



Reference Details

Owner DEGES Deutsche Einheit Fernstrassenplanungs- und -bau GmbH, Berlin, Germany +++ **General Contractor** Gerdum u. Breuer Bauunternehmen GmbH, Kassel, Germany +++ **Subcontractor for bored pile works** Himmel u. Papesch Bauunternehmung GmbH & Co. KG, Bebra, Germany +++ **Geotechnical Consulting** Technical University of Cottbus, Faculty for Geotechnics, Cottbus, Germany

DSI Unit SUSPA-DSI GmbH, LU West, Langenfeld, Germany
SUSPA-DSI Scope Scope Supply of 25 SUSPA-DSI Fabric Tubes XXL Ø1,720mm in lengths of 30.5 – 46.6 m, in two and three pieces



Fabric Tubes by SUSPA-DSI Used for Bridge Foundation

Utilization of Fabric Tubes for Foundation of Friedetal Bridge / Sollstedt, Federal Highway A38

On Federal Highway A38 between Goettingen and Halle, a new bridge is to be built in the Friedetal valley, between Breitenworbis and Bleicherode. With a length of 485m, the new bridge is to span both the Friede River and an industrial park.

The foundation of the bridge proved to be a more than complex geotechnical challenge for designers and contractors.

Investigation of the foundation soil conditions revealed a layer of upper bunter "Roet" underneath the 5-8m thick quaternary consisting of run-of-hill scree and watered clay. The gypsum enclosed in the bunter is partly leached out and has left cavities that can fill with sludge or water. In addition, the fact that potash was exploited for 90 years in this area at 800m below ground level has led to subsidence at the surface. This causes depressions below ground, making a special foundation necessary.

In order to bridge the cavities in the "Roet" and to reduce negative skin friction caused by depressions, large bored piles in diameters of 1,800mm with lengths of up to 60m were planned that were to be equipped with an outer steel tube serving as a sleeve in the area of the cavities.

As a specialist solution, heavy-duty polyamide fabric tubes closed at the bottom were used instead of the steel tubes. These fabric tubes had to be drawn over the reinforcement cage like a sock before concreting works. In addition, a special connection had to be developed for linking the 2 to 3 individual sections of the hose without weakening the fabric.

The development of valves for the bottom piece was an additional challenge. Drilling water containing small particles needed to stream through the tube during the installation of the reinforcement cage, but concrete was not to leak from the tube during concreting.

Consequently, the metal sleeves could be eliminated entirely. In addition, post-grouting of the annular space between borehole wall and steel sleeve, to avoid settlements at the surface, was no longer required.

With this innovative and economic procedure, transportation costs and construction time was significantly reduced. In addition, the installation of the reinforcement cages was considerably simplified.

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