

Zeitschrift: IABSE reports = Rapports AIPC = IVBH Berichte
Band: 64 (1991)

Artikel: Connecting short-span steel girders for continuity
Autor: Ivering, John W.
DOI: <https://doi.org/10.5169/seals-49297>

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: 22.02.2026

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



Connecting Short-Span Steel Girders for Continuity

Assemblage pour la continuité de poutres courtes en acier

Verbindungen zur Durchlaufwirkung kurzer Stahlträger

John W. IVERING

Senior Lecturer
Univ. of Technology, Sydney
Sydney, Australia

1. INTRODUCTION

A continuous system of bridge girders has an obvious advantage over a simply supported system by resulting in smaller bending moments and smaller cross section of the girders. Other design advantages include the capability of redistributing the horizontal forces from traffic over a greater number of piers and a reduction in the number of expansion joints in the deck. Against those advantages the engineer must evaluate the benefit of the lower cost of the fabrication and erection of simply supported units.

The best attributes of both systems can be utilized by designing the girders as simply supported for carrying the self weight and concrete deck weight but as a continuous system under the traffic loads. Such design is gaining popularity in Australia due to the development of field connections which make use of the longitudinal deck reinforcement to carry tensile forces in the superstructure over the piers. The sequence of concreting the deck incorporating continuous connections and the concept of girder supports are shown in Fig. 1.

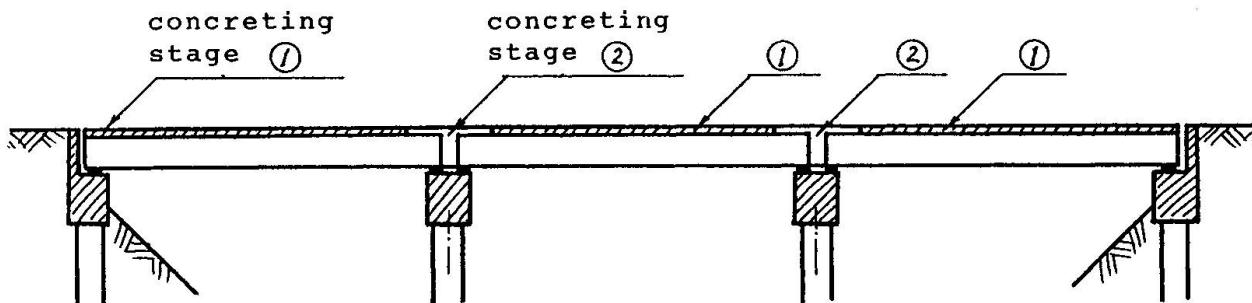


FIG. 1 Sequence of concreting the deck

2. END-PLATE CONNECTION

Laboratory tests on end-plate type connections were initiated in the Department of Main Roads of New South Wales in 1965 and a number of bridges with different variants of the connection were built since then. The connection was found to be structurally adequate but problems were experienced with the design of the end plates of sufficiently small size for a simple fabrication and easy transport. For the above reason the design of a continuous system for the live load only was found to be preferable to the design for the dead load and live load. Also, it was found necessary to provide some form of tensile connection at the bottom of the joint to accommodate stresses caused by the vibration of the deck and the expansion and contraction due to temperature variation. Fig. 2 shows the concept of this type of the connection.

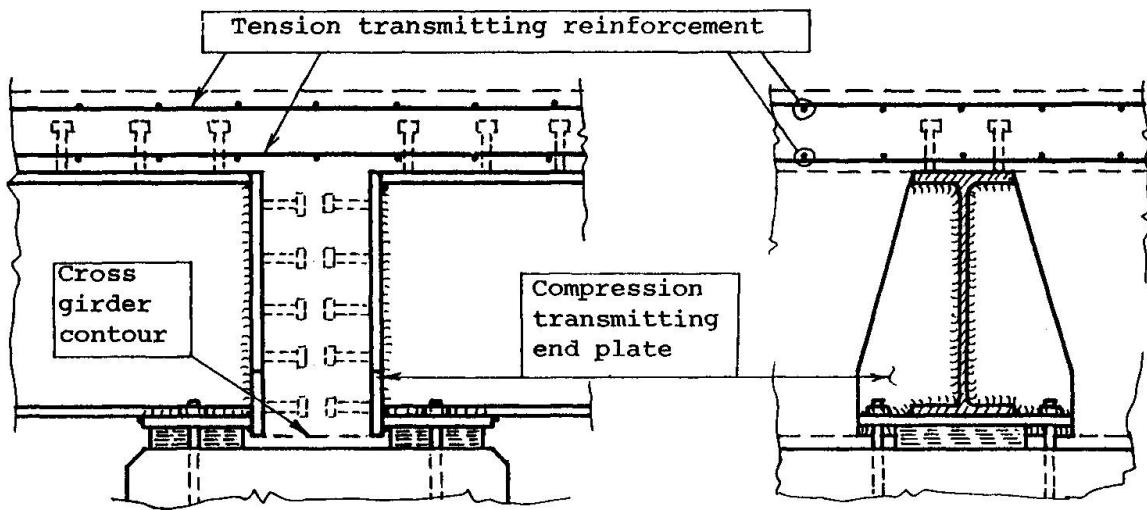


FIG. 2 End-plate type connection for continuity under Live Load.
(Cross girder reinforcement is not shown for clarity.)

3. CONNECTION WITH WELDED BOTTOM FLANGE

The portability of welding equipment, which became much smaller in the last decade, allowed construction of simple field joints in small bridges at a lower cost. Fig. 3 shows a variant a continuous connection where the bearing plate was utilized for the transmission of compressive forces in the girder. A welded joint of the bottom flange results in a positive connection of the girder. However, apart from the problem of bringing the welding equipment on the bridge during construction, some measures must be taken to protect the bearings from the temperature developed during welding. In spite of the problems mentioned, the type of the connection shown allows a more economic design than the traditional bolted connection which is usually located at the point of contraflexure of the girders. The location of the connection over the piers enables a more expedient construction of the bridge superstructure.

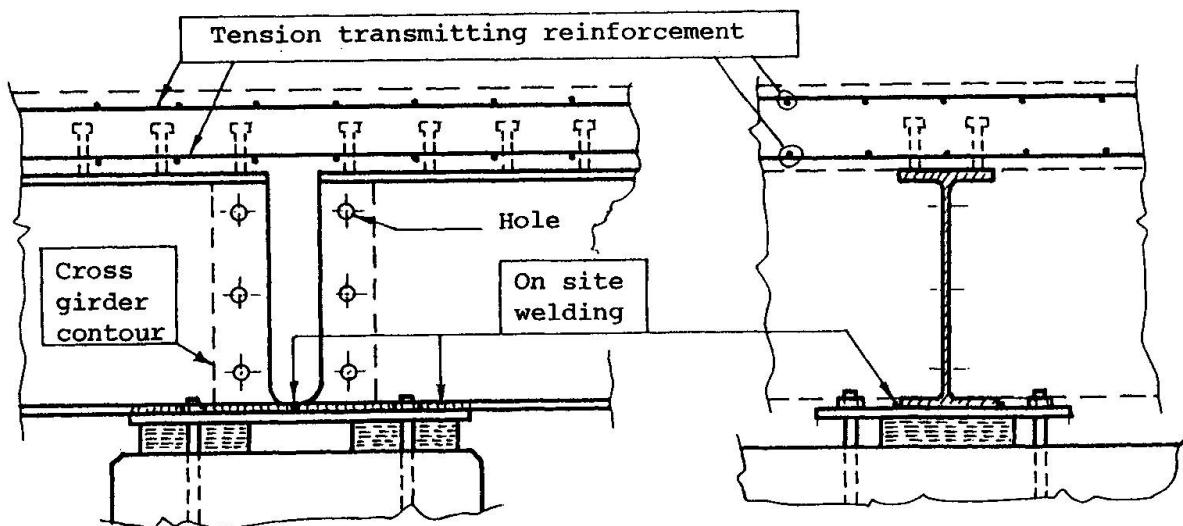


FIG. 3 Welded bottom flange connection for continuity