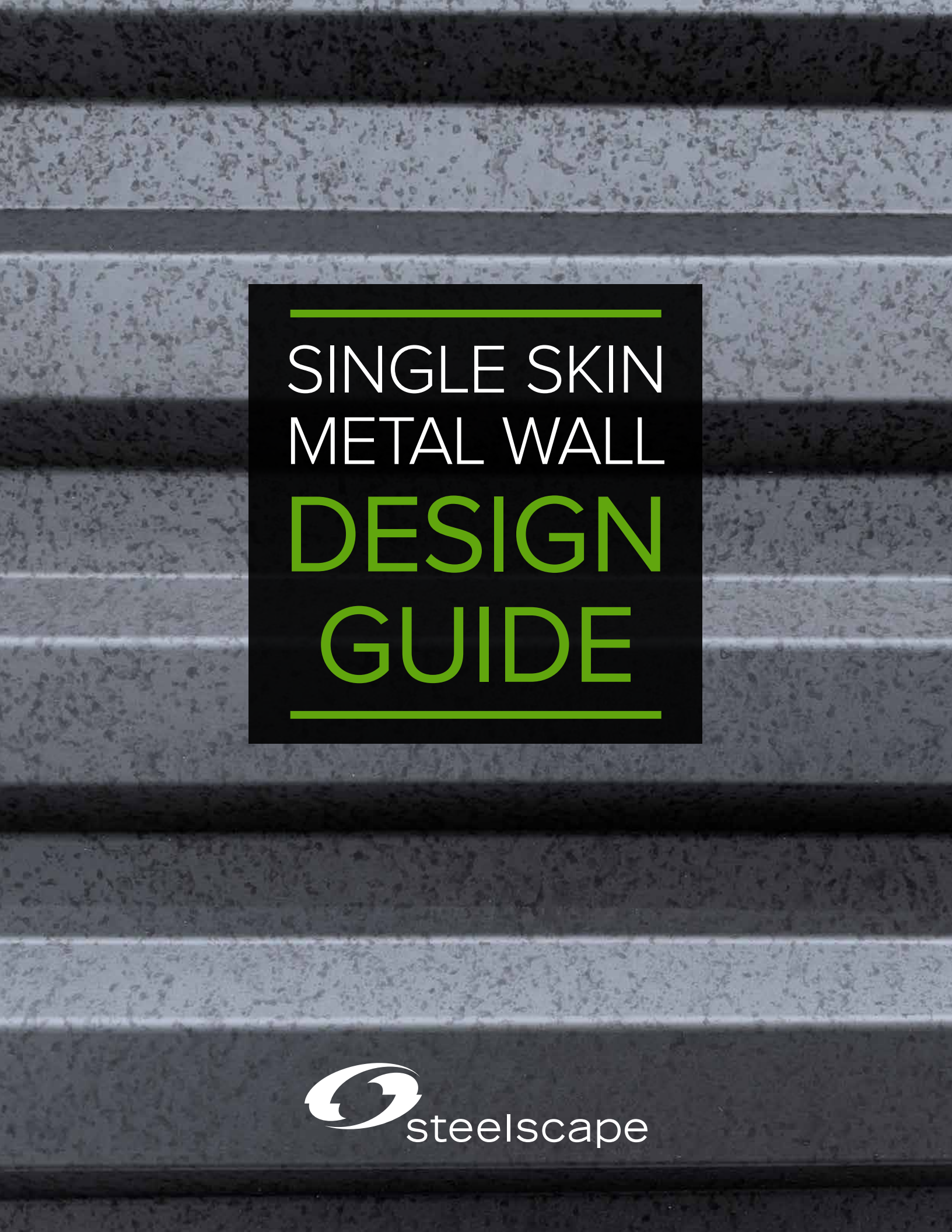


SINGLE SKIN METAL WALL DESIGN GUIDE

steelscape

SINGLE SKIN INTRODUCTION

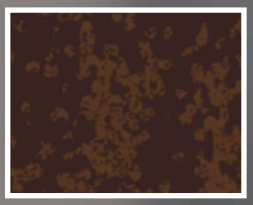
Single skin metal panels are one of the most versatile, durable and cost effective solutions for modern exterior wall design. These profiles are available in a wide variety of color options, shapes and designs, affording broad design flexibility and lustrous clean lines with evolving shadows. Single skin metal panels reflect strips of pre-painted metal that are formed into various profiles or shapes. Compared to other building materials, single skin metal panels are flexible, lightweight and easy to install; underpinning their frequent use today.

Single skin panels can be installed on a wide variety of substrates including, but not limited to: lumber, plywood, OSB, cold-formed steel, steel deck, and even concrete or masonry.

This guide is designed to provide an overview of the common forms of single skin metal panels, the designs that can be achieved with these panels and the various color options available. For details about the information presented in this guide, please contact Steelscape via steelscape.com.

Urban Slate

STEPS FOR SINGLE SKIN INSPIRATION



Natural Rust

HOW ARE SINGLE SKIN PROFILES MADE?

Single skin metal wall panels are produced through either roll forming or custom forming machines. Roll forming consists of the progressive forming of flat metal into panel designs with a consistent cross sectional shape. This process enables the metal to be formed gradually to prevent any damage to the paint while ensuring high consistency. Roll forming is a continuous process, enabling long panel lengths for clean lines spanning across structure surfaces. As large metal rollers are used to form these shapes, closed shapes and aggressive returning angles or pure ninety degree angles are difficult to produce. Similarly, deep panel designs, panel widths greater than three feet and non-symmetrical shapes are also uncommon design elements. Roll forming does not change the thickness of the metal but does add to the strength of the finished product.

Folding or stamping is an alternate process to roll forming and allows the creation of custom shapes as it is not manufactured using pre-made rollers. This process may provide more flexible design options. However, each panel is individually formed, resulting in panel maximum lengths of approximately twenty feet, and a slower, less automated process potentially leading to higher product cost.

WHY DOES THIS MATTER?

The single skin panel manufacturing process lends itself to certain design considerations, including:

- Repetitive, consistent shapes across the length of the profile
- Mostly angular lines with some sinusoidal options
- Limits on tightness/ closed nature of shapes
- Panel repeatability
- Considerations for attachment methods
- Limits on panel depth
- Limits on variability
- Long length capabilities
- Color flexibility

Vintage®

WHAT IS THE ROLE OF STEELSCAPE?

The coatings applied to the metal used in single skin products are highly important as they form a deciding factor of product aesthetics, durability and quality. For metal products, these finishes are typically applied prior to forming. The consistent finish of the surface, its warranty, corrosion performance, long-term durability and finally, the color, are all fundamental elements applied by Steelscape in the pre-painting process. Producing painted finishes in this manner ensures two things: first, the paints used must be highly durable to withstand the forming process and secondly, it ensures high product consistency and tight quality control as the paint is applied in an automated, highly controlled environment.

A single skin metal product typically consists of five important layers, the metallic coating, pre-treatment, primer, top coat and backer. The metallic coating is usually a combination of aluminum and zinc which provides corrosion resistance. Pre-treatments clean the material and enhance paint adhesion, primers prepare the substrate for painting by providing 'bite' and the top coat is the final color and first line of defense. Steelscape's expertise lies in the consistent application of these layers. For more information on Steelscape's technologically advanced paint processes, visit steelscape.com.

DESIGN OPTIONS SHAPE

Single skin metal wall panels can achieve a variety of different shapes, textures and shadow lines. The forms available are typically based on shape repetition, panel performance, lapping considerations and weatherability (such as dust collection and water shedding). Common shapes include flat and flush shapes, trapezoids, rounded squares and sinusoidal curves. Panel depths rarely extend beyond two inches deep and individual panel coverages range from twelve to thirty-six inches.

Single skin metal wall panels can achieve shape through one of two types. Concealed fastened wall panels and exposed fastened wall panels. Although fasteners can be color coded for improved integration, fastener placement can impact the installed aesthetic. Concealed fastened panels use hidden clips or fasteners (once installed) to attach the panel to the structure. This creates a cleaner look by focusing the viewer on the uninterrupted lines of the panel rather than the fasteners and the shadows they cast. Additionally, concealed fastened panels typically offer superior weather-tightness performance. Concealed fastened products typically use clips that allow for thermal expansion; the movement of panels as they expand and contract due to heat. Exposed fastened panels do not allow for this movement. To avoid the creation of elongated fastener holes over time, exposed fastened panels are often restricted in maximum length. Despite these drawbacks, exposed fastener panels are used extensively in modern building design. These profiles are more economical to purchase and install. Furthermore, their wide range of orientation and shape options enable these profiles to effectively add both color and texture to a building surface in an economical fashion.

The following section explores the aesthetic design options available with common single skin products.


FLUSH
STANDING SEAM
TRAPEZOID RIB
SQUARE RIB
SINUSODAL RIB
MODULAR
TRADITIONAL
TILE

CONCEALED FASTENED FLUSH

Single skin flat or flush panels are one of the most commonly used wall panel profiles. These products are commonly found in twelve inch widths, as the wider the panel the lower the strength and performance –even a twelve inch panel will require a specific clip to achieve building performance requirements. Twelve inch panels provides the optimum ratio between speed of install and installed performance. These panels provide a clean, flat surface when viewed from afar.

Flush panels can be specified with a reveal, which is a pronounced recessed area, to create a more discernible ribbed and textured appearance without visible fasteners. Commonly installed in vertical applications, these panels are often used to match the vertical design elements of existing structure pieces such as walls and windows.

Large flat areas in single skin metal are prone to the phenomenon known as oil-canning; the unintentional waviness of the surface. Skilled Installation, selecting a thicker material or surface striations can minimize this effect.

COLOR CONSIDERATIONS

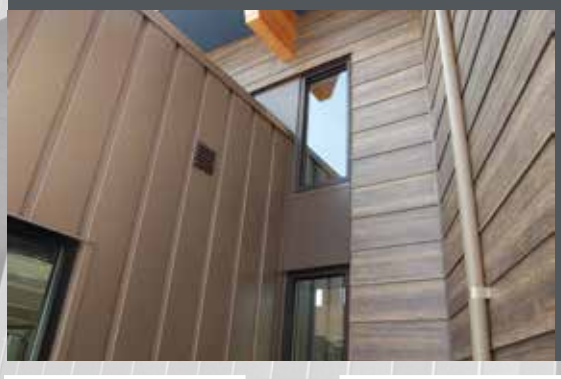
Flat surfaces are ideal for bright and engaging colors and patterns to create design accent pieces. Due to flush panel's twelve inch modularity, large flat surfaces can be modified through the use of multiple, contrasting colors and color mixing. Alternatively, flat panels in more muted colors can be used to skin buildings where large amounts of texture already exist and building designers seek to avoid conflict with other design elements. Classic metallic colors in these panels including dark silvers and bronzes work effectively as wainscoting or when used in mixed-use applications to modify the visual presence of the structure.

APPLICATIONS

- Wall accents and highlights
- Bright color focal points
- Adding texture to flat wall areas (reveal versions)
- Mixed material with wood or masonry siding
- Contrasting texture to other metal siding
- Lines to complement 90 degree design features
- Adding color diversity to surfaces

Photo Credit: Mike Walmsley

Photo Credit: Modern Building



TEXTURE | SHADOW | VERSATILITY

Vintage®

Dark Bronze

Metallic Silver

Vibrant Red

CONCEALED FASTENED STANDING SEAM

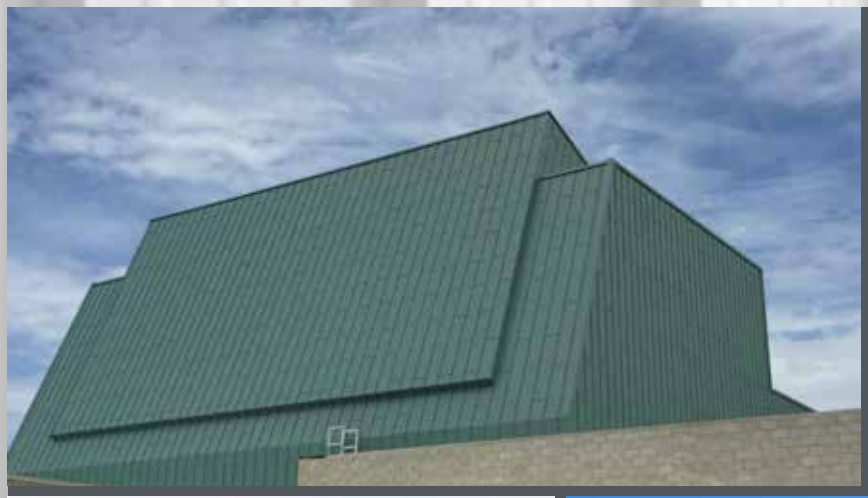
Standing seam panels are commonly found throughout the United States as a residential and commercial roofing profile. This product is highly versatile and should not be limited to simply roofs alone. Their distinctive accent lines which span uninterrupted across surfaces, create engaging finishes through shadow and texture. Installed primarily in vertical orientation, these panels are commonly produced in twelve to twenty inch widths for optimum product performance. For additional texture, panels can be split to create a tiled effect. Optional pencil ribs and striations can add texture in addition to reducing the potential effects of oil-canning. These panels are often used for their subtlety – the rib heights of these profiles (the raised seam) are usually no more than an inch creating distinctive yet modest shadows.

COLOR CONSIDERATIONS

Colors that interact well with shadows are common for these products. This includes tinted resins and metallics which evolve with natural light much like the shadows they cast. These products are often used in mixed color applications as the raised ribs help separate the space between individual colors. Alternatively these panels can be used in conjunction with the roof color to integrate roof shapes with walls to produce cohesive and complete design elements. These panels can be used to break up dark colors with additional texture created by the ribs of the panels.

APPLICATIONS

- Integrated roof and wall shapes
- High visibility areas
- Large square surfaces
- Sunlit wall areas
- Multi-colored walls
- Curved corners
- Dark wall surfaces



TEXTURE | SHADOW | VERSATILITY

Zinc Gray

Natural Antique Copper

Metallic Champagne

Tan

CONCEALED
TRAPEZOID & SQUARE RIB

Concealed fastened trapezoidal or square ribbed panels add the most texture to a wall surface through additional planes and deeper ribs. Trapezoidal ribs are commonly chosen for superior water shedding and dirt retention avoidance properties compared to square ribs when installed horizontally. Square ribs provide tighter, more pronounced lines and shadows. Concealed fastened versions of these products offer two distinct advantages - clean uninterrupted lines and texture optionality. As the majority of these panels are available in twelve or sixteen inch widths but with varying rib frequency options, they can be combined to create either repetitive of variable line and shadow options. These products are also versatile in their application, suiting both horizontal and vertical orientations.

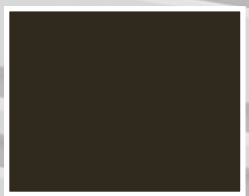
COLOR CONSIDERATIONS

The combination of enhanced texture and pattern variability is ideal for design accents or prominent surface areas. These designs pair well with both bright, engaging colors and dark tones. These panels also integrate with traditional colors when used as a more repetitive rib design without the use of unsightly fasteners.

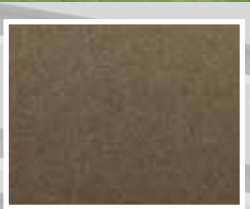
APPLICATIONS

- Areas seeking enhanced texture and shadow
- Bright feature areas
- Breaking up existing vertical or horizontal structure lines
- Reducing perceived size of a flat area
- Variable design texture
- Multi-colored walls
- Mitered corners (corners without trim)

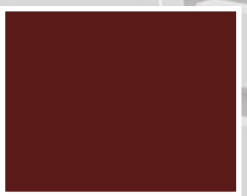
ENHANCED TEXTURE
VARIABILITY
COLOR ACCENTUATION



Dark Bronze



Sungold



Colonial Red

Silversmith

EXPOSED FASTENED
TRAPEZOID & SQUARE RIB

Exposed fastened products create many of the same shapes as concealed fastened products. These products will produce a consistent texture over the surface area. Many of these products have a deeper rib height and more pronounced pattern compared to concealed fastened offerings, enabling greater texture definition from afar. This more pronounced pattern and shadow can help conceal the exposed fasteners, which are typically installed in the low part (shadow cast) of the rib on walls. Products are suitable for vertical or horizontal orientation. This product is a popular choice for its more economical price point, and faster more straightforward installation process. These products also serve as an effective screen for rooftop elements such as exposed HVAC systems.

COLOR CONSIDERATIONS

These products provide an economical way to add accents of color and texture to an existing surface. As price sensitivity is often a driving factor, colors are often chosen from standard color palettes which are usually a combination of grays, silvers, bronzes and reds with some blue and green options. The combination of the deep ribs of these products, paired with bright colors can also provide outstanding surface texture.

APPLICATIONS

- Economical color highlights
- Economical texture additions
- Bright feature areas
- Breaking up existing vertical or horizontal structure lines
- Reducing perceived size of a flat area
- Consistent design texture
- Modern, industrial styles

ENHANCED TEXTURE
DEEP SHADOW
EFFICIENT

Zinc Gray

Champagne

Red

Metallic Copper

EXPOSED FASTENED SINUSODAL RIB

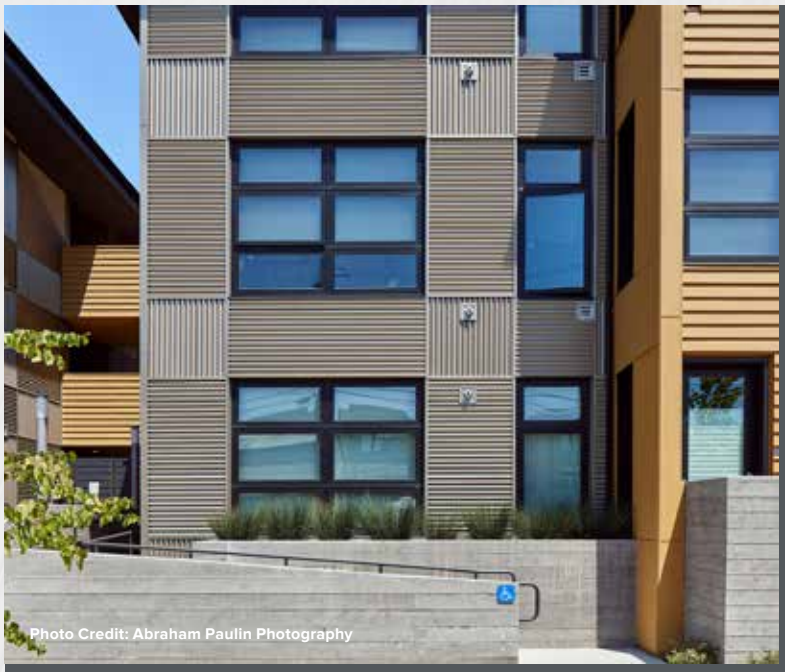
Commonly referred to as around corrugated, the sinusoidal rib is a classic metal profile used in roofing for decades. As a modern siding product, it is also an ideal choice for its timeless appearance and softer lines and shadows created by a less angular shape. These profiles are an economical siding solution to add texture and visual appeal to the surfaces of structures. These products also follow an installation process similar to other exposed fastener products. These profiles offer a shallower rib depth resulting in less pronounced shadows but also more prominent fasteners. These products can be curved readily and accommodate many architectural styles underpinning their frequent use in modern design.

COLOR CONSIDERATIONS

The softer shapes and shadows of the sinusoidal panel mean they work effectively well in almost any color. Color selection heavily depends on the other colors of the structure the designer is seeking to complement or contrast and how the texture of the corrugated profile adds to the overall design. Very dark colors such as rich blacks may struggle to highlight the shadows and textures cast by the ribs of this profile.

APPLICATIONS

- Vast options - versatile product
- Economical color highlights
- Economical texture additions
- Bright feature areas
- Reducing perceived size of a flat area
- Rustic design
- Curved applications



SUBTLETY
FLEXIBILITY
CLASSICAL

Vintage®

Champagne

Natural Rust

Burnt Rust

OTHER SINGLE SKIN SHAPES

Traditional / Agricultural – These profiles, typically available in three foot widths are designed to offer the greatest coverage and performance for the lowest cost. As a result, rib pattern and overall design favors functionality over form. The contrasting textures between the major ribs and minor ribs (for panel strength) may not produce the desired aesthetic for all applications. Color selection can be important in toning down the visual presence of these economical profiles. These type of profiles are also typically designed for economically focused applications, resulting in; paint system offerings and material thickness options that are not appropriate for all commercial and architectural applications.

Tile – Metal tiles are available in a wide variety of shapes and finishes due to their ease of forming. The installation can be more involved depending on the shape and desired weather-tightness of the structure. Single skin tiles can take on many forms including a brick style, fish scales to diamond tiling. Due to their installation complexity, tiles are often used for small design accent pieces. Because of their smaller size and modularity, tiles can also be used to add a range of colors to a singular surface.

Perforated – A product option rather than a profile, perforation is used for additional ventilation requirements or unique visual appeal. The majority of single skin profiles can be perforated in different designs and perforation options depending on product manufacturer. While adding unique appeal, perforation will impact the metal's corrosion performance and product strength.

Plate – While plate sheeting is technically a single skin product, it reflects thick pieces of heavy gauge steel that does not go through a forming process. This siding is used to create an industrial or aged look. Plate is often used for its oxidized aesthetic, as due to its thickness, the surface can corrode, without deteriorating the core steel. These products are heavy and have reduced versatility compared to regular single skin products.

Other Custom Fabrication – Metal is pre-painted prior to application, affording great flexibility to the shapes it can take on and as a result many custom options are available. A number of the characteristics of traditionally formed metal wall panels will still guide the options available with custom products. This generally means consistent lines and ribs with open angles.

Photo Credit: © Fine Line CAD Home Design, Boswell Photography, Bryan Wilkinson Design/Build

Sand Dune

Zinc Gray

Metallic Silver

Silver

DESIGN OPTIONS
COLOR & TEXTURE

The color, texture and design options available for pre-painted metal is endless. Not only does metal afford unmatched flexibility in finish options, but it also offers outstanding color vibrancy and finish durability. Modern paint technology can be used to evoke a wide range of emotions. When applied in combination with the strength of modern panel designs, these products ensure buildings will continue to evoke the same emotions and appeal for years to come.

Not all paint and finish technology is the same. Creative design visions can be achieved by using different paint types and effects. This section explores some of the finish options available to the design community.

Colonial Red

PAINT FINISHES

Solid Colors – The beauty of metal is that it can be coated in almost any solid color to fulfill a design vision. From the darkest blacks to the most vibrant reds and everything in between. Metal is often the product of choice for wall highlights and accent pieces, as its smooth surface and high gloss provides color vibrancy unmatched by other material types. Modern metal palettes have evolved in recent years to focus on versatile bronzes, grays and neutral tones. Vibrant colors such as bright reds and blues continue to be used in accent pieces. Bright colors contain organic pigments which may see these colors fade at a faster rate compared to duller colors consisting of inorganic pigments. Using a clear coat over the top of these colors will help preserve bright colors for years to come.

Weathered Copper

Metallics or Micas – Micas are specially formulated pigments added to standard paints to create a sparkling or light catching effect. Individual pigment particles are flat in nature allowing for light to reflect at various angles. This creates additional depth and a more dynamic interaction with natural light. Common micas include silver, bronze, champagne and copper tones. Please note these pigments are directional in nature and may vary from batch to batch. Designers and installers must take care in ensuring product is sourced from a singular provider at one point in time.

Metallic Copper

Pearlescent – Pearlescent paints use a similar approach as micas, but use specially formulated pigments coated with multiple colors to create an evolving color aesthetic. Pearlescent paints will create a unique color and shimmer and produce a different color from different viewing angles.

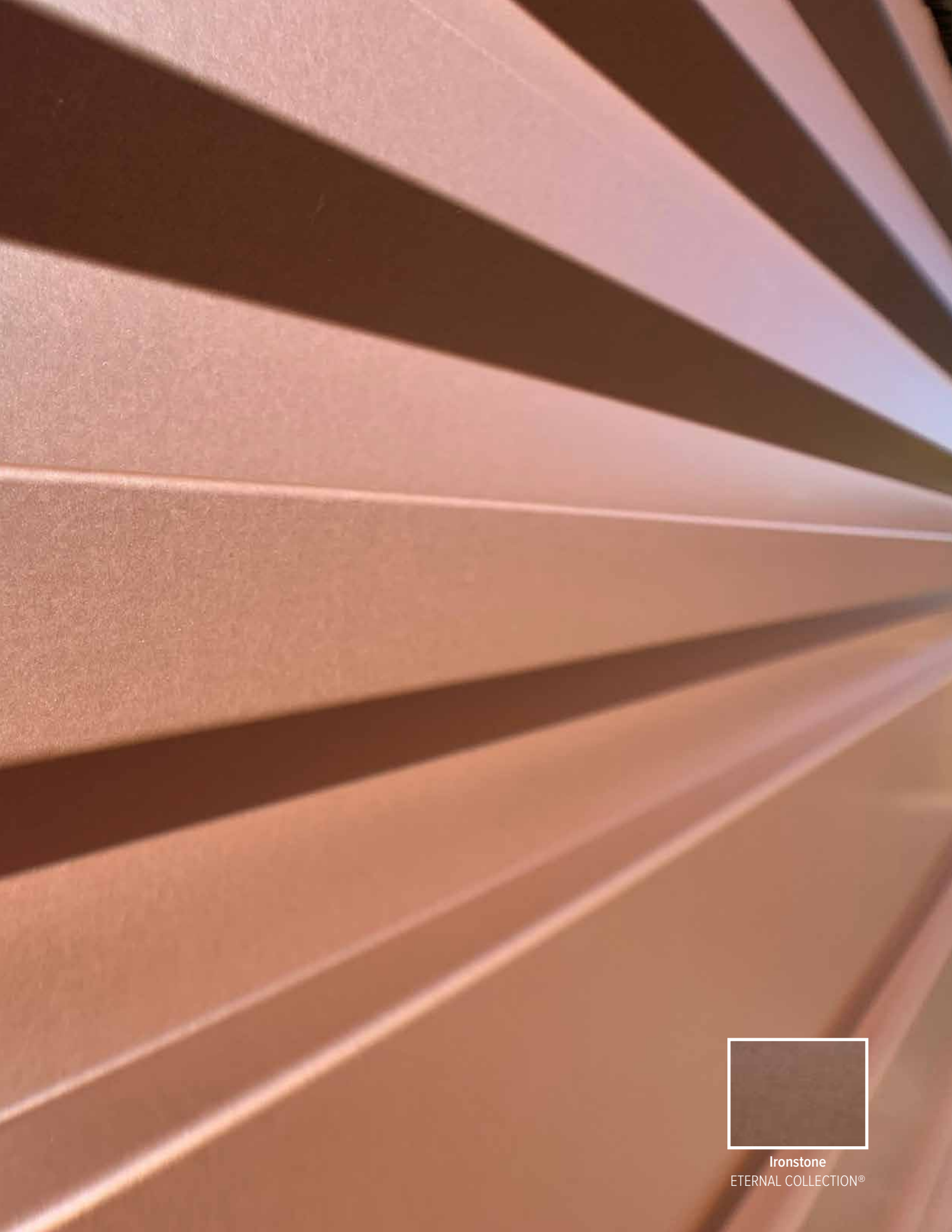
Pearlescent Copper

Tints or Resins – Tints and resins such as Steelscape's Eternal Collection®, use the combination of a translucent paint and a primeless base to create a distinctive finish. This style of finishes enables the base metal underneath to be viewed which provides enhanced texture, exudes the charm of metal and provides additional color depth.

Sungold

No Paint at All – Bare corrosion resistant steel such as ZINCALUME® does not need a top paint coat to provide long lasting curb appeal. Providing the same durability as standard painted metal, certain bare products provide a classic, distinctive finish that will stand the test of time. Initially providing a bright silver metallic luster, these finishes will naturally dull to create a long-lasting warm metallic glow. This style of finish is often selected for its surface distinctiveness and to evoke the natural beauty of metal in wall design.

ZINCALUME® Plus



Ironstone
ETERNAL COLLECTION®

MORE THAN JUST PAINT

Modern paint technology for metal has evolved to include more than just singular colors alone. This enables metal to be used in a diverse range of applications and to evoke a broader range of emotions from designers and building users. Innovations in paint types and technologies include:

Painted rust effects – Painted rusted metal finishes have the ability to evoke the emotive appeal of oxidized and weathered metal. The advantage of these finishes is that they will carry a complete paint warranty, the base metal performance is not compromised and it avoids unsightly rust runoff to surrounding areas.

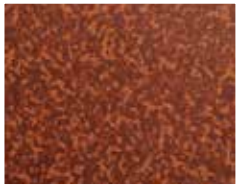
Multi-layer paint designs – Multiple paint patterns can be applied to base colors, in a process called flexographic printing. This enables the creation of distinctive finishes for added texture, or to evoke other finishes such as brushed stainless steel and wood. Despite the intricacy and depth of the design options available, these paint styles still carry the same paint warranties as traditional solid colors.

Textured finishes - Chemical properties in the paint create a 'crinkling' of the surface during the curing process of the paint. This creates a unique tactile appeal and can help reduce overall product sheen. Despite the textured finish, the paint performs in the same way as other similar metal systems and is resistant to dirt and grime accumulation.

Matte finishes – Modern paint technology has seen the development of ultra matte paint finishes. This means a broad range of solid colors but in low gloss options for improved environmental integration. Ultra matte products provide a unique satin aesthetic and integrate seamlessly with other building materials.

Embossing and stamping – Although not a painted process as listed above, metal can be processed with unique patterns, such as stucco or woodgrain, to provide an enhanced surface texture and to help dissipate sheen and glare.

The diverse range of finish options listed above are all specialties that Steelscape offer to the design community to expand the application of metal in modern building design. For more information please visit steelscape.com



Sedona Rust

Timeless Bronze

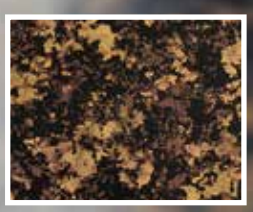
Slate Gray Rawhide

Basalt® Matte

Embossed ZINCALUME®

APPLICATIONS FOR UNIQUE FINISHES

- Rusted or aged aesthetic without performance concerns
- Surfaces seeking additional texture or to improve integration of large flat surface areas
- Desire to reduce sheen, gloss or effects of sunlight
- Seek to replicate other finishes but with enhanced durability or lower cost
- Added perceived viewing depth
- Improved integration with other building materials
- Unique or memorable wall designs



Baltic Brown

MORE THAN JUST PAINT

For painted single skin metal walls, there are three primary paint systems. These paint systems will range in their longevity of performance, cost, and the elements that they warrant. The three common paint systems include; standard polyester, silicone modified polyester (also known as SMP or enhanced polyester), and Fluorocarbon/ polyvinylidene fluoride (PVDF - or also known as the trade names Kynar 500® and Hylar 5000®). Paint systems range in performance from good (polyester), to better (SMP), to best (PVDF), although modern paint system development has narrowed the differences between a high-end standard polyester system and an SMP system.

Polyester paints are typically the most economical paint system and offer the lowest level of UV resistance when compared to SMP and PVDF systems. As a result, they usually offer the shortest product warranties. Their paint structure can be modified to suit a wide range of performance qualities and their flexibility means they can be offered in a variety of color and gloss options.

SMP paint systems are more durable compared to standard polyesters. They are modified with a different resin structure to improve their UV resistance qualities. SMP paint systems provide good weatherability (resistance to moisture, sunlight, and temperature changes) and offer a greater resistance to chalking and fading compared to polyester systems. Most residential roofing products sold today use SMP systems.

PVDF paint systems are known by several different names but they all use the same polymer and provide the most durable paint system. PVDF systems exhibit exceptional chemical, chalk, and fade resistance and can resist degradation when exposed to aggressive weather elements such as urban grime, air pollutants, salt, high temperatures and humidity. Their high formability means they can be used on a wide range of preformed shapes, which is why they are often used for high-end architectural and high-profile commercial projects. PVDF systems will cost more other systems and end users will need to determine whether this added performance is required.

Paint System	Polyester	SMP	PVDF
Overall	Good to better	Better	Best
Price Point	Cost effective	Moderate	Higher
Warranty	None to moderate	Long	Longest
Durability	Limited to good	Medium to high. Improved weatherability	Highest
Application	Versatile, but typically low exposure applications such as agricultural and industrial buildings	Wide range of construction applications including residential and commercial	High-end, high-profile, architectural and commercial projects
Other Attributes	Wide range of colors and gloss options	Wide range of colors and gloss options	Excellent chalk and fade resistance and chemical resistance

Burnt Rust

OTHER PAINT CONSIDERATIONS

Modern metal paint systems encompass a broad range of capabilities to ensure the end wall finish is tailored to its installed environment. Some considerations when selecting a finish for a single skin metal wall include:

'Cool' pigment technology - 'Cool' colors are coatings that utilize specialty pigments that have been altered chemically and physically to reflect Near Infrared (NIR) wavelengths. NIR light, which is not visible to the human eye, is responsible for heat generation within structures. Reflecting NIR wavelengths means that heat is reflected from the surface, significantly improving structure energy efficiency by reducing cooling costs.

Light Reflectance Value (LRV) - LRV often referred to as glare, measures the amount of visible or usable light that reflects from a surface. LRV is expressed as a percentage from 0 to 100; the higher the number the more visible light that is reflected. Typically, lighter colors will have a higher value than dark colors, but texture or 'matte' finishes can reduce LRV. These values are also often published on color cards.

Installation in a marine, industrial or other corrosive environments - Additional clear coat layers and high build primers can add extra protection against corrosion in severe environments. Within proximity of certain coastal or industrial environments these may be required in order to obtain a finish warranty.

Color preservation - The pigments in paint are what give it color. Organic pigments are typically derived from plants where as inorganic pigments are metallic compounds or oxides that are processed for color stability. Duller colors arise from inorganic pigments which means they are less susceptible to fading when exposed to UV light compared to brighter colors. Using a clear coat can help preserve bright, organic colors from fading.

Graffiti resistance – Some modern paint systems are available with additional coatings to provide protection against ink and paint based graffiti. By incorporating an additional protective layer in the coating process, these products allow for any graffiti to be simply wiped away by using a third party spray over the affected area. Alternatively the composition of certain resin products, such as Steelscape's Eternal Collection® or Vintage®, provide this functionality as standard.

Warrant coverage – Not all paint system offerings by product manufacturers are the same. Headline figures such as '30 years' may in fact cover different elements across different product warranties. Warranties may cover against elements including delamination, chalk and color fade. Always validate the system being proposed by the product manufacturer.


Vintage®

SINGLE SKIN TECHNICAL GLOSSARY

Chalking – The degradation of the resin system at the surface of the finish, due predominantly to prolonged UV exposure. As the resin breaks down, resin particles along with embedded pigment particles lose adhesion and take on a white appearance.

Concealed Fastener Roofing – Metal profiles where the point of attachment to the structure is not apparent once installed. Fasteners are typically concealed by the next lapped panels or are connected using clips.

Cool Colors – Coatings which utilizes infrared (IR) reflective pigments that have been altered chemically and physically to reflect IR wavelengths while still absorbing the same visible light. Reflecting IR light reduces the heat buildup in structures, thus reducing building cooling costs.

Corrugated – A common type of metal roof or wall panel design, that incorporates ribs of equal or similar size and shape to create aesthetically pleasing shapes and shadow lines.

Embossing – The process of creating a raised texture on the surface of the metal. Undertaken in a continuous process for metal applications.

Exposed Fastener or Lap Seam Panels – Panels which are lapped with one over one another, with the fastener then attached from the outside and driven directly through the metal.

Fading – Fading occurs when UV rays and substances in the environment attack the pigments in the paint and cause their color to change. Color change is typically assessed based on its variance to the base state when new, represented by Delta E (dE or ΔE).

Fastener – A common term use to describe the multiple methods in which a single skin metal profile can be attached to a structure. Includes items such as screws, bolts, nails and rivets.

Gloss and Sheen – Two terms used to describe how well a surface reflects visible light. Gloss is measured at a 60° angle from the surface, while sheen is measured at 85°.

Light Reflectance Value (LRV) – The amount of visible or usable light that reflects from a surface. LRV is expressed as a percentage from 0 to 100; the higher the number the more visible light that is reflected.

Metallic Coating – A process of applying additional metal elements, typically Zinc (galvanizing) or Aluminum and Zinc (ZINCALUME® or Galvalume®) to steel to improve corrosion performance.

Mica – Specially formulated pigments added to paint to create a sparkling or light- catching effect. This creates the effect of metal flakes in paint but with higher durability.

Oil Canning – A visual phenomenon seen as waviness or distortion in the flat surfaces of metal roofing and siding products. Created by a range of different factors including stresses in the base material, improper fastener pressure, misaligned panels and thermal expansion.

SINGLE SKIN TECHNICAL GLOSSARY

Pre-painted Metal – The continuous process of coating steel rolls, called coils, with paint (also called coil coating). This type of metal is used in metal roofs and walls. The paint is applied to the meta before it is formed into a finished product by a product manufacture.

Paint – The film applied to a surface to achieve a desired aesthetic and to protect the material underneath. Typically consists of a resins, solvents and pigments. Pigments add color, resins are the binder and add physical and chemical attributes, and solvents dissolve this combination into a liquid form.

Paint system – Consisting of a combination of the different painted layers, namely the pretreatment, primer and top coat to create a total finish solution. Paint systems can be modified to achieve different aesthetic or performance characteristics.

Primers – A coating that prepares the substrate for painting by providing 'bite' for adhesion and directly supports topcoat color and flexibility. Primers also provide corrosion resistance.

Rib – The rib of a panel refers to a raised part of a metal profile that runs consistently down the length of the panel. Ribs serve to add strength and visual appeal to a profile. Typically zero to one inch in height and less than two inches.

Roll Forming – The a process used to manufacture the majority of metal roof and wall products. A continuous production process where material is fed through a series of progressive rollers to form it into a finished state. Enables the end panels to be manufactured to desired end-user's length.

Sinusoidal – Relating to a figure that has the varied shape like sine curve; a curve above and below a central axis. For metal this refers to a consistent pattern of wave like flutes within a profile.

Standing Seam Roofing – A common metal roof type for both residential and commercial applications. The seam, is the vertical rib which interlocks between each profile and is raised from the flat base pan of the panel. The fasteners that attach these panels to the structure underneath are covered in the installation process, which is why these profiles are also called concealed fastener roofing profiles. Standing seam reflects one continuous piece from ridge to eave and are available in a variety of widths from twelve inch up to twenty inches and beyond.

Striation – The small ridges formed in flat areas of metal surfaces used to reduce the visual impact of oil-caning.

Thermal Movement – The tendency of a material to change its shape and area due to a change in temperature. For metal, heat causes the molecules to move and have a greater separation resulting in a expansion in size.

Top Coat – The top painted layer of metal which provides the visual color, offers protection from the outside elements, in addition to durability, and weatherability.

ZINCALUME® (also known as Galvalume®) – A metallic coating consisting of 55% Aluminum and 44% Zinc to offer superior corrosion resistance. Coatings using the aluminum-zinc alloy offer a number of advantages to zinc alone. Aluminum is inert and provides a protective rather than sacrificial barrier compared to zinc.

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