

Interurban Environment

[Road](#)

Interurban road tunnels have been built for centuries to enable vehicles crossing mountains and topographical accidents.

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[Railway](#)

Railway tunnels are nearly as old as railways. The first one was built in 1826 on the line between Liverpool and Manchester. Later on, the development of railways in the late 1880's led to a dramatic development of railway tunnels.

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[Navigation](#)

As navigation canals have to be built as horizontal as possible, as soon as topographical accidents appear the construction of tunnels is needed.

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[Others](#)

Some other structures need the construction of tunnels. For instance, tunnels have been built

on ski resorts such the ones built in Tignes.

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Rail, road and navigation tunnels are beeing built for centuries. One of the most - if not the most- ancient tunnel of that type is the Malpas tunnel on the Canal du Midi in France built in 1776.

Of course the development of tunnels has been very active during the XIXth century to accompany the development of the railway industry.

At the beginning the tunnels were relatively short eventhough the construction of Alpine tunnels at the end of the XIXth century shows advance rates which allowed construction of more than 10 km long tunnels. (see history).

Recent technical evolutions lead to increasingly longer tunnels in increasingly inhomogeneous grounds. The construction of the Channel Tunnel between UK and France or the Seikan tunnel in Japan are good examples.

Since the end of the 90's and the development of high speed railway lines, it is now necessary to build base tunnels (at altitude between 600 and 900 m) to replace summit tunnels.