THE STUDY OF BOND STRENGTH OF REINFORCED CONCRETE STRUCTURES ON SEVERE ENVIRONMENT

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ABSTRACT

Reinforced concrete is a composite material made up of two components with unequal mechanical behavior and physical features. It depends on the combined action of the concrete and the embedded reinforcement for satisfactory operation as a construction material. This action is produced by the interaction between both of its components, plain concrete and reinforcing bars. In, general, the external load is applied to concrete and to the reinforcing bars receive its part of the load only from the surrounding concrete by bond. So, bond stress is the shear stress acting parallel to an embedded bar on the surface between the bar and the concrete.
The aim of this research is to investigate the behavior of concrete characteristic on severe environment, and the bond strength of steel reinforcement with two different treatments. The concrete compressive strength is taken to be 35 MPa, as recommended on standards. The test commenced are compressive test and bond strength test.
The concrete compressive strength, (f'c) have met the criteria, since the average compressive strength obtained from the test are above 35 MPa. The concrete quality control has a poor quality control, which has coefficient of variation 10.99% against ACI 214R-11 requirement. The bond strength using painted reinforcement shows the relatively good performance rather than using waterproofed concrete and the bond strength using waterproofed concrete shows relatively flat performance. With the point of view of practical aspect, the waterproofed concrete seems to be more practical rather than painted reinforcement.

Kata Kunci: *reinforced concrete, severe environment, bond strength*