

## Trench preparation

Halifax drainage may be laid directly into an accurately trimmed trench allowing 50mm clearance beneath each coupling joint. The bottom of the trench should be flat to provide continuous support. Where accurate trimming cannot be achieved due to the subsoil condition, it will be necessary to excavate an additional 100mm to allow a granular bed to be laid whilst still maintaining the 50mm clearance beneath each joint.

## Bedding in concrete

When a concrete bed is required prepare the trench as above to provide 100mm of concrete under the pipe but support the pipe on a compressible material (expanded polystyrene) either side of each joint. If the pipework is being surrounded in concrete provision should be made for a flexible joint, within the concrete, at 5m intervals and placed next to a pipe joint. This should be made of suitable compressible material and cover the full cross sectional area of the concrete. It is recommended that inspection and testing of the pipework is completed in sections prior to haunching and surrounding with concrete.

## Settlement

Pipework leaving buildings and manholes which may be subject to settlement should incorporate a minimum of two joints close to the point of exit at a maximum of 600mm apart. This will provide a short length of pipe to act as a "rocker pipe" and in areas where large settlement is expected more than one may be required. See the image Underground pipe. See image **1**

## Depth of pipework

Halifax drainage can be installed under buildings without additional protection, but when laid under roads with less than 1.2m cover and in areas which are subject to special loadings it is recommended that extra protection be considered.

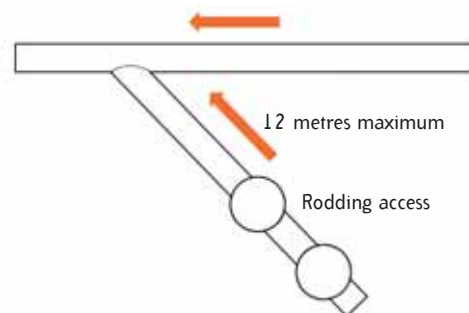
## Pipefalls

The pipework gradient should provide a self-cleaning action under normal discharge conditions. For flows of less than 1 litre/sec. gradients of 1 in 40 for 100mm pipe and 1 in 60 for 150mm pipe are usually satisfactory; but in any case the gradients should not be less than 1 in 80 for 100mm pipe and 1 in 150 for 150mm pipe.

## Provision for access

Access is required on drainage pipelines to enable the rodding and clearing of any debris and may be provided by manholes, chambers, access fittings or rodding eyes/roddable gullies - the latter allowing downstream access only.

As a general guide, no part of a drain should be further from a manhole than 45 metres and the distance between manholes should not exceed 90 metres. Where one drain connects with another drain without provision of access in the form of a manhole or inspection chamber, access should be provided on the branch drain within 12 metres of the junction. Where the drainage pipeline changes direction either vertically or horizontally; it is recommended an access fitting be incorporated in the design. See below image **2**



## Puddle flanges

In basement areas where pipes pass through external walls it may be necessary to install a puddle flange. For locations which are below the water table or in areas liable to flooding, puddle flanges will reduce the risk of water entering the building. See the image Puddle flange for a typical build in detail. Denso tape or similar should be wrapped around the pipe before bolting on the two piece puddle flange; this will ensure a water tight seal is achieved. See image **3**

When pipes are installed through pipe sleeves which have been cast into the concrete wall section, it will be necessary to seal the gap between the sleeve and pipe passing through it with a mastic/ sealant.

