TECHNO-ECONOMICAL STUDY ON PLASTIC WASTE AND RUBBER WASTE IN CONCRETE

M.Tech Dissertation Phase - II

Submitted in

Partial fulfillment of the requirements

For the degree of

MASTERS OF TECHNOLOGY

In

Construction Project Management

By

PATEL KEYUR J

180305216012

Under the supervision of

Dr. Jayeshkumar R. Pitroda

Prof. Sumit Phugat

April- 2020

DEPARTMENT OF CIVIL ENGINEERING

PARUL INSTITUTE OF TECHNOLOGY

FACULTY OF ENGINEERING& TECHNOLOGY

PARUL UNIVERSITY

P.O. Limda – 391 760, GUJARAT, INDIA

ABSTRACT

The rapid Urbanization and Industrialization all over the world has resulted in large deposition of Plastic waste and Waste Tyre Rubber. This waste can be utilized under proper condition to reduce the Cement content in Concrete. M30 concrete is used for most of the constructional works. The strength of this concrete results has compared with concrete obtained of Plastic waste and Waste Tyre Rubber. Experimental investigations comprised of testing physical requirements of coarse aggregates, fine aggregates, cement and the modifier waste plastic and waste tyre rubber.

In this paper low density poly ethylene (LDPE) granules used as replacement for coarse aggregate for producing concrete cubes and cylinders has been investigated and reported. LDPE based concrete cubes and cylinders were cast manually and the strength of the test concrete in terms of compression were experimentally evaluated. It is found that the strength of plastic replaced concrete in terms of compression can be comparable with the conventional concrete.

The present study is aimed at concrete mix with partial replacement of coarse aggregate by LDPE granules (0%, 10% and 20%) that will provide an advantage in reducing the dead weight of structure. This mix in the form of cubes and cylinders were subjected to compression and split tension to ascertain the strength parameter.

Hence the use of Rubber tyre and plastic granules in concrete making is not only beneficial but also helpful in disposal of plastic wastes.