

Table 4D Reference Design Values for Visually Graded Timbers (5" x 5" and larger)^{1,3}
(Cont.) (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 4D ADJUSTMENT FACTORS									
Species and commercial grade	Size classification	Design values in pounds per square inch (psi)							Grading Rules Agency
		Bending F_b	Tension parallel to grain F_t	Shear parallel to grain F_v	Compression perpendicular to grain $F_{c\perp}$	Compression parallel to grain F_c	Modulus of Elasticity		
							E	E_{min}	
DOUGLAS FIR-LARCH (NORTH)									
Select Structural	Beams and Stringers	1,600	950	170	625	1,100	1,600,000	580,000	NLGA
No.1		1,300	675	170	625	925	1,600,000	580,000	
No.2		875	425	170	625	600	1,300,000	470,000	
Select Structural	Posts and Timbers	1,500	1,000	170	625	1,150	1,600,000	580,000	
No.1		1,200	825	170	625	1,000	1,600,000	580,000	
No.2		725	475	170	625	700	1,300,000	470,000	
DOUGLAS FIR-SOUTH									
Select Structural	Beams and Stringers	1,550	900	165	520	1,000	1,200,000	440,000	WWPA
No.1		1,300	625	165	520	850	1,200,000	440,000	
No.2		825	425	165	520	550	1,000,000	370,000	
Select Structural	Posts and Timbers	1,450	950	165	520	1,050	1,200,000	440,000	
No.1		1,150	775	165	520	925	1,200,000	440,000	
No.2		675	450	165	520	650	1,000,000	370,000	
EASTERN HEMLOCK									
Select Structural	Beams and Stringers	1,350	925	155	550	950	1,200,000	440,000	NELMA NSLB
No.1		1,150	775	155	550	800	1,200,000	440,000	
No.2		750	375	155	550	550	900,000	330,000	
Select Structural	Posts and Timbers	1,250	850	155	550	1,000	1,200,000	440,000	
No.1		1,050	700	155	500	875	1,200,000	440,000	
No.2		600	400	155	550	400	900,000	330,000	
EASTERN HEMLOCK-TAMARACK									
Select Structural	Beams and Stringers	1,400	925	155	555	950	1,200,000	440,000	NELMA NSLB
No.1		1,150	775	155	555	800	1,200,000	440,000	
No.2		750	375	155	555	500	900,000	330,000	
Select Structural	Posts and Timbers	1,300	875	155	555	1,000	1,200,000	440,000	
No.1		1,050	700	155	555	875	1,200,000	440,000	
No.2		600	400	155	555	400	900,000	330,000	
EASTERN HEMLOCK-TAMARACK (N)									
Select Structural	Beams and Stringers	1,450	850	165	555	950	1,300,000	470,000	NLGA
No.1		1,200	600	165	555	800	1,300,000	470,000	
No.2		775	400	165	555	500	1,100,000	400,000	
Select Structural	Posts and Timbers	1,350	900	165	555	1,000	1,300,000	470,000	
No.1		1,100	725	165	555	875	1,300,000	470,000	
No.2		650	425	165	555	600	1,100,000	400,000	
EASTERN SPRUCE									
Select Structural	Beams and Stringers	1,050	725	135	390	750	1,400,000	510,000	NELMA NSLB
No.1		900	600	135	390	625	1,400,000	510,000	
No.2		575	275	135	390	375	1,000,000	370,000	
Select Structural	Posts and Timbers	1,000	675	135	390	775	1,400,000	510,000	
No.1		800	550	135	390	675	1,400,000	510,000	
No.2		450	300	135	390	300	1,000,000	370,000	
EASTERN WHITE PINE									
Select Structural	Beams and Stringers	1,050	700	125	350	675	1,100,000	400,000	NELMA NSLB
No.1		875	600	125	350	575	1,100,000	400,000	
No.2		575	275	125	350	400	900,000	330,000	
Select Structural	Posts and Timbers	975	650	125	350	725	1,100,000	400,000	
No.1		800	525	125	350	625	1,100,000	400,000	
No.2		450	300	125	350	325	900,000	330,000	

Table 4D Reference Design Values for Visually Graded Timbers (5" x 5" and larger)^{1,3}
(Cont.) (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 4D ADJUSTMENT FACTORS									
Species and commercial grade	Size classification	Design values in pounds per square inch (psi)							Grading Rules Agency
		Bending F_b	Tension parallel to grain F_t	Shear parallel to grain F_v	Compression perpendicular to grain $F_{c\perp}$	Compression parallel to grain F_c	Modulus of Elasticity		
							E	E_{min}	
HEM-FIR									
Select Structural	Beams and Stringers	1,300	750	140	405	925	1,300,000	470,000	WCLIB WWPA
No.1		1,050	525	140	405	750	1,300,000	470,000	
No.2		675	350	140	405	500	1,100,000	400,000	
Select Structural	Posts and Timbers	1,200	800	140	405	975	1,300,000	470,000	
No.1		975	650	140	405	850	1,300,000	470,000	
No.2		575	375	140	405	575	1,100,000	400,000	
HEM-FIR (NORTH)									
Select Structural	Beams and Stringers	1,250	725	135	405	900	1,300,000	470,000	NLGA
No.1		1,000	500	135	405	750	1,300,000	470,000	
No.2		675	325	135	405	475	1,100,000	400,000	
Select Structural	Posts and Timbers	1,150	775	135	405	950	1,300,000	470,000	
No.1		925	625	135	405	850	1,300,000	470,000	
No.2		550	375	135	405	575	1,100,000	400,000	
MIXED MAPLE									
Select Structural	Beams and Stringers	1,150	700	180	620	725	1,100,000	400,000	NELMA
No.1		975	500	180	620	600	1,100,000	400,000	
No.2		625	325	180	620	375	900,000	330,000	
Select Structural	Posts and Timbers	1,100	725	180	620	750	1,100,000	400,000	
No.1		875	600	180	620	650	1,100,000	400,000	
No.2		500	350	180	620	300	900,000	330,000	
MIXED OAK									
Select Structural	Beams and Stringers	1,350	800	155	800	825	1,000,000	370,000	NELMA
No.1		1,150	550	155	800	700	1,000,000	370,000	
No.2		725	375	155	800	450	800,000	290,000	
Select Structural	Posts and Timbers	1,250	850	155	800	875	1,000,000	370,000	
No.1		1,000	675	155	800	775	1,000,000	370,000	
No.2		575	400	155	800	350	800,000	290,000	
MIXED SOUTHERN PINE²									
(Wet Service Conditions)									
Select Structural	5"x5" and Larger	1,500	1,000	165	375	900	1,300,000	470,000	SPIB
No.1		1,350	900	165	375	800	1,300,000	470,000	
No.2		850	550	165	375	525	1,000,000	370,000	
MOUNTAIN HEMLOCK									
Select Structural	Beams and Stringers	1,350	775	170	570	875	1,100,000	400,000	WCLIB WWPA
No.1		1,100	550	170	570	725	1,100,000	400,000	
No.2		725	375	170	570	475	900,000	330,000	
Select Structural	Posts and Timbers	1,250	825	170	570	925	1,100,000	400,000	
No.1		1,000	675	170	570	800	1,100,000	400,000	
No.2		625	400	170	570	550	900,000	330,000	
NORTHERN PINE									
Select Structural	Beams and Stringers	1,250	850	135	435	850	1,300,000	470,000	NELMA NSLB
No.1		1,050	700	135	435	725	1,300,000	470,000	
No.2		675	350	135	435	450	1,000,000	370,000	
Select Structural	Posts and Timbers	1,150	800	135	435	900	1,300,000	470,000	
No.1		950	650	135	435	800	1,300,000	470,000	
No.2		550	375	135	435	375	1,000,000	370,000	
NORTHERN RED OAK									
Select Structural	Beams and Stringers	1,600	950	205	885	950	1,300,000	470,000	NELMA
No.1		1,350	675	205	885	800	1,300,000	470,000	
No.2		875	425	205	885	500	1,000,000	370,000	
Select Structural	Posts and Timbers	1,500	1,000	205	885	1,000	1,300,000	470,000	
No.1		1,200	800	205	885	875	1,300,000	470,000	
No.2		700	475	205	885	400	1,000,000	370,000	