



Report on their June 2018 visit to China

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To: PEECE Directors

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1. Purpose and structure of the report

This report provides an overview of the trip that Peter Rufford and Geoff Webb made to China between 15-30 June 2018. The two PEECE directors attended the World Transport Conference in Beijing and met with the Jilin Provincial Communications Department and visited the Jilin Transport Research Institute in Changchun. The department arranged for an inspection of the HeDa Expressway in the eastern part of the province..

The report is divided into eight sections and an overview is provided as follows:

- Section 1 outlines the structure of the report.
- Section 2 provides an overview of PEECE and its interests in China.
- Section 3 provides an overview of the HeDa Expressway construction in north-east Jilin Province. PEECE has an interest in the expressway due to its design and research features.
- Section 4 features the World Transport Conference.
- Section 5 illustrates the visit to Changchun in Jilin Province.
- Section 6 illustrates the inspection of the HeDa Expressway.
- Section 7 summarises where the company would like to take its Chinese connections to promote goodwill between the two countries by sharing road pavement technology through collaborative research

2. Introduction to PEECE

PEECE is a small multi-disciplinary Australian consulting company, who offer pavement technology solutions and undertake road feasibility studies for clients seeking funding for road infrastructure projects. Their web site is found at www.peece.com.au.

The Directors of the Company and their expertise include:

- Steve O'Rourke – civil engineering construction
- Geoff Webb – pavement technology and design
- Peter Rufford – highway planning engineering
- Jeff Roorda – asset management and IT solutions

PEECE has been active in China for 14 years through their links with the Jilin Provincial Communications (JPCD) in north-east China. Its directors have made regular visits to Jilin to discuss and exchange information on technology and construction issues.

PEECE has hosted four Chinese delegations to Australia as part of a Memorandum of Understanding with JPCD, initially signed in Changchun in September 2007 and subsequently endorsed as a Co-operation Agreement in April 2010, when the first delegation came to Australia.

They have delivered technical papers at conferences in Changchun and have witnessed at first hand the construction of the HeDa Expressway which contains innovative design and construction features.

3. HeDa Expressway

The PEECE Directors were initially briefed on the design features of the HeDa Expressway during their visit to Changchun in 2011. They subsequently inspected progress with its construction in each of the three construction seasons (2014-16). They witnessed the project from the design phase to the completion of construction and observed many innovative and high-quality technologies.

The HeDa Expressway included five 500m trial pavement sections, namely:

- Type 1 – Traditional semi-rigid pavement with additional 2cm strain-stress absorber
- Type 2 – Perpetual pavement with an additional asphalt layer on top of traditional semi-rigid pavement
- Type 3 – Flexible pavement configured in accordance with advanced technologies of other countries

- Type 4 – Flexible pavement configured with additional unbound granular layers
- Type 5 – Traditional semi-rigid pavement

The development of the high-performance asphalt binder made with crumb rubber and SBS polymer used in the asphalt mixes was also of great interest. The built-in instrumentation of the trial pavements included:

- Temperature and moisture of pavement layers
- Stress, strain and soil pressure measurements throughout the pavement

These measurements will be very valuable in understanding the performance of the various pavement layers.

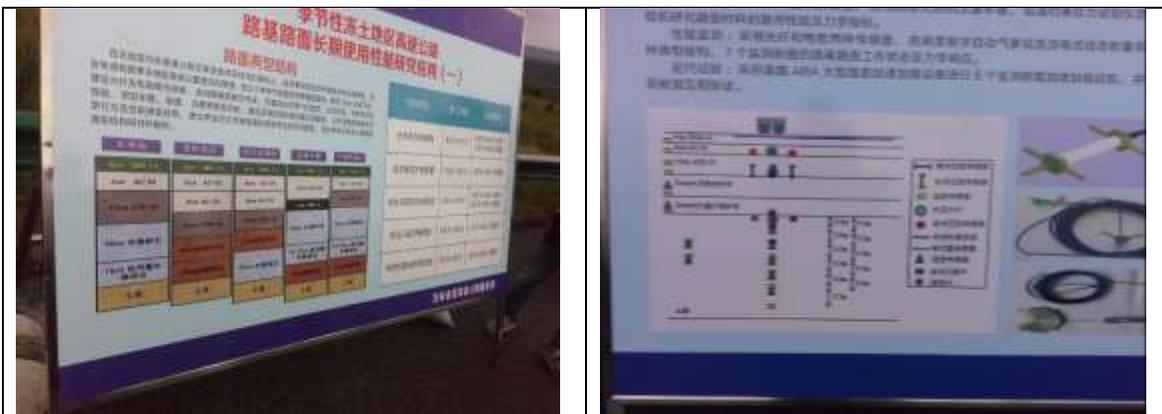
The innovative use of resource conservation and recycled materials were very impressive and included the use of volcanic ash, aggregate processing from tunnel excavations and crumb rubber in the asphalt.

Other special areas of interest included:

- The extensive production and use of the ecological block used for many applications throughout the project
- The Oil to Gas conversion asphalt plant
- The use of Flolic Foam tunnel freeze-thaw resistance technology
- Vehicle activation of lighting in tunnels

Also of great interest were the special techniques used for crossing wetland subgrades including the use of CFG (cement, fly ash and gravel), to minimise the impact of the road on aquatic wildlife.

Two display boards along the road side at the opening of the expressway are shown as follows:



4. World Transport Convention

The two directors attended the World Transport Convention in Beijing between 18-21 June 2018. The convention gave the directors the opportunity to gain an appreciation of progress with the Chinese Belt and Road Initiative, particularly as it affects Africa and the amount of research being undertaken in China. They were able to meet with Dr Zhang at the SinoRoad stall and meet up with the Jiangsu Expressway delegation that had visited Australia earlier in the year.



5. Visit to Changchun

The directors then flew to Changchun in Jilin Province where they visited the laboratory of the Jilin Transport Research Institute (JTRI) and inspected the newly purchased Falling Weight Deflectometer and the bay that will be installed with a latest technology accelerated loading facility.



6. Inspection of the HeDa Expressway

Arrangements were made to drive the HeDa Expressway (route G11) from north of the Heilongjiang/Jilin border to south of the Jilin/Liaoning border. The inspection covered the entire length of the expressway in Jilin Province. Overnight accommodation was arranged at Dunhua and Tonghua.

Special attention was made at the field trial sites that had been constructed into the expressway pavement, including the data capture and to the tunnels and elevated roadways.







7. PEECE's future interests

PEECE has several objectives in its Chinese strategy, including:

- Strengthening ties with Jilin Transport Research Institute and various road agencies in Jiangsu and Jilin Provinces. The main focus will be on hosting delegations to Australia and participating in exchange of information programs between the two countries.
- Collaborative research with SinoRoad. Initially this will focus on a joint proposal to forecast future maintenance requirements using the traffic speed deflection measuring equipment, Falling Weight Deflectometer and Ground Penetrating Radar and analysing the data captured at the five field trials on the HeDa Expressway.