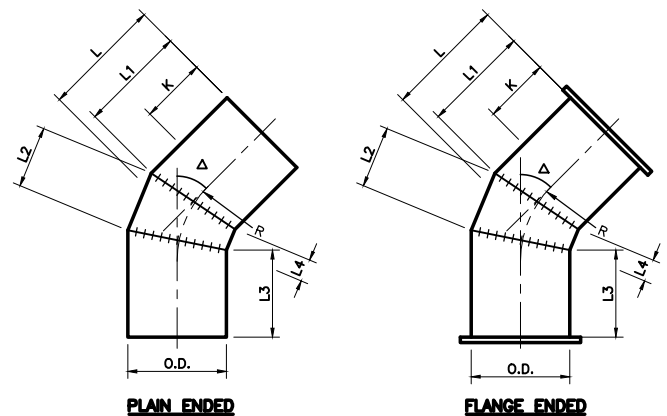


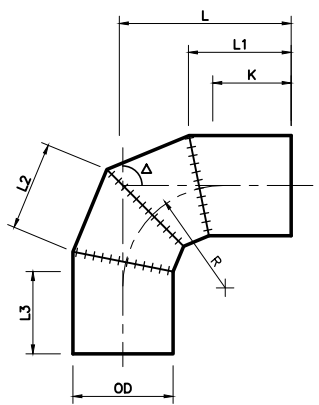
$L1 = L + \left(\frac{\phi}{2}\right) \tan \frac{\Delta}{2}$
 $L2 = L - \left(\frac{\phi}{2}\right) \tan \frac{\Delta}{2}$

UP TO 30° BEND



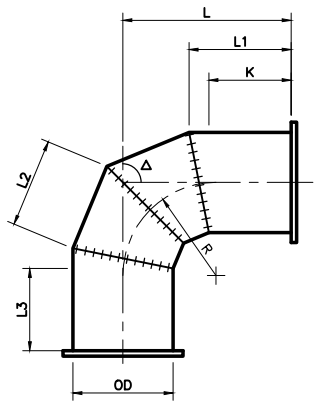
$K = L - R \tan \frac{\Delta}{2}$
 $L1 = K + \left(R + \frac{\phi}{2}\right) \tan \frac{\Delta}{4}$
 $L2 = (2R + \phi) \tan \frac{\Delta}{4}$
 $L3 = K + \left(R - \frac{\phi}{2}\right) \tan \frac{\Delta}{4}$
 $L4 = (2R - \phi) \tan \frac{\Delta}{4}$

OVER 30° TO 60° BEND



$K = L - R \tan \frac{\Delta}{2}$
 $L1 = K + \left(R + \frac{\phi}{2}\right) \tan \frac{\Delta}{6}$
 $L2 = (2R + \phi) \tan \frac{\Delta}{6}$
 $L3 = K + \left(R - \frac{\phi}{2}\right) \tan \frac{\Delta}{6}$
 $L4 = (2R - \phi) \tan \frac{\Delta}{6}$

PLAIN ENDED



FLANGE ENDED

OVER 60° TO 90° BEND

Δ UP TO 30° FLANGE ENDED MS BEND			
M.S. BENDS (NOMINAL DIA.)	OUTER DIA. φ (mm)	R (mm)	L (mm)
100	121.9	-	200
150	177.3	-	275
200	232.2	-	300
250	286.0	-	375
300	345.4	-	375
350	399.3	-	450
375	426.0	-	450
400	453.1	-	450
450	507.0	-	450
525	560.3	-	450
600	667.0	-	550

Δ OVER 30° TO 45° FLANGE ENDED MS BEND			
M.S. BENDS (NOMINAL DIA.)	OUTER DIA. φ (mm)	R (mm)	L (mm)
100	121.9	200	250
150	177.3	275	300
200	232.2	350	350
250	286.0	375	450
300	345.4	525	550
350	399.3	600	600
375	426.0	600	600
400	453.1	675	600
450	507.0	750	600
525	560.3	825	650
600	667.0	975	750

Δ UP TO 30° MILD STEEL BEND			
M.S. BENDS (NOMINAL DIA.)	OUTER DIA. φ (mm)	R (mm)	L (mm)
700	754.0	-	600
750	804.0	-	600
954	954.0	-	700
1000	1054.0	-	750
1050	1107.0	-	800
1150	1219.0	-	850
1200	1270.0	-	850
1400	1472.0	-	850
1800	1876.0	-	900
2050	2138.0	-	1000
2200	2290.0	-	1000

Δ OVER 30° TO 45° MILD STEEL BEND			
M.S. BENDS (NOMINAL DIA.)	OUTER DIA. φ (mm)	R (mm)	L (mm)
700	754.0	1125	850
750	804.0	1200	850
900	954.0	-	-
1000	1054.0	1500	1100
1050	1107.0	1500	1100
1150	1219.0	1800	1200
1200	1270.0	1800	1200
1400	1472.0	2100	1300
1800	1876.0	2700	1500
2050	2138.0	3000	1600
2200	2290.0	3300	1700

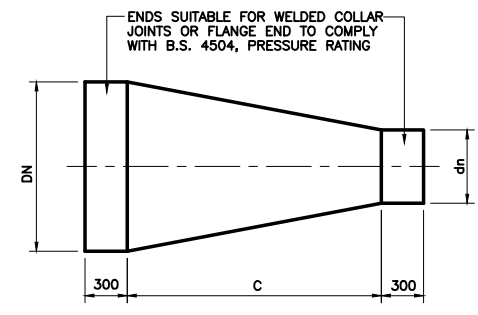
Δ OVER 45° TO 60° FLANGE ENDED MS BEND			
M.S. BENDS (NOMINAL DIA.)	OUTER DIA. φ (mm)	R (mm)	L (mm)
100	121.9	200	250
150	177.3	275	300
200	232.2	300	400
250	286.0	375	500
300	345.4	525	600
350	399.3	600	600
375	426.0	450	600
400	453.1	450	600
450	507.0	500	600
525	560.3	600	750
600	667.0	650	750

Δ OVER 60° TO 90° FLANGE ENDED MS BEND			
M.S. BENDS (NOMINAL DIA.)	OUTER DIA. φ (mm)	R (mm)	L (mm)
100	121.9	200	350
150	177.3	200	350
200	232.2	275	400
250	286.0	375	650
300	345.4	300	500
350	399.3	375	700
375	426.0	525	800
400	453.1	450	850
450	507.0	500	850
525	560.3	600	1000
600	667.0	650	1000

Δ OVER 45° TO 60° MILD STEEL BEND			
M.S. BENDS (NOMINAL DIA.)	OUTER DIA. φ (mm)	R (mm)	L (mm)
700	754.0	750	850
750	804.0	800	850
900	954.0	-	-
1000	1054.0	1000	1100
1050	1107.0	1000	1100
1150	1219.0	1200	1200
1200	1270.0	1200	1200
1400	1472.0	1400	1300
1800	1876.0	1800	1500
2050	2138.0	2000	1600
2200	2290.0	2200	1700

Δ OVER 60° TO 90° MILD STEEL BEND			
M.S. BENDS (NOMINAL DIA.)	OUTER DIA. φ (mm)	R (mm)	L (mm)
700	754.0	750	1100
750	804.0	800	1150
900	954.0	-	-
1000	1054.0	1000	1500
1050	1107.0	1000	1500
1150	1219.0	1200	1700
1200	1270.0	1200	1700
1400	1472.0	1400	1900
1800	1876.0	1800	2200
2050	2138.0	2000	2500
2200	2290.0	2200	2600

TABLE FOR MILD STEEL GUSSETED BENDS



CONCENTRIC TAPER

* PLATE THICKNESS FOR SECTION C SHALL BE THE SAME AS DN PLATE THICKNESS

TABLE FOR PLAIN ENDED TAPER			
DESCRIPTION	OUTER DIA. (DN) mm	OUTER DIA. (dn) mm	LENGTH OF TAPER (C) mm
2200mm x 2100mm	2290.0	2189.0	600
2200mm x 2000mm	2290.0	2088.0	1200
2050mm x 2000mm	2138.0	2088.0	600
2050mm x 1800mm	2138.0	1876.0	1500
1400mm x 1200mm	1472.0	1270.0	1200
1150mm x 1000mm	1219.0	1054.0	900
1050mm x 1000mm	1107.0	1054.0	600
750mm x 700mm	751.2	701.2	600
750mm x 450mm	804.0	507.0	1800

TABLE FOR FLANGE ENDED TAPER			
DESCRIPTION	OUTER DIA. (DN) mm	OUTER DIA. (dn) mm	LENGTH OF TAPER (C) mm
600mm x 525mm	667.0	560.3	450
600mm x 450mm	667.0	507.0	900
450mm x 375mm	507.0	426.0	450
450mm x 150mm	507.0	177.3	1800
400mm x 375mm	453.1	426.0	300
250mm x 200mm	286.0	232.2	300
250mm x 150mm	286.0	177.3	600
200mm x 150mm	232.2	177.3	300

SCHEDULE OF STEEL PIPES/FITTINGS THICKNESS				
NOMINAL DIAMETER	FINISHED INTERNAL DIAMETER (mm)	OUTSIDE DIAMETER (mm)	THICKNESS OF STEEL PLATE (mm)	THICKNESS OF CONCRETE LINING (mm)
50	50.0	69.2	3.6	6.0
75	75.0	94.2	3.6	6.0
100	93.7	121.9	4.1	10.0
150	149.1	177.3	4.1	10.0
200	204.0	232.2	4.1	10.0
250	257.8	286.0	4.1	10.0
300	313.8	345.4	5.8	10.0
350	361.7	399.3	5.8	13.0
375*	388.4	426.0	5.8	13.0
400	415.5	453.1	5.8	13.0
450	469.4	507.0	5.8	13.0
525*	522.7	560.3	5.8	13.0
600	628.0	667.0	6.5	13.0
700	701.2	754.0	7.4	19.0
750	751.2	804.0	7.4	19.0
900	900	954	8.0	19.0
1000	1000	1054.0	8.0	19.0
1050	1050	1107	9.5	19.0
1150	1150	1219	9.5	25.0
1200	1200	1270	10	25.0
1300	1300	1372	11	25.0
1400	1400	1472	11	25.0
1800	1800	1876	13	25.0
2000	2000	2088	14	30.0
2050	2050	2138	14	30.0
2100	2100	2189	14.5	30.0
2200	2200	2290	15	30.0

* OUTSIDE DIAMETER OF PIPE SIZE 375mm DIA. AND 525mm DIA. ARE BASED ON A.C. PIPE CLASS 'C'

- NOTES:**
- FOR LEGEND, ABBREVIATIONS AND GENERAL NOTES, SEE DWG NO. SYA / STD / 001.
 - ALL DIMENSIONS ARE IN mm UNLESS OTHERWISE STATED.
 - THICKNESS OF TAPERS AND BENDS SHALL FOLLOW SCHEDULE OF STEEL PIPES FITTINGS THICKNESS.
 - FID REFERS TO FINISHED INTERNAL DIAMETER AFTER LINING.
 - MS PIPE SPECIALS SHALL BE DESIGNED IN ACCORDANCE TO BS EN 534:1990
 - FLANGES SHALL BE DESIGNED TO PN 16
 - FLANGES SHALL BE IN ACCORDANCE TO BS 4504 TABLE 16/11

REV.	DESCRIPTION	DATE
1	ALL MS FITTINGS 600mm DIA. AND LESS SHALL BE OF FLANGE ENDED	JULY 2007

SYARIKAT BEKALAN AIR SELANGOR SDN BHD
 JALAN PANTAI BAHARU,
 59200, KUALA LUMPUR.
 TEL NO : 03 - 2088 5400
 FAX NO : 03 - 2088 5373

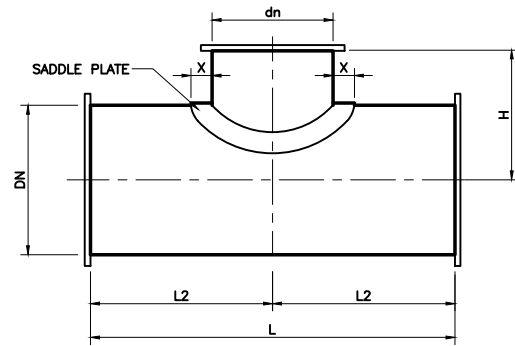
PROJECT :

DRAWING TITLE :
DETAILS OF MILD STEEL PIPES, BENDS AND CONCENTRIC TAPERS

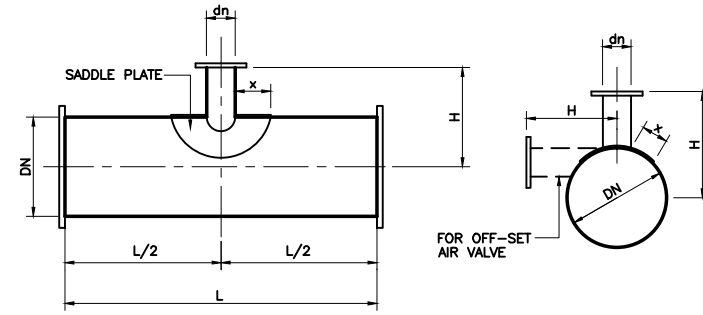
DRAWN BY : SHAIFUL	DESIGNED : SAT
CHECKED : HS	APPROVED : LPL
SCALE : NTS	DATE : OCT 2005

DRAWING NO :
SYA / MS / STD / 001 / REV. 1

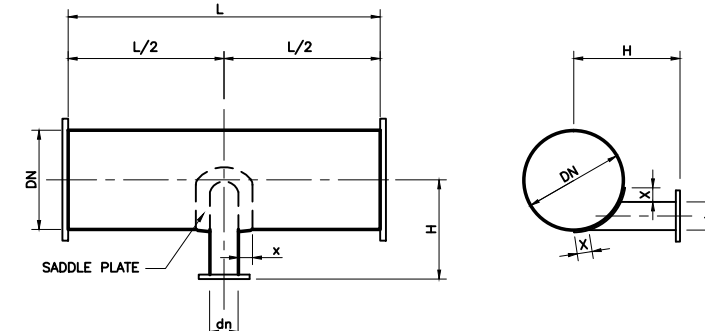
- NOTE :
1. FOR LEGEND, ABBREVIATIONS AND GENERAL NOTES, SEE DWG. NO SYA/STD/001.
 2. ALL DIMENSIONS ARE IN mm UNLESS OTHERWISE STATED.
 3. O.D REFERS TO OUTER DIAMETER.
 4. THICKNESS OF TEE AND BENDS SEE SCHEDULE OF STEEL PIPES/ FITTINGS THICKNESS.
 5. FLANGES SHALL BE IN ACCORDANCE TO BS 4504 TABLE 16/11



FLANGE ENDED TEE



STEEL AIR VALVE TEE



STEEL SCOUR TEE

SCHEDULE OF FLANGE ENDED TEE						
NOMINAL SIZE (mm)	BARREL O.D. DN (mm)	BRANCH O.D. dn (mm)	L (mm)	H (mm)	SADDLE PLATE	
					X (mm)	THICKNESS (mm)
600 x 600	667.0	667.0	2000	650	220	4.1
600 x 450	667.0	507.0	1550	650	180	4.1
600 x 200	667.0	232.2	700	600	100	4.1
600 x 150	667.0	177.3	700	550	75	4.1
450 x 450	507.0	507.0	1550	550	-	-
450 x 300	507.0	345.4	1050	500	-	-
450 x 250	507.0	286.0	850	500	-	-
450 x 200	507.0	232.2	700	500	-	-*
450 x 150	507.0	177.3	550	450	-	-
400 x 400	453.1	453.1	1350	550	-	-
400 x 150	453.1	177.3	550	450	-	-
250 x 250	286.0	286.0	850	400	-	-
250 x 200	286.0	232.2	700	400	-	-
250 x 150	286.0	177.3	550	350	-	-
200 x 200	232.2	232.2	700	400	-	-
200 x 150	232.2	177.3	550	350	-	-
200 x 100	232.2	121.9	400	350	-	-
150 x 150	177.3	177.3	550	300	-	-
150 x 100	177.3	121.9	400	300	-	-

NOTE : LARGER SIZED TO BE DESIGNED BY THE CONSULTANT TO SYABAS APPROVAL.

SCHEDULE OF F/E STEEL AIR VALVES TEES WITH FLANGED BRANCH						
TEE	BARREL O.D (mm)	BRANCH O.D (mm)	L (mm)	H (mm)	SADDLE PLATE	
					X (mm)	THICKNESS (mm)
100 x 25	121.9	44.2	550	150	-	-
150 x 25	177.3	44.2	600	180	-	-
200 x 50	232.2	69.2	750	210	-	-
250 x 50	286.0	69.2	850	230	-	-
300 x 50	345.4	69.2	900	260	-	-
350 x 50	399.3	69.2	1200	290	-	-
375 x 50	426.0	69.2	1200	290	-	-
400 x 75	453.1	94.2	950	310	-	-
450 x 75	507.0	94.2	1000	340	-	-
500 x 75	560.3	94.2	1050	370	-	-
600 x 100	667.0	121.9	1150	450	50	4.1

SCHEDULE OF P/E STEEL AIR VALVES TEES WITH FLANGED BRANCH						
TEE	BARREL O.D (mm)	BRANCH O.D (mm)	L (mm)	H (mm)	SADDLE PLATE	
					X (mm)	THICKNESS (mm)
700 x 600	754.0	667.0	2000	760	220	4.1
750 x 600	804.0	667.0	2000	680	220	4.1
900 x 600	954.0	667.0	2000	800	300	4.1

NOTE : LARGER SIZED TO BE DESIGNED BY THE CONSULTANT TO SYABAS APPROVAL.

SCHEDULE OF F/E STEEL TANGENTIAL SCOUR TEES						
TEE	BARREL O.D (mm)	BRANCH O.D (mm)	L (mm)	H (mm)	SADDLE PLATE	
					X (mm)	THICKNESS (mm)
100 x 100	121.9	121.9	550	750	-	-
150 x 100	177.3	121.9	600	800	-	-
200 x 100	232.2	121.9	750	825	-	-
250 x 100	286.0	121.9	850	850	-	-
300 x 100	345.4	121.9	900	875	-	-
350 x 100	399.3	121.9	1200	900	-	-
375 x 100	426.0	121.9	1200	900	-	-
400 x 150	453.1	177.3	950	925	-	-
450 x 150	507.0	177.3	1000	950	-	-
500 x 150	560.3	177.3	1050	975	-	-
600 x 150	667.0	177.3	1150	1000	75	4.1

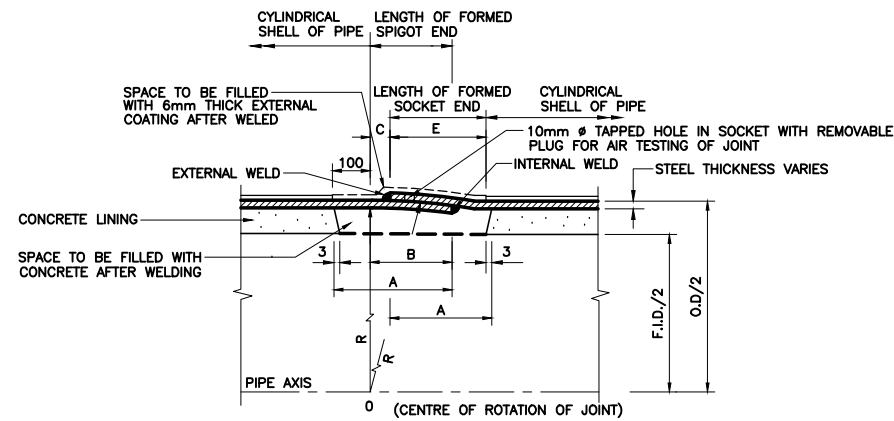
SCHEDULE OF P/E STEEL TANGENTIAL SCOUR TEES						
TEE	BARREL O.D (mm)	BRANCH O.D (mm)	L (mm)	H (mm)	SADDLE PLATE	
					X (mm)	THICKNESS (mm)
700 x 200	754.0	232.2	1450	1050	100	4.1
750 x 200	804.0	232.2	1500	1100	100	4.1
900 x 200	954.0	232.2	1800	1100	125	4.1

NOTE : LARGER SIZED TO BE DESIGNED BY THE CONSULTANT TO SYABAS APPROVAL.

REV.	DESCRIPTION	DATE
1	ALL TEES BELOW 600 DIA. TO BE USED FLANGE JOINT	JULY 2007

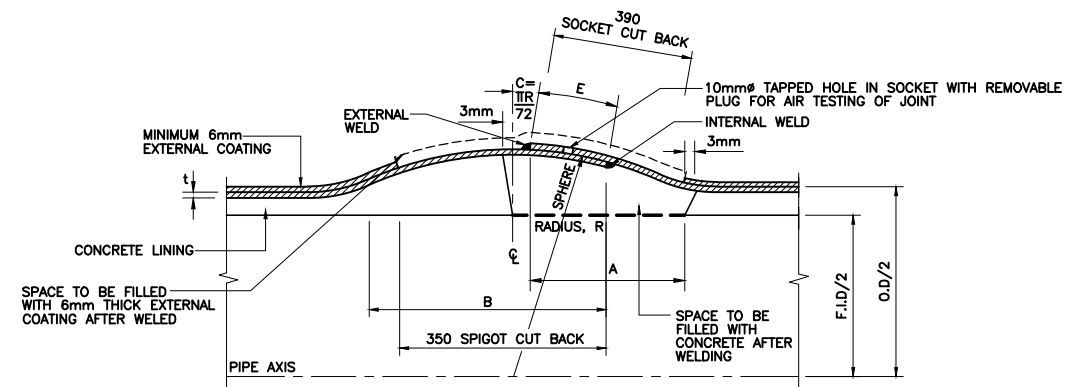
SYARIKAT BEKALAN AIR SELANGOR SDN BHD
 JALAN PANTAI BAHARU,
 59200, KUALA LUMPUR.
 TEL NO : 03 - 2088 5400
 FAX NO : 03 - 2088 5373

PROJECT :	
DRAWING TITLE : DETAILS OF MILD STEEL TEES	
DRAWN BY : SHAHRUL	DESIGNED : SAT
CHECKED : HS	APPROVED : LPL
SCALE : NTS	DATE : OCT 2005
DRAWING NO : SYA / MS / STD / 002 / REV. 1	



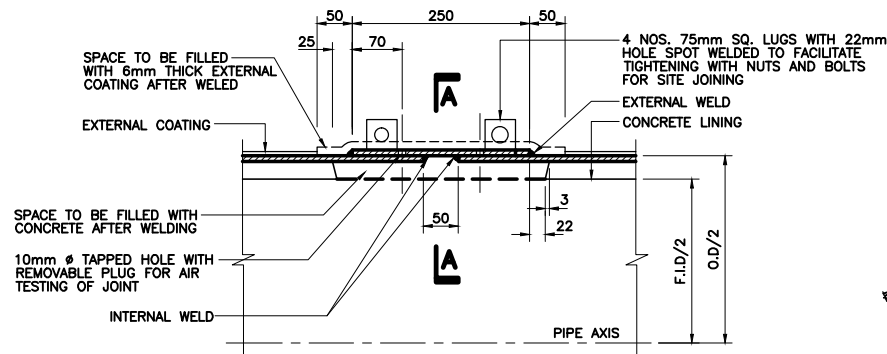
**HEMI-SPHERICAL SLEEVE JOINT/SLIP JOINTS
(FOR PIPES 700mm F.I.D. UP TO 1200mm F.I.D.)**

HEMI - SPHERICAL SLEEVE JOINT									
Pipe F.I.D (mm)	Pipe O.D (mm)	Radius R (mm)	Steel/Thickness t (mm)	Engagement, E		A (mm) B+100	B (mm) 4t+2c	C (mm) πR/90	Max. W (mm)
				Normal 4t+c(mm)	Minimum 4t(mm)				
701.2	754.0	377	7.4	45	30	160	60	15	-
751.2	804	402	7.4	45	30	160	60	15	-
1050.0	1107.0	554	9.5	60	40	180	80	20	-
1200.0	1270.0	635	10.0	65	40	190	90	25	-

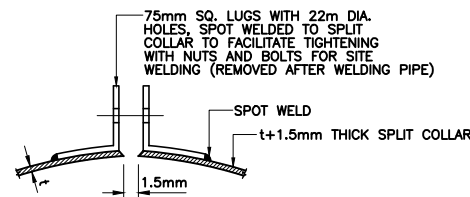


**SPHERICAL SLEEVE JOINT
(FOR PIPES 1400mm F.I.D UP TO 2200mm F.I.D.)**

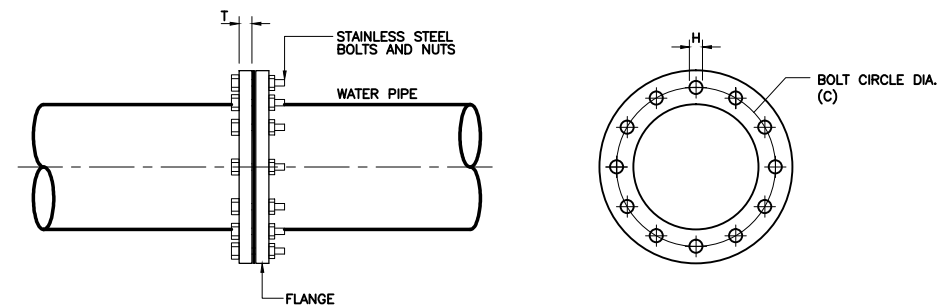
SPHERICAL SLEEVE JOINT DETAIL								
Pipe F.I.D (mm)	Pipe O.D (mm)	Radius R (mm)	Steel Thickness (mm)	Engagement, E		A (mm)	B (mm)	C (mm)
				Normal 4t+36 (mm)	Minimum 4t (mm)			
2200.0	2290.0	1190	15	164	60	335	538	50
2050.0	2138.0	1111	14	153	56	301	503	47
1800.0	1876.0	977	13	137	52	274	451	41
1400.0	1472.0	769	11	112	44	223	368	33



**DETAILS OF WELDED COLLAR JOINT
(FOR PIPE/FITTING 700mm F.I.D. AND ABOVE)**



SECTION A-A



**FLANGE JOINT
(FOR PIPES 600mm DIA. AND BELOW)**

TABLE FOR FLANGE (BS EN 1092-1:2007)					
PIPE SIZE (DN) (mm)	THICKNESS T (mm)	FLANGE BOLTING			
		C	H	No. OF HOLES	SIZE OF BOLTS
50	25	125	18	4	M16
100	22	180	18	8	M16
150	24	240	22	8	M20
200	26	295	22	12	M20
250	29	355	26	12	M24
300	32	410	26	12	M24
350	35	470	26	16	M24
400	38	525	30	16	M27
450	42	585	30	20	M27
500	46	650	33	20	M30
600	52	770	36	20	M33

- NOTE :**
1. FOR LEGEND, ABBREVIATION AND GENERAL NOTES, SEE DWG NO.: SYA/STD/001.
 2. ALL DIMENSIONS ARE IN mm UNLESS OTHERWISE STATED.
 3. THE OUTSIDE DIAMETER OF PIPE SHALL MEAN THE EXTERNAL DIAMETER OF STEEL PIPE BEFORE COATING.

REV.	REVISED BY	DESCRIPTION	DATE
0	LPL/HS	Original drawing.	OCT. '05
1	YHH	To remove the details of sleeve joint for pipe below 700mm dia. and replace with flange joint details.	08 APR '11

SYARIKAT BEKALAN AIR SELANGOR SDN BHD
 JALAN PANTAI BAHARU,
 59200, KUALA LUMPUR.
 TEL NO : 03 - 2088 5400
 FAX NO : 03 - 2088 5373

PROJECT :

DRAWING TITLE :
 DETAILS OF JOINTS
 (SHEET 1 OF 2)

DRAWN BY : SHAHRUL DESIGNED : YHH

CHECKED : KTT APPROVED : SS

SCALE : NTS DATE : JUNE 2011

DRAWING NO :
 SYA / MS / STD / 003 / REV.1

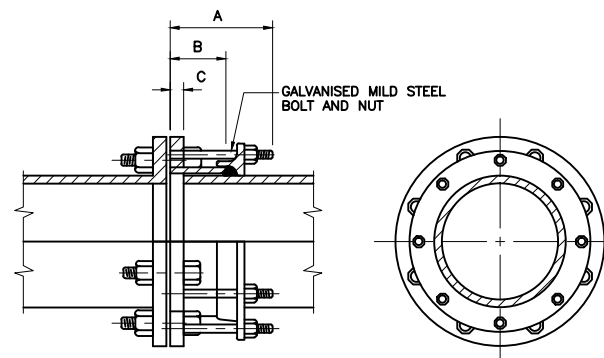
SCHEDULE OF MECHANICAL COUPLING									
Nominal Dia. of Pipe (mm)	Finished Internal Dia. Of Pipe (mm)	Outer Dia. of Pipe (mm)	J (mm)	K (mm)	Sleeve L x Thickness (mm)	Bolts			M (mm)
						No.	Dia (mm)	Length (mm)	
700	701.2	754.0	858	228	150 x 8	12	16	215	150
600	628.0	667.0	760	228	150 x 8	12	16	215	150
525	522.7	560.3	664	228	150 x 8	10	16	215	150
450	469.4	507.0	612	228	150 x 8	8	16	215	150
400	415.5	453.1	562	228	150 x 8	8	16	215	150
375	388.4	426.0	530	228	150 x 8	8	16	215	150
300	313.8	345.4	460	228	150 x 8	6	16	215	125
250	257.8	286.0	377	175	100 x 8	6	12	165	100
200	204.0	232.2	324	175	100 x 8	5	12	165	100
150	149.1	177.3	270	175	100 x 7	4	12	165	100
100	93.7	121.9	218	175	100 x 6	4	12	165	100

NOTE : LARGER SIZED TO BE DESIGNED BY THE CONSULTANT TO SYABAS APPROVAL.

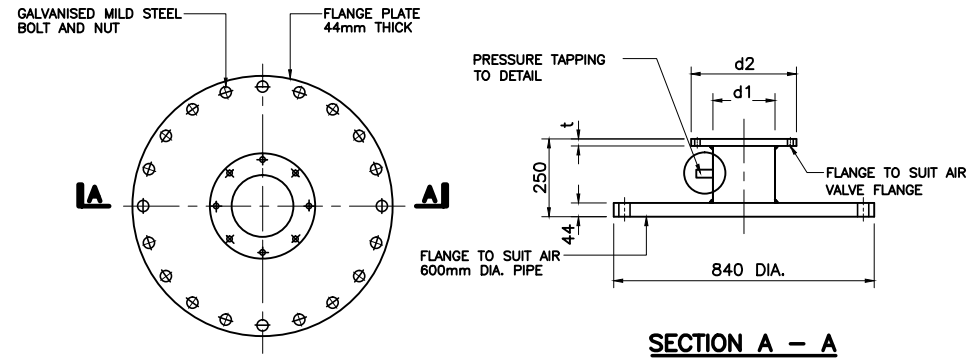
SCHEDULE OF FLANGE ADAPTOR					
Nominal Dia. of Pipe (mm)	Finished Internal Dia. Of Pipe (mm)	Outer Dia. of Pipe (mm)	A (mm)	B (mm)	C (mm)
1200	1200	1270	180	125	38
1000	1000	1054	155	115	25
700	701.2	754.0	155	105	25
600	628.0	667.0	155	105	25
525	522.7	560.3	155	105	25
450	469.4	507.0	155	105	25
400	415.5	453.1	155	105	25
375	388.4	426.0	155	105	25
300	313.8	345.4	136	90	25
250	257.8	286.0	136	90	25
200	204.0	232.2	118	75	24
150	149.1	177.3	118	75	22
100	93.7	121.9	118	75	20

NOTE : LARGER SIZED TO BE DESIGNED BY THE CONSULTANT TO SYABAS APPROVAL.

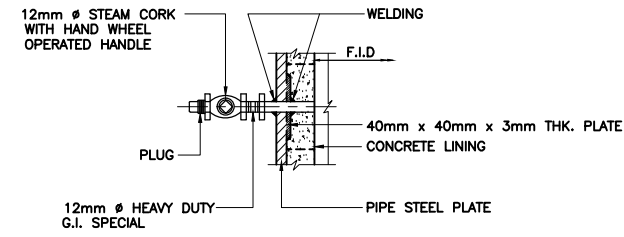
PUDDLE FLANGE DETAILS			
Pipe Size	F.I.D (mm)		Nominal Diameter 450mm & Below
	2200 to 750	710 to 500	
Thickness Of Puddle Flange	20mm	12mm	10mm
Diameter Of Puddle Flange	O.D Of Pipe + 125mm	O.D Of Pipe + 100mm	O.D Of Pipe + 75mm



DETAILS OF FLANGE ADAPTOR



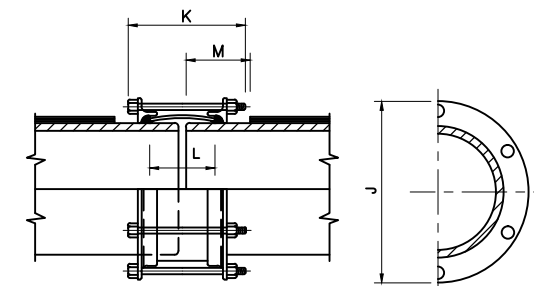
FLANGED AIR VALVE ADAPTORS



PRESSURE TAPPING

d1 (mm)	d2 (mm)	t (mm)
100	220	20
150	280	22
200	340	24
250	406	26

DOUBLE FLANGE VALVE ADAPTOR



DETAILS OF MECHANICAL COUPLING

- NOTE :**
- FOR LEGEND, ABBREVIATION AND GENERAL NOTES, SEE DWG NO: SYA/STD/001.
 - ALL DIMENSIONS ARE IN mm UNLESS OTHERWISE STATED.
 - THE OUTSIDE DIAMETER OF PIPE SHALL MEAN THE EXTERNAL DIAMETER OF STEEL PIPE BEFORE COATING.

REV.	DESCRIPTION	DATE

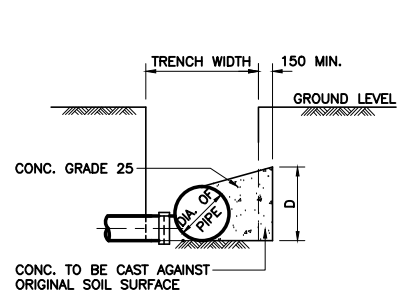
SYARIKAT BEKALAN AIR SELANGOR SDN BHD
 JALAN PANTAI BAHARU,
 59200, KUALA LUMPUR.
 TEL NO : 03 - 2088 5400
 FAX NO : 03 - 2088 5373

PROJECT :

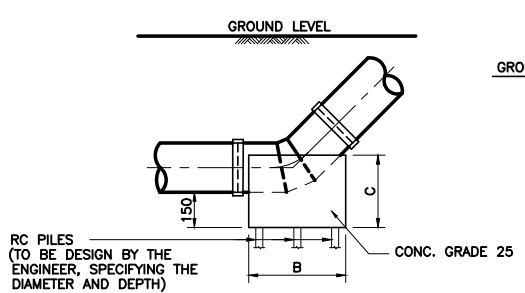
DRAWING TITLE :
 DETAILS OF JOINTS
 (SHEET 2 OF 2)

DRAWN BY : SHAHRUL	DESIGNED : SAT
CHECKED : HS	APPROVED : LPL
SCALE : NTS	DATE : OCT 2005

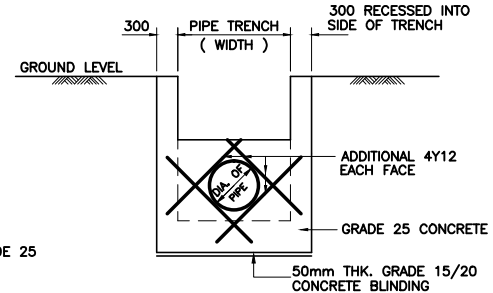
DRAWING NO :
 SYA / MS / STD / 004



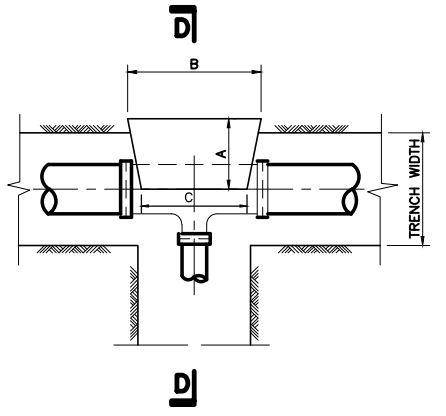
SECTION D-D



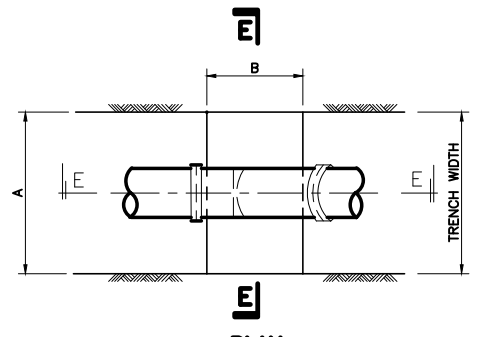
SECTION E-E



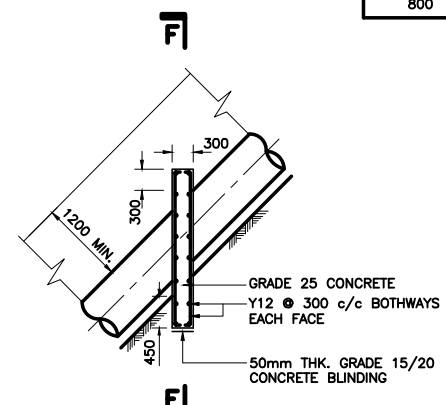
SECTION F-F



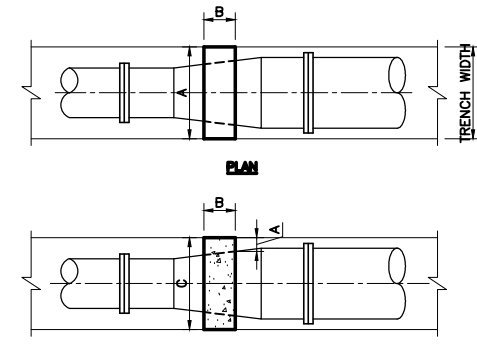
DETAILS OF THRUST BLOCK FOR STEEL SCOUR TEE



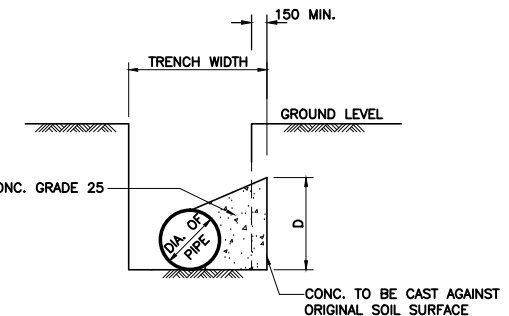
DETAIL OF THRUST BLOCK FOR VERTICAL BEND



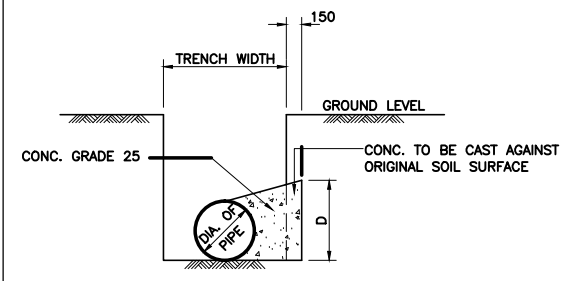
ELEVATION ANCHOR BLOCK



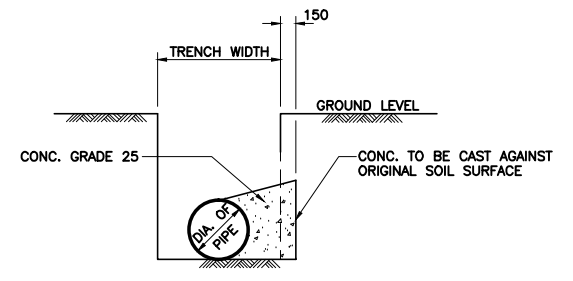
DETAILS OF THRUST BLOCK FOR TAPER



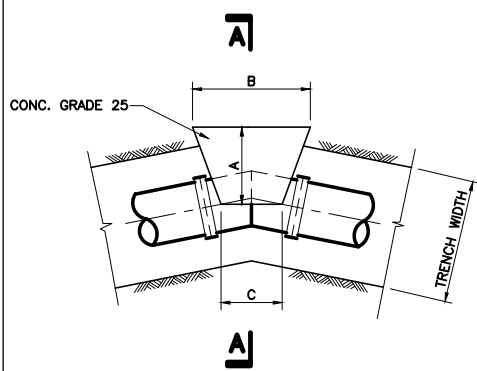
SECTION C-C



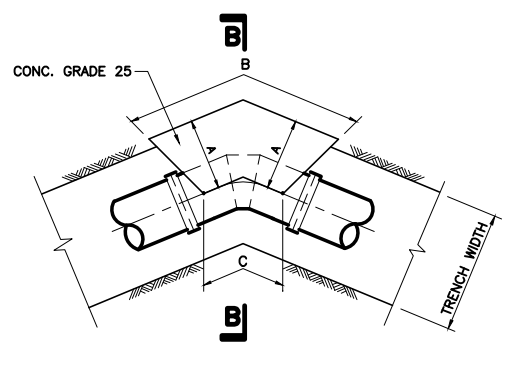
SECTION A-A



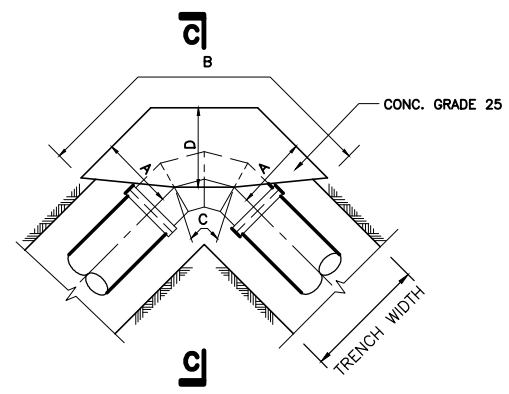
SECTION B-B



DETAILS OF THRUST BLOCK FOR STEEL GUSSETED BEND UP TO 30°



DETAILS OF THRUST BLOCK FOR OVER 30° TO 60° STEEL GUSSETED BEND



DETAILS OF THRUST BLOCK FOR OVER 60° TO 90° STEEL GUSSETED BEND

NOMINAL DIA. OF PIPE (mm)	OUTER DIA. OF PIPE (mm)	GUSSETED BEND												TEE/SCOUR TEE				
		UP TO 30°				OVER 30° TO 60°				OVER 60° TO 90°				NOMINAL DIA. OF TEE (mm)				
		A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D	
100	121.9	450	700	300	300	450	800	500	500	450	1000	500	600	100 x 100	450	350	250	200
150	177.3	450	900	400	400	450	900	550	500	450	1400	600	600	150 x 100	450	350	250	200
200	232.2	450	1000	500	400	450	1200	700	500	450	1700	750	600	150 x 150	450	350	350	190
250	286.0	500	1000	500	500	500	1550	800	600	500	1900	800	700	200 x 100	450	350	250	200
300	345.4	500	1200	500	500	500	1700	800	600	500	2000	800	700	200 x 200	500	450	500	200
350	399.3	550	1500	600	500	550	1800	850	600	550	2600	900	700	250 x 100	500	450	300	250
375	426.0	600	1600	600	500	600	2100	900	700	600	3000	950	700	300 x 100	500	400	300	250
400	453.1	600	1700	700	500	600	2300	1000	700	600	3300	1100	700	350 x 100	550	450	350	300
450	507.0	650	1900	700	600	650	2900	1000	700	650	3500	1150	800	375 x 100	600	450	350	300
525	560.3	700	2000	800	700	700	3100	1050	800	700	3800	1250	900	400 x 150	600	800	600	400
600	667.0	800	2000	800	800	800	3400	1200	1000	800	4100	1300	1200	450 x 150	650	800	650	600
750	813.4	950	2500	900	1000	950	4000	1400	1200	950	4600	1500	1400	450 x 200	650	800	700	650
800	914.4	1000	2900	900	1100	1000	4300	1500	1400	1000	5500	1600	1600	450 x 450	600	2100	650	650
														525 x 150	700	800	700	650
														600 x 150	800	800	750	650
														600 x 200	850	1000	800	700
														600 x 450	900	2500	900	900
														600 x 600	950	2800	1500	1200

NOMINAL DIA. OF PIPE (mm)	GUSSETED BEND					
	45°			30°		
	A	B	C	A	B	C
100	450	600	350	450	550	100
150	450	700	400	450	600	150
200	450	950	400	450	700	200
250	550	1200	500	550	850	250
300	550	1200	500	550	900	250
350	600	1200	500	600	900	300
375	650	1200	550	650	900	300
400	700	1200	550	700	900	350
450	850	1250	600	850	1000	350
525	950	1400	700	950	1100	400
600	1200	1450	750	1200	1250	450
750	1350	2000	850	1350	1400	500
850	1450	2400	1000	1450	1700	550

GRADIENT EXCEEDING		POSITION OF ANCHOR BLOCK
8% - 12.5%		EVERY 3RD. PIPE
12.5% - 20%		EVERY 2ND. PIPE
20% & ABOVE		EVERY PIPE

NOMINAL DIA. OF PIPE (mm)	A (mm)	B (mm)	C (mm)
150 x 100			
200 x 100	500	300	500
200 x 150			
250 x 150	600	300	600
250 x 200			
300 x 200	700	400	700
300 x 250			
350 x 200			
350 x 250	800	400	700
350 x 300			
400 x 200			
400 x 250	900	500	800
400 x 300			
400 x 350	900	450	800
450 x 300			
450 x 350	1000	700	850
450 x 400			

- NOTE :**
- FOR LEGEND, ABBREVIATION AND GENERAL NOTES, SEE DWG NO. SYA/STD/001.
 - ALL DIMENSIONS ARE IN mm UNLESS OTHERWISE STATED.
 - MASS CONCRETE GRADE 20/25.
 - ALLOWABLE BEARING PRESSURE = 75 KN/M².
 - TEST PRESSURE FOR THRUST BLOCKS IS BASED ON 100mm HEAD OF WATER.
 - DIMENSIONS OF THRUST BLOCKS TO BE INCREASED IF ACTUAL BEARING PRESSURE IS FOUND TO BE LESS THAN 75 KN/M².
 - DIMENSIONS 'A' OF THRUST BLOCK TO BE ADJUSTED BY THE S.O. IF NECESSARY TO SUIT TRENCH WIDTH.

REV.	DESCRIPTION	DATE

SYARIKAT BEKALAN AIR SELANGOR SDN BHD
 JALAN PANTAI BAHARU,
 59200, KUALA LUMPUR.
 TEL NO : 03 - 2088 5400
 FAX NO : 03 - 2088 5373

PROJECT :

DRAWING TITLE :
 DETAILS OF CONCRETE THRUST BLOCK AND ANCHOR BLOCK.

DRAWN BY : SHAHRUL	DESIGNED : SAT
CHECKED : HS	APPROVED : LPL
SCALE : NTS	DATE : OCT 2005

DRAWING NO :
 SYA / MS / STD / 005