World Academy of Science, Engineering and Technology
International Journal of Aerospace and Mechanical Engineering
Vol:11, No:06, 2017

Experimental Work to Estimate the Strength of Ferrocement Slabs Incorporating Silica Fume and Steel Fibre

Authors : Mohammed Mashrei

Abstract : Ferrocement is a type of thin reinforced concrete made of cement-sand matrix with closely spaced relatively small diameter wire meshes, with or without steel bars of small diameter called skeletal steel. This work concerns on the behavior of square ferrocement slabs of dimensions (500) mm x (500) mm and 30 mm subjected to a central load. This study includes testing thirteen ferrocement slabs. The main variables considered in the experimental work are the number of wire mesh layers, percentage of silica fume and the presence of steel fiber. The effects of these variables on the behavior and load carrying capacity of tested slabs under central load were investigated. From the experimental results, it is found that by increasing the percentage of silica fume from (0 to 1.5, 3, 4.5 and 6) of weight of cement the ultimate loads are affected. Also From this study, it is observed that the load carrying capacity increases with the presence of steel fiber reinforcement, the ductility is high in the case of steel fibers. The increasing wire mesh layer from six to ten layers increased the load capacity by 76%. Also, a reduction in width of crack with increasing in number of cracks in the samples that content on steel fibers comparing with samples without steel fibers was observed from the results.

Keywords : ferrocement, fibre, silica fume, slab, strength
Conference Title : ICSEVAE 2017 : International Conference on Structural Engineering, Vibration and Aerospace Engineering
Conference Location : San Francisco, United States
Conference Dates : June 07-08, 2017