RECYCLING AND RETROFITTING OF CONCRETE COULD PROVIDE ENORMOUS COST-SAVINGS

Enormous economic and environmental benefits could be achieved globally by emphasizing the recycling and retrofitting of concrete, the most commonly used building material on earth, says Bryan Perrie, CEO of Cement & Concrete SA (CCSA).

"Modern civilisation is built on concrete and its positive social impacts are immense. Because of its extensive usage, concrete inevitably has a relatively large environmental footprint but this could be reduced by increasing the volumes of recycled concrete," Perrie states.

"At least 10 billion tons of concrete are used annually - twice as much as any other building material. This means the potential for recycling is enormous but sadly unacceptably high volumes of concrete now end up in landfills together with other construction and demolition waste (C&DW) - completely ignoring their recycling potential."

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Perrie says the demolition of in-situ, precast, and tilt-up reinforced concrete can be achieved relatively easily by modern cutting, breaking, and lifting equipment. In addition, once the demolition of reinforced concrete is completed, the concrete and reinforcing steel can be separated for recycling.

"Internationally, the most common usage of recycled concrete currently is in the roads, but concrete can be recycled for many other purposes such as aggregate for building products such as bricks, blocks, layer works in road construction or land reclamation. In addition, recycling reduces the need for virgin materials, thereby saving resources and the energy required to process them.

Crushed concrete furthermore absorbs carbon dioxide. Precast components from structures can be reused in new buildings without having to be demolished and recycled. Structures using precast elements should, in fact, be designed for such reuse.

“In former industrial areas and inner-city precincts, there are many old concrete structures such as unused offices, factories and warehouses that can be retrofitted and converted into residential space. Effective building retrofitting usually requires the building structure to be left largely intact.”

The benefits of recycling and retrofitting include:

* Saving of natural resources, including raw materials, energy and water required for new structures;
* Reducing the quantity of solid waste sent to landfill;
* Lowering the energy consumption and pollution that would result from the extraction, manufacturing and transportation of virgin materials; and
* Increased employment opportunities - an important element in a country such as South Africa where so many people are jobless.

Perrie concedes that there are still some challenges to be overcome in the quest for using higher volumes of recycled concrete. "Included are aspects such as irregularity of supply, contamination and lack of consistent quality, site sorting, noise and pollution resulting from recovery and processing on site, as well as potential legal aspects.

"But the benefits - particularly for countries with shrinking economies - by far outweigh the challenges. CCSA believes there should be legislation banning construction and demolition waste from landfills, or taxation to limit the volumes of C&DW ending up in landfills. This must be coupled with increased policing to stop illegal dumping of construction waste. Architects and specifiers also need to increasingly consider the use of recycled concrete or concrete unit reuse when designing new buildings," he adds.

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