DOMINATOR 400 BOILER SEISMIC ANCHORAGE (ASCE 7-05)
Slab on Grade Applications Only

Equipment Parameters:

weight, W_p =	415.00	LBS.
w =	29.313	in.
L =	29.313	in.
h =	37.875	in.
cg =	17.140	in.
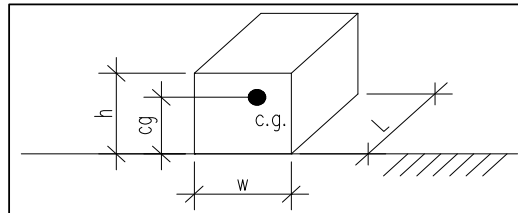
Seismic Parameters:

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 = 1.000   (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:

$F_p = (0.4*a_p*S_{DS}*W_p)/(R_p/I_p)$ = 79.6   LBS. (ASCE 7-05 Eqn. 13.3-1)

Upper Limit: $F_{pMAX} = 1.6*S_{DS}*I_p*W_p$ = 795.9   LBS. (ASCE 7-05 Eqn. 13.3-2)

Lower Bound: $F_{pMIN} = 0.3*S_{DS}*I_p*W_p$ = 149.2   LBS. (ASCE 7-05 Eqn. 13.3-3)

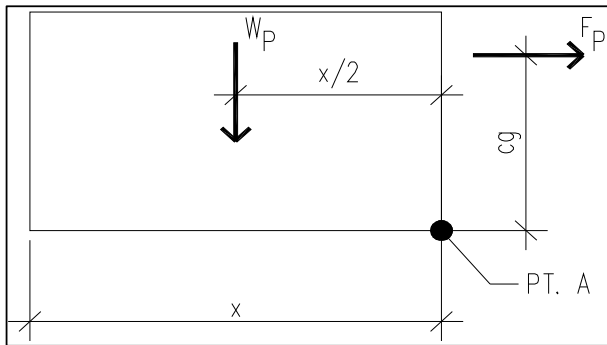$F_{p, DESIGN}$ = 149.2   LBS.

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Design Anchorage Force:

Horizontal Shear Force Per Anchor:

$$R_H = F_p/4 = \boxed{37.3} \text{ LBS.}$$

Overturning Resistance About Point A:

$$x = \boxed{29.31} \text{ in.}$$
$$x = \text{lesser of L or W}$$

$$M_{OT} = F_p*cg = \boxed{213.2} \text{ LBS.-FT.}$$

$$M_{RES} = W_p*x/2 = \boxed{506.9} \text{ LBS.-FT.} \quad \textbf{OK, No Uplift}$$

Vertical Acceleration: assume ρ = 1.0
$$E_v = \rho*F_p + 0.2*S_{DS}*W = \boxed{136.8} \text{ LBS. (ASCE Section 13.3.1)}$$

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

Force Summary Per Corner:
        Component Anchorage:

$$R_{HNET} = \boxed{37.3} \text{ LBS.}$$
$$R_{VNETUP} = \boxed{0.0} \text{ LBS.}$$

        Anchors Embedded in Concrete or CMU:

$$1.3*R_p*R_{HNET} = \boxed{121.3} \text{ LBS.}$$
$$1.3*R_p*R_{VNETUP} = \boxed{0.0} \text{ LBS.}$$