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## Behavior of FRP sheet-concrete bond in high strength concrete samples

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Abstract. The main goal of the present work is to investigate the effect of concrete compressive strength on the behavior of FRP sheet-concrete bond. For this purpose, a model of single shear test was selected and modeled using ANSYS program to study the "FRP-concrete bond". The formulated model was used in the analysis process and it gave results of good correspond with the available actual test results. It was found that the increasing in concrete strength leads to increasing in the bond capacity and the greater concrete strength the better utility of the FRP sheet. All studied models were failed in the same way by debonding the FRP sheet due to concrete failure.

Keywords: High strength concrete, FRP sheet-concrete bond, bond capacity, FEM, Single shear test.

## 1. Introduction

The 'FRP sheet-concrete bond " is an affair that is in need to discuss. The bond function is to transfer the stress between concrete and FRP to develop working of composite. The externally reinforcing structural element successes due to the totality of the bond occurs between the surface of concrete and FRP material. The primary considerations that need to achieve a good bonding include epoxy quality, surface preparation, and application of laminate. Although, the efficient bond depends mainly on the work quality and less on the material quality.

Design contra debonding failure is the most important point in the field of using FRP plates or sheets in strengthening structures. "There are various debonding failure modes such as separation of cover, debonding of plate, interfacial debonding, intermediate flexural crack formed interfacial debonding, and

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