

Experimental and Analytical Study of Various Types of Shear Connector Used for Cold-Formed Steel-Ferrocement Composite Beam

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Abstract : This work presents the experimental tests carried out to evaluate the behaviour of different types of shear connectors proposed for cold formed steel (CFS) section integrated with ferrocement slab as potential used for composite beam. Ten push-out test specimens of cold-formed steel lipped channel sections connected with ferrocement slab were tested. Three types of shear connectors were studied comprised of bolts, self-drilling-screw and bar angle. The connection behavior is analysed in terms of its load-slip relationship and the failure mode. The parametric studies were performed to investigate the effect on the shear connector's capacity by varying the number of layers of wire mesh used in ferrocement slab and types of shear connector used. An analytical analysis using ANSYS program and theoretical analysis (Eurocode 4) were carried out to verify the experiment results. The results show that the experimental, theoretical, and numerical values proved to have good agreement with each other.

Keywords : cold-formed steel, composite beam, ferrocement, finite element method, push-out test, shear connector

Conference Title : ICCCE 2015 : International Conference on Civil and Construction Engineering

Conference Location : Jeddah, Saudi Arabia

Conference Dates : January 26-27, 2015