7. Construction Tests of a Method for Seismic Strengthening Outer Frames with Steel Tube as Connection and Its Application to an Existing Building

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In order to apply an outer frame seismic strengthening method to an existing building, full-scale construction tests were conducted for a seismic strengthening method using steel tube as connection that could reduce post installation anchors, and for a multi-story all precast reinforced concrete member grouting method. The seismic strengthening method using steel tube as connection connects the existing building to the outer frame by newly constructing slabs in which steel tubes are inserted. Construction tests were therefore conducted for slabs in which steel tube as connection were inserted. As a result, it was confirmed that high-flow concrete densely filled the areas around the newly constructed slabs and inserted steel tubes. In the method of multistory grouting of all precast reinforced concrete members, the columns on the upper and lower floors and the precast reinforced concrete members at column-beam connections are laminated at a time and connected to one another by grouting. Multistory grouting tests were therefore conducted for all precast reinforced concrete members. As a result, it was confirmed that the connection joints of precast reinforced concrete members and the joints of main reinforcing bar joints of columns were filled densely with grout. Good construction results were confirmed in the full-scale construction tests. Then, the methods were applied to seismic strengthening of apartment buildings.

Key words: steel tube as connection, outer frame, seismic strengthening, precast reinforced concrete, grouting