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INSTALLATION GUIDE & MAINTENANCE MANUAL

5-V PANEL



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IMPORTANT NOTICE

In this manual are recommendations and instructions regarding the installation of Construction Metal Product's "Series 5-V" metal roof panel system. The information within includes material that was current at the time this manual was published. As building codes change and innovations evolve, CMP remains in step and therefore retains the right to make changes to the documentation herein, without notice and at any time without the incurrence of obligation. To insure you have the most up-to-date information, please visit our web site or contact CMP's Quality Assurance Department. The construction details within are meant to represent typical materials and conditions and may not suit your project's individual needs or aspects. Furthermore, CMP strongly recommends that all projects be engineered and installed to comply with all applicable building codes, including local regulations and within the standards set by the professional roofing industry.

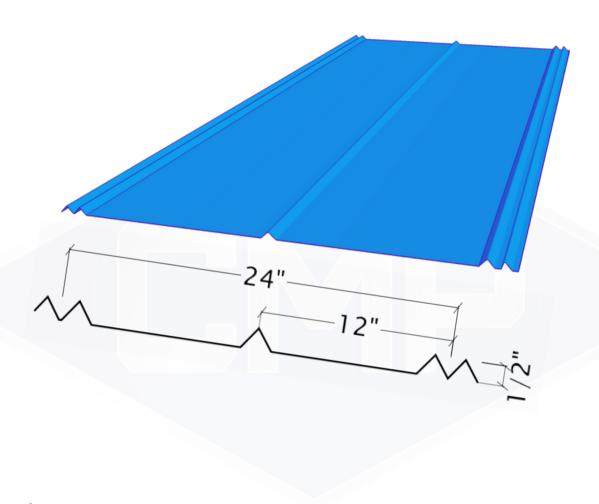


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ROOF PANEL PROFILE



Series "5-V"

Recalling the days of sturdy and rustic construction, CMP's offers the traditional Series "5-V" metal roof panel. The "5-V" gets its name from the five inverted vee grooves which make up it's profile while providing 24" of coverage for quicker installation. The Series 5-V's stunning design makes it very popular with residential and commercial customers alike. This traditional panel is available in 26 & 24 gauge galvalume steel, and in a wide variety pre-painted silicone polyester color finishes.

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PREPARATION REQUIREMENTS & RECOMMENDATIONS

This detail & installation manual has been provided to serve as a basic guideline for installing the CMP Panel roof systems. This manual should be used in conjunction with the architectural renderings to help ensure proper installation of the roof system. In case of discrepancies, the architectural renderings will govern over this installation guide.

It is the customer's responsibility to ensure that a competent and experienced installation team is selected to install this roof system. It is also the customer's responsibility to ensure the installation team understands and follows this manual and the architectural renderings concurrently.

Construction Metal Products, Inc. is not responsible for any problems or defects caused by improper installation techniques. Any questions in regards to clarifying the intent of this manual or the architectural renderings should be directed to CMP's account representative department at 704-871-8704

WARNING

It is strongly recommended that the Series 5-V metal panel roof systems be installed on roofs with slopes in excess of 3/12.5

<u>Important! Properly prepare the roofing substrate prior to roof panel installation</u>

I. Substrate, Roof Deck

CMP, Inc. recommends our metal roofing systems be installed over CDX plywood or OSB wooden roof decking with a minimum thickness of 15/32" or equal. Note: If using treated lumber, special corrosive resistant screws are required. Ask your representative for more information.

II. Tear-Off

The removal of existing roofing and the associated fasteners is optional with these panels. This does not damage, and typically improves, the structural capacity of wood decks. During removal, many shingle fasteners may remain embedded in the deck. These fasteners must be removed out or hammered flush into the deck.

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III. Repairs

Deteriorated areas should be removed and replaced with material(s) that closely match the existing thickness. The deck should be sound and smooth, with fasteners seated flush with the surface, prior to the installation of the metal roof. New wood decking, weather boards, planks, CDX plywood, OSB boards or equal should be the same thickness and have similar strength characteristics and span ratings to that of the area being replaced.

Deck fasteners that have backed out must have a new fastener installed adjacent to it and the existing fastener should be removed. Loose or lifted boards, planks, plywood, and corners should have additional fasteners installed to secure the existing deck in place.

Holes in wood decks that are 8" wide or less can be covered with 22-gauge steel. This steel plate should be galvanized and must overlap the wood roof deck 4 inches minimum and be secured with fasteners 4 inches on center.

Fascia boards should be straight, level and in good condition. Any rotted or deteriorated boards should be replaced. All roof framing and decking deformities will be transferred to the new metal roof if not corrected before sheeting begins.

IV. Underlayment

New underlayment must be immediately installed over prepared roof decking. CMP recommends 30# felt as the minimum underlayment. This underlayment should be installed with a minimum of a 2" side lap and a 6" end lap. Underlayment temporarily protects the roof decking against water penetration. It should be installed using galvanized tin caps (not plastic caps). The underlayment should be fastened to the deck with galvanized roofing nails with tin caps 12" in center in the field and 6" in center at the side lap.

V. Flashing & Trim

Re-roofing projects incorporate metal flashing and metal counter-flashing. Some counter flashings are embedded, such as into a masonry wall, or are installed behind existing siding. This metal, if not deteriorated, may be reused. The existing metal can be cut, leaving approximately a minimum of 2" of flashing exposed, and new counter-flashing can be fastened to the back- side of the existing metal. Counter-flashing must be slightly higher than the top of the rib on the panels to be installed.

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SAFETY

As with all construction projects, safety should be the primary concern. The installer or contractor should be sure that all OSHA safety rules are followed and that job safety is strictly adhered to.

The following safety equipment is strongly recommended when installing metal roofing:

- 1. Fall Protection, Safety Rope & Harness
- 2. Hand Protection, Gloves
- 3. Eye Protection
- 4. Hearing Protection
- 5. Rubber soled shoes

Metal roofing presents several specific safety issues:

- 1. Metal roofing is extremely slick and does not provide firm footing. Extreme care should be taken when:
- A. Working on roofs with a steep slope.
- B. Working on moist or wet roofs.
- C. Working on roofs in high wind.
- 2. Working with long panels.
- 3. Metal edges are very sharp and should be handled with care.
- 4. Care should be used when lifting panels due to their weight.
- 5. Always check for overhead electrical lines and exercise care not to have metal sheets come into close proximity. "Electrical Lines Can Arc Over 20 Feet"
- 6. All electrical tools should be inspected regularly for damaged cases or frayed electric cords. Extension cords should be inspected for damage daily.

Do Not Step or Walk on Unsecured Panels

Never step on a single unsecured roof panel, or a stack of roof panels on the roof. Secure each end of the panel with clamps or appropriate fasteners and place walkboards of adequate size and strength in the flat of any panels not fully secured to the roof and supported by panels on each side. Walkboards should run the full length of the panel and be fastened together by drilling a hole near the end of each board and tied with rope to the next board. Cut a groove in the bottom of each board so the board will lie flat and not tip back and forth because of the rope.



TOOLS & EQUIPMENT



CAUTION:

Whenever using any type of power equipment, it is important to follow the manufacturer's recommendation for use. Always be aware of the danger involved when using electric or air powered equipment.

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HANDLING PROCEDURES

Forklift Method

Before attempting unloading and the subsequent transporting of the Roof and wall Panels, carefully inspect and select all taxi and staging areas that are reasonably level with firm compacted surfaces without ruts and excavations. When loading/unloading bundles or crates of lengths up to 30' use a single forklift with wide-spaced forks equally positioned under the center of the crate/bundle. Crates/ bundles in excess of 30' can be handled with two forklifts spaced at equal intervals for the crate/bundle. Handle the crate/bundles one at a time to avoid product damage and maintain safety.

Crane Method

When loading/unloading using a crane or other overhead lift devices use nylon lift straps equally positioned under the center of the crate/bundle. Spreader bars suitable to maintain the strap positions are to be used and should be positioned on both the top and underside of the crate/bundles with care to protect the panel edges. Experienced crane operation is critical and care must be taken to avoid jerking and snatching the crate/bundles. When lifting crate/bundles in excess of 30' with crane-type lift devices, three-3 lift strap support points shall be required and include the use of spreaders as noted above.

CAUTION:

- -Workers must wear appropriate protective gear at all times when handling panels. Failure to do so may cause injury.
- -Carry individual panels in the on-edge position. Never move panels in a flat position as excessive flexing may result and may create permanent distortions.
- -When moving a solitary panel, it must be turned on its edge first and equally supported to each end with a compliment of handlers to transport the panel safely.
- -Lift panels when removing from crate/bundle. Do not drag panels out of the crate/bundle or across each other or any other surfaces.

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• On-Site Storage

The job site shall have adequate storage space to receive and store the crate/bundles. All storage areas must be level, firm, and clean, and maintain enough natural slope to remain free of ponding water. Always store panels in a dry condition, with one end slightly elevated to allow for incidental moisture drainage.

If panels are to be used immediately, consider the pre-planned placement of the crate/bundles at strategic locations as close as possible to the specific work areas. Cover any opened crate/bundles with plastic sheeting or tarps at the end of the work day and securely fasten to avoid wind damage.

Do not use ropes, steel cables, or chains to handle individual panels or crates/bundles. Limit outdoor storage to no longer than 60 days and periodically inspect the panels for moisture build-up. Corrosion or staining of any kind will not be considered as a cause for rejection.

If panels are not to be installed right away, store them under a temporary shelter or cover them with a protective tarp and adequately secure both the tarp and panels to prevent wind damage.

Care should be taken during unloading and storage to prevent damage to small items, i.e. trims fasteners, clips, sealants, etc. Cover all pallet crates or boxes to protect materials from the weather but allow for ventilation to prevent condensation. Temperature-sensitive items such as butyl tapes and sealants should be stored under controlled conditions.

Factory Applied Film Removal (if present)

If the panels or trim items have a protective film applied and if the panels will not be installed within 60 days, the crate/bundles should be separated and the protective film removed from each panel and/or trim piece. Carefully re-stack panels & trims to protect from the elements. Failure to remove the film within this time period may result in excessive film adhesion and breakdown of the plastic, making removal extremely difficult. In addition, failure to remove the film may result in a buildup of adhesive residue. Film removal and panel cleaning is the responsibility of the installation contractor.

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Remove protective film (if present) as the panels and trim are installed if possible, and in no cases allow the film to remain on the installed materials beyond the end of the work day. Remove by loosening the film along the product edge and peel off and down at approximately 45° angle.

If adhesive residue remains on painted surfaces after the protective film is removed, the items may be cleaned with a soft rag saturated with a general household cleaner (409, SFR, etc.) or an equivalent and rinse thoroughly. For cleaner safety, follow all the manufacturer's instructions.

Panel Cutting

Personnel working with panel-cutting equipment should wear eye protection at all times. Avoid cutting panels after their installation if at all possible.

Use only appropriate cutting tools and maintain extreme care. Do not use a cutting disk, torch, or other hot or high heat-producing methods. Hot filings may damage the painted surface of the panel. Preferably cut panels one at a time with aviation snips or sheet metal shears. To cut multiple panels simultaneously, use a circular saw with a fine-tooth carbide tip blade.

For openings and penetrations, cut panels individually with aviation snips. Also a high-speed bit (Dremel type) router may be used.

Power snips, power shears, and nibblers may also be used to cut panels, trims, and flashings.

Note: Do not use electric grinders or reciprocating-type saws.

- Step 1: Mark the cut line on the panel.
- Step 2: Re-check measurements and proceed with the cutting operation.
- Step 3: File or sand off any burrs or rough spots at the cut line.
- Step 4: Immediately remove all metal shavings etc.

....The panel is now ready for installation....

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Roof Panel Cleaning

Proper installation and maintenance are extremely important to maintain the original appearance of pre-painted roof and wall panels.

All dirt, oil, grease, fingerprints, metal filings or other contaminants must be removed to assure proper service life of the paint system. Owner should consider a wipe-down of the panels upon the conclusion of all exterior construction activities.

Airborne dirt particles may stain and cause apparent discoloration of the paint after prolonged exposure. Slight chalking from strong sunlight exposure may also cause a change in appearance. A thorough cleaning will usually restore the original appearance of the panels.

In most cases a simple low-pressure wash of the panels with plain water is adequate. Areas of heavy dirt deposits may require a solution of water and household laundry detergent (1/3 cup per gallon of water) to be used. Use a soft rag, sponge, or soft bristle brush to clean. Follow with a clean water rinse.

Mildew may occur in areas subjected to high humidity. To remove mildew, use the following solution followed by a clear water rinse: 1/3 cup of household laundry detergent, 2/3 cup of tri-sodium phosphate, 1-quart sodium hypo chlorite 5% solution (Clorox), 3 quarts water.

Caulking compounds, oil, grease, tars, wax, and similar substances can be removed by wiping with a cloth soaked with WD-40 lubricant or mineral spirits. Test on an inconspicuous area first. Do not rub excessively or damage to the finish may result. Wipe only contaminated areas and follow with detergent cleaning and thorough rinsing.

To remove oxidation and tough stains, use a household cleaner recommended for use on porcelain skins and bathtubs. This should be followed with a thorough rinsing.

CAUTION:

Wire brushing, strong solvents and abrasive cleaners should not be used.



PARTS & ACCESSORIES



GENERAL INSTALLATION INFORMATION

- 1. Insure that the structure is square and true before beginning panel installations. If the structure is not square, the panels will not properly seal at the side laps.
- 2. Green or damp lumber is not recommended. Moisture released from the damp lumber may damage the metal panels. Nails installed in green or damp lumber may back out.
- 3. Remove any loose metal shavings left on roof surface immediately to prevent corrosion. After installing roof, remove any debris such as leaves or dirt to prevent moisture from getting trapped on panels.

NOTE:

It is the responsibility of the user to verify all applicable code requirements for the area, check all measurements, and determine suitability of product for job.



FASTENING

Fasteners & Screws

For best results use a minimum 1-1/2" screw with grommet-type washers, tipped to penetrate the substrate type. (i.e. self-tapping for steel). Install screws into the flat of the panel as shown below. Drive the fastener so that the washer is compressed securely against the metal (See Fig. #1). Do not overdrive the fastener as this will form a dimple that can collect water and cause leakage.

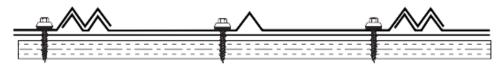
If you wish to pre-drill fastener holes, use a cover sheet to prevent hot shavings from sticking to panels.

NOTE: If rigid insulation is used directly under the panel, the fastener length needs to be increased to allow a minimum of 1" penetration into the wood.

Series 5-V Fastening Pattern



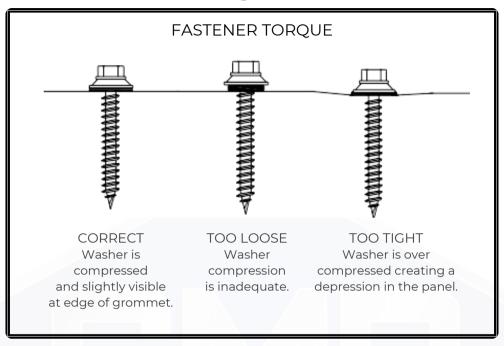
Enhanced fastening recommended at all eave, ridge & hip locations



Typical fastener pattern recommended for all other locations



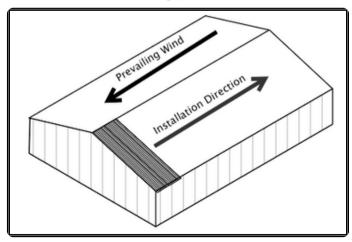
Fig. #1



RECOMMENDED ROOFING APPLICATIONS

- 1. Slopes of less than 3" in 12" are not recommended.
- 2. Side laps should face away from the prevailing wind (See Fig. #2).
- 3. Lay the first sheet along the eave at the down-wind side of the roof (farthest away from the direction of the prevailing winds).

Fig. #2



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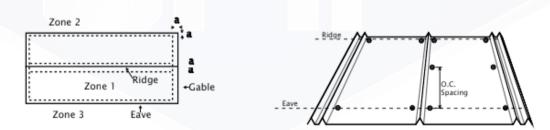


Recommended Fastening Guide

with <35' mean roof height - 3/12 to 7/12 pitch for 90, 100, & 110 mph wind speeds. Based on ASCE 7-93 (Supersedes ASCE 7-88)

ALTERNATE FASTENING SCHEDULE ON CENTER SPACING OR FASTENER ROW

	TYPE	TYPE SUBSTRATE	FASTENER SIZE	WIND SPEED ZONE						
				90		100		110		
ZONE 1	NAIL	WOOD	10dx1-3/4"	24"	12"	24"	12"	12"	6"	
	WOOD SCREW	WOOD	#9 x 1-1/2"	24"	12"	24"	12"	16"	8"	
	METAL STITCH	18GA Steel & Higher	#12 x 1"	24"	12"	24"	12"	16"	4"	
		20GA Steel & Lower	#14 x 7/8"							
ZONE 2 & 3	NAIL		10dx1-3/4"	12"	6"	10"	5"	8"	4"	
	WOOD SCREW	WOOD	#9 x 1-1/2"	24"	12"	24"	12"	16"	8"	
	METAL STITCH	18GA Steel & Higher	#12 x 1"	24"	12"	24"	12"	16"	8"	
		20GA Steel & Lower	#14 x 7/8"							

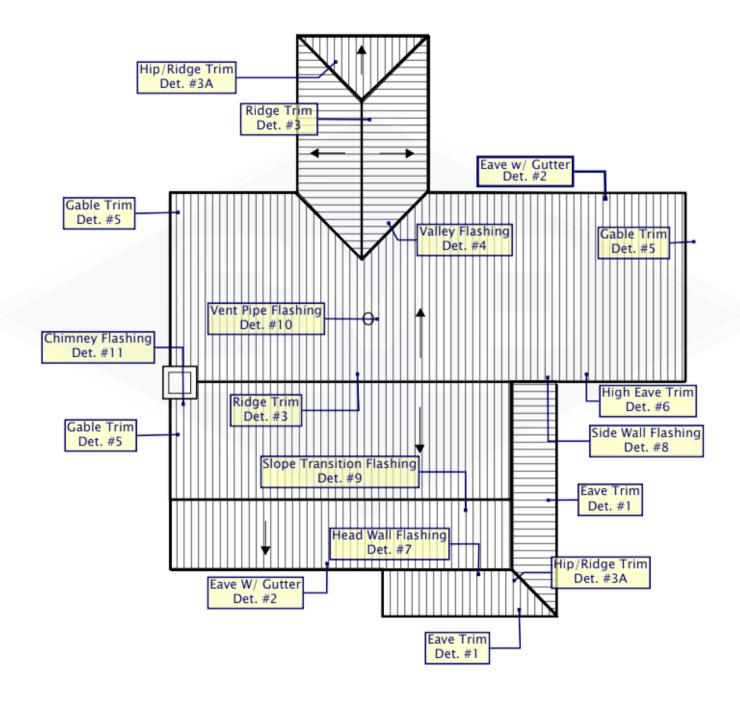


Note: Dimension a is defined as 10% of the minimum width of the building or 40% of the mean height of the roof, whichever is smaller, however, a cannot be less than either 4% of the minimum width of the building or 3 feet.

- 1. Allow an overhang of 1" at the eave to provide for a drip edge. Use inside closure at eave to prevent insect or bird infestation at openings. To protect against uplifting winds and to provide a finished appearance, apply rake trim or other standard gable trim. Install fasteners every 6-10" on-center.
- 2. A "High Profile" ridge cap of is recommended to prevent leakage. Seal off ridge and panel using outside closure strip.

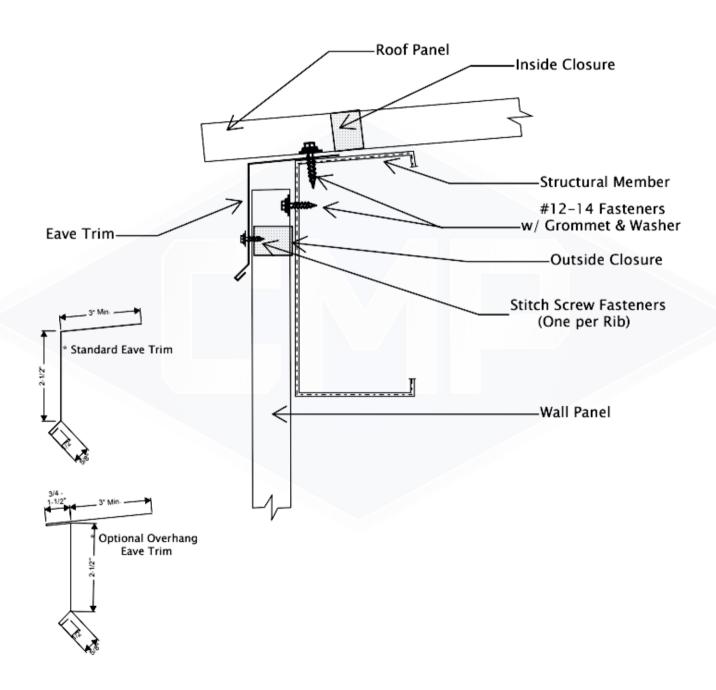


TYPICAL RESIDENTIAL ROOF PLAN



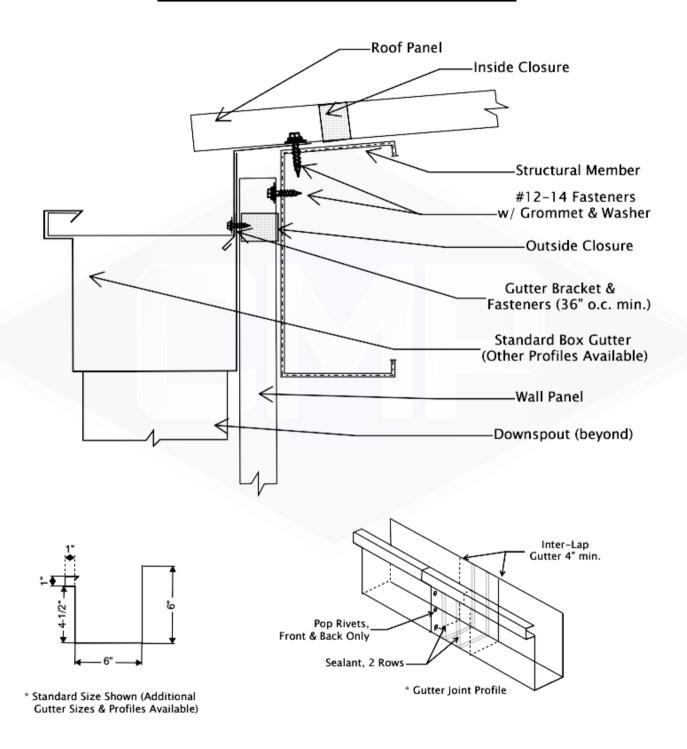


STANDARD CONSTRUCTION DETAILS **EAVE TRIM**



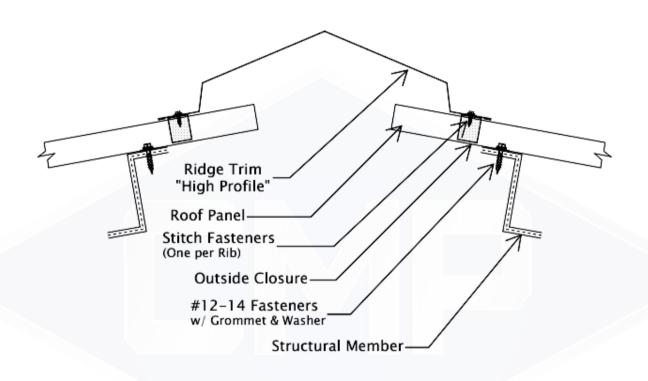


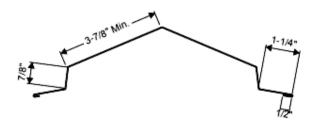
STANDARD CONSTRUCTION DETAILS **EAVE TRIM WITH GUTTER**





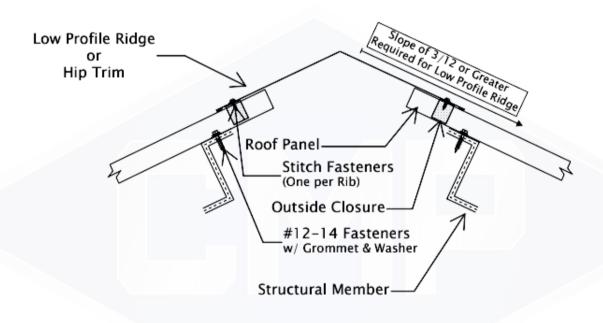
STANDARD CONSTRUCTION DETAILS **RIDGE TRIM** "HIGH PROFILE"

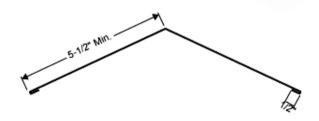






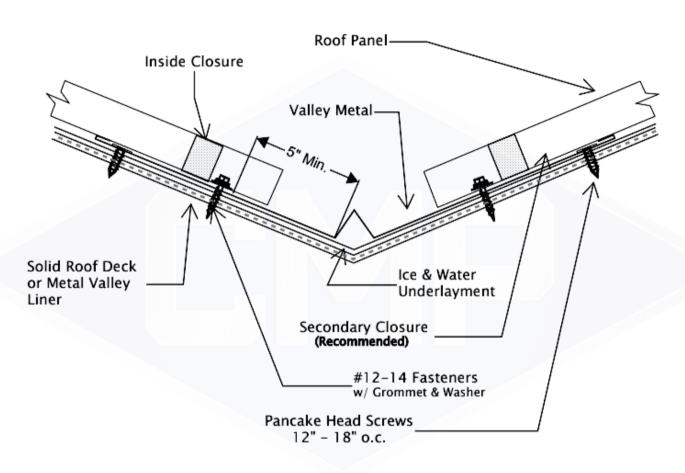
STANDARD CONSTRUCTION DETAILS **RIDGE TRIM HIP OR "LOW PROFILE"**

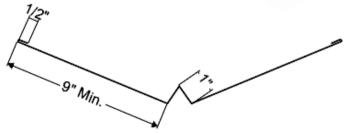






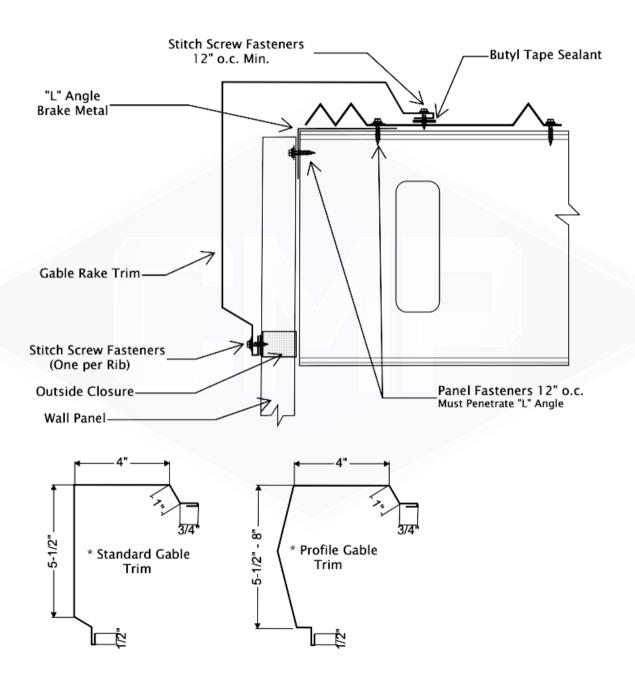
STANDARD CONSTRUCTION DETAILS **VALLEY FLASHING**





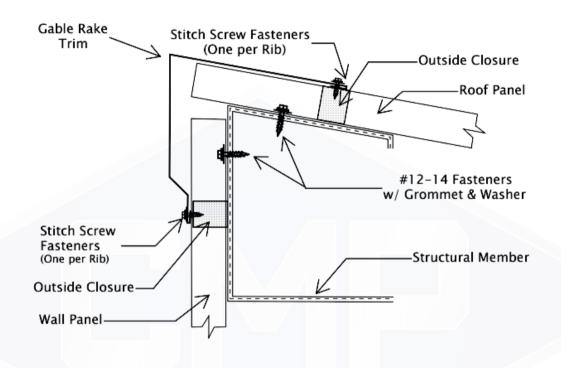


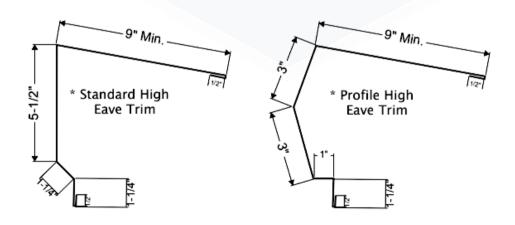
STANDARD CONSTRUCTION DETAILS **GABLE TRIM**





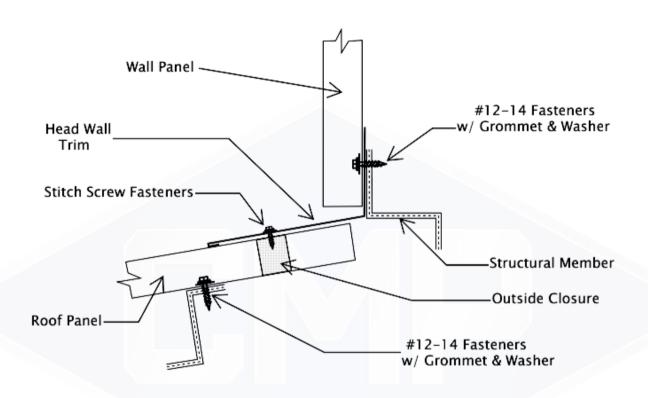
STANDARD CONSTRUCTION DETAILS **HIGH EAVE TRIM**

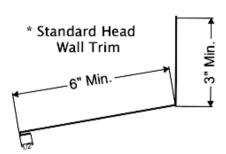






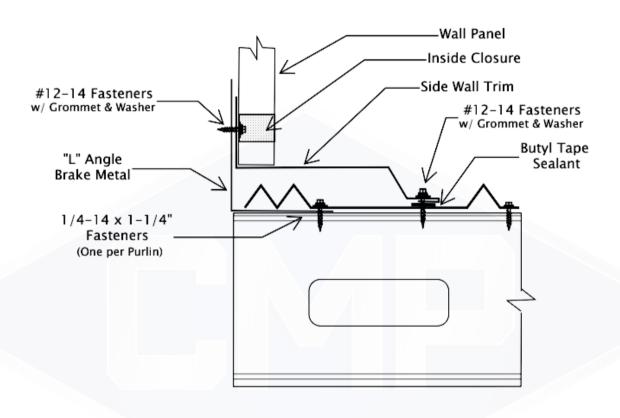
STANDARD CONSTRUCTION DETAILS **HEAD WALL TRIM**

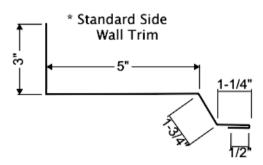






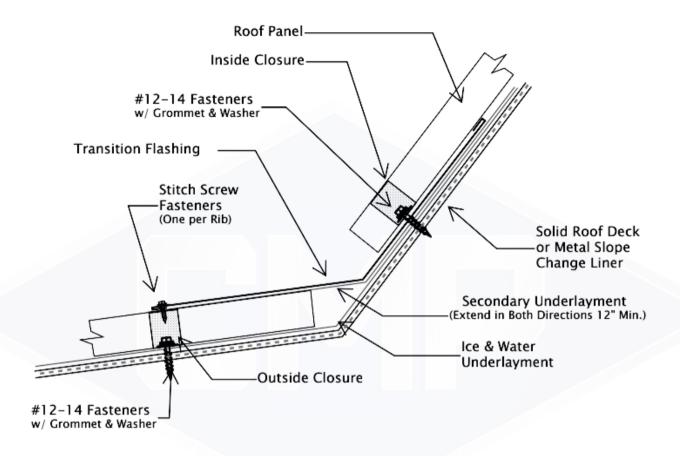
STANDARD CONSTRUCTION DETAILS **SIDE WALL TRIM**

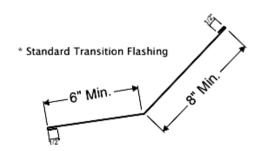






STANDARD CONSTRUCTION DETAILS SLOPE TRANSITION FLASHING

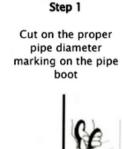






STANDARD CONSTRUCTION DETAILS

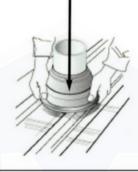


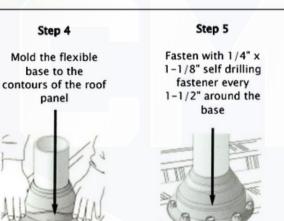


Step 2 Position the boot over the pipe and slide down



Step 3







FASTENING RECOMMENDATION

Corrosion resistant fasteners should be used around the base one every 1-1/2 inches as per the United Plumbing Code (UPC) recommendations. Refer to size chart for the quantity to use.



DESCRIPTION

1/4-14 x 1-1/8" DP1 long pilot selfdrilling fastener with long-life stainless steel or zinc die cast head

SEALANT RECOMMENDATION

Polyurethane sealant should be used under the base to assure a proper seal. If you prefer, additional sealant can be applied around base after installation.

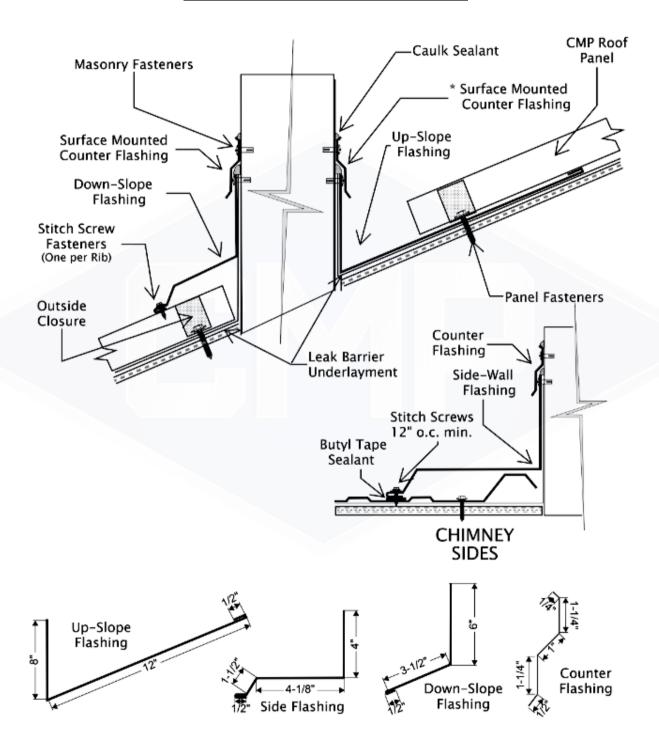


DESCRIPTION

Polyurethane tube sealant



STANDARD CONSTRUCTION DETAILS <u>CHIMNEY FLASHING</u>





29/26 GAUGE COLOR CHART

Construction Metal Products inc.

CMP manufactures a variety of metal roof and wall panels in 26 gauge and/or 29 gauge material. Please see the back of this chart to view the profiles that are available.

CMP's 40-year Silicon Polyester paint system, with Cool Roof Technology, provides solar reflectance ratings to meet today's Energy Star requirements. The 40-year paint system and galvalume steel guarantees a winning combination of weather-tested paint performance and superior corrosion resistance.





Colors shown here are as accurate as the printing process permits. Slight variations should be expected for the actual coil product.



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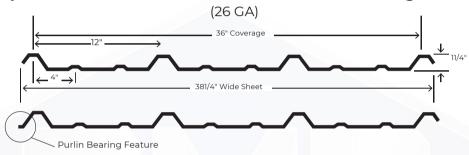
CMP MULTI-RIB

CMP MULTI-RIB Design Is Unmatched In Performance Durability.



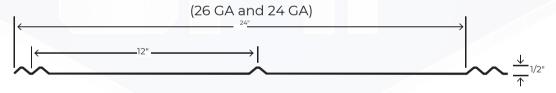
CMP R-PANEL

A Superior Roof or Wall Panel with Maximum Strength.



CMP 5-V

The 5-V's Stunning Design Makes it Very Popular with Residential and Commercial Customers.



CMP NAIL STRIP

Revolutionary Design Eliminates the need for Through Fasteners. (26 GA and 24 GA)



SAFETY PRECAUTIONS

Gloves should be worn to prevent injury while handling steel panels. Safety glasses should be worn to prevent eye injury when cutting or drilling steel panels with power tools. Use care when walking, sitting, or kneeling on a steel roof to avoid a fall. Steel panels may become slippery when wet. Do not work on the steel panels when wet or when climatic conditions are not suitable for safe installation. Failure to comply with these procedures relieves the manufacturer of responsibility for any resultant damage to or deterioration of the product and VOIDS ALL WARRANTIES. THERE IS NO IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR PURPOSE.



The Solar Reflective Index (SRI) as per ASTM E1980 is noted next to each color name. All colors are direct deposit paint samples.

Do not use this sheet to color match. Call your representative for a painted metal sample.



Custom colors and/or color matching is available subject to minimum volume criteria. Pricing will be dependent on project requirements.

In testament to the high quality of ColorKlad and AlumaKlad, a written warranty is available upon request, for qualifying applications. Available at no charge, this warranty covers peeling, color fade, chaiking and paint integrity. Reference actual warranty for details and conditions. Check suitability or use in potentially corrosive atmospheres. "Acrylic AZ55 is not covered under the ColorKlad® warranty. Metallics and Premiums may be priced higher than standard colors.







ColorKlad® — available in a premium cool coating — is the field-proven, time-tested leader in metal roofing. ColorKlad is made of a PVDF coating containing 70% Kynar 500® or Hylar 5000® resin over a high-quality primer, permanently bonded to commercial quality, extra smooth Grade 50 AZ50 Galvalume® or Galvanized G90 sheet or coil.

AlumaKlad™ — available in a premium cool coating — maintains design integrity and attractive appearance when design, climatic and/or atmospheric conditions call for aluminum. AlumaKlad is made of a PVDF coating containing 70% Kynar 500® or Hylar 5000® resin over a high-quality primer, permanently bonded to 3105-H24 aluminum sheet or coil.

COOL COLORS	SRI	24ga		.032"		.040"	.050"	.063"
		20"	48"	20"	48"	48"	48"	48"
AZ55 Acrylic Galvalume*		•	•					
Aged Copper	53	•	•	•	•			
Almond	78		•	A	•	•	•	
Ash Gray	32	•	•					
Bone White	83	A	•	A	•			
Charcoal Gray	29	•	•	•	•			
Classic Green	30	•	•	A	•	•		
Colonial Red	34	A	•					
Dark Bronze	25	•	•	•	•	•	•	•
Dove Gray	54	•	•	•	•			
Mansard Brown	26	•	•	A	•	•	•	
Musket Gray	32	•	•					
Black	-1	•	•	•	•			
Medium Bronze	31	•	•	•	•	•	•	•
Patina Green	55	A	•					
Regal White	78	A	•	•	•			•
Sandstone	71	A	•			•	•	
Sierra Tan	30	•	•	•	•	•	•	
Slate Blue	29	A	•					
Slate Gray	40	•	•	•	•			
Snowdrift	93	•	•	•	•			
Stone White	82	•	•	•	•	•		
Terra Cotta	37	A	•					
Premium / Metallic								
Banner Red	43	A	•					
Bright Silver	61	•	•	•	•	•	•	
Copper Penny	45	•	•	•	•			
Hartford Green	24	•	•				•	
Preweathered	39	•	•	•	•			
Royal Blue	26	•	•	•	•			

Items marked with (▲) are available but will be specially processed from 48.375" master coil and the drop coil will ship as part of order.

AlumaKlad **Color**Klad



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