



The Longest Axially Supported Cable-stayed Bridge in India: Chambal River Bridge

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Abstract

For the bypass of the city of Kota (Rajasthan), NHAI has planned to make the NH-76 cross the Chambal River. Since this crossing was falling in the “National Chambal Gharial Wildlife Sanctuary”, it was decided to cross the 300 m wide river with a single span, and hence reduce crocodile wild life disturbance by avoiding any pier in the river bed. After tender, the turnkey contract was awarded to the construction JV Hyundai-Gammon, on the basis of the solution proposed by Systra.

The proposed solution to achieve this goal, was a cable-stayed bridge with a 350 m main span and axial suspension.

Keywords: bridge, stay, cantilever method, geometry, control, construction, wind

1 Introduction

For the bypass of the city of Kota (Rajasthan), NHAI has planned to make the NH-76 cross the Chambal River. Since this crossing was falling in the “National Chambal Gharial Wildlife Sanctuary” [1], it was decided to cross the 300 m wide river with a single span, and hence reduce crocodile wild life disturbance by avoiding any pier in the river bed, [2]. After tender, the turnkey contract was awarded to the construction JV Hyundai-Gammon, on the basis of the solution proposed by Systra: a cable stayed bridge with 350 m main span and axial suspension (Figs 1 and 3).

The selected solution consisted in a single cell box girder 30.2 m wide, stiffened every 3.5 m by

transverse ribs (Fig.2). This very large width was required to position the 6 lanes carriageway with the 3 m central median. Two footpaths of 1.5 m width are also located on deck sides. In order to reduce noise, 2.5 m high sound barriers are placed on the deck.

The stays are placed in a single plane with a semi harp arrangement and are anchored every 7 m in the deck. The 80 m high pylons receive the passive anchorages of the stay cables.

The deck is supported by sliding spherical bearings on all piers, except shortest pylon pier which is rigidly connected to the deck. Location of this pylon near the cliff, has required special geotechnical and geophysical investigations, to ensure cliff stability.