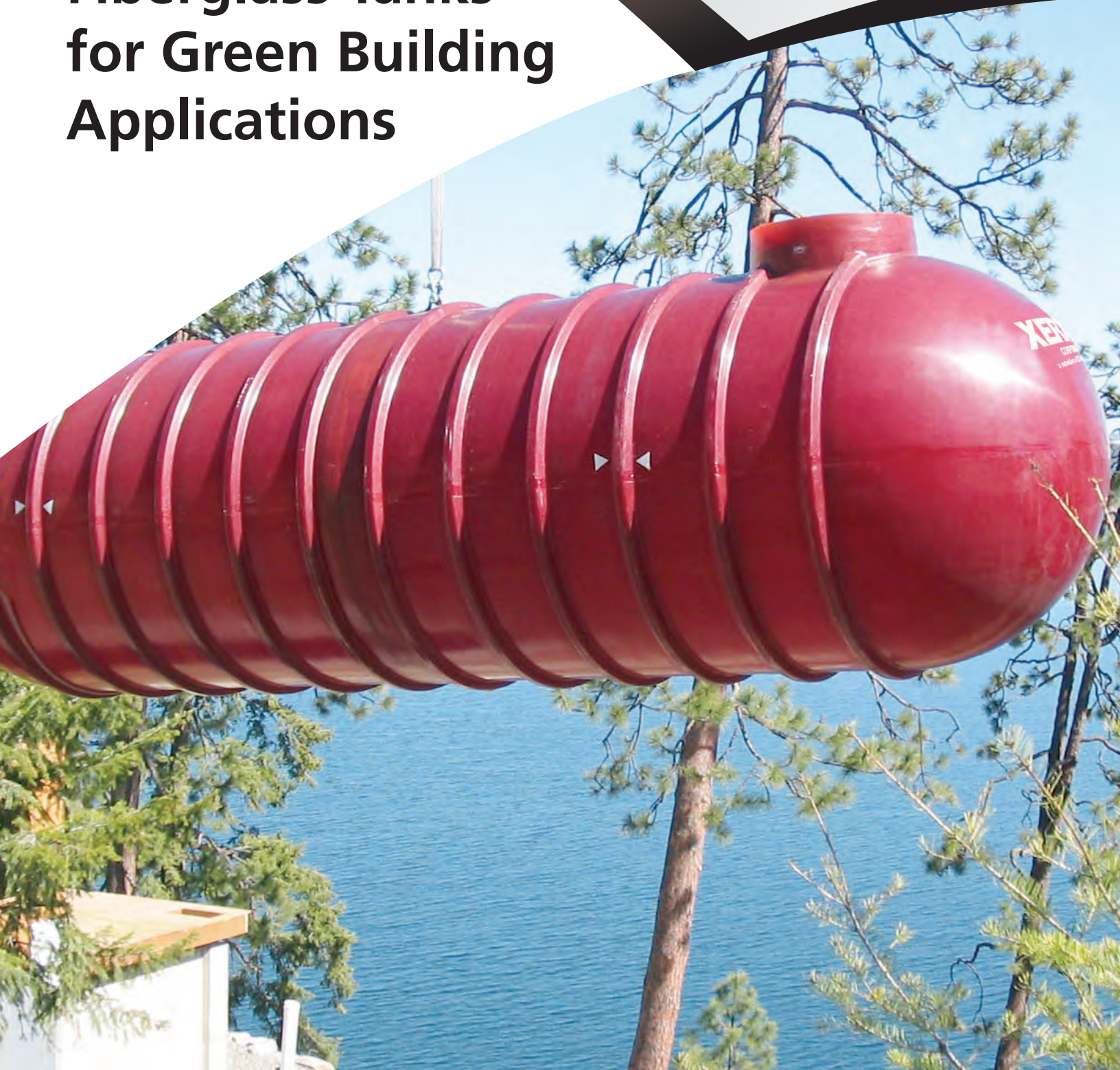


Fiberglass Tanks for Green Building Applications



Xerxes Fiberglass Tanks for Green Building



When people think of green building, they often think of the more obvious elements they see in design, such as energy conservation and environmentally friendly materials. Project owners and designers sometimes miss less obvious components that are just as important, such as stormwater management, water efficient landscaping, innovative wastewater technologies and water use reduction. These are the areas in which owners and designers of new construction and major renovation projects can use Xerxes fiberglass products and qualify for points under the U.S. Green Building Council's sustainable sites and water efficiency categories of its Leadership in Energy and Environmental Design (LEED®)⁽¹⁾ Green Building Rating System™.⁽²⁾

Meeting the requirements of green building is a natural extension of what Xerxes has always done. Long before green building was formalized as a national system, Xerxes' rustproof, watertight fiberglass tanks provided safe storage of liquids while protecting the environment. Since its inception, Xerxes has been an innovator, designing and manufacturing high-quality, cost-effective fiberglass tanks that provide reliable, long-term solutions for underground storage of liquids. Xerxes is well-known as a major

tank supplier to the petroleum industry, with many of the world's largest oil companies using Xerxes tanks for environmentally safe retail gasoline storage. Xerxes has applied that same expertise to the water and wastewater industry, and has become widely accepted as a superior option for the underground storage or processing of liquids in a wide range of applications. In other words, green building project owners and designers can take advantage of what Xerxes already offers.

Storage tanks aren't the only Xerxes products that can be incorporated into designs that might qualify for LEED credits. For instance, wet wells and lift stations can also be key elements in green building projects. The following pages present just a few examples of how Xerxes tanks, in already-proven applications, can be a key element in design concepts that qualify for available LEED credits in new construction and major renovation projects.

1) LEED® is a registered trademark of the U.S. Green Building Council, a nonprofit corporation independent of Xerxes Corporation.

2) LEED® Green Building Rating System™ is a trademark of the U.S. Green Building Council, a nonprofit corporation independent of Xerxes Corporation.

WE Prerequisite 1: Water Use Reduction

Intent: Increase water efficiency within buildings to reduce the burden on municipal water supply and wastewater systems.

Requirements: Employ strategies that in aggregate use 20% less water than the water use baseline calculated for the building (not including irrigation). Calculations are based on estimated occupant usage and must include only the following fixtures and fixture fittings (as applicable to the project scope) : water closets, urinals, lavatory faucets, showers, kitchen sink faucets and pre-rinse spray valves.

Source: U.S. Green Building Council, April 2009

Water Efficiency Category: LEED Credits for Water Efficiency Landscaping

Xerxes water tanks can easily fit into a design that qualifies for water efficiency landscaping credits under the LEED Water Efficiency category (Credit 1.1 and Credit 1.2). The intent of these LEED credits is to limit or eliminate the use of potable water, or other natural water resources, for landscape irrigation. Xerxes tanks are routinely used to collect and store captured rainwater or recycled site water, which is then used for landscape irrigation. Using rainwater and/or greywater instead of potable water is one way to reduce the use of potable water for irrigation. Using Xerxes water tanks, a system can be designed to conserve as much as 100 percent of potable water for such purposes. The use of rainwater “cisterns”, incorporated into building designs, is a practice that has been used for decades. Now, with LEED credits available, architects and building designers are routinely incorporating a state-of-the-art fiberglass cistern, providing the confidence that the collected water supply will be there as needed and not lost through cracks and leaks from less reliable storage products.



LEED Credits for Water Efficiency (WE)

WE Credit 1.1: Water Efficient Landscaping (Reduce by 50%)

WE Credit 1.2: Water Efficient Landscaping (No Potable Water Use or No Irrigation)

Intent: Limit or eliminate (50%) or eliminate (100%) the use of potable water, or other natural surface or subsurface water resources available on or near the project site, for landscape irrigation.

Requirements for Credit 1.1: Reduce potable water consumption for irrigation by 50% from a calculated mid-summer baseline case. Reductions must be attributed to any combination of the following items: plant species density and microclimate factor, irrigation efficiency, use of captured rainwater, use of recycled wastewater, use of water treated and conveyed by a public agency specifically for nonpotable uses.

Requirements for Credit 1.2: Achieve WE Credit 1.1 AND use only captured rainwater, recycled wastewater, recycled greywater, or water treated and conveyed by a public agency specifically for nonpotable uses for irrigation OR install landscaping that does not require permanent irrigation systems.

Source: U.S. Green Building Council, April, 2009

Water Efficiency Category: LEED Credit for Innovative Wastewater Technologies

Xerxes wastewater tanks are a natural component of systems designed to qualify for the innovative wastewater technology credit available under the LEED Water Efficiency category (Credit 2). This credit requires reducing the use of municipally provided potable water for building sewage conveyance by a minimum of 50 percent or the treatment of wastewater on site to tertiary standards. Onsite wastewater technology is an increasingly recognized commercial design concept for which Xerxes tanks have long been a critical component. The need to address wastewater management has led to the growing acceptance of onsite treatment. Xerxes wastewater tanks are used as process tanks, dosing tanks, recirculation tanks, collection tanks and holding tanks, all part of a complete wastewater treatment system in such projects as schools, commercial buildings, office complexes and housing developments. As wastewater treatment system designers develop new technologies, Xerxes tanks continue to be a part of that evolution.



LEED Credits for Water Efficiency (WE)

WE Credit 2: Innovative Wastewater Technologies

Intent: Reduce wastewater generation and potable water demand, while increasing the local aquifer recharge.

Requirements: Option 1/Reduce potable water use for building sewage conveyance by 50% through the use of water-conserving fixtures (water closets, urinals) or nonpotable water (captured rainwater, recycled greywater, and onsite or municipally treated wastewater).

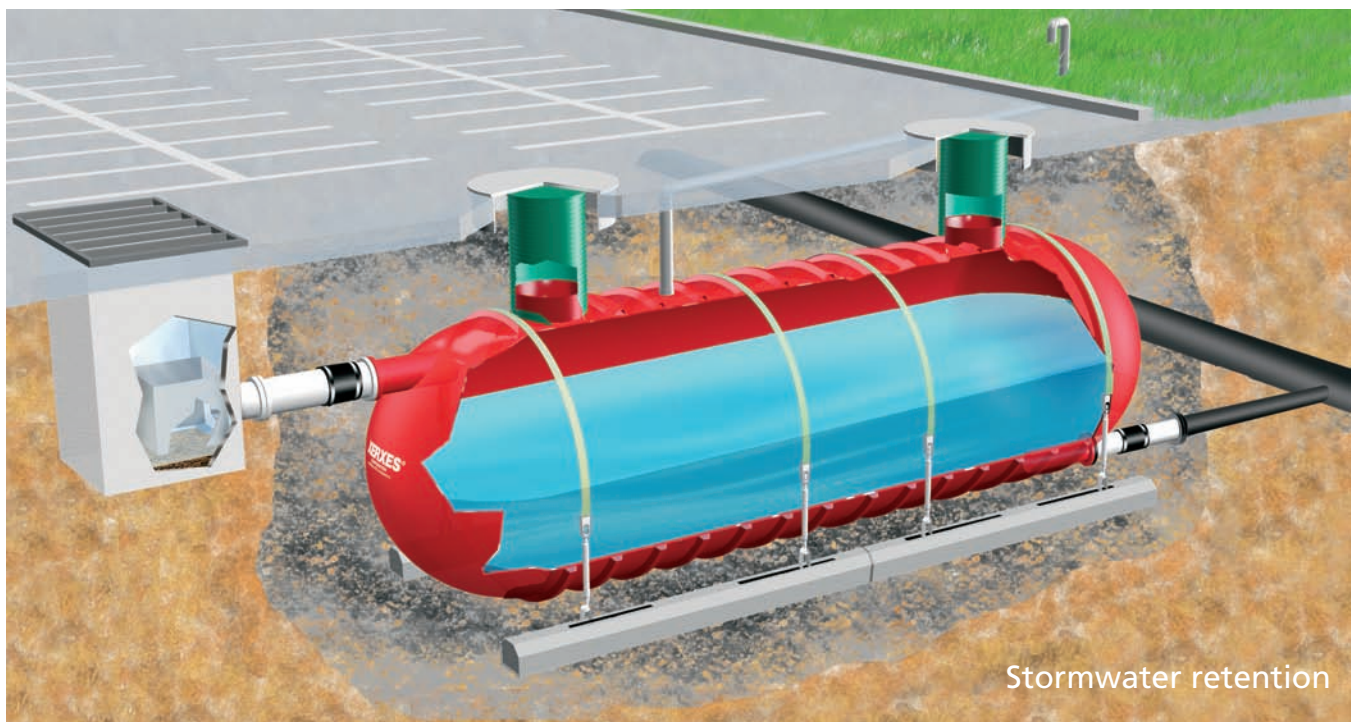
OR

Option 2/Treat 50% of wastewater onsite to tertiary standards. Treated water must be infiltrated or used onsite.

Source: U.S. Green Building Council, April, 2009

Sustainable Sites Category: LEED Credits for Stormwater Design

Environmental concerns have changed the management of stormwater runoff. When stormwater runs directly into sewer systems, it can result in either groundwater contamination or overloading of stormwater infrastructure. To address these problems, many communities now require a specific retention time before allowing stormwater to run into the drainage system. Typically, retention ponds are used to meet this requirement. As part of a stormwater management system, Xerxes underground water tanks offer a better alternative, which may also qualify for the stormwater design credits available under the LEED Sustainable Sites category (Credits 6.1 and 6.2). While meeting retention-in-time requirements, developers and property owners can also make better use of property by locating stormwater tanks in parking lots or parking areas. This is a significant benefit with the rising cost of land. (Xerxes tanks are rated for H-20 loads.) In addition, the collected stormwater can be used for non-potable uses such as landscape irrigation.



LEED Category: Sustainable Sites (SS)

SS Credit 6.1 Stormwater Design: Quantity Control

Intent: Limit disruption of natural water hydrology by reducing impervious cover, increasing onsite infiltration, reducing or eliminating pollution from stormwater runoff, and eliminating contaminants.

Requirements: See LEED 2009 for New Construction and Major Renovations Version 3.0, page 14.

SS Credit 6.2 Stormwater Design: Quality Control

Intent: Limit disruption and pollution of natural water flows by managing stormwater runoff.

Requirements: See LEED 2009 for New Construction and Major Renovations Version 3.0, page 15.

Source: U.S. Green Building Council, April 2009

Water Efficiency Category: LEED Credits for Water Use Reduction

Xerxes water tanks can be a component of many designs that would qualify for Water Use Reduction credits (3.1 and 3.2) under the LEED Water Efficiency category. Both of these credits have the same intent: to reduce the burden on municipal water supply and wastewater systems by maximizing water efficiency within buildings. Whether the aim is a 20 percent or a 30 percent reduction of water use, Xerxes water tanks can be used to collect plumbing greywater that can then be used for nonpotable applications, such as toilet and urinal flushing, mechanical systems and custodial uses. Xerxes tanks have been used for such applications in mixed-use commercial complexes throughout the United States. These applications can serve as templates for many others.



LEED Credits for Water Efficiency (WE)

WE Credit 3.1: Water Use Reduction (20% Reduction)

WE Credit 3.2: Water Use Reduction (30% Reduction)

Intent: Further increase water efficiency within buildings to reduce the burden on municipal water supply and wastewater systems.

Requirements: Employ strategies that in aggregate use less water than the water use baseline calculated for the building (not including irrigation) after meeting the Energy Policy Act of 1992 fixture performance requirements. Calculations are based on estimated occupant usage and must include only the following fixtures (as applicable to the building): water closets, urinals, lavatory faucets, showers, kitchen sinks and prespray valves.

Source: U.S. Green Building Council, April, 2009

Xerxes Tank Applications & Green Building: The List Goes On



Existing Buildings Rating System: An additional LEED Point

In addition to the numerous opportunities outlined in this brochure to establish points using the LEED for New Construction Rating System, USGBC's standard for the upgrade of existing facilities; LEED for Existing Buildings: Operations and Maintenance, also provides a separate and unique opportunity. Credit 4.2 of the Water Efficiency (WE) category addresses Cooling Tower Water Management, and provides a point for the use of makeup water that consists of at least 50 percent non-potable water. Incorporating Xerxes tanks into the design of an existing building is an excellent way to capture the additional point specific to this separate rating criteria.

The List Goes On

Aside from the design concepts shown in this brochure that may qualify for Green Building LEED credits, Xerxes tanks have a wide variety of applications. Xerxes tanks can be used in office developments, schools, healthcare facilities, mixed-use commercial developments, sanitary stations, resorts and casinos, to name just a few. There are a variety of ways that Xerxes tanks are used in innovative ways that don't qualify for LEED credits but have important design uses nonetheless.

For instance, Xerxes manufactures potable water tanks with an NSF® (National Sanitation Foundation) listing. Xerxes tanks are also widely used for fire-protection systems designed to comply with ever-changing fire codes. In addition, Xerxes tanks are used as residential cisterns and in car wash water-reclaim units, campgrounds, rest areas and truck stops. Again, whatever a customer's water tank needs, a Xerxes tank can be designed and manufactured to meet that particular application.

For more product information and for information on how to contact a Xerxes sales representative near you, please visit the Xerxes Web site at www.xerxes.com.

Features of Xerxes Tanks

- Constructed of rustproof, long-lasting fiberglass
- Manufactured to meet customers' functional requirements
- Designed with integral ribs for added strength
- Designed for H-20 load conditions
- Easy to ship and install
- Available from four U.S. manufacturing locations
- Manufactured to applicable requirements of Underwriters Laboratories and American Water Works Association standards
- Available in NSF-listed models
- Available in single-wall, double-wall and triple-wall models
- Available in sizes from 600 gallons to sizes in excess of 60,000 gallons

National benchmark for green building



The U.S. Green Building Council promotes the design and construction of buildings that are environmentally responsible, profitable and healthy places to live and work. This organization developed and administers the LEED Green Building Rating System that is the nationally accepted benchmark for the design, construction and operation of high-performance green buildings. LEED recognizes performance in six key areas of new construction and major renovations: sustainable sites, water efficiency, energy and atmosphere, materials and resources, indoor environmental quality, and innovation and design process. The LEED credit system is an easy way to identify projects and project components that meet this nationally accepted standard. As shown on the following pages, Xerxes tanks can be part of a variety of applications that may qualify for LEED credits.

Source: U.S. Green Building Council, November, 2007

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