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Behavior of glass fiber reinforced polymer (GFRP) wrapped nanomaterial concrete columns**S Senthil Selvan**

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In recent years, the world of science has started to produce new materials and to research their properties with nanotechnology. The use nanotechnology, which is also called molecular production, has become widespread in all branches of science. Nano materials such as nanoparticles, carbon nanotubes and nanofibers offer a potential for developing much stronger, tougher and more durable structural materials for construction sector. The deficiency may be due to change in design standards, improper construction practices (or) adverse environmental conditions. Under such circumstances, adoption of appropriate technique for restoring the structure is coming a challenging task. FRP wraps/laminates have proved to be a better option for the purpose. The main purpose of the investigation was to determine the effect along with varying along with concrete strength of 20 MPa and 30 MPa, on the effectiveness parameter of nanoconcrete columns wrapped with GFRP sheets. The objective of this experimental study is to evaluate the effectiveness of using externally bonded FRP columns. Square columns of size 150×150 mm and of 750 mm length were tested. One column is prepared as ordinary conventional column to serve as reference. The remaining columns were strengthened with GFRP laminates. The specimens were provided with glass fiber reinforced polymer (GFRP) laminates with two different thicknesses. The study parameters included first crack load, deflection at first crack load, yield load, deflection at yield load, service load, deflection at service load, ultimate load and deflection at ultimate load, deflection ductility, energy ductility, curvature ductility and crack width. The associated failure modes for test columns were also examined. The performance of virgin conventional columns and GFRP strengthened nanoconcrete columns were compared.

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