

Project: Underground Mines
Location: New South Wales.



Geoweb[®] Cellular Confinement

Keeping the roadways working in underground mines is essential – which can be a problem when trying to attain a minimum height to the roof but having to dig the road down into the base and expose underlying soils with low bearing capacities.

In these situations, the roadways can become impassable when mine vehicles, shuttle cars and mining machines create ruts which deepen over time and require maintenance to continue access. The presence of water only worsens the situation, making the maintenance of these roads costly and causing expensive delays to mining operations.

Solutions, such as concrete and cement stabilising these soft lenses, are also expensive and create problems when materials need to be transported underground, especially from a manual handling point of view.

Geofabrics Australasia has been working with local coal mines around Newcastle, NSW to develop solutions for these underground pavements.

Rather than construct drift pavements and diesel roadways solely from loose ballast, Geofabrics suggests that the underground roadways be constructed from a combination of the Australian-made **bidim[®]** nonwoven geotextile and **Geoweb[®]** a cellular confinement system.

The **bidim[®]** geotextile has a high puncture resistance and acts as a separation layer that prevents the soft clays pumping up into the ballast pavement. The **Geoweb[®]** constrains the aggregate from moving laterally, which increases the shear strength of the soil and prevents wheel-path rutting. This solution significantly extends the life of the pavement.

The **bidim[®]** geotextile is installed first. Over this, the **Geoweb[®]** panels are expanded and are temporarily held in place by “pogo-stick” braces between the floor and roof until the ballast material is placed into the cells. A skid-steer loader is useful to spread the ballast that the Eimco loader tips into the **Geoweb[®]** cells which then advances over the filled panels to create the pavement. The **Geoweb[®]** cells are slightly overfilled to form a strong stable platform. If required, **Tensar[®]** geogrids can be installed to further reduce differential settlements.

Since the initial trial at Chain Valley Coal Mine in 2006, **bidim[®]** geotextiles and **Geoweb[®]** panels have been installed in other high maintenance areas, including drifts, diesel roads, intersections and curves with success. Similarly a number of other coal mines in NSW including Mannering Colliery, Mandalong, Astar, Tasman and Beltana Coal Mines have also incorporated these solutions. These solutions have also been adopted in some underground mines in Queensland and are rapidly being accepted by the mining industry as a solution for their pavements.

Through innovative application of our products, Geofabrics has presented mining customers with an economical alternative to traditional pavement methods which were expensive and difficult to construct in underground applications.

