Viaduct over the Nora River

Asturias, Spain / 2002-2005

Structural type	composite twin-girder viaduct
Characteristics	total length = 228 m / 4 spans with 48 + 2 x 66 + 48 m
Owner	Ministerio de Fomento
Client	UTE Trubia - Llera
Constructor	UTE Trubia - Llera
Scope	detailed design and construction support

Viaduct 2 over the river Nora is a double beam composite bijácena-type structure with a total length of 246 m and a width of 12 m. The structure is conditioned by the presence of tunnels at both of its ends as well as highly skewed river flowing underneath. Another condition for the structural layout is determined by the environmental impact study which requires the bridge piles to be set at a minimum distance of 10 m from the riverside vegetation. These conditions result in a span distribution of 68 + 81 + 58 + 39 m span lengths.

The deck is 3,10 m deep, the span/depth ratio L/26. The piles are relatively slender, with a hollow box cross section of 2,00 m depth, 4,00 m width and a maximum height of 36 m.
The deck is made up of two steel compound profile beams, connected transversally by means of a concrete slab of variable depth, from 0,30 to 0,15 m, and by transversal beams placed every 3,00 m. T quantity of structural steel quantity of the deck, including diaphragms, braces and longitudinal stiffeners amounts to 207 kg/m2.

The deep foundations for the pylons of the main span consist of 6 piles of 1,50 m diameter with an approximate length of 12,00 m. The third pylon is directly footed on the limestone of the riverside; being its foundation deep enough in order to avoid the karstic cavities which were detected through soil analyses.

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