

Zeitschrift: IABSE congress report = Rapport du congrès AIPC = IVBH
Kongressbericht

Band: 14 (1992)

Artikel: Bridging the river Alaknanda for Badrinath shrine in Himalayas

Autor: Haridas, Giridhar R. / Deshpande, Sanjivan W. / Viridy, Jaswant Singh

DOI: <https://doi.org/10.5169/seals-13858>

Nutzungsbedingungen

Die ETH-Bibliothek ist die Anbieterin der digitalisierten Zeitschriften auf E-Periodica. Sie besitzt keine Urheberrechte an den Zeitschriften und ist nicht verantwortlich für deren Inhalte. Die Rechte liegen in der Regel bei den Herausgebern beziehungsweise den externen Rechteinhabern. Das Veröffentlichen von Bildern in Print- und Online-Publikationen sowie auf Social Media-Kanälen oder Webseiten ist nur mit vorheriger Genehmigung der Rechteinhaber erlaubt. [Mehr erfahren](#)

Conditions d'utilisation

L'ETH Library est le fournisseur des revues numérisées. Elle ne détient aucun droit d'auteur sur les revues et n'est pas responsable de leur contenu. En règle générale, les droits sont détenus par les éditeurs ou les détenteurs de droits externes. La reproduction d'images dans des publications imprimées ou en ligne ainsi que sur des canaux de médias sociaux ou des sites web n'est autorisée qu'avec l'accord préalable des détenteurs des droits. [En savoir plus](#)

Terms of use

The ETH Library is the provider of the digitised journals. It does not own any copyrights to the journals and is not responsible for their content. The rights usually lie with the publishers or the external rights holders. Publishing images in print and online publications, as well as on social media channels or websites, is only permitted with the prior consent of the rights holders. [Find out more](#)

Download PDF: 10.08.2025

ETH-Bibliothek Zürich, E-Periodica, <https://www.e-periodica.ch>



Bridging the River Alaknanda for Badrinath Shrine in Himalayas

Pont sur la rivière Alaknanda dans l'Himalaya

Die Brücke über den Alaknanda in Himalaya

Giridhar R. HARIDAS

Addl. Chief Eng.
Gammon India Ltd.
Bombay, India

Sanjivan W. DESHPANDE

Senior Design Eng.
Gammon India Ltd.
Bombay, India

Jaswant Singh VIRDY

Project Mgr.
Gammon India Ltd.
Bombay, India

1. INTRODUCTION

This bridge located in a picturesque Himalayan ranges across the river Alaknanda leads to the Holy Shrine of Badrinath, consecrated by the great philosopher and preacher 'Adi Shankaracharya'. Bridging across a deep gorge of over 37 M was a challenging task, as the fast flowing river underneath has all the risks which demanded a long span bridge with hardly any space available for balancing the cantilever construction. The bridge provides for a 7.5 M wide roadway for vehicular traffic with 1.5 M cantilever footway on either side.

2. SALIENT FEATURES

The total length of the bridge as finally constructed is 125.1 M between the faces of the dirt walls of the abutments. The bridge is located in a highly seismic region, it was, therefore, necessary to reduce the seismic forces transmitted to the base of over 33 m tall piers. This was achieved by providing a 3 span continuous bridge with a span configuration of 25.7 M x 68.8 M x 29.7 M.

To keep in with the aesthetics of the locale it was proposed to provide a uniform depth box of 4 M for the entire length of the bridge, though not an ideal proposition for a bridge located in seismic zone. With a view to reduce the forces on the piers, the hollow circular piers of 5 M were provided with roller bearings on top. This enabled not only to reduce the longitudinal forces but also forces due to high water current. However, in order to provide stability and avoid tension at the base, it was necessary to fill up the lower portion of the hollow piers with mass concrete. The

balancing effect of the cantilever construction as also the transient loads was countered by housing the shore spans inside the end abutments. This provided the necessary dead weight to counter the uplifting forces. The bearings used at the fixed end are of spherical type. The spherical bearings were adopted so that they would reduce the rotational restraints. The bridge is prestressed longitudinally by Freyssinet cables consisting of 12 Nos. of 1/2" dia. strand with braking force of 2250 kN.

3. DESIGN

The deck is designed for IRC Class A / Class 40R - two lanes or Class 70R single lane of traffic whichever produces severest effects in addition to footpath loading as per IRC. The deck is designed as a Class I structure with no tensile stresses permitted, as the present codal provision do not permit partial prestressing.

4. CONSTRUCTION

The unsymmetrical span configuration demanded caution while taking up the construction activity for the deck in the central span. It was, therefore, felt advisable to cast the shore spans on staging first, before taking up the cantilever construction using cantilever construction gantries. The cantilever construction involved successive casting of 3 M segments progressively from each end and then joining by central continuity unit of 2.8 M. The local sand available being of finer variety, to improve and attain a mix of M-40 grade, it was necessary to mix the crusher dust together with admixtures. The footpath and other miscellaneous activities were taken up soon after establishing the continuity.

Though the bridge was awarded in 1983 due to difficult terrain conditions and approach to bridge site getting blocked due to heavy landslides, the completion of the bridge got unduly delayed.

Successful completion of the project has helped the pilgrims to bridge the gap to Badrinath Shrine by one additional step.