



STONE INSTALLATION GUIDE



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ACHIEVING A GOOD BOND

To ensure the long-term success of ProVia stone veneer installations, proper mortar selection, surface preparation, and installation techniques are essential. Here are key guidelines to follow:

Achieving Bond: A strong bond starts with selecting the right mortar. Use a high-quality mortar, avoid cheaper alternatives with excessive sand, and follow the manufacturer's instructions regarding water amounts, mix time, slake time, and consistency. For jointed, grouted veneer, standard Type S or N mortar is sufficient, but for tight-fitting modular applications (like PrecisionFit & Drystack), it's recommended to use a polymer-modified mortar that complies with ANSI A118.4 or ANSI A118.15. Avoid mixing your own materials, as this can negatively affect the bond.

Hydration of Scratch Coat & Stone: Hydration is critical for proper bonding. Use a garden sprayer or mist setting on a hose to hydrate the scratch coat and stone before installation, ensuring the surfaces are fully hydrated but free of standing water. This step is important in hot weather and beneficial in cooler or dry climates. If using polymer-modified mortars, consult the manufacturer's recommendations on wetting requirements.

Impact of Dirt, Debris & Cutting Dust: Dirt, dust, and debris can impair the bond. Make sure that the wall bonding surfaces and the back of the veneer are clean and free from dust, laitance, loose concrete particles, and any films that could hinder bonding. Regularly clean the scratch coat, especially on new construction sites, to avoid dirt accumulation that can lead to bond failures.

Other Jobsite Considerations: Timing is crucial. The weight and vibration from installing other materials, such as drywall or roofing, can impact the stone veneer bond. To avoid potential cracks or bond failure, schedule stone installation after these materials are in place.

Importance of Mortar Coverage in Tight-Fitting Modular Installations: Unlike traditional masonry installations with visible grout joints that help lock each stone in place and improve adherence, tight-fitting modular installations lack this reinforcement. Therefore, a full, complete mortar setting bed is mandatory. This provides an effective seal behind and around the stone, preventing water infiltration, which can lead to issues like freezing and expansion, causing the veneer to disengage. For these applications, polymer-modified mortar or bonding agents are critical to ensure adherence.

TOOLS NEEDED

1. Staple/Nail gun
2. Metal Shears
3. Measuring Tape
4. Masonry Hammer
5. Wheelbarrow
6. Pointed shovel
7. Mortar hoe
8. 12" rectangular trowel
9. Pointed trowel
10. Nippers
11. 4' level
12. Grout bag
13. Tuck pointer
14. Plastic bristled brush or whisk broom
15. Gloves
16. Dust Mask
17. Safety Glasses
18. Wet or Circular Saw with Carbide or Diamond Tip Blade

STEP 1: Determining the Surface

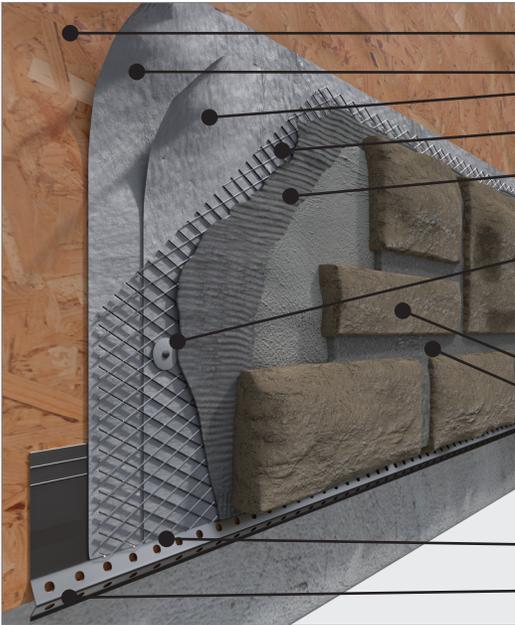
ProVia's stone products may be applied to any structurally sound load bearing wall surface. Non-load bearing walls may require alterations and we recommend you consult with a construction engineer. ProVia's stone may be applied directly to clean untreated porous concrete and masonry surfaces.

Backup Wall System	Sheathing/ Substrate	Water Resistive Barrier	Lath Type	Lath Fasteners	Setting Bed/Scratch Coat
Interior Wood or Steel Stud Framing; maximum spacing 16 in. (406 mm)	<ul style="list-style-type: none"> • Gypsum Wall Board • Plywood • OSB • Fiber Board 	Optional	Any approved lath	Corrosion resistant; minimum penetration $\frac{3}{4}$ in. (19 mm) into wood framing member or $\frac{3}{8}$ in. (10 mm) into steel framing member	See Mortar Table in Material Specs
	<ul style="list-style-type: none"> • Cement Board 	Not Required	Not Required	Not Applicable	ANSI A118.4 or ANSI A118.15
Exterior Wood or Steel Stud Framing; maximum spacing 16 in. (406 mm)	<ul style="list-style-type: none"> • Gypsum Wall Board • Plywood • OSB • Fiber Board 	Minimum two layers WRB *Optional for interior use	Any approved lath	Corrosion resistant; minimum penetration $\frac{3}{4}$ in. (19 mm) into wood framing member or $\frac{3}{8}$ in. (10 mm) into steel framing member	See Mortar Table in Material Specs
	<ul style="list-style-type: none"> • Cement Board 	Minimum one layer WRB	Not required	Not Applicable	ANSI A118.4 or ANSI A118.15
Concrete or Concrete Masonry	Not Applicable	Not Required	Not required	Not Applicable	See Mortar Table in Material Specs
	Not Applicable	Optional	Any approved lath	Corrosion resistant concrete screws, masonry nails, or powder actuated fasteners	See Mortar Table in Material Specs
Clay Masonry	Not Applicable	Optional	Any approved lath	Corrosion resistant concrete screws, masonry nails, or powder actuated fasteners	See Mortar Table in Material Specs

* Walls/surfaces must be clean and free from release agents, paints, stains, sealers or other bond-break materials that may reduce strength of mortar adhesion.

NOTE: The most current information available at www.masonryveneer.org.

Wood, Concrete and Cement Board Applications



- Wood Substrate
- Two Layers of WRB
- Lath
- Scratch Coat
- Lath Fasteners - Type & Spacing Per ASTM C1063



- Manufactured Stone
- Mortar Joint
- WRB Lapped Over Weep Screed
- Weep Screed



- Concrete Wall
- Lath (where necessary)
- Lath Fasteners - Type & Spacing Per ASTM C1063
- Scratch Coat



- Manufactured Stone
- Mortar Joint
- Weep Screed (where necessary)



- Wood Substrate
- One Layer of WRB
- Cement Board
- Mortar Setting Bed



- Manufactured Stone
- Mortar Joint
- Weep Screed

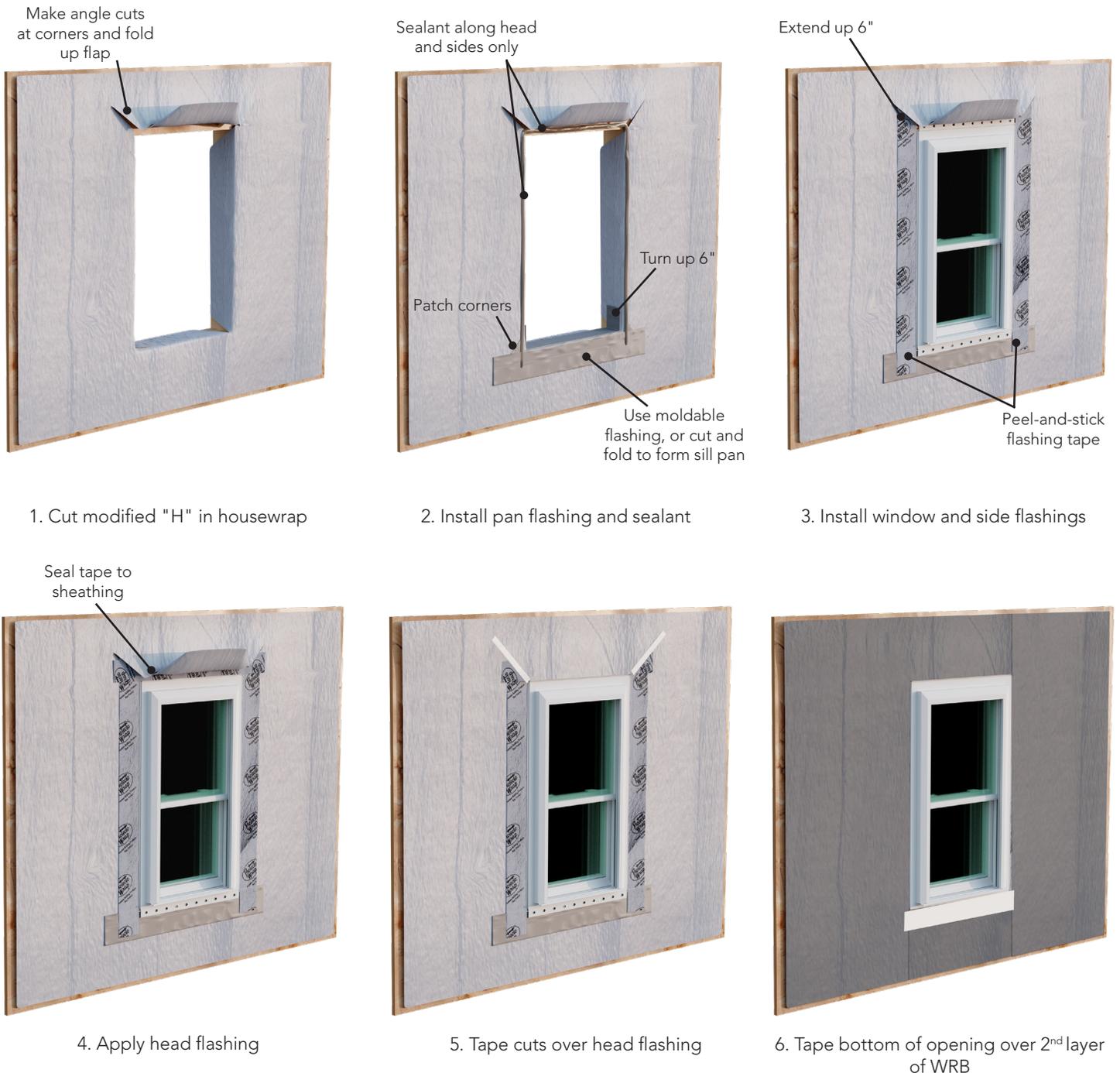
STEP 2: Preparing the Surface

Proper surface preparation is important for adhesion and keeping water infiltration to a minimum. Walls/surfaces must be clean and free from release agents, paints, stains, sealers or other bond-break materials that may reduce strength of mortar adhesion.

Flashing, Casing Bead & Flashing Tape - a thin piece of material to prevent the passage of water into a structure from a joint.

All flashing and flashing accessories must be corrosion resistant and integrated with the Water Resistant Barrier materials (if present). For exterior applications, flashing must be installed at all through-wall penetrations and at terminations of adhered manufactured stone veneer (ASMV) installations. One layer of house wrap covered by one layer of Water Resistant Barrier is acceptable. Flashing is not required for interior applications not exposed to water.

Flashing - Preparing opening



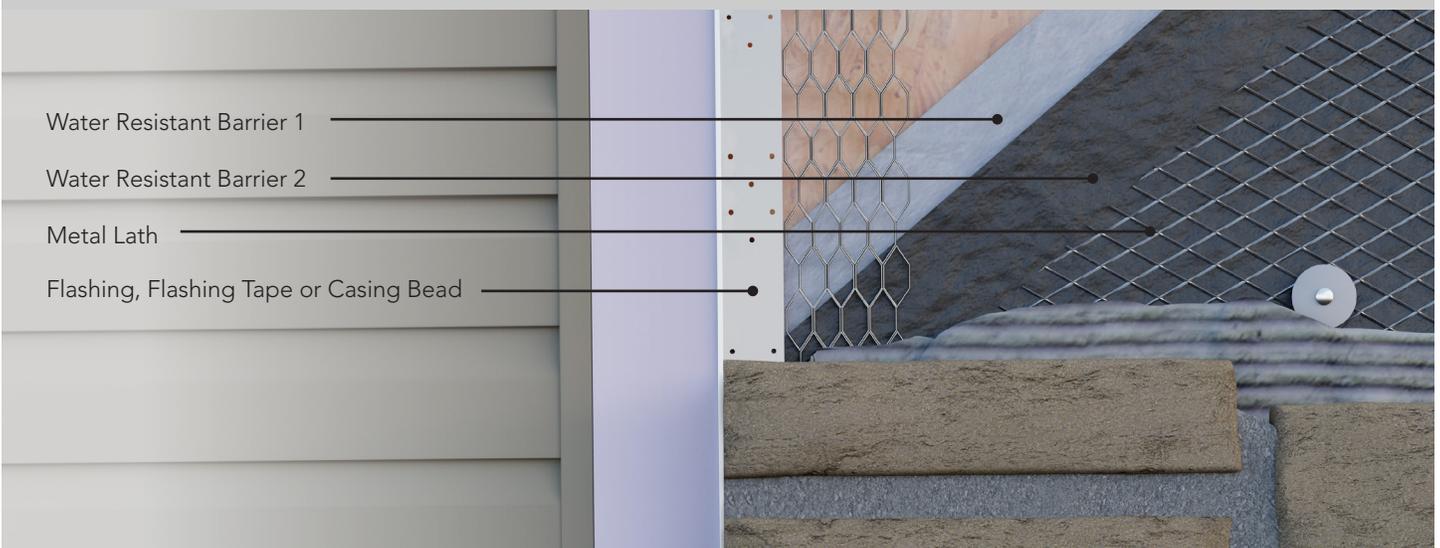
Flashing - Inside corner



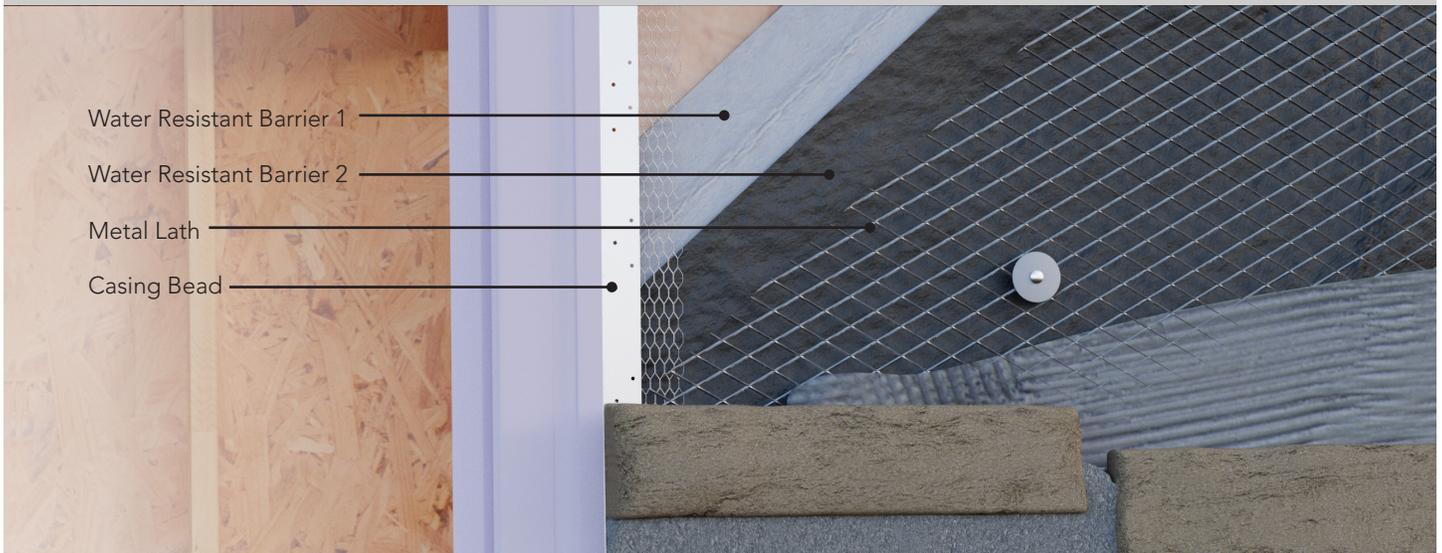
Flashing - Outside corner



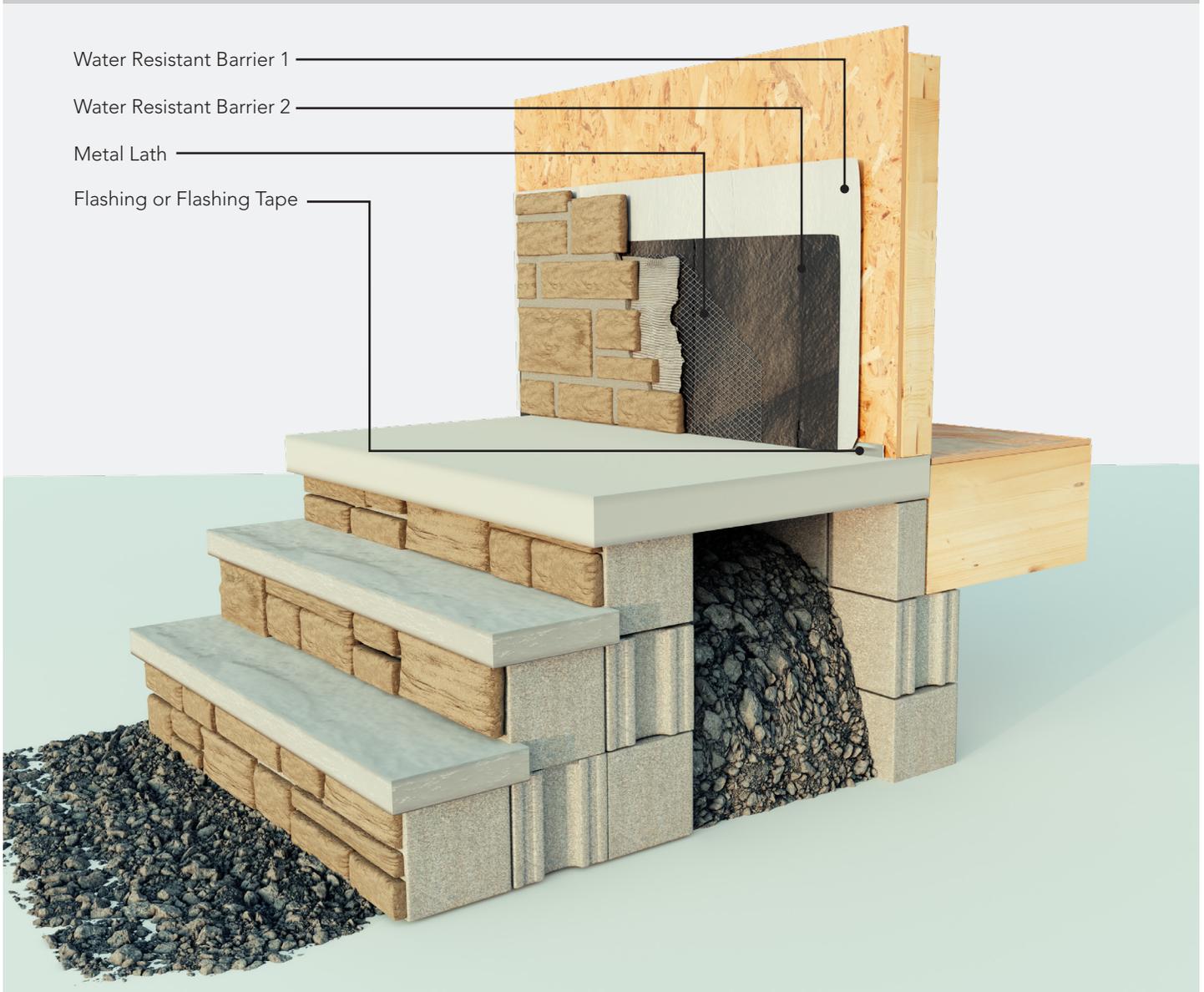
Flashing - Adjacent material



Flashing - Vertical Transition at a cased opening



Flashing - On porch and stairs

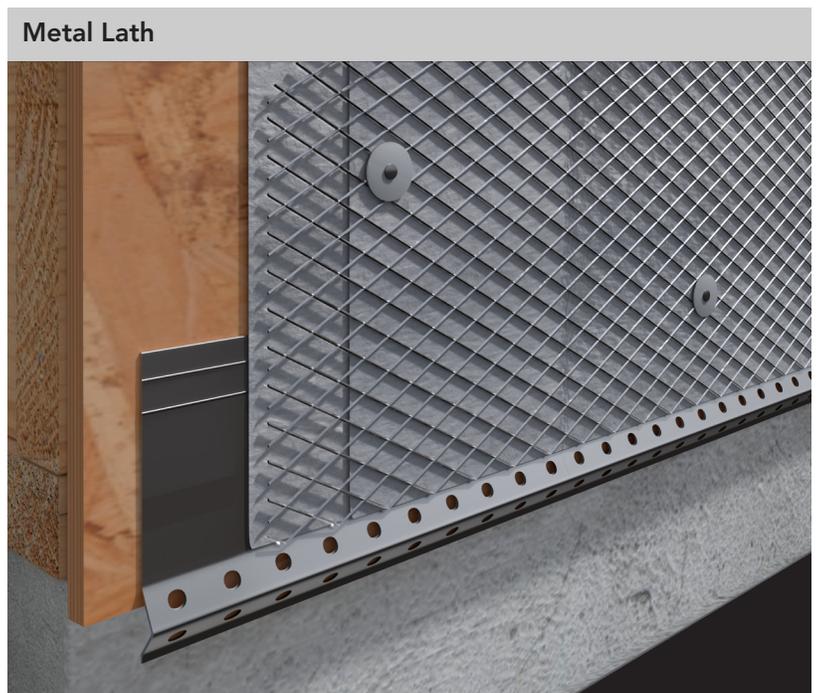


Flashing - Header installation



Metal Lath - adds strength and rigidity to the structure in addition to providing a matrix to which the mortar can adhere.

Lath should be applied horizontally across the wall. Metal lath should be applied horizontally (perpendicular to framing, if present) per manufacturer's instructions, and should overlap a minimum of 1" (25mm) at the vertical seams and a minimum of ½" (13mm) at the horizontal seams. Inside and outside corners should be wrapped a minimum of 16" to the next stud (do not end lath at the corner of framing).

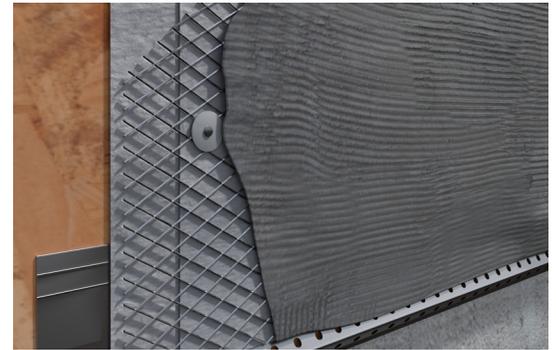


STEP 3: Applying the Scratch Coat

Scratch Coat - The purpose of the scratch coat is to create a surface to which the stone can stick. Stone will not stick to bare wood.

Mix thoroughly the appropriate mortar (refer to "Mortar" table in Material Specs) in a wheelbarrow using pointed shovel. Add approximately 2½ gallons clean, potable water to achieve a trowelable mixture. Spread mixture evenly over metal lath approximately ⅜" to ½" thick.

After mortar is thumb print dry, scratch or score the surface horizontally to create a rough scratch coat that ensures a good bond when the stone is applied.



STEP 4: Applying the Stone

Corners and Flats

If corner pieces are required, set them first by alternating the short and long leg of the corners on the wall. If the stone will not be grouted, they should be applied from the bottom up. If the stone is to be grouted, installation from the top down is best to keep the face of the stones clean.

Install flat pieces starting from the corner pieces and work towards the center of the wall. Start at the top and work sideways and down to keep stones clean. Horizontal lines should be broken approximately every 6'. The presence of moisture is important to achieve good adhesion. Because of this, you may need to moisten the back of the stone along with the scratch coat so that the surface is damp, but free of standing water to ensure good adhesion. Using the same mixture as the bed/scratch coat, apply approximately ½" of mortar, covering the entire back of the stone. By using gentle pressure and a slight wiggling action while applying the stone to the bed/scratch coat, you will assure a good bond. The stone installation must achieve a minimum of 50 lbs. per sq. inch shear bond*. All cuts should be installed with the cut facing away from the entrance. Blend stones of different shapes and colors to achieve a desirable look. If multiple lot numbers are present on the jobsite, it is recommended to blend stone from different lot numbers throughout installation.

Clearances

On exterior frame walls, weep screeds and other base flashings should be held a minimum of 4" (102 mm) above grade or a minimum of 2" (51 mm) above paved surfaces. This minimum can be reduced to ½" (13 mm) if the paved surface is a walking surface supported by the same foundation that supports the wall. Where the backing is concrete or masonry, maintain 2" (51 mm) clearance from grade or ½" (13 mm) from a paved surface provided that frost heave of adjacent surfaces is taken into consideration.

* Check with the mortar manufacturer to ensure their mortar meets or exceeds ASTM C 91 requirements and meets minimum bond code requirements

Joint Spacing

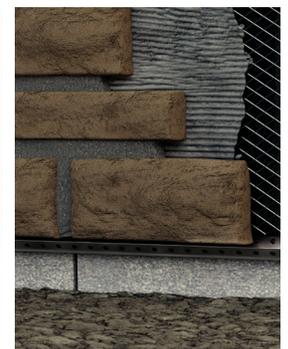
The recommended grout joint of ½ inch will ensure 10 square foot wall coverage for most profiles, for more details visit ProVia.com. Actual grout joint may differ according to the installer's discretion. It is essential that the entire back of each stone be encapsulated with mortar to ensure a good bond.

Dry Stacked Applications

The stones should fit tightly against each other, however due to the unique shape of each stone, some gaps between stones may occur. It is essential that the entire back of each stone be encapsulated with mortar to ensure a good bond. Dry stacked applications are not recommended where freeze/thaw is common.



Walking surface supported by the same foundation



Non-walking surface

STEP 5: Grouting

NOTE: Step 5 not required when installing Dry Stack or Non-Grout stone applications.

Finish Joint Procedure:



Tip: The mortar should be firm enough not to stain stone. If the mortar is struck prematurely, the joint will look like tooth-paste or appear creamy, wait for the mortar to dry more.

Tip: Start at the top and work down to ensure a clean finish.

Grouting the joints should be completed only after there is sufficient cure time of the manufactured stone. Grouting may be done with a grout bag, filling joints to the desired depth, ensuring that mortar is forced into all voids. Grout should be "thumb-print" hard before tooling the joints. When the desired firmness is reached, the use of a wooden striking tool carved just a little smaller than the joint width or metal margin trowel may be used. Press gently and smoothly as to fill grout voids and remove excess mortar to desired depth. When using a metal margin trowel, the joint must be scratched after striking to roughen joint surface. This can be achieved by turning the metal striking tool over and using the tip to scratch the joint.

Cleaning:

To keep your stone looking its best, you may want to occasionally clean your stone to remove dust or debris. Start by properly preparing your work area, then rinse the stone with water to see if that removes the debris, if not use a soft nylon brush along with warm water. If the warm water and nylon brush are not removing the debris, you can add a small amount of mild detergent to the warm water while using a soft nylon brush. Be sure to thoroughly rinse the stone after using the detergent to make sure no residue remains.

When moisture is present behind the stone, it can migrate to the surface depositing dissolved salts, which can create a white stain on the surface of the stone called efflorescence. Efflorescence may disappear on its own if the source of the moisture is controlled.

Do not use acids, chemicals, pressure washing, sandblasting, wire brushes or anything other than what is outlined above in the cleaning instructions.

Visit "www.provia.com/stone-cleaning-sealing" for step by step instructions and a video.

Sealant:

Sealant is not recommended for ProVia manufactured stone, if you choose to use a sealer, use only a silane or siloxane-based breathable masonry sealer. Be sure to test the sealer on a small inconspicuous area first and strictly follow the sealant manufacturer's directions.

Brushing Joints:



Brushing should be done within 2 hours after tooling the joints. The best way is with a clean whisk broom or any plastic bristled brush. Do not use a metal bristled brush. Do not let mortar set overnight before tooling or brushing and do not brush wet mortar, as it will smear.

For more grouting techniques, visit provia.com/manufactured-stone/installation.

Material Specs

Water Resistive Barrier

- No. 15 felt complying with ASTM D226 for type 1 felt (15 pound felt is not the same product as No. 15 felt)
- Complying with ASTM E2556/E2556M
- Combination of two materials meeting these requirements

Lath

- 2.5 - 3.4lb/yd self-furred metal lath meeting the requirements of ASTM C 847
- 18-gauge woven wire mesh meeting the requirements of ASTM C1032
- Welded wire lath meeting the requirements of ASTM C933

Fasteners

- Corrosion resistant staples, nails, and screws complying with ASTM C1063
- Masonry or concrete walls – Corrosion resistant
 - Concrete Screws
 - Powder Actuated Fasteners
- Wood framing – ¾ inch minimum penetration depth
 - Staples, Roofing Nails, Screws and Washers
- Metal framing – 1 inch minimum penetration depth
 - Screws

Weep Screeds and Casing Beads

- Minimum vertical attachment flange of 3.5 inches terminating behind WRB
- Metal - Thickness must be no less than 0.0179 inches (26 gage)
- Plastic - Thickness must be no less than 0.050 inches (1.3mm)

Mortar

Application Based Setting Bed Mortar Recommendations ¹			
Application	Type N Mortar (ASTM C270 or ASTM C1714)	Type S Mortar (ASTM C270 or ASTM C1714) or ANSI A118.1 Mortar	ANSI A118.4 or ANSI A118.15 Mortar
Interior Applications			
Less than 10 ft (3 m) in height above finished floor	Recommended	Recommended	Recommended
All other interior applications	Not Recommended	Recommended	Recommended
Exterior Single Family Residential Applications			
Grouted ²	Not Recommended	Recommended	Recommended
All other exterior single family residential applications	Not Recommended	Recommended	Recommended
Exterior Commercial Applications			
Less than 10 ft (3 m) in height above finished grade	Not Recommended	Recommended	Recommended
All other exterior commercial applications	Not Recommended	Not Recommended	Recommended
Special Applications			
Installed directly on cement board	Not Recommended	Not Recommended	Recommended
Non-vertical applications ³	Not Recommended	Not Recommended	Recommended

1 If the surface area of an AMSV unit exceeds 1 ft² (0.1 m²) or 24 in (610 mm) in any dimension, then install using setting bed mortar complying with ANSI A118.4 or ANSI A118.15.

2 Requires a minimum nominal mortar joint thickness of ¼ in (6.4 mm) around AMSV units.

3 Requires a fastening system designed by a professional engineer.

AMSV units should not be subjected to pedestrian or vehicular traffic.
NOTE: The most current information available at www.masonryvener.org.



“To serve, by caring for details in ways others won’t.” It’s not just our mission, but a way of letting our light shine every day at ProVia®. We continually strive to put these words into action by providing unmatched quality and service. The P-icon symbolizes each employee’s commitment to devoting the utmost care, pride and quality into each building product we manufacture...it’s The Professional Way.



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