



Installation Guide

Estimating Quantities of Stone

Natural Stone Solutions products are designed and packaged to be installed with or without a tight fitted joint. Most stone is available in flat and corner pieces. Corner pieces give the project the appearance of full thickness stone.

1. Determine the Square Footage of Flats needed by multiplying the length by the height of each surface to be covered with stone. Subtract the area of any openings such as doors or windows. If corners are being used, subtract approximately 6 inches from each flat surface, per lineal feet of corner or opening that is receiving corner pieces (see step #2).

2. Determine the Lineal Footage of Corners needed by adding together all the lineal feet of corners to be covered, including openings such as windows and doors. Corner pieces will cover an approximate average of 6 inches onto each flat surface (limiting the number of flat pieces needed).

Preparing the Installation Surface

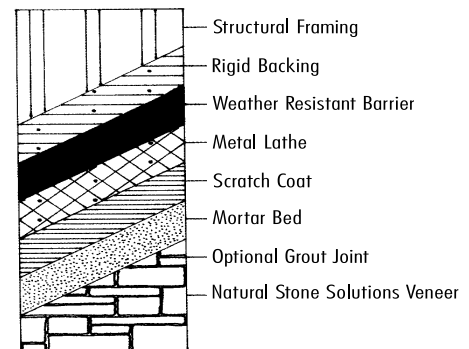
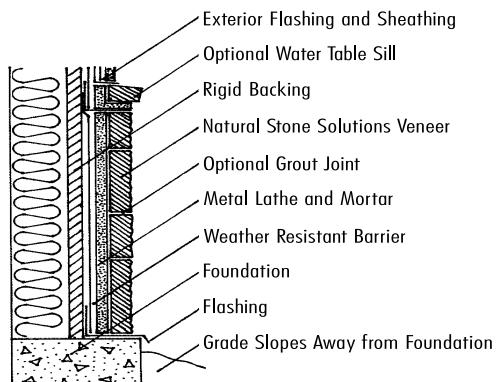
NSS stone products are generally suitable for installation over various stable, structurally sound and properly prepared substrates. Unstable substrates may result in cracking or poor bonding. Exterior applications should begin 4 inches above grade, to prevent moisture from "wicking" into the wall. Refer to local building codes to determine substrate suitability and requirements for stone veneers.

To install over rigid backing such as plywood, wallboard, paneling, rigid insulation or other acceptable substrates begin by installing a "breathable" weather resistant barrier. The weather resistant barrier should meet local building code requirements and be equal or greater than that specified in the UBC Standard 14-1 for waterproof building paper or asphalt-saturated rag felt, or ASTM D 226, Type 1, No. 15 felt. The weather resistant barrier should be installed horizontally (shingle-style) with overlaps of at least 2 inches. Vertical breaks should overlap at least 6 inches. Continually wrap weather resistant barrier around corners a minimum of 16 inches.

Install metal lathe (galvanized, diamond mesh (3.4lb.) or galvanized woven wire fabric lathe 1.1lb., 0.049 inch (no. 18 B.W. gauge) 1 1/2" hexagonal) as required by local building codes. Secure the metal lathe every 16" horizontally and every 6" vertically, with corrosion resistant fasteners which penetrate a minimum of 1" into the structural substrate. For structural framing with 16"-24" spacing, use 3.4 lb, 3/8" expanded metal lathe. Metal lathe should be installed with "cups" facing up & minimum overlaps of 2". Continually wrap metal lathe around corners a minimum of 16". Ensure that materials & specifications conform to local building codes. Do not install NSS products over open framing, without a rigid backing.

To install over treated masonry surfaces such as painted, sealed or dirty block, brick, concrete, or masonry surfaces where moisture penetration is a primary concern, install a weather resistant barrier & metal lathe. Weather resistant barrier & metal lather should have the same specifications & be installed in the same manor as installations over rigid backing. Metal lathe should be securely attached to the masonry substrate according to local building codes.

To install over clean, untreated masonry surfaces such as block, brick, concrete.... no additional surface preparation is needed. If moisture penetration is a primary concern, install NSS products as you would over treated masonry surfaces.



Mortar Specifications and Stone Installation

Most NSS stone products are designed & packaged to be installed with or without grout joints. For best results, & when installing with a grout joint, the mortar should be colored to compliment the natural color of the stone selected for your project.

Lay the individual stones out on the ground & arrange the stones by size & color to produce the desired look of the installation. Install corners first. Corners always have a short & a long side. Install the short & long sides alternating up a corner as you move up the wall. This will produce a more natural look. Stones should alternate which wall's scratch coat they intersect with.

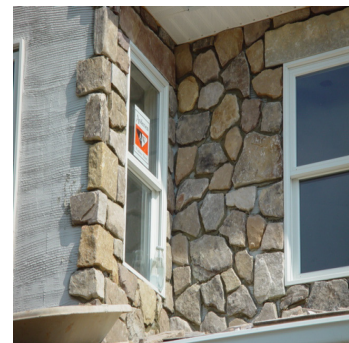
A scratch coat should always be applied before any stone is installed. The scratch coat is applied directly to (& should completely encapsulate) the metal lathe or untreated masonry surface. When preparing the mortar for applying a scratch coat, adhere to local building codes & follow the mortar manufacturer's instructions.

To apply NSS veneers, use an approved mortar for exterior use, meeting ANSI-A118.4. This ensures superior bonding & durability of your installation. When preparing the thin set mortar, adhere to local building codes & follow the thin set mortar manufacturer's instructions.

Ensure that the surface of the stone & the scratch coat are dampened to prevent rapid drying of the thin set mortar (especially in hot dry conditions). Using a mason's or plasterer's trowel, a skim coat (approx. 3/8" to 1/2") should be applied to a workable area (approx. 4 to 10 sq. ft.) of the scratch coat. Stone should be applied prior to the skim coat drying. A complete bed of thin set mortar should then be applied to the back of the stone (approx. 3/4" to 1"). The stone should be pushed onto the skim coat using adequate pressure & a slight "side-to-side" or "bouncing" motion to ensure a complete, void-less bond. Mortar should squeeze out on all sides of the stone, resulting in an approximate thin set mortar depth of 1/2" to 3/4". Total mortar bed depth (including scratch coat) should be approximately 1/2" to 1 1/4". The stone should take hold immediately, but you may need to hold it in place for a moment to ensure it stays where you want. For tight fitted applications, clean the excess thin set mortar away from the edges of the stone (where it squeezed out) to ensure the next piece of stone will fit snugly. For applications where a grout joint is preferred, clean the excess thin set mortar & ensure uniform joints between the stones.

To finish your natural stone veneer installation with a grout joint, fill the joints with mortar. Again, you may wish to color the grout mortar to compliment the natural color of the stone.

Using a masonry grout bag, forcemortar into all the joints, completely filling them & ensuring there are no voids. Allow the mortar to dry until it becomes firm or "thumb print dry". Do not try to remove wet mortar from the face of the stone. Allow it to dry & then brush it off with a stiff broom or brush. Compact or "point" the mortar between the stones using a wood or metal jointing tool sealing around all the stones. Finish the grout joints with a stiff broom or brush. For a more rustic look, apply more mortar into the joints & tool smooth to the face of the stone. This will make the joints appear wider & produces an "old world" look.



View showing scratch coat, corner & field installation



Trim Product Use & Installation

NSS products are appropriate for most interior or exterior applications. All trim products are relatively flat, & should be installed at a slight slope (2:12) to facilitate water run-off, where necessary. Refer to previous sections for substrate preparation, mortar specifics & application. Grout joints should be approximately 3/4" for looks & to allow for stone irregularities. Allow for an overhang of approximately 1/2" to 1 1/2" over finished wall surfaces. Refer to local building codes for additional requirements.

Hearth Stones are ideal for finishing the horizontal surfaces of your fireplace design. Hearth stones can be installed completely flat & level on interior applications which will not come in contact with moisture. For exterior applications, apply the hearth stones sloping away from any vertical wall intersections (the fireplace) as with wall cap installations.

Water Table Sills allow you to create the look of a full thickness wainscot or finished window penetration & protect walls from excessive moisture. If water table sills are not used, other precautions should be taken to flash horizontal terminations. Sills are designed to create approximately 1/2" to 1 1/2" of overhang over NSS stone veneers. Sills are supported by an adequate angle iron which has been securely attached to the vertical substrate & allows the sill to slope away from the building to facilitate water run-off. They are set in a complete bed of thin set mortar, which secures the back of the sill to the vertical wall, & the bottom of the sill to the horizontal angle iron. This set mortar should conform to specifications & be installed using wall veneer recommendations (as described in the previous section entitled "Mortar Specifications & Installation").

