Holcim

Strength. Performance. Passion.

M7 Orbital

Project Report - New South Wales

The Roads and Traffic Authority of NSW engaged Westlink Motorways in October 2002 to design and construct the M7 Orbital, thereby providing a ring road around Sydney. The main features of this project included:

- a 40km motorway linking the existing M2, M4 and M5 motorways
- specifically linking the M5 at Prestons in the South with the M4 at Eastern Creek and the M2 at West Baulkham Hills in the North
- seventeen interchanges along the motorway to provide access to the communities of Liverpool, Fairfield, Blacktown and Baulkham Hills, improving transport options to these areas
- a total of 38 underpasses and overpasses to maintain local access for pedestrians, cyclists and motorists along the full length of the motorway
- a facility built to motorway standard with the Westlink M7 providing for travel at variable speeds up to 100km/h, and
- a 40km off-road shared cycle/pedestrian pathway traversing the motorway and connecting with the Sydney Cycleway network.

The Westlink M7 is a cashless, free-flow electronic tollway with no toll booths, no slowing or stopping.

Specification requirements

The concrete had critical specification requirements including the following:

- RTA of NSW design criteria including bridge mixes, paving concrete and tremmie mixes
- special requirements for lean mix concrete
- special requirements for high early strength concrete.

There was a requirement to conduct a high degree of concrete testing to ensure that supplied concrete complied with nominated requirements. This required significant logistical activity and analysis. In addition, there were significant logistical difficulties in supplying concrete materials to such a vast construction area.

Solutions developed

Holcim provided a complete inducted testing team dedicated to the Westlink M7 project that significantly reduced the risk of slowing or stopping construction.

There were also procedures in place to ensure that a consistent quality product was provided to the customer despite concrete being provided from multiple supply plants, necessitated by the vast construction area in this project.

Results achieved

Over 159,000m^3 of concrete was supplied to the project comprising:

- 53,000m^3 of RTA bridge concrete
- 28,000m^3 of 5MPa lean concrete
- 11,500m^3 of high early strength concrete

2,700 reinforced concrete bridge segments were cast. 400,000 tonnes of concrete was used for bridge construction. Approximately 1 million tonnes of aggregate and sand in conjunction with 100,000 tonnes of cement and 12,000 tonnes of reinforcing steel were used to construct the concrete pavement.

Location	**Western Sydney, NSW**
Client	**Westlink Motorways**
Contractor	**Abigroup/Leightons JV**
Engineer	-
Products supplied	• Lean mix concrete • RTA bridge concrete • High early strength concrete
Commencement	**June 2003**
Completion	**June 2006**