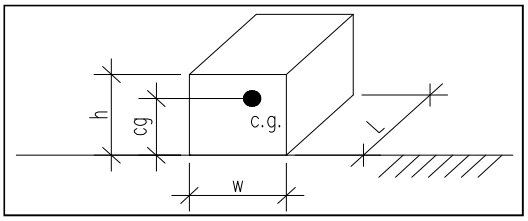
Project: LIVERMORE, CA 94550 page: 1 of 2
Date: 5/19/2015
Engineer: XXX

# FUTERA XLF 5000 BOILER SEISMIC ANCHORAGE (ASCE 7-05)

**Slab on Grade Applications Only**

Equipment Parameters:

| | | |
|---|---|---|
| weight, $W_p$ = | 1684.00 | LBS. |
| w = | 29.125 | in. |
| L = | 36.000 | in. |
| h = | 78.000 | in. |
| cg = | 39.000 | in. |




Seismic Parameters:

| | | | |
|---|---|---|---|
| $S_S$ = | 1.798 | ASCE 7-05 Figure 22-1) | Site Class = B |
| $a_p$ = | 1.000 | (ASCE 7-05 Table 13.6-1) | |
| Ip = | 1.500 | (ASCE Table 11.5-1) | Seismic Use Group = II |

| | | |
|---|---|---|
| $R_p$ = | **2.500** | (Default value for Anchorage per ASCE 7-05 Table 13.6-1) |
| $F_a$ = | **1.000** | (ASCE 7-05 Table 11.4-1) |
| $S_{MS} = F_a*S_s$ = | **1.798** | (ASCE 7-05 Eqn. 11.4-1) |
| $S_{DS} = 2/3*S_{MS}$ = | **1.199** | (ASCE 7-05 Eqn. 11.4-3) |

Seismic Design Category = **D**

Seismic Force:

| | | |
|---|---|---|
| $F_p = (0.4*a_p*S_{DS}*W_p)/(R_p/I_p)$ = | **484.5** | LBS. (ASCE 7-05 Eqn. 13.3-1) |
| Upper Limit: $F_{pMAX} = 1.6*S_{DS}*I_p*W_p$ = | **4844.5** | LBS. (ASCE 7-05 Eqn. 13.3-2) |
| Lower Bound: $F_{pMIN} = 0.3*S_{DS}*I_p*W_p$ = | **908.3** | LBS. (ASCE 7-05 Eqn. 13.3-3) |

$F_{p,\ DESIGN}$ = **908.3** LBS.

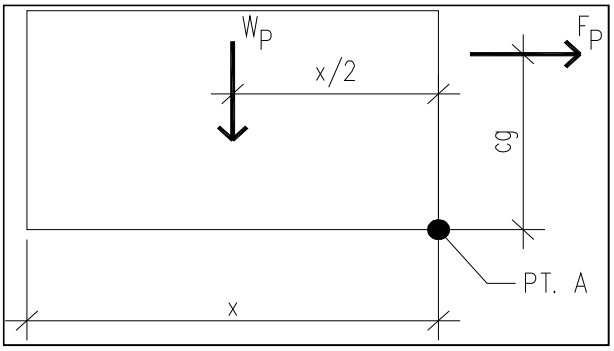
# FUTERA XLF 5000 BOILER SEISMIC ANCHORAGE (ASCE 7-05)

Design Anchorage Force:

Horizontal Shear Force Per Anchor:

$R_H = F_p/4 =$ **227.1** LBS.

Overturning Resistance About Point A:




x = **29.13** in.
x = lesser of L or W

$M_{OT} = F_p*cg =$ **2952.1** LBS.-FT.

$M_{RES} = W_p*x/2 =$ **2043.6** LBS.-FT. **Uplift**

Vertical Acceleration: assume ρ = 1.0

$Ev = \rho*Fp + 0.2*S_{DS}*W =$ **630.8** LBS. (ASCE Section 13.3.1)

$R_{VNETUP} = (M_{OT}/(2*x))-(W_p/4)+(Ev/4) =$ **0.0** LBS. **No Uplfit**

Force Summary Per Corner:

Component Anchorage:

$R_{HNET} =$ **227.1** LBS.

$R_{VNETUP} =$ **0.0** LBS.

Anchors Embedded in Concrete or CMU:

$1.3*R_p*R_{HNET} =$ **738.0** LBS.

$1.3*R_p*R_{VNETUP} =$ **0.0** LBS.