AMERICAN WOOD COUNCIL

November 2023

Errata

to the 2015/2018 Edition of the Structural Wood Design Examples

E1.1 – Note that F_t = 800 psi and E_{min} = 660,000 psi that are used in this example are incorrect, they should be F_t = 675 psi and E_{min} = 620,000 psi, which are the reference design values for No. 1 Douglas Fir-Larch (DF-L) in the 2015 and 2018 NDS Supplements.

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March 2020

Errata

to the 2015/2018 Edition of the Structural Wood Design Examples

E3.3 – Replace Page 118 with the following page:

$A_o := 4(4.5\cdot3) + (6\cdot7.5)$ Area of openings (ft^2)

$A_o = 99$

$$r := \frac{1}{1 + \frac{A_o}{h\cdot L_i}} \qquad r = 0.621$$ (SDPWS Eqn. 4.3-6)

$$C_o := \left(\frac{r}{3 - 2r}\right)\cdot\frac{L_{tot}}{L_i} \qquad C_o = 0.78$$ (SDPWS Eqn. 4.3-5)

$V_{PSW} := v_{WCASD}\cdot L_i\cdot C_o$

$V_{PSW} = 9282$ Perforated Shearwall (PSW) Capacity (lbs)

Since capacity of 9282 lbs exceeds demand of 5520 lbs, design is OK.

$$T := \frac{(V_w\cdot h)}{C_o\cdot L_i} \qquad T = 3519$$ Required Hold-down capacity (lbs) (SDPWS Eqn. 4.3-8)

<u>Design without Interior Gypsum</u>

$V_w := 5520$ Wind reaction on shear wall (lbs)

$h := 9$ Wall height (ft)

Assume 15/32 in. thick Wood Structural Panel (WSP) Sheathing, 8d nails @ 4 in. o.c. edge spacing. SDPWS Table 4.3A nominal capacity = 1065 lbs/ft (Wind)

$$v_{wASDWSP} := \frac{1065}{2} \qquad v_{wASDWSP} = 532.5$$ ASD Shear wall Capacity (lbs/ft) (SDPWS 4.3.3)

$C_o = 0.78$ Calculated PSW Shear Capacity Adjustment Factor (same as above)

$V_{PSW} := v_{wASDWSP}\cdot L_i\cdot C_o$

$V_{PSW} = 7518$ Perforated Shearwall (PSW) Capacity (lbs)

Since capacity of 7518 lbs exceeds demand of 5520 lbs, design is OK.

$$T := \frac{(V_w\cdot h)}{C_o\cdot L_i} \qquad T = 3519$$ Required Hold-down capacity (lbs) (SDPWS Eqn. 4.3-8)

Hold-down would need to be combined with 2nd floor hold-down requirements. Dead load offset has been neglected in this example (SDPWS 4.3.6.4.2)

E3.4 – Replace Pages 120-121 with the following pages:

Check maximum segment length based on Aspect Ratio Limits

Maximum aspect ratio for Wood Structural Panel Shear Walls = 3.5:1 (SDPWS 4.3.4)

Minimum segment length =Wall Height/Aspect Ratio

$L_{min} := \frac{9}{3.5} \quad L_{min} = 2.6$ Minimum full height wall segment length (ft)

All full height segments satisfy aspect ratio requirements. Maximum aspect ratio for WSP shear walls to avoid capacity adjustments = 2:1, so 3 foot wide segments will require capacity adjustments.

$V_s := 4733$ Applied shear load on each shear wall due to seismic force (lbs)

$h := 9$ Wall height (ft)

(Note: Seismic force calculated using WFCM Table 2.6 and WFCM Commentary.)

Assume 7/16 in. thick Wood Structural Panel (WSP) Sheathing, 8d nails @ 4 in. o.c. edge spacing. Studs @ 16 in. o.c. triggers Footnote 2 allows for use of 15/32 in. panel shear values. SDPWS Table 4.3A nominal capacity = 760 lbs/ft (Seismic). Unlike wind design, gypsum capacity is not included for seismic shear wall design.

$v_{sASDWSP} := \frac{760}{2} \quad v_{sASDWSP} = 380$ ASD Shearwall Capacity (lbs/ft) (SDPWS 4.3.3)

Calculate PSW Shear Capacity Adjustment Factor (C_o)

$L_i := 2(5) + 4\left[\left(\frac{2\cdot 3}{9}\right)\cdot 3\right]$

$L_i = 18$

Effective length of Full Height Segments (ft) using adjustment from SDPWS 4.3.4.3

$L_{tot} := 40$ Total wall length (ft)

$A_o := 4(4.5\cdot 3) + (6\cdot 7.5)$ Area of openings (ft^2)

$A_o = 99$

$$r := \frac{1}{1 + \frac{A_o}{h\cdot L_i}}$$ (SDPWS Eqn. 4.3-6)

$$C_o := \left(\frac{r}{3 - 2r}\right)\cdot\frac{L_{tot}}{L_i}$$ (SDPWS Eqn. 4.3-5)

$C_o = 0.78$

$V_{PSW} := v_{sASDWSP}\cdot L_i\cdot C_o \quad V_{PSW} = 5365$ Perforated Shearwall (PSW) Capacity (lbs)

Since capacity of 5365 lbs greater than demand of 4733 lbs, design is OK

Hold down capacity for Perforated Shearwalls specified in SDPWS Eqn. 4.3-8

$$T := \frac{\left(V_s \cdot h\right)}{C_o \cdot L_i} \qquad T = 3017$$

Required Hold down capacity (lbs)

Hold down would need to be combined with 2nd floor hold down requirements. Dead load offset has been neglected in this example. (SDPWS 4.3.6.4.2)