CASE STUDY

Geogrid

Project:	Universal Drive Stage 1 & 2
Date:	October 2007 - October 2008
Client:	Waitakere City Council
Location:	Henderson, Waitakere City

GEOFABRICS®

Tensar TriAx® Geogrid

STAGE 1

The original design of the pavement was based on a subgrade CBR strength of 2%. During construction the contractor encountered a section of road having very soft clayey material with high ground water table. The CBR value was estimated to be <1.0%. Concerns were raised over the performance of the road in the long term against the initial design.

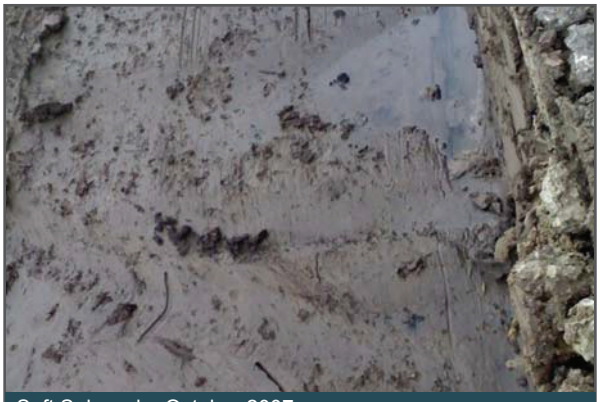
Tensar SS biaxial geogrids were proposed to improve performance based on over 10 years of historic use in road applications over soft ground by local Councils and Transit NZ .

The final pavement layout was to use **bidim® A29** geotextile as a separator layer between the soft subgrade and 400mm thick sand layer. The high flow rate of **bidim®** non woven geotextiles ensured dissipation of water pressures resulting from compaction of fill over ground with a high water table thus preventing a “water bed” effect that can occur if a geotextile with poor flow characteristics is used i.e. woven tape.

Tensar SS30 geogrid was placed between the 400mm thick sand layer and a 400mm thick GAP65 sub-base course layer followed by 150mm TNZ 40. **Tensar SS30** geogrids, besides increasing the design traffic also help to minimise the effects of potential differential settlements when constructing over ground with variable subgrade strengths.

TensarPave software demonstrated that the inclusion of **Tensar SS30** geogrid increased the design traffic by a factor of 4 when using the same pavement thickness.

Benkleman Beam testing of the sub-base course layer achieved design deflections of less than 2.0mm. The performance of the initial Tensar reinforced section resulted in the client doubling the area of reinforced pavement for this project.



Soft Subgrade, October 2007

LayingTensar geogrid, October 2007

Placement of GAP 65 sub-base course, October 2007

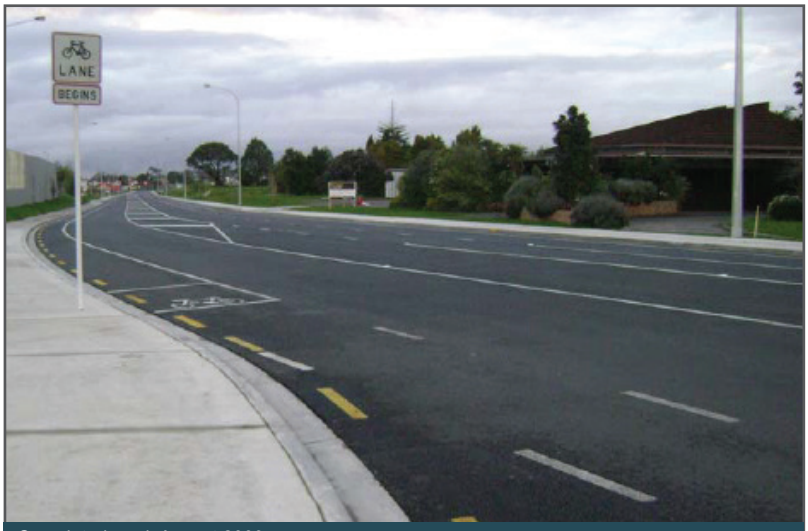
STAGE 2

Following the success of the road construction of Stage 1, over soft ground using **Tensar SS** geogrid; the contractor together with the Council's engineer, had no hesitation in using **Tensar** geogrid for the stabilisation of Stage 2 of the road. The only difference was the use of the newly launched **TriAx®** geogrid, which provides better performance, when compared with conventional biaxial geogrids.

Tensar TriAx® geogrid provides better interlocking with the granular material and hence improves performance when compared to **Tensar SS** geogrid, whilst the cost per metre remained the same. The Waitakere City Council has had no hesitation in using this innovative new **Tensar TriAx®** geogrid.

Laying of Tensar geogrid, October 2008

Granular fill on top of the grid, October 2008



Completed road, August 2009

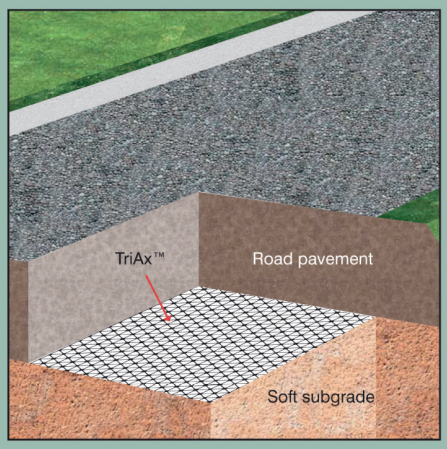
How Tensar® TriAx™ Geogrids work.

Using over 30 years' experience in ground stabilisation, **Tensar®** has radically re-engineered the fundamental structure of geogrids to create the revolutionary **TriAx™**, based on one of the most efficient and stable structural forms – triangles..

The aggregate particles interlock within the triangular apertures and the efficient, deep rib profile of **TriAx™** helps to confine aggregate, which combined with the isotropic stiffness, creates a mechanically stabilised layer with exceptional performance.

It has been shown that **TriAx™** outperforms even **Tensar®** biaxial geogrids. When compared with an unreinforced aggregate layer, a mechanically stabilised layer incorporating **TriAx™** geogrids can:

- Reduce the excavation needed.
- Control differential settlement.
- Increase bearing capacity.
- Cut construction CO^2 emissions by up to 50%.



Tensar® TriAx™ Geogrid Cross Section