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# Direct Design of Steel Bridge Using Nonlinear Inelastic Analysis

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**Abstract :** In this paper, a direct design using a nonlinear inelastic analysis is suggested. Also, this paper compares the load carrying capacity obtained by a nonlinear inelastic analysis with experiment results to verify the accuracy of the results. The allowable stress design results of a railroad through a plate girder bridge and the safety factor of the nonlinear inelastic analysis were compared to examine the safety performance. As a result, the load safety factor for the nonlinear inelastic analysis was twice as high as the required safety factor under the allowable stress design standard specified in the civil engineering structure design standards for urban magnetic levitation railways, which further verified the advantages of the proposed direct design method.

**Keywords :** direct design, nonlinear inelastic analysis, residual stress, initial geometric imperfection
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