

Assessment of Trolining® GmbH's Trolining system - schedule



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1. Scope

To assess the performance of the Trolining® system for the rehabilitation of sewers.

The system is designed for renovating diameters from 200 mm to 3500 mm of any cross sectional profile (e.g. circular, egg, box).

The system consists of three main parts: an optional pre-liner which is positioned in the sewer first, a studded in-liner which is inserted into the pre-liner and a high strength grout which is then injected into the void between the two liners or the in-liner and the existing sewer.

2. Assessment schedule

The assessment comprises the following checks:

2.1 Technical audit of the manufacturing process of the pre-liner and in-liner including dimensions, materials and quality control checks;

2.2 Technical review of the installation instructions;

2.3 Technical audit of the installed product performance by witnessing of 3 installations (1 Germany, 2 U.K.)

2.4 Review the suitability of the Trolining® system for use under typical site conditions.

2.5 Review of re-making lateral connections.

3. Review of properties

From a comparison of standards and current U.K. Water Industry requirements, the following properties are deemed important. These are to be checked in the technical audit where possible.

3.1 Conformance of the pre-liner with the manufacturer's specification.

3.2 Conformance of the in-liner with the manufacturer's specification.

3.3 Conformance of the grout (Injector) as a high strength cement-based material in accordance with the manufacturer's specification. Minimum crush strength of 85 N/mm² at 28 days.

3.4 Dimensions and tolerances to manufacturer's specification.

3.5 Wall thickness (minimum design thickness)

4. Review of procedures

In addition to the performance of the lining the following items will be checked.

1. Quality control as it applies to:
 - Incoming materials;
 - Pre-liner fabrication;
 - In-liner fabrication;
 - Installation;
 - Grouting;
 - Commissioning.
2. Installation in accordance with the Trolining® Process Manual.



3. That the system
- has sufficient adaptability/flexibility to achieve the required shapes;
 - is sufficiently strong to avoid deformation under the pressure of grouting;
 - is airtight to prevent the leakage of grout or infiltration of water which could impair the finish, performance and durability of the lining.
4. The grouting system is free from voids.

5. Review of design

Technical audit of the design process including structural testing of the composite lining and application in accordance with the Sewerage Rehabilitation Manual published by WRc.

6. Reference documents

1. Sewer Rehabilitation Manual (SRM), 3rd Edition, WRc plc.
2. Trolining® Process Manual, 27.08.99.
3. Trolining® Injector technical information sheet, 02.06.1998