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Artikel: Stayed bridge on the Tanaro at Alba (Italy)

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1. Stayed Bridge on the Tanaro at Alba (Italy)

Owner:	*Provincial Administration of Cuneo*
Architect:	*G. Vassallo*
Structural steel project:	*S. Caramelli, D. Danieli, G. Mazzali, G. Vassallo*
Contractor:	*Costruzioni Metalliche Finsider S.p.A. Guasticce (Leghorn)*
Duration of work:	*24 months*
Service date:	*1983*
Area of suspended roadway:	*3.606 m²*
Weight of steel structure + stays:	*1935 + 115 t*

The Provincial Administration of Cuneo adopted the bridging of the minor bed of the Tanaro with a single span to complete the by-pass of Alba.

The structure, with a single pylon and central suspension, involves the use of a continuous beam in two sections of 48.8 m and 114.3 m with reference to the pylon and the two banks of the stream.

The pylon is inclined at 10.4% with respect to the vertical (corresponding to the bisector of the angle of the stays), and is fixed at the base to a foundation block which also provides an intermediate support for the beam.

The beam and the pylon are only connected by the system of stays, resulting in independent action at the point of intersection. The height of the pylon above the foundation level is 35.3 m, and above the main deck 30 m.

The suspension system consists of three stays with anchorage on the beam.

The carriageway will consist of two independent 8 m lanes separated by a 2.50 m separation curb and two footpaths of 0.75 m.

The whole structure is in steel except for the side curbs of the footpaths which are in reinforced concrete and the 6 cm pavement on the orthotropic plate deck.

The beam is made of Fe 52/D steel apart from the consoles which are made of Fe 42/D; the pylon is also in Fe 42/D steel.

The beam is made as a three cell box, a central rectangular cell 11.30 x 2.30 m and two side trapezoidal cells and is terminated laterally by two 3 m overhangs. The height of the section is 2.3 m and is constant along the beam. The beam box is strengthened by a transversal network of diaphragms at 2.5 m intervals and a truss beam.

The main beam is subdivided into 13 segments varying in length from 10 to 18 m. Of these 8 have roughly the same construction characteristics, while the remaining 5 are special, 3 for fixing the roadway,

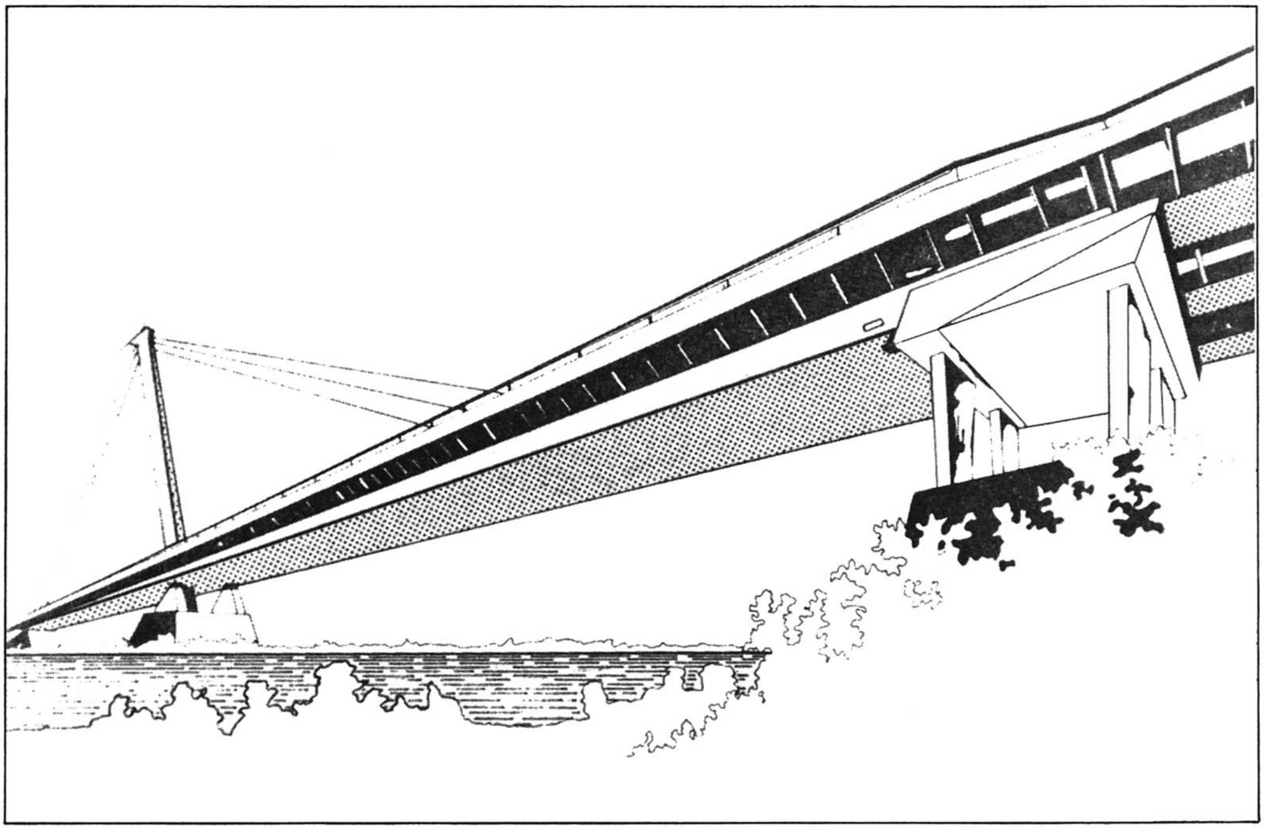

Fig. 1 Perspectives

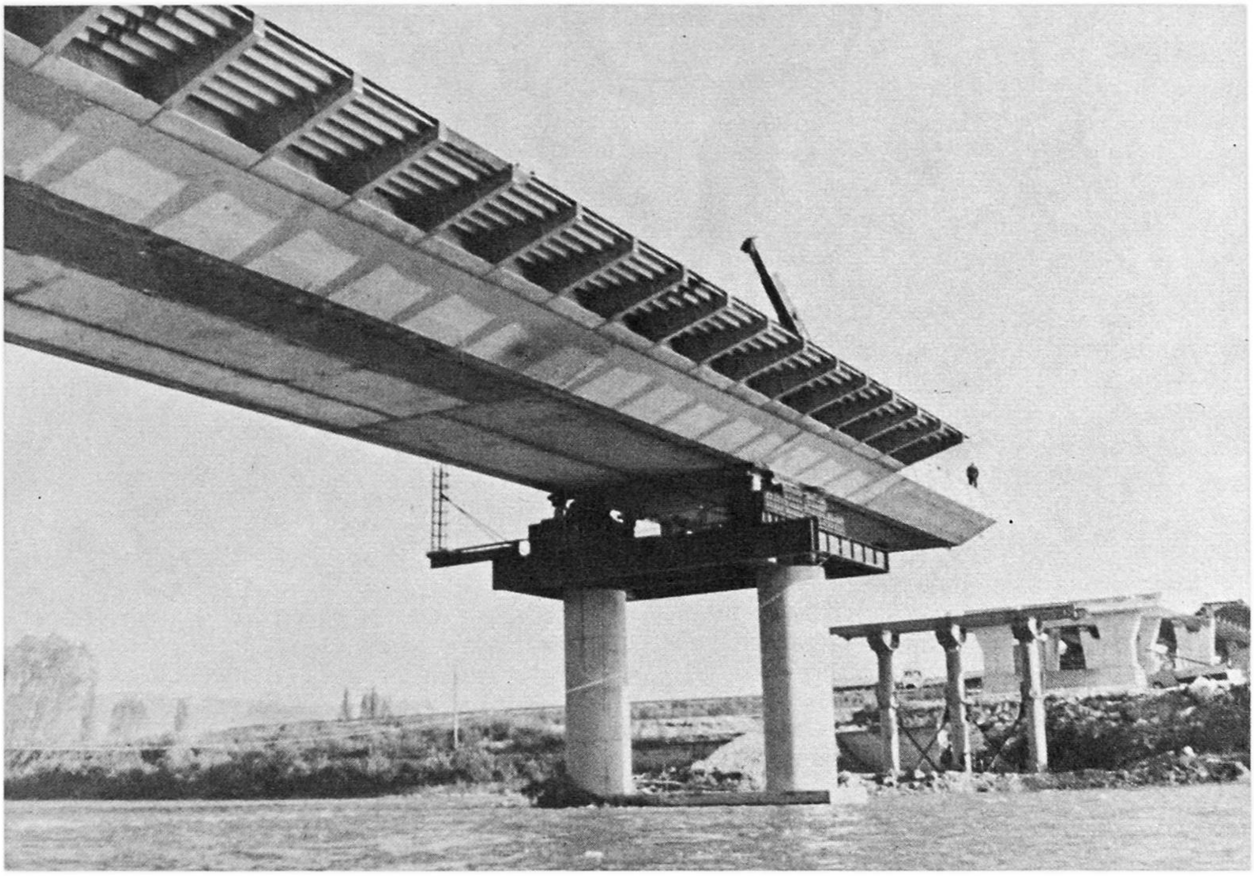

Fig. 2 The positioning of the main beam

one for the intersection of the pylon and the central support and one for the abutment end. The main beam is of welded construction with both in the workshop and on site welding.

The deck is an orthotropic plate with the longitudinal braces made of rounded triangular channels placed at 60 cm intervals.

The pylon has a rectangular box section tapering from 2.8 x 2.10 m at the base to 2.3 x 1.7 m at the top with its main stiffness in the longitudinal plane of the bridge.

The section is transversely strengthened by diaphragms placed at 3.5 m intervals.

The pylon is built in 6 sections, each approximately 6.0 m long. The top section differs substantially from the others as its design is dependent on and governed by the pylon-stay mutual constraining system and the requirements for its adjustment. The assembly of the whole pylon was carried out in the workshop.

The cables are continuous and free to slide at the head of the pylon.

Each stay is made of 8 closed spiral cables Ø82 mm, arranged in two layers of 4.

In each cable the three outside layers are made of Z wire (h = 5/6 mm), while the rest are round wires (Ø = 4.37 mm). Only the two outside layers have been galvanized.

Fig. 3 Mounting of stays