Sławomir Dudziak, Wioletta Jackiewicz-Rek, Zofia Kozyra, *On the Calibration of a Numerical Model for Concrete-to-Concrete Interface*
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Abstract
The study was devoted to the numerical modelling of concrete-to-concrete interfaces. Such an interface can be found in many modern composite structures, so proper characterisation of its behaviour is of great importance. A strategy for calibration of a model based on cohesive finite elements and the elastic-damage traction–separation constitutive law available by default in the Abaqus code was proposed. Moreover, the default interface material model was enhanced with the user-field-variables subroutine to include a real strength envelope for such interfaces. Afterwards, the modelling approach was validated with numerical simulation of the most popular tests for determining the strength characteristics of concrete-to-concrete interfaces: three-point bending beam with a notch, splitting bi-material cubic specimens, and slant-shear tests. The results of own pilot studies were used as well as those reported by other researchers. The performed simulations proved the accuracy of the proposed modelling strategy (the mean ratio of ultimate forces obtained with numerical models and from experiments was equal to 1.01). Furthermore, the presented examples allowed us to better understand the basic test methods for concrete interfaces and the observed mechanisms of failure during them.