

Strength of the Basement Wall Combined with a Temporary Retaining Wall for Excavation

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Abstract : In recent years, the need for remodeling of many apartments built 30 years ago is increasing. Therefore, researches on the structural reinforcement technology of existing apartments have been conducted. On the other hand, there is a growing need for research on the existing underground space expansion technology to expand the parking space required for remodeling. When expanding an existing underground space, for earthworks, an earth retaining wall must be installed between the existing apartment building and it. In order to maximize the possible underground space, it is necessary to minimize the thickness of the portion of earth retaining wall and underground basement wall. In this manner, the calculation procedure is studied for the evaluation of shear strength of the composite basement wall corresponding to shear span-to-depth ratio in this study. As a result, it was shown that the proposed calculation procedure can be used to evaluate the shear strength of the composite basement wall as safe. On the other hand, when shear span-to-depth ratio is small, shear strength is very underestimated.

Keywords : underground space expansion, combined structure, temporary retaining wall, basement wall, shear connectors

Conference Title : ICCEA 2018 : International Conference on Civil Engineering and Architecture

Conference Location : Dublin, Ireland

Conference Dates : January 30-31, 2018