

Geofabrics Journal

Dec 2008

ELCOROCK® - Southport Broadwater Parklands Redevelopment (QLD)

As we rush towards Christmas and the start of another year, it is time for rest and reflection – particularly appropriate given the international economic instability. Despite such uncertainty, Geofabrics continues to supply major civil construction projects, with recent highlights including –

- Securing our largest ever supply contract – for our soil reinforcement systems to assist the construction of a large Australian port facility.
- Securing a number of landfill and mining projects with our Australian made **ELCOSEAL®** Geosynthetic Clay Liner system – including a series of major international mining projects
- Completing a **Gabion** project on a remote mine site, working with the engineers through the design and installation phases
- Supplying world-class golf courses in the Middle East and Turkey with our **Megaflo®** drainage system and **BunkerMat®** bunker lining system

We are improving our awareness of sustainable manufacturing practices. Whilst we have been using recycled plastics in our **bidim®** non-woven geotextile and **Megaflo®** road edge drainage system for over a decade, we recently conducted an energy audit to help us achieve our targeted energy reductions through

2008/09. As an Australian manufacturer, we take our environmental responsibilities seriously.

The economic turbulence may be with us for a little longer, but we remain optimistic about the medium-term strength of the Australian engineering construction sector.

We wish you a safe and relaxing Christmas period, and look forward to working with you in 2009.



The Geofabrics Team

News & Events:

To register for our seminars on the **ELCOROCK®** coastal erosion protection system, please contact our local sales team or visit our website www.geofabrics.com.au

Did you know that we recently established a dedicated export division that can assist you with international projects?

Please contact Dave Markham on d.markham@geofabrics.com.au or exports@geofabrics.com.au

Did you know that we recently presented a paper on research into our **Megaflo®** road edge drainage system? For a copy of the paper, please contact Rod Fyfe on r.fyfe@geofabrics.com.au

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Sellicks Creek Environmental Rehabilitation...

The Sellicks Creek was previously a highly eroded creek channel that ran into the ocean at Sellicks beach. The City of Onkaparinga Council was concerned that this erosion created public safety issues, water pollution and a poor environment for native fauna and flora re-establishment.

Through clever design use of **Gabion** drop structures, underground pipes and a series of vegetated wetlands the design has achieved moderation of flows from storm events and created an environment that encourages native revegetation and attracts native fauna.

Geofabrics and Maccaferri provided design assistance with the **Gabion** drop structures, assistance in the use of **bidim**® geotextiles to underlay rock pitching at high flow pipe outlets, and technical information with regards to the use of **ELCOSEAL**® Geosynthetic Clay Liners in wetland areas. The natural clays provided insufficient impermeability to prevent seepage, causing subsidence of the **Gabion** drop structures.

Geofabrics also provided **Jute** and **Biomac** erosion protection to the final trimmed surface to prevent weed growth and encourage the establishment of planted native vegetation.

ADCIV Civil Contractors were awarded the tender contract. Working in close co-operation with the council, environmental regulators and the sub-contractors a number of ongoing design modifications allowed the project to run smoothly.

The finished project met the extremely high quality standards required of a high profile project of this nature. As a result, the project was nominated and reached the final of the Civil Contractors Federation Earth Awards Category 1.

Now, two years on since completion of the project, we are seeing the full benefit to the environment with minimal erosion and an area which has become a haven for local flora and fauna.

For more information on the project and products used contact Marc Amtsberg on (08) 8177 2055 or email at m.amtsberg@geofabrics.com.au

Stanley Street Pavement Rehabilitation

Strathpine Council was experiencing problems with the existing pavement of Stanley Street and proceeded with a detailed geotechnical investigation of the site. Results of this investigation indicated variable pavement thickness and quality with subgrade CBR ranging between 2.5 and 4.5.

Three remedial alternatives were offered following the geotechnical investigation; (a) Full depth granular re-construction to a depth of 590mm; (b) Deep Lift Asphalt 190mm DG28 (top 150mm of subgrade compacted to a conforming density ratio); (c) Insitu cement stabilisation to a depth of 325mm with target strength 1.5MPa and cement content of 2.3%.

Council Maintenance Engineers approached Geofabrics Australasia for alternative solutions which were innovative, cost effective and practical.

Geofabrics offered the following solution; **Tensar SS30** at subgrade, 300mm of type 2.3 pavement with 4% cement (Type A CTB) and 50mm asphalt surfacing.

This offered the following advantages over the original proposals; cost effective compared to cement stabilisation of the subgrade option and a fast and economical construction sequence.

Construction was completed on time, within budget and Council to date is extremely happy with the performance of the reconstructed pavement.

For more information on the project and products used contact Gary Tonks on (07) 3279 1588 or email at g.tonks@geofabrics.com.au



Stanley River Road Stabilises...

Stanley River Road is located in the Sunshine Coast Hinterland in the Conondale Range. Due to a high annual rainfall which causes saturated conditions, sections of this road are subject to slip failures. A 50m long x 5m high mass gravity **Gabion** retaining wall was chosen as the preferred option to repair an embankment failure that occurred during heavy rains.

Galmac (95% Zinc 5% Aluminium Mischmetal Alloy) coated woven mesh **Gabions** were selected due to their long term durability benefits, low installation cost, speed of installation, porous nature to aid in pore water dissipation, ability to accommodate differential settlement and the fact that a fully monolithic structure could be achieved.

The inclusion of Aluminium into the coating process means that the more active zinc will corrode first, leaving an aluminium enrichment which continues with exposure to elements. Therefore the longer the exposure the more corrosion resistant the coating becomes.

Furthermore, **Gabion** walls are unique in that they can be designed with a vertical front face, stepped front face or battered face depending on the project requirements.

The **Gabions** were fabricated off site using a Geofabrics supplied pneumatic lacing tool and high strength Galmac coated "C" shaped clips.

There was difficult access to the proposed **Gabion** wall from the main road, therefore the packing of the units and backfilling behind the wall posed a problem. This necessitated a novel way to fill the units using a mobile conveyor.

The conveyor was able to fill up to 100m³ of rock (150mm average size) per day with its 34m maximum reach which meant the 600m³ of **Gabions** was installed in just 6 days. It was suggested however that up to 200m³ could be filled once some modifications had been made to the Telebelt[®] mobile conveyor.

Southport Broadwater Parklands...

Gold Coast City Council recently decided to revitalise and update the popular ANZAC Park, situated off Marine Parade and fronting the Broadwater, at Southport.

In addition to upgraded amenities such as playgrounds and picnic areas, the new parklands will feature a Wetland area, Amphitheatre and a Tourist Pier, some 105m long, extending out onto the Broadwater.

Shoreline water levels and environmental constraints require four of the eight rows of support piles to be constructed "in the dry" from a working platform whilst the last four rows of support piles can be sunk from a barge. The working platform could not be a permanent structure as the existing Broadwater shoreline must be reinstated on completion of the reconstruction project.

A temporary U shaped bund (coffer dam) some 60m x 30m, was proposed, which once filled, would provide the working platform for the piling rig and crane. The bund height needed to taper from the shoreline out to a depth of 3.5m whilst also conforming to the seabed profile.

Based on past successful experience, hydraulically sand filled **ELCOROCK[®]** Mega Containers were selected to construct the temporary bunds. **ELCOROCK[®]** T4 Mega containers formed the foundation of the required U shape and type T1 Mega containers were placed on the T4 units to achieve a height of 3.8m where required.

To assist sand containment, a layer of **bidim[®]** A64 was placed within the banded area prior to infilling and the Broadwater was protected by way of a flotation curtain surrounding the entire work site.

For more information on this project contact Peter Wagner on (07) 5563 2131 or email: p.wagner@geofabrics.com.au



For more information on this project please contact Gary Tonks on (07) 3279 1588 or email on g.tonks@geofabrics.com.au

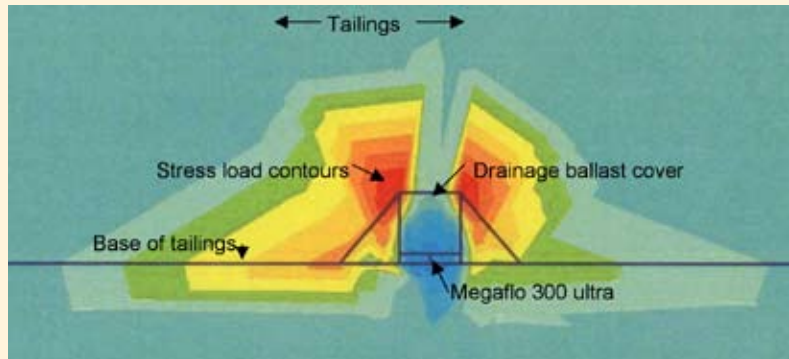
Under - Mining Tailings with Megaflo® Ultra

Megaflo® Ultra, manufactured by Geofabrics Australasia, is designed for high load capacity drainage of landfills and mining tailings applications. Consultants, Parsons Brinkerhoff, were recently commissioned to undertake a Finite Element Analysis of **Megaflo® Ultra** using PLAXIS software to model the effective stress on **Megaflo® Ultra** 300 (300mm) panel drain under an overburden load of 50m tailings of mine.

The effect of the loading was analysed for **Megaflo®** installed both vertically and horizontally beneath aggregate cover material. The testing combining the factors of varying cover thickness and the behaviour of tailings under staged consolidation to measure effective stress. Soil parameters were assigned to model four different materials, mine tailings, clay base liner, aggregate cover and foundation soil.

The analysis, plotted as stress contours, has shown that there is a substantial increase in vertical and horizontal stresses in the aggregate cover and the tailings surrounding the **Megaflo®** 300 as the tailings consolidate. Results also indicate that stress levels on the **Megaflo® Ultra** 300 are much lower than would be expected, with stresses within the yield capacity of **Megaflo®**. Soil arching has developed in the tailings and aggregate

cover, creating a bridging effect which has protected the **Megaflo®**300 panel from higher stress levels. With the growing need for performance and efficiency in the mining industry, Geofabrics Australasia has taken a major interest in design and manufacture of products for these applications. **Megaflo® Ultra** is a chemically resistant High Density Polyethylene drainage panel use in tailings installations and provides cost effectiveness, efficiency and long life under high surcharge drainage applications.



Megaflo Ultra - Horizontal Effective Stress diagram

For more information please contact Rod Fyfe on (08) 8177 2055 or email r.fyfe@geofabrics.com.au

Staff Profile: Rod Fyfe



Geofabrics Australasia appointed Rod Fyfe as Business Development Manager for geotextiles and drainage in mid 2007 to promote its range of **bidim®** and **Sealmac®** geotextiles and the **Megaflo®** drainage system. Rod previously held the position of State Manager for South Australia and Northern Territory for 11 years prior to a short tenure with the Civil Contractors Federation SA Branch in 2005-06

His role includes marketing of **bidim®** geotextiles and **Sealmac®** paving fabrics, along with research supporting the use of geotextiles in landfill applications and road stabilisation and surfacing. Roads are also the focus of the benefits of **Megaflo®** with Rod coordinating research projects exploring high performance road edge and subsoil drainage applications.

With over 30 years experience in the civil engineering field, Rod is actively promoting the cost effective and efficient use of geosynthetics in civil construction, travelling extensively with other Geofabrics managers to consult with design engineers and contractors around Australia.

BunkerMat® For Hyatt Regency Coolum

In September 2008, Geofabrics Golf Division was awarded the supply of **BunkerMat®** to the Hyatt Regency Coolum Golf Club. The prestigious Hyatt Coolum course located on Queensland's Sunshine Coast was designed by Robert Trent Jones Jr. and is the home of the Australian PGA Championship, which is being held again in December 2008.

Construction of six new holes on the Northern side of the existing course is being carried out by golf course construction company McMahons Pty Ltd. The existing soil conditions and bunker face design required the use of a

bunker liner, and after considering other products available on the market, McMahons Pty Ltd chose **BunkerMat®** for the project.

One of the many reasons why **BunkerMat®** was chosen, is its innate ability to allow separation of the specified bunker sand, from contamination of the bunker face material.

Furthermore, **BunkerMat®** only requires a thin veneer of sand on the bunker face, which prevents balls plugging and reduces the amount of sand required in each bunker. Most importantly if **BunkerMat®** is exposed, its unique UV stability prevents product degradation, ensuring a long life.

For more information on this project contact Greg Lock on (07) 3279 1588 or email g.lock@geofabrics.com.au

