



March 2013

ADDENDUM

to the 2012 and previous versions of the *Design Values for Wood Construction*

(a supplement to the *National Design Specification® (NDS®) for Wood Construction*)

Effective June 1, 2013, design values for all grades of visually-graded Southern Pine and Mixed Southern Pine lumber, 2" - 4" thick will change. The design values to use with the 2012 NDS, 2005 NDS, and the 2001 NDS are shown below (values that will change on June 1, 2013 are shown as underlined). These values supersede values published in the AWC March 2012 Addendum.

Table 4B Reference Design Values for Visually Graded Southern Pine Dimension Lumber (2" - 4" thick)^{1,2,3,4,5} (Tabulated design values are for normal load duration and dry service conditions, unless specified otherwise. See NDS 4.3 for a comprehensive description of design value adjustment factors.)

USE WITH TABLE 4B ADJUSTMENT FACTORS

Species and commercial grade	Size classification	Design values in pounds per square inch (psi)							Specific Gravity ⁶	Grading Rules Agency
		Bending F _b	Tension parallel to grain F _t	Shear parallel to grain F _v	Compression perpendicular to grain F _{c⊥}	Compression parallel to grain F _c	Modulus of Elasticity			
							E	E _{min}		
SOUTHERN PINE										
Dense Select Structural	2" - 4" wide	<u>2,700</u>	<u>1,900</u>	175	660	<u>2,050</u>	1,900,000	690,000	0.55	SPIB
Select Structural		<u>2,350</u>	<u>1,650</u>	175	565	<u>1,900</u>	1,800,000	660,000		
Non-Dense Select Structural		<u>2,050</u>	<u>1,450</u>	175	480	<u>1,800</u>	<u>1,600,000</u>	<u>580,000</u>		
No.1 Dense		<u>1,650</u>	<u>1,100</u>	175	660	<u>1,750</u>	1,800,000	660,000		
No.1		<u>1,500</u>	<u>1,000</u>	175	565	<u>1,650</u>	<u>1,600,000</u>	<u>580,000</u>		
No.1 Non-Dense		<u>1,300</u>	<u>875</u>	175	480	<u>1,550</u>	<u>1,400,000</u>	<u>510,000</u>		
No.2 Dense		<u>1,200</u>	<u>750</u>	175	660	<u>1,500</u>	<u>1,600,000</u>	<u>580,000</u>		
No.2		<u>1,100</u>	<u>675</u>	175	565	<u>1,450</u>	<u>1,400,000</u>	<u>510,000</u>		
No.2 Non-Dense		<u>1,050</u>	<u>600</u>	175	480	<u>1,450</u>	<u>1,300,000</u>	<u>470,000</u>		
No.3 and Stud		<u>650</u>	<u>400</u>	175	565	<u>850</u>	<u>1,300,000</u>	<u>470,000</u>		
Construction Standard	4" wide	<u>875</u>	<u>500</u>	175	565	<u>1,600</u>	<u>1,400,000</u>	<u>510,000</u>	0.55	
Standard		<u>475</u>	<u>275</u>	175	565	<u>1,300</u>	<u>1,200,000</u>	<u>440,000</u>		
Utility		<u>225</u>	<u>125</u>	175	565	<u>850</u>	<u>1,200,000</u>	<u>440,000</u>		
Dense Select Structural	5" - 6" wide	<u>2,400</u>	<u>1,650</u>	175	660	<u>1,900</u>	1,900,000	690,000	0.55	SPIB
Select Structural		<u>2,100</u>	<u>1,450</u>	175	565	<u>1,800</u>	1,800,000	660,000		
Non-Dense Select Structural		<u>1,850</u>	<u>1,300</u>	175	480	<u>1,700</u>	<u>1,600,000</u>	<u>580,000</u>		
No.1 Dense		<u>1,500</u>	<u>1,000</u>	175	660	<u>1,650</u>	1,800,000	660,000		
No.1		<u>1,350</u>	<u>875</u>	175	565	<u>1,550</u>	<u>1,600,000</u>	<u>580,000</u>		
No.1 Non-Dense		<u>1,200</u>	<u>775</u>	175	480	<u>1,450</u>	<u>1,400,000</u>	<u>510,000</u>		
No.2 Dense		<u>1,050</u>	<u>650</u>	175	660	<u>1,450</u>	<u>1,600,000</u>	<u>580,000</u>		
No.2		<u>1,000</u>	<u>600</u>	175	565	<u>1,400</u>	<u>1,400,000</u>	<u>510,000</u>		
No.2 Non-Dense		<u>950</u>	<u>525</u>	175	480	<u>1,350</u>	<u>1,300,000</u>	<u>470,000</u>		
No.3 and Stud		<u>575</u>	<u>350</u>	175	565	<u>800</u>	<u>1,300,000</u>	<u>470,000</u>		
Dense Select Structural	8" wide	<u>2,200</u>	<u>1,550</u>	175	660	<u>1,850</u>	1,900,000	690,000	0.55	SPIB
Select Structural		<u>1,950</u>	<u>1,350</u>	175	565	<u>1,700</u>	1,800,000	660,000		
Non-Dense Select Structural		<u>1,700</u>	<u>1,200</u>	175	480	<u>1,650</u>	<u>1,600,000</u>	<u>580,000</u>		
No.1 Dense		<u>1,350</u>	<u>900</u>	175	660	<u>1,600</u>	1,800,000	660,000		
No.1		<u>1,250</u>	<u>800</u>	175	565	<u>1,500</u>	<u>1,600,000</u>	<u>580,000</u>		
No.1 Non-Dense		<u>1,100</u>	<u>700</u>	175	480	<u>1,400</u>	<u>1,400,000</u>	<u>510,000</u>		
No.2 Dense		<u>975</u>	<u>600</u>	175	660	<u>1,400</u>	<u>1,600,000</u>	<u>580,000</u>		
No.2		<u>925</u>	<u>550</u>	175	565	<u>1,350</u>	<u>1,400,000</u>	<u>510,000</u>		
No.2 Non-Dense		<u>875</u>	<u>500</u>	175	480	<u>1,300</u>	<u>1,300,000</u>	<u>470,000</u>		
No.3 and Stud		<u>525</u>	<u>325</u>	175	565	<u>775</u>	<u>1,300,000</u>	<u>470,000</u>		

Species and commercial grade	Size classification	Design values in pounds per square inch (psi)							Specific Gravity ⁶ G	Grading Rules Agency
		Bending F _b	Tension parallel to grain F _t	Shear parallel to grain F _v	Compression perpendicular to grain F _{cL}	Compression parallel to grain F _c	Modulus of Elasticity			
							E	E _{min}		
SOUTHERN PINE (continued)										
Dense Select Structural	10" wide	<u>1,950</u>	<u>1,300</u>	175	660	<u>1,800</u>	1,900,000	690,000	0.55	SPIB
Select Structural		<u>1,700</u>	<u>1,150</u>	175	565	<u>1,650</u>	1,800,000	660,000		
Non-Dense Select Structural		<u>1,500</u>	<u>1,050</u>	175	480	<u>1,600</u>	<u>1,600,000</u>	<u>580,000</u>		
No.1 Dense		<u>1,200</u>	<u>800</u>	175	660	<u>1,550</u>	1,800,000	660,000		
No.1		<u>1,050</u>	<u>700</u>	175	565	<u>1,450</u>	<u>1,600,000</u>	<u>580,000</u>		
No.1 Non-Dense		<u>950</u>	<u>625</u>	175	480	<u>1,400</u>	<u>1,400,000</u>	<u>510,000</u>		
No.2 Dense		<u>850</u>	<u>525</u>	175	660	<u>1,350</u>	<u>1,600,000</u>	<u>580,000</u>		
No.2		<u>800</u>	<u>475</u>	175	565	<u>1,300</u>	<u>1,400,000</u>	<u>510,000</u>		
No.2 Non-Dense		<u>750</u>	<u>425</u>	175	480	<u>1,250</u>	<u>1,300,000</u>	<u>470,000</u>		
No.3 and Stud		<u>475</u>	<u>275</u>	175	565	<u>750</u>	<u>1,300,000</u>	<u>470,000</u>		
Dense Select Structural	12" wide	<u>1,800</u>	<u>1,250</u>	175	660	<u>1,750</u>	1,900,000	690,000	0.55	SPIB
Select Structural		<u>1,600</u>	<u>1,100</u>	175	565	<u>1,650</u>	1,800,000	660,000		
Non-Dense Select Structural		<u>1,400</u>	<u>975</u>	175	480	<u>1,550</u>	<u>1,600,000</u>	<u>580,000</u>		
No.1 Dense		<u>1,100</u>	<u>750</u>	175	660	<u>1,500</u>	1,800,000	660,000		
No.1		<u>1,000</u>	<u>650</u>	175	565	<u>1,400</u>	<u>1,600,000</u>	<u>580,000</u>		
No.1 Non-Dense		<u>900</u>	<u>575</u>	175	480	<u>1,350</u>	<u>1,400,000</u>	<u>510,000</u>		
No.2 Dense		<u>800</u>	<u>500</u>	175	660	<u>1,300</u>	<u>1,600,000</u>	<u>580,000</u>		
No.2		<u>750</u>	<u>450</u>	175	565	<u>1,250</u>	<u>1,400,000</u>	<u>510,000</u>		
No.2 Non-Dense		<u>700</u>	<u>400</u>	175	480	<u>1,250</u>	<u>1,300,000</u>	<u>470,000</u>		
No.3 and Stud		<u>450</u>	<u>250</u>	175	565	<u>725</u>	<u>1,300,000</u>	<u>470,000</u>		
MIXED SOUTHERN PINE										
Select Structural	2" - 4" wide	2,050	1,200	175	565	1,800	1,600,000	580,000	0.51	SPIB
No.1		1,450	875	175	565	1,650	1,500,000	550,000		
No.2		<u>1,100</u>	<u>675</u>	175	565	<u>1,450</u>	1,400,000	510,000		
No.3 and Stud		<u>650</u>	<u>400</u>	175	565	<u>850</u>	1,200,000	440,000		
Construction Standard	4" wide	<u>850</u>	<u>500</u>	175	565	<u>1,600</u>	1,300,000	470,000	0.51	SPIB
Utility		<u>475</u>	<u>275</u>	175	565	<u>1,300</u>	1,200,000	440,000		
Utility		<u>225</u>	<u>125</u>	175	565	<u>850</u>	1,100,000	400,000		
Select Structural	5" - 6" wide	1,850	1,100	175	565	1,700	1,600,000	580,000	0.51	SPIB
No.1		1,300	750	175	565	1,550	1,500,000	550,000		
No.2		<u>1,000</u>	<u>600</u>	175	565	<u>1,400</u>	1,400,000	510,000		
No.3 and Stud		<u>575</u>	<u>350</u>	175	565	<u>775</u>	1,200,000	440,000		
Select Structural	8" wide	1,750	1,000	175	565	1,600	1,600,000	580,000	0.51	SPIB
No.1		1,200	700	175	565	1,450	1,500,000	550,000		
No.2		<u>925</u>	<u>550</u>	175	565	<u>1,350</u>	1,400,000	510,000		
No.3 and Stud		<u>525</u>	<u>325</u>	175	565	<u>800</u>	1,200,000	440,000		
Select Structural	10" wide	1,500	875	175	565	1,600	1,600,000	580,000	0.51	SPIB
No.1		1,050	600	175	565	1,450	1,500,000	550,000		
No.2		<u>800</u>	<u>475</u>	175	565	<u>1,300</u>	1,400,000	510,000		
No.3 and Stud		<u>475</u>	<u>275</u>	175	565	<u>750</u>	1,200,000	440,000		
Select Structural	12" wide	1,400	825	175	565	1,550	1,600,000	580,000	0.51	SPIB
No.1		975	575	175	565	1,400	1,500,000	550,000		
No.2		<u>750</u>	<u>450</u>	175	565	<u>1,250</u>	1,400,000	510,000		
No.3 and Stud		<u>450</u>	<u>250</u>	175	565	<u>725</u>	1,200,000	440,000		

- LUMBER DIMENSIONS.** Tabulated design values are applicable to lumber that will be used under dry conditions such as in most covered structures. For 2" to 4" thick lumber the DRY dressed sizes shall be used (see Table 1A) regardless of the moisture content at the time of manufacture or use. In calculating design values, the natural gain in strength and stiffness that occurs as lumber dries has been taken into consideration as well as the reduction in size that occurs when unseasoned lumber shrinks. The gain in load carrying capacity due to increased strength and stiffness resulting from drying more than offsets the design effect of size reductions due to shrinkage.
- STRESS-RATED BOARDS.** Information for various grades of Southern Pine stress-rated boards of nominal 1", 1¼", and 1½" thickness, 2" and wider is available from the Southern Pine Inspection Bureau (SPIB) in the *Standard Grading Rules for Southern Pine Lumber*.

3. **SPRUCE PINE.** To obtain recommended design values for Spruce Pine graded to SPIB rules, multiply the appropriate design values for Mixed Southern Pine by the corresponding conversion factor shown below and round to the nearest 100,000 psi for E; to the nearest 10,000 psi for E_{min}; to the next lower multiple of 5 psi for F_v and F_{c⊥}; to the next lower multiple of 50 psi for F_b, F_t, and F_c if 1,000 psi or greater, 25 psi otherwise.

CONVERSION FACTORS FOR DETERMINING DESIGN VALUES FOR SPRUCE PINE

	Tension parallel to grain	Shear parallel to grain	Compression perpendicular to grain	Compression parallel to grain	Modulus of Elasticity	
Bending	F _t	F _v	F _{c⊥}	F _c	E and E _{min}	
Conversion Factor	0.78	0.78	0.98	0.73	0.78	0.82

4. **SIZE FACTOR.** For sizes wider than 12", use size factors for F_b, F_t, and F_c specified for the 12" width. Use 100% of the F_v, F_{c⊥}, E, and E_{min} specified for the 12" width.
5. When individual species or species groups are combined, the design values to be used for the combination shall be the lowest design values for each individual species or species group for each design property.
6. Specific gravity, G, based on weight and volume when oven-dry.