

Connecting pipes to manholes, chambers and other structures

Protecting pipelines

Where a drain or sewer passes through a structure (e.g. manhole, inspection chamber, footing, wall), it is reasonable to expect some differential settlement between the pipeline and the structure.

The design needs to allow sufficient flexibility in the pipeline near to the structure to avoid damage or misalignment due to movement. This might be achieved by choice of pipe material or inclusion of a short-length pipe (a 'rocker' pipe) with additional flexible joints in the pipeline. In extreme cases, stabilisation of the soil around the structure may be required to limit ground movement.

Slightly different terminology and ways of presenting the requirement to protect pipelines are used in the various UK documents for designing and constructing adoptable foul and surface water drains and sewers, highway drainage and building drainage (i.e. the Design and Construction Guide, Sewers for Adoption, Sewers for Scotland, Sewers for Adoption for Northern Ireland, Specification for Highway Works, Building Regulations Approved Documents and Building Standards Technical Handbooks and so on), but the intended outcome is the same.

Best practice

A clear and accessible explanation of best practice which is consistent with these documents has therefore been included in BS EN 752: 2017 *'Drain and sewer systems outside buildings. Sewer system management.'*

The BPF Pipes Group and its members recommend that the guidance in this Standard is followed.

The key points are reproduced overleaf and the full guidance can be found in clause NA.6.4.4.5 of the National Annex to BS EN 752: 2017.

Best practice guidance

On specifying the interface between a structure and a pipe, BS EN 752: 2017 advises:

- Expect some differential settlement between the pipeline and structure which may lead to high shear loads on the pipe built into the structure.
- Materials such as polyethylene and polypropylene can be sufficiently flexible to accommodate these shear loads without using rocker pipes and with no detrimental effect on the structural performance of the pipe.
- For other pipe materials, a short-length pipe (a 'rocker' pipe) should be laid between the structure and the full-length pipe to isolate this pipe from movements caused by differential settlement. The first flexible joint should be as close to the face of the structure as practicable and the recommended maximum length of a rocker pipe is given.
- For special cases, such as where large settlements due to poor soil might be expected or for very large diameter pipes, additional short-length (rocker) pipes might be needed or greater angular performance at pipe joints specified.

Note:

BS 9295 *'Guide to the structural design of buried pipes'* also includes guidance on this topic but interprets best practice differently and is inconsistent with the UK documents mentioned overleaf. To avoid confusion, BPF Pipes Group and its members recommend that BS EN 752: 2017 is taken as the lead document and BS 9295: 2020 (Clause A.10.3) is not to be used for this purpose.