

Aperture Size of Terrafix[®] TBX1500-3000 Series Biaxial Geogrids

There is a perception that an increase in aperture size in a biaxial geogrid would negatively affect the performance of the product in base reinforcement and subgrade improvement.

The Terrafix TB1500, 2000, 2500 and 3000 Geogrid Series has an aperture size of **39mm (1.54") x 39mm (1.54")**. The square aperture structure ensures that the tensile and flexural stiffness properties offered are very similar in both axial directions.

A larger aperture opening in a biaxial geogrid does not affect the product performance. According to the study, *'Investigation of geogrid aperture size effects on sub-base-subgrade stabilization of asphalt pavements'*, published in the The Baltic Journal of Road and Bridge Engineering by Tube Sert and Muhammet Vefa, their research concluded that geogrids with larger aperture sizes:

Exhibited higher pullout peak strength values, with the larger aperture structure exhibiting..."the highest mutual effect with the surrounding sub-base soil, and this characteristic allows the geogrid to be used as a prime reinforcement for sub-base structures."

It is also good to note that despite the aperture size tested, all three geogrid sizes tested exhibited virtually no lateral displacement: *"It is clear that high resistance to permanent deformation of sub-base layer can be achieved by stiff ribs providing interlock of soil particles into the aperture."*

Material quality and production practices are the primary factors in ensuring that a reliable, high performance product is specified. Robert Koerner suggests in his book, *Designing with Geosynthetics*, that a geogrid specification be written around a set of performance characteristics, including but not limited to:

- A minimum Modulus value at a particular strain rate (in both MD and XMD directions)
- A minimum Junction Strength values (in both MD and XMD directions)
- **Minimum Aperture Size (for both directions)**
- Polymer Material Limits

A deviation on aperture size (i.e. an increase), should not be considered a hindrance to the expected performance of the geogrid.



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