

## INSTALLATION GUIDE

Two basic variations of stone installation are called “standard installation” and “dry-stacked installation.”

### Standard Installation

Standard install leaves grouted joints between all stones.

### Dry-Stacked Installation

Dry-stacked procedure fits stones tightly together with hidden or minimal grouted joints.

Carefully read and follow all installation instructions. Read and observe safety precautions. Building code requirements vary from area to area; check with local authorities before starting your project. Manufactured Stone Company products are covered by a 50 -year limited warranty when installed in accordance with the manufacturer's instructions.

## ESTIMATING QUANTITY OF STONE

To determine the quantity of stone required, you must first measure the area to be covered and calculate it into square feet. Square footage is easily calculated by multiplying length by height for all stone areas. You can deduct any non-stone areas such as window or door openings by using the same formula and subtracting from the total. Next you will need to measure the lineal feet of all outside corners to include snow. For each linear foot of corner stone, there will be one square foot of stone coverage. The total linear footage should be deducted from the total square footage.

## TOOLS REQUIRED

Choosing the correct tools will ensure proper installation, and will help a project go quickly and smoothly. The following tools may be needed:

- safety glasses
- hammer and/or staple gun air compressor
- screw gun

- wheelbarrow and hoe or ½” drill and five-gallon bucket
- mixing paddle
- mortar mixer
- plaster's hawk and trowel
- margin trowel
- masonry saw
- wide mouth nippers
- level and chalk line
- metal jointing tool
- grout bag
- whisk broom

## MATERIAL REQUIREMENTS

### MORTAR COMPONENTS

1 part Type N or S masonry cement with 2-3 parts masonry sand  
or  
1 part Portland with 1 part lime and 5-7 parts sand

*For dry-stack installations it is recommended to add latex modifier or bonding agent to the above mixes*

### Note: Mortar

Weather conditions should be considered. If stone is being applied in hot or dry weather, the back of each piece should be moistened with a fine spray of water or a wet brush to adequately prevent excessive absorption of moisture from the mortar. If being installed over over concrete, masonry or scratch coat substrate, the substrate surface area should also be dampened before applying mortar. Applications should be protected from temperatures below 40 degrees F. Mortar will not set up properly under such conditions. Do not use antifreeze compounds to lower the freezing point of mortar.

### FLASHING

To maintain the weather – resistance of the exterior wall on which stone products are installed, rigid, corrosion resistant flashing should be installed at all penetrations and terminations of the stone cladding. Flashing type and locations should be in accordance with applicable building code.

## WEATHER-RESISTANT BARRIER

Barrier should be equal to U.B.C. Standard No. 14-1 for Kraft waterproof building paper or asphalt saturated rag felt.

## METAL LATH

Minimum 2.5 lb galvanized expanded metal lath (diamond mesh) or minimum 18 ga. Galvanized woven wire mesh. For metal buildings and open stud construction: minimum 3.4 lb., 3/8" rib, paper-backed galvanized expanded metal lath, or other code accepted mesh or lath.

## FASTENERS

**Wood frame:** Galvanized nails or staples providing 1" penetration into framing.

**Steel frame:** corrosion resistant, self-drilling and tapping pancake head screw (min. 7/16" head) providing 3/8" penetration beyond inside surface of metal.

**Concrete or masonry surface:** concrete nails.

## SURFACE PREPARATION

### RIGID BACKWALL

Wallboard, plywood, paneling, OSB, exterior core gypsum, concrete board or polystyrene insulation board installed over rigid backwall.

Cover sheathing with a weather-resistant barrier with lap joints 6" at vertical joints and 2" at horizontal joints in shingle fashion. Then, in accordance with local building code, lap (overlap 4" both vertically and horizontally) and install lath or mesh using galvanized nails, screws, or staples 6" on center vertically, penetrating studs a minimum of 1". Continuously wrap weather resistant barrier and metal lath a minimum of 16" to next framing member around all outside and inside corners. Apply scratch coat as needed. Allow to dry for 24-48 hours.

### CLEAN & UNTREATED

Concrete, masonry and stucco: No further preparation is needed. Examine newly poured concrete closely, ensuring that its surface

contains no release agents. If it does contain a release agent, remove as recommended by release agent manufacturer and return concrete/masonry to original finish. Apply scratch coat as needed. Allow to dry 24-48 hours.

### DIRTY, PAINTED OR SEALED

Concrete, masonry and stucco: Sandblast or waterblast to original surface. Remove sandblasting dust by washing and securely attach lath. Apply scratch coat as needed. Allow to dry 24-48 hours.

### METAL BUILDINGS

Lap and install 3.4 lb., 3/8" rib, paper-backed, galvanized expanded metal lath to metal cladding supports, using corrosion-resistant, self-drilling, self-tapping pancake head screws. Screws are installed on center equal to one screw/ sq. foot and shall not exceed 6" on center in one direction. Apply scratch coat. Allow to dry 24-48 hours.

### INSTALLING STONE AT GROUND LEVEL

Keep the finished edge of the stone a minimum of 4" above grade or 2" above pavement. Use a 2"x4" leveling strip.

### PREPARE YOUR WORK AREA

Spread the stone out at the job site to have a good variety of sizes, shapes and colors to choose. Plan for variety and contrast in the overall design. Use small stones next to large stones, heavy textured pieces next to smooth ones, thick stones next to thinner ones.

### MIXING MORTAR/GROUT

Mix to a firm, moist consistency. Mortar that is too dry and crumbly will not provide a proper bond. Mortar that is too wet will be weak and messy.

## APPLYING THE STONE

### STARTING POINT

Mortar and stone may be applied either from bottom up or from top down. Working from the top down may help avoid splashing previously applied stone with mortar. Anything Tight-fitted or Dry-Stacked should always be installed from the bottom up.

## LEVEL AND PLUMB JOINT LINES

Some stone styles look best when applied level and straight. Use chalk lines or leveling strips to maintain level.

## JOINT WIDTH

In order to obtain the most natural look, joints should be as narrow as possible. The average should not exceed 1/2" in width.

## INSTALL CORNERS FIRST

If your application requires corner pieces, apply these first. Notice that the corner pieces have a long and a short leg. Alternate these in opposite directions.

## INSTALL FLAT PIECES

After the corner pieces are in place, flat pieces are applied working toward the wall center.

## SETTING THE STONES

Apply mortar evenly to the entire back of the stone and adhere it to the surface. Apply even pressure to the stone to ensure a good bond. All edges or voids around the stone must be filled with mortar. Care should be taken to avoid smearing mortar on surface of stone.

## GROUTING AND FINISHING THE JOINTS

If additional mortar is required, use a grout bag to fill in joints. Care should be taken to avoid smearing mortar on the surface of stone.

When mortar joints have become firm, they should be pointed up with a wood stick or metal jointing tool. Setting time will vary depending on wall surface and climatic conditions. Rake out excess mortar, then compact and seal edges around stones.

When mortar joints have sufficiently set up, the finished job should be brushed to remove loose mortar and to clean the face of the stone.

## INSTALLING HEARTHSTONES & SILLS

### HEARTHSTONES

Start by placing mortar strips 1/4" deep and 3" wide approximately 1" apart on the prepared surface. Place the first

hearthstone on to the mortar bed and level. Place adjacent hearthstones, aligning and leveling with the first piece. If joints need additional mortar, fill joints using a grout bag.

### SILLS

Sills provide a transition piece between a stone wainscot and other exterior finishes. Install using galvanized metal support brackets fastened with galvanized nails or screws penetrating studs 1" at a minimum of 16" O.C.

## CLEANING, EFFLORESCENCE & SEALING

### CLEANING

Care should be taken to avoid smearing mortar on the surface of the components. Accidental smears should be removed using a dry whisk broom only after mortar has completely dried. Never use a wet or wire brush. Do not power wash, sandblast, use acid or acid-based products.

Dirt and other materials may be removed with a strong solution of granulated soap or detergent and water with a bristle brush. Do not use a wire brush as it will damage the surface of the stone. Rinse immediately with fresh water.

### EFFLORESCENCE

Efflorescence is a water-soluble salt that is deposited on the surface of stucco, concrete, brick and other masonry products by the evaporation of water that has penetrated the wall. On rare occasions efflorescence will occur. To remove efflorescence, allow the stone to dry thoroughly, then scrub vigorously with a stiff bristle brush and clean water. Rinse thoroughly and do not use a wire brush. For more difficult efflorescence, scrub thoroughly with a solution of 1 part white household vinegar to 5 parts water. Rinse thoroughly with fresh water.

### SEALING

Sealers are not necessary on manufactured stone; however, some customers may use sealers to help prevent staining and to aid cleaning in applications prone to smoke, soot, dirt, or water splashing. If you choose to use a sealer, make sure it is a silane or siloxane-base breathable sealer. Note that sealers may alter the color of the stone. Sealers also may slow the natural movement of moisture out of the stone causing efflorescence.