

## Sensitivity Parameter Analysis of Negative Moment Dynamic Load Allowance of Continuous T-Girder Bridge

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**Abstract :** The dynamic load allowance, as an application result of the vehicle-bridge coupled vibration theory, is an important parameter for bridge design and evaluation. Based on the coupled vehicle-bridge vibration theory, the current work establishes a full girder model of a dynamic load allowance, selects a planar five-degree-of-freedom three-axis vehicle model, solves the coupled vehicle-bridge dynamic response using the APDL language in the spatial finite element program ANSYS, selects the pivot point 2 sections as the representative of the negative moment section, and analyzes the effects of parameters such as travel speed, unevenness, vehicle frequency, span diameter, span number and forced displacement of the support on the negative moment dynamic load allowance through orthogonal tests. The influence of parameters such as vehicle speed, unevenness, vehicle frequency, span diameter, span number, and forced displacement of the support on the negative moment dynamic load allowance is analyzed by orthogonal tests, and the influence law of each influencing parameter is summarized. It is found that the effects of vehicle frequency, unevenness, and speed on the negative moment dynamic load allowance are significant, among which vehicle frequency has the greatest effect on the negative moment dynamic load allowance; the effects of span number and span diameter on the negative moment dynamic load allowance are relatively small; the effects of forced displacement of the support on the negative moment dynamic load allowance are negligible.

**Keywords :** continuous T-girder bridge, dynamic load allowance, sensitivity analysis, vehicle-bridge coupling

**Conference Title :** ICBMSM 2022 : International Conference on Bridge Maintenance, Safety and Management

**Conference Location :** Berlin, Germany

**Conference Dates :** July 21-22, 2022