

STRUCTURAL PERFORMANCE OF EXPANDED POLYSTYRENE LIGHTWEIGHT CONCRETE (EPS - LWC) WALL PANEL WITH SQUARE OPENING

By

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DECLARATION BY THE CANDIDATE

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ABSTRACT

The load bearing wall is common construction for tall building. The lightweight expanded polystyrene wall panel was establishing in this study in order to develop as the load bearing wall. This study provide the expanded polystyrene lightweight concrete (EPS - LWC) wall panel with square opening at the centre of wall panel. The objective of this study is to determine the ultimate axial load and maximum deflection of expanded polystyrene light weight concrete (EPS - LWC) wall panel. At the same time, this study also to evaluate crack behaviour of expanded polystyrene light weight concrete (EPS - LWC) wall panel with square opening. The material using to establish lightweight concrete wall panel are steel fibre and expanded polystyrene beads. The using of steel fiber is to minimize the major and minor crack around the opening. For the expanded polystyrene beads (EPS), it's using to replace the coarse and fine aggregate to ensure the lightweight wall panel is establish.

In this study were conducted two samples which are EPS - LWC wall panel with and without opening. The sample of EPS - LWC wall panel without opening is a control sample to compare with EPS - LWC wall panel with square opening. The result further confirm that the ultimate load of EPS - LWC without opening was 771 kN higher than EPS - LWC with square opening which is 428 kN. The deflection profile was not compliance the Euler's rule because the wall was experience the maximum deflection at 1350 mm from the base of wall panel.

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