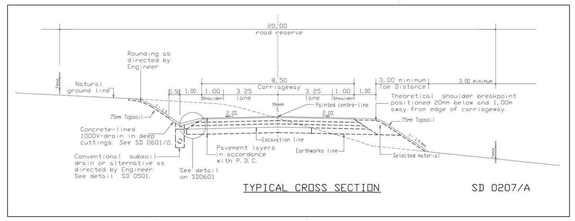
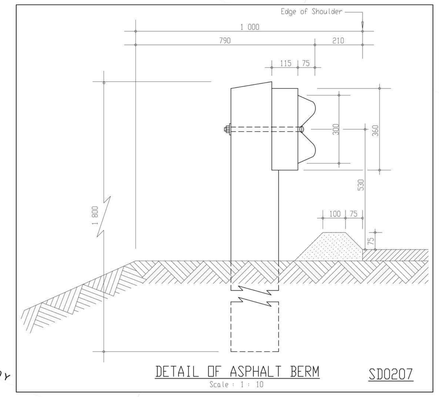


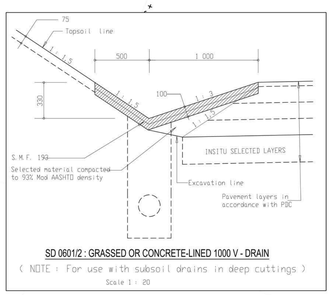
TYPICAL CROSS SECTION SD 0207/A



DETAIL OF ASPHALT BERM SD0207

Scale : 1 : 10

LEGEND	DESCRIPTIONS	KZN DOT'S STANDARD DETAIL
PC/01	CONCRETE PIPE CULVERT	SD 0401/B & SD 0406
	CONCRETE WALKWAY	SD 0203/A
	SIDE INLETS - KERB AND CHANNEL DROP INLETS - V-DRAINS	SD 0703/A SD 0602/B
	FIELD INLET	
	CONCRETE LINED 1000 V - DRAIN	SD 0601/2
	KERB AND CHANNEL CUT / FILL	SD 0601/5 (CUT) / SD 0701/A (FILL)
	CUT SIDE DRAIN OUTLET	SD 0603/3
RR	NEW ROAD RESERVE	
	SIGN POST	
	CADASTRAL BOUNDARY	
	EXISTING GRAVEL ROAD	
	GUARDRAILS	SD 1101/B



SD 0601/2 : GRASSED OR CONCRETE-LINED 1000 V - DRAIN

(NOTE : For use with subsoil drains in deep cuttings)

Scale 1 : 20

CURVE 9(RIGHT)	
R = 120.00	
Tc = 315.48	
△c = 105.28.32	
Lc = 220.91	
BCC9	3676.00
PI9	3785.93
ECC9	3897.00

DESIGN SPEED 60km/hr

CURVE 11(RIGHT)	
R = 220.00	
Tc = 64.58	
△c = 16.42.06	
Lc = 64.13	
BCC11	4144.00
PI11	4175.49
ECC11	4208.00

CURVE 13(RIGHT)	
R = 210.00	
Tc = 86.26	
△c = 23.12.48	
Lc = 85.08	
BCC13	4384.00
PI13	4426.48
ECC13	4470.00

CROSS DRAINAGE SKEW ANGLES

OUTLET

INCREASING 270° CHAINAGE

INLET

PC/09

CURVE 15(RIGHT)	
R = 110.00	
Tc = 199.02	
△c = 84.15.55	
Lc = 161.52	
BCC15	4576.00
PI15	4656.47
ECC15	4738.00

LHS GUARDRAIL km 4.506 - km 4.677

CURVE 14(LEFT)	
R = 400.00	
Tc = 82.74	
△c = 11.48.38	
Lc = 82.46	
BCC14	4484.00
PI14	4525.07
ECC14	4567.00

TO LOCATION NO.5

CURVE 12(LEFT)	
R = 580.00	
Tc = 119.76	
△c = 11.47.16	
Lc = 119.32	
BCC12	4209.00
PI12	4267.84
ECC12	4328.00

DESIGN SPEED 60km/hr

CROSS DRAINAGE SKEW ANGLES

INLET

INCREASING CHAINAGE 90° OUTLET

PC/07

600mmØ PIPE CULVERT @ km 3+990 - (PC/07)

CROSS DRAINAGE SKEW ANGLES

INLET

INCREASING CHAINAGE 90° OUTLET

PC/06

NEW PIPE CULVERT 600mmØ PIPE CULVERT @ km 3+709 - (PC/06)

RHS GUARDRAIL km 3.835 - km 3.932

RHS GUARDRAIL km 3.700 - km 3.780

RHS GUARDRAIL km 4.116 - km 4.185

LHS GUARDRAIL km 3.530 - km 3.626

GW03 (136.382)

GW04 (137.717)

HIGH POINT: 136.513 Ch 3622.872

HIGH POINT: 132.043 Ch 3392.769

LOW POINT: 131.664 Ch 3443.777

LOW POINT: 133.512 Ch 4468.497

CURVE 10(LEFT)	
R = 110.00	
Tc = 210.24	
△c = 87.24.00	
Lc = 167.79	
BCC10	3961.00
PI10	4044.43
ECC10	4129.00

CURVE 8(LEFT)	
R = 350.00	
Tc = 135.28	
△c = 21.52.32	
Lc = 133.64	
BCC8	3505.00
PI8	3571.06
ECC8	3638.00

CURVE 7(RIGHT)	
R = 500.00	
Tc = 169.36	
△c = 19.13.25	
Lc = 167.76	
BCC7	3320.00
PI7	3402.99
ECC7	3487.00

EXISTING ROAD

UPGRADE/ EXTEND EXISTING CULVERT

900mmØ PIPE CULVERT @ km 4+525 - (PC/09)

RHS GUARDRAIL km 4.498 - km 4.684

CENTRELINE

EXISTING ROAD

CENTRELINE

ECC 08 3638.00

BCC 08 3505.00

ECC 07 3487.00

BCC 07 3320.00

BCC 09 3676.00

ECC 09 3897.00

BCC 10 3961.00

BCC 11 4144.00

ECC 10 4129.00

ECC 11 4208.00

BCC 12 4209.00

ECC 12 4328.00

BCC 13 4384.00

ECC 13 4470.00

BCC 14 4484.00

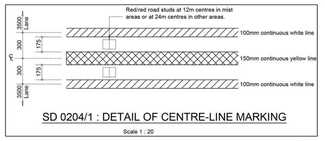
ECC 14 4567.00

BCC 15 4576.00

ECC 15 4738.00

BCC 16 4744.00

CURVE
R = 210
Tc = 19
△c = 48.5
Lc = 179
BCC16
PI16
ECC16



SD 0204/1 : DETAIL OF CENTRE-LINE MARKING

Scale 1 : 20

NOTES :

1. All levels, dimensions and setting out details to be verified on site prior to construction.
2. All existing drainage culverts are to be inspected , and any found in unservicable condition are to be replaced unless shown otherwise.
3. Culvert inverts are to be decided by the Engineer on site unless shown otherwise. Min. cover = 600mm, min: slope=2%.
4. Pipe culverts are to be laid in accordance with SD 0401 with headwalls as per SD 0402, SD 0403 or SD0406.
   Min dia = 450mm for minor access roads and access bellmouths , and min dia = 600mm for major road cross drainage.
5. Box culverts < 1.8m high are to constructed in accordance with SD 0404 or SD 0407. Box culverts >1,8m high are to be appropriately designed by a Structural Engineer in accordance with KZNDOT standards.
6. For erosion control cement grouted stone pitching or gabion mattresses are recommended at culvert inlets and outlets.
7. Earth berms are to be constructed at culvert inlets to direct stormwater into culverts where necessary.
8. Rock bolsters are to be placed across the invert of drains susceptible to erosion for every 2m vertical drop.
9. Grassed/Concrete lined V-drains as per SD 0601/3 & 4 are recommended for shallow cuttings of depth less than 5 mm measured at a point 6m from edge of carriageway. Concrete lined 1000 V - drains as per SD 0601/2 are recommened for deep cuttings of depth greater than 5 m measured at a point 6m from edge of carriageway.
10. Subsoil drains as per SD 0501 are to be installed with 1000 V-drains or where high water tables are encountered.
11. Kerb and channel drains as per SD 0701 are to be provided where fill embankments exceed 3m in height.
12. Where surface runoff is towards the road, catchwater banks are to be provided to divert stormwater to major cross drainage structures.
13. The positions of accesses are to be determined in consultation with the local community. Daylighting requirements are to be decided by the Engineer on site. Concrete wedges as per SD 0303 may be used in place of surfaced bellmouths for accesses serving single residential properties.
14. Guardrails are to be installed in accordance with SD 1101 and SD 1102 where fill embankments exceed 3m in height or where hazardous obstructions cannot be removed.
15. Existing road signs, services and fencing affected by construction are to be removed/relocated where necessary.
16. Underground service crossings and markers are to be in accordance with SD1001 - 3.
17. All new road signs and road marking requirements are to conform to the South African Road Traffic Signs Manual (SARTSM).
18. All work isto be carried out in accordance with "COLTO Specifications for Road and Bridge Works for State Road Authorities."
19. All survey and setting out data provided is based on (WGS 84)

NOTATION

BCC : Beginning of circular curve
ECC : End of circular curve
PI : Point of intersection
R : Radius of circular curve
△c : Deflection angle of circular curve
Lc : Length of circular curve
Tc : Length of curve tangent
PC : Pipe Culvert
RR : Road Reserve

BENCHMARKS
CO-ORDINATED LIST
SYSTEM: WG 31

POINT	CO-ORDINATES		
	Y	X	Z
T360	52964,020	3395870,590	184,900
GW01	52557,350	3392796,087	181,921
GW03	51953,118	3394477,226	136,992
GW04	51940,432	3394430,937	137,711
GW05	51026,122	3395386,650	71,023
GW06	51084,382	3395417,534	69,839

SIGN POSTING SCHEDULE

LEFT HAND SIDE				RIGHT HAND SIDE			
KM	CODE	SIZE	SIGN	KM	CODE	SIZE	SIGN
3+620	W208	-	2	4+000	W405	600	
3+720	W405	600		4+040	W405	600	
3+760	W405	600		4+080	W405	600	
3+800	W405	600		4+200	W208	-	2
3+840	W405	600		11+860	W323	1200	
3+880	W405	600		11+880	W203	1200	
4+520	W208	-	2	4+620	TR201-60	600	60
4+620	W405	600					
4+660	W405	600					
4+700	W405	600					
4+740	W405	600					
4+080	TR201-60	600	60				
AT ALL ACCESSES LEADING ONTO MAIN ROAD				R1		1200	STOP

HORIZONTAL ALIGNMENT CO-ORDINATE LIST

Position	Chainages	CO-ORDINATE - LO 31 Y-Coord	CO-ORDINATE - LO 31 X-Coord	Details
BCC7	3320.00	51632.14	3394500.30	R = 500.00
PI7	3402.99	51716.80	3394498.45	Tc = 169.36
ECC7	3487.00	51796.13	3394468.84	△c = 19.13.25 Lc = 167.76
BCC8	3505.00	51812.40	3394462.76	R = 350.00
PI8	3571.06	51875.77	3394439.11	Tc = 135.28 △c = 21.52.32
ECC8	3638.00	51943.39	3394440.77	Lc = 133.64
BCC9	3676.00	51980.98	3394441.69	R = 120.00
PI9	3785.93	52138.67	3394445.56	Tc = 315.48 △c = 105.28.32
ECC9	3897.00	52100.32	3394292.55	Lc = 220.91
BCC10	3961.00	52084.72	3394230.33	R = 110.00
PI10	4044.43	52059.17	3394128.36	Tc = 210.24 △c = 87.24.00
ECC10	4129.00	52159.87	3394098.21	Lc = 167.79
BCC11	4144.00	52174.33	3394093.88	R = 220.00
PI11	4175.49	52205.27	3394084.61	Tc = 64.58 △c = 16.42.06
ECC11	4208.00	52232.23	3394066.85	Lc = 64.13
BCC12	4209.00	52232.76	3394066.51	R = 580.00
PI12	4267.84	52282.76	3394033.57	Tc = 119.76 △c = 11.47.16
ECC12	4328.00	52338.44	3394011.54	Lc = 119.32
BCC13	4384.00	52390.92	3393990.78	R = 210.00
PI13	4426.48	52431.02	3393974.91	Tc = 86.26 △c = 23.12.48
ECC13	4470.00	52461.63	3393944.52	Lc = 85.08
BCC14	4484.00	52472.14	3393934.08	R = 400.00
PI14	4525.07	52501.50	3393904.93	Tc = 82.74 △c = 11.48.38
ECC14	4567.00	52536.21	3393882.40	Lc = 82.46
BCC15	4576.00	52544.00	3393877.35	R = 110.00
PI15	4656.47	52627.46	3393823.17	Tc = 199.02 △c = 84.15.55
ECC15	4738.00	52581.90	3393734.71	Lc = 161.52

D365 - ROAD RESERVE OFFSET POINTS

LEFT OF CENTRE LINE			RIGHT OF CENTRE LINE		
POINT	X	Y	POINT	X	Y
RR14	3394463.312	51843.058	RR125	3394454.492	51805.987
RR15	3394463.868	51848.955	RR124	3394448.788	51812.659
RR16	3394459.975	51855.884	RR123	3394443.973	51833.770
RR17	3394451.050	51954.803	RR122	3394444.214	51837.084
RR18	3394453.708	51985.360	RR121	3394429.957	52003.633
RR19	3394451.222	51995.756	RR120	3394421.298	52008.868
RR20	3394415.249	52074.168	RR119	3394415.220	52016.888
RR21	3394402.717	52090.967	RR118	3394408.942	52032.938
RR22	3394393.576	52098.208	RR117	3394398.303	52062.741
RR23	3394382.893	52102.738	RR116	3394337.670	52092.747
RR24	3394361.885	52109.532	RR115	3394328.674	52090.853
RR25	3394354.920	52109.512	RR114	3394301.341	52090.416
RR26	3394263.433	52103.331	RR113	3394093.201	52144.609
RR27	3394247.732	52102.414	RR112	3394079.905	52165.680
RR28	3394217.109	52092.442	RR111	3394073.043	52200.716
RR29	3394192.733	52092.024	RR110	3394026.223	52281.885
RR30	3394162.730	52100.477	RR109	3394016.587	52291.594
RR31	3394152.953	52110.650	RR108	3394011.009	52308.184
RR32	3394117.887	52149.219	RR107	3394010.567	52314.696
RR33	3394110.350	52155.355			
RR34	3394098.052	52193.116			
RR35	3394086.666	52218.206			
RR36	3394086.385	52234.231			
RR37	3394051.371	52283.047			
RR38	3394030.086	52326.260			
RR39	3394028.494	52336.569			
RR40	3394000.534	52401.086			
RR41	3393974.337	52444.441			
RR42	3393915.623	52507.491			
RR43	3393867.265	52578.439			
RR44	3393855.061	52587.669			
RR45	3393814.882	52602.735			
RR46	3393769.433	52604.921			
RR47	3393736.764	52599.608			
RR48	3393673.210	52568.379			

GUARDRAIL SCHEDULE

LEFT OF CENTRE LINE			RIGHT OF CENTRE LINE		
FROM CHAINAGE	TO CHAINAGE	LENGTH (m)	FROM CHAINAGE	TO CHAINAGE	LENGTH (m)
3 530	3 626	96	3 330	3 469	139
4 506	4 677	171	3 700	3 780	80
			3 833	3 932	99
			4 116	4 185	69
			4 498	4 684	186

PIPE AND CULVERT SCHEDULE

ITEM NO.	S.K.D.	SIZE Ø (mm)	PIPE CLASS	BEDDING TYPE	TYPE	LENGTH (m)	SKEW	INLET	OUTLET	HEADWALLS	SIDE/ DROP INLET
PC/05	3+443	900	75D	CLASS C	PIPE	20,175	90°	131.289	130.915	2	0
PC/06	3+709	600	75D	CLASS C	PIPE	14.500	90°	132.787	131.043	2	0
PC/07	3+990	600	75D	CLASS C	PIPE	11.500	90°	118.264	118.000	1	0
PC/09	4+525	900	75D	CLASS C	PIPE	13.016	270°	103.622	101.694	2	0

CONCRETE LINED 1000 V-DRAIN SCHEDULE

LEFT OF CENTRE LINE			RIGHT OF CENTRE LINE		
FROM CHAINAGE	TO CHAINAGE	LENGTH (m)	FROM CHAINAGE	TO CHAINAGE	LENGTH (m)
3 893	3 990	97			
4 389	4 500	111	4 391	4 490	99

TO SEA PARK

FOR TENDER PURPOSE

Symbol	Date	Description	Checked	Signed
		AMENDMENTS		

APPROVED

Supervising Engineer ..... Date

Supervising Authority

Continued from:-	C46934	Designed by:-	S. NKOSI
Continued on:-	C46936	Checked by:-	S. NKOSI
Cross Section No:-	C46947 to C46957	Drawn by:-	L. SIKHAKHANE
Longitudinal Section No:-	C46938 & C46939	Checked by:-	S. NKOSI
Survey Plan No:-		Date of approval:-	

transport
Department
Transport
Province of KwaZulu-Natal
'prosperity through mobility'

PROVINCE OF KWAZULU-NATAL
DEPARTMENT OF TRANSPORT

Designed by:-
KaMawewe Development Consultants (PTY) Ltd
12 Coronation Rd
Scottsville
Pietermaritzburg, 3201.

Tel No.: 033 342 9507
Fax No: 033 342 9249
E-mail : siya@kamawewe.co.za

Signed Date .....

KAMAWEWE DEVELOPMENT CONSULTANTS Pty(Ltd)

KaMawewe Development Consultants is ISO 9001:2015, ISO 14001:2015 & SO45001:2018 certified for its full range of services

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.....
Transportation Engineering: Chief Engineer

.....
Head: Transport

ROAD D365
(SEA PARK TO LOCATION NO. 5)

PORTION
(KM 2+291 - KM 5+853)

UPGRADE OF ROAD D365
LAYOUT PLAN

Staked KM Distance	KM 3+280 to KM 4+820
Sheet :-	2 of :- 3
Scale	1 : 1000
Contract No.:-	ZNB00583/00000/00/HOD/INF/21/T
REV. 00	Plan No.:- C46935

C46935