



a guide to

SOUTHERN PINE SIDING

- Patterns
- Installation
- Finishing & Maintenance



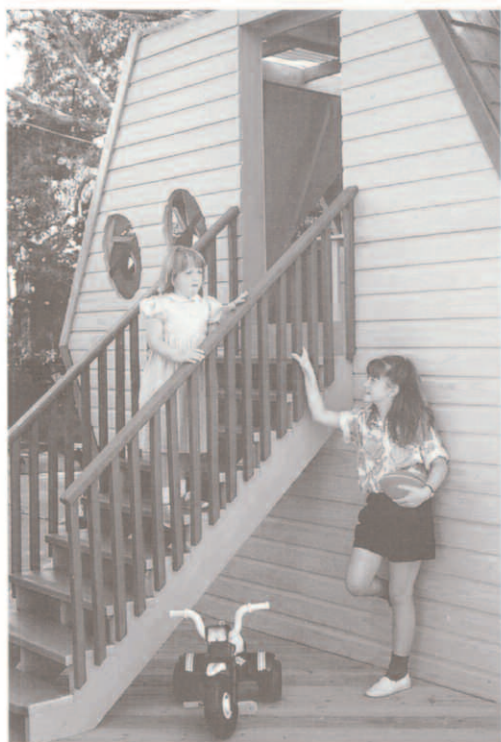
Introduction

The abundance and versatility of Southern Pine have contributed to its extensive use throughout North America. Its unique characteristics make it suitable for many applications, including siding.

Some characteristics of wood, such as how the board was sawn from the log (which determines the orientation

of the growth rings), the presence of knots and similar defects limiting the lumber grade, and moisture content, are primarily determined during the manufacturing, grading, and distribution processes. These processes can affect the finishing characteristics, appearance, and durability of solid wood products.

Lumber continues to be preferred for exterior building applications. Although this use had declined for several decades, there is currently a growing trend in the use of solid wood siding, particularly in multi-family units and custom-designed homes.



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Styles and Grades of Southern Pine Siding

Due to its popularity, Southern Pine siding is readily available in most markets east of the Rockies.

Three classifications of Southern Pine siding are widely available:

- Drop Siding
- Bevel Siding
- Log Cabin Siding

Drop siding is machined in a variety of distinctive patterns. The most popular patterns, commonly identified by a number, are profiled in Table 1. Bevel siding is one of the more popular types of siding for residential units. Center-matched and shiplap patterns are also used, especially on buildings without sheathing. These patterns of siding are applied horizontally or at an angle, making a structure appear lower and longer.

Southern Pine siding produced in accordance with SPIB Grading Rules is required to be seasoned to a specific moisture content. Therefore, it is properly conditioned for painting. When siding is adequately seasoned and is kept dry prior to installation and painting, it will stay in place and is not likely to shrink or open at the joints.

Common grades of drop siding are B&B, C, C&Btr, D, No.1, and No.2. Common grades of bevel siding are B&B, C, C&Btr, D, No.2, and No.3. Log cabin siding is graded under the rules for 2" dimension lumber.

When ordering, the appropriate pattern number and grade should be specified. A separate publication, "SPIB Standard Southern Pine Patterns" showing a complete listing of siding patterns is available from the Southern Pine Inspection Bureau.



Table 1: Southern Pine Siding Patterns

Drop Siding Patterns							Bevel Siding	Log Cabin
105	122	116	139	106	119	121		

Nominal and standard sizes of drop siding, dry, are:

	Thickness ¹ (inches)		Width (inches)		
	Nominal ²	Worked	Nominal	Face	Overall ³
Drop Siding (dressed and matched)	5/8	9/16	4	3-1/8	3-3/8
	1	23/32	5	4-1/8	4-3/8
			6	5-1/8	5-3/8
			8	6-7/8	7-1/8
			10	8-7/8	9-1/8
Drop Siding (Shiplapped)	5/8	9/16	4	3	3-3/8
	1	23/32	5	4	4-3/8
			6	5	5-3/8
			8	6-5/8	7-1/8
			10	8-5/8	9-1/8
			12	10-5/8	11-1/8

(1) These thicknesses apply to all widths. (2) Board measure for 5/8" computed on nominal surface dimensions. (3) The over-all widths for 5/8's thickness are 1/16" less.

Nominal and standard sizes of bevel siding, dry, are:

Thickness ¹ (inches)			Width (inches)		
Nominal ²	Thin Edge	Thick Edge	Nominal	Face	Over-all
1/2	3/16	7/16	4	3-1/2	3-1/2
5/8	3/16	9/16	5	4-1/2	4-1/2
3/4	3/16	11/16	6	5-1/2	5-1/2
1	3/16	3/4	8	7-1/4	7-1/4

(1) These thicknesses apply to all widths. (2) Board measure is computed on nominal surface dimensions.

Installation of Siding

Southern Pine siding is relatively easy to install. It is important to follow proper construction practices during installation. These construction practices assume that the lumber and other wood products have been properly stored on-site; for example, the wood has been protected from moisture, accumulation of dirt, and abrasion. It is *essential* that the wood be kept dry before and during construction.

Moisture Content

Moisture content is critical in determining finish performance both at the time of installation and during the entire life of the structure. It is also critical in preventing decay and insect attack. In some cases, excessive moisture content can render a

house uninhabitable because the resultant mold and decay fungi produce allergic reactions in the inhabitants.

Wood shrinks and swells with changes in its moisture content. To minimize dimensional change after installation, install siding at a moisture content that matches the local climate as closely as possible. If the climate in a particular region causes wood to maintain 9% to 14% moisture content annually, then ideally the siding would be installed at a moisture content within that range, and the material would be stored and protected for a week to ten days prior to application.

The recommended moisture content for wood used in exterior applications varies substantially depend-

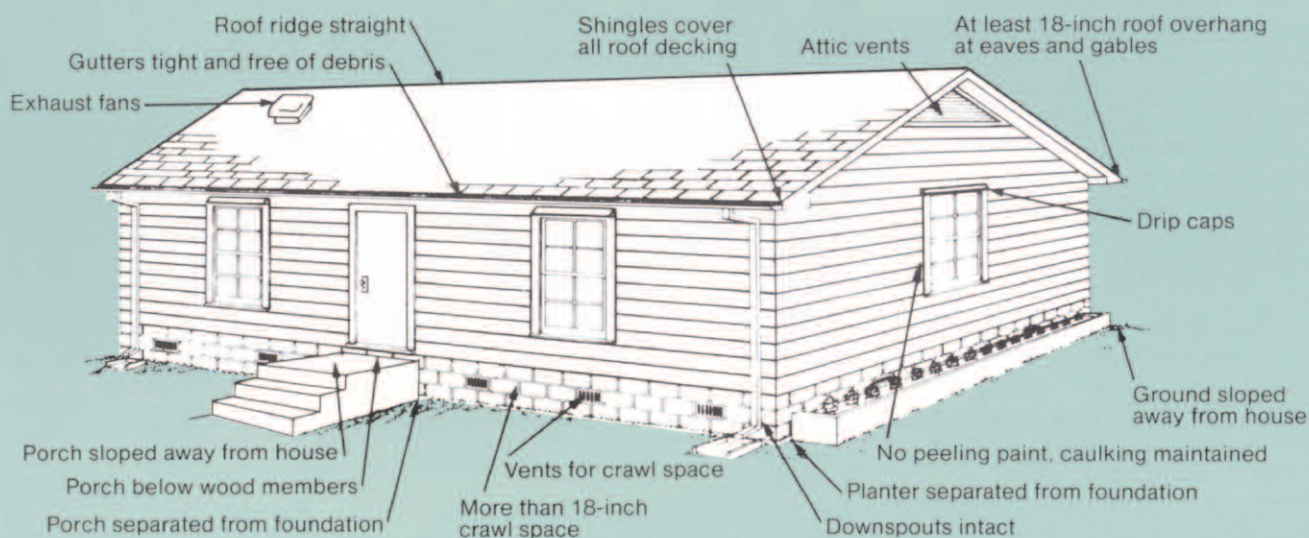
ing on geographic region. In the South, higher moisture content values than those shown in Table 2 have been experienced depending on local conditions, including elevation.

If unseasoned materials are used, the following considerations are suggested:

- 1) allow for shrinkage
- 2) use the narrowest width possible
- 3) use patterns which allow for some shrinkage
- 4) permit in-place seasoning before application of finish
- 5) priming prior to installation

If the moisture content exceeds 20% when it is painted, blistering and peeling are likely.

Important Construction Features



1. Wide roof overhangs provide some protection from sun and rain at least the upper portions of the structure. When a four-foot-wide overhang is provided, approximately two-thirds of conventional one-story side-wall is protected from exposure to full sunlight.

2. Metal flashings under shingles at roof edges prevent water from entering the roof decking and sidewalls, particularly on roofs with a low slope that are located in areas of high rainfall.

3. Metal flashing in roof valleys, junctions of roofs and around chimneys, as well as drip caps over window and door frames, help prevent water from entering the house.

4. Adequate and properly maintained gutters and properly hung downspouts prevent overflow and subsequent wetting of house eaves and sides and resulting "rainwater splash" of the siding near ground level.

5. Adequate insulation and ventilation of attics and crawlspaces prevents moisture condensation and resulting high moisture contents in the remainder of the house.

6. Exhaust fans should be used to remove moisture from high humidity areas such as washrooms with showers, or baths and kitchen areas. Be sure the fans are vented to the outside of the house. Clothes dryers should never be vented to the inside living quarters or to the crawlspace, basement, or attic. Plumbing should be well maintained.

7. If the house is built on a crawlspace, a clearance of at least 18 in. between the soil and the floor joists is required. The ground should be covered with a 6 mil polyethylene sheet or soil cover to prevent moisture movement from the soil upward. The crawlspace should be adequately ventilated and the vents kept open except in the coldest weather.

8. Any wood used for siding, sheathing, or plates should be at least 8 in. (above the outside groundline unless pressure treated with a wood preservative).

9. Proper installation of vapor barriers (vapor retarders), where appropriate, will help minimize condensation in walls and ceilings.

Table 2:

Recommended average moisture content values at time of installation for wood used in exterior applications such as siding and trim

Geographical area	Moisture content (percent)	
	Average	Individual pieces
Most areas of United States	12	9-14
Dry Southwestern areas	9	7-12
Warm, humid coastal areas	12	9-14

Siding Application

Courses of horizontal siding should be spaced so that a single board runs continuously above and below windows and doors without notching or splicing. Bevel siding that is 6" wide should have at least 1" of overlap between courses. Siding that is 8" or wider should overlap 1" to 1½", depending on the spacing required between window heights.

Siding should be butted snugly and squarely against door and window casings, corner boards, and adjoining boards. (Corner boards should lie flat against the sheathing.) Mitered corners should also be precisely fitted. Even if metal corner covers are used, siding boards should be carefully cut to avoid leaving a hollow place in the wood joint where water could collect.

Applying siding vertically may help reduce the effects of light and weathering. Water drains better from vertically oriented boards than from those placed horizontally. This application is also slightly more resistant to sunlight than beveled horizontal siding, because the angle of incident sunlight is smaller and ultraviolet radiation effects are reduced. Therefore, finishes are likely to perform somewhat better.

Nailing Procedures

All nailing should be over studs, and the total effective penetration of the nail into the wood should be *at least* 1½". For example, 3/8" thick siding over 3/4" wood sheathing requires a sevenpenny (7d) nail, which is 2¼" long. This combination results in a 1⅞" penetration of the nail into the stud, and a total effective penetration



of 1⅞" into the wood. However, nails that are longer than necessary should be avoided because they may interfere with electrical wires and plumbing.

To fasten siding in place, hot-dipped galvanized, aluminum, stainless-steel, or other noncorrosive nails are recommended. Aluminum or stainless-steel nails are best for naturally finished siding. Plain steel-wire nails, especially the large-headed type that are designed for flush driving, often make unsightly rust spots on most paints. Even small-headed, plain steel-wire nails, countersunk and puttied, are likely to spot the finish with rust eventually.

For best performance, nailing patterns for various kinds of siding and application procedures should comply with the recommendations of the siding manufacturers. If possible, solid lumber siding should be fastened so that boards are free to shrink

and swell, thereby reducing the tensile stresses that develop at the fasteners, and often resulting in cracking and splitting.

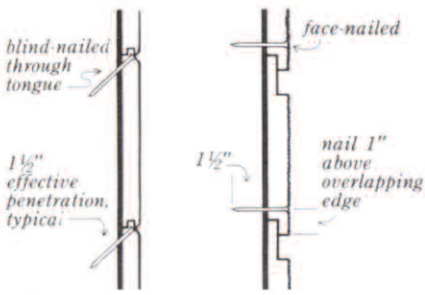
For bevel patterns, the siding should be face-nailed, one nail per bearing, so that the nail clears the edge of the undercourse. Eightpenny or 10d nails are recommended for 1" thick siding and 6d (2") to 8d (2½") nails for thinner material.

Shiplap siding in 4" and 6" widths should be face-nailed, one nail per bearing, 1" from each overlapping edge. One additional nail should be placed in the center of siding boards 8" or more in width. Again, 8d nails should be used for 1" thick siding.

Center-matched siding, 6" or less in width, is either face-nailed with one 8d nail per bearing or blind-nailed with one 6d finish nail through the tongue. Boards 6" or more in width are face-nailed with two 8d nails.

Nailing Techniques for Siding

- Total effective nail penetration into wood should be 1-1/2".
- All nailing should be over studs.

Drop		Bevel	Log Cabin
 Center-Matched Boards 6" or more in width are face-nailed with two 8d nails. Shiplap Boards 8" and wider require 1 additional nail in the center.		 Plain Bevel siding may be used with the smooth face exposed, or sawn face exposed for a textured effect. Recommended 1" minimum overlap.	 Nail 1 1/2" up from lower edge of piece. For 8" and wider, use two nails, 3" to 4" apart.

Installation Over Rigid-Foam Sheathing

To assure optimum performance of Southern Pine siding installed over rigid-foam sheathing, nail furring strips through sheathing to the wall studs on-center. Furring strips create an air gap between siding and sheathing, permitting drainage of rain and condensation. Otherwise, moisture becomes trapped between flush-nailed siding and sheathing, potentially rendering the siding's backing vulnerable to an impermeable sheathing and

moisture accumulation — a scenario likely to result in wood decay. Screening beneath the first course of siding prevents insect infestation. The top siding course should be ventilated upward beyond the soffit. Effective nail penetration into wall studs is to be a minimum of 1" for ring-shank nails.

Refer to the nailing schedule at right for properly installing Southern Pine siding over rigid-foam sheathing.

Nailing Schedule Over Rigid-Foam Insulation¹

SIDING	THICKNESS		RING-SHANK NAIL ² REQUIRED
	RIGID-FOAM SHEATHING	FURRING STRIP	
1/2	1/2	3/4	9d
1/2	3/4	3/4	10d
1/2	1	3/4	12d
3/4	1/2	3/4	10d
3/4	3/4	3/4	12d
3/4	1	3/4	16d

¹ All thicknesses shown are actual size.

² Pre-drilling siding and/or blunting the nail points helps prevent splitting.

Finishing Siding

Finishes or coatings are applied to exterior wood surfaces for a variety of reasons. The particular reason will determine the type of finish selected and subsequently the amount of protection provided to the wood surface, as well as the life expectancy for the finish. Finishes can be divided into two general categories:

- 1) **opaque coatings**, such as paints and solid-color stains, and
- 2) **natural finishes**, such as water-repellent preservatives, oils, and semi-transparent penetrating stains.

Paint

To achieve maximum paint life, follow these steps:

1. Treat properly cleaned wood siding and trim with a paintable water-repellent preservative or water repellent and caulk all joints and cracks.
2. After water-repellent preservative or water repellent has dried, prime the bare wood as soon as possible.
3. Apply two coats of a good-quality, all-acrylic latex house paint over the primer.
4. Apply one gallon of paint per approximately 400 square feet of smooth wood surface area.

5. To avoid future separation between paint coats, the first topcoat should be applied within two weeks of the primer and the second coat within 2 weeks of the first.

6. To avoid temperature blistering, oil-based paints should not be applied on a cool surface that will be heated by the sun within a few hours.

7. To avoid wrinkling, fading, or loss of gloss in oil-based paints, avoid applying paint in the evening of cool spring and fall days, when heavy dew can form before the paint surface has thoroughly dried.

Solid-Color Stains

Solid-color stains may be applied to a smooth surface with a brush, roller, or pad. Brush application usually works best. These stains act much like paint. However, they are not generally recommended for horizontal wood surfaces such as decks, railings, fences, and window sills. One coat of solid-color stain is adequate, but two coats will always provide better protection and longer service. The all-acrylic latex solid-color stains are generally superior, especially when two coats are applied. Oil-based solid-color stains are often used as the first coat over staining-type woods such as cedar and redwood.

Unlike paint, a solid-color stain may leave lap marks. Latex-based stains are fast-drying and are more likely to show lap marks than are oil-based stains. To prevent lap marks, follow the procedures suggested under application of semi-transparent penetrating stains.

Water-Repellent Preservatives

The most effective method of applying a water-repellent preservative is

to dip the entire board into the solution. However, brush treatment is also effective. When wood is treated in place, liberal amounts of the solution should be applied to all lap and butt joints, edges and ends of boards, and edges of panels where end grain occurs. Other areas especially vulnerable to moisture, such as the bottoms of doors and window frames, should not be overlooked. When used as a natural finish, the life expectancy of the preservative on new wood is only one to two years, depending upon the wood and exposure.

Oils & Semi-Transparent Penetrating Stains

Oils and semi-transparent penetrating stains may be applied by brush, spray, or roller. Again, brushing will usually give better penetration and performance. Spraying followed by back-brushing is also a good method of application. These oil-based stains are generally thin and runny, so application can be messy.

Lap marks will form if stains are improperly applied. Lap marks can be prevented by staining only a small number of boards (or a panel) at a time.

This method prevents the front edge of the stained area from drying out before a logical stopping place is reached. Working in the shade is desirable because the drying rate is slower.

To achieve a long life for penetrating, oil-based stain on roughsawn or weathered lumber, use two coats and apply the second coat before the first one is dry.

For oil-based stains, a two-coat wet system on rough wood or plywood may last as long as 8 years in certain exposures.

CAUTION: Sponges or cloths that are wet with oil-based stain are particularly susceptible to spontaneous combustion. To prevent fires, bury the cloths, immerse in water, or seal in an airtight container immediately after use.

Latex semi-transparent stains do not penetrate the wood surface, but are easy to apply and less likely to form lap marks. For a long life, two coats should be applied.

Refinishing of Wood

Exterior wood surfaces should be refinished only as the old finish deteriorates, or for aesthetic reasons such as a change in color or type of finish. Too-frequent refinishing, especially with paint, leads to a finish buildup and subsequent cracking and peeling. In some cases, dirty painted surfaces can be cleaned by washing with a mild detergent and water. To achieve maximum service life from a refinished surface, special surface preparation and finish application techniques should be followed.

Before renewing any finish, make certain that there is not mildew on the old surface. If mildew is present, it can grow through the new coating. Refer to the section on prevention and removal of mildew.

Paint & Solid-Color Stains

In refinishing an old paint coat or a solid-color stain that has weathered normally, proper surface preparation

and cleaning are essential for optimal performance of the new finish. If the surface has been finished with a lead-based paint, be sure to follow necessary precautions for preparing the surface.

Oils & Water-Repellent Preservatives

Oils and water-repellent preservatives can be renewed by a simple cleaning of the old surface with a bristle brush and application of a new coat of finish. In some cases, a mild scrubbing with a detergent followed by rinsing with water is appropriate. The second coat of water-repellent preservative will last longer than the first; more preservative can be applied because of small surface checks that are created by weathering.

Semi-Transparent Penetrating Stains

Semitransparent penetrating stains are relatively easy to refinish. Ex-

cessive scraping and sanding are not required — simply use a stiff bristle brush to remove all surface dirt, dust, and loose wood fibers, and then apply a new coat of stain. The second coat of penetrating stain often lasts longer than the first because more can be applied.

NOTE: Steel wool and wire brushes should never be used to clean surfaces to be finished with semi-transparent stains, oils, or water-repellent preservatives because small iron deposits may be left on the surfaces. These deposits can react with certain water-soluble extractives to produce dark blue stains on the surface. In addition, additives present in some semitransparent penetrating stains and water-repellent preservatives may cause surface iron to corrode. The corrosion products may then react with certain wood extractives to form a blue-black, unsightly discoloration that becomes sealed beneath the new finishing system.