# Geocells in Road Construction

Innovative Technology for Stability and Extended Infrastructure Lifespan

Definition, Structure, and Applications of Geocells in Civil Engineering Projects

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# Technical Specifications of Geocells

**Material**

Polypropylene (PP) 97-99%

**Recycled Material Percentage**

100%

**Dimensions**

58 × 58 × H3 cm

**Empty Volume**

91%

**Empty Surface**

64%

**Storage Capacity**

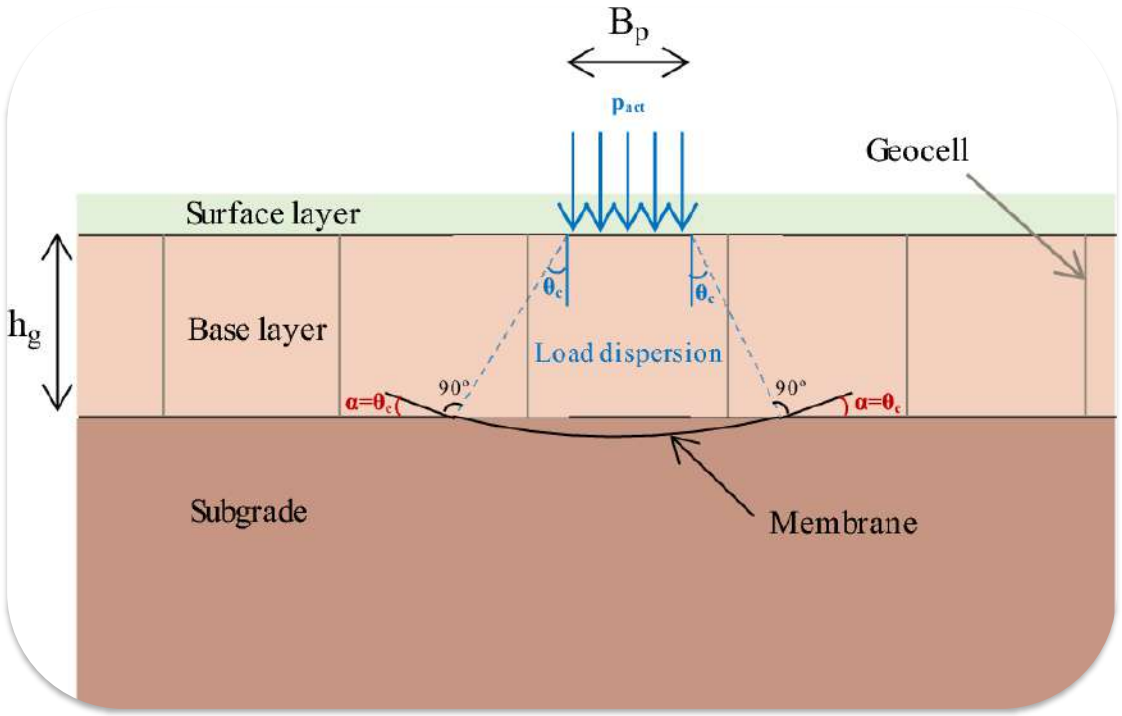
27.6 liters/m²

**Drainage Capacity**

4 liters/sec/m²

**Breaking Load**

95 tons/m²



# Functions and Benefits of Geocells in Road Construction

### Soil Stability

Creates 3D network to improve soil stability and prevent settlement

### Prevents Lateral Erosion

Resists erosion from rainfall and surface runoff

### Uniform Load Distribution

Reduces localized pressure and extends road lifespan

### Roadbed Reinforcement

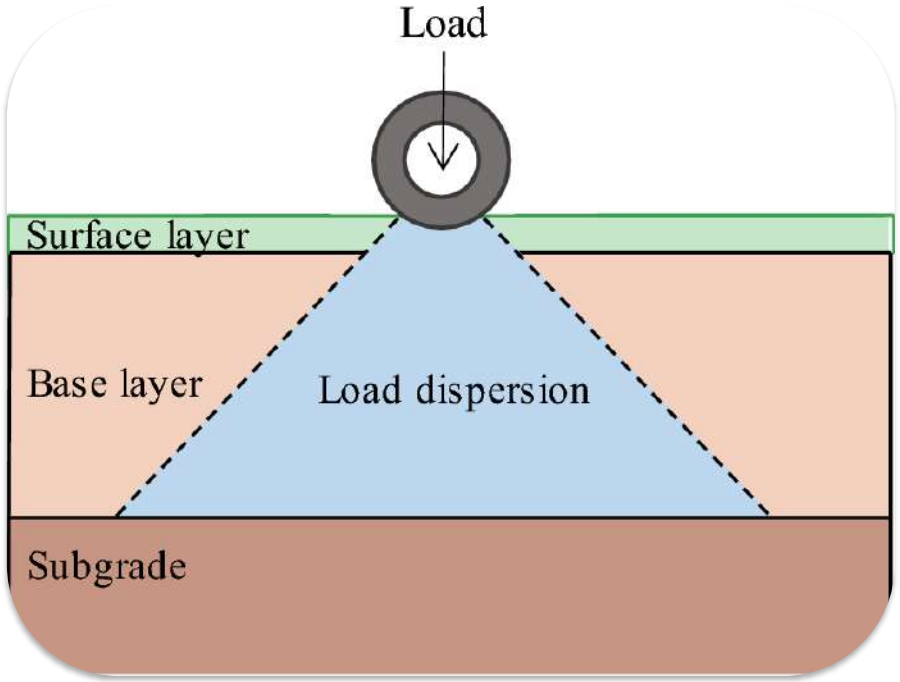
Increases load-bearing capacity and prevents cracking

### Slope Protection

Prevents landslides in mountainous routes

### Cost Savings

Reduces sub-base thickness and maintenance needs

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# Installation Process of Geocells

1. **Surface Preparation**

   Level and clean the road surface for geocell installation

2. **Geocell Expansion & Anchoring**

   Expand geocell on surface and secure with anchor pins

3. **Cell Filling**

   Fill geocell cells with gravel, sand or concrete materials

4. **Compaction & Final Preparation**

   Use roller for material compaction and surface preparation

Geocell installation at road construction project site

# Case Studies of Geocell Applications in Road Construction

## GEOWEB Load Support System

**Heavy-Duty Truck Parking - Guatemala**

Solved soft soil and flooding issues at a beverage distribution center

✓ **Increased surface stability and reduced maintenance needs**

## Unpaved Access Road

**Power Transmission Infrastructure - Canada**

Built stable access road to support transmission line and substation

✓ **Reduced sub-base thickness and lowered implementation costs**

## Paved Road Subgrade Stabilization

**Powderly, Texas, USA**

Complete reconstruction of distressed asphalt road with severe cracking

✓ **Extended road lifespan and reduced need for periodic maintenance**

## Roadbase Stabilization with Heavy Traffic

**Cold Lake, Alberta, Canada**


Road reconstruction project using geocell technology

# Conclusion and Recommendations

## Key Points

- Increased stability and road lifespan
- Reduced sub-base layer thickness
- Resistance to erosion and landslides
- Cost savings in implementation

## Recommendations

- Use in areas with soft or swampy soil
- Application in high-traffic roadways
- Suitable for mountainous and sloped roads
- Use in large infrastructure projects

## Competitive Advantage

Geocells offer an innovative and sustainable solution for extending infrastructure lifespan while reducing maintenance and repair costs.