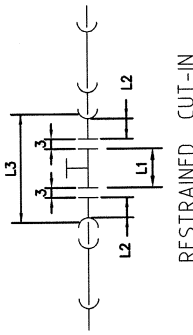
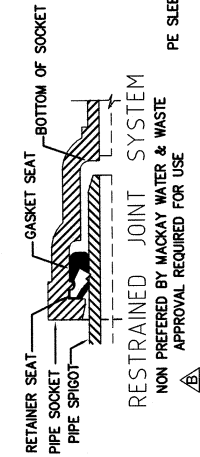


DN	BENDS (SEE NOTE 3)										
	HORIZONTAL		VERTICAL								
	UPWARD THRUST	DOWNWARD THRUST	45°	22.5°	45°						
100	0.8	1.6	3.4	8.1	2.4	4.9	10.2	0.8	1.6	3.4	24.7
150	1.1	2.2	4.6	11.2	3.4	6.9	14.4	1.1	2.2	4.6	31.7
200	1.4	2.8	5.9	14.2	4.4	8.8	18.4	1.4	2.8	5.9	44.4
250	1.6	3.1	6.5	15.8	4.9	9.8	20.5	1.6	3.1	6.5	49.4
300	1.8	3.7	7.7	18.5	5.8	11.7	24.4	1.8	3.7	7.7	57.4

MAIN BRANCH PIPE DN	TEES (SEE NOTE 5)		TAPERS (SEE NOTE 6)		MIN. LENGTH OF RESTRAINED FULL RESTRAINT (m)	MIN. LENGTH OF LARGE PIPE FOR FULL RESTRAINT (m)
	MIN. DISTANCE BETWEEN JOINTS 'A' (m)	RESTRAINED LENGTH 'B' (m)	LARGE PIPE DN	SMALL PIPE DN		
100	17.4	7.0	200	100	25.8	18.2
150	30.5	23.2	300	150	24.0	18.6
200	14.8	11.1	350	200	91.0	40.4
250	28.0	18.4	350	250	48.2	30.5
300	40.2	26.8	350	300	20.2	16.9
375	10.6	0.2	300	100	17.6	51.6
400	23.1	11.3	300	150	81.3	43.4
450	34.5	25.3	300	200	46.7	32.3
500	45.1	37.6	375	250	21.8	18.4
550	8.0	0.2	375	150		
600	20.9	6.6	375	200		
650	32.2	21.2	375	250		
700	42.8	33.7	375	300		
750	54.6	46.9				



DN	RESTRAINED CUT-IN INSERT CONNECTOR OVERALL L3
100	356
150	406
200	484
250	534
300	610
375	REFER MANUFACTURER

NOTES

- ALL DIMENSIONS IN MILLIMETRES UNLESS OTHERWISE NOTED.
- ALL RESTRAINED LENGTHS ARE APPLICABLE FOR BURIED PIPELINES ONLY. THE MINIMUM OF PIPELINE REQUIRED TO BE RESTRAINED IS CALCULATED FROM THE PIPE DIAMETER, FITTING TYPE, STANDARD TRENCH CONDITIONS AND A PIPELINE PRESSURE OF 12 m.
- THE LENGTH OF RESTRAINT REQUIRED IS THE AMOUNT OF PIPELINE THAT MUST BE RESTRAINED EITHER SIDE OF THE FITTING, INCLUDING THE FITTING JOINTS.
- SPECIAL CONSIDERATION IS REQUIRED IF THE DESIGNATED RESTRAINED LENGTH FOR A TEE ENCOMPASSES OR OVERLAPS THE DESIGNATED RESTRAINED LENGTH FOR ANOTHER FITTING. SEEK MANUFACTURER'S OR DESIGNER'S GUIDANCE.
- THE LENGTH OF RESTRAINT REQUIRED FOR TEES APPLIES TO 'B' (BRANCH) ONLY. THE MINIMUM DISTANCE 'A' BETWEEN JOINTS IS THE MINIMUM DISTANCE BETWEEN THE NEAREST UNRESTRAINED JOINT EITHER SIDE OF THE TEE, NOT INCLUDING THE TEE RESTRAINT IS NOT REQUIRED IN THE MAIN LINE SOCKETS OR MECHANICAL COUPLINGS, UNLESS ENCOMPASSING (SEE NOTE 4).
- HYDRANT TEES AND OTHER NON-THRUST BEARING FITTINGS DO NOT REQUIRE RESTRAINT.
- FOR TAPERS, IF THE MINIMUM LENGTH OF THE ADJACENT SMALL PIPE SIZE OCCURS, WITHOUT ENCOMPASSING ANOTHER FITTING'S RESTRAINT, THEN ONLY ONE RESTRAINED JOINT IS REQUIRED IN THE LARGE SOCKET OF THE TAPER. IF THE MINIMUM LENGTH OF SMALL PIPE DOES NOT OCCUR THEN, FULL RESTRAINT IS REQUIRED.
- TREAT FLUSHING BENDS AS A DEAD END.
- SPECIAL DESIGN REQUIRED FOR 90 DEGREE VERTICAL BENDS.
- PLACE MARKING TAPE FOR IDENTIFICATION OF RESTRAINED SECTIONS OF THE PIPELINE ALONG THE TOP OF THE RESTRAINED PIPE LENGTHS AND FASTEN TO THE PIPE AT NOT LESS THAN 3 m CENTRES. MARKING TAPE TO BE PINK COLOURED POLYETHYLENE TAPE APPROXIMATELY 100 WIDE, WITH THE INSCRIPTION: "RESTRAINED PIPELINE - USE RESTRAINED FITTINGS ONLY."
- WHEN MAINTAINING OR CUTTING RESTRAINED SECTIONS OF PIPELINE IT IS ADVISABLE THAT EFFECTIVE LENGTHS OF FITTINGS BE MEASURED ON SITE TO CONFIRM THEIR COMPLIANCE WITH THIS DRAWING.
- RESTRAINED JOINTS MAY BE ASSUMED TO ACT THE SAME AS A FLANGED JOINT.

ASSEMBLY

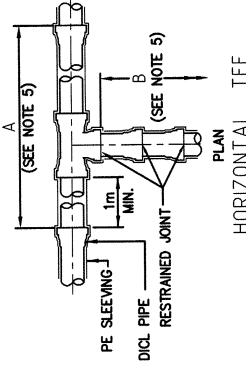
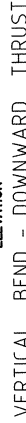
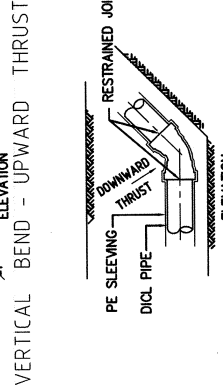
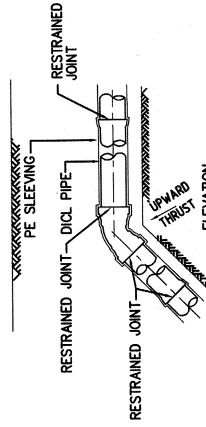
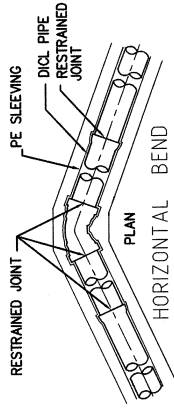
- JOINTING TO BE IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.
- RESTRAINT VIA LOCKING GASKETS IS ONLY TO BE USED WITH DI PIPES AND FITTINGS FEATURING THE AUTHORISED SOCKET PROFILE. DO NOT USE WITH OTHER DI SOCKET PROFILES OR OTHER PIPE MATERIALS.
- IF MAXIMUM JOINT DEFLECTION IS DESIRED, PUSH THE SPIGOT TO THE FIRST WITNESS MARK ONLY AND THEN DEFLECT THE JOINT. THE JOINT WILL NOT DEFLECT AFTER INSERTING THE SPIGOT ALL THE WAY HOME.

DISASSEMBLY

- JOINTS TO BE DISASSEMBLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
- DO NOT REUSE RESTRAINED JOINT GASKETS.

(WRITTEN PERMISSION REQUIRED FOR USE)

MRC STANDARD DRAWINGS SUPERCEDES WSAA STANDARD DRAWINGS



RESTRAINED CUT-IN

<b>Mackay REGIONAL COUNCIL</b>		DRAWING No. <b>A3-04284</b> AMEND. <b>C</b>	SHEET 1 OF 1
<b>COMMERCIAL SERVICES</b>		<b>STANDARD DRAWING</b> <b>RESTRAINED JOINT SYSTEM</b> DN 100 to DN 375 DI MAINS	
EXECUTIVE MANAGER MACKAY WATER & WASTE RPEQ 7506 JASON DEVITT DATE <b>27 MAY 09</b>		WSAA NO. <b>WAT-1208</b> WATER SERVICES ASSOCIATION of Australia	
DRAWING FILE NAME M:\Engineering Services\Technical Services\Design\Projects\Standard drawings\Mackay Water\WSAA MRC\WAT CODE\A3-04284B		SURVEY N/A	
SURVEY FILE No N/A		DATE OF LAST EDIT May 21, 2009	
LEVEL DATUM A.H.D.		JOB No	
MERIDIAN MGA-55		APPVD.	
<b>C/SB</b> <b>Amend mgr skn.</b>		<b>JC</b>	
MAY08 NOTE ADDED		SLR	
OCT07 T'SER TO MRC TBLOCK		SLR	
WSAA ORIG			
NO.	DATE	DESCRIPTION	APPVD.