



**University of
New Hampshire**
Cooperative Extension

**New Hampshire Native Lumber Law
RSA 434-:59-61**

Self Study Booklet

Issued by:

UNH Cooperative Extension

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Under the authority of:

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Bureau of Markets

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NH Native Lumber Law

Introduction

New Hampshire RSA 434:59-61, relative to the “Grading and Certification or Stamping of Native Lumber” was passed by the 1994 session of the General Court. Its purpose is to allow sawmills that are registered with the NH Division of Forests and Lands to mill certify their lumber if required by local code enforcement officials. The law applies to local lumber or lumber that is sawn in the state of NH for local end use applications. The administrative rules were adopted by the Department of Agriculture, Markets, & Food in January 1996 to implement and enforce the legislative directive.

A provision of the rules requires that any registered mill who wishes to use the NH Native Lumber Law must attend a one-day course on lumber grading standards and, upon completion of the course, take a grading test. After administering the program for a number of years, UNH Cooperative Extension in consultation with the NH Department of Agriculture, Markets & Food has designed a self-study program to make the process more convenient for NH’s sawmills. This booklet contains the fundamental NH Native Lumber Law course which, after study, will allow the registered mill to take the grading test. To schedule a test taking please call UNH Cooperative Extension, Forestry Information Center at 603-862-3883

The following question and answer section should help clarify the NH Native Lumber Law. The full wording of the law is contained in Appendix A.

Who is eligible to issue Native Lumber certificates?

Only those New Hampshire sawmills who are registered with the NH Division of Forests and Lands and have attended a training course by the UNH Cooperative Extension (or completed the self-study grading course and test) and have been permitted by the NH Department of Agriculture, Markets & Food may issue NH Native Lumber certificates.

General Information:

UNH Cooperative Extension, (603) 862-3883

Information for registering a sawmill:

The NH Division of Forests and Lands (603) 271-2214

Information on becoming a NH Native Lumber Law permitted sawmill:

The NH Department of Agriculture, Markets & Food (603) 271-3685.

Which lumber species does the NH Native Lumber Law apply to?

The law pertains to softwood lumber that is equal to or better than the No. 2 grade (American Softwood Lumber Standard), or as amended, provided that lumber for use in load bearing wall members shall be of stud grade minimum. Softwoods include: pine, spruce, fir, hemlock, tamarack and cedar. The lumber may be green or dry and of any softwood species. The following information must be provided on the certificate: species, quantity, address of where lumber will be used, whether it is green or dry, sawmill name, grader name and date of sale.

Is a sawmill required to issue a Native Lumber Certificate?

No, not unless the municipality in which the lumber is to be used requires a Native Lumber Certificate as an alternative to using grade-stamped lumber (lumber which is graded by a grade stamping agency such as NeLMA-the Northeastern Lumber Manufacturers Association.) Certificates are issued by the permitted mill to the purchaser with each load of native lumber. Again, if required by the local code enforcement officer, a copy of the certificate is to be filed with the building permit application for the specific end use. A sawmill is not required to participate in the Native Lumber Law program.

Which sawmills are permitted to issue native lumber certificates?

The New Hampshire Department of Agriculture, Markets & Food maintains a list of the mills and the graders who may issue the certificates under the NH Native Lumber Law.

Is a mill required to stamp the native lumber in addition to providing a certificate?

No, stamping is optional. Some mills choose to create a stamp which contains the mill name, location, and permit number. Regardless, a certificate **must** accompany every lumber shipment, as it is intended for a particular purchaser for use in a specific structure in a given town.

Can a NH sawmill, which has participated in the native lumber program, grade and issue a certificate for another NH sawmill (that has not participated in the program)?

Yes, a permitted grader from one sawmill can issue a certificate for another sawmill provided the other sawmill is registered under RSA 227-I:9 with the NH Division of Forests and Lands.

Does the “grader” represent him/herself or the sawmill?

Both, the grader signs the certificate as the person responsible for the certificate’s accuracy but also represents the mill which is providing the lumber.

When does the permit expire?

The permit is effective for 5 years at which time the grader may renew the permit by retaking the test.

Measuring Lumber

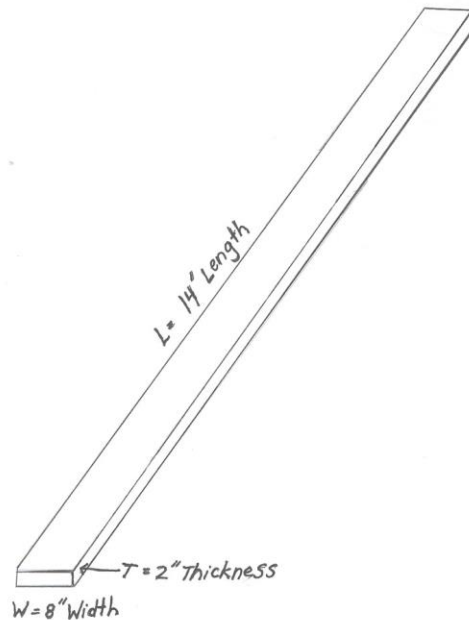
Sawn lumber is generally measured in board feet. Lumber may also be sold by the lineal foot, cubic foot, or cubic meter. Tons and cords are terms more commonly used for pulpwood, chips, sawdust, and bark. A board foot is a measure 12" wide by 12" long by 1" thick.

To determine board footage in a rough, green board, use the following formula:

$$\frac{W \text{ in inches} \times L \text{ in feet} \times T \text{ in inches}}{12}$$

W = width, L = length and T = thickness

Example



A board 8" wide by 14' long by 2" thick would be

$$\frac{8 \times 14 \times 2}{12} = 18.6 \text{ or } 19 \text{ Board Feet}$$

18.6 board feet rounds to 19 board feet.

Lineal, or running foot, refers to the length of the piece (in feet) regardless of width and thickness. For example the same board described above would contain 14 lineal feet.

Kiln Dried and Dressed (planed) lumber

Most woodworkers know that a kiln-dried, surfaced two-by-four sold in a retail lumber yard is not 2" by 4" rather, the actual measurement is 1 ½" by 3 ½". The term nominal is used to describe the size designation for the lumber that does not reflect the actual dimensions after the piece has been kiln dried and planed. The kiln-dried and planed size (the 1 ½" by 3 ½") is a standard established by the American Lumber Standard Committee. It is important for the sawmills using the NH Native Lumber Law to be clear about the lumber measurement and to specify, by way of an agreement between the buyer and seller, the lumber size, moisture content of the wood (green, air-dried, or kiln dried), and other information which is requested on the Native Lumber Certificate.

*Green refers to boards with a moisture content greater than 19%.

Dry refers to boards with a moisture content less than 19%

Kiln dried refers to lumber that has been dried in a heated chamber and generally to a moisture content of between 6-12%.

**American Softwood Lumber Standard, voluntary product standard PS 20-94*

Wood in Use

It is important for lumber producers to understand wood characteristics that affect strength. The weight of wood varies from species to species and is one factor in strength determination. Specific data on the most important timber species in the United States is available in the USDA, Forest Products Lab, *Wood Handbook*. The [Wood Handbook](#) is on-line.

The shape of the piece of wood and the force that is directed to it will also affect strength. The following listing is intended to give the reader a general background in those characteristics that affect the strength of a piece of wood. This listing is not intended to substitute for design specifications for wood or for a professional engineer's design.

5 Factors Affecting the Strength of Wood

1. Specific gravity
2. Grain
3. Knots
4. Moisture content
5. Time (duration)

1. Specific Gravity

The specific gravity of wood is the ratio of the oven-dry weight of a sample to the weight of a volume of water equal to the volume of the sample at a specific moisture content. The important factor to remember is that a wood with a higher specific gravity is denser and stronger than one with a lower specific gravity. In addition, the specific gravity changes as the moisture content changes. A drier piece of wood will have a higher specific gravity. The following chart illustrates the varying specific gravities for a few of the most common NH species based on 12% moisture content. (Wood Handbook)

Species	Specific gravity
Cedar, Eastern red	.47
Balsam Fir	.35
Eastern Hemlock	.40
Eastern White Pine	.35
Red Pine	.46
Black Spruce	.46
Red Spruce	.40
White Spruce	.40

2. Grain

Straight grain refers to wood with grain (fibers) that is oriented parallel to the edges and perpendicular to the end of the board. If the grain is not parallel to the edges, the strength of the piece of wood is reduced. If the slope of grain greater than 1" deviation for 4" of length (over a sufficient length and area to represent the general slope of the fibers of the piece) is not acceptable under the NH Mill Certified Grade. Often, this slope is caused by the white pine weevil an insect that destroys the leader (tip) of the tree causing one of the secondary branches to take over as the leader. This dynamic causes a severe crook and consequently, grain deviation in the lumber.

This board illustrates a slope of grain which is greater than 1" deviation for 4" of length. In addition, the severe slope of grain runs throughout the board.



Arrow follows
direction of grain

3. Knots or holes

Knots are branches that have been grown over by the tree. Often, knots can be invisible from the surface of the log. Knots can either be live (red knots) or dead (black knots). Black knots are unstable and can fall out, thus are treated more severely than red knots in the grading process.

Knots effect the strength of wood by creating grain deviation around the knot. In addition, if the knot is loose, it will reduce the effective amount of wood equal to its diameter. In other words, the wood strength is reduced the same as if there were a hole. The location of the knot may also be important. For example, in a beam supported on either end, a knot on the lower side of the beam has a greater effect on the load the beam will carry than a knot on the upper side.



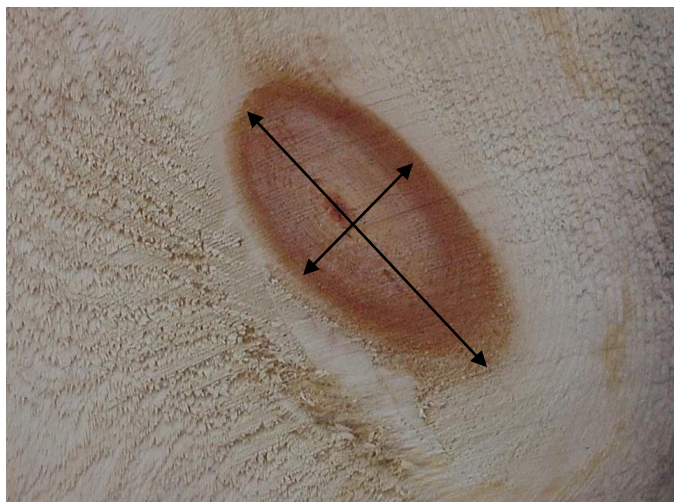
Red Knot



Black Knot

Measuring Knot Size

Knots are measured by determining the average diameter. The knot is measured at two places, perpendicular to each other. Review the following example:



This knot measures $2\frac{1}{2}$ inches in width and $4\frac{1}{2}$ inches in length.

To measure this knot, add $2\frac{1}{2}$ and $4\frac{1}{2} = 7$, then divide by 2 which equals $3\frac{1}{2}$ ".

The knot's average diameter is $3\frac{1}{2}$ ".

4. Moisture content

Dry wood is stronger than green (wet) wood. Wood at 10% moisture content is about double the strength of wood at 28% moisture content. (Bowyer, James. 1998. *Wood and Wood Products*. CD, University of Minnesota)

5. Duration: Time vs. Strength

It is generally believed that the longer a load bearing timber is in service, the weaker it becomes. More recent research by Dr. Robert Erickson at the University of Minnesota suggests that wood placed under constant moisture conditions does not weaken or creep. In New Hampshire, fluctuations in humidity can cause weakening of wood structures.

To review:

The 5 factors that affect the strength of wood are:

1. Specific gravity
2. Grain
3. Knots
4. Moisture content
5. Time (duration)

To prepare for the exam understand:

- The purpose of the NH Native Lumber Law
- Who is eligible to use the NH Native Lumber Law
- Which species apply
- Who has enforcement authority
- How to measure lumber
- How to measure a knot
- What board foot, lineal foot, and nominal measurement mean
- Green, dry and kiln dry lumber
- 5 major factors affecting the strength of wood
- The difference between a red knot and a black knot
- Lumber widths and thicknesses that apply (under the NH Native Lumber Law)
- Damage caused by white pine weevil
- Information contained on a NH Native Lumber Law certificate.
- Definition of native lumber
- When and if stamping the lumber is required
- How to read "NH Mill Certified Grade" page 9. You will be given a copy to use for grading a series of boards (photos with measurements given)

Example: This board is 2" thick and 8" wide

The largest knot is a red edge knot that is 1¼" X 4" (averages 2⅝")
Using page 9, a 8" board allows a 3½" red edge knot. Therefore,
the board makes the grade.



NH Hampshire Mill Certified Grade

This grade uses as its basis the National Grade “stud”. It is intended to describe the minimum accepted characteristics for dimension lumber.

Softwood Species

2” and thicker, 2” and wider.

Characteristics permitted and limiting provisions shall be:

Checks – seasoning checks not limited. End checks that extend through board are considered splits.

Knots – Not limited as to quality but are well spaced and are permitted in the following sizes or their equivalent.

Nominal width	Knot at the edge of wide face	Knot size at centerline of wide face	Hole size, 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 foot.

Pitch and pitch streaks- not limited

Pockets – pitch or bark, not limited

Shake – or separation of the wood along the annual growth rings (as visible from the end of the piece). If through at ends, limited as splits. Elsewhere, through shake limited to 1/3 length.

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, not limited

Unsound wood – must not destroy the nailing edge

Wane – One-third thickness and $\frac{1}{2}$ the width, full length, or equivalent on each face provided that wane does not exceed $\frac{1}{2}$ thickness and $\frac{3}{4}$ the width for up to $\frac{1}{4}$ length.

Warp – minimal

White speck (rot) and honeycomb (checking due to drying) – must be firm

Note: a copy of this page will be available for use during the test.

Appendix A.

State of New Hampshire RSA 434:59-61 Grading and Certification or Stamping of Native Lumber

434:59 Grading and Certification or Stamping of Native Lumber

I. For the purpose of this subdivision, “native lumber” means wood processed in the state of New Hampshire by mills registered in accordance with provisions of RSA 224-A. Such wood shall be considered certified or stamped in accordance with the requirements of this section.

II. (a) Notwithstanding any provision of law to the contrary, a mill registered in accordance with RSA 224-A selling native lumber shall, when required, certify in writing to the purchaser on a form approved by the commissioner of agriculture, markets and food that the quality and safe working stresses of the lumber are equal to or better than No. 2 grade in accordance with the conditions set for the in the American Softwood Standard PS 20-70, or as amended, provided that lumber for use in loading bearing wall members shall be of stud grade minimum. The certificate shall include wood species, quantity, location of use, green or dry, sawmill name, name of permitted grader and date. The certification shall be filed with the local building official having jurisdiction as part of the building permit application.

(b) Notwithstanding subparagraph (a), a mill registered in accordance with RSA 224-A selling native timber may stamp such timber.

III. The commissioner of agriculture, markets and food, in consultation with the division of forests and lands and the University of New Hampshire cooperative extension, shall establish standards for mill graders who will stamp or certify native lumber. The commissioner shall issue a written permit to each mill grader who has received training and who demonstrates by examination or other procedure prescribed by the commissioner in rulemaking, competence and ability to grade and certify or stamp native lumber in accordance with paragraph II of this section. No lumber shall be sold as certified or stamped native lumber unless it is accompanied by a certificate signed by a grader holding a valid permit.

IV. Any municipality which has adopted a building code which requires regular grade stamped lumber shall accept a stamp or certificate prepared pursuant to this subdivision which certifies that the native lumber meets the appropriate structural standards in lieu of an accepted and recognized lumber grading stamp. Any structure which is built with such approved native lumber shall be considered equivalent to a structure built with regular grade stamped lumber.

434:60 Rulemaking. The commissioner of agriculture, markets and food shall adopt rules, under RSA 591-A, necessary to administer this subdivision.

434:61 Prohibited Acts; Administrative Penalty. It shall be unlawful for any person to sell any lumber as stamped or certified native lumber unless such lumber has been graded and certified or stamped in accordance with RSA 434:59. Any person who violates any provision of this subdivision or any rule or order adopted or issued under this subdivision shall be liable for an administrative fine not to exceed \$1,000 for each violation.

Effective: July 22, 1994

Adopted Rule 1/22/96 1

Adopt Agr 908, cited and to read as follows:

CHAPTER AGR 900 STANDARDS FOR FARM PRODUCTS: BRANDS, LABELS, GRADES

Statutory Authority: RSA 434:59, III and 434:60

PART Agr 908 GRADING AND CERTIFICATION OR STAMPING OF NATIVE LUMBER

Agr 908.01 Purpose. These rules implement the procedures of the department of agriculture, markets and food, pursuant to RDS 434:59 et seq., allowing builders in municipalities that regulate the use of native lumber to use native lumber without the stamp of a grading agency when the lumber is graded and certified or stamped by a grader employed by a New Hampshire wood processing mill.

Agr 908.02 Scope. These rules shall apply to any sawmill which processes native lumber for sale in the state and chooses to participate in this program.

Agr 908.03 Definitions. The following words shall have the meanings indicated when used in this chapter:

(a) "Grader" means any person who has satisfied the requirements of Agr 908.07 and is certified by the department;

(b) "Location of use" means the address of intended use for the lumber;

(c) "Native lumber" means the wood, in log form, processed by registered mills in the state of New Hampshire;

(d) "Purchaser" means a builder, agent or owner who buys native lumber from a sawmill; and

(e) "Sawmill" means a mill registered in accordance with RSA 227-I:9.

(f) "When required" means when native lumber is to be used in a municipality which has adopted a building code which requires regular grade stamped lumber.

Agr 908.04 Certification of Native Lumber.

(a) Native lumber shall be certified in accordance with the requirements of this section.

(b) A sawmill shall sell or provide native lumber directly to the purchaser for use in a specified structure.

(c) A sawmill selling native lumber shall, when required, certify to the purchaser on a "Native Lumber Certification Form," as described in Agr 908.06, that the quality and safe working stresses of the lumber are equal to or better than No. 2 grade in accordance with the conditions of the American Softwood Standard PS 20-94, provided that the lumber for use in load bearing wall members shall at the minimum be of stud grade.

(d) The certification, when required, shall be filed by the builder as part of the building permit application.

Agr 908.05 Stamping of Native Lumber. A sawmill selling native lumber may stamp such lumber, in addition to certifying the native lumber pursuant to Agr 908.04.

Adopted Rule 1/22/96 2

Agr 908.06 Native Lumber Certification Form

(a) The “Native Lumber Certification Form,” when required, shall be completed by the sawmill and signed by a grader permitted in accordance with this section for every order of native lumber sold.

(b) The certification form shall include:

- (1) The species of lumber to be sold;
- (2) The quantity sold;
- (3) The location of use;
- (4) An indication of whether the lumber is green or dry;
- (5) The name of the sawmill;
- (6) The name of the permitted grader; and
- (7) The date of sale

Agr 908.07 Permitting of Native Lumber Graders

(a) In order to receive a native lumber grading permit, the prospective grader shall:

- (1) Attend a one-day course, administered by the university of New Hampshire cooperative extension, in the subject of grading standards; and
- (2) Demonstrate competency upon completion of the course by completing the native lumber grading test, pursuant to Agr 908.08.

(b) The native lumber grading permit shall be effective for 5 years, at which time the grader may renew the permit by completing the steps in Agr 908.07 (a). The permit is nontransferable.

Agr 908.08 Native Lumber Grading Test. Competency in native lumber grading shall be demonstrated by the prospective grader who can distinguish No. 2 or better grades from lesser grades of native lumber of different softwood species, and of random lengths, widths and defects.