

**CAPTURED STONE IMPRESSIONS'
INSTALLATION GUIDE FOR MANUFACTURED STONE VENEER**

Preface

Before installing manufactured stone veneer, consult with your building inspector to ensure these instructions meet the requirement of current local building codes. While care has been taken to create an installation guide which conforms to the National Building Code of Canada and the Nova Scotia Building Code, your local Building Official is responsible for the final determination for compliance and should be consulted beforehand.

Captured Stone Impressions highly recommends contracting a professional installer or mason to install manufactured stone veneer. They should be familiar with all the procedures to ensure that installation will conform to the local building code requirements.

What you will need:

Surface Prep

Tools:

- Staple Gun
- Hammer
- Utility Knife
- Lath Cutters

Materials:

- Approved building paper
- Staples for attaching building paper
- Lath - Two options:
 1. Woven or welded wire mesh. Must be galvanized. CSI recommends a 2.5 lb diamond galvanized mesh.
 2. Rib lath or expanded metal stucco mesh. Must be either galvanized or copper-alloy steel coated with rust inhibitive paint after fabrication.
- Fasteners for attaching lath. Must be corrosion resistant and made of material other than aluminum. You have two options:
 1. Nails - must be 3.2 mm in diameter or greater and the head must be 11.1 mm in diameter or greater. Must be long enough to penetrate at least 25 mm into framing members or to the full depth of the sheathing if the sheathing is used for the attachment.
 2. Staples - must be 1.98 mm or greater in diameter or thickness.
- Materials for installing flashing.

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Mortar Prep

Tools:

- Wheelbarrow (or container for mixing mortar)
- Shovel
- Hoe

Materials:

- Portland cement - must conform to CAN/CSA-A3001
- Masonry Cement or Lime
- Mason Sand
- Water
- Pigment (optional - for colouring)

Installation

Tools:

- 12" Trowel
- Pointed Trowel
- Nippers or Angle grinder with cutting blade for concrete (for cutting stone)
- Level
- Metal jointing tool
- Grout bag
- Whiskbroom (for cleaning the stone)

Materials:

- Manufactured Stone Veneer

Estimating the Amount of Stone Required

The following information is for estimating purposes only. Your installer should calculate the total amount of stone needed for the job, as they will have a better idea how much extra stone will be needed to allow for cutting, trimming and selection.

Calculation 1.

Square footage of TOTAL AREA to be covered.

Measure the height (H) and width (W) of each wall or surface area to be covered in INCHES. Use the following formula to determine square footage:

$$(H \times W) / 144 = \text{Square Footage}$$

So two walls sharing a corner, each measuring 8 feet (96") x 4 feet (48") would be calculated as follows:

$$96 \times 48 = 4608$$

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$$2304/144 = 32 \text{ Sq. Ft.}$$
$$\times 2 \text{ walls} = 64 \text{ Sq. Ft.}$$

Calculation 2.

Square footage of total OPENINGS (doors, windows, etc.).

Measure the height (H) and width (W) of each opening in INCHES. Use the following formula to determine square footage:

$$(H \times W) / 144 = \text{Square Footage}$$

So a small window measuring 2 feet (24") x 1 foot (12") would be calculated as follows:

$$24 \times 12 = 288$$
$$288/144 = 3 \text{ Sq. Ft.}$$

Calculation 3.

Lineal Footage for CORNER Stones.

Measure the height of each outside corner needing coverage. Typically, you can subtract .50 square foot from the total area for each lineal feet of corner. An 8 foot corner would be calculated as follows:

$$8 \text{ feet} \times .50 = 4 \text{ feet}$$

Calculation 4.

Amount of flat stone.

Subtract the square feet of and OPENINGS (Calculation 2) and CORNERS (Calculation 3) from the total area (Calculation 1):

Total Area - Openings - Corners = Flat Stone

$$64 - 3 - 4 = 57 \text{ Sq. Ft.}$$

In this example, 57 Sq. Ft. of flat stone and 8 Lin. Ft. of corner stone will be needed.

Installation

Wood-framed Structure (where 10 mm capillary break is required by local building code).

Vapour Barrier

- Install building paper or alternative, such as Tyvar or Tyvek, over entire project. We recommend 2-ply grade D paper or #15 Felt.
- If using felt or tar paper, begin installing at the bottom of your wall and work your way to the top, attaching it firmly with stapler. Overlap seams at least 150 mm (6") vertically and at least 75 mm (3") horizontally.

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Flashing & Capillary Break

National Building Code requires a 10mm air space. We currently carry 2 products to provide the air space. Keenes Dri-wall and MTI Sure Cavity. Both products meet building code.

Creating the 10 mm air space using MTI "Sure Cavity" Rain Screen System

See "Sure Cavity" instructions supplied by Captured Stone Impressions.

Creating the 10 mm air space using Keenes "Dri-wall"

See manufactures installation instructions:

<http://www.keenebuilding.com/media/documents/driwall-rain-10-mm/driwall-rainscreen-10mm-installation-instructions-2011-with-lh.pdf>

Lath

Install lath with the longest dimension running horizontally.

There must be 50 mm (2") or more of overlap on both the vertical and horizontal joints of the lath.

The end joints of the lath must be staggered and must occur over framing.

When installing lath around an outside corner, it must be reinforced. This can be done in two ways:

1. Place a second vertical strip of lath extending at least 150 mm (6") on both sides of the corner.
2. Extend the lath around the outside corner at least 150 mm (6") overlapping the joint of the second piece of lath at least 150 mm (6") BEFORE the corner so that there is at least 150 mm (6") of reinforcement on both sides of the corner.

Fastening the lath. The spacing the fasteners must meet one of the following three criteria:

1. 150 mm (6") on center vertically and 400 mm (15.75") on center horizontally.
2. 100 mm (4") on center vertically and 600 mm (24") on center horizontally.
3. Or at least 20 fasteners for every sq. meter of wall surface.

Brick, Concrete or other Masonry Surfaces

Make sure the surface is clean and free of paint or any other material which may compromise the adhesion of the mortar. If surface is dirty, painted or sealed, sandblast or water blast to removed. Wash thoroughly after. If there are still concerns, install metal lath for scratch/base coat. No moisture control system is necessary. If there is any release (oil) present on newly poured concrete, use muriatic acid and rinse thoroughly.

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Scratch Coat

Points to remember:

- Mix materials thoroughly before and after adding water.
- Do not apply stucco more than 3 hours after mixing.
- Keep all materials and surface above freezing
- Stucco needs to be kept above 10 degrees Celsius during application and for 2 days following.
- Pigment should be made of pure mineral oxides which will not be affected by sun, lime and cement.
- Pigment should not exceed 6% of the Portland cement by weight.
- If it is warm or dry, moisten stone or any concrete that mortar will come into contact with as it cause the mortar to dry out too quickly.

Mix one of the following mortar mixes with clean water for your scratch/base coat.

1. 1 part Portland cement, 1 part masonry cement, 3.25 to 4 parts of mason sand per part of cementitious material plus pigment for colouring if desired.
2. 1 part Portland cement, 0.25 to 1 part lime, 3.25 to 4 parts of mason sand per part of cementitious material plus pigment for colouring if desired.

Apply your first coat of mortar.

Using a trowel, spread mixture over lath, making sure the lath is fully embedded with mortar.

The first coat of mortar should be between 10 mm (3/8") - 20 mm (3/4") thick.

Score the first coat of mortar. This will allow the second coat better adhesion.

Let your first coat set up for at least 24 hours before proceeding. It may be necessary to wait another day if conditions are unfavourable.

Stone Placement

Laying Out the Stone

Pick out at least 20 pieces of stone which represent the variety of sizes and colours in your order and lay them out on the ground where you are installing. This will help you see what they will look like together on the wall.

Installing Stone

Stone can be installed from top to bottom, or bottom to top. Starting at the top and working your way down will eliminate the possibility of mortar falling on stone which has already been installed.

If you are installing stone which needs to be level, draw lines on the scratch coat with a pencil and a level to serve as a guide.

If you are using a mortar joint, try to keep spacing between stones as even as possible. 13 mm (1/2") is good

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If you are installing a drystack style (no mortar joint), take a little extra time to pick out your stone so that a tighter fit is ensured.

If you are using corner stones, you should install these first. Alternate long and short sides of your corner stones. After which, with the flat stone, work your way to the center of the wall.

Occasionally, it will be necessary to change the size of a stone to make it fit. Use nippers or a small hand grinder to resize. When cutting, try to anticipate how the stone will be viewed after it is installed. Keep the cut edge of a stone away from "eye-view." For example, when cutting stones to fit around a doorway, a vertically cut edge should be turned away from the door, making it less likely to notice. Similarly, horizontal cut edges should face up when above eye level, and down when installed below eye level. Later, when grouting, the cut edge can be covered up.

If you should drop mortar on the face of a stone, wait until the mortar dries enough to crumble before attempting to clean. Use a dry bristle brush or whiskbroom.

You can install the stone in one of two methods:

1. Applying Mortar to the Wall:

Using trowel, spread mortar over small section of wall (5 to 10 sq. ft.) about 13 mm (1/2") to 20 mm (3/4") thick.

Install each stone by pressing it into the mortar in firm slight twisting motion until you feel the backing of the stone begin "grind" against the base coat of mortar. Be careful to keep a tight, full, even mortar joint as you proceed. If stone doesn't hold to the wall, the wetness of your mortar needs to be adjusted. Do this before continuing.

2. Applying Mortar to Stone

Using pointed trowel, spread no less than 13 mm (1/2") of mortar to the back of your stone.

Press your stone firmly into the scratch coat so that the mortar is squeezed out from all sides of the stone and a secure bond is formed.

Grouting

Standard Joint (Raked) - Using a grout bag, fill in any voids between stones with mortar and allow the mortar to set up. After the mortar has become firm (30-60 minutes), use a metal jointing tool to rake out any excess mortar and work it in tight around the stone sealing the edges.

Overgrout Joint- Using a grout bag, overfill the joints between stones so that the mortar touches the edges of the stone face. Having the right consistency in your mortar is important to help reduce the introduction of air into the joint.

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Brushing

At the end of the day or when you have finished a job, you should take a dry whiskbroom and go over the entire surface, cleaning off any loose mortar in the joints or on the face of the stone.

Cleaning

It should not be necessary to clean your stone. However, in the event that cleaning may be required, use only granulated soap or a mild detergent diluted with water and a soft bristle brush.

NEVER use muriatic acid, harsh detergents, wire brushes or a high pressure washer to clean the stone. NEVER.

Sealing

Sealing manufactured stone veneer is typically not necessary. Applying a sealer will darken the stone, which may be undesirable. However, if your stone is going to be exposed to unusual amounts of smoke, soot, dirt or splashing water, sealing may be preferred to the frequent cleaning of your stone. The sealer should be a silane-based breathable sealer. Keep in mind that sealers can slow moisture being released from the stone and increase the possibility of efflorescence.

Caution

Do not subject Adheared Masonry Veneer 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 veneer units.

Do not subject Adheared Masonry Veneer to contact with de-icing materials, salt, or other harsh chemicals. Prolonged exposure to these conditions may Discolor the stone veneer or result in surface damage.

Water Run-off

It is important to divert water run-off away from veneer surfaces. Run-off or splashing may stain the veneer. Water runoff combined with severe freeze/thaw conditions can result in surface damage. Adheared Masonry Stone veneer should never be used below water level or in applications that subject the veneer to chlorine, deicers, or chemicals that may discolor or adversely affect the veneer. Corner or flat veneer pieces should not be used on exterior horizontal surfaces or to cap walls. Use stone caps or drip sills and extend them beyond wall surfaces by (approximately) 2".