SEAOC Seismic Design Manual (1997 UBC Version)
Errata No. 1 for Volume II

Page 10, References.

Add the following reference to listing:

AF &PA, 1996, American Forest and Paper Association, *LRFD Load and Resistance Factor Design – Manual for Engineered Wood Construction,* Washington, D.C.

Page 38, Design Example 1, Note 7.

Line 5, change to read:

$\gamma = (270{,}000)(1)^{1.5} = 270{,}000$ lb/in.

Page 52, Design Example 1.

Line 10, change the *R* to *k* to read: "Using the rigidity values *k* from Table 1-8…"

Page 52, Design Example 1.

After the expression " $\bar{y}_r = \frac{1700.9}{67.69} = \underline{\underline{25.1\,\text{ft @ roof}}}$ ", insert the following:

Using the rigidity values *k* from Table 1-8 and the distance *x* from line 1 to the shear wall:

Page 60, Design Example 1, Item 6.

Change the second paragraph to read:

For shear walls, the ratio for the wall with the largest shear per foot at or below two-thirds the height of the building is calculated. Or in the case of a two-story building, both levels. The value of r_{max} is computed from the total lateral load in the wall is multiplied by $10/l_w$ and divided by the story shear.

Page 60, Design Example 1.

Last line, change from: " A_B = 1,542 sf " to
" A_B = 2,378 sf (including all covered overhangs and projections) "

Page 61, Design Example 1.

Insert the following before the first line:

For ground level.

Page 61, Design Example 1.

Line 2, change to:

"Using strength-level forces for wall B: "

Page 61, Design Example 1.

Line 4, change to:

$$\tilde{n} = 2 - \frac{20}{0.26\sqrt{2,378}} = \underline{0.42} < 1.0 \text{ minimum} \quad o.k.$$

Page 61, Design Example 1.

Line 16, change to:

$$\tilde{n} = 2 - \frac{20}{0.31\sqrt{2,378}} = \underline{0.68} < 1.0 \text{ minimum} \quad o.k.$$

Page 61, Design Example 1.

Before item 7, insert the following:

For second level.

For east-west direction:

Using strength-level forces for wall B:

$$r_{max} = \frac{19,029\,(10/14.0)}{36,950} = 0.37$$

$$\tilde{n} = 2 - \frac{20}{0.37\sqrt{2,378}} = 0.89 < 1.0 \text{ minimum} \quad o.k.$$

$$\therefore \tilde{n} = \underline{\underline{1.0}}$$

For north-south direction:

$$r_{max} = \frac{6{,}112\,(10/15.0)}{14{,}800} = 0.28$$

$$\tilde{n} = 2 - \frac{20}{0.28\sqrt{2{,}378}} = 0.53 < 1.0 \text{ minimum} \quad o.k.$$

$$\therefore\ \tilde{n} = \underline{\underline{1.0}}$$

Therefore, for both directions there is no increase in base shear required due to lack of reliability/redundancy.

Page 62, Design Example 1.

Line 15, change to read:

$$F_p\ floor = \frac{(36{,}950 + 9{,}800) \text{ x } 39{,}000}{(39{,}000 + 64{,}000)} = 17{,}701 \text{lb (governs)}$$

Page 74, Design Example 1.

Line 13, change to read:

$$\text{Therefore, uplift} = \frac{(104{,}904) - (8{,}833 \text{x } 0.9)}{(10.0 \text{ ft} - 0.3 \text{ ft})} = 9{,}995 \text{lb}$$

Page 74, Design Example 1.

Line 20, change to read:

$$\text{Number of 10d common nails required} = \frac{9{,}995\,lb}{115 \text{ lb/nail}(1.7)(1.33)} = 38.4 \text{ nails}$$

Page 74, Design Example 1.

Bottom of page, add the following comment:

It is not clear in the code whether the E_m force needs to be applied to the tiedowns for shear walls. The SEAOC Seismology Committee is currently considering this issue. The reader should also see the commentary for Example 28 of Seismic Design Manual Volume I.

Page 75, Design Example 1.

Fifth line from bottom change to:

$v_E = 11{,}045 \text{ lb}/(28.0) = 394 \text{ plf} > 370 \text{ plf (for unblocked)}$ *n.g.* 96 AF & PA Table 5.5

Page 75, Design Example 1.

Third line from bottom change:

"Table 23-II-H" to "Table 5.5"

Page 76, Design Example 1.

Delete the first paragraph, and replace with the following:

> The code requires the same force (E_M) to be used regardless if strength or allowable stress design is used. ASCE 16, Load and Resistance Factor Design Standard for Engineered Wood Construction, is listed as a design standard in Section 2303 of the UBC. The AF&PA LRFD manual is based upon ASCE 16. From Table 5.5 of the LRFD manual, the factored shear resistance diaphragm shear for 19/32-inch APA sheathing, with 10d common wire nails spaced at 6-inch centers, and blocked edges, is 420 plf. Note that this is similar to using the allowable shear value of 320 plf (Table 23-II-H, 1997 UBC) and dividing by 1.25 for load duration and multiplying by 1.7 for allowable stress increase, i.e.,
> $\left(\frac{320}{1.25}\right) 1.7 = 435 \text{ plf.}$

Page 76, Design Example 1.

Line 4, change to read:

420 plf > 394 plf *o.k.*

Page 77, Design Example 1:

Figure 1-19, add sill plate and GLB cross-section symbols:

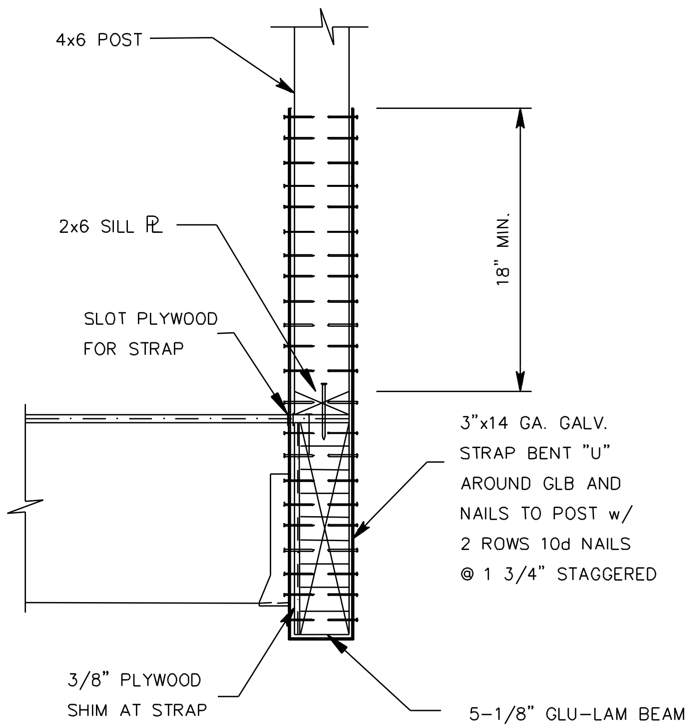

Figure 1-19. Detail of anchorage at point A (see also Figure 1-18)

Page 90, Design Example 2.

Third line from bottom of page, change to:

$W_{3rd\,floor} = 230{,}000$ lb

Page 97, Design Example 2.

Figure 2-5, change note at top of figure pointing to the roof trusses to read:

PREMANUFACTURED
WOOD ROOF TRUSSES
@16”o/c

Page 138, Design Example 2.

Line 11, change the equation from:

$$"09D \pm \frac{E}{1.4}" \text{ to } "\underline{0.9}D \pm \frac{E}{1.4}"$$

Page 140, Design Example 2.

Second line, change:

$$"P_{max} = 2{,}028\,\text{lb}" \text{ to } "P_{max} = \underline{2{,}128\,\text{lb}}"$$

Page 140, Design Example 2.

Line 6, change:

"2,028lb/2 x 187 =5.4 nails" to "<u>2,128</u>lb/2 x 187 = <u>5.7</u> nails"

Page 140, Design Example 2.

Line 13, change:

$$"f_c max = 2{,}028\,\text{lb}/(1.5 \leftrightarrow 3.5) = 386\,\text{psi} < F_c \;\; = 625\,\text{psi} \;\; o.k"$$

to:

$$"f_c max = \underline{2{,}128}\,\text{lb}/(1.5 \leftrightarrow 3.5) = \underline{405}\,\text{psi} < F_c \;\; = 625\,\text{psi}\; o.k."$$

Page 143, Design Example 2.

Line 7, change:

$$"T_y = 7{,}110 \leftrightarrow 1.4 \leftrightarrow 1.3 = 13{,}000\,\text{lb}" \text{ to } "\underline{T_u} = 7{,}110 \text{ x } 1.4 \text{ x } 1.3 = 13{,}000\,\text{lb}"$$

Page 152, Design Example 2, Item 19.

Replace the paragraph with the following:

> Section 2304.3 of the 1997 UBC appears to have changed the requirements for corrosion-resistant fasteners in treated sill plates. Although it does not appear to be the intent of the provision, a literal interpretation of the section would require hot-dipped zinc coated galvanized nails and anchor bolts. During the re-write of the wood chapter from the 1994 UBC to the 1997 UBC, the exception (§2311.1 in the 1994 UBC) unexplainably was omitted. The code change was proposed by

the wood industry, and §2304.3 is from a report in the Wood Handbook by the Forest Products Lab where fasteners were found to react with the preservative treatment when "… in the presence of moisture…" However it is uncertain whether a sill plate in a finished "dried-in" building is " in the presence of moisture." This can create a construction problem because hot-dipped zinc coated nails have to be hand driven, requiring the framer to put down his nail gun and change nailing procedures. The wording in the 2000 IBC is the same as the 1997 UBC. The SEAOC Code Committee is currently looking into this issue.

Page 164, Design Example 2.

Line 6, change:

"= 595,000 lb " to "$\underline{W}$ = 595,000 lb"

Page 164, Design Example 2.

Line 4, change:

"grade 33'-4"x 18-gauge metal studs" to "grade <u>33</u>-4"x18-gauge metal studs"

Page 198, Design Example 3, Item 7.

Line 4, change:

"Uplift = 3,770 lb" to "Uplift = $\underline{5{,}275}$ lb"

Page 199, Design Example 3.

Line 5, change:

"3,770/395 = 9.5" to "$\underline{5{,}275}$ /395 = $\underline{13.4}$"

Line 6, change:

" Use 12 minimum" to " Use <u>14</u> minimum"

Page 199, Design Example 3:

Line 12, change:

"$(1.75 + (1 + 12)1.75 + 1.75)2 + (1.5 + 0.75 + 12) = 65.0$" to

"$(1.75 + (1+\underline{14})1.75 + 1.75)2 + (1.5 + 0.75 + 12) = \underline{73.7}$"

Line 13, change :

" Use 72-inch-long strap" to " Use 74-inch-long strap"

Page 200, Design Example 3.

Figure 3-9, change the minimum dimension for the strap lengths from 29 inches to 30 inches.

Page 202, Design Example 3.

Figure 3-10, change the number of boundary studs from 5 to 6:

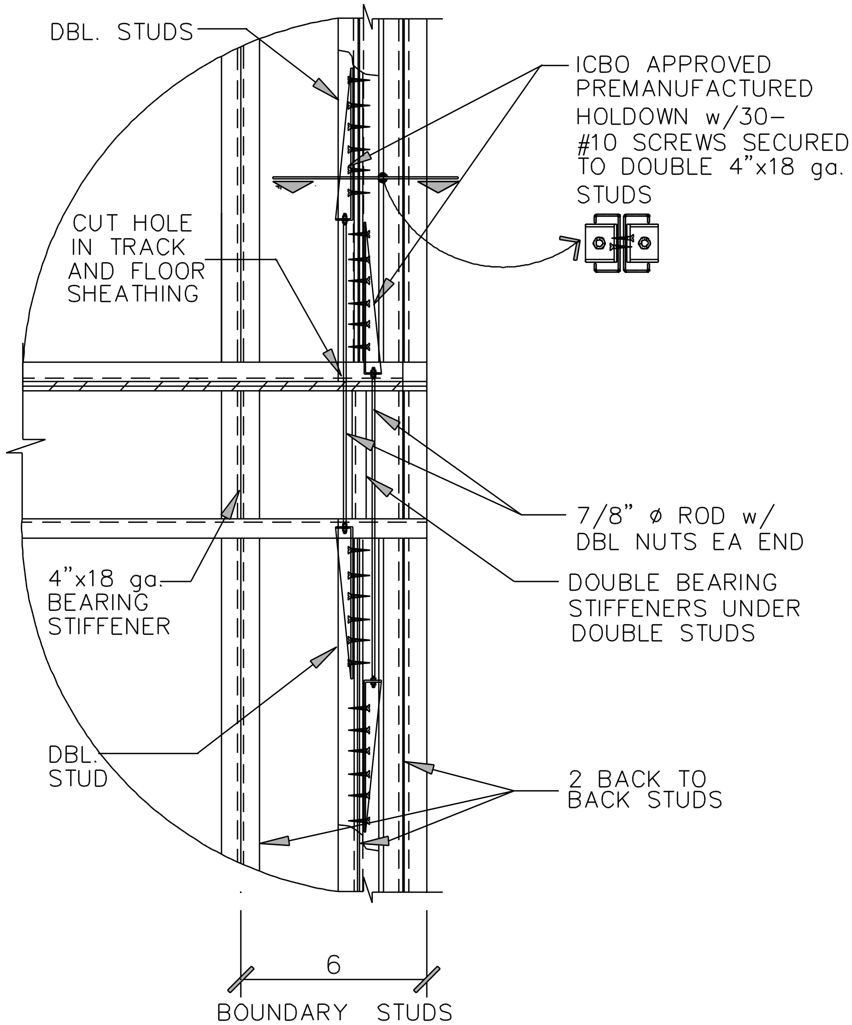

Figure 3-10. Typical tiedown connection at the second floor on line C

Page 203, Design Example 3.

Line 7, change:

"$\Omega_0 P_E$ = 815,696 ft – lb / (21.0 ft) (1.4) = 27,745 lb" to

"$\Omega_0 P_E$ = <u>815,696 ft – lb / (21.0 ft) = 38,845 lb</u>"

Page 203, Design Example 3.

Line 9, change:

"1.0(405) + 0.7 (145) + 27,745 = 28,250 lb" to

"1.0(405) + 0.7 (145) + <u>38,845</u> = <u>39,350</u> lb"

Page 203, Design Example 3.

Line 12, change:

"No. of studs required $= \dfrac{28{,}250}{4{,}042 \times 1.7} = 4.1$" to

"No. of studs required $= \dfrac{39{,}350}{4{,}042 \times 1.7} = 5.7$"

Page 203, Design Example 3.

Last two lines, change to read:

Therefore, use 6 studs at ends of wall as follows:

Use 2 back-to-back studs plus two pairs of 2 back-to-back studs
(See Figure 3-10).

Page 204, Design Example 3.

Line 7, change:

" $Z = 119$ lb/screws " to " $Z = 119$ lb/<u>screw</u> "

Page 205, Design Example 3.

Last line, change from:

" $P_n = 2.22(45)(0.625)(0.0451) = 282\dfrac{\text{k}}{\text{bolt}}$ " to " $P_n = 2.22(45)(0.625)(0.0451) = \underline{2.82}\dfrac{\text{k}}{\text{bolt}}$ "

Page 222, Design Example 4.

At the bottom of the page add the following:

$C_a = .53$, $R_p = 3.0$, $a_p = 1.0$

Page 223, Design Example 4.

Line 4, revise to read:

$$\underline{0.333}C_a I_p W_p \leq 0.7 C_a I_p W_p$$

Page 226, Design Example 4.

Line 10, revise equation to read:

$$c = \frac{a}{.85} = \frac{0.77in.}{.85} = 0.91in.$$

Line 13, revise to read:

$$= \frac{96in.(0.91in.)^3}{3} + (15.46)(2.62in.^2)(3.81in. - 0.91in.) = 365in.^4$$

Page 227, Design Example 4.

Revise Equation (8-20) to read:

$$M_u = M_{out-of-plane} + M_{eccentric} = 1.1(186{,}360lb - in) + 1.62(7{,}650lb)(6in.)/2 = 242{,}175lb - in.$$

Revise equation on lines 10 and 11 to read:

$$\Delta_u = \frac{5(186{,}050lb - in.)(192in.)^2}{48(1{,}875{,}000psi)(3546.6in.^4)} + \frac{5(242{,}175lb - in. - 186{,}050lb - in.)(192in.)^2}{48(1{,}875{,}000psi)(365.0in.^4)}$$

$$= 0.11in. + 0.31in. = 0.42in.$$

Revise second iteration for moment and deflection at the bottom of the page:

$$M_u = 242{,}175lb - in + 44{,}955lb(0.42in.) = 261{,}162lb - in.$$

$$\Delta_u = 0.11in. + \frac{5(261{,}162lb - in - 186{,}050lb - in)(192in.)^2}{48(1{,}875{,}000psi)(365.0in^4)}$$

$$= 0.11in. + 0.42in. = 0.53in.$$

Page 228, Design Example 4.

At top of page, revise third iteration for moment and deflection:

$$M_u = 242{,}175lb - in + 44{,}955lb(0.53in.) = 265{,}951lb - in.$$

$$\Delta_u = 0.11in. + \frac{5(265{,}951lb - in - 186{,}050lb - in)(192in.)^2}{48(1{,}875{,}000psi)(365.0in^4)}$$

$$= 0.11in. + 0.45in. = 0.56in.$$

Line 7, revise calculation of final wall moment:

$$M_u = 242{,}175lb - in + 44{,}955lb(0.56in.) = 267{,}159lb - in.$$

Line 10, change to:

$$= 0.80(2.61in.^2)(60{,}000psi)\left(3.81in. - \frac{0.77in.}{2}\right)$$

Line 11, change to:

$$= 429{,}122lb - in \ ? \ 267{,}159lb - in, \quad o.k.$$

Page 289, Design Example 6, Overview.

Revise the third sentence to read:

> These slender walls differ from concrete walls designed <u>as compression members (UBC §1914.4) or walls designed</u> under the empirical design method (UBC §1914.4)….

Page 296, Design Example 6.

Revise the last sentence before Part 4 to read:

> …otherwise a different method, such as <u>walls as compression members (§1914.4) or</u> the empirical design method (§1914.4), would be required along with <u>their</u> restrictions on wall height.

Page 297, Design Example 6.

Line 13, revise to read:

> …otherwise <u>a different method, such as walls as compression members (§1914.4) or</u> the empirical design method (§1914.4) would be necessary.

Page 298, Design Example 6.

Figure 6-6 should appear as follows: