

Finite Element Analysis of Punching Shear of Reinforced Concrete flat slab

by

saarabh Agrahari, Pradeep Kumar Ramancharla

in

*USMCA-2018: 17th International Symposium on New Technologies for Urban safety of Megacities in Asi
(USMCA 2018)*

Report No: IIIT/TR/2018/-1



Centre for Earthquake Engineering
International Institute of Information Technology
Hyderabad - 500 032, INDIA
December 2018

Finite Element Analysis of Punching Shear of Reinforced Concrete flat slab

Saurabh AGRAHARI
Earthquake Engineering Research Centre, IIIT-Hyderabad, India
saurabh.agrahari@research.iiit.ac.in
and
Pradeep Kumar RAMANCHARLA
Professor and Head
Earthquake Engineering Research Centre, IIIT Hyderabad
ramancharla@iiit.ac.in

ABSTRACT

Flat-slab building structures has significant advantages over slab-beam-column structures because of the free design of space, shorter construction time and cost-effective aspects. In the present situation of building construction around the world, Flat slab is becoming widely popular in the multi-storied buildings. However, many buildings with flat slab have performed poorly under the earthquake loading and therefore it is considered vulnerable under punching shear. The design code which is followed is not adequate for the punching shear of flat slab buildings under lateral loading.

To understand the behavior of building with flat slab subjected lateral loads, a numerical study is performed. A three-dimensional finite element analysis of reinforced concrete flat slab with software ABAQUS using the concrete damage plasticity model is presented. A reinforced concrete flat slab with and without column head and drop panel along with the columns is modelled. A study is performed for understanding the linear and nonlinear behavior of flat slab subjected to lateral static and dynamic loads.

Keywords: Flat Slab, Lateral loading, Finite Element Method, Concrete Damage Plasticity model, Punching shear.
