



PhD Project

Project Details	
Project Title	Development of multifunctional structural geotextiles using Textile wastes and hybrid fabrics
Project Summary	<p>Geosynthetic fabrics and fibers are used in a wide variety of transportation applications. Traditional geosynthetic fabrics are engineered with specific performance applications but with a relatively high material cost. Apparel and home textile wastes are routinely landfilled, representing a large waste stream that is increasing in volume; this waste stream is a potential feedstock that could improve the sustainability and reduce the cost of geotextiles/geosynthetics for a wide variety of transportation applications. This research suggests that recycled textiles may have a place for use in some engineering applications where new geotextiles or geosynthetics are traditionally used. Potentially, this waste stream could be a feedstock that could improve the sustainability and reduce the cost of geotextiles/geosynthetics for a wide variety of transportation infrastructure applications. This project seeks to show how geosynthetics are a solution to building sustainable civil, geotechnical and environmental infrastructure projects. A wealth of 3D textile structures is available for a broad range of geotechnical applications. An understanding of the dynamic interaction between the 3D textile structure and the geotechnical environment is essential in the design and selection of textile materials for geotextile applications. Multilayer solid structures and hollow structures such as 3D spacer and 3D honeycombs of different cell geometry are introduced as examples of this understanding while demonstrating their potential as multifunctional structural geotextiles. This research explores by reviewing a new way of joining geotextiles with novel 3D structures and stitch bonding technology and by examining the implication of emerging superabsorbent fibre for the next generation of geotextiles.</p>

PhD Supervisors			
Role	Faculty	Academic Unit in IITD	Email ID
Supervisor 1	Prof. B K Behera	Textile and Fiber Engineering	behera@textile.iitd.ac.in
Supervisor 2	Prof. G V Ramana	Civil Engineering	ramana@civil.iitd.ac.in

Project requirements (Student qualifications, experience required, etc)

- M. Tech. Textile/Civil/Polymer/Mechanical Engineering

Source of funding (IRD/FITT Project details, if any)

IRD Project

Role of Faculty Members involved:

Supervisors