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Busy this year, busier the next

Another financial year has come and gone, and the new one promises to be even busier than the old.

The highlights of 2006/07 include —

- Our work on major road, landfill and mining projects, with the applications for geosynthetics growing every year across Australia
- Completing a 12-month research program into the clay component of **ELCOSEAL®**, our geosynthetic clay liner, and completing technical training seminars around Australia
- Growing our international presence in specific countries with our Australian-made geosynthetic products
- Investing in our two manufacturing operations to ensure we remain at the leading edge of our industry

The coming year promises to be just as exciting and challenging. The civil construction industry remains robust, but the skills shortage continues to bite. We have several key challenges ahead of us, including release of the results from our 2-year research program into ELCO**ROCK®**, our coastal solutions system, to assist engineers design coastal structures. We look forward to results from our research program into geosynthetic clay liner performance with specific leachates and liquors, further investment in our two manufacturing operations and continued expansion of our export activities.

It is very exciting to be part of the current construction cycle, and we are proud to be working with designers, contractors, research institutions and asset-owners to build world-class infrastructure projects. We hope that the projects featured in this issue provide you with insights into innovative geosynthetic solutions.

Geofabrics Team

New India venture

With our first sales of bidim® non-woven geotextile to a river erosion project, we are confident that our Australian-made geosynthetic solutions have a place in India. Their civil construction market is where Australia was years ago – ready to accept innovative solutions for their road, landfill and mining projects.

We continue to work with local and international engineers on their infrastructure projects throughout India, Pakistan, Nepal, Sri Lanka and Bangladesh.

If you have projects running in these regions, please contact David Markham on +61 (0) 7 5500 14000 or email d.markham@geofabrics.com.au

In This Issue

bidim® helps take the heat off Queensland highway

Geotextile reinforcement is stabilising embankments on 5km of Sunshine Coast road.

The need for an alternative route to locations in the Sunshine Coast area of Queensland, by-passing the heavily used Nicklin Way, has inspired the upgrading of a 5km section of two-lane secondary road.

The works are being carried out by Neumann Contractors with the majority of the construction taking place in areas underlain by soft soils.

Construction is due for completion in mid-2008

Geofabrics products are key solutions to some of the problems encountered.

Geotextiles form part of the reinforcement design of the working platforms which allows rapid construction of embankments over areas which

would have previously required long consolidation periods. Two designs were adopted included incorporating **bidim**® continuous filament geotextiles in combination with high quality fill or a combination of **bidim**® and high strength knitted geotextiles.

The supply of Australian made **bidim**® geotextiles on this project has ensured there have been no delays due to product supply. The contractor had further peace of mind that **bidim**® is manufactured to ISO 9001 standards and could therefore rely on quality product from the start to the finish of the project.

For more information on this project and products used contact Gary Tonks (07) 32791588 or email g.tonks@geofabrics.com.au

Tensar®biaxial grids cut rail maintenance for NSW Railcorp

Railcorp, the rail authority for Metropolitan Sydney, was facing a problem with soft sub-grade just west of the Werrington Railway station in Western Sydney.

Track deflection readings were showing the track out of alignment with unacceptably large dynamic deflections.

The challenge for Railcorp is to minimize maintenance by extending the time between maintenance shutdowns, when they regularly maintain the permanent way by cleaning ballast and realigning the tracks by tamping ballast.

Following a dedicated Railway seminar given by Geofabrics to Railcorp Railway Engineers in 2006, the Geotechnical Section of Railcorp recommended the use of **Tensar**® biaxial grid. **SSLA30** large aperture **Tensar**® geogrid was chosen for the job.

The large aperture version of **Tensar**® **SS30** is perfectly matched to suit the ballast size. The ballast interlocks with the grid apertures which restricts the movement of ballast horizontally. If horizontal ballast movement is prevented or minimised, permanent vertical deflections of the track are also reduced.

The work was carried out in March 2007. Figure 2 shows the roll of **Tensar**® being dispensed. The rolls were started by shoveling ballast on the leading edge of the roll. Joins were achieved in a similar manner by anchoring the incoming roll with shoveled ballast. Production rates were less than when deploying the ballast cleaning machine without **Tensar**® but production rates will improve as the workers gain experience with Tensar installation.

Railcorp will retest the deflections of the track following completion of the remediation of the Werrington track. It is expected that permanent and dynamic deflections will be substantially lower due to the deployment of the **Tensar**® **SSLA30** geogrid within the rail formation.

For more information on this project and products used contact David Morgan (02) 9821 3277 or email d.morgan@geofabrics.com.au

Figure 2.

ELCOROCK® container walls defy stormy seas

Two private beachfront residences in the Bowen area threatened by invading waves are now secure behind a 54m long wall of 189 ELCOROCK® containers.

In common with much of the coastline of North Queensland, the foreshore in the Bowen area is susceptible to cyclones, large tidal variations, and erosion problems.

Local regulations require protection measures to be implemented in the form of a sea wall. The traditional method of rock walls has had a significant impact on the beach environment, contaminating the sand with rock material which has broken away from the rock structures.

However, the pace of prime coastal real estate development spurred investment in more advanced technologies. In this case, coastal engineering consultants, International Coastal Management, proposed using ELCO**ROCK**® product as an alternative to rock amour for the two private residences to provide protection from the ocean and to improve the amenity of the site.

The alternative sea wall comprises large 2.5m3 ELCO**ROCK**® geocontainers, manufactured from the standard ELCO**MAX**® geotextile for the wall itself with a more robust vandal-deterrent type geotextile used for the small boat ramp. The boat ramp was included in the design to improve beach access for the property owners.

The ELCO**ROCK**® wall is approximately 54m long and 4m high. The lower containers are founded at LAT and use specialised toe containers, constructed with a geotextile tail to provide extra scour protection, which is very important in the ever-changing coastal environment.

The project was completed in ten days.

For more information on this project and products used contact Simon Sheldrick (03) 8586 9100 or email s.sheldrick@geofabrics.com.au

Galmac® Gabions stand out in Deer Park estate

Geofabrics has contributed to a striking new feature of the landscape at Deer Park, on the western side of Melbourne.

It's a 10m high obelisk, plus a baby version beside it, located at the Derrimut Road entrance to a new 195 hectare Western Ring Road frontage industrial estate being developed by the Investa Development Group.

The design objective of the development's landscape architect, Tim Vernon at CDA Design Group, was to create an individual, conspicuous landmark while identifying the site entry. A gabion design was selected as it incorporated the use of local rock which melded with the local landscape.

Originally the obelisks were designed using a reinforced concrete core and rigid weld mesh Gabion facade. The awarded contractor, GroundTech Geotechnical Supplies and Services Pty Ltd, suggested a cost effective alternative making use of a steel frame core and double twist **Galmac® Gabion** facade.

Galmac® Gabions were specified as the coating provides long term protection to the wire used to form the gabions. **Galmac®** is a eutectic alloy of 95% zinc and 5% aluminum mischmetal alloy with significantly improved corrosion resistance characteristics over zinc in both chemical and physical terms. This new technology, when applied to steel wire products, gives three times the corrosion resistance over traditional zinc coated products.

The design eliminated the concrete structure, negated the need for a variety of specialised contractors and resulted in a 60 per cent cost saving, significant time saving and reduced building time.

For more information on this project and products used contact Russ Hogan (03) 8586 9100 or email r.hogan@geofabrics.com.au

Mine expansion could demand more ELCOMAX®

The expansion of an existing tailings dam at a Queensland mine called for the use of ELCO**MAX**® staple fibre geotextile. As the mining boom continues the facility is expected to expand and so too the need for more ELCO**MAX**® panels.

The Geofabrics Group was first approached in 2004 by a firm of mining consultants with a request for a geotextile suitable for use in the construction of the tailings embankments.

The tailings from the processing plant are slurry-pumped into the tailings dam for dewatering. The embankments are typically constructed using dried tailings however this results in flat batter angles and a large site footprint. In this instance the embankments were constructed from waste rock available from the mining operation which allowed steeper batter angles and therefore more effective use of available land. A geotextile was specified as a filtration and drainage layer and to prevent loss of the tailings through the porous rock embankment and rapid drainage to assist the consolidation of the tailings.

The tailings containment facility was constructed in three phases making use of custom-made panels of ELCO**MAX**® staple fibre geotextile. The specific geotextile was chosen after extensive field trials which showed that the energy absorption characteristics of ELCO**MAX**® staple fibre geotextiles best suited the extremely aggressive conditions encountered.

In order to assist construction and minimize geotextile overlap waste, a range of panels ranging from 9m x 40m to 46m x 40m were fabricated at the **ELCO Solutions** site on the Gold Coast. Each panel was fabricated to suit the batter length and height of the rock embankment. A recent visit to the site confirmed that ELCO**MAX**® performs admirably in this environment.

Following the positive outcome of this initial geosynthetic application the mine has identified other opportunities for Geofabrics mining products. These include:

- **Ecocell**® - Cellular confinement system
- **Tensar**® - Reinforcing geogrids
- Rock fall netting

For more information on this project contact Ken Winfield on (02) 9821 3277 or email k.winfield@geofabrics.com.au

Welcome to David Markham! He relocated from the UK in January this year to join the company as Regional Manager for Central Asia, based at ELCO Solutions on the Gold Coast.

Geofabrics is making headway into the Indian sub-continent where David will manage our new venture, building market presence, the appointment of distributors and recruitment of employees.

Having completed several visits, company personnel now have an understanding of the region's basic market dynamics. They've also caught up with Australian engineers now working in India and Pakistan.

David has 20 years' experience working in civil engineering for large contracting and consultancy companies, also working for Maccaferri in the UK. His most recent experience before joining Geofabrics was working for a project management consultancy operating in Southern and Central Asia.

You can contact Dave on +61 (0) 7 5500 1400 or you can email d.markham@geofabrics.com.au For more information visit the Geofabrics India website: www.geofabrics.co.in

Ecocell® panels stabilises highway problem

Ecocell® soil stabilising panels have resolved a problem on the Lonely Creek section of the busy Peak Downs Highway to Mackay.

The road contractor, Roadtek, and the Queensland Main Roads Department, were encountering problems in trying to stabilise embankments in the hilly country through which the highway runs. The Peak Downs Highway is the only road linking the port of Mackay to the mine sites and smaller mining towns in the region.

The Main Roads Department had employed a number of methods to achieve embankment stabilisation and protection, trying both soft and hard amour treatments and occasionally a combination of both. Nothing worked.

After representations from Geofabrics Townsville, the Main Roads Department in association with Roadtek, elected to trial a small section using **Ecocell**® filled with 40mm ballast. This was very successful and it was decided to stabilise a newly-constructed 1.2km stretch of road embankment using the **Ecocell**® system. 1750m2 of **Ecocell**® was installed, workers abseiling down the face of the embankment anchoring the product as they went.

Roadtek and Main Roads were happy with both the cost effectiveness and the efficiency of installation.

For more information on this project contact Mike Yewdall on (07) 4774 8222 or email m.yewdall@geofabrics.com.au

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