

## Using CFRP Sheets and Anchors on Sand-Lightweight Perlite Concrete to Evaluate the Flexural Behaviour of T-Beams

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**Abstract :** This paper evaluates the flexural response of sand-lightweight Perlite concrete using full-scale reinforced concrete T beams strengthened and anchored with carbon fiber reinforced polymer (CFRP) materials. Four specimens were prepared with the same geometry, steel reinforcements, concrete properties, and span lengths. The anchored beams had a similar number of CFRP sheets but were secured utilizing different arrangements of CFRP fiber anchors. That will allow for effective and easily making comparisons to examine the flexural strengthening behavior of sand-lightweight Perlite concrete beams with anchors. The experimental outcomes were also compared with the numerical study and the comparisons were discussed. The test results showed an improvement in flexural behavior due to the use of CFRP sheets and anchors. Interestingly, the anchored beams recorded similar ultimate strength regardless of the number of CFRP fiber anchors used due to the failure by excessive wide cracks in the concrete.

**Keywords :** perlite concrete, CFRP fiber anchors, lightweight concrete, full-scale T-beams

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