

French Highway Secured in Tailor-Made **HOBAS®** Fashion

The French highway network spans almost 12000 route kilometers, 60% of which are administered in a concession system by private companies such as APRR (Autoroutes Paris-Rhin-Rhône). Thousands of metal culverts have been installed along the roads to channel water. More than 50% of these are steel circulars or arches. After being in service for 30 to 40 years, these culverts have reached their maximum lifetime and are at risk to collapse any time causing road ruptures as approximately 20 years ago: Road embankment, paving and culverts needed to be repaired immediately which required an expensive construction of temporary diversions for both water and traffic. As a consequence, the highway companies conducted an extensive inventory. First surveys provided a better overview. It seemed that a significant number of the steel constructions (corrugated galvanized iron culverts) and a number of concrete culverts showed serious defects. Consequently, all 6 highway companies introduced a compulsory rehabilitation program in accordance with the technical specifications by the French Water Act of 1992.

On this account HOBAS GRP Pipe Systems have contributed to the security upgrade of the constructions and highways. Thanks to its environment-friendly characteristics and its

Year of Construction
2007

Duration of Construction
8 months

Length of Pipe
685 m

Pressure Class
PN 1

Stiffness Class
SN 5000, SN 10000

Diameter
DN 1200 - DN 2400, NC-Line ID 2880x1800

Installation Method
Relining and open installation

Application
NC Line®, WaterLine®

Client
APRR (Autoroutes Paris Rhin Rhône)

Contractor
DLE – Eiffage TP

Advantages
**hydraulic properties,
long lifetime,
light weight**



exceptionally long lifetime properties HOBAS GRP is an ideal material that fulfills all requirements. It should also be noted that the HOBAS Solutions for this project are based on trenchless technologies which permit works without traffic disruptions.

The described project is located on Highway A31, which connects the town Beaune and Luxembourg and is part of the APRR network. APRR is a subsidiary of the Eiffage Group, the seventh largest building and concession company in Europe, and is in charge of the second most important French highway network with 1800 km.

This project is noteworthy for its dual purpose:

- to rehabilitate damaged metal pipes that were for some parts severely corroded;
- and to extend the road by one lane in each direction.

Moreover, the rehabilitation involved a group of not less than 11 large-scale hydraulic constructions, 9 of which were originally elliptical, one was circular but strongly buckled, and one was in the shape of an arch. The total length of installed pipe adds up to 685 m.

HOBAS participated in the public tender by APRR. An overall solution was developed considering the geometry of each channel and grouping the constructions by size. This led to the proposal of 4 different and individual NC Line® profiles plus one circular CC-GRP Pipe OD 1720 for the rehabilitation of 9 elliptical constructions. Standard CC-GRP HOBAS Pipes were suggested for the remaining circular constructions and for the arch NC Line® panels of ID 2880x1800. Apart from this, an alternative solution proposed sliplining HOBAS NC Line Arches and HOBAS CC-GRP Pipes using both flush couplings and standard FWC couplings.

APRR opted for the latter proposal. The mixed technologies confirm the adaptability and flexibility of HOBAS Products. Thus, 635 m of pipes ranging from DN 1200 to DN 2400 have been installed between May 2007 when first deliveries were made and end of November 2007. Slightly more than 50 m of HOBAS NC Line® profiles completed the lot.



“Works were accomplished more easily thanks to the simple handling and jointing of HOBAS Pipes”, explained Civ. Eng. Norbert Cheminot, site manager of DLE EIFFAGE TP, contractor in charge of pipes installation and specialist for trenchless technologies. “Working on highways without disrupting the traffic is always a challenge. The HOBAS Solution required less heavy equipment, and turned the usually complex storage and handling into easy installation.”

HOBAS Pipe Systems were clearly the right choice for this project. They are a clever made-to-measure technical solution combining standard CC-GRP Pipes with arch-shaped NC Line® panels, and offer an exceptionally long lifetime under constant mechanical loading. The highway companies appreciate the products’ hydraulic properties despite a small reduction in dimension, and a low roughness coefficient thanks to the smooth liner surface, maximizing the flow rate and minimizing maintenance. “It was very important for us to find a rehabilitation solution that meets the terms of the French Water Act, something that would not affect the hydraulic condition of the existing pipeline and offer a long life-time.” Said Mr. Caisey a technical member of APRR’s area staff. “The solution also allowed an open installation for the part where the roads were enlarged.”

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