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HUBLI – 580031

(NBA ACCREDITED & AUTONOMOUS INSTITUTE WITH ISO 9001:2008 CERTIFICATION)

2013-2014



DEPARTMENT OF CIVIL ENGINEERING

A Project Report on

***APPLICATIONS OF GEOPOLYMER IN BUILDING MATERIALS AND
RETROFITTING***

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ABSTRACT

The methods used to manufacture the ceramic tiles involves the burning process which requires high temperature and hence high amount of heat energy and cement is used as a binding material, hence the present study consists of developing low cost energy saving methods without using cement for manufacturing geopolymer tile by using geopolymerization as a new ceramic processing technique. Geopolymer tiles are developed using industrial waste such as fly ash and geopolymer without using cement.

Nowadays fiber reinforced polymers represent a well-established technique for structural retrofit of reinforced concrete structural members. Epoxy resin is widely used in the retrofitting of concrete structure as a binding agent. In the present study an effort is made to replace epoxy resin by geopolymer resin. The present study investigates the effectiveness of fiber reinforced geopolymer-based systems in strengthening of cement concrete cylinders.

Total of 18 concrete cylinders were tested. Test results indicate a significant enhancement in compressive strength of specimens confined with CFRP using Epoxy resin (EP-CFRP). But there was no significant enhancement in compressive strength of specimens confined using Geopolymer resin (GP-CFRP) due to adverse climatic conditions.