New Pumarejo Bridge over Magdalena River

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Abstract

The New Pumarejo Bridge over Magdalena River in Barranquilla, Colombia, is one of the most relevant bridges built over the past few years in South America. The bridge has a total length of 2173 m without expansion joints, divided in two access viaducts, 618 and 755 m long, and a cable-stayed central stretch of 800 m with a main 380 m long span (Colombia's record). The access viaducts have 70 m long typical spans built by a movable scaffolding system (first realization in Colombia), whilst the cable-stayed stretch is built by free cantilevering from the pylons with 10 m long "in-situ" segments (well above the usual range). 3.65 m high, the cross section has a variable width that reaches 38.1 m in all the central stretch, what makes it the widest bridge in its typology (concrete box girder with central cable-stays).

Keywords: Cable-stayed bridge; free cantilevering; evolutionary construction, post-tensioned box girder.

1 Introduction

Located about 12 km from the mouth of the Magdalena River, and just 30 m downstream from the original 1974 Pumarejo Bridge (Figure 1), the New Pumarejo Bridge serves a dual purpose that has been present for years in Colombia's national development plans. On the one hand, the improvement of the road communication between the departments of the Colombian Caribbean by expanding the capacity of the *Transversal del Caribe* (Route 90), and on the other hand, the adequation of the Magdalena River, Colombia's main fluvial artery, for the circulation of deep draft vessels thanks to the elimination of the current bridge, which is only 16 m high. These 2 objectives define the morphology of the central area of the bridge, which must span a 300 x 40 m navigation channel and have a platform almost 40 m wide to accommodate 3 traffic lanes, a berm, a sidewalk and a bike lane in each sense.