Advanced Certificate in Tunnel Fire Protection

Smoke control systems

Active smoke control system:
A system that uses mechanical means, such as fans and ducts, to actively control the movement of smoke within a tunnel. This system is designed to maintain tenable conditions in the tunnel during a fire and to help facilitate evacuation and firefighting efforts.

Administrative controls:
Procedures and policies put in place to manage and reduce the risk of fires in tunnels. This can include regular inspections, training, and emergency response plans.

Air pressure difference:
The difference in air pressure between the inside and outside of a tunnel, which can affect the movement of smoke and fire within the tunnel.

Baffle plate:
A device used to direct and control the flow of air or smoke in a tunnel.

BLEVE (Boiling Liquid Expanding Vapor Explosion):
A type of explosion that can occur when a container of pressurized liquid is exposed to fire, causing the liquid to rapidly expand and explode.

Buffer area:
A space within a tunnel that is used to separate different operational areas and to provide a safe area for emergency responders and evacuees.

Combustion:
The process of burning, which releases heat and light and can produce smoke and other harmful byproducts.

Cross-passage:
A passageway that connects two parallel tunnels, allowing for the movement of people and equipment between them.

Decay rate:
The rate at which the intensity of a fire decreases over time.

Detection system:
A system that is used to detect the presence of smoke or fire in a tunnel. This can include smoke detectors, heat detectors, and flame detectors.

Emergency response plan:

A plan that outlines the steps to be taken in the event of a fire or other emergency in a tunnel. This can include evacuation procedures, firefighting strategies, and communication protocols.

Entrained smoke:
Smoke that is carried along with the airflow in a tunnel.

Evacuation:
The process of moving people out of a tunnel in the event of a fire or other emergency.

Fan:
A mechanical device that is used to move air or smoke within a tunnel.

Fire:
A rapid oxidation process that releases heat, light, and smoke.

Fire alarm system:
A system that is used to alert people in the event of a fire. This can include visual and audible alarms, as well as automated phone calls and text messages.

Fire brigade:
A team of trained firefighters who are responsible for responding to fires and other emergencies in a tunnel.

Fire detection system:
A system that is used to detect the presence of smoke or fire in a tunnel. This can include smoke detectors, heat detectors, and flame detectors.

Fire growth rate:
The rate at which a fire grows and spreads within a tunnel.

Fire loading:
The amount of fuel available for combustion in a tunnel.

Fire prevention plan:
A plan that outlines the steps to be taken to prevent fires in a tunnel. This can include regular inspections, training, and maintenance.

Fire resistance:
The ability of a material or structure to withstand fire for a certain period of time.

Fire retardant:
A chemical or substance that is used to slow the spread of fire.

Fire suppression system:
A system that is used to extinguish or control a fire in a tunnel. This can include water sprinklers, foam systems, and dry chemical systems.

Flame:
The visible portion of a fire, consisting of hot, glowing gases.

Flame detector:
A device that is used to detect the presence of flames in a tunnel.

Heat detector:
A device that is used to detect the presence of heat in a tunnel.

HVAC (Heating, Ventilation, and Air Conditioning) system:
A system that is used to control the temperature, humidity, and air quality within a tunnel.

Inert gas system:
A system that uses inert gases, such as nitrogen or argon, to displace oxygen and suppress fires in a tunnel.

Jet fan:
A high-velocity fan that is used to control the movement of air or smoke within a tunnel.

Local extraction ventilation system:
A system that is used to remove smoke from a specific area within a tunnel, such as a cross-passage or emergency refuge.

Natural ventilation system:
A system that uses the movement of air through a tunnel to control the movement of smoke and fire.

Passive smoke control system:
A system that uses the natural movement of air and the design of the tunnel to control the movement of smoke and fire. This system does not rely on mechanical means, such as fans and ducts.

Pressure relief vent:
A vent that is used to equalize the pressure between the inside and outside of a tunnel in the event of a fire.

Pressure tunnel:
A tunnel that is used to equalize the pressure between the inside and outside of a main tunnel.

Propagation rate:
The rate at which a fire spreads within a tunnel.

Refuge area:
A safe area within a tunnel where people can go in the event of a fire or other emergency.

Smoke:
A mixture of air, particles, and gases that is produced by a fire.

Smoke control system:
A system that is used to control the movement of smoke within a tunnel. This can include active and passive

systems, as well as mechanical and natural ventilation.

Smoke detector:
A device that is used to detect the presence of smoke in a tunnel.

Smoke extraction system:
A system that is used to remove smoke from a tunnel.

Smoke layer:
A layer of smoke that forms within a tunnel as a result of a fire.

Smoke management system:
A system that is used to control the movement of smoke within a tunnel.

Smoke vent:
A vent that is used to remove smoke from a tunnel.

Sprinkler system:
A system that is used to extinguish or control a fire in a tunnel. This system uses water sprinklers to wet down the fire and surrounding area.

Temperature difference:
The difference in temperature between the inside and outside of a tunnel, which can affect the movement of smoke and fire within the tunnel.

Tunnel:
A long, narrow underground passageway used for transportation, utilities, or other purposes.

Tunnel lining:
The inner surface of a tunnel, which can be made of concrete, steel, or other materials.

Tunnel portal:
The entrance or exit of a tunnel.

Ventilation system:
A system that is used to control the movement of air within a tunnel. This can include natural and mechanical ventilation systems.

Venturi effect:
The reduction in pressure that occurs when a fluid flows through a narrow opening, such as a vent or duct.

Water mist system:
A system that uses fine water droplets to extinguish or control a fire in a tunnel.

Wind effect:
The effect of wind on the movement of smoke and fire within a tunnel.

This glossary contains a comprehensive list of terms, concepts, and acronyms related to smoke control systems in the context of the Advanced Certificate in Tunnel Fire Protection. It includes definitions and explanations of active and passive smoke control systems, detection and suppression systems, and various types of vents and fans used in tunnel fire protection. It also covers administrative controls, emergency response plans, and other related topics. This glossary is designed to be a useful reference for students, professionals, and anyone interested in learning more about smoke control systems in tunnels.