

# The Essential Guide to Architecture and Interior Designing

#### **Full Version**





# The Essential Guide to Architecture and Interior Designing

Full Version www.07sketches.com

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MASTER BEDROOM DESIGN







# Foreword

Whether it's a small or a big project, there are multiple details and lots of thinking involved in an architectural design. From the beginning to the end, architects think and design in such a way that the design is functional, safe and aesthetically interesting.

Before designing and thinking about how the design will function, one must know the architectural drawing standards, human dimensions, how the basic design functions and looks like, knowledge of graphic design, knowledge of basic design, knowledge of colour scheme and understanding the user.

07Sketches - *The Essential Guide to Architecture and Interior Designing* is a unique and informative book with all these points compiled.

Each page is very well compiled with graphical handdrawn images and sketches with the complete explanations. As an architect, a designer or a student, you need to know the standards and specifications before stepping into designing. This book is ideal for someone who is an architect, interior designer, student or interested in the creative aspects of architectural design, hence you can refer to this book in your designing journey.

With the use of tips, suggestions, and visual representation, this book will inspire and motivate you to learn more about this field.





## Living Room Essentials and Dimensions



# Living Room Design

#### Central feature wall:

The feature wall is a main and focal wall in a living room. It can be decorated with different elements such as wall art, photo collages, etc.

In this living room, the feature wall elements are the T.V. unit, cabinets with storage and photo frame collage. The background material of the T.V. unit set is chosen in contrast with the wall in the background. To make it more interesting, horizontal panels are used in the T.V. unit set. The colour scheme of the room is monochromatic, hence the furniture colour blending with the room. To break the symmetry on the feature wall, the photo frame collage is decorated. The seating elements of the room have the same kind of material and colour. A big carpet is placed below the seating elements to make the space feel bigger, and the colour of the carpet is choosen according to the non-feature wall to create a balanced-looking environment.



Feature wall - T.V. unit



In this living room, the feature wall elements are the fireplace, two casement windows, indoor plants on top of the fireplace and photo frames at central axis of the feature wall. This feature wall is symmetrical in nature. The furniture colours are chosen from one single brown palette. The indoor plant is placed at the left side to keep the environment cozy and more connected to nature. To stand out from different elements, the corner wall is painted in a dark colour. In this way, the central part of this feature wall visually comes out. The two casement windows can also be covered with full curtains in case of personal preference.

Feature wall - fireplace

### **Living Room Essentials and Dimensions**

#### **Seating Elements**



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#### The focal point arrangement:

In this arrangement, the sofa and armchairs are placed in such a way that if a person sits, he/she can directly see the T.V. in front as shown in the diagrams.













#### Arrangement for discussion:

In these diagrams, each seating element is in front of each other. In this way, people can easily see each other while having conversation.

#### Arrangement that is balanced:

The arrangement looks balanced in these diagrams because the armchairs on the left side are balancing the 3-seater sofa.





#### Symmetrical arrangement:

The symmetrical arrangement looks visually weighted from all the sides.



Floorplan 3

Floorplan 4



#### Arrangement:

Living room of 4.72 meters by 3.9 meters.

The living room is arranged in such a way that it has both seating and study spaces. As shown in the floorplan, there are two seater sofas and two armchairs arranged on a big carpet/rug. While designing or arranging a living room with sofas, armchairs and a coffee table, placing a carpet makes a living room more cozy and looks more arranged. A study table, upper cabinets and two chairs are placed on the right side. For proper focus, the study table is therfore placed a little ways away from the T.V. unit and the window. There is a 1.5-meter-long window on the right side of the entrance.



Colour scheme





Placing and arranging the sofa, armchair and coffee table with a rug/ carpet is the most important thing. Don't frame the coffee table only. Don't use two different shapes and sizes of carpet/rug to frame all the elements. A smaller rug/carpet can make a room look smaller, and using a different size and shape creates a disjointed and uncomfortable feel.



Use a large rug/carpet that frames the entire elements as shown in the drawing. There are various sizes of rugs/carpets available; always go for which suits your living room by considering the size, colour scheme and environment. The advantage of using a large rug/carpet is that it creates an illusion of more space. After placing a large carpet/rug, you are good to go.







For discussion (no T.V. unit)

2.13M 6.9r 7.46m (24.47') (8.48) 4.57m ( 14.99' Step 1 2.15M 6.48 7.46m (24.47') 98 4.57m (14.99

**Living room with a dining table:** A room of 7.17 meters by 5.57 meters is getting separated in two different spaces. The living room has a sofa, carpet, armchairs, pouf and a storage space. The dining room consists of a dining table with chairs and a storage space for food. The console table is dividing these two spaces visually. Each space has two different entrances; the use of guidelines as shown in the second step helps to put all the things in place, and the room looks equally distributed.









There are a number of opportunities for an architect or an interior designer while designing the living room. Living room styles differ from region to region, and the design should reflect the behaviour of nature and the user. In each option, the placement of each element is arranged in such a way that it creates a welcoming and cozy environment. By using different sizes and colors of rug, different types of sofa and changing the orientation of elements, this can create different options with different flow and circulation. While designing or arranging these elements, one should take care of how space is getting used. With the use of same elements and space, each option has a different central piece of importance in it.



Step 3, option 2

Step 3, option 3

#### One room size with different furniture pieces and configurations



Use a console table to divide the space that contains the T.V., and the seating space with two separate rugs as shown in the floorplan.



The configuration of this room is in such a way that the living and study spaces are arranged at the bottom side of the room so no space is wasted.



The L-shaped accessway helps the room to divide into two different spaces. The T.V. and the sofa space are placed at the top left part, with a study table at the right wall just in front of the accessway as shown in the floorplan.



A big opening in this room gives more light and views, which is why the chaise sectional and armchairs are placed in the axis of the opening with the 3-seater and study space at the right side.



In this room, there are a total of four accessways that are in a linear manner, and the sofa, armchairs, study table and console table are arranged in the central axis of the room.



In this room, the space on the left side is big enough to place a U-shaped sofa with all the required elements. The study table is again placed at the right wall, and a console table is dividing these spaces.

# Living Room Designs

#### Living rooms - colour scheme with different configurations and furniture pieces

While designing the living room, select a type of personality that will blend with your house or with different rooms. Add interesting elements on the accent wall, and use a full wall curtain to make the space feel bigger. Use a rug/carpet that is based on the colour scheme of the room. Add some contrasting pillows on the sofa, add indoor plants, and you will get good results of the overall space.





Formal living room

Formal living room with a study table or a workspace





### **Living Room Designs**

### Living rooms - same configuration and furniture pieces with different styles

#### Traditional style

In the traditional style, there are several elements that look classical. Use of materials such as bronze and warm colour selections for furniture pieces help to enhance the classical view. The door trim and all the furniture pieces are also carved out in such a way that everything blends together. The traditional style varies region to region. In this room, all the seating elements have the same material and colour. The console table, coffee table and dining table are carved out similar to that of other furniture pieces, like workspace cabinets, etc. The accent wall is decorated with mirror and indoor plants.



#### Modern style

The modern style eliminates unnecessary detailing. The flooring is bright in colour, and therefore, each space looks spacious, open to our eyes. The furniture used in this type of style is eye-catching and simple in shape. Use of leather sofas and leather armchairs helps in comfort and simplicity. Use of accent colours like dark gray makes the space more interesting and balanced in nature. The use of the right combination of furniture pieces and materials helps the space look fresh and casual. There is no use of over-detailed furniture pieces and carvings on the door.



### Living Room Designs

#### Living rooms - same configuration and furniture pieces with different styles

#### **Minimalistic style**

The minimalistic design is very much similar to that of the modern style. The main goal of the minimalistic style design is to focus on a clutter-free space and the use of a simple colour tone. In the given drawing, there is the use of monochromatic colours. Also used are clear and clean workspace tops, clean and sleek coffee tables, and console tables. In this style, the shelves are hidden by the sliding cabinets as shown, and this small design makes a huge difference on the overall space. No overused geometry, textures and colours is the main goal of the minimalistic style. The accent wall colour is similar to the leather sofas, and the use of the same colour of dining and workspace chairs is done.



#### Industrial style

The industrial style design is inspired from old factories and industrial spaces. This style is rustic in nature. In the given space, there is the use of an exposed brick accent wall and concrete floors. To achieve an industrial style look, the colour scheme is the most crucial part. The main goal of this style is to provide rustic, rough textures on the walls and furniture pieces. The console table, dining table and workspace are finished in the matte colour. One wall and the floor are similar through the use of concrete, which makes the space feel bigger to our eyes. The colour of the carpet is matching with the exposed brick wall, and seating elements in a dark gray colour are used.



Large living rooms - different configurations and furniture pieces



Large living room with attached dining room, workspace and space for a piano



Large living rooms - different configurations and furniture pieces



Large living room with attached dining room, workspace and space for a piano



#### L-shaped living room layouts



The seating elements, the chaise sectional and armchair, are placed at the corner and oriented towards the T.V. unit. Indoor plants are used in between to visually divide the workspace and dining area. To keep the two walls balanced, a console table is placed opposite to the workspace. There should be enough room around the dining table for a better flow, which is why the dining table is placed at the central axis.



The fireplace is the central feature of the wall, and the seating elements are oriented towards it. There is an adequate space while entering the living room. The workspace is placed opposite to the entryway, and it has a separate window. As we have enough space of 3657 mm, the dining table and armchairs with the pouf are placed at the central axis of the room and oriented towards the fireplace.

The best way to separate different spaces is to use a freestanding console table in between. As shown in the layout, the T.V. unit and workspace are separated, and both have their own environment. The sofa is oriented towards the T.V. unit as well as the outdoor deck; in this way, anybody can enjoy the outdoor view while watching the T.V. The dining table is separated with enough storage space beside it.



After entering the living room, there are two spaces that are placed opposite to each other. The armchair seating is oriented towards the window, and the T.V. unit space is placed at the right corner wall. The console table is used to divide two different spaces. The workspace and storage cabinets are placed against the right wall, and the dining table is centrally placed just in front of the other accessway axis.



The use of the big carpet, T.V. unit and furniture just in front of the entrance makes the space more spacious to our eyes. The workspace and the dining table are placed at the front side, and the main element, or the focus, is towards the living space area. To keep the visual balance while entering, indoor plants are placed against the front wall. There are ample storage cabinets placed beside the dining table.



There is only one big opening (accessway) from the dining area. The living room is at the corner, and the L-shaped sofa is placed along the wall with enough space for the T.V. unit in front of it as shown in the floorplan. To enjoy the outdoor view, the armchairs are oriented towards the big sliding windows. The workspace table is placed opposite to the dining table with windows at the left side.



The circulation of the given floorplan is in the linear manner. Due to the balanced arrangement of all the elements, the space feels spacious and inviting to our eyes. The study table or the workspace is placed along the corner wall so that the circulation is free and we get more space around the dining table. The freestanding console table is placed on the central axis of the room just beside the dining table. The main feature element of this floorplan is the fireplace, which is placed at the corner. The corner fireplace is beneficial, as two walls get heated and the interior environment remains warm. A freestanding console table is placed at the centre of the room to visually divide the workspace and all other seating elements. We get enough storage cabinet space at the right wall beside the dining table.



### **Standard Kitchen Elements - Sizes**



# Standard Kitchen Sizes and Working Zones



Layout showing different zones in a kitchen



The working zone for two cooks should not be less than or equal to 1060 mm.



For a better flow, always place two working zone elements around 1220 mm to 1225 mm

#### Layout showing standard kitchen dimensions





From wall to working zone, the distance should be around 1066 mm to 1068 mm.





Less than or equal to 1015 mm from wall to working zone is not recommended.

# Working Zones and Common Mistakes to Avoid

#### Kitchen triangle



About the kitchen triangle or working zone:

The kitchen triangle or working zone is the most important element in a kitchen. In this triangle, there are three basic working elements: the refrigerator, the sink, and the hob or cooktop. The arrangement of these three elements should be like this.

You cook any meal and you usually take the ingredients from the refrigerator, wash, and prepare them near the sink and then further proceed to the cooking.

Calculation of the working triangle:

Depending on the kitchen style, size and design, each triangle should be at least 1220 mm to 2700 mm, and the sum should be 3960 mm to 7920 mm. This may vary according to design styles.\*

#### Common mistakes to avoid while designing kitchens



# Standard Kitchen Sizes and Types of Kitchen

Kitchen types and dimensions



# Standard Kitchen Sizes and Types of Kitchen

Kitchen types and dimensions



#### Kitchen with island counter



Having a kitchen island counter is beneficial, as it gives more countertop space, which means more preparation area. A kitchen island always looks beautiful when it is placed properly. Also, putting the main sink in the island can improve the overall functionality.

#### **Galley kitchen**



A galley kitchen consists of two platforms, which are placed parallel to each other and form a corridor in between to work. The galley kitchen design can make a space more inviting and can improve the overall traffic flow between the working zones.



A peninsula kitchen can be used to install more storage, though it is also used for additional preparation. Plus, adding chairs will have it function as a breakfast nook.

### Kitchen Elements Different types of kitchen units

Choosing or designing the kitchen units according to the client's requirements is crucial. The overall look or the design of the kitchen depends on the units. There are three basic categories of kitchen units: base units, wall units and tall units. Before planning or designing the kitchen, it is important to learn different types of units and their functions. Having no knowledge of kitchen units and directly jumping on the placement can make the kitchen worse in terms of its function and design. **Base units** gives us the easy access to everyday items and enough storage space to store utensils and other cooking materials. **Wall units** are used to store and display materials, and they're generally very heavy, hence requiring proper installation. Tall units, namely cabinets, can be used as a pantry. You can decide on adjustable fittings like shelves and drawers in the tall units according to your needs.





Four drawers

1/2 circle carousel in corner

Diagonal corner

## Kitchen Elements

Different types of kitchen units

Wall units



Four shelves

Housing for oven and fridge

Housing for fridge

# **Kitchen Design**

#### Storage

Organization of storage is an important aspect of maintaning a functioning kitchen. If the storage is not planned properly, you won't be able to cook effeciently. In the given elevation diagram, there are many hangers to hang different preparation essentials. Hang as many things possible between the worktop and wall unit cabinets, as these should be the most frequently used elements while cooking. Always avoid adding hangers just above the hob. Big cooking tins and utensils should be stored in the base units, as they are heavy. Pans and spoons should be stored in the drawers near the hob. Flour, pasta and rice should be in the wall unit.



age for the sink and wet preparation, there should be enough storage space to keep cleaning materials. Cleanliness is crucial. Always keep washing utensils right beside the sink. After washing the food, the next step is to cut or clean them, so there should be a different rack for knives and chopping boards as shown in the elevation. Provide hangers to hang towels. Use pull-out drawers to put trays inside. To enhance the natural light, try to place the window above the sink so that one can enjoy the outdoor view while washing or preparing the food.

Always make sure that

while designing the stror-

Storage - sink and wet preparation

SINK WITH

STIRAGE

I

PULL-DUT

TRAY SLOT

TOWEL

HANGER

DISH

WASHER

FOOD BAG

STORAGE

CLEANING

MATERIALS

### Kitchen Design Different types of worktop edges

Kitchen worktop edges are essential because if the water spills on the countertop, it'll drip down to the floor instead of directly towards your cabinets. The edges are designed in such a way that they are easy to clean and safe for the user with no sharp edges. The selection of worktop edges should be done with respect to your kitchen style. Worktop edges are the final finishing touch for your kitchen.



#### Different styles of kitchen unit hardware - sizes and placement

Kitchen unit hardware plays an important role when it comes to styling the kitchen. There are different kinds of hardware available on the market. There is no wrong or right rule when it comes to placing and choosing the hardware, but the hardware should look proportionate and well placed. Given below are some elevation drawings of kitchen units with different styles and sizes of hardware.



## Kitchen Design

### Different types of kitchen styles

### Modern kitchen style

The modern kitchen is a type of kitchen in which all the kitchen units and appliances are left unadorned. Use of materials like stainless steel, concrete and wood can all be layered together. The modern kitchen is all about creating a clean, open and functional design. Given below is an example of a modern kitchen style, which is in an L-shape, also known as an L-shaped kitchen, as we have seen previously. There are different elements and appliances in it: a ventilation hood, double built-in ovens, a hob, a side-by-side refrigerator, a dishwasher and an island with a sink in it.



# **Kitchen Design**

### Different types of kitchen styles

### Traditional kitchen style

The traditional kitchen design is a type of kitchen in which the design is marked by its classical design elements and architectural features. This type of kitchen is opposite to that of the modern kitchen design. We can see more ornaments done on the kitchen units, such as moldings, trims and carvings. Eye-catching and small details are the key features of creating a traditional design. Natural rich wood material can be used in this type of kitchen. Given below is an example of a traditional kitchen with all the details and drawings.


### Kitchen Design

### Different types of kitchen styles

#### Contemporary kitchen style

The contemporary kitchen is a type of kitchen in which there is a combination of both the modern as well as the traditional style. This type of kitchen is clean, stylish and uncluttered; it can fit into almost any size kitchen area with the proper use of materials and placement of units. Contemporary design means it involves the trends of the here and now. Decorative elements are used with no complex patterns, making this style very calming. The contemporary kitchen features the use of materials such as light, eco-friendly, recycled glass, plastic and wood.



### **Kitchen Design**

#### Modular kitchen

Nowadays, modular kitchens are popular in many countries. This type of kitchen is manufactured in factories, which consists of ready-to-install modules that can be easily trasnported and assembled. Modular kitchens comes in different styles, types and sizes. Modules are made from machines, so the final design or the final product is of superior and neat quality. If the homeowner wants to shift the kitchen, the modules can be easily dismantled and reassembled at the new site. The planning of the storage area, work area and cleaning area is done according to the room size before the production. Given below is a drawing of the modular kitchen showing different features.



▲ - Sinks are available in different shapes, sizes, materials and patterns. The stainless steel sink is popular, and it's easy to install.

**D** - An elegant shelf design works wonders in enhancing the overall modular kitchen look, and it's also great for storage.

**G** - Two different housings with insulation are done for an oven and a microwave. Keep in mind that the height is appropriate.

**J** - The ktchen countertop material depends on your personal choice, your main options being wood, steel, granite, marble, etc.

#### Single-wall kitchen

**B** - To keep the kitchen clean and shiny, dishwasher housing should be there in the modular base unit cabinets.

**E** - A built-in hob is fitted in the base unit. It looks clean and sleek because all the pipes and wires are concealed.

**H** - Wall units are easy to install, and they can fit in any size. Modular wall units contain a variety of storage options and designs.

**K** - Fitting hangers and shelves on the wall is a great way to maximize the efficiency of a kitchen, and they're available in many sizes and designs. **C** - Tall unit housing is fitted for the side-by-side refrigerator so that everything looks clean and we get an uncluttered kitchen design.

**F** - A built-in ventilation hood is covered by the wall unit. It creates a seamless look, and each wall unit looks balanced.

I - Modular base units come in many different design options for storage, such as pull-out doors, drawers, cabinets, etc.

**L** - There are many styles and types of hardware availabe. Make sure that the hardware matches with the modular design.

# Chapter 3 Pantry

### Kithen pantry and storage unit

The kitchen pantry is a type of storage area in which all the kitchen items such as baskets, cereal, boxes, water bottles, large items, etc., can be stored in shelves, cabinets and drawers. To increase the storage space, the kitchen pantry is directly attached to the kitchen, making it easier to access it.

Storage organization according to the size - shelf height

- 1. Rarely used items 457 mm (at the top) (1.49')
- 2. Baskets 203 mm (0.661)
- 3. Cans 177 mm (0.58)
- 4. Cereal boxes 380 mm (1.24)
- 5. Large items 500 mm (at the base) (1.64')

#### Pantry design - for large kitchens





The butler's pantry is defined as a small area for storage, cleaning and preparing, which is in between a kitchen and a dining room and often connected directly to the kitchen. A 800- butler's pantry contains a 950- worktop with all the prop-(000 er housing for the microwave, oven, dishwasher, etc. Storage of extra items such as heavy appliances, heavy containers and baskets can be stored in the butler's pantry. If one wants to prepare a quick meal/food/breakfast, he/ she can easily prepare in the butler's pantry without disturbing the main kitchen area.



Shelves for rarely used items (bowls, jars, etc.)

Racks for trays, long-length items, gloves, etc.

Wooden baskets, heavy items or large items.

Cabinet for packed food items and glasses

Shelves for spices and frequently used items

Shelves for packed food and plastic jars

Drawers for fruits and vegetables

Single shelf for clothes and tissue paper

### Example showing a kitchen with an attached pantry

The following is an L-shaped kitchen with an attached walk-in pantry and a butler's pantry. To provide enough natural light in the butler's pantry, there is a casement window in front of the sink. Always make sure that there is enough storage space for heavy items in the base units of the pantry. Add cabinets in the pantry to store packed food items, glasses, etc., which helps in avoiding any dust coming in. To get an uncluttered flow, always keep the distance between two units around 1200 mm. Add an additional dishwasher, sink and an oven in the butler's pantry, which helps in preparing and washing without disturbing the main kitchen space. Refrigerator housing is placed or designed in such a way that it can be easily accessed from both the sides.



#### L-shaped kitchen with an attached walk-in pantry

Each area is designed to provide proper flow in between each zone. We get a kitchen triangle or a working triangle in the middle of the kitchen. There is an opening in the pantry to access the dining room.



Perspective plan showing different zones in the kitchen

#### Different types of layouts - big-size pantry

A room of 10.6 meters by 5.1 meters is divided into two parts, one for the kitchen with the attached dining and the other for the walk-in butler's pantry. There are two bigsize sliding windows at the left side where we can fit the eight-seater dining table with an armchair space to read or just to chill in front of it. The step-by-step diagrams or plans are shown to help demonstrate how planning is done for this kind of big space. There is a use of extra kitchen units to increase the storage and work capacity. The walk-in pantry and butler's pantry are combined in one room with all the extra elements, like the sink, storage cabinets, shelves and hangers. Always design the butler's pantry in such a way that meal/food/breakfast can be prepared in the butler's pantry without disturbing the main kitchen.



L-shaped kitchen with attached dining and walk-in pantry

#### Different types of layouts - small-size pantry

Three different rooms are divided, and we get an L-shaped room for the kitchen as well as space for the eight-seater dining table. To get more views and natural light while eating, the dining table is placed just in front of the two big-size windows. The kitchen is designed in such a way that there is an extra seating space for breakfast. A U-shaped kitchen fits (8.85) perfectly in this kind of room as shown. The sink is placed in the middle of the kitchen unit with a window just in front of it to gain more natural light. A sink, hob and side-by-side refrigerator are placed to create an efficient working triangle. The walk-in-pantry or the butler's pantry is designed to maximize the work and storage area. All the cabinets and units are placed in the U-shape according to the room size.

2.7 m

(8.85')





The laundry room is an essential element in a house. The design and planning of a laundry room should be done to save you time and effort while working. The laundry room includes sorting clothes, washing, drying and folding. Arrange the work areas and appliances to facilitate this kind of flow. Think about wet and dry zones while designing. Place a laundry sink beside the washing machine to keep the wet tasks together and separate the dryer and ironing area. For unloading and loading of clothes from the washing machine and dryer, always allow 1060 mm of space in front. Always make sure to add hangers and a space for a built-in ironing rod in the laundry room.

Given below are the different types of laundry room layouts.



#### Different measurements

A - The height of the cabinet above the sink should be at least 730 to 740 mm. -(2.39'-2.42') B - The distance from the worktop to the wall unit should be 700 mm.  $-(2\cdot 29')$ C - The sink height should be around 850 to 900 mm. - (2.78 - 2.95') D - The minimum width for a laundry sink is around 360 mm, and a long sink can extend up to 600 m.  $-((.18^{1} - 1.96^{1}))$ E - Depending on the requirements, the cabinet width is around 350 to 400 mm. F - A long hanger is placed above the washer and dryer. (1.14' - 1.31')G - A compact shelf above the tall unit cabinet is used to keep washing items. H - A tall unit cabinet of 1000 mm is useful when it comes to storage. Long items can be stored in it. -(3.28')I - Drawers and base cabinets are used for storing clothes and cleaning items.

J - A dryer is placed just beside the washing machine.

K - A washing machine is placed just beside the sink, as these two elements are wet zones.

L - Provide at least 400 mm shelves to store items that are used often. -(1.31')M - Always provide 150 to 200 mm of leg room at the base units.-(0.49'-0.65')



Typical elevation of a laundry room

#### Laundry closet design

Things to keep in mind while designing laundry closets



Laundry closet elevation

A - Add door vents on the closet to avoid heat.

B - Add shelves or cabinets above the washer/ dryer, as we get a depth of around 650 mm inside the closet.

C - Install a front-load washer and dryer to get a countertop above.

D - A countertop can be used to keep baskets and other items.

E - Install a hanger to hang the ironing board if there is enough space left.

F - Add hangers above the countertop.

G - Install a ventilation system on the closet celing.

#### Different types of laundry room designs and dimensions



#### Different types of laundry room designs





#### Different bathroom elements



#### **Standard sizes**

While designing a bathroom, one should take care of minimum/ideal measurements inside the bathroom, which helps in providing comfort and safe clearance for general usage and movements inside. Bathroom dimensions may vary in different regions and according to the fixture sizes. **Minimum/required measurements** include 762 mm of clearance in front of the vanity, W.C. and bathtub. The minimum or ideal shower size should be 914 mm by 914 mm. The minimum width of the bathroom door is around 863 mm. Distance from the W.C. center to the wall or obstacle should be around or at least 430 mm. **REFER DRAWINGS FOR DIMENSIONS** IN IMPERIAL AND METRIC.



A well-designed bathroom is comfortable to use, safe, durable and easy to clean. It is crucial/important to know standard measurements. There are many considerations that go into designing. For example, providing proper ventilation, placing bathroom elements correctly, choosing the right materials for the bathroom, etc. Given below are the drawings showing minimum/recommended measurements inside the bathroom, which helps in enhancing the user experience.



#### Different bathroom layouts with standard/minimum sizes

Given below are the standard/minimum dimensions according to the building code. It may vary from region to region.



REFER DRAWINGS FOR DIMENSIONS IN IMPERIAL AND METRIC.

Bathroom layout - shower, W.C., sink (size: 2.5 m x 1.8 m)

Mistakes to avoid while designing bathrooms



#### Incorrect bathroom layout





Incorrect bathroom layout

The most common mistake designers make is placing the W.C./toilet directly in front of the bathroom door. If the bathroom is near to the kitchen, we will get a direct view of the toilet, which is not a good idea. The second layout shown is the correct layout of placing the W.C./toilet.



**Correct bathroom layout** 

### Bathroom Design Different sink/vanity designs

Providing clear floor space and clearance for a wheelchair footrest is very crucial. While designing, an open knee space is given, which is why it is important to know the standard dimensions of it. There are different kinds of vanity/sink designs that are convertible, easy to use and efficient. Given below are some examples shown with the respective measurements.



Note: The turning radius shown is in front of the vanity/sink. This turning radius can extend into knee space (up to around 480 mm).

The open knee space is efficient and can also provide flexibility, as it allows anyone to sit or stand. Knee space can also be used to store a waste bin, chair, stools, etc. The knee space can be designed in many different ways, such as providing retractable doors, folding doors and protective panels. The doors can also be removed, and we can store bathroom items or washing items beneath the countertop.



Retractable-doors cabinet with one sink

Folding-doors cabinet with one sink

No doors - protective panel design

#### Different types of bathroom layouts

# Half bath / powder room - elements (sink and W.C./toilet) IN IMPERIAL AND METRIC.

A powder room is a room that contains a W.C./toilet with a sink. It is a small room with no space for a shower or bathtub. The powder room can be designed near the front entry or in any other public area. Given below are the layouts showing different types of powder rooms.



#### Different types of bathroom layouts

#### REFER DRAWINGS FOR DIMENSIONS IN IMPERIAL AND METRIC.

Three-quarter bath - elements (sink/vanity, toilet, shower and a small-size linen cabinet/shelf according to the requirements) A three-quarter bathroom is different than the traditional bathroom. In this bathroom, there might be no bathtub, but we can see a sink, W.C./toilet and a space for a shower, which can be enclosed with glass panels. Given below are the layouts showing different types of three-quarter bathrooms.



### Different types of bathroom layouts REFER DRAWINGS FOR DIMENSIONS

IN IMPERIAL AND METRIC.

Full bath - elements (sink/vanity, W.C./toilet, bathtub and a linen closet) A full bath is different than that the three-quarter bath. The full bath contains a bathtub but no bathtub and shower together. Given below are some layouts of different full baths.



Layout 5 - 2438 mm x 1524 mm

Layout 6 - 3048 mm x 1828 mm

#### Different types of bathroom layouts

#### REFER DRAWINGS FOR DIMENSIONG IN IMPERIAL AND METRIC.

IN IMPERIAL AND N

Master bath - elements (sink/vanity, W.C./toilet, bathtub, closet and a shower) The master bathroom is connected to the master bedroom and is intended for private use by the bedroom occupants. The master bedroom is more spacious and bigger than all the other bathrooms. Given below are some different layouts of the master bathroom.



### Different types of bathroom designs

In this three-quarter bathroom, the flooring is done with a white marble, which is durable and also looks great. It can reflect the light and make the bathroom brighter. Always make sure that you are using each and every space correctly; the addition of a wall shelf can make a huge difference in terms of storage. Given below are the labelled drawings.



#### Different types of bathroom designs

In this master bathroom, to give a traditional look, the materials chosen are bold and similar to the wood/brown colour scheme. An alcove bathtub is fitted beside the shower area. The W.C./toilet and shower area are separated from each other and are enclosed within the brick wall. Given below are the labelled drawings.



### Different types of bathroom designs

In a three-quarter bath, dark-coloured flooring and wall tiling can make a bathroom more cozy. To add a shine, use metallic accents such as a sink or shower. In contrast with the dark-coloured material, use light colours on the wall to make the overall interior more interesting as shown in the given labelled drawings below.



### Different types of bathroom designs

Limestone cladding is done in this master bathroom, which is good around water and dust. The dust can be easily removed from it. We can see the wood vinyl flooring, which looks stylish and gives a touch of luxury. It is durable and hence is an ideal flooring solution for bathrooms. Given below are the labelled drawings shown.



### Different types of bathroom designs

Designing and choosing correct elements is really important; for example, the use of a free-standing bathtub as shown in the given master bathroom can make a huge difference in terms of the apperance. In contrast with the bathtub and W.C., the dark gray lime-stone is cladded on the wall and white marble is placed on the floor.



#### Different types of bathroom designs

If you want to feel energized when you walk into the bathroom, choose a brown, red and orange colour tone. Add contrasting dark gray elements such as a bathtub, sink countertop, etc. Ceramic tile is cladded on the bathroom wall with a light brown paint on the left wall. Given below are the labelled drawings shown in this master bathroom.







SWING-IN DOOR

W.C./

TOILET

Floorplan of a master bathroom

# **Chapter 6** Closets, Walk-in Closets

### **Closet Designs**

#### **Different types and introduction**

#### REFER DRAWINGS FOR DIMENSIONS IN IMPERIAL AND METRIC.

Closets are used to store and hang clothes and other items, such as shoes, jewellery, etc., in different ways, like hanging them on a hanger, placing them in shelves or by simply putting them in drawers. Closets generally have four kinds of elements, and they are hangers, drawers, shelves and cabinets. In terms of the dimensions, closets are usually 609 mm deep and a minimum of 914 mm wide. The height of the closet can go up to the ceiling, but generally it is around 2438 mm tall from the floor level, which is enough for storage space. Always make sure that the closet depth should not exceed more than 680 mm, or else the space will get wasted. Design doors in such a way that it opens from top to bottom completely. There are various door designs, such as bifold doors, sliding doors, swing-out doors, etc. Given below are different dimensions and designs of closets.



Example 2

### **Closet Designs**

### Different types of designs

There are many types of closet designs, such as L-shaped, U-shaped, etc. Given below are some examples showing different types of closets with all the required elements in it, such as cabinets, drawers, hangers, shelves, etc.



### Walk-in Closet Designs

#### Different types of walk-in closet designs

A walk-in closet simply means a room that is enclosed and contains different types of cabinets, wardrobes, drawers, shelves and hangers to store clothes, hats, jewellery items, boxes and other items. Closets are often designed in such a way that they are in the wall without disturbing the space of the bedroom/bathroom, but in many luxurious mansions/apartments/hotels/houses, walk-in closets are big with an attached vanity or powder room in it. There are different types of walk-in closets, such as double-sided walk-in closets, island walk-in closets, peninsula closets, single-wall walk-in closets, split double-sided walk-in closets, split single-sided walk-in closets, L-shaped walk-in closets and U-shaped walk-in closets. Choosing the correct closet type according to the room type and size is crucial. Given below are some walk-in closet examples shown.



### **Closet Designs**

#### Linen closet

Linen closets are usually designed for bathrooms. The closet should be organized to utilize each space correctly without wasting any area. Usually a linen closet contains drawers, small cabinets, shelves and hangers. The linen closet should be divided into three different zones: At eye level, place things/items that are used frequently. At the top-most part, place the least-used items. At the bottom-most part, place the items that are bulky, such as cleaning items for the bathroom. The linen closet should hold these items listed below:

bath rugs, window and shower curtains, towels of every size, large jars, bottles,

bath salts,

tissue papers,

cleaning clothes,

extra electric elements such as light bulbs, etc.

Given below are some examples of linen closets with the respective dimensions.





### Bedroom

### Introduction and essential elements

We spend about one-third of our lives sleeping in the bedroom. Designing and planning a bedroom is really an important part, as the environment inside needs to be calming, and at the same time, it needs to be private without any disturbance. There are basically two types of zones in a bedroom: a place to lie down and enough area to get dressed and store clothes. Most bedrooms include an attached bathroom and a walk-in closet with other storage furniture, like side tables, a coffee table, a sofa, armchairs, etc. Given below are some different types of bedroom elements with the respective measurements.



## Bedroom Design

#### Standard dimensions

Standard dimensions



#### **Bedroom planning**

#### Floorplan of a bedroom

Different zoning (bubble) diagrams showing how the planning should be done overall can be achieved with an attached closet and bathroom.

Below are different bubble diagrams showing the entrance, circulation pattern and relationship to the walk-in closet / wardrobe and bathroom space. Placing the wardrobe / walk-in closet near the bedroom entrance helps for easy access, which may occur several times in a day without any disturbance in between. Placing the closet/wardrobe far away from the entry door requires travelling through the entire bedroom, which leads to a poor circulation pattern (design). Given below are some examples. shown.


Different layouts - bedroom with an attached closet





This bedroom size allows for furniture to be placed on only two walls with enough area for circulation in between. A closet is in front of the bed and workspace, with storage drawers opposite the entrance wall. A queen-size bed is appropriate for this 3355 mm by 3610 mm bedroom.



This bedroom size allows for furniture to be placed on only two walls with enough area for circulation in between. The T.V. unit with attached storage drawers is placed in front of the bedroom with an armchair beside it to sit. A closet wardrobe is placed in the wall without disturbing the bedroom area. This bedroom is large in size, which allows for furniture to be placed on all three walls with enough circulation space in between. Thd wardrobe is placed in front of the bed without disturbing the main room. A small workspace table and storage drawers are placed together.



This bedroom is large in size, which allows for furniture to be placed on all three walls with enough circulation space in between. Always make sure to place enough seating elements if the room has adequate space in the corners.

#### Different layouts - bedroom with an attached closet

REFER DRAWINGS FOR DIMENSIONS IN IMPERIAL AND METRIC.



This bedroom size allows for furniture to be placed on only two walls. The closet is placed in-wall, and this room is also used as a children's bedroom. The twin beds are separated with one rectangular side table at the central part with a study table and an additional storage space in front of the bed.







This bedroom size allows for furniture to be placed on two side walls. A three-quarter bath and a walk-in closet area is placed in front of the bedroom with a good circulation pattern around and in between the bedroom elements. As this room is around 4.2 meters wide, study and seating spaces can be placed easily.

This is an example of a master bedroom with an attached walk-through closet and a master bathroom. There is an adequate space to fit two armchairs at the corner.

### Different layouts - mistakes to avoid while planning

There are some common mistakes people/designers make while planning bedrooms. Many mistakes include wrong placement of the bathroom or wrong placement of the walk-in closet, which leads to a problematic circulation pattern of an overall bedroom inside. Given below are some examples shown of how a negative bedroom planning looks like and an improvement version of the same. Note: These are just suggestions shown below; this may change according to the room size and configuration.



### **Bedroom Arrangements**

### Planning process - from zoning diagrams to drafted floorplans

When it comes to bedroom arrangements, in most houses, the bedrooms are located at the same place away from the common area. The bedroom doors should not be opened directly to the common areas, like the living room or kitchen. To access the bedroom, there should be some kind of hallway/corridor before entering. Given below are some step-by-step examples showing different arrangements of bedrooms.



Floorplan diagram 1

This is an arangement showing three bedrooms with an attached closet. The bathroom is placed at the centre so that it is easy to access from all the sides.

### Floorplan diagram 2

This three-bedroom arrangement includes a master bedroom. The common bathroom is placed in the axis of the corridor, and it is easy to access from all three sides.

### Floorplan diagram 3

The master bedroom is placed at the right side, as the space is large enough to fit the walk-through closet and a master bathroom. The common bathroom is at the corridor axis.

#### Different types of configurations and furniture pieces

REFER DRAWINGS FOR DIMENSIONS IN IMPERIAL AND METRIC.



The overall size of the bedroom is 4.8 meters by 3.5 meters. An L-shaped closet is placed beside the main door. The furniture is placed on three walls with seating and working elements. The full bath fits perfectly in this kind of configuration.



A single-wall closet is arranged at the entrance. The shower and bathtub are separated, and there is an adequate space to arrange furniture on two walls with a king-size bed.



This configuration is somewhat similar to the previous layout. The workspace and the closet are arranged at the right-side wall with a sectional sofa in front of it.



#### Different types of configurations and furniture pieces



**C (3.50')** The furniture pieces are arranged on two walls with two twin beds. A two-seater sofa is placed in the bedroom. The walk-in closet is placed in front of the main doorway, which is easy to access from all the sides. An alcove bathtub is separate from the toilet.



The walk-in closet is placed between the bathroom and the bedroom. Two different wardrobes are separated in two different rooms. As this bedroom size is bigger, the king-size bed is placed with a workspace beside it. REFER DRAWINGS FOR DIMENSIONS IN IMPERIAL AND METRIC.



#### Different types of configurations and furniture pieces

WINDOW WINDOW OPENING OPENING OPENING OPENING OPENING OPENING OPENING OPENING OPENING OPENING

A king-size bed is placed in the bedroom with seating, a working table and storage drawers at three walls. The walk-in closet and bathroom are placed on the right side of the entrance.



Two rooms are divided for walk-in closet wardrobes. The furniture pieces are placed on three walls of the bedroom. As the width of the overall room is large, a long-size alcove bath is fitted with a vanity, W.C. and bidet.



In this configuration, the W.C. is separate from the bathroom. The vanity is placed in between the bathtub and shower. The closets are separated in different rooms. The furniture elements are placed on three walls of the bedroom.



8840mm (29.01)

REFER DRAWINGS FOR DIMENSIONS IN IMPERIAL AND METRIC.

### Different types of configurations and furniture pieces

REFER DRAWINGS FOR DIMENSIONS IN IMPERIAL AND METRIC.



This bedroom includes a large walk-in closet with a full bath with an attached free-standing bathtub. The seating elements are placed and facing towards the fireplace.



The walk-in closet is placed in front of the entry, and it is easy to access from all the sides. A free-standing bathtub is placed in front of the window. A king-size bed fits perfectly, as the room is large enough.



The walk-in closets are divided into two parts, and there are two doorways to enter the main bedroom space. There is a separate room for the W.C. This bedroom is large in size, which allows for furniture to be placed on all three walls.



11

11/7/1-

CLOSET

### Emergency escape and rescue opening



**Double-hung window** 



The international code states that there should be at least one openable emergency escape and rescue opening in sleeping rooms and basements. The sill height should not be more than 1118 mm above the floor. A minimum net clear opening of 0.530 meters squared is also required. Lastly, there should be a minimum net clear opening height of 610 mm and a minimum net clear opening width of 508 mm.

### Rug sizes in the bedroom

Having the correct size rug for the bedroom can help make the room appear more spacious and larger. Given below are some rug sizes for king, queen and twin beds.



### Different accent wall designs



An accent wall is a wall that is decorated differently from the other three walls. The accent wall is usually painted in a bright or dark colour, or we can use different materials, like paneling, cloth, texture, brickwork, etc. In the above interior, dark wood cladding is done on the wall with a dark brown wood framing around it. It looks bold with a contrasting light gray colour in the background.



The accent wall is decorated with an exposed brickwork with a light brown wall paint around it. A dark brown full wall curtain is fitted on the casement window. White colour bed is placed which is bright and create a sense of spacious space or highlight the overall bedroom interior. Wardrobe and flooring colour matches with eash other.

### Different accent wall designs



The accent wall is decorated with the long vertical dark gray panels, and in contrast, light gray paint is used on the back wall. The overall colour scheme of this interior is dark, and everything looks modern. The same colour is used for the curtains and side wall as well as the furniture elements. The king-size bed is in contrast with the overall interior, with a dark colour on it.



The accent wall is decorated with a photo collage with a bright blue paint behind it. A horizontal golden colour strip visually divides the wall into two different parts. The same colour is used for the side wall and on the wardrobe. The vinyl flooring and the side table colour matche with each other.

# Chapter 8 Entryway, Foyer

# **Entryway and Circulation**

#### Introduction

Providing enough space for movement while entering the house and in between the rooms is essential. Planning according to the size required and understanding the human circulation pattern, these factors are important while designing. Given below are the bubble diagrams shown along with different public and private spaces.

This is a type of house, which is in L-shape. The spaces are divided from public to more private spaces. These different **PVBLI** placements of common and private spaces can make a huge difference in terms of the overall circulation. If the spaces are not placed properly, the overall circulation pattern can end up being poor. In between the entrance and the bedroom, there are different types of common rooms shown, and respectively, public and private zones beside it.





Understanding the private and common rooms can shape the overall building design. In the given bubble diagram, it is shown that we can use the back door to enter a house rather than approach the front. This type of design is done when the home-owner wishes to receive guests from auxiliary entryways. There can be secondary entrances from the garage, mudroom, den space, etc. In this diagram, there are two types of living rooms attached to each other, one for guests and another one that's more private for the family. To connect the private spaces with the outdoor (backyard), there are back doors, as shown in the bubble diagram.

There is a back door for the home office and for the bedroom. An informal living space is placed near the entrance. Rooms such as guest, formal living, kitchen, laundry, utility, hall, etc., can be placed between the public and private spaces, which is also called a common space. This type of zoning is for narrow and long houses.



Bubble diagram (example 3)

# **Entryway and Circulation**

### Differentfoyer/entrywaylayouts



Foyer floorplan 5

## **Entryway and Circulation**

### Differentfoyer/entrywayexteriordesigns

While planning the exterior of a house, one should carefully consider the exterior and interior design of such spaces. An exterior entryway design may be created in many different ways — for example, designing railings that match the house style, designing doors that look proportionate to the overall structure, etc. Adding a useful roof or overhang at the entry is essential, as it allows the person/pet/animal to stand/sit protected at the entrance. Create an entryway in such a way that it's wide and deep at the same time. This allows for movement, storage and general circulation space in between rooms. The main entryway door can create a sense of place within the residence. It helps to convey the meaning of the overall exterior design or exterior style of the house. The entry door should not appear as an afterthought. Given below are some examples shown of how different entryways looks like.





### Introduction and standard sizes

The staircase is an essential element of a building, which is required to connect two or more floors with each other. We can see staircases inside different buildings. In houses, we see staircases in foyers, in great rooms, in living rooms, in front of the porch, in the backyard, etc. Designing a staircase according to the guidelines and building code is important as well as for safety purposes. Staircases have traditionally been built out of materials such as wood, granite, marble, iron, aluminium, etc. Basically, staircases typically contain these major elements: handrail, post, riser, tread, nosing, baluster (if required) and many more. Given below are some standard sizes and dimensions for the staircase. Note: This may differ in different regions according to their building code.



#### **Different designs and measurements**



#### **Different railing designs**

Handrails are crucial in staircases. Handrails are also called banisters. Without handrails, one might fall, which is why choosing and designing handrails is essential. These are some safety tips for rails: Make sure rails are attached properly. Rails should be made out of durable material. The rail should be easy to grip.



#### Cable with metal handrail

Cable railing typically consists of cable. Cable railing is very strong, attractive and low-maintenance. The maximum cable spacing should be around 76.2 mm, though this may vary.

#### Glass with steel/metal handrail Wood baluster with wood rail

Installing glass railings allows one to enjoy unobstructed views from anywhere. Glass railings are superior, as they are both rust- and decay-free. It looks stylish and enhances the beauty of any building. Wood railing is maintanence-free. The elegance of wood is unmatched by anything else. The minimum distance from one baluster to the other is around 99 mm.

### Different types of staircases

There are many types of staircases, such as straight staircases, circular staircases, L-shaped staircases, stairs with a bookshelf, stairs with a closet beneath, three-quarter staircases and many more. Choosing the right staircase that your home deserves is important. Given below are some different types of labelled drawings shown.



Half-turn / U-shaped stairs



U-shaped stairs are essentially consisting of two parallel flights with a landing connecting each other. This type of staircase creates a 180-degree turn at the landing and is hence known as a U-shaped staircase. The landing in between can offer a resting U-shaped point. staircases are easy to fit into an architectural plan and usually designed at the corner.



Plan

**Perspective view** 

### Different types of staircases

### L-shaped stairs





Perspective view

#### **Different types of staircases**



#### **Spiral stairs**

Spiral staircases are usually installed when there is a shortage of space. They are easier to install than other stairs. Most of the spiral stairs come in a kit.

Z-shaped stairs create a shape similar to that of the letter Z, when seen from above. These types of stairs can be installed/built in small or awkwardly shaped spaces.

**Z-shaped stairs** 

#### **Curved stairs**

Curved stairs have a much larger radius and do not make a full circle. They add elegance to any type of interior.



#### **Split stairs**

Split stairs are also called bifurcated stairs, which have a landing and stairs split from it. They enhance the overall look of the interior space. These stairs are typically used in large homes.

# Quarter-landing stairs are also called U-shaped stairs.

Two parallel flights are joined by a landing, creating a

180-degree turn.

# Chapter 10 Windows and Doors

### Windows

### Introduction and different types

Windows are the most important element of any kind of building, whether it's a house or an office. Providing windows can facilitate the entry for natural light and ventilation. This enables the occupants of a building to enjoy the outdoor view. Basically, there are two kinds of windows: windows that are openable and windows that are fixed. Windows contain glass, frames, vertical stiles, horizontal rails, hooks, hinges, sills, etc. Given below are the labelled drawings shown.

#### **Different window materials**

Vinyl/fiberglass, vinyl aluminium clad, aluminium, wood, wood vinyl clad, wood aluminium clad

Basic labelled diagram of a window (example shown: double-hung window)



Head - The head is the main horizontal part, which is at the top of the window frame.

Jamb - The jamb is the main vertical part of a window frame.

Rail - The rail is the horizontal part of the frame, which holds the window panes.

Stile - The stile is the main vertical part of the frame.

Channel - The channel is placed to hold the window glass.

Sill - The sill is a horizontal part, which is at the bottom of the frame of a window.

Mutin bar - The mutin bar divides the individual panes of glass together to make much larger ones.

Casing - The casings are the moldings that go around the window frames.

**Different opening types** 



## Windows

Different types of windows



### Doors

### Introduction and different types

The door is a moving element in a building, which is made up of different materials. There are different door types and styles available, and choosing the right fit for the architecture of any home is important. There are different materials used for doors, such as wood, metal, uPVC, etc.

Considering the use, there are different types, such as sliding doors, composite doors, swinging doors, revolving doors, folding doors, etc. Given below are some different types and examples shown.

Basic labelled diagram of a door (example shown: swing-in door)



Hinge - The hinge attaches two objects together for limited movement.

Casing - The casing is the frame form on which the door is hinged.

Jamb - The jamb is the flat surface that runs vertically up either side of the door frame.

Threshold - The threshold is the sill of the door.

Mullion - The mullion is a vertical member that forms a division between the door.

Rail - The rail is the horizontal piece of the door, which is used to mount hardware to the top and bottom of the door.

Stile - The stile is the vertical piece of the door. They are used to mount locking hard-ware and other hardware.

#### **Different panel doors**

There are different panel doors available, such as one-, two-, three-, four-, five- and six-panel doors. Given below are a few examples shown.



# Chapter 11 History of Architecture

# Taj Mahal, Agra, India

The Taj Mahal, also spelled "Tadj Mahall", is a mausoleum complex in Agra, western Uttar Pradesh state, northern India. The Taj Mahal was built by the Mughal emperor Shah Jahan (reigned 1628–58) to immortalize his wife Mumtaz Mahal ("Chosen One of the Palace"), who died in childbirth in 1631, having been the emperor's inseparable companion since their marriage in 1612. India's most famous and widely recognized building, it is situated in the eastern part of the city on the southern (right) bank of the Yamuna (Jumna) River.

Agra Fort (Red Fort), also on the right bank of the Yamuna, is about 1 mile (1.6 km) west of the Taj Mahal. Resting in the middle of a wide plinth 23 feet (7 metres) high, the mausoleum proper is built of white marble that reflects hues according to the intensity of sunlight or moonlight. It has four nearly identical facades, each with a wide central arch rising to 108 feet (33 metres) at its apex and chamfered (slanted) corners incorporating smaller arches. The majestic central dome, which reaches a height of 240 feet (73 metres) at the tip of its finial, is surrounded by four lesser domes.

The acoustics inside the main dome cause the single note of a flute to reverberate five times. The interior of the mausoleum is organized around an octagonal marble chamber ornamented with low-relief carvings and semiprecious stones (pietra dura). Therein are the cenotaphs of Mumtaz Mahal and Shah Jahan. Those false tombs are enclosed by a finely wrought filigree marble screen. Beneath the tombs, at garden level, lie the true sarcophagi. Standing gracefully apart from the central building, at each of the four corners of the square plinth, are elegant minarets.



Perspective view and features of the Taj Mahal



Site plan, floorplan and section

Over the centuries, the Taj Mahal has been subject to neglect and decay. A major restoration was carried out at the beginning of the 20th century under the direction of Lord Curzon, then the British viceroy of India.

More recently, air pollution caused by emissions from foundries and other nearby factories, as well as exhaust from motor vehicles, has damaged the mausoleum, notably its marble facade.

A number of measures have been taken to reduce the threat to the monument, among them the closing of some foundries and the installation of pollution-control equipment at others, as well as the creation of a parkland buffer zone around the complex, and the banning of nearby vehicular traffic.

A restoration and research program for the Taj Mahal was initiated in 1998. Progress in improving environmental conditions around the monument has been slow, however.

From time to time, the Taj Mahal has been subject to India's political dynamics. Night viewing was banned there between 1984 and 2004 because it was feared that the monument would be a target of Sikh militants.

In addition, it increasingly has come to be seen as an Indian cultural symbol. Some Hindu nationalist groups have attempted to diminish the importance of the Muslim influence in accounting for the origins and design of the Taj Mahal.

Source: https://www.britannica.com/topic/Taj-Mahal

## Villa Savoye, Poissy, France

The Villa Savoye at Poissy, designed by Le Corbusier in 1929, represents the culmination of a decade during which the architects worked to articulate the essence of modern architecture. Throughout the 1920s, via his writings and designs, Le Corbusier (formerly Charles-Edouard Jeanneret) considered the nature of modern life and architecture's role in the new machine age. His famous dictum, that "The house should be a machine for living in", is perfectly realized within the forms, layout, materials and siting of the Villa Savoye.

Located just outside Paris, the Villa Savoye offered an escape from the crowded city for its wealthy patrons. Its location on a large unrestricted site allowed Le Corbusier total creative freedom. The delicate floating box that he designed is both functional house and modernist sculpture, elegantly melding form and function.

The Villa Savoye can be understood as Le Corbusier's refinement of his architectural system, his own personal Parthenon. Its essential geometric volumes embody his concept of the type form, and its careful consideration of procession and proportion connect the building to Classical ideals. At the same time, its clean simplicity and its use of concrete evoke the precisely calibrated works of engineering so admired by the architect. The Villa Savoye represents Le Corbusier's re-conception of the very nature of architecture, his attempt to express a timeless classicism through the language of architectural modernism.

# HISTORY OF ARCHITECTURE - VILLA SAVOYE



#### Perspective view and features of the Villa Savoye



### Perspective floorplans of the Villa Savoye

The ramp winds from the entrance up to the salon, a formal interior space that flows seamlessly into the roof terrace outside. Corbu, as he is also known, treated the terrace as a room without walls, reflecting his desire to fully integrate landscape and architecture.

The ramp finally culminates in the curved solarium crowning the house, whose rounded enclosure appears to be an abstract sculpture when viewed from below. Seen from the roof terrace, the ramp and cylinder of the solarium echo the forms of the ocean liners lauded in Vers une Architecture.

Le Corbusier and Madame Savoye believed in the health benefits of fresh air and sunshine, and considered leisure time spent outdoors one mark of a modern lifestyle.

The Villa Savoye's integration of indoor and outdoor spaces allowed the family to spend time outdoors in the most efficient way possible — the house was, in a sense, a machine designed to maximize leisure in the machine age.

## Florence Cathedral, Florence, Italy

Florence Cathedral, also known as Cathedral of Saint Mary of the Flowers as well as Cathedral of Santa Maria Del Fiore, is the principal church of the city of Florence in Tuscany, Italy. Designed by Arnolfo di Cambio, the construction work began in 1296 and was finished in 1436.

The cathedral is the fourth largest in the world, comprising the Baptistery and the Giotto's bell tower, which is located in Piazza del Duomo.

At the start of the 15th century, after 100 years of construction, the cathedral was devoid of its dome.

The construction of the dome was a long-drawn-out process, and the ultimate credit goes to Filippo Brunelleschi.



Perspective view and features of the Florence Cathedral





The Florence Cathedral was erected on the site of a smaller church dedicated to Saint Reparata. After Arnolfo's death in 1310, the progress of the work was slowed down for 30 years. The Arte della Lana took patronage of the construction of the cathedral and appointed Giotto in 1334 to supervise the work. After the death of Giotto in 1337, Andrea Pisano continued the construction until 1348, when work ceased due to the black death.

Work resumed in 1349 under the supervision of Francesco Talenti, who completed the campanile and enlarged the whole project. Giovanni di Lapo Ghini succeeded Talenti in 1359, who separated the center nave in four square bays. Other architects involved were Alberto Arnoldi, Neri di Fioravante, Giovanni d'Ambrogio and Andrea Orcagna. By 1375, the old church of Santa Reparata was demolished, and the nave was completed by 1380.

In 1418, an architectural design competition was announced by the Arte della Lana for building the Neri's dome. Two master goldsmiths — Lorenzo Ghiberti and Filippo Brunelleschi — were vying for the honor, while the latter succeeded in getting the offer. Brunelleschi took charge of the project, and in 1436, the dome was completed.

The decoration of the exterior of the cathedral started in the 14th century and was completed by 1887.

Source: https://www.thehistoryhub.com/florence-cathedral-facts-pictures.htm

# Frederick C. Robie House, Illinois, Chicago

Completed in 1910, the house Wright designed for Frederick C. Robie is the consummate expression of his Prairie style. The house is conceived as an integral whole — site and structure, interior and exterior, furniture, ornament and architecture, each element is connected. Unrelentingly horizontal in its elevation and a dynamic configuration of sliding planes in its plan, the Robie House is the most innovative and forward thinking of all Wright's Prairie houses.

On the exterior, bands of brick and limestone anchor the building to the earth, while overhanging eaves and dramatic cantilevered roofs shelter the residence. The horizontality of the house is reinforced at every level of the design, from the iconic roofline, to the very bricks and mortar of the building itself.

Through his use of materials, Wright achieves a remarkable balance of tone and color, as iron-flecked brick harmonizes with the iridescent leaded glass of the windows that encircle the building. Broad balconies and terraces cause interior and exterior space to flow together, while urns and planters at every level were intended to bloom with the seasons.



#### Perspective view and features of the Robie House

# HISTORY OF ARCHITECTURE - ROBIE HOUSE @075KETCHES



HISTORY OF ARCHITECTURE - ROBIE HOUSE @OTSKETTCHES



#### Floorplans of the Robie house

### Perspective view and features of the Robie House

The expansive living space at the heart of the home is one of the great masterpieces of 20th-century architecture and interior design.

The light-filled open plan is breathtaking in its simplicity — a single room, comprising a living and dining space, divided only by a central chimney.

Doors and windows of leaded glass line the room, flooding the interior with light. Iridescent, colored and clear glass composed in patterns of flattened diamond shapes and diagonal geometries evoke floral forms, while subtly echoing the plan and form of the building.

In his design of the Robie House, Wright achieves a dynamic balance between transparency and enclosure, blurring the boundaries between interior space and the world of nature beyond.

Source: https://www.flwright.org/researchexplore/robiehouse

## The Colosseum, Rome, Italy

The Colosseum, also named the Flavian Amphitheater, is a large amphitheater in Rome.

It was built during the reign of the Flavian emperors as a gift to the Roman people.

Construction of the Colosseum began sometime between 70 and 72 A.D. under the emperor Vespasian.

It opened nearly a decade later and was modified several times in the following years.

The massive structure measured approximately 189 by 156 meters (620 by 513 feet), towered four stories high and included 80 entrances to the amphitheater - 76 for the patrons, 2 for participants of events, and 2 exclusively for the emperor to use.

The sheer number of entrances proved to be necessary: The Colosseum could hold more than 50,000 spectators at its maximum capacity.



#### Perspective view and features of the Colosseum

# HISTORY OF ARCHITECTURE-THE COLOSSEUM @075KETCHES



#### Perspective view, plan and features of the Colosseum

When the Colosseum first opened, the emperor Titus celebrated with a hundred days of gladiatorial games. Emperors traditionally attended the games.

The emperor Commodus is known to have performed in the arena on hundreds of occasions. Aside from the games, the Colosseum also hosted dramas, reenactments and even public executions.

Eventually, the Romans' interest in the games waned. After the fall of the Western Roman Empire, the Colosseum began to deteriorate.

A series of earthquakes during the 5th century damaged the structure, and it also suffered from neglect. By the 20th century, nearly two-thirds of the original building had been destroyed.

Nevertheless, a restoration project began in the 1990s to repair the Colosseum. Today it is one of modern-day Rome's most popular tourist attractions, hosting millions of visitors a year.

Source: https://www.nationalgeographic.org/encyclopedia/colosseum
## Rich Roman houses, Domus, Rome

The Roman domus was much more than a place of dwelling for a Roman family. It also served as a place of business and a religious center for worship.

The size of a domus could range from a very small house to a luxurious mansion. In some cases, one domus took up an entire city block, while more commonly, there were up to 8 domus per insula (city block). All domus were free-standing structures.

Some were constructed like modern-day townhouses with common walls between them, while others were detached.

As the centerpiece of the house, the entrance hall was the most lavishly furnished room. Also, it contained the little chapel to the ancestral spirits (lararium), the household safe (arca) and sometimes a bust of the master of the house.



### Perspective view and floorplan of a domus

## RICH ROMANS HOUSE (DOMUS) @075KETCHES



### Perspective section view and features of a domus

A Roman house didn't look out directly onto the road, but rather into a small passageway. The vestibulum, the corridor that led from the main door onwards into the atrium, was called the fauces.

Aside from the main door, there was a servants' entrance, the posticum, usually positioned at the side of the house. It was used by slaves, servants, humble visitors or sometimes even by the master of the house, who sought to leave the house unnoticed by the prying eyes of onlookers in the main street.

The atrium (lobby) was originally the bedroom of the family's matriarch. The Romans kept the bed (lectus genialis) standing opposite the main entrance as a symbol of the sanctity of marriage.

There were several kinds of atriums: the impluvium, the tuscanium, the tetrastylum, the corinthium, the displuviatum and the testudinatum.

## Solomon R. Guggenheim Museum, New York City, U.S.

The Guggenheim Museum grew out of the art-collecting activities of Solomon R. Guggenheim (1861–1949), who was part-heir to a fortune made in the American mining industry by his father, Meyer Guggenheim.

Solomon began collecting abstract art in the 1920s, and in 1939, he founded the Museum of Non-Objective Painting to display his collection in New York City.

This museum, which was owned and operated by the Solomon R. Guggenheim Foundation, was renamed the Solomon R. Guggenheim Museum in 1952.

In 1959, the museum received a permanent home in an innovative new building designed by Frank Lloyd Wright. The building represents a radical departure from traditional museum design, spiraling upwards and outwards in smoothly sculptured coils of massive unadorned white concrete.



Perspective view and features of the Solomon R. Guggenheim Museum



Section of the Solomon R. Guggenheim Museum

The museum was expanded in 1992 by the addition of a nearby 10-story tower. Wright's building became one of his most iconic designs, and it was designated a World Heritage Site by UNESCO in 2019.

The Guggenheim Museum has a comprehensive collection of European paintings throughout the 20th century and of American paintings from the second half of the century.

The museum has the world's largest collection of paintings by Wassily Kandinsky and rich holdings of works by Pablo Picasso, Paul Klee and Joan Miró, among others. Modern sculpture is also well represented.

The exhibition space of the interior consists of a spiral ramp of six "stories" encircling an open centre space lighted by a dome of glass supported by stainless steel.

## Sydney Opera House, New South Wales, Australia

The Opera House is a multipurpose performing arts facility whose largest venue, the 2,679-seat concert hall, is host to symphony concerts, choir performances and popular music shows.

Opera and dance performances, including ballet, take place in the Opera House, which seats just over 1,500.

There are also three theatres of different sizes and configurations for stage plays, film screenings and smaller musical performances. The forecourt, on the southeastern end of the complex, is used for outdoor performances.

The building also houses restaurants and a professional recording studio.

# HISTORY OF ARCHITECTURE-SYDNEY OPERA HOUSE @075KETCHES



### Perspective view and features of the Sydney Opera House

HISTORY OF ARCHITECTURE-SYDNEY OPERA HOUSE @075KETCHES



Site plan, sections of the Opera House

Construction began in 1959, but a variety of problems arose, many resulting from the innovative nature of the facility's design.

The opening of the Opera House was originally planned for Australia Day (January 26) in 1963, but cost overruns and structural engineering difficulties in executing the design troubled the course of the work, which faced many delays. The project grew controversial, and public opinion turned against it for a time.

Construction continued until September 1973, and the Opera House finally had its grand opening on October 20, 1973.

## Pantheon, Rome, Italy

The Pantheon is one of the best-preserved monuments of Ancient Rome.

The structure, completed around 126 to 128 A.D. during the reign of Emperor Hadrian, features a rotunda with a massive domed ceiling that was the largest of its kind when it was built.

The Pantheon is situated on the site of an earlier structure of the same name, built around 25 B.C. by statesman Marcus Agrippa, and is thought to have been designed as a temple for Roman gods.



### Perspective view and features of the Pantheon





### Perspective view, section and plan of the Pantheon

Made primarily from bricks and concrete, the Pantheon consists of three sections: a portico with granite columns, a massive domed rotunda and a rectangular area connecting the other two sections.

Measuring 142 feet in diameter, the domed ceiling was the largest of its kind when it was built. At the top of the dome sits an opening, or oculus, 27 feet in width. The oculus, which has no covering, lets light — as well as rain and other weather — into the Pantheon.

The walls and floor of the rotunda are decorated with marble and gilt, and the domed ceiling contains five rings of 28 rectangular coffers.

When the artist Michelangelo saw the Pantheon, centuries after its construction, he reportedly said it was the design of angels, not of man. The Pantheon proved an important influence for the great Renaissance architect Andrea Palladio, as well as countless architects who followed, in Europe and beyond.

## Hagia Sophia, Istanbul, Turkey

The Hagia Sophia is an enormous architectural marvel in Istanbul, Turkey, that was originally built as a Christian basilica nearly 1,500 years ago.

Much like the Eiffel Tower in Paris or the Parthenon in Athens, the Hagia Sophia is a long-enduring symbol of the cosmopolitan city. However, as notable as the structure is itself, its role in the history of Istanbul — and, for that matter, the world — is also significant and touches upon matters related to international politics, religion, art and architecture.

The Hagia Sophia anchors the Old City of Istanbul and has served for centuries as a landmark for both Orthodox Christians and Muslims, as its significance has shifted with that of the dominant culture in the Turkish city.



## Perspective view and features of the Hagia Sophia

## HISTORY OF ARCHITECTURE - HAGIA SOPHIA @075KETCHES



### Perspective view, section, features and floorplan of the Hagia Sophia

Unable to repair the damage caused by the fire, Justinian ordered the demolition of the Hagia Sophia in 532. He commissioned renowned architects Isidoros (Milet) and Anthemios (Tralles) to build a new basilica.

The third Hagia Sophia was completed in 537, and it remains standing today.

The first religious services in the "new" Hagia Sophia were held on December 27, 537. At the time, Emperor Justinian is reported to have said, "My Lord, thank you for giving me the chance to create such a worshipping place."

The dome's supporting arches were covered with mosaics of six-winged angels called hexapterygon.

In an effort to create a grand basilica that represented all of the Byzantine Empire, Emperor Justinian decreed that all provinces under his rule send architectural pieces for use in its construction.

The marble used for the floor and ceiling was produced in Anatolia (present-day eastern Turkey) and Syria, while other bricks (used in the walls and parts of the floor) came from as far away as North Africa. The interior of Hagia Sophia is lined with enormous marble slabs that are said to have been designed to imitate moving water.

And, the Hagia Sophia's 104 columns were imported from the Temple of Artemis in Ephesus, as well as from Egypt.

Source: https://www.history.com/topics/ancient-greece/hagia-sophia

## St. Basil's Cathedral, Moscow, Russia

St. Basil's Cathedral history is somewhat clouded by myths and legends. One such example is the story that revolves around the blinding of its architects.

Legend has it that Ivan the Terrible ordered the two designers to be removed of their sight after the project was finished so that they could never create something so beautiful in the future.

There isn't much to back this St. Basil's Cathedral story up, and it's interesting to note that many researches aren't even clear on whether there were two architects or just one. The cultural heritage register of Russia gives credit to two architects, their names being Barma and Postnik Yakovlev, while numerous academics lean towards the idea that these names refer to one singular person.



Perspective view and features of St. Basil's Cathedral

HISTORY OF ARCHITECTURE-SAINT BASIL'S CATHEDRAL



Section and floorplan of St. Basil's Cathedral

In relation to the history of Russia, the country experienced significant turmoil in the late 1800s, and this continued into the new century. The early 1900s saw the country moving closer and closer to an anti-theist approach, and by 1929, St. Basil's Cathedral was completely secularized. This helped to secure its move towards becoming a museum. It operates in conjunction with the State Historical Museum and is the property of the Russian Federation. In 1990, St. Basil's Cathedral became part of UNESCO's larger Moscow Kremlin and Red Square World Heritage Site, and it has certainly gotten its fair share of visitors over the years.

A great way to get in touch with St. Basil's Cathedral history is to actually visit the famous landmark. St Basil's is open to the public all days, except on Tuesdays and the occasional days when it is closed for repairs. The hours are 11 a.m. to 5 p.m. As a side note, a variety of Russia tours highlight Red Square and Basil's Cathedral, and these tours can provide wonderful insight into the history of the area in general.

## Notre Dame de Paris, France

The Notre Dame Cathedral Paris, or Notre Dame de Paris (Meaning "Our Lady of Paris" in French) is a Gothic cathedral located in the fourth arrondissement of Paris, France. It has its main entrance to the west. The island is on the eastern half of the Île de la Cité.

The Notre Dame Cathedral, with its sculptures and stained glass windows, show the heavy influence of naturalism, unlike that of earlier Romanesque architecture. It was one of the very first Gothic cathedrals, and its construction took place throughout the Gothic period.

Building work began on the Notre Dame Cathedral in Paris way back in the 12th century, and it was not until some 300 years later that construction finally came to an end.



Perspective view and features of the Notre Dame Cathedral

HISTORY OF ARCHITECTURE - NOTRE-DAME CATHEDRAL @075KETCHES



Perspective view, section, features and floorplan of the Notre Dame Cathedral

The Notre Dame Cathedral Paris didn't originally have flying buttresses included in its design. But after the construction of the cathedral began, the thinner walls (popularized in the Gothic style) grew ever higher, and stress fractures began to occur as the walls pushed outwards. The cathedral's architects, in an effort to fix the problem, built supports around the outside walls, and later additions continued the pattern.

The Notre Dame Cathedral was among the first buildings in the world to use the flying buttress (arched exterior supports).

Over its vast history, the cathedral has suffered considerable damage, especially during the French Revolution in 1786.

Fortunately, it was sympathetically restored and has continued to attract attention from around the world. The cathedral has played host to many religious ceremonies and historical events, and despite their own religious beliefs, people of all different faiths and nationalities still marvel at its unique grandeur.

## Leaning Tower of Pisa, Italy

It all started in 1173. The original two levels of the Tower of Pisa didn't lean, but the structure began to slant when construction moved to the third level and beyond in 1178. Various solutions were tried once the architect took notice of the lean in 1185, determining that the soil at the chosen site was too unstable to support such a large structure.

The construction of the Tower of Pisa stopped for nearly a century because of Pisa's wars with the neighbouring city of Florence. Work started again in 1272, and four floors were built in an altered angle to the previous levels, but the Leaning Tower of Pisa started to lean in the direction of the taller side. In 1284, construction stopped again because Pisa was conquered by Genoa in another war. In 1370, the tower, now eight stories and 200 feet high, was officially completed. The Tower of Pisa's structure was subject to two main risks: structural failure of the fragile masonry, and collapse due to the breaking up of the subsoil around the foundations. A recent possible solution involved leading by installing a counterweight of about 660 tons on the north side of the tower's base in order to stop rotation. It failed. Then, during 1995, freezing of the inserting steel cables and freezing of the subsoil were attempted, but this caused the lean to increase.

Later on, scientists and engineers detected that soil extraction was the key to bringing the tilt back to stable conditions. Soil was extracted from two layers of earth: the top layer of sandy soil and the second of marine clay. The theory was that while the soil was being removed, the ground compression would surge, and the clay would consolidate, providing a stronger foundation. The drills extracted soil from inside a casing without acting upon other elements or outside of it. The drill cavity then closes smoothly when the drill is retracted and the soil settles, forming a cradle that cushions the tower as it shifts slightly to the north.

By using this method, engineers have reduced the lean back toward the center by 20 inches, back to where it was in 1838. The top of the tower now leans just over 13 feet off-centre.



Source: https://www.thebalancesmb.com/leaning-tower-pisa-construction-844359

Features and section of the Leaning Tower of Pisa

### The Parthenon, Acropolis of Athens, Greece

HISTORY OF ARCHITECTURE - THE PARTHENON @075KETCHES



Features and perspective views of the Parthenon

The Parthenon, as it appears today on the summit of the Acropolis, seems like a timeless monument — one that has been seamlessly transmitted from its moment of creation, some two and a half millennia ago, to the present. But this is not the case. In reality, the Parthenon has had instead a rich and complex series of lives that have significantly affected both what is left and how we understand what remains. Investigating the many lives of the Parthenon has much to tell us about how we perceive (and misperceive) this famous ancient monument. It is also relevant to broader debates about monuments and cultural heritage. In recent years, there have been repeated calls to tear down or remove contested monuments, for instance, statues of Confederate generals in the southern United States. While these calls have been condemned by some as ahistorical, the experience of the Parthenon offers a different perspective. What it suggests is that monuments, while seemingly permanent, are in fact regularly altered; their natural condition is one of adaptation, transformation and even destruction.

## Taipei 101 building, Taipei, Taiwan

Although in their original plans was a building of 88 storeys, with about 400 meters, the design of Taipei was amended so that it could hold its title of world's largest.

"The building was in its initial design of 88 apartments in principle but was not among the highest in the world, rose to 100 floors with 488 meters high, but none came to building the 500 meters, was increased to 101 flats with 508 meters, "says the engineer.

This tower is located on the block that make up the street and Sonchiz Avenue Hsinyi, in Taipei. The land of about 30,277 square meters, is owned by the municipality of Taipei, who ceded it to the construction company, through a concession contract to 70 years. Besides the top 101, the building has five floors that serve as underground parking. Opened in July 2003, the building is divided into two parts, one tower and a larger multi-building complex. The upper part consists of six levels for commercial plazas, and from the seventh to the top floor are reserved for commercial offices. The resistance of the building structure is based on 8 sidebars, and 16 central columns. The latter form a mega structure through which passes the elevator. The columns are a hybrid of metal and concrete. The size of the steel columns is 3.6 meters wide, 3.4 x 3 meters long and have a thickness of 80 millimeters of steel. Can withstand earthquakes of up to 7 degrees on the Richter scale and winds of over 450km / h. The major absorption capacity of this structure lies in a wind damper with metal plates of 660 tonnes which is installed on the floor 89, this is the larger and heavier worldwide. It is divided into 8 segments, 8 floors, and is the only buffer that is visible to the general public.







TOSHIBA gave the company to build the tallest building in the world the technology needed to incorporate the world's fastest elevators to reach a speed of 1000 meters per minutes carrying 30 people from the plant 5 to 89 in less than 40 seconds.

Besides the lifts are equipped with the latest technology in ermetismo fences similar to that used in aircraft to ensure maximum comfort for users during their use. HORNG according to the geologist Cheng Lin, of National Taiwan Normal University, will also be run by the quake area of Taiwan. Taiwan is located on a geological fault, so it has always had earthquakes. But in October 2004 and March 2005, two earthquakes of 3.8 and 3.2 degrees on the Richter scale had its epicenter just below the building. Coincidence? The geologist suggested that the 700,000 tonnes of the building have moved this effort vertical to the upper layer of the earth.

This extra pressure that is going to fail, it would trigger those responsible for the tremors. But the geologist and managers of the building did not confirm nor rule out that up to perform a full investigation to establish what exactly the effects of the tower on the soil of Taiwan.

## Nakagin Capsule tower, Tokyo, Japan

The Nagakin Capsule Tower is the first built in 1972, building based on the idea of habitats capsules. Its architect, Kisho Kurokawa, conceived this project as a mega-structure in which the habitable prefabricated modules are inserted, showing through their design ideas interchangeability, recyclability and sustainability in architectural works.

Due to its location in one of the neighborhoods most economic activity of the city of Tokyo, Japan, the building was designed especially for those working in central Tokyo but living in the suburbs, at considerable distances or even in other cities, but that business had to stay in central Tokyo. Therefore the project had the function of serving as a hotel bedroom or studio building. The project Nagakin Capsule Tower consists of two towers or structural cores of eleven thirteen stories high that incorporate the services and facilities; 140 capsules to 8 different types are attached. The set comes complete with a ground floor located a cafe and a first floor where offices are located.

Unlike traditional Japanese architecture, Nagakin Capsule Tower is not a finished or complete architecture, it is considered as a building changing over time. Despite this, it not completely ignores the tradition, because in the small scale of the design of the capsules is the proportion of Japanese tatami. Although capsules were well equipped, the high price of these, because of the high manufacturing cost and location of the building in one of the most expensive neighborhoods of Tokyo made were bought mostly by companies and not by private owners.



HISTORY OF ARCHITECTURE - NAKAGIN CAPSULE TOWER



Features, plan, section and interior of the Nakagin Capsule Tower

The capsules are devised as modules covering the basic needs of a cabin. They are designed as an inexpensive piece that will be built at the factory and transported to the building site to be inserted in situ, so it should be easily transportable and lightweight. Since it is expected to last approximately twenty capsules years maximum, they should also be easily replaceable.

These prefabricated cells have dimensions of 4 x 2.5 m. Eight types of capsules according to the position of the window, the arrangement of the entrance and placement of furniture finishing materials are projected. As a result of these types capsules super-deluxe, deluxe and standard emerge. The equipment of each type of capsule varies, but always as basic elements remain the bed, closets for clothes, desk, full bathroom, telephone, air conditioning, color TV, audio equipment, sheets, blankets, toothbrushes and utensils normally offered by hotels. Although this variety of capsules not all of them came into production was projected. Structural cores are constructed of rigid steel frames and concrete. From the ground floor to the second floor it was used reinforced concrete while the upper floors lightweight concrete was used. To use as soon as possible of the stairs, precast concrete was used in the construction of the towers in soils and plant entrances to the elevators. The capsules are composed of steel boxes and finished with galvanized steel panels reinforced those who are given an anti oxide and a layer of spray Kenitex.

## Bridge tower, London, England

The Tower Bridge is a bridge that combines two systems, swingarm and suspension, built between 1886 and 1894. The bridge crosses the River Thames near the Tower of London and has become an iconic symbol of the city. Its construction took eight years, five main contractors and the tireless work of 432 construction workers every day. In 2014, glass floors were installed on the walkways, giving visitors an unusual view from the bridge. The 11-meter-long glass floors are more than 40 meters above the river, allowing traffic from the bridge or the opening and closing to be observed from above. The structure of the Tower Bridge is made of steel covered with masonry and stone. The bridge has a length of 244 m with two towers 65 m high, built on docks, combining two bridge systems, swingarm and suspension. A swing bridge is a kind of drawbridge that works on a pivot and is balanced with a heavy weight. The central opening that opens between the towers is divided into two equal tilting blades, which can be raised at an angle of 85° to allow river traffic to pass. The rockers, which weigh more than 1,000 tons each, are balanced to minimize the required force and allow opening in five minutes. Plans for its construction began around 1876 when East London became a very densely populated area and a bridge over the Thames in that area of the city seemed a necessity. It would take another eight years and many discussions about the design before construction began. The steel structure of the bridge is clad in a masonry that harmonizes with the architectural character of the adjacent Tower of London, Cornish granite and Portland stone on a brick base.

In its construction 6,654.46m3 of Cornish and Portland stone granite, 20,000tn of cement, 53,519m3 of concrete, 31,000,000 bricks and 14,000tn of iron and steel were used. The cost of the docks was £ 111,122.

## HISTORY OF ARCHITECTURE -TOWER BRIDGE @075KETCHES



Source: https://en.wikiarquitectura.com/building/tower-bridge-london/

Features and views of the Bridge tower

# Chapter 12 Site Planning

### **Site Planning**



An architect should be equipped with a lot of lexicons in his life time, and one of these, is the definition of – site planning. Site planning is defined as 'the art of arranging structures on the land and shaping the spaces between them; an art linked to architecture, engineering, landscape architecture and city planning.' (Kevin Lynch, 1962). It is also defined as 'the art and science of arranging the portions of land.' (Harvey Rubenstein, 1980). Therefore, in site planning, it must be fundamentally grounded in the process of research of analysis and economically anticipating the desired outcome through adapting practical strategies as solutions to the existing design problem that has been identified in the first place.

Site planning involves the study of different factors that are existing in the site that made it like continuous streams of modification, which involves two phases: problem-seeking phase and problem-solving phase. On the diagram illustrated above, site planning stepby-step guide is shown. To look closely on the diagram below, the two main key players first are identified – the condition of the site, to be followed by the condition of the users.

### **Site Planning**

Foremost, the most important aspect is to identify the 'goals and objectives' for the site, and these are all up to the decision of the client or the decision of the architect. Second, is the process of research and inventory. This is where the phase where all the data should be gathered. In this phase also, where all the factors including natural, cultural and aesthetic aspects are identified primarily to evaluate the condition of the site. Then, alongside with gathering of research and inventory would be the analysis of all the gathered data from the second phase. This is where the designer would analyze the feasibility of the site whether the site is suitable for the project or not. The analysis for this step should be as detailed as possible (as this is still part of the problem-seeking phase).

The phases from 'Problem Seeking to Research, Inventory & Analysis' are similar to the Users. However, the user just needs to identify the user information with the two previous steps. This is where the architect would gather user's data from what type of users will accommodate the space/building structure, demographical profiles, the volume of the users will anticipate into a space and what are the special needs for each type of users.

The latter phases that cover the 'Synthesis to Post Occupancy Evaluation' are the problem-solving phases. After gathering all the data, feasibilities and the condition of the site, it is now the time for the schemes to be produced, and this is part of the step during the 'Synthesis' phase. The designer will provide the schemes, up to three schemes at the very least. At this stage of the planning, the scheme need not to be detailed or technically drawn. Rough sketches or doodling the concepts in mind would suffice.

Whenever possible, it is recommended for the schemes to be scaled in this early stage. But take note that, the synthesis phase would always check and go back to the goals and objectives of the site and for the users, making sure that the produced schemes will provide solutions to the challenges encountered in problem-seeking phase.

Before drafting the overall technical drawing and plans, the designer must evaluate first the best scheme that is appropriate for the project. And this can be done in the 'Selection' phase, where the designer is expected to formulate criteria according to the goals and objectives of the project formulated previously.

Then the best scheme that is the most favorable to all the criteria will then be drafted to technical drawings, if there are no revisions to be made at all. Eventually, the technical drawings with no revisions can proceed to the execution of the construction. And lastly, the monitoring phase is the stage when occupants are to be examined their experience, obtaining feedback from the users on a building's performance – Post Occupancy Evaluation. If the feedback of the users met the goals and objectives, then it means that the users are satisfied. However, if the majority of the users are not satisfied, it only means that there have been several problems to the steps (either or both occurred in problem-seeking or problem-solving phase) performed previously in the planning stages.

### Site Planning Factors that affect site planning

A. Natural factors

Site planning should consider the following natural factors in examining the site:

1. Geography & Geomorphology – condition of soil types, landforms, drainage, topography and slopes and soil erosion

2. Climate – solar orientation of the site, wind, humidity, and temperature

3. Geology – the condition of the rocks

4. Hydrology – surface and ground water

5. Vegetation – plant ecology in the site

6. Wildlife – habitats

#### B. Culture factors

1. Existing land use – ownership of the adjacent property, offsite or onsite nuisances.

2. Traffic and transit – vehicular and pedestrian circulation that are adjacent to the site,

3. Density and zoning - local legal and regulatory controls

4. Socio-economic factors

5. Utilities – sanitary, storm water, water supply, power supply and communication facilities adjacent to the site

6. Historic factors – existing historic buildings, landmarks or archeology.

#### C. Aesthetics factors

1. Natural features – such as existing mountain/terrain views, landscapes

and waterscapes

2. Spatial patterns - spaces and sequences.

3. Visual resources – this is all about interesting views and vistas existing on the site.

## 1 TOPOGRAPHY





# **Chapter 13** Typhoon Resilient House

There are countries who inevitably battling repetitious calamities yearly, like the typhoon. The major response of some localities, as part of their disaster preparedness program is to establish housing that can withstand the damage and hazard.

The robustness of a typical house can be first established in designing the right foundation. It will anticipate the maximum potential strength capacity of the overall structure and will ensure safe failure.



Timber foundations that are embeds in the ground and embeds directly on the rocks aren't good foundation and unstable.



Timber foundations that are anchored with angled bars are more durable; somehow can resist typhoons but still isn't strong enough.



that are anchored with concrete (RC) are more stable.

Another tip when constructing a typhoon-resilient house is that, all parts of the house should be tied tightly from top to bottom -



STABLE TIE: Rope made out of nylon



STABLE TIE: Metal strap tie



STABLE TIE: Timber cleats



MOST STABLE TIE: Thick metal strap

Ensure that the bracings are properly installed and placed -



### Ensure that all the connections and nails are all properly fastened -



Hammer the nails without damaging the woods and ensure that provides exceeded length so as not to break the nails easily.



The nails should be nailed properly (refer to illustration)



Angle the nails like so (refer to illustration) so as to fastened properly.



One may use gusset plates for the steel or wood connections to provide structural strength.



Considering one nail would result to instability and destruction.



Two nails that are angled and considering screws are more stable than the previous example illustration.



Bolt connection are recommended for it is more durable than the two previous examples.





Roofing should be carefully designed so as to alleviate the hazard when pulled off during the typhoon -



The space of the roof overhang should be at the correct interval to protect against rain.

A sturdy roof must be at the angle of 30-degrees and not less than 15-degrees and more than 45-degrees.

### Roofing and don'ts and do's -



## **Chapter 14** Major Parts of the Building (Foundation & Hardware)

### Major Parts of the Building

**1. Superstructure** – The portion of the building above the ground.

**2. Substructure** – The habitable portion of the building that is below the ground.

**3. Foundation** – The structural portion of the building that transfers the building load to the soil.



### Different types of footings -



## Major Parts of the Building

Different types of piles -



Foundation to any structure supports the superstructure itself transferring the loads to the soil. However, the layer of the soil in which it sits, must have a bearing capacity to withstand the settlement that is going to be built.

An earthquake resilient house or structure is primarily dependent on the foundation itself. The following are the illustrations of the basic pile foundation systems:



### 1. Timber Piles -

When compared to steel or cement driven piles, timber piles have massive benefits. Steel and concrete are typically heavier, which takes extensive preparation before they can be effectively installed in the ground. Timber piling, on the other hand, is much more moveable and easier to set up.

Amongst the type of piles, timber is one of the least expensive options for driven piles out of all the options. It can also benefit consumers in saving money in other ways.

### 2. H- Piles -

When the ground beneath a building or a bridge can no longer hold its weight, H-pile beams are used. If the building is too tall or the ground is too soft, this can happen. A deep foundation system must be constructed in either case to transport foundation loads down through the steel piles to the denser rock or soil layers below.

### 3. Pipe Pile -

Steel pipes that are welded, spiral-welded, or seamless are used to construct pipe piles. Deep foundations and the transmission of loads from buildings and other structures to deep, subsurface soil layers are two applications for them. By allowing for point bearing and skin friction, they aid to resist load pressure.

### 4. Concrete Pile -

Precast concrete piles, in general, can bear both high-tensile and high-pressure stresses. Tensile pressure can be employed as traditional reinforcement. It also works effectively for horizontal moments in the presence of any additional material.

### 5. Composite Pile -

Composite pile are made out of more than one material. It can be out of steel and a mixture of concrete (as reference to the illustrations).

## Major Parts of the Building

### Different types of piles -



### 1. End-bearing Pile -

Sometimes as called point bearing piles, used to transmit superstructure load from low bearing capacity soil to a strong stratum such as rock or very dense sand and gravel. It transfers the majority of their load-carrying ability from the strong soil layer at the pile's end. The applications of this type of pile can be used in: (a) high-rise structures; (b) bridges structures; (c) water tanks.

### 2. Friction Pile -

A friction pile foundation is a type of pile foundation. The frictional resistance force between the pile surface and the underlying soil is used to transfer the superstructure load in this sort of pile.

### 3. Compaction Pile -

Also called as Sand Compaction Pile. Sand compaction piles are one of the options for increasing ground stability, preventing liquefaction, and lowering settlement, among other things.

### 4. Steel Sheets Pile -

This is a vertical interlocking that creates a continuous wall. The walls are frequently used to hold soil or water. The performance of a sheet pile section is determined by its shape and the soils into which it is driven. The pile distributes pressure from the wall's high side to the soil in front of it. Widely used in river embankments, earthquake strengthening structures, and many other types of construction.

## Hardware (Screw, Bolts & Nuts)

### Wood Screws



**Elevator Bolts** 

Eye Lags

# Chapter 15 Residential
### Residential senior housing -Entry/Exit point -

One of the first considerations which merits mentioning is the transfer point of the user from public space to the least private space. An entry point should be a place or an area of function and not just a door that leads to other spaces of the house.

The following list of areas are desirable adjacent to the entry/exit points:

- -Storage (cloak room or storage for umbrella and footwears etc.)
- -Living Area
- -Food preparation
- The following list of areas are least desirable adjacent to the entry/exit points:
- -Personal hygiene
- -Dining
- -Sleeping and dressing
- -Exclusive outdoor spaces (such as garden, balcony etc., but these are optional)

When it comes to acoustics and visual considerations, the users should have visual and audio contact to the visitors beyond the entry door; but the visitors should have limited and controlled visual and audio contact to what's happening inside the house. This design strategy helps the user of the house to keep out unwanted visitors.

When it comes to spatial characteristics, this area should have an ample amount of wall space to hang a mirror. There should be a clear dimension of 1.00 m x 1.20 m to put some coats / arranging footwears.







#### Residential senior housing -Food Preparation Area -

The physical abilities of elderly may impede the normal functions and operations for the area for food preparation, storages and stocks, disposals, washing dishes and eating. To avoid the lack of architectural thought in this manner, appropriate physical design to these areas should be adapted by a designer. For example, food preparation area should be adjacent next to the entry/exit and therefore gives comfort for the aged upon entering the housing unit carrying of bundles. Food preparation area should also be directly adjacent to dining area so as to provide conveniency. If the dining area is located outdoors, a small eating nook shall be placed to facilitate breakfast or light meals. If this is the case, provide a pullout table measured about 0.6 m x 0.6 m or any small table should be placed. The visual and audio contact to the living room, sleeping and personal hygiene areas should be minimized; but it is desirable that the visual and audio contact to the entry/exits should be maintained.

The following list are furnishings and equipment that are desirable for the

- food preparation area:
- -Sinks and generous workspace
- -Cooking units and oven
- -Storages consisting of hanging cupboards and cabinets including

pantry area.

- -Refrigerator
- -Dishwasher (optional)
- -Dining and sink counter

When it comes to the configuration and use of space, L- and/or U-shaped counters are preferable for the kitchen for elderly. The corridor/ island type should be avoided as it is inconvenient for the people who are advancing age and for physicallychallenged users, as the user can find to repeatedly turn from the counter to

another. To ensure that this area provides convenience for the users, it is always necessary to provide artificial lightings in all working areas. Whereas, it is also worth taking note that the ceiling height should be no lower than 2.30 m. If in case main dining area and food preparation is a combined area, there should be clear spatial distinction (eg. difference in ceiling height).



### Residential senior housing -General Living Area -

Senior housing must also have an area where recreation and multi-functional areas are encouraged. Listed below are the activities to be held in this area:

- -Entertainment
- -Conversation
- -Sewing
- -Reading
- -Meditation/ Contemplation
- -Lounging

The following list of areas are desirable adjacent (no intervening spaces) to the general living area:

- -Entry/ Exit area
- -Private outdoor area (as an expansion of the living area activities)
- -Dining area

The following list of areas are least desirable adjacent (minor intervening circulation) to the general living area:

- -Food preparation area
- -Personal hygiene area
- -Storage and utility area
- -Sleeping and dressing areas

It is worth mentioning also that visual and audio relationship in contact to sleeping and dressing and personal hygiene spaces should be minimized.

The orientation of the living area should be placed in a location where the most interesting views from the unit/ dwelling place. Avoid placing the general living space where the sunlight is going to be controlled/ avoided, as this is an important aspect to boost one's mental and physical health. Therefore, planning this space should highly consider that they should receive an ample amount of sunlight during the day but not to the point it will have harsh effect to the users inside.

Moreover, the spatial characteristic for general living area should be flexible when it comes to furnishings and furniture. Since that there is indeed different activities/lifestyle may be involved in a senior housing, the provision for the openings such as doors, windows should be carefully considered so as not to limit the desired furniture arrangements.

The following specific design strategies should be taken down:

- 1500 mm min. clearance between facing seating  $-(4.92^{1})$
- 700 mm min. clearance is required for the use of desk  $-(2.29^{\circ})$
- 1500 required clearance between seating set and TV  $-C4.92^{\circ}$
- 3 m diameter is desirable for the seats for conversation area -(9.84')
- 900 mm for the min. clearance for main traffic paths / by-pass (See page number 142 for graphics).-

Residential senior housing -General Living Area -



1500 mm min. clearance between facing seating



1500 mm required clearance between seating set and TV



3 m diameter is desirable for the seats for conversation area



700 mm min. clearance is required for the use of desk



900 mm for the min. clearance for main traffic paths / by-pass

### Residential senior housing -General Living Area -

As a rule of thumb, it has been found that using **rectangular plan** rather than square space for the general living room is **easier** to furnish.



Example 1





Example 3



Example 4

### Residential senior housing -Dining Area -



As for the furnish of the space, table space and dining should be large enough to accommodate the needs of the elderly, and the following clearances should be considered in this phase:

- 900 mm for chairs plus access (2.95')
- 762 mm clearance for passage (2.5<sup>1</sup>)
- 1000 mm min clearance for serving from behind chairs (3.28')



More tip:

-Wherever possible, it is desirable to consider to have views outdoors from the dining table.

### Residential senior housing -Personal Sleeping / Dressing Area -

Most often, elderly make great use of bedrooms as their personal haven or private sanctuaries. Therefore, the efficiency and commodious of a bedroom is necessary for them. Another point which deserves mentioning is that, elderly is becoming more susceptible to illnesses. Since this area is considered as the most private zone in a house, bedrooms / sleeping areas should be partly adjacent to the following spaces:



However, indirect accessibility to the following spaces should exist in the spaces that follows: -Food preparation area / Kitchen (so as to avoid smell and audio contact) -Storage and utility area

The following spaces should have NO DIRECT accessibility to sleeping areas / bedroom:

- -Entry / exit points (for the purpose of privacy)
- -Living area
- -Dining

### Residential senior housing -Personal Sleeping -



As for the furnishings, the designer must consider the clearance for each of the furniture to be placed. For example, one mind be mindful for the provision of the lateral movement or transfer to the bed from wheelchair. To take note of these, the following clearances should be observed:

-1000 mm min. clearance at one side of the bed or foot of the bed for dressing -(2.28)

-600 mm min. clearance for least used side of double bed – (  $[.9G^1)$ 

-150 mm min. clearance from side of bed to side of dresser or chest of drawers  $-(0.49^{\circ})$ 

-915 mm min. clearance for major circulation path (door to closet) – desirable –  $(3.0^{\circ})$ 

-620 mm min. clearance between beds (if shared room) – (2.03')

### Residential senior housing -Personal hygiene areas -

The following requirements mentioned below are some of the minimum considerations of the designers when designing personal hygiene areas in senior dwellings.

Oftentimes, it is worth noting that bathrooms are frequently used during night than usual use during the day. Therefore, the designer must carefully consider that the adjacent space of personal hygiene areas is bedroom. If this is planned properly, the route should be direct and unobstructed. Wherever possible, indirect accessibility should exist between bathroom and general living space to be used by visitors or guests.

(3.5) The dimensions of the lavatory and water closets should be observed below: 1066.8mm (3.5) 762mm (2;5') 1066.8mm 00 1920.8mm C4- 34) 066.8mm W.C. 711.2 mm 660.4 mm 2.34' 3.50 (2.16) 31.8mm W.C. W.C. Lavatory Lavatory

Below are the illustrations of the typical space configurations of the bathrooms for aged people:



An important aspect which notes mentioning is the usage of grab bars. Although it is sometimes generally overused, if improperly located, they can become a hazard if the user slip. Therefore, grab bars should be used with reference to the country's local codes. In senior dwelling units, there should be at least one grab bar to the water closet and near bath tub or shower area.

More tip: In consideration of the aged people, it is most desirable to install basins that are cantile-ver style so as to give considerations to the wheelchair users.

GRAB

BAR

#### Housing for People with Disabilities -

One of the factors in considering in building residentials for people with physical impairments is the condition of the site. Site selection played an important role first and foremost. For example, primary services and facilities should be accessible to where the resident is going to be build. It is important to note that the site should be accessible and include employment opportunities, clinics, vocational rehabilitation programs, inexpensive private and public recreation, churches, stores including drug stores, groceries, inexpensive restaurants or stores and the like.

As part of evaluating the site, the designer must have site criteria, and these are:

-the topography of the site should be ideally flat for the physically impaired having less than 5% slope. -the site should have outlooks for nature, as a vantage point of interesting views. -above all, the traffic hazards, excessive noise and polluted air should be avoided.

#### Site considerations (Parking, pedestrian walks and access ramps) -

#### Parking -

The location of the parking lots/ area should be easily and conveniently accessible to the entrances of the dwellings. Another important note, there should be no steps or curbs from the parking lot to the entry access of the dwelling structure. As for the standard dimension of the parking lot, the minimum width parking is 3.60 m x 5.00 m, but 3.7 m x 5.00 m is desirable. The minimum anticipated 1.20 m is for the parking aisle to accommodate the orthopedic equipment as a general rule.



#### Pedestrian walks -

Pedestrian walks should be able to cater wheelchair users and other physically impaired people (to mention, people with eyesight disability). It should be intended into the curb and not protruding onto the street. Pedestrian walks should have nonslip floor finishes. Curb jamb should be colored in order to assist people with poor vision. Pedestrian walks should also have tactile warnings, whenever possible.

### Housing for People with Disabilities -

#### Ramps -

Ramps should be carefully designed. If not, these can be hazardous especially for the wheelchair users. The maximum slope should be not more than 5 percent. At this rate, physically impaired people can still negotiate the ramp even without assistance. Steeper ramps more than a 5 percent slope is hazardous and should be avoided in designing ramps. Another tip would be, ramps should be fireproof and nonslip. It should also have "PWD" signs engraved to the flowing of the ramp.

Whenever two ramp lengths are required for the design, there should be to be designed:



### Dwelling structures (Inside dwelling considerations) -

#### Entrances -

A minimum of 812.40 mm entrance doors to any dwelling structures (or even public use) is required and should be followed. And just like other entrance doors, thresholds are usually also applied. However, threshold should be avoided in PWD dwelling whenever possible in order to consider the equipment. If in case unavoidable, featheredged floor is required and the slope should no longer be higher to 12.7 mm (3 inch).

As for the choice of the door hardware, hinged doors are usually economical and safest. Revolving doors should never be used as it can be hazardous for the users with orthopedic equipment.

If the budget is feasible, automatic door openers are best for this. However, if the mechanism fails to function, the door should operate automatically be reverted to manual operation.

# (812.40 mm) = (2.66')

#### Stairs, Railings and Steps -

As a rule of thumb, nosing design in steps of the stairs should be avoided. It should not cause the users to catch their toes (together with their orthopedic equipment) as they climb.



Handrails should be 38 mm – 45 mm in diameter to easily grasp. While the clearance between the handrails and walls should not be less than 50 mm. The following illustration shows the ideal door knob hardware to be installed:



### Doorways (Minimum Clear Width Dimensions) -



#### Living room -

Entry ways and doors should be directly heading to the living room. Entrance through kitchen is not desirable. The overall space should be properly designed to permit circulation especially people who are using wheelchairs and crutches. The following human dimensions are illustrated as guide -



#### Housing for People with Disabilities -

#### Kitchen & Dining -

Some other dwellings, wherever possible, the dining area is combined with the living room. However, if not unavoidable, it is also acceptable if the dining room and kitchen are at the same zones.

The kitchen design should be more carefully designed than any other areas, as this space requires more activities and spaces for residents.

Base cabinets and other countertops should have a recessed toe space or knee space, about 150 mm deep. ( $i50 \text{ mm} \approx 0.50'$ )



### Apartments/ Studio bedrooms -

Foremost, the character that needs to be met is the universality of the spaces. Apartments should adapt to the variety of lifestyles of the users. Maximum privacy should be provided in consideration of the movement of the circulation. The spaces inside should have a clear distinction of its function, without needing to cross-over to one space or another.

The following notes are some of the handful tips on basic circulation pattern:

a. **Upon entering** - As the pandemic becoming more pronounced, the need of every household to have an area of sanitation is becoming more than just a trend, it is indeed necessary. Therefore, in planning apartments, space should be provided to anticipate that activity. Moreover, in a country with inclement weather condition, clothing should be put off as the users enter. So, it is desirable to anticipate to provide a storage to accommodate the stuff.

b. **Children Coming in from Play** – The children should be directly leads to reach the bathroom or their own bedrooms without the need to across the living space.

- c. From Bedroom to Bathroom It is ideal not to cross the living room and should be primarily avoided.
- d. From Kitchen to Bathroom Crossing the living room should be avoided. It should not be seen at all.
- e. Serving from Kitchen to Dining The circulation should be direct as possible to each other.

#### Living Rooms (Living - Dining) -

Generally, the living rooms or area are the largest space in an apartment. Needless to say, most of the housing developers like this space to be visible from the entry hall / entry vestibule.

The following are the minimum recommended lists of furniture:

- One couch
- Two easy (but not bulky) chairs
- One desk or center table
- One television set
- One table and set of chairs (as dining set)



Typical/Standard living room layout

layout

### Residential Apartment

#### **Dining Area -**

Dining areas are usually combined with living areas in small-scale apartments. However, it is really possible that having separate dining room can only be afforded in townhouse and luxury apartment types.

The two figures illustrate the sample configuration with the standard clearances of the spaces with respect to the existing furniture-



Example 1

Example 2

#### **Balconies** -

There is a notion that having balconies in an apartment, its function will have its pros and cos. Some argue that it's always better to extend the visual perception of the living space by adapting this strategy of placing a balcony. On the other hand, some people argue and oppose balconies as they have claimed that balconies are the primary dirt catchers and it's hard to keep it maintained. Given below are some examples and drawings of different balconies-

#### Different types of balconies -

- 1. Cantilevered balcony
- 2. Hung balcony
- 3. Stacked balcony
- 4. False balcony
- 5. Mezzanine balcony
- 6. Loggia balcony

# **Residential** - Apartment

### Kitchen -

When planning kitchen in an apartment, it is imperative to take note that the basic sequence of refrigerator – sink – stove should be observed from the door and heading toward the serving and eating areas (as illustrated below): (refer kitchen chapter for additional clearances and sizes of each elements).



Example 1 - Standard sizes - Apartment kitchen

#### Bedroom with multiple beds -

The following are the minimum recommended lists of furniture:

- Two twin beds
- One dresser
- One chair
- One crib, if necessary
- Night table

Shown below are the illustrations of the basic bedroom layouts with its standard clearance dimensions:





Example 2 - Standard sizes - Apartment kitchen

### **Residential Apartment - Location of stairs**

The schematic illustrations below are guide to where the designer consider to locate the stairs in an apartment building overall plan:



Example 6 - L shaped layout

## Residential Apartment - Setbacks

Building setbacks in any building typologies are necessary. One of the major purposes of the provision of setbacks are light and ventilation. Furthermore, setbacks will help alleviate the spread of fire in case of an emergency.

Depending on the Local provisions of a country, the designer should seriously observe the required setbacks. Illustrated below are some of the types of setbacks as a general idea.



### Apartment - On maintaining privacy and outlook

The illustrations below are some of the design tips on limiting direct downward views from a perspective of a person from the upper floors of apartment building.



More examples or techniques showing how to improve privacy and limit the direct downward view -





# Chapter 16 Commercial

**Shopping Retail -**

The main goal of every commercial establishment is to create value and bring a positive impact to the potential customers. Considering storefronts, it must attract people making them curious catching a glimpse as to what kind of merchandise is being sold inside. Thus, making the exterior space appear interesting and the interior space convincing to the integrity of the products. **To simply put, a well-planned retail shopping should be grounded in "merchandising psychology", which suggests of, "first, arouse interest; second, satisfy it."** 

Attracting customers can be accomplished by means of explicitly advertising the products. This could mean prices conveniently displays on show windows, displaying a model of mannequin and etc., which isn't limited to the imagination of the designer.

The designer should induce passerby to be curious, attracting them what's inside. Therefore, show windows may be opened even if it means showing the interior of the shop. Door entrances should be carefully planned and requires study as to relate the pedestrian traffic flows, store floors and interior layout of the space.

Further, organizing store spaces enables the customer browse effectively to the products inside the store. This would also allow storekeepers to keep close to the inventory and loses and various types of goods. The departmentalization of the products according to category becomes essential in controlling stocks.

The designer must also take consideration of the following, as to consider what customer accessories are required: place a seating inside, if necessary, mirrors, tables, counters, drinking fountains, if necessary.

Another aspect worth mentioning is that, the location of the stock rooms must be carefully planned so that salesperson does not need to leave the customer for too long period. Thus, fitting rooms should be adjacent to the item/ group of items being sold.

Commercial establishments, retail shops in particular must have layout plans to consider, and the following illustration presents the idea. See next pages for the illustrations.

### Shopping Retail -

Six basic plan type layouts -



### 1. Straight plan -

The most economical type of layout is the straight plan. This layout can be applied to any type of establishments, from a bookstore, shoe and apparel store to groceries and department stores. The designer may create variety of visual presentations by creating niches or vary and define the transition of the object platforms by levelling the other to another. This plan could also encourage people in pulling what's the rear of the stores, whilst directing them (through adapting straight plan) in the right direction, where the most important item is displayed.

Layout 1 - Straight plan



DIRECTIONAL ELEMENTS ON CEILING OR FLOOR

Layout 2 - Pathway plan



This type of plan is applicable to any type of virtual type stores. Recommended to any clothing stores with over 450 square meters as it presents pathway, a good architectural strategy to organize and gets shoppers go smoothly to the store. Further, the designer can create more dynamic design and interesting variation to the path using floor and ceiling as directional elements.



#### 3. Diagonal plan

To any self-service stores, diagonal plan is the best option. As the cashier is located at the center of the store, it has visual access to all the corners of the shop. Drug and food stores could take advantage in this type of layout.

Layout 3 - Diagonal plan

### Shopping Retail -



### 4. Curved plan

For boutiques, salons, eye shops, jewelry stores or other stores that sells high quality products can make use of curved plan. However, it can cost more to construct compared to the usual plans of using angular and rectangular.

Layout 4 - Curved plan



#### Layout 5 - Varied plan



#### 6. Geometric plan

The most unusual plan amongst the five basic plans mentioned earlier. This plan exhibits showcases as geometric in shape or mimicking the shape of a gondola. This type of plan suited best for apparel stores as it allows fitting rooms to be placed inside the areas of geometric shapes.

Layout 6 - Geometric plan

### Shopping Retail -

To be more efficient in the design of the retail stores, the following dimensions and anthropometrics should be observed to provide comfort for the users and for the storekeepers and salesmen to perform their best service



**General Offices -**

#### **General Design Principles for General Offices**

The workflow of a general office should adapt the "Straight-Line Principle". A well-planned office avoids crisscrossing of motions and backflows of workflow and should encourage to progress the work in a series of straight lines, so as caution are to be exercised. However, the straight-line principle cannot be adapted to other nature of work and activities, departmental office in particular.

In order to facilitate information and promote straight-line processes of work, desk should arrange in a similar manner (having to face the same direction) except if there are any functional reasons to prioritize.

Desks should be at a distanced of 1.80 m (2.00 m is desirable) in order to provide clearance particularly when desks are arranged in row or two.

In an open planned for the general office, the working area for the supervisor should be adjacent to the secretary or receptionist. But another important aspect that is worth mentioning, the working area of the supervisor should not be accessed directly through the general space for working area.

Employees performing tasks related to the visitor should be located near the office entrance while the employees who has more classified nature of work should be away from the entrances.

Glaring surfaces that can cause eye strain to the employees should be identified by the planner and corrected. Employees who are performing close-work should be well-lighted.

It is possible for the office to provide a space or a room for the clothes locker, however it is not recommended because it is wasteful. Large open areas near working zones should be incorporated and provide space with hanging space for coats, hats or other general stuff.

In placing furniture and fixtures, the designer must be mindful not to obstruct exits, corridors and stairways. Fire codes depending on the local country should be observed in planning.

Provision of a cubicle or an interview room must be provided in order to cater the general public say If there is an appointment, the use of these cubicles should be considered and it must be large enough for the interviewer and for the interviewee.

### **General Offices -**



The following illustrations are some of the examples of the office planning desk and chair sizes:

#### **General Offices -**

As to consider circulation, the following recommended clearances should be observed:

- Main aisles:

aisles leading to main exits from areas that carry substantial traffic should be approximately 1.5 m to 2 m wide. ( $1.5 \text{ m} = 4.9^{\circ}$ ) - Intermediate aisles: ( $2 \text{ m} = 6.5^{\circ}$ )

aisles with moderate traffic should be approximately 1.2 m wide (1.2m) = (3.93')

- Secondary aisled:

aisle clearance between row of desks should be approximately 0.90 m wide. (0.90m) = (2.95')



### **General Offices -**

The following illustrations are some of the examples on private office arrangements and configurations:



**Configuration - 1** 





Configuration - 2





**Configuration - 3** 

### **General Offices -**

The following illustrations are some of the examples on private office arrangements and configurations:



**Configuration - 5** 





Basic and standard dimensions to remember while designing office spaces -





Basic workstation with visitor sitting zone

Basic workstation with circulation zone

### **General Offices -**

The following illustrations are some of the examples on conference room arrangements and configurations:



#### Square table configuration

### **General Offices -**

The following illustrations are some of the examples of shared enclosed office / general office and multiple workstations arrangements and configurations:



### Hospitality – Food-service facility -

One of the challenges of space planning in restaurants is that it cannot be overestimated nor underestimated. If so, any of them might result to shortage or an excess of spaces which should be avoided by the planner as it might add to the unnecessary expenditures of the owner. The evaluation of the space planning should be grounded in the following factors, and these factors involved the number of meals to be prepared; the volume of the customers that should be anticipated; the functions and tasks performed; the equipment and other pertinent requirements; the number of employees and their respective working places; and the rate of people leaving the area (also called "turnover rate") that is inversely proportional to the number of seats in dining area over the average eating time.

As a general rule of thumb, space estimation of the necessary spaces (sometimes as required by the client) is the preliminary step in planning food-service facilities. The total facility size must be estimated accordingly, depending upon the type of food service to be planned. The table below shows the estimated square meters of the area per seat:

Type of operation	Area per seat
Table service	2.23 - 2.97 m² (24.0 - 31.96) sq ft.
Customer service	1.67 - 2.23 m² (17.97 - 24.0) sq.ft.
Booth service	1.86 - 2.60 m² (20.0 - 28.0) sq.ft.
Cafeteria service	2.04 - 2.79 m² (21.95 - 30.0) sq.fq.

Turnover rate is usually expressed per hour basis, as desired. For example, if the average estimated time of the seat is occupied is 20 mins., then the turnover rate is three per hour. If the average estimated time of the seat being occupied is 30 mins., the turnover rate is two per hour.

Turnover rates are usually affected by the efficiency (the speed) of service and the type of the meals being served (or the menu offerings available) and sometimes it is influenced by the dining atmosphere.

If the owner's basic objective is for the turnover rate to be increased, the following guidelines shall be recommended:

- Develop an uncomfortable seat design
- Apply well-lighted and light-colored painted areas for serving/dining.
- Place dining tables in close proximity.
- Suggest a meal target or plan that can be prepared in short processes.

Additionally, the planner must learn the following guidelines of the average turnover rates in each type of operation so as to give perception on the usual rate:

Type of operation	Turnover rate (per hr)	
Commercial cafeteria	1 1/2 -2 1/2	
Industrial or school cafeterias	2-3	
Counter service	2-3	
Combination of counter and table	1/2 - 1	
service		
Leisure table service	1/2 - 1	
Regular table service	1-2 1/2	

### Hospitality - Food-service facility -

More than the dining area, the designer also must be equipped in adapting strategies to be efficient in serving facility. The length of cafeteria counters is determined depending on the capacity of the space and the volume of foods that are displayed. Furthermore, the ideal design and strongly affect efficacy of the cafeteria counters is in identifying the flow rate of people leaving the area so as to cater people on the available seats. If the total number of seats in a dining area is already identified and the average of eating time has been observed, the following formula is recommended to obtain for the rate of the people leaving the service:

#### R = N/T

whereas:

R- rate of people leaving the service counter/ area

N- number of seats in dining area

T- average eating time

In considering sizes, shapes and standard dimensions of the dining tables, the following table shows the guideline:

Туре	Shape	Min dimensions	Generous dimensions
Table of 1's or 2's	Square	600 mm x 600 mm 1.96' x 1.96'	800 mm x 800 mm 2.62' x 2.62'
	Rectangle	600 mm x 800 mm (.96'×2.62'	800 mm x 914 mm 2.62' × 2.99'
	Round	800 mm <i>2.6</i> ₽'	914 mm 2.991
Table of 3's or 4's	Square	800 mm x 800 mm 2.62' × 2.62'	1066 mm x 1066 mm 3.49' X 3.49'
	Rectangle	800 mm x 1066 mm 2.62' X 3.491	914mm x 1219mm 2·ባጓ' አ 3·ባጓ <sup>ነ</sup>
	Round	914 mm 2.ๆๆ1	1219 mm x 1219 mm 3.۹۹' X 3.၅၅'
Table of 5's or 6's	Rectangle	800 mm x 1525 mm 2.62' X 5.00'	1066 mm x 1828 mm 3.49 <sup>1</sup> x 5.99 <sup>1</sup>
	Round	1219 mm 3.11'	1525 mm 5.00'

#### Hospitality – Motel Planning

Motels are oftentimes associated with hotels. However, motels are in fact, also called, "motor hotel", such is a multilevel hotel or transient accommodation that are providing more than the average parking than hotels. It is definitely a "go-to" haven for the motorists who usually wants to stay temporarily or overnight. This can be a primitive structure or an extravagant place. It can also be called an inn, cabin or a lodge where people who travels by car can be easily accommodated. Therefore, in motel planning, there are number of essential considerations in order to consider for it a success.

3 essential considerations / factors affect motel planning:

- 1. Good location
- 2. Attractive appearance / character
- 3. Quick, practical, pleasant and economical service.

Foremost, the designer who will plan motels should consider the good location of the site so that it will be directly in line with the traveler's or driver's vision, if along the highways. It is indeed a paramount importance. Illustrated below are some of the tips on how and where to locate the motels strategically:

#### A. Before the 'difficulty zone of road'

True enough, that when a motorist realized that there will be some difficulty driving a short distance ahead (whether it is a heavy traffic, a winding road over, or a tedious stretch of road) there will be a higher possibility that he would rather spend the night elsewhere than to be stuck in the traffic on the road. Situating the motel before the 'difficulty road' can be the best strategic plan for the motels to be built.

#### B. Isolated at a distance

Sometimes, it is an advantage to locate the motel isolated at a distance, especially when there is already a nucleus of motel that are established within the city. If several motels are already grouped just before entering a city, the motel that is located at least isolated from the grouped motels can be more successful because some motorists and guests tend to be more overwhelmed by a large group of motels.

#### C. Along the flow of traffic

Locating the motel along the traffic of the motorists is a good strategy especially if the traffic is all at heavy on the other side of the road, the motorist can easily maneuver heading to the motel.

#### **D. Hillside location**

Suppose that the characteristic of the topography has a running slope, it is ideal to locate the motel at the hillside location, wherein it will be directly in line to the driver's vision. Making the motel visually connected to the driver along the road or highways are considered to be a rewarding strategy.

#### Hospitality – Motel Planning

#### **Types of Motels:**

• City Motels – Motels that are built in a town or before to enter a town or within cities. These are generally considered as expensive lot and a restricted site. The motel that is usually built is three stories high.

• Highway motor hotels – The type of hotel that is usually one or two stories high. If possible, a number of not exceeding 15 % of the site area is used for parking.

• Motor annexes – This type of hotel is can be identified as an annex next to an establishment or a hotel. Its connection as an annex will depend on the reputation of the establishments' advertising, location, services, utilities, supervision and maintenance staff.

• Resort motels – These are motels within the destination or a tourist spot. A type of motel that requires recreation facilities. The site is ideally spacious, however, if not necessary, a small one can also function.

• Airport inns – Considered as one of the major inns for this type of motels are relatively large and high-class operations. Often have 150-300 rooms, two-stories guest room buildings and an acre of lot (at least 10 acre of site area). Its food and other service-related facilities such as function rooms, beverages facilities and other desired recreational facilities are usually in full-scale and extensive.

#### Site Plan (Site configurations)

Site configurations are necessary to determine in motel planning. Other pertinent information that needs to be gathered and realized are the following: contour of the land, size of the buildings and area for parking area or garage, size of the site, and most importantly the traffic patterns for guests, employees, supplies and refuse.

Motels are usually associated with close proximity to the highway and thus privacy of the establishment must be catered first and foremost.

Therefore, as a planner-designer, one must know the best preferences of the owner or operator of the motel in order to produce results desired, either one may want the motel set far back from the highway or another may want the swimming pool in front. (see next pages for illustrations)
## Hospitality

## Hospitality – Motel Planning

## Site Plan (Site configurations) -

The following are the site configurations as guide:

## 1. U-shaped plan

For small motels, guest units may be arranged in a U-shaped plan with lawn at the center of it. The registration area can be located at the center of the horizontal portion as the main building.

The same configuration can be considered with distinct modification, with everything under one roof.



## 2. Crescent-shape plan

This plan is often quite appealing to the users and motorists. The central registration and main building can be flanked at the center. If built under one roof, this arrangement can take the shape of half-hexagon. In other plan, a motel can be designed as a long straight building with equal wings extended from the registration / main entrance.







## Hospitality

## Hospitality – Motel Planning

## Site Plan (Site configurations) -

### 3. T-shaped plan

Depending on the site condition, T-shape plans might be the most suitable. However, with this design, the service entrance can be hard to locate.



#### 4. L-shaped plan

Amongst the plans, L-shaped arrangement is rightfully considered as the most popular plan. Placing the registration towards the highway gives an impression of welcoming the guests to the structure. The location also of the parking area displays also to the prospective guests. If possible, the location also of the pool and garden will be secluded from the direct noise of the highway adjacent to it.

The position of L-shaped plan can be reversed, having the pool and garden in front of the building structure / guest units. Another configuration is to place the parking in front while the garden and pool area is also secluded out of the highway.



## Hospitality

### Hospitality – Motel Planning

### **Other Considerations -**

#### A. Parking

The following guidelines can be considered in planning the parking areas for motels:

- 1 parking slot should be provided in every guest room.
- 1 parking slot for every 5 restaurant seats.
- 1 parking slot for every 3 employees.
- 2 parking slots for delivery and service trucks.

A motel with luxe and spacious recreational spaces and amenities may need 2 parking slots for every guest room. However, careful study should be observed depending on the site condition where the motel is going to be built. If in case located along downtown areas, parking slots may be reduced, depending on the country's local building code.

#### **B. Entrance drive**

The planner should design the turnoff driveway of the vehicle from the highway to the entry of the hotel at the minimum angle of 30 to 45 degrees, exceeding or sharp turnoff are not recommended.

Combination of adequate turning radius and driveway width work together. Moreover, the driveway of a morel should be at range of 6.00 meters to 7.50 meters for convenience and to avoid accidents. Meanwhile, curb radius should be at least 9.20 meters (approximately 30-foot radius).  $-(6.00 = (9.68^{\circ}), (7.50 = 24.60^{\circ}), (9.20 = 30.18^{\circ})$ 

The parking should be nearly level and the maximum slope of 6 percent is the usual turnoffs of vehicles from state highways.

#### C. Landscape

Landscape helps beautify the site and screened unpleasant views. This consideration should be part of every designer's rule of thumb when designing hospitalities such as hotels and motels – it is one of the things that gust sees first. It must be well-kept and should be properly maintained. Moreover, the right varieties of trees and planters should be observed either will it provide shade, attraction or screened undesirable views from and to guest rooms.

#### **D. Outdoor Advertising**

Advertising considerations played also an important role in motel planning. Indeed, having clear, readable, well-lit signs are big advantage to the motel economically because the entry signs should be visible to both motorists and on-foot travelers. The texts as signage should at least 500 mm high. (1.64')

The material in using the signage outdoors should be determined carefully. It should be durable enough to withstand climate conditions. The sign should be properly well-lit but make sure that it will not annoy the guests with excessive beams of light and unwanted glare.

#### E. Swimming pools

Some motels are including swimming pool in their amenities. The minimum size recommended for swimming pool is 6.00 mts. X 12.00 mts (large enough to accommodate 15 people). Provision of 20 to 30 men and women bathers around the pool area should be accessible and observed. This aspect is depending upon the standard provision of the local building code as it varies every country.  $(19.68' \times 39.37')$ 

Provision of "cabana cottages" may also be a wise strategy as this is also can be an income-generating areas.

## Chapter 17 Educational

## Educational – Early childhood education planning

Primary concerns of educational institutions first and foremost are the safety and security. Educational institutions should provide safety environment for the students, teachers, and staff of the community. And indeed, the problems associated with safety and security is multi-dimensional.

In this chapter, there are two basic strategies are provided in order to address building's security, and these are – "active" and "passive" security concepts (or oftentimes a combination of both).

### **Private security concepts**

Passive security concept deals on the program layout by the designer. It entails proper planning and considerations, especially building facility configurations. And these are the things that architects and designers should take part in as they are the ones who is accountable for space programming and to the layout and assigning of the spaces. They are also to forecast the possible circulation of every anticipated user.

### **Building Layout Guidelines**

• Avoid unnecessary corners. Blind spots in space planning should be avoided.

• If feasible, locate teacher preparation areas or offices with direct visual contact of major circulation areas (such as corridors, cafeterias, parking)

• Maximize "natural surveillance" from within the school to the outdoor such as parking areas and playground so that to alleviate potential suspicious person or activities.

• Realize spatial relationships to the spaces that are with natural transitions from one location to another (restrooms near class-rooms).

### Active security concepts

Active security concept deals on how to utilize advancements of technologies in order to suffice the need of safety and security. It is always based on "hardware security" such as multiple cameras and motion detectors.

#### Use of Technology

• Provide phones or communication device in every instructional and support areas.

• Provision for spaces or department that maximizes "public address system" designed to be heard throughout the school, and to the open fields if necessary.

• Provision of CCTV (Closed-circuit television) surveillance.

## Site planning, vehicular and pedestrian traffic

The following guidelines are the basic principles:

• Every bus drop-off may always be at the curb or in a public-right-of-way and should be "connected" to the main entry of the building for convenient access, should be well illuminated open walkways and avoid placing visual destructions.

- School service bus drop-off should be separated from other vehicular traffic.
- Parking areas should be distinct and identify the zones of students, employees or staff and community parking.
- Pedestrian of the students must be separated to the roadways.
- Easy wayfinding / signages should be properly observed.
- Outdoor playing areas should be in rectilinear plan, with a minimum of blind spots.

## Landscaping and lighting

Additionally, these guidelines will help the students and the whole institution community with security and to make the site more pleasant:

- High trees and low bushes (less than 900 mm) to deter hiding.
- Locate aesthetically pleasing fences around the perimeter of the site.
- Avoid too much beam lights and glaring site lighting in all parking areas, pedestrian and entry areas.
- Separate athletic fields from informal gathering areas.
- Locate athletic facilities away from the main structure, free from any fences.

## Life safety considerations

• Emergency exits should be considered in all situation. It should have a clear sign indicating the nearest exits adjacent to the classrooms and to the offices. Two or more exits are recommended to be provided from any area within the school.

• Door swing should be directed in the direction of travel.

• Educational institutions should provide also safety travel for vertical circulation. It is important that stairways are designed properly and safely (say that students are walking with books) can pass through safely.

• Stairways should be made of fire proof materials and construction (depending on the provision of the local code).

• Alleviate stairway hazards for the students and staff by applying the standard stair treads and risers. Also, provision of handrailing on both sides of the stairways should be highly observed.

• The walls of the corridors / hallways should be free from any projections. Wherever possible, there should be at least recessed in the corridor (such that drinking fountains, fire extinguishers, student lockers should be recessed).

Age group and class size	Suggested minimu (sqm/ student)	um Suggested optimal (sqm/ student)
Infants	3.25 ( 35.00)sq	ft 4.65 (50.00)sq.ft
Toddlers	3.25 ( 35 00) sq.	ft 4.65 (50.00) sq. ft.
Pre-school	3.25 (35.00) sq	ft 5.60 (60.27) sq.ft.

## Space requirements for early education facility classrooms

## Entry (Lobby and Reception)

The main entrance of this kind of educational facility should be welcoming to the children and their parents while the security and safety should be at the maximum considerations. Another worth to mention is that, entry or reception area should provide views from inside to outdoor in order to overseer what's happening outdoors. Provision of windows with sills low enough for the children to look upon. Moreover, the reception should be warm, bright, and leaves an impression of security. Furnitures to be considered in this area (as for the lobby / reception) include sofa, chairs, end table, and small coffee table or a small magazine rack.

## Large Motor Area

Early education should encourage the learners to develop their motor skills. Therefore, provision of this space should be observed in early education learning centers and facilities. For this area, one of the rule-of-thumb is for the area to be flexible in usage. Such that, every classroom may have large motor area where learners can play and learn freely. Specific requirements for this area vary upon the need of the age group, but it is important to understand that this area is used to develop eye/hand coordination (as motor skills) and positive self-image.

### Infants

Preparation of Infants' areas should be carefully planned. It is indeed quite challenging to create nurturing environment for them. Unnecessary corners and sharp edges should be strictly avoided in preparing the spaces for infants. Infants usually require soft, print-rich environment. This allows them to discover and wander the space. As to consider these milestones, the following guide-lines should be observed by the designer:

- Make sure floors are clean as they crawl, and not slippery. This should offer a place to land safely if they fall.
- Arranging furniture properly so that there will be a clear path when children wander around.
- Use low shelving, dividers and other furniture that allow teachers/overseers to monitor children at all times.

• A designer may provide additional stimulation within the infant's scope of comprehension by placing mirrors at least 400 mm above the finished floor so that children can play with their reflection. However, the mirrors should be shatterproof and with protected edges.

• Provision of low grab bars 430 mm above the finish floor so that children can assist themselves in learning how to balance as they begin walking.

### Toddlers

Areas for toddlers should have a hard surface flooring but it should be non-skid material. This will prevent children to slide as they begin learning to dance, walk, and play with other children. Just like in areas for infants, it is important to consider the abovementioned guidelines in planning the area for toddlers.

## **Play Area**

For this kind of educational facility in an early education, indoor and outdoor areas are important areas for children. Ali et al. (2018) moreover emphasized that "the cognitive skills of children are still in their early phase of inception and it is important to emphasize value of play-based learning during this developmental period. This is learning through means of 'play' which ranges from active-play that requires physical, verbal or mental engagement to pleasurable play that emphasizes on enjoyment as a key feature". And therefore, the designer must observe that a well-planned playground is essential to the growth and development of a child. And thus, play place areas should be planned according to the age group areas that are appropriate to the learners. Outdoor play areas should be designed in a way, there should be provided sun pockets and shading circulation. It should be free also from any hard and rough edges or any pointed edges objects. Paved pathways should be non-toxic and safe for all the learners. Indoor areas, on the other hand, should also be free from any hard and rough edges objects. This area should also be a large and flexible or a multi-purpose area where it can also serve large gathering such as performances, movies, indoor camps, social events and etc.

### **Reading/listening Area**

This is an area where children learn articulation skills such as reading, auditory, oral language skills, and vocabulary. Therefore, this should be an area that is free from noise and from the motion/movement.

The reading and listening area should be placed in a quiet zone. The space can be isolated or defined through cabinets, partition walls, or any partitions that will serve its purpose to block away this area from any noise and active activities.

### Toilets

Toilets should be designed accessible for children. The following are the standard guide in designing toilets as per ADA requirements:

	Ages 3-4	Ages 5-8	Ages 9-12	Ages 12+
Α	30.5 cm	30.5 – 38 cm	38-45.5 cm	45.5 cm
В	91.5 cm	91.5 cm	91.5 cm	112 cm
С	28-30.5 cm	30.5 – 38 cm	38-43 cm	43-48 cm
D	35.5 cm	35.5 – 43 cm	43-48.5 cm	48.5 cm
E	45.5-51 cm	51-63.5 cm	63.5-68.5 cm	84-91.5 cm

ADA requirements for building elements designed for the use of children -

Notes:

A- Distance from centerline of the toilet to side-walks or partitions on which the side grab bar and toilet paper dispenser are located.

B- Maximum height allowed for flush controls. Controls must be mounted on the open side of the toilet and must be hand operated or automatic.

C- Height of the toilet seat above the finished floor. Seats that are equipped to spring back to a lifted position are prohibited.

D- Mounting height of toilet paper dispenser measured from floor to the centerline of the dispenser.

E- Mounting height of grab bars located to back and side of toilet.

### **Diapering-changing station**

This should be considered in child centers, if possible. Either it can be provided as a sturdy furniture or attached to a wall. This area should not be adjacent to food preparation or food storage or service areas. It should be moisture resistant surface that is clean-able and it should have a sink with hot and cold running water, not used for food preparation and clean up. Side rails or raised edges (preferably 150mm) are recommended to prevent a child from falling off the diaper table. Soiled diapers should be directly disposed of into a covered, plastic-lined step can. The step can should be close to where diapering takes place to prevent carrying soiled diapers through the room or having to place soiled diaper/wipes on a surface.

### Sleeping / Napping area

Early childhood care centers should have sleeping/napping area for toddlers and infants. Although this area is just an optional area to be considered, the designer may design a space that are already incorporated to the general space, making it possible to define the space by placing a partition wall. But another important consideration for the designer is that, this area should be quiet and should have a dim light fixture. "Indirect up-lighting" is recommended so as to avoid direct light in the eyes of the learners. If the space permits, sleeping or napping area should have a crib or napping mats to accommodate infants or toddlers.

## Educational – Early childhood education planning

One area of thought in educational planning should consider elementary and secondary school planning. In this chapter of the book, fundamentals in site and classroom (alongside with other common facilities) planning are provided and to be explained.

## Site selection planning principles and guidelines

The site selection criteria in choosing the best location in building elementary and/or middle schools can be measured in the following basic items:

• Present and future environment: The forecast of economic, social, and housing makeup of community.

• Integration with community planning: Potential housing expansion relative to size, need and location.

• Role in comprehensive school building plan: Relationship to high schools and other elementary schools in same district (township, country, or community)

• Site characteristics: Site location setting – urban, suburban, or rural (determines demand for minimum and maximum space required): percent of usability of site for building, recreation and playfields, parking, roads and services; soil conditions – water table condition, flood plan, adjacent watersheds, and suitable materials for structural application.

• Adjacency to utility services: Utilities – availability and cost of electrical service, sanitary service (if none, feasibility of sewage treatment plant or septic tank), initial cost of land versus cost of land versus cost of improvements.

Ideal land sizes of the recent school (According to Albuquerque Public Schools [APS]):

Elementary School	10 acres
Middle School	20-25 acres
K-8 School	25 acres
High School	45-50 acres

In accordance also to the planning and guidelines of APS, the 25% is allocated to the Tare space that includes circulation (hallways, lobbies, vestibules, etc.), wall thickness, custodial space, general storage, and restrooms. Tare spaces excludes the mechanical room, IT rooms, electrical rooms, specific programmed storages, and specific programmed restrooms.

## Site Development

Elements of site development include the harmonious blend of the following elements for the school site, perimeters, parking lots, and adjacent streets. Aesthetic appeal and ease of maintenance are paramount concerns. Areas adjacent to an existing or planned housing development shall be buffered from the houses.

Drainage or blowing sand impact on neighbors is not allowed. Consider impacts of fugitive dust and storm water run-off in project planning.

• **On-Site Pedestrian Access/Sidewalks** - The pedestrian entry to the site shall be clearly defined. Paved sidewalks shall connect all school activity areas, including portables, (to provide accessibility and avoid undue maintenance in interior areas from mud or sand).

• **On-Site Bicycle Use -** Provide fencing (lockable) around a concrete pad for bicycle storage. Provision also of bicycle racks are ideal.

• **Accessibility** - Provide ADA compliant access to facilities (universal access preferred). Use ramps, handrails, and curb at building entrances, parking areas, playgrounds, and pedestrian walks in accordance with the New Mexico Building Code, American National Standards Institute, specifications for designing buildings and facilities accessible to and usable by people with physical disabilities.

**Main Entry** - Access points (See Safety/Security section for additional single-point of entry requirements):

For security, limit the number of school access points. The main entrance to buildings or building complexes shall be clearly defined by employing, primarily, architectural elements, and, secondarily, reinforced by landscaping, directional signage, and other means. Signage shall clearly identify car, bus, delivery, handicapped parking, and drop-off areas; different parking areas; location of accessible routes; and route to the office.

• **School Sign** - The school shall have an integral sign mounted on the building with the name of the school and the street number. The school may also have a free-standing monument sign with the name of the school and street number located near the street. The monument sign is not to be confused with a marquee sign.

• **Flagpole** - Provide one flagpole that is a minimum of 6-meter (20') tall with sheathed metallic flag snaps. The pole shall be one piece, non-tilted, aluminum

## Site Development

**Vehicular Circulation -** There shall be clear, separate, distinct and safe on-site circulation paths for pedestrians, school buses and staff, visitor, and service vehicles. Multiple access points for vehicles are preferred.

• **Bus Loading / Unloading –** Strive to provide separate bus loading/unloading zones accommodating the required number of buses for that school that do not conflict with other vehicular or pedestrian pathways and provides for the safe loading and unloading of students.

The loading area shall be able to accommodate up to 80% of the school population in a safe and orderly manner and load students from the curb directly into the bus door without passing between or behind buses or cars. Confirm the projected number of students and buses based on the school's projected student population.

The following illustrations suggests bus parking systems configurations:

- a. Parallel bus parking system
  a.1 Single- File System
  a.2 Free-access system
  b. 30 degree bus parking system
  b.1 Peel-off system
  b. 2 Free-access system
  c. 45 degree bus parking system
  c.1 Peel-off system
  c.2 Free-access system
  d. 60 degree bus parking system
  d.1 Peel-off system
- d.2 Free-access system

## Site Security / Safety

• Propose of Single Point of Entry

All school facility shall be accessed from a single point of entry. Parking, drop-off/ pick-up, pedestrian routes, and other site access locations shall guide/funnel anyone entering the campus to the single point of entry. The single point of entry shall be designed as a secure vestibule. The secure vestibule will require all visitors to sign in at the school's reception area before accessing other areas of the school. » The single point of entry applies to all school sites, including both single and multi-building campus

#### • Site fencing

The site shall be securable with perimeter and/or interior fencing

Security fencing shall be a minimum of 6'-0" high. Chain-link is acceptable for "back-of-house" areas, while welded wire fence is desirable at more visible areas. Interior fencing is also referred to as "inter-building" fencing. This strategy may be employed where school buildings serve as barriers/walls and fencing is constructed between buildings to provide a fenced environment to allow exterior circulation for school occupants between and among separate buildings.

Site fencing layout must be coordinated with building egress requirements as well as the District fire evacuation plan and active shooter protocol. Provide egress gates within the security fence as required by code, for fire evacuation, and for access to site features (recreation, playgrounds, parking, etc.).

Egress gates shall be exit-only, except where approved for re-entry with card access by the APS staff architect and security team representatives.

## • Site security lighting

Sites shall have illuminated parking areas, walks, entrances, portable areas, and exterior building areas for both safety and security purposes. » Exterior lighting shall meet Illumination Engineering Society (IES) recommendations

### **Classrooms Planning**

A classroom is a specific and special zone in a school, whereby students spend most of their time with. Therefore, classrooms in either elementary and secondary schools should be properly planned. The sensitivity of the designer must be taken seriously. For example, square-planned classrooms are proven to be more generally effective than rectangular-planned dominated classroom. The age range of the group should always be taken into consideration. At any given time of the day, a classroom might be arranged to accommodate:

(a) small to large group teams;

- (b) television or monitor viewing
- (c) use of wide range of technologies;
- (d) large digital protection.

### **General Requirements for All Classrooms**

1. **Electrical Access** – Provision of sufficient electrical outlets and considering where it is located within the room are one of the primary requirements in planning classrooms. This will dictate to where the computers and other educational gadgets are to be placed and to be moved. Hence, will paved way to a more flexible arrangement of the classroom.

**2. HVAC & Ventilation systems –** Mechanical ventilation is always almost an option for schools. Therefore, AHU (Air-handling units) rooms should be considered. Moreover, operable windows should always be at present in the room to permit natural ventilation at times. And thus, these windows can serve as an emergency escape.

**3. Lighting** – Lighting plays an important role in classrooms. There should be two levels of lighting control. One that allows "dimming", this is used for low-light activities and to control for video viewing. Proper lighting techniques should also be considered and applied in all spaces. In addition, lighting switches should be located near the door for easy access of the students.

**4. Writing Boards and Task Surfaces** – Chalkboards are now rapidly replaced by Whiteboards and Task surface that is influenced by environmental safety concern. These writing boards should be attached to a minimum of two walls (recommended is three walls when possible).

**5.** Projection / Monitor / Digital Equipment – Projection equipment is necessary for the lecture presentation. However, digital monitors are now often used adapted.



#### Type 5 - Four-seaters Arrangement

## Chapter 18 Sustainable design & diagrams

## Sustainable design

## **Daylighting Strategies**

Daylight is one of the most important factor in architecture, this can reduce electricity bill and create indoor environment that feel natural and inviting. Here are some different design strategies you can use while designing -



LIGHT WELL

Light-well is an uncovered external space provided within the volume of a large building to allow light and ventilation reach in as shown.





Reflective blinds can be used on the southern side windows which catch a lot of sunlight. They usually diffuse it and provide a thermal comfort inside any space.



ROOF MONITORS

Roof monitors are used to provide diffused or even direct sulight during cold winters. They are usually built/ designed directly on the roof as shown.





Reflectors are provided to enhance the lighting coming from the window, this can be achieved by using white or reflective surface.



CLERESTORY

Clerestory windows are used by designers who wish to maintain interior privacy and keep a space well-lighted.



LIGHT SHELF

When sunlight hits the light shelf, it reflects and the diffused evenly light is obtained within the space.

## Sustainable design

## **Daylighting Strategies**

More strategies and shading devices can be used on the external facade of the building -



Horizontal + Vertical or egg crates can be used to protect the harsh sunrays that are coming from all the orientations. Vertical shadings are best to use on east or west side of the building facade.

Sectional view of each shading devices with the shadow angle

A

B

C

SUSTAINABLE DESIGN CONTENT - TO BE CONTINUED IN OUR NEW E-BOOK = PURCHASE FROM HERE O7SKETCHES.GUMRDAD.COM

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## About Me



Hello there, my name is Bhupeshkumar Mithanlal.Malviya, and I am the founder of 07sketches. I have been practicing and studying architecture for the past five years, with another five years of experience in sketching/drawing and content creation.

I wrote this book with the goal of sharing my architectural knowledge. With this, I hope I can inspire you to learn more about architecture and interior designing or perhaps pursue a career in architecture and more related fields like this.

My latest achievements include: More than 300k followers on Instagram, Champion of the #letsketch competition, Featured in an interview with RealtyNXT, Featured in an interview with Concepts, Featured on MorpholioTrace, History of architecture series featured on Architecture & Design.



## 1. conversion table for lengths up to 20 meters, including measurements in feet-inches, decimal feet, centimeters, and millimeters:

Length (m)	Feet-Inches	Feet Decimal	Centimeters	Millimeters
0.1	0' 4"	0.328	10.16	101.6
0.5	1' 7"	1.640	50.80	508.0
1	3' 3"	3.281	100.00	1000.0
1.5	4' 11"	4.921	150.00	1500.0
2	6' 7"	6.562	200.00	2000.0
2.5	8' 2"	8.202	250.00	2500.0
3	9' 10"	9.843	300.00	3000.0
3.5	11' 6"	11.483	350.00	3500.0
4	13' 1"	13.123	400.00	4000.0
4.5	14' 9"	14.764	450.00	4500.0
5	16' 5"	16.404	500.00	5000.0
5.5	18' 1"	18.045	550.00	5500.0
6	19' 8"	19.685	600.00	6000.0
7	22' 11"	22.966	700.00	7000.0
8	26' 3"	26.247	800.00	8000.0
9	29' 6"	29.528	900.00	9000.0
10	32' 10"	32.810	1000.00	10000.0
15	49' 3"	49.213	1500.00	15000.0
20	65' 7"	65.617	2000.00	20000.0

Why Decimal Feet ? There are a few reasons why decimal feet are more convenient than feet-inches: Simplifies calculations: When working with decimal feet, calculations become easier because you don't have to convert between feet and inches. For example, adding two lengths of 3.5 feet and 2.75 feet is straightforward and can be done without converting to inches first. More precise: Decimal feet allow for greater precision than feet-inches because decimals can be expressed in fractions of an inch. For example, 3.25 feet is equivalent to 3 feet 3 inches, but 3.25 feet is more precise because it includes the additional decimal fraction of 0.25. Universal standard: Decimal feet are a more universal standard in the construction industry, as they are widely used in construction plans and documents. This makes it easier for architects, engineers, and contractors to communicate and work together effectively Reduces errors: Working with decimal feet can help reduce errors, as it eliminates the need to perform complex calculations involving feet and inches. This can help prevent mistakes that could result in costly rework or delays in the construction process.

## 2. Architectural Glossary:

Arch: A curved structural element that spans an opening and supports weight above it. Balustrade: A railing system made up of balusters, handrail, and sometimes a bottom rail. Bay window: A window or series of windows that project from the main walls of a building and create a bay or alcove. Beam: A horizontal structural element that supports weight and spans an opening. Brackets: An architectural element used to support a beam or other structural element, often featuring ornamental or decorative details. Column: A vertical structural element that supports weight and is typically cylindrical in shape. Cornice: A decorative or protective element that crowns or completes the top of a building or wall. Dormer: A window that projects vertically from a sloping roof. Façade: The exterior face or front of a building. Finial: A decorative element that tops a spire, pinnacle, or gable. Frieze: A horizontal band of decorative or ornamental elements, often found above doors and windows or below a cornice. Gable: The triangular portion of a wall that lies between the sloping roofs of a building. Keystone: A central stone at the top of an arch that locks the other stones in place. Mansard roof: A roof with two slopes on all four sides, creating a flat top and steep sides. Molding: A decorative strip used to enhance the appearance of walls, ceilings, and other architectural elements. Pilaster: A rectangular column that is attached to a wall and used for decoration or support. Portico: A covered entranceway supported by columns or pilasters. Quoins: Decorative stones that are used to accentuate the corners of a building. Soffit: The underside of a roof overhang or arch. Transom: A horizontal window located above a door or other window. Aedicule: A small ornamental structure, often containing a statue, built into the facade of a building. Apse: A semicircular or polygonal recess at the end of a building, often used in religious architecture. Batten: A narrow strip of wood or metal used to cover a joint or seam between two panels or boards. Coffer: A decorative sunken panel in a ceiling or vault, often square or rectangular in shape. Cupola: A small dome or tower on a roof, often used for ventilation or to provide a lookout. Entablature: The horizontal upper section of a classical order, consisting of architrave, frieze, and cornice. Jamb: The vertical side of a doorway or window frame. Mansard roof: A roof with two slopes on all four sides, creating a flat top and steep sides. Mullion: A vertical or horizontal bar used to divide a window into smaller panes. Niche: A recessed area in a wall used to display a statue or other decorative object. Oculus: A circular opening or eye in a dome, wall, or ceiling. Palladian window: A large window divided into three parts, consisting of a central arched section and two smaller rectangular sections on either side. Pediment: A triangular gable above a portico, door, or window, often decorated with sculpture or other ornamentation. Pergola: A shaded walkway or passageway, typically supported by columns or posts and covered in climbing plants. Rosette: A circular or oval ornament, often used in classical architecture to decorate cornices, friezes, and ceilings. Sash: The movable frame in a window, typically containing glass panes. Spandrel: The triangular area between two adjacent arches or between an arch and a horizontal beam or lintel. Tracery: Ornamental stone or woodwork forming the decorative intersecting lines in a window or other opening. Voussoir: A wedge-shaped stone used in the construction of an arch or vault. Wainscoting: A decorative paneling applied to the lower portion of a wall, often made of wood or tile.

## 3. Detailed lists of important architectural and interior design elements, along with their common dimensions in both millimeters and decimal feet:

#### A. Doors:

Standard interior door height: 2032 mm / 6'8" Standard interior door width: 762 mm / 2'6" Standard exterior door height: 2134 mm / 7' Standard exterior door width: 914 mm / 3' Pocket door width: 813-1219 mm / 2'8"-4' B. Windows:

Standard window height: 1219-1524 mm / 4-5' Standard window width: 914-1219 mm / 3-4' Standard bay window projection: 457-762 mm / 1.5-2.5' Standard window sill height: 914 mm / 3' C. Ceilings:

Standard ceiling height: 2438 mm / 8' Standard drop ceiling height: 2134 mm / 7' Coffered ceiling depth: 152-305 mm / 6-12" D. Walls:

Standard wall height: 2438 mm / 8' Standard wall thickness: 89 mm / 3.5" Standard drywall panel size: 1219 x 2438 mm / 4' x 8' E. Stairs:

Standard tread depth: 254 mm / 10" Standard riser height: 178 mm / 7" Standard handrail height: 914 mm / 3' Spiral staircase diameter: 1524-2438 mm / 5-8' F. Kitchen:

Standard countertop height: 914 mm / 3' Standard upper cabinet height: 914-1219 mm / 3-4' Standard base cabinet depth: 610 mm / 24" Standard kitchen island depth: 914 mm / 3' G. Bathroom:

Standard vanity height: 813 mm / 32" Standard shower width: 762-914 mm / 2.5-3' Standard bathtub length: 1524 mm / 5' Standard toilet height: 381-406 mm / 15-16" H. Furniture:

Standard sofa length: 1829 mm / 6' Standard dining table height: 762 mm / 2'6" Standard bed width: 1524 mm / 5' Standard chair width: 457-508 mm / 18-20" I. Flooring:

Standard tile size: 305 x 305 mm / 12" x 12" Standard hardwood plank width: 76-127 mm / 3-5" Standard carpet roll width: 3658 mm / 12' Standard floor to ceiling height: 2743-3048 mm / 9-10' J. Lighting:

Standard ceiling fixture height: 2032 mm / 6'8" Standard pendant fixture height: 762-914 mm / 2.5-3' Standard recessed fixture diameter: 152-305 mm / 6-12"

## 4. List of famous buildings around the world:

The Eiffel Tower - Paris, France The Taj Mahal - Agra, India The Great Wall of China - China The Colosseum - Rome, Italy The Sydney Opera House - Sydney, Australia The Burj Khalifa - Dubai, United Arab Emirates The Empire State Building - New York City, USA The Sagrada Familia - Barcelona, Spain The Golden Gate Bridge - San Francisco, USA The Louvre Museum - Paris, France The Tower of London - London, England The St. Basil's Cathedral - Moscow, Russia The Brandenburg Gate - Berlin, Germany The Forbidden City - Beijing, China The Petronas Twin Towers - Kuala Lumpur, Malaysia The Buckingham Palace - London, England The Notre Dame Cathedral - Paris, France The Palace of Versailles - Versailles, France The Alhambra - Granada, Spain The Christ the Redeemer - Rio de Janeiro, Brazil The Taipei 101 - Taipei, Taiwan The Potala Palace - Lhasa, Tibet The Tower Bridge - London, England The Willis Tower - Chicago, USA The Marina Bay Sands - Singapore.

The Sheikh Zayed Grand Mosque - Abu Dhabi, United Arab Emirates The Machu Picchu - Cusco, Peru The Palace of Fine Arts - San Francisco, USA The Arc de Triomphe - Paris, France The Dome of the Rock - Jerusalem, Israel The National Centre for the Performing Arts - Beijing, China The Flatiron Building - New York City, USA The Osaka Castle - Osaka, Japan The Piazza del Duomo - Florence, Italy The Cité de Carcassonne - Carcassonne, France The Rialto Bridge - Venice, Italy The Belem Tower - Lisbon, Portugal The Royal Palace of Caserta - Caserta, Italy The City Hall of Stockholm - Stockholm, Sweden The Atomium - Brussels, Belgium The St. Paul's Cathedral - London, England The Golden Pavilion - Kyoto, Japan The Old City of Dubrovnik - Dubrovnik, Croatia The Christchurch Cathedral - Christchurch, New Zealand The Tower of Hercules - A Coruña, Spain.

The Guggenheim Museum - Bilbao, Spain The Westminster Abbey - London, England The Château de Chambord - Chambord, France The Great Pyramid of Giza - Giza, Egypt The CN Tower - Toronto, Canada The St. Peter's Basilica - Vatican City The Neuschwanstein Castle - Füssen, Germany The La Pedrera - Barcelona, Spain The Leaning Tower of Pisa - Pisa, Italy The Mont Saint-Michel - Normandy, France The Sydney Harbour Bridge - Sydney, Australia The Palace of Westminster - London, England The Gaudi's Casa Batlló - Barcelona, Spain The Taipei Fine Arts Museum - Taipei, Taiwan The Dancing House - Prague, Czech Republic The Marina Bay Financial Centre - Singapore The Fallingwater House - Pennsylvania, USA The Völklingen Ironworks - Völklingen, Germany The Museum of Islamic Art - Doha, Qatar The Casa Milà - Barcelona, Spain The Burj al Arab - Dubai, United Arab Emirates The Sagrada Familia Nativity Façade - Barcelona, Spain The Glass House - Connecticut, USA The Robie House - Chicago, USA The Park Güell - Barcelona, Spain.

The Petra - Ma'an Governorate, Jordan The Casa da Música - Porto, Portugal The La Scala - Milan, Italy The Basilica of Our Lady of Guadalupe - Mexico City, Mexico The Blue Mosque - Istanbul, Turkey The Leshan Giant Buddha - Leshan, China The Basilica di San Marco - Venice, Italy The Meiji Shrine - Tokyo, Japan The Himeji Castle - Himeji, Japan The Bojnice Castle - Bojnice, Slovakia The St. Stephen's Basilica - Budapest, Hungary The Pena Palace - Sintra, Portugal The El Castillo - Chichen Itza, Mexico The Beiteddine Palace - Beiteddine, Lebanon The Cathedral of Saint Mary of the See - Seville, Spain The Ashford Castle - County Mayo, Ireland The Baha'i House of Worship - New Delhi, India The Hallgrímskirkja - Reykjavik, Iceland The Palace of Culture and Science - Warsaw, Poland The Lotte World Tower - Seoul, South Korea.

## 5. List of electrical names used in architecture and interior design:

Electrical Outlets - Receptacles (RCP) Switches - SW Dimmer Switches - DIM Electrical Panels - EP Circuit Breakers - CB GFCI Outlets - GFCI AFCI Circuit Breakers - AFCI Surge Protectors - SP Light Fixtures - LF Ceiling Fans - CF Recessed Lighting - RL Track Lighting - TL Pendant Lighting - PL Chandeliers - CH Sconces - SC Task Lighting - TL Under Cabinet Lighting - UCL LED Lighting - LED Landscape Lighting - LL **Emergency Lighting - EL** Exit Signs - ES Smoke Detectors - SD Carbon Monoxide Detectors - CMD Fire Alarms - FA Fire Extinguishers - FE Intercom Systems - IS Security Systems - SS Surveillance Cameras - SC Doorbells - DB Motion Sensors - MS Smart Home Systems - SHS Ethernet Outlets - ETH Cable Outlets - CO Telephone Jacks - TEL HDMI Outlets - HDMI USB Outlets - USB Thermostats - T HVAC Systems - HVAC Heat Pumps - HP Air Conditioners - AC Fans - FAN Dehumidifiers - DH Humidifiers - HUM Air Filters - AF Water Heaters - WH Boilers - BOIL Radiators - RAD Ductwork - DUCT Vents - VENT Exhaust Fans - EF

Electric Heaters - EH Electric Fireplaces - EF Electric Blankets - EB Electric Mattress Pads - EMP In-Floor Heating - IFH Radiant Panels - RP Solar Panels - SP Batteries - BAT Generators - GEN Power Supplies - PS Transformers - XFR Uninterruptible Power Supplies - UPS Capacitors - CAP **Resistors - RES** Inductors - IND Diodes - DIO Transistors - TRA Integrated Circuits - IC Printed Circuit Boards - PCB Conductors - COND Insulators - INS Grounding - GRD Shielding - SHLD Wiring - WIR Cabling - CAB

## 6. Architecture and Interior design working Template:

Pre-Design

Project Brief: A document outlining the client's goals, scope of work, budget, timeline, and other relevant information. Site Analysis: Assess the site's topography, zoning regulations, environmental factors, and other site-specific considerations.

Feasibility Study: Assess the feasibility of the project based on factors such as cost, schedule, potential issues, and stakeholder input.

Schematic Design

Concept Development: Develop a design concept that meets project goals and objectives, considering site conditions, client preferences, and other relevant factors.

Floor Plans: Develop detailed floor plans that show the placement of walls, doors, windows, and other architectural features.

Elevations: Develop detailed drawings that show the exterior of the building, including wall height, shape, and materials. Sections: Develop detailed drawings that cut through the building to show interior details such as ceiling height, structural components, and material finishes.

Design Development

3D Renderings: Create realistic 3D renderings that show the proposed design in detail, including lighting, material finishes, and furniture layout.

Material Selection: Select appropriate building materials that meet the design concept and budget, including flooring, wall finishes, and furnishings.

Lighting Plan: Develop a detailed lighting plan that includes fixture placement, type, and lighting levels. Construction Documents

Specifications: Write detailed descriptions of the materials, products, and construction techniques to be used in the project.

Drawings: Create detailed architectural and engineering drawings that show the design in greater detail, including construction details, millwork, and custom elements.

Schedules: Create schedules that outline the construction phases and milestones, including deadlines for approvals and materials delivery.

Bidding and Negotiation

Request for Proposal: Develop a document that outlines the scope of work and requests bids from contractors. Bid Analysis: Review and compare the submitted bids to select a contractor that meets project requirements and budget. Construction Administration

Construction Schedule: Develop a detailed construction schedule that outlines the project timeline, including key milestones and deadlines.

Submittals: Review and approve materials submitted by the contractor, including material samples, shop drawings, and product data.

Site Visits: Regularly visit the construction site to monitor progress, resolve issues, and ensure compliance with the design. Post-Construction

Punch List: Develop a checklist of items to be completed or corrected before the project is considered finished. Operations and Maintenance Manuals: Provide project documentation to the owner, including manuals, warranties, and maintenance instructions.

## 7. Important notes:

Consider the function of the space: When designing a space, it's important to consider the intended function of the room, as this will influence the layout, materials, and finishes that are used.

Focus on ergonomics: Good design should also prioritize ergonomics, or the study of how people interact with their environment. This means designing spaces that are comfortable, functional, and safe to use.

Embrace sustainability: Sustainability is an important consideration in modern design, and architects and designers should strive to incorporate sustainable materials and practices whenever possible.

Pay attention to lighting: Lighting is an important element of interior design, as it can influence the mood and atmosphere of a space. Consider both natural and artificial lighting sources when designing a room.

Understand color theory: The use of color can have a significant impact on the overall feel of a space. Understanding color theory can help designers create harmonious and visually pleasing color palettes.

Don't forget about acoustics: Acoustics are often overlooked in interior design, but they can have a big impact on the usability of a space. Consider using sound-absorbing materials or implementing other strategies to control noise levels.

Consider the context: Design doesn't happen in a vacuum, and it's important to consider the historical, cultural, and social context of a space when designing it.

Collaboration is key: Design is often a collaborative process, and architects and designers should work closely with clients, contractors, and other stakeholders to ensure that the final product meets everyone's needs.

Plan for the future: Finally, good design should be forward-thinking and considerate of the future. This means designing spaces that are adaptable and can evolve with changing needs and technologies.

## 8. Important notes:

Always start with a plan: Before beginning any design project, it's important to create a detailed plan that outlines the scope, timeline, and budget for the project. This will help ensure that everyone involved is on the same page and that the project stays on track.

Materials matter: The materials used in a design project can have a big impact on the final outcome. Consider the durability, sustainability, and aesthetic appeal of different materials when making design choices.

Use scale and proportion: Scale and proportion are important principles of design that can help create a cohesive and harmonious look. Make sure that furniture, decor, and architectural elements are appropriately scaled for the space.

Balance form and function: Good design should balance form and function, or aesthetic appeal and practicality. Strive to create spaces that are both visually appealing and functional for their intended use.

Emphasize focal points: Focal points are important design elements that draw the eye and create visual interest. Use lighting, color, texture, and other design elements to emphasize focal points in a space.

Think about traffic flow: When designing a space, consider how people will move through it. Arrange furniture and other elements in a way that promotes good traffic flow and minimizes congestion.

Embrace contrast: Contrast can be a powerful tool in design, creating visual interest and helping to define different areas of a space. Experiment with contrasting colors, textures, and materials to create a dynamic look.

Don't overlook the ceiling: The ceiling is often overlooked in interior design, but it can be a great opportunity to add visual interest and create a unique look. Consider using textured or patterned ceiling tiles or incorporating a statement light fixture.

Stay up-to-date on trends: Design trends can change quickly, and it's important to stay up-to-date on the latest developments in the field. Attend trade shows, read industry publications, and network with other designers to stay informed.

Stay true to your vision: While collaboration is important, it's also important to stay true to your design vision and principles. Don't compromise your values or design aesthetic to please others.

Always be learning: Finally, design is a field that is constantly evolving, and it's important to stay curious and continue learning throughout your career. Attend workshops, take courses, and seek out new experiences to stay inspired and informed.

## 9. the list of furniture that can be used in each room, including measurements in both the imperial and metric systems:

FOYER

Console table: 30" H x 36" W x 12" D (762 mm H x 914 mm W x 305 mm D) Mirror: 36" H x 24" W (914 mm H x 610 mm W) Bench or ottoman: 18" H x 36" W x 16" D (457 mm H x 914 mm W x 406 mm D) Rug: 5' x 7' (152 cm x 213 cm) LIVING ROOM

Sofa: 84" W x 36" D x 36" H (2134 mm W x 914 mm D x 914 mm H) Accent chairs: 30" W x 30" D x 34" H (762 mm W x 762 mm D x 864 mm H) Coffee table: 48" W x 24" D x 18" H (1219 mm W x 610 mm D x 457 mm H) Side table: 22" W x 22" D x 24" H (559 mm W x 559 mm D x 610 mm H) TV stand: 60" W x 20" D x 30" H (1524 mm W x 508 mm D x 762 mm H) Area rug: 8' x 10' (244 cm x 305 cm) DINING ROOM

Dining table: 72" L x 36" W x 30" H (1829 mm L x 914 mm W x 762 mm H) Dining chairs: 18" W x 20" D x 36" H (457 mm W x 508 mm D x 914 mm H) Buffet or sideboard: 60" W x 20" D x 36" H (1524 mm W x 508 mm D x 914 mm H) Area rug: 9' x 12' (274 cm x 366 cm) BEDROOM

Queen size bed: 60" W x 80" L x 54" H (1524 mm W x 2032 mm L x 1372 mm H) Nightstand: 22" W x 18" D x 24" H (559 mm W x 457 mm D x 610 mm H) Dresser: 60" W x 20" D x 30" H (1524 mm W x 508 mm D x 762 mm H) Area rug: 8' x 10' (244 cm x 305 cm) HOME OFFICE

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Desk: 60" W x 30" D x 30" H (1524 mm W x 762 mm D x 762 mm H)
Office chair: 24" W x 24" D x 36" H (610 mm W x 610 mm D x 914 mm H)
Bookshelf: 72" H x 36" W x 12" D (1829 mm H x 914 mm W x 305 mm D)
Area rug: 5' x 7' (152 cm x 213 cm)
KITCHEN
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Kitchen island: 72" W x 36" D x 36" H (1829 mm W x 914 mm D x 914 mm H) Counter stool: 18" W x 18" D x 24" H (457 mm W x 457 mm D x 610 mm H) Dining table (if space allows): 72" L x 36" W x 30" H (1829 mm L x 914 mm W x 762 mm H) Area rug: 5' x 7' (152 cm x 213 cm) BATHROOM

Vanity: 36" W x 22" D x 36" H (914 mm W x 559 mm D x 914 mm H) Wall mirror: 24" W x 36" H (610 mm W x 914 mm H) Towel rack: 24" W x 10" D x 6" H (610 mm W x 254 mm D x 152 mm H) Area rug: 3' x 5' (91 cm x 152 cm)