

Predictive Models for Compressive Strength of High Performance Fly Ash Cement Concrete for Pavements

Authors : S. M. Gupta, Vanita Aggarwal, Som Nath Sachdeva

Abstract : The work reported through this paper is an experimental work conducted on High Performance Concrete (HPC) with super plasticizer with the aim to develop some models suitable for prediction of compressive strength of HPC mixes. In this study, the effect of varying proportions of fly ash (0% to 50% at 10% increment) on compressive strength of high performance concrete has been evaluated. The mix designs studied were M30, M40 and M50 to compare the effect of fly ash addition on the properties of these concrete mixes. In all eighteen concrete mixes have been designed, three as conventional concretes for three grades under discussion and fifteen as HPC with fly ash with varying percentages of fly ash. The concrete mix designing has been done in accordance with Indian standard recommended guidelines i.e. IS: 10262. All the concrete mixes have been studied in terms of compressive strength at 7 days, 28 days, 90 days and 365 days. All the materials used have been kept same throughout the study to get a perfect comparison of values of results. The models for compressive strength prediction have been developed using Linear Regression method (LR), Artificial Neural Network (ANN) and Leave One Out Validation (LOOV) methods.

Keywords : high performance concrete, fly ash, concrete mixes, compressive strength, strength prediction models, linear regression, ANN

Conference Title : ICCTE 2014 : International Conference on Civil and Transport Engineering

Conference Location : Miami, United States

Conference Dates : March 10-11, 2014