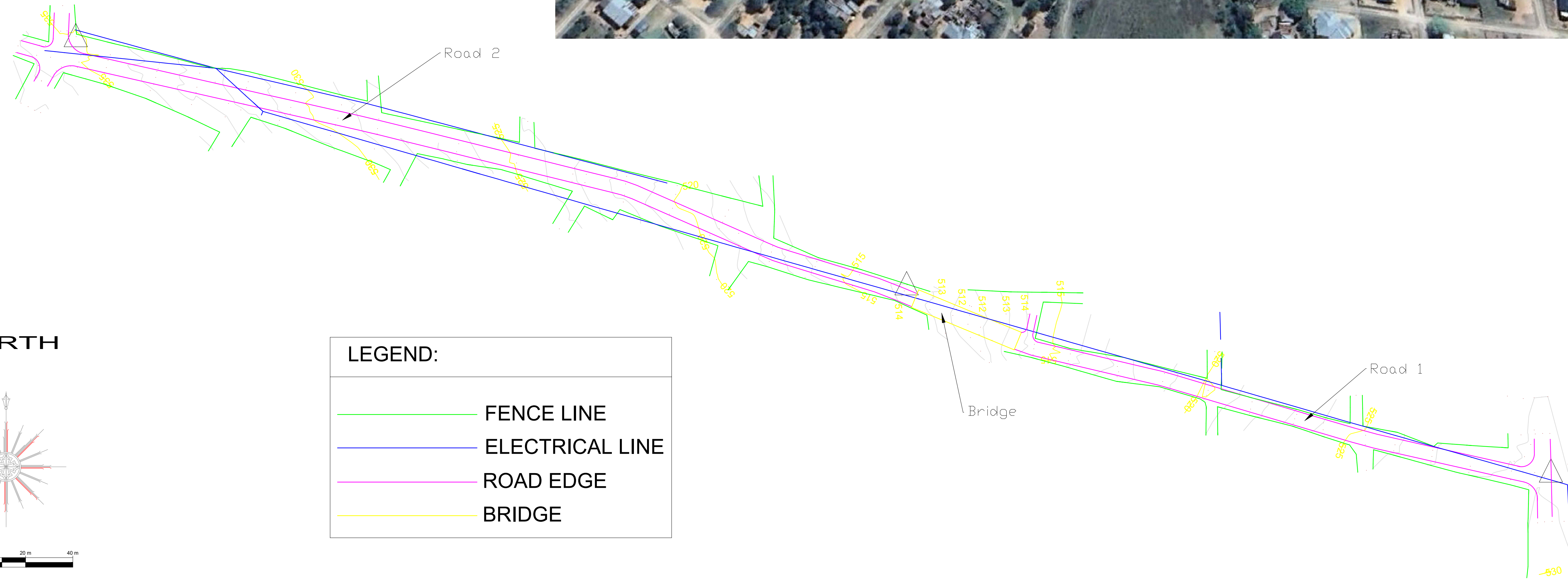
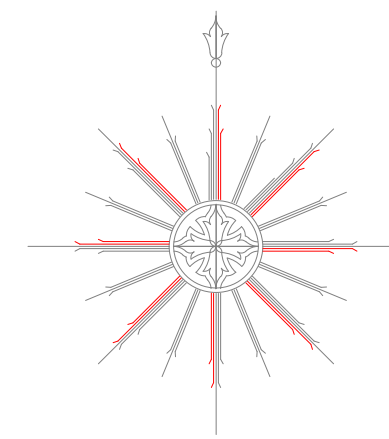


DRAWING CHECKED BY: MANYELENYELE AE	 MATHANDA CIVIL ENGINEERING AND PROJECT MANAGEMENT 11 TANGELO STREET BENDOR POLOKWANE 0699 Tel. (015) 298 8425 Fax (015) 298 8734 E-mail: mathandaconsulting@gmail.com	PROJECT TITLE:	 CITY OF MBOMBELA 1 NEL STREET MBOMBELA 1201 Tel. 013 759 9111 Fax 013 759 2070	MUNICIPAL MANAGER DATE 15/11/2024 CONSULTING ENGINEER DATE Pr No. 201370363	CONTRACT NO: 213/2020 XXXVI	SCALES
DRAWN BY: MHLARI KDK		UPGRADING OF VEHICLE BRIDGE AND 750M CONNECTOR ROAD AT SHABALALA MICASA			TENDER DRAWING	AS SHOWN
DESIGN CHECKED BY: MANANGA A		DRAWING TITLE:				DRAWING No: XXXVI - 001
DESIGNED BY: MANYELENYELE AE		LAY OUT PLAN: AERIAL PHOTOGRAPH				



NORTH

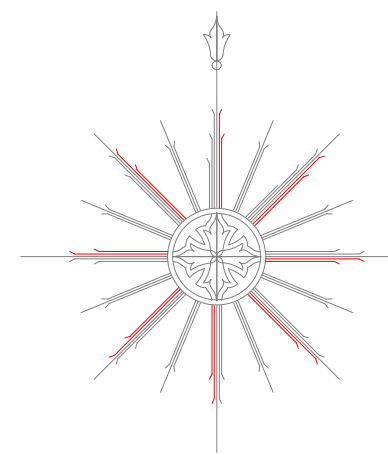


20 m 0 m 20 m 40 m

LEGEND:	
	FENCE LINE
	ELECTRICAL LINE
	ROAD EDGE
	BRIDGE

DRAWING CHECKED BY: MANYELENYELE AE	 MATHANDA CIVIL ENGINEERING AND PROJECTMANAGEMENT 11 TANGELO STREET BENDOR POLOKWANE 0699 Tel. (015) 298 8425 Fax (015) 298 8734 E-mail: mathandaconsulting@gmail.com	PROJECT TITLE:	 CITY OF MBOMBELA 1 NEL STREET MBOMBELA 1201 Tel. 013 759 9111 Fax 013 759 2070	MUNICIPAL MANAGER DATE CONSULTING ENGINEER Pr No. 20370363	CONTRACT NO: 213/2020 XXXVI	SCALES
DRAWN BY: MHLARI KDK		UPGRADING OF VEHICLE BRIDGE AND 750M CONNECTOR ROAD AT SHABALALA MICASA			TENDER DRAWING	AS SHOWN
DESIGN CHECKED BY: MANANGA A		DRAWING TITLE:				DRAWING No: XXXVI - 002
DESIGNED BY: MANYELENYELE AE		LAY OUT PLAN: SERVICES				

NORTH



Existing Paved Section

300 X 100 Edge Beam

Proposed Paving

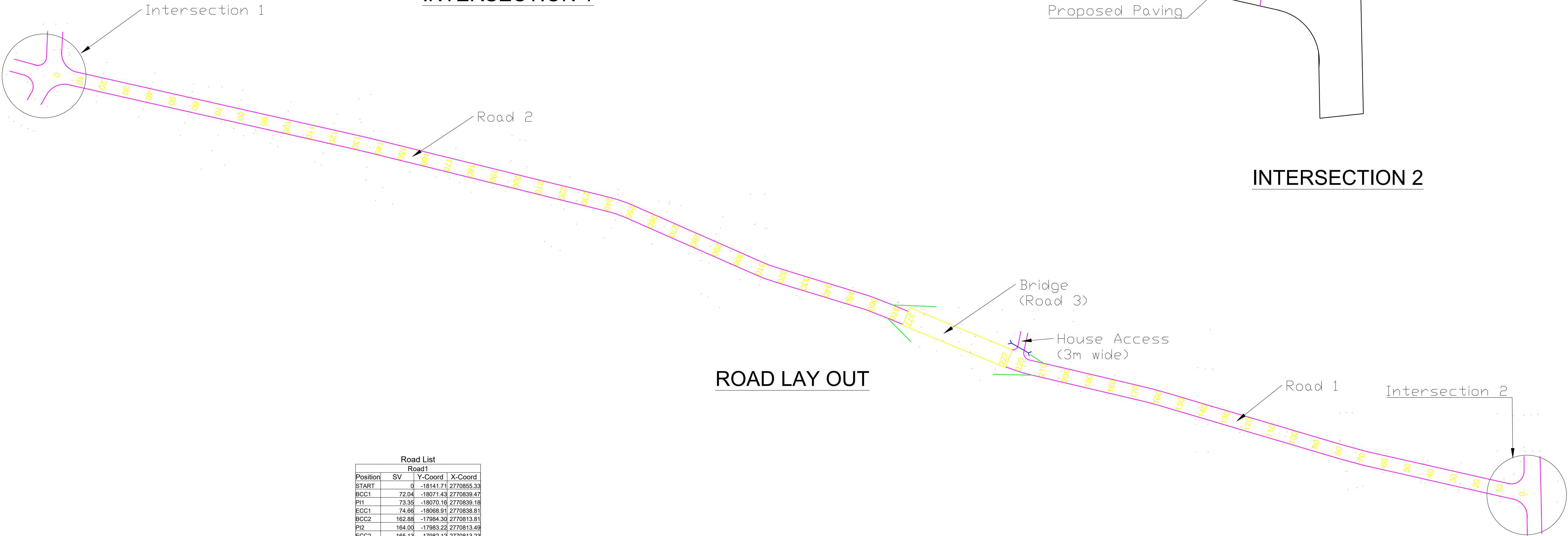
INTERSECTION 1

300 X 100 Edge Beam

Proposed Paving

Unpaved Section

INTERSECTION 2



ROAD LAY OUT

Curve List							
Road 1							
No	Radius	TR.In	TR.Out	TAN.In	TAN.Out	Deflection	
0	0.00	0.00	0.00	0.00	0.00	0.00.00	
1	40.00	0.00	0.00	1.31	1.31	3.44.33	
2	40.00	0.00	0.00	1.13	1.13	3.13.39	
3	5.00	0.00	0.00	0.40	0.40	9.13.43	
4	0.00	0.00	0.00	0.00	0.00	0.00.00	
Road 2							
No	Radius	TR.In	TR.Out	TAN.In	TAN.Out	Deflection	
0	0.00	0.00	0.00	0.00	0.00	0.00.00	
1	40.00	0.00	0.00	0.40	0.40	1.00.18	
2	40.00	0.00	0.00	3.46	3.46	9.52.23	
3	40.00	0.00	0.00	2.36	2.36	6.45.18	
4	5.00	0.00	0.00	0.24	0.24	5.28.59	
5	0.00	0.00	0.00	0.00	0.00	0.00.00	
Road 3							
No	Radius	TR.In	TR.Out	TAN.In	TAN.Out	Deflection	
0	0.00	0.00	0.00	0.00	0.00	0.00.00	
1	0.00	0.00	0.00	0.00	0.00	0.00.00	

Road List			
Road 1			
Position	SV	Y-Coord	X-Coord
START	0	-18141.71	2770855.33
BCC1	72.04	-18071.43	2770839.47
PI1	73.35	-18070.16	2770839.18
ECC1	74.66	-18068.91	2770838.81
BCC2	162.88	-17984.30	2770813.81
PI2	164.00	-17983.22	2770813.49
ECC2	165.13	-17982.12	2770813.23
BCC3	221.83	-17926.93	2770800.25
PI3	222.23	-17926.54	2770800.16
ECC3	222.63	-17926.17	2770800.01
END	227.23	-17921.92	2770798.25
Road 2			
Position	SV	Y-Coord	X-Coord
START	0	-17516.88	2770767.84
BCC1	134.01	-17647.61	2770706.31
PI1	134.41	-17648.00	2770706.40
ECC1	134.81	-17648.38	2770706.50
BCC2	243.34	-17753.76	2770732.49
PI2	246.78	-17757.11	2770733.32
ECC2	250.23	-17760.27	2770734.71
BCC3	313.12	-17817.84	2770760.02
PI3	315.47	-17820.00	2770760.97
ECC3	317.83	-17822.26	2770761.66
BCC4	361.87	-17864.38	2770774.52
PI4	362.11	-17864.61	2770774.59
ECC4	362.35	-17864.83	2770774.68
END	377.11	-17876.47	2770780.32
Road 3			
Position	SV	Y-Coord	X-Coord
START	0	-17921.92	2770798.25
END	47.00	-17878.47	2770780.32

LEGEND:

- 900mm Ø PIPE CULVERT
- ROAD EDGE
- BRIDGE
- SIDE DRAIN DISCHARGE

DRAWING CHECKED BY: MANYELENYELE AE



MATHANDA CIVIL ENGINEERING AND PROJECTMANAGEMENT
11 TANGELO STREET
DENBURG

DRAWN BY: MHLARI KDK

PROJECT TITLE:

UPGRADING OF VEHICLE BRIDGE AND 750M
CONNECTOR ROAD AT SHARAI ALA MICASA



CITY OF MBOMBELA
1 NEL STREET
MBOMBELA
2001

MUNICIPAL MANAGER

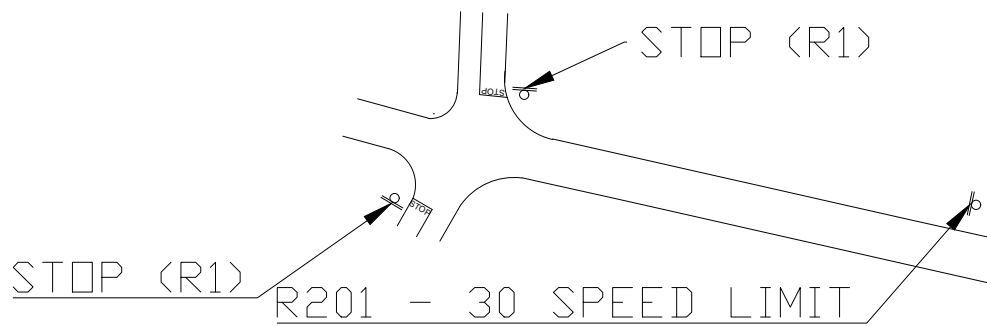
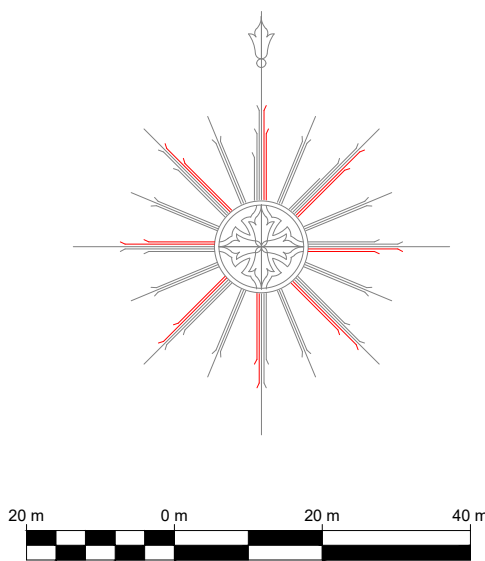
DATE

CONTRACT NO: 213/2020 XXXVI

SCALES

AS SHOWN

NORTH



TRAFFIC SIGNS & MARKING

1. Traffic Signs:

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

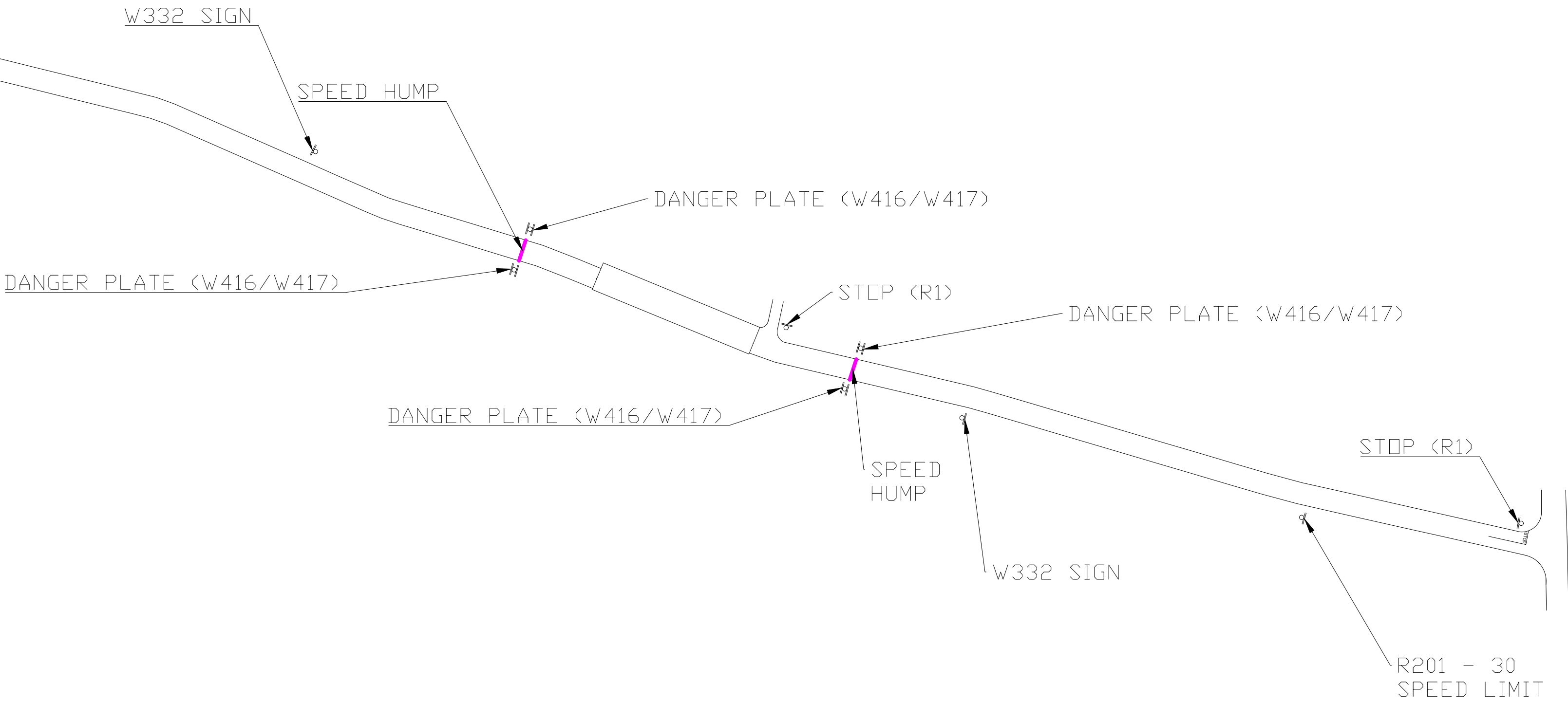
1.2 All signs must be according to the Road Traffic Signs Manuals

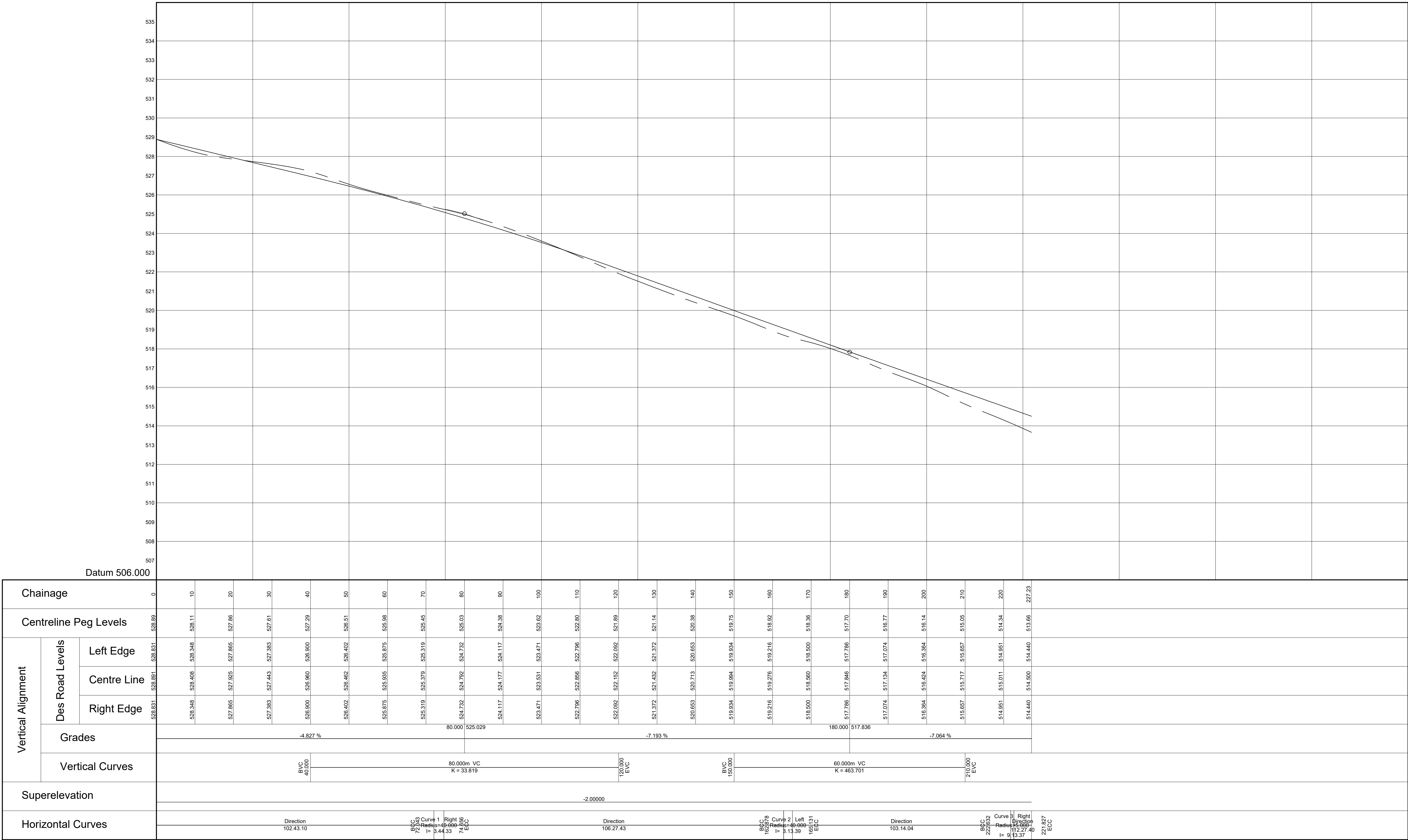
1.3 All signs excluding R1 series must have rounded edges

2. ROAD MARKINGS:

All new road markings in thermoplastic

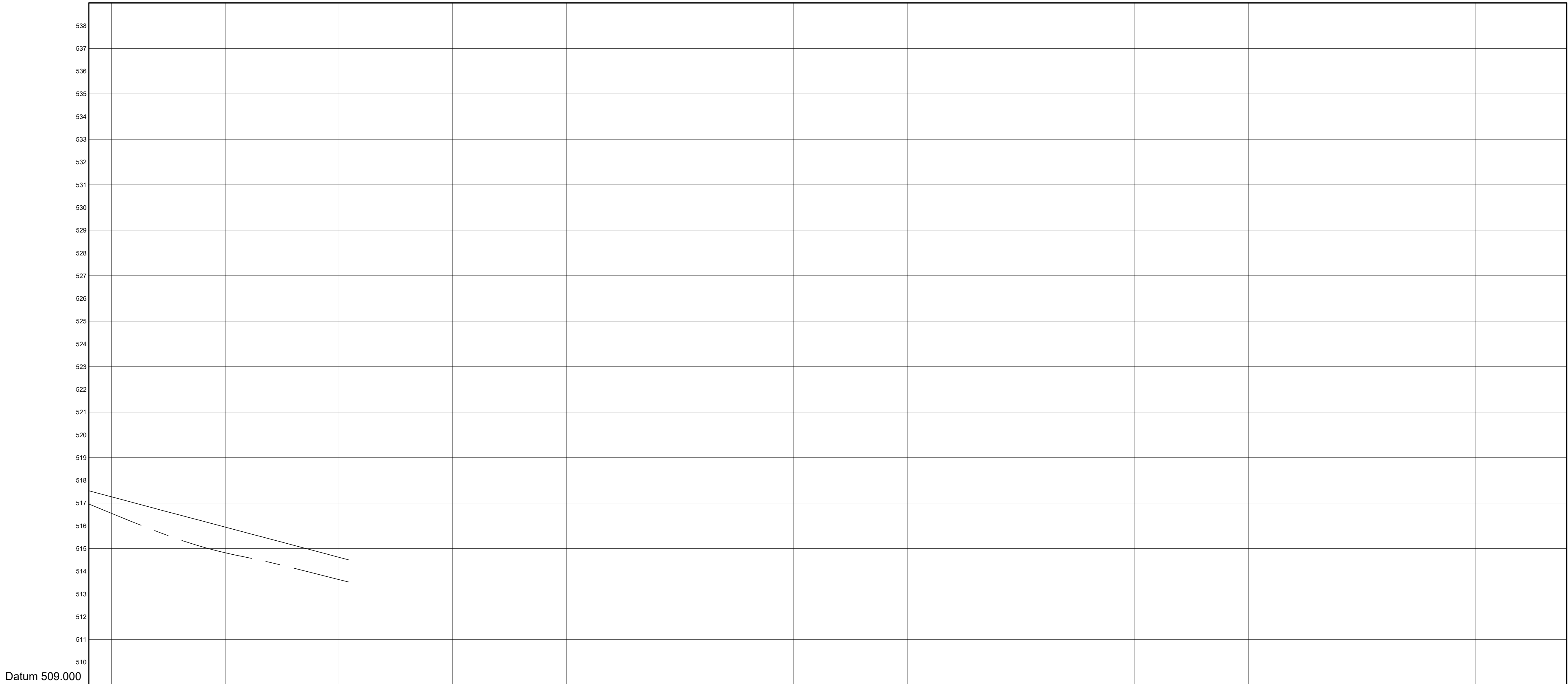
Colour	Paint application rate(mm)	Premix bead application rate(%)	Initial coefficient of retro-reflective (mimicandelas/lux/m²)
WHITE	1.2	35	200
YELLOW	1.2	35	135





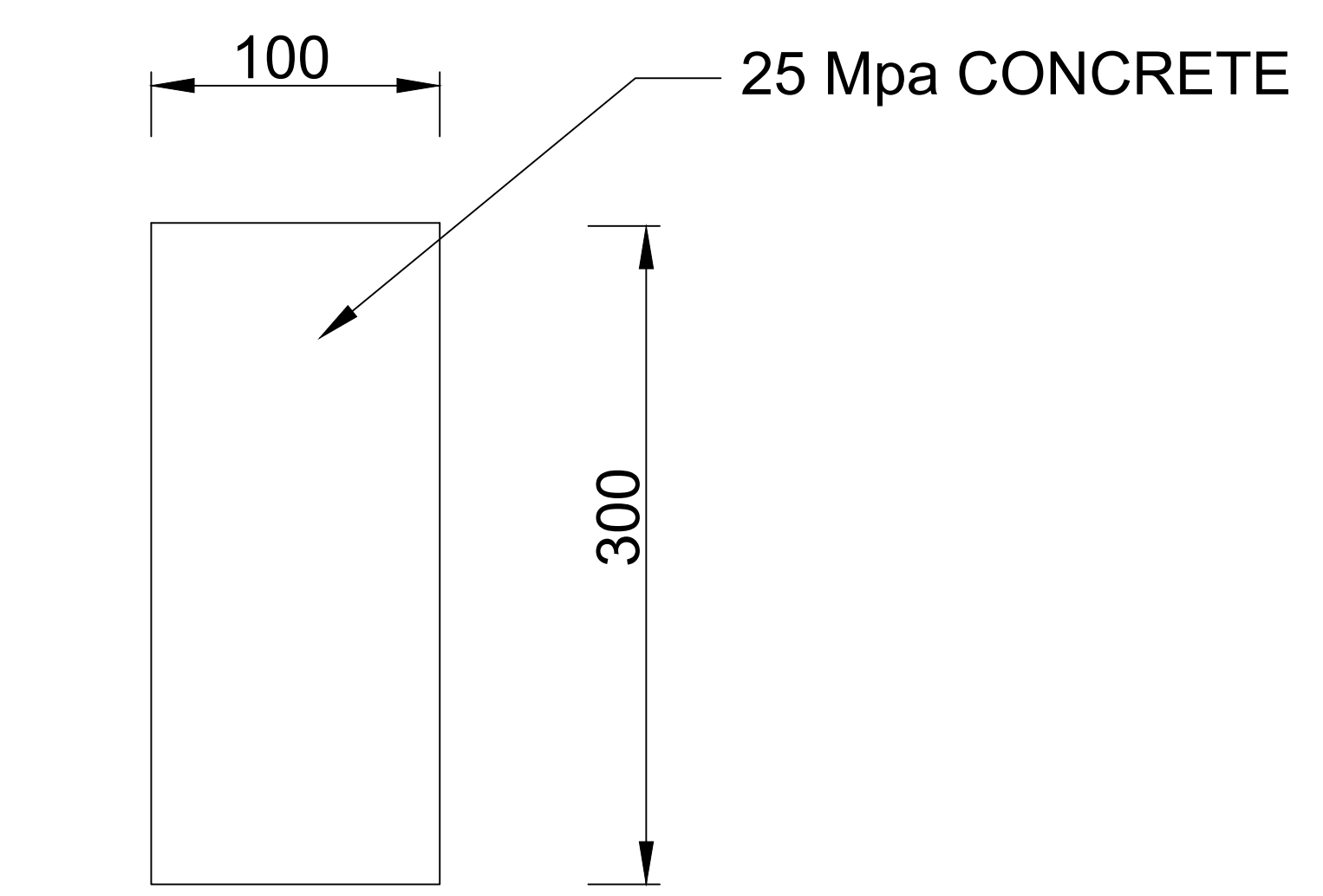
Longsection for 0 to 227



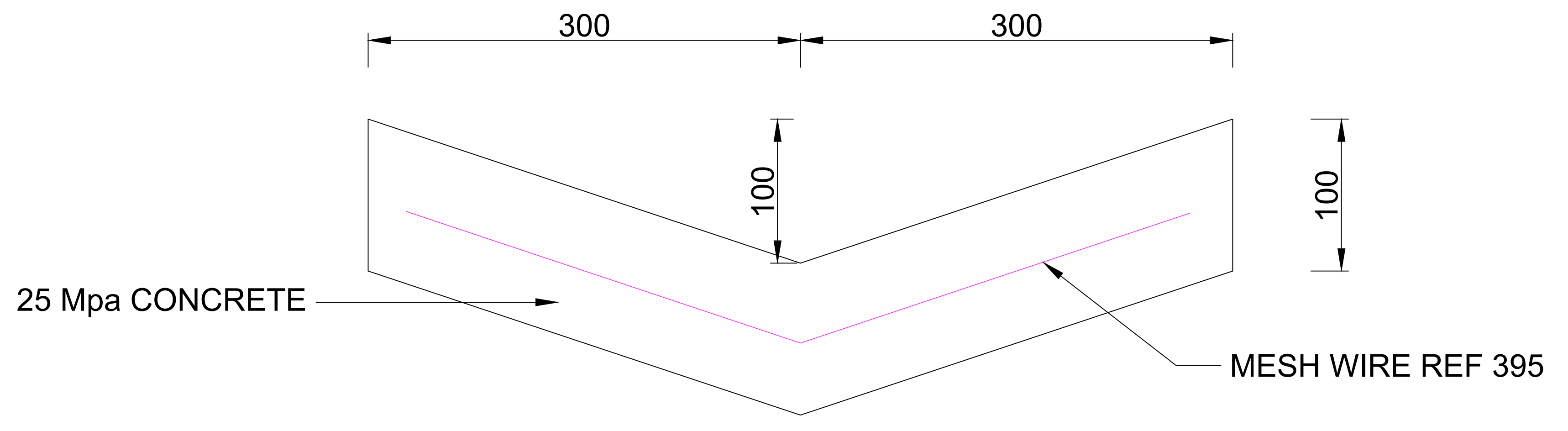


Chainage			320			330			340			350			360			370			377.11
Centreline Peg Levels			516.95		516.13		515.34		514.78		514.42		513.88		513.53						
Vertical Alignment	Des Road Levels	Left Edge	517.480		516.942		516.411		515.880		515.349		514.818		514.440						
		Centre Line	517.540		517.002		516.471		515.940		515.409		514.878		514.500						
		Right Edge	517.480		516.942		516.411		515.880		515.349		514.818		514.440						
	Grades		-5.311 %																		
	Vertical Curves		60.000m VC K = 66.439 330.000 EVC																		
Superelevation			-2.00000																		
Horizontal Curves			Direction 286.58.41 Curve Radius 292.27.40 Right Direction 292.27.40 Left Direction 292.27.40																		

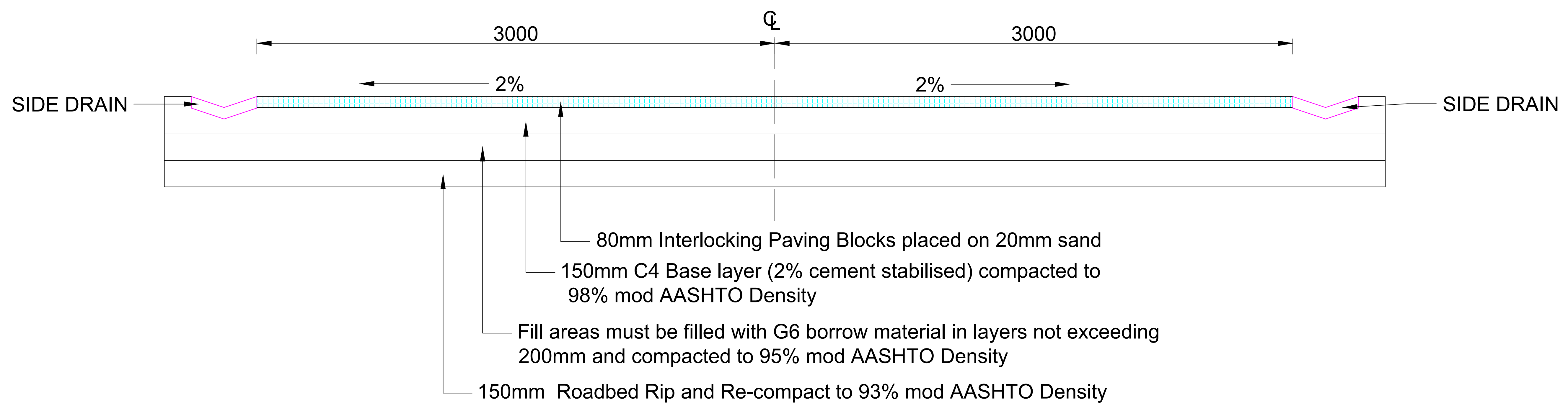
Longsection for 320 to 377






EDGE BEAM



SIDE DRAIN



PAVEMENT DESIGN

DRAWING CHECKED BY: MANYELENYELE AE	<div>MATHANDA <small>(AN ISO 9001:2015 CERTIFIED COMPANY)</small> MATHANDA CIVIL ENGINEERING AND PROJECTMANAGEMENT 11 TANGELO STREET BENDOR POLOKWANE 0699 Tel. (015) 298 8425 Fax (015) 298 8734 E-mail: mathandaconsulting@gmail.com</div>	PROJECT TITLE: UPGRADING OF VEHICLE BRIDGE AND 750M CONNECTOR ROAD AT SHABALALA MICASA	<div>CITY OF MBOMBELA <small>THE ULTIMATE DESTINATION</small> CITY OF MBOMBELA 1 NEL STREET MBOMBELA 1201 Tel. 013 759 9111 Fax 013 759 2070</div>	<div><div>MUNICIPAL MANAGER</div><div></div><div>CONSULTING ENGINEER</div><div>Pr No. 201370363</div></div> <div>DATE 15/11/2024 DATE</div>	CONTRACT NO: 213/2020 XXXVI	SCALES
DRAWN BY: MHLARI KDK		DRAWING TITLE: PAVEMENT DESIGN			TENDER DRAWING	AS SHOWN
DESIGN CHECKED BY: MANANGA A						
DESIGNED BY: MANYELENYELE AE						DRAWING No: XXXVI - 008

CHAINAGE 60

H.SCALE 1:100
V.SCALE 1:100
DATUM = 525

FINISHED	526.366	526.875	526.935	526.875	526.934
GROUND	526.366	526.042	526.976	526.935	526.934
OFFSET					



CHAINAGE 50

H.SCALE 1:100
V.SCALE 1:100
DATUM = 526

FINISHED	526.808	526.402	526.462	526.402	526.465
GROUND	526.808	526.463	526.413	526.457	526.465
OFFSET					



CHAINAGE 40

H.SCALE 1:100
V.SCALE 1:100
DATUM = 526

FINISHED	527.241	526.900	526.960	526.900	527.148
GROUND	527.241	527.287	527.288	527.148	527.148
OFFSET					



CHAINAGE 30

H.SCALE 1:100
V.SCALE 1:100
DATUM = 527

FINISHED	527.743	527.383	527.443	527.383	527.518
GROUND	527.743	527.736	527.613	527.510	527.518
OFFSET					



CHAINAGE 20

H.SCALE 1:100
V.SCALE 1:100
DATUM = 527

FINISHED	528.178	527.865	527.925	527.865	527.765
GROUND	528.178	527.870	527.858	527.788	527.765
OFFSET					



CHAINAGE 10

H.SCALE 1:100
V.SCALE 1:100
DATUM = 527

FINISHED		528.289	528.348	528.348	
GROUND		528.289	528.238	528.057	
OFFSET					



CHAINAGE 0

H.SCALE 1:100
V.SCALE 1:100
DATUM = 528

FINISHED	528.932	528.831	528.891	528.831	528.598
GROUND	528.932	528.646	528.891	528.625	528.598
OFFSET					



CHAINAGE 130

H.SCALE 1:100
V.SCALE 1:100
DATUM = 520

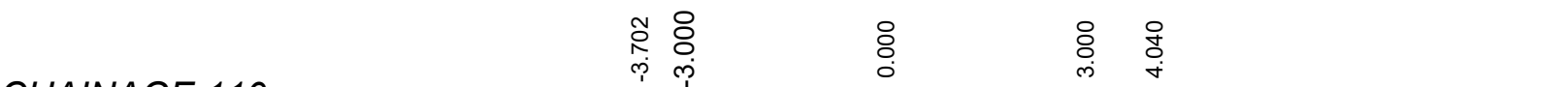
FINISHED		521.223		521.223	
GROUND		521.223	521.243	521.043	521.050
OFFSET					



CHAINAGE 120

H.SCALE 1:100
V.SCALE 1:100
DATUM = 521

FINISHED		521.981		522.092	
GROUND		521.981	521.914	521.815	521.812
OFFSET					



CHAINAGE 110

H.SCALE 1:100
V.SCALE 1:100
DATUM = 522

FINISHED	523.078		522.796		522.856
GROUND	523.078		522.917		522.859
OFFSET					



CHAINAGE 100

H.SCALE 1:100
V.SCALE 1:100
DATUM = 523

FINISHED	523.798		523.471		523.531
GROUND	523.798		523.742		523.486
OFFSET					



CHAINAGE 90

H.SCALE 1:100
V.SCALE 1:100
DATUM = 524

FINISHED	524.502		524.117		524.177
GROUND	524.502		524.488		524.358
OFFSET					



CHAINAGE 80

H.SCALE 1:100
V.SCALE 1:100
DATUM = 524

FINISHED	525.206		524.732		524.792
GROUND	525.206		525.144		524.909
OFFSET					



CHAINAGE 70

H.SCALE 1:100
V.SCALE 1:100
DATUM = 525

FINISHED	525.737		525.319		525.379
GROUND	525.737		525.548		525.358
OFFSET					



DRAWING CHECKED BY: MANYELENYELE AE

DRAWN BY: MHLARI KDK

DESIGN CHECKED BY: MANANGA A

DESIGNED BY: MANYELENYELE AE



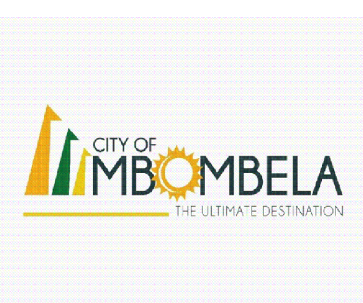
MATHANDA CIVIL ENGINEERING AND PROJECTMANAGEMENT
11 TANGELO STREET
BENDOR
POLOKWANE
0699
Tel. (015) 298 8425
Fax (015) 298 8734
E-mail: mathandaconsulting@gmail.com

PROJECT TITLE:

UPGRADING OF VEHICLE BRIDGE AND 750M
CONNECTOR ROAD AT SHABALALA MICASA

DRAWING TITLE:

CROSS SECTION: ROAD 1: DRAWING 1 OF 2



CITY OF MBOMBELA
1 NEL STREET
MBOMBELA
1201

Tel. 013 759 9111
Fax 013 759 2070

MUNICIPAL MANAGER

DATE

CONSULTING ENGINEER

Pr No. 201370363

DATE

15/11/2024

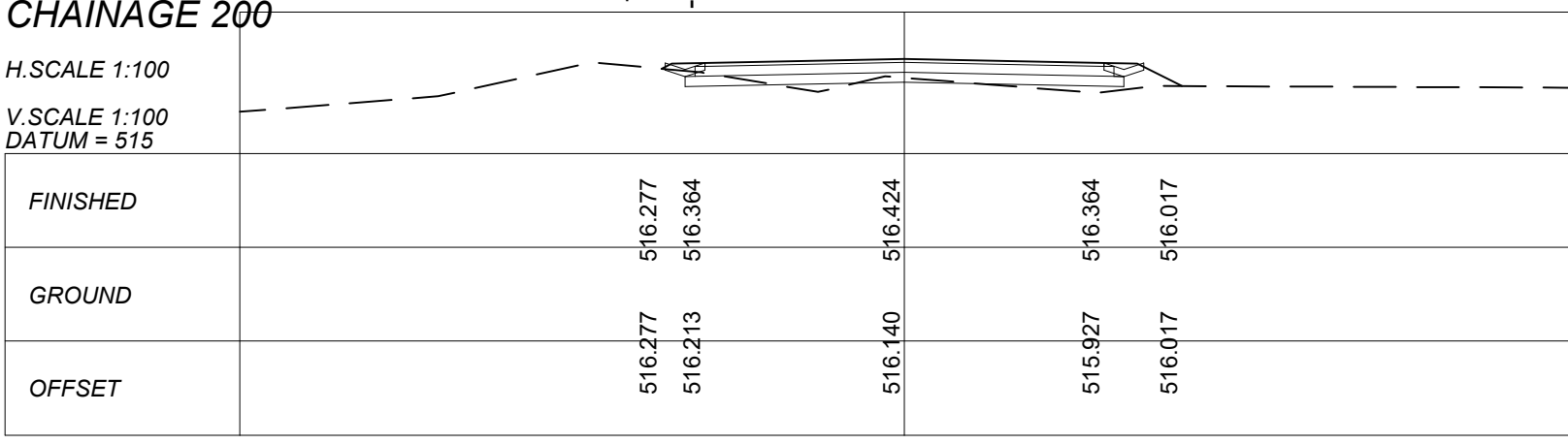
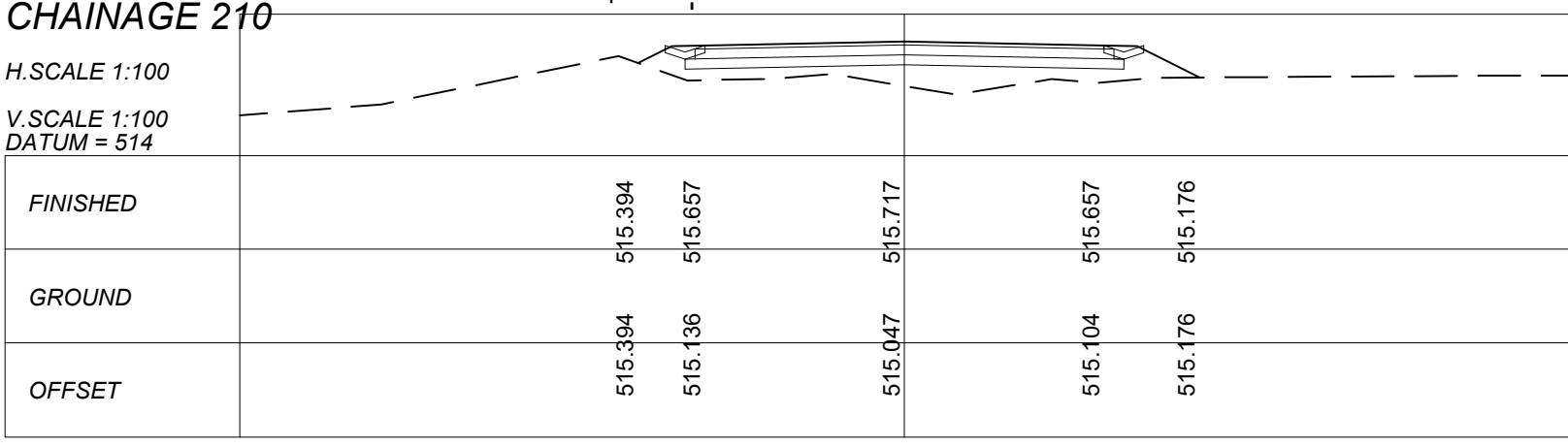
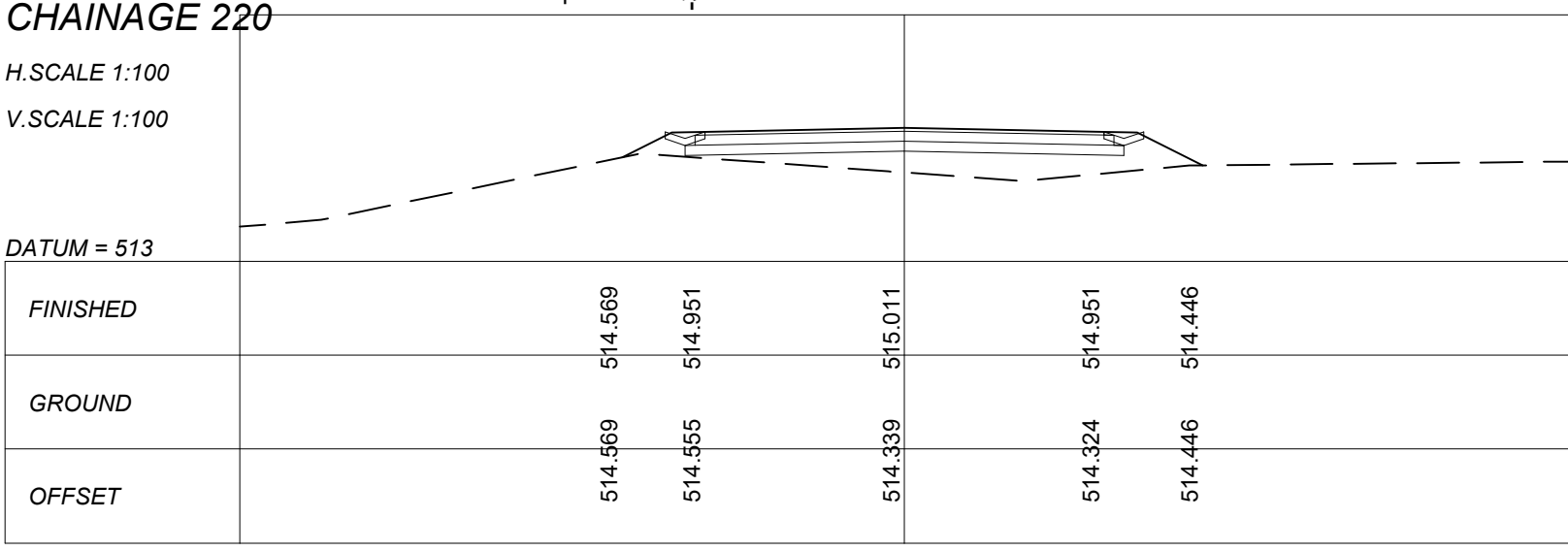
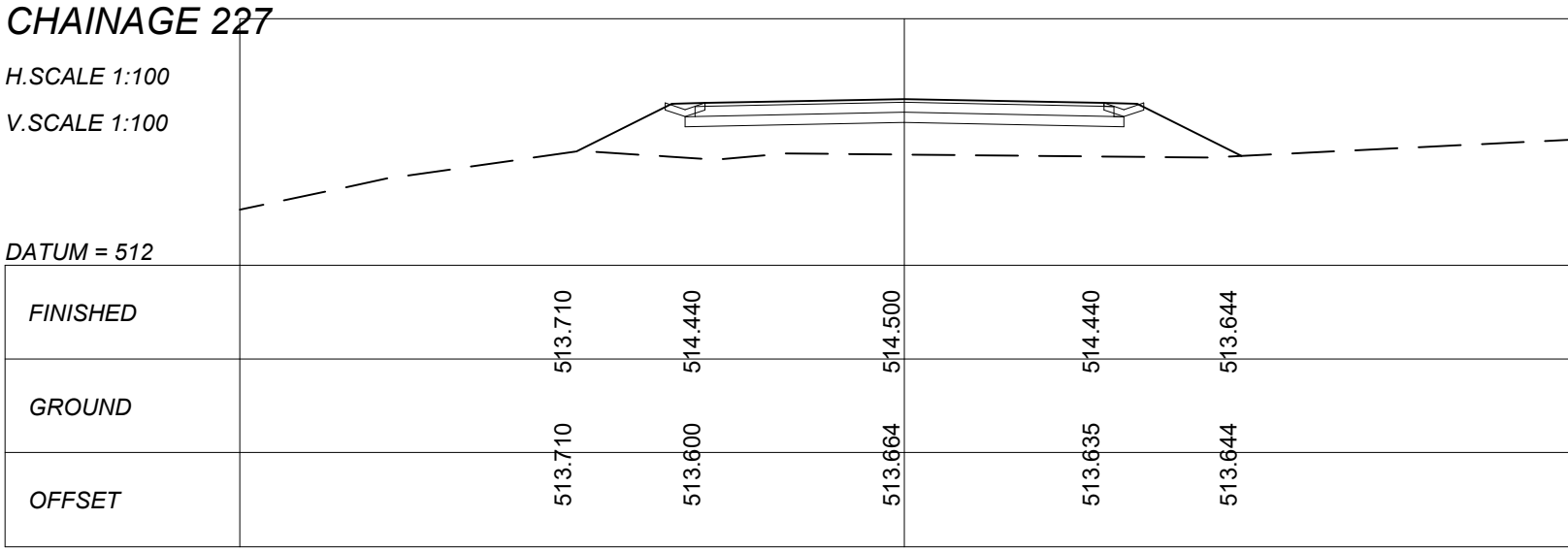
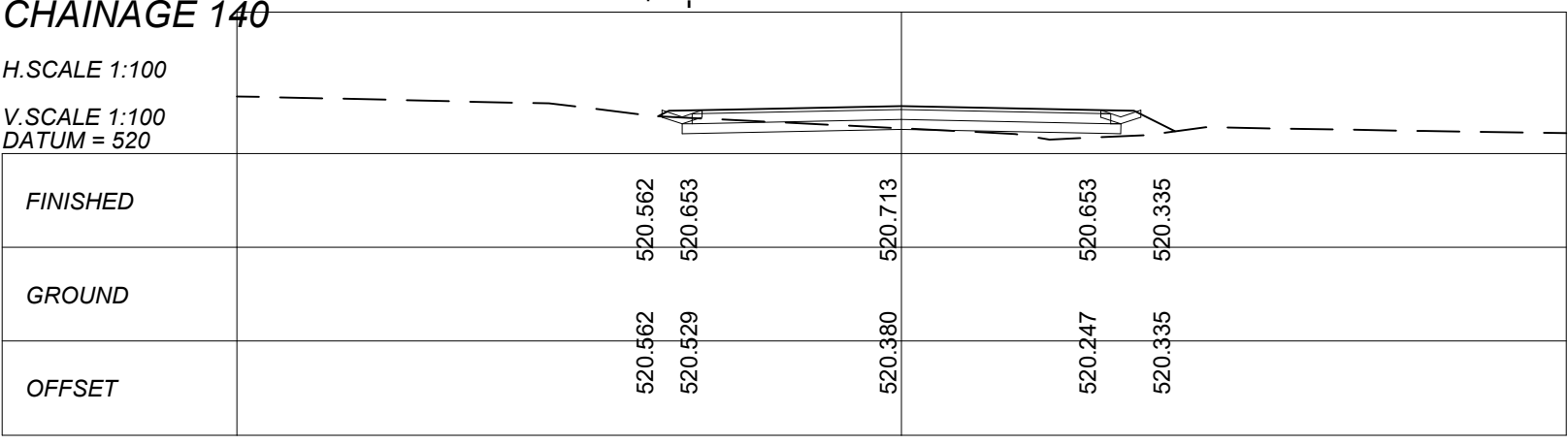
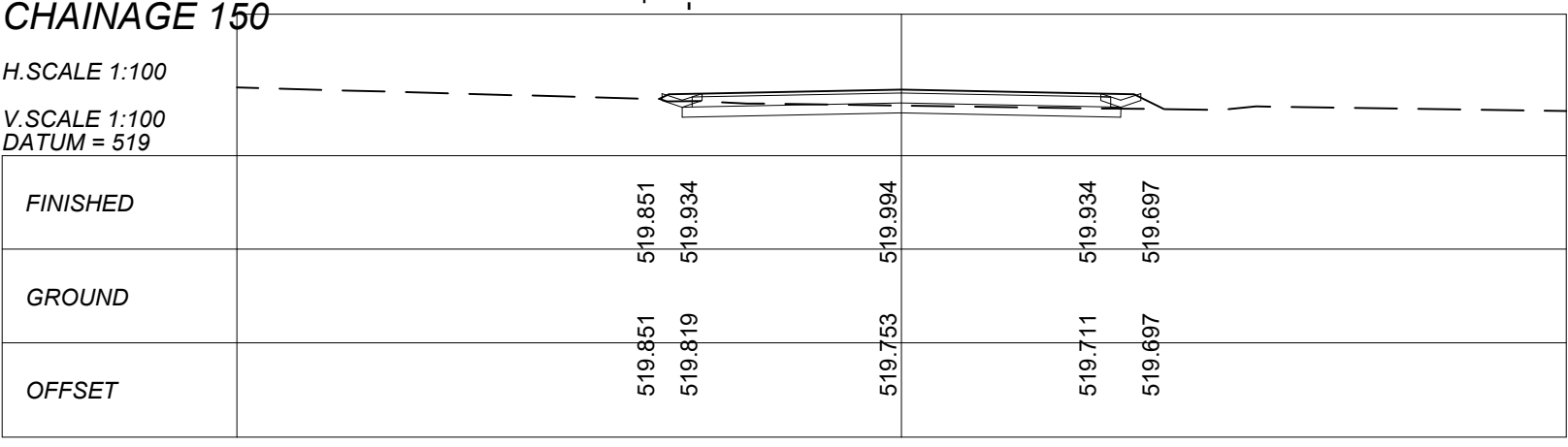
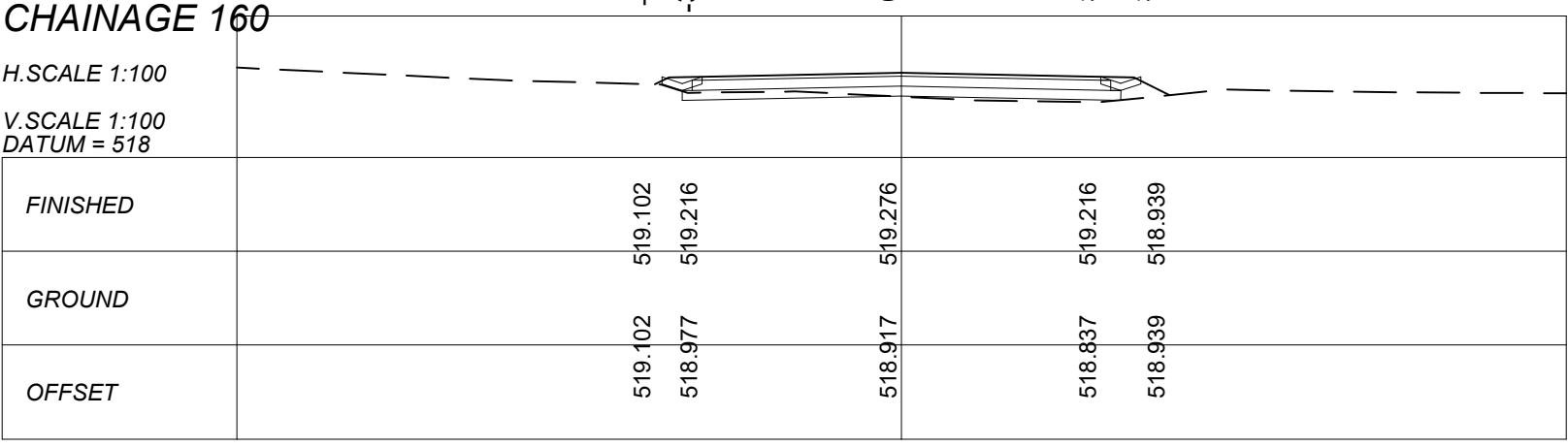
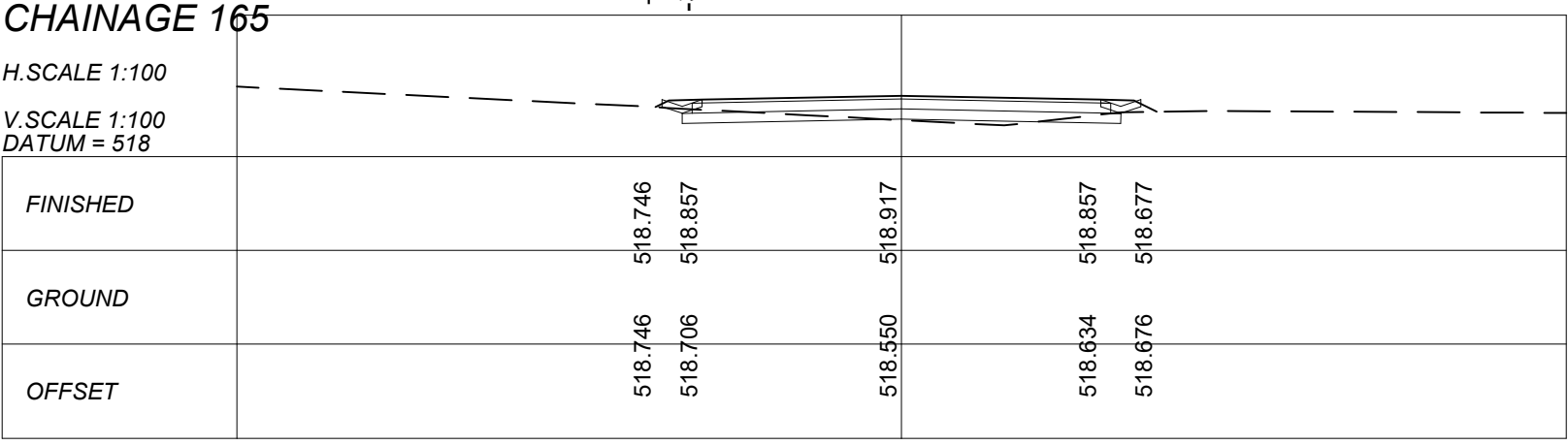
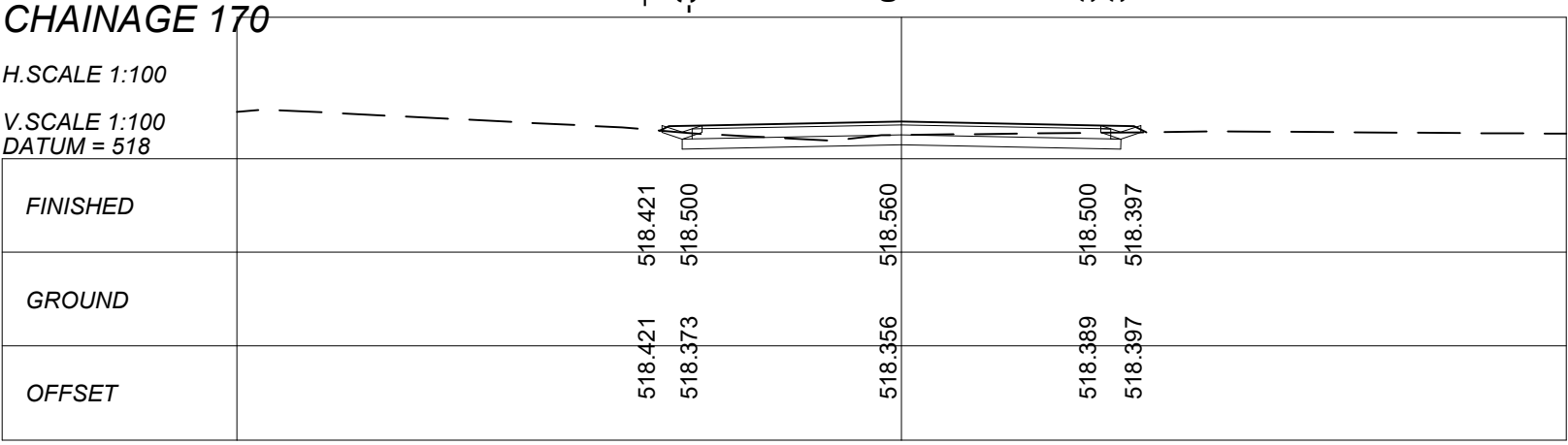
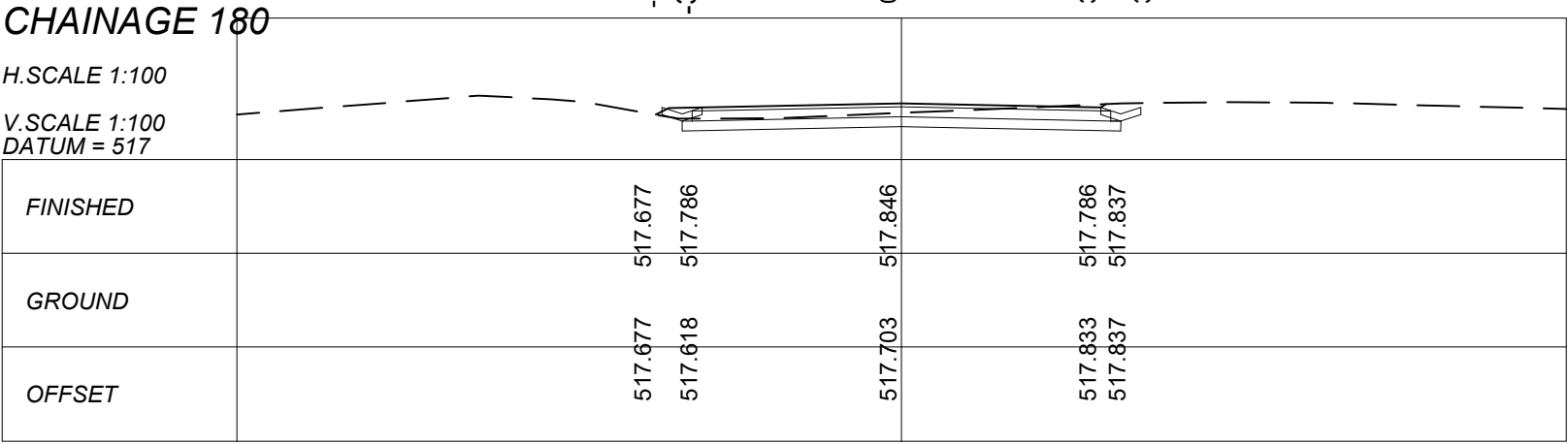
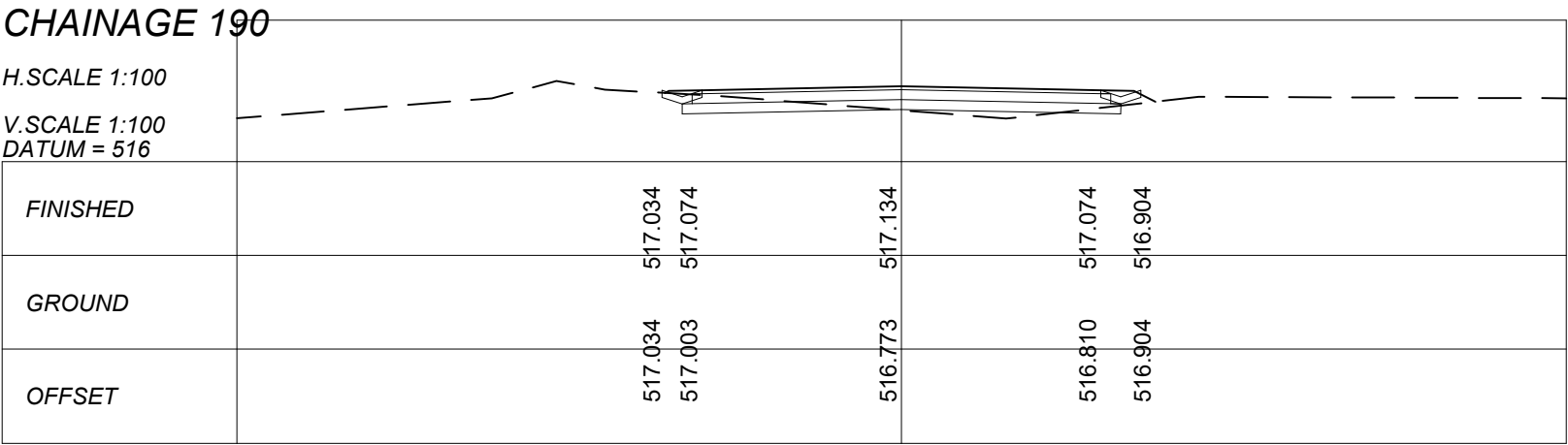
CONTRACT NO: 213/2020 XXXVI

TENDER DRAWING

SCALES

AS SHOWN

DRAWING No: XXXVI - 009



CHAINAGE 50

H.SCALE 1:100
V.SCALE 1:100
DATUM = 532

FINISHED		533.112		533.210		533.150		533.157
GROUND		533.112		533.249		533.455		533.157
OFFSET		533.112		533.249		533.157		533.157

CHAINAGE 40

H.SCALE 1:100
V.SCALE 1:100
DATUM = 533

FINISHED		533.561		533.678		533.618		533.900
GROUND		533.561		533.626		533.658		533.900
OFFSET		533.561		533.626		533.900		533.900

CHAINAGE 30

H.SCALE 1:100
V.SCALE 1:100
DATUM = 533

FINISHED		534.093		534.146		534.086		534.390
GROUND		534.093		534.167		534.390		534.390
OFFSET		534.093		534.167		534.390		534.390

CHAINAGE 20

H.SCALE 1:100
V.SCALE 1:100
DATUM = 534

FINISHED		534.407		534.615		534.555		534.723
GROUND		534.407		534.610		534.700		534.723
OFFSET		534.407		534.610		534.700		534.723

CHAINAGE 10

H.SCALE 1:100
V.SCALE 1:100
DATUM = 534

FINISHED		534.981		535.093		535.023		535.194
GROUND		534.981		535.046		535.170		535.194
OFFSET		534.981		535.046		535.170		535.194

CHAINAGE 0

H.SCALE 1:100
V.SCALE 1:100

FINISHED		535.382		535.551		535.491		535.683
GROUND		535.382		535.551		535.654		535.683
OFFSET		535.382		535.551		535.683		535.683

CHAINAGE 110

H.SCALE 1:100
V.SCALE 1:100

FINISHED		529.851		529.851		530.188		530.099
GROUND		529.851		529.816		530.066		530.099
OFFSET		529.851		529.816		530.066		530.099

CHAINAGE 100

H.SCALE 1:100
V.SCALE 1:100
DATUM = 530

FINISHED		530.335		530.723		530.642		530.642
GROUND		530.335		530.311		530.615		530.642
OFFSET		530.335		530.311		530.615		530.642

CHAINAGE 90

H.SCALE 1:100
V.SCALE 1:100

FINISHED		531.035		531.239		531.239		531.613
GROUND		531.035		531.104		531.569		531.613
OFFSET		531.035		531.104		531.569		531.613

CHAINAGE 80

H.SCALE 1:100
V.SCALE 1:100
DATUM = 531

FINISHED		531.432		531.796		531.736		531.610
GROUND		531.432		531.347		531.546		531.610
OFFSET		531.432		531.347		531.546		531.610

CHAINAGE 70

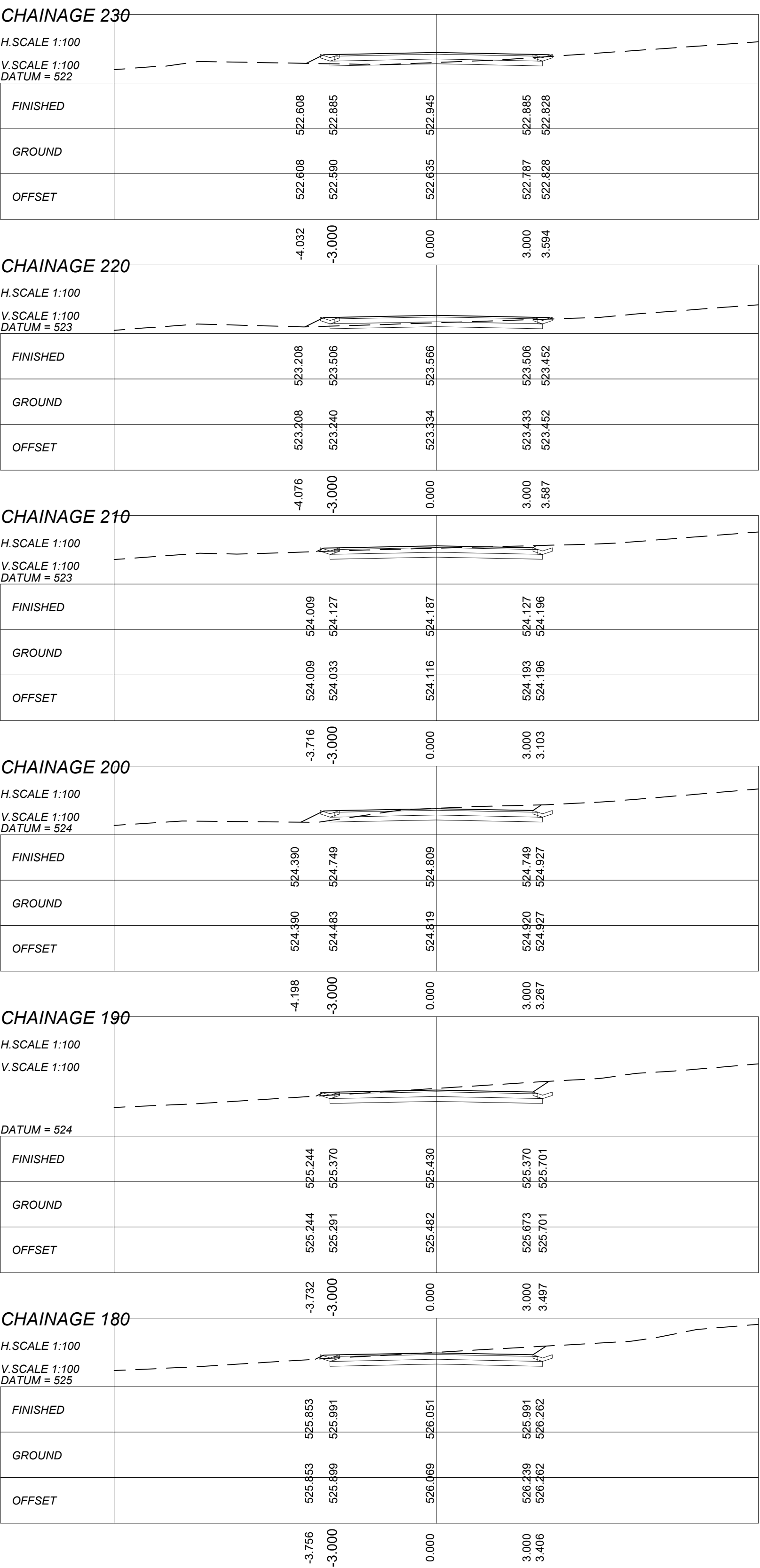
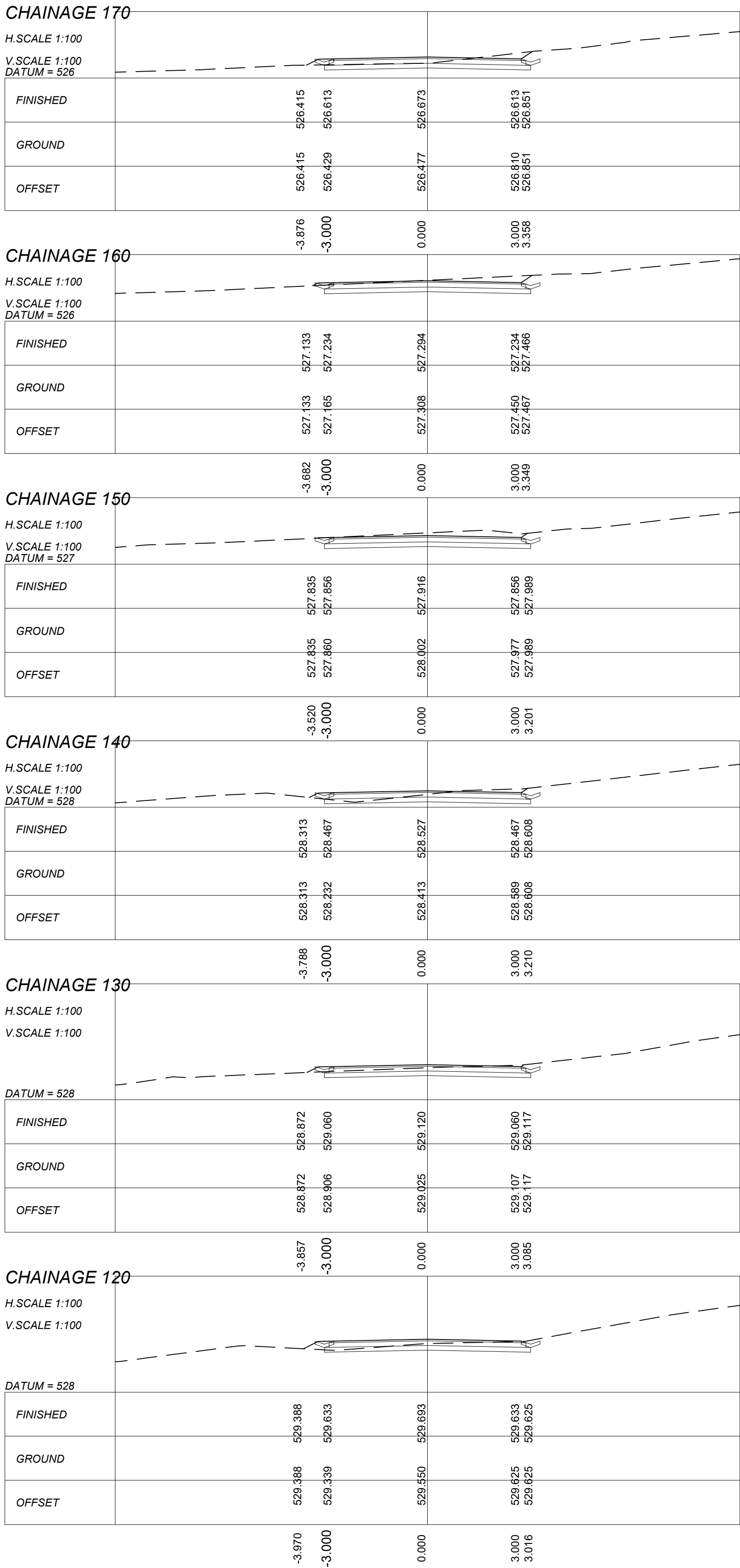
H.SCALE 1:100
V.SCALE 1:100

FINISHED		532.011		532.274		532.214		532.538
GROUND		532.011		532.065		532.511		532.538
OFFSET		532.011		532.065		532.511		532.538

CHAINAGE 60

H.SCALE 1:100
V.SCALE 1:100
DATUM = 532

FINISHED		532.480		532.742		532.682		532.585
GROUND		532.480		532.384		532.516		532.585
OFFSET		532.480		532.384		532.516		532.585



CHAINAGE 280

H.SCALE 1:100
V.SCALE 1:100
DATUM = 519

FINISHED		519.442	519.442	519.845	519.785	520.115
GROUND		519.442	519.444	519.408	520.072	520.115
OFFSET		-4.167	-3.000	0.000	3.000	3.495

CHAINAGE 270

H.SCALE 1:100
V.SCALE 1:100

DATUM = 519

FINISHED		519.923	519.923	520.459	520.389	520.331
GROUND		519.923	519.980	520.152	520.257	520.331
OFFSET		-4.432	-3.000	0.000	3.000	3.616

CHAINAGE 260

H.SCALE 1:100
V.SCALE 1:100
DATUM = 520

FINISHED		520.797	521.020	521.080	521.020	520.806
GROUND		520.797	520.791	520.772	520.850	520.806
OFFSET		-3.928	-3.000	0.000	3.000	3.228

CHAINAGE 250

H.SCALE 1:100
V.SCALE 1:100
DATUM = 521

FINISHED		521.331	521.642	521.702	521.642	521.520
GROUND		521.331	521.333	521.421	521.461	521.420
OFFSET		-4.102	-3.000	0.000	3.000	3.244

CHAINAGE 245

H.SCALE 1:100
V.SCALE 1:100
DATUM = 521

FINISHED		521.715	521.953	522.013	521.953	521.823
GROUND		521.715	521.647	521.631	521.741	521.823
OFFSET		-3.956	-3.000	0.000	3.000	3.738

CHAINAGE 240

H.SCALE 1:100
V.SCALE 1:100
DATUM = 521

FINISHED		522.056	522.263	522.323	522.263	522.133
GROUND		522.056	521.989	521.971	522.081	522.133
OFFSET		-3.895	-3.000	0.000	3.000	3.741

CHAINAGE 330

H.SCALE 1:100
V.SCALE 1:100

DATUM = 515

FINISHED		516.420	516.420	517.002	516.942	516.445
GROUND		516.420	516.109	516.128	516.335	516.445
OFFSET		-4.523	-3.000	0.000	3.000	4.473

CHAINAGE 320

H.SCALE 1:100
V.SCALE 1:100
DATUM = 516

FINISHED		517.038	517.480	517.540	517.480	517.127
GROUND		517.038	516.885	516.954	517.081	517.127
OFFSET		-4.386	-3.000	0.000	3.000	4.186

CHAINAGE 315

H.SCALE 1:100
V.SCALE 1:100
DATUM = 517

FINISHED		517.326	517.755	517.815	517.755	517.465
GROUND		517.326	517.277	517.362	517.412	517.465
OFFSET		-4.339	-3.000	0.000	3.000	4.061

CHAINAGE 310

H.SCALE 1:100
V.SCALE 1:100
DATUM = 517

FINISHED		517.785	518.034	518.094	518.034	517.923
GROUND		517.785	517.773	517.840	517.917	517.923
OFFSET		-3.979	-3.000	0.000	3.000	3.702

CHAINAGE 300

H.SCALE 1:100
V.SCALE 1:100

DATUM = 517

FINISHED		518.160	518.603	518.663	518.603	519.044
GROUND		518.160	518.237	518.821	519.026	519.044
OFFSET		-4.365	-3.000	0.000	3.000	3.662

CHAINAGE 290

H.SCALE 1:100
V.SCALE 1:100
DATUM = 518

FINISHED		518.583	519.186	519.246	519.186	519.322
GROUND		518.583	518.624	518.954	519.399	519.322
OFFSET		-4.686	-3.000	0.000	3.000	3.203

DRAWING CHECKED BY: MANYELENYELE AE

DRAWN BY: MHLARI KDK

DESIGN CHECKED BY: MANANGA A

DESIGNED BY: MANYELENYELE AE



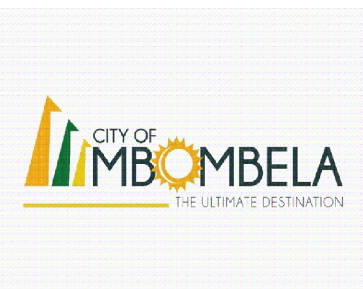
MATHANDA CIVIL ENGINEERING AND PROJECTMANAGEMENT
11 TANGELO STREET
BENDOR
POLOKWANE
0699
Tel. (015) 298 8425
Fax (015) 298 8734
E-mail: mathandaconsulting@gmail.com

PROJECT TITLE:

UPGRADING OF VEHICLE BRIDGE AND 750M
CONNECTOR ROAD AT SHABALALA MICASA

DRAWING TITLE:

CROSS SECTION: ROAD 2: DRAWING 3 OF 4



CITY OF MBOMBELA
1 NEL STREET
MBOMBELA
1201

Tel. 013 759 9111
Fax 013 759 2070

MUNICIPAL MANAGER

DATE

CONSULTING ENGINEER
Pr No. 201370363

15/11/2024

DATE

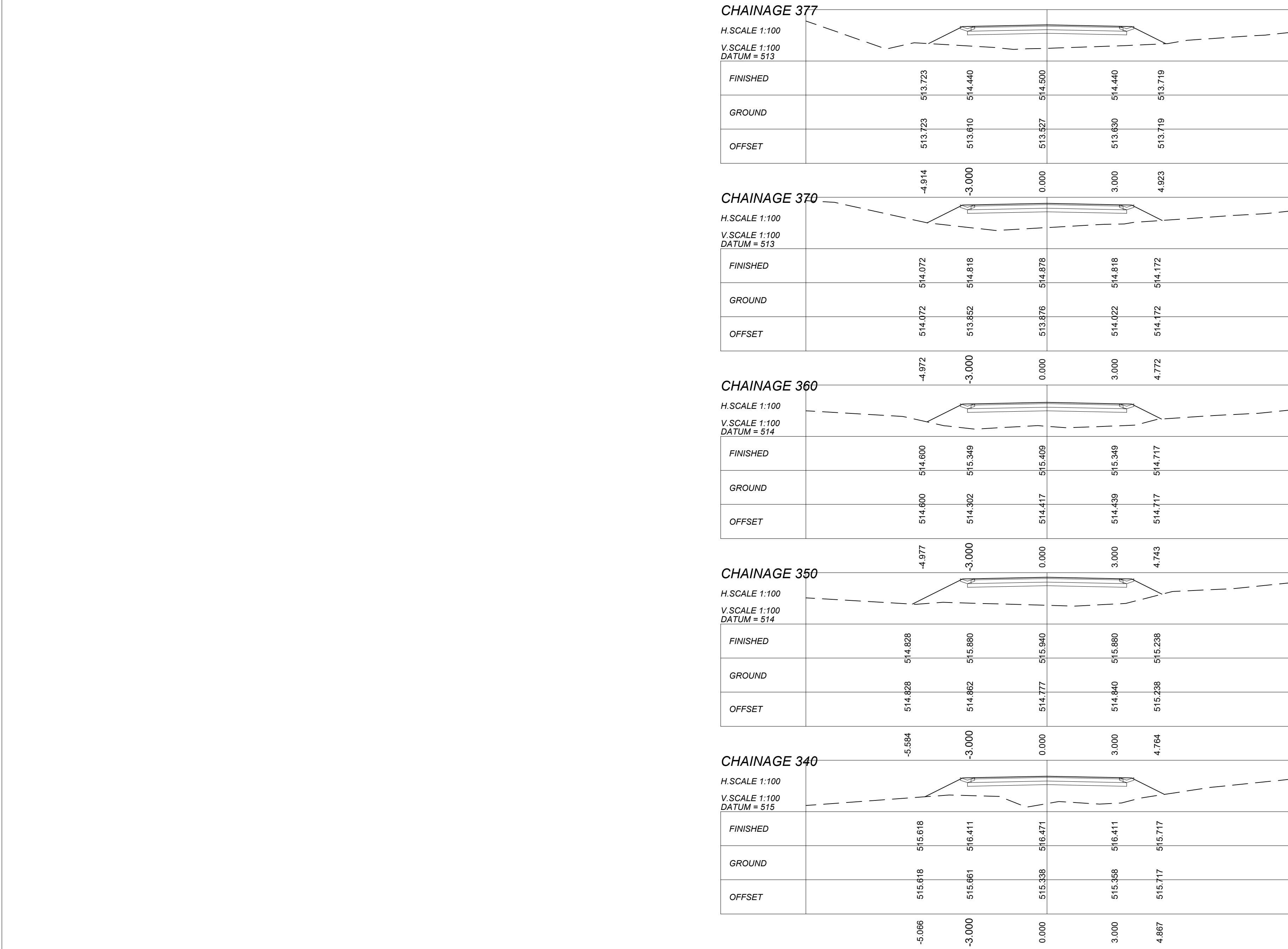
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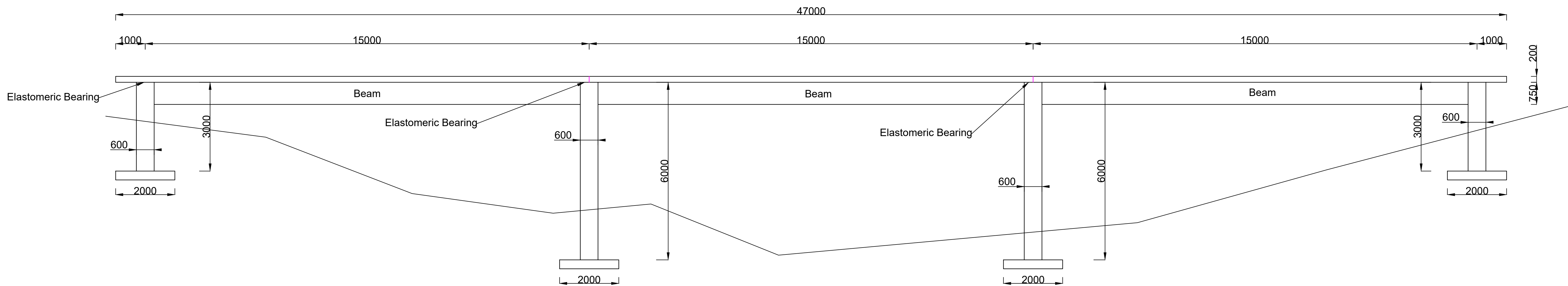
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TENDER DRAWING

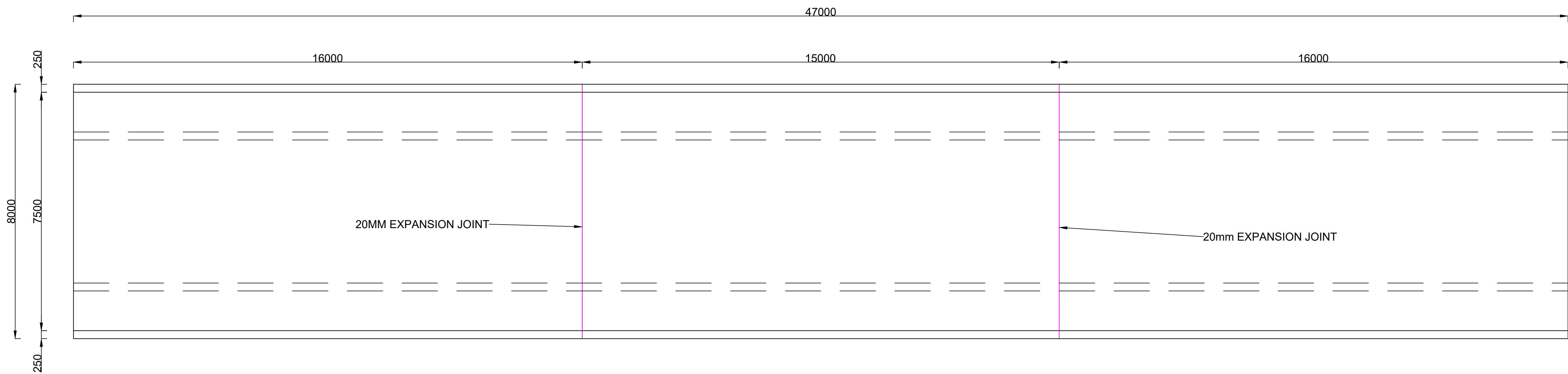
SCALES

DRAWING No: XXXVI - 013






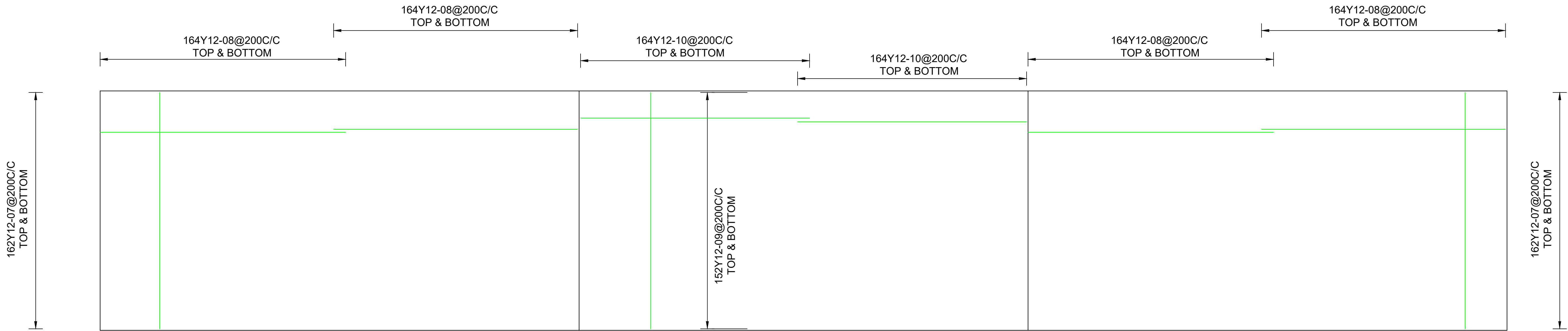


SIDE VIEW ON BRIDGE



PLAN VIEW ON BRIDGE

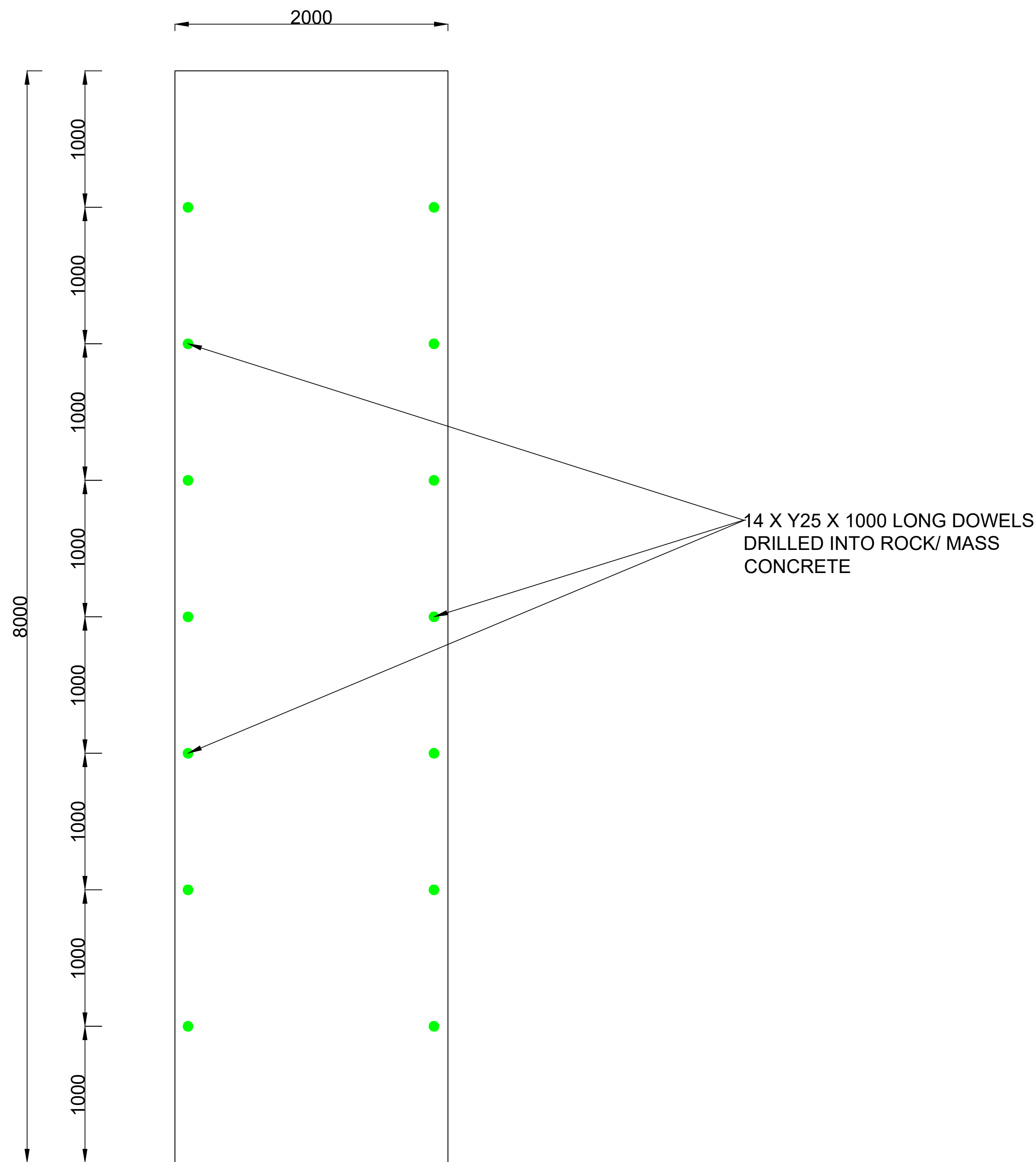
DRAWING CHECKED BY: MANYELENYELE AE	<div> MATHANDA CIVIL ENGINEERING AND PROJECTMANAGEMENT 11 TANGELO STREET BENDOR POLOKWANE 0699 Tel. (015) 298 8425 Fax (015) 298 8734 E-mail: mathandaconsulting@gmail.com</div>	PROJECT TITLE: UPGRADING OF VEHICLE BRIDGE AND 750M CONNECTOR ROAD AT SHABALALA MICASA	<div> CITY OF MBOMBELA 1 NEL STREET MBOMBELA 1201 Tel. 013 759 9111 Fax 013 759 2070</div>	<div>MUNICIPAL MANAGER  CONSULTING ENGINEER Pr No. 201370363</div> <div>DATE 15/11/2024 DATE</div>	CONTRACT NO: 213/2020 XXXVI	SCALES
DRAWN BY: MHLARI KDK		DRAWING TITLE: BRIDGE: DRAWING 1 OF 5			TENDER DRAWING	AS SHOWN
DESIGN CHECKED BY: MANANGA A						
DESIGNED BY: MANYELENYELE AE						DRAWING No: XXXVI - 015



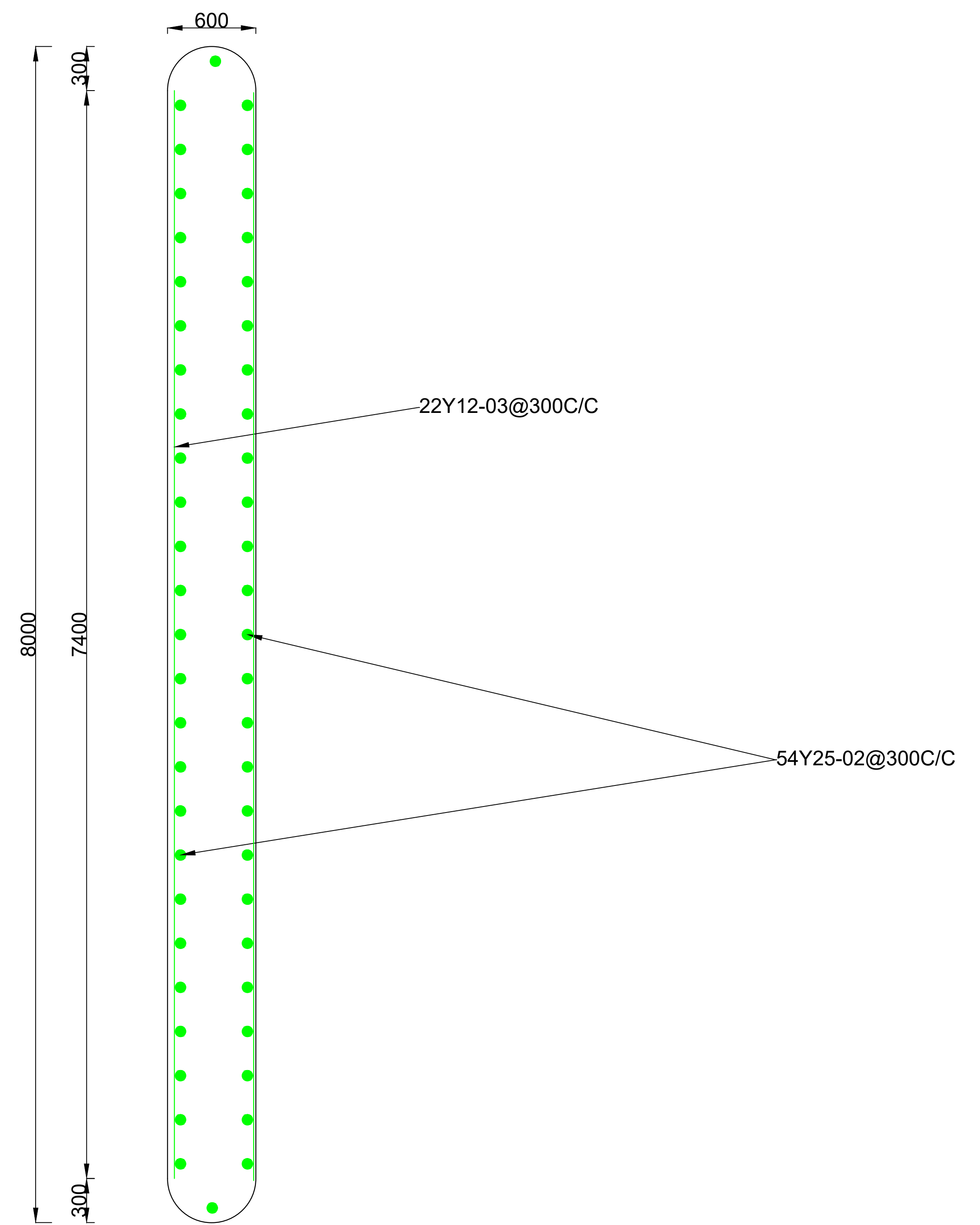
DECK REINFORCEMENT

BENDING SCHEDULE




MEMBER		REINFORCEMENT					BENDING TO SABS 82					
UNIT	NO	DIA	MARK	NO.BARS		LENGTH	SHAPE CODE	A	B	C	D	E/r
				UNIT	TOTAL							
ABURTMENTS	2	Y25	1	54	108	900	34	600				
	2	Y25	2	54	108	4000	20	4000				
	2	Y12	3	22	44	7900	20	7900				
PIERS	2	Y25	4	54	108	900	34	600				
	2	Y25	5	54	108	8000	20	8000				
	2	Y12	6	44	88	7900	20	7900				
DECK (OUTSIDE PANELS)	2	Y12	7	162	324	8100	35	7900				
	2	Y12	8	156	312	8250	34	8150				
	4	Y32	9	4	16	8250	34	8150				
	4	Y16	10	12	48	8150	20	8150				
	4	R10	11	44	176	3200	60	1350	150			
DECK (MIDDLE PANEL)	1	Y12	12	152	152	8100	35	7900				
	1	Y12	13	156	156	7750	34	7650				
	2	Y32	14	4	8	7750	34	7650				
	2	Y16	15	12	24	7650	20	7650				
	2	R10	16	41	82	3200	60	1350	150			
BARRIER	1	Y16	16	93	93	350	20	350				
BEAM	10	Y25	17	6	60	13000	20	13000				
	2	R10	18	136	272	1050	53	50	750	200		

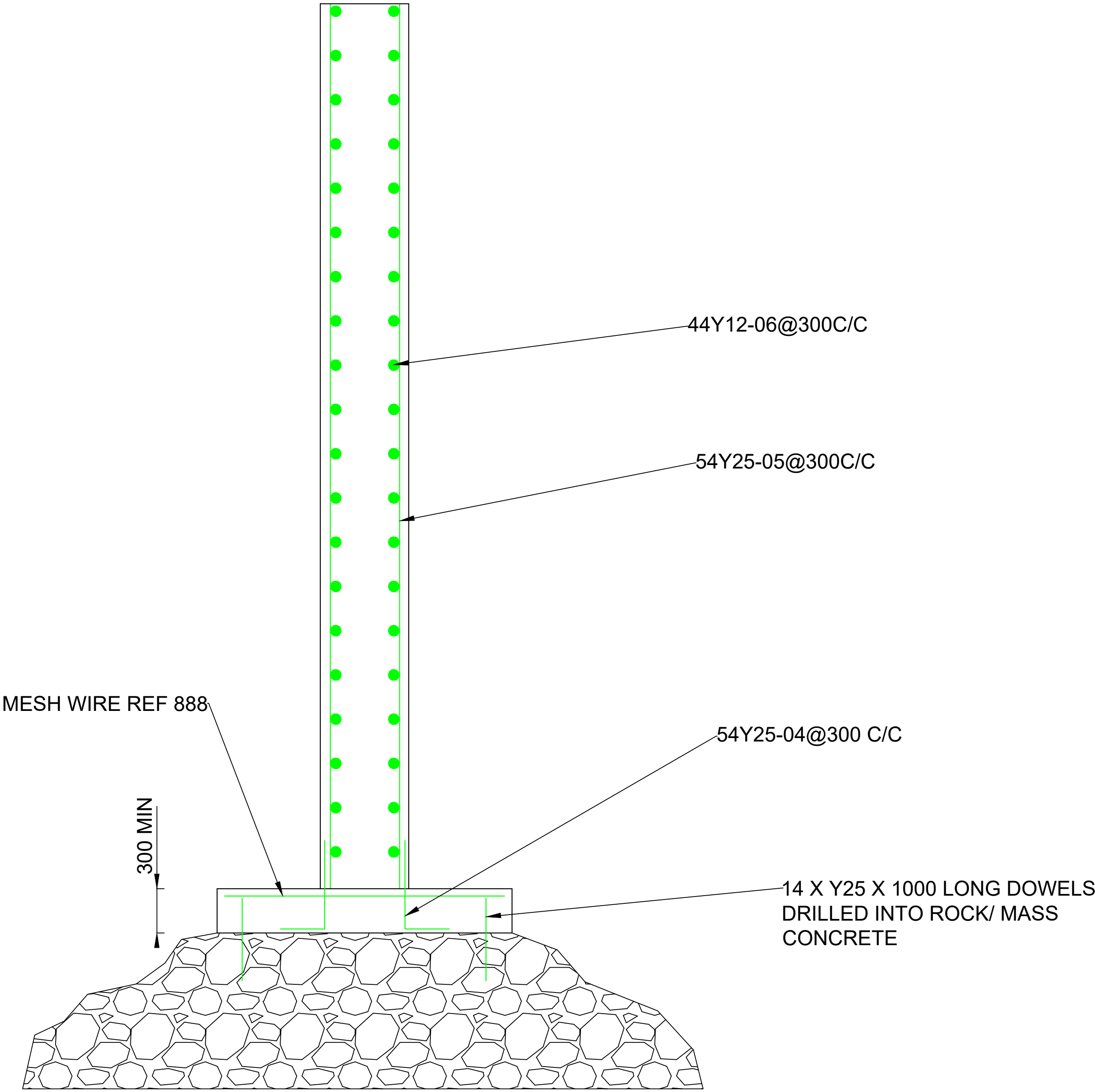


FOOTING PLAN

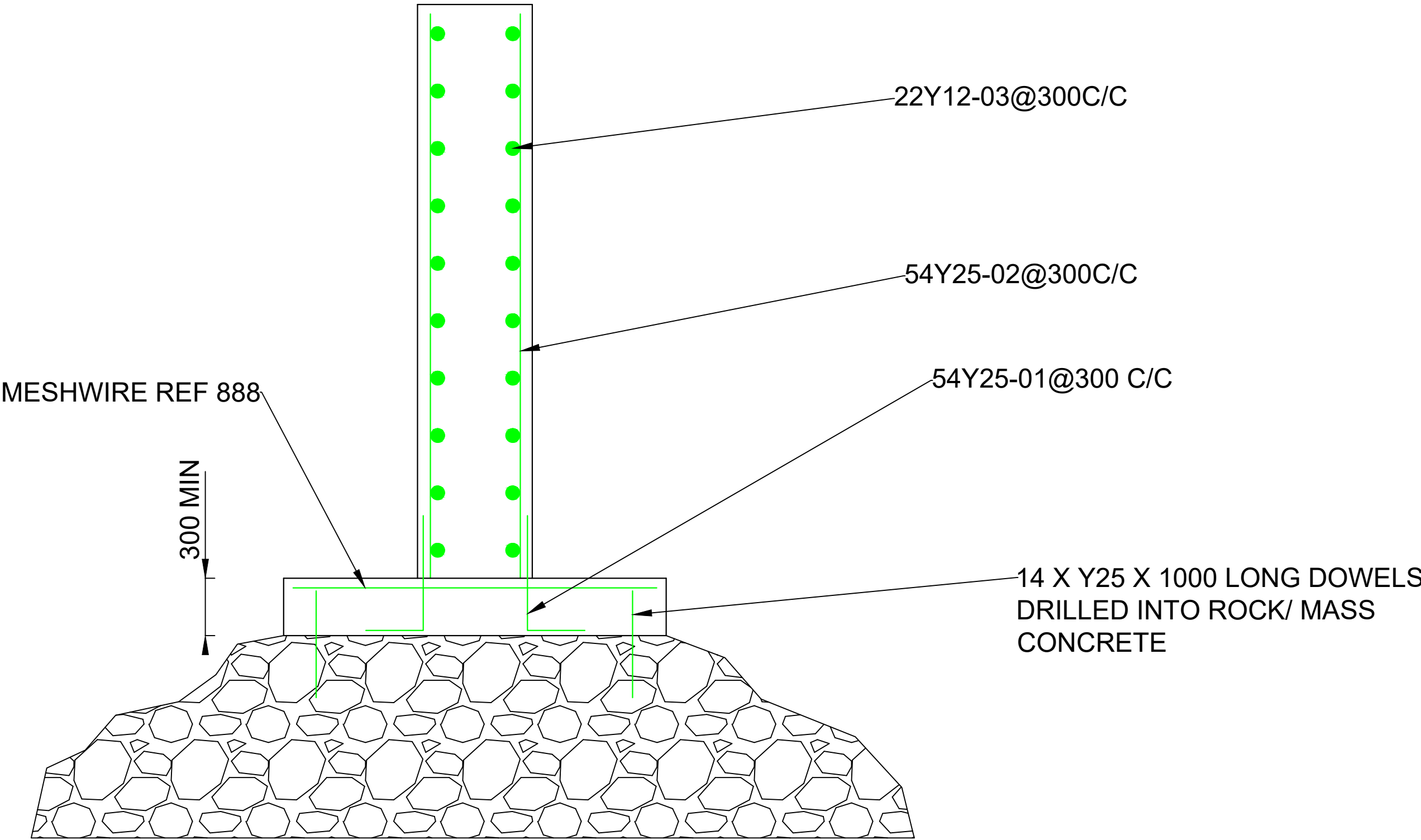


ABUTMENT/PIER PLAN

DRAWING CHECKED BY: MANYELENYELE AE	 MATHANDA CIVIL ENGINEERING AND PROJECT MANAGEMENT 11 TANGELO STREET BENDOR POLOKWANE 0699 Tel. (015) 298 8425 Fax (015) 298 8734 E-mail: mathandaconsulting@gmail.com	PROJECT TITLE:	 CITY OF MBOMBELA 1 NEL STREET MBOMBELA 1201 Tel. 013 759 9111 Fax 013 759 2070	 MUNICIPAL MANAGER CONSULTING ENGINEER Pr No. 201370363	DATE 15/11/2024	CONTRACT NO: 213/2020 XXXVI	SCALES
DRAWN BY: MHLARI KDK		UPGRADING OF VEHICLE BRIDGE AND 750M CONNECTOR ROAD AT SHABALALA MICASA				TENDER DRAWING	AS SHOWN
DESIGN CHECKED BY: MANANGA A		DRAWING TITLE:					DRAWING No: XXXVI - 017
DESIGNED BY: MANYELENYELE AE		BRIDGE: DRAWING 3 OF 5					






PIER SECTION

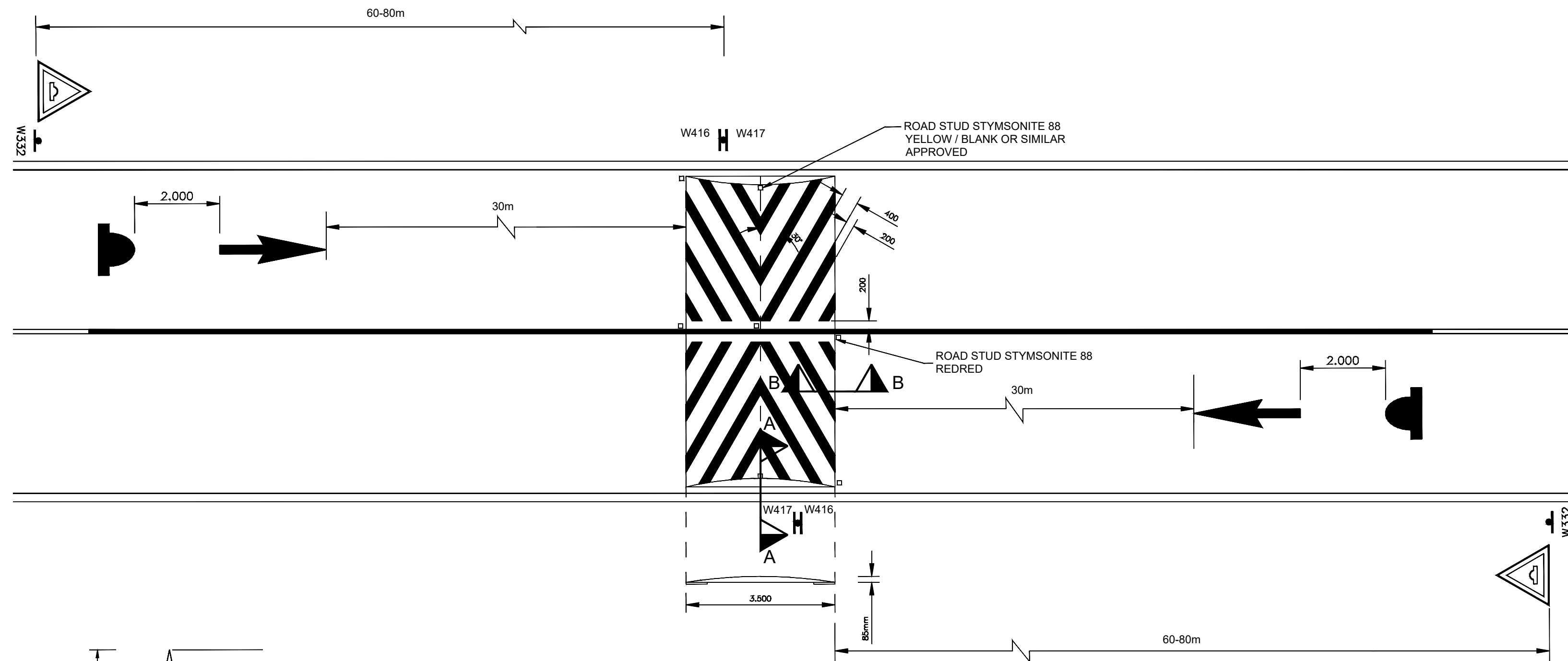


ABUTMENT SECTION

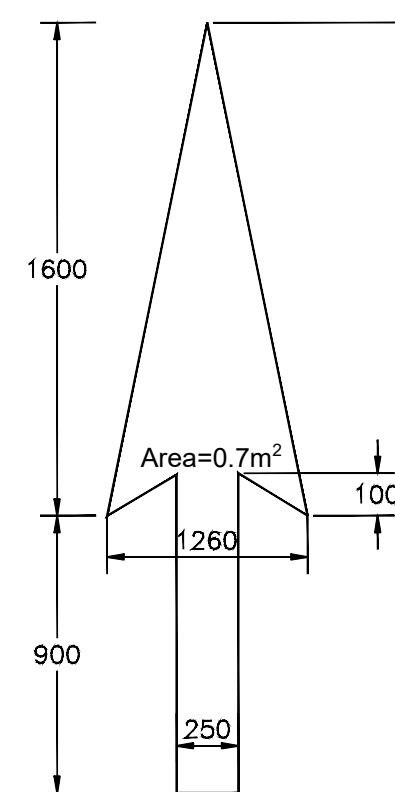
DRAWING CHECKED BY: MANYELENYELE AE	<div><div><div><div></div><div>MATHANDA</div></div><div><div>MATHANDA CIVIL ENGINEERING AND PROJECTMANAGEMENT</div><div>11 TANGELO STREET</div><div>BENDOR</div><div>POLOKWANE</div><div>0699</div><div>Tel. (015) 298 8425</div><div>Fax (015) 298 8734</div><div>E-mail: mathandaconsulting@gmail.com</div></div></div></div>	PROJECT TITLE:	<div><div><div><div></div><div>CITY OF MBOMBELA</div><div>THE ULTIMATE DESTINATION</div></div></div><div>CITY OF MBOMBELA 1 NEL STREET MBOMBELA 1201 Tel. 013 759 9111 Fax 013 759 2070</div></div>	<div><div>MUNICIPAL MANAGER</div><div>DATE</div><div><div></div></div><div>15/11/2024</div><div>CONSULTING ENGINEER</div><div>DATE</div><div>Pr No. 201370363</div></div>	CONTRACT NO: 213/2020 XXXVI	SCALES
DRAWN BY: MHLARI KDK		UPGRADING OF VEHICLE BRIDGE AND 750M CONNECTOR ROAD AT SHABALALA MICASA			TENDER DRAWING	AS SHOWN
DESIGN CHECKED BY: MANANGA A		DRAWING TITLE:				DRAWING No: XXXVI - 018
DESIGNED BY: MANYELENYELE AE		BRIDGE: DRAWING 4 OF 5				



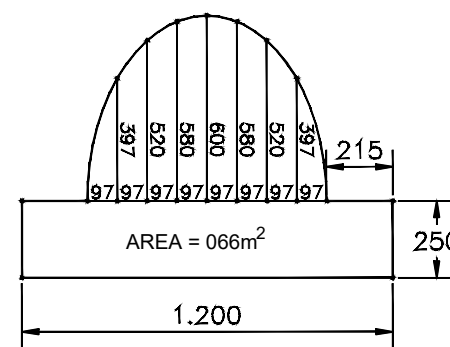
DRAWING CHECKED BY: MANYELENYELE AE	<div><p>MATHANDA CIVIL ENGINEERING AND PROJECT MANAGEMENT 11 TANGALO STREET BENDOR POLOKWANE 0099 Tel. (015) 298 8425 Fax (015) 298 8734 E-mail: mathandacivilsolutions@gmail.com</p></div>	PROJECT TITLE:	<div><p>CITY OF MBOMBELA 1 NEL STREET MBOMBELA 1201 Tel. 013 759 9111 Fax 013 759 2070</p></div>	<div><div>MUNICIPAL MANAGER</div><div></div><div>CONSULTING ENGINEER Pr No. 201370363</div></div> <div><div>DATE</div><div>15/11/2024</div><div>DATE</div></div>	CONTRACT NO: 213/2020 XXXVI	SCALES
DRAWN BY: MHLARI KDK		UPGRADING OF VEHICLE BRIDGE AND 750M CONNECTOR ROAD AT SHABALALA MICASA			AS SHOWN	
DESIGN CHECKED BY: MANANGA A		BRIDGE: DRAWING 5 OF 5			DRAWING No: XXXVI - 019	
DESIGNED BY: MANYELENYELE AE						



PLAN OF SPEED HUMP
SCALE 1:100



DETAIL OF SPEED HUMP ROAD MARKING
SCALE 1:20

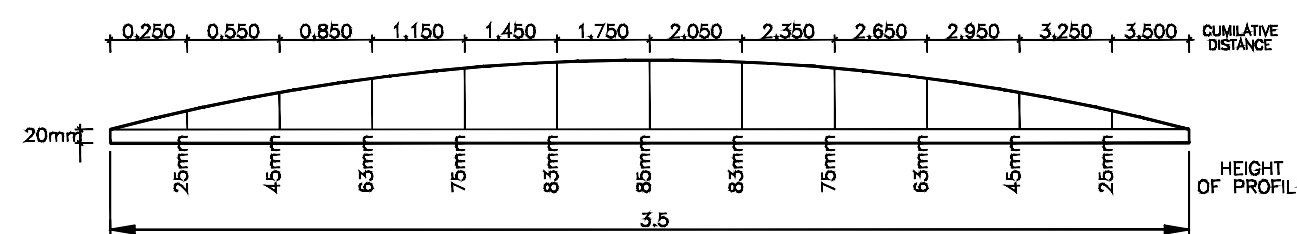


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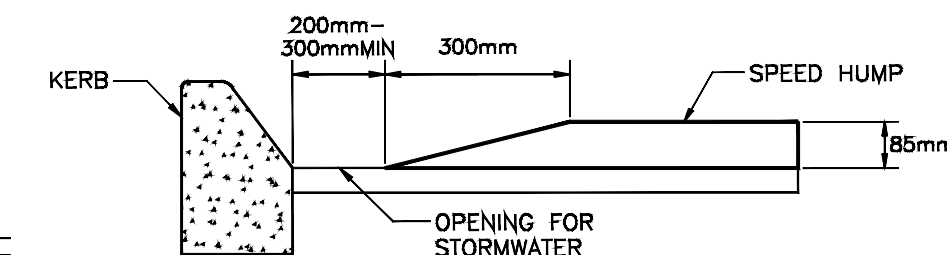
- Traffic Signs:
 - Only galvanneal bolts and nuts to be used on W and R series (round-studs)
 - All signs must be according to the Road Traffic Manuals
 - All signs excluding R1 series must have rounded edges
- ROADMARKINGS:
 - All new road markings in thermoplastic:

Colour	Best application (m²/m²)	Practical application (m²/m²)	Best application of retro-reflective (m²/m²)
White	1.2	0.8	0.8
Red	1.2	0.8	0.8

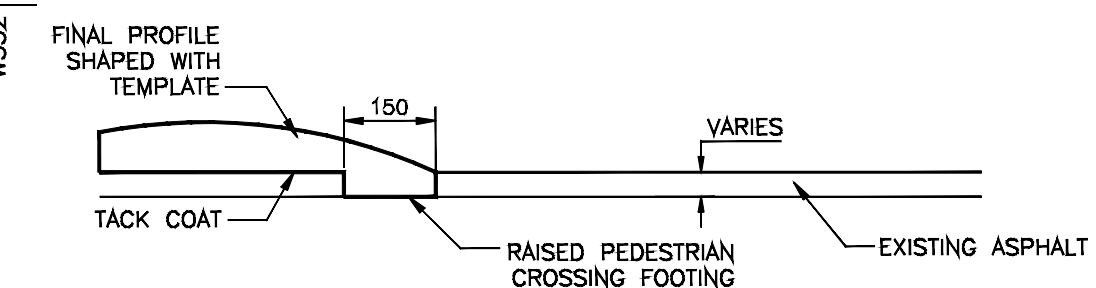
NOTE:
The Resident Engineer must always be consulted to assist with the setting out of speed humps.



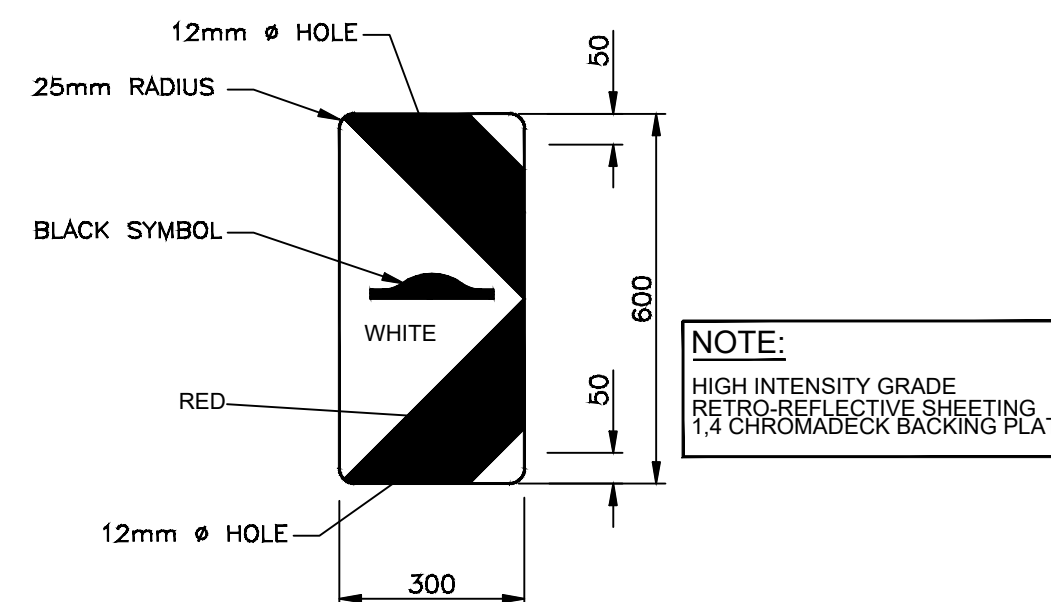
SIDE ELEVATION



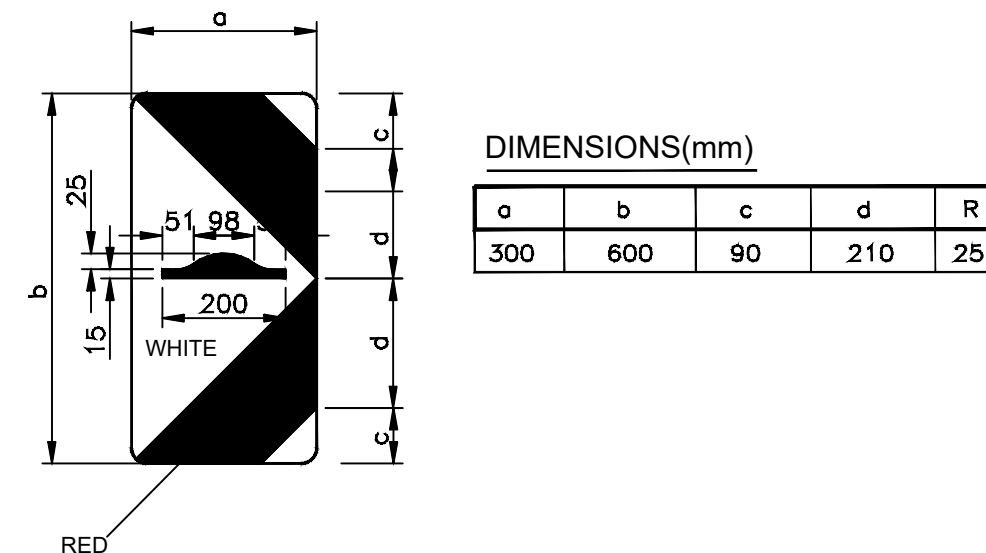
**SECTION A-A:
CONSTRUCTION DETAIL OF SPEED HUMP**
SCALE 1:100
50/60 Km/h



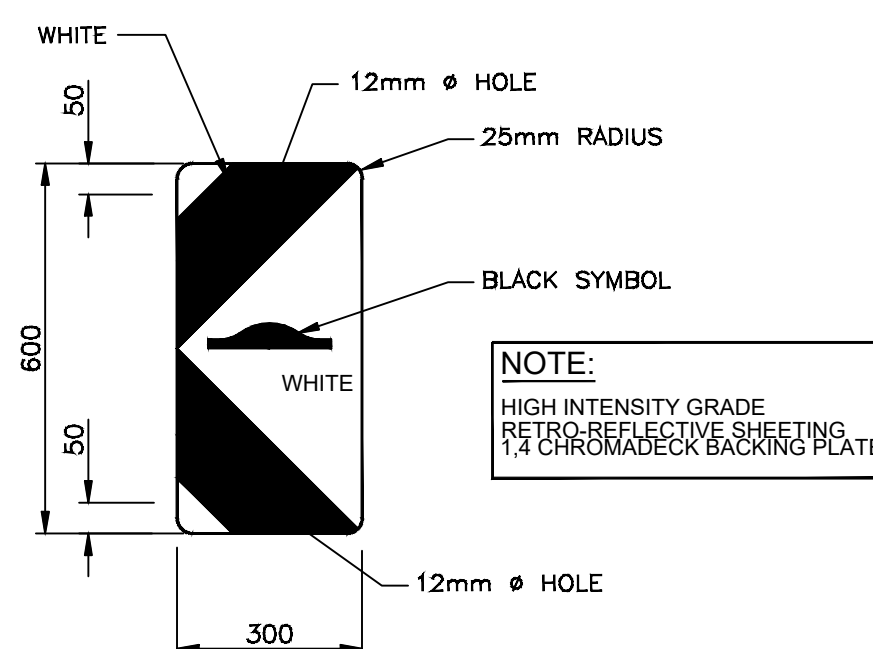
**SECTION B-B:
CONSTRUCTION DETAIL OF SPEED HUMP**
SCALE 1:100





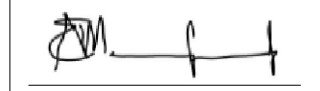
DANGER PLATE SPEED HUMP (LEFT)
W416
SCALE 1:10

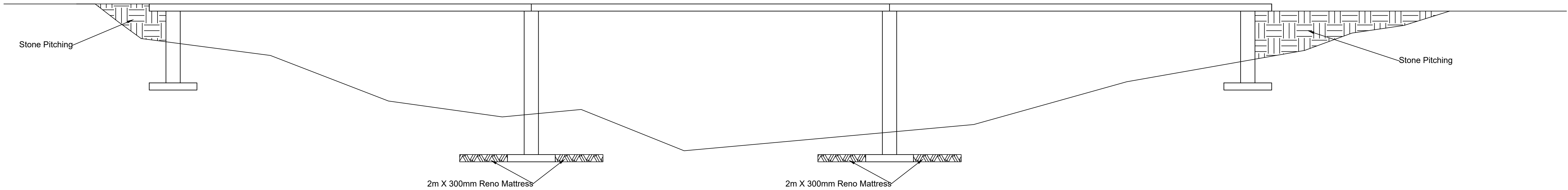


DANGER PLATE SPEED HUMP
W416
SCALE 1:10






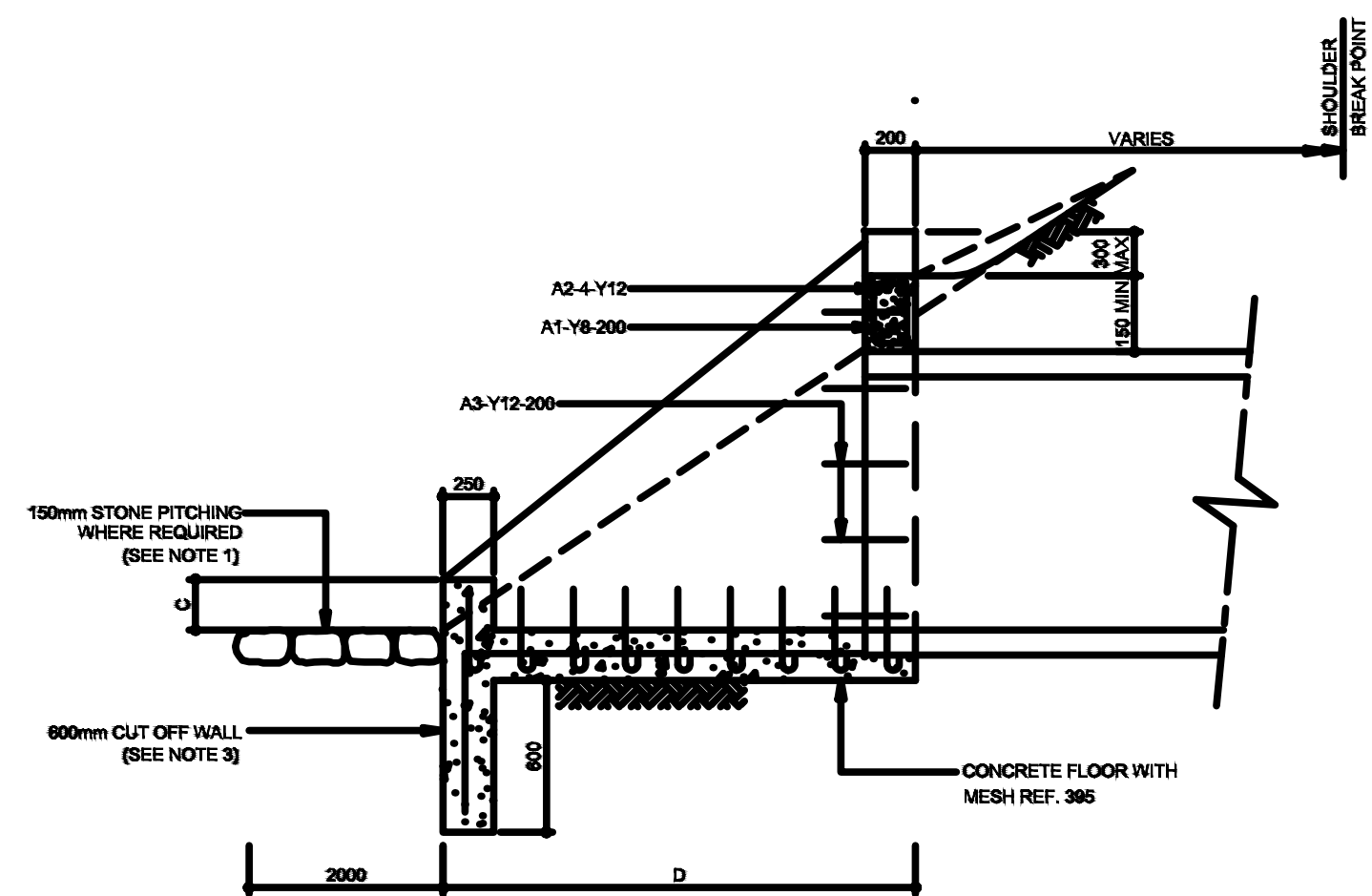
DANGER PLATE SPEED HUMP (RIGHT)
W417
SCALE 1:10

DRAWING CHECKED BY: MANYELENYELE AE	 MATHANDA CIVIL ENGINEERING AND PROJECT MANAGEMENT 11 TANGELO STREET BENDOR POLOKWANE 0699 Tel. (015) 298 8425 Fax (015) 298 8734 E-mail: mathandaconsulting@gmail.com	PROJECT TITLE:	 CITY OF MBOMBELA 1 NEL STREET MBOMBELA 1201 Tel. 013 759 9111 Fax 013 759 2070	MUNICIPAL MANAGER  CONSULTING ENGINEER Pr No. 201370363	CONTRACT NO: 213/2020 XXXVI	SCALES
DRAWN BY: MHLARI KDK		UPGRADING OF VEHICLE BRIDGE AND 750M CONNECTOR ROAD AT SHABALALA MICASA			TENDER DRAWING	AS SHOWN
DESIGN CHECKED BY: MANANGA A		DRAWING TITLE:				DRAWING No: XXXVI - 020
DESIGNED BY: MANYELENYELE AE		SPEED HUMP				

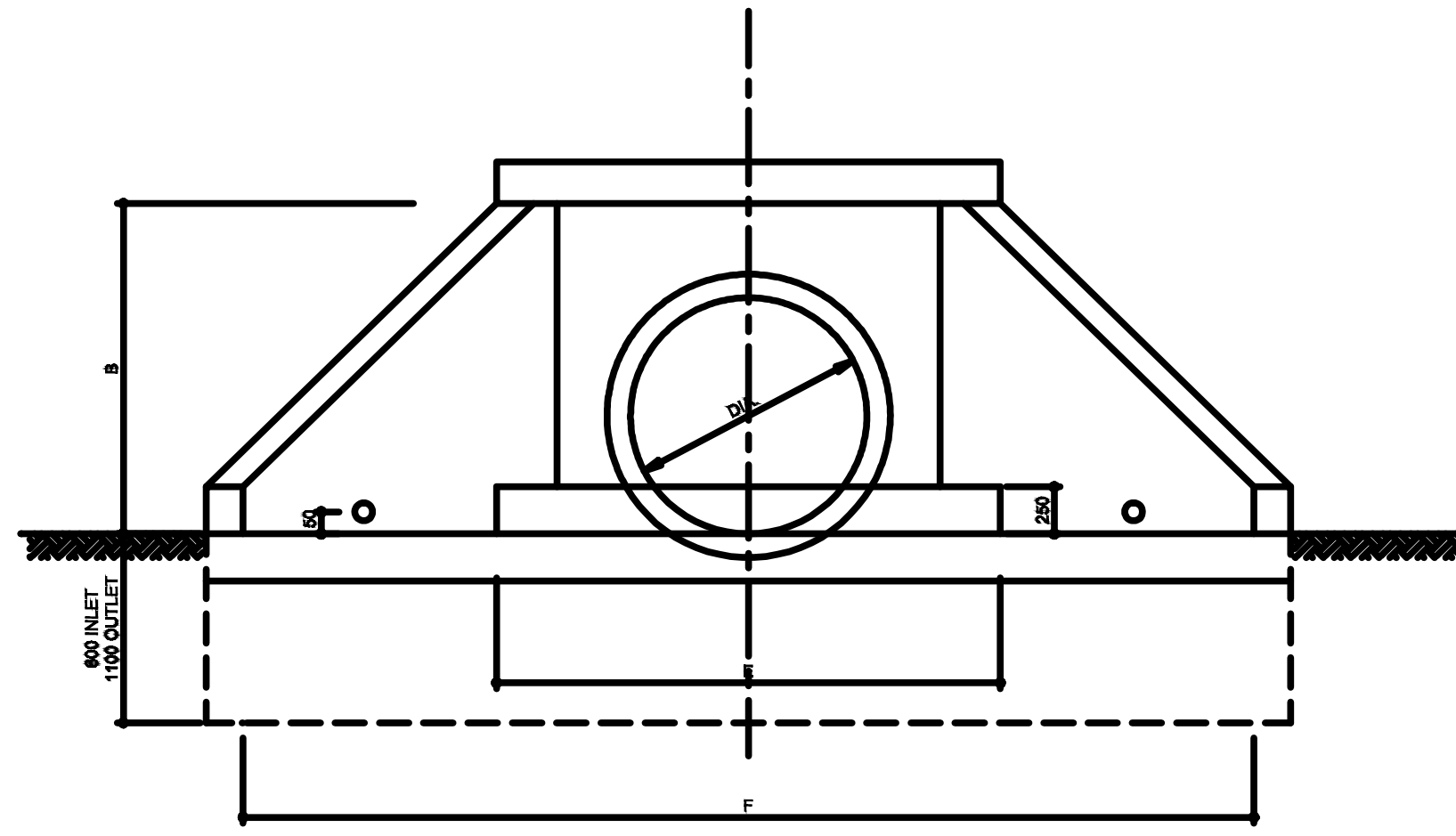


SIDE VIEW ON BRIDGE

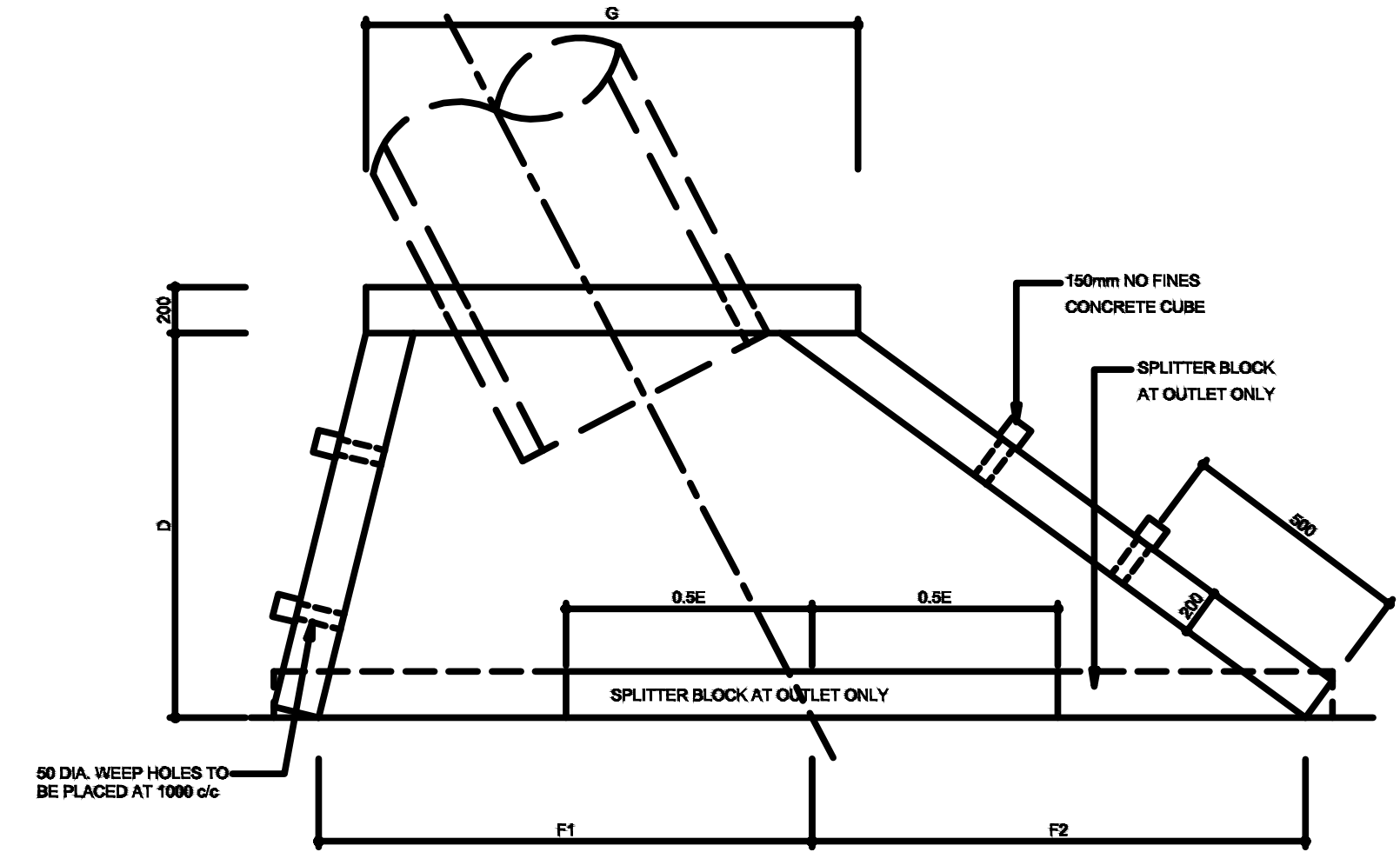
DRAWING CHECKED BY: MANYELENYELE AE	<div>MATHANDA <small>(AN ISO 9001:2015 CERTIFIED COMPANY)</small> MATHANDA CIVIL ENGINEERING AND PROJECTMANAGEMENT 11 TANGELO STREET BENDOR POLOKWANE 0699 Tel. (015) 298 8425 Fax (015) 298 8734 E-mail: mathandaconsulting@gmail.com</div>	PROJECT TITLE: UPGRADING OF VEHICLE BRIDGE AND 750M CONNECTOR ROAD AT SHABALALA MICASA	<div>CITY OF MBOMBELA <small>THE ULTIMATE DESTINATION</small> CITY OF MBOMBELA 1 NEL STREET MBOMBELA 1201 Tel. 013 759 9111 Fax 013 759 2070</div>	<div>MUNICIPAL MANAGER  CONSULTING ENGINEER Pr No. 201370363</div> <div>DATE 15/11/2024 DATE</div>	CONTRACT NO: 213/2020 XXXVI	SCALES
DRAWN BY: MHLARI KDK					AS SHOWN	
DESIGN CHECKED BY: MANANGA A					TENDER DRAWING	
DESIGNED BY: MANYELENYELE AE		DRAWING TITLE: EROSION PROTECTION				DRAWING No: XXXVI - 021



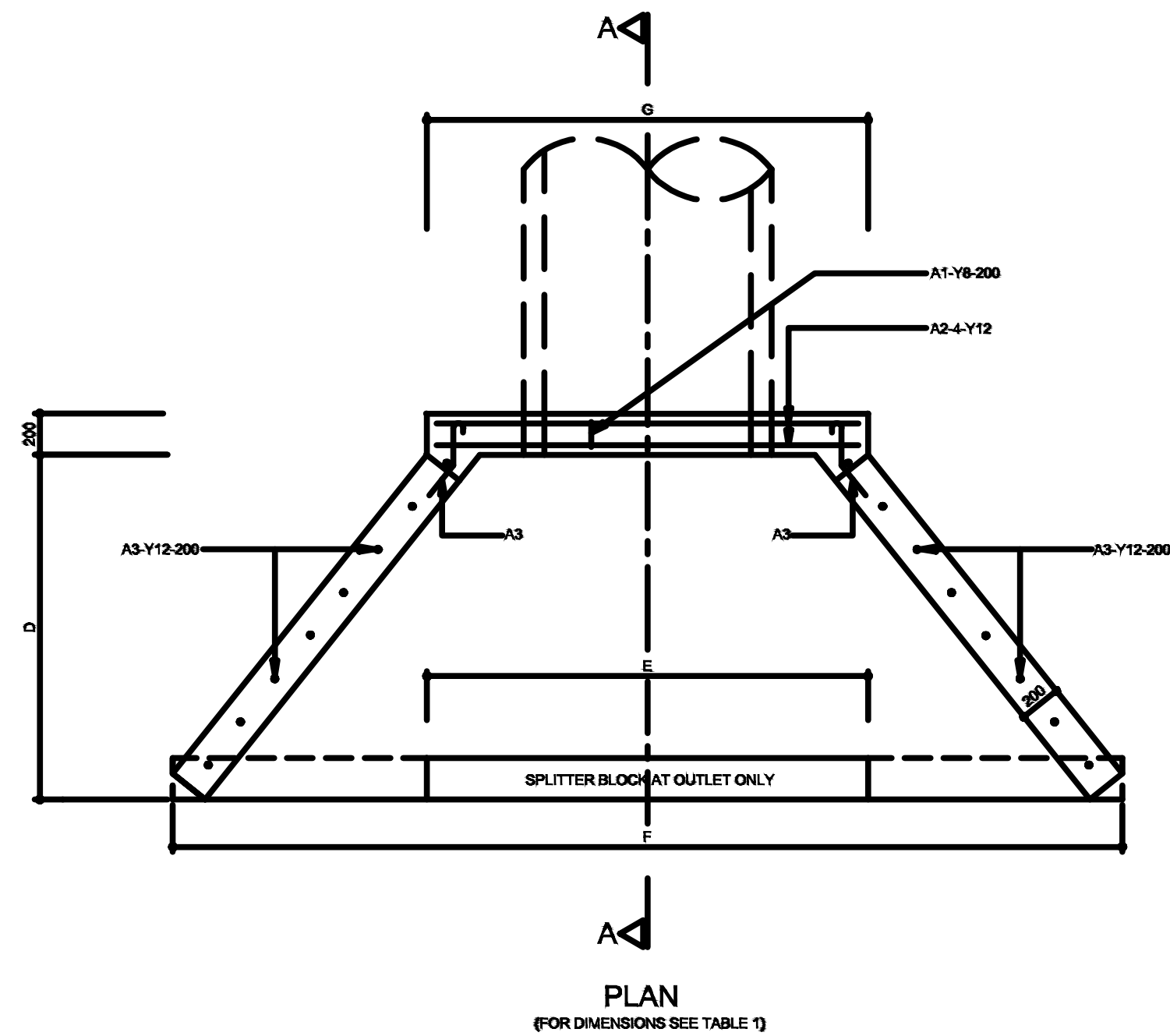
SECTION A-A
(FOR DIMENSIONS SEE TABLE 1)



FRONT ELEVATION - SINGLE PIPE
(FOR DIMENSIONS SEE TABLE 1)



SKEW PIPE CULVERT
(FOR DIMENSIONS SEE TABLE 3)



PLAN
(FOR DIMENSIONS SEE TABLE 1)

TABLE 2

ITEM	NUMBER	DIAMETER	CUT LENGTH	CODE	SHAPE
A1	VARIES	Y8	600	60	
A2	4	Y12	VARIES	20	STRAIGHT
A3	VARIES	Y12	500	32	

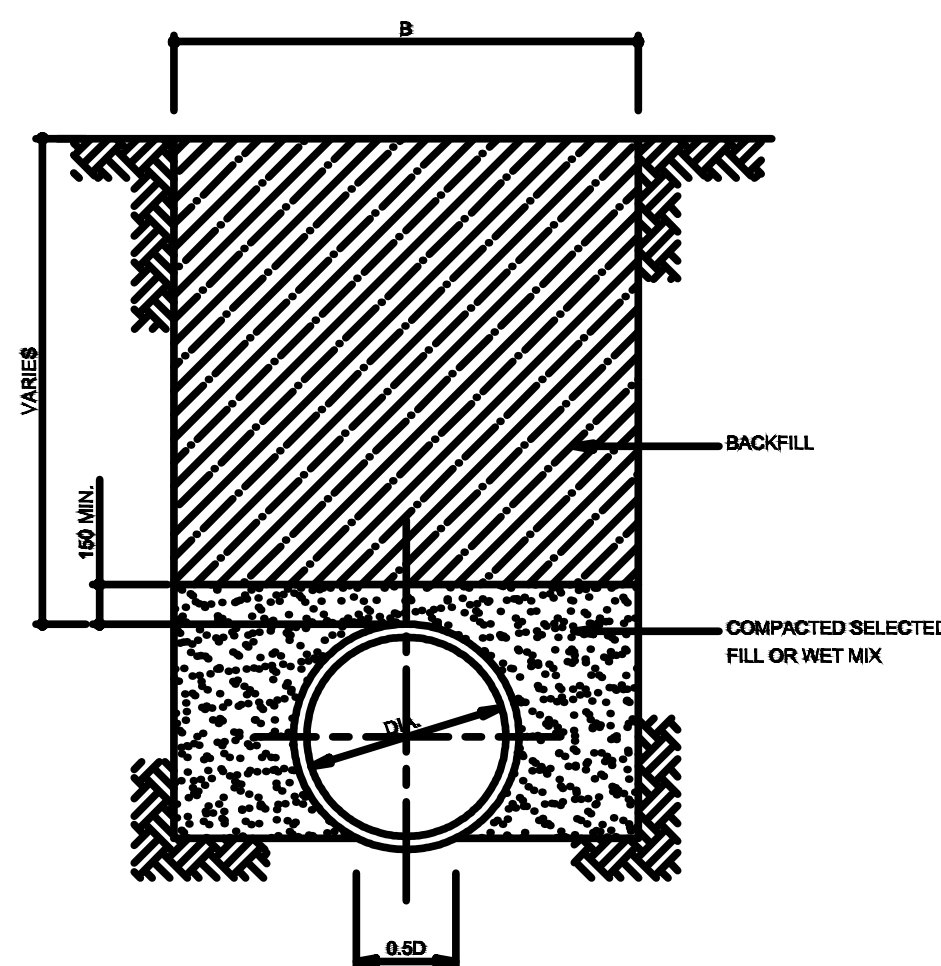
TABLE 3

NOMINAL DIAMETER	DIMENSIONS						
A	B	C	D	E	F1	F2	G
450	980	270	790	1140	1025	1025	1140
600	910	320	860	1300	1210	1210	1300
750	970	360	1180	1470	1410	1410	1470
900	1120	450	1340	1630	1590	1590	1630
1050	1280	510	1540	1800	1800	1800	1800
1200	1440	580	1730	1960	1860	1860	1960

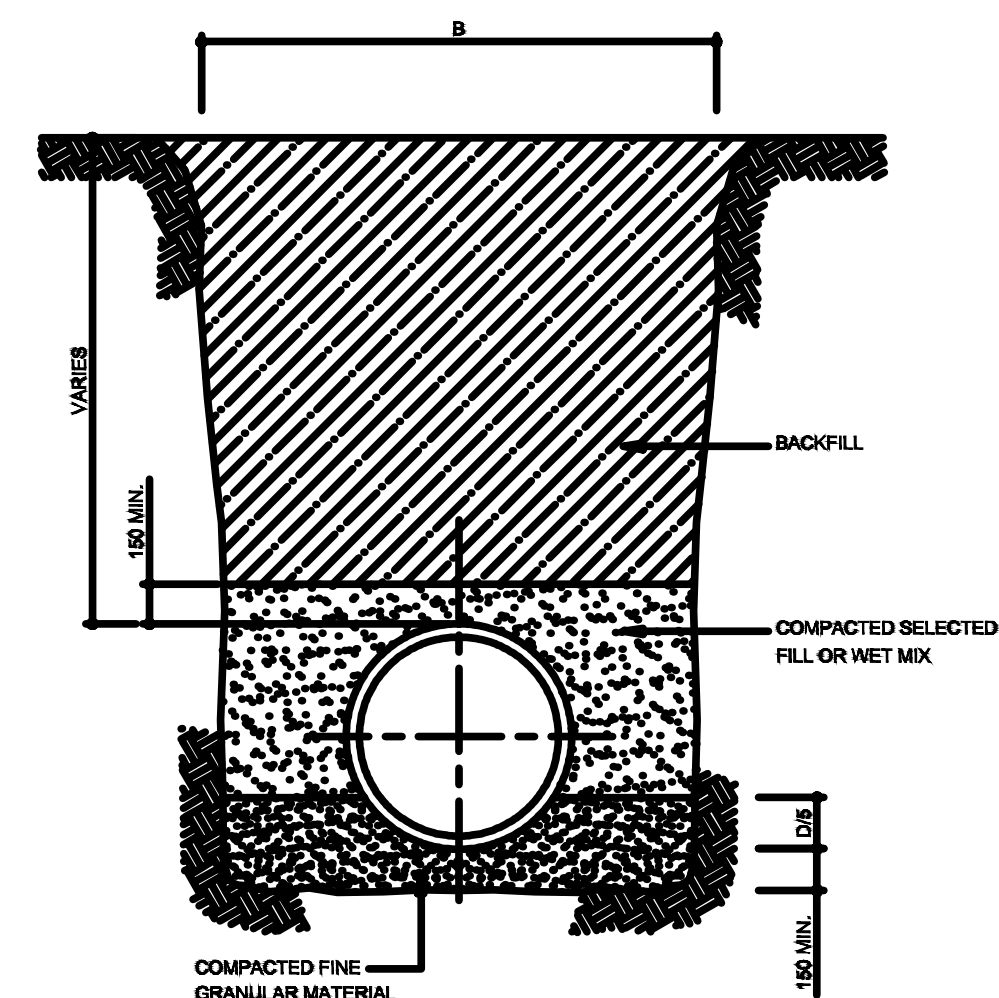
- NOTES:
- INLET/OUTLET APPROACHES IN FILL CONDITION TO BE STONE PITCHED WHERE EROSION IS LIKELY TO OCCUR.
 - SPLITTER BLOCK MAY BE OMITTED IF DISCHARGE VELOCITY IS LESS THAN 1.50 m/s AND PROVIDED AT OUTLETS ONLY.
 - CUT OFF WALLS MAY BE OMITTED IF STRUCTURE IS FOUNDED ON ROCK.
 - FOR MULTIPLE PIPE CULVERTS INCREASE DIMENSIONS "E" AND "F" BY $(n-1)(A+450)$ mm WHERE n = NUMBER OF PIPES WHERE A = NOMINAL DIAMETER OF PIPES
 - FOR SKEW PIPE CULVERTS THE HEADWALL SHALL BE PARALLEL TO THE CENTER LINE OF THE ROAD.
 - IF CORRUGATED METAL PIPES ARE USED 4 x 20mm x 150mm LONG GALVANISED ANCHOR BOLTS IN THE HOLLOWS OF THE CORRUGATIONS ARE TO BE USED.
 - SQUARE MESH FABRIC (REFERENCE S.M.F 311) TO BE PLACED CENTRALLY
 - DIMENSIONS IN TABLE 1 AND 3 ARE AS PER MANUFACTURING STANDARD OF ROCLA PIPE CULVERT TYPE SC TO SABS.

TABLE 1

NOMINAL DIAMETER	DIMENSIONS					
A	B	C	D	E	F	G
450	980	270	790	1140	2050	1140
600	910	320	860	1300	2420	1300
750	970	360	1180	1470	2810	1470
900	1120	450	1340	1630	3180	1630
1050	1280	510	1540	1810	3570	1800
1200	1440	580	1730	1960	3960	1960



CLASS C PIPE BEDDING IN SOIL
(FOR DIMENSIONS SEE TABLE 4)
N.T.S.



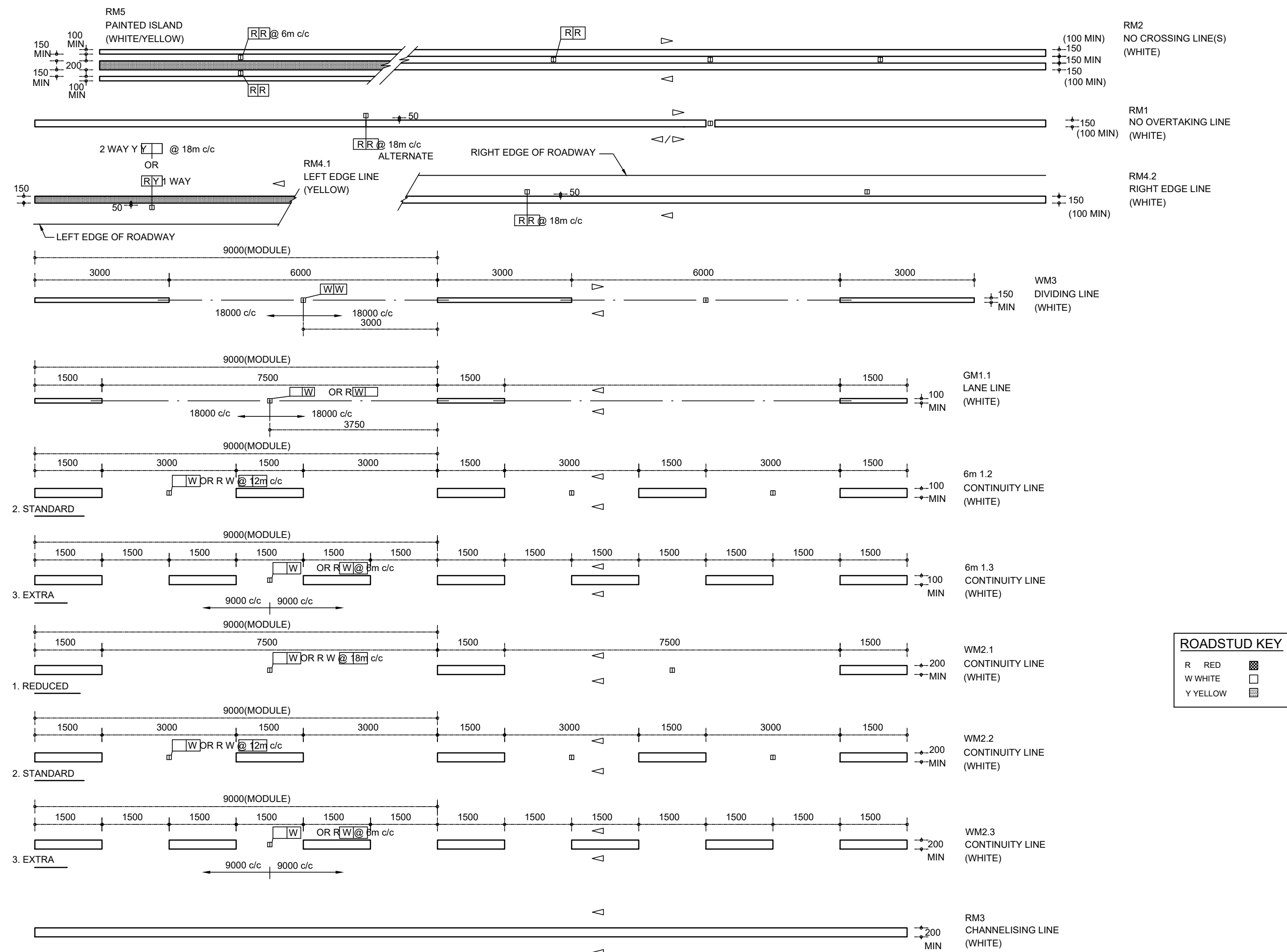
CLASS C PIPE BEDDING IN ROCK
(FOR DIMENSIONS SEE TABLE 4)
N.T.S.

TABLE 4

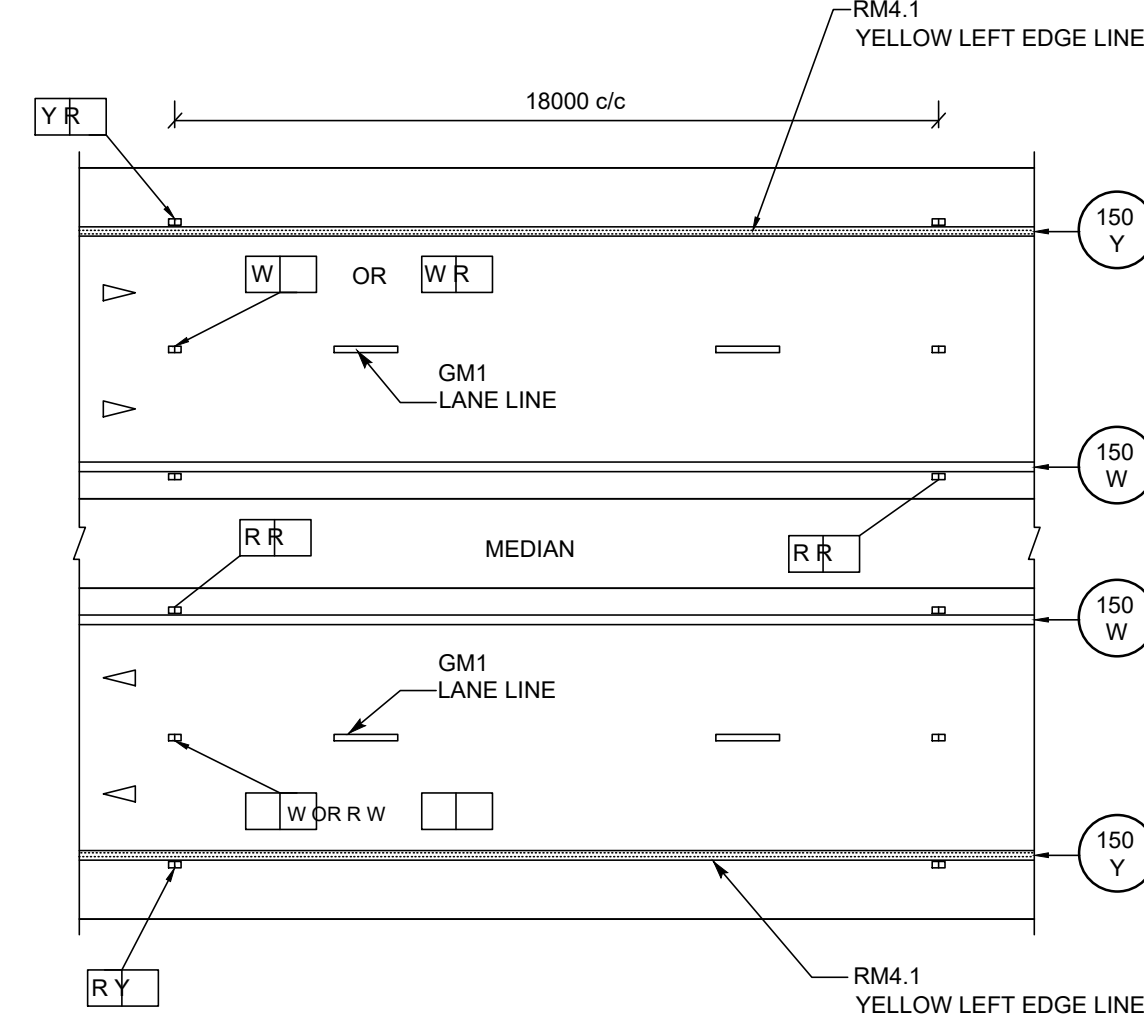
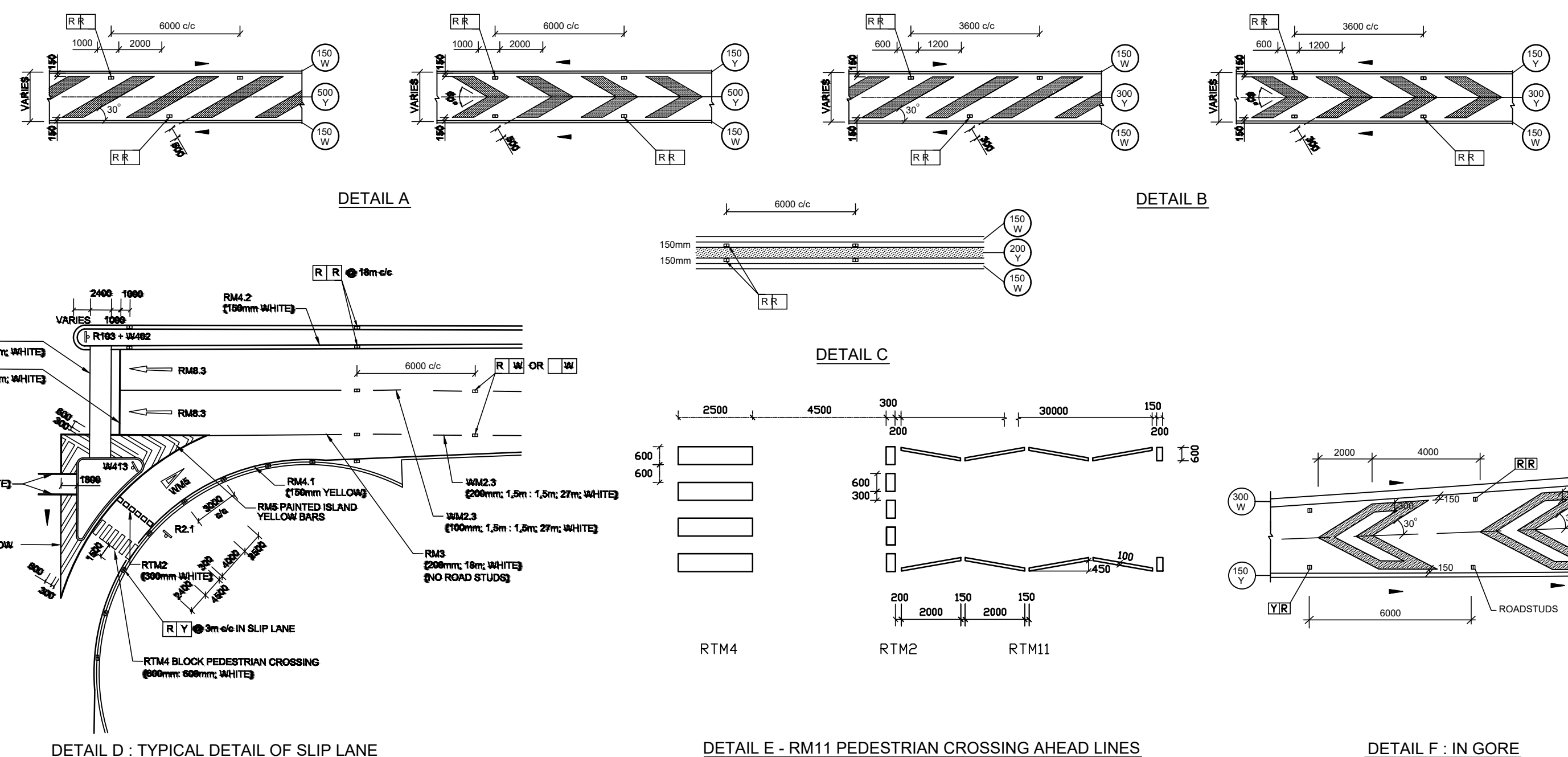
WIDTH 'B'		
DIA.	SINGLE PIPE	DOUBLE PIPE
600	1600	2500
750	1750	2875
900	1900	3250

PIPE BEDDING DETAILS

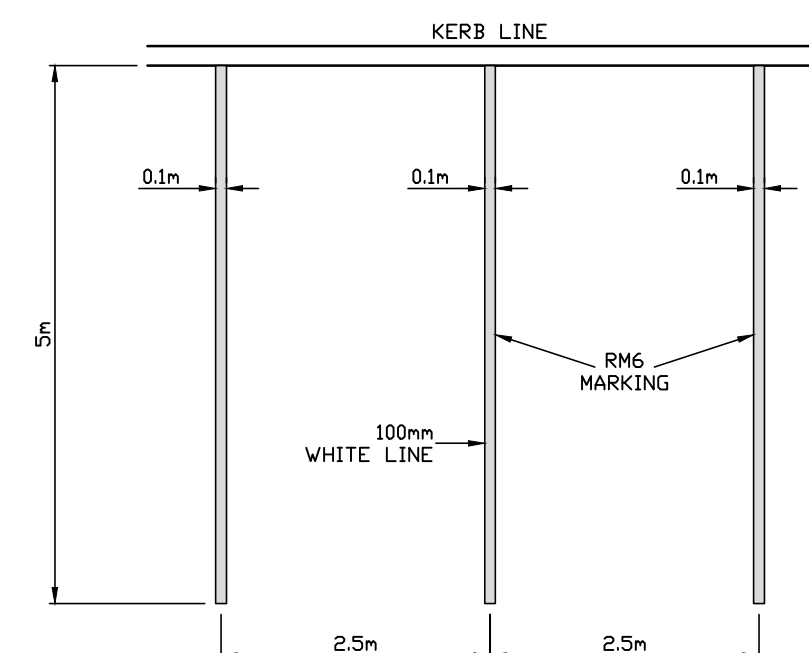
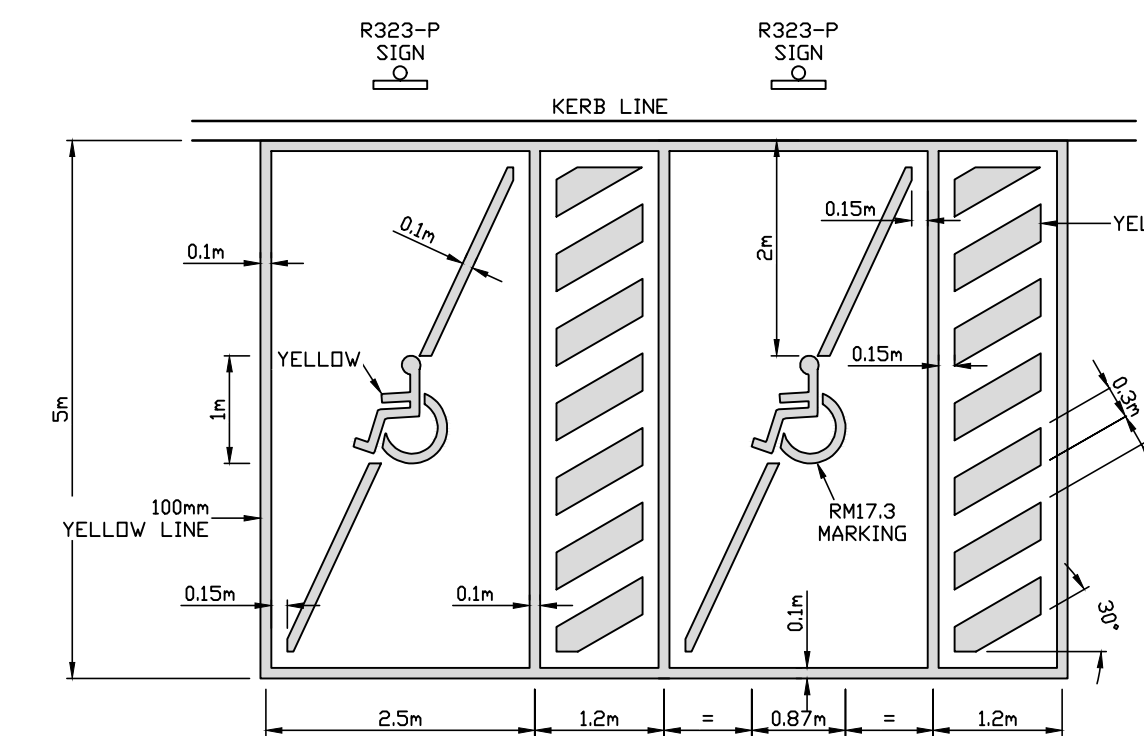
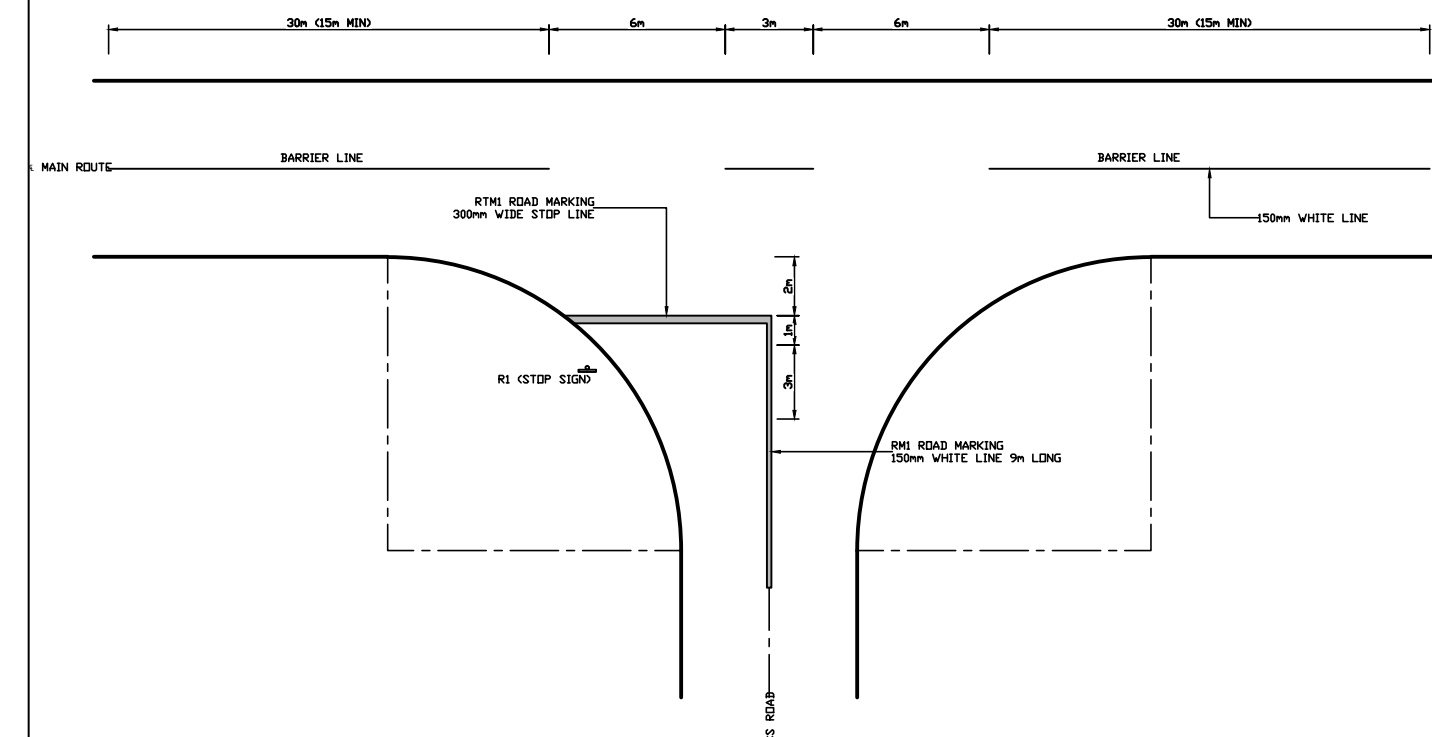
DRAWING CHECKED BY: MANYELENYELE AE	 MATHANDA CIVIL ENGINEERING AND PROJECT MANAGEMENT 11 TANGELO STREET BENDOR POLOKWANE 0699 Tel. (015) 298 8425 Fax (015) 298 8734 E-mail: mathandaconsulting@gmail.com	PROJECT TITLE:	 CITY OF MBOMBELA 1 NEL STREET MBOMBELA 1201 Tel. 013 759 9111 Fax 013 759 2070	MUNICIPAL MANAGER CONSULTING ENGINEER Pr No. 201370363	DATE 15/11/2024 DATE	CONTRACT NO: 213/2020 XXXVI	SCALES
DRAWN BY: MHLARI KDK		UPGRADING OF VEHICLE BRIDGE AND 750M CONNECTOR ROAD AT SHABALALA MICASA				TENDER DRAWING	AS SHOWN
DESIGN CHECKED BY: MANANGA A		DRAWING TITLE:					DRAWING No: XXXVI - 022
DESIGNED BY: MANYELENYELE AE		PIPE CULVERT					



URBAN LONGITUDINAL LINE TYPES
ROAD STUD PLACEMENT



ROAD STUDS : 4-LANE DUAL CARRIAGEWAY ROAD



DRAWING CHECKED BY: MANYELENYELE AE

DRAWN BY: MHLARI KDK

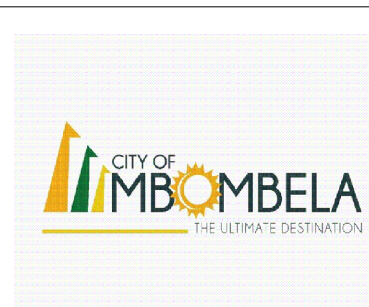
DESIGN CHECKED BY: MANANGA A

DESIGNED BY: MANYELENYELE AE

MATHANDA
CIVIL ENGINEERING AND PROJECTMANAGEMENT
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PROJECT TITLE:
**UPGRADING OF VEHICLE BRIDGE AND 750M
CONNECTOR ROAD AT SHABALALA MICASA**

DRAWING TITLE:
ROAD MARKING



CITY OF MBOMBELA
1 NEL STREET
MBOMBELA
1201
Tel. 013 759 9111
Fax 013 759 2070

MUNICIPAL MANAGER
CONSULTING ENGINEER
Pr No. 201370363

DATE
15/11/2024
DATE

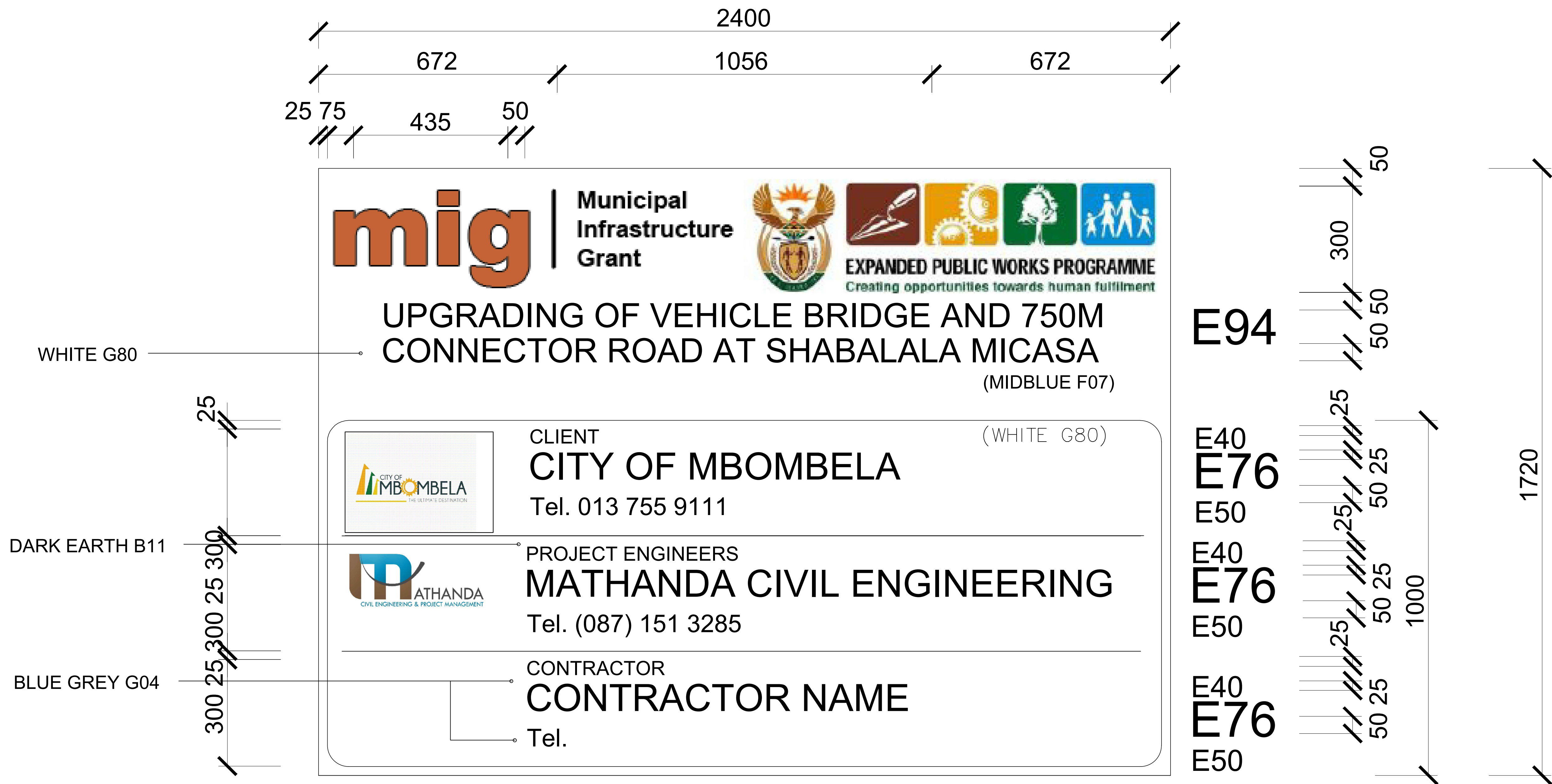
CONTRACT NO: 213/2020 XXXVI

TENDER DRAWING

SCALES

AS SHOWN

DRAWING No: XXXVI - 024



NOTE:

SEE SABS 1091 NATIONAL COLOUR STANDARDS FOR PAINT COLOURS.

SPECIFICATION :

1. The board shall be made up from tempered hardboard (or similar), at least 12 mm thick and shall be further braced on the reverse side to prevent warping and mounted on at least two firmly planted poles.
2. Logo's are only an indication and must be obtained from the Engineer prior to manufacturing.

DRAWING CHECKED BY: MANYELENYELE AE	 MATHANDA CIVIL ENGINEERING AND PROJECTMANAGEMENT 11 TANGELO STREET BENDOR POLOKWANE 0699 Tel. (015) 298 8425 Fax (015) 298 8734 E-mail: mathandaconsulting@gmail.com	PROJECT TITLE: UPGRADING OF VEHICLE BRIDGE AND 750M CONNECTOR ROAD AT SHABALALA MICASA	 CITY OF MBOMBELA 1 NEL STREET MBOMBELA 1201 Tel. 013 759 9111 Fax 013 759 2070	 MUNICIPAL MANAGER CONSULTING ENGINEER Pr No. 201370363	DATE 15/11/2024	CONTRACT NO: 213/2020 XXXVI	SCALES
DRAWN BY: MHLARI KDK		DRAWING TITLE: CONTRACT NAME BOARD				TENDER DRAWING	AS SHOWN
DESIGN CHECKED BY: MANANGA A							
DESIGNED BY: MANYELENYELE AE							DRAWING No: XXXVI - 025