

2. Strelasund Crossing





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The new section of the Baltic motorway A20 from Lübeck to Stettin also included construction of the Rügen link road „B96n Stralsund/Rügen“ over a length of approx. 55 km, thus providing an efficient traffic link to Rügen, Germany’s largest island. At the same time, a bypass relieved traffic pressure on Stralsund town centre by taking through-traffic off the existing B96 road.

One major element of this project included the second Strelasund Crossing between Stralsund and Rügen. The main structure of the section covering a length of 2,831 m consisted of a cable-stayed bridge.

6-part bridge structure

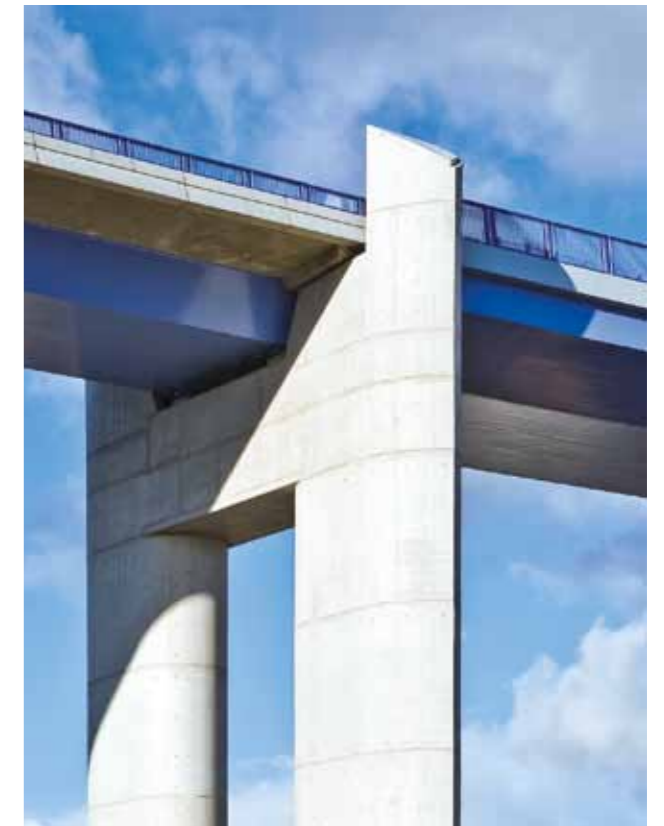
The bridge consists of 6 individual structures, connected at the separation pillars over the roadway transition points.

- structure 1.1: reinforced concrete slab beams over 10 sections with a total length of 327.5 m
- structure 1.2: composite box girder over 6 sections with a total length of 317.0 m
- structure 2: cable-stayed bridge with a total length of 583.3 m
- structure 3 to 5: reinforced concrete box girders each over 10 sections with a total length of 532.3 m, 532.2 m and 539.0 m.

SSF Ingenieure in joint venture with Büchting + Streit was commissioned with the execution planning of structures 1.1, 1.2 and 2, together with the substructures for structures 3 to 5. After four years of intensive planning and execution, the results then consisted of a modern, visually appealing bridge structure which has already received several awards.

Facts and figures

Client	DEGES, Berlin
Structure length in km	approx. 2.83
Planning period	2004 – 2006
Construction period	2004 – 2007
Construction costs	approx. € 90 million



Structures 1.1 and 1.2

Structure 1.1 which connects up to Stralsund bypass was designed as a reinforced concrete bridge with individual spans of 29.0 + 30.5 + 7 x 33.5 + 32.5 m. Structure 1.2 consists of continuous beams with a composite steel box girder with individual spans of 48.0 + 49.0 + 72.0 + 2 x 49.0 + 48.0 m. On both sides of the main opening, the superstructure is connected rigidly to the reinforced concrete pillars with four V-shaped steel stays. There are two individual stays in the cross section which taper with their drop-shaped cross section from the pillar to the superstructure. These geometrically complicated parts had to be produced with sheet thicknesses of up to 60 mm in accordance with the structural calculations. The stays were formed from just one sheet in each case, welded together with a longitudinal seam at the tip of the drop to form the box section.

The bridge cross section is 15 m wide between the two elevated cornice heads, and consists of the roadway with a width of 11.5 m and the cornice areas each 1.75 m wide. Together with the 1 m wide safety margins with the crash barriers, this then leaves emergency footpaths 0.75 m wide on either side of the roadway.

Structures 2, 3 and 5

Structure 2 crosses the Ziegelgraben and is the most dominant feature of the bridge. The single spans with the side sections connected on both sides are $54.0 + 72.0 + 126.0 + 198.0 + 72.0 + 59.3$ m. The two main openings are crossed with a cable-stayed system.

In the bridge view, the individual cables are arranged parallel as so-called „harp“ or „multiple cable system“ at intervals of 16.1 m in the main opening and 12.9 m in the neighbouring section. One special aspect of the bridge is that contrary to the fully sealed spiral cables normally used in Germany, stranded cables were used here for the first time.

The pylon consists of two approx. 87 m high individual supports with a drop-shaped cross-section. Sufficient stability is safeguarded in the direction of the bridge crossing by 3 cross-bars connecting the two pylon uprights in a frame system. The separating and pylon pillars are accessible.

As for structure 1.2, the foundations consist of large bored pilings with diameters of 1.50 m.

Structures 3 to 5 were executed in accordance with the ordered ancillary offer as reinforced concrete box girders with external prestressing in mixed construction. Apart from the connection area to structure 2, the structures run in a straight line with spans ranging between 53 m and 54 m.



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