

VOL 30
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SPECIAL POINTS
OF INTEREST:

- [REAAA Roadshow](#)
- [Tauranga Eastern Link](#)
- [Infratrains launches procurement qualification](#)
- [Young Professionals in Thailand](#)
- [MAIREPAV 7](#)
- [Safer Roads 2014](#)
- [REAAA Membership Options](#)

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Driving Progress

ROAD ENGINEERING ASSOCIATION OF ASIA & AUSTRALASIA (NZ)

REAAA NZ Chapter Roadshow – August 2012

SUCCESSFUL PROJECTS and TECHNOLOGY – “Helping us work smarter”



- Delivering World Class ITS Operations
- SH5 Mohaka River Bridge
- NZTA M&O Review Project
- Tauranga Eastern Link
- Earthquakes & Pavement Resilience
- Land Transport Emissions
- Sustainability and the roading industry
- Young Presenter Competition

Seminars will be held at:

Auckland - Wednesday 15th August

Taupo - Thursday 16th August

Wellington - Friday 17th August

Dunedin - Monday 20th August

Christchurch - Tuesday 21st August

Registrations extended to 8th August 2012

Registration form at www.reaaa.co.nz

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Tauranga Eastern Link Project

Peat bogs and shifting sands make for challenging highway construction

Tauranga's Eastern Link Project will be one of New Zealand's most important stretches of state highway when it is finally finished in 2016. The largest state highway ever built in the Bay of Plenty, this NZD\$455m stretch of road has also been recognised by the New Zealand government as a 'road of national significance'.

Tauranga, as the sixth most populated city in New Zealand, is growing fast with 111,000 residents currently calling the city home and this number set to increase by approximately 3000 people every year. The Tauranga Eastern Link represents a key strategic transport corridor for the area, by improving the efficiencies of transporting people and materials to and from the area – not to mention providing safer, better access to key locations in the region.

Although the contract was awarded to Fulton Hogan by the New Zealand Transport Agency (NZTA) back in November 2010 as traditional Design and Construct contract, the company has formed a Construction Alliance with HEB Contractors to undertake this challenging project. The lead designer is URS with Opus, Peters & Chueng and Bartley Consultants assisting them as sub-consultants.



Initial work started in the middle of 2011 on the project's two main sections. The first involves widening a 6km section of the existing highway from Te Maunga to Domain Rd into a four lane carriageway with a median barrier and additional improvements; the second will see the project team build a new 17km 'greenfields' section of four lane motorway with median barrier from Domain Rd to Paengaroa (SH2/33) junction. This will include an overbridge at Parton Rd, a four lane bridge Tauranga Eastern Link Project (TEL) will be the largest state highway ever built in the Bay of Plenty. over the Kaituna River, grade separated overpasses over Maketu Road and the adjacent railway line and a new twin lane roundabout at the intersection of SH2 and SH33.

Over the past six months, the Fulton Hogan team has been busy with preliminary works, such as site clearing, relocating fences and driveways, building a network of access roads and carrying out a series of ground improvements along both main sections of the site.

Tauranga Eastern Link Project cont'd....

However, achieving success in this type of project is not always easy. One of the major challenges lies in the land beneath the site, with 60 per cent of it consisting of layers of water-saturated peat bog and sand, creating highly unstable conditions for any type of building foundation. The area is also subjected to regular seismic activity, making seismic liquefaction an ever present risk factor for design of the structures and approaches.

“We knew very early on that the site conditions – in terms of access and ground stability – were going to be a major challenge in this location,” said Andrew McRae, Fulton Hogan’s Project Manager on the site.

“One of the very first things we did was to model the potential effects of our construction works, to develop an accurate idea of how the various layers of soil would react to the loads and stresses placed on them by the construction activity and the finished works.”

As a result of this testing, the project team has adopted a program of pre-work that will serve to reduce the moisture content in the peat-affected areas by up to 50 per cent. Part of this will involve ‘surcharging’ the ground, by building embankments of ‘preload’ – sand and fill materials – which will reach a height of up to four metres in some locations, and sit onsite for anywhere between six to 18 months, compressing the peat and draining excess moisture away at the same time.

“The preload materials will compress the peat layers down, pushing out the moisture content to a point where the ground can settle no further,” said Andrew. “We’ve built six trial embankments so far, to test how fast and how far the ground will settle. Once we’ve determined that, we will use the information to determine the length of time that preload will be required on the main embankments in the settlement prone areas before we start the foundation and pavement construction work.”

To ensure all the moisture drains properly from the peat, some of the preloaded embankments have a series of wick drains installed. These artificial drainage paths take the shape of thin strips, with a central plastic core to act as a free-draining water channel and a thin geosynthetic filter jacket. The team will lay over 49,500 of these during this stage of the project, with 37,000 already in place around the Domain Road interchange area.

The team has also carried out other types of ground improvement for critical areas of the project. One of these involves the Kaituna River bridge location, where the team has been installing over 2000 stone columns, with lengths varying from 13-17 metres, to strengthen the ground beneath the proposed bridge construction. With soil at this site also a mixture of peat and sand, the columns will provide the bridge with extra stability and protection against soil liquefaction in case of seismic activity.

“Coordinating the various stages of the program has also been a test of our project management abilities,” said Andrew. “All the work we have to do – land clearing, access road construction, doing the preliminary site works and starting on earthworks and other structures – has to be carefully managed, so that progress at the different site locations runs according to our project timetable

Tauranga Eastern Link Project cont'd....

Fulton Hogan's project staff are working closely with local residents and farmers to ensure the day to day site activity impacts as little as possible on these groups. The construction team is making sure works are scheduled around local farmers' stock movements.

The project is also being constructed in an area of significant cultural and archaeological importance, so has a Maori Liaison Officer coordinating hapu monitors on site, as well as ensuring the project protocols are addressed. "We have been very careful to stock proof our construction sites and we even have stock crossings set up at a couple of locations, to enable cows to make it across the roads for milking at various times of the day," said Andrew. "We also worked hand-in-hand with the local kiwifruit growers and the Kiwifruit Vine Health organisation to ensure that, when we had to clear 22ha of kiwifruit vines as part of the preliminary work, we disposed of the fruit in an approved manner, to avoid the spread of any PSA vine disease to other crops in the region."

At the end of its first year on the job the Fulton Hogan team is happy with progress so far, as is the NZTA. The next few months will see piling work started on the Kaituna River bridge and construction carried out on the Mangatawa and Domain Road interchanges, while other areas carrying preload embankments are given some time to settle.

"Our work so far on the Eastern Link Project has been a great advertisement for Fulton Hogan's abilities on these complex projects," said Robert Jones, COO Infrastructure. "It's a job that will continue to demand innovation and clever management and we are looking forward to the challenges it will bring over the next few years."

Article kindly supplied by Fulton Hogan Ltd and previously printed in People+Projects.

LOW VOLUME ROADS WORKSHOP 2013

ROTORUA, September 2013

www.reaaa.co.nz/chapter-activities/low-vol-roads-conference/

95TH REAAA Council Meeting - Thursday 27 September in Perth, Australia

25th ARRB Conference - 23—26 September 2012 in Perth

www.arrb.com.au

InfraTrain launches qualification for Procurement

InfraTrain New Zealand has recently launched the New Zealand Certificate in Infrastructure Civil Engineering (Procurement Procedures). Developed in partnership with the NZ Transport Agency (NZTA), the New Zealand Certificate recognises specialist skills and knowledge for tendering and procurement. It is aligned to NZTA Procurement Procedures, which aim to help local authorities and other approved organisations obtain better value for money.

The New Zealand Certificate replaces the National Certificate in Asset Management (Competitive Pricing Procedures), which was previously offered by InfraTrain. It is suitable for anyone who is involved in preparing tenders and administering physical works and professional services contracts relating to transportation and transportation assets. It is also suitable for anyone who is similarly involved in public transport services contracts. The qualification is especially relevant for teams working on activities which are funded under the Land Transport Programme. For these projects, NZTA now requires that at least one member of the proposal evaluation team is appropriately skilled and qualified.

The New Zealand Certificate covers key skills including initiating and managing all aspects of the procurement process; knowledge of contract conditions; and ethical tender evaluation. Skills for preparation of tender documents, or preparation and negotiation of contracts can also be covered, depending on individual requirements.

“A stronger focus on value for money means that the tendering and procurement environment is becoming increasingly competitive,” says InfraTrain Chief Executive, Philip Aldridge. “This qualification meets industry needs by aligning skills to industry best practice. It is practical, relevant, and gives local authorities and other organisations confidence that their processes meet NZTA requirements.”

Bernard Cuttance, Principal Procurement and Evaluation Advisor at NZTA, adds, “Since 2003, when the NZTA first required tender evaluation teams to include a qualified person for all significant contracts, over 200 people have obtained the National Certificate in Asset Management (Competitive Pricing Procedures). This has helped to raise the standard and the consistency of procurement processes – tender evaluation in particular.” He continues, “Now that the NZTA has replaced its Competitive Pricing Procedures manuals with the more enabling Procurement manual for activities funded through the National Land Transport Programme, having capable people to manage the procurement process is even more important. The New Zealand Certificate in Infrastructure Civil Engineering (Procurement Procedures) has a significant role to play in ensuring that purchasers have this capability.”

The New Zealand Certificate in Infrastructure Civil Engineering (Procurement Procedures) is now open for enrolment. Please contact InfraTrain for more details. www.infratrains.co.nz

Young Professionals in Thailand

In April this year the REAAA Governing Council held its inaugural REAAA Young Professional Meeting in Thailand on the 20th April 2012, in conjunction with the 94th Council meeting. I was fortunate enough to be nominated as the young professional to represent New Zealand Chapter at the meeting.

The objective of the meeting was to represent and provide a voice for young professionals and to encourage a culture of innovation, integrity and a pursuit of excellence. To be eligible to attend the young professional meeting candidates needed to be 35 years old or under, with lots of enthusiasm and preferably (but not limited to) an engineering background.

15 Young professionals were selected from countries including Malaysia, Indonesia, Singapore, Brunei, Japan, New Zealand and the Philippines.

As this was the first time the candidates had met the conference was a great opportunity for everyone to get to know one another and develop a network of contacts across different countries and cultures. Candidates all came from a wide range of back grounds including contracting, Land Transport and Government agencies as well as consultancy firms.

Topics discussed at the young professional meeting included REAAA's objectives and strategic plan, the roles and responsibilities of the young professionals and effective communication due to the geographical spread of chapter nominees.

The young professionals established it is crucial to have an understanding of REAAA's role in the different chapters to enable them to further enhance REAAA's presence and encourage strategic thinking within the industry. The young professionals intend on creating an open forum, to look at success stories in each chapter as well as any changes that have been made, or lessons learnt. This will help enable the young professionals to add value to the committee by gaining a better understanding of its responsibilities and help further REAAA's role in each country. The young professionals believe this will also help strengthen the networks between different chapters.

The conference was a great opportunity to create new contacts and colleagues in the construction industry from throughout Australasia. As the young professionals gain experience and understanding around the roles and responsibilities of REAAA throughout the different chapters a collaborative approach will be used to ensure strategies are implemented to guarantee future commitment to professional knowledge sharing across international boundaries.

Article kindly written by Dean Elder, Southroads Ltd



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Gary Liddle - *Chair of AustRoads and CEO, VicRoads*

Professor Andre Molenaar - *DELFT University of Technology, The Netherlands*

Professor Susan Tighe - *University of Waterloo, Canada*

Dr David Hutchison - *Downer, Roading NZ, New Zealand*

Professor Kim Jenkins - *Stellenbosch University, South Africa*

Dr John Donbavand - *NZ Transport Agency (NZTA), New Zealand*

For more details of guest speakers go to www.mairepave7.co.nz/guest-speakers

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Enquiries: Contact Petteena McOnie phone 09 923 9695 email mairepav7@auckland.ac.nz



THE SEVENTH INTERNATIONAL CONFERENCE ON MAINTENANCE AND REHABILITATION OF PAVEMENTS AND TECHNOLOGICAL CONTROL

research — innovation — application

The 4th International Safer Roads Conference

Cheltenham, UK, 18-21 May 2014



SaferRoads2014

Saving lives through safer roads is no accident

Abstracts are currently being accepted for the Conference, so take this opportunity to share your experience and knowledge and help improve road safety worldwide.

The 4th Conference will continue to emphasise the importance of the road surface, in reducing accident rates and focus on key issues including:

- Improving efficiency in delivering safer roads
- Applying good practice through innovative solutions
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Conference delegates will include:

- engineers
- practitioners
- policy makers
- central and local government representatives
- academics
- consultants
- contractors.

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Did you know?

- Every 6 seconds someone is killed or seriously injured on the world's roads
- 1.3 million road deaths worldwide every year—the equivalent of a major epidemic
- 2,000 lives lost needlessly on the roads in the UK alone every year
- Studies suggest accident rates for children are particularly high



The REAAA NZ Chapter committee would like to acknowledge an inaccurate title of one of the articles printed in our last newsletter. The article on the Victoria Park tunnel alluded to it being NZ's first inner city tunnel. It was kindly pointed out by Rob Partridge, MWH Wellington that there are three tunnels in Wellington city, with the Terrace Tunnel being right in the 'inner city'. Our apologies for this inaccuracy.

REAAA NZ Chapter Membership

REAAA (Road Engineering Association Asia Australasia) is an international fellowship of members interested in the science and practice of road engineering. Currently there are more than 1,200 members from 27 countries with over 100 members in the New Zealand Chapter.

Key objectives of the association are:

- To promote and advance the science and practice of road engineering and related professions.
- To educate and seek to improve, extend and elevate the technical and general knowledge of persons concerned with road engineering.

Chapter activities in New Zealand include:

- Regional seminars/forums
- Annual Roadshow
- Low Volume Roads Conference
- Site visits to projects of interest
- Regular newsletters on current developments and practices
- Network opportunities with other members in NZ and overseas

Institutional membership has named employees, of which can be changed at any time, who receive the chapter's newsletters and invitations plus allows any employee of an institutional member to attend the Chapter's roadshow at the REAAA member's reduced cost as well as attending the biannual Low Volume Roads Workshop at the member rate. In our quarterly newsletter we print an article from one of our institutional members and we also have a link to our institutional members from the NZ chapter's website.

Corporate membership is aimed at smaller companies or authorities and has named employees, of which can be changed at any time, who receive the chapter's newsletters and invitations. This membership also allows any employee of an corporate member to attend the Chapter's roadshow at the REAAA member's reduced cost as well as attending the biannual Low Volume Roads Workshop at the member rate.

An individual member receives the chapter's quarterly newsletter, the REAAA Journal from the parent body in Malaysia and any invitations/ correspondence from the Chapter plus a reduced member attendance fee to the Chapter's annual roadshow and the biannual Low Volume Roads Workshop. Please note this is only for the named member, transfer of an individual membership for these two conferences is not accepted. For any further information regarding membership please contact the Secretary as per below.

Vol 30

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