



## GEOFABRICS CASE STUDY



# IMPROVING BEARING CAPACITY FOR A CULVERT SLAB WITH GEOSYNTHETICS

## 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

### Triaxial Geogrid

- A multi-axial geogrid made from punched polypropylene sheets, forming a unique hexagonal structure with triangular apertures that confine and interlock with aggregate for soil stabilisation and ground improvement
- Reduces aggregate layer thickness by up to 50% without compromising performance, lowering excavation and fill costs
- Enhances layer stiffness to allow the use of lower-quality or recycled fill materials, reducing material costs
- Speeds up installation, offering a fast, cost-effective stabilisation solution for roads, working platforms and heavy-vehicle pavements

### Similar Product

Geofabrics® Geogrid™ Triaxial

## 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 triaxial geogrid.

Triaxial 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 m<sup>2</sup> of  
Geoweb and geogrid  
installed**

**Working platform  
thickness reduced by  
50%**



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Sustainable solutions

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