TRANSPORT DEPARTMENT

MAHUBE VALLEY: PHASE 3
MAJOR STORMWATER DRAINAGE SYSTEM

TENDER BOOK OF DRAWINGS

RTD 03-2025/25

PREPARED FOR

City of Tshwane
Roads and Stormwater
P.O. Box 1409
Pretoria, 0001

PREPARED BY

Afrisa Consulting (Pty) Ltd
Postnet Suite 26
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Nelspruit, 1200

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GENERAL DRAWINGS

DRAWING LIST: MAHUBE VALLEY PHASE 3				
DRAWINGS	**DRAWING TITLE**	**DRAWING NUMBER**	**REVISION**	**STATUS**
GENERAL PLAN	LIST OF DRAWINGS	AFR210/TGP-001	0	DETAILED
GENERAL PLAN	KEY MAP	AFR210/TGP-002	0	DETAILED
ROAD PLAN	BOLOA AVE, MORWA AVE, MOGASHOA AVE, AND PHAHLANE AVE ROAD PLAN	AFR210/TLP-001	0	DETAILED
	JULIUS NYERERE STREET ROAD PLAN	AFR210/TLP-002	0	DETAILED
TYPICAL CROSS SECTIONS	TYPICAL CROSS SECTIONS FOR ROADS	AFR210/TTC-101	0	DETAILED
ROAD LONG SECTIONS	BOLOA AVENUE ROAD LONGSECTION - SHEET 1 OF 2	AFR210/TLS-101	0	DETAILED
	BOLOA AVENUE ROAD LONGSECTION - SHEET 2 OF 2	AFR210/TLS-102	0	DETAILED
	MOGASHOA AVENUE ROAD LONGSECTION - SHEET 1 OF 1	AFR210/TLS-103	0	DETAILED
	PHAHLANE AVENUE AND MORWA AVENUE ROAD LONGSECTIONS - SHEET 1 OF 1	AFR210/TLS-104	0	DETAILED
	JULIUS NYERERE STREET ROAD LONGSECTION - SHEET 1 OF 1	AFR210/TLS-105	0	DETAILED
STORMWATER PLAN	MAHUBE SECONDARY SCHOOL STORMWATER LAYOUT - SHEET 1 OF 2	AFR210/TSW-001	0	DETAILED
	MAHUBE SECONDARY SCHOOL STORMWATER LAYOUT - SHEET 2 OF 2	AFR210/TSW-002	0	DETAILED
	MABENA AVENUE STORMWATER LAYOUT - SHEET 1 OF 2	AFR210/TSW-003	0	DETAILED
	MABENA AVENUE STORMWATER LAYOUT - SHEET 2 OF 2	AFR210/TSW-004	0	DETAILED
STORMWATER LONGSECTIONS	MAHUBE SECONDARY SCHOOL STORMWATER LONGSECTIONS - SHEET 1 OF 3	AFR210/TSW-101	0	DETAILED
	MAHUBE SECONDARY SCHOOL STORMWATER LONGSECTIONS - SHEET 2 OF 3	AFR210/TSW-102	0	DETAILED
	MAHUBE SECONDARY SCHOOL STORMWATER LONGSECTIONS - SHEET 3 OF 3	AFR210/TSW-103	0	DETAILED
	MABENA AVENUE STORMWATER LONGSECTIONS - SHEET 1 OF 4	AFR210/TSW-104	0	DETAILED
	MABENA AVENUE STORMWATER LONGSECTIONS - SHEET 2 OF 4	AFR210/TSW-105	0	DETAILED
	MABENA AVENUE STORMWATER LONGSECTIONS - SHEET 3 OF 4	AFR210/TSW-106	0	DETAILED
	MABENA AVENUE STORMWATER LONGSECTIONS - SHEET 4 OF 4	AFR210/TSW-107	0	DETAILED
ROAD CROSS SECTIONS	BOLOA AVENUE CROSS SECTIONS - SHEET 1 OF 2	AFR210/TXS-101	0	DETAILED
	BOLOA AVENUE CROSS SECTIONS - SHEET 2 OF 2	AFR210/TXS-102	0	DETAILED
	MOGASHOA AVENUE CROSS SECTIONS - SHEET 1 OF 1	AFR210/TXS-103	0	DETAILED
	PHAHLANE AVENUE AND MORWA AVENUE CROSS SECTIONS - SHEET 1 OF 1	AFR210/TXS-104	0	DETAILED
	JULIUS NYERERE STREET CROSS SECTIONS - SHEET 1 OF 1	AFR210/TXS-105	0	DETAILED

0 10 20 40 60 80m
SCALE 1:1000

AMENDMENTS

Rev	Date:	Drawn	Aprvd	DESCRIPTION
0	20/10/24	A.B.E	P.N	Issued for discussion
1	28/03/25	A.B.E	P.N	Issued for tender

CONSULTANTS DETAILS:

AFRISA CONSULTING PTY LTD
23 VENTER STREET
POSTNET SUITE 26
PRIVATE BAG X11326
NELSPRUIT
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email : info@afrisa.net
web : www.afrisa.net

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ROADS AND STORMWATER
For Internal Approval
RECIEVED
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DIRECTOR: INFRASTRUCTURE PROVISION — SIGNATURE — DATE
DIRECTOR: INFRASTRUCTURE PLANNING & MANAGEMENT — SIGNATURE — DATE
DIRECTOR: INFRASTRUCTURE MAINTENANCE MANAGEMENT — SIGNATURE — DATE
DIRECTOR: TRAFFIC ENGINEERING AND OPERATIONS — SIGNATURE — DATE
DIRECTOR: PROJECT MANAGEMENT — SIGNATURE — DATE
DIRECTOR: ASSET MANAGEMENT — SIGNATURE — DATE

CITY OF TSHWANE
TRANSPORT DEPARTMENT
P. LETLONKANE
STRATEGIC EXECUTIVE DIRECTOR

ROADS AND STORMWATER
L.V KEGAKILWE
EXECUTIVE DIRECTOR:
P.O. BOX 1409
PRETORIA
0001

WATER AND SANITATION
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DIRECTOR: INFRASTRUCTURE PROVISION — SIGNATURE — DATE
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DIRECTOR: BULK WATER SERVICES — SIGNATURE — DATE
DIRECTOR: WATER SERVICES DEV. & REGULATIONS — SIGNATURE — DATE
DIRECTOR: WASTE WATER COLLECTION — SIGNATURE — DATE
DIRECTOR: WASTE WATER TREATMENT — SIGNATURE — DATE

DESIGNED: A. BEECKMAN
DRAWN: P. NKOSI
CHECKED: C. ISA
CIVIL DRAUGHTING SERVICES: A. BEECKMAN
SIGNATURE: DATE:
SCALE: N.T.S
DATE:

LOCATION OF PROJECT:
MAMELODI/MAHUBE VALLEY

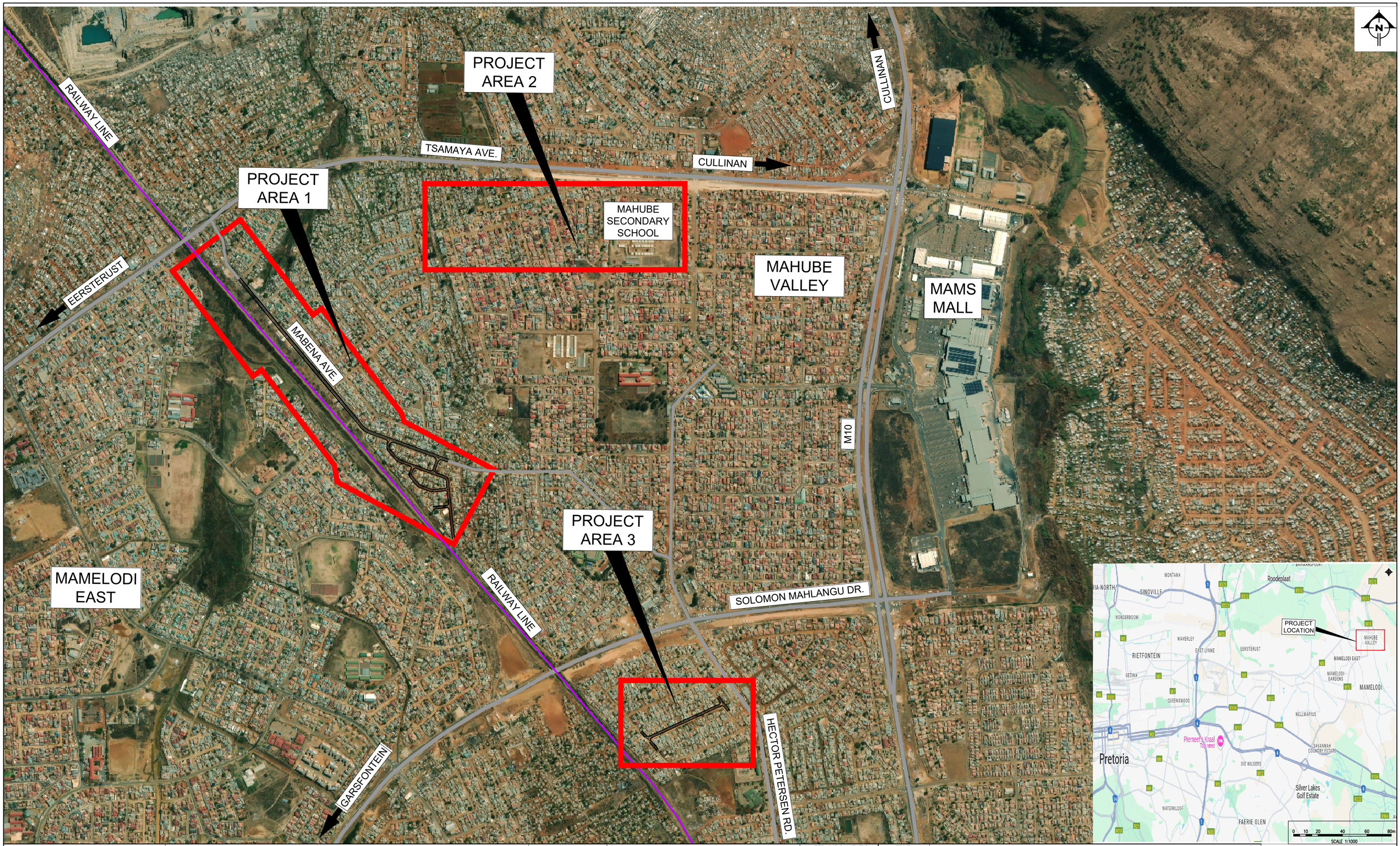
DESCRIPTION OF PROJECT
MAHUBE VALLEY: PHASE 3
MAJOR STORMWATER DRAINAGE SYSTEM
GENERAL PLAN: LIST OF DRAWINGS

PROJECT STATUS
CONCEPT DRAWING / TENDER DRAWING (selected) / APPROVED FOR CONSTRUCTION DRAWING / AS BUILT DRAWING

PROJECT ENGINEER: SIGNATURE — DATE
INSPECTOR OF WORKS: SIGNATURE — DATE
REMARKS:

CONTRACT No. :	PROJECT No. :	SHEET NO:	DRAWING NO.	REVISION
RTD 03-2025/26	COO 01 - 2021/22 (TIDC 10/2024)	1 OF 1	AFR210/ TGP-001	1

DRAWING_LOCATION: C:\Users\Morake Motsisi\AFRISA CONSULTING (PTY) LTD\Afrisa Consulting RSA PROJECTS 200 - PROJECTS\AFR210-MAHUBE VALLEY\G1 Afrisa Drawings\Drawings\DETAILED\AFR210-DGP-001-List of Drawings.dwg



AMENDMENTS

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DIRECTOR: TRAFFIC ENGINEERING AND OPERATIONS
DIRECTOR: PROJECT MANAGEMENT
DIRECTOR: ASSET MANAGEMENT

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ROADS AND STORMWATER
L.V KEGAKILWE
EXECUTIVE DIRECTOR:
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WATER AND SANITATION
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DIRECTOR: WATER DISTRIBUTION
DIRECTOR: BULK WATER SERVICES
DIRECTOR: WATER SERVICES DEV. & REGULATIONS
DIRECTOR: WASTE WATER COLLECTION
DIRECTOR: WASTE WATER TREATMENT

DESIGNED	A. BEECKMAN
DRAWN	P. NKOSI
CHECKED	C. ISA
CIVIL DRAUGHTING SERVICES	A. BEECKMAN
SCALE	1:5000
DATE:	OCTOBER 2024

LOCATION OF PROJECT:

MAMELODI/MAHUBE VALLEY

DESCRIPTION OF PROJECT

MAHUBE VALLEY: PHASE 3
MAJOR STORMWATER DRAINAGE SYSTEM
GENERAL PLAN: KEY PLAN

PROJECT STATUS

○ CONCEPT DRAWING ● TENDER DRAWING ○ APPROVED FOR CONSTRUCTION DRAWING ○ AS BUILT DRAWING

PROJECT ENGINEER: _____ SIGNATURE _____ DATE

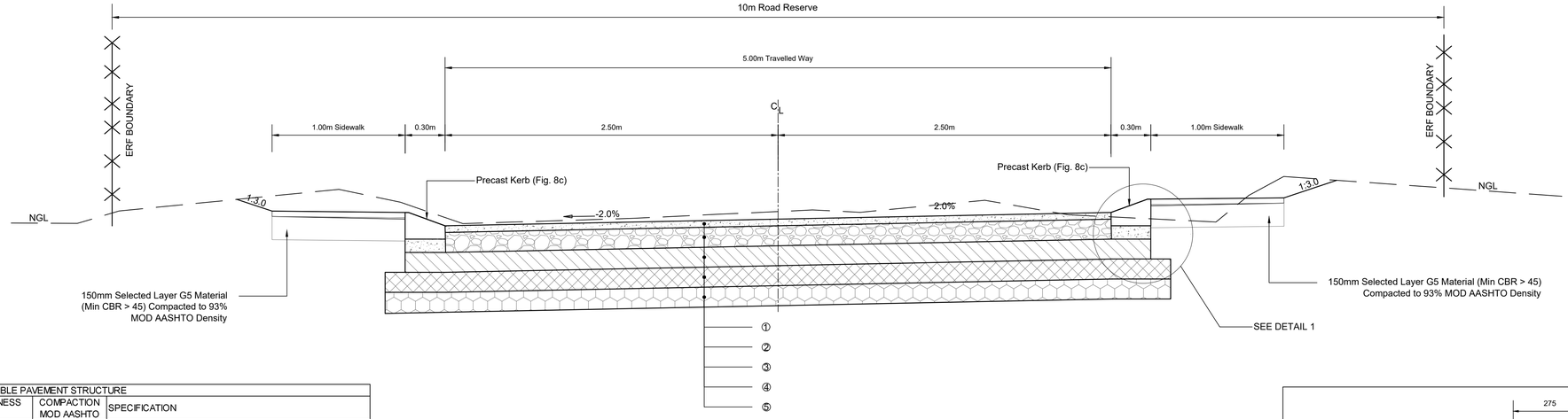
INSPECTOR OF WORKS: _____ SIGNATURE _____ DATE

REMARKS:

CONTRACT No.	PROJECT No.	SHEET NO.	DRAWING NO.
RTD 03-2025/26	COO 01 - 2021/22 (TIDC 10/2024)	1 OF 1	AFR210/TGP-002

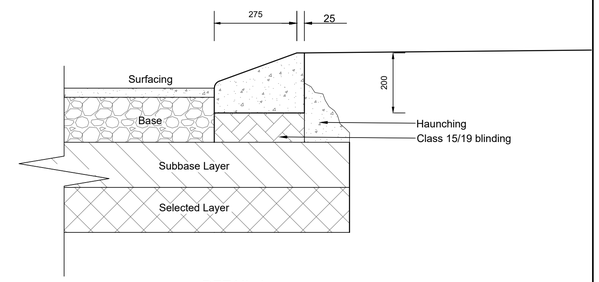
DRAWING_LOCATION: C:\Users\Morake Motsisi\AFRISA CONSULTING (PTY) LTD\Afrisa Consulting RSA PROJECTS 200 - PROJECTS\AFR210-MAHUBE VALLEY\G1 Afrisa Drawings\Drawings\TENDER\AFR210-TGP-002-Key Plan.dwg

TYPICAL CROSS SECTIONS



FLEXIBLE PAVEMENT STRUCTURE				
S/N	ITEM	LAYER THICKNESS [mm]	COMPACTION MOD AASHTO	SPECIFICATION
1	SURFACING	30		CONTINUOUSLY GRADED FINE ASPHALT
2	BASE LAYER	150	100%	G2
3	SUBBASE LAYER	150	97%	C4
4	SELECTED LAYER	150	95%	G6
5	ROADBED	150	93%	IN-SITU MATERIALS

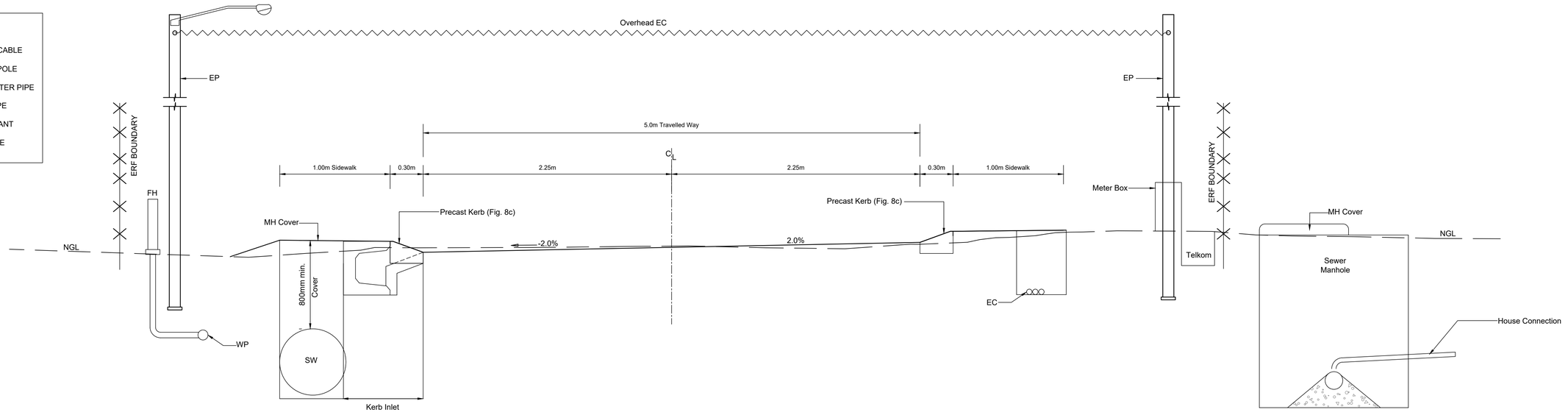
5.0m ROAD IN A 10m RESERVE
SCALE 1:20



DETAIL 1
SCALE 1:10

LEGEND

EC - ELECTRIC CABLE
EP - ELECTRIC POLE
SW - STORMWATER PIPE
WP - WATER PIPE
FH - FIRE HYDRANT
SP - SEWER PIPE



SCALE 1:1000

AMENDMENTS

Rev	Date:	Drawn	Aprvd	DESCRIPTION
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DIRECTOR: WASTE WATER TREATMENT

DESIGNED: A. BEECKMAN
DRAWN: P. NKOSI
CHECKED: C. ISA
CIVIL DRAUGHTING SERVICES: A. BEECKMAN
SCALE: AS SHOWN
DATE: OCTOBER 2024

LOCATION OF PROJECT:
MAMELODI/MAHUBE VALLEY

DESCRIPTION OF PROJECT
MAHUBE VALLEY: PHASE 3
MAJOR STORMWATER DRAINAGE SYSTEM
TYPICAL CROSS SECTIONS FOR ROADS

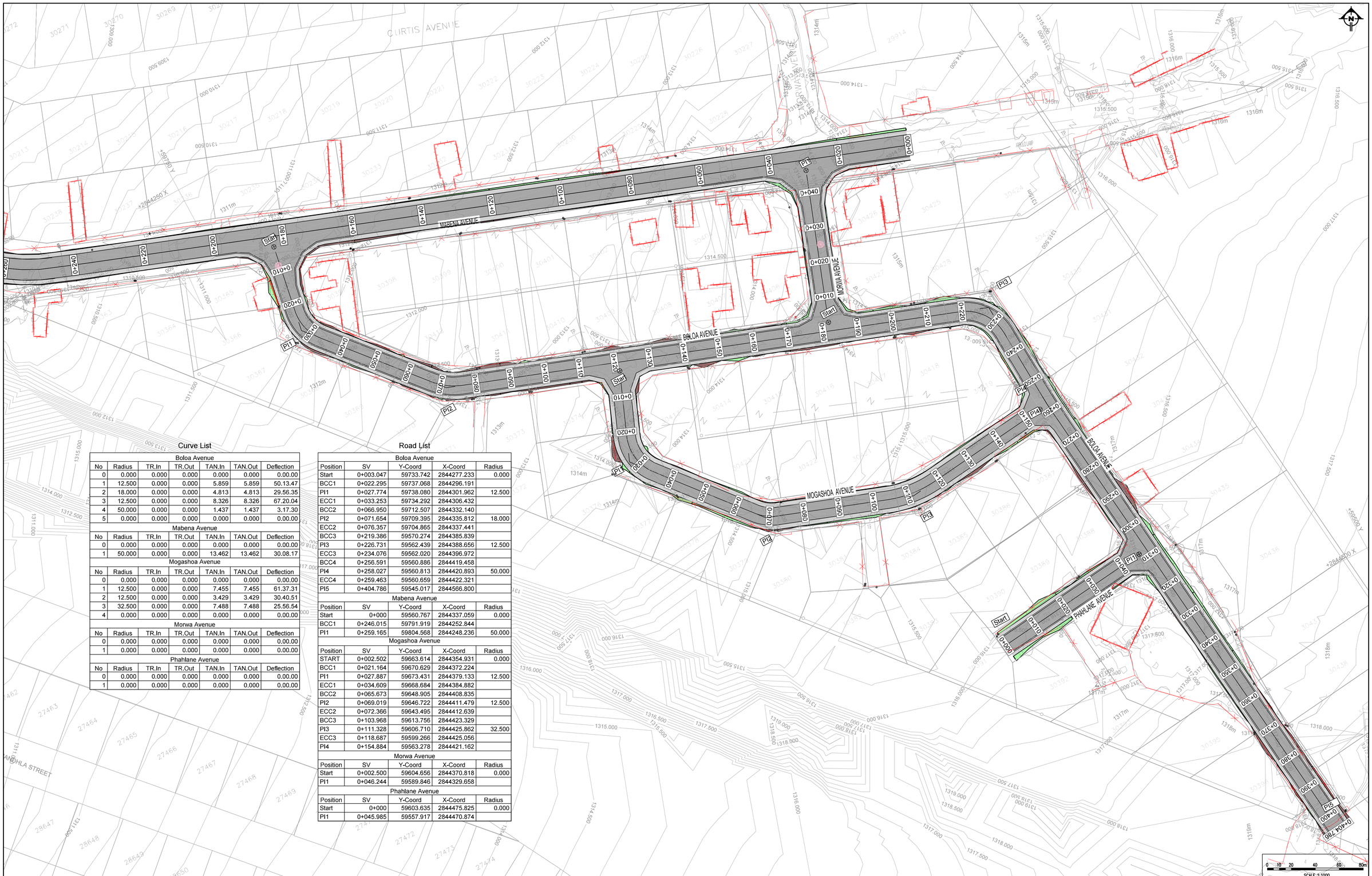
PROJECT STATUS
○ CONCEPT DRAWING ● TENDER DRAWING ○ APPROVED FOR CONSTRUCTION DRAWING ○ AS BUILT DRAWING

PROJECT ENGINEER: SIGNATURE DATE
INSPECTOR OF WORKS: SIGNATURE DATE
REMARKS:

CONTRACT No.: RTD 03-2025/26
PROJECT No.: COO 01 - 2021/22 (TIDC 10/2024)
SHEET NO.: 1 OF 1
DRAWING NO.: AFR210/ TTC-101
REVISION: 1

DRAWING_LOCATION: C:\Users\Morake Motsisi\AFRISA CONSULTING (PTY) LTD\Afrisa Consulting RSA PROJECTS 200 - PROJECTS\AFR210-MAHUBE VALLEY\G1 Afrisa Drawings\Drawings\TENDER\AFR210-TTC-101-Typical X-Sections.dwg

ROAD PLAN



Curve List

Boloa Avenue						
No	Radius	TR.In	TR.Out	TAN.In	TAN.Out	Deflection
0	0.000	0.000	0.000	0.000	0.000	0.00.00
1	12.500	0.000	0.000	5.859	5.859	50.13.47
2	18.000	0.000	0.000	4.813	4.813	29.56.35
3	12.500	0.000	0.000	8.326	8.326	67.20.04
4	50.000	0.000	0.000	1.437	1.437	3.17.30
5	0.000	0.000	0.000	0.000	0.000	0.00.00
Mabena Avenue						
No	Radius	TR.In	TR.Out	TAN.In	TAN.Out	Deflection
0	0.000	0.000	0.000	0.000	0.000	0.00.00
1	50.000	0.000	0.000	13.462	13.462	30.08.17
Mogashoa Avenue						
No	Radius	TR.In	TR.Out	TAN.In	TAN.Out	Deflection
0	0.000	0.000	0.000	0.000	0.000	0.00.00
1	12.500	0.000	0.000	7.455	7.455	61.37.31
2	12.500	0.000	0.000	3.429	3.429	30.40.51
3	32.500	0.000	0.000	7.488	7.488	25.56.54
4	0.000	0.000	0.000	0.000	0.000	0.00.00
Morwa Avenue						
No	Radius	TR.In	TR.Out	TAN.In	TAN.Out	Deflection
0	0.000	0.000	0.000	0.000	0.000	0.00.00
1	0.000	0.000	0.000	0.000	0.000	0.00.00
Phahlane Avenue						
No	Radius	TR.In	TR.Out	TAN.In	TAN.Out	Deflection
0	0.000	0.000	0.000	0.000	0.000	0.00.00
1	0.000	0.000	0.000	0.000	0.000	0.00.00

Road List

Boloa Avenue				
Position	SV	Y-Coord	X-Coord	Radius
Start	0+003.047	59733.742	2844277.233	0.000
BCC1	0+022.295	59737.068	2844296.191	
PI1	0+027.774	59738.080	2844301.962	12.500
ECC1	0+033.253	59734.292	2844306.432	
BCC2	0+066.950	59712.507	2844332.140	
PI2	0+071.654	59709.395	2844335.812	18.000
ECC2	0+076.357	59704.865	2844337.441	
BCC3	0+219.386	59570.274	2844385.839	
PI3	0+226.731	59562.439	2844388.656	12.500
ECC3	0+234.076	59562.020	2844396.972	
BCC4	0+256.591	59560.886	2844419.458	
PI4	0+258.027	59560.813	2844420.893	50.000
ECC4	0+259.463	59560.659	2844422.321	
PI5	0+404.786	59545.017	2844566.800	
Mabena Avenue				
Position	SV	Y-Coord	X-Coord	Radius
Start	0+000	59560.767	2844337.059	0.000
BCC1	0+246.015	59791.919	2844252.844	
PI1	0+259.165	59804.568	2844248.236	50.000
Mogashoa Avenue				
Position	SV	Y-Coord	X-Coord	Radius
START	0+002.502	59663.614	2844354.931	0.000
BCC1	0+021.164	59670.629	2844372.224	
PI1	0+027.887	59673.431	2844379.133	12.500
ECC1	0+034.609	59668.684	2844384.882	
BCC2	0+065.673	59648.905	2844408.835	
PI2	0+069.019	59646.722	2844411.479	12.500
ECC2	0+072.366	59643.495	2844412.639	
BCC3	0+103.968	59613.756	2844423.329	
PI3	0+111.328	59606.710	2844425.862	32.500
ECC3	0+118.687	59599.266	2844425.056	
PI4	0+154.884	59563.278	2844421.162	
Morwa Avenue				
Position	SV	Y-Coord	X-Coord	Radius
Start	0+002.500	59604.656	2844370.818	0.000
PI1	0+046.244	59589.846	2844329.658	
Phahlane Avenue				
Position	SV	Y-Coord	X-Coord	Radius
Start	0+000	59603.635	2844475.825	0.000
PI1	0+045.985	59557.917	2844470.874	

AMENDMENTS				
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CONSULTANTS DETAILS:

Afrisa CONSULTING — Transforming visions into reality

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web : www.afrisa.net

CESA Consulting Engineers South Africa

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ROADS AND STORMWATER
For Internal Approval
RECEIVED (SIGN WHEN APPLICABLE)
DIRECTOR: INFRASTRUCTURE PROVISION — SIGNATURE / DATE
DIRECTOR: INFRASTRUCTURE PLANNING & MANAGEMENT — SIGNATURE / DATE
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CITY OF TSHWANE — IGNITING EXCELLENCE

WATER AND SANITATION
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DIRECTOR: WASTE WATER TREATMENT — SIGNATURE / DATE

DESIGNED: A. BEECKMAN
DRAWN: P. NKOSI
CHECKED: C. ISA
CIVIL DRAUGHTING SERVICES: A. BEECKMAN — SIGNATURE / DATE
SCALE: 1:500
DATE:

LOCATION OF PROJECT:
MAMELODI/MAHUBE VALLEY

DESCRIPTION OF PROJECT:
MAHUBE VALLEY
MAJOR STORMWATER DRAINAGE SYSTEM

CONTRACT No.: RTD 03-2025/26
PROJECT No.: COO 01 - 2021/22 (TIDC 10/2024)
SHEET NO.:

PROJECT STATUS
○ CONCEPT DRAWING ● TENDER DRAWING ○ APPROVED FOR CONSTRUCTION DRAWING ○ AS BUILT DRAWING

PROJECT ENGINEER: SIGNATURE / DATE
INSPECTOR OF WORKS: SIGNATURE / DATE
REMARKS:

DRAWING NO.: AFR210/TLP-001
REVISION: 1

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Curve List

Julius Nyerere

No	Radius	TR.In	TR.Out	TAN.In	TAN.Out	Deflection
0	0.000	0.000	0.000	0.000	0.000	0.00.00
1	0.000	0.000	0.000	0.000	0.000	0.00.00

Road List

Julius Nyerere

Position	SV	Y-Coord	X-Coord	Radius
Start	0+002.562	58754.598	2845052.167	0.000
PI1	0+242.476	58972.832	2845151.833	

AMENDMENTS

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DIRECTOR: ASSET MANAGEMENT — SIGNATURE — DATE

CITY OF TSHWANE

TRANSPORT DEPARTMENT
P. LETLONKANE
STRATEGIC EXECUTIVE DIRECTOR

ROADS AND STORMWATER

L.V KEGAKILWE
EXECUTIVE DIRECTOR:

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CITY OF TSHWANE
IGNITING EXCELLENCE

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DIRECTOR: WASTE WATER TREATMENT — SIGNATURE — DATE

DESIGNED: A. BEECKMAN
DRAWN: P. NKOSI
CHECKED: C. ISA
CIVIL DRAUGHTING SERVICES: A. BEECKMAN
SIGNATURE: .... DATE: ....
SCALE: 1:500
DATE:

LOCATION OF PROJECT:

MAMELODI/MAHUBE VALLEY

DESCRIPTION OF PROJECT

MAHUBE VALLEY
MAJOR STORMWATER DRAINAGE SYSTEM

PROJECT STATUS

- ○ CONCEPT DRAWING
- ● TENDER DRAWING
- ○ APPROVED FOR CONSTRUCTION DRAWING
- ○ AS BUILT DRAWING

PROJECT ENGINEER: SIGNATURE — DATE
INSPECTOR OF WORKS: SIGNATURE — DATE
REMARKS:

CONTRACT No. : RTD 03-2025/26
PROJECT No. : COO 01 - 2021/22 (TIDC 10/2024)
SHEET NO:
DRAWING NO. AFR210/TLP-002
REVISION 1

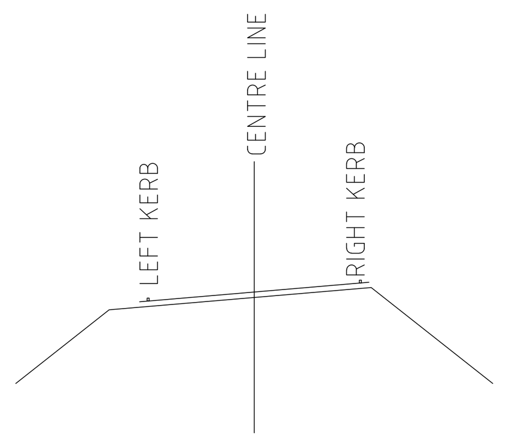
C:\Users\Morake Motsisi\AFRISA CONSULTING (PTY) LTD\Afrisa Consulting RSA PROJECTS 200 - PROJECTS\AFR210-MAHUBE VALLEY\G1 Afrisa Drawings\Drawings\Xref\A1 TITLE BLOCK.dwg

ROAD
LONGITUDINAL SECTIONS

NOTES AND SPECIFICATIONS

GENERAL

1. ALL MATERIAL AND WORKMANSHIP MUST COMPLY WITH THE REQUIREMENTS OF THE LATEST RELEVANT SABS REQUIREMENTS.
2. ALL DIMENSIONS ARE IN MILLIMETERS. (UNLESS OTHERWISE SPECIFIED)
3. DO NOT SCALE FROM THESE DRAWINGS.
4. ALL DIMENSIONS MUST BE CHECKED AND APPROVED ON SITE.
5. ALL CONSTRUCTION TO BE DONE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS FOR MUNICIPAL CIVIL ENGINEERING WORKS, THIRD EDITION 2005 AND THE STANDARD CTMM DETAIL DRAWINGS
6. THESE DRAWINGS MUST BE READ IN CONJUNCTION WITH THE ARCHITECTS DRAWINGS.(IF APPLICABLE)
7. THIS DRAWING MUST BE READ IN CONJUNCTION WITH THE STANDARD SPECIFICATIONS FOR MUNICIPAL CIVIL ENGINEERING WORKS, SERIES 4.
8. THE SIGNATURE OR INITIALS ON THIS DRAWING, OF ANY MANAGER OF THE PUBLIC WORKS AND INFRASTRUCTURE DEVELOPMENT DEPARTMENT, IN NO WAY REMOVES ANY RESPONSIBILITY WHATSOEVER FROM THE CONSULTANT.
9. THE CONSULTANT REMAINS RESPONSIBLE TO ENSURE THAT ALL THE GUIDELINES, STANDARD DRAWINGS, STANDARDS AND SPECIFICATIONS OF THE PUBLIC WORKS AND INFRASTRUCTURE DEVELOPMENT DEPARTMENT HAVE BEEN MET AND ARE COMPLIED WITH.
10. FINAL POSITION OF SERVICES TO BE DETERMINED ON SITE.



LEGEND

Design

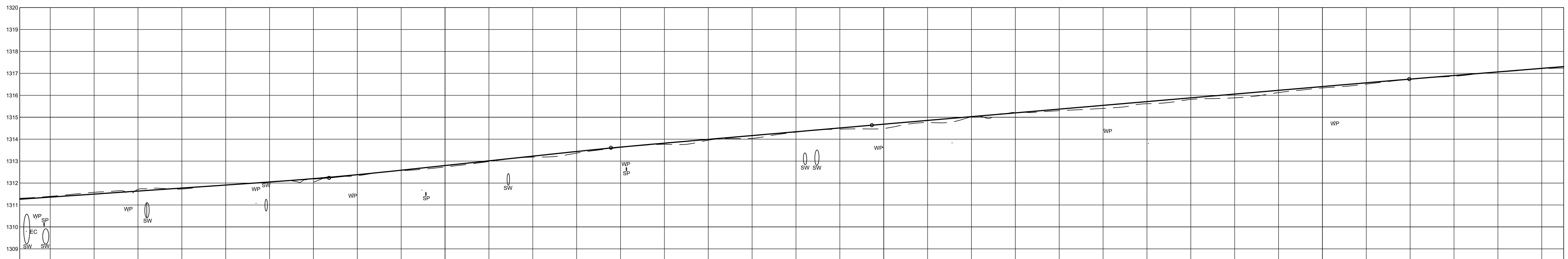
Existing

SW - Stormwater Pipe

SP - Sewer Pipe

WP - Water Pipe

EC - Electric Cable



Datum 1308.00

Chainages	0+003.05	0+010	0+020	0+030	0+040	0+050	0+060	0+070	0+080	0+090	0+100	0+110	0+120
Existing road level (CL)	1311.304	1311.386	1311.585	1311.735	1311.685	1311.915	1312.072	1312.030	1312.302	1312.562	1312.736	1312.984	1313.207
Left Edge (-2.5m)		1311.367	1311.446	1311.584	1311.722	1311.859	1311.997	1312.151	1312.331	1312.535	1312.749	1312.963	1313.176
Centre Line	1311.263	1311.359	1311.496	1311.634	1311.772	1311.909	1312.047	1312.201	1312.381	1312.585	1312.799	1313.013	1313.226
Right Edge (+2.5m)	1311.121	1311.355	1311.547	1311.684	1311.822	1311.959	1312.097	1312.251	1312.431	1312.635	1312.849	1313.063	1313.276

Chainages	0+130	0+140	0+150	0+160	0+170	0+180	0+190	0+200	0+210	0+220	0+230	0+240
Existing road level (CL)	1313.381	1313.631	1313.794	1313.993	1313.991	1314.317	1314.458	1314.436	1314.786	1315.011	1315.242	1315.306
Left Edge (-2.5m)	1313.390	1313.589	1313.768	1313.942	1314.130	1314.354	1314.561	1314.734	1314.906	1315.077	1315.249	1315.420
Centre Line	1313.440	1313.639	1313.818	1313.992	1314.165	1314.338	1314.511	1314.684	1314.856	1315.027	1315.199	1315.370
Right Edge (+2.5m)	1313.490	1313.689	1313.868	1314.042	1314.200	1314.323	1314.461	1314.634	1314.806	1314.978	1315.149	1315.320

Chainages	0+250	0+260	0+270	0+280	0+290	0+300	0+310	0+320	0+330	0+340	0+350	0+355
Existing road level (CL)	1315.404	1315.617	1315.849	1315.881	1316.144	1316.350	1316.514	1316.744	1316.850	1317.063	1317.234	1317.244
Left Edge (-2.5m)	1315.592	1315.763	1315.934	1316.106	1316.277	1316.449	1316.620	1316.789	1316.954	1317.116	1317.278	1317.360
Centre Line	1315.542	1315.713	1315.884	1316.056	1316.227	1316.399	1316.570	1316.739	1316.904	1317.066	1317.229	1317.310
Right Edge (+2.5m)	1315.492	1315.663	1315.834	1316.006	1316.177	1316.349	1316.520	1316.689	1316.854	1317.016	1317.178	1317.260

Vertical Alignment – Design Road Levels

Grades: 1.377 % | 73.573 1312.234 | 2.138 % | 137.804 1313.607 | 1.733 % | 197.293 1314.638 | 1.714 % | 319.791 1316.738 | 1.624 %

Vertical Curves: BVC 58.573 – 30.000m VC K = 39.432 – EVC 88.573 | BVC 127.804 – 20.000m VC K = 49.443 – EVC 147.804 | BVC 182.293 – 30.000m VC K = 1597.460 – EVC 212.293 | BVC 309.606 – 20.371m VC K = 224.625 – EVC 329.976

Superelevation: 2.00 / -2.00 | 2.00 / -2.00

Horizontal Curves: Direction 9.57.03 | 22.295 BCC | Curve 1 Left Radius=12.500 I= 50.13.47 | ECC 33.253 | Direction 319.43.16 | 66.950 BCC | Curve 2 Left Radius=18.000 I= 29.56.35 | ECC 76.357 | Direction 289.46.41 | 219.386 BCC | Curve 3 Right Radius=12.500 I= 67.20.04 | ECC 234.076 | Direction 357.06.46 | 256.591 BCC | Curve 4 Left Radius=50.000 I= 3.17.30 | ECC 259.463 | Direction 353.49.16

0 10 20 40 60 80m

SCALE 1:1000

AMENDMENTS				
Rev	Date:	Drawn	Aprvd	DESCRIPTION
0	20/10/24	A.B.E	P.N	Issued for discussion
1	28/03/25	A.B.E	P.N	Issued for tender

CONSULTANTS DETAILS:

AFRISA CONSULTING PTY LTD
23 VENTER STREET
POSTNET SUITE 26
PRIVATE BAG X11326
NELSPRUIT
1200
TEL : 087 700 9200
email : info@afrisa.net
web : www.afrisa.net

ISO 9001:2015 CERTIFIED

ROADS AND STORMWATER
For Internal Approval
RECIEVED SIGN WHEN APPLICABLE
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DIRECTOR: INFRASTRUCTURE PLANNING & MANAGEMENT — SIGNATURE — DATE
DIRECTOR: INFRASTRUCTURE MAINTENANCE MANAGEMENT — SIGNATURE — DATE
DIRECTOR: TRAFFIC ENGINEERING AND OPERATIONS — SIGNATURE — DATE
DIRECTOR: PROJECT MANAGEMENT — SIGNATURE — DATE
DIRECTOR: ASSET MANAGEMENT — SIGNATURE — DATE

CITY OF TSHWANE
TRANSPORT DEPARTMENT
P. LETLONKANE
STRATEGIC EXECUTIVE DIRECTOR

ROADS AND STORMWATER
L.V KEGAKILWE
EXECUTIVE DIRECTOR:
P.O. BOX 1409
PRETORIA
0001

CITY OF TSHWANE
IGNITING EXCELLENCE

WATER AND SANITATION
For Internal Approval
RECIEVED SIGN WHEN APPLICABLE
DIRECTOR: INFRASTRUCTURE PROVISION — SIGNATURE — DATE
DIRECTOR: WATER DISTRIBUTION — SIGNATURE — DATE
DIRECTOR: BULK WATER SERVICES — SIGNATURE — DATE
DIRECTOR: WATER SERVICES DEV. & REGULATIONS — SIGNATURE — DATE
DIRECTOR: WASTE WATER COLLECTION — SIGNATURE — DATE
DIRECTOR: WASTE WATER TREATMENT — SIGNATURE — DATE

DESIGNED: A. BEECKMAN
DRAWN: P. NKOSI
CHECKED: C. ISA
CIVIL DRAUGHTING SERVICES: A. BEECKMAN
SIGNATURE: DATE:
SCALE H: 1:500 V: 1:100
DATE: OCTOBER 2024

LOCATION OF PROJECT:
MAMELODI/MAHUBE VALLEY

DESCRIPTION OF PROJECT
MAHUBE VALLEY: PHASE 3
MAJOR STORMWATER DRAINAGE SYSTEM
BOLOA AVENUE ROAD LONGSECTION

CONTRACT No. : RTD 03-2025/26
PROJECT No. : COO 01 - 2021/22 (TIDC 10/2024)
SHEET NO: 1 OF 2
DRAWING NO. AFR210/TLS-101
REVISION 1

PROJECT STATUS
CONCEPT DRAWING ○ | TENDER DRAWING ● | APPROVED FOR CONSTRUCTION DRAWING ○ | AS BUILT DRAWING ○

PROJECT ENGINEER: SIGNATURE — DATE
INSPECTOR OF WORKS: SIGNATURE — DATE
REMARKS:

DRAWING_LOCATION: C:\Users\Morake Motsisi\AFRISA CONSULTING (PTY) LTD\Afrisa Consulting RSA PROJECTS 200 - PROJECTS\AFR210-MAHUBE VALLEY\G1 Afrisa Drawings\Drawings\TENDER\AFR210-TLS-101-105-Road Longsections.dwg

NOTES AND SPECIFICATIONS

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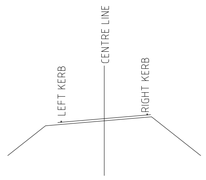


LEGEND

Design

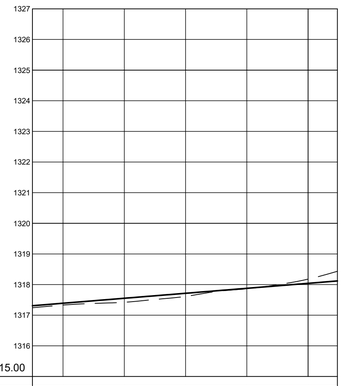
Existing

SW - Stormwater Pipe

SP - Sewer Pipe

WP - Water Pipe

EC - Electric Cable



Existing road level (CL)			1317.244	1317.339	1317.402	1317.987	1317.845	1318.148	1318.433
Vertical Alignment	Design Road Levels	Left Edge (-2.5m)	1317.360	1317.441	1317.603	1317.766	1317.928	1318.090	1318.168
		Centre Line	1317.310	1317.391	1317.553	1317.716	1317.878	1318.040	1318.118
		Right Edge (+2.5m)	1317.260	1317.341	1317.503	1317.666	1317.828	1317.990	1318.068
	Grades		1.624 %						
	Vertical Curves								
Superelevation			2.00						
			-2.00						
Horizontal Curves			Direction 353.49.16						
Chainages			0+355	0+360	0+370	0+380	0+390	0+400	0+404.79

0 10 20 40 60 80m

SCALE 1:1000

AMENDMENTS

Rev	Date:	Drawn	Aprvd	DESCRIPTION
0	20/10/24	A.B.E	P.N	Issued for discussion
1	28/03/25	A.B.E	P.N	Issued for tender

CONSULTANTS DETAILS:

AFRISA CONSULTING PTY LTD
23 VENTER STREET
POSTNET SUITE 26
PRIVATE BAG X11326
NELSPRUIT
1200
TEL : 087 700 9200
email : info@afrisa.net
web : www.afrisa.net

ISO 9001:2015 CERTIFIED

ROADS AND STORMWATER
For Internal Approval
RECEIVED SIGN WHERE APPLICABLE
DIRECTOR: INFRASTRUCTURE PROVISION
DIRECTOR: INFRASTRUCTURE PLANNING & MANAGEMENT
DIRECTOR: INFRASTRUCTURE MAINTENANCE MANAGEMENT
DIRECTOR: TRAFFIC ENGINEERING AND OPERATIONS
DIRECTOR: PROJECT MANAGEMENT
DIRECTOR: ASSET MANAGEMENT
SIGNATURE DATE

CITY OF TSHWANE

TRANSPORT DEPARTMENT

P. LETLONKANE

STRATEGIC EXECUTIVE DIRECTOR

ROADS AND STORMWATER

L.V KEGAKILWE

EXECUTIVE DIRECTOR:

P.O. BOX 1409
PRETORIA
0001

CITY OF TSHWANE
IGNITING EXCELLENCE

WATER AND SANITATION
For Internal Approval
RECEIVED SIGN WHERE APPLICABLE
DIRECTOR: INFRASTRUCTURE PROVISION
DIRECTOR: WATER DISTRIBUTION
DIRECTOR: BULK WATER SERVICES
DIRECTOR: WATER SERVICES DEV. & REGULATIONS
DIRECTOR: WASTE WATER COLLECTION
DIRECTOR: WASTE WATER TREATMENT
SIGNATURE DATE

DESIGNED: A. BEECKMAN

DRAWN: P. NKOSI

CHECKED: C. ISA

CIVIL DRAUGHTING SERVICES: A. BEECKMAN
SIGNATURE DATE

SCALE
H: 1:500
V: 1:100
DATE:
OCTOBER 2024

LOCATION OF PROJECT:

MAMELODI/MAHUBE VALLEY

DESCRIPTION OF PROJECT

MAHUBE VALLEY: PHASE 3

MAJOR STORMWATER DRAINAGE SYSTEM

BOLOA AVENUE ROAD LONGSECTION

PROJECT STATUS

○ CONCEPT DRAWING ● TENDER DRAWING ○ APPROVED FOR CONSTRUCTION DRAWING ○ AS-BUILT DRAWING

PROJECT ENGINEER: SIGNATURE DATE

INSPECTOR OF WORKS: SIGNATURE DATE

REMARKS:

CONTRACT No.: RTD 03-2025/26

PROJECT No.: COO 01 - 2021/22 (TIDC 10/2024)

SHEET NO: 2 OF 2

DRAWING NO: AFR210/TLS-102

DRAWING_LOCATION: C:\Users\Morake Motsisi\AFRISA CONSULTING (PTY) LTD\Afrisa Consulting RSA PROJECTS 200 - PROJECTS\AFR210-MAHUBE VALLEY\G1 Afrisa Drawings\Drawings\TENDER\AFR210-TLS-101-105-Road Longsections.dwg

NOTES AND SPECIFICATIONS

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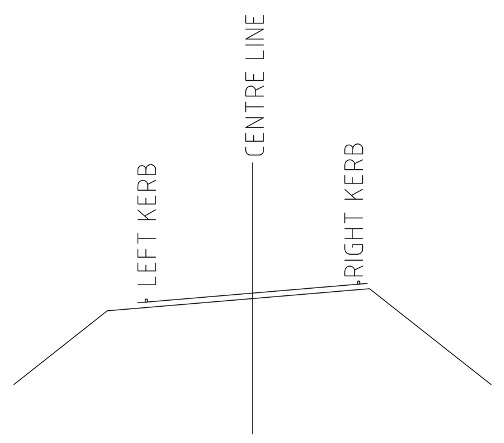

LEGEND

Design

Existing

SW - Stormwater Pipe

SP - Sewer Pipe

WP - Water Pipe

EC - Electric Cable

Datum 1310.00

Chainages	Existing road level (CL)	Left Edge (-2.5m)	Centre Line	Right Edge (+2.5m)
0+002.50	1313.243	1313.464	1313.300	1313.300
0+010	1313.315	1313.431	1313.441	1313.451
0+020	1313.606	1313.578	1313.628	1313.678
0+030	1313.754	1313.767	1313.817	1313.867
0+040	1313.981	1313.961	1314.011	1314.061
0+050	1314.229	1314.160	1314.210	1314.260
0+060	1314.422	1314.360	1314.410	1314.460
0+070	1314.593	1314.542	1314.592	1314.642
0+080	1314.739	1314.689	1314.739	1314.789
0+090	1314.915	1314.818	1314.868	1314.918
0+100	1315.011	1314.947	1314.997	1315.047
0+110	1315.129	1315.075	1315.125	1315.175
0+120	1315.223	1315.193	1315.243	1315.293
0+130	1315.377	1315.305	1315.355	1315.405
0+140	1315.510	1315.415	1315.465	1315.515
0+150	1315.450	1315.526	1315.576	1315.626
0+154.88	1315.640	1315.536	1315.630	1315.630

Vertical Alignment – Design Road Levels

Grades: 1.875 % | 34.447 1313.899 | 2.000 % | 70.000 1314.610 | 1.291 % | 113.846 1315.176 | 1.106 %

Vertical Curves: BVC 24.447 | 20.000m VC K = 160.342 | 44.447 EVC | BVC 59.879 | 20.242m VC K = 28.552 | 80.121 EVC | BVC 103.846 | 20.000m VC K = 108.348 | 123.846 EVC

Superelevation: 2.00 / -2.00

Horizontal Curves: Direction 22.04.40 | 21.164 BCC Curve 1 Left Radius=12.500 I= 61.37.31 ECC 34.609 | Direction 320.27.09 | Curve 2 Left Radius=12.500 I= 30.40.57 | Direction 289.46.19 | 103.968 BCC Curve 3 Left Radius=32.500 I= 25.56.54 ECC 118.687 | Direction 263.49.24

0 10 20 40 60 80m

SCALE 1:1000

AMENDMENTS

Rev	Date:	Drawn	Aprvd	DESCRIPTION
0	20/10/24	A.B.E	P.N	Issued for discussion
1	28/03/25	A.B.E	P.N	Issued for tender

CONSULTANTS DETAILS:

Afrisa CONSULTING Transforming visions into reality

AFRISA CONSULTING PTY LTD
23 VENTER STREET
POSTNET SUITE 26
PRIVATE BAG X11326
NELSPRUIT
1200
TEL : 087 700 9200
email : info@afrisa.net
web : www.afrisa.net

CESA Consulting Engineers South Africa

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ROADS AND STORMWATER
For Internal Approval
RECIEVED SIGN WHEN APPLICABLE
DIRECTOR: INFRASTRUCTURE PROVISION — SIGNATURE DATE
DIRECTOR: INFRASTRUCTURE PLANNING & MANAGEMENT — SIGNATURE DATE
DIRECTOR: INFRASTRUCTURE MAINTENANCE MANAGEMENT — SIGNATURE DATE
DIRECTOR: TRAFFIC ENGINEERING AND OPERATIONS — SIGNATURE DATE
DIRECTOR: PROJECT MANAGEMENT — SIGNATURE DATE
DIRECTOR: ASSET MANAGEMENT — SIGNATURE DATE

CITY OF TSHWANE
TRANSPORT DEPARTMENT
P. LETLONKANE
STRATEGIC EXECUTIVE DIRECTOR

ROADS AND STORMWATER
L.V KEGAKILWE
EXECUTIVE DIRECTOR:
P.O. BOX 1409
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CITY OF TSHWANE IGNITING EXCELLENCE

WATER AND SANITATION
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DIRECTOR: WATER DISTRIBUTION — SIGNATURE DATE
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DIRECTOR: WASTE WATER COLLECTION — SIGNATURE DATE
DIRECTOR: WASTE WATER TREATMENT — SIGNATURE DATE

DESIGNED: A. BEECKMAN
DRAWN: P. NKOSI
CHECKED: C. ISA
CIVIL DRAUGHTING SERVICES: A. BEECKMAN
SIGNATURE: DATE:
SCALE H: 1:500 V: 1:100
DATE: OCTOBER 2024

LOCATION OF PROJECT:
MAMELODI/MAHUBE VALLEY

DESCRIPTION OF PROJECT
MAHUBE VALLEY: PHASE 3
MAJOR STORMWATER DRAINAGE SYSTEM
MOGASHOA AVENUE ROAD LONGSECTION

CONTRACT No. : RTD 03-2025/26
PROJECT No. : COO 01 - 2021/22 (TIDC 10/2024)
SHEET NO: 1 OF 1
DRAWING NO. AFR210/TLS-103
REVISION 1

PROJECT STATUS
CONCEPT DRAWING | TENDER DRAWING (selected) | APPROVED FOR CONSTRUCTION DRAWING | AS BUILT DRAWING

PROJECT ENGINEER: SIGNATURE DATE
INSPECTOR OF WORKS: SIGNATURE DATE
REMARKS:

DRAWING_LOCATION: C:\Users\Morake Motsisi\AFRISA CONSULTING (PTY) LTD\Afrisa Consulting RSA PROJECTS 200 - PROJECTS\AFR210-MAHUBE VALLEY\G1 Afrisa Drawings\Drawings\TENDER\AFR210-TLS-101-105-Road Longsections.dwg

NOTES AND SPECIFICATIONS

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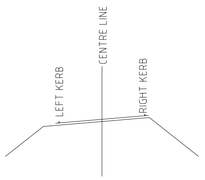


LEGEND

Design

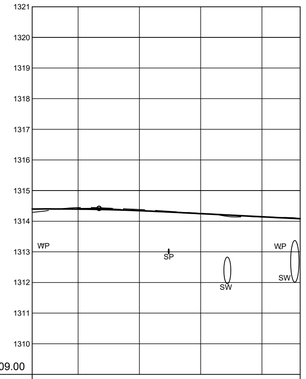
Existing

SW - Stormwater Pipe

SP - Sewer Pipe

WP - Water Pipe

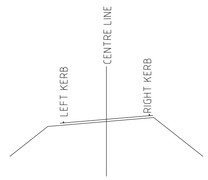
EC - Electric Cable



Datum 1309.00

Existing road level (CL)		1314.288	1314.477	1314.388	1314.299	1314.139	1314.087
Vertical Alignment / Design Road Levels	Left Edge (-2.5m)	1314.207	1314.348	1314.297	1314.197	1314.075	1313.901
	Centre Line	1314.397	1314.308	1314.347	1314.247	1314.144	1314.080
	Right Edge (+2.5m)	1314.397	1314.448	1314.397	1314.297	1314.214	1314.080
Grades			13.404	1314.418			
			0.193 %		-1.029 %		
Vertical Curves		BVC 0+04	20.000m VC K = 16.369			20.404 EVC	
Superelevation			2.00				
			-2.00				
Horizontal Curves			Direction 199.47.24				
Chainages		0+002.50	0+010	0+020	0+030	0+040	0+045.24

MORWA AVENUE LONGSECTION



LEGEND

Design

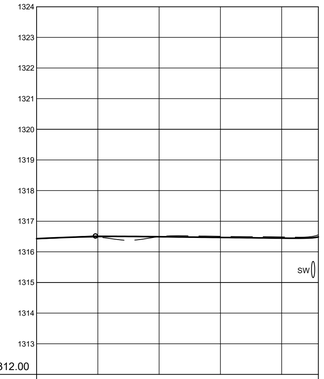
Existing

SW - Stormwater Pipe

SP - Sewer Pipe

WP - Water Pipe

EC - Electric Cable



Datum 1312.00

Existing road level (CL)		1316.425	1316.553	1316.543	1316.506	1316.497	1316.556
Vertical Alignment / Design Road Levels	Left Edge (-2.5m)	1316.381	1316.454	1316.443	1316.420	1316.398	1316.366
	Centre Line	1316.431	1316.504	1316.493	1316.470	1316.448	1316.486
	Right Edge (+2.5m)	1316.481	1316.554	1316.543	1316.521	1316.498	1316.486
Grades			9.590	1316.517			
			0.897 %		-0.228 %		
Vertical Curves		BVC 4.000	10.000m VC K = 8.890			14.590 EVC	
Superelevation			2.00				
			-2.00				
Horizontal Curves			Direction 263.49.10				
Chainages		0+000	0+010	0+020	0+030	0+040	0+045.98

PHAHLANE AVENUE LONGSECTION

SCALE 1:1000

0 10 20 40 60 80m

AMENDMENTS

Rev	Date:	Drawn	Aprvd	DESCRIPTION
0	20/10/24	A.B.E	P.N	Issued for discussion
1	28/03/25	A.B.E	P.N	Issued for tender

CONSULTANTS DETAILS:

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NELSPRUIT
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email : info@afrisa.net
web : www.afrisa.net

CESA Consulting Engineers South Africa

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ROADS AND STORMWATER
For Internal Approval
REQUIRED SIGN WHEN APPLICABLE

DIRECTOR: INFRASTRUCTURE PROVISION	SIGNATURE / DATE
DIRECTOR: INFRASTRUCTURE PLANNING & MANAGEMENT	SIGNATURE / DATE
DIRECTOR: INFRASTRUCTURE MAINTENANCE MANAGEMENT	SIGNATURE / DATE
DIRECTOR: TRAFFIC ENGINEERING AND OPERATIONS	SIGNATURE / DATE
DIRECTOR: PROJECT MANAGEMENT	SIGNATURE / DATE
DIRECTOR: ASSET MANAGEMENT	SIGNATURE / DATE

CITY OF TSHWANE

TRANSPORT DEPARTMENT
P. LETLONKANE
STRATEGIC EXECUTIVE DIRECTOR

ROADS AND STORMWATER
L.V KEGAKILWE
EXECUTIVE DIRECTOR:

P.O. BOX 1409
PRETORIA
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CITY OF TSHWANE — IGNITING EXCELLENCE

WATER AND SANITATION
For Internal Approval
REQUIRED SIGN WHEN APPLICABLE

DIRECTOR: INFRASTRUCTURE PROVISION	SIGNATURE / DATE
DIRECTOR: WATER DISTRIBUTION	SIGNATURE / DATE
DIRECTOR: BULK WATER SERVICES	SIGNATURE / DATE
DIRECTOR: WATER SERVICES DEV. & REGULATIONS	SIGNATURE / DATE
DIRECTOR: WASTE WATER COLLECTION	SIGNATURE / DATE
DIRECTOR: WASTE WATER TREATMENT	SIGNATURE / DATE

DESIGNED: A. BEECKMAN
DRAWN: P. NKOSI
CHECKED: C. ISA
CIVIL DRAUGHTING SERVICES: A. BEECKMAN
SIGNATURE / DATE
SCALE H: 1:500 V: 1:100
DATE: OCTOBER 2024

LOCATION OF PROJECT:

MAMELODI/MAHUBE VALLEY

DESCRIPTION OF PROJECT:

MAHUBE VALLEY: PHASE 3
MAJOR STORMWATER DRAINAGE SYSTEM
PHAHLANE AVENUE AND MORWA AVENUE ROAD LONGSECTIONS

CONTRACT No.: RTD 03-2025/26
PROJECT No.: COO 01 - 2021/22 (TIDC 10/2024)
SHEET NO.: 1 OF 1

PROJECT STATUS

CONCEPT DRAWING	TENDER DRAWING	APPROVED FOR CONSTRUCTION DRAWING	AS BUILT DRAWING
○	●	○	○

PROJECT ENGINEER: SIGNATURE / DATE
INSPECTOR OF WORKS: SIGNATURE / DATE
REMARKS:

DRAWING NO: AFR210/TLS-104
REVISION: 1

DRAWING_LOCATION: C:\Users\Morake Motsisi\AFRISA CONSULTING (PTY) LTD\Afrisa Consulting RSA PROJECTS 200 - PROJECTS\AFR210-MAHUBE VALLEY\G1 Afrisa Drawings\Drawings\TENDER\AFR210-TLS-101-105-Road Longsections.dwg

NOTES AND SPECIFICATIONS

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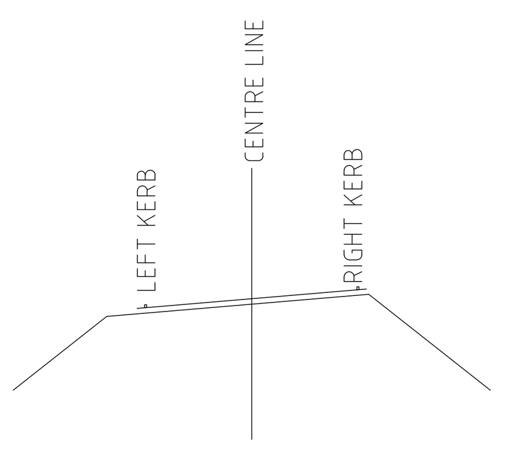

LEGEND

Design

Existing

SW - Stormwater Pipe

SP - Sewer Pipe

WP - Water Pipe

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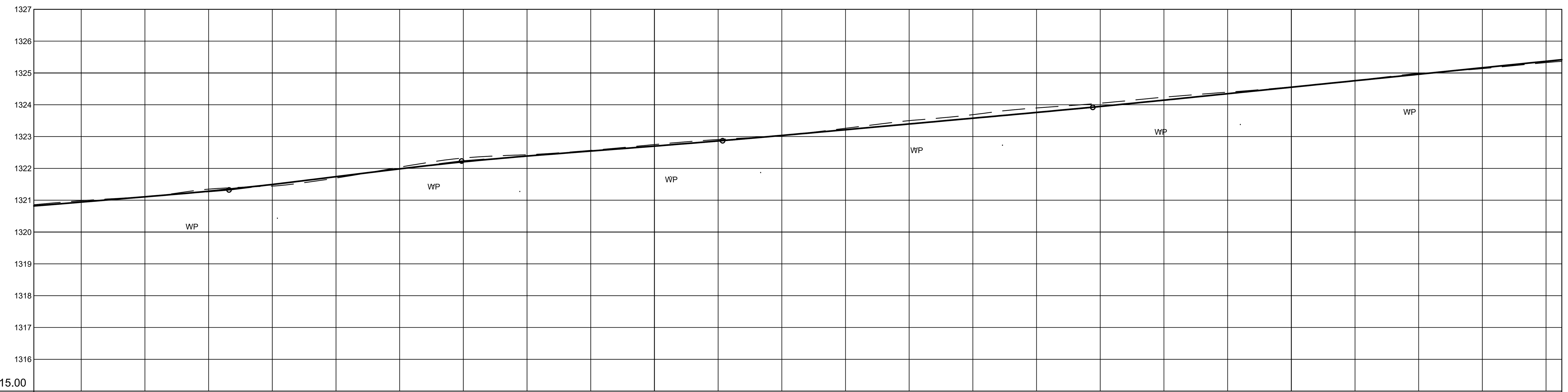

Datum 1315.00

Chainages	Existing road level (CL)	Left Edge (-2.5m)	Centre Line	Right Edge (+2.5m)
0+002.56	1320.856	1320.827	1320.820	1320.820
0+010	1321.008	1320.892	1320.942	1320.997
0+020	1321.077	1321.056	1321.106	1321.156
0+030	1321.367	1321.229	1321.280	1321.329
0+040	1321.449	1321.443	1321.493	1321.543
0+050	1321.680	1321.690	1321.740	1321.790
0+060	1322.042	1321.938	1321.988	1322.038
0+070	1322.346	1322.162	1322.212	1322.262
0+080	1322.418	1322.340	1322.390	1322.440
0+090	1322.557	1322.495	1322.545	1322.595
0+100	1322.751	1322.651	1322.701	1322.751
0+110	1322.916	1322.812	1322.862	1322.912
0+120	1323.017	1322.985	1323.035	1323.085
0+130	1323.259	1323.166	1323.216	1323.266
0+140	1323.511	1323.346	1323.396	1323.446
0+150	1323.675	1323.527	1323.577	1323.627
0+160	1323.902	1323.708	1323.758	1323.808
0+170	1324.038	1323.896	1323.945	1323.995
0+180	1324.238	1324.095	1324.145	1324.195
0+190	1324.400	1324.298	1324.348	1324.398
0+200	1324.560	1324.502	1324.552	1324.602
0+210	1324.753	1324.706	1324.756	1324.806
0+220	1324.987	1324.909	1324.959	1325.009
0+230	1325.118	1325.113	1325.163	1325.213
0+240	1325.337		1325.367	1325.403
0+242.48	1325.363		1325.417	1325.427

Vertical Alignment – Design Road Levels

Grades: 1.639 % | 33.193 1321.322 | 2.486 % | 69.720 1322.230 | 1.554 % | 110.698 1322.867 | 1.807 % | 168.821 1323.917 | 2.037 %

Vertical Curves:
- BVC 23.193 – 20.000m VC K = 23.614 – 43.193 EVC
- BVC 59.720 – 20.000m VC K = 21.474 – 79.720 EVC
- BVC 100.698 – 20.000m VC K = 79.358 – 120.698 EVC
- BVC 158.821 – 20.000m VC K = 86.954 – 178.821 EVC

Superelevation: 2.00 / -2.00

Horizontal Curves: Direction 65.27.15

0 10 20 40 60 80m
SCALE 1:1000

AMENDMENTS

Rev	Date:	Drawn	Aprvd	DESCRIPTION
0	20/10/24	A.B.E	P.N	Issued for discussion
1	28/03/25	A.B.E	P.N	Issued for tender

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DIRECTOR: ASSET MANAGEMENT — SIGNATURE — DATE

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ROADS AND STORMWATER

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DESIGNED: A. BEECKMAN
DRAWN: P. NKOSI
CHECKED: C. ISA
CIVIL DRAUGHTING SERVICES: A. BEECKMAN
SIGNATURE: DATE:
SCALE H: 1:500 V: 1:100
DATE: OCTOBER 2024

LOCATION OF PROJECT:
MAMELODI/MAHUBE VALLEY

DESCRIPTION OF PROJECT
MAHUBE VALLEY: PHASE 3
MAJOR STORMWATER DRAINAGE SYSTEM
JULIUS NYERERE STREET ROAD LONGSECTION

CONTRACT No. : RTD 03-2025/26
PROJECT No. : COO 01 - 2021/22 (TIDC 10/2024)
SHEET NO: 1 OF 1

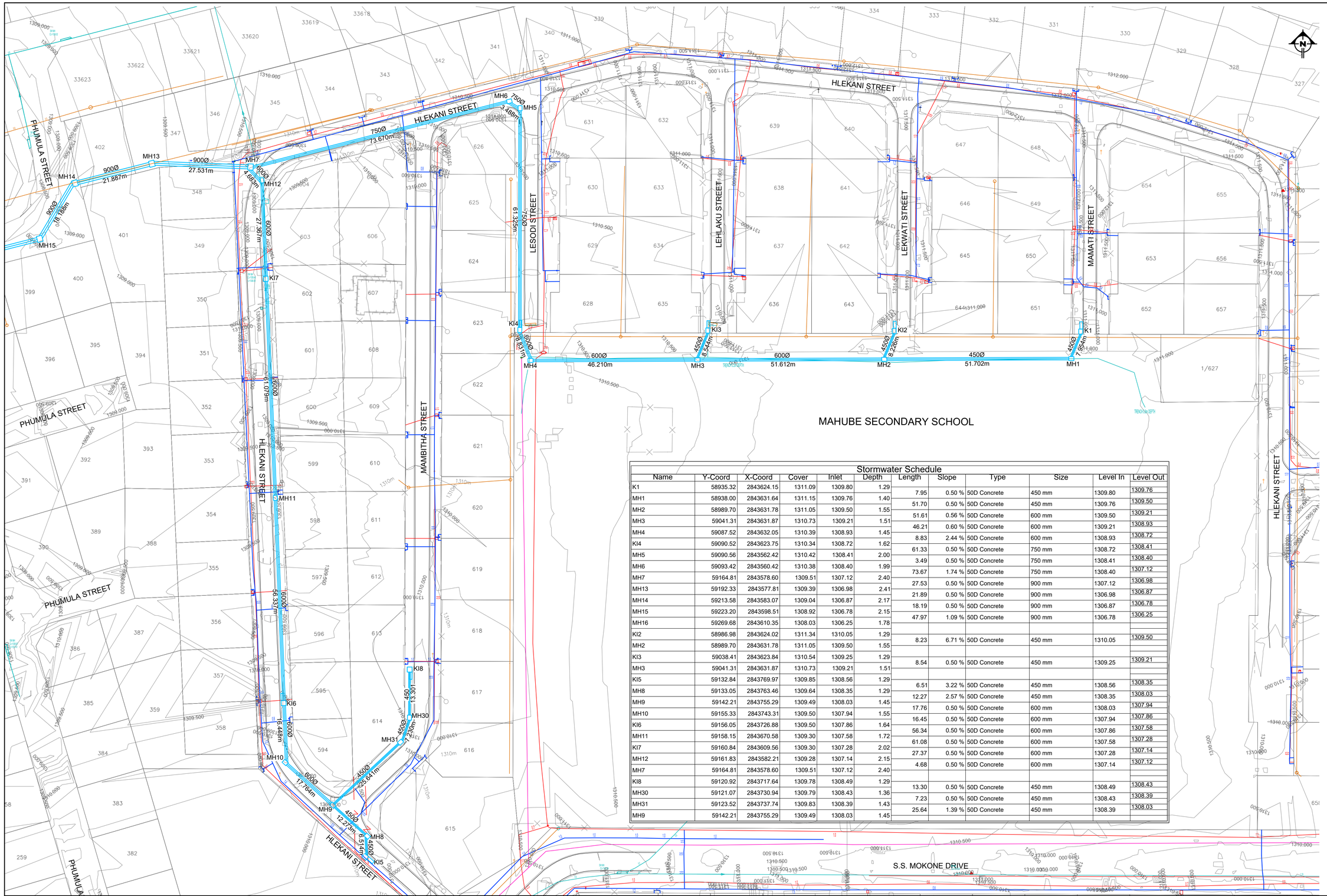
PROJECT STATUS: CONCEPT DRAWING ○ | TENDER DRAWING ● | APPROVED FOR CONSTRUCTION DRAWING ○ | AS BUILT DRAWING ○

PROJECT ENGINEER: SIGNATURE — DATE
INSPECTOR OF WORKS: SIGNATURE — DATE
REMARKS:

DRAWING NO. AFR210/TLS-105
REVISION 1

DRAWING_LOCATION: C:\Users\Morake Motsisi\AFRISA CONSULTING (PTY) LTD\Afrisa Consulting RSA PROJECTS 200 - PROJECTS\AFR210-MAHUBE VALLEY\G1 Afrisa Drawings\Drawings\TENDER\AFR210-TLS-101-105-Road Longsections.dwg

STORMWATER PLAN



Stormwater Schedule

Name	Y-Coord	X-Coord	Cover	Inlet	Depth	Length	Slope	Type	Size	Level In	Level Out
K1	58935.32	2843624.15	1311.09	1309.80	1.29						1309.76
MH1	58938.00	2843631.64	1311.15	1309.76	1.40	7.95	0.50 %	50D Concrete	450 mm	1309.80	
MH2	58989.70	2843631.78	1311.05	1309.50	1.55	51.70	0.50 %	50D Concrete	450 mm	1309.76	1309.50
MH3	59041.31	2843631.87	1310.73	1309.21	1.51	51.61	0.56 %	50D Concrete	600 mm	1309.50	1309.21
MH4	59087.52	2843632.05	1310.39	1308.93	1.45	46.21	0.60 %	50D Concrete	600 mm	1309.21	1308.93
KI4	59090.52	2843623.75	1310.34	1308.72	1.62	8.83	2.44 %	50D Concrete	600 mm	1308.93	1308.72
MH5	59090.56	2843562.42	1310.42	1308.41	2.00	61.33	0.50 %	50D Concrete	750 mm	1308.72	1308.41
MH6	59093.42	2843560.42	1310.38	1308.40	1.99	3.49	0.50 %	50D Concrete	750 mm	1308.41	1308.40
MH7	59164.81	2843578.60	1309.51	1307.12	2.40	73.67	1.74 %	50D Concrete	750 mm	1308.40	1307.12
MH13	59192.33	2843577.81	1309.39	1306.98	2.41	27.53	0.50 %	50D Concrete	900 mm	1307.12	1306.98
MH14	59213.58	2843583.07	1309.04	1306.87	2.17	21.89	0.50 %	50D Concrete	900 mm	1306.98	1306.87
MH15	59223.20	2843598.51	1308.92	1306.78	2.15	18.19	0.50 %	50D Concrete	900 mm	1306.87	1306.78
MH16	59269.68	2843610.35	1308.03	1306.25	1.78	47.97	1.09 %	50D Concrete	900 mm	1306.78	1306.25
KI2	58986.98	2843624.02	1311.34	1310.05	1.29						
MH2	58989.70	2843631.78	1311.05	1309.50	1.55	8.23	6.71 %	50D Concrete	450 mm	1310.05	1309.50
KI3	59038.41	2843623.84	1310.54	1309.25	1.29						
MH3	59041.31	2843631.87	1310.73	1309.21	1.51	8.54	0.50 %	50D Concrete	450 mm	1309.25	1309.21
KI5	59132.84	2843769.97	1309.85	1308.56	1.29						
MH8	59133.05	2843763.46	1309.64	1308.35	1.29	6.51	3.22 %	50D Concrete	450 mm	1308.56	1308.35
MH9	59142.21	2843755.29	1309.49	1308.03	1.45	12.27	2.57 %	50D Concrete	450 mm	1308.35	1308.03
MH10	59155.33	2843743.31	1309.50	1307.94	1.55	17.76	0.50 %	50D Concrete	600 mm	1308.03	1307.94
KI6	59156.05	2843726.88	1309.50	1307.86	1.64	16.45	0.50 %	50D Concrete	600 mm	1307.94	1307.86
MH11	59158.15	2843670.58	1309.30	1307.58	1.72	56.34	0.50 %	50D Concrete	600 mm	1307.86	1307.58
KI7	59160.84	2843609.56	1309.30	1307.28	2.02	61.08	0.50 %	50D Concrete	600 mm	1307.58	1307.28
MH12	59161.83	2843582.21	1309.28	1307.14	2.15	27.37	0.50 %	50D Concrete	600 mm	1307.28	1307.14
MH7	59164.81	2843578.60	1309.51	1307.12	2.40	4.68	0.50 %	50D Concrete	600 mm	1307.14	1307.12
KI8	59120.92	2843717.64	1309.78	1308.49	1.29						
MH30	59121.07	2843730.94	1309.79	1308.43	1.36	13.30	0.50 %	50D Concrete	450 mm	1308.49	1308.43
MH31	59123.52	2843737.74	1309.83	1308.39	1.43	7.23	0.50 %	50D Concrete	450 mm	1308.43	1308.39
MH9	59142.21	2843755.29	1309.49	1308.03	1.45	25.64	1.39 %	50D Concrete	450 mm	1308.39	1308.03

NOTES AND SPECIFICATIONS

GENERAL

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10 FINAL POSITION OF SERVICES TO BE DETERMINED ON SITE.

ROADS:

1 KERBING TO BE AS PER STANDARD DETAIL PLANS A AND B AND SECTION 10 OF VOLUME 1 OF CONTRACT DOCUMENT.

2 TRAFFIC CONTROL MUST COMPLY WITH THE REQUIREMENTS OF THE SOUTH AFRICAN ROAD TRAFFIC SIGNS MANUAL (THIRD EDITION).

3 VERTICAL AND HORIZONTAL ALIGNMENT TO FOLLOW THE EXISTING ROAD SURFACE, WITH A MINIMUM CROSS FALL OF 2 %.

STORMWATER:

PIPE DIAMETER TO BE AS SHOW ON THE DRAWING.

2 MINIMUM FALL TO BE 1:200.

3 PIPE BEDDING TO BE CLASS B UNLESS OTHERWISE SPECIFIED.

4 ALL EXCAVATIONS AND BEDDING MUST BE INSPECTED AND APPROVED BY THE ENGINEER BEFORE LAYING OF ANY PIPES.

5 CLEAN EXISTING STORMWATER INLETS AND REPAIR WHERE NECESSARY.(IF APPLICABLE)

LEGEND:

PROPOSED: EXISTING:

- STORMWATER LINE
- STORWATER MANHOLE
- ENERGY BREAKER
- STREAM / RIVER
- KERB INLET
- SEWER LINE
- SEWER MANHOLE
- WATER LINE
- WATER METER
- FIRE HYDRANT
- POWER LINE
- ELECTRIC BOX
- TRANSFORMER
- FIBRE LINE

0 10 20 40 60 80m

SCALE 1:1000

PROJECT STATUS

○ CONCEPT DRAWING ● TENDER DRAWING ○ APPROVED FOR CONSTRUCTION DRAWING ○ AS BUILT DRAWING

AMENDMENTS

Rev	Date:	Drawn	Aprvd	DESCRIPTION
0	20/10/24	A.B.E	P.N	Issued for discussion
1	28/03/25	A.B.E	P.N	Issued for tender

CONSULTANTS DETAILS:

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DIRECTOR: INFRASTRUCTURE MAINTENANCE MANAGEMENT — SIGNATURE — DATE
DIRECTOR: TRAFFIC ENGINEERING AND OPERATIONS — SIGNATURE — DATE
DIRECTOR: PROJECT MANAGEMENT — SIGNATURE — DATE
DIRECTOR: ASSET MANAGEMENT — SIGNATURE — DATE

CITY OF TSHWANE
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ROADS AND STORMWATER
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IGNITING EXCELLENCE

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DIRECTOR: WASTE WATER COLLECTION — SIGNATURE — DATE
DIRECTOR: WASTE WATER TREATMENT — SIGNATURE — DATE

DESIGNED: A. BEECKMAN
DRAWN: P. NKOSI
CHECKED: C. ISA
CIVIL DRAUGHTING SERVICES: A. BEECKMAN
SIGNATURE — DATE
SCALE: 1:500
DATE: OCTOBER 2024

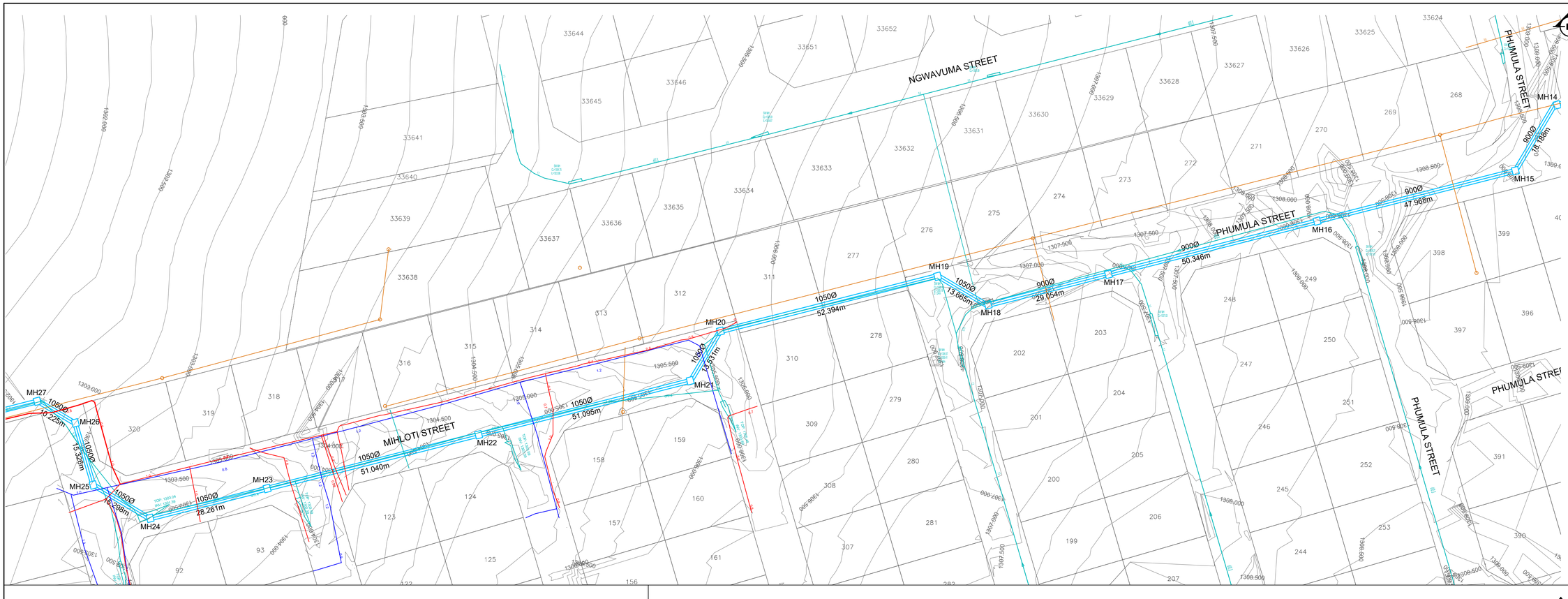
LOCATION OF PROJECT:
MAMELODI/MAHUBE VALLEY

DESCRIPTION OF PROJECT:
MAHUBE VALLEY: PHASE 3
MAJOR STORMWATER DRAINAGE SYSTEM
MAHUBE SECONDARY SCHOOL STORMWATER LAYOUT

PROJECT ENGINEER: SIGNATURE — DATE
INSPECTOR OF WORKS: SIGNATURE — DATE
REMARKS:

CONTRACT No.: RTD 03-2025/26
PROJECT No.: COO 01 - 2021/22 (TIDC 10/2024)
SHEET NO: 1 OF 2
DRAWING NO: AFR210/TSW-001

DRAWING_LOCATION: C:\Users\Morake Motsisi\AFRISA CONSULTING (PTY) LTD\Afrisa Consulting RSA PROJECTS 200 - PROJECTS\AFR210-MAHUBE VALLEY\G1 Afrisa Drawings\Drawings\DETAILED\AFR210-DSW001-004-Stormwater Layout.dwg



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6 THESE DRAWINGS MUST BE READ IN CONJUNCTION WITH THE ARCHITECTS DRAWINGS.(IF APPLICABLE)

7 THIS DRAWING MUST BE READ IN CONJUNCTION WITH THE STANDARD SPECIFICATIONS FOR MUNICIPAL CIVIL ENGINEERING WORKS, SERIES 4.

8 THE SIGNATURE OR INITIALS ON THIS DRAWING, OF ANY MANAGER OF THE PUBLIC WORKS AND INFRASTRUCTURE DEVELOPMENT DEPARTMENT, IN NO WAY REMOVES ANY RESPONSIBILITY WHATSOEVER FROM THE CONSULTANT.

9 THE CONSULTANT REMAINS RESPONSIBLE TO ENSURE THAT ALL THE GUIDELINES, STANDARD DRAWINGS, STANDARDS AND SPECIFICATIONS OF THE PUBLIC WORKS AND INFRASTRUCTURE DEVELOPMENT DEPARTMENT HAVE BEEN MET AND ARE COMPLIED WITH.

10 FINAL POSITION OF SERVICES TO BE DETERMINED ON SITE.

ROADS:

1 KERBING TO BE AS PER STANDARD DETAIL PLANS A AND B AND SECTION 10 OF VOLUME 1 OF CONTRACT DOCUMENT.

2 TRAFFIC CONTROL MUST COMPLY WITH THE REQUIREMENTS OF THE SOUTH AFRICAN ROAD TRAFFIC SIGNS MANUAL (THIRD EDITION).

3 VERTICAL AND HORIZONTAL ALIGNMENT TO FOLLOW THE EXISTING ROAD SURFACE, WITH A MINIMUM CROSS FALL OF 2 % (IF APPLICABLE)

STORMWATER:

PIPE DIAMETER TO BE AS SHOW ON THE DRAWING.

2 MINIMUM FALL TO BE 1:200.

3 PIPE BEDDING TO BE CLASS B UNLESS OTHERWISE SPECIFIED.

4 ALL EXCAVATIONS AND BEDDING MUST BE INSPECTED AND APPROVED BY THE ENGINEER BEFORE LAYING OF ANY PIPES.

5 CLEAN EXISTING STORMWATER INLETS AND REPAIR WHERE NECESSARY.(IF APPLICABLE)

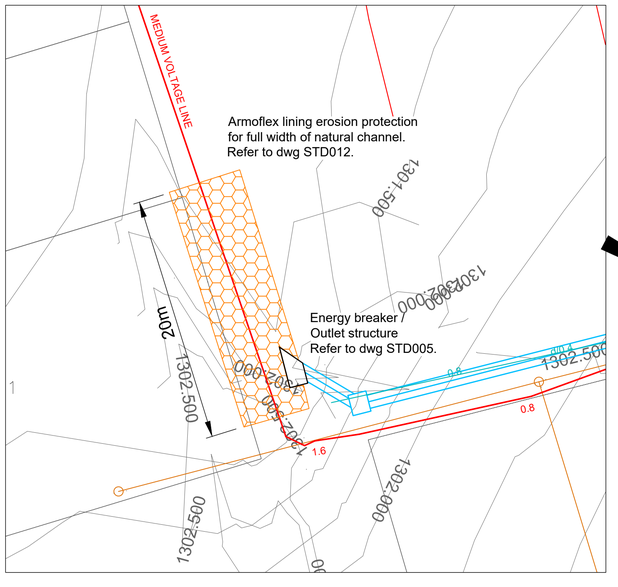
LEGEND:

PROPOSED: EXISTING:

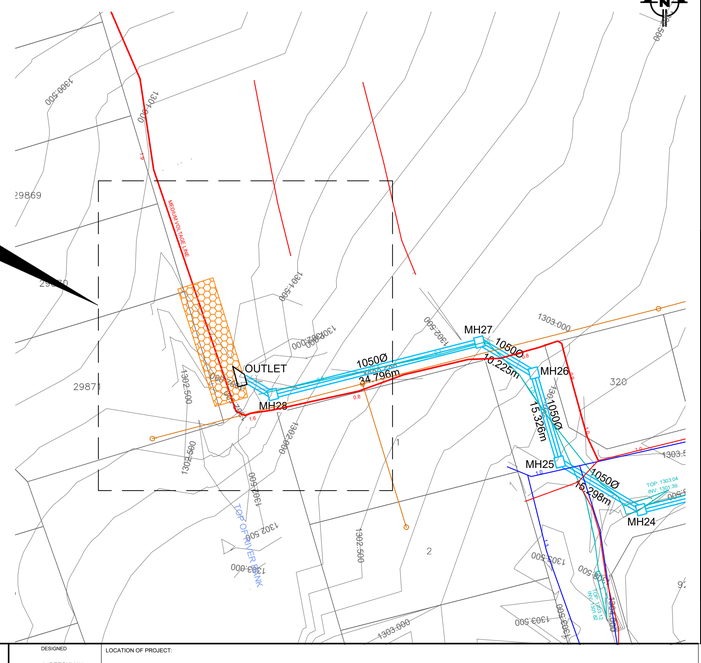
- STORMWATER LINE
- STORWATER MANHOLE
- ENERGY BREAKER
- STREAM / RIVER
- KERB INLET
- SEWER LINE
- SEWER MANHOLE
- WATER LINE
- WATER METER
- FIRE HYDRANT
- POWER LINE
- ELECTRIC BOX
- TRANSFORMER
- FIBRE LINE

Stormwater Schedule

Name	Y-Coord	X-Coord	Cover	Inlet	Depth	Length	Slope	Type	Size	Level In	Level Out
MH15	59223.20	2843598.51	1308.92	1306.78	2.15						1306.25
MH16	59269.68	2843610.35	1308.03	1306.25	1.78	47.97	1.09 %	50D Concrete	900 mm	1306.78	1305.07
MH17	59318.48	2843622.75	1307.28	1305.07	2.21	50.35	2.35 %	50D Concrete	900 mm	1306.25	1304.56
MH18	59346.62	2843629.96	1306.48	1304.56	1.91	29.05	1.74 %	50D Concrete	900 mm	1305.07	1304.23
MH19	59358.47	2843623.16	1306.64	1304.23	2.41	13.66	2.44 %	50D Concrete	1050 mm	1304.56	1303.59
MH20	59409.22	2843636.18	1305.74	1303.59	2.16	52.39	1.23 %	50D Concrete	1050 mm	1304.23	1303.54
MH21	59416.30	2843647.71	1305.45	1303.54	1.91	13.53	0.36 %	50D Concrete	1050 mm	1303.59	1302.76
MH22	59465.82	2843660.29	1304.67	1302.76	1.91	51.09	1.53 %	50D Concrete	1050 mm	1303.54	1301.72
MH23	59515.26	2843673.00	1303.64	1301.72	1.91	51.04	2.03 %	50D Concrete	1050 mm	1302.76	1301.36
MH24	59542.67	2843679.85	1303.28	1301.36	1.91	28.26	1.27 %	50D Concrete	1050 mm	1301.72	1301.10
MH25	59555.88	2843672.13	1303.02	1301.10	1.91	15.30	1.69 %	50D Concrete	1050 mm	1301.36	1300.84
MH26	59560.19	2843657.43	1302.75	1300.84	1.91	15.33	1.75 %	50D Concrete	1050 mm	1301.10	1300.57
MH27	59569.09	2843652.39	1302.48	1300.57	1.91	10.22	2.66 %	50D Concrete	1050 mm	1300.84	1299.61
MH28	59602.81	2843661.00	1301.53	1299.61	1.91	34.80	2.74 %	50D Concrete	1050 mm	1300.57	1299.09
						17.39	3.02 %	50D Concrete	1050 mm	1299.61	



DISCHARGE OUTLET LAYOUT



0 10 20 40 60 80m

SCALE 1:1000

AMENDMENTS

Rev	Date:	Drawn	Aprvd	DESCRIPTION
0	20/10/24	A.B.E	P.N	Issued for discussion
1	28/03/25	A.B.E	P.N	Issued for tender

CONSULTANTS DETAILS:

AFRISA CONSULTING PTY LTD
23 VENTER STREET
POSTNET SUITE 26
PRIVATE BAG X11326
NELSPRUIT
1200
TEL : 087 700 9200
email : info@afrisa.net
web : www.afrisa.net

ISO 9001:2015 CERTIFIED

ROADS AND STORMWATER
For Internal Approval
RECUSED SIGN WHEN APPLICABLE
DIRECTOR: INFRASTRUCTURE PROVISION
DIRECTOR: INFRASTRUCTURE PLANNING & MANAGEMENT
DIRECTOR: INFRASTRUCTURE MAINTENANCE MANAGEMENT
DIRECTOR: TRAFFIC ENGINEERING AND OPERATIONS
DIRECTOR: PROJECT MANAGEMENT
DIRECTOR: ASSET MANAGEMENT
SIGNATURE DATE

CITY OF TSHWANE

TRANSPORT DEPARTMENT
P. LETLONKANE
STRATEGIC EXECUTIVE DIRECTOR

ROADS AND STORMWATER
L.V KEGAKILWE
EXECUTIVE DIRECTOR:

P.O. BOX 1409
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0001

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DIRECTOR: BULK WATER SERVICES
DIRECTOR: WATER SERVICES DEV. & REGULATIONS
DIRECTOR: WASTE WATER COLLECTION
DIRECTOR: WASTE WATER TREATMENT
SIGNATURE DATE

DESIGNED:	A. BEECKMAN
DRAWN:	P. NKOSI
CHECKED:	C. ISA
CIVIL DRAUGHTING SERVICES:	A. BEECKMAN
SIGNATURE DATE	
SCALE:	1:500
DATE:	OCTOBER 2024

LOCATION OF PROJECT:

MAMELODI/MAHUBE VALLEY

DESCRIPTION OF PROJECT

MAHUBE VALLEY: PHASE 3
MAJOR STORMWATER DRAINAGE SYSTEM
MAHUBE SECONDARY SCHOOL STORMWATER LAYOUT

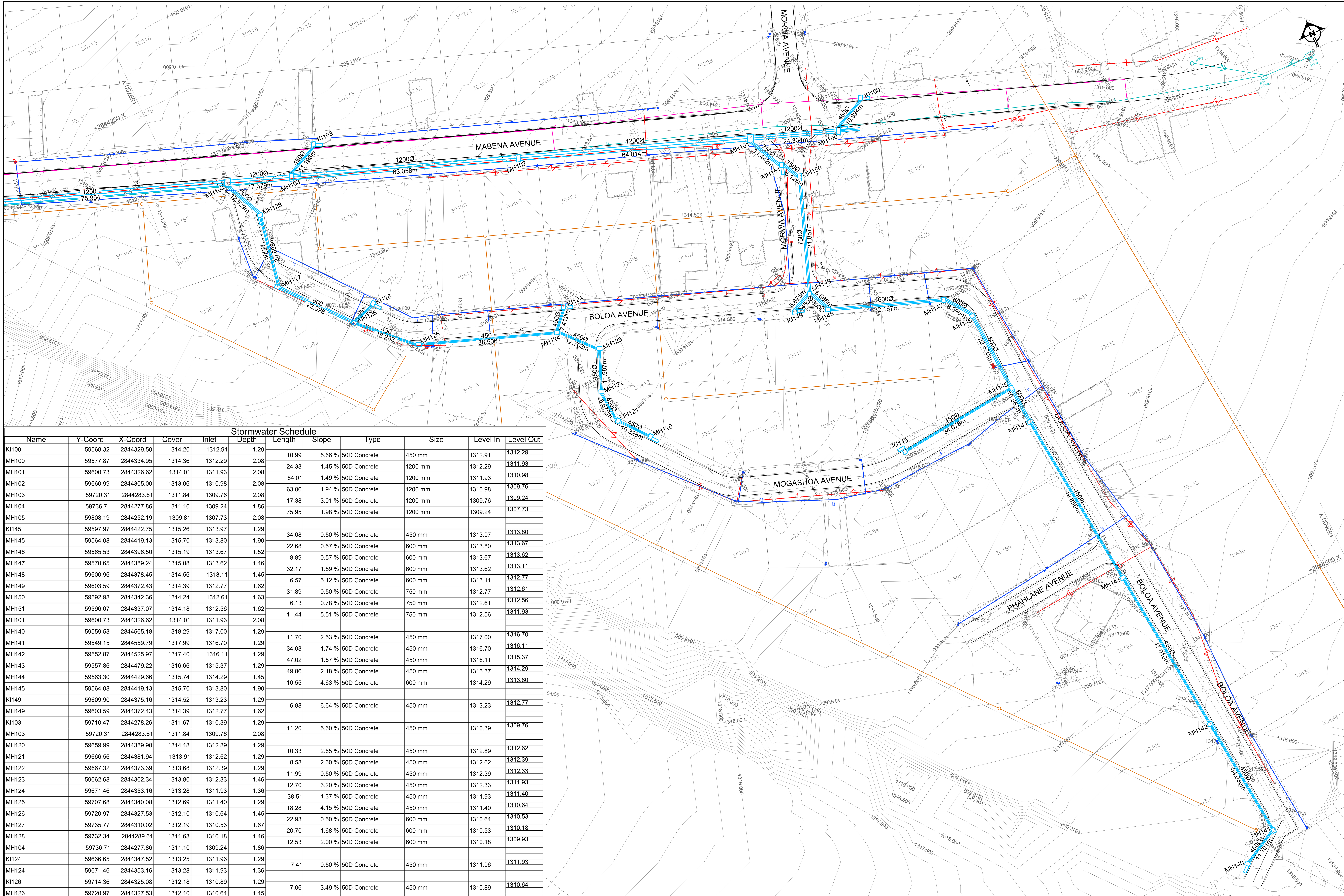
PROJECT STATUS

CONCEPT DRAWING | TENDER DRAWING | APPROVED FOR CONSTRUCTION DRAWING | AS BUILT DRAWING

PROJECT ENGINEER: SIGNATURE DATE
INSPECTOR OF WORKS: SIGNATURE DATE
REMARKS:

CONTRACT No.	PROJECT No.	SHEET NO:	DRAWING NO.
RTD 03-2025/26	COO 01 - 2021/22 (TIDC 10/2024)	2 OF 2	AFR210/TSW-002

DRAWING_LOCATION: C:\Users\Morake Motsisi\AFRISA CONSULTING (PTY) LTD\Afrisa Consulting RSA PROJECTS 200 - PROJECTS\AFR210-MAHUBE VALLEY\G1 Afrisa Drawings\Drawings\DETAILED\AFR210-DSW001-004-Stormwater Layout.dwg



Stormwater Schedule

Each Length to Level Out entry describes the pipe that runs from the manhole or inlet on that row to the next one listed.

Name	Y-Coord	X-Coord	Cover	Inlet	Depth	Length	Slope	Type	Size	Level In	Level Out
KI100	59568.32	2844329.50	1314.20	1312.91	1.29	10.99	5.66 %	50D Concrete	450 mm	1312.91	1312.29
MH100	59577.87	2844334.95	1314.36	1312.29	2.08	24.33	1.45 %	50D Concrete	1200 mm	1312.29	1311.93
MH101	59600.73	2844326.62	1314.01	1311.93	2.08	64.01	1.49 %	50D Concrete	1200 mm	1311.93	1310.98
MH102	59660.99	2844305.00	1313.06	1310.98	2.08	63.06	1.94 %	50D Concrete	1200 mm	1310.98	1309.76
MH103	59720.31	2844283.61	1311.84	1309.76	2.08	17.38	3.01 %	50D Concrete	1200 mm	1309.76	1309.24
MH104	59736.71	2844277.86	1311.10	1309.24	1.86	75.95	1.98 %	50D Concrete	1200 mm	1309.24	1307.73
MH105	59808.19	2844252.19	1309.81	1307.73	2.08						
KI145	59597.97	2844422.75	1315.26	1313.97	1.29	34.08	0.50 %	50D Concrete	450 mm	1313.97	1313.80
MH145	59564.08	2844419.13	1315.70	1313.80	1.90	22.68	0.57 %	50D Concrete	600 mm	1313.80	1313.67
MH146	59565.53	2844396.50	1315.19	1313.67	1.52	8.89	0.57 %	50D Concrete	600 mm	1313.67	1313.62
MH147	59570.65	2844389.24	1315.08	1313.62	1.46	32.17	1.59 %	50D Concrete	600 mm	1313.62	1313.11
MH148	59600.96	2844378.45	1314.56	1313.11	1.45	6.57	5.12 %	50D Concrete	600 mm	1313.11	1312.77
MH149	59603.59	2844372.43	1314.39	1312.77	1.62	31.89	0.50 %	50D Concrete	750 mm	1312.77	1312.61
MH150	59592.98	2844342.36	1314.24	1312.61	1.63	6.13	0.78 %	50D Concrete	750 mm	1312.61	1312.56
MH151	59596.07	2844337.07	1314.18	1312.56	1.62	11.44	5.51 %	50D Concrete	750 mm	1312.56	1311.93
MH101	59600.73	2844326.62	1314.01	1311.93	2.08						
MH140	59559.53	2844565.18	1318.29	1317.00	1.29	11.70	2.53 %	50D Concrete	450 mm	1317.00	1316.70
MH141	59549.15	2844559.79	1317.99	1316.70	1.29	34.03	1.74 %	50D Concrete	450 mm	1316.70	1316.11
MH142	59552.87	2844525.97	1317.40	1316.11	1.29	47.02	1.57 %	50D Concrete	450 mm	1316.11	1315.37
MH143	59557.86	2844479.22	1316.66	1315.37	1.29	49.86	2.18 %	50D Concrete	450 mm	1315.37	1314.29
MH144	59563.30	2844429.66	1315.74	1314.29	1.45	10.55	4.63 %	50D Concrete	600 mm	1314.29	1313.80
MH145	59564.08	2844419.13	1315.70	1313.80	1.90						
KI149	59609.90	2844375.16	1314.52	1313.23	1.29	6.88	6.64 %	50D Concrete	450 mm	1313.23	1312.77
MH149	59603.59	2844372.43	1314.39	1312.77	1.62						
KI103	59710.47	2844278.26	1311.67	1310.39	1.29	11.20	5.60 %	50D Concrete	450 mm	1310.39	1309.76
MH103	59720.31	2844283.61	1311.84	1309.76	2.08						
MH120	59659.99	2844389.90	1314.18	1312.89	1.29	10.33	2.65 %	50D Concrete	450 mm	1312.89	1312.62
MH121	59666.56	2844381.94	1313.91	1312.62	1.29	8.58	2.60 %	50D Concrete	450 mm	1312.62	1312.39
MH122	59667.32	2844373.39	1313.68	1312.39	1.29	11.99	0.50 %	50D Concrete	450 mm	1312.39	1312.33
MH123	59662.68	2844362.34	1313.80	1312.33	1.46	12.70	3.20 %	50D Concrete	450 mm	1312.33	1311.93
MH124	59671.46	2844353.16	1313.28	1311.93	1.36	38.51	1.37 %	50D Concrete	450 mm	1311.93	1311.40
MH125	59707.68	2844340.08	1312.69	1311.40	1.29	18.28	4.15 %	50D Concrete	450 mm	1311.40	1310.64
MH126	59720.97	2844327.53	1312.10	1310.64	1.45	22.93	0.50 %	50D Concrete	600 mm	1310.64	1310.53
MH127	59735.77	2844310.02	1312.19	1310.53	1.67	20.70	1.68 %	50D Concrete	600 mm	1310.53	1310.18
MH128	59732.34	2844289.61	1311.63	1310.18	1.46	12.53	2.00 %	50D Concrete	600 mm	1310.18	1309.93
MH104	59736.71	2844277.86	1311.10	1309.24	1.86						
KI124	59666.65	2844347.52	1313.25	1311.96	1.29	7.41	0.50 %	50D Concrete	450 mm	1311.96	1311.93
MH124	59671.46	2844353.16	1313.28	1311.93	1.36						
KI126	59714.36	2844325.08	1312.18	1310.89	1.29	7.06	3.49 %	50D Concrete	450 mm	1310.89	1310.64
MH126	59720.97	2844327.53	1312.10	1310.64	1.45						

NOTES AND SPECIFICATIONS

GENERAL

1. ALL MATERIAL AND WORKMANSHIP MUST COMPLY WITH THE REQUIREMENTS OF THE LATEST RELEVANT SABS REQUIREMENTS.
2. ALL DIMENSIONS ARE IN MILLIMETERS. (UNLESS OTHERWISE SPECIFIED)
3. DO NOT SCALE FROM THESE DRAWINGS.
4. ALL DIMENSIONS MUST BE CHECKED AND APPROVED ON SITE.
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ROADS:

1. KERBING TO BE AS PER STANDARD DETAIL PLANS A AND B AND SECTION 10 OF VOLUME 1 OF CONTRACT DOCUMENT.
2. TRAFFIC CONTROL MUST COMPLY WITH THE REQUIREMENTS OF THE SOUTH AFRICAN ROAD TRAFFIC SIGNS MANUAL (THIRD EDITION).
3. VERTICAL AND HORIZONTAL ALIGNMENT TO FOLLOW THE EXISTING ROAD SURFACE, WITH A MINIMUM CROSS FALL OF 2 % (IF APPLICABLE)

STORMWATER:

PIPE DIAMETER TO BE AS SHOW ON THE DRAWING.

2 MINIMUM FALL TO BE 1:200.

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5 CLEAN EXISTING STORMWATER INLETS AND REPAIR WHERE NECESSARY.(IF APPLICABLE)

LEGEND:

PROPOSED: / EXISTING:

- STORMWATER LINE
- STORWATER MANHOLE
- ENERGY BREAKER
- STREAM / RIVER
- KERB INLET
- SEWER LINE
- SEWER MANHOLE
- WATER LINE
- WATER METER
- FIRE HYDRANT
- POWER LINE
- ELECTRIC BOX
- TRANSFORMER
- FIBRE LINE

0 10 20 40 60 80m
SCALE 1:1000

AMENDMENTS

Rev	Date:	Drawn	Aprvd	DESCRIPTION
0	20/10/24	A.B.E	P.N	Issued for discussion
1	28/03/25	A.B.E	P.N	Issued for tender

CONSULTANTS DETAILS:

AFRISA CONSULTING PTY LTD
23 VENTER STREET
POSTNET SUITE 26
PRIVATE BAG X11326
NELSPRUIT
1200
TEL : 087 700 9200
email : info@afrisa.net
web : www.afrisa.net

Transforming visions into reality

CESA Consulting Engineers South Africa

ISO 9001:2015 CERTIFIED

ROADS AND STORMWATER
For Internal Approval
RECIEVED SIGN WHEN APPLICABLE

DIRECTOR: INFRASTRUCTURE PROVISION	SIGNATURE / DATE
DIRECTOR: INFRASTRUCTURE PLANNING & MANAGEMENT	SIGNATURE / DATE
DIRECTOR: INFRASTRUCTURE MAINTENANCE MANAGEMENT	SIGNATURE / DATE
DIRECTOR: TRAFFIC ENGINEERING AND OPERATIONS	SIGNATURE / DATE
DIRECTOR: PROJECT MANAGEMENT	SIGNATURE / DATE
DIRECTOR: ASSET MANAGEMENT	SIGNATURE / DATE

CITY OF TSHWANE

TRANSPORT DEPARTMENT
P. LETLONKANE
STRATEGIC EXECUTIVE DIRECTOR

ROADS AND STORMWATER
L.V KEGAKILWE
EXECUTIVE DIRECTOR:

P.O. BOX 1409
PRETORIA
0001

CITY OF TSHWANE
IGNITING EXCELLENCE

WATER AND SANITATION
For Internal Approval
RECIEVED SIGN WHEN APPLICABLE

DIRECTOR: INFRASTRUCTURE PROVISION	SIGNATURE / DATE
DIRECTOR: WATER DISTRIBUTION	SIGNATURE / DATE
DIRECTOR: BULK WATER SERVICES	SIGNATURE / DATE
DIRECTOR: WATER SERVICES DEV. & REGULATIONS	SIGNATURE / DATE
DIRECTOR: WASTE WATER COLLECTION	SIGNATURE / DATE
DIRECTOR: WASTE WATER TREATMENT	SIGNATURE / DATE

DESIGNED: A. BEECKMAN
DRAWN: P. NKOSI
CHECKED: C. ISA
CIVIL DRAUGHTING SERVICES: A. BEECKMAN
SIGNATURE: DATE:
SCALE: 1:500
DATE: OCTOBER 2024

LOCATION OF PROJECT:

MAMELODI/MAHUBE VALLEY

DESCRIPTION OF PROJECT

MAHUBE VALLEY: PHASE 3
MAJOR STORMWATER DRAINAGE SYSTEM
MABENA AVENUE STORMWATER LAYOUT

CONTRACT No. : RTD 03-2025/26
PROJECT No. : COO 01 - 2021/22 (TIDC 10/2024)
SHEET NO: 1 OF 2

PROJECT STATUS

CONCEPT DRAWING / TENDER DRAWING (marked) / APPROVED FOR CONSTRUCTION DRAWING / AS BUILT DRAWING

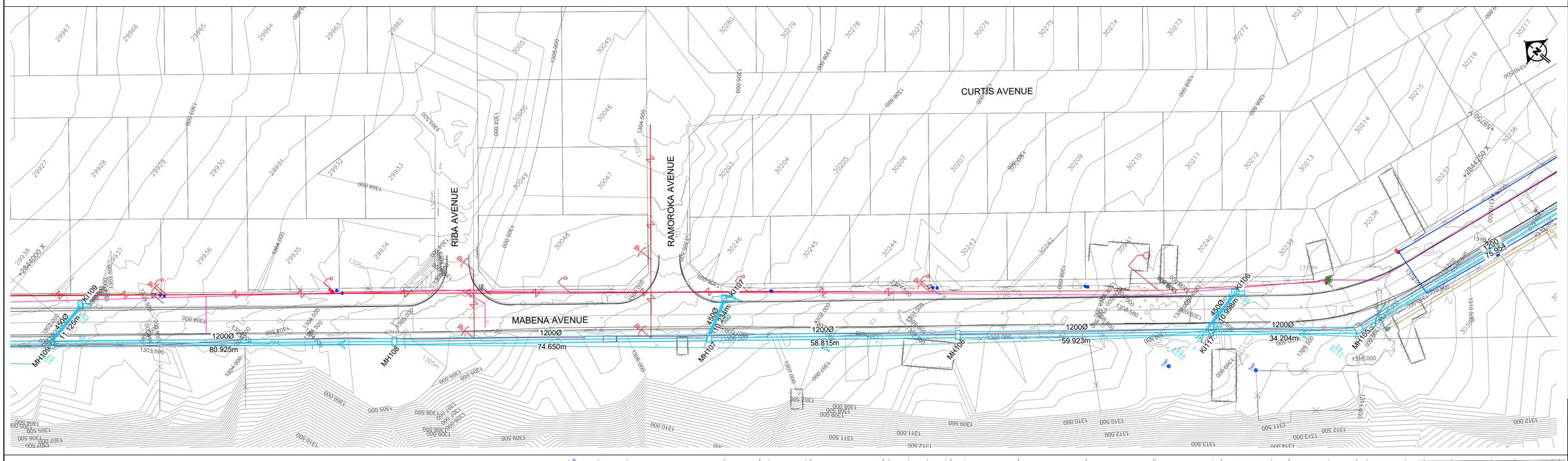
PROJECT ENGINEER: SIGNATURE / DATE
INSPECTOR OF WORKS: SIGNATURE / DATE
REMARKS:

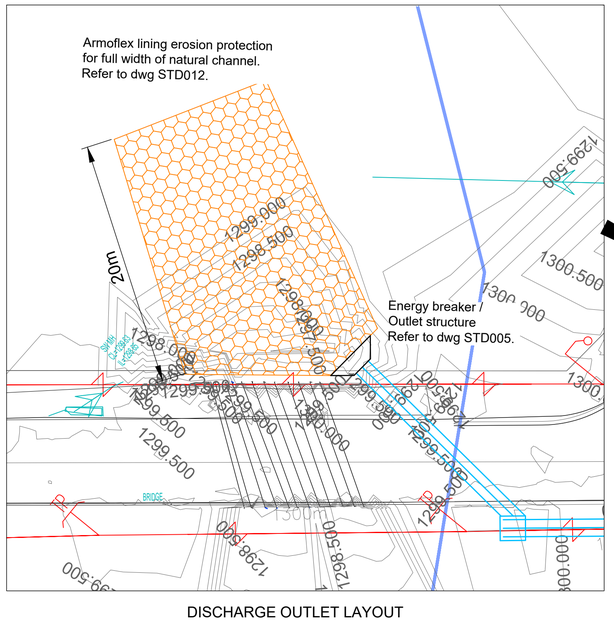
DRAWING NO. AFR210/TSW-003
REVISION

DRAWING_LOCATION: C:\Users\Morake Motsisi\AFRISA CONSULTING (PTY) LTD\Afrisa Consulting RSA PROJECTS 200 - PROJECTS\AFR210-MAHUBE VALLEY\G1 Afrisa Drawings\Drawings\DETAILED\AFR210-DSW001-004-Stormwater Layout.dwg

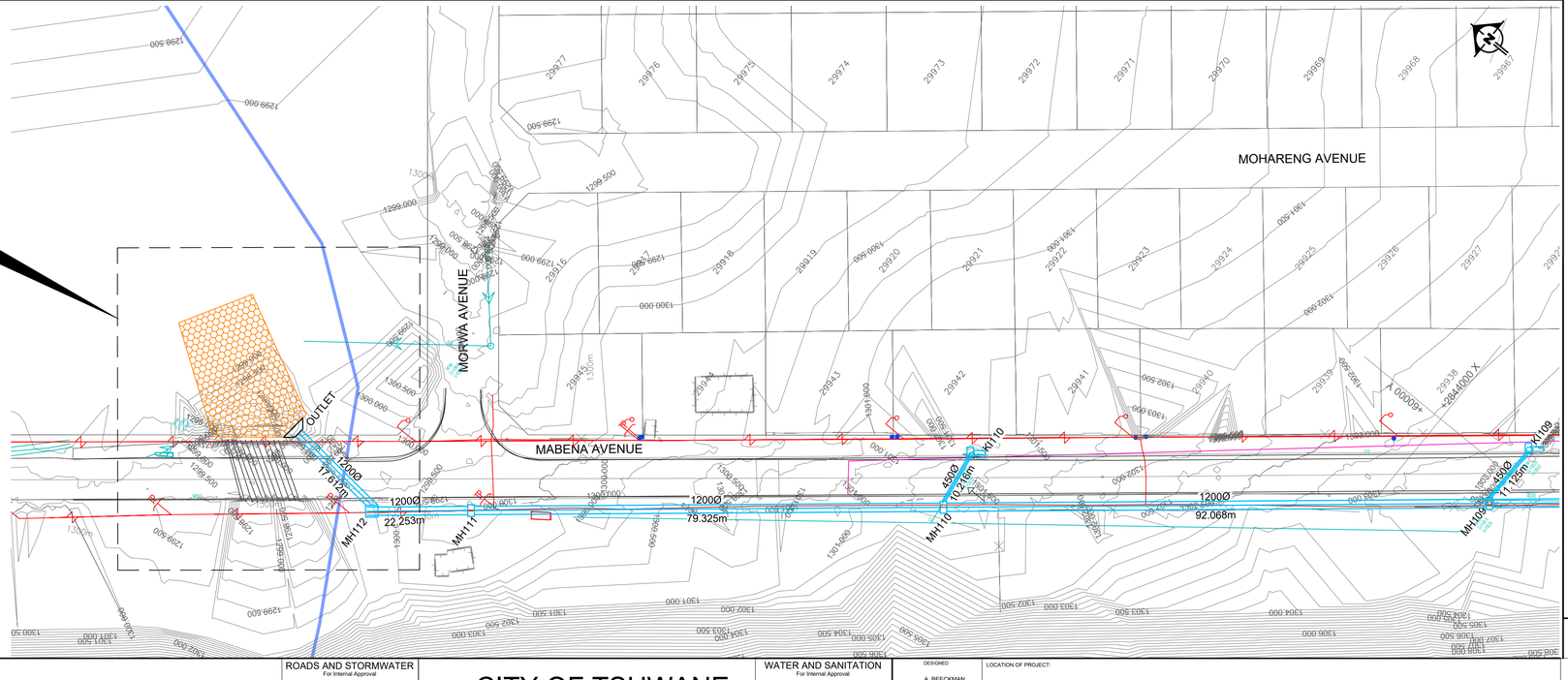
Stormwater Schedule

Name	Y-Coord	X-Coord	Cover	Inlet	Depth	Length	Slope	Type	Size	Level In	Level Out
MH109	60005.88	2844015.34	1303.14	1301.07	2.08						
						92.07	1.92 %	50D Concrete	1200 mm	1301.07	1299.30
MH110	60064.61	2843944.44	1301.37	1299.30	2.08						
						79.33	2.23 %	50D Concrete	1200 mm	1299.30	1297.53
MH111	60115.07	2843883.23	1299.60	1297.53	2.08						
						22.25	0.50 %	50D Concrete	1200 mm	1297.53	1297.42
MH112	60130.37	2843867.07	1299.94	1297.42	2.52						
KI110	60054.55	2843942.68	1301.08	1299.79	1.29	10.22	4.83 %	50D Concrete	450 mm	1299.79	1299.30
MH110	60064.61	2843944.44	1301.37	1299.30	2.08						





DISCHARGE OUTLET LAYOUT



NOTES AND SPECIFICATIONS

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- STREAM / RIVER
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- SEWER LINE
- SEWER MANHOLE
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- WATER METER
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- FIBRE LINE

SCALE 1:1000 (0 10 20 40 60 80m)

AMENDMENTS

Rev	Date:	Drawn	Aprvd	DESCRIPTION
0	20/10/24	A.B.E	P.N	Issued for discussion
1	28/03/25	A.B.E	P.N	Issued for tender

CONSULTANTS DETAILS:

AFRISA CONSULTING PTY LTD
23 VENTER STREET
POSTNET SUITE 26
PRIVATE BAG X11326
NELSPRUIT
1200
TEL : 087 700 9200
email : info@afrisa.net
web : www.afrisa.net

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ROADS AND STORMWATER — For Internal Approval
RECEIVED SIGN WHEN APPLICABLE
DIRECTOR: INFRASTRUCTURE PROVISION — SIGNATURE / DATE
DIRECTOR: INFRASTRUCTURE PLANNING & MANAGEMENT — SIGNATURE / DATE
DIRECTOR: INFRASTRUCTURE MAINTENANCE MANAGEMENT — SIGNATURE / DATE
DIRECTOR: TRAFFIC ENGINEERING AND OPERATIONS — SIGNATURE / DATE
DIRECTOR: PROJECT MANAGEMENT — SIGNATURE / DATE
DIRECTOR: ASSET MANAGEMENT — SIGNATURE / DATE

CITY OF TSHWANE

TRANSPORT DEPARTMENT
P. LETLONKANE
STRATEGIC EXECUTIVE DIRECTOR

ROADS AND STORMWATER
L.V KEGAKILWE
EXECUTIVE DIRECTOR:

P.O. BOX 1409
PRETORIA
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CITY OF TSHWANE
IGNITING EXCELLENCE

WATER AND SANITATION — For Internal Approval
RECEIVED SIGN WHEN APPLICABLE
DIRECTOR: INFRASTRUCTURE PROVISION — SIGNATURE / DATE
DIRECTOR: WATER DISTRIBUTION — SIGNATURE / DATE
DIRECTOR: BULK WATER SERVICES — SIGNATURE / DATE
DIRECTOR: WATER SERVICES DEV. & REGULATIONS — SIGNATURE / DATE
DIRECTOR: WASTE WATER COLLECTION — SIGNATURE / DATE
DIRECTOR: WASTE WATER TREATMENT — SIGNATURE / DATE

DESIGNED: A. BEECKMAN
DRAWN: P. NKOSI
CHECKED: C. ISA
CIVIL DRAUGHTING SERVICES: A. BEECKMAN — SIGNATURE / DATE
SCALE: 1:500
DATE: OCTOBER 2024

LOCATION OF PROJECT:

MAMELODI/MAHUBE VALLEY

DESCRIPTION OF PROJECT:

MAHUBE VALLEY: PHASE 3
MAJOR STORMWATER DRAINAGE SYSTEM
MABENA AVENUE STORMWATER LAYOUT

CONTRACT No.: RTD 03-2025/26
PROJECT No.: COO 01 - 2021/22 (TIDC 10/2024)
SHEET NO: 2 OF 2

PROJECT STATUS

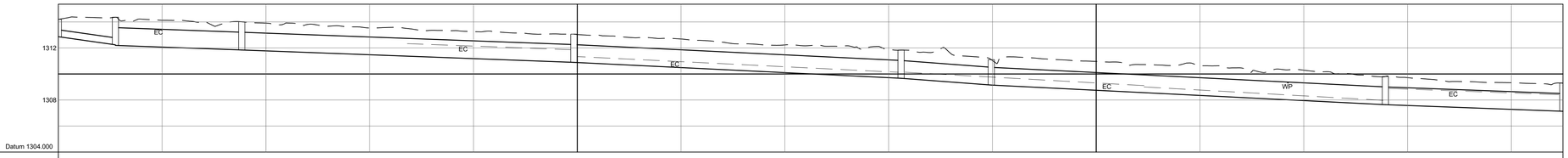
CONCEPT DRAWING	TENDER DRAWING	APPROVED FOR CONSTRUCTION DRAWING	AS BUILT DRAWING
○	●	○	○

PROJECT ENGINEER: ..... SIGNATURE ..... DATE
INSPECTOR OF WORKS: ..... SIGNATURE ..... DATE
REMARKS:

DRAWING NO: AFR210/TSW-004

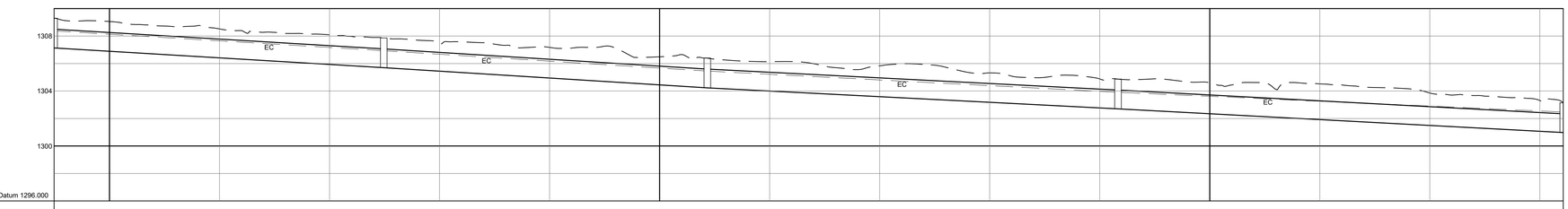
DRAWING_LOCATION: C:\Users\Morake Motsisi\AFRISA CONSULTING (PTY) LTD\Afrisa Consulting RSA PROJECTS 200 - PROJECTS\AFR210-MAHUBE VALLEY\G1 Afrisa Drawings\Drawings\DETAILED\AFR210-DSW001-004-Stormwater Layout.dwg

STORMWATER
LONGITUDINAL SECTIONS



CHAINAGE	0.000	10.994	19.280	35.328	99.342	162.400	179.779	236.851	255.733	289.937
GROUND LEVEL	1314.198	1314.382		1314.009	1313.058	1311.835	1311.098		1309.805	1309.268
NODE NAME	KI100	MH100		MH101	MH102	MH103	MH104		MH105	KI117
INLET/OUTLET LEVEL	1312.909	1312.286 1312.286		1311.933 1311.933	1310.982 1310.982	1309.759 1309.759	1309.236 1309.236		1307.729 1307.729	1307.222 1307.222
MANHOLE DEPTH	1.289	2.076		2.076	2.076	2.076	1.862		2.076	2.076
LENGTH		11.012 m		24.337 m	64.021 m	63.070 m	17.387 m		75.969 m	34.208 m
LINK TYPE / LINK SIZE		50D Concrete 450 mm		50D Concrete 1200 mm	50D Concrete 1200 mm	50D Concrete 1200 mm	50D Concrete 1200 mm		50D Concrete 1200 mm	50D Concrete 1200 mm
SLOPE		5.662%		1.453%	1.486%	1.939%	3.010%		1.983%	1.485%
FLOW		0.000 m³/s		3.407 m³/s	4.076 m³/s	4.076 m³/s	4.399 m³/s		4.829 m³/s	4.829 m³/s
CAPACITY		0.708 m³/s		4.905 m³/s	4.960 m³/s	5.666 m³/s	7.060 m³/s		5.731 m³/s	4.958 m³/s
VELOCITY		0.000 m/s		4.522 m/s	4.707 m/s	5.259 m/s	6.362 m/s		5.458 m/s	4.717 m/s

NODE KI100 to KI117



CHAINAGE	289.937	349.860	408.875	483.325	564.290
GROUND LEVEL	1309.268	1307.866	1306.397	1304.869	1303.144
NODE NAME	KI117	MH106	MH107	MH108	MH109
INLET/OUTLET LEVEL	1307.222	1305.790 1305.790	1304.321 1304.321	1302.793 1302.793	1301.088 1301.088
MANHOLE DEPTH	2.076	2.076	2.076	2.076	2.076
LENGTH		59.940 m	58.834 m	74.665 m	80.943 m
LINK TYPE / LINK SIZE		50D Concrete 1200 mm	50D Concrete 1200 mm	50D Concrete 1200 mm	50D Concrete 1200 mm
SLOPE		2.390%	2.497%	2.047%	2.131%
FLOW		4.930 m³/s	4.930 m³/s	4.990 m³/s	4.990 m³/s
CAPACITY		6.290 m³/s	6.431 m³/s	5.822 m³/s	5.940 m³/s
VELOCITY		5.929 m/s	6.039 m/s	5.555 m/s	5.655 m/s

NODE KI117 to MH109

NOTES AND SPECIFICATIONS

GENERAL

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3 DO NOT SCALE FROM THESE DRAWINGS.

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5 ALL CONSTRUCTION TO BE DONE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS FOR MUNICIPAL CIVIL ENGINEERING WORKS, THIRD EDITION 2005 AND THE STANDARD CTMM DETAIL DRAWINGS

6 THESE DRAWINGS MUST BE READ IN CONJUNCTION WITH THE ARCHITECTS DRAWINGS.(IF APPLICABLE)

7 THIS DRAWING MUST BE READ IN CONJUNCTION WITH THE STANDARD SPECIFICATIONS FOR MUNICIPAL CIVIL ENGINEERING WORKS, SERIES 4.

8 THE SIGNATURE OR INITIALS ON THIS DRAWING, OF ANY MANAGER OF THE PUBLIC WORKS AND INFRASTRUCTURE DEVELOPMENT DEPARTMENT, IN NO WAY REMOVES ANY RESPONSIBILITY WHATSOEVER FROM THE CONSULTANT.

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10 FINAL POSITION OF SERVICES TO BE DETERMINED ON SITE.

STORMWATER

1 PIPE DIAMETER TO BE AS SHOW ON THE DRAWING.

2 MINIMUM FALL TO BE 1:200.

3 PIPE BEDDING TO BE CLASS B UNLESS OTHERWISE SPECIFIED.

4 ALL EXCAVATIONS AND BEDDING MUST BE INSPECTED AND APPROVED BY THE ENGINEER BEFORE LAYING OF ANY PIPES.

5 CLEAN EXISTING STORMWATER INLETS AND REPAIR WHERE NECESSARY.(IF APPLICABLE)

LEGEND:

SP – SEWER PIPE

WP – WATER PIPE

EC – ELECTRICAL CABLE

0 10 20 40 60 80m

SCALE 1:1000

AMENDMENTS

Rev	Date:	Drawn	Aprvd	DESCRIPTION
0	20/10/24	A.B.E	P.N	Issued for discussion
1	28/03/25	A.B.E	P.N	Issued for tender

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DIRECTOR: WASTE WATER TREATMENT
SIGNATURE DATE

DESIGNED: A. BEECKMAN
DRAWN: P. NKOSI
CHECKED: C. ISA
CIVIL DRAUGHTING SERVICES: A. BEECKMAN
SIGNATURE DATE
SCALE
DATE: OCTOBER 2024

LOCATION OF PROJECT:

MAMELODI/MAHUBE VALLEY

DESCRIPTION OF PROJECT:

MAHUBE VALLEY: PHASE 3
MAJOR STORMWATER DRAINAGE SYSTEM
MABENA AVENUE STORMWATER LONGSECTION

CONTRACT No. RTD 03-2025/26 | PROJECT No. COO 01 - 2021/22 (TIDC 10/2024) | SHEET NO: 1 OF 4

PROJECT STATUS

○ CONCEPT DRAWING ● TENDER DRAWING ○ APPROVED FOR CONSTRUCTION DRAWING ○ AS BUILT DRAWING

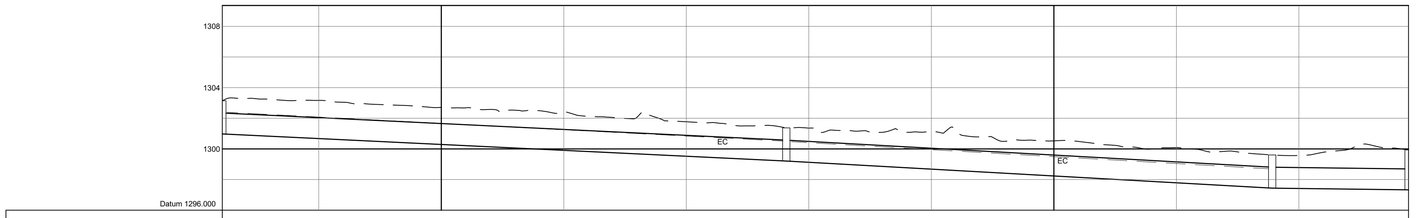
PROJECT ENGINEER:
SIGNATURE DATE

INSPECTOR OF WORKS:
SIGNATURE DATE

REMARKS:

DRAWING NO: AFR210/TSW-104

DRAWING_LOCATION: C:\Users\Morake Motsisi\AFRISA CONSULTING (PTY) LTD\Afrisa Consulting RSA PROJECTS 200 - PROJECTS\AFR210-MAHUBE VALLEY\G1 Afrisa Drawings\Drawings\TENDER\AFR210-TSW-104-107-Mabena SW Longsections.dwg



CHAINAGE	564.250	589.715	656.318	715.643	767.896
GROUND LEVEL	1303.144		1301.373	1299.604	1299.837
NODE NAME	MH109		MH110	MH111	MH112
INLET/OUTLET LEVEL	1301.068		1299.297 1299.297	1297.528 1297.528	1297.417 1297.417
MANHOLE DEPTH	2.076		2.076	2.076	2.520
LENGTH	92.085 m		79.345 m		22.253 m
LINK TYPE / LINK SIZE	50D Concrete 1200 mm		50D Concrete 1200 mm		50D Concrete 1200 mm
SLOPE	1.924%		2.230%		0.500%
FLOW CAPACITY	5.066 m³/s 5.645 m³/s		5.085 m³/s 6.076 m³/s		2.877 m³/s 2.877 m³/s
VELOCITY	5.405 m/s		5.781 m/s		2.420 m/s

NODE MH109 to MH112

NOTES AND SPECIFICATIONS

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STORMWATER

1 PIPE DIAMETER TO BE AS SHOW ON THE DRAWING.

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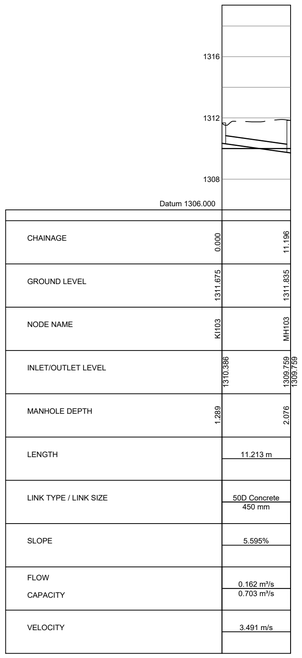
LEGEND:

SP – SEWER PIPE

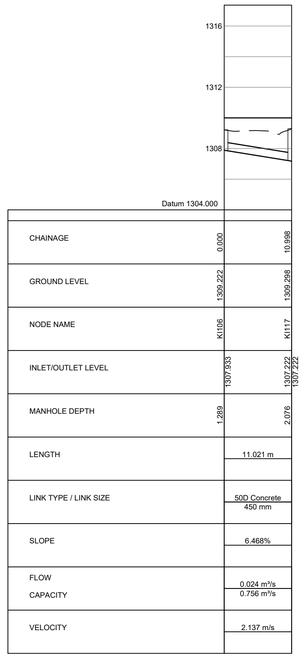
WP – WATER PIPE

EC – ELECTRICAL CABLE



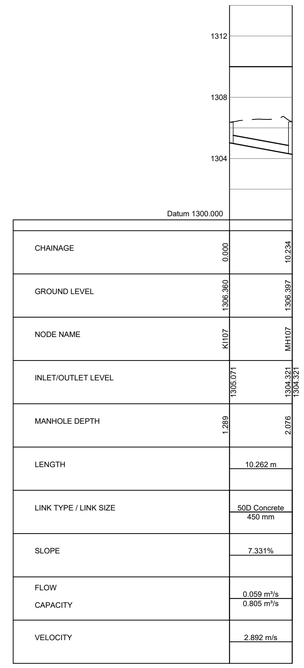
CHAINAGE	0.000	11.196
GROUND LEVEL	1311.675	1311.835
NODE NAME	KI103	MH103
INLET/OUTLET LEVEL	1310.386	1309.759 1309.759
MANHOLE DEPTH	1.289	2.076
LENGTH		11.213 m
LINK TYPE / LINK SIZE		50D Concrete 450 mm
SLOPE		5.595%
FLOW CAPACITY		0.162 m³/s 0.703 m³/s
VELOCITY		3.491 m/s

NODE KI103 to MH103



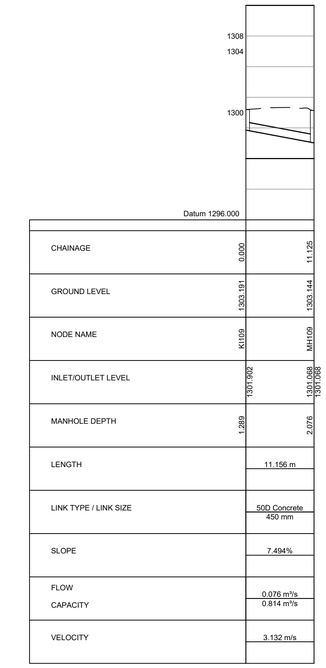
CHAINAGE	0.000	10.988
GROUND LEVEL	1309.222	1309.268
NODE NAME	KI106	KI117
INLET/OUTLET LEVEL	1307.933	1307.222 1307.222
MANHOLE DEPTH	1.289	2.076
LENGTH		11.021 m
LINK TYPE / LINK SIZE		50D Concrete 450 mm
SLOPE		6.468%
FLOW CAPACITY		0.024 m³/s 0.756 m³/s
VELOCITY		2.137 m/s

NODE KI106 to KI117



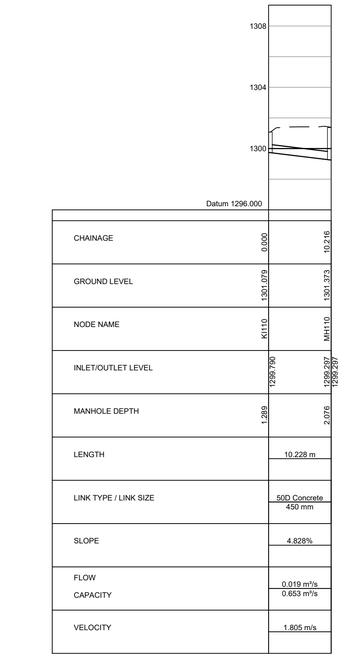
CHAINAGE	0.000	10.234
GROUND LEVEL	1306.360	1306.397
NODE NAME	KI107	MH107
INLET/OUTLET LEVEL	1306.071	1304.321 1304.321
MANHOLE DEPTH	1.289	2.076
LENGTH		10.262 m
LINK TYPE / LINK SIZE		50D Concrete 450 mm
SLOPE		7.331%
FLOW CAPACITY		0.059 m³/s 0.805 m³/s
VELOCITY		2.892 m/s

NODE KI107 to MH107



CHAINAGE	0.000	11.125
GROUND LEVEL	1303.191	1303.144
NODE NAME	KI109	MH109
INLET/OUTLET LEVEL	1301.902	1301.068 1301.068
MANHOLE DEPTH	1.289	2.076
LENGTH		11.156 m
LINK TYPE / LINK SIZE		50D Concrete 450 mm
SLOPE		7.494%
FLOW CAPACITY		0.076 m³/s 0.814 m³/s
VELOCITY		3.132 m/s

NODE KI109 to MH109



CHAINAGE	0.000	10.216
GROUND LEVEL	1301.079	1301.373
NODE NAME	KI110	MH110
INLET/OUTLET LEVEL	1299.790	1299.297 1299.297
MANHOLE DEPTH	1.289	2.076
LENGTH		10.228 m
LINK TYPE / LINK SIZE		50D Concrete 450 mm
SLOPE		4.828%
FLOW CAPACITY		0.019 m³/s 0.653 m³/s
VELOCITY		1.805 m/s

NODE KI110 to MH110

0 10 20 40 60 80m

SCALE 1:1000

AMENDMENTS

Rev	Date:	Drawn	Aprvd	DESCRIPTION
0	20/10/24	A.B.E	P.N	Issued for discussion
1	28/03/25	A.B.E	P.N	Issued for tender

CONSULTANTS DETAILS:

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ISO 9001:2015 CERTIFIED

ROADS AND STORMWATER
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WATER AND SANITATION
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DIRECTOR: WATER SERVICES DEV. & REGULATIONS
DIRECTOR: WASTE WATER COLLECTION
DIRECTOR: WASTE WATER TREATMENT

DESIGNED: A. BEECKMAN
DRAWN: P. NKOSI
CHECKED: C. ISA
CIVIL DRAUGHTING SERVICES: A. BEECKMAN
SIGNATURE DATE
SCALE
DATE: OCTOBER 2024

LOCATION OF PROJECT:
MAMELODI/MAHUBE VALLEY

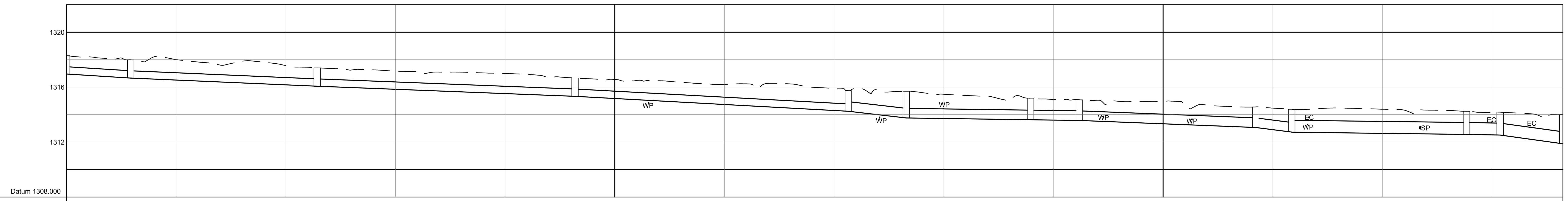
DESCRIPTION OF PROJECT
MAHUBE VALLEY: PHASE 3
MAJOR STORMWATER DRAINAGE SYSTEM
MABENA AVENUE STORMWATER LONGSECTION

PROJECT STATUS
○ CONCEPT DRAWING ● TENDER DRAWING ○ APPROVED FOR CONSTRUCTION DRAWING ○ AS BUILT DRAWING

PROJECT ENGINEER: SIGNATURE DATE
INSPECTOR OF WORKS: SIGNATURE DATE
REMARKS:

CONTRACT No.: RTD 03-2025/26
PROJECT No.: COO 01 - 2021/22 (TIDC 10/2024)
SHEET NO: 2 OF 4
DRAWING NO: AFR210/TSW-105

DRAWING_LOCATION: C:\Users\Morake Motsisi\AFRISA CONSULTING (PTY) LTD\Afrisa Consulting RSA PROJECTS 200 - PROJECTS\AFR210-MAHUBE VALLEY\G1 Afrisa Drawings\Drawings\TENDER\AFR210-TSW-104-107-Mabena SW Longsections.dwg



CHAINAGE	GROUND LEVEL	NODE NAME	INLET/OUTLET LEVEL	MANHOLE DEPTH
0.000	1318.290	MH140	1317.001	1.289
11.701	1317.993	MH141	1316.704 / 1316.704	1.289
45.731	1317.400	MH142	1316.111 / 1316.111	1.289
92.747	1316.664	MH143	1315.375 / 1315.375	1.289
106.174				
142.603	1315.743	MH144	1314.288 / 1314.288	1.455
148.303				
153.155	1315.697	MH145	1313.799 / 1313.799	1.898
159.916				
175.836	1315.194	MH146	1313.670 / 1313.670	1.524
184.726	1315.078	MH147	1313.619 / 1313.619	1.459
189.006				
205.156				
216.893	1314.562	MH148	1313.107 / 1313.107	1.455
223.459	1314.387	MH149	1312.771 / 1312.771	1.616
226.345 / 226.587				
246.903				
255.346	1314.239	MH150	1312.612 / 1312.612	1.627
259.929				
261.472	1314.180	MH151	1312.564 / 1312.564	1.616
267.079				
272.914	1314.009	MH101	1311.933 / 1311.933	2.076

LENGTH	LINK TYPE / LINK SIZE	SLOPE	FLOW	CAPACITY	VELOCITY
11.705 m	50D Concrete 450 mm	2.535%	0.203 m³/s	0.473 m³/s	2.776 m/s
34.035 m	50D Concrete 450 mm	1.742%	0.203 m³/s	0.392 m³/s	2.410 m/s
47.022 m	50D Concrete 450 mm	1.566%	0.203 m³/s	0.372 m³/s	2.314 m/s
49.867 m	50D Concrete 450 mm	2.181%	0.338 m³/s	0.439 m³/s	2.937 m/s
10.564 m	50D Concrete 600 mm	4.625%	0.467 m³/s	1.489 m³/s	4.264 m/s
22.681 m	50D Concrete 600 mm	0.570%	0.521 m³/s	0.523 m³/s	1.834 m/s
8.891 m	50D Concrete 600 mm	0.571%	0.521 m³/s	0.523 m³/s	1.841 m/s
32.171 m	50D Concrete 600 mm	1.593%	0.521 m³/s	0.874 m³/s	2.944 m/s
6.575 m	50D Concrete 600 mm	5.117%	0.521 m³/s	1.567 m³/s	4.562 m/s
31.887 m	50D Concrete 750 mm	0.500%	0.669 m³/s	0.882 m³/s	2.007 m/s
6.126 m	50D Concrete 750 mm	0.782%	0.669 m³/s	1.104 m³/s	2.399 m/s
11.460 m	50D Concrete 750 mm	5.515%	0.669 m³/s	2.931 m³/s	4.951 m/s

NODE MH140 to MH101

NOTES AND SPECIFICATIONS

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1. ALL MATERIAL AND WORKMANSHIP MUST COMPLY WITH THE REQUIREMENTS OF THE LATEST RELEVANT SABS REQUIREMENTS.
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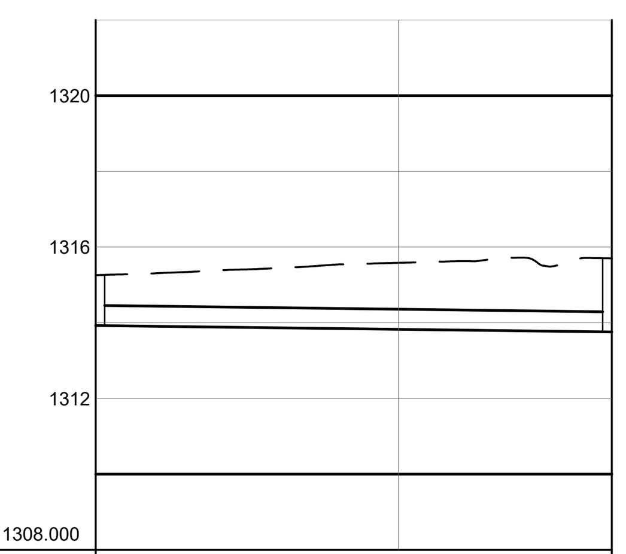
3. DO NOT SCALE FROM THESE DRAWINGS.
4. ALL DIMENSIONS MUST BE CHECKED AND APPROVED ON SITE.
5. ALL CONSTRUCTION TO BE DONE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS FOR MUNICIPAL CIVIL ENGINEERING WORKS, THIRD EDITION 2005 AND THE STANDARD CTMM DETAIL DRAWINGS
6. THESE DRAWINGS MUST BE READ IN CONJUNCTION WITH THE ARCHITECTS DRAWINGS.(IF APPLICABLE)
7. THIS DRAWING MUST BE READ IN CONJUNCTION WITH THE STANDARD SPECIFICATIONS FOR MUNICIPAL CIVIL ENGINEERING WORKS, SERIES 4.
8. THE SIGNATURE OR INITIALS ON THIS DRAWING, OF ANY MANAGER OF THE PUBLIC WORKS AND INFRASTRUCTURE DEVELOPMENT DEPARTMENT, IN NO WAY REMOVES ANY RESPONSIBILITY WHATSOEVER FROM THE CONSULTANT.
9. THE CONSULTANT REMAINS RESPONSIBLE TO ENSURE THAT ALL THE GUIDELINES, STANDARD DRAWINGS, STANDARDS AND SPECIFICATIONS OF THE PUBLIC WORKS AND INFRASTRUCTURE DEVELOPMENT DEPARTMENT HAVE BEEN MET AND ARE COMPLIED WITH.
10. FINAL POSITION OF SERVICES TO BE DETERMINED ON SITE.

STORMWATER

1. PIPE DIAMETER TO BE AS SHOW ON THE DRAWING.
2. MINIMUM FALL TO BE 1:200.
3. PIPE BEDDING TO BE CLASS B UNLESS OTHERWISE SPECIFIED.
4. ALL EXCAVATIONS AND BEDDING MUST BE INSPECTED AND APPROVED BY THE ENGINEER BEFORE LAYING OF ANY PIPES.
5. CLEAN EXISTING STORMWATER INLETS AND REPAIR WHERE NECESSARY.(IF APPLICABLE)

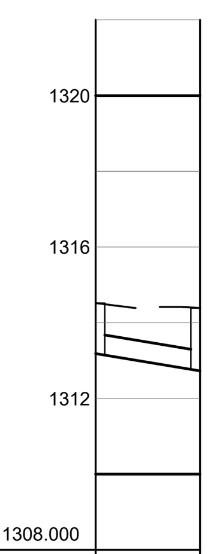
LEGEND:

SP – SEWER PIPE
WP – WATER PIPE
EC – ELECTRICAL CABLE



	KI145	MH145
CHAINAGE	0.000	34.078
GROUND LEVEL	1315.259	1315.697
NODE NAME	KI145	MH145
INLET/OUTLET LEVEL	1313.970	1313.799 / 1313.799
MANHOLE DEPTH	1.289	1.898
LENGTH	34.079 m	
LINK TYPE / LINK SIZE	50D Concrete 450 mm	
SLOPE	0.500%	
FLOW	0.055 m³/s	
CAPACITY	0.210 m³/s	
VELOCITY	1.080 m/s	

NODE KI145 to MH145



	KI149	MH149
CHAINAGE	0.000	6.875
GROUND LEVEL	1314.517	1314.387
NODE NAME	KI149	MH149
INLET/OUTLET LEVEL	1313.228	1312.771 / 1312.771
MANHOLE DEPTH	1.289	1.616
LENGTH	6.891 m	
LINK TYPE / LINK SIZE	50D Concrete 450 mm	
SLOPE	6.639%	
FLOW	0.124 m³/s	
CAPACITY	0.766 m³/s	
VELOCITY	3.446 m/s	

NODE KI149 to MH149

0 10 20 40 60 80m
SCALE 1:1000

AMENDMENTS

Rev	Date:	Drawn	Aprvd	DESCRIPTION
0	20/10/24	A.B.E	P.N	Issued for discussion
1	28/03/25	A.B.E	P.N	Issued for tender

CONSULTANTS DETAILS:
AFRISA CONSULTING PTY LTD
23 VENTER STREET
POSTNET SUITE 26
PRIVATE BAG X11326
NELSPRUIT
1200
TEL : 087 700 9200
email : info@afrisa.net
web : www.afrisa.net
ISO 9001:2015 CERTIFIED

ROADS AND STORMWATER
For Internal Approval
RECIEVED SIGN WHEN APPLICABLE
DIRECTOR: INFRASTRUCTURE PROVISION — SIGNATURE / DATE
DIRECTOR: INFRASTRUCTURE PLANNING & MANAGEMENT — SIGNATURE / DATE
DIRECTOR: INFRASTRUCTURE MAINTENANCE MANAGEMENT — SIGNATURE / DATE
DIRECTOR: TRAFFIC ENGINEERING AND OPERATIONS — SIGNATURE / DATE
DIRECTOR: PROJECT MANAGEMENT — SIGNATURE / DATE
DIRECTOR: ASSET MANAGEMENT — SIGNATURE / DATE

CITY OF TSHWANE
TRANSPORT DEPARTMENT
P. LETLONKANE
STRATEGIC EXECUTIVE DIRECTOR
ROADS AND STORMWATER
L.V KEGAKILWE
EXECUTIVE DIRECTOR:
P.O. BOX 1409
PRETORIA
0001
CITY OF TSHWANE
IGNITING EXCELLENCE

WATER AND SANITATION
For Internal Approval
RECIEVED SIGN WHEN APPLICABLE
DIRECTOR: INFRASTRUCTURE PROVISION — SIGNATURE / DATE
DIRECTOR: WATER DISTRIBUTION — SIGNATURE / DATE
DIRECTOR: BULK WATER SERVICES — SIGNATURE / DATE
DIRECTOR: WATER SERVICES DEV. & REGULATIONS — SIGNATURE / DATE
DIRECTOR: WASTE WATER COLLECTION — SIGNATURE / DATE
DIRECTOR: WASTE WATER TREATMENT — SIGNATURE / DATE

DESIGNED: A. BEECKMAN
DRAWN: P. NKOSI
CHECKED: C. ISA
CIVIL DRAUGHTING SERVICES: A. BEECKMAN
SIGNATURE: DATE:
SCALE
DATE: OCTOBER 2024

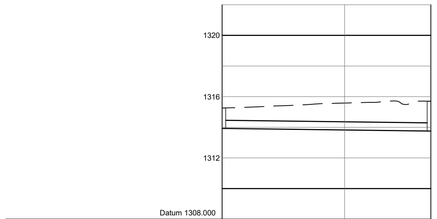
LOCATION OF PROJECT:
MAMELODI/MAHUBE VALLEY

DESCRIPTION OF PROJECT
MAHUBE VALLEY: PHASE 3
MAJOR STORMWATER DRAINAGE SYSTEM
MABENA AVENUE STORMWATER LONGSECTION

CONTRACT No. : RTD 03-2025/26
PROJECT No. : COO 01 - 2021/22 (TIDC 10/2024)
SHEET NO: 3 OF 4

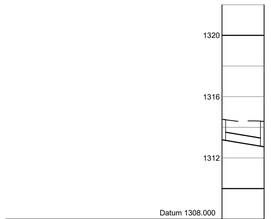
PROJECT STATUS
CONCEPT DRAWING / TENDER DRAWING (selected) / APPROVED FOR CONSTRUCTION DRAWING / AS BUILT DRAWING
PROJECT ENGINEER: SIGNATURE / DATE
INSPECTOR OF WORKS: SIGNATURE / DATE
REMARKS:
DRAWING NO. AFR210/TSW-106
REVISION 1

DRAWING_LOCATION: C:\Users\Morake Motsisi\AFRISA CONSULTING (PTY) LTD\Afrisa Consulting RSA PROJECTS 200 - PROJECTS\AFR210-MAHUBE VALLEY\G1 Afrisa Drawings\Drawings\TENDER\AFR210-TSW-104-107-Mabena SW Longsections.dwg



CHAINAGE	0.000	34.078
GROUND LEVEL	1315.259	1315.697
NODE NAME	KI145	MH145
INLET/OUTLET LEVEL	1313.970	1313.799 1313.799
MANHOLE DEPTH	1.289	1.898
LENGTH	34.079 m	
LINK TYPE / LINK SIZE	50D Concrete 450 mm	
SLOPE	0.500%	
FLOW CAPACITY	0.055 m³/s 0.210 m³/s	
VELOCITY	1.080 m/s	

NODE KI145 to MH145



CHAINAGE	0.000	6.875
GROUND LEVEL	1314.517	1314.387
NODE NAME	KI149	MH149
INLET/OUTLET LEVEL	1313.228	1312.771 1312.771
MANHOLE DEPTH	1.289	1.616
LENGTH	6.891 m	
LINK TYPE / LINK SIZE	50D Concrete 450 mm	
SLOPE	6.639%	
FLOW CAPACITY	0.124 m³/s 0.766 m³/s	
VELOCITY	3.446 m/s	

NODE KI149 to MH149

NOTES AND SPECIFICATIONS

GENERAL

1 ALL MATERIAL AND WORKMANSHIP MUST COMPLY WITH THE REQUIREMENTS OF THE LATEST RELEVANT SABS REQUIREMENTS.

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STORMWATER

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2 MINIMUM FALL TO BE 1:200.

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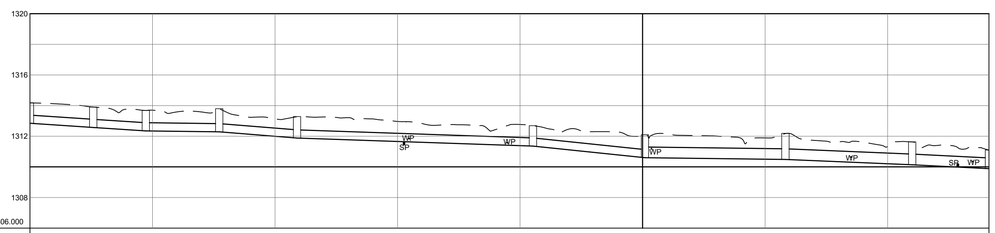
5 CLEAN EXISTING STORMWATER INLETS AND REPAIR WHERE NECESSARY.(IF APPLICABLE)

LEGEND:

SP – SEWER PIPE

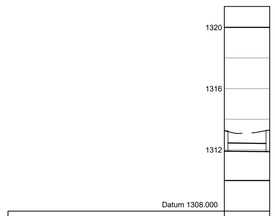
WP – WATER PIPE

EC – ELECTRICAL CABLE



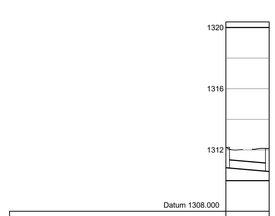
CHAINAGE	0.000	10.328	18.907	30.894	43.597	61.067 61.086	77.913	82.103	100.384 101.443	123.312	134.050	144.010	151.469	153.979	156.539
GROUND LEVEL	1314.179	1313.905	1313.682	1313.797	1313.281	1312.688	1312.096	1312.192	1311.635	1311.088
NODE NAME	MH120	MH121	MH122	MH123	MH124	MH125	MH126	MH127	MH128	MH104
INLET/OUTLET LEVEL	1312.890	1312.616 1312.616	1312.393 1312.393	1312.233 1312.233	1311.926 1311.926	1311.399 1311.399	1310.641 1310.641	1310.527 1310.527	1310.180 1310.180	1309.929 1309.929
MANHOLE DEPTH	1.289	1.289	1.289	1.466	1.356	1.289	1.455	1.665	1.455	1.882
LENGTH		10.331 m	8.582 m	11.987 m	12.710 m	38.509 m		18.297 m	22.928 m	20.701 m	12.532 m
LINK TYPE / LINK SIZE		50D Concrete 450 mm	50D Concrete 450 mm	50D Concrete 450 mm	50D Concrete 450 mm	50D Concrete 450 mm		50D Concrete 450 mm	50D Concrete 600 mm	50D Concrete 600 mm	50D Concrete 600 mm
SLOPE		2.652%	2.602%	0.500%	3.205%	1.367%		4.146%	0.500%	1.676%	2.000%
FLOW CAPACITY		0.112 m³/s 0.484 m³/s	0.112 m³/s 0.480 m³/s	0.112 m³/s 0.210 m³/s	0.174 m³/s 0.532 m³/s	0.242 m³/s 0.348 m³/s		0.242 m³/s 0.605 m³/s	0.338 m³/s 0.490 m³/s	0.361 m³/s 0.896 m³/s	0.430 m³/s 0.979 m³/s
VELOCITY		2.406 m/s	2.389 m/s	1.300 m/s	2.905 m/s	2.283 m/s		3.488 m/s	1.701 m/s	2.744 m/s	3.065 m/s

NODE MH120 to MH104



CHAINAGE	0.000	7.412
GROUND LEVEL	1313.252	1313.281
NODE NAME	KI124	MH124
INLET/OUTLET LEVEL	1311.963	1311.926 1311.926
MANHOLE DEPTH	1.289	1.356
LENGTH	7.412 m	
LINK TYPE / LINK SIZE	50D Concrete 450 mm	
SLOPE	0.500%	
FLOW CAPACITY	0.069 m³/s 0.210 m³/s	
VELOCITY	1.149 m/s	

NODE KI124 to MH124



CHAINAGE	0.000	7.059
GROUND LEVEL	1312.176	1312.096
NODE NAME	KI126	MH126
INLET/OUTLET LEVEL	1310.987	1310.641 1310.641
MANHOLE DEPTH	1.289	1.455
LENGTH	7.064 m	
LINK TYPE / LINK SIZE	50D Concrete 450 mm	
SLOPE	3.487%	
FLOW CAPACITY	0.095 m³/s 0.555 m³/s	
VELOCITY	2.538 m/s	

NODE KI126 to MH126

0 10 20 40 60 80m

SCALE 1:1000

AMENDMENTS

Rev	Date:	Drawn	Aprvd	DESCRIPTION
0	20/10/24	A.B.E	P.N	Issued for discussion
1	28/03/25	A.B.E	P.N	Issued for tender

CONSULTANTS DETAILS:

Afrisa CONSULTING — Transforming visions into reality

AFRISA CONSULTING PTY LTD
23 VENTER STREET
POSTNET SUITE 26
PRIVATE BAG X11326
NELSPRUIT
1200
TEL : 087 700 9200
email : info@afrisa.net
web : www.afrisa.net

CESA Consulting Engineers South Africa

ISO 9001:2015 CERTIFIED

ROADS AND STORMWATER
For Internal Approval
REQUIRED / SIGN WHEN APPLICABLE
DIRECTOR: INFRASTRUCTURE PROVISION — SIGNATURE / DATE
DIRECTOR: INFRASTRUCTURE PLANNING & MANAGEMENT — SIGNATURE / DATE
DIRECTOR: INFRASTRUCTURE MAINTENANCE MANAGEMENT — SIGNATURE / DATE
DIRECTOR: TRAFFIC ENGINEERING AND OPERATIONS — SIGNATURE / DATE
DIRECTOR: PROJECT MANAGEMENT — SIGNATURE / DATE
DIRECTOR: ASSET MANAGEMENT — SIGNATURE / DATE

CITY OF TSHWANE

TRANSPORT DEPARTMENT
P. LETLONKANE
STRATEGIC EXECUTIVE DIRECTOR

ROADS AND STORMWATER

L.V KEGAKILWE
EXECUTIVE DIRECTOR:

P.O. BOX 1409
PRETORIA
0001

CITY OF TSHWANE — IGNITING EXCELLENCE

WATER AND SANITATION
For Internal Approval
REQUIRED / SIGN WHEN APPLICABLE
DIRECTOR: INFRASTRUCTURE PROVISION — SIGNATURE / DATE
DIRECTOR: WATER DISTRIBUTION — SIGNATURE / DATE
DIRECTOR: BULK WATER SERVICES — SIGNATURE / DATE
DIRECTOR: WATER SERVICES DEV. & REGULATIONS — SIGNATURE / DATE
DIRECTOR: WASTE WATER COLLECTION — SIGNATURE / DATE
DIRECTOR: WASTE WATER TREATMENT — SIGNATURE / DATE

DESIGNED: A. BEECKMAN
DRAWN: P. NKOSI
CHECKED: C. ISA
CIVIL DRAUGHTING SERVICES: A. BEECKMAN — SIGNATURE / DATE
SCALE
DATE: OCTOBER 2024

LOCATION OF PROJECT:

MAMELODI/MAHUBE VALLEY

DESCRIPTION OF PROJECT:

MAHUBE VALLEY: PHASE 3
MAJOR STORMWATER DRAINAGE SYSTEM
MABENA AVENUE STORMWATER LONGSECTION

CONTRACT No.: RTD 03-2025/26
PROJECT No.: COO 01 - 2021/22 (TIDC 10/2024)
SHEET NO: 4 OF 4

PROJECT STATUS

○ CONCEPT DRAWING ● TENDER DRAWING ○ APPROVED FOR CONSTRUCTION DRAWING ○ AS BUILT DRAWING

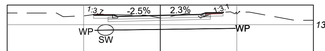
PROJECT ENGINEER: SIGNATURE / DATE
INSPECTOR OF WORKS: SIGNATURE / DATE
REMARKS:

DRAWING NO: AFR210/TSW-107

DRAWING_LOCATION: C:\Users\Morake Motsisi\AFRISA CONSULTING (PTY) LTD\Afrisa Consulting RSA PROJECTS 200 - PROJECTS\AFR210-MAHUBE VALLEY\G1 Afrisa Drawings\Drawings\TENDER\AFR210-TSW-104-107-Mabena SW Longsections.dwg

ROAD
CROSS SECTIONS

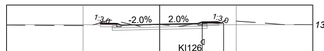
CHAINAGE 0+028



DATUM = 1309

FINISHED	311.656	311.650	311.441	311.664	311.812
GROUND	311.656	311.650	311.441	311.664	311.812
CL OFFSET	-4.378	-2.773	0.000	2.655	4.131

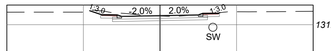
CHAINAGE 0+058



DATUM = 1310

FINISHED	312.115	312.115	311.969	312.019	312.118
GROUND	312.115	312.162	311.969	312.004	312.091	312.118
CL OFFSET	-3.906	-2.500	0.000	2.500	3.983

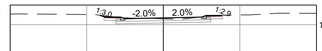
CHAINAGE 0+090



DATUM = 1310

FINISHED	312.907	312.907	312.535	312.585	312.783
GROUND	312.907	312.748	312.562	312.636	312.783	312.783
CL OFFSET	-4.585	-2.500	0.000	2.500	3.914

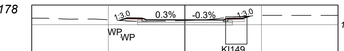
CHAINAGE 0+130



DATUM = 1311

FINISHED	313.609	313.449	313.381	313.493	313.598
GROUND	313.609	313.449	313.381	313.493	313.598	313.598
CL OFFSET	-4.128	-2.500	0.000	2.500	3.803

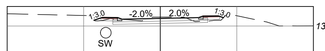
CHAINAGE 0+178



DATUM = 1312

FINISHED	314.279	314.224	314.262	314.434	314.551
GROUND	314.279	314.224	314.319	314.304	314.551	314.551
CL OFFSET	-4.249	-2.500	0.000	2.500	4.210

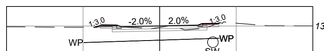
CHAINAGE 0+020



DATUM = 1309

FINISHED	311.378	311.446	311.496	311.546	311.547
GROUND	311.378	311.418	311.585	311.309	311.547	311.547
CL OFFSET	-4.333	-2.500	0.000	2.500	4.129

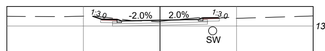
CHAINAGE 0+057



DATUM = 1310

FINISHED	311.915	311.915	311.955	312.005	312.055	312.207
GROUND	311.915	311.934	311.911	311.820	312.055	312.207
CL OFFSET	-4.249	-2.500	0.000	2.500	3.928

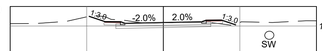
CHAINAGE 0+080



DATUM = 1310

FINISHED	312.635	312.331	312.381	312.431	312.524
GROUND	312.635	312.441	312.302	312.551	312.524	312.524
CL OFFSET	-4.383	-2.500	0.000	2.500	3.850

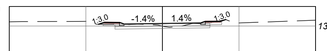
CHAINAGE 0+120



DATUM = 1311

FINISHED	313.633	313.368	313.207	313.244	313.078
GROUND	313.633	313.368	313.207	313.244	313.078	313.078
CL OFFSET	-4.839	-2.500	0.000	2.500	4.725

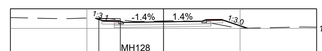
CHAINAGE 0+170



DATUM = 1312

FINISHED	314.116	314.112	313.991	314.147	314.200	314.423
GROUND	314.116	314.112	313.991	314.147	314.200	314.423
CL OFFSET	-4.170	-2.500	0.000	2.500	4.140

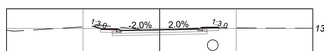
CHAINAGE 0+015



DATUM = 1309

FINISHED	311.657	311.535	311.487	311.456	311.016	311.016
GROUND	311.657	311.535	311.487	311.464	311.016	311.016
CL OFFSET	-4.434	-2.609	0.000	2.500	5.470

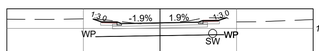
CHAINAGE 0+050



DATUM = 1310

FINISHED	312.143	312.143	311.859	311.905	311.959	312.044
GROUND	312.143	312.065	311.915	311.905	312.028	312.044
CL OFFSET	-4.321	-2.500	0.000	2.500	3.874

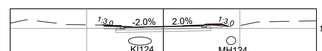
CHAINAGE 0+079



DATUM = 1310

FINISHED	312.611	312.438	312.339	312.614	312.408	312.696
GROUND	312.611	312.314	312.361	312.614	312.408	312.696
CL OFFSET	-4.363	-2.503	0.000	2.503	4.341

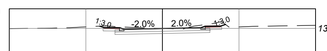
CHAINAGE 0+115



DATUM = 1311

FINISHED	313.230	313.144	313.117	313.227	313.170	313.137
GROUND	313.230	313.144	313.070	313.227	313.170	313.137	313.137
CL OFFSET	-3.949	-2.500	0.000	2.500	4.227

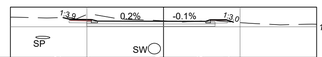
CHAINAGE 0+160



DATUM = 1312

FINISHED	314.150	314.087	313.992	314.210	314.042	314.259
GROUND	314.150	314.087	313.992	314.210	314.042	314.259
CL OFFSET	-4.095	-2.500	0.000	2.500	4.121

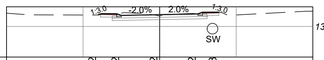
CHAINAGE 0+010



DATUM = 1309

FINISHED	311.602	311.367	311.359	311.356	311.304
GROUND	311.602	311.756	311.386	311.394	311.304	311.304
CL OFFSET	-6.557	-4.300	0.000	2.754	4.567

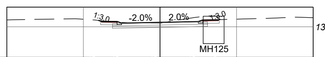
CHAINAGE 0+040



DATUM = 1309

FINISHED	311.762	311.722	311.772	311.822	311.913
GROUND	311.762	311.876	311.685	311.795	311.913	311.913
CL OFFSET	-4.008	-2.500	0.000	2.500	3.856

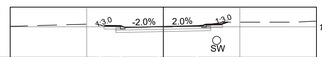
CHAINAGE 0+075



DATUM = 1310

FINISHED	312.416	312.279	312.251	312.638	312.485	312.338
GROUND	312.416	312.238	312.288	312.638	312.485	312.338
CL OFFSET	-4.004	-2.501	0.000	2.501	3.912

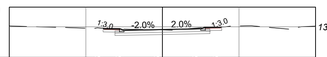
CHAINAGE 0+110



DATUM = 1311

FINISHED	313.066	312.997	312.984	313.104	313.063	313.311
GROUND	313.066	312.997	313.013	313.104	313.063	313.311
CL OFFSET	-3.819	-2.500	0.000	2.500	4.213

CHAINAGE 0+150



DATUM = 1312

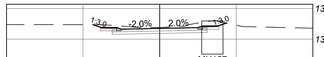
FINISHED	313.898	313.845	313.794	313.942	313.868	313.993
GROUND	313.898	313.845	313.768	313.942	313.868	313.993
CL OFFSET	-3.859	-2.500	0.000	2.500	3.844

CHAINAGE 0+008

DATUM = 1309

FINISHED	311.642	311.520	311.337	311.319	311.384
GROUND	311.642	311.520	311.238	311.388	311.384	311.384
CL OFFSET	-8.282	-5.806	0.000	3.165	4.608

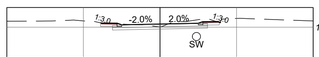
CHAINAGE 0+035



DATUM = 1309

FINISHED	311.944	311.653	311.703	311.753	312.052
GROUND	311.944	311.865	311.767	312.053	312.052	312.052
CL OFFSET	-4.344	-2.500	0.000	2.500	4.368

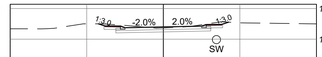
CHAINAGE 0+070



DATUM = 1310

FINISHED	312.281	312.206	312.030	312.490	312.312	312.251
GROUND	312.281	312.206	312.030	312.490	312.312	312.251
CL OFFSET	-3.860	-2.501	0.000	2.501	3.948

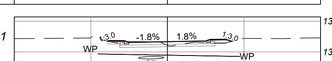
CHAINAGE 0+100



DATUM = 1310

FINISHED	313.004	312.903	312.736	312.942	312.849	313.113
GROUND	313.003	312.903	312.749	312.942	312.849	313.113
CL OFFSET	-4.233	-2.500	0.000	2.500	4.263

CHAINAGE 0+141



DATUM = 1311

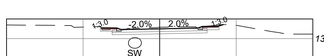
FINISHED	313.700	313.668	313.422	313.597	313.708	313.686
GROUND	313.700	313.668	313.617	313.597	313.708	313.686
CL OFFSET	-3.904	-2.511	0.000	2.511	4.204

CHAINAGE 0+005

DATUM = 1309

FINISHED	311.532	311.284	311.138	311.252	311.167
GROUND	311.672	311.315	311.307	311.252	311.167
CL OFFSET	-10.000	0.000	6.466	10.000

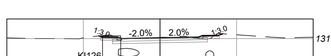
CHAINAGE 0+030



DATUM = 1309

FINISHED	311.691	311.584	311.634	311.684	311.912
GROUND	311.691	311.607	311.735	311.729	311.912	311.912
CL OFFSET	-3.811	-2.502	0.000	2.502	4.156

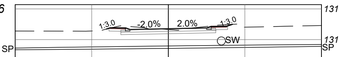
CHAINAGE 0+060



DATUM = 1310

FINISHED	312.170	312.026	312.072	312.032	312.097	312.313
GROUND	312.170	312.026	311.997	312.072	312.047	312.032	312.097	312.313
CL OFFSET	-3.988	-2.500	0.000	2.500	4.114

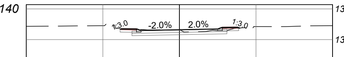
CHAINAGE 0+096



DATUM = 1310

FINISHED	312.687	312.850	312.655	312.858	312.755	312.994
GROUND	312.687	312.850	312.706	312.858	312.755	312.994
CL OFFSET	-4.035	-2.500	0.000	2.500	4.184

CHAINAGE 0+140



DATUM = 1311

FINISHED	313.685	313.653	313.631	313.584	313.689	313.752
GROUND	313.685	313.653	313.589	313.639	313.689	313.752
CL OFFSET	-3.841	-2.500	0.000	2.500	3.940

0 10 20 40 60 80m

SCALE 1:1000

AMENDMENTS

Rev	Date:	Drawn	Aprvd	DESCRIPTION
0	20/10/24	A.B.E	P.N	Issued for discussion
1	28/03/25	A.B.E	P.N	Issued for tender

CONSULTANTS DETAILS:

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ISO 9001:2015 CERTIFIED

ROADS AND STORMWATER
For Internal Approval
RECEIVED SIGN WHEN APPLICABLE
DIRECTOR: INFRASTRUCTURE PROVISION
DIRECTOR: INFRASTRUCTURE PLANNING & MANAGEMENT
DIRECTOR: INFRASTRUCTURE MAINTENANCE MANAGEMENT
DIRECTOR: TRAFFIC ENGINEERING AND OPERATIONS
DIRECTOR: PROJECT MANAGEMENT
DIRECTOR: ASSET MANAGEMENT
SIGNATURE DATE

CITY OF TSHWANE
TRANSPORT DEPARTMENT
P. LETLONKANE
STRATEGIC EXECUTIVE DIRECTOR
ROADS AND STORMWATER
L.V KEGAKILWE
EXECUTIVE DIRECTOR:
P.O. BOX 1409
PRETORIA
0001
CITY OF TSHWANE
IGNITING EXCELLENCE

WATER AND SANITATION
For Internal Approval
RECEIVED SIGN WHEN APPLICABLE
DIRECTOR: INFRASTRUCTURE PROVISION
DIRECTOR: WATER DISTRIBUTION
DIRECTOR: BULK WATER SERVICES
DIRECTOR: WATER SERVICES DEV. & REGULATIONS
DIRECTOR: WASTE WATER COLLECTION
DIRECTOR: WASTE WATER TREATMENT
SIGNATURE DATE

DESIGNED: A. BEECKMAN
DRAWN: P. NKOSI
CHECKED: C. ISA
CIVIL DRAUGHTING SERVICES: A. BEECKMAN
SIGNATURE DATE
SCALE HS: 1:200 VS: 1:200
DATE:

LOCATION OF PROJECT:

MAMELODI/MAHUBE VALLEY

DESCRIPTION OF PROJECT
MAHUBE VALLEY: PHASE 3
MAJOR STORMWATER DRAINAGE SYSTEM
BOLOA AVENUE CROSS SECTIONS

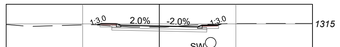
PROJECT STATUS
○ CONCEPT DRAWING ● TENDER DRAWING ○ APPROVED FOR CONSTRUCTION DRAWING ○ AS BUILT DRAWING

PROJECT ENGINEER: SIGNATURE DATE
INSPECTOR OF WORKS: SIGNATURE DATE
REMARKS:

CONTRACT No.	PROJECT No.	SHEET NO:	DRAWING NO:
RTD 03-2025/26	COO 01 - 2021/22 (TIDC 10/2024)	1 OF 3	AFR210/TXS-101

DRAWING_LOCATION: C:\Users\Morake Motisi\AFRISA CONSULTING (PTY) LTD\Afrisa Consulting RSA PROJECTS 200 - PROJECTS\AFR210-MAHUBE VALLEY\G1 Afrisa Drawings\Drawings\TENDER\AFR210-TXS-101-105-Cross Sections.dwg

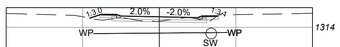
CHAINAGE 0+210



DATUM = 1313

FINISHED	1314.940	1314.906	1314.856	1314.806	1314.997
GROUND	1314.940	1314.833	1314.786	1314.934	1314.997
CL OFFSET	-4.028	-2.500	0.000	2.500	4.043

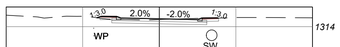
CHAINAGE 0+200



DATUM = 1312

FINISHED	1314.594	1314.731	1314.680	1314.630	1314.736
GROUND	1314.594	1314.604	1314.394	1314.532	1314.736
CL OFFSET	-4.542	-2.500	0.000	2.500	3.810

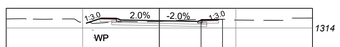
CHAINAGE 0+190



DATUM = 1312

FINISHED	1314.580	1314.580	1314.458	1314.539	1314.555
GROUND	1314.580	1314.467	1314.458	1314.539	1314.555
CL OFFSET	-4.072	-2.500	0.000	2.500	3.848

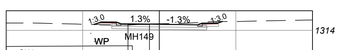
CHAINAGE 0+188



DATUM = 1312

FINISHED	1314.317	1314.527	1314.477	1314.427	1314.567
GROUND	1314.317	1314.422	1314.424	1314.552	1314.567
CL OFFSET	-4.758	-2.500	0.000	2.500	3.890

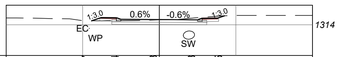
CHAINAGE 0+184



DATUM = 1312

FINISHED	1314.388	1314.432	1314.399	1314.366	1314.580
GROUND	1314.388	1314.356	1314.435	1314.510	1314.580
CL OFFSET	-4.262	-2.500	0.000	2.500	4.111

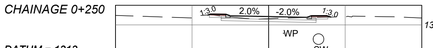
CHAINAGE 0+180



DATUM = 1312

FINISHED	1314.257	1314.354	1314.338	1314.323	1314.585
GROUND	1314.257	1314.276	1314.317	1314.469	1314.585
CL OFFSET	-4.418	-2.500	0.000	2.500	4.255

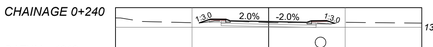
CHAINAGE 0+250



DATUM = 1313

FINISHED	1315.644	1315.592	1315.542	1315.492	1315.514
GROUND	1315.644	1315.515	1315.404	1315.479	1315.514
CL OFFSET	-3.971	-2.500	0.000	2.500	4.063

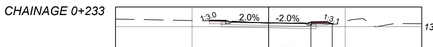
CHAINAGE 0+240



DATUM = 1313

FINISHED	1315.288	1315.420	1315.370	1315.320	1315.263
GROUND	1315.288	1315.387	1315.306	1315.308	1315.263
CL OFFSET	-4.526	-2.500	0.000	2.500	4.301

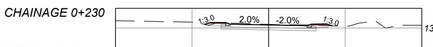
CHAINAGE 0+233



DATUM = 1313

FINISHED	1315.378	1315.300	1315.250	1315.200	1315.166
GROUND	1315.378	1315.353	1315.215	1315.231	1315.166
CL OFFSET	-3.896	-2.501	0.000	2.501	4.243

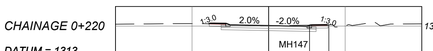
CHAINAGE 0+230



DATUM = 1313

FINISHED	1315.237	1315.249	1315.199	1315.149	1315.143
GROUND	1315.237	1315.321	1315.242	1315.203	1315.143
CL OFFSET	-4.169	-2.502	0.000	2.502	4.150

CHAINAGE 0+220



DATUM = 1313

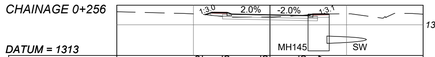
FINISHED	1315.150	1315.077	1315.027	1315.056	1315.082
GROUND	1315.150	1315.092	1315.011	1314.977	1315.082
CL OFFSET	-3.914	-2.501	0.000	2.501	3.817

CHAINAGE 0+216

DATUM = 1312

FINISHED	1314.702	1314.997	1314.951	1314.906	1314.949
GROUND	1314.702	1314.977	1314.775	1314.847	1314.949
CL OFFSET	-5.025	-2.512	0.000	2.513	4.027

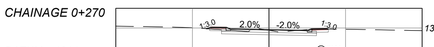
CHAINAGE 0+256



DATUM = 1313

FINISHED	1315.662	1315.695	1315.645	1315.595	1315.707
GROUND	1315.662	1315.496	1315.507	1315.648	1315.707
CL OFFSET	-4.228	-2.500	0.000	2.500	3.805

CHAINAGE 0+270



DATUM = 1314

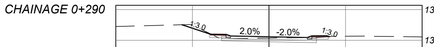
FINISHED	1315.955	1315.934	1315.884	1315.834	1315.929
GROUND	1315.955	1315.848	1315.849	1315.896	1315.929
CL OFFSET	-4.067	-2.500	0.000	2.500	3.846

CHAINAGE 0+260

DATUM = 1313

FINISHED	1315.727	1315.763	1315.719	1315.675	1315.829
GROUND	1315.727	1315.553	1315.618	1315.659	1315.829
CL OFFSET	-4.262	-2.521	0.000	2.521	3.957

CHAINAGE 0+290



DATUM = 1314

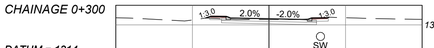
FINISHED	1317.013	1317.277	1316.227	1316.177	1316.235
GROUND	1317.013	1316.107	1316.144	1316.160	1316.235
CL OFFSET	-5.676	-2.500	0.000	2.500	3.956

CHAINAGE 0+280

DATUM = 1314

FINISHED	1316.214	1316.106	1316.056	1316.006	1316.333
GROUND	1316.214	1316.038	1315.881	1316.100	1316.334
CL OFFSET	-3.806	-2.500	0.000	2.500	4.452

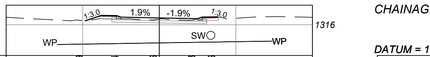
CHAINAGE 0+300



DATUM = 1314

FINISHED	1316.450	1316.449	1316.399	1316.349	1316.498
GROUND	1316.450	1316.367	1316.350	1316.385	1316.498
CL OFFSET	-4.125	-2.500	0.000	2.500	3.916

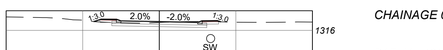
CHAINAGE 0+303



DATUM = 1314

FINISHED	1316.259	1316.494	1316.446	1316.398	1316.506
GROUND	1316.259	1316.385	1316.367	1316.368	1316.506
CL OFFSET	-4.835	-2.503	0.000	2.503	3.812

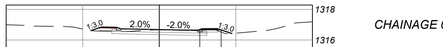
CHAINAGE 0+310



DATUM = 1314

FINISHED	1316.576	1316.620	1316.570	1316.520	1316.562
GROUND	1316.576	1316.498	1316.514	1316.583	1316.562
CL OFFSET	-4.262	-2.500	0.000	2.500	4.002

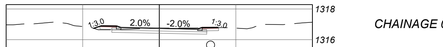
CHAINAGE 0+316



DATUM = 1314

FINISHED	1316.615	1316.728	1316.678	1316.628	1316.423
GROUND	1316.615	1316.550	1316.657	1316.660	1316.423
CL OFFSET	-4.467	-2.500	0.000	2.500	4.742

CHAINAGE 0+320



DATUM = 1314

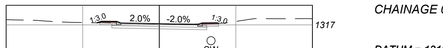
FINISHED	1316.739	1316.789	1316.739	1316.689	1316.783
GROUND	1316.739	1316.664	1316.744	1316.762	1316.783
CL OFFSET	-4.280	-2.500	0.000	2.500	3.848

CHAINAGE 0+330

DATUM = 1315

FINISHED	1316.884	1316.954	1316.904	1316.854	1317.056
GROUND	1316.884	1316.839	1316.850	1316.961	1317.056
CL OFFSET	-4.338	-2.500	0.000	2.500	4.076

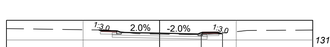
CHAINAGE 0+340



DATUM = 1315

FINISHED	1317.137	1317.116	1317.066	1317.016	1317.103
GROUND	1317.137	1317.101	1317.063	1317.063	1317.103
CL OFFSET	-4.066	-2.500	0.000	2.500	3.869

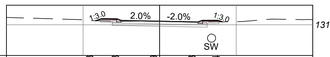
CHAINAGE 0+363



DATUM = 1315

FINISHED	1317.658	1317.495	1317.445	1317.395	1317.444
GROUND	1317.658	1317.532	1317.389	1317.356	1317.444
CL OFFSET	-3.959	-2.500	0.000	2.500	3.983

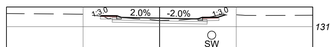
CHAINAGE 0+350



DATUM = 1315

FINISHED	1317.263	1317.278	1317.229	1317.178	1317.194
GROUND	1317.263	1317.227	1317.234	1317.193	1317.194
CL OFFSET	-4.174	-2.500	0.000	2.500	4.084

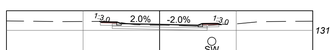
CHAINAGE 0+370



DATUM = 1315

FINISHED	1317.692	1317.603	1317.553	1317.503	1317.774
GROUND	1317.692	1317.589	1317.402	1317.536	1317.774
CL OFFSET	-3.862	-2.500	0.000	2.500	4.283

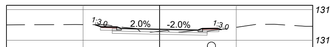
CHAINAGE 0+360



DATUM = 1315

FINISHED	1317.589	1317.441	1317.391	1317.341	1317.380
GROUND	1317.589	1317.502	1317.339	1317.281	1317.380
CL OFFSET	-3.913	-2.500	0.000	2.500	4.013

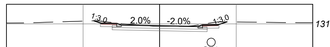
CHAINAGE 0+380



DATUM = 1315

FINISHED	1318.016	1317.766	1317.716	1317.666	1317.702
GROUND	1318.016	1317.861	1317.587	1317.665	1317.702
CL OFFSET	-4.221	-2.500	0.000	2.500	4.021

CHAINAGE 0+390



DATUM = 1316

FINISHED	1318.202	1318.018	1317.843	1317.926	1318.132
GROUND	1318.202	1318.018	1317.878	1317.828	1318.132
CL OFFSET	-4.292	-2.500	0.000	2.500	4.380

0 10 20 40 60 80m

SCALE 1:1000

AMENDMENTS

Rev	Date:	Drawn	Aprvd	DESCRIPTION
0	20/10/24	A.B.E	P.N	Issued for discussion
1	28/03/25	A.B.E	P.N	Issued for tender

CONSULTANTS DETAILS:

AFRISA CONSULTING PTY LTD
23 VENTER STREET
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NELSPRUIT
1200
TEL : 087 700 9200
email : info@afrisa.net
web : www.afrisa.net

ISO 9001:2015 CERTIFIED

ROADS AND STORMWATER
For Internal Approval
RECEIVED SIGN WHEN APPLICABLE

DIRECTOR: INFRASTRUCTURE PROVISION	SIGNATURE	DATE
DIRECTOR: INFRASTRUCTURE PLANNING & MANAGEMENT	SIGNATURE	DATE
DIRECTOR: INFRASTRUCTURE MAINTENANCE MANAGEMENT	SIGNATURE	DATE
DIRECTOR: TRAFFIC ENGINEERING AND OPERATIONS	SIGNATURE	DATE
DIRECTOR: PROJECT MANAGEMENT	SIGNATURE	DATE
DIRECTOR: ASSET MANAGEMENT	SIGNATURE	DATE

CITY OF TSHWANE

TRANSPORT DEPARTMENT
P. LETLONKANE
STRATEGIC EXECUTIVE DIRECTOR

ROADS AND STORMWATER

L.V KEGAKILWE
EXECUTIVE DIRECTOR:

P.O. BOX 1409
PRETORIA
0001

CITY OF TSHWANE
IGNITING EXCELLENCE

WATER AND SANITATION
For Internal Approval
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DIRECTOR: INFRASTRUCTURE PROVISION	SIGNATURE	DATE
DIRECTOR: WATER DISTRIBUTION	SIGNATURE	DATE
DIRECTOR: BULK WATER SERVICES	SIGNATURE	DATE
DIRECTOR: WATER SERVICES DEV. & REGULATIONS	SIGNATURE	DATE
DIRECTOR: WASTE WATER COLLECTION	SIGNATURE	DATE
DIRECTOR: WASTE WATER TREATMENT	SIGNATURE	DATE

DESIGNED: A. BEECKMAN
DRAWN: P. NKOSI
CHECKED: C. ISA
CIVIL DRAUGHTING SERVICES: A. BEECKMAN
SIGNATURE: DATE:
SCALE: HS: 1:200 VS: 1:200
DATE:

LOCATION OF PROJECT:

MAMELODI/MAHUBE VALLEY

DESCRIPTION OF PROJECT

MAHUBE VALLEY: PHASE 3
MAJOR STORMWATER DRAINAGE SYSTEM
BOLOA AVENUE CROSS SECTIONS

PROJECT STATUS

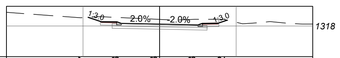
CONCEPT DRAWING	TENDER DRAWING	APPROVED FOR CONSTRUCTION DRAWING	AS BUILT DRAWING
○	●	○	○

PROJECT ENGINEER: SIGNATURE DATE
INSPECTOR OF WORKS: SIGNATURE DATE
REMARKS:

CONTRACT No.: RTD 03-2025/26
PROJECT No.: COO 01 - 2021/22 (TIDC 10/2024)
SHEET NO: 2 OF 3
DRAWING NO: AFR210/TXS-102
REVISION: 1

DRAWING_LOCATION: C:\Users\Morake Motsisi\AFRISA CONSULTING (PTY) LTD\Afrisa Consulting RSA PROJECTS 200 - PROJECTS\AFR210-MAHUBE VALLEY\G1 Afrisa Drawings\Drawings\TENDER\AFR210-TXS-101-105-Cross Sections.dwg

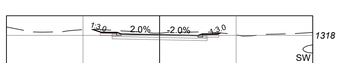
CHAINAGE 0+405



DATUM = 1316

FINISHED	1318.567	1318.168	1318.118	1318.068	1318.382
GROUND	1318.567	1318.548	1318.433	1318.437	1318.382
CL OFFSET	-4.665	-2.500	0.000	2.500	4.412

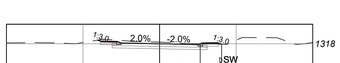
CHAINAGE 0+400



DATUM = 1316

FINISHED	1318.386	1318.090	1318.040	1317.990	1318.158
GROUND	1318.386	1318.296	1318.146	1318.225	1318.158
CL OFFSET	-4.357	-2.500	0.000	2.500	3.971

CHAINAGE 0+397



DATUM = 1316

FINISHED	1318.239	1318.048	1317.998	1317.948	1317.974
GROUND	1318.239	1318.212	1318.107	1318.007	1317.974
CL OFFSET	-4.043	-2.500	0.000	2.500	4.051

0 10 20 40 60 80m

SCALE 1:1000

AMENDMENTS

Rev	Date:	Drawn	Aprvd	DESCRIPTION
0	20/10/24	A.B.E	P.N	Issued for discussion
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SCALE: HS: 1:200 VS: 1:200
DATE:

LOCATION OF PROJECT:

MAMELODI/MAHUBE VALLEY

DESCRIPTION OF PROJECT

MAHUBE VALLEY: PHASE 3
MAJOR STORMWATER DRAINAGE SYSTEM
BOLOA AVENUE CROSS SECTIONS

CONTRACT No.: RTD 03-2025/26
PROJECT No.: COO 01 - 2021/22 (TIDC 10/2024)
SHEET NO: 3 OF 3

PROJECT STATUS

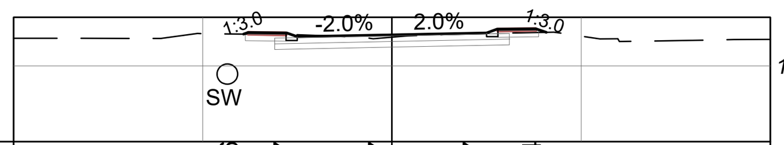
CONCEPT DRAWING	TENDER DRAWING	APPROVED FOR CONSTRUCTION DRAWING	AS BUILT DRAWING
○	●	○	○

PROJECT ENGINEER: SIGNATURE DATE
INSPECTOR OF WORKS: SIGNATURE DATE
REMARKS:

DRAWING NO: AFR210/TXS-103
REVISION: 1

DRAWING_LOCATION: C:\Users\Morake Motsisi\AFRISA CONSULTING (PTY) LTD\Afrisa Consulting RSA PROJECTS 200 - PROJECTS\AFR210-MAHUBE VALLEY\G1 Afrisa Drawings\Drawings\TENDER\AFR210-TXS-101-105-Cross Sections.dwg

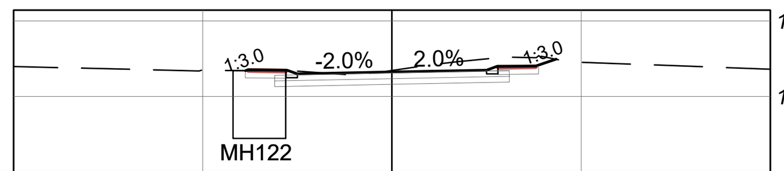
CHAINAGE 0+030



DATUM = 1311

FINISHED	1313.836	1313.767	1313.817	1313.867	1313.884
GROUND	1313.836	1313.818	1313.754	1313.851	1313.884
CL OFFSET	-3.924	-2.502	0.000	2.502	4.081

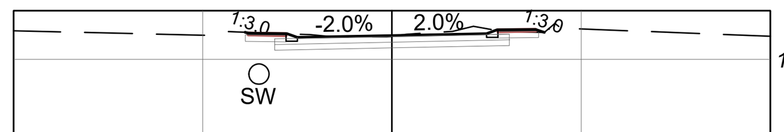
CHAINAGE 0+021



DATUM = 1311

FINISHED	1313.684	1313.597	1313.647	1313.697	1313.986
GROUND	1313.684	1313.669	1313.688	1313.996	1313.986
CL OFFSET	-3.869	-2.500	0.000	2.500	4.336

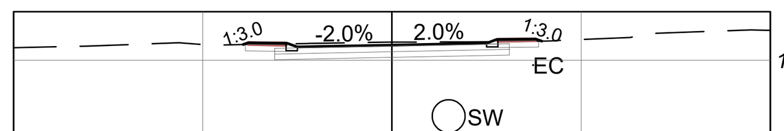
CHAINAGE 0+020



DATUM = 1311

FINISHED	1313.717	1313.578	1313.628	1313.678	1313.711
GROUND	1313.717	1313.663	1313.606	1313.811	1313.711
CL OFFSET	-3.885	-2.500	0.000	2.500	4.030

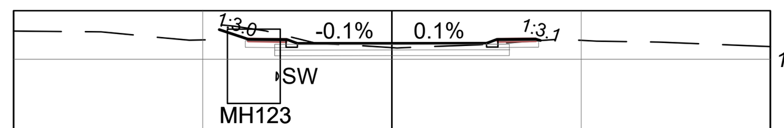
CHAINAGE 0+010



DATUM = 1312

FINISHED	1314.413	1314.348	1314.398	1314.448	1314.504
GROUND	1314.413	1314.436	1314.477	1314.485	1314.504
CL OFFSET	-3.936	-2.500	0.000	2.500	3.962

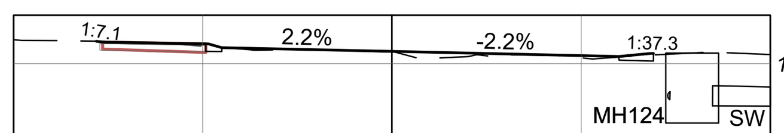
CHAINAGE 0+009



DATUM = 1311

FINISHED	1313.785	1313.420	1313.422	1313.424	1313.495
GROUND	1313.785	1313.545	1313.309	1313.399	1313.495
CL OFFSET	-4.565	-2.500	0.000	2.500	3.921

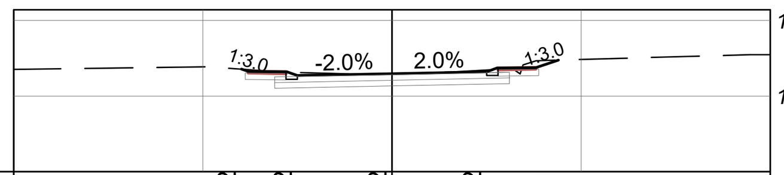
CHAINAGE 0+004



DATUM = 1311

FINISHED	1313.594	1313.422	1313.324	1313.192	1313.269
GROUND	1313.594	1313.428	1313.309	1313.175	1313.230
CL OFFSET	-7.818	-4.497	0.000	6.002	6.910

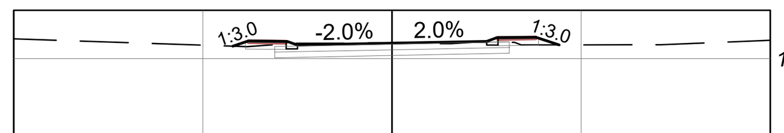
CHAINAGE 0+070



DATUM = 1312

FINISHED	1314.712	1314.542	1314.592	1314.642	1314.951
GROUND	1314.712	1314.625	1314.593	1314.688	1314.951
CL OFFSET	-3.981	-2.502	0.000	2.502	4.399

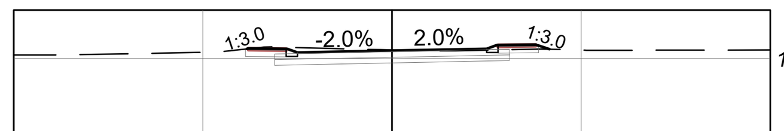
CHAINAGE 0+060



DATUM = 1312

FINISHED	1314.333	1314.360	1314.410	1314.460	1314.365
GROUND	1314.333	1314.407	1314.422	1314.436	1314.365
CL OFFSET	-4.210	-2.500	0.000	2.500	4.413

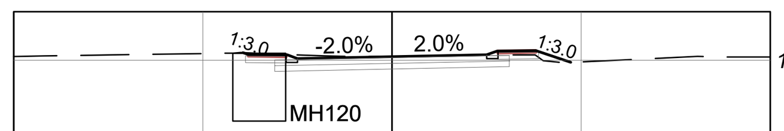
CHAINAGE 0+050



DATUM = 1312

FINISHED	1314.258	1314.160	1314.210	1314.260	1314.249
GROUND	1314.258	1314.292	1314.229	1314.224	1314.249
CL OFFSET	-3.835	-2.500	0.000	2.500	4.162

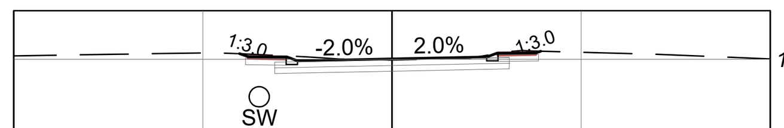
CHAINAGE 0+044



DATUM = 1312

FINISHED	1314.198	1314.040	1314.090	1314.140	1313.942
GROUND	1314.198	1314.138	1314.097	1314.135	1313.942
CL OFFSET	-3.941	-2.500	0.000	2.500	4.725

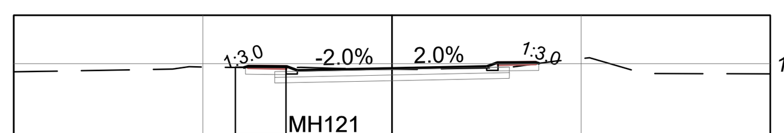
CHAINAGE 0+040



DATUM = 1312

FINISHED	1314.148	1313.961	1314.011	1314.061	1314.215
GROUND	1314.148	1314.074	1313.981	1314.105	1314.215
CL OFFSET	-4.033	-2.500	0.000	2.500	3.931

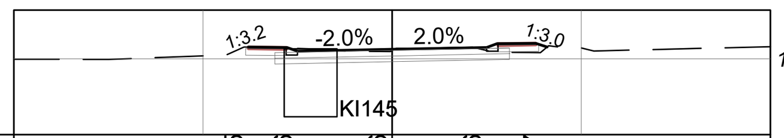
CHAINAGE 0+033



DATUM = 1312

FINISHED	1313.897	1313.824	1313.874	1313.924	1314.007
GROUND	1313.897	1313.901	1313.854	1313.883	1314.007
CL OFFSET	-3.910	-2.501	0.000	2.501	3.881

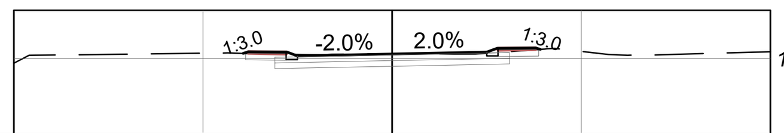
CHAINAGE 0+120



DATUM = 1313

FINISHED	1315.305	1315.196	1315.246	1315.296	1315.307
GROUND	1315.305	1315.269	1315.211	1315.217	1315.307
CL OFFSET	-3.801	-2.500	0.000	2.500	4.096

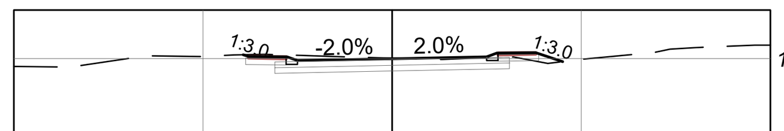
CHAINAGE 0+110



DATUM = 1313

FINISHED	1315.139	1315.075	1315.125	1315.175	1315.245
GROUND	1315.139	1315.109	1315.129	1315.145	1315.245
CL OFFSET	-3.938	-2.500	0.000	2.500	3.919

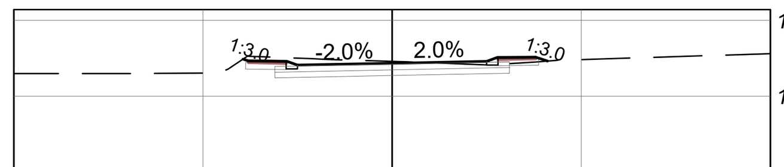
CHAINAGE 0+100



DATUM = 1313

FINISHED	1315.103	1314.947	1314.997	1315.047	1314.921
GROUND	1315.103	1315.089	1315.011	1315.022	1314.921
CL OFFSET	-3.936	-2.500	0.000	2.500	4.509

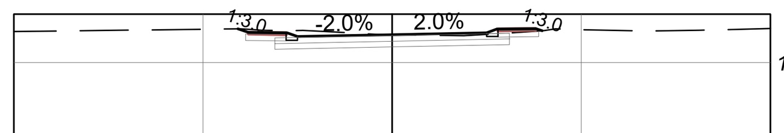
CHAINAGE 0+090



DATUM = 1312

FINISHED	1314.975	1314.818	1314.868	1314.918	1314.926
GROUND	1314.975	1315.003	1314.915	1314.823	1314.926
CL OFFSET	-3.939	-2.500	0.000	2.500	4.107

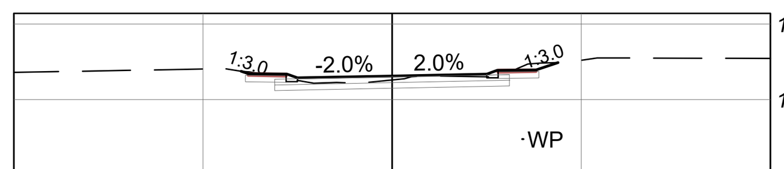
CHAINAGE 0+080



DATUM = 1312

FINISHED	1314.892	1314.689	1314.739	1314.789	1314.843
GROUND	1314.892	1314.849	1314.739	1314.749	1314.843
CL OFFSET	-4.077	-2.500	0.000	2.500	3.967

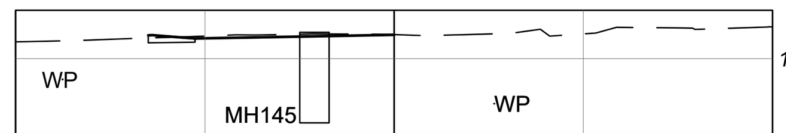
CHAINAGE 0+072



DATUM = 1312

FINISHED	1314.748	1314.574	1314.624	1314.674	1314.980
GROUND	1314.748	1314.508	1314.518	1314.603	1314.980
CL OFFSET	-3.992	-2.501	0.000	2.501	4.388

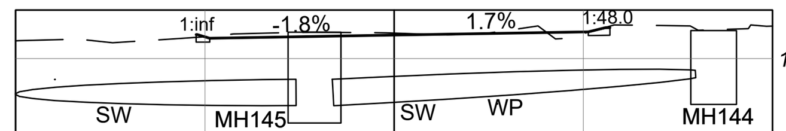
CHAINAGE 0+155



DATUM = 1313

FINISHED	1315.620	1315.536	1315.630
GROUND	1315.549	1315.590	1315.640
CL OFFSET	-6.495	-5.259	0.000

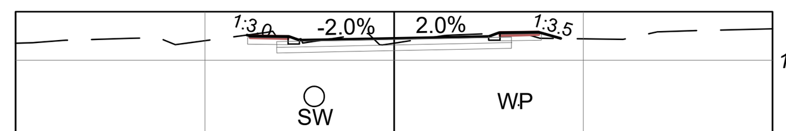
CHAINAGE 0+154



DATUM = 1313

FINISHED	1315.636	1315.536	1315.624	1315.708	1315.819
GROUND	1315.560	1315.583	1315.675	1315.697	1315.857
CL OFFSET	-5.230	-4.870	0.000	5.131	5.705

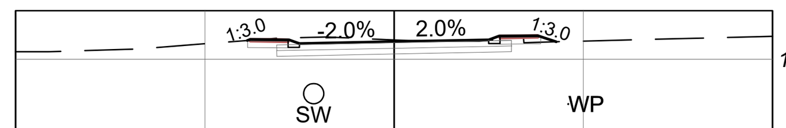
CHAINAGE 0+150



DATUM = 1313

FINISHED	1315.665	1315.526	1315.576	1315.626	1315.575
GROUND	1315.665	1315.556	1315.450	1315.699	1315.575
CL OFFSET	-3.886	-2.500	0.000	2.500	4.402

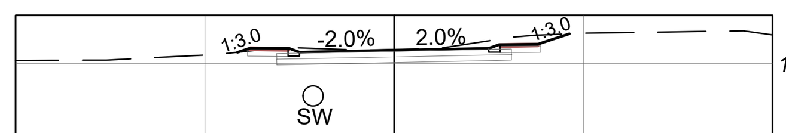
CHAINAGE 0+140



DATUM = 1313

FINISHED	1315.498	1315.415	1315.465	1315.515	1315.464
GROUND	1315.498	1315.573	1315.510	1315.501	1315.464
CL OFFSET	-3.882	-2.500	0.000	2.500	4.284

CHAINAGE 0+130



DATUM = 1313

FINISHED	1315.302	1315.305	1315.355	1315.405	1315.792
GROUND	1315.302	1315.418	1315.377	1315.605	1315.792
CL OFFSET	-4.138	-2.500	0.000	2.500	4.632

0 10 20 40 60 80m
SCALE 1:1000

AMENDMENTS

Rev	Date:	Drawn	Aprvd	DESCRIPTION
0	20/10/24	A.B.E	P.N	Issued for discussion
1	28/03/25	A.B.E	P.N	Issued for tender

CONSULTANTS DETAILS:

AFRISA CONSULTING PTY LTD
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web : www.afrisa.net

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ROADS AND STORMWATER
For Internal Approval

CITY OF TSHWANE
TRANSPORT DEPARTMENT
P. LETLONKANE
STRATEGIC EXECUTIVE DIRECTOR

ROADS AND STORMWATER
L.V KEGAKILWE
EXECUTIVE DIRECTOR:
P.O. BOX 1409
PRETORIA
0001

WATER AND SANITATION
For Internal Approval

DESIGNED: A. BEECKMAN
DRAWN: P. NKOSI
CHECKED: C. ISA
CIVIL DRAUGHTING SERVICES: A. BEECKMAN
SCALE HS: 1:200 VS: 1:200

LOCATION OF PROJECT:
MAMELODI/MAHUBE VALLEY

DESCRIPTION OF PROJECT:
MAHUBE VALLEY: PHASE 3
MAJOR STORMWATER DRAINAGE SYSTEM
MOGASHOA AVENUE CROSS SECTIONS

CONTRACT No. RTD 03-2025/26
PROJECT No. COO 01 - 2021/22 (TIDC 10/2024)
SHEET NO. 1 OF 1
DRAWING NO. AFR210/TXS-104

PROJECT STATUS
CONCEPT DRAWING | TENDER DRAWING | APPROVED FOR CONSTRUCTION DRAWING | AS BUILT DRAWING

PROJECT ENGINEER:
INSPECTOR OF WORKS:
REMARKS:

DRAWING_LOCATION: C:\Users\Morake.Motsisi\AFRISA CONSULTING (PTY) LTD\Afrisa Consulting RSA PROJECTS 200 - PROJECTS\AFR210-MAHUBE VALLEY\G1 Afrisa Drawings\Drawings\TENDER\AFR210-TXS-101-105-Cross Sections.dwg

MORWA AVENUE CROSS SECTIONS

CHAINAGE 0+033

DATUM = 1312

FINISHED	1314.262	1314.164	1314.214	1314.264	1314.279
GROUND	1314.262	1314.221	1314.205	1314.266	1314.279
CL OFFSET	-3.835	-2.500	0.000	2.500	4.083

CHAINAGE 0+030

DATUM = 1312

FINISHED	1314.304	1314.197	1314.247	1314.297	1314.346
GROUND	1314.304	1314.252	1314.259	1314.315	1314.346
CL OFFSET	-3.810	-2.500	0.000	2.500	3.982

CHAINAGE 0+025

DATUM = 1312

FINISHED	1314.294	1314.250	1314.300	1314.350	1314.408
GROUND	1314.295	1314.388	1314.322	1314.384	1314.408
CL OFFSET	-3.996	-2.500	0.000	2.500	3.954

CHAINAGE 0+020

DATUM = 1312

FINISHED	1314.315	1314.297	1314.347	1314.397	1314.441
GROUND	1314.315	1314.435	1314.388	1314.385	1314.441
CL OFFSET	-4.074	-2.500	0.000	2.500	3.996

CHAINAGE 0+010

DATUM = 1312

FINISHED	1314.413	1314.348	1314.398	1314.448	1314.504
GROUND	1314.413	1314.436	1314.477	1314.485	1314.504
CL OFFSET	-3.936	-2.500	0.000	2.500	3.962

CHAINAGE 0+005

DATUM = 1312

FINISHED	1314.346	1314.298	1314.401	1314.521	1314.609
GROUND	1314.346	1314.290	1314.329	1314.203	1314.608
CL OFFSET	-6.515	-4.269	0.000	4.388	7.940

CHAINAGE 0+045

DATUM = 1311

FINISHED	1314.017	1313.944	1314.089	1314.230	1314.285
GROUND	1314.030	1314.016	1314.111	1314.031	1314.003
CL OFFSET	-10.000	-9.238	0.000	9.552	10.000

CHAINAGE 0+045

DATUM = 1312

FINISHED	1314.036	1313.966	1314.093	1314.214	1314.325
GROUND	1314.033	1313.932	1314.120	1314.245	1314.203
CL OFFSET	-10.000	-7.925	0.000	8.238	9.226

CHAINAGE 0+040

DATUM = 1312

FINISHED	1314.059	1314.075	1314.144	1314.214	1314.219
GROUND	1314.059	1313.893	1314.139	1314.147	1314.219
CL OFFSET	-5.140	-3.457	0.000	3.483	5.127

CHAINAGE 0+037

DATUM = 1312

FINISHED	1314.178	1314.119	1314.173	1314.229	1314.328
GROUND	1314.178	1314.170	1314.153	1314.240	1314.328
CL OFFSET	-4.206	-2.725	0.000	2.751	4.118

MORWA AVENUE
CROSS SECTIONS

PHAHLANE AVENUE CROSS SECTIONS

CHAINAGE 0+030

DATUM = 1314

FINISHED	1316.370	1316.420	1316.470	1316.521	1316.542
GROUND	1316.370	1316.485	1316.506	1316.476	1316.542
CL OFFSET	-4.280	-2.500	0.000	2.500	4.066

CHAINAGE 0+020

DATUM = 1314

FINISHED	1316.325	1316.443	1316.493	1316.543	1316.398
GROUND	1316.325	1316.472	1316.543	1316.516	1316.398
CL OFFSET	-4.483	-2.500	0.000	2.500	4.566

CHAINAGE 0+010

DATUM = 1314

FINISHED	1316.268	1316.454	1316.504	1316.554	1316.566
GROUND	1316.268	1316.471	1316.553	1316.565	1316.566
CL OFFSET	-4.688	-2.500	0.000	2.500	4.093

CHAINAGE 0+005

DATUM = 1314

FINISHED	1316.285	1316.426	1316.476	1316.526	1316.413
GROUND	1316.285	1316.484	1316.452	1316.522	1316.413
CL OFFSET	-4.550	-2.500	0.000	2.500	4.467

CHAINAGE 0+046

DATUM = 1314

FINISHED	1316.366	1316.486
GROUND	1316.401	1316.556
CL OFFSET	-6.999	0.000

CHAINAGE 0+045

DATUM = 1314

FINISHED	1316.499	1316.390	1316.436	1316.558	1316.571
GROUND	1316.483	1316.485	1316.456	1316.563	1316.572
CL OFFSET	-5.147	-4.848	0.000	4.848	5.147

CHAINAGE 0+040

DATUM = 1314

FINISHED	1316.536	1316.398	1316.448	1316.498	1316.572
GROUND	1316.536	1316.540	1316.497	1316.550	1316.572
CL OFFSET	-3.883	-2.500	0.000	2.500	3.905

PHAHLANE AVENUE
CROSS SECTIONS

0 10 20 40 60 80m
SCALE 1:1000

AMENDMENTS

Rev	Date:	Drawn	Aprvd	DESCRIPTION
0	20/10/24	A.B.E	P.N	Issued for discussion
1	28/03/25	A.B.E	P.N	Issued for tender

CONSULTANTS DETAILS:

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ISO 9001:2015 CERTIFIED

ROADS AND STORMWATER
For Internal Approval
RECIEVED SIGN WHEN APPLICABLE
DIRECTOR: INFRASTRUCTURE PROVISION — SIGNATURE / DATE
DIRECTOR: INFRASTRUCTURE PLANNING & MANAGEMENT — SIGNATURE / DATE
DIRECTOR: INFRASTRUCTURE MAINTENANCE MANAGEMENT — SIGNATURE / DATE
DIRECTOR: TRAFFIC ENGINEERING AND OPERATIONS — SIGNATURE / DATE
DIRECTOR: PROJECT MANAGEMENT — SIGNATURE / DATE
DIRECTOR: ASSET MANAGEMENT — SIGNATURE / DATE

CITY OF TSHWANE
TRANSPORT DEPARTMENT
P. LETLONKANE
STRATEGIC EXECUTIVE DIRECTOR

ROADS AND STORMWATER
L.V KEGAKILWE
EXECUTIVE DIRECTOR:
P.O. BOX 1409
PRETORIA
0001

WATER AND SANITATION
For Internal Approval
RECIEVED SIGN WHEN APPLICABLE
DIRECTOR: INFRASTRUCTURE PROVISION — SIGNATURE / DATE
DIRECTOR: WATER DISTRIBUTION — SIGNATURE / DATE
DIRECTOR: BULK WATER SERVICES — SIGNATURE / DATE
DIRECTOR: WATER SERVICES DEV. & REGULATIONS — SIGNATURE / DATE
DIRECTOR: WASTE WATER COLLECTION — SIGNATURE / DATE
DIRECTOR: WASTE WATER TREATMENT — SIGNATURE / DATE

DESIGNED: A. BEECKMAN
DRAWN: P. NKOSI
CHECKED: C. ISA
CIVIL DRAUGHTING SERVICES: A. BEECKMAN
SIGNATURE: DATE:
SCALE HS: 1:200 VS: 1:200
DATE:

LOCATION OF PROJECT:
MAMELODI/MAHUBE VALLEY

DESCRIPTION OF PROJECT
MAHUBE VALLEY: PHASE 3
MAJOR STORMWATER DRAINAGE SYSTEM
MORWA AVENUE AND PHALANE AVENUE CROSS SECTIONS

CONTRACT No. : RTD 03-2025/26
PROJECT No. : COO 01 - 2021/22 (TIDC 10/2024)
SHEET NO: 1 OF 1

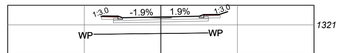
PROJECT STATUS
CONCEPT DRAWING / TENDER DRAWING (selected) / APPROVED FOR CONSTRUCTION DRAWING / AS BUILT DRAWING

PROJECT ENGINEER: SIGNATURE / DATE
INSPECTOR OF WORKS: SIGNATURE / DATE
REMARKS:

DRAWING NO. AFR210/TXS-105
REVISION 1

DRAWING_LOCATION: C:\Users\Morake Motsisi\AFRISA CONSULTING (PTY) LTD\Afrisa Consulting RSA PROJECTS 200 - PROJECTS\AFR210-MAHUBE VALLEY\G1 Afrisa Drawings\Drawings\TENDER\AFR210-TXS-101-105-Cross Sections.dwg

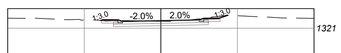
CHAINAGE 0+041



DATUM = 1319

FINISHED	1321.539	1321.464	1321.513	1321.562	1321.857	
GROUND	0.000	0.000	1321.441	0.000	0.000	
CL OFFSET	-3.910	-2.501	0.000	2.501	4.359	

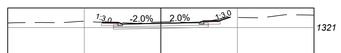
CHAINAGE 0+040



DATUM = 1319

FINISHED	1321.505	1321.443	1321.493	1321.543	1321.848	
GROUND	1321.505	1321.496	1321.449	1321.611	1321.848	
CL OFFSET	-3.944	-2.500	0.000	2.500	4.383	

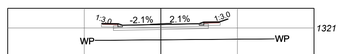
CHAINAGE 0+030



DATUM = 1319

FINISHED	1321.352	1321.229	1321.280	1321.329	1321.683	
GROUND	1321.352	1321.324	1321.367	1321.350	1321.683	
CL OFFSET	-3.836	-2.500	0.000	2.500	4.529	

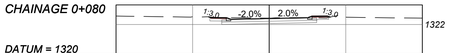
CHAINAGE 0+027



DATUM = 1319

FINISHED	1321.301	1321.175	1321.227	1321.279	1321.583	
GROUND	0.000	0.000	1321.279	0.000	0.000	
CL OFFSET	-3.853	-2.502	0.000	2.502	4.380	

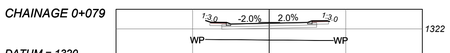
CHAINAGE 0+080



DATUM = 1320

FINISHED	1322.499	1322.340	1322.390	1322.440	1322.488	
GROUND	1322.499	1322.446	1322.418	1322.448	1322.488	
CL OFFSET	-3.947	-2.500	0.000	2.500	3.983	

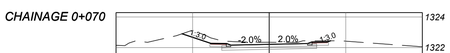
CHAINAGE 0+079



DATUM = 1320

FINISHED	1322.547	1322.319	1322.370	1322.420	1322.484	
GROUND	0.000	0.000	1322.428	0.000	0.000	
CL OFFSET	-4.154	-2.500	0.000	2.500	3.941	

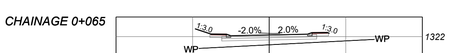
CHAINAGE 0+070



DATUM = 1320

FINISHED	1322.902	1322.162	1322.212	1322.262	1322.443	
GROUND	1322.902	1322.399	1322.346	1322.446	1322.443	
CL OFFSET	-5.688	-2.500	0.000	2.500	4.012	

CHAINAGE 0+065



DATUM = 1320

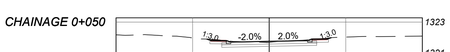
FINISHED	1322.506	1322.056	1322.106	1322.157	1322.228	
GROUND	0.000	0.000	1322.214	0.000	0.000	
CL OFFSET	-4.822	-2.500	0.000	2.500	3.917	

CHAINAGE 0+060

DATUM = 1320

FINISHED	1322.075	1321.938	1321.988	1322.038	1321.985	
GROUND	1322.075	1322.057	1322.042	1322.006	1321.985	
CL OFFSET	-3.879	-2.500	0.000	2.500	4.289	

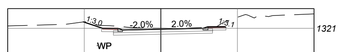
CHAINAGE 0+050



DATUM = 1319

FINISHED	1321.887	1321.755	1321.680	1321.835	1321.979	
GROUND	1321.887	1321.755	1321.740	1321.790	1321.979	
CL OFFSET	-4.059	-2.500	0.000	2.500	4.037	

CHAINAGE 0+010



DATUM = 1319

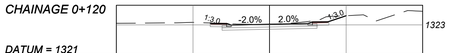
FINISHED	1321.421	1321.106	1320.892	1320.942	1321.083	
GROUND	1321.421	1321.106	1321.008	1320.997	1321.437	
CL OFFSET	-5.056	-2.500	0.000	2.748	4.242	

CHAINAGE 0+003

DATUM = 1319

FINISHED	1321.064	1320.827				
GROUND	1321.064	1321.006	1320.856			
CL OFFSET	-7.565	-4.445	0.000			

CHAINAGE 0+120



DATUM = 1321

FINISHED	1323.121	1322.985	1323.035	1323.085	1323.597	
GROUND	1323.121	1323.067	1323.017	1323.218	1323.597	
CL OFFSET	-3.878	-2.500	0.000	2.500	5.004	

CHAINAGE 0+117

DATUM = 1321

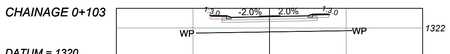
FINISHED	1323.044	1322.925	1322.977	1323.030	1323.409	
GROUND	0.000	0.000	1322.977	0.000	0.000	
CL OFFSET	-3.838	-2.504	0.000	2.504	4.609	

CHAINAGE 0+110

DATUM = 1321

FINISHED	1322.904	1322.812	1322.862	1322.912	1322.982	
GROUND	1322.904	1322.849	1322.916	1322.968	1322.982	
CL OFFSET	-3.852	-2.500	0.000	2.500	3.918	

CHAINAGE 0+103



DATUM = 1320

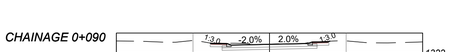
FINISHED	1322.836	1322.690	1322.741	1322.792	1322.864	
GROUND	0.000	0.000	1322.797	0.000	0.000	
CL OFFSET	-3.910	-2.501	0.000	2.501	3.918	

CHAINAGE 0+100

DATUM = 1320

FINISHED	1322.815	1322.651	1322.701	1322.751	1322.822	
GROUND	1322.815	1322.700	1322.751	1322.778	1322.822	
CL OFFSET	-3.961	-2.500	0.000	2.500	3.916	

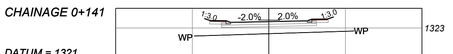
CHAINAGE 0+090



DATUM = 1320

FINISHED	1322.626	1322.495	1322.545	1322.595	1322.752	
GROUND	1322.626	1322.620	1322.557	1322.650	1322.752	
CL OFFSET	-3.862	-2.500	0.000	2.500	3.939	

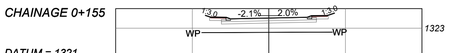
CHAINAGE 0+141



DATUM = 1321

FINISHED	1323.606	1323.364	1323.415	1323.466	1323.714	
GROUND	0.000	0.000	1323.514	0.000	0.000	
CL OFFSET	-4.198	-2.500	0.000	2.500	4.212	

CHAINAGE 0+155



DATUM = 1321

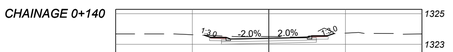
FINISHED	1323.833	1323.610	1323.661	1323.712	1323.982	
GROUND	0.000	0.000	1323.819	0.000	0.000	
CL OFFSET	-4.144	-2.501	0.000	2.501	4.278	

CHAINAGE 0+150

DATUM = 1321

FINISHED	1323.737	1323.527	1323.577	1323.627	1323.739	
GROUND	1323.737	1323.724	1323.671	1323.640	1323.739	
CL OFFSET	-4.099	-2.500	0.000	2.500	3.804	

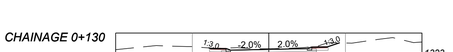
CHAINAGE 0+140



DATUM = 1321

FINISHED	1323.593	1323.348	1323.398	1323.448	1323.711	
GROUND	1323.593	1323.520	1323.511	1323.490	1323.711	
CL OFFSET	-4.208	-2.500	0.000	2.500	4.262	

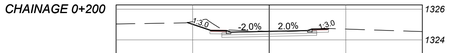
CHAINAGE 0+130



DATUM = 1321

FINISHED	1323.315	1323.166	1323.216	1323.266	1323.644	
GROUND	1323.315	1323.166	1323.259	1323.359	1323.644	
CL OFFSET	-3.917	-2.500	0.000	2.500	4.603	

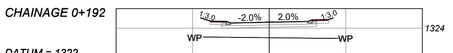
CHAINAGE 0+200



DATUM = 1322

FINISHED	1325.127	1324.502	1324.552	1324.602	1324.739	
GROUND	1325.127	1324.638	1324.560	1324.623	1324.739	
CL OFFSET	-5.344	-2.500	0.000	2.500	3.881	

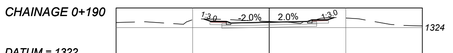
CHAINAGE 0+192



DATUM = 1322

FINISHED	1324.678	1324.340	1324.389	1324.438	1324.669	
GROUND	0.000	0.000	1324.420	0.000	0.000	
CL OFFSET	-4.482	-2.501	0.000	2.501	4.166	

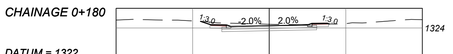
CHAINAGE 0+190



DATUM = 1322

FINISHED	1324.559	1324.298	1324.348	1324.398	1324.652	
GROUND	1324.559	1324.514	1324.400	1324.402	1324.652	
CL OFFSET	-4.252	-2.500	0.000	2.500	4.231	

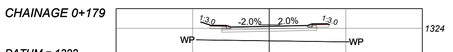
CHAINAGE 0+180



DATUM = 1322

FINISHED	1324.434	1324.095	1324.145	1324.195	1324.261	
GROUND	1324.434	1324.313	1324.238	1324.233	1324.261	
CL OFFSET	-4.488	-2.500	0.000	2.500	3.930	

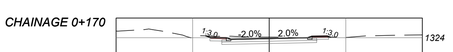
CHAINAGE 0+179



DATUM = 1322

FINISHED	1324.416	1324.083	1324.133	1324.183	1324.249	
GROUND	0.000	0.000	1324.232	0.000	0.000	
CL OFFSET	-4.468	-2.500	0.000	2.500	3.934	

CHAINAGE 0+170



DATUM = 1322

FINISHED	1324.122	1323.896	1323.945	1323.995		
GROUND	1324.122	1324.098	1324.038	1324.011	1324.039	
CL OFFSET	-4.149	-2.500	0.000	2.500	3.998	

0 10 20 40 60 80m

SCALE 1:1000

AMENDMENTS

Rev	Date:	Drawn	Aprvd	DESCRIPTION
0	20/10/24	A.B.E	P.N	Issued for discussion
1	28/03/25	A.B.E	P.N	Issued for tender

CONSULTANTS DETAILS:

AFRISA CONSULTING PTY LTD
23 VENTER STREET
POSTNET SUITE 26
PRIVATE BAG X11326
NELSPRUIT
1200
TEL : 087 700 9200
email : info@afrisa.net
web : www.afrisa.net

ISO 9001:2015 CERTIFIED

ROADS AND STORMWATER
For Internal Approval
RECEIVED
SIGN WHEN APPLICABLE
DIRECTOR: INFRASTRUCTURE PROVISION
DIRECTOR: INFRASTRUCTURE PLANNING & MANAGEMENT
DIRECTOR: INFRASTRUCTURE MAINTENANCE MANAGEMENT
DIRECTOR: TRAFFIC ENGINEERING AND OPERATIONS
DIRECTOR: PROJECT MANAGEMENT
DIRECTOR: ASSET MANAGEMENT
SIGNATURE DATE

CITY OF TSHWANE
TRANSPORT DEPARTMENT
P. LETLONKANE
STRATEGIC EXECUTIVE DIRECTOR

ROADS AND STORMWATER
L.V KEGAKILWE
EXECUTIVE DIRECTOR:

P.O. BOX 1409
PRETORIA
0001

CITY OF TSHWANE
IGNITING EXCELLENCE

WATER AND SANITATION
For Internal Approval
RECEIVED
SIGN WHEN APPLICABLE
DIRECTOR: INFRASTRUCTURE PROVISION
DIRECTOR: WATER DISTRIBUTION
DIRECTOR: BULK WATER SERVICES
DIRECTOR: WATER SERVICES DEV. & REGULATIONS
DIRECTOR: WASTE WATER COLLECTION
DIRECTOR: WASTE WATER TREATMENT
SIGNATURE DATE

DESIGNED: A. BEECKMAN
DRAWN: P. NKOSI
CHECKED: C. ISA
CIVIL DRAUGHTING SERVICES: A. BEECKMAN
SIGNATURE DATE
SCALE: HS: 1:200 VS: 1:200
DATE:

LOCATION OF PROJECT:

MAMELODI/MAHUBE VALLEY

DESCRIPTION OF PROJECT
MAHUBE VALLEY: PHASE 3
MAJOR STORMWATER DRAINAGE SYSTEM
JULIUS NYERERE STREET CROSS SECTIONS

CONTRACT No: RTD 03-2025/26
PROJECT No: COO 01 - 2021/22 (TIDC 10/2024)
SHEET NO: 1 OF 2

PROJECT STATUS

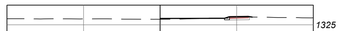
○ CONCEPT DRAWING ● TENDER DRAWING ○ APPROVED FOR CONSTRUCTION DRAWING ○ AS BUILT DRAWING

PROJECT ENGINEER: SIGNATURE DATE
INSPECTOR OF WORKS: SIGNATURE DATE
REMARKS:

DRAWING NO: AFR210/TXS-106

DRAWING_LOCATION: C:\Users\Morake Motisi\AFRISA CONSULTING (PTY) LTD\Afrisa Consulting RSA PROJECTS 200 - PROJECTS\AFR210-MAHUBE VALLEY\G1 Afrisa Drawings\Drawings\TENDER\AFR210-TXS-101-105-Cross Sections.dwg

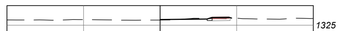
CHAINAGE 0+242



DATUM = 1323

FINISHED	1325.417	1325.427	1325.507
GROUND	1325.363	1325.433	1325.507
CL OFFSET	0.000	4.200	6.015

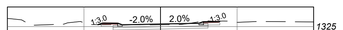
CHAINAGE 0+240



DATUM = 1323

FINISHED	1325.367	1325.403	1325.466
GROUND	1325.337	1325.439	1325.466
CL OFFSET	0.000	3.065	4.664

CHAINAGE 0+230



DATUM = 1323

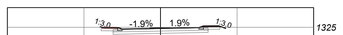
FINISHED	1325.127	1325.113	1325.163	1325.213	1325.349
GROUND	1325.127	1325.131	1325.118	1325.311	1325.349
CL OFFSET	-4.086	-2.500	0.000	2.500	3.877

CHAINAGE 0+220

DATUM = 1323

FINISHED	1325.067	1324.909	1324.959	1325.009	1324.964
GROUND	1325.067	1325.009	1324.987	1324.955	1324.964
CL OFFSET	-3.942	-2.500	0.000	2.500	4.266

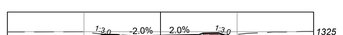
CHAINAGE 0+219



DATUM = 1323

FINISHED	1325.037	1324.880	1324.929	1324.978	1324.938
GROUND	0.000	0.000	1324.965	0.000	0.000
CL OFFSET	-3.938	-2.501	0.000	2.501	4.251

CHAINAGE 0+210



DATUM = 1323

FINISHED	1324.849	1324.706	1324.756	1324.806	1324.795
GROUND	1324.849	1324.785	1324.753	1324.798	1324.795
CL OFFSET	-3.901	-2.500	0.000	2.500	4.161

0 10 20 40 60 80m

SCALE 1:1000

AMENDMENTS

Rev	Date:	Drawn	Aprvd	DESCRIPTION
0	20/10/24	A.B.E	P.N	Issued for discussion
1	28/03/25	A.B.E	P.N	Issued for tender

CONSULTANTS DETAILS:

AFRISA CONSULTING PTY LTD
23 VENTER STREET
POSTNET SUITE 26
PRIVATE BAG X11326
NELSPRUIT
1200
TEL : 087 700 9200
email : info@afrisa.net
web : www.afrisa.net

ISO 9001:2015 CERTIFIED

ROADS AND STORMWATER
For Internal Approval
RECEIVED SIGN WHEN APPLICABLE
DIRECTOR: INFRASTRUCTURE PROVISION — SIGNATURE — DATE
DIRECTOR: INFRASTRUCTURE PLANNING & MANAGEMENT — SIGNATURE — DATE
DIRECTOR: INFRASTRUCTURE MAINTENANCE MANAGEMENT — SIGNATURE — DATE
DIRECTOR: TRAFFIC ENGINEERING AND OPERATIONS — SIGNATURE — DATE
DIRECTOR: PROJECT MANAGEMENT — SIGNATURE — DATE
DIRECTOR: ASSET MANAGEMENT — SIGNATURE — DATE

CITY OF TSHWANE

TRANSPORT DEPARTMENT
P. LETLONKANE
STRATEGIC EXECUTIVE DIRECTOR

ROADS AND STORMWATER

L.V KEGAKILWE
EXECUTIVE DIRECTOR:

P.O. BOX 1409
PRETORIA
0001

CITY OF TSHWANE
IGNITING EXCELLENCE

WATER AND SANITATION
For Internal Approval
RECEIVED SIGN WHEN APPLICABLE
DIRECTOR: INFRASTRUCTURE PROVISION — SIGNATURE — DATE
DIRECTOR: WATER DISTRIBUTION — SIGNATURE — DATE
DIRECTOR: BULK WATER SERVICES — SIGNATURE — DATE
DIRECTOR: WATER SERVICES DEV. & REGULATIONS — SIGNATURE — DATE
DIRECTOR: WASTE WATER COLLECTION — SIGNATURE — DATE
DIRECTOR: WASTE WATER TREATMENT — SIGNATURE — DATE

DESIGNED: A. BEECKMAN
DRAWN: P. NKOSI
CHECKED: C. ISA
CIVIL DRAUGHTING SERVICES: A. BEECKMAN
SIGNATURE — DATE
SCALE: HS: 1:200 VS: 1:200
DATE:

LOCATION OF PROJECT:

MAMELODI/MAHUBE VALLEY

DESCRIPTION OF PROJECT

MAHUBE VALLEY: PHASE 3
MAJOR STORMWATER DRAINAGE SYSTEM
JULIUS NYERERE STREET CROSS SECTIONS

CONTRACT No: RTD 03-2025/26
PROJECT No: COO 01 - 2021/22 (TIDC 10/2024)
SHEET NO: 2 OF 2

PROJECT STATUS

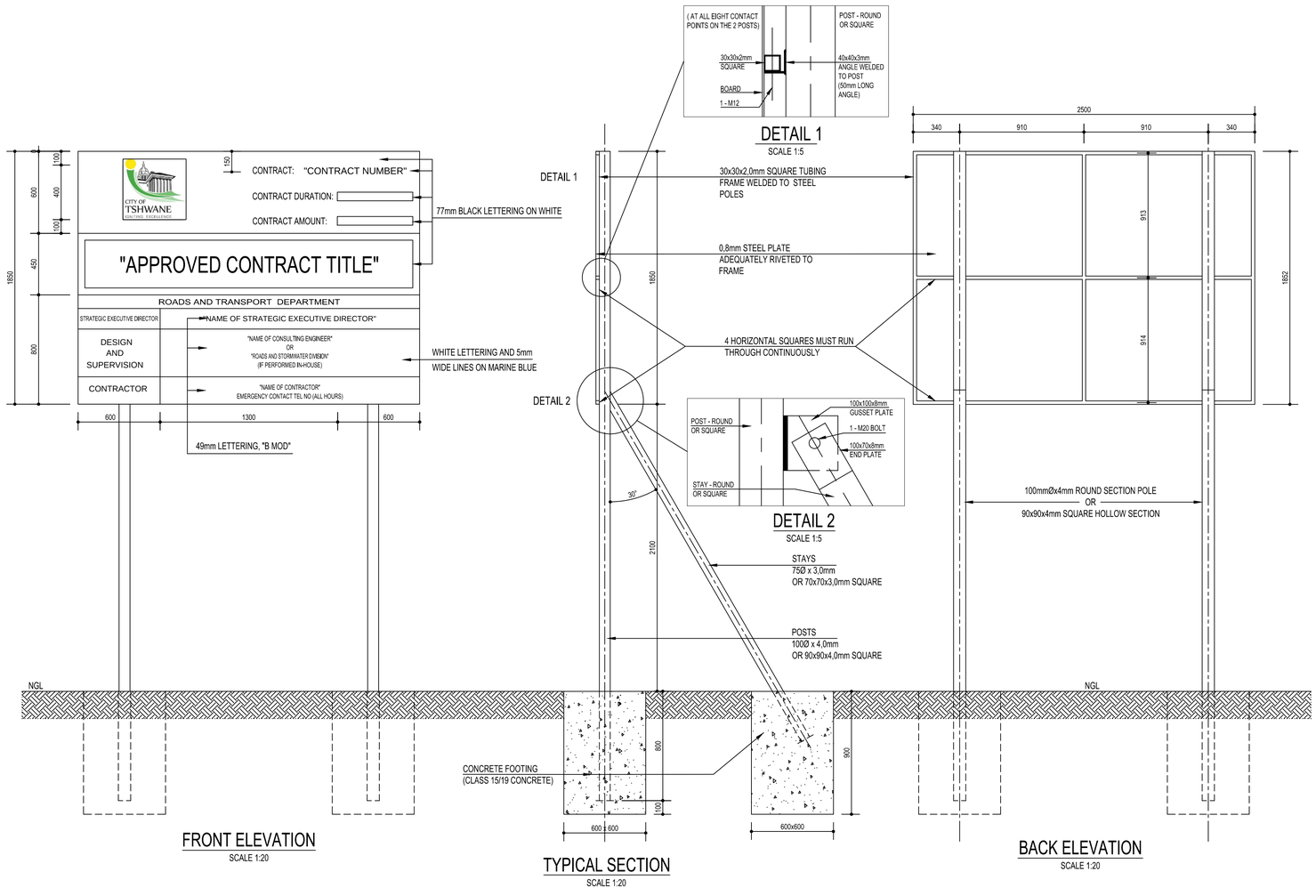
○ CONCEPT DRAWING ● TENDER DRAWING ○ APPROVED FOR CONSTRUCTION DRAWING ○ AS BUILT DRAWING

PROJECT ENGINEER: ..... SIGNATURE ..... DATE
INSPECTOR OF WORKS: ..... SIGNATURE ..... DATE
REMARKS:

DRAWING NO: AFR210/TXS-107

DRAWING_LOCATION: C:\Users\Morake Motisi\AFRISA CONSULTING (PTY) LTD\Afrisa Consulting RSA PROJECTS 200 - PROJECTS\AFR210-MAHUBE VALLEY\G1 Afrisa Drawings\Drawings\TENDER\AFR210-TXS-101-105-Cross Sections.dwg

CITY OF TSHWANE
STANDARD DRAWINGS



NOTES AND SPECIFICATIONS

1. ALL PAINTS TO HAVE GLOSS FINISH AND COMPLY WITH SANS 1519-2.
2. ALL WHITE AREAS AND LETTERING TO BE OFF-WHITE IN COLOUR. OFF-WHITE TO BE MADE UP BY ADDING 0,4 GRAMS BLACK AND 0,4 GRAMS RED PAINT TO ONE LITRE PURE WHITE PAINT
3. COLOUR OF PAINT TO CONFORM TO BS 2000 No.0/013
4. ALL LETTERING TO BE DONE ACCORDING TO THE PROVISION OF THE LATEST EDITION OF THE SOUTHERN AFRICAN DEVELOPMENT COMMUNITY ROAD TRAFFIC SIGNS MANUAL
5. ALL LETTERING ARE 49mm DIN 1451 PART 2 STYLE "B MOD" UNLESS OTHERWISE INDICATED

AMENDMENTS

NR.	DATE	APPROVED	DESCRIPTION	PAR.

DESIGNED
J.G. JANSEN VAN VUUREN Pr.Tech.
SIGNATURE: DATE:

DRAWN
S. AUDIE

DESIGN CHECKED BY
P. A. ODENDAAL Pr.Eng.
SIGNATURE: DATE:

INFRASTRUCTURE TECHNICAL INFORMATION MANAGEMENT
D.J. CHALMERS
SIGNATURE: DATE:

CITY OF TSHWANE
ROADS AND TRANSPORT DEPARTMENT

GROUP HEAD
Mr Letlonkane P. (Pheko)
P.O. BOX 1409
PRETORIA
0001

ACTING DIVISIONAL HEAD
Mr Lebepe M.T. (Thabo)
P.O. BOX 1409
PRETORIA
0001

DRAWING APPROVED BY ACTING EXECUTIVE DIRECTOR
Mr Lebepe M.T. (Thabo)
SIGNATURE: DATE:

LOCATION OF PROJECT:

TYPICAL STANDARD DETAILS

DESCRIPTION OF PROJECT

CONTRACT NAMEBOARD

CONTRACT No. :
PROJECT No. :
DATE : FEBRUARY 2017
SCALE : AS SHOWN
ORIGINAL PAPER SIZE: A1
DRAWING NO. STD001
SHEET NO: 1 OF 3
REVISION 0

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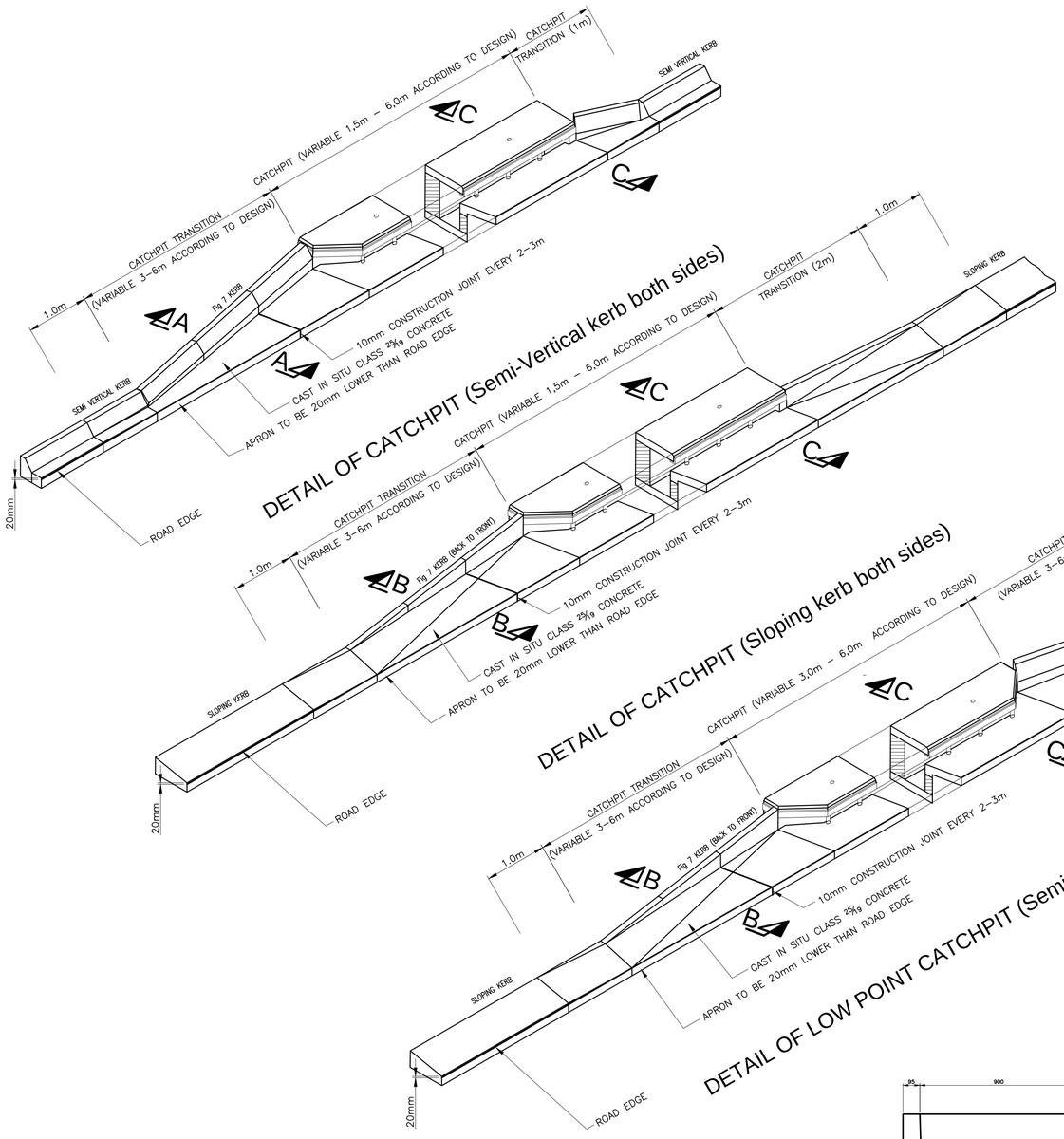
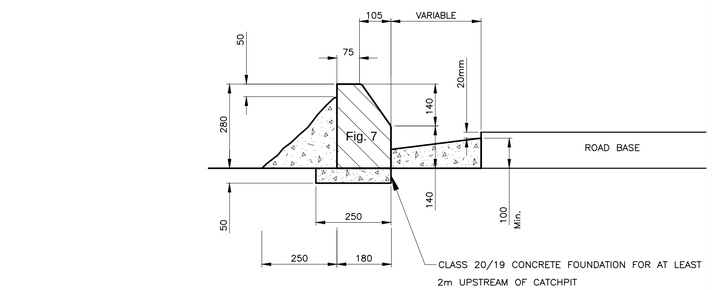
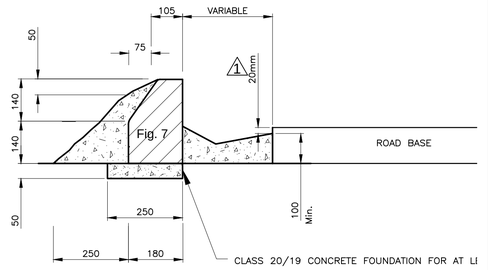
SCALE 1:1000

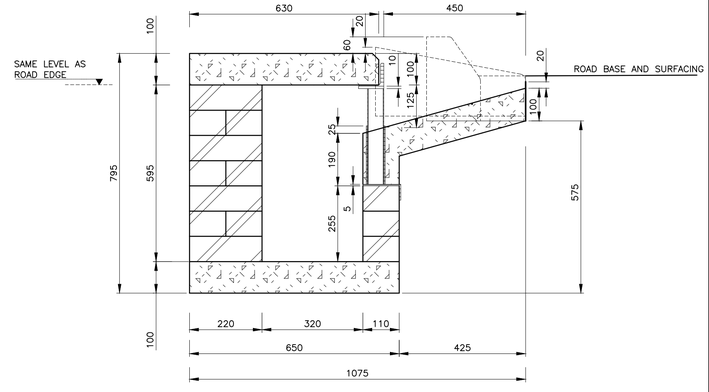




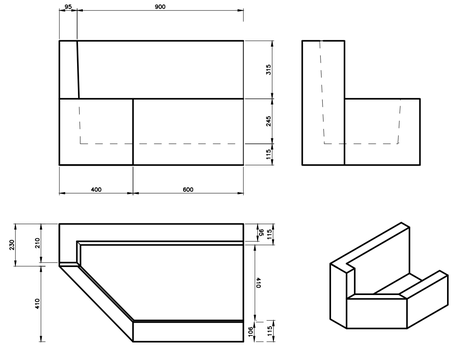
SECTION A-A



SECTION B-B



SECTION C-C



KERB INLET TYPE 5P END PIECE PROPOSAL

0 10 20 40 60 80m
SCALE 1:1000

NOTES AND SPECIFICATIONS

1. Permission must be obtained from the Engineer as well as from the Roads and Stormwater Division if any other catchpit type is proposed.
2. 'SILT TRAP CATCHPITS' will be specified by the Engineer in areas subject to siltation. 'SILT TRAP CATCHPITS' will be constructed by lowering the catchpit floor with one brick layer and constructing a 170mm high double brick wall at the catchpit outlet.The wall must not be connected to the walls of the catchpit but a 10mm slot must be formed on each side to ensure water seeping through into the junction box . The other levels and dimensions of the catchpit remain the same.

   'SILT TRAP CATCHPITS' will be measured separately from the other catchpits and indicated as such in the Schedule of Quantities.
3. All bricks shall comply with SANS 227 and shall be Engineering Units of Class FBS (Face Brick Standard) with a nominal compressive strength of 12 MPa.
4. Also refer to section 502, 702, 703, 704 and 809 of the Standard Specifications for Municipal Civil Engineering Works, 3rd edition, 2005.

AMENDMENTS				
NR.	DATE	APPROVED	DESCRIPTION	PAR.

DESIGNED: J.G. JANSEN VAN VUUREN Pr.Tech. (SIGNATURE / DATE)
DRAWN: S. AUDIE
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Mr Lebepe M.T. (Thabo)
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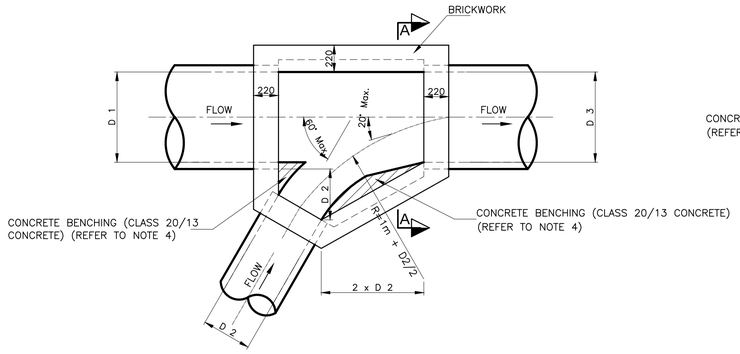
LOCATION OF PROJECT:

TYPICAL STANDARD DETAILS

DESCRIPTION OF PROJECT

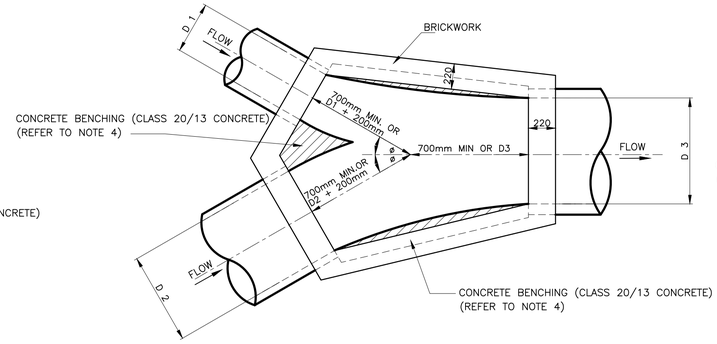
CATCHPIT DETAILS:
ISOMETRIC VIEW AND CROSS SECTIONS

CONTRACT No. :
PROJECT No. :
DATE : AUGUST 2018
SCALE : AS SHOWN
ORIGINAL PAPER SIZE: A1
DRAWING NO.: STD003
SHEET NO: 1 OF 2
REVISION: 0



PLAN OF TYPE C JUNCTION BOX (WITHOUT COVER SLAB)

D 1 = D 3 AND D 2 VARIES



PLAN OF TYPE C JUNCTION BOX (WITHOUT COVER SLAB)

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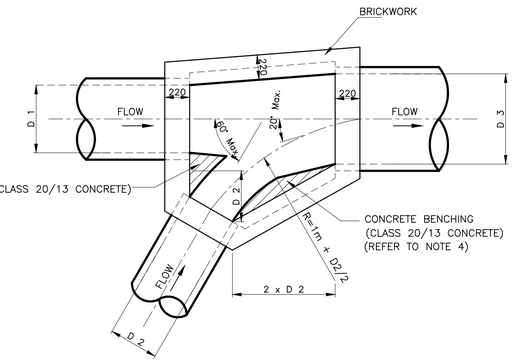
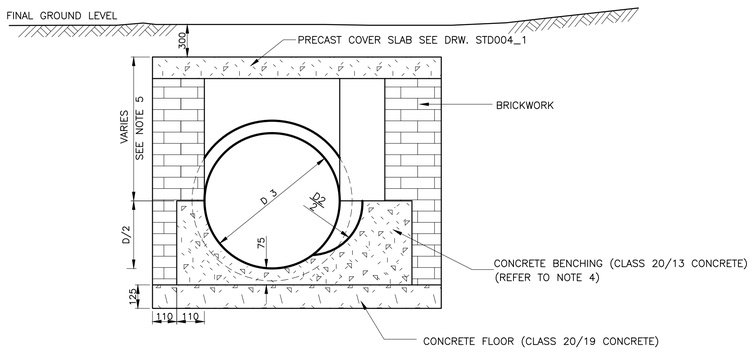


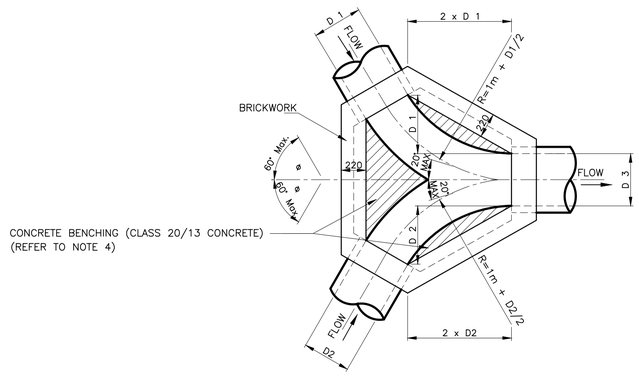
PLAN OF TYPE C JUNCTION BOX

(WITHOUT COVER SLAB)

D 1 ≠ D 3 AND D 2 VARIES



SECTION A-A



PLAN OF TYPE C JUNCTION BOX (WITHOUT COVER SLAB)

D 1 = D2 = D 3 AND Ø ≯ 30°

NOTES AND SPECIFICATIONS

1. All stormwater pipes to be laid soffit to soffit
2. Minimum pipe diameter of all pipes is 450mm.
3. Maximum angle between adjoining pipes is 60°.
4. Where a pipe wall is at least 75mm from the nearest junction box wall, the concrete bencing can be started adjacent to the double brick wall.
5. Where the total depth of the junction box (invert level to finished ground level) exceeds 2,0m a structural design must be submitted by a professional engineer.
6. All bricks shall comply with SABS 227 and shall be engineering units of class FBS (face brick standard) with a nominal compressive strength of 12 MPA.
7. Also refer to Section 502 of the Standard Specifications for Municipal Civil Engineering Works, 1991.

AMENDMENTS

NR.	DATE	APPROVED	DESCRIPTION	PAR.

DESIGNED: J. CRONJE — SIGNATURE: DATE:

DRAWN: S. AUDIE

DESIGN CHECKED BY: S. NAIDOO — SIGNATURE: DATE:

INFRASTRUCTURE TECHNICAL INFORMATION MANAGEMENT: D.J. CHALMERS — SIGNATURE: DATE:

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TRANSPORTATION PLANNING DIVISIONAL HEAD
Mr L. Swanepoel (Lourens)
SIGNATURE:
DATE:

DRAWING APPROVED BY GROUP HEAD
Mr Letlonkane P. (Pheko)
SIGNATURE: DATE:

LOCATION OF PROJECT:

TYPICAL STANDARD DETAILS

DESCRIPTION OF PROJECT

JUNCTION BOX AND MANHOLE DETAILS:

TYPE C JUNCTION BOX

CONTRACT No. :

PROJECT No. :

DATE : FEBRUARY 2017

SCALE : AS SHOWN

ORIGINAL PAPER SIZE: A1

DRAWING NO. STD004

SHEET NO: 4 OF 7

REVISION 0

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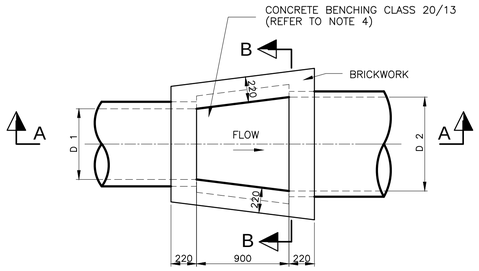
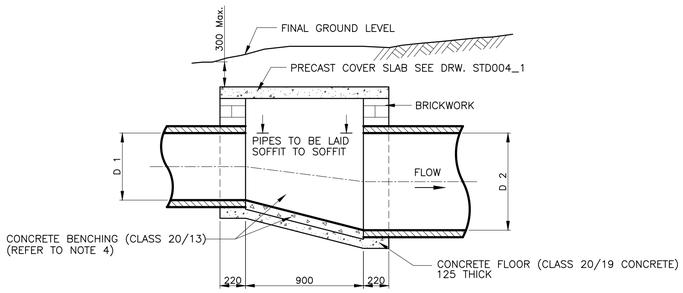
SCALE 1:1000



PLAN OF TYPE D JUNCTION BOX (WITHOUT COVER SLAB)

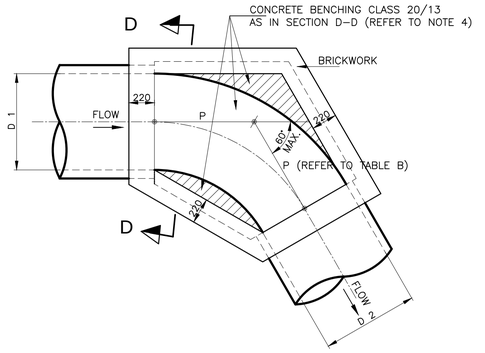
D 1 < D 2



SECTION A-A

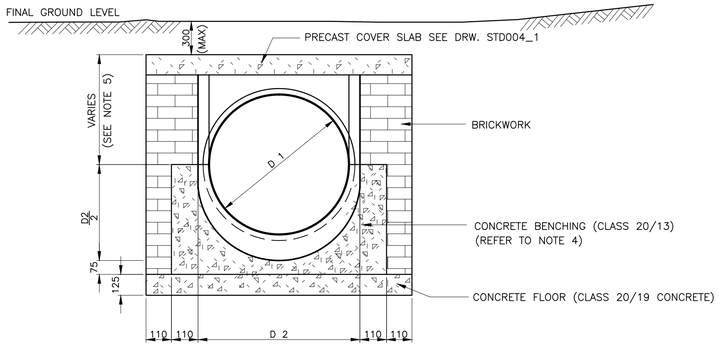
TABEL B

D 2 DIAMETER OF DOWN STREAM PIPE	DISTANCE P
450	700
525	700
600	750
675	780
750	800
825	825
900	850
1050	870
1200	925
1350	1000
1500	1100

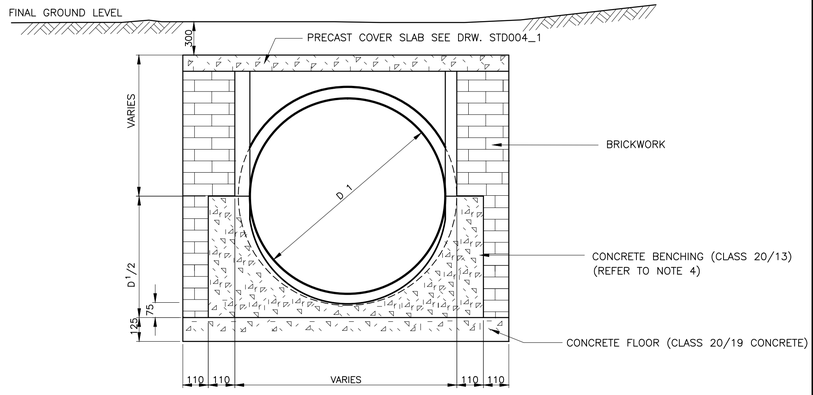


PLAN OF TYPE D JUNCTION BOX (WITHOUT COVER SLAB)

D 1= D 2 OR D 1 < D 2



SECTION B-B



SECTION D-D

NOTES AND SPECIFICATIONS

1. All stormwater pipes to be laid soffit to soffit
2. Minimum pipe diameter of all pipes is 450mm.
3. Maximum angle between adjoining pipes is 60°.
4. Where a pipe wall is at least 75mm from the nearest junction box wall, the concrete bencing can be started adjacent to the double brick wall.
5. Where the total depth of the junction box (invert level to finished ground level) exceeds 2,0m a structural design must be submitted by a professional engineer.
6. All bricks shall comply with SABS 227 and shall be engineering units of class FBS (face brick standard) with
7. Also refer to Section 502 of the Standard Specifications for Municipal Civil Engineering Works, 1991.

AMENDMENTS

NR.	DATE	APPROVED	DESCRIPTION	PAR.

DESIGNED: J. CRONJE — SIGNATURE: DATE:

DRAWN: S. AUDIE

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DATE:

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Mr Letlonkane P. (Pheko)
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LOCATION OF PROJECT:

TYPICAL STANDARD DETAILS

DESCRIPTION OF PROJECT

JUNCTION BOX AND MANHOLE DETAILS:

TYPE D JUNCTION BOX

CONTRACT No. :

PROJECT No. :

DATE : FEBRUARY 2017

SCALE : AS SHOWN

ORIGINAL PAPER SIZE: A1

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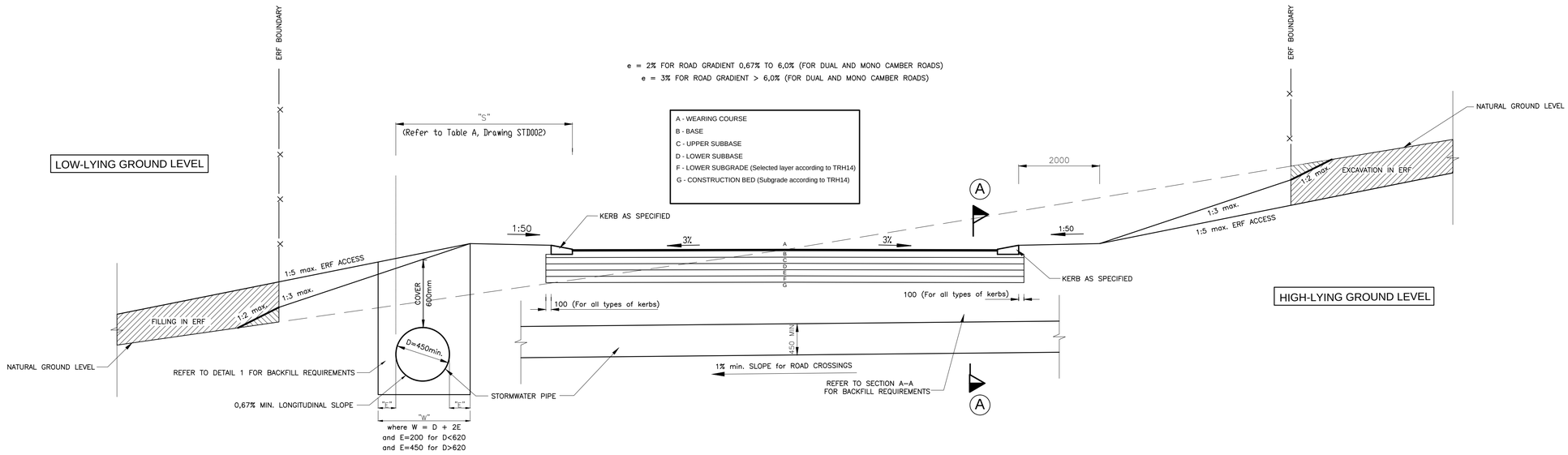
SCALE 1:1000

DRAWING NO: STD004

SHEET NO: 5 OF 7

0 REVISION

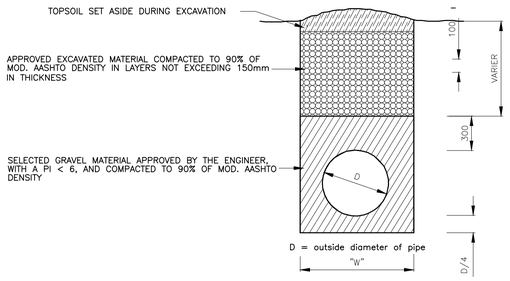


TYPICAL SECTION THROUGH ROAD RESERVE

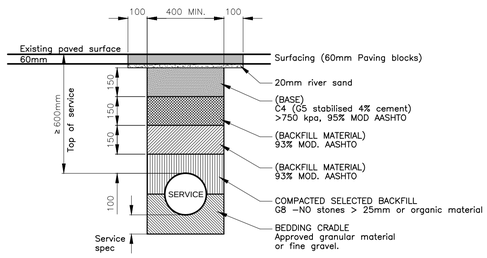
TABLE A: POSITION OF STORMWATER LINE IN ROAD RESERVE

ROAD RESERVE WIDTH (m)	CARRIAGE WAY WIDTH (m)	DISTANCE "S" (m)
25,0	14,0	2,300
	10,5	4,900
	7,4	6,000
20,0	10,5	2,300
	8,0	2,300
	7,4	2,300
16	7,4	1,950
	6,8	2,250
	6,0	2,300
13	5,5	1,400
	5,0	1,650
10	4,5	1,300

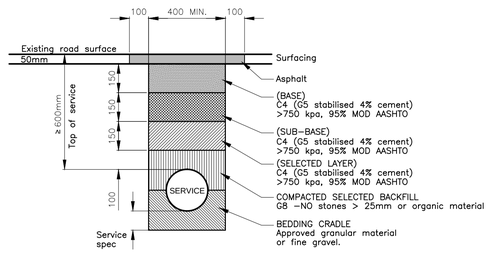
"S" Is the distance between the road (tar edge) and the furthest wall of the pipe or culvert.



DETAIL 1
BACKFILL OF TRENCHES NOT IN ROADS



TRENCH BACKFILLING FOR PAVED FOOTWAYS



TRENCH BACKFILLING FOR SURFACED ROADS

NOTES AND SPECIFICATIONS

1. STORMWATER

1.1 ALL STORMWATER PIPES TO BE LAID SOFFIT TO SOFFIT.

1.2 MIMIMUM PIPE DIAMETER IS 450mm.

1.3 MAXIMUM ANGLE BETWEEN ADJOINING PIPES IS 60%.

1.4 MINIMUM SLOPE FOR ROAD CROSSINGS IS 1% AND FOR OTHER PIPES 0,67%.

1.5 ALSO REFER TO SECTION 101, 104, 202, 502 AND 504 OF THE STANDARD SPECIFICATIONS FOR MINICIPAL CIVIL ENGINEERING WORKS, 3rd EDITION, 2005

2. ROADS.

2.1 ALL MATERIALS FOR PAVEMENT LAYERS SHALL, UNLESS OTHERWISE SPECIFIED IN THE PROJECT SPECIFICATIONS, CONFORM TO THE REQUIREMENTS OF TRH 14.

2.2 ALSO REFER TO SECTION 101, 104, 203, 503 AND 601 TO 606 OF THE STANDARD SPECIFICATIONS FOR MUNICIPAL CIVIL ENGINEERING WORKS, 3rd EDITION, 2005.

AMENDMENTS

NR.	DATE	APPROVED	DESCRIPTION	PAR.

DESIGNED: J. CRONJE — SIGNATURE: DATE:
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TRANSPORTATION PLANNING DIVISIONAL HEAD
Mr L. Swanepoel (Lourens)
SIGNATURE:
DATE:

DRAWING APPROVED BY GROUP HEAD
Mr Letlonkane P. (Phekо)
SIGNATURE: DATE:

LOCATION OF PROJECT:

TYPICAL STANDARD DETAILS

DESCRIPTION OF PROJECT

TYPICAL TRENCHING STORMWATER DETAIL
ROAD RESERVE, STORMWATER PIPELINE & FURROW

CONTRACT No. :
PROJECT No. :
DATE : 03 MARCH 2022
SCALE : AS SHOWN
ORIGINAL PAPER SIZE: A1
DRAWING NO. STD006
SHEET NO: 1 OF 1
REVISION 0

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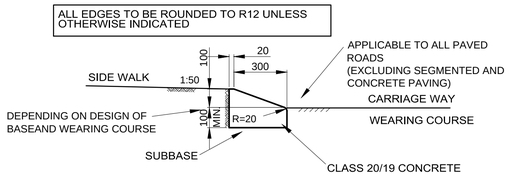
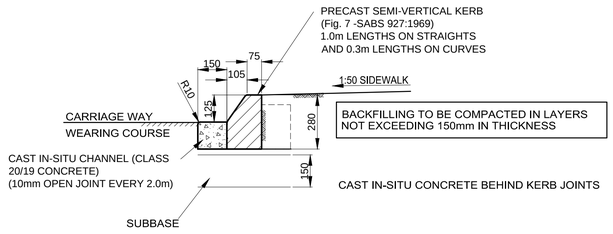
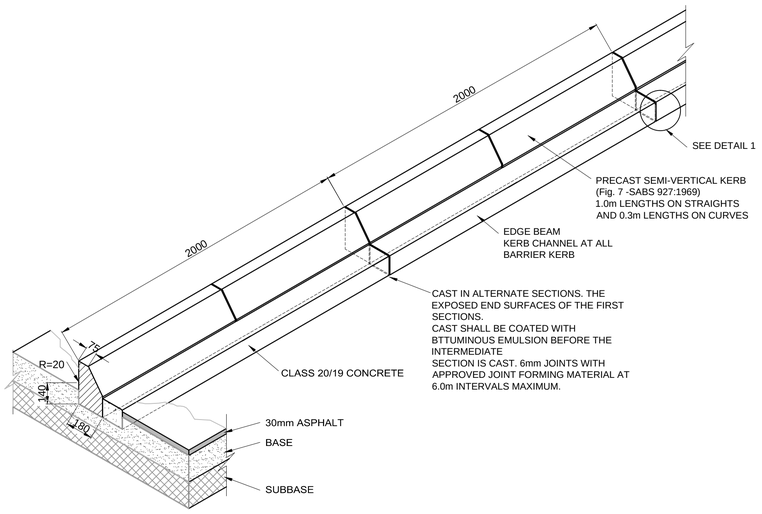


300 SLOPING KERB



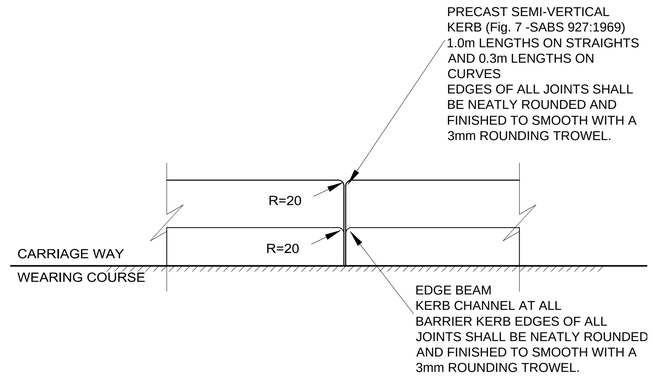
SEMI-VERTICAL KERB WITH CHANNEL

(FIG. 7 - SABS 927:1969)



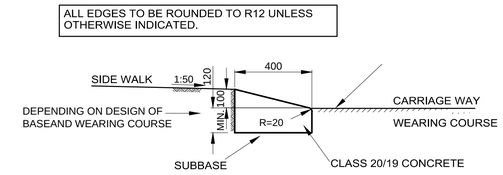
CAST IN-SITU DETAIL

SCALE 1: 20

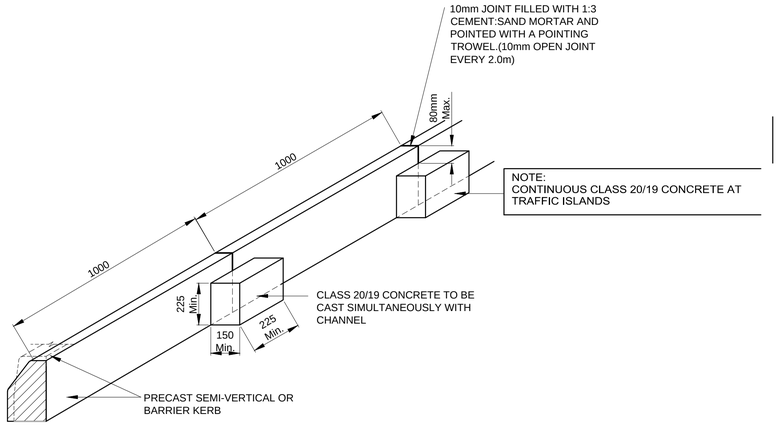


DETAIL 1

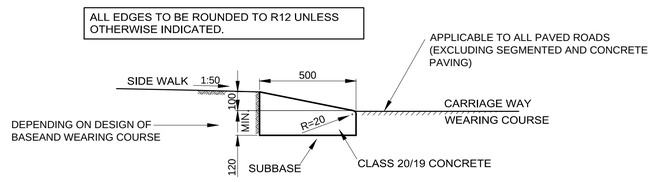
SCALE 1: 20



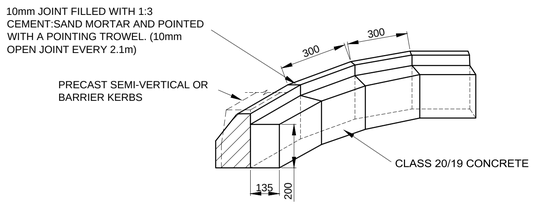
400 SLOPING KERB



SEMI-VERTICAL / BARRIER KERBS ALONG STRAIGHT SECTIONS

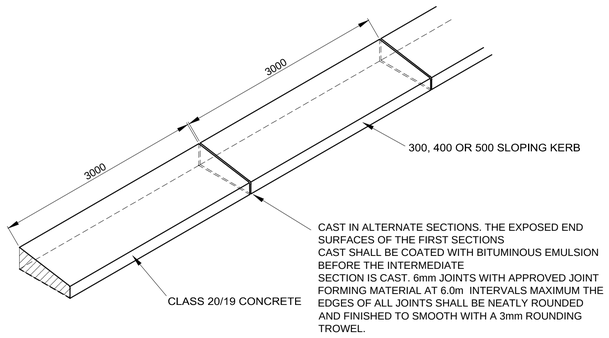


500 SLOPING KERB

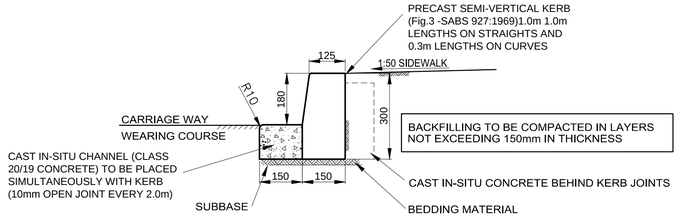


SEMI-VERTICAL / BARRIER KERBS ON CURVED SECTIONS

(Note: To be used up to and including a 15m Radius)



DETAIL OF SLOPING KERB



BARRIER KERB WITH CHANNEL

(FIG. 3 - SABS 927:1969)

TABLE A: KERBS TO BE USED FOR ROAD CONSTRUCTION

APPLICATION		TYPE OF KERB					
		300 Sloping Kerb.	400 Sloping Kerb.	500 Sloping Kerb.	Edge Beam	Semi-vertical Kerb (Fig.7) with channel	Barrier Kerb (Fig.3) with channel
Roads up to 5m wide.	Straights and curves	⊗			⊗ (See Note 1.)		
	Bellmouths (See Note 2 at the bottom)	⊗					
Road wider than 5m and up to 6m wide.	Straights and curves		⊗		⊗ (See Note 1.)		
	Bellmouths (See Note 2 at the bottom)		⊗				
Road wider than 6m	Straights and curves			⊗			
	Bellmouths (See Note 2 at the bottom)					⊗	
Bus and Taxi bays.							⊗
Where vehicles crossing the kerb is discouraged.						⊗	
Where vehicles crossing the kerb is prohibited.							⊗
Joint between asphalt and block paving					⊗		
Temporally edge restraint in asphalt paving to be removed when road is extended.					⊗		

NOTES: 1) An edge beam shall be constructed on the high side of roads with a single cross-fall.

2) At the intersection of roads with different road widths, the bellmouths shall be constructed with kerbs prescribed for the bellmouths of the wider roads.

SCALE 1:1000

NOTES AND SPECIFICATIONS

1. KERBS - GENERAL

1.1 Refer to Table A for the usage of kerbs

1.2 Also refer to Section 503 of the Standard Specifications for Municipal Civil Engineering Works, 3rd Edition, 2005.

2. CAST IN-SITU CONCRETE

2.1 Concrete to be class 20/19, class U2 finish or as speciefd by engineer.

2.2 Concrete to be cured for a minimum period of 7 days. also see section 704 of SSMCEW 3rd edition.

2.3 All concrete to be used for sloping kerbs or edge beams shall have a slump not greater than 60mm.

2.4 Where there is a difference between the top of the subbase and the bottom of the cast insitu kerbs of less than 75mm, such difference shall be made up with the same concrete as specified for the kerb, otherwise compacted subbase material shall be used.

2.5 The use of a machine to place cast in-situ kerbs must first be approved by the Engineer.

3. PRECAST KERBS

3.1 All precast kerbs shall comply with the requirements of SANS 927.

3.2 The bedding material on which precast kerbing is constructed shall be according to the Standard Specification for Municipal Civil Engineering Works, 3rd Edition, 2005.

AMENDMENTS

NR.	DATE	APPROVED	DESCRIPTION	PAR.

DESIGNED: P.A. ODENDAAL Pr.Eng. SIGNATURE: DATE:	DRAWN: S. AUDIE
DESIGN CHECKED BY: L.G. JOHANNES Pr. Eng. SIGNATURE: DATE:	INFRASTRUCTURE TECHNICAL INFORMATION MANAGEMENT: D.J. CHALMERS SIGNATURE: DATE:

CITY OF TSHWANE

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Ms. L. V. Kegakilwe-Piki, EXECUTIVE DIRECTOR, P.O. BOX 1409, PRETORIA, 0001

DRAWING APPROVED BY EXECUTIVE DIRECTOR
Ms. L. V. Kegakilwe-Piki
SIGNATURE: DATE:

LOCATION OF PROJECT:

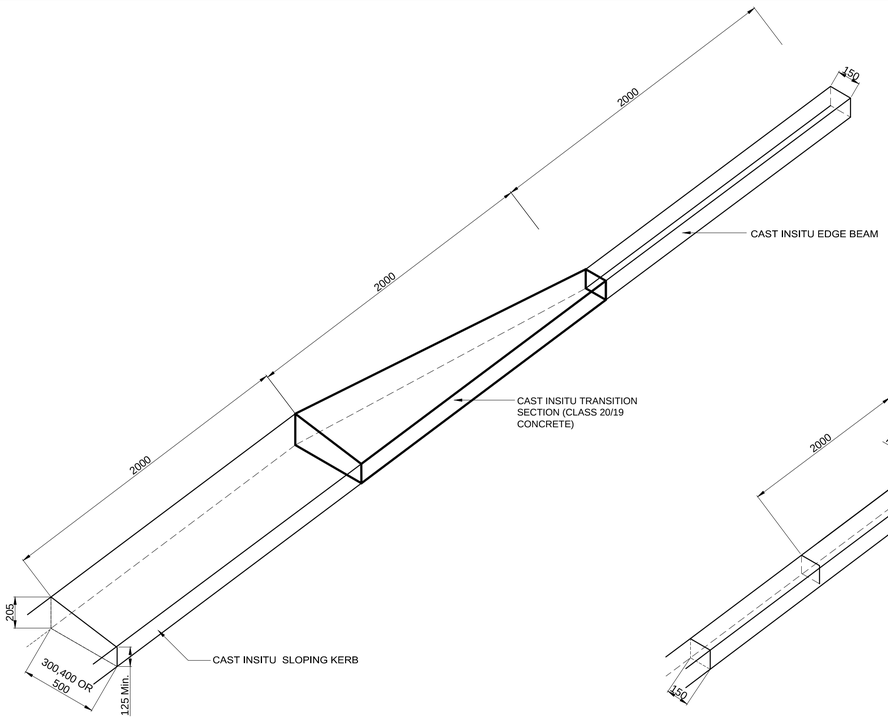
TYPICAL STANDARD DETAILS

DESCRIPTION OF PROJECT

KERBING DETAILS

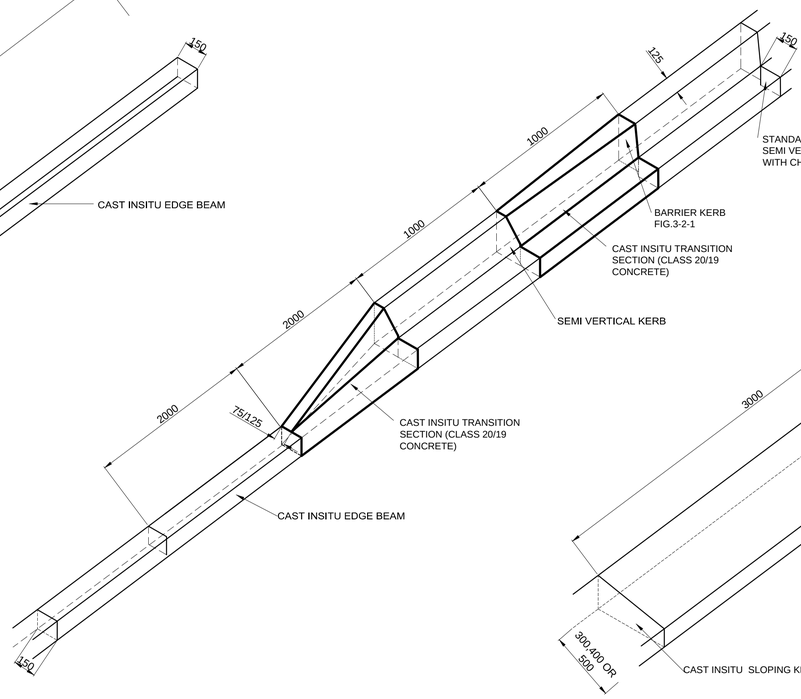
SLOPING KERB, SEMI-VERTICAL KERBS AND EDGE BEAM

CONTRACT No. :	PROJECT No. :
DATE : JANUARY 2018	SCALE : AS SHOWN
ORIGINAL PAPER SIZE: A1	
DRAWING NO. STD007	SHEET NO: 1 OF 2
REVISION 1	



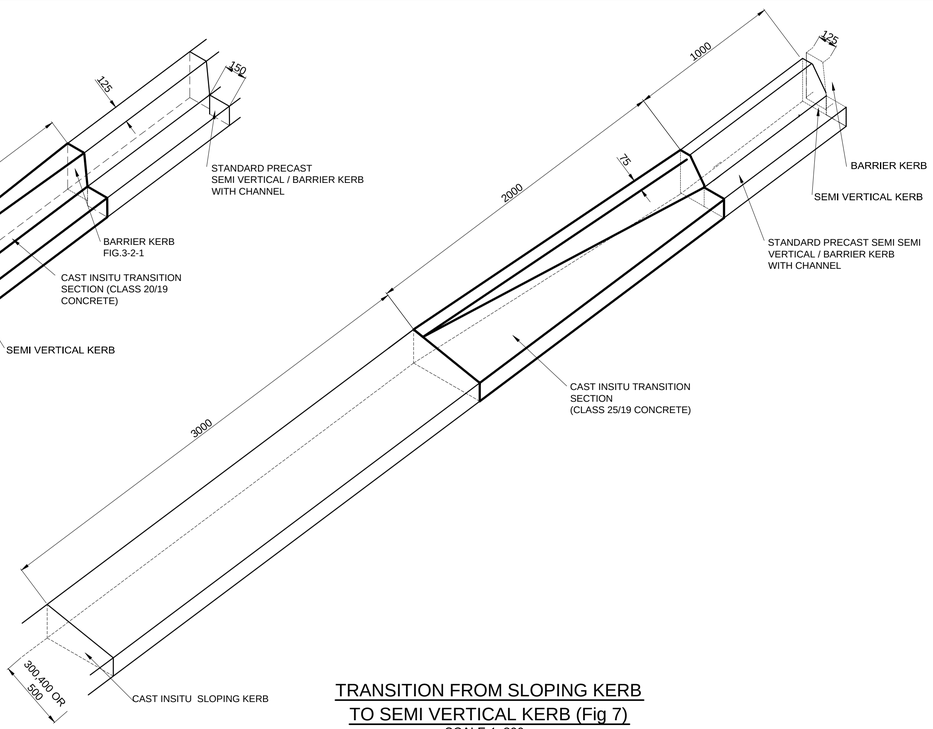
TRANSITION FROM SLOPING KERB TO EDGE BEAM

SCALE 1: 200



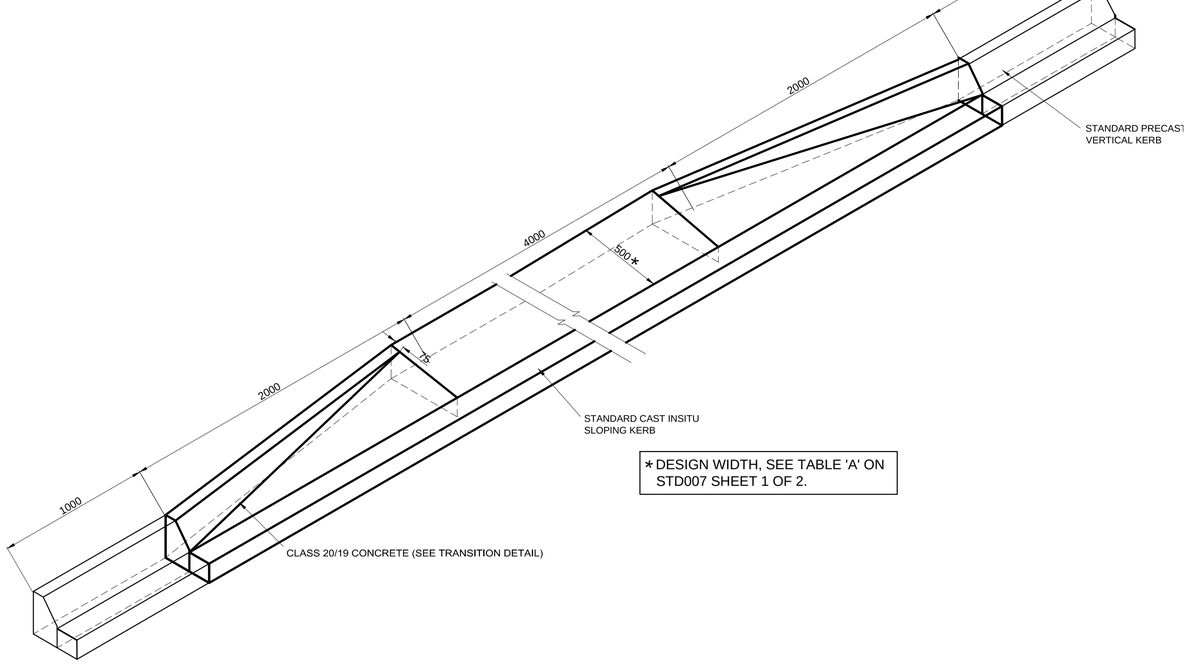
TRANSITION FROM SEMI VERTICAL / BARRIER KERB TO EDGE BEAM

SCALE 1: 200



TRANSITION FROM SLOPING KERB TO SEMI VERTICAL KERB (Fig 7)

SCALE 1: 200

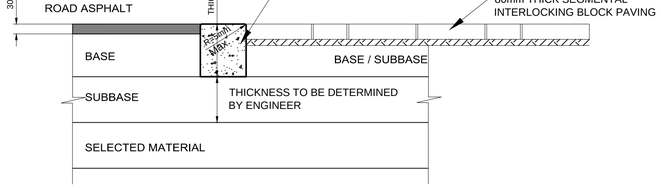


* DESIGN WIDTH, SEE TABLE 'A' ON STD007 SHEET 1 OF 2.

VEHICLE ENTRANCE WITH SEMI VERTICAL KERBING

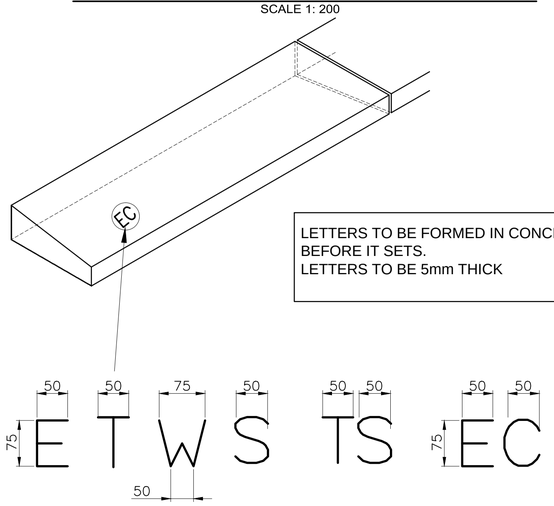
SCALE 1: 200

ALL EDGES TO BE ROUNDED TO R=5mm Max. UNLESS OTHERWISE INDICATED



TYPICAL SECTION OF EDGE BEAM AT THE TRANSITION BETWEEN TWO TYPES OF PAVEMENTS

SCALE 1: 200



LETTERS TO BE FORMED IN CONCRETE BEFORE IT SETS.
LETTERS TO BE 5mm THICK

DETAIL FOR THE IDENTIFICATION OF SLEEVE POSITIONS

NOTES AND SPECIFICATIONS

1. KERBS - GENERAL

1.1 Refer to Table A on Sheet 1 of Drawing STD007 for the application of kerbs.

1.2 Also refer to Section 503 of the Standard Specifications for Municipal Civil Engineering Works, 3rd Edition, 2005.

2. CAST IN-SITU CONCRETE

2.1 Concrete to be class 20/19.

2.2 Concrete to be cured for a minimum period of 7 days.

2.3 All concrete to be used for sloping kerbs or edge beams shall have a slump not greater than 60mm.

2.4 Where there is a difference between the top of the subbase and the bottom of the cast insitu kerbs of less than 75mm, such difference shall be made up with the same concrete as specified for the kerb, otherwise compacted subbase material shall be used.

2.5 The use of a machine to place cast insitu kerbs must first be approved by the Engineer.

3. PRECAST KERBS

3.1 All precast kerbs shall comply with the requirements of SANS 927.

3.2 The bedding material on which precast kerbing is constructed shall be according to the Standard Specification for Municipal Civil Engineering Works, 3rd Edition, 2005.

4. SERVICE KERB MAKERS FOR SERVICES

E	ELECTRICAL
T	TELKOM
W	WATER
S	SEWER
TS	TRAFFIC SIGNAL
EC	ELECTRONIC COMMUNICATION
LT	LIQUID TELECOM

4.1 All Electronic communication networks positions of crossing existing roads, need to be marked on the kerbs as indicated with the following abbreviations.

TBN (Tshwane Broadband Network)
DFA (Dark Fiber Africa)
MTN (MTN Group Limited)
VOD (Vodacom Group Limited)
FF (Frog Foot Fiber)
LT (Liquid Telecom) (Mthombo Pty Ltd)
EC (With all new road construction provision must be made for a minimum of 3 sleeves at all intersections and block crossings, for future communication services) In the case where these services are utilized by Electronic communication services these letterings need to be edged into the existing kerbs and the method be approved by the engineer. (Using a steel stencil template with the required letter dimensions and a concrete drill bit to edge the lettering 5mm deep was found to be most practical.)

AMENDMENTS

NR.	DATE	APPROVED	DESCRIPTION	PAR.

DESIGNED: P.A. ODENDAAL Pr.Eng. — SIGNATURE — DATE
DRAWN: S. AUDIE
DESIGN CHECKED BY: P.A. ODENDAAL Pr.Eng. — SIGNATURE — DATE
INFRASTRUCTURE TECHNICAL INFORMATION MANAGEMENT: D.J. CHALMERS — SIGNATURE — DATE

CITY OF TSHWANE

ROADS AND TRANSPORT DEPARTMENT

Mr P. Letlonkane, GROUP HEAD, P.O. BOX 1409, PRETORIA, 0001

Ms. L. V. Kegakilwe-Piki, EXECUTIVE DIRECTOR, P.O. BOX 1409, PRETORIA, 0001

DRAWING APPROVED BY EXECUTIVE DIRECTOR
Ms. L. V. Kegakilwe-Piki
SIGNATURE: ..... DATE: .....

LOCATION OF PROJECT:

TYPICAL STANDARD DETAILS

DESCRIPTION OF PROJECT

KERBING DETAILS

TRANSITION SECTIONS AND EDGE-BEAMS
VEHICLE ENTRANCE

CONTRACT No. :
PROJECT No. :
DATE : SEPTEMBER 2018
SCALE : AS SHOWN
ORIGINAL PAPER SIZE: A1
DRAWING NO. STD007
SHEET NO: 2 OF 2
REVISION

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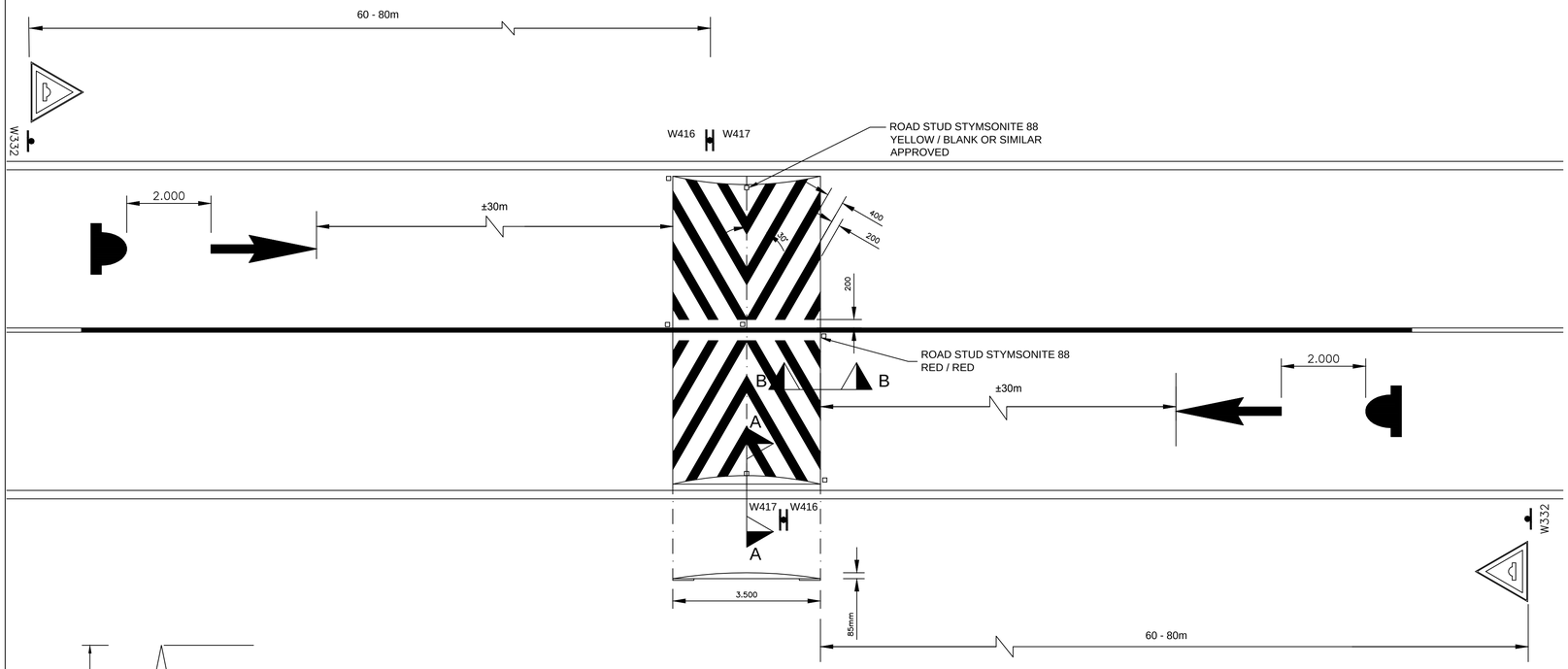
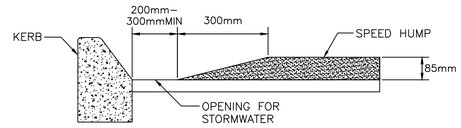


PLAN OF SPEED HUMP

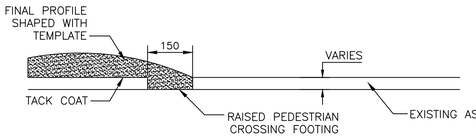
SCALE 1:100



SECTION A-A:
CONSTRUCTION DETAIL OF SPEED HUMP

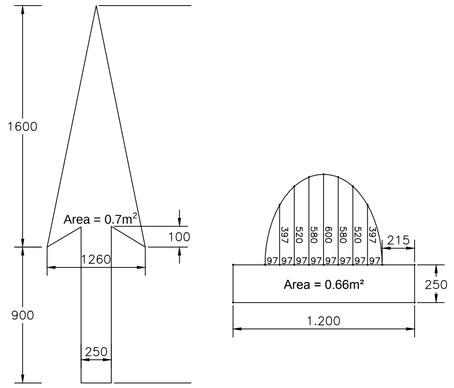
SCALE 1: 100

50/60 Km/h



SECTION B-B:
CONSTRUCTION DETAIL OF SPEED HUMP

SCALE 1: 100



NOTE
1. Traffic Signs:

1.1 Only galvanised bolts and nuts to be used on W and R series (no uni-struts)

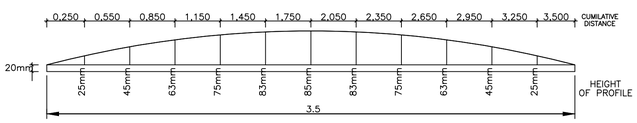
1.2 All signs must be according to the Road Traffic Signs Manuals but use 900Φ STOP (60km/h zone) for 3-way and 4-way stops

1.3 All signs excluding R1 series must have rounded edges

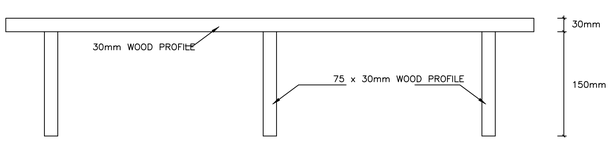
2. ROADMARKINGS:
All new road markings in thermoplastic

DETAIL OF SPEED HUMP ROAD MARKING

SCALE 1: 20



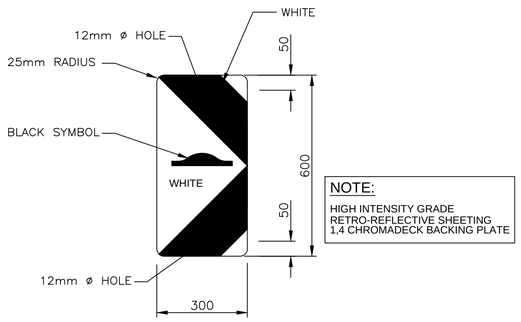
SIDE ELEVATION



PLAN

TEMPLATE DETAIL FOR CONSTRUCTION OF SPEED HUMP

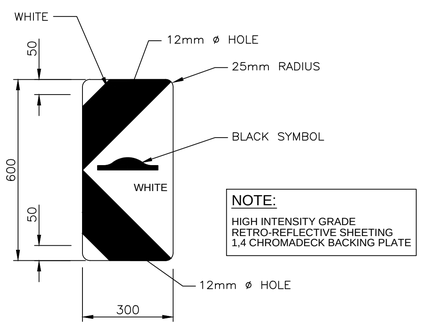
SCALE 1: 20



NOTE:
HIGH INTENSITY GRADE
RETRO-REFLECTIVE SHEETING
1,4 CHROMADECK BACKING PLATE

DANGER PLATE SPEEDHUMP (LEFT)
W416

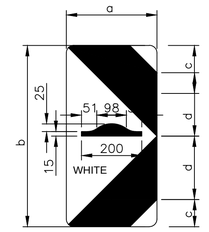
SCALE 1:10



NOTE:
HIGH INTENSITY GRADE
RETRO-REFLECTIVE SHEETING
1,4 CHROMADECK BACKING PLATE

DANGER PLATE SPEEDHUMP (RIGHT)
W417

SCALE 1:10



DIMENSIONS (mm)

a	b	c	d	R
300	600	90	210	25

DANGER PLATE SPEEDHUMP
W416

SCALE 1:10

NOTES AND SPECIFICATIONS

CONSTRUCTION METHOD: SPEED HUMPS

1. Setting out of hump - few days before construction.
2. Saw cuts one to two days before construction.

ON CONSTRUCTION DAY:

3. Remove 500 mm asphalt strips.
4. Start erecting road signs and paint warning road marking.
5. Place asphalt in strips and compact with two passes without vibrator.
6. Place templates - both sides of one lane at a time.
7. Place asphalt and rake till slightly higher than templates.
8. Shape asphalt with straight edge (channel section 6 m long).
9. Remove templates and compact without vibrator (three passes)
10. Measure profile and rectify if necessary.
11. Final compaction with three to four passes with vibrator.
12. Place road studs.
13. Paint speed hump the next day.

2. Traffic Signs:

2.1 Only galvanised bolts and nuts to be used on W and R series (no uni-struts)

2.2 All signs must be according to the Road Traffic Signs Manuals but use 900Φ STOP (60km/h zone) for 3-way and 4-way stops

2.3 All signs excluding R1 series must have rounded edges

3. **ROADMARKINGS:**

3.1 All longitudinal road markings in 1.2mm thick thermoplastic.

3.2 All small hand type markings namely STOP lines, Yield Lines, Pedestrian Crossing Lines, Block Pedestrian Crossings, Arrows and Symbols to be in thermoplastic (1.2mm thick) or two component cold plastic (MMA - Methyl Methacrylate) applied as a screed (1mm thick).

Colour	Paint application rate (mm)	Premix bead application rate (%)	Initial coefficient of retro-reflective (minicandelas/lux/m²)
WHITE	1.2mm thermo(1mm Cold)	35	250
YELLOW	1.2mm thermo(1mm Cold)	35	135

NOTE:

The Trafic Engineering and Operation section must always be consulted to assist with the setting out of speed humps.

AMENDMENTS

NR.	DATE	APPROVED	DESCRIPTION	PAR.

DESIGNED
C.B. RAMEKANE
SIGNATURE: DATE:

DRAWN
S. AUDIE

DESIGN CHECKED BY
P. A. ODENDAAL Pr.Eng.
SIGNATURE: DATE:

INFRASTRUCTURE TECHNICAL INFORMATION MANAGEMENT
D.J. CHALMERS
SIGNATURE: DATE:

CITY OF TSHWANE
ROADS AND TRANSPORT DEPARTMENT

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ACTING DIVISIONAL HEAD
Mr Lebepe M.T. (Thabo)
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PRETORIA
0001

DRAWING APPROVED BY ACTING EXECUTIVE DIRECTOR
Mr Lebepe M.T. (Thabo)
SIGNATURE: DATE:

LOCATION OF PROJECT:

TYPICAL STANDARD DETAILS

DESCRIPTION OF PROJECT

TRAFFIC CALMING MEASURES
TYPICAL SPEED HUMP AND ROADMARKINGS DETAIL

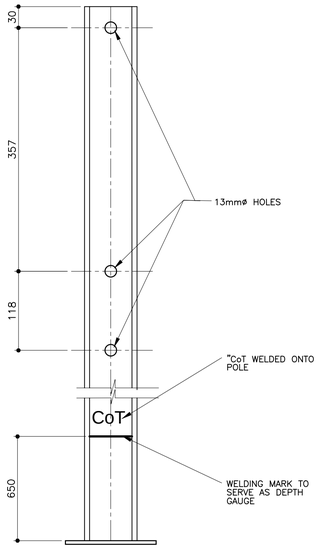
CONTRACT No. :
PROJECT No. :

DATE : 15 MARCH 2018
SCALE : AS SHOWN
ORIGINAL PAPER SIZE: A1

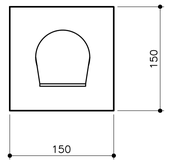
0 10 20 40 60 80m
SCALE 1:1000

DRAWING NO. STD016
SHEET NO: 1 OF 7
REVISION 0

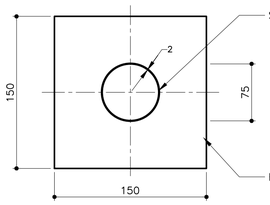
"D" SECTION POLE DETAIL



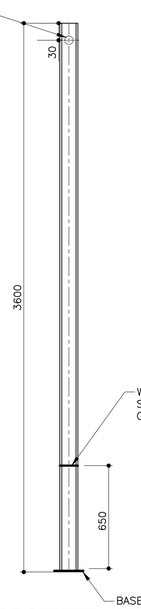
FRONT ELEVATION OF "D" SECTION POLE 3,2m & 3,6m

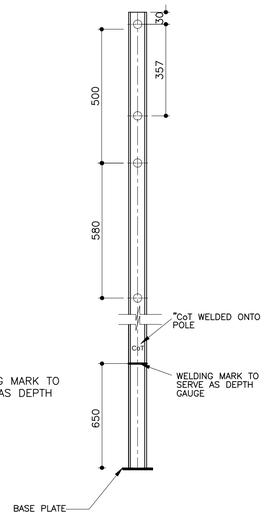


PLAN OF "D" SECTION POLE



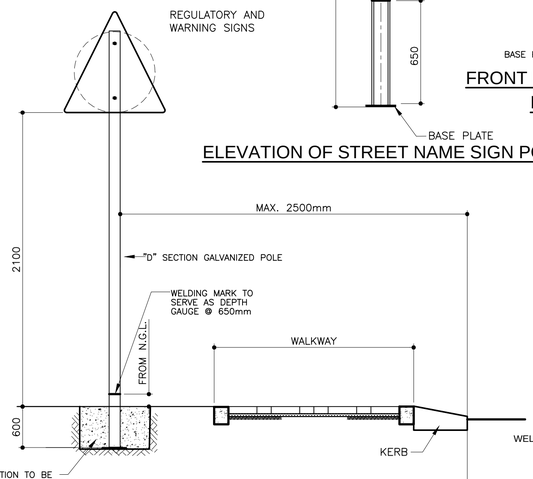
PLAN OF STREET NAME SIGN POLE



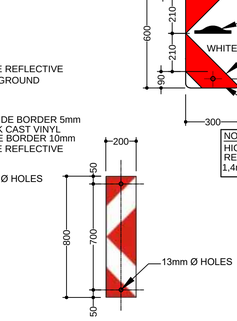


FRONT ELEVATION OF 2m & 2.5m D - SECTION POLE

ELEVATION OF STREET NAME SIGN POLE

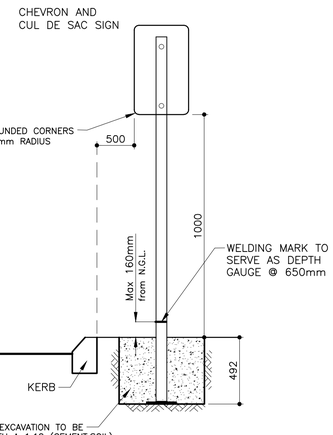


WALKWAY REGULATORY / WARNING SIGNS INSTALLATION DETAIL



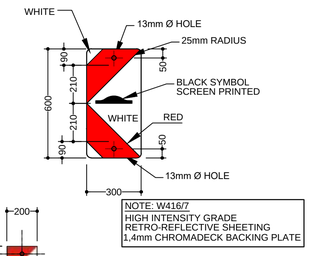
WELDING MARK TO SERVE AS DEPTH GAUGE
R103 + W402

W401 & W402

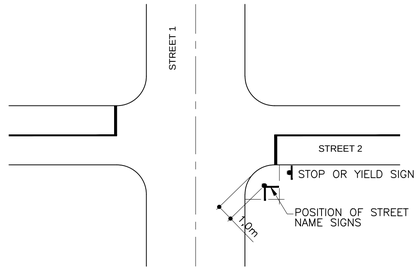


300X300X492 EXCAVATION TO BE BACKFILLED WITH A 1:12 (CEMENT:SOIL) MIXTURE THOROUGHLY COMPACTED AT OPTIMUM MOISTURE CONTENT IN 100mm LAYERS TO 93% MOD. AASHTO DENSITY.

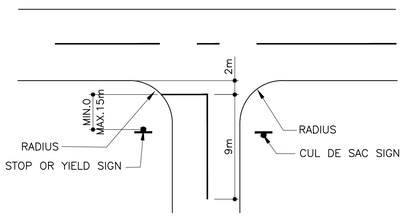
CHEVRON OR CUL DE SAC SIGN INSTALLATION DETAIL



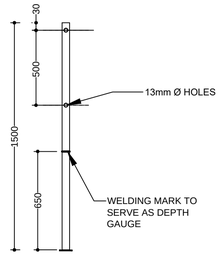
NOTE: W416/7
HIGH INTENSITY GRADE RETRO-REFLECTIVE SHEETING 1,4mm CHROMADECK BACKING PLATE



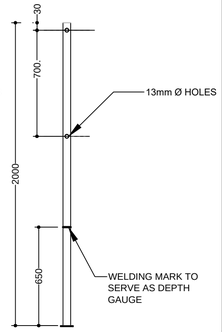
DETAIL OF INSTALLATION POSITION



TYPICAL INTERSECTION DETAIL



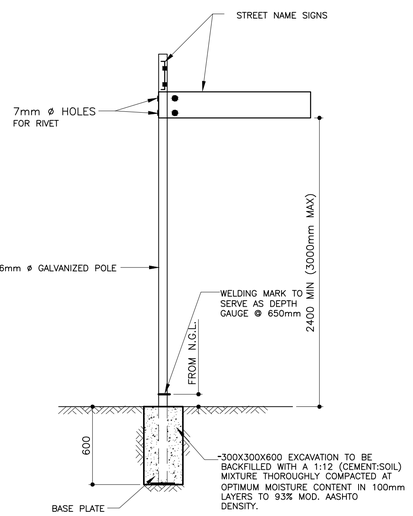
50 X 50 SQUARE



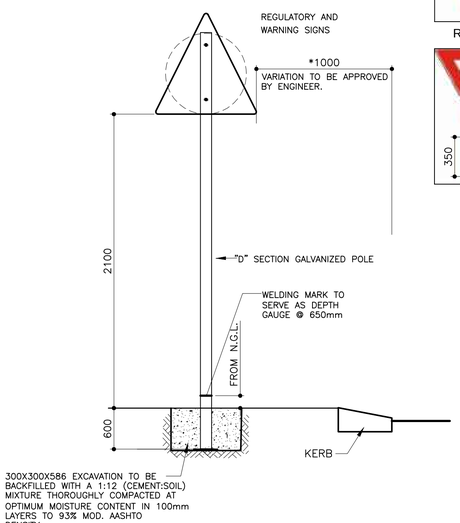
50 X 50 SQUARE

MINIMUM SIZES

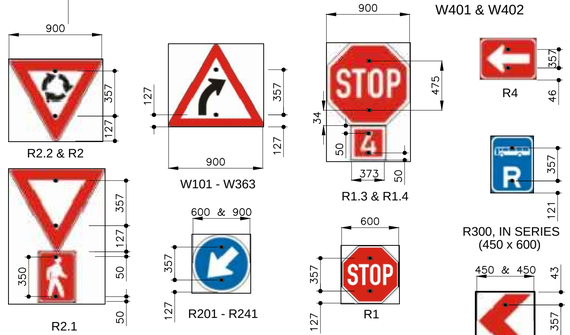
SIGN	SIGN SIZE	REFLECTIVE MATRIAL CLASS	POLE SIZE
R1-R241 600mm	600mm	CLASS 1 ENGINEERING GRADE PRISMATIC	3.2m D-SECTION
R1-R241 900mm	900mm (3 & 4 Way Stop)	CLASS 1 ENGINEERING GRADE PRISMATIC	3.6m D-SECTION
R1.3 & R1.4	273mm x 273mm	CLASS 1 ENGINEERING GRADE PRISMATIC	3.6m D-SECTION
R2 & R2.2	900mm	CLASS 1 ENGINEERING GRADE PRISMATIC	3.2m D-SECTION
R2.1	338mm x 450mm	CLASS 1 ENGINEERING GRADE PRISMATIC	3.6m D-SECTION
R301 -R403	450mm x 600mm	CLASS 1 ENGINEERING GRADE PRISMATIC	3.2m D-SECTION
R103 & W402	300mm x 1500mm	CLASS 1 ENGINEERING GRADE PRISMATIC	2.0m D-SECTION
R103 & W402	300mm x 1500mm	CLASS 3 ENGINEERING GRADE PRISMATIC	1.5m □ -SECTION BREAK AWAY
W101 - W363	900mm	CLASS 1 ENGINEERING GRADE PRISMATIC	3.2m D-SECTION
W101 - W364	1200mm	CLASS 1 ENGINEERING GRADE PRISMATIC	3.6m D-SECTION
W401 - W402	200mm x 800mm	CLASS 3 HIGH INTENSITY PRISMATIC	2.0m □ -SECTION
W401 - W402	250mm x 1000mm	CLASS 3 HIGH INTENSITY PRISMATIC	2.5m D-SECTION
W403 - W404	1200mm	CLASS 3 HIGH INTENSITY PRISMATIC	3.2m D-SECTION
W405 - W406	450mm x 450mm	CLASS 3 HIGH INTENSITY PRISMATIC	2.0m D-SECTION
W405 - W406	900mm x 900mm	CLASS 3 HIGH INTENSITY PRISMATIC	2.5m D-SECTION
W407 - W408	450mm x 1350mm	CLASS 3 HIGH INTENSITY PRISMATIC	2.0m D-SECTION
W407 - W408	900mm x 2700mm	CLASS 3 HIGH INTENSITY PRISMATIC	2.5m D-SECTION
W409 - W410	450mm x 2700mm	CLASS 3 HIGH INTENSITY PRISMATIC	2.0m D-SECTION
W409 - W410	900mm x 5400mm	CLASS 3 HIGH INTENSITY PRISMATIC	2.5m D-SECTION
W411	350mm x 3360mm	CLASS 3 HIGH INTENSITY PRISMATIC	2.0m D-SECTION
W413	466mm x 800mm	CLASS 3 HIGH INTENSITY PRISMATIC	1.5m □ -SECTION BREAK AWAY
W415	200mm x 800mm	CLASS 3 HIGH INTENSITY PRISMATIC	MOUNT ON BRIDGE
W416 - W417	300mm x 600mm	CLASS 3 HIGH INTENSITY PRISMATIC	1.5m □ -SECTION
IN4 - IN 6	450mm x 600mm	CLASS 3 HIGH INTENSITY PRISMATIC	2.0m D-SECTION
STREET NAMES		CLASS 1 ENGINEERING GRADE PRISMATIC	3.6m ROUND SECTION
R3 & R6 & R101 - R241	600mm	CLASS 1 ENGINEERING GRADE PRISMATIC	3.2m D-SECTION
R3 & R6 & R101 - R242	900mm	CLASS 1 ENGINEERING GRADE PRISMATIC	3.2m D-SECTION



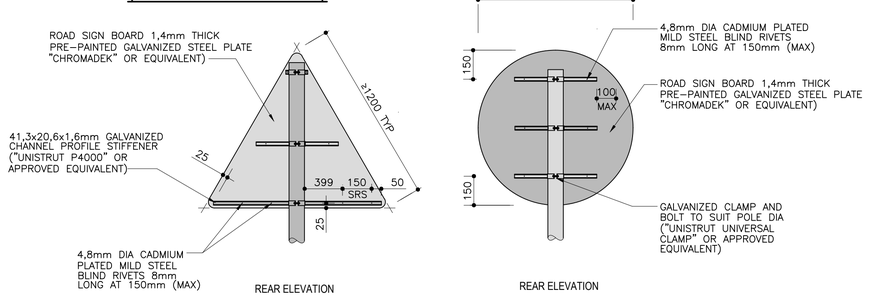
INSTALLATION DETAIL



NO WALKWAY REGULATORY / WARNING SIGNS INSTALLATION DETAIL



R & W SERIES (600 & 900 SIZE SIGNS)



REGULATORY AND WARNING SIGNS SIGN DRILLING DETAIL (13mm Ø Holes)

N.T.S

NOTES AND SPECIFICATIONS

SIGNS AND POLES

1. POLES

1.1 FOR STANDARD REGULATORY AND WARNING SIGNS, POLES USED SHALL BE OF A "D" SECTION OBTAINED BYROLLING FLAT MILD STEEL PLATE OF 2MM WALL THICKNESS TO THE DESIRED FORM, AND SEAM-WELDING IT ALONG THE ENTIRE LENGTH (THE D-SECTION EXTRUDE FROM STANDARD PIPE SECTION IS NOT ACCEPTABLE).

1.2 THE D SECTION MUST HAVE A FLAT BASE OF APPROXIMATELY 63MM MEASURED EXTERNALLY AND THE CIRCULAR PART AN EXTERNAL DIAMETER OF 76MM. EACH POLE IS TO BE BLANKED-OFF AT THE TOP BY MEANS OF AT LEAST 2MM MILD STEEL PLATE WELDED TO THE TOP, WITH THE SAME FORM AS THE D SECTION. THE WELDING JOINT MUST BE WATERTIGHT AND SMOOTHED OFF AFTER WELDING.

1.4 THE BASE PLATE FOR D SECTION POLES AND 76MM Ø ROUND POLES TO BE 150MM SQUARE AND 2MM THICK, AND WELDED TO THE BASE OF EACH POLE BY MEANS OF 4 EVENLY SPACED WELDS, EACH NOT LESS THAN 20MM LONG. THE BASE PLATE FOR 100MM Ø ROUND POLES TO BE 200MM SQUARE.

1.5 THE POLES SHALL BE HOT DIPPED ZINC COATED (GALVANISED).

1.6 ALL POLES > 3.6M IN LENGTH TO BE 100MM Ø ROUND POLES WITH 3MM WALL THICKNESS.

1.7 POLES USED FOR SIGNS > 1.5M² TO BE DESIGNED IN LINE WITH SARTSM VOLUME 2 CHAPTER 15.

1.8 ALL POLES USED FOR STREET NAME SIGNS SHALL BE 3.6M ROUND SECTIONS AND 76MM Ø.

1.9 SIGNS MUST BE INSTALLED ONTO BREAK AWAY FOOTINGS ON PAVED CONCRETE ISLANDS.

1.10 HOLES TO BE DRILLED AS DIRECTED BY THE ENGINEER.

1.11 SIGN DATE NEEDS TO BE APLICATE TO THE FRONT OF THE POLE 50mm HIGH VINYL.

1.12 NO JOINTING OF POLES ALLOWED.

2. SIGNS

2.1 ALL SIGNS TO BE MANUFACTURED WITH CLASS I ENGINEERING GRADE PRISMATIC MATERIAL HAVING A 7 YEAR WARRANTY PERIOD, WHILE ALL HAZARD MARKERS TO BE MANUFACTURED WITH CLASS 3 HIGH INTENSITY PRISMATIC MATERIAL HAVING A 10 YEAR WARRANTY PERIOD.
ALL PANEL SIGNS TO BE CLASS 3 REFLECTIVE GROUND MOUNTED AND CLASS 4 REFLECTIVE FOR OVERHEAD SIGNS.
ALL TEMPORARY SIGNS TO BE CLASS 3 REFLECTIVE MATERIAL.

2.2 NO UNISTRUTS ON SIGNS ARE ALLOWED FOR 600MM R SERIES AND UP TO 900MM W SERIES SIGNS, WHILE SIGNS > 1200MM REQUIRE UNISTRUTS.

2.3 ALL SIGN CORNERS TO BE ROUND R=25MM (EXCLUDING R1).

2.4 ALL SIGNS TO BE FIXED FLAT AGAINST THE POLES.

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2.12 ALL BOLTS TO HAVE WASHERS.

AMENDMENTS

NR.	DATE	APPROVED	DESCRIPTION	PAR.

DESIGNED: J. CRONJE Pr.TechEng.
DRAWN: S. AUDIE
DESIGN CHECKED BY: S. NAIDOO Pr.Tech.Eng.
INFRASTRUCTURE TECHNICAL INFORMATION MANAGEMENT: D.J. CHALMERS

CITY OF TSHWANE
ROADS AND TRANSPORT DEPARTMENT

GROUP HEAD
Mr Letlonkane P. (Pheko)
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DIVISIONAL HEAD
Mr Marven K Tlhagale
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DRAWING RECOMMENDED BY DIVISIONAL HEADS

TRANSPORT INFRASTRUCTURE DESIGN AND CONSTRUCTION DIVISIONAL HEAD
Mr K Tlhagale (Marven)
SIGNATURE:.....
DATE:.....

TRANSPORTATION PLANNING DIVISIONAL HEAD
Mr L. Swanepoel (Lourens)
SIGNATURE:.....
DATE:.....

DRAWING APPROVED BY GROUP HEAD
Mr Letlonkane P. (Pheko)
SIGNATURE:.....
DATE:.....

LOCATION OF PROJECT:

TYPICAL STANDARD DETAILS

DESCRIPTION OF PROJECT

SIGN BOARDS

REGULATORY AND WARNING SIGNS

CONTRACT No. :
PROJECT No. :
DATE : 17 NOVEMBER 2022
SCALE : NOT TO SCALE
ORIGINAL PAPER SIZE: A1
DRAWING NO: STD018
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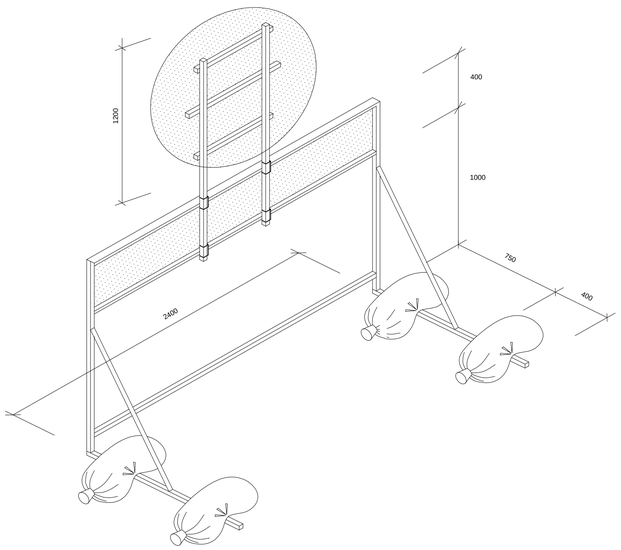
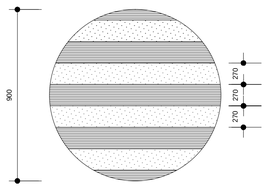
REVISION



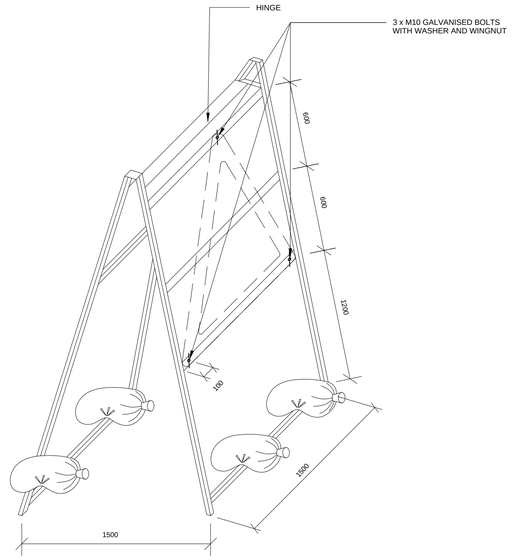
MOVABLE BARRICADES

NOT TO SCALE



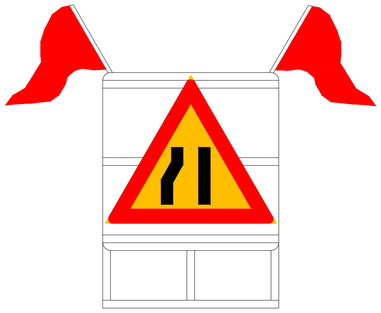
REVERSE SIDE OF PORTABLE SIGNS

NOT TO SCALE



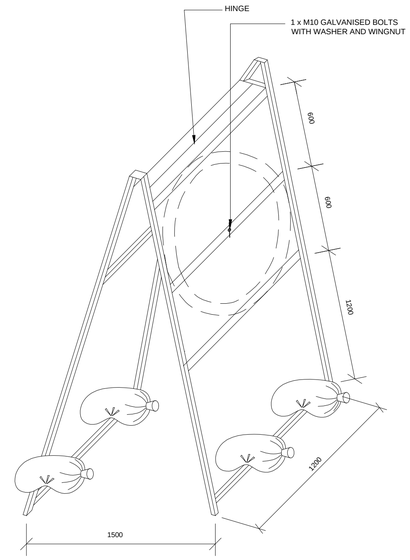
FOLDING STANDS WITH CHANGABLE SIGNS (1500mm)

NOT TO SCALE



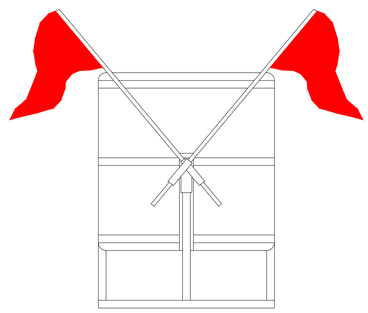
FOLDING STANDS WITH FLAG ATTACHMENTS - FRONT SIDE

NOT TO SCALE



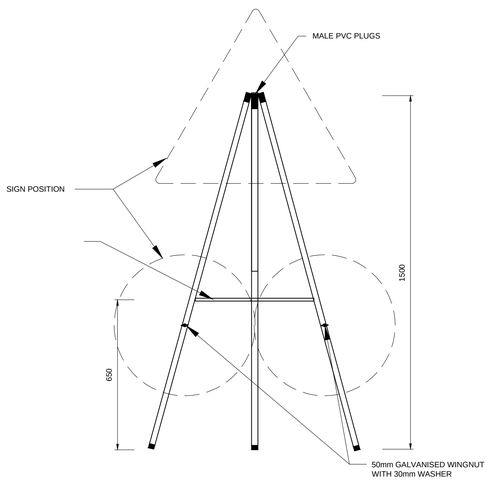
FOLDING STANDS WITH CHANGABLE SIGNS (1200Ø)

NOT TO SCALE

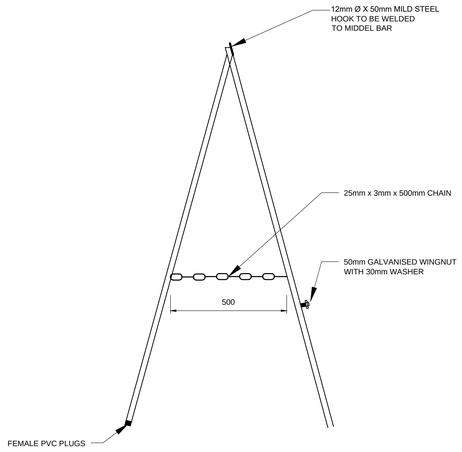


FOLDING STANDS WITH FLAG ATTACHMENTS - REVERSE SIDE

NOT TO SCALE



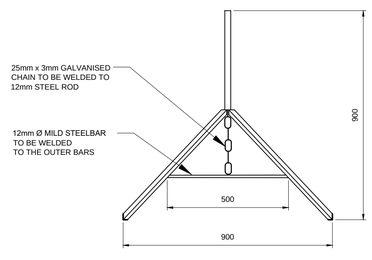
FRONT ELEVATION



SIDE ELEVATION

NOTE:

THE SECTION OF THE STAND SHALL BE OF A 25mm x 25mm HALLOW SQUARE SECTION OR 25mm Ø ROUND SECTION OF 1,6mm WALL THICKNESS.
STANDS SHALL BE PAINTED WITH 1 COAT PRIMER, 1 UNDERCOAT AND 1 FINAL COAT BRIGHT YELLOW.
TRAFFIC SIGN HOOK AND 2 X 30mm GALVANISED BOLTS WELDED TO THE FRAME COMPLETE WITH 50mm GALVANISED WINGNUTS AND 30mm WASHER TO BE FITTED AS INDICATED ON THE DRAWIN.
ALL WELDING SHALL BE 6mm FILLET RIGHT AROUND.
TOP OPEN ENDS OF SQUARE TUBING TO BE PLUGGED WITH MALE PVC PLUGS AND BOTOM OPEN ENDS TO BE PLUGGED WITH FEMALE PVC PLUGS.



PLAN

ROADWORKS FOLDING STAND

NOT TO SCALE

NOTES AND SPECIFICATIONS

POLES, SIGNS, FRAME PANEL AND BREAKAWAY DETAIL

1. POLES

1.1 FOR STANDARD REGULATORY AND WARNING SIGNS, POLES USED SHALL BE OF A "D" SECTION OBTAINED BYROLLING FLAT MILD STEEL PLATE OF 2MM WALL THICKNESS TO THE DESIRED FORM, AND SEAM-WELDING IT ALONG THE ENTIRE LENGTH (THE D SECTION EXTRUDE FROM STANDARD PIPE SECTION IS NOT ACCEPTABLE).
1.2 THE D SECTION MUST HAVE A FLAT BASE OF APPROXIMATELY 63MM MEASURED EXTERNALLY AND THE CIRCULAR PART AN EXTERNAL DIAMETER OF 76MM. EACH POLE IS TO BE BLANKED-OFF AT THE TOP BY MEANS OF AT LEAST 2MM MILD STEEL PLATE WELDED TO THE TOP, WITH THE SAME FORM AS THE D SECTION. THE WELDING JOINT MUST BE WATERTIGHT AND SMOOTHED OFF AFTER WELDING.
1.4 THE BASE PLATE FOR D SECTION POLES AND 76MM Ø ROUND POLES TO BE 150MM SQUARE AND 2MM THICK, AND WELDED TO THE BASE OF EACH POLE BY MEANS OF 4 EVENLY SPACED WELDS, EACH NOT LESS THAN 20MM LONG. THE BASE PLATE FOR 100MM Ø ROUND POLES TO BE 200MM SQUARE.
1.5 THE POLES SHALL BE HOT DIPPED ZINC COATED (GALVANISED).
1.6 ALL POLES > 3.6M IN LENGTH TO BE 100MM Ø ROUND POLES WITH 3MM WALL THICKNESS.
1.7 POLES USED FOR SIGNS > 1.5M² TO BE DESIGNED IN LINE WITH SARTSM VOLUME 2 CHAPTER 15.
1.8 ALL POLES USED FOR STREET NAME SIGNS SHALL BE 3.6M ROUND SECTIONS AND 76MM Ø.
1.9 SIGNS MUST BE INSTALLED ONTO BREAK AWAY FOOTINGS ON PAVED CONCRETE ISLANDS.
1.10 HOLES TO BE DRILLED AS DIRECTED BY THE ENGINEER.
1.11 SIGN DATE NEEDS TO BE APLICATE TO THE FRONT OF THE POLE 50MM HIGH VINYL.
1.12 NO JOINTING OF POLES ALLOWED.

2. SIGNS

2.1 ALL SIGNS TO BE MANUFACTURED WITH CLASS I ENGINEERING GRADE PRISMATIC MATERIAL HAVING A 7 YEAR WARRANTY PERIOD, WHILE ALL HAZARD MARKERS TO BE MANUFACTURED WITH CLASS 3 HIGH INTENSITY PRISMATIC MATERIAL HAVING A 10 YEAR WARRANTY PERIOD.
ALL PANEL SIGNS TO BE CLASS 3 REFLECTIVE GROUND MOUNTED AND CLASS 4 REFLECTIVE FOR OVERHEAD SIGNS.
ALL TEMPORARY SIGNS TO BE CLASS 3 REFLECTIVE MATERIAL.
2.2 NO UNISTRUTS ON SIGNS ARE ALLOWED FOR 600MM R SERIES AND UP TO 900MM W SERIES SIGNS, WHILE SIGNS > 1200MM REQUIRE UNISTRUTS.
2.3 ALL SIGN CORNERS TO BE ROUND R=25MM (EXCLUDING R1).
2.4 ALL SIGNS TO BE FIXED FLAT AGAINST THE POLES.
2.5 ALL VINYL TO BE CAST VINYL WITH 10 YEAR WARRANTY FOR ROAD SIGNS.
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2.12 ALL BOLTS TO HAVE WASHERS.

3. FRAME DETAIL.
FRAMES ONLY TO BE USED FOR W409 TO W411

3.1 THE FRAME SHALL BE OF A 38mm x 38mm HOLLOW SQUARE SECTION OF 2mm WALL THICKNESS.
3.2 FRAMES SHALL BE HOT DIPPED GALVANIZED.
3.3 ALL WELDING SHALL BE 6mm FILLET RIGHT AROUND.
3.4 FRAME SHALL BE COMPLETE WITH A 50mm x 80mm BRACKET AS PER DETAIL C AT THE TOP OF THE FRAME AND 200mm LONG UNISTRUT SECTION AT THE BOTTOM OF THE FRAME.
3.5 UNISTRUT TO BE SUPPLIED COMPLETE WITH CLAMPS, BOLTS, NUTS AND WASHERS.
3.6 ALL CUTTING, WELDING AND DRILLING TO BE DONE BEFORE THE GALVANIZING. ALL CORNERS TO BE CUT AND JOINED AT 45°

4. PANEL DETAIL
ALL HIGH VISIBILITY , GUIDENCE INFORMATION SIGNS TO BE PANEL SIGNS

4.1 ALL PANELS SHALL BE MANUFACTURED FROM 1,0mm THICK CHROMADEK MILD STEEL PLATE FOR PANELS < 200mm
4.2 A SIGN FACE WHICH EXCEEDS 6.3m IN LENGTH MAY BE MANUFACTURED IN 2 SECTIONS, THE JOINT SHALL NOT EXCEED 2mm. PANELS TO BE JOINED WITH M10 NUT WITH SPRINGNUT. REFER TO SARTSM VOLUME 2 CHAPTER 15 FOR DETAIL.
4.3 1,4mm CHROMADEK CHANNEL TO BE USED AT THE VERTICAL SIDES OF THE SIGN.
3.4 BLIND RIVETS SHALL BE 4.8mm Ø CADMIUM PLATED MILD STEEL.
4.5 STRUCTURAL STEEL SHALL COMPLY WITH THE FOLLOWING REQUIREMENTS: MILD STEEL: BS 4360, GRADE 43A ; OR SABS 1431, GRADE 300W.
4.6 ALL WELDING OF STEELWORK SHALL BE CARRIED OUT IN ACCORDANCE WITH BS 5135.
4.7 WELDING, CUTTING AND DRILLING SHALL BE DONE BEFORE GALVANISING.

5. BREAK-AWAY POLE FOOTING

5.1 STRUCTURAL STEEL SHALL COMPLY WITH THE FOLLOWING REQUIREMENTS: MILD STEEL; BS 4360, GRADE 43A; OR SABS HIGH-YIELD STRESS STEEL: BS 4360 GRADE 50B; OR SABS 1431, GRADE 350W. HIGH-YIELD STRESS STEEL: BS 4360 GRADE 50B; OR SABS 1431, GRADE 350W.
5.2 ALL WELDING OF STEELWORK SHALL BE CARRIED OUT IN ACCORDANCE WITH BS 5135.
5.3 WELDING, CUTTING AND DRILLING SHALL BE DONE BEFORE GALVANISING.

6. ALSO REFER TO SECTION 612 AND 809 OF THE STANDARD SPECIFICATIONS FOR MUNICIPAL CIVIL ENGINEERING WORKS, 3rd EDITION, 2005.

AMENDMENTS

NR.	DATE	APPROVED	DESCRIPTION	PAR.

DESIGNED
J. CRONJE Pr. Tech Eng.
SIGNATURE DATE

DRAWN
S. AUDIE

DESIGN CHECKED BY
S. NAIDOO Pr. Tech Eng.
SIGNATURE DATE

INFRASTRUCTURE TECHNICAL INFORMATION MANAGEMENT
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SIGNATURE:..... DATE:.....

LOCATION OF PROJECT:

TYPICAL STANDARD DETAILS

DESCRIPTION OF PROJECT

SIGN BOARDS

ACCOMMODATION TRAFFIC:
BARRICADE FOLDING STAND DETAIL

CONTRACT No. :
PROJECT No. :

DATE :
17 NOVEMBER 2022

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STD018

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6 OF 6

REVISION