

LOADTEST O-Cell® Technology at Weida Bridge, Germany



Project
Location
Client
Period
Project Description

Weidatalbrücke
Esperstedt, Germany
DEGES
April 2006

The project - BAB A 38, Göttingen – Halle Süd (A143) BW 4616/06A is located over the Weidatalbrücke, Esperstedt, Germany. Consisting of a 435 m long box girder bridge of seven spans; the longest 158 m.

The project is due for completion in April 2007 at a cost of 16.8 million Euros. The bridge is located within a nature reserve and is therefore in an environmentally sensitive area.

Tests were performed on two 1200 mm diameter piles approximately 27 m deep fitted with a multilevel O-cell arrangement mounted in a purpose built carrying frame. Two 540 mm diameter O-cells were installed in each carrying frame with a pile-tip pressure cell mounted at the bottom of each test pile. The lower O-cell was 2.4m above the pile tip and at the start of the limestone strata and the second O-cell level set at 9.4 m above the pile toe.

The added advantage unique to multi-level bi-directional tests, mobilising different portions of the test pile, was utilized on this project. The information provided side shear values for specific zones along the pile shaft and unit end bearing information. The load tests mobilized 32MN and 35.2MN combined skin friction and end bearing for the two test piles.

The pile-tip pressure cells allowed the end bearing to be separated from the side shear, with values of 4.62 MN and 1.15 MN for each pile and calculated unit end bearing at the base of 4840 kPa and 1017 kPa respectively.

Bi-directional load testing using the Osterberg Cell proved to be the most environmentally friendly solution for testing in this highly sensitive location. The alternative top-down solution would have meant erecting kentledge or installing extra anchor piles to create a reaction system. Instead, only the test piles had to be constructed and truck movements, for pile spoil removal and concrete deliveries were all reduced to a minimum.



Installation of O-cells and pressure cell on the bottom of the carrying frame



Installation of the O-cells on the steel carrying frame into the pile bore



Lifting of the steel frame showing two O-cells at two levels

Underside of completed bridge



source: www.uni-kassel.de

