

“Deep Swamp Cypress” Data Book

The purpose for writing this bulletin is threefold:

- 1) **Compare the qualities of "CYPRESS" Lumber to our closest competing species.**
- 2) **A handy reference.**
- 3) **The possible beginning of a "CYPRESS" Sales Training tool / manual.**

OVERVIEW

In preparing this work, we researched several sources. They ranged from Forest Industry Books, NHLA Grading Rules Book, the World Wide Web, Forest Products Research Laboratories, U.S. Department of Agriculture information, and manuals by the Forest Products Research Society. In other words, none of this work is "original". We located this information as a result of the efforts / work of others.

ADVANTAGE: CYPRESS!

Table of Contents	Page
Description of BALDCYPRESS	3
Specific Gravity and Density	4
Dimensional Stability (shrinkage)	5
Strength Terms Defined	6
Hardness	7
Shear Stress Parallel to Grain	7
Modulus of Elasticity	8
Modulus of Rupture	8
Impact Bending	9
Work to Maximum Load (static bending)	9
Tensile Strength (parallel and perpendicular to grain)	10
Compression Parallel to Grain	11
Compression Perpendicular to Grain	12
Shear Stress Parallel to Grain	13

Painting and Finishing Characteristics.....	14
Selection and Suitability of Wood USDA 1941	15-16
Siding Installation Guide from SCMA	17-20
NHLA CYPRESS Grading Rules	21-29
Illustrations	30-31
Definitions.....	32-33
Abbreviations.....	34

BALDCYPRESS

Baldcypress or cypress (*Taxodium distichum*) is also known as southern-cypress, red-cypress, yellow-cypress, and white-cypress. Commercially, the terms tidewater red-cypress, gulf-cypress, red-cypress (coast type), and yellow-cypress (inland type) are frequently used. About half of the cypress lumber comes from the Southern States and about a fourth from the South Atlantic States. Old-growth baldcypress is no longer readily available, but second-growth wood is available.

Sapwood of baldcypress is narrow and nearly white. The color of heartwood varies widely, ranging from light yellowish brown to dark brownish red, brown, or chocolate. The wood is moderately heavy, moderately strong, and moderately hard. The heartwood of old-growth baldcypress is one of the most decay resistant of U.S. species, but second-growth wood is only moderately resistant to decay. Shrinkage is moderately low but somewhat higher than that of the cedars and lower than that of Southern Pine. The wood of certain baldcypress trees frequently contains pockets or localized areas that have been attacked by a fungus. Such wood is known as pecky cypress. The decay caused by this fungus is stopped when the wood is cut into lumber and dried. Pecky cypress is therefore durable and useful where water tightness is unnecessary, appearance is not important, or a novel effect is desired.

When old-growth wood was available, baldcypress was used principally for building construction, especially where resistance to decay was required. It was also used for caskets, sashes, doors, blinds, tanks, vats, ship and boat building, and cooling towers. Second-growth wood is used for siding and millwork, including interior woodwork and paneling. Pecky cypress is used for paneling in restaurants, stores other buildings.

SPECIFIC GRAVITY AND DENSITY

Specific gravity provides the relative weight of wood compared to an equal volume of water. For many engineering applications, the basis for specific gravity is generally the oven dry weight and volume at a 12% moisture content (MC). Specific gravity is used as a standard basis to compare species. A larger number indicates a heavier material.

Density is the weight of wood per cubic foot at a specified MC. Density is important to indicate strength in wood and may predict certain characteristics such as hardness, ease of machining and nailing resistance. A larger number indicates a stronger / better wood.

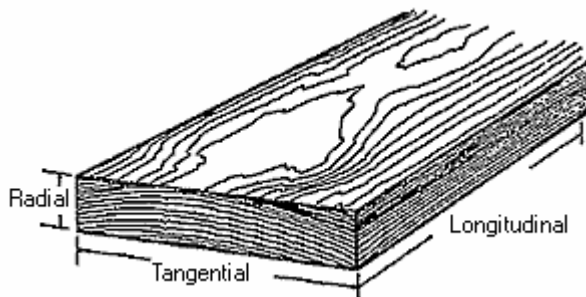
SPECIFIC GRAVITY						
	BALD-CYPRESS	ATLANTIC WHITE CEDAR	INCENSE CEDAR	WESTERN RED CEDAR	OLD GROWTH REDWOOD	SECOND GROWTH REDWOOD
GREEN	.42	.31	.35	.31	.38	.34
12% MC	.46	.32	.36	.32	.40	.35
OVEN DRY	.48	.35	.37	.34	.42	.36

DENSITY						
	BALD-CYPRESS	ATLANTIC WHITE CEDAR	INCENSE CEDAR	WESTERN RED CEDAR	OLD GROWTH REDWOOD	SECOND GROWTH REDWOOD
12% MC	32.2	22.4	25.9	22.4	28.0	24.5

DIMENSIONAL STABILITY (SHRINKAGE)

Above the fiber saturation point* (roughly 30% MC), wood will not shrink or swell from changes in moisture content. However, wood changes in dimension as moisture content varies below the fiber saturation point. Wood shrinks as it loses moisture below the fiber saturation point and swells as it gains moisture up to the fiber saturation point. These dimensional changes may result in splitting, checking, and warping. The combined effects of shrinkage in the tangential and radial axes can distort the shape of wood pieces because of the difference in shrinkage and the curvature of the annual rings.

DIRECTION OF SHRINKAGE	
Longitudinal = Along the grain (Negligible)	Length
Radial = across the growth rings	Thickness
Tangential = in the direction of growth rings (Twice as much as radial)	Width



SHRINKAGE FROM GREEN TO OVEN DRY MOISTURE CONTENT (%)							
	BALD-CYPRESS	ATLANTIC WHITE CEDAR	INCENSE CEDAR	WESTERN RED CEDAR	OLD GROWTH REDWOOD	SECOND GROWTH REDWOOD	YELLOW PINE
RADIAL	3.8	2.9	3.3	2.4	2.6	2.2	4.6
TANGENTIAL	6.2	5.4	5.2	5.0	4.4	4.9	7.7

BOUND WATER – This water, in the cell walls, must be removed to strengthen wood.

FREE WATER – This water in the cell cavity can be squeezed out. This water separates first as wood dries.

***FIBER SATURATION POINT** – Moisture content at the cell walls are still damp to touch, but no water exists in the cell cavities (similar to a wringed out sponge)

STRENGTH TERMS DEFINED

STRESS – The force being exerted on a board in a given area. This force is typically measured in pounds per square inch (PSI).

STRAIN – Shows how the piece of wood is affected by the stress (force). An example would be how much wood is compressed or deflected from this force. It is expressed in inches per inch.

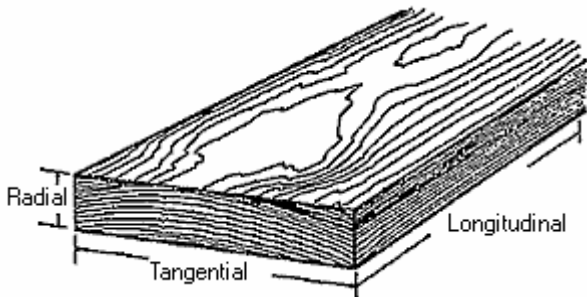
STRENGTH – The wood's ability to resist the applied stress (force) without failure. When the strength is equal or greater than the stress, the strain will be relieved and the board will return to normal as the stress is removed.

PROPORTIONAL LIMIT – The balance of **STRESS / STRAIN / STRENGTH** is constant up the proportional limit. Any force beyond this would cause the board not to return to its original shape. A permanent set remains (or structural damage occurs).

HARDNESS

This test is defined as resistance to being compressed, nicked or dented. It would also indicate the ease of nailing. In this test a .444 inch ball is embedded .222 inches. The load required to do this is indicated in pounds of force. The numbers are an average of radial and tangential* penetrations.

SIDE HARDNESS (LB OF FORCE)						
	BALD-CYPRESS	ATLANTIC WHITE CEDAR	INCENSE CEDAR	WESTERN RED CEDAR	OLD GROWTH REDWOOD	SECOND GROWTH REDWOOD
GREEN	390	290	390	260	410	350
12% MC	510	350	470	350	480	420



SHEAR STRESS PARALLEL TO GRAIN

Shear stress happens when a board surface is stressed from opposite directions. It forces portions to move in a parallel, but, opposite direction. The number on this chart indicate the force in pounds per square inch (PSI) required to cause the wood to shear. Values presented are average strength in radial and tangential shear planes.

SHEAR STRESS PARALLEL TO GRAIN (PSI)						
	BALD-CYPRESS	ATLANTIC WHITE CEDAR	INCENSE CEDAR	WESTERN RED CEDAR	OLD GROWTH REDWOOD	SECOND GROWTH REDWOOD
GREEN	810	690	830	770	800	890
12% MC	1000	800	880	990	940	1110

** Wood is very resistant to shearing perpendicular to grain and is not measured via a standard test.

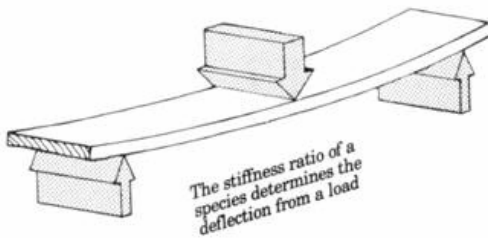
MODULUS OF ELASTICITY

This is the measurement of stiffness that determines the deflection from a load. An example would be boards on a floor. They will recover to their original shape from a stress up to the proportional limit*, but when stressed beyond this point, a permanent set will remain.

The Modulus of Elasticity is not a force number, but a ratio of the stress applied up to the proportional limit divided by the strain (the deflection over a given area). In simple terms; take the force of 7200 PSI and divide it by the amount of deflection over a given area (.0050 in.) and you have a MOE of 1.44. The higher number on the chart indicates greater stiffness.

MODULUS OF ELASTICITY (PSI X 1 MILLION)						
	BALD-CYPRESS	ATLANTIC WHITE CEDAR	INCENSE CEDAR	WESTERN RED CEDAR	OLD GROWTH REDWOOD	SECOND GROWTH REDWOOD
GREEN	1.18	.75	.84	.94	1.18	.96
12% MC	1.44	.93	1.04	1.11	1.34	1.10

***PROPORTIONAL LIMIT** is a term to describe a point where the strength of the wood and the load are even. When stressed beyond this point, structural damage will occur.



MODULUS OF RUPTURE

This measurement shows the maximum bending load that a board can support. The number indicates the stress required to cause failure. The higher number means that a greater force is required to cause failure.

MODULUS OF RUPTURE (PSI)						
	BALD-CYPRESS	ATLANTIC WHITE CEDAR	INCENSE CEDAR	WESTERN RED CEDAR	OLD GROWTH REDWOOD	SECOND GROWTH REDWOOD
GREEN	6600	4700	6200	5200	7500	5900
12% MC	10,600	6800	8000	7500	10,000	7900

IMPACT BENDING

This comparison shows the ability of wood to absorb shocks beyond the proportional limit*. In this test a 50lb hammer is dropped upon a beam. The height in inches shows how far the hammer fell to cause beam failure.

IMPACT BENDING (DROP IN INCHES)						
	BALD-CYPRESS	ATLANTIC WHITE CEDAR	INCENSE CEDAR	WESTERN RED CEDAR	OLD GROWTH REDWOOD	SECOND GROWTH REDWOOD
12% MC	24	13	17	17	19	15

***PROPORTIONAL LIMIT** is a term to describe a point where the strength of the wood and the load are even. When stressed beyond this point, structural damage will occur.

WORK TO MAXIMUM LOAD (Static Bending)

This test shows the ability to absorb shock with some permanent deformation and injury. The **WORK TO MAXIMUM LOAD (WML)** evaluates the combined strength and toughness of wood under bending stress.

WORK TO MAXIMUM LOAD (in-lbf/in³)						
	BALD-CYPRESS	ATLANTIC WHITE CEDAR	INCENSE CEDAR	WESTERN RED CEDAR	OLD GROWTH REDWOOD	SECOND GROWTH REDWOOD
GREEN	6.6	5.9	6.4	5.0	7.4	5.7
12% MC	8.2	4.1	5.4	5.8	6.9	5.2

TENSILE STRENGTH

Parallel and Perpendicular to Grain

Wood is strongest in Tension (pulling from each end) Parallel to Grain

The problem is how to harness all this strength. Attachments at the ends to pull the wood to maximum would cause failure at both ends.

The second chart shows that wood has considerably less strength with Tension perpendicular to grain.

TENSION – PARALLEL TO GRAIN (PSI)						
	BALD-CYPRESS	ATLANTIC WHITE CEDAR	INCENSE CEDAR	WESTERN RED CEDAR	OLD GROWTH REDWOOD	SECOND GROWTH REDWOOD
12% MC	8500	N/A	N/A	6600	9400	9100

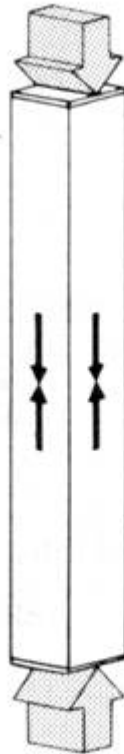
TENSION – PERPENDICULAR TO GRAIN (PSI)						
	BALD-CYPRESS	ATLANTIC WHITE CEDAR	INCENSE CEDAR	WESTERN RED CEDAR	OLD GROWTH REDWOOD	SECOND GROWTH REDWOOD
12% MC	270	220	270	220	240	250

COMPRESSION PARALLEL TO GRAIN

When used as studs, posts, or columns, the fibers are stressed uniformly parallel to and along the full length. In this application, the maximum strength of wood is at work. The numbers on this chart indicate the maximum crushing strength*. The larger number indicates a stronger board.

COMPRESSION PARALLEL TO GRAIN (PSI)						
	BALD-CYPRESS	ATLANTIC WHITE CEDAR	INCENSE CEDAR	WESTERN RED CEDAR	OLD GROWTH REDWOOD	SECOND GROWTH REDWOOD
GREEN	3580	2390	3150	2770	4200	3110
12% MC	6360	4700	5200	4560	6150	5220

***Maximum Crushing Strength** is the maximum stress sustained by a board when pressure is applied parallel to grain.

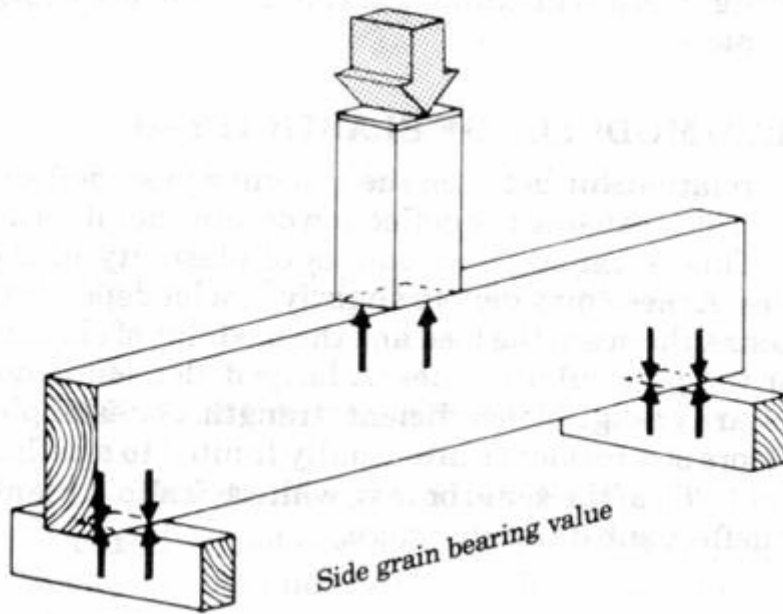


COMPRESSION PERPENDICULAR TO GRAIN

When a joist or beam supports weight, it is important to determine this load factor so the side grain doesn't get crushed. This chart shows to PSI load that was placed across the grain with the material stressed up to the proportional limit*. Wood is considerably weaker in this test compared to compression parallel to grain. The larger numbers on this chart indicate greater strength to resist stress.

Note: Some woods have a very different reaction as respect to the grain. The strength listed in this chart is an average of the radial and tangential observations.

COMPRESSION PERPENDICULAR TO GRAIN (PSI)						
	BALD-CYPRESS	ATLANTIC WHITE CEDAR	INCENSE CEDAR	WESTERN RED CEDAR	OLD GROWTH REDWOOD	SECOND GROWTH REDWOOD
GREEN	400	240	370	240	420	270
12% MC	730	410	590	460	700	520



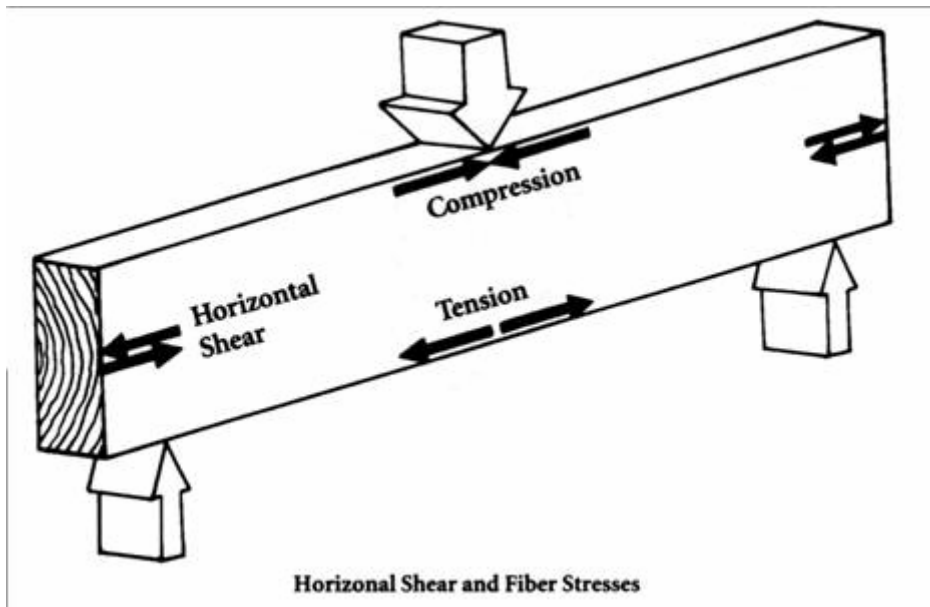
PROPORTIONAL LIMIT is a term to describe a point where the strength of the wood and the load are even. When stressed beyond this point, structural damage will occur.

SHEAR STRESS PARALLEL TO GRAIN

Shear stress happens when a board surface is stressed from opposite directions. It forces portions to move in a parallel, but opposite direction. The numbers on this chart indicate the force in pounds per square inch (PSI) required to cause the wood to shear. Values presented are average strength in radial and tangential shear planes.

SHEAR STRESS PARALLEL TO GRAIN (PSI)						
	BALD-CYPRESS	ATLANTIC WHITE CEDAR	INCENSE CEDAR	WESTERN RED CEDAR	OLD GROWTH REDWOOD	SECOND GROWTH REDWOOD
GREEN	810	690	830	770	800	890
12% MC	1000	800	880	990	940	1110

** Wood is very resistant to shearing perpendicular to grain and is not measured via a standard test.



PAINTING AND FINISHING CHARACTERISTICS

This chart shows how each species holds paint, is resistant to cupping, and if it may check. In the paint-holding characteristics, I – is best and V is worst. A lower number in the weathering category is better. The bottom two rows describes shrinkage from green to oven dry.

PAINTING AND FINISHING CHARACTERISTICS							
	BALD-CYPRESS	ATLANTIC WHITE CEDAR	INCENSE CEDAR	WESTERN RED CEDAR	OLD GROWTH REDWOOD	SECOND GROWTH REDWOOD	YELLOW PINE
PAINT HOLDING OIL-BASED	1	N/A	I	I	I	N/A	IV
PAINT HOLDING LATEX PAINT	1	N/A	I	I	I	N/A	III
RESISTANT TO CUPPING	1	N/A	N/A	1	1	N/A	2
CONSPICUOUSNESS TO CHECKING	1	N/A	N/A	1	1	N/A	2
COLOR	LIGHT BROWN	N/A	BROWN	BROWN	DARK BROWN	DARK BROWN	LIGHT BROWN
SHRINKAGE FLAT GRAIN	6.2	5.4	5.2	5.0	4.4	4.9	7.0
SHRINKAGE VERTICAL GRAIN	3.8	2.9	3.3	2.4	2.6	2.2	5.0

CUP – Deviation from flat across the width of a board. (Rounding)

CHECK – A lengthwise separation (splitting) of wood.

PROPERTIES, SELECTION AND SUITABILITY OF WOODS FOR WOODWORKING

Forest Products Laboratory, US Dept of Agriculture, Madison, WI. Feb. 1941

Here is an interesting species comparison which was published in the Industrial Arts and Vocational Education Magazine over 60 years ago!

Note: We make the assumption that Second Growth CYPRESS was being compared to Old Growth REDWOOD and Old Growth WESTERN RED-CEDAR.

Definition of Terms to interpret the table on page 16

Relative hardness – The harder the wood, the better it resists wear, the less it crushes or mashes under load and better it can be polished.

Comparative Weights - A heavy piece of dry wood is stronger, as a rule, than one lighter in weight whether of the same or different species.

Freedom from shrinkage and swelling – Predict how well the lumber will resist shrinking or swelling.

Freedom from Warping - Predicts how well the lumber resists warping.

Ease of Working w/ Hand Tools - Quality of the finished job and ease of working (low resistance to being shaped with hand tools).

Nail-Holding Power – The denser and harder the wood, the greater the inherent nail-holding power.

Bending Strength – Load-carrying capacity of wood that is used in a horizontal position (rafters, stringers, scaffolding).

Stiffness – A measure of the resistance to bending or deflection under load (floor joists, shelving, or beams).

Strength when used as posts - General comparison for lumber being used as posts. Unbraced supports are judged by their stiffness.

Toughness – Measurement of the capacity to withstand suddenly applied loads (ax handles, baseball bats). Tough woods give a warning of failure.

Decay Resistance – How well the wood resists deterioration under adverse conditions. (Natural decay resistance)

Proportion of Heartwood – Quantity of heartwood compared to sapwood. The elimination of sapwood (by selection) is necessary for decay resistance.

Amount of Figure – The character of the wood is important. (ie. Wavy or curly grain) High means an ordinary commercial run will have a pronounced figure.

Freedom from Odor and Taste (Dry) - Woods rated high have no odor or taste...the opposite is cedar with a low rating.

Number of Knots – Knotty pine wall boards may be attractive to some, but knots are objectionable from the standpoint of appearance and strength.

Size of Knots – The larger the knot, the greater its effect both on serviceability and appearance.

Number of Pitch Defects – Pitch makes wood more decay resistant, but more difficult to paint or varnish. Pitch pockets are confined to pines, spruces, Douglas fir, tamarack and western larch.

Number of Miscellaneous Defects - Miscellaneous defects are checks, shake, decay and manufacturing defects.

	Second Growth Cypress	Old Growth Redwood	Western Red-Cedar	Ponderosa Pine	Southern Yellow Pine
Number of Misc. Defects	I	LEAST	LEAST	I	I
Number of Pitch Defects	N/A	N/A	N/A	I	MOST
Size of Knots	I	LARGE	LARGE	I	LARGE
Number of Knots	LEAST	LEAST	LEAST	I	LEAST
Freedom from Odor and Taste (Dry)	I	N/A	L	L	L
Amount of Figure	H	I	I	L	H
Proportion of Heartwood	I	H	H	L	L
Decay Resistance	H	H	H	N/A	I
Toughness	I	I	L	L	I
Strength When Used as Posts	I	H	I	L	H
Stiffness	I	I	L	L	H
Bending Strength	I	I	L	L	H
Nail-Holding Power	I	I	L	I	H
Ease of Working w/ Hand Tools	I	I	H	H	L
Freedom from Warping	I	H	H	H	I
Freedom from Shrinkage	I	H	H	I	I
Comparative Weights	I	I	L	I	H
Relative Hardness	I	I	L	L	H

H= High, I=Intermediate, L=Low, N/A means rating is not available.



SOUTHERN CYPRESS SIDING

INSTALLATION GUIDELINES

The following are suggestions for proper design, storage, application, finishing, and maintenance of southern cypress siding.

These instructions may be more restrictive than some local building codes, but local building codes must be followed when they are more stringent. Southern cypress siding is manufactured to perform under ordinary service conditions when stored properly, installed on structures with proper vapor retarders and ventilation, and finished and maintained in accordance with these instructions.

STORAGE

Southern cypress siding is a quality wood product dried in accordance to the **Standard Specifications for Grades of Southern Cypress**:

Finish Grades

15 percent maximum moisture content.

Common Grades

18 percent maximum moisture content.

Siding material must be conditioned to the local average in-service moisture content before installation, usually between 8 and 16 percent. Store in an unheated structure or under cover until application. Southern cypress siding may be temporarily stored outside if at least 4 inches off the ground and on a flat, well-drained surface protected from moisture with a shed pack or waterproof cover. Do not seal the unit because ventilation is necessary to prevent condensation and ground moisture absorption which may cause mildew or mold. Special care should be given to material which has become wet during storage (i.e., broken units, etc.) because it may shrink and open gaps at the joints after application.

Southern Cypress Manufacturers Association
400 Penn Center Boulevard, Suite 530 Pittsburgh, PA 15235
Phone: (412) 829-0770 Fax: (412) 829-0844

DESIGN CONSIDERATIONS

Moisture Control. It is necessary to design walls that restrict moisture vapor from entering and condensing within the exterior wall cavity. Proper design will ensure the insulation's thermal efficiency and the overall structure's performance. Design must provide continuous vapor retarding equivalent to a rating of 1 perm installed on the living space side of the insulation. Vapor retarders are also required on the ground in all crawl spaces and under concrete slabs.

Acceptable products include: 6 mil polyethylene, asphalt impregnated kraft or foil-backed insulation (tabs must be stapled to the narrow face of the studs, not to the wide face), vinyl-faced or foil-backed gypsum, sandwich type kraft with an asphalt or polyethylene core, or equivalent. Vapor retarding paints are also available for interior walls.

Site Drainage. Slope ground away from structure for a minimum of 3 feet.

Roof Drainage. Incorporate an overhang or drainage system into the structure design to prevent water from running down sidewalls.

Ventilation. Both attics and crawl spaces require adequate ventilation. Clothes dryers must be vented outside; kitchen and bathroom fans are recommended to vent localized moisture outside.

Attics. Attic vents should provide a minimum of 1 square foot of net free vent area for every 150 square feet of attic space. Unrestricted air circulation is best achieved by a combination of soffit vents and ridge or roof vents.

Crawl Spaces. Crawl space vents should provide a minimum of 1 square foot of net free vent area for every 25 lineal feet of exterior wall. They should be placed to allow for cross-ventilation.

Siding Return at Roof (Dormers, etc.).

Use flashing, allowing at least a 2 inch clearance between siding and roof line (see illustration at bottom right). Cut edges of siding must be finished in accordance with finishing instructions described in this guide.

APPLICATION

It is recommended to apply southern cypress siding over standard sheathing material with maximum stud spacing of 16 inches o.c. Where building codes permit, siding may be applied over unsheathed walls. A suitable building or felt paper wind barrier is recommended and must be used where building codes require.

Foam and Foil-Faced Sheathings. Both rigid foam and foil-faced sheathings can be vapor barriers. Rigid foam sheathings, however, offer little or no resistance to sag caused by the weight of the siding on the nails. For application of southern cypress over rigid foam sheathing, use angular threaded ring shank nails long enough to penetrate at least 1 inch into framing members. For example, siding over 1-inch foam requires a 3-inch nail (10d).

Note: southern cypress siding applied over foam sheathing may take on a wavy appearance if the siding is compressed by nailing with too much force.

Installed Siding Material Checklist

Nails. Hot dipped galvanized or stainless steel with $\frac{1}{4}$ inch head; nails must be long enough to penetrate $1\frac{1}{2}$ inches in studs; ring shank or thread shank nails provide increased holding power and must penetrate studs at least 1 inch; siding nails should have blunt points to reduce splitting of the siding.

Caulking. Use high-grade, non-hardening acrylic or equal.

Paint and Stain. See finishing instructions.

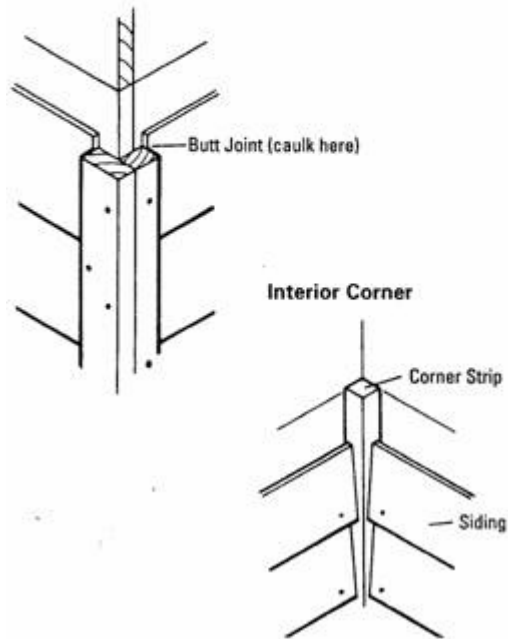
Drip Caps and Flashing. Must be used over doors, windows, masonry, other types of siding, and siding returns at dormers.

Corner Boards. Must be used at inside and outside corners (see illustrations at top right).

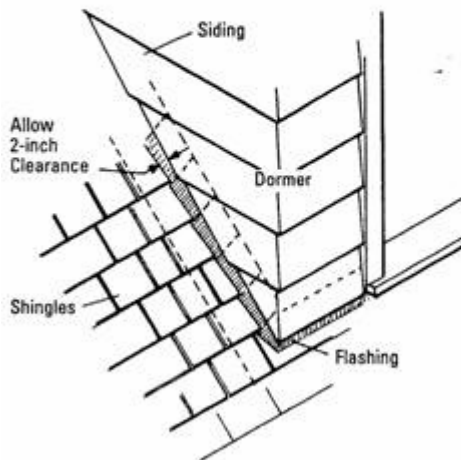
FINISHING

Recommended Procedures for Siding Corners

Corner Boards



Recommended Procedure for Dormers



Preparation. Before finishing, repair all nail holes and surface irregularities. All surfaces should be clean and caulking should be in good condition. Seasoned southern cypress siding should be finished promptly at the time of installation to protect against moisture absorption, discoloration from rain, and mildew. However, under no circumstances should siding be finished when it is wet.

Selection of Primer and Paint. Use a high-quality primer compatible with the paint being used—most paints will require an oil-based alkyd primer. High quality acrylic latex or oil-based paints are recommended. Certain paints contain water-sensitive polymers and/or surfactants that might absorb moisture, causing the siding to swell or creating an environment suitable for biological degradation. These additives are present in a variety of paints, at different price levels, and their presence is not necessarily reflected on the label. The only safe approach is to use a paint specifically recommended by a paint manufacturer for use on exterior wood siding. Light-colored finishes reflect heat more than dark colors and reduce the possibility of shrinking, checking, warping, and loosening of nails.

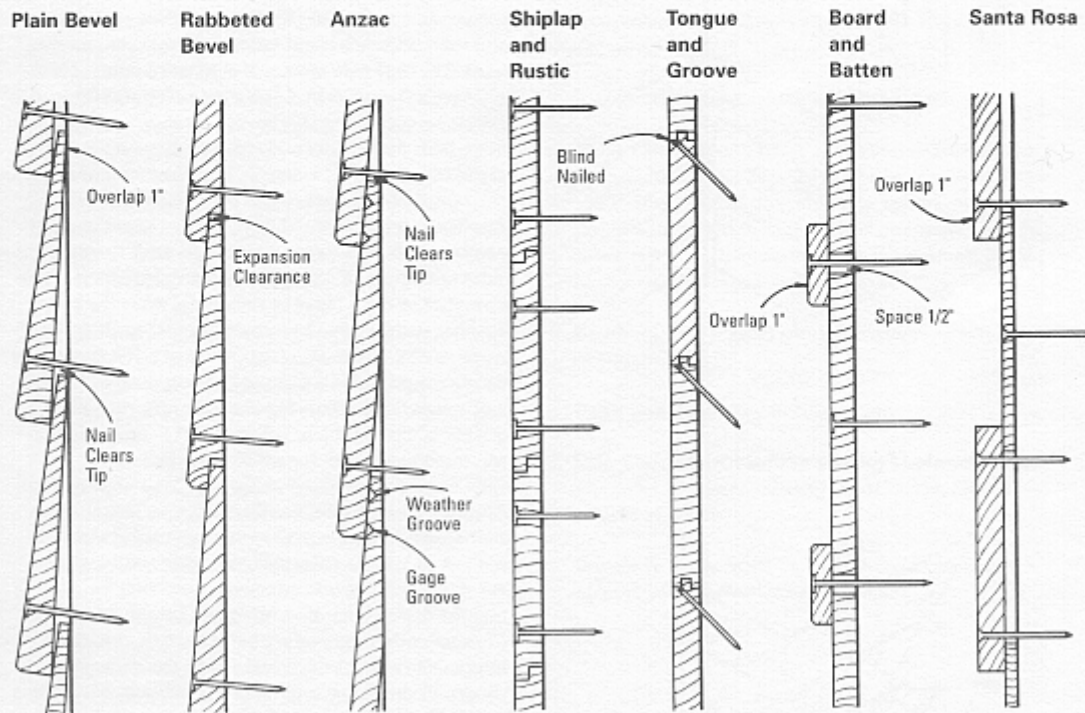
Application of Paint. Always follow the primer and paint manufacturer's recommendations. Priming all sides and edges of wood siding provides superior performance over all types of sheathing. After the prime coat has dried, apply two coats of paint to all exposed surfaces and edges. Brush application is recommended because it provides a more uniform coverage. Time of day, temperature, dew, fog and rain influence the quality of the paint job. Follow paint manufacturer's recommendations in regard to these factors.

Application of Stain. Southern cypress siding takes stains very well, however, semi-transparent stains do not last as long as paint systems. Most semi-transparent stains will provide adequate protection for 18 to 24 months depending on weather conditions. Consequently, they require reapplication at regular intervals to protect the wood siding from warping, checking, shrinking, and loosening of nails. Where it is desired to leave wood in its natural state, it should be brushed on all sides and edges with a quality clear water repellent preservative (preferably with an anti-fungal additive). Allow the water repellent to be absorbed and dry to the touch so the solvent will not react with foam sheathing. Clear coating must be re-applied at frequent intervals.

NAILING METHODS

Nail Sizes for Wood Siding Over Sheathing

Siding/Sheathing Combinations (Use wood siding nails)	Recommended Nail Length	
	Smooth Shank	Ring Shank
3/4" siding plus 1/2" sheathing	10d (3")	8d (2 1/2")
3/4" siding plus 3/4" sheathing	12d (3 3/4")	9d (2 3/4")
3/4" siding plus 1" sheathing	16d (3 1/2")	10d (3")



.....

The Southern Cypress Manufacturers Association provides information about cypress products. The Southern Cypress Manufacturers Association is not a manufacturer, seller or installer of southern cypress products, makes no representations or warranty, express or implied, with regard to any southern cypress products or the accuracy of the information contained in this publication and makes no implied representation or warranty as to merchantability or fitness of any southern cypress products for any particular purpose.

INSPECTION OF CYPRESS LUMBER

General Instruction

NOTE: The Grading Rules for Cypress Lumber were completely revised by the Association in 1997. A panel of industrial cypress manufacturers met in April of 1997 and participated in this revision. National Hardwood Lumber Association Inspectors will apply these rules when called upon to inspect cypress lumber unless otherwise specified.

1. These rules for Cypress are complete under this caption and are not to be confused with any standard grades or other species shown elsewhere in this book.
2. Requests to Association inspectors for inspection of Cypress at loading point should be accompanied by a copy of the order on which shipment is to be made. Requests for inspection at destination should also be accompanied by copy of order, but in the absence of such information the inspector will grade the lumber according to the following standard Cypress grades giving preference to grades in the order named: Selects & Better, #1 Common, #2 Common, and Peck.
3. Lumber shall be inspected and measured as the inspector finds it, of full length and width. He shall make no allowance for the purpose of raising the grade, except that imperfections in rough stock which can be removed in dressing to standard surfaced thickness shall not be considered in determining the grade; otherwise the defects admissible in rough and dressed stock shall be the same for like kinds and grades.
4. These rules define the poorest piece in any given grade, but the respective grades shall contain all pieces up to the next higher grade.
5. The grade shall be determined from the better face of the board. In Selects & Better the reverse side shall grade not below #1 Common. In #2 Common, the reverse side shall not prevent the serviceability of this utility grade.

Tally and Measurement

6. Lumber of standard size shall be tallied board measure. In lumber of standard thickness less than 1-inch, the board-foot measurement shall be based on the surface dimensions. In lumber measured with a board rule a piece tally in feet shall be made and this tally shall be the number of feet board measure of 1-inch lumber. The tally of lumber thicker than 1 inch shall be multiplied by the thickness as expressed in inches and fractions of an inch.
7. In material measured with a board rule, random width pieces measuring to the even half foot shall be alternately counted as of the next higher and lower foot count; fractions below the half foot shall be dropped and fractions above the half foot shall be counted as of the next higher foot.
8. Lumber shipped on stock or specified widths shall be tallied by the number of pieces of each size and length.
9. Recommended Sawing Sizes: When fresh sawn, stock widths should be ¼" to ½" over nominal width. When dry, stock widths must be full width allowing 10% 1/8" scant in width. When dressed two edges, pieces less than 8" wide can be ½" scant of the nominal width. Pieces 8" and wider can be ¾"

scant of the nominal width. Thickness in rough sawn lumber must be 1/16" to 1/8" over nominal thickness. When dry, lumber must be full thickness allowing 10% 1/16" scant. All grades shall be stock widths, unless otherwise specified.

10. Lumber having greater variation in thickness, except as to wane, between the thinnest and thickest points, than shown in the following table shall be measured for thickness at the thinnest point and classed as miscut, and shall be graded and reported as such.

1/16" in thicknesses of 3/8" and 1/2".

1/8" in thicknesses of 5/8" and 3/4".

1/4" in thicknesses of 1" to 2".

3/8" in thicknesses of 2-1/2" and 3".

1/2" in thicknesses of 4".

11. The limitations for dry lumber are as follows:

In Selects & Better, moisture content shall not exceed 15%. Lumber shall be considered air dried when moisture content does not exceed 18%.

Definition of Defects and Blemishes

12. When defects or blemishes, or combinations thereof, not described in these grading rules are encountered, they will be considered as equivalent to known defects according to their damaging effect upon the piece in the grade under consideration.
13. Standard definitions of the defects and blemishes usual in Cypress are as follows:
14. A defect is defined as any irregularity occurring in or on wood that may lower some of its strength, durability, or utility values.
15. A blemish is defined as anything not classified as a defect, marring the appearance of the wood.

Checks

16. A check is a lengthwise separation of the wood, which occurs usually across the rings of annual growth.
17. A surface check is a check occurring on the surface of the piece.
18. A small surface check is a perceptible opening, not over 4" long.
19. A medium surface check is one not over 1/32" wide and over 4" but not more than 10" long.
20. A large surface check is one over 1/32" wide and over 10" long.
21. An end check is one occurring on an end of a piece.

22. A through check is one extending from one surface through the piece to the opposite surface or to an adjoining surface.
23. A heart check is one starting at the pith and extending toward but not to the surface of the piece.

Decay and Peck

24. Decay is a disintegration of the wood substance due to the action of the wood-destroying fungi. The words “dote” and “rot” mean the same as decay.
25. Incipient decay is the early stage of decay in which the disintegration has not proceeded far enough to soften or otherwise change the hardness of the wood perceptibly. It is usually accompanied by a slight discoloration or bleaching of the wood.
26. Advanced (or typical) decay is the older stage of decay in which the disintegration is readily recognized because the wood has become punky, soft and spongy, stringy, ring shaked, pitted, or crumbly. Decided discoloration or bleaching of the rotted wood is often apparent.
27. A peck is typical decay which appears in the form of a hole, pocket, or area of soft rot usually surrounded by sound wood. Slight peck is not through the piece occupying less than 10% of the surface area.

Holes

28. Holes in wood may extend partially or entirely through the piece and be from any cause. When holes are permitted the average of the maximum length and maximum width shall be used in measuring the size, unless otherwise stated.
29. A pin worm hole is one not over 1/16” in diameter.
30. A medium worm hole is one over 1/16” but not more than 1/4” in diameter.
31. A large worm hole is one over 1/4” in diameter.

Knots

32. Knots are classified according to size, form, quality, and occurrence. The average of the maximum length and maximum width shall be used in measuring the size of knots, unless otherwise stated.
33. A pin knot is one not over 1/2” in diameter.
34. A small knot is one over 1/2”, but not more than 3/4” in diameter.
35. A medium knot is one over 3/4”, but not more than 1-1/2” in diameter.
36. A large knot is one over 1-1/2” in diameter.
37. A round knot is one oval or circular in form.

38. A spike knot is a branch or limb sawed in a lengthwise direction.
39. A sound knot is solid across its face, as hard as the surrounding wood, and shows no indications of decay. It may vary in color from red to black.
40. An unsound knot will not impair the strength of the board.
41. A decayed knot is softer than the surrounding wood and contains advanced decay.
42. A tight knot is one so fixed by growth or position that it will firmly retain its place in the piece.
43. An intergrown knot is one whose rings of annual growth are completely intergrown with those of the surrounding wood.
44. A water-tight knot is one whose rings of annual growth are completely intergrown with those of the surrounding wood on one surface of the piece, and which is sound on that surface.
45. An encased knot is one whose rings of annual growth are not intergrown and homogenous with those of the surrounding wood. The encasement may be partial or complete.
46. A loose knot is one not held firmly in place by growth or position and cannot be relied upon to remain in place in the board.
47. A pith knot is a sound knot with a pith hole not more than 1/4" in diameter.
48. A hollow knot is an apparently sound knot with a relatively large hole in it.

Manufacturing Defects

49. Manufacturing defects include all defects or blemishes which are produced in manufacturing, such as chipped grain, loosened grain, raised grain, torn grain, machine burn, and machine gouge.
50. Chipped grain means that a part of the surface is chipped or broken out in very short particles below the line of cut. It should not be classed as torn grain and, as usually found, shall not be considered a defect unless it is present in excess of 25% of the area.
51. Loosened grain means that a small portion of the wood has become loosened but not displaced.
52. Raised grain is a roughened condition of the surface of dressed lumber in which the hard summer wood is raised above the softer spring wood, but not torn loose from it.
53. Torn grain means that a part of the wood is torn out in dressing, and in depth is four distinct characters; slight, medium, heavy and deep.
54. Slight torn grain is not over 1/32" in depth.
55. Medium torn grain is over 1/32", but not more than 1/16" in depth.

56. Heavy torn grain is over 1/16", but not more than 1/8" in depth.
57. Deep torn grain is over 1/8" in depth.
58. A skip is an area on a piece that failed to surface.
59. A slight skip is one that failed to surface smoothly, whose area does not exceed the product of the width of the piece in inches multiplied by 6.
60. A heavy skip is one that the planer knife did not touch.
61. A machine burn is a darkening or charring of the wood due to overheating by the machine knives.
62. A machine gouge is a groove across a piece due to the machine cutting below the desired line of cut.

Shake

63. A shake is a lengthwise separation of the wood, which occurs usually between and parallel to the rings of annual growth.
64. A fine shake is one with a barely perceptible opening.
65. A slight shake is one with more than a perceptible opening but not over 1/32" in width.
66. A medium shake is one with an opening over 1/32" but not more than 1/8" wide.
67. An open shake is one with an opening over 1/8" wide.
68. A through shake is one extending from one surface through the piece to the opposite surface or to an adjoining surface.
69. A round shake is one completely encircling the pith.
70. A cup shake is one that does not completely encircle the pith.

Splits

71. A split is a lengthwise separation of the wood due to the tearing apart of the wood cells.
72. A short split is one not exceeding in length either the width of a piece or one-sixth its length.
73. A medium split is one exceeding in length the width of a piece but does not exceed one-sixth its length.
74. A long split is one exceeding in length one-sixth of the length of the piece.

Stain (or Discoloration)

75. Stain is a discoloration, occurring on or in lumber, of any color other than the natural color of the piece, on which it appears. It is classified as light medium and heavy.
76. Light stain is a slight difference in color which will not materially impair the appearance of the piece if given a natural finish.
77. Medium stain is a pronounced difference in color which, although it does not obscure the grain of the wood, would customarily be objectionable in a natural but not in a painted finish.
78. Heavy stain is a difference in color so pronounced as practically to obscure the grain of the wood.

Wane

79. Wane is bark, or the lack of wood or bark, from any cause on the edge or corner of a piece.
80. Slight wane is not over ¼” wide on the surface on which it appears, for one-sixth of the length and one-fourth the thickness of the piece.
81. Medium wane is over ¼” but not more than ½” wide on the surface on which it appears, for one-sixth the length and one-fourth the thickness of the piece.
82. Large wane is over ½” wide on the surface on which it appears, and/or over one-sixth the length and one-fourth the thickness of the piece.

Standard Grades

83. **STANDARD GRADES**: Selects & Better, No. 1 Common, No. 2 Common, and Peck. For most commercial sales, Selects & Better, then No.2 Common are shipped.

Selects & Better

84. The **Selects & Better** grade is of the highest quality and should be specified for any use where appearance is of the utmost importance, such as paneling, flooring partition, etc.
85. Minimum size board 4” x 8’ admitting 25% odd lengths.
86. Graded from better face with reverse side not below #1 Common.

Sapwood no defect.

Wane on No. 1 Common side shall not exceed ½ thickness or 1/3 length or 1/6 width in the aggregate.

- A. Pieces 4” and 5” wide may be clear allowing slight wane on one edge. (Par. 80)
- B. Pieces 6’ and wider admit: Split equal to the width of board in the aggregate.

Wane equal to ½ the thickness and twice the length in inches and ¾” wide.

Light stain—paragraph 76.

Defects Allowed:

Pieces 6” wide - medium knot

7”- 9” wide - 2 medium knots

10” and wider - 3 medium knots allowing
one additional knot for every 3” in width.

NOTE: *Medium knot is from ¾” – 1 ½” average diameter and must be sound except in 10” and wider lumber, 1 unsound medium and wider lumber, 1 unsound medium knot permitted.*

Defects which can be substituted for 1 medium knot:

3 Pin Knots - pin knot is ½” average diameter or less.

2 Small Knots - small knot is ½” – ¾” A.D.

3 Medium Surface Checks -1 medium surface check is 4”-10” Long and 1/32” W.

1 Slight Manufacturing Defect as defined in Par. 50, 51,54,59,61,62.

Fine Shake (Par. 64) equal to the width of the board.

10” and wider pieces allow 2 pin worm holes for each lineal foot.

#1 Common & #2 Common

87. The commons are a staple grade useful for all types of general construction, finish, trim, pattern stock, and other uses where ordinary tree characteristics either enhance the appearance of the piece or do not restrict the appropriate application of the piece.

#1 Common

88. Graded from standpoint of strength primarily used as poor face of a Select & Better board.

89. Minimum size board - 4” x 8’ admitting 25% odd length.

90. Admits any number of the following or equivalent: checks, slight peck, pin worm holes.

Medium manufacturing defects as defined in paragraphs 50,51,55,60,61 and 62.

Sound Knots: Occasional unsound knots on one face only - 10% of the pieces.

Average diameter of any knot to be less than:

1 ½ in 4” - 6” widths

2” in 7”- 11” widths

2 ½” in 12” widths

3” in 13”and wider pieces.

Shake that does not go through, stain, splits that do not exceed the width of the board in inches. Wane on one or both edges $\frac{1}{2}$ thickness and $\frac{1}{3}$ length and $\frac{1}{6}$ width in the aggregate.

No. 2 Common

91. Defect graded from standpoint of strength.
92. Minimum size board 4" x 6 on even 2' increments. No odd lengths admitted unless otherwise specified.
93. Must be suitable for ordinary fencing or dimension purposes in its full width and length.

Grade same as #1 common except admits: unlimited diameter sound or (unsound knots), pith knots, slight peck, shake and checks.

Wane on better face not to exceed $\frac{1}{2}$ the thickness or $\frac{1}{3}$ the length and $\frac{1}{6}$ the width of the piece. Wane on the poor face must not extend through the full thickness of the piece. leaving an $\frac{1}{8}$ nailing edge on the good face.

Split equal to the length of piece in inches.

Pith is admitted.

No open holes are permitted. Any unsound knot must not impair the strength of the piece.

#1 and #2 Peck

94. #1 Peck: The piece must contain a minimum of 10% (surface measure) well distributed peck on the face side. The peck must not allow light to show through the piece.
95. #2 Peck: Contains pieces that are not allowed in #1 Peck due to the fact that the peck allows light to show through the piece. Each piece must be suitable for ordinary handling and construction without breakage.

Cypress Timbers

Sizes and lengths as specified.

Square Edge and Sound

Shall be free from through shake, unsound knots or a combination of admissible defects that seriously impair the strength of the piece.

Will admit firm pith (heart center) well boxed; season checks; stain; pin worm holes; sound knots; slight peck in ends; slight shake in ends not extending to the surface: slight shake and slight peck on the surface, the aggregate of each not exceeding one-fourth the length of the piece; wane not exceeding one-eighth the width of a face on one corner or its aggregate equivalent on two or more corners.

No. 1 Common Timbers

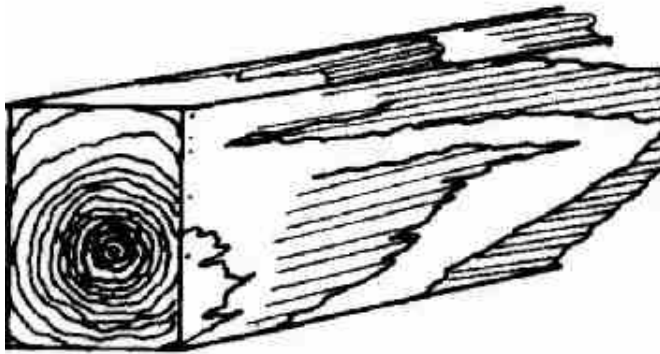
Will admit firm pith (heart center) well boxed; season checks; stain; pin worm holes: sound, encased and pith knots: an occasional unsound knot not to exceed in diameter $\frac{1}{2}$ " in 3" to 6" faces. 2" in 7" to 11" faces. 2-1/2" in 12" faces and 3" in wider faces; slight shake; medium shake not extending through the piece and not exceeding one-sixth its length; slight peck; split in each end not exceeding in length the width of the piece: wane not exceeding one-fourth the width of a face on one corner or its aggregate equivalent on two or more corners.

No. 2 Common Timbers

Will admit pith (heart center) boxed or showing on the surface; season checks; stain: pin worm holes; medium holes; sound. encased and pith knots; unsound knots not to exceed in diameter one-third the width of the face on which they appear; split not exceeding one-sixth the length of the piece; wane not exceeding one-half the width of the face on which it appears; peck and through shake that do not seriously impair the strength of the piece.

No. 3 Common Timbers

Will admit coarser defects than No. 2 Common, such as coarse peck; unsound knots and an occasional knot hole, but each piece shall be of sufficient soundness and strength for use as ground sills and low cost building material.



Warp. Here are four common types of warping.

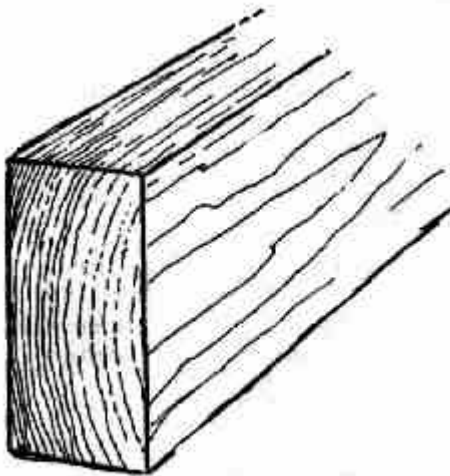
Bow: Distortion in the direction perpendicular (90 degrees of the flat face)

Crook: Distortion perpendicular to edge. End to End

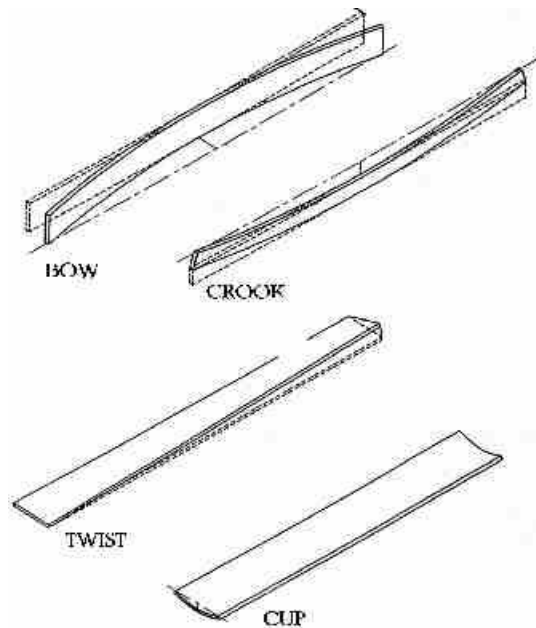
Twist: Distortion by turning or winding the edges of the board

Cup: Distortion where there is deviation perpendicular to the edge.

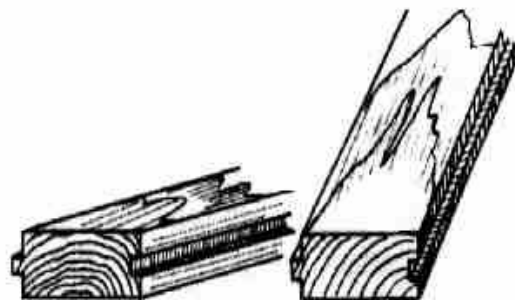
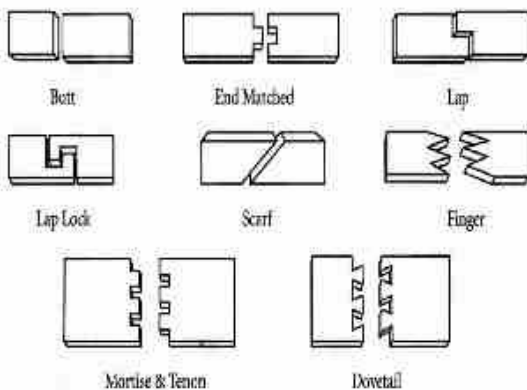
Boxed Heart



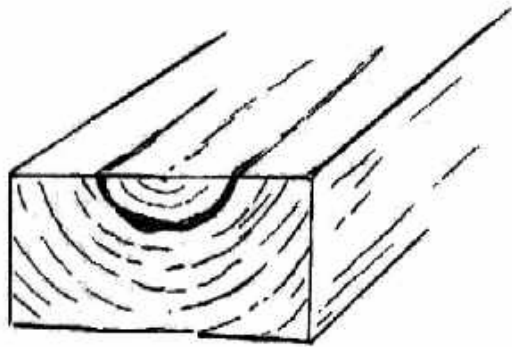
Free of Heart Center (FOHC)



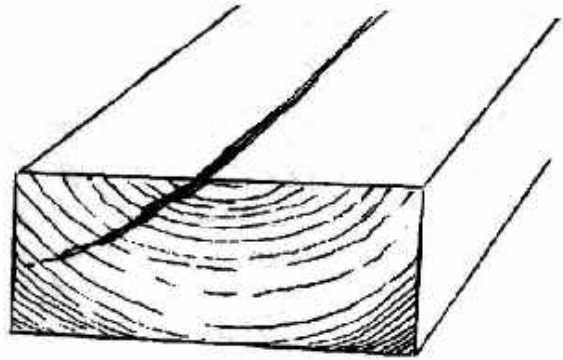
Common Wood Joints



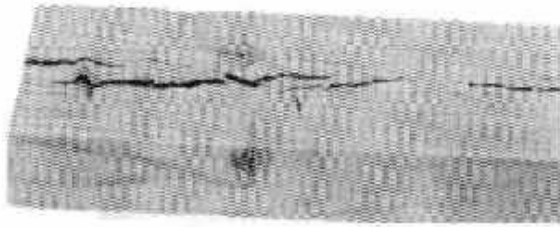
Center Matched



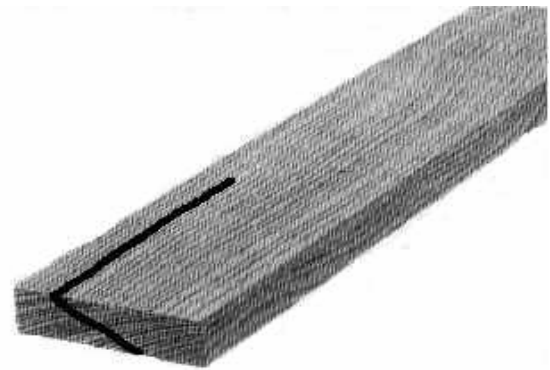
Cup Shake



Radial Shake



Shake – A lengthwise separation of the wood between or through the growth rings.



Split – The lengthwise separation of a piece of lumber extending from one surface or to an adjoining surface.



Wane – The presence of bark or the lack of wood from any cause on the edge or corner of a piece of wood.

DEFINITIONS

Bark Pocket: A bark-filled blemish in the board.

Bird Peck: A patch of distorted grain resulting from birds pecking through the growing cells in the tree and sometimes containing a whole and/or bark.

Boxed Heart: The term used when the pith falls entirely within the four faces of a piece of wood anywhere in its length.

Burl: A burl is a swirl or twist in the grain of the wood which usually occurs near a knot but does not contain a knot. Those containing sound centers are admitted in the cuttings except when otherwise specified.

Check: A lengthwise separation of the wood that usually extends across the rings of annual growth and commonly results from stresses set up in wood during seasoning

Compression Wood: Abnormal wood that forms on the under side of leaning and crooked coniferous trees.

Cup: A distortion of a board in which there is a deviation flatwise from a straight line across the board.

Equilibrium Moisture Content (ECM): Under constant conditions of temperature and humidity, wood is neither gaining nor losing moisture.

Decay: The decomposition of wood substance by fungi. **ROT & DOTE** means the same.

Insipient Decay: The early stage of decay that has not proceeded far enough to soften or otherwise perceptibly impair the hardness of the wood. It is usually accompanied by a slight discoloration or bleaching of the wood.

Green: Freshly sawn lumber that has received intentional drying; unseasoned.

Heart: Inner core of tree trunk the annual rings containing nonliving elements. In some species, heartwood has a prominent color different from sapwood.

Heartwood: The wood extending from the pith to the sapwood, the cells of which no longer participate in the life processes of the tree.

Knots: A portion of a branch or limb that has become incorporated in a piece of lumber.

Moisture Content: The weight of the water in wood expressed in percentage of the weight of the oven-dry wood.

PECK: Channeled or pitted area or pocket. Wood tissues between pecky areas remain unaffected. Peckiness occurs only while the tree is alive.

Pith: The small soft core occurring in the structural center of the log.

Pocket: A well defined opening between the rings of annual growth which develops during the growth of the tree.

Sapwood: The living wood of pale color near the outside of the log.

Seasoning (Air-Dried): Dried by exposure to air, usually in a yard without artificial heat.

Seasoning (Kiln-Dried): Dried in a kiln with the use of artificial heat.

Shake: A separation along the grain, the greater part of which occurs between the rings of annual growth.

Side bend: A distortion of a board in which there is a deviation edgewise from a straight line from end to end of the board.

Slope of the grain: Is the deviation of the wood fiber from a line parallel to the edges.

Sound Knot: A knot that is solid across its face, as hard as the surrounding wood, and shows no indication of decay.

Split: A lengthwise separation of the wood due to tearing apart of wood cells.

Wane: Is the presence of Bark or absence of wood on corners of a piece of lumber.

Warp: Warp is any variation from a true or plane surface. Warp includes bow, crook, cup, and twist, or any combination thereof.

LUMBER ABBREVIATIONS

AD	Air-dried	LBR	Lumber
ALS	American Lumber Standards	LCL	Less Than Carload
AST	Anti-stain treated	LFT	Linear Foot or Feet
BD	Board	LIN	Lineal
BD.Ft	Board feet	MBM	Thousand (Feet) Board Measure
BH	Boxed Heart	PAT	Pattern
B.M.	Board Measure	PCS	Pieces
BEV	Bevel or Beveled	RGH	Rough
CLG	Ceiling	R/L	Random Lengths
CLR	Clear	RES	Resawn
CM	Center Matched	SDG	Siding
COM	Common	STD	Standard
DET	Double end trimmed	STD Lengths	Standard Lengths
DIM	Dimension	SSDN	Sap Stain No Defect
DKG	Decking	S&E	Side and Edge(Surfaced On)
DNS	Dense	S1E	Surfaced On One Edge
DS	Drop Siding (also D/S)	S2E	Surfaced On Two Edges
FBM	Feet Board Measure	S1S	Surfaced On One Side
FG	Flat Grain(slash)	S2S	Surfaced On Two Sides
FLG	Flooring	S1S1E	Surfaced On One Side and One Edge
FOHC	Free of Heart Centers	S1S2E	Surfaced On One Side and Two Edges
FRT	Freight	S2S1E	Surfaced On Two Sides and One Edge
FT	Foot or Feet	S2S&CM	Surfaced on Two Sides and Center Matched
GM	Grade Marked	S2S&SL	Surfaced on Two Sides and Shiplapped
HB	Hollow Back	S2S&SM	Surfaced on Two Sides and Standard Matched
HRT	Heart	S4S	Surfaced on Four Sides
H&M	Hit and Miss	T&G	Tongued and Grooved
HORM	Hit or Miss		
IN.	Inch or Inches		
IND	Industrial		
KD	Kiln Dried		