

We Stress Quality

Machine Graded Lumber

An Introduction

Machine Graded Lumber

Machine graded lumber is identified and segregated by a characteristic that correlates with other structural properties. Current machine technologies operate on the basis of direct measurement of either stiffness or density.

Advantages of Machine Grading

The machine identifies the lumber based on algorithms keyed to the predictor property (either stiffness or density). Specific visual overrides are applied and daily off line testing is performed to verify the assigned properties. Because 100% of the production goes through the machine, gets sorted on the predictor parameter and because the process is "calibrated" daily by quality control, production is more uniform and more predictable.

Machine Grading Technologies

There are two major types of machines available today. The first type directly measures the stiffness of the lumber. The CLT, or Continuous Lumber Tester, manufactured by Metriguard, Inc. of Pullman, WA, is the most common type of stiffness based grading machine in use. The second type of machine directly measures the density of the lumber. The XLG, or X-ray Lumber Gauge, manufactured by CAE Newnes Ltd. of Salmon Arm, BC, CANADA, is the most common type of density based grading machine in use.

Classes of Machine Graded Lumber

The National Design Specification for Wood Construction recognizes two broad classes of machine graded lumber. These are Machine Stress Rated Lumber (MSR) and Machine Evaluated Lumber (MEL). Either the stiffness based or the density based machines can produce these classes of machine graded lumber. There are some engineering differences between the two classes of machine graded lumber - primarily in the relative values of various properties and in the level of off line testing required.

Identifying Machine Graded Lumber

As with visual grades of lumber, machine graded lumber is identified by the grade stamp of a lumber grading agency approved by the American Lumber Standards Committee or the Canadian Lumber Standards Accreditation Board. The distinguishing characteristics of the grade stamps for machine graded lumber include supplementary design values for the grade. For MSR, the grade stamp includes both the allowable bending stress and bending stiffness (modulus of elasticity). For MEL, the grade stamp adds the allowable tension stress and, optionally, the allowable compression stress (if compression quality control testing is performed).

Specifying Machine Graded Lumber

MSR grades are typically specified in terms of their bending stress and stiffness - for example, one would specify 2400f - 2.0E grade. MEL grades are specified by their "M" grade - for example, M-23.

MSR Grade Stamp:

AUDITED BY
TP[®] 2400F 2.0E
000 KD-19 SYP

MEL Grade Stamp :

AUDITED BY
TP[®] 000 KD-19 SYP
2400fb 1.8E 1800ft
M-23

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