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8. Bridge over the Don River near Kalatch-on-Don

Designer: Design Institute Giprotransmost

Contractor: A constructional organization of Glavmostostroi

Sphere of application: The bridge is meant to have 2 lanes for vehicular traffic and pedestrians

Full deck width: 12.0 m including the 9 m-wide roadway

Static system: a continuous multispans girder

(54.0 + 9 x 84.0 + 54.0 + 2 x 24.8)

Longitudinal grade up to 3 per cent

Materials used per m² of the continuous superstructure:

- prestressed concrete M-500: 0.536 m³
 - high-strength reinforcement: 36.8 kg
 - ordinary reinforcement: 57.4 kg
 - reinforced concrete M-300 for side-walk blocks: 0.055 m³
- Traffic opened: in 1976*

The river part of the bridge is crossed by a continuous II-span prestressed box girder (Fig. 1). The box girder assembled of precast elements has inclined webs and a cantilever upper slab. The girder depth varies from 3.16 m in the middle of spans to 4.5 m over piers (Fig. 2). Epoxy adhesive joints are used between adjacent elements squeezed by high-strength tendons located in closed ducts, a considerable number of inclined tendons threaded into the box webs. Each tendon consists of 48 wires $d = 5$ mm having 1700 kg/cm² normative resistance.

The continuous girder is assembled of 310 elements weighing from 42 to 53 tons. The dimension uniformity of most of the elements (230 from 310) allowed their pre-fabrication near the site.

The superstructure was erected by balanced cantilevered method with the help of a cantilever erecting portal crane (Fig. 3).

The approach part of the bridge is assembled of prestressed T-beams 24.8 m long, united by a continuous deck slab. They were erected by crawler cranes.

Due to the continuous multispans system, only two expansion joints were arranged along the whole bridge length, which provides favourable conditions for traffic.

The river pier foundations are mounted on bored piles $d = 1.35$ m. One form was used for concreting massive solid piers above the pilework, irrespective of their heights. The approach viaduct piers are precast and cast-in-place and erected on natural foundation.



Fig. 1 The general view of the bridge

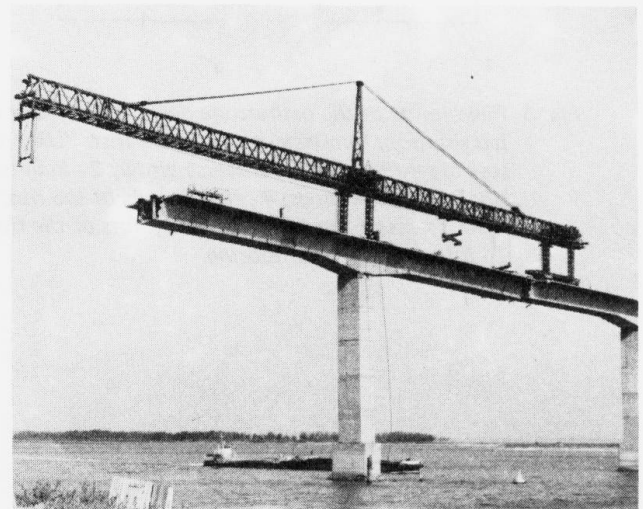


Fig. 3 The cantilever erecting portal crane during work

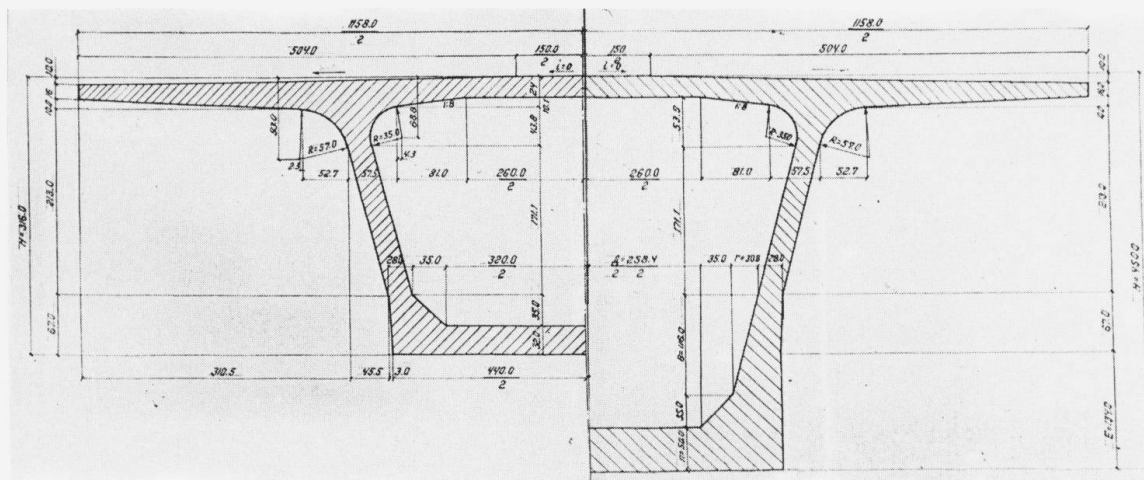


Fig. 2 The superstructure cross-section