

## The „Ziegelgrabenbrücke“ Main Structure of the second „Strelasundquerung“

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### Summary

After a construction time of three years, the 2830 m long Rügen Bridge in the course of the second Strelasundquerung is approaching its completion in autumn 2007.

The cable-stayed bridge crossing the Ziegelgraben forms the outstanding part of the link due to a number of innovative technical developments as the strand cables system Dyna Grip.

The superstructure with a length of 600 m and an overall steel weight of 6500 tons was successfully erected within only five months.

The main goal of the design – to create a modern and elegant civil engineering structure which is, in spite of its enormous dimensions compatible with the medieval townscape – has been achieved: the new cable-stayed bridge is already today considered a new landmark of the World Heritage Stralsund.

**Keywords:** innovation management, interactive dialogue, design optimizing process, world heritage considering design, parallel strand cables, hydraulic damper, erection monitoring, wind shielding, high containment guardrails

### 1. Introduction

The 4100 m long Strelasund Link including the Rügen Bridge will provide an efficient connection between the island of Rügen, the city of Stralsund situated on the shore of the Baltic Sea and the “Ostseeautobahn” A20 and avoid further traffic jams along the 70 year old “Rügendamm”.

The Link crosses the eastern part of Stralsund, the Ziegelgraben, the island of Dänholm and the Strelasund and consists of six individual bridges, – beam slab girder from prestressed concrete (BW1.1), steel composite bridge (BW 1.2), a cable-stayed bridge (BW2) and 3 box girder bridges from prestressed concrete (BW3, 4, 5).

The cable-stayed bridge crosses the Ziegelgraben with a minimum height of 42 m and a span of 198 m. Its aerodynamically shaped bridge deck is supported by 32 cables from a 128 m high, framed steel tower, resting on a concrete double leg.

The design of the bridge was dominated by the aim to develop a harmony between the ancient part of Stralsund, a World Heritage, and this modern structure. By a close cooperation between the owner, the design engineer and the architect an harmonic design of the entire crossing has been achieved - despite the different structural systems - which will not endanger Stralsund's status as a World Heritage site.

The bridge incorporates a number of innovations and first applications in Germany as the stay cables from parallel strands, self-compacting concrete, wind-shielding walls and high containment guardrails.