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Title:

Flexural Behavior of Composite Reinforced Concrete Elements

Abstract:

The main objective of this study is to get more information about the flexural behavior of composite reinforced concrete slabs using two layer of concrete, first layer is light weight concrete (LWC), and second layer is normal weight concrete (NWC), through an experimental tests carried out on several samples different in their dimensions and thickness of (LWC) and (NWC) and position of reinforcement, simply supported slabs subjected to one point load are adopted.

The slabs designed to fail in bending and the behavior of slabs under loading was actually failed in bending stress, and notes that during loading there was not any failed bearing in the supports.

The applied load was increase with constant rate for all slabs up to failure. The first visible cracks observed at the bottom face of slabs at loads ranging from (13.2-36.6) % from the measured load. The strength of normal weight concrete (f_{cu}) was (25 MPa), while the strengths of light weight concrete were (LWC1, LWC2, LWC3) (24, 18, 15MPa) respectively, when (LWC) in compression zone the maximum load was less than when the (NWC) in compression zone, and the crack load appears in different loads and seen that the change in concrete strength did not effect in crack load.

The position of concrete in tension or compression zone and bond between concrete and steel bar reinforcement not largely effected and did not effect on load capacity and crack load.