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# FLEXURAL REINFORCEMENT AND SHEAR REINFORCEMENT OF WEAK REINFORCED CONCRETE BEAMS WITH FRP PLATES

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The present study studies the flexural and shear reinforcement of weak reinforced concrete beams with FRP plates. Shear and flexure failures are two major defects in concrete beams. Bending deflection is generally preferred to shear failure because it exhibits a more flexible behavior. Soft defeat provides the ability to play back tensions and gives users and attendees more opportunities to find out the critical situation.

Strengthening of deficit RC flexure elements with FRP results in good strength improvement but at the cost of reduced ductility. Hybrid bonding systems were explored in the past to improve the ductility of FRP strengthened RC members under flexure. Few researchers in the past have investigated the efficiency of hybrid strengthening. It is found that the hybrid FRP strengthening technique can significantly improve the strength and energy dissipation capacity of RC members with low and moderate concrete strength.

In this study, four reinforced beams were amplified with reinforced composites and composites were designed and tested. The reinforced beams have a length of 2000 mm, a height of 230 mm and a width of 230 mm. Longitudinal ganglia with a score of 12 and transverse crossbars with a score of 10 are at a distance of 100 mm. By reviewing and comparing the samples, the maximum carrying capacity of the Beam C (CFRP reinforcement) model was 120.8 kN and 63%, respectively, with the lowest carrying capacity of 55% and 12.8 kN. The Beam C (CFRP reinforcement) model is 120.8 kN. Lowest pressure damage with 20.2 samples Beam-G and the highest compression damage with 26.6% is the Beam A model. Energy absorption in the Beam C model was 36% higher and the Beam A model with the lowest energy absorption of 12%.

Reinforcement of concrete RC members is usually done for various reasons, which can be changed to the type of bearing structural integrity and structural failure in the long run. Strengthening and choosing a type is a challenge because the effectiveness of a different reinforcement design under different loading conditions. The polymer-reinforced concrete member (FRP) behavior can significantly increase the strength and flexibility under axial compression.

However, the external connection efficiency decreases sharply when a member with a flexural load is combined. Therefore, a combination of different reinforcements can be an optimal solution to reinforce concrete structural members under different combinations of axial loads. The reinforcement of RC bending elements using FRP improves and reduces flexibility. FRP composition significantly improves the strength and energy capacity of RC members with low and medium compressive strength resistance (Chvalandian, 2018).

FRP materials can be used to reinforce structures to withstand increased loads due to changes in use or compensation for design and implementation errors. Using FRP mounting in reinforced concrete beam and modeling of reinforced concrete beam without FRP sheet based on bending response (Chalandian, 2018).

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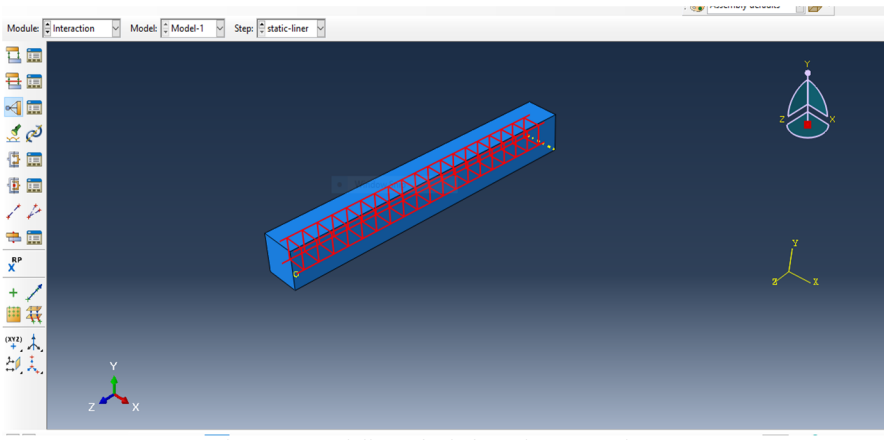


*Figure 1. Modeling of reinforced concrete beam.*

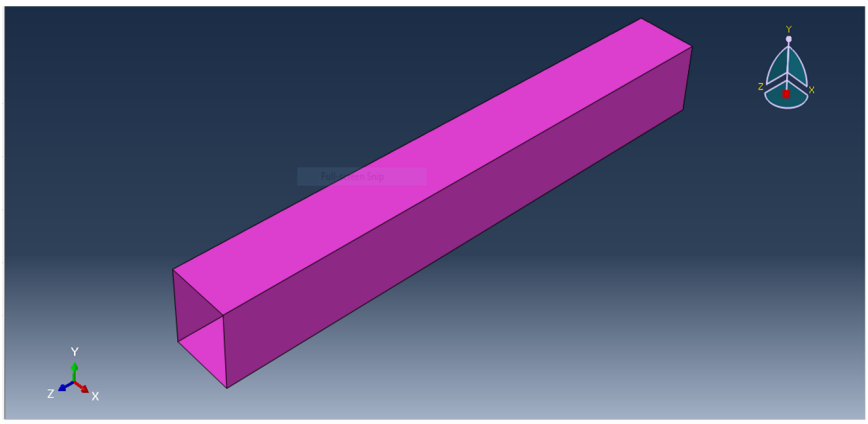

*Figure 2. CFRP sheet.*