

Soil Classification and allowable Horizontal bearing pressure or Ground. See Note 3

	For Horizontal Thrust on Trench Walls where cover over pipes is 450 or greater	'Y's and Dead Ends			11.25° Horizontal Bends			22.5° Horizontal Bends			45° & 30° Horizontal Bends			90° & 60° Horizontal Bends		
		Hard Clay Sound Rock	Very Stiff Clay Dense Sand Gravel Decomposed Rock	Stiff Clay Medium Dense Clean Sand	Hard Clay Sound Rock	Very Stiff Clay Dense Sand Gravel Decomposed Rock	Stiff Clay Medium Dense Clean Sand	Hard Clay Sound Rock	Very Stiff Clay Dense Sand Gravel Decomposed Rock	Stiff Clay Medium Dense Clean Sand	Hard Clay Sound Rock	Very Stiff Clay Dense Sand Gravel Decomposed Rock	Stiff Clay Medium Dense Clean Sand	Hard Clay Sound Rock	Very Stiff Clay Dense Sand Gravel Decomposed Rock	Stiff Clay Medium Dense Clean Sand
PBH kPa		50	100	200	50	100	200	50	100	200	50	100	200	50	100	200
DN	100	N	0.12	0.24	N	N	N	N	N	N	N	N	0.18	N	0.17	0.34

**MINIMUM THRUST AREA FOR BLOCKS IN SQUARE METRES (M²)
DESIGN PRESSURE 1000 kPa (NOM. 100 M HEAD)**

'N' Denotes nominal thrust area - (See notes 4 & 5)
PBH - Allowable Horizontal Bearing Pressure
DN - Nominal Diameter of Fitting

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.
- 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:
 - Minimum thrust area is <0.1m², and
 - '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 and flanges or gibbault joints to allow fittings to be removed without interfering with anchor block.

Must be read in conjunction with D33

Not to scale



**FOUL SEWER PUMP LINES
TYPICAL DETAILS THRUST BLOCK
INSTALLATION 'Y's, BENDS & TAPERS - TABLE**



**Fig. D33A
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