

عنوان مقاله:

Performance Evaluation of RC T-Beam Sections made with the Common Defects under Flexural Loading

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خلاصه مقاله:

The aim of this paper is to investigate the effects of the construction errors during the implementation of concrete T-beams. The construction errors in concrete structures are classified into two main sections. The first focuses on the position and ratio of reinforcing bars, while the other defects are related to the concrete strength. Tenth specimens of T-beams in experimental study were designated to simulate the possible defects in the field, like the impact of misplacement of slab reinforcement, irregular arrangement of slab reinforcement, the change in bar diameter of slab reinforcement and the effect of casting method of concrete on the structural behavior of T-beam sections. A control beam was cast for comparison and the measurements of various parameters including deflections, strains of reinforcement steel and propagation of cracks were made to evaluate to what extent these practice faults influence the behavior of reinforced concrete (RC) tested specimens. The shape of specimen consisted of beam and slab that was cast monolithically on the shape of character T-section. Thus, slab and beam act together in resisting the applied loads. Results indicated that the faulty placement of slab reinforcement leads to a lower bending moment capacity of the slab (brittle behavior) and the steel strain of slab decreases with the decrease of height of slab reinforcement. The irregularity of the reinforcing bars in concrete slab affected the ultimate load of the slab. Also, it was found that well-arranged distribution of reinforcement improves the ductile behavior of the slab and reduces the corresponding deflections. The minimum bar diameter for the reinforcement of slab is 8mm because the 6mm diameter reinforcement was found to be weak in resistance to the loads. T-beams are more efficient than rectangular beams where part of slab contributes to the resistance of the loads. The harmful effect of casting of slab on the layers led to the reinforcing bars of slab to resist the loading early. The aim of this paper is to investigate the effects of the construction errors during the implementation of concrete T-beams. The construction errors in concrete structures are classified into two main sections. The first focuses on the position and ratio of reinforcing bars, while the other defects are related to the concrete strength. Tenth specimens of T-beams in experimental study were designated to simulate the possible defects in the field, like the impact of ... misplacement of slab reinforcement, irregular arrangement of slab reinforcement, the change in bar diameter of

کلمات کلیدی:

Construction errors, T-beams, Faulty placement, The irregularity, Bar diameter, Harmful effect

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