RBI FLEXCORE 4000 BOILER SEISMIC ANCHORAGE (ASCE 7-10)

Slab on Grade Applications Only

Equipment Parameters:

weight, W_p =	4580.00	LBS.
w =	34.000	in.
L =	109.400	in.
h =	80.000	in.
cg =	35.900	in.
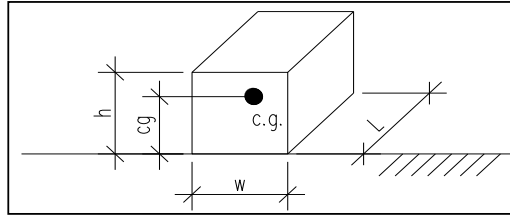
Seismic Parameters:

S_S =	1.798	ASCE 7-10 Figure 22-1)	Site Class = D
a_p =	1.000	(ASCE 7-10 Table 13.6-1)	
Ip =	1.500	(ASCE 7-10 13.1.3)	Risk Category = III

R_p =	2.500	(Default value for Anchorage per ASCE 7-10 Table 13.6-1)
F_a =	1.000	(ASCE 7-10 Table 11.4-1)
$S_{MS} = F_a*S_s$ =	1.798	(ASCE 7-10 Eqn. 11.4-1)
$S_{DS} = 2/3*S_{MS}$ =	1.199	(ASCE 7-10 Eqn. 11.4-3)

Seismic Design Category = **D**

Seismic Force:

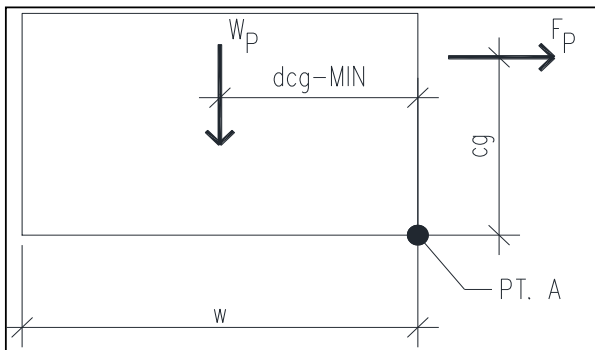|		
$F_p = (0.4*a_p*S_{DS}*W_p)/(R_p/I_p)$ =	1317.6	LBS. (ASCE 7-10 Eqn. 13.3-1)
Upper Limit: $F_{pMAX} = 1.6*S_{DS}*I_p*W_p$ =	13175.7	LBS. (ASCE 7-10 Eqn. 13.3-2)
Lower Bound: $F_{pMIN} = 0.3*S_{DS}*I_p*W_p$ =	2470.5	LBS. (ASCE 7-10 Eqn. 13.3-3)
$F_{p, DESIGN}$ =	2470.5	LBS.

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Design Anchorage Force:

Horizontal Shear Force Per Anchor:

$$R_H = F_p/4 = \boxed{617.6} \text{ LBS.}$$

Overturning Resistance About Point A:

$$x = \boxed{34.00} \text{ in.}$$
x = lesser of L or W
dcg - Min= **16.4** in.
.

$$M_{OT} = F_p*cg = \boxed{7390.8} \text{ LBS.-FT.}$$

$$M_{RES} = W_p*dcg\text{-MIN} = \boxed{3129.7} \text{ LBS.-FT.} \quad \textbf{Uplift}$$

Vertical Acceleration: assume $\rho = 1.0$

$$E_v = \rho*Fp + 0.2*S_{DS}*W = \boxed{1715.6} \text{ LBS. (ASCE Section 13.3.1)}$$

$$R_{VNETUP} = (M_{OT}/(2*x))-(W_p/4)+(E_v/4) = \boxed{0.0} \text{ LBS.} \quad \textbf{No Uplfit}$$

Force Summary Per Corner:
     Component Anchorage:

$$R_{HNET} = \boxed{617.6} \text{ LBS.}$$
$$R_{VNETUP} = \boxed{0.0} \text{ LBS.}$$

     Anchors Embedded in Concrete or CMU:

$$1.3*R_p*R_{HNET} = \boxed{2007.2} \text{ LBS.}$$
$$1.3*R_p*R_{VNETUP} = \boxed{0.0} \text{ LBS.}$$