

Environmental & LEED Attributes of Precast Concrete Box Culverts

The use of precast concrete box culverts is a sensible choice for sustainable development. Precast plants reuse formwork, in itself a conservationist move, and in doing so reduce construction waste that would otherwise be generated at a job site. Because precast concrete box culverts are modular and standardized, they are installed in a quicker fashion and result in reduced construction times and energy usage, noise and emissions from on-site equipment and in reduced site impact.

The cement used in concrete is made of natural materials such as limestone and clay. Most cement plants rely on nearby limestone quarries. The cement industry has made significant progress in reducing carbon dioxide emissions and energy usage in the last 30 years and is continually striving to make further reductions.

In addition, cementitious material used in concrete often contains manufacturing byproducts such as fly ash and blast furnace slag that would otherwise find their way to a landfill. Waste water can be recycled for use in manufacturing. Steel used for concrete reinforcement is typically composed of 95 percent post-consumer recycled content. Aggregates used in the manufacturing of precast concrete box culverts are generally extracted and manufactured regionally.

Concrete is a very strong and durable material, which is a significant sustainable attribute. It will not rust, rot or burn and has a service life of up to 100 years.

Precast concrete box culverts are a smart choice for projects applying for LEED certification. Most of the credits shown also have additional innovation in Design points that are tied to exemplary performance of the credit listed.

LEED for New Construction and Major Renovation 2009 Scorecard

Credit	Description	Credits Available	Comments
SS Credit 5.1	Site Development: Protect or Restore Habitat	1	Due to precast concrete box culverts being plant cast and delivered to the site ready to set they require very minimal site disturbance to install and can protect existing streams and waterways.
MR Credits 2.1 & 2.2	Construction Waste Management: Divert 50% (75%) From Disposal	2	Due to precast concrete box culverts being plant cast and delivered to the site ready to set they create minimal to zero amounts of onsite waste

			material.
MR Credits 4.1 & 4.2	Recycled Content: 10% (20%) (post-consumer + ½ pre-consumer)	2	Precast concrete box culverts may contain supplementary cementitious materials such as fly ash and blast furnace slag which will add to the project's recycled content goals.
MR Credits 5.1 & 5.2	Regional Materials: 10% (20%) Extracted, Processed & Manufactured Regionally	2	The vast majority of materials that go into the construction of precast concrete are within a 500 mi radius of the precast plant.

LEED for New Development Pilot Scorecard

Credit	Description	Credits Available	Comments
GIB Credit 6	Green Infrastructure & Buildings: Minimize Site Disturbance In Design and Construction	1	Precast concrete box culverts install in a small footprint and can utilize existing utilities, minimizing site disturbance.
GIB Credit 14	Green Infrastructure & Buildings: Recycled Content in Infrastructure	1	Precast concrete box culverts may contain supplementary cementitious materials such as fly ash and blast furnace slag which will add to the project's recycled content goals.