

ANALYSIS OF THE EFFICIENCY OF TOGGLE-BRACE-DAMPER SYSTEMS FOR THE SEISMIC PROTECTION OF HIGH-RISE BUILDINGS

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Abstract:

The current paper examines the benefits of applying supplemental damping to a high-rise concrete building designed following the National Structural Code of the Philippines. The seismic responses of the structure with and without devices for supplemental damping, i.e. buckling restrained braces, viscous dampers, and toggle-brace-dampers, are evaluated and compared. Obtained analytical results show that when dampers are installed in the structure, seismic demands and time of vibration are greatly decreased, allowing or removal of shearwalls to maximize usable floor space. Among the evaluated supplemental damping devices, toggle-brace-dampers present the highest efficiency, since they remarkably improve the building seismic performance using smaller dampers located in fewer locations.

Keywords: High-Rise Buildings, earthquakes, seismic protection, dampers, TOGGLE-BRACE-DAMPER

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