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INVESTIGATION ON ANCHORAGE BOND STRENGTH OF REINFORCING BARS WITH L - BENDS EMBEDDED IN GEOPOLYMER CONCRETE

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Abstract

Geopolymer concrete has been investigated thoroughly in recent times with respect to mechanical strength properties throughout the world. However, that is related to structural behavior of these concretes which needs to be taken up urgently in order to make them acceptable in field applications by practicing engineers. In this regard, studies related to bond strength of reinforcing bars with concrete is of great significant. The attainment of satisfactory performance in bond, when efficiently developed enables the concrete and steel to form composite structure which is the most important aim of reinforcement in RCC structural members. Bond stress in RC members arises due to anchorage of bars in Tension or Compression; anchorage bond problem is merely of determining of the length of embedment required to resist the withdrawal of reinforcing bars. Earlier investigations in GPCs for straight bars had proved that GPCs perform better than conventional concretes in case of bond. Hence, in the present study it deals about the experimental and numerical work relating to the finite element modeling using ANSYS version 15.0 to correlate the anchorage bond strength of L-bends/ 90° bends with that straight bar in geopolymer concrete cubes using Pull out test as per Indian codal provision IS 2770:1967. Standard test specimens with respect to compressive strengths were casted and tensile strength of the rod has been found out for using the data to model in ANSYS version 15.0 and the model developed is validated with experimental data of straight bars and L-bends on geopolymer concrete.

Author Keywords

Geopolymer Concrete, Anchorage Bond, Straight Bars and L-Bend/90° Bend, Pull Out Test

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