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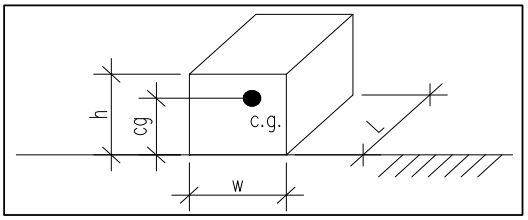
Date: 7/13/2010
Engineer: XXX

FUTERA FUSION 2000 BOILER SEISMIC ANCHORAGE (ASCE 7-05)

Slab on Grade Applications Only

Equipment Parameters:

weight, W_p =	1139.00	LBS.
w =	29.125	in.
L =	66.500	in.
h =	69.000	in.
cg =	28.875	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:

$F_p = (0.4*a_p*S_{DS}*W_p)/(R_p/I_p)$ =	**218.4**	LBS. (ASCE 7-05 Eqn. 13.3-1)
Upper Limit: $F_{pMAX} = 1.6*S_{DS}*I_p*W_p$ =	**2184.5**	LBS. (ASCE 7-05 Eqn. 13.3-2)
Lower Bound: $F_{pMIN} = 0.3*S_{DS}*I_p*W_p$ =	**409.6**	LBS. (ASCE 7-05 Eqn. 13.3-3)

$F_{p,\ DESIGN}$ = **409.6** LBS.

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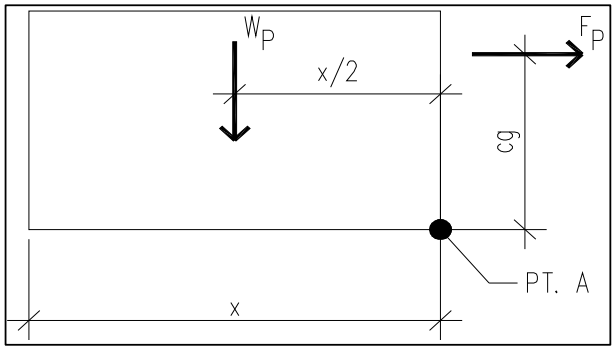
Design Anchorage Force:

Horizontal Shear Force Per Anchor:

$R_H = F_p/4 =$ **102.4** LBS.

Overturning Resistance About Point A:



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

$M_{OT} = F_p*cg =$ **985.6** LBS.-FT.

$M_{RES} = W_p*x/2 =$ **1382.2** LBS.-FT. **OK, No Uplift**

Vertical Acceleration: assume ρ = 1.0
$Ev = \rho*Fp + 0.2*S_{DS}*W =$ **375.5** 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:

$R_{HNET} =$ **102.4** LBS.
$R_{VNETUP} =$ **0.0** LBS.

Anchors Embedded in Concrete or CMU:

$1.3*R_p*R_{HNET} =$ **332.8** LBS.
$1.3*R_p*R_{VNETUP} =$ **0.0** LBS.