

Lime-ROK_® Installation Guide

FOR CERTIFIED INSTALLERS

Insulated Engineered Limestone Wall Panels

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Disclaimer

This guide is provided for informational purposes only. There are many details of installation (not included in this guide) that are assumed to be general construction knowledge to a construction professional. These guidelines are strictly recommendations and are intended to supplement, rather than replace, the basic construction knowledge of a construction professional. Selection of an appropriately experienced installer is the sole responsibility of the project owner or manager. Styrok shall not be held responsible for installation actions taken or not taken.

All installations of Lime-ROK must be in accordance with all applicable building codes and/or under the guidance of a licensed professional engineer. In all cases, applicable building code regulations take precedence over this guide.

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Product Description

Lime-ROK[®] **Engineered Limestone Panels** are 24" x 48" insulated, non-structural, prefinished wall panels designed to be installed on the exterior façade of any building.

Each panel consists of a high-density expanded polystyrene insulation board with a factory-applied 3/8" thick engineered limestone lamina made of a glass fibre reinforced concrete composite. The high-density foam provides exceptional thermal insulation, while keeping the panel lightweight (under 3 lbs / sq ft). The high-strength lamina ensures excellent impact resistance and durability.

Lime-ROK® panels offer the high-end elegance of smooth natural Indiana limestone without the high-end cost. Panels are CNC honed to capture the most authentic natural stone appearance and texture by exposing the multi-layer colours of the aggregates. The edges of each panel are then CNC trimmed to ensure accurate and consistent sizing. As a result, tight joints can be achieved, greatly improving the overall aesthetic of a Lime-ROK® finished wall and reducing installation time by allowing panels to be installed quickly and effortlessly in precise patterns.

Applications

Lime-ROK® panels are suitable for new and retrofit low-rise residential, commercial, industrial and institutional wall applications.

Handling and Storage

Until Lime-ROK® panels are adhered to a substrate, they should be handled with care to avoid cracking. Lime-ROK® panels are highly durable, but they only realize their full impact resistance once installed. Panels may be damaged if they are stepped on, thrown, dropped on their corners or otherwise handled roughly prior to installation.

Panels should be stored in a dry area for any extended periods of time prior to installation. Storage temperature should not exceed 158°F (70°C). Store panels horizontally on a wooden skid by stacking one on top of another facing cement to cement and foam to foam.

Material and Tools Checklist

Materials

- Exterior-grade, low modulus silicone caulking
- Polymerized exterior-grade wall adhesive
- StyGrout®
- Styrok® stone sealer (for touch ups)
- StyMatch® powder coat
- Wall repair mortar

Tools Required

- 1/2" notched trowel
- Chalk line
- Chisel
- Cordless screw gun
- Flat pry bar
- Grout line finishing tool
- Level
- Lime-ROK® wall levellers
- Mason's plum bob
- Measuring tape
- Miter-saw with a diamond blade
- Mixing bucket
- Pencil
- Spatulas
- Sausage caulking gun/grout application bag
- Sponge
- Table-saw with a diamond blade
- Hand grinder with a diamond blade
- Hand power mixer

Design Considerations

Lime-ROK® panels are versatile and easily site-modifiable. They can be cut on-site to clad irregular corners, around fixtures or for applications that call for smaller panel sizes. They can be installed in various patterns to create architectural reveals of any width, as well as vertically or horizontally, stacked or staggered, and both with or without accent mouldings. Their incredible versatility makes them a suitable option for both contemporary and traditional designs.

Prior to installation, you may want to take accurate measurements of your project and, with the assistance of a Styrok designer or another designer familiar with Lime-ROK®, prepare a panel layout to scale using design software or by hand on a copy of your project elevation.

There are many factors to consider when designing a Lime-ROK® exterior, many of which are project-specific and a matter of subjective taste. Below are a few key considerations you and your designer should keep in mind. This list is not exhaustive and is not intended to function as a step-by-step guide on how to prepare a design.

The value of a good design cannot be overstated. Ultimately, the overall aesthetic of your Lime-ROK® exterior largely depends on the quality of your design.

General Pattern Layout

Panels can be stacked one on top of another or staggered. Stacking panels produces a more modern aesthetic, whereas a staggered panel design is more traditional.





Panel Size

Sometimes, a design calls for smaller panels. Lime-ROK® can be cut to smaller sizes as desired. Various sized panels can also be combined to create unique patterns or for different sections of a project. For example, you may want to use larger panels for a large wall. For a smaller building, you may want to cut panels down to a smaller size proportionate to the wall size.

If you combine two different sizes of Lime-ROK® on the same wall, you may want to consider using a middle-band as a divider.

Grout Lines

• **Size.** All Lime-ROK[®] panels have a standard step edge around their perimeter. When panels are installed directly next to each other without any gap, they naturally form a 3/8" grout line. Larger grout lines can be achieved using panel spacers.



- **Placement.** When designing your panel layout, consider your grout line placement in relation to key openings or accents in order to align (or misalign) joint lines in a balanced manner. This is an important consideration. The location of grout lines plays an integral role in the overall aesthetic of a design. For example, you may want grout lines to align with the vertical axes of your entrance door. To achieve this, you may need to adjust your panel layout and/or grout line sizing so everything fits as per your design requirements.
- **Colour.** StyGrout® is available in two standard colours StyGrout-GR (a darker, grey colour option for enhanced joint lines) and StyGrout-N (a lighter option for a more subtle, natural limestone look).

Reveals

Reveals can be incorporated into a design to add depth. They also provide flexibility. Reveal sizes can be increased or decreased as required throughout a project, making them a useful tool in creating a well-balanced design. If your design calls for a reveal, consider the following:

- Size. Panels can be installed to create architectural reveals of virtually any width.
- **Placement**. As is the case with grout line placement, when designing your panel layout, you may want to consider your reveal placement in relation to key openings or accents in order to either align or misalign placement in a balanced manner. For example, you may want the top of a horizontal reveal to align with the top of your window mouldings. This may require an adjustment to your panel layout and potentially an increase or decrease in your reveal size so that all panels and reveals can fit appropriately as desired.







Ensuring a Well-Balanced Design

When designing your panel layout, always keep balance and symmetry in mind. This is the key to an aesthetically appealing design. This is more of an art than it is a science. There are no "rules" per se, but you may want to consider the following:

 Top and Bottom Rows. Consider the overall height of the wall, your grout line sizing and horizontal reveal sizing (if any) to determine how many horizontal rows your design calls for. The purpose of this exercise is to establish whether the starting row and top row of panels will need to be cut down proportionately in order to create a balanced design. If you simply start installing full panels on the bottom row and work your way up, you may end up with a top row that only has enough space for a few inches of panel, leaving you with an unbalanced design. That being said, other aspects of your design (eg. opening and accent placement) may take priority over balancing your top and bottom rows.



2. Left and Right End Rows. Consider the overall width of your wall and grout line sizing to determine how many vertical rows your design calls for. Consider where you will be aligning vertical joint lines in relation to openings and accents as this may impact how much space is left to be clad on your left and right vertical end rows. See "Corners" section below for more information on how to ensure that your left and right end rows are balanced depending on the type of corner you are working with.





Figure 9

3. Corners

a. <u>Outside Corners</u>. To achieve the most authentic Indiana limestone aesthetic, you will want to replicate the look of a standard 4" thick limestone block at outside corners (this is the typical thickness of limestone used in cladding applications).

With a stacked panel layout, this is easy to achieve - simply install a 4" cut panel at the starting point of each row on the return elevation of an outside corner and a full panel at the starting point of every row on the façade/primary elevation.



With a staggered panel layout, there are a few additional steps.

- 1. Install a 4" cut panel at the starting point of alternating rows on the façade/primary elevation. See 'a' panels in Figure 11 below.
- 2. Install a 4" cut panel at the starting point of alternating rows (opposite to those where 'a' panels have been installed) on the return elevation of the outside corner. See 'b' panels in Figure 11 below.
- 3. The first panel installed directly next to an 'a' or 'b' panel will be a full panel. See 'c' panels in Figure 11 below. For example, if you are using standard 24" x 48" panels throughout your project, 'c' panels will be 48" wide.
- 4. To ensure that panels will be staggered evenly, the first panel to be installed at the starting point of a row that does not begin with an 'a' or 'b' panel should be cut to size based on the following formula: *full panel width* ÷ 2 + 4. See 'd' panels in Figure 11 below. For example, if you are using a standard 24" x 48" panel throughout your project, 'd' panels will be 28" wide (48" ÷ 2 + 4").



Figure 11

- b. <u>Inside Corners</u>. Consider the width of your wall and panel layout to avoid a scenario where you only have space for a very small piece of panel at an inside corner. When designing a panel layout for a wall with an inside corner at either end, you may want to begin by considering the centre line of the wall, the size of your panels and your grout line sizing in order to achieve a balanced layout.
- c. <u>Outside to Inside Corners</u>. When you have a wall that goes from an outside corner to inside corner, always start with the outside corners as they are more important in terms of aesthetics. That being said, you may want to avoid a scenario where your inside corner end panels are only a couple of inches wide. This will look unbalanced. You may need to adjust your panel layout and/or sizing to achieve a balanced aesthetic.
- d. Corner Styles. Corners can be cut in two different styles:



i. Standard Corners



Figure 13

ii. Square Cut Corners







- 4. **Trimming Panels to Create Balance**. Sometimes, despite the most meticulous planning it will not be possible to create a balanced design without trimming panels in certain areas. If this scenario arises, consider trimming panels where the slight difference in size will blend in more seamlessly. Avoid trimming panels that are part of integral elements of the design (eg. outside corners), since these panels tend to catch the eye so the size differential may be noticeable.
- 5. **All Elevations.** Always remember to consider your project as a whole. You want to ensure that each elevation (and different sections within an elevation) are balanced in relation to each other.

Openings and Accents

Openings can be finished with or without mouldings. If you opt to install mouldings, take moulding size and placement into account when designing your panel layout.

Adjustments to your panel layout, grout line placement or reveal size or placement may be necessary in order to align panels with the edges of openings or accents or to give priority to key accents in your design. For example, if you have a mid-band going around the perimeter of a house and you wish to align it with an entrance portico, then this alignment becomes a priority.

Additionally, in order to highlight key accents in your design, you may need to build up your wall by adding additional foam backing.



Installing Lime-ROK®

Preparing Wall Surface

Lime-ROK® can be applied over new or existing construction.

For <u>new construction</u>, panels are applied over an EIFS wall assembly, replacing the finish coat. Your EIFS wall assembly should be prepared in accordance with the manufacturer's specifications and compliant with local building code requirements.

For <u>existing construction</u>, Lime-ROK® can be applied directly over existing masonry. Prior to installation, ensure that your substrate is clean, flat and dry. Repair and level any damaged or uneven areas using a wall repair mortar.

Installing Accent Mouldings

Before installing Lime-ROK® panels, any desired accent mouldings should be installed. Visit www.styrok.com for more information on Styrok pre-finished accents.

Marking Panel Layout

Mark key elements of your panel design layout on your wall using a wall level and chalk line. See "Design Considerations" section above for more information on preparing a design.

Cutting Panels

Throughout the project, full panels will likely need to be cut. Do so by measuring the placement site, measuring and marking the panel and cutting the panel using a mitre saw or table saw with a diamond blade. For irregular cuts (eg. when fitting panels around an existing pipe), use a diamond hand grinder or diamond router.

Preparing Wall Adhesive

Prepare a polymerized, exterior grade wall adhesive in accordance with the manufacturer's mixing instructions. Due to the lightweight nature of Lime-ROK® (under 3 lbs/ sq ft), no mechanical fastening or structural support is required.

Installing Panels

1. **Starter Strips.** Lime-ROK® starter strips are pre-wrapped to protect exposed edges of foam from external moisture sources and to provide a finished appearance. They incorporate a step edge, which acts as a support for the first row of panels and aids in achieving a straight and level starting point. Using wall adhesive, adhere Lime-ROK® starter strips to the wall immediately below where the first row of panels will be installed. Allow to cure.

- 2. First Panel. Begin with the first panel of the bottom row at an outside corner.
 - a. Use a mason's plum bob to ensure that both walls at the corner are level.
 - b. Cut a Lime-ROK® panel to size (if required by your design).
 - c. Using a ¹/₂" notched trowel, apply wall adhesive to the back of the panel.
 - d. Press the panel lightly against the wall until it is securely fixed.

3. Second and Subsequent Panels

- a. Repeat step 2 above to install the remaining panels as per your design.
- a. To ensure proper wall alignment, use a straight edge or wall level throughout the installation process. Use Lime-ROK® wall levellers to prevent panel lippage.
- b. Review "Design Considerations" section above for information relating to: grout line sizing, colour and placement; reveal sizing and placement; openings and accents; corners; and techniques for ensuring a well-balanced design.
- 5. **Terminations and Wrapping**. Install Lime-ROK® opening trims at all openings and terminations where an exposed edge of foam might occur, such as at a junction between Lime-ROK® and another cladding material, at an expansion joint, or at a penetration, such as a window, door, duct, pipe or electrical box. Lime-ROK® opening trims are pre-wrapped to protect foam from external moisture sources and to provide a finished appearance.
- 6. **Slope in the Grade**. If your project has a slope in the grade, panels can be installed in one of two ways:



a. Step-Down Method

Figure 17

b. Starter Strip Method

- i. Mark your Lime-ROK® starter strip placement on the wall according to your design.
- ii. Cut Lime-ROK® starter strips at 45 degree angles and adhere using wall adhesive. Allow starter strips to cure. For efficiency purposes, you may want to complete this step when you install starter strips for the rest of your project - see step 1 above.
- iii. Cut Lime-ROK® panels to size (if required) and install directly above starter strips.



Figure 18

7. Allow Panels to Set. Once all Lime-ROK® panels have been installed, allow everything to set for at least 24 hours.

Applying Grout

- 1. Prepare and mix StyGrout® in accordance with Styrok's mixing instructions.
- 2. Apply StyGrout® to all joints using a sausage caulking gun or a grout application bag.
- 3. Remove excess StyGrout® using a masonry grout finishing tool before the grout begins to dry.
- 4. Use a spatula and/or a damp sponge to clean edges and around joints.

Note: Joints in areas where snow or water may remain for prolonged periods of time should be caulked instead of grouted. See "Caulking Joints" section below.

Caulking Joints

- 1. Using a sausage calking gun, caulk all expansion, transition, termination and control joints with an exterior-grade, low modulus silicone caulking.
- 2. To unify the surface appearance, treat exposed silicon joints with StyMatch® powder coat while caulking is still wet.

Note: Ensure all caulking is completed before exposure to rainfall.

Post-Installation Considerations

Flashing

Ensure that all required metal flashing on your project is completed before exposure to rainfall. Flashing should incorporate a drip edge to the exterior with a slope sufficient to allow water drainage. A drip edge reduces the amount of water that will run down the surface of the panel, reducing chances of staining and efflorescence.

Refer to Ontario's *Building Code*, the *EIFS Council of Canada Practice Manual* and your EIFS manufacturer's technical documentation for more information on flashing requirements.

Replacing Damaged Panels

Lime-ROK® panels can be easily removed and replaced without harming surrounding panels or the underlying substrate.

- 1. Using a hand grinder, cut the damaged panel into smaller sections
- 2. Using a flat pry bar, pry the cut sections of the panel off the substrate
- 3. Using a spatula or chisel, clean away any remaining debris and carefully chisel away surrounding grout taking care not to damage surrounding panels.
- 4. Install replacement panel and apply StyGrout as per the installation steps set out above.

Maintenance

Cleaning Lime-ROK®

Lime-ROK® is a durable, moisture and dirt pickup-resistant composite made of glass fibre reinforced concrete treated with a permanent nano-stone sealer. Any surface dirt can be washed with a mild detergent and rinsed using a garden hose.

Inspecting Joints

Every spring, inspect all joints for any cracks that may have materialized over the winter due to excessive wall movement caused by building settlement and/or temperature fluctuation. Repair any cracks with StyGrout® or caulking (as applicable).