

## **EXPERIMENTAL AND NUMERICAL INVESTIGATION OF GEOSYNTHETIC REINFORMED CONCRETE STRUCTURE**

Geosynthetics are synthetic products generally used to stabilize terrain and are also widely used to resolve civil engineering problems. Most applications of geosynthetics are in civil, marine, transportation, geotechnical, environmental, hydraulics and other development engineering such as roads, railroads, embankments, canals, retaining walls etc. In this project, focusing on the use of two geosynthetic materials, geogrid and geonet.

The aim of the present study is to investigate the use of geogrid and geonet as a strengthening material to reinforced structure like beams and slabs. The purpose of this study is to reducing the utilization of steel in this rapidly developing world by introducing smart materials such as geogrid and geonet as the reinforcement which can be durable without compensating its strength.

This experimental study presents the impact and flexural behaviors of reinforced concrete structure like slabs and beams with geosynthetic as an additional reinforcement. Ordinary Portland cement of 53 grade used in this experiment. M-sand or natural fine aggregate passing through the sieve size of 4.75 mm and Locally available crushed coarse aggregate of size 12.5mm is used.

The experimental program contains testing of RC slab and beams strengthened with different types of geo-grid and reducing the percentage of steel reinforcement. The geogrids RC slabs and beams tested under impact and tensile loading. The impact behaviors in terms of energy absorption measured experimentally and utilized to compare with results of Finite element Analysis (FEA) carried out in ABAQUS Software. A Finite element model (FEM) has been developed using ABAQUS program to analyze the tensile behaviors of tested slabs and beams, then the experimental and theoretical results are compared.