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Investigation of Flat Slabs in Sri Lanka

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Extremely high demand for upstairs buildings in the world leads to strong demand for Flat Slabs. The traditional practice is to construct the slab on the beams and support the beams on the columns, which known as "Conventional Slab Beam." The main adverse effect of conventional slab beam is losing the clear height. Changing the traditional concept by resting slab directly on the columns, without the support of the visible beams is known as the concept of "Flat Slabs."

The main objective of this study is to identify the prominent influencing factors such as durability, efficiency, workability, appearance, attitude of designers, strength, and stability, which affects the usage of flat slabs, comparedto the Conventional Slab Beam. Also this study provides a comparison between flat slabs and conventional slabs regarding the design aspects, cost involved and self-weight.

The questionnaire survey was carried out among designers, contractors, and consultants of 50 high rise building with 2 floors and above. Descriptive and inferential statistical methodswere used for analysing the data of the questionnaire, and structural software, namely AUTO CAD, Etabs, and SAP2000, were used to analyse the structural design, and the cost per unit area.

The results revealed that the strongest factors in favour of selecting flat slabs are workability and the attitude of designers and contractors. Cost analysis showed that there is 26% of additional cost per 1 m^2 of flat slab, when compared to the conventional slabs. Analysis of structures showed around a 25% increase in the self-weight of flat slabs. In addition, the low stiffness of flat slabs tends to cause them to fail when applying lateral loads. According to this study it has been proven that flat slabs have poor safety aspects when compared to the conventional slab beam. However, the application of flat slabs with shear walls will give good structural stability and hence the research in this area is needed.

Key Words: Flat, Higher Self Weight, Durabilty, Shear Walls.

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