LEED 2009 New Construction

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The Credit Requirements listed in this document are contained within the Leadership in Energy and Environmental Design Green Building Rating System developed by the United States Green Building Council. For more information on the LEED Green Building Rating System, please visit www.usgbc.org.

For additional information about using precast concrete within the LEED system, please visit www.precast.org
Credit Requirement

Max. Points: 1

Site Development – Protect or Restore Habitat

Case 1 – Greenfield Sites
Limit all site disturbances to the following parameters:

• 40 feet beyond the building perimeter
• 10 feet beyond surface walkways, patios, surface parking and utilities less than 12 inches in diameter
• 15 feet beyond primary roadway curbs and main utility branch trenches
• 25 feet beyond constructed areas with permeable surfaces (such as pervious paving areas, stormwater detention facilities and playing fields) that require additional staging areas to limit compaction in the constructed area, or

Case 2 – Previously Developed Areas
Restore or protect a minimum or 50% of the site (excluding the building footprint) or 20% of the total site area (including building footprint area), whichever is greater, with native or adapted vegetation.

See the LEED Canada guide for information on Canada’s credit requirements.

Precast Contribution

Precast concrete products are cast and cured in the plant and delivered to the site ready to set. The impact on the construction site is significantly reduced because there is no formwork, less construction waste, less noise and fewer laborers needed on-site.

Precast components also make it easier to fit into tight spaces with a minimum of site disturbance and shorter installation times.

In addition, precast products can be custom-built to nearly any specification. Because the products are ready to install, they can be staged off-site and delivered on a schedule that keeps impact to the site at a minimum.
Credit Requirement  Max. Points: 1

Site Development – Maximize Open Space

Case 1: Sites with Local Zoning Open Space Requirements
Reduce the footprint and/or provide vegetated open space within the project boundary such that the amount of open space exceeds local zoning requirements by 25%.

Case 2: Sites with No Local Zoning Requirements (such as some university campuses, military bases)
Provide a vegetated open space area adjacent to the building that is equal in area to the building footprint.

Case 3: Sites with Zoning Ordinances by No Open Space
Provided vegetated open space equal to 20% of the project site area.

All Cases
For projects in areas that earn SS Credit 2: Development Density and Community Connectivity, vegetated roof areas can contribute to credit compliance.
For projects in urban areas that earn SS Credit 2: Development Density and Community Connectivity, pedestrian-oriented hardscape areas can contribute to credit compliance. For such projects, a minimum of 25% of the open space counted must be vegetated.
Wetlands or naturally designated ponds may count as open space and the side slope gradients average 1:4 (vertical: horizontal) or less and are vegetated.

Precast Contribution
Precast concrete structural products can help maximize open space when used in parking garage structures. These precast components can help reduce the overall footprint required for paved parking, allowing for more vegetated open space.
Credit Requirement

Max. Points: 1

Option 1
All flooring must comply with the following as applicable to the project scope:
• All carpet installed in the building interior must meet the testing and product requirements of the Carpet and Rug Institute Green Label Plus program.
• All carpet cushion installed in the building interior must meet the requirements of the Carpet and Rug Institute Green Label program.
• All carpet adhesive must meet the requirements of IEQ Credit 4.1: Adhesives and Sealants, which includes a volatile organic compound (VOC) limit of 50 g/L.
• All hard surface flooring must be certified as compliant with the FloorScore2 standard (current as of this date of this rating system), or more stringent version by an independent third party. Flooring products covered by FloorScore include vinyl, linoleum, laminate flooring, wood flooring, ceramic flooring, rubber flooring and wall base.
• An alternative compliance path using FloorScore is acceptable for credit achievement: 100% of the non-carpet finished flooring must be FloorScore-certified and must constitute at least 25% of the finished floor area. Examples of unfinished flooring include floors in mechanical rooms, electrical rooms and elevator service rooms.
• Concrete, wood, bamboo and cork floor finishes such as sealer, stain and finish must meet the requirements of South Coast Air Quality Management District (SCAQMD) Rule 113, Architectural Coatings, rules in effect on Jan. 1, 2004.
• Tile-setting adhesives and grout must meet SCAQMD Rule 1168. VOC limits correspond to an effective date of July 1, 2005, and rule amendment date of Jan. 7, 2005.

Option 2
All flooring elements installed in the building interior must meet the testing and product requirements of the California Department of Health Services Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers, including 2004 Addenda.

Precast Contribution

Precast concrete prestressed/structural products such as double tees, wall panels, hollow core slabs, flat slabs and I-beam girders can contribute toward this credit, because precast concrete does not emit Volatile Organic Compounds (VOCs).

Any sealers, stains or finishes must meet the South Coast Air Quality Management District’s Rule 1113 on Architectural Coatings.

Architectural precast tiles and pavers can also contribute toward this credit when setting with adhesives and grouts that meet Rule 1168 on VOC limits.
Credit Requirement

Recycled Content

Requirements
Use materials with recycled content such that the sum of postconsumer recycled content plus 1/2 the preconsumer content constitutes at least 10% or 20% (based on cost) of the total value of the materials in the project. The minimum percentage materials recycled for each point threshold is:

<table>
<thead>
<tr>
<th>Recycled Content</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>10%</td>
<td>1</td>
</tr>
<tr>
<td>20%</td>
<td>2</td>
</tr>
</tbody>
</table>

The recycled content value of a material assembly is determined by weight. The recycled fraction of the assembly is then multiplied by the cost of the assembly to determine the recycled content value.

Mechanical, electrical and plumbing components and specialty items such as elevators cannot be included in this calculation. Include only materials permanently installed in the project. Furniture may be included if it is included consistently in MR Credit 3: Materials Reuse through MR Credit 7: Certified Wood.

Precast Contribution

Precast concrete products may contain supplementary cementitious materials such as fly ash and blast furnace slag which will add to the project’s recycled content goals.

Precast products may also contain rebar and welded wire mesh which is often made from recycled steel.

Other less frequently used recycled content components include various fiber reinforcements, glass aggregates, silica fume, and recycled crushed concrete.

The NPCA LEED calculator helps members respond with the proper documentation required for this credit. Simply input the Zip Code/Postal Code and weight for each component to generate a pdf file that can be e-mailed directly to the LEED AP, contractor or architect.
Credit Requirement **Max. Points: 2**

### Regional Materials

Use materials or products that have been extracted, harvested, and manufactured within 500 miles of the project site.

The calculation is based on the overall materials cost. Materials costs include all expenses to deliver the material to the project site. Materials costs should account for all taxes and transportation costs incurred by the contractor but exclude any cost for labor and equipment once the material has been delivered to the site.

**Regional Materials of 10% = 1 point**
**Regional Materials of 20% = 2 points**

See the NPCA LEED Calculator at www.precast.org/leed for help with this credit.

See the LEED Canada guide for information on Canada’s credit requirements.

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### Precast Contribution

Because concrete uses plentiful and natural raw materials, concrete components can be extracted, harvested and manufactured within 500 miles of the project site. Using locally obtained raw materials helps reduce transportation distances which reduces the environmental impact of carbon emissions.

If shipping is done by rail or water, LEED Canada allows up to 2,400 km (1,500 miles) from both the manufacturing site to the project site and the location where building materials are extracted, harvested, recovered and processed to the manufacturing site.

The NPCA LEED Calculator helps provide the proper documentation required for this credit. Simply input the Zip code where each raw material originates and the weight of each material to generate a printable file that can be e-mailed to the LEED AP, contractor or architect.
Credit Requirement

Max. Points: 4

Material-Efficient Framing -- Off-site Fabrication

Use either of the following alternatives to on-site framing:

a) Panelized construction. Wall, roof and floor components are delivered to the job site pre-formed.

b) Modular, prefabricated construction. All principal building sections are delivered to the job site as prefabricated modules.

For the complete credit, prerequisite and additional information, please visit www.usgbc.org to download the free LEED Homes Guide.

Precast Contribution

Precast architectural wall panels and foundations are panelized and created at the plant, which helps create less framing waste on the job site.

In some cases, precast components can include the wall, roof and floor as one complete unit – ready to set and install – saving installation time and labor on the job site.

In addition, precast construction reduces air leakage through fewer joints and significantly decreases on-site construction waste.
Credit Requirement  

Max. Points: 4

Environmentally Preferable Products

(.5 point each, maximum 8 points)

Use building component materials that meet one or more of the criteria below:

- Environmentally preferable products. 0.5 points for using a foundation with 30% fly ash/slag. An additional .5 point for exemplary performance of 50% flyash slag, and/or
- Low Emissions (not applicable for concrete), and/or
- Local Production. 0.5 points for using a foundation that was extracted, processed, and manufactured within 500 miles of the project site.

Precast concrete products may contain supplementary cementitious materials such as fly ash and blast furnace slag, which will add to the project’s recycled content goals. Because concrete uses plentiful and natural raw materials, concrete components can be extracted, harvested and manufactured within 500 miles of the project site. Using locally obtained raw materials helps reduce the environmental impact of carbon emissions. The NPCA LEED calculator helps members respond with the proper documentation required for this credit. Simply input the Zip Code/Postal Code and weight for each component to generate a pdf file that can be e-mailed directly to the LEED AP, contractor or architect.
Credit Requirement

Max. Points: 3

Construction Waste Reduction

3.1 Construction Waste Management Planning
(Prerequisite)
Investigate and document local options for diversion, then document the diversion rate for construction waste. (See LEED Homes guide for full prerequisite)

3.2 Construction Waste Reduction
Reduce or divert waste generated from new construction activities from landfills and incinerators to a level below the industry norm. Use either of the two options:

a) Reduced Construction Waste. Generate 2.5 pounds or less of net waste (not including waste diverted reclamation or recycling) per square foot of conditioned floor area. Use the table to determine the score.

b) Increased Waste Diversion. Divert 25% of more of the total materials taken off the construction site from landfills and incinerators. Use the table to determine the score. Calculate the percentage using either weight or volume.

AMOUNT TO LANDFILLS AND INCINERATORS

<table>
<thead>
<tr>
<th>Reduced Construction Waste</th>
<th>Increased Waste Diversion</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lbs./Ft.²</td>
<td>Cubic Yds./1,000 Ft.²</td>
<td>% Waste</td>
</tr>
<tr>
<td>4.0</td>
<td>25.5</td>
<td>100.0%</td>
</tr>
<tr>
<td>3.5</td>
<td>22.3</td>
<td>88%</td>
</tr>
<tr>
<td>3.0</td>
<td>19.1</td>
<td>75%</td>
</tr>
<tr>
<td>2.5</td>
<td>15.9</td>
<td>63%</td>
</tr>
<tr>
<td>2.0</td>
<td>12.8</td>
<td>50%</td>
</tr>
<tr>
<td>1.5</td>
<td>9.6</td>
<td>38%</td>
</tr>
<tr>
<td>1.0</td>
<td>6.4</td>
<td>25%</td>
</tr>
<tr>
<td>0.5</td>
<td>3.2</td>
<td>13%</td>
</tr>
</tbody>
</table>

Precast Contribution

This credit allows for 2.5 pounds of construction waste per square foot of floor space. Precast concrete can contribute toward this credit because it is plant produced, which creates little to zero on-site construction waste.

Less on-site waste means less transportation of waste, less clean-up time, and less time spent sorting recyclables. These savings can contribute to a quicker, cheaper project and a more efficient construction schedule.
Credit Requirement  
Max. Points: 2

Regional Materials

Use materials or products that have been extracted, harvested, and manufactured within 500 miles of the project site. The calculation is based on the overall materials cost. Materials costs include all expenses to deliver the material to the project site. Materials costs should account for all taxes and transportation costs incurred by the contractor but exclude any cost for labor and equipment once the material has been delivered to the site.

- Regional Materials of 10% = 1 point
- Regional Materials of 20% = 2 points

See the NPCA LEED Calculator at www.precast.org/leed for help with this credit.

See the LEED Canada guide for information on Canada’s credit requirements.

Precast Contribution

Because concrete uses plentiful and natural raw materials, concrete components can be extracted, harvested and manufactured within 500 miles of the project site. Using locally obtained raw materials helps reduce transportation distances which reduces the environmental impact of carbon emissions.

If shipping is done by rail or water, LEED Canada allows up to 2,400 km (1,500 miles) from both the manufacturing site to the project site and the location where building materials are extracted, harvested, recovered and processed to the manufacturing site.

The NPCA LEED Calculator helps provide the proper documentation required for this credit. Simply input the Zip code where each raw material originates and the weight of each material to generate a printable file that can be e-mailed to the LEED AP, contractor or architect.
Credit Requirement  
Max. Points: 1

Minimized Site Disturbance in Design and Construction

**Option 1: Development Footprint on Previously Developed Land:**
Locate 100% of the development footprint on areas previously developed, or

**Option 2: Undeveloped Portion of Project Left Undisturbed**
Limit disturbance to:
- 40 feet beyond the building perimeter
- 10 feet beyond surface walkways, patios, surface parking and utilities less than 12 inches in diameter
- 15 feet beyond street curbs and main utility branch trenches
- 25 feet beyond constructed areas with permeable surfaces that require additional staging areas to limit compaction in the constructed zone.

**Note:** This is a condensed version of the credit. The full credit may be downloaded from USGBC’s Neighborhood Development Guide.

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Precast Contribution

Precast concrete products are plant cast and delivered to the site ready to set so they reduce the staging area required which can reduce the overall site disturbance.

The impact on the construction site is also reduced because there is no additional formwork, which often requires more construction area for above-ground products and larger excavation areas for underground products.

Less impact on sites can reduce construction waste, shorten the construction schedule and require fewer laborers on-site.
Credit Requirement
Max. Points: 1

Recycled Content in Infrastructure

Use materials for new infrastructure such that the sum of postconsumer recycled content, in-place reclaimed materials and one-half of the preconsumer recycled content constitutes at least 50% of the total mass of infrastructure materials.

Count materials in all of the following infrastructure items as applicable to the project:

- Roadways, parking lots, sidewalks, unit paving, and curbs
- Water retention tanks and vaults
- Base and subbase materials for the above
- Stormwater, sanitary sewer, energy distribution, and water piping

See the NPCA LEED Calculator at www.precast.org/leed for help with this credit.

See the LEED Canada guide for information on Canada’s credit requirements.

Precast Contribution

Precast concrete products may contain supplementary cementitious materials such as fly ash and blast furnace slag which will add to the project’s recycled content goals.

Precast products may also contain rebar and welded wire mesh which contains recycled steel. Other less frequently used recycled content components include various fiber reinforcements, glass aggregates, silica fume, and recycled crushed concrete.

Beyond precast products themselves, recycled crushed concrete can also contribute to this credit when utilized as road fill base.