Thermal Ceramics

FIREMASTER™

FireBarrier 135 Tunnel Fire Protection Systems

Installation of FireBarrier 135 in the Faver Tunnel Italy 2009/2010

Background

Improvements to the SS 612 highway in the Val di Cembra area of northern Italy required the construction of the new “Faver” tunnel in order to align a new section of road to an existing section located at a higher elevation.

The design of this 9.8m wide, 1.49 km long tunnel allows safe evacuation in case of a fire in the tunnel utilising a false wall built into the tunnel. The area formed by the wall serves both as a space in which tunnel services can be routed and access for escape and emergency fire services during a fire. A passive fire protection applied to the exterior of the wall ensures that the structure is insulated from the heat of the fire to prevent collapse and ensure the escape way remains operable during a fire. In addition, insulation of the air in the void behind the wall allows for safe operation of any critical tunnel services and a safe environment for people inside.

Design and Fire Protection

The original design concept for constructing the false wall used heavy concrete structure. However, as the use of a thin, corrugated, steel wall had already been demonstrated to be successful in the Verla Di Giovo tunnel the design was changed to utilise this, more lightweight, option to form the false wall.

Fire protection of the wall is achieved using FireBarrier 135 which is spray-applied directly to the steel and additionally supported using steel wire mesh

fixed onto the steel wall before spraying commences. Not only is the lining required to be self-supporting in service but it also has to withstand the effect of air pressure generated by traffic flows, thus the use of a reinforcing mesh.

The fire protection lining is required to withstand a hydrocarbon fuel fire of 2 hours duration, ensuring the steel temperature doers not exceed 400 °C. This was achieved using 20mm of FireBarrier 135. A layer of 40mm was applied onto the tunnel roof directly above the location of the emergency parking bays.

Over 420 tonnes of FireBarrier 135 was installed during two months in late winter 2009 and January 2010. The FireBarrier is installed as the final surface finish of the tunnel with no further protective coating required.