

STUDY ON DEVELOPMENT AND LONG TERM BEHAVIOUR OF GREEN CONCRETE WITH WASTE INDUSTRIAL BY-PRODUCTS

**A Thesis Submitted to
Babu Banarasi Das University
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in

Civil Engineering

by

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Under the Supervision of

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June, 2015

ANNEXURE II

CERTIFICATE

This is to certify that the thesis, entitled **THESIS ON DEVELOPMENT AND LONG TERM BEHAVIOUR OF GREEN CONCRETE WITH WASTE INDUSTRIAL PRODUCTS** submitted by Nakul Gupta for the award of Degree of Doctor Philosophy by Babu Banarasi Das University, Lucknow is a record of authentic work carried out by him under my supervision. To the best of my knowledge, the matter embodied in this thesis is the original work of the candidate and has not been submitted elsewhere for the award of any other degree or diploma.

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ANNEXURE I

DECLARATION BY THE CANDIDATE

I, hereby, declare that the work presented in this thesis, entitled **STUDY ON THESIS ON DEVELOPMENT AND LONG TERM BEHAVIOUR OF GREEN CONCRETE WITH WASTE INDUSTRIAL BY-PRODUCTS** in fulfillment of the requirements for the award of Degree of Doctor of Philosophy of Babu Banarasi Das University, Lucknow is an authentic record of my own research work carried out under the supervision of Dr. Pradeep Kumar, Associate professor, H.B.T.I., Kanpur. I also declare that the work embodied in the present thesis is my original work and has not been submitted by me for any other Degree or Diploma of any university or institution.

Date Name & Signature of the candidate

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PREFACE

Cement is very valuable commodity as it can be used to construct structurally sound buildings and infrastructure. The main environmental concern in the production of cement and concrete is the energy consumption. The total production of cement in the world is 1.6 billion tons which produces 7% of the total carbon dioxide transferred to the atmosphere. In developing countries like India Fly Ash, Brick Dust and Rice Husk Ash- a material naturally high in silica- can be used as supplementary cementitious material and can substitute a portion of Portland cement in concrete without sacrificing its compressive strength. This study investigates the use of Fly Ash from Reliance power plant Rosa, Uttar Pradesh, Rice Husk Ash and Brick Dust from Lucknow Division in 5, 10, 15, 20, 25, 30, 35 and 40% replacement of Portland cement by mass in concrete. A 40% replacement of Fly Ash, Brick Dust and Rice Husk Ash was deemed as appropriate and can be used in the construction work. Rice Husk Concrete and Brick Dust Concrete was found out to be 7% cheaper as compared with Fly Ash concrete in case of construction done in Lucknow division.

List of Research Paper

1. Characterization and Application of Brick Dust as a Pozzolanic Material in Concrete. (In VSRD International Journal Vol-4 Issue 6, June -2014).
2. Characterization and Application of Rice Husk Ash as a Pozzolanic Material in Concrete. (In IOSR-JMCE International Journal Vol-12 Issue 3, Ver.1, May-June -2014).

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