

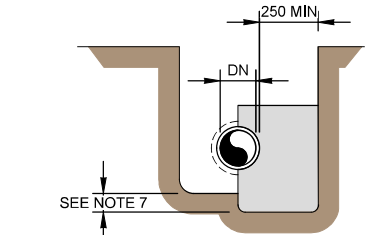
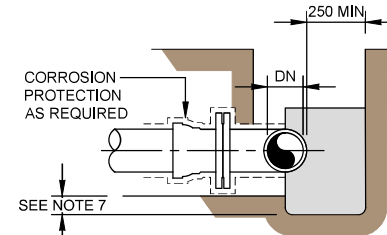
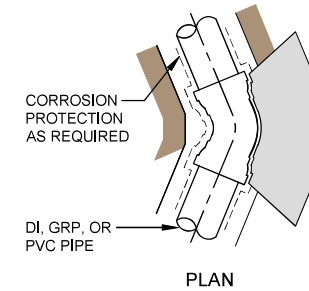
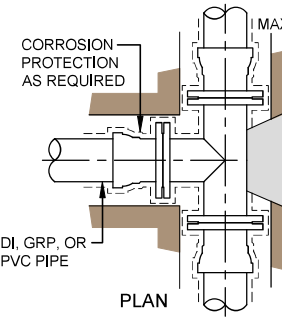
MINIMUM THRUST AREA FOR BLOCKS IN SQUARE METRES (m²) DESIGN PRESSURE 1000 kPa (NOM. 100 m HEAD)

SOIL CLASSIFICATION AND ALLOWABLE HORIZONTAL BEARING PRESSURE OF GROUND. SEE NOTE 3 FOR HORIZONTAL THRUST ON TRENCH WALLS WHERE COVER OVER PIPES IS 450 OR GREATER	90° AND 60°			45° AND 30°			22,5°			11,25°			TEES AND DEAD ENDS			
	HORIZONTAL BENDS			HORIZONTAL BENDS			HORIZONTAL BENDS			HORIZONTAL BENDS			TEES AND DEAD ENDS			
	STIFF CLAY; MEDIUM DENSE; CLEAN SAND	VERY STIFF CLAY; DENSE SAND/GRAVEL; DECOMPOSED ROCK	HARD CLAY; SOUND ROCK	STIFF CLAY; MEDIUM DENSE; CLEAN SAND	VERY STIFF CLAY; DENSE SAND/GRAVEL; DECOMPOSED ROCK	HARD CLAY; SOUND ROCK	STIFF CLAY; MEDIUM DENSE; CLEAN SAND	VERY STIFF CLAY; DENSE SAND/GRAVEL; DECOMPOSED ROCK	HARD CLAY; SOUND ROCK	STIFF CLAY; MEDIUM DENSE; CLEAN SAND	VERY STIFF CLAY; DENSE SAND/GRAVEL; DECOMPOSED ROCK	HARD CLAY; SOUND ROCK	STIFF CLAY; MEDIUM DENSE; CLEAN SAND	VERY STIFF CLAY; DENSE SAND/GRAVEL; DECOMPOSED ROCK	HARD CLAY; SOUND ROCK	
NOMINAL DIAMETER OF FITTING (DN)	PBH (kPa)	50	100	200	50	100	200	50	100	200	50	100	200	50	100	200
100	0.34	0.17	N	0.18	N	N	N	N	N	N	N	N	N	0.24	0.12	N
150	0.70	0.35	0.18	0.38	0.19	N	0.20	N	N	N	N	N	N	0.50	0.25	0.12
200	1.20	0.60	0.30	0.64	0.32	0.16	0.34	0.17	N	0.16	N	N	0.84	0.42	0.21	
225	1.52	0.75	0.38	0.81	0.41	0.21	0.42	0.22	0.11	0.22	N	N	1.06	0.53	0.27	
250	1.80	0.91	0.45	0.98	0.49	0.25	0.50	0.25	0.12	0.26	0.13	N	1.28	0.64	0.32	
300	2.66	1.33	0.66	1.44	0.72	0.36	0.74	0.37	0.18	0.36	0.18	N	1.88	0.94	0.47	
375	4.04	2.02	1.01	2.18	1.09	0.55	1.12	0.56	0.28	0.56	0.28	0.14	2.86	1.43	0.72	
225	5.71	2.86	0.73	3.09	1.55	0.40	1.58	0.79	0.20	1.58	0.79	0.20	4.04	2.02	0.52	
250	6.98	3.49	0.89	3.78	1.89	0.49	1.93	0.98	0.25	1.93	0.98	0.25	4.93	2.37	0.63	
300	9.89	4.95	1.27	5.36	2.68	0.68	2.73	1.36	0.35	2.73	1.36	0.35	6.90	3.50	0.89	
375	15.16	7.58	1.94	8.21	4.10	1.05	4.19	2.10	0.53	4.19	2.10	0.53	10.72	5.36	1.37	

'N' DENOTES NOMINAL THRUST AREA - (SEE NOTES 4 & 5)
PBH - ALLOWABLE HORIZONTAL BEARING PRESSURE

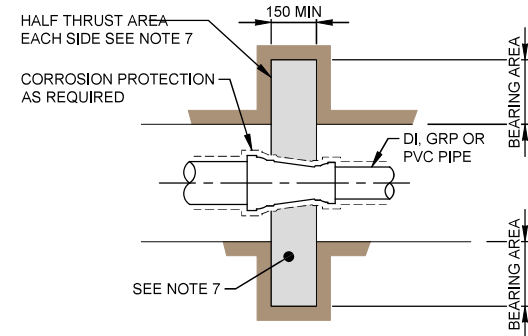
NOTE:

- ALL DIMENSIONS IN MILLIMETRES UNLESS OTHERWISE SPECIFIED.
- CAST THE THRUST AREA OF ALL THRUST BLOCKS AGAINST A CLEAN FACE OF UNDISTURBED NATURAL SOIL. THRUST BLOCKS NOT TO INTERFERE WITH OTHER SERVICES **USING 20MPa CONCRETE**.
- DO NOT USE STANDARD THRUST BLOCKS AS SPECIFIED IN THIS DRAWING IN:
 - VERY SOFT, SOFT, OR FIRM CLAY.
 - LOOSE CLEAN SAND.
 - UNCOMPACTED FILL OR REFUSE.
- A GEOTECHNICAL ASSESSMENT AND INDIVIDUAL DESIGN IS REQUIRED FOR THESE SOILS.
- THE NOMINAL THRUST AREA 'N' TO BE ACHIEVED BY POURING CONCRETE THE FULL LENGTH OF THE FITTING AND TO A DEPTH THAT ENSURES THE THRUST IS VERTICALLY AND HORIZONTALLY CENTRED ON THE RESULTING THRUST BLOCK. SEE ALSO NOTE 7.
- DESIGN PRESSURES OTHER THAN 1000 kPa REDUCE OR INCREASE THE MINIMUM THRUST AREA BY THE RATIO OF THE DESIGN PRESSURES EXCEPT WHERE:
 - MIN THRUST AREA IS <0.1 m², AN
 - 'N' APPEARS IN THE TABLE AND DESIGN PRESSURE IS ABOVE 1000 kPa. CALCULATE THE AREA.
- FINISH THRUST BLOCKS APPROXIMATELY 100 ABOVE THE TOP OF THE FITTING OR BEARING PAD AND EXTEND TO THE FLOOR OF THE TRENCH OR DEEPER IF NECESSARY TO ACHIEVE THE REQUIRED THRUST AREA. MAXIMUM ENCASEMENT TO BE 180°.
- THE MINIMUM THRUST AREA FOR TAPER THRUST BLOCKS TO BE EQUAL TO THE DIFFERENCE BETWEEN THE THRUST AREAS FOR DEAD ENDS OF EQUIVALENT DIAMETER TO THOSE EACH SIDE OF TAPER.
- 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. JOINTS TO BE CLEAR OF CONCRETE.
- CONCRETE TO BE KEPT CLEAR OF BOLTS & FLANGES OR GIBBAULT JOINTS TO ALLOW FITTINGS TO BE REMOVED WITHOUT INTERFERING WITH ANCHOR BLOCK.



ELEVATION (FOR HORIZONTAL THRUST)
THRUST BLOCK FOR TEES

ELEVATION (FOR HORIZONTAL THRUST)
THRUST BLOCK FOR BENDS



PLAN (FOR HORIZONTAL THRUST)
TAPER THRUST BLOCK

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HDC AMENDMENTS TO NZS 4404:2010 SHOWN IN **BOLD**.



STANDARD DETAILS

THRUST BLOCKS CONCRETE BLOCK DETAILS

Drawn	Designed	
J. GOODMAN	KCDC	
Approved	Revision Date	
B. MAGUIRE	OCTOBER 2020	
Scale	Drawing No.	Revision
NOT TO SCALE	HDC-WS-004	R0