Penetration into low-strength (23 MPa) concrete: target characterization and simulations

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Abstract

A combined experimental, analytical, and computational research and development program investigates the penetration of steel projectiles into low-strength concrete. Laboratory-scale material property tests conducted at the US Army Waterways Experiment Station on the concrete provide the data used in parameter estimation for a geomaterial constitutive model. The experiments and the model are described as well as the procedure used to fit the material model to the experimental data. The model accurately reproduces the data and predicts experimental results not used in the evaluation of model constants. The model, used in conjunction with an explicit transient dynamic finite element code, accurately predicts deceleration and depth of penetration of 3 CRH ogive-nosed 4340 steel penetrators.

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