Overheat and Fire Detection in Tunnels

SPECIAL HAZARD APPLICATION

The construction and environment of a vehicular tunnel poses unique and difficult fire safety problems. The life safety risks and potential danger facing people who travel through these enclosed structures are compounded when passengers are forced to evacuate through smoke-filled roadways or other emergency exits in the event of a fire.

Among the causes of fire in vehicular tunnels are: accumulation of combustible debris along the roadway and within vent shafts, fuel spills and oils on the road surface; flammable materials carried as cargo; short circuits or electrical malfunctions in control or power cables; ventilation and air handling equipment; and human caused hazards such as motor vehicle accidents.

Of all the potential causes of tunnel fires, incidents involving motor vehicles are of the greatest concern. Motor vehicle firesrepresent about 17% of all reported fires. Death and injury in motor vehicle fires result from direct exposure to heat and from inhalation of toxic combustion products. When this fire scenario occurs within the confines of a tunnel, extinguishment and response efforts are hampered due to limited access points for fire personnel, availability and adequacy of the water supply, and ventilation capabilities necessary to exhaust toxic smoke and gases.

A Protectowire FireSystem provides an effective solution for this unique special hazard. The FireSystem utilizes Protectowire Linear Heat Detector which is typically installed on the ceiling directly over the roadway. Protectowire is available in a wide range of models and operating temperatures designed to resist hostile environmental factors such as exhaust fumes and washdowns which are common occurrences in tunnels.

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The system's design may be further enhanced by installing Protectowire in the cable racks and equipment rooms which house control and power cables for the tunnel's ventilation, communication, and signaling equipment. In cable runs, Protectowire may be installed at each rack level in direct contact with the cables. Because the Detector is a cable, it will easily follow tray runs, change levels, and cover vertical cable risers.

Protectowire FireSystem Control Panels may be configured to monitor and activate extinguishing systems, sound audible and visual warning signals, control air handling and ventilation equipment, and identify in feet or meters, the exact location of an overheat or fire source by means of a proprietary digital alarm point location meter.

These versatile control panels are available in several different models to accommodate a wide range of environmental and operational requirements. No competitive system is more flexible and cost-effective. Smoke and spot heat detectors, manual stations, and other types of initiating devices can be used in combination with Protectowire for a total protection system. In addition, all FireSystem Control Panels may be easily interfaced with centralized monitoring and control systems, further reducing installation costs. Protectowire Linear Heat Detector is a component of a complete family of fire detection systems manufactured by The Protectowire Company.

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