Timber Products Inspection, Inc.

Log Program
Technical Guide

May 1, 2020

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P.O. Box 919 • 1641 Sigman Road • Conyers, Georgia 30012 • 770/922-8000 • FAX: 770/922-1290
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Introduction

The Timber Products Inspection, Inc. (TP) Log Program is an internationally accredited program that assigns stress grades to logs and timbers utilizing ASTM Standards. The intent of this document is to provide a brief overview of the program and the respective data associated with the stress grades. The document is divided into the following sections:

TP Log Program Overview
Outlines the basic premise behind TP's Program including the following topics:

- Definition of Stress Grades
- Description of Grading Process
- TP Log Program Accreditation
- TP Stress Grade Categories
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- Measurement of Logs in Defined Categories
- Structural Analysis and Design
- Allowable Stresses

Species Combinations and Designations
Defines the various species combinations for which TP log design values have been published. The lists include the combinations typically utilized by TP audited manufacturing facilities.

Specific Gravities
Provides the unseasoned specific gravities associated with the various published species combinations.

"Sawn Round Timber" Design Values
Provides the allowable stress values associated with the various species combinations and stress grades within the "Sawn Round Timber" stress grade category.

"Wall Log" Design Values
Provides the allowable stress values associated with the various species combinations and stress grades within the "Wall Log" stress grade category.

Additional Species Availability
Provides a list of the various wood species listed within ASTM Standard D2555 for which TP's program has been accredited. Many of the listed species are not listed within TP published design values due to seldom use. This section is provided to let interested parties know that TP can generate design values and subsequent stress grades for any of the species indicated upon request.

About Timber Products Inspection
Provides a brief synopsis of TP and the various auditing services it provides.

While this document provides useful information to parties interested in logs and timbers graded under TP's Log Program, it does not address all topics. For additional information, contact TP's office at (770) 922-8000 or visit TP's website at www.tpinspection.com.

Please Note: The information provided within this document is to be used only with logs and/or timbers graded and grade-marked by TP or by one of the manufacturers trained, approved and licensed by TP to apply the TP grade-marks.

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TP Log Program Overview

ASTM Standard D3957, "Standard Practices for Establishing Stress Grades for Structural Members used in Log Buildings" serves as a primary guideline for establishing log and timber design strengths in today's construction industry. Timber Products Inspection, Inc. (TP), an independent third-party inspection agency, was involved in the creation of and has been heavily involved with the maintenance of this standard since its inception.

Definition of Stress Grades

To understand TP's Log Program, one must know the definition and use of stress grades.

What is a stress grade? → In its simplest terms, a stress grade is a set of maximum allowable defects permitted in a log or timber after manufacture. In a stress grade, the defects are limited to those which affect the strength and use of the product. Natural growth characteristics such as knots, slope of grain, decay and compression wood are prime examples. Other naturally induced defects such as shakes, checks, insect damage and manufacturing characteristics may also be limited.

Why develop stress grades? → On the surface, the answer is that building codes and many financial institutions require structural members to be graded and grade-marked accordingly. Grading also provides a layer of protection for the manufacturer and homeowner by establishing definable levels of quality for the products being sold and marketed within the industry. While these reasons are important, the underlying basis for the stress grade itself is the development of allowable stress design values.

Stress grades, and the subsequent allowable stress values, can be used in conjunction with the species, size and shape of logs and timbers to determine the safe structural capacity of each member (i.e. allowable spans and load carrying ability). Most logs and timbers utilized in construction support a structural load. Some members carry more load than others. Stress grading is the primary way that one can be certain that the log or timber will do its job.

Description of Grading Process

Using ASTM D3957 as a guideline, TP's lumber experts, engineers and research scientists have developed an accredited program to define stress grades for the log and timber industry's use. In this program, logs and timbers are visually inspected with qualified graders observing all the surfaces of the member for strength reducing characteristics. Graders must be TP personnel or individuals trained by TP at manufacturing facilities. Manufacturing facilities with grade-marking privileges must have their graders certified and their performance is routinely monitored on an unannounced basis to assure conformance to the guidelines. Failure to comply jeopardizes the manufacturer's right to apply the registered TP logo stamp to the products they produce under the program.

TP Log Program Accreditation

U.S. building codes require both logs and timbers to be grade-marked either by an accredited agency employee or by a certified grader (manufacturing facility) which has been certified by the accredited agency to apply the official agency grade-mark. TP's program is accredited by the International Accreditation Service (see accreditations AA-696 and AA-771), a subsidiary of the International Code Council; and, as an independent inspection agency, TP assures the manufacturer, the purchaser and other third parties such as building officials and financial institutions that the material graded under TP's Log Program has been subjected to unbiased judgments based on quality.

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TP Stress Grade Categories

Stress grades defined under TP's Log Program are divided into three categories, depending on the style and size of material. The following defines each category:

1. **Sawn Round Timbers (SRT)**
   These values are for timbers that are either completely round or that are sawn or shaved along one surface such that the sawing or shaving does not exceed 3/10 of the radius of the log at any point. The stress grades and subsequent design values associated with this category are derived from ASTM D3957 and ASTM D2899, "Standard Practice for Establishing Allowable Stresses for Round Timber Piles." The various stress grades associated with this category are:

   - Unsawn
   - No. 1
   - No. 2
   - No. 3

2. **Wall Logs (WL)**
   The wall log category can be used for all material that is 4 ½ inches or greater in its least dimension (i.e. 4 ½ x 4 ½ and greater). This grade category is based upon an inscribed rectangle and is sometimes utilized for round members in lieu of the SRT category. However, this practice will result in an unnecessary reduction in design values since a great deal of the round member will be neglected when utilizing the "inscribed rectangle" approach. Wall log grades may be used for square sawn timbers or timbers run to any profile. The stress grades and subsequent design values associated with this category are derived from ASTM D3957 and ASTM D245, "Practice for Establishing Structural Grades and Related Allowable Properties for Visually Graded Lumber." The "wall log" category is not restricted to wall use only, but may be used for beams, joists, rafters, etc…. The stress grades associated with this category are:

   - Premium (Wall Log 69)
   - Select (Wall Log 61)
   - Rustic (Wall Log 53)
   - Wall Log 40
   - Wall Log 30
   - Wall Log 27 (Seldom Used - Info Available Upon Request)

3. **National Grade Rule (NGR) Equivalents**
   The TP Log Grading Program "NGR Equivalent" category is intended for material that does not qualify as a SRT or WL and has an actual thickness of 1 to 4 inches and a width of 4 inches and greater. The stress grades associated with this category are:

   - LGSS (Equivalent to Select Structural)
   - LG1 (Equivalent to #1)
   - LG2 (Equivalent to #2)
   - LG3 (Equivalent to #3)

The design values for TP's "Sawn Round Timber" grades and "Wall Log" grades are contained within this document. Design values for the "NGR Equivalent" grades are published by the appropriate lumber rules writing agency, or a complete set of these values for all species is available as a supplement to the National Design Specification (NDS) published by the American Forest and Paper Association (AFPA).

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Grade-marks and Certificates of Inspection

As previously noted, the information provided within this document is to be used only with logs and/or timbers graded and grade-marked by TP or by one of the manufacturers trained, approved and licensed by TP to apply the TP grade-marks. All material shall be grade-marked or accompanied with a "Certificate of Inspection" on TP letterhead. Grade-marks shall contain the following information at a minimum:

1. The TP registered logo
2. Plant Identification
3. The species or species combination of the material
4. The stress grade associated with the material
5. The certified moisture content if certified to be anything besides green

Moisture Content Provisions

All material certified under the TP Log Program shall be assumed as "Green" or "GRN" unless stated otherwise on the grade-mark or the certificate of inspection. "Green" can be defined as follows:

> *Indicates freshly sawn wood, or wood that has received no drying (unseasoned). All logs graded under TP's rules are considered Green unless a maximum moisture content is specified or the wood is indicated as being "KD" or "dry".*

The effects of moisture content should be considered by designers when utilizing TP certified logs and timbers. The moisture content can affect the allowable stress values (see footnotes of provided values within this document) as well as the serviceability of the structure (settling). For settling of the structure, TP recommends designers review section 304 of the most recent version of the ICC 400 American National Standard, "Standard on the Design and Construction of Log Structures."

Moisture content is measured utilizing electric meters as described within ASTM standards. If the log or timber is certified to have a maximum moisture content, one of the following indications will be provided on the grade-mark or certificate of inspection:

"Dry" - *Indicates that the material has a maximum moisture content of 19%*

"KD" - *Indicates that the material has been kiln-dried to a maximum moisture content of 19%*

"MC%" - *Indicates that the material has a maximum moisture content of "%"*

"KD%" - *Indicates that the material has been kiln-dried to a maximum moisture content of "%"*

Measurement of Logs in Defined Categories

To obtain section properties of Unsawn or Sawn Round Timbers, designers should see Table 302.2(2) of the most recent version of the ICC 400 American National Standard. Section properties for Wall Logs shall be determined using the log height and width dimensions of the largest rectangle that can be inscribed within the profile of the member.

Structural Analysis and Design

The structural analysis and design of log structures should be performed in accordance with Chapter 4 the most recent version of the ICC 400 American National Standard. Chapter 4 provides "prescriptive provisions" for structures meeting certain limitations and it provides "engineered provisions" for others.

Regardless of what approach is chosen, TP recommends the use of the National Design Specification (NDS), published by the American Forest and Paper Association, for the analysis and/or design of individual logs or timbers. Combined with the design values supplied in this document, the NDS provides detailed methods for analyzing various combinations of bending, horizontal shear, compression and tension.

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Allowable Stress Design Values

The underlying purpose of developing stress grades is to develop allowable stress design values. Stress design values give a designer the ability to select logs or timbers safely while considering economy at the same time. The following sections of this document provide allowable stresses associated with various species of wood for each of the stress grades previously defined. The allowable stresses provided are as follows:

Allowable Bending Stress (Fb) → Represents the maximum stress associated with a member in flexure. This load is commonly critical in floor joists and rafters and similarly loaded applications. Failure will occur in the form of rupturing the fibers in the top or bottom of the member.

Allowable Tensile Stress (Ft) → Represents the maximum allowable stress associated with tension on the member. This is commonly critical in trusses and hangers and failure would occur in the form of tearing the member apart.

Allowable Horizontal Shear Stress (Fv) → Typically a failure due to horizontal shear will occur along the grain of the member and it is commonly critical in floor joists and rafters with notches or other similar disruptions to a member.

Allow. Compression Perpendicular to the Grain (Fc_per) → Failure will occur in the form of crushing the member. This value is critical in connections as well as other bearing conditions.

Allow. Compression Parallel to the Grain (Fc_par) → Commonly critical in connections, trusses, and non-slender columns. Failure will typically occur in the form of crushing or rupturing the wood fibers.

Modulus of Elasticity (MOE) → Relates to how much a member will compress under a specific load. It primarily deals with serviceability (floor deflections, etc…). The higher the stress value, the stiffer the member resulting in less deflections, etc….

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Species Combinations and Designations

The following combinations and species designations (shown in brackets) are typically used by manufacturers enrolled in TP's Log Grading Program. Design values for species or combinations not noted are also available upon request from TP.

Alpine Fir → [Alpine Fir, AF]

Fir - Alpine (Can.)

Appalachian Softwoods → [APP SFTW]

Fir - Balsam
Fir - Balsam (Can.)
Hemlock - Eastern
Hemlock - Eastern (Can.)
Pine - Eastern White
Pine - Eastern White (Can.)
Pine - Jack
Pine - Jack (Can.)
Pine - Red
Pine - Red (Can.)
Southern Pine - Loblolly
Southern Pine - Longleaf
Southern Pine - Shortleaf
Southern Pine - Slash
Southern Yellow Pine - Pitch
Southern Yellow Pine - Pond
Southern Yellow Pine - Sand
Southern Yellow Pine - Spruce
Southern Yellow Pine - Virginia
Spruce - Black
Spruce - Black (Can.)
Spruce - Red
Spruce - Red (Can.)
Spruce - White
Spruce - White (Can.)
Tamarack
Tamarack (Can.)

BaldCypress → [Cypress]

BaldCypress

Beech → [Beech]

Beech - American

Douglas Fir → [DF, D Fir]

Douglas Fir - Coast
Douglas Fir - Interior North
Douglas Fir - Interior West

Douglas Fir – Larch → [DF-L, D Fir L]

Douglas Fir - Coast
Douglas Fir - Interior North
Douglas Fir - Interior West
Douglas Fir (Can.)
Larch - Western
Larch - Western (Can.)

Douglas Fir – N → [DF(N), D Fir N)

Douglas Fir (Can.)

Douglas Fir – S → [DF-S, D Fir S]

Douglas Fir - Interior South

Eastern Hemlock → [E Hem]

Hemlock - Eastern
Hemlock - Eastern (Can.)

Eastern Hemlock – Tamarack → [E Hem Tam]

Hemlock - Eastern
Hemlock - Eastern (Can.)
Tamarack
Tamarack (Can.)

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Eastern Softwoods → [EST SFTW]

Fir - Balsam
Fir - Balsam (Can.)
Hemlock - Eastern
Hemlock - Eastern (Can.)
Pine - Eastern White
Pine - Eastern White (Can.)
Pine - Jack
Pine - Jack (Can.)
Pine - Red
Pine - Red (Can.)
Southern Yellow Pine - Pitch
Spruce - Black
Spruce - Black (Can.)
Spruce - Red
Spruce - Red (Can.)
Spruce - White
Spruce - White (Can.)
Tamarack
Tamarack (Can.)

Eastern Spruce → [E SPR]

Spruce - Black
Spruce - Black (Can.)
Spruce - Red
Spruce - Red (Can.)
Spruce - White
Spruce - White (Can.)

Eastern White Pine → [EW PINE, EWP]

Pine - Eastern White
Pine - Eastern White (Can.)

Engelmann Spruce → [ES]

Spruce - Engelmann
Spruce - Engelmann (Can.)

Engelmann Spruce – Alpine Fir → [ES-AF]

Fir - Alpine (Can.)
Spruce - Engelmann
Spruce - Engelmann (Can.)

Engelmann Spruce – Alpine Fir – Lodgepole Pine → [ES-AF-LP]

Fir - Alpine (Can.)
Pine - Lodgepole
Pine - Lodgepole (Can.)
Spruce - Engelmann
Spruce - Engelmann (Can.)

Engelmann Spruce – Lodgepole Pine → [ES-LP]

Pine - Lodgepole
Pine - Lodgepole (Can.)
Spruce - Engelmann
Spruce - Engelmann (Can.)

Hem-Fir → [HF, HEM FIR]

Fir - California Red
Fir – Grand
Fir - Noble
Fir - Pacific Silver
Fir - White
Hemlock - Western

Hem-Fir North → [HEM FIR (N)]

Fir - Amabilis (Pacific Silver) (Can.)
Hemlock - Western (Can.)

Idaho White Pine → [IWP]

Pine - Western White
Pine - Western White (Can.)

Incense Cedar → [INC CDR]

Cedar - Incense

Lodgepole Pine → [LP]

Pine - Lodgepole
Pine - Lodgepole (Can.)

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Mixed Oak → [MIXED OAK]

Oak, Red - Black
Oak, Red - Cherrybark
Oak, Red - Laurel
Oak, Red - Northern Red
Oak, Red - Pin
Oak, Red - Scarlet
Oak, Red - Southern Red
Oak, Red - Water
Oak, Red - Willow
Oak, White - Bur
Oak, White - Chestnut
Oak, White - Live
Oak, White - Overcup
Oak, White - Post
Oak, White - Swamp Chestnut
Oak, White - Swamp White
Oak, White – White

Mixed Southern Pine → [MSP]

Southern Pine - Loblolly
Southern Pine - Longleaf
Southern Pine - Shortleaf
Southern Pine - Slash
Southern Yellow Pine - Pond
Southern Yellow Pine - Virginia

N. White Cedar → [NW CDR]

Cedar - Eastern (Northern) White (Can.)
Cedar - Northern White

Northern Pine → [NP]

Pine - Jack
Pine - Jack (Can.)
Pine - Red
Pine - Red (Can.)
Southern Yellow Pine - Pitch

Ponderosa Pine → [PP]

Pine - Ponderosa
Pine - Ponderosa (Can.)

Ponderosa Pine – Lodgepole Pine → [PP-LP]

Pine - Lodgepole
Pine - Lodgepole (Can.)
Pine - Ponderosa
Pine - Ponderosa (Can.)

Ponderosa Pine – Sugar Pine → [PP-SP]

Pine - Ponderosa
Pine - Ponderosa (Can.)
Pine - Sugar

Red Oak → [RED OAK]

Oak, Red - Black
Oak, Red - Cherrybark
Oak, Red - Laurel
Oak, Red - Northern Red
Oak, Red - Pin
Oak, Red - Scarlet
Oak, Red - Southern Red
Oak, Red - Water
Oak, Red - Willow

Redwood → [RWD]

Redwood - Old Growth
Redwood - Second Growth

Southern Yellow Pine → [SYP]

Southern Pine - Loblolly
Southern Pine - Longleaf
Southern Pine - Shortleaf
Southern Pine - Slash

Spruce-Pine-Fir → [SPF]

Fir - Alpine (Can.)
Fir - Balsam
Fir - Balsam (Can.)
Pine - Jack
Pine - Jack (Can.)
Pine - Lodgepole
Pine - Lodgepole (Can.)
Pine - Red
Pine - Red (Can.)
Spruce - Black
Spruce - Black (Can.)
Spruce - Engelmann
Spruce - Engelmann (Can.)
Spruce - Red
Spruce - Red (Can.)
Spruce - Sitka
Spruce - Sitka (Can.)
Spruce - White
Spruce - White (Can.)

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Sugar Pine → [SP]

Pine - Sugar

Tamarack → [Tam]

Tamarack
Tamarack (Can.)

Western Hemlock → [HEM, WH]

Hemlock - Western
Hemlock - Western (Can.)

Western Larch → [LARCH]

Larch - Western
Larch - Western (Can.)

Western Red Cedar → [WRC, WR CDR]

Cedar - Western Red
Cedar - Western Red (Can.)

Western Woods → [WEST WOODS]

Douglas Fir - Coast
Douglas Fir - Interior North
Douglas Fir - Interior South
Douglas Fir - Interior West
Douglas Fir (Can.)
Fir - Amabilis (Pacific Silver) (Can.)
Fir - California Red
Fir - Grand
Fir - Noble
Fir - Pacific Silver
Fir - Subalpine
Fir - White
Hemlock - Mountain
Hemlock - Western
Hemlock - Western (Can.)
Larch - Western
Larch - Western (Can.)
Pine - Lodgepole
Pine - Lodgepole (Can.)
Pine - Monterey
Pine - Ponderosa
Pine - Ponderosa (Can.)
Pine - Sugar
Pine - Western White
Pine - Western White (Can.)
Spruce - Engelmann
Spruce - Engelmann (Can.)
Spruce - Sitka
Spruce - Sitka (Can.)

White Oak → [WHITE OAK]

Oak, White - Bur
Oak, White - Chestnut
Oak, White - Live
Oak, White - Overcup
Oak, White - Post
Oak, White - Swamp Chestnut
Oak, White - Swamp White
Oak, White - White

White Woods → [WW]

Fir - Amabilis (Pacific Silver) (Can.)
Fir - California Red
Fir - Grand
Fir - Noble
Fir - Pacific Silver
Fir - White
Hemlock - Mountain
Hemlock - Western
Hemlock - Western (Can.)
Pine - Eastern White
Pine - Eastern White (Can.)
Pine - Jack
Pine - Jack (Can.)
Pine - Lodgepole
Pine - Lodgepole (Can.)
Pine - Monterey
Pine - Ponderosa
Pine - Ponderosa (Can.)
Pine - Red
Pine - Red (Can.)
Pine - Sugar
Pine - Western White
Pine - Western White (Can.)
Spruce - Engelmann
Spruce - Engelmann (Can.)
Spruce - Sitka
Spruce - Sitka (Can.)

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Species Combination Specific Gravities (Unseasoned Condition)

The following values were derived from clear wood specimen values shown within ASTM D2555.

Species or Combination	Unseasoned Specific Gravity (G)
Alpine Fir	0.33
Appalachian Softwoods	0.32
BaldCypress	0.43
Beech	0.57
Douglas Fir	0.45
Douglas Fir – Larch	0.45
Douglas Fir – N	0.45
Douglas Fir – S	0.43
Eastern Hemlock	0.39
Eastern Hemlock - Tamarack	0.39
Eastern Softwoods	0.32
Eastern Spruce	0.33
Eastern White Pine	0.35
Engelmann Spruce	0.33
Engelmann Spruce - Alpine Fir	0.33
Engelmann Spruce - Alpine Fir - Lodgepole Pine	0.33
Engelmann Spruce - Lodgepole Pine	0.33
Hem-Fir	0.35
Hem-Fir North	0.36
Idaho White Pine	0.35
Incense Cedar	0.35
Lodgepole Pine	0.39
Mixed Oak	0.53
Mixed Southern Pine	0.46
N. White Cedar	0.29
Northern Pine	0.39
Ponderosa Pine	0.39
Ponderosa Pine - Lodgepole Pine	0.39
Ponderosa Pine - Sugar Pine	0.34
Red Oak	0.53
Redwood	0.34
Southern Yellow Pine	0.47
Spruce-Pine-Fir	0.32
Sugar Pine	0.34
Tamarack	0.48
Western Hemlock	0.41
Western Larch	0.48
Western Red Cedar	0.31
Western Woods	0.31
White Oak	0.56
White Woods	0.33

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TP Design Values – SRT[a]

Combination	Grade	Fb	Ft	Fv	Fc_per	Fc_par	MOE
Alpine Fir							
	Unsawn	1450	775	125	405	825	1300000
	No. 1	1150	650	125	405	675	1300000
	No. 2	975	525	125	405	550	1300000
	No. 3	625	350	125	405	375	1100000
Appalachian Softwoods							
	Unsawn	1350	725	115	305	775	1100000
	No. 1	1100	600	115	305	625	1100000
	No. 2	900	500	115	305	525	1100000
	No. 3	600	325	115	305	350	800000
BaldCypress							
	Unsawn	1850	1000	145	615	1200	1300000
	No. 1	1500	825	145	615	950	1300000
	No. 2	1250	675	145	615	800	1300000
	No. 3	825	450	145	615	525	1000000
Beech							
	Unsawn	2400	1300	220	815	1150	1500000
	No. 1	1950	1050	220	815	950	1500000
	No. 2	1600	875	220	815	800	1500000
	No. 3	1050	575	220	815	525	1200000
Douglas Fir							
	Unsawn Dense	2400	1350	160	705	1300	1600000
	Unsawn	2050	1150	160	600	1150	1500000
	No. 1 Dense	1950	1100	160	705	1050	1600000
	No. 1	1700	925	160	600	950	1500000
	No. 2 Dense	1650	900	160	705	900	1600000
	No. 2	1400	775	160	600	800	1500000
	No. 3 Dense	1100	600	160	705	575	1300000
	No. 3	925	500	160	600	525	1200000
Douglas Fir - Larch							
	Unsawn	2050	1150	160	600	1150	1500000
	No. 1	1700	925	160	600	950	1500000
	No. 2	1400	775	160	600	800	1500000
	No. 3	925	500	160	600	525	1200000
Douglas Fir - N							
	Unsawn Dense	2450	1350	165	810	1350	1800000
	Unsawn	2100	1150	165	695	1200	1700000
	No. 1 Dense	2000	1100	165	810	1100	1800000
	No. 1	1700	925	165	695	975	1700000
	No. 2 Dense	1650	925	165	810	925	1800000
	No. 2	1400	775	165	695	800	1700000
	No. 3 Dense	1100	600	165	810	600	1400000
	No. 3	925	500	165	695	525	1400000
Douglas Fir - S							
	Unsawn Dense	2350	1300	165	605	1200	1300000
	Unsawn	2000	1100	165	520	1100	1200000
	No. 1 Dense	1900	1050	165	605	1000	1300000
	No. 1	1600	900	165	520	875	1200000
	No. 2 Dense	1600	875	165	605	825	1300000
	No. 2	1350	750	165	520	725	1200000
	No. 3 Dense	1050	575	165	605	550	1000000
	No. 3	875	475	165	520	475	1000000
Eastern Hemlock							
	Unsawn	1800	975	155	550	1000	1100000
	No. 1	1450	800	155	550	825	1100000
	No. 2	1200	675	155	550	700	1100000
	No. 3	800	425	155	550	450	900000
Eastern Hemlock – Tamarack							
	Unsawn	1800	975	155	550	1000	1100000
	No. 1	1450	800	155	550	825	1100000
	No. 2	1200	675	155	550	700	1100000
	No. 3	800	425	155	550	450	900000

[a] - For notes in regards to SRT design values, see page 14

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TP Design Values – SRT[a]

Combination	Grade	Fb	Ft	Fv	Fc_per	Fc_par	MOE
Eastern Softwoods							
	Unsawn	1350	725	115	305	775	1100000
	No. 1	1100	600	115	305	625	1100000
	No. 2	900	500	115	305	525	1100000
	No. 3	600	325	115	305	350	800000
Eastern Spruce							
	Unsawn	1350	725	120	360	775	1200000
	No. 1	1100	600	120	360	625	1200000
	No. 2	900	500	120	360	525	1200000
	No. 3	600	325	120	360	350	1000000
Eastern White Pine							
	Unsawn	1350	750	115	350	800	1100000
	No. 1	1100	600	115	350	650	1100000
	No. 2	925	500	115	350	550	1100000
	No. 3	600	325	115	350	350	800000
Engelmann Spruce							
	Unsawn	1350	750	125	320	700	1100000
	No. 1	1100	600	125	320	550	1100000
	No. 2	900	500	125	320	475	1100000
	No. 3	600	325	125	320	300	900000
ES-AF							
	Unsawn	1350	750	125	320	700	1100000
	No. 1	1100	600	125	320	550	1100000
	No. 2	900	500	125	320	475	1100000
	No. 3	600	325	125	320	300	900000
ES-AF-LP							
	Unsawn	1350	750	125	320	700	1100000
	No. 1	1100	600	125	320	550	1100000
	No. 2	900	500	125	320	475	1100000
	No. 3	600	325	125	320	300	900000
ES-LP							
	Unsawn	1350	750	125	320	700	1100000
	No. 1	1100	600	125	320	550	1100000
	No. 2	900	500	125	320	475	1100000
	No. 3	600	325	125	320	300	900000
Hem-Fir							
	Unsawn	1600	875	125	370	950	1200000
	No. 1	1300	725	125	370	750	1200000
	No. 2	1100	600	125	370	625	1200000
	No. 3	725	400	125	370	425	1000000
Hem-Fir North							
	Unsawn	1500	825	130	370	925	1400000
	No. 1	1250	675	130	370	750	1400000
	No. 2	1050	575	130	370	625	1400000
	No. 3	675	375	130	370	400	1100000
Idaho White Pine							
	Unsawn	1350	725	120	315	825	1300000
	No. 1	1100	600	120	315	675	1300000
	No. 2	900	500	120	315	550	1300000
	No. 3	600	325	120	315	375	1000000
Incense Cedar							
	Unsawn	1750	950	150	565	1050	900000
	No. 1	1400	775	150	565	850	900000
	No. 2	1150	650	150	565	700	900000
	No. 3	775	425	150	565	450	700000
Lodgepole Pine							
	Unsawn	1500	850	125	400	850	1100000
	No. 1	1250	675	125	400	700	1100000
	No. 2	1050	575	125	400	575	1100000
	No. 3	675	375	125	400	375	900000

[a] - For notes in regards to SRT design values, see page 14

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TP Design Values – SRT[a]

Combination	Grade	Fb	Ft	Fv	Fc_per	Fc_par	MOE
Mixed Oak							
	Unsawn	1900	1050	160	800	1000	900000
	No. 1	1550	850	160	800	800	900000
	No. 2	1300	725	160	800	675	900000
	No. 3	850	475	160	800	450	700000
Mixed Southern Pine							
	Unsawn	2000	1100	160	515	1150	1300000
	No. 1	1650	900	160	515	925	1300000
	No. 2	1350	750	160	515	775	1300000
	No. 3	900	500	160	515	500	1000000
N. White Cedar							
	Unsawn	1050	600	110	320	625	500000
	No. 1	875	475	110	320	500	500000
	No. 2	725	400	110	320	425	500000
	No. 3	475	250	110	320	275	400000
Northern Pine							
	Unsawn	1400	775	125	410	775	1100000
	No. 1	1150	625	125	410	625	1100000
	No. 2	950	525	125	410	525	1100000
	No. 3	625	350	125	410	350	900000
Ponderosa Pine							
	Unsawn	1400	775	130	440	800	1100000
	No. 1	1150	625	130	440	650	1100000
	No. 2	975	525	130	440	550	1100000
	No. 3	625	350	130	440	350	800000
PP-LP							
	Unsawn	1400	775	125	400	800	1100000
	No. 1	1150	625	125	400	650	1100000
	No. 2	975	525	125	400	550	1100000
	No. 3	625	350	125	400	350	800000
PP-SP							
	Unsawn	1400	775	130	345	800	1100000
	No. 1	1150	625	130	345	650	1100000
	No. 2	975	525	130	345	550	1100000
	No. 3	625	350	130	345	350	800000
Red Oak							
	Unsawn	1900	1050	160	820	1000	1200000
	No. 1	1550	850	160	820	800	1200000
	No. 2	1300	725	160	820	675	1200000
	No. 3	850	475	160	820	450	1000000
Redwood							
	Unsawn	1650	900	145	420	1050	1000000
	No. 1	1350	725	145	420	825	1000000
	No. 2	1100	600	145	420	700	1000000
	No. 3	725	400	145	420	450	800000
Southern Yellow Pine							
	Unsawn Dense	2350	1300	160	600	1350	1600000
	Unsawn	2000	1100	160	515	1150	1500000
	No. 1 Dense	1900	1050	160	600	1100	1600000
	No. 1	1650	900	160	515	950	1500000
	No. 2 Dense	1600	875	160	600	900	1600000
	No. 2	1350	750	160	515	800	1500000
	No. 3 Dense	1050	575	160	600	600	1200000
	No. 3	900	500	160	515	525	1200000
Spruce-Pine-Fir							
	Unsawn	1350	725	115	305	700	1100000
	No. 1	1100	600	115	305	550	1100000
	No. 2	900	500	115	305	475	1100000
	No. 3	600	325	115	305	300	900000

[a] - For notes in regards to SRT design values, see page 14

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TP Design Values – SRT

Combination	Grade	Fb	Ft	Fv	Fc_per	Fc_par	MOE
Sugar Pine							
	Unsawn	1450	800	130	345	850	1100000
	No. 1	1150	650	130	345	700	1100000
	No. 2	975	525	130	345	575	1100000
	No. 3	625	350	130	345	375	900000
Tamarack							
	Unsawn	1900	1050	155	595	1050	1300000
	No. 1	1550	850	155	595	850	1300000
	No. 2	1300	700	155	595	700	1300000
	No. 3	850	475	155	595	450	1100000
Western Hemlock							
	Unsawn	1850	1000	135	410	1100	1400000
	No. 1	1500	825	135	410	900	1400000
	No. 2	1250	675	135	410	750	1400000
	No. 3	800	450	135	410	500	1100000
Western Larch							
	Unsawn	2250	1250	165	605	1350	1600000
	No. 1	1850	1000	165	605	1100	1600000
	No. 2	1550	850	165	605	900	1600000
	No. 3	1000	550	165	605	600	1200000
Western Red Cedar							
	Unsawn	1450	800	125	385	925	1000000
	No. 1	1200	650	125	385	750	1000000
	No. 2	1000	550	125	385	625	1000000
	No. 3	650	350	125	385	400	800000
Western Woods							
	Unsawn	1350	725	115	315	700	1100000
	No. 1	1100	600	115	315	550	1100000
	No. 2	900	500	115	315	475	1100000
	No. 3	600	325	115	315	300	800000
White Oak							
	Unsawn	2000	1100	210	800	1100	900000
	No. 1	1600	900	210	800	875	900000
	No. 2	1350	750	210	800	725	900000
	No. 3	875	475	210	800	475	700000
White Woods							
	Unsawn	1350	725	115	315	700	1100000
	No. 1	1100	600	115	315	550	1100000
	No. 2	900	500	115	315	475	1100000
	No. 3	600	325	115	315	300	800000

SRT Design Value Notes

1. All values are in pounds per square inch (psi) and represent the following allowable stresses:

   Fb: Bending
   Ft: Tension
   Fv: Horizontal Shear
   Fc_per: Compression Perpindicular to the Grain
   Fc_par: Compression Parallel to the Grain
   MOE: Modulus of Elasticity

2. Design values are to be used only with logs and/or timbers graded and grademarked by TP or by one of the manufacturers trained, approved and licensed by TP to apply the TP grademarks.
   a. Lot or Individual home inspection grading services are available from TP for homeowners, builders, designers or manufacturers when the need arises.
3. Design values for Fb are based upon 2x2 clear wood specimens. It is common within the timber design industry to decrease allowable stresses as the member being designed increases in depth. ASTM D3957 does not require this reduction. It is at the designers' discretion as to whether this reduction should be applied. Should the designer choose to use the reduction, the allowable bending stress can be found by using the following equation:

   $$\text{Allowable Fb} = (\text{TP Fb}) * (2.2568/\text{Log Diameter})^{(1/9)}$$

4. Compression parallel to the grain (Fc_par) values have been increased by 10% for seasoning effects. Care must be taken to assure that the timber is sufficiently seasoned (dry) before full load is applied.
5. Provided values are based upon normal load durations and all appropriate form factors have been incorporated into the design values.

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TP Design Values – Wall Logs[a]

Combination	Grade	Fb	Ft	Fv	Fc_per	Fc_par	MOE
Alpine Fir							
	Premium (Wall Log 69)	1000	700	125	405	700	1300000
	Select (Wall Log 61)	900	600	125	405	625	1300000
	Rustic (Wall Log 53)	775	525	125	405	550	1200000
	Wall Log 40	600	400	125	405	400	1100000
	Wall Log 30	450	300	125	405	300	1100000
Appalachian Softwoods							
	Premium (Wall Log 69)	950	650	115	305	650	1100000
	Select (Wall Log 61)	850	550	115	305	575	1100000
	Rustic (Wall Log 53)	725	500	115	305	500	1000000
	Wall Log 40	550	375	115	305	375	800000
	Wall Log 30	425	275	115	305	275	800000
BaldCypress							
	Premium (Wall Log 69)	1300	900	150	615	1000	1300000
	Select (Wall Log 61)	1150	775	150	615	900	1300000
	Rustic (Wall Log 53)	1000	675	150	615	775	1100000
	Wall Log 40	775	525	150	615	575	1000000
	Wall Log 30	575	375	150	615	450	1000000
Beech							
	Premium (Wall Log 69)	1550	1050	215	815	900	1500000
	Select (Wall Log 61)	1350	900	215	815	800	1500000
	Rustic (Wall Log 53)	1200	800	215	815	700	1300000
	Wall Log 40	900	600	215	815	525	1200000
	Wall Log 30	675	450	215	815	400	1200000
Douglas Fir							
	Dense – Premium (Wall Log 69)	1750	1200	165	705	1100	1600000
	Premium (Wall Log 69)	1500	1000	165	600	1000	1500000
	Dense – Select (Wall Log 61)	1550	1000	165	705	1000	1600000
	Select (Wall Log 61)	1300	875	165	600	875	1500000
	Dense – Rustic (Wall Log 53)	1350	900	165	705	850	1400000
	Rustic (Wall Log 53)	1150	750	165	600	750	1300000
	Dense – Wall Log 40	1000	675	165	705	650	1300000
	Wall Log 40	850	575	165	600	575	1200000
	Dense – Wall Log 30	750	500	165	705	475	1300000
	Wall Log 30	650	425	165	600	425	1200000
Douglas Fir – Larch							
	Premium (Wall Log 69)	1500	1000	165	600	1000	1500000
	Select (Wall Log 61)	1300	875	165	600	875	1500000
	Rustic (Wall Log 53)	1150	750	165	600	750	1300000
	Wall Log 40	850	575	165	600	575	1200000
	Wall Log 30	650	425	165	600	425	1200000
Douglas Fir – N							
	Dense – Premium (Wall Log 69)	1750	1200	170	810	1150	1800000
	Premium (Wall Log 69)	1500	1050	170	695	1000	1700000
	Dense – Select (Wall Log 61)	1550	1000	170	810	1000	1800000
	Select (Wall Log 61)	1300	875	170	695	900	1700000
	Dense – Rustic (Wall Log 53)	1350	900	170	810	875	1600000
	Rustic (Wall Log 53)	1150	775	170	695	775	1500000
	Dense – Wall Log 40	1000	675	170	810	650	1400000
	Wall Log 40	875	575	170	695	600	1400000
	Dense – Wall Log 30	750	500	170	810	500	1400000
	Wall Log 30	650	425	170	695	450	1400000
Douglas Fir – S							
	Dense – Premium (Wall Log 69)	1650	1150	165	605	1050	1300000
	Premium (Wall Log 69)	1450	975	165	520	925	1200000
	Dense – Select (Wall Log 61)	1450	975	165	605	925	1300000
	Select (Wall Log 61)	1250	825	165	520	825	1200000
	Dense – Rustic (Wall Log 53)	1300	850	165	605	800	1200000
	Rustic (Wall Log 53)	1100	725	165	520	700	1100000
	Dense – Wall Log 40	975	650	165	605	600	1000000
	Wall Log 40	825	550	165	520	525	1000000
	Dense – Wall Log 30	725	475	165	605	450	1000000
	Wall Log 30	625	400	165	520	400	1000000

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[a] - For notes in regards to Wall Log design values, see page 19

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TP Design Values – Wall Logs[a]

Combination	Grade	Fb	Ft	Fv	Fc_per	Fc_par	MOE
Eastern Hemlock							
	Premium (Wall Log 69)	1250	875	155	550	875	1100000
	Select (Wall Log 61)	1150	750	155	550	775	1100000
	Rustic (Wall Log 53)	975	650	155	550	675	1000000
	Wall Log 40	750	500	155	550	500	900000
	Wall Log 30	550	350	155	550	375	900000
Eastern Hemlock – Tamarack							
	Premium (Wall Log 69)	1250	875	155	550	875	1100000
	Select (Wall Log 61)	1150	750	155	550	775	1100000
	Rustic (Wall Log 53)	975	650	155	550	675	1000000
	Wall Log 40	750	500	155	550	500	900000
	Wall Log 30	550	350	155	550	375	900000
Eastern Softwoods							
	Premium (Wall Log 69)	950	650	115	305	650	1100000
	Select (Wall Log 61)	850	550	115	305	575	1100000
	Rustic (Wall Log 53)	725	500	115	305	500	1000000
	Wall Log 40	550	375	115	305	375	800000
	Wall Log 30	425	275	115	305	275	800000
Eastern Spruce							
	Premium (Wall Log 69)	950	650	125	360	650	1200000
	Select (Wall Log 61)	850	550	125	360	575	1200000
	Rustic (Wall Log 53)	725	500	125	360	500	1100000
	Wall Log 40	550	375	125	360	375	1000000
	Wall Log 30	425	275	125	360	275	1000000
Eastern White Pine							
	Premium (Wall Log 69)	975	675	115	350	675	1100000
	Select (Wall Log 61)	875	575	115	350	600	1100000
	Rustic (Wall Log 53)	750	500	115	350	525	1000000
	Wall Log 40	575	375	115	350	400	800000
	Wall Log 30	425	275	115	350	300	800000
Engelmann Spruce							
	Premium (Wall Log 69)	950	650	125	320	600	1100000
	Select (Wall Log 61)	850	550	125	320	525	1100000
	Rustic (Wall Log 53)	750	500	125	320	450	1000000
	Wall Log 40	550	375	125	320	350	900000
	Wall Log 30	425	275	125	320	250	900000
ES-AF							
	Premium (Wall Log 69)	950	650	125	320	600	1100000
	Select (Wall Log 61)	850	550	125	320	525	1100000
	Rustic (Wall Log 53)	750	500	125	320	450	1000000
	Wall Log 40	550	375	125	320	350	900000
	Wall Log 30	425	275	125	320	250	900000
ES-AF-LP							
	Premium (Wall Log 69)	950	650	125	320	600	1100000
	Select (Wall Log 61)	850	550	125	320	525	1100000
	Rustic (Wall Log 53)	750	500	125	320	450	1000000
	Wall Log 40	550	375	125	320	350	900000
	Wall Log 30	425	275	125	320	250	900000
ES-LP							
	Premium (Wall Log 69)	950	650	125	320	600	1100000
	Select (Wall Log 61)	850	550	125	320	525	1100000
	Rustic (Wall Log 53)	750	500	125	320	450	1000000
	Wall Log 40	550	375	125	320	350	900000
	Wall Log 30	425	275	125	320	250	900000
Hem-Fir							
	Premium (Wall Log 69)	1150	800	125	370	800	1200000
	Select (Wall Log 61)	1000	675	125	370	700	1200000
	Rustic (Wall Log 53)	875	600	125	370	625	1100000
	Wall Log 40	675	450	125	370	475	1000000
	Wall Log 30	500	325	125	370	350	1000000

[a] - For notes in regards to Wall Log design values, see page 19

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TP Design Values – Wall Logs[a]

Combination	Grade	Fb	Ft	Fv	Fc_per	Fc_par	MOE
Hem-Fir North							
	Premium (Wall Log 69)	1100	750	130	370	775	1400000
	Select (Wall Log 61)	950	625	130	370	700	1400000
	Rustic (Wall Log 53)	825	550	130	370	600	1300000
	Wall Log 40	625	425	130	370	450	1100000
	Wall Log 30	475	300	130	370	350	1100000
Idaho White Pine							
	Premium (Wall Log 69)	950	650	120	315	700	1300000
	Select (Wall Log 61)	850	550	120	315	625	1300000
	Rustic (Wall Log 53)	725	500	120	315	550	1100000
	Wall Log 40	550	375	120	315	400	1000000
	Wall Log 30	425	275	120	315	300	1000000
Incense Cedar							
	Premium (Wall Log 69)	1250	850	155	565	875	900000
	Select (Wall Log 61)	1100	725	155	565	775	900000
	Rustic (Wall Log 53)	950	625	155	565	675	800000
	Wall Log 40	725	475	155	565	525	700000
	Wall Log 30	525	350	155	565	375	700000
Lodgepole Pine							
	Premium (Wall Log 69)	1100	750	125	400	725	1100000
	Select (Wall Log 61)	975	625	125	400	650	1100000
	Rustic (Wall Log 53)	825	550	125	400	575	1000000
	Wall Log 40	625	425	125	400	425	900000
	Wall Log 30	475	300	125	400	325	900000
Mixed Oak							
	Premium (Wall Log 69)	1250	875	155	800	775	900000
	Select (Wall Log 61)	1100	725	155	800	675	900000
	Rustic (Wall Log 53)	975	650	155	800	575	800000
	Wall Log 40	725	500	155	800	450	700000
	Wall Log 30	550	350	155	800	325	700000
Mixed Southern Pine							
	Premium (Wall Log 69)	1450	1000	160	515	950	1300000
	Select (Wall Log 61)	1250	825	160	515	850	1300000
	Rustic (Wall Log 53)	1100	725	160	515	750	1200000
	Wall Log 40	825	550	160	515	550	1000000
	Wall Log 30	625	400	160	515	425	1000000
N. White Cedar							
	Premium (Wall Log 69)	775	525	115	320	525	500000
	Select (Wall Log 61)	675	450	115	320	475	500000
	Rustic (Wall Log 53)	600	400	115	320	400	500000
	Wall Log 40	450	300	115	320	300	400000
	Wall Log 30	325	225	115	320	225	400000
Northern Pine							
	Premium (Wall Log 69)	1000	675	125	410	675	1100000
	Select (Wall Log 61)	875	575	125	410	600	1100000
	Rustic (Wall Log 53)	775	500	125	410	500	1000000
	Wall Log 40	575	375	125	410	375	900000
	Wall Log 30	425	275	125	410	300	900000
Ponderosa Pine							
	Premium (Wall Log 69)	1000	700	130	440	700	1100000
	Select (Wall Log 61)	900	600	130	440	600	1100000
	Rustic (Wall Log 53)	775	525	130	440	525	1000000
	Wall Log 40	600	400	130	440	400	800000
	Wall Log 30	450	300	130	440	300	800000
PP-LP							
	Premium (Wall Log 69)	1000	700	125	400	700	1100000
	Select (Wall Log 61)	900	600	125	400	600	1100000
	Rustic (Wall Log 53)	775	525	125	400	525	1000000
	Wall Log 40	600	400	125	400	400	800000
	Wall Log 30	450	300	125	400	300	800000

[a] - For notes in regards to Wall Log design values, see page 19

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TP Design Values – Wall Logs[a]

Combination	Grade	Fb	Ft	Fv	Fc_per	Fc_par	MOE
PP-SP							
	Premium (Wall Log 69)	1000	700	130	345	700	1100000
	Select (Wall Log 61)	900	600	130	345	600	1100000
	Rustic (Wall Log 53)	775	525	130	345	525	1000000
	Wall Log 40	600	400	130	345	400	800000
	Wall Log 30	450	300	130	345	300	800000
Red Oak							
	Premium (Wall Log 69)	1250	875	155	820	775	1200000
	Select (Wall Log 61)	1100	725	155	820	675	1200000
	Rustic (Wall Log 53)	975	650	155	820	575	1100000
	Wall Log 40	725	500	155	820	450	1000000
	Wall Log 30	550	350	155	820	325	1000000
Redwood							
	Premium (Wall Log 69)	1200	800	145	420	875	1000000
	Select (Wall Log 61)	1050	675	145	420	775	1000000
	Rustic (Wall Log 53)	900	600	145	420	675	900000
	Wall Log 40	675	450	145	420	500	800000
	Wall Log 30	500	325	145	420	375	800000
Southern Yellow Pine							
	Dense – Premium (Wall Log 69)	1700	1150	160	600	1150	1600000
	Premium (Wall Log 69)	1450	1000	160	515	1000	1500000
	Dense – Select (Wall Log 61)	1500	975	160	600	1000	1600000
	Select (Wall Log 61)	1250	825	160	515	875	1500000
	Dense – Rustic (Wall Log 53)	1300	850	160	600	875	1400000
	Rustic (Wall Log 53)	1100	725	160	515	775	1300000
	Dense – Wall Log 40	975	650	160	600	650	1200000
	Wall Log 40	825	550	160	515	575	1200000
	Dense – Wall Log 30	725	475	160	600	500	1200000
	Wall Log 30	625	400	160	515	425	1200000
Spruce-Pine-Fir							
	Premium (Wall Log 69)	950	650	115	305	600	1100000
	Select (Wall Log 61)	850	550	115	305	525	1100000
	Rustic (Wall Log 53)	725	500	115	305	450	1000000
	Wall Log 40	550	375	115	305	350	900000
	Wall Log 30	425	275	115	305	250	900000
Sugar Pine							
	Premium (Wall Log 69)	1000	700	130	345	725	1100000
	Select (Wall Log 61)	900	600	130	345	650	1100000
	Rustic (Wall Log 53)	775	525	130	345	550	1000000
	Wall Log 40	600	400	130	345	425	900000
	Wall Log 30	450	300	130	345	325	900000
Tamarack							
	Premium (Wall Log 69)	1350	925	160	595	875	1300000
	Select (Wall Log 61)	1200	800	160	595	775	1300000
	Rustic (Wall Log 53)	1050	700	160	595	675	1200000
	Wall Log 40	775	525	160	595	500	1100000
	Wall Log 30	600	375	160	595	375	1100000
Western Hemlock							
	Premium (Wall Log 69)	1300	900	140	410	950	1400000
	Select (Wall Log 61)	1150	750	140	410	825	1400000
	Rustic (Wall Log 53)	1000	675	140	410	725	1300000
	Wall Log 40	750	500	140	410	550	1100000
	Wall Log 30	575	375	140	410	400	1100000
Western Larch							
	Premium (Wall Log 69)	1600	1100	170	605	1150	1600000
	Select (Wall Log 61)	1450	950	170	605	1000	1600000
	Rustic (Wall Log 53)	1250	825	170	605	875	1400000
	Wall Log 40	950	625	170	605	650	1200000
	Wall Log 30	700	450	170	605	500	1200000

[a] - For notes in regards to Wall Log design values, see page 19

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TP Design Values – Wall Logs

Combination	Grade	Fb	Ft	Fv	Fc_per	Fc_par	MOE
Western Red Cedar							
	Premium (Wall Log 69)	1050	725	130	385	775	1000000
	Select (Wall Log 61)	925	625	130	385	700	1000000
	Rustic (Wall Log 53)	800	550	130	385	600	900000
	Wall Log 40	600	400	130	385	450	800000
	Wall Log 30	450	300	130	385	350	800000
Western Woods							
	Premium (Wall Log 69)	950	650	115	315	600	1100000
	Select (Wall Log 61)	850	550	115	315	525	1100000
	Rustic (Wall Log 53)	725	500	115	315	450	1000000
	Wall Log 40	550	375	115	315	350	800000
	Wall Log 30	425	275	115	315	250	800000
White Oak							
	Premium (Wall Log 69)	1300	900	205	800	825	900000
	Select (Wall Log 61)	1150	750	205	800	750	900000
	Rustic (Wall Log 53)	1000	675	205	800	650	800000
	Wall Log 40	750	500	205	800	475	700000
	Wall Log 30	575	375	205	800	375	700000
White Woods							
	Premium (Wall Log 69)	950	650	115	315	600	1100000
	Select (Wall Log 61)	850	550	115	315	525	1100000
	Rustic (Wall Log 53)	725	500	115	315	450	1000000
	Wall Log 40	550	375	115	315	350	800000
	Wall Log 30	425	275	115	315	250	800000

Wall Log Design Value Notes

1. All values are in pounds per square inch (psi) and represent the following allowable stresses:

   Fb: Bending
   Ft: Tension
   Fv: Horizontal Shear
   Fc_per: Compression Perpindicular to the Grain
   Fc_par: Compression Parallel to the Grain
   MOE: Modulus of Elasticity

2. Design values are to be used only with logs and/or timbers graded and grademarked by TP or by one of the manufacturers trained, approved and licensed by TP to apply the TP grademarks.
   a. Lot or Individual home inspection grading services are available from TP for homeowners, builders, designers or manufacturers when the need arises.
3. Design values for Fb are based upon 12 inch deep members. If the member exceeds 12 inches in depth, allowable stress factors shall be determined as follows:

$$\text{Allowable Fb} = (\text{TP Fb}) * (12/\text{Depth})^{(1/9)}$$

4. Compression parallel to the grain (Fc_par) values have been increased by 10% for seasoning effects. Care must be taken to assure that the timber is sufficiently seasoned (dry) before full load is applied.
5. Provided values are based upon normal load durations.

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Additional Species Availability

Timber Products Inspection (TP) has generated and published stress grades and design values for many commercially utilized wood species. While a wide variety of species are published, TP's program is not limited to those shown. The following list shows the various wood species available within ASTM Standard D2555 for which TP's program has been accredited. Should you desire to obtain the allowable stress design values and the associated grades for any of the following species, please contact TP's office.

Alder - Red
Ash - Black
Ash - Green
Ash - White
Aspen - Bigtooth
Aspen - Largetooth (Can.)
Aspen - Quaking
Aspen - Trembling (Can.)
BaldCypress
Basswood - American
Beech - American
Birch - Paper
Birch - Sweet
Birch - Yellow
Cedar - Alaska
Cedar - Atlantic White
Cedar - Eastern (Northern) White (Can.)
Cedar - Eastern Red
Cedar - Incense
Cedar - Northern White
Cedar - Port Orford
Cedar - Western Red
Cedar - Western Red (Can.)
Cedar - Yellow (Alaska) (Can.)
Cottonwood - Black
Cottonwood - Black (Can.)
Cottonwood - Eastern
Cottonwood - Eastern (Can.)
Douglas Fir - Coast
Douglas Fir - Interior North
Douglas Fir - Interior South
Douglas Fir - Interior West
Douglas Fir (Can.)
Elm - American
Elm - Rock
Elm - Slippery
Fir - Alpine (Can.)
Fir - Amabilis (Pacific Silver) (Can.)
Fir - Balsam
Fir - Balsam (Can.)
Fir - California Red
Fir - Grand
Fir - Noble
Fir - Pacific Silver
Fir - Subalpine
Fir - White
Hackberry
Hemlock - Eastern
Hemlock - Eastern (Can.)
Hemlock - Mountain
Hemlock - Western
Hemlock - Western (Can.)
Hickory - Bitternut
Hickory - Mockernut
Hickory - Nutmeg
Hickory - Pecan
Hickory - Pignut
Hickory - Shagbark
Hickory - Shellbark
Hickory - Water
Larch - Western
Larch - Western (Can.)
Magnolia - Cucumbertree
Magnolia - Southern Magnolia
Maple - Bigleaf
Maple - Black
Maple - Red
Maple - Silver
Maple - Sugar
Oak, Red - Black
Oak, Red - Cherrybark
Oak, Red - Laurel
Oak, Red - Northern Red
Oak, Red - Pin
Oak, Red - Scarlet
Oak, Red - Southern Red
Oak, Red - Water
Oak, Red - Willow
Oak, White - Bur
Oak, White - Chestnut
Oak, White - Live
Oak, White - Overcup
Oak, White - Post
Oak, White - Swamp Chestnut
Oak, White - Swamp White
Oak, White - White
Pine - Eastern White
Pine - Eastern White (Can.)
Pine - Jack
Pine - Jack (Can.)
Pine - Lodgepole
Pine - Lodgepole (Can.)
Pine - Monterey
Pine - Ponderosa
Pine - Ponderosa (Can.)
Pine - Red
Pine - Red (Can.)
Pine - Sugar
Pine - Western White
Pine - Western White (Can.)
Poplar - Balsam
Poplar - Balsam (Can.)
Poplar - Yellow
Redwood - Old Growth
Redwood - Second Growth
Southern Pine - Loblolly
Southern Pine - Longleaf
Southern Pine - Shortleaf
Southern Pine - Slash
Southern Yellow Pine - Pitch
Southern Yellow Pine - Pond
Southern Yellow Pine - Sand
Southern Yellow Pine - Spruce
Southern Yellow Pine - Virginia
Spruce - Black
Spruce - Black (Can.)
Spruce - Engelmann
Spruce - Engelmann (Can.)
Spruce - Red
Spruce - Red (Can.)
Spruce - Sitka
Spruce - Sitka (Can.)
Spruce - White
Spruce - White (Can.)
Sweetgum
Sycamore - American
Tamarack
Tamarack (Can.)
Tanoak
Tupelo - Black
Tupelo - Water

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About Timber Products Inspection, Inc.

Timber Products Inspection (TP) commenced operations in 1969, primarily servicing the lumber grading industry. Since that time, TP's expertise and customer service philosophy has led to an expansion of services creating the largest independent wood products inspection and testing agency in the United States. Whether its inspections, testing, training or engineering, TP strives to provide the highest quality and the most technically efficient services with a focus on customer needs.

TP Accreditations

TP holds accreditations with both the American Lumber Standard Committee (www.alsc.org) and the International Accreditation Service (www.iasonline.org), a subsidiary of the International Code Council (ICC). With inspectors located throughout the United States and abroad, TP has the ability and knowledge to inspect, test and/or analyze products quickly and efficiently in accordance with industry regulations.

What Services Does TP Offer?

Auditing → TP strives to promote quality in the forest products industry through a myriad of services. TP is recognized as being experts in the auditing of wood products in several industries including:

- Untreated Lumber
- Pressure Treated and Fire-Retardant Treated Lumber
- Glulam/Finger-jointed Lumber
- **Residential and Commercial Logs and Timbers**
- Export Packaging
- Pallets
- Fumigation
- Utility Products
- Wood Truss Manufacturing

Advancement → TP supports innovation and technology within the above and developing industries by offering testing services through its accredited Physical and Chemical Labs. TP's engineers and research scientists routinely work with customers in evaluating new and existing products in an effort to advance the industry.

Training → TP regularly provides training courses in the processes and requirements of the above listed services. Courses can be geared towards manufacturers, suppliers, designers, building officials or owners.

Learn More About TP

TP's staff stands ready to assist. You can reach TP's Conyers, Georgia office at (770) 922-8000 or the Vancouver, Washington office at (360) 449-3138. Additional information is also available on the web at www.tpinspection.com.

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