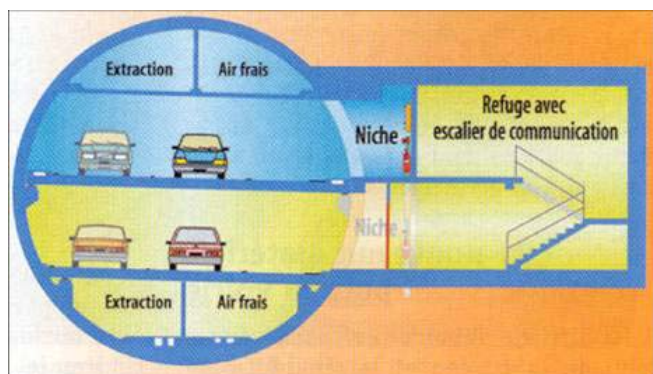


## Safety in road tunnels

The A86 tunnel project being constructed in Paris involves two tunnels; the East and West Tunnels. The East Tunnel for light vehicles only consists of a 10 km double-deck tunnel and will be executed in two steps; the first section between Rueil-Malmaison and Versailles Pont Colbert is 4.5 km long and will open in October 2007. The second tunnel of 5.5 km length between Pont Colbert and A13 is scheduled for completion two years later.

The dia. 10.5 m tunnel will have two traffic lanes and one emergency lane in each direction. A custom-built TBM of almost 12 m diameter and 200 m length finished boring the 4.5 km long section in October 2003. Prefabricated concrete lining segments were installed as the machine advanced.



Because of the too many accidents in road tunnels in recent years, it was decided to excavate safety niches every 200 m along the 4.5 km tunnel - a higher density of safety installations than ever before in a road tunnel.



There will be altogether 31 recesses; 18 safety recesses with transfer stairs between the two traffic levels and 13 structures to evacuate smoke from the lower level.

The excavation of the niches for the structures/stairways is carried out by a remote-controlled, electrically powered Brokk 330 equipped with breaker and scabbler.

Geologic conditions vary between hard rock (limestone and marl), clay and sand.



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