

# EXEMPLARY TEAMWORK STEERS GREEN STAR SUCCESS

The \$36.5M Eagle Farm Bus Depot project houses a Hardstand & circulation area for 200 buses. The impressive project also contains an administration building, workshop, refueling building and develop access roads and driveways into the depot.

**MAIN CONSTRUCTION COMPANY : ADCO Constructions Pty Ltd**  
**PROJECT END VALUE : \$36.5 million**  
**COMPLETION : September 2013**

It's one of the most technologically advanced workshops in Queensland, achieving a Five Star Green Star, Industrial Version 1, Design rating and currently submitting the Five Star Green Star, Version 1, As-built rating. But there was something else about the \$36.5 million Eagle Farm Bus Depot Project which was also outstanding.

It was the level of teamwork - between contractors ADCO Constructions, the stakeholders Brisbane Transport, Brisbane City Council, and the owner, Queensland Treasury Corporation. ADCO Constructions Project Manager John Porst, "The high level of mutual engagement and shared focus made this an especially positive project for everyone involved, and assisted in achieving a best practice outcome for this highly challenging and technically demanding project." The construction scope comprised storage room for 200 buses, a circulation driveway, mechanical workshop, refuelling stations, administration building, extensive access roadworks and sliding security gateways.

ADCO's combined strengths in design and construction were a major advantage, with their innovation-focused consultants assisting them to develop an integrated and fully-co-ordinated design and construction methodology. This approach also meant all potential constructability issues were resolved during the early stages, minimizing risks during the construction phase and facilitating timely completion of project milestones.

ADCO and their consultants, sub-contractors and suppliers undertook substantial analytical work throughout the design and construction process. A number of environmental considerations needed to be addressed, including potential noise pollution and air quality issues

during Depot operation. Extensive sound propagation modelling was carried out to ensure there would be adequate acoustic barriers between the Bus Depot and the Aviation Museum which is planned for a site immediately adjacent to the Depot.

Air quality monitoring was also carried out over an extensive area during the early stages, to establish baselines.

A range of other initial and ongoing studies were conducted, including traffic and transport analysis, mobility and accessibility engineering, intersection conceptualisation, design and capacity analysis, parking studies, road corridor planning, hierarchy of risk and safety analysis, light impact analysis, stormwater management, landscaping and topographical surveying.

To ensure construction did not impact on the enterprises in the surrounding industrial precinct, 3D modeling was undertaken to give a clear picture of the impacts the Depot would have on the area around it both during construction, and once operational.

The degree of mutual cooperation and cohesive working relationship between ADCO and the stakeholders ensured the results of all the various studies were able to add value and deliver a Depot which meets all the end-user requirements in terms of the buildings and the variety of operational and ancillary activities carried out there.

Leading edge technology has been incorporated into many aspects of the Depot, including the security. ADCO worked with Brisbane City Council's Corporate Security to develop an appropriate solution, which includes a fully-monitored fence and an automated secure sliding gate

entry system which combines electronic passes for the buses themselves, swipe card entry for staff and a CCTV visitor screening system.

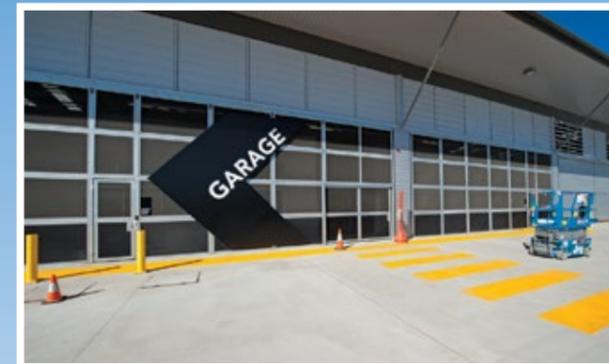
The project's Green Star initiatives include LED lighting for energy efficiency, mixed-mode air conditioning, solar passive design, solar panels and the harvesting of rainwater which will supply 95% of water used on site.

All ADCO's efforts came to fruition on October 13, 2013, when the Eagle Farm Bus Depot was formally opened by the Right Honorable Lord Mayor of Brisbane Cr Graham Quirk.

ADCO is one of Australia's top 100 private companies, with a track record of successful on-time, on-budget delivery of projects which stretches back to 1972. Their reputation has been built on long-term client relationships, as evidenced by their completion of numerous stores for the Australia-wide ALDI rollout, over 100 projects for Woolworths, and numerous Bunnings stores including the new, multi-level Bunnings Chatswood.

Other major industrial projects ADCO have successfully delivered include Rivergate Marina and Shipyard (Brisbane), the Virgin Blue Maintenance Facility at Brisbane Airport, Boral Plasterboard Manufacturing Plant and Gypsum Store (Brisbane), the Art Gallery of NSW Collections Store (Sydney), Virgin Blue Flight Simulators (Brisbane), TNT Distribution Centre Hume (ACT) and the M7 Precast Facility (Sydney).

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# PROVIDING SMART SOLUTIONS

The recently completed Trade coast Bus Depot at Eagle Farm consisted of three separate main buildings; Administration, Garage and Refuel, of which van der Meer Consulting delivered the following services:

- Structural Engineering Design
- Structural engineering Documentation
- Detailed shop drawings for both precast and structural steel elements

Each building provided a separate set of challenges which van der Meer Consulting needed to overcome in order to provide a mutually acceptable solution to all parties involved in the project. Van der Meer Consulting implemented its extensive technical background and knowledge to ensure that all applicable greenstar rating points associated with the structural items were achieved to ensure that the buildings delivered all the prerequisite 5-Green Star requirements.

Of all of the three buildings, the Garage Building was the most complex with its in ground service and jacking pits. The structural design of this building utilised a conventionally reinforced raft slab on ground, 21.5m single span steel portal frames, typically at 13.8 metre spacings, internal precast buildings within the main structure and a specialised maintenance platform, all incorporating attention to architectural detailing.

The structural documentation for this project was primarily undertaken using REVIT to model all structural elements. This structural model was then used as the foundation for the concrete panel and structural steel shop drawings using Tekla Structures software. An efficient process was implemented during the compilation of the shop drawings as the design engineers were able to work alongside both the draftspersons and detailers ensuring that the attention to detail

was maintained throughout the entire process without the need to produce, review and respond to time consuming RFI's.

The outcome was a project where the structural concept truly matched the finished product that was to both the projects client / stakeholders satisfaction.

Van der Meer Consulting is a wholly owned Australian consulting group, with offices in Melbourne and Sydney. The group offers Structural and Civil Engineering consulting services, as well as capabilities in Building Information Modelling (BIM) which will provide the structural steel and precast workshop fabrication drawings.

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## CIVIL ENGINEERING SPECIALIST

**It's amazing what can happen in a year.** And it is easy to simply not see all that has been done by the civil engineering contractors of a large building redevelopment and how incredible it is to get it all done in such a short time.

Mid-2012, Civil Unlimited was confronted with so many engineering challenges on the Tradecoast Bus Depot site at Eagle Farm, they hardly knew where to start.

"First of all," says Civil Unlimited's project manager, Alana Luppi, "The site had previously been the prefab concrete set down area for the Brisbane tunnel works. 90 percent of the site had random concrete slabs, boulders and rubble which no-one knew about. There was no alternative than to constantly haul out these huge concrete leftovers."

This problem continued during Civil Unlimited's second task – constructing the civil stormwater drainage and sewage retention basin. "Again, our pre-mapped drainage pathways were constantly interrupted by concrete. To be honest, we half expected to find a derelict plane down there as well. Nothing would have surprised us." By the time Civil Unlimited came to working above ground, the project was comparatively a breeze.

"We did the engineering for the building 'internals' as well as the upgrading of Lamington Avenue and Schnider Road. Once we got the underground out of the way, the surface work was comparatively easy."

When considering the enormity of the above-ground work on the site, it's easy to forget the enormity of what went into laying the surface. Civil Unlimited trucked in about 26,000 tonnes of dirt to fill the holes left by the concrete and to stabilise the marine mud to take footings and piping.

Civil Unlimited expect to have their contribution to the project finished around 12 months after starting, a pretty fast turn-around considering the unforeseen circumstances just below the topsoil.

Civil Unlimited's next project will be bulk earthmoving and stormwater drainage for the Enoggera Army Barracks. "That should prove a little easier. Although you never know – we might find that discarded plane over there."

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## CREATING AUTOMATED SECURITY SOLUTIONS

Keeping people and places safe is Create Security's speciality, with the company's design, engineering and construction talents delivering high-quality, reliable solutions for a wide range of projects. Recently, the company provided Adco with security gates for the Eagle Farm Bus Depot project, designing custom solutions which will ensure security for the end user (Brisbane City Council) and their employees.

The package delivered for the Bus Depot included a 6m manual swing gate, a pedestrian entry/exit gate and two 6.5m high speed cantilever gates, all engineered to the highest standards of quality. There were a range of site-specific considerations which the design and installation needed to address. As the main entry gate is suspended out over a flood retention basin built into the site, special footings were required to support the structure. Also, in conjunction with the multiple safety devices already built into their gates, Create Security needed to engineer a method of preventing unauthorised persons from entering the Palisade area from the water side of the gates.

The gates also needed to comply with the working at height issues which could arise when the gates require servicing or inspection. Safety was also carefully considered in terms of those in the vicinity during the operation of the gates, with the large, heavy cantilever gates designed to open at the rapid rate of one metre per second.

Create Security pay close attention to the aesthetics of their products in relation to the wider security installation and general surroundings. Their gates are designed to flow into the next part of the site's security solution, and the company's quality control processes also apply to the finish of the products.

For every project, Create Security provide tie-off posts so fencing can be attached directly to the gates' portals, reducing the amount of free standing fence posts required and resulting in an integrated appearance from the fence to the gate.

Work on the Eagle Farm Bus Depot security gates commenced in December 2012 when the first rag bolts were installed for the swing gate, with all works completed in time for the project's commissioning and operational milestones.

Create Security have 20 years experience in providing physical automated security solutions and traffic control systems across the government, commercial, industrial and corporate sectors. Their products include gates, automated bollards, pedestrian turnstiles, electric and high security fencing and automation equipment. A whole-of-project approach is taken, with Create Security's expert engineers and designers working closely with clients to develop the most appropriate solution for the site and the client's specific security needs.



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