

## Mechanical Model of Gypsum Board Anchors Subjected Cyclic Shear Loading

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**Abstract :** In this study, the mechanical model of various anchors embedded in gypsum board subjected cyclic shear loading were investigated. Shear tests for anchors embedded in 200 mm square size gypsum board were conducted to measure the load - load displacement curves. The strength of the gypsum board was changed for three conditions and 12 kinds of anchors were selected which were ordinary used for gypsum board anchoring. The loading conditions were a monotonous loading and a cyclic loading controlled by a servo-controlled hydraulic loading system to achieve accurate measurement. The fracture energy for each of the anchors was estimated by the analysis of consumed energy calculated by the load - load displacement curve. The effect of the strength of gypsum board and the types of anchors on the shear properties of gypsum board anchors was cleared. A numerical model to predict the load-unload curve of shear deformation of gypsum board anchors caused by such as the earthquake load was proposed and the validity on the model was proved.

**Keywords :** gypsum board, anchor, shear test, cyclic loading, load-unload curve

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