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**Natural Stone Solutions™**

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*"The Natural Choice: Thin Stone Veneer"™*

[www.nssthinstone.com](http://www.nssthinstone.com)

# **Installation Guide**

May, 2010

This guide outlines a 4-step process for installing **Natural Stone Solutions™** products:

- A) Estimating quantities of stone needed
- B) Materials and tools needed for veneer applications
- C) Preparing the installation surface
- D) Installing **Natural Stone Solutions™** thin stone veneer.

An NSS installation video is also available and our sales team is always ready to answer your questions and provide you with assistance to make sure your project is a success.

- A) Estimating quantities of Stone:** **Natural Stone Solutions™** “Diamond Select” products are available in flat and corner pieces and “Hand Select” pieces are only available in flats. Flats are installed on a flat wall surface and ordered in square feet quantities. Corners are installed on outside corner areas and ordered in lineal feet quantities. Using corners around windows and door openings provides added dimension and depth giving your project the appearance of full-thickness building stone from every angle.
- 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.
  - 2) If corners are being used, determine the total lineal feet of corners to be covered, including openings such as windows and doors. Corner pieces will cover roughly 0.5 square foot per lineal foot of corner (see **NSS Corner Piece** on back cover). Subtract [0.5 x the total lineal feet of corners] from the square footage of flats calculated in step A-1 to reduce the amount of flats required for the project.
  - 3) We recommend ordering 10% more than the quantities determined in steps A-1 and A-2. Natural stone products contain a range of colors, shapes and sizes. Having extra stone available allows the installer to pick and choose pieces that best suit your desired look.

**B) Materials and tools checklist for veneer applications:**

**Tools**

- Masonry trowel
- Plastering trowel
- Brick hammer
- Stone chisel
- Scraper
- Steel brush
- Paint brush
- Mason jointer
- Mortar pan

**Materials**

- Type “S” cement
- Mason sand
- Water
- Bonding agent (optional)
- Joint spacers (optional)
- Natural Stone Solutions™** thin stone veneer

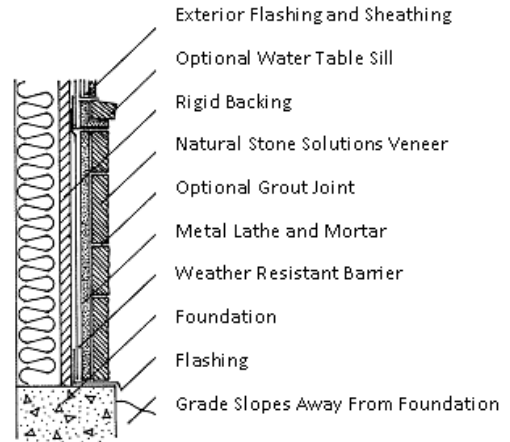
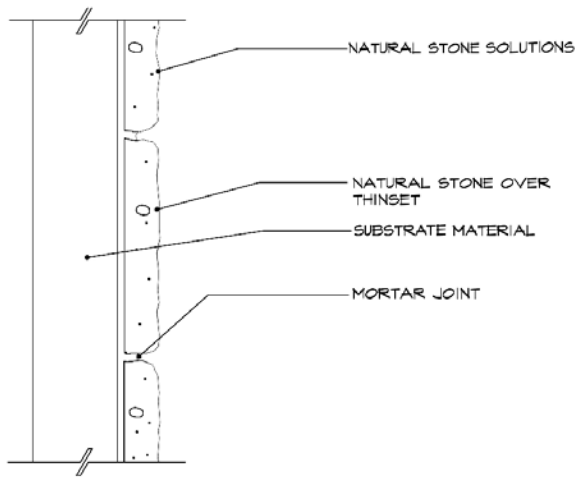
- C) Preparing the installation surface:** **Natural Stone Solutions™** products can be installed over several different types of surfaces.
- 1) **Over clean unpainted, unsealed, untreated brick, block, concrete or other masonry surfaces** (See **NSS Installation #1** on back cover). Surface preparation may not be required over cast-in-place concrete that has cured. It may be necessary to roughen the surface (with a steel brush, sandblasting, scuffing, etc.) or apply lath (see steps C-3-d through C-3-g) to promote mortar adhesion prior to installing the **Natural Stone Solutions™** thin veneer.
  - 2) **Over painted, sealed or treated brick, block, concrete or other masonry surfaces.** Clean the surface (by sandblasting, water blasting, acid etching or wire brushing) or attach metal lath (see steps C-3-d through C-3-g) to promote mortar adhesion prior to installing the **Natural Stone Solutions™** thin veneer.

**3) Over paneling, plywood and/or other rigid wood-related sheathing or insulation board. (See NSS Installation #2 on back cover).**

- a. **Note:** Do not apply **Natural Stone Solutions™** thin veneer directly to a surface such as drywall board. The installation surface must be capable of supporting the weight of the stone and accessory materials and drywall and other similar materials are too weak and flexible for this application. You will need to cover these surfaces with plywood or other approved rigid backing materials.
- b. Cover the wall surface with a weather-resistant barrier or felt paper meeting the U.B.C. building code standard (No. 14-1 Kraft waterproof building paper or asphalt-saturated rag felt).
- c. Apply the barrier or felt horizontally with the upper layer lapped over the lower layer by not less than 2". Where vertical joints occur, the barrier or felt paper should be lapped not less than 6".
- d. Install 2.5 lb. (or heavier) diamond mesh expanded metal lath. Lath is directional and has a top and a bottom side. Use galvanized lath for exterior application and black metal lath for interiors.
- e. Overlap lath sides by not less than ½" and lath tops and bottoms by not less than 1". Attach lath using galvanized or stainless steel fasteners (nail, staples or screws), every 6" on center vertically, and every 16" on center horizontally, and ensure penetration a minimum of 1" into the structural substrate. Ensure that the metal lath is attached with the small cups facing out (upwards).
- f. Double wrap metal lath a minimum of 16" around all inside and outside corners.
- g. Apply a ½" thick scratch coat of mortar over the metal lath, and allow it to cure (see step D-2).

**D) Installing *Natural Stone Solutions™* thin stone veneer:**

- 1) To avoid damage due to freeze/thaw conditions, stone should not be installed below water level or when temperatures are below 40° F. Divert water away from stone surfaces using flashing and gutters.
- 2) Use only an approved mortar when installing **Natural Stone Solutions™** thin veneer. We recommend mixing 2 parts type "S" masonry cement, 3 to 5 parts mason sand and water OR 1 part Portland masonry cement, 1 part lime, 3 to 5 parts mason sand and water. The use of a bonding agent (3 parts type "S" masonry cement, 7 parts masonry sand, and water + bonding agent) is recommended when extra stability is required.
- 3) Spray or brush water onto the surface of the stone and scratch coat to prevent rapid drying of the mortar (especially in hot conditions). The wall surface should be allowed to dry to avoid excess water.
- 4) Using a mason's trowel, apply approximately ½" thick layer of mortar to the entire back side of the stone. Then press the stone firmly into place on the prepared wall surface making sure mortar squeezes out around all sides of the stone. Tap or wiggle the stone to ensure a good bond.
- 5) After the stone has been applied to the wall surface (see **NSS Installation #3** on back cover), use a grout bag to fill in the joints with mortar, making sure to fill all voids. Colored mortar can be used to complement the stone's colors.
- 6) A "dry stack" look presents the appearance of ungrouted stone that has been stacked on top of each other. To achieve this look we recommend grouting to fill only the noticeable voids and to conceal any cut or broken stone edges. Use approximately half the amount of grout for normal joints, apply stones closer together with minimal width joints and deep strike the joints to reveal depth. When dry stacking **Natural Stone Solutions™** thin veneer, consider using thinset mortar to maximize the bond.
- 7) After the mortar joints become firm (usually in 30-60 minutes), use a wooden or metal striking tool to rake out the excess mortar to the desired depth. Be careful not to work the joints too soon or the mortar will smear.
- 8) Finish the grout joints with either a stiff brush or trowel to obtain the desired style. Narrow grout joints that are deeply recessed promote the appearance of a full-thickness building stone. To create a rustic, "old world" look, apply more mortar into the joints and then tool the excess mortar over the edges of the stone.
- 9) Loose mortar, mortar spots and stains should not be allowed to set for more than a few hours making clean up easily accomplished with water and a clean soft brush or towel.



**NSS Installation #1**

**NSS Installation #2**



**NSS Installation #3**

**NSS Corner Piece**



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