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Torsional Behavior of Reinforced Concrete (RC) Beams Strengthened by Fiber Reinforced Cementitious Materials– a Review

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Abstract : Reinforced concrete (RC) is commonly used material in the construction sector, due to its low-cost and durability, and allowed the architectures and designers to construct structural members with different shapes and finishing. Usually, RC members are designed to sustain service loads efficiently without any destruction. However, because of the faults in the design phase, overloading, materials deficiencies, and environmental effects, most of the structural elements will require maintenance and repairing over their lifetime. Therefore, strengthening and repair of the deteriorated and/or existing RC structures are much important to extend their life cycle. Various techniques are existing to retrofit and strengthen RC structural elements such as steel plate bonding, external pre-stressing, section enlargement, fiber reinforced polymer (FRP) wrapping, etc. Although these configurations can successfully improve the load bearing capacity of the beams, they are still prone to corrosion damage which results in failure of the strengthened elements. Therefore, many researchers used fiber reinforced cementitious materials due to its low-cost, corrosion resistance, and result in improvement of the tensile and fatigue behaviors. Various types of cementitious materials have been used to strengthen or repair structural elements. This paper has summarized to accumulate data regarding on previously published research papers concerning the torsional behaviors of RC beams strengthened by various types of cementitious materials.

Keywords : reinforced concrete beams, strengthening techniques, cementitious materials, torsional strength, twisting angle
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