Analiza numeryczna wybranych zagadnień mechaniki betonu

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Abstract

The presentation shows the capabilities of two modern material models for concrete to render real behaviour of concrete elements under static loading. Three different cases are analysed and evaluated: deterministic size effect (Wosatko et al., 2018) using a gradient enhanced damage model developed by authors (GD), punching shear failure for flat slabs without shear reinforcement (Wosatko et al., 2019) using Concrete Damaged Plasticity model (CDP) available in ABAQUS FEA and failure of frame corners under opening bending moment (Szczecina, 2018), also using the CDP model.

The results show that the modern material models for concrete are able to capture real behaviour of concrete elements in a reliable way. However, the presented analyses point out clearly that the choice of proper values of material model parameters has to be made with great care. Moreover, the last presented example shows that the advanced numerical simulations for concrete elements can be used as a design tool – in the analysed case giving a valuable insight into proper reinforcement detailing for RC frame corners.

References

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