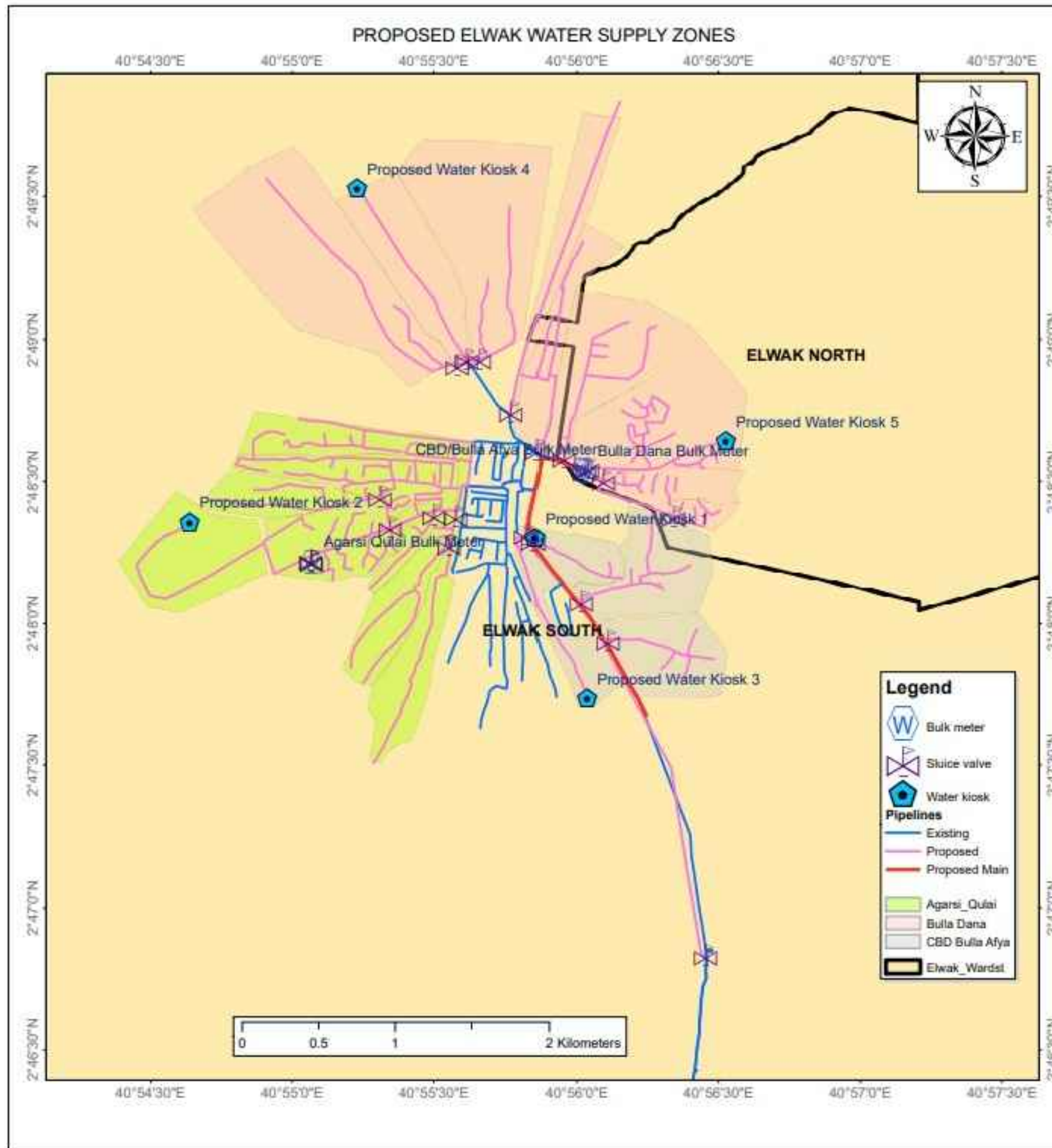


GENERAL DRAWINGS



NOTES


REV	REVISIONS	SIGN	DATE	APPROVED
D	BY	CHECKED		
C	BY	CHECKED		
B	BY	CHECKED		
A	BY	CHECKED		

Client

 PO Box 49699 - 00100, Nairobi, Kenya
 1st Floor, CIC Plaza, Mara Road, Upper Hill, Nairobi, Kenya
 Tel: 020 272 90 17 / 8

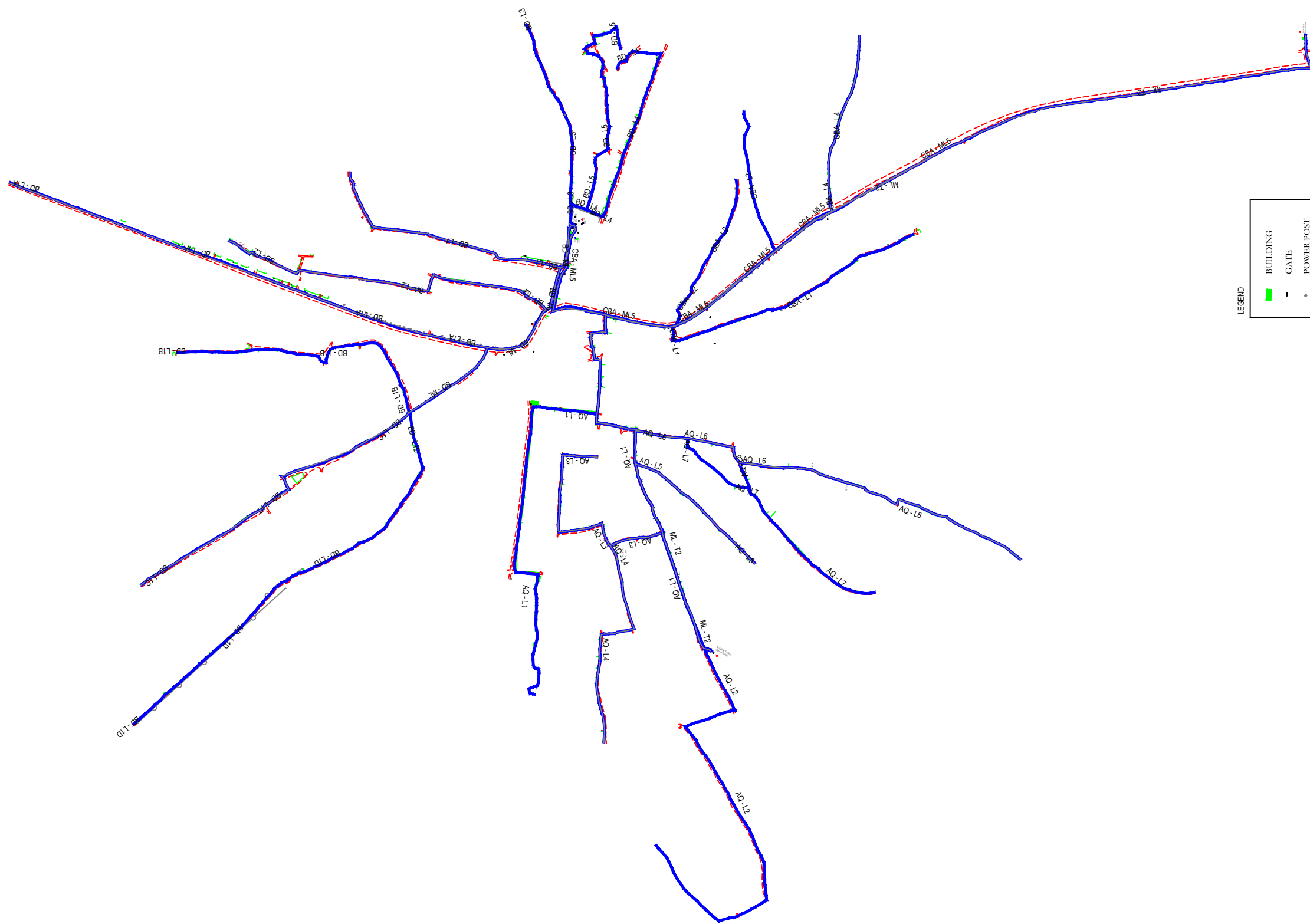
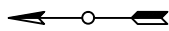
Project
 ELWAK WATER SUPPLY PROJECT
 DETAILED DESIGN

Consulting Engineer

 15 Westlands Road, Westlands, Office No. 09
 P.O. Box 30337 - 00100 Nairobi, Kenya.

Drawing Title
 PROJECT LOCATION
 GENERAL LAYOUT

Designed by	SWM	Drawn by	SWM
Checked by	EBO	Approved by	LWM
Scale	AS SHOWN (AT A1)	Date	JULY 2022
Job No.	ELWAK-WSP	ACAD File:	ELWAK/CAD/2822
A STATUS	DRAWING No.	ELWAK/MAIN LINE -T2/PP/01	0 REV



LEGEND

	BUILDING
	GATE
	POWER POST
	CONTROL POINT
	LAMP POST
	WALL
	WATER TANK
	SLUICE VALVE
	GATE VALVE
	FENCE
	CULVERT
	ROAD

NOTES

PROJECTION : UTM
 ZONE : 37(36°E - 42°E) North Hemisphere
 DATUM : WGS84
 UNITS : Meters

LEGEND

PROPOSED PIPELINE

GENERAL LAYOUT
 SCALE 1:10,000

REV	REVISIONS	SIGN	DATE	APPROVED
D	BY			
	CHECKED			
C	BY			
	CHECKED			
B	BY			
	CHECKED			
A	BY			
	CHECKED			

Client



PO Box 49699 - 00100,
 Nairobi, Kenya
 1st Floor, CIC Plaza,
 Mara Road, Upper Hill,
 Nairobi, Kenya
 Tel: 020 272 90 17 / 8

Project
ELWAK WATER SUPPLY PROJECT
DETAILED DESIGN

Consulting Engineer

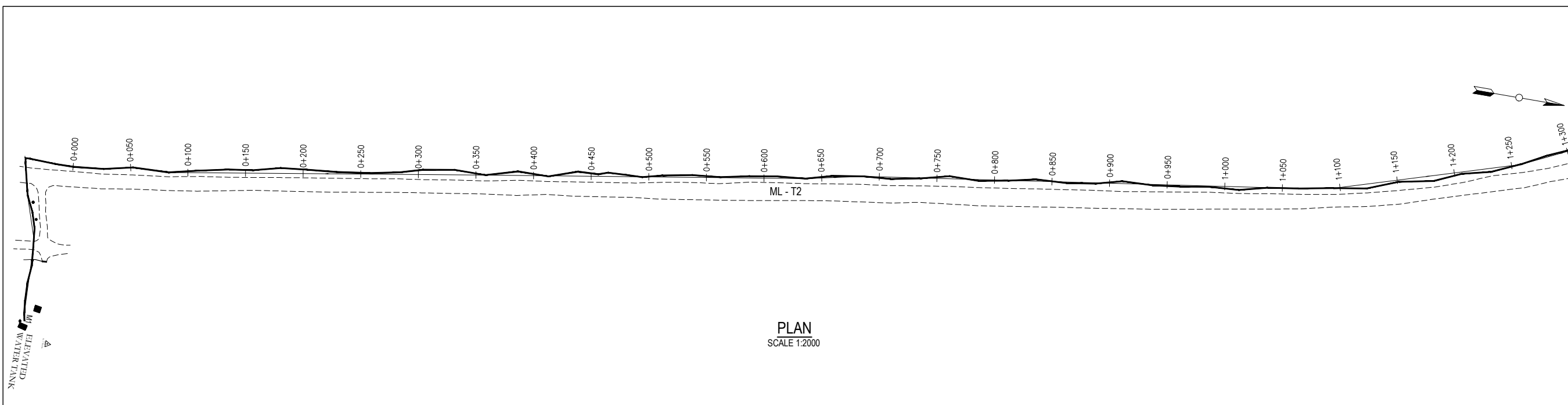


15 Westlands Road, Westlands,
 Office No. 09
 P.O. Box 30337 - 00100 Nairobi,
 Kenya.

Drawing Title
 MAIN LINE - TANK 2
 PLAN AND PROFILE

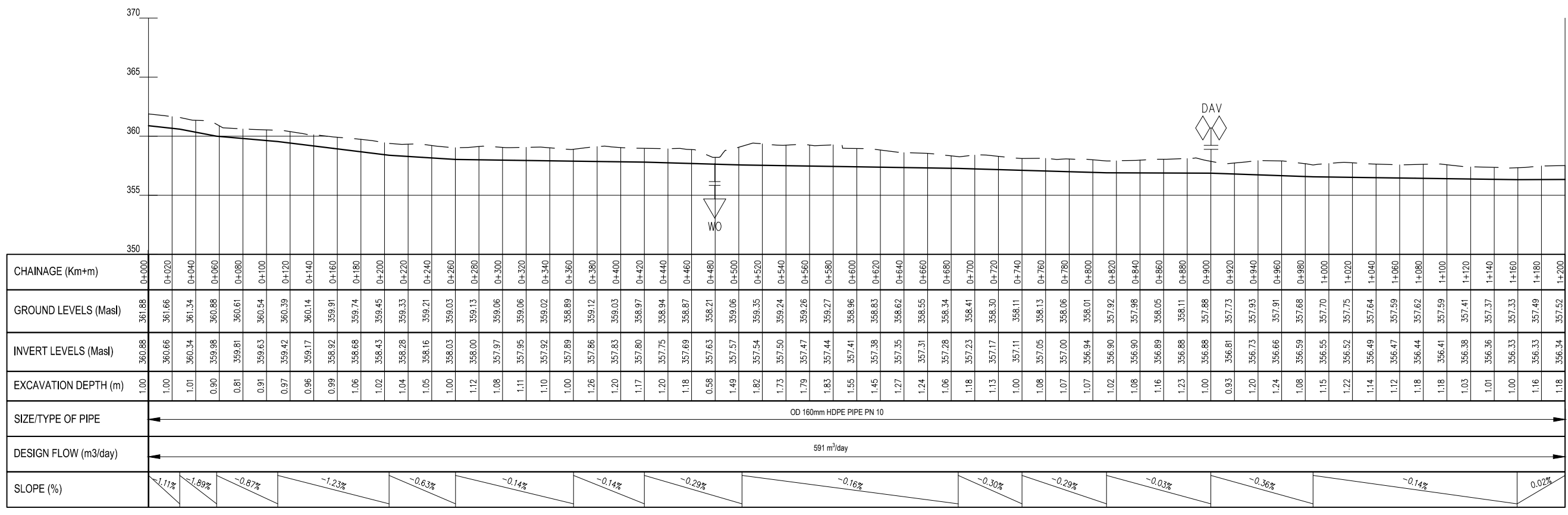
Designed by	SWM	Drawn by	SWM
Checked by	EBO	Approved by	LWM
Scale	AS SHOWN (AT A1)	Date	JULY 2022
Job No.	ELWAK-WSP	ACAD File:	ELWAK/CAD/2022
A	DRAWING No.	ELWAK/MAIN LINE -T2/PP/01	0
STATUS			REV

PLAN AND PROFILES



PLAN
SCALE 1:2000

MAIN LINE_TANK 2 PV - (31)
SCALE: H 1:1000,V 1:100. DATUM: 350.000



PROFILE
SCALES HOR 1:2000 AND VERT 1:200

NOTES


- All levels in metres above Mean Sea Level (MaSL)
- Precise location of air valves, washouts, bends and other fittings to be determined on site.
- Ground and Invert Level shown are only indicative. Final levels to be confirmed in accordance with the Contract Specifications.
- Pipes are to be laid to even gradients with a minimum cover of 1.0m
- All bends are horizontal unless otherwise stated.

LEGEND

- GROUND PROFILE
- PIPE INVERT PROFILE
- PROPOSED PIPELINE
- TARMAC ROAD
- GRAVEL ROAD
- R.D. ROAD CROSSING
- DAV DOUBLE ORIFICE AIR VALVE
- SAV SINGLE ORIFICE AIR VALVE
- WASHOUT
- WO
- NRV NON RETURN VALVE
- RDC REDUCER
- HB HORIZONTAL BEND
- LV LINE VALVE
- T TEE JUNCTION
- PN NOMINAL PRESSURE
- OD OUTSIDE DIAMETER

REV	REVISIONS	SIGN	DATE	APPROVED
D	BY CHECKED			
C	BY CHECKED			
B	BY CHECKED			
A	BY CHECKED			

Client



PO Box 49699 - 00100, Nairobi, Kenya
1st Floor, CIC Plaza, Mara Road, Upper Hill, Nairobi, Kenya
Tel: 020 272 90 17 / 8

Project
ELWAK WATER SUPPLY PROJECT

DETAILED DESIGN

Consulting Engineer



15 Westlands Road, Westlands, Office No. 09
P.O. Box 30337 - 00100 Nairobi, Kenya.

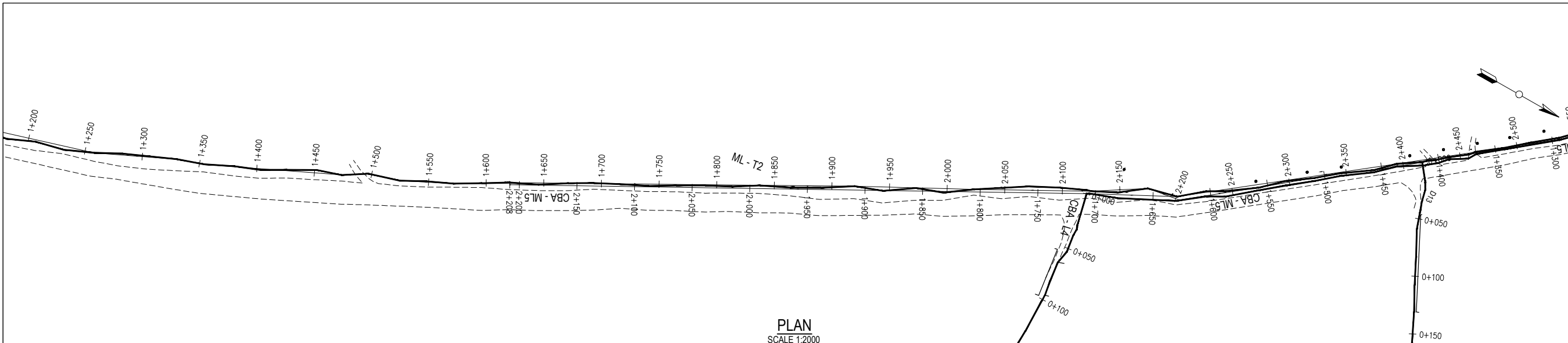
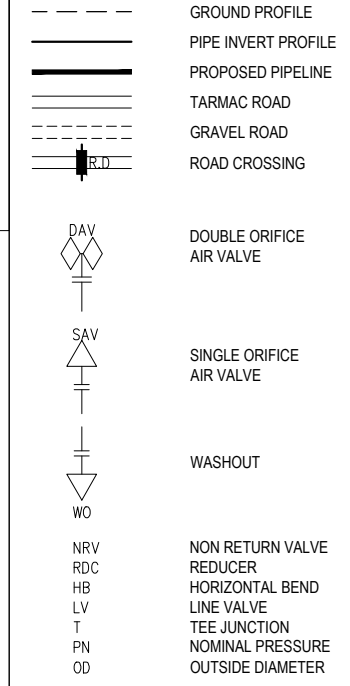
Drawing Title
MAIN LINE - TANK 2
PLAN AND PROFILE

Designed by	SWM	Drawn by	SWM
Checked by	EBO	Approved by	LWM
Scale	AS SHOWN (AT A1)	Date	JULY 2022
Job No.	ELWAK-WSP	ACAD File:	ELWAK/CAD/2022
A STATUS	DRAWING No.	ELWAK/MAIN LINE -T2/PP/01	0 REV

NOTES

- All levels in metres above Mean Sea Level (MaSL)
- Precise location of air valves, washouts, bends and other fittings to be determined on site.
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- All bends are horizontal unless otherwise stated.

LEGEND



MAIN LINE_TANK 2 PV - (32)
SCALE: H 1:1000, V 1:100. DATUM: 350.000

REV	REVISIONS	SIGN	DATE	APPROVED
D	BY CHECKED			
C	BY CHECKED			
B	BY CHECKED			
A	BY CHECKED			

Client

PO Box 49699 - 00100, Nairobi, Kenya
1st Floor, CIC Plaza, Mara Road, Upper Hill, Nairobi, Kenya
Tel: 020 272 90 17 / 8

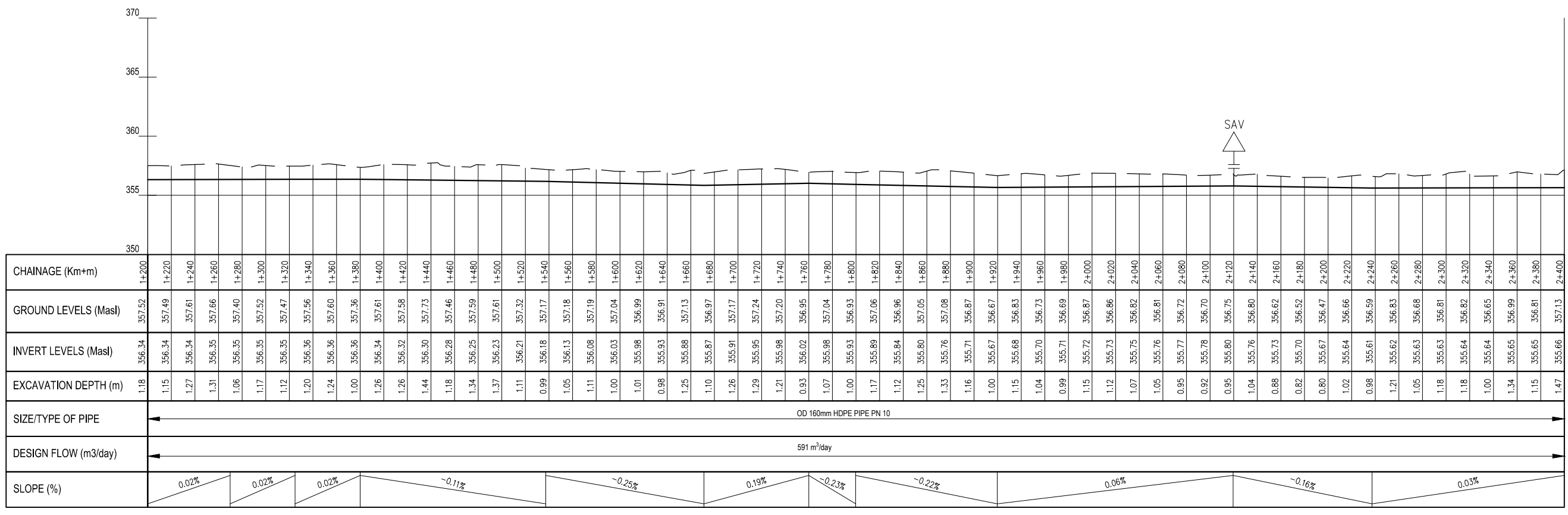
Project
ELWAK WATER SUPPLY PROJECT

Consulting Engineer

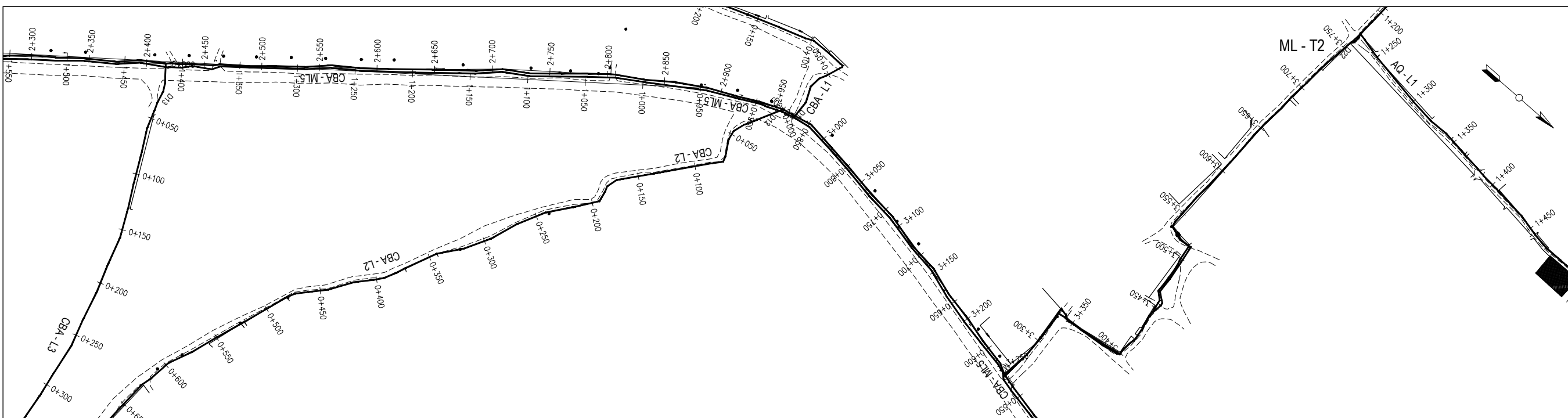
15 Westlands Road, Westlands, Office No. 09
P.O. Box 30337 - 00100 Nairobi, Kenya.

Drawing Title
RISING MAIN
PLAN AND PROFILE

Designed by	SWM	Drawn by	SWM
Checked by	EBO	Approved by	LWM
Scale	AS SHOWN (AT A1)	Date	JULY 2022
Job No.	ELWAK-WSP	ACAD File:	ELWAK/CAD/2022
A STATUS	DRAWING No.	ELWAK/MAIN LINE-12/PP/02	0 REV

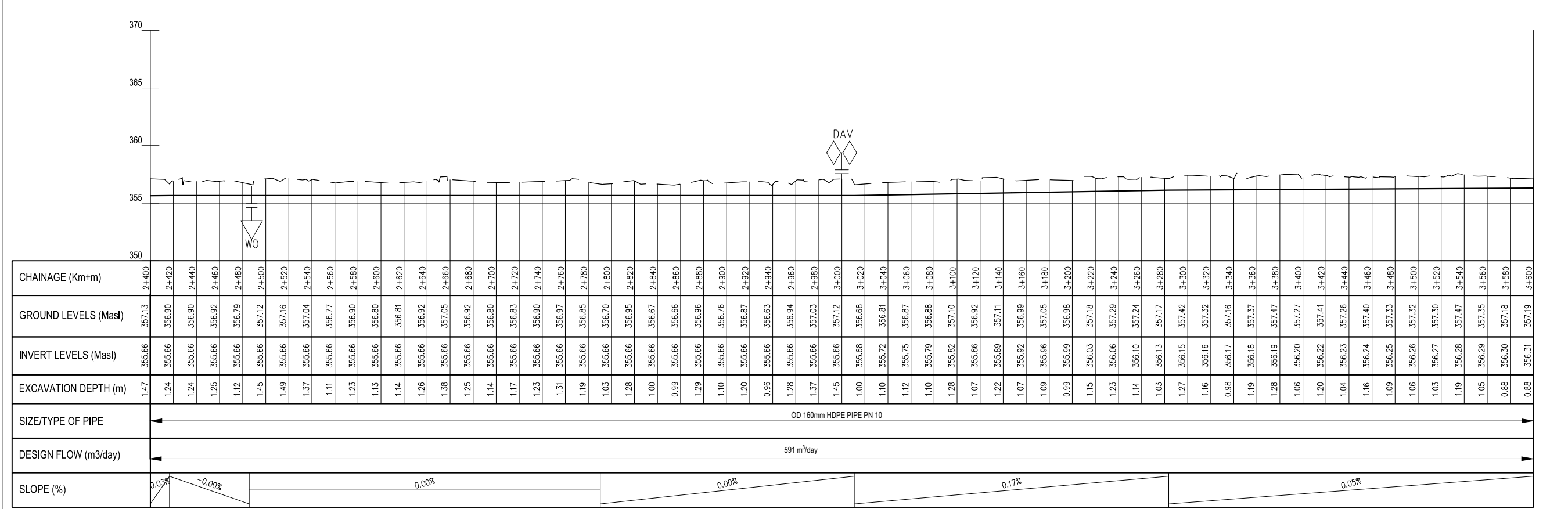


PROFILE
SCALES HOR 1:2000 AND VERT 1:200



PLAN
SCALE 1:2000

MAIN LINE_TANK 2 PV - (33)
SCALE: H 1:1000, V 1:100. DATUM: 350.000



PROFILE
SCALES HOR 1:2000 AND VERT 1:200

NOTES

- All levels in metres above Mean Sea Level (MaSL)
- Precise location of air valves, washouts, bends and other fittings to be determined on site.
- Ground and Invert Level shown are only indicative. Final levels to be confirmed in accordance with the Contract Specifications.
- Pipes are to be laid to even gradients with a minimum cover of 1.0m
- All bends are horizontal unless otherwise stated.

LEGEND

- GROUND PROFILE
- PIPE INVERT PROFILE
- PROPOSED PIPELINE
- TARMAC ROAD
- GRAVEL ROAD
- ROAD CROSSING
- DOUBLE ORIFICE AIR VALVE
- SINGLE ORIFICE AIR VALVE
- WASHOUT
- NON RETURN VALVE
- REDUCER
- HORIZONTAL BEND
- LINE VALVE
- TEE JUNCTION
- NOMINAL PRESSURE
- OUTSIDE DIAMETER

REV	REVISIONS	SIGN	DATE	APPROVED
D	BY			
	CHECKED			
C	BY			
	CHECKED			
B	BY			
	CHECKED			
A	BY			
	CHECKED			

Client

PO Box 49699 - 00100, Nairobi, Kenya
1st Floor, CIC Plaza, Mara Road, Upper Hill, Nairobi, Kenya
Tel: 020 272 90 17 / 8

Project
ELWAK WATER SUPPLY PROJECT

DETAILED DESIGN

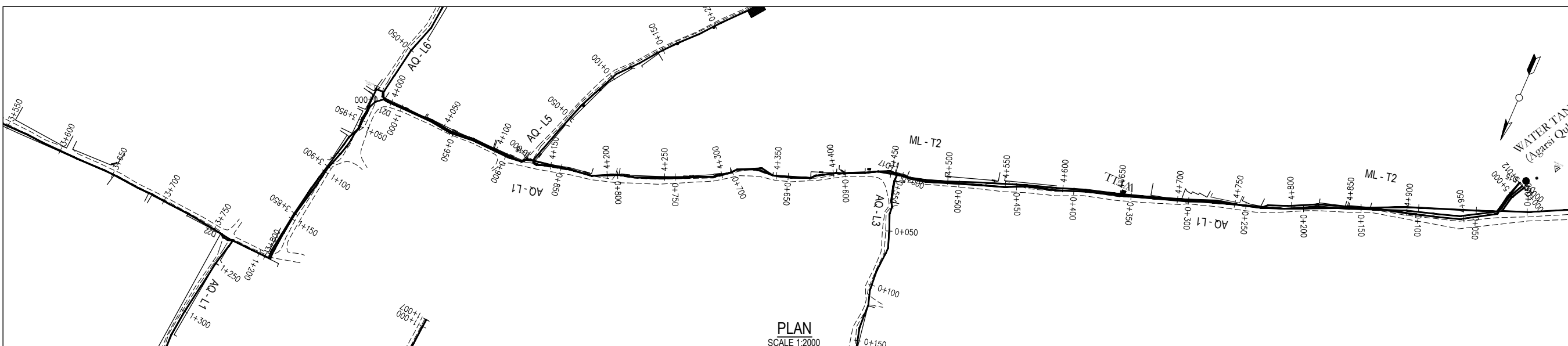
Consulting Engineer

15 Westlands Road, Westlands, Office No. 09
P.O. Box 30337 - 00100 Nairobi, Kenya.

Drawing Title
RISING MAIN

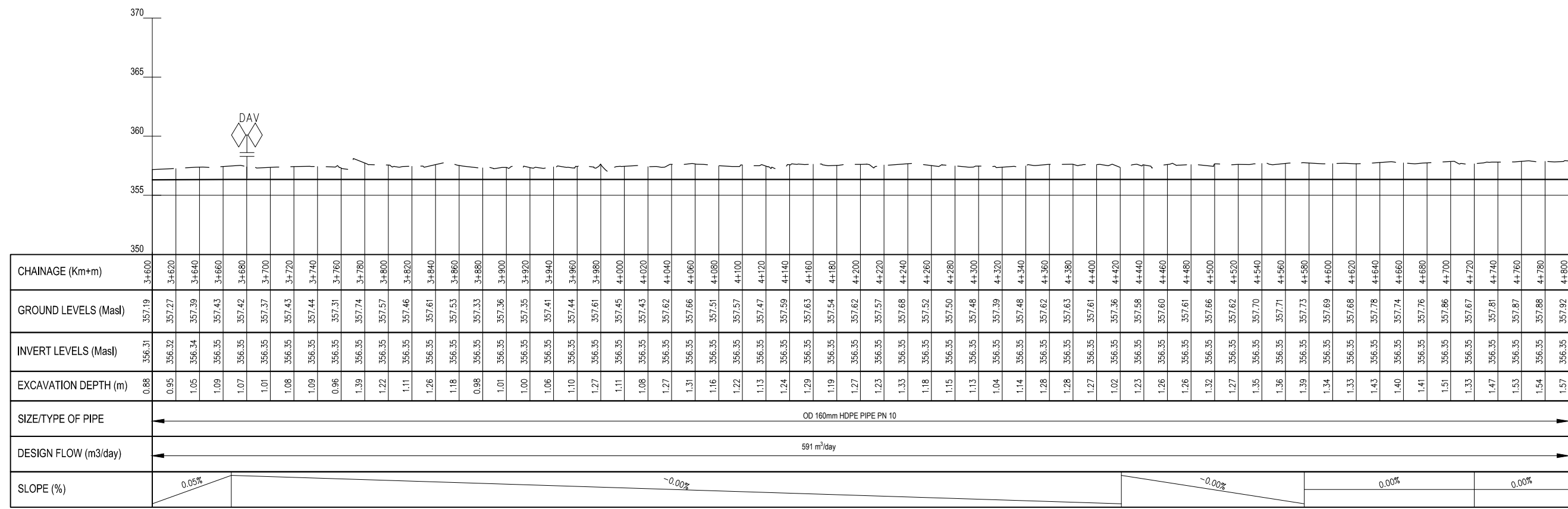
PLAN AND PROFILE

Designed by	SWM	Drawn by	SWM
Checked by	EBO	Approved by	LWM
Scale	AS SHOWN (AT A1)	Date	JULY 2022
Job No.	ELWAK-WSP	ACAD File:	ELWAK/CAD/2022
A STATUS	DRAWING No.	ELWAK/MAIN LINE-T2/PP/03	0 REV



PLAN
SCALE 1:2000

MAIN LINE_TANK 2 PV - (34)
SCALE: H 1:1000,V 1:100. DATUM: 350.000



PROFILE
SCALES HOR 1:2000 AND VERT 1:200

NOTES

- All levels in metres above Mean Sea Level (MaSL)
- Precise location of air valves, washouts, bends and other fittings to be determined on site.
- Ground and Invert Level shown are only indicative. Final levels to be confirmed in accordance with the Contract Specifications.
- Pipes are to be laid to even gradients with a minimum cover of 1.0m
- All bends are horizontal unless otherwise stated.

LEGEND

- GROUND PROFILE
- PIPE INVERT PROFILE
- PROPOSED PIPELINE
- TARMAC ROAD
- GRAVEL ROAD
- ROAD CROSSING
- DOUBLE ORIFICE AIR VALVE (DAV)
- SINGLE ORIFICE AIR VALVE (SAV)
- WASHOUT
- NON RETURN VALVE (NRV)
- REDUCER (RDC)
- HORIZONTAL BEND (HB)
- LINE VALVE (LV)
- TEE JUNCTION (T)
- NOMINAL PRESSURE (PN)
- OUTSIDE DIAMETER (OD)

REV	REVISIONS	SIGN	DATE	APPROVED
D	BY			
	CHECKED			
C	BY			
	CHECKED			
B	BY			
	CHECKED			
A	BY			
	CHECKED			

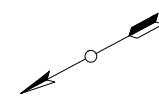
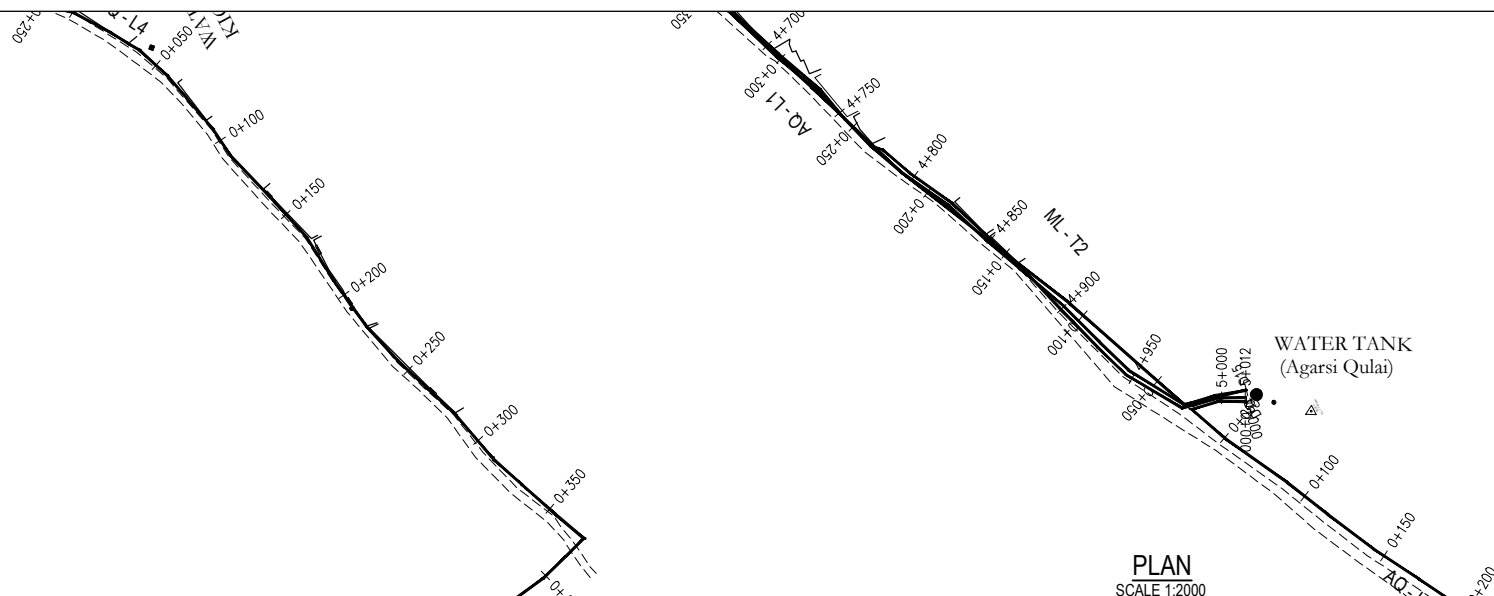
Client
 PO Box 49699 - 00100, Nairobi, Kenya
 1st Floor, CIC Plaza, Mara Road, Upper Hill, Nairobi, Kenya
 Tel: 020 272 90 17 / 8

Project
ELWAK WATER SUPPLY PROJECT
DETAILED DESIGN

Consulting Engineer
 15 Westlands Road, Westlands, Office No. 09
 P.O. Box 30337 - 00100 Nairobi, Kenya.

Drawing Title
RISING MAIN
 PLAN AND PROFILE

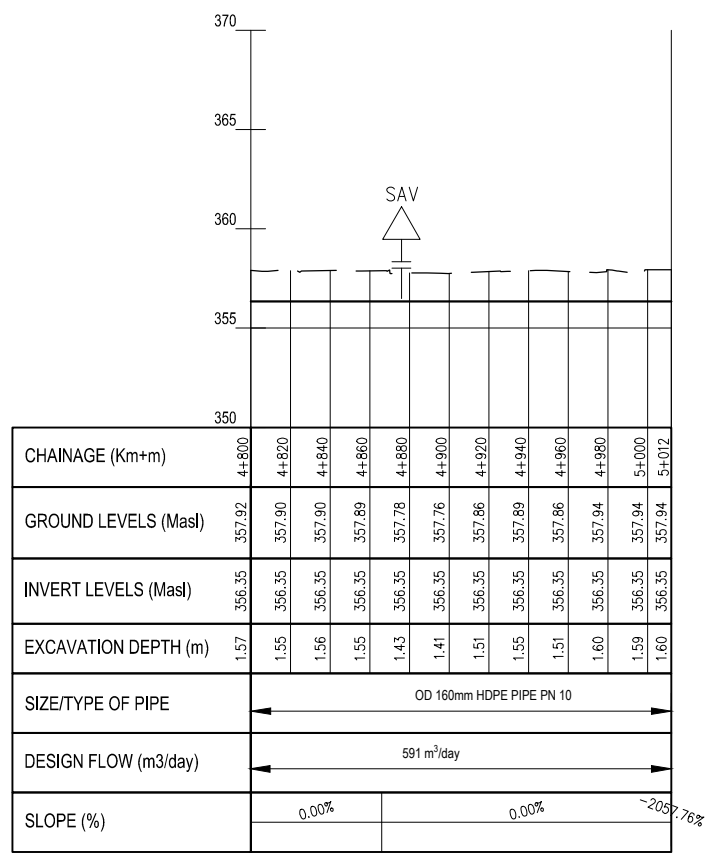
Designed by	SWM	Drawn by	SWM
Checked by	EBO	Approved by	LWM
Scale	AS SHOWN (AT A1)	Date	JULY 2022
Job No.	ELWAK-WSP	ACAD File:	ELWAK/CAD/2022
A STATUS	DRAWING No.	ELWAK/MAIN LINE-T2/PP/03	0 REV



- NOTES**
- All levels in metres above Mean Sea Level (MaSL)
 - Precise location of air valves, washouts, bends and other fittings to be determined on site.
 - Ground and Invert Level shown are only indicative. Final levels to be confirmed in accordance with the Contract Specifications.
 - Pipes are to be laid to even gradients with a minimum cover of 1.0m
 - All bends are horizontal unless otherwise stated.

- LEGEND**
- GROUND PROFILE
 - PIPE INVERT PROFILE
 - PROPOSED PIPELINE
 - ==== TARMAC ROAD
 - GRAVEL ROAD
 - R.D. ROAD CROSSING
 - DAV DOUBLE ORIFICE AIR VALVE
 - SAV SINGLE ORIFICE AIR VALVE
 - WASHOUT
 - WO
 - NRV NON RETURN VALVE
 - RDC REDUCER
 - HB HORIZONTAL BEND
 - LV LINE VALVE
 - T TEE JUNCTION
 - PN NOMINAL PRESSURE
 - OD OUTSIDE DIAMETER

MAIN LINE_TANK 2 PV - (35)
SCALE: H 1:1000, V 1:100. DATUM: 350.000



PROFILE
SCALES HOR 1:2000 AND VERT 1:200

REV	REVISIONS	SIGN	DATE	APPROVED
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C	CHECKED	BY		
B	CHECKED	BY		
A	CHECKED	BY		

Client



PO Box 49699 - 00100,
 Nairobi, Kenya
 1st Floor, CIC Plaza,
 Mara Road, Upper Hill,
 Nairobi, Kenya
 Tel: 020 272 90 17 / 8

Project
ELWAK WATER SUPPLY PROJECT

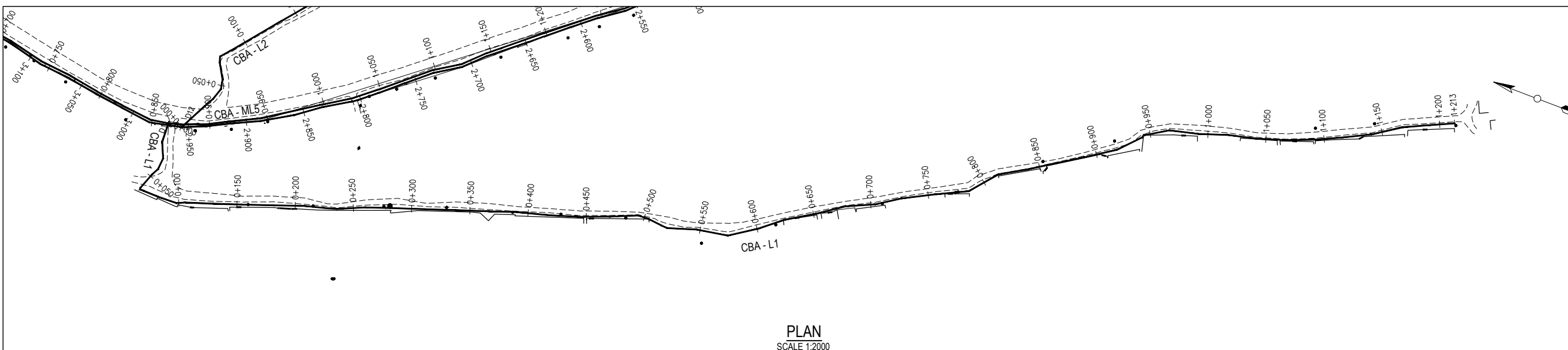
Consulting Engineer



15 Westlands Road, Westlands,
 Office No. 09
 P.O. Box 30337 - 00100 Nairobi,
 Kenya.

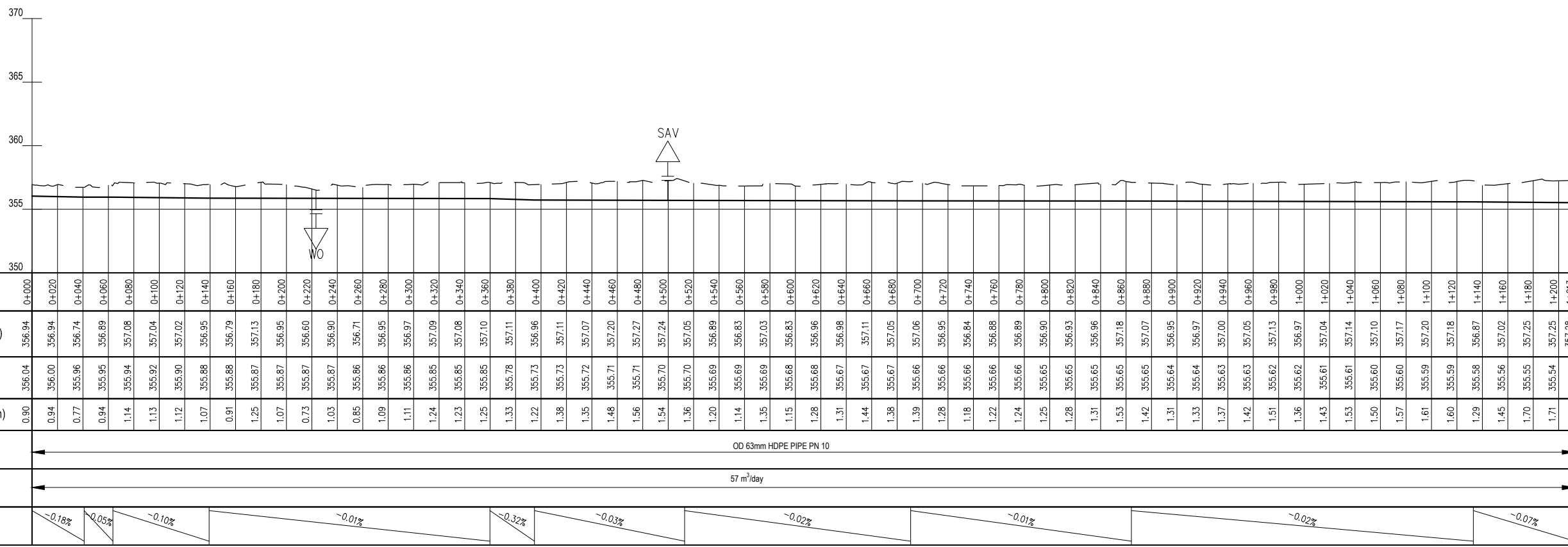
Drawing Title
RISING MAIN
PLAN AND PROFILE

Designed by	SWM	Drawn by	SWM
Checked by	EBO	Approved by	LWM
Scale	AS SHOWN (AT A1)	Date	JULY 2022
Job No.	ELWAK-WSP	ACAD File:	ELWAK/CAD/2022
A STATUS	DRAWING No.	ELWAK/MAIN LINE - T2/PP/04	0 REV



PLAN
SCALE 1:2000

CBA LINE 1 PV - (37)
SCALE: H 1:1000, V 1:100. DATUM: 350.000



PROFILE
SCALES HOR 1:2000 AND VERT 1:200


- NOTES**
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 - Precise location of air valves, washouts, bends and other fittings to be determined on site.
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 - All bends are horizontal unless otherwise stated.

- LEGEND**
- GROUND PROFILE
 - PIPE INVERT PROFILE
 - PROPOSED PIPELINE
 - TARMAC ROAD
 - GRAVEL ROAD
 - ROAD CROSSING

- DAV DOUBLE ORIFICE AIR VALVE
- SAV SINGLE ORIFICE AIR VALVE
- WASHOUT
- WO
- NRV NON RETURN VALVE
- RDC REDUCER
- HB HORIZONTAL BEND
- LV LINE VALVE
- T TEE JUNCTION
- PN NOMINAL PRESSURE
- OD OUTSIDE DIAMETER

REV	REVISIONS	SIGN	DATE	APPROVED
D	BY CHECKED			
C	BY CHECKED			
B	BY CHECKED			
A	BY CHECKED			

Client



PO Box 49699 - 00100, Nairobi, Kenya
1st Floor, CIC Plaza, Mara Road, Upper Hill, Nairobi, Kenya
Tel: 020 272 90 17 / 8

Project
ELWAK WATER SUPPLY PROJECT

DETAILED DESIGN

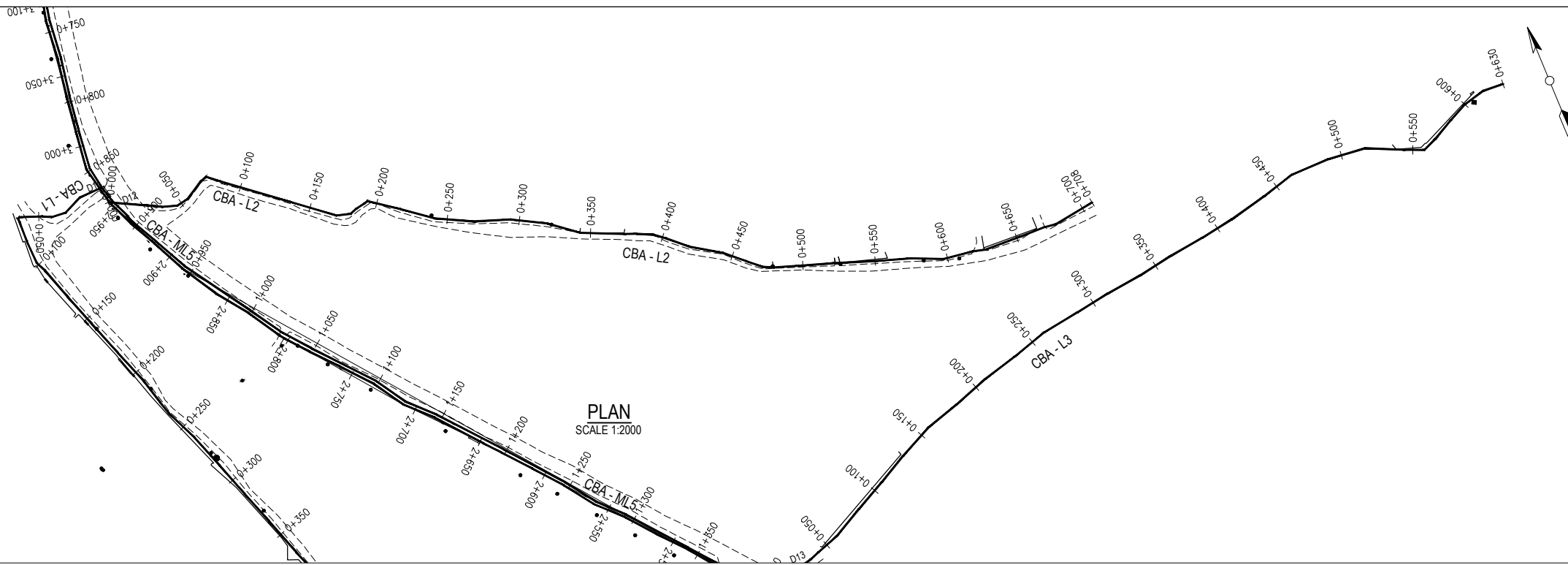
Consulting Engineer



15 Westlands Road, Westlands, Office No. 09
P.O. Box 30337 - 00100 Nairobi, Kenya.

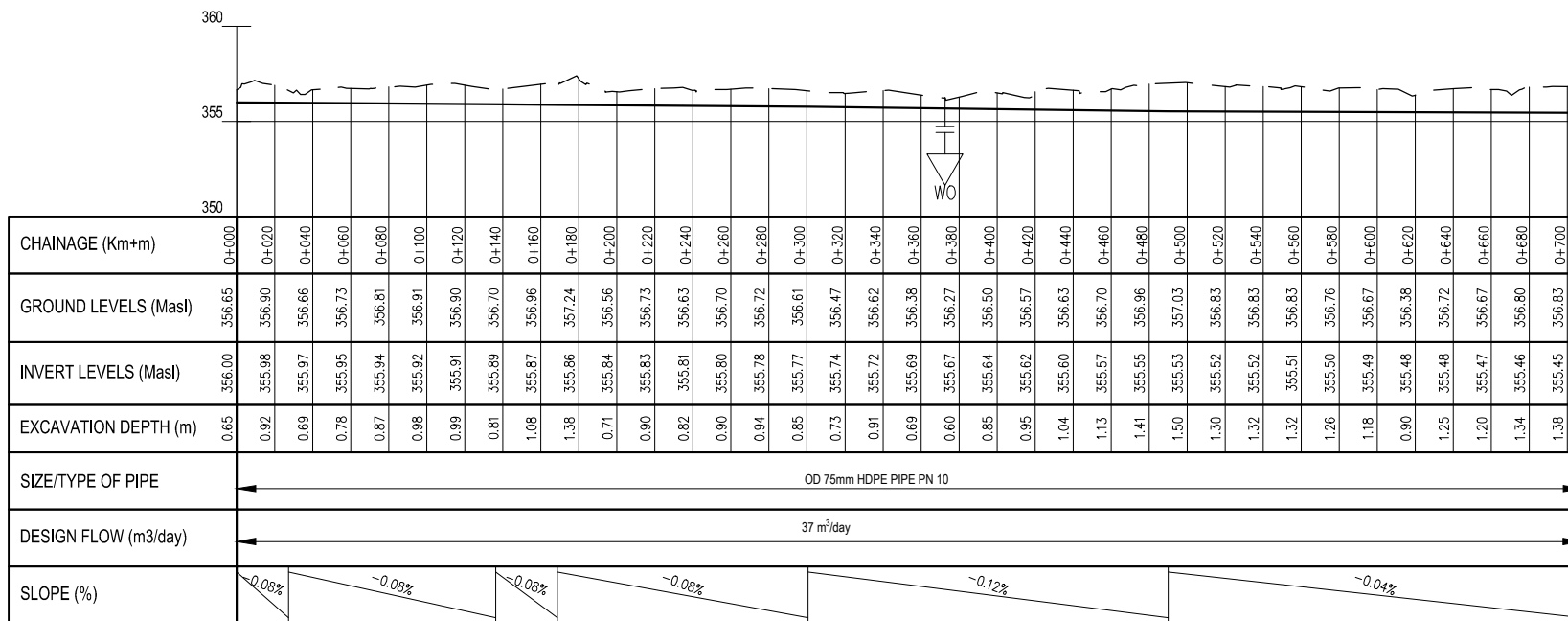
Drawing Title
CBA - L1
PLAN AND PROFILE

Designed by	SWM	Drawn by	SWM
Checked by	EBO	Approved by	LWM
Scale	AS SHOWN (AT A1)	Date	JULY 2022
Job No.	ELWAK-WSP	ACAD File:	ELWAK/CAD/2022
A STATUS	DRAWING No.	ELWAK/CBA L1/PP/01	0 REV



PLAN
SCALE 1:2000

CBA LINE 2 PV - (38)
SCALE: H 1:1000, V 1:100. DATUM: 350.000



PROFILE
SCALES HOR 1:2000 AND VERT 1:200

- NOTES**
- All levels in metres above Mean Sea Level (MaSL)
 - Precise location of air valves, washouts, bends and other fittings to be determined on site.
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LEGEND

- GROUND PROFILE
- PIPE INVERT PROFILE
- PROPOSED PIPELINE
- TARMAC ROAD
- GRAVEL ROAD
- ROAD CROSSING
- DOUBLE ORIFICE AIR VALVE
- SINGLE ORIFICE AIR VALVE
- WASHOUT
- WASHOUT
- NON RETURN VALVE
- REDUCER
- HORIZONTAL BEND
- LINE VALVE
- TEE JUNCTION
- NOMINAL PRESSURE
- OUTSIDE DIAMETER

REV	REVISIONS	SIGN	DATE	APPROVED
D	BY CHECKED			
C	BY CHECKED			
B	BY CHECKED			
A	BY CHECKED			

Client

PO Box 49699 - 00100, Nairobi, Kenya
1st Floor, CIC Plaza, Mara Road, Upper Hill, Nairobi, Kenya
Tel: 020 272 90 17 / 8

Project
ELWAK WATER SUPPLY PROJECT

DETAILED DESIGN

Consulting Engineer

15 Westlands Road, Westlands, Office No. 09
P.O. Box 30337 - 00100 Nairobi, Kenya.

Drawing Title
CBA - L2
PLAN AND PROFILE

Designed by	SWM	Drawn by	SWM
Checked by	EBO	Approved by	LWM
Scale	AS SHOWN (AT A1)	Date	JULY 2022
Job No.	ELWAK-WSP	ACAD File:	ELWAK/CAD/2022
A STATUS	DRAWING No.	ELWAK/CBA-L2/PP/01	0 REV

NOTES

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- Pipes are to be laid to even gradients with a minimum cover of 1.0m
- All bends are horizontal unless otherwise stated.


LEGEND

- GROUND PROFILE
- PIPE INVERT PROFILE
- PROPOSED PIPELINE
- TARMAC ROAD
- GRAVEL ROAD
- ROAD CROSSING

- DOUBLE ORIFICE AIR VALVE
- SINGLE ORIFICE AIR VALVE
- WASHOUT
- NON RETURN VALVE
- REDUCER
- HORIZONTAL BEND
- LINE VALVE
- TEE JUNCTION
- NOMINAL PRESSURE
- OUTSIDE DIAMETER

REV	REVISIONS	SIGN	DATE	APPROVED
D	BY CHECKED			
C	BY CHECKED			
B	BY CHECKED			
A	BY CHECKED			

Client



PO Box 49699 - 00100,
Nairobi, Kenya
1st Floor, CIC Plaza,
Mara Road, Upper Hill,
Nairobi, Kenya
Tel: 020 272 90 17 / 8

Project
ELWAK WATER SUPPLY PROJECT

DETAILED DESIGN

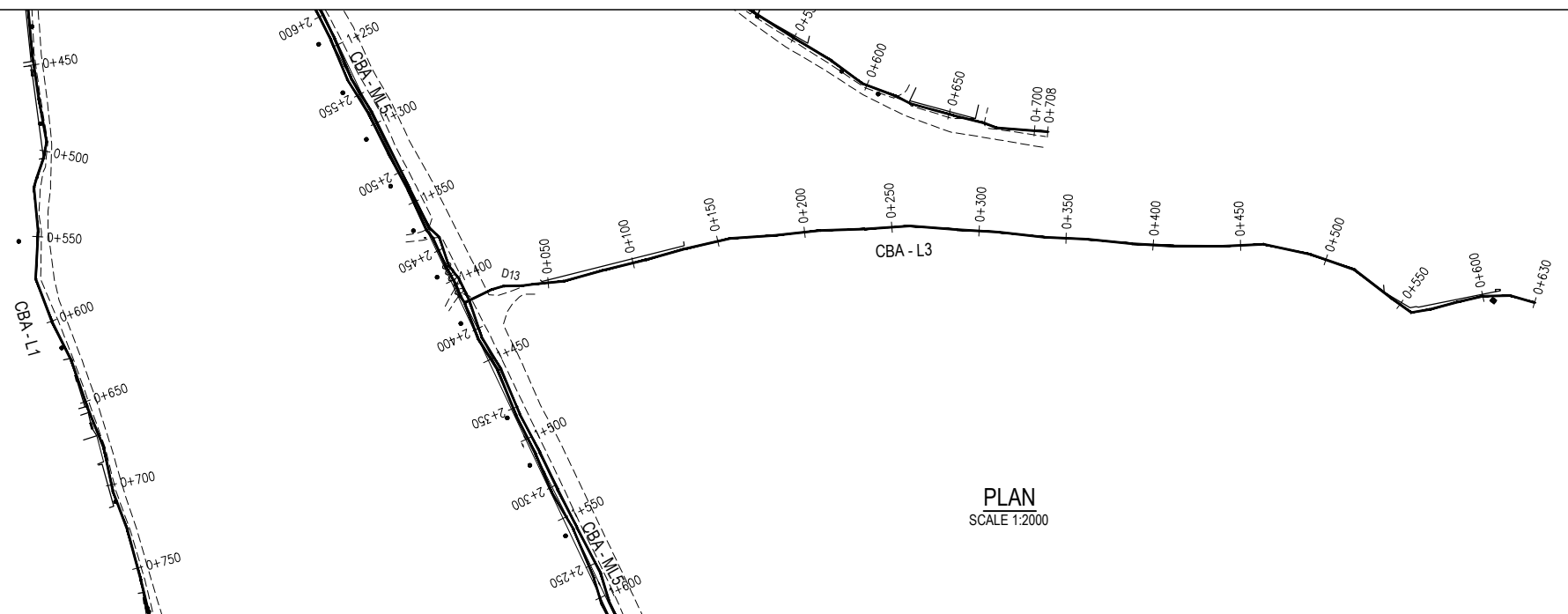
Consulting Engineer



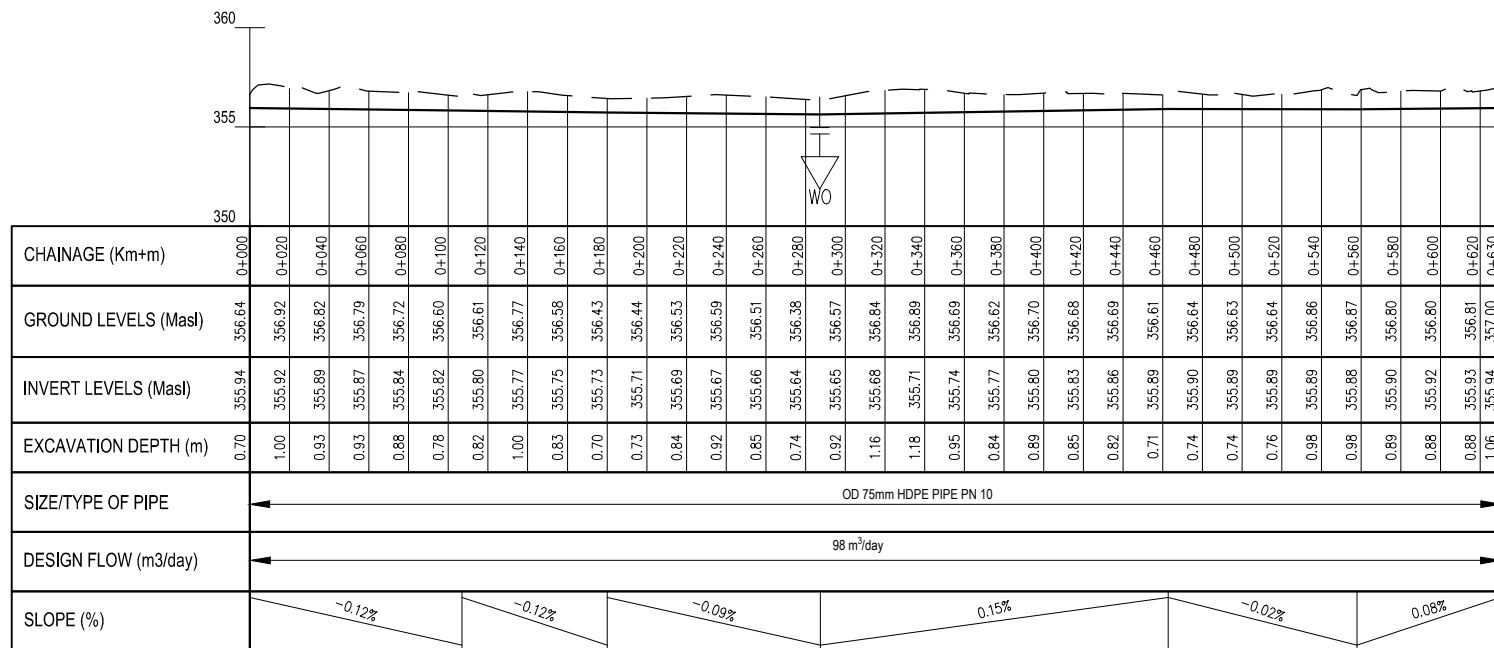
15 Westlands Road, Westlands,
Office No. 09
P.O. Box 30337 - 00100 Nairobi,
Kenya.

Drawing Title
CBA - L3
PLAN AND PROFILE

Designed by	SWM	Drawn by	SWM
Checked by	EBO	Approved by	LWM
Scale	AS SHOWN (AT A1)	Date	JULY 2022
Job No.	ELWAK-WSP	ACAD File:	ELWAK/CAD/2022
A STATUS	DRAWING No.	ELWAK/CBA-L3/PP/01	0 REV



CBA LINE 3 PV - (39)
SCALE: H 1:1000, V 1:100. DATUM: 350.000



PROFILE
SCALES HOR 1:2000 AND VERT 1:200

NOTES

- All levels in metres above Mean Sea Level (MaSL)
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- Ground and Invert Level shown are only indicative. Final levels to be confirmed in accordance with the Contract Specifications.
- Pipes are to be laid to even gradients with a minimum cover of 1.0m
- All bends are horizontal unless otherwise stated.


LEGEND

- GROUND PROFILE
- PIPE INVERT PROFILE
- PROPOSED PIPELINE
- TARMAC ROAD
- GRAVEL ROAD
- ROAD CROSSING

- DOUBLE ORIFICE AIR VALVE
- SINGLE ORIFICE AIR VALVE
- WASHOUT
- WASHOUT
- NON RETURN VALVE
- REDUCER
- HORIZONTAL BEND
- LINE VALVE
- TEE JUNCTION
- NOMINAL PRESSURE
- OUTSIDE DIAMETER

REV	REVISIONS	SIGN	DATE	APPROVED
D	BY CHECKED			
C	BY CHECKED			
B	BY CHECKED			
A	BY CHECKED			

Client




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1st Floor, CIC Plaza, Mara Road, Upper Hill, Nairobi, Kenya
Tel: 020 272 90 17 / 8

Project
ELWAK WATER SUPPLY PROJECT

DETAILED DESIGN

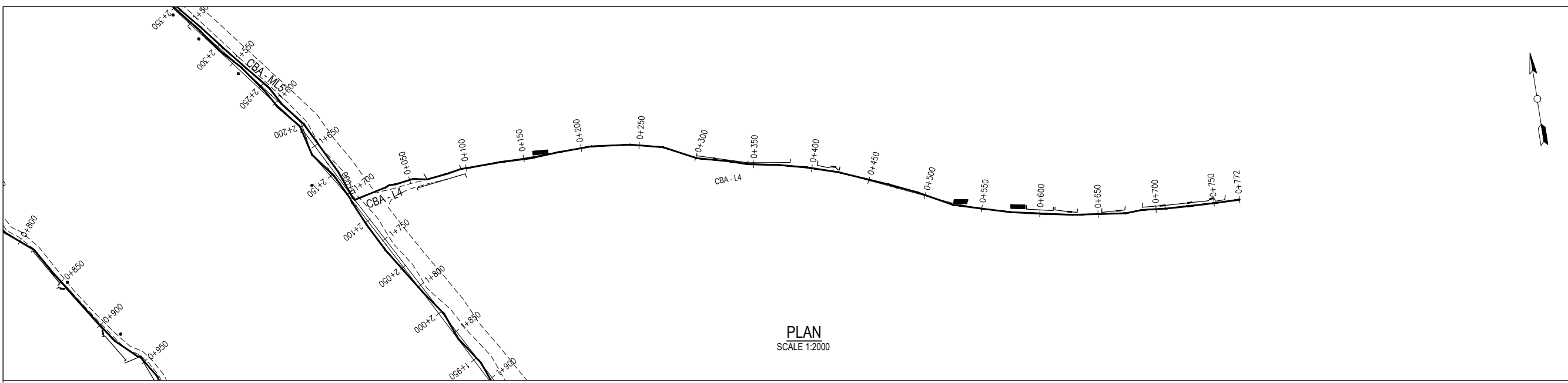
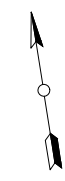
Consulting Engineer



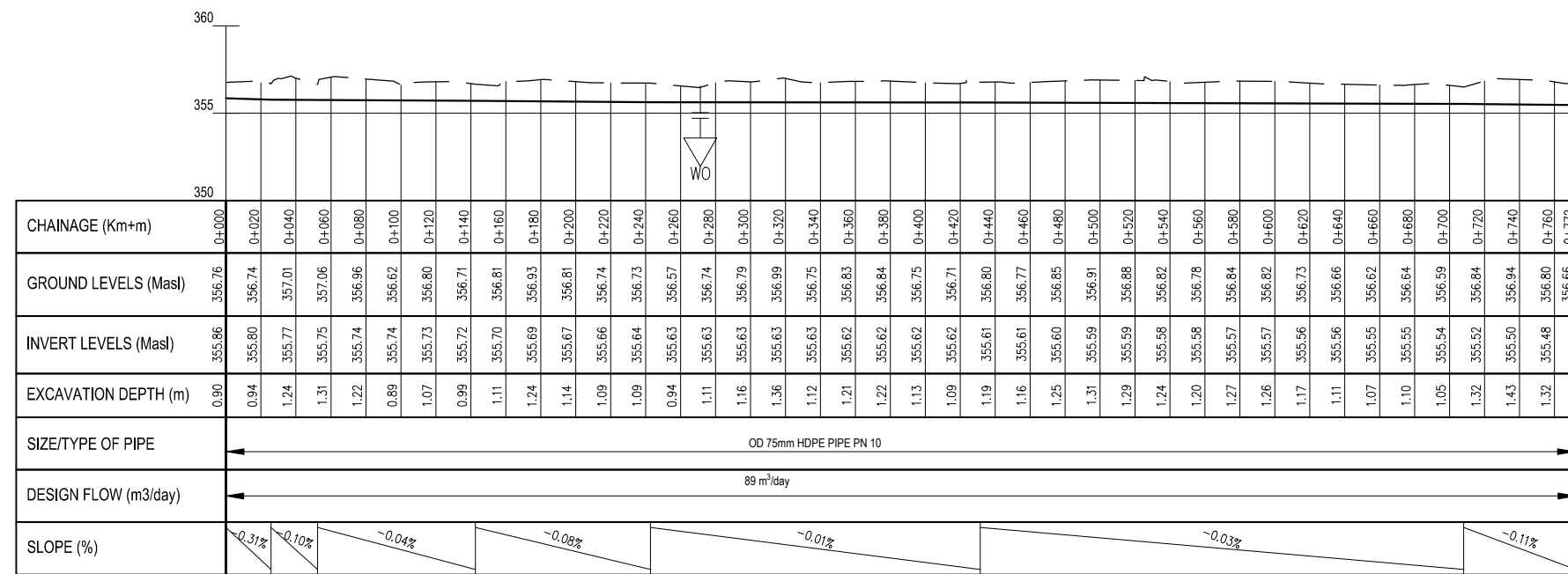
15 Westlands Road, Westlands, Office No. 09
P.O. Box 30337 - 00100 Nairobi, Kenya.

Drawing Title
CBA - L4
PLAN AND PROFILE

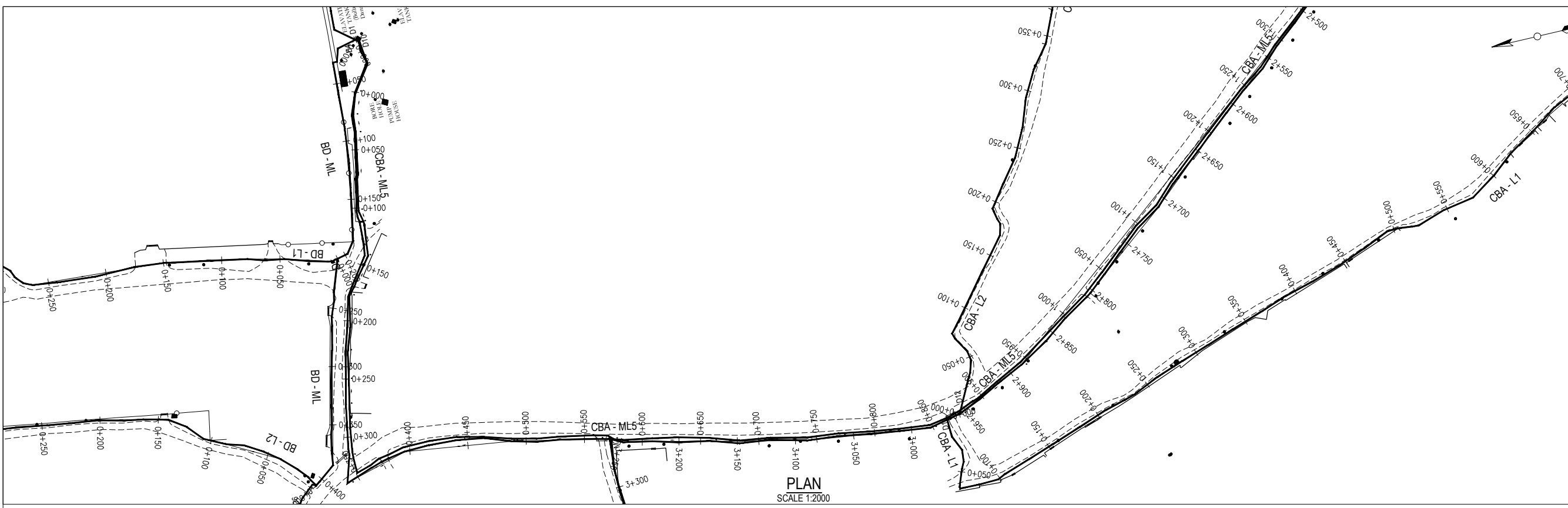
Designed by	SWM	Drawn by	SWM
Checked by	EBO	Approved by	LWM
Scale	AS SHOWN (AT A1)	Date	JULY 2022
Job No.	ELWAK-WSP	ACAD File:	ELWAK/CAD/2022
A STATUS	DRAWING No.	ELWAK/CBA-L4/PP/01	0 REV



CBA LINE 4 PV - (40)
SCALE: H 1:1000, V 1:100. DATUM: 350.000



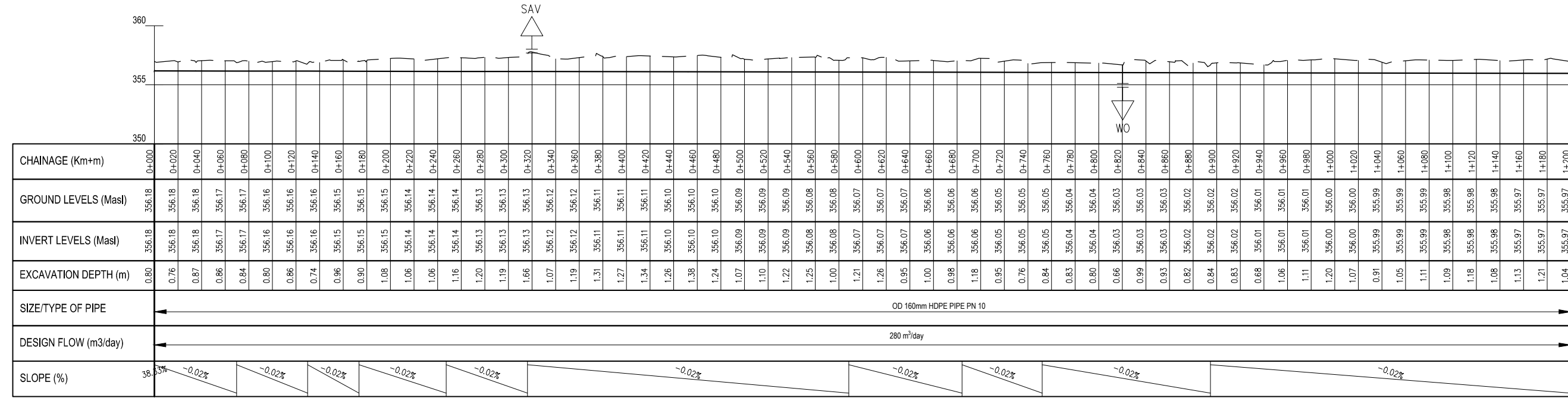
PROFILE
SCALES HOR 1:2000 AND VERT 1:200



- NOTES**
- All levels in metres above Mean Sea Level (MaSL)
 - Precise location of air valves, washouts, bends and other fittings to be determined on site.
 - Ground and Invert Level shown are only indicative. Final levels to be confirmed in accordance with the Contract Specifications.
 - Pipes are to be laid to even gradients with a minimum cover of 1.0m
 - All bends are horizontal unless otherwise stated.

- LEGEND**
- GROUND PROFILE
 - PIPE INVERT PROFILE
 - PROPOSED PIPELINE
 - TARMAC ROAD
 - GRAVEL ROAD
 - ROAD CROSSING
 - DAV DOUBLE ORIFICE AIR VALVE
 - SAV SINGLE ORIFICE AIR VALVE
 - WASHOUT
 - WO
 - NRV NON RETURN VALVE
 - RDC REDUCER
 - HB HORIZONTAL BEND
 - LV LINE VALVE
 - T TEE JUNCTION
 - PN NOMINAL PRESSURE
 - OD OUTSIDE DIAMETER

CBD_BULLA AFYA MAIN LINE PV - (75)
SCALE: H 1:1000, V 1:100. DATUM: 350.000



PROFILE
SCALES HOR 1:2000 AND VERT 1:200

REV	REVISIONS	SIGN	DATE	APPROVED
D	CHECKED			
C	CHECKED			
B	CHECKED			
A	CHECKED			

Client

PO Box 49699 - 00100, Nairobi, Kenya
 1st Floor, CIC Plaza, Mara Road, Upper Hill, Nairobi, Kenya
 Tel: 020 272 90 17 / 8

Project
ELWAK WATER SUPPLY PROJECT

Consulting Engineer

15 Westlands Road, Westlands, Office No. 09
 P.O. Box 30337 - 00100 Nairobi, Kenya.

Drawing Title
CBA - ML5
PLAN AND PROFILE

Designed by	SWM	Drawn by	SWM
Checked by	EBO	Approved by	LWM
Scale	AS SHOWN (AT A1)	Date	JULY 2022
Job No.	ELWAK-WSP	ACAD File:	ELWAK/CAD/2022
A STATUS	DRAWING No.	ELWAK/CBA-ML5/PP/01	0 REV

NOTES

- All levels in metres above Mean Sea Level (MaSL)
- Precise location of air valves, washouts, bends and other fittings to be determined on site.
- Ground and Invert Level shown are only indicative. Final levels to be confirmed in accordance with the Contract Specifications.
- Pipes are to be laid to even gradients with a minimum cover of 1.0m
- All bends are horizontal unless otherwise stated.

LEGEND

- GROUND PROFILE
- PIPE INVERT PROFILE
- PROPOSED PIPELINE
- TARMAC ROAD
- GRAVEL ROAD
- ROAD CROSSING

- DOUBLE ORIFICE AIR VALVE
- SINGLE ORIFICE AIR VALVE
- WASHOUT
- WASHOUT
- NON RETURN VALVE
- REDUCER
- HORIZONTAL BEND
- LINE VALVE
- TEE JUNCTION
- NOMINAL PRESSURE
- OUTSIDE DIAMETER

REV	REVISIONS	SIGN	DATE	APPROVED
D	BY CHECKED			
C	BY CHECKED			
B	BY CHECKED			
A	BY CHECKED			


Client



PO Box 49699 - 00100,
Nairobi, Kenya
1st Floor, CIC Plaza,
Mara Road, Upper Hill,
Nairobi, Kenya
Tel: 020 272 90 17 / 8

Project
ELWAK WATER SUPPLY PROJECT

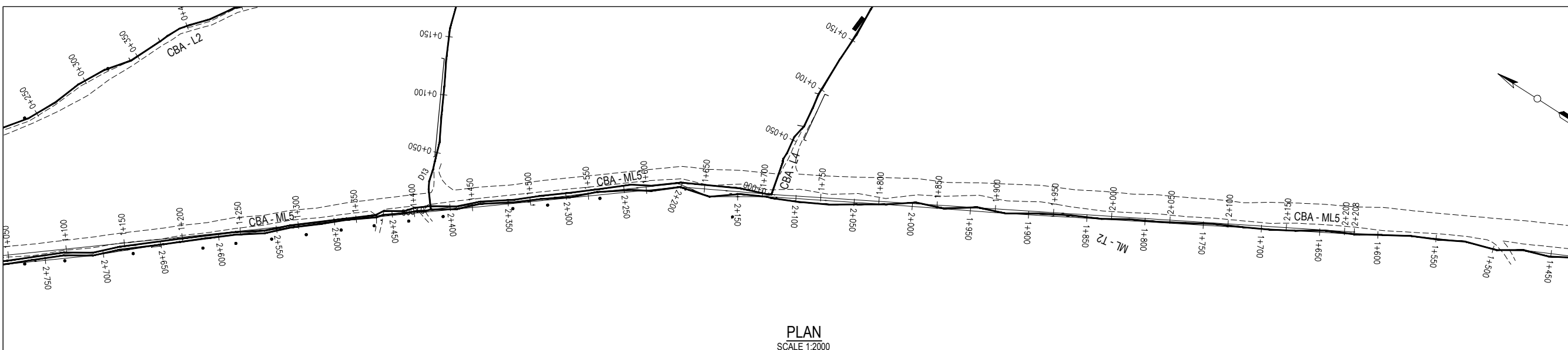
Consulting Engineer



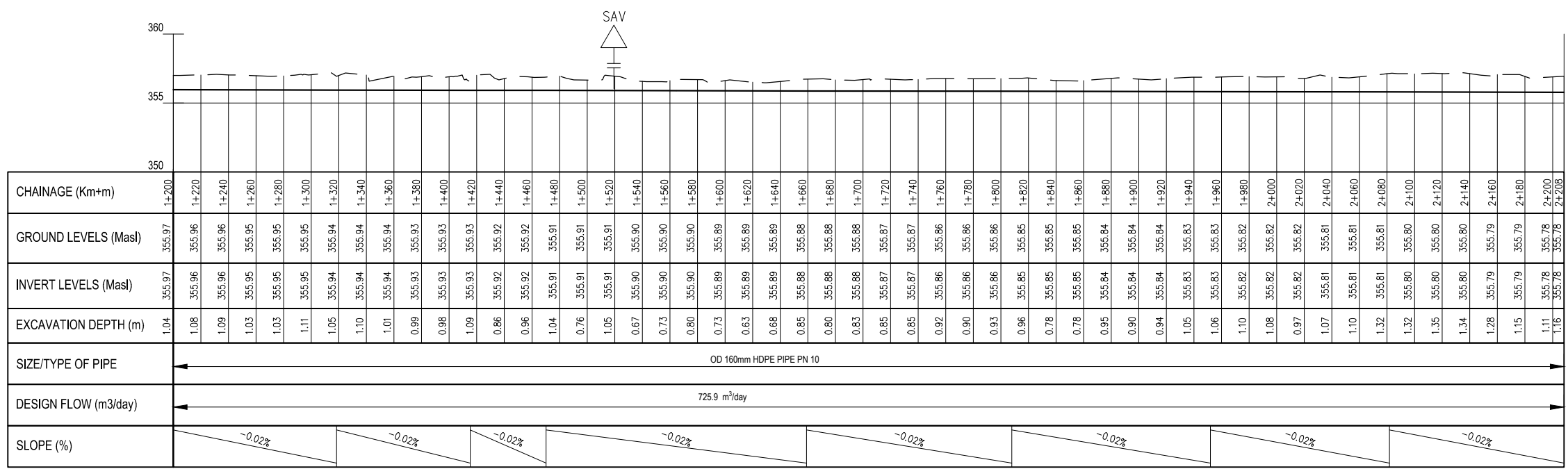
15 Westlands Road, Westlands,
Office No. 09
P.O. Box 30337 - 00100 Nairobi,
Kenya.

Drawing Title
CBA - ML5
PLAN AND PROFILE

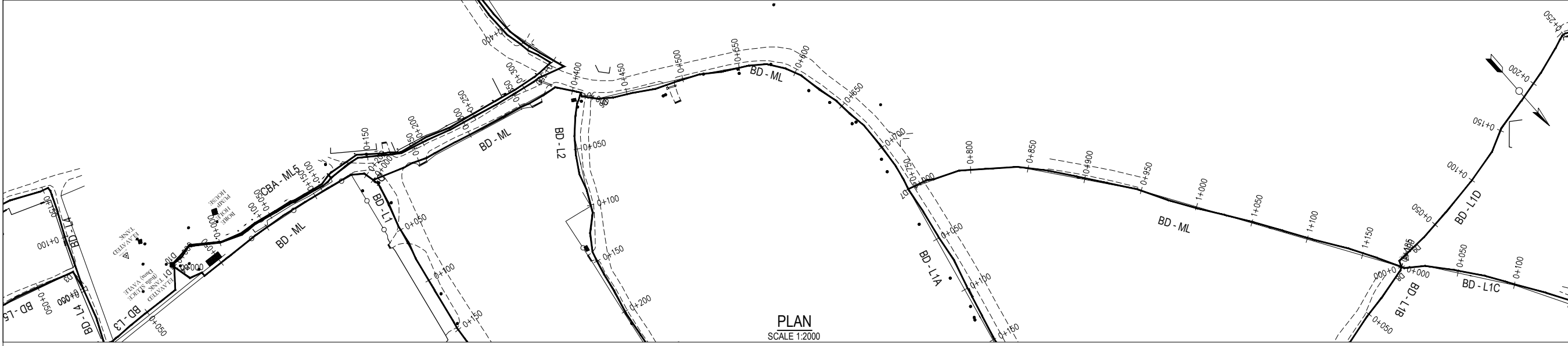
Designed by	SWM	Drawn by	SWM
Checked by	EBO	Approved by	LWM
Scale	AS SHOWN (AT A1)	Date	JULY 2022
Job No.	ELWAK-WSP	ACAD File:	ELWAK/CAD/2022
A STATUS	DRAWING No.	ELWAK/CBA-ML5/PP/02	0 REV



CBD_BULLA AFYA MAIN LINE PV - (76)
SCALE: H 1:1000, V 1:100. DATUM: 350.000

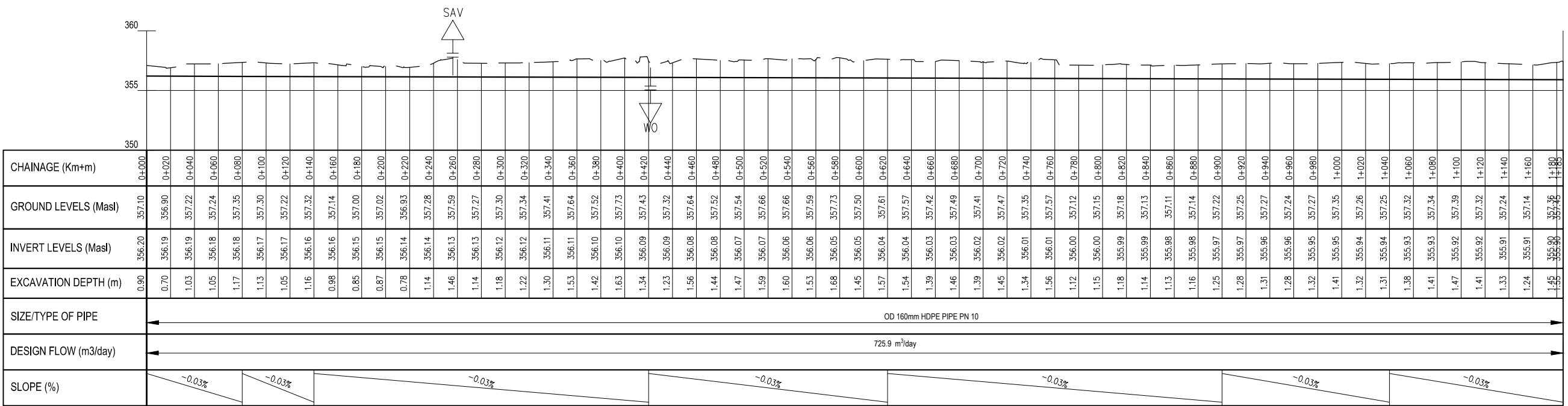


PROFILE
SCALES HOR 1:2000 AND VERT 1:200



PLAN
SCALE 1:2000

BD ML PV - (45)
SCALE: H 1:1000, V 1:100. DATUM: 350.000



PROFILE
SCALES HOR 1:2000 AND VERT 1:200

- NOTES**
- All levels in metres above Mean Sea Level (MaSL)
 - Precise location of air valves, washouts, bends and other fittings to be determined on site.
 - Ground and Invert Level shown are only indicative. Final levels to be confirmed in accordance with the Contract Specifications.
 - Pipes are to be laid to even gradients with a minimum cover of 1.0m
 - All bends are horizontal unless otherwise stated.
- LEGEND**
- GROUND PROFILE
 - PIPE INVERT PROFILE
 - PROPOSED PIPELINE
 - TARMAC ROAD
 - GRAVEL ROAD
 - ROAD CROSSING
 - DAV DOUBLE ORIFICE AIR VALVE
 - SAV SINGLE ORIFICE AIR VALVE
 - WASHOUT
 - WO
 - NRV NON RETURN VALVE
 - RDC REDUCER
 - HB HORIZONTAL BEND
 - LV LINE VALVE
 - T TEE JUNCTION
 - PN NOMINAL PRESSURE
 - OD OUTSIDE DIAMETER

REV	REVISIONS	SIGN	DATE	APPROVED
D	CHECKED			
C	CHECKED			
B	CHECKED			
A	CHECKED			

Client

PO Box 49699 - 00100, Nairobi, Kenya
1st Floor, CIC Plaza, Mara Road, Upper Hill, Nairobi, Kenya
Tel: 020 272 90 17 / 8

Project
ELWAK WATER SUPPLY PROJECT

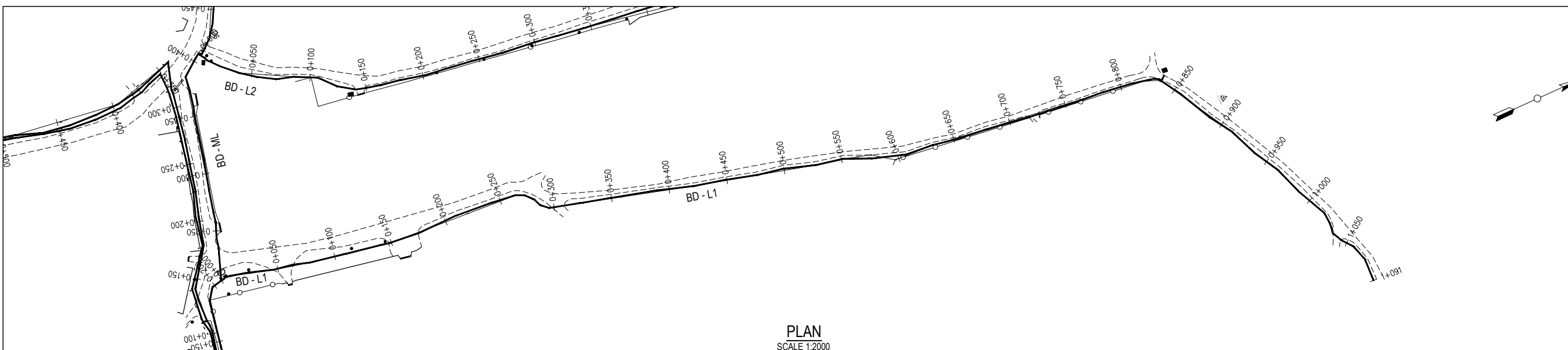
DETAILED DESIGN

Consulting Engineer

15 Westlands Road, Westlands, Office No. 09
P.O. Box 30337 - 00100 Nairobi, Kenya.

Drawing Title
BD - ML
PLAN AND PROFILE

Designed by	SWM	Drawn by	SWM
Checked by	EBO	Approved by	LWM
Scale	AS SHOWN (AT A1)	Date	JULY 2022
Job No.	ELWAK-WSP	ACAD File:	ELWAK/CAD/2022
A STATUS	DRAWING No.	ELWAK/BD-ML/PP/01	0 REV



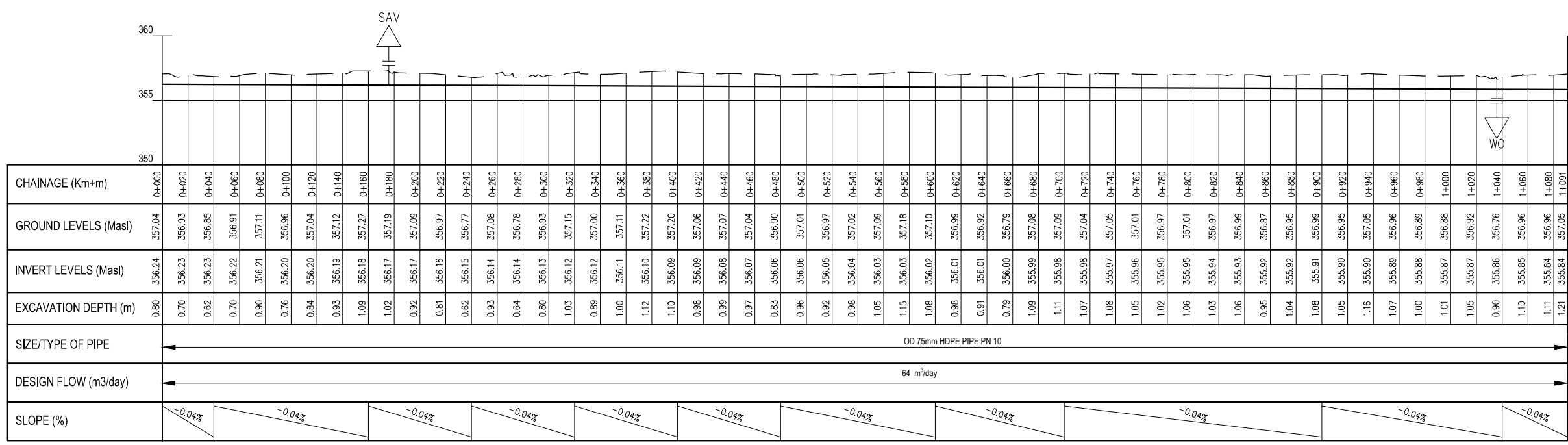
PLAN
SCALE 1:2000

- NOTES**
- All levels in metres above Mean Sea Level (MaSL)
 - Precise location of air valves, washouts, bends and other fittings to be determined on site.
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 - All bends are horizontal unless otherwise stated.

- LEGEND**
- GROUND PROFILE
 - - - PIPE INVERT PROFILE
 - PROPOSED PIPELINE
 - ==== TARMAC ROAD
 - GRAVEL ROAD
 - R.D. ROAD CROSSING

- DAV DOUBLE ORIFICE AIR VALVE
- SAV SINGLE ORIFICE AIR VALVE
- WASHOUT
- WO
- NRV NON RETURN VALVE
- RDC REDUCER
- HB HORIZONTAL BEND
- LV LINE VALVE
- T TEE JUNCTION
- PN NOMINAL PRESSURE
- OD OUTSIDE DIAMETER


BD L1 PV - (46)
SCALE: H 1:1000, V 1:100. DATUM: 350.000



PROFILE
SCALES HOR 1:2000 AND VERT 1:200

REV	REVISIONS	SIGN	DATE	APPROVED
D	BY CHECKED			
C	BY CHECKED			
B	BY CHECKED			
A	BY CHECKED			

Client




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1st Floor, CIC Plaza, Mara Road, Upper Hill, Nairobi, Kenya
Tel: 020 272 90 17 / 8

Project
ELWAK WATER SUPPLY PROJECT

DETAILED DESIGN

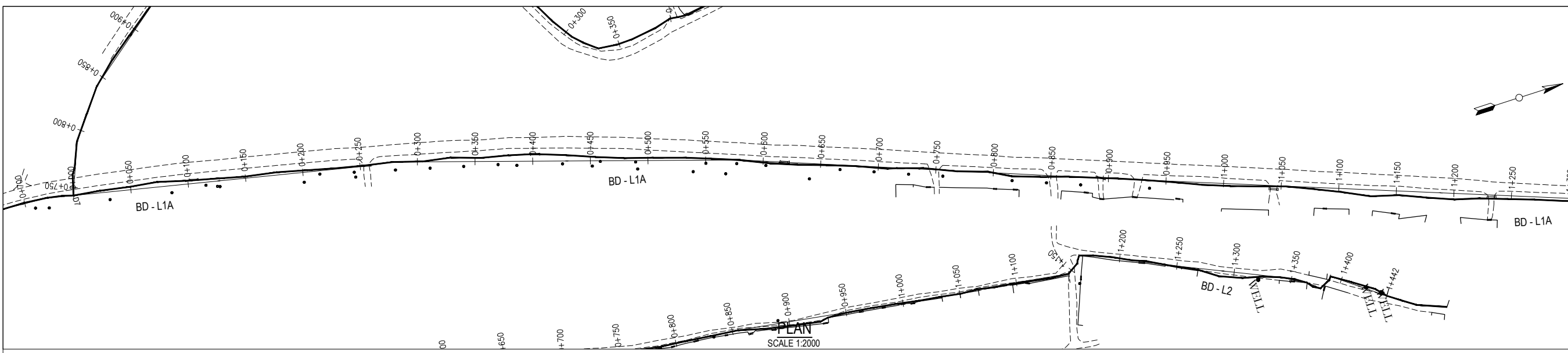
Consulting Engineer



15 Westlands Road, Westlands, Office No. 09
P.O. Box 30337 - 00100 Nairobi, Kenya.

Drawing Title
BD - L1
PLAN AND PROFILE

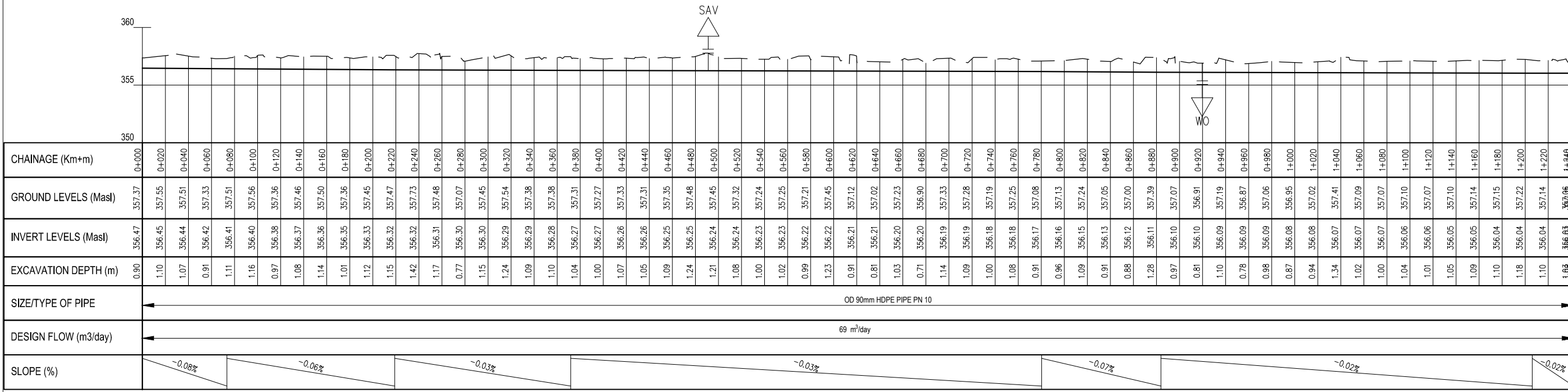
Designed by	SWM	Drawn by	SWM
Checked by	EBO	Approved by	LWM
Scale	AS SHOWN (AT A1)	Date	JULY 2022
Job No.	ELWAK-WSP	ACAD File:	ELWAK/CAD/2022
A STATUS	DRAWING No.	ELWAK/BD-L1VPP/01	0 REV




- NOTES**
- All levels in metres above Mean Sea Level (MaSL)
 - Precise location of air valves, washouts, bends and other fittings to be determined on site.
 - Ground and Invert Level shown are only indicative. Final levels to be confirmed in accordance with the Contract Specifications.
 - Pipes are to be laid to even gradients with a minimum cover of 1.0m
 - All bends are horizontal unless otherwise stated.

- LEGEND**
- GROUND PROFILE
 - - - PIPE INVERT PROFILE
 - PROPOSED PIPELINE
 - ==== TARMAC ROAD
 - GRAVEL ROAD
 - ⊥ R.D. ROAD CROSSING
 - DAV DOUBLE ORIFICE AIR VALVE
 - SAV SINGLE ORIFICE AIR VALVE
 - WASHOUT
 - WO
 - NRV NON RETURN VALVE
 - RDC REDUCER
 - HB HORIZONTAL BEND
 - LV LINE VALVE
 - T TEE JUNCTION
 - PN NOMINAL PRESSURE
 - OD OUTSIDE DIAMETER

BD L1A PV - (47)
SCALE: H 1:1000, V 1:100. DATUM: 350.000



REV	REVISIONS	SIGN	DATE	APPROVED
D	BY CHECKED			
C	BY CHECKED			
B	BY CHECKED			
A	BY CHECKED			

Client

 PO Box 49699 - 00100, Nairobi, Kenya
 1st Floor, CIC Plaza, Mara Road, Upper Hill, Nairobi, Kenya
 Tel: 020 272 90 17 / 8

Project
ELWAK WATER SUPPLY PROJECT
 DETAILED DESIGN

Consulting Engineer

 15 Westlands Road, Westlands, Office No. 09
 P.O. Box 30337 - 00100 Nairobi, Kenya.

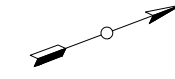
Drawing Title
 BD - L1A
 PLAN AND PROFILE

Designed by	SWM	Drawn by	SWM
Checked by	EBO	Approved by	LWM
Scale	AS SHOWN (AT A1)	Date	JULY 2022
Job No.	ELWAK-WSP	ACAD File:	ELWAK/CAD/2022
A STATUS	DRAWING No.	ELWAK/BD- L1A/PP/01	0 REV

PROFILE
 SCALES HOR 1:2000 AND VERT 1:200

NOTES

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- Precise location of air valves, washouts, bends and other fittings to be determined on site.
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- Pipes are to be laid to even gradients with a minimum cover of 1.0m
- All bends are horizontal unless otherwise stated.



LEGEND

- GROUND PROFILE
- PIPE INVERT PROFILE
- PROPOSED PIPELINE
- TARMAC ROAD
- GRAVEL ROAD
- ROAD CROSSING

- DOUBLE ORIFICE AIR VALVE
- SINGLE ORIFICE AIR VALVE
- WASHOUT
- WASHOUT
- NON RETURN VALVE
- REDUCER
- HORIZONTAL BEND
- LINE VALVE
- TEE JUNCTION
- NOMINAL PRESSURE
- OUTSIDE DIAMETER

REV	REVISIONS	SIGN	DATE	APPROVED
D	BY CHECKED			
C	BY CHECKED			
B	BY CHECKED			
A	BY CHECKED			

Client
 PO Box 49699 - 00100, Nairobi, Kenya
 1st Floor, CIC Plaza, Mara Road, Upper Hill, Nairobi, Kenya
 Tel: 020 272 90 17 / 8

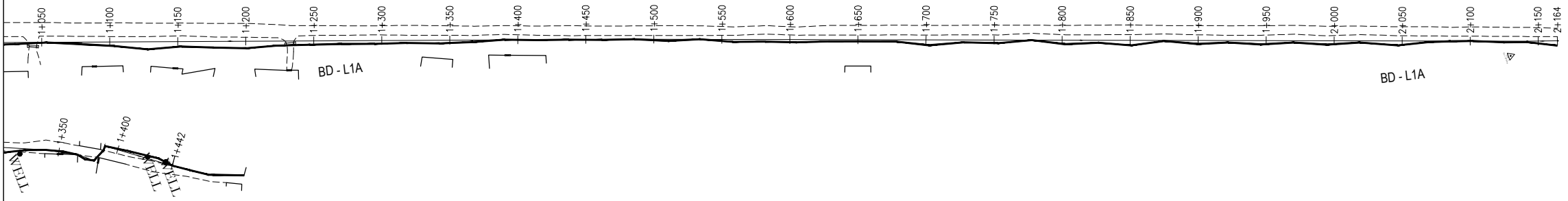
Project
ELWAK WATER SUPPLY PROJECT

DETAILED DESIGN

Consulting Engineer
 15 Westlands Road, Westlands, Office No. 09
 P.O. Box 30337 - 00100 Nairobi, Kenya.

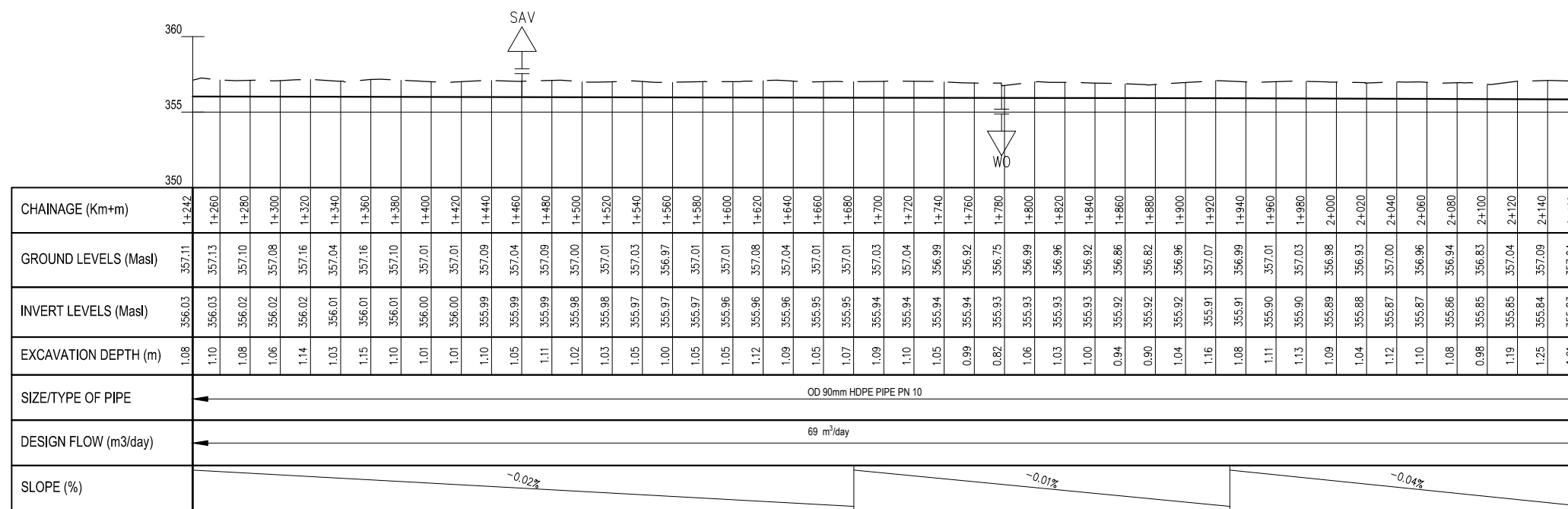
Drawing Title
 BD - L1A
 PLAN AND PROFILE

Designed by	SWM	Drawn by	SWM
Checked by	EBO	Approved by	LWM
Scale	AS SHOWN (AT A1)	Date	JULY 2022
Job No.	ELWAK-WSP	ACAD File:	ELWAK/CAD/2022
A STATUS	DRAWING No.	ELWAK/BD-L1A/PP/02	0 REV



PLAN
 SCALE 1:2000

BD L1A PV - (48)
 SCALE: H 1:1000,V 1:100. DATUM: 350.000

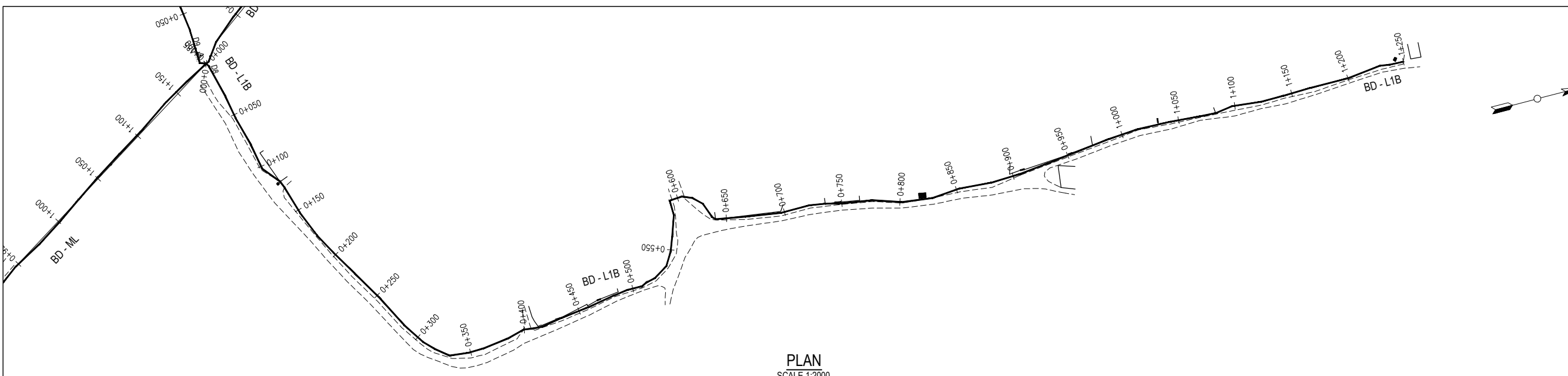
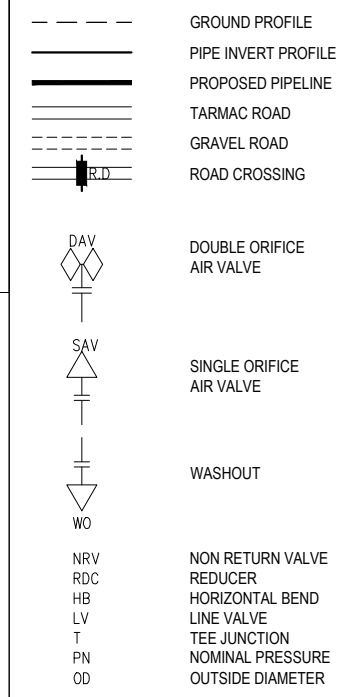


PROFILE
 SCALES HOR 1:2000 AND VERT 1:200

NOTES

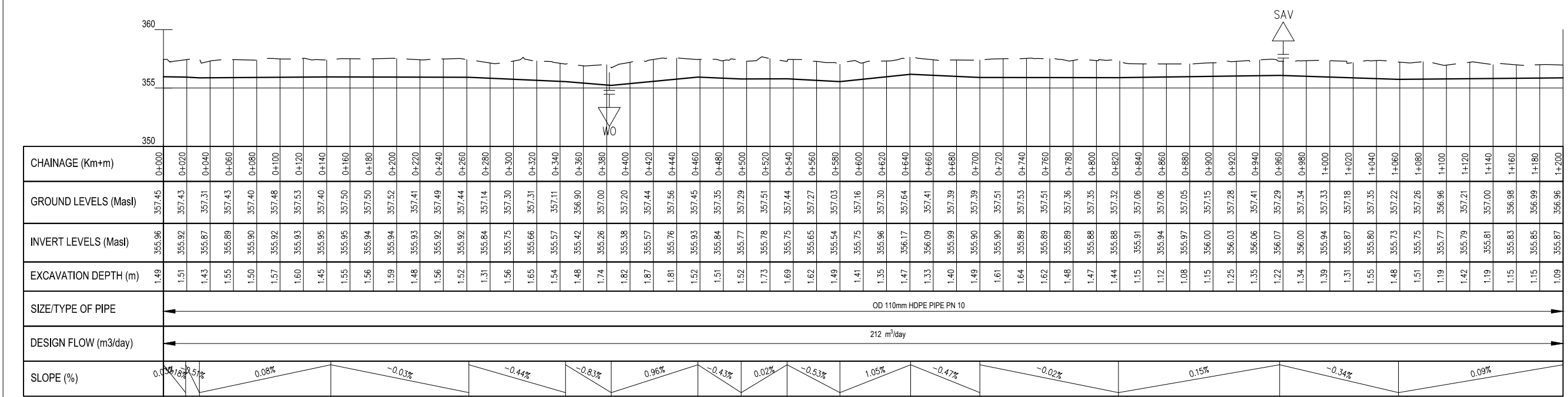
- All levels in metres above Mean Sea Level (MaSL)
- Precise location of air valves, washouts, bends and other fittings to be determined on site.
- Ground and Invert Level shown are only indicative. Final levels to be confirmed in accordance with the Contract Specifications.
- Pipes are to be laid to even gradients with a minimum cover of 1.0m
- All bends are horizontal unless otherwise stated.

LEGEND



PLAN
SCALE 1:2000

BD L1B PV - (49)
SCALE: H 1:1000, V 1:100. DATUM: 350.000



PROFILE
SCALES HOR 1:2000 AND VERT 1:200

REV	REVISIONS	SIGN	DATE	APPROVED
D	BY CHECKED			
C	BY CHECKED			
B	BY CHECKED			
A	BY CHECKED			

Client

PO Box 49699 - 00100, Nairobi, Kenya
1st Floor, CIC Plaza, Mara Road, Upper Hill, Nairobi, Kenya
Tel: 020 272 90 17 / 8

Project
ELWAK WATER SUPPLY PROJECT

DETAILED DESIGN

Consulting Engineer

15 Westlands Road, Westlands, Office No. 09
P.O. Box 30337 - 00100 Nairobi, Kenya.

Drawing Title
BD - L1B
PLAN AND PROFILE

Designed by	SWM	Drawn by	SWM
Checked by	EBO	Approved by	LWM
Scale	AS SHOWN (AT A1)	Date	JULY 2022
Job No.	ELWAK-WSP	ACAD File:	ELWAK/CAD/2022
A STATUS	DRAWING No.	ELWAK/BD-L1B/PP/01	0 REV

NOTES

1. All levels in metres above Mean Sea Level (MaSL)
2. Precise location of air valves, washouts, bends and other fittings to be determined on site.
3. Ground and Invert Level shown are only indicative. Final levels to be confirmed in accordance with the Contract Specifications.
4. Pipes are to be laid to even gradients with a minimum cover of 1.0m
5. All bends are horizontal unless otherwise stated.

LEGEND

- GROUND PROFILE
- PIPE INVERT PROFILE
- PROPOSED PIPELINE
- ==== TARMAC ROAD
- GRAVEL ROAD
- R.D. ROAD CROSSING

- DAV DOUBLE ORIFICE AIR VALVE
- SAV SINGLE ORIFICE AIR VALVE
- WO WASHOUT
- NRV NON RETURN VALVE
- RDC REDUCER
- HB HORIZONTAL BEND
- LV LINE VALVE
- T TEE JUNCTION
- PN NOMINAL PRESSURE
- OD OUTSIDE DIAMETER

REV	REVISIONS	SIGN	DATE	APPROVED
D	BY CHECKED			
C	BY CHECKED			
B	BY CHECKED			
A	BY CHECKED			

Client



PO Box 49699 - 00100,
Nairobi, Kenya
1st Floor, CIC Plaza,
Mara Road, Upper Hill,
Nairobi, Kenya
Tel: 020 272 90 17 / 8

Project
ELWAK WATER SUPPLY PROJECT

DETAILED DESIGN

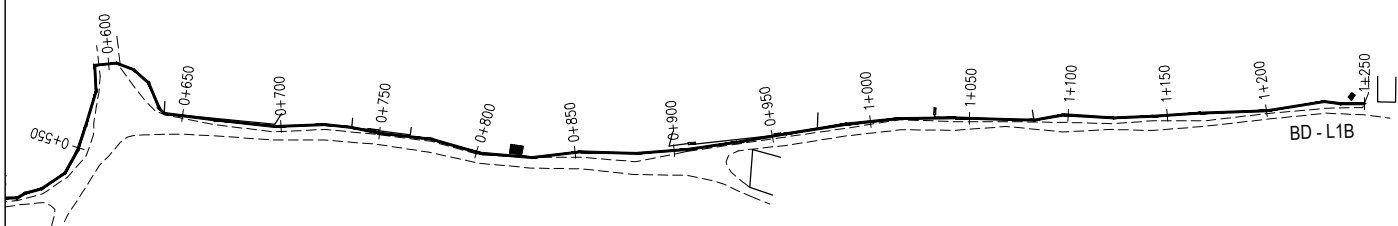
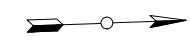
Consulting Engineer



15 Westlands Road, Westlands,
Office No. 09
P.O. Box 30337 - 00100 Nairobi,
Kenya.

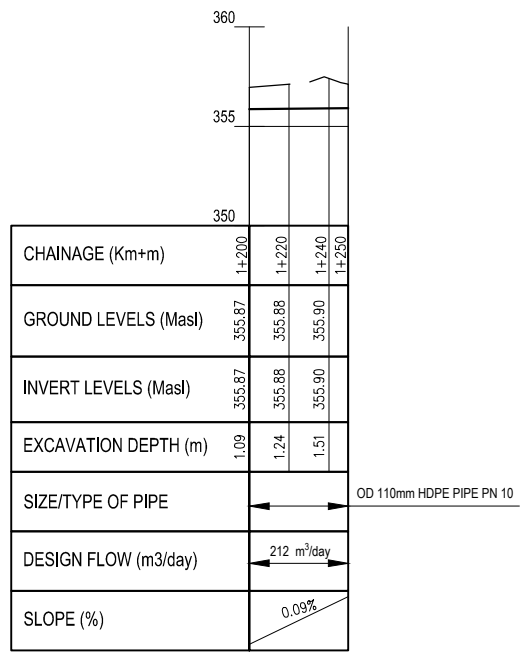
Drawing Title
BD - L1B
PLAN AND PROFILE

Designed by	SWM	Drawn by	SWM
Checked by	EBO	Approved by	LWM
Scale	AS SHOWN (AT A1)	Date	JULY 2022
Job No.	ELWAK-WSP	ACAD File:	ELWAK/CAD/2022
A	DRAWING No.	ELWAK/BD-L1B/PP/02	0
STATUS			REV

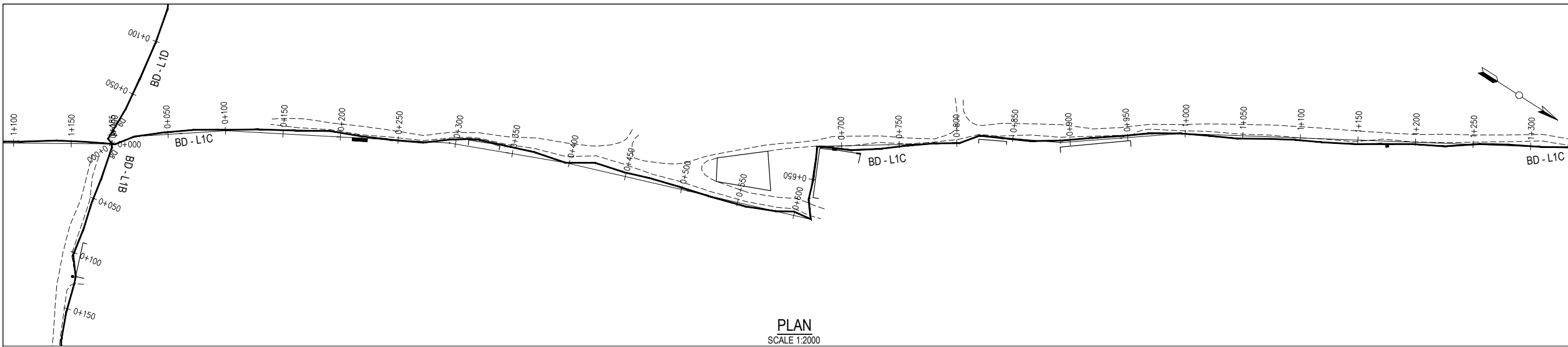


PLAN
SCALE 1:2000

BD L1B PV - (50)
SCALE: H 1:1000,V 1:100. DATUM: 350.000



PROFILE
SCALES HOR 1:2000 AND VERT 1:200



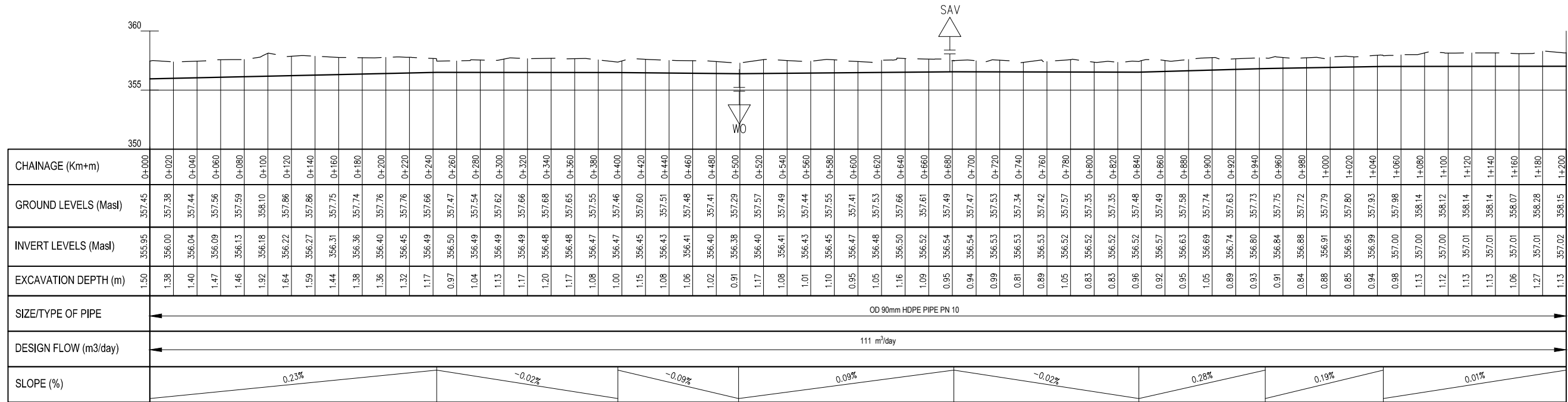
PLAN
SCALE 1:2000

- NOTES**
- All levels in metres above Mean Sea Level (MaSL)
 - Precise location of air valves, washouts, bends and other fittings to be determined on site.
 - Ground and Invert Level shown are only indicative. Final levels to be confirmed in accordance with the Contract Specifications.
 - Pipes are to be laid to even gradients with a minimum cover of 1.0m
 - All bends are horizontal unless otherwise stated.

- LEGEND**
- GROUND PROFILE
 - - - PIPE INVERT PROFILE
 - ==== PROPOSED PIPELINE
 - ==== TARMAC ROAD
 - ==== GRAVEL ROAD
 - ROAD CROSSING

- DAV DOUBLE ORIFICE AIR VALVE
- SAV SINGLE ORIFICE AIR VALVE
- WO WASHOUT
- NRV NON RETURN VALVE
- RDC REDUCER
- HB HORIZONTAL BEND
- LV LINE VALVE
- T TEE JUNCTION
- PN NOMINAL PRESSURE
- OD OUTSIDE DIAMETER

BD L1C PV - (51)
SCALE: H 1:1000, V 1:100. DATUM: 350.000



PROFILE
SCALES HOR 1:2000 AND VERT 1:200

REV	REVISIONS	SIGN	DATE	APPROVED
D	BY CHECKED			
C	BY CHECKED			
B	BY CHECKED			
A	BY CHECKED			

Client



PO Box 49699 - 00100,
Nairobi, Kenya
1st Floor, CIC Plaza,
Mara Road, Upper Hill,
Nairobi, Kenya
Tel: 020 272 90 17 / 8

Project
ELWAK WATER SUPPLY PROJECT

DETAILED DESIGN

Consulting Engineer



15 Westlands Road, Westlands,
Office No. 09
P.O. Box 30337 - 00100 Nairobi,
Kenya.

Drawing Title
BD - L1C
PLAN AND PROFILE

Designed by	SWM	Drawn by	SWM
Checked by	EBO	Approved by	LWM
Scale	AS SHOWN (AT A1)	Date	JULY 2022
Job No.	ELWAK-WSP	ACAD File:	ELWAK/CAD/2022
A STATUS	DRAWING No.	ELWAK/BD-L1C/PP/01	0 REV

NOTES

- All levels in metres above Mean Sea Level (MaSL)
- Precise location of air valves, washouts, bends and other fittings to be determined on site.
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- All bends are horizontal unless otherwise stated.


LEGEND

- GROUND PROFILE
- PIPE INVERT PROFILE
- PROPOSED PIPELINE
- TARMAC ROAD
- GRAVEL ROAD
- ROAD CROSSING

- DOUBLE ORIFICE AIR VALVE
- SINGLE ORIFICE AIR VALVE
- WASHOUT
- WASHOUT
- NON RETURN VALVE
- REDUCER
- HORIZONTAL BEND
- LINE VALVE
- TEE JUNCTION
- NOMINAL PRESSURE
- OUTSIDE DIAMETER

REV	REVISIONS	SIGN	DATE	APPROVED
D	BY CHECKED			
C	BY CHECKED			
B	BY CHECKED			
A	BY CHECKED			

Client



PO Box 49699 - 00100,
Nairobi, Kenya
1st Floor, CIC Plaza,
Mara Road, Upper Hill,
Nairobi, Kenya
Tel: 020 272 90 17 / 8

Project
ELWAK WATER SUPPLY PROJECT

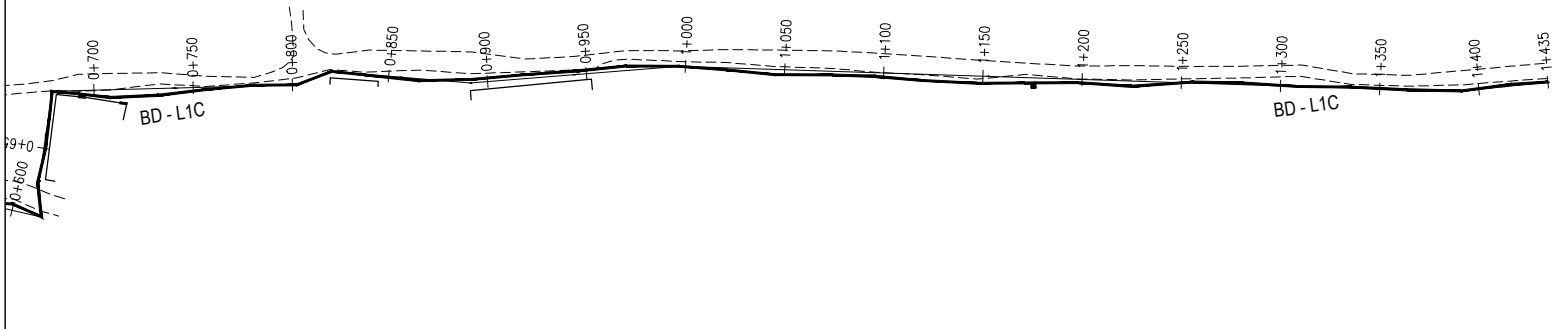
Consulting Engineer



15 Westlands Road, Westlands,
Office No. 09
P.O. Box 30337 - 00100 Nairobi,
Kenya.

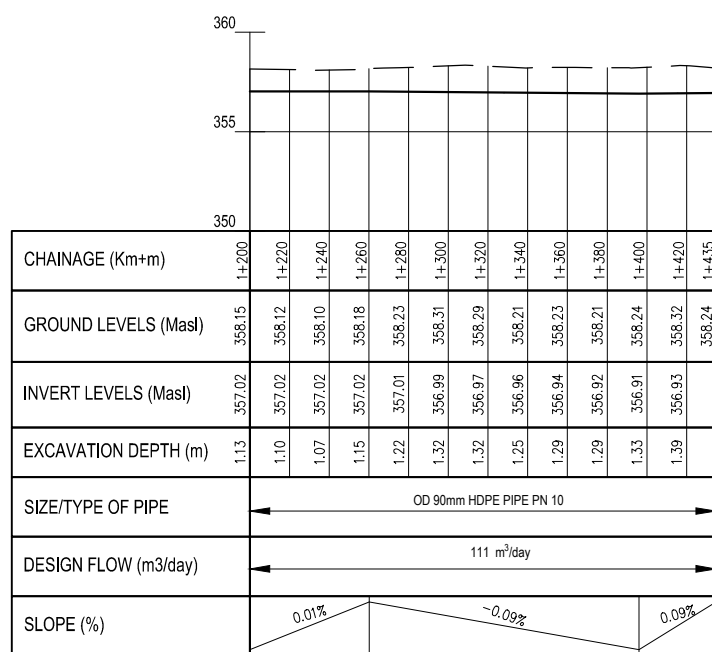
Drawing Title
BD - L1C
PLAN AND PROFILE

Designed by	SWM	Drawn by	SWM
Checked by	EBO	Approved by	LWM
Scale	AS SHOWN (AT A1)	Date	JULY 2022
Job No.	ELWAK-WSP	ACAD File:	ELWAK/CAD/2022
A	DRAWING No.	ELWAK/BD-L1C/PP/02	0
STATUS			REV

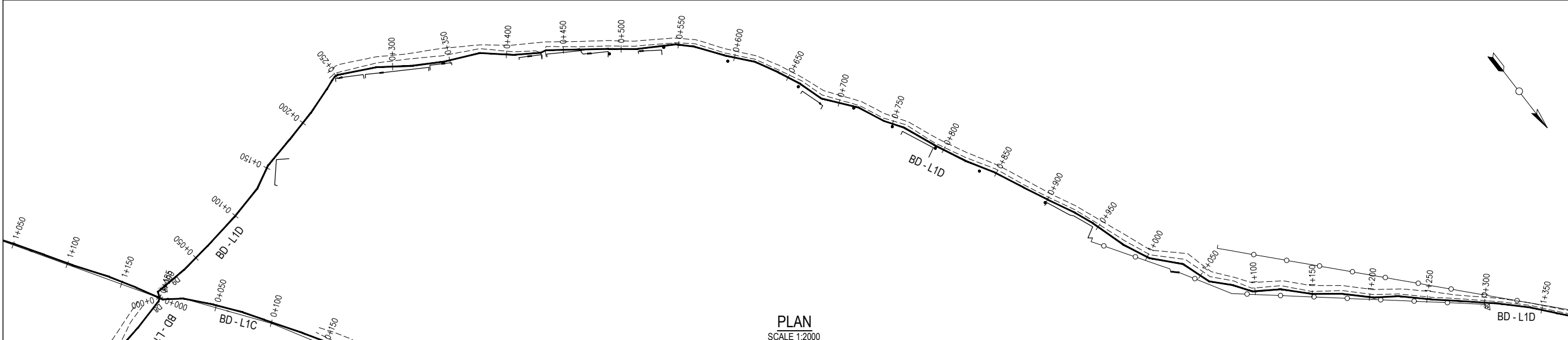


PLAN
SCALE 1:2000

BD L1C PV - (52)
SCALE: H 1:1000,V 1:100. DATUM: 350.000



PROFILE
SCALES HOR 1:2000 AND VERT 1:200

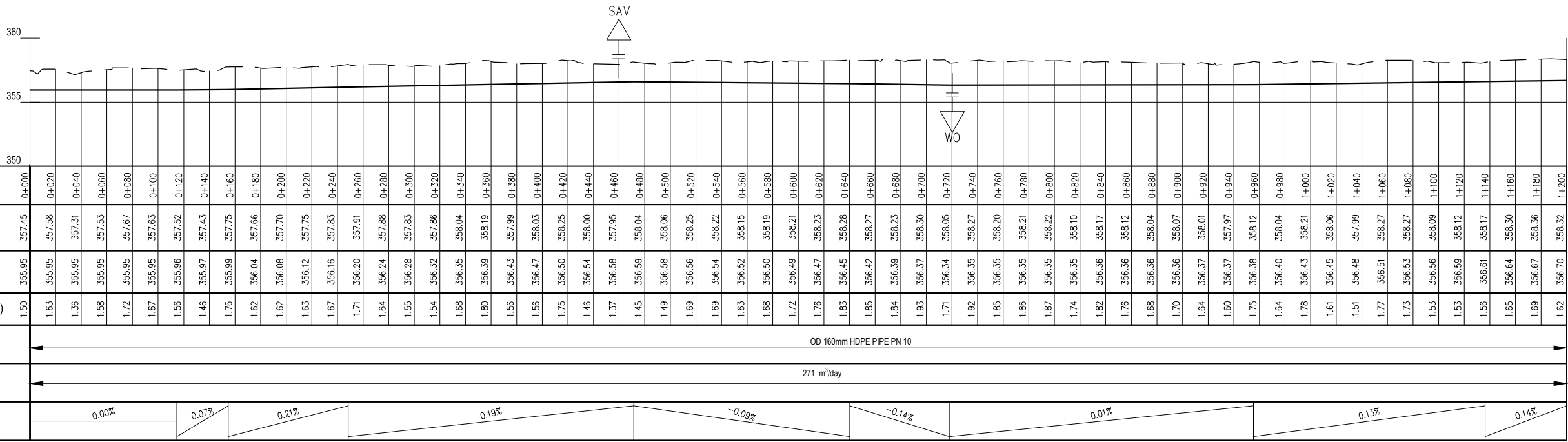


PLAN
SCALE 1:2000

- NOTES**
- All levels in metres above Mean Sea Level (MaSL)
 - Precise location of air valves, washouts, bends and other fittings to be determined on site.
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- LEGEND**
- GROUND PROFILE
 - - - PIPE INVERT PROFILE
 - ==== PROPOSED PIPELINE
 - ==== TARMAC ROAD
 - ==== GRAVEL ROAD
 - ROAD CROSSING
 - DAV DOUBLE ORIFICE AIR VALVE
 - SAV SINGLE ORIFICE AIR VALVE
 - WO WASHOUT
 - NRV NON RETURN VALVE
 - RDC REDUCER
 - HB HORIZONTAL BEND
 - LV LINE VALVE
 - T TEE JUNCTION
 - PN NOMINAL PRESSURE
 - OD OUTSIDE DIAMETER

BD L1D PV - (53)
SCALE: H 1:1000, V 1:100. DATUM: 350.000



PROFILE
SCALES HOR 1:2000 AND VERT 1:200

REV	REVISIONS	SIGN	DATE	APPROVED
D	BY CHECKED			
C	BY CHECKED			
B	BY CHECKED			
A	BY CHECKED			

Client

 PO Box 49699 - 00100, Nairobi, Kenya
 1st Floor, CIC Plaza, Mara Road, Upper Hill, Nairobi, Kenya
 Tel: 020 272 90 17 / 8

Project
ELWAK WATER SUPPLY PROJECT

DETAILED DESIGN
 Consulting Engineer

 15 Westlands Road, Westlands, Office No. 09
 P.O. Box 30337 - 00100 Nairobi, Kenya.

Drawing Title
BD - L1D
 PLAN AND PROFILE

Designed by	SWM	Drawn by	SWM
Checked by	EBO	Approved by	LWM
Scale	AS SHOWN (AT A1)	Date	JULY 2022
Job No.	ELWAK-WSP	ACAD File:	ELWAK/CAD/2022
A STATUS	DRAWING No.	ELWAK/BD-L1D/PP/01	0 REV

NOTES

- All levels in metres above Mean Sea Level (MaSL)
- Precise location of air valves, washouts, bends and other fittings to be determined on site.
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- All bends are horizontal unless otherwise stated.

LEGEND

- GROUND PROFILE
- PIPE INVERT PROFILE
- PROPOSED PIPELINE
- ==== TARMAC ROAD
- GRAVEL ROAD
- R.D. ROAD CROSSING

- DAV DOUBLE ORIFICE AIR VALVE
- SAV SINGLE ORIFICE AIR VALVE
- WO WASHOUT
- NRV NON RETURN VALVE
- RDC REDUCER
- HB HORIZONTAL BEND
- LV LINE VALVE
- T TEE JUNCTION
- PN NOMINAL PRESSURE
- OD OUTSIDE DIAMETER

REV	REVISIONS	SIGN	DATE	APPROVED
D	BY CHECKED			
C	BY CHECKED			
B	BY CHECKED			
A	BY CHECKED			

Client
 PO Box 49699 - 00100, Nairobi, Kenya
 1st Floor, CIC Plaza, Mara Road, Upper Hill, Nairobi, Kenya
 Tel: 020 272 90 17 / 8

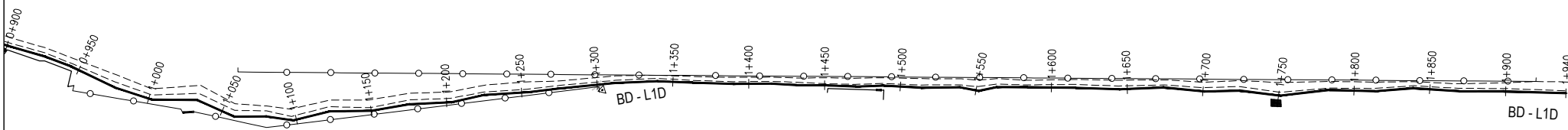
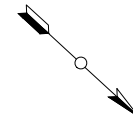
Project
ELWAK WATER SUPPLY PROJECT

DETAILED DESIGN

Consulting Engineer
 15 Westlands Road, Westlands, Office No. 09
 P.O. Box 30337 - 00100 Nairobi, Kenya.

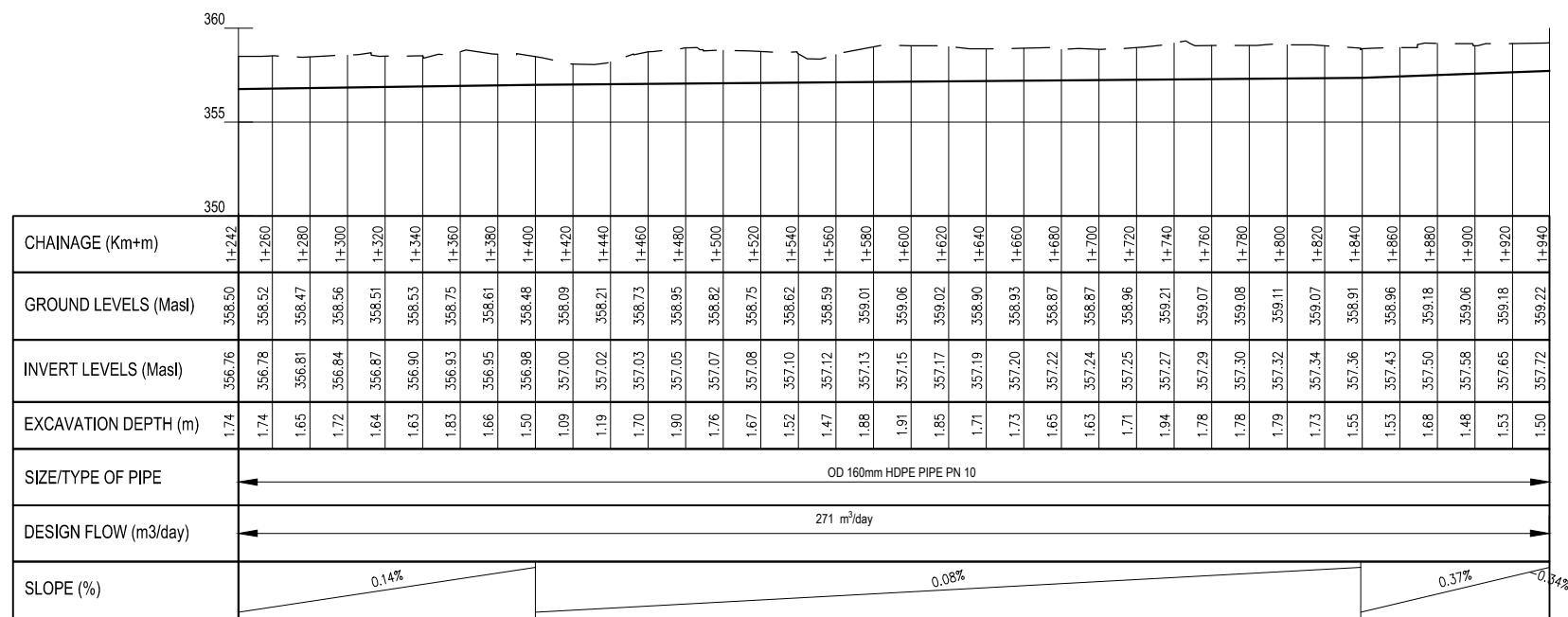
Drawing Title
 BD - L1D
 PLAN AND PROFILE

Designed by	SWM	Drawn by	SWM
Checked by	EBO	Approved by	LWM
Scale	AS SHOWN (AT A1)	Date	JULY 2022
Job No.	ELWAK-WSP	ACAD File:	ELWAK/CAD/2022
A STATUS	DRAWING No.	ELWAK/BD-L1D/PP/02	0 REV

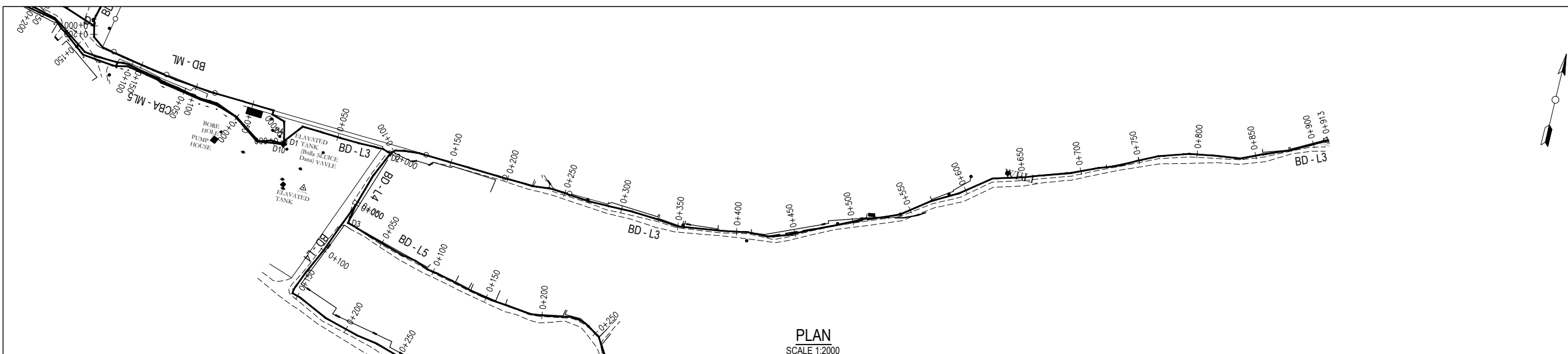


PLAN
 SCALE 1:2000

BD L1D PV - (54)
 SCALE: H 1:1000,V 1:100. DATUM: 350.000



PROFILE
 SCALES HOR 1:2000 AND VERT 1:200

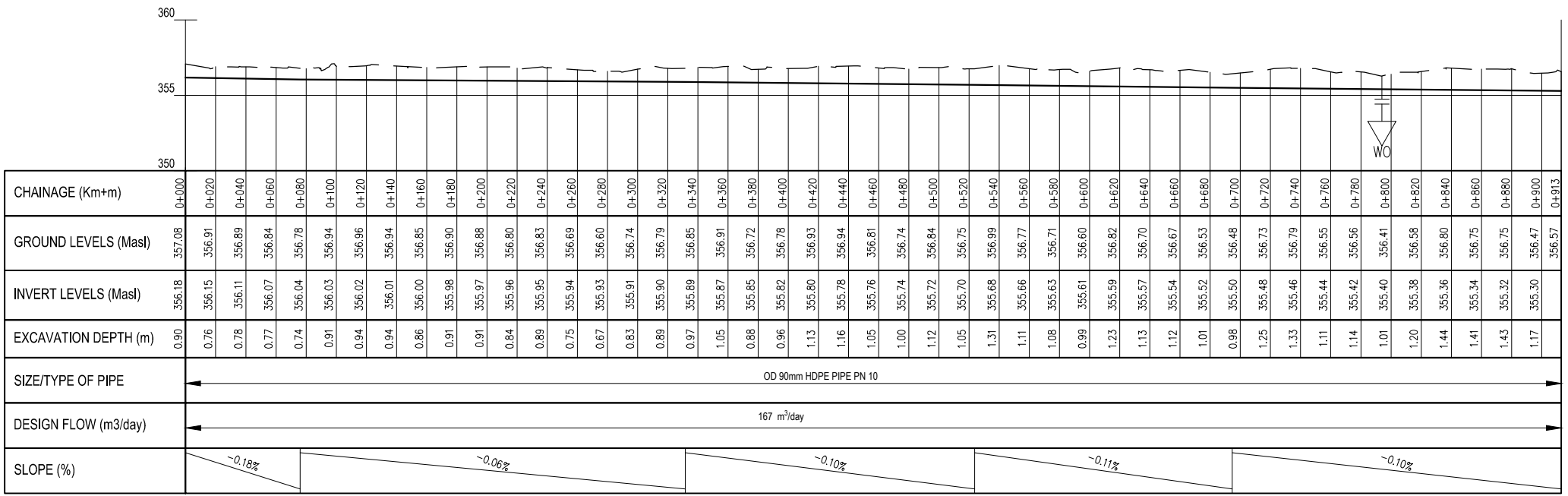


PLAN
SCALE 1:2000

- NOTES**
- All levels in metres above Mean Sea Level (MaSL)
 - Precise location of air valves, washouts, bends and other fittings to be determined on site.
 - Ground and Invert Level shown are only indicative. Final levels to be confirmed in accordance with the Contract Specifications.
 - Pipes are to be laid to even gradients with a minimum cover of 1.0m
 - All bends are horizontal unless otherwise stated.

- LEGEND**
- GROUND PROFILE
 - PIPE INVERT PROFILE
 - PROPOSED PIPELINE
 - TARMAC ROAD
 - GRAVEL ROAD
 - ROAD CROSSING
 - DAV DOUBLE ORIFICE AIR VALVE
 - SAV SINGLE ORIFICE AIR VALVE
 - WO WASHOUT
 - NRV NON RETURN VALVE
 - RDC REDUCER
 - HB HORIZONTAL BEND
 - LV LINE VALVE
 - T TEE JUNCTION
 - PN NOMINAL PRESSURE
 - OD OUTSIDE DIAMETER

BD L3 PV - (59)
SCALE: H 1:1000, V 1:100. DATUM: 350.000



PROFILE
SCALES HOR 1:2000 AND VERT 1:200

REV	REVISIONS	SIGN	DATE	APPROVED
D	BY CHECKED			
C	BY CHECKED			
B	BY CHECKED			
A	BY CHECKED			

Client

PO Box 49699 - 00100, Nairobi, Kenya
1st Floor, CIC Plaza, Mara Road, Upper Hill, Nairobi, Kenya
Tel: 020 272 90 17 / 8

Project
ELWAK WATER SUPPLY PROJECT

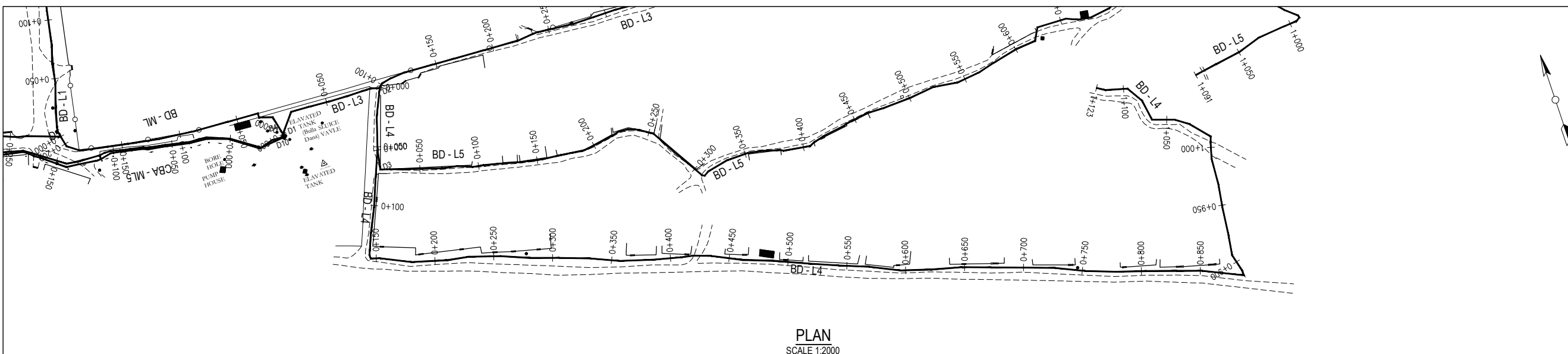
DETAILED DESIGN

Consulting Engineer

15 Westlands Road, Westlands, Office No. 09
P.O. Box 30337 - 00100 Nairobi, Kenya.

Drawing Title
BD - L3
PLAN AND PROFILE

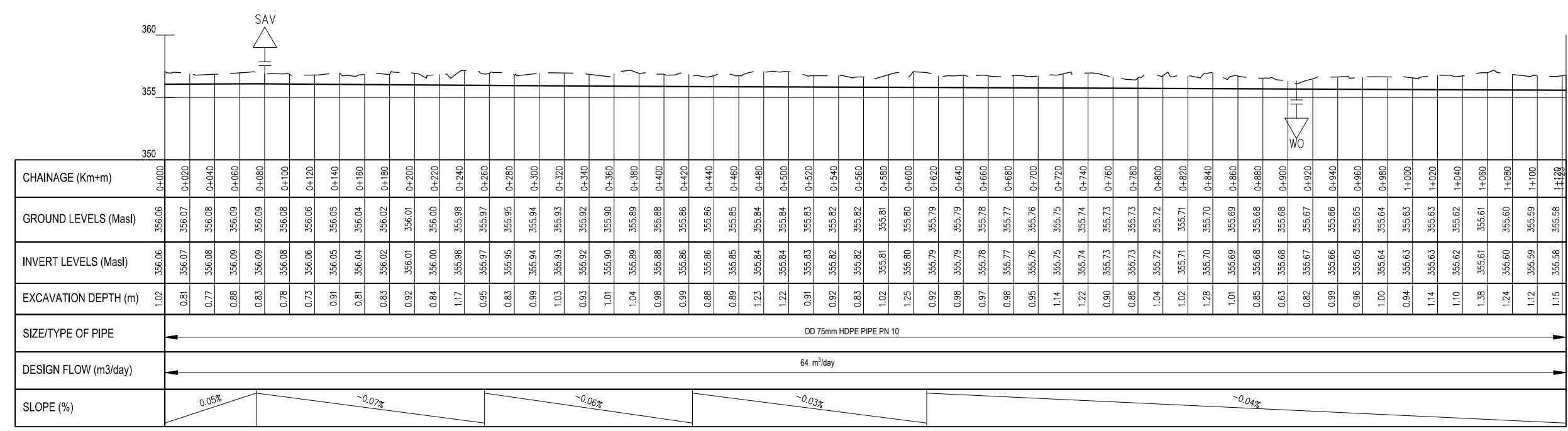
Designed by	SWM	Drawn by	SWM
Checked by	EBO	Approved by	LWM
Scale	AS SHOWN (AT A1)	Date	JULY 2022
Job No.	ELWAK-WSP	ACAD File:	ELWAK/CAD/2022
A STATUS	DRAWING No.	ELWAK/BD-L3/PP/01	0 REV



- NOTES**
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- LEGEND**
- GROUND PROFILE
 - PIPE INVERT PROFILE
 - PROPOSED PIPELINE
 - TARMAC ROAD
 - GRAVEL ROAD
 - ROAD CROSSING
 - DOUBLE ORIFICE AIR VALVE
 - SINGLE ORIFICE AIR VALVE
 - WASHOUT
 - NON RETURN VALVE
 - REDUCER
 - HORIZONTAL BEND
 - LINE VALVE
 - TEE JUNCTION
 - NOMINAL PRESSURE
 - OUTSIDE DIAMETER

BD L4 PV - (60)
SCALE: H 1:1000,V 1:100. DATUM: 350.000



PROFILE
SCALES HOR 1:2000 AND VERT 1:200

REV	REVISIONS	SIGN	DATE	APPROVED
D	BY CHECKED			
C	BY CHECKED			
B	BY CHECKED			
A	BY CHECKED			

Client

PO Box 49699 - 00100, Nairobi, Kenya
1st Floor, CIC Plaza, Mara Road, Upper Hill, Nairobi, Kenya
Tel: 020 272 90 17 / 8

Project
ELWAK WATER SUPPLY PROJECT

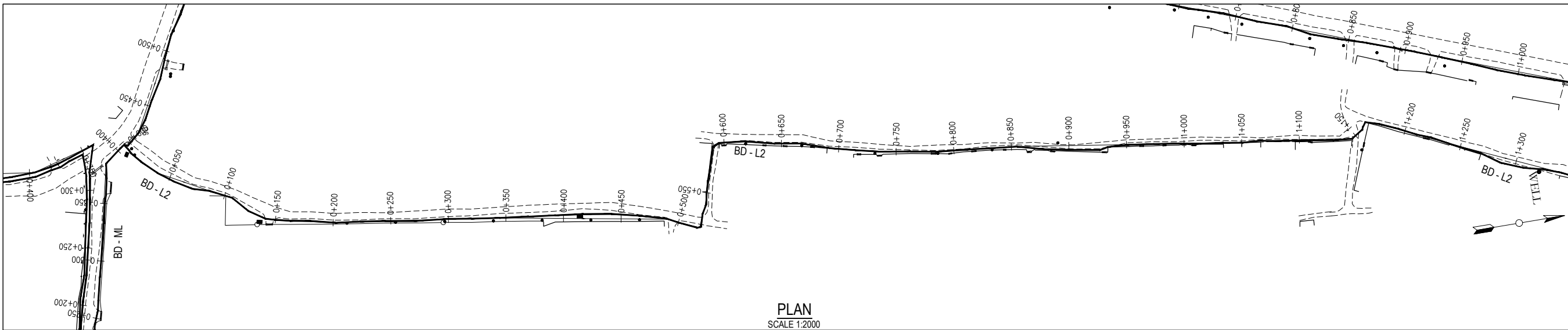
DETAILED DESIGN

Consulting Engineer

15 Westlands Road, Westlands, Office No. 09
P.O. Box 30337 - 00100 Nairobi, Kenya.

Drawing Title
BD - L4
PLAN AND PROFILE

Designed by	SWM	Drawn by	SWM
Checked by	EBO	Approved by	LWM
Scale	AS SHOWN (AT A1)	Date	JULY 2022
Job No.	ELWAK-WSP	ACAD File:	ELWAK/CAD/2022
A STATUS	DRAWING No. ELWAK/BD-L4/PP/01		0 REV

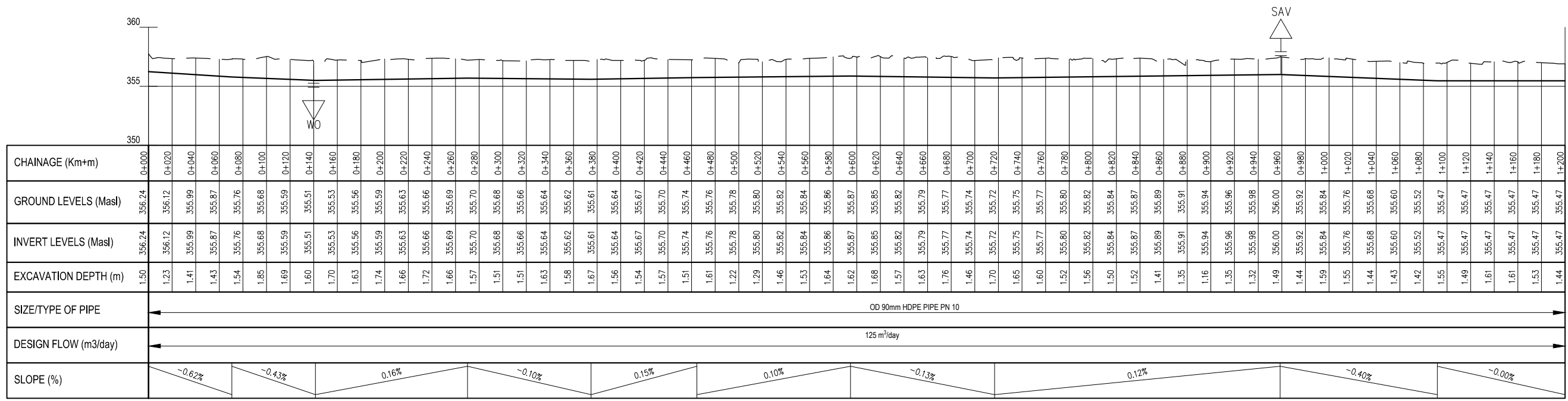


PLAN
SCALE 1:2000

- NOTES**
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 - Precise location of air valves, washouts, bends and other fittings to be determined on site.
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- LEGEND**
- GROUND PROFILE
 - PIPE INVERT PROFILE
 - PROPOSED PIPELINE
 - TARMAC ROAD
 - GRAVEL ROAD
 - ROAD CROSSING
 - DOUBLE ORIFICE AIR VALVE
 - SINGLE ORIFICE AIR VALVE
 - WASHOUT
 - WASHOUT
 - NON RETURN VALVE
 - REDUCER
 - HORIZONTAL BEND
 - LINE VALVE
 - TEE JUNCTION
 - NOMINAL PRESSURE
 - OUTSIDE DIAMETER

BD L2 PV - (55)
SCALE: H 1:1000, V 1:100. DATUM: 350.000



PROFILE
SCALES HOR 1:2000 AND VERT 1:200

REV	REVISIONS	SIGN	DATE	APPROVED
D	BY CHECKED			
C	BY CHECKED			
B	BY CHECKED			
A	BY CHECKED			

Client



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1st Floor, CIC Plaza, Mara Road, Upper Hill, Nairobi, Kenya
Tel: 020 272 90 17 / 8

Project
ELWAK WATER SUPPLY PROJECT

DETAILED DESIGN

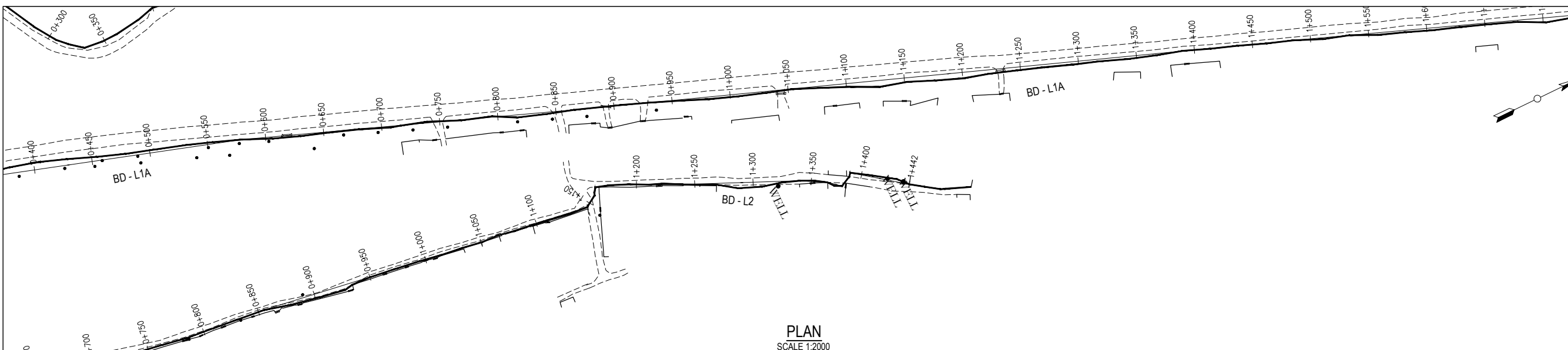
Consulting Engineer



15 Westlands Road, Westlands, Office No. 09
P.O. Box 30337 - 00100 Nairobi, Kenya.

Drawing Title
BD - L2
PLAN AND PROFILE

Designed by	SWM	Drawn by	SWM
Checked by	EBO	Approved by	LWM
Scale	AS SHOWN (AT A1)	Date	JULY 2022
Job No.	ELWAK-WSP	ACAD File:	ELWAK/CAD/2022
A STATUS	DRAWING No.	ELWAK/BD-L2/PP/01	0 REV

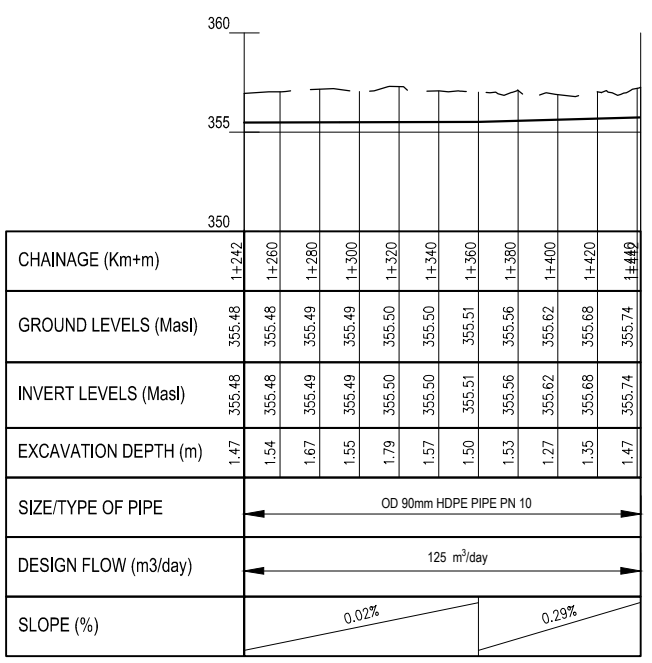


PLAN
SCALE 1:2000

- NOTES**
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 - Pipes are to be laid to even gradients with a minimum cover of 1.0m
 - All bends are horizontal unless otherwise stated.

- LEGEND**
- GROUND PROFILE
 - PIPE INVERT PROFILE
 - PROPOSED PIPELINE
 - TARMAC ROAD
 - GRAVEL ROAD
 - ROAD CROSSING
 - DOUBLE ORIFICE AIR VALVE
 - SINGLE ORIFICE AIR VALVE
 - WASHOUT
 - WASHOUT
 - NON RETURN VALVE
 - REDUCER
 - HORIZONTAL BEND
 - LINE VALVE
 - TEE JUNCTION
 - NOMINAL PRESSURE
 - OUTSIDE DIAMETER

BD L2 PV - (56)
SCALE: H 1:1000, V 1:100. DATUM: 350.000



PROFILE
SCALES HOR 1:2000 AND VERT 1:200

REV	REVISIONS	SIGN	DATE	APPROVED
D	CHECKED	BY		
C	CHECKED	BY		
B	CHECKED	BY		
A	CHECKED	BY		

Client



PO Box 49699 - 00100,
Nairobi, Kenya
1st Floor, CIC Plaza,
Mara Road, Upper Hill,
Nairobi, Kenya
Tel: 020 272 90 17 / 8

Project
ELWAK WATER SUPPLY PROJECT

DETAILED DESIGN

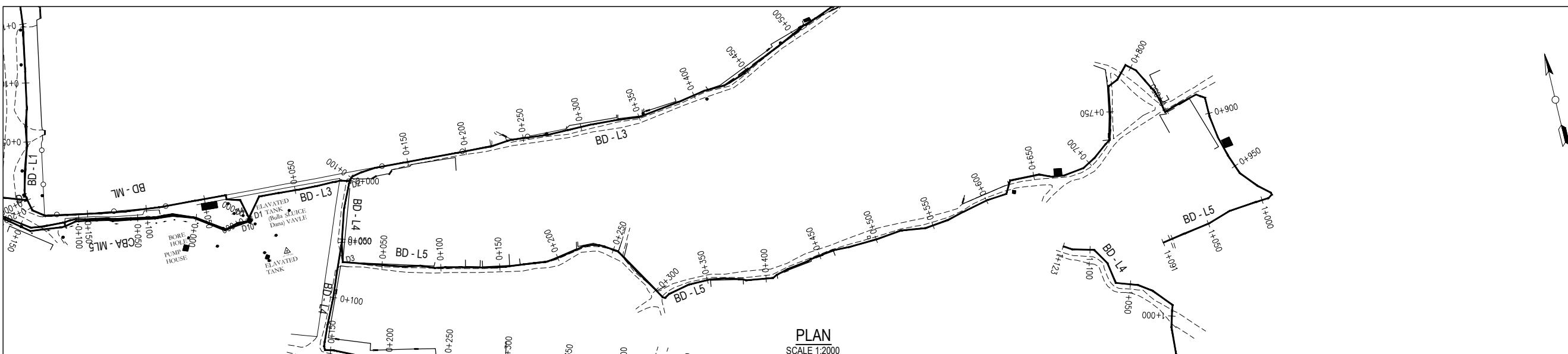
Consulting Engineer



15 Westlands Road, Westlands,
Office No. 09
P.O. Box 30337 - 00100 Nairobi,
Kenya.

Drawing Title
BD - L2
PLAN AND PROFILE

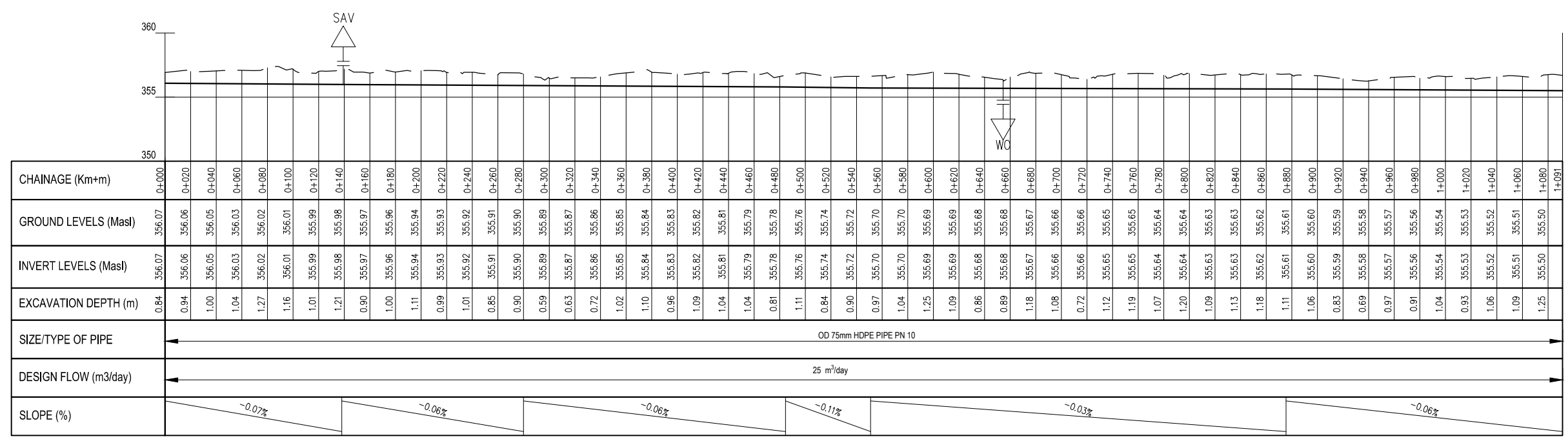
Designed by	SWM	Drawn by	SWM
Checked by	EBO	Approved by	LWM
Scale	AS SHOWN (AT A1)	Date	JULY 2022
Job No.	ELWAK-WSP	ACAD File:	ELWAK/CAD/2022
A	DRAWING No.	ELWAK/BD-L2/PP/02	0
STATUS			REV



- NOTES**
- All levels in metres above Mean Sea Level (MaSL)
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 - All bends are horizontal unless otherwise stated.

- LEGEND**
- GROUND PROFILE
 - PIPE INVERT PROFILE
 - PROPOSED PIPELINE
 - TARMAC ROAD
 - GRAVEL ROAD
 - ROAD CROSSING
 - DOUBLE ORIFICE AIR VALVE
 - SINGLE ORIFICE AIR VALVE
 - WASHOUT
 - NON RETURN VALVE
 - REDUCER
 - HORIZONTAL BEND
 - LINE VALVE
 - TEE JUNCTION
 - NOMINAL PRESSURE
 - OUTSIDE DIAMETER

BD L5 PV - (61)
SCALE: H 1:1000, V 1:100. DATUM: 350.000



PROFILE
SCALES HOR 1:2000 AND VERT 1:200

REV	REVISIONS	SIGN	DATE	APPROVED
D	CHECKED			
C	CHECKED			
B	CHECKED			
A	CHECKED			

Client

PO Box 49699 - 00100, Nairobi, Kenya
1st Floor, CIC Plaza, Mara Road, Upper Hill, Nairobi, Kenya
Tel: 020 272 90 17 / 8

Project
ELWAK WATER SUPPLY PROJECT

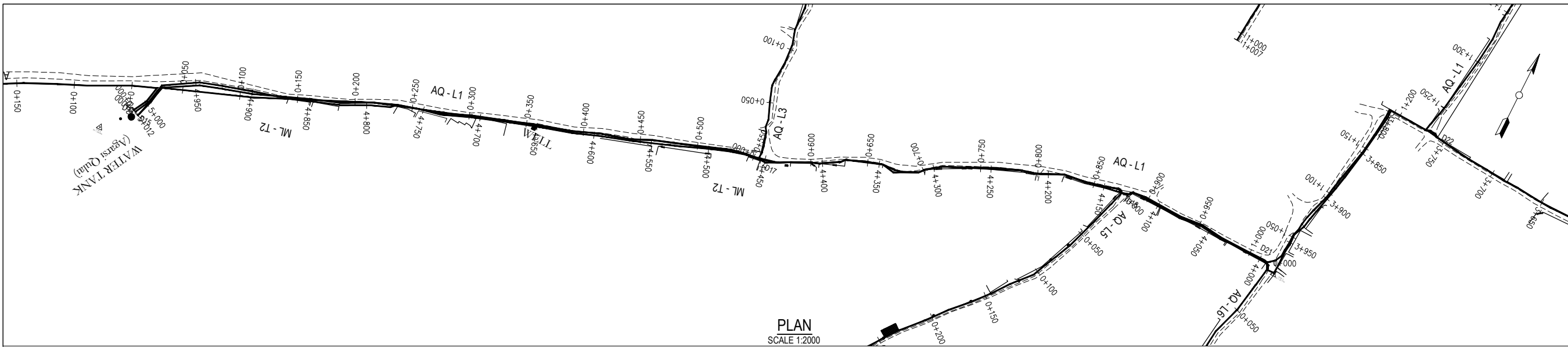
DETAILED DESIGN

Consulting Engineer

15 Westlands Road, Westlands, Office No. 09
P.O. Box 30337 - 00100 Nairobi, Kenya.

Drawing Title
BD - L5
PLAN AND PROFILE

Designed by	SWM	Drawn by	SWM
Checked by	EBO	Approved by	LWM
Scale	AS SHOWN (AT A1)	Date	JULY 2022
Job No.	ELWAK-WSP	ACAD File:	ELWAK/CAD/2022
A STATUS	DRAWING No.	ELWAK/BD-L5/PP/01	0 REV



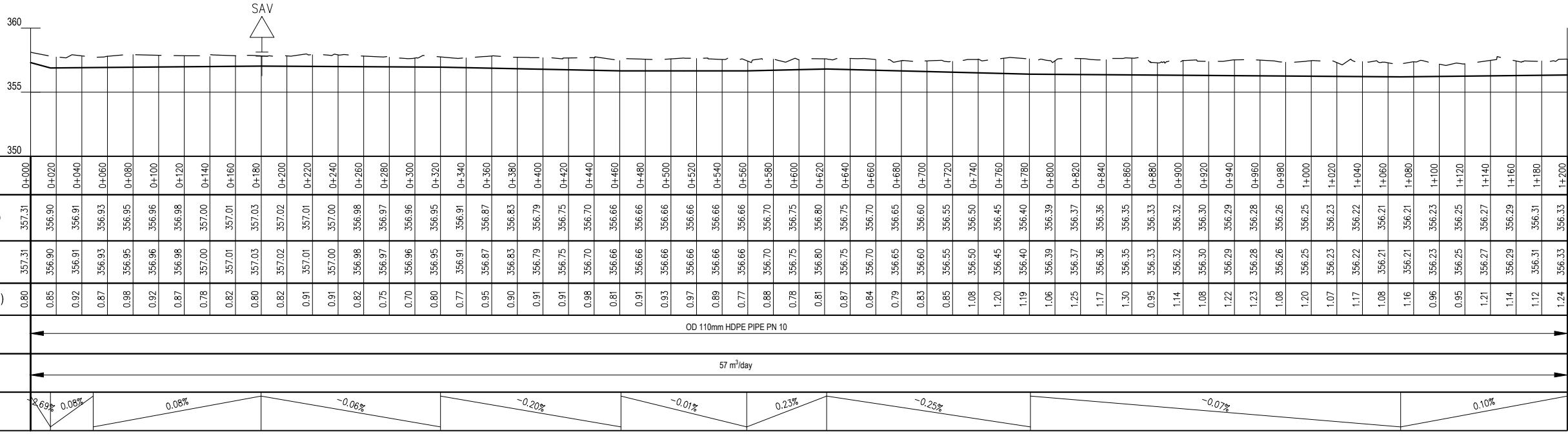
PLAN
SCALE 1:2000

- NOTES**
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 - Pipes are to be laid to even gradients with a minimum cover of 1.0m
 - All bends are horizontal unless otherwise stated.

- LEGEND**
- GROUND PROFILE
 - - - PIPE INVERT PROFILE
 - PROPOSED PIPELINE
 - ==== TARMAC ROAD
 - GRAVEL ROAD
 - R.D. ROAD CROSSING

- DAV DOUBLE ORIFICE AIR VALVE
- SAV SINGLE ORIFICE AIR VALVE
- WASHOUT
- WO
- NRV NON RETURN VALVE
- RDC REDUCER
- HB HORIZONTAL BEND
- LV LINE VALVE
- T TEE JUNCTION
- PN NOMINAL PRESSURE
- OD OUTSIDE DIAMETER

AQ L1 PV - (62)
SCALE: H 1:1000, V 1:100. DATUM: 350.000



CHAINAGE (Km+m)	GROUND LEVELS (Masl)	INVERT LEVELS (Masl)	EXCAVATION DEPTH (m)	SIZE/TYPE OF PIPE	DESIGN FLOW (m3/day)	SLOPE (%)
0+000	357.31	357.31	0.80	OD 110mm HDPE PIPE PN 10	57 m ³ /day	-2.69%
0+020	356.90	356.90	0.85			-0.08%
0+040	356.91	356.91	0.92			0.08%
0+060	356.93	356.93	0.87			0.08%
0+080	356.95	356.95	0.98			0.08%
0+100	356.96	356.96	0.92			0.08%
0+120	356.98	356.98	0.87			0.08%
0+140	357.00	357.00	0.78			0.08%
0+160	357.01	357.01	0.82			0.08%
0+180	357.03	357.03	0.80			0.08%
0+200	357.02	357.02	0.82			-0.06%
0+220	357.01	357.01	0.91			-0.06%
0+240	357.00	357.00	0.91			-0.20%
0+260	356.98	356.98	0.82			-0.20%
0+280	356.97	356.97	0.75			-0.20%
0+300	356.96	356.96	0.70			-0.20%
0+320	356.95	356.95	0.80			-0.20%
0+340	356.91	356.91	0.77			-0.01%
0+360	356.87	356.87	0.95			-0.01%
0+380	356.83	356.83	0.90			0.23%
0+400	356.79	356.79	0.91	0.23%		
0+420	356.75	356.75	0.91	-0.25%		
0+440	356.70	356.70	0.98	-0.25%		
0+460	356.66	356.66	0.81	-0.25%		
0+480	356.66	356.66	0.91	-0.25%		
0+500	356.66	356.66	0.93	-0.07%		
0+520	356.66	356.66	0.97	-0.07%		
0+540	356.66	356.66	0.89	-0.07%		
0+560	356.66	356.66	0.77	-0.07%		
0+580	356.70	356.70	0.88	-0.07%		
0+600	356.75	356.75	0.78	-0.07%		
0+620	356.80	356.80	0.81	-0.07%		
0+640	356.75	356.75	0.87	-0.07%		
0+660	356.70	356.70	0.84	-0.07%		
0+680	356.65	356.65	0.79	-0.07%		
0+700	356.60	356.60	0.83	-0.07%		
0+720	356.55	356.55	0.85	-0.07%		
0+740	356.50	356.50	1.08	-0.07%		
0+760	356.45	356.45	1.20	-0.07%		
0+780	356.40	356.40	1.19	-0.07%		
0+800	356.39	356.39	1.06	-0.07%		
0+820	356.37	356.37	1.25	-0.07%		
0+840	356.36	356.36	1.17	-0.07%		
0+860	356.35	356.35	1.30	-0.07%		
0+880	356.33	356.33	0.95	-0.07%		
0+900	356.32	356.32	1.14	-0.07%		
0+920	356.30	356.30	1.08	-0.07%		
0+940	356.29	356.29	1.22	-0.07%		
0+960	356.28	356.28	1.23	-0.07%		
0+980	356.26	356.26	1.08	-0.07%		
1+000	356.25	356.25	1.20	-0.07%		
1+020	356.23	356.23	1.07	-0.07%		
1+040	356.22	356.22	1.17	-0.07%		
1+060	356.21	356.21	1.08	-0.07%		
1+080	356.21	356.21	1.16	-0.07%		
1+100	356.23	356.23	0.96	-0.07%		
1+120	356.25	356.25	0.95	-0.07%		
1+140	356.27	356.27	1.21	-0.07%		
1+160	356.29	356.29	1.14	-0.07%		
1+180	356.31	356.31	1.12	-0.07%		
1+200	356.33	356.33	1.24	0.10%		

PROFILE
SCALES HOR 1:2000 AND VERT 1:200

REV	REVISIONS	SIGN	DATE	APPROVED
D	BY CHECKED			
C	BY CHECKED			
B	BY CHECKED			
A	BY CHECKED			

Client



PO Box 49699 - 00100, Nairobi, Kenya
1st Floor, CIC Plaza, Mara Road, Upper Hill, Nairobi, Kenya
Tel: 020 272 90 17 / 8

Project
ELWAK WATER SUPPLY PROJECT

DETAILED DESIGN

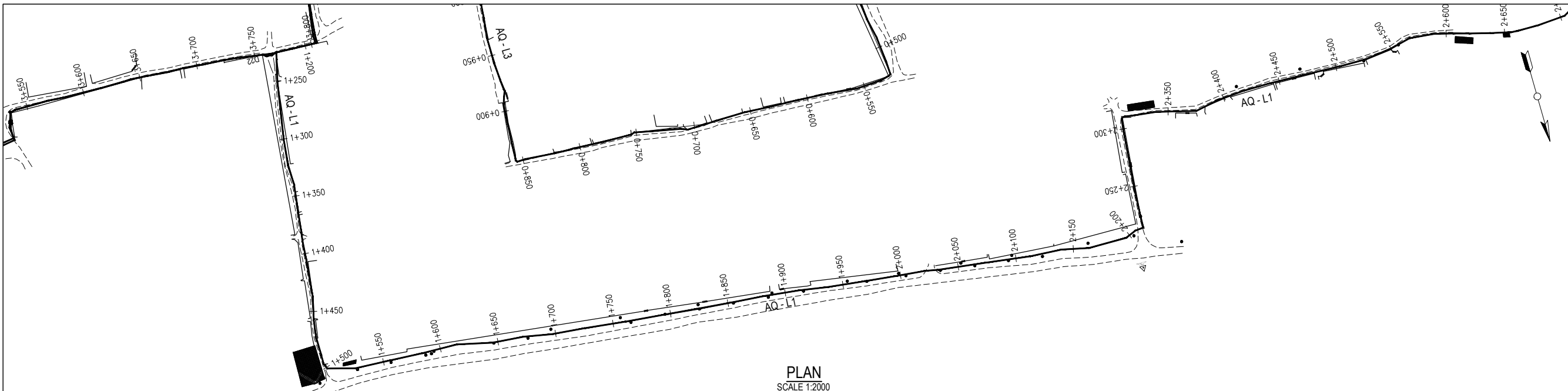
Consulting Engineer



15 Westlands Road, Westlands, Office No. 09
P.O. Box 30337 - 00100 Nairobi, Kenya.

Drawing Title
AQ - L1
PLAN AND PROFILE

Designed by	SWM	Drawn by	SWM
Checked by	EBO	Approved by	LWM
Scale	AS SHOWN (AT A1)	Date	JULY 2022
Job No.	ELWAK-WSP	ACAD File:	ELWAK/CAD/2022
A STATUS	DRAWING No.	ELWAK/AQ-L1/PP/01	0 REV

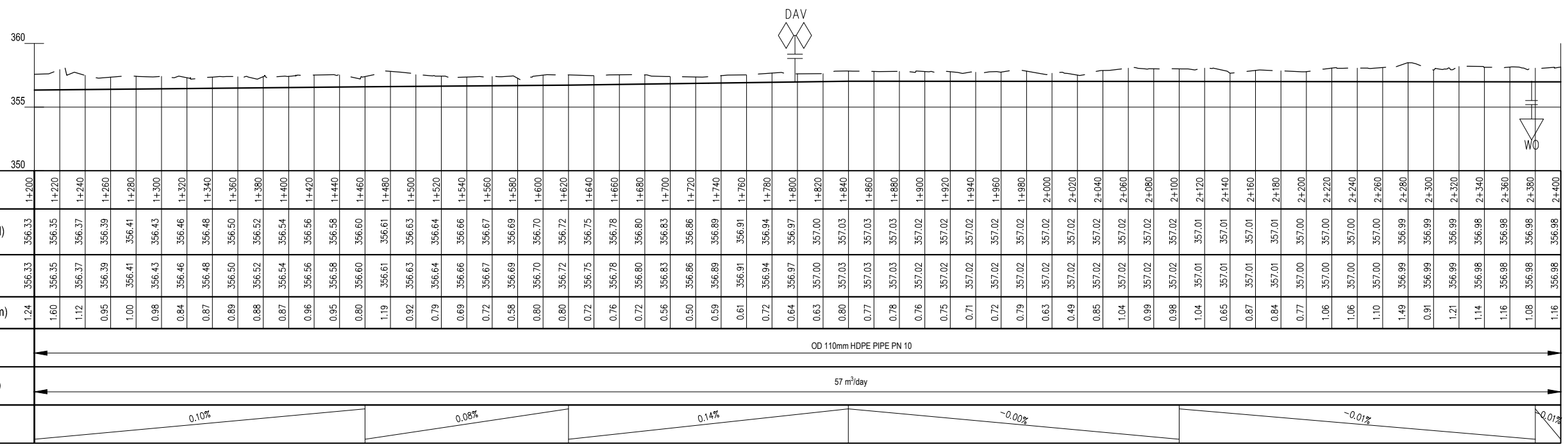


PLAN
SCALE 1:2000

- NOTES**
- All levels in metres above Mean Sea Level (MaSL)
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- LEGEND**
- GROUND PROFILE
 - PIPE INVERT PROFILE
 - PROPOSED PIPELINE
 - TARMAC ROAD
 - GRAVEL ROAD
 - ROAD CROSSING
 - DAV DOUBLE ORIFICE AIR VALVE
 - SAV SINGLE ORIFICE AIR VALVE
 - WASHOUT
 - WO
 - NRV NON RETURN VALVE
 - RDC REDUCER
 - HB HORIZONTAL BEND
 - LV LINE VALVE
 - T TEE JUNCTION
 - PN NOMINAL PRESSURE
 - OD OUTSIDE DIAMETER

AQ L1 PV - (63)
SCALE: H 1:1000,V 1:100. DATUM: 350.000



PROFILE
SCALES HOR 1:2000 AND VERT 1:200

REV	REVISIONS	SIGN	DATE	APPROVED
D	BY CHECKED			
C	BY CHECKED			
B	BY CHECKED			
A	BY CHECKED			

Client

PO Box 49699 - 00100, Nairobi, Kenya
1st Floor, CIC Plaza, Mara Road, Upper Hill, Nairobi, Kenya
Tel: 020 272 90 17 / 8

Project
ELWAK WATER SUPPLY PROJECT

Consulting Engineer

15 Westlands Road, Westlands, Office No. 09
P.O. Box 30337 - 00100 Nairobi, Kenya.

Drawing Title
AQ - L1
PLAN AND PROFILE

Designed by	SWM	Drawn by	SWM
Checked by	EBO	Approved by	LWM
Scale	AS SHOWN (AT A1)	Date	JULY 2022
Job No.	ELWAK-WSP	ACAD File:	ELWAK/CAD/2022
A STATUS	DRAWING No.	ELWAK/AQ-L1/PP/02	0 REV

NOTES

- All levels in metres above Mean Sea Level (MaSL)
- Precise location of air valves, washouts, bends and other fittings to be determined on site.
- Ground and Invert Level shown are only indicative. Final levels to be confirmed in accordance with the Contract Specifications.
- Pipes are to be laid to even gradients with a minimum cover of 1.0m
- All bends are horizontal unless otherwise stated.

LEGEND

- GROUND PROFILE
- PIPE INVERT PROFILE
- PROPOSED PIPELINE
- TARMAC ROAD
- GRAVEL ROAD
- ROAD CROSSING

- DOUBLE ORIFICE AIR VALVE
- SINGLE ORIFICE AIR VALVE
- WASHOUT
- WASHOUT
- NON RETURN VALVE
- REDUCER
- HORIZONTAL BEND
- LINE VALVE
- TEE JUNCTION
- NOMINAL PRESSURE
- OUTSIDE DIAMETER

REV	REVISIONS	SIGN	DATE	APPROVED
D	BY CHECKED			
C	BY CHECKED			
B	BY CHECKED			
A	BY CHECKED			

Client



PO Box 49699 - 00100,
Nairobi, Kenya
1st Floor, CIC Plaza,
Mara Road, Upper Hill,
Nairobi, Kenya
Tel: 020 272 90 17 / 8

Project
ELWAK WATER SUPPLY PROJECT

DETAILED DESIGN

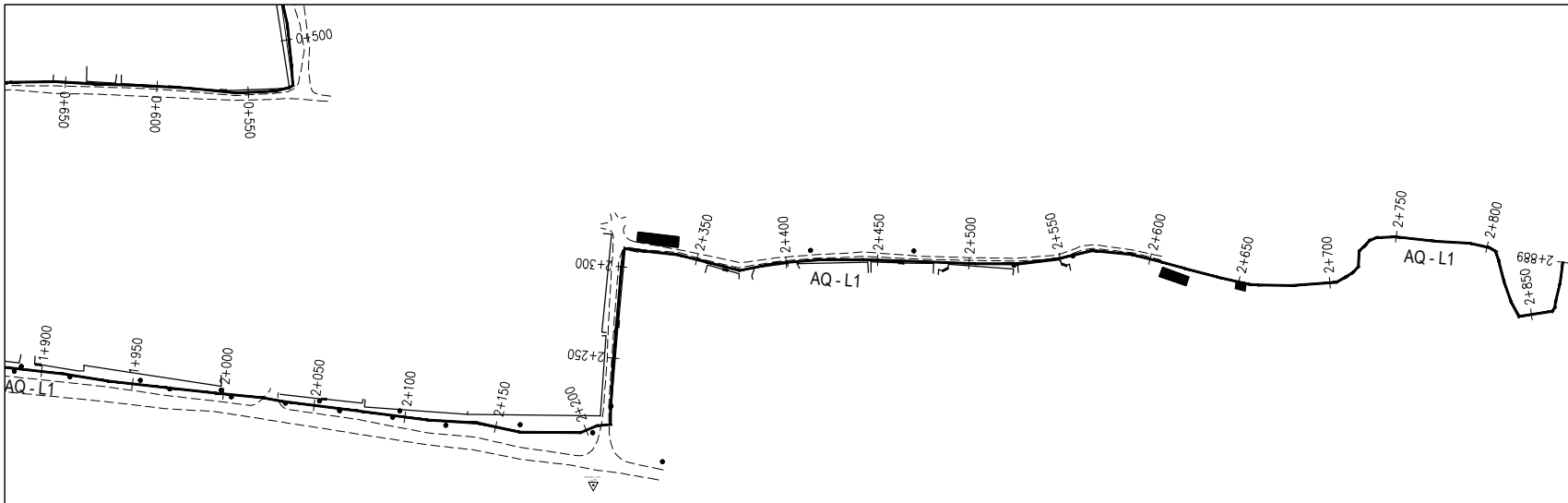
Consulting Engineer



15 Westlands Road, Westlands,
Office No. 09
P.O. Box 30337 - 00100 Nairobi,
Kenya.

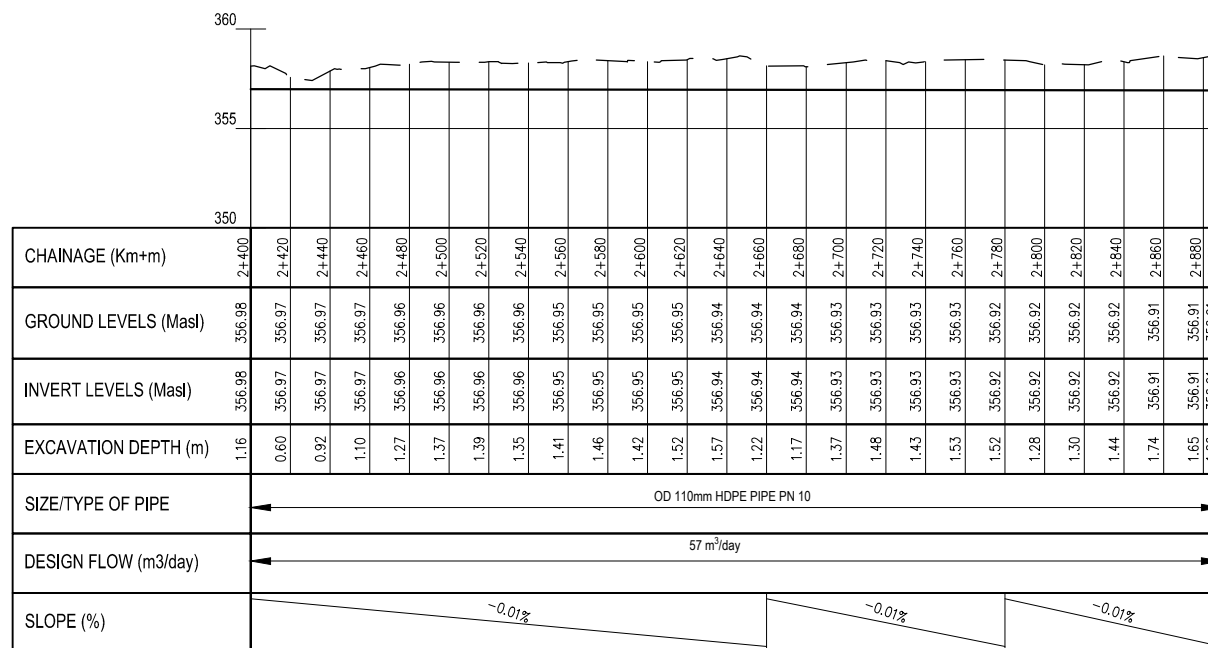
Drawing Title
AQ - L1
PLAN AND PROFILE

Designed by	SWM	Drawn by	SWM
Checked by	EBO	Approved by	LWM
Scale	AS SHOWN (AT A1)	Date	JULY 2022
Job No.	ELWAK-WSP	ACAD File:	ELWAK/CAD/2022
A STATUS	DRAWING No.	ELWAK/AQ-L1/PP/03	0 REV



PLAN
SCALE 1:2000

AQ L1 PV - (64)
SCALE: H 1:1000, V 1:100. DATUM: 350.000



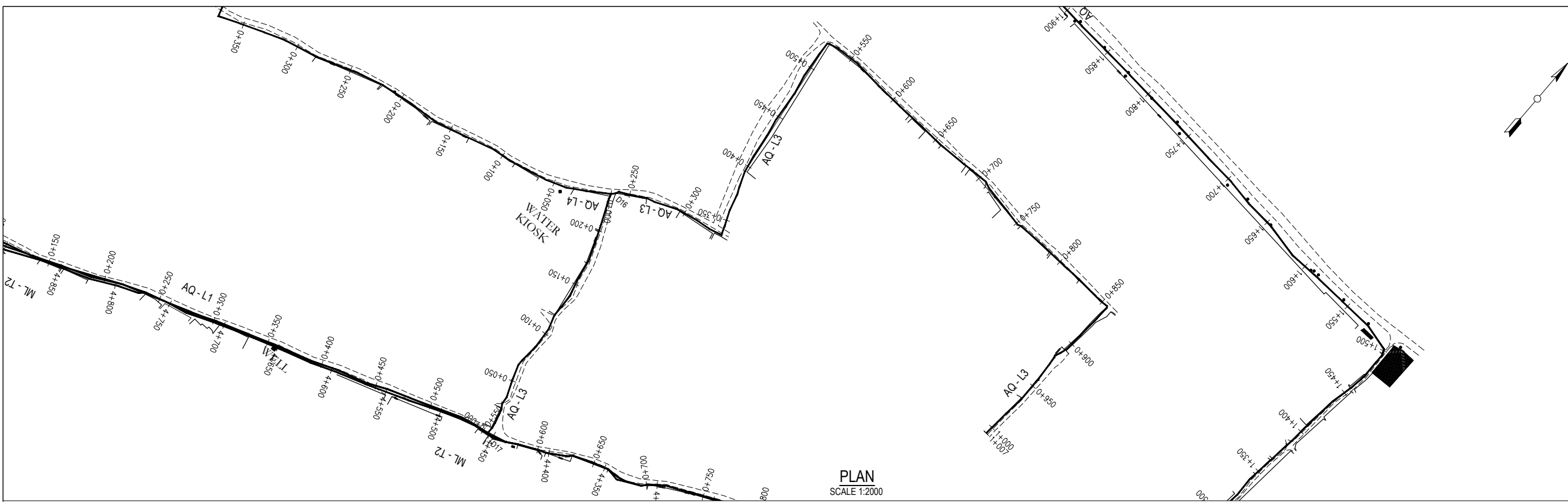
PROFILE
SCALES HOR 1:2000 AND VERT 1:200

NOTES

- All levels in metres above Mean Sea Level (MaSL)
- Precise location of air valves, washouts, bends and other fittings to be determined on site.
- Ground and Invert Level shown are only indicative. Final levels to be confirmed in accordance with the Contract Specifications.
- Pipes are to be laid to even gradients with a minimum cover of 1.0m
- All bends are horizontal unless otherwise stated.

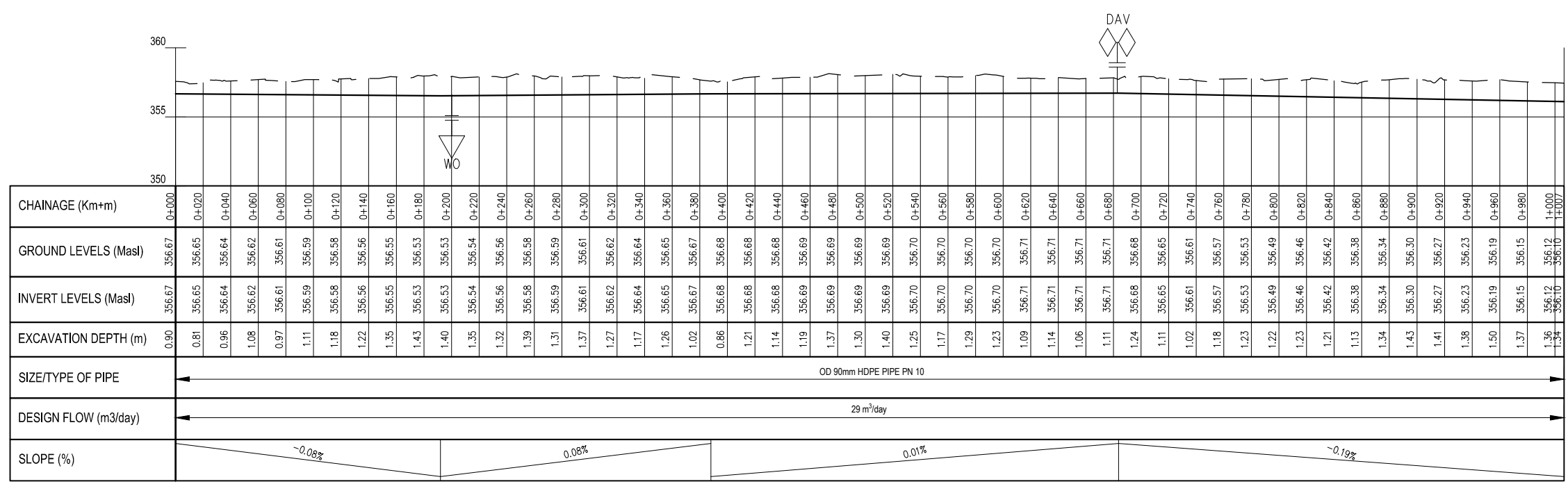
LEGEND

- GROUND PROFILE
- PIPE INVERT PROFILE
- PROPOSED PIPELINE
- TARMAC ROAD
- GRAVEL ROAD
- ROAD CROSSING
- DOUBLE ORIFICE AIR VALVE
- SINGLE ORIFICE AIR VALVE
- WASHOUT
- NON RETURN VALVE
- REDUCER
- HORIZONTAL BEND
- LINE VALVE
- TEE JUNCTION
- NOMINAL PRESSURE
- OUTSIDE DIAMETER



PLAN
SCALE 1:2000

AQ LINE 3 PV - (67)
SCALE: H 1:1000,V 1:100. DATUM: 350.000



PROFILE
SCALES HOR 1:2000 AND VERT 1:200

REV	REVISIONS	SIGN	DATE	APPROVED
D	BY CHECKED			
C	BY CHECKED			
B	BY CHECKED			
A	BY CHECKED			

Client

PO Box 49699 - 00100, Nairobi, Kenya
1st Floor, CIC Plaza, Mara Road, Upper Hill, Nairobi, Kenya
Tel: 020 272 90 17 / 8

Project
ELWAK WATER SUPPLY PROJECT

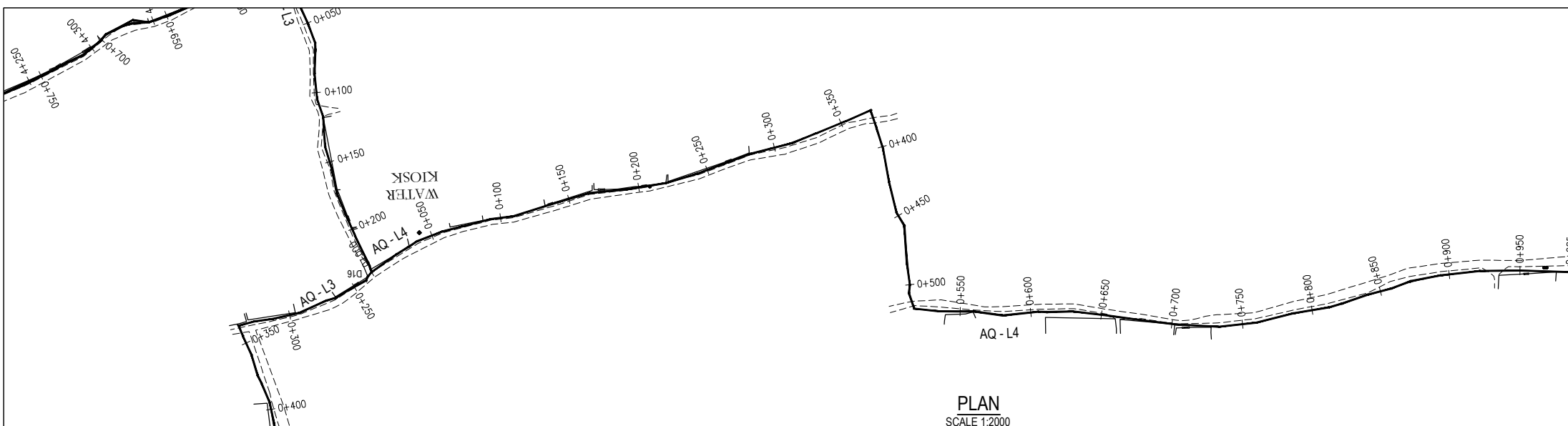
DETAILED DESIGN

Consulting Engineer

15 Westlands Road, Westlands, Office No. 09
P.O. Box 30337 - 00100 Nairobi, Kenya.

Drawing Title
AQ - L3
PLAN AND PROFILE

Designed by	SWM	Drawn by	SWM
Checked by	EBO	Approved by	LWM
Scale	AS SHOWN (AT A1)	Date	JULY 2022
Job No.	ELWAK-WSP	ACAD File:	ELWAK/CAD/2022
A STATUS	DRAWING No.	ELWAK/AQ-L3/PP/01	0 REV

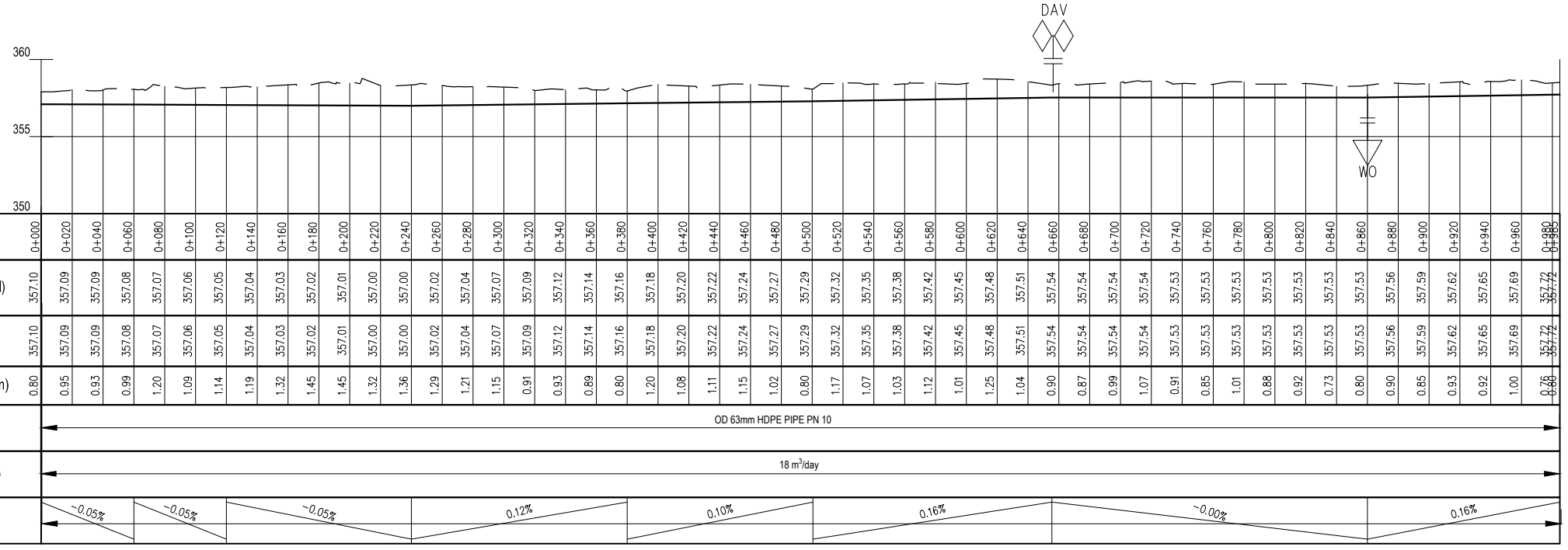


PLAN
SCALE 1:2000

- NOTES**
- All levels in metres above Mean Sea Level (MaSL)
 - Precise location of air valves, washouts, bends and other fittings to be determined on site.
 - Ground and Invert Level shown are only indicative. Final levels to be confirmed in accordance with the Contract Specifications.
 - Pipes are to be laid to even gradients with a minimum cover of 1.0m
 - All bends are horizontal unless otherwise stated.


- LEGEND**
- GROUND PROFILE
 - PIPE INVERT PROFILE
 - PROPOSED PIPELINE
 - TARMAC ROAD
 - GRAVEL ROAD
 - R.D. ROAD CROSSING
 - DAV DOUBLE ORIFICE AIR VALVE
 - SAV SINGLE ORIFICE AIR VALVE
 - WO WASHOUT
 - NRV NON RETURN VALVE
 - RDC REDUCER
 - HB HORIZONTAL BEND
 - LV LINE VALVE
 - T TEE JUNCTION
 - PN NOMINAL PRESSURE
 - OD OUTSIDE DIAMETER

AQ L4 PV - (68)
SCALE: H 1:1000, V 1:100. DATUM: 350.000



PROFILE
SCALES HOR 1:2000 AND VERT 1:200

REV	REVISIONS	SIGN	DATE	APPROVED
D	BY			
	CHECKED			
C	BY			
	CHECKED			
B	BY			
	CHECKED			
A	BY			
	CHECKED			

Client

 PO Box 49699 - 00100, Nairobi, Kenya
 1st Floor, CIC Plaza, Mara Road, Upper Hill, Nairobi, Kenya
 Tel: 020 272 90 17 / 8

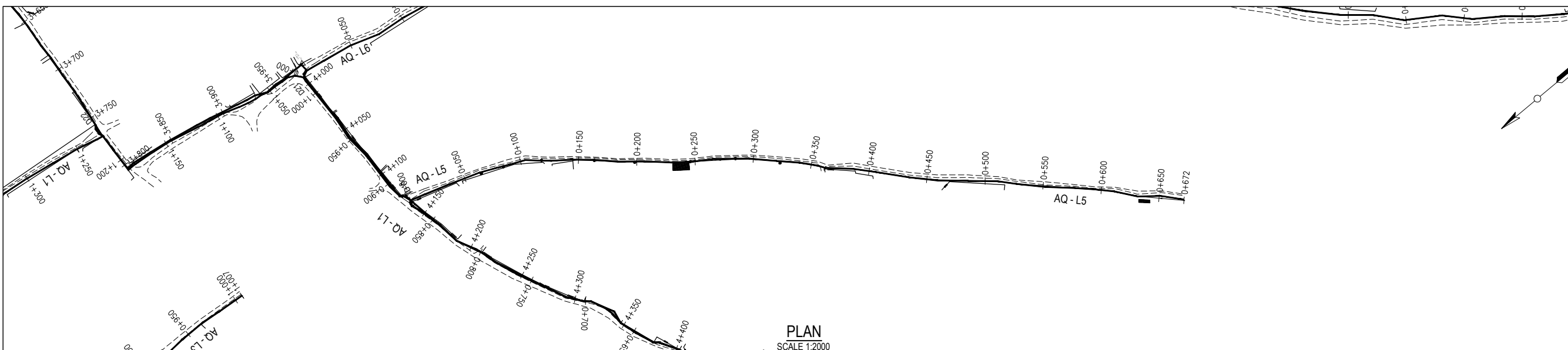
Project
ELWAK WATER SUPPLY PROJECT

DETAILED DESIGN
 Consulting Engineer

 15 Westlands Road, Westlands, Office No. 09
 P.O. Box 30337 - 00100 Nairobi, Kenya.

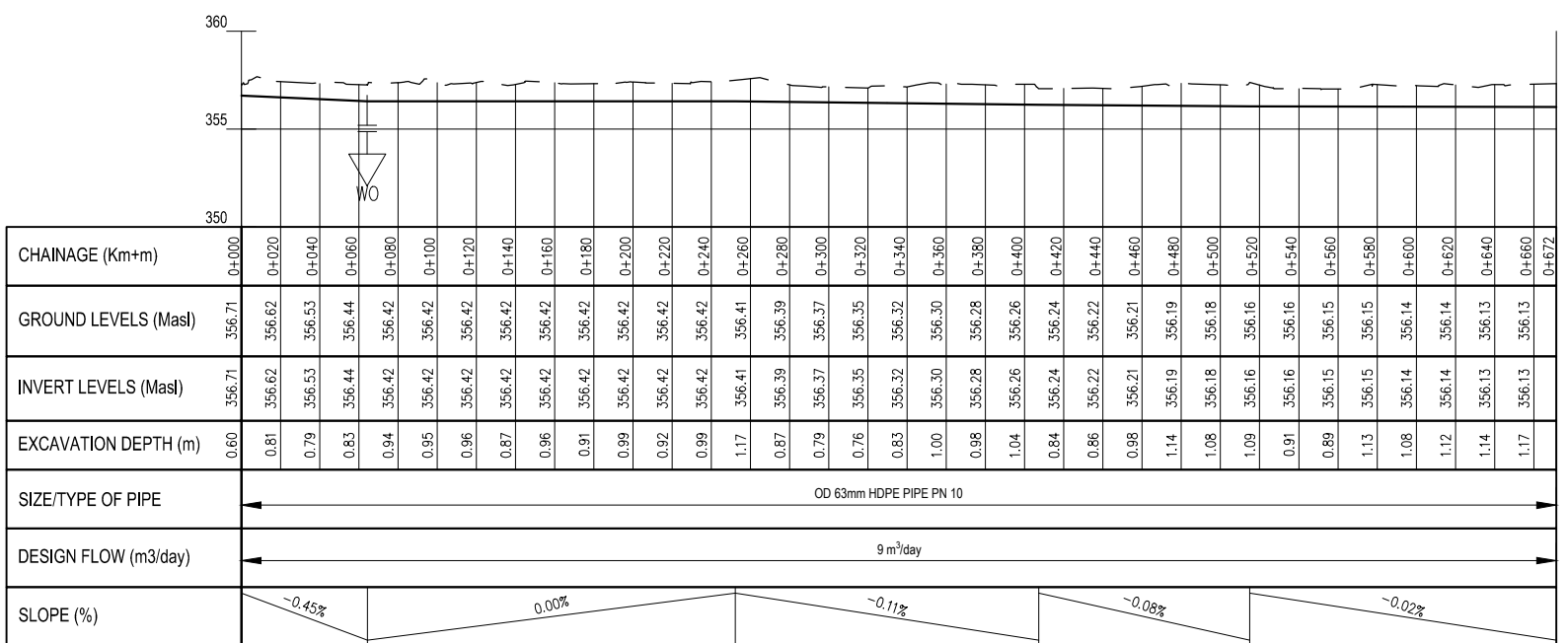
Drawing Title
 AQ - L4
 PLAN AND PROFILE

Designed by	SWM	Drawn by	SWM
Checked by	EBO	Approved by	LWM
Scale	AS SHOWN (AT A1)	Date	JULY 2022
Job No.	ELWAK-WSP	ACAD File:	ELWAK/CAD/2022
A STATUS	DRAWING No.	ELWAK/AQ-L4/PP/01	0 REV



PLAN
SCALE 1:2000

AQ L5 PV - (69)
SCALE: H 1:1000, V 1:100. DATUM: 350.000



PROFILE
SCALES HOR 1:2000 AND VERT 1:200

NOTES

- All levels in metres above Mean Sea Level (MaSL)
- Precise location of air valves, washouts, bends and other fittings to be determined on site.
- Ground and Invert Level shown are only indicative. Final levels to be confirmed in accordance with the Contract Specifications.
- Pipes are to be laid to even gradients with a minimum cover of 1.0m
- All bends are horizontal unless otherwise stated.

LEGEND

- GROUND PROFILE
- - - PIPE INVERT PROFILE
- PROPOSED PIPELINE
- ==== TARMAC ROAD
- GRAVEL ROAD
- R.D. ROAD CROSSING
- DAV DOUBLE ORIFICE AIR VALVE
- SAV SINGLE ORIFICE AIR VALVE
- WO WASHOUT
- NRV NON RETURN VALVE
- RDC REDUCER
- HB HORIZONTAL BEND
- LV LINE VALVE
- T TEE JUNCTION
- PN NOMINAL PRESSURE
- OD OUTSIDE DIAMETER

REV	REVISIONS	SIGN	DATE	APPROVED
D	BY CHECKED			
C	BY CHECKED			
B	BY CHECKED			
A	BY CHECKED			

Client

PO Box 49699 - 00100,
Nairobi, Kenya
1st Floor, CIC Plaza,
Mara Road, Upper Hill,
Nairobi, Kenya
Tel: 020 272 90 17 / 8

Project
ELWAK WATER SUPPLY PROJECT

Consulting Engineer

15 Westlands Road, Westlands,
Office No. 09
P.O. Box 30337 - 00100 Nairobi,
Kenya.

Drawing Title
AQ - L5
PLAN AND PROFILE

Designed by	SWM	Drawn by	SWM
Checked by	EBO	Approved by	LWM
Scale	AS SHOWN (AT A1)	Date	JULY 2022
Job No.	ELWAK-WSP	ACAD File:	ELWAK/CAD/2022
A	DRAWING No.	ELWAK/AQ - L5/PP/01	0
STATUS			REV

NOTES

- All levels in metres above Mean Sea Level (MaSL)
- Precise location of air valves, washouts, bends and other fittings to be determined on site.
- Ground and Invert Level shown are only indicative. Final Levels to be confirmed in accordance with the Contract Specifications.
- Pipes are to be laid to even gradients with a minimum cover of 1.0m
- All bends are horizontal unless otherwise stated.

LEGEND

- GROUND PROFILE
- PIPE INVERT PROFILE
- PROPOSED PIPELINE
- TARMAC ROAD
- GRAVEL ROAD
- ROAD CROSSING

- DOUBLE ORIFICE AIR VALVE
- SINGLE ORIFICE AIR VALVE
- WASHOUT
- WASHOUT
- NON RETURN VALVE
- REDUCER
- HORIZONTAL BEND
- LINE VALVE
- TEE JUNCTION
- NOMINAL PRESSURE
- OUTSIDE DIAMETER

REV	REVISIONS	SIGN	DATE	APPROVED
D	BY CHECKED			
C	BY CHECKED			
B	BY CHECKED			
A	BY CHECKED			

Client



PO Box 49699 - 00100, Nairobi, Kenya
1st Floor, CIC Plaza, Mara Road, Upper Hill, Nairobi, Kenya
Tel: 020 272 90 17 / 8

Project
ELWAK WATER SUPPLY PROJECT

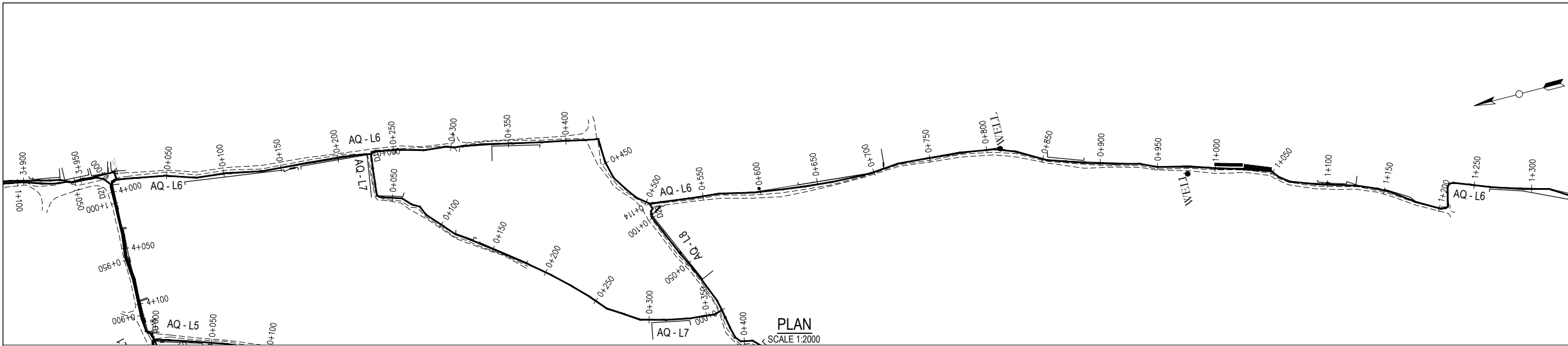
Consulting Engineer



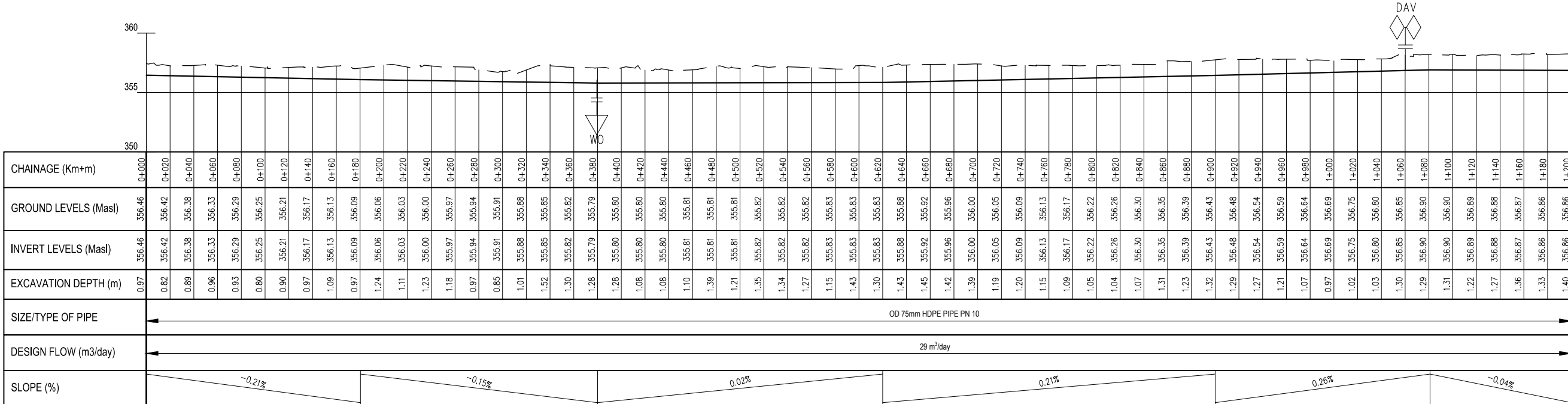
15 Westlands Road, Westlands, Office No. 09
P.O. Box 30337 - 00100 Nairobi, Kenya.

Drawing Title
AQ - L6
PLAN AND PROFILE

Designed by	SWM	Drawn by	SWM
Checked by	EBO	Approved by	LWM
Scale	AS SHOWN (AT A1)	Date	JULY 2022
Job No.	ELWAK-WSP	ACAD File:	ELWAK/CAD/2022
A STATUS	DRAWING No.	ELWAK/AQ-L6/PP/01	0 REV



AQ L6 PV - (70)
SCALE: H 1:1000, V 1:100. DATUM: 350.000



PROFILE
SCALES HOR 1:2000 AND VERT 1:200

NOTES

- All levels in metres above Mean Sea Level (MaSL)
- Precise location of air valves, washouts, bends and other fittings to be determined on site.
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- Pipes are to be laid to even gradients with a minimum cover of 1.0m
- All bends are horizontal unless otherwise stated.


LEGEND

- GROUND PROFILE
- PIPE INVERT PROFILE
- PROPOSED PIPELINE
- TARMAC ROAD
- GRAVEL ROAD
- ROAD CROSSING

- DOUBLE ORIFICE AIR VALVE
- SINGLE ORIFICE AIR VALVE
- WASHOUT
- WASHOUT
- NON RETURN VALVE
- REDUCER
- HORIZONTAL BEND
- LINE VALVE
- TEE JUNCTION
- NOMINAL PRESSURE
- OUTSIDE DIAMETER

REV	REVISIONS	SIGN	DATE	APPROVED
D	BY CHECKED			
C	BY CHECKED			
B	BY CHECKED			
A	BY CHECKED			

Client



PO Box 49699 - 00100,
Nairobi, Kenya
1st Floor, CIC Plaza,
Mara Road, Upper Hill,
Nairobi, Kenya
Tel: 020 272 90 17 / 8

Project
ELWAK WATER SUPPLY PROJECT

DETAILED DESIGN

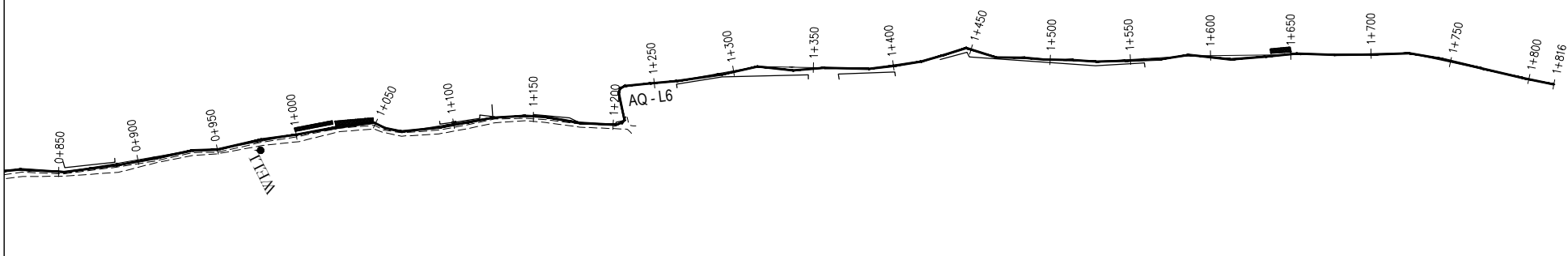
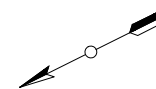
Consulting Engineer



15 Westlands Road, Westlands,
Office No. 09
P.O. Box 30337 - 00100 Nairobi,
Kenya.

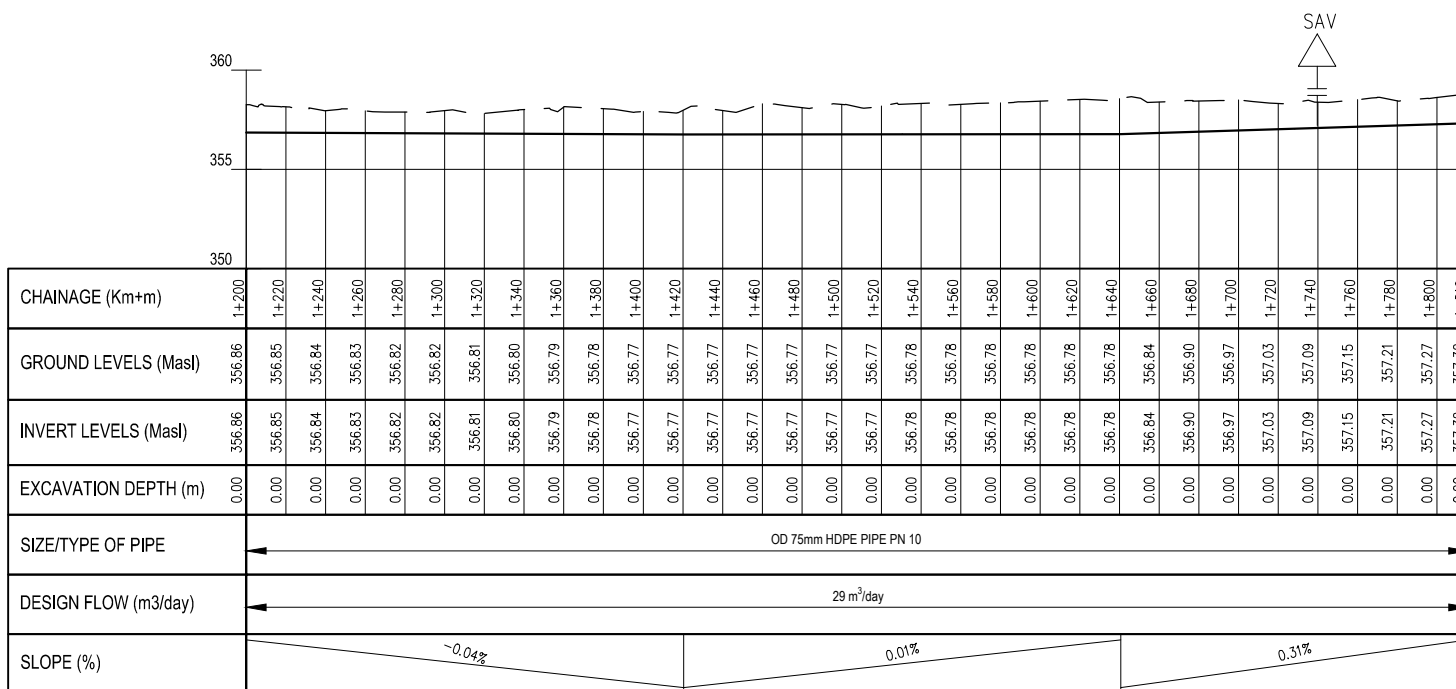
Drawing Title
AQ - L6
PLAN AND PROFILE

Designed by	SWM	Drawn by	SWM
Checked by	EBO	Approved by	LWM
Scale	AS SHOWN (AT A1)	Date	JULY 2022
Job No.	ELWAK-WSP	ACAD File:	ELWAK/CAD/2022
A STATUS	DRAWING No.	ELWAK/AQ-L6/PP/02	0 REV



PLAN
SCALE 1:2000

AQ L6 PV - (71)
SCALE: H 1:1000, V 1:100. DATUM: 350.000



PROFILE
SCALES HOR 1:2000 AND VERT 1:200

NOTES

- All levels in metres above Mean Sea Level (MaSL)
- Precise location of air valves, washouts, bends and other fittings to be determined on site.
- Ground and Invert Level shown are only indicative. Final levels to be confirmed in accordance with the Contract Specifications.
- Pipes are to be laid to even gradients with a minimum cover of 1.0m
- All bends are horizontal unless otherwise stated.

LEGEND

- GROUND PROFILE
- PIPE INVERT PROFILE
- PROPOSED PIPELINE
- TARMAC ROAD
- GRAVEL ROAD
- ROAD CROSSING

- DOUBLE ORIFICE AIR VALVE
- SINGLE ORIFICE AIR VALVE
- WASHOUT
- NON RETURN VALVE
- REDUCER
- HORIZONTAL BEND
- LINE VALVE
- TEE JUNCTION
- NOMINAL PRESSURE
- OUTSIDE DIAMETER

REV	REVISIONS	SIGN	DATE	APPROVED
D	BY CHECKED			
C	BY CHECKED			
B	BY CHECKED			
A	BY CHECKED			

Client



PO Box 49699 - 00100,
Nairobi, Kenya
1st Floor, CIC Plaza,
Mara Road, Upper Hill,
Nairobi, Kenya
Tel: 020 272 90 17 / 8

Project
ELWAK WATER SUPPLY PROJECT

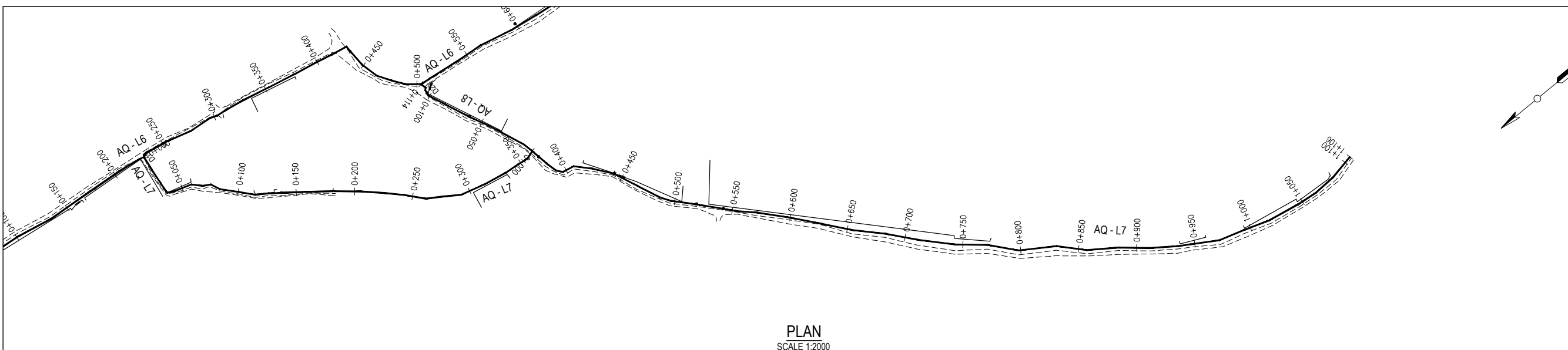
Consulting Engineer



15 Westlands Road, Westlands,
Office No. 09
P.O. Box 30337 - 00100 Nairobi,
Kenya.

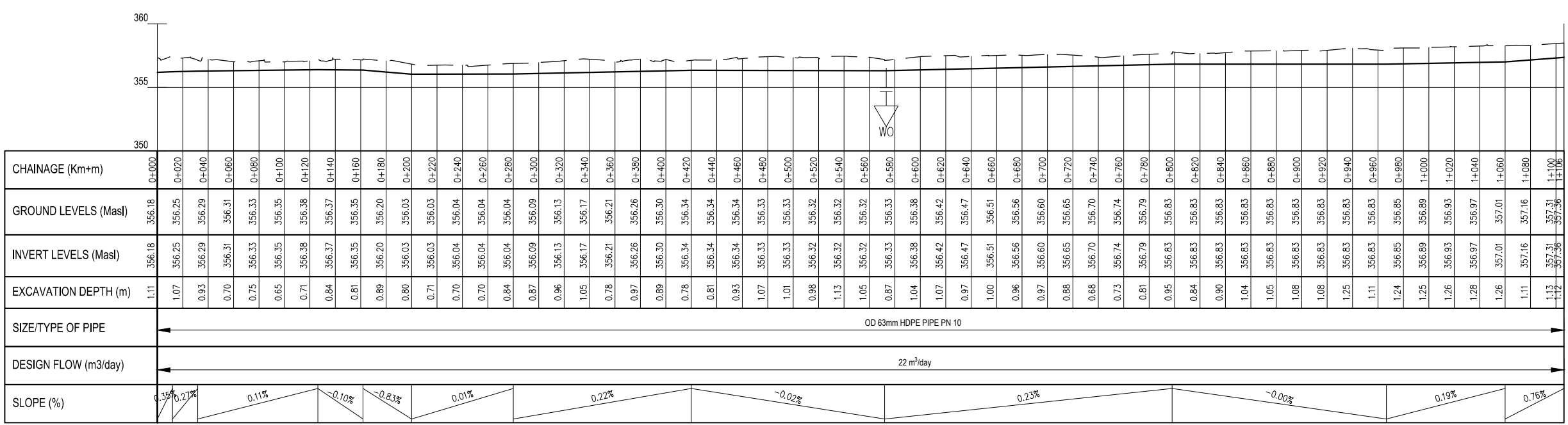
Drawing Title
AQ - L7
PLAN AND PROFILE

Designed by	SWM	Drawn by	SWM
Checked by	EBO	Approved by	LWM
Scale	AS SHOWN (AT A1)	Date	JULY 2022
Job No.	ELWAK-WSP	ACAD File:	ELWAK/CAD/2022
A	DRAWING No.	ELWAK/AQ-L7/PP/01	0
STATUS			REV

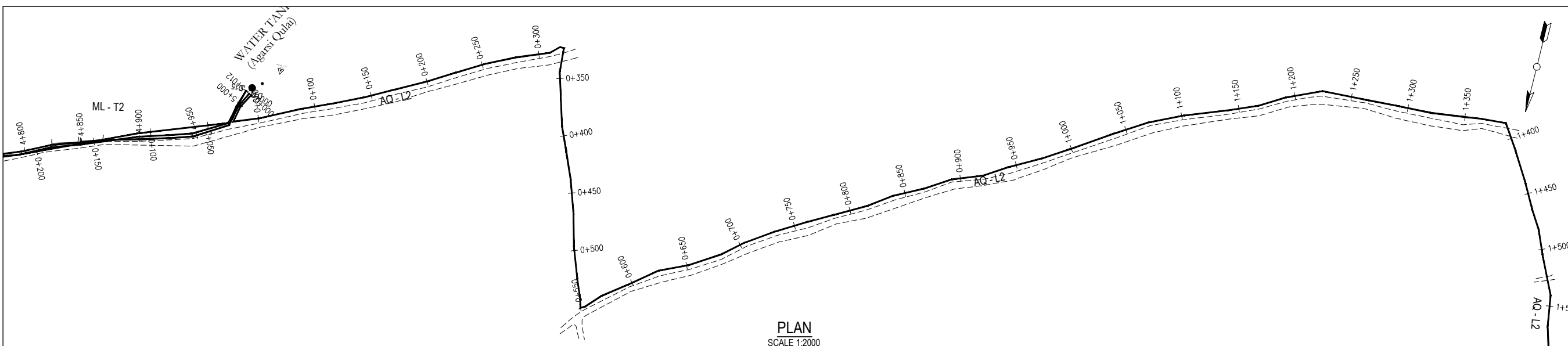


PLAN
SCALE 1:2000

AQ L7 PV - (72)
SCALE: H 1:1000,V 1:100. DATUM: 350.000



PROFILE
SCALES HOR 1:2000 AND VERT 1:200



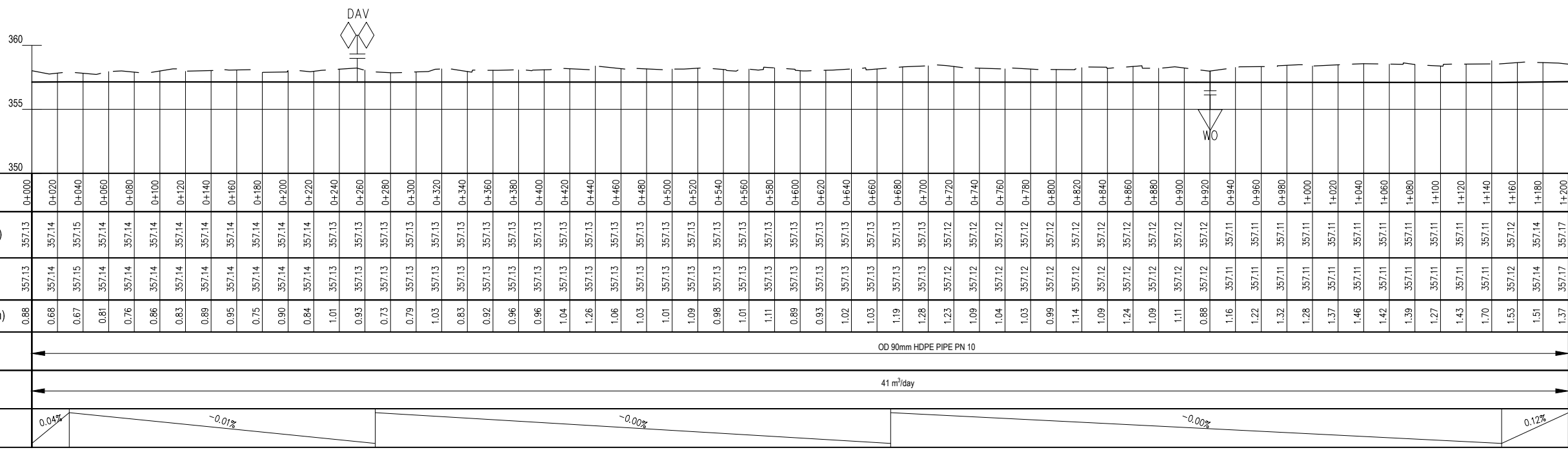
PLAN
SCALE 1:2000

- NOTES**
- All levels in metres above Mean Sea Level (MaSL)
 - Precise location of air valves, washouts, bends and other fittings to be determined on site.
 - Ground and Invert Level shown are only indicative. Final levels to be confirmed in accordance with the Contract Specifications.
 - Pipes are to be laid to even gradients with a minimum cover of 1.0m
 - All bends are horizontal unless otherwise stated.

- LEGEND**
- GROUND PROFILE
 - PIPE INVERT PROFILE
 - PROPOSED PIPELINE
 - TARMAC ROAD
 - GRAVEL ROAD
 - R.D. ROAD CROSSING

- DAV DOUBLE ORIFICE AIR VALVE
- SAV SINGLE ORIFICE AIR VALVE
- WASHOUT
- WO
- NRV NON RETURN VALVE
- RDC REDUCER
- HB HORIZONTAL BEND
- LV LINE VALVE
- T TEE JUNCTION
- PN NOMINAL PRESSURE
- OD OUTSIDE DIAMETER

AQ L2 PV - (65)
SCALE: H 1:1000, V 1:100. DATUM: 350.000



PROFILE
SCALES HOR 1:2000 AND VERT 1:200

REV	REVISIONS	SIGN	DATE	APPROVED
D	CHECKED	BY		
C	CHECKED	BY		
B	CHECKED	BY		
A	CHECKED	BY		

Client



PO Box 49699 - 00100,
Nairobi, Kenya
1st Floor, CIC Plaza,
Mara Road, Upper Hill,
Nairobi, Kenya
Tel: 020 272 90 17 / 8

Project
ELWAK WATER SUPPLY PROJECT

DETAILED DESIGN

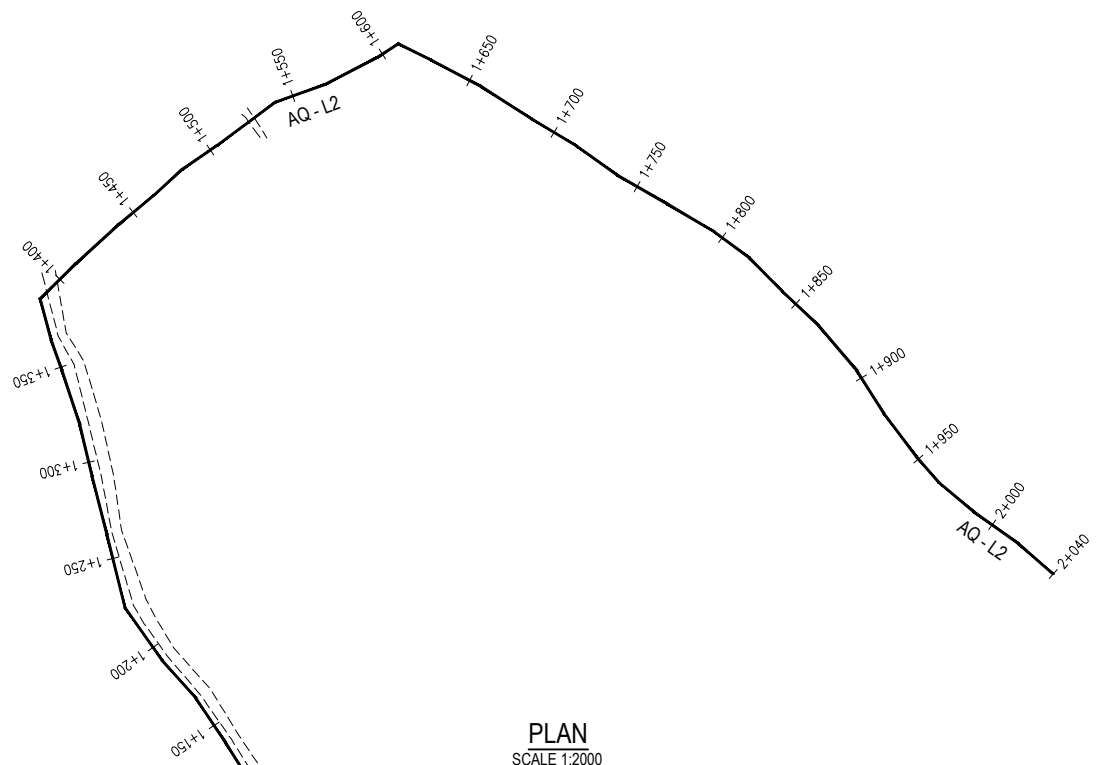
Consulting Engineer



15 Westlands Road, Westlands,
Office No. 09
P.O. Box 30337 - 00100 Nairobi,
Kenya.

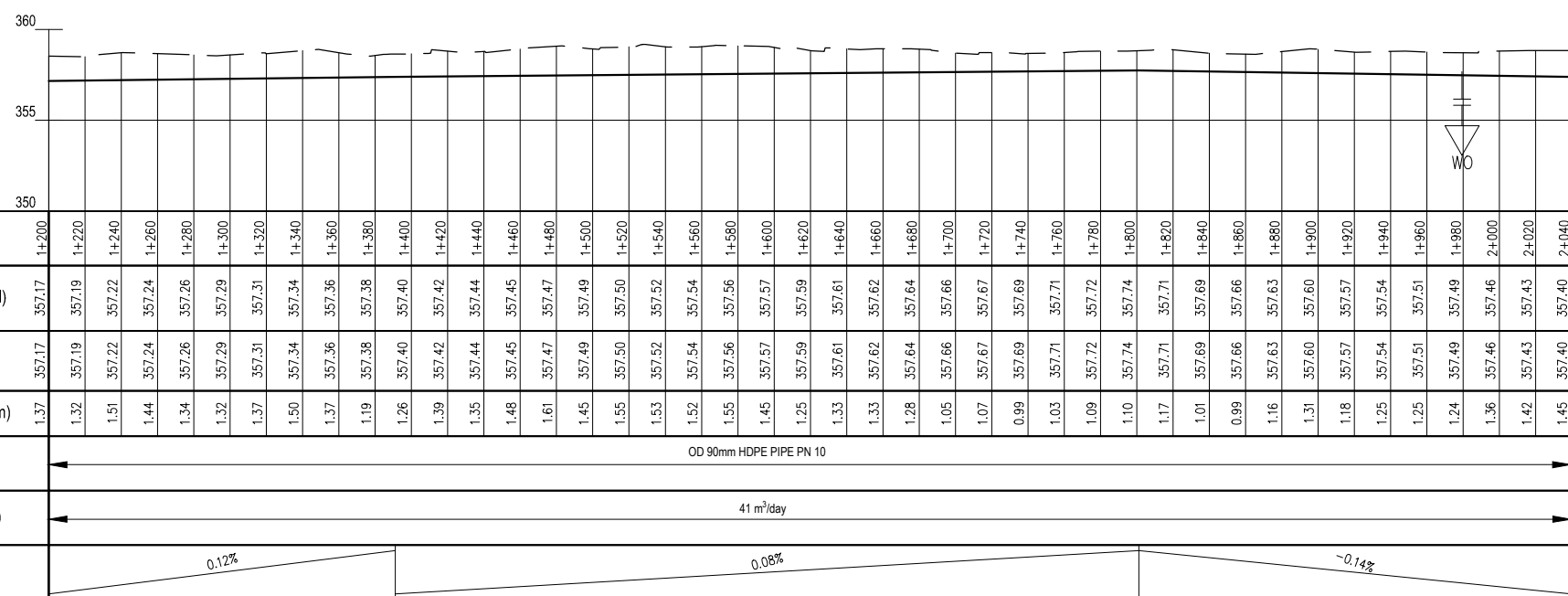
Drawing Title
AQ - L2
PLAN AND PROFILE

Designed by	SWM	Drawn by	SWM
Checked by	EBO	Approved by	LWM
Scale	AS SHOWN (AT A1)	Date	JULY 2022
Job No.	ELWAK-WSP	ACAD File:	ELWAK/CAD/2022
A STATUS	DRAWING No.	ELWAK/AQ-L2/PP/01	0 REV



PLAN
SCALE 1:2000

AQ L2 PV - (66)
SCALE: H 1:1000,V 1:100. DATUM: 350.000



PROFILE
SCALES HOR 1:2000 AND VERT 1:200

- NOTES**
- All levels in metres above Mean Sea Level (MaSL)
 - Precise location of air valves, washouts, bends and other fittings to be determined on site.
 - Ground and Invert Level shown are only indicative. Final levels to be confirmed in accordance with the Contract Specifications.
 - Pipes are to be laid to even gradients with a minimum cover of 1.0m
 - All bends are horizontal unless otherwise stated.


- LEGEND**
- GROUND PROFILE
 - PIPE INVERT PROFILE
 - PROPOSED PIPELINE
 - ==== TARMAC ROAD
 - GRAVEL ROAD
 - R.D
 - DAV DOUBLE ORIFICE AIR VALVE
 - SAV SINGLE ORIFICE AIR VALVE
 - WO WASHOUT
 - NRV NON RETURN VALVE
 - RDC REDUCER
 - HB HORIZONTAL BEND
 - LV LINE VALVE
 - T TEE JUNCTION
 - PN NOMINAL PRESSURE
 - OD OUTSIDE DIAMETER

REV	REVISIONS	SIGN	DATE	APPROVED
D	BY CHECKED			
C	BY CHECKED			
B	BY CHECKED			
A	BY CHECKED			

Client

 PO Box 49699 - 00100, Nairobi, Kenya
 1st Floor, CIC Plaza, Mara Road, Upper Hill, Nairobi, Kenya
 Tel: 020 272 90 17 / 8

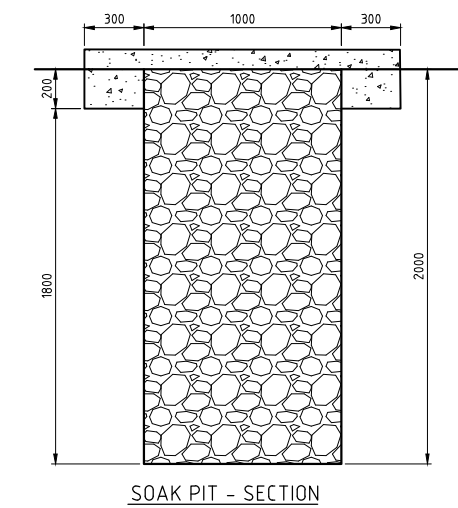
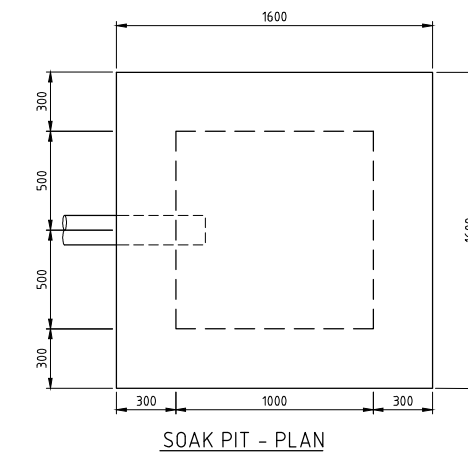
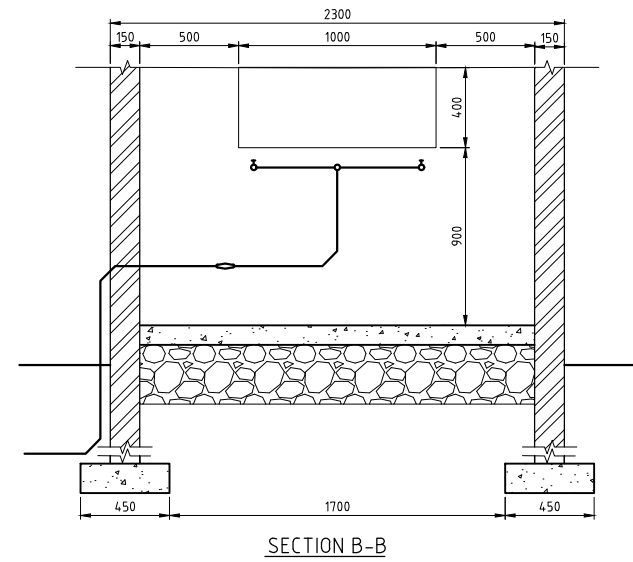
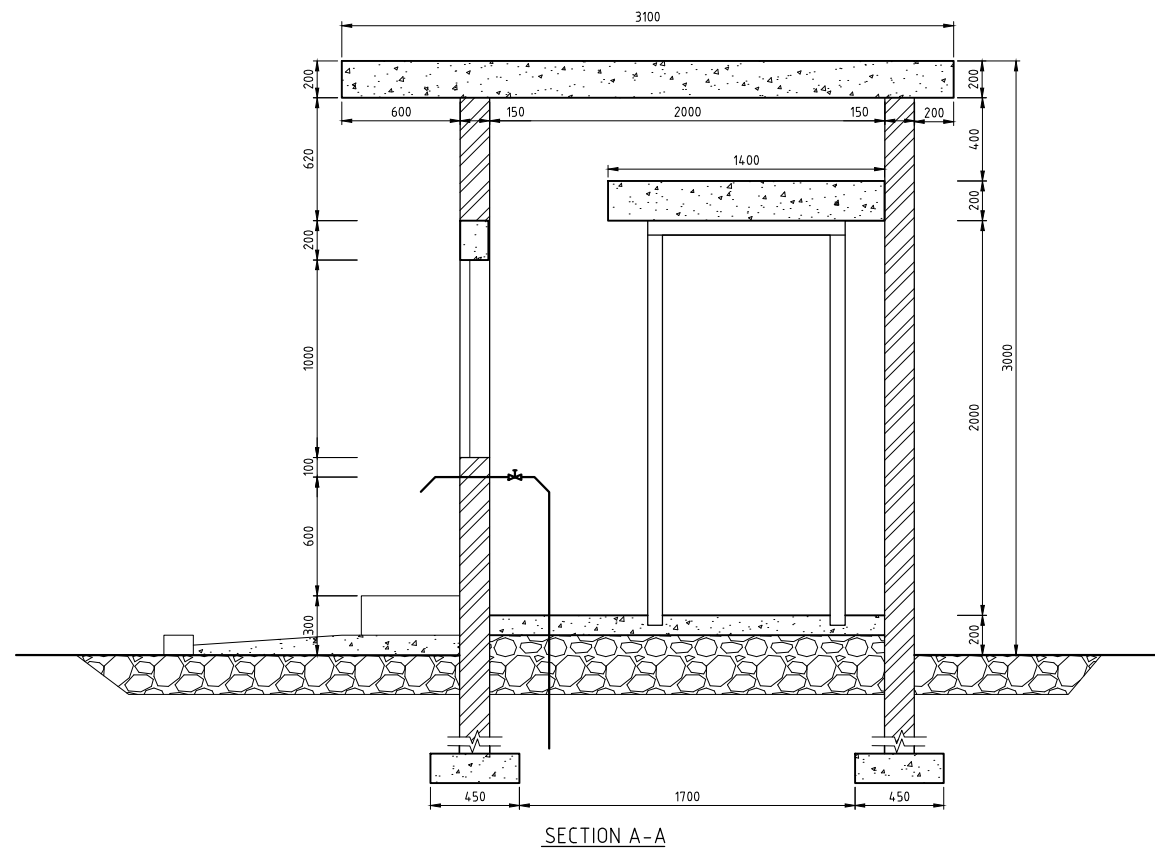
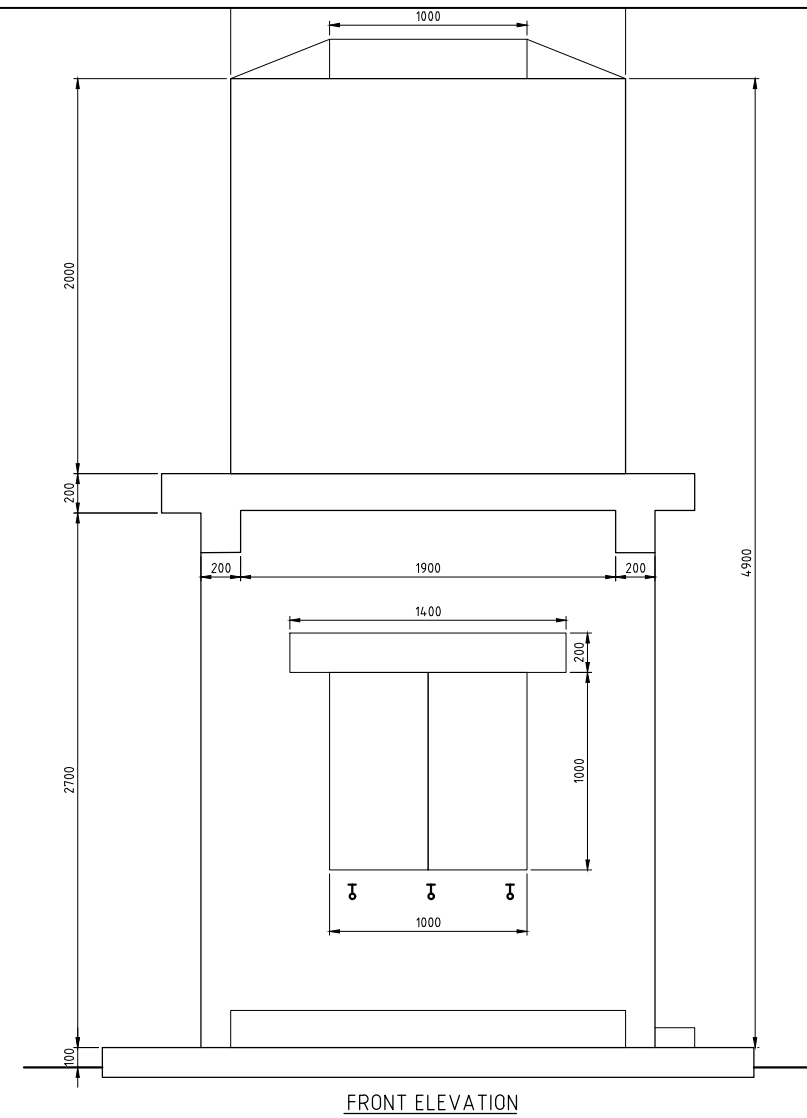
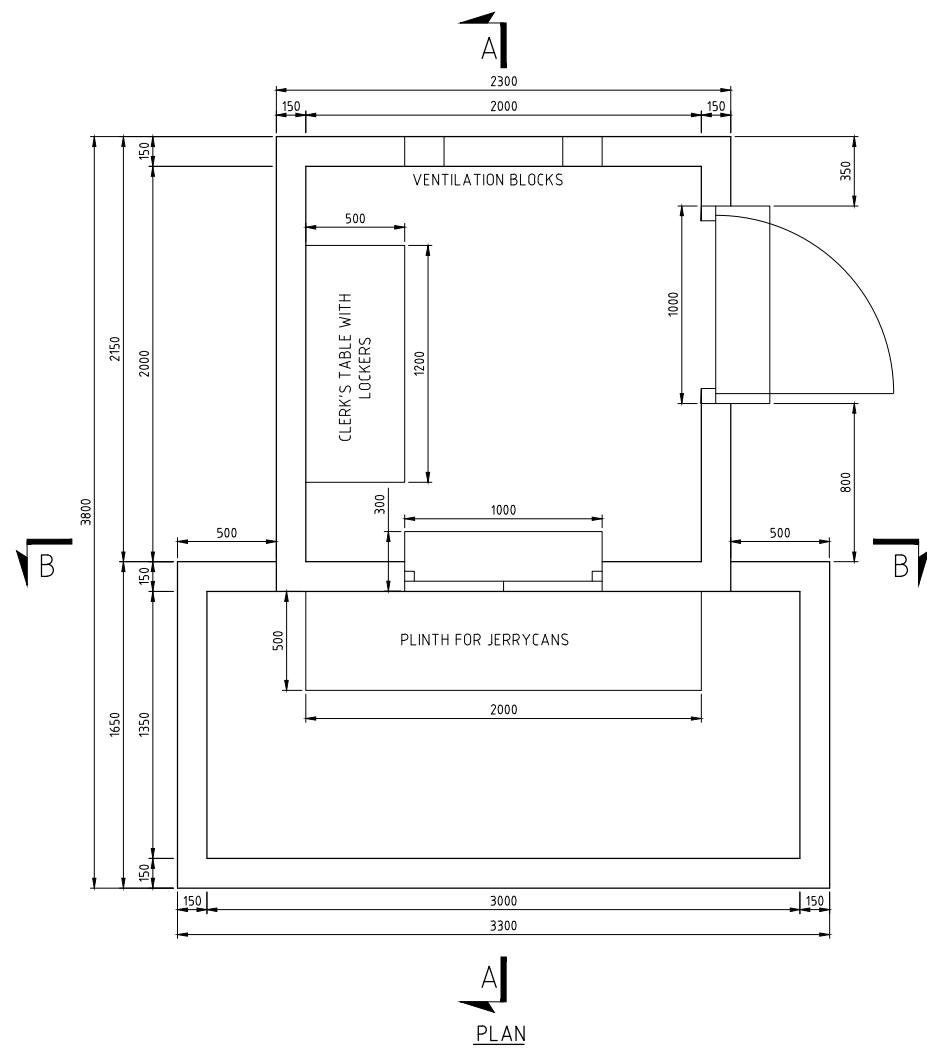
Project
ELWAK WATER SUPPLY PROJECT

DETAILED DESIGN
 Consulting Engineer

 15 Westlands Road, Westlands, Office No. 09
 P.O. Box 30337 - 00100 Nairobi, Kenya.

Drawing Title
 AQ - L2
 PLAN AND PROFILE

Designed by	SWM	Drawn by	SWM
Checked by	EBO	Approved by	LWM
Scale	AS SHOWN (AT A1)	Date	JULY 2022
Job No.	ELWAK-WSP	ACAD File:	ELWAK/CAD/2022
A STATUS	DRAWING No.	ELWAK/AQ-L2/PP/02	0 REV

STANDARD DRAWINGS



NOTES

- All dimensions are in millimeters unless otherwise stated.

REV	REVISIONS	SIGN	DATE	APPROVED
D	BY CHECKED			
C	BY CHECKED			
B	BY CHECKED			
A	BY CHECKED			

Client



PO Box 49699 - 00100,
Nairobi, Kenya
1st Floor, CIC Plaza,
Mara Road, Upper Hill,
Nairobi, Kenya
Tel: 020 272 90 17 / 8

Project
ELWAK WATER SUPPLY PROJECT

DETAILED DESIGN

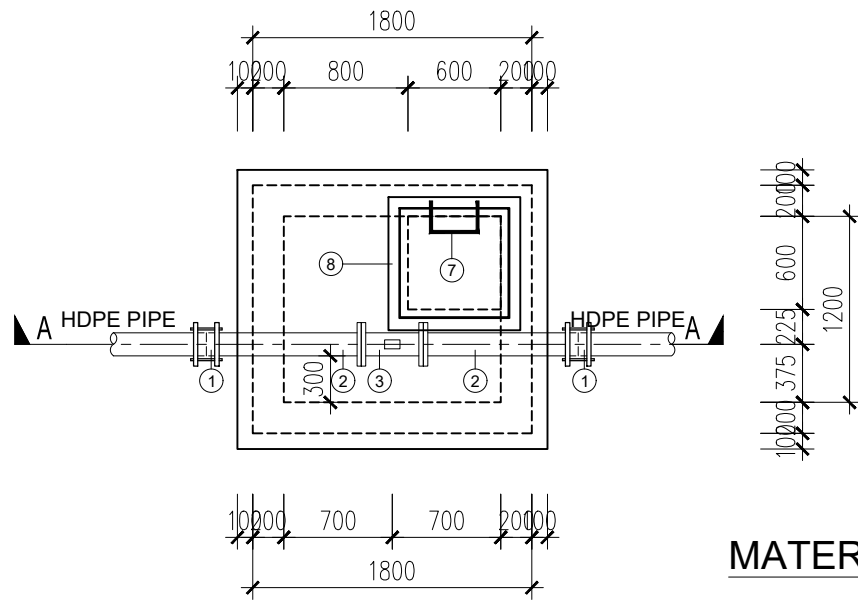
Consulting Engineer



15 Westlands Road, Westlands,
Office No. 09
P.O. Box 30337 - 00100 Nairobi,
Kenya.

Drawing Title
STANDARD DRAWINGS
TYPICAL WATER KIOSK

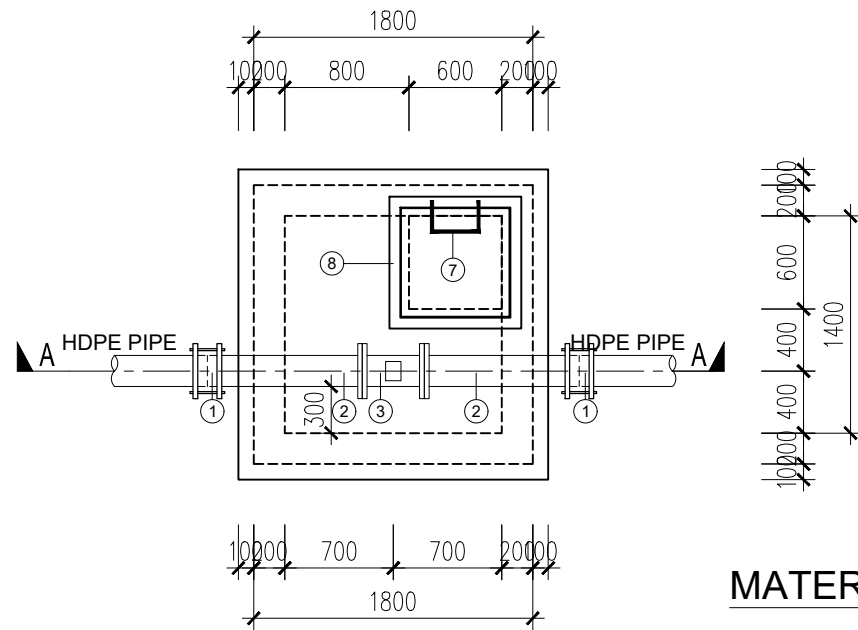
Designed by	SWM	Drawn by	JGG
Checked by	EBO	Approved by	PKG
Scale	AS SHOWN (AT A1)	Date	JULY 2022
Job No.	ELWAK	ACAD File:	ELWAK/STANDARD
A STATUS	DRAWING No. ELWAK/STANDARD DRAWINGS		0 REV



**HDPE OD160MM PIPE
AIR VALVE CHAMBER**
SCALE: 1:100

MATERIAL LIST

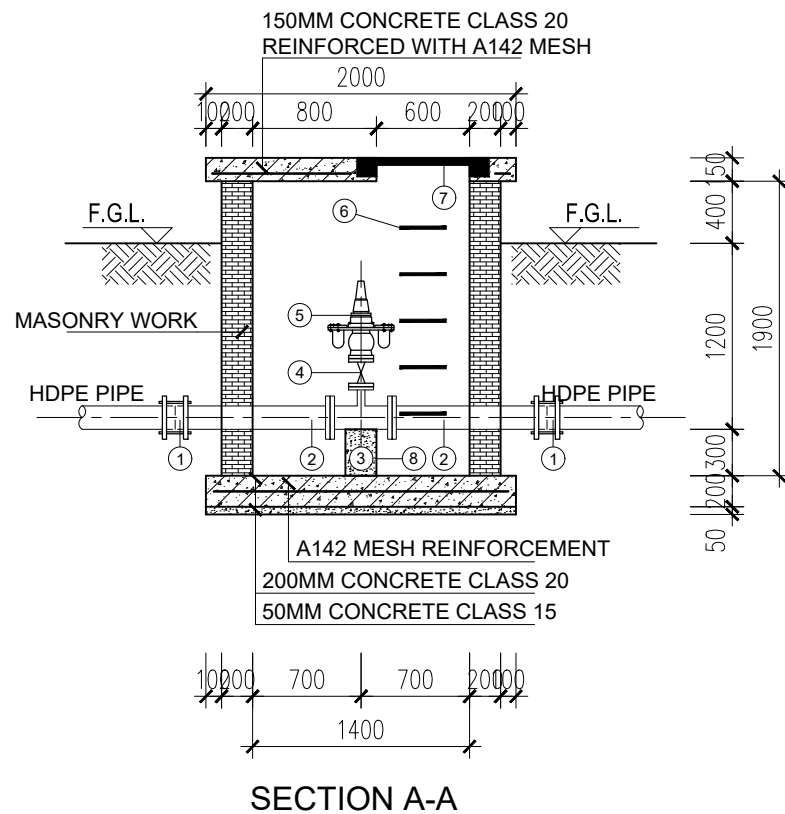
ITEM No.	Q'TY	DIA. (mm)	DESCRIPTION	SIZE/SKETCH
1	2	150	V.J. FLEXIBLE COUPLING	OD160xOD168mm
2	2	150	SINGLE FLANGED PIPE	
3	1	150x50	ALL FLANGED TEE	
4	1	50	ALL FLANGED GATE VALVE	BS 5163, PN16 L=180mm
5	1	50	DOUBLE ORIFICE AIR VALVE	PN16
6	6		P.P. MANHOLE LADDER STEPS	280x200x20mm
7	1		COMPOSITE MATERIAL MANHOLE COVER WITH FRAME	700x700x45mm
8	1		CONCRETE SUPPORT (CLASS 15)	300x200x150mm



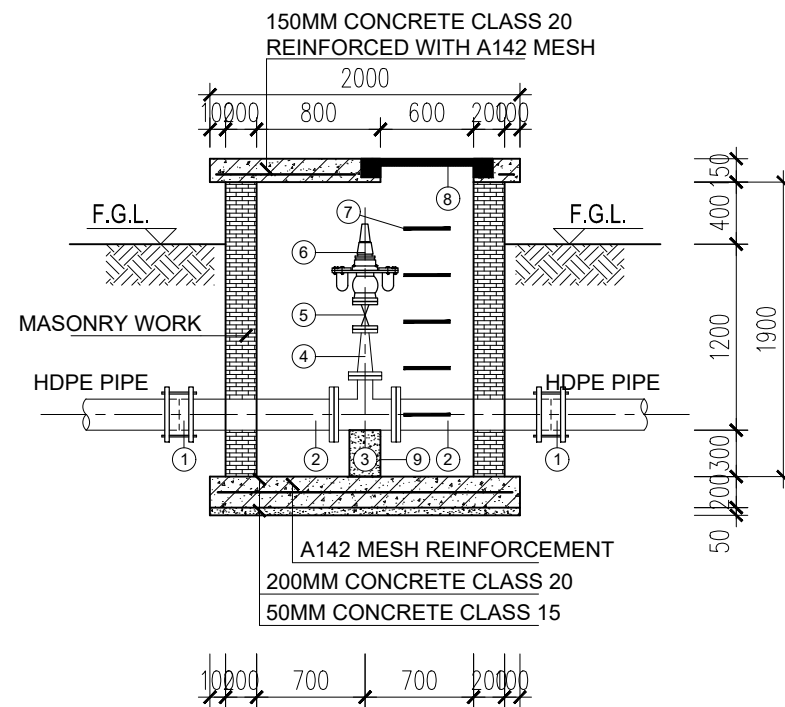
**HDPE OD225MM PIPE
AIR VALVE CHAMBER**
SCALE: 1:100

MATERIAL LIST

ITEM No.	Q'TY	DIA. (mm)	DESCRIPTION	SIZE/SKETCH
1	2	200	V.J. FLEXIBLE COUPLING	OD225xOD219mm
2	2	200	SINGLE FLANGED PIPE	
3	1	200x100	ALL FLANGED TEE	
4	1	100x50	ALL FLANGED CONCENTRIC TAPER	L=300mm
5	1	50	ALL FLANGED GATE VALVE	BS 5163, PN16 L=180mm
6	1	50	DOUBLE ORIFICE AIR VALVE	PN16
7	6		P.P. MANHOLE LADDER STEPS	280x200x20mm
8	1		COMPOSITE MATERIAL MANHOLE COVER WITH FRAME	700x700x45mm
9	1		CONCRETE SUPPORT (CLASS 15)	300x200x200mm



SECTION A-A



NOTES

1 All dimensions are in millimeters unless otherwise stated.

REV	REVISIONS	SIGN	DATE	APPROVED
D	CHECKED	BY		
C	CHECKED	BY		
B	CHECKED	BY		
A	CHECKED	BY		

Client

WaterFund
Financing the Water Sector
PO Box 49699 - 00100,
Nairobi, Kenya
1st Floor, CIC Plaza,
Mara Road, Upper Hill,
Nairobi, Kenya
Tel: 020 272 90 17 / 8

Project

ELWAK WATER SUPPLY PROJECT

DETAILED DESIGN

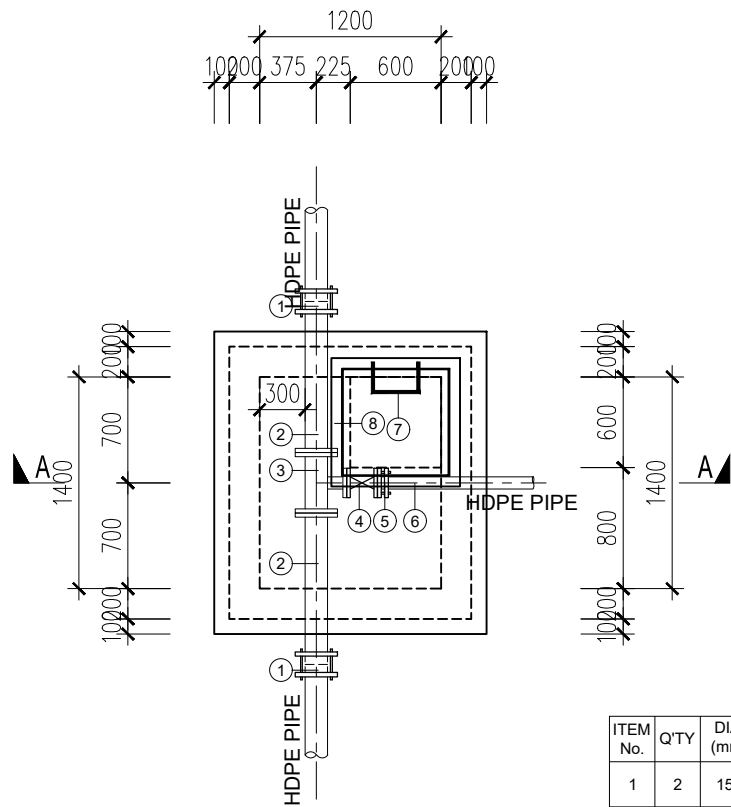
Consulting Engineer

15 Westlands Road, Westlands,
Office No. 09
P.O. Box 30337 - 00100 Nairobi, Kenya.

Drawing Title

STANDARD DRAWINGS
AIR VALVES CHAMBERS

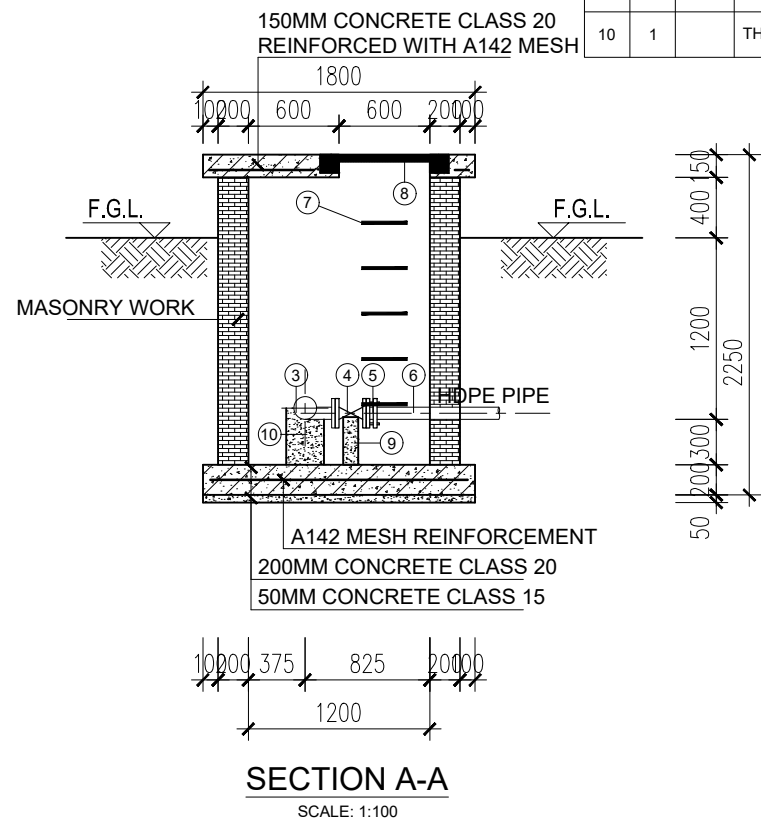
Designed by	SWM	Drawn by	JGG
Checked by	EBO	Approved by	PKG
Scale	AS SHOWN (AT A1)	Date	JULY 2022
Job No.	ELWAK	ACAD File:	ELWAK/STANDARD
A	DRAWING No. ELWAK/STANDARD DRAWINGS	0	REV



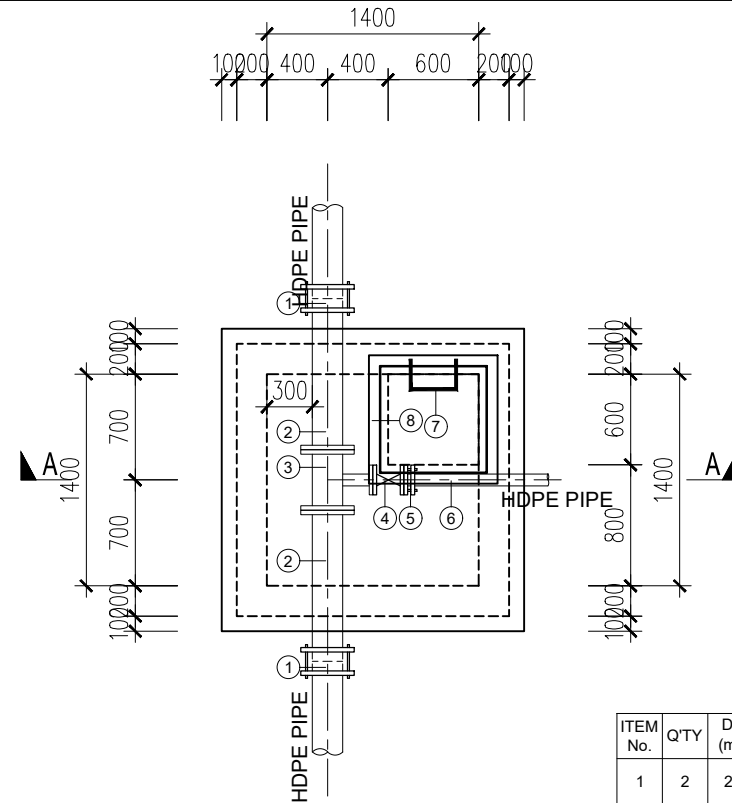
HDPE OD160MM PIPE WASHOUT CHAMBER
SCALE: 1:100

MATERIAL LIST

ITEM No.	QTY	DIA. (mm)	DESCRIPTION	SIZE/SKETCH
1	2	150	V.J. FLEXIBLE COUPLING	OD160xOD168mm
2	2	150	SINGLE FLANGED PIPE	
3	1	150x80	ALL FLANGED LEVEL INVERT TEE	
4	1	80	ALL FLANGED GATE VALVE	BS 5163, PN16 L=205mm
5	1	80	V.J. FLANGE ADAPTOR	DN80xOD90mm
6	1	90	HDPE PIPE (CLASS B)	
7	6		P.P. MANHOLE LADDER STEPS	280x200x20mm
8	1		COMPOSITE MATERIAL MANHOLE COVER WITH FRAME	700x700x45mm
9	1		VALVE STOOL (CLASS 15)	300x100x100mm
10	1		THRUST BLOCKS (CLASS 15)	



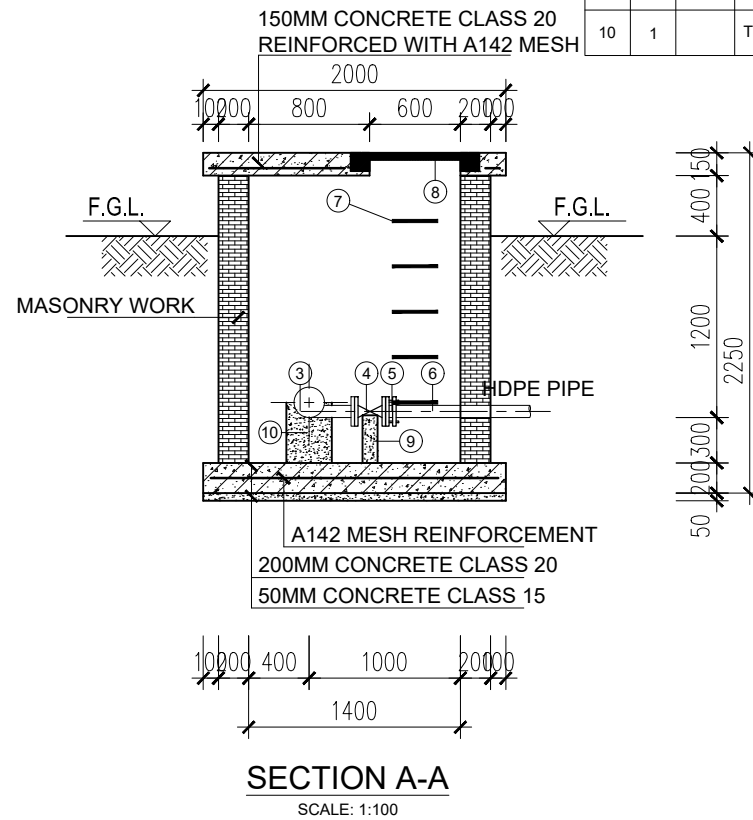
SECTION A-A
SCALE: 1:100



HDPE OD225MM PIPE WASHOUT CHAMBER
SCALE: 1:100

MATERIAL LIST

ITEM No.	QTY	DIA. (mm)	DESCRIPTION	SIZE/SKETCH
1	2	200	V.J. FLEXIBLE COUPLING	OD225xOD219mm
2	2	200	SINGLE FLANGED PIPE	
3	1	200x80	ALL FLANGED LEVEL INVERT TEE	
4	1	80	ALL FLANGED GATE VALVE	BS 5163, PN16 L=205mm
5	1	80	V.J. FLANGE ADAPTOR	DN80xOD90mm
6	1	90	HDPE PIPE (CLASS B)	
7	6		P.P. MANHOLE LADDER STEPS	280x200x20mm
8	1		COMPOSITE MATERIAL MANHOLE COVER WITH FRAME	700x700x45mm
9	1		VALVE STOOL (CLASS 15)	300x100x100mm
10	1		THRUST BLOCKS (CLASS 15)	




SECTION A-A
SCALE: 1:100


NOTES

1 All dimensions are in millimeters unless otherwise stated.

REV	REVISIONS	SIGN	DATE	APPROVED
D	CHECKED			
C	CHECKED			
B	CHECKED			
A	CHECKED			

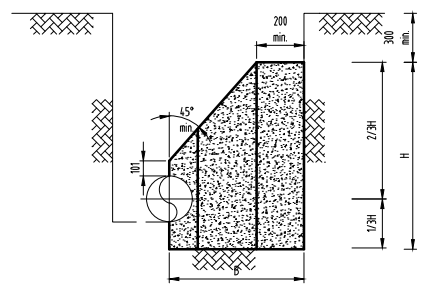
Client

 PO Box 49699 - 00100, Nairobi, Kenya
 1st Floor, CIC Plaza, Mara Road, Upper Hill, Nairobi, Kenya
 Tel: 020 272 90 17 / 8

Project
ELWAK WATER SUPPLY PROJECT
 DETAILED DESIGN

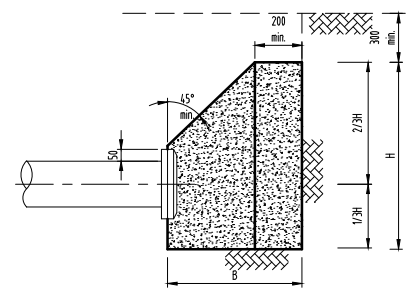
Consulting Engineer

 15 Westlands Road, Westlands, Office No. 09
 P.O. Box 30337 - 00100 Nairobi, Kenya.

Drawing Title
 STANDARD DRAWINGS
 WASHOUTS CHAMBERS

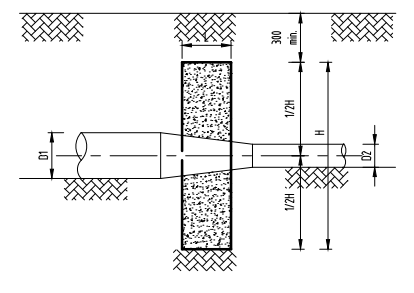
Designed by	SWM	Drawn by	JGG
Checked by	EBO	Approved by	PKG
Scale	AS SHOWN (AT A1)	Date	JULY 2022
Job No.	ELWAK	ACAD File:	ELWAK/STANDARD
A STATUS	DRAWING No. ELWAK/STANDARD DRAWINGS		0 REV



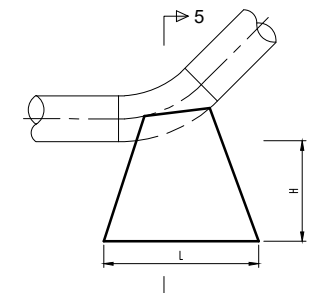
SECTION 1-1



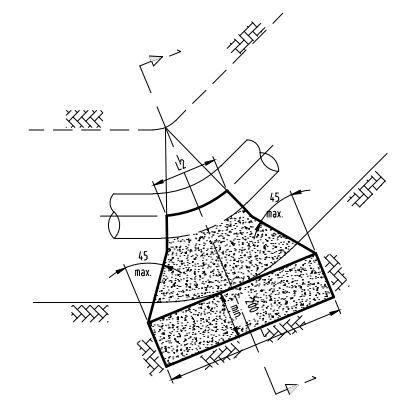
SECTION 3-3



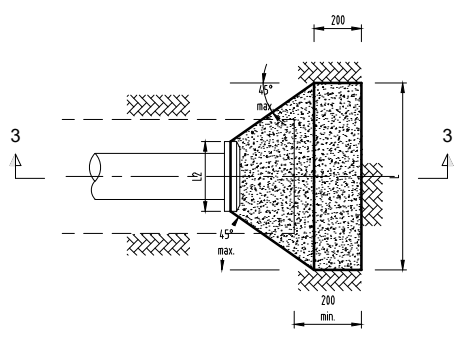
SECTION 4-4



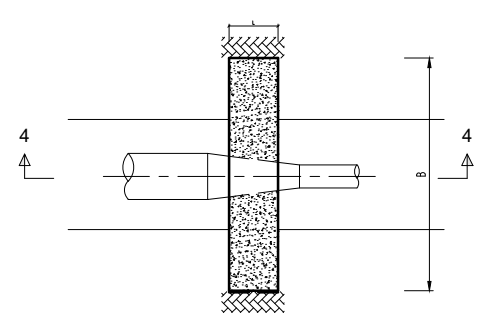
ELEVATION



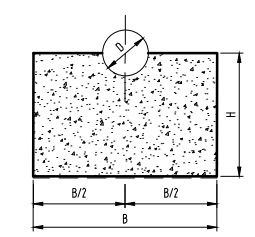
PLAN



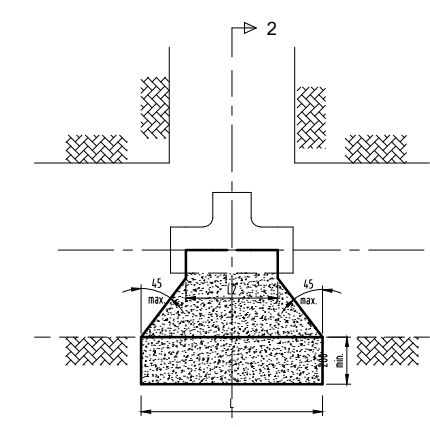
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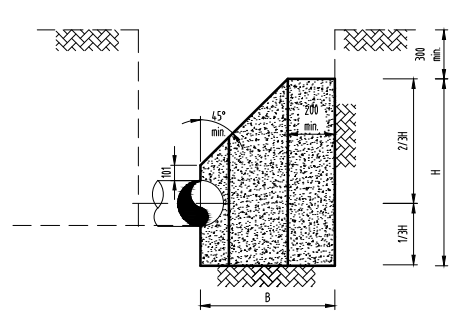
PLAN



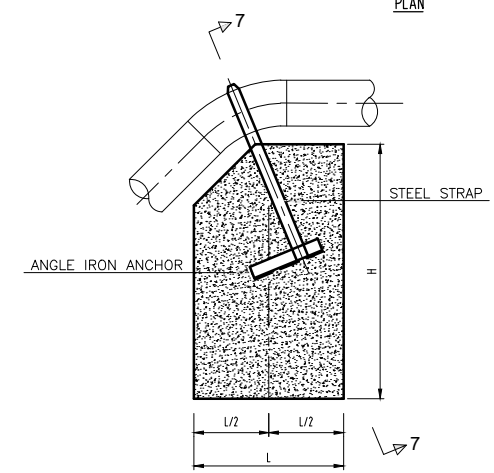
SECTION 5-5



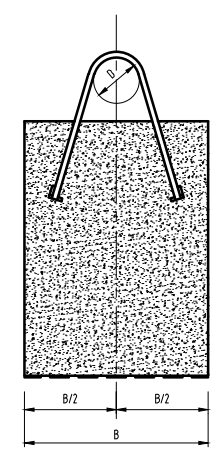
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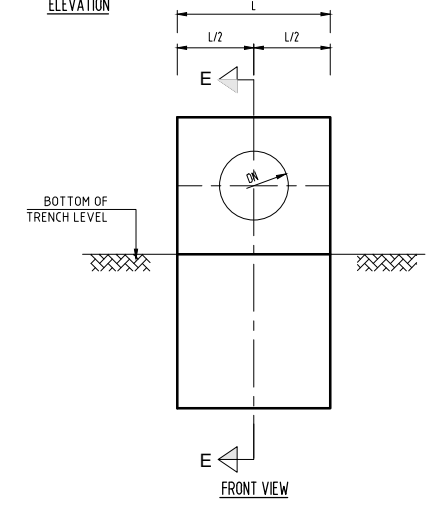
SECTION 2-2



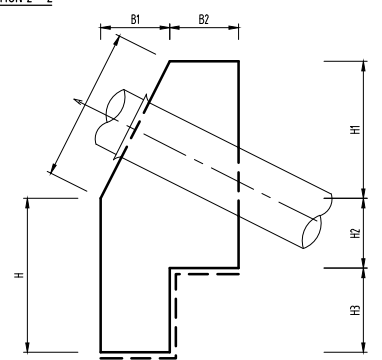
ELEVATION



SECTION 7-7



FRONT VIEW



SECTION E-E
ANCHOR BLOCKS ON GRADIENTS (TYPE GD)

GRADIENT	SPACING OF ANCHOR BLOCKS (m)
1 IN 2	5.5
1 IN 3	11.0
1 IN 4	11.0
1 IN 5	16.5
1 IN 6	22.0
1 IN 7 - 10	27.5

PIPE DIAMETER DN (mm)	DIMENSIONS (m)							
	A	L	H	H1	H2	H3	B1	B2
200	0.8	0.8	0.8	0.7	0.35	0.45	0.35	0.35
300	0.9	1.0	1.0	0.8	0.4	0.6	0.4	0.4
400	1.0	1.0	1.0	0.9	0.45	0.55	0.45	0.45
500	1.1	1.2	1.2	1.0	0.5	0.7	0.5	0.5
600	1.2	1.2	1.2	1.1	0.55	0.65	0.55	0.55
800	1.4	1.4	1.4	1.3	0.65	0.75	0.65	0.65


NOTE
1. ANCHOR BLOCK TO BE POSITIONED BEHIND COLLAR AS SHOWN

NOTES

1. All dimensions are in millimeters unless otherwise stated.

REV	REVISIONS	SIGN	DATE	APPROVED
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C	CHECKED BY			
B	CHECKED BY			
A	CHECKED BY			


Client



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1st Floor, CIC Plaza, Maru Road, Upper Hill, Nairobi, Kenya
Tel: 020 272 90 17 / 8

Project
ELWAK WATER SUPPLY PROJECT
DETAILED DESIGN

Consulting Engineer

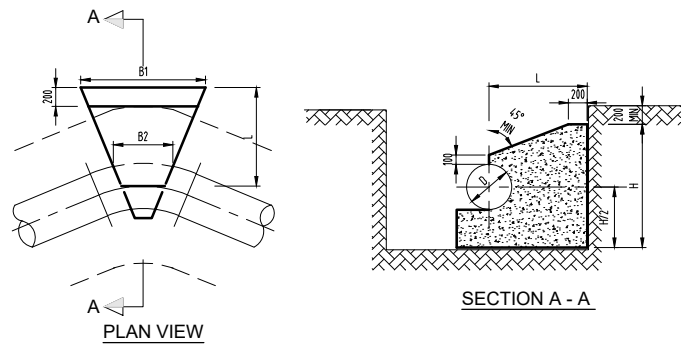


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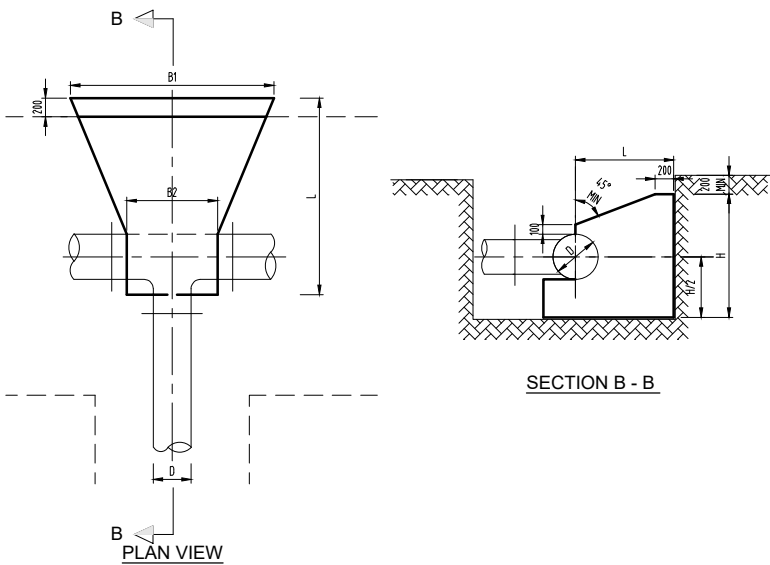
Drawing Title
STANDARD DRAWINGS
THRUST BLOCKS - 1

Designed by	SWM	Drawn by	JGG
Checked by	EBO	Approved by	PKG
Scale	AS SHOWN (AT A1)	Date	JULY 2022
Job No.	ELWAK	ACAD File:	ELWAK/STANDARD
A STATUS	DRAWING No. ELWAK/STANDARD DRAWINGS		0 REV

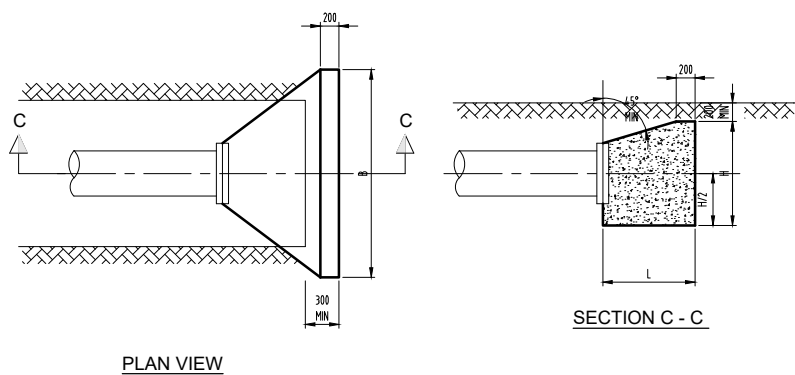
ANCHOR BLOCKS FOR BURIED SERVICES



ANCHOR BLOCKS AT HORIZONTAL BENDS (TYPE HB)



ANCHOR BLOCKS AT TEES (TYPE TY)

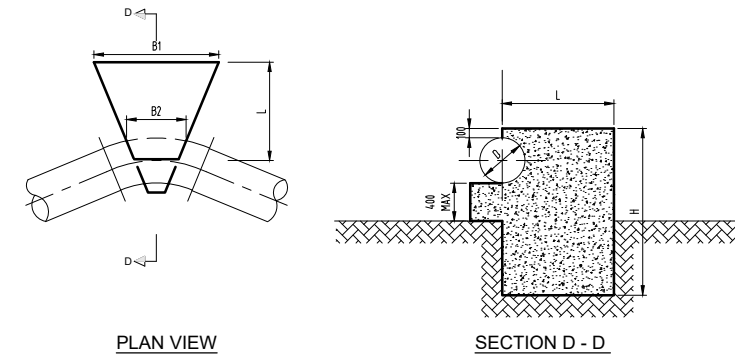


ANCHOR BLOCKS AT END CAPS (TYPE EC)

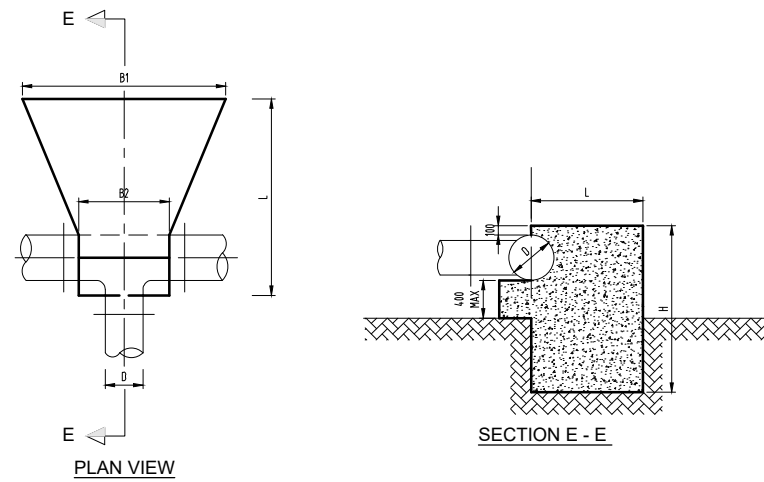
DIMENSIONS OF ANCHOR BLOCKS FOR BURIED SERVICES						
PIPE DIAMETRE (mm)	OPERATING PRESSURE (BAR)	TEST PRESSURE (BAR)	H (m)	B1 (m)	B2 (m)	L (m)
BENDS (TYPE HB) - 90°						
350	16	24	1.6	3.5	0.6	1.8
	25	37.5	2.0	4.0	0.6	1.8
BENDS (TYPE HB) - 60°						
350	16	24	1.5	2.8	0.45	1.6
	25	37.5	1.8	3.4	0.45	1.8
BENDS (TYPE HB) - 45°						
350	16	24	1.3	2.6	0.45	1.4
	25	37.5	1.7	3.0	0.45	1.7
BENDS (TYPE HB) - 22.5°						
350	16	24	1.2	1.5	0.2	1.2
	25	37.5	1.4	2.0	0.2	1.4
BENDS TYPE HB - 11.25°						
350	16	24	0.9	1.0	0.2	1.2
	25	37.5	1.2	1.2	0.2	1.2
TEE (TYPE TY)						
350	16	24	1.5	2.8	0.45	1.6
	25	37.5	1.8	3.4	0.45	1.8
END CAPS (TYPE EC)						
350	16	24	1.5	2.8	-	1.6
	25	37.5	1.8	3.4	-	1.8

DIMENSIONS OF ANCHOR BLOCKS FOR ABOVE GROUND SERVICES						
PIPE DIAMETRE (mm)	OPERATING PRESSURE (BAR)	TEST PRESSURE (BAR)	H (m)	B1 (m)	B2 (m)	L (m)
BENDS (TYPE AHB) - 90°						
350	16	24	3.0	3.0	0.6	3.5
	25	37.5	3.5	3.5	0.6	4.0
BENDS (TYPE AHB) - 60°						
350	16	24	3.0	2.5	0.45	3.0
	25	37.5	3.0	3.5	0.45	3.5
BENDS (TYPE AHB) - 45°						
350	16	24	2.5	2.5	0.45	3.0
	25	37.5	3.0	3.0	0.45	3.0
BENDS (TYPE AHB) - 22.5°						
350	16	24	2.0	2.0	0.2	2.5
	25	37.5	2.5	2.5	0.2	2.5
TEES (TYPE ATY)						
350	16	24	3.0	2.5	0.45	3.0
	25	37.5	3.0	3.5	0.45	3.5

ANCHOR BLOCKS FOR ABOVE GROUND SERVICES



ANCHOR BLOCKS AT HORIZONTAL BENDS (TYPE AHB)



ANCHOR BLOCKS AT TEES (TYPE ATY)

NOTES

1 All dimensions are in millimeters unless otherwise stated.


REV	REVISIONS	SIGN	DATE	APPROVED
D	CHECKED BY			
C	CHECKED BY			
B	CHECKED BY			
A	CHECKED BY			

Client

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 1st Floor, CIC Plaza, Marua Road, Upper Hill, Nairobi, Kenya
 Tel: 020 272 90 17 / 8

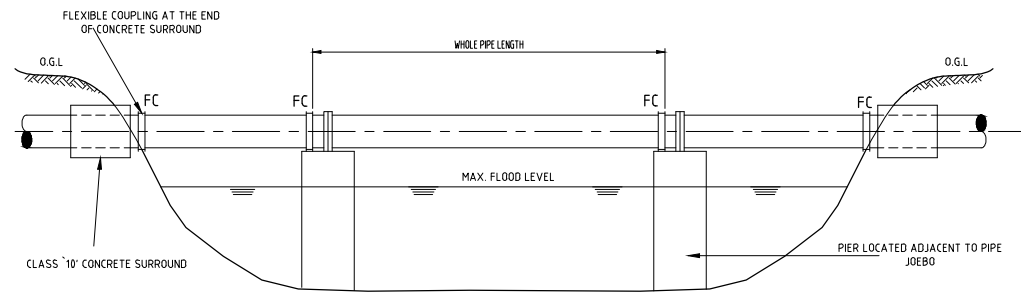
Project
ELWAK WATER SUPPLY PROJECT

DETAILED DESIGN

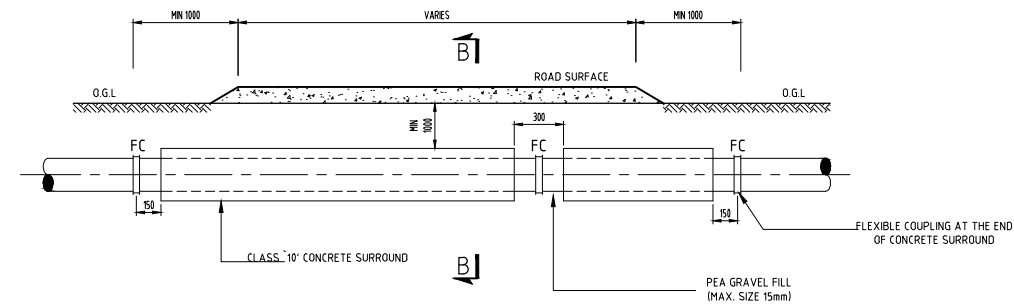
Consulting Engineer

 15 Westlands Road, Westlands, Office No. 09
 P.O. Box 30337 - 00100 Nairobi, Kenya.

Drawing Title
STANDARD DRAWINGS
THRUST BLOCKS - 2

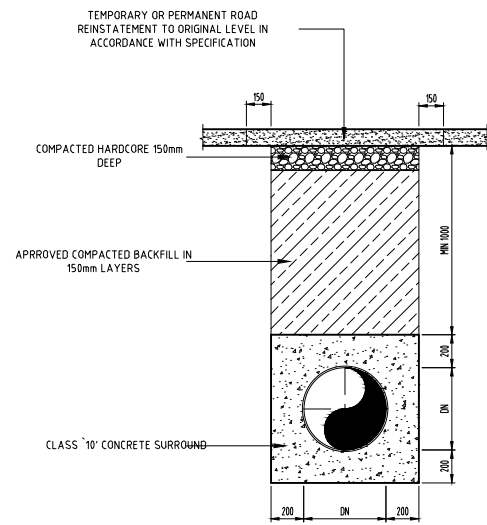
Designed by	SWM	Drawn by	JGG
Checked by	EBO	Approved by	PKG
Scale	AS SHOWN (AT A1)	Date	JULY 2022
Job No.	ELWAK	ACAD File:	ELWAK/STANDARD
A STATUS	DRAWING No. ELWAK/STANDARD DRAWINGS		0 REV



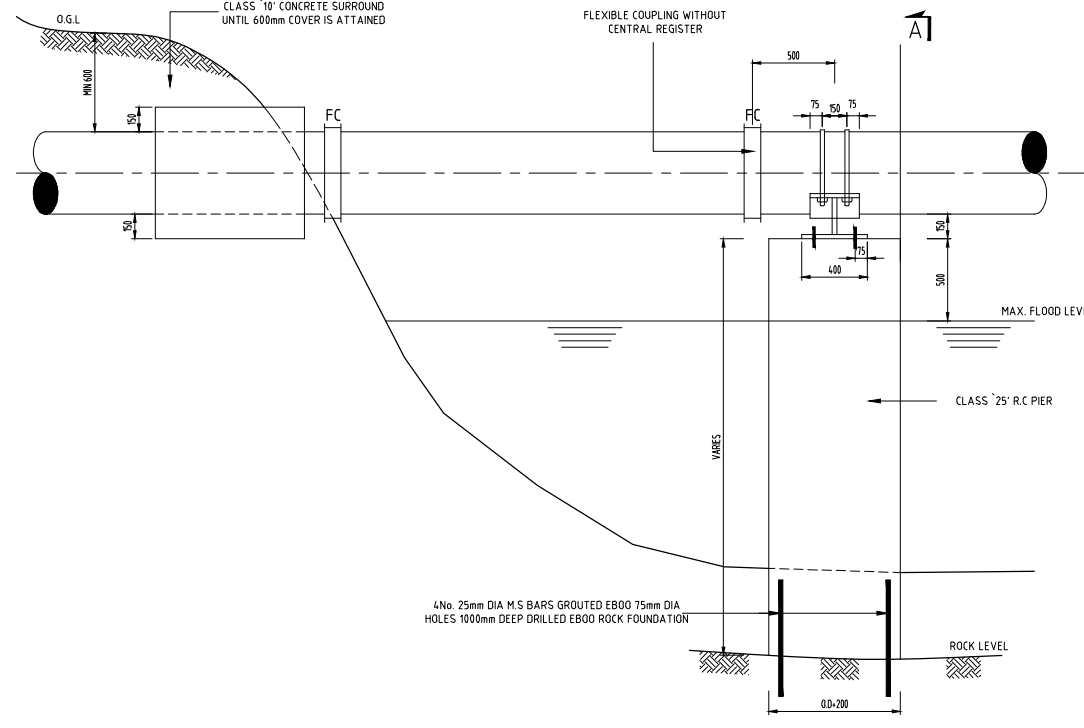
TYPICAL RIVER OVERCROSSING
N.T.S.



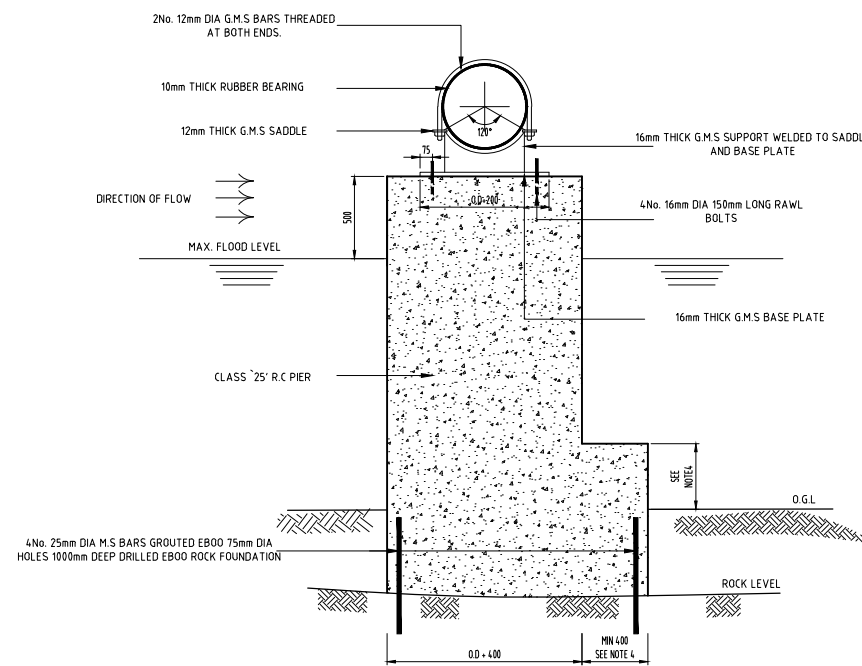
TYPICAL ROAD CROSSING
N.T.S.



SECTION B-B
N.T.S.



TYPICAL RIVER OVERCROSSING - DETAILS
N.T.S.



SECTION N A-A
N.T.S.

NOTES

1 All dimensions are in millimeters unless otherwise stated.

REV	REVISIONS	SIGN	DATE	APPROVED
D	CHECKED	BY		
C	CHECKED	BY		
B	CHECKED	BY		
A	CHECKED	BY		

Client

WaterFund
Financing the Water Sector
PO Box 49699 - 00100,
Nairobi, Kenya
1st Floor, CIC Plaza,
Mara Road, Upper Hill,
Nairobi, Kenya
Tel: 020 272 90 17 / 8

Project

ELWAK WATER SUPPLY PROJECT

DETAILED DESIGN

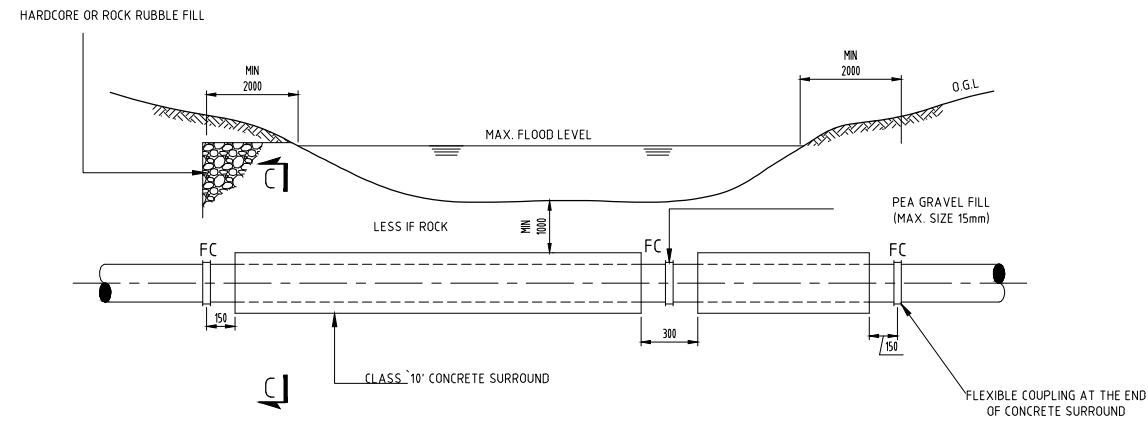
Consulting Engineer

15 Westlands Road, Westlands,
Office No. 09
P.O. Box 30337 - 00100 Nairobi, Kenya.

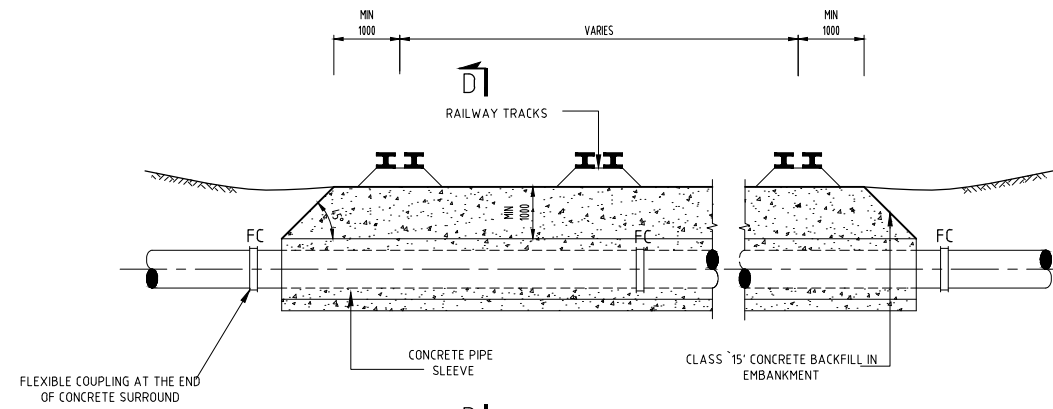
Drawing Title

STANDARD DRAWINGS
CROSSING DETAILS - 1

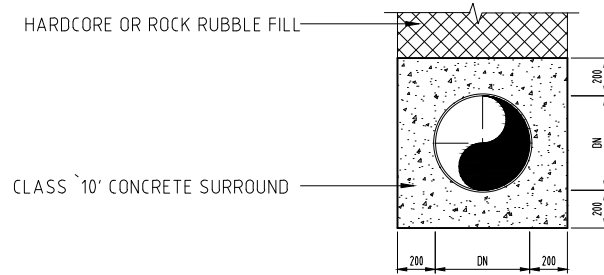
Designed by	SWM	Drawn by	JGG
Checked by	EBO	Approved by	PKG
Scale	AS SHOWN (AT A1)	Date	JULY 2022
Job No.	ELWAK	ACAD File:	ELWAK/STANDARD
A	DRAWING No. ELWAK/STANDARD DRAWINGS	0	REV



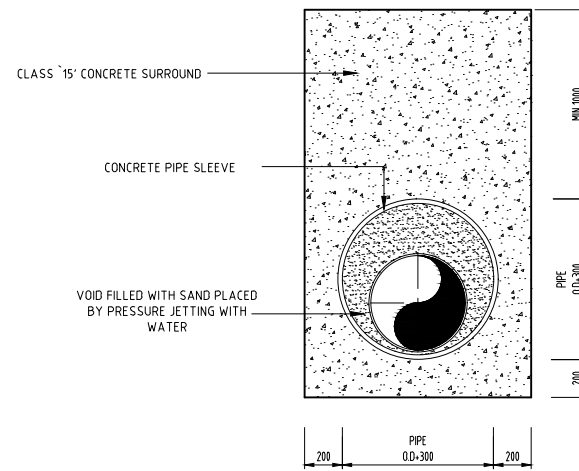
TYPICAL RIVER UNDERCROSSING
N.T.S



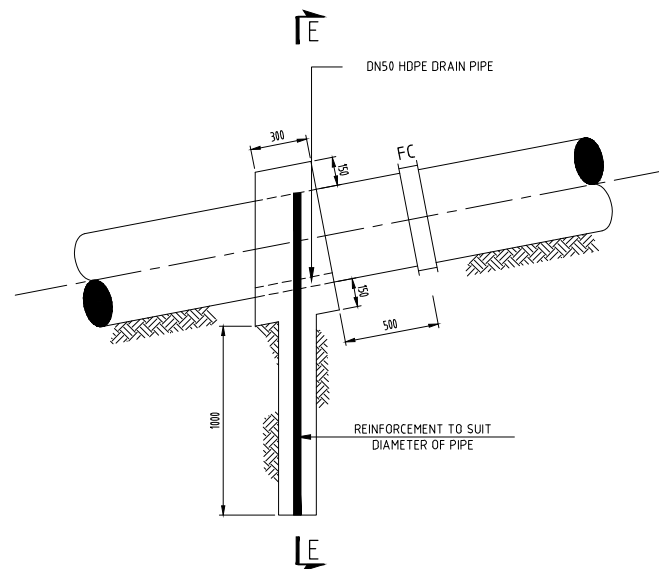
TYPICAL RAILWAY CROSSING
N.T.S



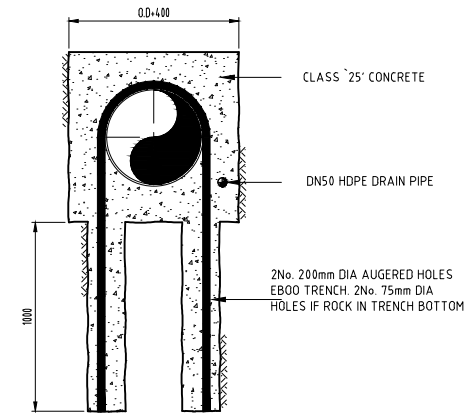
SECTION C-C
N.T.S



SECTION D-D
N.T.S



SLIP ANCHOR DETAIL
N.T.S



SECTION E-E
N.T.S

NOTES

1 All dimensions are in millimeters unless otherwise stated.

REV	REVISIONS	BY	SIGN	DATE	APPROVED
D		CHECKED			
C		CHECKED			
B		CHECKED			
A		CHECKED			

Client

 PO Box 49699 - 00100,
Nairobi, Kenya
1st Floor, CIC Plaza,
Mara Road, Upper Hill,
Nairobi, Kenya
Tel: 020 272 90 17 / 8

Project

ELWAK WATER SUPPLY PROJECT

DETAILED DESIGN

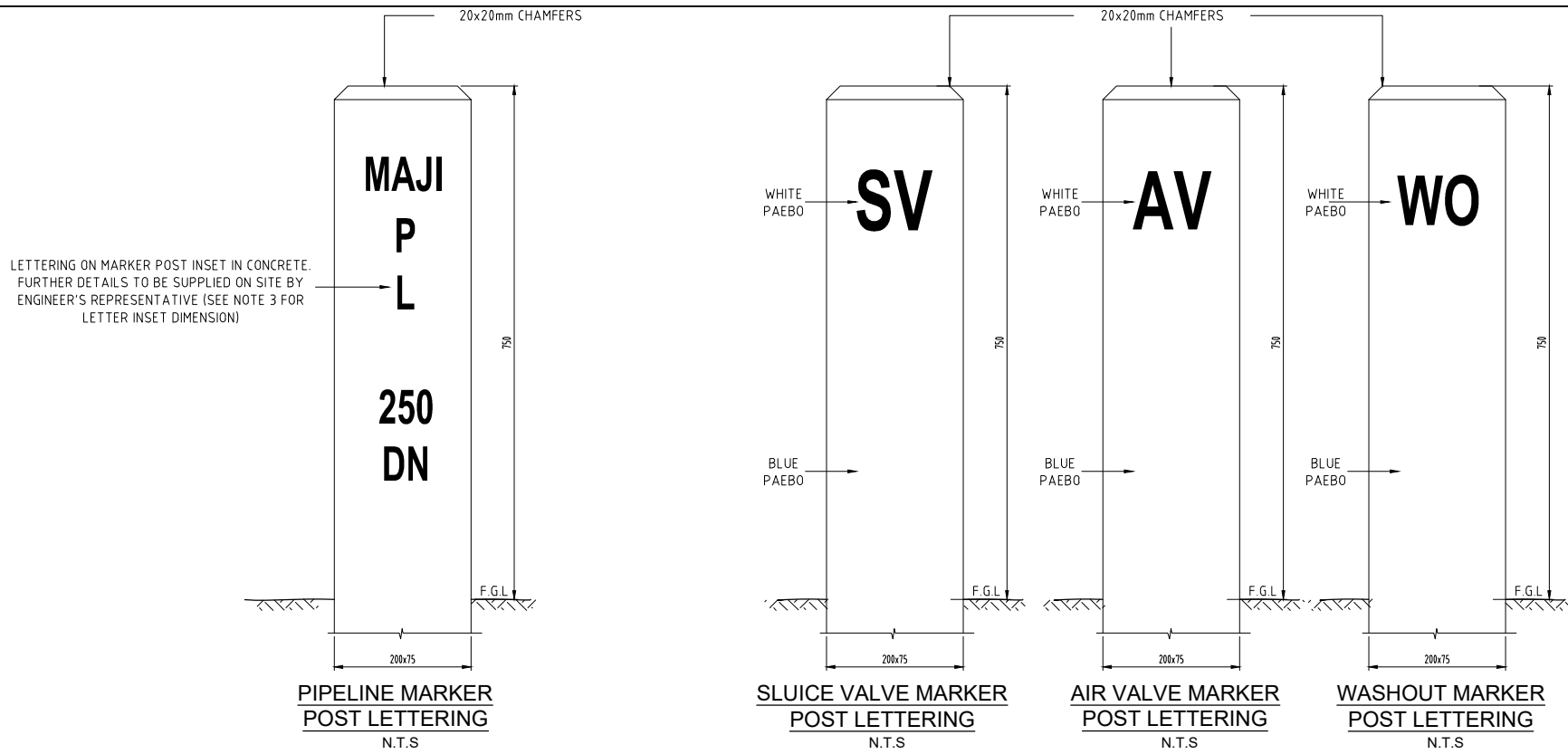
Consulting Engineer

 15 Westlands Road, Westlands,
Office No. 09
P.O. Box 30337 - 00100 Nairobi, Kenya.

Drawing Title

STANDARD DRAWINGS
CROSSING DETAILS - 2

Designed by	SWM	Drawn by	JGG
Checked by	EBO	Approved by	PKG
Scale	AS SHOWN (AT A1)	Date	JULY 2022
Job No.	ELWAK	ACAD File:	ELWAK/STANDARD
A	DRAWING NO. ELWAK/STANDARD DRAWINGS	0	REV



LETTERING ON MARKER POST INSET IN CONCRETE. FURTHER DETAILS TO BE SUPPLIED ON SITE BY ENGINEER'S REPRESENTATIVE (SEE NOTE 3 FOR LETTER INSET DIMENSION)

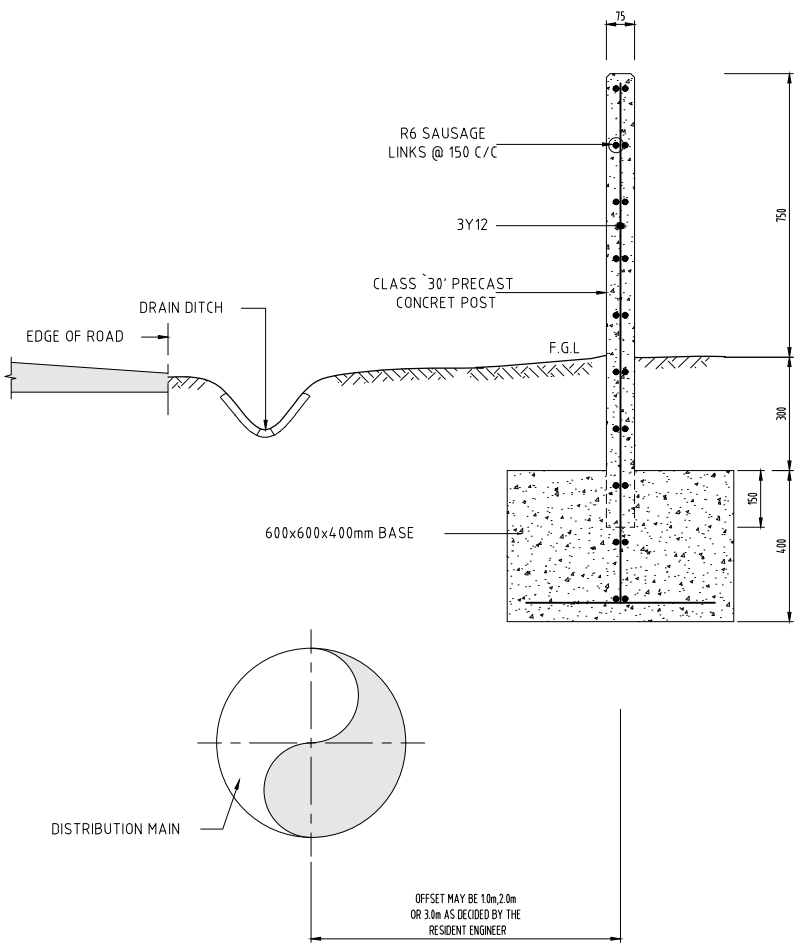
PIPELINE MARKER POST LETTERING
N.T.S

SLUICE VALVE MARKER POST LETTERING
N.T.S

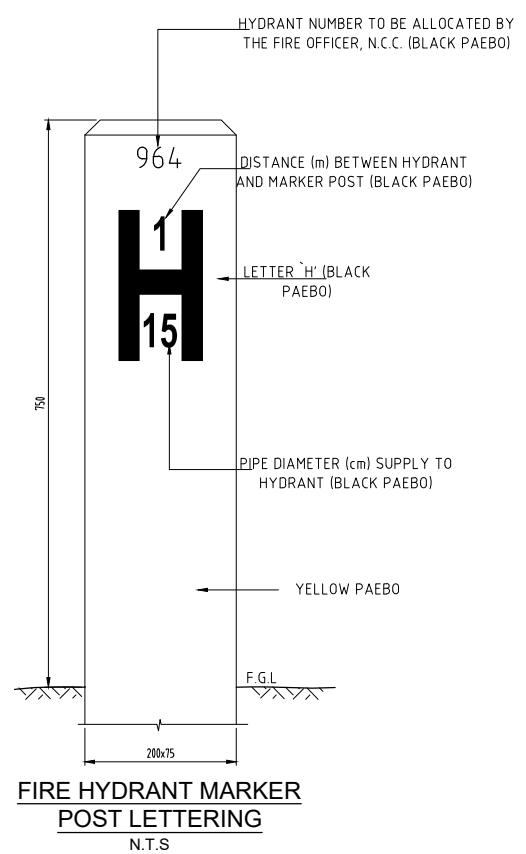
AIR VALVE MARKER POST LETTERING
N.T.S

WASHOUT MARKER POST LETTERING
N.T.S

MARKER POST ELEVATIONS
(SECTION SIMILAR TO MARKER POST FOR PIPELINE)



MARKER POST (FOR PIPELINE) TYPICAL SECTION
N.T.S




FIRE HYDRANT MARKER POST LETTERING
N.T.S


NOTES

1 All dimensions are in millimeters unless otherwise stated.

REV	REVISIONS	SIGN	DATE	APPROVED
D	CHECKED	BY		
C	CHECKED	BY		
B	CHECKED	BY		
A	CHECKED	BY		

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 PO Box 49699 - 00100, Nairobi, Kenya
 1st Floor, CIC Plaza, Maru Road, Upper Hill, Nairobi, Kenya
 Tel: 020 272 90 17 / 8

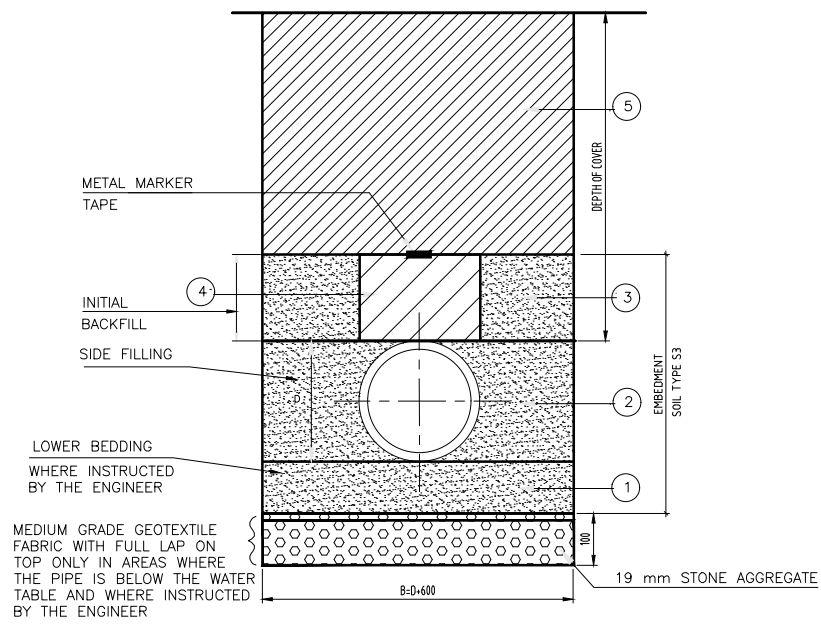
Project
 ELWAK WATER SUPPLY PROJECT
 DETAILED DESIGN

Consulting Engineer

 15 Westlands Road, Westlands, Office No. 09
 P.O. Box 30337 - 00100 Nairobi, Kenya.

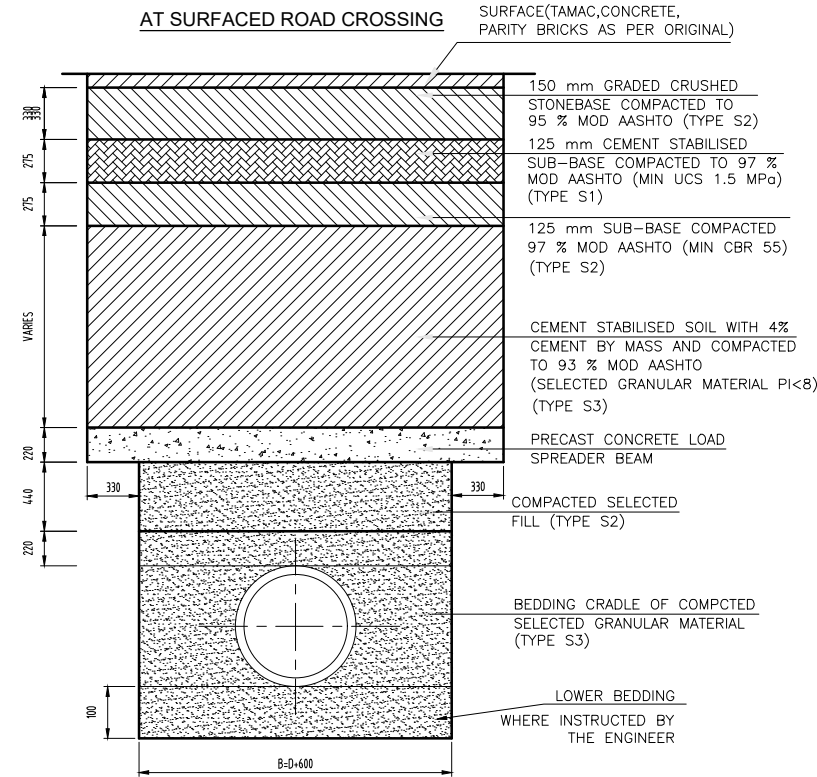
Drawing Title
 STANDARD DRAWINGS
 MARKER POSTS

Designed by	SWM	Drawn by	JGG
Checked by	EBO	Approved by	PKG
Scale	AS SHOWN (AT A1)	Date	JULY 2022
Job No.	ELWAK	ACAD File:	ELWAK/STANDARD
A STATUS	DRAWING No. ELWAK/STANDARD DRAWINGS		0 REV

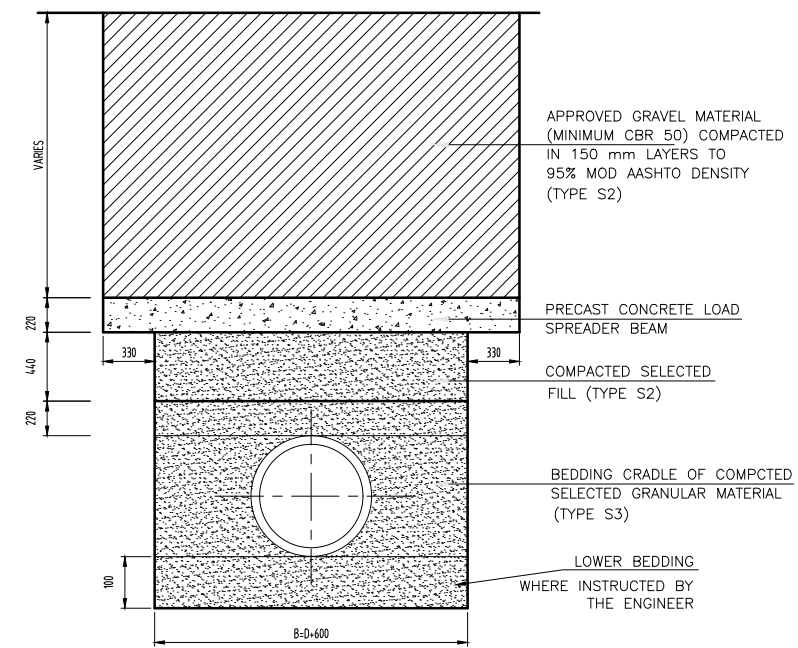
TYPICAL TRENCH EXCAVATION AND BACKFILLING FOR PE/HDPE PIPES



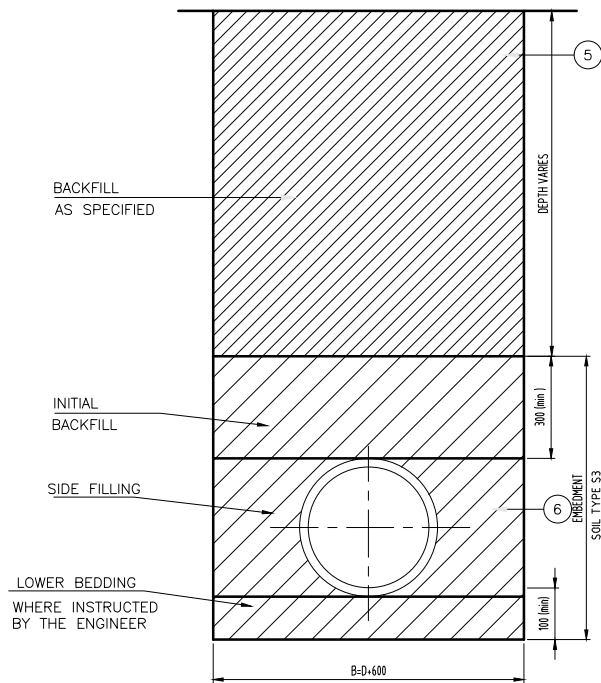
PIPE PROTECTION AT SURFACED ROAD CROSSING



PIPE PROTECTION AT UNSURFACED ROAD CROSSING



TYPICAL TRENCH EXCAVATION AND BACKFILLING FOR FERROUS PIPES



TYPICAL TRENCH WIDTHS FOR PIPES

NOMINAL DIAMETER D (mm)	80	100	160	200	250	300	600
WIDTH OF TRENCH B (m)	0.70	0.70	0.76	0.80	0.85	0.90	1.20

$B = D + 0.6 \text{ m (LIMITED TO A MINIMUM OF 0.6 m)}$

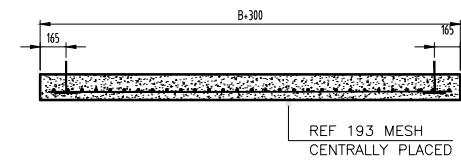
TABLE 1 : MATERIAL DESCRIPTION CHART

SOIL TYPE	DESCRIPTION	GROUP SYMBOL
S1	GRAVEL - SINGLE SIZE	GW
S2	GRAVEL - GRADED	GP
S3	SAND AND COARSE GRAINED SOILS WITH LESS THAN 12% FINES.	GF

LEGEND :

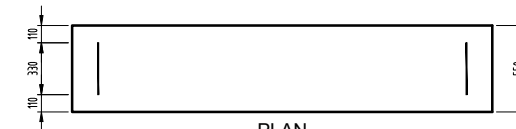
- D PIPE OUTSIDE DIAMETER
- B TRENCH WIDTH (SEE TABLE)
- ① LOWER BEDDING COMPRISING OF APPROVED GRANULAR BEDDING MATERIAL (SAND) COMPACTED TO 90 % MPD IN 50 mm LAYERS TO A THICKNESS OF 100 mm (min.) OR AS DIRECTED BY THE ENGINEER'S REPRESENTATIVE.
- ② APPROVED GRANULAR BEDDING MATERIAL TYPE S3 COMPACTED IN LAYERS AS PER NOTE 2. CAREFUL TAMPING ON EITHER SIDE OF THE PIPE SHOULD BE MAEBOAINED TO ENSURE EQUAL PRESSURE ON BOTH SIDES OF THE PIPE.
- ③ APPROVED GRANULAR BEDDING MATERIAL TYPE S3 COMPACTED IN SHALLOW LAYERS TO A MAXIMUM OF 150 mm THICK.
- ④ AS IN ③ ABOVE, BUT EXCESSIVE TAMPING TO BE AVOIDED.
- ⑤ NORMAL BACKFILL MATERIAL PROPERLY RAMMED IN LAYERS. NOT EXCEEDING 150 mm THICK.

PRECAST CONCRETE LOAD SPREADER BEAM



SECTION THROUGH SPREADER BEAM

1:10



PLAN

1:10

NOTE

INSTEAD OF A CONCRETE SPREADER BEAM, A CONCRETE OR STEEL PIPE WITH SUFFICIENT EBOERNAL BORE TO FACILITATE INSERTION OF PIPES SHOULD BE USED IF INSTRUCTED BY THE ENGINEER.

TABLE 2 : COMPACTION CHART GUIDE

% MPD	SOIL TYPE	COMPACTION METHOD	
		THICKNESS OF LAYER (max.)	No. OF PASSES
90	S1	150	1
	S2	150	2
	S3	50	2

NOTES

1 All dimensions are in millimeters unless otherwise stated.


REV	REVISIONS	SIGN	DATE	APPROVED
D	CHECKED	BY		
C	CHECKED	BY		
B	CHECKED	BY		
A	CHECKED	BY		

Client



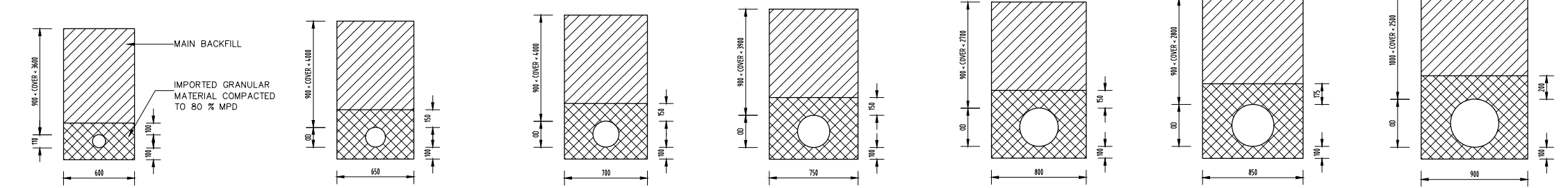
PO Box 49699 - 00100, Nairobi, Kenya
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Tel: 020 272 90 17 / 8

Project
ELWAK WATER SUPPLY PROJECT

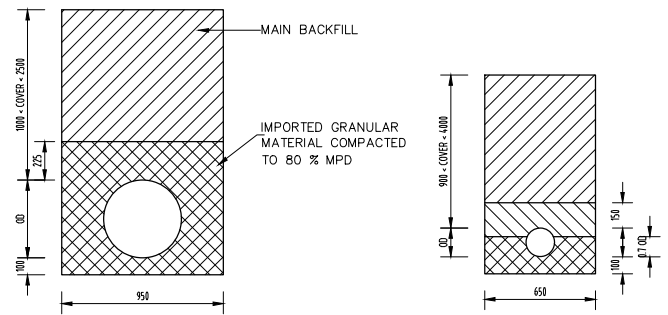
Consulting Engineer
 15 Westlands Road, Westlands, Office No. 09, P.O. Box 30337 - 00100 Nairobi, Kenya.

Drawing Title
**STANDARD DRAWINGS
PIPE BEDDING DETAILS - 1**

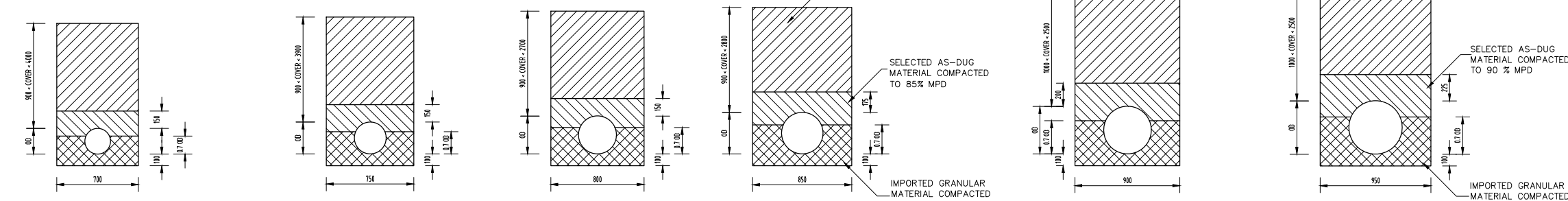
Designed by	SWM	Drawn by	JGG
Checked by	EBO	Approved by	PKG
Scale	AS SHOWN (AT A1)	Date	JULY 2022
Job No.	ELWAK	ACAD File:	ELWAK/STANDARD
A STATUS	DRAWING No. ELWAK/STANDARD DRAWINGS		0 REV



110 mm NOMINAL BORE uPVC PIPE TYPE S1 & S2 EMBEDMENT
 150 mm NOMINAL BORE STEEL PIPE TYPE S1 & S2 EMBEDMENT
 200 mm NOMINAL BORE STEEL PIPE TYPE S1 & S2 EMBEDMENT
 250 mm NOMINAL BORE STEEL PIPE TYPE S1 & S2 EMBEDMENT
 300 mm NOMINAL BORE STEEL PIPE TYPE S1 & S2 EMBEDMENT
 350 mm NOMINAL BORE STEEL PIPE TYPE S1 & S2 EMBEDMENT
 400 mm NOMINAL BORE STEEL PIPE TYPE S1 & S2 EMBEDMENT

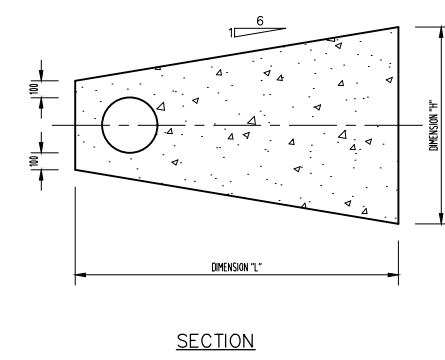
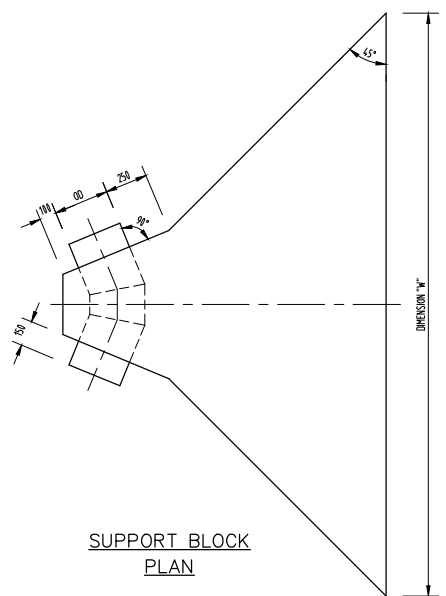


450 mm NOMINAL BORE STEEL PIPE TYPE S1 & S2 EMBEDMENT
 150 mm NOMINAL BORE STEEL PIPE TYPE B1 & B2 EMBEDMENT



200 mm NOMINAL BORE STEEL PIPE TYPE B1 & B2 EMBEDMENT
 250 mm NOMINAL BORE STEEL PIPE TYPE B1 & B2 EMBEDMENT
 300 mm NOMINAL BORE STEEL PIPE TYPE B1 & B2 EMBEDMENT
 350 mm NOMINAL BORE STEEL PIPE TYPE B1 & B2 EMBEDMENT
 400 mm NOMINAL BORE STEEL PIPE TYPE B1 & B2 EMBEDMENT
 450 mm NOMINAL BORE STEEL PIPE TYPE B1 & B2 EMBEDMENT

- NOTES**
1. SELECTED IMPORTED GRANULAR MATERIAL FOR TYPES S1 AND B1 EMBEDMENTS SHALL BE A SINGLE SIZED GRAVEL TO THE APPROVAL OF THE ENGINEER.
 2. SELECTED IMPORTED GRANULAR MATERIAL FOR TYPE S2 AND B2 EMBEDMENTS SHALL BE A WELL GRADED GRAVEL TO THE APPROVAL OF THE ENGINEER.
 3. SELECTED AS-DUG MATERIAL FOR TYPE B1 AND B2 EMBEDMENT SHALL BE EITHER:
 - A) SAND AND COARSE GRAINED SOIL WITH MORE THAN 12% FINES, OR
 - B) FINE GRAINED SOIL WITH A LIQUID LIMIT LESS THAN 50%, MEDIUM TO NO PLASTICITY AND LESS THAN 25% COARSE GRAINED MATERIAL.
 4. THE ENGINEER'S RULING ON THE SUITABILITY, OR OTHERWISE, OF MATERIALS FOR USE IN PIPE TRENCHES SHALL BE FINAL.
 5. WHERE PIPES PASS ACROSS ROADS AND TRACKS, THE PIPE BEDDING AND SURROUND MATERIAL AND MAIN BACKFILL SHALL BE COMPACTED TO 95% MPD.



SUPPORT BLOCK SCHEDULE OF DIMENSIONS

NOMINAL BORE (mm)	150	200	250	300	350	400	450
90° BEND	L (m)	1.2	1.7	2.2	2.6	2.9	3.5
	W (m)	2.5	3.6	4.8	5.6	6.3	7.5
	H (m)	0.8	1.0	1.2	1.4	1.5	1.8
45° BEND	L (m)	1.0	1.3	1.6	1.9	2.0	2.5
	W (m)	1.6	2.1	2.7	3.4	3.8	4.7
	H (m)	0.7	0.8	1.0	1.2	1.2	1.5
22.5° BEND	L (m)	0.8	0.9	1.1	1.3	1.4	1.7
	W (m)	0.8	1.1	1.6	1.9	2.2	2.6
	H (m)	0.6	0.7	0.8	1.0	1.0	1.2
11.25° BEND	L (m)	0.65	0.7	0.8	0.95	1.0	1.2
	W (m)	0.5	0.65	0.9	1.1	1.3	1.5
	H (m)	0.6	0.65	0.75	0.85	0.9	1.1

NOTES

1. All dimensions are in millimeters unless otherwise stated.

REV	REVISIONS	BY	DATE	APPROVED
D		CHECKED		
C		CHECKED		
B		CHECKED		
A		CHECKED		

Client



PO Box 49699 - 00100, Nairobi, Kenya
 1st Floor, CIC Plaza, Maru Road, Upper Hill, Nairobi, Kenya
 Tel: 020 272 90 17 / 8

Project
ELWAK WATER SUPPLY PROJECT

DETAILED DESIGN

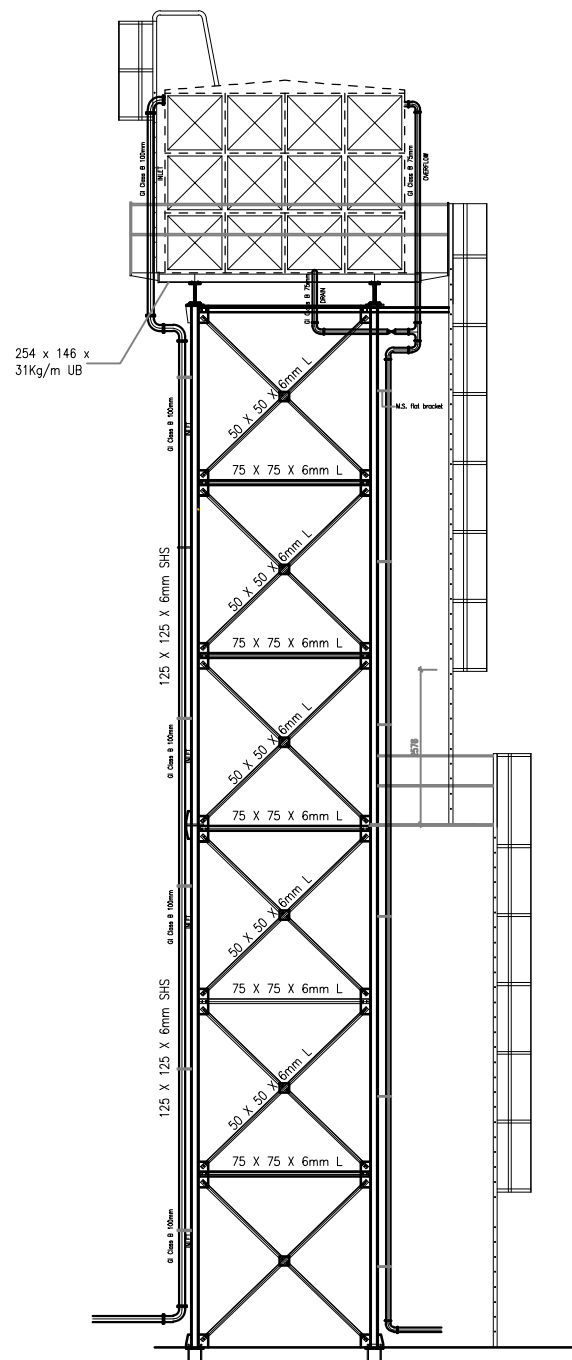
Consulting Engineer



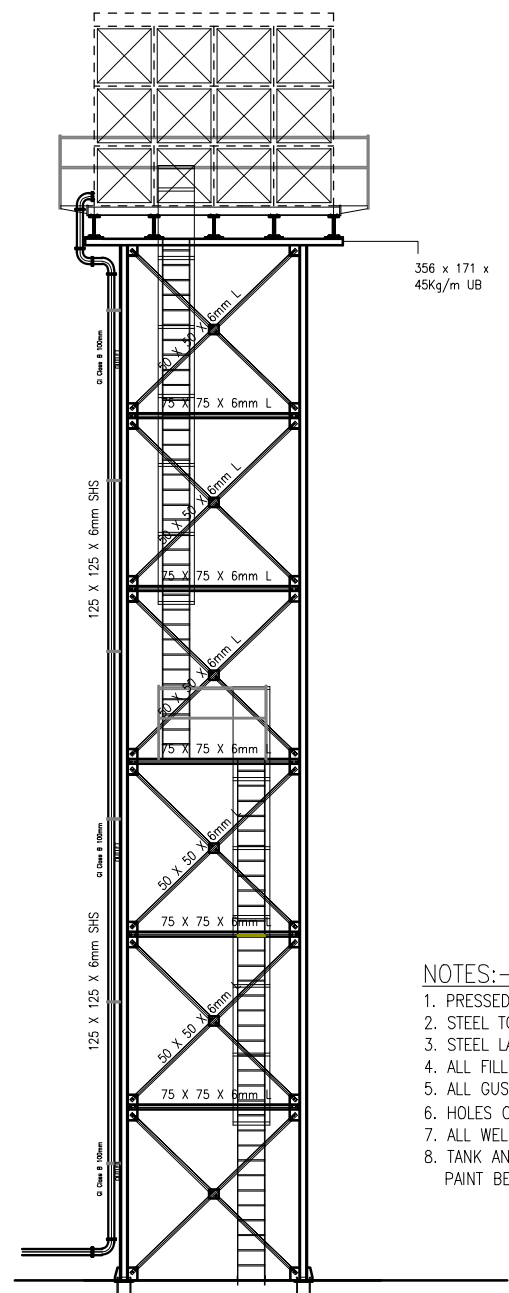
15 Westlands Road, Westlands, Office No. 09
 P.O. Box 30337 - 00100 Nairobi, Kenya.

Drawing Title
**STANDARD DRAWINGS
 PIPE BEDDING DETAILS**

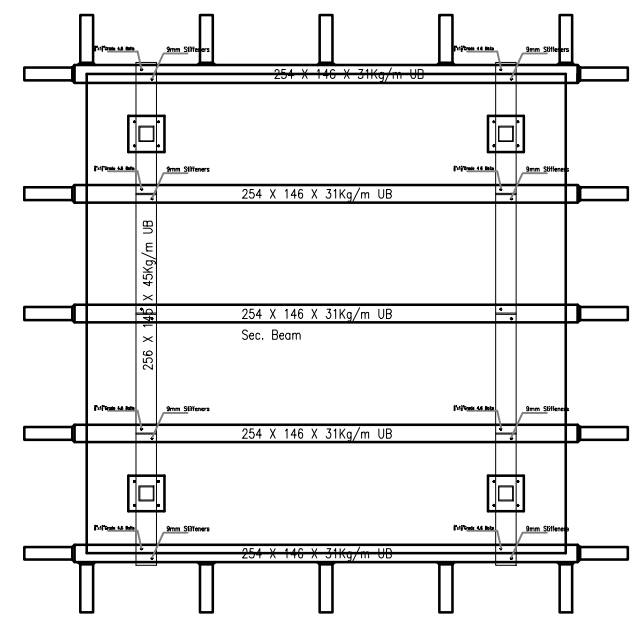
Designed by	SWM	Drawn by	JGG
Checked by	EBO	Approved by	PKG
Scale	AS SHOWN (AT A1)	Date	JULY 2022
Job No.	ELWAK	ACAD File:	ELWAK/STANDARD
A STATUS	DRAWING No. ELWAK/STANDARD DRAWINGS		0 REV



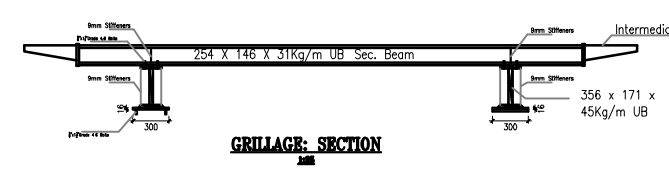
GENERAL ARRANGEMENT: FRONT VIEW



GENERAL ARRANGEMENT: SIDE VIEW

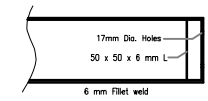


GRILLAGE: PLAN VIEW

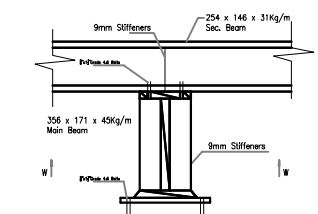
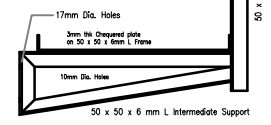


GRILLAGE: SECTION

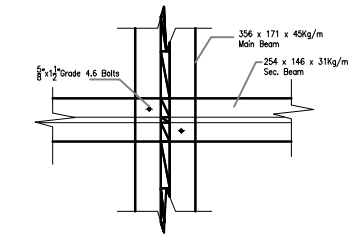
- NOTES:-**
1. PRESSED STEEL WATER TANK TO BS 1564 TYPE 2
 2. STEEL TOWER TO BS 449-1969
 3. STEEL LADDER TO BS 4211
 4. ALL FILLET WELDS NOT LESS THAN 6mm UNLESS OTHERWISE STATED
 5. ALL GUSSET PLATES 6mm THICK
 6. HOLES ON ANGLES AND GUSSET PLATES TO BE / 18mm
 7. ALL WELDS DESLAGGED AND WIRE-BRUSHED
 8. TANK AND TOWER TOWER TO BE PLATED ONE COAT OF PRIMER AND PAINT BEFORE DESPATCH.



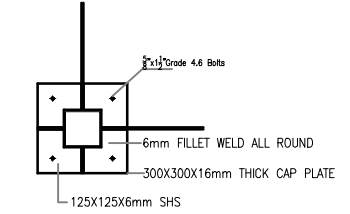
INTERMEDIATE SUPPORT:



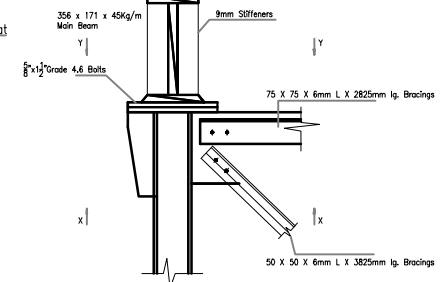
Sec.Beam to Main Beam connection



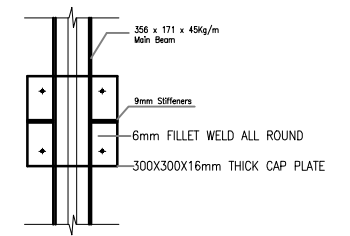
VIEW 'W' Sec.Beam to Main Beam connection



VIEW 'X' CAP GUSSET DETAILS: PLAN



STANCHION TOP DETAILS CAP GUSSET DETAILS: SECTION



VIEW 'Y' CAP GUSSET DETAILS: SECTION

NOTES

1. All dimensions are in millimeters unless otherwise stated.

REV	REVISIONS	SIGN	DATE	APPROVED
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C	CHECKED			
B	CHECKED			
A	CHECKED			

Client

WaterFund
Preserving the Water Sector

PO Box 49699 - 00100,
Nairobi, Kenya
1st Floor, CIC Plaza,
Mara Road, Upper Hill,
Nairobi, Kenya
Tel: 020 272 90 17 / 8

Project
ELWAK WATER SUPPLY PROJECT

DETAILED DESIGN

Consulting Engineer

15 Westlands Road, Westlands,
Office No. 09
P.O. Box 30337 - 00100 Nairobi,
Kenya.

Drawing Title
STANDARD DRAWINGS
ELEVATED STEEL WATER TANK

Designed by	SWM	Drawn by	JGG
Checked by	EBO	Approved by	PKG
Scale	AS SHOWN (AT A1)	Date	JULY 2022
Job No.	ELWAK	ACAD File:	ELWAK/STANDARD
A STATUS	DRAWING No. ELWAK/STANDARD DRAWINGS		
			0 REV