



An Oldcastle® Company

INSTALLATION GUIDE

Estimating Quantities of Glen-Gery Landmark Stone

Glen-Gery Landmark Stone products are designed and packaged to be installed with or without a tight fitted joint and are 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" 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 that will utilize corners. Corner pieces will cover an approximate average of 6" onto each flat surface (reducing the number of flat pieces needed).

An additional 2-4% additional material should be added to the total square footage calculations to allow for trimming and cutting stone for specific building design. Additional shapes and/or accessories should be ordered as needed to individualize the design.

Installation Recommendations

BUILDING CODE REQUIREMENTS

Building Code requirements vary by location. Always check with local authorities for applicable building code requirements in your area. Carefully read all instructions before proceeding with your Glen-Gery Landmark Stone application.

SURFACE PREPARATION

Glen-Gery Landmark Stone products are 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 a minimum of 4" above grade, and a minimum of 2 inches above hard surfaces (driveways, patios, etc.) to prevent moisture from "wicking" into the wall. Always refer to local building codes to determine substrate suitability and requirements for stone veneers.

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Surface Preparation CONTINUED FROM PAGE 1

Flashing

Corrosion resistant flashing must be installed prior to membrane and lath installation. Flashing must be installed at all terminations such as the base of the wall, cladding transitions, and stone applied above roofs. Flashing must also be installed around openings and through wall penetrations such as electrical, mechanical or plumbing penetrations to create weather tight installations per code requirements. All flashings should be integrated with water resistive barrier (when applicable) to prevent moisture penetration into the structure.

Weep Screed and Casing Bead

The application of a foundation weep screed is considered part of the flashing and drainage system and should be installed after the flashing at the base of the wall is in place. The weep screed serves to terminate the scratch coat at the bottom of the wall and facilitates the ability of moisture to exit the wall system and drip away from the surface of the foundation. Casing beads or plaster stops should be considered at all termination points except where weep screeds are installed. The weather resistant membrane described below should overlap all casing beads to ensure that sheathing is not exposed to the scratch coat.

Installation Over Sheathing (wood or metal stud backup)

Installation over rigid backing such as plywood, wallboard, paneling, rigid insulation or other acceptable substrates must include the installation of two weather resistive barriers (WRB). Although two WRBs are not required by all local codes Glen-Gery recommends the use of two membranes to increase water penetration resistance in exterior applications. In areas governed by the International Building Codes two layers of Grade D building paper or equivalent are required over wood based sheathing. Rain screen or drainage plane membranes may also be considered to assist in draining moisture from the wall. The membranes should be mechanically fastened and meet local building code requirements as well as the requirements of ICC Evaluation Services AC38, "Acceptance Criteria for Water-resistive Barriers." [Note: Sheathing should be installed according to manufacturer recommendations including fastener requirements, exposure, and movement (expansion/contraction).]

The WRB should be installed horizontally (shingle-style) with the upper layer overlapped over the lower layer of not less than 2". WRB ends or vertical breaks should overlap not less than 6". Continually wrap weather resistant barriers around corners a minimum of 16". The WRB must be installed according to manufacturer's recommendations and integrated with all flashing materials to prevent water penetration into the backup materials. The installed WRB should be free of tears or holes.

Install non-corrosive, expanded metal lath (corrosion resistant, diamond mesh (2.5 lbs. per yard weight) meeting ASTM C847 or corrosion resistant woven wire mesh (18-gauge or heavier) meeting ASTM C1032. All lath materials must be self furred or installed using self-furring fasteners. (Non galvanized black metal lath may be used for interior applications.) Install lath horizontally with the 'cups' pointing upwards and pulled tight prior to fastening. Overlap lath sides and ends a minimum of 1". Secure the metal lath horizontally on stud centers (no more than 24") and 6" vertically, with corrosion resistant fasteners that penetrate a minimum of 1" into wood stud or 3/8" into steel stud. When using self furring lathe, install fasteners in furring grooves or dimples to preserve the 1/4" distance between the wall and metal lath. Stagger lath joints to prevent continuous joints and avoid cracking of the scratch coat. Lath at interior and exterior corners must be double wrapped or continually wrapped around corners a minimum of 16".

Installation Over Masonry or Concrete

Glen-Gery Landmark Stone can be applied directly to new or existing concrete block or concrete surfaces. It is important to make sure that the existing surface and wall is sound, without defects, and meets local code requirements for stone veneer application.

To install over clean, untreated masonry or concrete surfaces such as block or poured concrete the scratch coat can be applied directly to the surface with no additional surface preparation required. Concrete surfaces should be free of dirt, waterproofing, paint, form oil or any other substance that could inhibit bond and should have a rough texture to ensure mortar bond. For added protection against cracking or bond failure metal lath can be installed as described in installations over treated masonry surfaces.

To install over treated masonry surfaces such as painted, sealed or dirty block, or concrete, the surface must be cleaned to ensure proper bond of the scratch coat or attach metal lath and scratch coat. Surfaces may be cleaned by pressure washing, acid washing, sand/blast blasting, or a combination of these methods to achieve a bondable surface. Existing masonry surfaces must be evaluated for mortar and unit integrity. If a bondable surface cannot be achieved, attach lathe and scratch coat prior to installing stone. Metal lath must be attached using corrosion resistant concrete screws or powder actuated fasteners that penetrate the surface of the masonry a minimum of 3/4". Anchor spacing should not exceed 6" x 24".

Follow specifications and installation requirements for the metal lath indicated for use over sheathing (above). Metal lath should always be securely attached to the masonry substrate according to local building codes.

Application of Glen-Gery Landmark Stone products over alternate substrates are beyond the scope of this publication. Contact your local Glen-Gery representative for additional information.



SCRATCH COAT INSTALLATION

Apply a 1/2" to 3/4" scratch coat of Type N or S mortar meeting ASTM C270. Premixed mortar must be suitable for manufactured stone installation and meet building code requirements including 50 psi shear strength when tested in accordance with ASTM C482. Latex modified thin set additive for exterior use may be considered for increased bond strength particularly with dry-stacked exterior applications.

Be sure to use sufficient mortar and pressure to completely encapsulate the lath or ensure full and complete bond to the masonry surface. The thickness of scratch coat must also allow for scoring of the surface without exposing the lath. As the material sets, or becomes somewhat firm, the entire surface must be scratched or scored horizontally to increase surface area of the scratch coat. Allow the scratch coat to cure a minimum of 24 hrs. prior to applying stone.

While bonding admixtures are often added to the scratch or bond coat, additives containing calcium chloride or other accelerators are not recommended due to potential contribution to corrosion of the lath.



APPLYING THE STONE

In order to ensure a varied selection of stone to choose from, lay out a minimum of 25 sq. ft. of stone near the wall area before applying stone to the wall. Balance the appearance of the stone on the wall by choosing and mixing shapes, sizes, colors textures and thicknesses and mix from more than one pallet/box if the project size makes this possible. Limit continuous vertical and horizontal joints by staggering different size stones. If necessary, a stone's shape may be altered with a pair of wide mouth nippers, tile trimmers, a hatchet, a masonry trowel or a masonry saw with a diamond or carbide blade. *Always use proper personal protection, including safety glasses, earplugs and respirators when trimming stone. If a saw is used, the use of a wet saw will lower the potential exposure to silica dust. Rinse the surface of the stone after cutting to avoid dust stains.* Buttering the altered end with mortar during installation may help to conceal trim marks. During hot weather, the scratch coat and back face of the stone should be dampened before applying the stone to reduce the absorption of moisture from the mortar joint and increase bond. The back of the stone and scratch coat surface should appear damp but without freestanding water.

When installing coursed or horizontal styles of Glen-Gery Landmark Stone special attention should be given to keeping the coursing level by snapping chalk lines every 1' to 2'. A level can also be useful to check straightness during installation of individual pieces.

Grouted installations should be applied from the top down to help keep the surface clean. Dry-stack installations should be installed from the bottom (base of the application) up. Install corners first; alternating the long and short returns. Flats can then be worked into the spaces created by the corners.

Mortar Application

Cover 100% of the back of each stone with at least 1/2" of the same mortar mixed used for the scratch coat. Use sufficient pressure to fill the texture and voids on the back of the stone. Press and work the stone into the scratch coat with enough pressure to force mortar to squeeze out around the entire perimeter of the unit. Be sure to tool the mortar that has squeezed out as necessary to allow for a grouted application or to prevent mortar from adhering to the surface of the stone. With the proper mortar mix, moisture content, and scratch coat preparation, the mortar should start to bond within a few seconds of the setting movement process. Do not disturb or tap the stone after it has set. If the stone is moved after initial set has begun, it should be removed from the wall, mortar scraped of the back of the stone and scratch coat, and reinstalled with new mortar. The resulting total mortar thickness behind the stone should be between 1/2" and 1" depending upon the thickness of individual stones and adjacent materials.

Joint Width (Grouted Joints)

Stones should be installed with relatively uniform size joints. Proper joint width depends on the type of stone being installed and the desired appearance. For 1/2" joints more mortar may be placed on the back of the stone. For thinner joints, less mortar should be used. Be aware that increasing the amount of mortar on the back of the stone increased the possibility of mortar droppings on the stones below it. More mortar also adds weight, which may allow the stones to sag or fall off the wall. Joints should be of similar width within the wall. Joints greater than 1/2" in width may cause shrinkage cracks within the joint.



STACKING PATTERN AND JOINT FINISHING

Drystack/Jointless installation

In this application each piece is laid with virtually no joint. Although mortar is used to set the stone to the wall, the finished wall will appear as though no mortar was used to install the stone. The edges of the stone must be properly filled (sealed) with mortar to ensure satisfactory bond and water penetration resistance. As noted earlier, be sure to apply a generous amount of mortar to the back of the stone to allow ample mortar to squeeze out around all edges of the stone as it is pressed onto the wall. After each individual stone is set use a masons trowel or margin trowel to remove excess mortar and to fill voids along the stones edges and also to allow for a tighter fit for the following stones. Additionally, prior to setting each stone a thin bead of mortar can be applied to the edges of previously installed stone—use of a grout bag may assist in applying the mortar.

Even with a dry stacked joint it may be necessary to utilize a grout bag described in the next section to touch up or fill noticeable voids and to conceal cut or broken stone edges. For best finished appearance, the dry stack mortar color should blend with the color of the stone to help conceal joint lines.

Mortared or Grouted Joints

This standard or raked joint application is achieved by laying each stone with roughly a 1/2" joint space between each stone. While the same mortar used for the scratch coat can also be used for the joints a colored mortar can be used to compliment or accent the appearance of the stone. A grout bag or grout gun can be used to fill the joints and force grout into any voids. Grouting the joints should only be done after the stone installation has sufficiently cured to allow mild contact without breaking bond. Although grouting can begin soon after stone installation it may be helpful to allow the mortar used to set the stone to dry approximately 24 hours to prevent disturbing the stone. Any mortar that accidentally gets onto the stone face should be allowed to dry until crumbly and then brushed of with a dry stiff bristle brush or broom.

When the mortar joints become firm but still crumbly a metal or wooden striking tool should be used to compress or rake out the mortar to the desired depth. The curing time prior to striking can vary significantly with temperature and humidity. If the grout smears or does not fall from the joint give the mortar more time to set. Once the joints are completed a whisk broom can be used to smooth the joints and clean away any loose mortar from the joints of face of the stone.



CLEANING

Never allow loose or unwanted mortar to set overnight. As noted in previous sections, mortar must be removed from the face of the stone with a stiff dry bristle brush or broom after it has been allowed to become dry and crumbly. Dirt may be removed using a solution detergent and water and applied using a bristle brush. Do not use a wire brush, aggressive high pressure cleaning methods or acid to clean the stone. Do not smear the wet mortar further into the pores of the stone. Do not use a wet brush or sponge to wipe the joints or clean excess mortar as it will again smear or stain the stone and will be more difficult to remove.

Clear Coatings/Sealers

Clear coating, sealers or water penetration resistant coating are not required for Glen-Gery Landmark Stone. However, coatings can prevent staining in applications subject to smoke, soot, dirt or water staining such as surrounding fireplace openings an is some cases at grade to prevent mud stains. Some coatings may darken the color of some stone. If a coating is desired, utilize a quality breathable coating such as silane coating and apply to several loose pieces of stone to ensure the end result is acceptable. Contact the coating manufacture directly for specific recommendations. Coatings should only be applied to dry masonry, after the scratch coat and mortar has completely cured.



SPECIAL CONDITIONS

Movement (flexible) Joints

While Glen-Gery Landmark Stone is relatively stable and will not move on its own, all buildings experience movement over time due to changes in temperature and humidity, foundation movement, shrinkage or expansion of wall elements. Such movements can cause cracking in the finished veneer unless movement joints are properly designed and installed. Movement joints should be flexible and at least 3/8" wide. The joint should continue through the veneer and is typically filled with backer rod and sealant.

Special Conditions CONTINUED FROM PAGE 4

Typical locations for movement joints in stone veneer include:

- At changes in building materials (such as where stone meets other siding)
- At movement joints within the substrate
- Around window and door openings
- Additional joints should be considered on long walls of continuous thin stone. Consult ASTM C1063 for additional information on control joint spacing and installation.

Also be sure to allow a minimum of 3/4" space between the roof and the stone.

Sills

Sill units allow you to create the look of a full thickness wainscot or finished window penetration and protect walls from moisture penetration. Sills are designed to create approximately 1/2" to 1-1/2" of overhang over Glen-Gery Landmark Stone veneers. Sills may be adequately supported using 2 galvanized metal support brackets or a support strip (with a minimum holding capacity of 5 lbs./lin. ft.) per stone, fastened with corrosion resistant nails or screws at 16" on center to studs or blocking. Construction adhesive may be used to bond the stone at bracket locations. Flashing should be installed immediately below the sill and supports and extend to the face of the exterior wall. The ends of the flashing should be turned up to provide an end dam and prevent water from entering the wall below. The units should always slope away from the building to facilitate water run-off.

If stone sills are not installed, appropriate trim materials that prevent water penetration should be used and precautions should be taken to flash horizontal terminations.

Hot/Cold Weather

Special consideration must be given to construction during hot and cold weather. During hot weather (above 90 degrees) additional water may need to be applied to the scratch coat and the backs of the stone prior to application. Providing shade and/or frequent misting of the wall may be required to ensure adequate bond. Do not install stone if temperatures are expected to be below 40 degrees within 24 hours after installation unless protection is available. Antifreeze or accelerator admixtures are not recommended. Be sure to consult local building codes or the hot and cold weather provisions of ACI 530.1/ASCE 6/TMS 602.

Chimneys

All stone chimneys must be properly flashed and capped with a one piece cap that extends a minimum of 1" beyond the finished stone surface to prevent water from entering the chimney chase below. A properly flashed chimney cricket must also be installed when appropriate in order to prevent moisture penetration.

Interior Applications

Water penetration and freeze/thawing cycles are not typically a concern on interior applications therefore flashing and weather resistant barriers are typically not needed. Be sure to confirm that the stone veneer system will be adequately supported. If adhesive approved for thin stone applications are used adhesive should be applied using the back side of a trowel with a second coat applied using the notched side. If necessary additional adhesive may be applied to the back face of the stone to ensure continuous bond of the stone to the backup. Do not use adhesive for fireplace or chimney applications. Stone can be applied to cementitious board as well as the substrates listed for exterior applications.



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