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10. Sarno Viaduct (Italy)

Owner: "AUTOSTRADE – Concessioni e Costruzioni Autostrade S.p.A.", Via Nibby 10, Roma, Italia
Engineer and Contractor: "FERROCEMENTO – Costruzioni e Lavori Pubblici S.p.A.", Via F. Scarpellini 24, Roma, Italia

Dimensions:

Type of structure: simply supported spans
Number of spans: 91 double spans with separated carriageways
Length of each span: 31,90 m
Total length of the viaduct: 2.903 m
Width of the viaduct: two carriageways 12,75 m each
Length of the precast deck: 31,85 m
Width of the precast deck: 12,75 m
Weight of the precast deck: 480 tons
Method of prestressing: pre-tensioning, carried on with 1/2" strands
Date of completion: november 1976

Near Naples on the Caserta–Nola–Salerno motorway a viaduct has been lately completed which embodies brand new technology and represents a major step forwards in the art of bridge and viaduct construction. Its chief characteristic is the use of fully prefabricated decks which, despite their exceptional size and weight, are made, transported and positioned in one single unit.

This revolutionary new system allows:

The best technical result: the entire motorway span is a monolithic block of precast and prestressed concrete. This solution gives a product of very high quality, combining, as it does, the best characteristics of a poured in place structure (continuity of the pouring and absence of joinings) and a prefabricated one (perfect organization and control of all operations and materials).

Maximum speed: the construction schedule is a span every 36 hours, four times faster than the most advanced systems used today.

Maximum safety: the precast decks always move "resting on" never "hanging from", with automatic control of direction made possible by the use of metallic wheels and rails. The transporting machine is designed according to the maximum possible slopes, which can be easily won in that the propulsion system is not based on wheel-road or wheel-rail adhesion, but on the clamping action exerted by hydraulic jaws on the rails: and that too means safety.

Economy: this new building procedure is not designed for modest works, but yields large savings when the viaduct has a large number of spans; in general it can be said that this procedure becomes economical and competitive when the number of spans exceed one hundred. The greater the number, the more the savings.

The construction equipment consists of three main sections:

- The construction section, with the pouring steel platform, the steam curing system and the lifting complex
- The transport section, of a very new conception, based on a multiple trolley equipment, a propulsion machine and a set of rails
- The launching section, consisting of a particular fully mechanised steel truss for the setting in place of the decks.

In conclusion an important method conceived for important works which, though representing a first experience in its kind, proved in practice to be fully successful.

(P. Gallo)



