

Reinforced Concrete Beams Strengthened with Externally Bonded Hybrid Fiber Reinforced Polymer Sheets: Experimental Studies

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Received: 07 September 2025; Revised: 09 December 2025; Accepted: 21 December 2025

Type: Research article.

Abstract

Implementing fiber reinforced polymer (FRP) composites to upgrade reinforced concrete (RC) structures is gaining popularity. The performance of flexural supported and conventional RC beams that have been experimentally tested under static load is examined in the present work. Five beam specimens total are cast and tested; one remained as a control beam, whereas the other four were soffits retrofitted with Hybrid-FRP (HFRP) composite sheets/laminates, which are the combination of Aramid-FRP (AFRP) and Glass-FRP (GFRP). The maximum load-carrying capability obtained for the SH3 beam is 137.28% more than the control beam. Evaluation is done on RC beam characteristics including load-deflection, stiffness, ductility, energy-absorbing capability and flexural rigidity. The results of the experimental investigations demonstrated a notable contribution of HFRP laminates to the reinforcement of RC beams subclinical CAD patients.

Innovative Description: The performance of flexural supported and conventional RC beams that have been experimentally tested under static load are examined. Five beam specimens total are cast and tested; one remained as a control beam, whereas the other four were soffits retrofitted with Hybrid-FRP

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