**Republic of Iraq**

**Ministry of Higher Education and Scientific Research**

**University of Technology**

**Building and Construction Engineering Department**

**Highway and Bridges Engineering Branch**

**SOFT SOIL IMPROVEMENT USING RECYCLED PLASTIC FIBER**

**ANNUAL PROJECT SUBMITTED TO THE BUILDING AND CONSTRUCTION**

**ENGINEERING DEPARTMENT OF THE UNIVERSITY OF TECHNOLOGY IN PARTIALFULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF BSc. OF SCIENCE INBUILDING AND CONSTRUCTION ENGINEERING**

**(GEOTECHNICAL ENGINEERING)**

**Submittedby:**

**AbdulazizSaadAbdulaziz**

**Supervised by:**

**Asst. Prof. Dr. Nahla M. Salim**

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**Abstract**

Executions of civil engineering structures on soft to very soft soil are usually associated with difficulties. There are two main problems encountered when undertaking construction in soft soil deposits, excessive settlement and low shear strength. Soil improvement and stabilization are the keys for these problems.

The amount of wastes has increased year by year and the disposal becomes a serious problem. Particularly, recycling ratio of the plastic wastes in life and industry is low and many of them have been reclaimed for the reason of unsuitable ones for incineration. It is necessary to utilize the wastes effectively with technical development in each field.

This study presents a simple way of recycling plastic waste in the field of civil engineering as reinforcing material. Reinforced soil construction is an efficient and reliable technique for improving the strength and stability of soils. The technique is used in a variety of applications, ranging from retaining structures and embankments to subgrade stabilization beneath footings and pavements.

Three percentages (1.5, 3 and 5%) of recycled plastic fiber were added to soft clay soils. The specific gravity and liquid limit were decreased while the plastic limit increased with increase of additive. Also, the optimum moisture content and the dry unit weight are decreases because the soil became stiff with increasing the additive in the soil. From the consolidation results, it was found that, the compression and swelling indices were marked low values in soil containing plastic fiber. Finally, the increase of plastic fiber percentage in the soil has caused an increase in the shear strength due to increase in friction angle.