

Calibration of coupling between local damage and creep model with size effect test on concrete beams

Rani Desiassyifayanty, author

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Abstrak

<hr> ABSTRACT

The aim of this research is to reproduce the experimental result using finite element approach with damage model coupled to creep. The calibration of coupling between creep and local damage model associated with size effect law proposed by Bazant are presented in this thesis. Its behavior was investigated through two kinds of studies, the loading rate effect and residual capacity test. Three different sizes of beam, which are geometrically similar specimens, were simulated in three point bending test and creep test divided into load level test and residual capacity test. Numerical simulation was done using existing finite element code Aster_ Code developed by EDF (Electricite de France) for coupling between local damage based on bi-linear elasto-damage model and creep based on Benboudjema theory. Result show that the finite element code is capable to reproduce the experimental result qualitatively. The interaction between creep and local damage is shown through size effect plot by giving the behavior shift to the right, which means that the materials become more brittle when creep appears.

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