

WHAT IS IT?

Eventually, all pavements must be replaced. After a long and reliable service life, concrete pavements can be crushed and reused. In fact, concrete is 100% recyclable (and the steel rebar within is recyclable as well).

The Construction Materials Recycling Association estimates that about 140 million tons of concrete are recycled each year in the U.S. alone. Typically, recycled concrete aggregate (RCA) is used as granular fill, base and sub-base material, or as aggregate in new concrete pavement.

Why do it?

Reusing concrete pavement minimizes the amount of raw materials required for a new pavement structure. With aggregates comprising between 70% to 85% by mass of the concrete mixture, it makes sense both economically and environmentally to reuse the existing pavement.

Producing recycled concrete aggregates is simple and economical. While RCA can be transported virtually anywhere, reusing the concrete at its original site (in-place recycling) has several benefits that can save on costs.

By eliminating the costs of removing old concrete, factoring in savings on disposal costs, and the potential cost of road damage from transport of virgin or waste materials, some states have estimated savings of up to 50% to 60% from using recycled aggregates versus buying new aggregate.



In-place concrete recycling reduces construction costs because a contractor doesn't have to locate a recycling center or pay for hauling the materials away. This ultimately saves money for taxpayers and agencies.

Environmental benefits of in-place recycling include reduced truck traffic, reduced fuel consumption and improved air quality by limiting exhaust fumes.

Using recycled concrete pavement, particularly in applications that expose it to the atmosphere (e.g., embankment fill, gravel roads, roof ballast, and railroad ballast) has an additional environmental benefit resulting from a process called carbon sequestering. This process essentially recaptures CO₂ from the atmosphere.

RECYCLED CONCRETE



According to a 2008 Federal Highway Administration national review, 84% of states are recycling concrete as aggregate. While most states use RCA as base material, 22% use the recycled material as aggregate for new concrete pavements.

Recycled concrete is easy to use. Even though concrete properties may differ slightly when using RCA, there are no special construction techniques required for paving new concrete made with recycled concrete aggregate. Prior testing ensures a quality and consistent product throughout.

Recycling Waste into Concrete

The concrete and cement industries also rely on waste materials from other industrial processes that are diverted away from landfills. Slag can be used to partially replace aggregate. Also fly ash, silica fume or ground granulated blast-furnace slag can be used to supplement the cement used in concrete.



Even the process of making cement makes use of recycled materials. High-energy waste, such as scrap tires, waste oils, and other organic wastes and solvents, can be safely used as fuel for the cement making process. Each year, a single cement kiln can use one million scrap tires, conserving fossil fuels and reducing waste.



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