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Road Tunnel Fire Protection

Objectives
To investigate the performance of current technologies for detecting tunnel fires and develop performance criteria for them. To contribute to technical specifications and installation requirements of fire detection systems for road tunnel protection.

Background
Tunnel fire safety measures are being questioned throughout the world following a number of fatal fires. However, information on the performance of fire detection systems used for road tunnel protection is still limited. Further technical information is needed to help authorities to select the most appropriate tunnel fire detection technologies, to assist standards-writing agencies to determine performance requirements for road tunnel fire detectors, and to improve fire detection technologies for tunnel protection.

Statement of Work
- Conduct laboratory tunnel fire tests in order to develop appropriate fire scenarios and test protocols to be used to evaluate the performance of current fire detection technologies.
- Apply computational fluid dynamics models to investigate the impact of various tunnel fire scenarios, and of changes in tunnel operating conditions and tunnel geometries, on the performance of fire detection systems.
- Conduct full-scale fire tests and investigate the performance of fire detection systems in an operating road tunnel in Montreal.
- Assist investigation into the impact of tunnel environment on the performance of fire detection systems in the Lincoln and Holland Tunnels in New York City.

Expected Outcomes
- Methodologies for evaluating the performance of selected fire detection technologies in tunnel environments.
- Project reports and peer-reviewed papers documenting the results of laboratory tunnel and field tests, and of computer simulations. These will demonstrate the capabilities and limitations of fire detection technologies for road tunnel protection.

Partners
The National Fire Protection Association's Fire Protection Research Foundation, with the support of international government organizations, universities, industries and private sector organizations.

Start/Expected Completion Dates
This project began in November 2005 and will be completed in November 2007.

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For more information, see http://irc.nrc-cnrc.gc.ca/fr/pfdss/detecttunnel_e.html

Full-scale fire tunnel test

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