aggregates would qualify, as costs are generally not considered part of concrete. Reinforcing steel should be considered as a separate item. This credit is worth 0.5 points for the quantities qualified above and 1 point if the quantities are doubled to the maximum limit of double points possible.拳头

Regional Materials (Materials and Resources Credit 5) This credit supports use of local materials and reduced transportation distances. The requirements state:

“Use a minimum of 20% of building materials that are manufactured regionally within a radius of 800 km (500 miles).” Concrete will usually qualify since ready-mix plants and precast plants are generally within 80 km (50 miles) of a job site. The percentage of materials is calculated on a cost basis. This credit is worth 0.5 points.

An additional point is earned if 60% of the regionally manufactured materials are extracted, manufactured, or improved within 80 km (50 miles). Ready-mix and prefabricated plants generally use aggregates that are extracted within 60 km (40 miles) of the plant. Cement and supplementary cementitious materials used for building are also often manufactured within 80 km (50 miles) of a job site. Recycling fiber is usually manufactured within 800 km (500 miles) of a job site, and typically made from recycled materials from the same region.

Others Points
Concrete can also be used to obtain points indirectly. For example, the Pennsylvania Department of Environmental Protection building in Harrisburg, is LEED Bronze certified and features a concrete floor. The concrete has LEED-experienced professionals available to help maximize the points for concrete. Use of concrete in the LEED system. The following are suggestions for how concrete can increase the number of points awarded to a project in the LEED system. The following are suggestions for how concrete can increase the number of points awarded to a project in the LEED system.

5. Concrete creates sustainable sites.

6. Concrete enhances energy performance.

7. Concrete contains recycled materials.

8. Concrete is manufactured locally.

9. Concrete is highly durable and cost-effective.

The LEED rating system has five main credit categories:

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The LEED rating system has five main credit categories:

1. Concrete creates sustainable sites.

2. Concrete enhances energy performance.

3. Concrete contains recycled materials.

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5. Concrete is highly durable and cost-effective.
This credit requires high albedo. This credit is awarded if energy cost savings can be achieved through using an efficient building envelope. Buildings that earn high albedo and use lower energy consumption due to the reflective surfaces will increase the building’s energy efficiency. Buildings with high albedo are more resistant to extreme temperatures and reduce peak heating and cooling loads. Buildings that use high albedo materials can also reduce the urban heat island effect. Buildings with high albedo also have lower cooling costs, which can result in reduced energy consumption and improved air quality. The use of urban albedo increases as the number of points awarded will depend on the building, climate, fuel costs, and energy requirements of the ASHRAE standard. The requirements for frame walls are based on the size of the building and the total cost of the materials used. The material and resource credits are awarded for the use of materials that are locally sourced or recycled and for the use of materials that are environmentally friendly and sustainable.
Points for Certification for LEED-NC v2.1

At least 24 points are required for LEED certification. Silver, gold, and platinum levels are also available.

Credit Category Points Available

Sustainable Sites 15
Water Efficiency 5
Energy and Atmosphere 17
Materials and Resources 15
Indoor Environmental Quality 15
Total Core Points 64
Innovation and Design Process 5

LEED-Certification Levels
Certified 26 - 37 Points
Silver 38 - 49 Points
Gold 50 - 59 Points
Platinum 60 - 99 Points

Brownefield Redevelopment

Concrete framed buildings can be certified with a LEED v2.1 Brownfield credits and will receive bonus points and lower Leadership credits. The building must be certified as a LEED certified building and designed to be certifiable and LEED certified the building must be certifiable and will be awarded a LEED LEED level of at least 70%

Reduced Site Disturbance

Delineate the credit for LEED v2.1 Sustainable Sites Credit 3.23. Dorset buildings can be used to limit site disturbance, such as earthwork and clearing vegetation. For example, one LEED criterion is to limit building energy cost savings. Greenhouses can be used to limit site disturbance, such as earthwork and clearing vegetation. For example, one LEED criterion is to limit building energy cost savings. In this con- structing parking garages on the lower level of a building would reduce the impact of the parking garage on the building structure/ shell is left in place and 2 points if 100% is left in place.

Sustainable Sites Credit 5.1: Concrete parking garages.

Sustainable Sites Credit 5.2: Porous pavements.

Project Checklist: LEED - New Construction (v2.1)

New Construction Can Be Covered By: R

Credit 4.3 Water Efficient Landscaping
Credit 5.1 Redstone buildings
Credit 4.5 Water Efficiency
Credit 5.2 Redstone Development

Sustainable Sites Credit 7.1.

Beneath the surface of a parking structure, pervious concrete pavements will reduce the rate and quantity of pollutant runoff by allowing stormwater to soak into the ground rather than being discharged into the urban waterway. The use of pervious concrete pavements will also help to reduce the urban heat island effect, which is an increasingly important issue as urban areas become more dense and as more people live, work, and play in urban areas.

Sustainable Sites Credit 6.1.

Water-efficient landscaping includes the use of plants that require less water and have lower maintenance requirements. This credit requires the design and implementation of a site plan that demonstrates how the site will be designed and managed to reduce watering needs and maximize the use of precipitation. The intent of this credit is to limit the amount of water used for landscaping purposes.

Sustainable Sites Credit 5.1.

Concrete parking garages.

Project Checklist: LEED - New Construction (v2.1)

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Sustainable Sites Credit 5.1.

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This credit requires high albedo.

This credit is awarded if energy cost savings can be documented.

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Brownfield Redevelopment

Concrete framed buildings can be certified with a LEED v2.1 Brownfield credits and will receive bonus points and lower Leadership credits. The building must be certified as a LEED certified building and designed to be certifiable and the performance-rewarded LEED v2.1 projects. The purpose of this credit is to lower the mass of a building by using materials with high albedo, such as light-colored concrete, pavers, or open-grid pavers rather than asphalt, concrete, light-colored pavers, or open-grid pavers rather than asphalt, concrete, light-colored pavers, or open-grid pavers rather than asphalt.

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points for Certification for LEED-NC v2.1.

Point Categories
Points Available
Sustainable Sites 10
Water Efficiency 5
Energy and Atmosphere 17
Materials and Resources 13
Indoor Environmental Quality 15
Total Core Points 58
Innovation and Design Process 5

Sustainable Sites Credit 5.1:

Concrete parking garages within the site footprint.

The intent of this credit is to limit disruption and disturbance to surrounding vegetation.

This credit requires high albedo pavements such as concrete, light-colored pavers, or open-grid pavements for roads, and parking. Garages need to be covered by an awning or roof to prevent direct sunlight on the surfaces during use. Concrete eliminates the risk of weed growth on roofs and in the surrounding area.

Concrete framed buildings provide thermal mass and have lower energy use than lighter, less massive buildings. These buildings are more comfortable and are more flexible in terms of the building's performance under extreme temperatures. They are more durable and have lower life-cycle costs, and minimum requirements of the standard. From 1 to 10 points are awarded for each use of recycled content in the item divided by the weight of all materials in the item is the point value. The value of the recycled content of a material is the basis for the calculation, and slag cement is considered 35% Recycled Content, Use 10% (post-consumer plus 1/2 post-industrial).

Recycled Content (Materials and Resources Credit 4).

The requirements of this credit are met by using materials with 10% or more post-consumer content and 5% or more post-industrial content. Materials meeting these requirements are 10% post-consumer, 5% post-industrial, or 100% recycled. The building structure/shell is left in place and 2 points if 100% is left in place. The building shell generally has a long life. This is worth 1 point if 75% of the existing structure and shell in place when renovating. The building shell serves as a base and is multiplied by the total cost of the recycled materials in the item. One point is awarded if the sum of the post-consumer and post-industrial content is 10% of the total content of the item.

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aggregates would qualify as green consumers. Almost all reinforcing steel is recycled from used steel. In LEED, the reusing of reinforcing steel is not considered part of concrete. Building materials should be considered as a separate issue. This credit is worth 1 point for the quantities quoted above and 1 point if the quantities are doubled.

Regional Materials (Materials and Resources Credit).

This credit supports the use of local materials and reduced transportation distances. The requirements state:

“Use a minimum of 40% of building materials that are manufactured regionally within a radius of 800 km (500 miles).” Concrete will qualify if it is re-used, if concrete plants are generally within 80 km (50 miles) of a job site. The percentage of materials is calculated in a cost basis. This credit is worth 0.5 points.

An additional point is earned if 50% of the regionally manufactured materials are extracted, harvested, or acquired within 800 km (500 miles). Acquiring and processing points generally use aggregates that are extracted within 60 km (35 miles) of the plant. Cement and supplementary, cementitious materials used for building are also often manufactured within 800 km (500 miles) of a job site. Retaining foam is usually manufactured within 600 km (350 miles) of a job site, and is typically made from recycled materials from the same region.

Others Points

Concrete can also be used to obtain points indirectly, for example, the Pennsylvania Department of Environmental Resources building in Harrisburg, Pennsylvania obtained certification because the building materials used for the remaining Materials Credit (Indoor Environmental Quality Credit 4.2) are post-industrial recycled materials. In addition, the building was made from recycled steel. Concrete is manufactured within 800 km (500 miles) of a job site, and is typically made from recycled materials from the same region.

Benefits of LEED Certification

LEED is a voluntary program; however, obtaining a LEED certification is a positive environmental image for the community. Additionally, meeting many of the green building standards can result in energy and cost savings over the life of the structure. Other advantages include better indoor air quality and increased amounts of daylight. Studies have shown that workers in these environments have increased job productivity and decreased worker turnover. These benefits contribute directly to a company’s profits because the targets are the maximum profit for the company occupying the space—about twice the rate for non-green, and utilities, and maintenance costs. In addition, students in these environments have higher scores and lower absences. Retail sales are higher in daytime buildings.

Support for green buildings has increased rapidly each year during the last five years. Many cities and states either provide tax credits or grants for green buildings, or require building certification for public buildings. The U.S. government is adopting green building programs similar to LEED through the General Services Administration (GSA) for its owned or leased more than 5300 buildings, and the U.S. Army, the Department of State, the Department of Energy, and the Environmental Protection Agency. Eight states including California, New York, Oregon, and Washington have adopted LEED for public buildings. Many agencies are requiring LEED certification or recognizing LEED credits as a minimum. Thirty-five countries have expressed interest in LEED, including China and India, these countries have exceptionally high new building construction. Conditions vary and the list is growing, so please contact local jurisdictions in USGBC for details.

The LEED® Green Building Rating SystemTM for New Construction Version 2.0 promotes the passive design of buildings for the improvement of outdoor and indoor building quality, the conservation of resources, and the reduction of waste during construction, operation, and maintenance of a building. The LEED® program uses certification for technical support and resources to go to www.usgbc.org.”

LEED is a point rating system devised by the U.S. Green Building Council (USGBC) to evaluate the environmental performance of a building and evaluate reduced transformation towards sustainable design. The system is credit based, allowing projects to earn points for environmentally friendly actions taken during the construction and use of a building. LEED was launched in 1998 as an evolution of “sustainable, market-driven rating system to accelerate the development and implementation of sustainable building practices.” The program is not rigidly structured, but white papers meet strict guidelines to be consistent with LEED.

Three LEED products are currently available:

• LEED-NC v2.1 for new commercial construction and major renovation projects
• LEED-EB v1.0 for existing building operations
• LEED-CI v2.0 for commercial interiors projects

Five Ways Concrete Helps Build Green

1. Concrete creates sustainable sites.
2. Concrete enhances energy performance.
3. Concrete conserves recycled materials.
4. Concrete is manufactured locally.
5. Concrete helps durable structures.

An Engineer’s Guide to: Building Green with Concrete

The LEED rating system has five main credit categories:

• Sustainable sites
• Water efficiency
• Energy and atmosphere
• Materials and resources
• Indoor environmental quality

Using concrete can facilitate the process of obtaining LEED® Green Building certification, leadership in energy and environmental design (LEED) is a point rating system devised by the U.S. Green Building Council (USGBC) to evaluate the environmental performance of a building and evaluate reduced transformation towards sustainable design. The system is credit based, allowing projects to earn points for environmentally friendly actions taken during the construction and use of a building. LEED was launched in 1998 as an evolution of “sustainable, market-driven rating system to accelerate the development and implementation of sustainable building practices.” The program is not rigidly structured, but white papers meet strict guidelines to be consistent with LEED.

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for LEED certification. LEED is a voluntary program; however, obtaining a LEED certification provides a number of benefits, including:

• A minimum of 20% of building materials that are manufactured regionally within a radius of 800 km (500 miles). Concrete is typically used in building construction and is often manufactured within 800 km (500 miles) of a job site.
• Reduced noise levels from the work of Antoine de Saint-Exupéry. Reduced noise levels are one of the listed benefits of using concrete.
• Use a minimum of 20% of building materials that are manufactured regionally within a radius of 800 km (500 miles). Concrete is typically used in building construction and is often manufactured within 800 km (500 miles) of a job site.
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• Use a minimum of 20% of building materials that are manufactured regionally within a radius of 800 km (500 miles). Concrete is typically used in building construction and is often manufactured within 800 km (500 miles) of a job site.

Other Points

Concrete can also be used to obtain points individually. For example, the Pennsylvania Department of Environmental Protection (Pennsylvania DEP) has a policy requiring the use of fly ash or supplementary cementitious material in specified construction projects. In addition, students in these environments have higher salaries as the largest expense for most companies occupying office space as day-lit buildings. Studies have shown that workers in these environments have increased amounts of daylight.

Benefits of LEED Certification

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