



PACIFIC LUMBER INSPECTION BUREAU

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New web-based calculators from Pacific Lumber Inspection Bureau put robust wood design data at users' fingertips

(Federal Way, Wash.) -- Calling them “the most comprehensive lumber span calculators we have ever produced,” Pacific Lumber Inspection Bureau (PLIB) has unveiled three new web-based calculators that provide users with previously unavailable digital structural lumber design tools.

PLIB’s **Design Value Comparison Calculator**, the first of its kind, allows users to determine the applicable design values for an unlimited set of species combinations, an invaluable tool in today’s market, where multiple species are often delivered to jobsites.

“The issue of having multiple species delivered to jobsites is not new,” explained PLIB President Jeff Fantozzi, “but with the increased use of imported lumber in recent years, we’ve been getting more and more calls for help from code officials, job superintendents and engineers attempting to determine the applicable design values for species and species groupings they hadn’t encountered before.”

In 2021, challenges created by the issue of having multiple species on jobsites surfaced in the State of North Carolina resulting in disruptions on construction sites and at distribution yards. The complexity of determining common design values for a wide variety of species combinations made using mixed species difficult for end users and code officials alike. The need for more user-friendly design aids was readily apparent.

“We developed the Design Value Comparison Calculator in response to this issue specifically,” Fantozzi stated.

With the tool, users can enter any number of grade/species/region combinations they see on grade stamps to generate a table showing design values and specific gravity values for each individual grouping, while also highlighting the values that are applicable to the group as a whole. According to Henry Morris, Director of Engineering for PLIB, “The tool saves wood designers, lumber brokers and code officials hours – time they previously spent having to mine data from spreadsheets or printed tables. It vastly simplifies the use of virtually any structural lumber one might encounter in North American markets.”



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PLIB's new **Span Options Calculator** allows users for the first time to generate a set of lumber size options capable of achieving spans based on user-entered design criteria and species information. A new **Max Span Calculator** provides the maximum span length, along with bending strength, shear strength and bearing strength values, for any combination of grade and species or species group based on user-entered design criteria. Both span calculators derive from the identical data set used in the Design Value Comparison calculator.

Grade Stamp Selector

GRADE: Select Structural, No. 1 & Btr, No. 1, **No. 2**, No. 3, Stud, Construction, Standard, Utility

SPECIES: ALL, NA, EU. Options include Norway Spruce (North)⁴, Red Maple², Red Oak², Redwood⁵, Scots Pine, Silver Fir (Abies alba), Southern Pine³, Southern Pine (Dense)³, Southern Pine (Non-Dense)³, and **Spruce-Pine-Fir⁴**.

REGION / COUNTRY: North America

MILL 10 No. 2 S-P-F KD-HT

ADD STAMP, RESET

Design Values published by PLIB except where indicated by superscript:
1: WFLA
2: NELMA
3: SPB
4: NLGA
5: BLS

Screen capture of results derived using PLIB's new Design Value Comparison Calculator, one of three new digital design tools now accessible on both desktop and mobile at: plib.org/resources/calculators/. Highlighted results indicate the design values that are applicable to the group as a whole.

Design Value Comparison

Wood Size: 2x12

	F _b Bending	F _t Tension	F _v Shear	F _{c⊥} Compression Perpendicular to Grain	F _c Compression Parallel to Grain	E Modulus of Elasticity	E _{min} Beam & Column Stability	G Specific Gravity
MILL 10 No. 2 D FIR KD-HT	900	575	180	625	1,350	1,600,000	580,000	0.5
MILL 10 No. 2 HF KD-HT	850	525	150	405	1,300	1,300,000	470,000	0.43
MILL 10 No. 2 SYP KD-HT	750	450	175	565	1,250	1,400,000	510,000	0.55
MILL 10 No. 2 S-P-F KD-HT	875	450	135	425	1,150	1,400,000	510,000	0.42
Minimum values	750	450	135	405	1,150	1,300,000	470,000	0.42

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The calculators include data for virtually any softwood lumber species one might find in use in North America, along with a wide range of hardwood species that could potentially be used in structural applications. The vast set of species choices, along with the ability to compare multiple combinations of options, makes these digital wood design calculators the first of their kind and extremely useful tools for wood users.

The calculators can be found on both the desktop and mobile versions of the PLIB website at www.plib.org/resources/calculators. They are publicly accessible and there is no charge for their use.



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“PLIB is committed to supporting continued and expanded use of lumber in both residential and commercial construction,” Fantozzi said, “Developing these calculators and making them easily accessible by anyone clearly helps meet that commitment.”

About PLIB:

The Pacific Lumber Inspection Bureau (PLIB) is a private, non-profit 501(c)6 member-based quality control inspection agency. Organized in 1903, PLIB offers lumber grading and grade stamping services as well as certification for heat-treated (HT) lumber, ISPM 15 wood packaging, Glulam, CLT, wood trusses, CE Marking, and WUI registration services, to over 450 softwood lumber manufacturers and re-manufacturers, drying facilities, glulam, truss, CLT manufacturing facilities and wood packaging facilities in Europe and North America.

The Bureau is headquartered in Federal Way, WA, with a Canadian division office in Vancouver, BC. Field offices are located in Washington, Oregon, California, Montana, British Columbia, Latvia and Germany. PLIB is accredited in North America by both the American Lumber Standard Committee (ALSC) and the Canadian Lumber Standard Accreditation Board (CLSAB). The agency operates in the Western and Southern U.S., Canada and Continental Europe.

In 2019, PLIB merged operations with West Coast Lumber Inspection Bureau (WCLIB) and WCLIB’s partner organization, the American Institute of Timber Construction (AITC), extending PLIB membership to all former WCLIB and AITC members, while also retaining all WCLIB, AITC trademarks and programs.

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