7. Development of the Mechanical Anchorage Using EG Anchor Plate —Structural Performance of L-Shaped Beam-Column Joint—

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In the reinforced concrete construction building, for anchorage of beam main reinforcement, bent-up type has been generally used, while for anchorage of top floor column main reinforcement, 180° hook type has been used in beam-column joint. As the bar arrangement in beam-column joint tends to become complicated, however, the mechanical anchorage has become popular for the anchorage of the main reinforcement. This time, mechanical anchorage method (EG anchor plate method) was developed, where circular anchor plate is screwed on screws that are attached to reinforcing bar by pressure. In FY2001, the part frame experiment (7 bodies of beam flexure fracture type test specimen and 4 bodies of beam-column joint shear destruction type specimen, totaling 11 bodies) was carried out in order to understand the structural performance for the case it is applied to the anchorage of column and beam main reinforcement of L-shaped beam-column joint, which is mainly designed for the top floor column capital section. As a result, the following facts were confirmed, when the EG anchor plate method was applied to L-shaped beam-column joint: ① The strength greater than beam-column joint shear strength can be ensured by the equation by Design guideline for Earthquake Resistant Reinforced Concrete Buildings Based on Inelastic Displacement Concept, and ② Sufficient ductility capacity can be ensured after the beam bending yield, and ③ Column capital reinforcing bar placed in each test specimen suppresses the shear crack of the joint, and thus it is effective to secure shear strength and ductility capacity .

Key words : mechanical anchorage, circular anchor plate, reinforced concrete, capital reinforcing bar, L-shaped beam-column joint