IABSE SYMPOSIUM ISTANBUL

LONG SPAN BRIDGES
26-28 APRIL, 2023
HYATT REGENCY ISTANBUL
ATAKOY HOTEL

Paper ID: 5006
Innovative solution for an Extradosed bridge over river Beas in Hilly Terrain of Himalayas

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ABSTRACT

Road Network of Himachal Pradesh, a northern state in India requires number of long span bridges across valleys and rivers due to its hilly terrain. One such bridge across river Beas at Hanogi has a total length of 119.2m. Proposed span arrangement at the location of this bridge is 97.2m + 22m. National Highway (NH-3) runs perpendicular to the bridge. The bridge is located in a constrained location with approach road on one side and a hillock with NH-3 at its toe on the other side. It was proposed to build an extradosed bridge of span 97.2m with pylon only on abutment A2 side and back stay cables anchored in hillock formed of rock.

This paper presents design aspects of the extradosed superstructure and cables, Back stay anchors, Abutment A2, staged construction analysis. The construction of the bridge is carried out by cantilever method with form traveller. This paper also covers construction methodology of the superstructure, ground Improvement and stability check at abutment A2 and Hillock where the stays are anchored.

This is one of the unique extradosed bridge where long span on one side is supported by cables on single pylon and back stay cables are anchored to the rock.

Keywords: Extradosed Bridge, Rock Anchored, Ground Improvement, Cantilever Construction.

1 INTRODUCTION

Roads are a very vital infrastructure for rapid economic growth of any state/country. In fact, the development of important sectors of economy such as Agriculture, Horticulture, Industry, Mining and Forestry depends upon efficient road network. Social activities such as education, health, family planning and promotion of tourism also depend upon efficient road network.

Road Network of Himachal Pradesh requires number of medium & long span bridges across valleys and rivers owing to its hilly terrain. Himachal Pradesh Public Works Department (HPPWD) is engaged in planning, construction and maintenance of roads, bridges, ropeways, and public buildings in the State. Furthering its primary mission to provide connectivity by way of all-weather roads to all the habitations (villages) in the state, HPPWD in consultation with elected representatives

https://doi.org/10.2749/istanbul.2023.0472