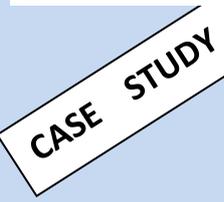


 LIGHTCEM 	Case Study:	Gothenberg Tunnel, Sweden
	Contracted by:	Swedish Roads Authority
	Application:	Road Tunnel Linings
	Requirements:	Lightweight Concrete Construction Segments
	Solution / Product:	LightCem® LITECRETE®™

THE PROBLEM The long, cold winters of Scandinavia have given rise to a problem of particular concern to road tunnel engineers.

Each year millions of litres of water gradually permeates into the rock, following every crack and fissure, seeking some form of outlet. Road tunnels running through the mountains form an ideal collection point and for many months of the year water is continually dripping from the tunnel roof. As temperatures fall in Winter, the dripping water turns to icicles, hanging like stalactites from the roof and subsequently dropping, dangerously onto the vehicles below.

A slight rise in temperature, during the day may once again result in a cascade of dripping water which will lay on the carriageway, ready to turn to a ribbon of ice next time the temperature drops. The dangers are obvious!

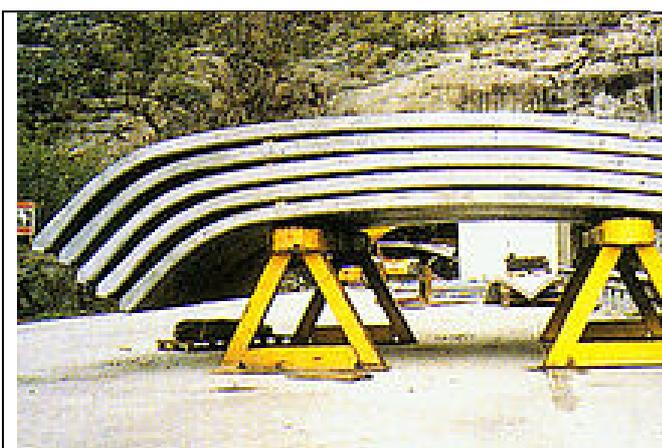
The solution? Swedish engineers turned to LightCem.

THE SOLUTION Lining the tunnels with concrete sections was an obvious answer, but ordinary concrete posed as many problems as it solved.

Ideally the concrete elements or sections would be LIGHT, STRONG and WATERPROOF - LIGHT enough to require just simple plant and equipment that could work easily inside the tunnel yet STRONG enough to be self-supporting. The segments also need to be WATERPROOF, to prevent the on-going problem and direct the water elsewhere.

LightCem elements proved to be the perfect solution. The combination of almost NO water absorption together with HIGH STRENGTH and LOW WEIGHT (each element weighing less than one third the weight of ordinary concrete) gave engineers the answer they were looking for.

An easy to install system that solved the problem, made the tunnels safer and resulted in an aesthetically pleasing finish - **and reduced costs!**



Gothenberg Tunnel – Roof Lining Segments Pre-cast LightCem LITECRETE concrete segments delivered and stockpiled ready for fitting.



Gothenberg Tunnel – Roof Lining Segments Pre-cast LightCem LITECRETE concrete segments provide the strength without the weight – and therefore reduced costs!

	<p>“LightCem LITECRETE is the ideal product for this work and is still functioning perfectly after 20 years.</p>	<p>Mr SK, MD CemPro</p>
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LIGHTCEM®

