Engineering Information

Piers-Safe Loads

PIERS-SAFE LOADS

	Per Square Foot
Granite	30 tons.
Limestone	15 tons.
Sandstone	20 tons.
Cement concrete 5:1	15 tons.
Cement concrete 10.1	3.5 tons.
Lime concrete	2 to 4 tons.
Brick in mortar	3.5 tons.
Brick in Cement	8 to 12 tons.
Rubble	3.5 tons.

Angles of Repose for Various Materials

	Angle of Repose
Bituminous Coal	30^0
Anthrocite Cool	27^0
Slaked Coal	$37 1/2^0$ to 45^0
Ashes	40^0
Soft Iron Ore	35^0
Earth (loam)	30^0 to 45^0
Sand (dry)	25^0 to 35^0
Sand (Moist)	30^0 to 45^0
Sand(wet)	15^0 to 30^0
Clay	25^0 to 45^0
Graver	30^0 to 40^0
Cinders	25^0 to 40^0
Coke	30^0 to 40^0
Wheat	28^0
Maize	27^0 to 30^0
Barley	27^0
Oats	28^0
Cement	17^0 to 30^0

LOADS

Structures are designed for the worst Combination of dead and live loads; wherever applicable, wind loads, seismis forces and secondary effects such as shrinkage, the rise or fall in temperature, etc. must also be considered.

Dead Loads :
The dead weight of a number of materials and structural item is given in the Table No. 1. In using these figures it should be noted that the density of most materials varies within certain well defined limits and this variation can, therefore, effect the imposed loading. The figurein the table are however, sufficiently accurate for normal design purpose.

Live Loads :
The live load lo be used for the design of floors and roofs in building are given in table 2 & 3 respectively. They are considered as uniformaly distributed static loads on the plan area and include the effects of normal impact. They, however do not take in to consideration special concentrated loads nor do they cater for loads incidential to construction and special cases of Vibration such as moving machinery, heavy acceleration from cranes hosits and the like, such loads should be dealt with individually in each case.

The figure given in Table No. 2 & 3 are conversions from the loading specified in the Indian standard Code of Practice; No. 875-1975 and their application should, therefore be read in conjuction with the provisions of this code.

Wind Pressure :
The basic pressure induced by wind loads for various heights of exposed surface are given in Table No. 4. The figures are based on table III of the I.S. Code of Practice No. 875-1957 and their application should confirm to the provision contained in clause 4 of the code.

Earth Pressure :
The value of the horizontal pressure exerted by a retained material is obtained from the normal Rankin's formula, which for a level fill retained against in vertical surface is expressed as :

$$P = wh \; \frac{1 - \sin \emptyset}{1 \times \sin \emptyset}$$