

MStone Stone & Tile Company

Stackstone & Corner Installation Guide

Jointless or Dry-Stacked Panel Installation

The MStone system is a jointless/dry-stack installation where panels and corners fit tightly together without grouted joints.

PLEASE NOTE: ALL MSTONE ROCKFACE PANELS MUST BE INSTALLED WITH A LATEX MODIFIED THINSET, SINCE STONE IS NOT DIRECTLY EXPOSED IN THE BACK OF THE PANEL

Materials

Weather Resistant Barrier (where required)

All exterior surfaces require a water/weather resistant barrier before installing MStone panels. This barrier must meet local building codes, UBC standard Code 141 regarding waterproof building paper or asphalt saturated building felt. Rigid noncorrosive flashing is required to exterior wall use.

Lath or Wire Mesh (where required)

Install a 2.5 lbs. diamond mesh expanded metal lath or an 18-gauge woven wire mesh: exterior applications will require a galvanized metal lath; however, a non-galvanized black metal lath may be used for interior applications. Overlap lath sides by not less than 3-8 inch and lath ends by not less than 1 inch. Attach the lath using galvanized nails or staples 6 inch on center and 16 inches horizontally, penetrating studs to a minimum of 1 inch. Continuously wrap metal lath a minimum of 16 inch around all outside and inside corners.

Scratch Coat

Apply a ½ inch thick scratch coat of mortar over the metal lath. Use a toothed scraper, notched trowel or small piece of lath to lightly rake horizontal grooves in the scratch coat, and allow the mortar to set. Mortar should be mixed to a firm but workable consistency. MStone systems recommends type n or s mortar combined with a bonding agent** (see architecture specification document for additional information). It is recommended that the scratch coat dry for at least 24 hours. Certain weather conditions may require that the scratch coat is moistened prior to the installation of the MStone panels.

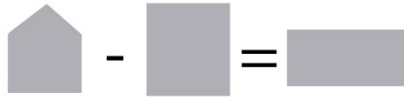
TOOLS

Masonry trowel
Wheel barrow
Buckets
Masonry hammer
Dust mask
Tuck pointer
Whisk broom
Sponge
Water
Chalk line
Plumb bob
Circular saw with carbide or diamond tip blade
Gloves
Pneumatic stapler or screw gun
Safety glasses
Finishing trowel
Grout bag
Stapler
Metal shears
Utility knife
Measuring tape
Level
Concrete hoe
Wet saw with carbide or diamond tip blade

**integral bonding agent meeting ASTM C 9322 or ASTM C 1059 type ii.
Refer to manufacturers' instructions for mix ratio.

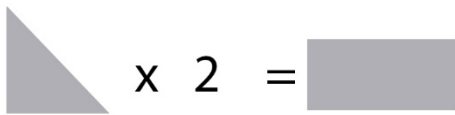
Estimating Stone Quantities Needed

Panels (flats) and corners can be used for all installations. Panels are applied to the flat wall surface and are ordered per piece. Each 6"x24" piece is one square foot. Corners are applied to outside or inside corners and are ordered in square feet. Each corner comes in two pieces, 6" x 8" and 6" x 16" with the two combined equaling one square foot.



Project Sq. Footage - Openings Sq. Footage = Adjusted Project Sq. Footage

1. Determine the total project square footage by multiplying the length by the height of each surface area to be covered and then deduct the area of all openings such as door and windows.



Lineal Footage of Corners

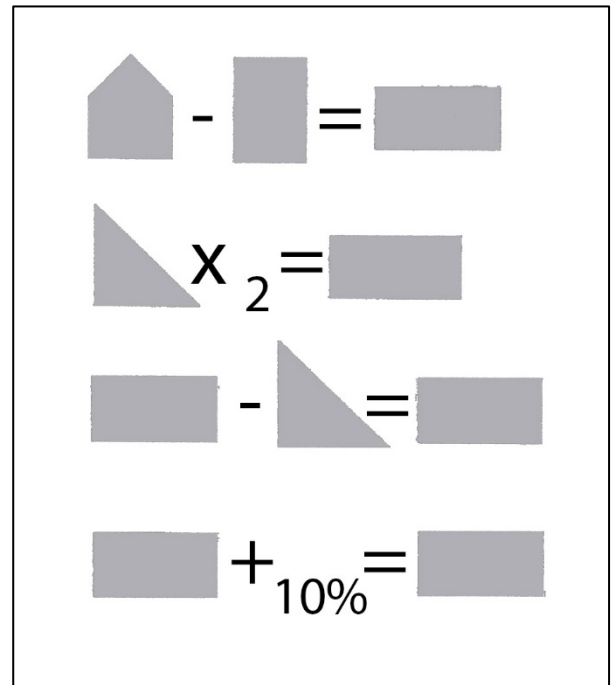
Sq. Footage of Corners

2. Determine the lineal footage of corner stones needed for the project by measuring the lineal feet of corner areas to be covered including. Don't forget to include any doorways, indents, notches, etc. that will require corners.
3. Determine the square footage of corners required for the project by multiplying the lineal footage of corner stones by two (one lineal foot of corners equal two square feet of MStone corner panels).



Adjusted Project Sq. Footage - Corner Sq. Footage = Sq. Footage of Panels to Order

4. Subtract the corner square footage from the total project square footage (point 1). This will give you the square footage of panels (flats) required. However, some extra quantities of flats is desirable for the best fitting and for cutting and trimming.
5. Add 5-10% extra as a buffer



Preparation of Surface

Clean

Always make sure that the surface to receive the stone is clean

Weather Resistant Barrier (where required)

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Lath or Wire Mesh (where required)

Install a 2.5 lbs. diamond mesh expanded metal lath or 18-gauge woven wire mesh. Exterior applications will require a galvanized metal lath, however, a non-galvanized black metal lath may be used for interior applications. Overlap lath sides by not less than 1 inch. Attached the lath using galvanized nails or staples 6 inches on center and 16 inches horizontally, penetrating studs to a minimum of 1 inch. Continuously wrap metal lath a minimum of 16 inches around all outside and inside corners.

Scratch Coat

Apply a ½ inch thick scratch coat of type N or S mortar with a bonding agent over the metal lath. Use a toothed scraper, notched trowel or small piece of lath to lightly rake horizontal grooves in the scratch coat. Allow scratch coat to dry at least 24 hours.

MStone Panel

Be sure the back of each MStone panel is clean and free from dust. This can easily be done by wiping the back of the panel with a damp rag. Cutting panels will create dust and should be worked on outside. Clean the back of all panels after cutting. Only cut panels with a wet saw.

Note: Mortar should be mixed to a firm but workable consistency. MStone systems recommends type N or S mortar combined with a bonding agent (see architecture specification document for additional information). It is recommended that the scratch coat dry for at least 24 hours. Certain weather conditions may require that the scratch coat is moistened prior to the installation of the MStone panels.**

****integral bonding agent meeting ASTM C 9322 or ASTM C 1059 type ii. Refer to manufacturers' instructions for mix ratio.**

Installation of MStone Panels

Always follow and check your local building code requirements. MStone should only be applied to structurally sound surfaces incorporating good building practices. Please note that the assistance of a professional contractor or engineer may be needed to evaluate your installation or the soundness of the substrate. A professional can also provide important information regarding local building codes, seismic building codes, institutional building codes, and installations.

Install the Corner Pieces First

Start from the bottom and work up. The corner pieces come in 8" and 16" lengths. Alternate these in opposite directions on the corner. It is recommended to lay out the MStone panels ahead of time to determine pattern.

Apply Mortar

Using a mason's trowel, cover the entire back of all panels completely with a ½ inch thick, even layer of mortar.

Secure the Stone to the Wall

Press stone panels firmly against the scratch coated wall to ensure a sound bond. It is suggested to keep the stonework free from mortar dropping and mortar smears as much as possible. Mortar droppings can be removed with a damp cloth.

Wetting the Stone and Substrate

Under certain conditions, the stone and substrate may need to be wet. If the stone is being installed onto a very hot, dry surface or in a hot, dry climate, the stone and wall surface should be wet to prevent excessive absorption of moisture from the mortar. This can be done by spraying water on the wall surface and back of stone.

Lay the Panels in an Offset Fashion

Stagger panel joints in a running bond pattern as this will reduce the appearance of the vertical joints.

Cold Weather Situations

Applications should be protected from temperatures below freezing to allow for the mortar to set up properly as recommended in section "2101.3 Cold-Weather Construction" of the International Building Code.

Cleaning

After 36 hours it is suggested to wet the stonework with water and then apply a mild cleaning detergent with a soft bristle brush to remove any dirt or mortar smear left from the installation. **Do not use any type of acid.**

Completion

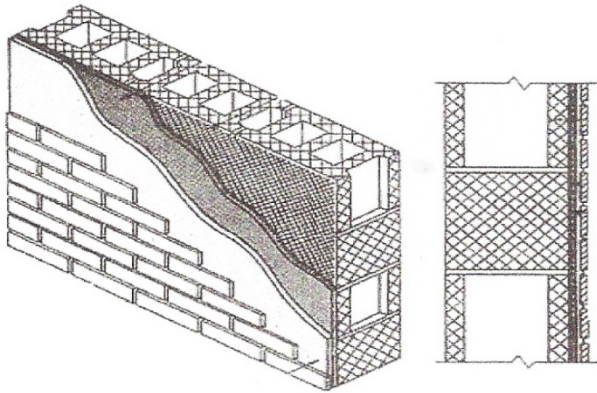
Stone is a natural product that "breathes". It does absorb oil, water and other substances that come in contact with the stone. Sealing is not necessary but may be desirable for attaining deeper and enhanced colors. Sealants are recommended for interior use where water, oil, or food may come in contact with the stone. Test sealer on a small loose "trial" piece prior to a large area application.

Exterior Framed Substrate

(Includes wood stud and steel stud framing Fig.1)

Exterior sheathing is required to provide a base for the application surface. This sheathing must meet local building codes for use as an acceptable exterior product which can include plywood, green treated plywood, rigid composite board, and flush metal siding. Cover sheathing with weather resistant vapor barrier.

Figure 1



1. Sheathing
2. Weather Resistant Barrier
3. Galvanized Metal Lath
4. Mortar
5. MStone Panels

New Concrete Masonry Wall

(Includes new concrete block or newly poured concrete wall Fig. 2)

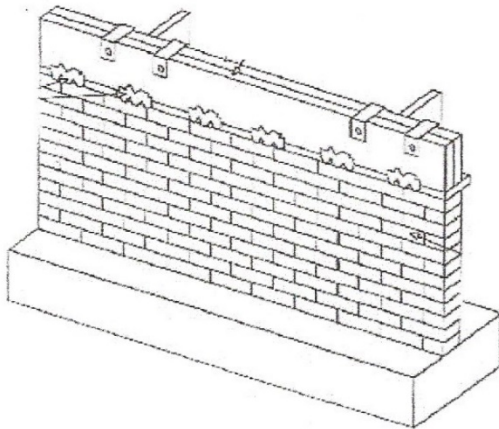
No special preparation is required for a concrete block wall. When working with a poured concrete wall, it is important to take extra time to examine the entire surface as it may have areas of form release agents on the surface. To remove this oil, apply and etch areas with muriatic acid, rinse thoroughly and/or score the area with a wire brush. After these surfaces are cleaned, rinsed, and allowed to dry, the MStone material can be installed directly to the concrete wall.

Existing Concrete Masonry Wall

(Includes sealed/painted concrete or brick work Fig. 2)

Sandblast the surface to remove any paint or sealer. Rinse thoroughly. Once the surface has dried, MStone material can be applied directly to clean surface. If this application is not reasonable, another option is to apply expanded metal lath to the painted or sealed surface with concrete screws or nails.

Figure 2



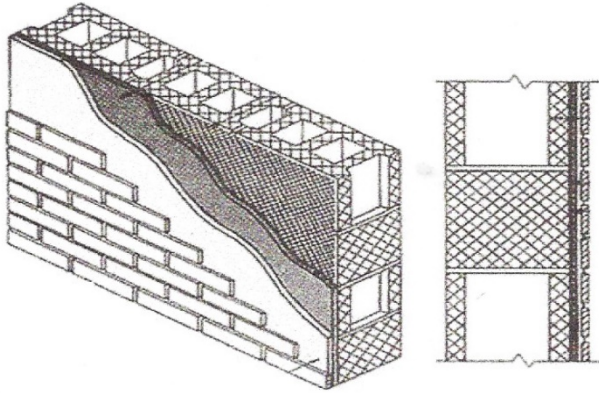
1. Mortar applied directly to untreated masonry, concrete or block
2. MStone panels

Rigid Insulation

(See Fig. 3)

Install the expanded metal lath as specified by the manufacturer's insulated forms. Concrete fasteners that secure the expanded metal last to the wall need to be long enough to penetrate clear through the insulation and secure into the cured poured concrete wall. Apply ½" thick scratch coat.

Figure 3



1. Rigid Insulation Board
2. Weather Resistant Barrier
3. Galvanized Metal Lath
4. Mortar
5. MStone Panels

*substrates and job conditions will vary greatly from site to site, therefore, it is the responsibility of individual project engineers to review and approve the suitability of mechanical anchors (wall ties) and the structural integrity of surfaces to be veneered

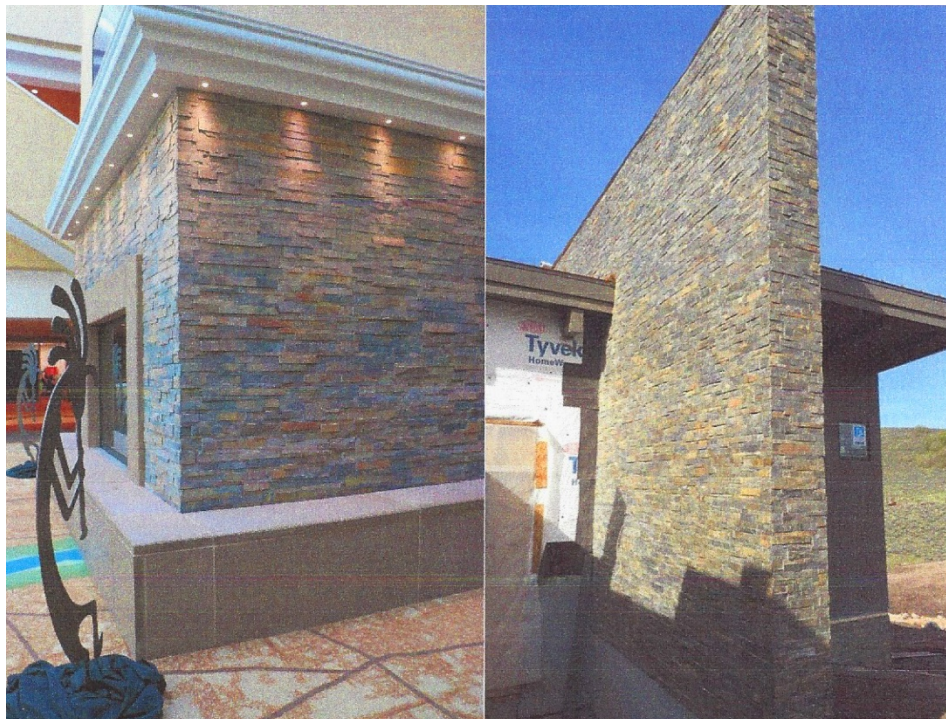
Method 1: MStone Two-Piece Non-Assembled Corners

Always start any installation containing one or more outside or inside corners at the corner, then complete the first row. Once set, complete the rest of the corner length before moving on to flat work

Install first corner: firmly press two corner pieces together at corner edge. Ensure there is no gap between the two staggered edges and that only the finish edge is visible from either side. As shown in the image below, finished edges may protrude beyond the corner edge. If such protrusion occurs, simply cut off protruding portion with standard tile snips.



You are left with a tight and clean corner with high character flat work and finished edges.



Method 2: Mitered Corners

For both 90 degree and irregular corners, you can also miter edges so they meet flush at an outside corner. Cut a straight line down a flat piece using a wet saw, then miter the edge using a 45-degree (or specified angle) level.



Start at the first corner, then complete the first row. Next, complete the full height of corners before completing the flatwork.

You are left with tight, 90 degree or irregular corners as shown below.

