



Flatlock Panel System

Installation Guide

innovative cladding design solutions

- **Product Description**
- **Universal Flashing Kit**
- **Supplemental Guide for VM Pro-Zinc Training**

To enroll in a VM PRO-ZINC Training Course contact:
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VMZINC

Flatlock Panel System

Specification and Tolerances

Wall panel substrate and framing designs can vary greatly. The Architect should consult model building code, Umicore Building Products USA's literature, or a building envelope consultant for additional information on appropriate wall designs. Consult Umicore Building Products USA, Inc. for assistance in editing the specific application.

QUALITY ASSURANCE

VM ZINC® Flatlock is a factory-formed, zinc-alloy, metal wall panel system.

- Zinc Alloy: 99.995 percent electrolytic high-grade zinc with alloy additives of copper (0.08 percent to 0.20 percent), titanium (0.07 percent to 0.12 percent), and aluminum (0.015 percent).
- Thickness: .039" (1.00 mm).

Dimensional Tolerances:

- a. Coverage: Plus or minus 1/16" (1.6 mm).
- b. Flatness at Maximum Deflection: 5/64" on 36" (2 mm on 914 mm).
- c. Curvature: 1/32" (0.8mm).

Installer's Qualifications:

- Engage an experienced installer who has completed metal wall panel system installation similar in material, design, forming method, and extent to that indicated for this Project and with a record of successful in-service performance.
- Successful completion of VM PRO-ZINC Training course.

DELIVERY, STORAGE, AND HANDLING

Delivery:

- Inspect delivered materials on arrival. Report damaged materials to Umicore BP within 5 days.
- Deliver materials to site in Umicore BP's original, unopened containers and packaging, with labels clearly identifying product name.
- Deliver materials so as not to be damaged or deformed.
- Package metal wall panels for protection during transportation and handling.
- Leave protective UV-resistant film on metal wall panels; Remove within 90 days after installation.

Storage and Handling:

- Store materials in clean areas in accordance with Umicore BP's instructions.
- Unload, store, and erect metal wall panels in a manner to prevent bending, warping, twisting, and surface damage.

Specifier Notes: Verify product compatibility if products other than those listed in this guide are to be specified and installed in conjunction with the metal wall panels.

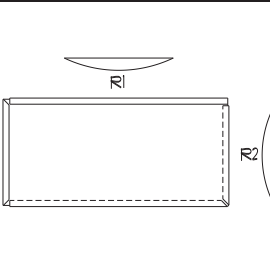
 <p>HORIZONTAL & VERTICAL</p>		FLATLOCK							
		Typical Panel Coverage:		36" x 16"		Panels per crate:		~60 panels	
		Max Panel Coverage:		8'-0" x 16"		Coverage:	Per panel	4 sq ft	
		On Center:	Vertical	16"			Per crate	240 sq ft	
			Horizontal	36"		Thickness:		0.8, 1.0mm	
		Radius:	Convex	Concave		Weight:	0.8 mm	6.35 lb	
		R1 & R2	12" pre-fab.	12" pre-fab.			1.0 mm	7.97 lb	
R1 & R2	15' field	15' field							



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Flashing and Trim:

- Field-fabricated from zinc-alloy sheets.
- Thickness: [.031" (0.8 mm)] [.039" (1.0 mm)].
- Seal against weather.
- Provide finished appearance.
- Provide pull-out resistance and flatness.
- Finish: Same zinc-alloy finish as adjacent metal wall panel system.
- Backside Coating Thickness: 60 microns.

Metal Wall Panels:

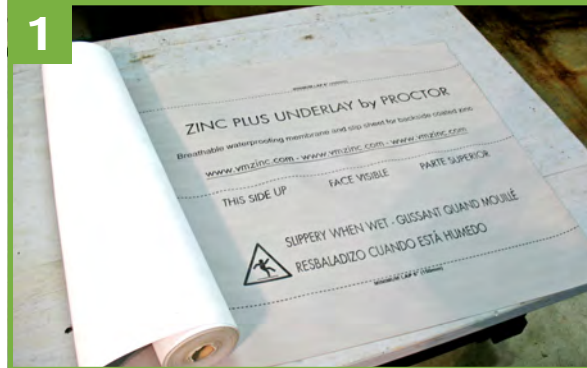
- Form with flat-lock seam at panel edges and smooth, flat pan.
- Field install in sequential order.
- Engage lower edge of each panel to upper edge of panel below and engage right side of preceding panel's left side.
- Mechanically attach panels to supports by locating concealed clips under upper and left edges of panels.

Weather Resistant Barrier

Product Description

Product

Description



Zinc Plus Underlay

Alternative to Type II roofing underlayment and Grade D weather resistive barrier paper specified in the 2006 IBC.

Roll Length: 164 ft (50 m), **Width:** 39" (1 m)

Weight - 164' x 39" roll, is 18 lb (8 kg)

Thickness: .023" (0.6 mm)

Water Vapor: 212 Perms

Transmission: per ASTM E96 Method A



Self - Adhering Waterproofing Membrane

For a list of available products, consult Umicore Building Products



Uncured EPDM Flashing Tape

For a list of available products, consult Umicore Building Products



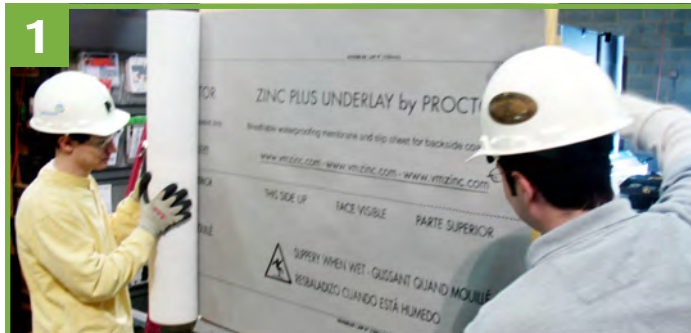
Compatible Sealants:

- DOW 795
- SIKA 1A

Weather Resistant Barrier Product Installation



Zinc Plus Underlay, Weather Resistant Barrier Installation



1 Install zinc plus underlay horizontally with a 6" overlap at seams.



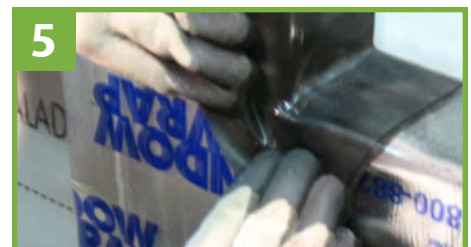
2 Cut the material at openings 45 degrees toward the center of the opening. Fold inward and attach to frame.



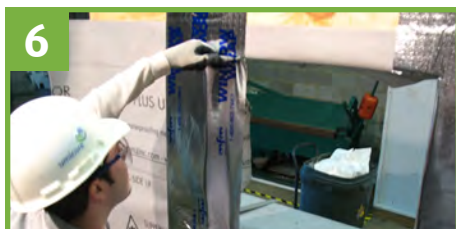
3 Apply waterproofing membrane at openings, extend lap 9" beyond opening at the sill.



4 Use a roller to bond the waterproofing membrane to the Zinc Plus Underlay. Hot air may be required to help with bonding at temperatures below 65 degrees.



5 Mold the uncured EPDM Flashing Tape into a one piece corner.



6 Apply the waterproofing membrane 9" beyond jamb frame opening. Overlap EPDM molded corner at sill.



7 Installed sill flashing.



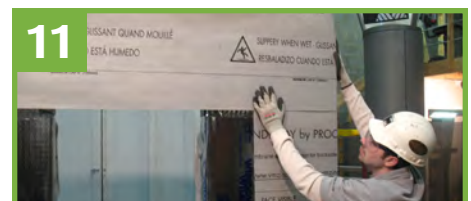
8 Repeat the molded EPDM corner flashing step for corners at window Head.



9 Apply waterproofing membrane 9" above opening at window head.



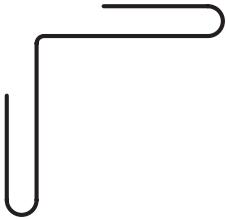























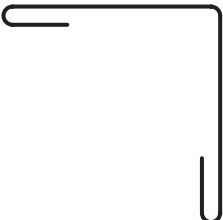





10 Installed corner at window head.





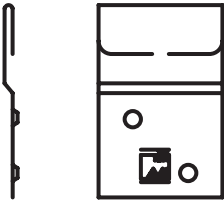


11 Apply cap strip of Zinc Plus Underlay over waterproofing membrane at top of window, even with rough opening. Cap strip to be overlapped by next run of Zinc Plus Underlay.

Flatlock Panel System

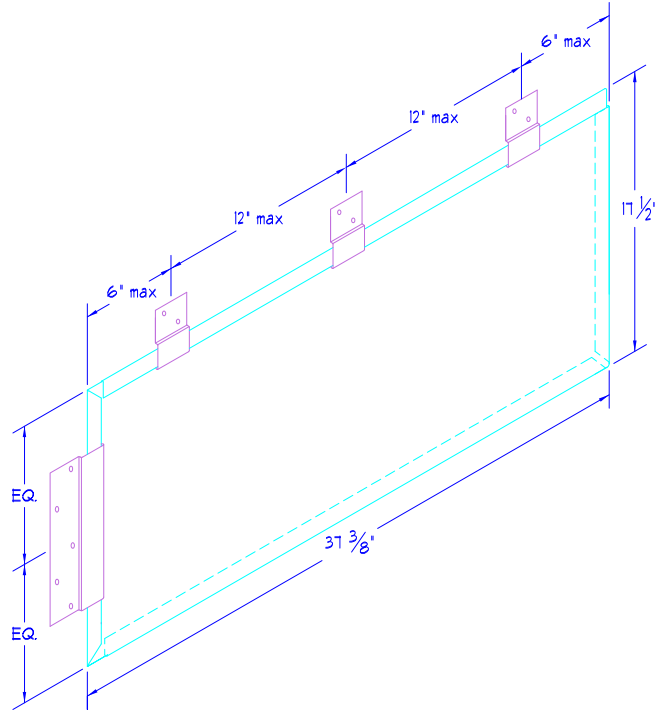
Product description: Universal Flashing Kit

Product	Description Code	Aspects	Quantity
	Inside Corner Flashing ISC - 1	 Quartz Zinc Plus	
		 Anthra Zinc Plus	
		 Pigmento Blue Plus	
		 Pigmento Green Plus	
		 Pigmento Red Plus	
	Window Flashing Sill/Jamb WF - S - 1	 Quartz Zinc Plus	
		 Anthra Zinc Plus	
		 Pigmento Blue Plus	
		 Pigmento Green Plus	
		 Pigmento Red Plus	
	Window Flashing Head 1 WF - H - 1	 Quartz Zinc Plus	
		 Anthra Zinc Plus	
		 Pigmento Blue Plus	
		 Pigmento Green Plus	
		 Pigmento Red Plus	
	Window Flashing Head 2 WF - H - 2	 Quartz Zinc Plus	
		 Anthra Zinc Plus	
		 Pigmento Blue Plus	
		 Pigmento Green Plus	
		 Pigmento Red Plus	
	Outside Corner Flashing OSC - 1	 Quartz Zinc Plus	
		 Anthra Zinc Plus	
		 Pigmento Blue Plus	
		 Pigmento Green Plus	
		 Pigmento Red Plus	

Product	Description Code	Aspects	Quantity
	J-Channel WF - J - 1	STAINLESS STEEL	
	Outside Corner OSC - 2	STAINLESS STEEL	
	Stainless Steel Cleat ST - 1	STAINLESS STEEL	
	Stainless Steel Z-Starter SSZ - 1	STAINLESS STEEL	
	Flatlock Clip FLCS - 1	STAINLESS STEEL	

Flatlock Panel System

Layout



Notes

Flatlock Panel System

Notes - Six Points



■ Patina vs. Corrosion

■ Expansion and Contraction

■ Malleability

■ Interaction with other materials

■ Cold weather installation

■ Handling and Storage

Flatlock Panel System

Key Points

1. Scaffold

- Check landscape for obstacles
- Mobile scaffolding, such as scissor lifts and bucket lifts, offer flexibility, but limit the size of the crew.
- Full scaffold is preferred.
- Repairing holes made for scaffolding may be accomplished by several means: a hinged key hole cover; plastic plugs; a complete cover piece riveted in place.
- Best place to attach the scaffold is the wall is inside the window openings.

2. Aesthetic

- Maintain consistent orientation of rolling direction.
- Do not overstress panels.
- Remove the plastic film from whole areas at one time continuously.
- Wear gloves.
- Inform other trades about interactions with other materials (limestone, paint, masonry, gypsum, welding sparks, fire stop, copper run off, etc.).
- Keep clean from dust and debris. Use approved cleaning methods only.

3. Removal of the Plastic Film

- Remember to remove the film from areas inside of folds.
- Do not use a steel knife to cut the film.
- A piece of zinc material may be used as a knife to cut the film which will minimize the chance of damage to the surface of the metal.
- Plastic film should be left in place during the construction of the project to protect the zinc surface from debris and dust which may damage the surface.
- Plastic film must be removed within 90 days of installation.
- Remove the film from whole areas at one time to avoid differences in color which

may occur due to the natural weathering process.

4. Panel Orientation

- Sequential order of installation from bottom to top and right to left (typical).
- Maintain consistent orientation of rolling direction.
- Maintain constant lap direction.

5. Sub-Structure

- Many types used (masonry, wood, metal) to be determined by the design authority with regard to local conditions.
- Supports may be continuous or non-continuous.
- Plywood support must have a separation (ZINC PLUS UNDERLAY).

6. Clips

- Short clips are used along longitudinal hem on panel.
- Long clips are used on the ends of panels





(imprint of short clips is possible at ends).

- Clip spacing to be determined by the design authority with regard to local conditions, 12 cm is typical.

7. Panel to Panel Connection

- Bottom hem of the panel should be more open (5T) than the end folds (2.5T). Tip: Tap a long clip inside the bottom fold to create the right space for the panels to “nest” together.
- Panels shall be installed with ¼” (5 mm) of space left before being fully engaged.

8. Tools:

“There are no bad tradesmen, only bad tools”. The list of tools is recommended, but not compulsory.

- Segmented bending machine
- Smooth shears, right and left cutting
- Circular saw with non-ferrous metal cutting blade (face protection required)
- Laser level (large areas) and 2M level
- Chalk line
- Angle square
- Pencils and/or soft tip markers (use only semi-permanent ink which can be removed with an approved cleaner)
- Drill with complement of bits
- Plastic hammer
- Small 45 degree seaming pliers
- Thin pry bar (painters 5 in one tool, “guzzle”)
- Rivet Tool

9. Cleaning

- Start with the least strength cleaner and work up to acquire the result desired. ALL CLEANERS SHALL BE THOROUGHLY RINSED WITH WATER.
- Cleaners, non-abrasive (For VM QUARTZ ZINC®, VM ANTHRA ZINC®, VM NATURAL ZINC®): water; alcohol, Strub oil; citrus oil cleaner; methyl ethyl cetone; soda.
- DO NOT USE ACETONE FOR PAINT SPILLS.
- White Rust: Use the cleaner which gives the best result. If the level of damage is that the metal is pitted, an abrasive cleaner or abrasive pad may be required. USE OF AN ABRASIVE WILL RETURN THE METAL TO A NATURAL ASPECT, ONLY TIME WILL RESTORE THE PATINA. ANTRA ZINC CANNOT BE RESTORED IN THIS MANER.
- CONSULT UMICORE BUILDING PRODUCTS FOR METHODS TO CLEAN PIGMENTO ZINC®.

10. Repairing a Damaged Panel

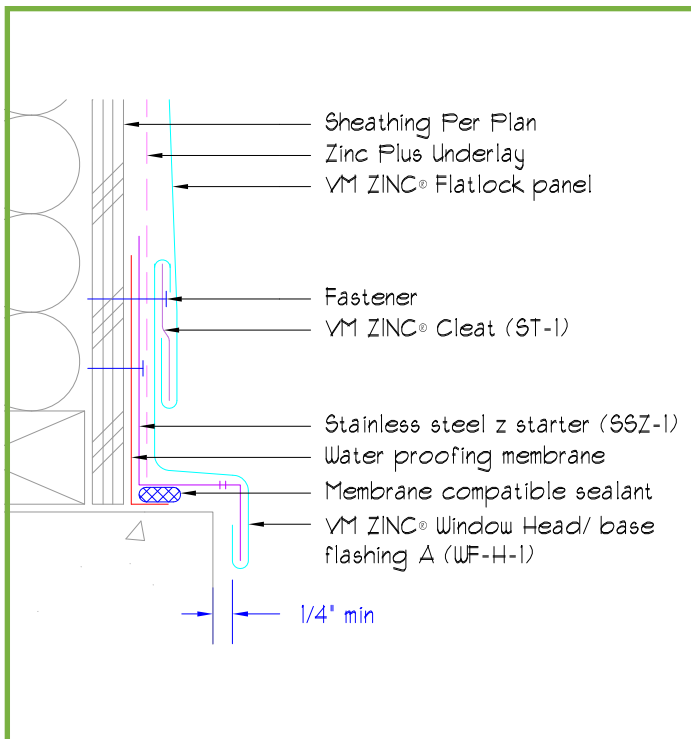
- Fabricate a repair (cover) panel by removing the top fold and out side fold (left) of a standard panel
- Slide the top edge under the succeeding panel above and under and over on the sides.
- Secure cover panel with stainless steel rivets painted to match

11. Window Flashing

- Sills must have 1:12 (5 degree) slope.
- Jams and head flashing shall “see to daylight” (water should spill to the outside).
- Corners to be sealed.

Flatlock Panel System

Base of Wall



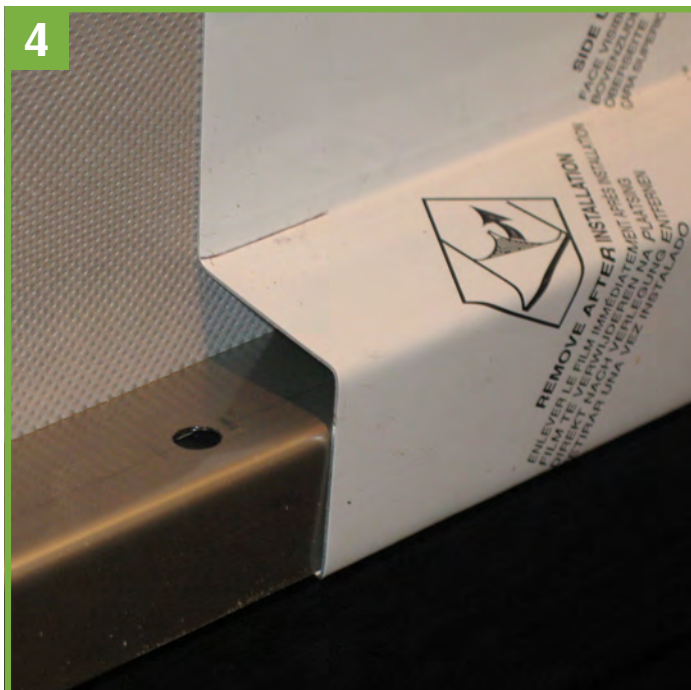
Installation Detail for Base of Wall



Apply bead of sealant at base of wall.



Bed vented starter SSZ-1 into sealant.



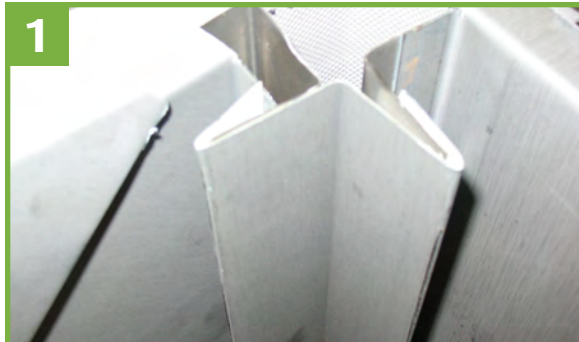
VM ZINC® PLUS Z flashing WF-H-1 shall be installed as shown to allow drainage and ventilation. Make certain that ZINC PLUS UNDERLAY® overlaps vented starter SSZ-1.



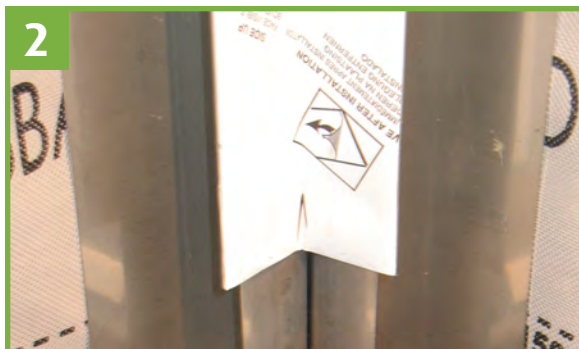
Install VM ZINC PLUS® Z flashing WF-H-1 and off-set starter ST-1. Attach with stainless steel pan head screws.*

Flatlock Panel System

Inside Corner



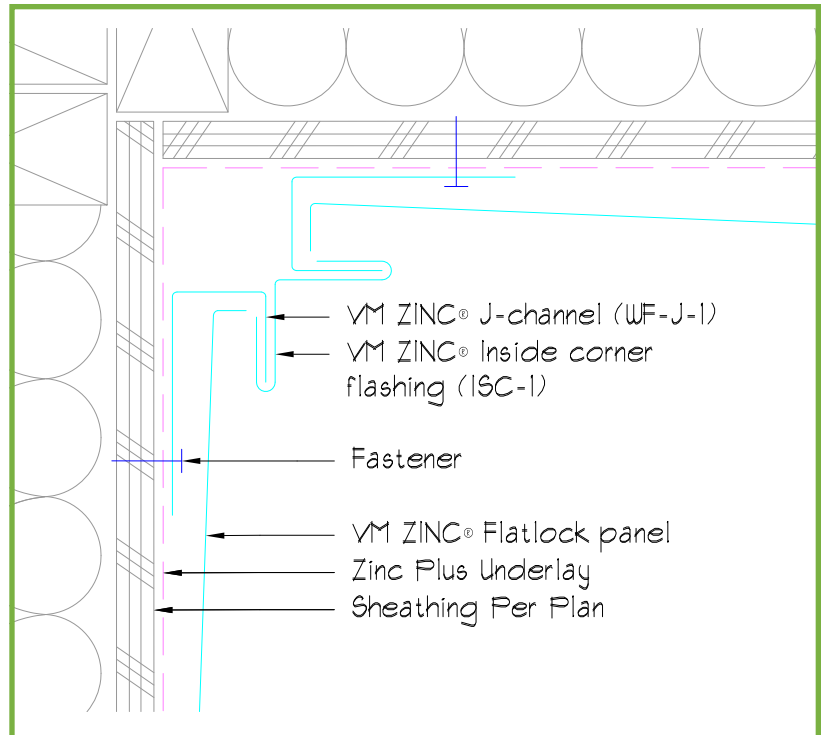
1
Panels are turned outward with a 90 degree bend to limit moisture ingress and to facilitate a flat panel face. Panel shown is a standard VM ZINC® FLATLOCK square panel on a diagonal bias with seams aligned.



2
Install stainless steel J-channels WF-J-1 at inside corner. Notch VM ZINC® PLUS Z flashing WF-H-1 to allow overlap of WF-J-1. Slide on VM ZINC® PLUS inside corner ISC-1 (shown with masking film attached).



3
Install VM ZINC® FLATLOCK Panel with FLCS-1 sheet clips using countersinking stainless steel screws (SPAX® T-20 drive shown)



Installation Detail for Inside Corner

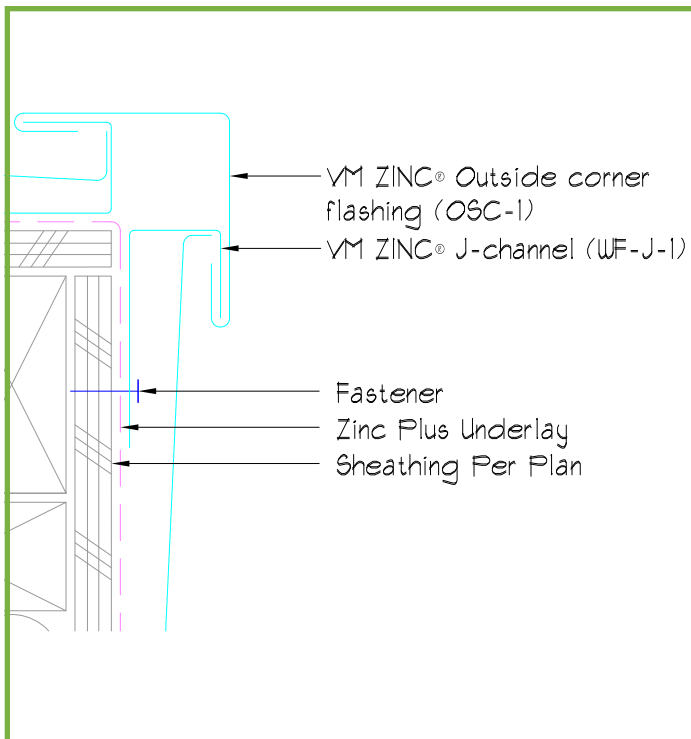


Finished

General note: Trims shall be attached using stainless steel pan head screws at 16" on center. Refer to project specifications.

Flatlock Panel System

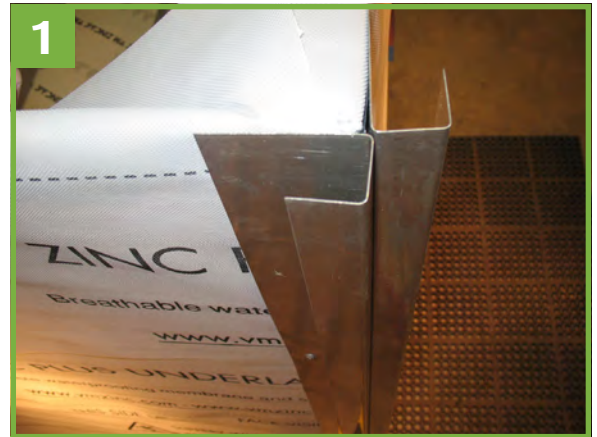
Outside Corners



Outside Corner #1



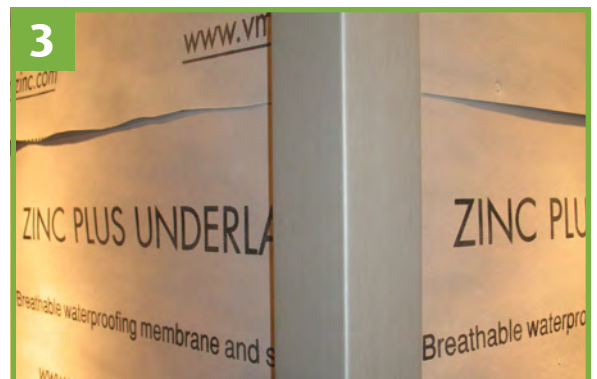
Finished



Install stainless steel J-channels WF-J-1 at outside corner.



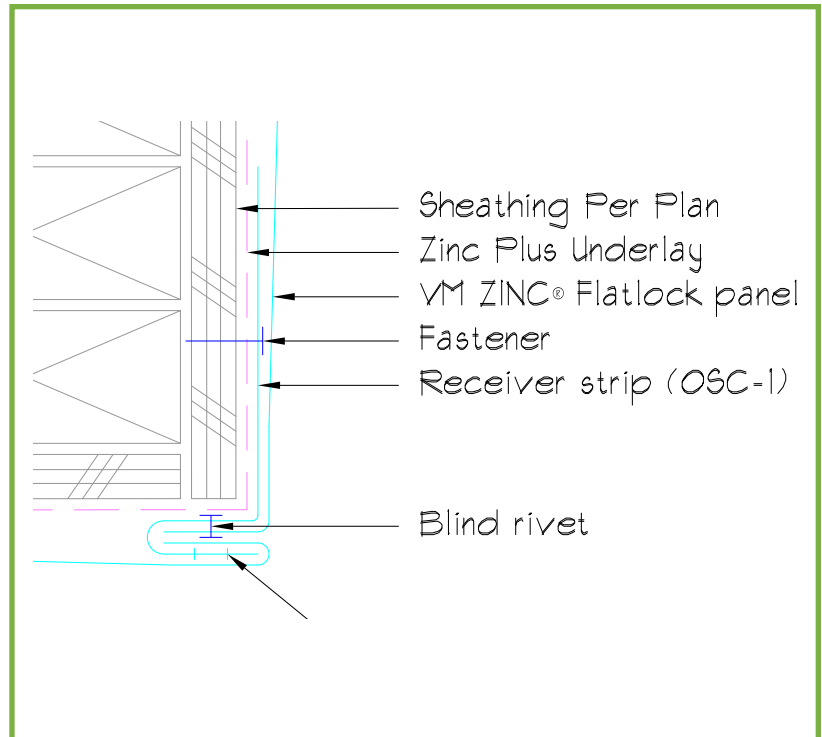
Slide on VM ZINC® PLUS outside corner OSC-1 (shown with masking film attached)



VM ZINC® PLUS outside corner OSC-1 shown with masking film removed. Panels to be installed inside J-channels used 90-degree bend method at inside corner.



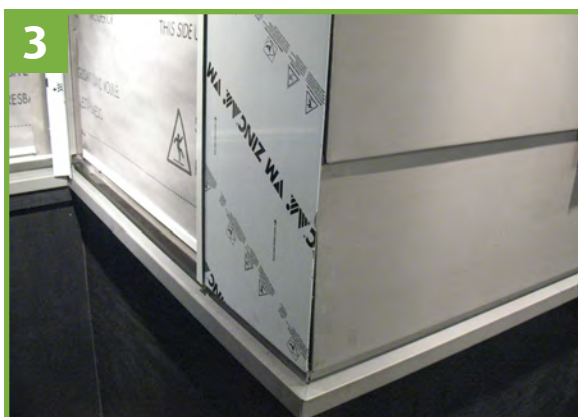
1 Attach pre-punched panel receiver OSC-2 at outside corner.*



Outside Corner #2



2 Bend end run orientation panels 90 degrees at corner. Fasten inside receiver with stainless steel pop-rivets.



3 Hook starting orientation panels on receiver at corner. Panel shown is a standard VM ZINC® FLATLOCK Panel on a vertical bias.

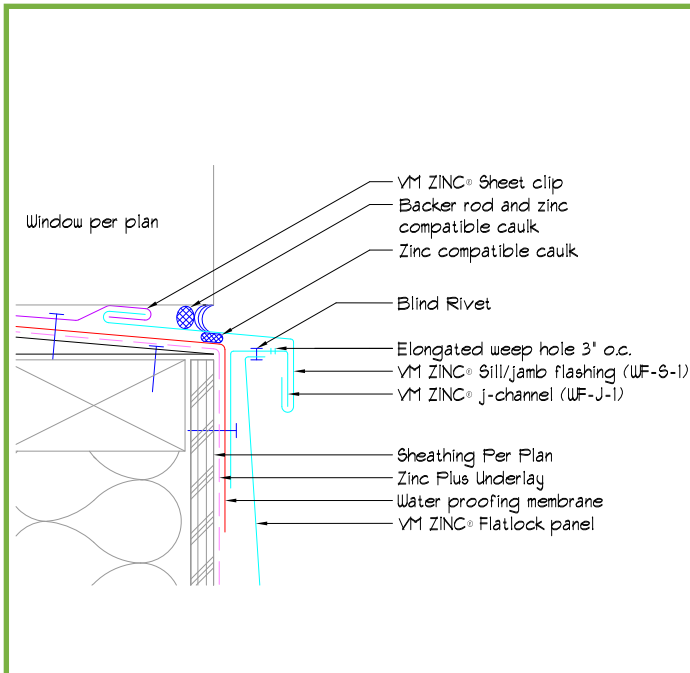


Finished

General note: Trims shall be attached using stainless steel pan head screws at 16" on center. Refer to project specifications.

Flatlock Panel System

Sill Flashing



Installation Detail for Sill Flashing



Pictured above are two options for preventing cracking when notching corners on panels and trims. Option A) Drill a 1/8" relief hole. Option B) Use a double cut notching tool with a rounded end point.



Finished



1
Install pre-punched sill channel 1/2" below window opening. Notch jamb side J-Channel (WF-J-1) to be received as shown.



2
Bed Sill flashing (WF-S-1) into sealant on window sill. Notch and fold ends of sill flashing upward 90 degrees 1-1/2", overlapping jambs as shown. Remove plastic film inside miter and area to be overlapped by jamb flashing.



3
Fit panel inside sill J-channel with a 3/4" 90 degree outward bend. Attach the panels with stainless steel blind rivets, painted to match.

Flatlock Panel System

Jamb Flashing

1



Miter jamb sleeve WF-S-1 45 degrees on front face and 5 degrees on frame side as shown.

2

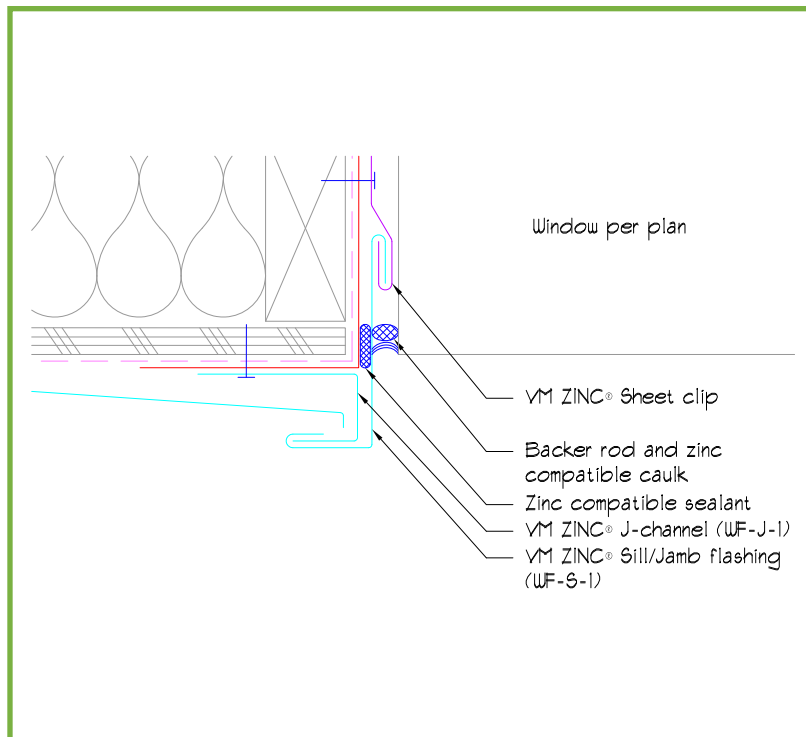


Apply sealant at junction between the waterproofing membrane and J-channel. Bed jamb sleeve in sealant.

3



Fold top of jamb sleeve inward at the head 1" with sealant behind. Cut back masking.



Installation Detail for Jamb Flashing



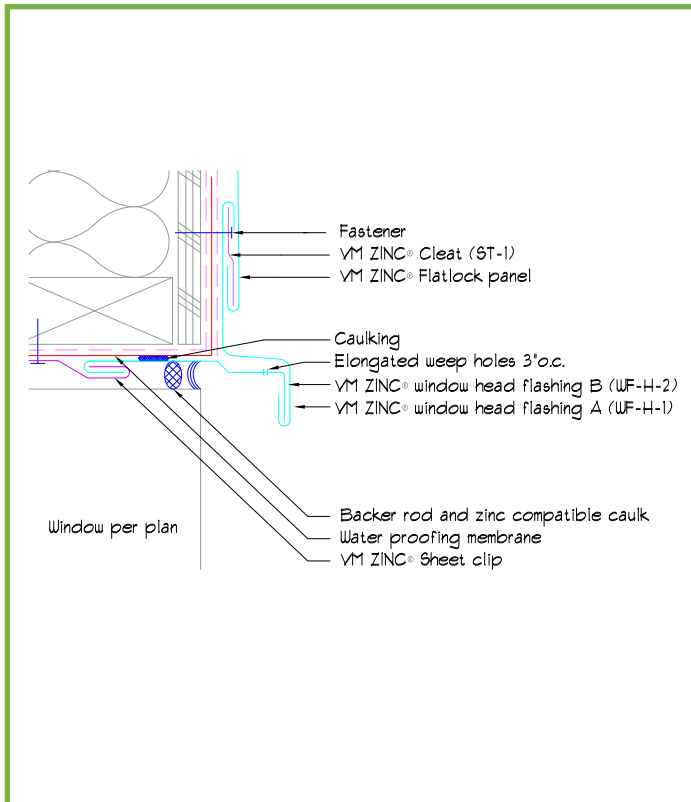
Use only zinc material for cutting the plastic film. This will minimize damage to the VM ZINC® pre-weathered finishes or score the zinc surface. Never use a steel razor utility blade to cut the film.



Finished

Flatlock Panel System

Head Flashing



Install head flashing WF-H-1 and starter strip ST-1. Attach with stainless steel pan head screws. Head flashing must overlap last panel inside jamb side J-channel. Cut head flashing 1-1/2" longer than the overall outside dimension of the jamb sleeves to allow for a 3/4" tab to be folded inward as shown.



Apply sealant at frame side of the window head.



Bed pre-punched head flashing WF-H-2 into sealant. Notch corners to overlap front face of jamb sleeve.



Flatlock Panel System

Panel Installation

EXECUTION

- Examine substrates, areas, and conditions for compliance with requirements for installation tolerances, metal wall panel supports, and other conditions affecting performance of work.
- Verify that substrate is plumb, sound, dry, smooth, clean, sloped for drainage, and completely anchored, and that provision has been made for wall drains, flashings, and penetrations through metal wall panels.
- Examine primary and secondary wall framing to verify that purlins, angles, channels, and other structural panel support members and anchorages have been installed correctly.
- Prepare written report, listing conditions detrimental to performance of work of this section. Submit copy of report to architect.
- Examine roughing-in for components and systems penetrating metal wall panels to verify actual locations of penetrations relative to seam locations of metal wall panels before wall panel installation.
- Proceed with installation only after any necessary corrections have been made.

INSTALLATION

- Install metal wall panels in orientation, sizes, and locations indicated on the drawings.
- Install metal wall panels plumb, level, square, true to line, and within installation tolerances.
- Install metal wall panels perpendicular to girts and subgirts, unless otherwise indicated.
- Anchor metal wall panels and other components of the work securely in place, with provisions for thermal and structural movement.
- Do not field-cut metal wall panels by torch.
- Fasten metal wall panels in accordance with manufacturer's instructions.
- Flash and seal metal wall panels with weather closure edges and at perimeter of openings.
- Install flashing and trim as metal wall panel

work proceeds.

- Fasten flashings and trim around openings and similar elements.
- Maintain metal wall panels in clean condition during installation.
- Remove protective film within 90 days of installation.



CLIPS AND FASTENERS

Clips for Metal Wall Panels:

- [300 series stainless steel] [or] [G-90 galvanized steel]. Specify 300 series stainless steel clips for use in marine environments.
- Pre-punched for attachment into substrate.
- Withstand negative load requirements.

Fasteners:

- #10 by 1-1/2", pancake-head, self-drilling screws, 300 series stainless steel, with Type A Philips drive.
- Resist negative design load requirements.
- Self-tapping screws, bolts, nuts, self-locking rivets and bolts, end-welded studs, and other suitable fasteners designed to withstand design loads. Material: Stainless steel.
- Exposed Fasteners:
 - a. Material: Stainless steel.
 - b. Heads: Match color of metal wall panels by factory-applied coating.
- Blind Fasteners: High-strength stainless steel rivets.

Flatlock Panel System

Flatlock: A wall cladding system that uses overlapped metal panels so that a nearly flat appearance is achieved.

The Flatlock system belongs to the rain-screen family (weather resistant, ventilated wall cladding installed over a waterproofing membrane). Flatlock panels offer a simple, yet elegant cladding solution characterized by a longitudinal seam on a horizontal, vertical, or diagonal bias.

Umicore Building Products Flatlock Panel Systems in VM ZINC® consist of factory-formed panels, flashings and trims. The panels are available in multiple shapes and dimensions, providing virtually unlimited design possibilities.

The panels engage one another on four sides using a 1", 180 degree folded hem and are secured with concealed fasteners and clips. This solution is well-suited for buildings up to 98'. For highrise applications, a specially engineered continuous clip is required.



The simplicity of the system allows for easy installation. Because there is little manual manipulation of the panels in the field, Flatlock panels may be installed in cold weather without fracture.

Key Advantages

- Versatile System with a Traditional Look
- Vertical, Horizontal and Diagonal Installation
- Engaged with a Single Fold on All Four Sides
- Concealed Clips and Fasteners
- Range of Components offering a wide Variety of Flashing Details.
- Easy to Install



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