

# CONCRETE ROADS OFFER EXTENSIVE AND DIVERSE BENEFITS

*Today's concrete roads are far from the concrete pavements of old, which are still in existence but were designed long ago to very different design criteria to those employed currently, says Bryan Perrie, CEO of Cement & Concrete SA (CCSA).*

Perrie says early concrete roads were laid using ancient techniques and equipment. "Modern designs, new construction methods, better surface finishing, and high-tech machinery now make it possible to produce high-quality concrete pavement surfaces that satisfy the needs and objectives of road users, neighboring communities, and road managers," he feels.

"Concrete pavements offer substantial environmental, economic, and social benefits and should be more widely regarded as the sustainable solution to South Africa's road network. These roads, which undoubtedly offer lower whole-life costs for comparable design, are the natural choice for projects where performance, value, longevity, social responsibility, and concern for the environment are paramount.

"Furthermore, concrete pavements offer a long service life that usually exceeds 30 years and requires relatively little maintenance and repair to produce long-term savings in raw materials, transport, and energy. Reducing traffic delays caused by road works on concrete pavements also cuts fuel consumption and exhaust gas emissions.



"In fact, at a time of soaring petrol prices, fuel-saving for cars and goods vehicles is an important advantage of concrete roads that is not always apparent or published. Yet the facts testify to such cost savings," Perrie states.

Sustainable concrete pavements make efficient use of natural resources and respect the environment throughout life cycles. In addition, the roads provide services to society in terms of mobility, safety, and comfort utilizing judicious choices for design, construction, maintenance, and demolition.

The following are some of the advantages and benefits of concrete for roads and pavements:

**Safety:** Surface texturing of concrete pavement can improve water run-off so that traffic on wet roads does not cause a splash, spray, and skidding. The light color of concrete pavements deflects light from vehicles and street lights, improving night-time visibility while affecting energy and materials savings by requiring fewer street lights per kilometer of road.

Heat retention: Concrete roads reflect sunlight which helps to mitigate the 'heat island effect'. Research has shown that black surfaces exposed to sunlight can become 21°C hotter than reflective white surfaces. This heats the air around roads, contributing to increased temperatures in surrounding buildings, necessitating more effective air conditioning, energy consumption, and electricity demand.

Labor-intensive construction: In countries such as South Africa, where unemployment is a significant burden to the economy, the manual aspects of the structure of concrete roads can be carried out by members of the local community after on-site training. Their newly acquired skills can, after that, be utilized in other sectors of civil engineering.

Other advantages include:

- Better performance in areas with heavy loads and stop-start traffic;
- Existing subgrade and alignment can be used;
- Ideal for upgrading existing deteriorated roads by overlaying or inlaying;

- Can be built with integral curb and channel;
- Can reduce stormwater reticulation;
- Simple, inexpensive equipment required for construction;
- Local materials can be used;
- Require less lighting energy where streetlights are provided;
- Built-in skid resistance can be provided; and
- Can be tined to improve drainage.

"A five-year Canadian study showed that concrete roads were only 2-4 decibels louder than asphalt. On the other hand, a conversation registers 60-70 decibels and a whisper, 20 decibels, so this is a minor and irrelevant factor," Perrie adds.

"Finally, on a smaller scale, South Africa also has yet to properly acknowledge the benefits of concrete strip roads, which can be laid as wheel tracks and are economical, durable, and particularly suitable for rural areas. Concrete strip roads have proved successful in many countries. However, the SA governmental road building sector, as well as private land-owners, are still to fully exploit the advantages of such slim surfaces which can make steep rural roads passable in all weather," he says.

[www.cemcon-org.za](http://www.cemcon-org.za)

