



Brad Hays



SBC Roof Series: Metal Roof System

A metal roof is a roofing system made from metal pieces or tiles. It is a durable and long-lasting option that provides protection against the elements such as rain, snow, and wind. Metal roofs are known for their energy efficiency, as they can reflect solar radiant heat, leading to potential cost savings on cooling expenses. Additionally, they are fire resistant and can often withstand high winds. The design and style of metal roofs can vary, with options for different colors, textures, and shapes to suit various architectural preferences. Overall, metal roofs are a popular choice for homeowners and building owners seeking a durable and low-maintenance roofing solution.

The strength of a metal roof system primarily comes from the structural integrity of the roofing materials, the metal panels themselves, the fastening method, and the underlying roof deck. The proper installation of metal panels, along with their attachment to the roof decking or structural supports, is crucial for ensuring the overall strength and durability of the roof.

Metal roofs come in a variety of designs and styles to suit different architectural preferences. Some common designs and styles of metal roofs include:

1. **Standing Seam Metal Roof:** This style features vertical metal panels with raised seams where adjacent panels join together.

A standing seam metal roof is a popular type of metal roofing system known for its distinctive design and durability. It features raised vertical seams that run from the ridge of the roof all the way down to the eaves. These raised seams are joined together to create a continuous, water-tight seal, providing excellent protection against the elements.

One of the key characteristics of a standing seam metal roof is its sleek, modern appearance, making it a popular choice for contemporary architectural designs. The standing seams also add structural strength to the roof, helping to prevent leaks and providing resistance against wind uplift. Additionally, this style of roofing allows for thermal movement, enabling the roof to expand and contract with temperature changes without compromising its integrity.

Standing seam metal roofs are available in a variety of metal types, including steel, aluminum, and copper, and they can be coated in different colors to match the overall aesthetic of a building. Overall, these roofs are valued for their longevity, low maintenance, and energy efficiency, making them a practical and attractive roofing option for many residential and commercial properties.



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The sizes of standing seam metal roofs can vary based on the specific manufacturer and their product offerings. Typically, the width of each panel can range from 12 to 20 inches, with larger custom widths also available in some cases. Panel lengths can often be custom-cut to fit the dimensions of a particular roof, but standard lengths can range from 8 to 24 feet.

The dimensions of standing seam metal roofs are often tailored to the specific requirements of a building, taking into account factors such as roof pitch, architectural design, and overall structural considerations. Additionally, different seam profiles and rib heights may be available, allowing for customization to best suit the aesthetic and functional needs of a given project.

When considering a standing seam metal roof, it's important to work with a qualified roofing professional or manufacturer who can provide guidance on the best panel sizing for your particular application.

2. **Metal Shingle Roof:** These roofs are designed to resemble traditional shingle roofs but are made of metal for added durability.

Metal shingle roofs are a type of roofing system that mimic the traditional appearance of asphalt, wood, or slate shingles but are constructed using metal materials for added durability and longevity. These metal shingles come in a variety of shapes and designs, tailored to resemble the look of different types of traditional roofing materials. The metal shingles are typically made from materials such as steel, aluminum, or copper, depending on the desired aesthetic and performance characteristics.

One of the key advantages of metal shingle roofs is their durability and resistance to harsh weather conditions, such as wind, rain, and hail. They also offer better longevity than traditional shingle roofs, often lasting 50 years or more. Additionally, metal shingle roofs are lightweight, fire-resistant, and recyclable, making them an environmentally friendly choice.

Installation of metal shingle roofs is relatively straightforward, and they can be installed over existing shingle roofs in some cases, potentially saving time and cost during the installation process. Overall, metal shingle roofs offer a combination of traditional aesthetic



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appeal and modern performance benefits, making them a popular choice for homeowners seeking a long-lasting and visually appealing roofing option.

The sizes of metal shingle roofs can vary based on the specific manufacturer and the design of the shingles. Metal shingles are available in various shapes and sizes to replicate the appearance of traditional roofing materials such as asphalt, wood, or slate shingles.

Typically, metal shingles are manufactured in standardized sizes to ensure ease of installation and a consistent appearance on the roof. These sizes may vary for different styles and profiles, but common sizes often range from approximately 12 to 18 inches in width and 12 to 24 inches in length. It's important to note that these dimensions are general estimates and can vary based on the specific product and manufacturer.

As with any roofing material, it's essential to consult with the manufacturer or a roofing professional to determine the specific sizes and dimensions available for the metal shingle product of interest. They can provide guidance on selecting the appropriate sizes based on the roof's design, architectural requirements, and desired aesthetic outcome.

3. **Corrugated Metal Roof:** Corrugated panels have repeating grooves that provide added strength and help to displace water efficiently.

A corrugated metal roof is a type of roofing material that is characterized by its distinctive wavy or rippled pattern. It consists of metal panels with alternating ridges and grooves, giving it increased strength and stability, as well as efficient water drainage. Corrugated metal roofs are commonly made from materials such as galvanized steel, aluminum, or zinc.

These roofs are renowned for their durability, making them suitable for various applications, including residential, commercial, agricultural, and industrial buildings. The corrugated design helps to displace water, snow, and debris, which contributes to the roof's ability to withstand harsh weather conditions.

In addition to its practical benefits, corrugated metal roofing is valued for its lightweight construction, fire resistance, and low maintenance requirements. It's also an energy-efficient option, with some metal panels designed to reflect solar radiant heat, potentially reducing cooling costs in warmer climates.

Corrugated metal roofing comes in standard sizes, with panels typically ranging from 26 to 36 inches in width and from 6 to 12 feet in length. These measurements can vary based on the manufacturer and specific product variations. Overall, corrugated metal roofs offer a



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blend of practicality, resilience, and aesthetic versatility, making them a popular choice for a wide range of architectural styles and building applications.

4. **Metal Tile Roof:** These metal roofs are designed to mimic the appearance of traditional clay or concrete tiles while offering the benefits of metal.

A metal tile roof is a type of roofing system that is designed to replicate the appearance of traditional clay or concrete tiles, while offering the durability and other advantages of metal. These metal tiles are created to mimic the shape, texture, and color of classic roofing materials, providing a visually appealing alternative to traditional tile roofs.

The metal tiles are typically made from materials such as steel, aluminum, or copper, and are available in a variety of profiles and finishes to suit different architectural styles. They offer the aesthetic charm of authentic tiles while delivering enhanced performance characteristics, including resistance to extreme weather, fire resistance, and a longer lifespan.

Metal tile roofs are known for their lightweight nature, which can reduce structural stress on the building, and they are often designed to interlock with each other, allowing for easier and more secure installation. Additionally, these roofs require minimal maintenance and are recyclable, making them an environmentally friendly choice.

Sizes of metal tile roofs can vary, but standard tile dimensions often range from approximately 12 to 16 inches in width and 16 to 22 inches in length. These sizes can vary depending on the manufacturer and specific product offerings.

Overall, metal tile roofs offer the timeless appeal of traditional tiled roofs with the added benefits of metal, making them an attractive and practical option for residential and commercial buildings.



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5. **Metal Shake Roof:** These roofs replicate the look of cedar shakes or wood shingles but with the added durability and fire resistance of metal.

A metal shake roof is a type of roofing system that imitates the look of traditional cedar shakes or wood shingles, while offering the durability and low-maintenance benefits of metal. These metal shakes are designed to replicate the natural, rustic appearance of wooden roofing materials, providing a classic aesthetic with modern performance attributes.

The metal shakes are typically constructed from materials such as steel, aluminum, or copper, and are available in various profiles and finishes to closely resemble the texture and color of wood shakes. This allows homeowners and building owners to achieve the desired architectural style while benefiting from the durability and longevity of metal roofing.

Similar to other metal roofing options, metal shakes roofs are known for their resistance to fire, extreme weather, and pests. They also offer excellent longevity and often come with warranties lasting several decades. Additionally, these roofs are lightweight, recyclable, and require minimal maintenance, making them an environmentally friendly and cost-effective choice.

Sizes of metal shakes for roofing can vary based on the manufacturer and the specific product offerings. However, standard shake dimensions often range from approximately 8 to 14 inches in width and 16 to 22 inches in length. It's important to consult with the manufacturer or a roofing professional to determine the exact dimensions available for a particular metal shakes roofing product.

In summary, metal shakes roofs offer the timeless beauty of wooden shakes along with the durable, practical benefits of metal, making them a popular choice for those seeking traditional charm and long-lasting performance in a roofing material.

These styles vary in their appearance, installation method, and overall aesthetic, providing options for homeowners and building owners to choose from based on their preferences and specific architectural needs.

The components of a typical metal roof can vary based on the specific design and installation method, but here are some common components:

1. **Metal Panels:** These are the primary covering of the roof, forming the external layer that provides protection from the elements. Metal panels come in various shapes and styles, such as



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standing seam, corrugated, or metal shingles.

2. **Underlayment:** Underlayment refers to an additional layer of material installed underneath the metal panels. It provides a secondary barrier against water infiltration and can enhance the roof's overall weather resistance.
3. **Flashing:** Flashing components help to prevent water from seeping into vulnerable areas such as roof intersections, valleys, and transitions. Flashing is typically made of metal and serves as a critical component for maintaining a watertight seal in these areas.
4. **Trim and Edging:** Metal trim and edging serve both functional and aesthetic purposes, providing a finished appearance to the roof while also covering and protecting the edges of the metal panels.
5. **Fasteners:** These are the hardware components used to attach the metal panels to the roof decking or structural supports. Fasteners can include screws, clips, or other types of attachment devices, depending on the specific roof design.

Metal panel screws and clips are commonly used fastening components in the installation of metal roofs. These fasteners play a critical role in securing metal panels to the roof deck or structural supports, ensuring the overall stability and weather resistance of the roof system. Here's an overview of metal panel screws and clips:

1. Metal Panel Screws:

- Screws are typically made of corrosion-resistant materials such as stainless steel or coated carbon steel to withstand exposure to the elements.
- They come in various lengths and sizes to accommodate different panel thicknesses and attachment requirements.
- The heads of the screws may be designed with sealing washers or gaskets to provide an additional seal against water infiltration.
- Self-tapping screws are often used in metal roofing installations, allowing them to create their own threads as they are driven into the metal panels and roof deck, providing a secure attachment.

2. Metal Panel Clips:

- Clips are used as an alternative attachment method to screws and are designed to securely hold metal panels in place without penetrating the panels themselves.
- They are often made of stainless steel or other durable materials to resist corrosion and provide long-lasting performance.



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- Clips can offer flexibility in accommodating thermal movement of the metal panels and can be designed to allow some degree of expansion and contraction without compromising the roof's integrity.

Both screws and clips are essential components in the proper installation of metal roofs, and the specific selection of fasteners may depend on factors such as the type of metal panels being used, the profile of the roof, and local building code requirements. It's crucial to use high-quality, manufacturer-recommended fasteners and ensure that they are installed according to the manufacturer's specifications to achieve a secure, weather-resistant, and long-lasting metal roof system.

6. **Roof Decking:** The roof deck forms the structural foundation for the metal roof, supporting the weight of the roofing materials and providing a flat and stable surface for installation.
7. **Ridge and Eave Closure:** These components are used to finish and seal off the top (ridge) and bottom (eaves) edges of the metal roof, helping to prevent water ingress and offering a neat, finished appearance.
8. **Battens:** Battens are sometimes used with metal roofs, particularly in certain installation methods and for specific types of metal roofing systems. Battens are narrow strips of material, often wood or metal, that are installed horizontally over the roof deck before the metal panels are put in place.

Battens used with metal roofs primarily serve as a means of support, ventilation enhancement, and thermal performance improvement, rather than providing significant additional strength to the roof system. While battens can contribute to the overall performance and longevity of the roof, their primary functions are related to airflow management, noise reduction, and insulation properties.

While battens can offer several advantages for metal roofs, such as improved ventilation and energy efficiency, it's important to consider their role primarily as a support and enhancement component rather than a significant contributor to the structural strength of the roof system.

Battens create a small space between the metal panels and the roof deck, which can help manage heat and moisture while providing a thermal break. However, the primary role of providing structural strength lies within the metal panels and their secure attachment to the roof's support structure.



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The use of battens can provide several benefits when installing a metal roof, including:

1. **Airflow:** Battens can create a small space between the metal panels and the roof deck, allowing for improved airflow and ventilation, which can help manage heat and moisture under the roof.
2. **Thermal Performance:** The space created by battens can provide a thermal break, improving the overall energy performance of the roof system by reducing heat transfer.
3. **Noise Reduction:** Battens can help mitigate potential noise caused by expansion and contraction of the metal panels during temperature changes by providing a cushioning effect.

It's important to note that not all metal roofing systems require battens, and their use can depend on the specific roofing design, local building codes, and the preferences of the homeowner or roofing professional. When considering a metal roof installation, it's best to consult with a qualified roofing contractor who can provide guidance on whether battens are necessary or beneficial for the specific roofing system being installed.

Remember, the exact components and their specific applications may vary based on the type of metal roof, installation method, and local building codes. It's essential to consult with a qualified roofing professional to ensure proper installation and maintenance of the metal roof components for optimal performance and longevity.



* Check with a licensed roofing contractor for additional information.