



Installation Guide

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There are two basic variations of stone installation procedures, giving two distinct finished appearances: Standard and Jointless or Dry - Stacked. The Standard installation procedure has grouted joints between all stones. The Jointless or Dry - Stacked installation procedure fits stone tightly together without grouted joints. While much of the installation procedure is the same for both variations, differences will be noted throughout these instructions.

Section 1: Estimating Stone Quantities

Two components, flats and corners, are used for installations. Flats are applied to the flat wall surface and are ordered in square feet. Corners are applied to outside corners and are ordered in linear feet. Using corners around window and door openings provides added dimensions and depth and enhances the finished design.

1. DETERMINE THE TOTAL PROJECT SQUARE FOOTAGE

by multiplying the length times the height of each surface area to be covered and then deducting the area of all openings such as doors and windows.

2. DETERMINE THE LINEAR FOOTAGE OF CORNER STONES

needed for the project by measuring the linear feet of outside corner areas to be covered including any doorways and windows that will have corners.

3. DETERMINE THE SQUARE FOOTAGE OF FLAT STONES REQUIRED

for the project by multiplying the linear footage of corner stones needed by .5 (One linear foot of corner stones equals approximately .5 square foot of flat stone) and subtracting this corner square footage from the total project square footage. This will give you the square footage of flat stone required. However, some extra quantity of flats is desirable for best fitting and for cutting and trimming.

Section 2: Preparing the Surface

OVER PLYWOOD, GYPSUM WALL BOARD, OSB, CONCRETE BOARD, FIBER BOARD, OR OTHER WOOD RELATED SHEATHING

Cover the wall surface with two layers of water-resistant barrier (WRB). The WRB shall be equal to that provided for the U.B.C Standard No. 14-1 for Kraft waterproof building paper or asphalt-saturated rag felt. The WRB must meet the requirements of ICC-ES Acceptance Criteria 38 for Water Resistive Barriers (Grade D, #15 felt meeting ASTM D 226, and housewrap).

Note: Use of felt paper meeting ASTM D 4869 is not recommended.

The building paper or felt shall be applied horizontally with the upper layer lapped over the lower layer not less than 2".

Where vertical joints occur, the felt or paper shall be lapped not less than 6".

Then install galvanized 2.5 lb. (or heavier) diamond mesh expanded metal lath or an 18 gauge woven wire mesh. Use galvanized lath for exterior applications. Overlap lath sides by not less than 3/8" and ends by a minimum of 1". Attach the lath using galvanized nails or staples 6" on center vertically and 16" on center horizontally; penetrating studs a minimum of 1". (**Be sure to attach the metal lath with the small cups pointing upwards.**) Double wrap metal lath a minimum of 16" around all inside and outside corners. Then apply a 1/2" thick scratch coat of mortar over the metal lath and allow to dry completely.

OVER OPEN STUDS

Apply paper-backed galvanized 3.4 lb, 3/8" rib expanded metal lath to studs using galvanized nails or staples every 6" vertically on center of studs with a minimum of 1" penetration into the stud. Lath sides must be overlapped not less than 1/2", and lath ends by not less than 1". For metal studs, use a corrosion-resistant self-tapping screw with a 7/16" head that will provide a minimum penetration past the inside metal surface of the stud by no less than 3/8". Then apply a 1/2" thick scratch coat of mortar over the metal lath. Allow to dry completely and set for no less than 48 hours

OVER METAL PANELS

Surface preparation is the same for **"OVER SHEETROCK, WALLBOARD, PANELING, PLYWOOD, OR OTHER RIGID WOOD RELATED SHEATHING"** (see page 5) except the metal lath should be attached using self-tapping screws with a 7/16" head that provides 3/8" minimum penetration beyond the inside metal surface.

OVER CLEAN (UNPAINTED, UNSEALED, UNTREATED) BRICK, BLOCK, CONCRETE OR OTHER MASONRY SURFACES.

No surface preparation is necessary, however for added insurance to minimize bond failure or to reduce the possibility of cracking, use a metal lath and scratch coat.

Newly poured concrete should be closely examined to ensure the surface does not contain any type of oil or release agents that may have been used during the forming process. A common method to determine the presence of a release agent is by spraying the surface with water. If the water beads up or runs off the wall, the presence of a release agent is likely. If a release agent is present, use a metal lath and scratch coat, acid etch, or wire brush the surface. It is imperative that the concrete surface is free of form release contamination if lath and scratch coat is not used to ensure a proper bond.

OVER PAINTED, SEALED OR TREATED BRICK, BLOCK, CONCRETE OR OTHER MASONRY SURFACES

The surface must either a) be cleaned back to the original surface by sandblasting, water blasting,

acid etching, or wire brushing or b) have metal lath attached using corrosion-resistant concrete nails with a scratch coat applied over the metal lath.

OVER RIGID INSULATION BOARD (< 1/2" thick)

Surface preparation is the same as for "over sheetrock, wallboard, paneling or plywood" except the spacing for nails or staples should be 6" on center vertically and 16" on center horizontally, penetrating studs a minimum of 1". Rigid insulation board thicker than 1/2" may require an engineering report on fastener size and spacing. Consult with a registered engineer or architect.

Section 3: Preparing the Mortar

Pre Mix can be used as long as it is specified for the use with stone veneer.

Mortar mix should be mixed to firm but workable (not too wet, not too dry) consistency.

Mortar mix for standard installation (grouted joints):

Type N Mortar (suggested mix)

2 parts Type N Masonry Cement
3 to 5 parts Masonry Sand
Water

Or

1 part Portland Cement
1 part Lime
3 to 5 parts Masonry Sand
Water

Type S Mortar (alternative mix)

3 parts Type S Masonry Cement
5 to 7 parts Masonry Sand
Water

Or

2 parts Portland Cement
1 part Lime
5 to 7 parts Masonry Sand
Water

Mortar mix for jointless/ dry-stacked installation:

Suggested mix

3 parts Portland Cement
2 parts Thinset Mortar* (see note below)
7 parts Masonry Sand
Water

Alternate mix #1

2 parts Portland Cement
1 part Lime
7 parts Masonry Sand
Bonding Agent and Water (preblended 1:1)

Alternate mix #2

3 parts Type S Masonry Cement
7 parts Masonry Sand
Bonding Agent and Water (preblended 1:1)

* Note: for exterior applications use only "latex modified thinset for exterior use, meeting ANSI-A118.4".

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Section 4: Applying the Stone

PROPER USE Carefully follow these recommended installation instructions and check your local Building Code requirements as these vary by area. StoneCraft should only be applied to structurally sound surfaces incorporating good building practices.

It is important to divert water run-off away from stone surfaces by using cant strips, gutters and flashing. Run-off or splashing may stain the material. Water run-off combined with severe freeze-thaw conditions can result in surface damage.

Install flashing type and location in accordance with local building code requirements. Corrosion resistant flashing must be installed around all penetrations and terminations of the stone application. The lower ends of the stone installation shall terminate 4" above earth surfaces or 2" above paved surfaces with an approved foundation weep screed unless an alternative method for flashing is approved by the building official. The perimeter of the scratch coat should incorporate the use of casing bead (minimum 1/2" depth), control joints, or other approved accessories.

StoneCraft should not be used below water level or in applications that subject the material to chlorine or chemicals that may discolor the stone. Avoid use of de-icers (e.g. salt) around StoneCraft veneer products.

LAYING OUT THE STONE

Before you begin, lay out a quantity of stone (25 sq.ft. minimum) near the work area to give you a selection to choose from. When installing stone, try to achieve a balanced pattern of shapes, sizes, colors, thicknesses and textures by selecting and mixing the various stones. **Select and mix stones from different boxes throughout the installation.**

STARTING

For standard installation procedure, StoneCraft is applied from the top down. This helps to keep the stone clean. For Jointless/Dry-Stacked installation, stone is applied from the bottom up.

Install the corners first for easiest fitting. Corner pieces have a long and a short return. These should be alternated in opposite directions on the wall corner.

FITTING STONES

Stones should be installed with uniform size grout joints. A consistent 1/2" or less space around the stones is desirable. Long, straight, unbroken joint lines should be avoided.

When installing horizontal styles of StoneCraft, special attention should be given to keeping the work level. Chalk lines should be snapped every 8" to 12" as a guide for keeping the installation level and then a level should be used during the installation of individual pieces. Also, it is of particular importance to frequently stagger the joint lines both vertically and horizontally.

TRIMMING STONES

For best fit, stones can be cut or shaped using a hatchet, wide-mouth nippers or mason's trowel edge. Straight cuts can be made with a diamond or carbide saw blade. Cut edges should be turned so they are not visible (down when below eye level and up when above eye level). To help conceal cut or broken edges, cover them with mortar when grouting.

SETTING THE STONE

Using a mason's trowel, apply 1/2" thick even layer of mortar to the entire back of the stone. Then press the stone firmly into place on the prepared wall surface, squeezing the mortar out round all edges. Using a gentle wiggling action, while pressing, the stone will insure a good bond.

For Jointless/ Dry-Stacked installation, it's important that the edges of the stone are properly sealed with mortar to ensure satisfactory bond. This can be achieved by following these steps:

1. Apply workable mortar generously to the back of each stone to allow ample mortar to squeeze out around all edges of the stone as it is pressed into the wall. Not only to help seal the stone's edges but also allows for tighter fitting of following stones.
2. Just prior to setting each stone, apply a thin bead of mortar with a grout bag to the edges of all previously installed adjacent stone.

If the stone is being installed onto a very 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 or brushing water into the back of the stone and the wall surface and/or by dipping the stone into a container of water. In either case, the stone and the wall surface should be allowed to dry for a few minutes after wetting to eliminate excess surface water. For Jointless / Dry-Stacked installations it will be necessary to wet the stones regardless of the weather conditions.

If any mortar accidentally gets on the stone face, do not try to wipe it off as it will smear and stain the stone. The mortar should be allowed to set until dry and crumbly, and then brushed off with a dry whisk broom.

GROUTING THE JOINTS:

After the stone has been applied to the wall surface, use a grout bag to fill the joint with mortar; forcing grout into any voids. Be careful not to smear grout onto the face of the stone. Any mortar that accidentally gets on the stone should be allowed to set until dry and crumbly, and then brushed off with a dry whisk broom.

There are three distinctive grout techniques, each with their own unique appearance: Standard Joints (Raked), Dry-Stacked Joints, and Overgrout Joints (historically referred to as a "Sack Finish"). These three joint finishes play a major role when it comes to the look and feel of real stone after the completion of a job.

STANDARD JOINT (RAKED)

This grout joint is achieved by laying each stone roughly one finger width apart from each other. A grout bag is then used to fill the joints with mortar, forcing grout into any voids. This technique can be used with all StoneCraft profiles excluding Ledgerstone.

DRY-STACKED

A Dry-Stacked installation is achieved by "dry" fitting each stone prior to installation. Each piece can be laid with virtually no joint. Even though you have used mortar to set the stone to the surface, when complete, the finished look will appear as though no mortar was used during the installation of the stone.

However, it is sometimes necessary to do touch-up grouting to fill noticeable voids and to conceal cut or broken edges of the stone. This technique can be used with Ledgerstone profile.

OVERGROUT

This type of grouting is an ever increasing technique to achieve an old-world look that makes the finished stone appear rustic and aged. The grout overlaps the face of the stone, widening the joints and making them very irregular. It is very important that the joint's mortar be applied with the absence of air pockets and are filled completely to the substrate. Mortar consistency should be right between being too wet and too crumbly. The overgrout technique uses almost every stone shipped because broken edges can be hidden by grout. This technique can be used with all profiles excluding Ledgerstone.

FINISHING THE JOINTS

When the mortar joints become firm (normally 30-60 minutes), use a wooden or metal striking tool to rake out the excess mortar to the desired depth while at the same time forcing the mortar into the joints so as to thoroughly seal the stone edges. Be careful not to work the joints too soon or the mortar will smear.

After working the joints, use a whisk broom to smooth the joints and clean away any loose mortar from the joints and stone face. Loose mortar and mortar spots, which have set for only a few hours, clean up easily and should never be allowed to set up overnight.

CAUTION: Do not use wet brushes or sponges to wipe the joints or clean mortar off the face of the stone as it will smear and stain. Also, never use wire brushes or acid on the stone surface.

***CLEANING:

To clean dirt or other particles from the stone surface, use a granulated type detergent mixed with water and gently scrub with a soft bristle brush. If efflorescence occurs, as it does with most masonry products, it is usually caused by moisture migration through the masonry substrate when the stone is saturated. Once the moisture is on the masonry surface, it evaporates, depositing the dissolved salts in the form of efflorescence. Efflorescence will disappear naturally with time. To clean the efflorescence right away, scrub the stone surface with a soft bristle brush and a solution of 1 part white household vinegar mixed with 5 parts water. Do not use acid based or other harsh cleaners on your StoneCraft veneer. Do not clean with a pressure washer.

COMPLETION:

Sealing the stone is not necessary. If you choose to use a sealer, use only a high quality silane or siloxane masonry sealer that is of the "penetrating breathable" type. Test the sealer for color change on several loose stones before application, as sealers may change the appearance of the stone.

Technical Data

INGREDIENTS	Lightweight Aggregate, Portland Cement, Mineral Oxide Colors
COST	The installed cost of StoneCraft is approximately 1/3 to 1/2 the cost of natural stone.
CODE ACCEPTABILITY & CERTIFICATION	  Mineral Composition Units Surface Burning Characteristics Flame Spread 0 Smoke Developed 0 546T ICC-ES Legacy Report ER-3568
COLOR RETENTION	Only permanent mineral oxide colors are used. No undesirable color change can be observed, even after years of weathering.

StoneCraft is designed to meet or exceed building code requirements. Independent testing confirms compliance with ICC-ES Acceptance Criteria for Precast Stone Veneer as follows:

FREEZE-THAW DURABILITY	Tested in accordance with ASTM C67, less than 3% weight loss.
SHEAR BOND (ADHESION)	Tested in accordance with ASTM C482, greater than 50 psi shear bond strength.
ABSORPTION	Tested in accordance with section 3.1.4 and 4.6 of ICC-ES Acceptance Criteria 51.
DENSITY	Tested in accordance with ASTM C567. Shipping weight is approximately 9-11 pounds per square foot.
THERMAL RESISTANCE	Tested in accordance with ASTM C177-71. R factor=.473 at 1.387 inches thick.
COMPRESSIVE STRENGTH	Tested in accordance with ASTM C192 and C39. Compressive strength is greater than 1800 psi.
TENSILE STRENGTH	Tested in accordance with ASTM C190.
FLEXURAL STRENGTH	Tested in accordance with ASTM C348.
	Local building codes may vary by area. Always check with your local building authorities before installing stone.

50 Year Limited Warranty

Manufacturer warrants **StoneCraft®** Wall Veneers for a period of 50 years against manufacturing defects when used on structures conforming to local building codes and when installed in accordance with manufacturer's written instructions. Warranty coverage specifically excludes damage resulting from wall movement; settlement of the building; contact with chemicals or paint; and discoloration due to contaminants, staining or oxidation. Warranty coverage is limited to replacement or repair of defective materials only and does not cover labor to remove or replace materials. Warranty coverage is limited to the original purchaser.

StoneCraft® profiles have variations in color and texture, as they are natural reflections of the characteristics found in stone. Though colors represented in this brochure are as accurate as possible, photographic, lighting conditions and printing techniques can alter perception of color. For true color accuracy we recommend obtaining a sample at your local authorized **StoneCraft®** distributor.

Visit us online at StoneCraft.com for detailed installation instructions, warranty information and other important technical product specifications.

Quality Assurance & Technical Support

StoneCraft quality assurance promise:

StoneCraft Profiles meet or exceed all regulatory standards for pre-cast veneer products.



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