

ASCE/SEI 7-05 Seismic Load Calculation

Client: Excel Homes
Job Number: EXLH042314-42
Description: 31217 Calcs.
Location: State of ME

Design Classification:

Occupancy Category: II
 Importance Category, I_E : 1.00
 Site Class: D
 ASCE 7 Design Category: D
 IRC Design Category: C
 Seismic Resisting System: *A13 Light-frame walls with wood shear panels*
 Response Factor, R: 6.5
 System Overstrength Factor, Ω_o : 3.0
 Deflection Amplification Fctor, C_d : 4.0

Response Acceleration: (ASCE 7, Figs. 22-1, 22-2)

Short Period (S_s) = 61.657 %g
 1-Second Period (S_1) = 15.25 %g

Spectral Response Acceleration:

Mapped		Site Coeff.		Maximum		Design	
S_s	S_1	F_a	F_v	S_{MS}	S_{M1}	S_{DS}	S_{D1}
0.62	0.15	1.31	2.19	0.81	0.33	0.54	0.22

Fundamental Period: (ASCE 7, Sec. 12.8.1.1)

Period Coefficient, C_T = 0.020
 Height to Highest Level, h_n = 20.3 ft
 $T_s = C_T h_n^{3/4} = 0.192$ sec

Seismic Response Coefficient: (Lateral Force Procedure, ASCE 7, Sec. 9.5.5.2)

$C_{smin} = 0.044 S_{DS} I_E = 0.024$

$C_s = \frac{S_{DS}}{R/I_E} = 0.083$

$C_{smax} = \frac{S_{D1}}{(R/I_E) T} = 0.18$

Min. For SDC E of F: $C_{smin} = \frac{0.5 S_1}{R/I_E} = 0.012$
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Sec 12.8.1.1 Design $C_s = 0.083$

Seismic Response Coefficient: (Simplified Analysis, Sec. 1617.5)

$F =$
 $C_s = \frac{1.2 S_{DS}}{R} = 0.099$

Sec 12.14.8 Design $C_s = 0.099$

Seismic Base Shear:

Base Shear Coefficient, $C_b = 0.083$ W

Minimum Interconnection Force: (ASCE 7, Sec. 12.1.3)

$0.133 \times S_{DS} = 0.071$ W
 Min. = 0.050 W
 $CS_{CXN} = 0.071$ W

PFS Corporation
 Northeast Region
 APPROVED
 R Wenner - 1
 5/15/14
 Approval limited to
 Factory Built Portion