



Concept Paper
On

Geosynthetics

Conference on Geosynthetics: Opportunities & Challenges
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Introduction:

Geotextiles are permeable textile materials applied in geotechnical applications, as an integral part of the structure. International experience in the application of geotextiles is more than five decades old. In India, the Science is only a few years old, although academic and research activity started decades ago. In fact, the earliest reference dates back to 1933 of the experiments undertaken by Indian Jute Mills Association wherein a bitumanised jute cloth was used for road surfacing. Around 1940, an experiment on using cotton fabric for road construction has also been reported. Bitumanised Hessian was also reportedly used as portable Aircraft runway in India during 2nd World War. Geotextiles made from manmade fibres were reported to have been used for the first time in 1953 in Netherlands for flood control. However, it is the use of manmade fibre fabrics in highways that stimulates the use of manmade fibre fabrics for civil/engineering purposes.

In the initial years, the textile manufacture for other purposes were used for geotech applications and can be termed as first generation of geotextiles. The second generations were made by manufacturers to suit geotechnical requirements using the established manufacturing technology and the third generation of geotextile comprises textile materials and composites designed and developed specifically for geotech applications. Geotextiles have proven to be the most versatile and cost effective ground modification materials.

Functions and Advantages of Geotextiles:

In the formative years while available carpets/sackings were used for the purpose, the application gradually grew to specially engineered fabrics for performing specific functions and in recent years, specially structured materials like geonets, geomats and geocomposites are increasingly being used. These may be made by either synthetic fibres or natural fibres. Soil has certain drawbacks when used as basis for building any structures; soil can only absorb tensile/shear forces to a limited extent; it is also easily deformable under the effect of water flow and shifts under a hydraulic/dynamic load because it has insufficient structural stability. This is why even our ancestors used straw, wood, etc. to stabilize the soil to assist in reinforcement, filtration and drainage applications.