

**Title:** structural design of sewer renovation systems : updated French recommendations ASTEE-3R 2014 for Non circular pipes

**Theme:** Trenchless Design and Construction

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**Abstract:** To meet the markets needs and requirements, the ASTEE, Scientific and technical Association for water and Environment, decided to revise the #R98 method of liners with the following objectives :

- Integrate the requirements of the new european and international standards
- propose a method applicable for non circular lings
- to take in account the host pipe condition , to prevent over design
- and gives guidelines for application of finite element method (FEM).

Based on this update, we will propose to resume the design of non circular critical shapes and sub critical shapes ( egg-shape, horseshoe, boxes) based on host pipe characteristics. This method is based on a fully closed form analytical solution (O. Thépot, 2000) which extends Glocks analysis to non circular lining, and present the guidelines for the design with using a FEM.