4. Development of Axial Reinforcement Method for Existing Reinforced Concrete Column Using High Strength Reinforcing Bars
- Seismic Strengthening Performance Evaluation and Construction Efficiency Improvement -

Osamu Yamaguchi, Takashi Misawa, Tetsuya Hironaka, Emi Matsumoto

A new method for strengthening an existing concrete column has been developed. By using high-strength reinforcing steel bars and spraying mortar to integrate them with the existing column, the column can be strengthened by use of a thin jacket (wrapping) layer. With this method, the jacket layer for seismic strengthening can be reduced to one-third compared with the conventional concrete jacketing method. This is advantageous when strengthening, for example, bridge piers in river channels and columns with clearance limits. Reversed cyclic loading tests were conducted for the purpose of earthquake resistance evaluation. The tests showed that the maximum horizontal load and the deformation capacity at yield of the existing reinforcement of a column strengthened by the newly developed method were 1.5 times and 1.1 times, respectively, as large as those of a non-strengthened column. The fact that the values obtained do not differ significantly from the values given by the current design formulas indicates that the current design formulas can be used without making any modification.

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