Firestone
BUILDING PRODUCTS

SKYPAVER™
COMPOSITE ROOF PAVERS

DESIGN & INSTALLATION GUIDE

January, 2014

GENERAL GUIDELINES

SkyPaver Composite Roof Pavers should be installed in accordance with the local building codes and the installation guidelines included below. Firestone Building Products, Inc. accepts no liability or responsibility for the improper installation of this product. SkyPaver Composite Roof Pavers (“pavers”) may not be suitable for every application and it is the sole responsibility of the installer to be sure that the pavers are appropriate for the intended use. Since all installations are unique, it is also the installer’s responsibility to determine specific requirements for each flat roof application. Firestone Building Products recommends that all applications be reviewed by a licensed architect, engineer or local building official prior to installation.

SUBSTRATE REQUIREMENTS

IMPORTANT: SkyPaver Composite Roof Pavers are designed to be installed over a fully adhered roofing membrane, and on a structural flat roof surface. SkyPavers are not a structural replacement for flat roof surfaces, and therefore, should never be used as the structural element of the roof, as a ballast system, or in pedestal applications. Prior to installing, be sure to verify that both the roof structure and roofing system can support the addition of SkyPaver Composite Roof Pavers.

· The roof structure must meet all required codes.

· Maximum slope: ½":12"

· The roof must have adequate drainage.

· Firestone SkyDrain drainage mat must be installed over the roofing membrane.

· The deck surface must be free from substantial undulations.

· Door and other thresholds must be able to accommodate the minimum added height.

IMPORTANT: EXPANSION AND CONTRACTION

SkyPaver Composite Roof Pavers will expand and contract with temperature change (similar to other composite materials). To allow for this movement:

1.23" SkyPavers

• When installing at ambient temperatures below 70 ˚F, leave a ⅝" gap between all protrusions.

• When installing at ambient temperatures above 70 ˚F, leave a ½" gap between all protrusions

1.98" SkyPavers

• Leave 1" gap between all damageable protrusions

• Leave 1/2" gap between rigid protrusions

TOOLS AND EQUIPMENT

• Safety Glasses, Gloves, Ear Plugs

• Marker

• Hand Dolly

• Edging

• Caulking Gun

• Adhesive – see recommended adhesives on Page 9 of this guide.

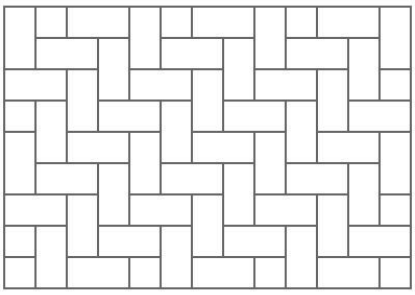
• Utility Knife

• Jigsaw or Miter Saw: 5-6 tpi jigsaw blade; 10"-24 tooth mitre saw blade; 12"-32 tooth mitre saw blade

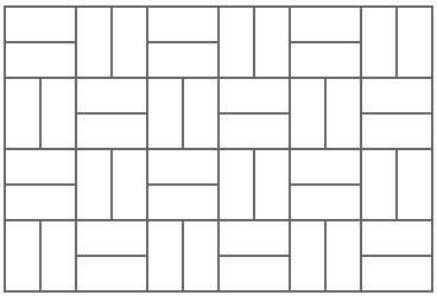
DESIGN PATTERNS & COLOR CHOICE

SkyPaver Composite Roof Pavers can be installed in a multitude of different patterns and combinations. Designs can include small and large repeating patterns. **IMPORTANT:** Installation grids must be orientated to allow the pattern of pavers to interlock grids in both directions. Example patterns for

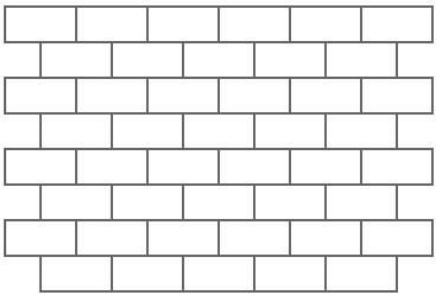
Herringbone



Basketweave



Running Bond

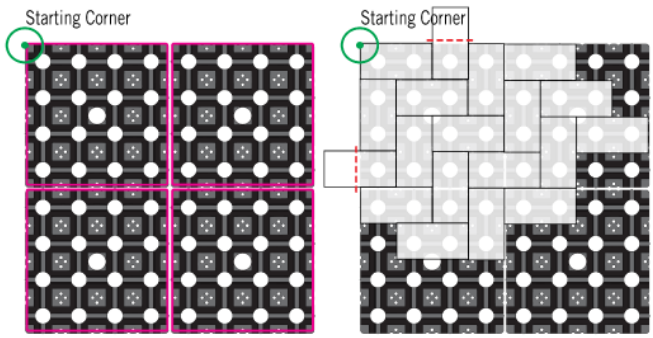


For all installations, regardless of the pattern selected, at least one paver must connect two grids in each direction. The Herringbone pattern achieves this connection without needing to specially orientate the grids. The Basketweave Pattern requires additional grids, and Running Bond Pattern requires reorientation of the grids in an offset pattern. The following information describes how the grids must be orientated for each of these patterns to assure overlap in all directions:

Herringbone Pattern:

SkyPavers naturally interlock their grids in all directions of the Herringbone Pattern.

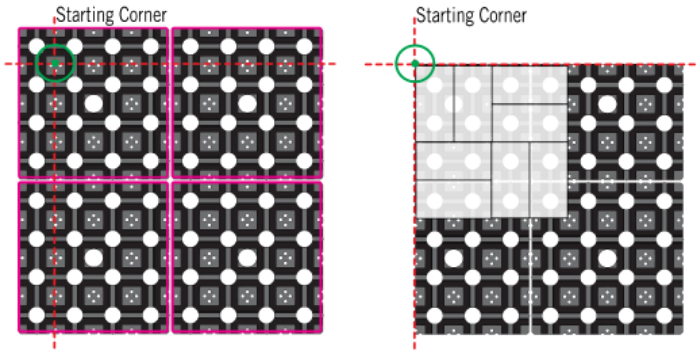
- Lay the installation grids as illustrated below.
- Start laying pavers at the starting corner as shown below.



Basketweave Pattern:

Basketweave Pattern is simple to install, however, extra installation grids are required.

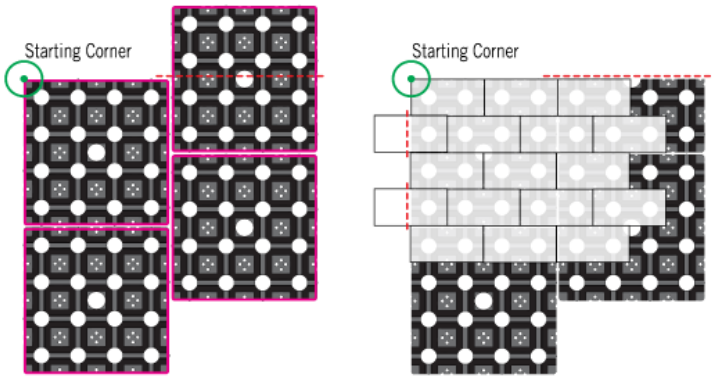
- The starting paver must be laid 4" down and 4" over from the top left corner of the grid. This will shift the pattern over and assure at least one paver will connect two grids in both directions.
- The leftover grid can either be trimmed off, or a 4" border can used to fill in the extra space.



Running Bond Pattern:

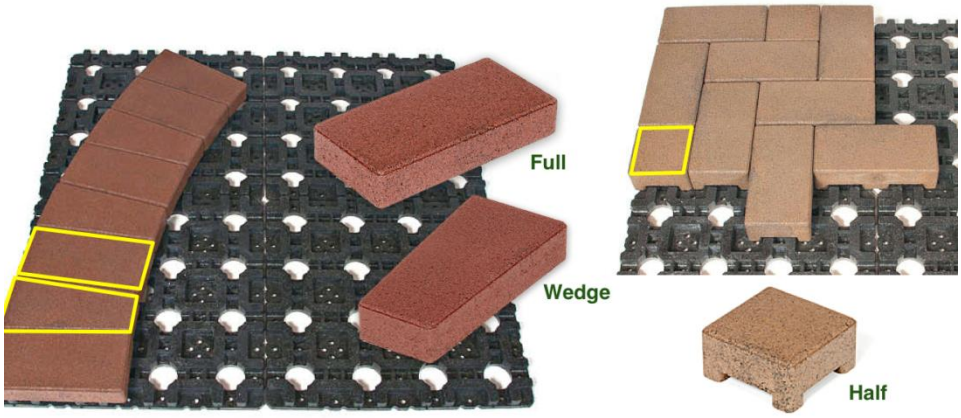
This pattern requires staggering the grids to ensure that the pavers connect in all directions.

- The starting paver can be laid in the top left corner, but the next column of grids must be staggered halfway down the starting row. Every other column will need one half grid at the top.
- Each half of the cut grid can be used.



Decide on Border / Soldier Course:

1.98" SkyPaver Composite Roof Pavers allow for several border and soldier course options. These can either be straight or curved. The accessory pavers can help limit the cutting and give a finished look to the project. (For more details see “Install Borders and Accessory Pavers” below).



Calculate Square-Footage:

Measure the dimensions of the area to be resurfaced and calculate the total square footage. Be sure to add extra to the measured square footage to allow for scrap and to have a few extras on hand in case of future damage.

Calculate Amount of SkyPaver Composite Roof Paver Product Required:

A unit of SkyPaver Composite Roof Pavers includes eight (8) pavers and one (1) 16.0" x 16.0" grid. The unit covers 1.78 square feet. To calculate how many units are needed, divide the total square footage of your project by 1.78. See the table on the following page for representative calculations.

Project Measurements (length x width = square feet)	Required Number of Units		
	Single Color	Two Color Blend	Three Color Blend
50 sq ft	29 units	30 units (15 units of each color)	30 units (10 units of each color)
100 sq ft	57 units	58 units (29 units of each color)	57 units (19 units of each color)
250 sq ft	141 units	142 units (71 units of each color)	141 units (47 units of each color)
500 sq ft	282 units	282 units (141 units of each color)	282 units (94 units of each color)

Color Options: SkyPaver Composite Roof Pavers come in five attractive colors that may be used singly, or combined to create unique blends. To help select the colors for your project, visit www.firestonebpco.com

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INSTALLATION OF SKYDRAIN DRAINAGE MAT

Use of Firestone SkyDrain drainage mat is required for all applications. SkyDrain serves to both protect the membrane from abrasion and allows a pathway for water to escape to the drains.

• Roll out SkyDrain with the length of the roll going with the slope of the roof (ensure it is flat and does not curl).

• Rows of the SkyDrain will abut one another.

• Offset seams of the grids and seams of the drainage mat for best results.

• Cut out the Sheet Drain around roof drains to allow water to escape.

• DO NOT adhere SkyDrain to the waterproofing membrane.

Hint: For small undulations in the flat roof surface, scrap pieces of Firestone RubberGard EPDM membrane can be used as shims. This can help create a smoother top surface once the paver system is installed.

INSTALLATION OF SKYPAVER GRIDS

REMINDER: Installation grids must be orientated to allow the pattern of pavers to interlock grids in both directions. Please refer back to “Choose Pattern” for more information.

- Begin laying grids from the starting point of your choice, on top of the already installed Firestone SkyDrain.
- • Lay out initial installation grids on the SkyDrain Drainage Mat, based on desired pattern (using extra grids can reduce installation time). To increase installation speed, it is recommended to purchase 10 extra installation grids to get started.
- As pavers are brought over and installed, the grids from those pavers will continuously be laid out across the install.
- Grids can be cut to fit with the same cutting tools used for the pavers (e.g. mitre saw or jigsaw).
    - If the ending grid is less than 4", cut off 4" or 8" of the grid before it, so the ending grids can be longer and will connect into the install with overlapping pavers (e.g. instead of a 16" grid then a 3" grid, create an 8" grid and an 11" grid).

INSTALLATION OF SKYPAVERS

• Bring stacks of pavers on the grids over to the starting point.

• Empty pavers off of the grid.

• Lay pavers using chosen pattern into the grids (mixing different colors if desired).

• **IMPORTANT:** Ensure that all grids are being connected by pavers in all directions.

• Take empty grids and lay them out in the continued orientation needed for your pattern.

• Continue laying pavers until all full pavers (i.e., not cut or trimmed) are installed.

• If multiple pallets of the same color are used, it is recommended to mix them throughout the installation area. SkyPavers are produced from up 95% recycled materials, which can create slight color variations.

CUTTING INDIVIDUAL GRIDS AND SKYPAVERS

• Use the cutting equipment recommended above.

• For miter saws, short quick swipes with the blade works best. Keep the blade speed up and avoid binding.

• Cut pavers individually using a spare grid to hold it in place.

• Grids are cut similar to pavers; however, they cut easier due to their thickness.

IMPORTANT: ALWAYS WEAR SAFETY GLASSES, GLOVES, AND EAR PLUGS WHEN TRIMMING PAVERS OR GRIDS. Obey all safety and operational instructions that came with your cutting equipment.

ADHERING PAVERS TO THE GRID

In certain cases, pavers must be adhered to the grid. Reasons for adhering pavers to the grid include use of cut pavers, wind uplift conditions, around drains or where potential standing water could exist, and near stairways and roof access points. Perimeter paver securement is addressed below. Consult your Firestone Building Products Roof Systems Advisor for recommendations in all applications where wind uplift is a concern.

• Using a recommended adhesive, place a ⅛" bead across the top ribs of the grid. Recommended adhesives are **TiteBond PROvantage Landscape Adhesive** and **TiteBond GREENchoice Construction Adhesive.**

• Place the paver in the grid and press down firmly.

• Let pavers sit undisturbed for duration of adhesive cure time, typically at least 72 hours.

• A 28 oz. tube of adhesive will cover approximately 15 square feet.

IMPORTANT: SECUREMENT OF PERIMETER PAVERS: Each application is different, and the perimeter must be secured accordingly. For most applications that end at a wall or parapet, securement of the pavers at the perimeter is typically not required. However, Firestone recommends adhering a minimum of 16” around the perimeter for all applications, as a safety measure. For applications where winds above 55mph are anticipated, contact your Firetone Roof System Advisor for job-specific information. For applications that do not end at a wall or parapet, a skirt board or trim board may be installed to cap off the unfinished edge of the paver system. Use of Edge Flashing may also provide additional edge securement, and SkyPavers may be used in conjunction with Firestone SkyScape edge flashing products, where appropriate. Contact Firetone Building Products for further details.

INSTALL BORDERS AND ACCESSORY PAVERS (1.98" SKYPAVERS ONLY)

If the project requires curved or straight borders the accessory pavers can eliminate much of the cutting. These include legless pavers and wedge pavers.

- Draw the shape of the desired border onto the pavers that will need to be cut. Laying the accessory pavers on top of the other pavers and tracing the interior edge is the easiest. A string line may also be used.
- Cut the pavers on the line in place using a jigsaw.
    - DO NOT cut through the grid.
- Place the legless and/or wedge pavers on top of installation grids to create the border.
- Use a recommended construction adhesive (see Page 9 of this guide) between the accessory pavers and the grid.

FINISHING THE PROJECT

SkyPaver Composite Roof Pavers may be edged using Firestone SkyScape Edge Flashing. See www.firestonebpco.com for information regarding SkyScape Edge Flashing.

MAINTENANCE

Most stains, bird droppings, etc. can be cleaned using a garden hose. Tougher, embedded debris can be cleaned using a mild detergent (similar to that used for cleaning your car). NOTE: Use of a high pressure sprayer is not recommended.

The techniques shown above should be used for best results. Results may vary as expansion and contraction could still occur, and drainage systems are unique to each flat roof. Firestone Building Products claims no liability or responsibility for the improper installation of this product. Since all installations are unique, it is the sole responsibility of the installer to determine specific requirements in regard to each flat roof application. Firestone recommends that all designs be reviewed by a licensed architect, engineer or local building official before installation. Please contact your Firestone Roof Systems Advisor prior to installing, if you have question or concerns.