Construction Planning for India's first "Signature Bridge"

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Summary

"Signature Bridge", with an unsymmetrical steel pylon 154m high, tallest so far, is one of the most elegant and state of the art bridge presently being built in capital city of New Delhi, India.

Once completed, the Signature Bridge will be the new landmark of New Delhi. It crosses the river Yamuna at Wazirabad dramatically improving signal free approach from NH-1 (Road No. 50) on western bank and Wazirabad Road (Road No. 59 Khajuri Khas intersection) on the Eastern bank for entry and exit of traffic in two directions.

This paper focuses on challenges faced during construction planning and logistics It describes the development of the construction procedures and methodologies, through various engineering solutions evolved through elaborate planning.

Keywords: *Unsymmetrical steel pylon, 154 m high, tallest in India so far*

1. Introduction

On completion, the Signature Bridge will crosses over river Yamuna at Waziraba, improving signal free approach from NH-1 (Road No. 50) on western bank and Wazirabad Road (Road No. 59 Khajuri Khas intersection) on the Eastern bank.

Signature Bridge would be an asymmetric steel cable-stayed bridge with a main span of 251 meters and total length of 675 meters. The inclined harp shaped Steel Pylon would be 154 m, with cable-stayed span one side counterbalanced by the backstay attached at axis 23 at the deck. The bridge's steel and concrete composite deck would have dual carriageway of 4 lanes (14 m) each with about 1.2 m. central verge, space for anchoring cables, maintenance walkway and crash barrier on either side of central verge.

Fig. 1: Signature Bridge: Aesthetic *Visualization*

2. Foundations & Substructure

Open and well types of foundations are proposed for this bridge, as there were huge and sudden variations in the rock profile, along the alignment of the bridge.

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3. Construction of super structure

Pylon and Deck Fabrication:

Fabrication works involves almost 6500 Mt for Pylon & 7000 Mt of for Deck.

Fabrication Works:

With most logistical related issues resolved, on drawings board, fabrication works started with new set of challenges which required high level of accuracy with stringent specifications and codal requirements.

Pylon and Deck Erection:

An unsymmetrical cable stayed bridge like Signature Bridge with an inclined pylon, supported on bearings, would be unstable structure during erection. This demanded for an innovative method of erection with a well-coordinated and calculated step by step erection procedure.

4. Way Forward:

This new symbol of Delhi is expected to be completed by next year. Upon completion, this iconic structure looking over capital city of India will stand for excellence through partnership.

Projects like these not only help in merging boundaries by bringing together domain experts from various corners of the globe, but also contribute in constantly raising the global construction standards through knowledge sharing. India, being an emerging country with tremendous potential for growth in infrastructure sector, would be the most benefited from such ventures.