DESIGN SPEED : 40 Km/H

NOTATION

BCC	:	Beginning of circular curve
ECC	:	End of circular curve
PI	:	Point of intersection
R	:	Radius of circular curve
△	:	Deflection angle of circular curve
Lc	:	Length of circular curve
T	:	Length of curve tangent
BT	:	Beginning of taper
ET	:	End of taper

LEGEND

SYMBOL	DESCRIPTION
	PIPE CULVERT AND HEADWALLS
	PIPE CULVERT, HEADWALL AND DROP INLET
	ROAD CENTRE LINE
	2400 GRASS LINED V DRAIN (SD 0601/3)
	CONCRETE V DRAIN (SD 0601/C)
	1000 CONCRETE LINE V DRAIN (SD 0601/2)
	CHUTE (SD 0605/A)
	LIMIT OF CONSTRUCTION
	NEW ROAD RESERVE
	EXISTING ROAD RESERVE
× × × × ×	EXISTING FENCE LINE
	GUARDRAIL
	CHANGE OF SPEED LIMIT

SIDE DRAIN SCHEDULE

LEFT HAND SIDE				RIGHT HAND SIDE			
	TO KM	LENGTH	TYPE	FROM KM	TO KM	LENGTH	TYPE
ROAD 1							ROAD 1
0.010	0.375	365	2.4m V-Drain	0.010	0.395	385	2.4m V-Drain
0.460	0.910	450	2.4m V-Drain	0.400	0.880	480	2.4m V-Drain
-	-	-	-	0.890	0.900	10	2.4m V-Drain
1.000	1.310	310	2.4m V-Drain	1.080	1.110	20	2.4m V-Drain
-	-	-	-	1.115	1.310	195	2.4m V-Drain
ROAD 2							ROAD 2
0.060	0.485	425	2.4m V-Drain	0.075	0.090	15	2.4m V-Drain
0.500	0.880	380	2.4m V-Drain	0.150	0.560	410	2.4m V-Drain
-	-	-	-	0.580	0.685	105	2.4m V-Drain
-	-	-	-	0.730	0.740	10	2.4m V-Drain
-	-	-	-	0.750	0.770	20	2.4m V-Drain
-	-	-	-	0.800	0.860	60	2.4m V-Drain
ROAD 3							ROAD 3
0.005	0.270	265	2.4m V-Drain	0.005	0.250	245	2.4m V-Drain
0.370	0.660	290	2.4m V-Drain	0.420	0.680	260	2.4m V-Drain
-	-	-	-	0.715	0.720	5	2.4m V-Drain
0.730	0.740	10	2.4m V-Drain	0.740	0.770	30	2.4m V-Drain
0.790	1.240	450	2.4m V-Drain	0.800	1.240	440	2.4m V-Drain

Road 2 Horizontal Data

Name	Chainage	Radius	Y-Coord	X-Coord
Start	0	0	77527.013	3428351.736
BC1	43.055	0	77504.386	3428315.106
PI1	0	40	77501.808	3428310.934
EC1	52.815	0	77498.299	3428307.508
BC2	72.572	0	77484.163	3428293.705
PI2	0	450	77459.498	3428269.622
EC2	141.383	0	77438.789	3428242.063
BC3	280.851	0	77355.005	3428130.565
PI3	0	250	77341.75	3428112.926
EC3	324.866	0	77325.61	3428097.881
BC4	358.645	0	77300.902	3428074.848
PI4	0	250	77289.285	3428064.019
EC4	390.365	0	77279.132	3428051.807
BC5	432.591	0	77252.136	3428019.338
PI5	0	50	77243.663	3428009.146
EC5	458.503	0	77241.351	3427996.095
BC6	474.643	0	77238.535	3427980.203
PI6	0	50	77236.313	3427967.664
EC6	499.582	0	77228.364	3427957.715
BC7	519.788	0	77215.75	3427941.929
PI7	0	100	77209.008	3427933.491
EC7	541.306	0	77200.619	3427926.687
BC8	557.846	0	77187.773	3427916.268
PI8	0	40	77172.128	3427903.578
EC8	595.169	0	77173.009	3427883.452
BC9	634.085	0	77174.711	3427844.574
PI9	0	100	77174.964	3427838.794
EC9	645.642	0	77175.882	3427833.082
BC10	724.814	0	77188.442	3427754.913
PI10	0	800	77192.071	3427732.33
EC10	770.547	0	77194.404	3427709.576
BC11	908.681	0	77208.49	3427572.163
PI11	0	100	77209.63	3427561.042
EC11	930.946	0	77208.286	3427549.944
End	972.081	0	77203.341	3427509.107

Road 2 Vertical Curve Data

	Chainage	Elevation	VC Len	K Val	Grade
Start	0.000	390.778			0.0000
BVC1	5.000	390.778			
VPI1	10.000	390.778	10.000	2.513	-3.9800
EVC1	15.000	390.579			
BVC2	45.000	389.385			
VPI2	120.000	386.400	150.000	22.409	2.7137
EVC2	195.000	388.435			
BVC3	277.938	390.686			
VPI3	307.938	391.500	60.000	11.134	-2.6752
EVC3	337.938	390.697			
BVC4	459.794	387.438			
VPI4	509.794	386.100	100.000	35.463	-5.4950
EVC4	559.794	383.353			
BVC5	590.914	381.642			
VPI5	740.914	373.400	300.000	35.792	2.8867
EVC5	890.914	377.730			
BVC6	930.000	378.858			
VPI6	940.000	379.147	20.000	6.928	0.0000
EVC6	950.000	379.147			
End	960.359	379.147			

GENERAL NOTES

1. All levels, dimensions and setting out details to be verified by Consultant and Contractors on site prior to construction
2. All existing drainage culverts are to be inspected, and any found in unserviceable condition are to be replaced unless shown otherwise.
3. Culvert inverts are to be decided by Engineer on site unless shown otherwise. Min. cover = 600mm, min. slope = 2%
4. Pipe culverts are to laid in accordance with SD0401 with headwalls as per SD 0402, SD 0403 or SD 0406. Min dia = 450mm for minor access broadband access bell-mouths, and min dia = 600mm for major road cross drainage.
5. Box culverts < 1.8m high are to be 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 KZN DOT standards.
6. For erosion control reno mattresses are recommended at culvert inlets and outlets.
7. Earth berms are to be constructed at culvert inlets to direct stormwater into culverts were 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 5mm measured at a point 6m from edge of carriageway. Concrete lined 1000 V-drains as per SD 0601/2 are recommended for deep cuttings of depth greater than 5m measured at a point 6m from edge of carriageway.
10. Subsoil drains as per SD 0501 are to be 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, also used in cuts here.
12. Where surface runoff is toward the road, catch - water 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 bell-mouths 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 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 SD 1001-3
17. All new road signs and road marking requirements are to conform to the Southern African Development Community Road Traffic Signs Manual (SADC - RTSM)
18. All work is to 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).
20. New fills and exposed cuttings are to be top-soiled and vegetated immediately after Construction to prevent erosion.

SIGN POSTING SCHEDULE

Ntshobelo					
Left Hand Side		Right Hand Side		Size	Note
m Distance	Sign	mDistance	Sign	mm	
Road 1					
0+000m	W409			675x450	New
0+030m	W409			675x450	New
0+840m	W203			900 (S)	New
0+960m	W409			675x450	New
		1+050m	W202	900 (S)	New
1+220m	W409			675x450	New
Road 2					
0+100m	W409			675x450	New
0+570m	W409			675x450	New
Road 3					
0+165m	W203			900 (S)	New
		0+330m	W409	675x450	New
		0+380m	W202	900 (S)	New
0+420m	W203			900 (S)	New
R1 at all unspecified access roads					

PIPE CROSSING SCHEDULE - ROAD 2

No.	CH Postion	Size (mm)	Pipe Class	Type	Bedding Class	Estimated Length (m)	Skew	Headwall	Drop Inlet	Flow (m^3/s)	Velocity (m/s)	Catchment Area (km^2)
01	120	900	100D	GI	C	17.70	0°	2	0	0.180	1.7	0.026
02	220	600	100D	GI	C	12.50	0°	2	0	0.219	1.5	0.031
03	320	600	100D	GI	C	11.20	0°	2	0	0.358	1.5	0.051
04	420	600	100D	GI	C	16.40	0°	2	0	0.134	1.7	0.019
05	520	600	100D	GI	C	17.70	0°	2	0	0.176	1.5	0.025
06	620	600	100D	GI	C	17.70	0°	2	0	0.128	1.5	0.018
07	720	600	100D	GI	C	28.00	0°	2	0	5.838	1.7	0.840
08	780	900	100D	GI	C	17.70	0°	2	0	0.289	1.5	0.042
09	880	600	100D	GI	C	17.70	0°	2	0	0.142	1.5	0.020
10	960	600	100D	GI	C	28.00	0°	2	0	5.838	1.7	0.840

CONCEPT DESIGN

Description	Checked	Signed
AMENDMENTS		

TENDER DRAWINGS

Supervising Engineer ..... Date .....

Supervising Authority .....

CAD File Ref:-

File Ref:-

Designed by : S. SAROOP
Checked by : J. KUNZE
Drawn by : S. SAROOP
Checked by : J. KUNZE

RAY NKONYENI LOCAL MUNICIPALITY
PO Box 5
Port Shepstone
4240

Designed by :

PO BOX 1575
WESTVILLE
3630

Signature: Date

Ipa Consulting cc
TEL No. 031-765 1907
FAX No. 031-765 2551

---------- Engineer

---------- Head: Municipality

PROJECT: MANDLA MZELEMU: UPGRADING OF PORTION FROM Km 0.000 TO Km 0.960

STAKED KM DISTANCE: Km 0.00 to Km 0.96

SHEET: 2 Of: 4

DRAWING DESCRIPTION: ROAD 2 GEOMETRICS & SERVICES PLAN

ROAD NAME : LOCAL ROAD MANDLA MZELEMU

PROJECT No: 8/2/RNM0451

SCALE: 1 : 1000

PLAN No: 321-CW-03