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Exterior Woodwork Details

Reduce maintenance and extend the life of exterior woodwork with good design, proper materials selection, and effective installation methods.

Exterior woodwork often requires repairs. Cracks and joints in the woodwork frequently open up only a year or two after the repair work is done. It doesn't matter if the wood is brand new or carefully restored original wood that is decades or even centuries old. In the short term this minor damage is an annoyance requiring a quick touch up. Over the long term these cracks can cause serious damage if left uncorrected.

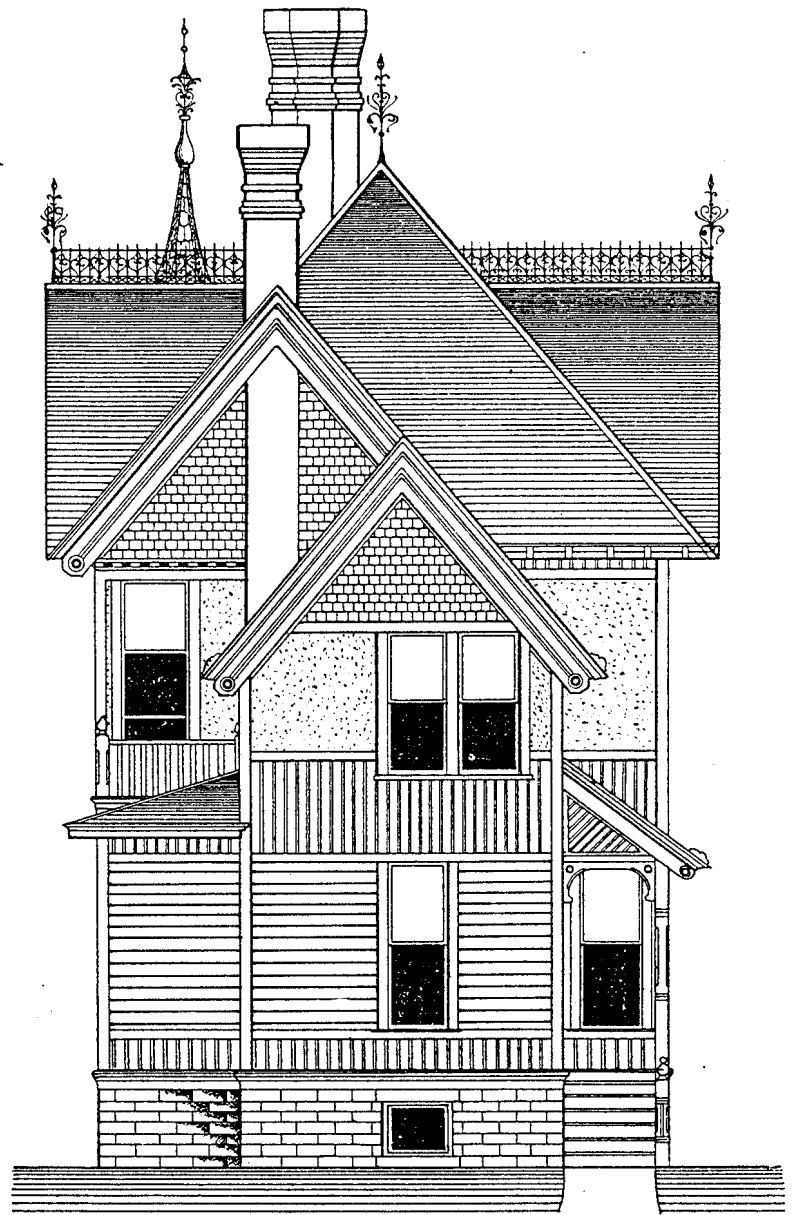
In this report we will take a close look at several examples of exterior woodwork to see how they can be detailed for a long life with low future maintenance. These examples are typical areas of woodwork that receive heavy stress from water and weather. They illustrate methods and materials that can be applied to any exterior woodwork.

The main objective behind exterior detailing is to form a "weather envelope" that protects the building from the ravages of wind, water and sun. This is easier to do on the relatively plain surfaces of some modern-style buildings than on historic buildings that have complex exteriors with lots of decorative features made out of a wide variety of materials.

For example, on a Queen Anne style house rich exterior details are fabricated from a surprising number of materials and parts:

- **Decorative detail: wood brackets, mouldings, panels and carvings**
- **Siding: wood clapboards and weather boards, wood shingles, masonry stucco**
- **Roofing: slate shingles, sheet metal, cast iron railings**
- **Masonry chimneys and foundations: brick, stone, mortar, concrete block**

Ideally all of these exterior parts work together forming the weather envelope. Individual parts are relatively easy to protect from deterioration with coatings such as paint on wood or zinc on galvanized steel sheet metal. It is when individual parts separate, allowing breaks in the weather envelope, that most problems arise.



Installation, repair and maintenance of this variety of materials requires the use of very different methods, techniques and skills. Usually each type of material is handled by a separate trade. The framing carpenters come to a project and do the structural work and then leave. Masons build chimneys. The sheet metal workers fabricate flashings. Then finish carpenters cut and fit the trim and finally the painters show up. This

Case History

Newel Post

This newel post and several others like it support a porch railing. (See Fig. 10.) In this case I will show you how to design details, select materials, and install exterior woodwork for lower maintenance and longer life.

For caps less than 8 or 10 inches wide use a single plank of wood with the full thickness and width needed cut the cap out of one solid piece of wood. The body of the cap is made of rather dry wood (10-12% moisture content) which may expand slightly in width when installed outdoors. If it were made of wood with a moisture content that was too high (18-20% plus) it would shrink and end checks, or cracks, might open up on the exposed end grain. End checks would allow moisture entry causing premature paint failure.

After all shaping is done seal the exposed end grain with epoxy consolidant. Epoxy consolidant is a thick syrupy liquid that soaks deeply into the end grain and then hardens into a flexible plastic. This treatment prevents moisture from soaking into the wood while remaining flexible to allow for some wood movement. (See Practical Restoration Report, Epoxy Repairs for Exterior Wood.)

When the design allows, cut mouldings directly on rails and stiles of exterior panel work rather than apply a separate moulding to hold the panel in place. This makes fewer joints to open up and holds the panel better. (See Fig. 12) Drill weep holes from the groove of bottom rails to the interior to let water drain that may collect there.

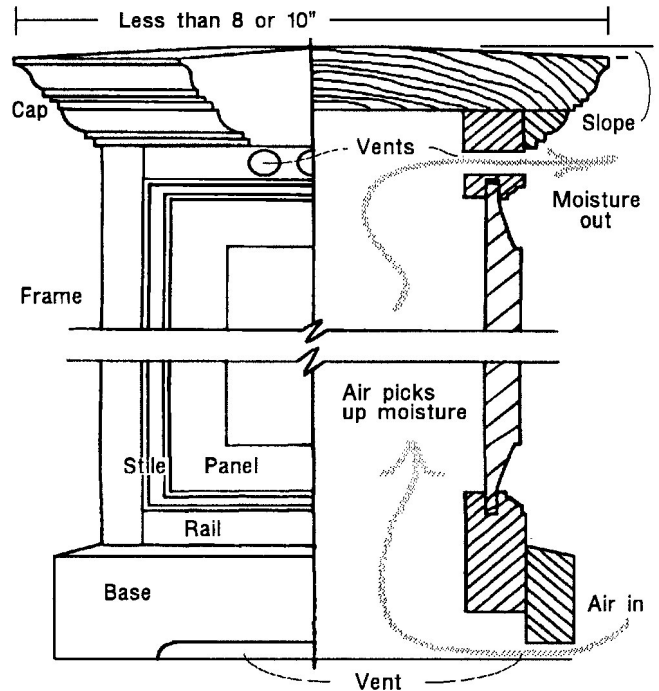


Fig. 10. This exterior porch newel post is constructed of four framed panels covered with a cap and supported by a base. The hollow center allows air movement to reduce moisture buildup.



Figure 11. Only eight years after construction with new wood the base boards on this newel post are warped allowing water entry. Notice how paint has fallen off in the characteristic flame pattern indicating flat-grain wood.



Figure 16. The miter joint of the base board is caulked into place (above). Sealant is gunned onto the miter joint just before nailing in place. A designed joint is used to seal the top edge of the base board (right).

Dry Assembly

If painters are on site and the contract calls for them to do priming I'll fit and tack all the pieces in place, then remove them for the painters to prime. When they are dry I'll do the final assembly.

During the final assembly caulk is applied at the edge of mating surfaces of each joint. Excess caulk squeezed out during nailing is cut or sanded away after it dries.

Caulk into Place

Sealing the joints of woodwork when it's first installed saves time -- you don't have to come back to do it later. I take two approaches here, caulk into place or seal with a designed joint. They both have the same purpose: to provide a flexible seal that is less likely to break than a paint film when the pieces eventually move.

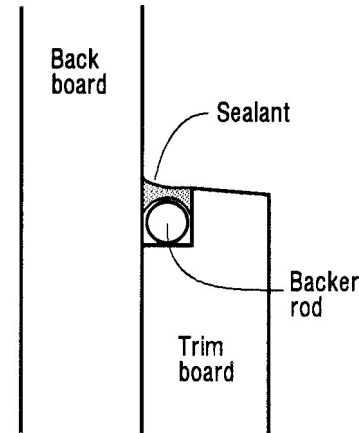


Fig. 17. In this cross section view a dado in the trim board forms a groove to hold the foam backer rod and sealant. Tuck the backer rod into the groove first. Then apply the sealant which conforms to an hour-glass shape that is both flexible and firmly bonded to the wood trim.

When deciding which joints to seal I imagine how rain water will flow over the woodwork. I seal horizontal and vertical joints that would trap water. Usually I leave some joints open at the bottom of an assembly to let water drain out if it sneaks in from above.

For ordinary work or for joints where I don't expect much movement I apply caulk at the edge of the mating faces of each piece. Usually a thin 1/8" bead of sealant is enough when the joint is flush and true. While this is not the best practice for sealing a joint it is quick and does keep the joint sealed longer than paint alone. There may be wider gaps when re-installing old pieces that don't meet exactly or when

