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ABSTRACT:
Stile and rail wood doors offer architects many options for wood doors' design to impact the design and appearance of their projects. Understanding the terminology, performance criteria and available choices may help the decision process and result in a more successful project.

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AWI, AWAC and WI - Architectural Woodwork Standards

Stile and Rail Wood Doors

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Background

Stile and rail wood doors' almost unlimited configurations allow designers to impart an aesthetic stamp on their projects. Doors can be either simple, with clean and crisp lines, or extremely elaborate. The possibilities are limited only by the designer's imagination and the ability of the manufacturer to craft the material.

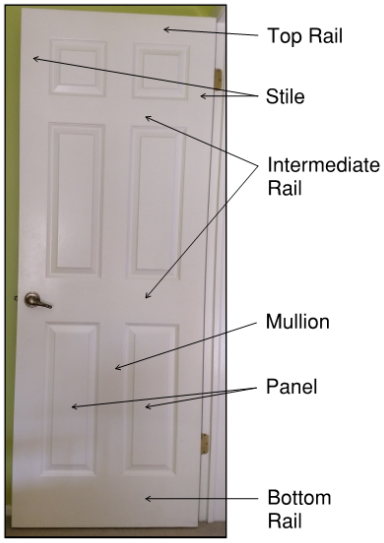
Specifying and designing stile and rail wood doors, however, requires significant understanding of the terminology, available construction options, and how various materials will perform once the doors are installed.

Terminology

The following components are common to nearly all stile and rail doors:

- **Stiles:** Vertical outside members. Stiles will normally contain the door hanging hardware and the lock or latchset and need to be sized accordingly. A vertical member between panels is called a mullion.
- **Rails**: Horizontal top, bottom and intermediate bands running between the stiles. Closers and exit devices are examples of hardware that will be installed on rails. Rails need not be flat; arched and other shapes are possible.
- **Panels**: Either solid or veneer wood products that fill in the frame formed by the stiles and rails.

These may also be glass or some other panel material

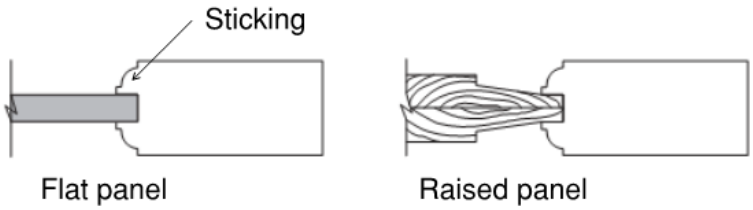


Parts of a stile and rail door

Beyond the common components, design options begin to come into play and these come with a number of other terms that need to be understood as well:

- **Sticking**: The shaped profile at edges of stiles and rails, where they meet the panels. This is generally part of the stile or rail, not applied after the fact.
- **Raised panel** and **flat panel**: Two basic configurations are possible for the panels - flat and raised, as shown in the illustration on the next page.
- **Molding**: Similar to sticking except moldings are applied on top of the stile/rail and overlap the panel. Glass stops are normally made by applying moldings to the door.

Specific shapes of sticking, raised panels, and moldings also have terms associated with them, like "ogee," "cove & bead," and "scoop," among many others. Some names are industry standard and others are specific to their manufacturers. Designers should review manufacturers' documentation for illustrations of some of the many possible sticking, molding, and raised panel shapes



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Materials

About the only material that all stile and rail wood doors have in common is that they are made of wood. How that wood is used, however, can be endlessly varied. Stiles and rails may be veneered or solid wood. If they are solid, they may be laminated of two or more pieces of solid lumber, a solution that generally results in doors that resist warping. If stiles and rails are veneered, the cores may be laminated solid lumber, engineered wood, panel product, or some combination of these.

Likewise, panels may be edge-glued solid wood or veneered, depending on the design intent, though veneering engineered products is preferred for large panels to improve dimensional stability.

The desired design, finish, and appearance of the door will contribute to the decision on whether to use veneer or solid wood. Architects should consult a manufacturer and describe their design intent to get a recommendation. The Architectural Woodwork Standards describes these considerations as well.

Fire Ratings

Fire rated stile and rail doors, tested up to 90 minutes, are available from a number of manufacturers. Fire rated and nonrated doors can appear identical to one another (some manufacturers' 90 minute doors are a minimum of 2-1/4 inches thick); the only difference is that the rated doors require a continuous mineral fiber core that extends to all four door edges. Fire rated doors can have glazing, as long as the glass and door assembly is tested.

Successful Designing and Specifying

Because myriad configurations are possible, a good first step is to narrow down some important decisions. Some questions that can be answered on drawings include the following:

- How many panels will the door have, and what sizes are they?
- Are other materials in use besides wood, (examples are glass, metal, or leather)?
- What shapes to use for sticking, molding, and panels?
- What directions should grain be running?
- Will the door accommodate the hardware that is needed?

The specifications cover other decisions, including the following:

- What quality level is required?
- What materials are doors made of?
- What construction method should be used for stiles, rails, and panels?
- How are doors finished?

A recommendation we frequently make is to specify stile and rail doors for fully glazed applications. Stile and rail doors are better able to support the glass than flush wood doors, and reduce the likelihood of sagging from the weight of the glass.

Following the standards and nomenclature that apply to stile and rail wood doors will help ensure that results meet expectations. Be sure to request physical samples showing finishes, sticking, and panel design, all of which will help verify that the manufacturer and architect agree on the design intent.

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