



Albolote-Santa Fé Overpasses. Granada External Bypass

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Summary

The New Granada Bypass launches from the connection with the A-44 highway (one of the main access paths to Granada) and extends along the Vega de Granada Metropolitan Area. Regarding the highway overpasses, a careful design has been established according to the important aesthetic impact these structures have on the road users. This design consists of a continuous prestressed concrete deck supported on a single point at the pier, and a special treatment of the cross section in addition of a remarkable global slenderness. In order to resist the seismic action, the project includes an innovative damping and isolating system, consisting on the combination of lead-core elastomeric bearings and sliding pendulous bearings.

Keywords: overpass, prestressed concrete, LRB, non-linear seismic analysis, “bow tie”.

1. Introduction

The three prestressed concrete overpasses have been projected as slabs, designed with a trapezoidal cross section having its bottom and lateral sides curved. There are two cases where the slab is solid: 7+250 7+770, having the 6+150 five circular lightnings of a 65 cm diameter.



Fig. 1: 3D Render visualization of the overpass type

The type of the overpasses is a two-span continuous statically indeterminate deck, having a constant depth and a deepening, known as “bow tie”, on the pier influence area. This depth increase varies linearly along the 30-35 % of the span length. The superstructure is supported on the central pier by a single bearing device, being the torsion effects fixed on the abutments. The prestressing tendons layout adjusts to the classical parabolic configuration matching the bending moment curve.