

Secugrid® HS

Working Platform above Sinkholes

Project name

Electrification "Südbahn", Ulm Central Station -
Friedrichshafen - Lindau, PfA 4, Germany

Client

DB Netz AG, Stuttgart, Germany

Construction company

Josef Hebel GmbH & Co. KG, Memmingen, Germany

Product

Secugrid® HS 1200/100 R6





The oldest railway line in Württemberg, Germany, the „Südbahn“, will be electrified and upgraded for a maximum speed of 160km/h. As part of the rehabilitation works, an old bridge near Langenargen will be replaced. In order to create sufficient working and storage space for the construction work, a 4,900m² large working platform was built directly next to the railway line.

The working area is overlying an old landfill with potential risks of sinkholes up to 1.5m in diameter. The working platform was reinforced with the high-strength geogrid Secugrid® HS from Naue. This prevented damage to the newly installed bridge and provided sufficient stability for the heavy crane operation. Secugrid® HS geogrids consist of high-tenacity polyester filaments with a robust extruded polyethylene protective coating.

The geogrid was designed based on the B.G.E. method, according to EBGEO (2010) for a biaxial spanning of the potential sinkholes. Due to the selected design approach, the anchorage lengths could be kept as short as possible at the given limited space conditions.

The design of the geogrid reinforcement was based on a maximum allowable elongation of 2.6% with a maximum design life of 2 years. The main reason for the strain limitation was not to exceed differential settlements > 4.0cm on the surface of the working platform which are tolerable for the assembly crane.

This requirement was met with the high-strength geogrid Secugrid® HS. The geogrids were anchored in the main stress direction, depending on the soil cover thickness, with a required length of up to 19.10m beyond the area at risk of collapse. In the transverse direction, an overlap of 0.50m was required.

To enable optimised installation procedures, a geogrid layout plan was prepared, which specified the exact length and overlaps of the individual panels.



Fig. 1: Sinkhole within the contact area to be secured

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