GLOS ASSOCIATES INC.

Engineering Calculation Sheet

PROJECT NAME: Seismic analysis steel frame DATE: Sept. 9/13

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BY:

Site class "D" $I_E = 1.0$, $F_a = 1.3$, $F_v = 1.4$

$h_n = 12^m$, $T_a = 0.025 h_n = 0.025 \times 12 = 0.3(s)$ braced frame

$S(T_a) = S(0.3)$ using linear interpolation between $T = 0.2 \sim 0.5$

$S(0.2) = F_a S_a(0.2) = 1.3 \times 0.15 = 0.195$

$S(0.5) = F_v S_a(0.5) = 1.4 \times 0.085 = 0.119$

$\therefore S(0.3) = 0.169$ $S(0.3) = 0.1$ (Robot) small

Base shear (4.1.8.11) $M_v = 1.0$ $W = 11476$ KN (from Robot)

$V = S(T_a) M_v I_E W / (R_o R_d) = 0.169 \times 1 \times 1 \times 11476 / (1.3 \times 1.5)$

$= 994$ KN

$V_{max} = \frac{2}{3} S(0.2) I_E W / (R_o R_d) = \frac{2}{3} \times 0.195 \times 1 \times 1 / (1.3 \times 1.5) = 765$ KN

$\times 11476$

$V_{min} = S(2.0) M_v I_E W / (R_o R_d) = 0.0196 \times 1 \times 1 \times 11476 / (1.3 \times 1.5) = 115$ KN

∴ Base Shear $V = 765$ KN

Robot $V = 577$ KN Small