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Some Findings on the Shear Wall Deflection Modelling Using Finite Element Method

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ABSTRACT

In this paper, three types of model and statical analysis of a 31.5-meter height shear wall, taken from a part of flat building in Pulau Pinang, was analyzed by using London University Structural Analysis Software (LUSAS), a finite element software. The above-mentioned shear wall structure was modeled using three popular models: the column analogy model, plane stress model, and the three-dimensional model. Using the column analogy model, it was found that mesh density does not change the displacements of the shear walls but the other model shows some percentage of changes from previous flexural displacements varying from 0.11% to 0.22% (plane stress model) and 1.30% to 1.31% (three-dimensional model). Column analogy model showing the wall has the stiffest flexural element ($k_{lateral}$ = 107.38 kN/m) and the least stiff flexural element is by using the three dimensional model ($k_{lateral}$ = 33.95 kN/m). Column analogy exhibits a stable model in order to predict flexural displacement of the shear wall.

Keywords: *shear wall, LUSAS, lateral stiffness, column analogy, plane stress*