1. Development of Seismic Retrofit Method Using Shear Reinforcing “Best Grout Bar” with Hexagonal Nut Attached at the Tip

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The objective of this study was to develop a shear reinforcement method using dowel anchors that could enable application to an existing reinforced concrete structure from one side of the member and improve shear strength. To that end, pull-out tests were conducted using “best grout bar” with a hexagonal nut attached at the tip on the side of embedment and alternate loading and unloading tests and construction performance tests were conducted using beam specimens. As a result, the length of anchorage required for best grout bars to develop designated yield strength was identified in the pull-out tests, and the improvement of shear reinforcing effect was verified and the method for calculating shear strength was identified in the beam specimen loading tests. In the construction tests, it was found that upward construction could guarantee filling and embedment performance by combining plastic mortar, mortar filling fixture and best grout bar insertion fixture.

Key words: dowel anchors, seismic retrofit, shear reinforcing steel bars, plastic mortar, upward construction