عنوان مقاله:

Interaction between One Internal Hole and Two Neighboring Joints under Uniaxial Compression using an Experimental Test and a Numerical Simulation

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خلاصه مقاله:

The interaction between an internal hole and two surrounded joints under a uniaxial compression are examined using the experimental and discrete element procedures. Inside the concrete sample, two notches and an internal hole are created. The joint angle change from ۰° to ۹۰° with an increment of ۳۰°. The distances between the joint and the internal hole are ۲ cm and ۳ cm. Also the numerical models are provided. The joint angle change from ۰° to ۹۰° with an increment of ۱۵°. The distances between the joint and the internal hole are ۲ cm, ۳ cm, and ۴ cm. The compressive strength is ۷.۲ MPa. The rate of loading is ۰.۰۰۵ mm/s. The experiment indicates that the failure process is significantly dependent on the notch angle and the joint distance from the hole. The pattern of fracture and mechanism of failure of joints affect the shear strengths of the samples. The models with joint angles of ۳۰° and ۶۰° have a less compressive strength since the pure tensile failure occurs in these configurations. The model strength decreases with decrease in the join spacing. In fact, in the case that the joint spacing is ۲ cm, the interaction between the hole and the neighboring joint is so strong. Consequently, the compressive strength is declined. In both approaches of the numerical simulation and experimental methods, the pattern and strength of failure are identical.

کلمات کلیدی:

compressive test, joint angle, joint distance, hole, PFC۲D

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