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Artikel: Bridge over the Jablanica lake Mostar (Yugoslavia)

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3. Bridge over the Jablanica Lake Mostar (Yugoslavia)

Owner:	*Electrical Industry Authority of B&H, Hydroelectric Power Plants on the Neretva River*	
Designer:	*Milenko Pržulj, Ph.D.C.E.* *Rusmir Tanović, M.Sc.C.E.* *Traser Co., Sarajevo*	
Contractors:	*ŽGP Contracting Company, Sarajevo* *Djuro Djaković Co., Slavonski Brod*	
Time of Construction:	*18 months*	
Year of Completion:	*1987*	
Material Quantities:		
– Superstructure	*structural steel*	*680 t*
– Abutments	*concrete*	*1630 m³*
	reinforcement	*198 t*

The following factors influenced the bridge layout:

- a selected micro-location
- morphological profile of the lake at place of bridge crossing
- high water storage level of 49.00 m and water adopted level for construction of 260 m a.s.l. which was guaranteed for three months only
- relatively favourable foundation conditions
- economic feasibility and safety of construction
- bringing contingencies and extras down to a minimum.

A bridge axis is in a straight line with a gradient of 2.2%. The bridge 6,00 + 2 × 0.75 m wide has been designed as a continuous steel girder of 20.0 + 140.0 + 20.0 m span with reinforced concrete abutments anchored in rocky slopes above the construction water level. Reinforced concrete abutments receive a couple of opposite reactions of a girder and transmit them to the ground.

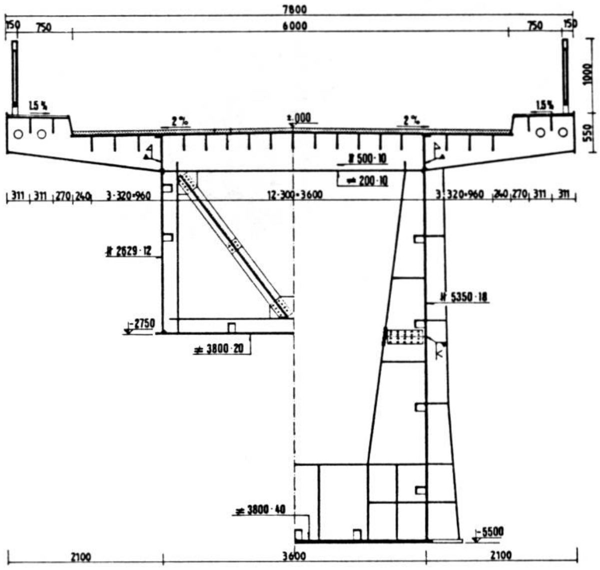

Fig. 2 Bridge cross-section

Six prestressed anchors of the GII 2500 kN (52∅7 mm) type used for anchoring of abutments to the rock mass provide for the required stability coefficient and elimination of tensile strain in foundation joints.

Size of span, pretty low self-weight which has a positive effect on design of specific shape of abutments as well as on safety and speed of construction were determining factors for the use of steel as a structural material for a main girder. The box steel girder is of variable height ranging from 2.75 m in the middle of the interior span to 5.50 m at supports. It also exhibits required torsional rigidity during erection and use of the bridge.

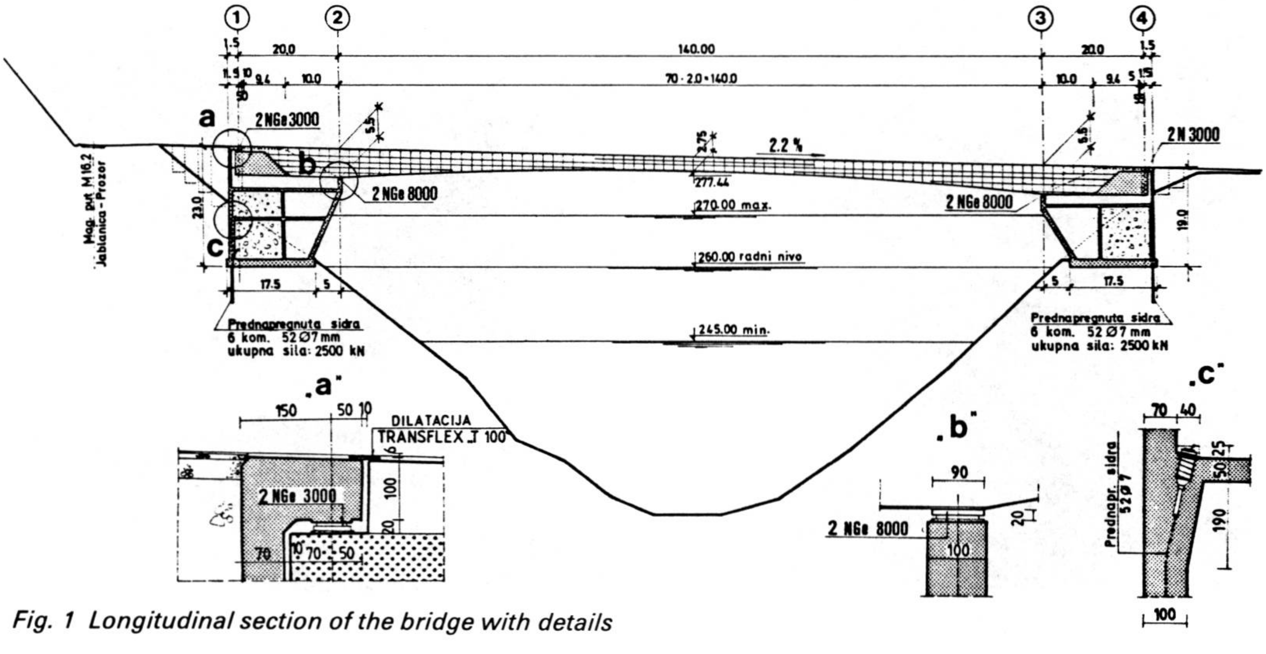

Fig. 1 Longitudinal section of the bridge with details

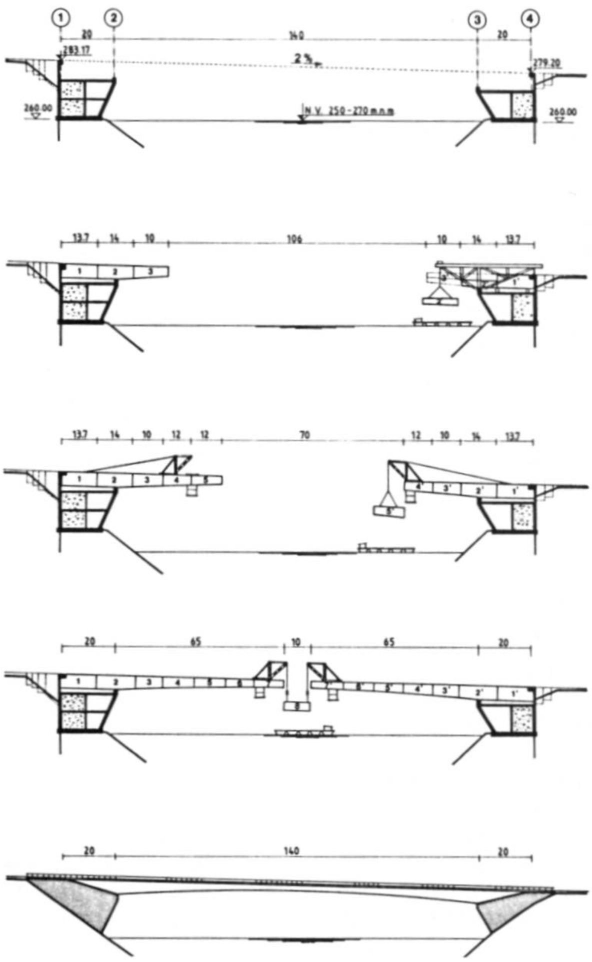

Fig. 3 Main erection stages of steel structure

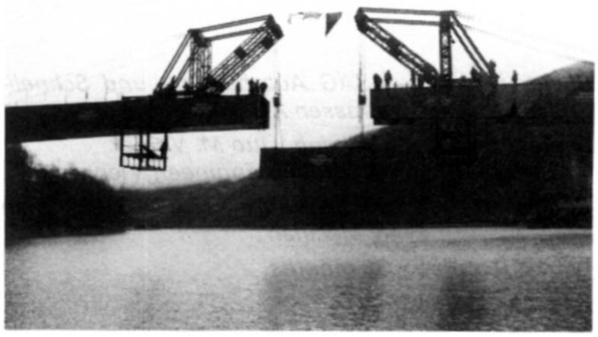

Fig. 5 View of the bridge at low water level

The structural system of the bridge is a continuous girder over three spans with a distinct interior span so that it is, in a way, a restraint beam of 140 m span. A structural analysis of structures intended for free cantilever construction is connected to design construction stages. Thus, the structural analysis of this bridge followed all stages of construction and use.

Steel structure was completely shop welded. Segments were 10.0 – 14.0 m long, 3.80 m wide and 3.70 m high. Weight ranged from 67,000 kg to 16,000 kg. Test erection was completely shop done.

Testing of the bridge was done by 11 heavy vehicles of total weight exceeding 300 t. Comparative measured and design stresses agreed well. Maximum deviations were less than 3%. Measured stresses of non-symmetrical loading showed that the total section participates in load transfer. Comparative measured and design deflections were in complete agreement.

(M. Pržulj, R. Tanović)

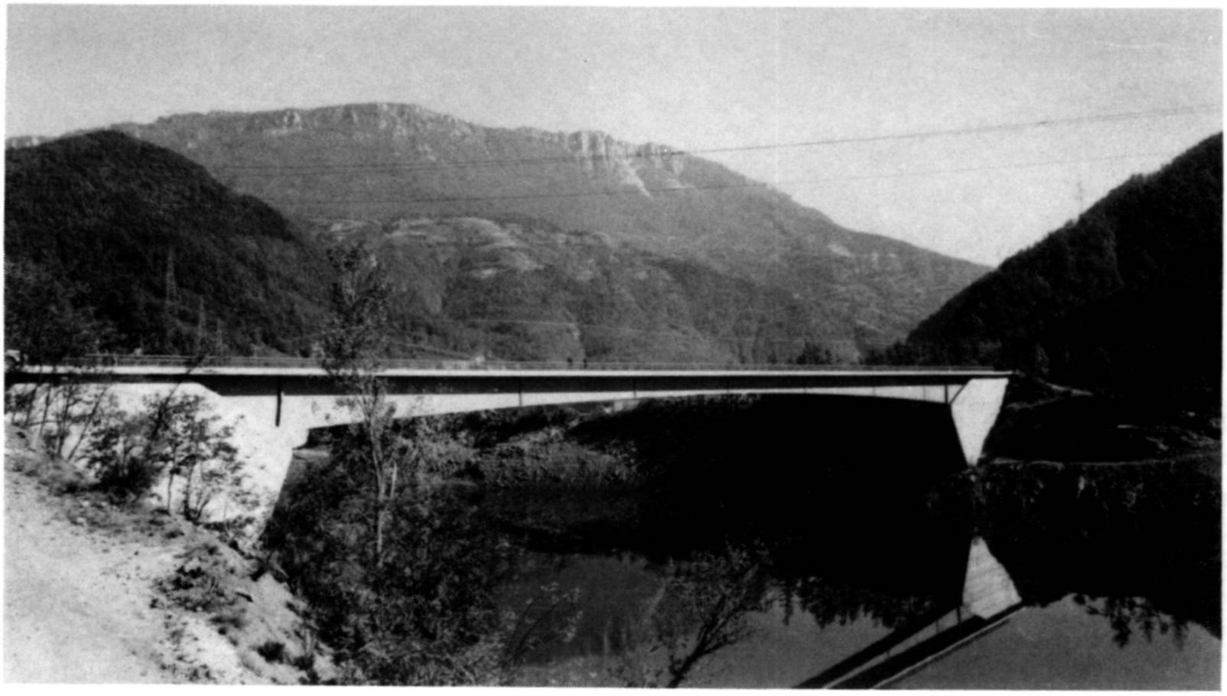

Fig. 4 Final assembly of the segment 8