

Loading Capacity and Deformability of R/C Beams with Extremely Low Strength Concrete

by

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Abstract

The purpose of this study is to experimentally investigate the bearing capacity and deformation capability of reinforced concrete beams with extremely low strength concrete, and to examine the applicability of current methods for estimating various bearing capacities and ductility. From the test results, when the concrete strength was significantly low, the deformation capability was poor, even though flexural yielding occurred. The cross-sectional analysis, which is based on Bernoulli's principle for plane sections and the material characteristics, showed that the relationship between the bending moment and curvature of the beam section could be properly evaluated as well as the bending moment capacity and deformability. Also, the shear capacity was markedly overestimated by Arakawa's equation, which has been conventionally used in seismic diagnosis. On the other hand, according to the shear capacity equation adopted in the "Ductility Design Guideline" by AIJ, the shear capacity was conservatively or rather too conservatively estimated.

Keywords: extremely low strength concrete, seismic diagnosis, reinforced concrete beam, loading capacity, deformability.

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