

ABSTRACT

Our research and engineering abilities have evolved over time. Researchers and engineers searched for new and better materials to better control the allocation of production costs in the construction industry during this development process. Many new raw materials and innovative compound have been discovered, but not all compounds have amazing properties. A material that is mixed with additional materials to make a composite material in most circumstances. Due to its chemical resistance, high-temperature resistance, and low thermal expansion, carbon fibre is one of the most common building materials; its strength is five times that of steel.

In Kenya, there is a problem with collapsing buildings. Strengthening columns with CFRP is one method used in retrofitting columns to improve axial capacity and ductility. The procedure for determining the amount of CFRP wrap to use has a literature gap. Recently, there has been an increased use of fibre-reinforced polymer materials for strengthening and structural repair. This is due to the benefits of these composites over traditional materials such as steel. The results of an experiment on the effect of different amounts of CFRP on different types of concrete grades in terms of strengthening are presented in this document. An experiment was carried out on non-slender, square concrete columns to determine the axial gain in load-bearing capacity of CFRP-reinforced columns. Plain specimens of concrete test (150 mm x 150 mm x 350 mm) were used. Three concrete qualities were used: C8/10, C12/15, and C16/20. The test specimens had various CFRP shell configurations, including partial and full inclusion in one and two layers. The test specimens were compressed uniaxially until failure, and the expansion curves were recorded.