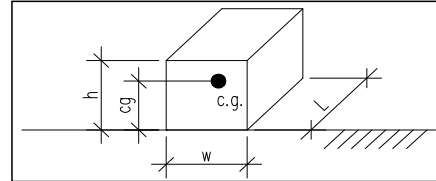


**RBI TORUS 0300 INDOOR - SEISMIC ANCHORAGE (ASCE 7-16/IBC 2000)**  
**Slab on Grade Applications Only**

Equipment Parameters:

weight,  $W_p = 375.24$  LBS.  
 $w = 25.09$  in.  
 $L = 40.25$  in.  
 $h = 40.94$  in.  
 $cg = 17.05$  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 =

Seismic Use Group =

$R_p = 1.500$  (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 =

Seismic Force:

$F_p = (0.4 * a_p * S_{DS} * W_p) / (R_p / I_p) = 186.0$  LBS. (ASCE 7-16 Eqn. 13.3-1)  
 Upper Limit:  $F_{pMAX} = 1.6 * S_{DS} * I_p * W_p = 1115.8$  LBS. (ASCE 7-16 Eqn. 13.3-2)  
 Lower Bound:  $F_{pMIN} = 0.3 * S_{DS} * I_p * W_p = 209.2$  LBS. (ASCE 7-16 Eqn. 13.3-3)

$F_{p, DESIGN} = 209.2$  LBS.

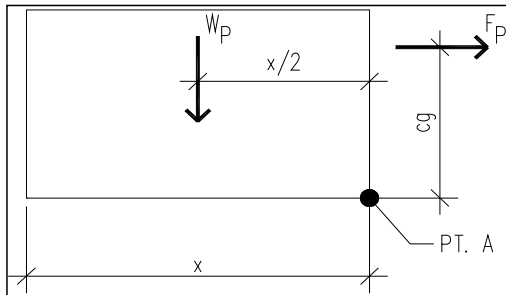
**RBI TORUS 0300 INDOOR - SEISMIC ANCHORAGE (ASCE 7-16/IBC 2000)**

Design Anchorage Force:

Horizontal Shear Force Per Anchor:

$$R_H = F_p/4 = \boxed{52.3} \text{ LBS.}$$

Overturning Resistance About Point A:



$$x = \boxed{40.25} \text{ in.}$$

$x = \text{lesser of } L \text{ or } h$

$$M_{OT} = F_p * cg = \boxed{3566.9} \text{ LBS.-FT.}$$

$$M_{RES} = W_p * x/2 = \boxed{7551.7} \text{ LBS.-FT.} \quad \text{OK, No Uplift}$$

Vertical Acceleration:

assume  $\rho = 1.0$

$$E_v = \rho * F_p + 0.2 * S_{DS} * W = \boxed{145.3} \text{ LBS. (IBC Eqn. 1617.1.1)}$$

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

Force Summary Per Corner:

Component Anchorage:

$$R_{HNET} = \boxed{52.3} \text{ LBS.}$$

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

Anchors Embedded in Concrete or CMU:

$$1.3 * R_p * R_{HNET} = \boxed{102.0} \text{ LBS. (IBC 1617.1.7 #2)}$$

$$1.3 * R_p * R_{VNETUP} = \boxed{0.0} \text{ LBS. (IBC 1617.1.7 #2)}$$

## ASCE 7-16

Fa Table 11.4-1 Site Coefficient, Fa

	1	2	3	4	5	6	7	8	9
Site Class	0	0.25	0.3	0.35	0.4	0.45	0.5	0.55	
A	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
B	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
C	1.29	1.29	1.29	1.28	1.28	1.27	1.27	1.26	
D	1.65	1.52	1.50	1.47	1.45	1.43	1.40	1.38	
E	2.90	2.35	2.24	2.13	2.02	1.91	1.80	1.69	
F	site spec.	site spec.	site spec.	site spec.	site spec.	site spec.	site spec.	site spec.	site spec.

Fa column\_index = **23**

Fv Table 11.4-2 Site Coefficient, Fv

	1	2	3	4	5	6	7	8	9
Site Class	0	0.1	0.12	0.14	0.16	0.18	0.2	0.22	
A	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
B	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
C	1.52	1.52	1.52	1.51	1.51	1.51	1.50	1.50	
D	2.34	2.34	2.32	2.29	2.26	2.23	2.21	2.18	
E	4.2	4.2	site spec.	site spec.	site spec.	site spec.	site spec.	site spec.	site spec.
F	site spec.	site spec.	site spec.	site spec.	site spec.	site spec.	site spec.	site spec.	site spec.

Fv column\_index = **#REF!**

Seismic Design Category: Table 11.6-1 IN ASCE 7-16

Value of $S_{DS, g}$	Seismic Use Group					
	1 $S_{DS}$	2 I	3 II	4 III	5 IV	
$S_{DS} < 0.167$	0	A	A	A	A	A
$0.167 \leq S_{DS} < 0.33$	0.167	B	B	B	C	B
$0.33 \leq S_{DS} < 0.50$	0.33	C	C	C	D	C
$0.50 \leq S_{DS}$	0.5	D	D	D	D	D
SUG column_index =	<b>4</b>					
SUG =	<b>D</b>	<b>4</b>				

Seismic Design Category: Table 11.6-2 IN ASCE 7-16

Value of $S_{D1, g}$	Seismic Use Group				
	1 $S_{D1}$	2 I	3 II	4 III	5 IV
$S_{D1} < 0.067$	0	A	A	A	A
$0.067 \leq S_{D1} < 0.133$	0.067	B	B	C	C
$0.133 \leq S_{D1} < 0.20$	0.133	C	C	D	D
$0.20 \leq S_{DS}$	0.2	D	D	D	D

---

SUG column_index =	5	
SUG =	A	1

Seismic Use Group  <-- Link Cell  
I  
II  
III

Site Class  <-- Link Cell  
A  
B  
C  
D  
E  
F

**Ss**

10	11	12	13	14	15	16	17	18
0.6	0.65	0.7	0.75	0.8	0.85	0.9	0.95	1
0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
1.26	1.25	1.25	1.24	1.24	1.24	1.23	1.23	1.22
1.35	1.33	1.30	1.28	1.25	1.23	1.20	1.18	1.16
1.58	1.47	1.36	1.25	site spec.	site spec.	site spec.	site spec.	site spec.
site spec.	site spec.	site spec.	site spec.	site spec.	site spec.	site spec.	site spec.	site spec.

**S<sub>1</sub>**

10	11	12	13	14	15	16	17	18
0.24	0.26	0.28	0.3	0.32	0.34	0.36	0.38	0.4
0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
1.50	1.50	1.49	1.49	1.49	1.48	1.48	1.48	1.48
2.15	2.12	2.10	2.07	2.04	2.01	1.99	1.96	1.93
site spec.	site spec.	site spec.	site spec.	site spec.	site spec.	site spec.	site spec.	site spec.
site spec.	site spec.	site spec.	site spec.	site spec.	site spec.	site spec.	site spec.	site spec.

- 1
- 2
- 3
- 4



