

A UNITED STATES
DEPARTMENT OF
COMMERCE
PUBLICATION



NBS Voluntary Product Standard

PS 20-70

American Softwood Lumber Standard

A Voluntary Standard
Developed by the
National Bureau of Standards
in Cooperation With Producers,
Distributors, and Users

U.S.
DEPARTMENT
OF
COMMERCE
National
Bureau
of
Standards

Developed by the Subcommittee on Standards
Development and Information Systems of the
Technical Committee on Wood and Wood Products
of the American Society of Mechanical Engineers

PRODUCT STANDARDS

Product Standards are published voluntary standards that establish (1) dimensional requirements for standard sizes and types of various products, (2) technical requirements for the product, and (3) methods of testing, grading, and marking these products. The objective is to define requirements for these products in accordance with the principal demands of the trade. *Product Standards* are published by the National Bureau of Standards of the U. S. Department of Commerce.

Development of a PRODUCT STANDARD

The Bureau's Office of Engineering Standards Services works closely with business firms, trade organizations, testing laboratories, and other appropriate groups to develop such standards. (A group interested in developing a Product Standard may submit a written request to the Office of Engineering Standards Services, National Bureau of Standards.) After determining that the desired standard would be technically feasible and in the public interest, a specific proposal is developed in consultation with interested trade groups and circulated for industry consideration and comment.

Subsequently, a Standard Review Committee is established to review the proposed standard for conformance with the Department of Commerce procedures. The committee includes qualified representatives of producers, distributors, and users or consumers of the product. When approved by the committee, copies of the recommended standard are distributed for consideration and acceptance. When the acceptances show general agreement by all segments of the industry, and when there is no substantive objection deemed valid by the National Bureau of Standards, the Bureau announces approval of the Product Standard and proceeds with its publication.

Use of a PRODUCT STANDARD

Product Standards are developed for the maximum use of industry by ensuring that producers, distributors, and users or consumers cooperate in the development of a voluntary Product Standard. The adoption and use of a Product Standard is *voluntary*. Product Standards are used most effectively in conjunction with legal instrumentalities such as building codes, purchase orders, and sales contracts. When a standard is made part of such a contract, compliance with the standard is enforceable by the buyer or the seller along with other provisions of the contract. There is *no* governmental regulation or control involved.

Purchasers may order products that comply with Product Standards and determine for themselves that their requirements are met. More often, manufacturers refer to the standards in sales catalogs, advertising, invoices, and labels on the products. Commercial inspection and testing programs are also employed for greater effectiveness together with grade labels, hallmarks and certificates. Such assurance of compliance promotes confidence and understanding between buyers and sellers.

EFFECTIVE DATE

Having been passed through the regular procedures of the Office of Engineering Standards Services, National Bureau of Standards, this Product Standard is issued by the National Bureau of Standards, effective September 1, 1970. (See page 25.)

(Supersedes Simplified Practice
Recommendation R16-53)

AMERICAN SOFTWOOD LUMBER STANDARD

1. PURPOSE

1.1. **General**—The responsibility of the entire softwood lumber industry for maintaining, in the public interest, nationally recognized size, grade, and inspection standards is recognized. The purpose of this Product Standard is to establish voluntary standards for the size, grade, and inspection of softwood lumber.

This Product Standard is intended to establish a common basis for uniform industry-wide inspection and grade-marking practices for each piece of lumber which is produced and sold in accordance with the provisions hereof. The Standard also provides a standardized working basis for the coordination of the grades of the various species of softwood lumber and for the preparation of grading rules applicable to each species. These American Lumber Standards are not intended for use either as grading rules or as purchase specifications.

2. SCOPE

2.1. **General**—This Product Standard covers the principal trade classifications and sizes of softwood lumber for yard, structural, and shop use. It provides a common basis of understanding for the classification, measurement, grading, and grade marking of rough and dressed sizes of various items of lumber, including finish, boards, dimension, and timbers.

2.2. **Supplementary**—This Standard also includes the following:

- (1) the organization and functions of the American Lumber Standards Committee, its Board of Review, and the National Grading Rule Committee,
- (2) the standard commercial names of the principal softwood species,
- (3) the standard definitions of terms used in describing standard grades of lumber,
- (4) the standard lumber industry abbreviations.

3. RECOMMENDATIONS

3.1. **General**—Standard terms and practices are defined and discussed in this Section to encourage and promote the use of uniform methods in the grading, inspection, measurement, and description of softwood lumber.

3.2. **Application**—This Standard applies to such lumber as may be identified as a manufactured product derived from a softwood log in a sawmill, or in a sawmill and planing mill, which when rough shall have been sawed, edged, and trimmed at least to the extent of showing saw marks in the wood on the four longitudinal surfaces of each piece for its over-all length, and which has not been further manufactured other than by crosscutting, ripping, resawing, joining crosswise and/or endwise in a flat plane, surfacing with or without end matching, and working.

3.3. **Designation**—“American Standard Lumber”—Lumber conforming to the basic minimum size and grade provisions of the American Lumber Standards, when graded under rules approved by the Board of Review of the American Lumber Standards Committee, as hereinafter provided, may be designated “American Standard Lumber.”

3.4. Terminology—

3.4.1. **Dry Lumber**—For the purposes of this Standard, dry lumber is defined as lumber which has been seasoned or dried to a moisture content of 19 percent or less.

3.4.2. **Green Lumber**—For the purpose of this Standard, green lumber is defined as lumber having a moisture content in excess of 19 percent.

3.4.3. **Species**—The standard commercial names for lumber cut from the principal species of softwoods contained in Section 11 should be used in the formulation of lumber grading rules and in the terms of purchase and sale of American Standard Lumber.

3.4.4. **Characteristics**—The limitations of any grade of lumber described in certified grading rules should be expressed within the terms of the definitions in Section 12 of this Standard.

3.4.5. **Abbreviations**—The standard lumber abbreviations are shown in Section 13 of this Standard.

3.5. Measurement and Tally—

3.5.1. **Board Measure**—"Board measure" is the term used to indicate that a board foot is the unit of measurement of lumber. The number of board feet in a piece is obtained by multiplying the nominal thickness in inches by the nominal width in feet by the length in feet, except for lumber with a nominal thickness less than 1 inch, for which the number of board feet equals the product of the nominal width in feet by the length in feet.

3.5.2. **Tally, Standard Sizes**—Lumber should be tallied board measure. The invoices for lumber of standard sizes should show the number of pieces of each nominal size and length as well as the net thickness and width of such lumber. A piece tally in board feet for each length should also be shown on the invoice for shipments based on board measure.

3.5.3. **Tally, Nonstandard Sizes**—Lumber finished to nonstandard sizes should be tallied board measure as of either the rough or the nominal size necessarily used in its manufacture, and the actual thickness and width of such lumber should be shown on the invoice.

3.5.4. **Board Rule Tally**—In lumber specified to be measured with a board rule on actual widths, pieces measuring to the even half foot are alternately counted as of the next higher and lower foot count; fractions below the half foot are dropped and fractions above the half foot are counted as of the next higher foot.

3.5.5. **Averages—Length, Width**—The average length in feet of a shipment of lumber is computed by dividing the total length in feet by the total number of pieces in the shipment. The average width in inches of a shipment of lumber 1 inch or less in thickness is computed by dividing the total board feet by the total length in feet and multiplying the result by 12; but if thicker than 1 inch, the total board foot tally is divided first by the nominal thickness as expressed in inches and fractions of an inch.

3.6. Special Provisions—

3.6.1. **Bundled Lumber**—Each length of bundled lumber, except end-matched lumber, bevel siding, and bungalow siding, should be bundled separately.

3.6.2. **Rough Finish and Boards**—In shipments of rough finish and boards, pieces $\frac{1}{2}$ inch or more above the nominal thickness, such as may be produced by uneven sawing, may, at the option of the buyer, be rejected or be accepted as of the next lower grade.

3.6.3. **Specified Lengths**—The marketing practice covering lengths of lumber should permit the buyer to obtain specified lengths or specified assortments of lengths.

4. CLASSIFICATIONS OF AMERICAN STANDARD LUMBER

4.1. **General**—American Standard softwood lumber shall be classified according to the use, manufacturing, and size classifications shown below.

4.2. **Use Classifications**—Softwood lumber is classified by use as follows:

- (1) **Yard lumber**—Lumber of those grades, sizes, and patterns which is generally intended for ordinary construction and general building purposes.
- (2) **Structural lumber**—Lumber that is 2 or more inches in nominal thickness and width for use where working stresses are required.
- (3) **Factory and shop lumber**—Lumber that is produced or selected primarily for remanufacturing purposes (see 5.4).

4.3. **Manufacturing Classifications**—Softwood lumber is classified according to extent of manufacture as follows:

- (1) **Rough lumber**—Lumber which has not been dressed (surfaced) but which has been sawed, edged, and trimmed at least to the extent of showing saw marks in the wood on the four longitudinal surfaces of each piece for its over-all length.
- (2) **Dressed (surfaced) lumber**—Lumber that has been dressed by a planing machine (for purpose of attaining smoothness of surface and uniformity of size) on one side (S1S), two sides (S2S), one edge (S1E), two edges (S2E), or a combination of sides and edges (S1S1E, S1S2E, S2S1E, S4S).
- (3) **Worked lumber**—Lumber which, in addition to being dressed, has been matched, shiplapped, or patterned.
 - (a) **Matched lumber**—Lumber that has been worked with a tongue on one edge of each piece and a groove on the opposite edge to provide a close tongue-and-groove joint by fitting two pieces together; when end-matched, the tongue and groove are worked in the ends also.
 - (b) **Shiplapped lumber**—Lumber that has been worked or rabbeted on both edges of each piece to provide a close-lapped joint by fitting two pieces together.
 - (c) **Patterned lumber**—Lumber that is shaped to a pattern or to a molded form, in addition to being dressed, matched, or shiplapped, or any combination of these workings.

4.4. **Size Classifications**—Softwood lumber is classified according to size as follows:

4.4.1. **Nominal Size**—Softwood lumber is classified by nominal size as follows:

- (1) **Boards**—Lumber less than 2 inches in nominal thickness and 2 or more inches in nominal width. Boards less than 6 inches in nominal width may be classified as strips.
- (2) **Dimension**—Lumber from 2 inches to, but not including, 5 inches in nominal thickness, and 2 or more inches in nominal width. Dimension may be classified as framing, joists, planks, rafters, studs, small timbers, etc.
- (3) **Timbers**—Lumber 5 or more inches nominally in least dimension. Timber may be classified as beams, stringers, posts, caps, sills, girders, purlins, etc.

NOTE: The actual sizes of all lumber dimensions referenced in this Standard in terms of "nominal" sizes are set-out in Tables 1 through 5. The use of "nominal" sizes in the language of the Standard is for convenience and follows the practice of the industry. No inference should be drawn that the "nominal" sizes are actual sizes.

4.4.2. **Roughdry¹ Size**—The minimum roughdry thickness of finish, common boards, and dimensions of sizes 1 or more inches nominal thickness shall be not less than 1/8 inch thicker than the corresponding minimum finished dry thickness, except that 20 percent of a shipment may be not less than 3/32 inch thicker than the corresponding minimum-finished dry thickness. The minimum roughdry widths of finish, common strip, boards, and dimension shall be not less than 1/8 inch wider than the corresponding minimum-finished dry width.

4.4.3. **Dressed Sizes**—Dressed sizes of lumber shall equal or exceed the minimum sizes shown in Tables 1, 2, 3, 4, and 5. (Refer also to 5.5.5 covering length and 7.2 for grade-marking nonstandard sizes.)

¹ Roughdry means before dressing and at moisture content specified for seasoned lumber in 5.6.1.

TABLE 1. *Nominal and minimum-dressed dry sizes of finish, flooring, ceiling, partition, and stepping at 19 percent maximum-moisture content*

(The thicknesses apply to all widths and all widths to all thicknesses except as modified)

ITEM	THICKNESSES		FACE WIDTHS	
	NOMINAL ¹	MINIMUM DRESSED	NOMINAL	MINIMUM DRESSED
		Inches		Inches
Finish	3/8	5/16	2	1-1/2
	1/2	7/16	3	2-1/2
	5/8	9/16	4	3-1/2
	3/4	5/8	5	4-1/2
	1	3/4	6	5-1/2
	1-1/4	1	7	6-1/2
	1-1/2	1-1/4	8	7-1/4
	1-3/4	1-3/8	9	8-1/4
	2	1-1/2	10	9-1/4
	2-1/2	2	11	10-1/4
	3	2-1/2	12	11-1/4
	3-1/2	3	14	13-1/4
	4	3-1/2	16	15-1/4
	Flooring ²	3/8	5/16	2
1/2		7/16	3	2-1/8
5/8		9/16	4	3-1/8
1		3/4	5	4-1/8
1-1/4		1	6	5-1/8
1-1/2		1-1/4		
Ceiling ²	3/8	5/16	3	2-1/8
	1/2	7/16	4	3-1/8
	5/8	9/16	5	4-1/8
	3/4	11/16	6	5-1/8
Partition ²	1	23/32	3	2-1/8
			4	3-1/8
			5	4-1/8
			6	5-1/8
Stepping ²	1	3/4	8	7-1/4
	1-1/4	1	10	9-1/4
	1-1/2	1-1/4	12	11-1/4
	2	1-1/2		

¹ For nominal thicknesses under 1 inch, the board measure count is based on the nominal surface dimensions (width by length). With the exception of nominal thicknesses under 1 inch, the nominal thicknesses and widths in this table are the same as the board measure or count sizes.

² In tongued-and-grooved flooring and in tongued-and-grooved and shiplapped ceiling of 5/16-inch, 7/16-inch, and 9/16-inch dressed thicknesses, the tongue or lap shall be 3/16-inch wide, with the over-all widths 3/16 inch wider than the face widths shown in the table above. In all other worked lumber of dressed thicknesses of 5/8 inch to 1-1/4 inches, the tongue shall be 1/4 inch wide or wider in tongued-and-grooved lumber, and the lap 3/8-inch wide or wider in shiplapped lumber, and the over-all widths shall be not less than the dressed face widths shown in the above table plus the width of the tongue or lap.

TABLE 2. *Nominal and minimum-dressed dry sizes of siding at 19 percent maximum-moisture content*

(The thicknesses apply to all widths and all widths to all thicknesses)

ITEM	THICKNESSES		FACE WIDTHS	
	NOMINAL ¹	MINIMUM DRESSED	NOMINAL	MINIMUM DRESSED
		Inches		Inches
Bevel Siding	1/2	7/16 butt, 3/16 tip	4	3-1/2
	9/16	15/32 butt, 3/16 tip	5	4-1/2
	5/8	9/16 butt, 3/16 tip	6	5-1/2
	3/4	11/16 butt, 3/16 tip	8	7-1/4
	1	3/4 butt, 3/16 tip	10	9-1/4
			12	11-1/4
Bungalow Siding	3/4	11/16 butt, 3/16 tip	8	7-1/4
			10	9-1/4
			12	11-1/4
Rustic and Drop Siding (shiplapped, 3/8-in. lap)	5/8 1	9/16 23/32	4	3
			5	4
			6	5
Rustic and Drop Siding (shiplapped, 1/2-in. lap)	5/8 1	9/16 23/32	4	2-7/8
			5	3-7/8
			6	4-7/8
			8	6-5/8
			10	8-5/8
			12	10-5/8
Rustic and Drop Siding (dressed and matched)	5/8 1	9/16 23/32	4	3-1/8
			5	4-1/8
			6	5-1/8
			8	6-7/8
			10	8-7/8

¹ For nominal thicknesses under 1 inch, the board measure count is based on the nominal surface dimensions (width by length). With the exception of nominal thicknesses under 1 inch, the nominal thicknesses and widths in this table are the same as the board measure or count sizes.

TABLE 3. Nominal and minimum-dressed sizes of boards, dimension, and timbers
 (The thicknesses apply to all widths and all widths to all thicknesses)

ITEM	THICKNESSES			FACE WIDTHS						
	NOMINAL	Minimum Dressed		NOMINAL	Minimum Dressed					
		Dry ¹	Green ¹		Dry ¹	Green ¹				
		Inches	Inches		Inches	Inches				
Boards ²	1	3/4	25/32	2	1-1/2	1-9/16				
				3	2-1/2	2-9/16				
				4	3-1/2	3-9/16				
				5	4-1/2	4-5/8				
				6	5-1/2	5-5/8				
				7	6-1/2	6-5/8				
				8	7-1/4	7-1/2				
				9	8-1/4	8-1/2				
				10	9-1/4	9-1/2				
				11	10-1/4	10-1/2				
				12	11-1/4	11-1/2				
				14	13-1/4	13-1/2				
				16	15-1/4	15-1/2				
				Dimension	2 2-1/2 3 3-1/2	1-1/2 2 2-1/2 3	1-9/16 2-1/16 2-9/16 3-1/16	2	1-1/2	1-9/16
								3	2-1/2	2-9/16
								4	3-1/2	3-9/16
5	4-1/2	4-5/8								
6	5-1/2	5-5/8								
8	7-1/4	7-1/2								
10	9-1/4	9-1/2								
12	11-1/4	11-1/2								
14	13-1/4	13-1/2								
16	15-1/4	15-1/2								
Dimension	4 4-1/2	3-1/2 4	3-9/16 4-1/16					2	1-1/2	1-9/16
								3	2-1/2	2-9/16
								4	3-1/2	3-9/16
								5	4-1/2	4-5/8
								6	5-1/2	5-5/8
								8	7-1/4	7-1/2
				10	9-1/4	9-1/2				
				12	11-1/4	11-1/2				
				14		13-1/2				
				16		15-1/2				
				Timbers	5 & Thicker		1/2 Off	5 & Wider		1/2 Off

¹ See 3.4.1 and 3.4.2 for the definitions of dry and green lumber.

² Boards less than the minimum thickness for 1 inch nominal but 5/8 inch or greater thickness dry (11/16 inch green) may be regarded as American Standard Lumber, but such boards shall be marked to show the size and condition of seasoning at the time of dressing. They shall also be distinguished from 1-inch boards on invoices and certificates.

TABLE 4. *Nominal and minimum-dressed sizes of (2-inch and under) shiplap, centermatch, and D & M*

(The thicknesses apply to all widths and all widths to all thicknesses)

ITEM	THICKNESS			FACE WIDTHS		
	NOMINAL	Minimum Dressed		NOMINAL	Minimum Dressed	
		Dry ¹	Green ¹		Dry ¹	Green ¹
	Inches	Inches		Inches	Inches	
Shiplap, 3/8-inch lap	1	3/4	25/32	4	3-1/8	3-3/16
				6	5-1/8	5-1/4
				8	6-7/8	7-1/8
				10	8-7/8	9-1/8
				12	10-7/8	11-1/8
				14	12-7/8	13-1/8
				16	14-7/8	15-1/8
Shiplap, 1/2-inch lap	1	3/4	25/32	4	3	3-1/16
				6	5	5-1/8
				8	6-3/4	7
				10	8-3/4	9
				12	10-3/4	11
				14	12-3/4	13
				16	14-3/4	15
Centermatch, 1/4-inch tongue	1	3/4	25/32	4	3-1/8	3-3/16
	1-1/4	1	1-1/32	5	4-1/8	4-1/4
	1-1/2	1-1/4	1-9/32	6	5-1/8	5-1/4
				8	6-7/8	7-1/8
				10	8-7/8	9-1/8
			12	10-7/8	11-1/8	
2" D & M, 3/8-inch tongue	2	1-1/2	1-9/16	4	3	3-1/16
				6	5	5-1/8
				8	6-3/4	7
				10	8-3/4	9
				12	10-3/4	11
2" Shiplap, 1/2-inch lap	2	1-1/2	1-9/16	4	3	3-1/16
				6	5	5-1/8
				8	6-3/4	7
				10	8-3/4	9
				12	10-3/4	11

¹ See 3.4.1 and 3.4.2 for the definitions of dry and green lumber.

TABLE 5. *Worked lumber such as factory flooring, heavy roofing, decking, and sheet piling*

(The thicknesses apply to all widths and all widths to all thicknesses)
(SEE "Note.")

THICKNESSES ¹			FACE WIDTHS		
NOMINAL	MINIMUM DRESSED		NOMINAL	MINIMUM DRESSED	
	Inches			Inches	
TONGUE AND GROOVED					
	Dry	Green		Dry	Green
2-1/2	2	2-1/16	4	3	3-1/16
3	2-1/2	2-9/16	6	5	5-1/8
3-1/2	3	3-1/16	8	6-3/4	7
4	3-1/2	3-9/16	10	8-3/4	9
4-1/2	4	4-1/16	12	10-3/4	11
SHIPLAP					
	Dry	Green		Dry	Green
2-1/2	2	2-1/16	4	3	3-1/16
3	2-1/2	2-9/16	6	5	5-1/8
3-1/2	3	3-1/16	8	6-3/4	7
4	3-1/2	3-9/16	10	8-3/4	9
4-1/2	4	4-1/16	12	10-3/4	11
GROOVED-FOR-SPLINES					
	Dry	Green		Dry	Green
2-1/2	2	2-1/16	4	3-1/2	3-9/16
3	2-1/2	2-9/16	6	5-1/2	5-5/8
3-1/2	3	3-1/16	8	7-1/4	7-1/2
4	3-1/2	3-9/16	10	9-1/4	9-1/2
4-1/2	4	4-1/16	12	11-1/4	11-1/2

NOTE: In worked lumber of nominal thicknesses of 2 inches and over, the tongue shall be 3/8 inch wide in tongued-and-grooved lumber and the lap 1/2 inch wide in shiplapped lumber, with the over-all widths 3/8 inch and 1/2 inch wider, respectively, than the face widths shown in the above table. Double tongued-and-grooved decking may be manufactured with a 5/16-inch tongue.

¹ See Table 3 for information on 2-inch dimension.

5. GRADING PROVISIONS

5.1. **Standards for Grading**—To the extent to which differences in the characteristics of species, in the quality of logs, in conditions of manufacture, and in the uses to which the product is put will permit, in practical application, the basic provisions for the grading of lumber shall be uniform. The grading of lumber cannot be considered an exact science because it is based on either a visual inspection of each piece and the judgment of the grader or on the results of a method of mechanically determining the strength characteristics of structural lumber (see 5.3.2). Grading rules, however, shall be sufficiently explicit to establish a maximum of 5 percent below grade as a reasonable variation between graders. If any grading rules indicate that a grade qualifies under two use classifications, the grade provisions shall satisfy the requirements for both classifications.

5.2. Yard Lumber—

5.2.1. **Grade Classifications**—The grading of yard lumber is based upon the uses for which the particular grade is designed, and is applied to each kind with reference to its size and length when graded, without consideration to further manufacture. On the basis of quality, the basic grade classifications of yard lumber are as follows:

- (1) **Select:** Lumber of good appearance and finishing qualities.
 - (a) Suitable for natural finishes.
 - (i) Practically clear.
 - (ii) Generally clear and of high quality.
 - (b) Suitable for paint finishes.
 - (i) Adapted to high-quality paint finishes.
 - (ii) Intermediate between high-finishing grades and common grades, and partaking somewhat of the nature of both.

(2) **Common:** Lumber which is suitable for general construction and utility purposes.

- (a) For standard construction use.
 - (i) Suitable for better type construction purposes.
 - (ii) Well adapted for good standard construction.
 - (iii) Designed for low-cost temporary construction.
- (b) For less exacting construction purposes.
 - (i) Low quality.
 - (ii) Lowest recognized grade must be usable.

5.2.2. Grade Characteristics—The method of determining the extent and limitations of the characteristics permitted in the poorest pieces admissible in each grade of yard lumber shall be stated in an approved rule, except in the lowest grade of each classification. A grade shall be representative, however, and shall not comprise only low-line pieces.

5.2.3. Grade Sizes—The dressed thicknesses and widths of yard lumber as specified in 4.4 shall be considered as minimum standards for the corresponding nominal sizes as shown. Lumber of standard size, rough or dressed, may be described by its nominal dimension providing net sizes are also shown.

5.2.4. Grading—Faces—Timbers and dimension shall be graded from all four faces. All other yard lumber and yard boards may be graded from the face or best side only.

5.3. Structural Lumber—

5.3.1. Development of Working Stress and MOE Values—Working stress and modulus of elasticity (MOE) values contained in grading rules shall be developed in accordance with appropriate ASTM standards and other technically sound criteria. The National Bureau of Standards, with the advice and counsel of the U.S. Forest Products Laboratory, shall be the final authority as to the appropriateness of such standards or criteria. The Board of Review shall seek the assistance of the Forest Products Laboratory in reviewing working stress and modulus of elasticity values set forth in grading rules and, in the case of each set of grading rules submitted for approval, the Board shall obtain a report from the Laboratory to verify that the procedures used in developing the claimed values are in accordance with the standards and criteria described herein. Rules-writing agencies shall make available upon request an explanation of the means by which the claimed values were derived. When more than one rules-writing agency has responsibility for writing grading rules for a species, a group of species, or a geographical subdivision of a species or of a group of species, a common set of strength and stiffness values will be used by the agencies involved for that species, subdivision, or group of species in the interests of uniformity and standardization.

5.3.2. Grading—Mechanical—The grading of structural lumber by mechanical means is recognized as an acceptable method of grading, but all such grading equipment and methods are subject to approval and certification by the Board of Review.

5.3.3. Grading—Faces—Timbers and dimension shall be graded from all four faces.

5.4. Factory and Shop Lumber—

5.4.1. Grade Classification—The end use of factory and shop lumber produced from different species and in the several regions varies considerably; accordingly, the American Lumber Standard grade classifications shall be those promulgated by the several agencies which formulate and publish grading rules and which have been approved by the Board of Review.

5.4.2. Grade Characteristics—Factory and shop lumber is graded with reference to its use for doors and sash, or on the basis of characteristics affecting its use for general cutup purposes, or on the basis of size of cutting. The grade of factory and shop lumber shall be determined by the percentage of the area of each board or plank available in cuttings of specified or of given minimum size and qualities. The grade of factory and shop lumber shall be determined from the poor face, although the quality of both sides of each cutting must be considered.

5.4.3. Grade Sizes—The end use of factory and shop lumber produced from different species and in the several regions varies considerably; accordingly, the American Lumber Standard grade sizes shall be those promulgated by the several agencies which formulate and publish grading rules and which have been approved by the Board of Review.

5.4.4. Warped Lumber—The cuttings in warped lumber shall be so laid out as to surface two sides to standard thickness and have straight edges parallel to the edges of the board or plank.

5.5. General Grading Provisions—

5.5.1. **Grade Characteristics**—Characteristics permitted and limitations for rough lumber shall be the same as those prescribed in grading rules for dressed lumber of like kind and grade, and in addition, such others as will disappear in standard dressing shall be allowed. If characteristics other than those described in certified grading rules are encountered, they shall be appraised in relation to the characteristics permitted or limitations prescribed for the grade under consideration and shall be allowed if regarded as equivalent or less damaging in effect on the strength, appearance, or other utility value of the piece. The characteristics and limitations in any grade or species vary as the area of the piece increases or diminishes with respect to the basic size or area specified, but their size shall not exceed that permitted in the respective grading rules.

5.5.2. **Special Provisions**—When heartwood, sapwood, grain classifications, and other optional provisions are specified, and the lumber conforms to the requirements of such special provisions as well as of the regular grade designated, it may be regarded as of standard quality.

5.5.3. **Mixed Grades**—Mixed grades other than the two highest established grades for each species shall not be included in certified grading rules.

5.5.4. **Nonstandard Grades**—When nonstandard grades, sizes, or workings are specified or when particular provisions of a standard grade are waived or changed, inspection shall be made accordingly, but all of the other provisions of the standard grading rules shall apply.

5.5.5. **Standard Lengths**—Standard lengths of lumber shall be in multiples of 1 or 2 feet as specified in the certified grading rules.

5.5.6. **Trimmed Lengths**—Unless otherwise stated in the contract of purchase, yard lumber shall be trimmed for the removal of spur and splintered ends, and if 2 inches and less in nominal thickness (except lath), shall be double-end-trimmed to a length that is not scant of nominal length and that is not over 3 inches in excess of nominal length.

5.6. Seasoning Provisions—

5.6.1. **General**—Grading rule provisions dealing with lumber seasoning and moisture content shall be developed by each region in accordance with its own conditions and the requirements of the users of its products subject to the other provisions of this section. Provisions for seasoned lumber shall be expressed in terms of maximum moisture content to be allowed at any point on each piece. The restrictions on the moisture content of seasoned lumber shall apply at the time of shipment, at the time of dressing (if dressed lumber is involved), and at the time of any reinspection (if moisture content is involved in the reinspection), as provided in the applicable grading rules. Moisture content determinations shall be made with electric meters of the type described in Section 9, Method B of ASTM D 2016-65, *Standard Methods of Test for Moisture Content of Wood*,² and the procedures to be used in making such determinations shall be in accordance with those described in Section 11, Method B of ASTM D 2016-65.

5.6.2. **Grading Rules**—The grading rules for each species or region shall include clear definitions for dry (see 3.4.1) lumber, under 5-inch nominal thickness, which shall be based on 19 percent or lower maximum moisture content, but the grading and grade marking of green (3.4.2) or dry lumber of any item as American Standard Lumber is a matter for each rules publishing agency to determine in accordance with its own conditions.

5.6.3. **Dry Size Requirements**—The grading rules shall require all lumber under 5-inch nominal thickness sold as dry to be 19 percent or less in moisture content at the time of dressing, and to be not less than American Lumber Standards minimum dry dressed thickness and width at 19 percent moisture content, or at such lower maximum-moisture content as may be applicable to the lumber at the time of dressing. The minimum-dressed dry sizes are shown in Tables 1, 2, 3, 4, and 5. Shrinkage that may occur after dressing to standard dry size shall be recognized through the allowance of a tolerance below minimum American Lumber Standards dry sizes on the basis of 1 percent shrinkage for each four points of moisture content reduction below the applicable maximum or 0.7 percent shrinkage for Redwood, Western Red Cedar, and Northern White Cedar for each four points of moisture content reduction.

² Copies of ASTM publications can be purchased from the American Society for Testing and Materials, 1916 Race Street, Philadelphia, Pennsylvania 19103.

5.6.4. **Size Differentials**—When the grading rules in any region permit lumber under 5-inch nominal thickness to be dressed green, the rules shall require that the lumber be dressed to sizes specifically stated in the rules, which sizes shall provide differentials both in thickness and width, as set forth in Tables 3, 4, and 5.

5.6.5. **Green Size Requirements**—The green sizes specifically stated in the rules shall be not less than the green sizes³ shown in Tables 3, 4, and 5, except for Redwood, Western Red Cedar, and Northern White Cedar. (For these three species, the following minimum dressed thicknesses shall apply: 21/32 inch for corresponding 5/8 inch dry, 25/32 inch for nominal 1 inch, 1-9/16 inch for 2 inch nominal, 2-1/16 inch for nominal 2-1/2 inch, 2-9/16 inch for nominal 3 inch, 3-1/16 inch for nominal 3-1/2 inch, 3-9/16 inch for nominal 4 inch, and 4-1/16 inch for nominal 4-1/2 inch. The following minimum green dressed widths shall apply: 2-9/16 and 3-9/16 inch for nominal 3 inch and 4 inch, 4-9/16, 5-9/16, and 6-9/16 inch for nominal 5 inch, 6 inch, and 7 inch, 7-3/8, 9-3/8, 11-3/8, inch for nominal 8 inch, 10 inch, and 12 inch, 13-7/16 and 15-7/16 for nominal 14 inch and 16 inch.)

Shrinkage that may occur after dressing to standard green size shall be recognized through the allowance of a tolerance below minimum American Lumber Standard green sizes on the basis of 1 percent shrinkage for each four points of moisture content below 30 percent, or 0.7 percent shrinkage for Redwood, Western Red Cedar, and Northern White Cedar for each four points of moisture content below 30 percent.

5.6.6. **Grade Marking**—When grading rules provide for grade marking of lumber under 5-inch nominal thickness, the rules shall contain a provision for standardized marking of such lumber so as to indicate whether the lumber was green or dry at time of dressing.

6. INSPECTION PROVISIONS

6.1. **General**—Subject to freedom of agreement between buyer and seller as to the settlement of complaints, the purchase, sale, or shipment of American Standard grades of lumber is construed as involving agreement to submit to reinspection by the certified inspection agency under whose published rules the lumber was graded, any complaint involving grades, sizes, moisture content, or tally. Grading rules shall include provisions for reinspection in case of complaint, available to anyone at reasonable cost.

6.2. **Payment—Certificate Costs**—When a certified agency issues a certificate on a shipment, the party requesting the certificate shall pay for the cost thereof.

6.3. **Service**—Inspection service is required for the inspection of grades not described in the rules only when written, detailed specifications accompany the request for such inspection and for the inspection of standard grades in nonstandard sizes only on the basis of 5.5.4, unless otherwise prescribed in the contract of purchase and sale.

6.4. **Complaints**—Grade complaints may be recognized on lumber only when it is in the form in which it was shipped. Any subsequent change in manufacture or working or through kiln-drying will relieve the seller of responsibility of any grade complaints.

6.5. **Inspection and Reinspection Procedures**—

6.5.1. **Buyers' Responsibilities**—In case of complaint, the buyer is required to accept that portion of the shipment that is of the grade, size, or moisture content specified and hold intact that portion which is disputed for inspection or reinspection. Any action on the part of the buyer in accepting and using such portion of the shipment that is of the grade, size, or moisture content specified shall not be construed as the acceptance of the entire shipment. The buyer shall hold the disputed material intact, properly protected, for not exceeding 30 days after date of the request for inspection or reinspection. The buyer shall file complaint with the seller within the time specified in the following provisions. The buyer shall pay in accordance with the terms of the sale for that portion which he accepts, but acceptance by the buyer of a part of a shipment does not prejudice his just claims on account of any unused lumber that is alleged by him to be not of the grade, size, or moisture content specified.

6.5.2. **Sellers' Responsibilities**—Upon receipt of complaint from the purchaser, the seller shall immediately request the agency under whose rules shipment has been made, or such other agency as may have been agreed upon, to provide inspection or reinspection or retally, as the case may be, according to its grading rules in effect at the time of execution of contract.

³ The minimum green sizes are based on shrinkage factors of 2.35 percent in thickness and 2.80 percent in width from the fiber saturation point to a 19 percent maximum moisture content with recognition given to manufacturing practices, differences in shrinkage characteristics between species of lumber, and the most practical groupings for efficient use.

6.5.3. **Cost and Assistance**—The expense of such inspection, reinspection, or retally shall be borne in accordance with the inspection provisions of the applicable grading rules, but the person calling for the reinspection shall be responsible to the agency for the costs thereof. The purchaser shall lend all reasonable assistance to facilitate the inspection or reinspection or retally.

6.5.4. **Tally, Grade, and Size Complaints**—In case of complaint involving tally, the entire item shall be held intact for retally. In case of complaint regarding grade or size, but not involving tally, the buyer is required to hold intact that portion that is of the grade or size which is in dispute for inspection and file complaint with the seller within 10 days of date of receipt of shipment.

6.5.5. **Moisture Content Complaints**—In case of complaint involving moisture content, the customer must inform the shipper of the complaint within 72 hours after the lumber is unloaded. In such cases, the shipper shall answer such complaint within 72 hours from receipt of complaint. A reinspection involving a complaint on moisture content shall be made in accordance with the provisions of the applicable grading rules. Each piece shall be tested for moisture content, and separation shall be made of all pieces conforming to the maximum allowable from any portion exceeding such maximum.

6.5.6. **Reinspection Results**—Each item of a shipment shall be considered as of the grade invoiced if, upon reinspection under the grading rules under which the lumber has been graded and sold, 95 percent or more thereof is found to be of said grade or better. When degrades in grade or moisture content or both are in excess of 5 percent of the board footage of each item or when they are more than one grade lower than the grade invoiced, such degrades shall be kept separate and shall be the property of the seller, unless otherwise agreed. These provisions shall not apply in the case of specially worked lumber.

7. GRADE MARKING PROVISIONS

7.1. **Agency Certification and Supervision**—When American Standard Lumber is grade marked, the grade marking shall be under the direction, including regular grading supervision at mills, of an agency certified by the Board of Review of the American Lumber Standards Committee as competent and having adequate facilities for such supervision.

7.1.1. **Agency Procedure**—Each certified agency shall submit procedures with respect to grade marking to the Board of Review for approval.

7.1.2. **Agency Symbol**—Each agency, so certified by the Board of Review, shall maintain a bona fide supervisory inspection service under which each mill authorized to use the registered symbol of the certified agency⁴ in conjunction with the grade mark will be checked regularly as to grading efficiency and conformity to all the agency established rules for grade marking.

7.2. **The Grade Mark**—When American Standard Lumber is grade marked, the grade marking shall be subject to the following provisions:

- (1) The grade mark shall signify that the lumber conforms to the size, grade, and seasoning provisions of the rules under which it is graded. When green lumber thinner than 5-inch nominal is graded and grade marked (see also 5.6.6) under the applicable grading rules, it shall comply with the green size requirements of such rules. If lumber is dressed to a size below minimum American Lumber Standards requirements or below the minimum size set forth in the applicable grading rules, the stamp must show size, and if thinner than 5-inch nominal, in addition, must state whether the lumber was dry or green when dressed. If lumber is dressed to less than the standard thickness of 1-inch nominal, the stamp must show the dressed thickness and whether the lumber was green or dry when dressed.
- (2) An easily distinguishable mark or insignia, registered and symbolizing grading supervision by a certified agency, shall be used in conjunction with the grade mark for each agency.
- (3) All pieces and/or bundles of a given grade shall be grade marked.
- (4) Mixed grades other than the two highest recognized grades for each species shall not be grade marked with a combination grade designation; if grade marking is required, each piece of a grade shall be marked as of its actual grade.

⁴ Facsimiles of the grade marks of the grading and inspection agencies that are certified by the American Lumber Standards Committee shall be made available to purchasers, consumers, and specifiers by the American Lumber Standards Committee.

- (5) The grade mark for structural lumber, except machine graded lumber, shall include an identification or designation of the commercial name of the species (see Section 11) from which the lumber was produced. The identification of species will not be required when the agency symbol also indicates the species from which the lumber was produced. Where grading rules contain provisions for the grouping of species, each individual species included in a group shall be identified in the rules and the grade mark will include the designation assigned to the group.
- (6) A certified agency may provide further regulations for the use of its grade mark, provided the basic provisions of this section are observed.

7.3. **Delegation of Grading Authority**—Permission to grade mark may be delegated by any agency certified by the Board of Review to operate a mill supervisory service to those mills which are able to prove their ability to conform and their conformance currently with the grading rules for the species and grades which they manufacture and which agree to maintain the established standards of size and grade and to submit their lumber to inspection by the supervisory agency, both at the mill and upon complaint at destination.

8. AMERICAN LUMBER STANDARDS COMMITTEE

8.1. **Appointment of Members**—The members of the American Lumber Standards Committee and their alternates shall be appointed by the Secretary of Commerce for terms of not less than two nor more than five years.

8.2. **Composition of Committee**—The following procedures shall apply in making appointments to the Committee.

- (1) Each agency which participates in this program and which formulates, publishes, and maintains grading rules and maintains inspection facilities covering the various lumber species shall nominate two persons for each member allotted to that agency. Members and their alternates shall be appointed from the nominees furnished by each agency according to the number of members allotted to each of the agencies as follows:

<i>Agency</i>	<i>Members Allotted</i>
Southern Pine Inspection Bureau	2
Western Wood Products Association	2
West Coast Lumber Inspection Bureau	2
Redwood Inspection Service	1
Northeastern Lumber Manufacturers Association	1
Northern Hardwood & Pine Manufacturers Association	1
Each other agency qualifying under this category	1

- (2) Each lumber inspection agency which participates in this program and which does not publish grading rules may nominate one person for membership. Nominations may be made in the same manner by firms or organizations which are not members of inspection or rules-writing agencies. Three members of the Committee and their alternates shall be appointed from among the nominees so furnished.

- (3) Nominations of persons for membership on the Committee shall be received from firms or organizations within lumber specifying, distributing, and consuming groups at the request of the Secretary, and members shall be appointed from those groups as follows:

<i>Groups</i>	<i>Members Allotted</i>
Lumber Distributors & Wholesalers	2
Lumber Retailers	2
Intermediate Manufacturers (formerly millwork manufacturers)	1
Wood Using Industries	1
General Contractors	1
Home Builders	1
Architects and Engineers	2

- (4) The Secretary may appoint members to represent the general public consumer at large.

- (5) Each nomination for membership on the Committee shall be submitted to the Secretary of Commerce by the appropriate agency, firm, or organization upon request or whenever a vacancy occurs in the segment represented. Each nomination shall contain:
 - (a) A summary of the qualifications of the nominee.
 - (b) A statement of the method or procedure by which the nominee was selected by the agency, firm, or organization and the procedures under which he will exercise his responsibility for the agency or segment of the industry he represents.
 - (c) A statement of any interests, financial or otherwise, which the nominee may have in agencies or segments of the industry other than the one he represents.
 - (d) For agencies submitting more than one nominee, a listing in the order of priority recommended for appointment.
- (6) Ex officio, non-voting members may be appointed from the following Federal agencies:
 - Department of Defense
 - Department of Agriculture
 - Department of Interior
 - General Services Administration
 - Federal Housing Administration
 - National Bureau of Standards

8.2.1. Balance of Representation—The Secretary of Commerce may from time to time make such changes in the constitution of the Committee or make additional appointments as he deems necessary to maintain a proper balance among the various segments of the industry and to insure that the views of the Committee are adequately representative of the entire lumber industry (including producers, distributors, and consumers).

8.2.2. Committee Secretary—Except as provided in 8.3 (1) below, the manager or executive officer of the Board of Review, employed as hereinafter provided, shall serve as the Secretary of the American Lumber Standards Committee.

8.3. Functions of Committee—The functions of the American Lumber Standards Committee shall be:

- (1) To act as the Standing Committee for the purpose of considering proposals for future revisions of or amendments to the American Lumber Standards, which may result in recommendations to the Secretary of Commerce. When acting as the Standing Committee, the regular Product Standards Procedures shall be applicable, and the Secretary of Commerce shall furnish an executive secretary for the Standing Committee and may appoint a chairman for the Standing Committee. The proceedings of the Standing Committee shall be conducted within the spirit of Executive Order 11007 on Advisory Committees.
- (2) To cooperate with the U.S. Department of Commerce in establishing and making continuously available, as the needs of the industry and trade may demand, basic standards of lumber size, pattern, quality, inspection, and reinspection.
- (3) To determine the standards by which the Board of Review, as hereinafter provided, shall adjudge and approve as in conformance with the American Lumber Standards:
 - (a) Any published rules.
 - (b) The competency and reliability of, and adequacy of the facilities provided by, agencies publishing grading rules for the purpose of lumber certification, inspection, reinspection, and supervision of grade marking.
 - (c) The competency and reliability of, and adequacy of the facilities provided by, lumber inspection agencies participating in this program that do not publish grading rules.
- (4) To advise the Board of Review with respect to the interpretation or application of the published American Lumber Standards, and the detailed requirements defined and set up by the American Lumber Standards Committee in connection therewith.
- (5) To fix, after consultation with the agencies participating in the use of its facilities, such charges and fees as the Committee finds to be necessary to cover the actual cost, including necessary reserves and provisions for contingencies, of carrying out its functions and those of the Board of Review. Such charges and fees shall be assessed at a uniform proportionate rate against the agencies participating in the use of the facilities of the Com-

mittee. The certification of any agency not paying its assessment within 60 days after notification by the Secretary of the Committee shall be revoked by the Board of Review.

8.4. Transaction of Business—

8.4.1. Meetings—A majority of the members of the American Lumber Standards Committee representing agencies which formulate, publish, and maintain grading rules and maintain inspection facilities, together with a majority of the other members, shall constitute a quorum for the transaction of business. A vote of the majority of those present shall decide any question that may come before a meeting; but if at any meeting of the Committee there shall be less than a quorum present, a majority of those present may either adjourn the meeting from time to time or act on the subjects before it, subject to ratification in writing by the respective majorities which constitute a quorum.

8.4.2. Correspondence—Business may be transacted by correspondence without having been previously presented at a meeting of the Committee, in accordance with rules to be established by the Committee.

9. THE BOARD OF REVIEW

9.1. Composition, Election, Terms, Compensation, and Removal—The Board of Review shall be composed of three members, concurred in by the Department of Commerce, none of whom shall be members of the American Lumber Standards Committee or affiliated with a grading agency or any member of a grading agency.

(1) **Nominations—**Board of Review members shall be nominated as follows:

- (a) One member shall be nominated by unanimous decision of those American Lumber Standards Committee members representing the certified rules-writing agencies.
- (b) One member shall be nominated by majority decision of the certified non-rules-writing lumber inspection agencies. The Chairman of the American Lumber Standards Committee shall appoint a Committee member representing such agencies to determine and report their decision.
- (c) The other members of the American Lumber Standards Committee shall nominate one or more persons for the purpose of electing the third member to the Board of Review.
- (d) The names of the nominees shall be submitted to the Department of Commerce for concurrence prior to their election to the Board of Review and shall be accompanied by a summary of the qualifications of each nominee and a statement of any interests, financial or otherwise, which the nominee may have in the lumber industry.

(2) **Election—**Board of Review members shall be elected from among the aforesaid nominees by the members of the American Lumber Standards Committee by a majority of those voting. In the event that a nominee designated under parts (a) or (b) of subsection (1) of this section should fail to receive a majority of the votes cast at any election, a new nominee shall be designated in accordance with the procedure set forth in those parts (a) and (b).

(3) **Terms—**At the first meeting of the American Lumber Standards Committee following publication of this Standard, there shall be elected three members of the Board of Review for terms, respectively, of three years, two years, and one year, or until their successors are duly elected and qualify. Annually thereafter, one member shall be elected for a term of three years or until his successor is duly elected and qualifies. Vacancies on the Board of Review by reason of death, resignation, or removal may be filled in the same manner above specified at any regularly called Committee meeting. Any person elected to fill a vacancy shall serve the unexpired term of his predecessor.

(4) **Compensation—**The American Lumber Standards Committee shall fix and pay compensation to the members of the Board of Review and shall reimburse them for all reasonable expenses incurred in fulfilling their duties.

(5) **Removal—**Any Board of Review member may be removed by a vote of not less than two-thirds of all the members of the American Lumber Standards Committee, with the concurrence of the Department of Commerce.

9.2. Board Manager—The Board of Review shall select, subject to the approval of the American Lumber Standards Committee, and employ, a salaried manager or other executive officer who shall assume the responsibilities and perform the duties

delegated to him by the Committee or the Board of Review. Such manager or executive officer shall not be in the employment of any lumber organization, company, or inspection agency during his employment by the Board of Review.

9.3. Autonomy of Board—The Board of Review of the American Lumber Standards Committee shall be an autonomous body functioning under by-laws approved from time to time by the American Lumber Standards Committee and not inconsistent with this section.

9.4. Functions of Board—It shall be the function of the Board of Review to examine upon application and to certify as conforming to the requirements of American Lumber Standards and to the detailed requirements established by the American Lumber Standards Committee:

- (1) Any grade strength ratios, nomenclature, and descriptions of grades published by the National Grading Rules Committee and any grading rules published by a competent and reliable agency having adequate facilities for mill inspection and for reinspection (provided that no such rules for any species in any region shall be certified if certified published rules and service applicable thereto are adequate and already fully and fairly available to all manufacturers, distributors, and consumers of such lumber, on equal terms and conditions without discrimination), when such rules do actually conform to the basic requirements of the American Lumber Standards and subject to the following conditions:
 - (a) That, upon approval by the Board of Review, the published rules carry specific references to such approval.
 - (b) That approval of the rules by the Board of Review imposes the condition that the originating agency permit the publication of the rules without charge in whole or in part, including all applicable provisions and with all quoted parts clearly so indicated by anyone desiring to do so; provided that any such publication carry reference to the source of the rules and their effective date, and will be revised to conform with any subsequent changes in the rules, giving the effective date thereof.
 - (c) That subsequent revisions may be made by the promulgating agency to grading rules that have been approved by the Board of Review. The Board shall take action on any proposed revisions within 90 days after submission to the Board.
 - (d) That grading rules of an agency shall not be certified as conforming to American Lumber Standards if the Board of Review determines that the dimension lumber rules therein fail to conform to the provisions of the National Grading Rule for dimension lumber established pursuant to Section 10 of this Standard.
- (2) The competency and reliability of, and adequacy of the facilities provided by, agencies participating in this program for the purposes of lumber certification, inspection, reinspection, or supervision of grade marking.
- (3) The procedure followed in authorizing mills to grade mark under adequate supervision.
- (4) The continuing conformance of grading rules to American Lumber Standards, as well as the competency and performance of lumber inspection and grade marking agencies.

9.5. Power of Board—If at any time the practices of any approved and certified agency are found not in conformity with the standards adopted by the American Lumber Standards Committee, and if, after due notice in writing to that effect, those practices shall not have been brought into conformity with such standards by the agency concerned, the Board of Review is empowered to revoke all previous approval and certification granted that agency.

9.6. Actions of Board—In all actions in relation to the approval of grading rules, inspection facilities, and grade-marking practices, the American Lumber Standards Committee and the Board of Review shall proceed in a fair and nondiscriminatory manner, giving full and due consideration to the past experience and performance of agencies seeking approval, and shall apply uniform standards of judgment in making all determinations. In the matter of inspection agencies, definite requirements as to the integrity and competency of the agency and the adequacy of its facilities may be established, but all such requirements shall be uniformly applied with respect to all agencies seeking approval of the Board of Review. No inspection agency that is controlled by any person or firm whose own products are subject to its inspection and certification shall be approved. Inspection services furnished by buyers and users for inspection of their own purchases shall not be approved by the Board of Review.

9.7. **Availability of Board**—The facilities of the Board of Review shall be available at all times on equal terms to any affected party. They shall also be available to all lumber inspection agencies, without favor or discrimination, and without any requirement for joining or otherwise subscribing to any trade association or supporting any service or activity other than those of grading, standardization, grade marking, and inspection that falls within the jurisdiction of the Board of Review.

9.8. **Enforcement**—The Board of Review shall adopt, subject to prior approval by the American Lumber Standards Committee, and administer, rules, regulations, and sanctions to insure continued competency, reliability, and integrity of certified agencies providing inspection services with respect to performance of such agencies.

9.9. **Board Hearings**—Any party affected by a decision or action of the Board of Review shall have the right to require the Board to hold a hearing at which such party may appear personally or by counsel and present evidence and argument in support of his position in accordance with procedures established by the Board.

9.10. **Reports of Action**—The Board of Review shall within 30 days following an official action make such official action public.

10. NATIONAL GRADING RULE COMMITTEE

10.1. **Composition of Committee**—The National Grading Rule Committee (NGRC) of the American Lumber Standards Committee shall be composed of persons representing the following organizations which desire to participate:

<i>Organization</i>	<i>Number of Members</i>
Southern Pine Inspection Bureau	2
Western Wood Products Association	2
West Coast Lumber Inspection Bureau	2
Redwood Inspection Service	1
Northeastern Lumber Manufacturers Association, Inc.	1
Northern Hardwood & Pine Manufacturers Association	1
Building Officials Conference of America	1
International Conference of Building Officials	1
Southern Building Code Congress	1
National Association of Home Builders	1
Canadian Inspection Agencies	1
American Society of Civil Engineers	1
American Institute of Architects	1
Consumer Organizations	1

Ex officio, non-voting members may be appointed from the following Federal agencies:

Federal Housing Administration	1
Defense Supply Agency	1
Forest Products Laboratory	1
National Bureau of Standards	1

10.2. **Appointment of NGRC Members**—Each organization or group of organizations desiring to participate and entitled to representation as hereinabove provided shall appoint annually the number of persons to which each is entitled, such persons to be competent in the field of lumber technology. Notwithstanding the foregoing, the representative of consumer organizations shall be appointed by the American Lumber Standards Committee.

10.3. **Autonomy of NGRC**—The NGRC shall be an autonomous body functioning under by-laws (providing, among other things, for the appointment of subcommittees) approved from time to time by the American Lumber Standards Committee and not inconsistent with this section. The Chairman of the NGRC shall be elected annually by the Committee from among its members. Each member shall have one vote, and a majority of members of rules-writing agencies and a majority of the other members shall constitute a quorum to conduct business. A majority vote of those present and voting at a meeting shall prevail.

10.4. **Functions of the NGRC**—The NGRC shall establish, maintain, and make fully and fairly available grade strength ratios, nomenclature, and descriptions of grades for dimension lumber conforming to American Lumber Standards. Grading rules of an agency shall not be certified as conforming to American Lumber Standards if the Board of Review determines that the dimension lumber rules therein fail to conform to the provisions of the National Grading Rule for dimension lumber established pursuant to this section.

11. COMMERCIAL NAMES OF THE PRINCIPAL SOFTWOOD SPECIES⁵

The commercial names listed below are intended to provide a correlation between commercial names for lumber and the botanical names of the species from which the lumber may be manufactured. In some instances more than one species is associated with a single commercial name. For stress-graded lumber, the species to be associated under a commercial name will be determined in accordance with 5.3.1. These commercial names are to be used in grading rule descriptions and in specifications (see 3.4.3).

<i>Commercial Names for Lumber⁶</i>	<i>Official Common Tree Names⁷</i>	<i>Botanical Names</i>
CEDAR:	Alaska-cedar	<i>Chamaecyparis</i>
Alaska Cedar		<i>nootkatensis</i>
Incense Cedar	incense-cedar	<i>Libocedrus decurrens</i>
Port Orford Cedar	Port-Orford-cedar	<i>Chamaecyparis</i>
		<i>lawsoniana</i>
Eastern Red Cedar	eastern redcedar	<i>Juniperus virginiana</i>
	southern redcedar	<i>J. silicicola</i>
Western Red Cedar	western redcedar	<i>Thuja plicata</i>
Northern White Cedar	northern white-cedar	<i>Thuja occidentalis</i>
Southern White Cedar	Atlantic white-cedar	<i>Chamaecyparis thyoides</i>
CYPRESS:⁸	baldcypress	<i>Taxodium distichum</i>
	pondcypress	<i>T. distichum</i> var. <i>nutans</i>
FIR:		
Balsam Fir ⁹	balsam fir	<i>Abies balsamea</i>
	Fraser fir	<i>A. fraseri</i>
Douglas Fir ¹⁰	Douglas-fir	<i>Pseudotsuga menziesii</i>
Noble Fir	noble fir	<i>Abies procera</i>
White Fir	subalpine fir	<i>Abies lasiocarpa</i>
	California red fir	<i>A. magnifica</i>
	grand fir	<i>A. grandis</i>
	noble fir	<i>A. procera</i>
	Pacific silver fir	<i>A. amabilis</i>
	white fir	<i>A. concolor</i>
HEMLOCK:		
Eastern Hemlock	Carolina hemlock	<i>Tsuga caroliniana</i>
	eastern hemlock	<i>T. canadensis</i>
Mountain Hemlock	mountain hemlock	<i>Tsuga mertensiana</i>
West Coast Hemlock	western hemlock	<i>Tsuga heterophylla</i>
JUNIPER:		
Western Juniper	Alligator juniper	<i>Juniperus deppeana</i>
	Rocky Mountain juniper	<i>J. scopulorum</i>
	Utah juniper	<i>J. osteosperma</i>
	western juniper	<i>J. occidentalis</i>
LARCH:		
Western Larch	western larch	<i>larix occidentalis</i>

⁵ The information contained herein was obtained from ASTM Standard D 1165-52, *Standard Nomenclature of Domestic Hardwoods and Softwoods*, which was reapproved by ASTM in 1964.

⁶ The commercial names for lumber represent commonly accepted commercial practice. It should be noted that some grading rules approved by the Board of Review provide for the inclusion of additional species under the established names.

⁷ The official common tree names conform to the Check List of Native and Naturalized Trees of the United States (including Alaska), Agriculture Handbook No. 41 (1953), and are sometimes used as names for lumber. In addition to the official common name for a species, the Check List also lists other names by which the species and the lumber produced from it are sometimes designated.

⁸ Cypress includes types designated as Red Cypress, White Cypress, and Yellow Cypress. Red Cypress is frequently classified and sold separately from the other types.

⁹ Balsam Fir lumber is sometimes designated either as Eastern Fir or as Balsam.

¹⁰ Douglas Fir may be specified either as Coast Region Douglas Fir or as Inland Region Douglas Fir, but if the particular type is not so specified or is not otherwise indicated through the grade specifications, either or both types will be allowed.

<i>Commercial Names for Lumber⁶</i>	<i>Official Common Tree Names⁷</i>	<i>Botanical Names</i>
PINE:		
Jack Pine	jack pine	Pinus banksiana
Lodgepole Pine	lodgepole pine	P. contorta
Norway Pine	red pine	P. resinosa
Ponderosa Pine	ponderosa pine	P. ponderosa
Sugar Pine	sugar pine	P. lambertiana
Idaho White Pine	western white pine	P. monticola
Northern White Pine	eastern white pine	Pinus strobus
Longleaf Yellow Pine ¹¹	longleaf pine	Pinus palustris
	slash pine	P. eliottii
Southern Yellow Pine	loblolly pine	Pinus taeda
	longleaf pine	P. palustris
	pitch pine	P. rigida
	shortleaf pine	P. echinata
	slash pine	P. eliottii
	Virginia pine	P. virginiana
REDWOOD:	redwood	Sequoia sempervirens
SPRUCE:		
Eastern Spruce	black spruce	Picea mariana
	red spruce	P. rubens
	white spruce	P. glauca
Engelmann Spruce	blue spruce	Picea pungens
	Engelmann spruce	P. engelmannii
Sitka Spruce	Sitka spruce	Picea sitchensis
TAMARACK:	Tamarack	Larix laricina
YEW:		
Pacific Yew	Pacific yew	Taxus brevifolia

12. DEFINITIONS OF TERMS USED IN DESCRIBING STANDARD GRADES OF LUMBER

The commonly recognized characteristics and conditions occurring in softwood lumber are:

Bark pockets	Knots	Pith flecks
Checks	Mismanufacture	Shake
Cross breaks	Pitch	Splits
Cross grain	Pitch pockets	Stain
Decay	Pitch seams	Wane
Gum spots, streaks, etc.	Pitch streaks	Warp
Holes	Pith	

air dried—Seasoned by exposure to the atmosphere, in the open or under cover, without artificial heat.

all-heart—Of heartwood throughout; that is, free of sapwood.

annual ring—Growth put on in a single year.

bark pocket—Patch of bark partially or wholly enclosed in the wood. Classified as are pitch pockets.

blemish—Anything marring the appearance of lumber.

bow—See WARP.

¹¹ The commercial requirements for Longleaf Yellow Pine lumber are that not only must it be produced from trees of the botanical species of *Pinus eliottii* and *Pinus palustris*, but each piece in addition must average either on one end or the other not less than six annual rings per inch and not less than one-third summerwood. Longleaf Yellow Pine lumber is sometimes designated as Pitch Pine in the export trade.

- boxed pith*—Where the pith is enclosed within the four sides of the piece.
- bright*—Unstained.
- characteristics*—Distinguishing features which by their extent and number determine the quality of a piece of lumber.
- check*—Lengthwise grain separation, usually occurring through the growth rings as a result of seasoning.
- surface check*—Occurs on a surface of a piece.
- small surface check*—Not over 1/32 inch wide and not over 4 inches long.
- medium surface check*—Not over 1/32 inch wide and over 4 inches long, but not over 10 inches long.
- large surface check*—Over 1/32 inch wide or over 10 inches long.
- end check*—Occurs on an end of a piece.
- through check*—Extends from one surface through the piece to the opposite surface or to an adjoining surface.
- chipped grain*—Area where the surface is chipped or broken out in very short particles below the line of cut. Not classed as torn grain and, as usually found, is not considered unless in excess of 25 percent of the surface involved.
- clear*—Free or practically free of all blemishes, characteristics, or defects.
- compression wood*—Abnormal wood that forms on the under side of leaning and crooked coniferous trees. It is characterized, aside from its distinguishing color, by being hard and brittle and by its relatively lifeless appearance.
- corner*—The intersection of two adjacent faces.
- crook*—See WARP.
- cross break*—Separation of the wood across the width.
- crosscutting*—Cutting with a saw across the width.
- cup*—See WARP.
- cutting*—Resulting pieces after crosscutting and/or ripping.
- decay*—Disintegration of wood substance due to action of wood-destroying fungi. Also known as *dote* and *rot*.
- advanced (or typical) decay*—Older stage of decay in which disintegration is readily recognized because the wood has become punky, soft, spongy, stringy, shaky, pitted, or crumbly. Decided discoloration or bleaching of the rotted wood is often apparent.
- incipient decay*—Early stage of decay in which disintegration has not proceeded far enough to soften or otherwise change the hardness of the wood perceptibly. Usually accompanied by a slight discoloration or bleaching of the wood.
- pocket rot*—Typical decay which appears in the form of a hole, pocket, or area of soft rot, usually surrounded by apparently sound wood.
- water soak or stain*—Water-soaked area in heartwood, usually interpreted as the incipient stage of certain wood rots.
- degrades*—Pieces which on reinspection prove of lower quality than the grade in which they were shipped.
- diagonal grain*—A deviation of the grain from a line parallel to the edges, which results from sawing a piece of lumber at an angle other than parallel with the bark.
- double end trimmed*—Trimmed reasonably square by a saw on both ends.
- dry*—Seasoned; not green (See 3.4.1).
- edge*—The narrow faces of rectangular-shaped lumber.
- edge grain (vertical grain)*—Annual rings (so-called grain) which form an angle of 45° or more with the surface of the piece.
- firm red heart*—A stage of incipient decay characterized by a reddish color in the heartwood, which does not unfit the wood for the majority of yard purposes. (Not to be confused with natural red heartwood in some species.)
- flat grain (slash grain)*—Annual rings (so-called grain) which form an angle of less than 45° with the surface of the piece.
- f.o.h.c. (free of heart centers)*—Where the pith is not enclosed within the four sides of the piece.
- green*—Not fully seasoned (See 3.4.2).
- growth ring*—The growth put on in a single year.
- gum pocket*—An opening between growth rings which usually contains or has contained resin or bark, or both.
- gum seam*—Check or shake filled with gum.
- gum spot*—Accumulation of gumlike substance occurring as a small patch. May occur in conjunction with a bird-peck or other injury to the growing wood.
- gum streak*—Well-defined accumulation of gum in more or less regular streak. Classified as are pitch streaks.

heart face—Face side free of sapwood.

heart shake—See SHAKE—PITH SHAKE.

heartwood—Inner core of the tree trunk comprising the annual rings containing non-living elements; usually darker in color than sapwood.

hit-and-miss—Series of surfaced areas with skips not over 1/16 inch deep between them.

hit-or-miss—To skip or surface a piece for a part or the whole of its length, provided it is nowhere more than 1/16 inch scant.

holes—Holes may extend partially or entirely through a piece and be from any cause. To determine the size of a hole, average the maximum and minimum diameters, unless otherwise specified.

pin hole—not over 1/16 inch in diameter.

medium hole—Over 1/16 inch, but not over 1/4 inch in diameter.

large hole—Over 1/4 inch in diameter.

honeycomb (decay)—Honeycomb is indicated by large pits in the wood.

kiln-dried—Seasoned in a chamber by means of artificial heat.

knot—Branch or limb embedded in the tree and cut through in the process of lumber manufacture; classified according to size, quality, and occurrence. To determine the size of a knot, average the maximum length and maximum width, unless otherwise specified.

pin knot—Not over 1/2 inch in diameter.

small knot—Over 1/2 inch, but not over 3/4 inch in diameter.

medium knot—Over 3/4 inch, but not over 1-1/2 inches in diameter.

large knot—Over 1-1/2 inches in diameter.

knot quality—

decayed knot—Softer than the surrounding wood, and containing advanced decay.

encased knot—Its rings of annual growth are not intergrown with those of the surrounding wood.

hollow knot—Apparently sound except that it contains a hole over 1/4 inch in diameter.

intergrown knot—A knot partially or completely intergrown on one or two faces with the growth rings of the surrounding wood.

loose knot—Not held tightly in place by growth or position, and cannot be relied upon to remain in place.

fixed knot—Will hold its place in a dry piece under ordinary conditions; can be moved under pressure, though not easily pushed out.

pith knot—Sound knot except that it contains a pith hole not over 1/4 inch in diameter.

sound knot—Solid across its face, as hard as the surrounding wood, shows no indication of decay, and may vary in color from the natural color of the wood to reddish brown or black.

star-checked knot—Having radial checks.

tight knot—So fixed by growth or position as to retain its place.

firm knot—Solid across its face, but containing incipient decay.

water-tight knot—Its rings of annual growth are completely intergrown with those of the surrounding wood on one surface of the piece, and it is sound on that surface.

knot occurrence—

branch knots—Two or more divergent knots sawed lengthwise and tapering toward the pith at a common point.

corner knot—Located at the intersection of adjacent faces.

knot cluster—Two or more knots grouped together, the fibers of the wood being deflected around the entire unit. A group of single knots is not a knot cluster.

single knot—Occurs by itself, the fibers of the wood being deflected around it.

spike knot—A knot sawed in a lengthwise direction.

loosened grain—Small portion of the wood loosened but not displaced.

machine burn—Darkening or charring due to overheating by machine knives.

machine gouge—Groove due to the machine cutting below the desired line of cut.

mismatch—Includes all defects or blemishes produced in manufacturing. See CHIPPED GRAIN, HIT-AND-MISS, HIT-OR-MISS, LOOSENED GRAIN, MACHINE BURN, MACHINE GOUGE, MISMATCHED LUMBER, RAISED GRAIN, SKIP, TORN GRAIN, and VARIATION IN SAWING.

- mismatched lumber*—Worked lumber that does not fit tightly at all points of contact between adjoining pieces, or in which the surfaces of adjoining pieces are not in the same plane.
- slight mismatch*—Mismatch variation not over 1/64 inch.
- medium mismatch*—Mismatch variation over 1/64 inch, but not over 1/32 inch.
- heavy mismatch*—Mismatch variation over 1/32 inch.
- mixed grain*—Any combination of edge grain and flat grain.
- moisture content*—Weight of the water in wood expressed in percentage of the weight of oven-dry wood.
- peck*—Channeled or pitted areas or pockets as sometimes found in cedar and cypress.
- pecky*—Characterized by PECK.
- pitch*—Accumulation of resin in the wood cells in a more or less irregular patch.
- light pitch*—Lightly evident presence of pitch.
- medium pitch*—Trace of pitch slightly more evident than light pitch.
- heavy pitch*—Very evident presence of pitch showing by its color and consistency.
- massed pitch*—Clearly defined accumulation of solid pitch in a body by itself.
- pitch pocket*—An opening between growth rings which usually contains or has contained resin or bark, or both.
- very small pitch pocket*—Not over 1/8 inch in width and not over 2 inches in length.
- small pitch pocket*—Not over 1/8 inch in width and not over 4 inches in length, or not over 1/4 inch in width and not over 2 inches in length.
- medium pitch pocket*—Not over 1/8 inch in width and not over 8 inches in length; or not over 3/8 inch in width and not over 4 inches in length.
- large pitch pocket*—Width or length exceeds the maximum permissible for medium pitch pocket.
- closed pitch pocket*—Does not show an opening on both sides of the piece.
- open (through) pitch pocket*—Is cut across on both sides of the piece.
- pitch seam*—Shake or check filled with pitch.
- pitch streak*—Well-defined accumulation of pitch in a more or less regular streak.
- small pitch streak*—Not over one-twelfth of the width by one-sixth of the length of the surface on which it occurs.
- medium pitch streak*—Larger than a small pitch streak but not over one-sixth of the width or one-third of the length of the surface on which it occurs.
- large pitch streak*—Over one-sixth of the width or one-third of the length of the surface on which it occurs.
- pith*—Small soft core in the structural center of a log.
- boxed pith*—Where the pith is within the four faces of an end of a piece.
- pith fleck*—Narrow streak resembling pith on the surface of a piece, usually brownish up to several inches in length, resulting from burrowing of larvae in the growing tissue of the tree.
- raised grain*—Roughened condition of the surface of dressed lumber in which the hard summerwood is raised above the softer springwood, but not torn loose from it.
- sapwood*—Outer layers of growth in a tree, exclusive of bark, which contain living elements; usually lighter in color than heartwood.
- saw butted*—Trimmed by a saw on both ends.
- seasoning*—Evaporation or extraction of moisture from green or partially dried wood.
- shake*—A lengthwise grain separation between or through the growth rings, and may be further classified as ring shake or pith shake.
- fine shake*—A barely perceptible opening.
- slight shake*—More than a perceptible opening but not over 1/32 inch wide.
- medium shake*—Over 1/32 inch but not over 1/8 inch wide.
- open shake*—Over 1/8 inch wide.
- cup shake*—Does not completely encircle the pith.
- round shake*—Completely encircles the pith.
- ring shake*—Partially or completely encircles the pith.
- shell shake*—Where both ends of a shake which has been cut across occur on one face or edge of a piece.
- through shake*—Extends from one surface through the piece to the opposite surface or to an adjoining surface.
- pith shake (heart check)*—Extends across the rings of annual growth in one or more directions from the pith toward but not to the surface of a piece. Distinguished from season check by having its greatest width nearest the pith, whereas the greatest width of a season check is ordinarily at the surface of a piece, and when a piece has boxed pith the greatest width of a season check is farthest from the pith.
- side cut*—Where the pith is not enclosed within the four sides of the piece.

- skip*—Area on a piece that failed to surface, classified as follows:
- slight skip*—Area not over six times the width of the piece that the planer knife failed to surface smoothly.
 - shallow (small) skip*—Area not over six times the width of the piece that the planer knife failed to touch by not over 1/32 inch.
 - deep (heavy) skip*—Area not over 12 times the width of the piece that the planer knife failed to touch by not over 1/16 inch.
- slope of grain*—Cross grain or deviation of the fiber from a line parallel to the sides of the piece, and may consist of diagonal grain, spiral grain, or both.
- straight grain*—Slope of grain limited to 1 inch in each 20 inches of length.
- slight cross grain*—Slope of grain not more than 1 inch in a length of 15 inches.
- medium cross grain*—Slope of grain more than 1 inch in a length of 15 inches, but not more than 1 inch in a length of 8 inches.
- steep cross grain*—Slope of grain more than 1 inch in a length of 8 inches.
- smoke-dried*—Seasoned by exposure to the heat and smoke of fire maintained beneath or within the stacks of lumber.
- softwood*—One of the group of trees which have needle-like or scale-like leaves. The term has no specific reference to the softness of the wood.
- sound*—Free of decay.
- spiral grain*—Fibers that extend spirally about instead of vertically along the bole of a tree.
- split*—Lengthwise separation of the wood extending from one surface through the piece to the opposite surface or to an adjoining surface.
- short split*—Length does not exceed either the width of a piece or one-sixth of its length.
 - medium split*—Length exceeds the width of a piece, but does not exceed one-sixth of its length.
 - long split*—Length exceeds one-sixth of the length of a piece.
- springwood*—More or less open and porous tissue marking the inner part of each annual ring, formed early in the period of growth.
- stain*—Discoloration on or in lumber other than its natural color.
- light stain*—Slight difference in color which will not materially impair the appearance of the piece if given a natural finish.
 - medium stain*—Pronounced difference in color which, although it does not obscure the grain of the wood, is customarily objectionable in a natural but not in a painted finish.
 - heavy stain*—Difference in color so pronounced as practically to obscure the grain of the wood.
- summerwood*—Denser fibrous outer portion of each annual ring, usually without conspicuous pores, formed late in the growing period, not necessarily in summer.
- torn grain*—Part of the wood torn out in dressing; classified as follows:
- slight torn grain*—Not over 1/32 inch deep.
 - medium torn grain*—Over 1/32, but not over 1/16 inch deep.
 - heavy torn grain*—Over 1/16, but not over 1/8 inch deep.
 - deep torn grain*—Over 1/8 inch deep.
- unsound*—Decayed.
- variation in sawing*—A deviation from the line of cut. Slight variation is not over 1/16 inch scant in 1 inch lumber, 1/8 inch in 2 inch, 3/16 in 3 inch to 7 inch, and 1/4 inch in 8 inch and up.
- wane*—This is bark or lack of wood from any cause on the edge or corner of a piece.
- slight wane*—Not over 1/4 inch wide on the surface on which it appears for one-sixth of the length and one-fourth of the thickness of the piece.
 - medium wane*—Over 1/4 inch, but not over 1/2 inch wide on the surface on which it appears, for one-sixth of the length and one-fourth of the thickness of the piece.
 - large wane*—Over 1/2 inch wide on the surface on which it appears, or over one-sixth of the length and one-fourth of the thickness of the piece, or both.
- warp*—Any variation from a true or plane surface, includes bow, crook, cup, or any combination thereof.
- bow*—Deviation flatwise from a straight line from end to end of a piece, measured at the point of greatest distance from the straight line.
 - crook*—Deviation edgewise from a straight line from end to end of a piece, measured at the point of greatest distance from the straight line; and classified as slight, small, medium, and large. Based on a piece 4 inches wide and 16 feet long, the distance for each degree of crook shall be: *slight crook*, 1 inch; *small crook*, 1-1/2 inches; *medium crook*, 3 inches;

and *large crook*, over 3 inches. For wider pieces it shall be 1/8 inch less for each additional 2 inches of width. Shorter or longer pieces may have the same curvature.

cup—Deviation flatwise from a straight line across the width of a piece, measured at the point of greatest distance from the line; and classified as slight, medium, and deep. Based on a piece 12 inches wide, the distance from each degree of cup shall be: *slight cup*, 1/4 inch; *medium cup*, 3/8 inch; and *deep cup*, 1/2 inch. Narrower or wider pieces may have the same curvature.

13. LUMBER INDUSTRY ABBREVIATIONS

These abbreviations are commonly used for softwood lumber, although all of them are not necessarily applicable to all species. Additional abbreviations which are applicable to a particular region or species may be included in approved grading rules.

Abbreviations are commonly used in the forms indicated, but variations such as the use of upper- and lower-case type, and the use or omission of periods and other forms of punctuation are optional.

AD	Air-dried	E&CV2S	Edge and center Vee two sides
ADF	After deducting freight	EE	Eased edges
ALS	American Lumber Standards	EG	Edge (vertical) grain
AV or AVG	Average	EM	End matched
Bd	Board	EV1S	Edge Vee one side
Bd. ft.	Board foot or feet	EV2S	Edge Vee two sides
Bdl	Bundle	Fac	Factory
Bev	Beveled	FAS	Free alongside (named vessel)
B/L	Bill of lading	FBM	Foot or feet board measure
BM	Board Measure	FG	Flat (slash) grain
Btr	Better	Flg	Flooring
B&B or B& Btr	B and better	FOB	Free on board (named point)
B&S	Beams and stringers	FOHC	Free of heart center or centers
CB1S	Center bead one side	FOK	Free of knots
CB2S	Center bead two sides	Fr	Freight
CF	Cost and freight	Ft	Foot or feet
CG2E	Center groove two edges	GM	Grade marked
CIF	Cost, insurance, and freight	G/R or G/Rfg	Grooved roofing
CIFE	Cost, insurance, freight, and exchange	HB	Hollow back
Clg	Ceiling	H&M	Hit-and-miss
Clr	Clear	H or M	Hit-or-miss
CM	Center matched	Hrt	Heart
Com	Common	Hrt CC	Heart cubical content
CS	Caulking seam	Hrt FA	Heart f i c i l area
Csg	Casing	Hrt G	Heart girth
Cu. Ft.	Cubic foot or feet	IN.	Inch or inches
CV1S	Center Vee one side	J&P	Joists and planks
CV2S	Center Vee two sides	KD	Kiln-dried
D&H	Dressed and headed	Lbr	Lumber
D&M	Dressed and matched	LCL	Less than carload
DB. Clg.	Double-headed ceiling (E&CB1S)	LFT or Lin. Ft	Linear foot or feet
DB. Part	Double-headed partition (E&CB2S)	Lgr	Longer
DET	Double end trimmed	Lgth	Length
Dim	Dimension	Lin	Linear
Dkg	Decking	Lng	Lining
D/S or D/Sdg	Drop siding	M	Thousand
EB1S	Edge bead one side	MBM	Thousand (feet) board measure
EB2S	Edge bead two sides	MC	Moisture content
E&CB1S	Edge and center bead one side	Merch	Merchantable
E&CB2S	Edge and center bead two sides	Mldg	Moulding
E&CV1S	Edge and center Vee one side	No.	Number
		N1E	Nosed one edge
		N2E	Nosed two edges

Og	Ogee	SM. or Std. M	Standard matched
Ord	Order	Specs	Specifications
Par	Paragraph	Std	Standard
Part	Partition	Stpg	Stepping
Pat	Pattern	Str. or Struc	Structural
Pc	Piece	S1E	Surfaced one edge
Pcs	Pieces	S1S	Surfaced one side
PE	Plain end	S1S1E	Surfaced one side and
PO	Purchase order		one edge
P&T	Post and timbers	S1S2E	Surfaced one side and
Reg	Regular		two edges
Res	Resawed or resawn	S2E	Surfaced two edges
Rfg	Roofing	S2S	Surfaced two sides
Rgh	Rough	S2S1E	Surfaced two sides and
R/L	Random lengths		one edge
R/W	Random widths	S2S&CM	Surfaced two sides and
R/W&L	Random widths and		center matched
	lengths	S2S&SM	Surfaced two sides and
Sdg	Siding		standard matched
Sel	Select	S4S	Surfaced four sides
S&E	Side and Edge (surfaced	S4S&CS	Surfaced four sides and
	on)		caulking seam
SE Sdg	Square edge siding	T&G	Tongued and grooved
SE & S	Square edge and sound	VG	Vertical grain
S/L or S/LAP	Shiplap	Wdr.	Wider
SL&C	Shipper's load and count	Wt	Weight

EFFECTIVE DATE

The effective date of a voluntary Product Standard is the date upon which reference to the Standard may be made by producers, distributors, users and consumers, and other interested parties. Products shall not be labeled or otherwise described as conforming to a Product Standard until such time as all applicable requirements established in the Standard are met. The effective date of this Standard is September 1, 1970.

HISTORY OF PROJECT

The notable success of the lumber industry's effort to simplify sizes, nomenclature, and grades of softwood lumber, and to obtain uniformity of practice is recorded in the successive editions of this recommendation, which first appeared in 1924. These efforts received their first important impetus in 1919 when the industry convened the American Lumber Congress and adopted a program outlining many of the objectives since realized.

Early in 1922 the Secretary of Commerce, responding to the industry's request, offered the cooperation of the Department in any activities directed toward simplification, standardization, and development of adequate quality guaranties to the lumber-using public. Accordingly, a general conference was held under the auspices of the Division of Simplified Practice, National Bureau of Standards, in May 1922 at which time representatives of all affected interests adopted resolutions to develop standards in sizes and grades of lumber and methods of interpreting, enforcing, and applying the standards.

A second general conference in July 1922 further developed the plan and formed the Central Committee on Lumber Standards to act as an executive steering committee and to draft definite recommendations. The committee organized a larger group—the Consulting Committee on Lumber Standards—and the two worked together in preparing recommendations, which were considered at a third general conference held on December 12 and 13, 1923.

On April 22, 1924, a fourth general conference met to consider certain supplementary recommendations prepared by the central committee at the direction of the December 1923 conference, and approved Simplified Practice Recommendation R 16 as it first appeared in 1924.

Since that time, the recommendation has been revised several times to keep it abreast of changing conditions. The changes accomplished by each of the five revisions from 1924 through 1953 are summarized in editions of the recommendation issued, respectively, in 1925, 1926, 1929, 1939, and 1953.

Current Revision

Attempts were made by the American Lumber Standards Committee (successor to the Central Committee on Lumber Standards) in 1957, 1961, 1962, and 1963 to develop a revision of the lumber standard which related lumber sizes to moisture content. A revision, recommended by the committee, was circulated by the Department of Commerce to the industry in April of 1964 for a determination of its acceptability. This revision failed to achieve a consensus.

In the fall of 1964 a subcommittee of the House Select Committee on Small Business conducted a hearing on the "impact upon small business of U.S. softwood lumber standards." The subcommittee report recommended that the American Lumber Standards Committee be reconstituted to provide broader representation and that the revision of the existing standard, SPR 16-53, be reconsidered by the reconstituted committee.

The Department of Commerce, in April of 1965, reconstituted the American Lumber Standards Committee and charged it with reviewing the existing lumber standard and developing a revision which would serve the interest of the public and the industry.

Revisions relating lumber sizes to moisture content, recommended by the ALSA, were circulated by the Department of Commerce in November of 1966 and June of 1969 to the industry. Distribution was made for the purpose of determining the acceptability of the revision to lists compiled by the Bureau of the Census which were deemed to be statistically representative of producers, distributors, users and manufacturing consumers of softwood lumber. The 1966 revision was found, by the Department, to be unacceptable in that it was not supported by a sufficient proportion of the several segments of the lumber industry to be considered as achieving "general concurrence" as defined in the Department's published procedures.

The revision, distributed in June of 1969, was, however, supported by general concurrence in that the survey conducted by the Census Bureau indicated that not less than 87 percent of (1) producers, (2) distributors, and (3) users and manufacturing consumers of softwood lumber accepted the revision of SPR 16-53. A notice was published in the Federal Register on December 5, 1969, that the revision had met all procedural requirements for the development of a voluntary Product Standard. The revision was published on that date as Product Standard PS 20-70, "American Softwood Lumber Standard."

STANDING COMMITTEE

The Standing Committee, known as the *American Lumber Standards Committee*, is composed of representatives of producers, distributors, users, and consumers of softwood lumber. The members of the committee and their alternates are appointed by the Secretary of Commerce in accordance with Section 8 of this standard. (The names of the members of the committee are available from the Office of Engineering Standards Services, National Bureau of Standards, Washington, D.C. 20234.)

The primary functions of the committee are to review and consider proposals to revise or amend the standard in light of changing circumstances, to make appropriate recommendations to the Department, and to assist the Department in interpreting the standard. Comments concerning the standard and suggestions for its revision may be addressed to any member of the committee or to the Office of Engineering Standards Services, National Bureau of Standards, U.S. Department of Commerce (Washington, D.C. 20234), which acts as secretary of the committee.

THE NATIONAL ECONOMIC GOAL

Sustained maximum growth in a free market economy, without inflation, under conditions of full employment and equal opportunity

THE DEPARTMENT OF COMMERCE

The historic mission of the Department is "to foster, promote and develop the foreign and domestic commerce" of the United States. This has evolved, as a result of legislative and administrative additions, to encompass broadly the responsibility to foster, serve and promote the nation's economic development and technological advancement. The Department seeks to fulfill this mission through these activities:



MISSION AND FUNCTIONS OF THE DEPARTMENT OF COMMERCE

"to foster, serve and promote the nation's economic development and technological advancement"

Participating with other government agencies in the creation of national policy, through the President's Cabinet and its subdivisions.

- Cabinet Committee on Economic Policy
- Urban Affairs Council
- Environmental Quality Council

Promoting progressive business policies and growth.

- Business and Defense Services Administration
- Office of Field Services

Assisting states, communities and individuals toward economic progress.

- Economic Development Administration
- Regional Planning Commissions
- Office of Minority Business Enterprise

Strengthening the international economic position of the United States.

- Bureau of International Commerce
- Office of Foreign Commercial Services
- Office of Foreign Direct Investments
- United States Travel Service
- Maritime Administration

Assuring effective use and growth of the nation's scientific and technical resources.

- Environmental Science Services Administration
- Patent Office
- National Bureau of Standards
- Office of Telecommunications
- Office of State Technical Services

Acquiring, analyzing and disseminating information concerning the nation and the economy to help achieve increased social and economic benefit.

- Bureau of the Census
- Office of Business Economics

NOTE: This schematic is neither an organization chart nor a program outline for budget purposes. It is a general statement of the Department's mission in relation to the national goal of economic development.

NBS TECHNICAL PUBLICATIONS

PERIODICALS

JOURNAL OF RESEARCH reports National Bureau of Standards research and development in physics, mathematics, chemistry, and engineering. Comprehensive scientific papers give complete details of the work, including laboratory data, experimental procedures, and theoretical and mathematical analyses. Illustrated with photographs, drawings, and charts.

Published in three sections, available separately:

• Physics and Chemistry

Papers of interest primarily to scientists working in these fields. This section covers a broad range of physical and chemical research, with major emphasis on standards of physical measurement, fundamental constants, and properties of matter. Issued six times a year. Annual subscription: Domestic, \$9.50; foreign, \$11.75*.

• Mathematical Sciences

Studies and compilations designed mainly for the mathematician and theoretical physicist. Topics in mathematical statistics, theory of experiment design, numerical analysis, theoretical physics and chemistry, logical design and programming of computers and computer systems. Short numerical tables. Issued quarterly. Annual subscription: Domestic, \$5.00; foreign, \$6.25*.

• Engineering and Instrumentation

Reporting results of interest chiefly to the engineer and the applied scientist. This section includes many of the new developments in instrumentation resulting from the Bureau's work in physical measurement, data processing and development of test methods. It will also cover some of the work in acoustics, applied mechanics, building research, and cryogenic engineering. Issued quarterly. Annual subscription: Domestic, \$5.00; foreign, \$6.25*.

TECHNICAL NEWS BULLETIN

The best single source of information concerning the Bureau's research, developmental, cooperative, and publication activities, this monthly publication is designed for the industry-oriented individual whose daily work involves intimate contact with science and technology—for *engineers, chemists, physicists, research managers, product-development managers, and company executives*. Annual subscription: Domestic, \$3.00; foreign, \$4.00*.

* Difference in price is due to extra cost of foreign mailing.

NONPERIODICALS

Applied Mathematics Series. Mathematical tables, manuals, and studies.

Building Science Series. Research results, test methods, and performance criteria of building materials, components, systems, and structures.

Handbooks. Recommended codes of engineering and industrial practice (including safety codes) developed in cooperation with interested industries, professional organizations, and regulatory bodies.

Special Publications. Proceedings of NBS conferences, bibliographies, annual reports, wall charts, pamphlets, etc.

Monographs. Major contributions to the technical literature on various subjects related to the Bureau's scientific and technical activities.

National Standard Reference Data Series. NSRDS provides quantitative data on the physical and chemical properties of materials, compiled from the world's literature and critically evaluated.

Product Standards. Provide requirements for sizes, types, quality, and methods for testing various industrial products. These standards are developed cooperatively with interested Government and industry groups and provide the basis for common understanding of product characteristics for both buyers and sellers. Their use is voluntary.

Technical Notes. This series consists of communications and reports (covering both other agency and NBS-sponsored work) of limited or transitory interest.

Federal Information Processing Standards Publications. This series is the official publication within the Federal Government for information on standards adopted and promulgated under the Public Law 89-306, and Bureau of the Budget Circular A-86 entitled, Standardization of Data Elements and Codes in Data Systems.

CLEARINGHOUSE

The Clearinghouse for Federal Scientific and Technical Information, operated by NBS, supplies unclassified information related to Government-generated science and technology in defense, space, atomic energy, and other national programs. For further information on Clearinghouse services write:

Clearinghouse
U.S. Department of Commerce
Springfield, Virginia 22151

Order NBS publications from:
Superintendent of Documents
Government Printing Office
Washington, D.C. 20402

U.S. DEPARTMENT OF COMMERCE • Maurice H. Stans, Secretary

NATIONAL BUREAU OF STANDARDS • Lewis M. Branscomb, Director

The National Bureau of Standards¹ was established by an act of Congress March 3, 1901. Today, in addition to serving as the Nation's central measurement laboratory, the Bureau is a principal focal point in the Federal Government for assuring maximum application of the physical and engineering sciences to the advancement of technology in industry and commerce. To this end the Bureau conducts research and provides central national services in four broad program areas. These are: (1) basic measurements and standards, (2) materials measurements and standards, (3) technological measurements and standards, and (4) transfer of technology. The Bureau comprises the Institute for Basic Standards, the Institute for Materials Research, the Institute for Applied Technology, the Center for Radiation Research, the Center for Computer Sciences and Technology, and the Office for Information Programs.

THE INSTITUTE FOR BASIC STANDARDS provides the central basis within the United States of a complete and consistent system of physical measurement; coordinates that system with measurement systems of other nations; and furnishes essential services leading to accurate and uniform physical measurements throughout the Nation's scientific community, industry, and commerce. The Institute consists of an Office of Measurement Services and the following technical divisions:

Applied Mathematics—Electricity—Metrology—Mechanics—Heat—Atomic and Molecular Physics—Radio Physics²—Radio Engineering²—Time and Frequency²—Astrophysics²—Cryogenics.²

THE INSTITUTE FOR MATERIALS RESEARCH conducts materials research leading to improved methods of measurement standards, and data on the properties of well-characterized materials needed by industry, commerce, educational institutions, and Government; develops, produces, and distributes standard reference materials; relates the physical and chemical properties of materials to their behavior and their interaction with their environments; and provides advisory and research services to other Government agencies. The Institute consists of an Office of Standard Reference Materials and the following divisions:

Analytical Chemistry—Polymers—Metallurgy—Inorganic Materials—Physical Chemistry.

THE INSTITUTE FOR APPLIED TECHNOLOGY provides technical services to promote the use of available technology and to facilitate technological innovation in industry and Government; cooperates with public and private organizations in the development of technological standards, and test methodologies; and provides advisory and research services for Federal, state, and local government agencies. The Institute consists of the following technical divisions and offices:

Engineering Standards—Weights and Measures—Invention and Innovation—Vehicle Systems Research—Product Evaluation—Building Research—Instrument Shops—Measurement Engineering—Electronic Technology—Technical Analysis.

THE CENTER FOR RADIATION RESEARCH engages in research, measurement, and application of radiation to the solution of Bureau mission problems and the problems of other agencies and institutions. The Center consists of the following divisions:

Reactor Radiation—Linac Radiation—Nuclear Radiation—Applied Radiation.

THE CENTER FOR COMPUTER SCIENCES AND TECHNOLOGY conducts research and provides technical services designed to aid Government agencies in the selection, acquisition, and effective use of automatic data processing equipment; and serves as the principal focus for the development of Federal standards for automatic data processing equipment, techniques, and computer languages. The Center consists of the following offices and divisions:

Information Processing Standards—Computer Information—Computer Services—Systems Development—Information Processing Technology

THE OFFICE FOR INFORMATION PROGRAMS promotes optimum dissemination and accessibility of scientific information generated within NBS and other agencies of the Federal Government; promotes the development of the National Standard Reference Data System and a system of information analysis centers dealing with the broader aspects of the National Measurement System, and provides appropriate services to ensure that the NBS staff has optimum accessibility to the scientific information of the world. The Office consists of the following organizational units:

Office of Standard Reference Data—Clearinghouse for Federal Scientific and Technical Information³—Office of Technical Information and Publications—Library—Office of Public Information—Office of International Relations.

¹ Headquarters and Laboratories at Gaithersburg, Maryland, unless otherwise noted; mailing address Washington, D. C. 20234.

² Located at Boulder, Colorado 80302.

³ Located at 5285 Port Royal Road, Springfield, Virginia 22151.