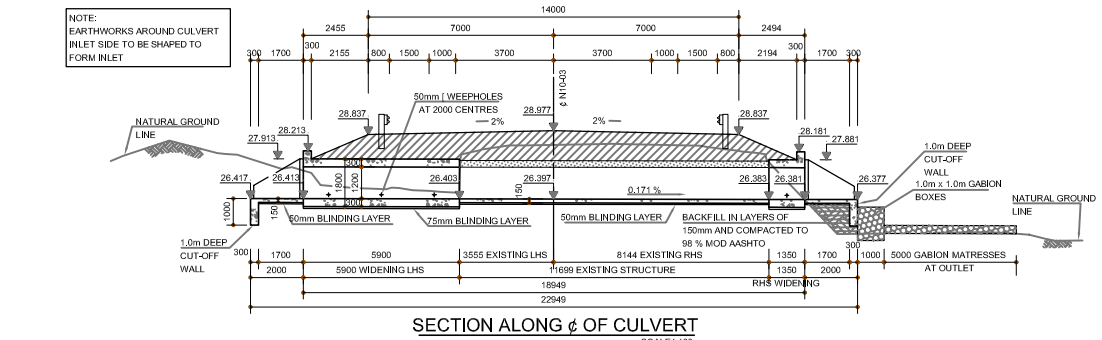
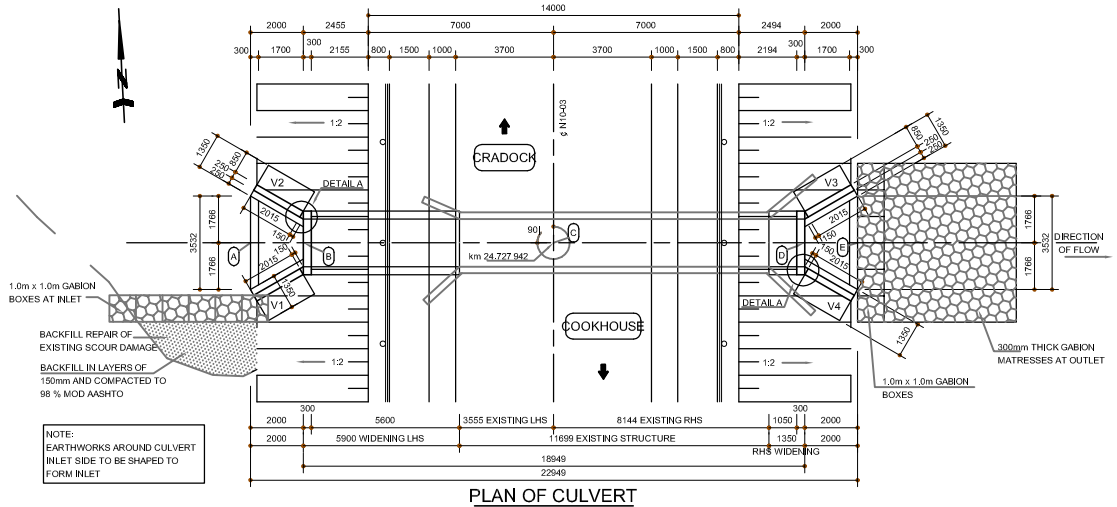


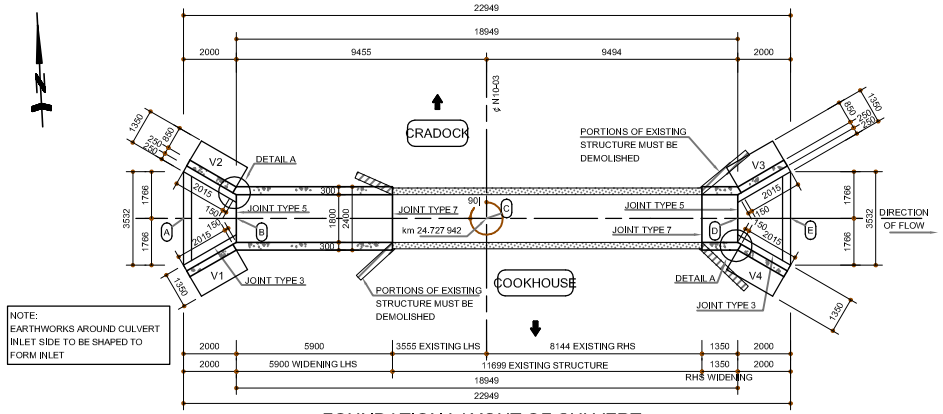
SECTION ALONG ¢ OF CULVERT

SCALE1:100



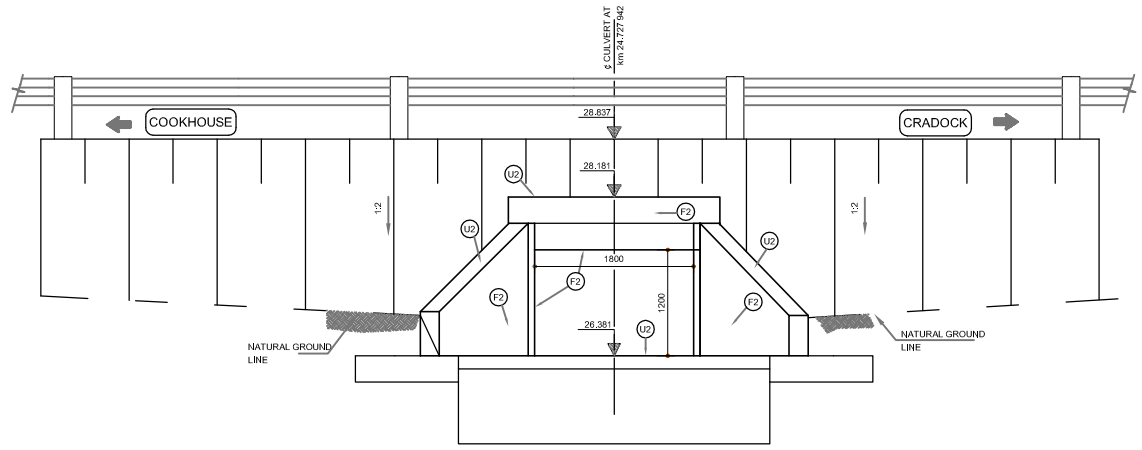
PLAN OF CULVERT

SCALE1:100



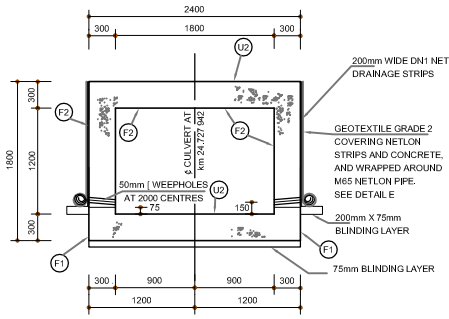
FOUNDATION LAYOUT OF CULVERT

SCALE1:100



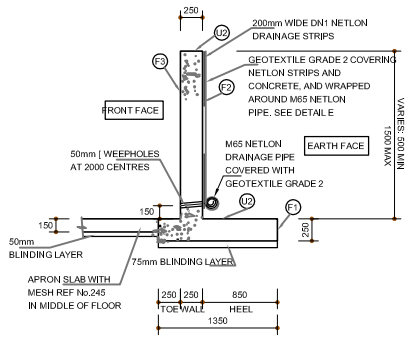
ELEVATION ON CULVERT

(OUTLET SIDE) SCALE 1:30



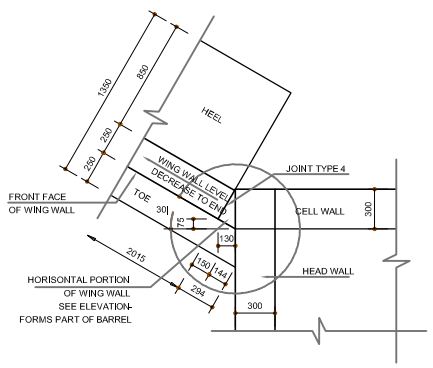
TYPICAL SECTION THROUGH CULVERT

SCALE 1:30



TYPICAL SECTION THROUGH WING WALLS

SCALE 1:30



DETAIL A

SCALE 1:20

CO-ORDINATES		
POINT	Y	X
A	-83 306.961	3 604 604.819
B	-83 308.958	3 604 604.919
C	-83 318.401	3 604 605.395
D	-83 327.883	3 604 605.874
E	-83 329.880	3 604 605.974

NOTE:
ALL EXISTING LEVELS AND DIMENSIONS MUST BE CHECKED BEFORE CONSTRUCTION CAN COMMENCE.
ANY DISCREPANCIES MUST BE BROUGHT TO THE ATTENTION OF THE RESIDENT ENGINEER.

NOTE:
BEFORE DEMOLISHING OF PORTIONS OF THE EXISTING STRUCTURE CAN COMMENCE, MUST THE POSITIONS OF ALL EXISTING SERVICES eg. OPTICAL CABLES AND WATER MAINS etc BE RECORDED IN ORDER TO MAKE PROVISION TO PROTECT IT AGAINST AGAINST ANY POSSIBLE DAMAGE.

DESIGN DATA

GENERAL DESIGN NOTES:

1)THE SERVICE CULVERT CONSISTS OF 1/1.80m x 1.20m CELL OF IN-SITU CAST CONCRETE

2)DESIGN METHOD: LIMIT STATE

3)DESIGN CODE: TMH7-PART 3 - 1989

DESIGN LOADINGS:

1)DESIGN CODES: TMH7 - PARTS 1 AND 2,
"CODE OF PRACTICE FOR THE DESIGN OF HIGHWAY BRIDGES AND CULVERTS IN SOUTH AFRICA (AS AMMENDED IN 1988)"

2)LIVE LOADS: TYPE NA LOADING
TYPE NB-36 LOADING AND NC35 x 5 x40

3)DEAD LOADS: IN-SITU CONCRETE - 25.5kN/m^3
PREMIX-24kN/m^3
COMPACTED EARTH FILL - 20kN/m^3

4) DESIGN FILL HEIGHT: 1.20m

5)INTERNAL ANGLE OF FRICTION OF BACKFILL MATERIAL - 30°
EARTH PRESSURE DUE TO BACKFILL MATERIAL 10 kPa/m
(UNYIELDING STRUCTURE)

6) COMPUTER PROGRAM: PROKON

7) REFER TO STANDARD SPECIFICATIONS
SECTIONS 6000 : STRUCTURES (COLTO)

DESIGN PARAMETERS

1)YOUNG'S MODULUS (E):PLAIN CONCRETE (fcu=30MPa) =26GPa
REINFORCING STEEL =200GPa

MATERIALS

1) FOUNDING

FOUNDING MATERIAL - CLAYEY SAND
PERMISSIBLE BEARING PRESSURE - 250kPa
DESIGN BEARING PRESSURE - 180kPa

2)CONCRETE CHARACTERISTIC STRENGTHS (95%)

STRUCTURAL ELEMENT	fcu(MPa)	CLASS
BLINDING LAYERS	15	15/19
FLOOR SLABS	30	30/19
WALLS	30	30/19
ACCESS COVER SLAB	30	30/19

2.1) COEFICIENT OF EXPANSION OF CONCRETE - 0,007mm/m/C^0

3)REINFORCING CHARACTERISTIC STRENGTHS

DESCRIPTION	fy(MPa)
MILD STEEL	250
HIGH TENSILE STEEL (SABS 920 1985)	450

GENERAL

1)CONCRETE FINISH:

1.1 SHUTTERED SURFACES: FOUNDATIONS - F1
UNEXPOSED SURFACES - F2
EXPOSED SURFACES - F2

1.2 UNSHUTTERED SURFACES: TOP OF FLOOR SLABS - U2
TOP OF WALLS - U2
TOP OF ACCESS COVER SLAB - U2

2)CONCRETE COVER : 50mm

3)ALL VISIBLE CORNERS MUST BE CHAMFERED - 25mmx25mm

STRUCTURE NUMBER PLATES

(i) LETTERS AND NUMERALS SHALL BE TYPE 'B' LETTERS TO DIN 1451 PART 2.
(ii) THE DATE ON THE CULVERT NUMBER PLATE SHALL BE THE YEAR IN WHICH THE CULVERT WAS COMPLETED.
(iii) THE CULVERT NUMBER SHALL HAVE A WHITE BACKGROUND WITH BLACK LETTERS, NUMERALS AND BORDER.

MANUFACTURE OF NUMBER PLATES

TYPE 1 NUMBER PLATE

(i) THE NUMBER PLATES SHALL BE MANUFACTURED FROM NON-METALLIC, UV RESISTANT MATERIAL

CONSTRUCTION OF NUMBER PLATES

TYPE 1 NUMBER PLATE

(i) THE CULVERT NUMBER PLATES SHALL BE POSITIONED AS SHOWN.

(ii) THE NUMBER PLATE SHALL BE SECURELY FASTENED TO THE INSIDE FACE OF THE SHUTTER BY MEANS OF M10 ANCHOR BOLTS. THE PROTRUDING THREADS OF THE BOLTS SHALL BE COATED WITH AN APPROVED DEBONDING AGENT. ONCE THE CONCRETE HAS SET AND PRIOR TO STRIPPING THE SHUTTER THE M10 BOLTS SHALL BE REMOVED. THE BOLT HOLES SHALL BE MADE GOOD WITH EPOXY FILLER AND THE PAINT WORK TOUCHED UP.

No.	DATE	REVISION	CONSULT. ENG.
V1	FEB 2012	ORGINAL VERSION	ME BOTHA

CONSTRUCTION RECORD
WORKS CONTRACT ENGENEER:
Name : XX XXXXXXXXX
Prof, Reg, No, : XXXXXXXX
Date : DD / MM / YYYY
SANRAL PROJECT MANAGER:
Name : XX XXXXXXXXX
Prof, Reg, No, : XXXXXXXX
Date : DD / MM / YYYY

WorleyParsons
resources & energy
Incorporating KV3 ENGINEERS
P.O.Box 7587
Newton Park 6055
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Fax:(041)364-3798
www.worleyparsons.com

DESIGNED BY
NAME TJ MOKOMA
Prof, Reg, No. 20110029
CHECKED BY
NAME W JEPPE
Prof, Reg, No. 20030254
DRAWN BY
NAME LM ROGERS

CONSULTANT APPROVAL
Name : W JEPPE
Prof, Reg, No. : 20030254
Date : DD / MM / YYYY

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0184
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Tel: (012) 844 8000

THE SOUTH AFRICAN NATIONAL ROADS AGENCY SOC LTD
Reg. No. 1998/009584/06

SOUTHERN REGION
NRA House
Southern Life Gardens
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Newton Park
Port Elizabeth
6045
PO Box 27230
Greenacres
6057
Tel: (041) 398 3200

ACCEPTANCE
THIS ACCEPTANCE IS FOR PROCEDURAL AND ADMINISTRATIVE REVIEW PURPOSES ONLY AND DOES NOT ATTRACT LEGAL LIABILITY OF LIABILITY OF ANY KIND FROM WHATSOEVER CAUSE OR HOWEVER ARISING
for CEO: SA NATIONAL ROADS AGENCY LTD.
Date:

PROJECT DESCRIPTION

CONTRACT NO. NRA N.006-040-2009/1F : REHABILITATION OF N6 SECTION 4 FROM km 52.0 TO km 66.2

DRAWING NAME

WIDENING OF BOX CULVERT - GENERAL LAYOUT

SCALE : NOT TO SCALE SHEET 1 OF 1

PROJECT NUMBER	N.006-040-2009/1F		
DRAWING LOCATION DATA	START	END	
ROUTE	R61	R61	
SECTION	03	03	
DRAWING km DISTANCE	52,0	66,2	
DRAWING TYPE	STRUCTURES - MINOR CULVERTS		
BRIDGE/STRUCTURE No.	-		
CONSULTANT DRAWING No.	FA	260690QPO/0	VER
SANRAL DOCUMENT #	X		V1