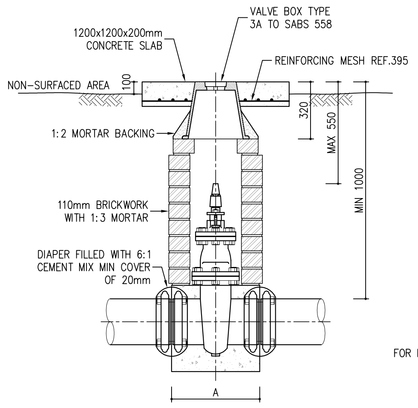
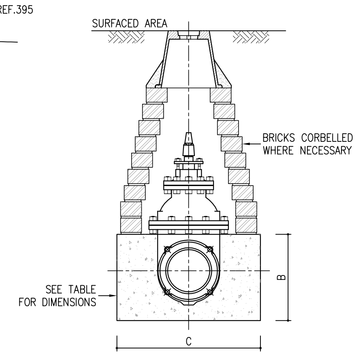


PLAIN ENDED ISOLATING VALVE
NOT TO SCALE



PLAIN ENDED ISOLATING VALVE
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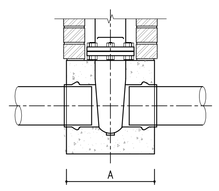

SOCKETED ISOLATING VALVE FOR uPVC PIPE
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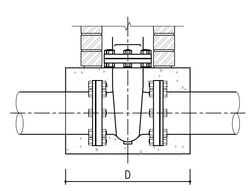
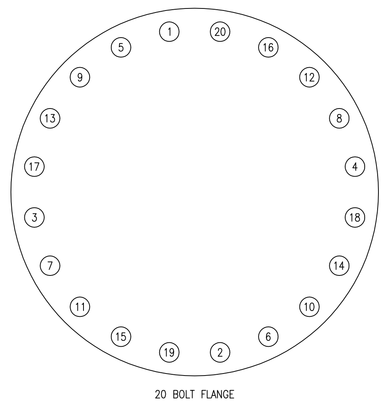
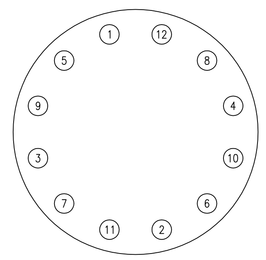


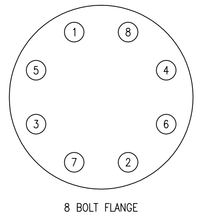
FLANGED ISOLATING VALVE
NOT TO SCALE



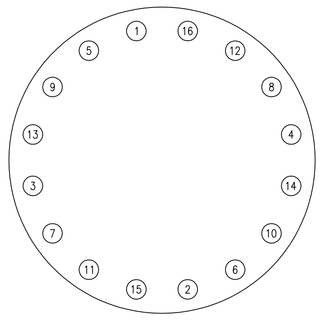
20 BOLT FLANGE



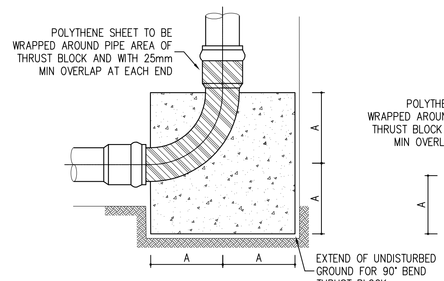
12 BOLT FLANGE



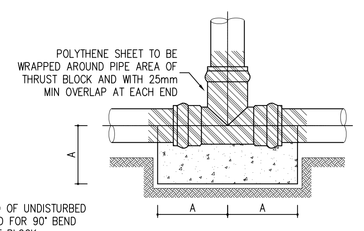
8 BOLT FLANGE



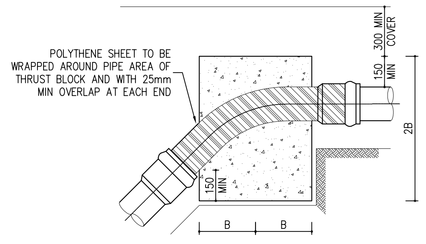
16 BOLT FLANGE



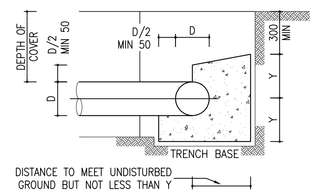
SECTION C-C
BEND
NOT TO SCALE



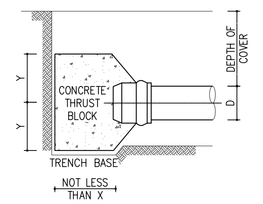
SECTION D-D
T-JUNCTION
NOT TO SCALE



SECTION E-E
BEND
NOT TO SCALE



SECTION A-A
NOT TO SCALE



SECTION B-B
NOT TO SCALE

NOTES:

1. DRAWINGS APPLIES TO VERTICAL THRUST BLOCKS FOR PIPE SIZES 50–315mm ONLY
2. MINIMUM DEPTH OF COVER = 0,8m
3. ALL CONCRETE TO BE GRADE 20MPa/19mm AND CAST AGAINST UNDISTURBED GROUND WHERE SHOWN AS FOLLOWS:
4. THRUST BLOCKS DESIGN PARAMETERS:
   UNIT WEIGHT OF CONCRETE = 22kN/m
   UNIT WEIGHT OF SOIL = 18kN/m
   COHESIONLESS SOIL: ANGLE OF FRICTION = 30°
   BEARING CAPACITY = 70kN/m
   FACTOR OF SAFETY = 1,5
5. CONCRETE TO BE KEPT CLEAR OF JOINTS OR BOLTS FOR BLANK FLANGES

NOTES

1. ALL WORK TO BE DONE TO SANS 1200.
2. LEVELS AND PIPEWORK DETAILS OF EXISTING PIPEWORK TO BE CONFIRMED ON SITE.
3. ALL uPVC PIPEWORK SHALL BE CLASS 16 AS INDICATED AND COMPLY WITH SANS 966 PART 1.
4. ALL FLANGE DRILLING TO BE TO SANS 1123 TABLE 1600/3.
5. ALL WELDING SHALL COMPLY WITH SANS 10044. WELDING OF SHALL BE DONE ACCORDING TO THE MMA PROCESS AND THE GRADE OF WELDING RODS SIMILAR TO THE STEEL PIPE OR FITTING.
6. HOT DIPPED GALVANISED PIPES AND PIPE SPECIALS OUTSIDE VALVE CHAMBERS SHALL BE TREATED WITH AN APPROVED PRIMING SOLUTION AND WRAPPED WITH AN APPROVED PETROLATUM TAPE WITH FINISHING LAYER BY MEANS OF CLING WRAP.
7. ALL UNDER GROUND CONNECTIONS OF VALVES, STEEL PIPES AND STEEL OR DUCTILE IRON FITTINGS SHALL BE TREATED WITH A COMPATIBLE PRIMER, PACKED WITH "DENSO MASTIC", WRAPPED WITH "DENSO TAPE" WITH FINISHING LAYER BY MEANS OF CLING WRAPPING.
8. ALL BOLTS, NUTS AND WASHERS SHALL BE HOT DIP GALVANISED TO SANS 121 AND SANS 32. ALL BOLTS AND NUTS SHALL BE GRADE 8.8 TO SANS 1700 AND ISO 898. TWO WASHERS SHALL BE USED WITH EVERY BOLT CONNECTION TO PREVENT DAMAGE TO COATINGS.
9. SUITABLE ISOLATION SHALL BE PROVIDED BETWEEN FLANGES, WASHERS AND BOLTS TO PREVENT GALVANIC CORROSION BETWEEN DISSIMILAR METALS (E.G. BETWEEN STAINLESS STEEL AND MILD STEEL OR CAST IRON). SHAFT THREAD SHALL BE COVERED WITH HEAT SHRINK INSULATION (OR SIMILAR APPROVED) AND 3mm CAF NON-CONDUCTIVE WASHERS SHALL BE USED WITH STANDARD WASHERS WHERE DISSIMILAR FITTINGS ARE JOINED.
10. PLAIN ENDED FITTINGS SHALL BE JOINED WITH "VIKING JOHNSON" (OR SIMILAR APPROVED) COUPLINGS COATED WITH 300 MICRONS DFT RILSAN NYLON 11 TO THE MANUFACTURER'S SPECIFICATIONS.
11. ALL ISOLATING VALVES UP TO AND INCLUDING 300mm NOMINAL DIAMETER SHALL BE RESILIENT SEAL GATE VALVES, FLANGED, NON-RISING SPINDLE, 16 BAR, ANTI-CLOCKWISE CLOSING, TOP CAP SUITABLE FOR USE WITH A VALVE KEY (UNLESS OTHERWISE INDICATED OR SPECIFIED), TO SANS 664.
12. ALL CONCRETE TO BE CLASS 35MPa/19mm WITH THE MINIMUM COMBINED CEMENT CONTENTS INCLUDING EXTENDERS OF 420kg/m³ AND WITH XYPEX ADMIX C-500NF ADMIXTURE AT A DOSAGE RATE OF 1.5% BY WEIGHT OF THE CEMENTITIOUS CONTENT INCLUDING EXTENDERS. COVER TO STEEL TO BE MINIMUM 50mm.
13. WATER:CEMENT RATIO NOT TO EXCEED 0,45:1.
14. ALL CONCRETE EDGES TO HAVE 20mm CHAMFERS.
15. VALVE CHAMBER TO BE FOUNDED ON DENSE HOMOGENEOUS MATERIAL WITH A UNIFORM BEARING CAPACITY OF NOT LESS THAN 100 kN/m².
16. ALL DIMENSIONS SHOWN ON THIS DRAWING SHALL BE VERIFIED BY THE CONTRACTOR IN ORDER TO ENSURE THAT ON-SITE REQUIREMENTS ARE MET. DIMENSIONS MAY VARY DEPENDING ON THE TYPE AND MAKE OF ITEMS SUCH AS VALVES. DIMENSIONS OF ALL PIPES, FITTINGS, VALVES, ETC. MUST BE SUBMITTED FOR APPROVAL ON A SHOP-DRAWING BEFORE ANY MATERIAL IS ORDERED. ANY DISCREPANCIES MUST BE REPORTED TO THE ENGINEER PRIOR TO THE ORDERING OF ANY MATERIALS.

TABLE

NOM ø	A	B	C	D
50	320	320	600	500
80	320	320	600	500
100	320	320	600	500
150	400	400	650	600
200	420	420	700	650
225	450	450	750	650
300	560	540	840	700

NOTES :

1. ALL VALVES MUST OPEN CLOCKWISE.
2. REFER TO CONTRACT SPECIFICATIONS FOR MORE INFORMATION.
3. ALL CONCRETE TO BE GRADE 20MPa/19mm.
4. VALVES SHALL BE CLASS 16 SANS 664.
5. INSTALL EXTENTION ROD WHEN VALVE IS MORE THAN 550mm BELOW FINISHED SURFACE LEVEL.
6. VALVE COVER AND FRAME TO BE PAINTED BLUE.

ISOLATING VALVE DETAIL
NOT TO SCALE

BOLT TORQUE SPECIFICATION :

PRIOR TO COMMENCING TIGHTENING OF A FLANGED JOINT IT SHALL BE ENSURED THAT THE FLANGES ARE PARALLEL TO EACH OTHER. FLANGED JOINTS SHALL BE TIGHTENED FOLLOWING THE SPECIFIED TIGHTENING SEQUENCE TO ACHIEVE AN EVEN BOLT LOADING AND TO ELIMINATE ELASTIC INTERACTION. THE CAUSE OF UNEVEN LOADING IN THE BOLTS, EVEN WHEN THE SAME TIGHTENING TORQUE IS APPLIED TO ALL THE BOLTS, IS ELASTIC INTERACTION. THIS IS WHEN THE TIGHTENING OF ONE BOLT AFFECTS THE TENSION IN A BOLT NEXT TO IT AS A RESULT OF THE JOINT COMPRESSING.

THE BASIS FOR THE TIGHTENING SEQUENCE IS A CRISS-CROSS TIGHTENING PATTERN. IN ORDER TO FURTHER TO REDUCE THE EFFECTS OF ELASTIC INTERACTION, AN APPROVED LUBRICANT SHALL BE USED ON THE THREAD OF THE BOLT AND UNDER THE NUT FACE, AND A MULTI-PASS TIGHTENING SEQUENCE SHALL BE FOLLOWED. A LUBRICANT REDUCES FRICTION, THREAD WEAR AND GALLING AND ALLOW THE BOLTS TO BE RE-USED. THE MULTI-PASS TIGHTENING SEQUENCE IS WHEN THE BOLTS ARE INITIALLY TIGHTENED TO A TORQUE VALUE BELOW WHAT IS FINALLY REQUIRED AND ARE RE-TIGHTENED TO A FINAL TORQUE ON A SUBSEQUENT TIGHTENING PASS AROUND THE JOINT.

FOLLOWING THE FINAL TIGHTENING PASS, A CHECKING PASS SHALL BE CARRIED OUT IN WHICH ALL THE BOLTS ARE CHECKED TO THE FINAL TORQUE VALUE, AS A FINAL CHECK EACH BOLT SHALL BE "RINGED" BY TAPPING LIGHTLY WITH A LEAD, OR SIMILAR, HAMMER ENSURING THAT THE THREADS ARE NOT DAMAGED. IF ANY BOLTS ARE LOOSE THE TONE OF THE SOUND GIVEN OFF WILL BE DIFFERENT TO A TIGHTENED BOLT. A LOOSE BOLT COULD BE AS A RESULT OF CROSS-THREADING OR SIMILAR PROBLEM IN WHICH THE TORQUE VALUE MAY BE ACHIEVED BUT NO TENSION RESULTS IN THE BOLT.

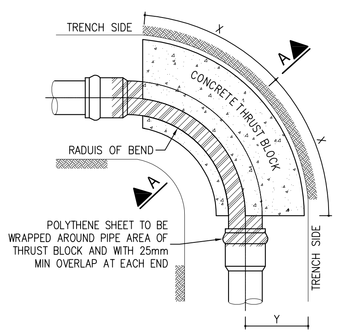
TYPICAL FLANGE BOLTING
SEQUENCE
NOT TO SCALE

DETAILS FOR VERTICAL THRUST BLOCKS

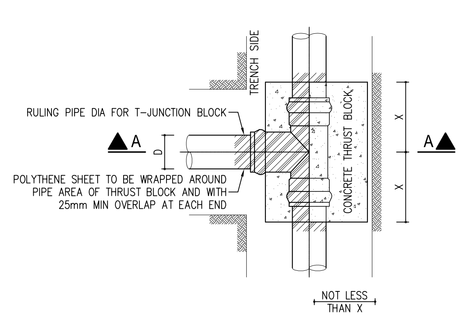
PIPE OD (mm)	DOWNWARD THRUST BLOCK					UPWARD THRUST BLOCK			
	ANGLE OF BEND				T-JUNCTION	ANGLE OF BEND			
	11¼°	22½°	45°	90°		11¼°	22½°	45°	
	A	A	A	A	A	B	B	B	
50	150	150	175	250	150	225	275	325	
63	150	150	175	275	175	250	300	375	
75	150	150	175	300	200	275	325	400	
90	150	150	175	325	225	275	350	450	
110	150	150	200	375	250	325	400	525	
125	150	175	225	400	275	350	425	575	
140	150	200	250	425	300	375	475	600	
160	150	225	275	475	350	400	500	650	
200	200	275	350	550	425	450	600	750	
250	250	325	425	650	525	525	675	875	
315	300	400	550	750	650	625	800	1 025	

DETAILS FOR HORIZONTAL THRUST BLOCKS

PIPE OD (mm)	ANGLE OF BEND								T-JUNCTION OR END CAP	
	11 ¼ °		22 ½ °		45°		90°			
	X	Y	X	Y	X	Y	X	Y	X	Y
50	75	75	100	100	150	125	275	150	150	150
63	75	100	125	125	175	175	325	175	200	175
75	100	100	150	150	200	200	375	200	225	225
90	125	125	175	175	250	225	450	250	275	250
110	150	150	200	200	300	275	525	275	325	325
125	175	150	225	225	325	325	625	325	375	350
140	200	175	250	250	350	350	675	350	400	400
160	225	200	300	275	400	400	775	400	450	450
200	250	250	350	350	500	475	925	475	625	500
250	325	300	450	400	700	500	1 150	575	825	550
315	375	375	575	475	975	550	1 625	600	1 150	600

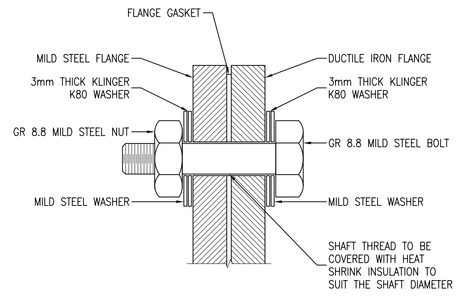


PLAN OF BEND
NOT TO SCALE



PLAN OF T-PIECE
NOT TO SCALE

PLAN OF END CAP OR
BLANK FLANGE
NOT TO SCALE



TYPICAL ISOLATION BETWEEN DISSIMILAR
METALS FOR FLANGED CONNECTIONS
SCALE 1:2

NO.	DATE	REVISION DESCRIPTION	DRAWN

BKS (PTY) LTD
Engineering and Management
Reg.Nr. No. 1966/006628/07

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Tyger Waterfront
Carl Cronje Drive
Bellville
Tel : (021) 950 7500
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CLIENT
OVERSTRAND MUNICIPALITY

PROJECT
UPGRADING OF THE FILTRATION PLANT AT BAARDSKEERDERSBOS

DRAWING TITLE
TYPICAL DETAILS

	BKS RESPONSIBLE PERSON	DATE	SHEET SIZE
DESIGNED	H SMOOK	MAY 2009	A0
DRAWN	C vd BERG	MAY 2009	SCALE
CHECKED	H AARTSMA		AS SHOWN
APPROVED	PR. ENG		

BKS DISCIPLINE: URBAN AND RURAL

BKS DRAWING NUMBER

BKS PROJ. No	SUB NUMBER	DISCIPLINE	DRAWING NUMBER	STATUS	REVISION
J00991	01	036	002	T	00

DRAWING STATUS CODES :
D = DRAFT, F = FINAL, P = PRELIMINARY, A = RECORD DRAWING
R = REPORT, T = TENDER, C = CONSTRUCTION

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