

Title :

The effect of fiber concrete on compressive strength of columns confined by FRP

Abstract :

Abstract One of the effective ways to improve performance in column retrofitting is the use of FRP sheets. In the present study, the effect of using single-stranded polypropylene filaments of 12 mm in length and 1.2 kg / cm³ in order to determine the compressive strength was made. In recent years, numerous studies have been carried out on fiber concrete and concrete enclosed with FRP, but the impact of the combination of the above parameters has not been investigated. In this thesis, the effect of fiber concrete on the compressive strength of the enclosed column with FRP is investigated. In the present study, after the mechanical and chemical experiments on all materials in the area, the best concrete mixing plan was selected, then about one cubic meter of concrete was made by a batching machine with half a cubic meter of it produced by polypropylene fibers and the other half without fiber. . Each of them was made up of 24 cylinders with a diameter of 150 mm and a height of 300 mm. The samples were broken under static axial loading and the results were compared using the load-displacement curve. The results showed that the polypropylene fibers in the concrete enclosed by FRP sheets improved the mechanical properties of the concrete, including hardness, compressive strength, final strain of the concrete, and the deformation index, and also delayed the final failure time of the sample.

Keywords :

Reinforcement of columns, fiber concrete, enclosure, failure time, strain stress curve