RBI FLEXCORE 3000 BOILER SEISMIC ANCHORAGE (ASCE 7-10)
Slab on Grade Applications Only

Equipment Parameters:

weight, W_p =	2425.00	LBS.
w =	32.000	in.
L =	48.300	in.
h =	80.000	in.
cg =	37.500	in.
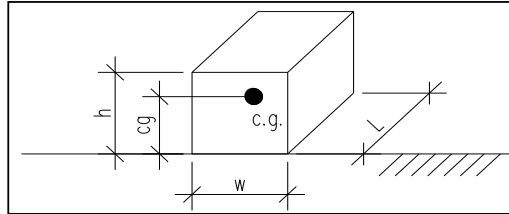
Seismic Parameters:

S_S =	1.798	ASCE 7-10 Figure 22-1)
a_p =	1.000	(ASCE 7-10 Table 13.6-1)
Ip =	1.500	(ASCE 7-10 13.1.3)

Site Class = D

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:

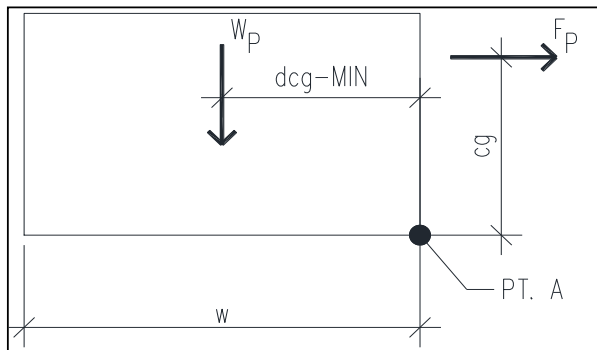|		
$F_p = (0.4 * a_p * S_{DS} * W_p)/(R_p/I_p)$ =	697.6	LBS. (ASCE 7-10 Eqn. 13.3-1)
Upper Limit: $F_{pMAX} = 1.6 * S_{DS} * I_p * W_p$ =	6976.2	LBS. (ASCE 7-10 Eqn. 13.3-2)
Lower Bound: $F_{pMIN} = 0.3 * S_{DS} * I_p * W_p$ =	1308.0	LBS. (ASCE 7-10 Eqn. 13.3-3)

$F_{p, DESIGN}$ = **1308.0** LBS.

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Design Anchorage Force:

Horizontal Shear Force Per Anchor:

$$R_H = F_p/4 = \boxed{327.0} \text{ LBS.}$$

Overturning Resistance About Point A:

$$x = \boxed{32.00} \text{ in.}$$
$$x = \text{lesser of L or W}$$
$$dcg - Min = \mathbf{14.9} \text{ in.}$$

$$M_{OT} = F_p \cdot cg = \boxed{4087.6} \text{ LBS.-FT.}$$

$$M_{RES} = W_p \cdot dcg\text{-MIN} = \boxed{1505.5} \text{ LBS.-FT.} \quad \textbf{Uplift}$$

Vertical Acceleration: assume $\rho = 1.0$

$$E_v = \rho \cdot Fp + 0.2 \cdot S_{DS} \cdot W = \boxed{908.4} \text{ LBS. (ASCE Section 13.3.1)}$$

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

Force Summary Per Corner:

Component Anchorage:

$$R_{HNET} = \boxed{327.0} \text{ LBS.}$$
$$R_{VNETUP} = \boxed{0.0} \text{ LBS.}$$

Anchors Embedded in Concrete or CMU:

$$1.3 \cdot R_p \cdot R_{HNET} = \boxed{1062.8} \text{ LBS.}$$
$$1.3 \cdot R_p \cdot R_{VNETUP} = \boxed{0.0} \text{ LBS.}$$