Proceedings of the International E-Conference on Novel Innovations and Sustainable Development in Civil Engineering 2020

ISBN	978-93-88122-14-6	VOL	01
Website	www.veltech.edu.in	eMail	nisdce@veltech.edu.in
Received	10-May-2020	Accepted	25-May-2020
Article ID	NISDCE194	eAID	2020.nisdce.194

STATIC AND CYCLIC RESPONSE OF CFRP SHEET BONDED RC BEAM WITH END ANCHORAGE

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ABSTRACT: The Behaviour of reinforced concrete beams strengthened with Carbon Fibre Reinforced Polymer (CFRP) sheet is presented in this paper. The experimental program includes four rectangular cross section beams of size 100*150*1500 mm and manufactured with M30 grade concrete and Fe500 structural steel. Over all four beams, two control and two strengthened beams, were tested under four-point bending. Two beams wrapped with CFRP sheet with end anchorage in U-Shape manner. The reinforced concrete beam has been tested and the performance under static and cyclic loading has been observed. The work carried out has examined the strengthening capacities of RC beams retrofitted with CFRP sheet is larger than the control beam. The influence of CFRP sheets was adequate on increasing the flexural strength of RC beams and the ductility of the beams was reduced. The strength gain caused by CFRP sheet in U-Shape is 12.8% in static load and 7.87% in cyclic load when compared to control beam. Experimental results show that the externally bonded CFRP sheet can increase the shear capacity of the beam significantly along with improving the performance of strengthened RC beams.

Keywords: *CFRP, Ductility, Strengthening, RC beams, Flexural strength, Shear capacity, Static load, Cyclic load*