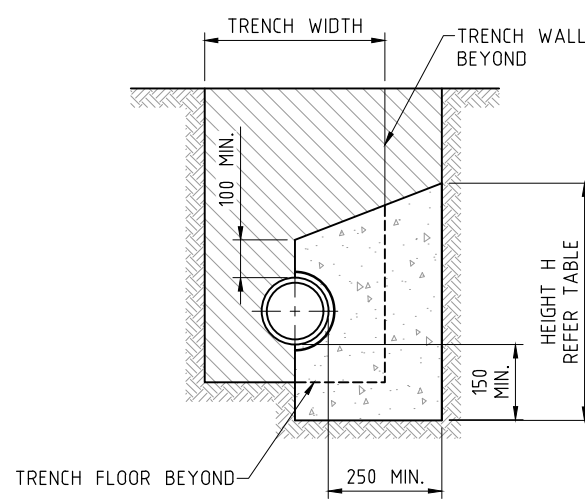
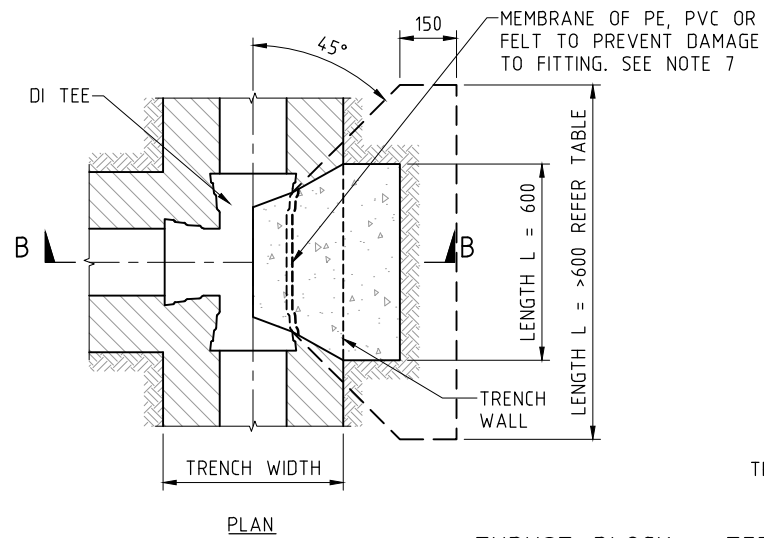


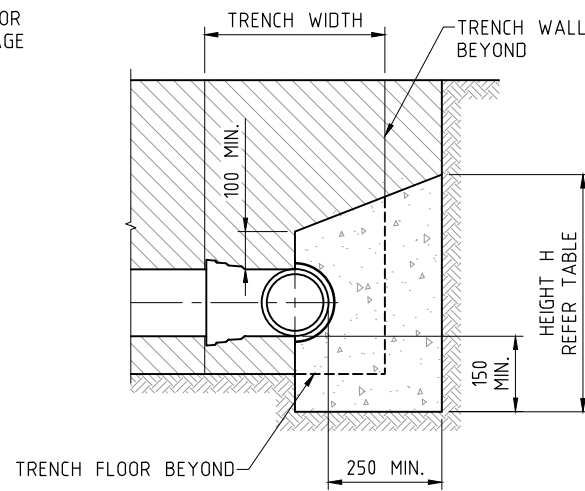
**THRUST BLOCK - BENDS**  
NOT TO SCALE



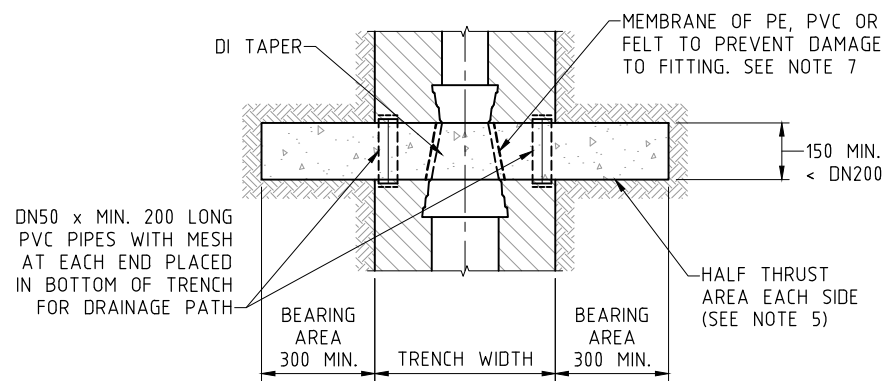
**TYPICAL SECTION A-A**



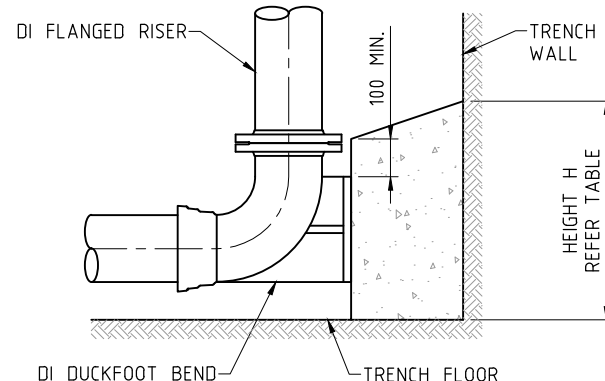
**THRUST BLOCK - TEES**  
NOT TO SCALE



**TYPICAL SECTION B-B**



**THRUST BLOCK - TAPERS**  
NOTE: SPECIAL DESIGN REQUIRED FOR SOIL TYPE  
NOT TO SCALE



**THRUST BLOCK - FLUSHING / WASHOUT BEND**  
NOTE: MINIMUM REQUIRED THRUST AREA AS PER TEE OR CLOSED END  
NOT TO SCALE

DIMENSIONS FOR HORIZONTAL THRUST BLOCKS - TEST PRESSURE 800 kPa																			
PIPE DN	FITTING	MAX. THRUST IN KN	THRUST BLOCK HEIGHT H	THRUST BLOCK LENGTH L FOR SOIL TYPE						PIPE DN	FITTING	MAX. THRUST IN KN	THRUST BLOCK HEIGHT H	THRUST BLOCK LENGTH L" FOR SOIL TYPE					
				STIFF CLAY 50KPa	VERY STIFF CLAY SANDY LOAM 100KPa	SAND AND GRAVEL HARD CLAY 150KPa	SAND AND GRAVEL CEMENTED WITH CLAY 200KPa	ROCK 240KPa	STIFF CLAY 50KPa					VERY STIFF CLAY SANDY LOAM 100KPa	SAND AND GRAVEL HARD CLAY 150KPa	SAND AND GRAVEL CEMENTED WITH CLAY 200KPa	ROCK 240KPa		
100	90° BEND	13.9	400	700	x	x	x	x	375	90° BEND	165.6	800	#	2100	1400	1050	900		
	45° BEND	7.4		x	x	x	x	x		2250	1150		750	x	x				
	22.5° BEND	4.1		x	x	x	x	x		x	x		x	x	x				
	11.25° BEND	1.6		x	x	x	x	x		x	x		x	x	x				
	6° BEND	0.9		x	x	x	x	x		x	x		x	x	x				
	TEE OR CLOSED END	9.8		x	x	x	x	x		#	1500		1000	750	650				
150	90° BEND	28.7	450	1300	650	x	x	x	450	90° BEND	234.5	900	#	2600	1750	1300	1100		
	45° BEND	15.6		700	x	x	x	x		#	1450		950	750	x				
	22.5° BEND	8.2		x	x	x	x	x		1300	650		x	x	x				
	11.25° BEND	4.1		x	x	x	x	x		750	x		x	x	x				
	6° BEND	2.1		x	x	x	x	x		#	1850		1250	950	800				
	TEE OR CLOSED END	20.5		950	x	x	x	x		#	#		1900	1450	1200				
200	90° BEND	49.2	550	1800	900	x	x	x	500	90° BEND	286.2	1000	#	#	1900	1450	1200		
	45° BEND	26.2		950	x	x	x	x		#	1550		1050	800	650				
	22.5° BEND	13.9		x	x	x	x	x		1600	900		x	x	x				
	11.25° BEND	6.6		x	x	x	x	x		800	x		x	x	x				
	6° BEND	3.5		x	x	x	x	x		#	2050		1350	1050	850				
	TEE OR CLOSED END	34.4		1250	650	x	x	x		#	#		1850	1550					
225	90° BEND	61.5	600	2000	1050	700	x	x	600	90° BEND	405.1	1100	#	#	#	1850	1550		
	45° BEND	32.8		1100	x	x	x	x		#	2000		1350	1000	850				
	22.5° BEND	17.2		x	x	x	x	x		2050	1050		700	x	x				
	11.25° BEND	8.2		x	x	x	x	x		1050	x		x	x	x				
	6° BEND	4.4		x	x	x	x	x		#	2600		1750	1300	1100				
	TEE OR CLOSED END	43.5		1450	750	x	x	x		#	#		2400	2000					
250	90° BEND	74.6	650	2300	1150	800	x	x	750	90° BEND	621.6	1300	#	#	#	2400	2000		
	45° BEND	40.2		1250	650	x	x	x		#	2600		1750	1300	1100				
	22.5° BEND	20.5		650	x	x	x	x		2650	1350		900	700	x				
	11.25° BEND	10.7		x	x	x	x	x		900	x		x	x	x				
	6° BEND	7.8		x	x	x	x	x		#	#		2300	1700	1400				
	TEE OR CLOSED END	52.5		1650	850	x	x	x		#	#		2750	2300					
300	90° BEND	109.1	700	#	1600	1050	800	x	900 (Ø960 MSCL)	90° BEND	814.6	1500	#	#	#	2750	2300		
	45° BEND	59.0		1700	850	x	x	x		#	2950		2000	1500	1250				
	22.5° BEND	30.3		900	x	x	x	x		1500	800		x	x	x				
	11.25° BEND	14.8		x	x	x	x	x		#	#		2000	1600					
	6° BEND	7.8		x	x	x	x	x		#	#		#	2000	1600				
	TEE OR CLOSED END	77.1		2200	1100	750	x	x		#	#		#	#	#				

x DENOTES THRUST BLOCK LENGTH OF 600 MIN.  
# DENOTES SPECIAL DESIGN REQUIRED FOR SOIL TYPE

**THRUST BLOCK NOTES**

- ALL DIMENSIONS IN MILLIMETRES UNLESS OTHERWISE SPECIFIED.
- CAST THE THRUST AREA OF ALL THRUST BLOCKS AGAINST A CLEAN FACE OF UNDISTURBED NATURAL SOIL.
- DO NOT USE STANDARD THRUST BLOCKS AS SPECIFIED IN THIS DRAWING IN SOILS WITH <50 kPa BEARING CAPACITY EG;
  - VERY SOFT, SOFT OR FIRM CLAY.
  - LOOSE SAND.
  - UNCOMPACTED FILL OR REFUSE.
 A GEOTECHNICAL ASSESSMENT AND INDIVIDUAL DESIGN IS REQUIRED FOR THESE SOILS.
- THRUST BLOCKS NOT TO INTERFERE WITH OTHER SERVICES OR BE LOCATED OUTSIDE THE WATER MAIN ALLOCATION WITHOUT WATER AGENCY APPROVAL.
- CONCRETE TO BE GRADE N20 FOR UNREINFORCED THRUST BLOCKS AND N32 FOR REINFORCED.
- THE MINIMUM THRUST AREA FOR TAPER THRUST BLOCKS TO BE EQUAL TO THE DIFFERENCE BETWEEN THE THRUST AREAS FOR TEES OR CLOSED ENDS OF EQUIVALENT DIAMETER TO THOSE EACH SIDE OF TAPER. THE DETAIL SHOWN IS FOR < OR = DN200 MAINS. FOR LARGER MAINS, THE TAPER THRUST BLOCK SHALL BE REINFORCED.
- FOR DOWNWARD VERTICAL THRUST, THE ALLOWABLE BEARING PRESSURES FOR VARIOUS SOILS MAY BE TAKEN AS TWICE THAT FOR HORIZONTAL THRUST SHOWN.
- WHEN POURING CONCRETE AGAINST FITTINGS, PLACE A MEMBRANE OF POLYETHYLENE, PVC OR FELT BETWEEN THE FITTING AND CONCRETE TO PREVENT DAMAGE TO THE FITTING. PIPE JOINTS TO BE CLEAR OF CONCRETE.
- CONCRETE THRUST BLOCK ANCHORS FOR VALVES TO BE AS DETAILED ON TWEED SHIRE COUNCIL SEWERAGE RETICULATION STANDARD DRAWING S.D.232.
- THRUST BLOCK DIMENSIONS CAN BE INDIVIDUALLY ADJUSTED TO SUIT LOCATION. MINIMUM THRUST AREA MUST BE ACHIEVED.
- TABLE OF DIMENSIONS IS BASED ON THE REQUIRED TEST PRESSURE OF 800 kPa AND ACTUAL DI CL PIPE DIAMETERS.

<b>A</b>	<b>ORIGINAL ISSUE</b>	<b>A.A</b>	<b>24.11.21</b>
ISSUE	AMENDMENT DETAILS	INITIALS	DATE



**DESIGN UNIT**  
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MURWILLUMBAH,  
NEW SOUTH WALES 2484  
PHONE 02 6670 2400  
EMAIL tsc@tweed.nsw.gov.au  
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DESIGN ENGINEER	A.A. DATE NOV. 2021
W.W.U. MANAGER	A.B. DATE NOV. 2021
DRAWN	INFRASTRUCTURE DELIVERY UNIT - DESIGN
SCALE	NOT TO SCALE

PROJECT:	<b>SEWERAGE RETICULATION STANDARDS</b>	DRAWING NUMBER:	<b>S.D.230</b>
DRAWING TITLE:	<b>HORIZONTAL THRUST BLOCKS SEWER MAINS - TEST PRESSURE 800kPa</b>	DATE:	<b>NOV. 2021</b>
ACAD FILE No: G:\_AAA TSC STANDARD DRAWINGS\200 SEWERAGE WORKS\CURRENT DRAWINGS\S.D.230 (Nov-21 Rev A).dwg			

S.D.230, 13/12/2021, 8:56:45 AM