

A Review of the Drawbacks of Current Fixed Connection Façade Systems, Non-Structural Standards, and Ways of Integrating Movable Façade Technology into Buildings

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Abstract : Façade panels of various shapes, weights, and connections usually act as a barrier between the indoor and outdoor environments. They also play a major role in enhancing the aesthetics of building structures. They are attached by different types of connections to the primary structure or inner panels in double skin façade skins. Structural buildings designed to withstand seismic shocks have been undergoing a critical appraisal in recent years, with the emphasis changing from 'strength' to 'performance'. Performance based design and analysis have found their way into research, development, and practice of earthquake engineering, particularly after the 1994 Northridge and 1995 Kobe earthquakes. The design performance of facades as non-structural elements has now focused mainly on evaluating the damage sustained by façade frames with fixed connections, not movable ones. This paper will review current design standards for structural buildings, including the performance of structural and non-structural components during earthquake excitations in order to overview and evaluate the damage assessment and behaviour of various façade systems in building structures during seismic activities. The proposed solutions for each facade system will be discussed case by case to evaluate their potential for incorporation with newly designed connections. Finally, Double-Skin-Facade systems can potentially be combined with movable facade technology, although other glazing systems would require minor to major changes in their design before being integrated into the system.

Keywords : building performance, earthquake engineering, glazing system, movable façade technology

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