

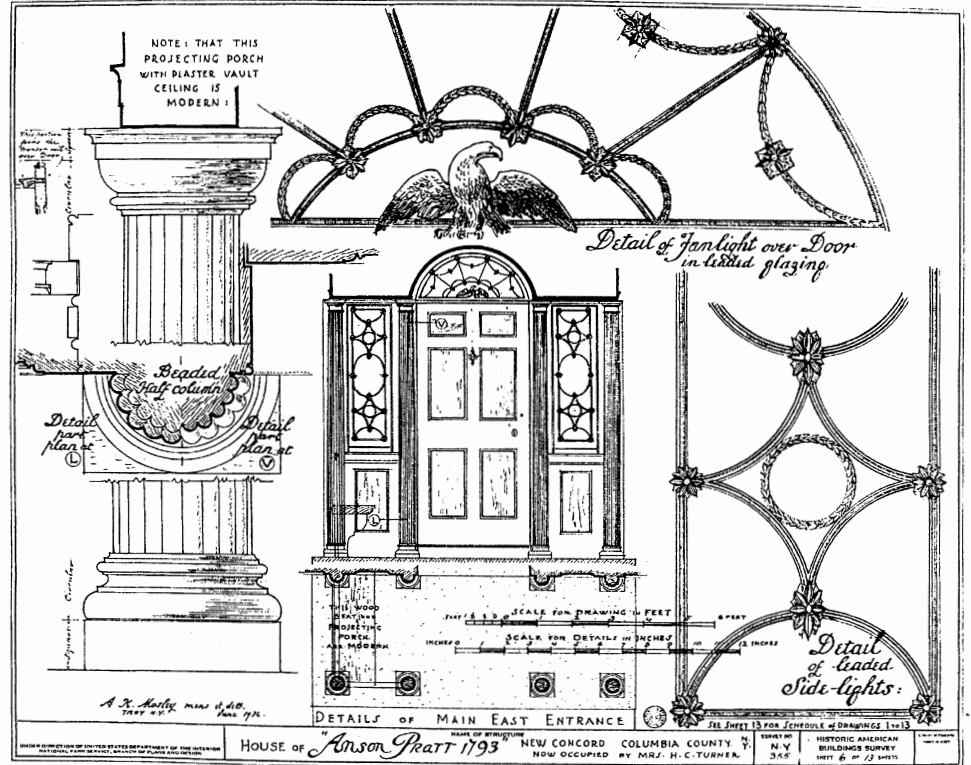
# POINT OF ENTRY: AN OVERVIEW OF HISTORIC DOORS

The most important feature of a building must always be its doorway, regardless of the style or class of architecture of which it is a part.

by Steve Hendricks, *Historic Doors by Hendricks*

From humble cottages to important public buildings, the doorway presents itself as an introduction to the intended use of any structure. While acknowledging that the doorway consists of much more than just the door, this article will focus on the door itself and the evolution of its construction as it applies to early architectural styles in the New World. We hope to provide some general insight into the various designs found in doors through the first two centuries of American settlement.

Is it possible to specify an historically accurate door design for a particular building or period of architecture? Looking at door construction through history can shed some light on this question, although much depends upon the degree of authenticity required in a project. Research can help identify an appropriate style of door even if the original design may never be fully known.



The decoration in this fanlight celebrates symbols of the new Republic. (HABS #NY355-6)

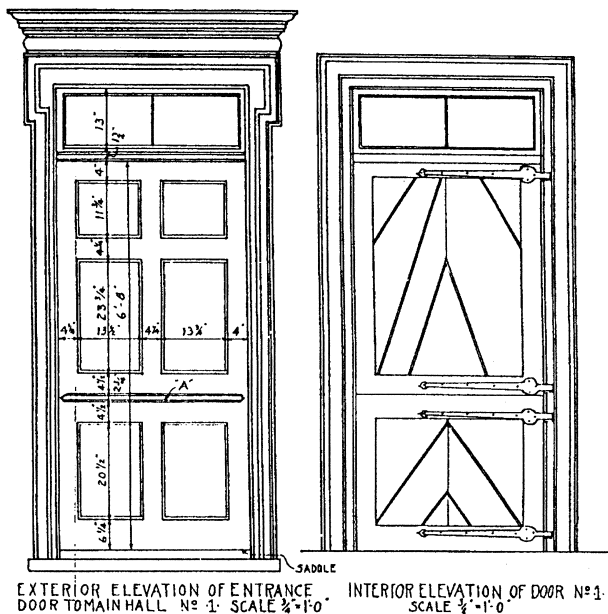
## Plank-Style Doors

The earliest settlers in the Americas arrived during a period of dramatic change, architecturally as well as socially. The influence of the Renaissance

on architecture had spread across most of the European continent and England by the time of the first migrations of settlers to the New World in the 16th and 17th centuries. But the building technology they brought to America was rooted in the pre-Renaissance practices of their diverse European cultures. Pioneer life in the early settlements was too focused on survival to be much concerned with style. Medieval technology in door construction was primarily in plank-style doors. Yet even in this relatively crude form there is exciting variety.

In plank-style doors, the general form of construction was to fill an opening with vertical boards and to use some method to hold them together and keep them from sagging as they hung from their hinges. In the simplest form, horizontal boards (battens) would be clinch-nailed across the standing boards. Strap hinges were made to cover much of the width of the door and were located to bolt the boards and battens together. A brace was sometimes installed between the battens, which would run at an angle from the outside of the door at the top to the bottom at the hinge side and would help carry the cantilevered weight from the bottom hinge. These braces were often fitted into the battens instead of just butting up against them, which maintained a square door longer.

“Crossboarding” was another approach used to build a heavier and more secure door. Horizontal boards would be nailed to the vertical ones covering the entire width and length of the door. A variation of this was to run the crossboards at an angle. Sometimes these diagonal boards were enclosed within a frame

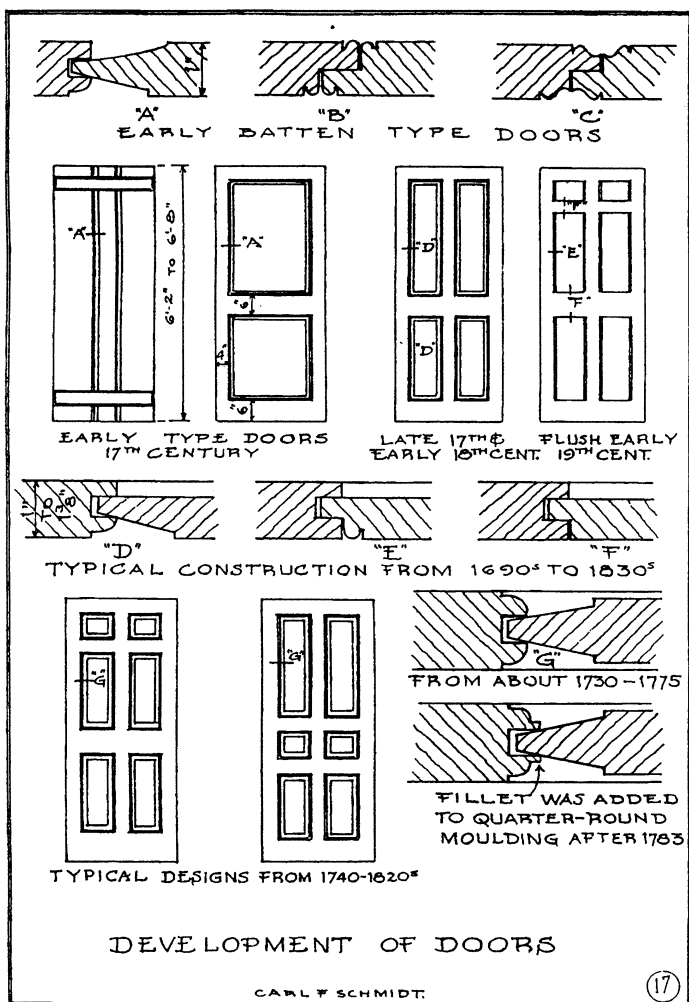


An unusual example of crossboarding applied to the interior of a six-panel door. This is also a Dutch door. (HABS #NY355-6)

applied to the perimeter. Other patterns, such as diamond shapes, were also made by nailing crossboarding onto the back of vertical boards.

A more sophisticated plank-style door was constructed by fastening boards to a stile-and-rail frame. In this case it is the frame which supplies the structure, usually by means of mortise-and-tenon joinery, similar to the modern way of producing a dimensionally stable door. The joinery at the intersection of the stile and rail could also be fabricated by half-lapping the parts. A beautiful example of frame-and-plank construction is illustrated in the HABS drawing of the door to the William Grovatt house. In this example the planks show through the frame as panels on the exterior side and are finished by a large bolection molding. This frame-and-plank method of constructing doors became very popular again in later times for Gothic Revival-style doors in churches and universities, sometimes with planks cladding both sides of an internal structural frame and hiding it from view.

The time frame for plank-style doors in America is primarily from the first settlement in Jamestown in 1607 until the early 1700's when the Georgian style began to spread. Not many original buildings from this period have survived. Of course, the techniques continued in widespread use in barns and other secondary buildings for many generations (even to the present) because of the relatively low technology involved in their construction.



This evolution of door construction shows the change to the ovolo at the margins of the panels. (From *Restoration and Preservation*, Carl F. Schmidt, reprinted by permission, SUNY Genesco, Genesco, NY)

## Frame and Panel Doors: Georgian

The symbols of civilized culture inevitably spread as the colonies became more settled. The architectural tastes of the mother country were of prime influence. After the London fire of 1666 there was a tremendous building boom as most of the city had to be rebuilt. The current trend in building style had a larger-than-usual field in which to practice. The royal architects of King George I, II, and III had promoted the classical influences of Andrea Palladio, resulting in what we refer to as the Georgian style, which became the first dominant architectural style of the colonies as people became more established. In this style the door was the centerpiece of a symmetrical facade within an even rhythm of fenestration, and embellished with classical elements including columns, capitals, arched and gabled porticos, etc.

Pertaining to door construction, the familiar raised-panel door came into widespread use at this time. This trend was most likely due to more than just fashion. Frame-and-panel construction was a technological improvement. Because of the seasonal expansion and contraction of wood (1/8 in. in 8 in.), the plank-style door was not very good at maintaining an airtight opening. The frame-and-panel approach to constructing doors addressed this deficiency by minimizing the width of the solid-wood members that make up the overall door width. Wood expands and contracts mostly across its width and very negligibly through its length. By using vertical wood members on each side (stiles) and joining them with horizontal members (rails), a superior dimensional stability was achieved. "Floating" panels fitted into grooves cut into the stiles and rails filled the difference, making a solid door while minimizing the expansion and contraction of the overall width.

The doors were usually from 1 to 1-3/8 in. thick with the panels beveled to fit into the grooves cut into the stiles and rails. Usually the edges of the stiles and rails were molded with a simple quarter-round or "ovolo" molding framing the raised panel. Since the panels were thinner than the frame members of the door, they were "sunk" or recessed at the back side, and those edges of the stiles and rails were often left square. Mortise-and-tenon joints were used at the juncture of the stiles and rails, and these either were pinned together with small wooden pegs, or used wedges to tighten the tenon in the mortise. Planks were often still used as backing on a frame-and-panel door, probably to ensure more security. The paneled side was presented as ornament to the exterior, and the planking showed to the interior.

Another variation of the paneled door did not use raised or beveled panels but instead made them recessed on one side and flush on the other. On the flush side a bead was cut into the vertical edges of the panels where they met the frame. It functioned as a parting bead where the paint would crack as the panels changed dimension through the seasons. Sometimes the top square panels would have this bead running horizontally, but the bead was usually cut to run with the grain.

The frame-and-panel construction approach begged to be used in a decorative manner. The proportioning of stiles, rails, and panels was something that every fabricator of doors had to contend with. Being a fundamentally Christian culture at the time, the familiar six-panel door soon became dominant in colonial America: By using a wide lock rail as a visual divider, the

top four panels were proportioned to describe a cruciform; separated by the lock rail, the two panels below represented the open Bible. Other panel configurations were also used, but the familiar proportioning of the six-panel "Colonial" door remains a standard today.

## Federal

The Georgian style remained popular through the 1700's up to the American Revolution. Technically, the Colonial period ended then. After the Revolution, a new architecture was sought after to symbolize the new Republic. This desire helped fuel the development of the Federal or Adam style (after British architect Robert Adam) and the Jeffersonian style, which looked to French rather than English models. Much of the symmetry and use of classical motifs carried over into these styles from the Georgian period. The essential difference was one of more elaborate detail and decoration and an increased use of the fanlight above the door. The fanlight was a direct contribution of Robert Adam, who used it extensively in London as a way to distinguish one rowhouse from another. Strict new building codes instituted after the London fire resulted in severe design limitations; variations in design from one fanlight to another gave distinctiveness to the entry.

As to the door itself, the frame-and-panel method continued in much the same way as it had during the previous period. Fewer doors used planking on the interior. Doors were more often the same panel design on both the interior and exterior, although the panels were not always raised on both sides of the door. However, a subtle but intriguing development in door construction occurred at this time. Prior to the Revolution, the margin around the panel was molded with the simple ovolo spoken of earlier. After the Revolution this molding was modified to include a fillet or quirk at the bottom edge where it meets the panel. This distinction is noted by two renowned architectural historians, Carl Schmidt and Henry C. Mercer. Schmidt records that, "after the Revolutionary War a fillet or squared edging was added to the quarter-round molding on the door stiles and rails, and a new type of molding – an ogee – was introduced." As noted by Mercer, "more probably caused by some technical change or improvement in joinery . . . than by mere fashion, this sudden, marked and universal change in door panels . . . shows that handmade door panels with plain ovolo framework, if part of the original construction, will at once date a house as Colonial, or as built before 1776." Regarding the Federal period after the Revolution, Mercer goes on to say, "As above stated, the evidence gathered shows that after 1776, door or shutter panels, in which the outer frame consists of an ovolo molding with one or two beads or quirks, or an ogee, suddenly and universally supersede the old plain ovolo molding . . . and continue in use in doors and shutters until machine-made moldings take their place around 1835."

## Machine-Made Doors: Classical, Greek Revival & Beyond

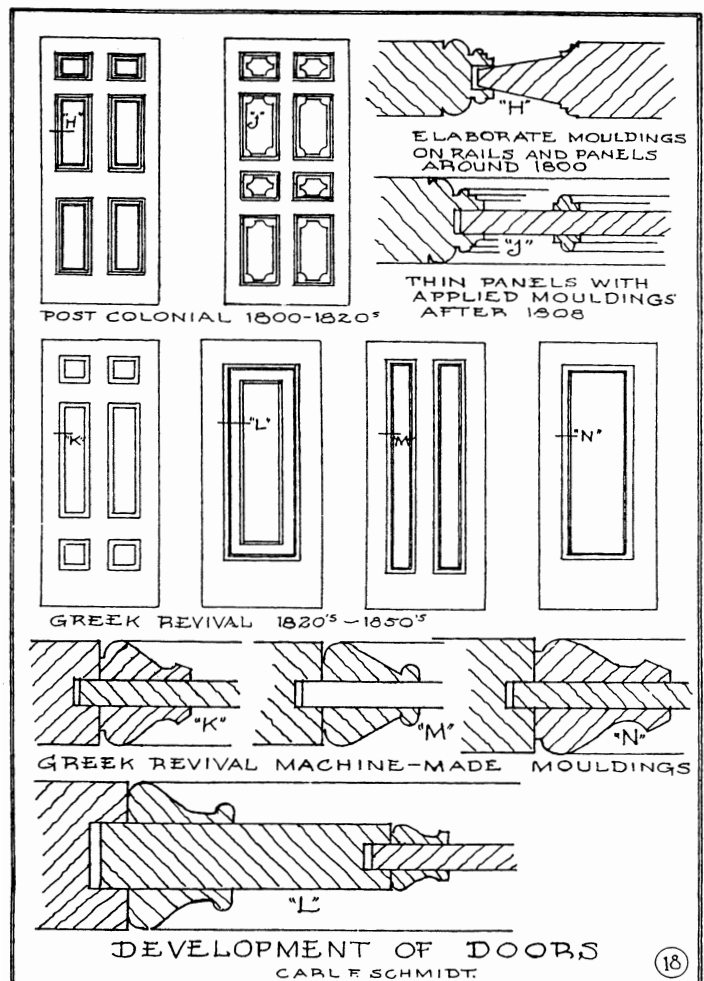
Around 1800, woodworking machines of various types were invented in England and eventually revolutionized the trade and the way doors were made. These machines would have found limited application in the major cities of the United States, perhaps as early as the 1790's.

However, it was not until the introduction of steam power and the birth of the modern factory (c. 1835) that these machines had much impact on woodworking as practiced in the growing new Republic.

As this technology developed, the design of doors gradually changed, although the basic frame-and-panel construction remained the same. The ability to embellish with detail was increased by the use of machinery. The moldings around the margins of the panels became more elaborate and varied, usually being nailed onto the frame members rather than cut into them as before. Of course, the older methods of door construction persevered to varying degrees as the new machine technology gradually expanded its sphere of influence. In general, doors with machine-made applied moldings are not found before the 1830's, they became more widespread afterwards, especially as tastes in building style evolved.

The first architectural style to follow the Federal period was Classical Revival (1790-1825). Door designs of this period do not seem to differ dramatically from those of the Federal period. Sometimes the raised panels would be carved at the corners of the panel raise as a further embellishment. Different arrangements and proportions of paneling within the door were consistent with the tendency of this style to higher degrees of decoration, as was the use of more elaborate molding on the frame.

By the time of Greek Revival (1825-1860), however, a real shift in style is apparent. Common door styles for



Note cross-section of layered panels for Greek Revival doors. (From *Restoration and Preservation*, Carl F. Schmidt, reprinted by permission, 18)

Greek Revival used one or two large vertical panels, often flat instead of raised, and sometimes a layering of panel within panel with moldings applied at each margin. Doors constructed this way could be 3 or 4 in. thick. The moldings were also more elaborate than in earlier doors and were often nailed on.

As the 19th century progressed, machine-made doors became more available and the ability to decorate with moldings more common. With the popularity of the Victorian styles at the latter part of the century, the amount of machine-made ornament employed in doors found even more field for practice, and door designs proliferated. By the late 19th century, doors were being sold through catalogues to a rapidly expanding population. Several of these catalogues have been reprinted as design references. In general, it may be said that almost all doors continued to be built in the frame-and-panel method, with the exception of the Gothic Revival styles mentioned earlier in the discussion about plank-style doors.

## Conclusion

Different periods of American architecture have utilized their own unique door designs and, although it is always dangerous to overgeneralize, it is possible to say that certain door designs are more or less appropriate to a given style of building. This is easier to recognize with some styles of buildings and more difficult with others. The development of technology has always influenced design, and this has certainly been the case with regard to doors as we look at them over time. While designs may vary, it is also interesting how much has stayed the same. Since the introduction of the frame-and-panel method of building doors, not much has changed about their construction. Almost all of the variety we see in historic doors is composed from this technique. This is still true of better doors in our own age, despite the technological advancement of plywood-panel products.

Throughout most of the history of architecture, doors have been fabricated primarily from wood. Only in recent years have other materials, such as steel and fiberglass, vied for use in the construction of entry doors. The building trades are inundated with scientific reports

highlighting the strengths of a favorite new material, often neglecting to note the weaknesses. For good reasons – despite radical changes in building technology over the centuries – wood has remained the primary building material for doors. In addition to its enduring beauty, even in painted projects, the cellular structure of wood is a natural insulator (400 times more efficient than steel) and is more dimensionally stable than other materials. The methods of building wooden doors are tried and true and are readily available to today's designers. The versatility of wood as a design medium for custom projects is unsurpassed.

As with any material, there are limitations to wood doors. They are not maintenance free. To preserve a good finish, wood doors should not stand completely exposed to full sun. Specifiers of wood doors should be mindful of exposure to the elements. Protecting the door with a porch or hood, or by setting it back within the exterior wall, were all design elements employed in earlier times to help maintain the entry. They still make good sense today (even for doors not constructed from wood).

As an element of architectural design, the door plays an important part in every style or period. The English Arts and Crafts architect C.F.A. Voysey said, "The doors will be wide in proportion to height, to suggest welcome – not standoffishly dignified, like a coffin lid, high and narrow for the entrance of one body only." From the very nature of its function, the doorway can stake first claim to adornment in any style of building.

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*AUTHOR'S BIBLIOGRAPHY: Restoration and Preservation, by Carl F. Schmidt, Carl F. Schmidt, 1976. The Dating of Old Houses, by Henry C. Mercer, Bucks County Historical Society, Doylestown, PA, 1976. Historic American Building Survey (HABS), Library of Congress, Washington, D.C.*

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