



C.1 Safer Road Infrastructure

MEMBERS

Total membership: 43 countries
Members: 68
Corresponding members: 13
Associate members: 8

ISSUES AND STRATEGIES

C.1.1 - Incorporating human factors in road design for influencing driver behaviour

- Examine how key human factors that affect road user behaviour can be translated into engineering characteristics and road safety design policies.
- Undertake review of other guidance on human factors especially on vulnerable road user behaviour in road design standards.

C.1.2 - Safe design for roads in urban areas

- Consider recent changes to design guides for urban roads that promote improved road safety.
- Review safe road design in urban areas using segregated road space for the needs of vulnerable road users and public transport.
- Compare and evaluate design provision for low speed roads in residential areas

C.1.3 - Design improvements for vulnerable road users

- Assess design guidance on safe design for vulnerable users.
- Select design examples of good practice for the needs of vulnerable road users along those interurban roads to improve the situation in so-called linear settlements.

C.1.4 - Improvements in safe working on roads

- Assess approaches aimed at improving the safety of road workers. Assess design guidance on safe design for vulnerable users.

C.1.5 - Upgrading and Updating of the PIARC Road Safety Manual

- Review the World Road Association Manual, incorporating the outputs from the previous cycle in order to create a comprehensive road safety knowledge base.

OUTPUTS

INTERNATIONAL SEMINARS

- Safer Road Infrastructure and Operations (Kuala Lumpur, Malaysia, 20–24 October 2008)
- Promoting Road Safety for Vulnerable Road Users (Cape Town, South Africa, 25-27 October 2009)
- International Seminar on Road Safety (New Delhi, India, 14-19 March 2011)

PAPERS IN ROUTES/ROADS

About Human Factors in Road Design and Operation:

- “Spatial Perception - the secret of safe roads” (to be published)
- About the linear settlement problems for road safety:
- No. 347: “They call them Coffin Roads”. H.-J. Vollpracht
- No. 347: “Roads that serve the neediest users, yet all too often kill them in the process”. B. Diallo

About Safe Road works:

- “Keeping workers and travelers safe during road construction and maintenance” (to be published)

TECHNICAL REPORTS

- Revised Human Factors Guideline for Safe Road Infrastructure
- Human Factors in Road Design – A Comparison of current international design elements as they relate to human factors of spatial perception
- Revision of the Checklists for Road Safety Audits and Inspections in respect of Human Factors and for Urban roads
- Work zone safety guidance

OTHERS

- The Chair was a member of the UN – Road Safety Collaboration
- Meeting working on the Global Plan for the Decade of Actions for Road Safety



C.2 Safer Road Operations

MEMBERS

Total membership: 72 (41 countries)
Members: 51
Corresponding members: 16
Associate members: 5

ISSUES AND STRATEGIES

C.2.1 – Comparison of national road safety policies and plans

- Review national road safety policies and plans across a range of countries.

C.2.2 – Best practices in safety campaigns by public administrations

- Identify different approaches to road safety campaigns undertaken by public administrations.
- Review the different media that are used for promoting road safety.

C.2.3 – Cost effectiveness of safety measures and allocation of resources

- Study and compare the cost benefit analysis used by different road authorities for investment in safety schemes.

C.2.4 – Institutional regulation aspects

- Consider the different approaches taken by road administrations based upon legislation and regulations in relation to the safe operation of roads.

OUTPUTS

INTERNATIONAL SEMINARS AND WORKSHOPS

- Safer Road Infrastructure And Operations: How To Make Our Roads Safe (Kuala Lumpur, Malaysia, 22 October 2008)
- International Experiences on Most Effective Road Safety Measures (Queretaro, Mexico, 28 April 2009)
- Promoting Road Safety for Vulnerable Road Users (Cape Town, South Africa, 25-27 October 2009)
- Safer Road Operations (San José, Costa Rica, 8-12 November 2010)
- The Influence of Road Infrastructure on Road Safety Operation (Buenos Aires, Argentina, 9–11 May 2011)

TECHNICAL REPORTS

- Comparison of National Road Safety Policies and Plans
- Best practices in road safety campaigns by public administrations
- Cost Effectiveness of Safety Measures and Allocation of Resources

OTHERS

- State of the Practice “Cost-Effectiveness Analysis (CEA), Cost-Benefit Analysis (CBA), and Resource Allocation”



Members visiting the traffic control center in Madrid, Spain, November 2008

C.3 Managing Operational Risk in Road Operations

MEMBERS

Total membership: 55 (32 countries)
Members: 36
Corresponding members: 14
Associate members: 5

ISSUES AND STRATEGIES

C.3.1 – Introduce risk management techniques in the road sector

- Analyse the use of risk management techniques by road authorities and identify best practice.
- Identify case studies that exemplify the benefits of using risk management in different aspects of the road sector.

C.3.2 – Risks Associated with Natural Disasters, Climate Change, Man Made Disasters and Security Threats

- Identify approaches being used to assess the risks associated with natural disasters, climate changes, man made disasters and security threats.
- Identify strategies that are being applied to reduce or mitigate the risks associated with these circumstances.

C.3.3 – Social acceptance of risks and their perception

- Identify and evaluate studies of the public's perception to risks in the road system and the factors that effect those social reactions.
- Study methods that are used to measure people's acceptance of risks.

OUTPUTS

INTERNATIONAL SEMINARS AND WORKSHOPS

- Managing Operational Risk on Roads (Iasi, Romania, 5-7 November 2009)
- Workshop on Managing Operational Risk in Road Operations (Rome, Italy, 6 May 2010)
- Risk and Emergency Management for Roads (Beijing, China, 11-13 November 2010)
- Workshop on Managing Operational Risk in Road Operations (Osaka, Japan, 24 April 2011)

PAPERS IN ROUTES/ROADS

- **No. 344:** "Managing the operational risk of roads - Social acceptance of risks and their perception". R. Arditi, E. Belda Esplugues, B. Cecchini, F. Fernandez Alonso
- **No. 346:** "How does social acceptance of risks and their perception influence risk management on road operations?" I. Benekos, P. Toniolos

TECHNICAL REPORTS

- A Guide to Risk Management in a Road Organization
- Risks Associated with Natural Disasters, Climate Change, Man Made Disasters and Security Threats
- Social Acceptance of Risks and their Perception



C.4 Road Tunnel Operations

ISSUES AND STRATEGIES

C.4.1 – Improve tunnel operation and maintenance

- Study of responsibilities in tunnel safety management, including organisation of tasks and necessary skills.
- Develop procedures to improve tunnel operation based on training, exercises, and analysis of incidents, traffic and maintenance.
- Benchmark experience on tunnel safety inspection and maintenance organisation. Draw lessons on reliability, availability and maintainability of systems.

C.4.2 – Manage and improve tunnel safety

- Identify priorities and methods for improving safety in existing tunnels, including infrastructure, prevention and operation.
- Develop recommendations for risk analysis and investigate strategies for risk evaluation.

C.4.3 – Influence users' behaviour in tunnels

- Investigate harmonised means to influence users' behaviour in tunnels, including disabled persons.

C.4.4 – Optimize tunnel ventilation and mitigate fires

- Update the air demands for ventilation in order to take into account recent reductions in vehicle emissions and the pollutants now considered critical, including specific situations in developing countries.
- Investigate fire test data and new regulations in order to finalise the update of design fires.
- Follow up new developments of fixed fire fighting systems and their application.

C.4.5 – Evaluate, organize and communicate knowledge on tunnel operation and safety

- Identify needed information and scrutinize contents of existing World Road Association reports and other reports.
- Organise the document(s) produced by the Committee (e.g. tunnel manual for practitioners or guide for non-specialists).

PRODUCTIONS

INTERNATIONAL SEMINARS AND WORKSHOPS

- Tunnels and ITS Applications (Buenos Aires, Argentina, 23-26 March 2009)
- Road Tunnel Operations (Xiamen, China, 25-26 March 2011)
- Three workshops dealing with tunnel safety, operations and refurbishment in Montreal (Canada), Auckland (New Zealand) and St Petersburg (Russia).

PAPERS IN ROUTES/ROADS

- N° 342: "Fire detection systems in road tunnels"
- N° 350: "Risk evaluation for road tunnels." B. Kohl, G. Clark
"The ITA Committee on Operational Safety of Underground Facilities (COSUF): Five years of activity and cooperation with PIARC." D. Lacroix
"Security and Safety of Road Tunnels and Other Critical Infrastructures." A. Kashef
"Life cycle aspects of electrical road tunnel equipment"; U. Welte

MEMBERS

Total membership: 140 (32 countries)
Members: 51
Corresponding members: 19
Associate members: 70

TECHNICAL REPORTS

- "Strategic tunnel safety management" – Guidance on roles and responsibilities in tunnel safety management.
- "Good practice for road tunnel emergency exercises" – Step by step guide to define the objectives, to prepare, carry out and evaluate an exercise.
- "Management of maintenance and technical inspections of road tunnels"
- "Life cycle aspects of electrical road tunnel equipment" – lessons on reliability, availability and maintainability of systems.
- "Current practice for risk evaluation in road tunnels" – Guidance on how to evaluate the results of risk analyses, with examples of different approaches taken worldwide.
- "Improving Safety in Existing Tunnels – Step by step guide to identifying priorities and methods for improving safety in existing tunnels, including infrastructure, prevention and operation.
- "Drivers' education" – Background to human factors and driver behaviour in tunnels, what has to be communicated to tunnel users and what the driver must do.
- "Vehicle emissions and air demand for ventilation" – Updated guidance on ventilation demands in response to new reductions of pollutant emissions and consideration of new pollutants.
- "Design Fire Characteristics for Road Tunnels" – Fire test data and guidance on defining design fires for road tunnels.
- "Road Tunnel Manual" – An online compendium of all of PIARC's guidance on road tunnel operations.

OTHERS

- Special session on Road Tunnel Winter Maintenance and Operations, during the International PIARC Winter Road Congress in Quebec (Canada).
- Collaboration with the Committee on Operational Safety in Underground Facilities (ITA-COSUF) of the International Tunnelling and Underground Space Association (ITA/AITES), and with the European Commission regulatory committee for safety of road tunnels.