



# STONE INSTALLATION GUIDE

## 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/<br>Substrate  | Water Resistive<br>Barrier                                     | Lath Type            | Lath Fasteners  | Setting Bed/Scratch<br>Coat           |
|---|--|--|----------------------|---|---------------------------------------|
| Concrete or CMU*  | Not Applicable   | Optional   | Optional             | Not Applicable  | See Mortar Table in<br>Material Specs |
| Exterior Wood or<br>Steel Stud Framing;<br>maximum spacing<br>16 in. (406 mm) | <ul style="list-style-type: none"> <li>• Gypsum Wall Board</li> <li>• Plywood</li> <li>• OSB</li> <li>• Fiber Board</li> <li>• Cement Board</li> </ul> | Minimum two<br>layers WRB<br><br>*Optional for<br>interior use | Any approved<br>lath | Corrosion resistant; minimum penetration<br>$\frac{3}{4}$ in. (19 mm) into wood framing member<br>or $\frac{3}{8}$ in. (10 mm) into steel framing<br>member | See Mortar Table in<br>Material Specs |
| Coursed Brick or<br>Stucco  | Not Applicable   | Optional   | Any approved<br>lath | Corrosion resistant concrete screws,<br>masonry nails, or powder actuated<br>fasteners  | See Mortar Table in<br>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](http://www.masonryveneer.org).

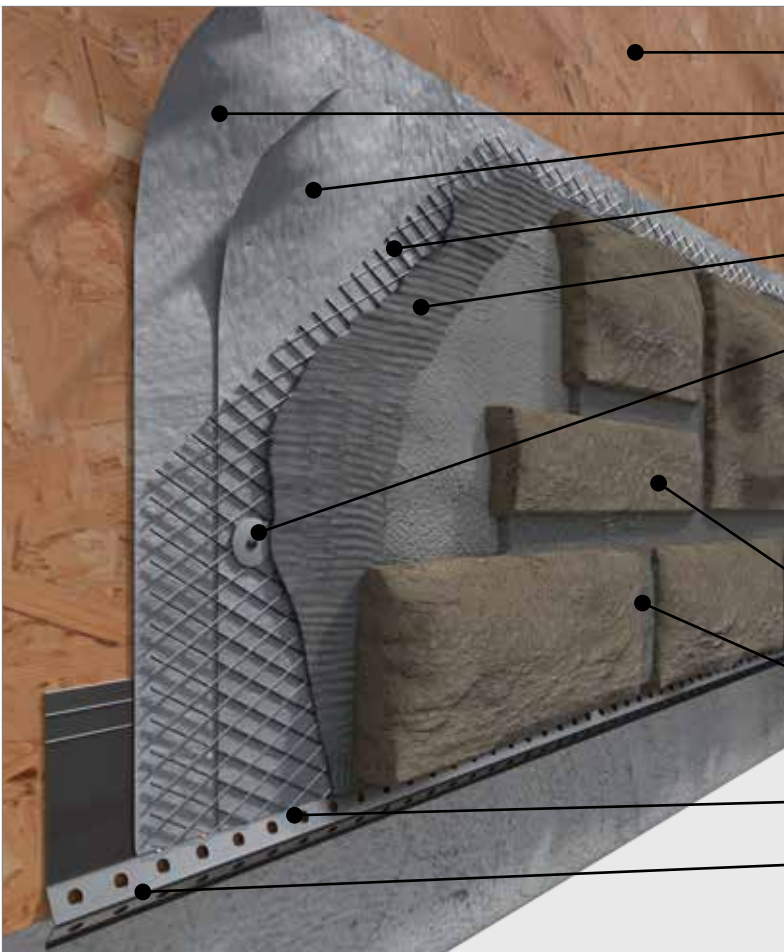
# Wood and Concrete Applications



- Concrete Wall
- Lath (where necessary)
- Lath Fasteners - Type & Spacing Per ASTM C1063
- Scratch Coat
- Manufactured Stone
- Mortar Joint
- Weep Screed (where necessary)



"Back-butter" the back of the stone with mortar before attaching to the scratch coat.



- 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



"Back-butter" the back of the stone with mortar before attaching to the scratch coat.

## 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.

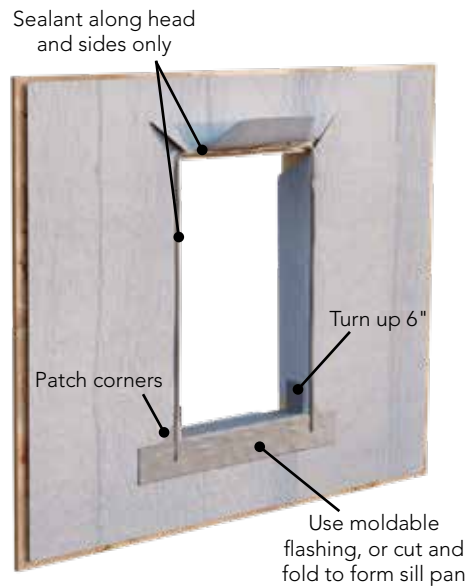
**Flashing, Casing Bead & Flashing Tape** - a thin piece of material to prevent the passage of water into a structure from a joint.

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.

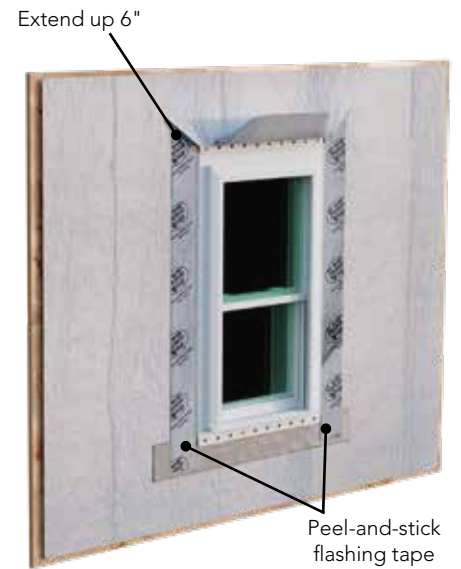
### Flashing - Preparing opening



1. Cut modified "H" in housewrap



2. Install pan flashing and sealant



3. Install window and side flashings



4. Apply head flashing



5. Tape cuts over head flashing



6. Tape bottom of opening over 2<sup>nd</sup> layer of WRB

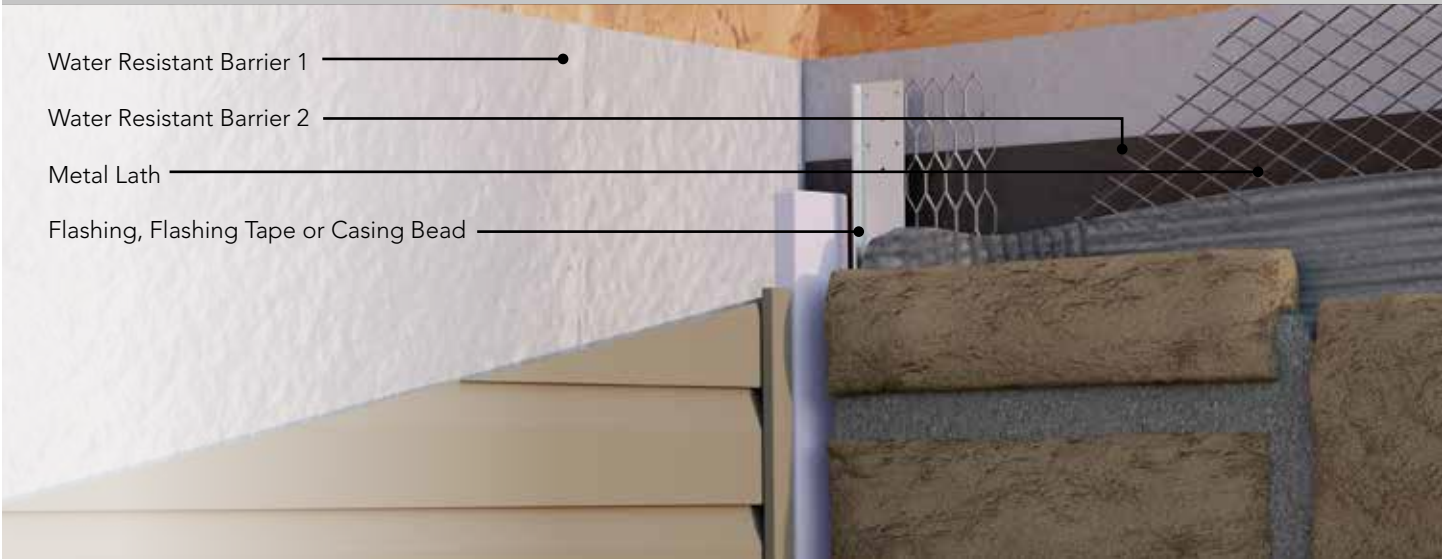
**Flashing - Inside corner**

Water Resistant Barrier 1

Water Resistant Barrier 2

Metal Lath

Flashing, Flashing Tape or Casing Bead



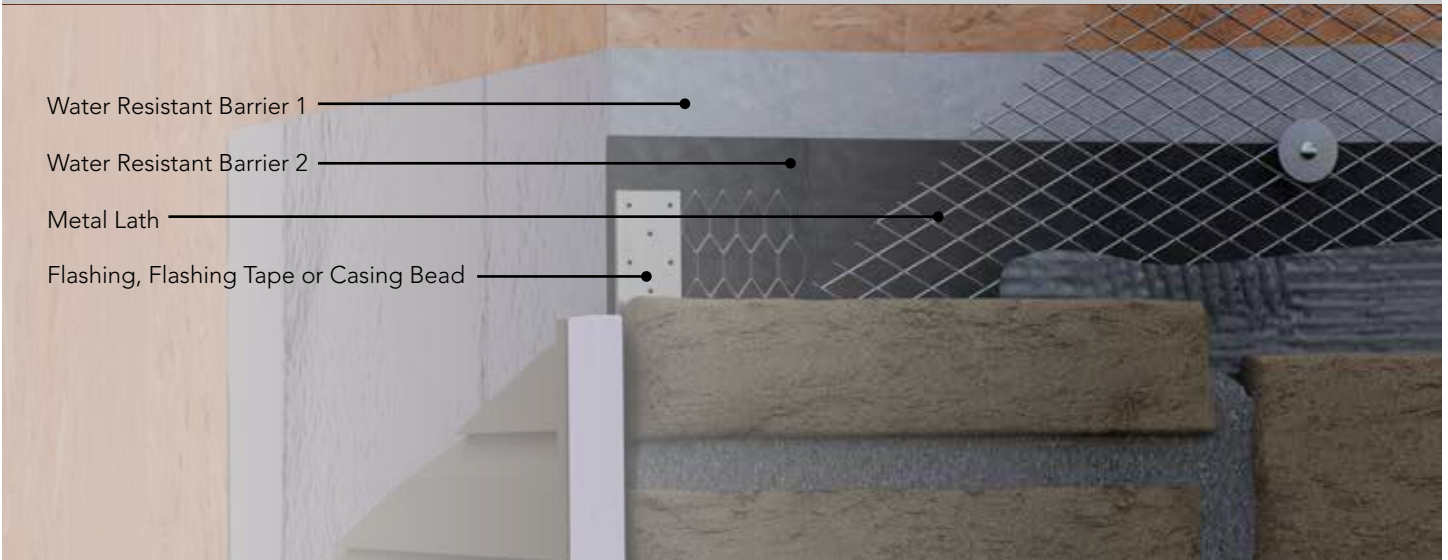
**Flashing - Outside corner**

Water Resistant Barrier 1

Water Resistant Barrier 2

Metal Lath

Flashing, Flashing Tape or Casing Bead



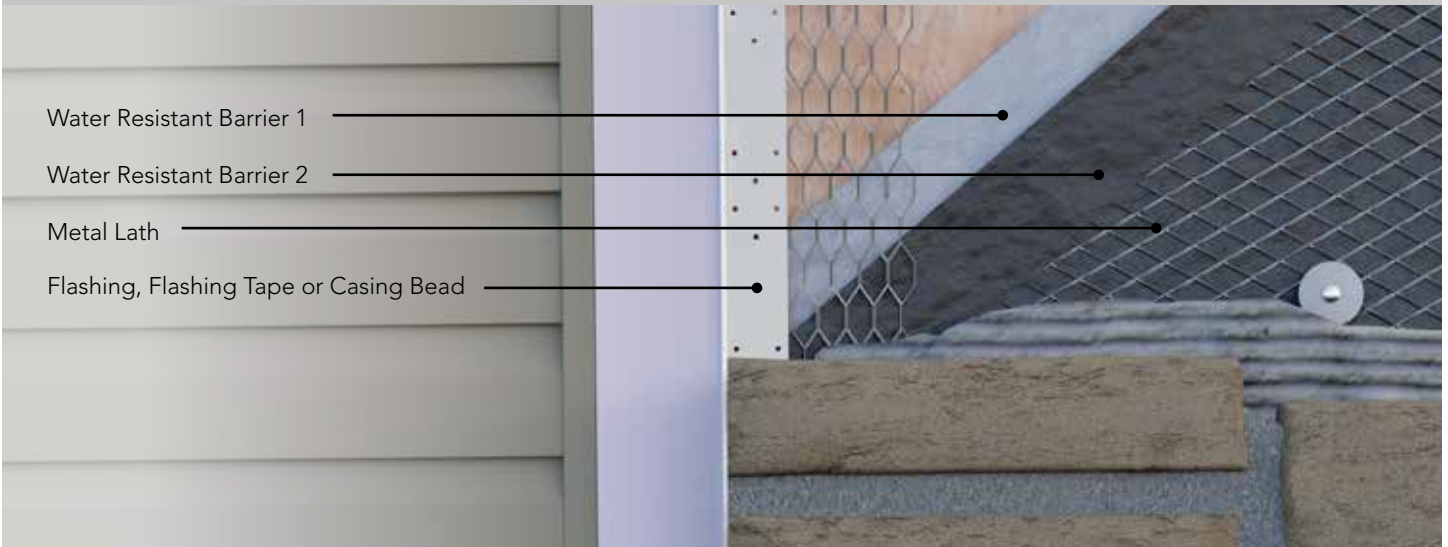
**Flashing - Adjacent material**

Water Resistant Barrier 1

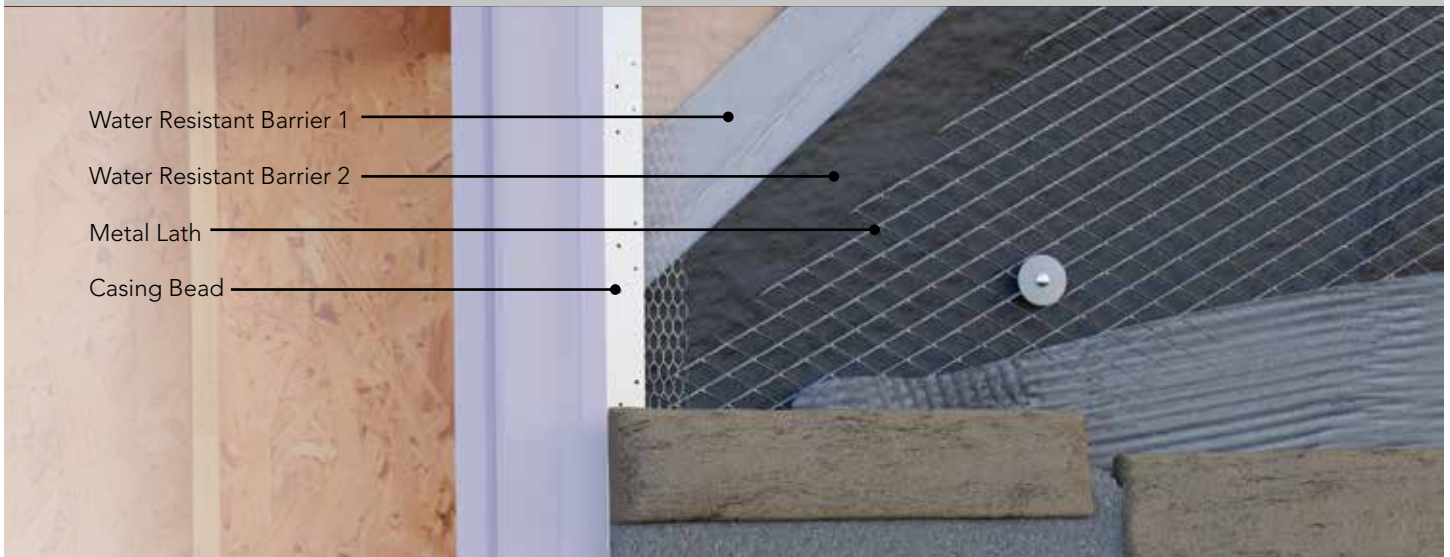
Water Resistant Barrier 2

Metal Lath

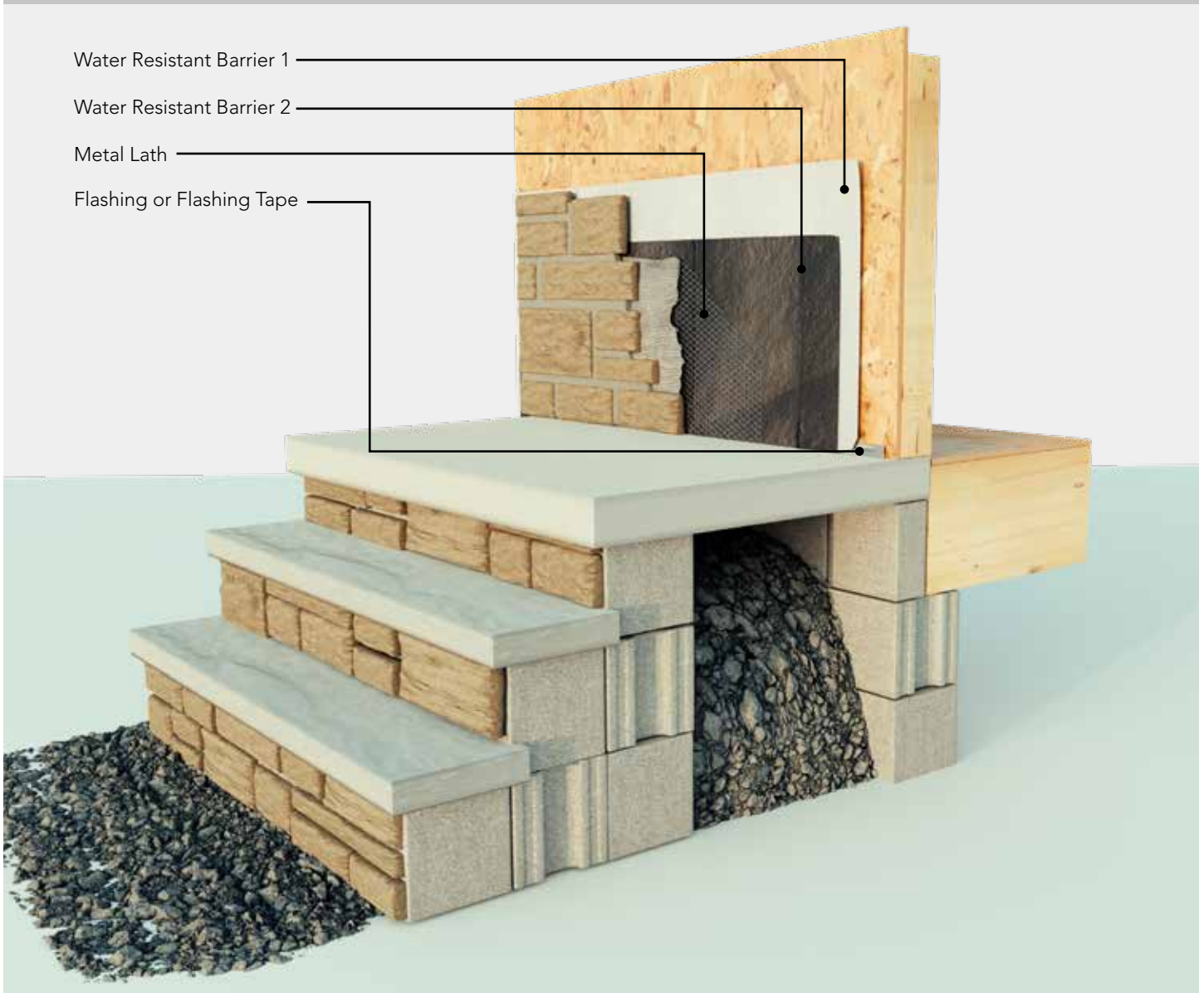
Flashing, Flashing Tape or Casing Bead



**Flashing - Vertical Transition at a cased opening**



**Flashing - On porch and stairs**

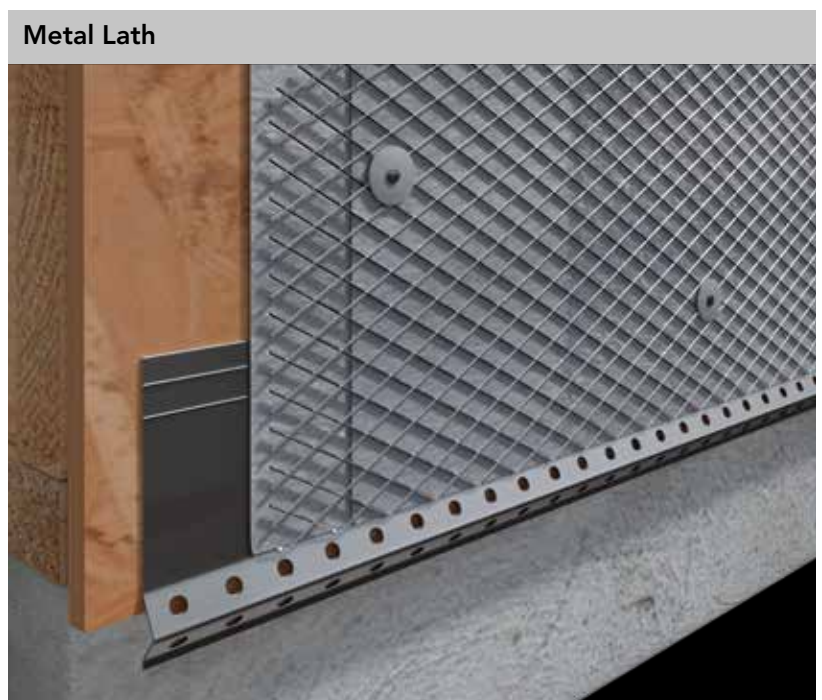


## Flashing - Header installation



**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 1/2" (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.

Where freeze/thaw conditions are rare, stone can be installed to grade. However, unwarrantable discoloration of stone touching the ground may occur. Where freeze/thaw conditions are common, stone should be installed a minimum of 2" above surfaces. This minimum can be reduced to ½" if the surface is a walking surface supported by the same foundations supporting the wall.

*\* 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 ⅝ 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. If gaps between stones is a possibility, it is recommended to use a complimentary color mortar. 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:

Do not pressure wash, sandblast, use wire brushes or acids for cleaning. Instead, wet the wall thoroughly with water. Next, scrub the wall with tri-sodium phosphate solution using a stiff plastic bristled brush. Then, rinse the wall thoroughly. If you need further assistance, contact your dealer or Customer Service at 800.669.4711.

### Sealing:

Sealing is unnecessary and an additional expense on most projects. However, a sealed surface is much easier to clean than an unsealed surface. If you have conditions that could discolor or stain the stone, sealing is an option that you may want to consider. Contact your dealer or Customer Service at 800.669.4711 for assistance.

### 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](http://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 –  $\frac{3}{4}$  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 <sup>1</sup> |   |  |                                       |
|---|---|--|---------------------------------------|
| Application   | Type N Mortar<br>(ASTM C270 or<br>ASTM C1714) | Type S Mortar<br>(ASTM C270 or ASTM<br>C1714) or ANSI A118.1<br>Mortar | ANSI A118.4 or ANSI<br>A118.15 Mortar |
| <b>Interior Applications</b>                                      |   |  |                                       |
| Less than 10 ft (3 m) in height above finished floor              | Recommended                                   | Recommended  | Recommended                           |
| All other interior applications                                   | Not Recommended                               | Recommended  | Recommended                           |
| <b>Exterior Single Family Residential Applications</b>            |   |  |                                       |
| Grouted <sup>2</sup>  | Not Recommended                               | Recommended  | Recommended                           |
| All other exterior single family residential applications         | Not Recommended                               | Recommended  | Recommended                           |
| <b>Exterior Commercial Applications</b>                           |   |  |                                       |
| 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                           |
| <b>Special Applications</b>                                       |   |  |                                       |
| Installed directly on cement board                                | Not Recommended                               | Not Recommended  | Recommended                           |
| Non-vertical applications <sup>3</sup>                            | Not Recommended                               | Not Recommended  | Recommended                           |

1 If the surface area of an AMSV unit exceeds 1 ft<sup>2</sup> (0.1 m<sup>2</sup>) 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  $\frac{1}{4}$  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](http://www.masonryvener.org).

## TIPS & SUGGESTIONS

### Caution

Do not subject AMSV to direct or frequent water contact. For example, avoid allowing sprinklers to directly spray onto the surface. Also, downspouts or drainage pipes should be placed so that water is not frequently moistening the AMSV units.

Do not subject AMSV to contact with de-icing materials, salt, or other harsh chemicals. Prolonged exposure to these conditions may discolor the AMSV or result in surface damage.

NOTE: For more detailed installation instructions, visit our website [www.provia.com](http://www.provia.com)

### Darker looking Stone

ProVia's stone is packaged before the drying process is complete. As with natural stone, ProVia's stone will look darker if moisture is present. Therefore, examine the stone for moisture and if in doubt, place a few stones on an oven rack, in the middle of an oven at 160 degrees, for several hours. Allow them to cool before removing from the oven. The stone will lighten to its true color as moisture dissipates. If not, contact ProVia Customer Service.

### Draining Plane Systems

ProVia's stone does not require the use of rain screen drainage plane systems although some building codes require this. Reference the MVMA Installation guidelines at <https://ncma.org/manufactured-stone-veneer/>

### Efflorescence

A white residue that sometimes appears on masonry surfaces. As moisture makes its way through concrete, from the inside out, it may bring with it any soluble salts residing in the concrete or mortar. When the moisture evaporates, it leaves the soluble salts on the masonry surface.

To clean efflorescence off a masonry surface, mix 1 part white vinegar to 5 parts clean water. With a soft bristled brush lightly scrub the masonry surface with the water/vinegar mixture. Do not use acids, power washing equipment or other cleaning agents to remove efflorescence.

### Expansion/Control Joints

Do not span expansion or control joints with stone. Terminate stone at the expansion or control joint. These exist to relieve pressure and allow for movement in the structure.

### Flashing

No weep screed is needed where there is flashing. To prevent leaks place Z-flashing above all openings in the stone area. Use flashing above brick instead of weep screed.

### Stains

Paint – use artists echo knife (looks like a scalpel). Gently lift paint splatter off.

Coffee – scrub with tri-sodium phosphate solution, rinse with water and cover with cat litter.

Oil – put paint thinner on the stain, scrub with small soft brush, cover with cat litter, flour or corn meal. Repeat process until stain is gone.

*For situations or applications not outlined in this manual, please refer to the most current edition of the MVMA Installation Guide and detailing options for compliance with ASTM C1780.*



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