



## DOW ROOFING SYSTEMS, LEED AND SUSTAINABLE ROOF ASSEMBLIES

### SUSTAINABLE ROOFING

The integrated roofing products and systems from Dow are suitable for a sustainable roofing design. Among its many affiliations and alignments with organizations dedicated to sustainable design and construction, Dow is a member of the U.S. Green Building Council (USGBC), an internationally recognized, nonprofit coalition that promotes high-performance green building design.

The USGBC Leadership in Energy and Environmental Design (LEED) system is a voluntary, consensus-based rating system that lets design professionals accumulate credits based on meeting criteria for the use of environmentally friendly, sustainable and energy-efficient products and systems.

By reaching certain point levels, buildings can be LEED certified at these levels: certified, silver, gold and platinum. In some countries, states/provinces and localities, LEED certification can result in financial incentives.

### DOW ROOFING SYSTEMS

Dow Roofing Systems offers a portfolio of solutions to meet sustainable design objectives (Table 1). In conjunction with other items found in a roofing assembly, a roofing system from Dow Roofing Systems can contribute to LEED points for building certification. Table 2 details the credit name and number, number of possible points and comments. These credits are based on LEED for Building Design and Construction 2009.

**TABLE 1: SUSTAINABLE SOLUTIONS**

| VEGETATIVE ROOFS                                                                                                                                                                                                                                                                                                                                                                         | LOW- AND ZERO-VOC APPLICATIONS                                                                                                                               | EXPOSED REFLECTIVE ROOFS                                                                                                                                                                                                                                                                                              |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| An intensive or extensive vegetative roof from Dow Roofing Systems is a proven method for creating an environmentally friendly "cool" roof. The GARDENTOP™ System combines high-performance TIEMPO™+ 2000 TPO Roofing Membrane or VIENTO™ PVC Roofing Membrane, insulation and water-management technology to deliver maximum roof life, design flexibility and installation efficiency. | Dow Roofing Systems offers adhesive options with low- or zero-volatile organic compounds (VOC). Dow also has insulation with zero ozone-depletion potential. | Dow Roofing Systems offers white, reflective membranes, energy-efficient insulation, accessories and design consultation services for the following types of exposed reflective roof assemblies: <ul style="list-style-type: none"> <li>• Mechanically attached</li> <li>• Fully adhered</li> <li>• Vented</li> </ul> |

#### DOW ROOFING SYSTEMS INSULATION

Energy efficiency is key to sustainability. HCFC-free TERMICO™ Polyisocyanurate and STYROFOAM™ Brand Extruded Polystyrene Foam Insulation products help optimize energy efficiency, manage moisture and reduce greenhouse gas emissions, contributing to credits in several categories.

**TABLE 2: CONTRIBUTION TO LEED POINTS FOR NEW CONSTRUCTION AND MAJOR RENOVATIONS – DOW ROOFING SYSTEMS**

| CREDIT NUMBER                     | CREDIT NAME                                  | NUMBER OF POINTS | CONTRIBUTION                                                                                                                                                                                                                                                                                                                                              |
|-----------------------------------|----------------------------------------------|------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Sustainable Sites (SS) Credit 5.1 | Site Development, protect or restore habitat | 1                | Projects earning SS Credit 2 and using vegetative roof surface may apply the vegetative roof surface to this calculation (if the plants meet the definitions of native/adapted), in which case the requirement is 20 percent of the site area (including building footprint). This option is intended for urban sites with little or no building setback. |
| SS Credit 5.2                     | Site Development, maximize open space        | 1                | For all compliance options, when projects are located in urban area earning SS Credit 2, vegetative roof areas can contribute to credit compliance.                                                                                                                                                                                                       |
| SS Credit 6.1                     | Stormwater Design, quantity control          | 1                | Vegetative roof – consisting of Dow Roofing Systems insulation and membrane – can promote infiltration, reduce imperviousness and reduce stormwater runoff, which contribute to achieving the credit requirements.                                                                                                                                        |
| SS Credit 6.2                     | Stormwater Design, quality control           | 1                | Vegetative roof – consisting of Dow Roofing Systems insulation and membrane – can promote infiltration, reduce imperviousness and solids loading, and reduce stormwater runoff, which contribute to achieving the credit requirements.                                                                                                                    |

TABLE 2 CONTINUED ON NEXT PAGE

CONTINUED FROM PAGE 1

| CREDIT NUMBER                             | CREDIT NAME                                                                     | NUMBER OF POINTS            | CONTRIBUTION                                                                                                                                                                                                                                                                                                                                                                                                                |
|-------------------------------------------|---------------------------------------------------------------------------------|-----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| SS Credit 7.2                             | Heat Island Effect, roof                                                        | 1                           | Install 50 percent of the roof area with vegetative roof – consisting of Dow Roofing Systems insulation and membrane – to reduce urban heat island effect. Use roofing materials with a solar reflectance index (SRI) equal to or greater than 78 for low-sloped roof and 29 for steep-sloped roof for a minimum of 75 percent of the roof surface. TIEMPO™+ 2000 TPO Membrane has a minimum solar reflectance index of 97. |
| Water Efficiency (WE) Credit 1            | Water-Efficient Landscaping, reduced by 50 percent                              | 2                           | Vegetative roof – consisting of Dow Roofing Systems insulation and membrane – with native or adaptive vegetation has a high level of rainwater retention to satisfy irrigation needs. This credit is more applicable to urban areas where green space around the building perimeter is limited.                                                                                                                             |
| Energy and Atmosphere (EA) Prerequisite 2 | Minimum Energy Performance                                                      | Required                    | Green roof – consisting of Dow Roofing Systems insulation and membrane – helps increase energy efficiency to meet the Minimum Energy Performance prerequisite.                                                                                                                                                                                                                                                              |
| EA Credit 1                               | Optimize Energy Performance                                                     | 1-19 or 3-21 (Core & Shell) | Vegetative roof – consisting of Dow Roofing Systems insulation and membrane – can help achieve higher energy-efficiency levels for a building by providing better insulation and little heat island effect.                                                                                                                                                                                                                 |
| Materials and Resources (MR) Credit 3.1   | Material Reuse, 5 percent                                                       | 1                           | Vegetative roof – consisting of Dow Roofing Systems insulation and membrane – is long lasting when designed and installed properly. The insulation and other components of the system can often be reused.                                                                                                                                                                                                                  |
| MR Credit 3.2                             | Material Reuse, 10 percent                                                      | 2                           | Vegetative roof – consisting of Dow Roofing Systems insulation and membrane – is long lasting when designed and installed properly. The insulation and other components of the system can often be reused.                                                                                                                                                                                                                  |
| MR Credit 4.1                             | Recycled Content, 10 percent (post-consumer plus half pre-consumer)             | 1                           | Many components of the vegetative roof assembly – such as waterproof membrane and filter fabric – provide recycled post-consumer and pre-consumer recycled content.                                                                                                                                                                                                                                                         |
| MR Credit 4.2                             | Recycled Content, 20 percent (post-consumer plus half pre-consumer)             | 2                           | Many components of the vegetative roof assembly – such as waterproof membrane and filter fabric – provide recycled post-consumer and pre-consumer recycled content.                                                                                                                                                                                                                                                         |
| MR Credit 5.1                             | Regional Materials, 10 percent extracted, processed and manufactured regionally | 1                           | Many components of the vegetative roof assembly – such as waterproof membrane, filter fabric and insulation – are harvested, processed and manufactured regionally.                                                                                                                                                                                                                                                         |
| MR Credit 5.2                             | Regional Materials, 20 percent extracted, processed and manufactured regionally | 1                           | Many components of the vegetative roof assembly – such as waterproof membrane, filter fabric and insulation – are harvested, processed and manufactured regionally.                                                                                                                                                                                                                                                         |

TABLE 2 CONTINUED ON NEXT PAGE

## SUPPLEMENTAL INFORMATION

## SUSTAINABLE SITES (SS)

## CREDIT 5.1 – SITE DEVELOPMENT: PROTECT AND RESTORE HABITAT

## Intent:

Conserve existing natural areas and restore damaged areas to provide habitat and promote biodiversity.

## Requirements:

For greenfield sites (not previously developed or graded and in a natural state), limit all site 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 primary roadway curbs and main utility branch trenches
- 25 feet beyond constructed areas with permeable surfaces

On previously developed or graded sites, restore or protect a minimum of 50 percent of the site area (excluding the building footprint) with native/adapted vegetation.

An innovation credit can be earned with 75 percent of the site area covered with native/adapted vegetation.

Projects using a vegetative roof surface may apply this to the calculation (if the plants meet the definitions of native/adapted). In this case, the requirement is 20 percent of the site area, including the building footprint. This option is intended for urban sites with little or no building setback.

## CREDIT 5.2 – SITE DEVELOPMENT: MAXIMIZE OPEN SPACE

## Intent:

Provide a high ratio of open space to development footprint to promote biodiversity.

**Requirements:**

*Option 1:* Reduce the development footprint (defined as the total area of building footprint, hardscape, access roads and parking) and/or provide vegetated open space within the project boundary to exceed the local zoning open space requirements by 25 percent.

*Option 2:* For areas without zoning requirements – such as some university campuses and military bases – provide vegetated open space adjacent to the building that is equal to the building footprint.

*Option 3:* Where zoning exists without a requirement for open space, provide vegetated open space equal to 20 percent of the project's site area.

**For all of the options:**

- For projects located in urban areas that earn SS Credit 2, vegetative roof areas can contribute to credit compliance.
- For projects located in urban areas, pedestrian-oriented hardscape areas can contribute to credit compliance. For such projects, a minimum of 25 percent of the open space counted should be vegetated.
- Wetlands and naturally designed ponds may count as open space if the side slope gradients that average 1:4 (vertical:horizontal) or less are vegetated.

The building may be awarded an innovation point if the project has doubled the open space requirement.

**CREDIT 6.1 – STORMWATER DESIGN: QUANTITY CONTROL****Intent:**

Limit disruption of natural hydrology by reducing impervious cover, increasing on-site infiltration and managing stormwater runoff.

**Requirements:**

Impervious surfaces promote runoff of precipitation volumes instead of infiltration into the subsurface.

| CREDIT NUMBER                                 | CREDIT NAME                                                                   | NUMBER OF POINTS | CONTRIBUTION                                                                                                                                                                                                                      |
|-----------------------------------------------|-------------------------------------------------------------------------------|------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Indoor Environmental Quality (IEQ) Credit 4.1 | Low-Emitting Materials – Adhesives and Sealants                               | 1                | Dow 2000 Membrane Adhesive (Low-VOC) has a VOC amount of 245 g/l, which meets IEQ Credit 4.1 requirement of 450 g/l for single-ply roof membrane sealant.                                                                         |
| IEQ Credit 7.1                                | Thermal Comfort, design                                                       | 1                | Vegetative roof – consisting of Dow Roofing Systems insulation and membrane – can help achieve better energy efficiency to meet the ASHRAE 55.2 Thermal Environmental Design standards to provide comfort for building occupants. |
| Innovation and Design (ID) Credit 1.1         | 100 Percent Green Roof for Exemplary Performance of SS Credit 7.2             | 1                | Double the existing credit requirements to provide exemplary performance.                                                                                                                                                         |
| ID Credit 1.2                                 | Green Roof Accounts for 40 Percent of the Project Site Area for SS Credit 5.1 | 1                | Double the existing credit requirements to provide exemplary performance.                                                                                                                                                         |

*Option 1:* Where existing imperviousness is less than or equal to 50 percent, implement a stormwater management plan to prevent:

- Post-development peak discharge rate (typically calculated by a civil engineer based on surface characteristics and data on stormwater frequency, intensity and duration)
- Quantity from exceeding the predevelopment peak discharge rate
- Quantity for the one- and two-year, 24-hour design storms

Or, implement a stormwater management plan that protects receiving stream channels from excessive erosion by implementing a stream channel strategy and quantifying control strategies.

*Option 2:* Where existing imperviousness is greater than 50 percent, implement a stormwater management plan that results in a 25 percent decrease in the volume of stormwater runoff from the two-year, 24-hour design storm.

**Strategies:**

Design the project site to maintain natural stormwater flows by promoting infiltration. Specify vegetative roofs, pervious paving and other measures to minimize impervious surfaces. Reuse stormwater generated for non-potable use, such as landscape irrigation, toilet and urinal flushing, and custodial uses.

**CREDIT 6.2 – STORMWATER DESIGN: QUALITY CONTROL****Intent:**

Reduce or eliminate water pollution by reducing impervious cover, increasing on-site infiltration, eliminating sources of contaminants and removing pollutants from stormwater runoff.

**Requirements:**

Implement a stormwater management plan that reduces impervious cover, promotes infiltration, and captures and treats the stormwater runoff from 90 percent of the average annual rainfall, using acceptable best management practices (BMP).

BMPs used to treat runoff must be capable of removing 80 percent of the average annual post-development total suspended solids (TSS) load, based on existing monitoring reports.

**Strategies:**

Use alternative surfaces – such as vegetative roofs, pervious pavement or grid pavers – and nonstructural techniques to reduce imperviousness and promote infiltration, thereby reducing pollutant loadings.

Use sustainable design strategies to design integrated natural and mechanical treatment systems – such as constructed wetlands, vegetative filters and open channels – to treat stormwater runoff.

Nonstructural techniques include vegetated swales and the disconnection of impervious pavement. Structural techniques include rainwater cisterns, manholes and ponds, and are preferred in urban and constrained areas.

**CREDIT 7.2 – HEAT ISLAND EFFECT: ROOF****Intent:**

Reduce heat islands (thermal gradient differences between developed and undeveloped areas) to minimize impact on microclimate and human and wildlife habitat.

**Requirements:**

*Option 1:* Use roofing materials with a solar reflectance index (SRI) equal to or greater than the values below for a minimum of 75 percent of the roof surface.

Low-sloped roof:  
≤2:12 (SRI 78)

Steep-sloped roof:  
>2:12 (SRI 29)

TIEMPO™+ 2000 TPO Roofing Membrane has a minimum SRI of 97 (78.4% reflectance and 0.88 emittance).

*Option 2:* Install a vegetative roof for at least 50 percent of the roof area.

*Option 3:* Install high albedo (reflective) and vegetative roof surfaces that, in combination, meet the following criteria:

$$(\text{Area of SRI Roof}/0.75) + (\text{Area of Vegetative Roof}/0.5) \geq \text{Total Roof Area}$$

**Strategies:**

Consider installing high albedo and vegetative roofs to reduce heat absorption.

An innovation credit can be earned if the total roof area is 100 percent high albedo or vegetative roof – excluding mechanical equipment, photovoltaic panels and skylights.

**WATER EFFICIENCY (WE)****CREDIT 1 – WATER-EFFICIENT LANDSCAPING, REDUCED BY 50 PERCENT****Intent:**

Limit or eliminate the use of potable water – or other natural surface or subsurface water resources available on/near the project site – for landscaping irrigation.

**Requirements:**

*Option 1:* Reduce potable water use for irrigation by 50 percent from a calculated mid-summer baseline case. Reduction should be attributed to any combination of the following items:

- Plant species factor
- Irrigation efficiency (such as drip irrigation or micro-irrigation)
- Use of captured rainwater
- Use of recycled wastewater
- Use of water treated and conveyed by a public agency specifically for non-potable use

**Strategies:**

To reduce or eliminate irrigation requirements, perform a soil/climate analysis to determine the appropriate plant material and design the landscape with native/adapted plants.

Where needed, use high-efficiency equipment and/or climate-based controllers. Drip irrigation is high-efficiency irrigation where water is delivered at low pressure through buried mains and sub-mains. Micro-irrigation uses small sprinklers and microjets or drippers designed to apply a small volume of water.

**ENERGY AND ATMOSPHERE (EA)****PREREQUISITE 2 – MINIMUM ENERGY PERFORMANCE****Intent:**

Establish the minimum level of energy efficiency for the proposed building and systems.

**Requirements:**

There are three options to comply with this mandatory requirement:

- Whole Building Energy Simulation – comply with the mandatory provisions (Section 5.4, 6.4, 7.4, 8.4, 9.4 and 10.4) of ASHRAE/IESNA Standard 90.1 2007 and compare against a baseline building
- ASHRAE Advanced Energy Design Guide
- Prescriptive Compliance Path: Advanced Buildings Core Performance Guide

**Strategies:**

Design the building envelope, HVAC, lighting and other systems to maximize energy performance. For projects pursuing EA Credit 1, a computer simulation model may be used to confirm the satisfaction of this prerequisite.

If a local code has demonstrated the quantitative and textual equivalence, it may be used in lieu of ASHRAE.

### CREDIT 1 – OPTIMIZE ENERGY PERFORMANCE (1-19 POINTS FOR NEW CONSTRUCTION AND SCHOOLS, 3-21 POINTS FOR CORE AND SHELL)

#### Intent:

Achieve increasing levels of energy performance above the baseline in the prerequisite standard to reduce environmental and economic impacts associated with excessive energy use.

#### Requirements:

Use one of the following options (all are assumed to be in compliance with Prerequisite 2).

*Option 1:* Whole Building Energy Simulation (1-19 points for New Construction and Schools; 3-21 points for Core and Shell)

Based on Performance Rating Method in Appendix G, the minimum energy cost savings (percentage) for each point is shown in Table 3.

*Option 2:* Prescriptive Compliance Path – Advanced Energy Design Guide (1 point)

Comply with ASHRAE Advanced Energy Design Guide for:

- Small Office Building 2004
- Small Retail Buildings 2006
- Small Warehouses and Self Storage Buildings 2008

*Option 3:* Prescriptive Compliance Path – Advanced Buildings Core Performance Guide (1-3 points)

Comply with the prescriptive measures in the New Buildings Institute guides. The following restrictions apply:

- Buildings must be less than 100,000 ft<sup>2</sup>
- Buildings may not be health care, warehouse or laboratory projects
- Project teams must fully comply with Section One (“Design Process Strategies”) and Section Two (“Core Performance Requirements”)

Minimum points achieved under Option 3 (1 point)

- One point is available for all projects less than 100,000 ft<sup>2</sup> that comply with Sections One and Two of the Advanced Buildings Core Performance Guide

Additional points available under Option 3 (2 additional points)

- Up to two additional points are available to projects that implement performance strategies listed in Section Three (“Enhanced Performance”)
- For every three strategies implemented from Section Three, one point is available
- Any strategies applicable to the project may be implemented except:

3.1 Cool Roofs

3.8 Night Venting

3.13 Additional Commissioning

These strategies are addressed by different aspects of the LEED program and are not eligible for additional points under EA Credit 1.

### MATERIALS AND RESOURCES (MR)

CREDIT 3.1 – MATERIAL REUSE, 5 PERCENT AND CREDIT 3.2 – MATERIAL REUSE, 10 PERCENT

#### Intent:

Reuse building materials and products in order to reduce demand for virgin materials and to reduce waste – thereby reducing impacts associated with the extraction and processing of virgin materials.

#### Requirements:

Use salvaged, refurbished or reused materials so the sum of these materials constitutes at least 5 or 10 percent (based on cost) of the total value of materials on the project.

#### Strategies:

Identify opportunities to incorporate salvaged materials into building design and research potential material suppliers.

Consider salvaged materials such as beams and posts; flooring; paneling; doors and frames; cabinetry and furniture; and brick and decorative items.

The material cost can be either actual cost paid or the replacement value.

An innovation credit can be earned if the reuse material reaches 15 percent of the total materials cost.

**TABLE 3: MINIMUM ENERGY COST SAVINGS FOR POINTS EARNED**

| PERCENT OPTIMIZED ENERGY PERFORMANCE, NEW BUILDINGS | PERCENT OPTIMIZED ENERGY PERFORMANCE, EXISTING BUILDING RENOVATIONS | RESULTING POINTS FOR NEW CONSTRUCTION AND SCHOOLS | RESULTING POINTS FOR CORE AND SHELL |
|-----------------------------------------------------|---------------------------------------------------------------------|---------------------------------------------------|-------------------------------------|
| 12                                                  | 8                                                                   | 1                                                 | 3                                   |
| 14                                                  | 10                                                                  | 2                                                 | 4                                   |
| 16                                                  | 12                                                                  | 3                                                 | 5                                   |
| 18                                                  | 14                                                                  | 4                                                 | 6                                   |
| 20                                                  | 16                                                                  | 5                                                 | 7                                   |
| 22                                                  | 18                                                                  | 6                                                 | 8                                   |
| 24                                                  | 20                                                                  | 7                                                 | 9                                   |
| 26                                                  | 22                                                                  | 8                                                 | 10                                  |
| 28                                                  | 24                                                                  | 9                                                 | 11                                  |
| 30                                                  | 26                                                                  | 10                                                | 12                                  |
| 32                                                  | 28                                                                  | 11                                                | 13                                  |
| 34                                                  | 30                                                                  | 12                                                | 14                                  |
| 36                                                  | 32                                                                  | 13                                                | 15                                  |
| 38                                                  | 34                                                                  | 14                                                | 16                                  |
| 40                                                  | 36                                                                  | 15                                                | 17                                  |
| 42                                                  | 38                                                                  | 16                                                | 18                                  |
| 44                                                  | 40                                                                  | 17                                                | 19                                  |
| 46                                                  | 42                                                                  | 18                                                | 20                                  |
| 48                                                  | 44                                                                  | 19                                                | 21                                  |

**CREDIT 4.1 – RECYCLED CONTENT, 10 PERCENT (POST-CONSUMER PLUS HALF PRE-CONSUMER) AND CREDIT 4.2 – RECYCLED CONTENT, 20 PERCENT (POST-CONSUMER PLUS HALF PRE-CONSUMER)**

**Intent:**

Increase demand for building products that incorporate recycled-content materials, thereby reducing impacts resulting from extraction and processing of virgin materials.

**Requirements:**

Use materials with recycled content such that the sum of post-consumer recycled content plus one-half of the pre-consumer content constitutes at least 10 or 20 percent (based on costs) of the total value of the materials in the project.

Post-consumer material is waste material generated by households or by commercial, industrial and institutional facilities in their roles as end users of the product, which can no longer be used for its intended use. Pre-consumer material is diverted from the waste stream during the manufacturing process. Excluded is the reutilization of materials such as rework, regrind or scrap generated in a process and capable of being reclaimed within the same process that generated it.

The recycled-content value of a material assembly shall be 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 shall not be included in the calculation. Only include materials permanently installed in the project. Furniture may be included provided it is included consistently in MR Credits 3-7.

**Strategies:**

Establish a project goal for recycled-content material and identify material suppliers that can achieve this goal. During construction, ensure that specified recycled-content materials are installed. Consider a range of environmental, economic and performance attributes when selecting products and materials.

While no recycle information is available for steel products, assume a default recycled content of 25 percent post-consumer. No other material is recognized as having similar recycled content. Some steel products will contain 90 percent or higher. It is recommended to check with the manufacturer.

An innovation credit can be earned if 30 percent or more recycled content can be achieved.

**CREDIT 5.1 – REGIONAL MATERIALS, 10 PERCENT EXTRACTED, PROCESSED AND MANUFACTURED REGIONALLY AND CREDIT 5.2 – REGIONAL MATERIALS, 20 PERCENT EXTRACTED, PROCESSED AND MANUFACTURED REGIONALLY**

**Intent:**

Increase demand for building materials and products that are extracted and manufactured within the region – thereby supporting the use of indigenous resources and reducing the environmental impacts resulting from transportation.

**Requirements:**

Use building materials or products that have been extracted, harvested, recovered or manufactured within 500 miles of the project site – for a minimum of 10 or 20 percent (based on costs) of the total materials value. If only a fraction of a product or material is extracted/harvested, recovered and manufactured locally, then only that percentage (by weight) shall contribute to the regional value.

Mechanical, electrical and plumbing components and specialty items such as elevators shall not be included in the calculation. Only include materials permanently installed in the project. Furniture may be included provided it is included consistently in MR Credits 3-7.

**Strategies:**

Establish a project goal for locally sourced materials and identify materials and suppliers that can achieve this goal. During the construction, ensure that the specified local materials are installed and quantify the total percentage of local materials installed. Consider a range of environmental, economic and performance attributes when selecting products and materials.

An innovation credit can be earned if 40 percent or more regionally harvested, extracted and manufactured products can be achieved.

**INDOOR ENVIRONMENTAL QUALITY (EQ)**

**CREDIT 4.1 – LOW-EMITTING MATERIALS – ADHESIVES AND SEALANTS**

**Intent:**

Reduce the quantity of indoor air contaminants that are odorous, irritating and/or harmful to the comfort and well-being of installers and building occupants.

**Requirements:**

Adhesives, sealants and sealant primers must comply with South Coast Air Quality Management District (SCAQMD) Rule #1168. Volatile organic compound (VOC) limits are listed in the table on page 471 (*LEED 2009 Reference Guide for Green Building Design and Construction*).

**CREDIT 7.1 – THERMAL COMFORT: DESIGN**

**Intent:**

Provide a comfortable thermal environment that supports the productivity and well-being of building occupants.

**Requirements:**

Design the HVAC systems and the building envelope to meet the requirements of ASHRAE 55-2004 Thermal Comfort Conditions for Human Occupancy. Demonstrate design compliance in Section 6.1.1 documentation.

**Strategies:**

Establish comfort criteria per ASHRAE 55-2004 that support the desired quality and occupant satisfaction. Evaluate air temperature, radiant temperature, air speed and humidity in an integral fashion and coordinate these criteria with EQ Prerequisite 1, EQ Credit 1, and EQ Credit 2:

- Active conditioning
- Passive conditioning
- Mixed-mode conditioning

ASHRAE 55-2004 is based on the Predicted Mean Vote (PMV) comfort model with seven levels, ranging from +3 (hot) to -3 (cold).

**INNOVATION AND DESIGN (ID) PROCESS**

TWO POSSIBLE POINTS (BY DOUBLING THE ORIGINAL CREDIT REQUIREMENTS TO PROVIDE EXEMPLARY PERFORMANCE)

**Intent:**

Provide design teams and projects the opportunity to be awarded points for exceptional performance above the requirements set by LEED for New Construction Green Building Rating Systems and/or innovative performance in green building categories not specifically addressed by this rating system.

**Requirements:**

In writing, identify the intent of the proposed innovation credit, the proposed requirements for compliance, the proposed submittals to demonstrate compliance, and the design approach (strategies) that might be used to meet the requirements.

**Strategies:**

Substantially exceed a LEED for New Construction performance credit such as Energy Performance or Water Efficiency. Apply strategies or measures that demonstrate a comprehensive approach and quantifiable environmental and/or health benefits.

A separate set of submittals is required for each point pursued, and no single strategy is eligible for more than one point. Four independent sustainability measures may be applied to ID credits.



### SUSTAINABILITY ON TOP

Not only is sustainability on top of many minds today, sustainability and environmental stewardship top Dow's list of priorities. Our building science experts can help architects, consultants, owners and contractors keep sustainability on top.

The newly integrated resources of Dow Roofing Systems and Dow Building Solutions further leverage Dow's building science know-how, insulation and polymer technology experience, diversified chemical portfolio and leadership in sustainability to deliver even more comprehensive solutions for increased energy efficiency and lower installation costs for the entire building enclosure.

In addition to LEED, Dow Roofing Systems offers science-based solutions for designing and constructing high-performance roofs to meet the criteria of other rating systems and standards such as Cool Roof Rating Council, ENERGY STAR and California Title 24, including:

- White reflective membranes for cool roofs
- Insulation with zero ozone-depletion potential
- VOC-free and low-VOC adhesive options
- Reusable and recyclable materials

For information about Dow Roofing Systems products and systems and other Dow solutions that support sustainable design objectives, call Dow Roofing Systems at 1-800-621-ROOF (7663) or visit [www.dowroofingsystems.com](http://www.dowroofingsystems.com).

To learn more about LEED, visit [www.usgbc.org](http://www.usgbc.org).

**[www.dowroofingsystems.com](http://www.dowroofingsystems.com)**

#### Technical Information

1-877-788-8324

#### Sales Information

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#### IN THE U.S.

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#### STYROFOAM™ Brand Extruded Polystyrene Foam Insulation

CAUTION: This product is combustible. Protect from high heat sources. A protective barrier or thermal barrier may be required as specified in the appropriate building code. For more information, consult MSDS, call Dow at 1-866-583-BLUE (2583) or contact your local building inspector. In an emergency, call 1-989-636-4400.

#### Dow Polyisocyanurate Insulation

CAUTION: This product is combustible and shall only be used as specified by the local building code with respect to flame spread classification and to the use of a suitable thermal barrier. For more information, consult MSDS, call Dow Roofing Systems at 1-800-621-ROOF (7663) or contact your local building inspector. In an emergency, call 1-989-636-4400.

**WARNING: Rigid foam insulation does not constitute a working walkable surface or qualify as a fall protection product.**

Building and/or construction practices unrelated to building materials could greatly affect moisture and the potential for mold formation. No material supplier including Dow can give assurance that mold will not develop in any specific system.

