

ISBN	978-93-88122-14-6
Website	www.veltech.edu.in
Received	10-May-2020
Article ID	NISDCE202

VOL	01
eMail	nisdce@veltech.edu.in
Accepted	25-May-2020
eAID	2020.nisdce.202

## REPAIR AND STRENGTHENING OF RC STRUCTURAL ELEMENT BY DISTRESS UNDER DIFFERENT ENVIRONMENTAL CONDITION

Rexlin Shejoe S<sup>1</sup> Arunraj A<sup>2</sup>

<sup>1</sup> PG student, Easwari Engineering College, Tamil Nadu.

<sup>2</sup> Assistant Professor, Easwari Engineering College, Tamil Nadu.

**ABSTRACT:** Reinforced concrete structural elements are damaged due to various environmental effects which need to be repaired and strengthened by various methods to avoid failure. The present work is an experiment of retrofitting the distressed RC Members by using polyester resin. In this experiment, 8 beams of size with width 100mm, depth 150mm and length of 1500mm was cast and cured for 28 days. Out of 8 beams, 2 beams are control beams and the other 2 beams are loaded up to service load under four-point flexural loading. The micro cracks developed in the beam was repaired using polyester resin with 2% catalyst and 2% accelerator was mixed by bonding technique. The other 2 beams which are loaded up to ultimate load under four-point flexure was repaired using patching and overlaying technique. In this 1.2% catalyst and 1.2% accelerator was used with the polyester resin and resin concrete for cracks and damaged area. The other 2 beams are subjected to corrosion and repaired using polyester resin concrete. After testing the 2 control beam has an flexural strength of about 45KN and the other 2 beams which are repaired using bonding technique is found to be increased in strength by 10 KN and the 2 other beams repaired using patching and overlay are found to be increased in strength by 15 KN than the ultimately loaded beam. The beam with corrosion was repaired by removing the cover concrete of the beam up to the reinforcement level, then cleaned by anticorrosive chemical. Additional reinforcement required was added and tied with the existing reinforcement. Then repaired by polyester resin concrete mix and found to have flexural strength of about 65 KN. This paper presents the mechanical properties of polyester resin repair methods and flexural behavior of control and repaired beams.

**Keywords:** Beam, Concrete, Fly Ash, Polyester Resin, Compressive Strength, Flexural Strength, Repair, Reinforcement, Tension, Steel, Concrete

This paper is prepared exclusively for International E-Conference on Novel Innovations and Sustainable Development in Civil Engineering 2020 which is published by ASDF International, registered in London, United Kingdom under the directions of the Editor-in-Chief Dr E B Perumal Pillai and Editors Dr. M Vinod Kumar and Mr. R. Saravana Kumar. Permission to make digital or hard copies of part or all of this work for personal or classroom use is granted without fee provided that copies are not made or distributed for profit or commercial advantage, and that copies bear this notice and the full citation on the first page. Copyrights for third-party components of this work must be honored. For all other uses, contact the owner/author(s). Copyright Holder can be reached at copy@asdf.international for distribution.

2020 © Reserved by Association of Scientists, Developers and Faculties [www.ASDF.international]