Riyadh metro

Riyadh, Kingdom of Saudi Arabia / 2016

Structural type	continuous viaducts with segmental construction
Characteristics	21,841km of viaducts
Client	FCC Construccion, S.A.
Scope	detailed design and construction support

The Riyadh metro is a 175 km subway project currently under construction, with 6 lines with underground, level and elevated sections, in addition to 87 stations and 7 depots.

The FAST consortium, led by the Spanish construction company FCC, which includes Samsung C&T, Alstom, Strukton, Freyssinet Arabia, Setec, Atkins and TYPSA is one of three consortia contracted by Arriyadh Development Authority to design and build the Riyadh Metro Project. FAST was selected to develop the design and construction of three lines: Yellow, Green and Purple lines of the Riyadh Metro Project. In total, FAST will deliver:

- 64 km out of a total 176km of track
- 24 stations, elevated, at ground level, and underground
- 2 depots
- 2 pre-cast yards, where the viaduct and tunnel sections and segments are constructed

FHECOR has carried out the detailed project of a series of prefabricated panels, consisting of two beams with a U-shaped cross section and an upper slab resting on them. The total length of precast beam deck built with these type lights exceeds 21 km.

The precast beam deck of the viaducts are, in general, isostatic, although there are some special cases with special spans of variable geometry although also isostatic.
Most isostatic spans are supported by conventional neoprene bearing pads. In some special cases in which greater capacity of the supports has been required, as in openings with pronounced curvatures, of greater length or special structures, POT-type bearings have been provided.

For the standard precast beam decks simply supported, the continuous upper slab has been designed, and expansion joints have been arranged at variable distances, depending on the interaction studies carried out by the structure. All the precast beam decks are formally similar and are formed by two beams with a U-shaped cross section and an upper slab. The cross section is formed by the two prefabricated and post-tensioned U-beams, on which there is a completely prefabricated slab except for the areas located on the webs and in the areas between pre-slabs that are poured in the second phase to provide the slab with longitudinal continuity. To ensure the proper position of the beams until the completion of the placement of the slab, GEWI bars have been used in the diaphragms, connecting both beams in order to avoid any minimum rotation caused by the asymmetry of the cross section of the beams. The purpose of these bars is not therefore to give a monolithic behavior to the two beams along the span, where it has been assumed that both beams work independently.

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