

Figure 4.6
Wide Trench Condition

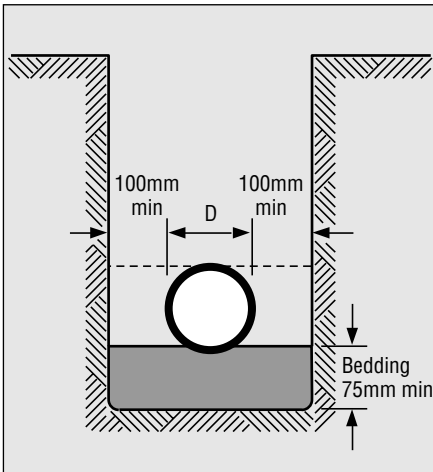


Figure 4.7
Narrow Trench Condition

Allowable Bending Radius

Vinidex PE pipes are flexible in behaviour, and can be readily bent in the field.

In general terms, a minimum bending radius of 33 x outside diameter of the pipe (33D) can be adopted for PE80C, and PE100 material pipes, whilst a radius of 20 x outside diameter of the pipe (20D) can be adopted for PE63, and PE80B material pipes during installation.

This flexibility enables PE pipes to accommodate uneven site conditions, and, by reducing the number of bends required, cuts down total job costs.

For certain situations, the designer may wish to evaluate the resistance to kinking or the minimum bending radius arising from strain limitation. The long term strain from all sources should not exceed 0.04 (4%).

When bending pipes there are two control conditions:

1. Kinking in pipes with high SDR ratios.
2. High outer fibre strain in high pressure class pipes with low SDR ratios.

For condition 1

The minimum radius to prevent kinking (R_k) may be calculated by:

$$R_k = \frac{SDR (SDR-1)}{1.12}$$

For condition 2

The minimum radius to prevent excess strain (R_e) may be calculated by:

$$R_e = \frac{D}{2} \epsilon$$

where

ϵ = outer fibre strain
(maximum allowable = 0.04)

D = mean Di (mm)