5.4-15. Suggestion: Use the 'Beam Deformation' option of the "General Analysis Module" of MDSolids to check your solution.
5.4-17. Suggestion: Use the 'Beam Deformation' option of the "General Analysis Module" of MDSolids to check your solution.
5.4-19. $V(x) = -p_0 L\left[\frac{2}{3} - \left(\frac{x}{L}\right) + \frac{1}{3}\left(\frac{x}{L}\right)^3\right]$,
$M(x) = p_0 L^2\left[\frac{1}{4} - \frac{2}{3}\left(\frac{x}{L}\right) + \frac{1}{2}\left(\frac{x}{L}\right)^2 - \frac{1}{12}\left(\frac{x}{L}\right)^4\right]$

5.5-1. Use the "Determinate Beams Module" of MDSolids to check your solution.
5.5-3. Use the "Determinate Beams Module" of MDSolids to check your solution.
5.5-5. Use the "Determinate Beams Module" of MDSolids to check your solution.
5.5-7. Use the "Determinate Beams Module" of MDSolids to check your solution. (Hint: Let $P = 1$ kip, and let $a = 1$ ft.)
5.5-9. Use the "Determinate Beams Module" of MDSolids to check your solution.
5.5-11. Use the "Determinate Beams Module" of MDSolids to check your solution.
5.5-13. Use the "Determinate Beams Module" of MDSolids to check your solution.
5.5-15. Use the 'Beam Deformation' option of the "General Analysis Module" of MDSolids to check your solution.
5.5-17. Suggestion: Use the "Determinate Beams Module" of MDSolids to check your solution. Enforce symmetry by using only the left (or right) half of the beam.
5.5-19. $M_1 = (3x_1)$ kip·ft, $M_2 = 3(5 - x_2)$ kip·ft

5.6-1 – 5.6-21. Section 5.6 is an optional section.

CHAPTER 6

6.2-1. (a) $\epsilon_{max} = 0.001041\frac{mm}{mm}$,
(b) $\epsilon_{max} = 0.001664\frac{mm}{mm}$
6.2-3. (a) $L_{min} = 1.571$ m, (b) $\epsilon_{max} = 1.571(10^{-3})\frac{mm}{mm}$
6.2-5. $\kappa' = \nu\kappa$

6.3-1. $\sigma_{max} = \dfrac{Eh}{(2r + h)}$

6.3-3. $h_{max} = 0.0497$ in.
6.3-5. (a) $\sigma_{maxT} = 69.4$ MPa, (b) $\rho = 181.4$ m,
(c) $\delta_{max} = 44.1$ mm
6.3-7. (a) $\sigma_A = -1700$ psi, (b) $\sigma_C = 1400$ psi,
$F_{top} = 11.55$ kips (C)
6.3-9. $(M_z)_{max} = 220$ kN·m, (b) $(M_y)_{max} = 75.6$ kN·m
6.3-11. $\sigma_A = -2.16$ ksi, $\sigma_B = 4.20$ ksi
6.3-13. (a) $\overline{\eta} = \dfrac{23a}{7}$, (b) $\sigma_{maxT} = \dfrac{483}{12,796}\dfrac{M}{a^3}$
(c) $F_{top} = \dfrac{108}{457}\left(\dfrac{M}{a}\right)$ (C)
6.3-15. $(\sigma_B)_{max} = 16.23$ ksi
6.3-17. $(\sigma_C)_{maxT} = 37.3$ MPa
6.3-19. $(\sigma_{B^-})_{maxT} = 9.28$ ksi, (b) $(\sigma_C)_{maxC} = -10.64$ ksi
6.3-21. (a) Use the "Determinate Beams Module" of MDSolids to check your solution for Part (a).
(b) $\sigma_{max} = 12.52$ ksi
6.3-23. $(\sigma_A)_{maxT} = 787$ psi, $(\sigma_A)_{maxC} = -2910$ psi
6.3-25. (a) Use the "Determinate Beams Module" of MDSolids to check your solution for Part (a).
(b) $\sigma_{max} = 3.14$ ksi
6.3-27. (a) Use the "Determinate Beams Module" of MDSolids to check your solution for Part (a).
(b) $\sigma_{max} = 18.00$ MPa
6.3-29. (a) Use the "Determinate Beams Module" of MDSolids to check your solution for Part (a).
(b) $\sigma_{max} = 11.18$ ksi
6.3-31. (a) Use the "Determinate Beams Module" of MDSolids to check your solution for Part (a).
(b) $\sigma_{max} = 35.8$ MPa
6.3-33. (a) Use the "Determinate Beams Module" of MDSolids to check your solution for Part (a).
(b) $\sigma_{maxT} = 1.457$ ksi $\sigma_{maxC} = -1.165$ ksi
σ_{maxT} occurs at $x = 3$ ft; σ_{maxC} occurs at $x = 6$ ft.
6.3-35. Letting $w = 1$ kN/m, use the "Determinate Beams Module" of MDSolids to check your solution for $M(x)$. $w_{max} = 108.1$ kN/m
6.3-37. (a) $\dfrac{\sigma_{xmax}}{\sigma_{ymax}} = 3\left(\dfrac{x}{h}\right)^2$, (b) ——

6.3-39. Use MDSolids.
6.3-41. Use MDSolids.

6.4-1. W16 × 40, $(S = 64.7\,in^3)$
6.4-3. $S_{design} = 1667(10^3)\,mm^3$, W 610 × 92
6.4-5. (a) $S = \dfrac{b(nt)^2}{6}$, (b) $n = 5$ planks
6.4-7. $b_{min} = 230$ mm
6.4-9. $S_{design} = 36.0\,in^3$, W 12 × 35
6.4-11. $b = \dfrac{\sqrt{3}}{6}d$, $h = \dfrac{\sqrt{6}}{3}d$

6.4-13. (a) $b = 0.838$ m,
(b) $S_{design} = 314(10^3)\,mm^3$, W 310 × 33
6.4-15. $P_{allow} = 1.692$ kips

6.5-1. $(\sigma_{max})_w = 509$ psi, $(\sigma_{max})_s = 11.20$ ksi
6.5-3. $P_{allow} = (P_{allow})_s = 57.7$ kN
6.5-5. $(\sigma_{max})_a = \dfrac{24M}{bh^2(1 + 7n)}$, $(\sigma_{max})_b = \dfrac{48Mn}{bh^2(1 + 7n)}$