

4.6 Determine the dressed size, area, moment of inertia, and section modulus for the following members. Give values for both axes. Tables may be used (cite reference).

- 2×4
- 8×8
- 4×10
- 6×16

Table 1 B used.

Nominal Size	Dressed	A (in ²)	I_x (in ⁴)	S_x (in ³)	I_y (in ⁴)	S_y (in ³)
2 x 4	1 1/2" x 3 1/2"	5.250	5.359	3.063	0.984	1.313
8 x 8	7 1/2" x 7 1/2"	56.25	263.7	70.31	263.7	70.31
4 x 10	3 1/2" x 9 1/4"	82.88	230.8	49.91	33.65	18.89
6 x 16	5 1/2" x 15 1/2"	85.25	1707.0	220.2	214.9	78.15

4.16 Give the reference design values for No.1 DF-L for the following sizes. List values for F_b , F_v , F_c , $F_{c\perp}$, F_c , E , and E_{min} . Give table reference.

- 10×10
- 12×14
- 4×16
- 4×4
- 2×10
- 6×12
- 6×8
- 10×14

see attached spreadsheet

4.18 Give the notation for the following adjustment factors. In addition, list the design properties (that is, F_b , F_v , F_c , $F_{c\perp}$, F_c , E , or E_{min}) that may require adjustment (NDS Table 4.3.1) by the respective factors.

- Size factor
- Time effect factor
- Load duration factor
- Repetitive member factor
- Temperature factor
- Wet service factor
- Flat-use factor

see attached sheet

Problem 4.16: No 1 DF-L (Douglas Fir Larch), WCLIB unless noted oththerwise. Values in psi.

Nominal (in)	Table 4A?	Table 4D?	Fb	Ft	Fv	Fcperp	Fc	E	Emin
10 by 10		P&T	1200	825	170	625	1000	1600000	580000
12 by 14		P&T	1200	825	170	625	1000	1600000	580000
4 by 16	X		1000	675	180	625	1500	1700000	620000
4 by 4	X		1000	675	180	625	1500	1700000	620000
2 by 10	X		1000	675	180	625	1500	1700000	620000
6 by 12		B&S	1350	675	170	625	925	1600000	580000
6 by 8		P&T	1200	825	170	625	1000	1600000	580000
10 by 14		B&S	1350	675	170	625	925	1600000	580000

Problem 4-18

Factor	Symbol	Notes
Size factor	C_s	
Time effect factor	λ	LRFD only
Load duration factor	C_D	ASD only
Repetitive member factor	C_r	
Temperature factor	C_t	
Wet service factor	C_M	
Flat-use factor	C_{Fu}	

Table 4.3.1 for LRFD

	C_M	C_t	C_L	C_F	C_{Fu}	C_i	C_p	C_T	C_b	K_F	ϕ	λ
Fb = Fb times	X	X	X	X	X	X				X	ϕ	λ
Ft' = Ft times	X	X		X	X	X				X	ϕ_b	λ
Fv' = Fv times	X	X			X	X				X	ϕ_t	λ
FC-perp = FC-perp times	X	X			X	X			X	X	ϕ_v	λ
Fc' = Fc times	X	X		X	X	X			X	X	ϕ_e	λ
E' = E times	X	X			X	X				X	ϕ_c	λ
E'min = Emin times	X	X			X	X		X		X	ϕ_c	λ