

# Evaluation of maintenance and repair of reinforced concrete structures by FRP sheets

**Meysam Manzari tavakoli, Masoud Lakzadeh\*, Mahdi Mohammadbagheri, Omid Koohsari**

1. Department of Civil Engineering, Faculty of Shahid Chamran Technical and Vocational University
2. Department of Civil Engineering, Faculty of Shahid Chamran Technical and Vocational University
3. Department of Civil Engineering, Student of Shahid Chamran Technical and Vocational University
4. Department of Civil Engineering, Student of Shahid Chamran Technical and Vocational University

## Abstract

In many cases, reinforced concrete structures need repair and repair due to changes in operating loads, user and operation modifications, computational errors, faults and imperfections, and failure to meet design requirements during execution. The Federal Emergency Management Agency (FEMA) for the upgrading of structures has evaluated the methods of rebuilding existing buildings and providing retrofitting methods. It can be noted that reinforcement and retrofitting, bearing more load and eliminating structural weakness. Fiber-reinforced polymer (FRP) is one of the materials used in civil engineering to repair and strengthen the structure. FRPs are durable, durable, lightweight materials, and the relatively thin thickness of these sheets makes them more efficient and easy to use. Among the weaknesses of these sheets are short life and fire resistance and weakness against stresses. This paper reviews the methods of maintenance of concrete structures by FRP fibers according to the standards defined by the Federal Emergency Management Agency (FEMA).

**Key words:** refurbishment, concrete structures, maintenance, FRP.

## 1. Introduction

Reinforced concrete structures are considered to be of great interest in Iran. These structures need to be maintained in order to overcome time and performance problems. One of the newly considered maintenance methods is the use of FRP fibers.

Bending, cutting and twisting is one of the most important advantages of FRP. Concrete pillars are retrofitted with the help of maintenance techniques to prevent effective breakdowns over time. In general, refurbishment is done with the help of steel members. The major weakness of steel members, non-resistance to moisture and corrosion are among the reasons that lead us to use newer materials for retrofitting. Although the cost of using steel materials is somewhat low, maintenance and implementation costs are not cost-effective. A more practical solution for the maintenance and repair of concrete structures is