



GEOFABRICS CASE STUDY



STABILISING BEARING CAPACITY FOR CULVERT SLAB WITH GEOCELL & GEOGRID

PRODUCTS USED

Presto Geoweb® Cellular Confinement Geocell System

- 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 that blends into the natural environment
- Reduces the thickness of structural support elements by 50% or more

Tensar® Stabilisation Geogrid

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

PROJECT DESCRIPTION

In 2024, construction works were undertaken at the Teringie Wetlands, located in Raukkan, South Australia. The upgrades included improvements to vehicle access tracks, removal of vegetation, channel earthworks and the installation of new regulatory structures.

The site presented challenging ground conditions, with a surface of soft clay that became firmer with depth. To address these, the project contractor approached Geofabrics for a geosynthetic solution that would use lean mix concrete as the blinding layer beneath a 3.5 metre by 6 metre culvert slab, improving bearing capacity and meeting hydraulic requirements.

OUR SOLUTION

The Geofabrics team collaborated with the client's designer and the manufacturer, Presto, to develop a solution comprising 150 millimetre Geoweb cellular confinement geocell system infilled with lean mix concrete, and Tensar stabilisation geogrid laminated with Bidim Green as basal reinforcement. This solution enabled the foundation to achieve the required bearing capacity for the slab, improving it by 50%. Lean mix concrete was used as the blinding layer under the slab to meet the hydraulic requirements.

In accordance with the installation manual recommendations for Tensar geogrids, the laminated geogrid was first rolled out on the soft subgrade with overlaps. The Geoweb geocell system was then placed on top of the laminated geogrid and infilled with 10 MPa lean mix concrete. Special guidance on infilling the Geoweb panels with lean mix concrete was provided to the project team.

The culvert slab was supported by a working platform of Geoweb panels with a stabilisation geogrid beneath. This configuration helped achieve the required bearing capacity and meet hydraulic requirements, with lean mix concrete infilled within the Geoweb system.



Improved bearing
capacity by
50%

3.5 x 6m
culvert slab



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