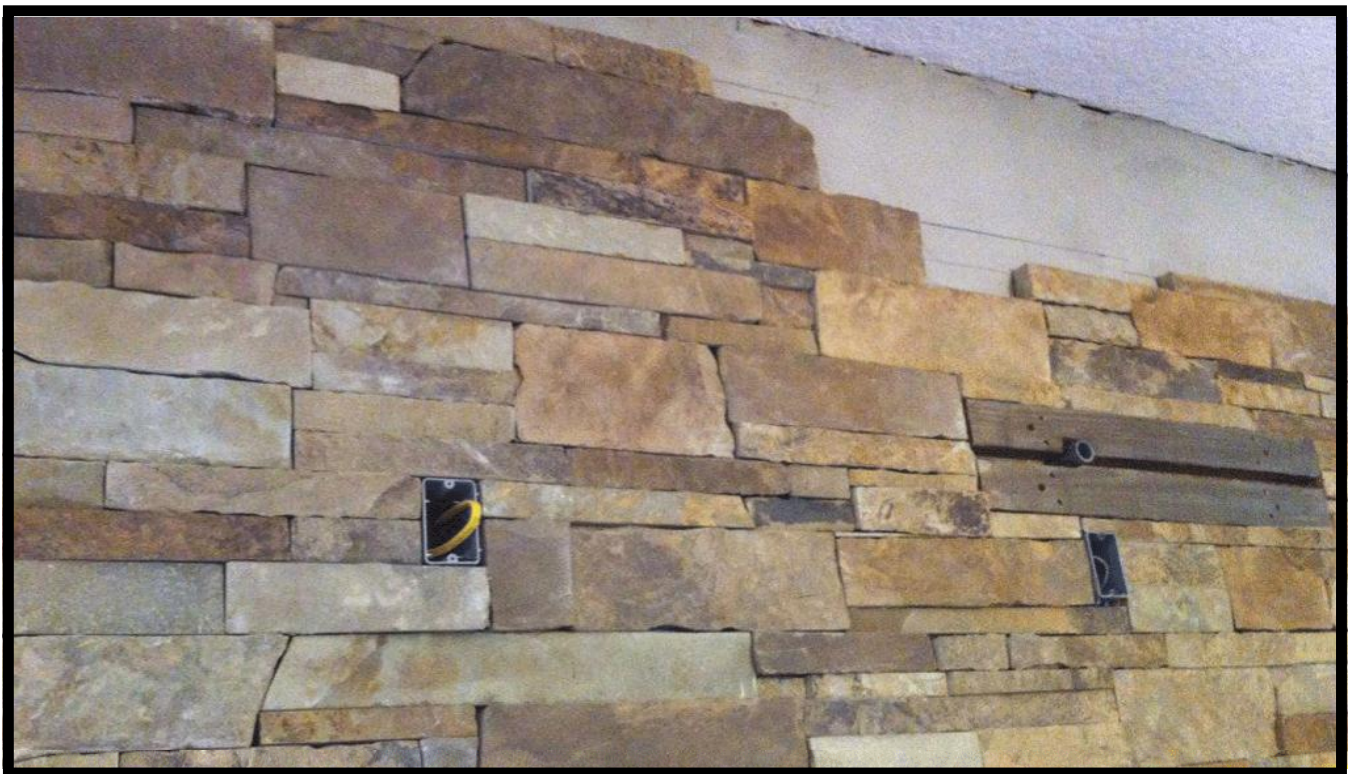


Thin Veneer Stone

Installation Guide



Complete step by step "How-to" guide for installing Thin Veneer Stone.

Important:

From pallet to pallet of natural thin veneer stone, as with any natural stone product, color can vary. It is always in the best interest to randomly select from different pallets during installation to ensure all colors of the stone are distributed evenly.

Legal Notice:

Oak Canyon Stone Co., and their employees, do not claim to be professional masonry instructors or installers. These installation techniques are merely suggestions that tend to work with great success. If there is any question of whether or not to use metal lath, use it. Metal lath adds support for the stone and mortar. Although lath is not required for clean, uncoated concrete block, it is recommended for all applications.

Oak Canyon Stone Co. accepts no responsibility for poor installation or unusual conditions where thin veneer stone is installed. By using this information you agree to hold Oak Canyon Stone Co. harmless for any damages, personal injury or losses resulting from the use or inability to use this information. We highly recommend the use of a stone mason for your thin veneer stone installation. If you decide to do yourself, you accept all risks involved including a failed installation due to any circumstances arising from your improper mixing of mortar, improper application of mortar and/or stone, lack of using lath or failure to follow any building codes or safety recommendations.

See inside back cover for basic installation concepts.

How Much Thin Veneer Stone Do You Need?

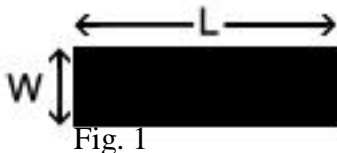
First, you will need to calculate the total square footage of the surface(s) you will be covering. Measure the width and height of each section, in feet. Multiply the width by height to get the square footage. Add the square footage of all sections together to get your total square footage. Measure any windows or door openings the same way, and subtract the square footage for those from your total square footage.

HINT: If you measure by inches, you can convert to feet by dividing the total square inches by 144 (144 sq. in. = 1 sq.ft.).

Every house is different and many will have complex shaped surfaces to calculate. Commercial buildings can be calculated in the same manner, just on a larger scale. At a minimum, you will need to be able to calculate the area of rectangles and triangles.

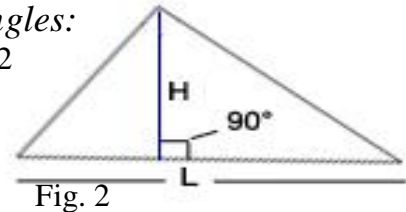
Calculating Rectangles:

$$\text{Area} = W \times L$$



Calculating Triangles:

$$\text{Area} = L \times H / 2$$



Here is an example of how to measure the surfaces of a house. The house pictured on the right has both rectangles and a triangle to be covered. The triangle doesn't have to be a perfect triangle, just be sure to measure from the ridge point straight down to a point along the flat line (L) that is 90 degrees to the ridge point. (See Fig. 2). It may be helpful to use a "plumb-bob" attached at the ridge point and hanging down to the horizontal line (base of the triangular section). Then use a framing square to find the 90 degree point. Measure the height along the plumb-bob line.

So to calculate the three (3) surfaces shown in Fig. 3, you will need to measure the rectangular section (the wall the window is in) and the triangular section shown (the point above the base of the roof overhang to the roof ridge, as shown by H & L).

First, measure H & L (in feet).

Now multiply H by L and divide your result by 2. This gives you the square footage of the triangle. (You divide by 2 because a triangle is only half the area of a rectangle or square with the same width and height).

Now measure H2 and W2 (the main wall).

Then multiply H2 by W2. Add this result to your last result. Now measure the window opening width and height the same way, multiply width by height, then subtract that result from the total square footage you just calculated.

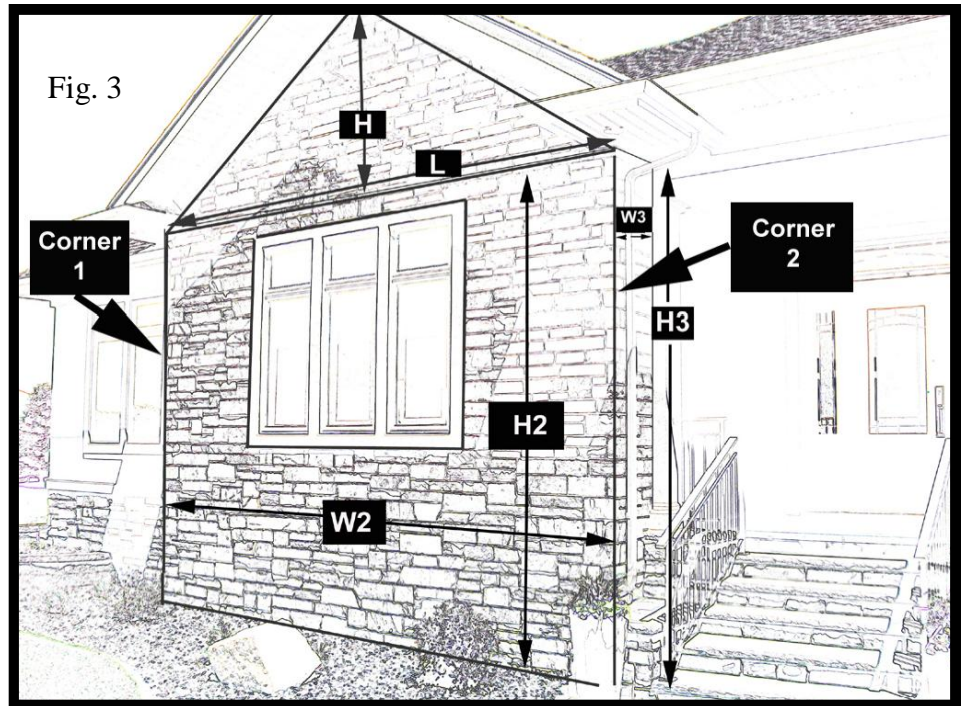
Now measure W3 & H3. Now total the results together. This will give you the total square footage to be covered.

Next, you will need to calculate for outside corner pieces, by linear footage. The example in Fig. 3 has only 2 outside corners (corner 1 & corner 2). Measure the height of each corner to get total linear footage. If you have multiple corners, measure each separately and total together.

HINT: If you measure the corner heights in inches simply divide total inches by 12 to get total feet.

Every house/building is different. So, be sure to plan ahead by noting which areas will be covered by the thin veneer stone, then measure the square footage (multiply the width by height, in feet) of each section and add the results together. Then subtract the total square footages for any windows or doors that are inside those sections. And remember corner pieces of thin veneer stone are sold by linear foot. Each linear foot of corner pieces average approximately .5 square feet, depending on the type selected.

You could run into other shapes you will need to calculate for, such as half circles, arches, hexagons, etc. You should refer to basic geometry formulas for information about how to calculate those. It is important that you use the same measurement system (i.e. inches or feet), to avoid confusion. For example, if you measure a line that is 7 Ft. 3 In., multiply 7 x 12 and add 3 to get 87 inches. Divide by 12 to get 7.25 Feet. Calculating your total square footage and linear feet (for corners) is important so that you do not purchase too little or too much stone to do the job. We do recommend that you add about 10% to the total to allow for waste from cutting/trimming pieces to fit. Many masonry contractors can assist you in this process.



Safety First:

Before beginning your installation, make sure you have protective eyewear (safety goggles), gloves, a dust mask that covers your mouth and nose and always keep a safe working area. Do not allow anyone in your work area unless they also wear the same safety equipment. Adhere to all safety warnings on equipment, materials and tools you are using.

Installation Steps

Preparing the Surface

Over sheetrock, wallboard, paneling, plywood, other rigid wood-related sheathing or rigid insulation board

Cover the wall surface with a weather-resistive barrier. The barrier shall be equal to that provided for in the U.B.C. Standard No. 14-1 for kraft waterproof building paper or asphalt saturated rag felt. The building paper or felt shall be applied horizontally with the upper layer lapped over the lower layer not less than 2 inches. Where vertical joints occur, the felt or paper shall be lapped not less than 6 inches.

Note: Do not attempt to apply “thin stone” directly to a surface such as sheetrock. Any surface that you apply “thin stone” to must be capable of supporting the weight of your product and of the masonry materials used. Sheetrock, wallboard and other similar materials, while being structurally sound building products, are too flexible for direct installation. You will need to cover these weaker surfaces with plywood or other approved sturdy backing materials.

Next, install 2.5 lb. (or heavier) diamond mesh expanded metal lath.

Note: Lath is directional. It has a top and bottom side. Use galvanized lath for exterior applications. Black metal lath (non-galvanized) may be used for interior applications.

Overlap lath sides by not less than a ½” and lath ends by not less than 1”. Attach the lath using galvanized nails or staples every 6” on center vertically, and every 16” on center horizontally, penetrating the studs a minimum of 1”. Again, 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 ½” thick scratch coat of mortar over the metal lath, rake gently, then allow it to set. Mortar can either be type N or S or a premixed mortar designed specifically for thin stone veneer.

Over most clean unpainted, unsealed, untreated brick, block, concrete or other masonry surfaces:

Surface preparation may not be necessary over cast-in-place concrete that has cured. This surface can be roughed or lath can be applied. Keep in mind that applying an uncured masonry adhesive to a cured surface can pose problems. It may be necessary to rough the surface (sandblast, scuff, etc.) or apply lath. Applying lath is highly recommended for maximum structural integrity.

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.



Installation Steps (cont'd)

Applying the Stone

Setting the stone

Using a mason's trowel, apply approx. 1/2" thick even layer of mortar to the entire back side of the stone. Then press the stone firmly into place on the prepared wall surface, squeezing the mortar out around all edges. Using a gentle wiggling action or tapping of stone will ensure a good bond. For jointless/dry-stacked installations, it's important when setting the stone that the edges of the stone are properly sealed with mortar to ensure satisfactory bond.

If the stone is being installed onto a very dry surface or in a hot/dry climate, the wall surface should be wet to prevent excessive absorption of moisture from the mortar. This can be done by spraying or brushing water onto the wall surface. The wall surface should be allowed to dry for a few minutes after wetting to eliminate excess surface water.



Grouting the joints

After the stone has been applied to the wall surface, use a grout bag to fill the joints with mortar, forcing grout into any voids. Any mortar that accidentally gets on the stone should be allowed to set until dry and crumbly, and then brushed off with a whisk broom.



The "Dry stack look"

We recommend grouting to fill noticeable voids and to conceal cut or broken stone edges. Use approx. 1/2 the amount of grout as for the "jointed look". The "dry stack" appearance will result from deep striking of the joints. When dry stacking thin veneer stone consider using thinset. This product will **maximize the mechanical bond**.

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.

At this point, it is necessary to recognize the fact that a 3/8" masonry joint represents up to 18% of what the eye sees after completion. If you appreciate the stone selection and want to focus on the natural beauty of "all natural thin stone" we recommend narrow grout joints that are raked or recessed back. This will allow the stone to stand out with its natural beauty.

Note: It is important to divert water run-off away from stone surfaces by using gutters and flashing. Water run-off combined with severe freeze/thaw conditions can result in damage. Stone should not be used below water level. Do not install while temperatures are below 40° Fahrenheit. Provide supplemental heat if necessary to ensure a minimum temperature of 40° Fahrenheit between installation and mortar drying for approx. 24 hours.

Preparing the Mortar

Mortar should be mixed to a workable consistency.

Several companies now produce premixed “Veneer Stone Mortar” and should be used, if available. Many stores offer the Quikrete Polymer Modified Veneer Stone Mortar which is premixed and only requires you to add water. It comes in 80 LB bags and covers approx. 17 Sq.Ft. as a scratch coat, and slightly less for bond coat.



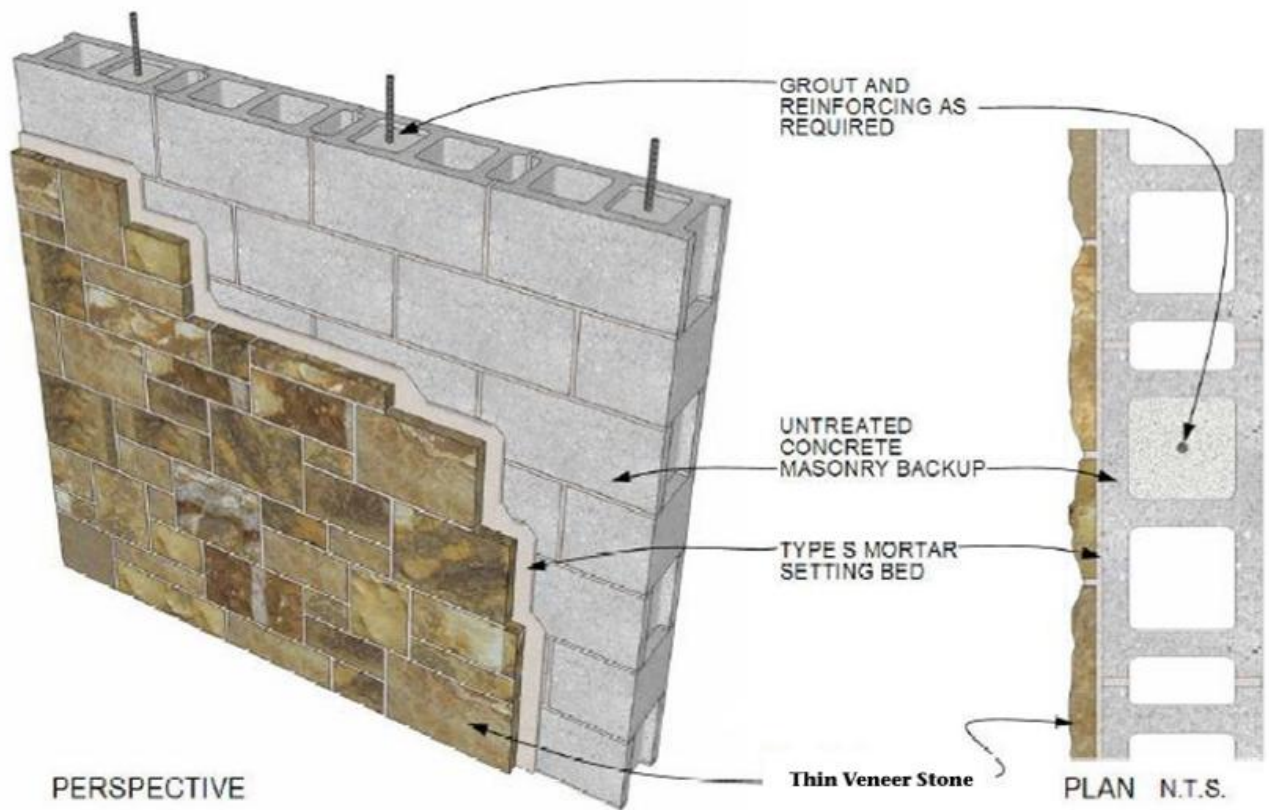
Be sure to follow the instruction for the mortar you purchase. If you are installing veneer stone with a “dry-stack” look, you should use a polymer modified veneer stone mortar for a better bond. You can also add a bonding agent to type S mortar. If you’re installing with a fully grouted joint look, the standard veneer stone mortar should suffice.

If you Mix type N mortar -

- 2 parts type N masonry cement
- 3 to 5 parts masonry sand and water
- OR -
- 1 part Portland cement
- 1 part Lime
- 3 to 5 parts masonry sand and water

If you Mix type S mortar -

- 3 parts type S masonry cement
- 5 to 7 parts masonry sand and water
- OR -
- 2 parts Portland cement
- 1 part Lime
- 5 to 7 parts masonry sand and water



Applying over clean, untreated new masonry. Masonry that is not new/clean/untreated should be cleaned and/or sandblasted to the original surface or covered with metal lath that is securely fastened.

