

May Zin Cho 2010: Study of the Effect on the Shear Strength by the Openings in Flat Plate. Master of Engineering (Civil Engineering), Major Field: Civil Engineering, Department of Civil Engineering. Thesis Advisor: Associate Professor Trakool Aramraks, Ph.D. 196 pages.

This research aimed to study the effect on shear strength by the openings in flat plate. In the first step, eight numbers of square openings were used to study the effect of the locations of openings in the flat plate. In the second step, openings with various rectangular sizes located at critical locations and the effect of the sizes of the openings were studied. In the final step, the effect on shear strength by the openings was investigated and two methods of shear strengthening were studied to increase the shear strength of flat plate with the openings.

In first step, the results showed that the openings at the face of the column are the most critical for the flat plate with openings. In second step, the results showed that the critical sizes of the opening are: the opening width parallel to the face of the column larger than three-tenths of the column strip width, and the opening width perpendicular to the face of the column larger than one-tenth of the column strip width. In the final step, the result showed that shear strength provided by the concrete of the flat plate decreases with the increase of the opening sizes. Moreover, the shearhead reinforcement was found to be more effective than bar reinforcement in increasing the shear strength of the flat plate with openings. When the drop panel was used as shear strengthening, the results showed that the original slab thickness should be increased not less than 1.8 times the slab thickness around the various sizes of openings at the face of interior column, and the original slab thickness should be increased not less than 1.6 times the slab thickness around the various sizes of opening at the face of the edge column.

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Thesis Advisor's signature

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