



# NEED A NEW ROOF?

How Building Owners Can  
Reduce Cost With a Metal Roof



[www.mcelroymetal.com](http://www.mcelroymetal.com)

# INTRODUCTION

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Any building owner knows that a leaking roof causes all sorts of headaches, from damaged inventory to finished goods, safety issues and even health problems for employees. Of course, the longer leaks go unresolved, the more problematic the issues can become. While short-term fixes like patches or coatings appear “easy,” they are only temporary solutions, and simply will not solve the problem long-term.

The goal of this eBook is to make every business owner’s new roof their last roof. The best way to accomplish that is to help building owners understand their reroofing options, and present the features and benefits of Metal-Over-Metal Recover Systems.



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# EXECUTIVE SUMMARY

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When a metal roof is underperforming due to age or poor installation, the most common solutions are liquid-applied coatings, single-ply recovers or replacing the roof with new metal panels. Each option has its own set of advantages and disadvantages. For example, coating the roof provides a low-cost solution, but has a short service life. Single-ply works well on some applications, but metal buildings can collapse after being covered with single-ply materials.

It's true. Replacing a metal roof with another metal roof carries a higher initial cost than single-ply recovers or coating the existing metal roof. However, for owners tired of the constant mess and ongoing maintenance with leaking or problematic roofs, metal panels simply offer the best long-term solution.

- Longer life. Based on an extensive study, Galvalume-coated steel panels are now projected to last 60+ years, far outlasting the 10-year life expectancy for coatings and 20-year single-ply products. To view the study [click here](#).
- Impact resistance. Metal roofing has Class 4 impact-resistance, so it holds up far better against hail, high winds and flying debris. Conversely, roof coatings and single-ply recovers are very thin and easily punctured, allowing water and melted snow to enter the building.
- Symmetrical metal panels allow for panel replaceability. Although metal roofing is far less likely to be damaged by hail, wind or debris, these systems enable individual panels to be removed and replaced if damage occurs. Additionally, building alterations during the life of the building, such as adding curbs to accommodate new mechanical equipment, are much more manageable with symmetrical panels.



# EXECUTIVE SUMMARY

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There are two main approaches for replacing metal roofing: Remove and Replace & Recover. While tearing off the roof and installing a new one (referred to as a Remove and Replace) offers a fresh start, the approach is very expensive, exposes the building and its contents to the elements, and consequently causes an enormous disruption to business operations and employees.

Unsatisfied with the traditional reroofing approaches, savvy building owners are instead embracing a roof “Recover” approach with increasing frequency. A metal-over-metal Recover involves installing new metal roofing over the top of a building’s existing metal roof. Recovers are becoming the “go-to” approach for a host of reasons:

- Eliminates the need for a tear-off. As a result, projects can be completed faster, with less cost, disruption and risk.
- Minimized interruption to the operation. While a complete roof replacement can shut a building down for weeks or months, it’s business as usual during a Recover project.
- Installer safety considerations. Remove and Replace projects often require crews to work 20-30’ in the air over open framing, exposing crew members to incredible risk. Conversely, Recover projects allow the crews to work more safely on top of the existing roof, decreasing risk and installation time.
- Exemption from some building codes. Recover projects are exempt from the current International Energy Conservation Code (IECC) requirements, saving a tremendous amount of money. In sharp contrast, the Remove and Replace approach requires the building to meet current energy standards, which almost always means adding insulation regardless of the owner’s desire to do so.
- Ease of structural enhancement. Chances are good that wind-load requirements have changed since the original building construction. Therefore, structural enhancement is often necessary. During the Recover process, multi-span clips can easily accomplish this goal. In case you aren’t familiar with multi-span clips, you can learn more about them in the “Ways to Reduce Cost of a New Metal Roof” section of this eBook. In comparison, adding structural framing is much more difficult and expensive with the Remove and Replace method.

# REROOFING SNAPSHOT

There are four common approaches to commercial roof replacements involving metal roof panels: Remove and Replace; roof coatings, single-ply Recovers, and metal Recovers. Let's take a closer look at each of them.

## REMOVE & REPLACE

The Remove and Replace approach has been the go-to reroof option for decades. As the name implies, this approach involves tearing off the old metal roof and installing a new metal roof in its place. While this is undoubtedly a long-term solution, this eBook will discuss how this method proves to be an expensive option with regard to business interruption and higher material and labor costs.

## ROOF COATINGS

Roof coatings are certainly the least expensive approach for reroofing over metal roofs, but they are also widely recognized as short-term “bandages.” Part of the reason lies in the fact that metal roofs expand and contract much more than other roofing materials. This expansion, especially at lap joints, can literally cause coatings to tear apart, rendering them totally ineffective as a long-term solution. However, it's essential to realize that even if roof coatings resist the damage caused by expansion and contraction, their life expectancy is limited to 10 years or less.

## SINGLE-PLY RECOVERS

Single-Ply Recovers over metal roofs offer an improved 20-year life expectancy. However, they change how the metal building structure was initially designed to drain water from the roof and have consequently led to roof collapses. In fact, a recent article published in Professional Roofing magazine highlighted structural and safety concerns with Single-Ply Recovers. To read the article [click here](#).



These two images show the potential risk of installing a single-ply roof over a metal building roof. Fortunately, no one was in the building when the roof collapsed.

# REROOFING SNAPSHOT

## METAL ROOF RECOVERS

Recover solutions involve leaving the existing metal roof in place and installing a new metal roof over the existing roof by attaching the new roof panels through the old roof into the structure, or deck, below. Compared to the other options just discussed, Metal Roof Recovers are taking the market by storm.



# SYSTEM COMPARISONS

The only two reroofing options currently available that offer an anticipated life expectancy of **60+ years** are the Remove and Replace and the Recover approaches. Consequently, the remainder of this eBook will focus on these two approaches.

## TEAR-OFF EXPENSE

When you opt for a Recover approach instead of Remove and Replace, you save all of the costs associated with tearing the old roof off. Not only is the tear-off and disposal of the old roof expensive, but it's also highly disruptive to your business.

## BUSINESS OPERATION IMPACT

While tear-off expenses can add up quickly, most building owners ultimately select the Recover path because the Remove and Replace approach simply impacts their business too much. Downtime for employees, manufacturing and day-to-day business operations due to disruptions from an open roof during the Remove and Replace process are just too significant. Conversely, because Recover applications go right over the existing roof, there are limited, if any, disruptions to day-to-day operations.

## SAFETY CONSIDERATIONS

The Remove and Replace option can also create safety concerns when working with pre-engineered metal buildings. After removing the original panels, the installation crews often work over open framing (perhaps 20-30' off the ground) versus a Recover where installers are working/walking on the existing roof.

In addition to contractor safety, there is also less chance for falling debris and tools on roof Recover jobs. Conversely, Remove and Replace projects can allow items to fall easily through the open framing with risk of injuring employees and damaging equipment, inventory and finished goods on the ground.



# SYSTEM COMPARISONS

## REDUCED LANDFILL DEBRIS

On the positive side, metal roofing is a recyclable product. However, transporting the panels after tear-off in a Remove and Replace approach still adds unnecessarily to our carbon footprint. In addition, Remove and Replace projects generate excessive amounts of trash, such as insulation and underlayments. For these reasons, Recover is a much more environmentally friendly approach.



## REDUCED PROJECT CONSTRUCTION TIMELINE

In most cases, leaving the existing roof in place (Recover approach) can significantly decrease the time necessary to complete the reroofing operation.

Imagine day one of a roof repair with both options:

- **Remove and Replace Approach:** The contractor shows up and starts physically taking the panels off the roof. Unfortunately, now instead of a few leaks here and there, employees, equipment and finished products are entirely exposed to the elements such as rain and temperature extremes. Consequently, in many cases, business operations are either completely halted or moved to temporary quarters. Both involve considerable hard and soft costs.
- **Recover Approach:** The contractor arrives on the site and starts installing new panels over the top of the old ones. Employees aren't frustrated or inconvenienced, and business operations literally continue like they would on any other day.

## BUILDING & ENERGY CODES

Local and national building codes also bear consideration in a comparison of the two systems. For example, local building codes typically require owners to bring the building up to current insulation requirements when completing a roof repair via the Remove and Replace method. However, Recover work is often exempt from the new stricter energy codes.

# WAYS TO REDUCE COST OF A NEW METAL ROOF

Making a sound financial investment, such as choosing a metal roof, can pay huge dividends with reduced maintenance and interruption costs to building owners. In addition, since standing-seam roof systems can have a life expectancy of 60+ years, there are some definite life cycle cost advantages. Admittedly, the improved performance comes with an initial price tag higher than lower-performing competitive options.

Many building owners fail to realize that there are several different ways to save money on a new metal roof without making any sacrifices to the integrity or longevity of the roofing system. They are:

- Symmetrical vs. Asymmetrical Roofing Systems
- On-site Panel Production
- Roof Panel Width
- Weathertightness Warranties
- Installer Training
- Multi-Span vs. Individual Clips



# WAYS TO REDUCE COST OF A NEW METAL ROOF

## SYMMETRICAL VS. ASYMMETRICAL ROOFING SYSTEMS

Like every other industry, metal roofing and siding panels have evolved over the years. As a result, today's product families offer quicker installation and easier modification during ownership. Symmetrical vs. asymmetrical standing-seam roof panels are a great example of product evolution. As the name might imply, one panel looks the same on both sides (symmetrical), and the other panel looks different on both sides (asymmetrical). While at first blush that difference might appear minor, it's actually quite significant for the following reasons.

- **Ease of Future Repair/Modifications:** Since a metal roof can last 60+ years, most building owners realize that repairs or modifications will be likely at some point. Because the panel is the same on both sides, symmetrical panels can be easily removed and replaced after the initial installation. Conversely, based on their panel design, asymmetrical panels often require contractors to remove the whole side of a roof when modifications or repairs are necessary. Want to learn more? [Click here](#) to see this video to see how easy it is to replace a symmetrical panel.
- **Center Starts:** Roofing contractors start installing panels at one end of the building and work their way across the roof in a one-by-one sequence with traditional or asymmetrical panels. With symmetrical panels, however, the contractor can begin panel installation from any point on the roof. In addition, they can skip over penetrations and come back to them later, or even have top installers work on complex details while the rest of the crew continues sheeting the roof. These two labor-saving advantages can significantly reduce completion time and also offer a higher quality roof system.
- **Reduced Scrap:** Because symmetrical panels are the same on both sides, they allow the installer to use the drop cut off of one panel on the opposite side of the roof plane for projects with hips and valleys. The ability to flip panels helps reduce scrap and overall job cost that simply isn't an option with asymmetrical panels.
- **Increased Thermal Movement:** By using a fixed clip and allowing the panel to move freely over the clip, symmetrical panels offer greatly enhanced thermal movement. Traditional asymmetrical roof systems that incorporate 2-piece floating clips have a certain amount of travel that the panel can experience before the clip binds up. This clip style limits the length of a panel run from eave to ridge. At that point, the only option is to step down onto a lower roof plane. Step-down flashings are one of the greatest sources of leaks on metal buildings.



This photo shows an example of a two-piece asymmetrical standing seam panel clip destroyed by excessive thermal movement of the roof panels. The panels were too long for the clip.

# WAYS TO REDUCE COST OF A NEW METAL ROOF

## ON-SITE PANEL PRODUCTION

Panel end-laps occur in long panel runs when two or more asymmetrical panels are joined together end-to-end. In addition to being extremely time-consuming to install, end-lap conditions are the single most preventable source of leaks on a metal roof. When correctly installed (and often they aren't!), panel end-laps rely on screws penetrating the roof panel and tape sealant to make the system weathertight (see image below). Unfortunately, these components represent a weakness in the roofing system that undoubtedly shortens the potential lifespan, driving the cost of ownership up.



Choosing a roof system capable of on-site production for panel lengths above 50' eliminates the lap issue because on-site operators can produce panels up to 250' long right onto the roof plane. This approach reduces the chance of future leaks and also dramatically reduces installation labor. A double win for sure! Consequently, we're proud to offer on-site production for several of our panel profiles. If you want to learn more about the possibility of on-site panel production for your next project, contact us by [clicking here](#).



On-site panel production offers two additional avenues for cost-savings:

- First, site-forming the panels right onto the roof eliminates packaging costs. The savings here are two-fold. The lumber cost for crating material is omitted but you're also avoiding the cost for crews to unpack the material and then remove the lumber from the roof top back to the ground. Disposal fees for the crating material are also avoided.
- Secondly, increased trucking capacity reduces freight costs since coils take less room on trucks than roll-formed panels.

# WAYS TO REDUCE COST OF A NEW METAL ROOF

## ROOF PANEL WIDTH

Most manufacturers offer standing-seam roof panels in widths from 16"-24". At face value, the decision of panel width may not seem overly important to you. However, the decision is worth consideration for a couple of reasons.

While narrower panels are more expensive to purchase and install, they typically aren't plagued by a phenomenon called oil-canning. If you're not familiar with oil-canning, [click here](#) to read our blog post to learn more. While oil-canning doesn't impact your roofing system's performance or life expectancy, some owners find it troublesome from an aesthetic standpoint. For this reason, if your roof is highly visible, you may want to use narrower panel widths, even though they are more expensive to purchase and install.

For owners who either aren't concerned with the possibility of oil-canning or those with a roof that isn't highly visible, wider panels offer the most cost-effective metal roofing approach. Wider width panels, like 24", are more economical to purchase and install much more quickly than their 16-18" counterparts. To further illustrate this point, let's consider a double sloped building 80' wide by 100' long. When using a 24" panel, you would need 50 panels on each side, or 100 panels total. Conversely, a 16" panel would require 75 panels on each side or 150 total. A narrower panel means 50% more panels are purchased, shipped and handled by installation crews. Consequently, you can see how quickly a small thing like panel width impacts your overall project cost.

## SKIP THE WEATHERTIGHTNESS WARRANTY

One of the best ways to save money on a new metal roof is to have a great contractor install the roof from the beginning and then skip the additional cost of a manufacturer issued weathertightness warranty. Warranty costs range from \$0.20 to \$0.40/square foot, and rarely do owners recoup the additional investment. While the square foot cost appears minimal, consider this example. For a 100' x 200' building, you're talking 200,000 square feet at an average cost of .30 per square foot for a total of \$6,000. Admittedly, that's not a great deal of money until you consider the reality that a properly installed metal roof seldom leaks. However, the weathertightness warranty market is big business for some manufacturers, so warranties are often heavily promoted.

At McElroy Metal, we do not use weathertightness warranties as a marketing tool or revenue stream. Instead, we would prefer that building owners hire a quality installer from day one and put that extra warranty money in their pocket.

With that said, we're happy to supply a weathertightness warranty for situations where it's vital to the owner. However, since there are coverage and liability differences vary greatly between manufacturer warranties, we always recommend reading the fine print. At McElroy Metal, we've worked hard to be transparent and inform building owners what they can and can't expect from a weathertightness warranty. [Click here](#) for more information.

# WAYS TO REDUCE COST OF A NEW METAL ROOF

## INSTALLER TRAINING

There's simply no doubt that crews with specific panel experience can install products more quickly and more effectively than when working with an unfamiliar product. Consequently, working with an installer familiar with the system you've chosen to use is a great way to save cost and ensure proper system installation.

To this end, it's also essential to work with a manufacturer who places very high importance on installer education. Some manufacturers offer their training via strictly online learning classes, while others like McElroy Metal offer robust hands-on training classes.

## MULTI-SPAN VERSUS INDIVIDUAL CLIPS

During a Remove & Replace project, structural framing is often added to open-frame metal buildings' corners and edge zones to help meet current wind-load requirements.

Beefing up the structure means installing additional purlins below or above the old roof to add attachment points for the new roof panels. As you might expect, adding framing to an existing building is expensive, time-consuming and highly disruptive to the building occupants since it's traditionally done after removing the existing roof.

Conversely, with a symmetrical panel in a Recover application, continuously roll-formed clips running the entire panel length improve the structural integrity. These multi-span clips can be utilized over the roof as the whole or in specific areas where additional uplift pressures exist such as along the eave or the building corner zones.



Using multi-span clips can triple the wind uplift capacity without removing the original roofing system. Consequently, this approach dramatically reduces labor, material cost and disruption to occupants and business operations.

# ENERGY CODES AND INSULATION CONSIDERATIONS

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## ENERGY CODES AND INSULATION CONSIDERATIONS

Section C-503 of the International Energy Conservation Code (IECC) requires owners to bring the building up to current insulation requirements when altering a structure, including a Remove and Replace roof modification. The code exempts roof Recovers from this requirement.

The code states that roof Recovers are an alteration that “need not comply with the requirements for new construction, provided that the energy use of the building is not increased.” While that might not seem like a big deal, it can represent significant cost-savings, especially if adding insulation is unimportant to the owner.

Consider a building owner with a pre-engineered metal building planning for a Remove and Replace repair option. While requirements vary by code and geography, it’s pretty common for 6” of additional insulation to be required to meet the new stringent energy codes. Sadly, the cost of the insulation is only one part of the equation. You’ll also be facing some significant labor costs. Labor will be required to remove and dispose of the old materials, plus the cost to install the new insulation. Additionally, many building owners overlook the disruption that removing the roof presents. All of that can be avoided by simply going with a Recover instead of Remove & Replace.

**Bottom Line:** The Recover approach allows the building owner (instead of the government) to decide on the financial investment of additional insulation. For some building uses, owners embrace and even exceed the new requirements, but it just may not make economic sense in other situations.

# CHOOSING A PARTNER

Selecting a qualified partner for the reroofing journey is critical. While there are plenty of people and companies advising on roofing issues, few have the experience of McElroy Metal. We have been in the metal roofing business and solving problems for more than 57 years. Our interest is in helping building owners find the best long-term solution.

## WHAT'S OUR STORY?

We love to use our experience to help building owners find the solution that fixes their problems for the long-term at the best possible value.

McElroy Metal has participated in thousands of jobs and tens of millions of square feet of roof Recover projects. Over the years, we've successfully addressed all kinds of unique problems. Additionally, we hold numerous patents and are a trusted education partner of Roofing Consultants International (RCI). McElroy Metal's National Recover Manager, Charlie Smith, co-authored RCI's two-day Metal Roofing course, and is a sought-after speaker at industry trade shows and events. To connect with Charlie please click [here](#) to submit a contact form.



McElroy Metal also has a rigorous testing program to ensure our systems perform as designed in real-life applications. For example, our in-house ASTM E1592 Test Chamber is a valuable asset that enables our engineers to test the wind uplift capabilities of our many systems.

Beyond the knowledge and expertise of our National Recover Manager, Charlie Smith, and our in-house engineering and testing group, we are also very proud of our in-field support. McElroy Metal has 25 certified manufacturers/installers that own the equipment to manufacture and install our symmetrical 238T roof systems. We started this program to align McElroy Metal with some of the best sheet metal roofing contractors in the country and provide them the advantage of working at a reduced cost since they manufacture the panel on-site using material supplied by us. This team of highly qualified contractors can help you solve your problem with the highest quality solution at the lowest possible cost while still offering a McElroy Metal Weathertightness Warranty if desired.

We also have more than 500 qualified and factory-trained contractors to install our roof systems that purchase formed panels directly from one of our manufacturing facilities or one of our on-site manufacturing operations. These contractors have completed McElroy Metal's two-day, hands-on training class to learn how to work with our products and install per our recommendations and details.

Admittedly, McElroy Metal isn't the only game in town. For owners looking for options outside of McElroy Metal, there are some key considerations and questions to ask your potential partners.

# CHOOSING A PARTNER

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## FINDING THE RIGHT PARTNER

It is vital that the reroofing partner selected has extensive knowledge and experience on the topic of reroofing. Reroofing is an area of specialty within the roofing industry, and consequently requires an entirely different level of expertise than general roofing experience. To say that reroofing is another animal is an understatement. Therefore, it's essential to research and vet potential partners thoroughly. While certainly not an exhaustive list, the questions below should be a good starting point in these conversations.

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### QUESTIONS TO ASK INSTALLERS TO DETERMINE REROOFING EXPERTISE:

- Length of experience with reroofing-specific applications?
- How many square feet of reroofing have they successfully completed?
- What different types of systems have they used?
- Which system is their preferred, and why?
- What manufacturer certification classes have they completed?
- How many projects have they installed?

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### QUESTIONS TO ASK POTENTIAL MANUFACTURERS:

- How many certified/qualified installers do they have in the specific project area?
- What patents does the manufacturer hold?
- Is the contractor you're considering certified with them? If so, how long have they worked with the contractor?
- What issues/complications has the contractor you're considering experienced on previous projects?
- What degree of complexity can the installer handle?

# SUMMARY

Admittedly, no one wants the hassle and expense of replacing a worn-out roof. Yet, non-performing roofs negatively impact business operations, reduce building values and expose inventories to damage and employees to health risks, so they simply can't be ignored. Fortunately, by using Recover technology, replacing a roof is not as complicated, expensive, invasive or cumbersome as it once was.

Like McElroy Metal's 238T and Trap-Tee, symmetrical roof panels are hands down the best-standing seam metal roof systems on the market today. The Metal-Over-Metal Recover approach maintains structural integrity, represents a cost-effective option, and can last 60+ years for a price that can be competitive with Single-Ply Recover without the risks of roof collapse.

## ABOUT MCELROY METAL

Incorporated in 1963, McElroy Metal is an employee owned business. McElroy Metal holdings include 14 manufacturing facilities and 29 Service Centers located throughout the United States.

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