

## Performance-Based Damage Assessment of Steel/RC Hybrid Structure

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**Abstract:** Structural members of different materials in hybrid structures have different damage performances. Based on the classical Park-Ang damage model, a consistent modification of that model is proposed for structural members of different materials in order to determine the behavior and the damage process from member-level to structure-level. Furthermore, the specific limit values of this damage model at various performance levels are calculated. Obvious differences have been found between the limit values of different types of members. In order to unify the damage limits that correspond to predefined performance levels such that a comparison between different members can be made directly, normalized parameters for the different types of members are introduced to build the unified damage model. Finally, a 12-storey Reinforced Concrete-Concrete Encased Steel - Steel vertically mixed frame model of Tongji University tested on a shaking table is used to demonstrate the practical use of the proposed damage model and performance levels of the members of different materials.