

Rocky Mountain Masonry Institute

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What is LEED?

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An Overview of the US Green Building Council's Sustainable Construction Rating System

- *LEED Point Categories*
- *Masonry's Place in LEED Ratings*



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Table of Contents

What is LEED	p. 4
Sustainable Sites Credits	p. 5
Water Efficiency Credits	p. 6
Energy and Atmosphere Credits	p. 6
Materials and Resources Credits	p. 6—8
Innovation in Design Credits	p. 8
LEED Changes	p. 9
Bibliography	p. 10

What is LEED?

LEED takes its name from Leadership in Energy and Environmental Design. The Green Building Rating System was developed by the U.S. Green Building Council (USGBC). LEED is a national voluntary program to define and measure what constitutes a "green" building. The LEED certification process strives to improve occupant wellbeing and minimize the environmental impact of buildings.

Buildings are LEED-certified if they achieve at least 26 points out of a possible 69 points. You can achieve different levels of LEED certification:

- 26 points LEED Certified Project
- 33-38 points LEED Silver Certification
- 39-51 points LEED Gold Certification
- 52 points LEED Platinum Certification

There are several different LEED rating systems:

- LEED-NC for new construction and major renovations
- LEED-EB for existing buildings
- LEED-CI for commercial interiors
- LEED-CS for core and shell construction
- LEED-H for homes
- LEED-ND for neighborhood developments
- LEED-S for schools

The LEED-NC rating system is divided into five environmental categories, each with multiple parts or credits to recognize sustainable building practices. The sixth LEED category recognizes projects that greatly exceed the LEED credit requirements or that address sustainable issues not covered by the LEED rating system. The categories are:

- Sustainable Sites (SS) 14 points available
- Water Efficiency (WE) 5 points available
- Energy and Atmosphere (EA) 17 points available
- Materials and Resources (MR) 13 points available
- Indoor Environmental Quality (EQ) 15 points available
- Innovation and Design Process (ID) 4 points available + 1 point for having a LEED-AP on the design team

Masonry and sustainable building design seem like a natural fit. Masonry, with its durability, its local or regional manufacturing, and its thermal mass characteristics can help you meet many of the goals of sustainable building design. Although the LEED system does not award points to any material, masonry materials can help you achieve points when they are used to attain the goals listed below.

Sustainable Sites (SS)

Credit SS 2: Development Density and Community Connectivity

Intent: Encourage dense, urban development that will minimize our dependence on cars. Tight urban development also minimizes infrastructure costs like new roads, new utility lines and new water treatment plants. Unfortunately, dense urban areas must protect their closely spaced buildings against the spread of fire. Masonry can help here by supplying building enclosures that are naturally fire resistant. Brick, stone and block do not burn.

Credit SS 5.1: Restore Natural Habitat

Intent: Restore natural habitat. If you are building a new wetlands area, you can use interlocking concrete blocks to line the bottom of your pond to stabilize the soil.

Credit SS 5.2: Maximize Open Space

Intent: Limit the site disturbance as much as possible. Masonry materials do not require a large staging area for construction. Also, masonry retaining walls can help you keep your building footprint as small as possible.

Credit SS 6.1: Stormwater Management —Quantity Control

Intent: Limit disruption and pollution of natural streams and aquifers by minimizing stormwater runoff, allowing water to soak naturally into the soil. Permeable paving systems such as sand-set pavers, open grid pavers and permeable concrete all allow water to pass through the paving and to soak into the sand, gravel and soil below. Impermeable paving systems like asphalt and concrete shed most of the water quickly off site, overloading storm sewers.

Credit SS 6.2: Stormwater Management — Quality Control

Intent: Filter out the suspended solids that are carried in the storm run-off. To achieve this credit, you need to filter out 80% of the total suspended solids. You must treat 90% of the storm water from a 100-year storm. In an arid climate like ours, you need to treat the run-off from a ½" rainstorm. Again, permeable paving materials will help here.

Credit SS 7.1: Heat Island Effect — Non-Roof

Intent: Reduce heat island effect that occurs in dense urban environments when dark paving and dark buildings absorb solar radiation. The ambient air temperature can vary as much as 10 degrees from the city to the adjacent countryside. Light colored paving materials and open-grid pavers can help mitigate the solar gain and will help you achieve this credit.

Water Efficiency (WE)

Credit WE 1.1 and 1.2: Water Efficient Landscaping

Intent: Reduce the use of potable water for landscaping. In addition to using drought tolerant and native plant species, replacing turf with masonry pavers can help you win this credit. Masonry pavers do not need to be watered at all.

Energy and Atmosphere (EA)

Credit EA1 — Optimize Energy Performance

Intent: Minimize future energy costs by using efficient insulation and mechanical systems. You get up to 10 points for energy efficiency above and beyond the code-required minimum system. They lowered the energy efficiency thresholds in LEED 2.2 so these credits are easier to achieve now than they were with LEED 2.1.

Masonry can contribute to achieving points in this category by using passive solar designs. The thermal mass inherent in masonry reduces temperature swings, stores heat/cooling for release at later times, and reduces peak energy loads. These strategies can reduce the size of the HVAC system you need to install.

Materials and Resources (MR)

Credit MR1.2, 1.2 and 1.3 — Building Reuse

Intent: Extend the life cycle of existing building stock, conserve resources, retain cultural resources and reduce waste sent to the landfill.

- Credit 1.1 Reuse 75% of existing walls, floors and roof.
- Credit 1.2 Reuse 100% of the existing walls, floors and roof.
- Credit 1.3 Reuse 50% of interior non-structural elements.

Credit MR 2.1 and 2.2 — Construction Waste Management

Intent: Divert construction and demolition debris from landfill disposal.

- Credit 2.1 Divert 50% of the construction and demolition waste.
 - Credit 2.2 Divert 75% of the construction and demolition waste
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Calculations can be done by weight or volume but they need to be consistent.

Masonry materials come in small, modular units. There is usually very little waste. Intact, unused masonry units can be saved to use on another project, returned to the manufacturer for resale or donated to charitable organizations. Scraps and broken pieces of masonry can be crushed and used for aggregate or fill. The wooden pallets that carry the brick and block can be returned to the manufacturer and used again.

Credit MR 3.1 and 3.2 — Reused Materials

Intent: Encourage the reuse of salvaged materials and products to reduce the demand for virgin products. Masonry materials can be salvaged and reinstalled, but the Brick Industry Association warns against using recycled brick outdoors in severe climates. There is no problem if you reinstall them indoors. Up to two points can be earned for use of salvaged building materials for 5% and 10% of building materials. Calculations are based on the cost of the materials. Materials salvaged on site do not apply to this credit, but do count toward Credit MR 1 (Building Reuse) or Credit MR 2 (Construction Waste Management).

Credit MR 4.1 and 4.2 — Recycled Content

Intent: Increase demand for building products that incorporate recycled content materials, therefore reducing impacts resulting from extraction and processing of new virgin materials. Post-industrial recycled material is counted at only 50% of its value while post-consumer recycled waste counts as full value.

- Credit MR 4.1 Use 5% recycled content materials
- Credit MR 4.2 Use 10% recycled content materials

Calculations are based on cost of the materials

Because of the inert nature of masonry products, they are ideal candidates for incorporating recycled materials. Concrete masonry units often incorporate recycled materials. According to the NCMA, supplementary cementitious materials such as fly ash, silica fume and slag cement are considered post-industrial materials. Glass, slag and other recycled materials used as aggregate qualify as post-consumer materials. (NCMA TEK Note 6-9A)

Bricks often incorporate recycled brick ground up and used as grog. If reclaimed from a job site, this material can qualify as post-consumer recycled content. Some manufacturers use bottom ash, a post-industrial waste, for 10 to 12% (by weight) of the clay body. Other post-industrial materials used include fly ash and even sludge. Because of the inert properties of brick, even contaminated soil and sawdust can be used to make brick. Contact your brick supplier to ask if they use recycled material in their product.

Mortar may contain recycled materials such as fly ash. Steel reinforcing bars used in reinforced masonry may contain post-consumer or post-industrial materials.

Credit MR 5.1 and 5.2 — Regional Materials

Intent: Encourage the use of materials that are extracted and manufactured within the region, thereby supporting the regional economy and reducing transportation costs. The distances for this credit are based on a 500-mile radius circle, centered on the project site. This distance is measured "as the crow flies".

- Credit MR 5.1 Use 10% regionally manufactured materials
- Credit MR 5.2 Use 20% regionally manufactured materials

These credits are calculated based on the cost of the material.

Innovation in Design (ID)

Credit ID1.2, 1.2, 1.3 and 1.4 — Innovation in Design

Intent: Recognize exceptional performance beyond the requirements in LEED or reward innovations in categories not specifically addressed by LEED. Innovation in Design awards one point for each innovation up to a total of four points. Possible areas where masonry can contribute include:

- Acoustic performance
- Life-cycle cost and durability
- Efficient use of materials as structure, enclosure and finished surface
- Improved air quality by reducing the need for paint or interior coatings, thereby reducing volatile organic compounds (VOCs) mold-resistance

ID credits require the applicant to write the intent and requirements of the credit. These credits are typically awarded for having a building-wide approach that addresses a sustainable feature such as those listed above. All materials used in the building would be considered, and masonry could be a large contributor to achieving the intent.

Credit ID-2 gives one point for having a LEED-accredited professional on the design team.

Changes from LEED 2.1 to LEED 2.2

Credit SS 6.2 – Stormwater Run-off

Best Management Practice (BMP) plan requires treatment of no less than 90% of the run-off from a 100-year storm. Removal of phosphorus is no longer required.

Credit EA 1 – Optimize Energy Efficiency

Credit earning performance thresholds have been reduced. LEED 2.1 asked for a 15% to 60% improvement in the energy performance of the building (with 5% increments). LEED 2.2 lowers these numbers to 10.5% to 42% (with 3.5% increments).

Credit MR 4.1 and 4.2 – Recycled Content of Materials

"Post industrial" content is now called "pre-consumer". Recycled content thresholds that were 5% (for MR4.1) and 10% (for MR 4.2) have been increased to 10% and 20% respectively.

Credit MR 5.1 and 5.2 – Regional Materials

Qualifying materials must be extracted, processed and manufactured within a 500-mile radius of the job site (measured "as the crow flies"). Thresholds are 10% for MR 5.1 and 20% for MR 5.2.

Please note—the process is underway to make changes from LEED 2.2 to LEED 2008. For more information, see the RMMI Feb. 13, 2008, brochure: *"Proposed Changes to LEED: West Region Council Input to LSC"*

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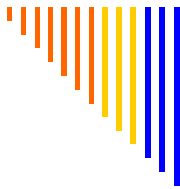
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Notes





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