



STANDARD GRADING RULES for CANADIAN LUMBER

Effective December 1, 2022

(Supersedes all previous Editions, Revisions and Supplements)

Approved by:

Canadian Lumber Standards Accreditation Board
and

American Lumber Standard Committee, Board of Review

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PREFACE

The National Lumber Grades Authority (NLGA) was incorporated under Federal Charter on January 12, 1971, as a non-profit organization responsible for writing and maintaining Canadian lumber grading rules.

The NLGA Standard Grading Rules for Canadian Lumber (NLGA Grading Rules) are approved and enforced by the Canadian Lumber Standards Accreditation Board (CLSAB) for use in Canada and by the American Lumber Standard Committee, Incorporated (ALSC), Board of Review for lumber used in the U.S. This approval enables acceptance under Canadian and U.S. building codes.

The National Grading Rule for Dimension Lumber (NGR) applies to all species of softwood dimension lumber, nominal 2" to 4" thick, which are covered by grading rules developed and approved under Voluntary Product Standard PS 20 – American Softwood Lumber Standard (PS 20). The NLGA Grading Rules conform to the provisions of the NGR (see Para. 120) for the species listed in its rules (see Para. 7). The NGR establishes standard dimension lumber grades and grade names, assuring users of uniform design and performance for all commercial species of dimension lumber.

The membership of NLGA consists of the lumber manufacturers' associations and independent grading agencies operating in Canada that have been accredited by CLSAB and the ALSC Board of Review to certify grade-stamped lumber following the NLGA Grading Rules. A list of NLGA members and facsimiles of their grade stamps are given in Section 13.

Engineering design values are developed by NLGA for the structurally rated lumber products of Canadian-grown species (see Para. 48).

The NLGA Grading Rules express values in inch-pound (imperial) units. The equivalent SI (metric) values, where stated, are provided for information only. In case of a dispute, the values stated in imperial units shall take precedence.

This English version of the NLGA Standard Grading Rules for Canadian Lumber takes precedence over all other translated versions. Other language versions are translated for convenience only and in the case of a dispute and/or discrepancy, the English version shall take precedence. Readers are requested to forward any noted errors or omissions to the attention of NLGA for correction in future editions.

Supplements to this version of the NLGA Standard Grading Rules for Canadian Lumber, when issued, will be posted on the NLGA website (www.nlga.org).

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GENERAL PROVISIONS

1. Scope

The purpose of grading rules is to maintain a standard or measure of value between mills manufacturing the same or similar woods so that uniform qualities will be the result.

2. Interpretations

The interpretations of these rules are vested in the National Lumber Grades Authority (NLGA). Written interpretations of these rules have been established by NLGA in order to promote the uniform application of these rules and are included at the back of this grade rule book for information.

3. Lumber

Lumber is a manufactured product derived from a log in a sawmill or planing mill, which when rough shall have been sawed, edged, and trimmed at least to the extent of showing saw marks or other marks made in the conversion of logs to lumber on the four longitudinal surfaces of each piece for its overall length, and which has not been further manufactured other than by cross-cutting, ripping, resawing, joining crosswise and/or endwise in a flat plane, or surfacing with or without end matching and working.

4. Canadian and American Standard Lumber

Lumber manufactured and measured according to the provisions of these rules may be regarded as "Canadian Standard Lumber" and/or "American Standard Lumber" meeting the provisions of CSA 0141 and/or PS 20, respectively, and may be so designated (commonly referred to as CLS and/or ALS Lumber).

5. Original Grading

The grade of lumber, as determined by the grader, applies to the size, form, condition, or degree of seasoning at time of original grading.

6. Remanufacturing

Except in the case of such items as factory lumber, material supplied in accordance with these rules is not graded with the intent that it be suitable for remanufacturing to smaller sizes.

7. Species Covered

The provisions of the NLGA Grading Rules apply to the following softwood and hardwood species grown and manufactured in Canada:

Softwood Lumber Species

Commercial Name	Botanical Name	Grade Stamp Identification
Eastern White Cedar or Northern White Cedar	<i>Thuja occidentalis</i>	East White Cedar (N) or EW Cedar (N)
Western Red Cedar or Red Cedar	<i>Thuja plicata</i>	WR Cedar (N)
Yellow Cedar or Pacific Coast Yellow Cedar or Yellow Cypress	<i>Cupressus or Chamaecyparis nootkatensis</i>	Y Cedar (N)
Alpine Fir or Subalpine Fir	<i>Abies lasiocarpa</i>	Alpine Fir (N) or AP Fir (N)
Amabilis Fir or Pacific Silver Fir	<i>Abies amabilis</i>	AM Fir (N)
Balsam Fir	<i>Abies balsamea</i>	B Fir (N)
Grand Fir	<i>Abies grandis</i>	G Fir (N)
Eastern Hemlock	<i>Tsuga canadensis</i>	East Hemlock (N) or E Hem (N)
Western Hemlock	<i>Tsuga heterophylla</i>	W Hem (N)
Tamarack or Eastern Larch	<i>Larix laricina</i>	Tam (N)
Western Larch	<i>Larix occidentalis</i>	Larch (N)
Douglas-Fir	<i>Pseudotsuga menziesii</i>	D Fir (N)
Eastern White Pine	<i>Pinus strobus</i>	East White Pine (N) or EW Pine (N)
Jack Pine	<i>Pinus banksiana</i>	J Pine (N)
Lodgepole Pine	<i>Pinus contorta</i>	L Pine (N)
Ponderosa Pine or Yellow Pine	<i>Pinus ponderosa</i>	P Pine
Red Pine	<i>Pinus resinosa</i>	R Pine
Western White Pine or Idaho Pine	<i>Pinus monticola</i>	WW Pine
Whitebark Pine	<i>Pinus albicaulis</i>	WB Pine
Black Spruce	<i>Picea mariana</i>	B Spr (N)
Sitka Spruce or Coast Sitka Spruce	<i>Picea sitchensis</i>	C Sitka
Engelmann Spruce	<i>Picea engelmannii</i>	E Spr (N)
Norway Spruce	<i>Picea abies</i>	N Spr (N)
Red Spruce	<i>Picea rubens</i>	R Spr (N)
White Spruce	<i>Picea glauca</i>	W Spr (N)
Western White Spruce		WW Spr (N)

Hardwood Lumber Species

Commercial Name	Botanical Name	Grade Stamp Identification
Aspen or Aspen Poplar or Trembling Aspen	<i>Populus tremuloides</i>	Aspen (N)
Large-toothed Aspen	<i>Populus grandidentata</i>	
Black Cottonwood	<i>Populus trichocarpa</i>	B Cot
Balsam Poplar	<i>Populus balsamifera</i>	B Pop
Red Alder **	<i>Alnus rubra</i>	Alder (N)
White Birch **	<i>Betula papyrifera</i>	W Birch

****** Red Alder and White Birch do not have approved design values for structural lumber use in the U.S.

For shipments to the U.S., these species shall not be intermingled with structural lumber of any species that have assigned design values, nor shall they be grade-stamped to any grade within the NLGA Grading Rules that have assigned U.S. design values.

7a. Species Combinations

A number of Canadian timber species that are grown together and are jointly harvested, manufactured, and marketed, have similar performance properties which make them interchangeable in use. For the purposes of identification in the marketplace (because some species cannot be visually separated in lumber form) and standardization of assigned lumber design values, certain species are given a common grade stamp designation.

The various species combinations which may be grade-stamped with a common designation are listed in the following table:

Species in Combination	Commercial Designation	Grade Stamp Identification
Douglas-Fir Western Larch	Douglas Fir-Larch (North)	D Fir-L (N)
Western Hemlock Amabilis Fir	Hem-Fir (North)	Hem-Fir (N)
White Spruce Engelmann Spruce Black Spruce Red Spruce Lodgepole Pine Jack Pine Alpine Fir Balsam Fir	S-P-F or Spruce-Pine-Fir	S-P-F or Spruce-Pine-Fir
Any Canadian lumber species covered by the NLGA Grading Rules (see Para. 7) except for Red Alder & White Birch in the U.S.	Northern Species	North Species or N. Species
Eastern Hemlock Tamarack	Eastern Hemlock-Tamarack (North)	Hem-Tam (N)
Yellow Cedar Western Red Cedar	Western Cedars (North)	W Cedar (N)
Aspen Poplar Largetooth Aspen Balsam Poplar	Northern Aspen	N. Aspen
Douglas-Fir Western Larch Western Hemlock Amabilis Fir Coast Sitka Spruce	Coast Species	Coast Species

Since the composition of species in timber stands varies and there is no practical way to determine the species percentage that might be included in a particular shipment, lumber marked with a combination grade stamp may be all of any one species or some mixture of any of the species in the combination.

7b. Structural Design Values

- a) **For use in Canada:** Structural design values for structurally-graded products are published in CSA O86 - Engineering design in wood. Even though the individual species of a combination may be separately identified by the grade stamp, only four Canadian species combinations: S-P-F, D Fir-L (N), Hem-Fir (N) and North Species have assigned design values in CSA O86. These combinations were sampled and tested to establish design values as coherent groups.

Where individual species of structurally graded products, other than those species named in S-P-F, D Fir-L (N) or Hem-Fir (N) combinations, are grade-stamped alone or in combination, the design values of North Species shall apply.

- b) For use in the U.S.:** Structural design values for structurally-graded products are listed in the NLGA Grading Rules, Paras. 900 to 910 and are also published in the American Wood Council (AWC) "National Design Specification (NDS) Supplement" for the NLGA species combinations and some individual species as noted by product category below:

Dimension Lumber (Paras. 121, 122 and 124)

U.S. design values for dimension lumber are listed in NLGA Paras. 905i, 905j & 905l and Table 4A of the AWC NDS Supplement. In addition to the four main Canadian species combinations (S-P-F, D Fir-L (N), Hem-Fir (N), and North Species), the individual species of Coast Sitka Spruce, Norway Spruce, and Yellow Cedar have separate, species specific, assigned design values.

Where individual species of dimension lumber, other than those species named in S-P-F, D Fir-L (N) or Hem-Fir (N) combinations or individual species of Coast Sitka Spruce, Norway Spruce, and Yellow Cedar, are grade-stamped alone or in combination, the design values of North Species shall apply.

Timbers (Paras. 130 and 131)

U.S. design values for timbers are listed in Paras. 905n & 905o and Table 4D of the AWC NDS Supplement. In addition to the three main Canadian species combinations of S-P-F, D Fir-L (N) and Hem-Fir (N), the following species or combinations also have separate assigned design values for timbers; Coast Sitka Spruce, Hem-Tam (N), Ponderosa Pine, Red Pine, Western Cedars (N), Western Hemlock (N) and Western White Pine.

Note: *For use in the U.S., there are no assigned timber design values for Norway Spruce (N), EW Pine (N), Black Cottonwood, Red Alder, and White Birch species or the Northern Species, Coast Species and Northern Aspen species combinations.*

Decking (Para. 127)

U.S. design values for decking are tabled under Para. 905m of the NLGA Grading Rules and Table 4E of the AWC NDS Supplement.

Mills may separate individual species of structurally graded products for manufacturing or marketing purposes, although there is no advantage in such separation for design values.

Where shipments include species from two or more combination groups, which are not separated, the lowest design values of these species combinations shall apply.

8. Lumber Grade

A lumber grade is a minimum standard describing the extent and limitations of the characteristics permitted in a piece of lumber having regard to the end use for which the grade is intended.

Since no two pieces of lumber are identical, complete uniformity in grades or shipments is impossible. A shipment of a specific grade shall not be made up only of pieces containing characteristics of the maximum number or size permitted. It is recognized that grades or specifications may overlap and that producers of lumber may utilize other grading rules or specifications and may sort their lumber accordingly and therefore, nothing in these rules (unless otherwise specified) precludes or prohibits the selection of pieces of lumber meeting the requirements of more than one grade or specification for use in any of the grades or specifications for which it qualifies.

9. Freedom of Contract

The right to freedom of contract between buyer and seller is recognized and any of the provisions of these rules may be set aside by special agreement. However, if the lumber is grade stamped, it must still meet or exceed the minimum provisions of the grade as defined in the rules. “**Out of Contract**” situations are identified in Para. 410.3.

10. Inspection

The inspection of lumber is the visual analysis of lumber.

11. Grading

The grading of lumber is the application of a grading rule to lumber for the purpose of determining the grade of a piece of lumber based on inspection and/or on non-destructive mechanical methods.

12. Grade Checking

The grade checking of lumber is the inspection of lumber for the supervision control made by an Accredited Agency on its graders' performance.

13. Reinspection

The reinspection of lumber is the verification made upon a claim on a shipment or an item of a shipment (see Para. 400).

14. Faces Graded

Unless otherwise specified, the following standard procedures will apply:

Dimension lumber, timbers and similar items are graded for strength; characteristics on all four sides and both ends are considered in relation to their effect on the strength of the piece. The principal factors which govern the strength of a piece of lumber are the slope of grain, size of knots and their location. It is primarily on the basis of these factors that the stress value of any grade is assigned. Other characteristics of wood which have a lesser effect on strength, such as shake, splits, etc., are then restricted or not permitted so that the assigned values for the grades are assured. Some characteristics such as pitch streaks, pitch pockets and wane may be restricted merely for the sake of appearance. Knots not firmly fixed, unsound knots and knot holes, which have no more effect on strength than sound knots, are restricted in most grades in order to improve appearance.

Boards and other yard lumber, when rough or surfaced, are graded from the face or best side unless otherwise specified. The reverse face may have characteristics approximately one grade lower than the face.

Factory lumber is graded from the poorer face.

15. Grade of Piece

The grade of each piece is determined by the application of the rule to the sum of all its characteristics.

Each grade description lists the major characteristics which may be acceptable and usually limits them as to location, type, area, size, or number.

16. Equivalent Characteristics

When characteristics are not described, they are appraised in relation to the characteristics permitted or limitations prescribed for the grade under consideration and are allowed if judged by the grader or inspector to be equivalent in effect to those described.

17. Maximum Combination of Characteristics

All or nearly all of the permissible characteristics of the grade are rarely present in maximum size or number in any one piece. Any piece with an unusual combination of characteristics which seriously affects normal serviceability is excluded from the grade under consideration.

18. Variation in Grading

Each piece of lumber graded under the NLGA Grading Rules shall meet the grade specifications for the product and grade under these rules. It is recognized, however, that the grading of lumber cannot be considered an exact science because it is based on a visual inspection of each piece and the judgement of the grader. The provisions of the NLGA Grading Rules and the NGR are sufficiently explicit to establish a maximum of five (5) percent difference of opinion as a reasonable variation between graders.

19. Percentage of Volume

Except as otherwise specified, all percentages referred to herein are applicable to volume (FBM).

20. Basic Size

The number and/or size of the characteristics permitted in a grade varies as the area of the piece increases or decreases in relation to basic size specified.

21. Basis for Rough Lumber

Characteristics permitted and limitations for rough lumber are the same as those for dressed lumber of like kind and grade. In addition, such characteristics which are likely to disappear in dressing rough lumber to standard sizes are allowed, however, when rough lumber is graded for shipment in the rough no such allowance is permitted unless otherwise specified.

22. Manufacture Classification

- a) **Rough Lumber** - Lumber that has not been dressed (surfaced), but which has been sawed, edged, and trimmed at least to the extent of showing saw marks or equivalent on the four longitudinal surfaces of each piece for its overall length.
- b) **Dressed (Surfaced) Lumber** - Lumber that has been dressed by a planing machine (for purposes 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 or S4S.
- c) **Worked Lumber** - Lumber, which in addition to being dressed has been matched, shiplapped or patterned.
 - i) **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 & groove joint by fitting two pieces together. When end matched the tongue and groove are worked on the ends also.

- ii) **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.
- iii) **Patterned Lumber** - Lumber that is shaped to a pattern or to a moulded form, in addition to being dressed, matched or shiplapped, or any combination of these workings.
- d) **Product of Lumber** - The term "Product of" denotes that a facility has ripped, resawn, or patterned the material from standard grades of lumber and,
 - i) design values do not apply when using a "Product of" designation; and
 - ii) lumber with "Product of" designation shall not be intermingled with lumber having design values.

23. Basis of Measurement

Board measure is the standard basis of measuring lumber under these rules. The board measurement of lumber, rough or dressed, is based on the corresponding nominal dimension.

24. Unit of Measurement

Board foot is the unit of measurement of lumber. A board foot is the quantity of lumber contained in or derived by drying, dressing, or working from a piece of rough green lumber, nominal 1 inch thick by nominal 1 foot wide by 1 foot long, or its equivalent volume in thicker, wider, narrower, or longer lumber.

25. Board Measure

The number of board feet in a piece of lumber is obtained by multiplying the nominal thickness in inches or fraction of an inch by nominal width in feet by the length in feet.

26. Thin Lumber

For lumber with a nominal thickness less than one (1) inch, the number of board feet equals the product of the nominal width in feet by the length in feet.

27. Stick Tally

In lumber specified to be measured with a board rule (stick) 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.

28. Standard Sizes Tally

Standard lumber should be tallied board measure. The invoices for lumber of standard sizes shall show the number of pieces of each nominal size and length as well as the net thickness and width of such lumber.

29. Non-Standard Sizes Tally

Lumber finished to non-standard 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.

30. Standard (Dressed) Sizes

Standard thicknesses and widths are shown in Para. 820 of these rules. The dressed thickness and widths, as shown, are considered standard for corresponding nominal sizes as shown. Lumber of any size, rough or dressed, is described by its nominal dimensions in customary use and in these rules.

31. Nominal and Actual Sizes

The use of "nominal" sizes in the language of these rules is for convenience purposes only and follows the practice of the industry. No inference should be drawn that the "nominal" sizes are actual sizes.

32. Rough Sizes

The minimum rough thickness of dry and green lumber 1 or more inches in nominal thickness shall be not less than $\frac{1}{8}$ " (3 mm) thicker than the corresponding minimum standard dressed thickness, except that up to 20 percent of a shipment shall be not less than $\frac{3}{32}$ " (2 mm) thicker than the corresponding standard dressed thickness. The minimum rough widths shall not be less than $\frac{1}{8}$ " (3 mm) wider than the corresponding standard dressed width.

33. Resawn or Ripped Surface Lumber

When ripping or resawing surfaced lumber a maximum tolerance of $\frac{1}{32}$ " over or under in thickness or $\frac{1}{16}$ " over or under in width will be permitted in the occasional piece.

34. Average Width

There are two methods of calculating average width:

- a) Standard Average Method - The average nominal width in inches of a shipment of lumber is computed by dividing the total board feet by the total length in feet and multiplying the result by 12; but if thicker than one (1) inch, the total board foot tally is first divided by the nominal thickness as expressed in inches.

- b) Board Foot Method - The average nominal width of a shipment is computed by multiplying the board feet of each width by the width and dividing the total number of board feet times the width, by the total board feet.

35. Standard Lengths

Standard lengths are multiples of 1', but some items are customarily shipped in multiples of 2'. In all items, longer lengths than those listed may be included at shipper's option.

36. Trimmed Length

Unless otherwise stated in the contract of purchase, lumber under these rules shall be trimmed for the removal of sniped, splintered, or uneven log lengths. It must be trimmed full to length specified and,

- a) if nominal 2" thick or less - not more than 3" over length. For pieces over nominal 12" in width or over 20' in length, the overlength tolerance is 12".
- b) nominal 3" and 4" in thickness - not more than 4" over length.
- c) nominal 5" and thicker - not more than 6" over length.

37. Average Length

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.

38. Grade Stamped Lumber

Standard lumber (rough or dressed) in the species covered by these rules may be available grade stamped under the direction of Agencies accredited by the CLSAB, or for the U.S. market, by the ALSC Board of Review.

39. Grade Stamps

A certified grade stamp is the buyer's assurance that the lumber involved has been inspected by a qualified grader who is regularly supervised for grading accuracy in accordance with the requirements of CSA O141 and/or PS 20, and that the lumber was graded under a grading rule or standard approved by the CLSAB and/or the ALSC Board of Review.

Each grade stamp shall display the following:

- a) registered symbol of the accredited Agency,
- b) mill and/or grader identity (usually by number),
- c) grading rule used where applicable (Para. 40),
- d) lumber grade,

- e) species or species combination, and
- f) seasoning state (Para. 44) at time of surfacing for boards and dimension lumber less than nominal 5 inches in thickness.

Further designations such as non-standard sizes, moisture content, NLGA Grading Rules paragraph number, and heat-treatment (HT) shall be added to the grade stamp where specified in these rules.

40. Grading Rule

When lumber is graded in accordance with the NLGA Grading Rules, grade stamps of an accredited Grading Agency shall contain the abbreviation **"NLGA"**.

If species not recognized by the NLGA Grading Rules (see Para. 7) are designated on the grade stamp, either singly or in combination with NLGA species, the **"NLGA"** designation shall not be included on the stamp.

41. Grade

The lumber grade is identified by the appropriate grade name or grade name abbreviation as shown in these rules.

Mixed grade stamping other than the two (2) highest established grades for each grading rule category shall not be permitted. When the two (2) highest established grades are grade stamped using a combination grade stamp, the design values for the lowest grade in the combination are applicable, except when specific values have been assigned to the mixed grade (see Para. 754).

The grade stamp for boards must show the paragraph number of the pertinent paragraph if the grade name is the same or similar to that used in any other board grade.

When grade-stamping boards whose surfaced thickness is in excess of 1-5/16", the grade stamps shall also include the word **"BOARD"** to indicate that the piece of lumber is a board and not stress graded dimension lumber.

42. Species

The species or species combination is identified on the grade stamp by species name, by approved abbreviation or by approved species combination identification (see Paras. 7 and 7a).

43. Sizes

If lumber is dressed to a size below minimum Canadian Standard Lumber or American Standard Lumber size requirements, the grade stamp shall show the actual size.

44. Moisture Content Standards

The moisture content of wood is the weight of water in wood expressed as a percentage of the weight of the wood from which all water has been removed (oven dry). Moisture is removed from lumber by air drying, by use of dry kilns or by other artificial means.

Dry Lumber - is lumber which has been dried to a moisture content of 19% or less.

Green Lumber - is lumber having a moisture content of over 19%.

Rough lumber of any size does not require (but may include) a seasoning designation on the grade stamp. If so designated, rough lumber which has been dried to a moisture content of 19% or less may be stamped "**DRY**" or if kiln dried to a maximum moisture of 19% may be stamped "**KD**". Rough green lumber having a moisture content greater than 19% may be stamped "**GRN**".

Moisture content designations for surfaced (dressed) lumber are as follows:

a) Boards & Dimension Lumber

Boards or Dimension lumber (less than nominal 5" in thickness) surfaced at a moisture content of 19% or less shall be stamped "**S-DRY**", or if kiln dried to a maximum moisture content of 19%, lumber may be stamped "**KD**" at time of surfacing.

Grade stamps for Boards or Dimension lumber surfaced at a moisture content greater than 19% shall show "**S-GRN**" on the stamp.

Except as otherwise provided, any Boards or Dimension lumber surfaced at a moisture content of 15% or less may be stamped "**MC15**", or if kiln dried to a maximum moisture content of 15%, lumber may be stamped "**KD15**" at time of surfacing. It is also permissible to stamp as "**S-DRY**" or "**KD**" if air-dried or kiln dried lumber, respectively, is surfaced at a moisture content of 15% or less. However, if such lumber is invoiced as "**MC15**" or "**KD15**". or some lesser moisture content, and reinspection is made, the invoice provisions shall prevail for purposes of reinspection.

b) Clears, Selects, Factory Lumber & Moulding Stock

All grades nominal 2" or less in thickness sold as **DRY** (seasoned) shall be dried to 15% maximum moisture content, stock over 2" thick shall be dried to 19% maximum moisture content.

Orders for lumber of a moisture content varying from the above shall be subject to special agreement.

c) Lumber Nominal 5" and Thicker

Moisture content of nominal 5" and thicker lumber shall be subject to special agreement.

All lumber shrinks and expands within narrow limits with changes in moisture content much as most other materials swell or shrink with changes in temperature.

Natural shrinkage or expansion in width and thickness may average approximately 4% from fibre saturation point (approximately 30% moisture content) to normal dry service conditions. Individual pieces may have more or less shrinkage.

When lumber is further dried after surfacing an allowance may be made of 1% (0.7% for Western Red and Eastern White Cedar) reduction in size for each 4% reduction in moisture content based on the actual moisture content of the dry items and on 30% moisture content for unseasoned items. The same tolerance will be applied to dry items subject to re-absorption.

Shrinkage or expansion percentages are average values. Shrinkage and expansion of individual pieces may vary. In large sizes, where it is impractical to establish the moisture content, any allowance for shrinkage or expansion must be left to the judgement of experienced personnel.

Note: *The range of shrinkage of individual pieces from experimental observation is from 2% to 7%. Variables that affect measurement and shrinkage of lumber are density, species, grain orientation and allowable grade characteristics. (See Forintek Canada Corp. - Jessome, A.P., 2000, SP-514 Report or the U.S. Forest Products Laboratory, Research Reports 15 and 30).*

45. Supplementary Provisions

All provisions outlined in the preceding paragraphs, where appropriate, supplement the specific provisions for the various items outlined in these rules.

46. Specified Species

All grades in this rule apply to all species listed in Para. 7 unless otherwise specified. Although some paragraphs are identified with particular species, this does not preclude other species being graded under these paragraphs on request.

47. Reprints from Other Rules

- a) Paras. 112, 113, 151, 160, 161 and 162 are reprinted from WWPAA rules,
- b) Para. 195 is reprinted from PLIB (WCLIB) rules, and
- c) Para. 164 is reprinted from NELMA rules.

48. Design Values

Engineering design values are developed by NLGA for the structurally rated (stress graded) lumber products of Canadian-grown species. See Para. 7b for further detail.

For use in Canada, design values are approved and assigned to the structural grades by the CSA Technical Committee on Engineering Design in Wood. These design values are published in the current edition of CSA 086 - Engineering design in wood.

For use in the U.S., design values are approved by the ALSC Board of Review. U.S. design values for NLGA structural grades are tabled in Paras. 900 to 910 and published in the AWC NDS Supplement.

NOTES

**KD FINISH, V.G., F.G., and/or M.G.
ALL SPECIES (EXCEPT WR CEDAR)
Nominal 2" & Thinner and 2" & Wider**

101. FINISH

Finish is customarily shipped kiln dried and surfaced four sides. Grade descriptions are based on a piece nominal 8" wide & 12' long. The number of characteristics in larger or smaller pieces may vary in proportion to the size of the piece. Pieces nominal 5" & narrower are graded from best face and both edges; pieces nominal 6" & wider from best face and one edge. There are two grades of Finish: "**C and Better**" and "**D**". If ordered V.G., face should have V.G. appearance.

101a. "C AND BETTER" FINISH

Characteristics or their equivalent smaller which may appear on pieces in this grade and their limiting provisions are:

Checks	4 - small, scattered.
Cup	light, occasional pieces.
Heart Stain	firm.
Skips	occasional, very light on edges and reverse side.
Splits	short, in 5% of the pieces.
Sap Stain	medium.
Torn or Raised Grain	light.
Warp	light in occasional pieces.
Knots	2 - sound, tight, small or 3 - equivalent smaller, <u>or</u> Pitch Streak: 1 - small, <u>or</u> Pockets: 4 - small.
Cutout	5% of the pieces in a shipment may have a 3" cutout, 3' or more from either end in pieces 12' & longer, provided such pieces are otherwise of a high type.

101b. "D" FINISH

Characteristics on reverse face may be 25% larger or more numerous.

Characteristics or their equivalent smaller which may appear on pieces in the grade and their limiting provisions are:

Checks	medium, scattered.
Cup	medium.
Pin Holes	limited.
Pitch Streak	medium.
Pockets	4 - medium.
Skips	2 - medium per 12', hit and miss on reverse side, approximately 1/8" scant in width if one edge surfaced.
Splits	short.
Stained Wood	not limited.
Torn or Raised Grain	not limited.
Wane	1/8 width, 1/4 the length or equivalent, 1/4 the thickness; 50% more on reverse face.
Warp	medium.
White Specks	firm, 1/4 the width or equivalent.
Knots	4 - 1" fixed or 8 - equivalent smaller.
Cutout	10% of the pieces in a shipment may have a 3" cutout, 3' or more from either end in pieces 12' & longer.

**KD CEILING AND SIDING, V.G., F.G. and/or M.G.
ALL SPECIES (EXCEPT WR CEDAR)
Nominal 1" & Thinner and 3", 4", 6", 8" & Wider**

102. CEILING AND SIDING

Ceiling and Siding are customarily shipped kiln dried and surfaced two sides, tongued & grooved or shiplapped and usually run to a pattern. The reverse side may be partially surfaced or hollow or scratched back. In occasional pieces of "**C and Better**" grade, the tongue or lap in Siding may be 1/16" narrow and in Ceiling with a tongue 1/8" or more in width is permissible. Grade descriptions are based on a piece nominal 6" wide and 12' long. The number of characteristics in larger or smaller pieces may vary in proportion to the size of the piece. When V.G. is ordered, face must have V.G. appearance.

There are three grades of Ceiling and Siding: "**C and Better**", "**D**", and "**E**".

102a. "C AND BETTER" CEILING AND SIDING

Characteristics or their equivalent smaller which may appear on pieces in the grade and their limiting provisions are:

Checks	3 - small.
Heart Stain	firm.
Sap Stain	medium.
Skips	occasional, very light.
Torn or Raised Grain	light.
Warp	light, occasional pieces.
Knots	3 - sound, tight, small or 4 - equivalent smaller, <u>or</u> Pitch Streaks: 2 - small, <u>or</u> Pockets: 5 - small.
Cutout	5% of the pieces in a shipment may have a 3" cutout, 4' or more from either end in pieces 12' & longer, provided such pieces are otherwise of a high type.

102b. "D" CEILING AND SIDING

Characteristics or their equivalent smaller which may appear on pieces in this grade and their limiting provisions are:

Checks	not limited.
Holes	1 - 1" or equivalent smaller in pieces 8' to 14' long, and 2 - 1" or equivalent smaller in pieces 16' & longer.
Pin Holes	limited.
Pitch Streaks	large.
Pockets	5 - medium.
Skips	hit and miss on face or grooved edge.
Splits	medium.
Stained Wood	not limited.
Tongue or Lap	narrow, must be at least 1/16" in width.
Torn or Raised Grain	not limited.
Warp	medium.
White Specks	firm, 1/4 the width or equivalent.
Knots	4 - fixed, approximately 1" or 8 - equivalent smaller.
Cutout	10% of the pieces in a shipment may have a 3" cutout, 4' or more from either end in pieces 12' & longer.

102c. "E" CEILING AND SIDING

Graded under provisions for "E" Flooring, Para. 104c.

KD CASING AND BASE, V.G., F.G. and/or M.G. Nominal 1" Thickness and 2" or Wider

103. CASING AND BASE

Casing and Base are customarily shipped kiln dried and run to a pattern. The reverse side may be hollow or scratched back. Grade descriptions are based on a piece nominal 4" wide & 12' long. The number of characteristics in larger or smaller pieces may vary in proportion to the size of the piece. In applying these Rules, the face and both edges shall be considered in Casing and best face and exposed edge in Base. When V.G. is ordered, face must have V.G. appearance.

There are three grades of Casing and Base: "C and Better", "D" and "E".

103a. "C AND BETTER" CASING AND BASE

Characteristics or their equivalent smaller which may appear on pieces in this grade and their limiting provisions are:

Checks	small.
Heart Stain	firm.
Skips	occasional, very light on edges and reverse side.
Splits	short, in 5% of the pieces.
Sap Stain	medium.
Torn or Raised Grain	light.
Warp	light in occasional pieces.
Knots	1 - sound, tight, small or 2 - equivalent smaller, <u>or</u> Pitch Streak: 1 - small, <u>or</u> Pockets: 2 - small.
Cutout	5% of the pieces in a shipment may have a 3" cutout, 3' or more from either end in pieces 12' & longer, provided such pieces are otherwise of a high type.

103b. "D" CASING AND BASE

Characteristics or their equivalent smaller which may appear on pieces in this grade and their limiting provisions are:

Checks	medium, occasional 12".
Pin Holes	limited.
Pitch Streak	medium.
Pockets	2 - medium.
Skips	hit and miss either face; approximately 1/8" scant on edge.
Splits	short.
Stained Wood	not limited.
Torn or Raised Grain	not limited.
Wane	1/8 the width, 1/4 the length or equivalent, 1/4 the thickness; 50% more on reverse face.
Warp	medium.
White Specks	firm, 1/4 the width or equivalent.
Knots	2 - fixed, approximately 1" or 4 - equivalent smaller.
Cutout	10% of the pieces in a shipment may have a 3" cutout, 3' or more from either end in pieces 12' & longer.

103c. "E" CASING AND BASE

Graded under provisions for "E" Flooring, Para. 104c.

KD FLOORING, V.G., F.G. and/or M.G.
Nominal 2" & Thinner and 3", 4" & 6" Wide

104. FLOORING

Flooring is customarily shipped kiln dried and surfaced two sides, tongued & grooved. The reverse side may be partially surfaced or hollow or scratched back. Grade descriptions are based on a piece nominal 4" wide & 12' long. The number of characteristics in larger or smaller pieces may vary in proportion to the size of the piece.

When V.G. Flooring is ordered, the face must present a V.G. appearance with an average of not less than 4 rings per inch at both ends.

There are three grades of Flooring: "**C and Better**", "**D**" and "**E**".

104a. "C AND BETTER" FLOORING

Characteristics or their equivalent smaller which may appear on pieces in this grade and their limiting provisions are:

Checks	2 - small.
Heart Stain	firm.
Skips	very light, occasional piece.
Sap Stain	medium.
Tongue	1/16" narrow.
Torn or Raised Grain	light.
Warp	light in occasional pieces.
Knots	2 - sound, tight, small or 3 - equivalent smaller, <u>or</u> Pitch Streak: 1 - small, <u>or</u> Pockets: 3 - small.
Cutout	5% of the pieces in the shipment may have a 3" cutout, 4' or more from either end in pieces 12' & longer, provided such pieces are otherwise of a high type.

104b. "D" FLOORING

Characteristics or their equivalent smaller which may appear on pieces in this grade and their limiting provisions are:

Checks	not limited.
Holes	1 - 1" or equivalent smaller in 8' to 14' and 2 - 1" or equivalent smaller in 16' & longer.
Pin Holes	limited.
Pitch Streaks	large.
Pockets	4 - medium.
Skips	hit and miss on face or grooved edge.
Splits	medium.
Stained Wood	not limited.
Tongue	narrow, must be at least 1/16" in width.
Torn or Raised Grain	not limited.
Warp	medium.
White Specks	firm, 1/4 the width or equivalent.
Knots	4 - fixed, approximately 1" or 8 - equivalent smaller.
Cutout	10% of the pieces in the shipment may have a 3" cutout, 4' or more from either end in pieces 12' & longer.

104c. "E" M.G. FLOORING

All characteristics which do not interfere with the use of the piece full length are permitted. In pieces over 6' long, characteristics which interfere with use of the piece full length are permitted if not located within 2' of either ends and provided also that 75% of such a piece can be used after cutting into two or three pieces. Pieces 6' and shorter must be usable full length.

KD STEPPING, V.G., F.G. and/or M.G.

105. STEPPING

Stepping is customarily shipped kiln dried, surfaced two sides, one edge and bull nosed on the opposite edge. Grade descriptions are based on a piece nominal 12" wide & 12' long. The number of characteristics in larger or smaller pieces may vary in proportion to the size of the piece. Characteristics which appear in an area of about 1" on the face side of the riser edge are not considered.

There are two grades of Stepping: "**C and Better**" and "**D**".

105a. "C AND BETTER" STEPPING

When V.G. is ordered, angle of grain should not be more than 45° from vertical for 1/2 the face from wearing edge.

Characteristics or their equivalent smaller which may appear on pieces in this grade and their limiting provisions are:

Checks small, none through.

Heart Stain firm.

Skips occasional, very light on face and back, hit and miss on riser edge.

Sap Stain medium.

Torn or Raised Grain light.

Warp light.

Knots 4 - sound, tight, and small, or 6 - equivalent smaller, or 2 - 1",
or Pitch Streaks: 2 - small,
or Pockets: 9 - small.

Cutout 5% of the pieces in a shipment may have a 3" cutout, 3' or more from either end in pieces 12' & longer, provided such pieces are otherwise of a high type.

105b. "D" STEPPING

When V.G. is ordered, angle of grain should not be more than 60° from vertical for 1/2 the face from wearing edge.

Characteristics or their equivalent smaller which may appear on pieces in this grade and their limiting provisions are:

Checks	not limited.
Pin Holes	limited.
Pitch Streaks	medium.
Pockets	6 - medium.
Skips	hit and miss; hit or miss on riser edge.
Splits	short.
Stained Wood	not limited.
Torn or Raised Grain	not limited.
White Specks	firm, 1/4 the width or equivalent.
Knots	6 - 3/4", or 4 - 1", or 2 - 1 1/2" in size or equivalent, fixed, smaller.
Cutout	10% of the pieces in a shipment may have a 3" cutout, 3' or more from either end in pieces 12' & longer.

CLEAR PANELLING ALL SPECIES (EXCEPT WR CEDAR)

106. PANELLING

Panelling is graded under the provisions of the "Finish" paragraphs (Para. 101), except that it is graded as a one face grade.

WINDOW JAMB, DOOR JAMB, DOOR SILL, WINDOW SILL, WINDOW STOOL

107. JAMBS AND SILLS

These patterns are graded under the provisions of the "Finish" paragraphs (Para. 101), except that they are graded as a one face grade.

INDUSTRIAL CLEARS
ALL SPECIES (EXCEPT WR CEDAR)
V.G., F.G., AND/OR M.G., Rough or Surfaced
K.D., A.D., or Unseasoned
Nominal 2" & Thinner and 3" & Wider

108. INDUSTRIAL CLEARS (NOMINAL 2" & THINNER)

Industrial Clears, if ordered surfaced, are finished to the sizes shown in Para. 820c., unless otherwise specified. If ordered rough unseasoned, the approximate tolerance in sawing under nominal is limited as per Para. 747. For seasoned thicknesses and widths refer to Para 32. For further information on grading of Industrial Clears, see NLGA Interpretations 2.1.

Grade descriptions are based on a piece nominal 8" wide & 12' long. The number of characteristics in larger or smaller pieces may vary in proportion to the size of the piece.

Pieces nominal 5" & narrower are graded from best face and both edges; pieces nominal 6" & wider from best face and one edge.

There are three grades of Industrial Clears: "**B and Better**", "**C**" and "**D**".

108a. "B AND BETTER" INDUSTRIAL

Characteristics or their equivalent smaller which may appear on pieces in this grade and their limiting provisions are:

Checks	4 - small. No limit in number if surface is rough.
Cup	light.
Pitch Streak	1 - small, <u>or</u> Pockets: 3 - very small, <u>or</u> Pin Holes: 3
Rate of Growth	average 6 rings per inch.
Sapwood	bright, 1/3 the width or equivalent.
Slope of Grain	not to exceed 1 in 8.
Splits	short, in 5% of the pieces.
Torn or Raised Grain	very light.
Warp	very light in occasional pieces.

108b. "C" INDUSTRIAL

Characteristics or their equivalent smaller which may appear on pieces in this grade and their limiting provisions are:

Checks	4 - small. No limit in number if surface is rough.
Cup	light in occasional pieces.
Heart Stain	firm.
Sap Stain	medium. 25% of face or equivalent greater area of light stain.
Skips	occasional, very light on face. Light on edges and on back.
Slope of Grain	1 in 6.
Splits	short, in 5% of the pieces.
Torn or Raised Grain	light.
Warp	light in occasional pieces.
Knots	2 - sound, tight, small, or 3 - equivalent smaller, <u>or</u> Pitch Streak: 1 - small, <u>or</u> Pockets: 4 - small, <u>or</u> Pin Holes: 8.

108c. "D" INDUSTRIAL

Reverse face must be of a reasonably clear type, allowing characteristics 25% larger or more numerous.

Characteristics or their equivalent smaller which may appear on pieces in this grade and their limiting provisions are:

Checks	not limited.
Cup	medium.
Holes/Slough Knots	1 - small or equivalent smaller on face, two - 1/2" or equivalent smaller on back.
Pin Holes	limited.
Pitch Streaks	medium.
Pockets	4 - medium.
Skips	hit and miss; approximately 1/8" scant on edge, hit or miss on back.
Slope of Grain	1 in 4
Splits	short.
Stained Wood	not limited.
Torn or Raised Grain	not limited.
Wane	1/8 the width, 1/4 the length or equivalent, 1/4 the thickness; 50% more on reverse face.
Warp	light.
White Specks	firm, 1/4 the width or equivalent.
Knots	4 - fixed, approximately 1" or 8 - equivalent smaller.
Cutout	10% of the pieces in a shipment may have a 3" cutout, 3' or more from either end in pieces 12' & longer.

INDUSTRIAL CLEARS

Nominal 2 1/4" & Thicker and 3" & Wider

109. INDUSTRIAL CLEARS (NOMINAL 2 1/4" & THICKER)

Industrial Clears, if ordered surfaced, are finished to the sizes shown in Para. 820c., unless otherwise specified. If ordered rough unseasoned, the approximate tolerance in sawing is limited as per Para. 747. For seasoned thicknesses and widths, refer to Para. 32. Grade descriptions are based on a piece nominal 8" wide & 12' long. The number of characteristics in larger or smaller pieces may vary in proportion to the size of the piece.

The grade is determined from the better face with the upper half of the edges considered as part of the face and lower half of the edges as part of the reverse face, the reverse face being approximately one grade lower.

There are three grades of Industrial Clears: "**B and Better**", "**C**" and "**D**".

109a. "B AND BETTER" INDUSTRIAL

Characteristics or their equivalent smaller which may appear on pieces in this grade and their limiting provisions are:

Checks	4 - small. No limit in number if surface is rough.
Pockets	3 - 4" in 2 1/4" thicknesses to 3 - 6" in 4" & thicker or 1 - small Pitch Streak.
Rate of Growth	average 6 rings per inch.
Sapwood	bright, 1/3 the width or equivalent.
Skips	light on back in occasional piece.
Slope of Grain	not to exceed 1 in 8.
Splits	short, in 5% of the pieces.
Torn or Raised Grain	very light.
Warp	very light in occasional piece.

109b. "C" INDUSTRIAL

Characteristics or their equivalent smaller which may appear on pieces in this grade and their limiting provisions are:

Checks	4 - small. No limit in number if surface is rough.
Heart Stain	firm.
Skips	occasional very light on face, light on edges and reverse side.
Slope of Grain	1 in 6.
Splits	short, in 5% of the pieces.
Sap Stain	medium. 25% of face or equivalent greater area of light stain.
Torn or Raised Grain	light.
Warp	light in occasional pieces.
Knots	4 - sound, tight 1" or 5 - equivalent smaller in 2 1/4" thicknesses, to 4 - 2" or 5 - equivalent smaller in 12" thicknesses, <u>or</u> Pitch Streak: 1 - medium, <u>or</u> Pockets: 4 - 6".

109c. "D" INDUSTRIAL

Reverse face must be of a reasonably clear type, allowing characteristics 25% larger or more numerous.

Characteristics or their equivalent smaller which may appear on pieces in this grade and their limiting provisions are:

Checks	not limited.
Pin Holes	limited.
Pitch Streaks	medium.
Pockets	4 - medium, occasional pocket may be 25% larger.
Skips	hit and miss; approximately 1/8" scant on edge.
Splits	short.
Stained Wood	not limited.
Torn or Raised Grain	not limited.
Wane	1/8 the width, 1/4 the length or equivalent, 1/4 the thickness; 50% more on reverse side.
Warp	medium.
White Specks	1/4 the width or equivalent.
Knots	4 - fixed 1" or 7 - equivalent smaller in 2 1/4" thicknesses, to 4 - 2" or 7 - equivalent smaller in 12" thicknesses.
Cutout	10% of the pieces in a shipment may have a 3" cutout, 3' or more from either end in pieces 12' & longer.

BOARDS – SELECTS
Rough or Surfaced
All Widths and All Thicknesses

112. SELECTS

Grade descriptions for Selects are based on a piece of S4S 1" x 8" x 12' long. The number and extent of characteristics in larger or smaller pieces may vary in proportion to the size of the piece. Characteristics appearing on the edges of S2S or rough stock widths which will be removed in surfacing are not given the same consideration as characteristics in S4S lumber. In random width shipments sold on board rule scale, the grade will be determined by the full width of the piece. For Standard Sizes, see Para. 820e.

For further information on the grading of Selects, refer to the NLGA Interpretations 2.2.

112a. SELECT GRADES

In Select board grades, all pieces are graded from the better side or face. The reverse side may be somewhat lower in quality with more restrictions placed on the back of the higher grades.

There are three grades of Selects:

“B & BETTER - 1 AND 2 CLEAR” (SUPREME - WW PINE),

“C SELECT” (CHOICE - WW PINE) and

“D SELECT” (QUALITY - WW PINE).

112b. "B & BETTER - 1 AND 2 CLEAR" (SUPREME - WW PINE)

Lumber of this grade may be ordered when the ultimate in fine appearance is desired. This is the highest grade of Select lumber produced and many pieces are absolutely clear. Some pieces may have a few minor characteristics which do not detract from their appearance or high quality.

Characteristics and limiting provisions are:

Checks	seasoning, small, 1 on each end, or 3 or 4 if away from ends.
Crook	as shown in Para. 810a.
Cup	very light.
Skip	very light on one edge, light on back.
Stained Wood	light in an occasional piece over not more than 10% of the face.
Torn Grain	very light, not more than 3" long.
Twist	7/4 and thinner, 1/2 of very light. 8/4 and thicker, 1/4 of very light. See Para. 810d.
Wane	on reverse side only, 1/4 the thickness, 1/6 the length in an occasional piece.
Knots	2 - sound, tight, pin knots, <u>or</u> slight traces of pitch, <u>or</u> a very small pocket, <u>or</u> equivalent.

112c. "C SELECT" (CHOICE - WWPINE)

Lumber of this grade is recommended for all finishing uses where fine appearance is essential. Because of its appearance and usability, it ranks only slightly less than **B & Better - 1 and 2 Clear** and it is one of the most sought-after products from the clear portion of the log. It is widely used for high quality interior trim and cabinet work with natural, stain or enamel finishes.

Characteristics and limiting provisions are:

Checks seasoning, small, well scattered on the surface.

Crook as shown in Para. 810a.

Cup very light.

Skip light on one edge, 1 - medium, or 2 - light skips on the back.

Stained Wood medium in an occasional piece covering 1/3 the face, or a greater area of lighter stain when not in combination with other characteristics.

Torn or Raised Grain very light.

Twist 7/4 and thinner, 1/2 of very light.

8/4 and thicker, 1/4 of very light.

See Para. 810d.

Wane on reverse side, 1/2 the thickness, 1/8 the width, 1/4 the length in an occasional piece.

With the above, one of the following characteristics are permitted:

Pitch light over not more than 1/2 the face.

Pitch Streak 1 - small.

Pockets 2 - very small.

Knots 2 - small, sound, tight.

Equivalent characteristics no more damaging than any of the above.

112d. "D SELECT" (QUALITY - WWPINE)

Lumber of this grade has many of the fine appearance features of **C Select** grade. Although generally less restrictive than **C Select**, **D Select** is suitable where the requirements for finishing are less exacting.

This grade is between the higher finishing grades and the Board Common grades as many pieces have a finish appearance on one side, the reverse side showing larger or more numerous characteristics.

Characteristics and limiting provisions are:

Checks	seasoning - small, scattered; medium on back.
Crook	as shown in Para. 810a.
Cup	very light.
Skip	1 - very light on face; hit and miss on back; one edge may be 1/16" scant for 1/2 the length in an occasional piece.
Split	short on one end or equivalent.
Stained Wood	medium, over entire face if otherwise high quality.
Torn or Raised Grain	light in scattered spots.
Twist	7/4 and thinner, very light. 8/4 and thicker, 1/2 of very light. See Para. 810d.
Wane	on reverse side, 3/4 the thickness, 1/4 the width, 1/4 the length.

With the above, one of the following characteristics are permitted:

Pitch	medium, over not more than 2/3 of face, less if heavy.
Pitch Streak	1 - medium.
Pockets	4 - small.
Knots	4 - small, fixed.

Equivalent characteristics no more damaging than any of the above.

One 4" cutout is permitted in pieces of otherwise high appearance. Cutting must be directly on an end or more than 2' from an end. Cutouts are restricted to pieces 12' and longer and 10% of an item.

112e. STAINED SELECTS

Stained Selects are graded **D Select** or better in all characteristics except stain, admitting all degrees of stain.

BOARDS – COMMONS

Rough or Surfaced

All Widths and All Thicknesses

113. COMMONS

The five Common grades are:

“1 COMMON” (COLONIAL – WW PINE),

“2 COMMON” (STERLING – WW PINE),

“3 COMMON” (STANDARD – WW PINE),

“4 COMMON” (UTILITY – WW PINE), and

“5 COMMON” (INDUSTRIAL – WW PINE).

Grade stamps applied under this paragraph shall show **“Para. 113”** on the stamp to differentiate from Para. 118 board grades.

Certain characteristics found in Board lumber are difficult to evaluate to an exact degree because of the nature of the portion of the log from which Boards are produced. Some limiting characteristics must be evaluated by applying sound judgement and all characteristics must be considered in determining the grade. Any piece judged to contain a serious combination of the listed characteristics, even though some of the characteristics may not be limiting by themselves, is excluded from the grade. Likewise, an otherwise “high line” piece may be placed in a grade even though one or two of its characteristics may slightly exceed the limitation described in the rules. Such pieces will be of exceptional quality otherwise and might grade one or more grades higher, except for such characteristics. Therefore, each individual piece is considered in its entirety in determining the grade.

When characteristics are listed as applying to a specific size piece (such as 1" x 8" x 12') the number and extent of the same characteristics in larger and smaller pieces may vary in proportion to the size of the piece.

Knot descriptions are given in Para. 718. Because most Board lumber is produced from the inner portion of the log; the size of a knot may not be the determining factor in establishing a particular grade. Therefore, some pieces of a lower grade may have smaller knots than some pieces of a higher grade. Knot sizes cannot be satisfactorily established to an exact degree for any particular grade of Board lumber. It is generally the character or condition of the knot and not the size that determines the grade of the piece.

Spike knots are permitted in all grades of Board lumber, providing the knot or knots have no more effect than the other knots permitted in an individual grade. For Standard Sizes, see Para. 820e.

For further information on the grading of Commons, refer to the NLGA Interpretations 2.3.

NOTES

113a. "1 COMMON" (COLONIAL – WW PINE)

Lumber of this grade, while not usually carried in stock in large quantities, may be ordered when the ultimate in fine appearance of knotty material is required. This grade includes all sound, tight-knotted stock with the size and character of the knot the determining factor of the grade.

Characteristics and limiting provisions are:

Checks seasoning, 4 - small on surface in a 1" x 8" x 12'.

Crook as shown in Para. 810b.

Cup very light.

Heart Pith firm, not more than 1/4" wide, 1/6 the length.

Pitch light over not more than 1/8 the area.

Pockets 2 - very small, dry, well scattered in a 1" x 8" x 12' or equivalent smaller.

Skips 3 - very light on one edge or 2 - light on back in a 1" x 8" x 12'.

Splits very short, limited to 1 on each end.

Stain light over not more than 1/3 of face.

Torn or Raised Grain very light.

Twist 7/4 & thinner, very light.

8/4 & thicker, 1/2 of very light.

See Para. 810d.

Wane on back, 1/2 thickness, 1/8 width, 1/4 length in an occasional piece.

Knots sound, tight and smooth, red, limited as follows:

Nominal Face Width	Knot Size
2"	5/8"
3"	7/8"
4"	1 1/4"
6"	1 3/4"
8"	2 1/4"
10"	2 1/2"
12"	2 3/4"
14" & wider	3"

The knot sizes listed in the above table will generally be the maximum size found in this grade. However, there may be pieces of otherwise exceptional quality which may contain slightly larger knots than those shown.

Black knots must be smooth, sound, tight and small.

An occasional piece may have one angling $\frac{3}{8}$ " hole (slough knot) on the edge, extending into the wide face not more than $\frac{1}{2}$ " and into not more than $\frac{1}{2}$ the thickness.

113b. "2 COMMON" (STERLING – WW PINE)

Lumber of this grade is intended primarily for use in housing and light construction where it is exposed such as in paneling, shelving, and other uses where a knotty type of lumber with fine appearance is required.

Since knots can easily be sealed off for painting, this also is an excellent grade for siding, cornice, soffits, fascia and other exterior uses.

Characteristics and limiting provisions are:

Checks	seasoning, 2 - medium or equivalent smaller in a 1" x 8" x 12'.
Roller checks	light on back, not more than 1/4 the length.
Crook	as shown in Para. 810b.
Cup	light.
Heart Pith	firm, not more than 1/2" wide, 1/2 the length.
Pin Holes	12 - scattered in a 1" x 8" x 12'.
Pitch	streaks and patches of light to medium covering 1/2 of face or 2 - very small streaks of heavy pitch.
Pockets	3 - small, dry, well scattered, or equivalent smaller in a 1" x 8" x 12'.
Shake	light, not over 1/6 in length.
Skip	medium on back, limited to 1/4 of length; medium on edge, limited to 1/3 of length.
Splits	short, limited to 1 on each end.
Stained Wood	medium, over entire face on pieces of otherwise high quality.
Torn or Raised Grain	light.
Twist	7/4 and thinner, very light. 8/4 and thicker, 1/2 of very light. See Para. 810d.
Wane	on back, 1/2 thickness, 1/6 width, 1/3 length or equivalent in an occasional piece.

Knots

The knot sizes listed below will generally be the maximum size found in this grade. However, there may be pieces of otherwise exceptional quality, which may contain slightly larger knots than those shown.

Knots are limited as follows:

Nominal Face Width	Red Knots Sound & Tight	Black Knots Sound & Tight
2"	1"	$\frac{3}{8}$ "
3"	$1\frac{1}{4}$ "	$\frac{1}{2}$ "
4"	2"	$\frac{3}{4}$ "
6"	$2\frac{1}{2}$ "	1"
8"	3"	$1\frac{1}{4}$ "
10"	$3\frac{1}{4}$ "	$1\frac{3}{8}$ "
12"	$3\frac{3}{4}$ "	$1\frac{1}{2}$ "
14" & wider	4"	$1\frac{3}{4}$ "

An occasional piece may have the following: 2 small fixed knots or one angling $\frac{3}{4}$ " hole (slough knot) on the edge extending into the wide face not more than 1" and not over $\frac{1}{2}$ the thickness of the piece.

Black knots of maximum size in this grade are accepted in pieces of high quality and limited to 1 in the 16' and longer lengths, and proportionately smaller in the shorter lengths.

Pieces containing numerous smaller black knots shall be of quality in keeping with the requirements of this grade.

113c. "3 COMMON" (STANDARD – WW PINE)

Lumber of this grade is widely used for a large range of building purposes where appearance and strength are both important. With characteristics limited to assure a high degree of serviceability, this grade is often used for shelving, panelling, and siding and is especially suited for fences, boxes, crating, sheathing and many industrial uses.

Characteristics and limiting provisions are:

Checks	seasoning, medium.
Roller checks	1 - 3' light on face; light to medium 2/3 length on back.
Crook	as shown in Para. 810b.
Cup	medium.
Pin or Small Holes	30 per square foot or 4 - small holes in a 1" x 8" x 12'.
Pitch	heavy over 1/2 the area or 2 small streaks of massed pitch.
Pockets	medium, well scattered.
Shake	light to medium, scattered full length in otherwise 2 Common type.
Skip	one medium on face, hit & miss on back for 2/3 the length. One edge may be 1/8" scant for 1/2 the length or 1/16" scant full length.
Split	1/6 the length.
Stained Wood	medium to heavy over the entire face.
Torn Grain	medium.
Twist	7/4 & thinner, light. 8/4 & thicker, 1/2 of light. See Para. 810d.
Unsound Wood	similar to firm white speck; limited to 1/8 the area.
Wane	on back, 2/3 thickness, 1/4 width, 1/2 length or equivalent in an occasional piece.

Knots

The knot sizes listed below will generally be the maximum size found in this grade, however, there may be pieces of otherwise exceptional quality which may contain slightly larger knots than those shown.

Knots are limited as follows:

Nominal Face Width	Red Knots Sound & Tight	Unsound or Loose Knots, Knot Holes
2"	1 $\frac{3}{16}$ "	$\frac{3}{8}$ "
3"	1 $\frac{1}{2}$ "	$\frac{5}{8}$ "
4"	2 $\frac{1}{2}$ "	$\frac{3}{4}$ "
6"	3"	1 $\frac{1}{4}$ "
8"	3 $\frac{1}{2}$ "	1 $\frac{1}{2}$ "
10"	4"	1 $\frac{3}{4}$ "
12"	4 $\frac{1}{2}$ "	2 $\frac{1}{4}$ "
14" & wider	5"	2 $\frac{1}{2}$ "

Black knots may be 2/3 size of allowable red knots, 2 maximum in each 12' of length or equivalent smaller tight black knots.

Fixed knots may be equal to knot hole in size and are limited to 2 per 12' of length when not in serious combinations with other characteristics.

Only one maximum size knot hole or loose knot is permitted in any one piece, but two equivalent smaller knot holes or loose knots may be permitted if well-spaced and the piece is otherwise of high quality.

Unsound knots are not limited in number.

113d. "4 COMMON" (UTILITY – WW PINE)

Lumber of this grade is more widely used than other grades for general construction purposes. Boards of this grade are used for sub-floors, roof and wall sheathing, concrete forms, low-cost fencing, crating and similar types of construction. It is a popular grade in general construction and industry use. Although appearance is given consideration, pieces are graded chiefly for serviceability as they are seldom used in exposed construction.

Characteristics and limiting provisions are:

Checks	seasoning, large.
Roller checks	medium to heavy, full length on back, light to medium 2/3 length on face.
Crook	as shown in Para. 810b.
Cup	heavy.
Pin Holes or Small Holes	not limited.
Pitch	heavy streaks and patches of massed pitch over 1/2 area in otherwise high-quality pieces.
Pockets	large.
Shake	medium to heavy full length.
Skip	hit & miss on face, 1/16" scant full length if surfaced one side. One edge may be 1/4" scant for 1/2 length or 1/8" scant full length.
Split	1/3 length.
Stained Wood	heavy.
Torn Grain	heavy.
Twist	7/4 and thinner, medium. 8/4 and thicker, 1/2 of medium. See Para. 810d.
Unsound Wood or Honeycomb	not firm, scattered spots over 1/4 the face.
White Speck & Honeycomb	firm.
Wane	1/2 thickness, 1/8 width, 1/6 length on face; heavy on back, but equivalent to knot holes if through thickness.

Knots are limited as follows:

Nominal Face Width	Fixed Knots, Firm & Tight Knots	Loose Knots & Knot Holes
2"	1 $\frac{5}{16}$ "	$\frac{3}{4}$ "
3"	1 $\frac{3}{4}$ "	1"
4"	3"	1 $\frac{1}{2}$ "
6"	3 $\frac{1}{2}$ "	2"
8"	$\frac{2}{3}$ width	2 $\frac{1}{2}$ "
10"	$\frac{2}{3}$ width	3"
12"	$\frac{2}{3}$ width	3 $\frac{1}{2}$ "
14" & wider	$\frac{2}{3}$ width	4"

Knot holes and/or loose knots of maximum size are limited to three for each 12' of length.

113e. "5 COMMON" (INDUSTRIAL – WW PINE)

Lumber of this grade is intended for use in construction where lumber of a higher grade is not needed. This grade permits characteristics such as stain, large knots, very large holes, unsound wood, massed pitch, heavy shake, splits and wane in varying stages or degrees singly or in combinations.

Many pieces in this grade are only slightly lower than the 4 Common (Utility – WW Pine) grade while others will be at the opposite end of the grade level. Although 5 Common is the lowest Common Board grade, it is suitable for uses in economical construction where appearance and strength are not basic requirements.

BOARDS
SHEATHING AND FORM LUMBER
Rough or Surfaced
Shiplapped or Tongued & Grooved
Under Nominal 2" in Thickness and 2" & Wider

114. SHEATHING AND FORM LUMBER

Boards are graded from the face or better side. The reverse side may have characteristics approximately one grade lower than the face.

There are five grades of Boards:

"Select Merchantable",

"Construction",

"Standard",

"Utility", and

"Economy".

For further information on the grading of Boards - Sheathing and Form Lumber, refer to NLGA Interpretations 2.4.

114a. "SELECT MERCHANTABLE" BOARDS

Pieces are graded primarily for serviceability but are usually of fine appearance.

Characteristics and limiting provisions are:

Checks	medium.
Heart Stain	firm.
Slough Knots	one 1", not through, per 12' length.
Pin Holes	limited.
Pitch Streaks	small.
Pockets	medium, scattered.
Roller Checks	totaling 1/2 length on reverse face permitted if tight, none through.
Sap Stain	medium.
Skips	very light on face, occasional light on edges and reverse side.
Splits	short.
Tongue or Lap	1/16" narrow.
Torn or Raised Grain	medium.
Warp	light.

Knots sound, tight, and well scattered, approximately:

Nominal Face Width	Knot Size
2"	1"
3"	1 1/4"
4"	1 1/2"
6"	2"
8"	2 1/2"
10"	3"
12" & wider	3 1/2"

Spike Knots permitted if judged equivalent in effect to other knots.

S1S Boards may have tolerance of 1/32" over or under.

114b. "CONSTRUCTION" BOARDS

Characteristics and limiting provisions are:

Checks	not limited.
Pin Holes	not limited.
Pitch Streaks	not limited.
Pockets	medium.
Skips	light on face, medium on edges and reverse side.
Splits	short.
Stained Wood	not limited.
Tongue or Lap	1/16" narrow.
Torn or Raised Grain	medium.
Wane	1/2 the thickness, 1/8 the width or equivalent.
Warp	light.
Knots	approximately:

Nominal Face Width	Firm & Tight	Unsound or Not Firmly Fixed Knots	Holes*
2"	1"	1/2"	1/2"
3"	1 1/4"	5/8"	5/8"
4"	1 3/4"	7/8"	7/8"
6"	2"	1"	1"
8"	2 1/2"	1 1/4"	1 1/4"
10"	3"	1 1/2"	1 1/4"
12"	3 1/2"	1 3/4"	1 1/4"
Over 12"	4"	2"	1 1/4"

* Two holes of maximum size or equivalent smaller are permitted per 12' length.

Spike Knots permitted if judged to be equivalent in effect to other knots.

S1S Boards may have tolerance of 1/32" over or under.

114c. "STANDARD" BOARDS

Characteristics and limiting provisions are:

Checks	not limited.
Pin Holes	not limited.
Pitch Streaks	not limited.
Pockets	not limited.
Shake	tight through, short separate shakes permitted full length or equivalent roller checks.
Skips	medium on face, hit and miss on edges and reverse side.
Splits	1/6 length.
Stained Wood	not limited.
Tongue or Lap	1/8" narrow.
Torn or Raised Grain	heavy.
Wane	1/2 the thickness, 1/6 the width or equivalent.
Warp	medium.
White Specks	1/3 face area.
Knots	approximately:

Nominal Face Width	Firm & Tight	Unsound or Loose Knots or Holes*
2"	1 1/4"	3/4"
3"	1 1/2"	1"
4"	2 1/2"	1 1/4"
6"	3"	1 1/2"
8"	3 1/2"	1 3/4"
10"	4"	2"
12"	4 1/2"	2 1/4"
Over 12"	5"	2 1/2"

* Two holes, or their equivalent smaller, permitted for each 12' of length.

Spike Knots permitted if judged to be equivalent in effect to other knots.

S1S Boards may have tolerance of 1/32" over or under.

114d. "UTILITY" BOARDS

Characteristics and limiting provisions are:

Checks	not limited.
Honeycomb	firm.
Pin Holes and Pockets	not limited.
Pitch Streaks	not limited.
Shake	not serious.
Skips	hit and miss, or 1/16" scant if one side surfaced; 1/8" scant one edge if other edge surfaced.
Splits	approximately 1/4 the length.
Stained Wood	not limited.
Tolerance in Sawing	in rough stock is approximately 1/8" thicker and/or wider than standard surfaced size.
Tongue	at least 1/8" wide.
Lap or Groove	at least 3/16" wide.
Torn or Raised Grain	not limited.
Unsound Wood	spots or streaks well scattered.
Wane	1/4 the width if not extending into opposite face, except as equivalent to holes permitted.
Warp	heavy.
White Specks	not limited.

Knots

Nominal Face Width	Firm & Tight	Unsound &/or Loose Knots & Holes *
2"	1 1/4"	1"
3"	2"	1 1/4"
4"	3"	1 1/2"
6"	3 1/2"	2"
8"	2/3 width	2 1/2"
10"	2/3 width	3"
12"	2/3 width	3 1/2"
Over 12"	2/3 width	4"

* Maximum holes limited to 1 per lineal ft. or equivalent smaller. Serious distorted grain and burls not permitted.

Spike Knots permitted if equivalent in effect to other knots.

S1S Boards may have tolerance of 1/16" under or 1/32" over.

114e. "ECONOMY" BOARDS

Characteristics permitted and limiting provisions shall be:

Holes	75% of cross section.
Honeycomb	not limited.
Shake	not limited.
Splits	1/3 length.
Unsound Wood	75% of cross section.
Wane	1/2 width, full length of piece. If through the edge, equivalent to the area of the hole allowed. Through portion not to exceed 2' in length. If across the face, 1/2 the width must not exceed 1/8" scant in thickness for 1/3 length or equivalent.
Waste	pieces over 6' in length may contain waste (areas where characteristics are larger than those permitted in the grade) which require removal by cross-cutting. The waste portions must not be located within 2' of either end of the piece and combined shall not exceed 25% of the total length of the board.
White Specks	not limited.
Knots	75% of cross section.

Pieces cannot be more than 1/4" scant in width or 1/8" scant in thickness based on the S4S size.

SRESS-RATED BOARDS

**1 ½" & Thinner in Thickness and 2" & Wider
All Species**

115. STRESS-RATED BOARDS

Stress-Rated Boards may be graded using the same paragraphs as stress-rated dimension lumber (Light Framing, Structural Light Framing, Structural Joists & Planks, or Studs) and the same strength values may be assigned.

When Stress-Rated Boards are grade stamped, the stamp shall show the paragraph number of the dimension lumber grade used, dimension lumber grade name and "**SRB**" to identify it as a Stress-Rated Board, in addition to the normal grade stamping requirements (see Para. 39).

NOTES

EASTERN WHITE AND RED PINE BOARDS

All Thicknesses and All Widths

Rough or Surfaced

Clears, Selects and Commons

Grade descriptions are based on a piece of S4S nominal 1" x 8" x 12' long. The number and extent of characteristics in larger or smaller pieces may vary in proportion to the size of the piece. Characteristics appearing on the edges of S2S or rough stock widths which will be removed in surfacing are not given the same consideration as characteristics in S4S lumber. In random width shipments sold on board rule scale, the grade will be determined by the full width and thickness of the piece. Any piece showing a serious combination of the listed characteristics which might impair its intended use is excluded from the grade under consideration. All pieces are graded from the better side or face. The reverse side may be one grade lower in quality with more restriction placed on the back of the higher grades. Compression wood in damaging form based on visual inspection (i.e., compression failure, warp, or other such damage) is excluded from B and Better, C Select, D Select, 1 Common, 2 Common and 3 Common. Due to the inherent nature of the species, allowable pitch for red pine is much greater.

Certain characteristics found in Board lumber are difficult to evaluate to an exact degree because of the nature of the log from which Boards are produced. Some limiting characteristics must be evaluated by applying sound judgement and all must be considered in determining the grade. Any piece judged to contain a serious combination of the listed characteristics, even though some of the characteristics may not be limiting in themselves, is excluded from the grade. Likewise, an otherwise "high line" piece may be placed in a grade even though one or two of its characteristics may slightly exceed the limitations described by the rules. Such pieces will be of exceptional quality otherwise and might grade one or more grades higher, except for such characteristics. Therefore, each individual piece is considered in its entirety in determining the grade. For Standard Sizes, see Para. 820b.

For further information on the grading of Eastern White and Red Pine Boards, refer to NLGA Interpretations 2.5.

**EASTERN WHITE AND RED PINE
CLEARS
All Thicknesses and All Widths
Rough or Surfaced**

116. CLEARS

There is only one grade of Clears for Eastern White and Red Pine Boards: **"B AND BETTER"**.

116a. "B AND BETTER" CLEARS

Some pieces may have a few minor characteristics which do not detract from their appearance or high quality.

Characteristics and limiting provisions are:

Manufacture	Standard "C" (Para. 722) on occasional piece.
Length	8' and longer.
Checks	seasoning, small, 1 on each end or 3 or 4 if away from ends.
Warp	very light (Para. 752) on occasional piece.
Skip	very light on one edge, light on back.
Stained Wood	light on occasional piece, not more than 10% of the face.
Torn Grain	very light, not more than 3" long.
Wane	on reverse side only of an occasional piece; 1/4 thickness, 1/16 the width, 1/6 the length.
Knots	2 sound, tight, pin, <u>or</u> slight traces of pitch, <u>or</u> a very small pocket, <u>or</u> equivalent.

EASTERN WHITE AND RED PINE SELECTS All Thicknesses and All Widths Rough or Surfaced

117. SELECTS

There are two grades of Selects for Eastern White and Red Pine Boards: "**C SELECT**" and "**D SELECT**".

117a. "C SELECT"

Because of its appearance and usability, this grade ranks only slightly less than Para. 116a **B and Better** clears - it is one of the most sought after products from the clear portion of the log.

It is widely used for high quality interior trim and cabinet work with natural, stain or enamel finishes.

Characteristics and limiting provisions are:

Manufacture	Standard "C" (Para. 722) on occasional piece.
Length	6' and longer (5% maximum FBM basis of 6' length allowed in each width).
Checks	seasoning, small, well distributed on the surface, 6 in a 1" x 8" x 12'.
Skip	light on one edge, 1 medium or 2 light skips on the reverse side.
Stained Wood	light, on occasional piece.
Wane	on reverse side, 1/2 the thickness, 1/8 the width, 1/4 the length on occasional piece.
Warp	light (Para. 752) on occasional piece.

In addition to the above, one of the following characteristics:

Pitch	light, not more than 1/2 the face.
Pitch Streak	1 - small.
Pockets	2 - very small or equivalent.
Knots	2 - small, sound, and tight or equivalent smaller.
Equivalent characteristics	no more damaging than any of the above.

117b. "D SELECT"

Lumber of this grade has many of the fine appearance features of the **C Select** grade. Although generally less restrictive than C Select, D Select is suitable where the requirements for finishing are less exacting. The grade is between the higher finishing grades and the board grades, as many pieces have a finish appearance on one face, the reverse side showing larger or more numerous characteristics.

Characteristics and limiting provisions are:

Manufacture	Standard "C" (Para. 722) on occasional piece.
Length	6' and longer (5% maximum FBM basis of 6' length allowed in each width).
Checks	seasoning, small, well distributed; medium on back.
Skip	1 - very light on face, hit and miss on back; One edge may be 1/16" scant for 1/2 the length on an occasional piece.
Splits	1/16 the length on one end or equivalent.
Stained Wood	medium, on an occasional piece.
Wane	on reverse side, 3/4 the thickness, 1/4 the width, 1/4 the length on an occasional piece.
Warp	medium (Para. 752) on an occasional piece.

In addition to the above, one of the following characteristics:

Pitch	medium, not more than 2/3 of face, less if heavy.
Pitch Streak	1 - medium.
Pockets	4 - small or equivalent smaller.
Shake	light on reverse face, well distributed.
Knots	4 - small, fixed, or equivalent smaller.
Equivalent characteristics	no more damaging than any of the above.

117c. STAINED SELECTS

Stained Selects are graded D Select or Better in all characteristics except stain, admitting all degrees of stain.

EASTERN WHITE AND RED PINE COMMONS

All Thicknesses and All Widths Rough or Surfaced

118. COMMONS

There are five common grades and one plank wall grade:

“1 COMMON”,

“2 COMMON”,

“3 COMMON”,

“4 COMMON”,

“PLANK WALL”, and

“5 COMMON”.

Grade stamps applied under this paragraph shall show “**Para. 118**” on the grade stamp to differentiate from Para. 113 board grades.

For further information on the grading of Para. 118 Commons, refer to the NLGA Interpretations 2.6.

118a. “1 COMMON”

This grade includes all sound, tight knotted stock with the size and character of the knot, the determining factor of the grade.

Characteristics and limiting provisions are:

Manufacture	Standard “C” (Para. 722) on an occasional piece.
Length	6' or longer (8% maximum FBM basis of 6' length allowed in each width).
Checks	seasoning, 4 - small, surface in a 1" x 8" x 12'.
Heart Pith	firm; not more than 1/4" wide, 1/6 the length.
Pitch	light, not more than 1/8 the area.
Pitch Streak	2 - very small streaks of medium pitch in 1" x 8" x 12'.
Pockets	very small, 4 in 1" x 8" x 12' or equivalent smaller.
Shake	light surface, not over 1/8 the length.
Skip	3 - very light on one edge or 2 - light on reverse side in a 1" x 8" x 12'.
Split	very short, limited to one on each end.

Stained Wood	light, not more than 1/3 the face.
Wane	on reverse side, 1/2 the thickness, 1/8 the width, 1/4 the length on an occasional piece.
Warp	medium (Para. 752) on an occasional piece.
Knots	sound, tight and smooth, red, and black limited as follows:

Nominal Face Width	Red Knots	Black Knots
4"	1"	$\frac{3}{4}$ "
6"	1 $\frac{1}{2}$ "	1 $\frac{1}{4}$ "
8"	2"	1 $\frac{1}{2}$ "
10"	2 $\frac{1}{2}$ "	2"
12"	3"	2 $\frac{1}{2}$ "

Black knots limited to 3 of maximum size and/or equivalent smaller for each 12' of length.

Smooth means free of heavy pitch and bark.

Spike knots permitted if judged to be equivalent in effect to other knots. Spike knots in 6/4 and thicker, two of limiting size, 1/3 the width and up to 1/2 the thickness.

The knot sizes listed above will generally be the maximum size found in this grade. However, there may be pieces of otherwise exceptional quality which may contain slightly larger knots than those listed.

An occasional piece may have one angling 1/2" hole (slough knot) on the edge, extending into the wide face not more than 1/2" and into not more than 1/2 thickness.

118b. "2 COMMON"

Characteristics and limiting provisions are:

Manufacture	Standard "D" (Para. 722) on an occasional piece.
Length	6' and longer (10% maximum FBM basis on 6' lengths allowed in each width).
Checks	seasoning, 2 - medium or equivalent smaller in a 1" x 8" x 12' piece.
Roller Checks	light on reverse side, no more than 1/4 length.
Heart Pith	firm, not more than 1/2" wide by 1/2 length.
Hole	one only medium hole or cavity, or 12 - pin holes scattered in a 1" x 8" x 12'.
Pitch	streaks and patches of light to medium covering 1/2 the face or 2 - very small streaks of heavy pitch.
Pockets	3 - small, well distributed or equivalent smaller in a 1" x 8" x 12'.
Shake	light, not over 1/6 the length.
Skip	medium on reverse side limited to 1/4 the length, medium on edge limited to 1/3 the length.
Split	short, limited to 1 on each end.
Stained Wood	light to medium over entire face on piece otherwise high quality.
Wane	on reverse side, 1/2 the thickness, 1/6 the width, 1/3 the length or equivalent on an occasional piece.
Warp	medium (Para. 752) on an occasional piece.
Knots	limited as follows:

Nominal Face Width	Red Knots Sound & Tight	Black Knots Sound & Tight
4"	1 1/4"	1"
6"	1 3/4"	1 1/2"
8"	2 1/2"	1 3/4"
10"	3"	2 1/4"
12"	3 1/2"	2 3/4"

Spike knots permitted if judged to be equivalent in effect to other knots. Spike knots in 6/4 and thicker, three of limiting size, 1/2 the width and up to 3/4 the thickness.

The knot sizes listed above will generally be the maximum size found in this grade. However, there may be pieces of exceptional quality otherwise, which may contain slightly larger knots than those listed.

An occasional piece may have 2 - small, fixed knots or one angling 3/4" hole (slough knot) on the edge extending into the wide face not more than 1" and not over 2/3 the thickness of the piece.

Pieces containing numerous smaller black knots shall be of quality in keeping with the requirements of this grade.

118c. "3 COMMON"

Characteristics and limiting provisions are:

Manufacture	Standard "D" (Para. 722) on an occasional piece.
Length	6' & longer (12% maximum FBM basis of 6' lengths allowed in each width).
Checks	seasoning, one 2' long on face, 1/3 length on reverse side.
Roller checks	one 2' long on face, 1/3 length on reverse side.
Hole	pin, 15 per each square foot or 4 - medium holes in a 1" x 8" x 12'.
Pitch	heavy over 1/2 the area; or 2 - small streaks of massed pitch.
Pockets	medium, well distributed.
Shake	light to medium well scattered over full length; through shake not to exceed 2' in length.
Skip	medium on face, hit & miss on reverse side. One edge may be 1/8" scant for 1/2 the length or 1/16" scant full length.
Split	10% of length.
Stained Wood	medium to heavy over the entire face, maximum 1/3 of total shipment.
White Speck	firm, limited to 1/8 the area on reverse side, very small streak on best face.
Wane	on reverse side, 2/3 the thickness, 1/4 the width, 1/2 the length or equivalent on an occasional piece.
Warp	heavy (Para. 752) on occasional piece.

Knots

limited as follows:

Nominal Face Width	Red Knots Sound & Tight	Black Knots Sound, Tight and Fixed
4"	2"	1 $\frac{1}{3}$ "
6"	3"	2"
8"	4"	2 $\frac{3}{4}$ "
10"	5"	3 $\frac{1}{3}$ "
12"	6"	4"

Spike knots permitted if judged to be equivalent in effect to other knots. Spike knots in 6/4 and thicker, four of limiting size, 2/3 the width and up to the full thickness.

The knot sizes listed above will generally be the maximum size found in this grade. However, there may be pieces of exceptional quality otherwise which may contain slightly larger knots than those shown.

An occasional piece may have 1 or 2 angling knot holes (slough knots) in the edge, extending into the wide face not more than 1/3 the width and not more than 3/4 the thickness or equivalent smaller, or an unsound knot equal to the hole permitted.

118d. "4 COMMON"

Characteristics and limiting provisions are:

Length	6' & longer (15% maximum FBM basis of 6' lengths allowed in each width).
Checks	seasoning, large full length on reverse side.
Roller checks	medium full length on reverse side.
Holes	pin holes not limited; other holes limited to the equivalent of knot holes allowed.
Pitch	heavy streaks and patches of massed pitch over 1/2 area on otherwise high quality pieces.
Pockets	large.
Shake	through shake, well scattered, full length.
Skip	hit and miss on face, 1/16" scant full length of surface one side. One edge may be 1/4" scant for 1/2 the length or 1/8" scant full length.
Splits	15% of length.
Stained Wood	heavy.
White Specks	60% of the face or equivalent on both faces.
Honeycomb or Unsound Wood	20% of one face or equivalent on both faces. Must not destroy the edges.
Wane	2/3 the thickness, 1/6 the width, 1/2 length.
Warp	heavy (Para. 752) on an occasional piece.
Knots	limited as follows:

Nominal Face Width	Fixed Knots, Firm & Tight Knots	Unsound Knots, Loose Knots, Knot Holes
4"	3"	1/6 width
6"	3 1/2"	1/6 width
8", 10", 12"	2/3 width	1/6 width

Unsound knots, knot holes and/or **loose knots** shall be limited to 3 maximum size or equivalent for each 12' of length.

118e. "PLANK WALL"

The grade permits characteristics such as stain, large knots, large holes, unsound wood, massed pitch, heavy shake, splits and wane in varying stages and degrees singly or in combinations but must have reasonably sound edges and ends for nailing.

118f. "5 COMMON"

This grade permits characteristics such as stain, large knots, very large holes, unsound wood, massed pitch, heavy shake, splits and wane in varying stages or degrees singly or in combinations. Many pieces in this grade are only slightly lower than the 4 Common grade while others will be at the opposite end of the grade level.

NATIONAL GRADING RULE FOR DIMENSION LUMBER

All Species

120. NATIONAL GRADING RULE (NGR)

The Canadian Lumber Standards Accreditation Board (CLSAB) Regulations provide that dimension lumber grading rules may only be certified as conforming to Canadian Standard Lumber (as defined by CSA 0141) if the rules conform to the National Grading Rule (NGR) for Dimension Lumber.

In addition, as per PS 20 (see Para. 120a), dimension lumber grading rules may only be certified as conforming to the American Softwood Lumber Standard if the dimension lumber rules therein conform to the NGR.

The NLGA dimension lumber grading rules in Paras. 121, 122 and 124 incorporate and conform to the NGR. The NGR Interpretations, which provide additional information in the application of the NGR, are appended to the NLGA Grading Rules.

As per PS 20 - Section 11, NLGA is a participating member of the NGR Committee (see Para. 120a).

The following Paras. 120a to 120e are excerpted from the NGR.

120a. NGR - INTRODUCTION

Product Standard 20 (PS 20) American Softwood Lumber Standard published by the U.S. Department of Commerce, stipulates that a National Grading Rule Committee composed of members competent in the field of lumber technology shall *“establish, maintain and make fully and fairly available, nomenclature and descriptions of grades for dimension lumber.”*

It provides further that *“grading rules of an agency shall not be certified as conforming to the American Softwood Lumber Standard if the ALSC 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 in conformance with Section 11 of PS 20. The NGR applies to all species of softwood lumber¹ which are covered by grading rules developed and approved under PS 20.

¹ *Hardwood lumber shall not be graded under provisions of this rule unless included in rules certified by the Board.*

120b. NGR - SCOPE

For purposes of the National Grading Rule for Dimension Lumber, “dimension” is limited to surfaced softwood lumber of nominal thicknesses from 2 inches through 4 inches and nominal widths 2 inches and wider; and which is designed for use as framing members such as joists, planks, rafters, and studs. It does not apply to those grades that are segregated for special uses, but which are sometimes manufactured to the “dimension” sizes provided that descriptions for such special grades are included in the applicable agency grading rules.

Lumber grades provide standard specifications for segregating the lumber cut from logs into appropriate use categories.

Use categories may be developed based on appearance, structural capacity, suitability for secondary manufacturing, or a combination of these. The grade specifications in the NGR are based primarily on structural performance. Limitations for appearance characteristics are established principally to ensure good suitability and utility of the material in covered structural or industrial framing uses.

The following are examples of special products excluded from the National Grading Rule for Dimension Lumber:

Crossarms
Factory & Shop Lumber
Finish (Selects)
Foundation Lumber
Industrial Clears
Ladder Stock
Laminating Stock

Railroad Stock
Rough Lumber
Scaffold Planks
Ship Decking and Plank Stock
Stadium Plank
Worked Lumber

When provisions are developed for segregating lumber based on rate of growth or specific gravity in accordance with the general provisions of ASTM D245 for a species, such provisions shall be included in grading rules applicable to that species. The provisions shall include the specific manner in which the specific gravity and/or rate of growth is to be determined.

120c. NGR - CLASSIFICATION

The National Grading Rule for Dimension Lumber classifies dimension lumber into 3 width categories and 4 use categories.

Dimension lumber up to 4 inches wide is classified as “**Structural Light Framing**” and “**Light Framing**”.

Dimension lumber 2 inches and wider is classified as “**Studs**”.

Dimension lumber 5 inches and wider is classified as “**Structural Joists & Planks**”.

The basic grade descriptions for dimension lumber provide good structural capacity, serviceability, and general good appearance, however sometimes, structural grades with a higher appearance level are desired. An Appearance classification is also available that provides standard specifications for such uses. The Appearance category provides the same level of structural performance as the applicable NGR grade, but with the added restrictions on wane, skip and warp. Any NGR grade may be graded or ordered with “**Appearance**” limitations.

“**Appearance**” shall be designated by either the term “**Appearance**” or the abbreviation “**App**” on the grade stamp or by specifically identifying “**Appearance**” in the purchase and shipping documents.

NOMINAL 2 to 4" THICK, 2 to 4" WIDE

STRUCTURAL LIGHT FRAMING

Grade Name (and Abbreviation)

Select Structural (Sel Str)

NO. 1 (1)

NO. 2 (2)

NO. 3 (3)

LIGHT FRAMING

Grade Name (and Abbreviation)

Construction (Const)

Standard (Stand)

Utility (Util)

NOMINAL 2 to 4" THICK, 2" and WIDER

STUDS

Grade Name

Stud

NOMINAL 2 to 4" THICK, 5" and WIDER

STRUCTURAL JOISTS & PLANKS

Grade Name (and Abbreviation)

Select Structural (Sel Str)

NO. 1 (1)

NO. 2 (2)

NO. 3 (3)

APPEARANCE

Grade Name (and Abbreviation)

NGR grade name plus Appearance (NGR grade name plus **APP**)

Applicable to all NGR grades

Except as otherwise provided herein, the above grades shall constitute the dimension grades included in rule books of certified rule writing agencies and are the only dimension grades which shall be grade stamped as American Standard Lumber. Modification of these descriptions shall be made only by the National Grading Rule Committee.

120d. NGR - GENERAL

The major characteristics encountered in grading of softwood lumber are listed for each grade herein. Not all the listed characteristics will occur in lumber of any particular grade. When characteristics unique to a single species are encountered which are not included in the grade description, the characteristics shall be assessed in comparison to the most similar characteristic listed and permitted to the same degree. All grade descriptions set forth the major limiting characteristics that occur in lumber in each grade. Hence, the rules describe the poorest pieces permitted in a grade. All or nearly all of the permissible characteristics of a grade are rarely present in maximum size or number in any one piece.

Any piece with a combination of characteristics which are judged to be more severe than the maximum characteristics permitted in the grade, even though each if taken individually is permitted, shall be excluded from the grade. The grading of lumber cannot be considered an exact science because it is based on a visual inspection of each piece and the judgement of the grader and/or on the results of a method of mechanically determining the strength characteristics of structural lumber. The NGR establishes a maximum of 5 percent below grade as the tolerance allowed between graders.

Knots, checks, shakes and slope of grain in visually graded lumber shall be measured in accordance with the provisions of ASTM D245 except that no increase in slope of grain or size of knots is permitted outside the middle one third of the length. Except as otherwise provided herein, knots appearing on narrow faces are limited to the same displacement as knots specified at edges of wide faces. The limitations on knot sizes and other characteristics governing strength shall not be exceeded.

Compression wood shall be limited in effect to other appearance or strength reducing characteristics permitted in the grade.

120e. NGR - MACHINE GRADED LUMBER

A basic description for machine graded lumber is included for those certified rules writing agencies which possess the necessary technical information on their species to include detailed machine grading provisions in their grading rules. This method for mechanical testing and marking of machine graded lumber shall be included in certified agency rules if they provide for machine graded lumber.

Grade descriptions and grade marking privileges shall be provided by the certified rules writing agencies for machine graded lumber when lumber is evaluated by mechanical means.

NOTES

NATIONAL GRADING RULE

STUDS

Nominal 2" to 4" Thick and 2" & Wider

121. STUDS

There are two grades of Studs, "**STUD**" and "**ECONOMY STUD**". Only the "**STUD**" grade is stress rated and assigned design values.

Note: For measurement of knots, see Para. 320b.

121a. "STUD"

Characteristics permitted and limiting provisions shall be:

Checks seasoning checks not limited. Through checks at ends are limited as splits.

Knots not limited as to quality but are well spaced and are permitted in the following sizes or their equivalent displacement:

Nominal Width	At Edge Wide Face	Centreline Wide Face	Holes* (Any Cause)
2"	$\frac{3}{4}$ "	$\frac{3}{4}$ "	$\frac{3}{4}$ "
3"	1 $\frac{1}{4}$ "	1 $\frac{1}{4}$ "	1 $\frac{1}{4}$ "
4"	1 $\frac{3}{4}$ "	2 $\frac{1}{2}$ "	1 $\frac{1}{2}$ "
5"	2 $\frac{1}{4}$ "	3"	1 $\frac{3}{4}$ "
6"	2 $\frac{3}{4}$ "	3 $\frac{3}{4}$ "	2"
8"	3 $\frac{1}{2}$ "	4 $\frac{1}{2}$ "	2 $\frac{1}{2}$ "
10"	4 $\frac{1}{2}$ "	5 $\frac{1}{2}$ "	3"
12"	5 $\frac{1}{2}$ "	6 $\frac{1}{2}$ "	3 $\frac{1}{2}$ "
14"	6"	7"	4"

* One hole or equivalent smaller holes per 1 lineal ft.

Manufacture Standard "F". See Para. 722f.

Pitch & Pitch Streaks not limited.

Pockets - pitch or bark not limited.

Shake if through at ends, limited as splits. Elsewhere through shakes $\frac{1}{3}$ the length.

Skips hit or miss on any face, with a maximum of 10% of the pieces containing heavy skips on wide faces only. See Paras. 720e and g.

Slope of Grain	1 in 4.
Splits	equal in length to twice the width of the piece.
Stain	stained sapwood. Firm heart stain or firm red heart.
Unsound Wood	in spots or streaks limited to 1/3 the cross section at any point along the length. Must not destroy nailing edge. See Para. 710e.
Wane	1/3 thickness and 1/2 the width full length, or equivalent on each face, provided that wane does not exceed 1/2 the thickness and 3/4 the width for up to 1/4 the length. See Para. 750.
Warp	1/2 medium. See Para. 752.
White Speck & Honeycomb	firm

121b. "ECONOMY STUD"

The "Economy Stud" grade is not a recognized grade under the NGR but is included here as an NLGA grade. Lumber graded under this grade is not stress rated and has no assigned design values.

Characteristics for lumber of this grade are so designed that each piece can be used full length.

Honeycomb	not limited.
Knots & Holes	75% of cross section.
Shake	not limited.
Splits	1/4 length.
Skips	maximum 1/4" scant of standard surfaced size.
Unsound Wood	75% of cross section away from ends.
Wane	3/4 of any face or as equivalent, 1/4 thickness across face full length, or 1/2 thickness up to 2' long.
Warp	heavy.
White Speck	not limited.

NATIONAL GRADING RULE

LIGHT FRAMING

Nominal 2" to 4" Thick and 2" to 4" Wide

122. LIGHT FRAMING

There are four grades of Light Framing: “**CONSTRUCTION**”, “**STANDARD**”, “**UTILITY**”, and “**ECONOMY**”. All these grades are stress rated and assigned design values, except for “**ECONOMY**”.

Note: For measurement of knots, see Para. 320b.

122a. “CONSTRUCTION” LIGHT FRAMING

Characteristics permitted and limiting provisions shall be:

- Checks** surface seasoning checks not limited. Through checks at ends are limited as splits.
- Knots** sound, firm, encased, and pith, must be tight and are permitted in the following sizes or their equivalent displacement:

Nominal Width	Anywhere on Wide Face	Unsound or Loose Knots and Holes* (Any Cause)
2"	$\frac{3}{4}$ "	$\frac{5}{8}$ "
3"	$1\frac{1}{4}$ "	$\frac{3}{4}$ "
4"	$1\frac{1}{2}$ "	1"

*One hole or equivalent smaller holes per 3 lineal ft.

- Manufacture** Standard “E”. See Para. 722e.
- Pitch & Pitch Streaks** not limited.
- Pockets - pitch or bark** not limited.
- Shake** if through at ends, limited as splits. Surface shakes up to 2' long.
- Skips** hit and miss skips in a maximum of 10% of the pieces. See Para. 720f.
- Slope of Grain** 1 in 6.
- Splits** equal in length to the width of the piece.

Stain	stained sapwood. Firm heart stain or firm red heart.
Wane	1/4 the thickness and 1/4 the width full length, or equivalent on each face, provided that wane does not exceed 1/2 the thickness or 1/3 the width for up to 1/4 the length. See Para. 750.
Warp	1/2 of medium. See Para. 752.

122b. "STANDARD" LIGHT FRAMING

Characteristics permitted and limiting provisions shall be:

Checks seasoning checks not limited. Through checks at ends are limited as splits.

Knots not restricted as to quality and are permitted in the following sizes or their equivalent displacement:

Nominal Width	Anywhere on Wide Face	Holes* (Any Cause)
2"	1"	¾"
3"	1 ½"	1"
4"	2"	1 ¼"

*One hole or equivalent smaller holes per 2 lineal ft.

Manufacture Standard "F". See Para. 722f.

Pitch & Pitch Streaks not limited.

Pockets - pitch or bark not limited.

Shake if through at ends, limited as splits. Away from ends through shakes up to 2' long, well separated. If not through, single shakes shall not exceed 3' long or 1/4 the length, whichever is greater.

Skips hit & miss, with a maximum of 5% of the pieces containing hit or miss or heavy skip 2' or less in length. See Paras. 720e, f, and g.

Slope of Grain 1 in 4.

Splits equal in length to 1 ½ times the width of the piece.

Stain stained sapwood. Firm heart stain or firm red heart, not limited.

Unsound Wood small spots or streaks of firm honeycomb or peck are limited to 1/6 the width. In 2" lumber, any other unsound wood is limited to a spot 1/12 the width and 2" in length or equivalent smaller.

Wane 1/3 the thickness and 1/3 the width, full length or equivalent on each face, provided that wane does not exceed 2/3 the thickness or 1/2 the width for up to 1/4 the length. See Para. 750.

Warp light. See Para. 752.

White Speck firm, 1/3 the face or equivalent.

122c. "UTILITY" LIGHT FRAMING

Characteristics permitted and limiting provisions shall be:

- Checks** seasoning checks not limited. Through checks at ends are limited as splits.
- Knots** not restricted as to quality and are permitted in the following sizes or their equivalent displacement:

Nominal Width	Anywhere on Wide Face	Holes* (Any Cause)
2"	1 ¼"	1"
3"	2"	1 ¼"
4"	2 ½"	1 ½"

*One hole or equivalent smaller holes per 1 lineal ft.

- Manufacture** Standard "F". See Para. 722f.
- Pitch & Pitch Streaks** not limited.
- Pockets - pitch or bark** not limited.
- Shake** surface shakes permitted. If through at edges or ends, limited as splits. Elsewhere through shakes 1/3 the length, scattered along the length.
- Skips** hit or miss, with a maximum of 10% of the pieces containing heavy skips. See Paras. 720e and g.
- Slope of Grain** 1 in 4.
- Splits** equal to 1/6 the length of the piece.
- Stain** stained wood, not limited.
- Unsound Wood** spots or streaks limited to 1/3 the cross-section at any point along the length. Must not destroy the nailing edge. See Para. 710e.
- Wane** 1/2 the thickness and 1/2 the width full length, or equivalent on each face, provided that wane does not exceed 7/8 the thickness or 3/4 the width for up to 1/4 the length. See Para. 750.
- Warp** medium. See Para. 752.
- White Speck & Honeycomb** firm.

122d. "ECONOMY"

The "**Economy**" grade is not a recognized grade under the NGR but is included here as an NLGA grade. Lumber graded under this grade is not stress rated and has no assigned design values.

The characteristics of this grade may also be applied to the structural light framing and joists & planks "**Economy**" grade (see Para. 124e).

Characteristics permitted and limiting provisions shall be:

Holes (any cause) size of a hole not to exceed 75% of cross-section. The through portion shall not exceed 2' in length.

Honeycomb & White Specks firm, not limited.

Knots 75% of cross section.

Skips 1/4" scant in thickness &/or width. Not limited in length.

Shake not limited.

Splits 1/3 length.

Unsound Wood 75% of cross-section. Not limited in length.

Wane 3/4 width, full length of piece. If through the edge, equivalent to the area of the hole permitted. Through portion not to exceed 2' in length. If across the face, 1/2 the width must not exceed 1/4" scant in thickness for 1/3 length or, as equivalent longer.

Waste pieces 9' and longer in length may contain waste (areas where characteristics are larger than those permitted in the grade) which require removal by cross-cutting. The waste portions combined shall not exceed 25% of the length of the piece and must not be located within 2' of either end of the piece.

NOTES

NATIONAL GRADING RULE
STRUCTURAL LIGHT FRAMING
Nominal 2" to 4" Thick and 2" to 4" Wide
STRUCTURAL JOISTS & PLANKS
Nominal 2" to 4" Thick and 5" & Wider

124. STRUCTURAL LIGHT FRAMING

There are five grades of Structural Light Framing and Structural Joists & Planks: **"SELECT STRUCTURAL"**, **"NO. 1"**, **"NO. 2"**, **"NO. 3"** and **"ECONOMY"**. All these grades are stress rated and assigned design values, except for **"ECONOMY"**.

Note: For measurement of knots, see Para. 320b.

124a. "SELECT STRUCTURAL"

Characteristics permitted and limiting provisions shall be:

Checks surface seasoning checks, not limited. Through checks at ends are limited as splits.

Knots sound, firm; encased and pith knots, if tight and well spaced, are permitted in sizes not to exceed the following, or equivalent displacement:

Nominal Width	At Edge Wide Face	Centreline Wide Face	Unsound or Loose Knots and Holes* (Any Cause)
2"	3/8"	3/8"	3/8"
3"	1/2"	1/2"	1/2"
4"	3/4"	7/8"	3/4"
5"	1"	1 1/2"	7/8"
6"	1 1/8"	1 7/8"	1"
8"	1 1/2"	2 1/4"	1 1/4"
10"	1 7/8"	2 5/8"	1 1/4"
12"	2 1/4"	3"	1 1/4"
14"	2 3/8"	3 1/4"	1 1/4"
16"	2 3/8"	3 3/8"	1 1/4"
18"	2 1/2"	3 1/2"	1 1/4"

*One hole or equivalent smaller holes per 4 lineal ft.

Manufacture	Standard "E". See Para. 722e.
Pitch & Pitch Streaks	not limited.
Pockets - pitch or bark	not limited.
Rate of Growth	limited to medium grain in Douglas Fir & Western Larch only. See Para. 350a.
Shake	if through at ends, limited as splits. Surface shakes up to 2' long.
Skips	hit and miss skips in a maximum of 10% of the pieces. See Para. 720f.
Slope of Grain	1 in 12.
Splits	equal in length to the width of the piece.
Stain	stained sapwood. Firm heart stain or firm red heart limited to 10% of the piece.
Wane	1/4 the thickness and 1/4 the width full length, or equivalent on each face, provided that wane does not exceed 1/2 the thickness or 1/3 the width for up to 1/4 the length. See Para. 750.
Warp	1/2 of medium. See Para. 752.

124b. "NO. 1" STRUCTURAL

Characteristics permitted and limiting provisions shall be:

Checks surface seasoning checks, not limited. Through checks at ends are limited as splits.

Knots sound, firm; encased and pith knots, if tight and well spaced, are permitted in sizes not to exceed the following or equivalent displacement:

Nominal Width	At Edge Wide Face	Centreline Wide Face	Unsound or Loose Knots and Holes* (Any Cause)
2"	1/2"	1/2"	1/2"
3"	3/4"	3/4"	3/4"
4"	1"	1 1/2"	1"
5"	1 1/4"	1 7/8"	1 1/8"
6"	1 1/2"	2 1/4"	1 1/4"
8"	1 1/2"	2 3/4"	1 1/2"
10"	1 7/8"	3 1/4"	1 1/2"
12"	2 1/4"	3 3/4"	1 1/2"
14"	2 3/8"	4"	1 1/2"
16"	2 3/8"	4 1/2"	1 1/2"
18"	2 1/2"	4 5/8"	1 1/2"

*One hole or equivalent smaller holes per 3 lineal ft.

Manufacture Standard "E". See Para. 722e.

Pitch & Pitch Streaks not limited.

Pockets - pitch or bark not limited.

Rate of Growth limited to medium grain in Douglas Fir and Western Larch only. See Para. 350a.

Shake if through at ends, limited as splits. Surface shakes up to 2' long.

Skips hit & miss skips in a maximum of 10% of pieces. See Para. 720f.

Slope of Grain 1 in 10.

Splits equal in length to width of the piece.

Stain stained sapwood. Firm heart stain or firm red heart.

Wane

1/4 the thickness and 1/4 the width full length, or equivalent on each face, provided that wane does not exceed 1/2 the thickness or 1/3 the width for up to 1/4 the length. See Para. 750.

Warp

1/2 of medium. See Para. 752.

124c. "NO. 2" STRUCTURAL

Characteristics permitted and limiting provisions shall be:

Checks seasoning checks not limited. Through checks at ends are limited as splits.

Knots well spaced knots of any quality are permitted in sizes not to exceed the following or equivalent displacement:

Nominal Width	At Edge Wide Face	Centreline Wide Face	Unsound or Loose Knots and Holes* (Any Cause)
2"	5/8"	5/8"	5/8"
3"	7/8"	7/8"	7/8"
4"	1 1/4"	2"	1 1/4"
5"	1 5/8"	2 3/8"	1 3/8"
6"	1 7/8"	2 7/8"	1 1/2"
8"	2 1/2"	3 1/2"	2"
10"	3 1/4"	4 1/4"	2 1/2"
12"	3 3/4"	4 3/4"	3"
14"	4 1/8"	5 1/4"	3 1/2"
16"	4 1/4"	5 3/4"	4"
18"	4 3/8"	5 7/8"	4 1/2"

*One hole or equivalent smaller holes per 2 lineal ft.

Manufacture Standard "F". See Para. 722f.

Pitch & Pitch Streaks not limited.

Pockets - pitch or bark not limited.

Rate of Growth limited to medium grain in Douglas Fir and Western Larch only. See Para. 350a.

Skips hit & miss, with a maximum of 5% of the pieces containing hit or miss or heavy skip 2' or less in length. See Paras. 720e, f and g.

Splits equal in length to 1 1/2 times the width of the piece.

Shake if through at ends, limited as splits. Away from ends through shakes up to 2' long, well separated. If not through, single shakes shall not exceed 3' long or 1/4 the length, whichever is greater.

Slope of Grain 1 in 8.

Stain stained sapwood. Firm heart stain or firm red heart not limited.

Unsound Wood (excluding white specks)

not permitted in thicknesses over 2". In 2" lumber, small spots or streaks of firm honeycomb or peck are limited to 1/6 the width. Any other Unsound Wood is limited to a spot 1/12 the width and 2" in length or equivalent smaller.

Wane 1/3 the thickness and 1/3 the width full length, or equivalent on each face, provided that wane does not exceed 2/3 the thickness or 1/2 the width for up to 1/4 the length. See Para. 750.

Warp light. See Para. 752.

White Speck firm, 1/3 the face or equivalent.

124d. "NO. 3" STRUCTURAL

Characteristics permitted and limiting provisions shall be:

Checks seasoning checks not limited. Through checks at ends are limited as splits.

Knots well spaced knots of any quality are permitted in the following sizes or their equivalent displacement:

Nominal Width	At Edge Wide Face	Centreline Wide Face	Unsound or Loose Knots and Holes* (Any Cause)
2"	3/4"	3/4"	3/4"
3"	1 1/4"	1 1/4"	1 1/4"
4"	1 3/4"	2 1/2"	1 3/4"
5"	2 1/4"	3"	1 7/8"
6"	2 3/4"	3 3/4"	1 1/2"
8"	3 1/2"	4 1/2"	2"
10"	4 1/2"	5 1/2"	2 1/2"
12"	5 1/2"	6 1/2"	3"
14"	6"	7"	3 1/2"
16"	6 3/8"	8"	4"
18"	6 1/2"	8 1/4"	4 1/2"

*One hole or equivalent smaller holes per 1 lineal ft.

Manufacture Standard "F". See Para. 722f.

Pitch & Pitch Streaks not limited.

Pockets - pitch or bark not limited.

Shake surface shakes permitted. If through at edges or ends, limited as splits. Elsewhere through shakes 1/3 the length, scattered along the length.

Skips hit or miss, with a maximum of 10% of the pieces containing heavy skips. See Paras. 720e and g.

Slope of Grain 1 in 4.

Splits equal to 1/6 the length of the piece.

Stain stained wood, not limited.

Unsound Wood spots or streaks limited to 1/3 the cross-section at any point along the length. Must not destroy the nailing edge. See Para. 710e.

Wane	1/2 the thickness and 1/2 the width full length, or equivalent on each face, provided that wane does not exceed 7/8 the thickness or 3/4 the width for up to 1/4 the length. See Para. 750.
Warp	medium. See Para. 752.
White Speck & Honeycomb	firm.

124e. “ECONOMY”

Graded under the provisions of Para. 122d.

NATIONAL GRADING RULE APPEARANCE

125. APPEARANCE (APP)

The “**Appearance**” designation conforms to all provisions of the applicable NGR grade. In addition, the following limiting provisions shall apply:

Manufacture	Standard “E”. See Para. 722e.
Skip	hit and miss skips in a maximum of 10% of pieces. See Para. 720(f).
Wane	1/4 the thickness and 1/6 the width by 1/4 the length. Para. 750b shall not be applied.
Warp	1/2 of medium. See Para. 752

Appearance shall be designated by either the term “**Appearance**” or the abbreviation “**App**” on the grade stamp or by specifically identifying “**Appearance**” in the purchase and shipping documents.

EXTERIOR PATIO DECKING
Rough or Surfaced – KD, AD or Unseasoned
Nominal 5/4 to 2" Thick and 4" & Wider
For Flat-Wise Load Applications
Where Spans Are Not to Exceed 16" on Centre

126. EXTERIOR PATIO DECKING

Exterior Patio Decking is produced to standard sizes (see Para. 820b) with the option of radius edges per buyer's specification. Unsound wood or decay is not permitted on any face.

There are two grades of Exterior Patio Decking: "**SELECT PATIO**" and "**COMMERCIAL PATIO**".

126a. "SELECT PATIO"

Unless otherwise specified, characteristics on the reverse face may be one grade lower ("**Commercial Patio**").

Characteristics permitted and limiting provisions shall be:

Checks medium

Compression Wood shall be limited in effect to other appearance or strength reducing characteristics permitted in the grade.

Heart Stain firm.

Holes pin to small in size, equivalent to chipped knots.

Manufacture Standard "D". See Para. 722d.

Peck (Cedar) reverse face, small spots or streaks limited to 1/6 the width.

Pin Holes limited.

Pitch light.

Pitch Streak 1 - small.

Pockets - bark medium.

Pockets - pitch small.

Sapstain medium.

Shake light - several along length, none through. If through at ends, limited to splits.

Skip very light, 1 per 12'. Light on reverse face and edges.

Slope of Grain	1 in 8.
Splits	short.
Wane	reverse face only, 1/2 the thickness and 1/3 the width.
Warp	light.
Knots	sound and tight are permitted in the following sizes. Measurements as per Para. 320a.

Nominal Face Width	Knot Size
4"	1 ½"
5"	2"
6"	2 ½"
8"	3"
10"	3 ½"
12"	4"

Spike & Narrow Face Knots

limited to equivalent displacement.
Measurements as per Para. 320b.

Chipped Knots not to exceed 1/3 thickness, 2 per 12'.

126b. "COMMERCIAL PATIO"

Unless otherwise specified, characteristics on the reverse face may be 25% larger or more numerous than those permitted on the face.

Characteristics permitted and limiting provisions shall be:

Checks	not limited.
Compression Wood	limited in effect to other appearance or strength reducing characteristics permitted in the grade.
Grub/Teredo Holes	as per NLGA Interpretations 1.3
Honeycomb	reverse face: firm, small spots or streaks limited to 1/6 the width.
Manufacture	Standard "F". See Para 722f.
Peck (Cedar)	reverse face in spots or streaks limited to 1/3 the width.
Pin Holes	not limited.
Pitch	not limited.
Pitch Streaks	not limited.
Pockets - bark	large.
Pockets - pitch	medium.
Shake	medium, 1/4 length, none through. If through at ends, limited to splits.
Skip	light on face, 2 per 12'. Hit and miss 1/32" on reverse face. Medium on edges.
Slope of Grain	1 in 8 for 4" wide lumber and 1 in 6 for wider widths up to 12".
Splits	medium.
Stained Wood	firm.
Wane	reverse face only, 1/2 thickness and 1/3 width or equivalent on each face, provided that wane does not exceed 2/3 thickness or 1/2 width for up to 1/4 the length.
Warp	medium.
White Speck	firm, 1/3 volume. Reverse face, firm.

Knots

permitted in the following sizes. Measurements as per Para. 320a.

Nominal Face Width	Sound & Tight Knots	Unsound & Loose Knots, Holes *
4"	2"	$\frac{3}{4}"$
5"	$2\frac{1}{2}"$	1"
6"	3"	$1\frac{1}{4}"$
8"	$3\frac{1}{2}"$	$1\frac{1}{2}"$
10"	4"	$1\frac{3}{4}"$
12"	$4\frac{1}{2}"$	2"

* One hole or equivalent smaller holes per 12'

Spike & Narrow Face Knots

limited to equivalent displacement. Measurements as per Para. 320b.

DECKING

Nominal 2" to 4" Thick and 4" & Wider

127. DECKING

Decking is widely used for walls or roofs where appearance and load-bearing features are important. Moisture content is subject to special agreement.

Orders may specify "Square End Trim" as per Para. 749.

Decking is usually surfaced with a single tongue and groove pattern in 2" thicknesses and a double tongue and groove pattern in 3" & 4" thicknesses, with edge "V" one side.

The side with the "V" or "pattern" shall be considered the face side.

There are two grades of Decking: "**SELECT DECKING**" and "**COMMERCIAL DECKING**".

127a. "SELECT DECKING"

Characteristics and limiting provisions are:

Checks	medium.
Crook	light, occasional piece.
Holes	equivalent to chipped knots.
Pitch	light, or equivalent, very small streak.
Pockets - Bark	medium.
Pockets - Pitch	very small, dry.
Rate of Growth	medium grain in Douglas Fir & Western Larch only. See Para. 350a.
Skips	very light, maximum 10% of face in occasional pieces.
Slope of Grain	1 in 10.
Splits	short, occasional piece.
Stained Wood	medium.
Tongue	1/16" scant, occasional piece.
Torn or Raised Grain	medium.
Twist	very light, occasional piece.

Knots

sound and tight on exposed face, well-spaced.
Measurements as per Para. 320a.

Nominal Face Width	Knot Size (both faces)	3x6 & 4x6 Knot Sizes
4"	1 1/2"	-
6"	2 3/8"	2 1/2"
8"	3 1/4"	-
10"	4"	-
12"	5"	-

Spike & Narrow Face Knots

equivalent. In occasional pieces, firm and tight knots not exceeding 1 1/2" in diameter are permitted if not through the piece and limited to 2 per 12 lin. ft. or equivalent smaller.

Chipped Knots & Unsound Wood

may contain chipped or unsound spots of approximately 3/4" in diameter, not through, 2 per 12 lin. ft. or equivalent smaller.

Back & Unexposed Edges

hit & miss skips, wane approximately 1/3 face width and other characteristics which do not affect the intended end use.

In WR Cedar, peck is permitted on back and unexposed edges in narrow streaks, well scattered which do not affect the strength more than other characteristics allowed.

127b. "COMMERCIAL DECKING"

Characteristics and limiting provisions are:

Checks	not limited.
Crook	medium on occasional piece.
Holes	1".
Pitch	streaks.
Pockets	bark or pitch.
Rate of Growth	medium grain in Douglas Fir and Western Larch only. See Para. 350a.
Shake	if "through" at ends, treat equivalent as splits. Away from the ends, "through" shake can be up to 2' long, well separated. If not "through", single shakes shall not exceed 3' long or 1/4 the length, whichever is greater.
Skips	hit & miss.
Slope of Grain	1 in 8.
Splits	1/6 length.
Stained Wood	not limited.
Torn Grain	not limited.
Tongue	1/16" scant.
Twist	very light on occasional piece.
Unsound Wood	in small spots or streaks up to 1" wide on any face. in WR Cedar spots or streaks of peck 1/3 width of any face.
Wane	1/6 face width.
White Specks	1/3 width or equivalent.
Knots	well-spaced. Measurement as per Para. 320a.

Nominal Face Width	Knot Size (both faces)	3x6 & 4x6 Knot Sizes
4"	1 3/4"	-
6"	2 7/8"	3"
8"	3 3/4"	-
10"	4 7/8"	-
12"	6"	-

Spike or Narrow Face Knots

equivalent.

Chipped & Broken-out Knots

approximately 1 1/2" in diameter, not through.

Back & Unexposed Edges

wane approximately 1/3 face width and other characteristics not affecting intended end use.

MACHINE GRADED LUMBER

Nominal 2" and Less in Thickness and 2" & Wider

128. MACHINE GRADED LUMBER – GENERAL

The grading of lumber by mechanical means is recognized as an acceptable method of grading. All equipment and methods shall be approved and certified by the CLSAB and ALSC Board of Review. The NLGA Special Product Standard for Machine Graded Lumber (**NLGA SPS 2**) is the approved standard for the manufacture of machine graded lumber.

There are three (3) classifications of machine graded lumber:

“**MACHINE STRESS-RATED LUMBER**” (MSR),

“**MACHINE EVALUATED LUMBER**” (MEL), and

“**E-LAM LUMBER**” of which there are two (2) categories:

“**E-RATED STRUCTURAL LAMINATION LUMBER**”, and

“**MSR/MEL TENSION LAMINATION LUMBER**”.

For use in Canada, design values for machine graded lumber are established by the CSA Technical Committee on Engineering Design in Wood and published in CSA O86. Grades of MSR, MEL and E-Rated Structural Lamination Lumber and their characteristic property values are referenced in NLGA SPS 2. Grades of MSR and MEL may be produced with alternate design value assignments when provided for in the NLGA Grading Rules and Standards.

For use in the U.S., grades of MSR and MEL and their allowable design values are approved by the ALSC Board of Review and are shown in Paras. 910a to 910e and in Table 4C of the AWC NDS Supplement. Grades of MSR/MEL Tension Lamination lumber and their allowable design values are the same as MSR and/or MEL.

For use in the U.S., the assigned specific gravity (based on oven-dry weight and volume), horizontal shear (F_v) and compression perpendicular to grain ($F_{C_{\text{perp}}}$) design values for MSR and MEL are provided in Para. 910a, b and c, respectively. When the specific gravity for a grade exceeds the value for the species average shown in Para. 910a and is controlled as part of the qualification and daily quality control program, the allowable stress for horizontal shear (F_v) and compression perpendicular to grain ($F_{C_{\text{perp}}}$), may be calculated using the formulas given in Para. 910b and c.

When qualified, the specific gravity value shall be included on the grade stamp indicating that this property exceeds the assigned value.

Note: For the species combination of Spruce-Pine-Fir (S-P-F), if a grade of 2.0 E is simultaneously sorted with a higher E grade or grades, then specific gravity must be quality controlled for the 2.0 E grade.

Strength reducing characteristics larger than those listed in the following paragraphs for MSR and MEL are permitted provided the additional requirements outlined in the NLGA SPS 2 are followed and tension (F_t) qualification and daily quality control are performed. In such cases, the limiting size of the strength reducing characteristic shall be documented and included on the grade stamp.

When the grade stamp on Machine Graded Lumber includes the designation “**1W**”, it signifies that the lumber has been visually graded to meet or exceed the optional “**1W**” wane limitations as described in Para. 128b or 128c of the NLGA Grading Rules and Section 6 of NLGA SPS 2.

For further information on the visual grading restrictions of Machine Graded Lumber, refer to the NLGA Interpretations 2.7.

128a. VISUAL GRADING OF RESIDUAL LUMBER

Residual lumber is lumber which has passed through the machine grading process and was rejected from the minimum selection criteria of the machine grade being produced.

- a)** Residual lumber from a machine grading process that requires bending strength quality control may be placed in the highest visual grade for which the piece qualifies, provided that the design values assigned to the visual grade meet both of the following conditions:
 - i)** the appropriate size-adjusted design value in bending (F_b) assigned for the visual grade is less than the machine grade F_b value from which it was rejected; and
 - ii)** the assigned visual grade modulus of elasticity (E) value is less than the process average grade E value from which it was rejected, or **alternatively**, that the residual lumber visual grade E value is verified to be greater than the assigned visual grade E value.
- b)** Residual lumber from a machine grading process that requires bending and tension strength quality control may be placed in the highest visual grade for which the piece qualifies, provided that the design values assigned to the visual grade meets both of the following conditions:
 - i)** the appropriate size-adjusted design values in bending (F_b) and tension (F_t) assigned to the visual grade are less than

the machine grade F_b and F_t from which it was rejected; and

- ii) the assigned visual grade modulus of elasticity (E) value is less than the process average grade E value from which it was rejected, or **alternatively**, that the residual lumber visual grade E value is verified to be greater than the assigned visual grade E value.

See NLGA Interpretations 2.7.4 for examples of residual lumber grading scenarios.

128b. MACHINE STRESS-RATED (MSR) LUMBER

Machine stress-rated lumber is lumber that has been evaluated by mechanical stress rating equipment. MSR lumber is distinguished from visually graded lumber in that each piece is non-destructively tested and marked to indicate the grade modulus of elasticity (MOE). MSR lumber is also required to meet the visual requirements set forth herein.

A grade mark on machine stress-rated lumber indicates that the stress rating system used meets the requirements of the Grading Agency's certification and quality control procedures.

In addition to the grade stamp requirements of Para. 39, the grade mark shall show the phrase "**Machine Rated**" or "**MSR**" and the " **F_b** " and "**E**" rating for the grade. The " **F_b** " rating is the fibre stress in bending in pounds per square inch and the "**E**" rating is the rated modulus of elasticity in millions of pounds per square inch.

VISUAL RESTRICTIONS ON MSR LUMBER

Machine stress-rated lumber must be well manufactured and visually graded to limit certain characteristics even though the actual strength may not be affected. Characteristics permitted and limiting provisions shall be:

Checks	seasoning checks not limited. Through checks at ends are limited as splits.
Manufacture	Standard "F". See Para. 722f.
Shake	if through at ends, limited as splits. Away from ends, through shakes up to 2' long, well separated. If not through, single shakes shall not exceed 3' or 1/4 the length, whichever is greater.
Skips	hit & miss, with a maximum of 5% of the pieces containing hit or miss or heavy skip, 2 feet or less in length. See Paras. 720e to 720g.

Splits equal in length to 1 1/2 times the width of the piece.

Slope of Grain

for grading machines ⁽¹⁾ not evaluating slope of grain, slope of grain shall be limited by the assigned allowable bending design value:

1 in 8	for 0 F _b to 1450 F _b
1 in 10	for 1500 F _b to 2050 F _b
1 in 12	for 2100 F _b & over.

⁽¹⁾ machines which measure MOE by deflection indirectly evaluate slope of grain.

Unsound Wood (excluding White Specks)

small spots or streaks of firm honeycomb or peck are limited to 1/6 the width. Any other unsound wood is limited to a spot 1/12 the width and 2" in length or equivalent smaller.

Wane 1/3 the thickness and 1/3 the width full length, or equivalent on each face, provided that wane does not exceed 2/3 thickness or 1/2 the width for up to 1/4 the length. See Para. 750.

Optional "1W" Wane

1/4 the thickness and 1/4 the width, full length or equivalent on each face, provided that wane does not exceed 1/2 the thickness or 1/3 width for up to 1/4 the length. See Para. 750.

Warp light. See table, Para. 752.

White Specks firm, 1/3 the face or equivalent

In addition to the visual limitations listed; knots, knot holes, burls, or abnormal grain distortion, partially or wholly at edges of wide faces, shall not occupy more of the net cross-section than:

1/2	for 0 F _b to 900 F _b
1/3	for 950 F _b to 1450 F _b
1/4	for 1500 F _b to 2050 F _b
1/6	for 2100 F _b & over.

The ends of the lumber not tested by the stress-rating equipment shall be limited as follows:

Edge Knots as limited above.

Knots other than Edge Knots

equal to the largest knot tested in the tested portion of the piece or the Edge Knot permitted in the next lower Fb class, whichever is greater.

Cross-Section Knots

the size or displacement of all knots in the same cross-section may not exceed the size of the permitted largest knot as described above.

Slope of Grain

general slope of grain shall not exceed:

1 in 8	for 0 F _b to 1450 F _b
1 in 10	for 1500 F _b to 2050 F _b
1 in 12	for 2100 F _b & over.

Other strength reducing characteristics, such as knot holes, burls, or abnormal grain distortion, shall be considered the same as knots.

NOTES

128c. MACHINE EVALUATED LUMBER (MEL)

Machine Evaluated Lumber (MEL) is lumber that has been non-destructively evaluated by CLSAB or ALSC approved grading machines to predict certain mechanical properties. The MEL machine evaluates each piece and shall be capable of sorting and marking the material into mechanical properties. MEL shall meet the MSR requirements with the exception of the minimum modulus of elasticity specification and shall meet the following requirements:

- tension (F_t) qualification and daily quality control is a mandatory requirement; and
- the process lower fifth percentile of edge bending MOE (E_{5th}) shall equal or exceed 0.75 times the characteristic mean MOE value for the grade E.

MEL is also required to meet certain visual requirements as set forth herein.

The grade stamp on Machine Evaluated Lumber indicates the stress rating system used meets requirements of the Grading Agency's certification and quality control procedures. In addition to the grade stamp requirements of Para. 39, the grade stamp shall show the term "**MACHINE EVALUATED**" or "**MEL**" and a "**MEL grade**" code. The MEL grade code represents a specific combination of allowable design values for fibre stress in bending (F_b), tension (F_t), average modulus of elasticity (E), and, if applicable, specific gravity as specified in NLGA SPS 2, Table 3.

VISUAL RESTRICTIONS ON MEL

Machine Evaluated Lumber must be well manufactured and visually graded to limit certain characteristics even though the actual strength may not be affected. Characteristics permitted and limiting provisions shall be:

Checks	seasoning checks not limited; through checks at ends limited as splits.
Manufacture	Standard "F". See Para. 722f.
Splits	equal in length to 1 1/2 times the width of the piece.
Shake	if through at ends, limited as splits. Away from ends through shakes up to 2' long, well separated. If not through, single shakes shall not exceed 3' long or 1/4 the length, whichever is greater.
Skip	hit & miss, with a maximum of 5% of the pieces containing hit or miss or heavy skip 2' or less in length. See Paras. 720e to 720g.

Slope of Grain

for grading machines ⁽¹⁾ not evaluating slope of grain, slope of grain shall be limited by the assigned allowable bending design value:

1 in 8	for 0 F_b to 1450 F_b
1 in 10	for 1500 F_b to 2050 F_b
1 in 12	for 2100 F_b & over.

⁽¹⁾ machines which measure MOE by deflection indirectly evaluate slope of grain.

Unsound Wood (excluding White Specks)

small spots or streaks of firm honeycomb or peck are limited to 1/6 the width. Any other unsound wood is limited to a spot 1/12 the width and 2" in length or equivalent smaller.

Wane 1/3 the thickness and 1/3 the width full length, or equivalent on each face provided that wane does not exceed 2/3 thickness or 1/2 the width for up to 1/4 the length. See Para. 750.

Optional "1W" Wane

1/4 the thickness and 1/4 the width full length, or equivalent on each face, provided that wane does not exceed 1/2 the thickness or 1/3 width for up to 1/4 the length. See Para. 750.

Warp light. See table, Para. 752.

White Specks firm, 1/3 the face or equivalent

In addition to the visual limitations listed; other strength reducing characteristics such as knots, knot holes, burls or abnormal grain distortion partially or wholly at edges of wide faces, shall not occupy more of the net cross-section than:

1/2	for 0 F_b to 900 F_b
1/3	for 950 F_b to 1450 F_b
1/4	for 1500 F_b to 2050 F_b
1/6	for 2100 F_b & over.

The ends of the lumber not tested by the grading machine, shall be limited as follows:

Edge Knots as limited above.

Knots other than Edge Knots

equal to the largest knot tested in the tested portion of the piece or the Edge Knot permitted in the next

lower Fb class, whichever is greater.

Cross-Section Knots

the size or displacement of all knots in the same cross-section may not exceed the size of the permitted largest knot as described for knots other than edge knots listed above.

Slope of Grain

general slope of grain shall not exceed:

1 in 8 for 0 Fb to 1450 Fb

1 in 10 for 1500 Fb to 2050 Fb

1 in 12 for 2100 Fb & over.

Other strength reducing characteristics such as knot holes, burls, abnormal grain distortion shall be considered the same as knots.

128d. E-RATED STRUCTURAL LAMINATION LUMBER

E-Rated Structural Lamination lumber is lumber that has been non-destructively evaluated by CLSAB and ALSC approved grading machines.

E-Rated Structural Lamination lumber is distinguished from visually graded lumber in that each piece is non-destructively tested and marked to indicate the long-span flat-wise grade E (**LS E**) classification. E-Rated Structural Lamination lumber shall meet the visual requirements as set forth herein.

For E-Rated Structural Lamination lumber, moisture content is subject to special agreement.

A grade stamp on E-Rated Structural Lamination lumber indicates the stress rated system used meets the requirements of the Grading Agency's certification and quality control procedures.

In addition to the grade stamp requirements of Para. 39, the grade stamp shall show the "**LS E**" designation followed by the term "**LAM**".

The "**LS E**" designation shall be the average "**flat-wise**" long span "**E**" of the grade as determined by qualification testing and maintained by quality control. The grade stamp may also indicate the applicable MSR or MEL grade in accordance with the preceding sections of Para. 128.

If a more restrictive visual quality level is qualified, then the grade stamp shall include the visual quality level (VQL). (i.e., If a VQL of 1/3 cross-section is qualified for a grade of 1.9 E-LAM, the grade stamp for this product would read: 1.9E LAM-3 in which the "-3" signifies the denominator of the allowable VQL).

VISUAL RESTRICTIONS ON E-RATED STRUCTURAL LAMINATION LUMBER

E-Rated Structural Lamination lumber shall be well manufactured and visually graded to limit defined characteristics even though the actual strength may not be affected. Characteristics permitted and limiting provisions shall be:

Checks	seasoning checks not limited. Through checks on ends are limited as splits.
Knots	may be sound, unsound or not firmly fixed. A knot or knots shall not occupy more than 1/2 the cross section. A knot of the permitted size may be anywhere on the piece.
Holes	interchangeable with knots in size and spacing. Other holes are permitted if no more damaging in effect than the allowable knot.
Manufacture	Standard "C". See Para. 722c.
Pitch or Bark Pockets	medium, scattered.
Pitch Streaks	not to exceed 1/6 the width.
Shake & Splits	permitted if extending from wide faces into the thickness at an angle of 45 degrees or more from the wide face. Other restrictions are subject to special agreement.
Skips – Face	hit & miss, with a maximum of 5% of the pieces containing hit or miss.
Skips – Edge	hit & miss, with a maximum of 5% of the pieces containing hit or miss or heavy skip 2' in length or less (See Paras. 720e to 720g) unless a more restrictive requirement is specified.
Slope of Grain	for machines not evaluating slope of grain; the edge knot limits the slope of grain as follows: 1/3 edge knot displacement & larger: 1 in 10 1/4 edge knot displacement & smaller: 1 in 12
Stain	medium stained sapwood. Firm heart stain.
Torn Grain	medium. Spots of heavy torn grain around knot areas or equivalent.
Warp	light.
Wane	not to exceed 1/4" on the wide face by 1/4" deep or equivalent on the edge unless a more restrictive requirement is specified.

White Specks

firm. A combination of white speck and a knot in the same cross section shall not occupy more than $1/2$ the width or equivalent.

128e. MSR / MEL TENSION LAMINATION LUMBER

MSR/MEL Tension Lamination lumber is lumber that has been non-destructively evaluated by ALSC and CLSAB approved grading machines.

MSR/MEL Tension Lamination lumber shall meet all the requirements of MSR or MEL, as applicable, including mandatory UTS qualification and daily quality control.

Qualification and subsequent quality control are required for each of the following properties:

- edge modulus of elasticity (E),
- long-span flat-wise modulus of elasticity (LS E),
- bending strength (F_b) and
- tensile strength (F_t).

For MSR/MEL Tension Lamination lumber, moisture content is subject to special agreement.

In addition to the grade stamp requirements of Paras. 39 and 128d, a grade stamp on MSR/MEL Tension Lamination lumber shall include the applicable MSR or MEL grade stamp information.

VISUAL RESTRICTIONS ON MSR / MEL TENSION LAMINATION LUMBER

The visual requirements listed in Para. 128d shall apply to MSR/MEL Tension Lamination lumber with the following exceptions:

- a) Strength reducing characteristics such as knots, knot holes, burls, abnormal grain distortion or decay partially or wholly at the edges of wide faces, shall not occupy more of the net cross-section than:

$1/2$	for 0 F_b to 900 F_b
$1/3$	for 950 F_b to 1450 F_b
$1/4$	for 1500 F_b to 2050 F_b
$1/6$	for 2100 F_b & over

- b) The ends of the lumber not tested by the grading machine shall be limited as follows:

Edge Knots as limited above in a)

Knots other than Edge Knots

equal to the largest knot in the tested portion of the piece or the edge knot permitted in the next lower F_b class, whichever is greater.

Cross Section Knots

the size or displacement of all knots in the same cross-section shall not exceed the size of the permitted largest knot as described for knots other than edge knots listed above.

Slope of Grain

general slope of grain shall not exceed

1 in 8	for 0 F_b to 1450 F_b
1 in 10	for 1500 F_b to 2050 F_b
1 in 12	for 2100 F_b & over.

Other strength reducing characteristics such as knot holes, burls or abnormal grain distortion shall be considered the same as knots.

GLUED LUMBER

Nominal 2" and Less in Thickness and 2" & Wider

129. GLUED LUMBER - GENERAL

The NLGA structural glued lumber standards shall be applied when glued lumber is grade stamped to the structural lumber grades and species covered in the NLGA Grading Rules.

These glued lumber standards are approved by CLSAB. The present policy of the ALSC Board of Review does not call for Board of Review approval, however, these standards are required to conform to the ALSC Glued Lumber Policy and Board of Review monitors compliance of the NLGA glued lumber standards.

The following NLGA Special Product Standards are applicable to grade stamped structural fingerjoined lumber:

- NLGA SPS 1** Special Products Standard for Fingerjoined Structural Lumber,
- NLGA SPS 3** Special Products Standard for Fingerjoined "Vertical Stud Use Only" Lumber, and
- NLGA SPS 4** Special Products Standard for Fingerjoined Machine Graded Lumber (FJ-MGL).

The following NLGA Special Product Standards are applicable to grade stamped structural face-glued lumber:

- NLGA SPS 5** Special Products Standard for Structural Face-Glued Lumber "Vertical Use Only", and
- NLGA SPS 6** Special Products Standard for Structural Face-Glued Lumber.

Glued lumber shall be grade stamped as follows:

- a) All previously affixed grade stamps must be obliterated.
- b) In addition to the required grade stamp information (see Para. 39), the grade stamp shall include the following:
 - i) "HRA" or "Non-HRA", as applicable; and
 - ii) the grade stamp criteria identified in Paras. 129a or 129b, as applicable.

Note: *The designation "HRA" on a grade stamp indicates the adhesive used is qualified as a "Heat Resistant Adhesive" in accordance with the CLSAB Regulations and the ALSC Glued Lumber Policy.*

129a. STRUCTURAL FINGERJOINED LUMBER GRADE STAMP

In addition to the grade-stamp requirements of Para. 129 above, the structural fingerjoined lumber grade stamp shall also display the following:

- a) For fingerjoined structural lumber meeting the requirements of NLGA SPS 1:
 “**SPS 1**” and
 “**CERT FGR JOINT**”
- b) For fingerjoined structural lumber meeting the requirements of NLGA SPS 3:
 “**SPS 3**” and
 “**CERT FGR JOINT**” and
 “**VERTICAL STUD USE ONLY**”
- c) For fingerjoined structural lumber meeting the requirements of NLGA SPS 4:
 “**SPS 4**” and
 “**CERT FGR JOINT**”
 or
 “**SPS 4**” and
 “**CERT FGR JOINT**” and
 “**DRY USE ONLY**”

Note: “*DRY USE ONLY*” to be added as specified in SPS 4.

129b. STRUCTURAL FACE-GLUED LUMBER GRADE STAMP

In addition to the grade-stamp requirements of Para. 129 above, the structural face-glued lumber grade stamp shall also display the following:

- a) For face-glued structural lumber meeting the requirements of NLGA SPS 5:
 “**SPS 5**” and
 “**CERT FACE GLUED**” and
 “**VERTICAL STUD USE ONLY**”
- b) For face-glued structural lumber meeting the requirements of NLGA SPS 6:
 “**SPS 6**” and
 “**CERT FACE GLUED**”

129c. NON-STRUCTURAL FINGERJOINED BOARDS

In fingerjoined boards, the grade limiting characteristics are the same as those on a solid sawn piece of lumber of the same board grade and size. The joint shall also be tight and of good appearance.

Non-structural fingerjoined boards shall be grade stamped as follows:

- a) All previously affixed grade stamps must be obliterated, and
- b) In addition to the required grade stamp information (see Para. 39), the grade stamp shall include the following:

“NON-STRUCTURAL GLUED LUMBER”

NOTES

BEAMS AND STRINGERS
(Rectangular Timbers)
Rough or Surfaced
Nominal 5" & Thicker
Nominal Width more than 2" greater than Thickness

130. BEAMS AND STRINGERS

There are five grades of Beams and Stringers:

"SELECT STRUCTURAL",

"NO. 1",

"NO. 2",

"STANDARD", and

"UTILITY".

Three of these grades, **"SELECT STRUCTURAL"**, **"NO. 1"**, and **"NO. 2"** are stress grades with assigned design values.

Pieces 5" x 5" and larger, with the width not more than 2" greater than the thickness (Post and Timber sizes), may be graded under this paragraph provided all faces are graded as narrow faces. Pieces so graded will have design values the same as the following Beam and Stringer grades and, in addition to the grade stamping requirements of Para. 39, the grade stamp or accompanying grade certificate shall also show **"Para. 130"**.

Along with the following specific provisions applicable to Beams and Stringers, the appropriate provisions in all other paragraphs in the rules apply.

For measurement of knots, shakes, checks, and splits refer to Paras. 320, 320b, 330 and 340 respectively. Knots appearing on the narrow faces are limited to the same displacement as knots at the edges of the wide faces.

Pieces are graded from all faces, and both ends.

130a. "SELECT STRUCTURAL" BEAMS AND STRINGERS

Characteristics and limiting provisions shall be:

Checks	in areas at ends, single or opposite, with a total equal to approximately 1/4 the thickness.
Holes	pin: limited. grub and teredo: one for each 2' of length.
Pitch Streaks	not limited.
Pockets	pitch or bark: medium.
Rate of Growth	medium grain in Douglas Fir and Western Larch only.
Shake	1/6 thickness on ends.
Skips	occasional 1/16" x 2' or equivalent.
Slope of Grain	1 in 14.
Splits	1/2 width in length or equivalent end checks.
Stain	stained sapwood; 10% firm heart stain.
Torn Grain	heavy.
Wane	1/8 of any face or, as equivalent, 1/4 of any face for 1/4 length.

Knots sound, tight, well-spaced and are permitted in sizes not to exceed the following or equivalent displacement:

Nominal Width	At Edge of Wide Face	Centreline Wide Face
8"	1 7/8"	2"
10"	2"	2 5/8"
12"	2 1/8"	3 1/8"
14"	2 3/8"	3 1/4"
16"	2 1/2"	3 1/2"
18"	2 3/4"	3 1/2"

The size of the knots on the wide faces may be increased proportionately from the size permitted at the edge to the size permitted at the centerline.

In Cedar, characteristic soft knots 1/2 the size of the sound and tight knots are permitted.

130b. "NO. 1" BEAMS AND STRINGERS

Characteristics and limiting provisions shall be:

Checks	in areas at ends, single or opposite, with a total equal to approximately 1/4 the thickness.
Holes	pin: limited. grub and teredo: one for each 1' length. in cedar: holes from any cause 1/2 the size of the allowable knots.
Pitch Streaks	not limited.
Pockets	pitch or bark: not limited.
Rate of Growth	medium in Douglas Fir and Western Larch only.
Shake	1/6 thickness on ends.
Skips	occasional 1/8" x 2' or equivalent.
Slope of Grain	1 in 10.
Splits	short or equivalent end checks.
Stain	stained sapwood, heart stain firm.
Torn Grain	heavy.
Wane	1/4 of any face or, as equivalent, 1/3 of any face for 1/4 length.

Knots sound, tight, well-spaced and are permitted in sizes not to exceed the following or equivalent displacement:

Nominal Width	At Edge of Wide Face	Centreline Wide Face
8"	2 5/8"	3"
10"	2 7/8"	3 3/4"
12"	3 1/4"	4 1/2"
14"	3 1/2"	5"
16"	3 3/4"	5 1/4"
18"	3 7/8"	5 5/8"

The size of the knots on the wide faces may be increased proportionately from the size permitted at the edge to the size permitted at the centerline.

In Cedar, characteristic soft knots half the size of the sound and tight knots are permitted.

130c. "NO. 2" BEAMS AND STRINGERS

Characteristics and limiting provisions shall be:

Checks not limited.

Honeycomb or Peck

spots and streaks of firm honeycomb or peck are limited to 1/6 the width.

Pitch Streaks not limited.

Pockets pitch or bark: not limited.

Slope of Grain 1 in 6

Skips 1/8" deep and 2' in length or 1/16" scant full length

Splits medium or equivalent end checks.

Stained Wood not limited.

Shake 1/2 length, 1/2 thickness. If through at ends, limited as splits.

Torn Grain not limited.

Unsound Wood small spots, well scattered, 1/6 the face width.

Wane 1/3 of any face or equivalent, 1/2 of any face for 1/4 the length.

White Specks firm, 1/3 volume.

Knots sound, not firmly fixed, or holes, well-spaced and are permitted in sizes not to exceed the following or equivalent displacement:

Nominal Width	At Edge and Centreline of Wide Face
8"	4 1/2"
10"	5 5/8"
12"	6 7/8"
14"	7 1/2"
16"	8 1/4"
18"	8 5/8"

Unsound knots are limited to 1/2 the size of other knots.

130d. "STANDARD" BEAMS AND STRINGERS

Graded as per the provisions of Para. 131d.

130e. "UTILITY" BEAMS AND STRINGERS

Graded as per the provisions of Para. 131e.

NOTES

POSTS AND TIMBERS
Rough or Surfaced
Nominal 5" x 5" and Larger
Nominal Width not more than 2" greater than Thickness

131. POSTS AND TIMBERS

There are five grades of Posts and Timbers:

"SELECT STRUCTURAL",

"NO. 1",

"NO. 2",

"STANDARD", and

"UTILITY".

Three of these grades, **"SELECT STRUCTURAL", "NO. 1", and "NO. 2"** are stress grades with assigned design values.

In addition to the following specific provisions applicable to Posts and Timbers, the appropriate provisions in all other paragraphs of the rules apply. Except as provided in the grade descriptions, knots appearing on narrow faces are limited to the same displacement as knots specified for the wide faces.

For measurement of knots, shakes, checks, and splits refer to Paras. 320, 320b, 330 and 340 respectively.

Pieces are graded from all faces, and both ends.

131a. "SELECT STRUCTURAL" POSTS AND TIMBERS

Characteristics and limiting provisions shall be:

- Checks** in areas at ends, single or opposite, with a total equal to approximately 1/4 the thickness.
- Holes** pin: limited.
grub and teredo: one for each 2' of length.
- Knots** sound, tight and well-spaced. May be present anywhere in the piece in the following sizes or their equivalent displacement:

Nominal Width	Knot Size
5"	1"
6"	1 1/4"
8"	1 5/8"
10"	2"
12"	2 3/8"
14"	2 1/2"
16"	2 3/4"
18"	3"

Assigned stress values do not apply to pieces 20" and wider or thicker; and/or 50' or longer. In pieces of this size or length, the knots may be proportionately larger. In Cedar, characteristic soft knots 1/2 the size of the sound and tight knots are permitted.

- Pitch Streaks** not limited.
- Pockets** pitch or bark: medium.
- Rate of Growth** medium in Douglas Fir and Larch only.
- Shake** 1/3 thickness on ends.
- Skips** 1/16" x 2' or equivalent.
- Slope of Grain** 1 in 12.
- Splits** 3/4 thickness in length or equivalent end checks.
- Stain** stained sapwood; heart stain firm - 10% width or equivalent.
- Torn Grain** heavy.
- Wane** 1/8 any face or as equivalent 1/4 of any face for 1/4 length.

131b. "NO. 1" POSTS AND TIMBERS

Characteristics and limiting provisions shall be:

Checks in areas at ends, single or opposite, with a total equal to approximately 1/2 the thickness.

Holes pin: limited.
grub and teredo: one for each 1' length.
in cedar: holes from any cause 1/2 the size of the allowable knots.

Knots sound, tight and well-spaced. May be present anywhere in the piece in the following sizes or their equivalent displacement:

Nominal Width	Knot Size
5"	1 1/2"
6"	1 7/8"
8"	2 1/2"
10"	3 1/8"
12"	3 3/4"
14"	4"
16"	4 1/4"
18"	4 1/2"

Assigned stress values do not apply to pieces 20" & wider or thicker; and/or 50' or longer. In pieces of this size or length, the knots may be proportionately larger. In Cedar, characteristic soft knots 1/2 the size of the sound and tight knots are permitted.

Pitch Streaks not limited.

Pockets bark or pitch: not limited.

Rate of Growth medium in Douglas Fir and Larch only.

Shake 1/3 thickness on ends.

Skips 1/8" x 2' or equivalent.

Slope of Grain 1 in 10.

Splits short or equivalent end checks.

Stain stained sapwood, heart stain firm.

Torn Grain heavy.

Wane 1/4 any face or as equivalent 1/3 of any face for 1/4 length.

131c. "NO. 2" POSTS AND TIMBERS

Characteristics and limiting provisions shall be:

Checks not limited.

Honeycomb or Peck

spots and streaks of firm honeycomb or peck limited to 1/6 width.

Knots

sound, not firmly fixed or holes, well-spaced. May be present anywhere in the piece in the following sizes or their equivalent displacement:

Nominal Width	Knot Size
5"	2 1/2"
6"	3"
8"	3 3/4"
10"	5"
12"	6"
14"	6 1/2"
16"	7"
18"	7 1/2"

Unsound knots are limited to 1/2 the size of other knots.

Pitch Streaks not limited.

Pockets pitch or bark: not limited.

Shake 1/2 length, 1/2 thickness. If through at ends, limited as splits.

Skips 1/8" deep and 2' in length or 1/16" scant full length.

Slope of Grain 1 in 6.

Splits medium or equivalent end checks.

Stained Wood not limited.

Torn Grain not limited.

Unsound Wood small spots, well scattered, 1/6 the face width.

Wane 1/3 of any face or equivalent 1/2 the width for 1/4 length.

White Specks firm, 1/3 volume.

131d. "STANDARD" POSTS AND TIMBERS

Characteristics and limiting provisions shall be:

Checks	not limited.
Holes	1/2 width of face or equivalent
Honeycomb or Peck	spots and streaks of honeycomb or peck limited to 1/4 width.
Knots	1/2 width of face or equivalent.
Pitch Streaks	not limited.
Pockets	bark or pitch: not limited.
Shake	1/2 thickness, 1/2 length or equivalent, if through at end, limited as splits.
Skips	1/8" x 2' or 1/16" scant full length.
Slope of grain	1 in 4
Splits	medium or equivalent end checks.
Stain	stained wood.
Torn Grain	not limited.
Unsound Wood	spots 1/4 the face width.
Wane	1/3 of any face or equivalent, 1/2 width for 1/4 length.
White Specks	1/3 volume.

131e. "UTILITY" POSTS AND TIMBERS

Characteristics and limiting provisions shall be:

Checks not limited.

Holes 3/4 width of face or equivalent.

Honeycomb or Peck

spots or streaks 1/2 the face width.

Knots 3/4 width of face or equivalent.

Pitch Streaks not limited.

Pockets bark or pitch: not limited.

Shake not through, single shake permitted full length.
Shake on ends limited to splits. Elsewhere,
through shakes 1/2 length, scattered full length.

Skips 1/8" scant if surfaced; 1/2" off nominal if rough.

Slope of grain 1 in 4

Splits 1/4 length.

Stained wood not limited.

Torn Grain not limited.

Unsound Wood spots or streaks 1/2 face width.

Wane 1/3 of any face or equivalent, 1/2 width for 1/4
the length.

White Speck not limited.

SPECIALTY ITEMS
LADDER RAILS
Seasoned and Surfaced Four Sides

132. LADDER RAILS

Ladder Rails are customarily furnished in Douglas Fir, Western Hemlock and Coast Sitka Spruce as ordered, but when specified, any other species may be used under these rules.

Ladder Rails are well manufactured to sizes ordered and are practically straight, permitting only very light crook or bow in occasional pieces. Limitations on compression wood in these grades apply to the type that is readily identifiable by visual inspection. Ladder Rails are dried to a maximum of 15% moisture content. Grade descriptions are based on a piece nominal 3" wide. The number of characteristics in wider or narrower pieces may vary accordingly.

There are three grades of Ladder Rails: "**V.G. LADDER RAILS**", "**F.G. or M.G. LADDER RAILS**", and "**LADDER RAIL STOCK**".

In addition to the following specific provisions for Ladder Rails, the appropriate provisions in all other paragraphs in the rules apply.

132a. "V.G. LADDER RAILS"

Most pieces are entirely clear or have only minor or unimportant characteristics such as:

Burls	less than 1/2" in diameter.
Checks	small, one in any 3 lineal feet.
Compression Wood	a streak 1/2" wide or equivalent, narrower streak.
Pockets	very small, one in any 3 lineal ft.
Rate of Growth	average 6 rings per inch.
Slope of Grain	1 in 12.
Torn Grain	very light.

132b. "F.G. OR M.G. LADDER RAILS"

Pieces of this grade may be Vertical, Flat or Mixed Grain at shipper's option unless otherwise specified. Most pieces are clear or have only minor or unimportant characteristics such as:

Burls	less than 1/2" in diameter.
Checks	small, 1 in any 3 lineal feet.

Compression Wood

	a streak 1/2" wide or equivalent, narrower streak.
Knots	pin, sound and tight, less than 1/2" in diameter and located 1/2" or more from the edges are permitted on wide faces if not more frequent than 1 in any 3 lineal ft.
Pockets	very small, 1 in any 3 lineal feet.
Rate of Growth	average 6 rings per inch.
Slope of Grain	1 in 12.
Torn Grain	very light.

132c. "LADDER RAIL STOCK" (V.G., F.G., OR M.G.)

Pieces of this grade have one or more characteristics which are of size or number that the pieces are not of the "Ladder Rail" grade but are suitable for use in shorter components. Characteristics or their equivalent smaller which may appear on pieces in this grade and their limiting provisions are:

Burls less than 1/2" in diameter.

Checks 2 - 6" in any 3 lineal feet.

Compression Wood

narrow streaks, with the aggregate not to exceed 1/4 the volume of the piece.

Heart Stain firm.

Knots pin, sound and tight, less than 1/2" in diameter and located 1/2" or more from the edges are permitted on wide faces if not more frequent than 1 in any 3 lineal ft.

Pockets small, 1 in any 3 lineal feet, or their equivalent smaller.

Sap Stain medium.

Skips very light on occasional pieces.

Slope of Grain 1 in 10.

Splits short in 5% of the pieces.

Torn Grain light.

Cutout a 3" cutout is permissible in 10% of the shipment if the resultant pieces are 3' long or longer and meet the provisions of "Ladder Rail Stock".

SPECIALTY ITEMS

GUTTER

133. GUTTER

Gutter is shipped in a number of patterns. Grade descriptions are based on a piece nominal 4" x 5" - 20'. The number of characteristics in larger or smaller pieces may vary in proportion to the size of the piece. Gutter must be watertight full length.

In addition to the following specific provisions applicable to Gutter, the appropriate provisions in all other paragraphs in the rules apply.

There are two grades of Gutter: "**CLEAR**" and "**SELECTED**".

133a. "CLEAR" GUTTER

Characteristics or their equivalent smaller which may appear on pieces in this grade and their limiting provisions are:

Checks	medium, not through.
Knots	3 - sound, tight 1" or equivalent smaller.
Pitch Streaks	medium.
Pockets	4 - medium, none through.
Skips	very light on exposed faces, hit & miss on other faces.
Stained Sapwood	medium.
Torn or Raised Grain	heavy.

133b. "SELECTED" GUTTER

Must be medium grain, free from defective hearts. Other characteristics and limiting provisions are:

Checks	medium, not through.
Knots	sound, intergrown and well scattered, approximately 1" in 3" widths to 1 3/4" in 5" widths.
Spike Knots	equivalent.
Pitch Streaks	large.
Pockets	medium, none through.
Skips	very light on exposed faces, hit & miss on other faces.
Stained Sapwood	medium.
Torn or Raised Grain	heavy.

SPECIALTY ITEMS

MAST, SPAR AND BOAT LUMBER

134. MAST, SPAR AND BOAT LUMBER

Mast, Spar and Boat Lumber F.G. and/or V.G. is well manufactured and F.O.H.C. Grade descriptions are based on a piece nominal width 8" x 12'.

In addition to the following specific provisions applicable to Mast, Spar and Boat Lumber, the appropriate provisions in all other paragraphs in the rules apply.

134a. "ONE TO TWO INCH"

Characteristics and limiting provisions are:

Checks	4 - small.
Pockets	3 - very small, none through.
Rate of Growth	average 5 rings per inch.
Sapwood	bright, 1/3 width or equivalent.
Slope of Grain	1 in 10.
Splits	short, in 5% of the pieces.

And on reverse side:

Pockets	pitch or bark: 4 - small.
Knots	2 - small, sound and tight, or equivalent pin.

134b. "TWO AND ONE-FOURTH INCH AND THICKER"

Characteristics and limiting provisions on wide face and corresponding half of narrow faces are the following or equivalent:

Checks	6 - small in 2 1/4" thickness to 6 - medium in 6" & thicker.
Pockets	3 - small in 2 1/4" thickness to 4 in 4" & thicker.
Rate of Growth	average 5 rings per inch.
Sapwood	bright, 1/3 width or equivalent.
Slope of Grain	1 in 10.
Splits	short in 5% of pieces.

And on reverse side and corresponding half of narrow faces:

Pockets	pitch or bark: 4 - medium.
Knots	3 - sound and tight, 1" in 2 1/4" thickness to 2" in 12" thicknesses.

SPECIALTY ITEMS

FLITCHES FOR REMANUFACTURE

150. FLITCHES FOR REMANUFACTURE

Flitches as specified in these grades are particularly valued for the percentage of cuttings which may be obtained for use in joinery and factory work.

150a. FACTORY FLITCHES

Irregularities such as spike knots, knots, large soft knots, loose knots, knot holes or wane on corners which can be entirely removed in the process of resawing, ripping and/or cross-cutting will be allowed, provided that irregularities as heretofore mentioned are located in the flitch in such a way that each clear cutting resulting will not be less than 2' long, after allowing not more than 20% waste in a flitch. In each flitch or board 12' and longer at least half of required cuttings shall be 7' and longer.

150b. SHOP FLITCHES

Flitches of this grade give a lower return of clear cuttings than Factory Flitches but will be satisfactory for use in many areas where clear cuttings of shorter length are required. Each flitch must produce, on remanufacture, a minimum of 60% of clear cuttings 2' and longer.

SPECIALTY ITEMS

MOULDING STOCK

All Thicknesses and Widths

151. MOULDING STOCK (A)

Moulding Stock (A) is stock of a type suitable for ripping into strips 1" and wider, 10' and longer. At least 2/3 of the area contains such rips of the grade permissible in standard Mouldings.

In 4/4 and 8/4 & thicker Moulding Stock the grade of each rip is determined from the best face. In 5/4, 6/4 and 7/4 Moulding Stock the grade of each rip is determined from the poorest face.

Slope of grain is limited to 1 in 4 in 4/4 and 8/4 & thicker stock and 1 in 6 in 5/4, 6/4 & 7/4 stock.

Crook, regardless of the width of a piece, is limited to 1" in 10' and shorter pieces and 1 1/2" in 11' and longer pieces.

Up to 10% of the footage of any item may be 6' to 9' in length, provided each piece contains 2/3 or more of full-length moulding rips.

Wane, stain, skips in dressing or other characteristics that will surface off in making mouldings of standard size are admissible in computing the percentage of rips.

In rough 4/4 Moulding Stock, up to 10% of the material may be less than 7/8" thick, provided 5/8" mouldings can be manufactured from the thinner stock.

Rough 5/4, 6/4 and 7/4 Moulding Stock shall be the same thickness as other grades of Selects (see Para. 820e). Rough 8/4 Moulding Stock shall be the same thickness as other grades of Selects (see Para. 820e), except that 5% of the material may contain a minimum thickness of 1 7/8". Moulding Stock thinner than these minimums shall be included and tallied as of the next lower thickness.

Massed pitch, shake, unsound wood and wane may render a portion of a piece unusable as Moulding Stock. If these characteristics create a total loss of 10% or more of the area of the piece, the excess unusable portion shall be scaled off to the nearest square foot, and the scale-off shall be marked on the piece. Pieces containing less than 10% waste shall not be scaled off to raise the grade. Pieces requiring more than 50% scale-off are not permitted.

151a. MOULDINGS

Standard Mouldings permit such characteristics as are acceptable in both interior and exterior trim. These may be light seasoning checks, very small pockets, light torn grain, pin-size and small knots, medium stain or a small amount of medium pitch. A serious combination of these is not admissible in any one piece. The number and extent of characteristics permitted varies as the area of the piece increases or diminishes.

Based on a 1" x 2" x 12' size, this grade will admit the following characteristics or the equivalent:

- a) A small spot of torn grain and 1' of medium pitch, light skip in dressing on back; **or**
- b) One pocket $\frac{1}{8}$ " x 2" or equivalent; **or**
- c) Two pin knots or one small knot (knots may be increased in number on an equivalent basis as the size of the moulding increases, but may not be increased in size); **or**
- d) One small seasoning check and a light snipe at one end; **or**
- e) Medium stain covering $\frac{1}{3}$ the face in an occasional piece, or a greater area of lighter stain when not in combination with other characteristics.

Characteristics that will not show when piece is laid are not given the same consideration as characteristics elsewhere.

In random length Mouldings, pieces requiring one cut not to exceed 4" of waste to eliminate a characteristic too serious to go in the grade are allowed in otherwise high line pieces. The cut must be more than 36" from each end of the piece. Not more than 10% of the cutting type is admissible in any one item.

Lengths shall be 3' to 20' in multiples of 1'. When random length shipments are ordered, no more than 15% under 8' in any one item and bundled separately shall be shipped. When shipments are ordered to be 6' and longer, no more than 10% under 8' is allowable in any one item.

- a) Casing and Stop patterns 7' in length are considered long lengths when figuring percentage of shorts.
- b) Cut to length window and door trim are graded as completely usable.

The above paragraphs also apply to all fingerjoined mouldings with the additional provision that medium stain is allowed.

Patching and filling are allowed in fingerjoined mouldings, providing a good paintable surface results.

152. MOULDING STOCK (B)

Moulding Stock (B) shall consist of lumber suitable for ripping into moulding strips 1" and wider, 8' and longer.

Each piece contains not less than 50% of rips of the grade permissible (See Para. 151a for grade characteristics). Up to 15% of stock 6' to 7' may be included, provided each piece contains 50% or more of full length moulding rips. Wane, stained wood, skips in dressing, or other characteristics that will surface off in making mouldings of standard size are admissible in computing the percentage of obtainable rips.

In rough Moulding Stock, up to 10% of the material may be less than 7/8" thick, provided 5/8" mouldings can be manufactured from the thinner stock.

SPECIALTY ITEMS

WINDOW STOCK (WS)

All Widths and up to 5" in Thickness

153. WINDOW STOCK

There are five (5) grades of Window Stock: "**CLEAR**", "**A**", "**B**", "**C**" and "**SELECT**" Window Stock. These grades are designed to provide the window trade with a full width product where only cross-cutting is required for the manufacture of window components.

Window stock may be supplied green or dry, rough, surfaced or worked, vertical, flat or mixed grain as ordered.

Grades are based on the quality and percentage of cuttings available from each piece.

The poorer face shall determine the grade.

Cutting sizes must be full width and 3' and longer.

153a. GRADE OF CUTTINGS

The cuttings of "CLEAR", "A", "B" and "C" window stock shall permit:

Checks	In dry stock: one - 4" per cutting - no limit if rough. If ordered unseasoned and/or rough: not limited
Mineral Streaks	2 per cutting on the occasional piece
Rate of Growth	average 6 rings per inch.
Slope of Grain	1 in 8
Slough Knots	occasional piece may have one slough knot extending 1/2" into the wide face and not more than 1/2" deep in thickness.
Wane	1/2" in thickness and width, full length on one corner only.
Warp	Crook/Bow: 1/32" for each 1' of length. Twist: 1/2 of Crook/Bow allowance.

153b. "CLEAR" WINDOW STOCK (Clr-WS)

The entire length of the pieces in this grade shall conform to the grade of cuttings.

153c. "A" WINDOW STOCK (A-WS)

Pieces in this grade shall contain a minimum of 90% - 3' & longer cuttings.

153d. "B" WINDOW STOCK (B-WS)

Pieces in this grade shall contain a minimum of 70% - 3' & longer cuttings.

153e. "C" WINDOW STOCK (C-WS)

Pieces in this grade shall contain a minimum of 50% - 3' & longer cuttings.

153f. "SELECT" WINDOW STOCK (Sel-WS)

This grade is of the quality for use where high appearance is not required and is more suitable for paint finishes.

Pieces in this grade shall contain a minimum of 70% - 3' & longer cuttings. The cuttings of "SELECT" window stock shall permit:

Checks	In dry stock: one - 4" per cutting - no limit if rough. If ordered unseasoned and/or rough: not limited.
Heart Stain	not limited.
Knots	sound and tight pin knots.
Mineral Streaks	not limited.
Pockets	very small
Rate of Growth	average 4 rings per inch.
Sapstain	medium
Slope of Grain	1 in 6
Slough Knots	occasional piece may have one slough knot extending 1/2" into the wide face and not more than 1/2" deep in thickness.
Wane	1/2" in thickness and width, full length, on one corner only.
Warp	Crook/Bow: 1/32" for each 1 foot of length. Twist: 1/2 of Crook/Bow allowance.

SPECIALTY ITEMS

FACTORY LUMBER AND DOOR STOCK

154. FACTORY DOOR AND LUMBER STOCK

Factory Lumber (Para. 155) and Door Stock (Para. 156) shall be measured for the percentage of cuttings (Para. 157) which can be obtained with the grade work carried to each cutting piece (Para. 158).

In addition to the following specific provisions applicable to Factory Door and Lumber Stock, the appropriate provisions in all other paragraphs in the rules apply.

155. FACTORY LUMBER 1" & 2" SHOP (All Species except WR Cedar)

Sizes:

Nominal Thickness	Finished Thickness S2S	Nominal Widths
1" cut full size	25/32" & 13/16"	5" and wider
2"	1 25/32"	5" and wider

Lengths: 4' & longer. Not to exceed 25% 8' & shorter, in multiples of 1'.

Scantness: Rough 6" & narrower shall not be more than 1/8" scant in width when dry; 8" & wider widths shall not be more than 1/4" scant when dry.

Size of Cuttings:

- a) 9 1/4" or wider, 18" or longer.
- b) 5" or wider, 3' or longer.
- c) If stock under 5" wide, cutting must be full width and 3' & longer.

155a. GRADE OF CUTTINGS

The grade is determined from the poorest face.

- a) Cuttings 9 1/4" or wider and 18" or longer shall be clear on both sides — bright sapwood admitted.
- b) All other cuttings other than sash shall have a face equal to "**B and Better**" Industrial as per Para. 108b.
- c) Sash cuttings as per Para. 157d.

Panel stock cuttings to be graded under **a)** above and must be full to width ordered.

155b. "SELECT SHOP"

Each piece shall contain 70% or more of **a)** and/or **b)** cuttings.

155c. "NO. 1 SHOP"

Each piece shall contain 50% to 70% of **a)** and/or **b)** cuttings.

155d. "NO. 2 SHOP"

Each piece shall contain 33 1/3% to 50% of **a)** and/or **b)** cuttings.

155e. "NO. 3 SHOP"

NO. 3 Shop shall be of factory lumber type admitting all pieces below the grade of NO. 2 Shop that contain approximately 10% or more of mixed **a)** and/or **b)** cuttings and 30% or more of mixed sash cuttings or 50% of sash cuttings.

156. DOOR STOCK 1 3/8" AND THICKER**Sizes:**

Nominal Thickness	Finished Thickness S2S	Lengths
1 3/8" cut full size	1 5/32"	6' and longer in multiples of 1'
1 5/8" cut full size	1 13/32"	
2" cut full size	1 25/32"	
2 1/2" cut full size	2 9/32"	
3" cut full size	2 3/4"	
4" cut full size	3 3/4"	

156a. SCANTNESS

Rough 4" to 6" widths shall not be more than 1/8" scant in width when dry; 8" and wider widths shall not be more than 1/4" scant when dry.

156b. DOOR CUTTINGS – Lengths and Widths

Stiles, for purposes of computing percentages of cuttings, shall be figured as 4" to 6" wide by 6'8" to 7'7", in multiples of 1" in length for 1 3/8" and 1 5/8" Door Stock and 6'9" to 8'1" for 2" & thicker Door Stock.

Top Rails, 4" to 6" wide and **Bottom Rails**, 8" to 12" wide, shall be figured in lengths from 23" to 37" in multiples of 1" for 1 3/8" and 1 5/8" Door Stock and 25" to 47" for 2" & thicker Door Stock.

Muntins, shall be 4" to 6" wide and 3'6" to 4' in length.

156c. DOOR CUTTINGS – Percentages

In determining the percentage of door cuttings in 1 3/8" & thicker stock, consideration must be given to the fact that stock is to be ripped full length before cross cutting, in such manner as will yield the highest grade and largest percentage of door cuttings, except in such cases where stock will yield a higher value by first being cross cut for rails. In instances where stock is cross cut for rails and some of the stock so obtained contains stiles and muntins or top rails, which can be obtained by ripping this cross cut stock, the door cuttings so obtained shall be figured in when determining percentages. Where cutout knots occur, the computation of cuttings shall commence 1" from nearest edge of knot. Imperfections, other than knots, which will machine out, are permissible. Door Stock shows on both sides, hence the grade is determined from the poorer face.

157. GRADE OF CUTTINGS

Three grades of Door Cuttings only shall be recognized, "NO. 1 Cuttings", "NO. 2 Cuttings" and "NO. 3 Cuttings". Cuttings shall be VG unless otherwise specified.

157a. "NO. 1 CUTTINGS"

NO. 1 Cuttings will admit 1 - small pocket, not through. NO. 1 Cuttings must average at least 8 rings to the inch. Light pink colour admitted.

Slope of grain not to exceed 1 in 8.

157b. "NO. 2 CUTTINGS"

NO. 2 Cuttings must average at least 6 rings to the inch. Will admit firm stained wood and one of the following:

- | | |
|----------------------|---|
| Pocket | 1 - small, not through. |
| Pockets | 2 - small, not through, in a stile if located within 20" of the ends. |
| Checks | 1 or more, none through, with a combined length of not more than 6". |
| Torn Grain | very light on one side of a piece. |
| Pitch Streaks | not pronounced, or light pitch. |

Slope of grain not to exceed 1 in 8.

157c. "NO. 3 CUTTINGS"

NO. 3 Cuttings will permit stained wood and one of the following:

- Pocket** 1 - 6", not through, for each 20" of length,
or equivalent of seasoning checks.
- Pitch Streaks** medium.
- Torn Grain** light.
- Knot** 1 - sound, tight, 5/8" per cutting
- Pin Holes** a few scattered on one side.

157d. "SASH CUTTINGS"

NO. 2 Cuttings and Better are 2 1/2", 3 1/2" and 4 1/2" wide by 28" and over in length.

158. GRADE OF PIECE FOR CUTTING

158a. "FACTORY SELECT"

Each piece shall contain 70% or more NO. 1 Door Cuttings. Sizes and grades of cuttings admissible in any combination are as follows:

- 4" to 6" widths:** any number of NO. 1 Stiles; 1 only NO. 1 Top Rail.
- 8" to 12" widths:** any number of NO. 1 Stiles and/or Bottom Rails are allowed; 1, NO. 1 Top Rail may be included.

In pieces requiring 3 Stiles to get the necessary percentage of cuttings, 1 - NO. 2 Stile is allowed. Muntins are not permitted in this grade.

158b. "NO. 1 SHOP" (Door Stock)

Each piece shall contain 50 to 70% or more NO. 1 Door Cuttings. Sizes and grades of cuttings admissible in any combination are as follows:

- a) Any number of NO. 1 Stiles.
- b) Any number of NO. 1 Rails - 8" to 12" wide.
- c) 2 only, NO. 1 Muntins or Top Rails.
- d) 1 only, NO. 2 Stile. Each 4" to 6" piece in this grade must contain at least 1 Stile.

158c. "NO. 2 SHOP" (Door Stock)

Each piece shall contain not less than 25% NO. 1 Door Cuttings, or 40% NO. 2 Door Cuttings, or 60% of NO. 3 Door Cuttings, or 33 1/3% of NO. 1 and NO. 2 Door Cuttings combined.

Any combination of Stiles, Rails or Muntins is admissible except NO. 1 Top Rails shall be figured as NO. 2.

158d. "NO. 3 SHOP" (Door Stock) or "SASH"

NO. 3 Shop shall be of factory lumber type admitting all pieces below the grade of NO. 2 Shop which contain approximately 10% or more of mixed Door Cuttings and 30% or more of mixed Sash Cuttings, or 50% of Sash Cuttings, or 40% NO. 3 Cuttings.

158e. "CUT DOOR STOCK" K.D.

Sizes: thicknesses, lengths and widths as follows:

Nominal Thickness	Finished Thickness S2S
1 3/8"	1 5/32"
1 5/8"	1 13/32"
2"	1 25/32"

Door Stock	Lengths	Widths
Stiles	6'7" to 8'1"	4" to 6"
Bottom Rails	23" to 48"	8" to 12"
Top Rails	23" to 48"	4" to 6"
Muntins	36" to 4'	4" to 6"

Rough 4" to 6" widths shall not be more than 1/8" scant in width when dry; 8" and wider shall not be more than 1/4" scant when dry.

Imperfections on face and edges that will dress, tenon or sand out are permitted.

Door Stock shows on two sides, therefore the grade must be determined from the poorer face.

GRADES - Stiles, Rails, Top Rails, Narrow Lock Rails and Muntins

158f. "NO. 1"

NO. 1 will permit:

Torn Grain very light.

Pocket 1 - 3", not through thickness or into edge.

Note: *In Top and Narrow Lock Rails, and Muntins, no pitch pockets are permitted.*

158g. "NO. 2"

NO. 2 will permit:

Torn Grain very light.

And one of the following or equivalent:

Stained Wood light, not over 50% of one side of piece.

Checks 1 or more, with a combined length of not over 8".

Pockets 2 - 4", none through thickness or into edge.

Pitch Streak small, light.

Knots 1 - sound, tight, not over 5/8" in diameter.

158h. "NO. 3"

NO. 3 will permit:

Torn Grain light.

And one of the following or equivalent:

Stained Wood not limited.

Checks 1 or more, with a combined length of not over 8".

Pockets 2, none over 6" in length.

Pitch light.

Knots sound, tight, none over 1".

Pin Holes a few scattered on one side.

SPECIALTY ITEMS

ALTERNATE RULES FOR FACTORY LUMBER

159. BOX LUMBER – 4/4 and Thicker, All Widths

Box lumber may be of any thickness, 4/4 and thicker. It is considered strictly Factory lumber graded for box cutting value, and no comparison with any Yard grade shall be made.

Shipments ordered "hit or miss" to larger than standard sizes will contain all stock that will surface cleanly to standard size.

On orders of special widths or thicknesses, all stock sawn for the orders will be shipped.

Docking for scale, or so-called "pencil trimming", is permissible if the scale-off is clearly indicated on each piece so trimmed. The descriptions following are intended to define the low limits of the grades, and shipments of box lumber will generally be found to contain a large portion of stock of higher box cutting value.

Short Box includes lumber 12" to 48" long, inclusive, 3" & wider of **NO. 4 Common** grade and better.

159a. "NO. 1 BOX"

Sound red knots up to 4" in diameter and medium black knots are admissible, and no limit is placed on the number appearing in any one piece.

Larger knots, knot holes, and other serious characteristics are permitted when the waste from these characteristics does not exceed 15% of the piece.

Other characteristics admissible in this grade are:

- a) Light to medium blue stain, over the entire face of one side or its equivalent on both sides.
- b) Heavy blue stain, over not more than 25% of one side or its equivalent on both sides.
- c) Light to medium pitch, evenly distributed throughout the piece.
- d) Heavy pitch or massed pitch streaks, over not more than 15% of the area, in pieces of otherwise good quality.
- e) Large seasoning checks, splits, heart shake, or a combination of these characteristics, over not more than 1/2 the length on one side or its equivalent on both sides, in pieces containing no other serious characteristics.

- f) Wane, equivalent to 1/4 the width, 1/2 the thickness and 1/4 the length, if not in combination with other serious characteristics.
- g) Fine seasoning checks, full length of a piece or their equivalent in light heart shake, a few worm holes, heart pith, light skips in dressing, or medium red heart stain, in pieces of otherwise good quality.

A serious combination of the above characteristics is not admissible in any one piece.

159b. "NO. 2 BOX"

The characteristics found in this grade are heavy and massed pitch, rot, numerous worm holes and heavy stain. Other types contain excessive heart shake, splits and seasoning checks, heavy skips in dressing and all other characteristics too serious to go into NO. 1 Box. No one piece shall contain less than 75% sound wood of usable quality.

160. SHOP LUMBER

Shop lumber is graded with reference to its use for sash and doors, or on the basis of characteristics affecting its use for general cut-up purposes, or on the basis of size of cutting. The grade of shop lumber is determined by the percentage of the area of each piece available in cuttings of specified or of given minimum sizes and qualities. Slope of grain is limited to 1 in 4 in all Shop grades.

Surfaced Shop lumber may be up to 1/64" full in thickness and still be considered on size. No minus tolerance in thickness is allowed.

Standard Shop Thicknesses:

Nominal Thickness	Surfaced Thickness S2S
4/4	3/4"
5/4	1 5/32"
6/4	1 13/32"
7/4	1 19/32"
8/4	1 13/16"
9/4	2 3/32"
10/4	2 3/8"
11/4	2 9/16"
12/4	2 3/4"
16/4	3 3/4"

The grades of Factory lumber 5/4 and thicker are determined from the poorer side of the piece.

Massed pitch, shake, unsound wood and wane may render a portion of a piece unusable for millwork.

If these characteristics create a total loss of 5% or more of the area of the piece, the excess unusable portion shall be scaled off to the nearest square foot, and the scale-off shall be marked on the piece.

Pieces containing less than 5% waste shall not be scaled off to raise the grade. Pieces requiring more than 50% scale-off are not permitted.

In determining the percentage of door cuttings in 5/4 & thicker Shop lumber, consideration must be given to the fact that usually pieces are to be ripped full length before cross cutting in such a manner as will yield the highest grade and largest percentage of door cuttings, subject to the following exceptions:

- a) In such cases where pieces will yield a higher value by first being cross cut for rails, and some of the stock so obtained contains stiles or muntins or top rails, which can be obtained by ripping this cross cut stock, the door cuttings so obtained shall be figured in when determining percentages.
- b) Pieces in which stiles only are computed for the required percentage may be cross cut first.

In 4/4 Shop, each cutting is figured without regard to whether the lumber will be ripped before cross-cutting.

5/4 AND THICKER SHOP GRADES

160a. "FACTORY SELECT" (NO. 3 CLEAR)

Each piece of Factory Select contains 70% or more of NO. 1 Door Cuttings, except that pieces containing one NO. 1 stile, or two or more NO. 1 Door Cuttings will admit one NO. 2 stile. Not over two muntins are included in any piece. No piece contains muntins only.

160b. "NO. 1 SHOP"

Each piece of NO. 1 Shop contains from 50% to 70% of NO. 1 Door Cuttings, except that pieces containing one or more NO. 1 Door Cuttings will admit one NO. 2 stile. Not over two muntins are included in any piece.

160c. "NO. 2 SHOP"

Each piece of NO. 2 Shop contains one of the following percentages of Door Cuttings: 25% NO. 1 cuttings; 33 $\frac{1}{3}$ % mixed NO. 1 and NO. 2 cuttings; 40% NO. 2 cuttings.

160d. "NO. 3 SHOP"

The grade of NO. 3 Shop $\frac{5}{4}$ and thicker is Factory lumber type admitting all pieces below the grade of NO. 2 Shop that contain not less than 30% of the area of any combination of the following cuttings: NO. 1 and NO. 2 door cuttings, sash cuttings, moulding ribs, jamb and sill cuttings. Sash cuttings are of NO. 1 quality.

Moulding ribs are 2" and wider and 10' and longer. Jambs and sills are 5" and wider and 3' and longer and of NO. 1 cutting quality on one face except that barely perceptible light brown stain is admitted.

The backs of jamb and sill cuttings may contain pin knots, seasoning checks, medium pitch pockets, light stain, medium pitch, skips in dressing and other characteristics of equivalent nature. No consideration is given to edge or end characteristics that will be removed in milling.

Not more than 5% of stock narrower than 5" is admissible in any shipment of NO. 3 Shop.

161. 4/4 SHOP GRADES

161a. "FACTORY SELECT" (NO. 3 CLEAR)

The grade of 4/4 Factory Select is determined by the percentage in each piece of cuttings suitable for general millwork in the sizes and qualities hereinafter specified.

Cuttings are 9 $\frac{1}{4}$ " wide or wider and 18" long or longer; or 5" wide or wider and 3' long or longer.

Cuttings 9 $\frac{1}{4}$ " wide or wider and less than 3' in length are free from characteristics on both sides.

Cuttings 5" wide or wider and 3' long or longer will grade C Select, or better.

Each piece of 4/4 Factory Select contains 70% or more of any one cutting or combination of cuttings described in the foregoing rules.

161b. "NO. 1 SHOP"

The grade of 4/4 No. 1 Shop is determined by the percentage in each piece of cuttings suitable for general millwork in the sizes and qualities hereinafter specified.

Cuttings are 9 1/4" wide or wider and 18" long or longer; or 4" wide or wider and 3' long or longer.

Cuttings 9 1/4" wide or wider and less than 3' in length are free from characteristics on both sides.

Cuttings 4" wide or wider and 3' long or longer will grade C Select, or better.

The grade of 4/4 NO. 1 Shop may be 4" and wider. Each piece contains from 50% to 70% of any one cutting or combination of cuttings of the quality described in the foregoing rules.

161c. "NO. 2 SHOP"

The grade of 4/4 NO. 2 Shop consists of Shop type of pieces which do not have the required percent of cuttings necessary for 4/4 NO. 1 Shop. This grade contains not less than 33 1/3% of cuttings of the size and quality permissible in 4/4 NO. 1 Shop.

162. CUT SASH AND DOOR STOCK

All sash and door cuttings are graded from the poor side of the piece. "Cut Sash" and "Door Stock" shall be graded as completely usable.

Less consideration is given to edge or end characteristics that will surface off in milling than to defects elsewhere in the piece.

A deviation of bow or crook is permissible as shown for the following basic lengths:

Length	Bow or Crook
28" to 48"	1/32"
60"	1/16"
70"	3/32"
80" and longer	1/8"

Lengths falling between the basic lengths may have a proportionate amount of bow and crook on the same curvature.

Surfaced stock may be up to 1/64" full in thickness, but no minus tolerance is allowed. Width variation may be 1/8" over or 1/32" under the specified width.

Sash cuttings are 2 1/2" & over in width by 28" & over in length.

162a. "SASH CUTTINGS"

"NO. 1" Sash Cuttings are free from characteristics on both sides, except that light brown stain or one barely perceptible bark or pitch blemish is admissible.

"NO. 2" Sash Cuttings proportioned to their size, will admit the same characteristics permitted in NO. 2 cuttings of door stock.

162b. "DOOR CUTTINGS"

Two grades of door cuttings are recognized, "NO. 1" and "NO. 2".

"NO. 1 Cuttings" are free from characteristics on both sides, except that light brown stain or one barely perceptible bark or pitch blemish is admissible.

"NO. 2 Cuttings" will admit any one of the following characteristics:

- a) A small knot of sound character not exceeding 5/8" in diameter.
- b) Light blue stain and/or medium brown stain.
- c) One bark pocket 1/8" by 1" in size or several when proportionately smaller or less pronounced.
- d) One or more small seasoning checks, the combined length not exceeding 8".
- e) One very small pitch pocket, showing on one side only.
- f) Light pitch or pitch streaks that do not form a pronounced defect.
- g) Slight skip or torn grain.

162c. CUTTING SIZES

Stiles are 5" and 6" wide by from 6'8" to 7'6" long. They may be either NO. 1 or NO. 2 in quality.

Bottom rails are 9" and 10" wide by 2'4" to 3' long. They may be either NO. 1 or NO. 2 in quality.

Muntins are 5" and 6" wide by from 3'6" to 4' long. They may be either NO. 1 or NO. 2 in quality.

Top rails are 5" and 6" wide by from 2'4" to 3' long. They must be of NO. 1 quality but are considered as NO. 2 cuttings.

In computing the area of door cuttings in Factory lumber 5/4 & thicker, the sizes and corresponding rounded values listed below shall be used.

STILES

Width x Length	Area (square feet)	Rounded Area (square feet)
5" x 6'8"	2.78	3
5" x 6'10"	2.85	
5" x 7'	2.92	
5" x 7'2"	2.99	
5" x 7'4"	3.06	
5" x 7'6"	3.13	
6" x 6'8"	3.33	3 ¼
6" x 6'10"	3.42	3 ½
6" x 7'	3.50	
6" x 7'2"	3.58	
6" x 7'4"	3.67	3 ¾
6" x 7'6"	3.75	

BOTTOM RAILS

Width x Length	Area (square feet)	Rounded Area (square feet)
9" x 2'4"	1.75	1 ¾
9" x 2'6"	1.875	
9" x 2'8"	2.00	2
9" x 2'10"	2.125	
9" x 3'0"	2.25	2 ¼
10" x 2'4"	1.94	2
10" x 2'6"	2.08	
10" x 2'8"	2.22	2 ¼
10" x 2'10"	2.36	
10" x 3'0"	2.50	2 ½

MUNTINS

Width x Length	Area (square feet)	Rounded Area (square feet)
5" x 3'6"	1.46	1 ½
5" x 3'8"	1.53	
5" x 3'10"	1.60	
5" x 4'0"	1.67	1 ¾
6" x 3'6"	1.75	
6" x 3'8"	1.83	
6" x 3'10"	1.92	2
6" x 4'0"	2.00	

TOP RAILS

Width x Length	Area (square feet)	Rounded Area (square feet)
5" x 2'4"	0.97	1
5" x 2'6"	1.04	
5" x 2'8"	1.11	
5" x 2'10"	1.18	1 ¼
5" x 3'0"	1.25	
6" x 2'4"	1.17	
6" x 2'6"	1.25	
6" x 2'8"	1.33	
6" x 2'10"	1.42	1 ½
6" x 3'0"	1.50	

163. CUT GRADES

Cut grades are used for cutting-up qualities only and are not to be confused either in quality or value with grades outlined elsewhere in the NLGA Grading Rules.

Cut grades are “**NO. 1**”, “**NO. 2**” and “**NO. 3**” but generally marketed NO. 1 & NO. 2, or NO. 1, NO. 2 & NO. 3 together.

These grades will not permit shake in a cutting but will permit a small amount of light surface stain. Bright sap no defect.

Cuts are composed of units. One unit is 1" x 1' surface measure or the equivalent in square inches.

To determine the number of units in the White Pine cut grades, use the following table:

For:	91 2/3%	(11/12)	- Multiply surface measure by 11.
	83 1/3%	(10/12)	- Multiply surface measure by 10.
	66 2/3%	(8/12)	- Multiply surface measure by 8.
	50%	(6/12)	- Multiply surface measure by 6.
	33 1/3%	(4/12)	- Multiply surface measure by 4.

163a. “NO. 1 CUTS”

This grade is used for pattern stock, sash, doors, panel work. Will admit:

All thicknesses.

Widths - 6" & wider.

Lengths - 8' to 16' long.

A board placed within this grade must be capable of being cut to contain one cutting of at least 36 units with each additional cutting to contain 28 units. The total of all the clear cutting units in each board to be at least $66 \frac{2}{3}\%$ of the surface area.

Cuttings to be not less than 6" in width. $\frac{1}{8}$ " sound knot allowed in cuttings - one knot per each 12 units.

Will also admit clear 6" and 7" wide boards, 8' - 12' long, $91 \frac{2}{3}\%$ clear, in not more than two cuttings, full width of the piece.

163b. "NO. 2 CUTS"

Same as NO. 1 Cuts, but in smaller dimensions. Will admit:

All thicknesses.

Widths - 6" & wider.

Lengths - 8' to 16' long.

A board placed within this grade must be capable of being cut to contain one cutting of at least 28 units with each additional cutting to contain not less than 20 units. The total of all clear cutting units in each board to be at least 50% of the surface area.

Cuttings to be not less than $5 \frac{1}{2}$ " in width. $\frac{1}{8}$ " sound knot allowed in cuttings at the rate of one knot per each 12 units.

Will also admit pieces 6" and 7" wide, 8' to 12' long, $83 \frac{1}{3}\%$ clear in not more than two cuttings, full width of the piece.

163c. "NO. 3 CUTS"

Small pattern work, paint doors, sash and toy manufacturing stock. Will admit:

All thicknesses.

Width - 5" & wider.

Lengths - 6' to 16' long.

A board placed within this grade must be capable of being cut to contain one or more cuttings of at least 20 units. The total of all the clear cutting units in each board to be at least $33 \frac{1}{3}\%$ of the surface area.

Cuttings to be not less than 5" wide. $\frac{1}{8}$ " sound knot allowed in cuttings at the rate of one knot per each 9 units.

NOTES

PINE FURNITURE GRADES
4/4 to 12/4 in Thickness and 4" & Wider
4' to 16' Lengths Including Not Over 5% of 4' and 5'

164. PINE FURNITURE

There are two grades for pine furniture available: "**NO. 1 FURNITURE**" and "**NO. 2 FURNITURE**". Furniture grade pine is selected stock having well distributed sound, completely intergrown red knots that will provide sound cuttings on a fixed percentage of the good face.

Characteristics and limiting provisions of cuttings are:

Face:

- a) One sound, completely intergrown red knot is required per cutting with a minimum of one for each 3 lineal feet of length.
- b) One sound, tight, black knot up to 1/4" in diameter or equivalent smaller is allowed in cuttings 6 lineal feet or over in length.
- c) Not permitted: black knots, pith, checks, shake, splits, warp, wane, pitch pockets, worm holes, rot, stain, or other defects that seriously weaken the cutting.

Back: Sound, allowing no rot, shake, wane, unsound knots, or other defects that seriously weaken the cutting.

164a. "NO. 1 FURNITURE"

Minimum sizes of cuttings are 4" x 2' or 3" x 3'.

The allowable number of cuttings is calculated by adding 1 to the surface measure of the piece, dividing by 3, and dropping any fraction:

Surface Measure	Number of Cuttings
2' - 4'	1
5' - 7'	2
8' - 10'	3
11' - 13'	4
14' & over	5

This grade requires sound cuttings of 66 2/3% or better on the face and 33 1/3% or better on the back of any piece.

Pieces producing 75% or better sound face cuttings are allowed one additional cutting.

164b. "NO. 2 FURNITURE"

Minimum size of cuttings is 3" x 2'. The allowable number of cuttings is calculated by dividing the surface measure of the piece by 2 and dropping any fractions:

Surface Measure	Number of Cuttings
2' - 3'	1
4' - 5'	2
6' - 7'	3
8' - 9'	4
10' - 11'	5
12' - 13'	6
14' & over	7

This grade requires sound cuttings of 50% or better on the face.

Pieces producing 66 $\frac{2}{3}$ % or better sound face are allowed 1 additional cutting.

RAILWAY AND CAR FRAMING GRADES

CAR FRAMING

1" to 2" Thick

Unseasoned, V.G. and/or F.G

170. 1" AND 2" CAR FRAMING

There are two grades of 1" to 2" Car Framing: "B & BETTER" and "C".

If A.D. or K.D. required, must be so specified. Grade descriptions based on a piece 6" wide & 12' long.

170a. "B & BETTER"

Characteristics and limiting provisions are:

Sapwood bright, 1/3 of face unless K.D., A.D. or treated with anti-stain solution.

Torn Grain very light.

With the above, one of the following or equivalent:

Checks 3 - small.

Pockets 3 - small, none through.

Knots 3 - pin, sound, intergrown.

If specified S2S, occasional light skips on back permitted.

170b. "C"

Characteristics and limiting provisions are:

Sapwood stained, medium, 25% of face.

Torn Grain light.

With the above, one of the following or equivalent:

Checks small.

Pockets 5 - small.

Pitch Streak small.

Knots 3 - sound, tight, 1" or equivalent smaller.

If specified, S2S, occasional light skips on back permitted.

CAR FRAMING
2 ½" and Thicker
Unseasoned, V.G. and/or F.G

171. 2 ½" AND THICKER CAR FRAMING

There are two grades of 2 ½" & thicker Car Framing: "**B & BETTER**" and "**C**".

If A.D. or K.D. required, must be so specified. Grade descriptions based on a piece 6" wide & 12' long.

171a. "B & BETTER"

Characteristics and limiting provisions are:

Sapwood bright, 1/3 of face unless K.D., A.D. or treated with anti-stain solution.

Torn Grain light.

With the above, on face and corresponding half of edges, one of the following or equivalent:

Checks 3 - small.

Pockets 3 - 6" or equivalent smaller.

Knots 3 - small, sound, tight.

If specified S2S, occasional light skips on back permitted.

171b. "C"

Characteristics and limiting provisions are:

Sap Stain medium, 25% of face.

Torn Grain light.

With the above, on face and corresponding half of edges, one of the following or equivalent:

Checks small.

Pitch Streak medium.

Pockets 5 - 6" or equivalent smaller.

Knots 3 - 1 ½" sound, tight or equivalent smaller.

If specified S2S, occasional light skips on back permitted.

CAR FRAMING
Under 7" in Thickness
Rough or Surfaced

172. CAR FRAMING

There are three grades of Car Framing: "**SELECT STRUCTURAL**", "**SELECTED**" and "**NO. 1**".

172a. "SELECT STRUCTURAL"

Must be sound wood, close grain, free from wane. Characteristics and limiting provisions are:

Checks	not limited.
Pockets	medium.
Sap Stain	medium, approximately 10% of face.
Skips	occasional, light on face and edges, not opposite each other.
Slope of grain	1 in 15.
Spike Knots	equivalent.
Torn Grain	medium.
Knots	sound, tight, not in clusters:

Face Width	Maximum Knot Size
3" & 4"	1"
6"	1 ¼"
8"	1 ½"
10"	1 ¾"
12"	2"
Greater than 12"	2 ½"

172b. "SELECTED"

Must be sound wood, free from wane. Characteristics and limiting provisions are:

Checks	not limited.
Pockets	medium.
Sap Stain	medium, 25% of face.
Skips	occasional, light on face and edges, not opposite each other.

Spike Knots	equivalent.
Torn Grain	medium.
Knots	sound, tight, not in clusters, approximately:

Face Width	Maximum Knot Size
3" & 4"	1"
6"	1 ¼"
8"	1 ½"
10"	1 ¾"
12"	2"
Greater than 12"	2 ½"

172c. "NO. 1"

Must be sound wood. Characteristics and limiting provisions are:

Checks	not limited.
Heart Stain	approximately 10% of face.
Pockets	permitted.
Sap Stain	medium.
Skips	occasional, light on face & edges, not opposite each other.
Splits	short.
Spike Knots	equivalent.
Torn Grain	not limited.
Wane	1/8 of any face for 1/4 length.
Knots	sound, tight, not in clusters:

Face Width	Maximum Knot Size
3" & 4"	1 ½"
6"	1 ¾"
8"	2"
10"	2 ½"
12"	3"
Greater than 12"	3 ½"

CLEAR CAR DECKING
1 ½" to 4" in Thickness and 4" to 12" in Width
Rough or Surfaced

173. CLEAR CAR DECKING

There are two grades of Clear Car Decking: "**B & BETTER**" and "**C**".
Surfaced sizes and patterns are subject to special contract.
Grade descriptions are based on a piece 1 ½" x 6" x 9'.

173a. "B & BETTER", V.G. and/or F.G.

Characteristics and limiting provisions are:

Heart Stain firm.

Sap Stain light.

Torn Grain light.

With the above, one of the following or equivalent:

Checks 3 - small, none through.

Pockets 3 - small or 1 - medium, none through.

If specified S2S, occasional light skips on back permitted.

173b. "C", V.G. and/or F.G.

Characteristics and limiting provisions are:

Heart Stain firm.

Skips very light.

Sap Stain medium.

Torn Grain medium.

With the above, one of the following or equivalent:

Checks small, allowing some 8", none through.

Pockets 5 - small, none through.

Knots 4 - small, sound, intergrown.

If specified S2S, occasional light skips on back permitted.

CAR DECKING AND GRAIN DOOR MATERIAL

174. CAR DECKING AND GRAIN DOOR MATERIAL

There are two grades of common (Grain Tight) Car Decking and Grain Door material, "**SELECTED**" and "**NO. 1**".

Surfaced sizes and patterns are subject to special contract.

174a. "SELECTED", (GRAIN TIGHT)

Characteristics and limiting provisions are:

Checks not limited.

Pockets medium, none through.

Skips very light.

Stained Wood not limited.

Torn Grain medium.

Knots sound, intergrown, maximum 1 1/2".

If specified S2S, occasional light skips on back permitted.

174b. "NO. 1"

Characteristics and limiting provisions are:

Checks not limited.

Pockets large, none through.

Skips very light.

Stained Wood not limited.

Torn Grain heavy.

Knots sound, tight, approximately 1/3 width of piece.

If specified S2S, occasional light skips on back permitted.

CAR LINING AND ROOFING

V.G. and/or F.G.

175. CAR LINING AND ROOFING

There are three grades of Car Lining and Roofing: "**B & BETTER**", "**C**" and "**SELECTED**".

If A.D. or K.D. required, must be so specified.

Grade descriptions are based on a piece 4" wide and 12' long.

175a. "B & BETTER"

Characteristics and limiting provisions are:

Crook 3/4" in 4" widths, 5/8" in 6" widths.

Heart Stain firm.

Sap Stain light.

Torn Grain light.

With the above, one of the following or equivalent:

Checks 4 - small, none through.

Pockets 4 - small, none through.

Knots 3 - pin, sound, intergrown.

If specified S2S, occasional light skips on back permitted.

175b. "C"

Characteristics and limiting provisions are:

Crook 3/4" in 4" widths, 5/8" in 6" widths.

Heart Stain firm.

Skips very light.

Sap Stain medium.

Torn Grain medium.

With the above, one of the following or equivalent:

Checks small.

Pockets 5 - medium, none open through.

Knots 3 - small, sound, intergrown, or equivalent pin.

If specified S2S, occasional light skips on back permitted.

175c. "SELECTED" (GRAIN TIGHT)

Characteristics and limiting provisions are:

Checks	not limited.
Crook	3/4" in 4" widths, 5/8" in 6" widths
Pockets	medium, none open through.
Skips	very light.
Stained Wood	not limited.
Torn Grain	not limited.
Knots	sound, intergrown, approximately 1" in 4" widths & 1-1/2" in 6" widths.

If specified S2S, occasional light skips on back permitted.

HORIZONTAL CAR SHEATHING V.G. and/or F.G.

176. HORIZONTAL CAR SHEATHING

There are three grades of Horizontal Car Sheathing: "B & BETTER", "C" and "SELECTED".

If A.D. or K.D. required, must be so specified. Grade descriptions are based on a piece 2" x 6" x 18'.

176a. "B & BETTER"

Characteristics and limiting provisions are:

Crook	1/2".
Heart Stain	firm.
Sap Stain	light.
Torn Grain	light.

With the above, one of the following or equivalent:

Checks	5 - small, none through.
Pitch Streak	very small.
Pockets	5 - small, none through.

On reverse side:

Pockets	slightly larger than above.
Knots	2 - small, sound, intergrown, if located away from edges.

If specified S2S, occasional light skips on back permitted.

176b. "C"

Characteristics and limiting provisions are:

Crook	1/2".
Heart Stain	firm.
Skips	very light.
Sap Stain	medium.
Torn Grain	medium.

With the above, one of the following or equivalent:

Checks	small, none through.
Pitch Streaks	2 - medium.
Pockets	8 - small, none open through.
Knots	8 - small, sound, intergrown.

If specified S2S, occasional light skips on back permitted.

176c. "SELECTED" (GRAIN TIGHT)

Characteristics and limiting provisions are:

Checks	not limited.
Crook	1/2".
Pockets	medium, none open through.
Skips	very light.
Stained Wood	not limited.
Torn Grain	not limited.
Knots	sound, intergrown, approximately 1" in 4" widths, 1 1/2" in 6" widths.

If specified S2S, occasional light skips on back permitted.

CAR SIDING V.G. and/or F.G.

177. CAR SIDING

There are three grades of Car Siding: "B & BETTER", "C" and "SELECTED". Grade descriptions are based on a piece 1" x 4" x 9'.

177a. "B & BETTER"

Characteristics and limiting provisions are:

Crook	1/2" in 4" widths, 3/8" in 6" widths.
Heart Stain	firm.
Sap Stain	light.
Torn Grain	very light.

With the above, one of the following or equivalent:

Checks	3 - small, none through.
Pockets	3 - small, none through.
Knots	3 - pin, sound, intergrown.

If specified S2S, occasional light skips on back permitted.

177b. "C"

Characteristics and limiting provisions are:

Crook	1/2" in 4" widths, 3/8" in 6" widths.
Heart Stain	firm.
Skips	very light.
Sap Stain	medium.
Torn Grain	light.

With the above, one of the following or equivalent:

Checks	small, none through.
Pockets	5 - small, none open through.
Knots	3 - pin, sound, intergrown.

If specified S2S, occasional light skips on back permitted.

177c. "SELECTED" (GRAIN TIGHT)

Characteristics and limiting provisions are:

Checks	not limited.
Crooks	3/4" in 4" widths, 5/8" in 6" widths.
Pockets	medium, none open through.
Skips	very light.
Stained Wood	not limited.
Torn Grain	not limited.
Knots	sound, intergrown, approximately 1" in 4" widths, 1 1/2" in 6" widths.

If specified S2S, occasional light skips on back permitted.

RUNNING BOARDS

V.G. and/or F.G.

178. RUNNING BOARDS

There are two grades of Running Boards: “**B & BETTER**” and “**C**”. If specified V.G., angle of grain is not more than 60 degrees from vertical.

Running Boards are usually shipped unseasoned. If A.D. or K.D. required, must be so specified.

Grade descriptions are based on a piece 6" wide and 12' long.

Running Boards ordered S1S are graded from the rough face.

178a. “B & BETTER”

Characteristics and limiting provisions are:

Sapwood bright, 25% of face, unless A.D., K.D. or treated with anti-stain solution.

With the above, one of the following or equivalent:

Checks 3 - small.

Pockets 3 - small.

178b. “C”

Characteristics and limiting provisions are:

Heart Stain firm.

Sap Stain medium.

With the above, one of the following or equivalent:

Checks 3 - small.

Pockets 5 - small.

Knots 3 - 1", sound, tight, if located away from edges.

SAWN RAILROAD TIES

179. RAILROAD TIES

There is only one grade of sawn railroad ties. The NO. 1, NO. 2 and NO. 3 designations refer to "use" and these are predicated by the amount of wane permitted. Sizes and species may be specified by purchaser.

All ties shall be manufactured from sound, live, straight timber and are free from decay, unsound knots, shake, bark seams and worm holes, except pin worm holes (Ambrosia beetle) and all other imperfections that would impair the strength or durability of the tie. Ties shall be clean and peeled but an occasional strip of inner bark 1" wide & 10" long may be permitted. All four faces must be sawn and opposite faces parallel.

Characteristics and limiting provisions are:

Bow 1/2" in 6" thicknesses, 1" in 7" thicknesses.

Crook 1" in 8" widths, 1 1/2" in 9" widths.

Checks medium, not through.

Knots sound and tight, 1/4 the width. Knots are measured using the average diameter method. See Para. 320a.

Pockets permitted.

Pith exposed heart not permitted in species other than Douglas Fir.

Size Tolerances 1" over in length and 1/8" under and 1/2" over in width and thickness.

Wane restrictions are applied 8" to 28" from either end. Maximum on one edge 1 1/2".

NO. 1 Ties (7x9) minimum face of 7" is permitted if wane on one wide face only. If wane on both wide faces, minimum face width is 8".

NO. 2 Ties (6x8) minimum face of 6" is permitted if wane on one wide face only. If wane on both wide faces, minimum face width is 7".

NO. 3 Ties (6x8) minimum face 5" on one or both wide faces.

"**Flatted**" ties when ordered are covered by special contract.

SCAFFOLD PLANK
1 ¼" & Thicker and 8" & Wider
All Species Except Cedars

180. SCAFFOLD PLANK

Scaffold Plank is well manufactured.

The grade is determined from the poorer face.

Wide face knot sizes shall be determined from the face showing the largest knot dimensions. The resultant average of the maximum dimensions of the end section of the knot shall be used in determining the knot size.

The measurement of wide face knots overlapping an edge (3-face knot) shall be determined in accordance with Part 1 - NGR Interpretations, Figure 5a. Four-face knots are not permitted in Scaffold Plank.

Narrow face (spike) knots are permitted provided their cross-sectional area displacement does not exceed that of the knot size permitted for the wide face. Narrow face knots shall not be spiked across the piece for more than one half the width.

Pieces containing spike knots in the same cross-section are not permitted in the grade of Scaffold Plank.

Knot Spacing: When two or more knots appear in the same cross-section, the combined total sum of their sizes and/or displacement must not exceed the specified knot size or displacement for that width of piece under consideration.

The term "cross-section" is defined as the area across the width of a piece equal to the diameter of the largest knot present. See: Part 1 - NGR Interpretations, Figure 11.

Pieces are FOHC (side cut). See Para. 714 c).

There is only one grade: **"SELECT STRUCTURAL"**. The grade stamp identification for this grade is **"SEL SCAFFOLD"**.

In addition to the following specific provisions applicable to Scaffold Plank, the appropriate provisions in all other paragraphs in the NLGA grading rules apply.

180a. "SELECT STRUCTURAL" – SCAFFOLD PLANK

Characteristics and their limiting provisions shall be:

Checks	surface only. If through at ends, equivalent to splits.
Pitch Streaks	medium.
Pockets	medium.
Rate of Growth	close grain.
Sap Stain	medium.
Slope of Grain	1 in 12.
Splits	very short.
Knots	sound, tight and well-spaced, may be present in the following sizes:

Face Width	Knot Size
8"	1 $\frac{5}{8}$ "
9"	1 $\frac{3}{4}$ "
10"	1 $\frac{7}{8}$ "
12"	2 $\frac{3}{8}$ "
14"	2 $\frac{1}{2}$ "
16"	2 $\frac{5}{8}$ "

Chipped or sloughed knots on a wide face extending into or across a narrow face are permitted if not larger than 1" in size and if not through the thickness.

One wide face must be free of holes on the corners.

STRUCTURAL LAMINATIONS

2" & Thinner and 3" & Wider

Rough or Surfaced

181. STRUCTURAL LAMINATIONS

The grades of Structural Laminations in this section are intended for use in members manufactured to CSA O122 - Structural glued-laminated timber. There are four grades of Structural laminations: "**B-F LAMINATING**", "**B LAMINATING**", "**C LAMINATING**" and "**D LAMINATING**".

Structural laminations for use in members manufactured to ANSI/AITC specifications shall be graded under Para. 195.

181a. GENERAL REQUIREMENTS

The following general requirements apply to all laminating grades:

Moisture content subject to special agreement. When ordered surfaced, must be well manufactured.

Laminating stock must be of sound wood and shall be graded from the worst face and based on the full length of the piece.

Knots shall be measured between lines enclosing the knot and parallel to the edges of the wide faces. If two or more knots are in line, i.e., partially, or completely enclosed by the same parallel lines and separated lengthwise by less than 8 inches, the effective width of the knots shall be the distance between two parallel lines which enclose the knots.

Two or more knots of maximum size will be permitted if they are separated in a lengthwise direction a distance, measured centre to centre of the knots, at least equal to the width of the piece.

When two or more knots appear in the same cross-section of a piece (opposite each other on a face or edge), the sum of their sizes shall not exceed the maximum permitted knot size.

Maximum cup permitted:

Nominal Thickness	Nominal Width		
	4" or less	6"	8" & Wider
1"	1/32"	1/16"	1/8"
2"	none	1/32"	1/16"

181b. "B-F LAMINATING"

In addition to the requirements for "B Laminating", the following provisions shall apply for "B-F Laminating": knots, knot holes and local deviations of slope of grain exceeding 1 in 16 shall not be permitted within one half inch of both edges of one wide face.

This face shall also be free from torn grain.

181c. "B LAMINATING"

In addition to the General Requirements, the following provisions shall apply to the "B Laminating" grade:

Checks	approximately 1/4 the length.
Crook	1/4" in 12'.
Cup	as per table in Para. 181.
Knots	sound, tight, loose or knot holes. approximately:

Face Width	Knot Size
4"	7/8"
6"	1 3/8"
8"	1 3/4"
10"	2 1/4"
12"	2 3/4"

Machine Marks	occasional knife marks or machine burns permitted.
Pitch Streaks	1/8" wide, equal to the width of the piece.
Pockets	1/8" wide, equal to the width of the piece.
Rate of Growth	close grain - Douglas Fir only.
Shake	approximately 1/4 the length.
Skips	hit or miss on narrow face, occasional roughness in dressing on wide face.
Slope of Grain	1 in 16.
Spike Knots	equivalent.
Splits	approximately 1/4 the length.
Stained Wood	firm.
Torn Grain	light on wide faces, heavy on edges.
Twist or Bow	1/2" in 12'.
Wane	3/16" may go through thickness.
Worm Holes	pin, scattered; small, occasional.

181d. "C LAMINATING"

In addition to the General Requirements, the following provisions shall apply to the "C Laminating" grade:

Checks	approximately 1/4 the length.
Crook	1/4" in 12'.
Cup	as per table in Para. 181.
Knots	sound, tight, loose or knot holes, approximately:

Face Width	Knot Size
4"	1 1/4"
6"	2 1/8"
8"	2 3/4"
10"	3 5/8"
12"	4 3/8"

Machine Marks	occasional knife marks or machine burns permitted.
Pitch Streaks	1/8" wide equal to the width of the piece.
Pockets	1/8" wide equal to the width of the piece.
Rate of Growth	medium - Douglas Fir only.
Shake	approximately 1/4 the length.
Skips	hit or miss on narrow face, occasional roughness in dressing on wide face.
Slope of Grain	1 in 12.
Spike Knots	equivalent
Splits	approximately 1/4 the length.
Stained Wood	firm.
Torn Grain	light on wide faces, heavy on edges.
Twist or Bow	1/2" in 12'.
Wane	3/16" may go through thickness.
Worm Holes	pin, scattered; small, occasional.

181e. "D LAMINATING"

In addition to the General Requirements, the following provisions shall apply to the "D Laminating" grade:

Checks	approximately 1/4 the length.
Crook	1/4" in 12'.
Cup	as per table in Para. 181.
Knots	sound, tight, loose or knot holes, approximately:

Face Width	Knot Size
4"	1 5/8"
6"	2 5/8"
8"	3 1/2"
10"	4 1/2"
12"	5 1/2"

Machine Marks	occasional knife marks or machine burns permitted.
Pitch Streaks	1/8" wide equal to the width of the piece.
Pockets	1/8" wide equal to the width of the piece.
Rate of Growth	medium - Douglas Fir only.
Shake	approximately 1/4 the length.
Skips	hit or miss on narrow face, occasional roughness in dressing on wide face.
Slope of Grain	1 in 8.
Splits	approximately 1/4 the length.
Stained Wood	firm.
Torn Grain	light on wide faces, heavy on edges.
Twist or Bow	1/2" in 12'.
Wane	3/16" may go through thickness.
Worm Holes	pin, scattered; small, occasional.

PICKETS

K.D. or Unseasoned

182. PICKETS

There are two grades of Pickets: **"NO. 1"** and **"NO. 2"**.

Standard sizes of Pickets are:

Nominal 1 1/4" square	S4S to 1 1/32" x 1 1/32"
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Nominal 1 1/2" square	S4S to 1 9/32" x 1 9/32"
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Nominal 1" x 3" flat	S4S to 1 1/16" x 2 1/2"
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Grades are based on a piece 1" x 3" x 4'.

In addition to the following specific provisions applicable to Pickets, the appropriate provisions in all other paragraphs in the grading rules apply.

182a. "NO. 1"

Most pieces of this grade are entirely clear or have only a few minor and unimportant characteristics, such as:

Checks small.

Skips occasional very light.

Torn Grain light.

Knots 1 - small, sound, tight or its equivalent.

182b. "NO. 2"

Pieces of this grade may have one or more characteristics which are of such size or number that the piece is not of **"NO. 1"** grade.

Pieces may contain characteristics which have no important effect on the utility of the piece, such as:

Checks not limited.

Pin Holes limited.

Skips light.

Torn Grain not limited.

Knots 2 - approximately 1", or their equivalent.

LATH
1 1/2" or 1 5/8" in Width
3 Pieces for Each 1" in Thickness

183. LATH

Lath, unless otherwise specified, is shipped either dry or unseasoned at shipper's option.

There are two grades of Lath: "**NO. 1**" and "**NO. 2**".

183a. "NO. 1" LATH

Pieces of this grade are entirely clear or may have one of the following or equivalent:

Holes pin, limited.

Pockets small.

Stained Wood not limited.

Knots pin.

Pieces are uniformly manufactured with scantness in width in unseasoned pieces limited to 1/16" & seasoned pieces to 3/32".

Dry pieces may be scant in thickness, but not more than 1/16" for three pieces.

All pieces are within 1/4" of full length.

183b. "NO. 2" LATH

Pieces of this grade are either so scant in size or contain characteristics of such number or size that they cannot be included in "**NO. 1**" grade.

Pieces may contain the following or equivalent:

Holes small.

Pockets not limited.

Stained Wood not limited.

Wane not through.

Knots not limited.

Pieces are not over 1/4" scant in width or 3/4" scant in length. Each piece is at least 1/4" thick.

INDUSTRIAL WOOD LATH

184. INDUSTRIAL WOOD LATH

There are three grades of industrial wood lath: "NO. 1", "NO. 2" & "NO. 3".

The lath grades in the species covered in the NLGA rules are intended for the manufacture of snow fence, base for plaster finish and for kiln strips.

The lath is usually rough but may be dressed if specified.

Length 32", 36", 42", 48", 60" or 72" as specified.

Thickness $\frac{3}{8}$ " or $\frac{1}{2}$ ".

Width 1 $\frac{1}{2}$ ".

Other thicknesses, widths and lengths may be specified.

184a. "NO. 1" WOOD LATH

Characteristics which may appear on pieces in this grade and their limiting provisions are:

Knots $\frac{3}{4}$ " intergrown, one per 12" of length. $\frac{1}{4}$ " or smaller to be disregarded. No knots on edges.

Pith not permitted.

Slope of Grain 1 in 32.

Wane $\frac{1}{3}$ thickness and $\frac{1}{3}$ width.

White Speck 15%.

Variation in Size:

Length: $\frac{1}{2}$ " short in 10% of shipment.

Width: $\frac{1}{8}$ " over - $\frac{3}{16}$ " under.

Thickness: $\frac{1}{16}$ " over - $\frac{3}{32}$ " under.

184b. "NO. 2" WOOD LATH

Characteristics which may appear on pieces in this grade and their limiting provisions are:

Holes $\frac{1}{2}$ " per 2' of length.

Knots 1" sound, one per lineal foot.

$\frac{3}{4}$ " not firmly fixed, one per lineal foot.

Pith permitted.

Slope of Grain	1 in 20.
Split	medium.
Wane	1/2 thickness and 1/2 width.
White Speck	30%.

Variation in Size:

Length:	3/4" short in 20% of shipment.
Width:	3/16" over - 1/4" under.
Thickness:	1/8" over - 1/8" under.

184c. "NO. 3" WOOD LATH

Characteristics which may appear on pieces in this grade and their limiting provisions are:

Wane	1/2 the width and full thickness. Taper or wedges at one or both ends for 6" is permitted, provided length of lath is not reduced.
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All other characteristics which do not interfere with the use of the lath, full length, are permitted in this grade.

Variation in Size

Length:	2" short in 20% of shipment.
Width:	3/8" over or under.
Thickness:	1/4" over or under.

Note: *Experience has shown that the combination of heartwood and sapwood in a lath may cause excessive distortion. If there is no distortion, such combination is not considered a defect in the grading of lath.*

PIPE STAVE STOCK
(DOUGLAS FIR)
Rough, Unseasoned, F.G. and/or V.G.

185. PIPE STAVE STOCK

There is only one grade: “**PIPE STAVE STOCK**”. Pipe stave stock is well manufactured. Edges must not contain imperfections which will prevent a watertight joint when worked.

185a. “PIPE STAVE STOCK”

Characteristics which may appear on pieces in this grade and their limiting provisions are:

Pockets	small, none through.
Sapwood	bright, not more than half the thickness.
Knots	sound tight, none through.

SILO STAVES
(DOUGLAS FIR)

186. SILO STAVES

Silo Staves are used in the construction of silos for the curing and storage of ensilage. There are two grades of Silo Staves: “**CLEAR**” and “**SELECTED**”. Grade descriptions are based on a piece 6" wide by 12' long. Lengths are in multiples of 1'. The number of characteristics in larger or smaller pieces may vary in proportion to the size of the piece.

Silo staves shall be graded from the inside or narrow face as this is the use side. The outside, or wide face, can be approximately one grade lower.

Finished - Seasoned Thickness	Finished - Unseasoned Thickness	Finished - Face Width
1 5/8"	1 5/8"	5" outside
		4 7/8" inside

186a. "CLEAR" SILO

Must be watertight full length of piece. Characteristics which may appear on pieces in this grade and their limiting provisions are:

Sapwood bright or medium stained - $\frac{1}{2}$ the thickness from outside face.

Torn Grain medium.

With the above, one of the following or equivalent:

Checks none through.

Crook approximately $\frac{1}{4}$ " in 12'.

Pitch Pockets 4 - small, none through.

Knots 5 - small, sound, tight.

186b. "SELECTED" SILO

Must be watertight full length of piece. Characteristics and limiting provisions are:

Checks medium.

Crook very light.

Heart Stain firm - 25%.

Pockets not exceeding 6" in length, none through.

Sapwood bright or medium stained - $\frac{1}{2}$ the thickness from outside face.

Knots medium, sound, tight.

MINE GUIDES (DOUGLAS FIR)

189. MINE GUIDES

There are two grades of Mine Guides: "**CLEAR**" and "**SELECTED**". Mine Guides shall be well manufactured, close grain, square edged, with a slope of grain not greater than 1" in 12" and with measurable warp not permitted.

In addition to the following specific provisions applicable to Mine Guides, the applicable provisions of all other paragraphs in the NLGA rules apply.

Note: *Knots are measured using the average diameter method. See Para. 320a.*

189a. "CLEAR"

Characteristics and limiting provisions are:

- Checks** single or opposite each other, with a summed total equal to approximately 1/4 the thickness.
- Torn Grain** light.
- Skips** occasional light.
- Pitch Pockets** 4 - medium based on 12 lineal feet.
- Knots** shall be free from knots on the face and both edges.

189b. "SELECTED"

Characteristics and limiting provisions are:

- Stained Sapwood** not limited.
- Checks** medium.
- Torn Grain** medium.
- Skips** occasional medium.
- Pitch Pockets** medium.
- Pitch Streaks** not limited.
- Knots** sound, tight, well scattered, approximately:

Nominal Width or Thickness	Knot Size
3" & 4"	1"
6"	1 1/4"
8"	1 1/2"
10"	1 3/4"

CROSSARMS

(DOUGLAS FIR, WESTERN HEMLOCK, AND YELLOW CEDAR)

Rough or Surfaced

190. CROSSARMS

There are two grades of crossarms: "**CLEAR**" and "**SELECTED**". Rough stock must be sawn full to sizes ordered.

Grade descriptions are based on 3" x 4" x 8' to 4" x 6" x 8' long.

The number of characteristics in larger or smaller pieces may vary in proportion to the size of the piece. The best narrow face shall be considered the top of the arm. Stock must be F.O.H.C.

Note: *Knots are measured using the lines parallel method as per Para. 320b.*

190a. "CLEAR" CROSSARMS

Characteristics or their equivalent smaller which may appear on pieces in this grade and their limiting provisions are:

Checks	small on top of arm, medium on other faces.
Crook or Bow	medium.
Knots	2 - 1" or equivalent smaller, sound, tight on top of arm, 3/8" or less not considered. 4 - 1 1/4" or equivalent smaller, sound, tight or not firmly fixed, well scattered, on other faces. Occasional pieces may have 1 additional knot and knots may be 25% larger.
Pitch Streak	medium.
Pin Holes	scattered.
Pockets	4 - small on top of arm; 5 - medium on other faces.
Rate of Growth	close grain.
Sap Stain	medium.
Skips	1 - light, approximately 12" long.
Slope of Grain	not to exceed 1 in 12, although an occasional piece may have a slope of grain not to exceed 1 in 10.
Torn Grain	medium.

Wane

1 1/4" within 12" of the ends, centre of length
3/4", when measured across the corner.

Minor surface characteristics permitted, provided they do not exceed 1/3 size of permissible knots.

Occasional cutouts permitted in pieces 13' and longer, provided resulting pieces 6' and longer meet the above specification. Limit of waste is 2 lineal feet.

190b. "SELECTED" CROSSARMS

Characteristics or their equivalent smaller which may appear on pieces in this grade and their limiting provisions are:

Checks	small on top of arm, medium on other faces.
Crook or Bow	medium.
Heart Centres	permitted if not more than 1/8" from any face.
Knots	sound, tight, approximately 1" in 4" to 6" widths and 1 1/4" in wider widths.
Pin Holes	scattered.
Pitch Streaks	medium.
Pockets	medium.
Rate of Growth	medium grain.
Sap Stain	not limited.
Skip	occasional, light.
Slope of Grain	1 in 12, occasional 1 in 10.
Torn Grain	medium.
Wane	1 1/2" within 12" of the ends, centre of length 3/4", when measured across the corner.

10% of the pieces in the shipment may have cutouts 3' or more from either end, providing resulting pieces meet the above specifications. Limit of waste is 1 lineal foot.

TANK STOCK
(DOUGLAS FIR, WESTERN RED CEDAR,
AND YELLOW CEDAR)
Rough, Unseasoned, F.G. and/or V.G.

191. TANK STOCK

There are two grades: **"Tank Stock - Two Inch to Three Inch"** and **"Tank Stock - Four Inch and Thicker"**.

Grade characteristics are based on 6" x 12'. The number of characteristics in larger or smaller pieces may vary in proportion to the size of the piece. Must be well manufactured and full sawn. Edges must be watertight when worked.

191a. "TANK STOCK - TWO INCH TO THREE INCH"

Characteristics or their equivalent smaller which may appear on pieces in this grade and their limiting provisions are:

Checks	medium, none through.
Knots	2 - small, sound, tight, none through. One additional pocket &/or knot for each 2 additional inches in width.
Pockets	2 - small, none through.
Rate of Growth	8 rings per inch.
Sapwood	bright, approximately 25% of the face and 1/2 the thickness.
Slope of Grain	1 in 8.

191b. "TANK STOCK - FOUR INCH AND THICKER"

Characteristics or their equivalent smaller which may appear on pieces in this grade and their limiting provisions are:

Checks	medium, none through.
Knots	3 - sound and tight, 1" in 4" thickness to 4 - 2" in 12" thickness. One additional pocket and/or knot for each 2 additional inches in width.
Pockets	3 - medium, none through.
Rate of Growth	8 rings per inch.

Sapwood bright, approximately 25% of the face and 1/2 the thickness.

Slope of Grain 1 in 8.

Reverse side and corresponding half of narrow face may have:

Pockets 4 - medium.

Knots 4 - 1" in 4" thickness to 4 - 2" in 12" thickness.

**STADIUM PLANK
(YELLOW CEDAR)
1 1/4" & Thicker and 3" & Wider**

192. STADIUM PLANK

Stadium Plank is well manufactured. Except for strength determining factors, the pieces are graded from the best wide face and best edge (narrow face) and this should be so indicated. If air dried or kiln dried, the moisture content covered by special contract.

In dry stock, blanked or run to pattern, loose knots, knot holes or their equivalent may be replaced by wood plugs. These plugs must not be larger than the permitted knot size and located only within the centre half of the width. Reasonable care should be taken in matching colour and grain. Some smaller defects may be filled with an approved filler.

If stock is to be used in areas of warm, humid climate, sapwood should be restricted to 10% by volume at buyer's request.

There are two grades: "**STADIUM PLANK SEATS**" and "**STADIUM PLANK WALK BOARDS**".

192a. "STADIUM PLANK SEATS"

Characteristics and limiting provisions are:

Checks	medium.
Rate of Growth	close grain.
Sap Stain	medium.
Seams or Pockets	medium.
Skips	light on reverse face and back edge.
Splits	very short.
Slope of Grain	1 in 10.
Torn or Raised Grain	light, heavy on reverse face and back edge.
Knots	sound, tight and well scattered.

On Narrow Face		On Wide Face	
Thickness	Knot Size	Width	Knot Size
1 1/4"	none	3"	1"
1 1/2"	1/2"	4"	1 1/4"
2"	3/4"	6"	1 1/2"
3"	1"	8"	1 7/8"
		10"	2 3/8"
		12"	2 3/4"
		14"	3"
		16"	3 1/4"

Characteristic Yellow Cedar knots (black or black rimmed) permitted up to 3/4" if judged they will retain their position in the piece.

Knots not firmly fixed, loose, spike knots (unless small and completely intergrown), raised or chipped knots or knot holes only permitted on reverse face and back edge.

192b. "STADIUM PLANK WALK BOARDS"

Characteristics and limiting provisions are:

Checks	medium.
Rate of Growth	close grain.
Sap Stain	medium.
Seams or Pockets	medium.
Skips	very light on face in occasional pieces. Hit & miss permitted on reverse face and edges.
Slope of Grain	1 in 10.
Splits	short.
Torn or Raised Grain	heavy.
Wane	1/2" in thickness and 1" in width for 1/2 length permitted on reverse face only.
Knots	sound tight and well scattered.

On Narrow Face		On Wide Face	
Thickness	Knot Size	Width	Knot Size
1 1/4"	none	3"	1"
1 1/2"	1/2"	4"	1 1/4"
2"	3/4"	6"	1 1/2"
3"	1"	8"	1 7/8"
		10"	2 3/8"
		12"	2 3/4"
		14"	3"
		16"	3 1/4"

Spike Knots	equivalent.
Chipped Knots	1/8" deep, occasional 1/4".

Characteristic Yellow Cedar knots (black or black rimmed) permitted if judged they will retain their position in the piece.

Knots not firmly fixed, loose or raised knots, or knot holes only permitted on reverse face and edges.

STRUCTURAL LAMINATIONS (DOUGLAS FIR) ROUGH OR SURFACED 2" Net or Thinner When Surfaced; 3" & Wider

195. STRUCTURAL LAMINATIONS

This paragraph refers to structural laminations for use in glulam members manufactured to ANSI/AITC specifications.

There are five grades of Douglas Fir used for laminating purposes: "L1" DENSE LAMINATING, "L1C" LAMINATING, "L2D" DENSE LAMINATING, "L2" LAMINATING and "L3" LAMINATING.

The following general restrictions and limiting provisions apply to all grades and sizes of lumber used as individual laminations for structural glued laminated lumber.

Checks seasoning.

Heart Stain firm.

Knots may be sound, unsound or not firmly fixed.

Knot Holes are interchangeable with knots in size and spacing.

Other holes permitted if no more damaging in effect than the allowable knot hole.

Knot Measurement: measured by the area of the cross section it occupies.

Knot Spacing: a knot of the permitted size may be anywhere on any face. Knots must be spaced in accordance with Para. 320.

Manufacture shall be well manufactured.

Moisture Content moisture content is subject to special agreement.

Pitch Pockets medium, scattered.

Pitch Streaks not exceeding 1/6 width.

Torn Grain medium torn grain. Spots of heavy torn grain around knot areas or equivalent.

Splits & Shake splits and shake are permitted if extending from wide faces in the thickness at an angle of 45 degrees or more from the wide face.

Surfacing edges may be hit or miss when ordered surfaced.

Warp crook or twist, light.

In addition to the following specific provisions applicable to lumber for laminating purposes, the appropriate provisions of all other paragraphs in the NLGA grading rules apply.

195a. "L1" DENSE LAMINATING

Characteristics and limiting provisions are:

Grain	dense material (see Para.195f).
Slope of Grain	not to exceed 1 in 14, full length of piece.
Stained Sapwood	light.

Knots sound, unsound or loose.

Nominal Width	Approximate Knot Size
4"	$\frac{7}{8}$ "
6"	$1 \frac{3}{8}$ "
8"	$1 \frac{7}{8}$ "
10"	$2 \frac{3}{8}$ "
12"	$2 \frac{7}{8}$ "
14"	$3 \frac{3}{8}$ "

Spike & Narrow Face Knots are permitted if judged to have no more effect on strength than other knots.

195b. "L1C" LAMINATING

Characteristics and limiting provisions are:

Grain	close.
Knots	conform to provisions of Para. 195a.
Slope of Grain	not to exceed 1 in 12, full length of piece.
Stained Sapwood	light.

195c. "L2D" DENSE LAMINATING

Conforms to all the provisions of Para. 195d except that Dense material (see Para. 195f) is required.

195d. "L2" LAMINATING

Characteristics and limiting provisions are:

Stained Sapwood	medium.
Grain	medium
Slope of Grain	not to exceed 1 in 12 full length of piece.
Wane	per purchaser's specifications.
White Specks	firm. A combination of white speck and a knot in the same cross section shall occupy not more than $\frac{1}{3}$ the width or equivalent.

Knots sound, unsound or loose.

Nominal Width	Approximate Knot Size
4"	1 $\frac{1}{8}$ "
6"	1 $\frac{7}{8}$ "
8"	2 $\frac{3}{8}$ "
10"	3 $\frac{1}{8}$ "
12"	3 $\frac{3}{4}$ "
14"	4 $\frac{3}{8}$ "

Spike & Narrow Face Knots are permitted if judged to have no more effect on strength than other knots.

195e. "L3" LAMINATING

Characteristics and limiting provisions are:

Grain	medium.
Slope of Grain	not to exceed 1 in 8, full length of piece.
Stained Sapwood	medium.
Wane	per purchaser's specifications.
White Specks	firm. A combination of white speck and a knot in the same cross section shall occupy not more than $\frac{1}{2}$ the width or equivalent.

Knots sound, unsound or loose.

Nominal Width	Approximate Knot Size
4"	1 ³ / ₄ "
6"	2 ³ / ₄ "
8"	3 ⁵ / ₈ "
10"	4 ⁵ / ₈ "
12"	5 ⁵ / ₈ "
14"	6 ⁵ / ₈ "

Spike and Narrow Face Knots are permitted if judged to have no more effect on strength than other knots.

195f. DENSE MATERIAL

Dense material in Douglas Fir averages approximately 6 or more annual rings per inch and, in addition, 1/3 or more summerwood on either one end or the other of a piece, measured as described in Para. 350c.

The contrast in colour between the summerwood and springwood must be distinct. Pieces averaging less than 6 annual rings per inch but not less than 4 are accepted as dense if averaging 1/2 or more summerwood.

**STRUCTURAL LAMINATIONS
(HEM-FIR)
ROUGH OR SURFACED
2" Net or Thinner When Surfaced; 3" & Wider**

H195. HEM-FIR STRUCTURAL LAMINATIONS

There are three grades of Hem-Fir used for laminating purposes: "**L1**" LAMINATING, "**L2**" LAMINATING, and "**L3**" LAMINATING.

The general restrictions and limiting provisions for Douglas Fir Structural Laminations, Para. 195, apply also to Hem-Fir Structural Laminations.

H195a. "L1" LAMINATING

Characteristics and limiting provisions are:

Grain	medium.
Knots	conform to Douglas Fir provisions, Para. 195a.
Slope of Grain	not to exceed 1 in 14 full length of the piece.
Stained Sapwood	light.

H195b. "L2" LAMINATING

Graded under the provisions for Douglas Fir, Para. 195d.

H195c. "L3" LAMINATING

Graded under the provisions for Douglas Fir, Para. 195e.

WESTERN RED CEDAR
FINISH, PANELLING, CEILING & DROP SIDING, K.D.
2" & Thinner and 2" & Wider

200. FINISH, PANELLING, CEILING AND DROP SIDING

Western Red Cedar Finish is customarily shipped kiln dried and surfaced four sides.

Grade descriptions for Finish and Panelling are based on a piece 8" wide and 12' long.

Grade descriptions for Ceiling and Drop Siding are based on a piece 4" wide and 12' long.

The number of characteristics in larger or smaller pieces may vary in proportion to the size of the piece.

Pieces of Finish 5" and narrower are graded from the best face and both edges. Pieces 6" and wider are graded from the best face and one edge.

Pieces of Panelling, Drop Siding and Ceiling run to pattern may be partially surfaced or hollow or scratched back.

"Saw Texture" is available in all grades of Western Red Cedar and, as the name implies, is a rough finish put on the face of a piece to give it a textured finish. Material supplied with this finish shall in all ways adhere to the grades, sizes and patterns as specified, except that it shall be graded from the textured face.

There are three grades of Western Red Cedar Finish, Panelling and Ceiling: **"CLEAR HEART"**, **"A"**, and **"B"**.

If F.G. or V.G. only is desired, it must be so specified. Otherwise, mixed grain (M.G.) may be shipped at shipper's option.

In occasional pieces of **"A and Better"** the tongue or lap in panelling and siding may be 1/16" narrower and Ceiling with a tongue 1/8" or more in width is permissible.

200a. "CLEAR HEART"

This is the highest grade of Finish, Panelling, Ceiling and Drop Siding produced. The exposed face shall be all heartwood with many pieces being clear. Some pieces may exhibit a few minor characteristics which do not detract from their high appearance and quality.

Characteristics and limiting provisions are:

Cup	very light.
Skips	very light on back.
Torn or Raised Grain	very light.
Warp	very light.

200b. "A"

This grade is only slightly less restrictive than "CLEAR HEART". The "A" grade is ideally suited to applications where finishing requirements are less exacting.

Characteristics and limiting provisions are:

Checks	small.
Cup	light.
Knots	2 - small, sound, tight or their equivalent.
Sapwood	not limited
Skips	occasional light on edges and back.
Torn or Raised Grain	light.
Warp	light.

200c. "B"

Although the "B" grade permits larger and more numerous characteristics than "CLEAR HEART" and "A" grades, it is highly serviceable and often yields short lengths of fine appearance from longer stock. Many pieces have a fine appearance on one side, the reverse side showing larger or more numerous characteristics.

Characteristics and limiting provisions are:

Checks	not limited.
Cup	medium.
Knots	4 - approximately 1" or their equivalent.
Pin Holes	limited.
Sapwood	not limited

Skips	hit and miss on either face and grooved edge in patterned stock; approx. 1/8" scant on edge.
Splits	short.
Tongue or Lap	narrow, must be at least 1/16" in width.
Torn or Raised Grain	not limited.
Wane	1/8 width for 1/4 the length & 1/4 the thickness, or its equivalent in an occasional piece.
Warp	medium.
Cutouts	a 3" cutout - 3' or more from either end of pieces 12' & longer is permissible in 10% of the shipment.

200d. GLUED-UP FINISH, PANELLING, CEILING & DROP SIDING

End-glued, edge-glued or a combination of end and edge-glued Finish, Panelling, Ceiling and Drop Siding is intended to be interchangeable in use value with one-piece stock of the comparable grade. The characteristics of the grade are the same as for one-piece stock. Additional requirements for which the producer is responsible are:

- a) Exterior glue line equal to heat cured 50-50 melamine urea glue.
- b) Adequate glue line strength for usual handling and fastening.
- c) Appearance shall be suitable for intended finishing of each grade.

NOTES

WESTERN RED CEDAR BEVEL SIDING, K.D.

201. WESTERN RED CEDAR BEVEL SIDING

Western Red Cedar Bevel Siding is produced by resawing kiln dried surfaced lumber on a bevel to produce two pieces thicker on one edge than the other and is most commonly used as exterior siding, giving a horizontal shadow line effect.

Except for siding intended for rough side use, bevel siding is graded on the surfaced side with characteristics and limiting provisions enumerated in the grades applying to the exposed width. Grade descriptions are based on a piece 6" wide by 12' long. Occasional tolerance in thickness is permitted, approximately $\frac{1}{32}$ " over or under in any one piece. The thick edge permits minor characteristics that do not detract from the appearance of the piece in use.

"Saw Texture" is available in all grades of Western Red Cedar Bevel Siding and as the name implies is a rough finish put on the face of a piece to give it a textured finish. Material supplied with this finish shall in all ways adhere to the grades, sizes and patterns as specified, except that it shall be graded from the textured face.

There are five grades of Western Red Cedar Bevel Siding: **"CLEAR V.G. HEART"**, **"A"**, **"B"**, **"RUSTIC"** and **"C"**.

Special items, namely $\frac{1}{2}$ " x 4" and $\frac{1}{2}$ " x 5" sizes, $\frac{1}{2}$ " x 6" square edged and $\frac{3}{4}$ " x 6" rabbeted siding, are usually graded **"CLEAR V.G. HEART"** and **"A"** combined for the first grade.

Normal head lap for regular Bevel Siding is 1". This portion of the thin edge may contain characteristics that will be covered when laid and will provide a suitable backing.

In rabbeted siding, depth of rabbet conforms to thickness of thin edge, width of rabbet is $\frac{1}{2}$ ".

FINISHED SIZES:

Nominal Sizes		Dressed Sizes		
Thickness	Width	Thick Edge	Thin Edge	Width
1/2"	4"	15/32"	3/16"	3 1/2"
	5"	15/32"	3/16"	4 1/2"
	6"	15/32"	3/16"	5 1/2"
	8"	15/32"	3/16"	7 1/4"
5/8"	8"	9/16"	3/16"	7 1/4"
	10"	9/16"	3/16"	9 1/4"
3/4"	6"	3/4"	3/16"	5 1/2"
	8"	3/4"	3/16"	7 1/4"
	10"	3/4"	3/16"	9 1/4"
	12"	3/4"	3/16"	11 1/4"

LENGTHS:

Lengths are 3' and longer in multiples of 1'.

NESTED BUNDLING (N.B.):

Bundles are 6' to 16' or longer. Bundles 10' and longer contain specified layers of 3' to 7' lengths.

FULL LENGTH BUNDLING (F.L.B.):

All pieces in the bundle correspond to length of the bundle. The length assortment is normally 6' to 16' or longer but may include a percentage of 3' to 5' bundles, as specified by the shipper.

SHORTS:

"CLEAR V.G. HEART" and **"A"** Grades:

6" & narrower, not more than 20% of the footage may be 6' and 7' bundles.

8" & wider, not more than 15% of the footage may be 6' and 7' bundles.

"B" and **"RUSTIC"** Grades:

Not more than 20% of the footage may be 6' and 7' bundles.

"C" Grade:

No percentage specified.

BUNDLING SCHEDULE:

Nominal Sizes	F.L.B. and N.B. Layers per Bundle	N.B. Only: Layers Nested in 10' & longer
3/4" x 6" to 12"	6	2
1/2" x 5" to 8"	10	3
5/8" x 8" to 10"	10	3
1/2" x 4"	12	4

201a. "CLEAR V.G. HEART" BEVEL SIDING

The exposed width is all heartwood and free from imperfections and presents a vertical grain appearance for 3/4 the width from the thick edge.

The thick edge may contain light torn or raised grain.

201b. "A" BEVEL SIDING

"A" Bevel Siding may be furnished in mixed grain. Characteristics and limiting provisions are:

Knots 1 - small, sound, tight or 2 - pin, sound, tight in occasional piece.

Skips very light on thick edge.

Torn or Raised Grain very light on face, light on thick edge.

201c. "B" BEVEL SIDING

"B" Bevel Siding may be furnished in mixed grain. Characteristics and limiting provisions are:

Knots 4 - small, sound, tight or equivalent smaller in occasional piece.

Pin Holes well scattered in occasional piece.

Skips very light, light on thick edge in occasional piece.

Torn or Raised Grain light, medium on thick edge in occasional piece.

Cutouts are permitted which can be removed by cutting out not more than 5% of the length of the piece, not exceeding one cutout in pieces 6' to 9' and two cutouts in pieces 10' & longer. The minimum length of the piece of each segment after cutting must not be less than 18".

201d. "RUSTIC" BEVEL SIDING

Pieces are graded from the re-sawn side. Thick edge may be rough or surfaced. The grade may include pieces too thin to dress to standard size, but not more than 1/16" scant thickness. Lengths are random, with percentage as specified by the shipper.

Some pieces may contain:

Holes pin, well scattered.

Knots 4 - sound, tight, small.

201e. "C" BEVEL SIDING

Although this grade admits larger or more numerous characteristics than "B" grade, it often yields short lengths of fine quality. This grade may include stock too thin to dress to standard sizes. Lengths are random with percentages as specified by the shipper.

201f. FACTORY PRIMED BEVEL SIDING

Factory primed products shall be identified with a stamp or label by the producer.

201g. GLUED UP BEVEL SIDING

End-glued, edge-glued or a combination of end and edge-glued Bevel Siding is intended to be interchangeable in use value with one-piece stock of a comparable grade. The characteristics of the grade are the same as for one-piece stock. Additional requirements for which the producer is responsible are:

- a)** Exterior glue line equal to heat cured 50-50 melamine urea glue.
- b)** Adequate glue line strength for usual handling and fastening.
- c)** Appearance shall be suitable for intended finishing of each grade.

**WESTERN RED CEDAR
INDUSTRIAL CLEARS
V.G., F.G. and/or M.G.
Rough or Surfaced
K.D., A.D. or Unseasoned
Nominal 2" & Thinner, 3" & Wider**

202. INDUSTRIAL CLEARS (2" & THINNER)

There are three grades of Western Red Cedar Industrial Clears: "**B and Better**", "**C**" and "**D**".

Western Red Cedar Industrial Clears, if ordered surfaced and unless otherwise specified, are finished to the sizes shown in Para. 820c. If ordered rough unseasoned, see Para. 747 for permitted variation in size. For seasoned thicknesses and widths refer to Para. 32.

Grade descriptions are based on a piece 8" wide and 12' long. The number and extent of characteristics may vary in proportion to the size of the piece being graded. Pieces 5" & narrower are graded from best face and both edges; pieces 6" & wider from best face and one edge.

202a. "B AND BETTER" CEDAR INDUSTRIAL CLEARS

Characteristics or their equivalent smaller which may appear on pieces in this grade and their limiting provisions are:

Checks	4 - small. No limit to number in rough stock.
Knots	on reverse face: 3 - small, sound, tight.
Rate of Growth	6 rings per inch.
Skips	on reverse face, occasional light.
Slope of Grain	not to exceed 1 in 8.
Splits	short, in 5% of the pieces.
Torn or Raised Grain	very light.
Warp	very light in occasional pieces.

202b. "C" CEDAR INDUSTRIAL CLEARS

Characteristics or their equivalent smaller which may appear on pieces in this grade and their limiting provisions are:

Checks	4 - small. No limit to number in rough stock.
Knots	3 - 1", sound, tight or 5 - equivalent smaller or 4 - not firmly fixed or unsound 1/2 the size of sound and tight.
Skips	occasional, very light on face; light on edges and reverse side.
Slope of Grain	1 in 6.
Splits	short, in 5% of the pieces.
Sap Stain	medium.
Torn or Raised Grain	light.
Warp	light in occasional pieces.

In this grade, 10% of the pieces in a shipment may have a 3" cutout, 3' or more from either end, in pieces 12' & longer.

202c. "D" CEDAR INDUSTRIAL CLEARS

A grade recommended and widely used where general utility purposes are of more importance than appearance. Characteristics on reverse face may be approximately 25% larger or more numerous.

Characteristics or their equivalent smaller which may appear on pieces in this grade and their limiting provisions are:

Checks	not limited.
Knots	4 - approximately 1", fixed or 8 - equivalent smaller.
Pin Holes	limited.
Skips	hit & miss; approximately 1/8" scant on edge.
Splits	short.
Sap Stain	not limited.
Torn or Raised Grain	not limited.
Wane	1/8 the width, 1/4 the thickness, 1/4 the length or equivalent; 50% more on reverse face.
White Specks	firm, 1/4 the width or equivalent.
Warp	medium.

In this grade, 20% of pieces in a shipment may have a 3" cutout, 3' or more from either end in pieces 12' & longer.

**WESTERN RED CEDAR
INDUSTRIAL CLEARS
V.G., F.G. and/or M.G.
Rough or Surfaced
K.D., A.D. or Unseasoned
Nominal 2 1/4" & Thicker, 3" & Wider**

203. INDUSTRIAL CLEARS (2 1/4" & THICKER)

There are three grades of Industrial Clear: "**B and BETTER**", "**C**" and "**D**".

Industrial Clears, if ordered surfaced and unless otherwise specified, are finished to the sizes shown in Para. 820c. If ordered rough unseasoned, see Para. 747 for permitted variation in size. For seasoned thicknesses and widths refer to Para. 32.

Grade descriptions are based on a piece 8" wide and 12' long. The number of characteristics in larger or smaller pieces may vary in proportion to the size of the piece.

The grade is determined from the better face with the upper half of the edges considered as part of the face and lower half of the edges as part of the reverse face, the reverse face being approximately one grade lower.

203a. "B AND BETTER" CEDAR INDUSTRIAL CLEARS

Characteristics or their equivalent smaller which may appear on pieces in this grade and their limiting provisions are:

Checks	4 - small. No limit to number in rough stock.
Knots	on reverse face: sound, tight, 3 - 1" in 2 1/4" thickness, to 3 - 2" in 12" thicknesses.
Rate of Growth	6 rings per inch.
Slope of Grain	not to exceed 1 in 8.
Splits	short, in 5% of the pieces.
Torn or Raised Grain	very light.
Warp	very light in occasional pieces.

203b. "C" CEDAR INDUSTRIAL CLEARS

Characteristics or their equivalent smaller which may appear on pieces in this grade and their limiting provisions are:

Checks	4 - small. No limit to number in rough stock.
Knots	sound, tight, 4 - 1" or 5 - equivalent smaller in 2 1/4" thickness, to 4 - 2" or 5 - equivalent smaller in 12" thicknesses; or 4 - not firmly fixed or unsound 1/2 the size of sound and tight knots.
Skips	occasional, very light on face; light on edges and back.
Slope of Grain	1 in 6.
Splits	short, in 5% of the pieces.
Sap Stain	medium.
Torn or Raised Grain	light.
Warp	light in occasional pieces.

In this grade, 10% of pieces in a shipment may have a 3" cutout, 3' or more from either end in pieces 12' & longer.

203c. "D" CEDAR INDUSTRIAL CLEARS

Reverse face must be of a reasonably clear type, allowing characteristics approximately 25% larger or more numerous.

Characteristics or their equivalent smaller which may appear on pieces in this grade and their limiting provisions are:

Checks	not limited.
Knots	fixed, 5 - 1" or 7 - equivalent smaller in 2 1/4" thicknesses, to 5 - 2" or 7 - equivalent smaller in 12" thicknesses.
Pin Holes	limited.
Skips	hit and miss; approximately 1/8" scant on edge.
Splits	short.
Sap Stain	not limited.
Torn or Raised Grain	not limited.
Wane	1/8 the width, 1/4 the thickness, 1/4 the length or equivalent; 50% more on reverse side.
Warp	medium.
White Specks	1/4 the width or equivalent.

In this grade, 20% of pieces in a shipment may have a 3" cutout, 3' or more from either end in pieces 12' & longer.

**WESTERN RED CEDAR
TIGHT KNOTTED STOCK
KNOTTY PANELLING AND SIDINGS
Rough or Dressed
Nominal 1" & Thicker, 4" & Wider**

204. TIGHT KNOTTED STOCK

There are two grades of Tight Knotted Stock: **"SELECT KNOTTY"** and **"QUALITY KNOTTY"**.

Knotty Panelling and Sidings (Dressed or Rough) stock may be shipped kiln dried, air dried or green and shall be well manufactured. Knots and other natural markings shall form the major characteristics of these grades. Panelling and Siding are one face grades. Unless otherwise specified, characteristics which do not interfere with the intended use are permitted on the reverse side.

"Saw Texture" is available in all grades of Western Red Cedar Knotty Panelling and Sidings and as the name implies is a rough finish put on the face of a piece to give it a textured finish. Material supplied with this finish shall in all ways adhere to the grades, sizes and patterns as specified, except that it shall be graded from the textured face.

204a. "SELECT KNOTTY"

Characteristics and limiting provisions are:

Checks	small surface.
Knots	sound, tight; star checking and/or slight chipping permitted.
Skips	very light on back.
Spike Knots	approximately 1/2 the width.
Splits	short in 5% of pieces.
Torn Grain	light.
Warp	very light.

204b. "QUALITY KNOTTY"

Characteristics and limiting provisions are:

Checks	medium surface, occasional through or equivalent shake.
Knots	sound, tight; star checked &/or chipped; occasional 1" not firmly fixed or unsound
Pin Holes	well scattered.
Skips	very light.
Spike Knots	equivalent.
Splits	short
Torn or Raised Grain	medium.
Warp	light.
Cutouts	in pieces 12' & longer, 20% of pieces in a shipment may contain a 3" cutout - 3' or more from either end.

WESTERN RED CEDAR KNOTTY BEVEL SIDING

205. KNOTTY BEVEL SIDING

Knotty Bevel Siding may be K.D., A.D. or Green and is a type of siding especially selected for exterior exposed surfaces. Knots and other natural markings shall form the major characteristics of this product.

Knotty Bevel Siding shall be well manufactured on face and edges but permitting imperfections which will be covered when laid. Minimum head lap of 1". Pieces shall have a minimum thickness of 3/16" in any exposed part.

There are two grades of Knotty Bevel Siding: "**SELECT KNOTTY**" and "**QUALITY KNOTTY**".

"**Saw Texture**" is available in all grades of Western Red Cedar Bevel Siding and as the name implies is a rough finish put on the face of a piece to give it a textured finish. Material supplied with this finish shall in all ways adhere to the grades, sizes and patterns as specified, except that it shall be graded from the texture face.

205a. "SELECT KNOTTY"

Characteristics and limiting provisions are:

Checks	surface.
Knots	sound, tight. Approximately 2" in 6" widths to 3 1/2" in 12" widths. Star checking and slight chipping permitted.
Skips	occasional light on exposed edge.
Spike Knots	approximately 1/2 the width.
Splits	occasional short.
Tolerance in Sawing	occasional, not to exceed 1/16" in thickness.
Torn or Raised Grain	medium.
Warp	light.

205b. "QUALITY KNOTTY"

Characteristics and limiting provisions are:

Checks	not limited.
Holes	a few small, well scattered.
Knots	sound, tight, star checked, chipped or torn.
Sap Stain	not limited.
Shake	tight, through.
Skips	light on face, heavy on exposed edge.
Spike Knots	not limited
Splits	short
Tolerance in Sawing	approximately 1/16" in thickness.
Torn or Raised Grain	heavy
Warp	medium.
Cutouts	occasional pieces may contain cutouts which can be removed by wasting not more than 10% of the length of the piece. 1 cutout permitted in pieces 6' to 9' in length; 2 in 10' to 16'; and 3 in the lengths over 16'; the shortest cutting being 30".

WESTERN RED CEDAR FACTORY LUMBER SHOP

206. FACTORY LUMBER

Factory lumber shall be measured for the percentage of cuttings which can be obtained from a piece of lumber by ripping or cross-cutting or both to obtain clear or virtually clear cuttings for use in joining or similar factory work.

206a. WIDTHS, THICKNESSES AND LENGTHS

- a) **WIDTHS:** Standard widths shall be 5" and wider, but permitting narrow widths, if specified. Shop Lumber is usually shipped in random widths although specified widths may be supplied. Widths 6" & narrower shall not be more than 1/8" scant when dry; 8" & wider widths shall not be more than 1/4" scant when dry.
- b) **THICKNESSES AND LENGTHS:** The following thickness shall be considered standard. All other thickness shall be considered special.

Nominal Thickness (Cut full size)	Finished Thickness S2S	Lengths
1"	25/32"	4' & longer in multiples of 1'. Not more than 25% 8' & shorter
1 3/8"	1 5/32"	
1 5/8"	1 13/32"	
2"	1 25/32"	
2 1/2"	2 9/32"	
3"	2 3/4"	
4"	3 3/4"	

206b. SIZE OF CUTTINGS

- a) 9 1/2" or wider, 18" or longer.
- b) 5" or wider, 3' or longer.
- c) A strip 2" or wider, the length of the piece or 12' and longer.
- d) Full width cuttings only in 2", 3", and 4" - 3' & longer.

206c. GRADE OF CUTTINGS

NO. 1: Cuttings in 1" and thicker stock shall be clear on both sides of the piece.

NO. 2: Cuttings shall be the same size as NO. 1, but will admit one of the following:

Checks one or more small, whose combined length does not exceed 8".

Knots tight, 1 - 5/8".

Torn or Raised Grain very light on one side only.

GRADES OF FACTORY LUMBER - SHOP

206d. "SELECT SHOP"

Each piece contains 70% or more of **NO. 1 Cuttings**.

206e. "NO. 1 SHOP"

"**NO. 1 Shop**" shall be cutting stock containing not less than 50% of **NO. 1 Cuttings**; or not less than 70% of **NO. 1** and **NO. 2 Cuttings** of which there shall be not less than 25% of **NO. 1 Cuttings** in each piece.

206f. "NO. 2 SHOP"

"**NO. 2 Shop**" shall be cutting stock falling below "**NO. 1 Shop**" and containing not less than 35% of **NO. 1 Cuttings**; or not less than 55% of **NO. 2 Cuttings**; or 45% of **NO. 1** and **NO. 2 Cuttings** combined.

206g. "NO. 3 SHOP"

"**NO. 3 Shop**" shall be of cutting stock admitting all pieces below the grade of "**NO. 2 Shop**" that contain approximately 25% of **NO. 1 Cuttings**; or 45% of **NO. 2 Cuttings**; or 35% of **NO. 1** and **NO. 2 Cuttings** combined.

WESTERN RED CEDAR FENCE BOARDS

210. FENCE BOARDS

Boards of this grade may be rough or surfaced, A.D., K.D. or green and are especially selected for tight construction.

The grade is determined from the best face. There are three grades: "SELECT FENCING", "QUALITY FENCING", and "RUSTIC FENCING".

210a. "SELECT FENCING"

Characteristics and limiting provisions are:

Checks	not limited.
Knots	sound and tight. Knots not firmly fixed or unsound approximately 1/6 width.
Pin Holes	not limited.
Shake	fine, barely perceptible (visible only when held at a favourable angle to the light).
Skips	hit and miss.
Spike Knots	approximately 1/2 face width or equivalent.
Splits	short.

S1S Boards may have tolerance of 1/16" over or under the net invoiced thickness.

210b. "QUALITY FENCING"

Characteristics and limiting provisions are:

Checks	not limited.
Holes	4 - 1" per 12', grub or teredo equivalent.
Honeycomb	firm, 1/3 width
Knots	sound and tight. Knots not firmly fixed or unsound approximately 1/3 the width.
Pin Holes	not limited.
Shake	not limited.
Skips	hit or miss.
Spike Knots	approximately 3/4 face width.
Splits	medium.

Unsound Wood	small spots & streaks equivalent to holes.
Wane	1/2 thickness, 1/3 width.
White specks	firm, not limited.

S1S Boards may have tolerance of 1/16" over or under the net invoiced thickness.

210c. "RUSTIC FENCING"

Lumber of this grade is suitable for low quality fencing and permits all characteristics which do not interfere with the use of the piece.

S1S Boards may have tolerance of 3/16" over or under the net invoiced thickness.

Boards re-sawn from surfaced lumber permits edge skips to not exceed 1/4".

Rough sawn boards may have a tolerance of 1/4" over or under the invoiced thickness.

Variation in width not to exceed 1/2" in rough material.

WESTERN RED CEDAR FOUNDATION LUMBER Nominal 2" & Thicker, 4" & Wider

211. FOUNDATION LUMBER

The dimension stability and decay resistance qualities of this material make it ideally suited for use as Foundation Lumber.

There is only one grade of Foundation Lumber: "**FOUNDATION**". In addition to the following specific provisions applicable to Foundation Lumber, the appropriate provisions in all other paragraphs in the NLGA grading rules apply.

For measurement of knots see Para. 320b.

Pieces are selected from heartwood and must be free of heart centre (FOHC) and free of sapwood.

211a. "FOUNDATION"

Characteristics and limiting provisions are:

Bark Pockets not limited.

Checks seasoning only; if through at ends, limited as splits.

Shake through heart shakes up to 2' long, well separated; if not through, single shakes 3' long or 1/4 the length, whichever is greater.

Skips hit and miss; in 5% of pieces hit or miss or one heavy skip 2' long.

Splits medium.

Torn Grain not limited.

Unsound Wood peck, narrow streak 1/6 the width.

Warp light.

Knots sound, unsound or not firmly fixed but well spaced, are permitted in the following sizes or their equivalent displacement:

Nominal Width	Knot Size	Holes ** (Any cause)
4"	2"	1 1/4"
6"	2 1/2"	1 1/2"
8"	3"	2"
10"	3 1/2"	2 1/2"
12"	4"	3"
Over 12"	4 1/2"	3 1/2"

** one or equivalent smaller per 2 lineal feet.

Narrow face and spike knots are permitted if judged to have no more effect on strength than other knots.

STRESS GRADING AND CHARACTERISTICS

300. STRESS GRADES

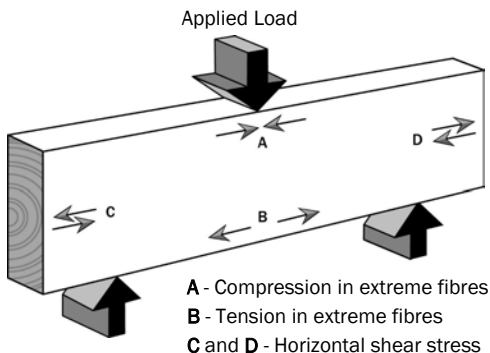
310. STRESSES ILLUSTRATED

310a. EXTREME FIBRE IN BENDING – “ F_b ” AND HORIZONTAL SHEAR – “ F_v ”

In structures, stress grades of lumber may carry loads on spans between supports and the lumber is stressed internally to the extent required to resist the external load. The loads cause pieces to bend, producing tension in the extreme fibres along the face farthest from the applied load and compression in the extreme fibres along the face nearest to the applied load. (**Figure 1**)

At the same time, over each support, there is a stress that tends to slide the fibres over each other horizontally. This action is similar to the way the ends of playing cards slide over each other when a deck is sharply bent. The internal force that resists this action is the horizontal shear value of the wood. The shearing stress is maximum at the centre of the depth of the piece.

FIGURE 1



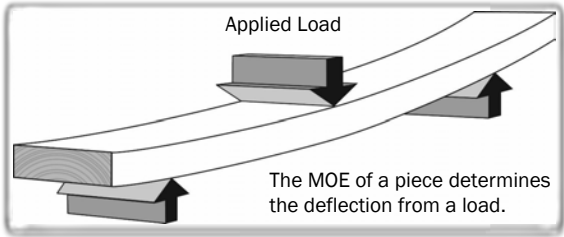
310b. MODULUS OF ELASTICITY – “ E ”

The relationship between the amount a piece deflects and the load causing the deflection determines its stiffness (**Figure 2**). Using Hooke's Law, the Modulus of Elasticity (E) is the ratio of bending stress over bending strain, or the slope of the stress-strain

relationship. A piece may deflect slightly or a lot depending on its size, the span, the load, and the modulus of elasticity for the species and grade. A large deflection is not necessarily a sign of insufficient strength.

The application will determine the acceptable deflection. For example, the floors of a residence are usually limited to a deflection $1/360^{\text{th}}$ of the span, or less.

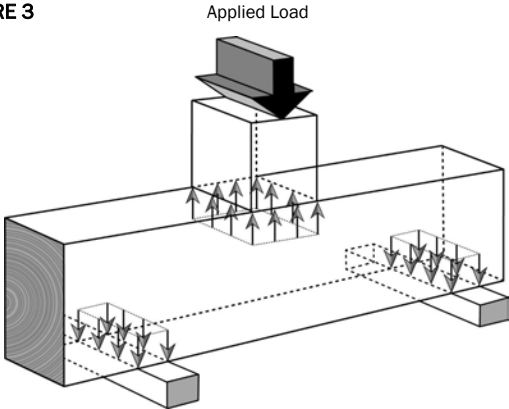
FIGURE 2



310c. COMPRESSION PERPENDICULAR TO GRAIN – “ $F_{C\text{perp}}$ ”

Where a joist, beam, or similar piece of lumber bears on supports, the loads tend to compress the fibres (**Figure 3**). It is therefore necessary that the bearing area be sufficient to prevent side grain crushing.

FIGURE 3

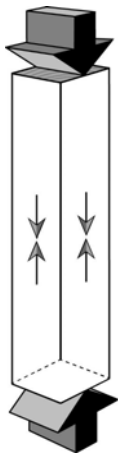


310d. COMPRESSION PARALLEL TO GRAIN – “ $F_{c\parallel}$ ”

In many parts of a structure, stress-grades are used with the loads supported on the ends of the pieces. Such uses include studs, posts, columns, and struts. (Figure 4)

The internal stress induced by this kind of loading is the same across the whole cross-section and the fibres are uniformly stressed parallel to and along the full length of the piece.

FIGURE 4



310e. EFFECT OF HOLES ON DESIGN VALUES

Many stress grades that are assigned design values for engineered and repetitive member uses, permit “not firmly fixed” knots or knot holes. Knots - not firmly fixed and holes do not reduce strength any more than intergrown knots, so no distinction need be made between knots and holes. For the sake of appearance, holes in certain grades are frequently restricted more severely than knots.

320. MEASUREMENT OF KNOTS

The methods of knot measurement in the NLGA Grading Rules are assigned based on the intended use of the lumber product. The two main knot measurement methods are described in Paras. 320a and 320b.

320a. KNOTS - NON-STRUCTURAL LUMBER

Unless otherwise specified, knots in non-structural lumber shall be measured using the “average diameter method” calculated by averaging the maximum and minimum diameters as illustrated in **Figures 5, 6 and 7**. (Also see NLGA Interpretations 1.8).

In the next three diagrams, knot size is calculated by $(\text{Length A} + \text{Length B}) / 2$.

FIGURE 5 Round or Oval Knots

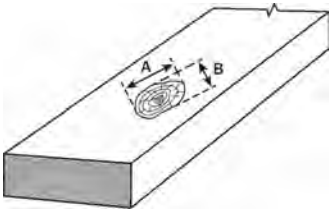


FIGURE 6 Irregular Knots

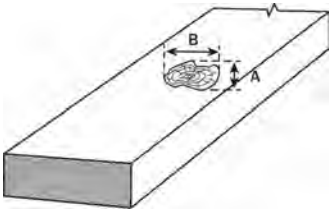
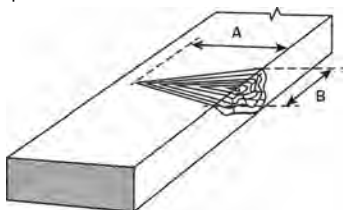


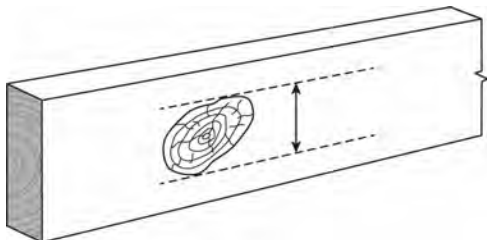
FIGURE 7 Spike Knots



320b. KNOTS - STRUCTURAL LUMBER

In grades of dimension lumber, timbers, and other grades where specified, knots on wide faces are measured between lines parallel to the edges as shown in **Figure 8**.

FIGURE 8



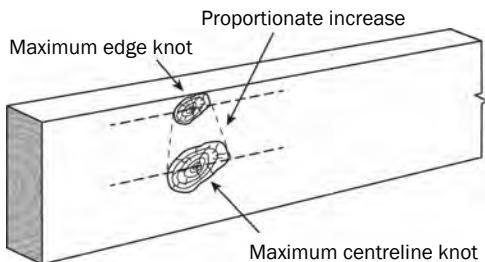
The following are general guidelines for the measurement of knots in stress grades of structural lumber:

Note: *Illustrations on the following pages are examples only. Judgement must be used in measuring the many different knots that occur in natural growth for equivalent effect on a piece.*

- a) The sum of the sizes of all knots in any 6" of length of a piece shall not exceed twice the size of the largest knot permitted. More than one knot of maximum permissible size shall not be in the same 6" of length and the combination of knots must not be serious.

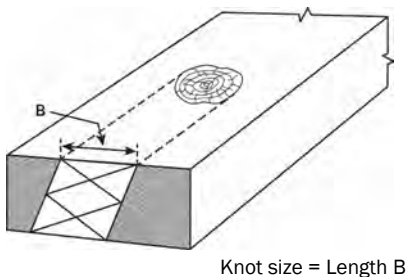
- b) Displacement as used in the NLGA Grading Rules means the amount of clear wood displaced by a knot and considered in its relation to the amount it reduces the strength of the cross section of the piece of lumber under consideration.
- c) Narrow face and spike knots are measured by the displacement method. Stress grades are graded full length with listed knot sizes applying full length.
- d) The allowable size of knots on the wide faces, when appearing away from the edge, shall be proportionately increased from the size specified for knots located along the centerline. The increase shall start at a distance from the edge equal to $\frac{1}{2}$ the diameter of the allowable edge knot. (**Figure 9**)

FIGURE 9



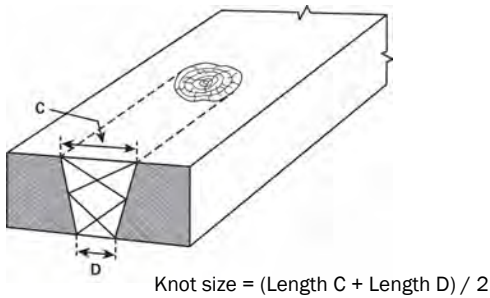
Wide face knots extending through the piece to the reverse face are measured as shown in **Figure 10**.

FIGURE 10



When tapering knots are encountered, their equivalent size is determined as shown in **Figure 11**.

FIGURE 11



Narrow face and spike knots are judged by the amount of cross section (displacement) they occupy as illustrated in **Figures 12** and **13**.

FIGURE 12

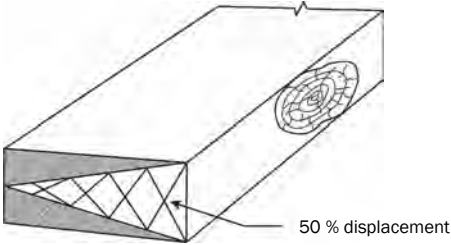
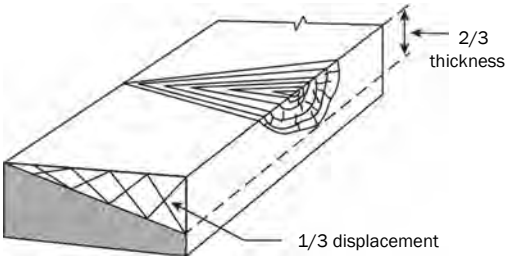


FIGURE 13



330. POSTS & TIMBERS - SHAKE, CHECKS AND SPLITS

Due to the nature of shake, checks and splits, judgement must be used in evaluating their extent.

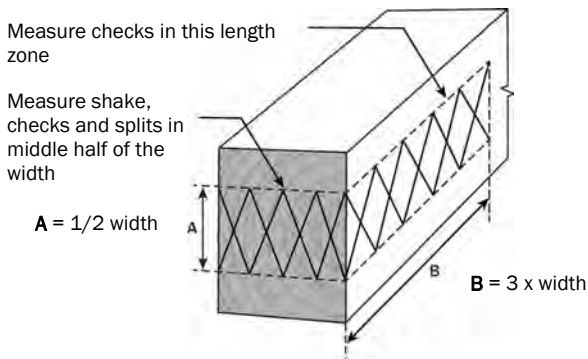
Shake and checks, as a rule, have little influence on the strength of a post or column, unless so extensive as to split the piece practically in two.

The grade limitations are applied primarily for appearance.

340. POSTS & TIMBERS AND BEAMS & STRINGERS - MEASUREMENT OF SHAKE, CHECKS AND SPLITS

The measurement of shake, checks and splits in Beams & Stringers is confined to the middle $\frac{1}{2}$ of the width (height when standing on the narrow edge) of the piece and restrictions on checks are applied only for a distance from the ends equal to three times the width of the wide face. (**Figure 14**)

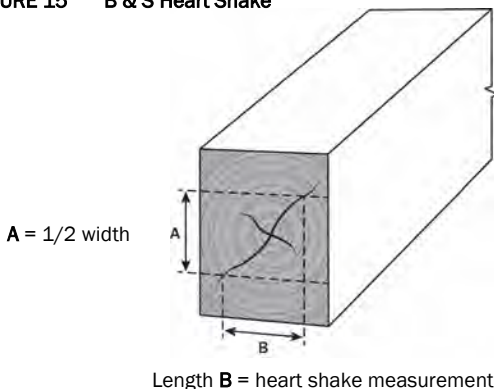
FIGURE 14 **B&S Measurements**



340a. HEART SHAKE

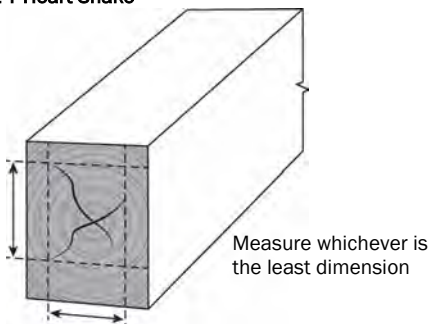
- Heart shake in Beams & Stringers is measured at the ends of pieces, between lines enclosing the shake and parallel to the wide faces as illustrated in **Figure 15**.

FIGURE 15 B & S Heart Shake



- b) Heart shake in Posts & Timbers are measured at the ends of pieces, between lines parallel with the two faces (enclosing the extent of the shake) that give the least dimension as illustrated in **Figure 16**.

FIGURE 16 P & T Heart Shake

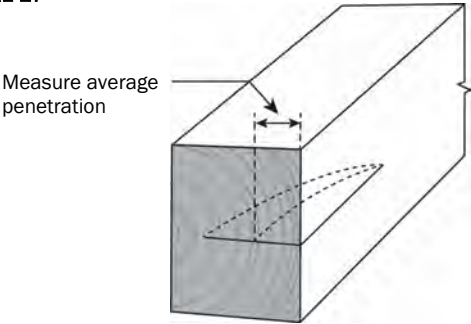


340b. CHECKS

Checks are measured as an average of the penetration perpendicular to the wide face (**Figure 17**). Where two or more checks appear on the same face, only the deepest one is measured.

Where two checks are directly opposite each other, the sum of their depths is considered.

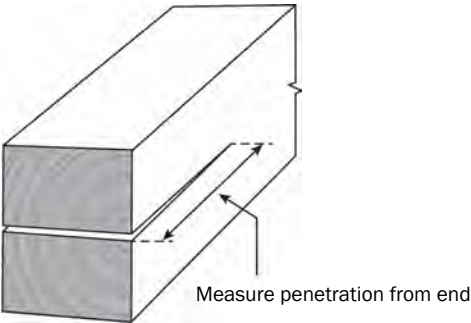
FIGURE 17



340c. SPLITS

Splits are measured as the average penetration of a split from the end of the piece and parallel to the edges of the piece (**Figure 18**).

FIGURE 18



350. DENSITY AND RATE OF GROWTH

The greater the specific gravity of lumber, the greater is the strength of wood fibres.

One method of measuring specific gravity is described in ASTM D245. The method visually measures the growth rings per inch along with the amount of summerwood in the growth rings.

Rate of growth requirements are sometimes a part of a grading rule for reasons of texture as well as for strength.

350a. MEDIUM GRAIN

Medium grain means an average of approximately 4 or more annual rings per inch on either one end or the other of a piece, measured as described in Para. 350c.

In Douglas Fir and Larch, pieces averaging less than 4 rings per inch are accepted if averaging $\frac{1}{3}$ or more summerwood (the dark portion of the annual ring).

350b. CLOSE GRAIN

Close Grain means an average of approximately 6, but not more than approximately 30, annual rings per inch on either one end or the other of a piece, measured as described in Para. 350c.

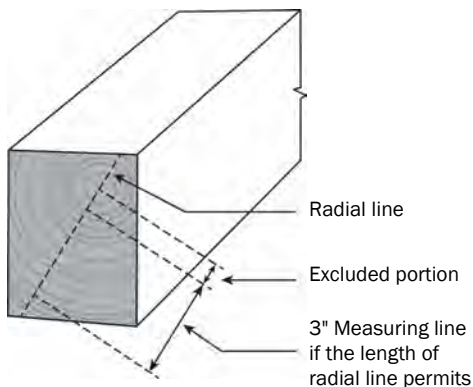
In Douglas Fir and Larch, pieces averaging 5 rings or more than 30 rings per inch, are accepted as close grain if averaging $\frac{1}{3}$ or more summerwood (the dark portion of the annual ring).

350c. MEASUREMENT OF AVERAGE RATE OF GROWTH

- a) Average rate of growth is measured on a line at a right angle to the rings in an area representative of the average growth in the cross section at either one end or the other. If the size of the piece permits, the measuring line should be 3" long.
- b) In Boxed heart (pith present) pieces, the measurement may exclude an inner portion of the radius amounting to approximately one quarter of the least dimension (**Figure 19**).

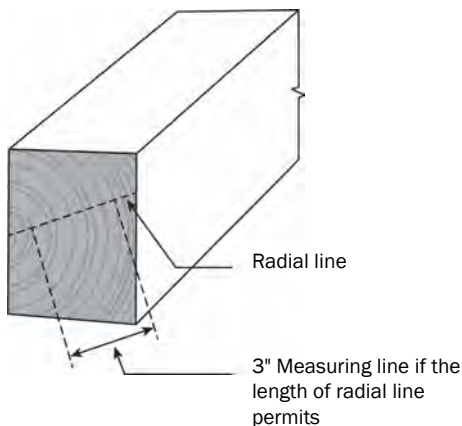
FIGURE 19

Boxed Heart (Pith present)



- c) In FOHC (side cut) pieces, the measuring length shall be centrally located (**Figure 20**).

FIGURE 20 FOHC (Free of heart centre or side cut)



Note: Stress grades specify minimum requirements and maximum characteristics, all of which may be present in the same piece. The grading rules commonly prohibits any serious combination of characteristics which reduces strength. Relative density, however, may compensate in part for such a combination; that is, if a piece is above average in density, that fact may be taken into account in assessing the effect of a combination of characteristics.

360. SLOPE OF GRAIN

Slope of Grain is the deviation of the wood fibre from a line parallel to the edges of a piece. (See example in **Figure 21**)

The deviation is expressed as a ratio such as a slope of grain of 1 in 8, 1 in 10, 1 in 12, and 1 in 15.

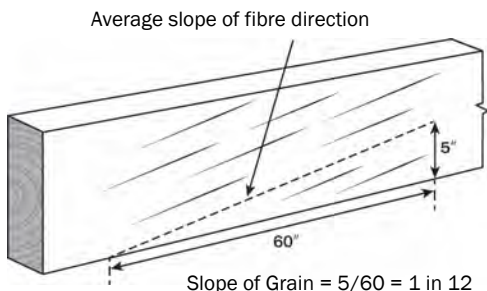
This provides slope of grain grading requirements which relate to the assignment of design values to small lumber sections.

In lumber nominal 2 inches and thicker and nominal 4 inches and wider, slope of grain is measured over a sufficient length and area to be representative of the general slope of the fibres. Local deviations around knots and elsewhere are disregarded in the general slope measurement.

In thinner or narrower lumber, the displacement of local grain deviation (other than around knots) which exceeds the slope provisions of the grade is limited to the knot displacement permitted.

In lumber, less than one inch net in thickness, the average slope of grain anywhere in the length shall not pass completely through the thickness of the piece in a length less than the allowable slope. For instance, for an allowable slope of 1 in 8, the average slope of grain shall not pass completely through the piece in a distance less than 8 inches regardless of the thickness.

FIGURE 21 **Slope of Grain Example**



NOTES

REINSPECTION

400. REINSPECTION: GENERAL

Unless otherwise agreed upon between buyer and seller, lumber sold under these rules shall be subject to reinspection provisions as described herein.

Buyer and seller may agree on the settlement of complaints in accordance with the terms of sale or alternately on any other method with respect to grade moisture content, size, species, manufacture, and tally of a shipment. In the absence of special agreement between buyer and seller, the purchase, sale or shipment of lumber designated by grades described in these rules, NLGA Special Product Standards and Interpretations shall be construed as agreement between buyer and seller to abide by all applicable provisions of these rules and make available the lumber for the purpose of reinspection by a CLSAB / ALSC accredited inspection agency (herein after referred to as the "Agency") whose grade stamp appears on the lumber or who has supervised the grading of the lumber in question or by their authorized Reinspection Agency. (See Section 13 of these rules for a list of accredited Canadian grading agencies and their grade stamp facsimiles.)

Upon written request by the buyer or seller, reinspection services shall be made available by the Agency at a reasonable cost.

The Agency assumes no responsibility for, or concern in, arranging or paying for labour or other services necessary in performing the reinspection.

Reinspection shall also be made available for non-standard grades and non-grade stamped lumber provided the appropriate documentation is made available to the Agency.

The Agency shall re-inspect shipments in the case of complaint for grade, moisture content, size, species, manufacture, measurement, or tally. For reinspection purposes, the following shall apply:

- a) **An item of a shipment** consists of a grade and size, without reference to lengths.
- b) **Mixed grade shipment** contains more than one grade (i.e., lumber gradestamped as NO. 1 or NO. 2 however invoiced as "2 & Btr").
 - In a mixed grade shipment, the buyer and seller shall agree that the grades specified in the mixture are considered as one grade (the lessor of the combination grades invoiced) in determining an item.

- A shipment that specifies quantities and/or percentages of grades shall not be considered a mixed shipment and each item shall be considered separately.

c) Buyer and seller shall consent to the method of invoicing prior to shipment.

Unless otherwise agreed to between buyer and seller, reinspection shall be conducted in accordance with the invoice.

401. COMPLAINTS

Unless otherwise specified by the terms of sale or special contract, the grading of lumber is based upon; grade, moisture content, size, and manufacture at time of grading and/or grade stamping, shipment and unloading by the buyer (See Para. 407.1).

For complaints on lumber to be recognized, the lumber shall be in the form in which it was invoiced.

Any subsequent change in manufacture or working or through kiln drying, treatments, fabrication or other use relieves the seller of their responsibility in recognizing any complaint except in cases of prior consent of the parties involved.

In the case of a complaint involving measurement (i.e., FBM), tally, or both, the entire item shall be held intact until re-inspected or re-tallied.

In the case of complaint regarding grade, moisture content, size, species or manufacture, but not involving measurement or tally, the buyer shall be required through agreement to accept that portion of the shipment that is of the invoiced grade, moisture content, size, species or manufacture as the case may be.

Upon receipt of complaint from the buyer/seller, the buyer/seller shall either resolve the complaint to the satisfaction of the buyer/seller or shall immediately contact the Agency whose grade stamp appears on the lumber or who supervised the grading of the lumber in question and request that they provide reinspection or re-tally service, as the case may be.

402. ASSISTANCE

The party calling for the reinspection, or re-tally shall be responsible to the Agency for payment of expenses associated with the reinspection or re-tally. Upon mutual agreement, the buyer and seller may share in the payment of expenses of the reinspection or re-tally.

In the event buyer/seller are not able to come to a mutual agreement, the payment of expenses for the reinspection or re-tally is defined in Para. 411 of these procedures.

The buyer shall promptly provide all reasonable assistance to facilitate the reinspection or re-tally.

403. BUYER'S RESPONSIBILITIES

Requests for reinspection or re-tally shall be acknowledged provided:

- a) The buyer holds intact and properly protects that portion of the shipment which is in dispute in accordance with Para. 405.
- b) The lumber which is in dispute and not kept intact shall be considered of the highest invoiced grade specified of the items on which the complaint is made.

Note: *It shall be recognized between buyer and seller that lumber which is in dispute shall be held intact. However, the buyer may in determining whether a complaint is valid, examine some or all of the shipment, which may necessitate in the removal of paper wrap and/or strapping.*

The seller shall acknowledge this as a reasonable method of determining whether a complaint exists. It shall be the buyer's responsibility to re-pile/repackage the lumber examined, and to identify the disputed lumber to the Agency for verification.

Any action on the part of the buyer in accepting and using that portion of the shipment that is of the grade, size, species, manufacture, and moisture content specified shall not be construed as acceptance of the entire shipment.

The buyer shall pay for the lumber in accordance with the terms of the sale for that portion accepted, however acceptance of part of a shipment shall not prejudice the buyer's just claims that any unused lumber conforms to the specifications of the grade, size, species, manufacture, or moisture content.

The buyer shall understand that that portion of lumber which has been accepted, used or not available for reinspection shall be included in calculating the results of the reinspection (entire item).

Example:

Item:	100,000 FBM
Accepted and/or used:	<u>30,000 FBM</u>
Portion remaining for reinspection:	70,000 FBM

Reinspection below grade results:	5,000 FBM
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Note: *The 5,000 FBM below grade shall be calculated on the 100,000 FBM (entire item) **NOT** the 70,000 FBM.*

404. SELLER'S RESPONSIBILITIES

Unless otherwise settled, the seller, upon receipt of complaint from the buyer, shall immediately request the Agency to provide reinspection or re-tally, as the case may be, in accordance with the rules in effect at the time of execution of the contract.

Failing action by the seller to execute the request to provide reinspection or re-tally shall be cause for the buyer to request reinspection or re-tally directly with the Agency. Failure by the seller to execute a request for reinspection or re-tally shall not relieve the seller of their responsibility in accepting the terms and conditions for reinspection or re-tally as contained herein.

405. TIME FRAME

The buyer shall file a complaint with the seller within the time limits specified as follows:

405.1 FILING OF COMPLAINTS (STORAGE / PROTECTION)

The onus by the buyer to hold the disputed lumber intact and properly protected, shall not exceed **THIRTY (30) CALENDAR DAYS** from the date of filing the request for reinspection with the seller, unless alternate means of settling the complaint have been mutually agreed to by buyer and seller.

Upon receipt of the complaint from the buyer, the seller shall immediately notify the buyer that arrangements shall be made for reinspection or re-tally, unless alternate means of settling the complaint have been mutually agreed to by buyer and seller.

The disputed lumber held in excess of **THIRTY (30) CALENDAR DAYS** shall become the responsibility of the seller to hold intact and properly protect unless alternative arrangements have been agreed to between buyer and seller.

Failure by the seller to make appropriate arrangements to hold intact and properly protect the disputed lumber shall relieve the buyer from the responsibility in accepting any portion of the disputed lumber.

The Agency, upon receipt of the complaint from the buyer or seller, shall when scheduling their availability to perform the reinspection or re-tally be cognisant of the **THIRTY (30) CALENDAR DAY** requirements and make every effort to have the disputed lumber re-inspected or re-tallied within the **THIRTY (30) CALENDAR DAYS**.

405.2 GRADE

Complaints must be filed within **TEN (10) NORMAL WORKING/BUSINESS DAYS** after receipt of the shipment.

In the case of shipments composed of wrapped, strapped, or packaged units, reinspection for grade shall be permitted provided the complaint is filed within **NINETY (90) CALENDAR DAYS** after receipt of the shipment.

In either case, reinspection shall involve only natural grade and manufacturing characteristics which are not altered by time and may include, but are not limited to, knots, knot size and placement, manufacture, pitch, wane, and skips.

The **NINETY (90) CALENDAR DAY** time limit for filing complaints is provided solely to protect the buyer's claim to a reinspection until such time as the wrapped, strapped, or packaged units are opened, and shall not be construed to permit a delay in payment of invoices.

Complaints on lumber shipped in wrapped or strapped packages shall only be recognized up to **NINETY (90) CALENDAR DAYS** provided:

- a) The lumber is grade stamped or marked in some recognizable manner establishing its identity in a positive way.
- b) There is no evidence of handling abuse or unsatisfactory protection.
- c) The seller's responsibility for nonconforming lumber shall apply only to that portion of the shipment which is in nonconformance to the grade requirements at the time of shipment as indicated by the Agency's report.

Complaints on warp, splits, stain, fungus, and other characteristics which may develop subsequent to arrival at the destination shall not be recognized unless proof can be provided that these characteristics developed prior to the lumber arriving at its destination.

405.3 MOISTURE CONTENT

In case of a complaint involving moisture content, the buyer shall inform the seller of the complaint within **SEVENTY-TWO (72) HOURS** (3 normal working /business days of the buyer; weekends/statutory holidays shall not be included) after the lumber is unloaded in the buyer's yard or their designated location.

In such cases, the seller shall respond to the complaint within **SEVENTY-TWO (72) HOURS** (3 normal working / business days; weekends / statutory holidays shall not to be included) from receipt of buyer's complaint.

405.4 TALLY, MEASUREMENT MANUFACTURE AND SIZE

In cases of complaints involving tally, measurement, species, manufacture or size, the buyer shall hold intact the entire shipment and shall file complaint with the seller within **TEN (10) NORMAL WORKING / BUSINESS DAYS** of receipt of shipment.

405.5 SPECIAL AGREEMENTS BETWEEN BUYER AND SELLER

Resolution shall be agreed upon between buyer and seller. This does preclude requesting the Agency to perform a verification or reinspection of the issue of complaint.

406. PROCEDURES

All requests for reinspection or re-tally shall be made in writing to the Agency and shall be accompanied by a copy of the purchase order, buyer's acceptance or acknowledgement of the order and a copy of the facilities invoice (Prices may be deleted).

All pertinent information shall be made available to the Agency including, but not limited to; grading rules, location, reason for reinspection, date of arrival of shipment and date of lodging the complaint plus any other information that may be helpful to the Agency.

407. MOISTURE CONTENT COMPLAINTS

For complaints on moisture content to be recognized, the Agency shall perform its reinspection in accordance with the following conditions and procedures:

407.1 MOISTURE CONTENT RESTRICTIONS

Restrictions on moisture content shall apply at the time of grading and grade stamping (if applicable), at time of shipment, and at time of unloading by the buyer in accordance with Para. 44, Moisture Content Standards.

When lumber is shipped on open transport equipment (i.e., rail, truck, boat, etc.) which exposes the lumber to the weather, the seller shall be relieved from responsibility for the re-absorption of moisture after the lumber has been loaded on said equipment provided the seller notifies the buyer, and the buyer consents to the method of shipment.

407.2 MOISTURE CONTENT TESTING

Unless otherwise agreed to between buyer and seller, moisture content determinations shall be made with electric resistance type meters correctly calibrated and adjusted for species and wood temperature.

Testing shall be conducted in accordance with ASTM D7438 "Standard Practice for Field Calibration and Application of Hand-Held Moisture Meters" procedures. Para. 44 of these grading rules shall also be referred to when conducting reinspection for moisture content.

407.3 MOISTURE CONTENT MEASUREMENT

Unless otherwise agreed to between buyer and seller, reinspection shall include testing of all pieces of the item under complaint. All pieces not exceeding the maximum permissible moisture content shall be separated from those in excess of the permissible moisture content.

408. SHORTAGE OR DAMAGE

All claims for shortages or damage shall be supported by an Affidavit from the buyer or his agent, and shall include but are not limited to, piece tallies, numbers off car seals, if any, car numbers and initials, a report from the Transportation Agent at destination, or by an Affidavit that the Transportation Agent was requested to make such a report and refused to do so.

409. AGENCY RESPONSIBILITY

The responsibility of the Agency on reinspection or re-tally shall be deemed to have been fulfilled when it has supplied all parties concerned with a report on the results of the reinspection or re-tally.

The Agency reserves the right to request prepayment of all expenses or a deposit to cover the estimated expenses.

410. SETTLEMENT PROVISIONS

410.1 GRADE

The contractual obligation of the seller shall be deemed to have been fulfilled when each item in the shipment upon reinspection is found to be 95% or more of the invoiced grade or better.

When, upon reinspection, the degrades are found to be more than 5% below grade, or when the degrades are found to be more than one

grade lower than the grade invoiced, the degrades shall be the property of the seller, while that portion of the shipment which is on, or above grade shall be accepted by the buyer as invoiced. Such degrades, if accepted by the buyer, shall be paid at the appropriate grade price.

410.2 MOISTURE CONTENT

The shipment shall be considered as of the moisture content as specified when 95% or more of the FBM (volume) is within the maximum allowable moisture content.

410.3 “OUT OF CONTRACT” SITUATIONS

Throughout the NLGA Grade Rules some characteristics are identified with a percentage of pieces permitted in a shipment.

If the number of pieces in a shipment exceed the allowable percentage permitted even though these pieces are within the grade characteristic limitations for the grade under consideration, an “**Out of Contract**” situation occurs.

Examples of characteristics that are restricted by percent of pieces in a shipment that are subject to an “**Out of Contract**” situation if the number of pieces is exceeded include but are not limited to: “Cutouts” in Para. 112d., “Hit & Miss” skip in Para. 124, “Wane extending partially or completely through the edge” in Para. 750, “Occasional piece” references, etc.

Other “**Out of Contract**” situations may include, but are not limited to incorrect size, species, tally and / or manufacture, that differ from the invoice agreed to between buyer and seller.

Grade and moisture content settlement provisions are addressed in Paras. 410.1 and 410.2. respectively and are not considered “**Out of Contract**” situations.

Settlement of “**Out of Contract**” situations shall be agreed to between buyer and seller.

411. COST

The expense of the reinspection shall be borne by the seller if the item under complaint is found to be less than 95% of the invoiced grade or moisture content.

The expense of reinspection shall be borne by the buyer, if 95% or more of the shipment is of the invoiced grade or moisture content.

If more than one item is under complaint, the expense of

reinspection shall be pro-rated between buyer and seller in the ratio of the invoiced footage and to items found to be less than 95% on grade to those found to be 95% or more on, or above grade.

412. SPECIALLY WORKED LUMBER

In the case of special grades, when grades are in dispute, or sizes are in dispute, the Agency shall not make reinspection unless the request is accompanied by the exact specifications under which the product was sold.

Grades of Factory lumber such as Shop, Moulding Stock and Box are designed for remanufacture into special products. Other grades shown herein are primarily designed to be used for the specific purposes and in the sizes shown in the individual grade descriptions. Therefore, when lumber is ordered and invoiced as a specific grade and then remanufactured and the product ("Product of" lumber) shipped, no guarantee of the remanufactured product is made. However, for the purpose of providing a method upon which complaints may be settled the following shall apply:

412.1 "RESAWN" LUMBER

When lumber is sold on a specific grade and then "resawn" and the product shipped, the product will be considered on-grade if fifty percent (50%) or more of it is of the grade invoiced or better, unless the purchase agreement specifies otherwise.

412.2 "RIPPED" OR "RUN TO PATTERN" LUMBER

When lumber is sold on a specific grade and to be "ripped" or "run to pattern" lumber and the product shipped, settlement provisions are subject to agreement between buyer and seller.

413. SPECIAL PRODUCTS STANDARD LUMBER

In the event of a complaint on NLGA Special Product Standard (SPS) lumber grades (such as **SPS 1** or **SPS 2**, etc.), reference shall be made to the reinspection clause outlined in the appropriate SPS for procedures and settlement provisions. Unless otherwise provided for in the reinspection provisions of the Special Product Standards, the reinspection provisions listed above shall apply.

NOTES