

# UPGRADING OF A SECTION OF MAIN ROAD 974 BETWEEN LAXEY AND PROVINCIAL BOARDER NEAR HEUNINGVLEI PHASE 1

06 Oliewen Park Bloemfontein 9301

# APRIL 2024

# TENDER DESIGN DRAWINGS



TEL NO:(053) 839 2100 FAX:(053) 839 2291



Heuningvlei			
S E Nakhubung Shalaneng			
Ashfield			
Tsiloane			
Perth River Sesipi			
Leeds	North West		
Proposed U	Jpgrade		
MAdibeng			
	Bolelatlou		
Gar	nan		
Laxey		$\mathcal{F}$	
LOCALITY PLAN			
N.I.S			
DRAWING No. DRAWING DESCRIPTION	LIST OF D	STATUS	DATE
DRPW/BR/DR/001 COVER PAGE		ISSUED FOR TENDER	2024/04/12
DRPW/BR/DR/002 SITE PLAN DRPW/BR/DR/003 LONGSECTION		ISSUED FOR TENDER	2024/04/12 2024/04/12
DRPW/BR/DR/004 GENERAL ARRANGEMENT PLAN		ISSUED FOR TENDER	2024/04/12
FOOTINGS AND PILE LAYOUTS FOR ABUTMENTS, PIERS AND	D WINGWALLS	ISSUED FOR TENDER	2024/04/12
DRPW/BR/DR/006 NORTH AND SOUTH ABUTMENT LAYOUT, ELEVATION AND D	DETAILS	ISSUED FOR TENDER	2024/04/12
DRPW/BR/DR/007 PIER DETAILS - PIER 1 AND PIER 2 DRPW/BR/DR/008 BRIDGE DECK LAYOUT			
		ISSUED FOR TENDER	2024/04/12
		ISSUED FOR TENDER	2024/04/12 2024/04/12 2024/04/12
DRPW/BR/DR/009 SUPPORT DETAIL 1 DRPW/BR/DR/010 SUPPORT DETAIL 2		ISSUED FOR TENDER ISSUED FOR TENDER ISSUED FOR TENDER ISSUED FOR TENDER	2024/04/12 2024/04/12 2024/04/12 2024/04/12 2024/04/12
DRPW/BR/DR/009SUPPORT DETAIL 1DRPW/BR/DR/010SUPPORT DETAIL 2DRPW/BR/DR/012SUPPORT DETAIL 3DRPW/BR/DR/013SUPPORT DETAIL 4		ISSUED FOR TENDER ISSUED FOR TENDER ISSUED FOR TENDER ISSUED FOR TENDER ISSUED FOR TENDER ISSUED FOR TENDER ISSUED FOR TENDER	2024/04/12 2024/04/12 2024/04/12 2024/04/12 2024/04/12 2024/04/12 2024/04/12
DRPW/BR/DR/009SUPPORT DETAIL 1DRPW/BR/DR/010SUPPORT DETAIL 2DRPW/BR/DR/012SUPPORT DETAIL 3DRPW/BR/DR/013SUPPORT DETAIL 4DRPW/BR/DR/014SUPPORT DETAIL 5		ISSUED FOR TENDER ISSUED FOR TENDER ISSUED FOR TENDER ISSUED FOR TENDER ISSUED FOR TENDER ISSUED FOR TENDER ISSUED FOR TENDER	2024/04/12 2024/04/12 2024/04/12 2024/04/12 2024/04/12 2024/04/12
DRPW/BR/DR/009 SUPPORT DETAIL 1 DRPW/BR/DR/010 SUPPORT DETAIL 2 DRPW/BR/DR/012 SUPPORT DETAIL 3 DRPW/BR/DR/013 SUPPORT DETAIL 4 DRPW/BR/DR/014 SUPPORT DETAIL 5 DRPW/BR/DR/015 REINFORCEMENT SOUTH ABUTMENT DRPW/BR/DR/016 REINFORCEMENT NORTH ABUTMENT		ISSUED FOR TENDER ISSUED FOR TENDER TO BE ISSUED FOR CONSTRUCTION	2024/04/12 2024/04/12 2024/04/12 2024/04/12 2024/04/12 2024/04/12 2024/04/12
DRPW/BR/DR/009SUPPORT DETAIL 1DRPW/BR/DR/010SUPPORT DETAIL 2DRPW/BR/DR/012SUPPORT DETAIL 3DRPW/BR/DR/013SUPPORT DETAIL 4DRPW/BR/DR/014SUPPORT DETAIL 5PRPW/BR/DR/015REINFORCEMENT SOUTH ABUTMENTDRPW/BR/DR/015REINFORCEMENT NORTH ABUTMENTDRPW/BR/DR/016REINFORCEMENT PIER 1 AND PIER 2		ISSUED FOR TENDER	2024/04/12 2024/04/12 2024/04/12 2024/04/12 2024/04/12 2024/04/12 2024/04/12
DRPW/BR/DR/009  SUPPORT DETAIL 1    DRPW/BR/DR/010  SUPPORT DETAIL 2    DRPW/BR/DR/012  SUPPORT DETAIL 3    DRPW/BR/DR/013  SUPPORT DETAIL 4    DRPW/BR/DR/014  SUPPORT DETAIL 5    DRPW/BR/DR/015  REINFORCEMENT SOUTH ABUTMENT    DRPW/BR/DR/016  REINFORCEMENT NORTH ABUTMENT    DRPW/BR/DR/017  REINFORCEMENT PIER 1 AND PIER 2    DRPW/BR/DR/018  SOUTH ABUTMENT BENDING SCHEDULES		ISSUED FOR TENDER    ISSUED FOR CONSTRUCTION    TO BE ISSUED FOR CONSTRUCTION    TO BE ISSUED FOR CONSTRUCTION    TO BE ISSUED FOR CONSTRUCTION	2024/04/12 2024/04/12 2024/04/12 2024/04/12 2024/04/12 2024/04/12 2024/04/12
DRPW/BR/DR/009SUPPORT DETAIL 1DRPW/BR/DR/010SUPPORT DETAIL 2DRPW/BR/DR/012SUPPORT DETAIL 3DRPW/BR/DR/013SUPPORT DETAIL 4DRPW/BR/DR/014SUPPORT DETAIL 5DRPW/BR/DR/015REINFORCEMENT SOUTH ABUTMENTDRPW/BR/DR/016REINFORCEMENT NORTH ABUTMENTDRPW/BR/DR/017REINFORCEMENT PIER 1 AND PIER 2DRPW/BR/DR/018SOUTH ABUTMENT BENDING SCHEDULESDRPW/BR/DR/019NORTH ABUTMENT BENDING SCHEDULES		ISSUED FOR TENDER    ISSUED FOR CONSTRUCTION    TO BE ISSUED FOR CONSTRUCTION	2024/04/12 2024/04/12 2024/04/12 2024/04/12 2024/04/12 2024/04/12 2024/04/12 2024/04/12
DRPW/BR/DR/009 SUPPORT DETAIL 1 DRPW/BR/DR/010 SUPPORT DETAIL 2 DRPW/BR/DR/012 SUPPORT DETAIL 3 DRPW/BR/DR/013 SUPPORT DETAIL 4 DRPW/BR/DR/014 SUPPORT DETAIL 5 DRPW/BR/DR/015 REINFORCEMENT SOUTH ABUTMENT DRPW/BR/DR/016 REINFORCEMENT NORTH ABUTMENT DRPW/BR/DR/016 REINFORCEMENT PIER 1 AND PIER 2 DRPW/BR/DR/017 REINFORCEMENT PIER 1 AND PIER 2 DRPW/BR/DR/018 SOUTH ABUTMENT BENDING SCHEDULES DRPW/BR/DR/019 NORTH ABUTMENT BENDING SCHEDULES DRPW/BR/DR/020 DECK REBAR DETAILS		ISSUED FOR TENDER    ISSUED FOR CONSTRUCTION    TO BE ISSUED FOR CONSTRUCTION	2024/04/12 2024/04/12 2024/04/12 2024/04/12 2024/04/12 2024/04/12 2024/04/12 2024/04/12 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
DRPW/BR/DR/009 SUPPORT DETAIL 1 DRPW/BR/DR/010 SUPPORT DETAIL 2 DRPW/BR/DR/012 SUPPORT DETAIL 3 DRPW/BR/DR/013 SUPPORT DETAIL 4 DRPW/BR/DR/014 SUPPORT DETAIL 5 DRPW/BR/DR/015 REINFORCEMENT SOUTH ABUTMENT DRPW/BR/DR/016 REINFORCEMENT NORTH ABUTMENT DRPW/BR/DR/017 REINFORCEMENT PIER 1 AND PIER 2 DRPW/BR/DR/018 SOUTH ABUTMENT BENDING SCHEDULES DRPW/BR/DR/019 NORTH ABUTMENT BENDING SCHEDULES DRPW/BR/DR/020 DECK REBAR DETAILS		ISSUED FOR TENDER    TO BE ISSUED FOR CONSTRUCTION	2024/04/12 2024/04/12
DRPW/BR/DR/009 SUPPORT DETAIL 1 DRPW/BR/DR/010 SUPPORT DETAIL 2 DRPW/BR/DR/012 SUPPORT DETAIL 3 DRPW/BR/DR/013 SUPPORT DETAIL 4 DRPW/BR/DR/014 SUPPORT DETAIL 5 DRPW/BR/DR/015 REINFORCEMENT SOUTH ABUTMENT DRPW/BR/DR/016 REINFORCEMENT NORTH ABUTMENT DRPW/BR/DR/016 REINFORCEMENT PIER 1 AND PIER 2 DRPW/BR/DR/017 REINFORCEMENT PIER 1 AND PIER 2 DRPW/BR/DR/018 SOUTH ABUTMENT BENDING SCHEDULES DRPW/BR/DR/019 NORTH ABUTMENT BENDING SCHEDULES DRPW/BR/DR/020 DECK REBAR DETAILS		ISSUED FOR TENDER    TO BE ISSUED FOR CONSTRUCTION	2024/04/12 2024/04/12
DRPW/BR/DR/009 SUPPORT DETAIL 1 DRPW/BR/DR/010 SUPPORT DETAIL 2 DRPW/BR/DR/012 SUPPORT DETAIL 3 DRPW/BR/DR/013 SUPPORT DETAIL 4 DRPW/BR/DR/014 SUPPORT DETAIL 5 DRPW/BR/DR/015 REINFORCEMENT SOUTH ABUTMENT DRPW/BR/DR/016 REINFORCEMENT NORTH ABUTMENT DRPW/BR/DR/017 REINFORCEMENT PIER 1 AND PIER 2 DRPW/BR/DR/018 SOUTH ABUTMENT BENDING SCHEDULES DRPW/BR/DR/019 NORTH ABUTMENT BENDING SCHEDULES DRPW/BR/DR/020 DECK REBAR DETAILS		ISSUED FOR TENDER    TO BE ISSUED FOR CONSTRUCTION	2024/04/12 2024/04/12
DRPW/BR/DR/009 SUPPORT DETAIL 1 DRPW/BR/DR/010 SUPPORT DETAIL 2 DRPW/BR/DR/012 SUPPORT DETAIL 3 DRPW/BR/DR/013 SUPPORT DETAIL 4 DRPW/BR/DR/014 SUPPORT DETAIL 5 DRPW/BR/DR/015 REINFORCEMENT SOUTH ABUTMENT DRPW/BR/DR/016 REINFORCEMENT NORTH ABUTMENT DRPW/BR/DR/017 REINFORCEMENT PIER 1 AND PIER 2 DRPW/BR/DR/018 SOUTH ABUTMENT BENDING SCHEDULES DRPW/BR/DR/019 NORTH ABUTMENT BENDING SCHEDULES DRPW/BR/DR/020 DECK REBAR DETAILS		ISSUED FOR TENDER    ISSUED FOR CONSTRUCTION    TO BE ISSUED FOR CONSTRUCTION	2024/04/12      20
DRPW/BR/DR/009 SUPPORT DETAIL 1 DRPW/BR/DR/010 SUPPORT DETAIL 2 DRPW/BR/DR/012 SUPPORT DETAIL 3 DRPW/BR/DR/013 SUPPORT DETAIL 4 DRPW/BR/DR/014 SUPPORT DETAIL 5 DRPW/BR/DR/015 REINFORCEMENT SOUTH ABUTMENT DRPW/BR/DR/016 REINFORCEMENT NORTH ABUTMENT DRPW/BR/DR/017 REINFORCEMENT PIER 1 AND PIER 2 DRPW/BR/DR/018 SOUTH ABUTMENT BENDING SCHEDULES DRPW/BR/DR/019 NORTH ABUTMENT BENDING SCHEDULES DRPW/BR/DR/020 DECK REBAR DETAILS		ISSUED FOR TENDER ISSUED FOR TENDER ISSUED FOR TENDER ISSUED FOR TENDER ISSUED FOR TENDER ISSUED FOR TENDER TO BE ISSUED FOR CONSTRUCTION TO BE ISSUED FOR CONSTRUCTION	2024/04/12 2024/04/12 2024/04/12 2024/04/12 2024/04/12 2024/04/12 2024/04/12 00 BE CONFIRMED TO BE CONFIRMED TO BE CONFIRMED TO BE CONFIRMED TO BE CONFIRMED TO BE CONFIRMED
DRPW/BR/DR/009 SUPPORT DETAIL 1 DRPW/BR/DR/010 SUPPORT DETAIL 2 DRPW/BR/DR/012 SUPPORT DETAIL 3 DRPW/BR/DR/013 SUPPORT DETAIL 4 DRPW/BR/DR/014 SUPPORT DETAIL 5 DRPW/BR/DR/015 REINFORCEMENT SOUTH ABUTMENT DRPW/BR/DR/016 REINFORCEMENT NORTH ABUTMENT DRPW/BR/DR/017 REINFORCEMENT PIER 1 AND PIER 2 DRPW/BR/DR/018 SOUTH ABUTMENT BENDING SCHEDULES DRPW/BR/DR/019 NORTH ABUTMENT BENDING SCHEDULES DRPW/BR/DR/020 DECK REBAR DETAILS		ISSUED FOR TENDER    ISSUED FOR CONSTRUCTION    TO BE ISSUED FOR CONSTRUCTION	2024/04/12 2024/04/12 2024/04/12 2024/04/12 2024/04/12 2024/04/12 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
DRPW/BR/DR/009  SUPPORT DETAIL 1    DRPW/BR/DR/010  SUPPORT DETAIL 2    DRPW/BR/DR/013  SUPPORT DETAIL 4    DRPW/BR/DR/014  SUPPORT DETAIL 5    DRPW/BR/DR/015  REINFORCEMENT SOUTH ABUTMENT    DRPW/BR/DR/016  REINFORCEMENT NORTH ABUTMENT    DRPW/BR/DR/016  REINFORCEMENT NORTH ABUTMENT    DRPW/BR/DR/017  REINFORCEMENT PIER 1 AND PIER 2    DRPW/BR/DR/018  SOUTH ABUTMENT BENDING SCHEDULES    DRPW/BR/DR/019  NORTH ABUTMENT BENDING SCHEDULES    DRPW/BR/DR/020  DECK REBAR DETAILS	Continued from:	ISSUED FOR TENDER    ISSUED FOR CONSTRUCTION    TO BE ISSUED FOR CONSTRUCTION    Designed by:	ds and Public .Works
DRPW/BR/DR/009  SUPPORT DETAIL 1    DRPW/BR/DR/010  SUPPORT DETAIL 2    DRPW/BR/DR/0112  SUPPORT DETAIL 3    DRPW/BR/DR/013  SUPPORT DETAIL 4    DRPW/BR/DR/014  SUPPORT DETAIL 5	Continued from: Continued on:	ISSUED FOR TENDER    ISSUED FOR CONSTRUCTION    TO BE ISSUED FOR CONSTRUCTION    Designed by:    Checked by:	ds and Public .Works
DRPW/BR/DR/009  SUPPORT DETAIL 1    DRPW/BR/DR/010  SUPPORT DETAIL 2    DRPW/BR/DR/013  SUPPORT DETAIL 3    DRPW/BR/DR/014  SUPPORT DETAIL 5	Continued from:      Continued on:      Continued on:      Continued on:      Continued on:      Longitudinal Section No:	ISSUED FOR TENDER    ISSUED FOR CONSTRUCTION    TO BE ISSUED FOR CONSTRUCTION    Core Beissued FOR CONSTRUCTION    Checked by:    Drawn by:    Checked by:	ds and Public .Works



IST OF DRA	WINGS	
	STATUS	DATE
	ISSUED FOR TENDER	2024/04/12
	ISSUED FOR TENDER	2024/04/12
	ISSUED FOR TENDER	2024/04/12
	ISSUED FOR TENDER	2024/04/12
	ISSUED FOR TENDER	
	TO BE ISSUED FOR CONSTRUCTION	TO BE CONFIRMED
	TO BE ISSUED FOR CONSTRUCTION	TO BE CONFIRMED
	TO BE ISSUED FOR CONSTRUCTION	TO BE CONFIRMED
	TO BE ISSUED FOR CONSTRUCTION	TO BE CONFIRMED
	TO BE ISSUED FOR CONSTRUCTION	TO BE CONFIRMED
	TO BE ISSUED FOR CONSTRUCTION	I O BE CONFIRMED







	CENTE	ERLINE													
	(	£		1065_											
	H <sub>L</sub> H	CULL		1060_	Km 0.001268 V 1058.483										 <u>n 0.176250</u> 1058.154
PRO	ر DFILE OF	GRADE LI	NE		ELE	-0	0.19%								
SCAL HORIZ VERT	E: ZONTAL ICAL	1:1000 1:100		1055_											
				1050_				BVC km 0.056 BVCE 1058.38							VCL = 240 K = 69.3
	0 10 2	0 30 40 50 m M 1042.262	50 	1045_											
VERT		RVES		1042				-		0.40%					VCL=240. K=69.38
FINAL	-	H	LEFT			1058.447	1058.410	1058.371	1058.293		1058.157	1057.964	1057.713	1057.404	1057.038
ROAE	) LS	H <sub>C</sub>	ON CL			58.447 1058.447	58.410 1058.41C	58.371 1058.371	58.293 1058.293		<u>88.157 1058.157</u>	57.964 1057.964	57.713 1057.713	57.404 1057.404	57.038 1057.038
SUPE	R ELEVA					105	106	10,	105		100	105	105	105	106
GROU	JND LEVE	ELS AT GF	RADE LINE			1058.218	1058.182	1058.122	1058.024		1057.821	1057.625	1057.431	1057.279	1057.030
GUARDF KERB LE SHOULD GUARDF KERB BL	METER D	ISTANCE		000.0		0.020	0.040	0.060	0.08		00.100	0.120	0.140	0.160	0.180
SHOULD HOR	ER RIGHT	ALIGNME	NT		-						L	STRAIGI .=245.26 196° 16' 2	HT 8m 24"		
DRAII	NAGE	KILOME SIZE AN	TER DISTAN	CE	km 0.00	0									
		·			•					ISSUED F	FOR TEND	ER		Conti	inued from
Symbol	Date		Description			Checl	ked	Signed		Supervising	engineer		Date	Cross	3 Section 1
		AI	MENDMENTS							Superv	ising Aut	hority		Desig	ın Plan No

0.56				EVCE 1053.76 BVC km 0.298 EVCE 1053.76 BVCE 1053.72				VCL = 165.9 K = 39.95	99	EL	Km 0.46 EV 1050.50	EVC km 0.464			Km 0.49 ELEV 108 0.50%	50.63		BVC km 0.578 BVCE 1051.67					VCL = K = 3	218.11 85.91					EVC km 0.796	BVC km 0.811 BVCE 1055.98				
. <u>6 m</u> 38			-3.66%					VCL=166.0 K=39.95	m							0.50%		-					VCL=2 K=8	218.1 m 5.91									3.049	6
1056.614 1056.614 1056.614	1056.132 1056.132 1056.132 1055.593 1055.593 1055.593	1054.996 1054.996 1054.996	1054.341 1054.341 1054.341	1053.631 1053.631 1053.631	1052.962 1052.962 1052.962	1052.393 1052.393 1052.393	1051.924 1051.924 1051.924	1051.555 1051.555 1051.555	1051.286 1051.286 1051.286	1051.118 1051.118 1051.118	1051.049 1051.049 1051.049	1051.081 1051.081 1051.081	1051.180 1051.180 1051.180	1051.280 1051.280 1051.280	1051.380 1051.380 1051.380	1051.480 1051.480 1051.480	1051.580 1051.580 1051.580	1051.680 1051.680 1051.680	1051.807 1051.807 1051.807	1051.981 1051.981 1051.981	1052.202 1052.202 1052.202	1052.469 1052.469 1052.469	1052.783 1052.783 1052.783	1053.144 1053.144 1053.144	1053.551 1053.551 1053.551	1054.004 1054.004 1054.004	1054.504 1054.504 1054.504	1055.051 1055.051 1055.051	1055.643 1055.643 1055.643	1056.249 1056.249 1056.249	1056.841 1056.841 1056.841	1057.417 1057.417 1057.417	1057.976 1057.976 1057.976	1058.518 1058.518 1058.518
0.200 1056.236	0.220 1055.504 0.240 1054.528	0.260 1053.589	0.280 1052.734	0.300 1051.995	0.320 1051.413	0.340 1050.744	0.360 1049.796	0.380 1048.703	0.400 1047.603	0.420 1046.472	0.440 1045.449	0.460 1043.348	0.480 1042.337	0.500 1042.801	0.520 1044.668	0.540 1045.297	0.560 1045.806	0.580 1046.429	0.600 1047.449	0.620 1048.445	0.640 1049.301	0.660 1050.206	0.680 1051.019	0.700 1051.818	0.720 1052.706	0.740 1053.524	0.760 1054.189	0.780 1054.790	0.800 1055.390	0.820 1055.857	0.840 1056.205	0.860 1056.469	0.880 1056.532	0.900 1056.601
	km 0.24	R=1000.00m L= <u>11.10m</u> Δ=0°38'10" 45     kr	n 0.256																															
m: No: Action No:	De CH Dr CH	esigned by: necked by: rawn by: necked by: ate of appro	val: —		ent: Northe		epartment	UI KOODS C	inu PUDIIC	.worкs Р Tel No:(05 Fax:(05	2.0 Box 3132 Kimberley 8300 3) 839 2100 (3) 839 2291	Signat	ure	NSULTING	Z Tel Na Fax Date	25 Highveld Ro Kempton P 11 0:(011) 970 7 1:(086) 525 3	oad ark 619 Trar 134 Eng 681 Hea	nsportation gineering: C ad: Transpo	chief Engine ort	eer	Drawing ti	<sup>itle:</sup> TH PR SIT	e upgi ovincia e plan	RADING AL BORI N AND	RO/ OF MR DER NE/ LIST OF	AD M 974 ANI AR HEU DRAWII	R974 d dr34 ningvle	- AN[ 97 sec	D DR	3497 F BETWI	een la:	XEY AN	D	Stake Scale A

EVC km 0.796	04%										
	BVC km 0.811 ABVCE 1055.98										
1055.643 1055.643 1055.643	1056.249 1056.249 1056.249	1056.841 1056.841 1056.841	1057.417 1057.417 1057.417	3.04	1058.518 1058.518 1058.518 %	1059.044 1059.044 1059.044	1059.554 1059.554 1059.554	1060.046 1060.046 1060.046	1060.522 1060.522 1060.522	1060.982 1060.982 1060.982	1061.425 1061.425 1061.425
0.800 1055.390	0.820 1055.857	0.840 1056.205	0.860 1056.469	0.880 1056.532	0.900 1056.601	0.920 1056.775	0.940 1057.085	0.960 1057.592	0.980 1058.242	1.000 1058.900	1.020
TION	)R3497 of betw	7 /EEN LA	XEY AN	D	St	aked km dis ale AS SHOWN	stance	Sher Plar DRP	et: 1 of: 1 n No: W-BR-DR-	-003	



n: Designed by: Client: Northern Cape Department of Roads and Public .Works Designed by:	
P.0 Box 3132 Kimberley	
No: Drawn by: 8300 Tel No: (053) 839 2100	baith CONSU
ction No: Fax: (053) 839 2291	
o: Date of approval: - Signature	

STRUCTUF	RE OF THE BRIDGE CONSIST	'S OF A SINGLE SPAN, SIMPLY UCTURE IS FOUNDED ON PRECAST
	ES. ABUTMENTS ARE OF TH	E WALL TYPE WITH
IGS WALLS	S.	
TATE DESI	GN METHOD IS USED.	
IS DESIG	NED IN ACCORDANCE WITH	THE "CODE OF PRACTICE
SIGN OF H	IIGHWAY BRIDGES AND CUL	VERTS IN SOUTH AFRICA"
1, 2 (1985)	AS AMMENDED (1988) AND	PART 3 (1989)
VVAS ANA " חואס "אס	ILYSED USING A SPACE FRA	ME GRILLAGE ANALYSIS
	FRORON )	
DING		
LOADING	IS IN ACCORDANCE WITH T	MH7 PART 2 AS AMENDED 1988.
VING DESI	GN VALUES HAVE BEEN US	ED:
	NA, NB-36 AND NC 30-5-40	
	REINFORCED CONCRETE	25.0 kN/m <sup>3</sup>
	STRESSED CONCRETE	25.5 kN/m <sup>3</sup>
	ROAD SURFACING	23.0 kN/m <sup>3</sup>

SURE:	RANKING THEORY	
	DENSITY OF SOIL	20.0 kN/m <sup>3</sup>
	ANGLE OF INTERNAL FRICTION	35°
T HAS E	EEN DESIGNED IN ACCORDANCE W	/ITH TMH7 PART 1 AND
ALUSTR	ADE.	
AMETE	RS	

ELASTICITY (YOUNG'S MODULUS)	
30MPa)	28 Gpa
l0MPa)	31 Gpa
STEEL	200 Gpa
NG STEEL	195 Gpa
D CONCRETE	•
OR	2.75
COEFFICIENT	290E-6
OF THERMAL EXPANSION	12E-6/*C
NG	
EFFICIENT (u)	0.25
RICTION COEFFICIENT (20% MORE)	0.30
TOR (k)	0.0027/m
• •	10mm

LAMINATED RUBBER BEARINGS: FRICTION COEFFICIENT 0.30

LASSES (CHARACTERISTIC STRENGTH (MPa	) / STONE SIAZE (mm)) 15/19
RETE	15/38
PPROACH SLABS	30/19
PILES	30/19
PETS	40/19
HANNEL	40/13
IENT TO BE HOT ROLLED AND TO COMPLY W	TH THE STANDARD
ONS FOR STEEL BARS FOR CONCRETE REIN	ORCEMENT SANS 920
ARACTERISTIC STRENGTH:	
BARS (R)	250 MPa
TRESS STEEL BARS (Y)	450 Mpa
SH IN ACCORDANCE WITH SANS 1024	
NG STEEL TO BE LOW RELAXATION SUPER G	RADE STEEL WITH A
ARACTERISTIC STRENGTH (CS) OF 1770 MPa	AND TO COMPLY
3. THE APPLIED STRESSES ARE:	
ESSES (MAX)	77% OF CS
TRESSES	70% OF CS
SES	60% OF CS
ATION 1.2% OF JACKED FORCE	

60°

SHALL COMPLY WITH BS5400 PART 9 LAMINATED RUBBER WITH IRDH HARDNESS

### 5. SUBSTRUCTURE

- 5.1. ALL VISIBLE SHARP EDGES TO BE CHAMFERED 2 5.2. CONCRETE FINISH TO FORMED SURFACES: ALL EXPOSED FACES
- ALL OTHER FACES 5.3. CONCRETE FINISH TO UNFORMED SURFACES:
- ALL EXPOSED SURFACES ALL OTHER SURFACES
- 5.4. MINIMUM CONCRETE COVER TO REINFORCEMEN FOOTINGS AND ABUTMENTS PILES 5.5. TYPE OF FOUNDING MATERIAL:
- MEDIUM HARD ROCK MUDROCK FOR PILES MAXIMUM ALLOWABLE BEARING PRESSURE: MAXIMUM ACTUAL BEARING PRESSURE: ALL PILES TO BE SOCKETED BY A MINIMUM OF 1 5.6. FOUNDING METHOD
- 900mm AUGER PILES WITH 1.2m PILE CAPS. 6. SUPERSTRUCTURE
- 6.1. METHOD OF ANALYSIS: GRILLAGE
- 6.2. ALL SHARP EDGES TO THE BALUSTADES TO BE ROUNDED 20 x 20mm AND ALL OTHER SHARP EDGES TO BE CHAMFERED 25 x 25mm 6.3. CONCRETE FINISH TO FORMED SURFACES: ALL EXPOSED FACES OTHER FACES
- BALUSTRADES 6.4. CONCRETE FINISH TO UNFORMED SURFACES: TOP OF BALUSTRADES TOP OF DECK SLAB OTHER SURFACES
- 6.5. MINIMUM CONCRETE COVER TO REINFORCEMENT: DECK BALUSTRADES
- 6.6. EXPANSION JOINTS: ASPHALTIC PLUG "THORMA" OR SIMILAR
- 6.7. MAXIMUM DEFLECTIONS AT MIDSPAN: SHORT TERM - LIVE LOAD

25 Highveld Road Kempton Park 1619 Tel No:(011) 970 7134 Fax:(086) 525 3681

Transportation Engineering: Chief Engineer

Head: Transport

ROAD MR974 AND DR3497

Drawing title: THE UPGRADING OF MR974 AND DR3497 SECTION OF BETWEEN LAXEY AND HEUNINGVLEI GENERAL ARRANGEMENT

25 x 25mm	
	CLASS F2 CLASS F1
	CLASS U2 CLASS U1
IN I .	50mm 75mm
	5000 kPa 1000 kPa
	MA.

CLASS F2 CLASS F1 CLASS F3	
CLASS U3 CLASS U2 CLASS U1	
40mm 40mm	

20.0mm

Staked km distance

Sheet: 1 of: 1

Plan No: DRPW-BR-DR-004

AS SHOWN

Scale

Symbol	Date	Description	Checked	Signed	Supervising engineer Date	Cross Section No: Longitudinal Section
					Supervising engineer	Continued on:
					ISSUED FOR TENDER	Continued from:
						* XXX ` +XXXX Y
						15 100 H
						11838
					1.56	ST AND
						15 <sup>00</sup> *

Supervising Authority

AMENDMENTS



BRIDGE STRUCTURAL ELEMENTS ARRANGEMENT SCALE 1:100







FOUNDATION LAYOUT SCALE 1:100







SECTION I-I SCALE 1:100











25 Highveld Road Kempton Park Tel No:(011) 970 7134 Fax:(086) 525 3681

Date

Transportation 1619 Engineering: Chief Engineer

Head: Transport

ROAD MR974 AND

Drawing title: THE UPGRADING OF MR974 AND DR34 BETWEEN LAXEY AND PROVINCIAL BOR FOOTING AND PILE LAYOUT FOR PIERS

Please be advised that the pile information represented on the drawings is subject to pending geotechnical study. Accurate soil profiles will be reflected on the drawings upon the conclusion of this study. Until the geotechnical study is finalized, the current pile information remains provisional and subject to change.

DR3497	Staked km distance	Sheet: 1 of: 1
497 SECTION OF RDER NEAR HEUNINGVLEI S AND ABUTMENTS	Scale AS SHOWN	Plan No: DRPW-BR-DR-005



om:	Designed by:	Clien
:	Checked by:	-
n No:	Drawn by:	
ection No:	Checked by:	
No:	Date of approval:—	

TYPICAL SECTION THROUGH SOUTH ABUTMENT SCALE 1:100

# TYPICAL SECTION THROUGH NORTH ABUTMENT SCALE 1:100

					roae	MRS	974	AN[	) DR
ansportation ngineering: Chief Engineer	Drawing title:	THE Betw	UPGF VEEN	RADIN LAXE`	G OF Y AND	MR97 PRO	4 AN VINCI	ND D Al E	R3497 Borde
ead: Transport		ABUT	[MEN]	rs la	YOUT,	SECT	IONS	ANE	) DET,
	ansportation gineering: Chief Engineer ead: Transport	onsportation gineering: Chief Engineer ead: Transport	ansportation gineering: Chief Engineer ead: Transport Drawing title: THE UPGRADING OF BETWEEN LAXEY AND ABUTMENTS LAYOUT,	ansportation gineering: Chief Engineer ead: Transport Drawing title: THE UPGRADING OF MR97 BETWEEN LAXEY AND PRO ABUTMENTS LAYOUT, SECT	ansportation gineering: Chief Engineer ead: Transport Drawing title: THE UPGRADING OF MR974 AN BETWEEN LAXEY AND PROVINCI ABUTMENTS LAYOUT, SECTIONS	ansportation gineering: Chief Engineer ad: Transport Drawing title: THE UPGRADING OF MR974 AND D BETWEEN LAXEY AND PROVINCIAL E ABUTMENTS LAYOUT, SECTIONS AND			



DECK 670,500 <u>↓ 1500</u> 6000

23497

97 SECTION OF DER NEAR HEUNINGVLEI TAILS.

Staked km distance

Sheet: 1 of: 1

Scale AS SHOWN





PLAN VIEW OF PIER 2 SCALE 1:50

					AS BUILT	Continued from:	Designed by:	Client:
					-	Continued on:	Checked by:	-
					Supervising engineer Date	Cross Section No:	Drawn by:	
Symbol	Date	Description	Checked	Signed		Longitudinal Section No:	Checked by:	
		AMENDMENTS			Supervising Authority	Design Plan No:	Date of approval:—	









₽<sub>36</sub>

P35

1404

<b>TYPICAL SECTION THROUGH DECK &amp; ELEVATION VI</b>
SCALE 1:100









## **TYPICAL SECTION THROUGH PIER 1** SCALE 1:100



/IEW OF PIER 2

ROAD MR974 AND D 25 Highveld Road Kempton Park Transportation Engineering: Chief Engineer Drawing title: THE UPGRADING OF MR974 AND DR34 1619 Tel No:(011) 970 7134 Fax:(086) 525 3681 BETWEEN LAXEY AND PROVINCIAL BORD PIERS LAYOUT, SECTIONS AND DETAILS. Head: Transport Date

Please be advised that the pile information represented on the drawings is subject to pending geotechnical study. Accurate soil profiles will be reflected on the drawings upon the conclusion of this study. Until the geotechnical study is finalized, the current pile information remains provisional and subject to change.

DR3497	Staked km distance	Sheet: 1 of: 1
197 SECTION OF DER NEAR HEUNINGVLEI S.	Scale AS SHOWN	Plan No: DRPW-BR-DR-007

APPROACH SLAB	<u>₹ 670 ₹ 500</u> ₹
	900
2313	812 1046



					-		Continued from:
							Continued on:
					Supervising engineer	Date	Cross Section No
Symbol	Date	Description	Checked	Signed			Longitudinal Secti
		AMENDMENTS			Supervising Authority		Design Plan No:

Date of approval:-

Signature

	25 Highveld Road		ROAD MR974 AND DR3497	Staked km distance	Sheet: 1 of: 1
ISULTING	Kempton Park 1619 Tel No:(011) 970 7134 Fax:(086) 525 3681	Transportation Engineering: Chief Engineer	<sup>Drawing title:</sup> THE UPGRADING OF MR974 AND DR3497 SECTION OF BETWEEN LAXEY AND PROVINCIAL BORDER NEAR HEUNINGVLEI	Scale AS SHOWN	Plan No: DRPW-BR-DR-008
	Date	Head: Transport	DECK LAYOUT, SECTION AND DETAILS.		



AMENDMENTS

Supervising Authority

Continued from:	Designed by:	Client: Northern Cape Department of Roads and Pul	blic .Works	Designed by:				ROAD MR974 AND DR7
Continued on:	Checked by:	A Se	P.O Box 3132 Kimberley		25 Highveld Road Kempton Park			
Cross Section No:	Drawn by:		8300 Tel No: (053) 839 2100	DC BAITHUSI CONSULTING	1619 Tel No:(011) 970 7134	Transportation Engineering: Chief Engineer	Drawing title:	THE UPGRADING OF MR974 AND DR3497 SECTION OF
Longitudinal Section No:	Checked by:		Fax:(053) 839 2291		Fax:(086) 525 3681			PROVINCIAL BORDER NEAR HEUNINGVLEI SLIPPORT DETAIL 1
Design Plan No:	Date of approval:—			Signature	Date	Head: Transport		JULI DETAIL I



Scale AS SHOWN





Staked km distance

Sheet: 1 of: 1

Plan No: DRPW-BR-DR-010

AS SHOWN

Scale





# TYPICAL SECTION A-A SCALE 1:15



# SIDE VIEW OF TOP OF SUPPORT WALL NTS

NOTE : TOPS OF SUPPORT WALL, INCLUDING FOR SHADED AND NON-SHADED AREAS, ARE PARALLEL TO THE ADJACENT ROAD GRADE AND ROTATE ABOUT POINT Z

Client: Northern Cape Department of Roads and Public .Works Designed by: P.O Box 3132 Kimberley 8300 CONSULTING Tel No:(053) 839 2100 Fax:(053) 839 2291 Date of approval:-Signature



### NOTES

1.	GENERAL
1.1	INSPECTION EYES SHA
1.2	THE RECESSES FOR EX THE DETAILS OF THE DIMENSIONS OF THE R
1.3	*T = 60mm MIN (20mm OR 100mm MAX (20mm
2.	MATERIAL AND FINISH
	THE MATERIAL AND WO STANDARD SPECIFICAT
2.2	SERVICE DUCTS : 110 SANS 791:2004
2.1	CONCRETE CLASS (MPa
2.4.	SURFACE FINISHES : - CLASS F3 - - CLASS U3 -
2.5	ALL EXPOSED VERTICA EXCEPT WHERE OTHERW
2.6	THE DRAW WIRE PROVI THAN 3m BEYOND THE NYLON ROPE OR PVC C
2.7	CURING PARAPETS ARE TO BE COLTO CLAUSE 6409,
3.	TOLERANCES
3.1	TOLERANCES APPLICAB
3.1.1	DIMENSION FROM SETT 10mm OUTWARDS, 0
3.1.2	STEPS IN CONCRETE F

3.1.3 DEVIATION FROM LINE AND LEVEL MEASURED OVER 5m : 5mm

25 Highveld Road Kempton Park 1619 Tel No:(011) 970 7134 Fax:(086) 525 3681				ROAD	MR974	AND	DR34
	Transportation Engineering: Chief Engineer	Drawing title:	THE UPGRADING OF PROVINCIAL BORDE SUPPORT DETAIL 3	F MR974 R NEAR	AND DR349 HEUNINGVLEI	7 SECTI	ON OF B
Date	Head: Transport						

ALL BE PROVIDED AT DISTANCES NOT EXCEEDING 50m. EXPANSION JOINT CONSTRUCTION AND THE EXPANSION JOINT COVER PLATES ARE SUBJECT TO E EXPANSION JOINT SYSTEM FINALLY APPROVED. THE CONTRACTOR SHALL CONFIRM THE RECESSES WITH THE ENGINEER PRIOR TO THE CASTING OF THE BARRIER. mm LEVELLING COURSE + 40mm ASPHALT) n LEVELLING COURSE + 2x40mm ASPHALT) VORK SHALL COMPLY WITH THE RELEVANT CLAUSES OF SERIES 6000 AND 8000 OF THE ATIONS, THE PROJECT SPECIFICATIONS AND SHALL INCLUDE THE FOLLOWING: 10 Ø uPVC NORMAL DUTY (SDR 51) PIPES TO

Pa/mm) : W30/19 UNLESS DURABILITY CONCRETE IS NOT REQUIRED (EXPOSURE CLASS XC1a) : (EXPOSED FACES) - STEEL SHUTTER FINISH

- STEEL TROWEL FINISH CAL SHARP CORNERS SHALL BE CHAMFERED 20 x 20mm AND ROUNDED 20mm HORIZONTALLY RWISE INDICATED ON DETAIL DRAWING. /IDED IN THE SERVICE DUCTS SHALL BE IN ONE CONTINUOUS LENGTH, EXTENDING NOT LESS E END FACE OF THE ABUTMENT END BLOCKS. THE DRAW WIRE SHALL BE NON CORRODABLE COATED STEEL WIRE OF NOT LESS THAN 5000N TENSILE STRENGTH.

E CURED BY EITHER METHOD (d), (e) OR (f) OF , AS AGREED WITH ENGINEER.

ABLE TO ERECTION OF UNITS: TTING OUT LINE TO FRONT FACES : Omm INWARDS

FRONT FACES AT ABUTTING UNITS : 3mm

497

Staked km distance

Scale

Sheet: 1

BETWEEN LAXEY AND

AS SHOWN

of: 1



![](_page_11_Figure_3.jpeg)

![](_page_11_Figure_5.jpeg)

# SIDE VIEW OF TOP OF SUPPORT WALL

NTS

NOTE : TOPS OF SUPPORT WALL, INCLUDING FOR SHADED AND NON-SHADED AREAS, ARE PARALLEL TO THE ADJACENT ROAD GRADE AND ROTATE ABOUT POINT Z

![](_page_11_Figure_10.jpeg)

25 Highveld Road			ROAD MR974 AND DR3	
	Kempton Park 1619 Tel No:(011) 970 7134 Fax:(086) 525 3681	Transportation Engineering: Chief Engineer	Drawing title:	THE UPGRADING OF MR974 AND DR3497 SECTION OF PROVINCIAL BORDER NEAR HEUNINGVLEI SUPPORT DETAIL 4
	Date	Head: Transport		

NOTE:						
1.	GENERAL					
1.1 1.2	THE REQUIRED LENGTH OF THE HANDRAIL, THE LAYOUT AND THE REQUIRED UNIT QUANTITIES AND LENGTHS SHALL BE DETERMINED ON SITE. HANDRAIL DESIGNED FOR LOADING ON PEDESTRIAN BARRIERS ACCORDING TO TMH 7. CLASS II (i.e. 4.5 kN/m VERTICALLY & 4.5L kN TRANSVERSE).					
0.0	ALSO TO BE USED FOR 1,5 k	N/m LOAD	CASE.			
2.0						
	6000 AND 7000 OF THE STAN AND SHALL INCLUDE THE FC	DARD SPE	CIFICATIONS,	THE PRC	JECT SPECIFIC	ATIONS
2.1	CHARACTERISTIC STRENGT	H OF MATE	RIALS:			
2.1.1	REINFORCEMENT:					
	DESCRIPTION	CHARA STREN	CTERISTIC GTH (MPa)	YOUN	G'S MODULUS (GPa)	
	MILD STEEL BARS HIGH TENSILE STEEL	2	50 50		200 200	
2.1.2	FLAME RETARDANT POLYCR	ETE WITH	UV STABILISEI	₹:		
	DESCRIPTION CHARAC				YOUNG'S MOD	ULUS
	PRECAST UNIT	250	70	LINGTH	200	
2.2	SURFACE FINISHES: - CLA	SS F3 -	STEEL SHUTT	ER FINIS	н	
	CLA	SS U3 -	STEEL TROW	EL FINISH	1	
2.3 2.4	MINIMUM POLYCRETE COVE MINIMUM LAP LENGTH : 1	R : 10mm 50mm				
3.	MANUFACTURE					
3.1	THE PRECAST HANDRAIL UN				AILS, INCLUDIN	G
3.2	THE SHUTTER RELEASE AGE			E FINISH		MUST
3.3	ALL REINFORCEMENT TO BE SPECIFICATIONS.	GALVANIZ	ED IN ACCOR	DANCE V	/ITH THE	
4.	TOLERANCES					
4.1	MANUFACTURING TOLERANCES: THE MOULD SHALL BE MANUFACTURED TO TOLERANCES THAT WILL ENSURE THAT UNITS COMPLY WITH THE FOLLOWING TOLERANCES AFTER CASTING:					
4.1.1 C	DIMENSIONS:	S : +5mm	Omm			
4.1.2	LENGTHS SURFACE IRREGULARITIES	: +0mm AND WARP	- 5mm MEASURED B	Y MEANS	OF A STRAIGHT	T EDGE
4.1.3	VERTICAL : 2mm HORIZONTAL : 3mm OVER THE LENGTH OF UNIT SQUARENESS OF ENDS: NO DIMENSION SHALL DEVIATE BY MORE THAN 2mm FROM THE THEORETICAL					
4.0	SQUARE PLANE CORRESPO	NDING TO	THE FURTHES	T PROJE	CTING POLYCRE	TE.
4.2. 4.2.1						
4.2.1	5mm OUTWARD, 0mm IN STEPS IN POLYCRETE FROM	WARD. T FACES A			mm	
4.2.2 4.2.3	DEVIATION FROM LINE AND POSTS SHALL ALWAYS BE FI STEPS IN FOOTBRIDGES. TH ALL STRUCTURES ON VERTI	LEVEL MEA XED VERT E ENGINEE CAL CURV	SURED OVER ICAL IN THE C ER TO ADVISE ES.	ANY 5 UI ASE OF E ON VERT	NITS: 5mm DECKS ON GRAD TCAL ALIGNMEN	E AND IT FOR
5.	ERECTION OF HANDRAIL UN	ITS				
5.1	GENERAL:					
5.1.1	NON-SHRINK CEMENTITIOUS GROUT AND EPOXY GROUT AS APPROVED BY THE ENGINEER.					
5.1.2	NO UNIT SHALL BE TRANSPORTED OR ERECTED BEFORE IT HAS ATTAINED A CHARACTERISTIC STRENGTH OF 75MPa.					
5.1.3	IN ORDER TO ACHIEVE GOO FOLLOWING PROCEDURE SH a) ONLY UNITS OF MATCHI USED IN A PARTICULAR	D ALIGNME HALL BE FO NG COLOU HANDRAIL	ENT WITH A UN DLLOWED FOR IR AND FINISH	IFORM A EACH IN FROM O	PPEARANCE TH DIVIDUAL BRIDG NE MOULD SHAL	E )E: _L BE
5.1.4	b) LINING OP OF THE HAND LENGTH OF THE BRIDGE THE PREPARATION OF THE I GROUTING IN OF THE UNITS IN THE PROJECT SPECIFICA THE GROUT MANUFACTURE	PRIOR TO POLYCRET AND THE ( TIONS AND R.	S SHALL BE CO FINAL GROUT E SURFACES F GROUTING OP SHALL INCLU	DMPLETE FING. PRIOR TO ERATION DE THE F	D OVER THE FO THE PLACING A SHALL BE AS SI RECOMMENDATI	AND PECIFIE ONS OF
5.2	ERECTION PROCEDURE:					
5.2.1 5.2.2	ERECT TEMPORARY PROTECTION SCREEN. REMOVE ANY EXISTING POSTS, BRACKETS AND PATCH BOLT HOLES. WHERE					
5.2.3	APPLICABLE. DRILL 80 DIA. AND 16 DIA. HC		THE EXISTING	KERB AS	PER DETAIL.	
5.2.4 5.2.5	PREPARE CONTACT SURFACES AS IN 5.1.4 ABOVE. PLACE AND GROUT VERTICAL POSTS OF PRECAST UNITS AND ENSURE ALIGNMENT IN 4.2					

5.2.6 GROUT AND FIX TO TOP RAIL.5.2.7 REMOVE TEMPORARY PROTECTION SCREEN AFTER COMPLETION OF WORK.

## RIES

# UST BE

## HAT

CIFIED IS OF

ENT AS

# 3497

F BETWEEN LAXEY AND

### Staked km distance

Sheet: 1

of: 1

AS SHOWN

Scale

![](_page_12_Figure_0.jpeg)

AMENDMENTS	

Longitudinal S Design Plan

\_\_\_\_\_

Supervising Authority

om:	Designed by:	Client: Northern Cape Department of Roads and Public .Works	Designed by:
n:	Checked by:	P.O Box 3132 Kimberley	
n No:	Drawn by:	8300 Tel No:(053) 839 2100	DC
Section No:	Checked by:	Fax:(053) 839 2291	
No:	Date of approval: -		Signature

Head: Transport

SUPPORT DETAIL 5

\_\_\_\_\_ Date

07		
	1	