

INVESTIGATION OF LONGITUDINAL SPLITTING OF COMPOSITE SLABS/BEAMS

MASTER OF SCIENCE

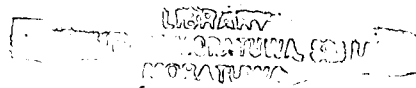
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INVESTIGATION OF LONGITUDINAL SPLITTING OF COMPOSITE SLABS/BEAMS

By
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This thesis was submitted to the Department of Civil Engineering of the University of Moratuwa in partial fulfillment of the requirements for the Degree of Master of Science



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ABSTRACT

In this research study the longitudinal Splitting of concrete-steel composite structures has been investigated. Longitudinal Splitting can be identified as one of the common problem exist at serviceability limit state of structures and sometimes ignoring of these splitting may cause ultimate failure of the structure.

The main objective of this research study was to develop finite element computer program for modeling the longitudinal splitting of composite slabs. A number of standard finite element types were used to model various elements of the structure such as concrete slab steel beam, steel deck profile, transverse reinforcements and steel stud connectors.

One-way spring elements were used to represent shear studs and an equation developed for stiffness value for these spring elements based on fracture mechanism concept. This equation was accounted for a number of factors, which are generally known to have a direct influence on longitudinal splitting. Only headed studs with a diameter 19 mm and nominal length 100 mm was considered throughout this study.

The finite element model was verified with some experimental tests conducted by prior investigators and also by changing different features of model, the ways of reducing the failure of composite structures were investigated.

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