

INFORMER

YOUR QUARTERLY FRC NEWS & TECHNICAL UPDATE FROM INFORCE

PROJECT RIVERLEA



Riverlea Group is widely recognised for their distinguished assortment of premium garden sheds and high-quality outdoor amenities, which encompass fireplaces, chimeneas, firepits, and BBQs. Headquartered in Hamilton, they are currently in the process of erecting a new integrated facility for manufacturing, distribution, and administration, with over 15,000m² of floor slab and pavements slated for completion by July 2024.

The construction of this new facility necessitated a jointless flooring solution, encompassing 1,100 square meters of heavy-duty manufacturing space, 5,600 square meters of assembly and warehousing areas, alongside 8,500 square meters of external pavement and hardstand.

Why did Riverlea opt for an Inforce floor?

The decision to adopt an Inforce optimised floor stemmed from the amalgamation of durability, performance, and cost-effectiveness inherent in Inforce design methodology that gave significant advantages over conventional designs.

What were the desired outcomes, and were they achieved?

The primary objective was to design floor areas that were tailored to Riverlea's operational requisites, with minimal joints and no sawcuts for long-term maintenance requirements and all inter-pour floor joints fortified with Casta Group steel armouring.

How did Inforce contribute to the project's success?

Inforce facilitated the exploration of various design options, aligning them with Riverlea's specific objectives. Additionally, Inforce provided support to the design and construction team throughout the detailed design phase, as well as preconstruction and post-construction monitoring.



PROJECT TALLEY'S



Talley's Group is currently in the process of constructing a new cold storage facility in Longburn, with Inforce enlisted by Silvester Clark Engineering to deliver an optimised design for the large external concrete hardstand designed to take heavy truck traffic and container storage.

Why was Inforce engaged in this project?

Inforce was specifically engaged to develop an optimised full-depth hardstand design, including concrete wear layer as well as an optimised reinforced subbase design utilising Neoloy to save significant costs on what was challenging ground conditions with low CBR's.

What was the desired outcome?

The overarching goal was to achieve an optimised full-depth pavement design that would be fit-for-purpose for a heavily trafficked site on poor subgrade. Eliminating the need for traditional mesh reinforcement by utilising fibre reinforcing, thereby expediting construction timelines was key in the concrete slab. Additionally, for the subbase design, the objective was to minimise excavation and spoil removal while ensuring long-term stability, particularly in areas with soft ground conditions, by integrating Neoloy technology.

Was it achieved?

Indeed, the objectives were successfully realised. For the slab design, we devised a solution capable of accommodating a 10-ton axle load while eliminating mesh reinforcement and substituting it with steel fibre reinforcing. Furthermore, substantial savings were achieved in the subbase design by reducing thickness by up to 50% compared to conventional methods yet at the same time increasing the long-term stability of the pavement. Additionally, the utilisation of recycled crushed concrete as infill further contributed to sustainability and cost-effectiveness.



NEOLOY® TOUGH-CELLS

Neoloy® Tough-Cells: A Cost-Effective, Sustainable, and Long-Lasting Solution for Civil Structures on poor ground. Neoloy® Tough-Cells represent a revolutionary 3D mechanical soil stabilisation solution ideal for heavy duty applications, or civil infrastructure situated on poor load bearing subgrade. These infrastructures encompass a wide range of applications, including railways, airports, marine ports, embankments, working platforms, and both paved and unpaved roads.

Crafted from a Novel Polymeric Alloy (NPA), Neoloy® Tough-Cells consist of a blend of polyolefin and thermoplastic engineering polymers, boasting enhanced engineering properties. Thanks to its exceptional stiffness and high tensile strength, Neoloy® Tough-Cells can withstand significant hoop stresses resulting from lateral confinement of compacted infill material under dynamic structural loading, such as repetitive heavy traffic loading, while experiencing minimal strain.

With a proven track record spanning decades, Neoloy® Tough-Cells have been deployed in infrastructure projects across more than 80 countries worldwide, including NZ, Australia, USA, Canada, Latin America, Europe, Africa, Southeast Asia, and the Middle East.

Neoloy® Tough-Cells offer a diverse array of benefits, including:

- Up to a 50% reduction in granular layer thickness and an 80% decrease in rutting.
- Enhanced equivalent California Bearing Ratio (CBR) of the pavement system by up to 7 times, contingent upon ground conditions.
- Amplified modulus of the infill material by up to 5 times, depending on the material utilised.
- Prevention of reflective cracking and mitigation of differential settlement in expansive soils.
- Up to 80% reduction in CO2 emissions.
- Reduction of construction and total life-cycle costs by up to 45%.
- Engineered for a project lifespan of up to 75 years.
- High creep resistance, with less than 3% permanent deformation over a 75-year service life.
- Reduction of long-term maintenance costs by up to 75%.
- Capability to utilise existing site material and lower-grade materials as infill, such as sand, recycled asphalt/concrete, and quarry waste.
- Streamlined logistics and rapid installation.
- Reduced depth of excavation required.
- Decreased labour and machinery hours.
- Minimised transportation costs and time.

Case studies: (a) Neoloy-reinforced access road on existing saturated peat bog soil (CBR 1%) for MEG Energy, Canada; (b) High speed track stabilisation, Amtrak, US Federal.



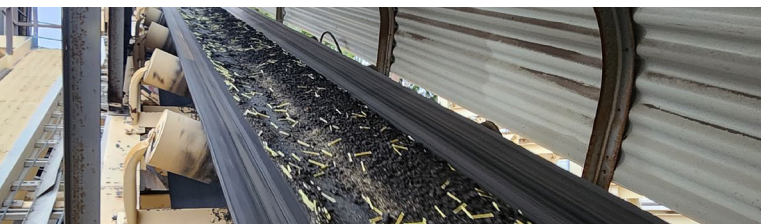
CITY OF SALISBURY
**ACE XP
ASPHALT FIBRE**



From here, the process was very simple, nothing else was required to be altered by FH, from mixing time, transportation, paving, raking and compaction. Speaking to the operators on the day, they advised that if we hadn't told them of the fibres, they wouldn't have known they were in there!

Inforce has been working with the City of Salisbury (CoS) council in South Australia since early 2023 to implement a trial of the ACE XP Aramid fibres for Asphalt. Personal from CoS had known the performance benefits of ACE XP for many years but had been unable to find a suitable partner to progress any further so when Inforce approached them with the news we were now the Australasian exclusive distributor, they were thrilled.

Moving forward to June 23, a trial site had been selected and Inforce, working in collaboration with council contractor Fulton Hogan, were able to implement the first laydown trial of ACE XP treated asphalt in Australasia. Plant dosing of the fibres was carried out by the Inforce team using a simple manual dosing system.



which introduced the low dose of fibre **(106g/T)** in a very consistent manner into the Astec Double Drum asphalt plant via the RAP conveyor.

On completion of the successful laydown, performance testing was carried out according to the SA Standard test methods on some of the plant mixed asphalt with fibre, this was an AC10M C320 Asphalt mix with a maximum aggregate size of 14mm and using a standard C320 grade binder. The results were very pleasing, with both the fatigue and rutting tests improving by well over 40% when compared to historical test data on the same mix

These results closely aligned with the data we have from North America, where the ACE XP fibres have been used for over a decade, interestingly in the past year, over 8 million tonnes of Asphalt have been treated with Aramid Fibres in NA, this shows the increasing use of these fibres as a simple, low carbon option to increase performance of any existing asphalt mix. And the best part? Aside from introducing the fibres into the asphalt mix, nothing else is required to be altered to get these benefits, no mix design change, no change to paving procedures, no change to anything in the entire process!!

Inforce is well advanced in further trials with various clients throughout Australasia, if you want to be a part of this exciting journey adopting a game changing technology that has years of proven track record that gives extraordinary performance gains at the same time as reducing the CO2 footprint of Asphalt, get in contact with Inforce today!

TEST	ACIOM C320 (CONTROL)	ACIOM C320 ACE XP FIBRES	% CHANGE
Resilient modulus (25C°)	4,700 MPa	5,100 MPa	+ 8.5%
Rutting (WT)	4.7 mm	2.25 mm	- 47.5%
Fatigue - 4PB Test (20C°)	103 µε	148 µε	+ 44.0%