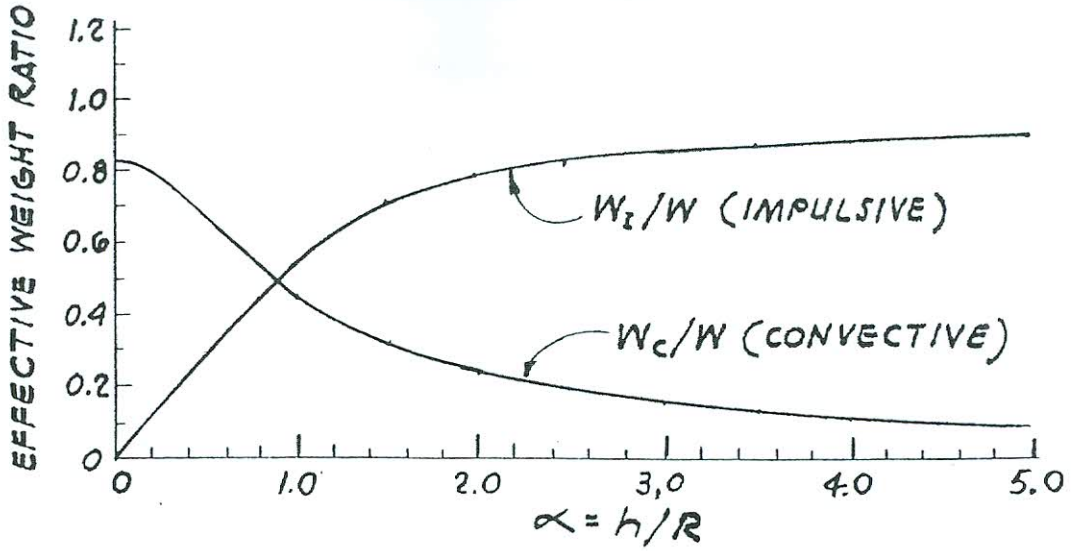
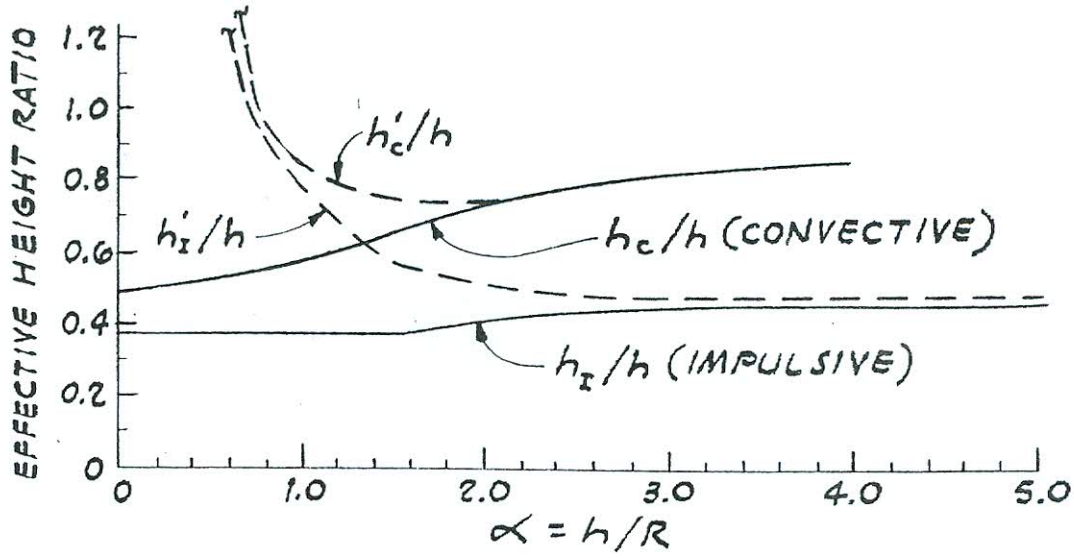


(a). Effective Weight Ratio (See Table 13-1)



(b). Effective Height Ratio (See Table 13-2)

Figure 13-3. Effective weight and height ratios.

α = h/R		0.50	0.75	1.00	1.50	2.00	2.50	3.00	3.50	4.00	5.00
W_I/W, impulsive		0.29	0.42	0.54	0.71	0.79	0.83	0.86	0.88	0.89	0.91
W_c/W, convective	Cylindrical	0.66	0.53	0.43	0.30	0.23	0.18	0.15	0.13	0.11	0.09
	Rectangular	0.69	0.58	0.48	0.34	0.26	0.21	0.18	0.15	0.13	0.11
See Figure 13-3(a) for Plot											

~~*Table 13-1. Effective weight ratio.*~~

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$\alpha = h/R$		0.50	0.75	1.00	1.50	2.00	2.50	3.00	3.50	4.00	5.00
h_i, impulsive	h_I/h	0.38	0.38	0.38	0.38	0.41	0.42	0.44	0.45	0.45	0.46
h_i, impulsive	h'_I/h	1.60	1.00	0.80	0.58	0.51	0.49	0.48	0.48	0.47	0.47
h_c, convective	cylindrical	0.53	0.57	0.60	0.68	0.74	0.79	0.82	0.84	0.86	0.89
	rectangular	0.53	0.55	0.58	0.65	0.71	0.76	0.79	0.82	0.84	0.87
h_c, convective	cylindrical	1.60	0.96	0.79	0.73	0.75	0.79	0.82	0.84	0.86	0.89
	rectangular	2.00	1.11	0.86	0.73	0.74	0.77	0.80	0.82	0.84	0.87

~~e Figure 13-3(b) for Plot~~

~~Table 13~~-2. Effective height ratio.

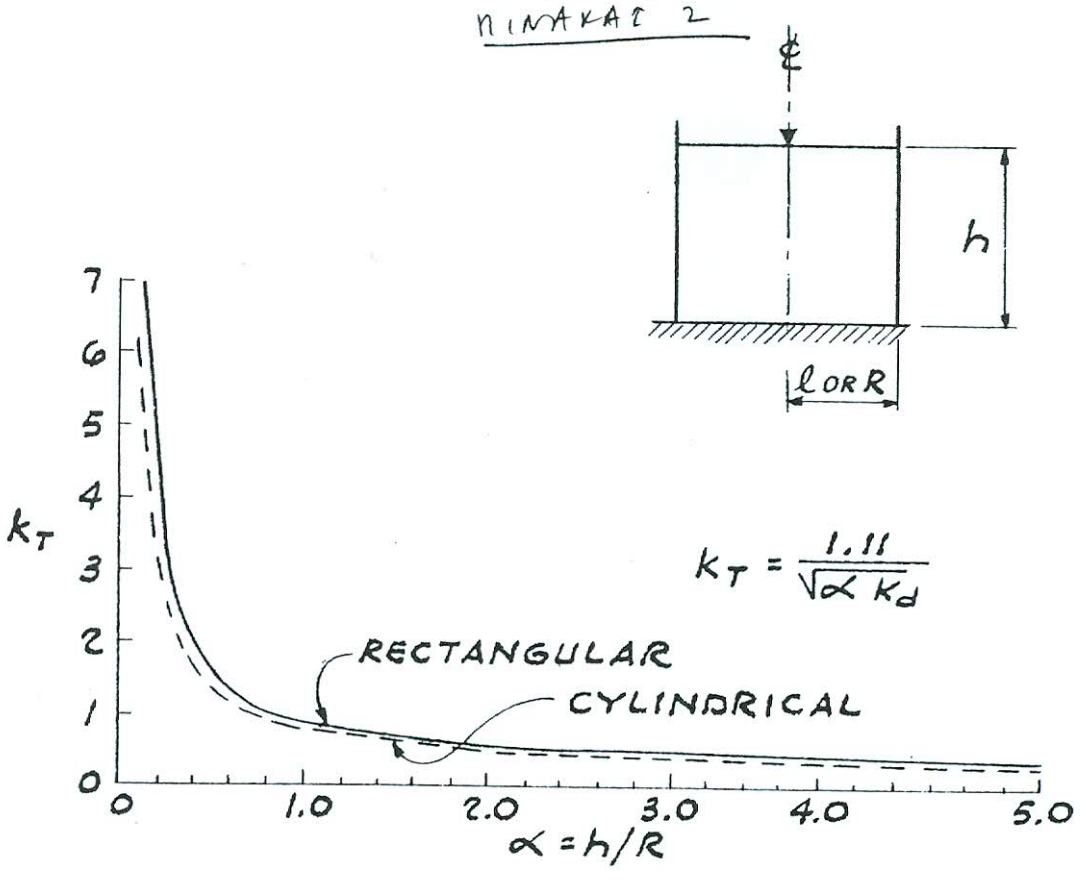

Figure 13-4. Period constant, k_r

is is consistent with modal analysis procedures ere spectral responses of the predominant des are combined in such a manner.

(4) Sloshing wave height d_{max}. The value of $_{ax}$ must be less than the freeboard height (h_r inus h) for the simplified hydrodynamic proce- ure to be valid. If d_{max} is greater than (h_r minus , liquid will overflow the top of the tank when ere is no roof or will be confined by the roof if a roof exists. When there are interior elements, such as baffles or roof supports, the effects of sloshing liquid on these elements will be considered.

b. Design of tank. The critical items of concern in the seismic design of the tank are the horizontal shear at the base, the overturning and uplift forces at foundations, the compression buckling of the tank shell, and, when tie-downs are used, the resulting additional stresses at the attachment of

	k_T*								
α	0.50	0.75	1.00	1.50	2.00	2.50	3.00	4.00	5.00
k_T, cylindrical	1.40	1.00	0.84	0.67	0.58	0.52	0.47	0.41	0.37
k_T, rectangular	1.50	1.10	0.92	0.73	0.63	0.56	0.51	0.44	0.39

*used for sloshing (convective motion) period: $T = k_T\sqrt{h}$, where h is the height in feet.
See Figure 13-4 for Plot

Table 13–3. Period constant, k_T

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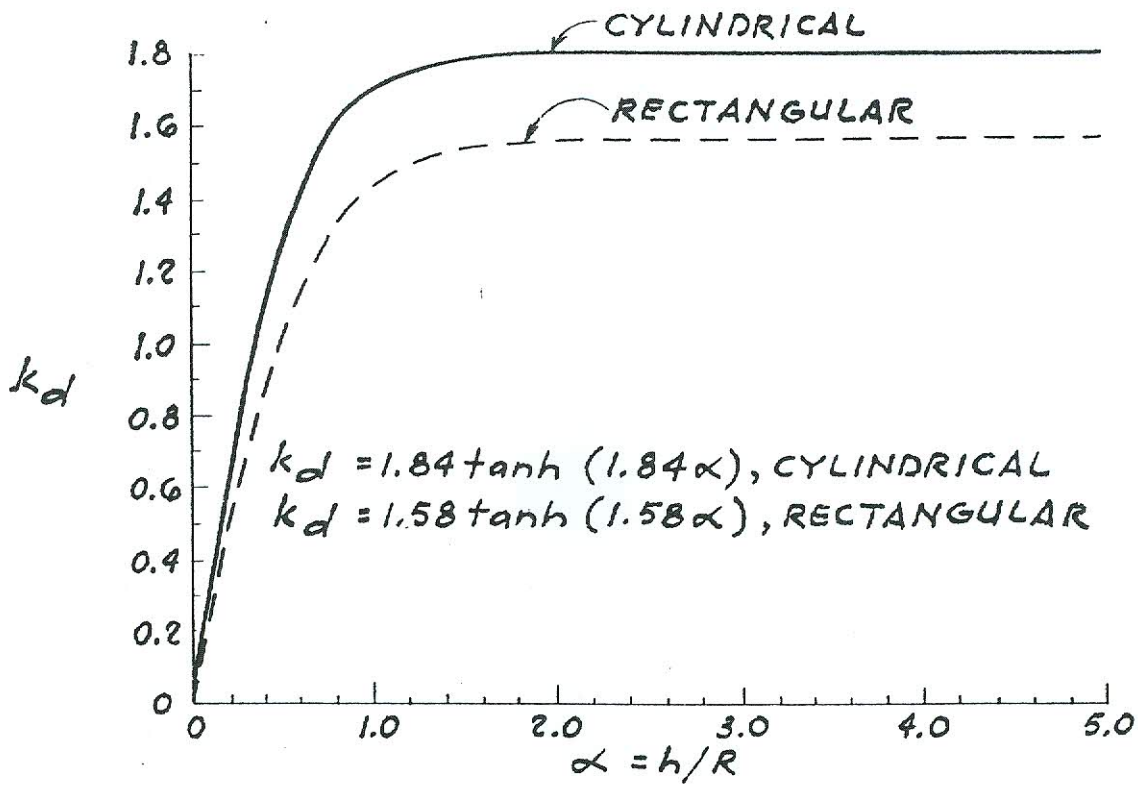

Figure 13–5. Coefficient k_d

α	0.50	0.75	1.00	1.50	2.00	2.50	3.00	4.00	5.00
k_d, cylindrical	1.33	1.62	1.75	1.83	1.84	1.84	1.84	1.84	1.84
k_d, rectangular	1.04	1.31	1.45	1.55	1.57	1.58	1.58	1.58	1.58

See Figure 13-5 for Plot

Table 13–4. Coefficient k_d

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