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)
- $I_p = 1.500$ (ASCE 7-10 13.1.3)

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: $F_{p\text{MAX}} = 1.6*S_{DS}*I_p*W_p = 6976.2$ LBS. (ASCE 7-10 Eqn. 13.3-2)
- Lower Bound: $F_{p\text{MIN}} = 0.3*S_{DS}*I_p*W_p = 1308.0$ LBS. (ASCE 7-10 Eqn. 13.3-3)
- $F_p, \text{DESIGN} = 1308.0$ LBS.
RBI FLEXCORE 3000 BOILER SEISMIC ANCHORAGE (ASCE 7-10)

Design Anchorage Force:

Horizontal Shear Force Per Anchor:

\[ R_h = \frac{F_p}{4} = 327.0 \text{ LBS.} \]

Overturning Resistance About Point A:

\[ x = 32.00 \text{ in.} \]
\[ x = \text{lesser of } L \text{ or } W \]
\[ dcg - \text{Min} = 14.9 \text{ in.} \]

\[ M_{OT} = F_p \cdot cg = 4087.6 \text{ LBS.-FT.} \]
\[ M_{RES} = W_p \cdot dcg - \text{Min} = 1505.5 \text{ LBS.-FT.} \text{ Uplift} \]

Vertical Acceleration: assume \( \rho = 1.0 \)
\[ Ev = \rho \cdot F_p + 0.2 \cdot S_{DS} \cdot W = 908.4 \text{ LBS. (ASCE Section 13.3.1)} \]
\[ R_{VNETUP} = (M_{OT}/(2 \cdot x)) - (W_p/4) + (Ev/4) = 0.0 \text{ LBS. No Uplift} \]

Force Summary Per Corner:

Component Anchorage:

\[ R_{HNET} = 327.0 \text{ LBS.} \]
\[ R_{VNETUP} = 0.0 \text{ LBS.} \]

Anchors Embedded in Concrete or CMU:

\[ 1.3 \cdot R_p \cdot R_{HNET} = 1062.8 \text{ LBS.} \]
\[ 1.3 \cdot R_p \cdot R_{VNETUP} = 0.0 \text{ LBS.} \]