

Zeitschrift: IABSE structures = Constructions AIPC = IVBH Bauwerke
Band: 12 (1988)
Heft: C-47: Repair and rehabilitation of bridges: case studies II

Artikel: Strengthening of bridge slab at Kami-Imasu Bridge (Japan)
Autor: Inokuma, Yasuo
DOI: <https://doi.org/10.5169/seals-20938>

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: 14.10.2025

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



8. Strengthening of Bridge Slab at Kami-Imasu Bridge (Japan)

Owner: Japan Highway Public Corporation

Engineer: Japan Highway Public Corporation

Date of Construction: 1964

Date of Repair: 1976

Introduction

The maintenance of floor slabs of steel bridges has been a serious problem in Japan Highway Public Corporation since the mid'60s. In 1974, the specifications for Highway Bridges of Japan Road Association were revised, so that the thickness of slab should be increased by 4 to 5 cm. The floor slabs which were constructed according to the new specifications have scarcely been damaged.

However, the damage of the floor slabs of the bridges constructed before 1974 is still discovered and requires repair or strengthening. As method of repair and strengthening, addition of stringers and steel plating have often been adopted. The Kami-Imasu Bridge is an example where stringers were added.

Repair Work

The Kami-Imasu Bridge is a two-span continuous steel girder, which was designed based on the 1966 specifications. The bridge length and width are 99.0 m and 10.7 m, respectively. The slab is 16 cm thick and covered by 7.5 cm thick asphalt concrete pavement.

After ten years of service, cracks in the slab increased to such an extent that it had to be repaired and strengthened. Finally it was decided to install stringers in between the original main box girders and the original central stringers as shown in Fig. 1. The reasons for the adoption of this method are as follows:

- 1) The traffic volume was so large that it was difficult to conduct the repair work on the upper side of the slab.
- 2) It was expected to be sufficiently effective on decrease of the bending moment of the slab.

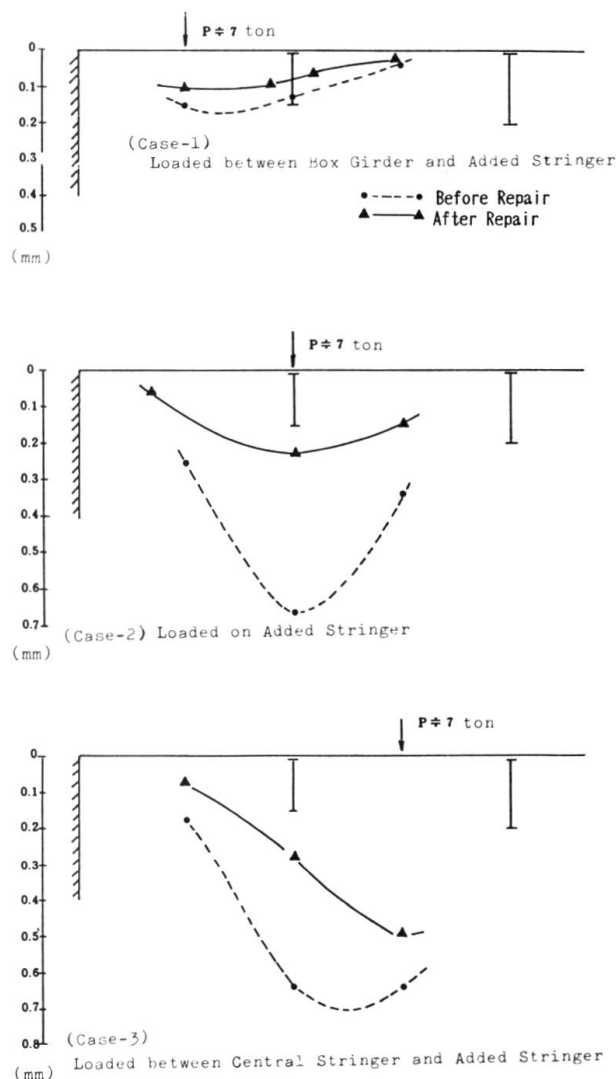


Fig. 2 Effect of Repair

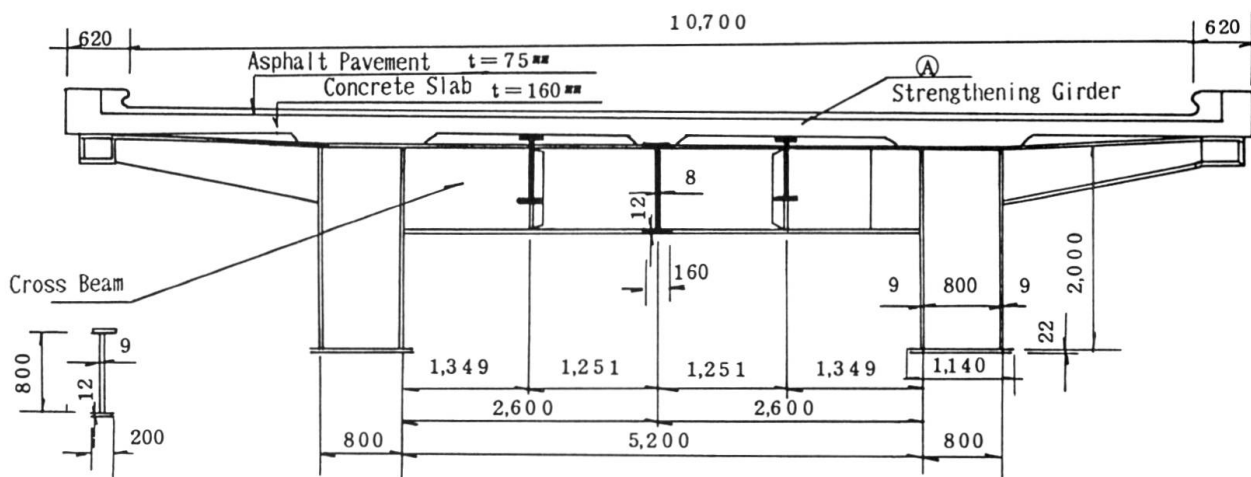


Fig. 1 Structure



Photo 1 General View of Strengthening

Effect of Repair

A loading test was conducted, using a truck with a 7-ton rear wheel load in order to measure the difference of deflections before and after the strengthening. The result is shown in Fig. 2.

In cases where the wheel was located between the main box girder and the added stringer (Case-1), on the added stringer (Case-2) and between the original stringer and the added stringer (Case-3), the deflections at the loading points after repair were decreased to 60%, 66% and 78%, respectively. The repair work is, thus, estimated as successful.

(Yasuo Inokuma)

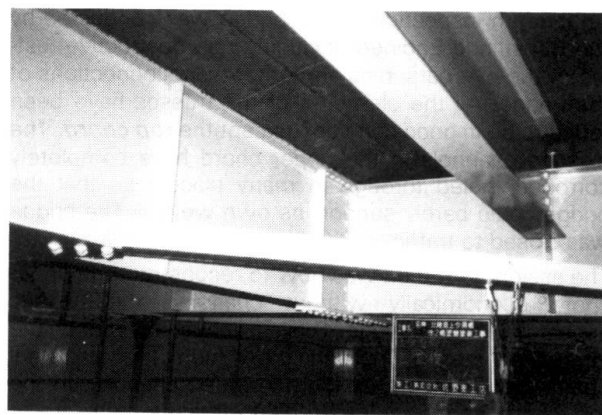


Photo 2 Detail of Added Stringer