

EVALUATION OF TRIAXIAL GEOGRIDS FOR REDUCTION OF BASE THICKNESS IN FLEXIBLE PAVEMENTS

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ABSTRACT

An experimental program to assess performance of a triaxial geogrid-reinforced flexible pavement was carried out. Various laboratory tests were conducted using a steel cylindrical mold with dimensions of 1.8 m (6 ft) in diameter and 2.1 m (7 ft) in height. The studied reinforced and unreinforced (without geogrid) sections consisted of a locally-obtained subgrade with a minimum thickness of 1.5 m (5 ft) and an asphaltic surface course of 76 mm (3 in). The base thickness of both sections was kept constant at 406 mm (16 in). An hydraulic actuator provided 40 kN (9 kip) sinusoidal vertical load through a 305 mm (12 in) circular steel plate at a frequency of 0.77 Hz. The instrumentations include pressure cells, foil strain gauges, LVDT and a data acquisition system. A Triaxial type geogrid was placed in the mid-depth of aggregate base course. Performance of geogrid-reinforced section was compared with that of unreinforced section. Test results revealed that addition of geogrid reduced surface deflection. In addition, it decreased the vertical stresses experienced in base aggregate and subgrade layers.