Tensar Geocell Mattress System offers many practical applications and solutions to construction on weak and difficult soils

Road and motorway embankments over weak and wet ground

- Proven application of a Tensar Geocell to stabilise and drain the base of an embankment (Kaposmero, Hungary)

Embankments over weak substructures with high levels of ground water

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Commercial units constructed on variable ground and waste deposits

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Tensar Technology - proven practical solutions and the know-how to get them built

Tensar systems are based on Tensar Technology and the proven performance of Tensar geogrids. Tensar Technology is widely adopted for ground stabilisation problems and reinforced soil structures, delivering not savings in cost and time. We can help you apply Tensar Technology to deliver the best value on your project.

The Tensar Geocell Mattress System has been used successfully in embankment foundation applications since it was introduced in 1983. A continuous open cellular structure, the Tensar Geocell Mattress System is typically 1m thick, comprising Tensar uniaxial and biaxial geogrids.

3 major benefits when using Tensar Geocell Mattress System

1. The Tensar Geocell Mattress System provides initial construction access onto soft soils and rapid to assemble. Once Roled onto the working platform it provides a stable foundation for the embankment allowing even and controlled settlement.

2. The Tensar Geocell Mattress System intersects potential failure planes. The rigidity of the Tensar Geocell Mattress System forces the planes deeper into the firm strata below. The critical failure mechanism then becomes that of plastic failure of the soft layer and this stability can be improved.

3. The rough interface at the base of a Tensar Geocell Mattress System reduces lateral spread and also enhances mobilisation of the maximum shear capacity of the foundation soil further increasing stability.

The right choice for rapid construction and faster consolidation

Working and practical advantages of Tensar Geocell Mattress System can:

- Provide stability of the foundation without the need for piles or other ground improvement measures
- Allow safe access to site and the forming of a working platform
- Avoid excavation and replacement of the soft soil
- Prevent loss of drainage fill into the weak foundation
- Provide even and controlled settlement
- Allow faster consolidation
- Accommodate vertical band (wick) drain installation if consolidation needs to be further accelerated

Railway Embankment, Senkvice, Slovakia

The ability of the Tensar Geocell Mattress System to control differential settlement and achieve rapid consolidation has been demonstrated in a railway embankment (reported by Jenner et al, ref. The use of cellular geocell mattresses as the foundation of road and rail embankments, Proceedings of the Geotechnical Engineering Congress, 24-27 June 2008. IHS BRE Press, 2008). Instrumentation demonstrated that settlement was even and consolidation rapid. The Tensar Geocell Mattress System resulted in just 30% of the calculated settlement value that was predicted without the geocell.
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3 major benefits when using Tensar Geocell Mattress System

**Rapid Construction**

1. The Tensar Geocell Mattress System can provide initial construction access onto soft sites and rapid site assembly. Once built with a stiff platform that provides a differential foundation for the embankment allowing even and controlled settlement.

2. Increase foundation stability allowing controlled settlement

3. The right choice for rapid construction and faster consolidation

The Tensar Geocell Mattress System provides the following advantages when used as the foundation of embankments:

- Provides stability of the foundation without the need for piles or other ground improvement measures
- Allows safe access to site and the forming of a working platform
- Avoids excavation and replacement of the soft soil
- Prevents loss of drainage fill into the weak foundation
- Provides even and controlled settlement
- Allows faster consolidation
- Accommodates vertical band (wick) drain installation if consolidation needs to be further accelerated

**Rigidity and Increase Stability**

1. The Tensar Geocell Mattress System intersects potential failure planes. The rigidity of the Tensar Geocell Mattress System forces the planes deeper into the firm strata below. The critical failure mechanism then becomes that of plastic failure of the soft layer and the stability can be improved.

2. Improved stability

3. The rough interface at the base of a Tensar Geocell Mattress System reduces lateral spread and also ensures mobilisation of the maximum shear strength capacity of the foundation soil. Further increasing stability.

3 Diagrams showing the application of Tensar Geocell Mattress System

**Railway Embankment, Senkvice, Slovakia**

The Tensar Geocell Mattress System has provided the following advantages when used as the foundation of embankments:

- Reduced lateral spread
- Increased foundation stability
- Avoided excavation and replacement of the soft soil
- Prevented loss of drainage fill into the weak foundation
- Provided even and controlled settlement
- Accommodated vertical band (wick) drain installation if consolidation needs to be further accelerated

**Railway Embankment, Senkvice, Slovakia**

The Tensar Geocell Mattress System has provided the following advantages when used as the foundation of embankments:

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The Tensar Geocell Mattress System has been used successfully in embankment foundation applications since it was introduced in 1983. A continuous open cellular structure, this Tensar Geocell Mattress System is specially the first, comprising Tensar uniaxial and biaxial geogrids.

3 major benefits when using Tensar Geocell Mattress System

- Increased foundation stability allowing controlled settlement
- The right choice for rapid construction and faster consolidation
- Reduce lateral spread

**Rapid Construction**

1. The Tensar Geocell Mattress System can provide initial construction access onto soft sites and rapid to assemble. Once fill soft material is placed onto the Tensar Geocell Mattress System platform that provides a stable foundation for the embankment allowing even and controlled settlement.

2. The Tensar Geocell Mattress System intersects potential failure planes. The rigidity of the Tensar Geocell Mattress System forces the planes deeper into the firm strata below. The critical failure mechanism then becomes that of plastic failure of the soft layer and this stability can be improved.

3. The rough interface at the base of a Tensar Geocell Mattress System reduces lateral spread and also ensures mobilisation of the maximum shear capacity of the foundation soil. Further increasing stability.

**Improved and Increased Stability**

4. The Tensar Geocell Mattress System includesd biaxial spreaded and also ensures mobilisation of the maximum shear capacity of the foundation soil. Further increasing stability.

**Reduced Lateral Spread**

5. The rough interface at the base of a Tensar Geocell Mattress System reduces lateral spread and also ensures mobilisation of the maximum shear capacity of the foundation soil. Further increasing stability.

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Instrumentation demonstrated that settlement was even and consolidation rapid. The Tensar Geocell Mattress System resulted in just 30% of the calculated settlement value that was predicted without the geocell.

Comparison of actual settlement measured with the Tensar Geocell and the calculated settlement predicted without the Geocell.
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- Proven application of a Tensar Geocell Mattress System controlling differential settlement when building over landfill (Elstow, UK)

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- Tensar TriAx™ Geogrid performance and specification notes
- Tensar Earth Retaining System brochure
- Tensar Foundations over Piles brochure
- Basal Reinforcement brochure
- Roadside Reinforcement brochure
- Appoyh Pavement brochures
- Basal Reinforcement brochure

Tensar Geocell Mattress System

Tensar tech system for constructing foundations with controlled settlement

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