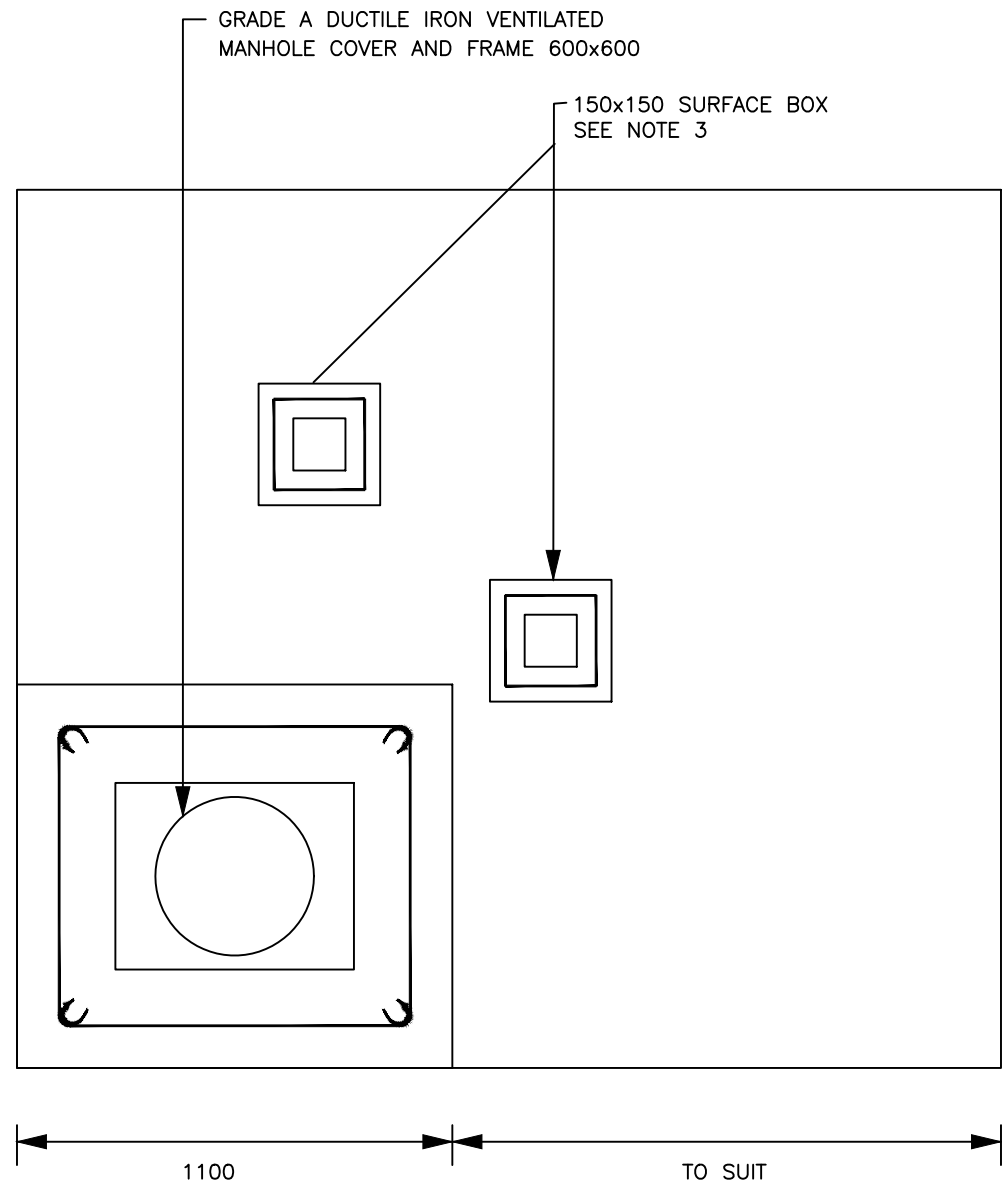
CONTRACTOR

DETAILED ENGINEERING DESIGN

DRAWING TITLE

WASHOUT/GATE VALVE CHAMBER WITH THRUST BLOCK - R.C. DETAILS

SCALE	As Shown	DRAWING No.	SD135B
SURVEYED		DESIGNED	Otwane Dan.
DRAWN	Joshua Nyarwanda	CHECKED	Rodney Barugahare
DATE	OCT 2021	APPROVED	Rodney Barugahare.



PLAN

SECTION A-A

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MUTUNDA WATER SUPPLY SYSTEM

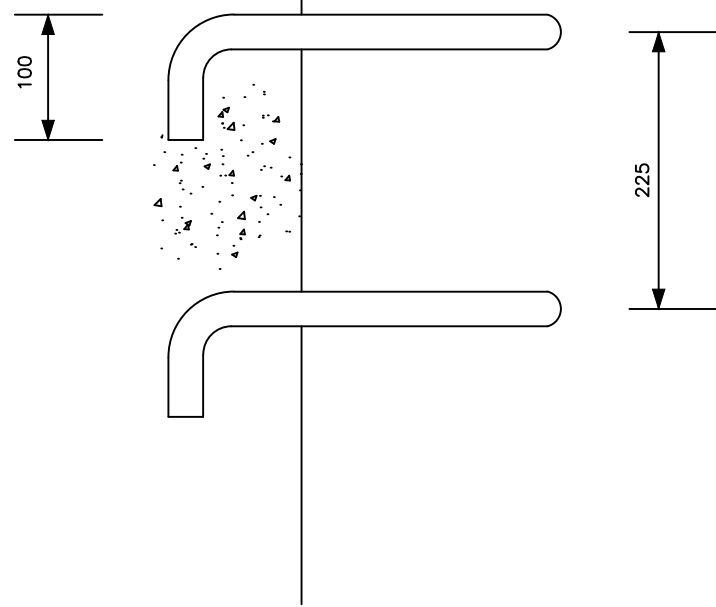
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CONTRACTOR

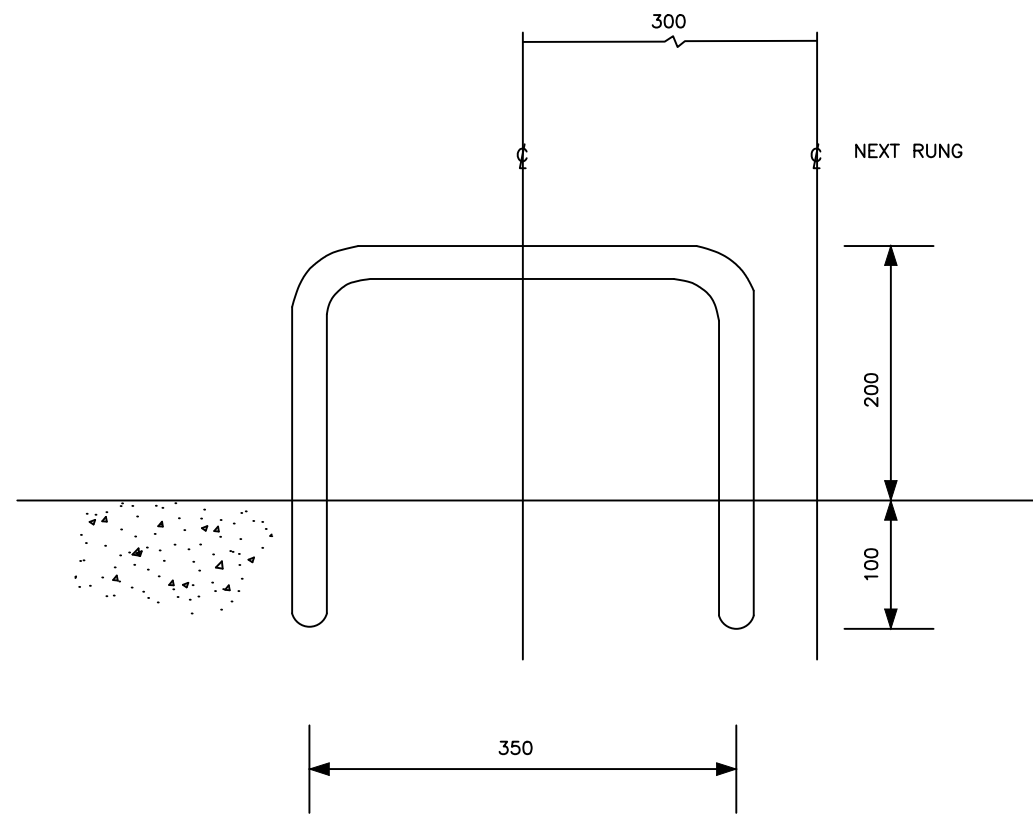
DETAILED ENGINEERING DESIGN

DRAWING TITLE
WASHOUT/GATE VALVE CHAMBER ROOF SLAB-R.C. DETAILS

SCALE	As Shown	DRAWING No.	SD135C
SURVEYED		DESIGNED	Otwane Dan.
DRAWN	Joshua Nyarwanda	CHECKED	Rodney Barugahare
DATE	OCT 2021	APPROVED	Rodney Barugahare.



ELEVATION



PLAN

Step Irons are to be to B1247, or made from 25 dia. reinforcing bars bent as shown (if approved)
 Bars should be placed at 225 centres vertically and at alternate centres 300 vertically

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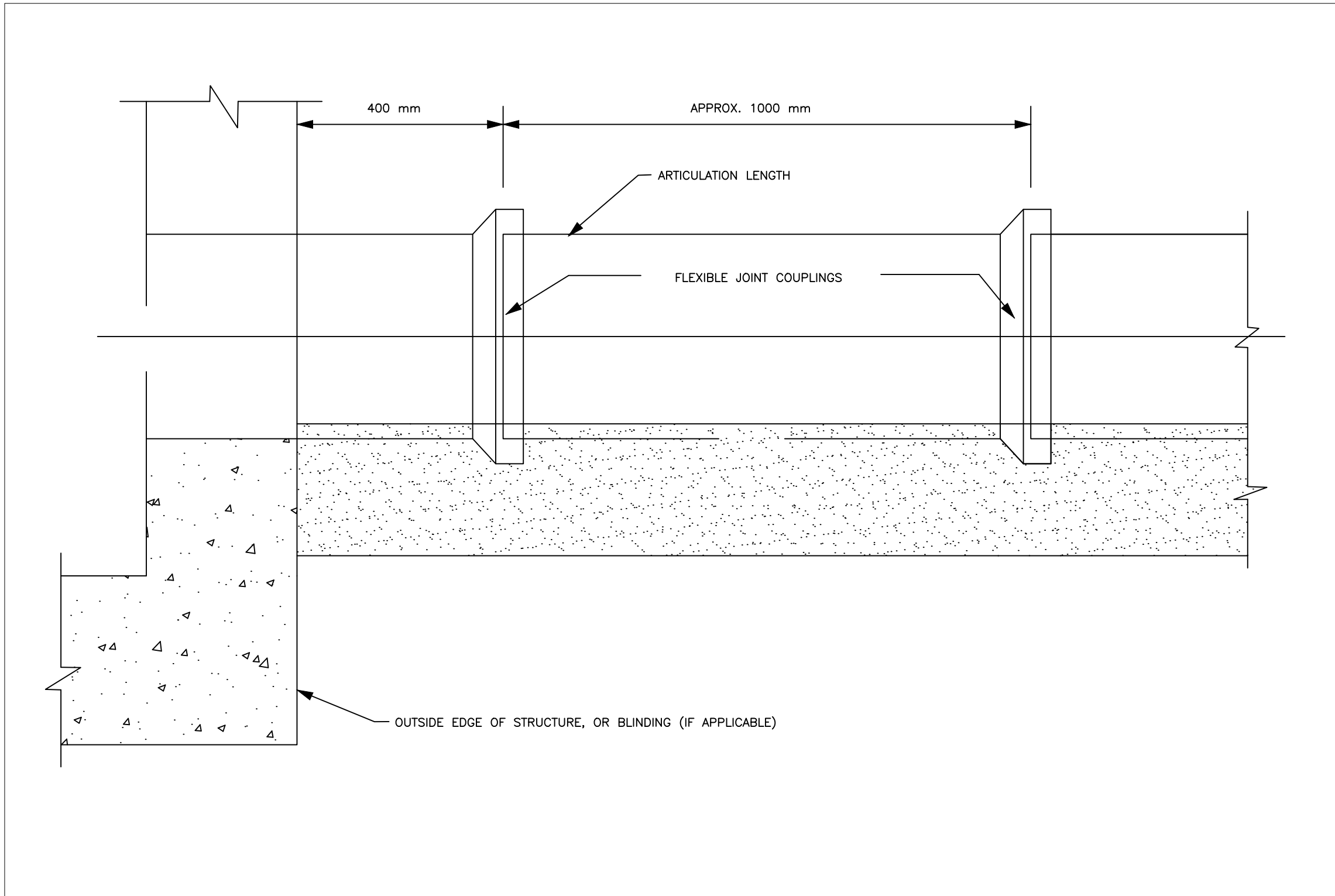
MUTUNDA WATER SUPPLY SYSTEM

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CONTRACTOR

DETAILED ENGINEERING DESIGN
DRAWING TITLE
STEP IRON DETAIL

SCALE	As Shown	DRAWING No.	SD136
SURVEYED		DESIGNED	Otwane Dan.
DRAWN	Joshua Nyarwanda	CHECKED	Rodney Barugahare
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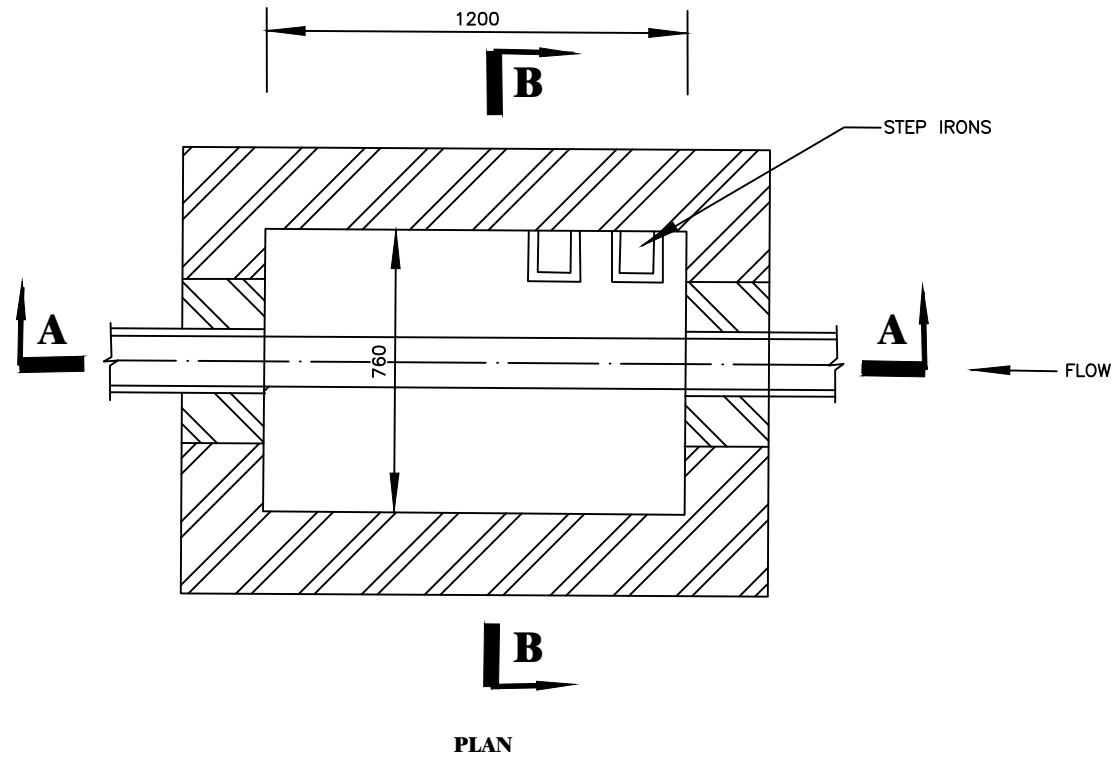
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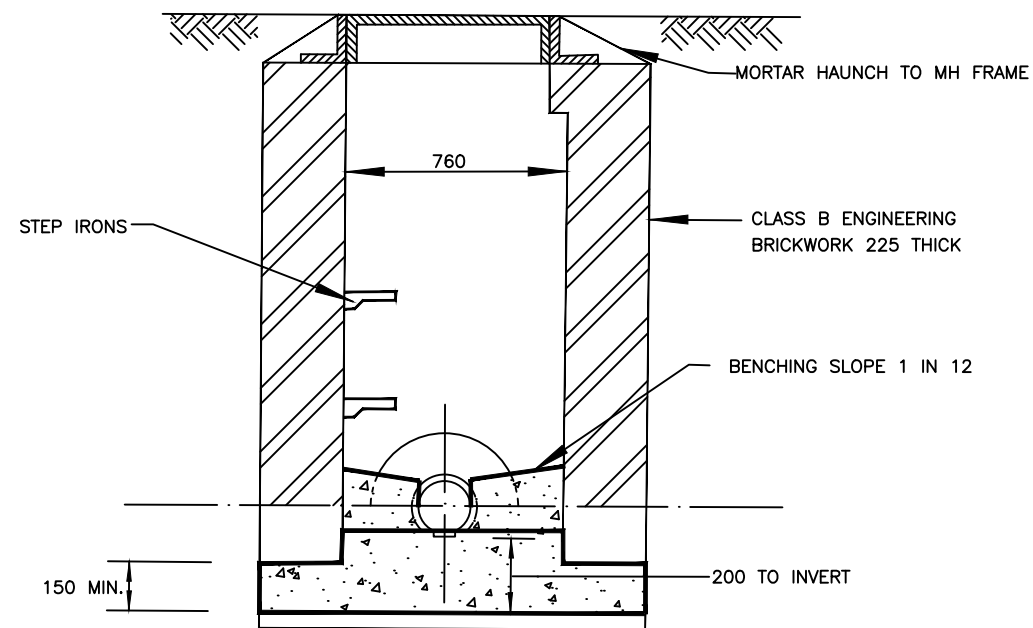
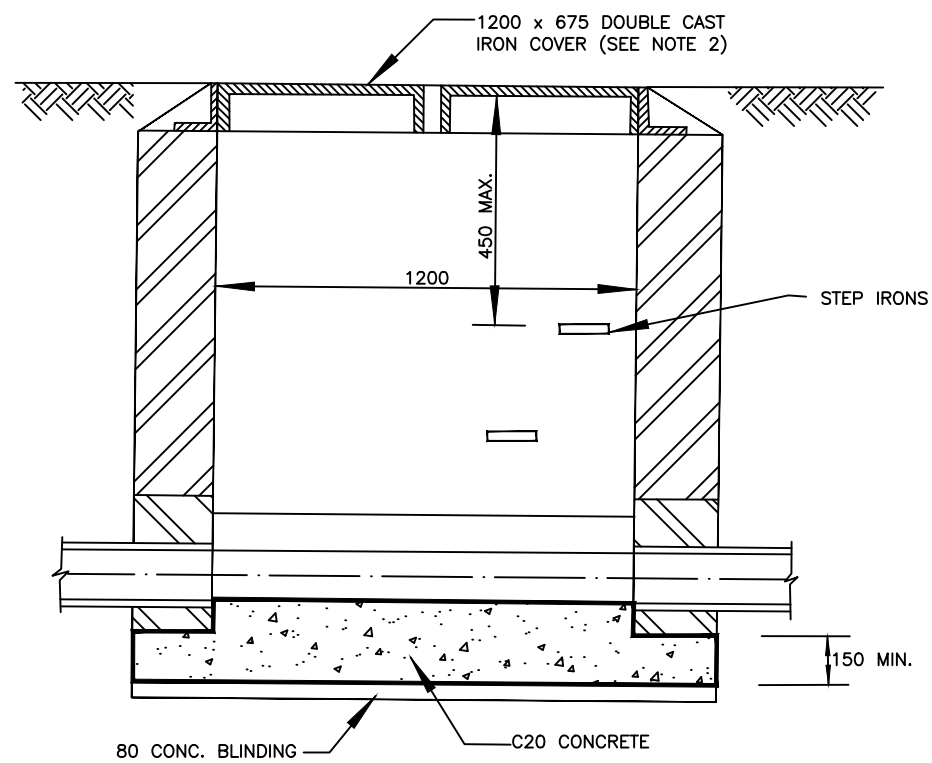
DETAILED ENGINEERING DESIGN
 DRAWING TITLE **FLEXIBLE PIPE JOINT DETAILS FOR PIPES ENTERING OR LEAVING CONCRETE STRUCTURES**

SCALE	As Shown	DRAWING No.	SD137
SURVEYED		DESIGNED	Otwane Dan.
DRAWN	Joshua Nyarwanda	CHECKED	Rodney Barugahare
DATE	OCT 2021	APPROVED	Rodney Barugahare.



NOTES:

1. MANHOLES FOR SEWER SIZES UP TO AND INCLUDING 900 DIA DEPTH TO SOFFIT EXCEEDING 1000 BUT NOT EXCEEDING 1350
2. MANHOLE FRAMES AND MULTIPLE COVERS WITH A MINIMUM CLEAR OPENING OF 1200x675 SHALL OTHERWISE COMPLY WITH BS497 PART 1 GRADE A.
3. CHAMBERS WITH OUTGOING PIPES GREATER THAN 700 DIA. SHALL BE FITTED WITH REMOVABLE SAFETY CHAIN AT DOWN STREAM END.
4. PIPES ENTERING MANHOLES SHALL HAVE A FLEXIBLE JOINT WITHIN 600 OF THE INSIDE FACE OF THE MANHOLE FOR PIPES UP TO 450 AND WITHIN 1000 OF THE INSIDE FACE OF THE MANHOLE FOR PIPES UP TO 1000. THIS SHALL BE FOLLOWED BY A SHORT ROCKER PIPE.
5. INTERNAL DIMENSIONS OF CHAMBER NORMALLY 1200x675 (AS CLEAR OPENING IN FRAME) BUT CHAMBER WIDTH SHOULD BE INCREASED FOR PIPES LARGER THAN 225 DIA. TO GIVE 225 BENCHING EACH SIDE WITH THE BRICKWORK CRIBBLED DOWN TO 675.
6. ALL DIMENSIONS ARE IN MILLIMETRES.



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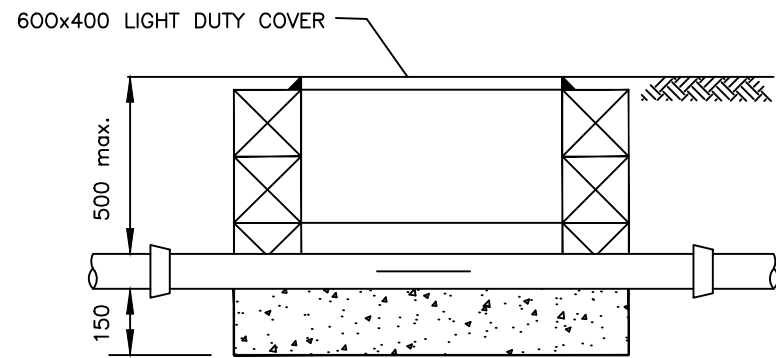
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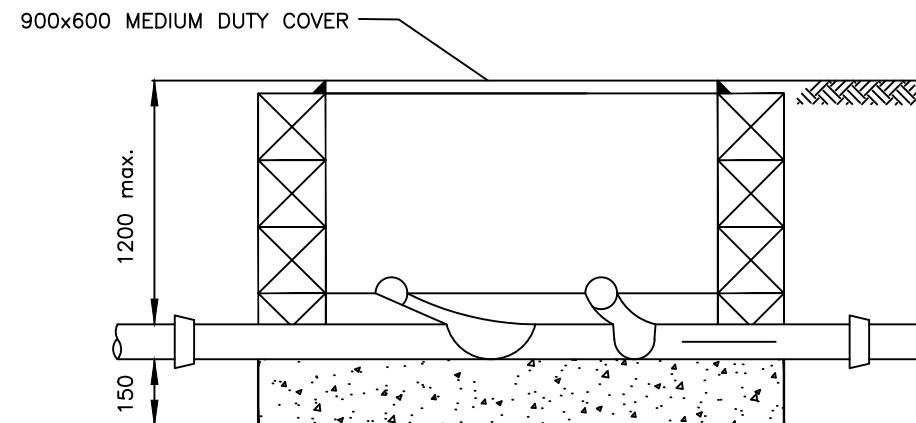
CONTRACTOR

DETAILED ENGINEERING DESIGN
 DRAWING TITLE
MANHOLE - TYPE C

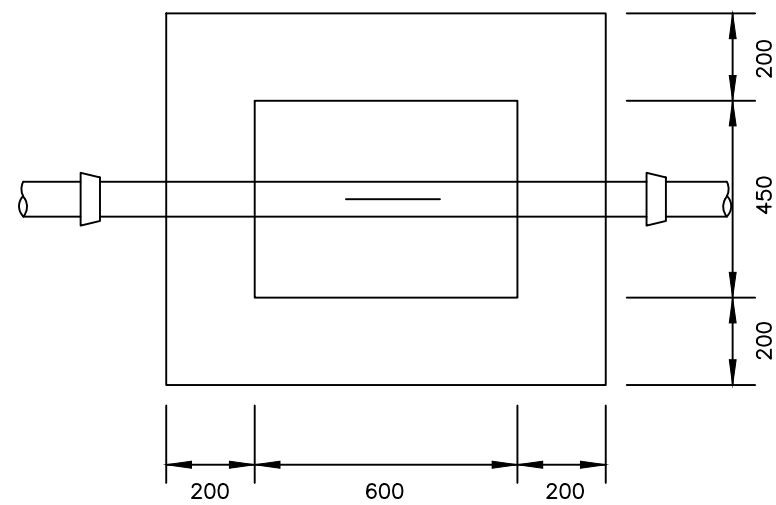
SCALE	As Shown	DRAWING No.	SD202
SURVEYED		DESIGNED	Otwane Dan.
DRAWN	Joshua Nyarwanda	CHECKED	Rodney Barugahare
DATE	OCT 2021	APPROVED	Rodney Barugahare.



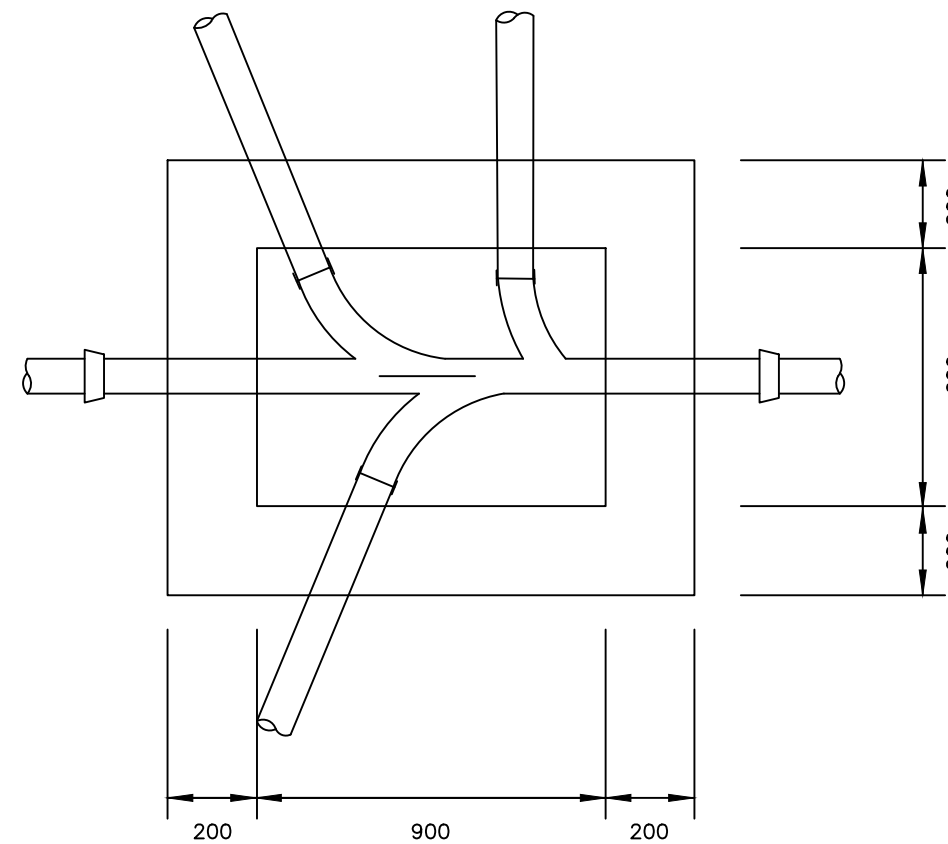
SECTION (TYPE 1)



SECTION (TYPE 2)



PLAN (TYPE 1)



PLAN (TYPE 2)

NOTES

1. ALL DIMENSIONS ARE IN MILLIMETRES
2. CONSTRUCTION OF BASE SLAB TO BE CLASS 30/40S CONCRETE AND WALLS TO BE EITHER CLASS 30/40S CONCRETE OR CONCRETE BLOCKWORK WITH 20 THICK CEMENT MORTAR RENDER TO BOTH INTERNAL AND EXTERNAL FACES.
3. BENCHING TO BE CLASS 30/20S CONCRETE WITH 20 THICK CEMENT MORTAR TO SURFACE.

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MUTUNDA WATER SUPPLY SYSTEM

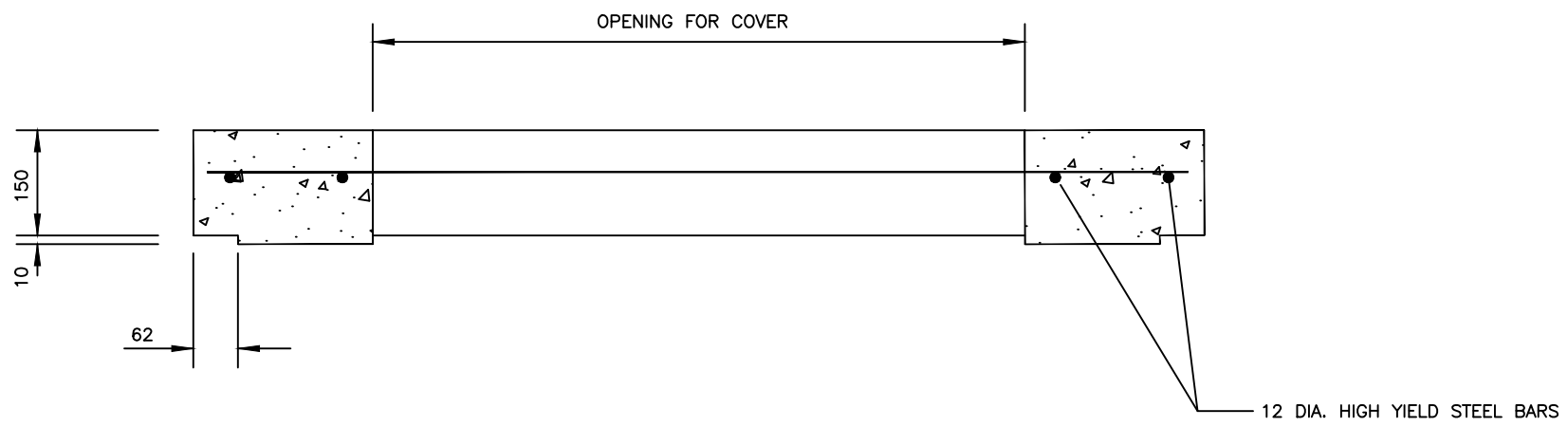
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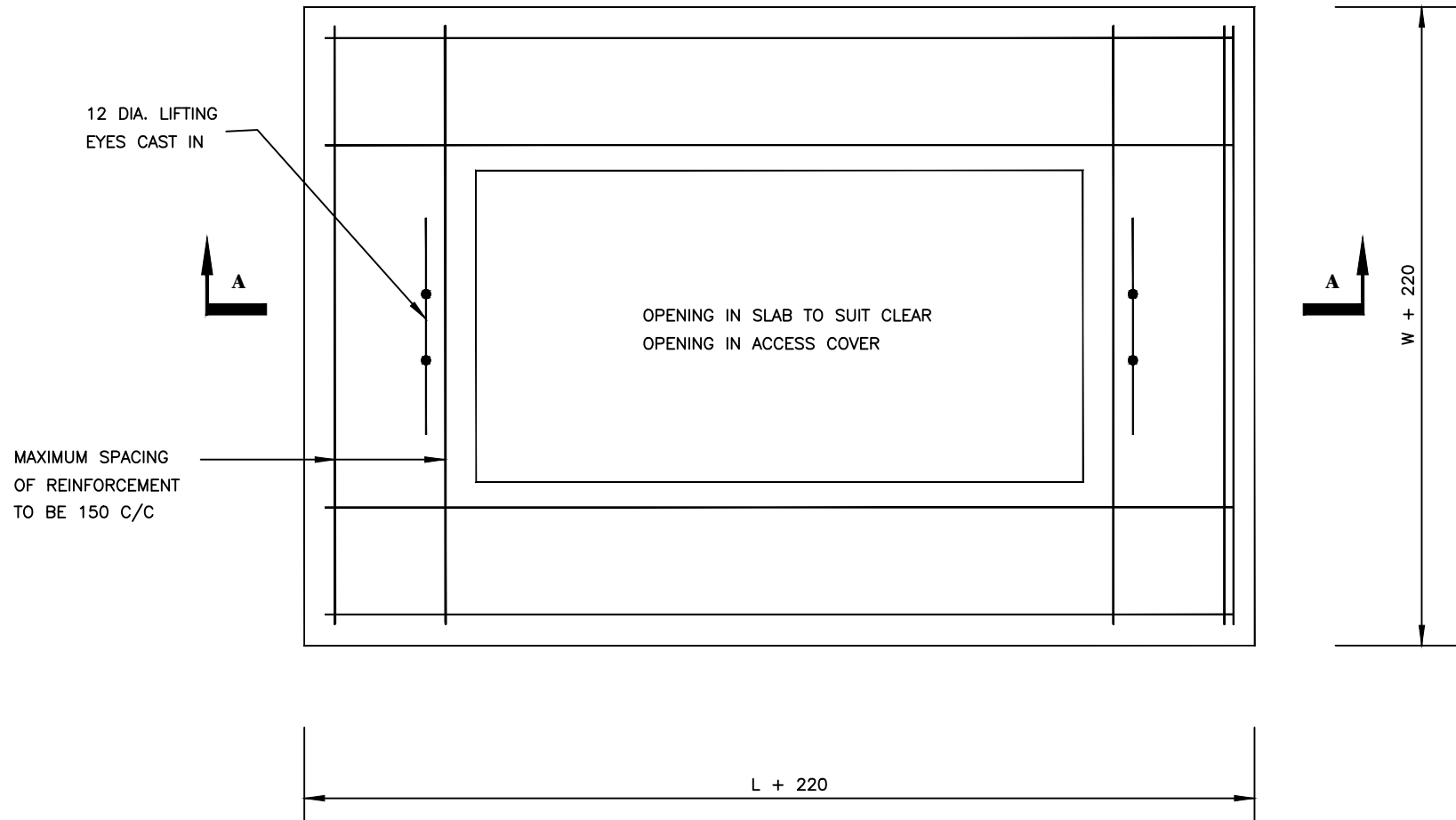
DETAILED ENGINEERING DESIGN

DRAWING TITLE
INSPECTION CHAMBERS- TYPES 1 AND 2

SCALE	As Shown	DRAWING No.	SD206
SURVEYED		DESIGNED	Otwane Dan.
DRAWN	Joshua Nyarwanda	CHECKED	Rodney Barugahare
DATE	OCT 2021	APPROVED	Rodney Barugahare.



SECTION A-A



PLAN

NOTES

1. ALL DIMENSIONS ARE IN MILLIMETRES
2. FOR GENERAL NOTES SEE STANDARD DETAIL No. V/G/NOTE/01.
3. FRAME TO BE SET IN CONCRETE UPSTAND MINIMUM DEPTH 150 DOWELLED TO SLAB WITH 6 No. T18 BARS 200 LONG.
4. L AND W ARE INTERNAL CHAMBER DIMENSIONS. SEE STANDARD DETAIL No. SD 214.

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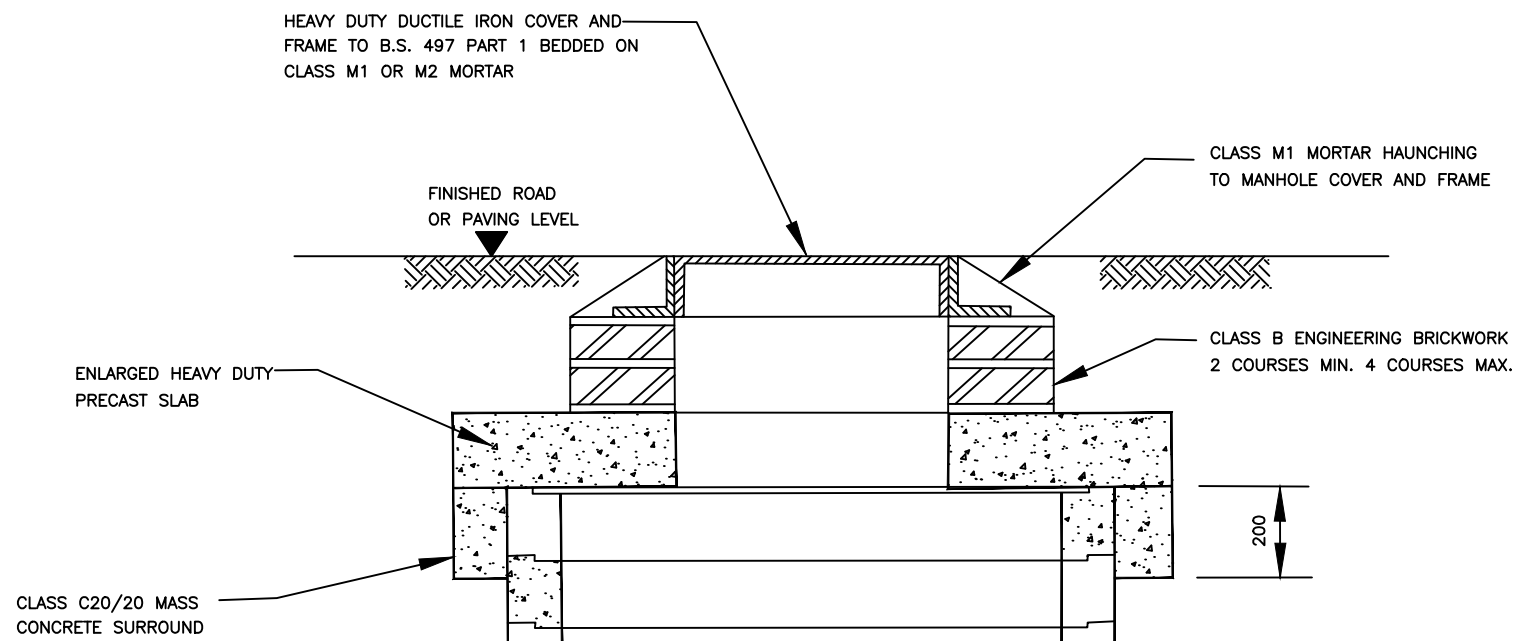
CONTRACTOR

DETAILED ENGINEERING DESIGN

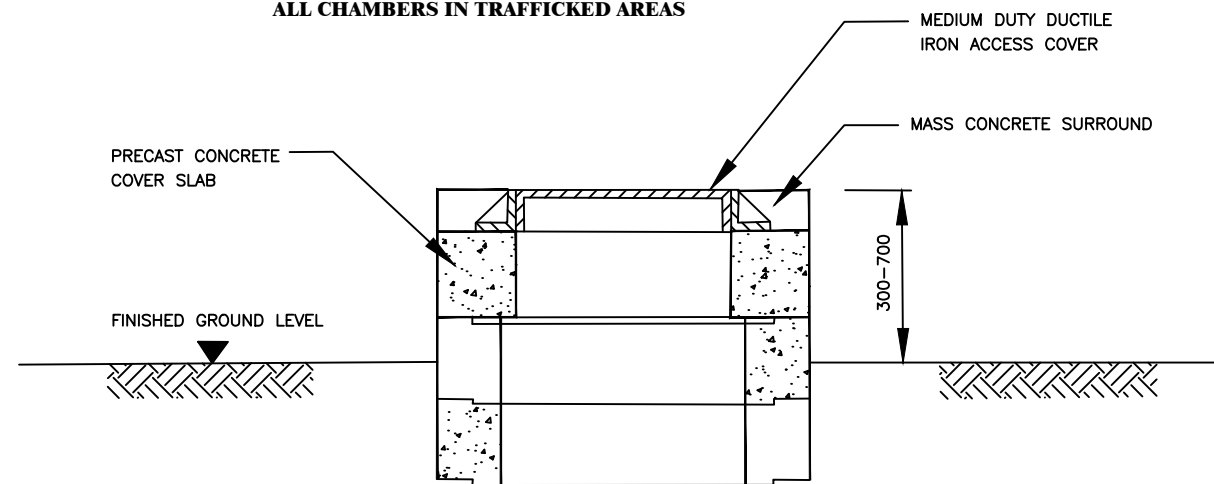
DRAWING TITLE

PRECAST CONCRETE COVER SLAB OPEN AREAS

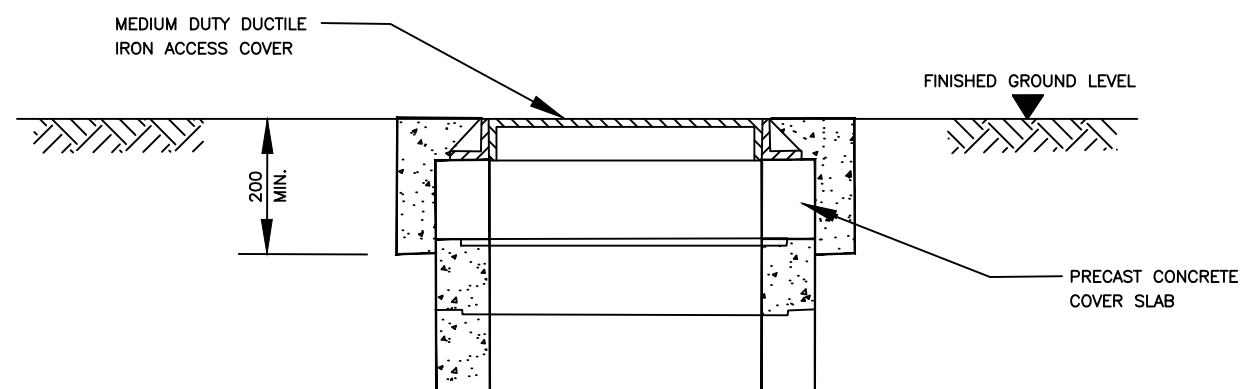
SCALE	As Shown	DRAWING No.	SD211
SURVEYED		DESIGNED	Otwane Dan.
DRAWN	Joshua Nyarwanda	CHECKED	Rodney Barugahare
DATE	OCT 2021	APPROVED	Rodney Barugahare.



ALL CHAMBERS IN TRAFFICKED AREAS



CHAMBERS IN OPEN AREAS



FLUSH FITTING CHAMBERS IN NON-TRAFFICKED AREAS

NOTES :

1. ALL DIMENSIONS ARE IN MILLIMETRES.

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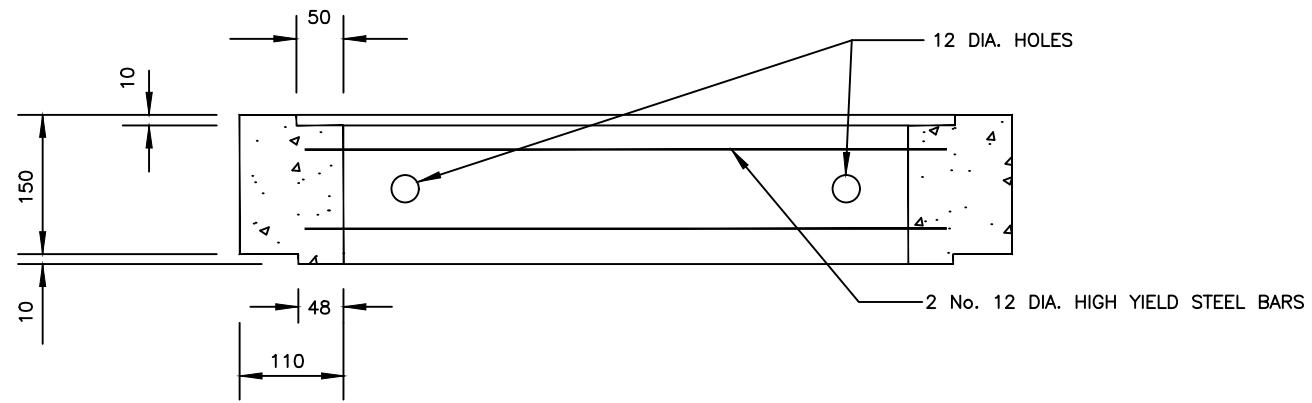
CONTRACTOR

DETAILED ENGINEERING DESIGN

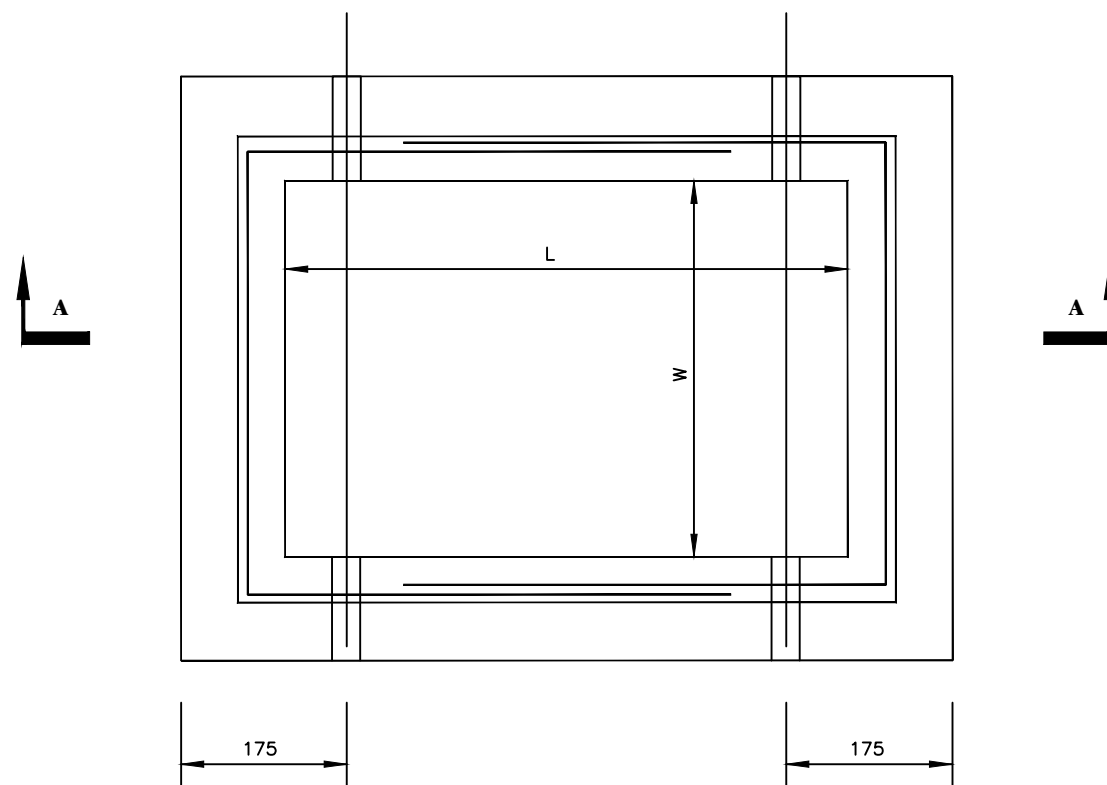
DRAWING TITLE

PRECAST CHAMBER COVER SLAB INSTALLATION

SCALE	As Shown	DRAWING No.	SD213
SURVEYED		DESIGNED	Otwane Dan.
DRAWN	Joshua Nyarwanda	CHECKED	Rodney Barugahare
DATE	OCT 2021	APPROVED	Rodney Barugahare.



SECTION A-A



PLAN

TYPE	L	W
A	430	280
B	600	450
C	750	600
D	900	600
E	1200	600
F	1200	900

NOTES

1. ALL DIMENSIONS ARE IN MILLIMETRES
2. CONCRETE TO BE CLASS 30/20.
3. COVER TO REINFORCEMENT TO BE 40mm.
4. DIMENSIONS L AND W FROM TABLE SHOWN.
5. FOR GENERAL NOTES SEE STANDARD DRAWING No. SD100.

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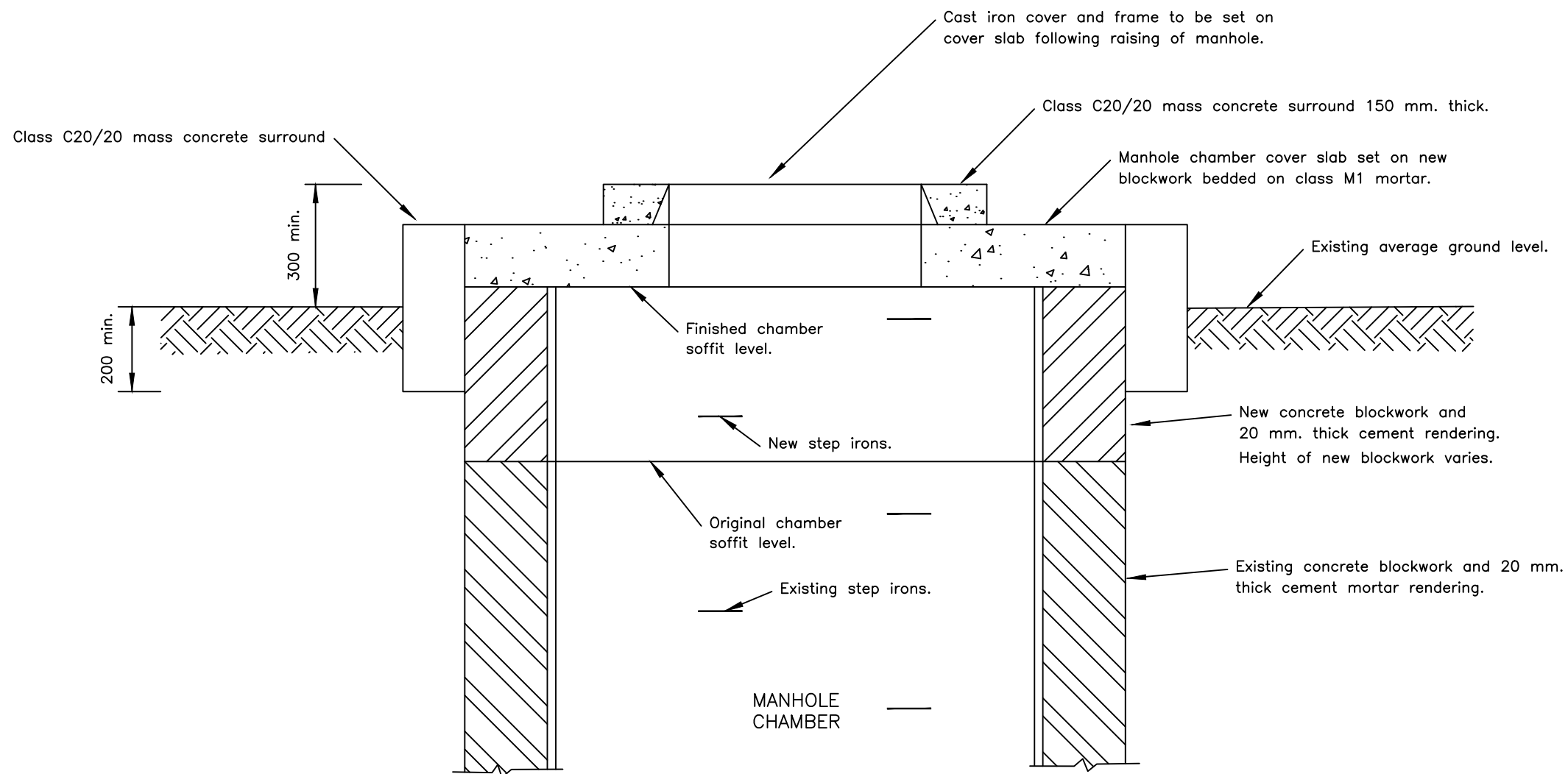
MUTUNDA WATER SUPPLY SYSTEM

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 SARI
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CONTRACTOR

DETAILED ENGINEERING DESIGN
 DRAWING TITLE
PRECAST CONCRETE CHAMBER SECTIONS

SCALE As Shown DRAWING No. SD214
 SURVEYED DESIGNED Otwane Dan.
 DRAWN Joshua Nyarwanda CHECKED Rodney Barugahare
 DATE OCT 2021 APPROVED Rodney Barugahare.



NOTES

1. The existing manhole chamber cover slab shall be re-used where possible. If existing slab is damaged it shall be replaced by a new slab as per standard detail SD 211.
2. Manhole chambers are generally square in plan with 1200 x 1200 internal dimensions. Dimensions to be confirmed by the contractor prior to casting new manhole chamber cover slab
3. The existing cast iron cover and frame shall be re-used where possible. If the cover or frame is damaged, it shall be replaced by a medium duty cover and frame supplied by the Employer.
4. Width of the new concrete blocks shall be the same as existing chamber walls.
5. The final cove level shall be agreed with the Engineer prior to placing mass concrete surrounds.
6. New step irons as per SD 206.

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DETAILED ENGINEERING DESIGN
 DRAWING TITLE
ALTERATIONS TO CHAMBERS IN OPEN AREAS

SCALE	As Shown	DRAWING No.	SD215
SURVEYED		DESIGNED	Otwane Dan.
DRAWN	Joshua Nyarwanda	CHECKED	Rodney Barugahare
DATE	OCT 2021	APPROVED	Rodney Barugahare.

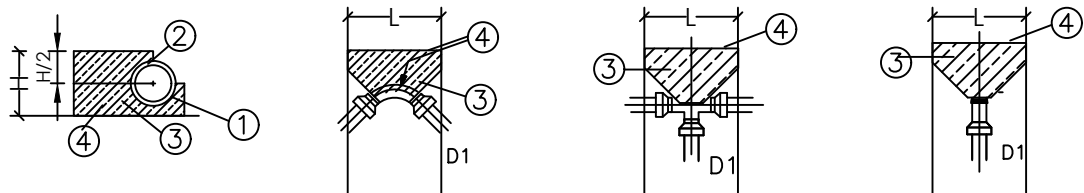
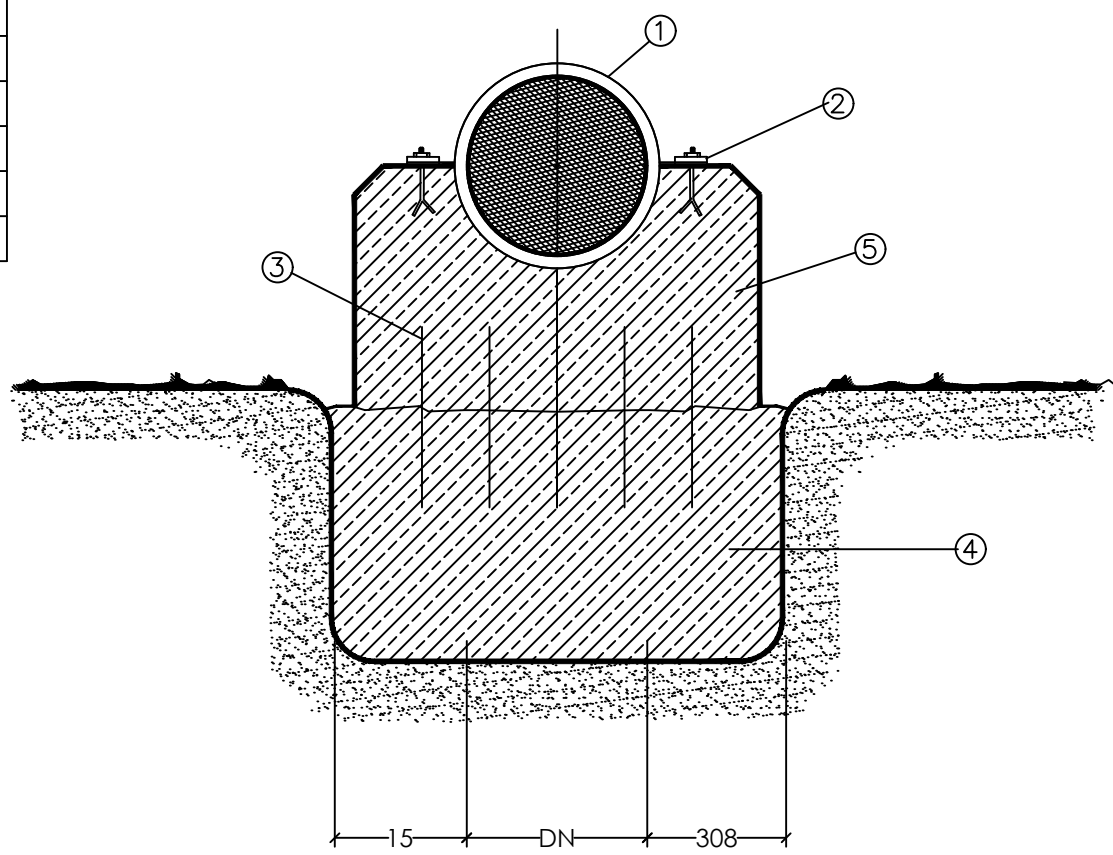
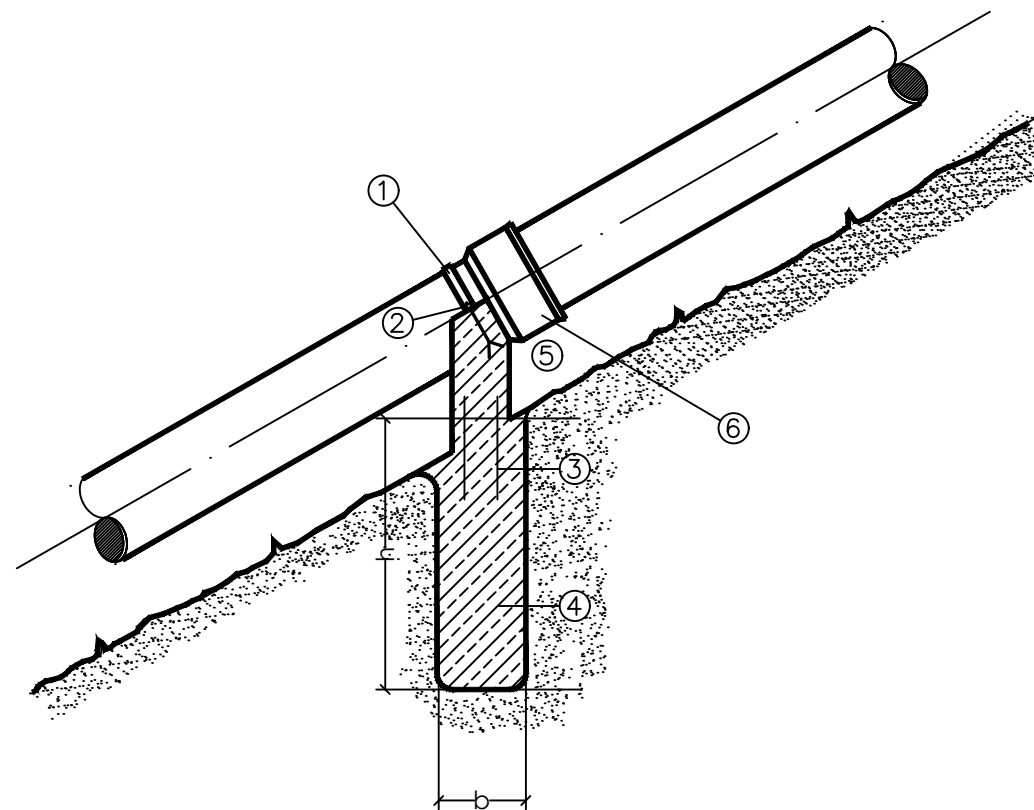


TABLE I

	C	B	A1	A2	A3	A4	A5	A6
D1								
mm	mm ²	mm ²	mm ²	mm ²	mm ²	mm ²	mm ²	mm ²
65	0.05	0.05	0.07	0.05	0.04	0.03	0.02	0.01
80	0.08	0.08	0.11	0.08	0.06	0.04	0.03	0.02
1.00	0.11	0.11	0.16	0.11	0.08	0.06	0.04	0.02
1.50	0.25	0.25	0.35	0.25	0.19	0.13	0.10	0.05
2.00	0.40	0.40	0.56	0.40	0.31	0.21	0.16	0.08
2.50	0.66	0.66	0.93	0.66	0.51	0.34	0.25	0.13
3.00	0.94	0.94	1.33	0.94	0.72	0.49	0.37	0.19
4.00	1.66	1.66	2.34	1.66	1.29	0.86	0.65	0.33
5.00	2.50	2.50	3.53	2.50	1.93	1.30	0.98	0.50
6.00	3.61	3.61	5.09	3.51	2.78	1.88	1.41	0.72
7.00	4.90	4.90	5.91	4.90	3.77	2.55	1.91	0.98
8.00	6.39	6.39	9.01	6.39	4.92	3.32	2.49	1.29
9.00	8.10	8.10	11.42	8.10	6.24	4.21	3.16	1.62

P2(bar) \ P1(bar)	10	15	20	25	30
2.0	0.5	0.75	1.0	1.25	1.5
1.5	0.67	1.0	1.33	1.57	2.0
1.0	1.0	1.5	2.0	2.5	3.0
0.5	2.0	3.0	4.0	5.0	6.0



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MUTUNDA WATER SUPPLY SYSTEM

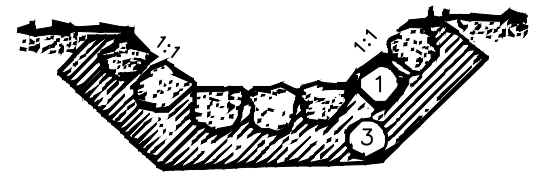
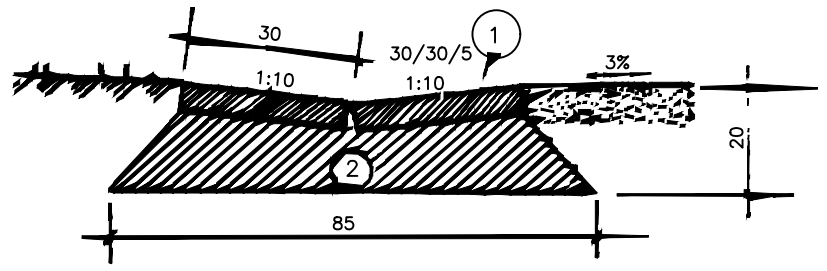
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 DRAWING TITLE
 THRUST BLOCK

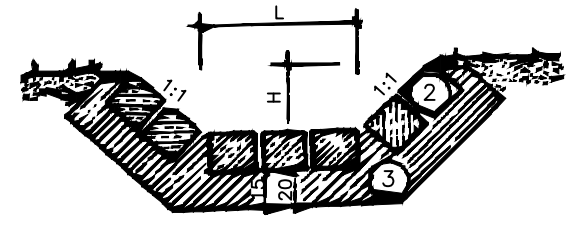
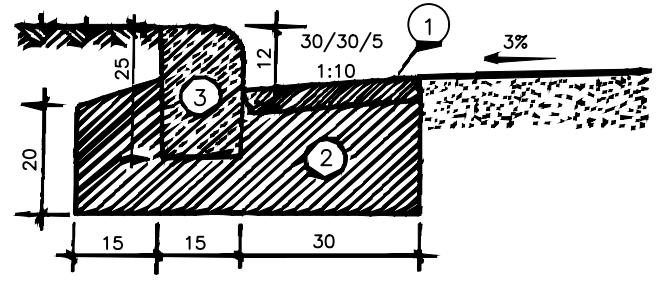
SCALE As Shown DRAWING No. SD216
 SURVEYED DESIGNED Otwane Dan.
 DRAWN Joshua Nyarwanda CHECKED Rodney Barugahare
 DATE OCT 2021 APPROVED Rodney Barugahare.

A



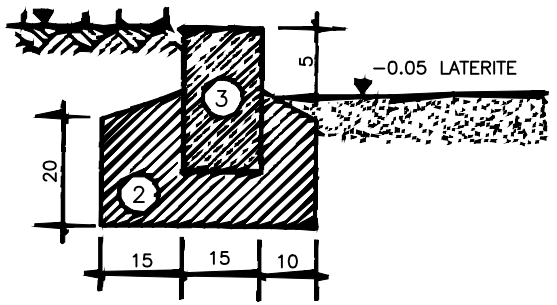
A

B

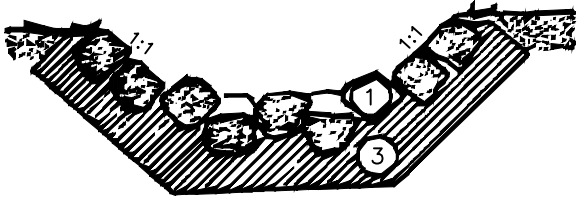
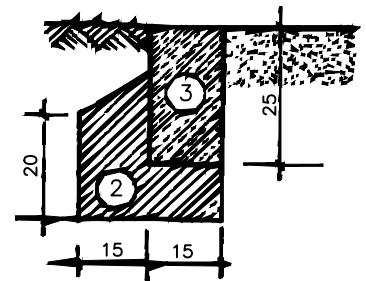


B

C



D



L	cm	40	60	80	100	120
H	cm	20	40	40	60	60
h	cm	5	10	10	15	15

KERB & DRAIN

- A. Open drain
 - B. Concrete slab half drain
 - C. Kerb
 - D. Embedded Kerb
 - 1. Prefabricated concrete slabs of class as specified
 - 2. Concrete foundation class as specified
 - 3. Prefabricated concrete kerbs class as specified
- The excavation and other works are specified
Kerbs at road junctions and bends with R < 10 m have to be rounded off. In that case the length of the kerbstone depth must be doubled.

OPEN DRAINAGE CHANNEL


- A. Open drain channel
 - B. Open drain channel with obstacles
 - 1. Stones
 - 2. Cement blocks
 - 3. Concrete class as specified
- The lining & works include
- excavation class as specified
 - concrete class as specified
 - Rock or cement blocks
 - Planting of a 50 cm ~ grass a strip on either side of the channel

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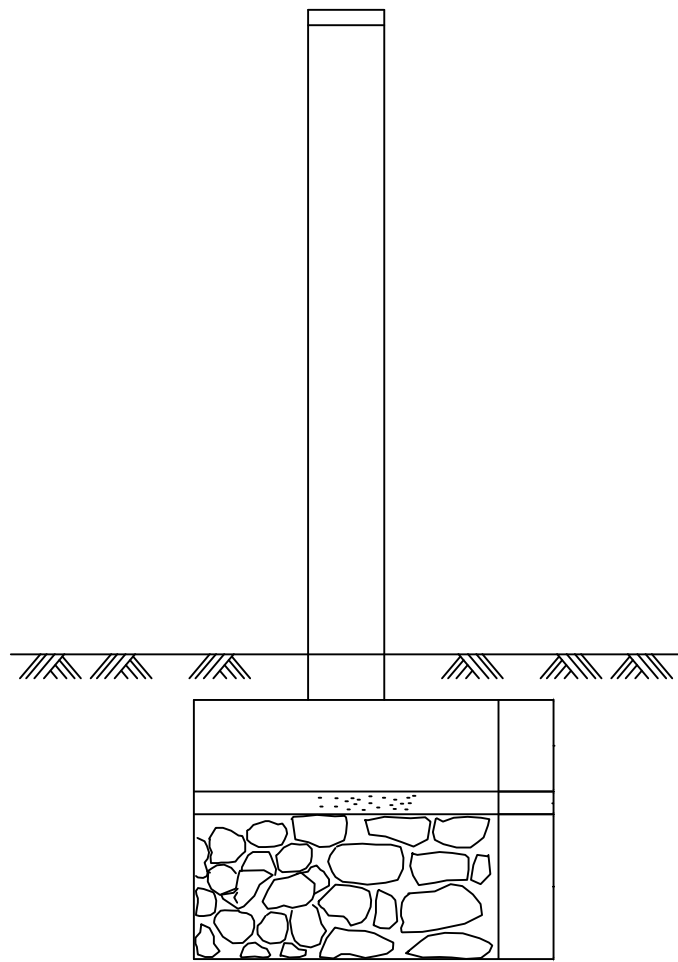
CONTRACTOR

DETAILED ENGINEERING DESIGN

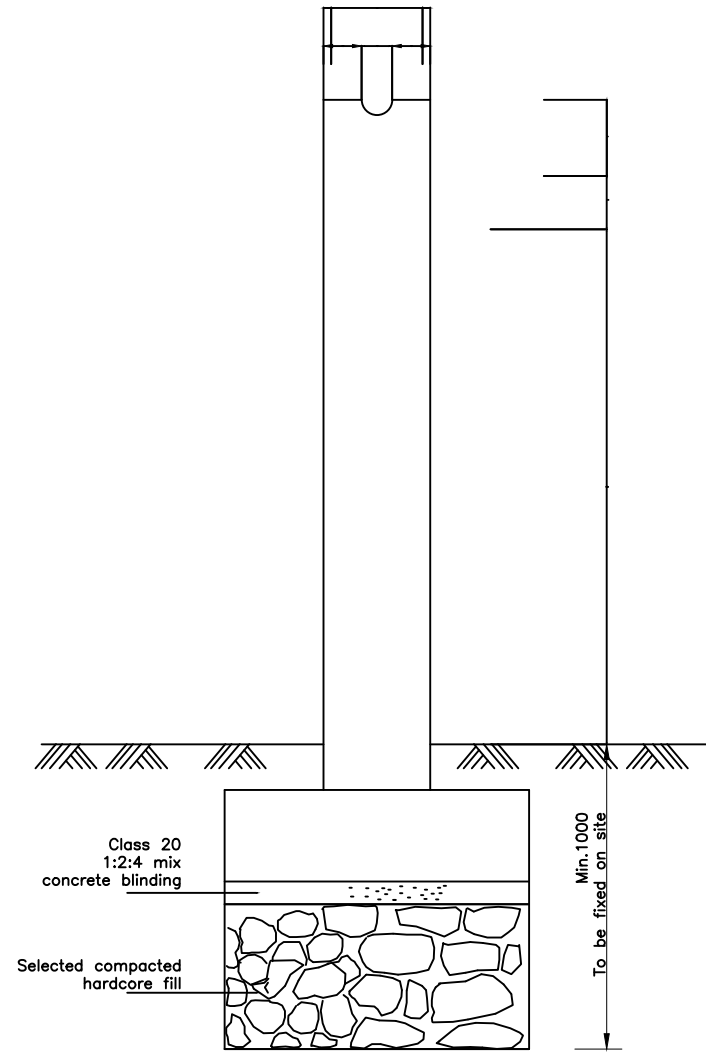
DRAWING TITLE

OPEN DRAINAGE CHANNEL AND KERB

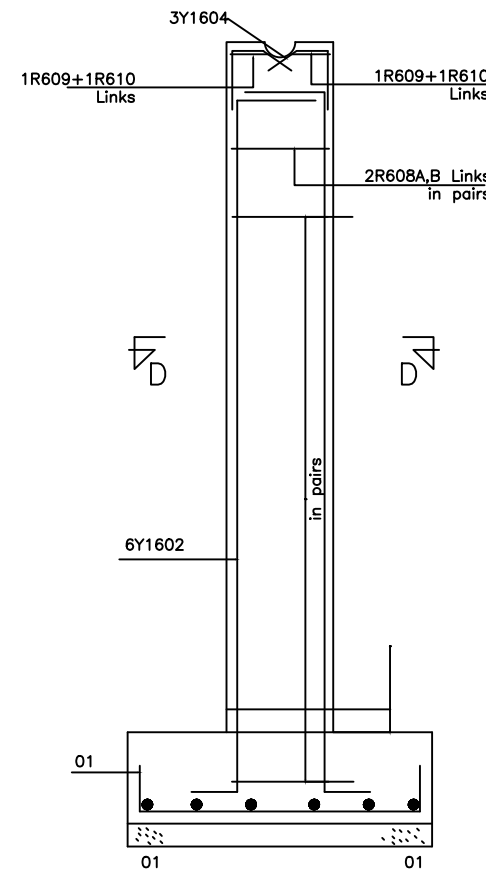
SCALE	As Shown	DRAWING No.	SD218
SURVEYED		DESIGNED	Otwane Dan.
DRAWN	Joshua Nyarwanda	CHECKED	Rodney Barugahare
DATE	OCT 2021	APPROVED	Rodney Barugahare.



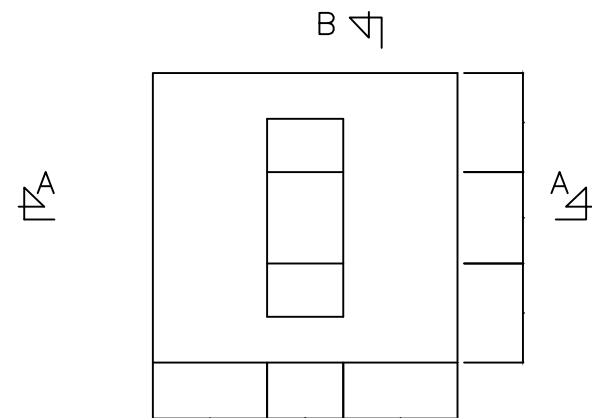
SECTION A-A



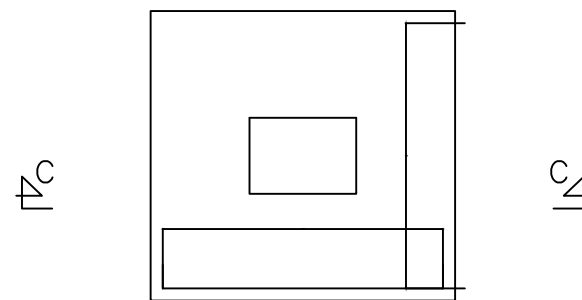
SECTION B-B



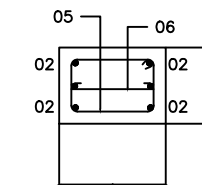
SECTION C-C



FOUNDATION PLAN





FOUNDATION TYPE 1
12 No. OFF THUS



SECTION D-D

CLIENT

GOVERNMENT OF UGANDA
 MINISTRY OF WATER AND ENVIRONMENT

CO-FINANCED BY:
 AND 
 THE WORLD BANK GOVERNMENT OF UGANDA

PROJECT
 CONSULTANCY SERVICES FOR FEASIBILITY STUDY, DETAILED ENGINEERING DESIGN AND CONSTRUCTION SUPERVISION OF SOLAR POWERED PIPED WATER SUPPLY SYSTEMS AND SANITATION FACILITIES IN REFUGEE SETTLEMENTS AND HOST DISTRICTS IN WEST NILE AND NORTHERN UGANDA IN KIRYANDONGO DISTRICT

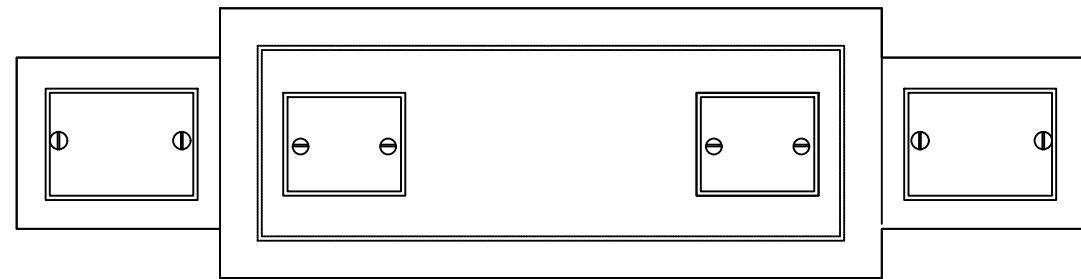
MUTUNDA WATER SUPPLY SYSTEM

CONSULTANT
 **SARI** In Joint Venture with 
 Corporate Headquarter
 10 Philip Lane, 1st Floor,
 London EC3M 8AA,
 United Kingdom

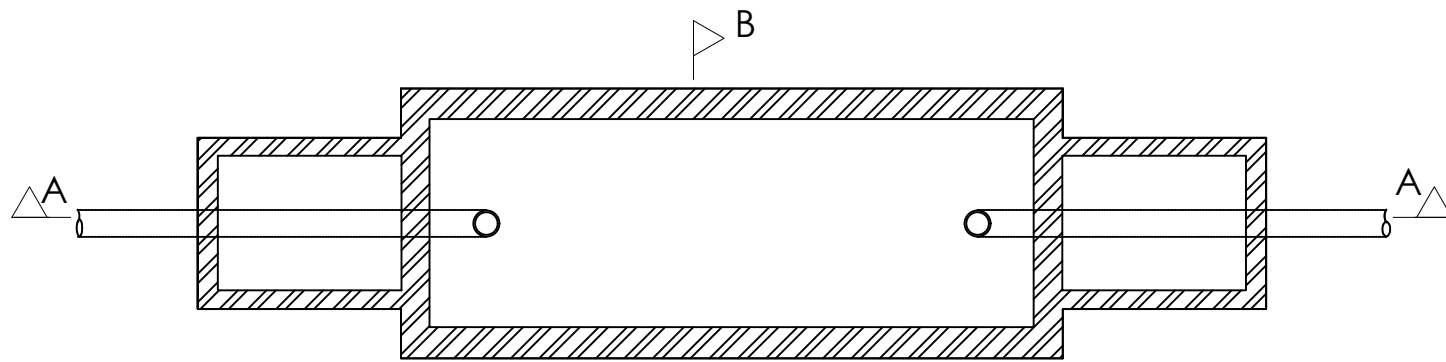
CONTRACTOR

DETAILED ENGINEERING DESIGN
 DRAWING TITLE
 PIPE SUPPORTS R.C DETAILS

SCALE	As Shown	DRAWING No.	SD220
SURVEYED		DESIGNED	Otwane Dan.
DRAWN	Joshua Nyarwanda	CHECKED	Rodney Barugahare
DATE	OCT 2021	APPROVED	Rodney Barugahare.



PLAN OF TOP



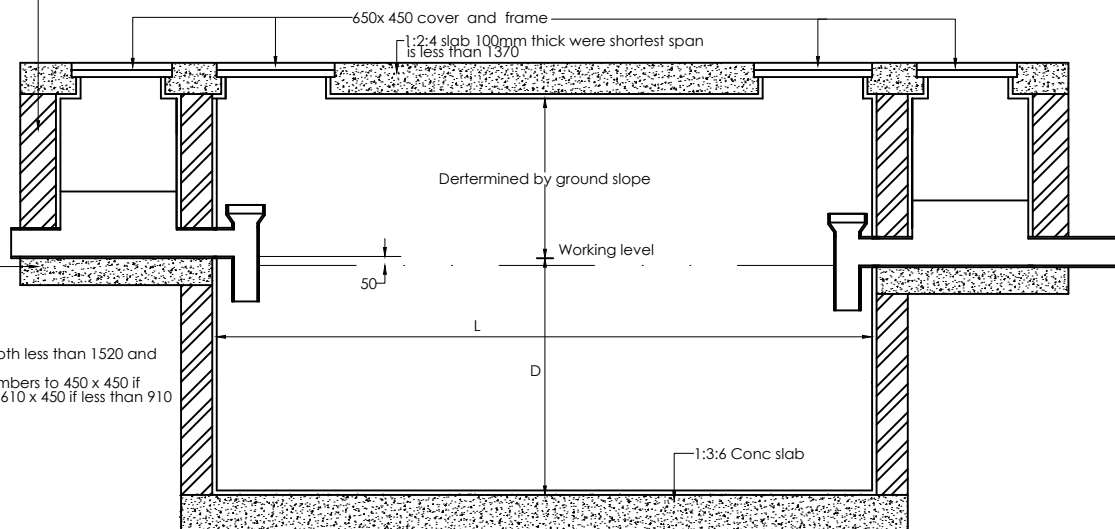
PLAN

SIZES OF INSPECTION CHAMBER			
DEPTH TO INVERTS	INTERNAL DIMENSIONS	WALL THICKNESS	FOUNDATION THICKNESS
UP TO 450	450x450	100	150
475	900	450x600	100
925	1500	750x1050	225
OVER	1500	750x1050	225

BRICKWORK TO BE BUILT IN CEMENT MORTAR 1:6 AND RENDERED INTERNALLY IN 1:3 CEMENT PLASTER 13mm THICK FOUNDATION TO BE 1:3:6 CONCRETE MIX OF CEMENT

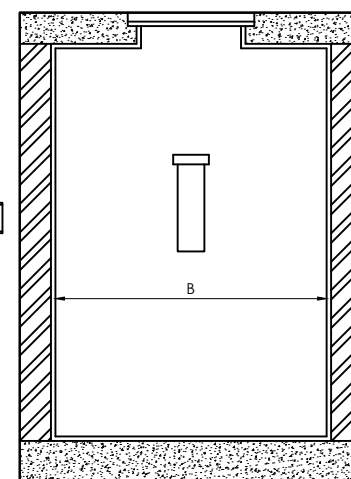
DIMENSIONS OF SEPTIC TANK				
No. of Users	L	B	D	Capacity Liters
6	1800	625	900	1137
10	2250	625	900	1435
15	2475	625	900	1707
20	2860	625	900	1820
25	3300	625	900	2117
30	2400	900	1050	2388
35	2550	900	1050	2530
40	3000	900	1050	2980
45	3300	900	1050	3276
50	3750	900	1050	3727
60	3150	925	1200	4460
70	3750	925	1200	5312
80	4200	925	1200	5890
90	4850	925	1200	6597
100	4950	1125	1200	7462
150	5250	1350	1500	10533
200	6450	1350	1500	12697
250	7050	1350	1650	16513
300	7500	1350	1800	18155

Block wall built in 1:3 cem mortar, or 1:3:6 rendered with 1:2 mortar 13mm thick Walls to be 175 thick for walls less than 910 high and 240 otherwise

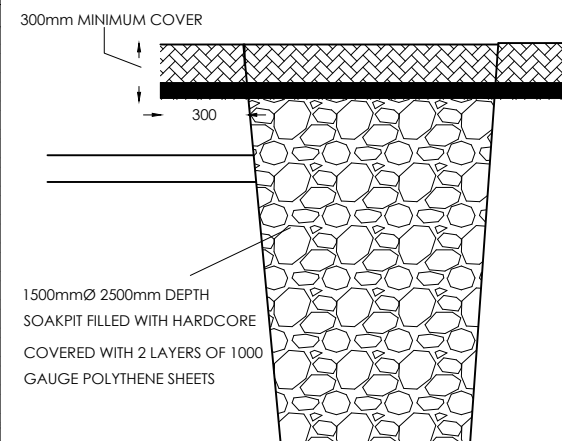


SECTION A-A

125mm conc slab (1:3:6) for invert depth less than 1520 and 200mm if more than 1520. Internal dimensions of inspection chambers to 450 x 450 if depth to invert does not exceed 450, 610 x 450 if less than 910 and 1050 x 760 if more than 1520.



SECTION B-B





SOAK PIT

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MUTUNDA WATER SUPPLY SYSTEM

CONSULTANT
 **SARI** In Joint Venture with 
 Corporate Headquarter
 10 Philip Lane, 1st Floor,
 London EC3M 8EA,
 United Kingdom

CONTRACTOR

DETAILED ENGINEERING DESIGN

DRAWING TITLE
 SEPTIC TANK DETAIL

SCALE As Shown DRAWING No. SD221
 SURVEYED DESIGNED Otwane Dan.
 DRAWN Joshua Nyarwanda CHECKED Rodney Barugahare
 DATE OCT 2021 APPROVED Rodney Barugahare.