

عنوان مقاله:

The Comparison of Punching Shear Capacity in Solid and Void Two-Way Slabs on Soil Substrate in Relation to Spring Stiffness Changes

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نویسندگان:

H. Azizian - *Department of Civil Engineering, Mahabad Branch, Islamic Azad University, Mahabad, Iran*

M. A. Lotfollahi-Yaghin - *Civil Engineering Faculty, University of Tabriz, Tabriz, Iran*

A. Behravesht - *Department of Civil Engineering, Mahabad Branch, Islamic Azad University, Mahabad, Iran*

خلاصه مقاله:

This study aims to investigate punching shear in solid and void slabs as well as simulated soil and spring models as distributed loads on the mentioned slabs. To this end, the slabs were tested using the nonlinear finite element analysis under static loading to assess their failure in terms of the final load and cracking patterns on the soil substrate and spring. For this purpose, a 3D finite element analysis was performed based on the element size, mesh, and concrete characteristic modeling. In Finite Element Software ABAQUS ۶.۱۹, the nonlinear behavior of brittle materials was defined based on the concrete damaged plasticity (CDP) model. Next, the results of the numerical analysis of the slabs were calibrated and validated based on a comparison with experimental specimens on a soil substrate. At the end, by optimizing the spring constant and obtaining the soil spring constant, the results of the numerical analysis of the slabs on the spring support were compared to the experimental results, which showed the calibrated models correctly predicted the punching cutting response of the slabs.

کلمات کلیدی:

Laboratory model, Numerical Model, Punching Shear Capacity, Soil and Spring Model, Spherical Plastic Hollow Formers, Two-Way Solid and Hollow Slabs

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