Project Profile

Noarlunga to Victor Harbor Road Road Upgrades

Client	Lanskey Constructions
Location	Victor Harbor, South Australia
Duration	June 2018 to July 2018
Contract	Lump Sum Design and Construct
Cost	$1.9 million

Project Overview

In 2018, Bunnings Warehouse and Coles Supermarket commenced the $25 million construction of new retail facilities on the corner of Adelaide Road (Noarlunga -Victor Harbor Road) and Hindmarsh Road. The works required upgrades to the roundabout at the crossover point of the new road and upgrades to the existing roads adjacent to the retail site.

McMahon Services was engaged by Lanskey Constructions to undertake road works, awarded through a competitive tendering process.

Scope of Work

The scope of works for the roundabout and road upgrade project included 5,000m³ of bulk earthworks to construct new road batter and the detention basin, a new underground stormwater system, and the supply and install of road lighting totalling six poles and luminaires along Adelaide Road to improve the road safety. Road works included concrete works for new kerbs and gutters, traffic islands and pram ramps, and construction of new road pavement for the road widening, left turn slip lanes and the new access to the site and upgrades to the existing road with the placement of new, thicker bitumen to improve pavement life and road rideability. Additional scope included construct of a new 2.5m wide shared path along the new development, new signage

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and line marking. Tree removal was planned in advanced through early engagement with City of Victor Harbor council.

Over 30m of redundant asbestos piping were excavated, treated and disposed of at a licenced EPA receiving station. The project team delivered 500m of new road construction, 4,500m² of new asphalt, 375m of new stormwater reinforced concrete pipes ranging from 375mmm to 450mm, 15 new stormwater pits and 7,000m² of landscaping.

Traffic management strategies for Adelaide Road with a daily traffic of 4,900 vehicles per day were developed before construction works commenced and were implemented at all times during the works. Works were also undertaken adjacent to operating businesses requiring additional pedestrian and access traffic management strategies.

Variable message signs were set up for advanced notice of work commencement and to communicate traffic restrictions during the deep lift asphalt work. Letter drops and face to face communication with local businesses adjacent to the works were conducted prior to deep lift asphalt work. As a result, there were no community complaints during and after the deep lift asphalt work.

The project was completed ahead of time and on budget. The workforce peaked at 20 and achieved 13,000 work hours with nil environmental incidents and nil Lost Time Injuries. The majority of plant and equipment on the project was owned and operated by McMahon Services, and included a 2m profiler, two 20t excavators, two 8t excavators, two 40t dump trucks, two 140M graders, a kerbing machine, 10t and 8t rollers, a 12,000L water truck, one Franna Crane and six semi tipper trucks.

Innovations

Accelerated Program

The access road works were required to be completed in early June to allow Bunnings traders to finalise set up and open their new store. Due to unforeseen delays, works started later than initially planned and the project team were required to develop innovative delivery strategies to ensure the access road portion of the works were completed on time.

A variety of alternative plant and equipment were mobilised to site to accelerate the program. Two 20t Excavators and two 40t Dump Trucks with faster production rates than the originally scoped plant and equipment were used for construction of the detention basin and the new road batter. A 2m Profiler removed the approximate 280mm layer of the existing road to minimise delays to traffic on Adelaide Road. A kerbing machine laid 200m of concrete kerbing and gutters faster than could have been achieved with labour crews. Also assisting in the accelerated program were a 140M Grader and a 20t Excavator each fitted with Total Station Survey, an electronic transit theodolite to read slope distances across the work site in real time. This information was used to construct the basin and the road batter to the design without requiring multiple visits of a surveyor.

Staging and delivery methodologies were also altered during the construction phase to minimise impacts on traffic and businesses.

Construction around live services

Overhead powerlines were present on site and this was a key risk during the bulk earthworks and road batter construction phases. Safe Work Method Statements were developed that limited the height excavators could raise their booms while spotters were in place at all times to ensure people, plant and equipment remained well outside the powerline exclusion zones.

An existing watermain and low voltage electrical conduits crossing the work site had not been identified during the design phase and conflicted with the new underground stormwater system. The project team developed a new design for the stormwater comprising of additional pits, pipe alignments and invert chambers to avoid the more-costly task of relocating the watermain.

Minor modifications to the lighting design allowed for a common service trench for stormwater and the electrical conduits, dramatically reduced trenching and backfilling works.

Fibre reinforced concrete

Fibre reinforced concrete was used for the construction of drainage structures. This improved productivity as the materials are 75% lighter than traditional concrete and the high strength of pipe sections allowed for stability over longer lengths during transport and placement, 4.0m versus 2.5m for steel reinforced concrete pipes. Fibre reinforced concrete also has better corrosive properties protecting the concrete in the long term from environmental damage compared to traditional concrete.

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Deep lift asphalt

Changes to the Adelaide Road design from granular pavement to deep lift asphalt minimised impacts to traffic and local businesses, reducing this component of the works from 30 days to 3 days and eliminating the need to work through the night. The thickness of the new pavement was reduced from 365mm to 275mm significantly reducing the risks to break the existing watermain and risks related to wet weather delays.

Local Participation

Local subcontractors and suppliers were engaged for all works not self-performed by McMahon Services. This included service locations, traffic management, labour hire, plant hire, all materials and transport. McMahon Services' work force were all from South Australia.