

Footbridges - Small is beautiful



European Council
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Civil Engineers



Footbridges

Maßstab für die Ansicht

Small is beautiful



Georgia

Anaklia Footbridge

Anaklia

1 January 2012

Europe's longest timber bridge

Cable-stayed bridge, total length 505 metres

Glulam wooden structure

Assembled using the patented Hess limitless joint

Text by: Markus Golinski

All photos: Hess Timber, Germany



The original conceptual design of the footbridge envisaged a bold suspension bridge design made of steel and with a length of approximately 552 metres. In this design, the biggest span, of approximately 317 metres, would have been located in central section of the bridge. This design, however, by far exceeded the planned budget. The search therefore began for an alternative solution.

Eventually a cheaper solution involving timber was decided upon as an alternative to the steel structure. Leonhardt, Andrä and Partner (LAP) of Stuttgart (Germany), who had been chosen as planning partners, created a timber construction solution in cooperation with the German company Hess Timber. Before the design was finally approved by Georgian president Mikheil Saakashvili, several versions and suggestions had been worked out.

The final design was a multiple span system consisting of two haunched end spans of 36 metres each, six standard spans measuring 48 metres and a cable-stayed section consisting of the largest spans of, respectively, 64 and 84 metres. The total length of the bridge is 505 metres, which makes it Europe's longest timber bridge.

The cross-section of the bridge reveals a spatial timber frame construction consisting of two trussed girders which are laterally inclined to 45 degrees as well as a horizontal panel construction consisting of cross-bars and wood-based boards. The glulam sections were joined by means of standard slotted plate and dowel joints.



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Originally it was planned to cover the entire timber frame structure with chestnut cladding. During assembly, however, the client was impressed by the timber frame construction and it was decided to clad the glulam elements with transparent polycarbonate plates so as to keep them visible.

Hess Timber decided to transport an entire carpenter's workshop from Germany to Georgia in order to ensure the smooth realisation of the pre-assembly process and the necessary preliminary work. Assembly was carried out by German carpenters and Georgian support workers.

Assembly of the bridge: where possible, the timber frames (produced on site) and steel parts (produced in Germany) were pre-assembled on the ground and/or on the dam raised at the assembly site. Owing to the site's special position (right beside the sea, on the river Inguri), the assembly work that took place in autumn and early winter was repeatedly affected by flooding, storm tides and violent storms.

Project data:

Owner: Georgia

General Contractor: CRP, Tbilisi, Georgia

Timber frame construction:

Hess Timber, Kleinheubach, Germany

Design: Leonhardt, Andrä & Partner, Stuttgart, Germany

Timber frame structural engineering calculations: Fast & Epp, Darmstadt, Germany

Planning of sealing details: HSW-Ingenieure, Bad Oeynhausen, Germany

Structural engineering calculations for cables, pre-tensioning and assembly:

Redaelli, Italy

Lighting design: Lunalicht, Karlsruhe, Germany

Structural engineering calculations and manufacture of neoprene bearings: ALGA (Freyssinet Group), Milan, Italy.

