

Nonlinear Finite Element Modeling of Reinforced Concrete Flat Plate-Inclined Column Connection

Authors : Rabab Allouzi, Amer Alkloub

Abstract : As the complex shaped buildings become a popular trend for architects, this paper is presented to investigate the performance of reinforced concrete flat plate-inclined column connection. The studies on the inclined column and flat plate connections are not sufficient in comparison to those on the conventional structures. The effect of column angle of inclination on the punching shear strength is found significant and studied herein. This paper presents a non-linear finite element based modeling approach to estimate behavior of RC flat plate inclined column connection. Results from simulations of RC flat plate-straight column connection show good agreement with experimental response of specimens tested by other researchers. The model is further used to study the response of inclined columns to punching at various ranges of inclination angles. The inclination angle can be included in the punching shear strength provisions provided by ACI 318-14 to account for the effect of column inclination.

Keywords : punching shear, non-linear finite element, inclined columns, reinforced concrete connection

Conference Title : ICSR 2020 : International Conference on Scientific Research and Development

Conference Location : Chicago, United States

Conference Dates : December 12-13, 2020