

## ABSTRACT

Increasing demands of reinforcement in the joint panel is now requiring more effective system to reduce the complicated fabrication by widely used precast system. Joint panel is responsible to keep the load transfer through beam and column. Beam and column joint is a crucial part in a structural frame that ensure the main feature of the whole structure during earthquake. Since precast system might reduce the joint panel monolithic integrity and stiffness, an innovation by adding fiber into the grouting system will give a breakthrough.

The loading test of precast concrete beam-column joints using FRCC (Fiber Reinforced Cementitious Composites) in joint panel was conducted to evaluate the influences of fiber towards shear performance. The experimental factor is fiber types with same volume fraction in mortar matrix of joint panel. Two specimens with Aramid-fiber and PP-fiber by two percent of volume fraction are designed to fail by shear failure in joint panel by reversed cyclic testing method.

The comparison amongst those experiment results by various parameters for the shear performance of FRCC beam-column joints using various fibers are discussed. Preceding specimens was using no fiber, PVA fiber, and steel fiber has been carried out. Through the current experiment results and the comparison with previous experiment results, it can be recognized that by using fibers in joint panel was observed qualitatively could prevent crack widening with equitable and smaller crack width, improved the shear capacity by widening the hysteretic area, increased highest increment of maximum load by 49.9% in positive loading and 44.0% in negative loading, and decreased the deformation rate by 13%. Elastic modulus properties of fiber are observed to give the most impact towards shear performance.

**Keywords:** joint panel, fiber, FRCC, elastic modulus, shear performance