World Academy of Science, Engineering and Technology
International Journal of Civil and Architectural Engineering
Vol:16, No:07, 2022

Tuned Mass Damper Vibration Control of Pedestrian Bridge

Authors : Qinglin Shu

Abstract : Based on the analysis of the structural vibration comfort of a domestic bridge, this paper studies the vibration reduction control principle of TMD, the derivation process of design parameter optimization and how to simulate TMD in the finite element software ANSYS. The research shows that, in view of the problem that the comfort level of a bridge exceeds the limit in individual working conditions, the vibration reduction control design of the bridge can effectively reduce the vibration of the structure by using TMD. Calculations show that when the mass ratio of TMD is 0.01, the vibration reduction rate under different working conditions is more than 90%, and the dynamic displacement of the TMD mass block is within 0.01m, indicating that the design of TMD is reasonable and safe.

Keywords : pedestrian bridges, human-induced vibration, comfort, tuned mass dampers
Conference Title : ICBMSM 2022 : International Conference on Bridge Maintenance, Safety and Management
Conference Location : Berlin, Germany
Conference Dates : July 21-22, 2022

Open Science Index, Civil and Architectural Engineering Vol:16, No:07, 2022 publications.waset.org/abstracts/152738.pdf