

# SOUTH ROAD SUPERWAY ON THE WAY

The \$842M South Road Superway project will be one of Australia's largest single investment developments and one of the most complex engineering road projects for any freeway.

**MAIN CONSTRUCTION COMPANIES :** John Holland,  
Leed Engineering & Construction  
**PROJECT END VALUE :** \$842 million  
**COMPLETION :** September 2013  
**ROAD LENGTH :** 4.8km



The Australian and South Australian Governments are working together to improve transport in South Australia. The \$842 million South Road Superway project is the biggest single investment in a South Australian road project, and so far the state's most complex engineering road construction project. This project is under a joint venture between John Holland and Leed Engineering & Construction and is the second stage of the north-south transport corridor upgrade which provides a 4.8 kilometre non-stop corridor and incorporates a 2.8 kilometre elevated roadway.

Supporting the local economy, the South Road Superway project has provided more than 2000 jobs and has supported the growth of local businesses. Many local contractors and suppliers were engaged on the project and included:

- Boral (Wingfield) and Holcim (Hindmarsh) to provide concrete for the development
- OneSteel who prepared reinforcing steel from its premises at Cavan
- Penrice at Angaston, Adelaide Resource Recovery, ACT Hire and Nick's Cranes from the local suburb of Wingfield.

This project complements the \$564 million Northern Expressway connecting the Sturt Highway with Port Wakefield Road, the completed Port River Expressway and the South Road Planning Study, currently underway south of Regency Road. The main focal points of this project include the following:

- The upgrading of this section of South Road is the second step in creating a non stop north-south corridor from Gawler to Old Noarlunga, and complements the residential and industrial development occurring and planned for Adelaide.

- The northern end of South Road is being upgraded as it is a key freight route for Adelaide's major export generating industries.
- South Road is the direct link for industrial transport hubs: Adelaide Airport, Islington Rail Terminal, Port Adelaide and Outer Harbour.

A purpose built casting yard was implemented for the project and saved the transportation of heavy segments by road. Being able to cast the segments as close as possible to the piers ensures minimum interruption to traffic. Land was secured and the Superway casting yard built for this purpose at 628-638 South Road.

The casting yard features a shed that contains most of the activities associated with the casting yard. This shed is 232m long, 26m wide and 17 m high and will use approximately 11,000 tonne of steel reinforcement and 57,000 cubic metres of concrete to make the segments. It has had more than 43,000 tonne of material through the yard to create a supportive base to store the heavy segments and features a workforce of around 220 people operating in shifts to produce around 40 segments a week.

Both the state and region will see significant benefits from the improved freight transport access, through and within metropolitan Adelaide.

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## PERFECT CHOICE

When experience matters, Cooke Precast Concrete is the perfect choice for your next project.

The company is a leading supplier and manufacturer of precast concrete drainage pits and access covers (formerly called manhole covers). Their range includes kerb inlet structures which include the introduction of a newly developed solid top cast iron cover.

The team provided their services on the South Road Superway project in South Australia. The 4.8 kilometre development was the second stage of the north-south transport corridor upgrade.

With timing critical, Cooke Precast Concrete developed a keen relationship with the project principle, which allowed them to keep a close eye on design and level variations which enabled them to maintain a very high standard of accuracy and quality control. Cooke Precast Concrete redesigned the standard steel reinforcement for drainage structures to use polyfibre non corrosive reo. They also used caltite additives in the high strength concrete mix design to suit specification.

All Cooke Precast Concrete products are built to high standards and as they are cured before delivery, this process often reduces downtime compared to in-situ castings. The company is located at Edinburgh North in northern Adelaide and operates a substantial production facility from these premises. They feature their own large concrete batching facility where they are able to produce consistent mixes as well as the special design batches like calcareous aggregate, fondag, coloured and high strength concrete.

The business employs a highly skilled team of technical and production staff who bring extensive experience to their portfolio and ensures consistent results for their customers. With a team of more that 50 employees, Cooke Precast Concrete is helping to build new infrastructure, defence facilities, commercial and industrial projects with specialized precast and glass reinforced products.

*For more information contact Cooke Precast Concrete Pty Ltd, 3 Peachey Road, Edinburgh North, South Australia 5113, phone 08 8209 3093, fax 08 8209 3094, website [www.cookeprecast.com.au](http://www.cookeprecast.com.au)*





# ROCK SOLID SUPPLY

Over the last decade, Penrice Quarry & Mineral has become a key supplier of quarry materials to large and small infrastructure projects across South Australia. As a key supplier of rubbles, road bases, aggregate, cement treated material and fills to the South Road Superway Project in Adelaide, Penrice has further established itself as a supplier of choice to major infrastructure projects.

Based in the heart of the Barossa Valley, Penrice worked closely with site work coordinators to have specially selected materials delivered from their Angaston Quarry to designated works around the project. To date Penrice has supplied over 320,000 tonnes of materials to this project.

The South Road Superway has been a dynamic project and unlike some other recent major works projects. This project has delivered complexity via the fact the project had to deconstruct a major roadway and then implement the new design build. This meant plans would change on short notice or different materials were required to complete a parcel of work based on what was identified once the demolition of an area was complete. To manage this accordingly Penrice worked hand in hand with key parties daily to alter forecasts, ensure quality and specification and manage stockpiles on site at Angaston.

Penrice had to be flexible and quick to react to a changing material profile. By liaising closely with site coordinators and engineers, Penrice was able to understand and monitor the challenges the project team faced. When requirements changed, the team at Penrice utilised their extensive operational experience in these types of projects to ensure extra or different materials were made available in short time frames. At times this included utilising network to access extra equipment to turn around short lead-times. Being located at Angaston the logistics of a project such as the South Road Superway can be challenging but based on previous experience in high profile infrastructure works, Penrice was able to work with logistics contractors to ensure material deliveries flowed no matter what the request of the project.

Penrice feature a dedicated team of professional staff and is a key supplier to major infrastructure projects in South Australia. The South Road Superway project is another example of Penrice proving to be a market leader in their industry. They have also successfully completed works on The Northern Expressway and Sturt Highway upgrades.

Penrice Quarry & Mineral operates South Australia’s largest marble and limestone mine. Servicing all locations, local and interstate, Penrice specialise in direct supply of mineral product to the following markets:

- Civil Building and Construction/Road Bases - Rubbles
- Aggregate/Cement/Pre-Casting
- Chemical Applications
- Agricultural Lime
- Glass and Metal
- Mining
- Environmental Control/ Water Purification
- Specialised Sands
- Landscape Supplies
- Landfill

For more information contact Penrice Quarry & Mineral, Penrice Road, Angaston, SA 5353, phone 08 8563 8800, email [quarrysales@penrice.com.au](mailto:quarrysales@penrice.com.au), website [www.penrice.com.au](http://www.penrice.com.au)





# WEALTH OF EXPERIENCE

Rizzani de Eccher SpA (RdE) is an Italian-based family-owned Contractor, market leader in the areas of civil engineering and building construction. RdE technological leadership is evident in motorway and railway viaducts, urban elevated light rail and stay cable bridges. In the last 30 years RdE contributed to the construction of more than 6 million m<sup>2</sup> of bridge deck around the world. The specific bridge know-how covers design and supply of special equipment, bearings and post-tensioning, permanent works design, construction engineering and methodology, project management, specialist engineering support and experienced supervisors.

From the beginning of the Superway Project in December 2010, RdE through its branch Rizzani de Eccher Australia Pty Ltd has been involved in the engineering and construction



of the segmental viaduct with balanced cantilever methodology.

Due to the time, design and site constraints, RdE's major challenges were the standardisation of the construction details and the optimisation of the production cycles.

The design of the viaduct required the use of several different type and shape of bridge segments that introduced additional complexity to the design of the temporary works, the erection methodology and the equipment to be used for handling the segments. RdE - through its fully own subsidiary DEAL - designed, manufactured, delivered and assembled all the specialised equipment for the precast, handling and erection of the 2,203 segments. The entire supply consisted of 12 moulds, 1 Straddle-Carrier, 3 portal Gantry Cranes, 1 Launching Truss and 2 Segment Lifters.

RdE Australia and its people worked proactively and collaboratively with the Superway JV in resolving the project unique challenges, such as the complexity of its design, the time-dependant static scheme, the relatively short construction duration and tight tolerance requirements for the geometry

control. With no compromise to Safety and Quality, RdE is proud to have been part of the success of the South Road Superway Project.

RdE is committed to continue with its Australian experience and support the Government Authorities and the local Contractors with its expertise gained on projects in over 50 countries around the world. RdE believes that its experience, its skills and its people can deliver value for money solutions and bring value-add to all infrastructure projects with ultimate benefit to the Australian wider community.



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# SUSTAINABLE CONSTRUCTION

**Xypex Australia assisted in providing a sustainable solution to the South Road Superway due to the aggressive soil in which was being built on.** Specification called for long term durability and protection of reinforcement steel. Xypex Australia provided a solution that would not only provide durability and protection of the reinforcement steel but reduce on-going maintenance costs and extend the service life of the structure.

Xypex Admix C-5000 was placed in all piles and pile caps, while Ecotec Silica Fume was placed throughout all of the concrete. In providing this solution for the South Road Superway, Xypex Australia Technical department worked closely with Boral Concrete and Design Engineers (GHD) to design specialist concrete mixes to meet the project requirements.

Xypex Australia specialises in increasing the life of civil and commercial infrastructure through durability by crystallisation with concrete admixtures, coatings and repair products and has proven performance in solutions for:

- Alkaline Aggregate Reaction
- Carbonation Resistance
- Chloride Ion Resistance
- Industrial Chemicals
- Sulphate Resistant
- Permeability
- Crack Healing
- Crack Repair
- Construction Joints

Xypex Australia has recently completed projects including:

- The Royal Adelaide Hospital
- Victorian Comprehensive Cancer Centre
- The University of South Australia
- Karara Iron Ore Terminal
- The Southern Expressway

Xypex Australia specialises in providing systems and solutions that meet the demands and needs of their clientele whilst also addressing social and environmental needs to society. The Company is driven by passionate and like-minded people who believe in assisting in the sustainability of structures.

*For more information Xypex Australia has offices located nationwide, for your nearest Xypex Office or Distributor visit [www.xypex.com.au](http://www.xypex.com.au) or call (02) 6040 2444*





## COMPLETE CONTROL

The Department of Planning, Transport and Infrastructure (DPTI) have been using Transmax's STREAMS ITS Platform since 2007 when it was selected as the preferred system in South Australia's search for a new traffic management and control system that could control all of the existing roadside devices and interface with other systems used by the traffic management centre.

The move to STREAMS has been a major advancement for the operation of the South Australian road system and allows TMC operators to use one system rather than 11 separate systems.

In 2011, Transmax was named the preferred ITS supplier for the Urban Superway Project, an \$812 million project featuring a 4.8km non-stop north-south corridor between the Southern Expressway and the Port River Expressway in Adelaide.

Transmax assisted the Urban Superway Joint Venture to prepare their ITS design during the tender process. They also worked directly with the DPTI to define the concept of operations for the use of the STREAMS ITS to manage the road.

The following procedures were carried out during the upgrade to a STREAMS ITS platform:

- Develop new features to ensure it could be managed according to DPTI policies
- Develop software to integrate with the Video Incident Detection System for use at the traffic management centre
- Develop software to control and implement a Lane Use Management system
- Develop software to monitor devices providing alarm and maintenance information

- Assist with the configuration, testing and commissioning of 150 roadside ITS devices for integration into DPTI's STREAMS ITS system
- Operational scenario creation, testing and training of TMC operators in how to use the system to manage the road.

STREAMS-managed equipment includes:

- Five variable message signs and Six changeable message signs
- One WindSonic Anemometer
- 21 CCTV cameras (using the MaxPro 1000 CCTV system)
- SCADA equipment
- Programmable Logic Controllers (PLC)
- Bascule bridges
- Two span locks
- Warning gates
- Barrier gates
- Two pedestrian gates
- Two sets of warning lights and gongs
- One set of marine traffic lights
- Two marine horns

Transmax is a full service Intelligent Transport Systems solutions provider with over 40 years experience in their field.

# TRANSMAX

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