

PERTH TAKING FLIGHT

DEVELOPER : Perth Airport
MAIN CONSTRUCTION COMPANY : Georgiou
ARCHITECT : MPS
STRUCTURAL ENGINEER : BG&E
CONSTRUCTION VALUE : \$31 million



Images this page supplied by Georgiou

The Perth Airport Skybridge saw the construction of a 280m of elevated moving walkway with three lifts and future provision to connect the proposed Forrestfield Airport Link project (Airport Central Train Station) to Terminals 1 and 2 at Perth Airport.

The Perth Airport Skybridge is a \$31 million project linking Perth Airport's terminals with Airport Central Station as part of the Forrestfield Airport Rail Link (FAL) which links Perth's public transport network with the airport.

When the FAL opens in 2021, the enclosed walkway will provide a sheltered link from the station to Terminal 1, with access to Terminal 2.

The Skybridge is a major step to ensure an easy and user friendly public transport journey to Perth Airport. "The development of Airport Central Station and its link to the terminals via the Skybridge will provide a seamless passenger experience. Perth Airport's focus is on providing an efficient and modern airport that provides maximum economic benefits for the State and a quality travel experience for all Western Australians," said Kevin Brown, Perth Airport CEO.

The project was jointly funded by the State Government and Perth Airport and delivered by Georgiou Group, a national civil and building construction company with offices in Perth, Brisbane and Sydney. Georgiou's ability to bring together their building and engineering

arms to demonstrate an innovative approach to their clients' needs saw them rise above the competition and secure the project.

Georgiou used computer simulated pedestrian modelling analysis to optimise the bridge width and traveller position leading to an overall weight and cost reduction while still achieving the client's aesthetic requirements. This also gave the airport confidence that the bridge could cope with the expected peak pedestrian demand.

The need to maintain normal airport operations during construction required meticulous planning during the project. The project works were staged with four main work fronts constantly evolving to minimise impacts to ground transport stakeholders and available carpark bays.

The bridge was installed in 12 modular sections measuring a total of 280m long and 8m wide that were craned into place in June/July 2019. The transportation of the modules from the assembly area onto site. Georgiou used a six-axle Self Propelled Modularised Transporter (SPMT) which involved a high level of planning to minimise operational impacts.

The airport's height requirements needed to be met, and lifts and craneage were coordinated with Perth Airport and Civil Aviation Authority requirements. The lifts utilised a 750-tonne crane – the largest in Western Australia. The team took just 20 minutes to lift the 35m, 76 tonne modules into place without affecting the airport's daily operations.

The site also had a high water table requiring dewatering to facilitate construction. To meet environmental requirements within the limited site footprint a complex water re-injection method was adopted. The bridge was also designed as naturally ventilated with low energy lighting and sunlight harvesting to reduce energy consumption.

The project had complex internal and external stakeholder relationships that required a strong partnering philosophy and relationship management interface to be fostered. Georgiou brought together their building and engineering arms to deliver the project along with designers BG&E, Aurecon and MPS Architectural.

Georgiou also needed to be in sync with Perth Airport when it came to the closure of the main ring road into the T1 and T2 Terminals. The closure's success was down to each partner understanding the other's needs and working as one team. Through exemplary project coordination and planning, the project team completed the works one month ahead of schedule.



"From day one we worked incredibly hard to hit every milestone," said Construction Manager, Steven Pilling. "From pouring the first pier foundation to lifting the trusses, every team member has given the project 110% which shows in the finished product."

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For more information contact Perth Airport, Level 2, 2 George Wiencke Drive (Opposite T3 & T4), Perth Airport WA 6105, website www.perthairport.com.au



WHEN SIZE DOES MATTER

The Perth Airport Skybridge is a 280m elevated moving walkway connecting Perth's airport with the Airport Central Railway Station.

The bridge was fabricated in 12 modular sections, each 35m long and weighing 76 tonnes, which were bolted together onsite before being craned into place.

Joyce Krane used their new 750 tonne Liebherr LTM1750-9.1 Mobile Crane – one of Australia's largest mobile cranes to lift the sections into place.

"It was actually the very first job for our brand new crane which had only just arrived in the country," said David Morgan, Business Development Manager. "We now have three large heavy lift mobile cranes in Australia – two LTM1750-9.1 cranes and one LG1750 crane."

The logistics of the lifting operation were quite straightforward with clear level access to the site however only a small operating window of time was available to complete the lifts which presented a challenge.

"The main front access road to the international airport had to be closed to allow the Skybridge sections to be safely and accurately lifted over the road and into position," explained David. "We had to be as quick as safely possible to minimise the impact on the airport operation."

Joyce Krane also engaged an experienced crane engineer who worked with the lifting team and conducted checks to ensure the rigging equipment and the initial positioning

of the crane was correct. The Joyce Krane team safely completed the lifts well within the allocated timeframe.

Based in Karratha in the Pilbara Region of Western Australia, over the last 40 years Joyce Krane has established a reputation as a regional heavy lifting and logistics specialist of choice. In recent years Joyce Krane has established operations in Onslow and Perth, Western Australia and their Heavy Lift Division in Sydney now provides heavy lift and logistics services to the eastern states of Australia, particularly for the infrastructure and renewable energy sectors.

In addition to the Georgiou Group, Joyce Krane have worked with some of Australia's biggest clients including Chevron, Woodside, Rio Tinto, BHP, Laing O'Rourke, CPB, John Holland, Clough, Bechtel and Technip.

The company has over 50 cranes Australia wide, ranging from 25-750 tonnes operated by experienced nationally accredited personnel. During their 40 years of lifting experience the Joyce Krane Technical Team has successfully planned and completed many specialised and challenging heavy lifts on some of Australia's major construction projects.

In addition to crane hire, Joyce Krane also have a fleet of transportation and specialised lifting equipment and provides a range of support services including project evaluation, site inspection, equipment maintenance, JSA (Job Safety Analysis) development, personnel hire, transport and logistics.

Joyce Krane's wealth of industry knowledge and expertise enables them to manage the most complex lifting challenges in a safe, efficient and cost effective manner. No matter who or where the client is, their mission is to meet and exceed expectations by continuous improvement and consistently delivering quality services on time, on spec and on budget.

"Joyce Krane is a 100% Australian owned family business," said David. "The business was built by founder Mick Joyce based on good old fashioned Australian values and we continue to stay true to those values today."

For more information contact Joyce Krane, (Karratha HQ) Lot 3911 Coolawayah Road, Karratha WA 6714, phone 1300 956 923, website www.joycekrane.com



HOOK LINE AND LIFTER

Engineering consultancy Peritas Group (Peritas) were engaged by Georgiou as the temporary works and construction engineer for the lifting of the 12 large steel modules that comprised the skybridge.

Peritas were responsible for the design of the lifting procedure, lifting frames and lifting points. They also designed temporary steelwork, propping and module modifications to accommodate the lifting points and enable transportation.

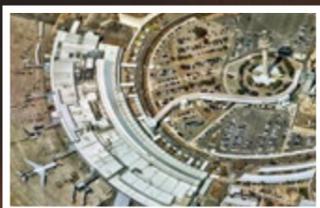
Peritas worked closely with the original design engineer, BG&E to design lifting details that worked with the architectural and aesthetic intent of the skybridge. The lifting points were designed to facilitate easy unhooking and release of the lifting frame after the modules were landed.

“The main project challenges were related to the module size, length and the restrictions associated with the site,” said Edward McLarty, Project Manager. “The largest and heaviest lift was over the access route to the terminal drop-off/pick-up area which could only be shut down for a short time. A practice lift was completed the day before which, together with our analysis and site checks, gave us confidence it would work.”

The project benefited from Peritas’ extensive experience designing working with Georgiou on Aubin Grove Railway Station which involved construction over live railway lines. Peritas Group also previously worked with Georgiou and BG&E on the temporary works for the new Mandurah Traffic Bridge.

Founded in 2008, Peritas’ innovative philosophy, is conveyed by their name which is derived from the Latin word “Peritus” meaning expert, theologian, or consultant. Today Peritas’ 40 person design team specialise in the design of infrastructure, construction engineering, mining, industrial, marine and land development projects, with the consistent goal to “always provide design value to the project and our clients.”

For more information contact Peritas Group, 74 Goodwood Parade, Burswood WA 6100, phone 08 6336 9299, email enquire@peritasgroup.com.au, website www.peritasgroup.com.au



peritas
GROUP



**thyssenkrupp's
innovative iwalk delivers
more passengers with less!**



(Less building cost, less energy consumption, less carbon footprint, less installation time, less maintenance, less weight).

thyssenkrupp has built a global reputation on innovation in passenger transportation systems in a mere 40 years in business. All their products and services are designed to meet customers’ individual needs.

As they say, less is definitely more with thyssenkrupp’s iwalk, the next-generation moving walk. It perfectly fits the spectacular Skybridge at Perth Airport’s ambitious expansion and upgrade.

Two of the four cutting-edge moving walks on a new Skybridge at Perth Airport will extend 92m – the longest iwalks that thyssenkrupp Elevator has ever produced.

The remaining two are 38m in length. These iwalks will have the capacity to transport 7,300 passengers per hour, supporting the anticipated 20,000 trips a day, ensuring maximum passenger comfort and efficiency when moving from plane to train. These are the remarkable numbers the Forrestfield-Airport link is expected to carry when fully running by 2021, according to the Public Transport Authority of Western Australia.

thyssenkrupp Elevator was selected as a result of a long and robust relationship with the airport’s builders Georgiou.



Puerto Algeciras, Spain

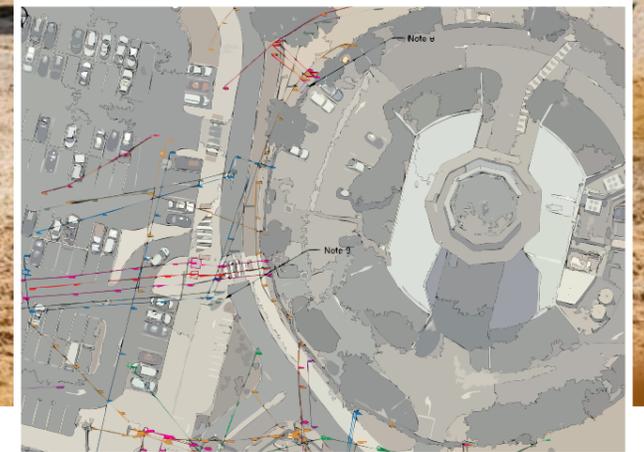
Atocha Railway Station, Madrid, Spain



“Right from the start and due to the iwalk’s shallow pit to no pit design, we identified the iwalk as an appropriate solution to providing an aesthetic benefit to the customer”, says Peter Walker, CEO thyssenkrupp Elevator. He adds: “Innovations move our business forward, our company as well as our customers only gain value from innovations when they help us to be more efficient and provide faster and better services. With Australia’s first iwalk by thyssenkrupp, we turn innovations into profitable growth.”

“iwalk’s unique modular design encompasses flexibility and versatility in transporting more people, trollies and baggage with less. The integration with our IoT solution MAX will ensure that Perth Airport receives the data-driven asset reliability and transparency that they expect”. Remarks Clayton Boladeras, thyssenkrupp’s MOD/NI Sales & Operations Manager.

For more information contact Clayton Boladeras +61 402 783 298 or visit www.thyssenkrupp-elevator.com/au



EYES UNDERGROUND

Abaxa is Western Australia's largest utility location company, with over 30 years of industry experience, founded in 1980 as a privately and locally owned family business. The Abaxa team are passionate about protecting people and infrastructure through reducing asset risk.

Abaxa can provide a complete service from early planning, through to construction completion as demonstrated by projects such as the New Metro Perth, Perth City Link, Perth Airport Upgrade, Elisabeth Quay, and Smart Freeways.

With a dedicated team of technical experts in engineering, surveying, and accredited locators, Abaxa is a diverse utility resource company with a quality rating of 99.9% on accurate site clearance and strike-less projects.

The project included a desktop utility assessment including the Perth Airport GIS to collate data in preparation for the site reconnaissance. A detailed site survey followed, applying relevant geophysical techniques to validate and verify utility records and detect the subsurface infrastructure.

The project location in an operational airport was a key challenge against a short delivery programme. The Abaxa technical specialists identified many unplanned utilities during the investigation and survey. Utilities were identified outside approved clearance areas challenging field specialists requiring variable techniques to detect and survey, whilst navigating access and maintaining safety

Collaboration with the project manager to identify and recommend critical construction conflicts with utilities and then agreed verification techniques was completed within the Safety Management Plan. This reduced the risk of asset damage for construction and completed the field investigation to the highest level under the Australian Standard AS5488.

A survey of the field reconnaissance completed the project providing data management records with reporting on critical utilities to keep the project moving to programme allowing decisions post field survey.

The seamless delivery of the Perth Airport Skybridge is testament to Abaxa's capability in ensuring project certainty.

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