



Structural Behaviour of Precast Concrete Sandwich Panel: A Review

Abhinav Anand¹, Vaibhav Singhal²

¹PhD Scholar, Dept. of Civil and Environmental Engineering, IIT Patna

²Assistant Professor, Dept. Civil and Environmental Engineering, IIT Patna

Abstract

Precast concrete sandwich wall (PCSW) panel consists of two concrete wythes separated by an insulation material and bonded together with the shear connectors which helps the walls to behave in a composite manner. This paper reviews the considerable number of studies related to the structural performance of precast concrete sandwich panels subjected to the in-plane and out-of-plane loads. This review highlights various important parameters such as shear connectors, concrete compressive strength and sandwich material that influence the structural response of these wall panels. The shear connectors have a crucial role in the transfer of shear forces through-out the concrete wythes. Different types of shear connectors made with steel, glass or carbon fibres in various geometric configurations have been used in PCSW systems. Similarly, different materials such as expanded polystyrene (EPS), extruded polystyrene (XPS), and polyurethane are used as an insulating layer. The insulation used in between the wythes resist thermal conductance. This paper will discuss the effect of slenderness ratio, aspect ratio etc. on the behaviour of the PCSW panel. It highlights the gap areas and scope for future research for the wider application of PCSW systems in civil infra-structure.

Keywords: Precast concrete sandwich panel, Shear connectors, Structural performance