STEEL AND COMPOSITE BRIDGES FOR THE HIGH SPEED RAILWAYS IN FRANCE

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ABSTRACT

This paper describes some steel and composite bridges constructed for the new high speed railway lines in France. The architectural and technical aspects of the large viaducts are presented with particular emphasis on high-speed criteria. Interaction between the architectural and structural aspects of the conceptual design phase was particularly successful in the large bow-string viaducts.

The TGV Méditerranée line built between 1194 and 1998 has required many crossings over motorways, rivers and large valleys. Steel was massively used here to build some of the most spectacular bridges of this last decade in France. For the longest spans ranging from 80 to 124 meters, tied-arch bridges were retained; for the shorter spans plate girders decks were chosen: composite two or four beams, twin boxes or lateral girders.

For the TGV EST under construction now, nearly all the large bridges have a composite steel concrete deck. Apart from the classical twin I girder, there are twin box girders for spans up to over 70 m. For skew crossings lateral girders with transversal encased rolled beams are being constructed.

The success of steel in the bridge building of the TGV Méditerranée line is due to the special progress undergone at the rolling mills in the maximum dimensions of plates available, the high yield TM steel and LP plates.