A First Course in the Finite Element Method

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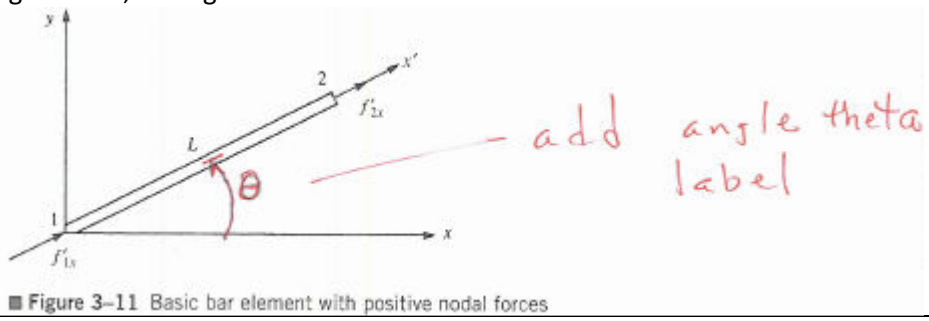
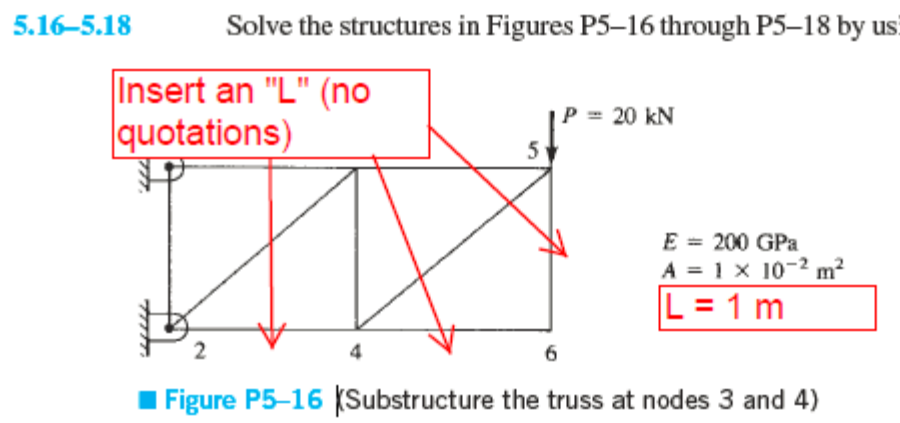
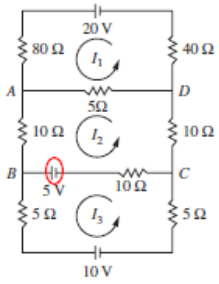
Errata for First and Second Printings

Page Number	Correction Description	Printing Affected
79	In the first line, “rectangular plane” should be “plane quadrilateral”	1
90	In Figure 3-11, an angle theta should be added as shown:  ■ Figure 3–11 Basic bar element with positive nodal forces	1
173	In Equation (4.1.2), remove the term “a_3x^2 +”	1&2
187	In the first line of Equation (4.3.15), “20,000” should be “25,000”	1
200	Delete the superscript 2 that follows “-6L”in Equation (4.4.12)	1
200	Delete the superscript 2 that follows “-6L”in Equation (4.4.13)	1
207	In Equation (4.4.31), delete the third to last column and add a minus sign before the rightmost “6L” in the bottom row	1
209	In Equation (4.5.4), add a subscript “1” following “*C*”	1&2
209	In Equation (4.5.5), the x in the second to last term should not be in subscript	1
209	In the first line of Equation (4.5.9), “rac” should be “rad”	1
221	In the equation 7 lines from the bottom, “-5” should be “-10”	1
229	Near the bottom of the page, “Compute Answers with P4—5” should be “Compute Answers with P4—7”	1
235	In Problem 4.38, insert “Let $E = 200$ GPa.” after “of the span.”	1&2
308	Replace the current version of Figure P5–16 with the version shown  ■ Figure P5–16 (Substructure the truss at nodes 3 and 4)	1&2
344	In the first line of Equation (6.2.2), “a_2” should be “a_2x”	1
346	In Equation (6.2.15), the middle term of the top row of the matrix should be “$\alpha_j u_j$” instead of “$\alpha_i u_j$”	1
346	Two lines under Equation (6.2.15), “α_1” should be “α_i”	1
382	A minus sign (-) should be inserted after the equal sign in Equation (6.2.43)	1
384	In Problem 6.4, “v^2” should be “v_2“	1

385	In Problem 6.9, "u_3" should be "u_2"	1
389	In Problem 6.15, remove "on the next page" from the second and third lines	1
484	In Figure P9–26b, change "(0, 1, 0)" near the bottom of the figure to "(0, 0, 1)	1&2
531	In Problem 10.6, the reference to "P10–5" in the first line should be to "P10–6"	1&2
617	In Equations (13.4.47a) and (13.4.47b), add "Btu/h" at the end of the equations	1&2
655	In Figure P13-2, insert "h, T_∞" at the right side of the first diagram	1&2
656	In Problem 13.4, change "50°F" to "100°F"	1&2
724	In Figure P14-17, swap the long and short lines where shown  ■ Figure P14–17	1&2
757	In Figure P15-12, insert the following above the figure: E_{brass} = 15 X 10^6 psi, α_{brass} = 11.3 X 10^{-6}/°F $E_{magnesium}$ = 4.5 X 10^6 psi, $\alpha_{magnesium}$ = 14.5 X 10^{-6}/°F	1&2
850	Add prime symbols as shown below: Add primes $a'_{21} = a_{21} - a_{11}\frac{a_{21}}{a_{11}} = 2 - 2\left(\frac{2}{2}\right) = 0$ $a'_{22} = a_{22} - a_{12}\frac{a_{21}}{a_{11}} = 1 - 2\left(\frac{2}{2}\right) = -1$ $a'_{23} = a_{23} - a_{13}\frac{a_{21}}{a_{11}} = 0 - 1\left(\frac{2}{2}\right) = -1$ $a'_{24} = a_{24} - a_{14}\frac{a_{21}}{a_{11}} = 4 - 9\left(\frac{2}{2}\right) = -5$ (B.3 Note that these new coefficients correspond to those of the second of Eqs. (B.3. where the right-side as of Eqs. (B.3.18) are those from the previous step [here f Eqs. (B.3.16)], the right side a_{24} is really $c_2 = 4$, and the left side a_{24} is the new c_2 = For $k = 1, i = 3$, and j indexing from 1 to 4, $a'_{31} = a_{31} - a_{11}\frac{a_{31}}{a_{11}} = 1 - 2\left(\frac{1}{2}\right) = 0$ $a'_{32} = a_{32} - a_{12}\frac{a_{31}}{a_{11}} = 1 - 2\left(\frac{1}{2}\right) = 0$ $a'_{33} = a_{33} - a_{13}\frac{a_{31}}{a_{11}} = 1 - 1\left(\frac{1}{2}\right) = \frac{1}{2}$ $a'_{34} = a_{34} - a_{14}\frac{a_{31}}{a_{11}} = 6 - 9\left(\frac{1}{2}\right) = \frac{3}{2}$ (B.3	1
851	Add double prime symbols as shown below: $a''_{32} = a_{32} - a_{22}\left(\frac{a_{32}}{a_{22}}\right) = 0 - (-1)\left(\frac{0}{-1}\right) = 0$ $a''_{33} = a_{33} - a_{23}\left(\frac{a_{32}}{a_{22}}\right) = \frac{1}{2} - (-1)\left(\frac{0}{-1}\right) = \frac{1}{2}$ $a''_{34} = a_{34} - a_{24}\left(\frac{a_{32}}{a_{22}}\right) = \frac{3}{2} - (-5)\left(\frac{0}{-1}\right) = \frac{3}{2}$	1
909	In 3.16, add prime symbols as shown below:	1

	3.16 a. $u_1' = 0.3536$ in., $u_2' = 0.707$ in. b. $u_1' = 0.433$ in., $u_2' = -0.1585$ in.	
913	In 4.7, “-1.344” should be “-0.672”, “0.0072” should be “0.0036”, and “0.0024” should be “0.0012”	1
914	In 4.12, “7230” should be “2230” and the “-” before “534” should be removed	1
914	In 4.13, “-0.014” should be “-0.0159”	1
915	In 4.28, “-20.3” should be “-46.9”, and “at midspan of AB” should be inserted right below “at midspan of BC”	1
915	In 4.31, “-0.495” should be “-0.0137”, “at C” should be “at midspan of BC”, “5625” should be “4821”, “at A” should be “at B”, and the last line should be removed	1
917	In the final line for the solution of Problem 5.5, insert “-” before “2171 k-in.”	1&2
917	In 5.6, “-0.0363” should be “-0.063”	1
917	In the fourth line of Problem 5.6’s solution, “58.31 kip” should be “28.31 kip”	1&2
922	In the answer for 6.7b, change all instances of “MPa” to “GPa”	1&2
923	For part e of Problem 6.9, “-3.73 ksi” should be “-4.73 ksi”	1&2
923	In the first line of part c for Problem 6.14, “-1.63” should be “-3.256”	1&2
926	Change the answer for 9.4a to “σ_r = 25800 psi, σ_z = 5400 psi, σ_ϑ = 25800 psi, τ_{rz} = -5400 psi”	1&2
926	Change the answer for 9.4b to “σ_r = 3514 psi, σ_z = -85.7 psi, σ_ϑ = 2143 psi, τ_{rz} = -700 psi”	1&2
926	In the answer for 9.4c, change “τ_{rz} = 900 psi” to “τ_{rz} = 0”	1&2
927	Change the answer for 9.7a to “σ_r = -75.6 MPa, σ_z = -58.8 MPa, σ_ϑ = 92.4 MPa, τ_{rz} = -58.8 MPa”	1&2
927	Change the answer for 9.7b to “σ_r = -72.8 MPa, σ_z = -50.4 MPa, σ_ϑ = 39.2 MPa, τ_{rz} = -39.2 MPa”	1&2
927	Change the answer for 9.7c to “σ_r = -2100 MPa, σ_z = -1260 MPa, σ_ϑ = 1260 MPa, τ_{rz} = -1050 MPa”	1&2
927	In the answer for Problem 10.5, change the current “c.” to “d.” Then insert the following before the new “d.”: “c. u = 0.0024 in.”	1&2
927	In the answer for Problem 10.8, change “4.859” to “3.885”. Change “2.793” to “2.916”. After “(center)”, insert a comma and then “σ = 39.9 MPa at x = 0”	1&2