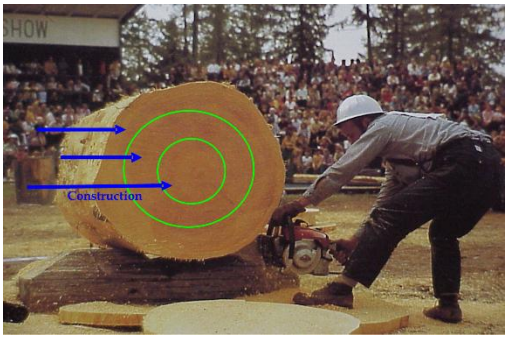
NLGA Posts and Timbers – Lesson 17

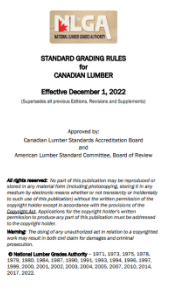
I. Utilization in Construction Zones

a. Posts and timbers containing large knots may be used in designated Construction zones, as long as they meet NLGA grading specifications.

b. NLGA grades define minimum requirements and maximum permissible characteristics, allowing all features to coexist in the same piece while prohibiting combinations that reduce structural strength.



II. National Lumber Grades Authority (NLGA)


NLGA

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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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".

Those 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 Rules 320, 320b, 330 and 340 respectively.

Pieces are graded from all faces, and both ends.

a. The NLGA was incorporated on January 12, 1971, under Federal Charter to maintain Canadian lumber grading rules.

b. Posts and Timbers grading is outlined in paragraph 131, pages 105 to 110, covering timber sizes starting at five inches by five inches and larger.

III. Characteristics and Dimensions of Posts and Timbers

a. Posts and Timbers are characterized by a square cross-section, making them suitable for vertical applications.

b. Nominal dimensions start at five inches wide by five inches and larger, with the width not exceeding nominally two inches greater than the thickness.

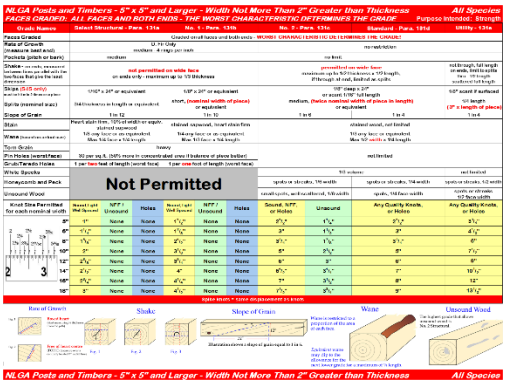
c. Posts and Timbers may be graded under Beams and Stringers rules, provided that all faces are graded as narrow faces and paragraph 130 is indicated on the grade stamp or accompanying grade certificate.

IV. Grades of Posts and Timbers

a. Posts and Timbers are categorized into five grades: Select Structural, Number One, Number Two, Standard, and Utility.

b. Select Structural, Number One, and Number Two are stress grades emphasizing strength for structural applications.

c. Grading requires evaluation of all four sides and both ends to ensure compliance with strength requirements.



V. Certified Grade Stamp

a. A certified grade stamp assures buyers that lumber has been inspected and graded in accordance with CSA Standard 0141 or PS20 and approved by CLSAB or ALSC.

b. Grade stamps include the registered symbol of the certified agency, mill or grader identity, applicable grading rule, assigned grade, and species or species group.

c. Additional indications such as size, moisture content, and heat-treatment (HT) may also be included on the grade stamp.

VI. Purpose and Grades of NLGA Posts and Timbers

a. The grades of NLGA Posts and Timbers ensure the provision of strong, reliable timber suited for both high-end construction and general utility purposes. The focus remains on strength, requiring the assessment of all four sides and both ends during grading.

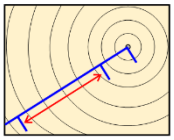
b. Posts and Timbers are categorized into five grades: Select Structural, Number One, Number Two, Standard, and Utility. Select Structural, Number One, and Number Two are stress grades that prioritize strength for structural applications.

VII. Dimensions and Grading Considerations

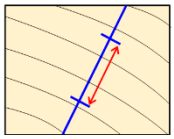
a. Posts and Timbers are defined by nominal dimensions starting at 5 inches wide by 5 inches and larger, with the width not exceeding nominally 2 inches greater than the thickness.

b. Grading considers permissible characteristics such as knots, with the size, quality, and extent of each characteristic defined in the grade rule. All faces and ends are inspected, and the worst characteristic determines the grade. Pieces failing to meet Utility grade specifications are rejected.

VIII. Rate of Growth Requirements

Fig. 1 

Boxed heart
(start measuring ¼ thickness from the pith)

Fig. 2 

Free of heart centre
(FOHC) (measure over a centrally located 3″ radial line)

a. Rate of growth requirements apply specifically to Select Structural and Number One grades for Douglas Fir and Larch species. Medium growth is defined as 4 or more rings per inch on one end or the other.

b. Pieces averaging fewer than 4 rings per inch are accepted if they average one-third or more summerwood. The measurement is performed perpendicular to the growth rings at the best end, divided by 3, or by the total length if a 3-inch line is unavailable.

IX. Shake Measurement and Allowances

a. Shakes are measured by boxing them within parallel lines, with the smallest dimension determining the size. This process applies to heart shake and ring shake.

b. Shake allowances vary by grade. For Select Structural and Number One grades, shakes are limited to one-third of the thickness at the ends. If shakes extend onto a face, the grade is reduced to Number Two or lower. For Number Two and Standard grades, shakes may penetrate up to half the thickness for half the length or equivalent away from the ends, with through shakes allowed up to 4 feet in full length. Utility grade allows single shakes for the full length or multiple shakes extending up to half the piece's length if through.

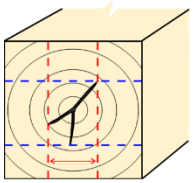


Fig. 1

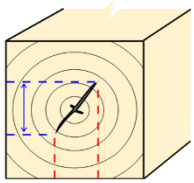


Fig. 2

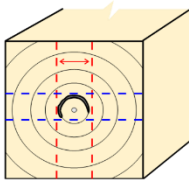


Fig. 3

X. Splits Measurement and Allowances

a. Splits are measured by average penetration, with checks on the ends exceeding grade limits treated as splits. Allowances vary by grade. Select Structural allows splits up to three-quarters the thickness of the piece, Number One permits splits up to the width of the piece, Number Two and Standard allow splits up to twice the width, and Utility permits splits up to one-quarter the piece's length.

XI. Slope of Grain

a. The slope of grain measures the deviation of wood fibers from a line parallel to the piece's edges and is assessed over a sufficient distance to determine general slope. Measurements are taken at the worst area of the piece and calculated as a ratio of the measured slope to the width of the piece.

b. Ratios allowed by grade include one-in-twelve for Select Structural, one-in-ten for Number One, one-in-six for Number Two, and one-in-four for Standard and Utility.

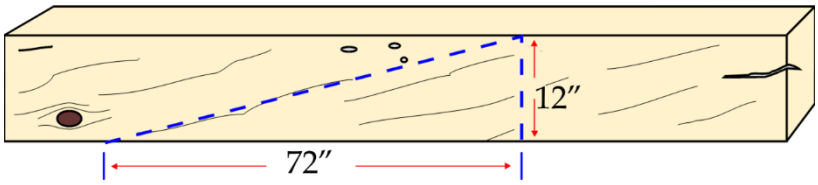


Illustration shows a slope of grain equal to 1 in 6.

XII. Stained Heartwood and White Specks

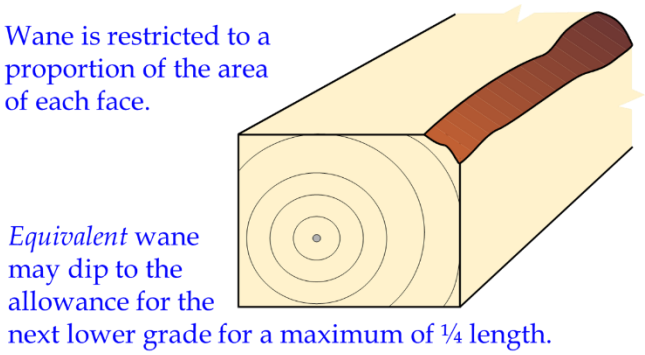
a. Stained heartwood appears as irregularly colored areas from pink to brown and is restricted to 10% of the piece in Select Structural but permitted in other grades.

b. White specks are narrow pits caused by the fungus Phellinus pini, and their later stage, honeycomb, develops in the living tree. Both white specks and honeycomb, permitted in certain grades, do not affect a piece's structural utility. They are allowed up to one-third of the volume in Number Two and Standard grades and without restriction in Utility.

XIII. Wane Measurement and Allowances

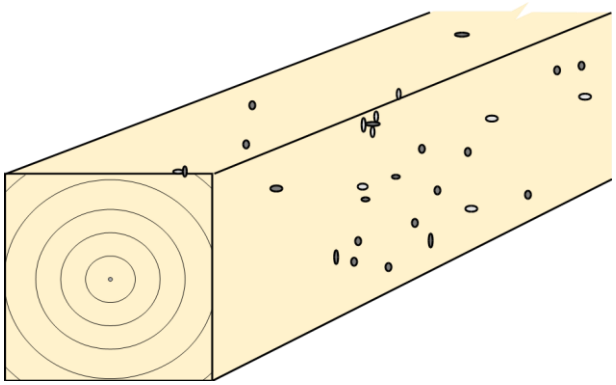
a. Wane refers to missing wood on a timber's edge or corner, with basic wane allowance permitted along the full length of a piece. Additional wane allowances are limited to a maximum face reduction over one-quarter of the piece's length.

b. Allowances differ by grade, with Select Structural permitting one-eighth face wane, Number One allowing one-quarter face wane, and Number Two, Standard, and Utility permitting up to one-third face wane for the full length or one-half face wane over one-quarter length.



XIV. Holes: Pin, Grub, and Teredo

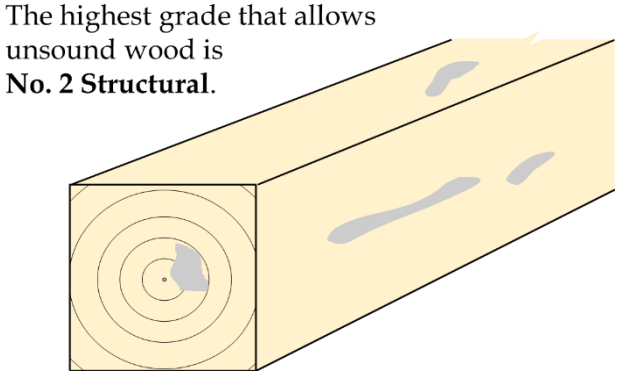
a. Pin holes, grub, and teredo holes are counted on the worst face and permitted within specified limits depending on the grade. Select Structural and Number One allow 30 pin holes per square foot, with an additional 50% in concentrated areas, while grub or teredo holes are restricted to one per one or two lineal feet.



b. Number Two allows holes limited by knot rules, Standard permits holes up to half the face width, and Utility allows holes up to three-quarters of the face width, with no restriction on quantity for either Standard or Utility grades.

XV. Unsound Wood and Knot Measurement

a. Unsound wood is permitted in varying degrees depending on the grade. Number Two restricts it to spots equivalent to one-sixth the face width square, Standard allows spots up to one-quarter the face width square, and Utility permits spots up to one-half the face width square.



b. Knots are measured by displacement on the face where they occur, with no restriction on the number of knots. Corner knots are measured where they most closely approximate the branch's diameter.

c. Knot quality also varies by grade. Select Structural and Number One require sound and tight knots, while Number Two permits loose or unsound knots up to half the size of others. Standard allows knots of any quality up to half the face width, and Utility allows knots up to three-quarters the face width, provided displacement does not exceed 75%.