Project

Hamburg: Geogrid-reinforced load-transfer platform (LTP) with Secugrid® HS high-strength geogrids support the new Wilhelmsburger Reichsstrasse, Hamburg, Germany

The Wilhelmsburger Reichsstrasse in Hamburg is well known to many people from the traffic news on the radio.

Around 55,000 vehicles use this important north-south connection every day, and 10% of them are heavy goods vehicles. Every accident leads to kilometre-long traffic jams. Conditions for both residents and traffic were in urgent need of improvement. In addition, the road transects the district of Wilhelmsburg, impacting heavily on the urban development. The Hanseatic city therefore decided to relocate the road and to combine it in a traffic artery with the railway line some distance away. Construction began in 2013.

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One of the major challenges was the very weak subsoil. In particular, the transition between an engineering structure with deep foundations, a bridge, and the adjacent route made it necessary to compensate for the different settlement behaviours. At the future Wilhelmsburg-Centre junction, this transition between road embankment and bridge was achieved with a geogrid-reinforced load-transfer platform (LTP) over vertical CMC columns. The design verification showed that the high-strength Secugrid® HS 1200/100 R6, laid crosswise in two layers above the CMC columns, fulfilled the requirements for the structure.

For optimum execution, installation plans were drawn up for the individual areas which laid down the exact lengths of the individual geogrids. Secugrid® HS was produced in accordance with these lengths, and the almost 32,000 m² were delivered in a very short time within the framework of the construction schedule.

The handling of the rolls on site was seen as being very positive. The relative stiffness of Secugrid® HS 1200/100 R6 compared to woven materials allowed a fast, taut and wrinkle-free installation on the formation, and the required wrap-around length of the geogrids, which were laid at right angles to the axis of the structure at the edge of the load-distribution layer, was problem-free. In the difficult and challenging environment of the construction process, the installation of Secugrid® HS thus proved to be both safe, and easy to plan.

In combination with the CMC columns, the reinforced load-transfer platform forms a safe base for the new Wilhelmsburger Reichsstrasse. After completion in 2019, the predicted traffic volume is 67,000 vehicles per day. Thanks to its high strength, Secugrid® HS 1200/100 R6 will then permanently transfer the loads from the road embankment and the traffic to the load-bearing CMC columns, and will thus bridge over the soft subsoil.

The entire construction project was planned by the DEGES Deutsche Einheit Fernstraßenplanungs- und -bau GmbH. Construction of much of the route, and in particular of this sensitive area, was carried out by the contractor EGGERS Umwelttechnik GmbH, Hamburg. The design of the geogrid-reinforced load-distribution layer was carried out by the design office Bauberatung Geokunststoffe Gmbh & Co. KG in Espelkamp.

Project name:
Wilhelmsburger Reichsstraße

Consultant:
DEGES Deutsche Einheit Fernstraßenplanungs- und -bau GmbH

Installation Contractor:
EGGERS Umwelttechnik GmbH

Product:
Secugrid® HS 1200/100 R6

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