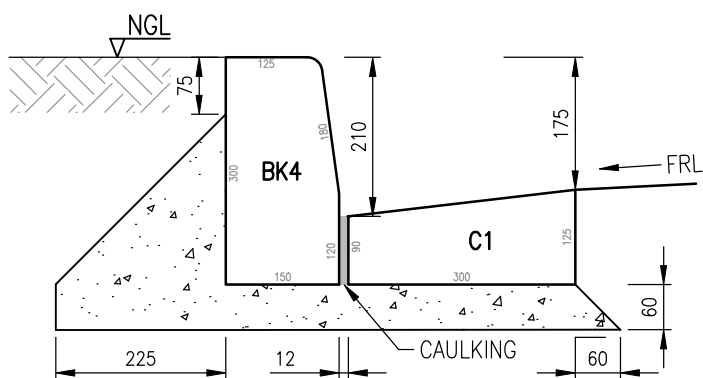
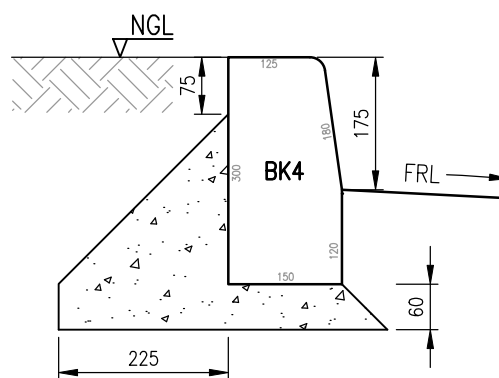


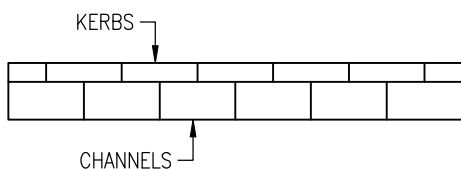
**BK2 BARRIER KERB ONLY**



## BK4 BARRIER KERB & C1 CHANNEL



### BK4 BARRIER KERB ONLY



## STAGGERING OF KERBS AND CHANNELS

1. ALL UNITS MUST BE LAID WITH 20 MPa CONCRETE BEDDING/BACKING, UNLESS SHOWN OTHERWISE, ON SUBGRADE/SUBBASE COMPACTED TO THE REQUIRED SPECIFICATIONS
2. NO OUTFALL CHANNELS PERMITTED.
3. ALL RADII < 20m MUST BE BUILT WITH 300/330mm LONG ELEMENTS.
4. ALL PRECAST UNITS LAID LONGITUDINALLY NEXT TO ONE ANOTHER MUST BE STAGGERED.
5. ALL KERB JOINTS TO BE WATER SPRAYED BEFORE CAULKING.
6. CAULKING BETWEEN KERBS TO HAVE A CEMENT:SAND RATIO OF 1:3.
7. EXPANSION JOINTS ON KERBING:
  - A. SHALL BE 10mm WIDE, SPACED AT 10m c/c.
  - B. FILLED WITH FOAMED POLYSTYRENE (OR EQUIVALENT APPROVED)
  - C. SEALED WITH 20mm X 10mm SILICONE SEALANT (OR EQUIVALENT APPROVED)

NGL: NATURAL GROUND LEVEL  
FRL: FINISHED ROAD LEVEL  
FSL: FINISHED SURFACE LEVEL



CITY OF CAPE TOWN  
ISIXEKO SASEKAPA  
STAD KAAPSTAD

CITY OF CAPE TOWN  
URBAN MOBILITY

**TITLE**

## BARRIER KERBS AND CHANNELS

## STANDARDS AND GUIDELINES DETAILS

SCALE

**1:10**

DRAWING No.

## RD1.1

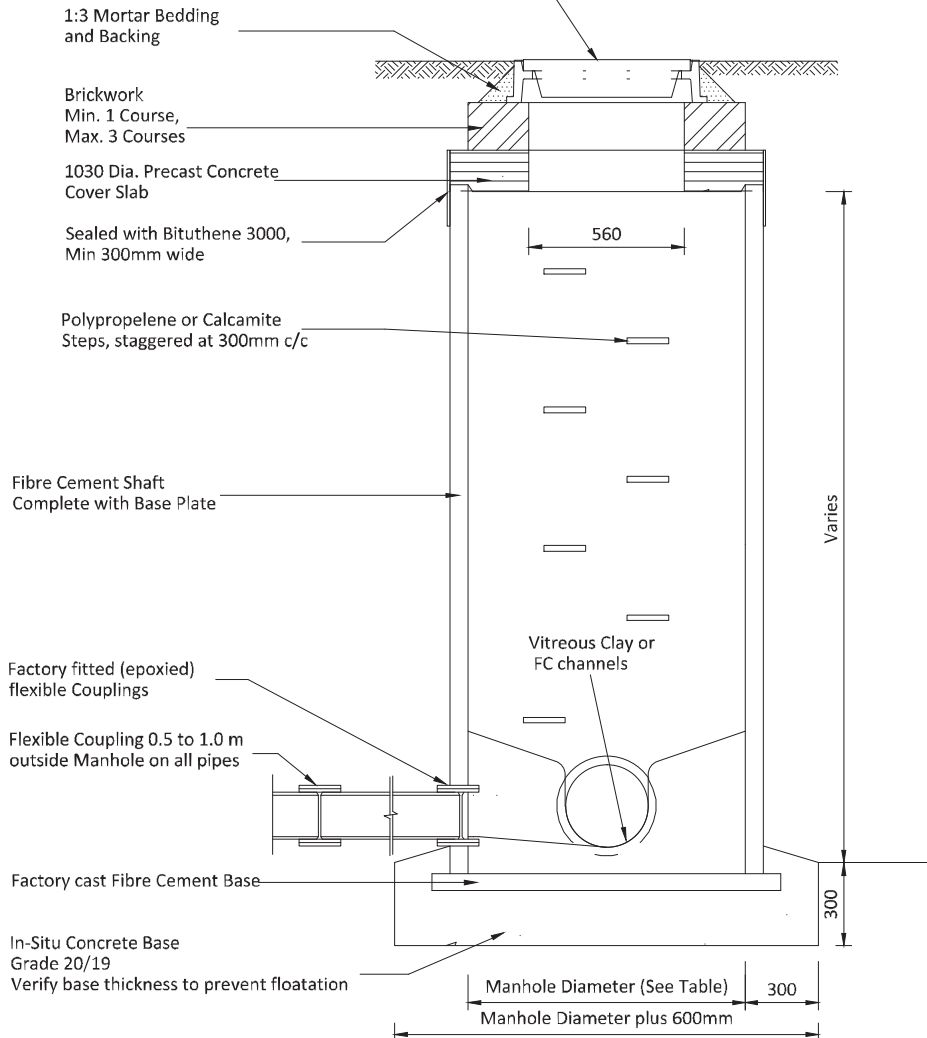
PAPER

A4

REV

**B**

REFER to CoCT standard manhole cover and frame 2010 (drawings SW8A, SW8B, SW8C)



Manhole Diameter Table.

Main Pipe	Junc Pipe	Manhole dia.
160 - 250	160 - 200	1000
275 - 325	160 - 250	1200
350 - 400	160 - 225	1200
425	160 - 300	1500
450 - 525	160 - 275	1500
550 - 575	160 - 250	1500
600	160 - 250	1500
625 - 650	160 - 325	1800
675 - 725	160 - 300	1800
750 - 800	160 - 275	1800
800 - 900	160 - 250	1800

**Note:**

Manholes for pipe diameters and junction angles that fall outside the above range needs to be specially designed to accommodate precast channel layouts.

**Note:**

- 1) Refer to SABS 1200 LD for Specifications and items not indicated
- 2) For sealing specifications refer to the text portion of the City's Standard Specifications
- 3) Check Manhole Diameter based on Channel Layout with centre line Radii of all channels = 2 x diameter.
- 4) Check/determine concrete base thickness to prevent floatation



CITY OF CAPE TOWN | ISIKHULU SAKHEKAPA | SHIBO KAAKAPATA

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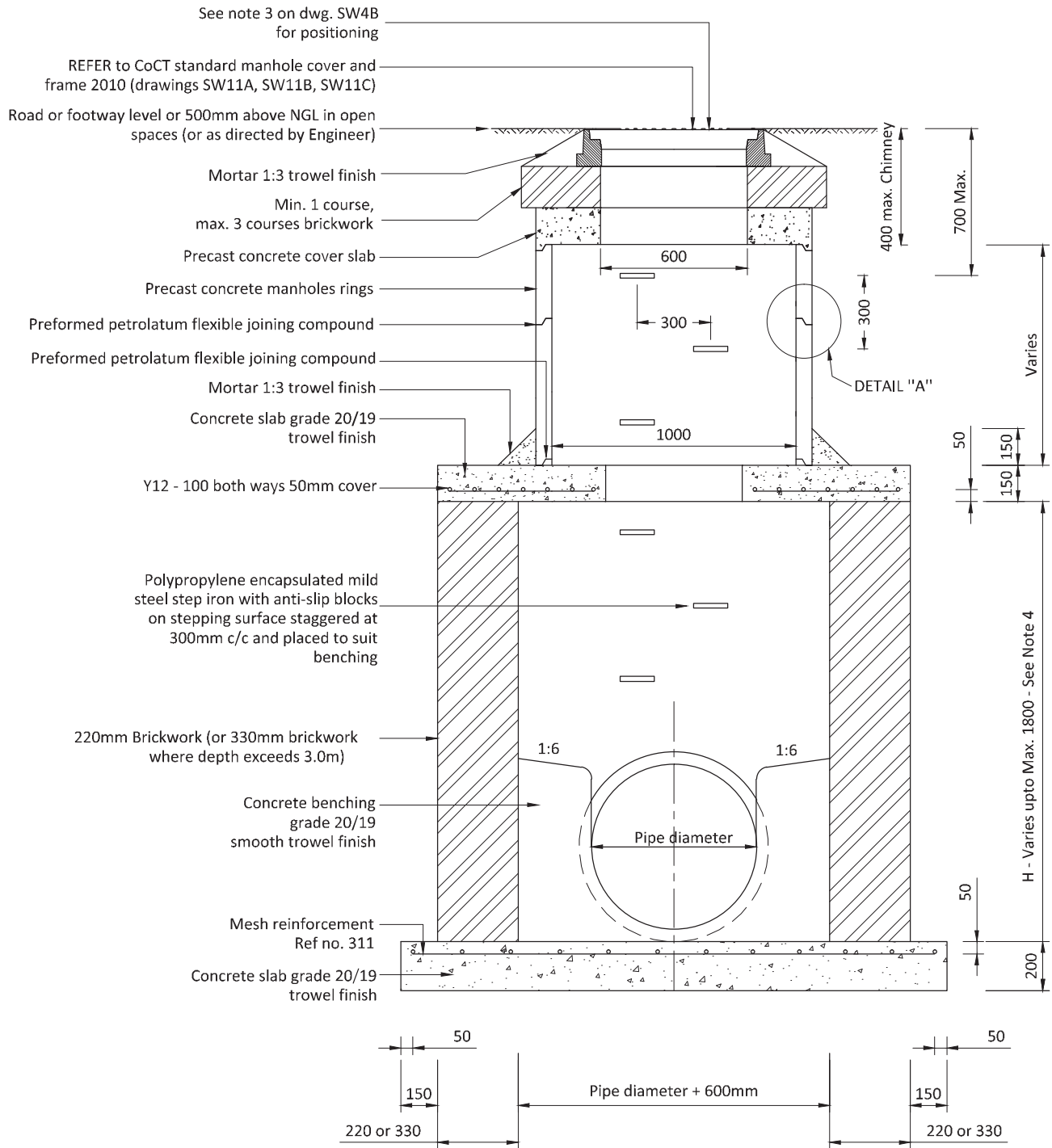
**CITY OF CAPE TOWN  
STANDARD DETAILS  
SEWER MANHOLE  
(Fibre Cement Type)**

DRAWING No.

**S2**

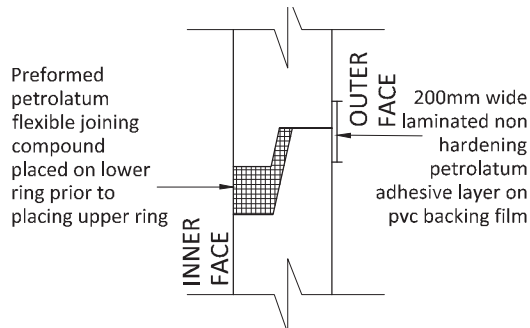
SCALE

1:25



## SECTION A - A

SCALE 1:25



## DETAIL "A" - JOINT SEALER

SCALE 1:5



CITY OF CAPE TOWN | SIKESIKU SASEKAPA | SHAD KAAPSTAD

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FEB 2013

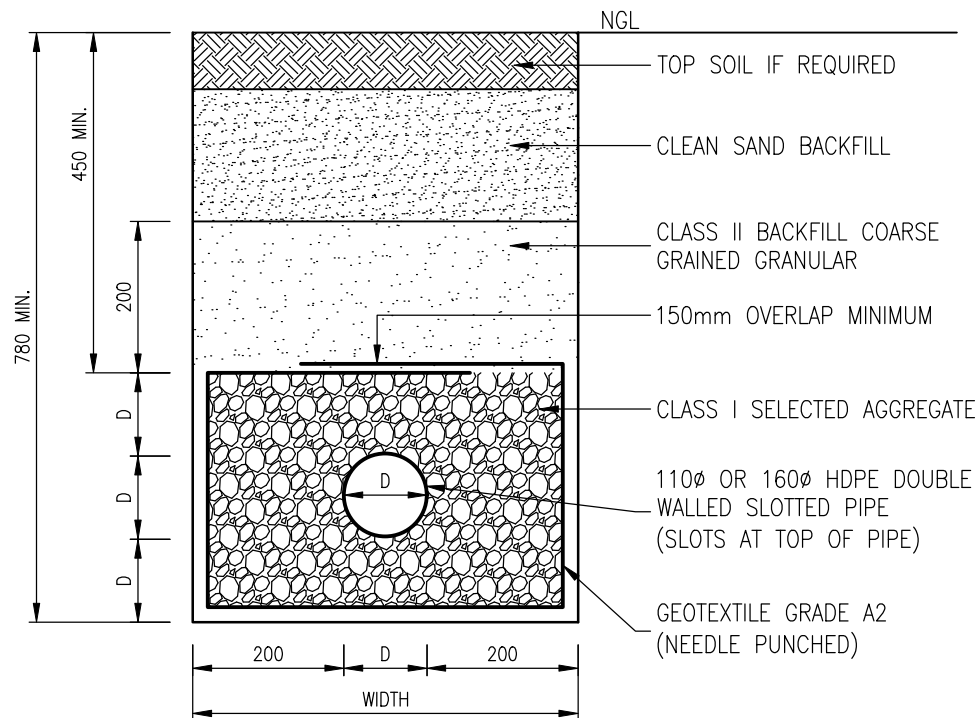
# CITY OF CAPE TOWN STANDARD DETAILS STORMWATER MANHOLE - SECTION FOR Ø675mm PIPES AND LARGER

DRAWING No.

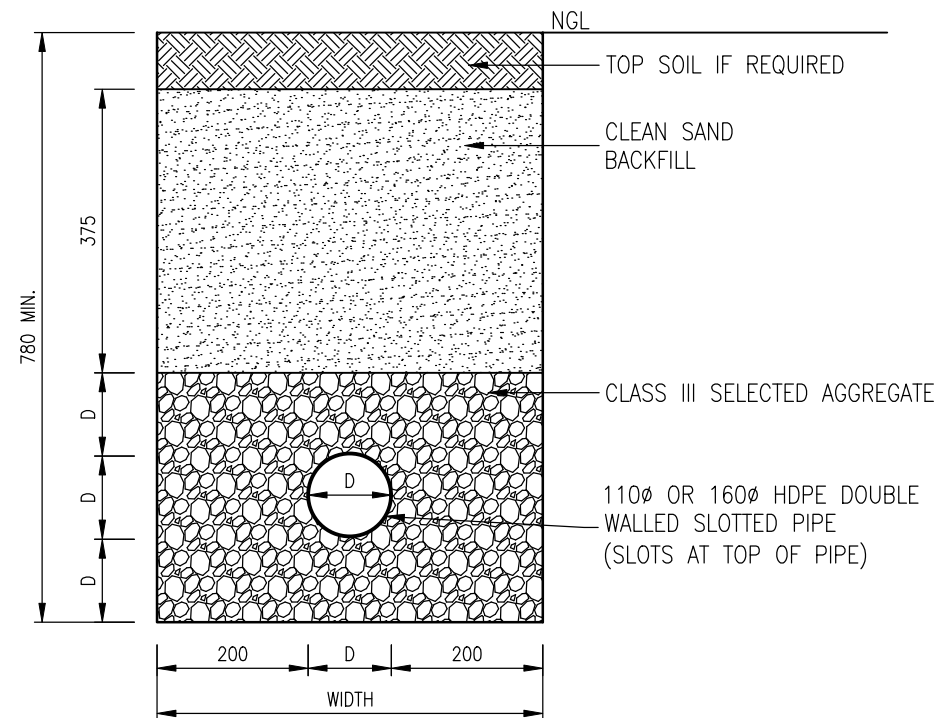
**SW4A**

SCALE

AS SHOWN



## GENERAL CONDITIONS



## CLAY CONDITIONS

### NOTES:

#### PIPE BACKFILL:

- CLASS I: CRUSHED ROCK STONE AGGREGATE WITH LITTLE OR NO FINES (9–38mm).
- CLASS II: COARSE GRAINED FREE DRAINING NON-COHESIVE GRANULAR SOILS (0.6–38mm, FINES < 5%).
- CLASS III: WELL MIXED & COMPACTED CRUSHED STONE, GRADED AS FOLLOWS:
  - 50% – 13mm CUBICAL
  - 25% – 6.75mm CUBICAL
  - 25% – 4.75mm TO DUST (WASHED CRUSHER DUST)

NGL: NATURAL GROUND LEVEL  
FRL: FINISHED ROAD LEVEL  
FSL: FINISHED SURFACE LEVEL



CITY OF CAPE TOWN  
URBAN MOBILITY

TITLE

## SUB-SURFACE DRAIN: MAIN LINE

STANDARDS AND GUIDELINES DETAILS

SCALE

1:20

PAPER

A4

DRAWING No.

SW1.1

REV

B

**TABLE 1**  
MANHOLE CHAMBER DIAMETER

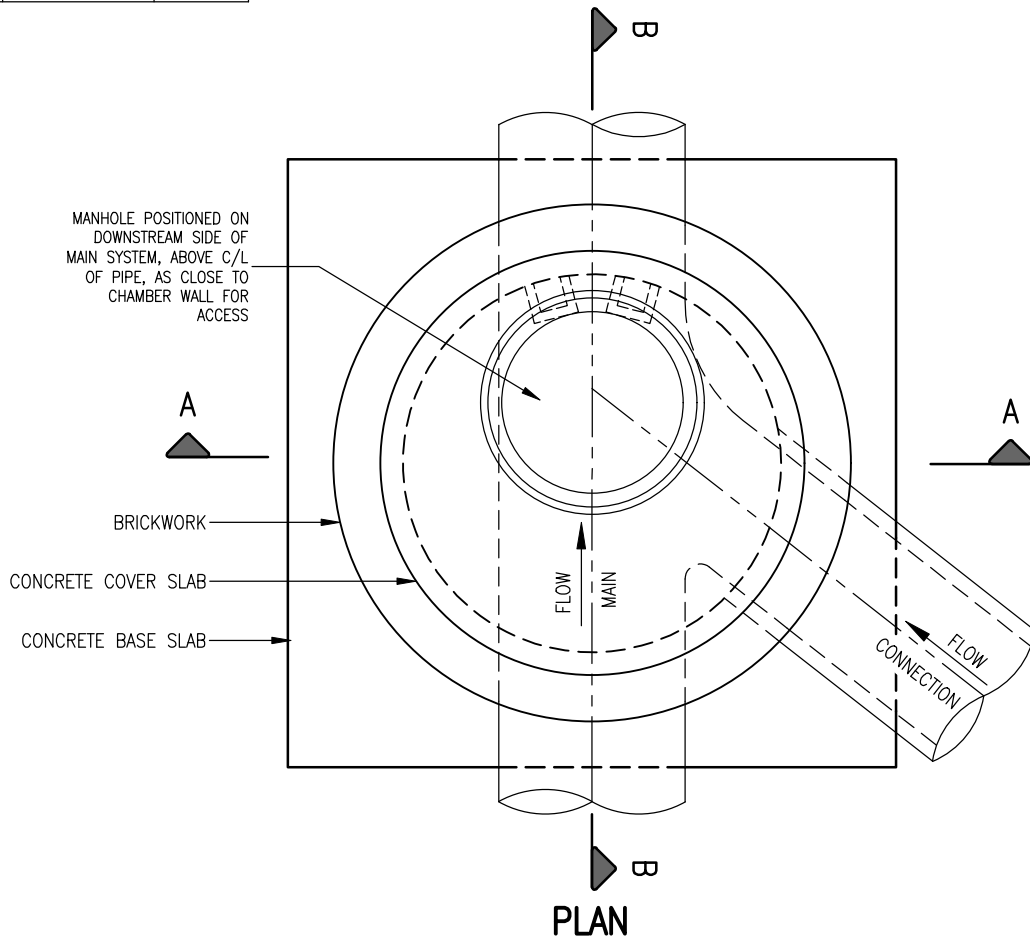
NOM. PIPE DIA. (mm)	DEPTH 'y' (m)		
	$y \leq 2.5$	$2.6 < y \leq 4.0$	$y > 4.0$
	CHAMBER DIAMETER $\phi$ (mm)		
375	1000	1250	1500
450			
525			
600	1250	1500	1500
675			
750			
825	1500	1500	1500
900			
1050			
1200	1800	1800	1800
1350	1950	1950	1950

**TABLE 2**  
BRICKWORK & FLOOR/BASE SLAB

DEPTH "y" (m)	BRICKWORK (mm)	BASE/FLOOR SLAB		
		THICKNESS (mm)	CONCRETE GRADE	REINFORCING
$y \leq 2.5$	230	150	20/19	NONE
$2.5 < y \leq 4.0$	350	200	20/19	MESH 311
$y > 4.0$	350	250	25/19	MESH 395

**TABLE 3**  
PRECAST CONCRETE RING:  
MINIMUM WALL THICKNESS

RING DIAMETER	WALL THICKNESS
1000	65
1250	75
1500	85
1800	95
1950	115



**NOTES:**

- REFER TO SECTION 10.4.3 FOR MANHOLE COVER AND FRAME REQUIREMENTS.
- HINGED MANHOLE COVERS SITUATED IN THE ROAD SHALL OPEN TOWARDS ONCOMING TRAFFIC.
- MANHOLE COVER LEVEL:
  - ROADWAY OR FOOTWAY: LEVEL WITH FRL/FSL.
  - OPEN SPACES: 500mm ABOVE NGL (UNLESS DIRECTED OTHERWISE). MINIMUM CENTER LINE RADIUS OF BENCHING: 2.5 X PIPE DIAMETER.
- CHIMNEY OPENING TO BE PLACED AS CLOSE TO CENTER LINE OF THE MAIN INCOMING AND OUTGOING PIPE AS POSSIBLE.
- BRICKWORK: SEE "SPECIFICATION FOR MASONRY UNITS", SECTION 10.4.10.
- ALL INTERNAL BRICKWORK TO HAVE SMOOTH FINISH (12mm PLASTERED WITH 1:3 MORTAR).
- MANHOLES MUST CATER FOR ANY SITE SPECIFIC GROUND CONDITIONS. SHOULD THE MANHOLE DESIGN REQUIRE ALTERATIONS/AMENDMENTS FOR SUCH CONDITIONS, THE DESIGN MUST BE DISCUSSED WITH THE APPROVAL AUTHORITY.
- REFER TO DRAWING SW2.3 FOR MANHOLE WITH AN ACCESS SHAFT (DEEP TYPE).
- MANHOLES FOR PIPE DIAMETERS GREATER THAN 1350mm SHALL REQUIRE A SPECIAL DESIGN.

NGL: NATURAL GROUND LEVEL  
FRL: FINISHED ROAD LEVEL  
FSL: FINISHED SURFACE LEVEL

**SHEETS INFO:**

SHEET 1: GENERAL NOTES  
TABLES 1, 2 & 3  
SHEET 2: SECTION A-A & B-B



CITY OF CAPE TOWN  
URBAN MOBILITY

TITLE

**STORMWATER MANHOLE  
WITHOUT ACCESS SHAFT (SHALLOW TYPE)**

STANDARDS AND GUIDELINES DETAILS

SHEET 1

SCALE

**1:25**

PAPER

**A4**

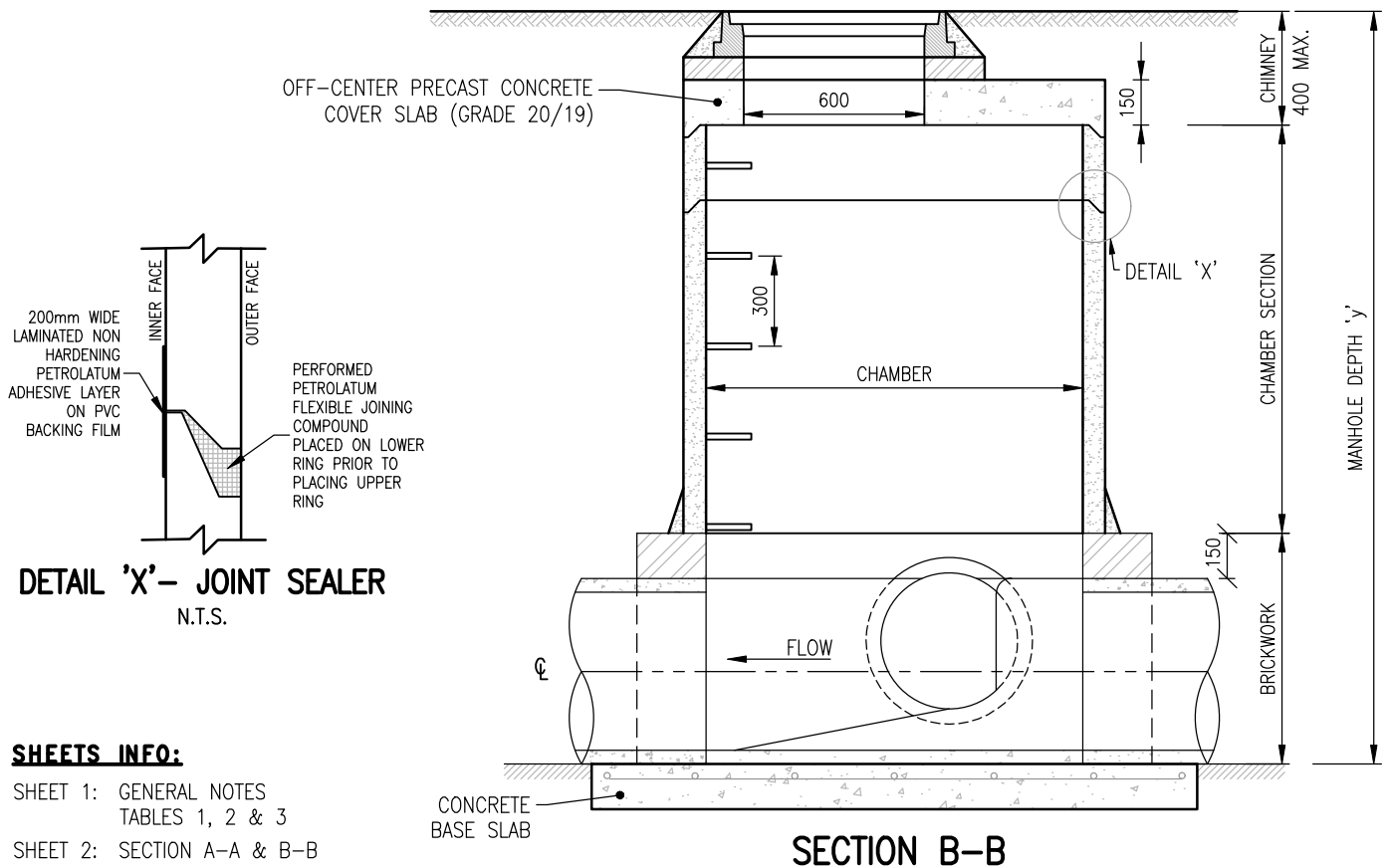
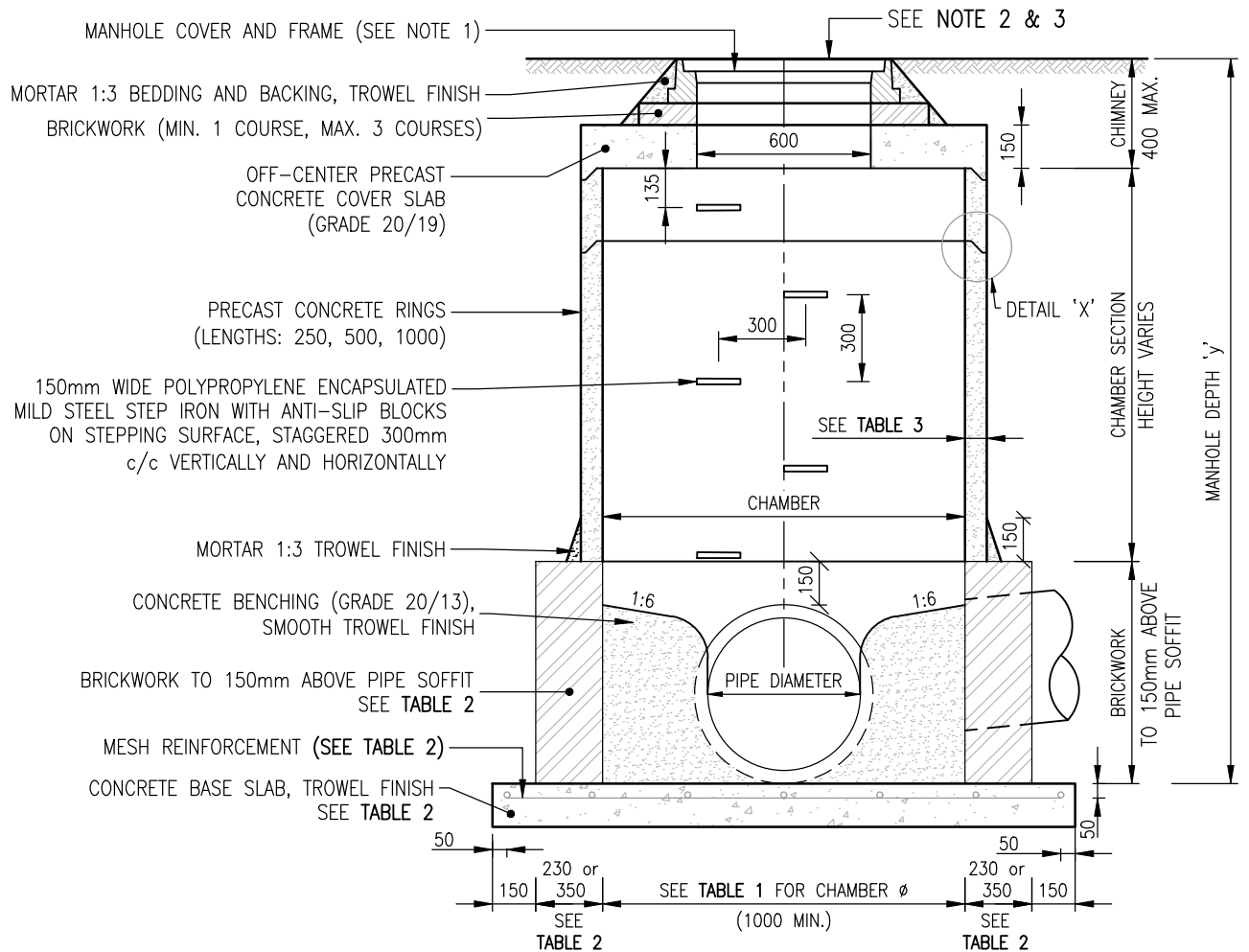
DRAWING No.

**SW2.2A**

REV

**B**

\\CBD-CIVIC-FS01\\Apps\\CAD\\R&SD\\ITI\_01 Design\\T\_1000B Standards\\T\_1000RS DESIGN\_Roads and Stormwater\\0002 Drawings\\\_Version3.0\\03 SW\\SW2.2B - Manhole for SW Pipes (Shallow Type)\_RevC.dwg



#### SHEETS INFO:

SHEET 1: GENERAL NOTES  
TABLES 1, 2 & 3

SHEET 2: SECTION A-A & B-B



CITY OF CAPE TOWN  
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CITY OF CAPE TOWN  
URBAN MOBILITY

TITLE

## STORMWATER MANHOLE WITHOUT ACCESS SHAFT (SHALLOW TYPE)

STANDARDS AND GUIDELINES DETAILS

SHEET 2

SCALE

1:25

DRAWING No.

SW2.2B

PAPER

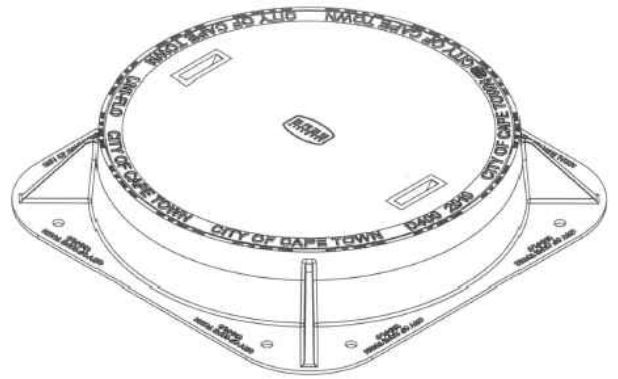
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REV

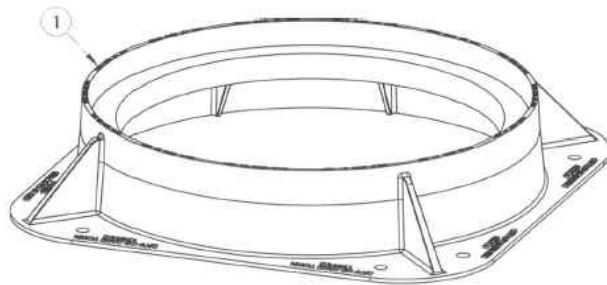
C



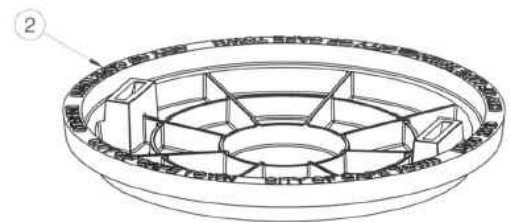
RENDERED COVER AND FRAME



ASSEMBLED COVER AND FRAME



COMPONENT 1: FRAME



COMPONENT 2: COVER



COMPONENT 3: CONCRETE INFILL

COMPONENT DETAILS & SPECIFICATIONS

#	Component	APPROXIMATE MASS	SIZE	MATERIAL	CLASSIFICATION
1	Frame	48kg	800x800x150mm (L x W x H)	Ductile Iron	Class D400 (400kN)
2	Cover	48kg	694mm $\phi$ ; 100mm (H)	Ductile Iron	Class D400 (400kN)
3	Concrete Infill	53kg	Volume = 0.022m <sup>3</sup>	Concrete	(45MPa 28-day Compressive Strength)

**NOTES:**

1. THE COVER AND FRAME SHALL CONFORM TO THE LATEST SANS 50124.
2. DUCTILE IRON SHALL CONFORM TO THE LATEST SANS 936.



CITY OF CAPE TOWN  
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CITY OF CAPE TOWN  
URBAN MOBILITY

TITLE

**DUCTILE IRON MANHOLE COVER AND  
FRAME, WITH CONCRETE INFILL**

STANDARDS AND GUIDELINES DETAILS

SCALE

**NTS**

DRAWING No.

**SW2.4**

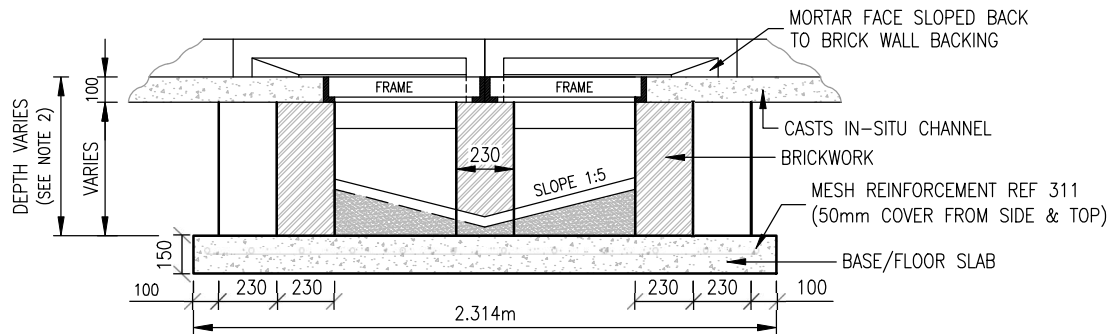
PAPER

**A4**

REV

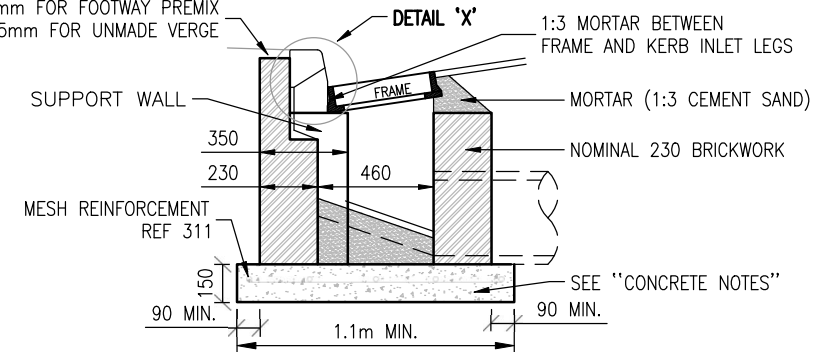
**A**



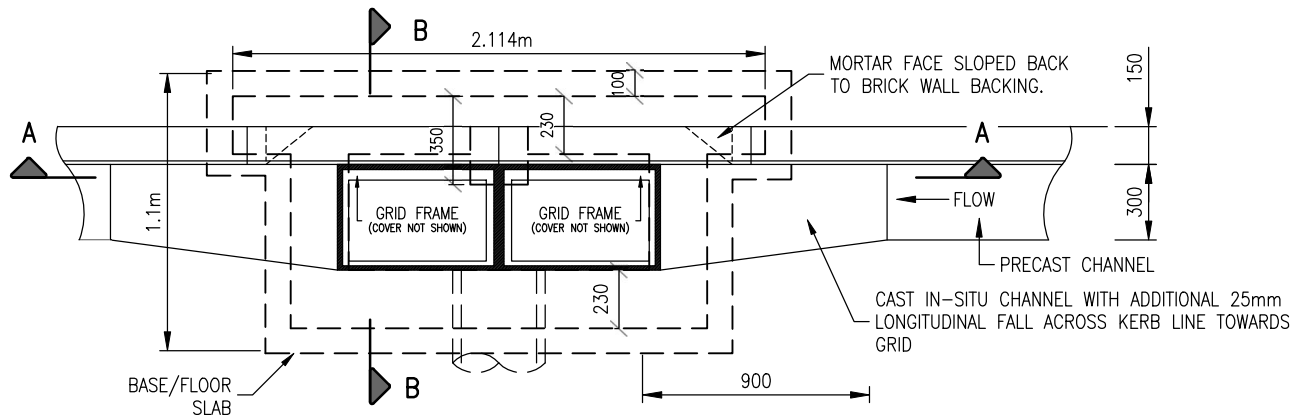


SECTION A-A

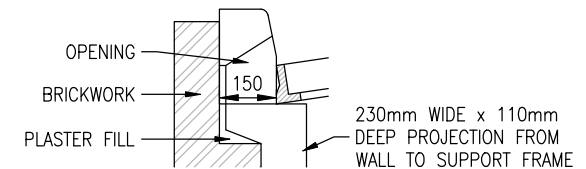
ALLOWANCE: 30mm FOR FOOTWAY PREMIX  
75mm FOR UNMADE VERGE



SECTION B-B



PLAN



DETAIL 'X'

**GENERAL NOTES:**

- HINGED COVERS ARE TO OPEN TOWARDS SIDEWALK AND NOT THE ROAD.
- CATCHPIT DEPTH:
  - MINIMUM = 0.75m
  - MAXIMUM = 1.20m
- BRICKWORK: SEE SECTION 10.4.10 "SPECIFICATION FOR MASONRY UNITS".
- ALL INTERNAL BRICKWORK TO HAVE SMOOTH FINISH.
- REFER TO DRAWING SW4 FOR INLET KERB DETAILS.

**NOTES: CONCRETE GRADES**

BASE/FLOOR	25/19
BENCHING	20/13
IN-SITU CAST CHANNEL	30/19



CITY OF CAPE TOWN  
URBAN MOBILITY

TITLE

**STORMWATER CATCHPIT  
TYPE A: DOUBLE KERB & GRID INLET COMBINATION**

STANDARDS AND GUIDELINES DETAILS

SCALE

**N.T.S.**

PAPER

**A4**

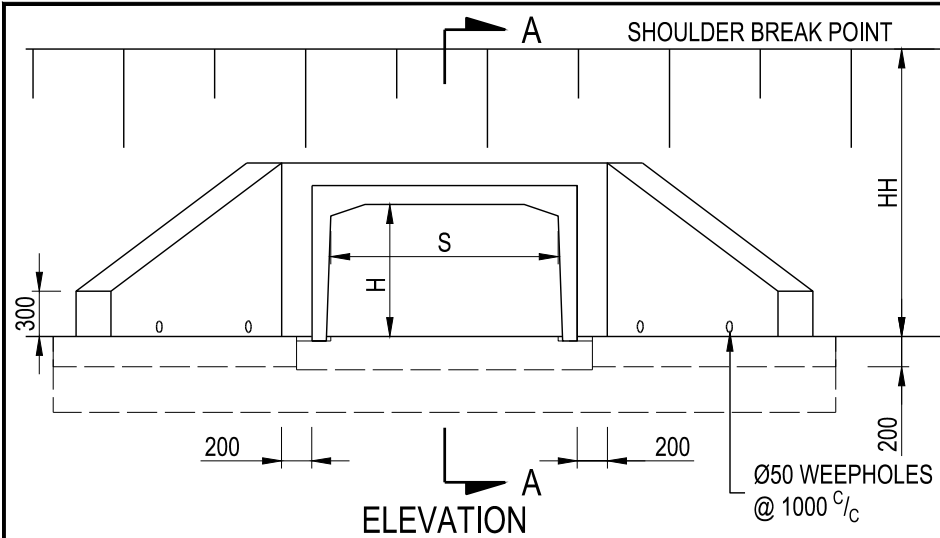
DRAWING No.

**SW3.1**

REV

**C**



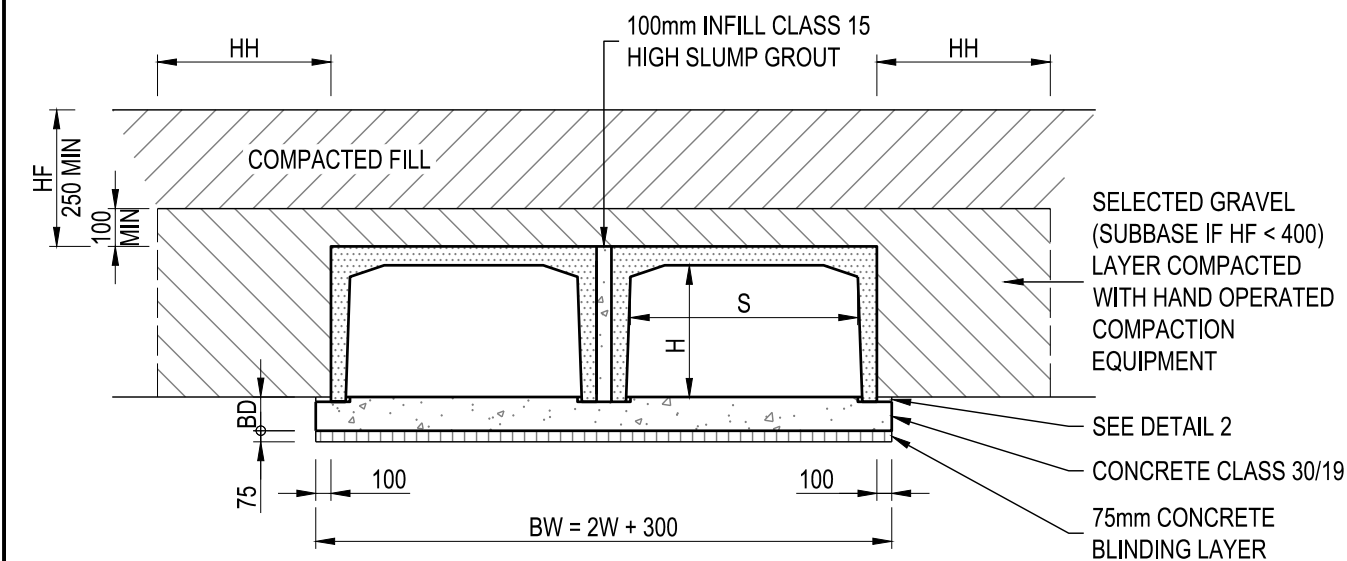
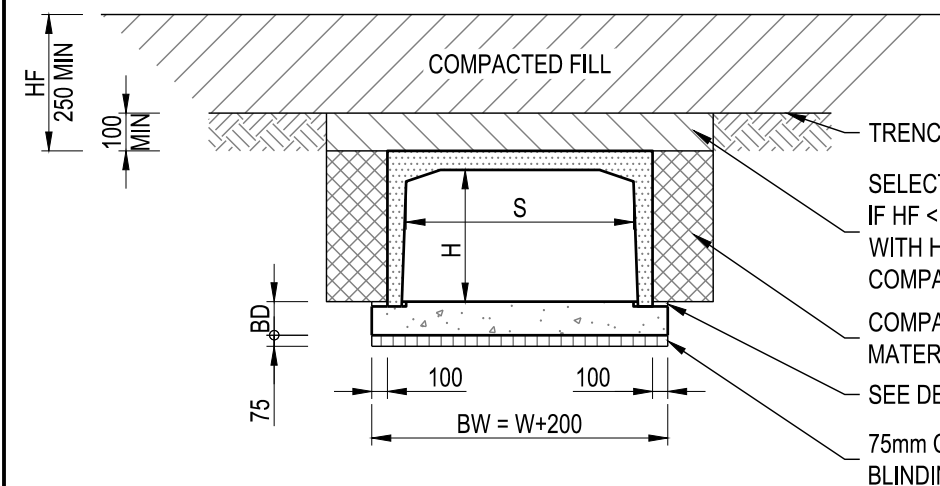


MAX TRENCH WIDTH = BW+600

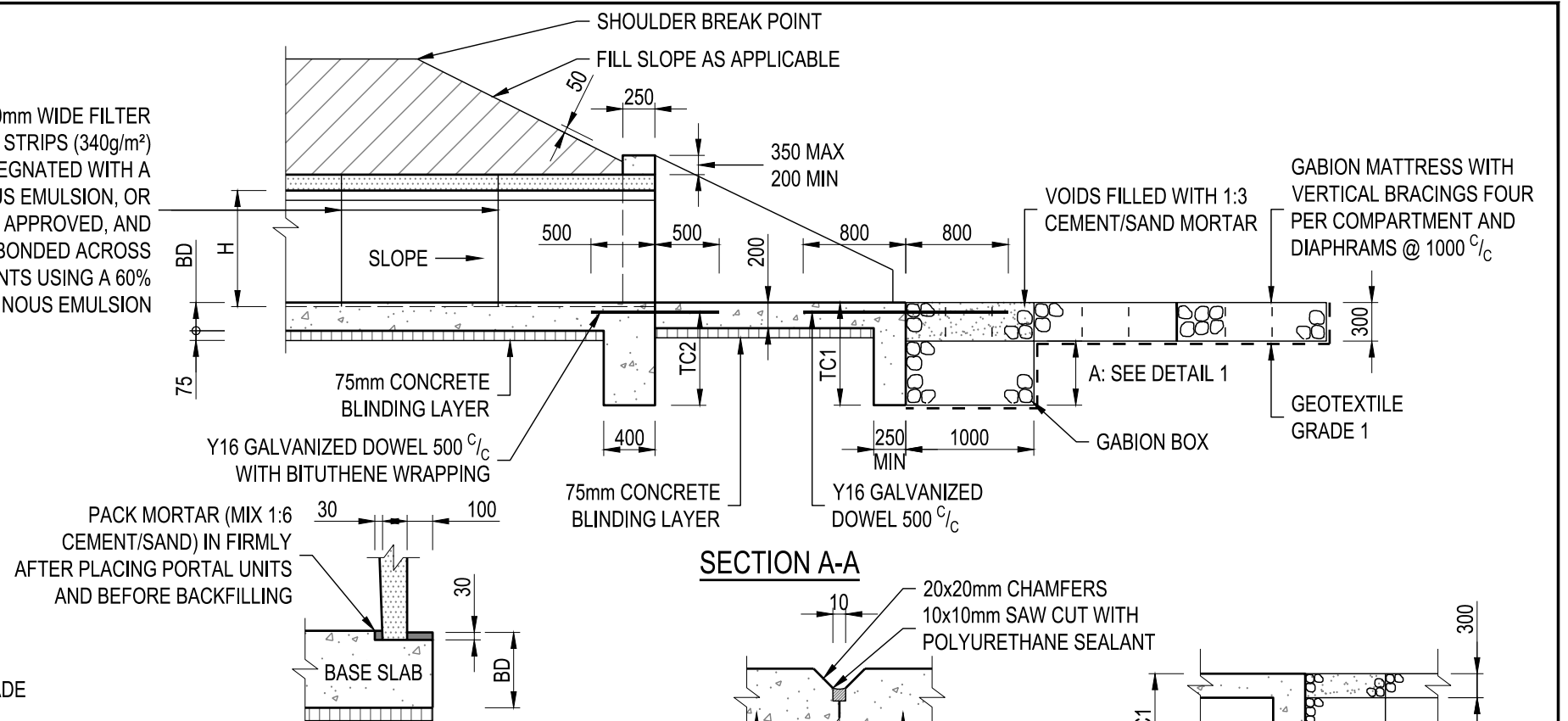
400 MAX

W

400 MAX



**SECTION B-B: 2x CULVERTS**



**DETAIL 2: FOR H GREATER THAN 900mm PROVIDE RECESS IN BASE ALB AT ALL PORTAL LEG LOCATIONS AS SHOWN**

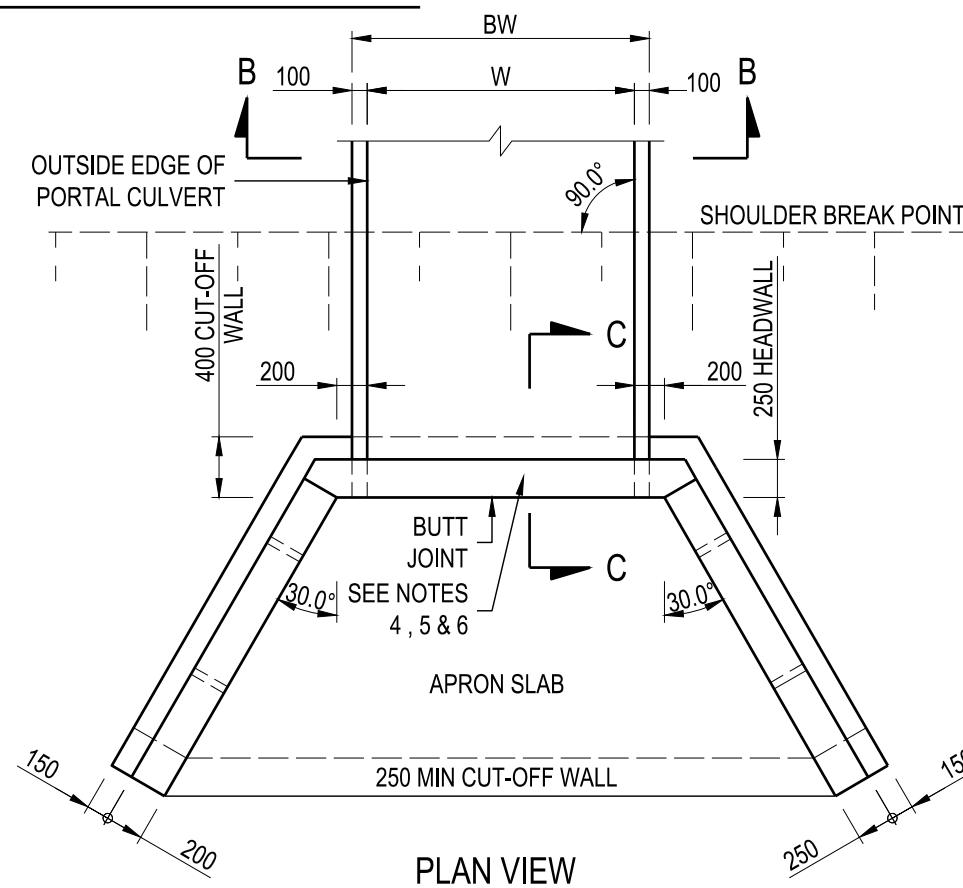
**SECTION C-C: BUTT JOINT**

TC1	PROTECTION DEPTH (A)
<800	0
800 - 1300	500
> 1300	1000

**DETAIL 1: GABION PROTECTION DEPTH**

**NOTES:**

- GENERAL
  - CUT-OFF WALLS TC1 AND TC2 TO BE CONSTRUCTED AT BOTH INLET AND OUTLET SIDES.
  - GABION SCOUR PROTECTION TO BE CONSTRUCTED AT OUTLET ONLY. EXTENT OF INLET/OUTLET PROTECTION AS SPECIFIED.
  - THIS DRAWING TO BE READ TOGETHER WITH SW-05-02 AND IN CONJUNCTION WITH 2200 OF THE COLTO DOCUMENT "STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE WORKS FOR STATE ROAD AUTHORITIES".
- NOTATION
  - H: CLEAR INTERNAL HEIGHT OF PORTAL
  - S: CLEAR INTERNAL SPAN OF PORTAL
  - W: TOTAL EXTERNAL WIDTH OF PORTAL
  - HH: HEADWALL HEIGHT
  - BW: BASE SLAB WIDTH
  - BD: BASE SLAB DEPTH
  - TC1: CUT-OFF WALL DEPTH AT END OF BASE SLAB
  - TC2: CUT-OFF WALL DEPTH AT END OF BASE SLAB
  - HF: HEIGHT OF FILL
  - WWH: WING WALL HEIGHT
  - FD: FOUNDATION DEPTH



DRAWING TITLE :

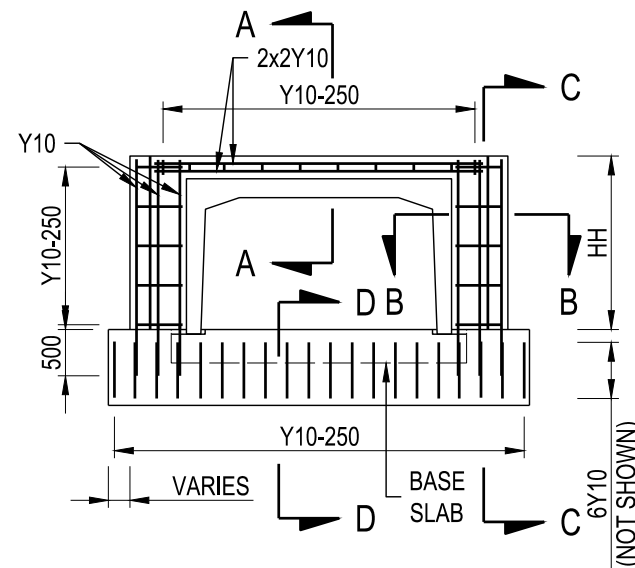
**BOX CULVERT INLET AND OUTLET DETAILS**

SCALE : NTS

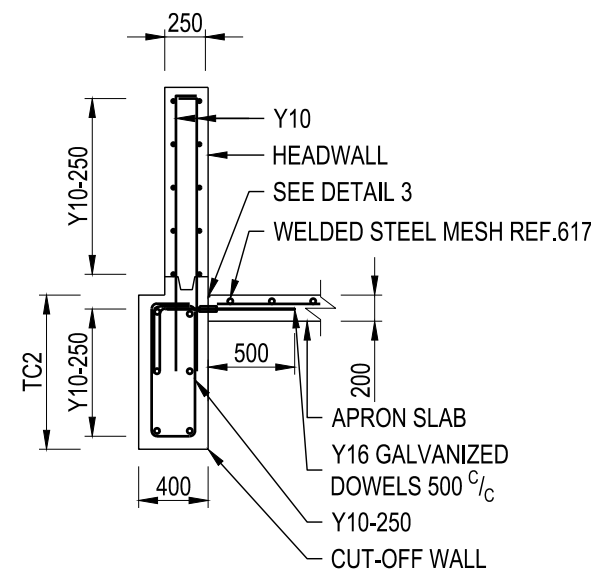
ORIGINAL DWG SIZE A3

DRAWING No. :

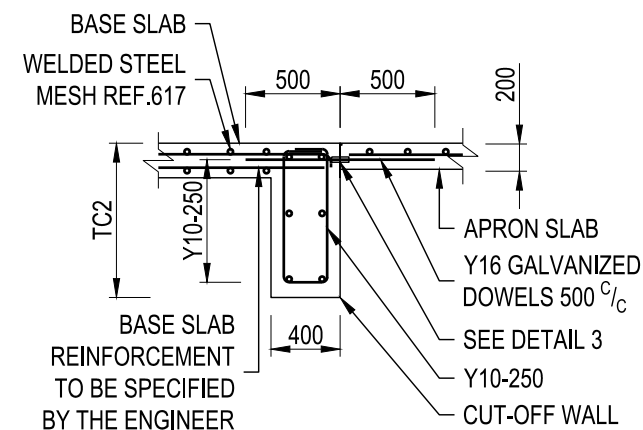
**SW-05-01**



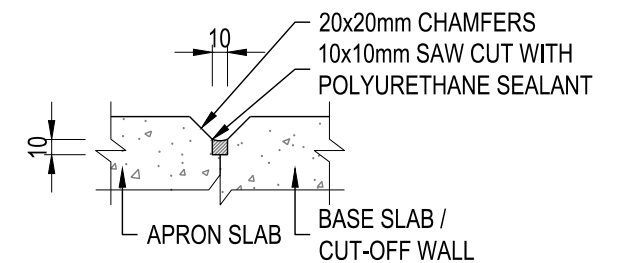
HEADWALL AND CUT-OFF WALL DETAIL



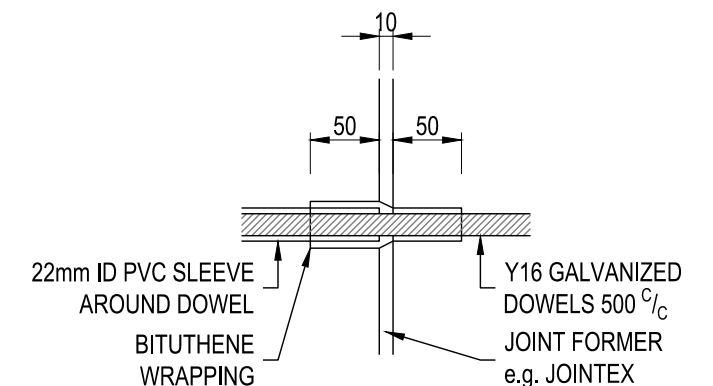
SECTION C-C: HEADWALL AND CUT-OFF WALL DETAIL



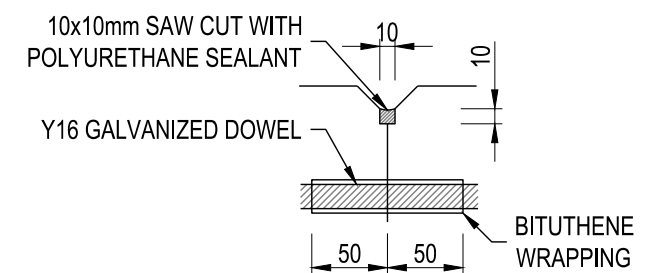
SECTION D-D: BASE SLAB, CUT-OFF WALL AND SPRON SLAB DETAIL



DETAIL 1

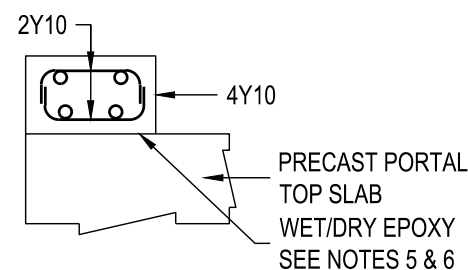


DETAIL 2

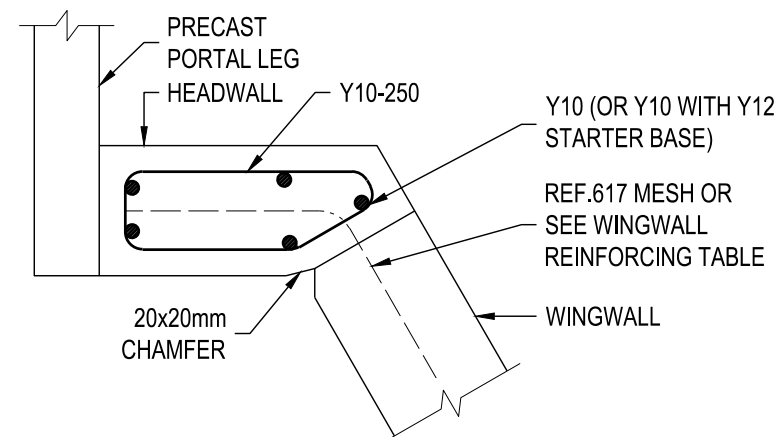


DETAIL 3

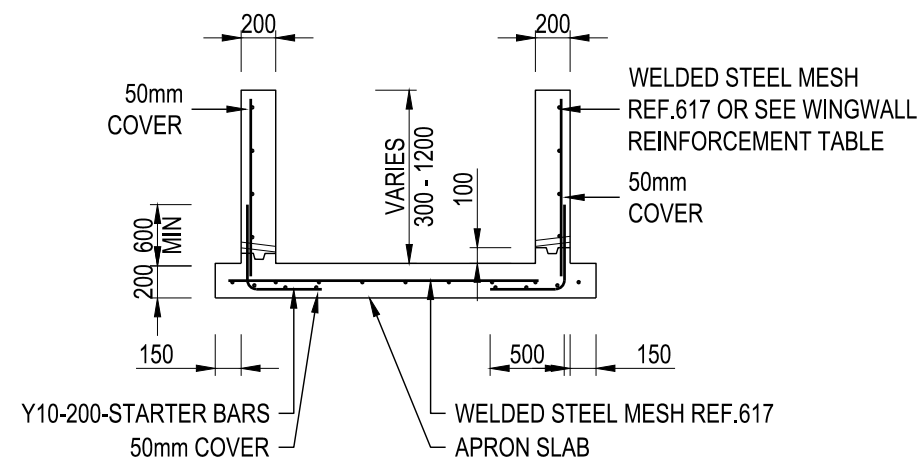
WINGWALL REINFORCEMENT	
WWH	VERTICAL STEEL
≤ 1200	Y10 - 250
ALL TRANSVERSE STEEL Y10-250 THROUGHOUT	



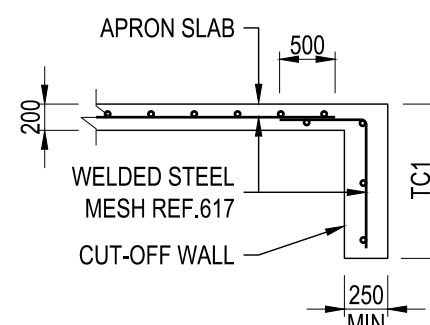
SECTION A-A



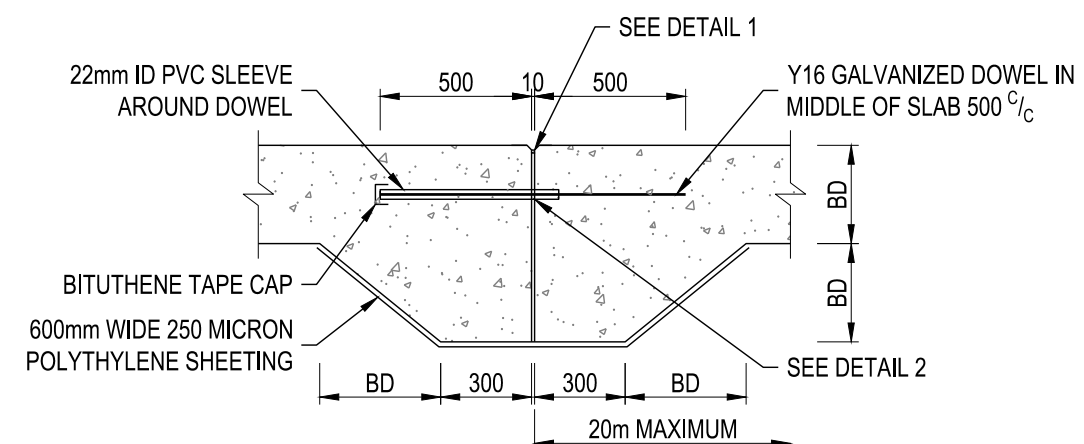
SECTION B-B



WINGWALL AND APRON SLAB DETAIL FOR HEADWALL HEIGHTS (HH) NOT EXCEEDING 1200mm

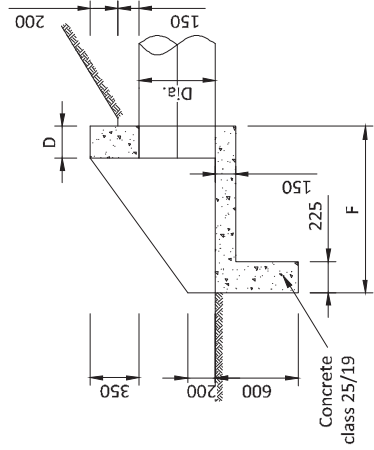


APRON SLAB AND CUT-OFF WALL DETAIL

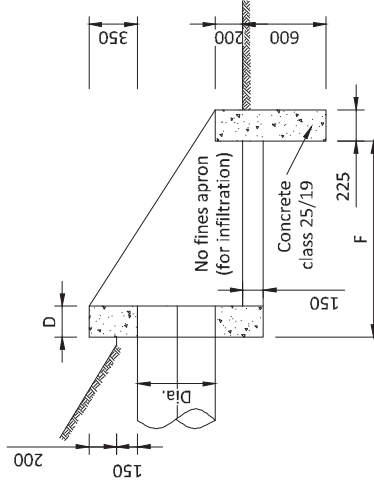


JOINTS IN BASE SLAB (TRANSVERSE)

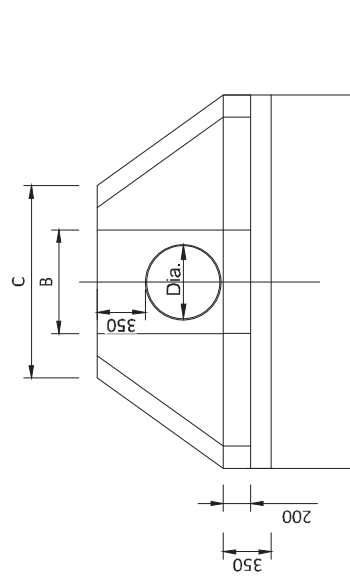
NOTES:  
1. THIS DRAWING TO BE READ TOGETHER WITH SW-05-01.



**SECTION A - A  
INLET**



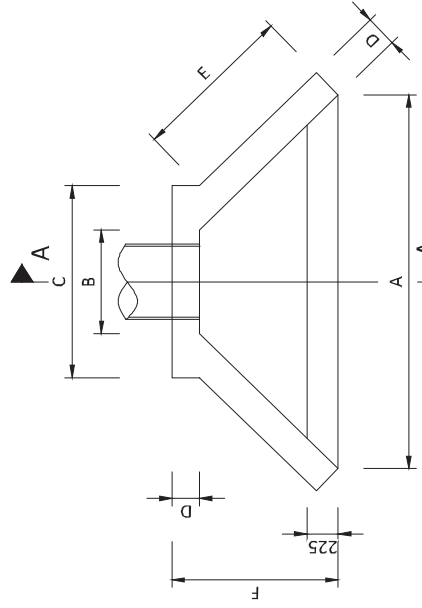
**SECTION A - A  
OUTLET**



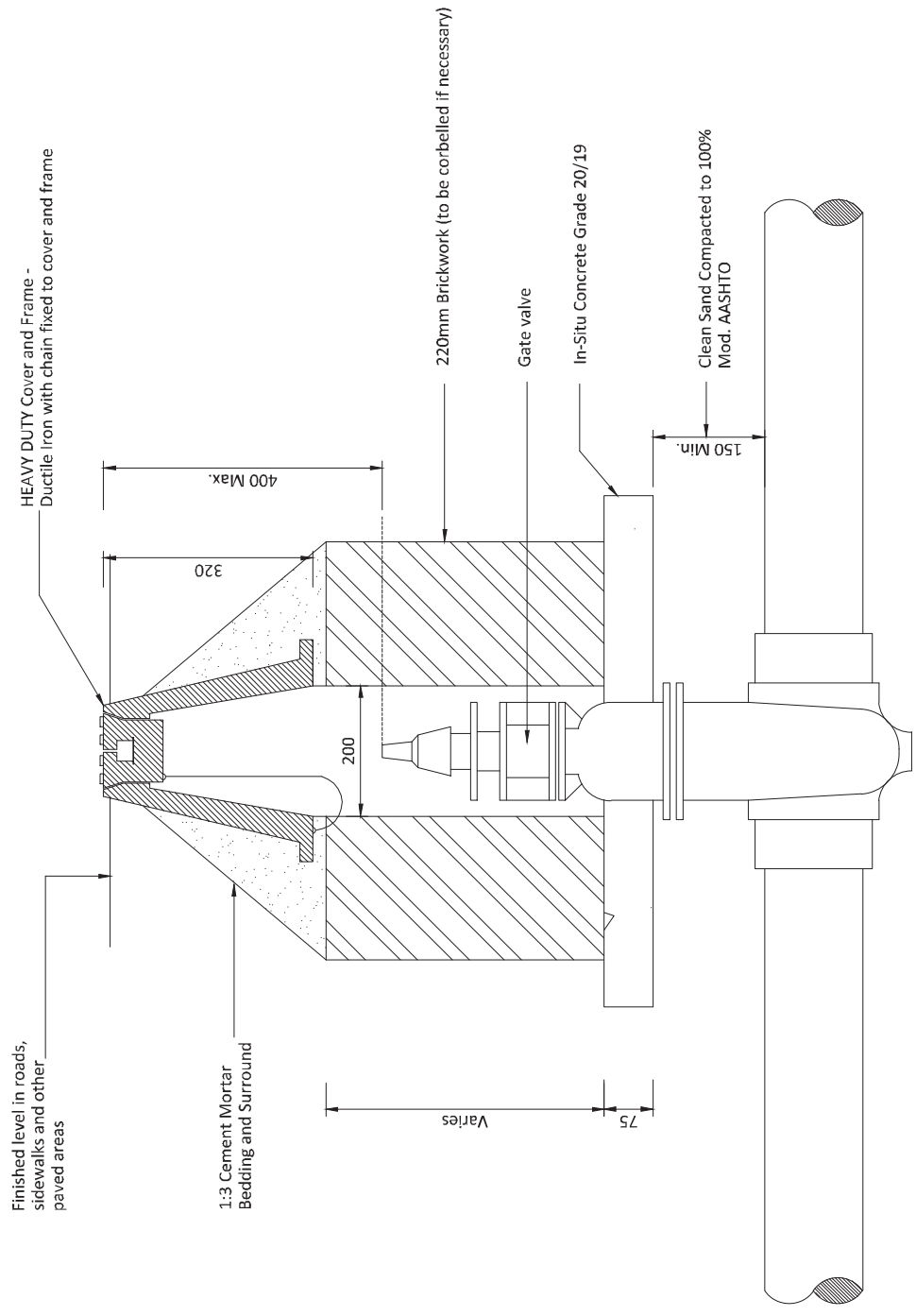
**ELEVATION  
OUTLET**

- Notes:**
1. No fines base for infiltration
  2. Special detail to be drawn up for diameters larger than 1.35m
  3. Walls to be constructed of brickwork (see specifications for masonry units) or concrete (class 25/19mm).
  4. All exposed brickwork to be rendered in 1:2 plaster (concrete masonry units only)

HEADWALL DIMENSIONS						
DIA.	A	B	C	D	E	OUTLET F
1350	6200	1500	2500	330	2970	3 x Ø
1200	5500	1350	2270	330	2605	3 x Ø
1050	4800	1200	2050	330	2245	3 x Ø
900	4100	1050	1825	330	1880	3 x Ø
825	3800	975	1720	330	1700	3 x Ø
750	3400	900	1610	330	1520	3 x Ø
600	2700	750	1390	220	1150	3 x Ø
525	2450	675	1275	220	1050	3 x Ø
450	2200	600	1160	220	930	3 x Ø
375	1700	525	1030	220	435	3 x Ø
300	1300	450	920	220	430	3 x Ø

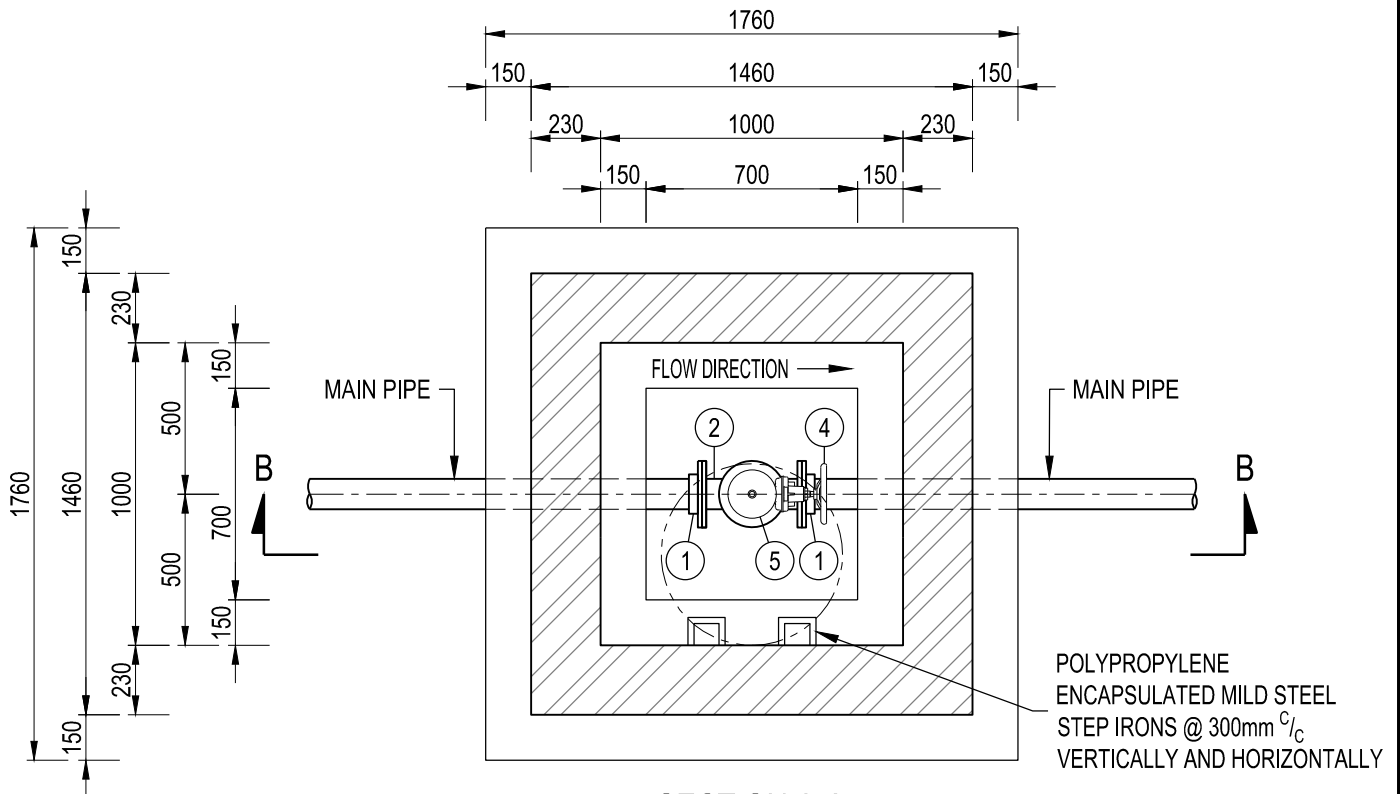


**PLAN  
OUTLET**

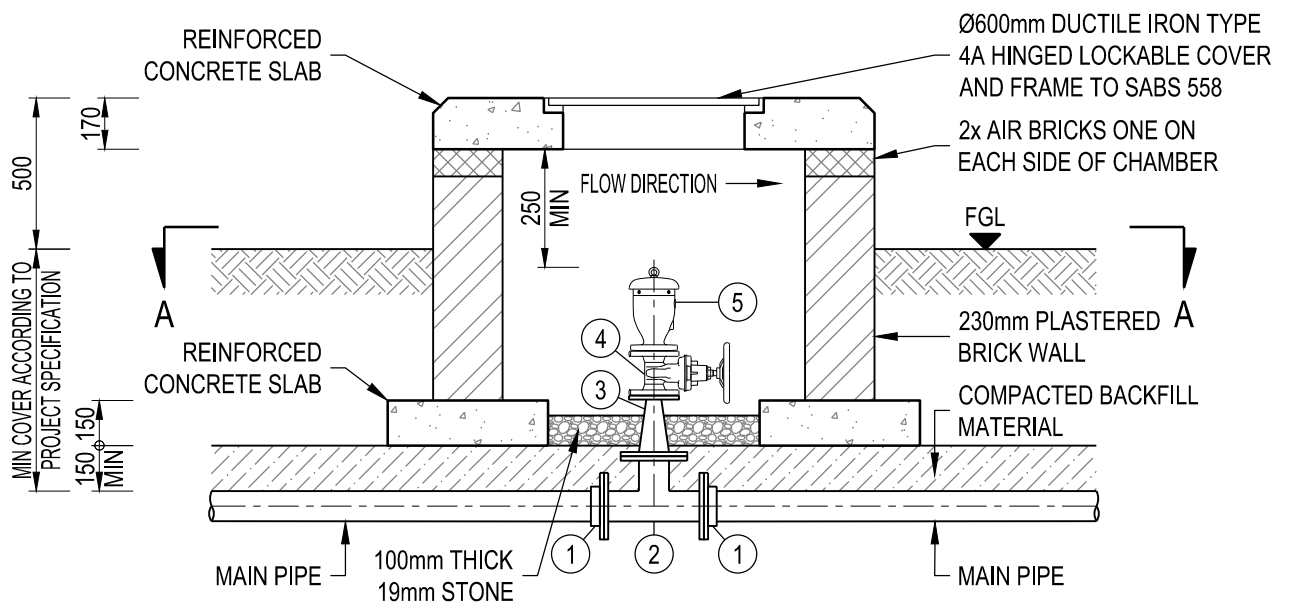


TYPICAL SECTION

CITY OF CAPE TOWN STANDARD DETAILS VALVE CHAMBER		DRAWING No. <b>W1</b>	SCALE 1:10
<div>APPROVED BY</div> <div>ISSUED DATE</div> <div><b>FEB 2013</b></div>		 <div>CITY OF CAPE TOWN   DESIGN &amp; CONSTRUCTION   2008-2013</div> <div>THIS CITY WORKS FOR YOU</div>	



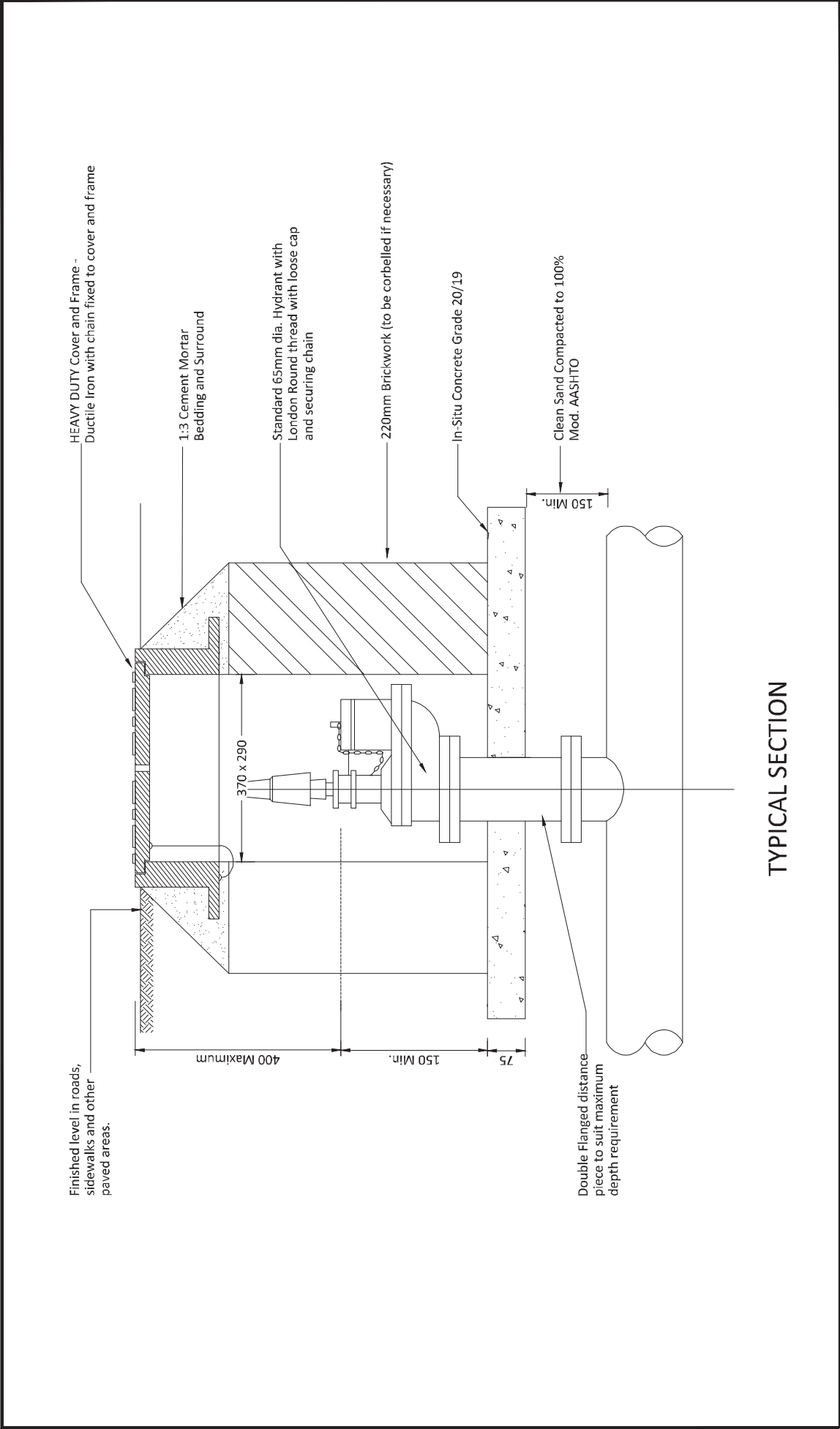
**SECTION A-A**



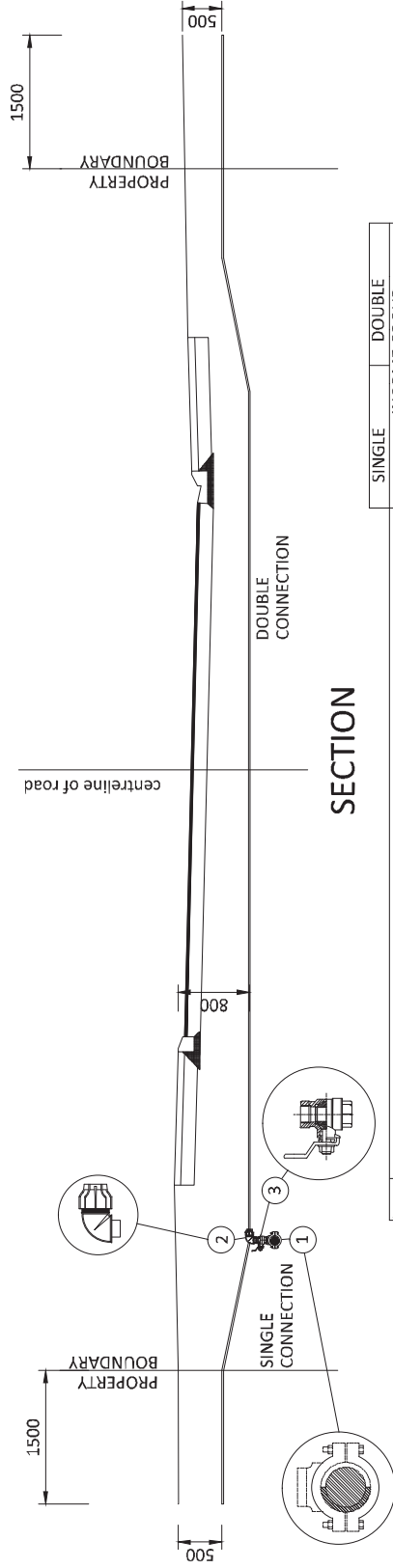
**SECTION B-B**

## FITTINGS

1. ADAPTOR ACCORDING TO PIPELINE MATERIAL. FOR PVC-U, STEEL AND DUCTILE IRON A FLANGE ADAPTOR IS REQUIRED. FOR HDPE A HDPE STUB END WITH STEEL BACKING RING IS REQUIRED.
2. FLANGED STEEL REDUCING TEE.
3. FLANGED STEEL REDUCER WITH DIMENSIONS TO MATCH TEE AND AIR VALVE.
4. FLANGED RSV SHORT BODY GATE VALVE WITH HANDWHEEL AND CLOCKWISE CLOSING. DIAMETER TO MATCH AIR VALVE.
5. 50mm FLANGED AIR VALVE.

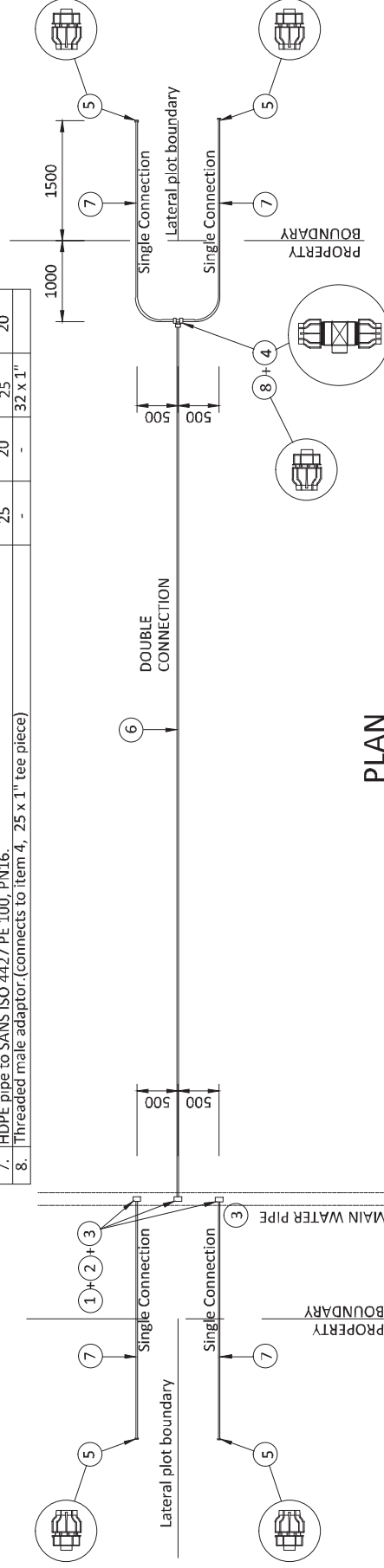


DRAWING No. <b>W2</b>		SCALE 1:10	
CITY OF CAPE TOWN STANDARD DETAILS		HYDRANT CHAMBER	
APPROVED BY ISSUED DATE <b>FEB 2013</b>		THIS CITY WORKS FOR YOU	
		CITY OF CAPE TOWN   DESIGNED AND DRAWN BY: J. VAN DER MERWE	



## SECTION

Item No.	SPECIFICATIONS FOR PIPES AND FITTINGS	INCOME GROUP			
		SINGLE		DOUBLE	
		'H' to 'M'	LOW	'H' to 'M'	LOW
1.	Cast Iron, Ductile Iron or 'Alprene or Magnum' 16 bar JASWIC approved polypropylene saddle with threaded outlet and secured with stainless steel bolts and nuts.				
2.	Cast & Ductile Iron to be coated as specified in the City's Standard Specifications				
3.	Male threaded 45° or 90° elbow (45° preferred)	25 x 3/4"	20 x 1/2"	32 x 1"	25 x 3/4"
4.	Municipal DZR Ball Cock or DZR brass ferrule to SABS std. (optional)	3/4"	1"	1"	3/4"
5.	Increasing tee piece for 20 and 25 dia. pipe crossings.	-	-	25 x 1"	25 x 20
6.	Female threaded tee piece for 40 dia. pipe crossing.	-	-	25 x 1"	25
7.	End cap.	25	20	25	20
8.	HDPE pipe to SANS ISO 4427 PE 100, PN16.	-	-	32	25
	HDPE pipe to SANS ISO 4427 PE 100, PN16.	25	20	25	20
	Threaded male adaptor (connects to item 4, 25 x 1" tee piece)	-	-	32 x 1"	-



## PLAN

DRAWING No.

**W3**

SCALE  
N.T.S.

# CITY OF CAPE TOWN STANDARD DETAILS TYPICAL WATER CONNECTION

APPROVED BY

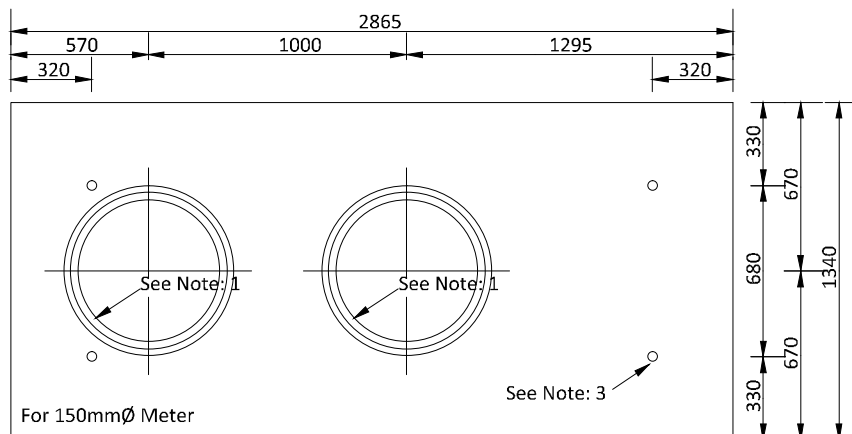
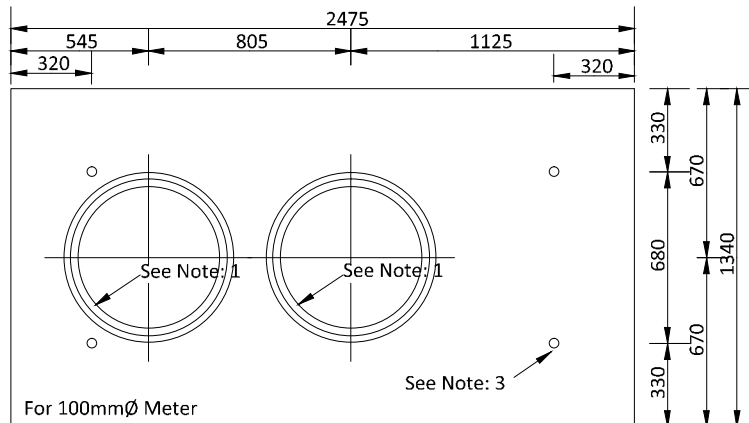
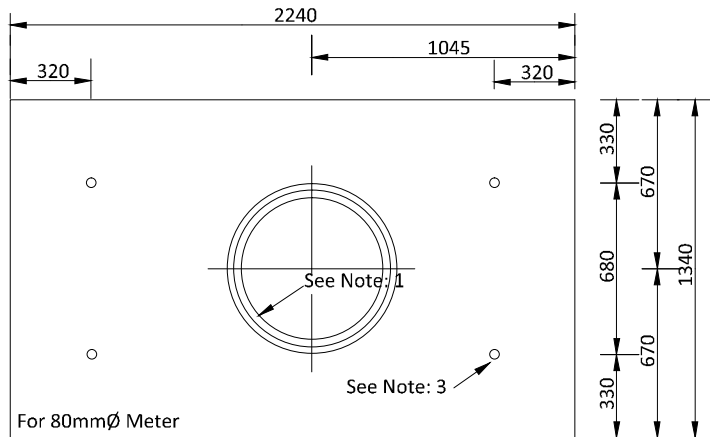
ISSUED DATE

**FEB 2013**



THIS CITY WORKS FOR YOU



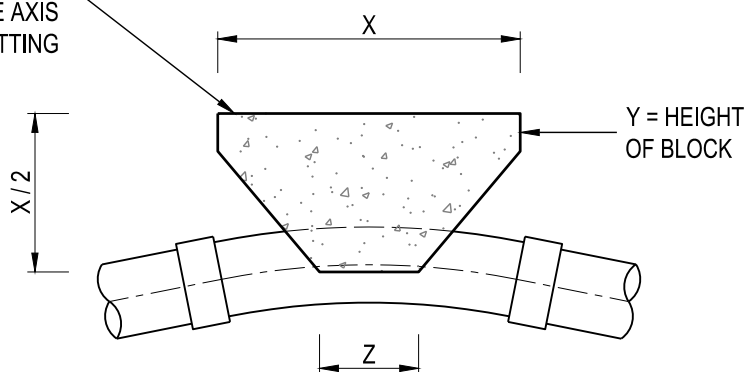


## NOTES

- NOTE 1: DUCTILE IRON COVER FRAMES TO BE PLACED ABOVE WATER METER & STRAINER
- NOTE 2: CUT & BEND MESH TO SUIT COVER OPENING & SUMP
- NOTE 3: PROVIDE 4No. 40mmØ LIFTING HOLE IN ROOF SLAB [PLUGGED WITH BITUMEN AFTER ROOF SLAB IS IN PLACE TO PREVENT WATER SEEPAGE]
- NOTE 4: PLASTIC SHEETING 375 MICRON EMBOSSED D.P.C. SABS 952\1962 TYPE B TO BE PLACED ON WALLS BEFORE PLACING ROOF SLAB IN PLACE AND SEAL INTERNAL AND EXTERNAL JOINTS WITH SIKAFLEX-PRO 2HP
- NOTE 5: CONCRETE GRADE 25\19 FOR FLOOR AND ROOF SLABS
- NOTE 6: AVOID PLACING THE METER CHAMBER IN THE ROAD AND ENTRANCES WHEREVER POSSIBLE
- NOTE 7: CHAMBER WALLS TO BE PLASTERED, EXTERNAL AND INTERNAL, TO PREVENT SEEPAGE OF GROUND WATER INTO MANHOLE (PLASTER 13MM THICK, STEEL TROWELLED TO SMOOTH SURFACE)
- NOTE 8: EXTERNAL PLASTERED WALLS TO BE COATED WITH 2 COATS FLINTKOTE [ABE] AND 1 FINAL COAT SILVAKOTE [ABE] AND INTERNAL PLASTERED WALLS TO BE COATED WITH 3 COATS DURASLURRY[ABE]
- NOTE 9: ALL FLANGES TO BE DRILLED T16
- NOTE 10: VIKING JOHNSON COUPLING TO BE SEALED WITH DENSO TAPE
- NOTE 11: ONLY STAINLESS STEEL 316L SHOULD BE USED FOR BOLTS & NUTS
- NOTE 12: INTERNAL, PIPE PIECES SHALL BE COATED WITH 3 COATS CARBOLINE 891, MINIMUM TOTAL THICKNESS OF 250 MICRON
- NOTE 13: EXTERNAL, PIPE PIECES SHALL BE COATED WITH 3 COATS CARBOLINE 891, MINIMUM TOTAL THICKNESS OF 250 MICRON
- NOTE 14: EXTERNAL, VIKING JOHNSON/FLANGE ADAPTORS TO BE SEALED WITH DENSO TAPE
- NOTE 15: EXTERNAL BENDS, TEES & FLANGE ADAPTORS SHALL BE COATED WITH 3 COATS CARBOLINE 891, MINIMUM TOTAL THICKNESS OF 250 MICRON



15MPa CONCRETE TO BE CAST  
AGAINST UNDISTURBED  
IN-SITU MATERIAL AROUND THE AXIS  
OF SYMMETRY OF THE FITTING



NOTE: COUPLINGS AND FLANGES TO BE LEFT FREE OF CONCRETE.

50-100kPa SOIL BEARING CAPACITY AND 1350kPa MAX SITE TEST PRESSURE

	11.25° BEND			22.25° BEND			45° BEND		
DN	X	Y	Z	X	Y	Z	X	Y	Z
75	200	200	150	300	300	150	350	350	150
100	250	250	200	350	350	200	500	400	200
150	400	300	300	550	450	300	750	550	300
200	550	350	350	700	550	350	1050	700	350
250	700	450	350	950	650	400	1350	850	450
300	850	550	400	1100	800	450	1650	1050	550
350	950	650	400	1250	950	500	1850	1250	550

100-200kPa SOIL BEARING CAPACITY AND 1350kPa MAX SITE TEST PRESSURE

	11.25° BEND			22.25° BEND			45° BEND		
DN	X	Y	Z	X	Y	Z	X	Y	Z
75	200	150	150	200	200	150	300	200	150
100	200	200	200	250	250	200	400	250	200
150	250	250	300	350	350	350	550	400	300
200	350	300	350	500	450	350	700	550	350
250	450	350	350	600	550	400	850	700	450
300	550	450	400	700	650	450	1000	850	550
350	650	500	400	800	750	500	1200	950	550

200-400kPa SOIL BEARING CAPACITY AND 1350kPa MAX SITE TEST PRESSURE

	11.25° BEND			22.25° BEND			45° BEND		
DN	X	Y	Z	X	Y	Z	X	Y	Z
75	200	100	150	200	150	150	250	150	150
100	200	150	200	250	200	200	300	200	200
150	250	150	300	350	200	300	450	250	300
200	300	200	350	400	300	350	550	350	350
250	350	250	350	450	350	400	650	450	450
300	400	300	400	550	450	450	750	600	550
350	500	350	400	600	550	500	850	700	550



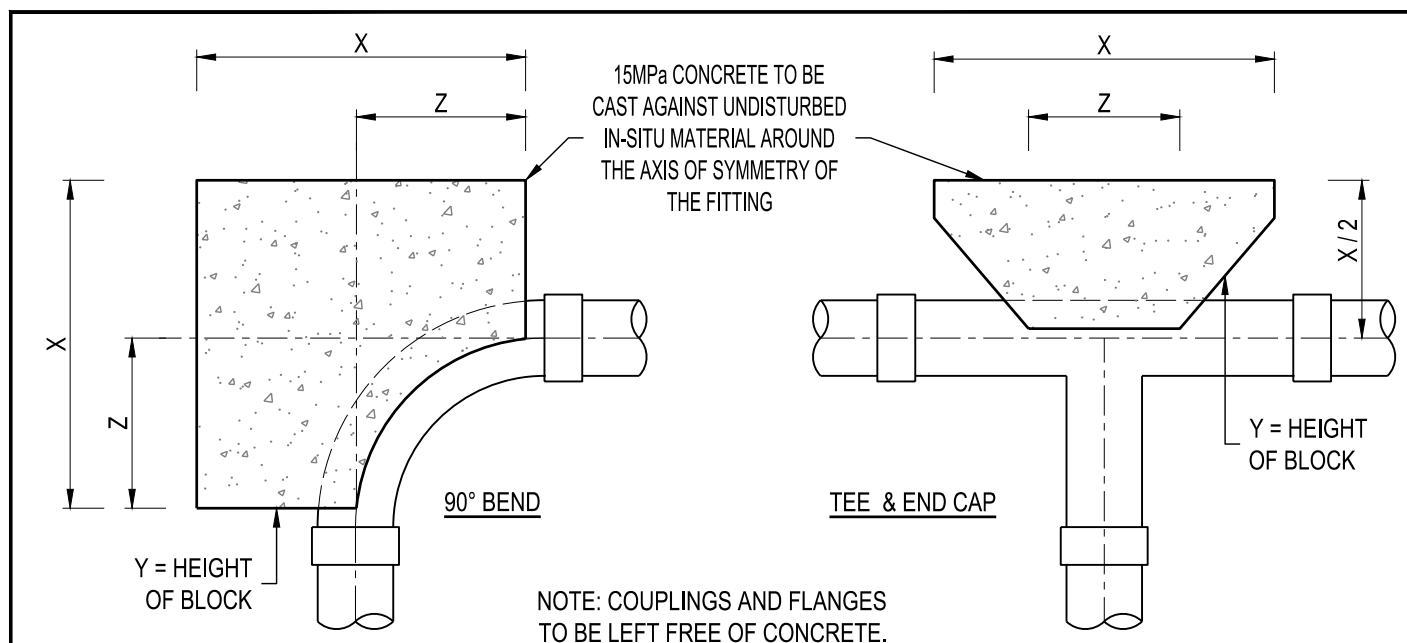
DRAWING TITLE :

**TYPICAL DETAIL OF THRUST BLOCK FOR BENDS**

SCALE :  
**NTS**

ORIGINAL DWG  
SIZE A4

DRAWING No. :  
**W-10-01**



50-100kPa SOIL BEARING CAPACITY AND 1350kPa MAX SITE TEST PRESSURE

	90° BEND			TEE & END CAP		
DN	X	Y	Z	X	Y	Z
75	400	400	200	400	350	150
100	600	450	250	600	400	200
150	1000	550	400	1000	550	300
200	1300	750	450	1350	700	350
250	1700	900	500	1750	850	450
300	2000	1100	550	2150	1000	550
350	2250	1300	600	2450	1200	550

100-200kPa SOIL BEARING CAPACITY AND 1350kPa MAX SITE TEST PRESSURE

	90° BEND			TEE & END CAP		
DN	X	Y	Z	X	Y	Z
75	350	250	200	300	250	150
100	450	300	250	400	300	200
150	650	450	400	600	450	300
200	850	600	450	800	600	350
250	1050	750	500	1000	750	450
300	1250	900	550	1250	900	550
350	1550	1000	600	1350	1100	550

200-400kPa SOIL BEARING CAPACITY AND 1350kPa MAX SITE TEST PRESSURE

	90° BEND			TEE & END CAP		
DN	X	Y	Z	X	Y	Z
75	250	200	200	250	250	150
100	300	250	250	350	350	200
150	500	300	400	450	450	300
200	650	400	450	550	550	350
250	800	500	500	650	650	450
300	950	650	550	800	800	550
350	1050	750	600	900	900	550



DRAWING TITLE :

**TYPICAL DETAIL OF THRUST BLOCK  
FOR 90 BEND, TEE & END CAP**

SCALE :  
**NTS**

ORIGINAL DWG  
SIZE A4

DRAWING No. :  
**W-10-02**

ENTIRE FRAME TO BE SEATED IN 15mm MORTAR (MIXTURE RATIO 3:1)

