

Development of the Design Method of the Friction Damper to Meet the Ductility Demand

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Various types of the dampers have been adopted for the bridges and the viaducts in order to assure the safety of railway structures against strong earthquakes. Although such devices attain significant damage reduction, a bunch of complex dynamic analyses are required to design the appropriate damper properties considering nonlinear interaction between the damper and the structure. In order to overcome such a difficulty, a simple design chart was proposed that gives the necessary control force and the corresponding displacement of the friction damper to meet the maximum ductility demand of the structure. In addition, it has been confirmed through numerical simulations of the real railway bridge that the damper designed by the proposed chart reduces the damage of the structure below the predetermined damage level.