

Application Problems of Anchor Dowels in Reinforced Concrete Shear Wall and Frame Connections

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Abstract : Strengthening of the existing seismically deficient reinforced concrete (RC) buildings is an important issue in earthquake prone regions. Addition of RC shear wall as infill or external walls into the structural system has been a commonly preferred strengthening technique since the Big Erzincan Earthquake occurred in Turkey, 1992. The newly added rigid infill walls act primarily as shear walls and relieve the non-ductile existing frames from being subjected to large shear demands providing that new RC inner or external walls are adequately anchored to the existing weak RC frame. The performance of the RC shear walls-RC weak frame connections by steel anchor dowels depends on some parameters such as compressive strength of the existing RC frame concrete, diameter and embedment length of anchored rebar, type of rebar, yielding stress of bar, properties of used chemicals, position of the anchor bars in RC. In this study, application problems of the steel anchor dowels have been checked with some field studies such as tensile test. Two different RC buildings which will be strengthened were selected, and before strengthening, some tests have been performed in the existing RC buildings. According to the field observation and experimental studies, if the concrete compressive strength is lower than 10 MPa, the performance of the anchors is reduced by 70%.

Keywords : anchor dowel, concrete, damage, reinforced concrete, shear wall, frame

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