

The Door to Inner Switzerland

Highway N 4.1.6 is a very busy road through the Swiss region Knonaueramt. The Islisberg tunnel, the so-called “door to inner Switzerland”, is the most complex part of this highway, and functions as important connection of the region. Its construction started in February 2002 and the opening of the road is planned for 2010.

The 4.95 km long tunnel consists of 2 sections each of which hold a 7.75 m wide road and 1 m banquetts on each side. An accessible service channel dimensioned 3.20 x 2.05 m runs below the road. For safe tunnel drainage and along with other tunnel equipment, it holds a 10.4 km HOBAS CC-GRP Tunnelline® System of DN 200 to DN 400, SN 2500 to 10000.



The pipe delivery for the relatively narrow service channel was well planned by HOBAS. The comparably light CC-GRP Pipes were packaged to perfectly fit through the channel where they could easily be unloaded by 2 men. To provide an optimal drainage, the pipes were brought into a constant gradient and assembled with the help of a small crane. In addition to the standard HOBAS Couplings that are readily mounted on one end of each pipe, mechanical couplings were installed at two points of the line. They were necessary since the pipeline was built beginning from both sides of the tunnel. Furthermore they can be easily opened for pipe inspection.

Drainage systems for tunnels need to be designed according to strict requirements. For instance, the high mineral contents diluted in the ground water often lead to incrustations on the pipe surface resulting in a loss of hydraulic properties. HOBAS CC-GRP Tunnelline® Systems are specially equipped with a smooth liner giving mineral deposits hardly a chance. For maintenance, they can be easily cleaned with a simple low pressure water jet. Short pipe sections DN 200 running in opposite direction to the line were installed for this

purpose. Special, leak-tight cleaning and inspection openings designed by HOBAS Engineers are used to ease future pipe inspections via camera insertion. They can be effortlessly opened and closed with no extra tools.



Another important pipe property is flame retardance. Thanks to the HOBAS Centrifugal Casting Process pipes can be produced to significantly reduce the fire hazard in tunnels. The high content of hardly combustible materials (e.g. glass fibers, mineral reinforcing material) adds to this property. Sewer gas which lead to explosions in cases of flying sparks are prevented from leaking into the tunnel with 90° bends. These were installed where the drainage pipe from the road enters the pipeline in the service channel.



The decision for HOBAS Products was made during the planning stage of the project. The technical support by HOBAS (e.g. draft of the drainage, hydraulic sizing, pipe statics, design of a safety concept, ...) and prompt adaptations of fittings easily convinced the contractor. As a system supplier, HOBAS offers a broad range of products and HOBAS CC-GRP Tunnelline® Systems fulfill the strict safety



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requirements. This was very important in this project as dangerous goods and chemicals will be transported through the tunnel.

The client is highly satisfied with the cooperation and support HOBAS offered and looks back to a successfully accomplished project.



Overview	
Year of Construction	2006 - 2007
Duration	1 year
Length of Pipe	10.448 m
Pressure Class	PN 1
Diameter	DN 200 - 400
Stiffness Class	SN 2500 – 10000
Installation Method	on supports
Application	TunnelLine®
Client	Baudirektion Kanton Zürich
Contractor	Marti Tunnelbau AG, Bern Ed. Züblin AG, Stuttgart Marti AG Bauunternehmung, Zürich
Advantages	fire-retardant, chemical resistance, custom-made fittings, fast service, technical support, smooth inner surface -