CASE STUDY:

PERMEABLE PAVEMENTS

BROOKSIDE ROAD, SPRINGFIELD, SA
FEBRUARY 2017
CLIENT: MICTHAM COUNCIL
CONTRACTOR: GS CIVIL & REMO CONTRACTORS

Geoweb Geocell Cellular Confinement System

The Geoweb geocell cellular confinement system is the most advanced soil stabilisation technology available. It was initially developed by Presto Geosystems together with the US Army Corp of Engineers to allow heavy vehicles to travel over soft ground. It is widely used in Australia for load support, erosion control, slope stability, retaining structures and high velocity channels.

The Geoweb system consists of a robust three-dimensional structure housing a network of interconnected cells that confine and compact soil. The confinement action prevents erosion and improves the structural performance of the soil or aggregate infill providing an alternative to reinforced concrete or armour. The Geoweb cellular confinement system comes in collapsed, lightweight panels which can be handled easily and safely onsite.

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Traditional theories suggest that water ingress into soils under a pavement will over wet the natural subgrade to its soaked CBR state and therefore induce heaving or create a softened support for the pavement.

Mitcham Council's theory, as has been proven in trials, is that semi-arid clays in treed areas require significant volumes of natural moisture/stormwater to actually limit the variation in soil moisture between the months, and hence limit soil reactivity/movement. Therefore, permeable pavements in Adelaide's climate will actually assist in limiting soil movements.

Council were trying to construct a permeable pavement in a tree sensitive area without compacting the soil prior to constructing the pavement on top. The objective being to minimise compaction of natural soils and allow air and water to penetrate through the pavers into the soil and roots below, while not destabilising the pavement above.

In order to design a permeable pavement Council turned to Geofabrics for assistance.

The team liaised with council in the design phase of the project to develop a solution, ultimately offering the Geoweb Cellular Confinement System as a solution due to its proven strength, rapid installation, and its ability to spread and carry high loads over poor ground conditions.

Geoweb confines the structural infill within its cells which in turn reduces the load applied to the wet subgrade, preventing sinking of the pavement. It also stiffens the pavement to protect against potential heaving of clays.

By utilising Geoweb, it also meant that the pavement could consist of porous screenings rather than impermeable crushed rock, enabling hydration of the dry soils and roots below.

To assist further with the distribution of water through the subgrade, Megaflo flat panel drain was utilised directly below the Geoweb, allowing run off from the adjacent pavements to be distributed evenly below the pavement.

Council have found the solution so effective that they have conducted field days demonstrating the system to neighbouring municipalities.

Council demonstrating the system to neighbouring municipalities