

MAINFREIGHT SIGMA SLAB®

Roe Highway Logistics Park – Perth, Western Australia

The Mainfreight logistics facility at Roe Highway Logistics Park required a heavy-duty concrete pavement capable of supporting extreme loading conditions while maintaining long-term durability and operational efficiency.

The project involved the construction of a 7,200 m² high-performance industrial slab designed to accommodate five-high stacked shipping containers and the movement of large container handling forklifts. These loading conditions required a structural solution that exceeded the performance of conventional jointed concrete pavements.

To achieve this, the project team implemented the SIGMA Slab® system, combining Bekaert®'s high-performance Dramix® steel fibres with a CCL post-tensioning system, delivering a robust and efficient slab with no conventional joints.

The SIGMA Slab® system integrates steel fibre reinforcement and post-tensioning to control cracking, improve load distribution, and significantly increase slab performance.

For the Mainfreight facility, this approach allowed the slab to:

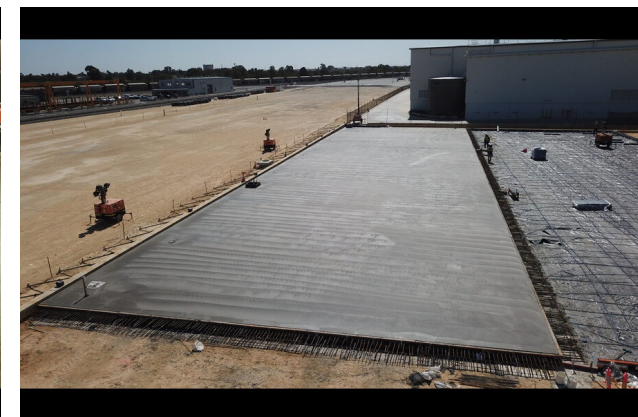
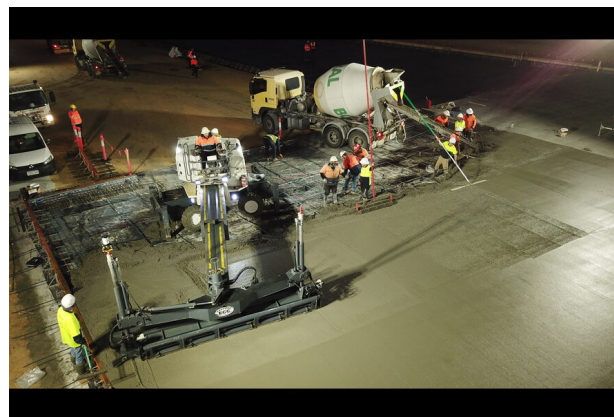
- Support heavy container stacking up to five units high
- Handle high wheel loads from container handling equipment
- Operate with no traditional joints, improving operational performance
- Deliver enhanced durability and reduced maintenance requirements

Sustainability & Material Efficiency

A key outcome of the SIGMA Slab® design was the significant reduction in construction materials when compared to a traditional plain concrete pavement.

The project delivered:

- ~950 m³ reduction in concrete volume
- Up to 70% reduction in conventional steel reinforcement
- Lower embodied carbon through reduced material consumption



- Faster construction with fewer installation stages
- Reduced long-term maintenance due to joint elimination

These efficiencies contribute directly to lower environmental impact and improved sustainability outcomes for the project.

Project Outcome

The completed 7,200 m² SIGMA Slab® provides Mainfreight with a high-performance logistics pavement capable of supporting demanding container storage and heavy vehicle operations.

By integrating advanced fibre technology and post-tensioned design, the slab delivers a durable, joint-free surface optimised for modern logistics operations while achieving significant material savings and sustainability benefits.

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