

September 2011

PipeLine

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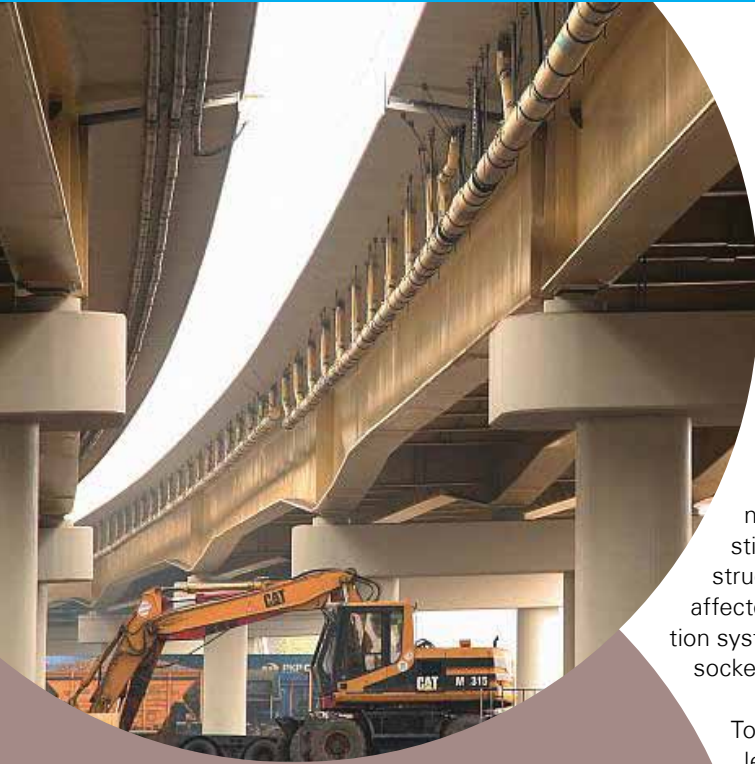
Poland Continues Paving the Way to the Future Tackling a Tough Challenge with **HOBAS®** BridgeLine® Pipes

Poland's strategic objective of the construction of the 48 km motorway section Sośnica–Gorzyczki and particularly its intersection with the A4 Motorway at Sośnica Junction in Gliwice is to establish a convenient connection to the South, West and the East of Europe. Linking the two motorways also stimulates the development and revival of the nearby provinces and integrates individual regions that are undergoing restructuring processes. The establishment of the connection and in particular the 842-meter-long viaduct WA 470 in an area affected by mining turned out to be tricky but posed no problem for HOBAS Drainage Pipes.

The Sośnica-Belk section features three traffic lanes in either direction running across areas with subsidence due to mining. This required special attention so that the embankments and the whole motorway structure therefore had to be adequately secured. Three junctions have been constructed on the motorway: Knurów, Dębieski and Belk, as well as the Main Toll Plaza in Gliwice and two motorway service areas in Knurów. It is furthermore worth taking a closer look at a further civil structure: the 842-meter-long viaduct WA 470 leading over Moczury pond, a railway siding of the coal mine and Dworcowa Street in Knurów. The construction works were estimated to amount to over 213 million euros and were commenced by the Greek contractors J&P AVAX S.A. in January 2007. Works on subsequent sections of the A1 are still underway.

The WA 470 viaduct was designed as a beam-and-slab composite structure with steel girders and a reinforced concrete deck slab supported by reinforced concrete columns. There are two separate carriageways running east- and westwards each of which use 15 simply supported structures and a 4-span continuous structure. A part of the viaduct is divided into independent segments due to its location in the area influenced by mining (the structure is assigned Geotechnical Category 3). This division of the construction into two separate parts brought about a number of implementation issues as e.g. the large number of necessary movement joints, the use of special barriers, sound-absorbing barriers, the drainage system etc. Another





challenge was posed by the Moczury pond which is used to drain the area and which resulted from subsidence due to local mining. To solve this, it was decided to build a causeway across the pond with additional pillars.

A HOBAS BridgeLine® System was employed for the drainage of the structure. Both the pipes and the fittings were produced with the color RAL 1014 to match the bridge. Thanks to small ratio of external to internal pipe diameter of centrifugally cast GRP pipes and their exceptionally smooth internal surfaces with a hydraulic modulus $k=0.01$ mm the drainage system consists of pipes with nominal diameters ranging from DN 200 to DN 500 and a ring stiffness of SN 5000 to 10000 N/m². Lateral lines were constructed with DN 150 pipes, SN 10000 N/m². As the structure is affected by land deformation due to mining, a double compensation system has been integrated in the pipe system. In this case a socket and a bellows compensator were used.

To sum up, the drainage system of the structure required not less than 1100 pipe fittings and 1400 m of pipe. The technical support as well as the simple and quick installation of the comprehensive HOBAS BridgeLine® System enabled a trouble-free and considerably fast implementation of the project.

“Despite the tight deadline set by the general contractor we managed to perform the task on time thanks to the close collaboration with HOBAS. Tackling this tough challenge together with a partner like this was a good decision”, says Robert Ziernicki of AHIS S.A., the contractor in charge of the bridge drainage system.

Fmd: hobas.poland@hobas.com

Year of construction

2008 – 2009

Scope of products

**1400 m pipe,
1100 fittings**

Diameter

DN 150 – 500

Pressure class

PN 1

Stiffness class

SN 5000 – 10000

Installation

Above ground

Application

Bridge drainage

Client

J&P AVAX S.A.

Constructor

AHIS S.A.

Benefits

**Technical support, easy
and quick installation,
wide range of products**

