

# Geocell – Cellular Confinement System

## Description



A 3D cellular confinement system is a honeycomb geocell structure created by the 3D interaction of soil, cell walls and geometry. Geocell cellular confinement system maintains soil compaction, thereby increasing the structural strength of the infill and pavement layer. The key geocell reinforcement mechanisms are lateral and vertical cellular confinement, beam effect and improved load distribution. When the confined soil within a geocell is subjected to loading, it causes lateral stresses on the cell walls. The 3D zone of cellular confinement reduces the lateral movement of soil particles while vertical loading on the contained infill results in high lateral stress and resistance on the cell-soil interface.

The high-strength geocell mattress, acts as a flexible beam, which reduces stress and settlement. In addition cellular confinement increases the elastic modulus values of granular infill materials, particularly marginal fill, such as fine granular soils and recycled materials.

## Benefits

**Key Advantages** – high elastic stiffness, low creep, high tensile strength

### Improved Load Distribution

- 80% less rutting
- 70% saving in granular infill
- Enable use of marginal soil for infill

### x5 Improvement in Asphalt Layer

- 35% less asphalt
- 35% savings in base/subbase layers
- Enables use of RAP for infill

### Improved Modulus of Adjacent Layers – x7.6 Jump

- transfers vertical forces to hoop stresses and by passive resistance.

**Proven Results** – supported by 55 published papers.

## Applications

- Road Base Reinforcement
- Railway Track Reinforcement
- Heavy Loads Platforms Stabilization
- Slope and channel erosion protection
- Earth stabilization and retaining walls
- Landfill & Reservoir geo-membrane protection