

Topic 10

CORE DESIGN MALL



Definition of Core

- The **central of arterial part** of a multistory building that integrates **functions and service** needs for established occupants. Such areas are normally composed of toilet facilities, elevator banks, janitors' closet, utilities, mechanical facilities, smoke shafts and stair.
- Core also known as facade envelope is a spatial element for load-bearing high-rise building system.

Function of Core

- Tying the building together to act as a unit
- To maximize flexibility in layout
- As shear wall systems to provide the necessary lateral stability for the building
- Resist lateral forces from any direction
- Carries gravity loads
- Cores = service core = risers
- Elevators = Main vertical circulation system

Designer's Consideration

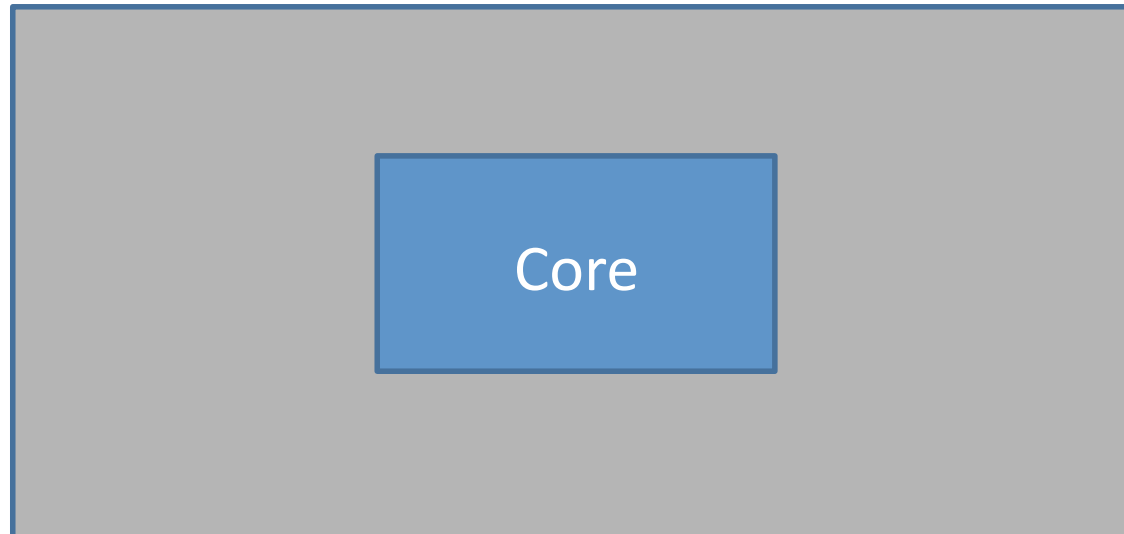
- Typical floor plate sizes
- Typical floor plate efficiency
- Staircase positions
- Tenancy options
- View outward
- M&E risers and routes
- Structural system options
- Material for the construction of core

Building Core: Elements and Design

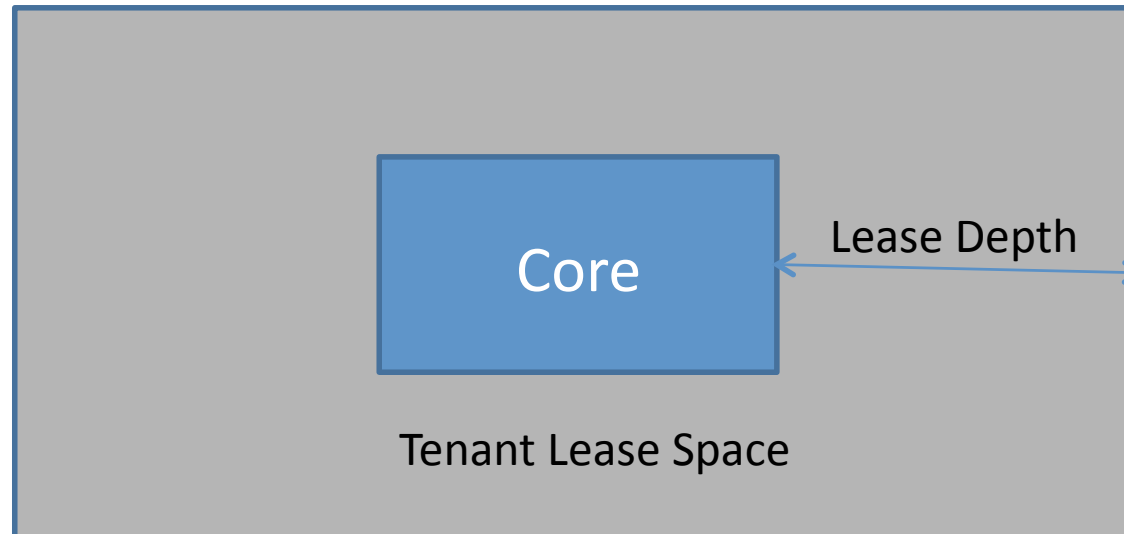
The typical floor plate of the standard commercial office structure contains the following:

- Vertical Circulation Core
- Open Lease Space
- Optional public corridor.

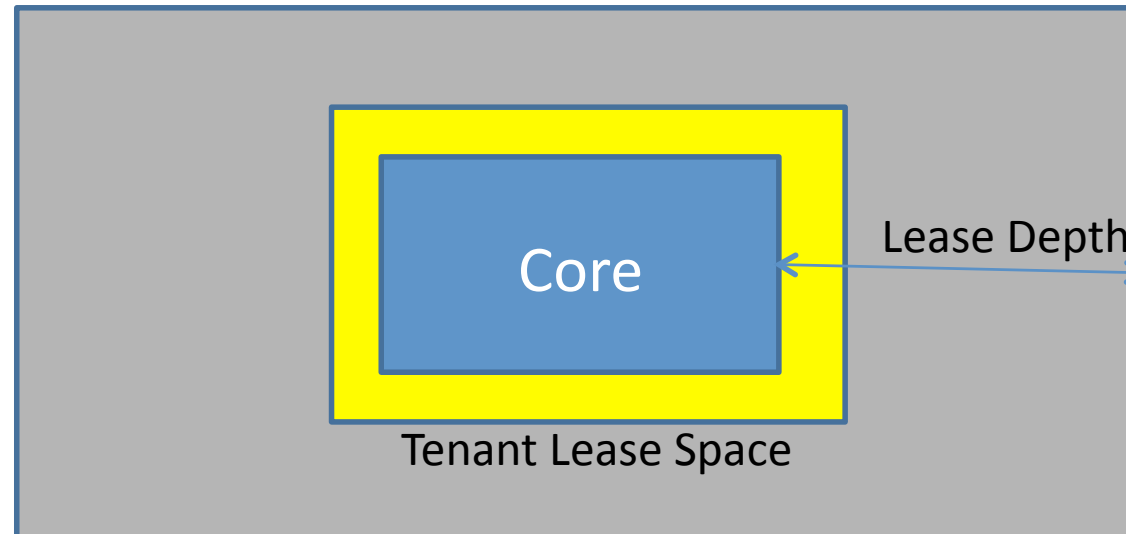
Building Core



Lease Area

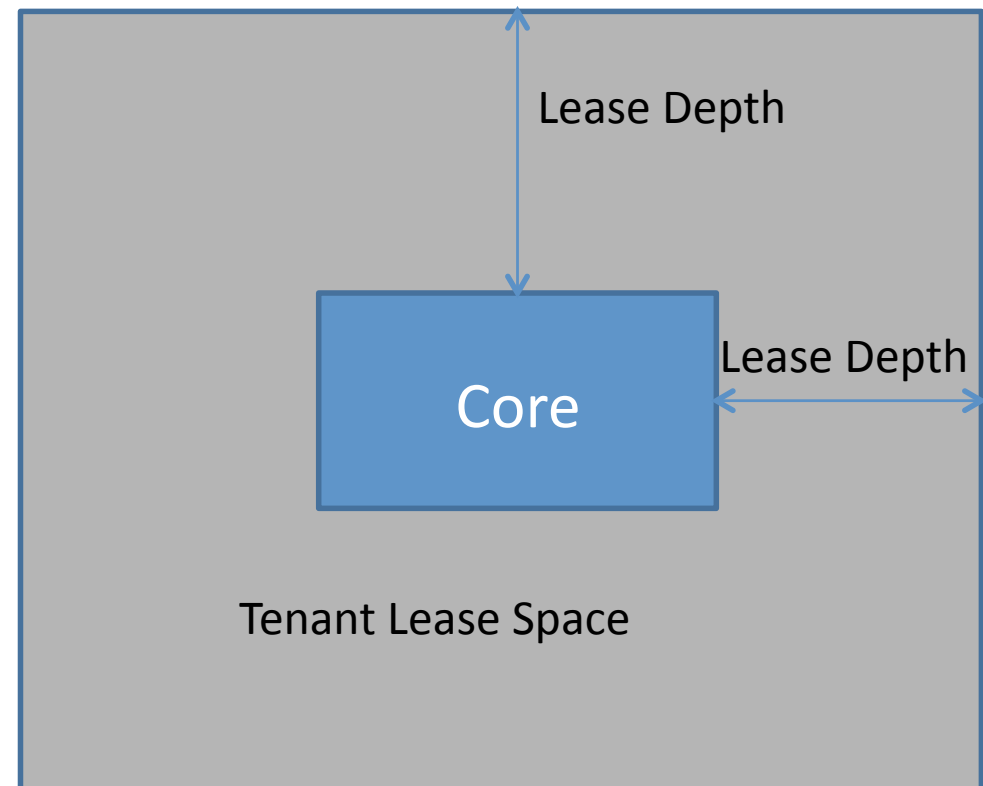


Optional Corridor



Central Core

- In the central core the lease depth is relatively equal around the core of the building.
- The Tenant can lease the entire floor plate or a portion of it.



Central Core

Advantages

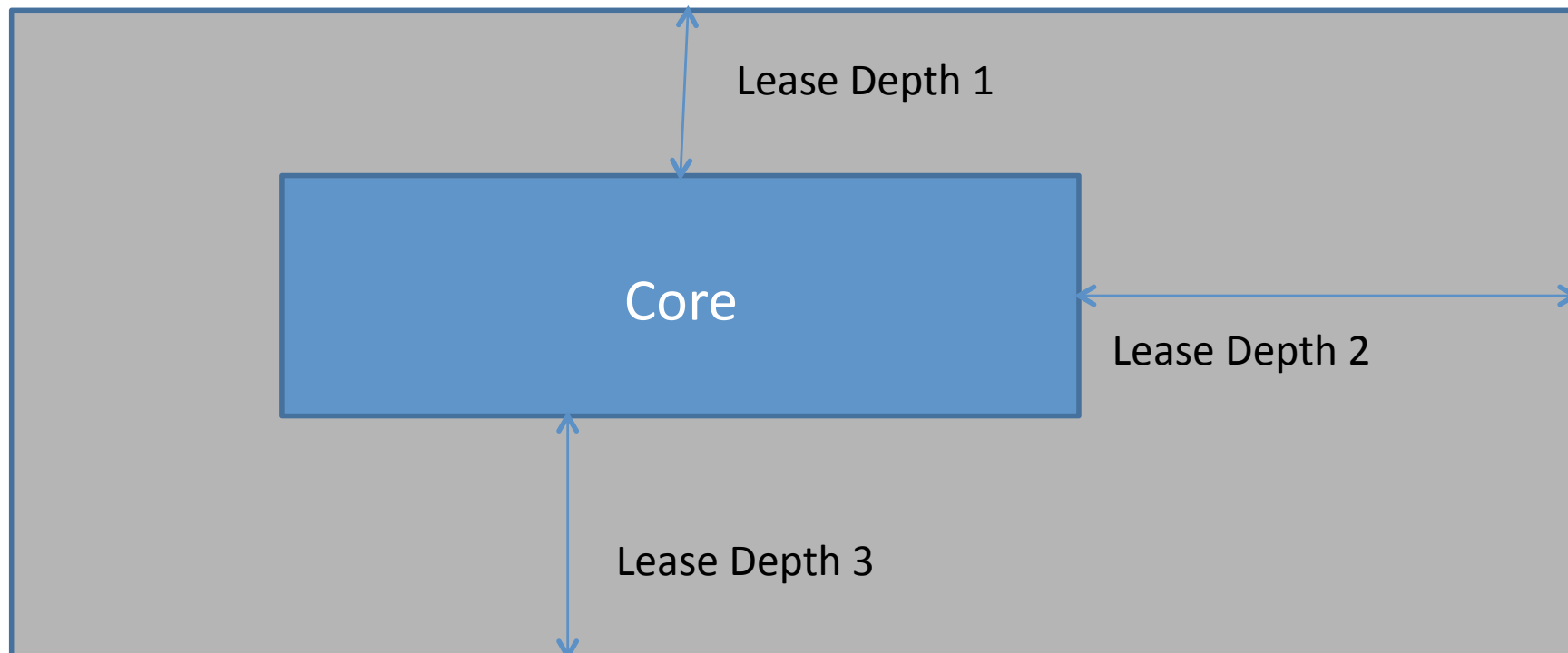
- Allows all window all window space to be utilized as rental of the building plan will permit offices of verging depths to receive natural light
- Extremely convenient of access and in some cases may be equidistant for all side
- Simplifies area division & provides good flexibility of tenant distribution in the some way
- Horizontal utility runs may also relatively equidistant from the core
- Combine with a square building plan, bearing exterior & core walls, this location permits a floor plan tree of columns and thus totally flexible for office layout

Disadvantages

- The central interior location limits the depth of offices in the mid-zone of each floor
- It requires an access corridor around its perimeter

Off Center Core

- The off-center core places the core off center creating differing lease depths.
- This provides greater leasing options.



Off Center Core

Advantages

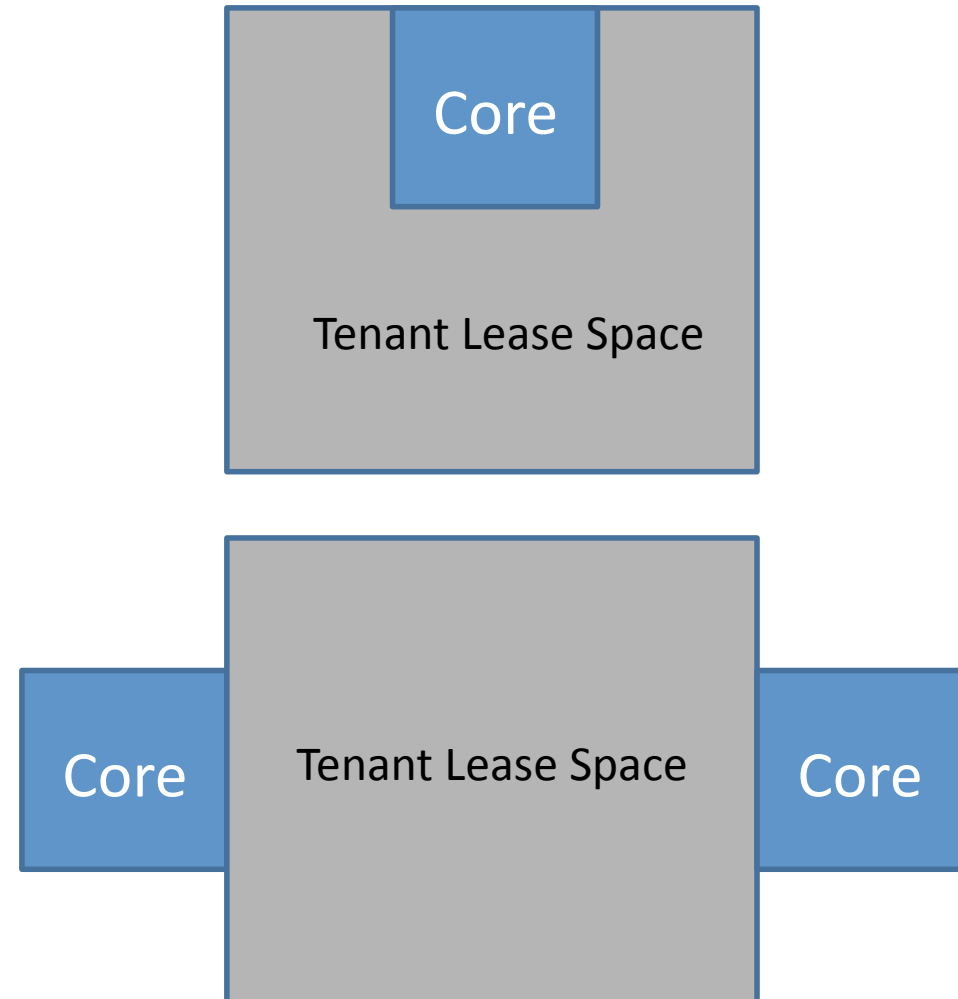
- All window or building perimeter space to be used for offices
- More flexibility in maximum depth and arrangement of spaces
- Affords the opportunity of developing small secluded space in the relatively narrow portion of the floor plan where the core is closes to the exterior walls.

Disadvantages

- Present some problems of access
- Less flexibility of tenant distribution
- Remote and thus less convenient to the far sides and corners of the building

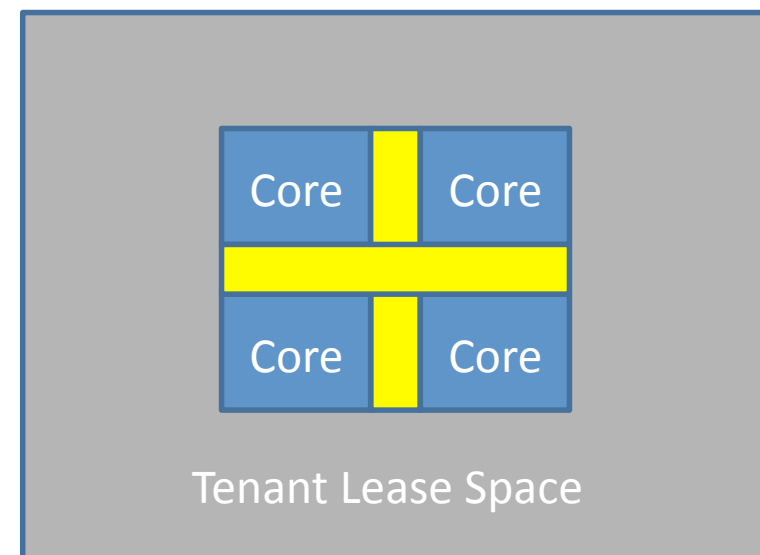
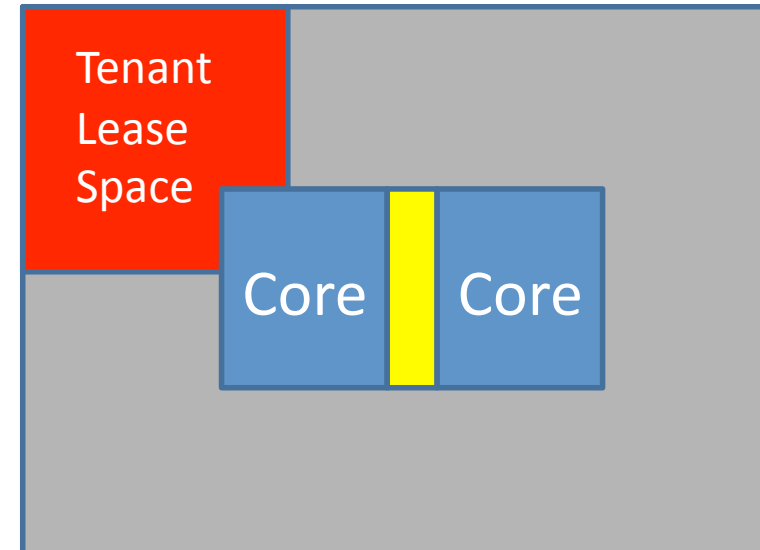
Exterior Core

- In the Exterior Core configuration the core is pulled either to one side or edge.
- If the core is pushed to one side creating a 'dead wall' this can be used to advantage where poor views or party walls present a problem.
- The Core can also be isolated as a separate mass element independent from the lease floor plate.



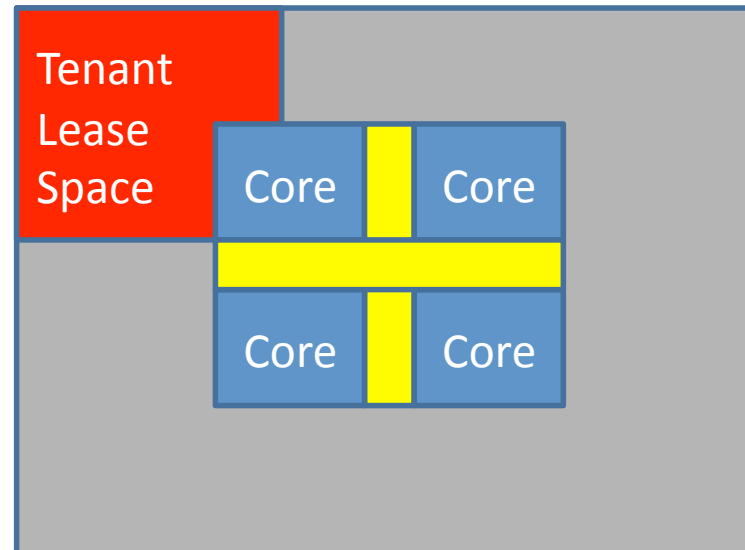
Split Core

- The Split core divides the core with a central space, all components of the core are accessed from this central space.
- This eliminates the need for any peripheral access corridor and lease space can extend right up to the walls of the core elements.



Split Core

- The Split Core can be divided in any number of ways. It should be noted that this increases the depth of the core and therefore the size of the floor plate.

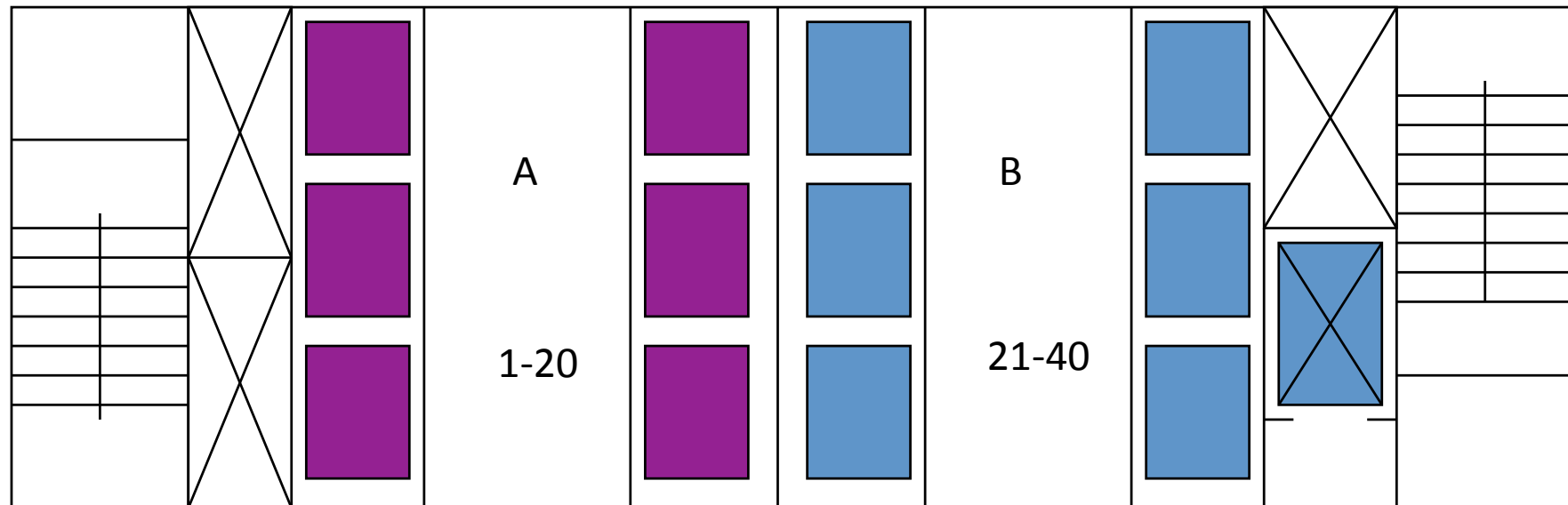


Material

- **Steel**
 - Large and costly
 - achieve its lateral stability.
 - necessary core stiffness
 - relatively rapid assemblage of the prefabricated members.
 - Enclose space, no extra consideration need to be given to fire proofing.
 - Lack of ductility
 - Respect to earth quake loading

Elevator Configuration in Tall Buildings

- Different banks of elevators serve different floors



Elevator design and Configuration

Elevator design should give optimum:

- Number of elevators
- Types of elevators
- Elevator capacities
- Arrangement of elevator

Service-core layout & space

- Elevator car sizes & shapes **requirements**
- Elevator door types & sizes-common widths 1.1 m or 1.2m
- Elevator shafts -are according to car shapes & sizes, and door sizes. Sufficient air around cars & counterweights should be provided to minimize buffeting & air-borne noise during operation.
- Elevator core & lobby planning -‘outward facing’ elevators VS ‘inward facing’ elevators.

Lease Space Planning

Lease space can be arranged in basically two general configurations:

- Perimeter Office
- Executive Core

Executive Core

Executive Core

- Increasingly we see the introduction of the executive core which moves the executive offices to the center of the floor plate.
- This allows greater light penetration and maximizes the number of people who get a view.

