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A Project Report on

"PERFORMANCE STUDY OF GEOPOLYMER COMPRESSED BLOCKS AND PRE-FABRICATED STRUCTURAL ELEMENTS"

Submitted in partial fulfillment of the requirements for the award of

BACHELOR OF ENGINEERING IN CIVIL ENGINEERING

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ABSTRACT

Geopolymer, an inorganic alumina silicate polymer is synthesized predominantly from silicon and aluminum materials or from by product materials like fly ash and GGBS. The application of geopolymer technology substantially reduces the CO_2 emissions by the cement industries and utilizes the waste materials such as fly ash. In this project a study has been carried out on manufacturing of geopolymer binder based compressed blocks using fly ash, GGBS and quarry dust as fine aggregate. A mixture of sodium hydroxide and sodium silicate were used to prepare the blocks which were cured at ambient temperature. Preliminary studied was carried out in the laboratory by casting small cubes of different ratios of binders, and the best mix ratio was chosen for actual casting of the compressed blocks in an industrial site. The Physical properties of the blocks were found by carrying out compression test, water absorption and acid resistance test.

This project also covers the material and the mixture proportions, the manufacturing process, the fresh and hardened state characteristics, the influence of various parameters on the fresh and hardened state of geopolymer concrete, the utilization of the material in structural members, and the long-term behaviour.