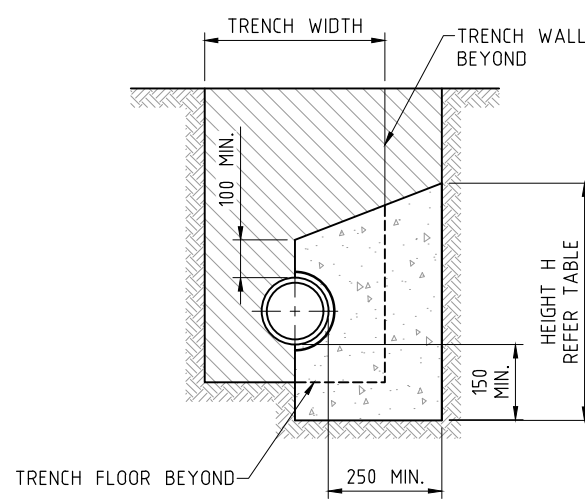
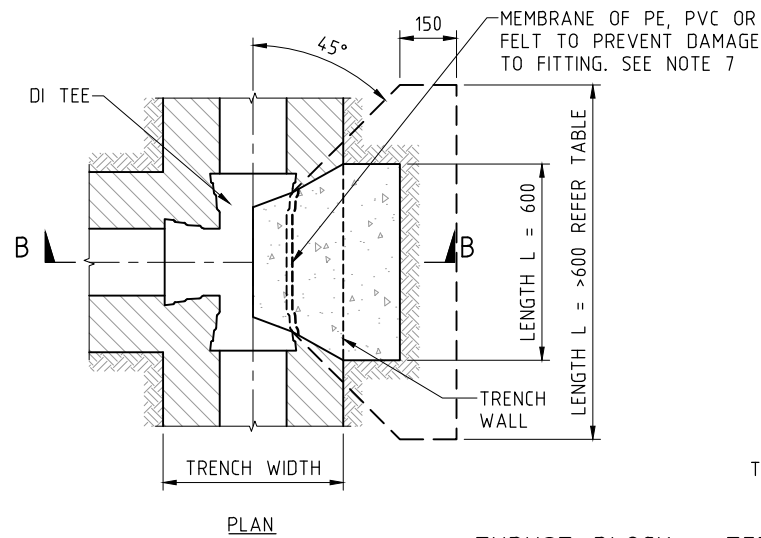


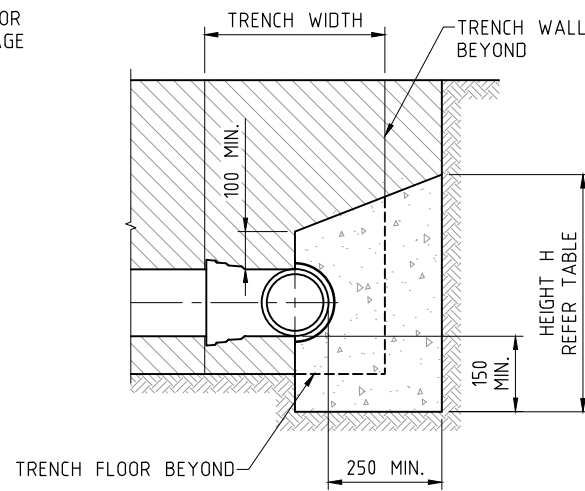
THRUST BLOCK - BENDS
NOT TO SCALE



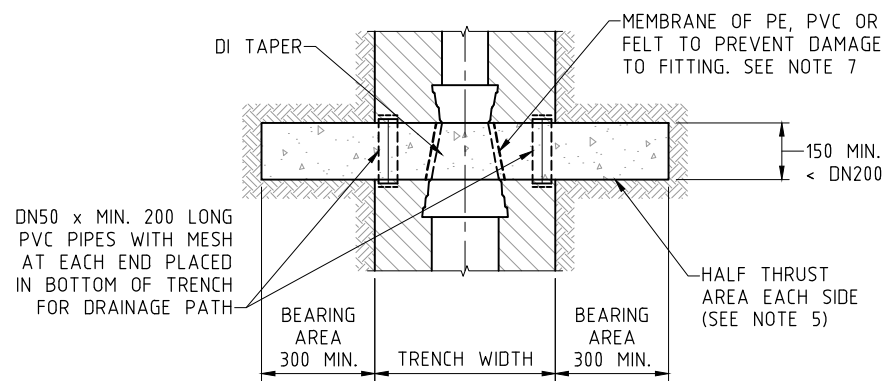
TYPICAL SECTION A-A



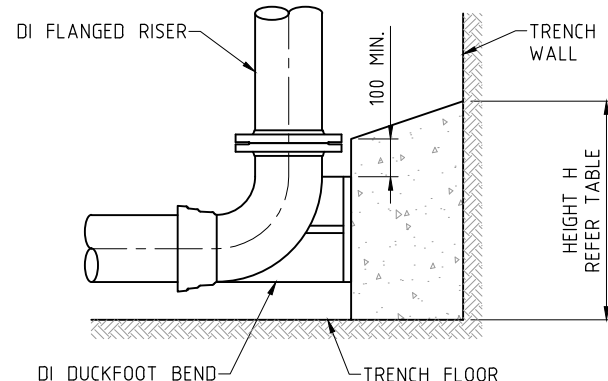
THRUST BLOCK - TEES
NOT TO SCALE



TYPICAL SECTION B-B



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



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

DIMENSIONS FOR HORIZONTAL THRUST BLOCKS - TEST PRESSURE 1200 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	19.8	400	1000	x	x	x	x	375	90° BEND	241.9	800	#	#	2220	1510	1260		
	45° BEND	10.7		x	x	x	x	x		45° BEND	130.9		#	1640	1090	820	680		
	22.5° BEND	5.5		x	x	x	x	x		22.5° BEND	66.7		1670	840	x	x	x		
	11.25° BEND	2.7		x	x	x	x	x		11.25° BEND	33.5		x	x	x	x	x		
	6° BEND	1.4		x	x	x	x	x		6° BEND	17.8		x	x	x	x	x		
	TEE OR CLOSED END	14.0		700	x	x	x	x		TEE OR CLOSED END	171.0		#	2140	1430	1070	890		
150	90° BEND	41.7	450	1860	930	x	x	x	450	90° BEND	342.6	900	#	#	2540	1900	1590		
	45° BEND	22.6		1000	x	x	x	x		45° BEND	185.4		#	2060	1375	1030	860		
	22.5° BEND	11.5		x	x	x	x	x		22.5° BEND	94.5		2100	1050	700	x	x		
	11.25° BEND	5.8		x	x	x	x	x		11.25° BEND	47.5		1060	x	x	x	x		
	6° BEND	3.1		x	x	x	x	x		6° BEND	24.2		#	2690	1800	1350	1120		
	TEE OR CLOSED END	29.5		1300	600	x	x	x		TEE OR CLOSED END	242.3		#	#	2790	2090	1740		
200	90° BEND	71.7	550	#	1300	870	650	x	500	90° BEND	226.2	1000	#	#	2260	1510	1130	940	
	45° BEND	38.8		1410	700	x	x	x		45° BEND	115.3		2310	1150	770	x	x		
	22.5° BEND	19.8		720	x	x	x	x		22.5° BEND	58.0		1160	x	x	x	x		
	11.25° BEND	9.9		x	x	x	x	x		11.25° BEND	295.5		#	#	1970	1480	1230		
	6° BEND	5.3		x	x	x	x	x		6° BEND	593.0		#	#	#	2700	2250		
	TEE OR CLOSED END	50.7		1850	920	x	x	x		TEE OR CLOSED END	320.0		#	2920	1950	1460	1220		
225	90° BEND	89.4	600	#	1500	1000	750	x	600	90° BEND	164.0	1100	#	#	2980	1490	990	750	620
	45° BEND	48.4		1620	810	x	x	x		45° BEND	82.2		1500	750	x	x	x		
	22.5° BEND	24.6		830	x	x	x	x		22.5° BEND	419.0		#	#	2540	1910	1590		
	11.25° BEND	12.4		x	x	x	x	x		11.25° BEND	909.0		#	#	#	#	2920		
	6° BEND	6.6		x	x	x	x	x		6° BEND	492.0		#	#	2530	1890	1580		
	TEE OR CLOSED END	63.2		2100	1060	700	x	x		TEE OR CLOSED END	251.0		#	1930	1290	970	810		
250	90° BEND	109.0	650	#	1700	1120	840	700	750	90° BEND	126.1	1300	#	#	1940	970	650	x	x
	45° BEND	59.0		1820	910	x	x	x		45° BEND	64.3		#	#	#	2480	2060		
	22.5° BEND	30.1		930	x	x	x	x		22.5° BEND	1228.0		#	#	#	#	3420		
	11.25° BEND	15.1		x	x	x	x	x		11.25° BEND	664.0		#	#	2960	2220	1850		
	6° BEND	7.1		2400	1200	800	x	x		6° BEND	339.0		#	2260	1510	1130	940		
	TEE OR CLOSED END	77.1		2100	1060	700	x	x		TEE OR CLOSED END	170.0		#	2270	1140	760	x	x	
300	90° BEND	158.6	700	#	2270	1510	1140	950	900 (Ø960 MSCL)	90° BEND	868.0	1500	#	#	#	#	3300	2650	
	45° BEND	85.9		2453	1230	820	x	x		45° BEND	1228.0		#	#	#	#	3420		
	22.5° BEND	43.8		1250	630	x	x	x		22.5° BEND	664.0		#	#	2960	2220	1850		
	11.25° BEND	22.0		630	x	x	x	x		11.25° BEND	339.0		#	2260	1510	1130	940		
	6° BEND	11.7		x	x	x	x	x		6° BEND	170.0		#	2270	1140	760	x	x	
	TEE OR CLOSED END	112.2		#	1600	1070	800	750		TEE OR CLOSED END	868.0		#	#	#	#	3300	2650	

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 WATER SUPPLY STANDARD DRAWING S.D.305.
- 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 1200 kPa AND ACTUAL DI CL PIPE DIAMETERS.

A	ORIGINAL ISSUE	AA	24.11.21
ISSUE	AMENDMENT DETAILS	INITIALS	DATE



DESIGN UNIT
COUNCIL OFFICES
TUMBULGUM ROAD,
MURWILLUMBAH,
NEW SOUTH WALES 2484
PHONE 02 6670 2400
EMAIL tsc@tweed.nsw.gov.au
WEBSITE www.tweed.nsw.gov.au

DESIGN ENGINEER	AA	DATE	NOV. 2021
W.W.U. MANAGER	AB	DATE	NOV. 2021
DRAWN	INFRASTRUCTURE DELIVERY UNIT - DESIGN		
SCALE	NOT TO SCALE		

PROJECT:	WATER SUPPLY STANDARDS	DRAWING NUMBER:	S.D.303
DRAWING TITLE:	HORIZONTAL THRUST BLOCKS WATER MAINS - TEST PRESSURE 1200kPa		NOV. 2021
ACAD FILE No:	G:_AAA TSC STANDARD DRAWINGS\300 WATER SUPPLY\CURRENT DRAWINGS\S.D.303 (Nov-21 Rev A).dwg		