July 20, 2010

Carlisle LEED Information

LEED-NC Version 2009 Credits, that a roofing application can be applied to are outlined and include specific product data. Also listed are Credits where roofing materials may impact the Credit.

Sustainable Sites (SS)

- **SS Credit 5.1: Protect or Restore Habitat (1 Point):** Applicable to Case 2, Previously Developed Areas or Graded Sites. To conserve existing natural areas and restore damaged areas to provide habitat and promote biodiversity.
    - The use of a Roof Garden Waterproofing System helps meet the requirements of this credit.

- **SS Credit 5.2: Site Development-Maximize Open Space (1 Point):** In all cases for projects in urban areas that earn SS Credit 2 Vegetated Roof areas can contribute to credit compliance.
- **SS Credit 6.1: Stormwater Design: Quantity Control (1 Point):** Limit disruption of natural water hydrology by reducing impervious cover, increasing on-site infiltration, reducing or eliminating pollution from stormwater runoff, and eliminating contaminants.
    - The use of a Roof Garden Waterproofing System helps meet the requirements of this credit.

- **SS Credit 6.2: Stormwater Design: Quality Control (1 Point):** Limit disruption and pollution of natural water flows by managing stormwater runoff.
    - The use of a Roof Garden Waterproofing System helps meet the requirements of this credit.

- **SS Credit 7.2: Heat Island Effect: Roof (1 Point) :** Reduce heat islands (thermal gradient differences between developed and undeveloped areas) to minimize impact on microclimate and human and wildlife habitat.
    - **Option 1** – For low-sloped roofs with a slope less than or equal to 2:12, use roofing materials that have a Solar Reflectance Index (SRI) equal to or greater than 78.
        - Sure-White white EPDM membrane – the SRI is 105 and meets the requirements of this credit.
        - Sure-Weld white TPO membrane – the SRI is 110 and meets the requirements of this credit.
        - Sure-Weld tan TPO membrane – the SRI is 88 and meets the requirements of this credit.
        - Spectro-Weld white TPO membrane - the SRI is 113 and meets the requirements of this credit.
        - Sure-Flex white PVC membrane - the SRI is 110 and meets teh requirements of this credit.

    - **Option 2** – Install a vegetated roof for at least 50% of the roof area.
        - The use of a Roof Garden Waterproofing System meets the requirements of this credit.

    - **Option 3** – Install high-albedo and vegetated roof surfaces in combination such that it meets the formula listed in LEED.
        - **The use of products listed in Option 1 and use of a Roof Garden Waterproofing system can meet this requirement.**

Water Efficiency (WE)

- **WE Credit 1: Water Efficient Landscaping (2-4 Points):** Limit or eliminate the use of potable water or other natural surface or subsurface water resources.. For buildings without vegetation on the ground reducing use of potable water for watering any roof and courtyard garden space as long as cover 5% of site.
    - **The use of a Roof Garden with low water needs helps meet the requirements of this credit.**

back to top

Energy & Atmosphere (EA)

- **EA Credit 1: Optimize Energy Performance (1-19 Points):** The LEED credit requires a percentage improvement in the proposed building performance rating compared to the baseline building performance rating per ASHRAE/IESNA Standard 90.1-2007 (without amendments) by a whole building simulation using the Building Performance Rating Method in Appendix G of the Standard. The credit encompasses the entire building (roof and walls) but the increase in roof insulation would contribute to earning this credit; up to 19 points can be achieved. Other steps that can be taken to help meet the reductions is the installation of skylights with lighting controls, which reduces the energy for lighting. Also the use of the proper roof membrane color can reduce energy use in the hot and cold climates. The minimum energy cost savings percentage for each point threshold is as follows:

New Building	Existing Building Renovations	Points
12.0%	8.0%	1
14.0%	10.0%	2
16.0%	12.0%	3
18.0%	14.0%	4
20.0%	16.0%	5
22.0%	18.0%	6
24.0%	20.0%	7
26.0%	22.0%	8
28.0%	24.0%	9
30.0%	26.0%	10
32.0%	28.0%	11
34.0%	30.0%	12
36.0%	32.0%	13
38.0%	34.0%	14
40.0%	36.0%	15
42.0%	38.0%	16
44.0%	40.0%	17
46.0%	42.0%	18
48.0%	44.0%	19

For example, the 2007 ASHRAE minimum R-value for most of the United States is 20. The use of 3.3" thick polyisocyanurate would provide an R-value of 20.4. To achieve the 48.0% increase a total thickness of 4.7" of polyisocyanurate would be needed with an R-value of 29.6.

back to top

Materials & Resources (MR)

- **MR Credit 2 (1-2 Points): Construction Waste Management: Divert 50% from Disposal: 1 Credit: Divert 75% from Disposal = 2 Credits.** Divert construction, demolition and land-clearing debris from disposal in landfills and incinerators. Redirect recyclable recovered resources back to the manufacturing process. Redirect reusable materials to appropriate sites.
    - Recycle and/or salvage at least 50% of non-hazardous construction and demolition debris. Excavated soil and land-clearing debris do not contribute to this credit. Calculations can be done by weight or volume, but must be consistent throughout.
    - Establish goals for diversion from disposal in landfills and incinerators and adopt a construction waste management plan to achieve these goals. Consider recycling cardboard, metal, brick, acoustical tile, concrete, plastic, clean wood, glass, gypsum wallboard, carpet, and insulation. Designate a specific area(s) on the construction site for segregated or commingled collection of recyclable materials, and track recycling efforts throughout the construction process. Identify construction haulers and recyclers to handle the designated materials. Note that diversion may include donation of materials to charitable organizations and salvage of materials on-site.

back to top

- **MR Credit 3: Materials Reuse (1-2 Points): 5% = 1 Credit: 10% = 2 Credits:** 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 resources.
    - Use salvaged, refurbished or reused materials such that the sum of these materials constitutes at least 5%, based on cost, of the total value of materials on the project. For example, reuse ballast, insulation, or existing single-ply membrane for other use.

- **MR Credit 4 Recycled Content (1-2 Points) : 10% -1 point, and 20% - 2 Points:** Increase demand for building products that incorporate recycled content materials, thereby reducing impacts resulting from extraction and processing of virgin materials
    - 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% (based on cost) of the total value of the materials in the project.
    - 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.
    - **Post-Consumer Material** is defined as waste material generated by households or by commercial, industrial and institutional facilities in their role as end-users of the product, which can no longer be used for its intended purpose.
    - **Pre-Consumer Material** is defined as material diverted from the waste stream during the manufacturing process. Excluded is 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 of various Carlisle products:**
        - Sure-Seal EPDM membrane has 3% recycled content.
        - Sure-Weld TPO membrane has 10% pre-consumer recycled content.
        - Sure-Flex PVC membrane has 10% pre-consumer recycled content.
        - Extruded Polystyrene has 40% pre-consumer recycled content.
        - Expanded Polystyrene has a 25% pre-consumer recycled content.

- **MR Credit 4.1 and 4.2: Recycled Content** *(continued)*:
  - Polyisocyanurate HP-H insulation – the recycled content varies based on the individual board thickness as listed:

Thickness	Total Recycled %	Post-Consumer Recycled %	Pre-Consumer Recycled %
1.0	37.80	27.80	10.00
1.1	36.20	26.20	10.00
1.2	34.50	24.60	9.90
1.3	33.20	23.30	9.90
1.4	31.90	22.10	9.80
1.5	30.80	21.00	9.80
1.6	29.70	20.00	9.70
1.7	28.80	19.10	9.70
1.8	28.00	18.30	9.70
1.9	27.20	17.50	9.70
2.0	26.50	16.90	9.60
2.1	25.80	16.20	9.60
2.2	25.20	15.60	9.60
2.3	24.70	15.10	9.60
2.4	24.20	14.60	9.60
2.5	23.60	14.10	9.50
2.6	23.10	13.60	9.50
2.7	22.70	13.20	9.50
2.8	22.30	12.80	9.50
2.9	21.90	12.40	9.50
3.0	21.60	12.10	9.50
3.1	21.10	11.70	9.40
3.2	20.80	11.40	9.40
3.3	20.50	11.10	9.40
3.4	20.30	10.90	9.40
3.5	20.00	10.60	9.40
3.6	19.70	10.30	9.40
3.7	19.50	10.10	9.40
3.8	19.30	9.90	9.40
3.9	19.00	9.60	9.40
4.0	18.80	9.40	9.40
4.5	17.80	8.50	9.30

  - DensDeck Prime - the recycled content varies based upon its manufacturing location as listed:

Manufacturing Location	TotalRecycled %	Pre-Consumer Recycled %	Post-Consumer Recycled %
Acme, TX	0	0	0
Antioch, CA	0	0	0
Brunswick, GA	0	0	0
Caledonia, ON	0	0	0
Camden, NJ	3	3	0
Ft. Dodge, IA	4	4	0
Lovell, WY	0	0	0
Savannah, GA	2	2	0
Tacoma, WA	40	40	0

- DensDeck – the recycled content varies based upon its manufacturing location as listed:

Manufacturing Location	Total Recycled %	Pre-Consumer Recycled %	Post-Consumer Recycled %
Acme, TX	0	0	0
Antioch, CA	0	0	0
Blue Rapids, KS	0	0	0
Brunswick, GA	0	0	0
Caledonia, ON	0	0	0
Camden, NJ	3	3	0
Edmonton, AB	0	0	0
Ft. Dodge, IA	4	4	0
Las Vegas, NV	0	0	0
Lovell, WY	0	0	0
Long Beach, CA	0	0	0
Savannah, GA	2	2	0
Sigurd, UT	0	0	0
Sweetwater, TX	0	0	0
Tacoma, WA	20	20	0
Wheatfield, IN	90	90	0

- Securock - manufactured from 95% recycled materials.
- Wood Fiberboard – the recycled content varies based upon its manufacturing location as listed:

Manufacturing Location	Total Recycled %	Pre-Consumer Recycled %	Post-Consumer Recycled %
Barrow, LA	5	5	0
Danville, VA	5	5	0
Jarrett, VA	10	10	0
Sunbury, PA	5	5	0

back to top

- **MR Credit 5.1 and 5.2 (1-2 Points): Regional Materials: Extracted, Processed, and Manufactured Regionally (10% - 1 point, and 20% - 2 points):** 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. The credit requires the use of building materials or products that have been extracted, harvested, or recovered, as well as manufactured, within 500 miles of the project site for a minimum of 10% or 20% (based on cost) of the total materials value.

  The manufacturing locations for various products are as listed below:

  - **Sure-Seal (black) and Sure-White (white) EPDM membranes:**
    - Carlisle, PA
    - Greenville, IL
  - **Sure-Weld TPO membrane:**
    - Senatobia, MS
    - Tooele, UT
  - **Sure-Weld PVC membrane:**
    - Mountaintop, PA
    - Hillside, NJ
  - **Polyisocyanurate HP-H insulation:**
    - Franklin Park, IL
    - Kingston, NY
    - Lake City, FL
    - Smithfield, PA
    - Terrell, TX
    - Tooele, UT
  - **DOW Styrofoam Extruded Polystyrene insulation:**
    - Allyn's Point, CT
    - Dalton, GA
    - Hanging Rock, OH
    - Joliet, IL
    - La Porte, TX
    - Riverside, MO
    - Torrance, CA
    - Fort Saskatchewan, AB
    - Varennes, QC
    - Weston, ON
  - **Foamular Extruded Polystyrene insulation:**

- Montreal, QC
- Rockford, IL
- Tallmadge, OH

- **Insulfoam Expanded Polystyrene insulation:**
  - Anderson, SC
  - Aurora, CO
  - Chino, CA
  - Dixon, CA
  - Lakeland, FL
  - Marlin, TX
  - Mead, NE
  - Phoenix, AZ
  - Salt Lake City, UT
  - Kent, WA
- **Wood Fiberboard:**
  - Barrow, LA
  - Danville, VA
  - Jarrett, VA
  - Sunbury, PA
- **DensDeck Prime:**
  - Acme, TX
  - Antioch, CA
  - Brunswick, GA
  - Caledonia, ON
  - Camden, NJ
  - Ft. Dodge, IA
  - Lovell, WY
  - Savannah, GA
  - Tacoma, WA
- **DensDeck:**
  - Acme, TX
  - Antioch, CA
  - Brunswick, GA
  - Caledonia, ON
  - Camden, NJ
  - Ft. Dodge, IA
  - Las Vegas, NV
  - Lovell, WY
  - Long Beach, CA
  - Savannah, GA
  - Sigurd, UT
  - Sweetwater, TX
  - Tacoma, WA
  - Wheatfield, IN
- **Securock:**
  - Aliquippa, PA
  - Baltimore, MD
  - Bridgeport, AL
  - Charlestown, MA
  - East Chicago, IN
  - Empire, NV
  - Fort Dodge, IA
  - Galena Park, TX
  - Jacksonville, FL
  - New Orleans, LA
  - Norfolk, VA
  - Plaster City, CA
  - Rainier, OR
  - River Rouge, MI
  - Santa Fe Springs, CA
  - Shoals, IN
  - Sigurd, UT
  - Southard, OK
  - Sperry, IA
  - Stony Point, NY
  - Sweetwater, TX
  - Hagersville, Ontario
  - Montreal, Quebec

Note: Carlisle products are comprised of compounds from across the U.S. and, therefore, do not comply with the portion of the credit pertaining to extraction, harvesting, and recovering.

back to top

Indoor Environmental Quality (EQ)

- **EQ Credit 4.1 (1 Point) : Low-Emitting Materials: Adhesives and Sealants:**
  The credit deals with all adhesives and sealants used on the interior of the building (defined as inside of the weatherproofing system/waterproofing membrane). Therefore, adhesives used below the Sure-Seal EPDM membrane need to be in compliance with VOC limits required in the credit (250 g/l or less).
  - Low VOC Bonding Adhesive has a VOC of 250 g/l.
  - Aqua Base 120 Bonding Adhesive has a VOC of 8 g/l.
  - Fast 100 Adhesive has a VOC of 0 g/l.
  - Cold-Applied Adhesive has a VOC of 0 g/l.
  - OlyBond 500 Adhesive has a VOC of 0 g/l.

- IEQ Credit 8.1 (1 Point): Daylight
- This credit deals with providing the building occupants with a connection between indoor spaces and the outdoors through the introduction of daylight.
  - The use of Skylights can provide daylighting even in large buildings where it cannot be accomplished with windows.
  - Drylights are excellent for large aread and Tubular are excellent for smaller areas or where the light is more pinpointed.

back to top

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