## Services Shafts & Rooms:

1. On typical floor, as far as possible, location of electrical shaft should not be adjacent to fire escape staircase.
2. On floor where any of the service rooms (eg. Meter room, Pump room, BMS room, Fire Control Room) are located:
    a. These rooms should be located as close to the relevant/related service shafts as possible, to avoid unnecessary crossing of cables/wires eg. meter rooms should be located very close to the electrical shaft. This will save unnecessary expense and provide greater space for other uses on the said floor where service rooms are located. This is especially important on the ground/entry floor to ensure that the height of the entrance lobby is not compromised.
3. Electrical meter rooms should have a fire door and frame with 2 hours fire rating. Fire resistance door and frame of 2 hr rating to be used in case of Electrical ducts, in case they have door opening into/inside a fire escape staircase.
4. Ideally for all plumbing/water verticals passing through a deck/utility area/service slab/other accessible area inside the unit, only shaft (not sleeve) should be provided which is sized rationally and to the minimal sized needed. As far as possible, instead of having pipes on both sides of a balcony/utlility/service slab, try to locate as many of the pipes as feasible onto one side. It is to be ensured that the plumbing and electrical provisions in a utility area are on the same side of the utility area to allow a washing machine to be installed and operated easily.
5. The floor level opening of the shaft in any areas which are accessible by humans should be protected with a 1 ft high brickwork / mesh to prevent material or small children from falling into the shaft.
6. For all shaft doors which are exposed to weather / on external facade, the door should be of such material that it does not get spoilt by exposure to rain or sunlight (eg. wooden doors coated with polyeurathene-based paint OR steel door).
7. While designing the service routings, it is to be ensured that no wet services pass through the electrical or meter rooms.
8. Following services rooms should be air-conditioned:
    a. LV Electrical room in residential buildings with height > 100 m (maintain to 30 C), all commercial with height > 24 m and retail mall (not Boulevard shopping centre) buildings.
    b. Lift Machine Room (LMR) to the desired temperature of the manufacturer specification (generally 30 C) for all lifts > 1.5 m/s.
9. Cable trays (or any other form of trunking) should be used for vertical runs of service cables in all very high rise buildings (> 150 m). However, no of cable trays / encasing should be moderated by combing various cables on the same cable tray (if they don't interfere with each

other due to proximity). Fire alarm cable should be placed in GI trunking to ensure appropriate fire resistance duration.

10. Doors of service shafts on habitable / public access areas:
    a. All doors to service shafts should be kept as small as practically possibly (max. height of 1 mtr.).
    b. To reduce costs- In parking areas, all service shaft doors to be in metal with paint finish to match the wall surface around the shaft opening.
    c. These doors should be lockable with a LNKey whenever they are located in a publicly accessible area (eg. passage, staircase) or inside a habitable unit. They should be kept locked at all times, except when under service by the FM department. All keys for these ducts should only be handed over to the FM department/society and not to the individual unit occupants.
    d. In order to provide easy access to the fire duct in case of a fire emergency, the LNKey should be placed in a 'fire breakable' box close to the fire duct.
    e. Inside the unit, the service door should be so located that they are atleast 0.600 m above the slab level, to avoid falling of object/humans slippings in the shaft area. The service junctions inside the shaft should be planned accordingly keeping in the mind the service door height and location.