

One-way ticket to productive rail infrastructure

A \$238 million project in South Australia is set to increase productivity on the Melbourne-Adelaide-Perth rail line and improve urban environment through the provision of upgraded cycling and pedestrian linkages.

The Torrens Rail Junction project is the second project in the separation of freight and passenger rail lines in metropolitan Adelaide, with the first being the Goodwood Rail Junction project. It has been delivered by the Alliance composed of the Department of Planning, Transport and Infrastructure (SA), Laing O'Rourke, AECOM, and Kellogg, Brown & Root (KBR).

Kellogg, Brown & Root (KBR). The Torrens Rail Junction is located where South Australia's interstate freight railway crosses the Outer Harbor passenger railway in the northwestern rim of the Adelaide Park Lands. Previously posing a productivity constraint on the Adelaide-Melbourne rail freight line, works to increase the flow of freight commenced in 2016 with an upgrade of the junction.

The project intends to remove major pinch points in the freight and rail network and includes grade separation of three existing intersections and construction of three underpasses along the 1.5 kilometres of lowered railway.

Precast manufacturer PERMAcast

Design & Construction

Laing O'Rourke, Aecom and KBR

Client

Department of Planning, Transport and Infrastucture

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The precast package

National Precast member, PERMAcast, manufactured and delivered several precast concrete elements for the construction of two parts of the project—the new lowered Bowden Rail Station and the Torrens Junction Bridge. All units were cast in specialty-built moulds and comprised both precast and prestressed elements. The components included:

- 46 precast bridge barriers,
- 30 bridge approach slabs,
- 58 platform retaining walls,
- 58 platform panels,
- 18 ramp retaining walls,
- 142 pad and strip footings,
- four platform end walls, and
- four 18-metre prestressed prop beams.







PERMAcast's Managing Director, Alberto Ferraro, says the precast package included a mix of architectural and structural elements.

"We manufactured two-tone coloured platform slabs as well as retaining walls with patterns and coloured concrete," Mr Ferraro details.

"Being a rail project, all reinforcement was welded and required electrical continuity for earthing purposes."

Rail line on track

Precast was specified as the main construction method because of its speedy construction times and offsite manufacture. "The project had extremely aggressive schedule requirements. We needed to build a large number of moulds and set up the project within weeks," Mr Ferraro explains. "A full precast design meant that there was minimal interference with live train rails."

Installation of the bridge deck demanded a team of almost 400 workers each day for 16 days. Here, they worked to install a 90-metre-long bridge, which included 950m3 of concrete, 68 planks of 12 tonnes each, the excavation of 22,500m3 of soil, and the laying of the rail track.

An interstate journey

All precast elements were manufactured in the precaster's Cardup factory in Western Australia–2,723 kilometres away from the project's South Australian location.

Offering extensive logistics solutions for clients and providing purpose-build transport stillages, PERMAcast ensured that all elements arrived on site within tolerance specifications and without damage.

"Transport of the precast had to be delivered on more than 200 semi-trailers, which was extremely challenging, as some products weighed 33 tonne," Mr Ferraro reveals.

"Not damaging the architectural panels during transport was vital."

With a highly-skilled team and a 250,000m2 storage yard, the precaster has the capacity to manufacture and manage large-scale projects, like the Torrens Rail Junction.

"Our in-house fleet of prime movers and trailers gives us additional flexibility in coordinating with and meeting our clients' required delivery schedules," Mr Ferraro says.

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