

## Evaluation of the Use of U-Wrap Anchorage Systems for Strengthening Concrete Members Reinforced by Fiber Reinforced-Polymer Laminate

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**Abstract :** The anchorage of fibre-reinforced polymer (FRP) sheets is the most effective solution to prevent or delay debonding failure; this system has proven to get better levels of FRP utilization. Unfortunately, the related design information is still unclear. This shortcoming limits the widespread use of the anchorage system. In order to minimize the knowledge gap about the design of U-wrap anchors, this paper reports the results of tested beams which were strengthened with carbon fiber-reinforced polymer (CFRP) sheets at their tension sides and secured with U-wrap anchors at each end of the longitudinal CFRP. The beams were tested under four-point loading until failure. The parameters examined include the compressive strength of the concrete and the number of longitudinal CFRP. It is concluded that these parameters have a considerable effect on the debonding of the strain. The greatest improvement in the strain was 55.8% over the control beam.

**Keywords :** CFRP, concrete strengthening, debonding failure, debonding strain, U-wrap anchor

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