

Behaviour Of Cfrp Strengthened Cantilever Hollow-Core Panels

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In practice, there can be a need to use standard precast, prestressed hollow-core slabs with one or two layers of prestressing steel in floors that have cantilever extensions or modification of architectural requirements which may create a cantilever effect. In order to establish design criteria for such usage, preliminary work is presented on testing of such hollow-core slabs of 4.5 m length placed in a cantilever configuration, with a cantilever span of 2 m that is achieved by bolting down one end of the panel. Results are presented for both virgin and CFRP strengthened slabs. The failure response was noted to be flexural, with high flexibility due to the cantilever action. Experimental results are used to calibrate a nonlinear finite element model of the cantilever panel using DIANA software. Numerical simulation was carried out to predict the allowable wall loads that can be placed at the edge of the cantilever slab for normal and CFRP flexurally strengthened hollow-core slabs. Inasmuch as hollow-core slabs are inherently deficient in shear, CFRP strengthened slab configurations with plain concrete infill in high shear zone were modelled and shown to be able to withstand high wall loads.