

GREENING INFRASTRUCTURE WITH CONCRETE

Concrete is widely used throughout the world in infrastructure construction. This common material is known for its strength and durability; however it is also a major contributor to CO₂ production. Concrete takes a lot of energy to produce – one ton takes 4900 mega joules – and also produces a large amount of CO₂ during manufacturing – one ton of concrete results in about one ton of CO₂.

That means that concrete also provides us with a great opportunity to reduce the production of CO₂ – in fact Portland cement production is a major component of Energy Policy, Efficiency and Conservation and Global Warming, Climate Change. Optimizing the service life of concrete-based infrastructure, concrete mix designs and use of recycled materials, we can have a material impact on Energy Conservation and Climate Change.

Using 2X Green concrete in new infrastructure helps you realize this opportunity by reducing the initial energy required by over 25% and extending the service life.

HOW IT'S DONE

Supplementary Cementitious Materials (SCMs) are materials that can be substituted for Portland cement and are recycled materials. The most commonly specified throughout the world are Fly Ash, Slag and Silica Fume. Often used to reduce the cost of cement, when properly engineered and combined in the right proportions, they can optimize not only service life but reduce the high energy/high CO₂ values found in pure Portland cement.

2X Green concrete is designed to optimize the combination of the SCMs available locally to improve service life and reduce the environmental impact of the concrete structure.

WHAT THIS MEANS TO YOU

Durability and Extended Service Life

Concrete engineers and major asset owners, including the US Department of Transportation (FHWA) focus on concrete's durability and impermeability to chemical attack and corrosion – the concrete cover is the first line of defense against corrosion of steel reinforcement. 2X Green concrete is designed to be dense and impermeable, thus ensuring a high performance concrete structure for a long time.

Using 2X Green concrete in infrastructure applications, such as stormwater treatment systems, means these structures will not show any signs of corrosion for over 100 years. This is a dramatic improvement over current allowable specifications.

Recycled Content

Concrete can be recycled, and used as aggregate in new concrete. 2X Green incorporates recycled concrete in the amounts of up to 10% of the aggregate, which ensures the highest quality structure with the least impact on the environment.

Regulatory Compliance

California and other states have taken the lead by legislating reductions in CO₂ generation. Cement production is a high priority area because with 2.5 billion tons produced per year, it represents 7% of the world's CO₂ production. California consumes 14 million tons of cement per year. AB 32 targets the reduction in Portland cement on all concrete structures in California. 2X Green replaces Portland cement by a minimum of 35%, but the increased service life of 100 years (or greater) means these structures will have a much lower CO₂ footprint over the entire service life.

Environmentally Preferable Purchasing (EPP)

State and Federal laws encourage and mandate that EPP be practiced when procuring goods and services with state or federal funds. In simple terms, if two products have the same durability and the same life cycle cost, then the product with the lowest impact on the environment should be procured.

2X Green concrete structures are more durable, have a much lower carbon footprint and a significantly lower life cycle cost. When adhering to EPP laws, 2X Green structures are the obvious choice. *[California law requires State government to practice EPP. See Public Contract Code, sections 12400-12404 for more information].*



STORMWATER FILTRATION SYSTEM INCORPORATES GREENER CONCRETE TO LOWER CARBON FOOTPRINT

Fashion Island®, a premier outdoor retail center located in Newport Beach, California, is owned by the Irvine Company. The 1.3 million square foot shopping center has a history of renovations over the past 40 years – the most recent was an improvement to the shopping mall’s parking lots in order to reduce pollution in the water flowing underneath.

With a commitment to environmental stewardship, the Irvine Company wanted a high-tech stormwater pollutant removal system to trap and treat stormwater runoff and help protect local water quality. The Irvine Company chose The Stormwater Management StormFilter® from CONTECH Construction Products Inc. to install beneath the parking lot outside of one of its major department stores where it would treat a significant portion of the runoff from the shopping center.

Adding to the StormFilter’s green footprint is the filter’s structural housing, which is composed of “green” concrete, called 2X Green. Unlike regular concrete, 2X Green is made from partly recycled materials such as silica fume and fly ash, a by-product of coal-fired power plants. 2X Green, manufactured by Clean Water Resources (CWR), provides twice the durability and up to a 70% reduction in CO2 when compared to standard concrete used in drainage and underground infrastructure.

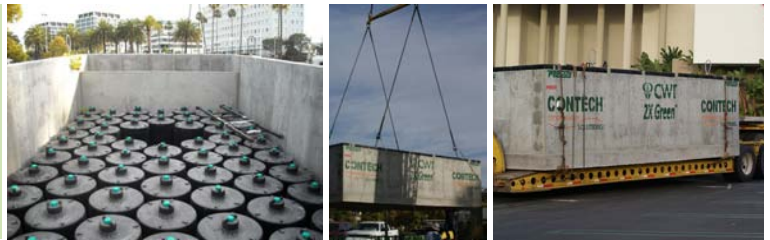
“It also should last longer – at least 125 years – which is double the lifespan of regular concrete,” said David Sinclair, president of Clean Water Resources in Connecticut. If it lasts 100 years, it could reduce carbon dioxide emissions by as much as 14 tons below what might be emitted using regular cement that would need to be replaced sooner.

The Fashion Island StormFilter is one of the first green concrete vault filters of its kind used in Southern California and will hopefully inspire future companies and project leaders to implement solutions that minimize a site’s environmental footprint.

CWR and CONTECH Construction Products have partnered to provide infrastructure solutions with a lower carbon footprint. All stormwater, bridge and tunnel concrete structures sold by CONTECH in California, Washington, Oregon and Alaska can now be made on request using 2X Green. “CONTECH is dedicated to shaping the future of green building and design, and with this partnership we are delivering on that commitment by offering our customers another option that helps them minimize their environmental impact,” said Craig Wenzlick, West Area Vice President for CONTECH.

Green Facts

- 3.4 times increase in service life*
- 40% reduction in Life Cycle Cost*
- 35% reduction in energy required
- Manufactured within 75 miles of project



*over min. allowable specifications

ABOUT THE STORMWATER MANAGEMENT STORMFILTER®

A best management practice (BMP) designed to meet stringent regulatory requirements; the Stormwater Management StormFilter® from CONTECH removes the most challenging target pollutants – including fine solids, soluble heavy metals, oil, and total nutrients – using a variety of sustainable media. Its patented, surface-cleaning system prevents surface blinding, which extends the cartridge life cycle.

The StormFilter’s proven field-tested performance has led to hundreds of stand-alone approvals by regulatory agencies nationwide, including the first proprietary BMP to receive General Use Level Designation from the Washington Department of Ecology and Final Certification from the New Jersey Department of Environmental Protection as a standalone stormwater treatment system.

For more information visit www.contech-cpi.com or call 800.338.1122.

