BSi Building Stone Institute

Natural Thin Stone Veneer

TECHNICAL INFORMATION GUIDE

Natural Thin Stone Veneer

Contents

Preface

The following information was developed to provide basic guidelines for architects, engineers, and contractors regarding the installation of natural thin stone veneer. This general information brochure gives suggested guidelines; however, it does not override any local building codes.

Introduction

Stone has been used for thousands of years. Since ancient times, natural stone has been an enduring symbol of wealth, beauty, and sheer magnificence.

Natural Thin Stone Veneer has been fabricated for many years. Recently, machinery (by a variety of manufacturers) has evolved to cut natural full dimensional stone to natural thin stone veneer (nominal 1-1/4 inch thickness). The machinery can also cut 90 degree corners which are used for corner applications, concealing the true thickness of the stone. The results? Natural Thin Stone Veneer weighs less than full thickness veneer thanks to the thin cut. The lightweight pieces help reduce production, shipping, and construction costs. In addition, Natural Thin Stone Veneer can be installed without footings or ledges and adheres to concrete, plywood, paneling, drywall, and even metal.

Most consumers prefer natural stone over "man-made cast concrete" materials, which is why Natural Thin Stone Veneer is becoming so popular in the marketplace.

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Explanation of Natural Thin Stone Veneer

Full Dimensional Stone = 3 - 5 inches depth & 40 - 73 lbs./sq ft

Natural Thin Veneer = 1-1/4 nominal inch (generally), 15 lbs./sq ft or less

- In order to be considered a Natural Thin Veneer, the weight of the stone needs to be less than 15 lbs/sq foot as described in the 1997 Uniform Building Code.
- In order for this to be accomplished, the stone (pictured above) needs to be a nominal 1-1/4 inches thick.
- The thicknesses of other types of stone may vary depending on the density of the stone.
- Natural Thin Veneer is typically less than 1/2 (or more) the thickness of Full Thickness Veneer.
- In addition, the weight of Natural Thin Veneer can be just a fraction of Full Thickness Veneer, sometimes 75% less.

Advantages of Natural Thin Stone Veneer

- Freeze/Thaw Cycle
- Shapes/textures
- Consistency in manufacturing process = meets weight requirements
- Variety
- Durability
- Low maintenance
- Many sources
- It's the real thing – others trying to imitate look and feel
- Non-patterned
- Customized – without sacrificing look/quality
- Available in all Natural Stone – limestone, granite, bluestone, sandstone, mica and others
- No support ledge required – ideal for remodeling projects
- Can be applied directly over brick and other rigid structures
- Interior applications work very well. The use of Natural Thin Stone veneer in a remodeling job can add tremendous value to a project

Product Comparison Matrix

Characteristics	Natural Thin Veneer	Full Thickness Veneer	Man-Made/Concrete Veneer
Color Availability	Natural tones and hues, no unnatural reproductions	Natural tones and hues, no unnatural reproductions	Predictable manufactured colors Unpredictable consistency
Material Composition	Entirely natural stone	Entirely natural stone	Cement, oxide colors, various aggregates and other chemicals
Long-Lasting/ Durability	New application of proven material	Proven over centuries	Short history, warranties are needed to promote product
Design Flexibility	Allows creative and custom patterns	Allows creative and custom patterns	Defined and predictable patterns Limited to number of molds
Product Availability	Abundant	Abundant	Limited to cement and geographic availability
Color	Maintained throughout life of product	Maintained throughout life of product	Prone to fading over time

Product Specification Description

Stone Type

Natural Thin Stone Veneer is to be 100% natural quarried stone. No concrete composite stone is to be accepted. Stone is to be sound type and is recommended to be tested to ATSM specifications. It is also recommended that this material be packaged carefully in boxes or on pallets, stored off the ground and protected from the elements.

Packaging

Consider that packaging by different fabricators varies from waxed cardboard containers, wooden pallets with wire wrapping, to wooden crates. The thin stone product is to be packaged in a durable non-staining, protective packaging designed to minimize damage to products during shipping and outdoor storage. The name of the product should be identified on each package of product.

Quality Criteria

Natural Thin Stone Veneer should meet minimum quality standards as follows:

- *Thickness range:* 3/4" minimum to 1-1/2" maximum
- *Weight per square foot:* Stone should weigh no more than 15 lbs per square foot for the thickest stone.
- *Natural Formation:* No open seams or starts or cracks. No high percentages of rusting or oxidizing minerals which may cause excess staining and bleeding after installation.
- *Face area:* Minimum 1/8 sq. ft. per face with minimum dimension of 2" in any direction.
- *Corner stones:* Minimum of 3" length on return on any exposed side of corner stones.
- *Tests:* Meets or exceeds required ASTM testing levels for absorption, compressive strength, and flexural strength for the appropriate geological stone type.

Usage

Natural Thin Stone Veneer is fabricated to offer the original beauty that only natural stone can provide but is designed for a lightweight non-structural installation. A support ledge is not needed for a successful installation, provided the natural thin stone veneer weight is 15 lbs. per square foot or less.

Technical Data

Product information and testing data should be requested and obtained from the product manufacturer. Contact BSI for manufacturers and distributors in your area.

Waterproofing Procedures

Listed below are general procedures used to waterproof areas before the installation of Natural Thin Stone Veneer. Waterproofing is an extremely important process which must meet or exceed all local building codes and BSI recommends that a highly qualified waterproofing company/contractor handle this portion of the installation or knowledgeable mason subcontractor adhering to industry standard.

Moisture Control

If additional moisture control is desired, a moisture-resistant barrier can be applied to all vertical wood or moisture-sensitive backup walls. Overlap adjoining sheets of moisture barrier a minimum of 2" on horizontal joints and minimum 6" on vertical joints. It is recommended by BSI to include a weep system behind an exterior installation of Natural Full Veneer and Natural Thin Stone Veneer. Contact the BSI office or visit the Web site www.buildingstoneinstitute.org for further weep system information.

Flashing

It is important to provide a weather shield, flashing, or caulk at all material transition points and at all areas that could lead to possible moisture penetration, including but not limited to all window and door openings, electrical outlets, electrical fixtures and plumbing fixtures. It is important to follow manufacturers specifications for correct installations. Flashing needs to be applied under water tables and sills, and the base of walls where this veneer meets a brick or other ledge.

Caulk

Cut paper-backed lath as close as possible around electrical outlets, and then caulk between the outlet and the lath. Apply silicone caulk to the sides of all windows and doorways. Caulk all joints which occur between thin stone veneer and dissimilar materials like wood, glass, vinyl, and also at all control and movement joints which occur in the structure. Use backer rods in caulked control joints to allow for proper joint movement during expansion and contraction.

General Surface Preparation

If there is a chemical film on the wall it needs to be removed. In many instances the film may be removed with sandblasting or etching with masonry detergents. The use of acid to remove the film is also a consideration however, in all cases you should check with the manufacturer of the product(s) to make sure it will not damage the underlying surface. The removal process will also make the wall surface less smooth which will aid in the installation process.

Concrete Block or Brick

Natural Thin Stone veneer can be applied directly to any new or existing concrete block or brick surface. *(Fig. 1)* It is important to make sure that the existing surface and wall is sound and without defects, and that the surface has not been painted or sealed. In the case of a poured concrete wall, all form release chemicals should be either sandblasted or removed with a masonry detergent before the application of the natural thin stone veneer.

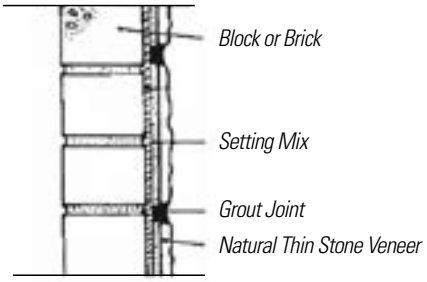


Fig. 1

Framed Exterior Walls

For exterior walls a non-corrosive paper-backed lath is applied (see waterproofing instructions). All wood surfaces require the application of non-corrosive wire lath and a setting mix (between 1/2" - 1" thick) before applying natural thin stone veneer *(Fig 2)*. Studs in walls are covered with exterior grade wood sheathing or cement mesh mortar units as chosen by builder. Minimum thickness of 1/2" is recommended.

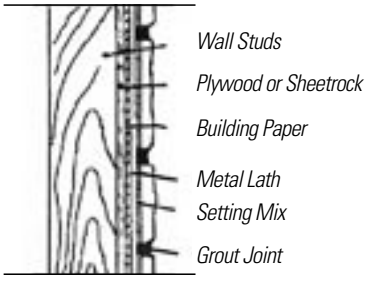


Fig. 2

Metal Lath

For applications that involve installing paper-backed corrosion resistant wire lath: After the first piece of lath is correctly placed at the bottom of the wall, continue up the wall overlapping a minimum of 3" for each piece of lath from the bottom to the top. Wrap metal lath around and overlap at corners a minimum of 16". Use self-furring, non-corrosive, expanded metal lath, 3.4 lbs per yard weight. Use Galvanized, barbed nails (or another quality anchor system such as galvanized screws and washers) at 6" vertical centers, in line with wall stud horizontal spacing. Place nails in furring groove or dimples to preserve 1/4" furring away from wall of metal lath. Overlap horizontal joints of lath a minimum of 1" and vertical joints a minimum of 1". A paper-backed metal lath can be utilized to avoid the need for a separate moisture control barrier being applied prior to the metal lath.

Installation Procedures

Mortar Type

Type N or S mortar is used for installing Natural Thin Stone Veneer depending upon the type of stone being installed. Check with producer for a recommendation.

Bonding Admixtures

The use of a bonding admixture with the mortar may be recommended to add bonding strength (check with your stone dealer for recommendation). Please refer to the selected bonding agent instructions for recommended mixture quantities. Extra care should be taken when using bonding agents since dropping can be difficult to remove once they cure. The use of an epoxy, thin set and/or construction adhesives should only be used in interior applications. Admixtures are necessary for all soffit or overhead conditions.

Setting Natural Thin Stone Veneer

Now that the metal lath and the scratch coat have been applied, installation of the natural thin stone can proceed.

- If corner pieces are required for the application it will be best to start with the corners first. This will provide a better guide for your pattern to continue around the corner.
- Most corner pieces will have a long end and a short end. These pieces should alternate in opposite directions, as they are stacked, one upon the other.
- The back of each stone should be covered 100% with a thickness of at least 1/2" of mortar. A bit more mortar can be added towards the center of the back of each stone.
- The stone should be pressed firmly against the scratch coat wall to ensure a sound bond.
- Extra mortar will ooze out around the edges as each stone is set in place. This extra mortar will fill in around the stone creating your grout joints.
- If you choose not to use this method to fill the joints, then the joints can be filled with grout using a grout bag and/or a tuck pointing tool.
- Make sure to create control and movement joints in the veneer in the same places that they exist in the structure. These control and movement joints serve to allow for the movement of the structure as it settles and moves from environmental changes. *Consult a local contractor, your builder, or structural engineering professional to determine the need for these special joints.*

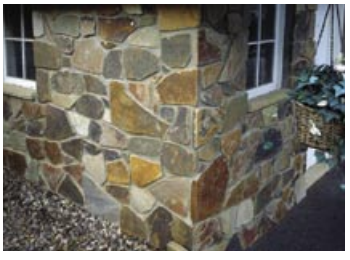
1. Surface to be covered

2. Construction Paper

3. Metal Lath

4. Setting Mix

5. Natural Thin Stone Veneer



Maintenance

Cleaning

If mortar contacts the face of the stone, allow it to dry slightly and then pick the mortar from the face. If removed when very wet, the mortar can smear and cause more work later. If a bonding admixture is used in the mortar then remove the mortar as soon as possible by dry brushing and then damp sponge. Do not attempt to smear the mortar. It is suggested to wet the stonework down with water and then to 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.* Always wet the stone first before applying any cleaning solutions to prevent over-absorption of the cleaning solution, and always ask your dealer for a recommended cleaner. Cleaners perform differently and your needs will vary depending upon the stone used.

Sealing (optional)

If a sealer is required, first check with the natural stone supplier as to a sealer that may be recommended for your stone. Topical sealers and impregnators are available for application when enhancement of the color or water repellency is required. Make sure to choose products which are not harmed by ultra-violet rays, alkali, do not yellow, and do not interfere with evaporation of moisture through the stone. Always test a small area before full application. Once sealers are applied to the stone it must be considered that re-application of the sealers will be necessary over time. Longevity varies and re-sealing times can range from 1 year to 10 years depending on the product, application, and exposure. The sealer should not be applied until the stonework and mortar has time to completely cure. *EXTREMELY IMPORTANT: The installation instructions by the sealer manufacturer must be followed.*

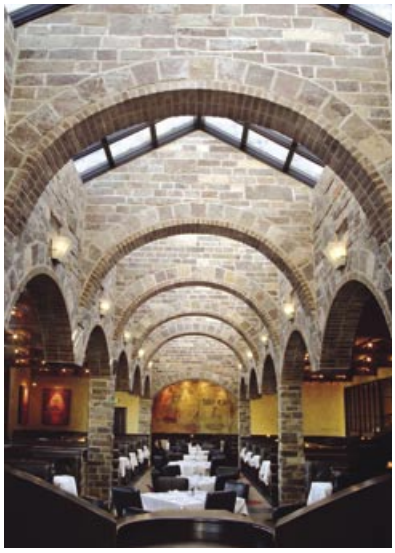
General Information

Availability

Natural Thin Stone Veneer may be purchased from a quarry or one of their authorized dealers throughout the United States and Canada. Most dealers can also provide installation services or can recommend a qualified installation company.

Cost

Natural Thin Stone Veneer is priced per square foot. Prices will vary in different locations due to such variables as shipping cost, installation applications, and material costs. Materials are usually packaged in certain units, like pallets or boxes, and require purchase of the entire unit. Always allow an overage (consult your stone supplier for an exact percentage) in purchasing to allow for selection of product which goes into the final installation. Cost savings on Natural Thin Stone Veneer are typically realized in the shipping and installation portion of the quote. Therefore it is extremely important to price out the entire project from start to finish to realize the entire savings. Typically, natural thin stone processing costs are slightly higher than for full veneer, due to the added cuts and labor to make the thin stone lightweight. Cost savings are realized through lower freight costs and shortened installation times.



Building Stone Institute

Founded in 1919, Building Stone Institute is an international, non-profit, tax exempt trade association of quarriers, fabricators, installers, and design professionals from all aspects of the natural stone industry, with the goals to increase consumer demand for stone and to service our member companies.

Building Stone Institute would like to thank the following member firms for their generous sponsorship of this technical information guide.

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