# Why Cemstone

## LEED® and Concrete

### What is LEED

LEED - Leadership in Energy and Environmental Design

LEED was developed by the United States Green Build Council (USGBC)

USGBC is a non-profit organization

### What is LEED all about

The purpose of LEED is to construct buildings with the least amount of environmental impact during and after construction. LEED promotes the use of sustainable materials and practices while also looking at how people interact within a particular building, i.e. thermal comfort, day lighting, $CO_2$ exposure, views of the exterior, etc.


### How does LEED work

LEED has various different programs. The following is a list of the most common:

New Construction – NC

Existing Buildings – EB

Core and Shell – CS

Homes – H

Each one of these programs has a guide/checklist that will assist a design/construction team through the process of getting a building LEED certified.

Each program is broken up into various sections with each section consisting of credits where points can be earned. The following is a summary of the sections in the new construction version:

Sustainable Sites (SS) – 14

Water Efficiency (WE) – 5

Energy and Atmosphere (EA) – 17

Materials and Resources (MR) – 13

Indoor Environmental Design (EQ) – 15

Innovation and Design (ID) - 5

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### How does LEED work

LEED certification has 4 levels: Certified, Silver, Gold and Platinum. Each level corresponds to the number of points achieved: The following is a list of the point levels:

| | |
|---|---|
| Certified | – 23 - 32 points |
| Silver | – 33 - 38 points |
| Gold | – 39 - 51 points |
| Platinum | – 52 - 69 points |

The higher the points the more sustainable the building is viewed.

### How are credits referred

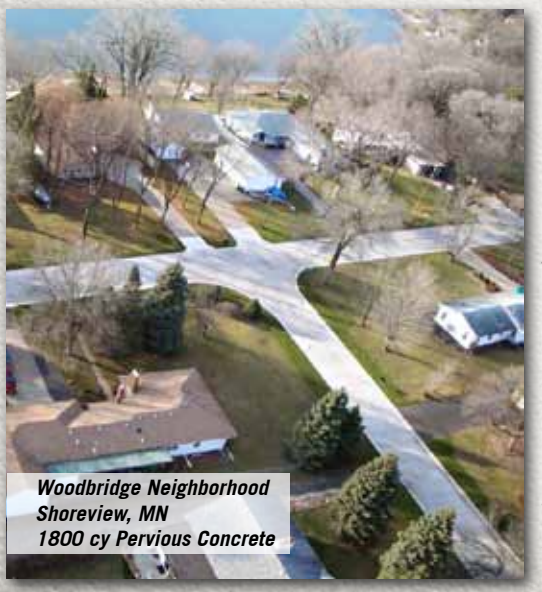
A credit is noted as follows:

- Sustainable Sites Credit 7.1 is referred to as SS7.1

### What is LEED accreditation

A person can become LEED accredited by understanding the LEED rating system and then taking an exam. One point is achieved if a LEED Accredited Professional (AP) is used on the project. Cemstone was the first ready-mix company in the country to have a LEED AP.

### How does concrete fit into LEED



*Woodbridge Neighborhood*
*Shoreview, MN*
*1800 cy Pervious Concrete*

Concrete fits into numerous categories. The following is a description of the most common credits where concrete and concrete related products fit into LEED. ***NOTE: In general one product/system/procedure can not earn a credit/point. It is a collective effort that between various products/systems/procedures that earns credits/points.***

**SS6.1 – Stormwater Management**

The control of stormwater is becoming a large problem. Stormwater can increase pollution in rivers/lakes as well as cause erosion. Points can be earned by decreasing the volume of stormwater run-off. Pervious concrete is recognized as a solution to this problem. Cemstone has supplied the most pervious in Minnesota and our mixture has the most in place and laboratory testing which shows that when designed, installed, cured and maintained correctly it can be a freeze/thaw durable product.

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### How does concrete fit into LEED

#### SS6.2 – Stormwater Quality

If you capture 100% of the stormwater it is considered to be treated and therefore a point can be earned. Pervious concrete can be used to assist in accomplishing this. Pervious concrete has also been shown to improve the quality of the stormwater as well.

#### SS7.1 – Non-Roof Heat Island Effect

LEED looks at hard/dark surfaces as sources for heat generation due to the sun. This heat can result in increased energy costs. Therefore, the use of concrete as a paving material due to its lighter color is recognized as a way to decreasing the heat-island effect. Asphalt is the opposite. This is another advantage of concrete paving.

#### EA Pre-requisite and EA1 – Energy Efficiency

Energy efficiency of our structures is recognized as the most important credit within LEED. So much that a building must meet industry standards just to qualify for LEED certification and the more energy efficient the more points that can be obtained. The use of high mass walls is an excellent way of contributing to this credit. ICF's and T-Mass have both been used on LEED projects. The extremely high R-value and air tightness make for a very energy efficient wall. Cemstone's alliance with Reward and T-Mass is unique in the market as we can combine these products with concrete that is also "green". It should be noted that this credit encompasses all of the energy usage included electrical and so the walls are only one portion of the credit calculation.

#### MR2.1 and 2.2 – Construction Waste

When ready-mixed concrete is ordered and used, in general a specific amount is used with very little leftovers. In addition, any unused concrete is returned to the plant of origin and turned into recycled concrete. Therefore, the use of ready-mixed concrete reduces construction waste.

#### MR3.1 and 3.2 – Building Reuse

If a building is going to be deconstructed, the concrete in the building could be reused as base aggregate and potentially concrete aggregates. This can assist in achieving points as the total dollar value of reused materials is totaled.

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### MR 4.1 and 4.2 – Recycled Materials

Fly ash, slag and silica fume are recycled materials and would otherwise be discarded. There use in concrete is strongly encouraged. The more they are used the more concrete contributes to the total recycled materials content of the building and therefore more points are available. Cemstone has been the leader in using fly ash in concrete for years. Consistent materials and a knowledge of how these materials interact is the key to achieving success in using recycled materials and Cemstone has shown that over the past decade.

### MR 5.1 and 5.2 – Local Derived Materials

The use of locally derived (within a 500 mile radius) is encouraged by LEED. This promotes less trucking and locally owned business. For the most part Cemstone concrete is made up of locally derived materials. Our cements, aggregates, water and fly ash (depending upon project location) are all harvested with 500 miles of most projects.

### ID Credit – 40% reduction in Cement

The production of one ton of cement is said to produce 1 ton of CO2. Therefore, LEED rewards projects with a point if they can reduce the amount of cement used by 40%. This is accomplished through the use of high volume supplemental cementitious materials use, i.e. high volume fly ash. Cemstone has worked on projects using these techniques with great success. Our knowledge of cementitious materials and admixtures allows us to accomplish this without sacrificing set times, finishes and strength. No other ready mix company in Minnesota has this kind of experience as these mixtures are not made by simply removing cement and replacing it with fly ash.

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