

# Displacement-Based Seismic Design of Non-Structural Building Elements

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**Abstract.** Performance-based earthquake engineering requires the harmonization of performances between structural and non-structural elements. This presentation discusses a new performance-based seismic design procedure for non-structural elements through a direct displacement-based methodology. The proposed direct displacement-based methodology is applicable to non-structural elements attached to a single location in the supporting structure and for which damage is the result of excessive displacements. The fundamentals of direct displacement-based seismic design for supporting structures are first reviewed along with a description of the modifications required for its application to non-structural elements. As an example, the direct displacement-based seismic design of a suspended piping restraint installation is presented. The design approach is appraised by nonlinear dynamic time-history analyses.