

Use of Geosynthetic in Road Construction

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Abstract: Geosynthetic materials primarily made of various polymers provide excellent durability and have been increasingly used in civil and transportation infrastructure projects. The authors described an overview of the various geosynthetic materials, brief details on manufacturing processes, and various application areas in infrastructure works. Four infrastructure case studies using different geosynthetic materials including geocells, geotextiles, geofoam, geofibers, and others are described to explain the role of these materials in enhancing the performance of transportation and civil infrastructure including pavements, bridge approach slabs, dams, and embankments. The relevant material properties and design methodologies applied are also described in these case studies. Overall, it can be mentioned that geosynthetic polymeric materials and their durable performance characteristics make them excellent materials for the construction and renovation of civil infrastructure works. Sustainability and life cycle cost studies will provide more insights into these materials and how they can reduce maintenance costs in the longer design life periods. Geosynthetics are synthetic products used to stabilize terrain. They are generally polymeric products used to solve civil engineering problems. This includes eight main product categories: geotextiles, geogrids, geonets, geomembranes, geosynthetic clay liners, geofoam, geocells and geocomposites. The geosynthetics are one of the popular and major reinforcement materials in civil engineering construction practices. Geosynthetics are known for offering economical, technically efficient, and environmentally friendly solutions for complex problems. The effective utilization of geosynthetics in civil engineering practice depends on fundamental aspects of the reinforcement material. The present chapter provides a brief overview of the geosynthetics including different categories, properties, and functions of geosynthetics. Further, the evolution, applications, and reinforcement mechanisms of cellular confinement systems have been described.

Keywords: Geosynthetic

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