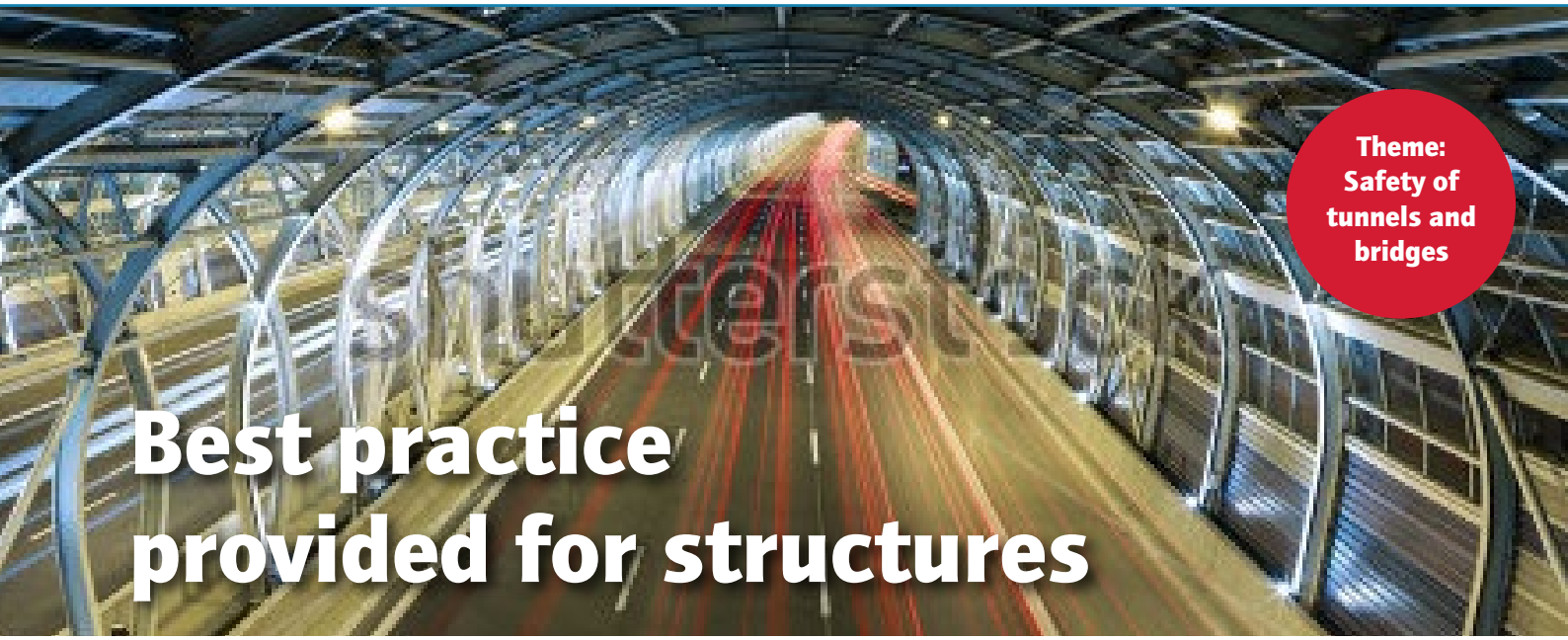


Theme: Safety of tunnels and bridges

Best practice provided for structures

Safety of road tunnel users around the world is a key focus for technical committee 3.3

Safety and smooth running of highway structures are among the responsibilities of two WRA Technical Committees; TC3.3 which looks after Road Tunnel Operations and TC4.3 which manages Road Bridges.

Providing advanced safety systems that consider fully the needs of mobility impaired drivers using highway tunnels is a key area of focus over the next three years for the PIARC technical committee on Road Tunnel Operations.

The committee will investigate what issues need addressing for the benefit of disabled persons and write a report focusing on best practice before 2019.

Further priorities for the committee include a look at how best to design laybys and LED lighting in road tunnels. The committee will then look to update further the online Road Tunnel Manual to reflect developments in best practice.

Looking forward the technical committee will also continue to identify challenges associated with and provide best practice guidance for the design and operation of road tunnels around the world.

During the previous three years six new working groups were set up by the committee to report on specific areas of work. As a result eight technical reports and four papers have been prepared. Presentations and discussions at the recent World Road Congress covered much of the recent work.

Ensuring safety within tunnels remains the fundamental goal of the committee. It also plans to continue working towards identifying and encouraging best practice in tunnel operations, including ventilation, machinery and lighting.

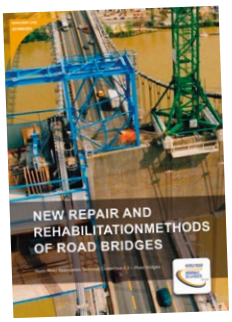
The committee will continue to share its knowledge around the world through the updated Road Tunnel Manual and online training courses.

The PIARC technical committee on Road Tunnel Operations was formed in 1957 to focus on activities including those relating to internal design, safety of users, equipment and the operation of road tunnels.

Authors: Fathi Tarada, Gary Clark and Les Fielding

Innovation encouraged by new road rehabilitation guidance

Japanese innovation that removes paint cleanly from steel bridges is detailed in a new report produced by WRA's Road Bridges technical committee. The innovation involves a vacuum blasting technique that also withdraws old bridge coverings at the same time. This promises to significantly reduce the risk of abrasives, fumes and toxic paint fragments from escaping into the air.



The report in question is titled 'New repair and rehabilitation methods for road bridges' and is currently available to download from the piarc website. Another new technique covered by the report involves dealing with bridge decks which have been penetrated by de-icing salts and are beginning to corrode.

A solution developed in Belgium involves managing the long term risk of tendon corrosion by injecting a corrosion inhibitor solution into the tendon using an ultrasonic pump. A cement grout can also injected afterwards if large voids are detected during this process.

The report also says that the average age of road bridges is over 50 years and a large number are in poor condition. Economic constraints lead to the search for innovative solutions to extend the service life of the bridges and rehabilitate them in the most cost effective way.

From an international survey 22 cases of degradation were selected that mainly affect reinforced concrete and pre-stressed concrete bridges. For each of these countries were invited to describe the standard repair method as well as innovative methods that have been applied.

A comparison between the methods is made in the report, considering reliability, availability, maintainability and safety. The financial aspect and environmental sustainability are also examined.

Three further reports recently produced by the Road Bridges technical committee cover 'Adaptation to climate change', 'Risk-based management of bridge stock' and 'Estimation of load carrying capacity of bridges based on damage and deficiency'. These three reports will be available to download from the website soon.

Author: David Ashurst