

WHAT IS IT?

With a reputation for longevity and durability, concrete pavements have been meeting the needs of sustainable development for decades. Concrete pavements are also an excellent choice when considering the lifetime environmental impact. From mining the locally produced, raw materials through construction and long-term maintenance free performance, concrete stands out as the most cost-effective, sustainable paving material.

Durability and Low Maintenance

- Quite simply, concrete lasts longer. In turn, rehabilitation and reconstruction of concrete pavements are necessary less often.
- Economic and CO₂ savings are achieved due to less fuel-intensive construction operations.
- Fewer raw materials are used both in the short- and long-term life of the pavement.
- Fewer work zones translates to reduced traffic congestion.

Locally Produced

- Concrete is typically produced regionally from abundant resources.
- Fuel consumption and emissions are minimized for transportation and handling.
- Concrete is a made-to-order material resulting in less building waste.

Abundant Raw Materials:

- Concrete pavements are made with cement (made from plentiful natural minerals), aggregates (stone, sand, and gravel), and water.
- These materials are readily availability and most often, locally sourced.

Renewable and Recyclable

- Though concrete pavements will last for years, concrete can be recycled at the end of its service life.
- This benefit reduces the demand on non-renewable raw materials.



ENVIRONMENTAL BENEFITS OF CONCRETE PAVEMENTS



Recycling Waste

- The use of industrial byproducts in concrete improves pavement longevity, saves money, lowers energy usage, and reduces the generation of greenhouse gases.
 - Slag, a steel byproduct, can be used to partially replace aggregate.
 - Fly ash, created from coal combustion, can replace some of the cement.
 - Ground blast-furnace slag, created in the manufacture of iron, can also replace some of the cement content.
 - Scrap tires can be safely used as fuel in the cement manufacturing process.
- A concrete mix can incorporate waste otherwise destined for the local landfill.

Energy Savings

- The light color of concrete pavements offers natural reflectivity.
 - These pavements are brighter at night and therefore less light and energy is necessary for illumination.
- A concrete pavement is a cool pavement, thereby reducing the urban heat island effect.
 - This phenomenon causes increased energy consumption and contributes to smog formation and other air quality issues.
- Motorists traveling on concrete pavements benefit from its rigidity.
 - Because the pavement is stiffer, the surface doesn't have as much give, allowing for better fuel efficiency.

Stormwater Management and Water Quality

- Some pavements can make use of a highly permeable pavement made with coarse aggregates, cement, and water.
- Pervious concrete pavements absorb rainfall, reducing stormwater runoff and minimize the amount of pollutants (such as automotive fluids) flowing directly to local streams and rivers.
- By allowing some of the rainfall to percolate into the ground, the soil naturally treats the polluted water and reduces the strain on wastewater treatment facilities.

Quiet

- Optimized surface textures can be used on concrete pavements, resulting in long-lasting pavements with acoustic stability.



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