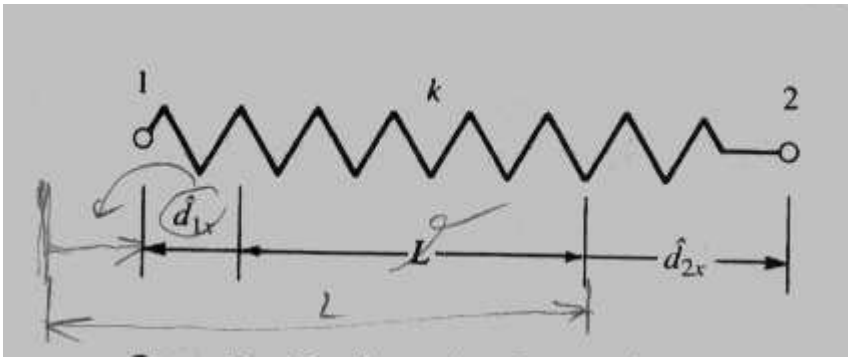
Partial List of Errata

(Updated Dec. 5, 2009)

A First Course in the Finite Element Method, Fourth Edition, Logan, D. L., Thomson, 2007.
(**First printing**)

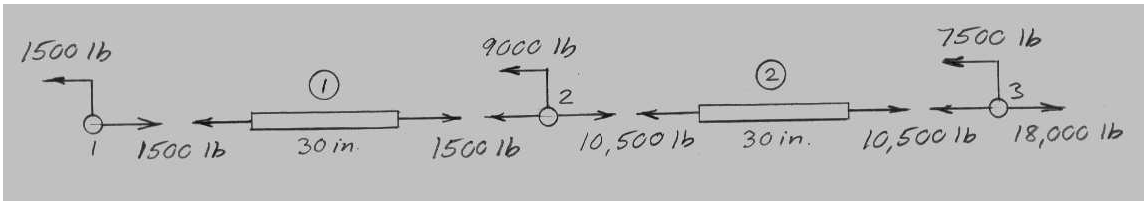
p. 1	Para. 1, line 1	"problems" should read "boundary-value problems".
p. 1	Para. 2, line 1	"problems" should read "boundary-value problems".
p. 1	Para. 2, line 10	"problem" should read "time-independent boundary-value problem".
p. 33	Figure 2-5	Should be



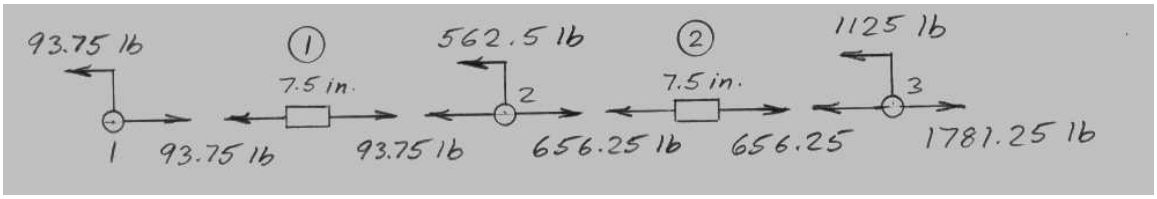
p. 33	Para. 1, line 2	"negative" should read "positive".
p. 33	Para. 1, line 3	"opposite" should read "in".
p. 33	Para 1, line 3	"whereas" should read "and"..
p. 33	Para 1, line 3	"is" should read "is also".
p. 35	Eq. (2.3.1)	Left-hand side should read: $\begin{Bmatrix} f_{1x}^{(1)} \\ f_{3x}^{(1)} \end{Bmatrix}$
p. 35	Eq. (2.3.2)	Left-hand side should read: $\begin{Bmatrix} f_{3x}^{(2)} \\ f_{2x}^{(2)} \end{Bmatrix}$

p. 37	Eq. (2.4.2)	Right-hand side should read: $\begin{Bmatrix} f_{1x}^{(1)} \\ 0 \\ f_{3x}^{(1)} \end{Bmatrix}$
p. 37	Eq. (2.4.3)	Right-hand side should read: $\begin{Bmatrix} 0 \\ f_{2x}^{(2)} \\ f_{3x}^{(2)} \end{Bmatrix}$
p. 44	Fig. 2-10 (b)	Arrows should be reversed.
p. 45	Fig. 2-12 (b)	Arrows should be reversed.
p. 46	Figure 2-13	This figure is supposed to represent what is the *given* data. Therefore, the symbol "F_{3x}" should be removed together with the arrow, and "δ" should be represented by an arrow pointing to the right.
p. 50	Last paragraph	Should read: "Consider the simple spring assemblage in Figure 2-16 subjected to an applied force $F_{2x} = P$, and a horizontal displacement $d_{1x} = \delta$." *Note: You can never subject a node, in the same direction, simultaneously to a* ***given*** *external force* ***and*** *a* ***given*** *displacement. When one is given the other is an unknown.*
p. 51	Figure 2-16	This figure is supposed to represent what is the *given* data. Therefore, the symbol "F_{1x}" should be removed together with the arrow, and "F_{2x}" should be replaced by the symbol "*P*".
p. 51	Figue 2-17	"F_{1x}" should read "$F_{1x} = k_b\delta$", and "F_{2x}" should read "*P*".
p. 51	Line below Fig. 2-17	Line should read: "Now we apply the force $F_{1x} = k_b\delta$ at node 1 in the direction of …".
p. 51	Eq. (2.5.55)	The term "F_{1x}" on the left-hand side should be deleted, and "F_{2x}" should read "*P*".
p. 51	Eq. (2.5.56)	"F_{2x}" should read "*P*".

p. 51	Eq. (2.5.57)	The term "$F_{1x}k_1$" on the right-hand side, in the numerator, should be deleted, and "F_{2x}" should read "P".
p. 52	Eq. (2.5.58)	"F_{2x}" should read "P".
p. 59	Example 2.5, Para. 2	"Eq. (2.6.10)" should read "Eq. (2.6.13)".
p. 62	Problem 2.7	"Figure P2-3" should read "Figure 2-3".
p. 64	Figure P2-19	Should read "$k = 1000$ lb/in^2".
p. 66	Figure 3-2	Delete "$\hat{T}_x = C\hat{x}$ (force/length)".
p. 72	Sect. 3.2, para. 1, last line	"[1-3]." should read "[1-3].)".
p. 105	Eqs. (3.9.8) through (3.9.13)	"f" should read "F" everywhere.
p. 122	Para "5."	Should read: "The axial stress is not continuous at the locations of the nodes because the external forces equivalent to the distributed load are applied at the nodes as concentrated forces. This is shown in Figure 3-34 for elements 1 and 2 in the two-element solution, and elements 1 and 2 in the eight-element solution. As the number of elements used increases, the discontinuity in the axial stress decreases at the node locations."
p. 123	Figure 3-34	Replace the bottom part of (a) with:



p. 123	Figure 3-34	Replace the bottom part of (b) with:



p. 125 Para. 3, line 2	"independent" should read "dependent".
p. 125 Para. 5, line 2	"independent" should read "dependent"
p. 140 Figure P3-32	The answers in the book are for the truss when the right-hand support is a *pinned* support with $d_{5x} = 0$, not a *roller* support as shown with $d_{5x} \neq 0$.
p. 152 Sect. 4.1, line 1	"simple" should read "conventional".
p. 152 Sect. 4.1, para. 3	"following sign" should read "following FEM sign".
p. 152 Last sentence	"simple" should read "conventional".
p. 152 Fig. 4-2	"Beam" should read "Conventional beam".
p. 153 Fig. 4-3	In figure (b), the lines *a'-c'* and *b'-d'* should be perpendicular to both the top and bottom curved fibers of the beam. Furthermore, angle $\hat{\phi}$ is measured from the vertical line to the line that is an extension of line *a'-c'*.
p. 155 Line 3 below Eq. (4.1,2)	"equation" should read "equation (4.1.1h)".
p. 156 Fig. 4-5	"$-\hat{y}$" is a position coordinate and so it should be represented by an arrow downward.
p. 157 Eq. (4.1.11)	"$\hat{m}(x)$" should read "$\hat{M}(x)$" to be consistent with Eq. (4.1.1f)
p. 157 Eq. (4.1.12)	"$\hat{V}$" should read "$\hat{V}(0)$". "$-\hat{m}$" should read "$-\hat{M}(0)$". "$-\hat{V}$" should read "$-\hat{V}(L)$". "$\hat{m}$" should read "$\hat{M}(L)$".
p. 160 Eq. (4.1.15)	"$-\hat{m}(0)$" should read "$-\hat{M}(0)$". "$\hat{m}(L)$" should read "$\hat{M}(L)$".
p. 163 Fig. 4-8	*x* - *y* axes should be added with origin at node 1.

p. 172 Last paragraph	This paragraph should come AFTER Fig. 4-17.
p. 176 Fig. 4-23	In figures (a) and (b), all supports shown should be deleted. All overhangs, on the left and right ends, should be deleted. Figure (c) should be deleted. The (a) part of the title should read: "(a) The distributed load on the beam". The (c) part of the title should be deleted.
p. 176 Line 7	The sentences starting with "If we want to …" should be deleted all the way to the end of the paragraph.
p.176 Last para,, line 4	"nodal loads" should read "the element internal nodal loads".
p. 179 Para. 2, line 7	"forces" should read "loads". "($F = 0$)" should be deleted.
p. 179 Para 2, line 8	"Eq. (4.4.8)" should read "Eq. (4.4.8) in partitioned form as [see Eq. (2.5.13)]"
p. 179 Eq. (4.4.9)	Should read: $\left(\underline{F}_0\right)_1 = \underline{K}_{11}\underline{d}_1$
p. 179 Line below Eq. (4.4.9)	"$\underline{d}$" should read "$\underline{d}_1$".
p. 180 Fig. 4-26	All minus signs in (b) should be deleted.
p. 181 Line 3	"displacement and rotation" should read "displacement and rotation at the nodes".
p. 182 Example 4.7, line 1	"cantilever beam" should read "single cantilever beam element".
p. 183 Fig, 4-27	All minus signs in (b) should be deleted. "Cantilever beam" should read "Single cantilever beam element".
p. 183 Eq. (4.4.20)	Arrows should be deleted.
p. 184 Fig. 4-28	All minus signs in (b) should be deleted.
p. 185 Eq. (4.4.25)	Arrows should be deleted.
p. 186 Fig. 4-29	All minus signs in (b) should be deleted.

p. 191 Line 1	"bound on" should read "bound on the absolute value of".
p. 191 Eq. (4.5.16)	The "*x*" subscripts should be "*y*" subscripts.
p. 193 Fig. 4-32	All minus signs in (b) should be deleted.
p. 199 Fig. 4-35	Arrows of $\hat{T}_y$ should be up.
p. 209 Top of page	"**4.25-31**" should read "**4.25-30**".
p. 227 Eq. (5.2.23)	Results on far right should read: $\hat{m}_1 = -381.5 \text{ k - in.}$, $\hat{m}_2 = -769.5 \text{ k - in.}$
p. 227 Eq. (5.2.27)	"-832.57" should read "-830.5", and "-412.50" should read "-419.1".
p. 228 Eq. (5.2.28)	"-832.57" should read "-830.5", and "-412.50" should read "-419.1".
p. 228 Eq. (5.2.29)	Results on far right should read: $\hat{m}_2 = 769.5 \text{ k - in.}$, $\hat{m}_3 = -2019 \text{ k - in.}$
p. 308 Fig. 6-5	Displacements *u*, $u + \frac{\partial u}{\partial x} dx$ and $\frac{\partial u}{\partial y} dy$ should all be indicated with arrows pointing to the right. Displacements *v*, $v + \frac{\partial v}{\partial y} dy$ and $\frac{\partial v}{\partial x} dx$ should all be indicated with arrows pointing up.
p. 311 Line below Eq. (6.2.2)	"(x_i, y_i)" should read "(x, y)".
p. 315 Fig. 6-9 (b)	The last two rectangles at the end of the bent beam should be inline with the fourth rectangle from the wall.
p. 318 Line below Eq. (6.2.40)	Delete line starting with "where".
p. 326 Eq. (6.3.9)	"evaluated at $x = a$, $y = y$" should read "evaluated along $x = a$".
p. 326 Bottom of page	"As the surface …" should read "As the surface

		traction *p* acts along the edge $x = a$ from $y = 0$ to $y = L$, we evaluate the shape functions along $x = a$ and integrate over …”.
p. 327	Eqs. (6.3.10) and (6.3.11)	“evaluated at $x = a$, $y = y$” should read “evaluated along $x = a$
p. 328	Line 2 below Eq. (6.3.17)	Should read “uating N_1, N_2, and N_3 along $x = a$ (the edge corresponding to the …”.
p. 331	Last paragraph	“$F = \frac{1}{2}TA$” should read “$F = \frac{1}{2}TS$”.
p. 332	Eq. (6.5.2)	“d_{1x}” should read “u_1”, “d_{1y}” should read “v_1”, etc.
p. 338	Eqs. (6.5.23) through (6.5.27)	“d_{3x}” should read “u_3”, “d_{3y}” should read “v_3”, etc.
p. 339	Eq. (6.5.29)	“d_{1x}” should read “u_1”, “d_{1y}” should read “v_1”, etc.
p. 340	Eq. (6.5.32)	“d_{1x}” should read “u_1”, “d_{1y}” should read “v_1”, etc.
p. 342	Para. 3, line 3	“LST (“ should read “LST (linear-strain triangle”.
p. 554	Figure 13-16	The downward arrowheads should be deleted.
p. 774	Problem numbers	“2.7 through 2.17” should read “2.8 through 2.18” consecutively. (*Fixed in later printings.)*
p. 774	Missing answer for 2.7	Answer is same as Eq. (2.2.18).
p. 775	Problem numbers	“2.18 through 2.20” should read “2.19 through 2.21” consecutively. (*Fixed in later printings.)*
p. 777	Answer 3.22	“422” should read “423” (two places), “1570” should read “1577”, “574” should read “-577”, “996” should read “1000”.
p. 781	Answer 4.21	“k-in.” should read “kip-ft”.

p. 782 Answer 5.2 $d_{3x:} = 0.686$ in.

p. 782 Answer 5.3 Channel section 6 × 10.5 based on $M_{\max} = 106{,}900$ lb - in.

p. 783 Answer 5.5 $M_3 = -2171$ kip - in.

p. 785 Answer 5.31 Should read: $d_{2x} = 3.20 \times 10^{-4}$ in., $d_{2y} = -1.319 \times 10^{-3}$ in., $\phi_2 = -2.28 \times 10^{-4}$ rad

p. 788 Answer 7.23 A "strength of materials" calculation gives $o_1 = 5.1$ MPa at the hole. A Patran/Nastran FEM model gives 5.8 MPa.