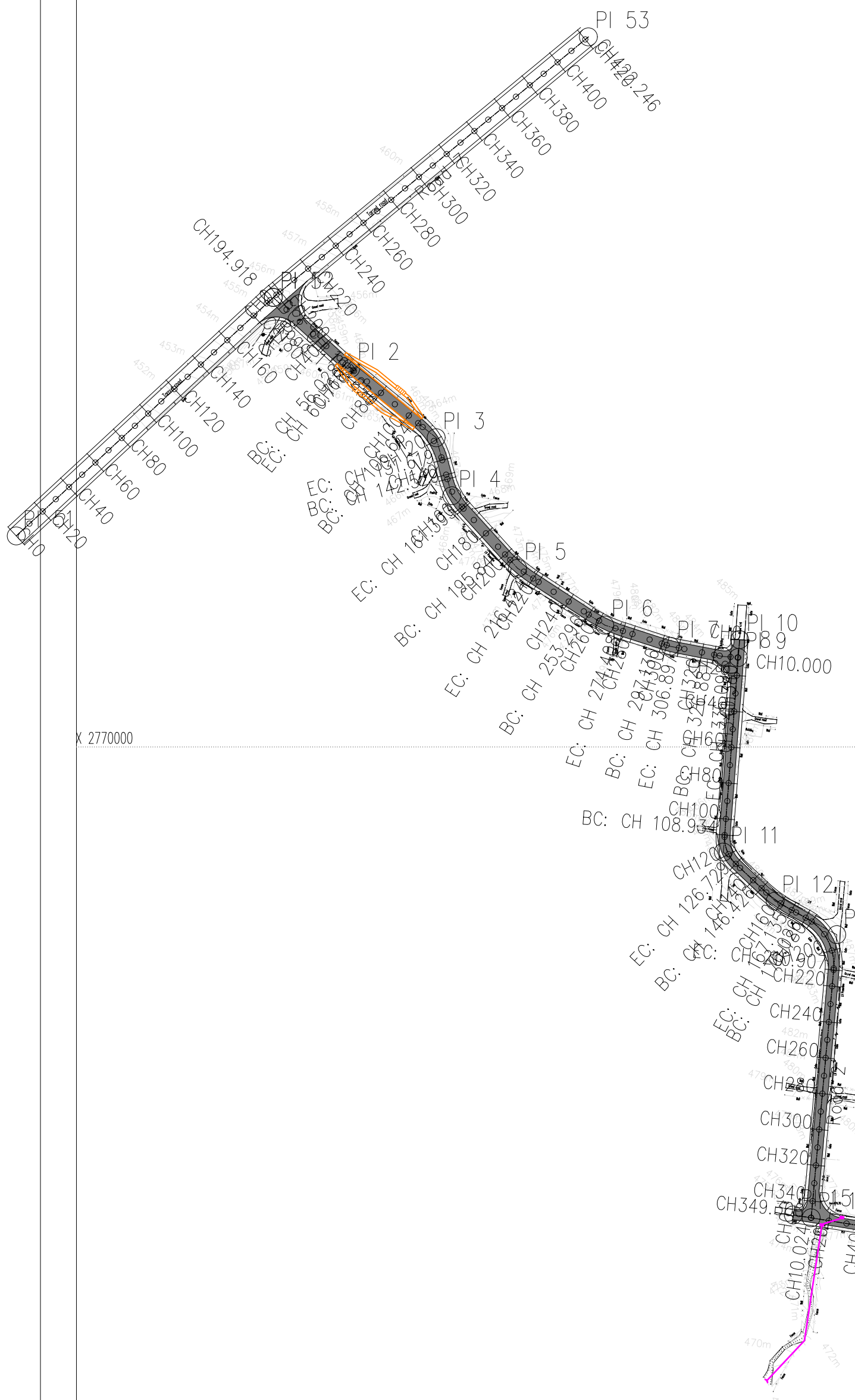




LEGEND:	
	Wellhead
	Gate
	Boundary wall
	Fence line
	Building/Toilet
	Shack/Foundation
	Optic fibre manhole
	Tree
	Water Valve
	Water Manhole
	Transformer
	Sewer Manhole
	Pylon
	Water Meter
	Inspection Eye
	Pole Stay
	Electrical Pole
	Telkom Pole
	Powerline
	Lampost
	Waste Bin
	Sign Board
	Tap
	Road Sign
	Kilometer Marker
	Fire Hydrant
	Electrical Box

DETAIL

MABUZA R.
SITUATED
MUNICIPAL
EHLANZENI
PROVINCE

MAPPING

COORDINA

National G

HEIGHT SY

Trig Base

Contours

Major Inter

Minor Inter

NACALA L

UNIT 124

CORNER V

P. O. BOX

NELSPRUIT

Email: ntr

TEL: 078

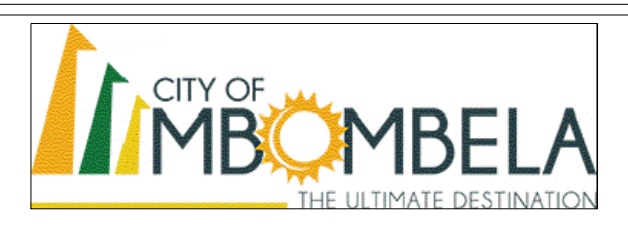
BENCH

POINT	X	Y
BM1	111.843	111.843
BM2	111.843	111.843
BM3	111.843	111.843
BM4	111.843	111.843
BM5	111.843	111.843
BM6	111.843	111.843
BM7	111.843	111.843
BM8	111.843	111.843
BM9	111.843	111.843

NOTES :
REFER TO NOTES DRAWINGS, DRAWING NUMBERS; SG001, SG002,
AND SG003

PRELIMINARY	
TENDER PURPOSES	*
FOR CONSTRUCTION	
AS BUILT	

5	
4	
3	
2	
1	
DATE	REVISIONS



1 Nel Street
Mbombela
1201

TEL: (013) 759 9111
FAX: (013) 759 2070
WEB: www.mbombela.gov.za

City of Mbombela

PROJECT :
PAVING OF GOROMANE TO KAMABUZA
(VIA TFOLINHLANHLA) AT SHABALALA
WARD 1

PROJECT NO: COM11/2023

DRAWING TITLE :
ROAD LAYOUT AND SETTING OUT

DESIGNED :	J.T.
DRAWN :	A.F.
SCALE :	1:2500
DATE :	23 DECEMBER 2022
CHECKED :	J.T.
APPROVED :	J.T.M
SIGNATURE :	

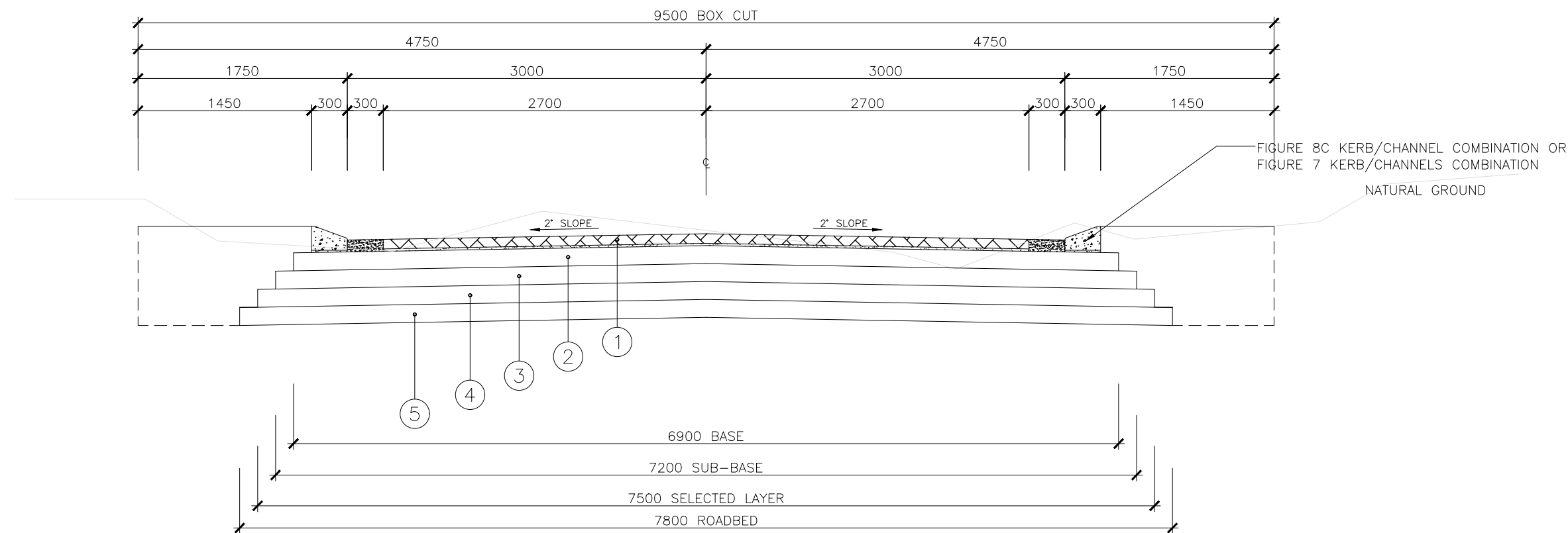
PROFESSIONAL SERVICE :
CIVIL ENGINEERING

DRAWING No :
065/GOR/R001 REV 0

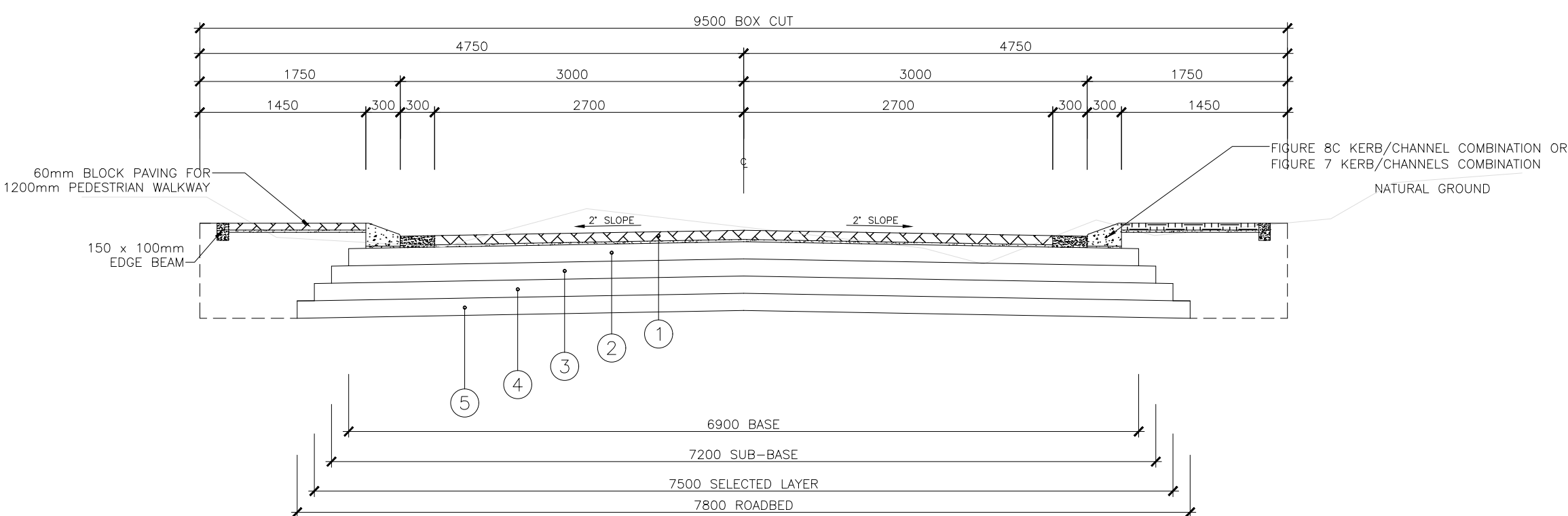
THIS DRAWING IS THE PROPERTY OF MK. DUBE CONSULTING &
REPRODUCTION, DISTRIBUTION, ALTERATION OR ISSUING THEREOF
WITHOUT PERMISSION IS PROHIBITED UNDER THE COPYRIGHT ACT.



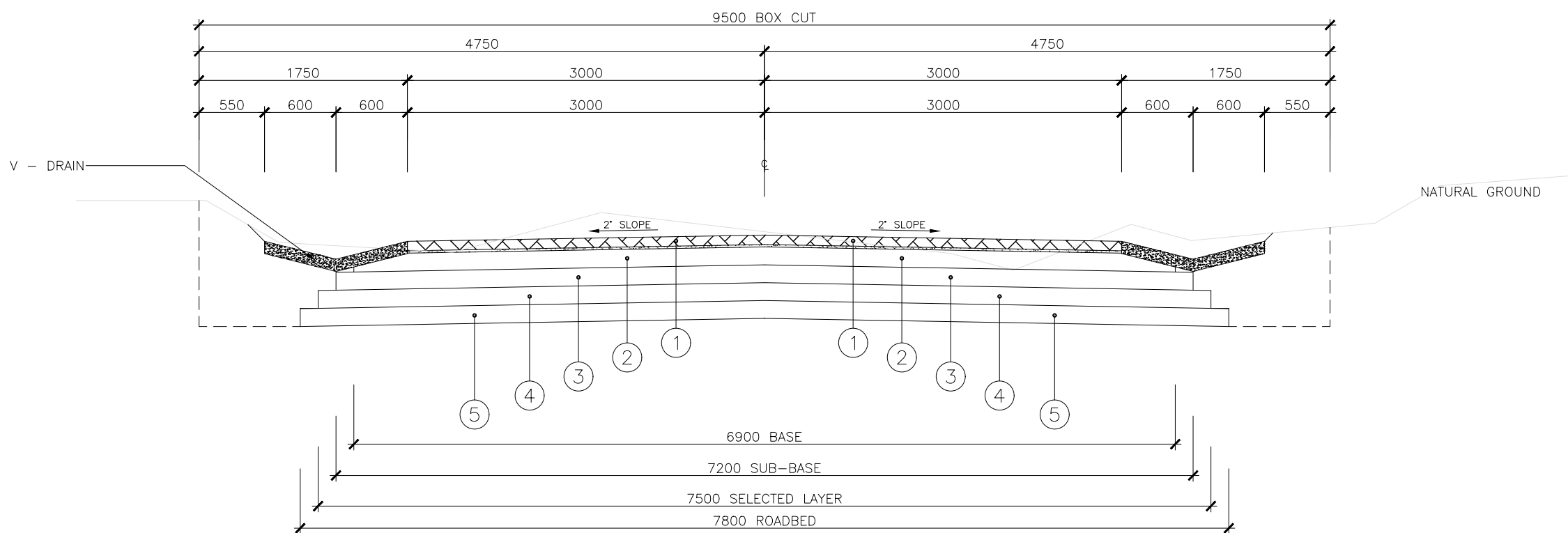
MK DUBE CONSULTING (PTY) LTD
OFFICE No. 7 LIZA'S COURT, 28 VAN RENSBURG STREET, NELSPRUIT, 1206
P.O. BOX 569, SONPARK, 1206
TEL: (013) 753 2998, FAX: 086 549 1872



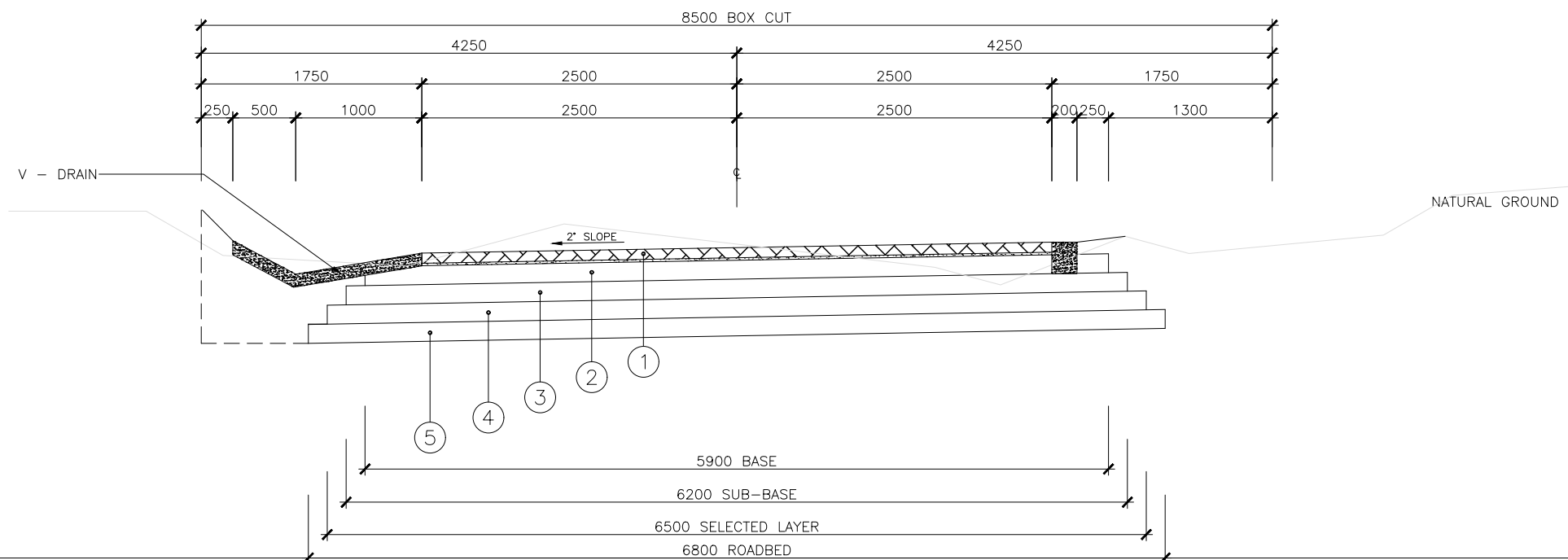
TYPICAL ROAD SECTION 1



TYPICAL ROAD SECTION 2 (WITH WALKWAY)



TYPICAL ROAD SECTION 3 (V-DRAINS)



TYPICAL ROAD SECTION 4 (ROAD NO. 3 - CROSSFALL)

ITEM	LAYER	THICKNESS (mm)	TRH 4 CODE	DESCRIPTION	FIELD REQUIRED COMPACTION
1	PAVING (SURFACE)	100		80mm THICK 35MPa INTERLOCKING PAVING BLOCKS ON A 20mm THICK BED OF RIVERSAND	—
2	BASE (IMPORTED FROM BORROW PIT AND/OR COMMERCIAL SOURCE)	150	C3	UCS:1,5 TO 3,0 Mpa @ 100% MOD. AASHTO; MINIMUM ITS = 250 Kpa @ 95–97% MOD. AASHTO COMPACTION; MAXIMUM AGGREGATE 63mm; 5% MAXIMUM PI = 6 AFTER STABILIZATION; MAX. FINES LOSS = 20%; FIELD COMPACTION 98% MOD. AASHTO MIN.	98% MOD AASHTO MIN
3	SUB-BASE (IMPORTED FROM BORROW PIT AND/OR COMMERCIAL SOURCE)	150	C4	UCS:0,75 TO 1,5 Mpa @ 100% MOD. AASHTO; MINIMUM ITS = 250 Kpa @ 95–97% MOD. AASHTO COMPACTION; MAXIMUM AGGREGATE 63mm; 5% MAXIMUM PI = 6 AFTER STABILIZATION; MAX. FINES LOSS = 20%; FIELD COMPACTION 98% MOD. AASHTO MIN.	97% MOD AASHTO MIN
4	SELECTED (FROM STOCKPILE & BORROW PIT)	150	G6	MINIMUM CBR = 15% @ 93% MOD. AASHTO; MAXIMUM SIZE ½ OF LAYER THICKNESS; DENSITY = 95% MOD. AASHTO; PI < 12 OR 3GM + 10; MAXIMUM SWELL 1.5% @100% MOD. AASHTO; FIELD COMPACTION 95% MOD. AASHTO MIN.	95% MOD AASHTO MIN
5	ROADBED	150	IN-SITU	IN-SITU	93% MOD AASHTO MIN
6	SUBGRADE INSITU	150 LAYERS	IN-SITU	IN-SITU	90% MOD AASHTO MIN
*FILL (CUT & FILL) INSITU MATERIAL CUT TO STOCKPILE/FILL		150 LAYERS	IN-SITU	MINIMUM CBR = 3% @ 90% MOD. AASHTO; MAXIMUM SIZE ½ OF LAYER THICKNESS;	90% MOD AASHTO MIN
*PIONEER LAYER		300	—	ROCKFILL (MAXIMUM ½ OF LAYER) THICKNESS MIXED WITH G9–G10	—
*REPLACEMENT LAYER		1000	—	DUMPROCK MIXED WITH G9–G10	—

NOTES :
REFER TO NOTES DRAWINGS, DRAWING NUMBERS, SG001, SG002, AND SG003

PRELIMINARY

TENDER PURPOSES *

FOR CONSTRUCTION

AS BUILT

5		
4		
3		
2		
1		
DATE REVISIONS		

CITY OF MBOMBELA
THE ULTIMATE DESTINATION
1 Nel Street Mbombela 1201
TEL: (013) 759 9111
FAX: (013) 759 2070
WEB: www.mbombela.gov.za
City of Mbombela

PROJECT :
PAVING OF GOROMANE TO KAMABUZA (VIA TFOHLHLANHLA) AT SHABALALA WARD 1

PROJECT NO: COM11/2023

DRAWING TITLE :
PAVEMENT LAYERWORKS AND TYPICAL SECTION DETAILS

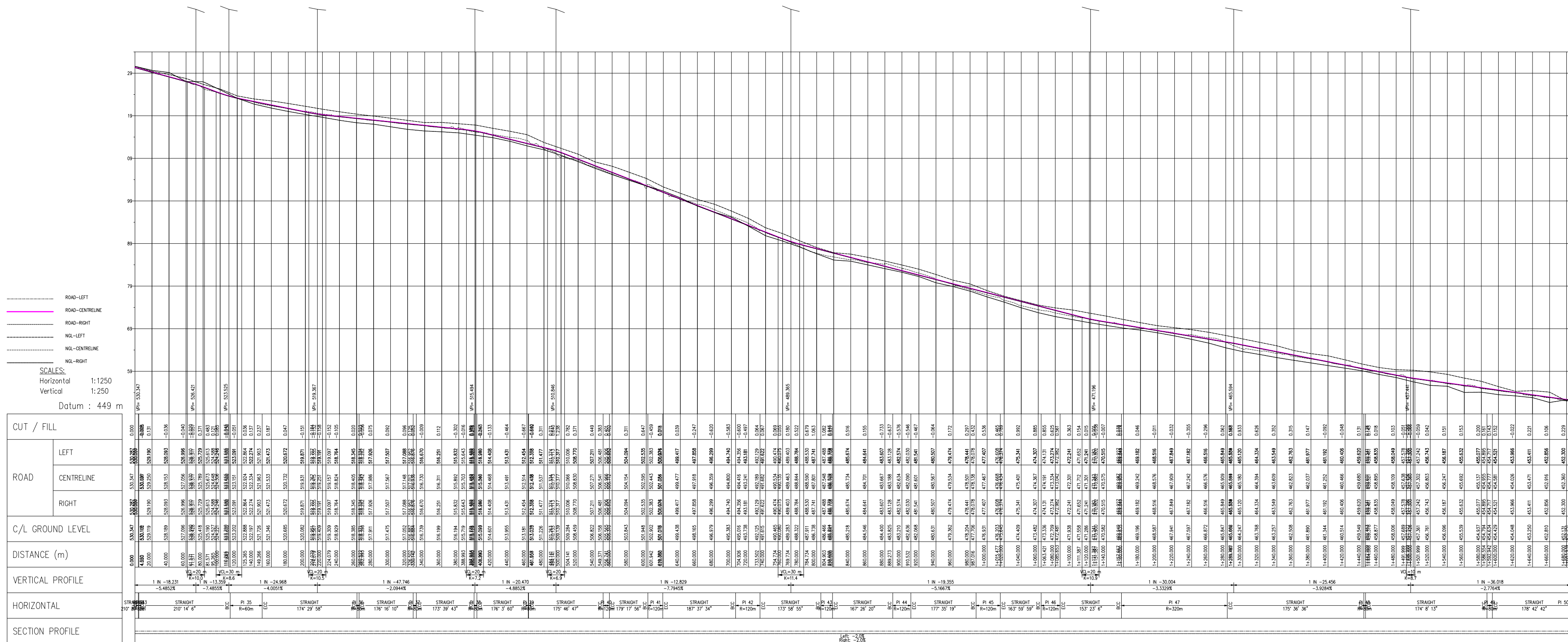
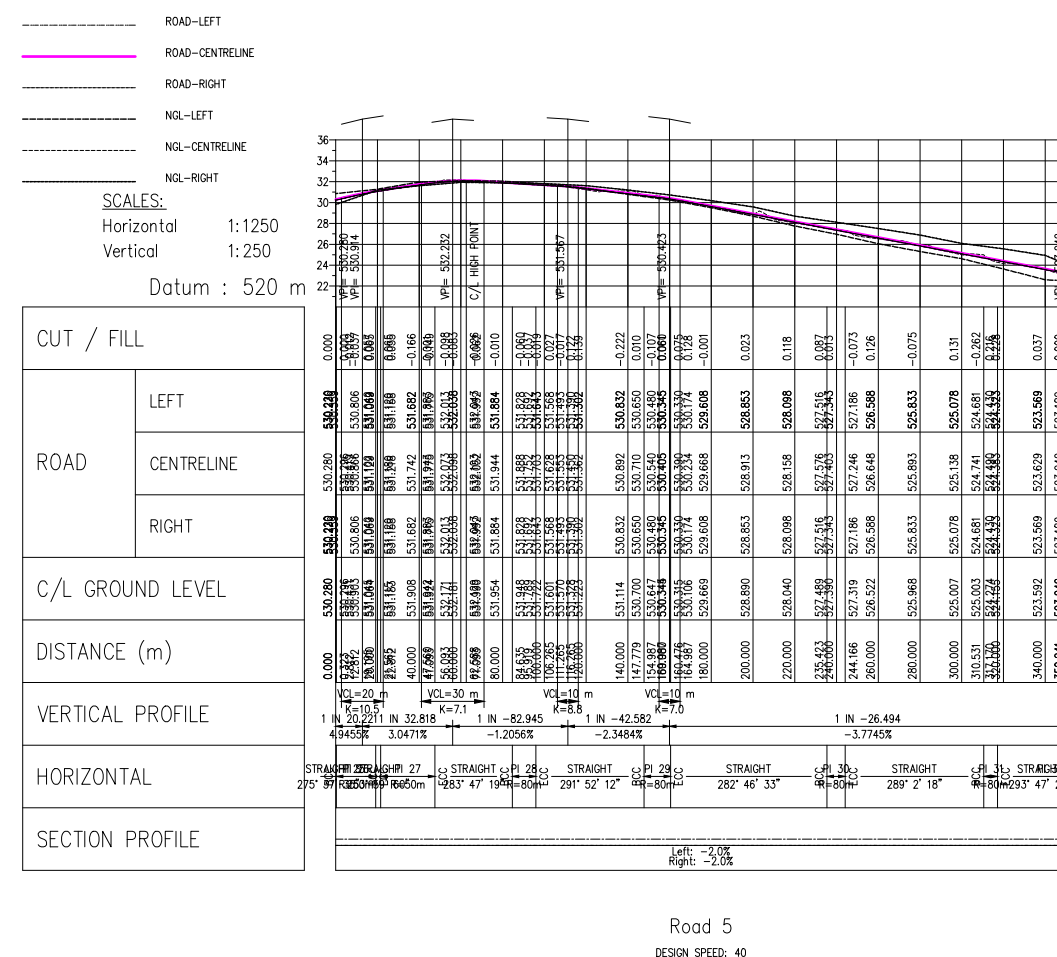
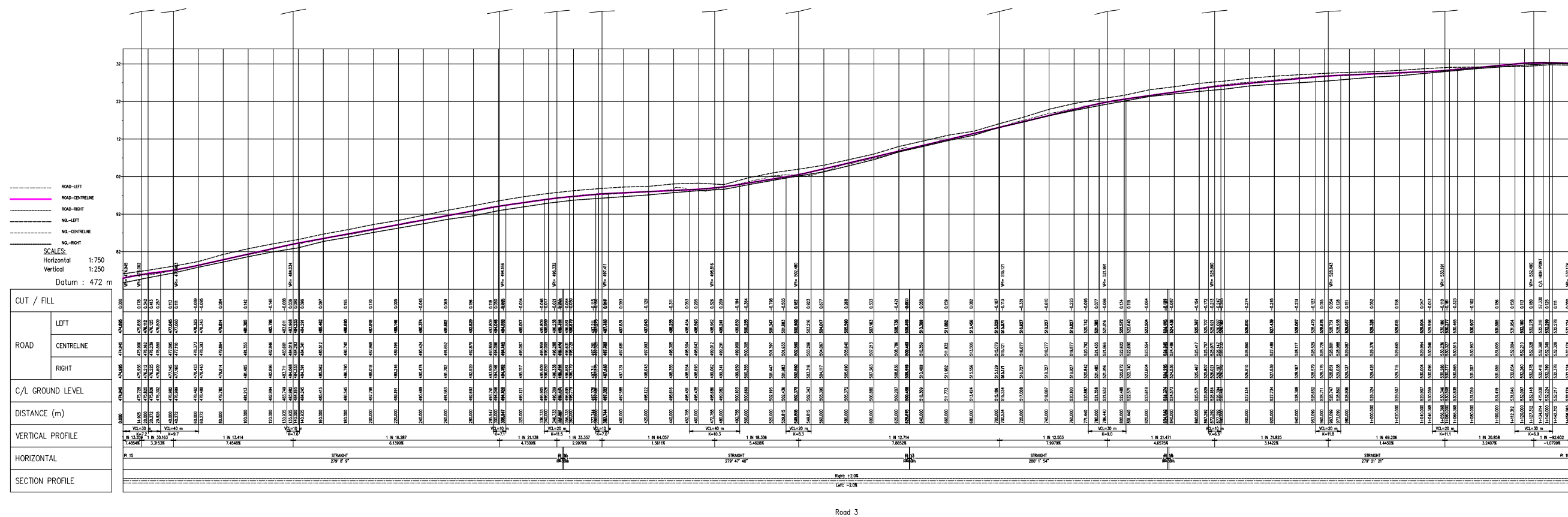
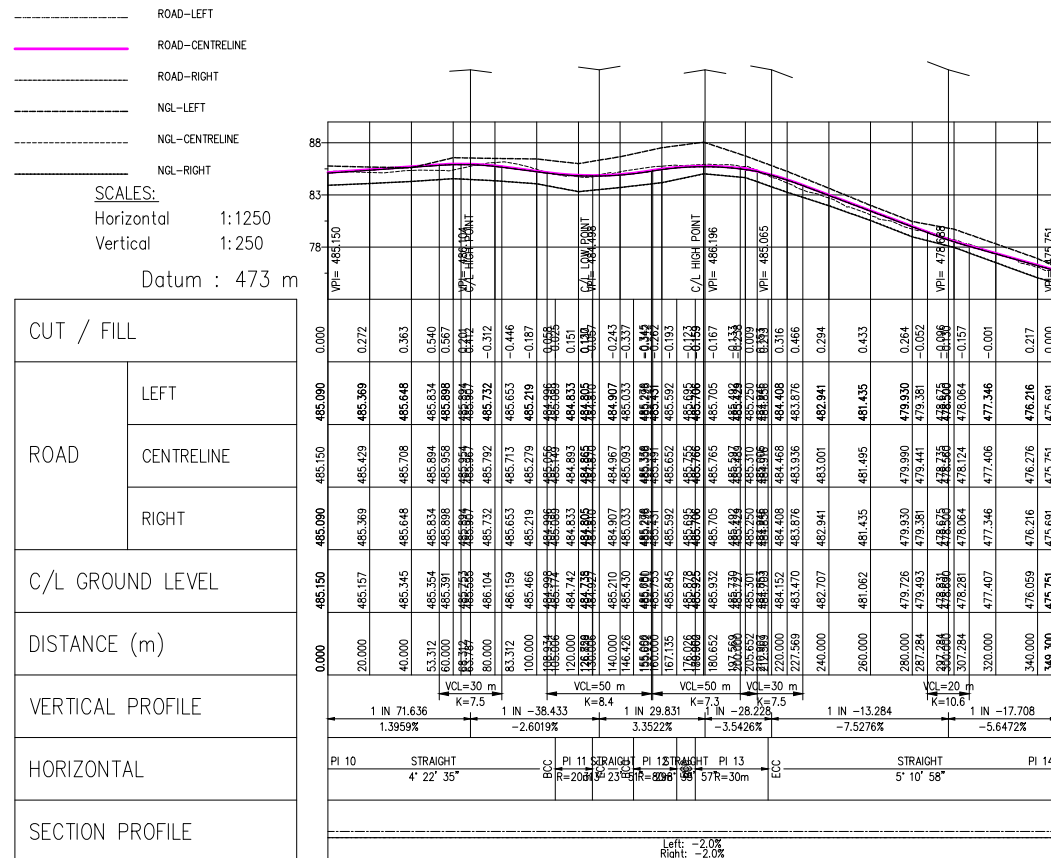
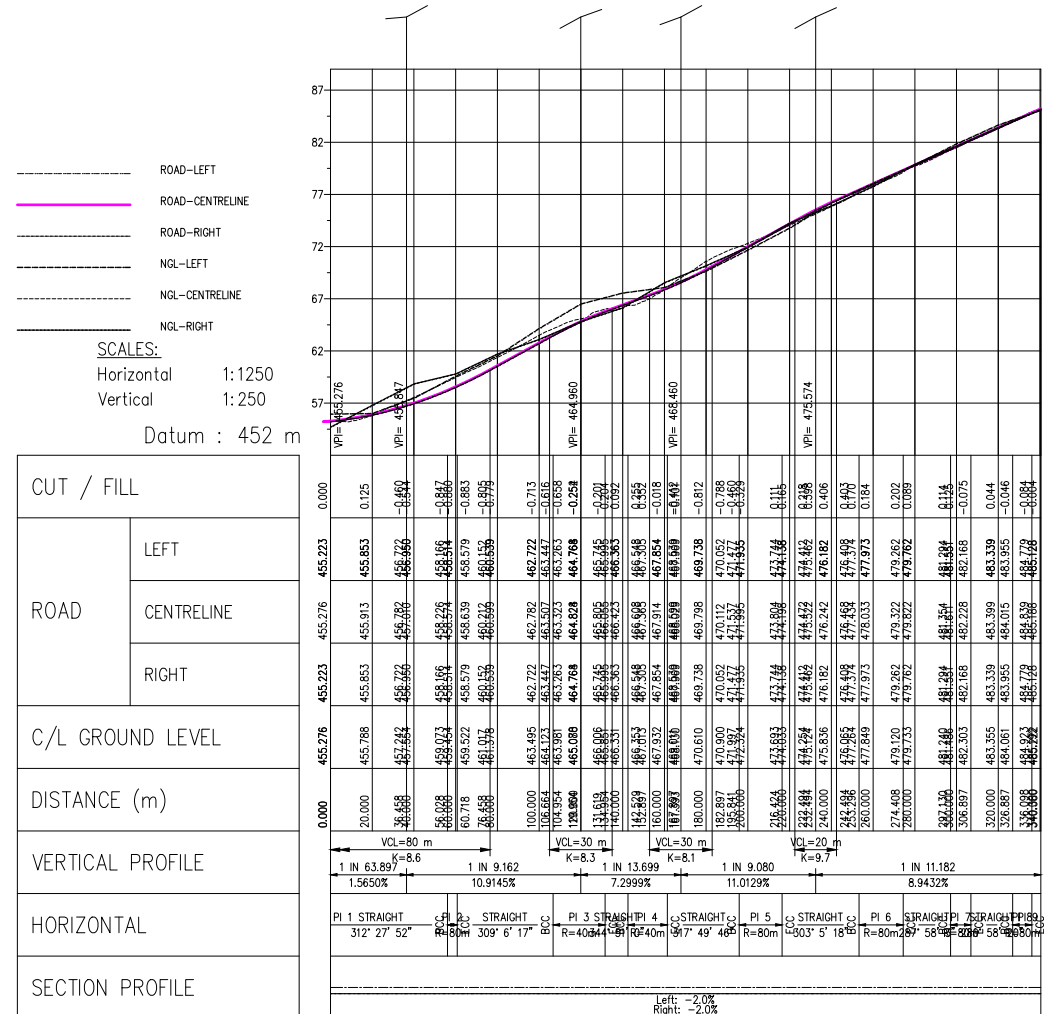
DESIGNED :	J.T.
DRAWN :	A.F.
SCALE :	N.T.S.
DATE :	23 DECEMBER 2022
CHECKED :	J.T.
APPROVED :	J.T.M
SIGNATURE :	

PROFESSIONAL SERVICE :
CIVIL ENGINEERING

DRAWING No :
065/GOR/R051 REV 0

THIS DRAWING IS THE PROPERTY OF MK DUBE CONSULTING & REPRODUCTION, DISTRIBUTION, ALTERATION OR ISSUING THEREOF WITHOUT PERMISSION IS PROHIBITED UNDER THE COPYRIGHT ACT

M Dube CONSULTING
MK DUBE CONSULTING (PTY) LTD
OFFICE No. 7 LIZA'S COURT, 28 VAN RENSBURG STREET, NELSPRUIT, 1200
P.O. BOX 569, SONPARK, 1206
TEL: (013) 753 2968, FAX: 086 549 1872



NOTES :
REFER TO NOTES DRAWINGS, DRAWING NUMBERS, SG001, SG002, AND SG003

PRELIMINARY

TENDER PURPOSES *

FOR CONSTRUCTION

AS BUILT

5	
4	
3	
2	
1	
DATE REVISIONS	

CITY OF MBOMBELA
1 Nel Street
Mbombela
1201

TEL: (013) 759 9111
FAX: (013) 759 2070
WEB: www.mbombela.gov.za

City of Mbombela

PROJECT :
PAVING OF GOROMANE TO KAMABUZA
(VIA TFO LINHLANHLA) AT SHABALALA
WARD 1

PROJECT NO: COM11/2023

DRAWING TITLE :
ROAD LONG SECTIONS

DESIGNED : J.T.
DRAWN : A.F.
SCALE : 1:2000
DATE : 23 DECEMBER 2022
CHECKED : J.T.
APPROVED : J.T.M
SIGNATURE :

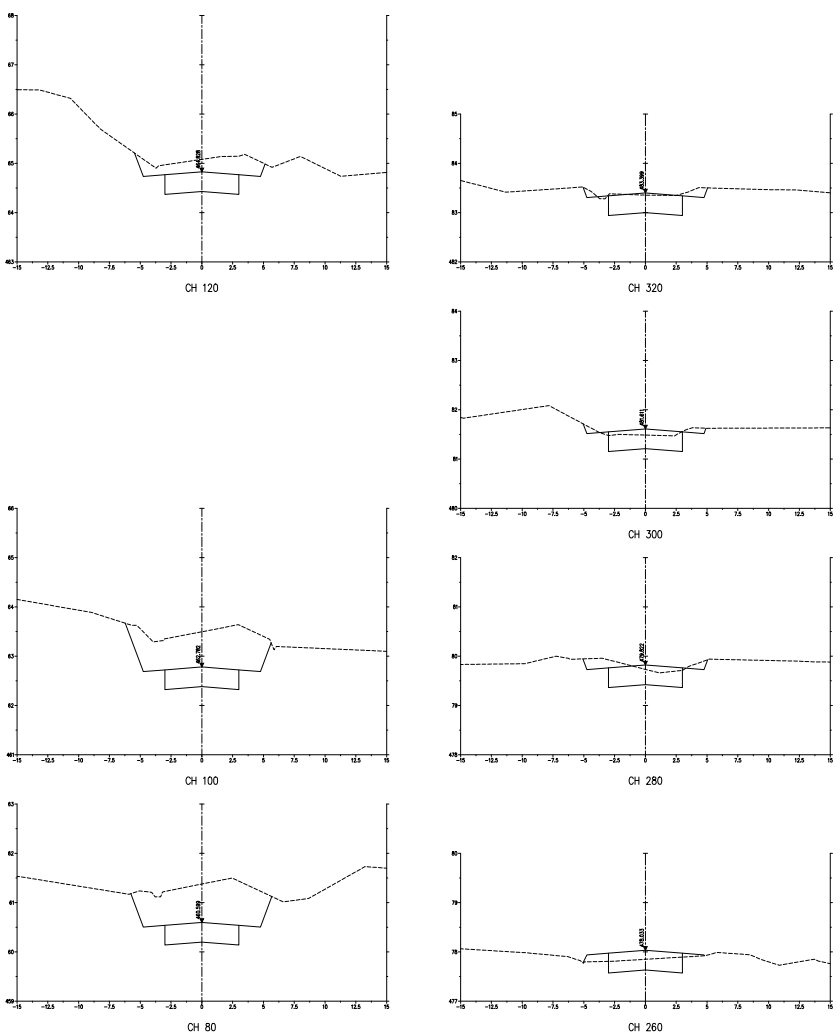
PROFESSIONAL SERVICE :
CIVIL ENGINEERING

DRAWING No :
065/GOR/R101 REV 0

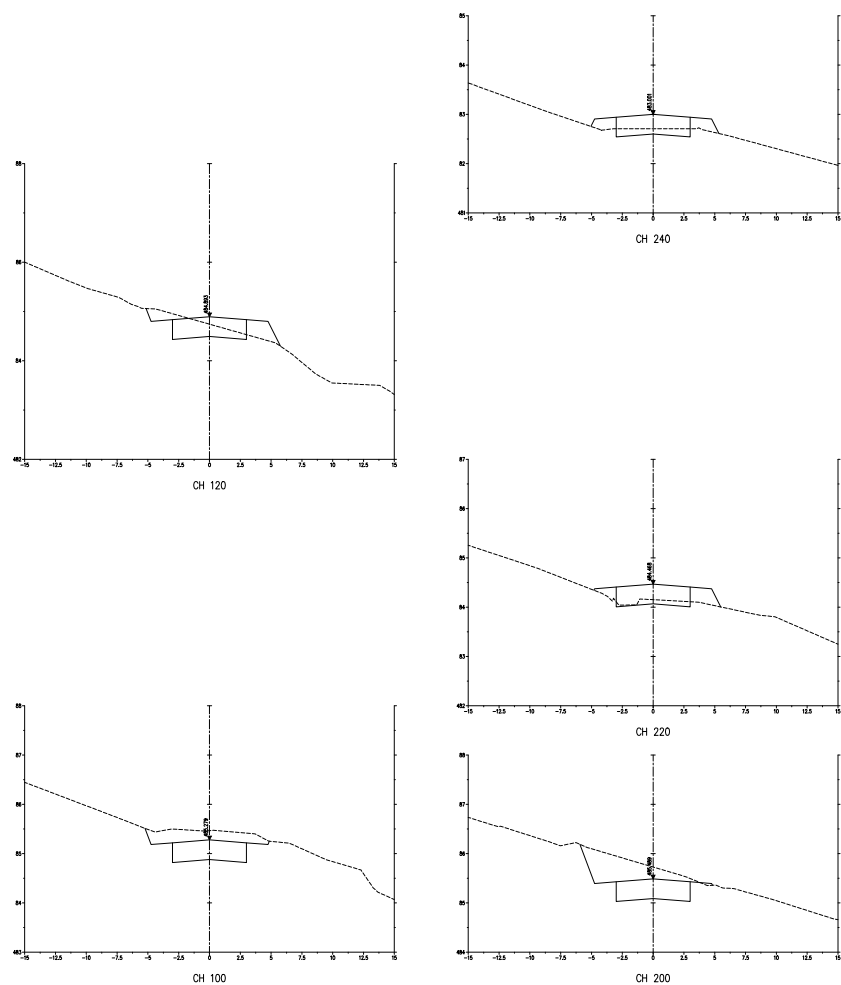
THIS DRAWING IS THE PROPERTY OF MK. DUBE CONSULTING & REPRODUCTION, DISTRIBUTION, ALTERATION OR ISSUING THEREOF WITHOUT PERMISSION IS PROHIBITED UNDER THE COPYRIGHT ACT.

M Dube CONSULTING

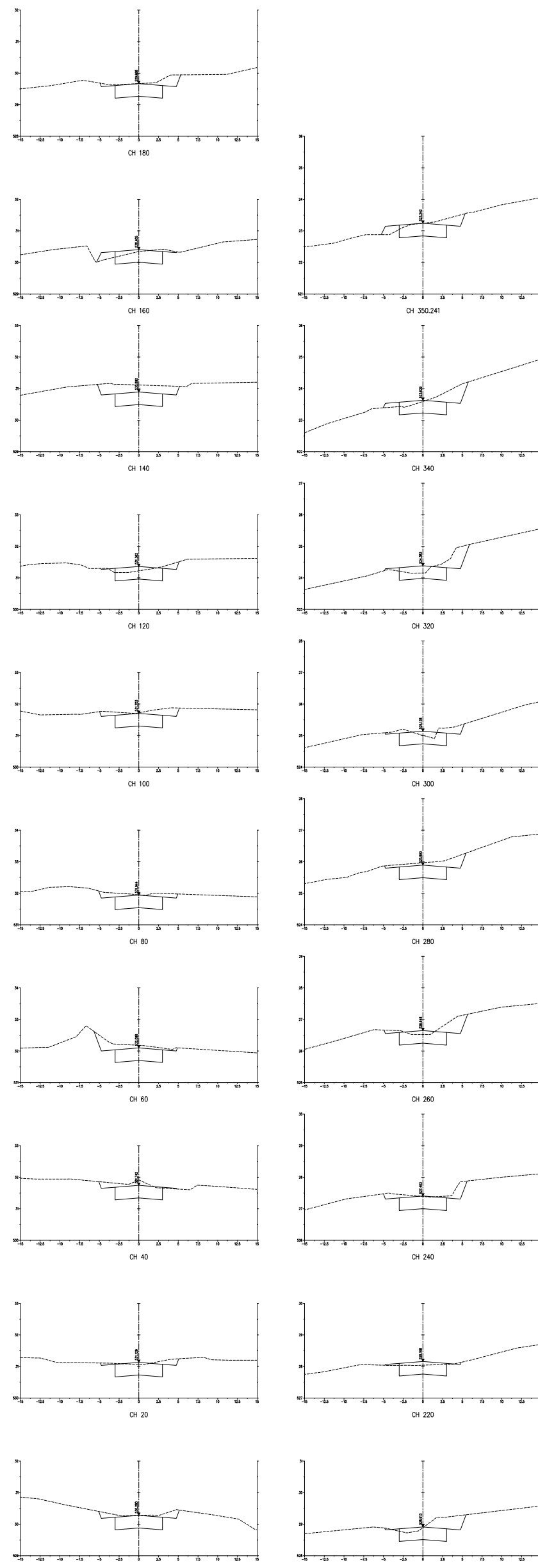
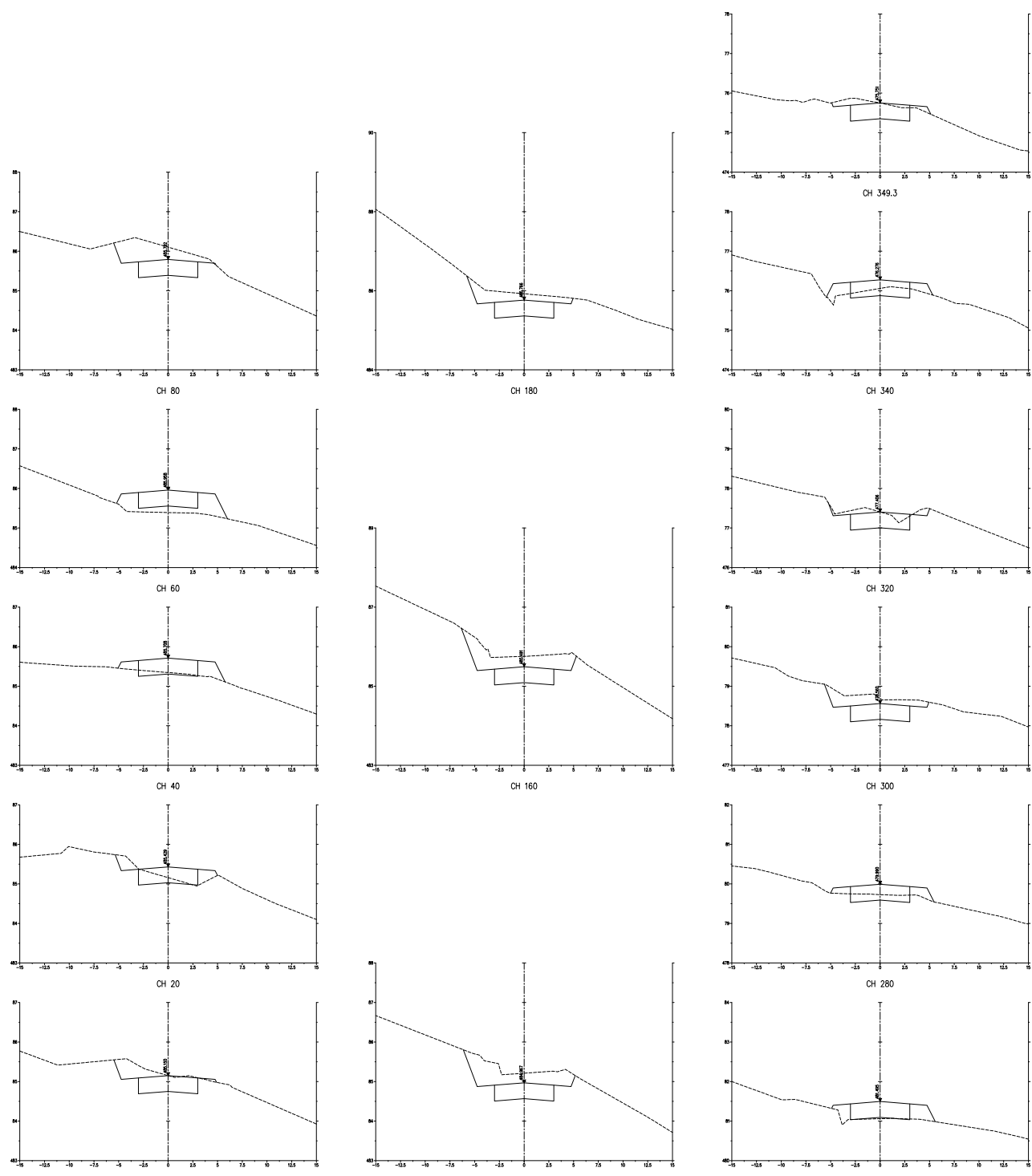
MK DUBE CONSULTING (PTY) LTD
OFFICE No. 7 LIZA'S COURT, 28 VAN RENSBURG STREET, NELSPRUIT, 1200
P.O. BOX 569, SONPARK, 1206
TEL: (013) 753 2968, FAX: 086 549 1872



H-SCALE 1:100
V-SCALE 1:25



H-SCALE 1:100
V-SCALE 1:25



H-SCALE 1:100
V-SCALE 1:25

NOTES :
REFER TO NOTES DRAWINGS, DRAWING NUMBERS, SG001, SG002, AND SG003

PRELIMINARY
TENDER PURPOSES *
FOR CONSTRUCTION
AS BUILT

5		
4		
3		
2		
1		
DATE REVISIONS		



1 Nel Street
Mbombela
1201

TEL: (013) 759 9111
FAX: (013) 759 2070
WEB: www.mbombela.gov.za

City of Mbombela

PROJECT :
PAVING OF GOROMANE TO KAMABUZA
(VIA TFOLINHLANHLA) AT SHABALALA
WARD 1

PROJECT NO: COM11/2023

DRAWING TITLE :
ROAD CROSS SECTIONS

DESIGNED :	J.T.
DRAWN :	A.F.
SCALE :	1:2000
DATE :	23 DECEMBER 2022
CHECKED :	J.T.
APPROVED :	J.T.M
SIGNATURE :	

PROFESSIONAL SERVICE :
CIVIL ENGINEERING

DRAWING No :
065/GOR/R201 REV 0

THIS DRAWING IS THE PROPERTY OF MK. DUBE CONSULTING & REPRODUCTION, DISTRIBUTION, ALTERATION OR ISSUING THEREOF WITHOUT PERMISSION IS PROHIBITED UNDER THE COPYRIGHT ACT.



MK DUBE CONSULTING (PTY) LTD
OFFICE No. 7 LIZA'S COURT, 28 VAN RENSBURG STREET, NELSPRUIT, 1200
P.O. BOX 569, SONPARK, 1206
TEL: (013) 753 2998, FAX: 086 549 1872

REFER TO NOTES DRAWINGS, DRAWING NUMBERS; SG001, SG002,
AND SG003

*

AS BUILT

DATE	REVISIONS



PROJECT :
PAVING OF GOROMANE TO KAMABUZA
(VIA TFOLINHLANHLA) AT SHABALALA
WARD 1

DRAWING TITLE :
ROAD CROSS SECTIONS

SIGNATURE :

DRAWING No :
065/GOR/R202 REV 0

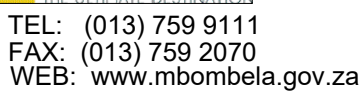
THIS DRAWING IS THE PROPERTY OF MK. DUBE CONSULTING & REPRODUCTION, DISTRIBUTION, ALTERATION OR ISSUING THEREOF WITHOUT PERMISSION IS PROHIBITED UNDER THE COPYRIGHT ACT.





REFER TO NOTES DRAWINGS, DRAWING NUMBERS; SG001, SG002 AND SG003

AS BUILT

DATE REVISIONS

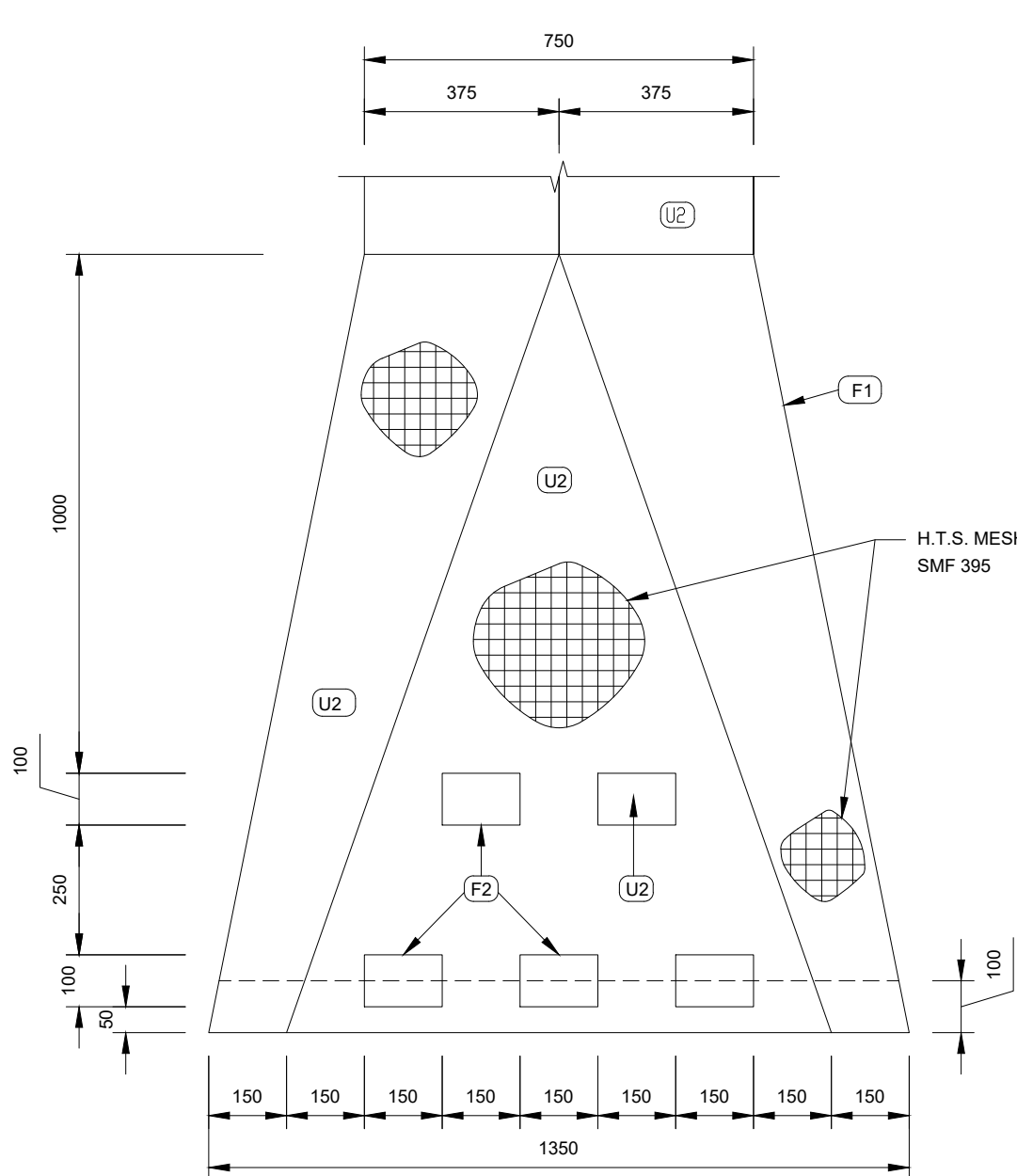
PAVING OF GOROMANE TO KAMABUZA (VIA TFOLINHLANHLA) AT SHABALALA WARD 1

DRAWING TITLE :
ROAD CROSS SECTION

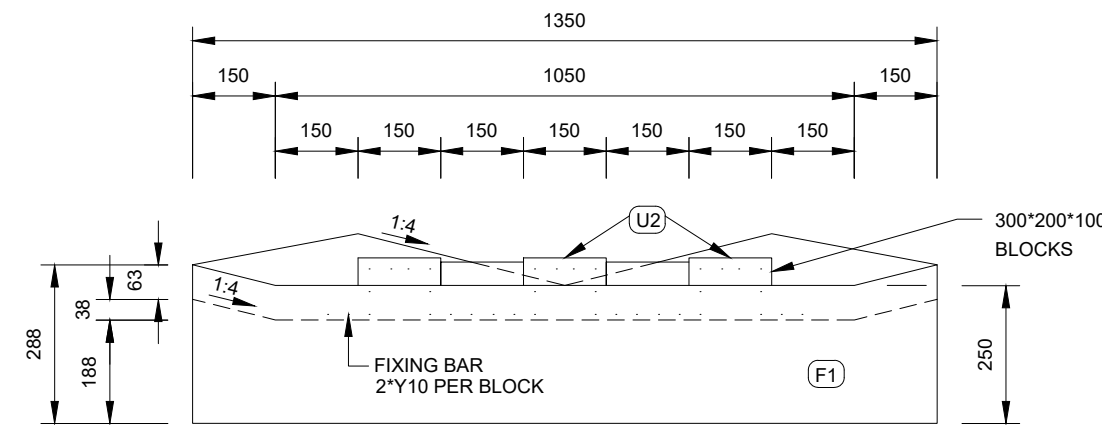
APPROVED

THIS DRAWING IS THE PROPERTY OF MK. DUBE CONSULTING &
REPRODUCTION, DISTRIBUTION, ALTERATION OR ISSUING THERE
WITHOUT PERMISSION IS PROHIBITED UNDER THE COPYRIGHT ACT

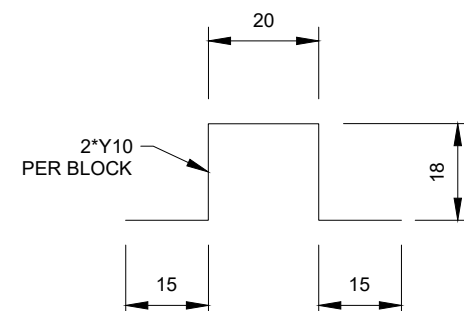




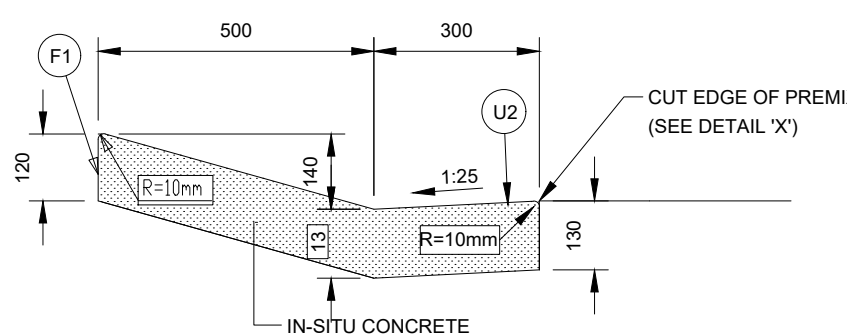
PLAN OF ENERGY BREAKER
SCALE 1:20



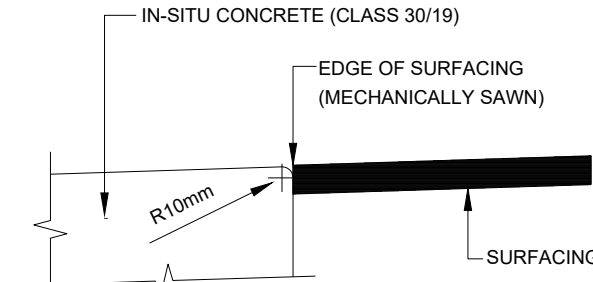
FRONT ELEVATION OF ENERGY BREAKER
SCALE 1:20



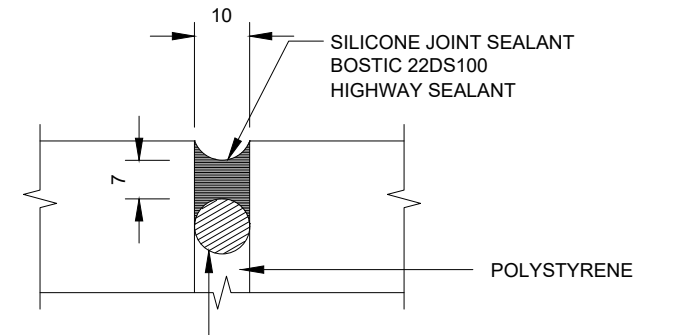
FIXING BAR
SCALE 1:10



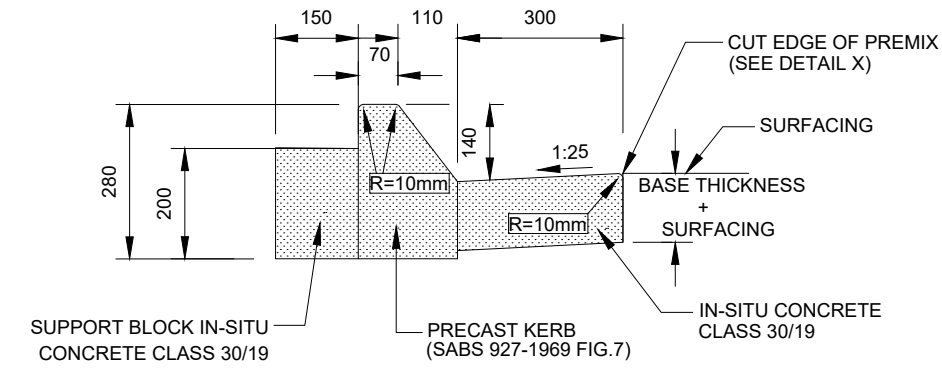
CROSS SECTION OF TYPE C MOUNTABLE KERB
AT RURAL INTERSECTIONS
SCALE 1:10



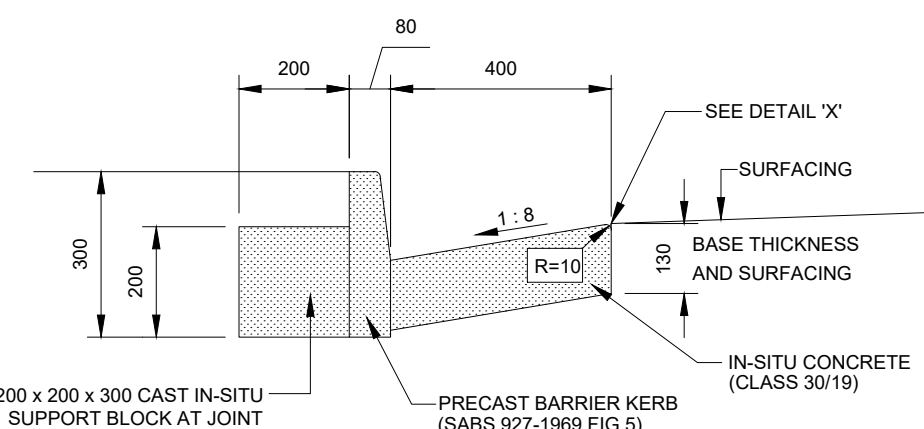
DETAIL X
SCALE 1:5



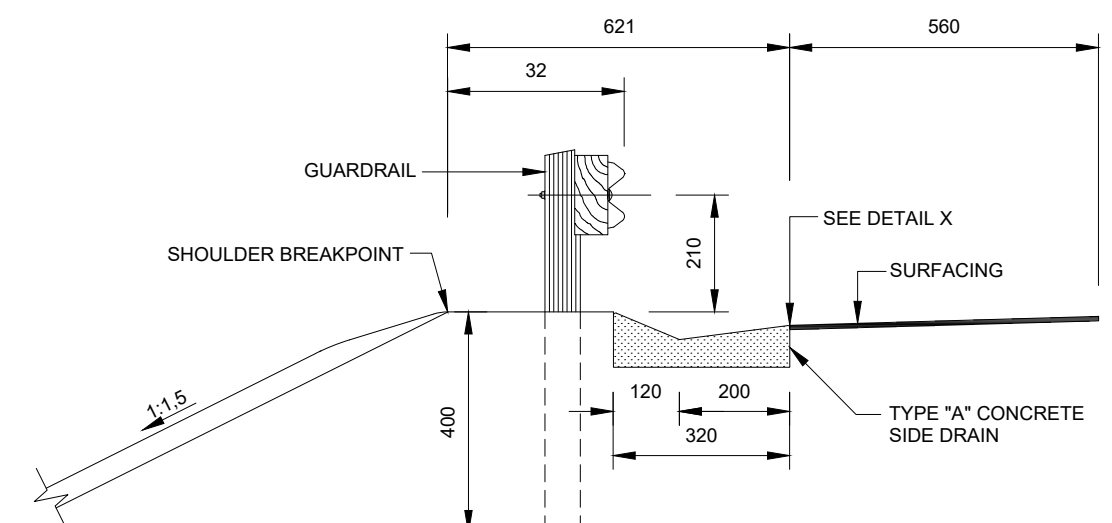
EXPANSION JOINT
SCALE : SCHEMATIC
NOTE: EXPANSION JOINT EVERY 5th PANEL (10m)



CROSS SECTION OF TYPE B SEMI MOUNTABLE KERB
AT INTERSECTIONS
SCALE 1:10

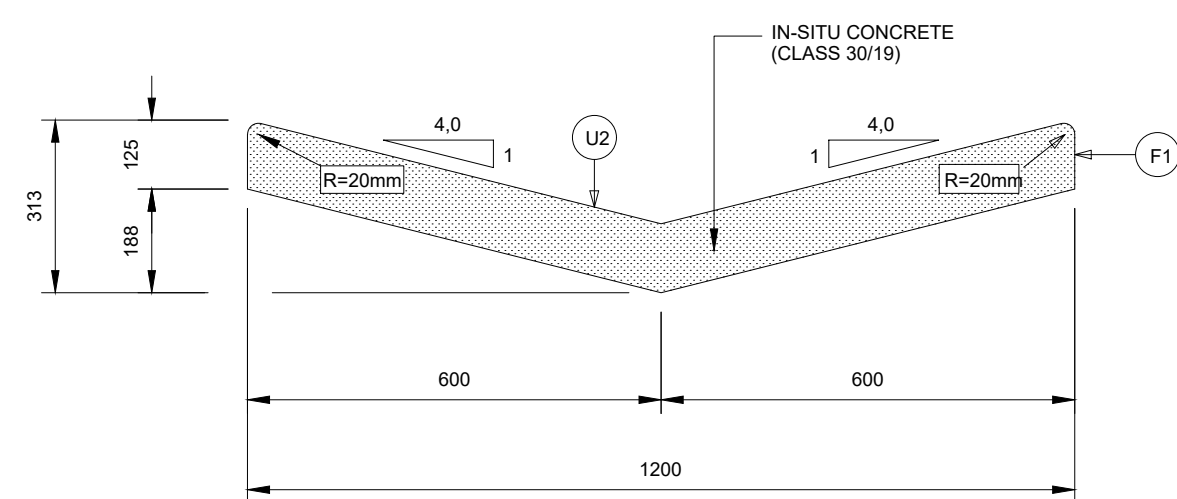


TYPE B1 KERB
SECTION THROUGH BARRIER KERB (FIG 5)
SCALE 1:10

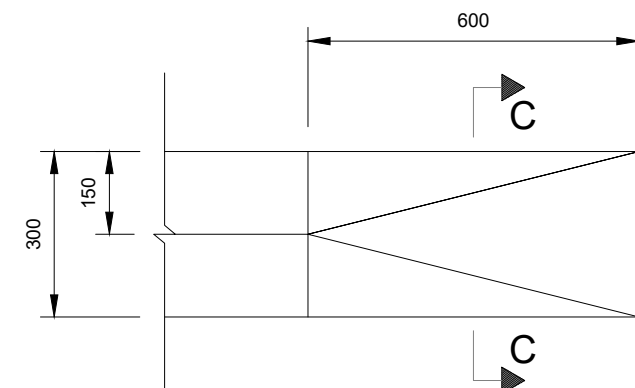


POSITION OF TYPE "A" CONCRETE SIDE DRAIN
SCALE 1:25

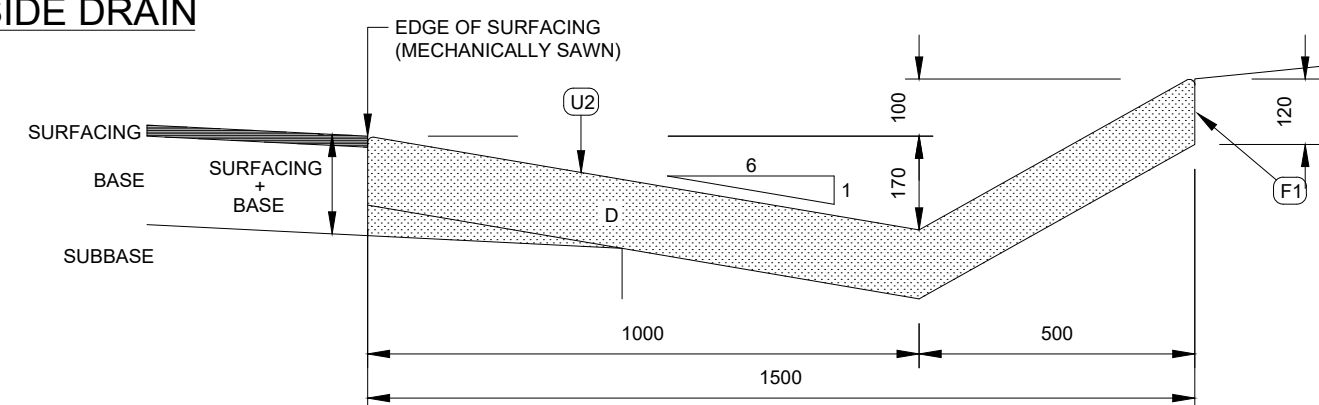
DETAIL OF ENERGY BREAKER SYSTEM AT DISCHARGE POINT OF TYPE 'F' CONCRETE SIDE DRAIN



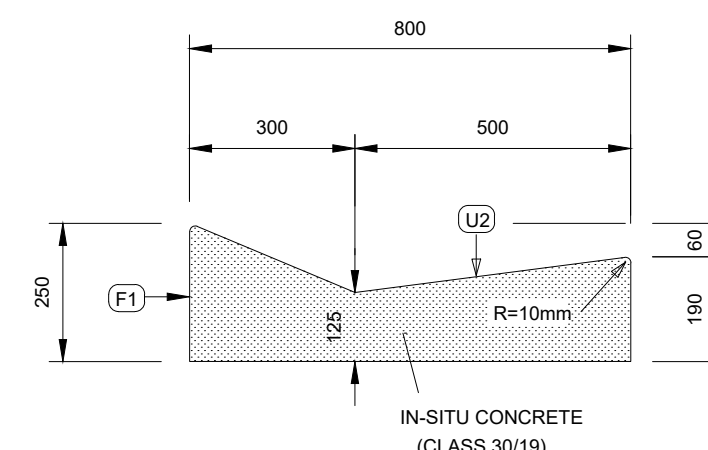
CROSS SECTION OF TYPE E CONCRETE CHANNEL IN OPEN DRAINS
SCALE : SCHEMATIC



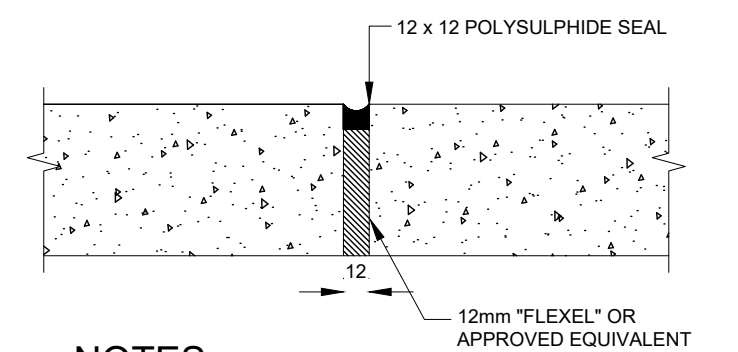
BEGINNING OF TYPE 'E' CONCRETE DRAIN
SCALE : SCHEMATIC



CROSS SECTION OF TYPE 'F' CONCRETE SIDE DRAIN IN CUTTINGS
SCALE : SCHEMATIC

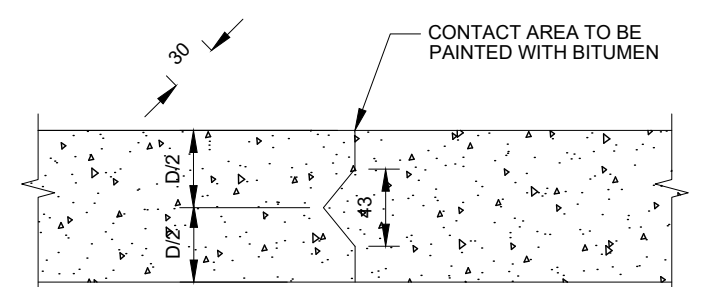


CROSS SECTION OF TYPE "A" CONCRETE SIDE DRAIN
SCALE 1:10



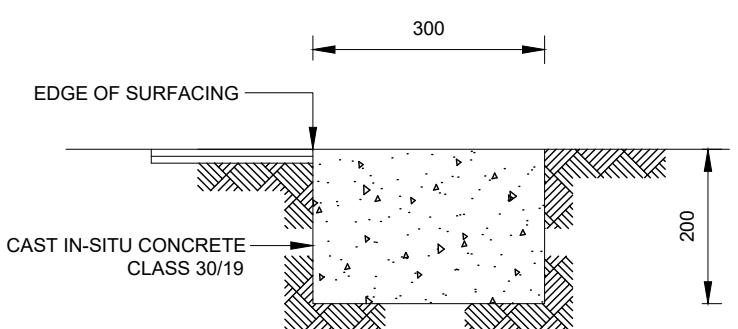
DETAIL OF EXPANSION JOINT
N.T.S.

DETAIL OF EXPANSION JOINT
N.T.S.



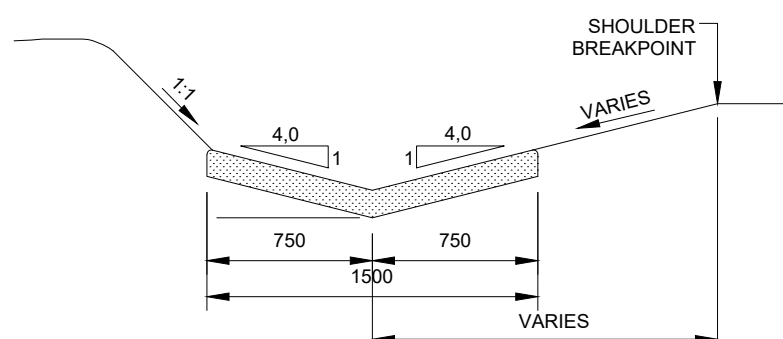
DETAIL OF CONTRACTION JOINT
N.T.S.

DETAIL OF CONTRACTION JOINT
N.T.S.



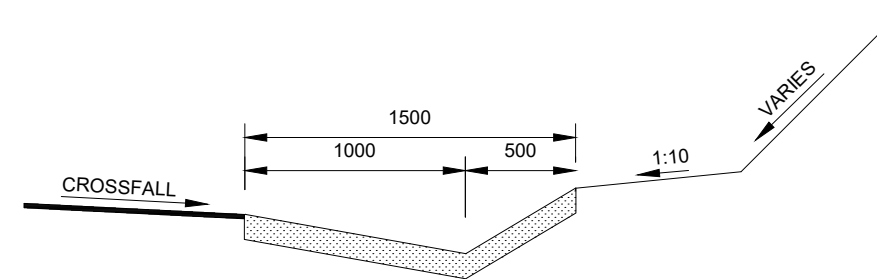
DETAIL OF EDGE BEAM (TYPE A)
N.T.S.

JOINTS IN CONCRETE EDGE BEAMS

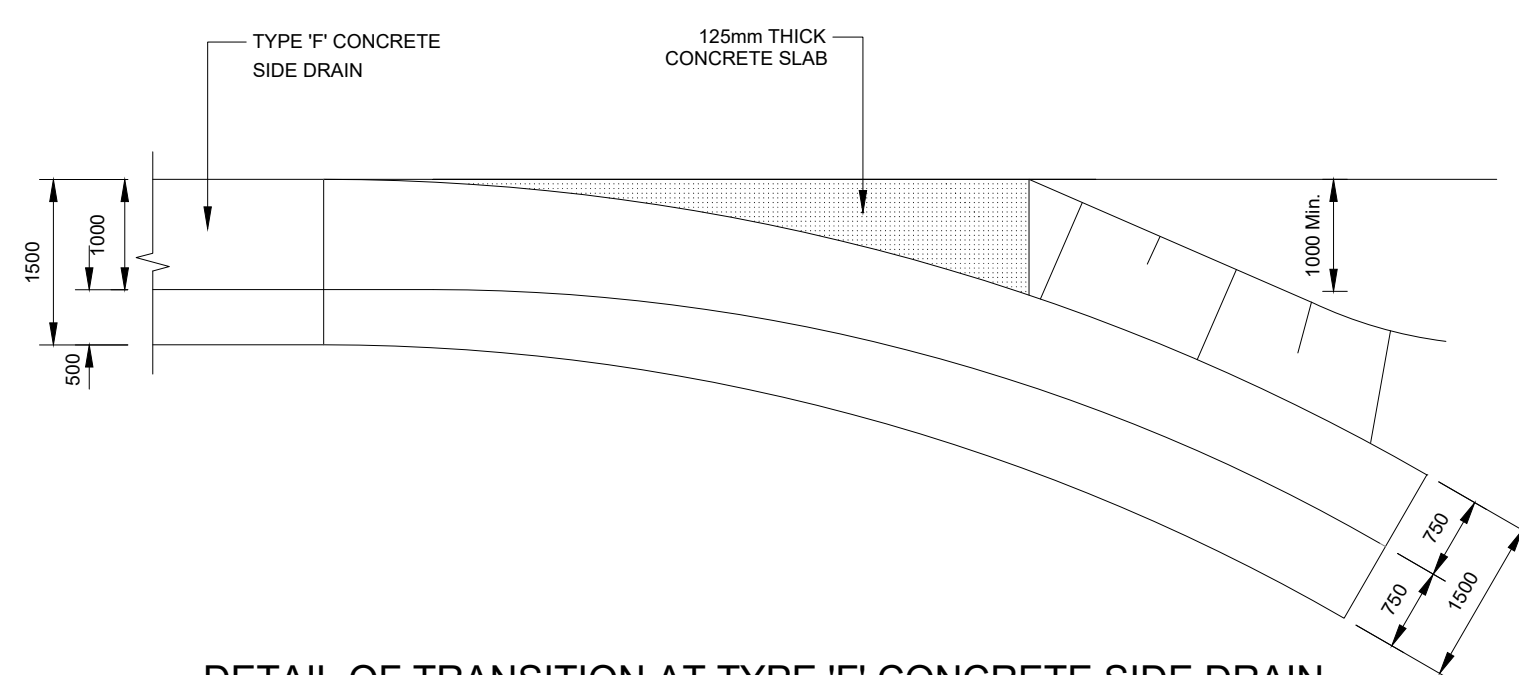


POSITION OF TYPE 'E' CONCRETE DRAIN
IN SHALLOW CUT
SCALE : SCHEMATIC

SECTION C-C
SCALE 1:50



POSITION OF TYPE 'F' CONCRETE SIDE DRAIN
SCALE : SCHEMATIC

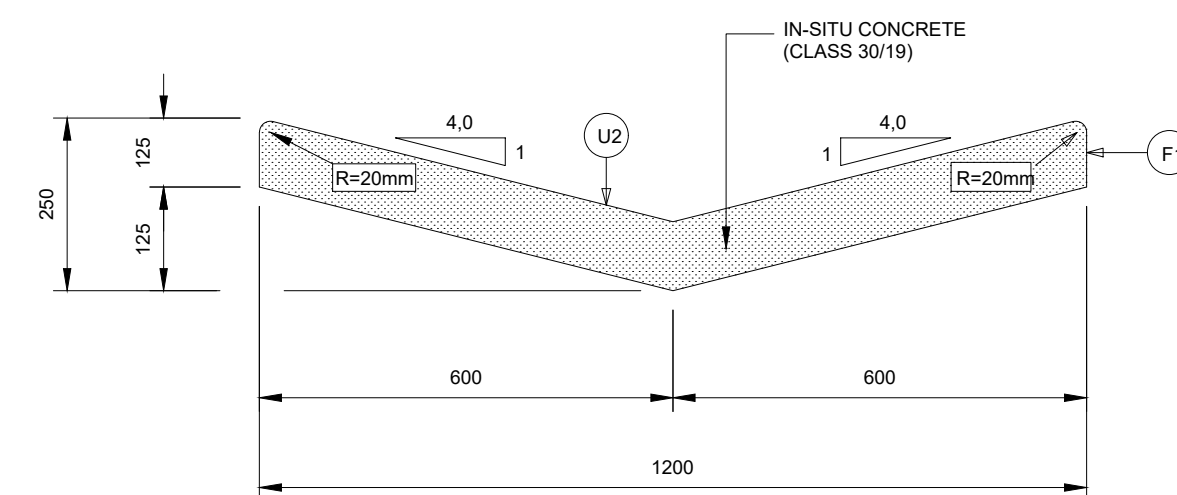


DETAIL OF TRANSITION AT TYPE 'F' CONCRETE SIDE DRAIN
SCALE : SCHEMATIC

CASE(n)	W	X	Y	Z	D	VOLUME ³ m/m
1	1000	670	330	110	125	0.1250
2	1500	1000	500	170	125	0.1875
3	2000	1330	670	220	150	0.3000
4	2500	1670	830	280	150	0.3750

DIMENSIONS OF TYPE F CONCRETE CHANNELS

- NOTES**
- ALL CONCRETE CHANNELS AND OTHER DRAINAGE STRUCTURES ON THIS PLAN TO BE CAST USING CLASS 30/19 CONCRETE
 - TYPES 'E' AND 'F' CONCRETE MUST BE CAST IN ALTERNATIVE LENGTHS OF 2.0 m MAXIMUM WITH EXPANSION JOINTS EVERY 5th PANEL (10 m)
 - ALL EXPOSED CORNERS MUST BE ROUNDED OFF TO A RADIUS OF 10 mm
 - THE CLASS OF SURFACE FINISH IS INDICATED AS 'F1' OR 'U2'
 - V MIN. = 150mm (PREFERRED = 300mm)



CROSS SECTION OF TYPE E CONCRETE CHANNEL IN OPEN DRAINS
SCALE : SCHEMATIC

CASE(n)	W	W/2	W/8	D	W/8+D	VOLUME ³ m/m
1	1000	500	125	125	250	0.1250
2	1500	750	188	125	313	0.1875
3	2000	1000	250	150	400	0.3000
4	2500	1250	313	150	463	0.3750

DIMENSIONS OF TYPE E CONCRETE CHANNELS



1 Nel Street
Mbombela
1201

City of Mbombela

PROJECT :
PAVING OF GOROMANE TO KAMABUZA
(VIA TFOLINHLANHLA) AT SHABALALA WARD 1

PROJECT NO: COM11/2023

DRAWING TITLE :
STANDARD DETAILS
CONCRETE CHANNEL AND KERB DETAILS

REVISIONS

6			
5			
4			
3			
2			
1	-- / -- / --	--	--

PRELIMINARY
TENDER PURPOSES
FOR CONSTRUCTION
AS BUILT

DESIGNED : J.T.
DRAWN : J.T.
SCALE : N. T. S.
DATE : 23 DECEMBER 2022
CHECKED : J.T.
APPROVED : J.T.M.
SIGNATURE :

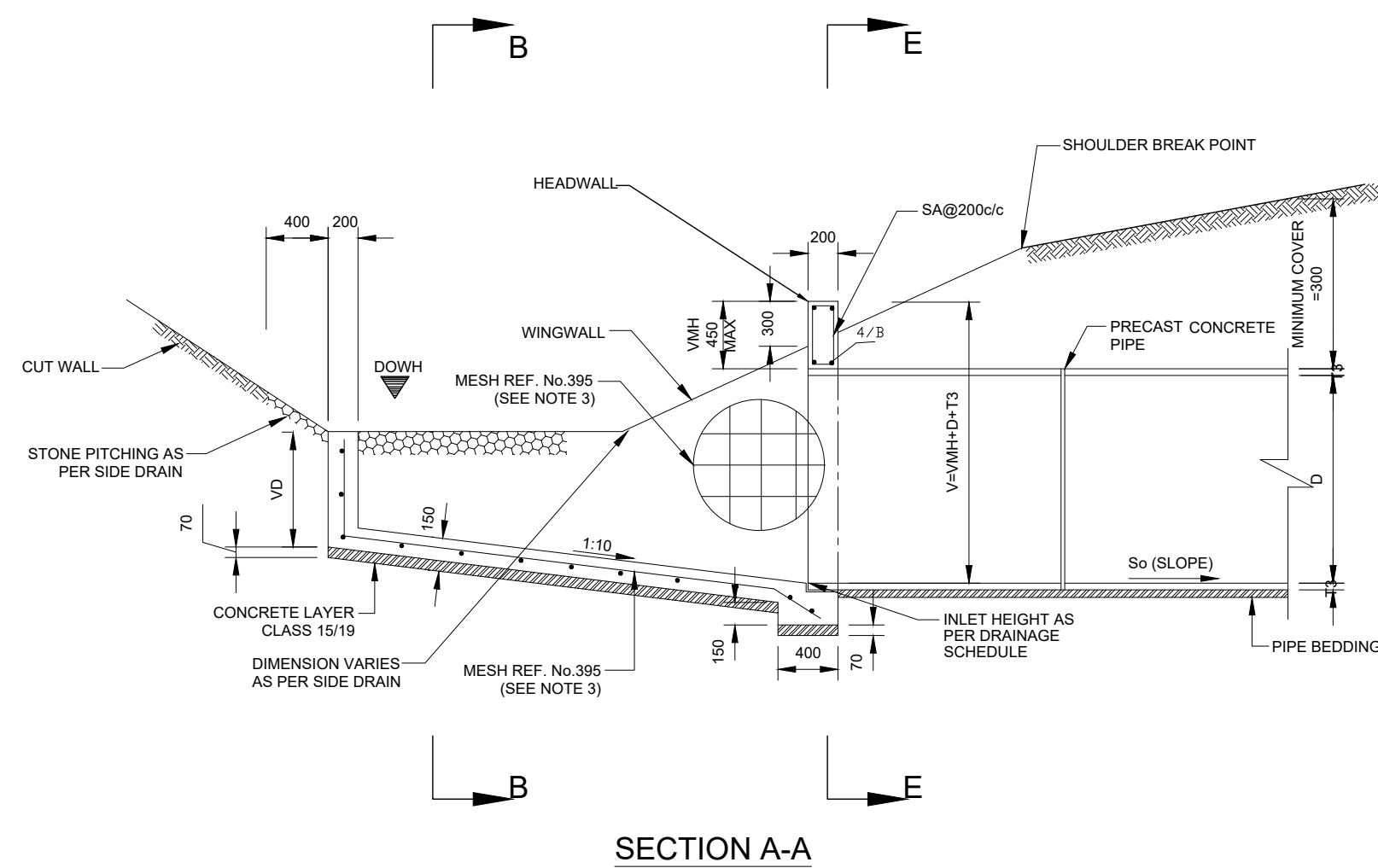
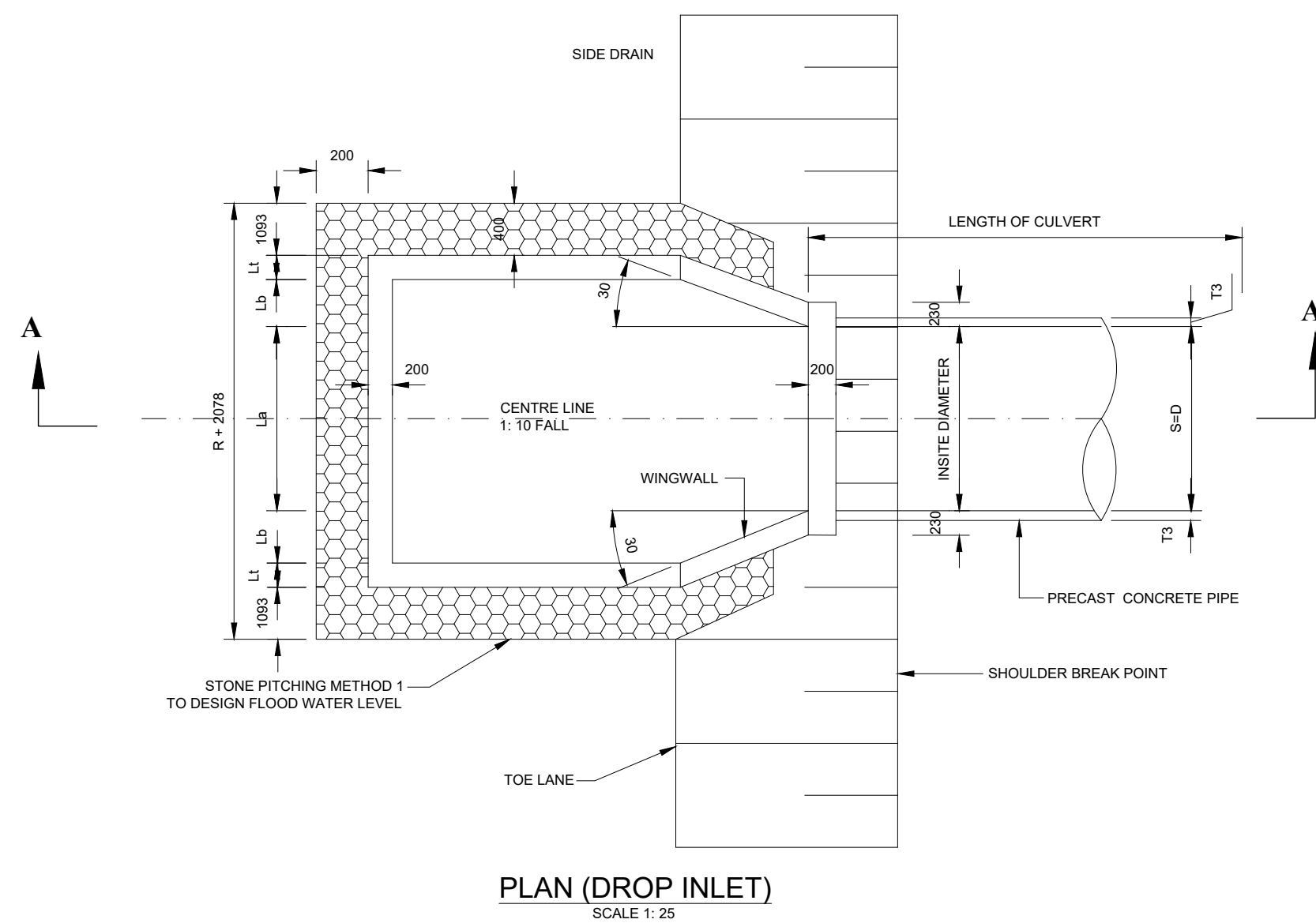
PROFESSIONAL SERVICE :
CIVIL ENGINEERING

DRAWING No :
065/GOR/R1201 REV 0

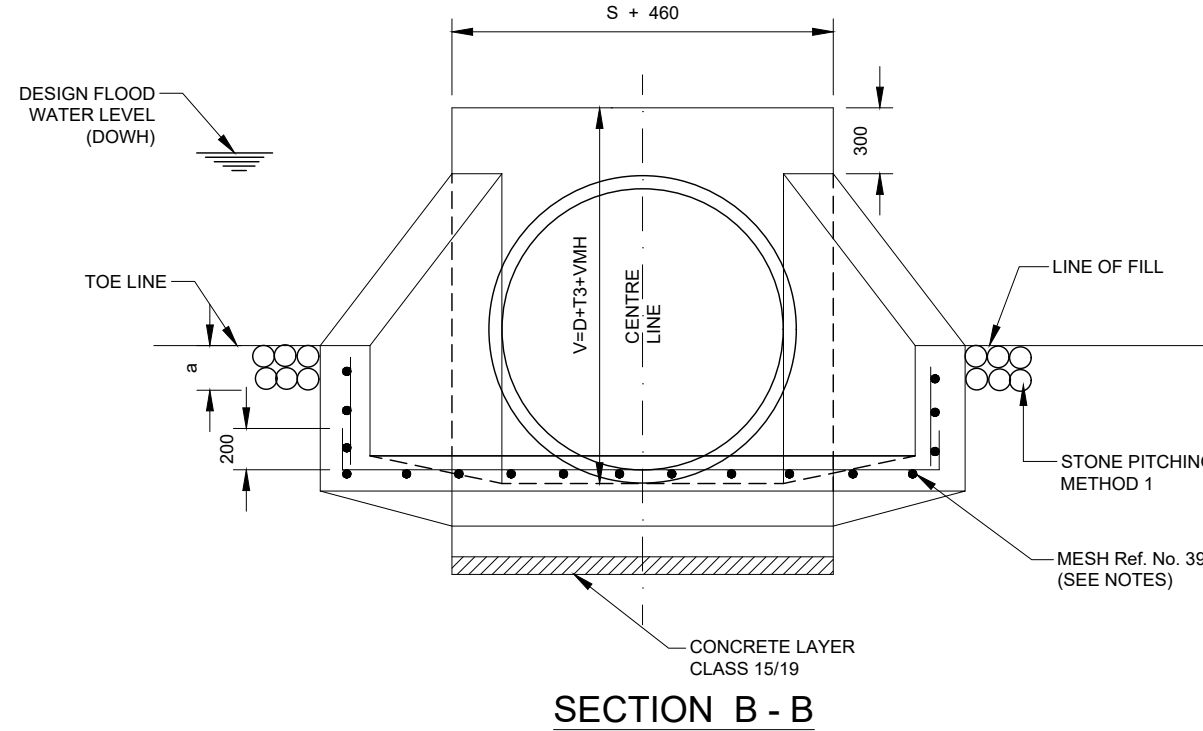
THIS DRAWING IS THE PROPERTY OF MK DUBE CONSULTING & REPRODUCTION, DISTRIBUTION, ALTERATION OR ISSUING THEREOF WITHOUT PERMISSION IS PROHIBITED UNDER THE COPYRIGHT ACT.



MK DUBE CONSULTING
SUITE 7 LIZA'S COURT, 28 VAN RENSBURG STREET, NELSPRUIT
P.O. BOX 569, SONPARK, 1206 TEL: (013) 753 2998

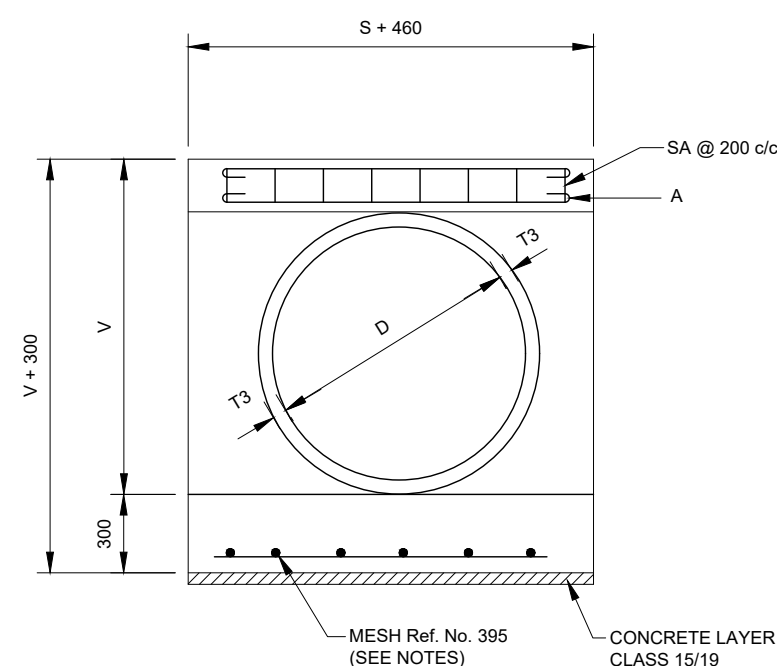


**SINGLE PIPE CULVERT INLET
STRUCTURE - TYPE 3**

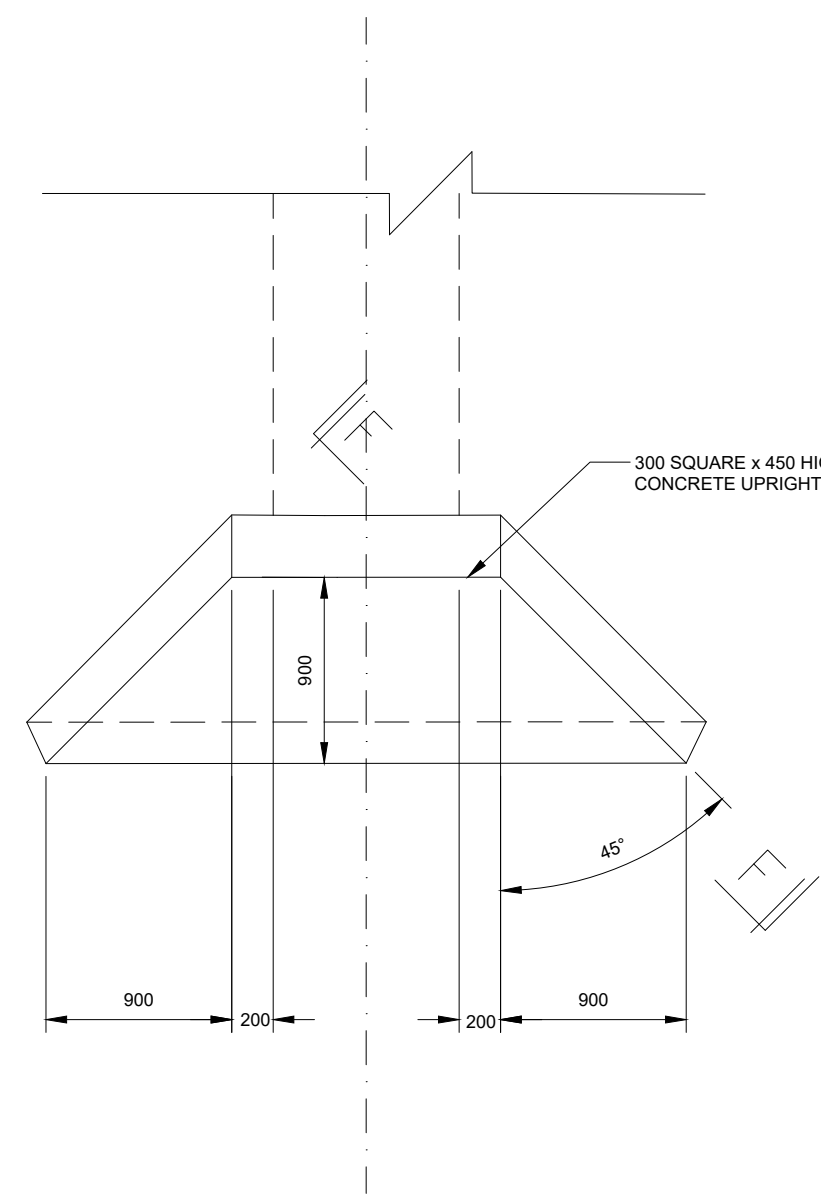


BENDING SCHEDULE FOR HEADWALL BEAM TYPE 1 AND 2 PIPE CULVERTS			
STAFF MARK	DIAMETER	LENGTH	BEND
A	Y12	S + 600	
B	Y16	S + 600	
SA	R10	400 + 2X @ 200c/c	

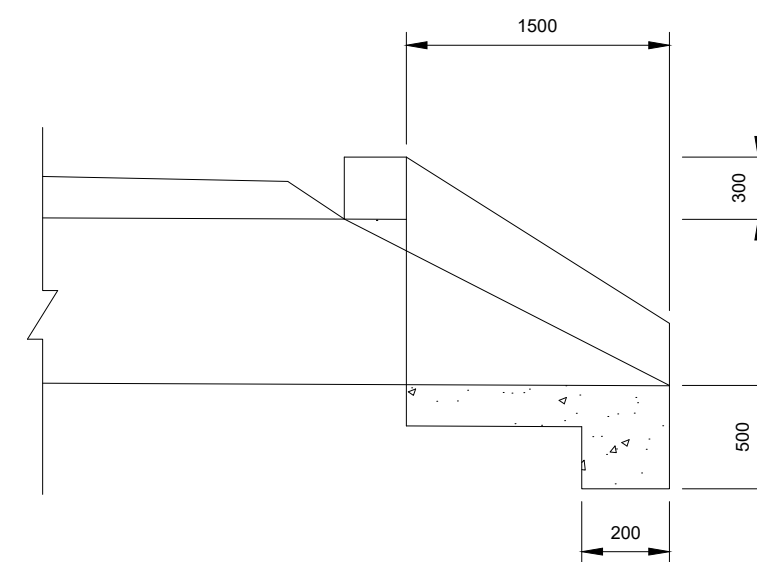
NOTES : 1. SEE TYPE 1 & 2 DETAIL DRAWINGS FOR NOTE (INFORMATION)
2. THIS TYPE OF HEADWALL IS ONLY APPLICABLE TO CULVERT INLET



SECTION E - E



PLAN OF OUTLET AND OUTLET (NORMAL CULVERTS)

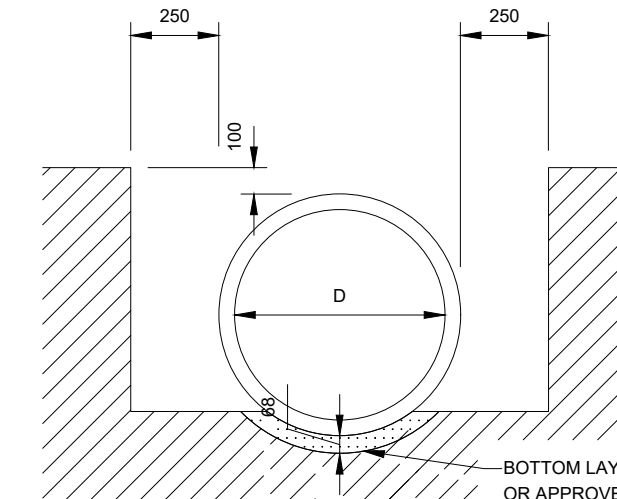


SECTION F - F

NOTES

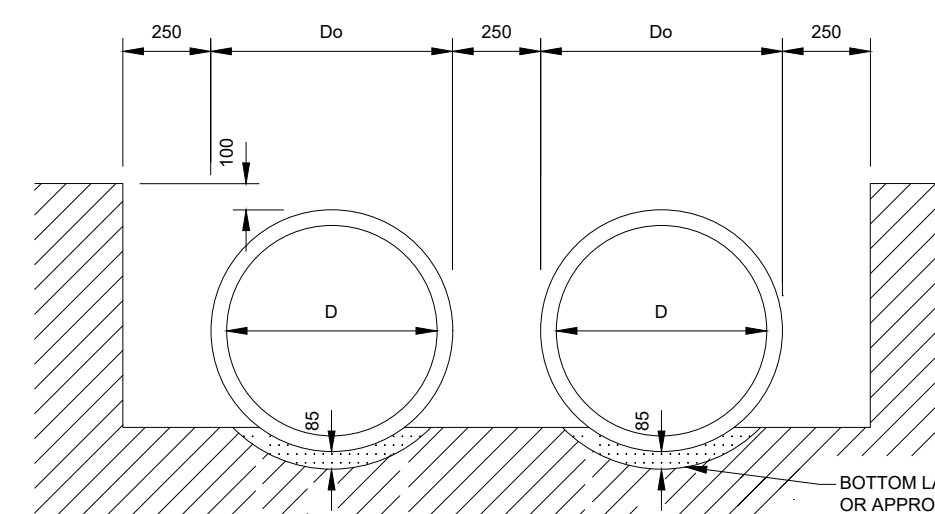
ALL SHARP CORNERS ON HEADWALLS, WINGWALLS AND APRON SLAB TO BE FINISHED OFF WITH A 25x25 BEVEL

ALL DIMENSIONS AND LEVELS OF CULVERT TO BE FINALISED BEFORE CONSTRUCTION MAY COMMENCE



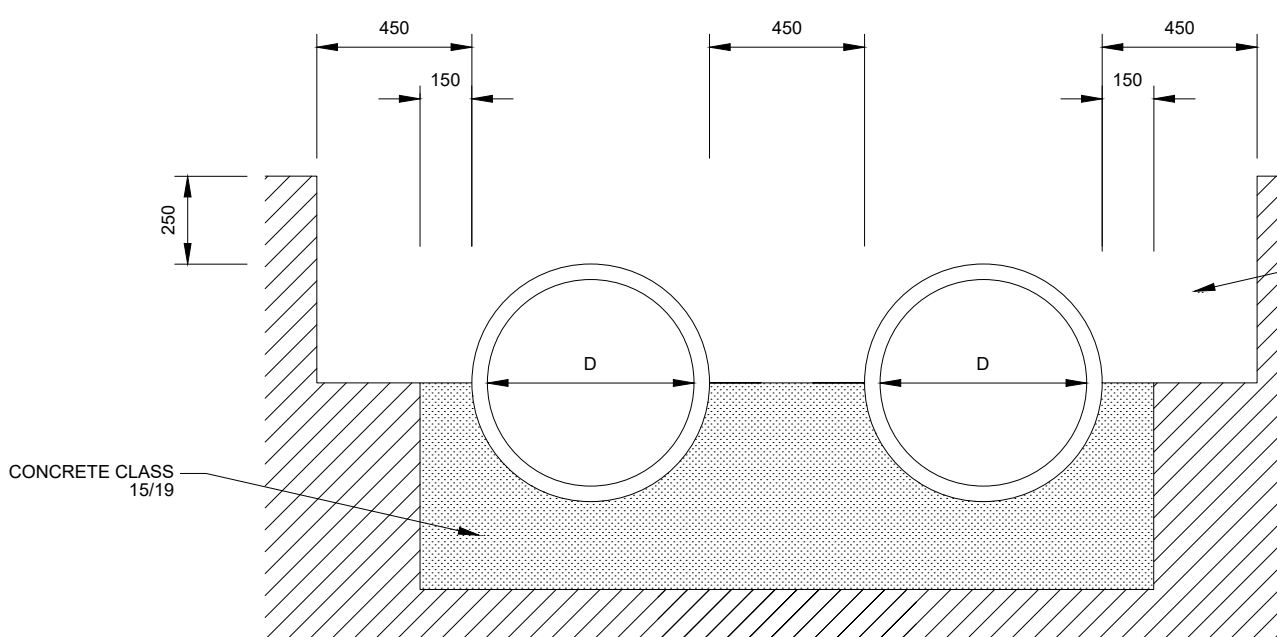
CLASS B BEDDING ON SOFT MATERIAL (SINGLE PIPE)

SCALE: SCHEMATIC



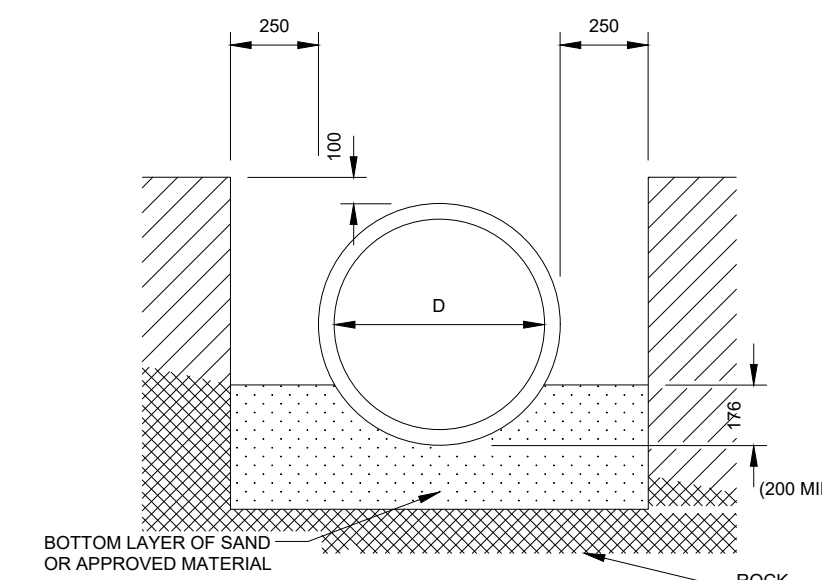
CLASS B BEDDING ON SOFT MATERIAL

SCALE: SCHEMATIC



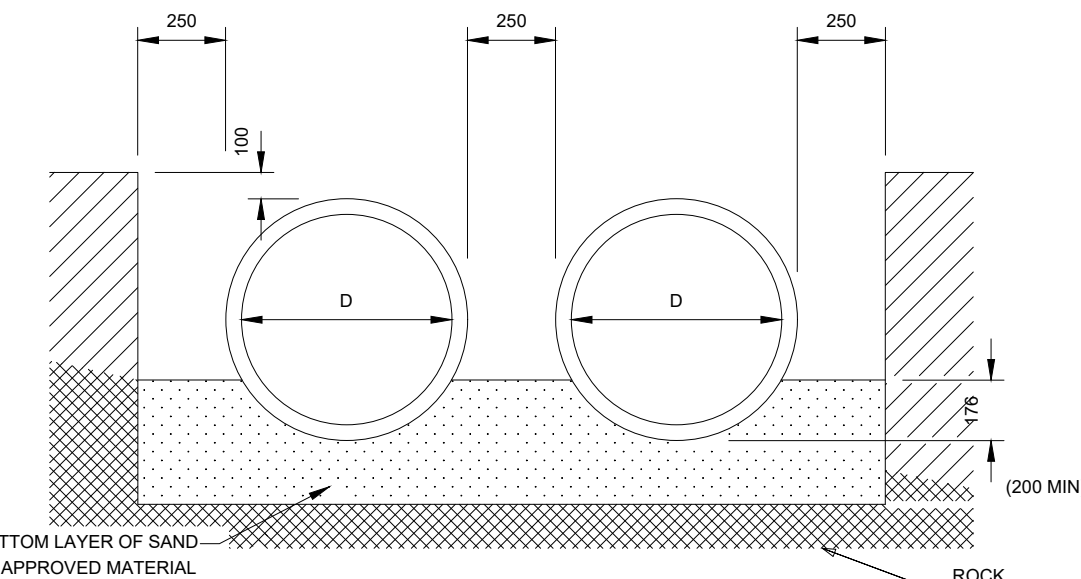
CLASS A BEDDING

SCALE 1:25



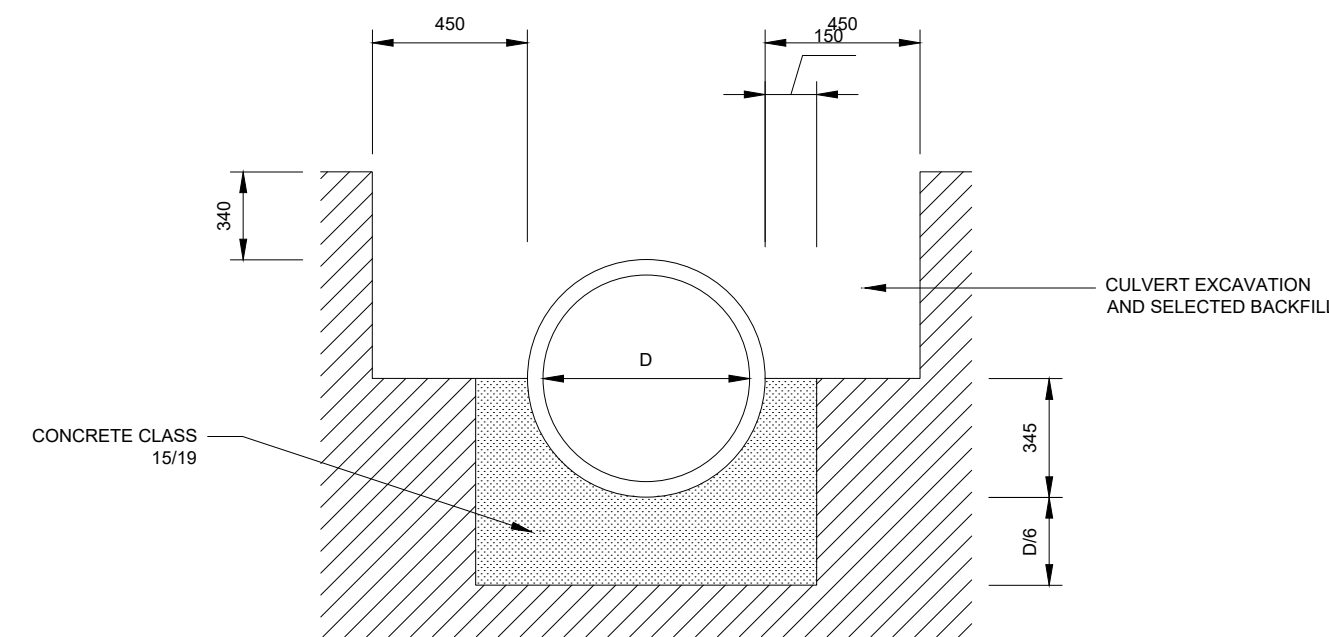
CLASS B BEDDING ON ROCK (SINGLE PIPE)

SCALE: SCHEMATIC



CLASS B BEDDING ON ROCK

SCALE: SCHEMATIC

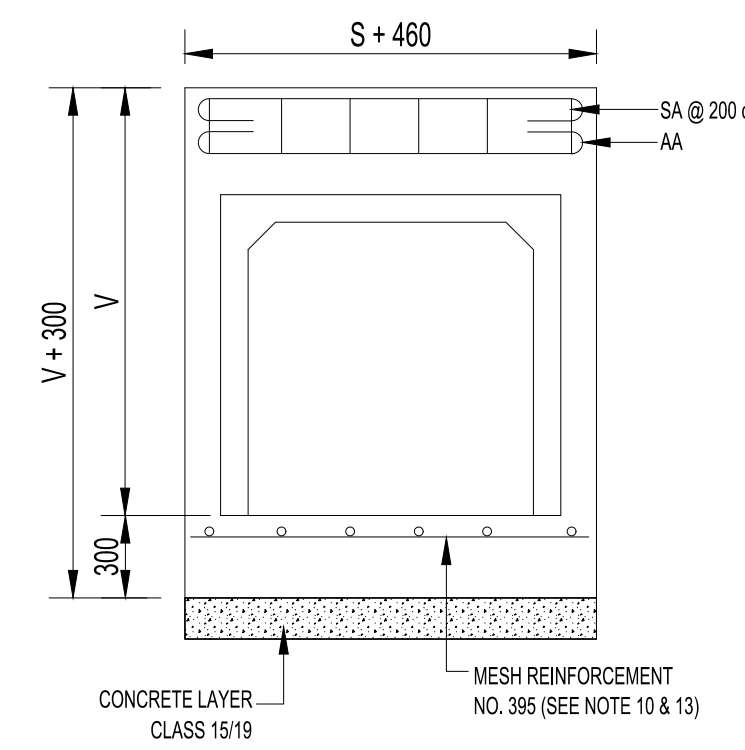


CLASS A BEDDING

SCALE 1:25

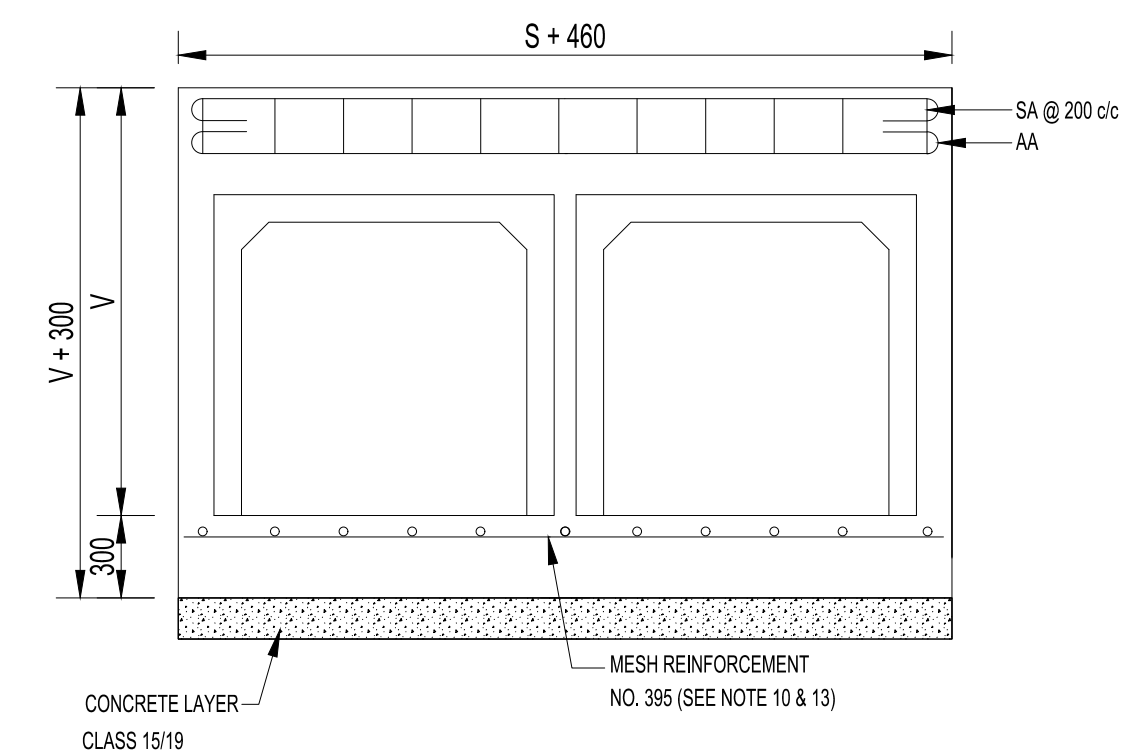
NOTES

- 1.01 ALL CONCRETE PIPE CULVERTS SHALL COMPLY WITH THE REQUIREMENTS OF S.A.B.S 677.
- 1.02 THE PIPE CLASS MUST BE DETERMINED FROM THE WEIGHT OF THE PRISM OF FILL ABOVE THE CULVERT PLUS THE SNABC LOADINGS IN ACCORDANCE WITH TMH 7 (PARTS 1&2) "CODE OF PRACTICE FOR THE DESIGN OF HIGHWAY BRIDGES AND CULVERTS IN SOUTH AFRICA" AND STATED IN THE DRAINAGE SCHEDULE.
- 1.03 THE MAXIMUM WHEEL LOAD ALLOWED ON THE PIPE IS 30KN WITH A MINIMUM FILL OF 150mm ON TOP OF THE PIPE FOR BOTH BEDDING CONDITIONS AND ALL PIPE DIAMETERS AS SHOWN.
- 1.04 ALL INFORMATION REGARDING A SPECIFIC PIPE CULVERT APPEARS ON THE DRAINAGE SCHEDULE OF THE ROAD.
- 1.05 CONCRETE BACKFILL CLASS 15/19.



SECTION E - E

SCALE 1:25



SECTION F - F

SCALE 1:25



1 Nel Street
Mbombela
1201

City of Mbombela

PROJECT :

PAVING OF GOROMANE TO KAMABUZA
(VIA TFOHLINHLANHLA) AT SHABALALA WARD 1

PROJECT NO: COM11/2023

DRAWING TITLE :

STANDARD DETAILS

CULVERT DETAILS

REVISIONS

6			
5			
4			
3			
2			
1	-- / -- / --	--	--

PRELIMINARY

TENDER PURPOSES

FOR CONSTRUCTION

AS BUILT

DESIGNED :

J.T.

DRAWN :

J.T.

SCALE :

N. T. S.

DATE :

23 DECEMBER 2022

CHECKED :

J.T.

APPROVED :

J.T.M.

SIGNATURE :

PROFESSIONAL SERVICE :

CIVIL ENGINEERING

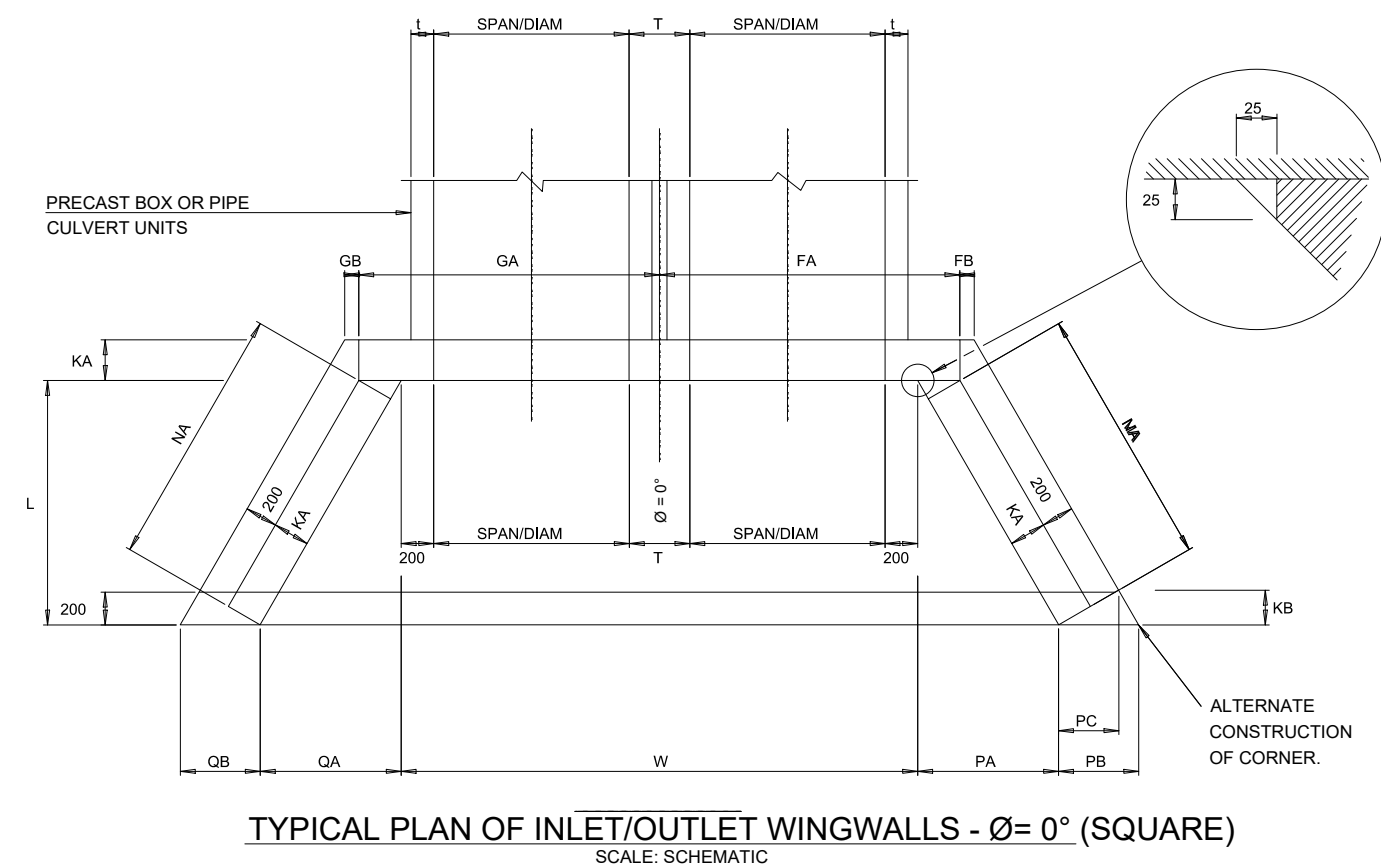
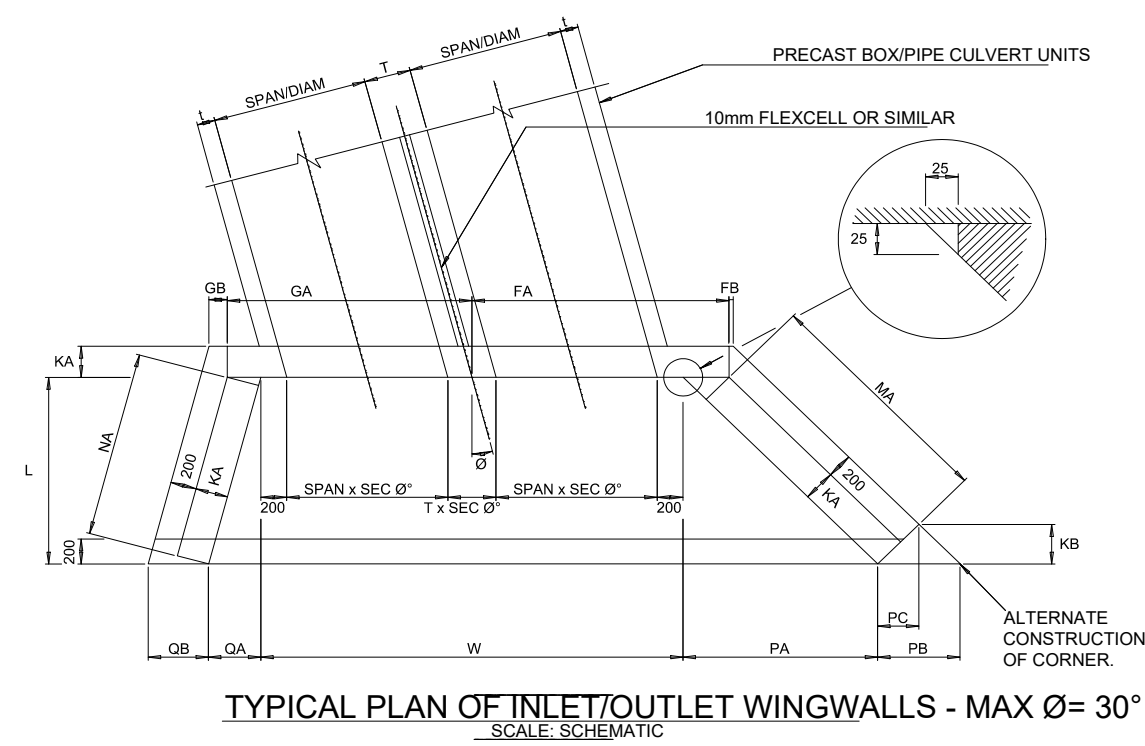
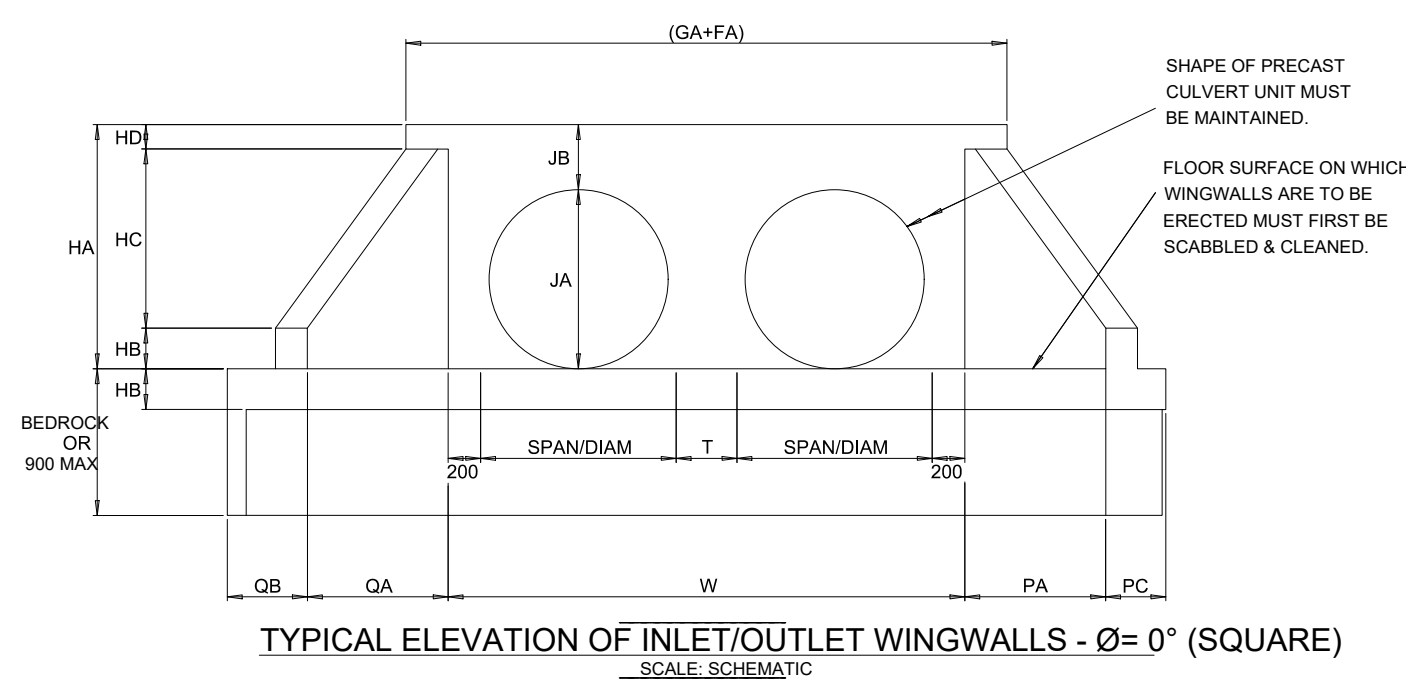
DRAWING No :

065/GOR/R1202 REV 0

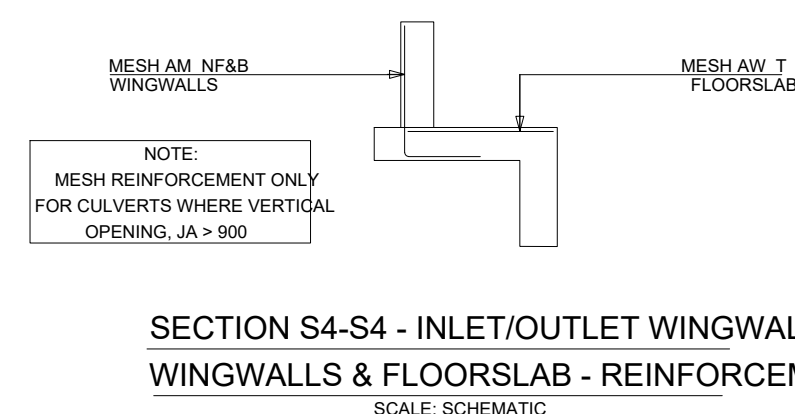
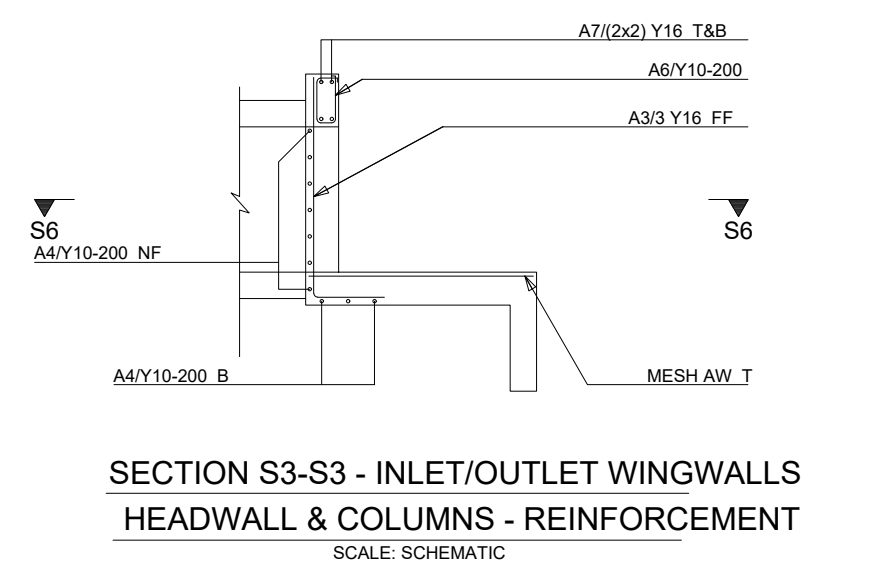
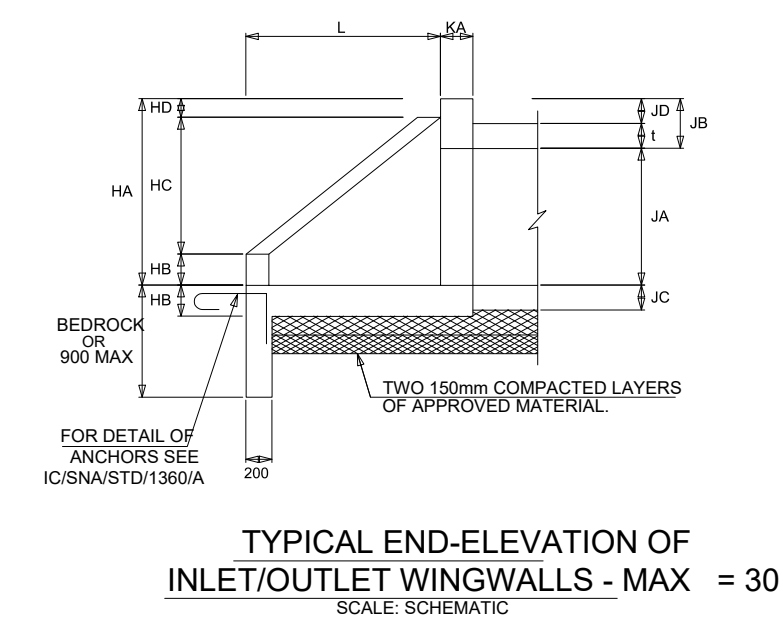
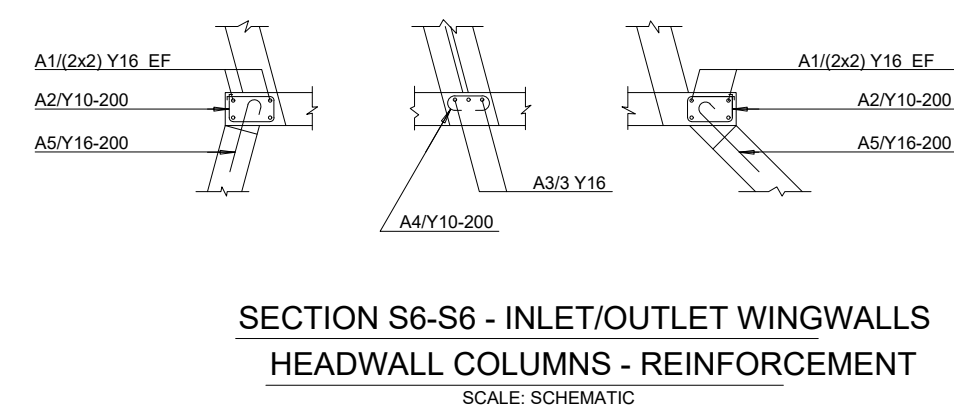
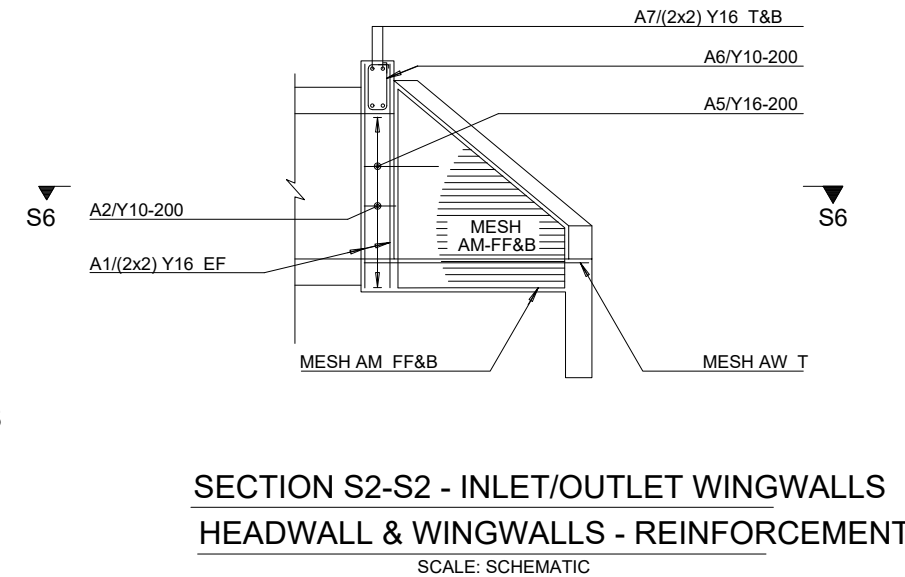
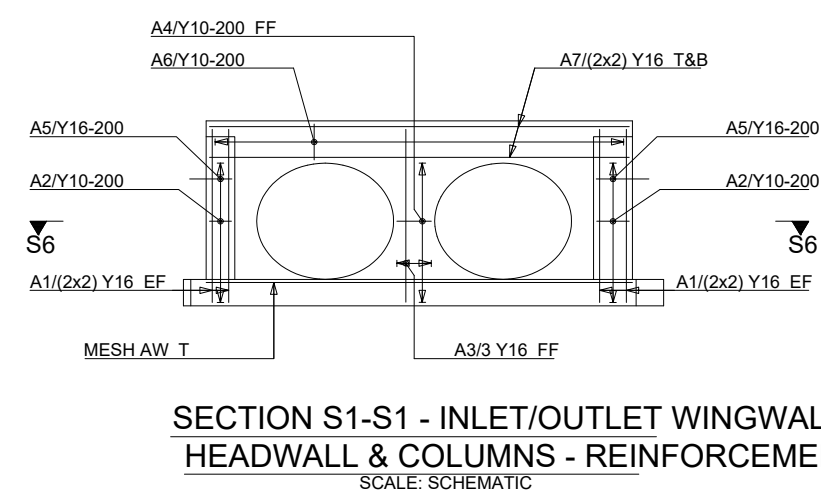
THIS DRAWING IS THE PROPERTY OF MK DUBE CONSULTING & REPRODUCTION, DISTRIBUTION, ALTERATION OR ISSUING THEREOF WITHOUT PERMISSION IS PROHIBITED UNDER THE COPYRIGHT ACT.



MK DUBE CONSULTING
SUITE 7 LIZA'S COURT, 28 VAN RENSBURG STREET, NELSPRUIT
P.O. BOX 569, SONPARK, 1206 TEL: (013) 753 2998



CULVERT DESCRIPTION	WINGWALL REFERENCE NUMBER										
		TYPE	BARRELS	SPAN/DIA	HEIGHT	PIPE/ABED CLASS	SKEW ANGLE				
INLET/OUTLET WINGWALLS CONCRETE DIMENSIONS		FA									
		FB									
		GA									
		GB									
		HA									
		HB									
		HC									
		HD									
		JA									
		JB									
		JC									
		JD									
		KA									
		KB									
		L									
		MA									
		NA									
		PA									
		PB									
		PC									
	QA										
	QB										
	R										
	T										
	t										
	W										
	A1										
	BAR DIA										
	QUANTITY										
	aa										
	A2										
	BAR DIA										
	QUANTITY										
	aa										
	ab										
	CUT LENGTH										
	A3										
	BAR DIA										
	QUANTITY										
	aa										
	ab										
	CUT LENGTH										
	A4										
	BAR DIA										
	QUANTITY										
	aa										
	CUT LENGTH										
	A5										
	BAR DIA										
	QUANTITY										
	aa										
	CUT LENGTH										
	A6										
	BAR DIA										
	QUANTITY										
	aa										
	ab										
	CUT LENGTH										
	A7										
	BAR DIA										
	QUANTITY										
	aa										
	ab										
	CUT LENGTH										
INLET/OUTLET WINGWALLS MESH REINFORCEMENT	SMF 617	mc	md								
	na										
	mb										
	mc										
	md										
	me										
	MASS (kg)										
	SMF 617	nd	nc								
	na										
	nb										
nc											
nd											
ne											
MASS (kg)											
SMF 311	wb	wc	wd								
wa											
wb											
wc											
wd											
MASS (kg)											



1 DESIGN CRITERIA

1.01 THE WINGWALLS ARE DESIGNED AS CANTILEVERS FIXED TO THE BASE AND SUPPORTED BY THE HEADWALL.

1.02 THE WINGWALLS ARE DESIGNED FOR A SURCHARGE OF 750 mm AND A MAXIMUM SLOPE OF 1:1.16 FOR AN 80% HEIGHT.

1.03 THE DENSITY OF SOIL = 20 kN/m³

1.04 SOIL PRESSURES DETERMINED USING RANKINE'S THEORY.

1.05 CONCRETE

WINGWALLS INSITU BARREL

CHARACTERISTIC STRENGTH (MPa)	30	30
CLASS CONCRETE	30/19	30/19

1.06 REINFORCEMENT ACCORDING TO SABS 2020 - LATEST REVISION.

CHARACTERISTIC STRENGTH OF HIGH TENSILE STEEL = 450 MPa

CHARACTERISTIC STRENGTH OF HIGH TENSILE STEEL MESSE = 450 MPa

1.07 A LINEAR SOIL PRESSURE DISTRIBUTION IS ASSUMED.

2.01 GENERAL

2.02 THE REQUIRED CLASS OF SURFACE FINISH IS F2 FOR ALL VISIBLE SURFACES.

2.03 ALL VISIBLE CORNERS MUST HAVE A 25 x 25 mm CHAMFER.

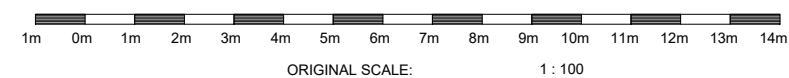
2.04 TWO 150 mm LAYERS OF APPROVED MATERIAL, COMPACTED TO 93% MODIFIED A.A.S.H.T.O. DENSITY, ARE REQUIRED UNDER THE INLETS AND OUTLETS.

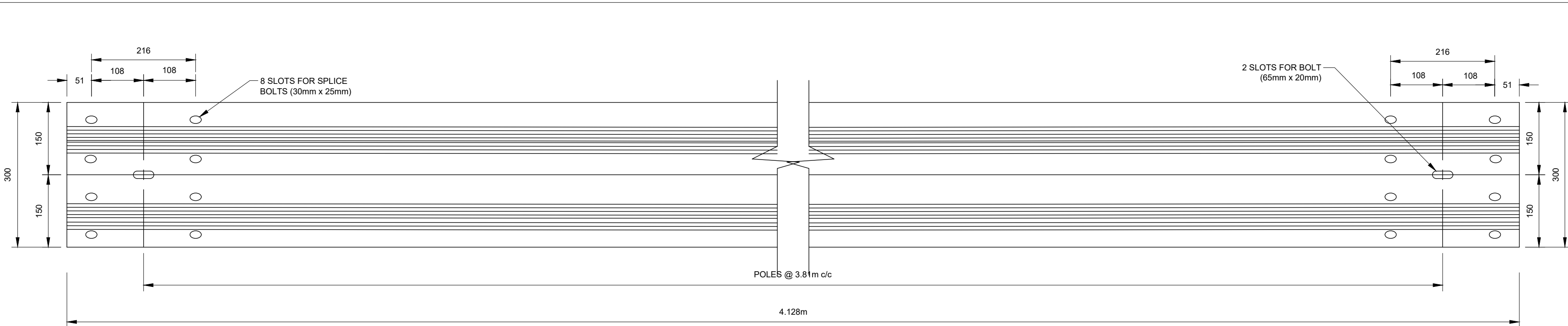
2.05 MINIMUM CONCRETE COVER TO REINFORCEMENT IS 40 mm.

2.06 FURTHER INFORMATION REGARDING SPECIFIC CULVERTS APPEAR ON THE DRAINAGE SCHEDULES OF THE ROAD.

2.07 THE INLET AND OUTLET UNITS ARE DESIGNED TO ACT AS INDEPENDENT UNITS WHEN USED TOGETHER WITH PIPES.

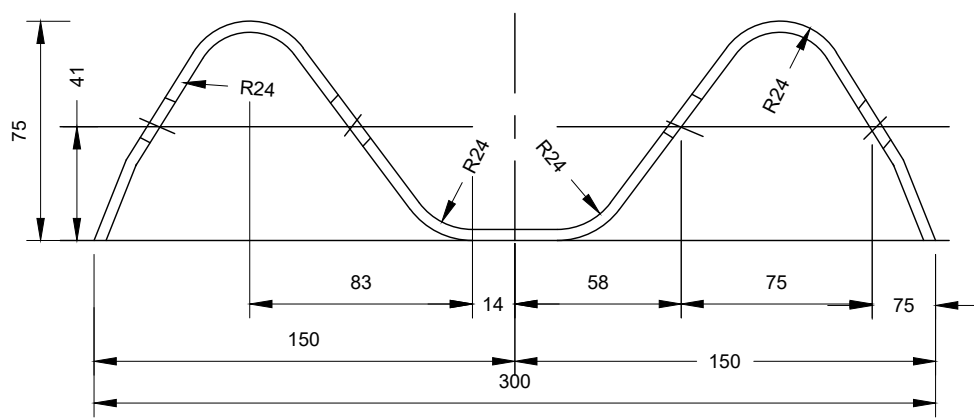
2.08 THE HEADWALLS MUST BE ALIGNED PARALLEL TO THE ROAD SHOULDER.





TYPICAL GUARDRAIL SECTION

1:5

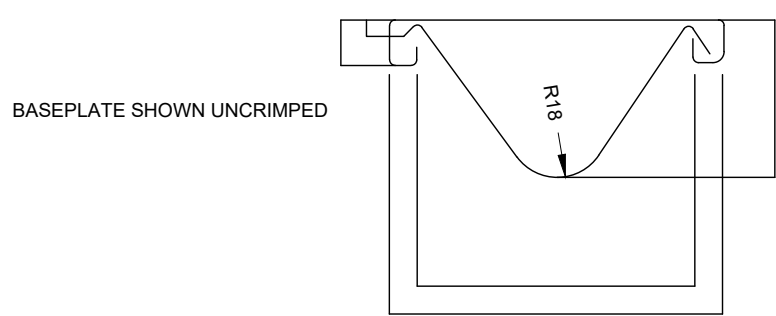


SECTION THROUGH GUARDRAIL

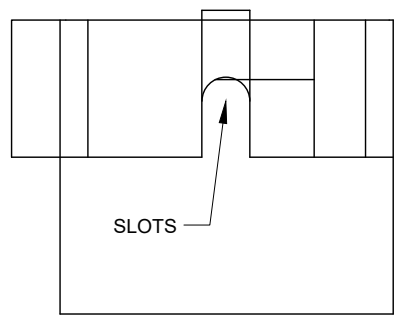
1:2

NOTE:

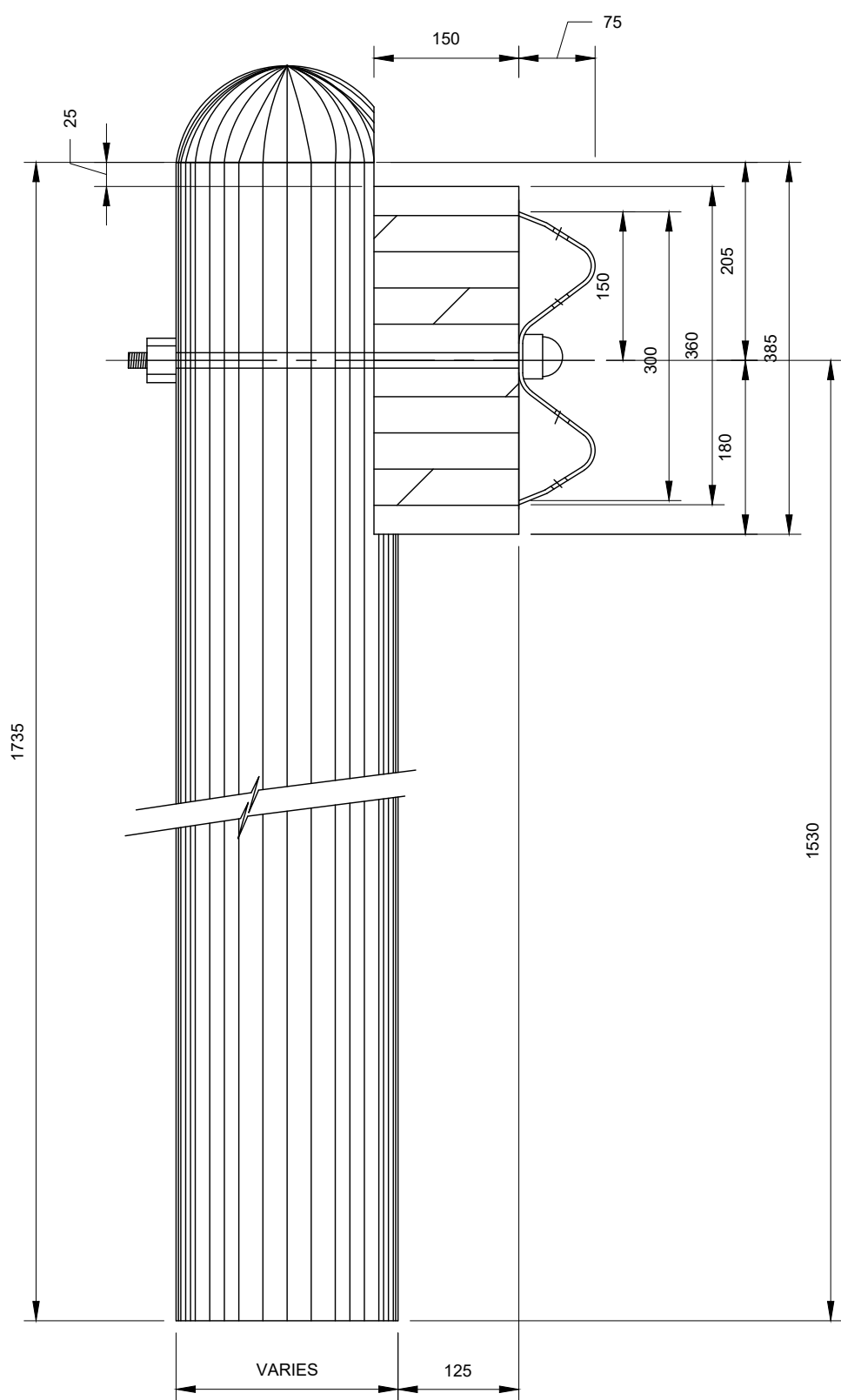
1. GUARDRAILS WILL BE PLACED WHERE REQUIRE BY THE ENGINEER
2. ALL GUARDRAILS MUST BE GULVANISED (NOT PAINTED)



SECTION PLAN

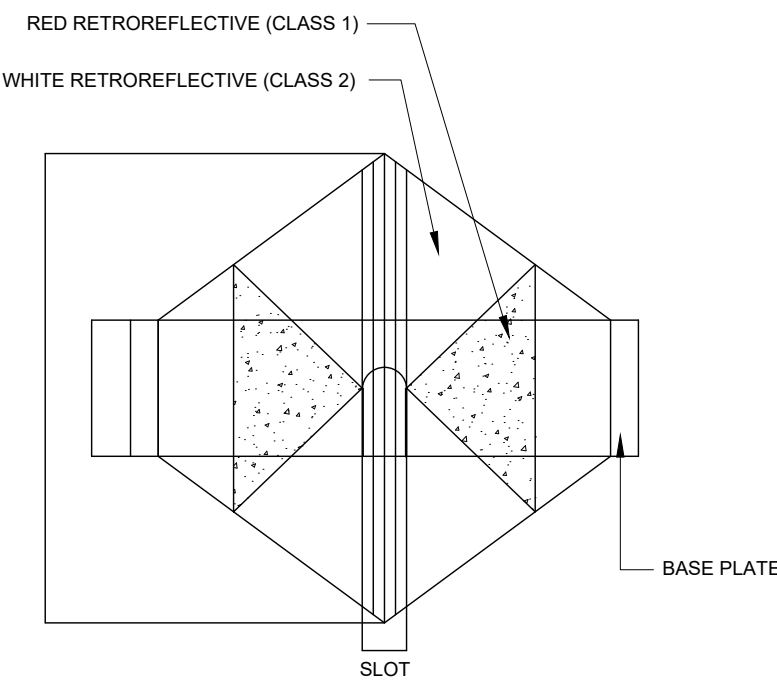


DETAIL OF BASE PLATE

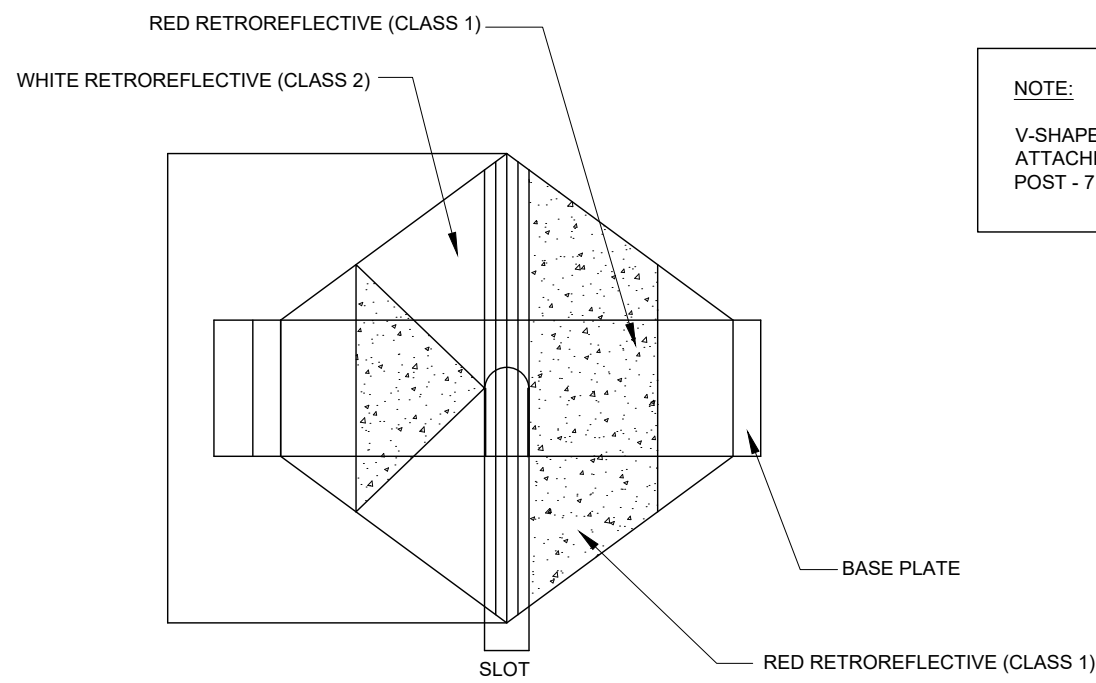


ELEVATION OF GUARDRAIL

1:5



FRONT ELEVATION : TYPE D1 (A)



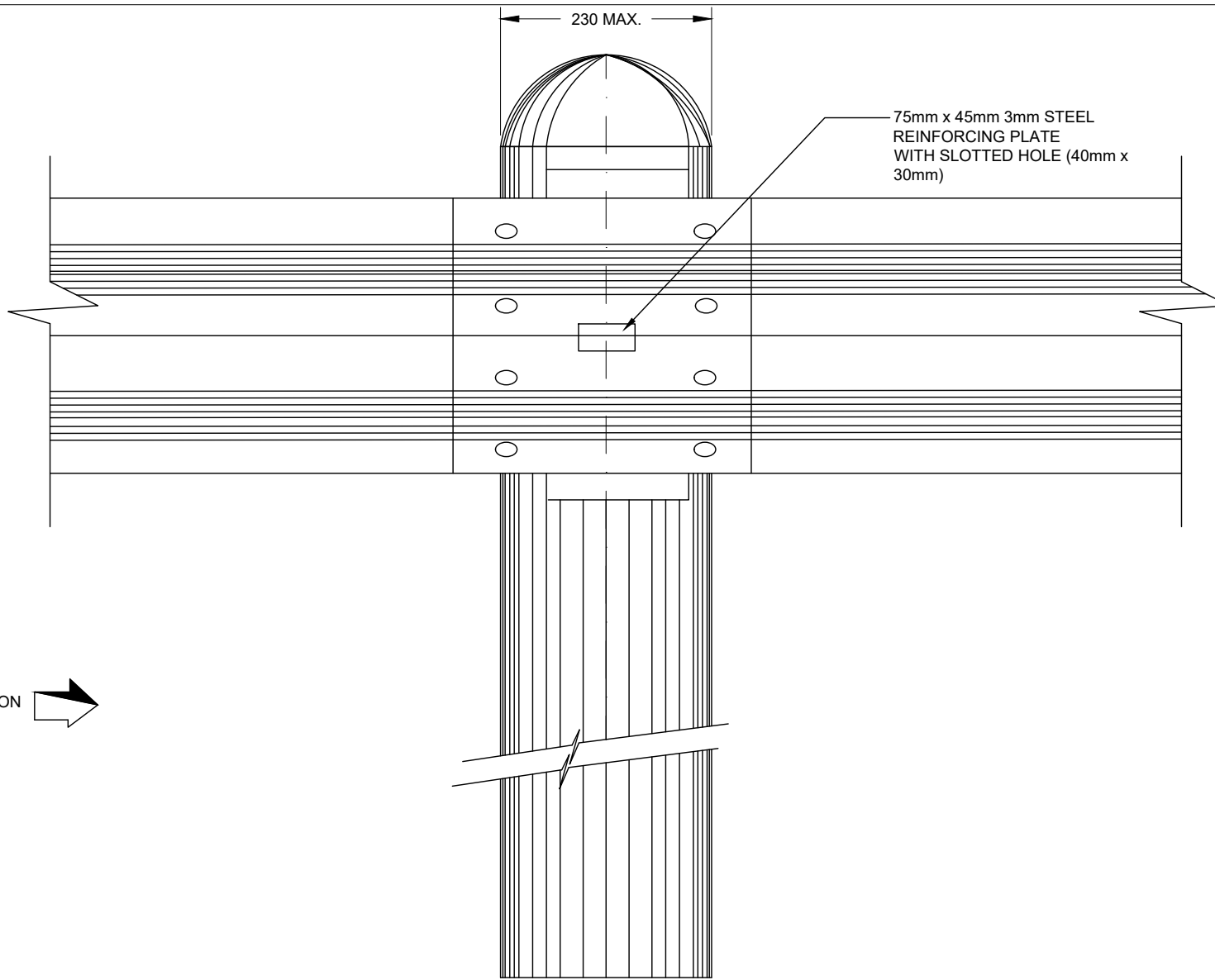
FRONT ELEVATION : TYPE D1 (B)

NOTE:

- V-SHAPED REFLECTIVE PLATES ATTACHED TO EACH ALTERNATIVE POST - 7.62m c/c.

SPECIFICATIONS

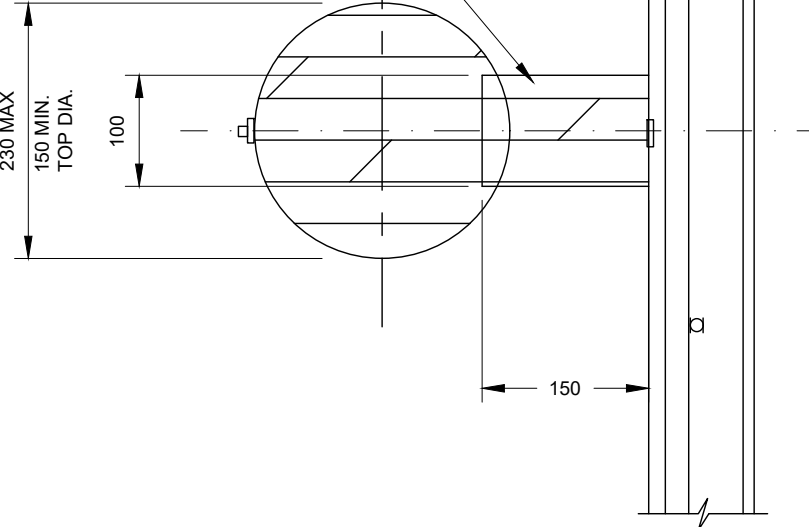
1. BOLTS: HIGH TENSILE STEEL 16mm
2. WASHERS: 3mm THICK
3. SPACER BLOCK: PINE OR GUM, PRESSURE IMPREGNATED WHICH COMPLIES WITH SABS 538 OR 539.
4. POSTS: 150mm MIN - 230mm MAX, PINE OR GUM, PRESSURE IMPREGNATED WITH CREOSOTE WHICH COMPLIES WITH SABS 538 OR 539.
5. GALVANIZING: GUARDRAILS - SABS 763, TYPE A1 ARTICLE. BOLTS AND WASHERS: SABS 763, TYPE C1 ARTICLE
6. TIMBER POST: POSTS SHALL COMPLY WITH THE REQUIREMENTS OF SABS AND SHALL CARRY THE SABS MARK.
7. CREOSOTE TREATMENT: TIMBER POSTS AND SPACER BLOCKS SHALL BE TREATED IN ACCORDANCE WITH SABS 05 WITH CREOSOTE WHICH COMPLIES WITH SABS 538 OR 539F.
8. REFLECTIVE PLATES: OUTER SURFACE SHALL BE COATED WITH ENGINEERING GRADE RETRO-REFLECTIVE MATERIAL WHICH COMPLIES WITH THE PROVISION OF CKS 191 IN THE COLOURS SHOWN IN THE DRAWING.



DETAIL A: FRONT ELEVATION
NORMAL SPACING OF POSTS

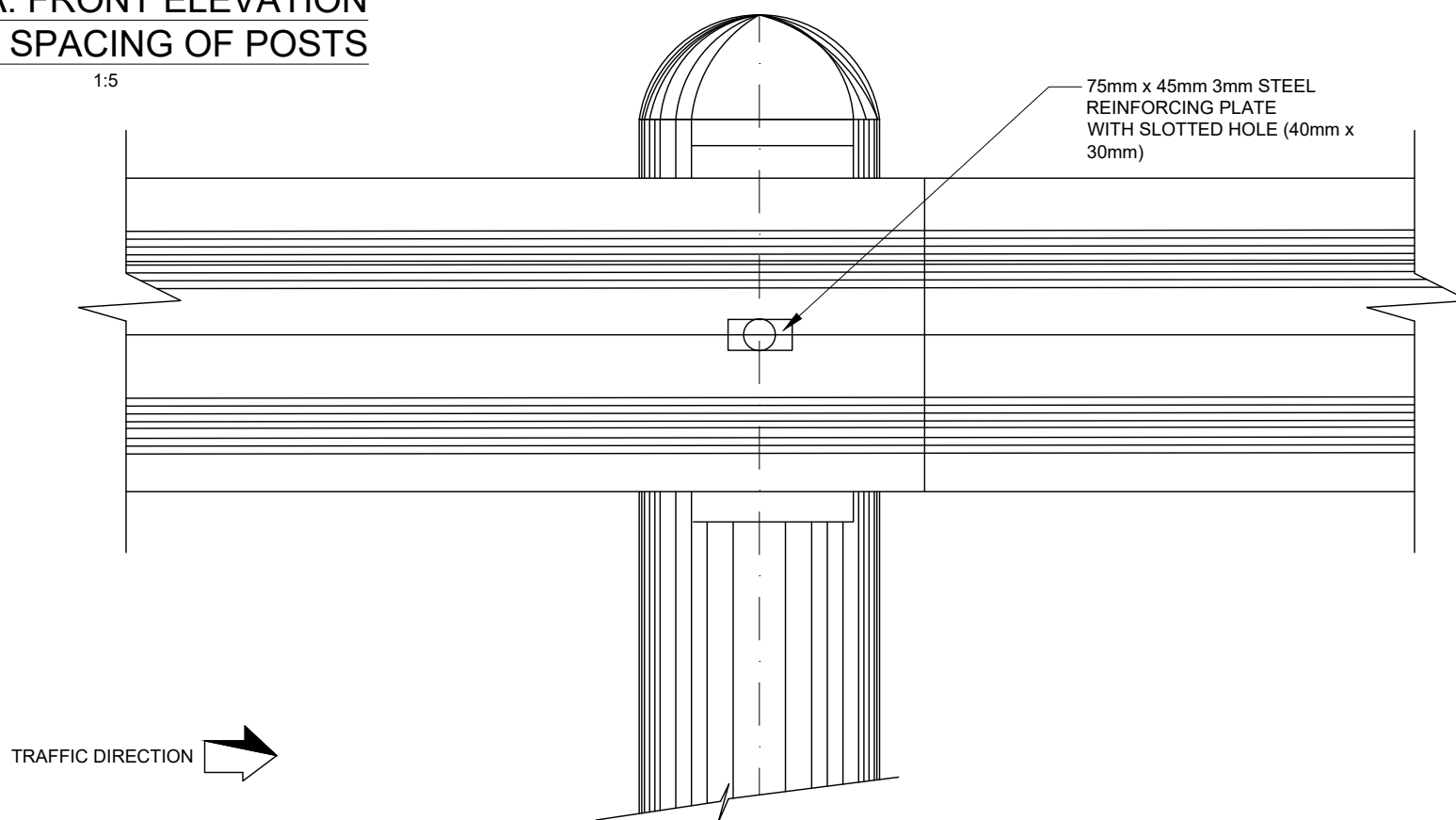
1:5

CREOSOTED TREATED SPACER BLOCK
PINE OR GUM (150mm x 100mm x360mm)



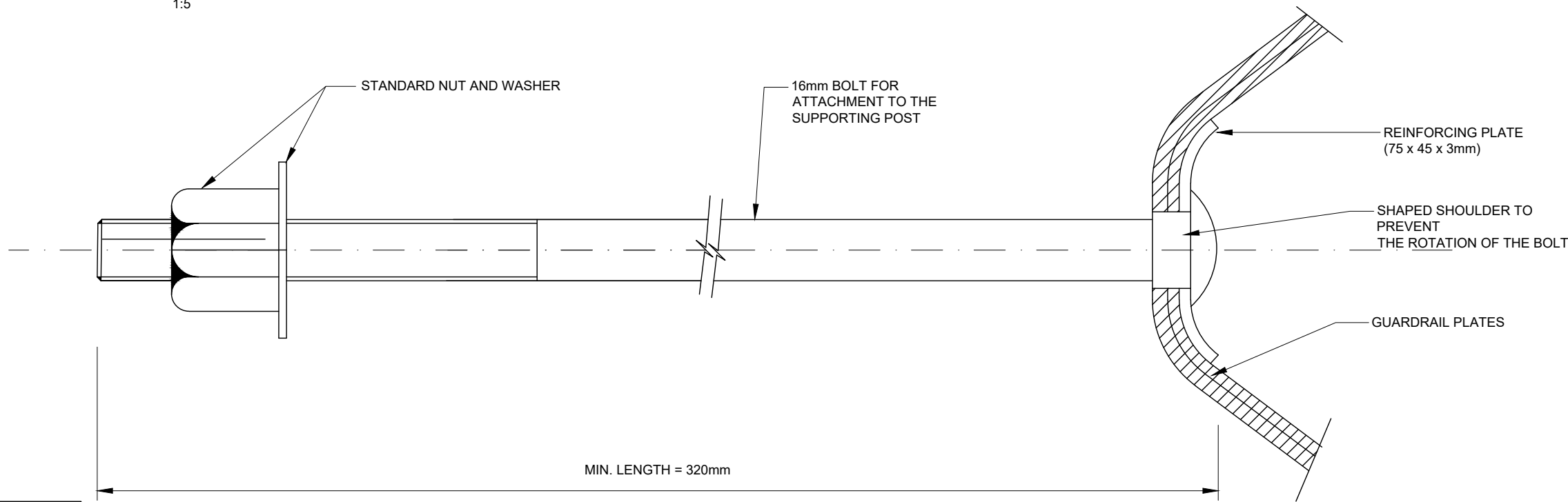
PLAN

1:5



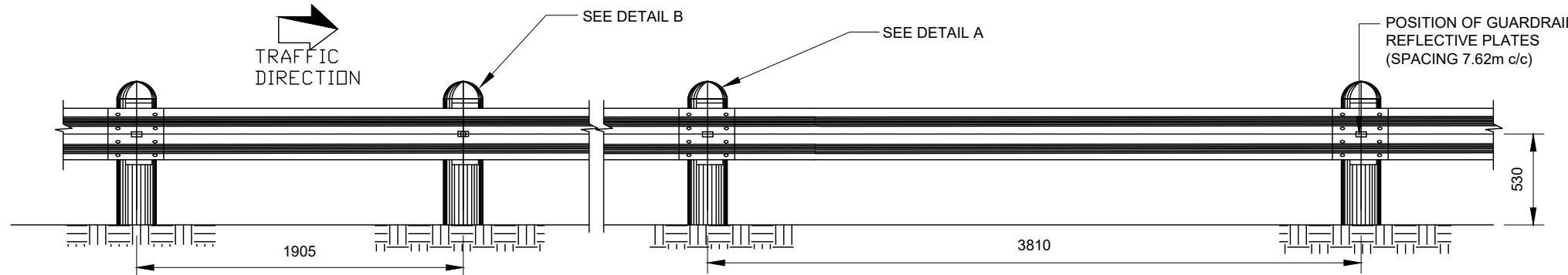
DETAIL B: FRONT ELEVATION
HALF SPACING OF POSTS

1:5



TYPICAL BOLTS

1:1



SPACING OF POSTS AND POSITION OF REFLECTIVE PLATES

1:25



1 Nel Street
Mbombela
1201

City of Mbombela

PROJECT :

PAVING OF GOROMANE TO KAMABUZA
(VIA TFO LINHLANHLA) AT SHABALALA WARD 1

PROJECT NO: COM11/2023

DRAWING TITLE :

STANDARD DETAILS

GUARDRAIL DETAILS

REVISIONS

6
5
4
3
2
1

-- / -- / --

PRELIMINARY

TENDER PURPOSES

FOR CONSTRUCTION

AS BUILT

DESIGNED :

J.T.

DRAWN :

J.T.

SCALE :

N. T. S.

DATE :

23 DECEMBER 2022

CHECKED :

J.T.

APPROVED :

J.T.M.

SIGNATURE :

PROFESSIONAL SERVICE :
CIVIL ENGINEERING

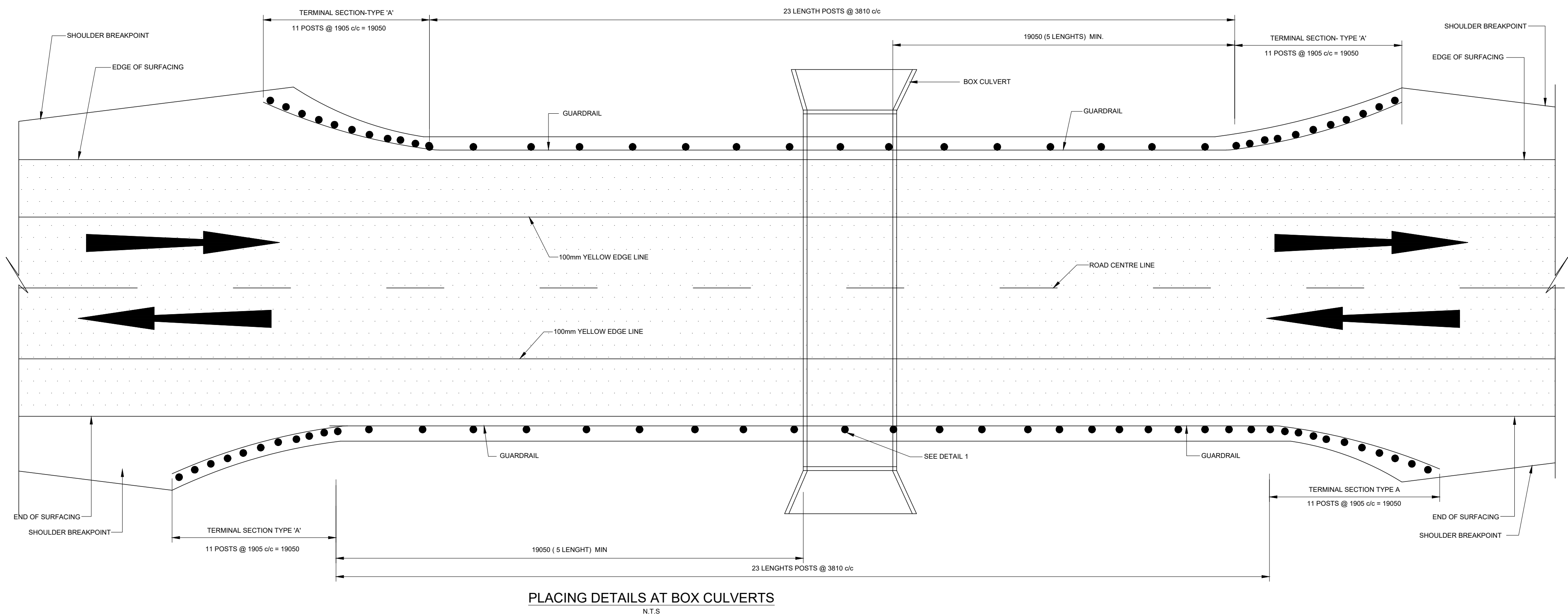
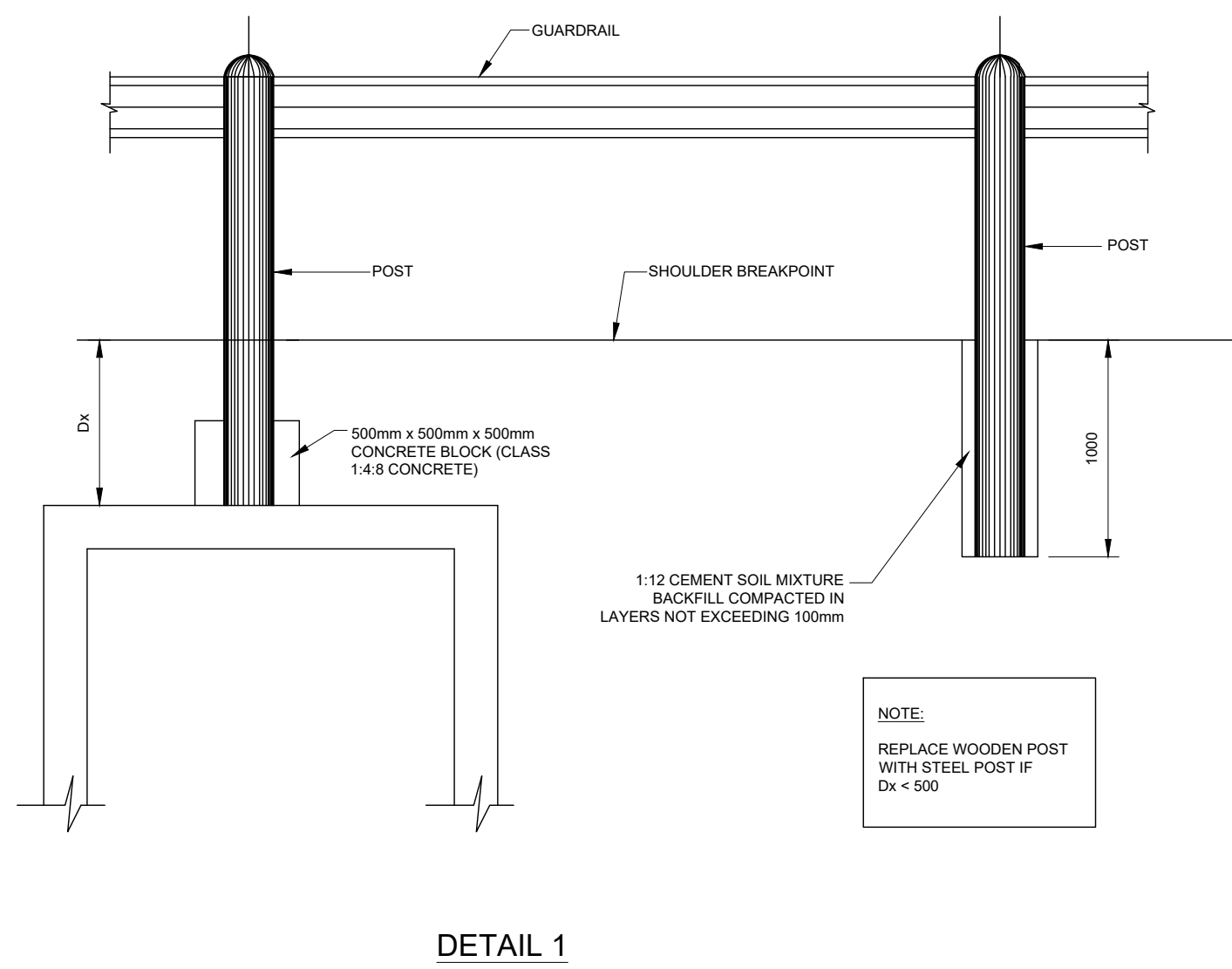
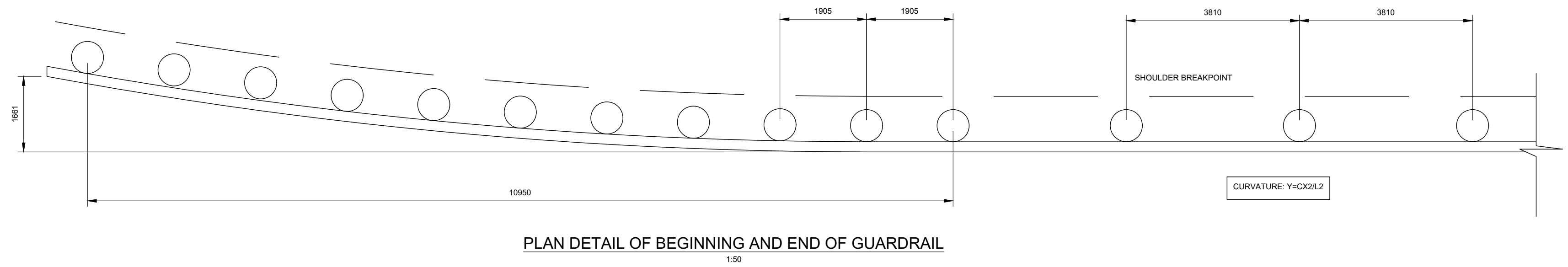
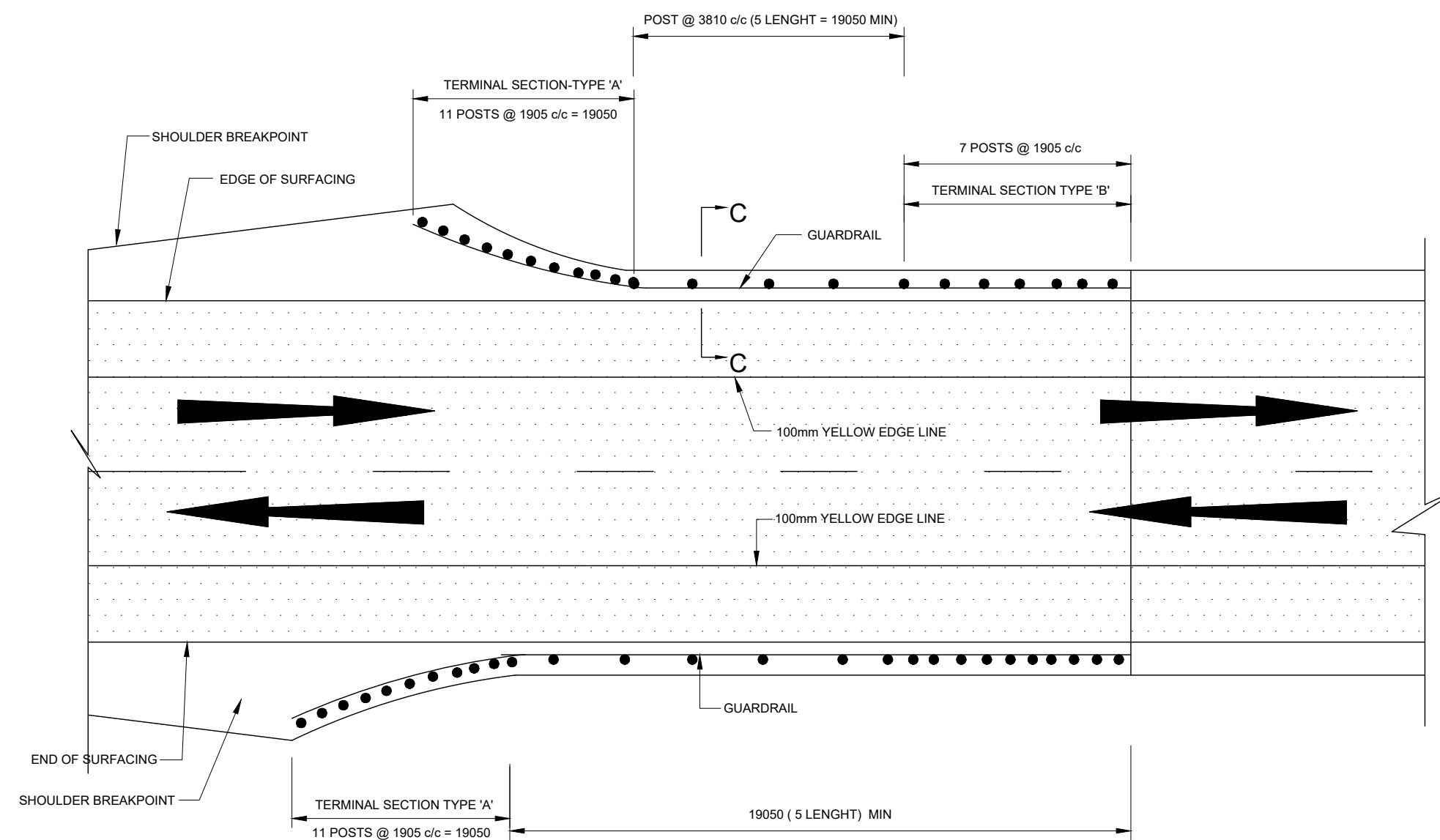
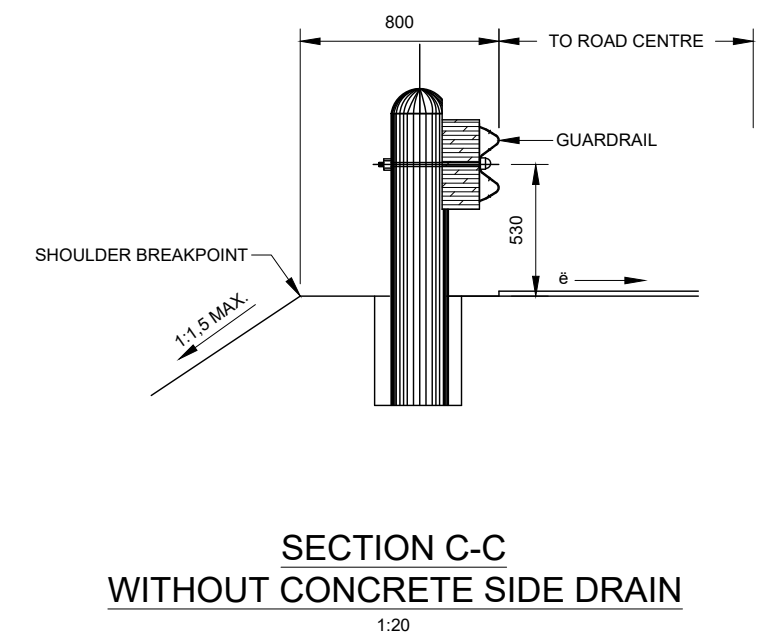
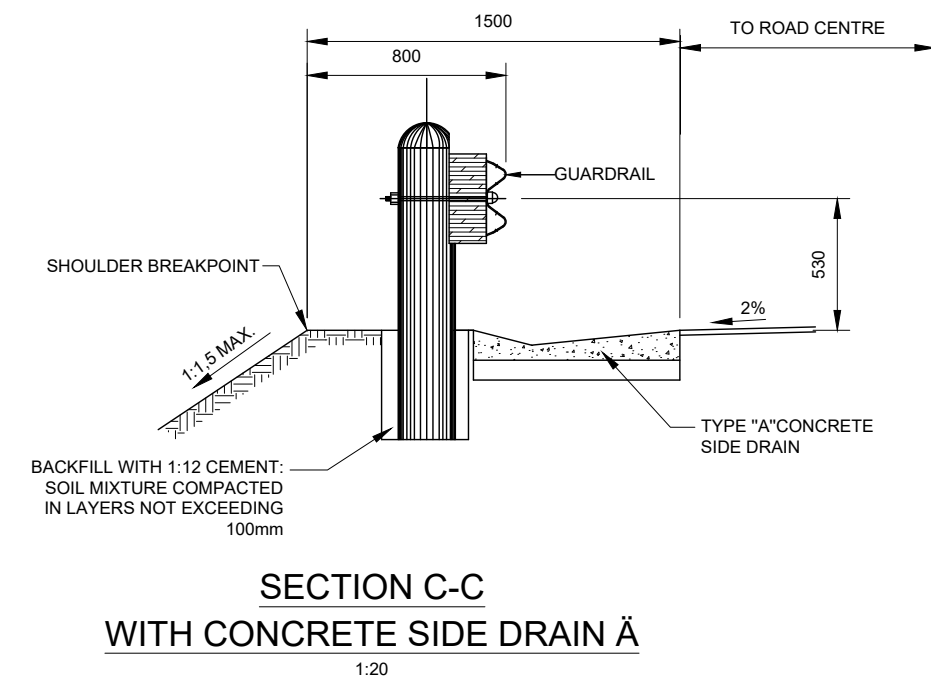
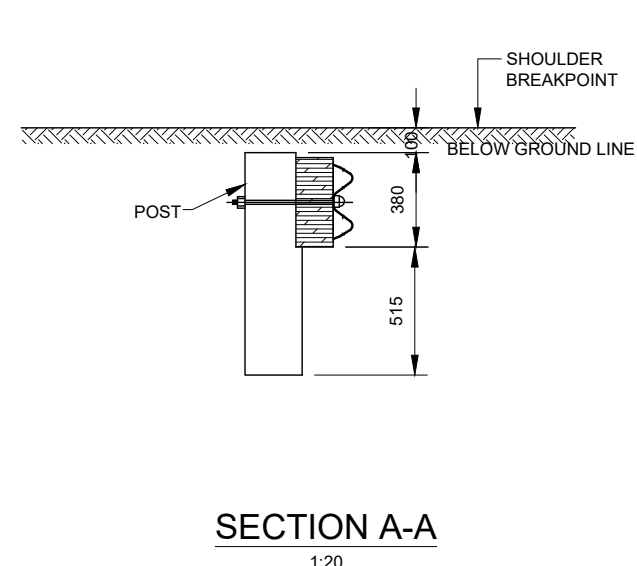
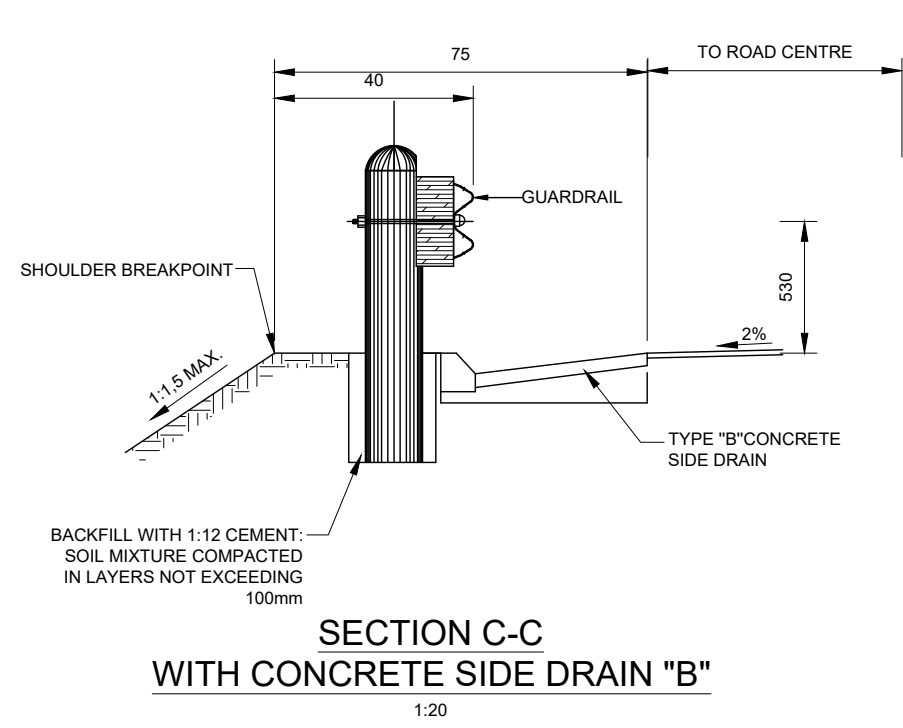
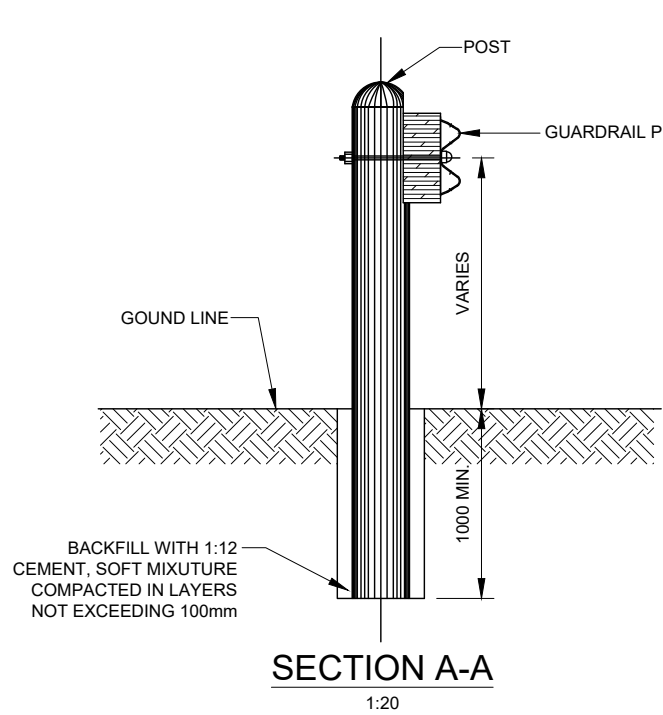
DRAWING No :
065/GOR/R1204A REV 0

THIS DRAWING IS THE PROPERTY OF MK DUBE CONSULTING &
REPRODUCTION, DISTRIBUTION, ALTERATION OR ISSUING THEREOF
WITHOUT PERMISSION IS PROHIBITED UNDER THE COPYRIGHT ACT.



MK DUBE CONSULTING
SUITE 7 LIZA'S COURT, 28 VAN RENSBURG STREET, NELSPRUIT
P.O. BOX 569, SONPARK, 1206 TEL: (013) 753 2998

TABLE: I		
PLACING OF POLES AT PARABOLIC TERMINAL SECTIONS		
	HORIZONTAL OFF-SETS FOR PARABOLIC TERMINAL SECTIONS Y (mm)	VERTICAL OFF-SETS FOR PARABOLIC TERMINAL SECTIONS (MEASURED TOP OF POST) X (mm)
a	60	0
b	70	33
c	80	133
d	90	299
e	100	531
f	110	635



PLACING DETAILS AT BOX CULVERTS
N.T.S.



1 Nel Street
Mbombela
1201

City of Mbombela

PROJECT :
PAVING OF GOROMANE TO KAMABUZA
(VIA TFOHLINHLANHLA) AT SHABALALA WARD 1

PROJECT NO: COM11/2023

DRAWING TITLE :
STANDARD DETAILS
GUARDRAIL DETAILS

REVISIONS

6			
5			
4			
3			
2			
1	--/--	--	

PRELIMINARY
TENDER PURPOSES
FOR CONSTRUCTION
AS BUILT

DESIGNED : J.T.
DRAWN : J.T.
SCALE : N. T. S.
DATE : 23 DECEMBER 2022
CHECKED : J.T.
APPROVED : J.T.M.
SIGNATURE :

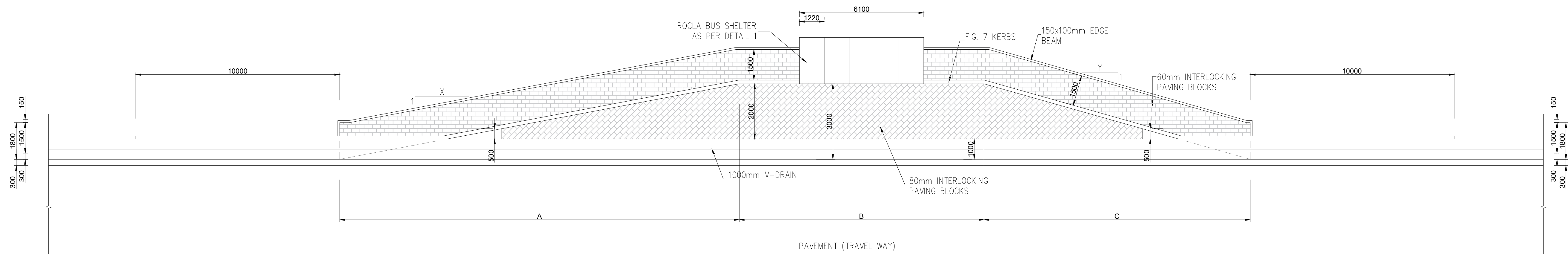
PROFESSIONAL SERVICE :
CIVIL ENGINEERING

DRAWING No :
065/GOR/R1204B REV 0

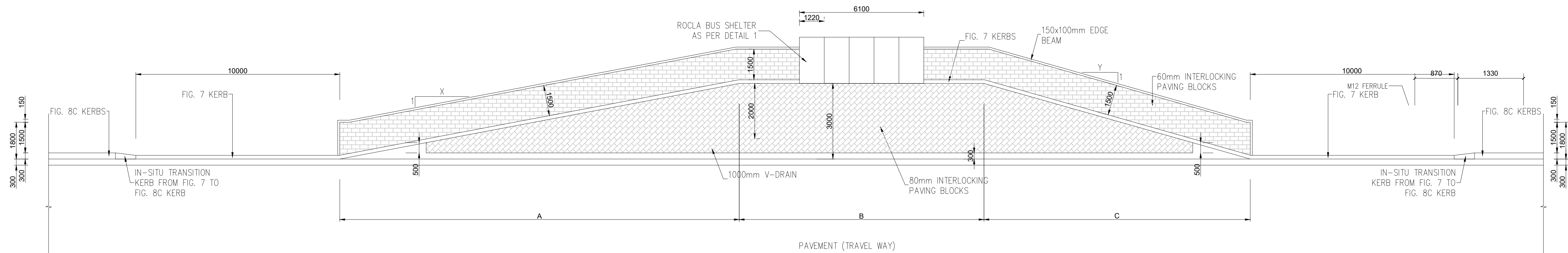
THIS DRAWING IS THE PROPERTY OF MK DUBE CONSULTING & REPRODUCTION, DISTRIBUTION, ALTERATION OR ISSUING THEREOF WITHOUT PERMISSION IS PROHIBITED UNDER THE COPYRIGHT ACT.



MK DUBE CONSULTING
SUITE 7 LIZA'S COURT, 28 VAN RENSBURG STREET, NELSPRUIT
P.O. BOX 569, SONPARK, 1206 TEL: (013) 753 2998



TYPICAL BUS STOP LAYOUT WITH A V-DRAIN



TYPICAL BUS STOP LAYOUT WITH A CHANNEL

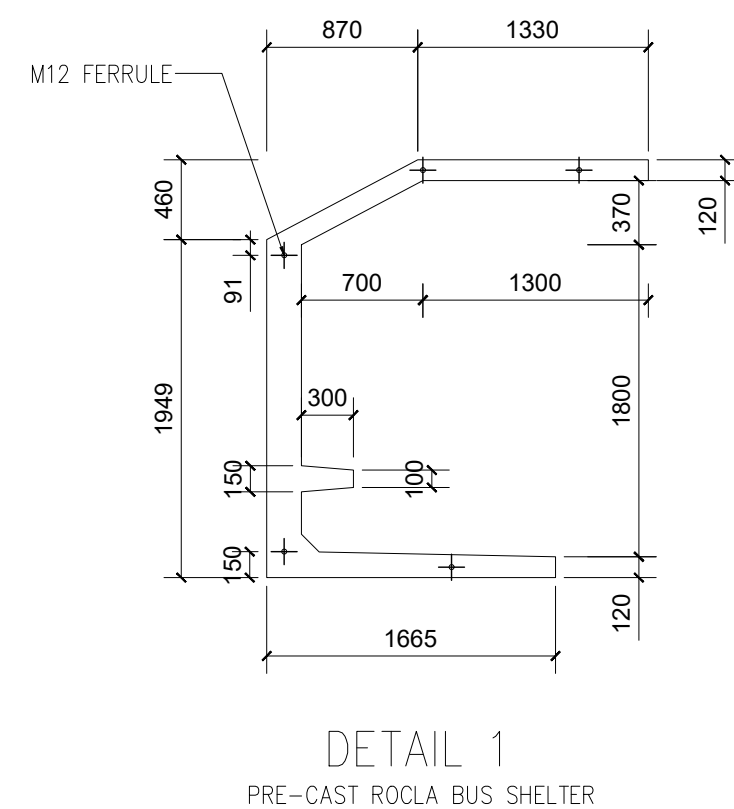
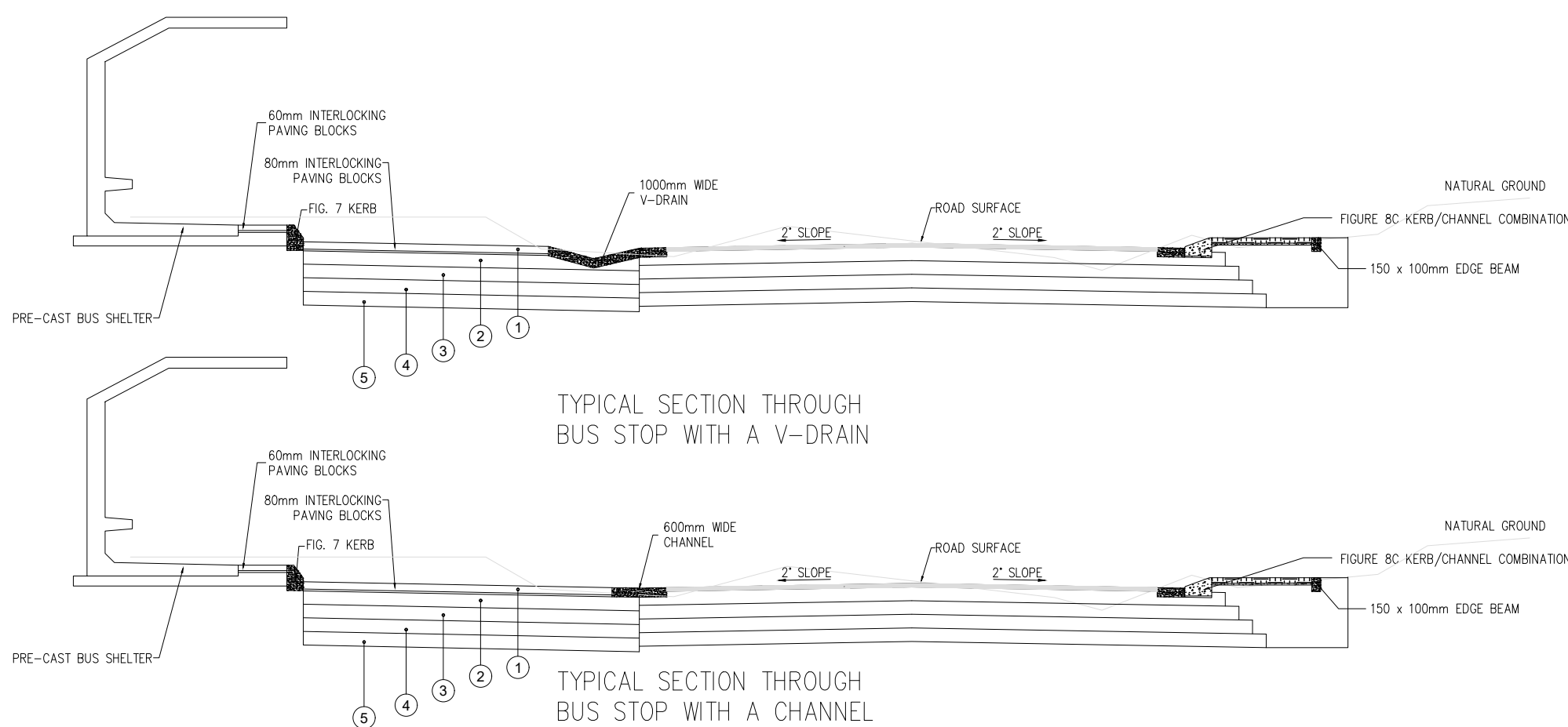


TABLE A: DIMENSIONS OF BUS AND TAXI BAYS		
DIMENSIONS	BUS BAY	TAXI BAY
A	18,0m	10,0m
B	23,0m – TRIPLE (15,0m) – DOUBLE (12,0m) – SINGLE + 12,0m PER ADDITIONAL BUS	8,0m (6,0m) + 8,0m (*5,5m) PER ADDITIONAL TAXI
C	12,0m	6,0m
D	3,0m – 3,5m	2,5m
1: X	1: 6 *(1: 5)	1: 4 *(1: 3,2)
1: Y	1: 4	1: 2,4

NOTES :
REFER TO NOTES DRAWINGS, DRAWING NUMBERS, SG001, SG002,
AND SG003

5		
4		
3		
2		
1		

DATE REVISIONS

CITY OF MBOMBELA
THE ULTIMATE DESTINATION
1 Nel Street
Mbombela
1201
TEL: (013) 759 9111
FAX: (013) 759 2070
WEB: www.mbombela.gov.za
City of Mbombela

PROJECT :
PAVING OF GOROMANE TO KAMABUZA
(VIA TFO LINHLANHLA) AT SHABALALA
WARD 1

PROJECT NO: COM11/2023

DRAWING TITLE :
BUS STOP AND BUS SHELTER
DETAILS

DESIGNED :	J.T.
DRAWN :	A.F.
SCALE :	N.T.S.
DATE :	23 DECEMBER 2022
CHECKED :	J.T.
APPROVED :	J.T.M
SIGNATURE :	

PROFESSIONAL SERVICE :
CIVIL ENGINEERING

DRAWING No :
065/GOR/R1206 REV 0

THIS DRAWING IS THE PROPERTY OF MK DUBE CONSULTING &
REPRODUCTION, DISTRIBUTION, ALTERATION OR ISSUING THEREOF
WITHOUT PERMISSION IS PROHIBITED UNDER THE COPYRIGHT ACT

M Dube CONSULTING
MK DUBE CONSULTING (PTY) LTD
OFFICE No. 7 LIZA'S COURT, 28 VAN RENSBURG STREET, NELSPRUIT, 1200
P.O. BOX 569, SONPARK, 1206
TEL: (013) 753 2998, FAX: 086 549 1872



REFER TO NOTES DRAWINGS, DRAWING NUMBERS; SG001, SG002,
AND SG003

DATE	REVISIONS
------	-----------



DRAWING No :
065/GOR/R1207 REV 0

THIS DRAWING IS THE PROPERTY OF MK. DUBE CONSULTING & REPRODUCTION, DISTRIBUTION, ALTERATION OR ISSUING THEREOF WITHOUT PERMISSION IS PROHIBITED UNDER THE COPYRIGHT ACT.

