

# Structural concrete insulating panels (SCIPs): An alternative construction technology in seismic regions

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**ABSTRACT:** For past several decades, the masonry (concrete blockwork/brick) and precast tilt panel construction have been common for building residential and low-rise commercial buildings in many countries around the world. In this type of construction, the masonry bearing walls and tilt panels are intended to resist both gravity and lateral loads.

Alternatively, in some situations they can be used for cladding. The Structural Concrete Insulating Panels (SCIPs) were invented in Pasadena, California by Victor P. Weismann, who secured the worlds' first Patent on the concept in 1967. The concept is a panelized system with composite or partially composite action, made up of a "sandwich" of two thin reinforced concrete shells joined together by a light-gauge welded-wire truss. The inside core is made of foam which functions as thermal and sound insulation.

The SCIP system can be used as an alternative for the traditional masonry and tilt panel construction of residential and low-rise commercial buildings in seismic areas. It offers many advantages compare to masonry/tilt panel construction, such as reduced weight of the structure (up to 40%), high inherent stiffness for both in-plane and out-of-plane actions, easier transportation of panels, faster construction, better quality control, minimum use of formwork, labor, and crane on the site, excellent thermal and sound insulation, and limited environmental impacts.

This paper aims to provide an introduction to SCIP system in seismic regions, its nonlinear properties, and analysis/design procedure. Furthermore, the latest experimental results and findings from Metrock Structural Insulated Panels in the United States are presented accordingly.