**Investigates the influence of UPFRC flat slab dimensions on punching shear resistance using finite elements**

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**Abstract.**  Flat slabs are a popular choice for multi-story structure construction due to their ease of installation, speed of construction, shallow floor depth, and cost. However, flat slabs are subject to punching shear, a failure mode that may suddenly happen at the connections between slabs and columns. One of the suitable methods to improve resistance to punching failure is to use UHPFRC panel materials. Moreover, the flat slab created using UHPFRC could be thinner than traditional concrete. Using ABAQUS software, a non-linear finite element (FE) model was developed to predict the punching shear performance of UHPFRC flat slabs. In addition, a comparison was made between the punching shear strengths obtained from the finite element (FE) model and those predicted by existing standards. It was found that the current standards underestimated the punching shear strengths compared to both the FE model and the test results.

**Keywords:** Flat slabs, Punching shear, UHPC, FE model, ABAQUS.