



PIARC's road tunnel committee: Past and future activities

Ingo Kaundinya

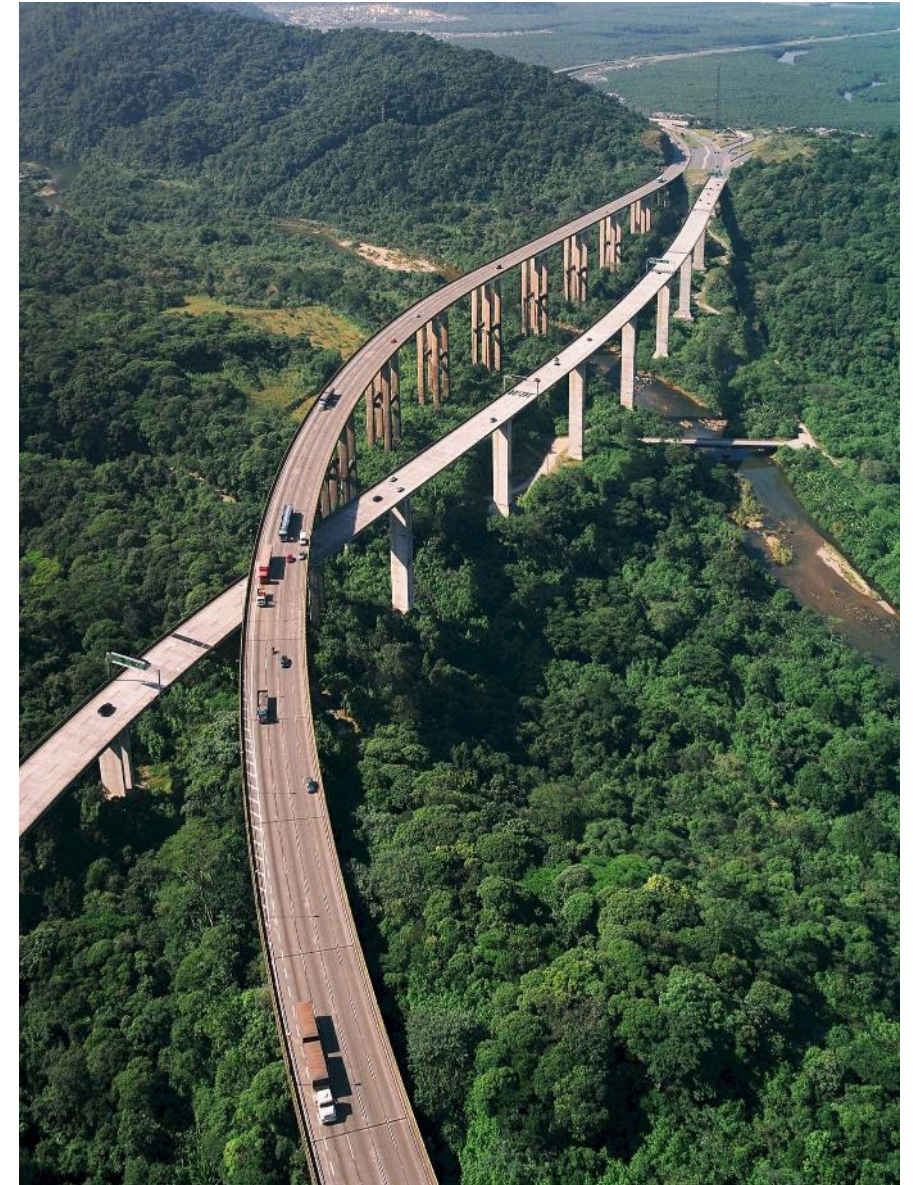
Chair of TC 4.4 "Tunnels"

TUNNEL SAFETY & VENTILATION – Virtual Conference

December 1st, 2020

Outline

- Introduction: What is PIARC?
- Technical Committee 4.4 Tunnels
- Highlights of the last work cycle 2016-2019
- Activities in the current work cycle 2020 - 2023



What is PIARC?

- PIARC is the World Road Association
- We were founded in 1909 as a non-profit, non-political Association
- Our goal is to organise exchange of knowledge on all matters related to roads and road transport
- PIARC has a Consultative Status to Economic and Social Council of United Nations since 1970
- Acknowledged for the quality of its outputs
- The activities of the Association are guided by a Strategic Plan of 4 years



Structure according to Strategic Plan 2020-2023

| Strategic Theme 1 Road Administration | Strategic Theme 2 Mobility | Strategic Theme 3 Safety and Sustainability | Strategic Theme 4 Resilient Infrastructure |
|--|---|--|---|
| TECHNICAL COMMITTEES | | | |
| TC 1.1 Performance of Transport Administrations | TC 2.1 Mobility in Urban Areas | TC 3.1 Road Safety | TC 4.1 Pavements |
| TC 1.2 Planning Road Infrastructure and Transport to Economic and Social Development | TC 2.2 Accessibility and Mobility in Rural Areas | TC 3.2 Winter Service | TC 4.2 Bridges |
| TC 1.3 Finance and Procurement | TC 2.3 Freight | TC 3.3 Asset Management | TC 4.3 Earthworks |
| TC 1.4 Climate change and resilience of Road Network | TC 2.4 Road Network Operation/ITS | TC 3.4 Environmental Sustainability in Road Infrastructure and Transport | TC 4.4 Tunnels |
| TC 1.5 Disaster management | | | |
| CROSS-CUTTING COMMITTEES | | | |
| Terminology Committee | | | |
| Road Statistics Committee | | | |
| RESPONSE TEAM | | | |
| PIARC Covid-19 Response Team | | | |
| TASK FORCES | | | |
| TF 1.1 Well-Prepared Projects | TF 2.1 New mobility and its impact on road infrastructure and Transport | TF 3.1 Road Infrastructure and Transport Security | TF 4.1 Road Design Standards |
| TF 1.2 HDM-4 | TF 2.2 Electric Road Systems | | |

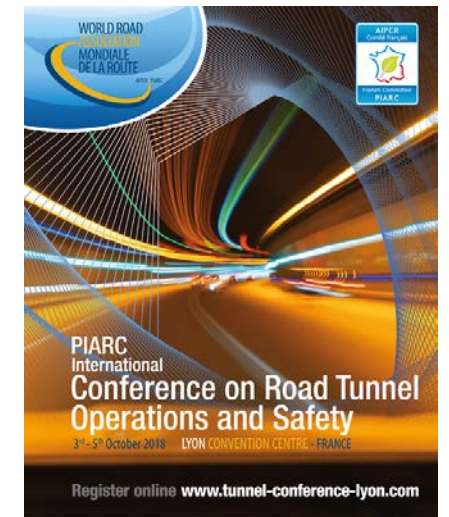
TC 4.4 Tunnels

- 70 members and corresponding members
- 17 associated members + 39 associated members in working groups
- 35 Countries around the world represented
- Work is organized in TC meetings and 7 working groups and task forces



Highlights of the 2016 – 2019 work cycle

- 5 Technical Reports
 - All reports available in EN, FR, ES
 - Published on PIARC website, free download after registration
- 1st PIARC International Conference on Road Tunnel Operations and Safety in Lyon (France), 2018
- Workshops in Montreal (2018)
- Seminar in Cape Town (2017)
- Contributions to the World Road Congress in Abu Dhabi (2019)
- 8 TC meetings
- Update of the DGQRAM Software (Phase 1)



Highlights of the 2016 – 2019 work cycle



"Introduction to the RAMS concept for road tunnel operations"

Examines how the **"Reliability, Availability, Maintainability and Safety** of tunnel systems/equipment can be achieved by applying the methodology of standard EN 50126

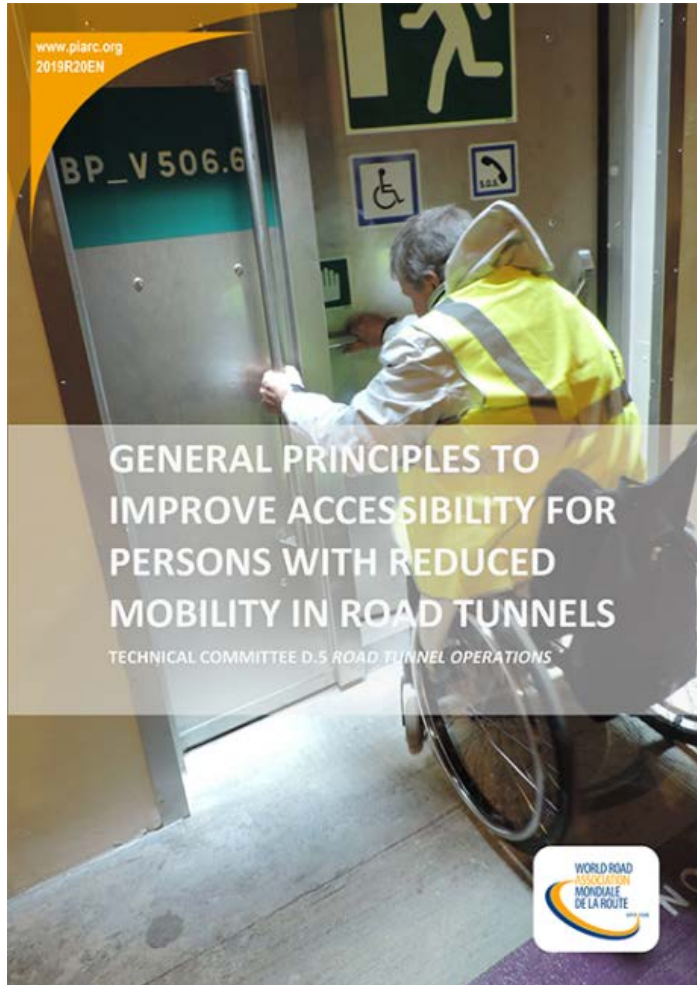
Highlights of the 2016 – 2019 work cycle



"Prevention and mitigation of tunnel-related collisions"

Presents possible organizational and technical measures that can be implemented to prevent and /or mitigate collisions in which the specific characteristics of a tunnel play a role in either the cause or the effect.

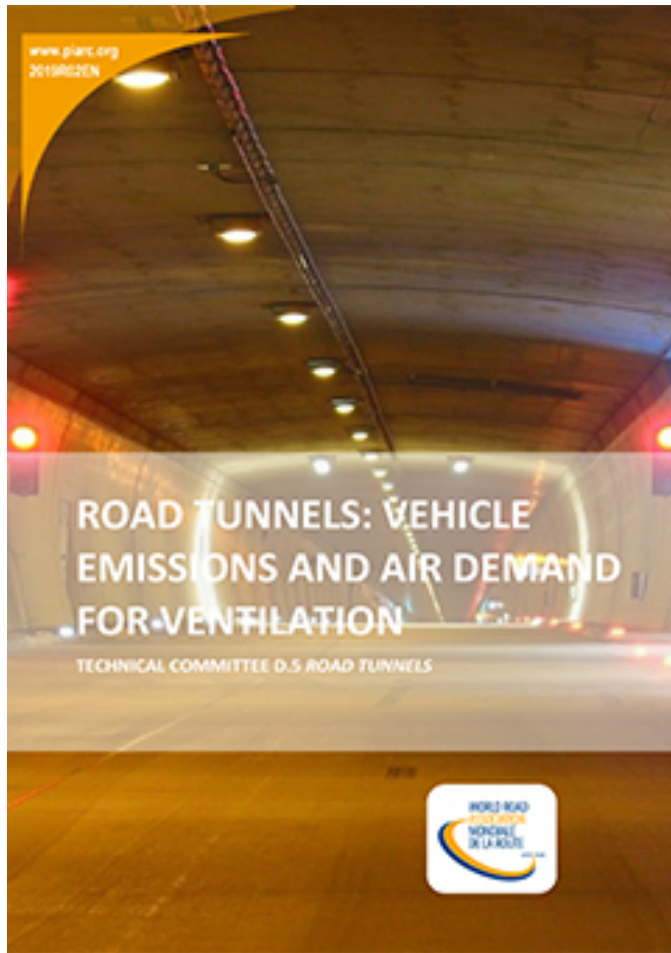
Highlights of the 2016 – 2019 work cycle



“General principles for improving accessibility for persons with reduced mobility in road tunnels”

Principles that can be adopted to make allowance for persons with reduced mobility when designing or refurbishing a road tunnel. Examples of implementations from various countries are presented.

Highlights of the 2016 – 2019 work cycle



“Road tunnels: Vehicle emissions and air demand for ventilation”

Revised version of the 2012 report. Provides updated emission rates and an assessment methodology for establishing the minimum fresh-air demand for adequate in-tunnel air quality and visibility thresholds.

Highlights of the 2016 – 2019 work cycle

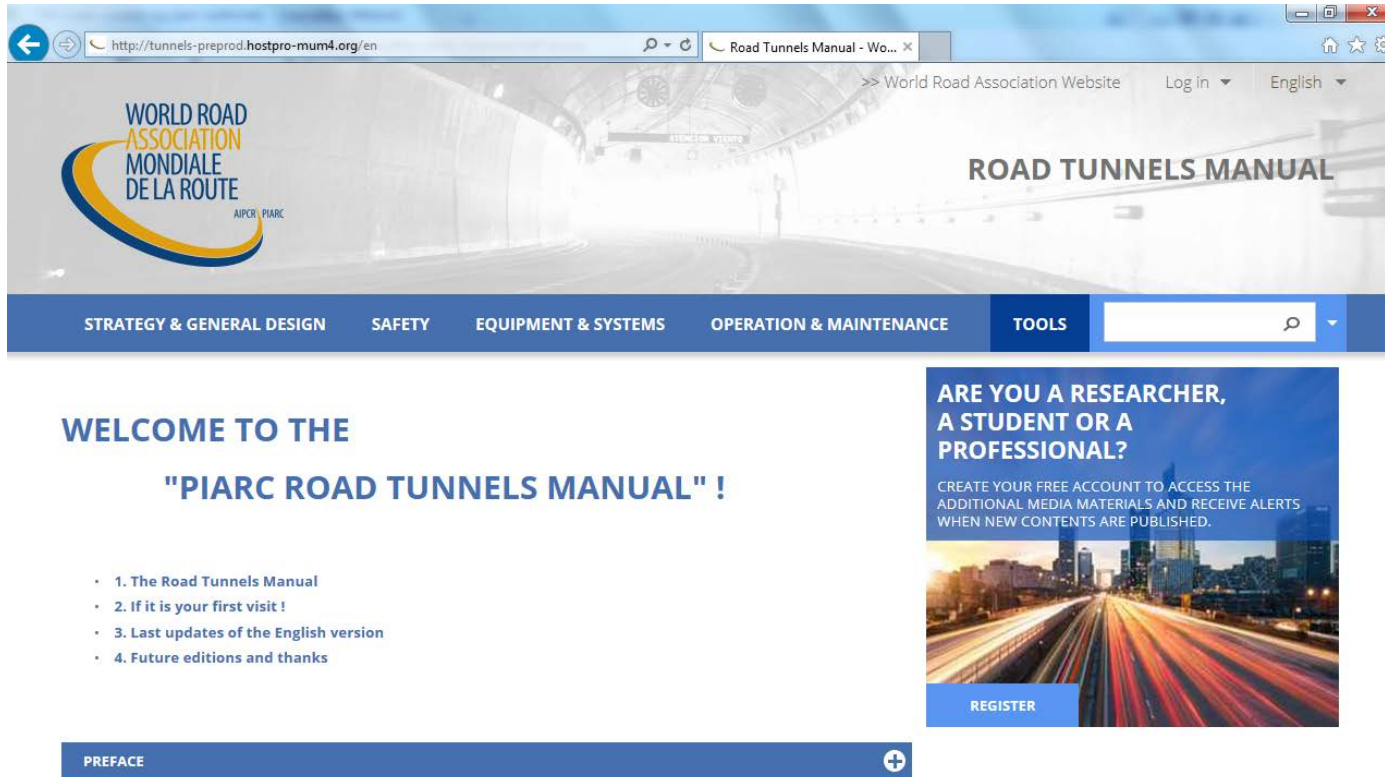


“Large underground and interconnected infrastructures: specific analysis and recommendations”

Specific challenges of complex underground networks with recommendations in terms of ventilation, signage, operation and maintenance.

Highlights of the 2016 – 2019 work cycle

Ongoing revision of the Road Tunnels Manual:
new version published for the Abu Dhabi World Road Congress (EN & ES)



The screenshot shows a web browser window displaying the PIARC Road Tunnels Manual website. The browser address bar shows the URL <http://tunnels-preprod.hostpro-mum4.org/en>. The website header features the PIARC logo (World Road Association / Association Mondiale de la Route) and the title "ROAD TUNNELS MANUAL". A navigation menu includes "STRATEGY & GENERAL DESIGN", "SAFETY", "EQUIPMENT & SYSTEMS", "OPERATION & MAINTENANCE", and "TOOLS". Below the navigation menu, the main content area displays a welcome message: "WELCOME TO THE 'PIARC ROAD TUNNELS MANUAL' !". A list of four items is provided: 1. The Road Tunnels Manual, 2. If it is your first visit!, 3. Last updates of the English version, and 4. Future editions and thanks. To the right, there is a promotional box for researchers, students, and professionals, encouraging them to create a free account to access additional media materials and receive alerts. The box includes a "REGISTER" button and a background image of a city street at night with light trails.

Current version available at:
<https://tunnels.piarc.org/en>

Activities in the current work cycle 2020 - 2023

1. Measures for increasing resilience of tunnels

- Use current experience on management of tunnel in order to develop best practices on design and construction for road tunnel operations.
- Establish criteria for the design and construction of more resilient tunnels for road tunnel operations.
- Identify resilience measures with regard to risk reduction measures and associated risk management methods

2. Best practices in management in urban and heavily trafficked tunnels

- Identify best practices in management (maintenance and traffic operation), particularly of urban tunnels and tunnels with high traffic volume

Activities in the current work cycle 2020 - 2023

3. **Impact of new propulsion technologies on road tunnel operations and safety**
 - Identify the impact of new propulsion technologies on road tunnel operations and safety.
 - Analyze how to prevent and mitigate the potential consequences of incidents involving alternative fuel vehicles.
4. **Intelligent Transportation Systems in tunnels**
 - Investigate and define the technological advances in ITS related to a road tunnel environment that can have a significant impact on operation and user safety.
 - Highlight the main expectations from the tunnel community regarding these systems.

Activities in the current work cycle 2020 - 2023

5. Update of the Tunnels Manual

- Complete the FR and ES versions of the manual.
- Update incorporating the works from previous and current work cycle.

6. Support for updating and improving of DG-QRAM (Dangerous Goods – Quantitative Risk Assessment Method)

- Phase 2: Improvement of the software, based on feedback of users
- Coordination with the relevant Task Group (funding countries & expert users)
- Version 2019 with updated software (phase 1) already available at www.piarc.org

Events planned for the work cycle 2020 - 2023

- World Winter Service and Road Resilience Congress
8-11 February 2022 – Calgary (Canada)



- 2nd PIARC International Conference on Road Tunnel Operations and Safety,
(October 2022) – Spain (City to decide)



Sevilla



Granada

- 27th World Road Congress
2-6 October 2023, Prague (Czech Republic)



**XXVIITH WORLD
ROAD CONGRESS
PRAGUE 2023**

Thank you for your attention!



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