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R. BAKER & SON Clearing the Waste Stream with Concrete Recycling

By: David Baker

Concrete is ubiquitous in our world today. According to the Cement Sustainability Initiative (CSI), **concrete is second only to water as the most-consumed material on earth**, and twice as much concrete is used in construction worldwide than all other building materials combined. As a result, concrete accounts for hundreds of millions of tons of construction and demolition (C&D) waste each year, and with greater environmental awareness and stricter landfill regulations, concrete recycling is becoming increasingly important.

Why recycle concrete?

There are two main environmental and financial benefits to recycling concrete: 1) landfill waste is significantly reduced; 2) use of recycled concrete aggregate reduces the need for natural materials and the associated mining and transportation costs. Recycling of C&D debris, including concrete, is worth 1-2 LEED points.

What are some of the uses for recycled concrete?

Most recycled concrete is used as aggregate base and sub-base for roadways, as it has equal or superior compaction properties as compared to primary aggregates, and is generally less expensive. Recycled concrete aggregate can be used over geotextile fabric as a soil stabilizer on construction projects to increase the load-bearing capacity of the subgrade, and can replace natural aggregate as bedding for pipes and other underground utilities. Recycled concrete can also be used as a landscaping material, in retaining walls, to control erosion, in artificial reefs, and in underpass abutment structures. *continued on page 2*



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Use of recycled concrete as an aggregate for structural concrete is slowly on the rise as researchers work to improve concrete formulas and methods of aggregate processing. Currently, recycled aggregate is mainly used in ready-mix concrete.

How is demolition concrete recycled?

Concrete must be sorted on-site and separated from other C&D materials, then either processed on-site using mobile equipment, or transported to an off-site facility, which can usually produce a higher-quality aggregate. Contaminated concrete (determined through pre- or post-demolition sampling) must be segregated and handled as hazardous waste.

After concrete has been reduced to a manageable size, it is run through a crusher. Magnets or other mechanical means are used to extract metals, such as steel rebar, which is recycled as well. The crushed concrete can then be used as-is, or, for a higher grade aggregate, it can be further screened and subjected to water floatation, hand picking, air separators, and electromagnets to remove remaining dirt, metal, and foreign particles.

R. Baker & Son: Project Photo

By: [Walter Baker](#)

A complex and challenging project performed by R. Baker & Son at PSE&G's Glenmont, NY station involved the decommissioning and dismantling of four gunite-lined steel stacks from atop the powerhouse roof.

With the 170-ft tower and the 165-ft building standing at a combined height of 335 feet, a Favco M760D tower crane was erected on the roof to lift and lower the stack sections to the ground. Shown in the photo, a second crane, a 500-ton hydraulic Demag, is used to hoist a man



basket nearly 350 feet in the air to allow crew members to perform rigging and dismantling of the stack and breeching. **The project was complicated by the close proximity of live power lines, cooling towers, and the new powerhouse, which was required to remain online for the duration of the project.**

Expert R. Baker & Son crews were made up of safety professionals, industrial dismantlers and ironworkers, master riggers, heavy equipment operators, and demolition superintendents. Tasks included cleaning and remediation of more than a thousand cubic yards of fly ash from the stack bases. Fly ash, gunite, and carbon steel were carefully segregated and shipped to the appropriate recycler. Baker personnel complied with strictly enforced measures and procedures to ensure a safe and successful project.

PPE Basics: Hand Protection

Hand and arm injuries account for one third of all construction-related injuries. With proper use of job-appropriate PPE, most of these injuries can be prevented, and there are many choices available that are far more comfortable and provide better dexterity and protection than the lightweight cotton or bulky leather gloves of the past.

Different trades require different levels of protection from various hazards, and gloves should be chosen accordingly based on specific need. For example, rigging and demolition workers require gloves that offer greater resistance to cuts, punctures, and abrasions, while other trades may be more susceptible to chemical

hazards, heat, or cold. When dexterity is particularly important, workers should wear gloves that allow them to perform intricate tasks without having to remove them. Vibration-dampening and impact-resistant gloves are recommended for workers who operate equipment that can cause carpal tunnel syndrome and other cumulative trauma disorders such as jackhammers and pneumatic tools.

OSHA requires that employers supply proper hand protection and recommends ANSI standards as a guideline. PPE vendors may also refer to ASTM standards to assist customer selection.



R. Baker & Son Featured in ENR Special Demolition Section

R. Baker & Son's involvement in the 2012 Statue of Liberty renovation project was featured ENR Magazine's special demolition section last December. The publication was sponsored by the National Demolition Association (NDA) for members to showcase their mastery in the demolition process.

The project upgraded safety features in the famous monument and improved accessibility for disabled visitors. R. Baker & Son performed rigging, dismantling, and selective demolition sequences and procedures while National Geographic Channel cameras followed their progress for Access 360° Heritage: Statue of Liberty. R. Baker & Son work crews were heavily featured in the documentary aired earlier this year.

