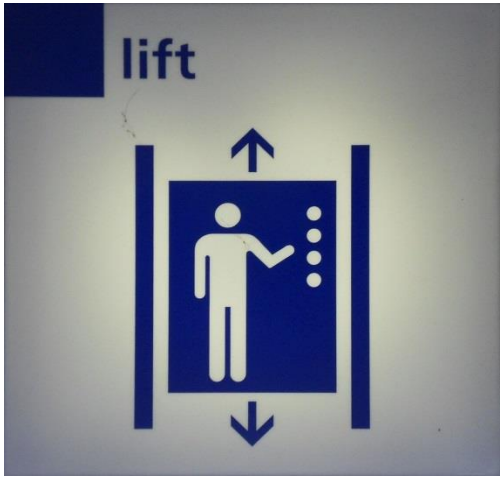

Lifts Requirements in Buildings

ARCH 326

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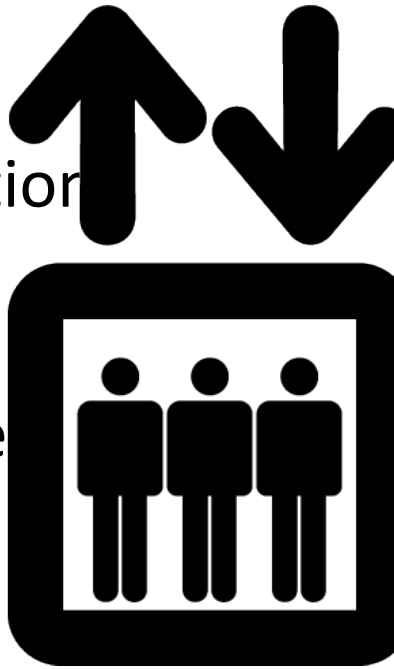
Size of Lift



- The lift load depends on its usage, load limitation should be set with warning system for safety consideration.
- 0.2 m^2/person in normal situation and usage
- Considerations: VIP, the old, the ill, …etc
- Clearances with walls:
- 230mm clearance on the side.
- 150 mm clearance on front for double doors sets.
- 300 mm clearance on the back for counter balance weight. Depends on the manufactured lifts.

Doors Opening in Lifts

- One direction
- Two direction
- More than two but require special solutions:
- 1- Linear (up to 4 lifts)
- 2- facing (4-8 lifts)
- 3- Functional Growing (operating theatre)

Lifts or Elevators

- All building are classified, in terms of lifts requirements as either :
- a-Office Buildings
- b-Residential buildings
- In (a) the traffic served is assumed to be 75% of the population. (G+1st floors they require no lift service generally in period of 30 minutes.
- The size of the lift is decided by the designer
- The Round Trip Time is given by the manufacturer R.T.T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Estimation of Number of Lifts

No of passengers discharged by one lift :

$$= \frac{30\ minutesXLift\ capacity}{R.T.T}$$

Number of lifts required after approximated:

$$= \frac{Calculated\ No.\ of\ Passengers}{Number\ of\ passengers\ per\ lift}$$

R.T.T is the time taken by the lift to complete one cycle with stops as programmed.

- In residential buildings, the traffic served is assumed to be 6% of total population on the second floor and above in a period of 5 minutes.
- Then No. of passengers / 1 lift car is:

$$= \frac{5\ minutes X\ Lift\ Capacity}{R.T.T}$$

$$\text{No. of Lifts required} = \frac{calculated\ number\ of\ passengers}{No.of\ passeng.ers\ per\ 1\ lift\ car}$$

Lift Usage and waiting Intervals

- Number of lifts required depends on:
- **a-Disabled usage**, furniture movements, patients..etc..
- **b-waiting interval** should be 30- 60 sec. Office Building, and 90 to 120 seconds in residential buildings.
- **c-loading conditions** number of persons should be stated 340 kg/m^2

Example 1

- How many lifts required in a 15 story office building . If each floor is occupied by 50 person and lift car capacity is 10 person with R.T.T of 3 minutes?
- No. of persons requiring lift service= (15-2)X50X0.75 = 487.5 Persons
- No. of persons per lift = 30X10/3=100 persons
- No. of lifts calculated = 487.5/100 = 5 lifts

EXAMPLE 2

- If same building is used as residential , how many lifts required?
- No. of persons required lift service= (15-2)X50X6% = 30
- No of person per lift= 5X10/3 = 16.5 persons.
- No of lifts calculated = 39/16.5 = 3 lifts

Tutorial

- **Each student:**
- **Class work :**

Refer to your design project to estimate the number of lifts required to serve your building.