FORTUNE CONTRACT

NOT JUST A PRETTY FACE

UNDERLYING FACTORS TO CONSIDER IN THE PROPER SPECIFICATION OF CARPET

WHITE PAPER

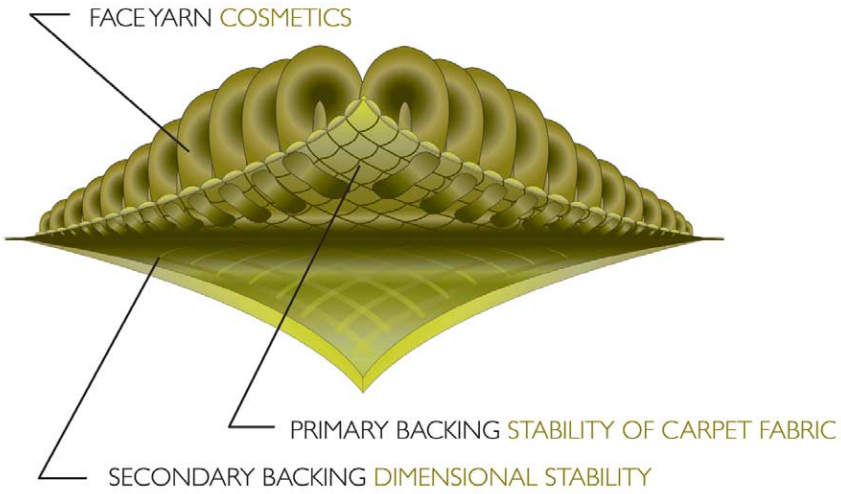
A beautiful carpet installation relies on more than just a pretty face. It's also what's on the underside that really counts. In a previous white paper, *Proper Specification of Carpet*, the issues of fiber choices, dye methods and texture options were discussed. In this sequel, other important topics are addressed that affect the specification process, including primary and secondary backing options, installation and maintenance. These issues go beyond the design, color and pattern concerns, yet can drastically impact the success of a project. A little knowledge about the variables in carpet construction below the face, and the effect these components have on overall performance, can be helpful.

First, and most important, keep in mind that carpet is a textile. Understanding the construction process of the commercial carpet textile is an essential part of knowing the effects each component has on the quality of the end product.

PRIMARY BACKING

There are three main steps in the manufacturing process: dyeing, tufting and finishing. Dye methods are explained in *Proper Specification of Carpet*. TUFTING is the process by which face yarn is sewn, or "tufted," into a woven foundation, or primary backing. In the center of the tufting machine, hundreds of threaded needles punch face yarn into the primary backing in varied heights and colors depending on the design. This foundation is the source of stability for the carpet fabric not only throughout the tufting process but also the entire life of the product. Primary backings are partially responsible for stability, pattern straightness, pattern clarity and tuft bind in carpet fabrics.

Until about 1970, jute was the primary backing of choice. Jute, however, was prone to shrinking, mildewing, rotting and popping apart at the seams. Today, most primary backings are made of polypropylene. Polypropylene doesn't absorb water and greatly reduces the concerns with jute. The LEED program has brought interest back to jute as a rapidly renewable resource, but the polypropylene manufacturers have been proactive in adding post-consumer and post-industrial content to their products.



PICK COUNT, or the number of threads per inch in the primary backing, is directly related to the overall dimensional stability of the fabric. Most broadloom commercial carpet uses a pick count ranging from 11 to 22 picks per inch. A primary backing with more picks per inch is inherently more stable than one with fewer. New technology allows for a continuous monitoring of pattern alignment during the tufting process. A more stable carpet translates to an easier installation with side match and bow and skew issues.

SECONDARY BACKING

In the final stage of production, the finishing process, a secondary backing is adhered to the underside of the primary backing using an adhesive that is cured in an oven. The adhesive serves to provide dimensional stability and lock the face fibers into place. There are several types of backing systems depending on the intended application for the finished carpet. The various systems have different characteristics to consider as they pertain to the end-use: performance, high comfort, noise reduction, rolling traffic, moisture barrier, and, as LEED awareness increases, recycled content.

Most carpet is adhered with latex, a water-soluble adhesive. This is the most common secondary backing, and is very serviceable in many applications. Over time, wet cleaning methods and humidity can break down the latex causing expansion, delamination and wrinkling. Where moisture is an issue, it is more appropriate to specify a secondary backing that will perform in such conditions.

Performance backings are commonly made with polyurethane adhesive. Polyurethane backings come in many different thicknesses and densities that conform to the end use requirements. With or without an attached cushion, polyurethane backings increase tuft-bind, help prevent edge-ravel and improve abrasion resistance. With an attached cushion, there are improvements in energy savings, ergonomic underfoot comfort, acoustical enhancement, rolling traffic mobility and appearance retention. When spills and aggressive maintenance procedures are problematic, the addition of a moisture barrier ensures critical performance properties do not deteriorate.

The specification of some high-density polyurethane with recycled content and a post-consumer recycled non-woven secondary backing fabric can contribute to the total building materials requirements for LEED certification. This is in addition to the point allowed for Green Label carpets certified by the Carpet and Rug Institute. You may also specify low VOC emitting adhesives to be used and further contribute to LEED points.

INSTALLATION

So, your carpet textile has gone through the manufacturing processes. Just like other textile applications, the fabric must be pieced together to become a finished product. The quality is in the material itself, but the quality of assembly is equally important.

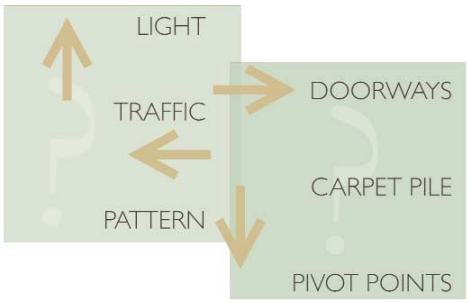
The satisfaction with an installation is largely based on the execution of seams. SEAM PLACEMENT is critical, and should be addressed early in the specification process. Properly placed seams run the length of an area, and with, rather than across, traffic lanes. Lighting should not strike across a seam, as this will emphasize its appearance. Where possible, seams should not be placed at pivot points in traffic, and not perpendicular to doorway openings.

In addition to seam placement, examination of the carpet pile should also be addressed. Carpet pile has a direction, like the nap of velvet or corduroy. The direction should remain consistent throughout an installation. Pile reversal will appear as shading, or a color variance, at the point where two widths of fabric meet.

If the carpet has a specific pattern, large or small, it must be matched at the seams to have a satisfactory installation. Large patterns are easier to match, but require more carpet. Smaller patterns are more difficult to match, and improper attention usually has unsightly results. Bow and skew are terms used to describe conditions that affect the ability to pattern match. If left uncorrected, wavy or crooked lines will be visible on the floor when looking across the seams. BOW refers to when the pattern deviates in an arch toward the center of the carpet fabric. SKEW refers to the pattern being square across the width. Most manufacturers have strict tolerances for these conditions, which typically occur during the finishing process. To correct many pattern match issues, such as bow and skew, a qualified installer will use a power stretcher and stay nails.

Loop pile carpets, while generally considered more durable, are inherently more difficult to install. Careful attention must be paid to the use of seam sealers that permanently anchor the loops at the cut edge. Improper use often results in unsightly pulls and snags at the seams.

The Carpet and Rug Institute provides guidelines for proper installation in CRI-104 *Standard for Installation of Commercial Carpets*. They also certify installers who follow their procedures. Part of the specification documents should state that these guidelines be followed, as well as those from the manufacturer. Pattern match and the proper use of seam sealer are time and labor intensive processes that must be considered in the budgeting and specification stages.



IMPORTANT FACTORS IN SEAM PLACEMENT

MAINTENANCE

Taking care of the carpet after installation is important to the overall satisfaction with performance and appearance retention of the textile. Just as with a nice suit, carpet must be cleaned regularly, relative to its use. Lack of attention to maintenance issues will result in a shorter lifecycle for the carpet, as dirt will abrade the face fibers. Plus, improper cleaning can affect indoor air quality. In general, spots and spills should receive immediate attention, and cleaning should be scheduled and targeted to heavy traffic areas. Aggressive chemicals and methods should be used only with the appropriate carpet type. Most manufacturers provide cleaning and maintenance guidelines for their products. The CRI certifies both cleaning companies and vacuum cleaners that have been tested to meet stringent criteria. Some observance of these guidelines should prolong the useful life of the carpet and contribute to a more healthy work environment.

Commercial carpet goes through many stages in the manufacturing process.. Beyond the surface, the underlying components can dramatically affect you and your client's satisfaction with a given project. Proper specification is about what is "inside," not just a pretty face.

REFERENCES

SI Flooring Systems: pattern|lok®, Resource Guide to Commercial Carpet Foundation
CRI-104 *Standard for Installation of Commercial Carpets*
The Dow Chemical Company

The author, Judith Ingalls, is Vice President of Style and Design for Fortune Contract, commercial carpet manufacturer in Dalton, Ga. Fortune Contract combines form, texture, color and balance to create innovative products with both aesthetics and structural integrity. Judith is the career recipient of three IBD awards, including Best of Competition, and eight Solutia DOC Awards. Judith has created a broad range of award winning designs and continues her success with Fortune Contract's wide array of products.

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