Pot Bearing design calculations.

		in KN	in kips
Dead Load	PD	900	202.33
Live Load	PL	300	67.44
Lateral Load	HT	150	33.72
Rotation	θu	0.02	

	Inputs
	Constants
	Results

To convert KN to kips / 4.44822

To calculate Diameter of the pot

The diameter of the pot and the elastomeric pad are determined by the maximum stress, 25MPa (3.5 ksai) permitted on the pad at the maximum load.

			in mm
	A		48000
	T		15278.87
			123.6077
	Dp		247.2155
Pad Diameter		Roundup	248

To calculate Elastomer thickness

The thickness of the pad is determined by the strain in the elastomeric pad

tr ≥	3.33*θu *Dp	16.5168
		17

To calculate Piston Sealing rings width **b*rings***, and thickness **r*ings***

(Ring should be flat and manufactured out of of ptfe or brass)

b*rings* =	≥max (0.02Dp)		4.96
(width)		Roundup	5
r*ings* =	≥0.2*b*rings***		1
(thickness)		Roundup	1
Total thickness of rings	Rings	3	3

To calculate Piston thickness

The piston should have a minimum thickness of **t_{pist} > 0.06 D_p**

			14.88
Percentage constant	0.06		
		Roundup	15

The minimum thickness of the rim of Piston ***t_{rim}***, is

trim ≥ _____ **4.38**

F_y =yield strength of steel	345	Roundup	5.00

To calculate Pot wall thickness

Pot wall thickness is calculated based on Eqs. 1 and Eqs 2

Eqs - 1 for Vertical load

tw ≥ _____ **19.84**

σ_u = _____ ***(Dp)** 12320

Øt* = *resistance factor for tension (0.9) 0.9

Eqs - 2 for Horizontal load load

tw≥ ——— 539.13043 **23.22**

62 ..-Constant

	Eqs-1	NO
There for Pot wall thickness to be considered to be	**Eqs-2**	OK

To calculate pot base thickness (minimum)

Pot base thickness **t_{base}** ≥ 0.06 **D_p** ≤ **t_w**

t base	14.88	OK	
Dp	19.84	OK	

Results.		
1. Minimum diameter of the Pot	248	
2. Minimum thickness of the elastomer Pad	17	
3. Thickness of Piston	15	
4. Minimum thickness of piston	5.00	
5. Base size minimum	353.33	
6. Minimum top size	406.32	
7. Pot wall thickness	23.22	
8. Top plate thickness	14.88	
8. Pot base thickness	19.84	