The Third Dimension:

Aesthetic Grooves

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Exterior insulation and finish systems have come a long way since first appearing on the US construction scene more than 20 years ago. And their popularity has grown in the past decade with the introduction of aesthetic joints or grooves. Initially intended to facilitate finish coat application and provide decorative enhancement to EIFS projects, aesthetic grooves typically are used on a polymer-based (PB) system, since the joints can be routed easily or cut in the insulation board.

Whereas EIFS walls were once accepted for their monolithic appearance, they now serve as a canvas for the architect’s artistic expression. What was a complicated, time-consuming and expensive approach to enhancing a building’s image has become simple and more reasonably priced. Everyone involved with EIFS system—manufacturers, architects, distributors and contractor—has benefitted from the advancements made in aesthetic groove technology and methodology. But there is still a long way to go in the standardization of the aesthetic grooves and the tools needed to create them.

How far have we come? Today, an architect can consult system and tool manufacturers’ guidelines and dimension charts to get general ideas about commonly used grooves. But with the range of shapes and sizes of grooves, EIFS tool manufacturers and suppliers have been scrambling to provide the equipment applicators need to complete jobs professionally and economically.

To appreciate what has been accomplished, you have to go back to the advent of the aesthetic groove. At that time, EIFS applications were being expanded to take on more square footage. Architects, meanwhile, were looking to break up monolithic walls without the use of expansion joints, which were tedious and labor intensive for the contractor. The era of the flat, blank exterior wall was gone.

The idea arose to rout outside insulation to a specific depth and then working the base coat, reinforcing fabric and finish, thus giv-
ing the appearance of an expansion joint without the added time or expense.

Of course, this idea looked fairly simple on the drawing board, but the architect had to meet some basic guidelines established by the system manufacturers. For one, a minimum of 1-1/2 inch thick insulation board was generally required to maintain at least 3/4 inch thick installation once the aesthetic groove was cut. Second, the base coat, reinforcing fabric and finish—together known as lamina—had to remain free of cuts and snags. And third, the groove, when cut, could not follow the contour of the board line.

In addition, if an architect designed a 1 inch square groove for an EIFS surface, the contractor had to be aware that he actually need to make a 1-1/4 inch initial groove cut to account for the lamina installation. Routers could be used to cut grooves, but typically standard router bits were 1-1/4 inches or less. So for projects that called for greater widths, the contractor had to make two or more passes with a router, or have a bit custom-made to his specifications.

Then there was the process of installing the lamina so that it would be smooth, tear-free and meet the

Aesthetic grooves produce a block effect which repeats the shape of the rectangular windows.
manufacturer’s standards. The only tools that were available for that job were the trowel and margin trowel, both of which posed the danger of cutting or snagging lamina because of their sharp edges. Some contractors would go so far as to bend their trowels so they could sled the fabric into the groove with less trouble.

Through trial and error, five shapes of grooves emerged as the most widely used: Square, Round or U, Beveled, Angled, and V. Each creates its own aesthetic character and challenges.

With no standard sizes, depths or widths, the creation of these grooves became a matter of guesswork for the architects and contractors as to what would work and wouldn’t work effectively.

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Standard Aesthetic Grooves (Finished)
All grooves include lamina thickness for exterior insulation and finish (EIF) polymer based (PB) systems.
**Groove Shapes**

The Square Groove creates a sharp shadow line and generally varies from 1/2 to 6 in. (finished) width and from 1/2 to 1 in. deep. This groove is difficult to install because of tight right angles. It can also create problems in long-term wall performance if used in horizontal applications. Water tends to pool on edges, and birds find larger grooves perfect nesting ground.

The U Groove is very similar to the Square Groove in appearance on the wall while eliminating many of its installation difficulties and maintenance problems. The U shape eliminates the 90 degree angles at the bottom of the groove which makes installation much easier and allows greater runoff. The drawback of this groove is that it has a maximum width of 3/4 in. and depth of 5/8 in. based on standard tooling.

The Beveled Groove is widely used for larger horizontal reliefs and designs. Generally the grooves are 6 in. wide and 1 in. deep. This has been an extremely difficult groove to cut and finish, but the performance of the groove is exceptional. Water runs off easily, and surface dirt can be washed away by a heavy rain.

The Angled Groove is similar to the Beveled Groove except both sides are 60 degree angles. The double bevel makes the groove appear wider and creates a flat shadow line. As with the Beveled Groove, water and dirt don’t collect on the edges, reducing wall maintenance.

The V Groove, the most popular of all groove shapes, can run horizontally or vertically and create a strong shadow line. The shape is relatively easy to install and can be designed in widths up to 2 in. and depths of 1 in. with standard tooling. With no shelf edges, the groove also performs well long-term. (See chart for a listing of the most popular groove sizes and styles which have evolved as the industry standards.)

Once architects saw the versatility of these grooves beyond their use of creating symmetrical shadow line and rip edge at windows and soffit lines, the concept caught fire and became a nearly boundless means of architectural expression.

Then, about four years ago, the initial set of groove tools was unveiled; architects, distributor and contractors now had a reference source listing “standard” tools available, thus eliminating some of the guesswork and hassles. This new set of tools included a standardized selection of router bits and a unique troweling sled with a long-wear plastic blade that could fit grooves perfectly, thereby virtually eliminating the threat of any tears or snags.
This revolutionary development was soon followed by a new approach to cut the aesthetic joints—hot cutting tools. Although the routing technique has been widely accepted because router bits can be purchased almost anywhere, routing is generally viewed as a messy procedure, since much of the cut insulation becomes airborne and scatters around a job site. The hot cutting tools, on the other hand, can slice through insulation quickly, with no mess.

Even these first generation cutting tools have their restrictions. Only a limited number of standard blades are available, and none are more than 1 in. wide. But a new gen-

*Interconnecting grooves create a pleasing design in these exterior walls.*
eration of hot grooving units has emerged that offers an expanded line of blades and greater widths, making historically expensive and difficult groove styles easy to cut. In addition, these hot grooving units can make grooves in several different types of rigid insulation boards that are precise and consistent compared to other less controllable methods. And, if a mistake is made with a hot grooving unit, the installation can be put back in place and cut again. These new machines, along with their older cousins, still provide the versatility of creating custom-made grooves but at a significantly lower cost.

From the evolution of commonly used groove styles and sizes to new, more efficient tools, industry advancements have made aesthetic grooves easier to choose, specify and install. However, there is still little standardization or widely accepted norms for choosing and creating aesthetic grooves.

By developing standard grooves, anyone in the industry will be able to specify a groove style and size, ensuring that the proper tools and equipment exist to complete the job professionally and at a reasonable cost. With no second guessing, confusion or misunderstandings, EIFS projects can run more efficiently, reducing costs and providing greater profit opportunities throughout the industry.

About the Author:
Bill Seibert is Vice President-General Manager for Wind-Lock Corporation and has been active in the EIFS industry since 1978.