

**LEEDs**

# LEEDs

- Leadership in Energy and Environmental Design (LEED)
- Developed by the U.S. Green Building Council
- LEED Green Building Rating System is the nationally accepted benchmark for the design, construction, and operation of high performance green buildings

*U.S. Green Buildings Council, [www.usgbc.org](http://www.usgbc.org)*

# LEEDs

- LEED promotes a whole-building approach to sustainability by recognizing performance in five key areas of human and environmental health:
  - Sustainable site development
  - Water savings
  - Energy efficiency
  - Materials selection
  - Indoor environmental quality

# LEED

- To earn certification a building project must meet certain prerequisites and performance benchmarks (“credits”) within each category.
- Projects are awarded different certification levels depending on the number of credits they achieve

■ Certified	32 – 39 pts
■ Silver	40 – 47
■ Gold	48 – 63
■ Platinum	64 - 85

# LEED

- How Asphalt contributes to LEED credits:
  - Recyclable
    - Recycling and waste management
  - Porous HMA pavements
    - Stormwater Management
    - Heat Island reduction
  - HMA Surface Coatings
    - Heat Island reduction
  - Wisconsin Aggregate Sources
    - Regional Material usage

# LEED

- LEED Programs:

- LEED – NC

- Green Building Rating System for New Construction & Major Renovations

- LEED – EB

- Green Building Rating System for Existing Buildings Upgrades, Operations and Maintenance

- LEED for Schools

- New Construction and Major Renovations

- LEED for Neighborhood Development

- LEED for Homes

- LEED for Retail

- New Construction and Major Renovations

# LEED

- Possible earned Credits using HMA:
  - LEED-NC
    - 9 pts
  - LEED-EB
    - 4-10 pts
  - LEED for Schools
    - 6-9 pts
  - LEED for Neighborhood Development
    - 4-9 pts
  - LEED for Homes
    - 3-15 pts
  - LEED for Retail
    - 11 pts

# New Construction

LEED®-NC Green Building Rating System For New Construction & Major Renovations Version 2.2			
Rating Category	Credit Description	Points	Discussion of Asphalt Pavement Applicability/Contribution to Rating Category
<b>Sustainable Sites</b>			
SS Credit 6.1	Stormwater Design: Quantity Control	1	Porous asphalt pavement (i.e. pervious paving) constructed on a recharge bed promotes quantity control utilizing highly pervious mixtures (approx. 6,000 ft/day). Potentially, site discharge and flow can be reduced below predevelopment conditions through conveyance of roof drainage, and other stormwater flows, to the pavement recharge bed. Design Guide: <a href="http://store.hotmix.org/index.php?productID=179">http://store.hotmix.org/index.php?productID=179</a> WAPA Presentation: <a href="http://www.wispave.org/downloads/WAPAporous.pdf">http://www.wispave.org/downloads/WAPAporous.pdf</a>
SS Credit 6.2	Stormwater Design: Quality Control	1	Porous asphalt pavement (i.e. pervious paving) constructed on a recharge bed promotes stormwater quality control through infiltration utilizing highly pervious mixtures (approx. 6,000 ft/day). Data indicates infiltration BMPs have the highest pollutant removal efficiency for total phosphorus, soluble phosphorus, nitrate, zinc, and TSS, when compared to wetlands, wet ponds, filtering, swales, and dry ponds. NAPA Presentation: <a href="http://www.wispave.org/downloads/NAPAporous.pdf">http://www.wispave.org/downloads/NAPAporous.pdf</a>
SS Credit 7.1	Heat Island Effect: Non-Roof	1	There are two ways in which asphalt pavement may be used to attain this credit. (1) Porous asphalt pavement (i.e. pervious paving) applied to at least 50% of the parking lot area. (2) Reducing heat island effect using asphalt pavements is achievable by coating the pavement surface to raise the Solar Reflectance Index (SRI). This approach allows the designer to capture the economy of using asphalt pavement while also expressing creativity and ingenuity. Coatings of virtually any color are available to treat asphalt pavement. This allows the designer to raise the SRI and integrate features such as color designated pavement areas. Multiple colors can be used to identify walkways, bikeways, emergency parking, handicap areas, or other. Another treatment that raises albedo is "sealing and chipping" using limestone or other light colored aggregate. Sealing and chipping is low cost and provides an agrarian look. Coating Colors for LEED Credit: <a href="http://www.integratedpaving.com/leed/">http://www.integratedpaving.com/leed/</a>
<b>Materials &amp; Resources</b>			
MR Credit 2.1	Construction Waste Management: Divert 50% From Disposal	1	Asphalt pavements are 100% recyclable. Where construction/major renovation of the site requires removal of asphalt pavement the entire quantity of asphalt pavement can be redirected to the manufacturing process for recycling into new asphalt pavement.
MR Credit 2.2	Construction Waste Management: Divert 75% From Disposal	1	See discussion for MR Credit 2.1

# New Construction

## LEED-NC (continued)

Rating Category	Credit Description	Points	Discussion of Asphalt Pavement Applicability/Contribution to Rating Category
Materials & Resources (continued)			
MR Credit 4.1	Recycled Content: 10% (post-consumer + ½ pre-consumer)	1	Reduction in virgin materials is accomplished by incorporating recycled asphalt pavement. Project features utilizing asphalt paving materials and referencing the Wisconsin Department of Transportation (WisDOT) Construction & Material Specifications are permitted to contain the following percentages of recycled asphalt pavement: Surface layer mixes - 20%, lower layer mixes - 25%. WisDOT Specification: <a href="https://trust.dot.state.wi.us/static/standards/stnds/pec/sect460.pdf">https://trust.dot.state.wi.us/static/standards/stnds/pec/sect460.pdf</a>
MR Credit 4.2	Recycled Content: 20% (post-consumer + ½ pre-consumer)	1 Point in addition to MR Credit 4.1	See discussion for MR Credit 4.1
MR Credit 5.1	Regional Materials: 10% Extracted, Processed & Manufactured Regionally	1	Asphalt pavements utilize indigenous resources and reduce environmental impacts resulting from transportation. Asphalt pavements must be placed hot; therefore these mixtures must be produced locally, typically with local aggregate. Vehicles hauling asphalt mix are equipped to reduce heat loss in transport.
MR Credit 5.2	Regional Materials: 20% Extracted, Processed & Manufactured Regionally	1 Point in addition to MR Credit 5.1	See discussion for MR Credit 5.1

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# Existing Buildings

LEED®-EB Green Building Rating System For Existing Buildings Upgrades, Operations and Maintenance Version 2			
Rating Category	Credit Description	Points	Discussion of Asphalt Pavement Applicability/Contribution to Rating Category
<b>Sustainable Sites</b>			
SS Credit 5.1 & 5.2	Stormwater Management: Rate and Quantity Reduction	1-2	<p>Porous asphalt pavement (i.e. pervious paving) constructed on a recharge bed reduces stormwater flow rate and quantity leaving the site. Potentially, site discharge and flow and can be reduced below predevelopment conditions through conveyance of roof drainage, and other stormwater flows, to the pavement recharge bed. Pollutant reduction of natural water flows is attained through infiltration. Data indicates infiltration BMPs have the highest pollutant removal efficiency for total phosphorus, soluble phosphorus, nitrate, zinc, and TSS, when compared to wetlands, wet ponds, filtering, swales, and dry ponds.</p> <p>Design Guide: <a href="http://store.hotmix.org/index.php?productID=179">http://store.hotmix.org/index.php?productID=179</a></p> <p>WAPA Presentation: <a href="http://www.wispave.org/downloads/WAPAporous.pdf">http://www.wispave.org/downloads/WAPAporous.pdf</a></p> <p>NAPA Presentation: <a href="http://www.wispave.org/downloads/NAPAporous.pdf">http://www.wispave.org/downloads/NAPAporous.pdf</a></p>
SS Credit 6.1	Heat Island Effect: Non-Roof	1	<p>There are two ways in which asphalt pavement may be used to attain this credit.</p> <p>(1) Porous asphalt pavement (i.e. pervious paving) applied to at least 50% of the parking lot area. (2) Reducing heat island effect using asphalt pavements is achievable by coating the pavement surface to raise the Solar Reflectance Index (SRI). This approach allows the designer to capture the economy of using asphalt pavement while also expressing creativity and ingenuity. Coatings of virtually any color are available to treat asphalt pavement. This allows the designer to raise the SRI and integrate features such as color designated pavement areas. Multiple colors can be used to identify walkways, bikeways, emergency parking, handicap areas, or other. Another treatment that raises albedo is "sealing and chipping" using limestone or other light colored aggregate. Sealing and chipping is low cost and provides an agrarian look.</p> <p>Coating Colors for LEED Credit: <a href="http://www.integratedpaving.com/leed/">http://www.integratedpaving.com/leed/</a></p>
<b>Materials &amp; Resources</b>			
MR Credit 1.1 & 1.2	Construction, Demolition and Renovation Waste Management	1 - 2	<p>Asphalt pavements are 100% recyclable. Where construction/major renovation of the site requires removal of asphalt pavement the entire quantity of asphalt pavement can be redirected to the manufacturing process for recycling into new asphalt pavement.</p>

# Existing Buildings

LEED®-EB (continued)			
Rating Category	Credit Description	Points	Discussion of Asphalt Pavement Applicability/Contribution to Rating Category
Materials & Resources (continued)			
MR Credit 2.1 - 2.5	Optimize Use of Alternative Materials	1 - 5	<p>There are two ways in which asphalt pavement may be used to attain this credit.</p> <p>(1) LEED permits credit for building materials used on site where the material contains at least 10% post-consumer or 20% post-industrial material. Recycled asphalt pavement is such a material and project features utilizing asphalt paving materials, Reduction in virgin materials is accomplished by incorporating recycled asphalt pavement. Project features utilizing asphalt paving materials and referencing the Wisconsin Department of Transportation (WisDOT) Construction &amp; Material Specifications are permitted to contain the following percentages of recycled asphalt pavement: Surface layer mixes - 20%, lower layer mixes - 25%. WisDOT Specification: <a href="https://trust.dot.state.wi.us/static/standards/stnds/spec/sect460.pdf">https://trust.dot.state.wi.us/static/standards/stnds/spec/sect460.pdf</a></p> <p>(2) LEED permits credit if 50% of the material used are extracted and processed within 500 miles of the project. Asphalt pavements must be placed hot; therefore these mixtures must be produced locally, typically with local aggregate.</p>

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# Schools

LEED® for Schools For New Construction and Major Renovations April 2007 Version			
Rating Category	Credit Description	Points	Discussion of Asphalt Pavement Applicability/Contribution to Rating Category
<b>Sustainable Sites</b>			
SS Credit 6.1	Stormwater Design: Quantity Control	1	<p>Porous asphalt pavement (i.e. pervious paving) constructed on a recharge bed promotes quantity control utilizing highly pervious mixtures (approx. 6,000 ft/day). Potentially, site discharge and flow can be reduced below predevelopment conditions through conveyance of roof drainage, and other stormwater flows, to the pavement recharge bed.</p> <p>Design Guide: <a href="http://store.hotmix.org/index.php?productID=179">http://store.hotmix.org/index.php?productID=179</a></p> <p>WAPA Presentation: <a href="http://www.wispave.org/downloads/WAPAporous.pdf">http://www.wispave.org/downloads/WAPAporous.pdf</a></p>
SS Credit 6.2	Stormwater Design: Quality Control	1	<p>Porous asphalt pavement (i.e. pervious paving) constructed on a recharge bed promotes stormwater quality control through infiltration utilizing highly pervious mixtures (approx. 6,000 ft/day). Data indicates infiltration BMPs have the highest pollutant removal efficiency for total phosphorus, soluble phosphorous, nitrate, zinc, and TSS, when compared to wetlands, wet ponds, filtering, swales, and dry ponds.</p> <p>NAPA Presentation: <a href="http://www.wispave.org/downloads/NAPAporous.pdf">http://www.wispave.org/downloads/NAPAporous.pdf</a></p>
SS Credit 7.1	Heat Island Effect: Non-Roof	1	<p>There are two ways in which asphalt pavement may be used to attain this credit.</p> <p>(1) Porous asphalt pavement (i.e. pervious paving) applied to at least 50% of the parking lot area. (2) Reducing heat island effect using asphalt pavements is achievable by coating the pavement surface to raise the Solar Reflectance Index (SRI). This approach allows the designer to capture the economy of using asphalt pavement while also expressing creativity and ingenuity. Coatings of virtually any color are available to treat asphalt pavement. This allows the designer to raise the SRI and integrate features such as color designated pavement areas. Multiple colors can be used to identify walkways, bikeways, emergency parking, handicap areas, or other. Another treatment that raises albedo is "sealing and chipping" using limestone or other light colored aggregate. Sealing and chipping is low cost and provides an agrarian look. Coating Colors for LEED Credit: <a href="http://www.integratedpaving.com/leed/">http://www.integratedpaving.com/leed/</a></p>
<b>Materials &amp; Resources</b>			
MR Credit 2	Construction Waste Management: Divert From Disposal	1 - 2	<p>Asphalt pavements are 100% recyclable. Where construction/major renovation of the site requires removal of asphalt pavement the entire quantity of asphalt pavement can be redirected to the manufacturing process for recycling into new asphalt pavement.</p>

# Schools

LEED® for Schools (continued)			
Rating Category	Credit Description	Points	Discussion of Asphalt Pavement Applicability/Contribution to Rating Category
Materials & Resources (continued)			
MR Credit 4	Recycled Content: (post-consumer + ½ pre-consumer)	1 - 2	Reduction in virgin materials is accomplished by incorporating recycled asphalt pavement. Project features utilizing asphalt paving materials and referencing the Wisconsin Department of Transportation (WisDOT) Construction & Material Specifications are permitted to contain the following percentages of recycled asphalt pavement: Surface layer mixes - 20%, lower layer mixes - 25%. WisDOT Specification: <a href="https://trust.dot.state.wi.us/static/standards/stnds/spec/sect460.pdf">https://trust.dot.state.wi.us/static/standards/stnds/spec/sect460.pdf</a>
MR Credit 5	Regional Materials: Extracted, Processed & Manufactured Regionally	1 - 2	Asphalt pavements utilize indigenous resources and reduce environmental impacts resulting from transportation. Asphalt pavements must be placed hot; therefore these mixtures must be produced locally, typically with local aggregate.

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# Neighborhood Development

LEED For Neighborhood Development PILOT VERSION Updated June 2007			
Rating Category	Credit Description	Points	Discussion of Asphalt Pavement Applicability/Contribution to Rating Category
Green Construction & Technology			
GCT Credit 9	Stormwater Management	1 - 5	<p>Porous asphalt pavement (i.e. pervious paving) constructed on a recharge bed reduces stormwater flow rate and quantity leaving the site. Potentially, site discharge and flow can be reduced below predevelopment conditions through conveyance of roof drainage, and other stormwater flows, to the pavement recharge bed. Pollutant reduction of natural water flows is attained through infiltration. Data indicates infiltration BMPs have the highest pollutant removal efficiency for total phosphorus, soluble phosphorous, nitrate, zinc, and TSS, when compared to wetlands, wet ponds, filtering, swales, and dry ponds.</p> <p>Design Guide: <a href="http://store.hotmix.org/index.php?productID=179">http://store.hotmix.org/index.php?productID=179</a></p> <p>WAPA Presentation: <a href="http://www.wispave.org/downloads/WAPAporous.pdf">http://www.wispave.org/downloads/WAPAporous.pdf</a></p> <p>NAPA Presentation: <a href="http://www.wispave.org/downloads/NAPAporous.pdf">http://www.wispave.org/downloads/NAPAporous.pdf</a></p>
GCT Credit 10	Heat Island Reduction: Option 1 - Non-Roof	1	<p>There are two ways in which asphalt pavement may be used to attain this credit.</p> <p>(1) Porous asphalt pavement (i.e. pervious paving) applied to at least 50% of the site hardscape. (2) Reducing heat island effect using asphalt pavements is achievable by coating the pavement surface to raise the Solar Reflectance Index (SRI). This approach allows the designer to capture the economy of using asphalt pavement while also expressing creativity and ingenuity. Coatings of virtually any color are available to treat asphalt pavement. This allows the designer to raise the SRI and integrate features such as color designated pavement areas. Multiple colors can be used to identify walkways, bikeways, emergency parking, handicap areas, or other. Another treatment that raises albedo is "sealing and chipping" using limestone or other light colored aggregate. Sealing and chipping is low cost and provides an agrarian look. Coating Colors for LEED Credit: <a href="http://www.integratedpaving.com/leed/">http://www.integratedpaving.com/leed/</a></p>

# Neighborhood Development

LEED For Neighborhood Development (continued)			
Rating Category	Credit Description	Points	Discussion of Asphalt Pavement Applicability/Contribution to Rating Category
Green Construction & Technology (continued)			
GCT Credit 17	Recycled Content in Infrastructure	1	<p>Reduction in virgin materials is accomplished by incorporating recycled asphalt pavement. Project features utilizing asphalt paving materials and referencing the Wisconsin Department of Transportation (WisDOT) Construction &amp; Material Specifications are permitted to contain the following percentages of recycled asphalt pavement: Surface layer mixes - 20%, lower layer mixes - 25%. WisDOT Specification: <a href="https://trust.dot.state.wi.us/static/standards/stnds/spec/sect460.pdf">https://trust.dot.state.wi.us/static/standards/stnds/spec/sect460.pdf</a></p> <p>Ground Tire Rubber (GTR) can be added either as an asphalt cement modifier or a constituent of the aggregate structure.</p>
GCT Credit 18	Construction Waste Management	1	Asphalt pavements are 100% recyclable. Where construction/major renovation of the site requires removal of asphalt pavement the entire quantity of asphalt pavement can be redirected to the manufacturing process for recycling into new asphalt pavement.

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# Homes

LEED For Homes Program Version 1.11a January 2007			
Rating Category	Credit Description	Points	Discussion of Asphalt Pavement Applicability/Contribution to Rating Category
<b>Sustainable Sites</b>			
SS 3.	Shading of Hardscapes	1	Requirements for this credit allow the use of pavement surfaces having reflectance of at least 0.3 over 50% of the site's non-roof impervious surface. Attaining this credit with asphalt pavements is achievable by coating the pavement surface to raise the Solar Reflectance Index (SRI). This approach allows the designer to capture the economy of using asphalt pavement while also expressing creativity and ingenuity. Coatings of virtually any color are available to treat asphalt pavement. This allows the designer to raise the SRI and integrate features such as color designated pavement areas. Another treatment that raises albedo is "sealing and chipping" using limestone or other light colored aggregate. Sealing and chipping is low cost and provides an agrarian look. Coating Colors for LEED Credit: <a href="http://www.integratedpaving.com/leed/">http://www.integratedpaving.com/leed/</a>
SS 4.	Surface Water Management	6 max.	Porous asphalt pavement (i.e. pervious paving) constructed on a recharge bed reduces stormwater flow rate and quantity leaving the site. Potentially, site discharge and flow and can be reduced below predevelopment conditions through conveyance of roof drainage, and other stormwater flows, to the pavement recharge bed. Design Guide: <a href="http://store.hotmix.org/index.php?productID=179">http://store.hotmix.org/index.php?productID=179</a> WAPA Presentation: <a href="http://www.wispave.org/downloads/WAPAporous.pdf">http://www.wispave.org/downloads/WAPAporous.pdf</a>
<b>Materials &amp; Resources</b>			
MR 2.	Environmentally Preferable Products	8 max.	Credit can be obtained for using products that are extracted, processed and manufactured within 500 miles of the home. Asphalt pavements utilize indigenous resources and reduce environmental impacts resulting from transportation. Asphalt pavements must be placed hot; therefore these mixtures must be produced locally, typically with local aggregate.

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# Retail

## LEED For Retail - New Construction and Major Renovations Pilot Version 2 April 2007

Rating Category	Credit Description	Points	Discussion of Asphalt Pavement Applicability/Contribution to Rating Category
<b>Sustainable Sites</b>			
SS Credit 6.1	Stormwater Design: Quantity Control	1	<p>Porous asphalt pavement (i.e. pervious paving) constructed on a recharge bed promotes quantity control utilizing highly pervious mixtures (approx. 6,000 ft/day). Potentially, site discharge and flow can be reduced below predevelopment conditions through conveyance of roof drainage, and other stormwater flows, to the pavement recharge bed.</p> <p>Design Guide: <a href="http://store.hotmix.org/index.php?productID=179">http://store.hotmix.org/index.php?productID=179</a></p> <p>WAPA Presentation: <a href="http://www.wispave.org/downloads/WAPAPorous.pdf">http://www.wispave.org/downloads/WAPAPorous.pdf</a></p>
SS Credit 6.2	Stormwater Design: Quality Control	1	<p>Porous asphalt pavement (i.e. pervious paving) constructed on a recharge bed promotes stormwater quality control through infiltration utilizing highly pervious mixtures (approx. 6,000 ft/day). Data indicates infiltration BMPs have the highest pollutant removal efficiency for total phosphorus, soluble phosphorous, nitrate, zinc, and TSS, when compared to wetlands, wet ponds, filtering, swales, and dry ponds.</p> <p>NAPA Presentation: <a href="http://www.wispave.org/downloads/NAPAPorous.pdf">http://www.wispave.org/downloads/NAPAPorous.pdf</a></p>
SS Credit 7.1	Heat Island Effect: Non-Roof (25% of site hardscape)	1	<p>There are two ways in which asphalt pavement may be used to attain this credit.</p> <p>(1) Porous asphalt pavement (i.e. pervious paving) applied to at least 25% of the site hardscape. (2) Reducing heat island effect using asphalt pavements is achievable by coating the pavement surface to raise the Solar Reflectance Index (SRI). This approach allows the designer to capture the economy of using asphalt pavement while also expressing creativity and ingenuity. Coatings of virtually any color are available to treat asphalt pavement. This allows the designer to raise the SRI and integrate features such as color designated pavement areas. Multiple colors can be used to identify walkways, bikeways, emergency parking, handicap areas, or other. Another treatment that raises albedo is "sealing and chipping" using limestone or other light colored aggregate. Sealing and chipping is low cost and provides an agrarian look.</p> <p>Coating Colors for LEED Credit: <a href="http://www.integratedpaving.com/leed/">http://www.integratedpaving.com/leed/</a></p>
SS Credit 7.2	Heat Island Effect: Non-Roof (50% of site hardscape)	1	<p>There are two ways in which asphalt pavement may be used to attain this credit.</p> <p>(1) Porous asphalt pavement (i.e. pervious paving) applied to at least 50% of the site hardscape. (2) See discussion for MR Credit 7.1</p>
SS Credit 7.3	Heat Island Effect: Non-Roof (75% of site hardscape)	1	<p>There are two ways in which asphalt pavement may be used to attain this credit.</p> <p>(1) Porous asphalt pavement (i.e. pervious paving) applied to at least 75% of the site hardscape. (2) See discussion for MR Credit 7.1</p>

# Retail

LEED For Retail (continued)			
Rating Category	Credit Description	Points	Discussion of Asphalt Pavement Applicability/Contribution to Rating Category
<b>Materials &amp; Resources</b>			
MR Credit 2.1	Construction Waste Management: Divert 50% From Disposal	1	Asphalt pavements are 100% recyclable. Where construction/major renovation of the site requires removal of asphalt pavement the entire quantity of asphalt pavement can be redirected to the manufacturing process for recycling into new asphalt pavement.
MR Credit 2.2	Construction Waste Management: Divert 75% From Disposal	1 Point in addition to MR Credit 2.1	See discussion for MR Credit 2.1
MR Credit 4.1	Recycled Content: 10% (post-consumer + ½ pre-consumer)	1	Reduction in virgin materials is accomplished by incorporating recycled asphalt pavement. Project features utilizing asphalt paving materials and referencing the Wisconsin Department of Transportation (WisDOT) Construction & Material Specifications are permitted to contain the following percentages of recycled asphalt pavement: Surface layer mixes - 20%, lower layer mixes - 25%. WisDOT Specification: <a href="https://trust.dot.state.wi.us/static/standards/stnds/spec/sect460.pdf">https://trust.dot.state.wi.us/static/standards/stnds/spec/sect460.pdf</a>
MR Credit 4.2	Recycled Content: 20% (post-consumer + ½ pre-consumer)	1 Point in addition to MR Credit 4.1	See discussion for MR Credit 4.1
MR Credit 5.1	Regional Materials: 10% Extracted, Processed & Manufactured Regionally	1	Asphalt pavements utilize indigenous resources and reduce environmental impacts resulting from transportation. Asphalt pavements must be placed hot; therefore these mixtures must be produced locally, typically with local aggregate. Vehicles hauling asphalt mix are equipped to reduce heat loss in transport.
MR Credit 5.2	Regional Materials: 20% Extracted, Processed & Manufactured Regionally	1 Point in addition to MR Credit 5.1	See discussion for MR Credit 5.1

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