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Supplemental energy dissipation: state-of-the-art and state-of-the-practice

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Abstract

In recent years, considerable attention has been paid to research and development of structural control devices, with particular emphasis on alleviation of wind and seismic response of buildings and bridges. In both areas, serious efforts have been undertaken to develop the structural control concept into a workable technology, and today we have many such devices installed in a wide variety of structures. The focus of this state-of-the-art paper is on passive and active structural control systems. Passive systems encompass a range of materials and devices for enhancing structural damping, stiffness and strength. Active systems, which include active, hybrid and semi-active systems, employ controllable force devices integrated with sensors, controllers and real-time information processing. This paper includes a brief historical outline of their development and an assessment of the state-of-the-art and state-of-the-practice of this exciting, and still evolving, technology. Also included in the discussion are their advantages and

limitations in the context of seismic design and retrofit of civil engineering structures.



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Keywords

Earthquake engineering; Passive energy dissipation; Active structural control

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