



GEOFABRICS CASE STUDY



IMPROVING BEARING CAPACITY FOR A CULVERT SLAB WITH GEOWEB & TRIAX

PRODUCTS USED

Presto® Geoweb Cellular Confinement Geocell

- Made from robust UV resistant high-density polyethylene (HDPE), the system contains a network of interconnected cells that confine and compact soil
- Quick installation through the use of patented ATRA clip connection system or high strength tendons, saving on installation costs
- Eco-friendly soil stabilisation solution
- Reduces the thickness of structural support elements by 50% or more

Tensar® TriAx Multiaxial Geogrid

- Made from a punched polypropylene sheet that is used to form hexagonal structures with triangular apertures to effectively confine and interlock aggregate particles
- Reduces granular layer thickness and CO₂ emissions in construction by up to 50%
- Improves bearing capacity on railway projects and stabilises the rail ballast and track bed
- Durable structure that provides greater stability and stiffness in challenging weather and environmental conditions
- Can be installed quickly, reducing construction costs

PROJECT DESCRIPTION

The project involved replacing existing pipe culverts located at a major railway line. To manage the overland flows, the design engineer on this project proposed a large 5.9 x 9.6 metres culvert slab beneath the rail embankment.

Geofabrics was approached by the design engineer to provide a geosynthetic solution to improve the bearing capacity under the culvert slab.

OUR SOLUTION

Following a review of the information provided by the design engineer, Geofabrics undertook numerical analysis to determine the working platform thickness needed for achieving the required bearing capacity. The proposed solution comprised multiple layers of geosynthetics, including Presto Geoweb cellular confinement system and Tensar TriAx multiaxial geogrid.

TriAx geogrids were installed at the bottom of the working platform, while Geoweb was laid closer to the surface, covering a total area of 300 square metres. A well-graded aggregate was used for the construction of the working platform. By incorporating these geosynthetics into the working platform, the thickness needed to achieve the required bearing capacity was reduced by approximately 50% compared to the solution without geosynthetics.



300 m² of
Geoweb and TriAx
installed

Working platform
thickness reduced by
50%



ABID ALI
SENIOR APPLICATIONS ENGINEER
GEOTECHNICS

☎ 0428 079 821

✉ A.ALI@GEOFABRICS.COM.AU

📍 GEOFABRICS CENTRE FOR GEOSYNTHETIC
RESEARCH, (GRID), GOLD COAST, QLD



Visit [geofabrics.co](https://www.geofabrics.co) or call 1300 60 60 20 (AU)
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