NEW CUTTING FOR SAFER MOTION

The project included the removal of the level crossing on Springvale Road, the construction of a new premium station at Springvale, improved bus, taxi and parking facilities.

SPRINGVALE LEVEL CROSSING REMOVAL / **ALLIANCE**

Below Springvale Level Crossing is a $159 million project that forms part of the Victorian Goverments blitz to remove level crossings across Melbourne.

A precedent for transport upgrades in Victoria, the Springvale Level Crossing Removal from VicRoads Alliance sets the bar for urban renewal ideology, combining priorities of premium public transport nodes within a wider contribution and connection to the community.

An Alliance consisting of VicRoads, Public Transport Victoria (PTV), Metro Trains Melbourne (MTM), McConnell Dowell Constructors, Balfour Beatty Rail, Parsons Brinckerhoff and Beca was formed to design and construct the project. Major stakeholders included the City of Greater Dandenong and the community of Springvale. Delivered over a period of fifteen months, the Alliance contract was awarded in May 2013 and was completed in June 2014.

Scope of works involved the construction of a new bridge for Springvale Road across what was previously an at grade level crossing, with the basic premise being the lowering of the railway line to underneath Springvale Road and a new station above. Around 1.6km of new tracks have been built into the new cutting with Brendan Pauwels, Project Director from Vic Roads, explaining the staging of the project to its current operational status.

"We had to close Springvale Road for about 9 days last year to build the bridge structure across what would become the new railway cutting. The train platform itself was being built while the excavation works were going on, in the building of the new track alignment. For the majority of the project we were able to excavate next to the existing rail alignment, so that then later the tracks could be tied back in to the existing ones at either end."

A massive amount of around 1000 piles were installed for the initial establishment of the retaining walls, followed by a repeat process of removal of material, then lowering of retaining wall to a final depth of five and a half metres. Samr Fouda, Network Operations Manager from VicRoads explains the decision for an iterative excavation methodology, including use of CFA piling for the retaining walls, and furthermore the selection of integral abutment for cast supports and pre-cast beams for the bridge.

"The area had some challenging geotechnical issues. An iterative process was due to those ground conditions - we had to initially lower the water table out there, so before Christmas we de-watered the site. We excavated down around two metres at a time, and then would shotcrete the wall, so that we could stabilize the walls before we got down even further."

'In order to minimize future maintenance, we had integral abutments where the bridge beams were cast into the pile, so there was no expansion joint. That was a successful outcome as we don't have to go into the rail corridor in the future and do maintenance on that.'

The Alliance management team was headed by the General Manager Peter Fraser, with six other team members reporting – including Health and Safety Coordinator, Construction Manager and Engineering Manager from McConnell Dowell, Design Manager and Stakeholder Manager from Parsons Brinckerhoff, Networks Operations Manager from VicRoads, and Rail Interface Manager from MTM.

Ongoing consultation occurred not only with the local council but also the Office of the Victorian Government Architect, ensuring a design that was consistent with the greater Springvale area. Future transport requirements and developments in Victoria have been factored into the upgrade, with the old railway track alignment being a possible site of additional tracks (including freight travelling between Dandenong and Port of Hastings into Melbourne).

A project that has been delivered on time and under budget, the rail crossing removal has gone beyond initial design considerations to offer safer and greater infrastructure for a community in motion.

For further information contact VicRoads, email railprojects@roads.vic.gov.au

Left Delcon Civil completed the track formation, bulk earthwork, and drainage for the new underground station

Embracing the complexities of a rail and road interchange and site renewal, Delcon Civil made a full commitment to bringing the Springvale Level Crossing Removal to a safe and successful completion. The $400+ million project from a VicRoads Alliance and a consortium of companies have manifested a railway station that now lies beneath the roadway, and with Delcon Civil ensuring a collaborative approach for a quality outcome.

The initial scope of works for Delcon Civil was the major pipeline construction, consisting of 1350 mm diameter stormwater concrete reinforced pipe (RCP). The primary challenge faced at this stage was conducting works in the heart of Springvale, therefore requiring clear direction and constant communication with local businesses and also residences.

"The broad scope was to construct the subsidiary pipeline works, to Melbourne water standards, at an average depth of between 3½ to 5 metres. We did all of the re-instatement works along with ¨ the asphalt, road works and modifications required, whilst dealing with a multiple of existing services, and overcoming the challenges of planning our design, and working in a rail environment,' states Director of Delcon Civil, David Harry.

Following on from the first pipeline staging for the project, were three other road areas requiring stormwater drainage, watermain diversion and re location along with sewer and manhole construction. This included works on Lightwood Avenue, using 1350mm diameter RCP and 450mm mild steel concrete lined water main including all valve and cathodic installation along with hot taps and cut ins conforming with South East Water standards. A network of secondary roads using HDPE (High Density Polyethylene) pipes was also constructed. Further aspects involved sewer pipeline construction and a manhole construction that required horizontal directional drilling. Night works works were undertaken to construct a turning lane on Springvale road in accordance with Vic Roads specification

All project areas involved working around a high number of services already in place, and required strategic and safe planning in order to avoid disruptions. In fact, testimony to Delcon Civil's precautionary work value, no disruptions to services occurred through any of the three work stages. This was also achieved by the use of company's fleet of NDD (non-destructive digging) Trucks, enabling excavation to occur with the use of high pressure water and vacuum. Conducting works at night limited the amount of disruption, with services needing to be shut down during those time-frames.

The apex moment of the project was the Easter-timed end tie in of the trackwork. It was in the co-ordination of the complex job amongst the plethora of constraints that Delcon Civil demonstrated their capability, along with handling the amount of service-proofing work that the site required.

"The work we did over Easter was basically hinged on whether the project was going to be successful or not. The train line was shut down for four days, and we had just over two days to complete our scope of works. We did everything from bottom ballast down on the entire Eastern end of the tunnel. This included the track formation, bulk earthworks, drainage, and demolition of a shotcrete wall. Essentially we had 8 excavators, 10 dump trucks and other equipmentand it was quite a large affair with a lot riding on it."

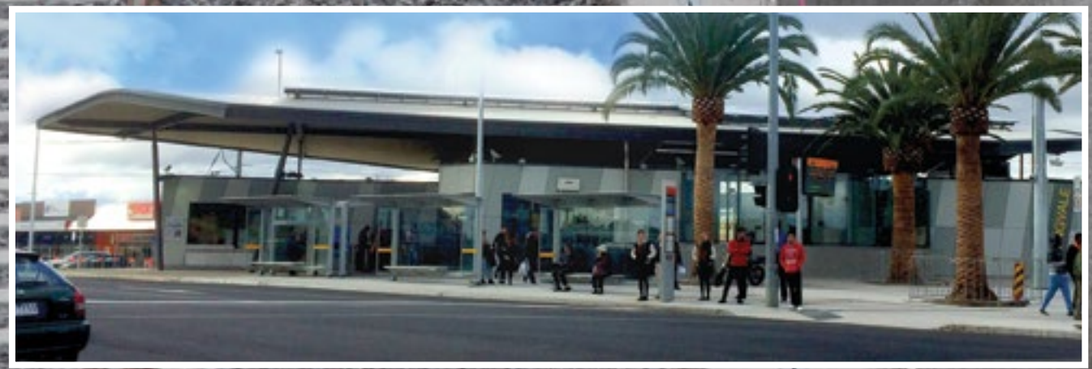
There were 15 members of Delcon Civil on the team, including company director David Harry, two Project Engineers, General Foreman, Leading Hands, with further employees as plant operators and labourers, pipelayers and welders. Subcontractors were used for works such as asphalting and geo-technical testing.

A company founded in 2006, Delcon Civil has remained driven in their focus on collaboration and the development of strong relationships with all stakeholders. Regarded as an industry leader for large scale civil and pipeline projects, it is their approach of commitment and integrity in their work that keeps a standard not only for the company, but also for the wider industry.

Ensuring safety and minimising their impact on the environment when executing major civil and pipeline projects defines Delcon Civils' culture. Their best practice approach in safety and environment whilst delivering quality outcomes is testament to their continued growth and success.

For further information contact Delcon Civil Pty Ltd, 3/37 Yazaki Way, Carrum Downs VIC 3201, phone 03 8787 7858, email info@delconcivil.com.au, website www.delconcivil.com.au

Below CCG architects were engaged to develop the architectural, urban deisgn and precinct works



Below Mitchcon installed the shotcrete for the retention system.

There are over 160 level crossings in Metropolitan Melbourne. Many of these cause congestion traffic and rail and are the source of accidents. The Victorian Government has a program to remove these conflicts over the coming years, with two (2) being commenced this year. Springvale is one of these two (2) and CCG are part of a consortium that won this Alliance project with Networx and VicRoads. The principal partners of MacDow, Balfor Beaty, PB and Beca with Vic Roads, PTV and MTM have now completed managing this exciting project. CCG architects were engaged to develop the architectural, urban deisgn and precinct works, and involved deisgn for:

- New platforms at the lower level
- New station facilities at street level, including waiting room, kiosk, toilets, ticketing and staff facilities
- Kiss'n'ride, taxis and parking for people with disabilities in a dedicated zone with safe access to the station
- New Bus interchange on Springvale rd and Lightwood road
- Replacement on grade parking
- New station forecourt, with iconic Palm trees and colourful paving with associated bike parking and retail.

There have been many complimentary comments made about this new station which integrates well with the town centre and should prove a catalyst for future development in the precinct.

For more information contact Caldis Cook Group, Suite 209, 757 Bourke Street, Docklands VIC 3008, phone 03 9600 3090, fax 03 9600 4507, email projects@caldiscook.com, website www.caldiscook.com

Recently in construction, there has been a demand for the ability to excavate below ground level, and make the most out of every square metre of land. This is true as congestion grows in cities such as Melbourne. As density increases, transport systems must too, with excavation to create new routes of transport free of interference, becoming the logical solution.

Retention systems involving shotcrete provide an efficient avenue for this scale of excavation. Springvale Level Crossing Removal was organised and efficiently retained by the collaboration of McConnel Dowell (MacDow) using Mitchcon Pty Ltd to install the shotcrete in their retention system. Mitchcon also provides all types of concrete pumping services to the construction industry. Their versatile level of experience enables them to deliver their services in a productive manner. A variety of pumping methods and state of the art equipment are used to ensure that deadlines are met and that the quality of the services delivered are of an exceptional standard.

Mitchcon's ethos incorporates integrity and veracity, so their dialogue with MacDow did not involve excuses or 'whys'; it was about 'how' and 'when'. Mitchcon's respect and broad range of experience, allows them to work professionally along side major contractors. Mitchcon shares an enthusiasm and expectation for productivity, enabling them to achieve what most fall short of producing. Often the shotcrete walls on Springvale Level Crossing approached challenging heights and depths. Over 35 years of collaborative experience allowed Mitchcon and MacDow to expediently apply safe work methods to all shotcreting situations that presented. Despite challenging heights, the walls were sprayed successfully, because of extensive experience in very challenging situations.

In addition to installing shotcrete, Mitchcon offer a range of retention services. They are sensitive to the commercial demands on each individual system, so offer all finishes, from cost effective and time efficient, to the most intricate and creative finishes involving shotcrete. Projects such as the Hamer Hall Redevelopment and various skate parks are testimony to their ability to produce artistic finishes to logistically challenging jobs.

As Melbourne expands, Mitchcon will continue to provide expertise and experience to contractors both large and small with professionalism, to these challenging projects. Both MacDow & Mitchcon have the skills and importantly the professional approach necessary to accomplish high productivity in a physically demanding and testing field of work. Mitchcon would like to congratulate MacDow on the way the project was managed, and look forward to working together in the future.

For more information go to www.mitchcon.com.au

Below Oak Park Tullamarine specialise in in-situ casting of structural concrete.

Below Pressure Right provided the temporary works for water removal during construction.

In-situ casting of structural concrete is an artform mastered by Oak Park Tullamarine concrete services, a family owned business running for over 20 years and located in Victoria. Contracted for all structural concrete works on the Springvale Level Crossing Upgrade, Oak Park Tullamarine successfully managed a tightly programmed project with their array of skilled manpower and equipment.

Completing all structural concrete work on this project included installation of re-inforcement, formwork, pouring of all structural beams, prepping the shotcrete and boxing and pouring the platforms and ground slabs. Their skilled labour was integral in the cutting and excavation process for the new railway tracks at the lowered ground level.

Working around the clock, Oak Park Tullamarine carried out all concrete works for both the Springvale Road Bridge and the second bridge at Warwick road. Project Director William Bell explains the process.

"We were there from the very start. First off was around 4 – 5 km of capping beams along the top of the retaining wall, then we moved onto the bridge – we did Warwick Avenue Bridge and Springvale Road Bridge. The Springvale Road Bridge was a shutdown, so we worked through three or four nights to do the bridge. Then we moved onto the ground slabs where we did all the excavation process slabs and the platforms as well."

A hidden component to the job was a large stormwater concrete tank that is underneath the rail tracks.

Oak Park Tullamarine supply their own crew, ranging from crane crew, formworkers and concreters. On this project they had 48 workers at the peak, with another 10 sub-contractors to fix the steel. They have a range of equipment including cranes that are at the ready for all jobs.

Current other projects underway include the drainage reconstruction for the outer rim of Tullamarine Airport with construction company John Holland and pavement works at Melbourne Airport for Fulton Hogan and McConnell Dowell.

For more information contact Oak Park Tullamarine Pty Ltd, 105A Boundary Road, Laverton VIC 3026, phone Ian Bell on 0419 002 154

Earthwork projects that cut below the water table require reliable and highly durable equipment for the dewatering of the site. For the grade separation and subsequent lowering of the rail line to underneath the road on the Springvale Level Crossing Project, Pressure Right were sub-contracted for their specialist knowledge of pump and dewatering solutions on projects of this type.

With the permanent stormwater structure a separate part of the infrastructure works, Pressure Right provided the temporary works for water removal during construction phase. Using their horizontal trencher, they installed 480 lineal metres of horizontal drainage at 3 metres below the final cut level.

The work entailed the installation of the dewatering infrastructure then connecting 8 pumps to run the system, which then pumped water into a sediment tank, and away again another 400 metres from site.

Utilizing the most efficient machinery currently on the market, the company has a number of BBA PT90 dewatering pumps that they used on this project. As a regular part of their service, Pressure Right provides periodic maintenance of the pumps, in this case returning to site twice a week to monitor fuel and re-align any elements of the system.

"The biggest challenge we faced was the requirement to continually move our systems around during the construction period to ensure sufficient access was maintained to allow ground works to continue. At one stage this involved hanging several hundred metres of poly discharge pipe from the walls. The most rewarding part of this job was that the main contractor on site was able to complete their project without any ground water issues"

With offices located in Geelong, Sydney and Brisbane, Pressure Right tackle infrastructure, residential and commercial jobs across the Eastern Seaboard. Pressure Right has just completed major dewatering works for the Gold Coast City Council, Port Botany Terminal 3, residential developments on the Bellarine Peninsula along with dewatering for storm water upgrades for the Greater City of Geelong Council. Pressure Right has also been involved in several large bypasses recently including the Sewage Treatment Plant in Penrith for Water Infrastructure Group/ Sydney Water along with the 1650mm outfall project at Armstrong Creek with the Barwon Water Alliance group that saw them win an Earth Award.

For more information contact Pressure Right (VIC), 153-155 Weddell Road, North Geelong VIC 3215, phone 03 5291 3888, fax 03 5278 5763, email info@pressureright.com.au, website www.pressureright.com.au