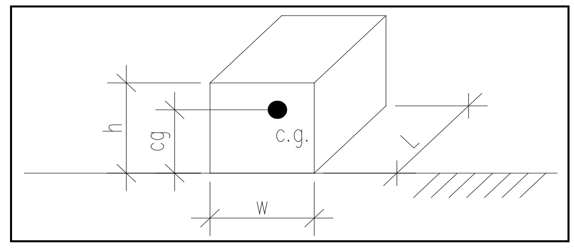
Project: ENCORE
Date: 09/06/22
Engineer: BMH

RBI ENCORE RB0500 INDOOR DUAL FUEL UNIT - SEISMIC ANCHORAGE (ASCE 7-16/IBC 2000)

Slab on Grade Applications Only

Equipment Parameters:

weight, W_p =	549.88	LBS.
w =	26.97	in.
L =	39.38	in.
h =	66.09	in.
cg =	30.95	in.



Seismic Parameters:

S_S =	1.800	ASCE 7-16 Figure 22-1 using 84th percentile value
a_p =	1.000	(ASCE 7-16 Table 13.6-1)
I_p =	1.500	(ASCE 7-16 Table 13.1.3)

Site Class = D

Seismic Use Group = IV

R_p =	**1.500**	(Default value for Anchorage per ASCE 7-16 13.6-1)
F_a =	**1.032**	(ASCE 7-16 Table 11.4-1)
$S_{MS} = F_a{*}S_s$ =	**1.858**	(ASCE 7-16 Eqn. 11.4-1)
$S_{DS} = 2/3{*}S_{MS}$ =	**1.239**	(ASCE 7-16 Eqn. 11.4-3)

Seismic Design Category = **D**

Seismic Force:

$F_p = (0.4{*}a_p{*}S_{DS}{*}W_p)/(R_p/I_p)$ =	**272.5**	LBS. (ASCE 7-16 Eqn. 13.3-1)
Upper Limit: $F_{pMAX} = 1.6{*}S_{DS}{*}I_p{*}W_p$ =	**1635.0**	LBS. (ASCE 7-16 Eqn. 13.3-2)
Lower Bound: $F_{pMIN} = 0.3{*}S_{DS}{*}I_p{*}W_p$ =	**306.6**	LBS. (ASCE 7-16 Eqn. 13.3-3)

$F_{p,\ DESIGN}$ = **306.6** LBS.

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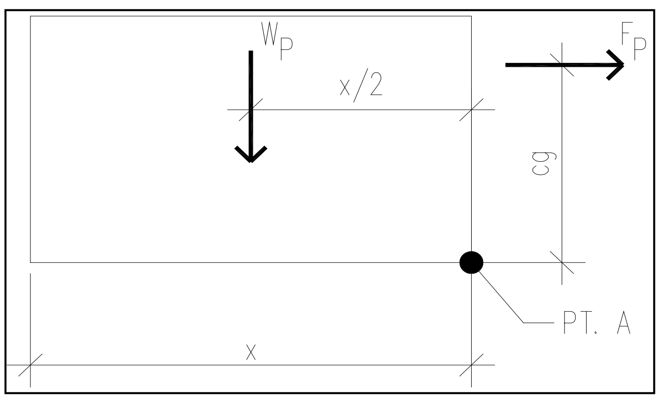
Design Anchorage Force:

Horizontal Shear Force Per Anchor:

$R_H = F_p/4 =$ **76.6** LBS.

Overturning Resistance About Point A:



x = **39.38** in.
x = lesser of L or h

$M_{OT} = F_p*cg =$ **9488.4** LBS.-FT.

$M_{RES} = W_p*x/2 =$ **10827.1** LBS.-FT. **OK, No Uplift**

Vertical Acceleration: assume ρ = 1.0
$Ev = \rho*Fp + 0.2*S_{DS}*W =$ **212.9** LBS. (IBC Eqn. 1617.1.1)

$R_{VNETUP} = (M_{OT}/(2*x))-(W_p/4)+(Ev/4) =$ **36.2** LBS. **No Uplfit**

Force Summary Per Corner:
Component Anchorage:

$R_{HNET} =$ **76.6** LBS.
$R_{VNETUP} =$ **36.2** LBS.

Anchors Embedded in Concrete or CMU:

$1.3*R_p*R_{HNET} =$ **149.5** LBS. (IBC 1617.1.7 #2)
$1.3*R_p*R_{VNETUP} =$ **70.6** LBS. (IBC 1617.1.7 #2)