

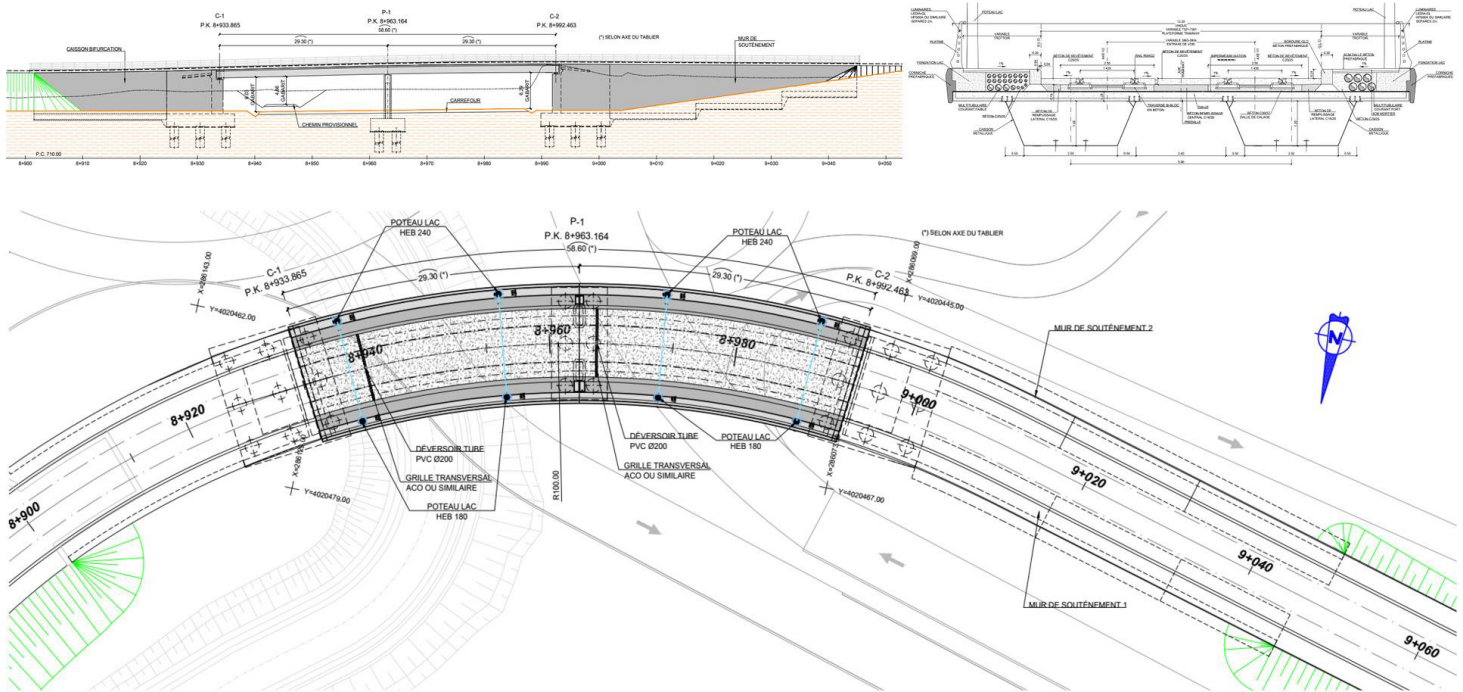


Zouaghi Viaduct. Constantine LRT

Constantine, Algeria / 2016-2017

Structural type
Characteristics
Client
Constructor
Scope

Composite steel-concrete box girder
Length 29,30+29,30m. Width 12,20m. Height 1,45m (1,20+0,25m). Curvature R=100m
CORSAN-CORVIAM, GRUPO ISOLUX
UTE CORSAN-CORVIAM/ALSTOM/COSIDER
detailed design



The tramway line in Constantine, Algeria, is the first tram system developed in the region, aiming to connect one million people and transform the city into an international cultural destination.

This viaduct is part of the Extension Project of Tramway Line 1 between Zouaghi and Ali Mendjeli.

This structure is a continuous supported composite structure with two steel U-beams (grade S-355) spanning 58,60m long (2 x 29,30m)

The depth of the cross-section is 1,45 m, which therefore has a length/height ratio of 1/20. Thus, although this ratio is not particularly low, the advantage is obtained of a reduction in the quantities of steel and concrete.

Its width remains 12,20 m like other structures of the project, of which 7,5 m in the middle are planned for the double track on slab as well as two sidewalks of 2,35 m. The plan layout is curved with a radius of curvature of 100 m and about the vertical profile it is in a high point curve.

The cross-section is composed of two 1,20 m steel U-beams separated by 5,90 m, and an upper concrete slab with a constant thickness of 0,25 m. The upper slab will be concreted on precast concrete panels. In addition, in the areas mainly subjected to negative moments, the section is completed by a 0,25 m structural concrete slab at the bottom of the steel U-beams.

The viaduct under vertical load is a continuous beam. Under the horizontal load, there is a fixed support at abutment 1 while abutment 2 and the pier are mobile. In this way, the seismic design of the viaduct is: the abutment is 1 fixed longitudinally and transversely while the abutment 2 and the pier are movable with elastomers. Also, seismic stops, which are redundant, are proposed to the pier and the abutment C2 in the transverse direction. The seismic stops are activated only when the seismic displacement is greater than that obtained for the seismic design hypothesis.



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