



Altea Railway Viaduct

Altea, Alicante, Spain / 2003

Structural type
Characteristics
Client
Constructor
Scope

prestressed concrete slab with a central concrete inverted beam
330m in length, 8 spans of 30 + 45 x 6 + 30m
Constructora Levantina
constructora levantina
detailed design



The Altea railway viaduct was designed and constructed with a ribbed deck, which presents the singularity of a central web designed to increase depth above the deck. The superstructures' main features are:

- Prestressed concrete deck (HP-35) formed by a continuous 330m long beam and eight spans measuring 30 + 6x45 + 30 m.
- A hollow box cross section, 4.50m at its base and 10.60m at the top. The deck depth below the railroad track is a constant 1.40m. This cross section width permits two embedded track lengths of metric gauge, one on each side of the central web, although only one of them (on the seaward side) has been put into service in the first phase of the project.
- The decks' central web is 1.40m wide and its height varies parabolically from a minimum of 1.0m to a maximum of 4.0m above the piers, extending 22.50m along both sides of the piers.

The deck is supported by seven piers as well as the abutments, their main characteristics being as follows:

- The piers, built with HA-30 reinforced concrete, are conically-shaped in the longitudinal direction with rounded-off edges. The battered wall of the piers is 1/40, and their minimum dimension at the head, is 4.50m x 1.50m. At the top of the piers just below the web of the deck, an opening has been created so as to locate therein a spud protruding from the deck, thus connecting superstructure and substructure in the transversal direction. Pier heights vary between 5.0m and 10.0m.
- Pier foundations have been accomplished with six 1.50m diameter piles 1.50m, which are embedded into the marl/limestone layer; pile caps are built employing HA-25 reinforced concrete.
- The abutment on the Alicante side is of the closed wall type, with a height of 2.60m from its foundations. It has a shallow foundation, set upon a layer of clay with limestone traces, which has an estimated bearing capacity of 2 Kg/cm².
- The abutment on the Valencia end of the bridge consists of a stub supported by two 1.50m diameter piles. These piles are embedded into the marl/limestone layer and are capped by a stub upon which the deck rests.



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