

TECHNICAL BULLETIN
LEED 2.2 NC PROGRAM

The LEED Green Building Rating System is a system developed to certify “green” buildings under a system created and promulgated by the U.S. Green Building Council. LEED stands for “Leadership in Energy and Environmental Design”. The current version of this program is LEED 2.2 NC, for New Construction. Architects attempt to certify their buildings for a variety of reasons, including state and local government incentives in some areas, Federal government requirements on some projects, professional recognition and because they want to be environmentally responsible.

The rating system gives points for a project in the following categories: SS sustainable sites (14 possible points), WE water efficiency (5 possible points), EA energy and atmosphere (17 possible points), MR materials & resources (13 possible points), EQ indoor environmental quality (15 possible points), and ID innovation & design process (5 possible points). The total possible points are 69. To become certified takes 26 to 32 points. 33 to 38 points gets the building Silver Certification. 39 to 51 points achieves Gold Certification and 52 to 69 points obtains Platinum Certification. There are also several items that are minimum requirements for any certification level and do not earn any points. These items are erosion and sediment control, fundamental building systems commissioning, minimum energy performance, CFC reduction in HVAC&R equipment, storage & collection of recyclables, minimum indoor air quality performance, and environmental tobacco smoking control. The LEED program certifies buildings only; not individual construction products so Rollfab cannot seek LEED certification of any of our products.

Let’s get to specifics of how an Architect can gain LEED points by using Rollfab’s products! The first possible point is under sustainable sites. One point can be earned under credit SS 7.2 by using a roof system that is highly reflective AND has a high emissivity as rated by a new method called the Solar Reflectance Index (SRI). This requirement is intended to reduce the heat island effect. LEED no longer uses the Energy Star program requirements. One nice change is that the SRI is calculated from the initial reflectivity and the initial emissivity. This means that, unlike Energy Star approval, we no longer have to wait 3 years for aged reflectivity values for the LEED program. For a low slope roof of 2:12 or less, the SRI must be at least 78. For a steep slope roof of over 2:12 pitch the SRI must be at least 29. We have many colors that meet the steep slope requirements and a few that meet the stiffer low slope requirements. The SRI values for our standard colors and some special colors are listed on the tables at the end of this technical bulletin.

A reflective metal roof can also help toward the energy efficiency prerequisite and the optimized energy performance requirements in *credit EA 1* which is up to 10 credits under energy & atmosphere section. This section compares the reduced design energy cost for the project compared to the energy cost budget according to ASHRAE Standard 90.1. The greater the energy savings; the more the points, up to 10 points for a 42% reduction in energy requirements over the ASHRAE energy budget. ASHRAE is the

American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc. Highly reflective metal roofing helps reduce the air-conditioning costs and helps to meet this requirement, but it's only a small part of the equation. Under *credit EA 2*, between 1 and 3 points are available for developing on-site renewable energy. This can be accomplished using Rollfab's Solar SSR system. EA 2.1 allows 1 point for generating 2.5% of the building's energy requirements on-site with solar panels. EA 2.2 allows 2 point for generating 7.5% of the building's energy requirements on-site with solar panels and EA 2.3 allows 3 points for generating 12.5% with solar panels. (In 2009 this credit is scheduled to go up to 7 points for 13% generated by solar panels.)

Under materials & resources 1 point can be earned under *credit MR 2.1* by recycling or salvaging at least 50% of the construction, demolition and land clearing waste. Naturally, 100% of any scrap metal roofing and siding panels or drop from cutting can be recycled. This 50% number, like all of the LEED points, is based on the entire construction project, so recycling 100% of the metal roofing and siding panel scrap may not offset the scrap from other construction products that are not salvageable. As with most of these averaged points, the higher than required values from metal panels help to offset other "less green" products. An additional point can be earned under *credit MR 2.2* by recycling or salvaging at least 75% of the construction, demolition and land clearance waste. Under *credit MR 4.1* one point is awarded if the weighted average recycled content of the building products are at least 10% and an additional point is awarded under *credit MR 4.2* if the weighted average recycled content of the building products are at least 20%. The recycled content is defined as the postconsumer recycled content plus half the pre-consumer content. (Pre-consumer was formerly called post-industrial recycled content.) This number for steel is 22.3 % plus $\frac{1}{2}$ of 6.1 % = 25.4 %. For Rollfab, aluminum number is 35% plus $\frac{1}{2}$ of 55% = 62.5%. For copper it's 50% plus $\frac{1}{2}$ of 25% = 62.5%. As you can see, the more metal roofing and siding they use on a project the better chance that have to offset the poor, less fortunate other construction products with little or no recycled content and the better the chance they'll get the 2 points, or at least 1 point from this credit. *Credit MR 5.1* allows 1 credit if a weighted average of 10% of the building material is manufactured regionally. This is defined as the final production point being within 500 miles of the jobsite. For jobsite roll formed panels this is an easy requirement. For other products it depends on the jobsite location and the production plant for the product. Under *credit MR 5.2,1* credit is issued if a weighted average of 20% of the building materials is produced from material that is extracted, harvested or recovered as well as manufactured within 500 miles of the project site.

This is a tough requirement for metal products since the raw materials are extracted from all over the world and very difficult to trace back from a specific project to the extraction point. As a result, metal panels typically do not contribute to this point.