

(TN1) Laying pipes in soft ground



Installation: Pipe laying

Laying pipes in soft ground (TN1)

Where the trench formation has little bearing strength and therefore will not support pipe bedding material effectively, it is necessary to provide a stable formation before pipe laying. Such conditions most commonly occur in peat, silty ground, soft to very soft alluvial clays, running sand, or in artificially filled ground.

Although trench formations are sometimes stabilised with concrete, this is unlikely to assure long-term stability in all cases, and a form of flexible bedding construction is the preferred method of dealing with this situation.

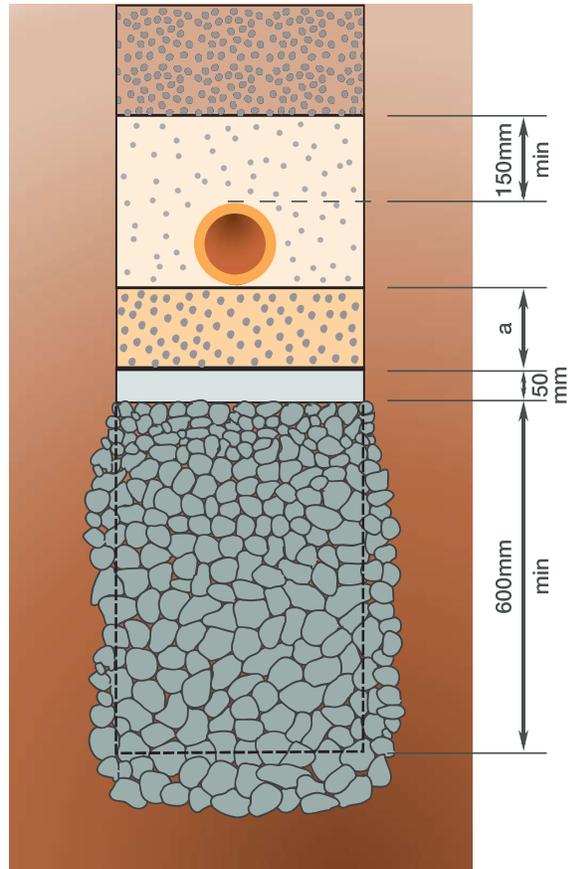
The trench formation and manhole base should be overexcavated by 600-800mm, depending on the bearing strength of the ground. Gravel reject material or small hardcore, less than 75mm, is then compacted in layers to form a firm trench bottom. A 50mm thickness of leanmix concrete is then placed as a blinding layer. The pipe is then laid on granular bedding material. These details are illustrated in Figure 6.

The pipe bedding construction requirements are calculated in the normal way, for example by using the CPDA's Bedding Tables or Simplified tables of external loads on buried pipelines. It is important that 'wide trench' design criteria are used because 'narrow trench' conditions cannot be guaranteed in this situation. The extra depth of granular bedding material shown in Figure 6, 150mm for sleeve-jointed pipes, rather than the usual 50mm, is required because of the hard nature of the constructed trench bottom. For a class 'F' bedding, selected backfill material is then placed to 150mm above the pipe and compacted before the main backfill is placed. Where class 'B' or class 'S' beddings are required, additional bedding material will either partially or wholly replace the selected backfill material.

Where groundwater exists at a level above the interface between the rejects and the new trench bottom, the procedure detailed in Laying pipes in waterlogged ground – Technical Note 2, page 100 should also be applied. The geotextile should surround both the material in the base of the trench as well as the pipe bedding material.

The use of a geotextile around the compacted material in the base of the trench will also assist compaction in exceptionally soft ground conditions, as well as limiting the movement of fines.

Fig. 6 – Class F bedding construction in soft ground



Note: Dimension 'a', the depth of the bedding material below the pipe, is 150mm.