A Greek Revival Addition

Joining stock and custom-milled trim to make a formal entryway

by Joseph Beals

A modern and unremarkable Cape Cod cottage needed a new gable-end door and entry. The existing frame was falling apart, the laminated oak sill had delaminated, the brick stoop was crumbling and the apron under the door was rotting, along with the sidewall shingles that the stoop abutted. Because the entry had failed in so many ways, the owner took advantage of circumstance and asked us for a new entry. We chose to use two doors with an airlock to make an enclosed entrance.

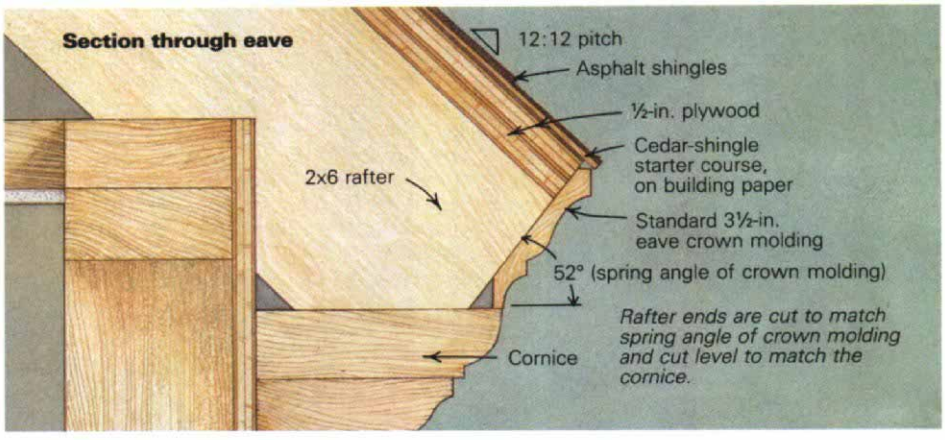
Greek Revival architecture was the style of choice; not only is it common in this part of New England, but it also lends itself to full expression even on a small scale. The entryway had to be big enough to include the many formal elements that make up the Greek Revival style, but not so big as to overpower the gable end of the house.

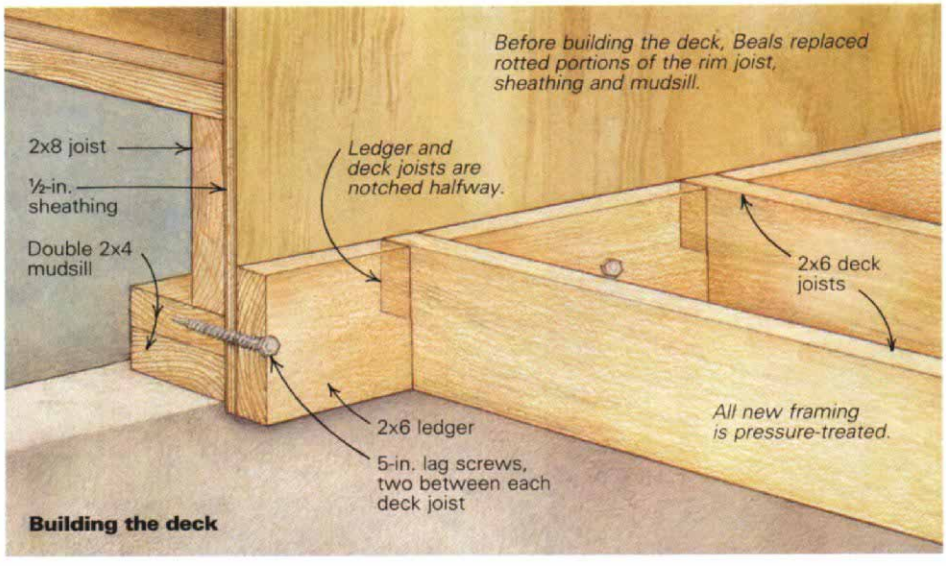
In the transition from the marble buildings of ancient Greece to the woodwork of the early United States, Greek Revival architecture has retained the elements of form, yet has allowed a freedom of ornamentation ranging from the austere to the exquisitely ornate. A gable wall rather than a sidewall most often serves as the front of a Greek Revival house and is the focus of the design. An entablature surmounts the sidewalls under the roof and continues horizontally across the gable, forming a pediment above. Where it appears on the sidewalls, the entablature is typically surmounted by a crown molding, which is mitered to raking crown moldings that meet at the peak of the gable. The face of the pediment is recessed behind the rake trim and entabulature, creating a strong play of light and shadow. In Greek architecture, the gable-end entablature is supported by columns around the entire building, but in many Greek Revival buildings, the columns are replaced by pilasters and detailed corner trim, which echo the effect of columns without the function.

Designing the entryway—The width of the entryway was critical because of tight space. The owner requested a 36-in. outside door flanked by sidelights that he had salvaged some years before. I drew a front elevation incorporating a pair of fluted pilasters outboard of the sidelights on the front corners, and another pair between the sidelights and the door. I sketched the details of the entablature above the door so that I could derive the height of the sidewall and figure the length of rafters and location of cuts. The entryway depth was less critical, but it was important not to make it protrude too far. An interior depth of 4 ft. would allow a comfortable margin for opening the outside door, and would also mean that a single sheet of drywall could finish each interior sidewall. An invaluable resource for me during design was *New England Doorways* by Samuel Chamberlain (Hastings House Publishers, N. Y., 1939; out of print).

The entryway would have a 12:12 pitch roof—steeper than a traditional Greek Revival roof, but identical to the pitch of the main roof. This ensured that the entryway would look like part of the house rather than like a contrived addition. The steep gable makes an unusually tall pediment, so to soften the height we added a half-round window above the cornice. This solution was more luck than genius: the window was the top of an old door that had arrived in a pile of junk from another job, and it begged to be saved. A few days in the shop was enough time for me to saw it free, then fabricate the curved casings and add a sill.

Foundation and steps—After the existing brick stair and landing were broken up and removed, we found that rot in the wall was more





extensive than we had expected. Not only were the sill and rim joist compromised by water damage, they were also full of carpenter ants. Because a gable-end wall doesn't carry much load, replacing the rotten portions of the rim joist and sill and patching in new sheathing took only half a day.

The existing entry would remain in use during construction, so I built a foundation deck at once. To achieve the width we needed for door, pilasters and sidelights, the deck would be too wide to center on the existing door, as its left corner would lie over the water supply line. I moved the deck 2 ft. to the right to clear the water line, and later framed for a new door. Moving the door over solved a minor problem inside the house, where the entrance had been too close to the corner of the room to allow for usable space against the wall.

I lag-screwed a ledger to the new sill and fit notched pressure-treated 2x6 joists into notches cut in the ledger (bottom drawing, facing page). The 4x4 outer posts of the deck bear on cast-in-place concrete piers. The surface of the deck is 6½ in. below the floor of the house. The two lower steps have 12-in. treads, while the top step is 30 in. deep and serves as a landing (photo right). It also makes a graceful transition from the narrower steps to the door. In a traditional entry, the landing would be stone or brick and have an iron boot scraper fitted at one end, but those are costly details this project had to do without.

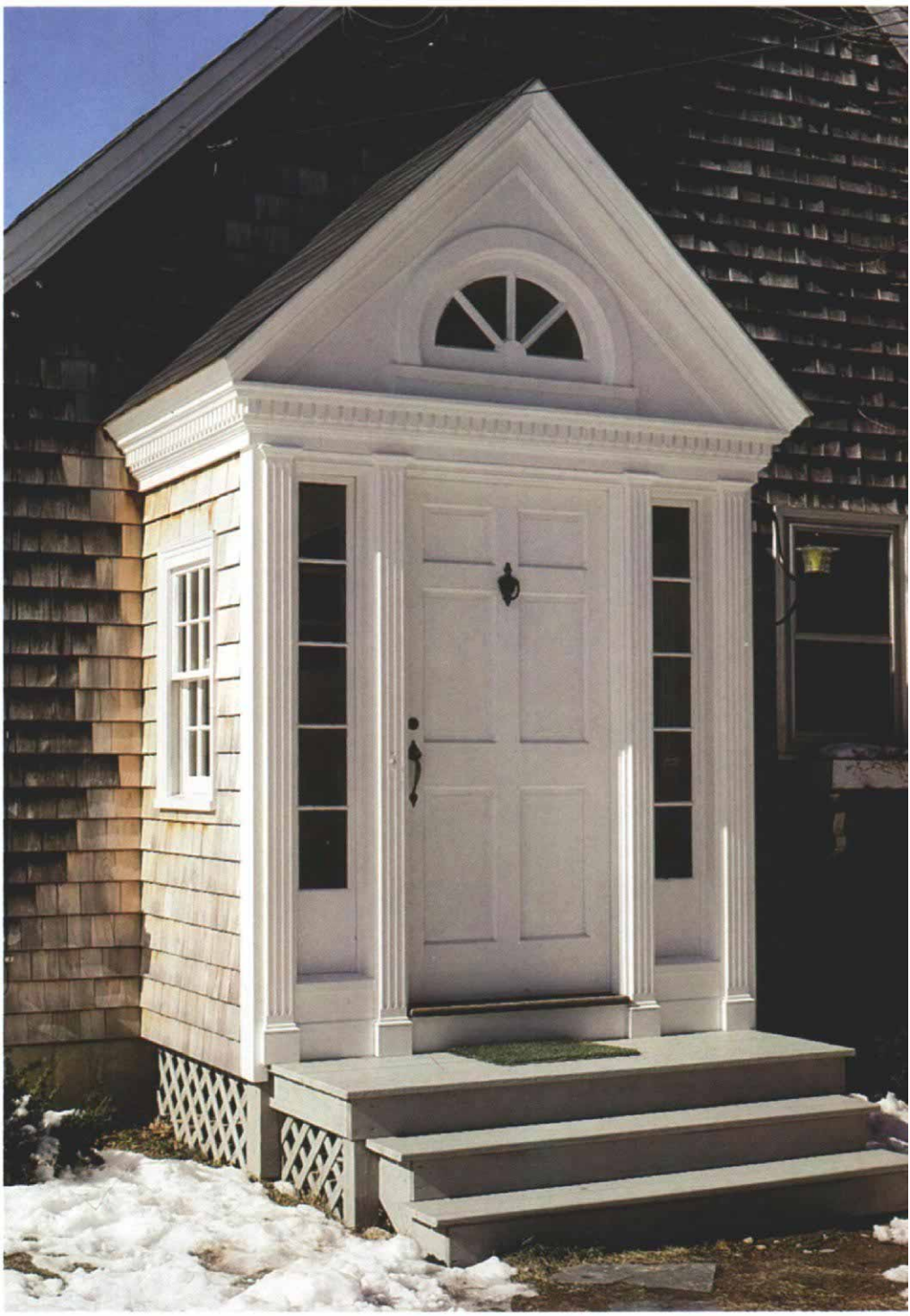
The cornice and pediment—The entry framing is conventional, but the roof required careful planning to accommodate the entablature. I cut the rafter tails to match the spring angle of the crown molding (the spring angle describes the cant of the molding in relation to the horizontal) and cut the bottoms level to provide support for the cornice (top drawing, facing page). To provide a solid backing for the crown molding at both rake and eave, I sheathed the roof deck with two layers of ½-in. plywood. At the gable face, I ripped the cantilevered ends of the plywood slightly to match the spring angle of the raking moldings.

The trim for the entryway was built up from standard lumberyard moldings and from moldings that I milled from 1x or 2x pine stock. The first trim I installed, after sheathing the entryway walls with plywood, was the top piece of the cornice, which I milled from 2x6 stock. I nailed it to the rafter bottoms on the sidewalls and toenailed it into the studs along the gable end. Along the gable end, where the top of the cornice is exposed to the weather, I planed its top to a 3° slope to allow for water runoff (drawing next page).

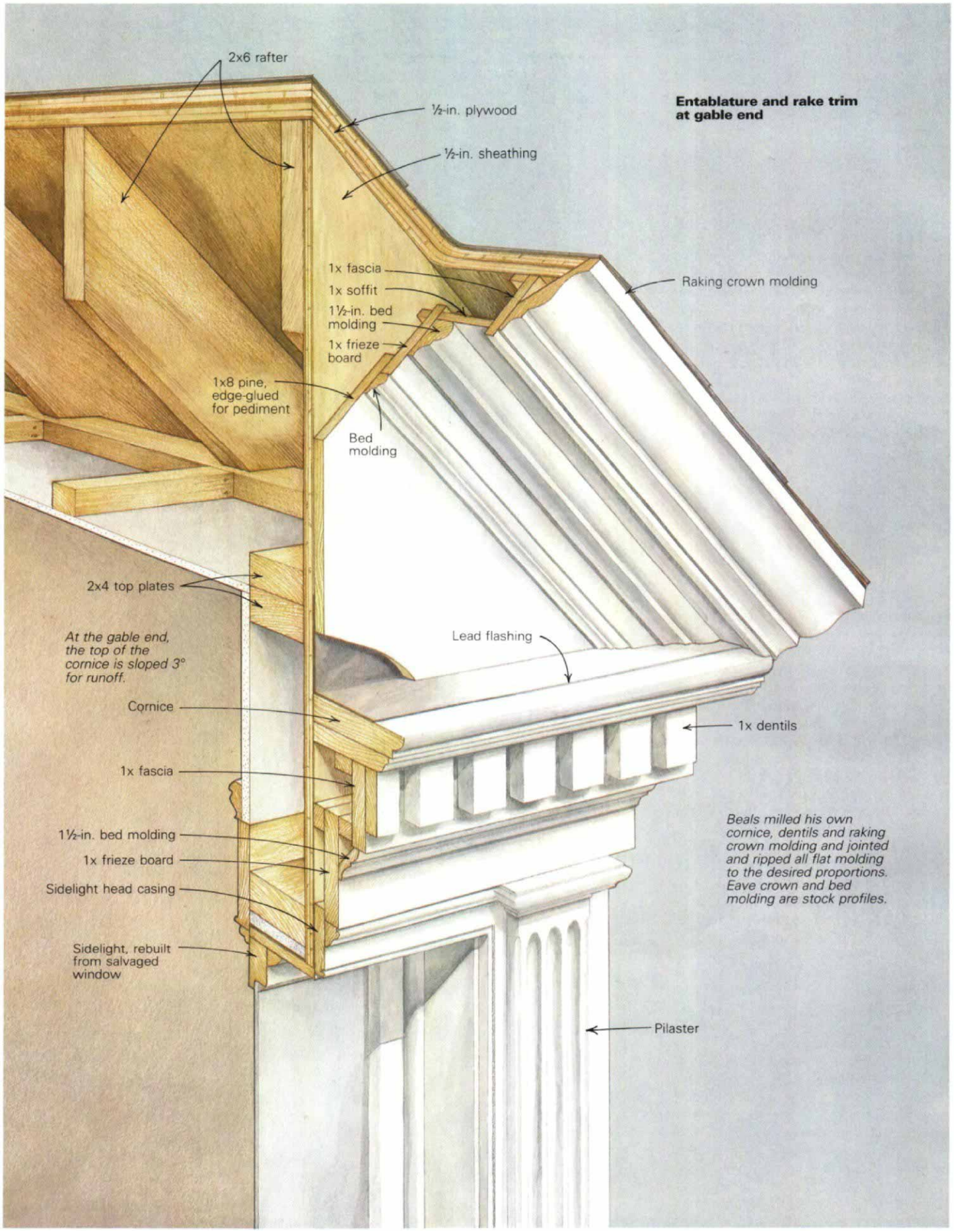
The pediment had to be finished next. In a small structure like this, the recessed face of the pediment is traditionally a monolithic surface—shingles or clapboards would destroy the purity of appearance. I built this one by edge-gluing lengths of clear pine with resorcinol adhesive, and sealed the joints with orange shellac to prevent glue lines from showing through the paint. Then I primed both sides with oil-base paint.

To attach the pediment, I worked lead flashing into the corner between the top of the cornice and the gable sheathing, then fastened the pediment to the studs with a few finish nails. I built up the rake trim—all but the crown molding—fitting it tight to the cornice at its lower ends, and mitered each piece at the peak (top drawing facing page). The next step was to fit the eave and raking crown moldings that are such a strong feature of Greek Revival architecture.

Matching raking to eave molding—On the Greek Revival houses of New England, eave crown moldings mitered to raking crown moldings are such a common sight that I was not prepared for the complexity of the joint between the two. A raking molding, which



The influence of the Greek Revival style is apparent in the pedimented gable facing front and in the strong lines of the entablature of this entryway addition. The most challenging task to building a pedimented gable is mitering eave and raking crown moldings. Here, the author milled and hand-planed his own raking molding to a modified profile of the eave molding.



Drawings: Gary Williamson

slopes downward and outward, can only meet an eave molding if its profile is milled wider than and in a precise distortion of the profile of the eave molding. The profile of the raking molding is a function of roof pitch, reaching a maximum elongation when the roof pitch is 1:1. A hundred years ago, it was doubtless common practice for lumberyards to stock suitable complements of eave and raking moldings. But those days are long past. Now we improvise.

I used standard lumberyard crown molding on the eave walls and mitered their outboard ends in the usual way, as if they were to intersect horizontally with another eave molding (drawing below). Then I held a 1x6 in place on the rake fascia in contact with the mitered end of the eave molding, and traced the eave profile onto the 1x6. To achieve the approximate profile of the raking molding, I gave a 1x6 a number of passes with different knives on the molding head of my table saw. I used molding planes and sandpaper to true the profile.

I marked the bottom miters of each length of raking molding with both a square and a bevel gauge, then cut proud of the line with a handsaw and trimmed with a block plane until the joint came up tight. This seems straightforward, but was really a devilish exercise. Intuition is no help: the miters of the raking moldings look improperly cut until the moment when the piece slips into position and the puzzle comes together (see *FHB* #41, pp. 64-65 for more on raking molding). My reference for this art of the past, as well as for other joinery techniques, is *Modern Carpentry* by Fred Hodgson, published in 1917. It's out of print, but a similar reference is George Ellis's *Modern Practical Joinery,* published in 1908 and reprinted by Linden Publishing Co. (3845 N. Blackstone, Fresno, Calif. 93726).

Completing the entablature—Before beginning work on the entablature, I closed the entryway to weather. I shingled the roof with asphalt shingles, beginning with a cedar-shingle starter course along each eave to keep a traditional appearance. (We did not consider the use of an aluminum drip edge, which is out of place in restoration or reproduction carpentry.) I replaced the wall shingles that I had stripped to accommodate the new entryway, except for a small space at the top of each sidewall where the entablature would butt against the house. I scribed and fitted those shingles after finishing the entablature. I nailed 5-in. corner boards to the sheathing, then built and installed sidewall windows and shingled the walls.

Making the components of the frieze was my next task. A number of visitors have looked in wonder at the dentil molding and remarked on the skill and patience required to fit each dentil in place. The technique they are imagining certainly would demand patience and a talent closer to madness than skill. They would be surprised to find that making the dentils took me 20 minutes.

To make the dentil moldings, I began with three lengths each of 1x3 and 1x4 stock (for the three lengths of the entablature). I have no respect for the edges you get on lumberyard stock, so it's my habit to joint such stock, rip it to width and joint the other side. I ripped the 1x3s to 2¼ in. and the 1x4s to 3 in., then glued the narrower stock (for the dentils) to the wider stock (the frieze board), aligning the top edges. Then I cut between the dentils with a dado blade in a radial-arm saw, using a gauge block screwed to the fence to keep the spacing accurate.

I primed and topcoated all moldings in the shop, brought them to the site and nailed them in place. The frieze is blocked out to allow sidewall shingles to be tucked underneath, and it runs over the corner boards. A bed molding under the dentil molding returned the fascia to the frieze below, and the entablature was complete.

Salvaged sidelights—The owner had salvaged the sidelights long ago from a two-hundred-year-old house. Little about their overall appearance suggests their age, but some anonymous artisan had sawed his stock and planed the parts in the quiet of a colonial New England village. He chiseled the joints and secured them with wood pegs, and two centuries later his sash was returned to use with a few repairs, new glazing and new paint. It was a particular pleasure to give new life to the work of an earlier century.

The sidelights were 8 in. shorter than the stock door, which caused a problem. To line up the heads, I built the sidelight frames with a filler panel below the sill. The sidelight frames and the stock door jambs are finished with beaded casings, or architraves. An apron runs the width of the entryway between the corner boards, and is raised a fraction above the landing to prevent moisture from being trapped underneath.

I made the fluting for the pilasters with a molding knife on the table saw. Each pilaster is fitted with a plinth block and a capital. The plinth is no more than a block with a standard base cap mitered around the top. The capital ends under the frieze, as would the top of a column supporting the entablature of a portico. Strict attention to form would require that the capitals be an independent part of each pilaster, but a more graceful appearance was achieved by running the upper capital molding across the tops of the sidelights and door (photo p. 69).

We used solid oak sills in the new entryway for both the outer door and the new inside door. Although they are more expensive, I prefer solid oak to laminated oak sills because laminated sills will eventually come apart.

Assessing the entryway—One question still concerned me, even when the entryway was finished: How will a formal Greek Revival entry look on a Cape Cod cottage? I had made detail drawings and perspectives a dozen times over, but nothing tells the truth better than a casual view from a distance. And coming down the long driveway in the last days of a New England summer, the entryway does just what the owner had in mind. It is neither obtrusive nor frivolous, but looks if it has belonged to New England for years. □

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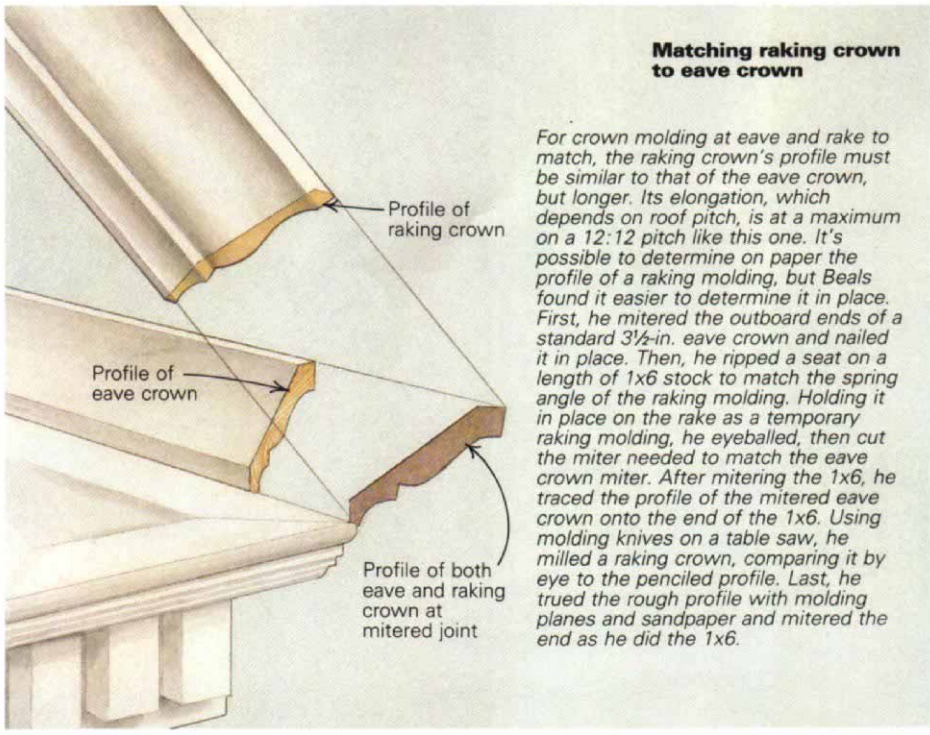

Matching raking crown to eave crown

For crown molding at eave and rake to match, the raking crown's profile must be similar to that of the eave crown, but longer. Its elongation, which depends on roof pitch, is at a maximum on a 12:12 pitch like this one. It's possible to determine on paper the profile of a raking molding, but Beals found it easier to determine it in place. First, he mitered the outboard ends of a standard 3½-in. eave crown and nailed it in place. Then, he ripped a seat on a length of 1x6 stock to match the spring angle of the raking molding. Holding it in place on the rake as a temporary raking molding, he eyeballed, then cut the miter needed to match the eave crown miter. After mitering the 1x6, he traced the profile of the mitered eave crown onto the end of the 1x6. Using molding knives on a table saw, he milled a raking crown, comparing it by eye to the penciled profile. Last, he trued the rough profile with molding planes and sandpaper and mitered the end as he did the 1x6.