



REPORT ON THE HEDA EXPRESSWAY, JILIN PROVINCE, CHINA

1. Introduction

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 had the privilege of witnessing the project from the design phase to the completion of construction.

They observed many innovative and high quality technologies that were developed and used in the HeDa Expressway. This report summaries some of the features incorporated into the project.

2. Trial Pavement Sections

The Trial Pavement Sections included in the project were very interesting as were the measuring equipment and instruments installed into the road to measure and monitor future road pavement performance.

The five trial pavement sections included:

- 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

3. Innovative Features

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.

PEECE would be very interested in collaborating with the Key Laboratory to analyse data that will come from the built-in instrumentation of the Trial Pavements of:

- 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 pavement.

The innovative use of resource conservation and recycled materials were very impressive. They included the use of:

- Volcanic ash
- Aggregate processing from tunnel excavations
- Crumb rubber

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 plant
- The use of Flolic Foam tunnel freeze-thaw resistance technology

Also of great interest were the special techniques used for crossing wetland subgrades including the use of CFG, to minimise the impact of the road on the aquatic wildlife.

4. Our Opinion

The PEECE Directors believe that the Heda Expressway project is truly a World Class demonstration project that displays many innovative and environmentally sensitive engineering features that will attract interest from all over the world.

It is a credit to all those involved from the original planning and concept development phase through design and into construction and operation of the expressway. It sets a new standard in expressway design and construction in environmentally sensitive areas.

We are grateful for the opportunities we have had to witness the building of such a significant land transport project and wish the people of China well as they enjoy high class road access to north-east China's spectacular and beautiful countryside.

5. Our Proposal

We would like to propose a future research project aimed at using high speed deflection measurements and data from the Trial Pavements to jointly develop a pavement deterioration model and remaining capacity model to predict future maintenance demands for expressway maintenance management. We hope to discuss this further at our next visit.



Peter Rufford
Executive Director

26th August 2016