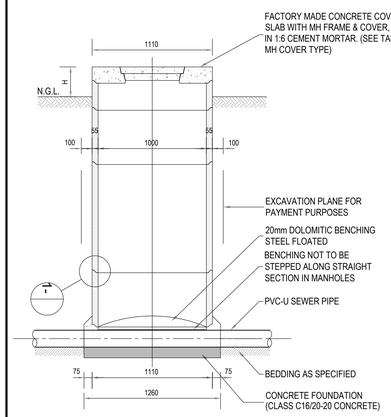
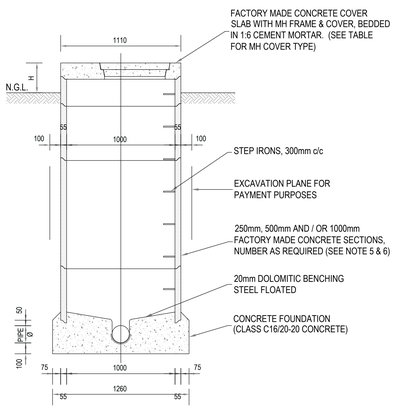


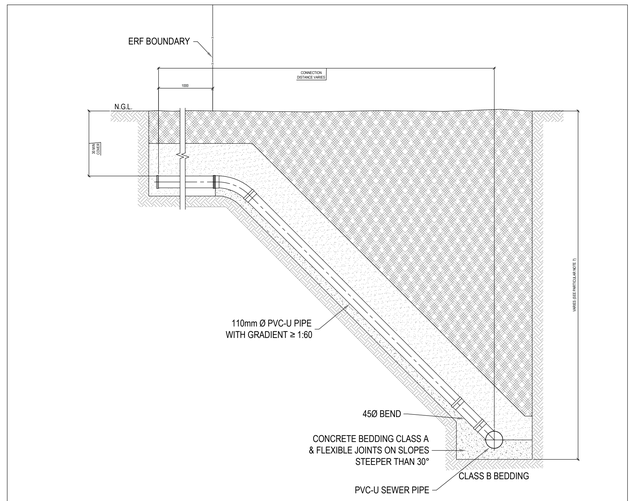
ALTERNATIVE LAYOUT WITH SPACERS



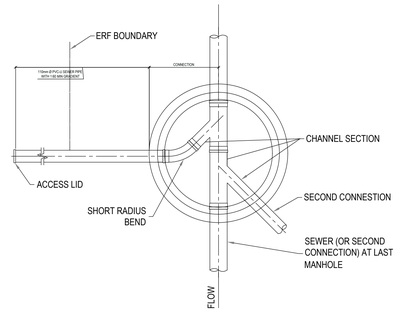
SECTION A
SCALE 1:20



SECTION B
SCALE 1:20



SECTION
HOUSE CONNECTION TYPE C
SCALE 1:20



PLAN
HOUSE CONNECTION TYPE D
SCALE 1:20
(CONNECTION AT MANHOLE)

NOTES AND SPECIFICATIONS

GENERAL

1. ALL MATERIAL AND WORKMANSHIP MUST COMPLY WITH THE REQUIREMENTS OF THE LATEST RELEVANT SANS STANDARD
2. ALL DIMENSIONS ARE IN mm (UNLESS OTHERWISE SPECIFIED)
3. DO NOT SCALE FROM THESE DRAWINGS
4. ALL DIMENSIONS TO BE CHECKED AND APPROVED ON SITE
5. ALL CONSTRUCTION TO BE DONE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS FOR MUNICIPAL CIVIL ENGINEERING WORKS, THIRD EDITION 2005 AND THE STANDARD COT DETAIL DRAWINGS
6. THIS DRAWING MUST BE READ IN CONJUNCTION WITH THE STANDARD DRAWINGS (IF APPLICABLE)
7. THIS DRAWING MUST BE READ IN CONJUNCTION WITH THE STANDARD SPECIFICATIONS FOR MUNICIPAL CIVIL ENGINEERING WORKS, SERIES 3
8. THE SIGNATURE OR INITIALS ON THIS DRAWING OF ANY DIRECTOR OF THE WATER AND SANITATION DEPARTMENT, IN NO WAY, REMOVES ANY RESPONSIBILITY WHATSOEVER FROM THE CONSULTANT
9. THE CONSULTANT REMAINS RESPONSIBLE TO ENSURE THAT ALL THE GUIDELINES, STANDARD DRAWINGS, STANDARDS AND SPECIFICATIONS OF THE WATER AND SANITATION DEPARTMENT HAVE BEEN MET AND ARE COMPLIED WITH
10. FINAL POSITION OF SERVICES TO BE DETERMINED ON SITE
11. SEWERS INSTALLED WITHIN PROPERTIES ARE USUALLY PLACED 1.2m FROM ERF BOUNDARY UNLESS OTHERWISE SPECIFIED
12. SEWERS INSTALLED WITHIN ROAD RESERVE BOUNDARY MUST BE POSITIONED IN ACCORDANCE WITH THE APPLICABLE SERVICES LAYOUT DRAWING

PARTICULAR

1. STEP IRONS TO BE COPOLYMER POLYPROPYLENE ENCAPSULED 12mm HIGH TENSILE STEEL BAR, "CALCAMITE" OR SIMILAR
2. TYPICAL VALUES FOR H
   = 50 - 75mm WITHIN ERVEN & ROAD RESERVES
   = 250mm LOW COST HOUSING DEVELOPMENTS & UNDEFINED ROADWAYS
   = 500mm OPEN VELD OR ROAD RESERVES WHERE POSITION OF MANHOLES CAN BE CONCEALED BY LONG GRASS OR OTHER GROWTH
3. CHANNELING
   NOMINAL DIAMETERS
   Ø ≤ 300MM CLAY OR DOLOMITE CONCRETE OR NUTEC CEMENT
   Ø > 300MM INSITU CAST DOLOMITE CONCRETE
4. CONCRETE SECTIONS MUST BE FIXED WITH AN APPROVED EPOXY SEALER SUCH AS EPIDERMIX 344 OR PROSTRUCT 687 OR SIMILAR APPROVED.
5. FACTORY MADE MANHOLE SECTIONS MUST BE MADE IN ACCORDANCE WITH SANS 1294
6. MANHOLE FRAMES MAY ONLY BE BUILT IN ON SLOPED FINISHED SIDEWALKS ON A WRITTEN INSTRUCTION BY THE ENGINEER
7. OVER EXCAVATION MAY ONLY BE FILLED AFTER APPROVAL BY THE ENGINEER WITH GRADE 20/19 CONCRETE OR OTHER SUITABLE MATERIAL AS DIRECTED BY THE ENGINEER
8. NO PART OF THE MANHOLE MAY BE FINISHED OFF WITH CEMENT-WASH OR MORTAR
9. POLYMER MANHOLE COVER & FRAME TO SABS SPECIFICATION SANS 1882/2003
10. TYPE 2A E GLASS LAMINATE COMPOSITE MANHOLE COVER & FRAME TO SABS SPECIFICATION SANS 50124 (EN124:1994)

MANHOLE CHAMBER SIZES

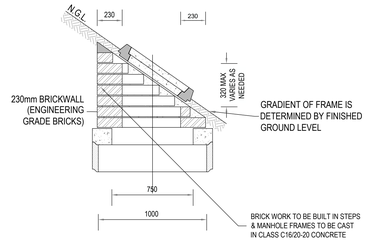
NOMINAL Ø (mm)	USAGE
1000	150 ND PIPES WITH STRAIGHT THROUGH MANHOLES UP TO 1.25m DEEP
1250	BENDS IN MANHOLES, LARGER PIPES & MANHOLES BETWEEN 1.25m & 3.0m DEEP
1500	LARGER PIPES & MANHOLES DEEPER THAN 3.0 m

NOTE : MANHOLE CHAMBER SIZES TO BE APPROVED BY THE EXECUTIVE WATER AND SANITATION DIRECTOR :

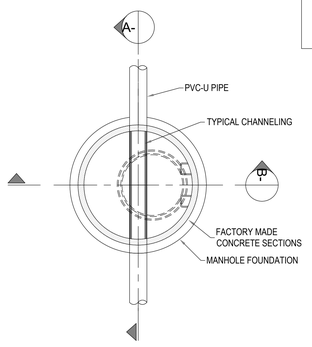
MANHOLE COVERS AND FRAMES
SANS 50124 (SABS EN 124)

POSITION OF MANHOLE	FRAME AND COVER TYPE
CARRIAGEWAY	560mm Ø CLASS D400 POLYESTER RESIN
STREET RESERVE	560mm Ø CLASS B125 POLYESTER RESIN OR TYPE 4 CONCRETE REPLACEMENT
ERVEN	560mm Ø CLASS B125 POLYESTER RESIN OR TYPE 4 CONCRETE REPLACEMENT
GENERAL	ONLY 560mm Ø, CLASS D400 POLYESTER RESIN MAY BE USED FOR SEWERS 300mm Ø AND LARGER

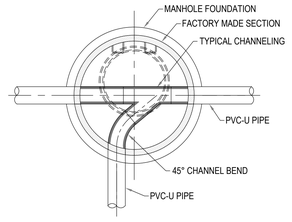
NOTE : POLYMER MANHOLE COVER & FRAME TO SABS SPECIFICATION SANS 1882/2003.TYPE 2A E GLASS LAMINATE COMPOSITE MANHOLE COVER & FRAME TO SABS SPECIFICATION SANS 50124 (EN124:1994) CAST IRON COVERS AND FRAMES ARE USED ONLY WITH WRITTEN INSTRUCTIONS FROM THE ENGINEER



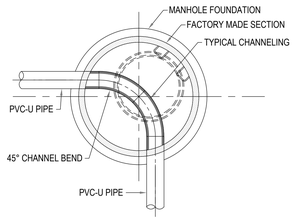
TYPICAL SECTION
SCALE 1:20
BUILT IN MANHOLE FRAME AT FINISHED SLOPED SIDEWALKS
(WITH WRITTEN PERMISSION FROM THE ENGINEER ONLY)



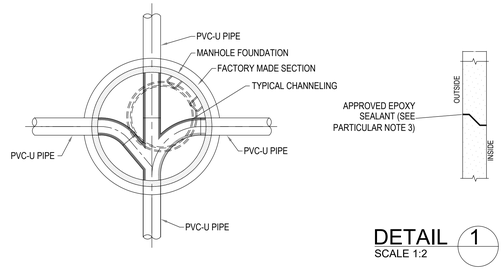
PLAN
SCALE 1:20
(TYPICAL EXAMPLE OF THROUGH
CONNECTION IN MANHOLE)



PLAN
SCALE 1:20
(TYPICAL EXAMPLE OF 90° CONNECTION IN MANHOLE)

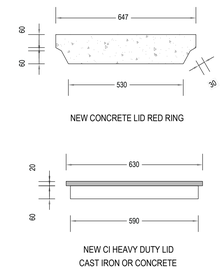


PLAN
SCALE 1:20
(TYPICAL EXAMPLE OF 90° BEND IN MANHOLE)



PLAN
SCALE 1:20
(TYPICAL EXAMPLE OF SIDE
CONNECTIONS IN MANHOLE)

DETAIL 1
SCALE 1:2



MANHOLE COVERS TYPICAL PROFILES

TYPICAL MANHOLE LAYOUTS SHOWING POSITIONS OF MANHOLE FRAME, STEPS & CHANNELING

No.	DATE	REVISION
V1	08/03/2024	ORIGINAL VERSION

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Pretoria
0184

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SANRAL
SOUTH AFRICAN NATIONAL ROADS AGENCY SOC LTD
BUILDING SOUTH AFRICA THROUGH BETTER ROADS

WESTERN REGION
1 Havenga Street
Oakdale
Bellville
7530

Private Bag X19
Bellville
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Tel: (021) 957 4600

ACCEPTANCE

THIS ACCEPTANCE IS FOR PROCEDURAL AND ADMINISTRATIVE REVIEW PURPOSES ONLY AND DOES NOT ATTRACT LEGAL LIABILITY OR LIABILITY OF ANY KIND FROM WHATSOEVER CAUSE OR HOWEVER ARISING

for the SA NATIONAL ROADS AGENCY SOC LTD.
Date:

PROJECT DESCRIPTION
THE CAPACITY IMPROVEMENT OF NATIONAL ROUTE 1 SECTION 1 FROM OLD OAK INTERCHANGE (KM 18.90) TO KOELENHOF INTERCHANGE (KM 33.00)

TYPICAL SEWER DETAILS
MANHOLE DETAILS FOR SEWER PIPES
UP TO 300mm NOMINAL DIAMETER

SCALE @ A0: AS SHOWN | SHEET 1 OF 1

PROJECT NUMBER	N001-010-2021/1	
DRAWING LOCATION DATA	START	END
ROUTE	N01	N01
SECTION	01	01
DRAWING km DISTANCE	18.900	33.000
DRAWING TYPE	SERVICES - SEWER DETAILS	
BRIDGE/STRUCTURE No.	N/A	
CONSULTANT DRAWING No.	312-00827-01-TD81	VER
SANRAL DOCUMENT #	XXXXXX	V1

312-00827-01-TD81