

Fatigue Tests of New Assembly Bolt Connections for Perspective Temporary Steel Railway Bridges

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Abstract : The paper deals with the problems of the actual behavior, failure mechanism and load-carrying capacity of the special bolt connection developed and intended for the assembly connections of truss main girders of perspective railway temporary steel bridges. Within the framework of this problem solution, several types of structural details of assembly joints have been considered as the conceptual structural design. Based on the preliminary evaluation of advantages or disadvantages of these ones, in principle two basic structural configurations so-called "tooth" and "splice-plate" connections have been selected for the subsequent detailed investigation. This investigation is mainly based on the experimental verification of the actual behavior, strain and failure mechanism and corresponding strength of the connection, and on its numerical modeling using FEM. This paper is focused only on the cyclic loading (fatigue) tests results of "splice-plate" connections and their evaluation, which have already been finished. Simultaneously with the fatigue tests, the static loading tests have been realized too, but these ones, as well as FEM numerical modeling, are not the subject of this paper.

Keywords : Bolt assembly connection, cyclic loading, failure mechanisms, fatigue strength, steel structure, structural detail category, temporary railway bridge

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