

## The bottom line—a tremendous life-cycle cost advantage.

The concept of a life-cycle cost advantage typically is introduced when a product carries a higher initial investment than a comparable product. But the MR-24 metal roof system turns in a virtual trifecta as it outperforms other products in important environmental and energy-saving categories while providing greater durability at a significantly lower cost than alternative

roofing products. A thorough and realistic life-cycle cost analysis of 30 years, based on a 50,000-square-foot roof area, recently compared the MR-24 roof to an EPDM (rubber) roof. This analysis was more than conclusive and presented a substantial six-figure life-cycle cost benefit.

So while it seems too good to be true,

facts and research show a life-cycle cost advantage that is undeniable when you compare the MR-24 metal roof system with any conventional roof. Contact your local Butler Builder® for a detailed analysis of how the MR-24 roof system can provide more value throughout the life of your next building.

## About the authors

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# RISING VALUE IN MR-24® STANDING-SEAM ROOF SYSTEM VS. CONVENTIONAL ROOF OPTIONS

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1 Proceedings of the Fourth International Symposium on Roofing Technology: "The Relative Durability of Low-Slope Roofing." Carl G. Cash 1996

2 *The Metal Initiative*. "Low Slope Roofing Life Cycle Cost Analysis." Ducker Research Company May 2005

3 *EPDM Roof System Performance*: "An Update of Historical Maintenance Costs." James Hoff 2003

4 [www.coolroofs.org/documents/June2006ProductDirectory061506.pdf](http://www.coolroofs.org/documents/June2006ProductDirectory061506.pdf)

5 [www.coolmetalroofing.org/pdf/arr.pdf](http://www.coolmetalroofing.org/pdf/arr.pdf)



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## RISING VALUE IN MR-24® STANDING-SEAM ROOF SYSTEM VS. CONVENTIONAL ROOF OPTIONS

There is a new value proposition in commercial roof systems. The impact of rising energy, manufacturing, raw material, and transportation costs has changed the rationale in selecting the roof system for a new building. Take a few moments to learn how these changes will impact your next construction project.

The reasons for constructing a new building are based on the unique needs of the company or organization. Whether the goal is to produce more products, provide comfortable space for people to work or worship, or showcase merchandise in a retail setting, all building owners share a common goal: to have a measurable return on their investment.

Given that objective, it is evident that the roof—arguably one of the most critical aspects of a construction project—should be selected to provide excellent performance while saving money not only on the initial construction costs, but also based on the ongoing (life-cycle) costs. Those are exactly the advantages offered by the MR-24 standing-seam metal roof system developed by Butler Manufacturing.™ Here's why:

- Metal roofing has never been more cost competitive compared to conventional roofing
- The MR-24 roof system is a long-term solution—actual in-place performance reached 40 years in 2009
- The MR-24 roof system allows you

to be environmentally responsible by helping you meet LEED® and ENERGY STAR® Cool Roof standards

- The life-cycle cost of an MR-24 roof system is substantially better when compared to any conventional roof

It is important to know the facts to make an informed decision rather than simply accept conventional wisdom. The MR-24 roof system is the undisputed leader in high-performance standing-seam metal roof systems. When compared to conventional roof systems, **the MR-24 metal roof system costs less, lasts longer, protects better against UV degradation**, and better handles the sun's heat. **That could result in energy savings of up to 40%.** All of this adds up to a clear life-cycle cost advantage.

## Are conventional roofs less cost competitive than metal roofs?

As the costs of conventional roof system materials and associated commodities continue to increase, conventional roofing can no longer remain cost competitive with a standing-seam metal roof such as the MR-24 roof system. Beyond the cost of the roof itself, conventional roof systems are insulated using polyisocyanurate or polystyrene insulation boards that have been affected by escalating petrochemical costs. As conventional roofs attempt to achieve

the same R-value attainable with 6 inches of fiberglass insulation in a metal roof assembly, the cost difference increases even further.

A recent study compared the total installed cost for various roof systems. To ensure maximum accuracy, actual quotes were solicited directly from roofing contractors and compared with installed metal roof systems to ensure an “apples-to-apples” evaluation.

**The MR-24 metal roof system was found to cost about 43% less than even the lowest-cost rubber roof system (EPDM) and 65% less than the highest-cost conventional roof system.**

With those cost savings, you might assume that the metal roof is less durable. However, the truth is exactly the opposite.

Low-slope Roof Membrane	Avg. Life(yr.) <sup>4</sup>	Avg. Quote*	Deck	Price
EPDM	14.2	\$5.02	\$2.00	\$7.02
Reinforced TPO	12.8	\$6.19	\$2.00	\$8.19
Reinforced Polyvinyl Chloride (PVC)	13.8	\$6.69	\$2.00	\$8.69
Coal-tar Pitch BUR	23.0	\$9.37	\$2.00	\$11.37
Asphalt BUR	14.7	\$7.69	\$2.00	\$9.69
SBS Multiple Modified Bitumen	15.9	\$7.98	\$2.00	\$9.98
APP Multiple Modified Bitumen	13.7	\$8.19	\$2.00	\$10.19
Butler MR-24 Metal Roof System	30.0	\$4.00	n/a	\$4.00

\*Average based on five separate quotes from roofing contractors across the northeastern U.S.A.

### Conventional Criteria

- roof size is 100' x 100'
- roof deck is 22-gauge galvanized steel
- the required perimeter treated wood blocking is included
- edge is metal without parapets
- insulation is 3.25" polyisocyanurate (R-20): hot-applied system requires 1/2" fiberboard over the insulation
- polyisocyanurate insulation is mechanically attached
- single plies are 45 mil EPDM or 60 mil thermoplastic and are mechanically attached
- built-up roof felts are 15 lb. per square and type VI
- coal tar and BUR are gravel topped
- all systems include a 10-year warranty
- perimeter gutter or edge trim and roof drains are not included

### Notes

1. All pricing done using open shop labor
2. Prices quoted August through September 2008
3. Roof deck is included in the installed price

## RISING VALUE IN MR-24® STANDING-SEAM ROOF SYSTEM VS. CONVENTIONAL ROOF OPTIONS

### The MR-24 metal roof system typically outperforms conventional roofs.

In addition to a significant initial cost advantage, the MR-24 metal roof system has demonstrated a service life at least twice that of the most commonly used conventional roof systems. The MR-24 metal roof system was introduced in 1969 and was immediately identified as a significant engineering innovation in roofing. The MR-24 standing-seam metal roof challenged the status quo of the building industry and is currently protecting more than 2 billion square feet of buildings in every environment around the world.

Nearly all of the early MR-24 roof systems remain in service and are expected to continue this remarkable legacy with very little annual maintenance cost. The strength of the pre-engineered steel roof system, combined with Butler's advanced protective finishes, ensures a product that will outperform any conventional roof system. In 2009, the MR-24 roof system surpassed the 40-year mark of actual in-place performance, confirming the 40+ year life expectancy projected in earlier

industry studies, provided that the roof is properly maintained.<sup>1,2</sup>

So, maybe you think that's the catch—maintenance costs. Not true. Nearly all industry estimates put the **annual maintenance costs for a metal roof system such as the MR-24 roof at 5 to 10 times less than the annual maintenance costs for EPDM rubber roofs.**<sup>3</sup>

### Sustainable and energy efficient.

The MR-24 metal roof system outpaces other roofs in its potential for LEED® credits and Cool Roof ratings.<sup>4</sup>

#### Consider first how the MR-24 roof system counts toward LEED certification.

The U.S. Green Building Council (USGBC) is a coalition of leaders from across the building industry that works to promote buildings that are environmentally responsible, cost effective, and healthy places to live and work. The organization's LEED (Leadership in Energy and Environmental Design) Rating System has spearheaded the “Green Building” movement among design professionals committed to developing high-performance, energy-efficient, environmentally responsible, more sustainable facilities. The USGBC's efforts have become engrained in more and more design criteria for state and institutional projects intended to achieve LEED certification. Many progressive corporations pursue LEED certification, and variations have been adopted for federal government and military facility construction programs.

The MR-24 metal roof system helps to meet LEED requirements because the roof is made from recycled material (steel) and is **recyclable, sustainable,**

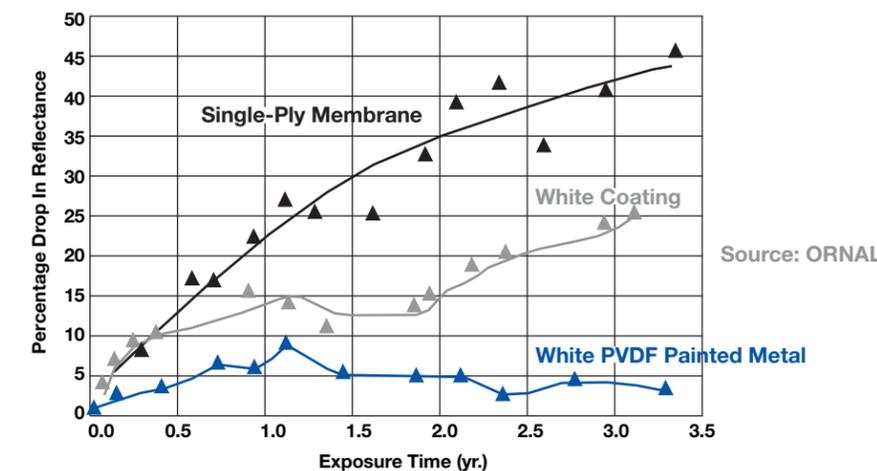
**and energy efficient**, contributing toward a potential of 4 LEED credits.

#### Meets ENERGY STAR® cool roof standards for energy efficiency

When it comes to actual energy savings, the MR-24 metal roof system also scores well against even white membrane roofing in emissivity and reflectivity during comparative Cool Roof evaluations. A report by the Cool Roof Rating Council, that includes studies conducted at The Department of Energy's Oak Ridge National Laboratory, underscores how a metal roof system is more effective than

conventional roofs both in reflecting the sun's rays and in preventing solar heat transfer into a building's indoor environment.<sup>5</sup> During cloudy conditions or after sunset, a metal roof assembly also does not retain heat as long as roofs comprised of other materials. This lowers the temperature around the building and reduces the chances of smog formation (the “Heat Island Effect”).

The Butler MR-24 metal roof system helps to maintain a consistent temperature inside the building, thus reducing your cost for air conditioning.



- Prepainted metal roofing retained 95% of its initial solar reflectance over time
- PVDF (polyvinylidene fluoride) is a 70% Kynar® paint finish.