

# ACI 550.5M-18

An ACI Standard

## Code Requirements for the Design of Precast Concrete Diaphragms for Earthquake Motions (ACI 550.5M-18) and Commentary

Reported by Joint ACI-ASCE Committee 550



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*This standard describes code requirements for the design of precast concrete diaphragms subject to earthquake motions where used under the design provisions of ASCE/SEI 7-16 Section 12.10.3 and ACI 318M. The response of precast concrete diaphragms under earthquake motions depends primarily on the strength, stiffness, and deformation capacities of the connectors and the reinforcement at joints between the precast concrete members. The seismic forces specified in ASCE/SEI 7 for the design of precast concrete diaphragms, their chords, and collectors in structures assigned to Seismic Design Category (SDC) C, D, E, or F are tied to force reduction factors specified in ASCE/SEI 7-16 Chapter 12, and to*

*the shear overstrength provided by the connections and the reinforcement at joints specified in ASCE/SEI 7-16 Chapter 14. The shear overstrength depends on the design methodology, elastic or ductile, used for the diaphragm and targets elastic response for the maximum considered earthquake for shear connections regardless of the design option selected. The design option that can be used depends on the assigned design category and on the span and aspect ratio of the diaphragm. The selection of the design option is associated with minimum requirements for the tensile deformation capacity of the connections and the reinforcement at joints.*

**Keywords:** connections; diaphragms; earthquake-resistant structures; precast concrete; seismic design.

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