

Redwood

TECHNICAL DATA SHEET

Using Redwood Siding over Rigid Foam Sheathing

As with many new systems, there have been unanticipated side effects when wood sidings have been applied over rigid foam sheathing. . .

Rigid foam sheathings have little or no nail-holding power. . .

Energy efficiency is a major concern in the building industry. This is especially true in areas with extreme temperatures. New techniques and products can provide better insulation.

One product used increasingly in recent years is rigid foam sheathing. As an alternative to plywood or fiberboard sheathing, rigid foam sheathing is a superior insulator due to its low density. It is made from polyurethane, polyisocyanurate or polystyrene materials using lamination, extrusion, molding or casting methods. Some of the products available are foil-faced on one or both sides. Typically, sheathing panels 2x8, 4x8 or 4x9 feet from one-half to one inch thick are applied over framing. Siding is then installed over the rigid foam sheathing.

Redwood sidings have performed well for years over traditional sheathings such as plywood and fiberboard. The majority of buildings using rigid foam sheathing and wood or hardboard siding have performed well, but there have been problems in some instances. As with many new systems, there have been unanticipated side effects when wood sidings have been applied over rigid foam sheathing.

First of all, remember that rigid foam sheathings have little or no nail holding power. Occasional performance problems relating to improper nailing include: cupping, buckling, splitting, joint separation and misalignment of siding boards and nail loosening.

Another problem with rigid foam sheathings is caused by one of its assets—impermeability to moisture. Moisture accumulation on the back of the siding is considered the primary cause of buckling, paint blistering and peeling, extractive bleeding and nail corrosion. To develop construction techniques that would help to minimize most compatibility problems between rigid foam sheathing and wood sidings, the forest products and plastics industries formed the Joint Committee on Wood Siding and Foam Sheathing. The Committee's report, "Guidelines For Installing and Finishing Wood & Hardboard Sidings Over Rigid Foam Sheathings," is the basis for the following recommendations.

Construction details are critical to good siding performance. . .

Certified Kiln Dried sidings are recommended for best performance with rigid foam sheathings. . .

Recommended nailing practices must be followed strictly. . .

Because most problems appear to be moisture related, make certain that vapor barriers, vents and flashing are properly installed and that sheathing is installed according to manufacturers' directions. Exhaust fans are recommended for high moisture areas such as kitchens, baths and laundry rooms.

Certified Kiln Dried redwood siding is recommended for best performance and minimum dimensional shrinkage. Make sure siding remains clean and dry prior to installation. Customers should be aware that the RIS grade marks and the mark of CRA member mills are additional assurances of quality.

Thickness affects siding performance. Thicker patterns are more stable and resist changes due to temperature and moisture fluctuation. Also recommended are widths eight inches and narrower.

For best performance over rigid foam sheathing, use vertical grain siding and all-heartwood grades.

Use corrosion resistant nails such as top quality hot-dipped galvanized or stainless steel. Ringed-shank nails provide increased holding power. Small-headed casing nails are not recommended.

Foam sheathing is not a good nailing base and provides little nail-holding power. Nails must penetrate 1-1/2 inches into studs after passing through sheathing. Thus, for 3/4-inch thick siding over 1-inch thick foam sheathing, a 3-1/4-inch nail (12d) is required. Specialty siding nails are available in this length.

Pre-drill nail holes at board ends of wood siding. This helps to prevent splitting both while nailing and during the life of the siding.

All end joints must fall over studs.

Plain bevel siding requires a lap of one inch over the underlying board to help eliminate moisture intrusion.

Nail locations should allow for approximately 1/8-inch expansion in underlying boards which can occur with temperature and moisture changes. CRA recommends a single nail per bearing on redwood bevel and rabbeted bevel siding to help minimize the effects of shrinking and expansion. (See drawing on back page.)

With bevel siding, care should be taken not to overdrive nails; this may result in splitting or cupping.

Proper finishing is critical for satisfactory siding performance over rigid foam sheathing. . .

Other precautionary measures include. . .

CRA will continue to collect data on relationship between rigid foam sheathing and wood sidings. . .

Apply a clear water repellent to all faces and edges of every piece of siding before installation. Caution: Some water repellents may cause foam sheathing to deteriorate if not totally dry prior to the installation of the siding.

Apply finishes with a brush for best coverage. Use only top quality paints and stains, and follow the manufacturer's application recommendations closely.

If the siding is to be painted, use a quality oil or alkyd-based, stain-blocking primer specifically formulated for redwood. Back-priming is highly recommended.

Siding should be finished promptly after installation or pre-finished before installation.

All joints should be caulked with a high quality caulking compound. Do not use silicone compounds on redwood as they do not adhere as well as other products.

Lighter colored finishes are recommended as they will help reflect heat and reduce the possibility of shrinkage, checking and loosening of nails.

In cold climates, 2x6 framing with fiberglass insulation between studs may permit builders to meet the required R-value. This method can replace 2x4 framing using rigid foam sheathing.

The use of conventional building paper between foam sheathing and siding may reduce the potential for problems arising from moisture accumulation at the siding/sheathing interface.

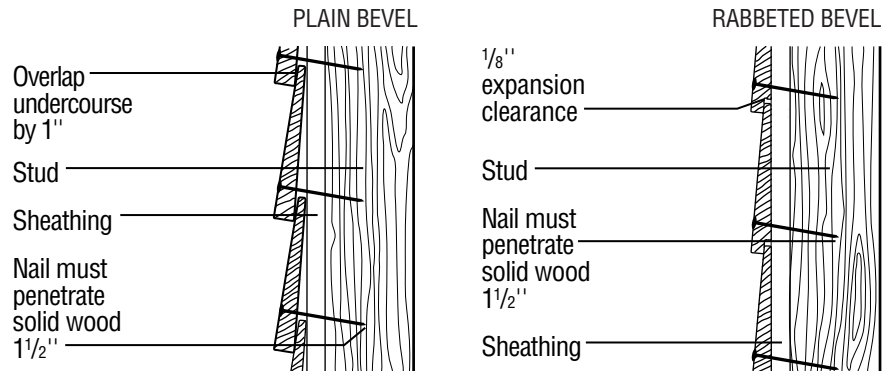
An alternative solution for severe climates may be to install the siding over furring strips or strapping. An air space of at least 3/8 inch will create a capillary break and will allow for the venting of accumulated moisture. This will necessarily alter trim and fenestration details.

California Redwood Association will continue to compile information regarding the use of redwood and rigid foam sheathings. This report will be updated as new information is available. CRA's information will be provided to the building materials industries.

RECOMMENDED NAILING METHODS for Certified Kiln Dried Redwood

A 1/8-inch expansion gap on Certified Kiln Dried rabbeted bevel siding will help prevent buckling. . .

HORIZONTAL SIDING (side view)

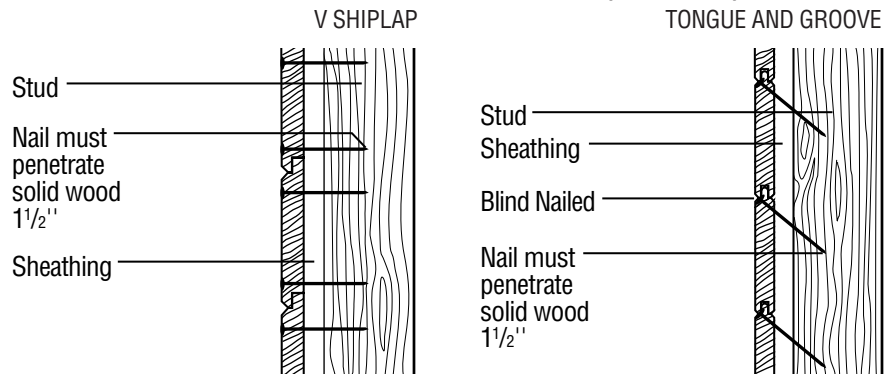


Face nail with one nail only per bearing. Drive nail so shank clears the top of the preceding undercourse.

Face nail with one nail only per bearing. Drive nail about one inch above lower edge of course.

BEWARE OF DRIVING NAIL HOME WITH TOO HEAVY A FINAL BLOW. WOOD MAY SPLIT OR CUP DUE TO NON-SUPPORT IN CAVITY.

HORIZONTAL OR VERTICAL SIDING (side view)

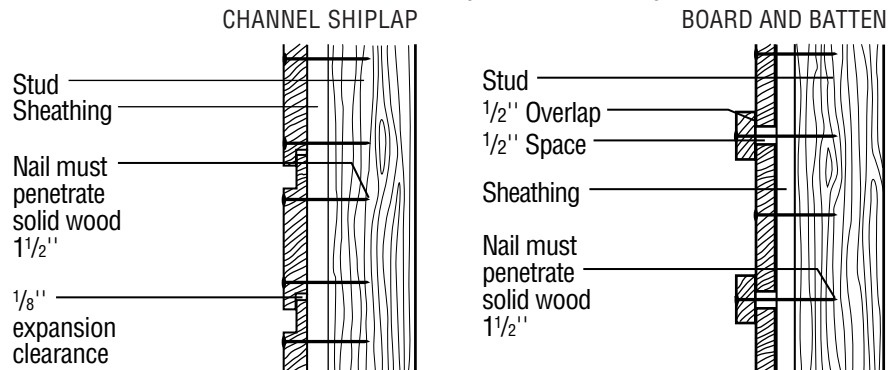


Nails must penetrate solid wood 1-1/2 inches. . .

Face nail with two siding nails per bearing for patterns wider than six inches. Position nails one-quarter the width of the material in from each edge. For narrower courses, one nail per bearing is enough—with the nailing point one inch from the overlapping edge.

Blind nail four- and six-inch widths through tongue with finish nails. Use one nail per bearing. For wider patterns, face nail with two nails per bearing, as in V Shiplap, left.

VERTICAL SIDING (overhead view)



Use one nail, an inch from the lap, for 6-inch channel shiplap. Face nail with two nails per bearing for patterns 8 inches and wider. Space nails 1 1/2 inches from the edge of the overlap and 2 inches from the edge of the underlap. Nail other widths proportionately. Position material to allow expansion clearance of 1/8 inch. Boards should be nailed to horizontal blocking installed between studs at no more than 24 inches on center.

Space underboards about 1/2 inch apart and nail with one nail per bearing driven through center of material. Boards wider than 8 inches use 2 face nails evenly spaced. Nail batten strips with one nail per bearing, driven through center. Boards should be nailed to horizontal blocking installed between studs at no more than 24 inches on center.



405 Enfrente Drive, Suite 200
Novato, California 94949
Telephone 415 382-0662
Fax 415 382-8531
Toll Free 1-888-CAL REDWOOD
www.calredwood.org

Redwood—our renewable resource