

With or without Trench - always with HOBAS®! Renovation of a Sewer Main in Strasbourg, France

The reconstruction of the sewer main for the Rhine Harbour of Strasbourg was a model example of the complementary nature of open-dig and trenchless installation. Where the working space would have been insufficient, rehabilitation was carried out by sliplining prefabricated GRP NC Line® panels. Wherever a trench was feasible, CC-GRP Pipes were laid in an excavated trench which was prepared in accordance with pipe installation standards and as the depth required.

The project, coordinated by the Water and Sanitation Division of the Urban Community of Strasbourg, involved the renovation of an egg shaped main dimensioned 1,400 x 1,900 mm that functions as combined sewer for domestic and industrial effluents. 980 m DN 1500 CC-GRP pipe were lowered into a trench with a depth varying between 3 and 9 m. Over a stretch of 550 m the existing egg shaped structure was sliplined utilizing GRP NC Line® panels with an internal dimension of 1230 x 1660 mm.

The concept and implementation of mixed installation techniques for the project was particularly innovative and pragmatic. All pipe material was supplied by HOBAS. "We were looking for the best techno-economical compromise and this led us to selecting these techniques for this project. The performance of the 2 methods and the pipe material had to be taken into account while keeping environmental impacts to a minimum. Trenchless installation enabled the industrial roadway to remain open for use and us to comply with budget and safety considerations", explains Marc Hunsinger, head of the CUS Water and Sanitation Networks department. This project was coordinated by a consortium where SMCE Réha was responsible for the trenchless section and EJM Alsace for the open-dig section.

The sewer main that was relined has a curved section and therefore required the use of panels in different lengths varying from 1 to 2.35 m. These were inserted in the main with the help of a trolley and fitted together with a hydraulic jack. Then the panels were held in place with wooden wedges and finally fixed by grouting the annulus.

For the structural rehabilitation, the 25 mm thick NC Line walls have been calculated to ensure the optimal performance of the new line. This system not only transfers vertical loads (ground and heavy industrial traffic) but above all withstands aggressive substances from effluents from agronomical industrial plants with pH levels ranging from 1 to 10. The sewer's leak tightness is guaranteed by EPDM rubber seal integrated in each PN 1 connection.



Year of Construction
2009
 Construction Time
9 months
 Total Length of Pipe
1530 m,
15 Tangential Shafts
 Pipe Diameter
DN 1500, NC Profiles:
1230 x 1660 mm
 Pressure Class
PN 1
 Installation Method
open cut, relining
 Application
SewerLine®, NC Line®
 Client
CUS – Strasbourg
Urban Municipality
 Engineering Office
CUS – Water and Sewer
Networks Department
 Contractors
SMCE Réha, EJL Alsace
 Advantages
Corrosion and abrasions resistance,
several installation methods possible
with one pipe material, light weight, easy installation

“The structure of the masonry sewer was very weak due to constant heavy loads from lorries. Furthermore, its crown has suffered because of corrosive exhaust emissions”, states Laurent Gerber, Managing Director of SMCE Réha.

The relined sections with GRP panels show high structural and mechanical strength, the flow rate is now considerably higher, and the new material is corrosion as well as abrasion resistant guaranteeing durability for at least 50 years. Mr. Laurent Gerber adds: “Trenchless rehabilitation was a good alternative installation method that allowed us to keep existing trees and moreover ensured open access to the industries of Strasbourg’s harbour. The sliplining only required 3 access pits over the 550 m stretch that was rehabilitated and therefore kept disruptions of a strongly frequented road to a minimum.”

The simultaneously excavated section called for special equipment as emphasized by Jean-Claude Bouvard, director of the EJM Fegersheim branch: “We deployed heavy machinery and a lot of manpower for the installation of the new sewer. For the maximal depth of 9 m we used high tonnage compact excavator types 944, 934 and 924 from Liebherr as well as heavy-duty double slide trench shields. The DN 1500 CC-GRP HOBAS Pipes weigh only 365 kg per meter, each standard unit being 6 m long. The therefore comparably light weight at the given diameter, the pipe length and mounted push-to-fit joints made handling easy. Besides, this was the first GRP project for the EJM construction team and we are delighted to see that all went well. In line with our commitment to environmental protection the excavated soil could be used as backfill material. Only the pipe embedment was supplied.”

Completing the system and in addition to the pipes, fifteen prefabricated HOBAS CC-GRP DN 1500 x DN 1000 tangential manholes have been installed for the open trench section. These special components are equipped with GRP couplings which connect to the standard centrifugally cast GRP pipes.

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