



NEWSLETTER

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A WORD FROM THE REGISTRAR

Earlier this month we celebrated Australian Engineering Week, an opportunity to recognise the significant achievements and contributions of engineers. Engineers play a crucial part in day to day life; be it buildings, infrastructure, technology or transport, engineers have been involved from the initial design stage to the completed product.

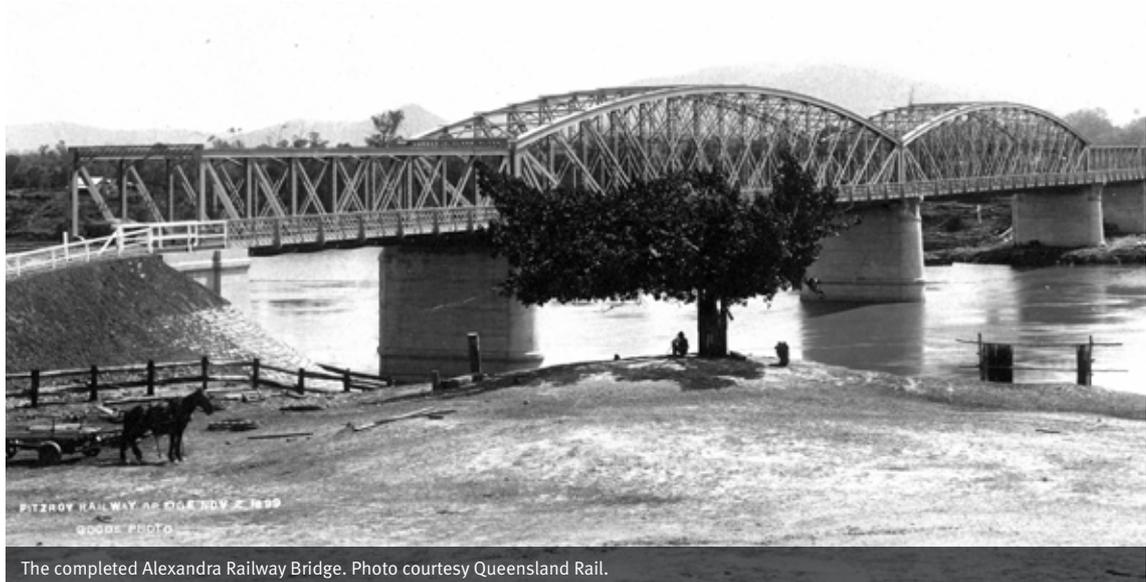
Some of the earliest engineering projects in Queensland were the design and development of the rail network. QR celebrated 150 years of service in July and the Board has delved into the history books to learn more about early railway engineers.

We were lucky enough to meet some up and coming engineers at recent career days at the Queensland University of Technology and the University of Queensland. Students were genuinely interested to know more about registration and the Professional Engineers Act. Next month the Board will participate in and sponsor Griffith University's 6th International Conference on Engineering, Project, & Production Management on the Gold Coast.

You can read about QR's 150 year celebration, university career days, case notes on managing projects with multiple contractors and more in this month's edition of the e-news.

As always, I hope you find the e-news interesting and useful. If you have any feedback or require assistance, please contact the Board on 07 3198 0000 or via admin@bpeq.qld.gov.au.

Gary Stirling
Acting Registrar



The completed Alexandra Railway Bridge. Photo courtesy Queensland Rail.

EARLY RAILWAY ENGINEERING IN QUEENSLAND

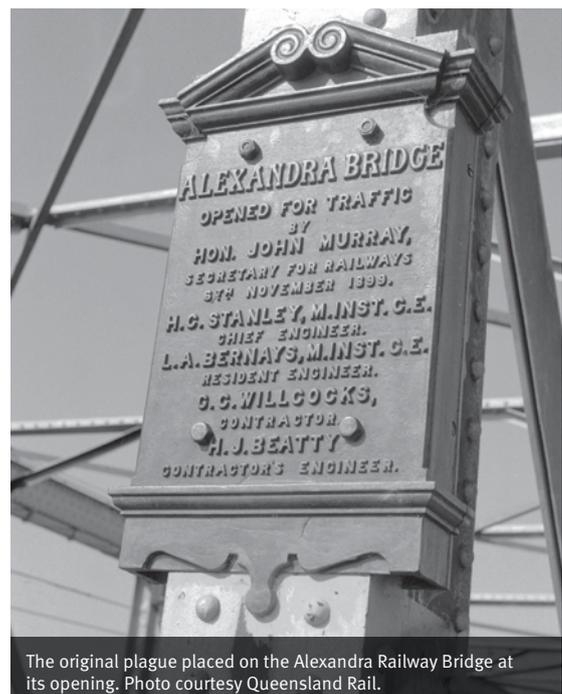
When Queensland Rail (QR) was established in 1865 it operated just four locomotives that ran on a single 34 kilometre track from the Workshops in Ipswich to Bigges Camp. From there the network expanded to more than 10 separate tracks, the most in any Australian state or territory.

QR grew to become one of Queensland's single biggest employers, with railway engineers forming a core component of the QR workforce. George Willcocks was, arguably, the most prolific railway contractor of late 19th century and his engineering and construction company lays claim to being behind some of the earliest pieces of rail infrastructure along the North Coast Line and around Brisbane.

In 1897 G.C Willcocks Co was awarded the £43,471 Alexandra Railway Bridge project, crossing the Fitzroy River in Rockhampton; a major hub for passenger and freight rail. Despite delays due to flooding the Alexandra Railway Bridge opened in 1899, connecting north and south Rockhampton and the city itself to western Queensland (Longreach) and the coast (Emu Park).

The bridge served as a vital rail link for Queensland until 1942 when it was decked to allow vehicular use by the American military posted in the region during the Second World War (the existing traffic bridge was inadequate to handle the heavy vehicles and equipment). Following the war the Alexandra Railway Bridge returned to its original purpose and continues to serve the people of Queensland and Rockhampton to this day.

** The Board acknowledges QR's media unit and historian for providing information and images for this article.*



The original plaque placed on the Alexandra Railway Bridge at its opening. Photo courtesy Queensland Rail.



CASE NOTES – TWO RPEQS ARE CAUTIONED FOR THEIR INVOLVEMENT IN A BUILDING SUSTAINING A SHEAR FAILURE IN A CONCRETE TRANSFER BEAM.

The Board was prompted to investigate the conduct of three RPEQs in carrying out design and inspection services for a multi-story office building. A failure in a concrete shear transfer beam was reported, subsequently the Board launched its investigation to determine whether the conduct of any of the RPEQs had caused or contributed to the failure.

The project manager was Company A, which instructed Engineer A to engineer three basement levels of the building. Company A then engaged Company B on a “design-and-construct” basis to design, engineer, and construct the pre-stressed slabs for the building. Company A instructed Engineer B to do its engineering work. Finally, Company A instructed Engineer C to inspect the as-constructed slabs. The scope of Engineer C’s inspection included the failed concrete shear transfer beam.

In engineering the pre-stressed slabs, Engineer B determined a particular column in the first level of the basement needed to be moved from where Engineer A designed it. Engineer B moved that column on Engineer B’s design drawings. Those design drawings were provided by Engineer B to Company B and then on to Company A. Importantly, Engineer B did not notify Engineer A, or indeed Company A, about the changed column location. Somehow, Company A used Engineer A’s drawings instead of Engineer B’s drawings in constructing the building and the column was put in the wrong place. The shear reinforcement could not cope with the column’s changed location and caused the failure in the beam. Despite Engineer C having access to Engineer B’s plans during his inspection, which showed where the column should have been, Engineer C did not notice the column out of position and certified the work as being completed in accordance with design.

The Board found that Engineer B should have taken further steps to ensure all parties to the project knew about the change in the column’s position and the impact it might have on the overall design. Had Engineer B been more forthright in notifying about the change, it is likely the right plans would have been used in the construction and the column would have been correctly positioned. The Board also found that Engineer C could and probably should have noticed the incorrectly positioned column.

There were strong mitigating factors involved. Engineer B notified Company B of the change in column position, which was apparently not passed on by Company B in its meetings with Company A. The Board recognised that, strictly speaking, Engineer B had complied with contractual obligations to Company B and that Company B had some responsibility in notifying Company A of the change. The Board recognised that when Engineer C was carrying out his inspection, everything but the subject column would have been positioned as per Engineer B’s drawings. It was the first time Engineer B and Engineer C had come to the attention of the Board and both were fully cooperative throughout the investigation. The Board strongly cautioned both engineers for their conduct.

**The companies and engineers in question have been de-identified.*

The Board is committed to assisting RPEQs to maintain high standards of professional conduct and competence, maintaining public confidence in the standard of services provided and practice of RPEQs. To this end, the Board releases “case notes” in its monthly e-newsletters to provide practical examples and guidance. The case notes concern investigations the Board had conducted of the conduct of RPEQs and of suspected offences against the Act and subsequent disciplinary/enforcement actions taken.



Students at the QUT Science and Engineering Careers Fair. Photo courtesy QUT.

UP AND COMING RPEQS

Engineering and science students turned out in force at the Queensland University of Technology and the University of Queensland's respective career days. The Board was pleased to take part and educate students about becoming an RPEQ and the legalities of practice as an engineer in Queensland.



Registration Officer, Teresa, setting up the Board's stall at the University of Queensland Engineering Students Career Day.

TALL BUILDING FIRE SAFETY

Fire safety standards have been a topic discussion amongst many engineers of late. To educate and inform engineers about fire safety management in tall buildings the Institution of Fire Engineers (IFE) is hosting a four day training course in Brisbane from 7-11 December, 2015. The course counts toward an RPEQ's continuing professional development (CPD) and will equip engineers with the latest knowledge

and techniques in managing fire safety in tall buildings.

For more information visit <http://www.eventbrite.co.uk/e/ife-accredited-tall-building-fire-safety-management-course-tickets-17953729087>, or contact IFE via email at admin@ife.org.au.





RPEQ INVOLVEMENT IN PROJECTS

RPEQs play an important role in projects across all engineering disciplines. Parties look to RPEQs for expert engineering advice and expect that work carried out by RPEQs will be of a high standard. It is common for RPEQs to be engaged to carry out services for only a particular part of a project and not to have input into the rest. However, the Board cautions RPEQs to ensure they understand what is happening across projects with which they are involved, including the effect their work may have on other parts of the project. If an RPEQ makes a change to the part of the project with which they are involved and that may affect other aspects of the project, the RPEQ must clearly communicate the change and potential effects to other parties.. Failure to communicate clearly with other parties involved in the project can have catastrophic consequences, as shown by the following example:

An engineer was engaged by the lead builder to engineer the structural elements of a building from the ground floor up, and a second engineer was engaged to engineer the structural elements of the basement levels of the building. The second engineer, having

viewed the first engineer's engineering drawings, needed to change the location of a column because of headroom requirements in the basement levels. The second engineer changed the location of the column and provided the engineering drawings back to the lead builder, but did not ensure that the first engineer and the lead builder were aware of the change and its impact on the design. As a result of the failure to communicate the change clearly, the lead builder referenced the first engineer's drawings instead of the second engineer's drawings and installed the column in the wrong place. The shear transfer measures installed could not cope with the increased shear forces caused by the incorrectly placed column and a shear fracture of a concrete shear transfer beam occurred.

In this situation, the Board would expect the second engineer to notify the first engineer of the need to change the column's location and the anticipated consequences of the change. The Board also expects the second engineer to clearly inform the lead builder about the change.

OCTOBER REGIONAL BOARD MEETING

The next Regional Board Meeting will be held on the Sunshine Coast on 9 October, 2015.

The Board wants to meet local engineers and will host a meet and greet for Sunshine Coast engineers as part of the trip. RPEQs will have the chance to discuss the issues important to them with Board members and any 'newly minted' RPEQs will receive their certificates of registration.

Date	Thursday, 8 October 2015
Time	6:00 pm to 8:00 pm
Venue	Novotel Twin Waters Resort - Ocean Dr, Twin Waters QLD
RSVP	to executiveassistant@bpeq.qld.gov.au by Friday, 25 September 2015

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