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5 Star Hotel

Sanand, Gujarat, India

Dec, 2025

5 Star Hotel

Sanand, Gujarat, India

BACHELOR OF ARCHITECTURE

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DEPARTMENT OF ARCHITECTURE AND PLANNING

MAULANA AZAD NATIONAL INSTITUTE OF TECHNOLOGY, BHOPAL

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5 Star Hotel

Sanand, Gujarat, India

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UNDER THE GUIDANCE OF

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DEPARTMENT OF ARCHITECTURE AND PLANNING

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CANDIDATE DECLARATION

The Thesis Project in the subject ARC 511, entitled "**5 Star Hotel, Sanand, Gujarat, India"**, is being submitted in partial fulfilment of the requirement for the award of degree of Bachelor of Architecture by the undersigned for evaluation.

The matter embodied in this project is a record of my own work. If, in future, it is found that the above statement is false, then I have no objection in withdrawal of Bachelor of Architecture Degree awarded to me by the Institute.

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RECOMMENDATION

Based on the above declaration of the student, the undersigned recommends that the work submitted by the candidate may be considered for the final end term examination of the subject ARC-511, Thesis Project.

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Thesis Guide

CERTIFICATION OF EXAMINATION

The Bachelor of Architecture Thesis Viva-Voce examination of Mr/Ms Student Name Scholar No.211110---, was held on 1/12/2025 to 2/12/25.

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ABSTRACT

This thesis report presents a comprehensive site study and literature study for a 5-star hotel, aiming to create a luxurious and captivating hospitality experience for discerning guests. The report explores various aspects of hotel architecture, including spatial planning, sustainability, interior design, and contextual integration. It understands the technical function of a hotel complex. Its relationship of the surrounding with emphasis on exterior setting in conjunction with interior. Hotel provides regarding tourism, recreation, business etc.

The design proposal focuses on seamlessly blending functionality, aesthetics, and sustainability. The spatial planning emphasizes a fluid circulation system, ensuring intuitive navigation and optimizing guest experiences. The integration of advanced technology is explored to enhance guest comfort, convenience, and efficiency while maintaining a human-centered approach.

The concerned design proposal here aims at creating an iconic luxury 5 Star Hotel in GIDC Sanand , Gujrat. The 5-star hotel in GIDC Sanand aims to showcase architectural brilliance and innovative design, becoming an iconic landmark that enhances the city's skyline. The hotel aspires to attract and cater to affluent travelers, business professionals, and prominent individuals visiting GIDC Sanand for business or leisure purposes. It aims to provide a premium experience that meets the discerning needs and expectations of this target market. The 5-star hotel aims to contribute to the growth of tourism in GIDC Sanand by attracting domestic and international visitors. By offering exceptional accommodations, dining, and recreational facilities, it strives to position Gujarat as a desirable destination for luxury travelers.

ACKNOWLEDGMENT

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CHAPTER I

I. DESIGN BRIEF

1.1 INTRODUCTION

A business hotel is an establishment primarily designed to cater to the needs of corporate travelers, offering lodging and services that support work-related activities. Traditionally focused on providing a functional room with essentials such as a comfortable bed, desk, and connectivity options, business hotels have evolved to incorporate modern amenities like high-speed internet, ergonomic workspaces, and soundproof environments that ensure productivity and comfort. Typical features found in business hotel rooms include a work desk with task lighting, multiple charging ports, a digital safe, coffee-making facilities, and a flat-screen television. Enhanced business-class offerings may include express check-in/check-out services, complimentary breakfast, meeting rooms, and executive lounges. Larger business hotels also offer amenities such as fitness centers, airport shuttle services, co-working spaces, and 24-hour business centers.

1.2 AIM

The main aim is to achieve a fully functional Hotel design without any compromise to aesthetics and services

1.3 OBJECTIVES

- To design a hotel responding to the site conditions.
- To follow the immediate urban context and design accordingly.
- To reflect the economic dynamism and industrial identity of Sanand.
- To design the hotel as a high-functioning node within Sanand's growing industrial ecosystem
- To use the site views to the fullest and follow every bye-law that the site commands.
- To create efficient service networks keeping in mind the highest standards of hospitality industry.

1.4 SITE LOCATION

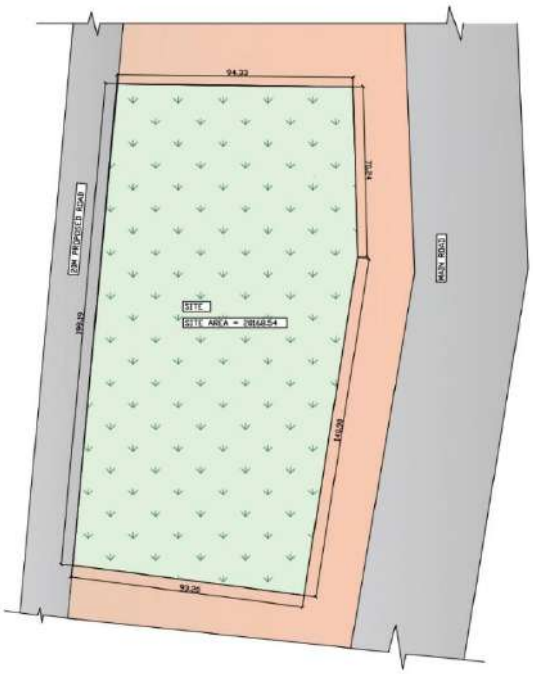
Name of the Project: Proposed 5 Star Hotel
Location: GIDC Sanand-II (Plot SM-39/5),
Sanand-II Industrial Estate,
District - Ahmedabad
State - Gujarat
Site Coordinates : 23°00'21.5"N, 72°14'59.6"E



1.5 PROJECT DETAILS

Site Area = 20168 Sq. M (4.8 Acres. Approx.)
Total Built Up Area = 82,308 Sq. M
FAR = 1.8
Building Height = not restricted
Front Setback = 7.5M
Rear And Side Setback = 4.5M / 9 m from all side according NBC
Ground Coverage = 40%

1.6 SITE PLAN WITH DIMENSION

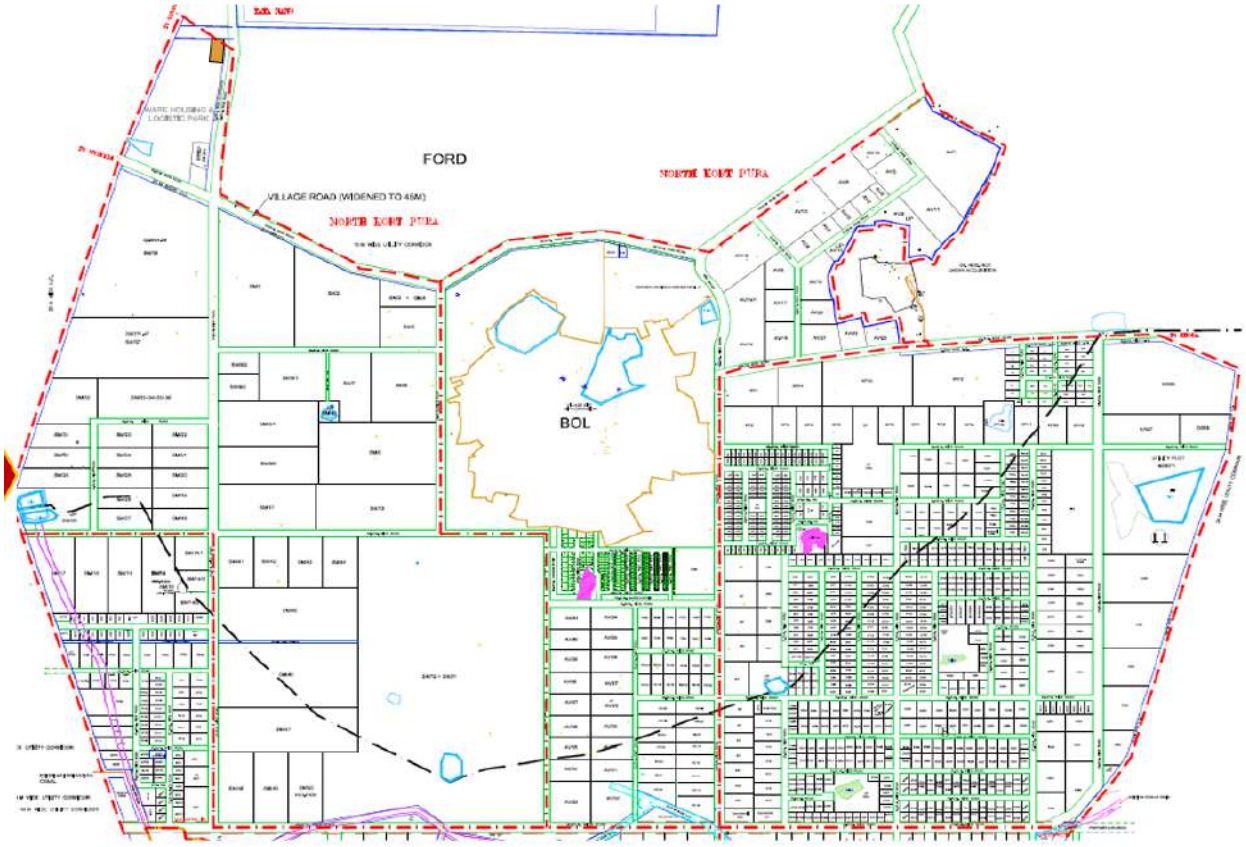




1.7 PROPOSING AGENCY

Name of the Proponent: Gidc Sanand

1.8 SITE LOCATION ON MASTER PLAN

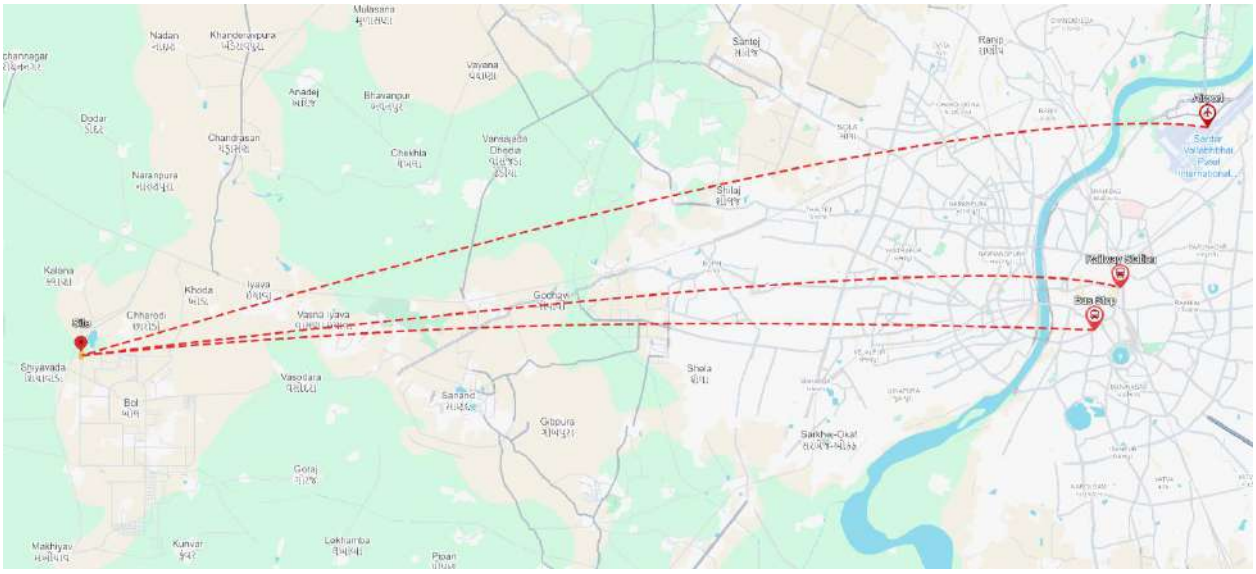


1.9 SITE CONTEXT

The proposed site for the 5-star hotel is strategically located within the industrial zone of Sanand, Gujarat, offering both accessibility and potential for high footfall from business and industrial visitors. The location is well-connected by various modes of transport, albeit with a preference for private or industrial commuting methods due to the distance from major public transit hubs.

Connectivity & Transportation Access

- **BusAccess:**
  The nearest bus stop is **Sanand ST Stand**, located approximately **17 km** from the site. For intercity and long-distance travel, the **Ahmedabad Central Bus Station** at **Gita Mandir**, approximately **40 km** away, offers comprehensive connectivity
- **RailwayAccess:**
  The **Chharodi Railway Station**, located **5 km** from the site, serves as the closest railway link and caters primarily to local trains. For broader national rail access, **Ahmedabad Junction**, a major railhead, is located **43 km** away.
- **AirConnectivity:**
  The nearest airport is the **Sardar Vallabhbhai Patel International Airport**, situated about **50 km** from the site. While not immediately adjacent, the airport provides direct flights to major cities across India and select international destinations. Additionally, **helipads located within nearby industrial areas** offer a high-speed commute alternative, particularly for corporate or VIP guests.



1.10 SITE PROXIMITY & SURROUNDINGS

The site is enveloped by a thriving **industrial ecosystem**, contributing to a consistent demand for premium hospitality services from domestic and international business travelers, consultants, and corporate delegates. The presence of large-scale manufacturing units and tech parks nearby underscores the need for high-end accommodations and business conferencing facilities.

1.11 SOCIAL INFRASTRUCTURE

1.11.1 Educational Institutions Nearby

- Northkotpura Primary School
- Charal Primary School
- College of Safety and Fire Technology – an institute that brings in students, faculty, and visiting professionals regularly

1.11.2 Healthcare Facilities Nearby:

- Sub Centre Bol
- Doctor House Bol
- Occupational Health Centre – serving primarily industrial workers and local residents.



- Sanand GIDC Gate no. 1
- Sanand GIDC Gate no. 2
- Gujarat Gas CNG Pump
- Nayara Petrol Pump
- Suspa Pneumatics India Private Limited
- Yazaki India Private Limited
- Gabriel India Limited Sanad
- Adient India Pvt
- Tata Motors

- Micron Technology
- JBM Auto Limited
- Tata Sanand Vehicle Assembly Plant
- GIDC Office Sanand
- Nestle India Limited
- Hitachi Hi-Rel Power Electronics
- Sub Centre Bol (Hospital)
- BOL Industrial Estate GISC 2
- Omspace Rocket & Exploration
- Nayara Petrol Pump
- Hindustan Coca Cola Beverages
- Jaivel Aerospace Ahemdabad
- Magneti Marelli Motherson Auto System
- BOL Post Office
- Maxxis Rubber India Private Limited
- Doctor House BOL
- Indutotherm (India) Private Limited
- Nivea India Private Limited
- Arabelle Solutions
- India Japan Lighing Pvt Ltd
- Emcure Pharmaceuticals Limited Sanand
- Primary Health Centre Zolapur

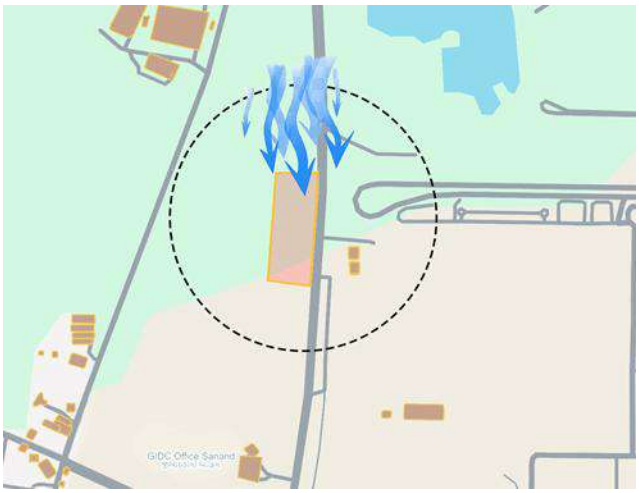
1.12 SITE ACCESSIBILITY



1.13 SITE VEGETATION



1.14 WIND FLOW



1.15 DESIGN BRIEF

- **<u>Project Title:</u> Development of a 5-star hotel in Sanand, Ahmedabad, Gujarat.**
- **<u>Proposing Authority:</u> Industrial zone under GIDC (Gujarat Industrial Development Corporation)**
- **<u>Surrounding Features:</u>** The proposed project site is located in the industrial-commercial zone of Sanand, Ahmedabad, a rapidly developing hub within Gujarat's manufacturing corridor. The site is surrounded by major industrial establishments and benefits from excellent regional connectivity. It is located approximately 35 km from Sardar Vallabhbhai Patel International Airport and around 25 km from Ahmedabad Junction Railway Station, ensuring convenient access for national and international business travelers. The site is also well connected via S.G. Highway and the Ahmedabad–Dholera Expressway, making it highly accessible for corporate visitors and industrial delegates frequenting the region.

- **Target Audience:** Corporate travelers, visiting consultants, technical experts, business delegations
- **Key Industries Nearby:** Tata Motors, Ford India, Nestlé, Hitachi, Colgate-Palmolive, and other major MNCs.

Sanand has emerged as a crucial industrial corridor in Gujarat, experiencing rapid growth in infrastructure, employment, and industrial investments. However, there is a **distinct lack of premium hospitality infrastructure** within this industrial zone, creating a prime opportunity for the development of a dedicated business hotel.

1.16 BROAD SCOPE OF WORK

1.16.1 The scope of work includes but is not limited to:

Development of the 5 Star Hotel at Sanand shall have:

I. Rooms
II. Conference Hall / Convention Hall
III. Restaurant and bar
IV. Health club
V. Banquet Hall
VI. 24/7 Café
VII. Spa
VIII. Swimming Pool
IX. Admin Block, Entrance Foyer and lobby
X. Commercial Space
XI. Ballroom
XII. Basement for parking and services
XIII.

1.16.2 What Makes This Business Hotel Different from Others

This Business Class Hotel in Sanand, Ahmedabad, is strategically designed to cater specifically to the unique demands of corporate travelers and industrial professionals, unlike standard leisure or tourist-oriented hotels. While most hotels focus on general hospitality, this property is tailor-made for productivity, convenience, and professional engagement, offering a seamless blend of work and comfort

1.16.3 KEY DIFFERENTIATORS:

Strategic Location Within an Industrial Hub

1. Located at the heart of Sanand's GIDC industrial area, the hotel eliminates the need for long travel from city hotels.
2. Direct proximity to major industrial players (Tata Motors, Ford, Hitachi, etc.) gives business guests faster access to their destinations.

Business-First Design Philosophy

1. Layouts, circulation, and services are designed around a corporate lifestyle—from express check-ins to flexible meeting schedules.
2. A dedicated Business Lounge supports informal meetings, interviews, and quick networking.

Smart Room Technology

1. Rooms are equipped with high-speed Wi-Fi, ergonomic workstations, soundproofing, and digital automation—ideal for working professionals.
2. Long-stay suites with kitchenettes cater to consultants or project-based guests staying for extended durations.

Purpose-Built Meeting & Conference Spaces

1. Unlike general banquet halls found in typical hotels, this property includes:
   - Modular boardrooms with video conferencing
   - Seminar rooms for training sessions
   - A business center with private work pods and printing/scanning facilities
   - A 200+ pax conference hall designed for corporate product launches, industry meetups, or investor presentations

Efficient Service Networks

1. Back-of-house (BOH) services are zoned for minimal disturbance, ensuring quiet, focused environments.
2. 24/7 concierge and business support (IT, logistics, courier, etc.) tailored to business schedules.

Quick Access & Transit Connectivity

1. Located just 35 km from SVP International Airport and 25 km from Ahmedabad Railway Station, the hotel is highly accessible for national and international executives.

Work-Life Balance Amenities

1. Rooftop café for after-hours relaxation or informal networking
2. Fitness center and wellness zone to maintain well-being during tight schedules
3. Sound-insulated rooms and smart lighting to improve rest quality for peak productivity

1.16.4 How It Enhances Meeting & Accommodation Experiences

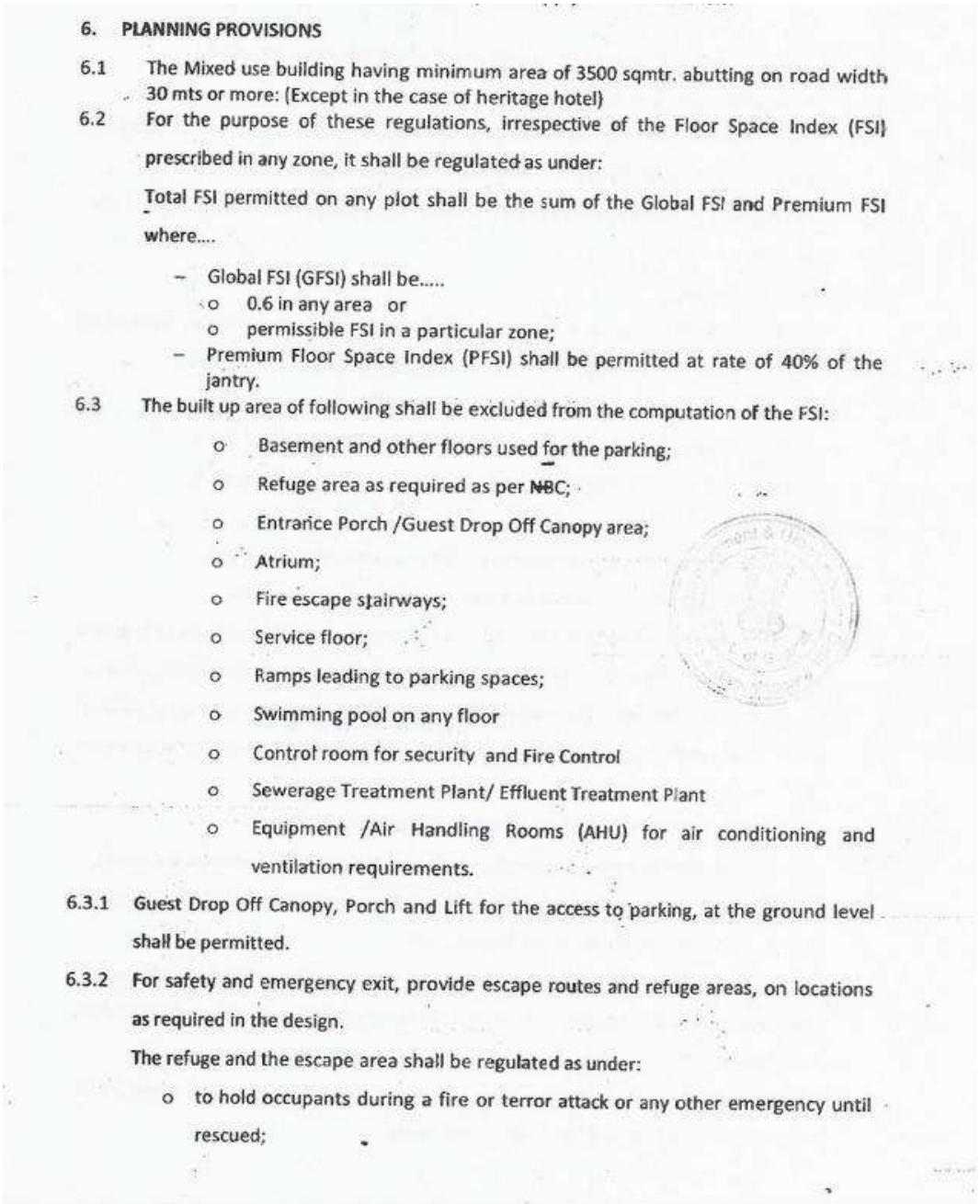
Features	**Meeting Experience**	**Accommodation Experience**
Location	Near factories & industrial zones for on-time meetings	Less commuting means more time for rest/work
Technology Integration	High-end AV systems, video conferencing	Smart room control, VPN-ready high-speed Wi-Fi
Space Flexibility	Modular halls & convertible spaces	Room layouts designed for both work and relaxation
24/7 Business Support	On-demand admin, tech, and logistic support	Round-the-clock room service and concierge
Professional Ambience	Formal, modern décor suited for business discussions	Calming, minimalist interiors to reduce travel stress
Extended Stay Comfort	Meeting spaces connected to lounge zones	Suites with kitchenettes for long-stay professionals

CHAPTER II

II. LITERATURE REVIEW

The word hotel is derived from the French hotel (coming from hotel meaning host), which referred to a French version of a townhouse or any other building seeing frequent visitors, rather than a place offering accommodation. In contemporary French usage, hotel now has the same meaning as the English term, and hotel particular is used for the old meaning.

REGULATIONS FRO HOTELS AND MIXED USE DEVELOPMENT (2016) OF GOVERNMENT OF GUJRAT



6. **PLANNING PROVISIONS**

6.1 The Mixed use building having minimum area of 3500 sqmtr. abutting on road width 30 mts or more: (Except in the case of heritage hotel)

6.2 For the purpose of these regulations, irrespective of the Floor Space Index (FSI) prescribed in any zone, it shall be regulated as under:

Total FSI permitted on any plot shall be the sum of the Global FSI and Premium FSI where....

- Global FSI (GFSI) shall be.....
  - 0.6 in any area or
  - permissible FSI in a particular zone;
- Premium Floor Space Index (PFSI) shall be permitted at rate of 40% of the jantry.

6.3 The built up area of following shall be excluded from the computation of the FSI:

- Basement and other floors used for the parking;
- Refuge area as required as per NBC;
- Entrance Porch /Guest Drop Off Canopy area;
- Atrium;
- Fire escape stairways;
- Service floor;
- Ramps leading to parking spaces;
- Swimming pool on any floor
- Control room for security and Fire Control
- Sewerage Treatment Plant/ Effluent Treatment Plant
- Equipment /Air Handling Rooms (AHU) for air conditioning and ventilation requirements.

6.3.1 Guest Drop Off Canopy, Porch and Lift for the access to parking, at the ground level shall be permitted.

6.3.2 For safety and emergency exit, provide escape routes and refuge areas, on locations as required in the design.

The refuge and the escape area shall be regulated as under:

- to hold occupants during a fire or terror attack or any other emergency until rescued;

- Refuge Area shall be shall be regulated as under:
  - one or more refuge spaces, not necessarily be contiguous but connected with escape routes;
  - minimum area of 15 sq.mts and a minimum width of 3.0 mts
  - at least one refuge space be provided for every 6 floors or part thereof;
  - the refuge and the escape area shall be designed for safety of the occupants;
  - design of refuge area should comply with the provisions of NBC

6.3.3 Margins and Built-up area:

6.3.4 Notwithstanding anything contained in GDCR, margins shall be regulated as under:

a. Minimum clear margin of 9.0 mts in all sides shall be provided.

b. Nothing except cabin and structures related to security may be permitted in the margins;

6.3.5 Height of building:

Height higher than that permitted under the GDCR shall be known as additional height. The Additional height (AH) shall be regulated as under:

a. Up to 70 mts height shall be permitted on road width 30 mtr or more

b. more than 70 mtr height shall be permitted on road width 40 mtr or more

Provided that, in case of heritage hotel road width shall not be considered.

6.3.6 Parking:

a. Parking shall be permitted on any floor/ basements at any levels;

b. Parking in shall be allowed in one or more levels of basement;

c. Space for services which may include electric cabin, substation, a.c. plant room, Generator room, boiler room, hotel laundry, housekeeping, stores, lockers and rest room for the reserve staff. However such services shall only be permitted on one level of basement. Such uses shall strictly be ancillary to the principal use.

d. Mechanical parking shall be allowed at any level.

e. Minimum parking equivalent to 50 % of the consumed FSI shall be provided;

f. The parking can be provided in one or more lots. However it shall have to be provided within the same building unit;

6.3.7 Access for private cars, cyclists, pedestrians, service vehicles, emergency vehicles, physically challenged people, and public utility vehicles shall be designed for safety and convenience;

6.3.8 Access Points onto public roads should be located and designed in such a way as to minimise traffic hazards, queuing on public roads.

6.3.9 On each floor minimum of one service corridor of minimum 2.5 mts width, having access from each floor and is connected to the lift shall be provided;

6.3.10 Lifts – planning and design

The planning and design of lifts shall be in accordance with National Building Code of India.

2.1 GENERAL DEVELOPMENT CONTROLREGULATION OF GUJRAT INDUSTRIAL DEVELOPMENT CORPORATION

For Industrial and commercial Development :

Road length	Width of roads
Up to 150 mtrs.	9.0 mtrs.
Above 150 mtrs. & uptot 300 mtrs.	12.0 mtrs.
Above 300 mtrs. & upto 1000 mtrs.	14.0 mtrs.
Above 1000 mtrs.	20.0 mtrs.

9. Floor Space Index (FSI) :

9(1) For residetial and industrial development, the maximum permissible floor space index (FSI) of a building unit shall be 1.6 for law rise building. Maximum built up area on any floor for law rise building shall be 50% of the area of building unit for industrial and 40% for residential and commercial purpose. For commercial development, the maximum permissible floor space index for low rise buiding shall be 1.6.

9(2) Height of Building :- The maximum height shall not be more than 13. mtrs, for building with solid plinth and 15 mtrs. for building on stilts clear from the plot level to the top of the building. In case of building for mdustrial purpose, height of more than 13 meters may be permitted of required for industrial purpose and approved by Factory Inspector.

12. Marginal distance between two detached structures.

12(1) There shall be provided minimum marginal distance between two detached structures as under :

For residential development	4.5 mtr.
For industrial development	4.5 mtr.
For commercial development	6.0 mtr.

Industrial Development and Commercial Development :

Plot Size	Front margin (In Mtrs.)
50 sq. mtr. to 100 sq. mtr.	3.0
101 sq. mtr. to 200 sq. mtr.	4.5
201 sq. mtr. to 300 sq. mtr.	4.5
301 sq. mtr. to 500 sq. mtr.	4.5
501 sq. mtr. to 10,000 sq. mtr.	6.0
10,001 sq. mtr. to 50,000 sq. mtr.	7.5
50,001 sq. mtr. and Above	9.0

11(2) Industrial and Commercial Development :

Plot size	Rear margin (M)	Side Margin (M) I	Side Margin (M) II
Upto 100 sq. mtr.	Nil	Nil	Nil
101 to 200 sq. mtr.	1.5	-	1.5
201 to 300 sq. mtr.	2.0	-	2.5
301 to 500 sq. mtr.	3.0	-	3.0
501 to 1000 sq. mtr.	3.0	3.0	3.0
10001 to 10,000 sq. mtr.	4.5	4.5	4.5
10,001 to 50,000 sq. mtr	9.0	4.5	4.5
Above 50,000 sq. mtr.	9.0	9.0	9.0

9m in all sides (from RFHMD)

14(2) In case of industries and commercial development the minimum width of approach to building shall be 3.5 mtr.

15 Plinth

No building shall have plinth less than 45 Cm. measured from the crown of the road in front of the building provided that the ground floor of the building be permited on pillars subject to the conditions that at no pointits clear height over the ground level shall be less than 2 mtrs. and further that this space shall at all times be kept free from any enclosures except for genuine stair case and sanitary block.

17. Height of floors :

17(1) The minimum height of floors in a building measured from floor finish to bottom of the lowest structural member at any point shall be 2.8 mtrs. for residential development and 3 mtrs. for commercial development.

17(2) For dining space, verandah, bath room, corridor, puja room, coal room, passage, stair cabin and pump room the minimum height shall be 2 mtrs.

17(3) The maximum floor height shall not exceed 3.6 mtr.s for residential development, 4 mtrs. for industrial development and 3.60 mtrs. for commercial development. Also refer section 22. But this limit on height may be relaxed for industrial structures if required by industrial process subject to the fire fighting provision being made as per national building code in 17(4) the loft at a minimum height of 2 mtrs. not exceeding 1/4th of the area of room may be allowed in any room in residential development. In case of Industrial Development Commercial and in public buildings the left at minimum height of 2.5 mtrs. for sloping room and 2 mtrs for flat roof not exceeding 1/4 the area of the room may be allowed.

18. Stair, Lobbies & corridors.

In case residential commercial and in public building the width of lobbies or crorridors in a building unit shall be as under.

(i) Minimum clear width corridors shall be 1 mtr. up to 3 mtr. length and for every additional length of 3 mtrs or part thereof, the width of corridors shall be increased by 15 cms. and upto a maximum of 2.5 mtrs.

(ii) The clear width of common stair shall not be less than 1.2 mtrs. Stair case upto 0.9 mtr. minimum width may be permited in single occupational residential bunglow/ apartment.

(iii) Minimum Stair width for more than six units tenaments on each floor shall be 1.5 mtrs.

(iv) The stair case shall be so located that it shall he within accessible distance of not more than 15 mtr. from any entrance of unit.

(v) Cantilever staircase of width upto 0.9 meters may be permitted in minimum 3 meters width margins in residential building.

19. Sanitary Accommodation :

19(1) In case of residential development minimum sanitary facilities provided shall be one toilet per unit or house. In case of industrial building sanitary accommodation as per the requirements of Factory Act shall be provided.

In case of commercial development minimum one W.C. for each sex on each floor shall be provided.

In case of use of building of a public nature minimum one w.c. for each sex, one urinal for 25 males and one urinal for 25 femals shall be provided.

20. Ventilation :

20(1) Every room in residential building should be constructed such that the same shall have for the purpose of ventilation.

- A window or windows and/or ventilators clear of such frames, opening directly into an interior or exterior open air space or into an open verandah or gallery abutting on such open air spaces having an opening of not less than 1/10th of floor area of the room or an aggregate opening of door opening on outside open space. windows and ventilations of not less than 1/7th of the floor area of the room or kitchen.

- In case of factories, industries and building of werehouses, every room in such buildin shall be lighted and ventilated by sufficient number of windows. ventilators and sk lighting inclusive of doors opening on outside open having clear opening of not les than 1/7 of the floor area abutting on open air space of width not less than 1/3 of th height of the part of the building abutting such open space.
- Providied these requirement may be relaxed if artificial lighting and ventilations ar installed to the satisfaction of the GIDC
- The ventilation so provided under the above regulation shall be subject to th satisfaction requirements of Factory Act if applicable.
- Every stair case provided under foregoing clauses shall be lighted and ventilated to th of GIDC from an open air space not less than 1 sq. mtr.
- There shall be provided window or windows on an aggregate area of atleast 1.2 sc mtr. on each storey in such of the wall of the stair case which abuts on such 1 sq. mt open air space to light and ventilate such stair case.
- In case of commercial buildings & public buildings, the ventifilation in each room sha be 1/7the of the floor area including door opening on outside open space. windows & ventilators

22(1) Compound Wall : The height of compound wall shall not exceed 2 mtrs. from road level and where height exceeding the above is provided spacial approval of Managing Director GIDC shall be obtained.

In the said regulations, the sub-regulation(9) of - regulation 5 shall be substituted by the following; "5(9) - "Floor Space Index (FSI)" shall, subject to the provisions of sub-clause (2), mean quotient of the ratio of the combined gross floor area of all floors including areas of all walls except areas specifically exempted under these Regulations, to the total area of plot or building unit.

$$\text{Floor Space Index} = \frac{\text{Total floor area including walls of all floors}}{\text{plot area or building unit.}}$$

In computation of FSI, the following shall not be taken into account, namely;

1.1 Parking spaces not having any enclosures and partitions of any kind, with clear height of 2.4 mtr. and in case of slabs with beams, having height not exceeding 2.8 mts.,

1.2 Spaces of hollow plinth with maximum clear height of 2.8 mts. including beams in residential buildings only (not even in mixed development) at ground level not having any enclosures, walls or partitions in any forms;

2. Ramps leading to any area exclusively used for parking;

3. Interior open spaces and ducts required to be kept under these Regulations,

4. Weather shed upto 0.60 mt. width;

5. Staircase with maximum intermediate landing width equal to the width of stair, and the maximum landing width at floor level up to twice the width of stair;

6. Basement exclusively used for requisite parking having maximum clear height of 2.6 mts, excluding beams,

7. Security cabin up to 4 sq.mts.,

8. Electric room as specified by an Electricity Distribution company/Electricity Transmission company.".

9. In the said regulation after sub-regulation (1) of regulation 19, the following sub-regulation shall be inserted viz;

"19 (2)- control of storm water:

(a) Definitions: "storm sewer" shall mean sewer drainage but excludes sewage and industrial wastes, other than unpolluted cooling water.

(b) Regulations:

1. No person shall discharge or cause to be discharged any storm water, surface water ground water, roof run off, or sub surface - drainage to any sanitary sewer, uncontaminated cooling water or unpolluted industrial process water may be permitted to be discharged to any sanitary sewer by the Engineer if storm sewer is not available.

2. Storm water and all other unpolluted drainage shall be discharged to such sewer as are specifically designated as storm sewers or to a natural outlet approved by the Engineer. Industrial cooling water or unpolluted process water may be discharged with the prior approval of the Engineer to a storm sewer or natural outlet.

"21. Parking:

21(1) Minimum Parking Space: off street parking spaces for vehicles shall be provided for every building constructed for the first use or when the use of old building is changed to any of the uses mentioned in the table below: -

TABLE FOR MINIMUM OFF STREET PARKING SPACES

3.	Commercial and business establishments including business office, bank, hostel, guest house, restaurant, institutional building and health facilities including hospital and nursing homes etc.	30% of maximum permissible FSI. Note: 1) The parking space so required shall be provided excluding required marginal space and built up area with solid plinth subject to other regulation, 2)20% of the parking space required at the ground level shall be exclusively earmarked for visitors.	50% of the total parking space requirements shall be reserved for cars.

3. Marginal space of 4.5 mtr. or more may be allowed for parking if it forms part of parking layout as required under clause 21(2).

7. Parking reserved to the visitors shall be provided on ground level only.

21(2) The parking layout shall fulfill the following conditions, namely:-

(i) The minimum width of access to the street from parking space shall be 3.0 meters.

(ii) The car parking space shall have two independent accesses leading to street if its area capacity excees 300 sq.mtrs.

(iii) If the parking space is not provide at street level, the gradient of ram pleading to parking space shall not be more than 1 meter over a horizontal distance of 7 meters.

(iv) Clear heading of 2.8 mts shall be provided on every access leading to parking space and at any point in parking

Provided that:-

(1) The total area of cellar (basement) shall be allowed excluding the margins. It may be one or two level.

(ii) clear height of cellar shall not be less than 2.40 mts. and upto 2.8 mts.;

(iii) Uses permitted, Parking, Safe deposit vault, A.C. Plant, storage other than inflammable material.

Provided further that the area used for parking only shall be deducted in coroputing FSI.

owner/developer has to provide/construct percolating well with rain water harvesting system in building unit and at the rate of one percolating well for every 4000 sq.mtr. or part thereof building unit.

(I) Conservation and Harvesting of Rain Water in Building:

Having Plinth built up area of 750 sq. mtrs. or more, every such building shall be provided with required facilities and infrastructure for conservation and harvesting of rain water viz;

(ii) Percolation Pits:

The ground surface around the building shall have percolation pit or bore as recommended by competent authority within the building site, or bore recharge. Such pits shall be filled with small pebbles or brick jelly or river sand and covered with perforated concrete slabs.

(iii) Terrace Water Collection:

The terrace may be connected to a sump or well bore through a filtering tank by PVC pipe as recommended by Competent Authority. A valve system shall be incorporated to enable the first part of the rain water collected to be discharged out to the solid if it is dirty.

(iv) Open ground:

(i) whenever there is open ground a portion of top solid should be removed and replaced with river sand to allow slow percolation of rain water.

(ii) Any other methods proved to be effective in conservation and harvesting of rain water may be adopted in each and every construction taken up.

"29. Tree Plantation:

(i) Building unit having 1000 sq. mtrs. and more area at the rate of 3 trees for every 200 sq. mtrs. of building unit, for all uses, shall have to be planted on the site plan/layout plan and also has to be maintained the same.

32. Percolating well and Rainwater Harvesting System:

For the area of building unit above 500 sq.mtr. and up to 1500 sq.mtr., the owner/developer shall carryout water harvesting system as specified by the authority.

In case where the area of building unit exceeds 1500 sq.mtr. and upto 4000 sq.mtr.

2.2 MINISTRY OF TOURISM GUIDELINES:

FACILITIES & SERVICES	1*	2*	3*	4*	5*/ 5*D	Yes/ No	COMMENTS
Health – Fitness and Barber's Shop	D	D	D	D	N		Indian system of treatments should preferably be offered
Beauty Salon and Barber's Shop	D	D	D	D	D		

ANNEXURE – III

CHECKLIST OF FACILITIES FOR CLASSIFICATION / RE-CLASSIFICATION OF OPERATIONAL HOTELS

FACILITIES & SERVICES	1*	2*	3*	4*	5*/ 5*D	Yes/ No	COMMENTS
GENERAL							
Full time operation 7 days a week in season	N	N	N	N	N		
Establishment to have all necessary trading licenses / Permissions	N	N	N	N	N		
Establishment to have public liability insurance	D	D	D	D	D		
24hr. lifts for buildings higher than ground plus two floors	N	N	N	N	N		Mandatory for all hotels. Local laws may require a relaxation of this condition. Easy access for the differently abled guests.
Bedrooms, Bathrooms, Public areas and kitchen fully services daily	N	N	N	N	N		
All floor surfaces clean and in good shape	N	N	N	N	N		Floor may be of any type.
GUEST ROOM							
Minimum 10 lettable rooms, all rooms with outside windows / ventilation.	N	N	N	N	N		
Minimum size of bedroom excluding bathroom in sq.ft.	120	120	130	140	200		Rooms should not be less than the specified size. The area may include the vestibule and other covered area within the room but exclude outdoor verandah/ balcony. Single occupancy rooms may be 20 sq.ft. less.
Air – conditioning - % of Rooms	25%	25%	50%	100%	100%		Air –conditioning / heating depends on climatic conditions and architecture. Room Temperature should be between 20 to 28 degree Celsius.
A clean change of bed and bath linen daily and between check –in	N	N	N	N	N		Definitely required between each check – in. On alternate days for 1 & 2 Star category hotels.
Guest linen							Good quality linen to be provided.
Minimum bed width for single 90 cm and double180 cm.	D	N	N	N	N		
Mattress thickness minimum 10 cm	D	D	N	N	N		Coir, foam or spring foam

Minimum bedding 2 sheets, pillow and case, blanket, mattress protector / bed cover	N	N	N	N	N		Blankets available in air conditioned room as per seasonal requirement in non A/C rooms. Mattress protector is 'desirable' in 1 Star and 2 Star category hotels and 'necessary' for the other categories.
Suite *(2 rooms or 2 room-bays having a bedroom and separate sitting area, having one bathroom and one powder room.)*	D	D	D	N	N		Minimum 1 suite. A suite must be sold as one room.
Hairdryers	D	D	N	N	N		Where not provided in bathroom, must be available on request. 3 Star, 4 Star, 5 Star and 5 Star Deluxe category hotels shall provide hair dryer facility in the room on complimentary basis. In 1 Star and 2 Star hotels, this facility will be made available on request on complimentary basis.
Safe keeping / in room safe	D	D	D	N	N		1,2, and 3 Star hotels to have facilities for safe keeping in the reception. All 4 Star, 5 Star and 5 Star Deluxe hotels shall provide a safe in the room.
Mini bar / Fridge All 3 Star hotels shall have facility of a mini fridge and all 4 Star, 5 Star, and 5 Star Deluxe hotels shall have a the facility of mini bar.	D	D	N	N	N		Contents must conform to local laws.
Drinking water with minimum one glass per guest.	N	N	N	N	N		All star category hotels to provide 2 sealed bottles of branded packaged drinking water of minimum 500 ml per person per day on complimentary basis. Ultra violet treated water will not be acceptable.
Guest Linen							Good quality linen to be provided.
Shelves / drawer space	N	N	N	N	N		Necessary for hotels of 1,2 and 3 Star category to have a wardrobe.
Wardrobe with minimum 4 clothes hangers per bedding	N	N	N	N	N		In one star or two star hotels, this may be without doors.
Sufficient lighting (1 lamp per bed)	N	N	N	N	N		

A 5 amp earthed power socket	N	N	N	N	N		
A bedside table and drawer	N	N	N	N	N		1 per twin bed and two for a double bed.
TV Cable if available	D	D	N	N	N		TV must have a remote. Exception: for eco and nature resorts TV cable is not mandatory for 3 Star to 5 Star Deluxe category hotels. However, it is mandatory that they provide a television with cable in the lobby or other common area.
A writing surface with sufficient lighting	D	D	N	N	N		
Chairs	N	N	N	N	N		Preferably one per bed
Waste paper basket	N	N	N	N	N		
Opaque curtains or screening at all windows	N	N	N	N	N		All 4 Star, 5 Star, and 5 Star Deluxe hotels shall have blackout curtains
A mirror at least half length (3 ft.)	N	N	N	N	N		
A stationary folder containing stationary	D	D	N	N	N		
A 'do not disturb' notice	N	N	N	N	N		
Night spread / bed cover	N	N	N	N	N		
Energy saving lighting	N	N	N	N	N		
Linen Room	N	N	N	N	N		Should be well ventilated
BATHROOM							
Number of rooms with attached bathrooms	All	All	All	All	All		All bathrooms to have a sanitary bin with lid.
Minimum size of bathroom in square feet	30	30	36	36	45		25% of bathrooms in 1 &2 Star hotels to have western style WC. For hotels built before 1.1.2012, the Minimum bathroom size may be relaxed by 10% (to be rounded off to the next integer) provided the total size of the room and the bathroom taken together are as follows: 1 Star & 2 Star – 150 sq. ft., 3 Star-166 sq. ft., 4 Star – 176 sq. ft., 5 Star & 5 Star Deluxe – 245 sq. ft.

1 bath towel and 1 hand towel to be provided per guest	N	N	N	N	N		
Bath Mat	D	D	N	N	N		
Guest toiletries to be provided. Minimum 1 new soap per guest.	N	N	N	N	N		Quality products depending on Star category.
Bottled toiletry products to be provided.	D	D	D	N	N		
Clothes – hooks in each bath / shower room	N	N	N	N	N		All star category hotels shall provide two (2) clothes hooks in the bath / shower room
Sanitary bin	N	N	N	N	N		These must be covered
Each western WC toilet to have a seat with lid and toilet paper.	N	N	N	N	N		
All Star hotels shall provide water sprays or bidets or washlets or other modern water based post- toilet – paper hygiene facilities.	N	N	N	N	N		
Floors and walls to have non – porous surfaces	N	N	N	N	N		
Hot and Cold running water available 24 hours	N	N	N	N	N		
Shower cabin	N	N	N	N	N		A shower with shower curtain will suffice where shower cabin is not available.
Bath tubs				D	D		
Water saving taps and showers	N	N	N	N	N		
Energy saving lighting	N	N	N	N	N		
PUBLIC AREA							
Lounge or seating area in the lobby	N	N	N	N	N		Lobby shall have furniture and fixtures which shall include chairs / arm chairs, sofa, tables and fresh floral display. Door man on duty for 4 star categories and below 4 star categories, the presence of a door man on duty in the lounge or sitting area in the lobby shall not be mandatory. However, in such areas, the presence of staff on duty shall be obligatory around the clock 24/7

Reception facility	N	N	N	N	N		Manned minimum 16 hours. Call service 24 hours. Local directions to hotel including city street maps to be available.
Valet (parking) services to be available	D	D	N	N	N		
Availability of Room, F&B and other tariff	N	N	N	N	N		
Heating and cooling to be provided in public areas	-	-	-	N	N		Temperatures to be between 20 degrees Celsius to 28 degrees Celsius. Air – conditioning in common areas like lobby, restaurants, verandahs, bar where they are open to nature on one or more sides, shall not be mandatory for beach, lake, backwater, river, hill, mountain, forest or nature hotels & Resorts.
Public rest rooms for ladies and gents, a wash basin with running hot and cold water, a mirror, a sanitary bin with lid in unisex 7 ladies toilet.	N	N	N	N	N		
ROOM AND FACILITIES FOR THE DIFFERENTLY ABLED GUEST							
At least one room for the differently abled guest	N	N	N	N	N		The room shall have low height furniture, low peep hole, cupboard with low clothe hangers, audible and visible (blinking light) alarm system and doorbell. The almirah / cupboard doors in the differently abled room should be sliding to enable opening the same by the differently abled person. Blinking light in the room and bathroom should also be connected with the door bell for the hearing impaired. Cordless telephone in the room. Direct calling facility to the front desk or operator.
Bathroom	N	N	N	N	N		Door width for room of the differently abled persons and bathroom of such rooms should allow easy accessibility of wheel chair made available by the hotel).

							For new hotels coming up after 01.04.2017, the minimum door width of such rooms and their bathroom shall be minimum 90 cm. The door width of the room and bathroom for differently abled persons in existing hotels shall be 90 cm. with effect from 01.04.2023 Bathroom for the differently abled guest shall have suitable fixtures like low wash basin with wheel chair accessibility, low vanity unit, Wall mounted seat in shower area, hand shower, Grab bars net to the WC and shower area.
Ramps with anti-slip floors at the entrance. Minimum door width should be one meter to allow wheel chair access	N	N	N	N	N		Fixed and anti – slip ramp to be provided in all public areas. Free accessibility in all public areas, and to at least one restaurant in 5 star and 5 star deluxe hotel.
Public Restrooms	N	N	N	N	N		All star category hotels should have a public restroom for differently abled guests (unisex) with minimum door width which allows easy accessibility of wheel chair (made available by the hotel). Low height urinal with grab bars. For new hotels coming up after 01.04.2017, the minimum door width of such public rest room (unisex) shall be minimum 90 cm. For existing hotels, the minimum door width of public restroom (unisex) shall be mandatory after 01.04.2023

FOOD & BEVERAGE OUTLETS							
1 Star & 2 Star							1 & 2 Star categories should have minimum one dining room serving all meals.
3 Star Category							One Multi – cuisine Restaurant cum Coffee Shop open from 07.00 am. To 11.00 pm. And 24 hr. Room Service.
4 Star category (with alcohol service or with no alcohol service)							**Grade A cities:** One Multi – cuisine Restaurant cum Coffee Shop open from 07.00 am. To 11.00 pm., one specialty Restaurant and 24 hr. Room Service. The specialty Restaurant may either be indoors with air-conditioning, or outdoors. The Specialty Restaurant must serve specific form of cuisine. The Specialty Restaurant may be open for lunch / dinner. **Cities other than grade A cities:** One Multi – cuisine Restaurant cum Coffee Shop open from 07.00 am. To 11.00 pm. and 24 hr. Room Service.
5 Star category (with alcohol service or with no alcohol service) and 5 Star Deluxe							**Grade A cities:** One 24 hour Multi Cuisine Restaurant cum Coffee Shop, one Specialty Restaurant and 24 hr. Room Service. The Specialty Restaurant may either be indoors with air – conditioning, or outdoors. The Specialty restaurant must serve specific form of cuisine. The Specialty Restaurant may be open for lunch / dinner. **Cities other than Grade A cities:** One 24 hour Multi Cuisine Restaurant cum Coffee Shop and 24 hr. Room Service. One Specialty Restaurant would be desirable.

Grade A: Delhi, ** Mumbai, Kolkata, Chennai, Bangalore, Pune, Hyderabad, Secunderabad. Note: The Ministry of Tourism may review and revise the cities falling under the Grande 'A' from the time to time. ** Delhi would include the hotels falling Gurgaon, Faridabad, Ghaziabad, Noida, And Greater Noida"							
Crockery and glassware	N	N	N	N	N		Plastic ware acceptable in pool area.
Cutlery to be at least stainless steel	N	N	N	N	N		All category hotel should see good quality metal cutlery. Aluminum cutlery is prohibited.
Bar	D	D	D	N	N		Bar will not be mandatory wherever bar licence is prohibited as per local law. Wherever bar is allowed as per local law, the hotel will have to first obtain bar license before applying to the Ministry of Tourism for Classification of the hotel. Liquor shops/ liquor stores will not be considered while granting classification under 'with alcohol' category.
KITCHEN / FOOD PRODUCTION AREA							
Refrigerator with deep freezer	N	N	N	N	N		Capacity based on quantum of F&B Operations.
Segregated storage of meat, fish and vegetables	N	N	N	N	N		Meat, fish and vegetables to be kept in separate freezers
Tiled walls, non slip floors	N	N	N	N	N		
Colour coded synthetic chopping boards	N	N	N	N	N		Wooden chopping boards
Head covering for production staff	N	N	N	N	N		
Daily germicidal cleaning of floors	N	N	N	N	N		
Good quality cooking vessels / utensils	N	N	N	N	N		Use of aluminum vessels is prohibited except for bakery
All food grade equipment containers.	N	N	N	N	N		
Drinking water	N	N	N	N	N		Water treated with UV+ filtration
Ventilation system	N	N	N	N	N		
Garbage to be segregated – wet and dry	N	N	N	N	N		To encourage recycling
Wet garbage area to be air-conditioned.	D	D	N	N	N		
Receiving areas and stores distinct from garbage area.	N	N	N	N	N		Should have sink with table surface, weighing machine

							quality control and pre wash area.
Six monthly medical check ups for production staff	N	N	N	N	N		Records to be submitted along with pathological records to HRACC during inspection of the hotel
First aid training for all kitchen staff	N	N	N	N	N		
Pest control	N	N	N	N	N		Record to be shown to the HRACC during inspection of the hotel
STAFF							
Staff uniforms for front of the house.	N	N	N	N	N		Uniforms to be clean and in good condition.
English speaking front office staff	D	D	N	N	N		This may be relaxed outside the metros / sub-metros for 1 Star and 2 Star category hotels.
Percentage of Supervisory staff	20%	20%	40%	40%	80%		Hotels of 4 Star category and above should have qualified Heads of Departments. The supervisory or the skilled staff may have training or skill certification as follows: Degree / Diploma from Central or Star IHMs/ FCIs or from NCHMCT affiliated IHMs or from other reputed Hospitality Schools.
Percentage of skilled staff	20%	20%	30%	30%	60%		The supervisory or the skilled staff may have t raining or skill certification as follows: Degree / Diploma from Central or Star IHMs/ FCIs or from NCHMCT affiliated IHMs or from other reputed Hospitality Schools. Skill training certificate issued under the guidelines and scheme of the Ministry of Tourism
STAFF WELFARE FACILITIES							
Staff Rest Rooms	D	D	N	N	N		Separate for male and female employees, with bunk beds. Rooms should be well lighted and ventilated
Staff locker Rooms	D	D	N	N	N		
Toilet facilities	N	N	N	N	N		Full length mirror, hand dryer with liquid soap dispenser
Separate Dining area & Facility	D	D	N	N	N		

CODE OF CONDUCT FOR SAFE & HONOURABLE TOURISM							
Display of pledge	N	N	N	N	N		Pledge to be displayed prominently in the staff/ back areas / office premises of all the Heads of Departments (HODs)
Training for 'Code of Conduct for safe & Honourable Tourism'	N	N	N	N	N		At time of Joining (orientation programme and subsequent in – house training)
Maintenance of Action Taken Report with regards to compliance of the provisions of the Code.	N	N	N	N	N		Signatories of the 'Code of Conduct' to maintain record of action taken in compliance of the provisions of the code.
Focal points / Nodal officers	N	N	N	N	N		Two nodal officers to be nominated (from HRD and Security side etc.) for hotel with more than 25 personnel and one focal point for hotel with less than 25 personnel.
GUEST SERVICES							
Provision for wheelchair for the differently abled guest	N	N	N	N	N		Wheel chair to be made available on complimentary basis in hotels of all categories.
Valet (parking) services to be available	D	D	N	N	N		
Dry cleaning / laundry	D	D	D	N	N		In house for 5 Star Deluxe hotels. For 5 Star category and below, may be outsourced.
Tea / coffee making facility in the room	D	D	D	N	N		Tea / coffee making facilities in the room to be made available on complimentary basis in all 4 Star, 5 Star and 5 Star Deluxe hotels.
Iron and Iron Board facility	N	N	N	N	N		Each hotel up to the level of 4 star to have a number of irons and ironing board equal to 20% of the number of lettable rooms, to be provided to a resident guest on request. 5 star and 5 star deluxe hotels to have iron and ironing board in every lettable room.
Paid transportation on call	D	D	N	N	N		Guest should be able to travel from hotel
Shoe cleaning shoe horn & slippers	D	D	D	N	N		Free facility to be provided for in house guest
Ice (from drinking water) on demand	D	D	N	N	N		Complimentary on request
Acceptance of common credit cards and facility/ infrastructure for accepting/ making payments by digital transactions	N	N	N	N	N		
Assistance with luggage on request	N	N	N	N	N		

A public telephone on premises. Unit charges made known	D	D	N	N	N		There should be at least one telephone no higher than 24" from floor level in 5 and 5 Star Deluxe (to also cater to differently abled guest)
Wake – up call service on request	N	N	N	N	N		
Messages for guests to be recorded and delivered	N	N	N	N	N		A prominently displayed message board will suffice for 1 & 2 Star Categories
Name address and telephone number of doctors with front desk	N	N	N	N	N		Doctor on call in 3,4,5 & 5 Star Deluxe
Stamps and mailing facilities	D	D	D	D	D		
Newspapers available	D	D	D	N	N		This may be placed in the lounge for 1,2,& 3 Star hotels
Access to travel desk facilities	N	N	N	N	N		This need not be on the premise for 1,2&3 Star categories
Left luggage facilities	D	D	N	N	N		This must be in a well secured room / 24 hours manned area. All 4 Star, 5 Star and 5 Star Deluxe hotels shall provide luggage racks, portable or fixed, for two large suitcases. This will be stated on the hotel's website under the head 'Facilities and Amenities provided on complimentary basis' and mentioned to guest while checking in.
Provision for emergency supplies toiletries / first aid kit	D	D	N	N	N		
Health – Fitness and Barber's Shop	D	D	D	D	N		Indian system of treatments should preferably be offered
Beauty Salon and Barber's Shop	D	D	D	D	D		
Florist	D	D	D	D	D		
Utility shop / kiosk	D	D	D	D	D		The presence of a utility kiosk / shop will not be a mandatory condition for classification under 1 to 5 Star Deluxe categories. NO separate book shop shall be necessary.
Money changing facilities	D	D	D	D	D		Money changing facility to be made available.
SAFETY & SECURITY							
Metal detectors (door frame or hand held)	D	D	N	N	N		
CCTV at strategic location	N	N	N	N	N		

X-Ray Machine	D	D	D	D	N		For 5 Star Deluxe category, it would be 'Necessary' to have an x-ray machine at the guest entrance for screening of baggage Manual check may be conducted for staff and suppliers at designated entry points.
Under belly scanners to screen vehicles.	D	D	D	N	N		
Verification	N	N	N	N	N		All hotels should conduct antecedent verification of their staff and suppliers by the Police / private security.
Staff trained in firefighting Drill	N	N	N	N	N		All hotels to conduct periodic fire drills and maintain 'Manuals' for disaster management, First Aid and Fire Safety
Security arrangements for all hotels entrances.	N	N	N	N	N		
Each bedroom door to be fitted with lock and key, viewport / peephole & internal securing device.	D	D	N	N	N		A safety chain / wishbone latch is acceptable in place of viewport / peephole.
Smoke Detectors	N	N	N	N	N		These can be battery operated.
Fire and Emergency alarms should have visual & audible signals.	N	N	N	N	N		
First aid kit with over the counter medicines at the front desk	N	N	N	N	N		
Fire Exit Signs on guest floors with emergency / backup power.	N	N	N	N	N		
COMMUNICATION FACILITIES							
Telephone facility within arm's reach of the toilet seat	D	D	D	N	N		
Provide at least two multi – purpose sockets	N	N	N	N	N		All Star hotels shall provide at least two multi-purpose sockets capable of handling US, European Community and Japanese plugs at or just above the table level. It should be possible for guest to charge a laptop and cell phone simultaneously. This condition shall be applicable to all new hotels that will start operating from 01.04.2016. For the hotels which have come into operation before 31.03.2016 this parameter will be applicable from 01.04.2022. However, till such time as this facility is

							provided on a permanent basis, it will be mandatory for all Star hotels to provide multi-socket adapter plugs on request.
A telephone for incoming & outgoing calls in the room	D	N	N	N	N		4 star and above should have direct dialing and STD / ISD facilities. 1,2 and 3 Star category hotels may go through a telephone exchange.
PC available for guest use with internet access	D	D	N	N	N		This can be a paid service. Upto 3 Star, PC can be in the executive offices, Internet subject to local access being available.
E-mail service	D	D	N	N	N		Subject to local internet access being available.
Fax, photocopy and printing Services.	N	N	N	N	N		
In room Internet / wi-fi connection	D	D	D	N	N		Subject to local internet access being available. Wi-Fi wherever possible.
Business Centre	D	D	D	N	N		This should be a dedicated area. (This provision may be relaxed for resort destinations, tourist and pilgrimage centers).
Swimming Pool	D	D	D	D	N		This can be relaxed for hill destinations. Mandatory to have trained Life Guard, Board containing Do's and Don'ts, No Diving sign, pool depth etc. should be displayed at a strategic location in the pool area. All 4 Star, 5 Star and 5 Star Deluxe hotels shall provide a luminous LED wall clock with numerals of three inches or more on display near their swimming pools
Parking Facilities	D	D	N	N	N		Should be adequate in relation to the number of rooms & banquet / convention hall capacity. Exclusively earmarked accessible parking nearest to the entrance for differently abled guest.
Conference Facilities.	D	D	D	D	N		
ECO FRIENDLY PRACTICES							
Sewage Treatment Plant	N	N	N	N	N		A Sewage Treatment Plant will not be a mandatory condition for hotels which have obtained completion certificate for construction before 01.04.2012.

Rain Water Harvesting	N	N	N	N	N		
Waste management	N	N	N	N	N		
Pollution control methods for air, water and light	N	N	N	N	N		
Introduction of non CFC equipment for refrigeration and air conditioning and other Eco-friendly measures / initiatives.	N	N	N	N	N		

Checklist of Services and Facilities (Annexure III)

D Desirable

N Necessary

There is no relaxation in the **'Necessary'** criteria of the Checklist of Services and Facilities (Annexure II), except as specified in the comments column of said checklist.

2.3 GUIDELINES FOR SECURITY MEASURES IN HOTELS:

2.3.1 EXTERNAL ACCESS OF CONTROL:

1. LIMITING ACCESS POINTS

The number of access points needs to be reduced to a minimum of two or three and entry of persons regulated and monitored through CCTV cameras placed at such points.

2. PERIMETER SECURITY SYSTEM

A three-tier security system should be put in place-

- At the perimeter, on the outside of the hotel itself, cars must be stopped, boots checked and mirrors put under the car chassis to detect explosives.
- Vehicles driving up to the hotel door should be discouraged. Vehicles should not be allowed to go right up to the door. Guests must alight at some distance away and walk-up.
- There should be closed circuit TVs installed in all public areas of the hotel, especially at the alighting point and entrance door for scanning people coming into the hotel.

3. ROAD BARRIERS

Premium hotels could consider installing devices like hydraulically operated road barriers or retractable bollards that can stop vehicles coming at high speed. Short humps can be raised from ground level to slow down/stop vehicles.

4. SHRUBS AND VINES

Heavy shrubs and vines should preferably be kept away from the hotel building and trimmed close to the ground to reduce their potential to conceal criminals or bombs.

5. PATROLLING

Increasing the number of Security Guards and stepping up patrolling can be an effective deterrent to criminals.

2.3.2 MATERIAL ACCESS CONTROL:

2.3.2.1 GUEST BAGGAGE CHECK

- Baggage should be taken to a drop point, away from the lobby and passed through baggage scanners which can detect the shape and density of the objects with a high degree of clarity
- Handheld bags must be checked at the entry point.

2.3.2.2 PEOPLE ACCESS CONTROL:

- **WALK-IN GUESTS**
  Hotels should not entertain Walk-in guests' (without reference or pre-bookings)

- **GUEST PROFILING**
  Hotels should put in place a computer linked guest profiling system to zero in on persons of suspicious antecedents whose names figure in the Ministry of Home Affairs' Watch List. The information would include details such as full name of the guest, date of birth; nationality, sex; passport number, country issuing the passport; country of residence; visa number, date and place of issue.

- **EMPLOYEE VERIFICATION**
  Internal security must be ensured through background checks and antecedent verification of employees and service providers. Temporary staff should be hired from reputed contractors who maintain up-to-date database.

- **VISITOR MANAGEMENT SYSTEM**
  A visitor management system is essential. All visitors must be given a 'Visitor Pass'.

2.3.3 INTERNAL ACCESS CONTROL:

(a) Within the hotel there should be restriction on access to different parts of the hotel.

(b) Access of staff to various departments in the hotel can also be regulated through proximity cards with magnetic inter locks.

(c) Entrances to areas such as Boiler Rooms, Mal Rooms, Computer Rooms,

(d) Switch Boards and Control Rooms should remain locked when not in use.
(e) It is also necessary to establish a procedure for the accountability of their keys.

(f) LIFT USAGE

- The practice of people entering the lobby and taking the lift to any floor must be stopped.
- Lifts should be programmed so that Guests staying in hotels are able to go only to the guest floor they are on by swiping their room card in the lift and it should only let them get out on the guest floor they are on.

2.3.4 OTHER SECURITY MEASURES:

1. ROOM KEY SCANNERS

   The US Department of Energy, through its Oak Ridge National Labs, has developed Mass Spectrometry Scanners which can analyze up to 1000 guest room access cards per hour. These can detect even a billionth of a gram of explosives such as Nitroglycerine or TNT. Even if a tinge of explosive has been touched by the guest it would alert the staff immediately and information flashed to security agencies.

2. SNIFEX

   Snifex is a small handheld device with an ariel. The ariel starts V pointing to the direction where explosive is kept from a distance of a few meters.

3. TRASH MANAGEMENT

   An explosive device can easily be hidden in the trash. Trash cans need to be managed by trustworthy personnel.

2.3.5 CRISIS MANAGEMENT PLAN:

- Hotels must have a plan of action ready in case of an emergency Staff should be trained by mock drills in evacuations to help people in terror situations.
- Hotels need to build strong in-house systems to prevent or deal with a crisis; train and motivate staff to respond to an emergency and evacuate guests if there is shooting or a bomb goes off. There should be a designated nodal executive in-charge of the crisis management team.
  During crisis, calls start pouring from all over the world for news of the welfare and safety of guests and from the media persons who file reports on TV channels and in newspapers. There should be a nodal point and a designated person for information dissemination and to respond to al enquiries during a crisis.

2.4 ITC HOTEL MANUAL:

2.4.1 Parking and Approach to Building:

There must be minimally one designated accessible parking space in every 25 parking spaces provided.

Location:

- The accessible parking bay should be located closest to the entrance, with an accessible route, that is level or gently sloping and minimally 1200mm wide, leading to the building entrance.
- The route to the entrance from the parking must not require the user to cross any vehicular monument.
- The parking and the route connecting it to the entrance should preferably be covered.
- In case of underground parking, accessible parking bays should be located closest to the elevator leading to the lobby levels.

2.4.2 Parking Space

- Accessible parking bay should be 4800mm wide, out of which at least 1200mm, on both the sides, is used as transfer bays. Where there are two accessible parking bays adjoining each other, then the 1200mm transfer bay, on one side, may be shared by the two parking bays in between them.
- Length of the accessible parking bay should preferably be 6000mm, including a 1200mm wide transfer zone at the rear to allow loading of the wheelchair. The transfer zones, both on the sides and the rear should have yellow or white cross-hatch road markings.

2.4.3 Signage

- There should be the international symbol of accessibility painted on the 2400mm wide area where the car is to be parked. The symbol should be large enough to be easily visible by person looking for the accessible parking. Recommended size being 1000mm x 1000mm but not larger than 1500mm x 1500mm. The sign painted on the floor should contrast with the floor color (preferred colors, white and blue)
- There should also be a signboard with the international symbol of accessibility at the height of 1200mm from the floor right at the end of the parking.

- The Symbol of Access should be displayed at approaches and entrances to car parks, to indicate the provision of an accessible parking lot, for people with disabilities within the vicinity.
- Directional signs should be displayed at points where there is a change of direction to direct people with disabilities to the accessible parking lot.
- Approach to the Building
- The approach to the building entrance should be clearly defined.
- The surfaces should be firm and even, with a finish which is slip resistant in all weather conditions.
- The width of paths should be appropriate to meet the needs of all users.
- A recommended clear width of 1800mm will allow two wheelchair users to pass each other on path, however where obstacles are unavoidable and 1800mm width cannot be provided, a clear width of at least 1200mm should be provided throughout the path.
- Any kerbs in the route should have appropriate drop kerbs to allow access to a wheelchair

2.4.4 **Main Entrance**:

- Entrance should be easy to locate and adequately signposted.
- Consider installing automatic or semi-automatic doors.
- Avoid thresholds; if unavoidable, they should be no higher than 6mm.
- There should be a landing of at least 1800mm x 1800mm immediately next to the door.

2.4.5 Lobby, Reception and House Phones:

2.4.5.1 Lobby

- The lobby should be levelled and split levels should be avoided. It should have adequate circulation space for a guest on a wheelchair, parents with a double pram or a person with heavy luggage.
- Any center piece that may be used in the lobby should be such that can be easily detected by a person with vision impairments. This can be achieved by making it contrast in color with the flooring and detectable by a white cane and by having its lower edge less than 300mm above the ground.

2.4.5.2 Reception

- Location of the reception should be such that it is easily identifiable from the entrance. The approach to the reception should be obstacle free.
- The reception should be designed, so as to accommodate both standing and sitting guests. This can be achieved by providing a seated section that is minimally 1500mm wide x 760mm high x 700mm deep with a 750mm high knee recess. The standing section should range from 950mm to 1100mm in height.
- A minimum clear floor area of 1200mm depth and 1800 mm width is required in front of any reception desk or counter (with a provision of 500mm deep knee recess) to enable sufficient maneuvering space for wheelchair users. If there is no knee recess provided, then the minimum maneuvering space required is 1400mm deep and 2200mm wide.

2.5 TIME SAVER STANDARDS (BUILDING TYPES)- HOTEL:

- It must be borne in mind that, as far as planned circulation is concerned, there must never be a mingling of the front-of-the-house services with those of the back of the house.
- The two functions must be kept separate and yet so interrelated that both functions smoothly and efficiently.
- The physical environment becomes an important part of the guest's creature comfort. These factors include color and decor, lighting, proper air temperature, comfortable furnishings and, above all, a pleasant and relaxed atmosphere.
- This involves the economics of a new hotel, which will center upon the cost of construction and furnishing. These costs represent, together with the cost of the land, the amount of money that is to be invested.

2.5.1 BACK OF THE HOUSE:

- Though rarely seen by a guest, the back of the house is the most crucial part of the plan. It must be laid out with two paramount objectives: control and efficiency. Foodstuffs, housekeeping supplies, and a great many other items must be received out of sight of the hotel guests. Such receiving is usually done at a loading dock, which should be covered so that deliveries can be made regardless of the weather.
- This is usually the function of a receiving department that should be located directly on or adjacent to the loading dock. Tight control must be exercised in two directions. In one direction, it is not uncommon for material to be delivered and, within a short time of its having been left on the dock unchecked, for the management to find that this material has disappeared or that some parts of the shipment have gone astray. The second part of the control is to make sure that,

once these shipments have arrived, they go directly to their destination without a chance- of becoming lost on the way.

- A good back-of the- house plan will be worked out in such a way that the flow of supplies is tightly controlled by the security that the architect works into his plan
- Tight, well-planned back of the house will have circulation patterns that will provide the utmost in control.
- In the larger hotels, garbage destructors or compressors may be used, in which case tight surveillance is necessary only in the garbage receiving area. Where garbage is shipped out, it is wise to have the garbage rooms so placed (and, incidentally, refrigerated) that the receiving office has this space in full view.
- A tight control at the point of entry and egress of all employees is highly desirable and can easily be accomplished if it is the same point as that at which food and other hotel supplies are brought in. Once again, the architect's careful planning will make it possible for employees to reach their various dressing and locker areas with a minimum of travel time lost. It must be borne in mind that there is class distinction in hotels and, as an example, that dishwashers and porters are not placed in the same locker rooms as head waiters and reception clerks.

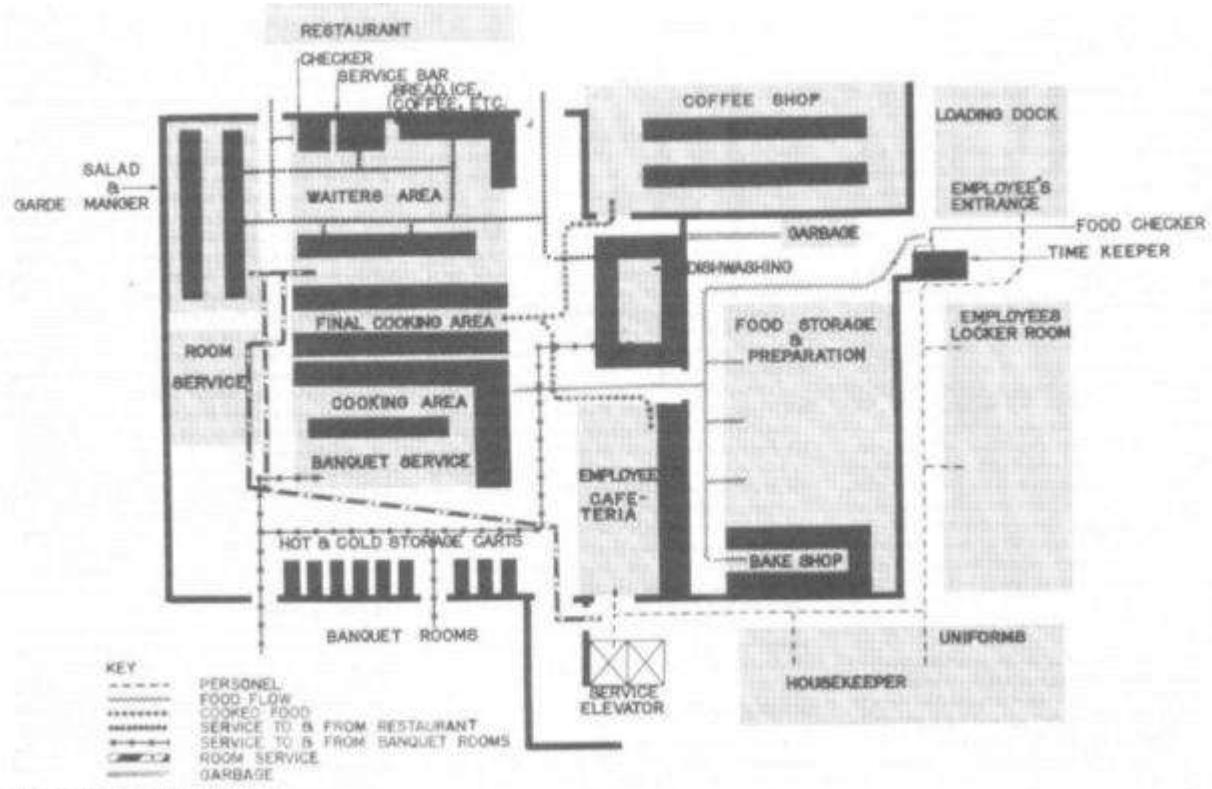


Fig. 1 Flow diagram of service areas.

- Locker rooms should be provided with ample toilet facilities and showers. Once the personnel have changed into their uniforms, the plan of the back of the house will make it possible for the people to get to their work stations with little time lost.
- Uniform issue is related to the housekeeper, the housekeeper to the laundry room, and the laundry room to the soiled linen room. The soiled linen room connects by vertical linen chute to the service room on every typical floor, and every typical floor is connected by a service elevator that opens to the lower-floor service area convenient to the scrutinizing gaze of the steward and the timekeeper. For convenience, a trash chute (Fig. 2), going from every typical floor service area, should be located next to the linen chute.

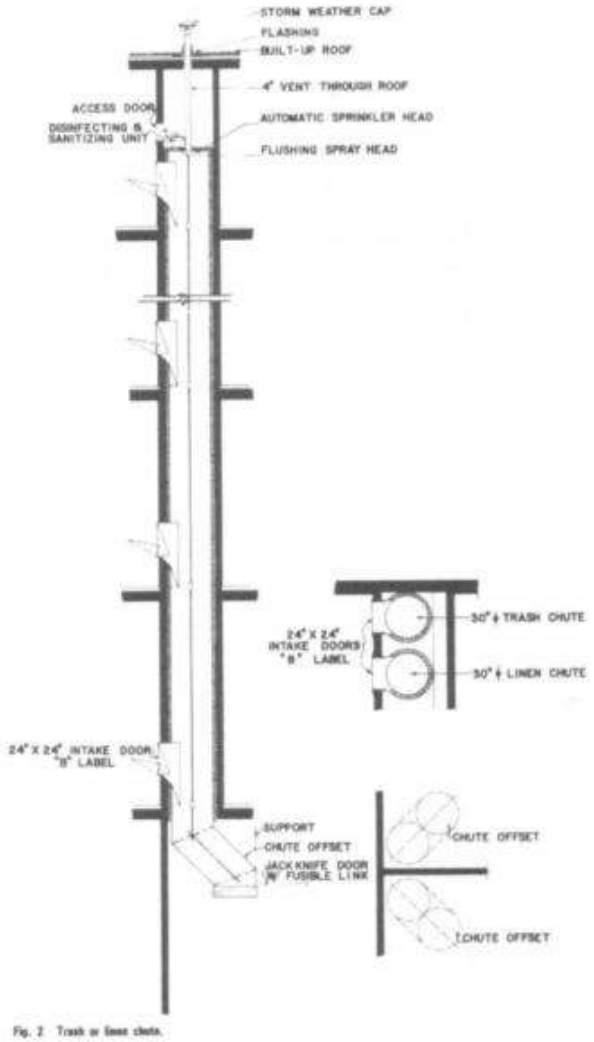


Fig. 2 Trash or linen chute.

2.5.2 LAUNDARY FACILITIES:

- A laundry is a usual adjunct of most good-sized hotels.
- A hotel laundry that does its own uniforms and flatwork (sheets, pillowcases, linens, etc.) requires a good-sized space for washers, dryers, drum ironers, and various pressing machines-each suitable for its own type of flatwork, uniforms and guests' laundry, and men's and women's wearing apparel.
- Larger hotels will maintain their own cleaning department for dry cleaning and pressing of woolens and similar garments. Such a cleaning and valet service is usually a part of or close to the laundry area, and it is definitely under the supervision of the laundry manager.

2.5.3 HOUSEKEEPING DEPARTMENT:

- The housekeeping department, having several functions, is the province of the chief housekeeper, who will usually have assistant floor housekeepers. Under the housekeeper's strict control and supervision will be all the maids and porters
- The porters will deliver to the service areas on the guest-room floors all linen and soap as well as facial tissue, toilet paper, matches, room service menus, and ashtrays.
- The housekeeper's area is also a storage area, for here are kept all the supplies that become a part of housekeeping.
- It might be useful for the architect to know how many rooms a maid can make up during her daily tour of duty.
- It rarely goes beyond 15. One porter is usually assigned to each maid. In addition to the regular daytime maid, there will be, in most hotels, a night maid who will make up beds for guests ready to go to sleep.

2.5.4 FOOD AND BEVERAGE SERVICES:

- The flow of the raw food from the time it is delivered to the steward until it is finally cooked and ready to be picked up by the waiters or the waitresses.
- After the comestibles have been weighed in, checked, and signed for, they are sent to either dry storage or liquor storage (a room with a big lock on it) or to one of the various cold holding rooms or boxes. Canned food and other bottled or packaged food which does not need refrigeration will be sent to dry-storage rooms. In this storage space will also be kept the various condiments that the chef will need in the preparation of his food. Vegetables will be sent to an area where they will be stored ready for preparation. A refrigerator box of the proper temperature will be needed,

as well as work space, sinks, and cutting boards where vegetables will be prepared for the chefs as needed. Vegetable preparation area is needed.

- Dairy products will go to their own cold-storage boxes. Fish, fowl, and meat will go to a separate area where boxes must be arranged with proper temperatures for their storage.
- Freezer, refrigerator, and cold storage boxes require heavy insulation. Slab sinkage in these areas should be provided for.
- The bakery shop should be a separate entity, having its own refrigerator boxes as well as all the pertinent equipment that a baker will use in his art---and an art it is, indeed.
- Here again, one should be reminded that the bakery should be close to the actual food service area so that not too many of these goodies find their way into the locker rooms or out of the hotel entirely.
- KITCHEN- The food from the prep area is brought to the various points where it is to be used. One of the first areas to which a good part of the prepared food will go is the rough cooking area. Here we find the big soup kettles, the vegetable steamers, the ovens, and the hot tops where most of the bulk foods will be prepared.
- Pot washing area close to the rough or preliminary food cooking area. Rough cooking is usually backed up to the finished cooking area.
- Between the chefs' ovens, broilers, and fry- errs, which are aligned in a straight line, there will be an aisle for the chefs. On the other side of this aisle will be the serving tables from which the waiters will pick up the finished food. At the bottom of these tables will be plate. warmers which the waiter picks up and sets on the table so the chef can place the order of the specific dish that is required.
- This entire area is for self-service by the waiters, who will pick up the items they need on their way to the guest waiting for the delivery of his food.
- DINING ROOM- The dishwasher is usually placed close to the Dining room area so that the dishes can be disposed of as soon as the waiter or busboy enters the kitchen. The dishwashing area is, of necessity, not only noisy but also a rather untidy operation, SO it must be kept fairly isolated from the actual cooking and serving area.
- Then, before entering tire. dining room, Ire will usually go by a checker's desk where he presents a check indicating the items that he is taking out of the kitchen to the diner.
- One other space will usually occur in our ideal kitchen--a service bar with a bartender who will prepare tire drinks that the waiter has ordered.
- There will be a chef's office, which is set where the chef can observe all the activities in tire kitchen. His office is usually enclosed with glass to give him aural privacy but complete visual control. Here the chef will prepare and plan menus.
- Room-service area- Here there must be sufficient space for a fairly large number of room service rolling tables, which are set and ready to carry the dishes that have been ordered by the guest via telephone.

- The room-service area is always close to tire cooking and garde manger area.
- The room service area should, of necessity, be as close to the service elevators as possible.
- COOKING AREA- The cooking area, consisting mainly of griddles, will be manned by short-order chefs who are ready to prepare various hot breakfast dishes, and the garde manger section will be manned by a crew who are expert in the preparation of breakfast menus.

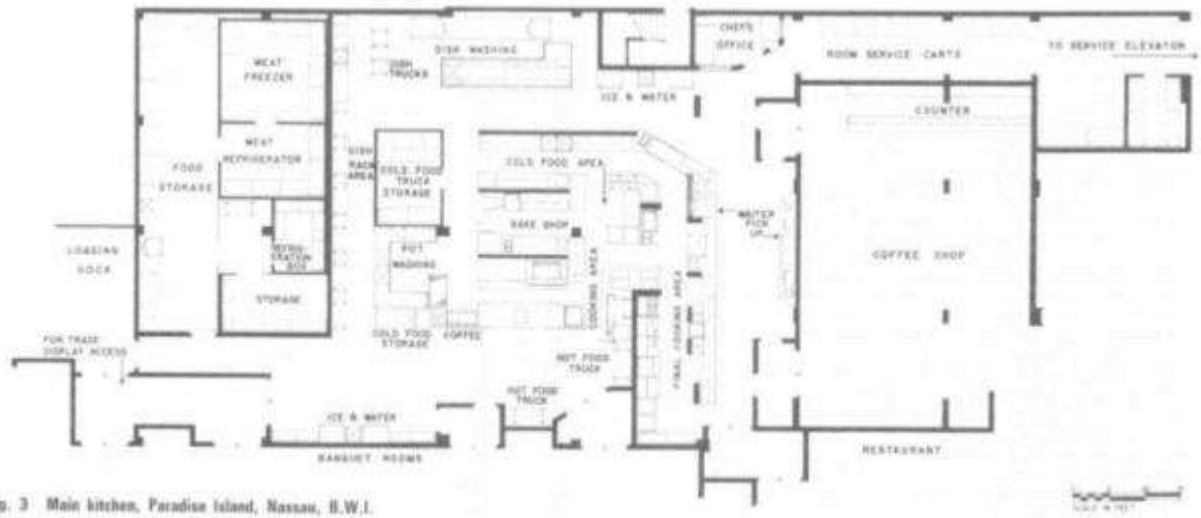


Fig. 3 Main kitchen, Paradise Island, Nassau, B.W.I.

- BANQUET HALLS- In the banquet area there will be mobile cabinets that take trays. These are electrified cabinets arranged to keep dishes either hot or cold. Those banquet cabinets can be stocked before a banquet for certain types of manes.
- A large banquet area in a hotel will require a separate banquet kitchen with its own cooking facilities as well as its own dishwashing area.
- One last observation: it is an excellent idea to have toilets and washrooms for kitchen help, so that it isn't necessary for them to return to their locker rooms, which may be at some distance. It is always advisable to keep the kitchen help within the kitchen during their stint of duty. Doors to dining rooms, and there may be several dining rooms serviced by the one kitchen, should be strategically placed and baffled so that the diners do not have a view of what goes on in the kitchen, and, what is more important, do not hear what is going on.
- The ideal plan would be to place the coffee shop backed up to the kitchen, so that certain finished dishes and prepared foods can be delivered to the coffee shop work area directly from the main kitchen under complete control and it passes from prep areas to kitchen to coffee shop.
- At the counter we will usually find a pickup area where the waiters can pick up the food prepared for them without disturbing the diners who are sitting at counters. Dirty dishes will be sent back to the dishwashing area through a pass-through, or they will be carried to the dishwashing area in the main kitchen.

- Employees' cafeteria- This space is usually planned to be close to the help's locker rooms and yet contiguous to the main kitchen.
- Beverage service area- This may be a bar room or a cocktail lounge. In any case, there will be a bar with stools (if local codes permit) and an area for cocktail tables and chairs. A cocktail lounge must be serviced just as the kitchen is serviced. To the bar must be brought not only liquor and bottled goods but also the usual crunchies.
- Ideally, the delivery should be made directly to the back bar through pass-throughs from the kitchen, so that we find once again another unit backed up to the ideal kitchen.

2.5.5 MECHANICAL SPACES:

- Another area that should be considered in designing the back-of-the-house spaces will be the boiler or mechanical room. In this area will be found the various pieces of equipment for heating and cooling as well as all the tanks and pumps to keep all the mechanical systems in operation.
- In this area will also be found all central switch gear that controls electric current for every purpose in the hotel complex. This domain belongs to the house engineer and, naturally, there should be provision for an engineer's office, with a mechanical repair shop close by.
- These would include a carpentry shop, an upholstery shop, and definitely an area for a locksmith. Somewhere in the area, where they are easily accessible, will be storage rooms in which will be kept a multitude of spare parts to service the hotel. be occupied by personnel that very often come in contact with the guests, and the strategic location of these back-of-the-house facilities will be controlled entirely by what happens in the front of the house.
- Included in these areas you will find accounting and bookkeeping offices (which back up the front cashiers); reservations offices (which back up to the front registration desk); and offices for management, which will include a reception area, a manager's office, and an assistant manager's office.
- There is also a mail sorting room.

2.5.6 FRONT OF THE HOUSE:

- The guest or the paying customer sees only the front of the house, and this must be all that he desires.
- The front of the house comprises every area that the guest will see; lobbies, dining spaces, rest rooms, passenger elevators, corridors, hotel rooms, etc. These spaces must be handled and planned with one thought in mind: the convenience and continued approbation of the guests.
- The registration desk and the elevators should and must be immediately apparent. The registration area consists of a front desk, behind which is a registration clerk,

behind whom is the key and mail rack, and behind that the various administration spaces.

2.5.7 GUEST REGISTRATION:

- A hotel registration desk must be located so that it is immediately visible as one enters the hotel lobby. The size of the desk will be determined by the size of the hotel.
- ,000 rooms might have anywhere from four to six registration clerks, while a hotel of 100 to 200 rooms will have one or at roost two spaces at which guests may register.
- The simplest arrangement will call for a suitable file containing advance reservation cards requesting space, so that the clerk can quickly check what room has been reserved for what particular guest.
- Advance registration counter

2.5.8 MAIL AND KEYS:

- There are two other services that the front or registration desk must perform. The first and obvious one is to serve as the place where the room keys are kept.
- If the registration clerk handles the key, then obviously the key rack is directly behind the desk, easily accessible to the registration clerk. If the hotel is large enough to require separate area and separate personnel for handling of keys, this function will usually be alongside the actual registration desk.

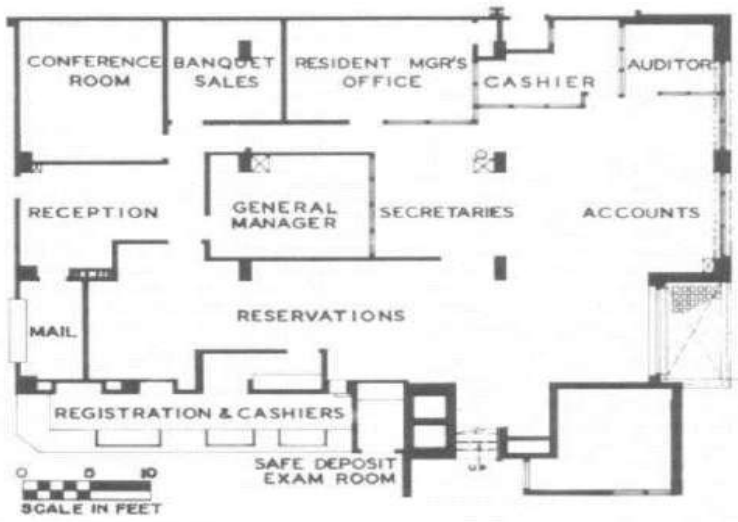


Fig. 4 The Churchill Hotel, London.

2.5.9 CASHIOR:

- The average hotel usually has the cashier's counter located adjacent to the registration desk.
- The larger hotels may place cashiers in the so-called "front desk" area but somewhat remote from the actual registration desk. There are times in large hotels, especially those catering to conventions, where one convention is checking out while another is checking in. This will make for traffic congestion and some confusion. Such a situation can be avoided by planning the registration and cashier facilities so that lines forming in front of the registration desk do not conflict with lines forming at the cashier's counter.
- Larger hotels will have a complete bookkeeping department. This will require more than just the actual cashiers, who remain at their stations, while the bookkeeping department handles all entries and bookkeeping for the guests. It is obvious that this bookkeeping department should be close to if not backed up to tire front desk cashiers, so that any questions of charges can be quickly checked and adjusted by the cashier, who will contact the bookkeeping department for clarification or corrections in the guests' bills.
- Therefore, a small closed room is normally provided. The guest enters this room and gives the valuables to the cashier through a pass-through window. This pass-through window should have a view of the vault or the safe so that the guest can watch his valuables being deposited properly.
- In large hotels, where there are a number of restaurants and other facilities which entail cash payment, special arrangements should be made for the handling of this cash and, in some instances, safety deposit boxes or vaults are provided so that the money can be stored when it is brought to the cashier space at off hours.

2.5.10 ADMINISTRATIVE AREA:

- The administration of a hotel operation depends entirely upon its size.
- A larger, medium-sized hotel will have a manager and an assistant manager and, as a rule, there will be e reception office where one or two typist receptionists will be acting as a buffer between the public and the manager.
- Aside from the manager and the assistant manager, there may be an office for a food and beverage manager and a banquet manager. A larger hotel, with sizable convention facilities, will also have an office for the convention manager and his assistants.

2.5.11 RESTAURANT FACILITIES:

- Under normal situations there will be a cocktail lounge or beverage bar even in the smallest dining facility. The larger hotel will have a pleasant coffee shop for quick service and for simpler meals, whereas a restaurant, with its appropriate decor for more leisurely dining, will offer a more varied menu with probably higher cost per

meal than in the coffee shop. The cocktail lounge will usually be found close to the dining room so that hotel guests can pause for a cocktail before lunch or dinner, or while waiting, before going to the dining room", to meet friends or other guests. Where convention facilities are offered within a hotel, it is wise to have a bar placed close to the convention facilities.

- Large convention and banquet facilities usually provide a fixed or portable bar arrangement in the pre-assembly or foyer areas to take care of pauses between meetings and seminars and to fill those pauses with a facility that will provide a "pause that refresh." There is no special requirement for the design of hotel restaurants, bars, cocktail lounges, and coffee shops which are in any way different from the standard requirements for any such facility.
- Wherever a rooftop restaurant is created, the architect must bear in mind that there will be increased traffic in the elevators taking diners from both in and outside the hotel to this specialized rooftop facility. And don't forget that, because of public assembly requirements, the stairs must be sized larger. Supper clubs or nightclubs will also be found in the larger hotels with this type of dining and entertainment area along with orchestra dressing rooms.

2.5.12 LOBBIES:

- Every hotel, regardless of its size, must have a public lobby. The size of the lobby is largely determined by the number of guest rooms as well as by the type of hotel that is on the architect's drawing boards.
- Furnishings, color, finishing materials, lighting, and decor must create the proper ambience regardless of whether the hotel is large or small, in a city or a resort, moderately priced or expensive.

2.5.13 ELEVATORS:

- Except for one- and two-story motels, every hotel and motel will use elevators to take guests from the point at which they have checked in up to the floor where the guest's room is located. Elevators should be located so that they are immediately visible, either from the entrance of the hotel or from the check-in or registration area. Another consideration in the planning of elevators is that of their location on the guest-room floors. It is advisable to place them centrally so that the distance walked by a guest in any direction is reduced to a minimum.
- The number, size, and speed of the required elevators is best determined by the elevator companies themselves.
- Service elevators are separate and apart.
- Each bank of elevators should be strategically located to best service the front of the house (guests) or the back of the house.

- The bell captain's station should be located so there is a commanding view of the hotel entrance, the registration desk, the cashier, and the elevators.
- Somewhere in the lobby there should be a rather large storage spare for luggage which may be left by guests after checking out but prior to departing.

2.5.14 GUEST FLOOR CORRIDORS:

- It is wise to remember that no guest-room doors should be placed opposite the elevators. Guests coming or going late at night, coming out or getting into the elevators, may talk loudly or may be too noisy, in which case they would be disturbing guests whose doors open off this area. The foyer should be further demarked from the guest-room corridor by its decor and lighting.
- One of these appurtenances would be a small bench or some type of seat for guests who may want to wait in the foyer for the elevator or who may be waiting to meet someone else on the floor. It is also a thoughtful gesture to have a full-length mirror in this area; men as well as women guests appreciate the chance to have a look at themselves before descending to the main lobby floor.
- There should obviously be a good-sized ash receiver for cigarettes, cigars, and other trash nuisances that the guest may want to get rid of before getting into the elevator.
- Good practice indicates that a corridor should, if at all possible, not be over 100 ft in length.
- There is very little choice in the width of a corridor. Normally, 6 ft is considered an adequate width, although some hotels have made do with only 5 ft.
- Another expedient, which may be used either in a narrow corridor (under 6 ft) or a standard-width corridor, would be the device of recessing the bedroom or guest-room doors. Setting doors back from the corridor wall 1 ft or even as much as 2 ft gives an apparent width to the corridor and, what is more important, it gives each room entrance its own sense of privacy and individuality.
- A flush panel door is the least expensive but also the least desirable type of door for a guest room. If only a flush door is used, strong color might be helpful,
- The lower portion of the wall, therefore, might well be designed as a dado made of a bruise- and shock-resistant material or merely marked off with a contrasting color or wall covering.

2.5.14 GUEST ROOMS:

- The length and width are determined by the amount of furniture that is to go into the room and by the degree of luxury that the hotel operator wishes to achieve.
- The most common room in the hotel field today is the twin-bedded room. Then we have the possibility of a single occupancy room, and, lastly, studio rooms or suites.

- The next consideration is the size of the beds themselves. There are single beds which are 3 ft 6 in. wide, a full-sized bed which is 4 ft 6 in., a queen-sized bed which is 5 ft wide, end a king-sized bed which is 6 ft wide. Presently, all beds are still being made in a 6-ft 6-in. length dimension.
- If at all possible, there should be a3-ft aisle and, if no furniture is placed opposite the bed (a very unlikely arrangement), then the width of the room would be a minimum of 10 ft 6 in.
- Where furniture will be placed on the wall opposite the bed, such furniture will most likely consist of a dresser or cupboard with drawers. Such a piece of furniture requires a minimum of 18 in. in width and most likely an optimum width of 24 in.
- The most common arrangement found in most hotels consists of two comfortable armchairs with a cocktail table between them. A comfortable chair will require a depth of least 30 in. and another 30 in. of leg space in front of it, which means that we need at least 5 ft from the wall before we encounter the first piece of furniture, which will probably be a bed.
- In talking of lighting, we must bear in mind that we want not only a lamp or a ceiling fixture over the sitting area but also adequate reading lights for the beds. The most often used arrangement is a twin-headed lamp sitting on the night table between the two beds.
- Another piece of fixed furniture that is desirable is a luggage stand.
- This could be a straight-backed chair or a stool placed in front of the writing-makeup table.
- Between a pair of twin beds, the ubiquitous nightstand with its small storage space below is standard.
- SUITES: Another popular arrangement in hotels is that of the so-called "studio room." Dual sleep pieces have been developed which are comfortable sofas during the day and perfectly comfortable beds at night.
- The purpose of a studio arrangement is to enable the guest to use his room as a true sitting room.
- Another reason for having these studio rooms is that they may double as sitting rooms for suites by having one room, which is a normal bedroom or guest room, adjoin another room which is furnished as a studio room. Thus, the hotel can provide a two-room suite (obviously, connecting doors must be provided between these two accommodations).
- Every hotel should have arrangements for suites of a permanent nature as opposed to a combination of a studio room with a typical guest room. Suites will be furnished like fine sitting rooms. They are used not only by the affluent traveler because he can afford it but also by travelers who do a good deal of entertaining, especially business travelers who entertain clients and customers on their arrival in any given city.
- These suites are also often used by two couples or by a large family, in which case the sitting room of the suite may be used for sleeping at night. In this case, dual

sleep pieces will be required, but they will usually be the type that is referred to as a "davenport," or the type of sofa which opens out to become a comfortable double bed (never as comfortable as a true bed). These suites should have a good-sized dining table with a sufficient number of chairs, provision for an adequate desk (since some business may be carried on in that room), a sufficient number of comfortable lounge chairs, and an accessory table.

- It is a good practice to arrange the sitting room of a suite so that it connects with at least two bedrooms and, if at all possible, three and sometimes even four bedrooms.
- Suites will usually be found in the corner of a building, which makes it possible for the planner to join up several bedrooms.
- There are times when suites are not used, and the hotel should be able to rent each of the rooms in the suite separately.
- A foyer which connects the bedrooms and the sitting area makes this separate keying of rooms possible.
- A complete bathroom should be planned for each of the sitting rooms of a suite to make it possible to rent the rooms out singly.
- Since this room will be used for entertaining (either business or private), a bar with water connection becomes a pleasant adjunct.
- Obviously, these rooms will be placed on the lowest floors so they can be close to the public spaces for the convenience of those who are going to use them for meetings or seminars in connection with a larger convention or meeting taking place in the hotel.

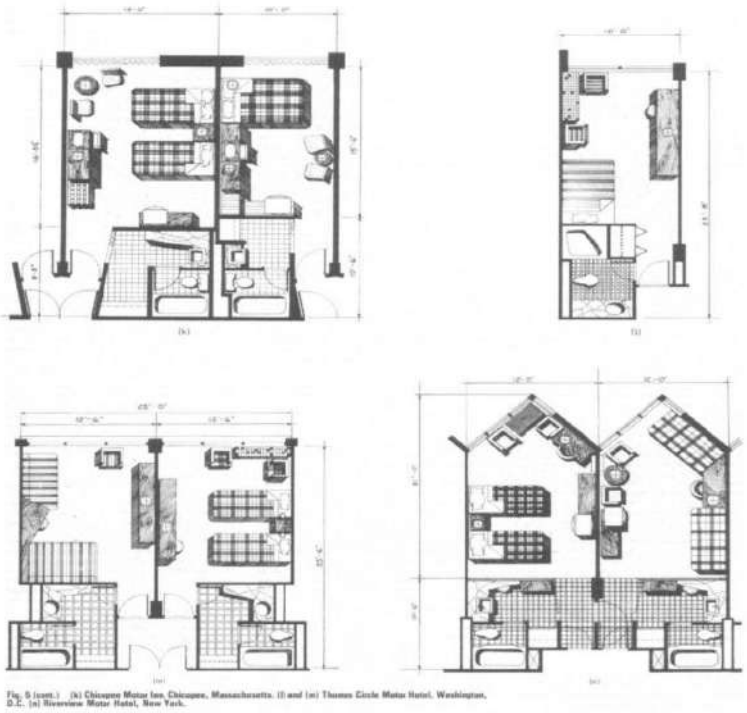


Fig. 5 (cont.) (k) Chicopee Motor Inn, Chicopee, Massachusetts. (l and m) Thomas Circle Motor Hotel, Washington, D.C. (n) Riverview Motor Hotel, New York.

2.5.16 GUEST BATHROOMS:

- The minimum bathroom will have a combination tub-shower, a lavatory, and a water closet.
- An innovation devised by the writer's firm was the introduction of two lavatories in the bathroom facilities. These two lavatories may be right in the bathroom itself, they may be pulled out into a dressing area, or one lavatory may be placed in the bathroom and another outside the bathroom.
- Bidet is being introduced. Obviously, this additional feature is found only in the most luxurious hotels.
- A wall-hung unit makes cleaning of hotel bathrooms easier for the maid, but again, its economics will determine whether this fairly expensive type of installation is warranted. The tub in a guest room is normally a 5-ft tub.
- The normal shower head becomes standard in all hotels, although there is a growing tendency to using the so-called "telephone shower head."
- The normal wall shower head, and by using two movable shower-head supports, one at the normal hand level and one at the higher level where a fixed shower head normally would occur, the guest has the option of allowing the hand type shower head to remain in a standard position or to remove it and use it as he pleases.
- It is preferable to have a ledge on which toiletries may be placed, where they are conveniently reached, and where, obviously, they will not be left when the guest checks out.
- If a ledge is used, the toilet tissue holder can be placed within the recess of the ledge, es can be the tumbler holders and the toothbrush holders. Obviously, an electrical convenience outlet must be placed in this area for electric shavers, electric toothbrushes, and other electrical gadgets that today's traveler takes with him. A slot receptacle for used razor blades should not be forgotten. Towel bars must be strategically placed so that the guest can reach for a towel regardless of whether he is stepping out of the tub or whether he is washing or shaving et the lavatory.
- Another nicety which might be provided is some form of clothesline. With today's wash-and-wear apparel, many guests, especially women, like to do their washing at night and hang their garments in the bathroom.
- A number of hotels are installing a wall-hung mirror which is an enlarging mirror on one side and a normal mirror on the other, a very nice touch for both men and women guests.

2.5.17 GUEST CLOSETS:

- The size of a closet will be determined by the type of hotel.
- Having the open hanging arrangements obviates this possibility. The longer the guest-room stay that is anticipated, then the larger the closet.
- It should be possible to store the luggage out of sight in the closet without diminishing the available hanging space, the shoe-rack space, or shelf space for hats and other apparel and paraphernalia. Whether the closet is a flat reach-in type or a

walk-in type, the door should be such that, when the closet is opened, there are no hidden recesses where clothing may be forgotten because it cannot be readily seen by the departing guest.

- A good closet will have a hang rod with sufficient space to comfortably hold men's and women's clothes, a shelf for packages, hats, etc., and a shoe ledge or rack for placing shoes.

2.5.18 GUEST FLOOR SERVICE SPACES:

- Every guest-room floor will have a service area.
- Primarily, it is a place where linen is stored and where the maids' carts are kept. We must bear in mind that each maid will handle anywhere from 12 to 15 rooms and that each maid will need a cart. The number of rooms on the floor will, therefore, determine the number of maids and, in turn, the number of carts.
- A closed storage area should be provided for the storage of linens. In addition to the maids', porters', and linen supplies, sufficient space should be left for the storage of room-service carts.
- They may have to remain on the floor for some time waiting for the service elevator or elevators. Obviously, the service elevators will open out to this service area, so that all this activity takes place out of the sight and hearing of the hotel guests.

2.5.19 BANQUETING FACILITIES:

- Larger hotels will have a more diversified arrangement for meetings, luncheons, dinners, and banquets. The largest hotels are usually designed with a full banqueting and convention facility.
- The normal meeting room requirements are rather simple. The rooms will vary in size to accommodate anywhere from 10 to as many as 100 people. In most instances, wherever it is feasible, the meeting rooms will be arranged in a straight line, so that the walls separating one room from the other can be made movable.
- Thus, if two meeting rooms which normally might seat 25 people are thrown open to one, we would have a meeting room to take 50 people; and if another wall is opened, we would be able to seat 75 people, and so on.
- In larger rooms, which normally qualify for conventions or large banquets, it is also possible to subdivide the space by the use of movable walls to create smaller rooms when a large room is not required. A large space which might seat 1,000 people when all folding wells have been moved back can be cut up into anywhere from four to six spaces, allowing for meeting rooms that can accommodate 150 to 250 people.
- Of course, in the really large convention halls, it will not be unusual to seat 3,000 or more people in one large convention banquet hell. Realizing that food must be

brought to all these rooms, their juxtaposition to serving kitchens is highly important in arranging the plan.

- For the most part, food should be brought directly from banquet kitchens to the banquet spaces. In subdividing these spaces, the subdivision must be so planned that each space is contiguous to the kitchen and has its own doors to enable waiters to come and go between the banquet spaces and the banquet kitchen.
- Sound isolation is of the greatest importance, and this applies not only to the decibel rating of the panels themselves but also the arrangement of the joints between the sections or panels of the movable wall.
- In fairly large meeting, banquet, and convention facilities, space must be provided which is normally called "preconvention assembly space.'
- Since most of the people who are standing are those who will eventually be seated, the proportions of the preconvention foyer space will be determined by the number of people who will be eventually seated. As a rule of thumb, a person standing in fairly close quarters will take up approximately 5 sq ft. A person seated at a table will take up anywhere from 10 to 15 sq ft. A person seated for a seminar or a meeting will require 8 or 9 sq ft. It thus becomes apparent that the ideal preconvention, pre-banquet, or assembly space should be at least one-third of the area of tire actual dining and meeting spaces.

2.5.20 SPACE ALLOTMENTS AND FLOOR ASSIGNMENTS FOR TYPICAL HOTEL OF 100 ROOMS

General data and approximations

Height of building above ground (ground floor plus 6 typical guest floors)	7 stories
Ground-floor area	10,000 sq ft
Typical guest-floor area	6,000 sq ft
Guest rooms per typical floor,	17 rooms
Stairways on the typical floor,	2 stairways
Elevators (1 guest and 1 service car)	2 elevators

The first four factors listed above are of course all interrelated and must be organized as a compatible group.

	Productive area, sq ft	*Nonproductive area, sq ft*
Public space		
Lobby and front office		1,100(G)
Lounge		600(G)
Corridors adjoining (total of above, 1,900 sq ft)		200(G)
Men's toilet for guests		150(G)
Women's toilet for guests		100(G)
Women's restroom for guests		100(G)
*Coat checkroom		120(G)
*Bellman's checkroom		40(G)

	Productive area, sq ft	Nonproductive area, sq ft
Concession space		
Barber shop	180(B)	
*Valet shop	100(B)	
Subrental space		
3 rented stores, (each 800 sq ft)	2,400(G)	
3 storage rooms (each 200 sq ft)	600(B)	
Food and beverage service space		
Main dining room (90 seats)	1,500(G)	
Main kitchen		1,100(G)
Bake shop		200(G)
?Coffee shop (50 seats)	800(G)	
Bar and cocktail lounge	750(G)	
Private dining rooms (250 + 500 sq ft)	750(G)	
?Banquet-ballroom	1,400(B)	
?Banquet-ballroom foyer		450(B)
?Banquet-ballroom storage		140(B)
?Banquet serving pantry		350(B)
Employees' dining room		220(B)
Steward's storeroom		400(G)
Beverage storerooms		180(B)
*China, glass, and silver storage		300(B)
Receiving room		180(G)
Garbage room		80(G)

	Productive area sq ft	Nonproductive area sq ft
Guest-room space		
102 rooms (each 250 sq ft; including bath, closet and vestibule)	25,500(T)	
Auxiliary space (add 40 per cent of above for corridors, stairs, elevators, maid's closets, walls, and partitions)		10,200(T)
General service space		
Manager's office		140(G)
*Secretary's office		100(G)
Accounting office		150(G)
?*Sales and reservations office		140(G)
*Mimeograph room		40(G)
Linen room		350(B)
?Laundry (700 sq ft; omitted)		
Men's toilet and locker room		360(B)
Women's toilet and locker room		360(B)
Maintenance shops		400(B)
Furniture storage		250(B)
*Records storeroom		250(B)
*General storeroom		200(B)
Boiler room		600(B)
*Water-heater tank space		150(B)
Fuel storage		200(B)
Transformer vault		100(B)
*Refrigeration compressor room		400(B)
*Fan rooms, ventilation equipment		400(B)
Total productive area	33,980 sq ft	
Listed nonproductive area		20,800 sq ft
Add for basement corridors, walls, stairways, and elevators		2,500 sq ft
Add for ground-floor stairways and elevators		500 sq ft
Total nonproductive area		23,800 sq ft
Grand total of areas	57,780 sq ft	

6 typical guest floors, each 6,000 sq ft	36,000 sq ft
Ground floor, figured at 10,590 sq ft	10,500 sq ft
Basement, figured at 10,440 sq ft	10,500 sq ft
Total approximate floor area	57,000 sq ft

2.6 TIME SAVER STANDARDS (BUILDING TYPES)- RESTAURANTS:

2.6.1 SPACE REQUIREMENTS

- Adequacy of space will influence building and operating costs and efficiency. When space is too small, labor time end effort is likely to increase end the volume and quality of output decrease. When it is too large, building and maintenance costs are excessive.
- Calculate area requirements in terms of: (1) volume and type of service, (2) amount and size of equipment to be used, (3) number of workers required, (4) space for needed supplies, and (5) suitable traffic area. The dining area location and space allowance.

2.6.2 DINING ROOMS:

- Space for dining areas is usually based on the number of square feet per person seated times.
- Space requirements:
  The patron's size and the type and quality of service should be considered. A banquet seating allowance might be as little as 10 sq ft per seat and that for a deluxe restaurant as much as 20 sq ft

TABLE 1 Square Feet per Seat Used for Various Types of Food Operations

Type of operation	Square feet per seat
Cafeteria, commercial	16-18
Cafeteria, college and industrial	12-15
Cafeteria, school lunchroom	9-12
College residence, table service	12-15
Counter service	18-20
Table service, hotel, club restaurant	15-18
Table service, minimum eating	11-14
Banquet, minimum	10-11

- All of the areas in a dining room used for purposes other than seating are a part of square footage allowed for seating.
- Service stations may be estimated in the proportion of one small one for every 20 seats or a large central one for every 50 to 60 places. The advisability of having a central serving station will be influenced by the distance of the dining area from the serving area.
- Small substations for silver, dishes, napery, beverages ice, butter, and condiments may measure 20 to 24 in. square and 36 to 38 in. high. The size of central stations varies from that for a small enclosed room to that of a screened section measuring approximately 8 to 10 ft long by 27 to 30 in. wide by 6 to 7 ft. high. Table size will influence patron comfort and efficient utilization of spaces. Smell tables, such as 24 or 30 in. square, are economical for seating but are uncomfortable for large people.
- The width of booths including seats and table is commonly 5h ft. A lunch counter will have a minimum width of 16 in. and a maximum width of 24 to 30 in. The linear feet are calculated on the basis of 20 to 24 in. per seat. The maximum area best served by one waitress is generally 16 ft of counter.
- U-shaped counters make maximum use of space and reduce travel. Space in depth of 8'/r to 11 ft will be required for every linear foot of counter. This will provide 3 to 4 ft of public aisle, 2j& ft for aisle space for employees. A width of 41h ft is desirable where employees must pass.
- A minimum passage area is 18 in. between chairs and, including chair area, tables should be spaced 4 to 5 ft apart. Aisles on which bus carts or other mobile equipment is to be moved should be sized according to the width of such equipment.
- Diagonal arrangement of square tables utilizes space better then square arrangement and yields a more trouble-free traffic lane.

Number of Persons Allowance:

- The number of persons to be seated at one time is the second point of information needed for calculation of the dining room size. The total number of seats required at one time, multiplied by the space required for each seat, will give the total number of square feet needed in the dining area.
- The number of times a seat is occupied during a given period is commonly referred to as "turnover."
- The turnover per hour, times the number of seats available, gives the total number of patrons who can be served in an hour. If peak loads, or number to be served at one time, are known, the number of seats required can be estimated.
- The table sizes used in the dining room will affect occupancy. It is often desirable to provide for groups varying from two to eight, with a predominance in most dining rooms of those for two people.
- Chairs with a "tablet arm" that will fold a tray have been used for fast turnover in crowded areas.
- One cafeteria line can serve four to eight patrons per minute depending on (1) the speed of the servers, (2) the elaborateness of food selection, (3) convenience of the layout, and (4) the type of patrons.
- Banquet seating requires planning because maximum seating potential means maximum profits. Folding tables 30 in. wide are popular. These are obtained in varying lengths, but 72 and 96 in. are commonly used. The spacing for the legs should be such as to allow for comfortable seating when the tables are joined end to end and place settings are laid on 24-in. centers.
- Separate rooms, folding doors, screens, or other attractive devices can be used to reduce size of an area during slack periods. Sections left open should be those easiest to serve. Balconies, back rooms, or other less desirable space can often be used for overflow numbers that occasionally require service.

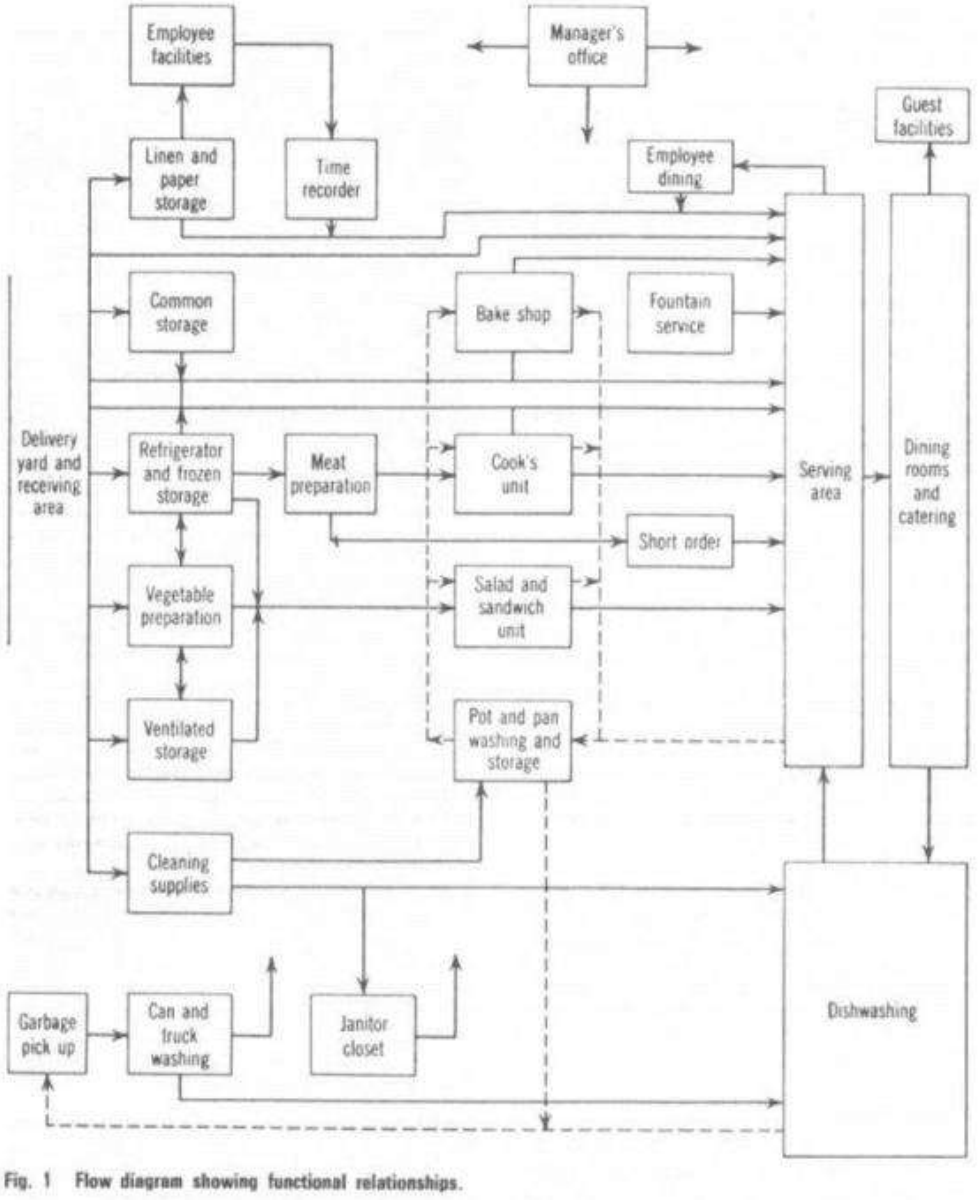


Fig. 1 Flow diagram showing functional relationships.

2.6.3 Production areas:

A frequently used rule for allotting apace for the kitchen is that it should be one-third to one-half the area of the dining room.

An analysis of specific needs is required. Many factors influence space requirements, such as:

Type of preparation and service

- Amount of the total production done in the unit
- Volume in terms of the number of meals served

Variety of foods offered in the menu

Elaborateness of preparation and service

Amount of individual service given, as in a hospital trey service

Seating and service plan, whether on one floor or many

a. The equipment provided will affect the space needs. Garbage and refuse, for example, may require a sizable area for storage awaiting pickup. Disposal units for food garbage, incinerator for burnable refuse, and a crusher for tin cans will greatly reduce the amount to be held. Frequency of garbage collection will minimize the space needs.
b. The shape of the kitchen, location of ventilation and elevator shafts, support columns and partitions should be considered in relation to an efficient layout for work. The location of entrances and exits for a good flow of traffic, window placement, suitable space, and relationship of sections need

TABLE 2 Variation in Space Needs in Relation to Numbers Served

Meal load	Square feet per meal	Variation in square feet
100-200	5.00	500-1,000
200-400	4.00	800-1,600
400-800	3.50	1,400-2,800
800-1,300	3.00	2,400-3,900
1,300-2,000	2.50	3,250-5,000
2,000-3,000	2.00	4,000-6,000
3,000-5,000	1.85	5,500-9,250

consideration. Eliminate partitions whenever possible; this will reduce space needs and also permit easier supervision of production areas.

c. The square footage given is to be multiplied by the maximum number of meals estimated per hour of service.
d. The width of the table may be 24 to 30 in. unless dishes or food containers are to rest at the back of the table. Tables 36 in. wide are preferable when the back of the area is used for such storage. Where two workers work opposite each other, a table 42 in. wide may be used. A work area of 4 to 6 in ft will be within convenient reach of the average person. Tables 8 to 10 ft. long are used if two people are working side by side. A height of 34 in., commonly used as a working height, should be evaluated in terms of specific work done and equipment used.
e. The minimum width for a lane between equipment where one person works alone is 36 and 42 in. where more than one is employed and where workers must pass each other in the progress of work. Where mobile equipment is used, 48 to 54 in. are recommended. At least 60 in. are needed for main traffic lanes where workers regularly pass each other with mobile equipment.
f. Work centers at right angles to traffic lanes are efficient.

g. A satisfactory layout may claim less than 30 percent of total space for equipment while work areas, traffic lanes, and space around equipment for easy operation and cleaning may require 70 percent or more.

TABLE 3 Square Feet of Kitchen Space per Meal for Food Facilities of Different Type and Size

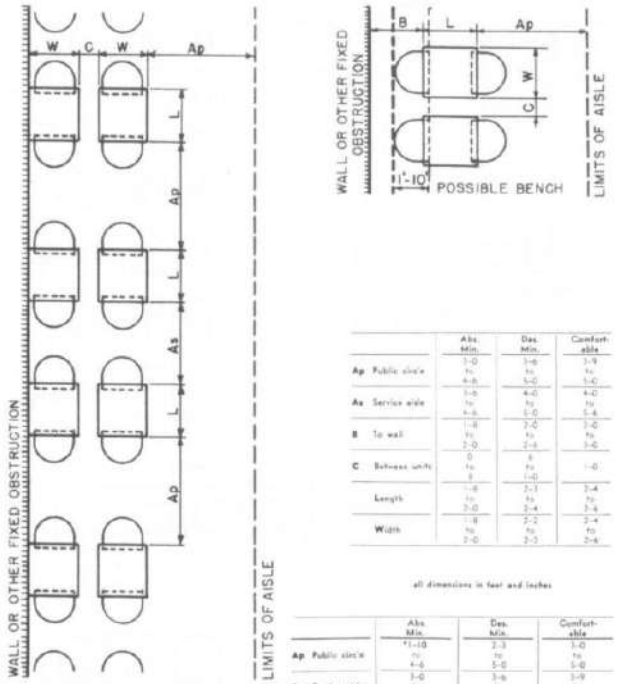
Type of facility	Estimated maximum meals per hour				
	200 or less	200–400	400–800	800–1,300	1,300–7,500
Cafeterias	7.5–5.0	5.0–4.0	4.0–3.5	3.5–3.0	3.0–1.6
Hospitals	18.0–4.5	12.0–4.5	11.0–4.5	10.0–4.0	8.0–4.0
Hotels	18.0–4.0	7.5–3.0	6.0–3.0	4.0–3.0	4.0–3.0
Industrial lunchrooms	7.5–5.0	4.0–3.2	3.5–2.0	3.0–2.0	2.5–1.7
Lunch counters	7.5–2.0	2.0–1.5			
Railroad dining car	1.6				
Restaurants (service)	7.0–4.0	5.0–3.6	5.0–3.6	5.0–3.0	5.0–3.0
School lunchrooms	4.0–3.3	3.3–2.2	3.0–2.0	2.5–1.6	2.0–1.6

Serving areas:

- In cafeterias the counter length should be regulated by the variety and volume.
- An estimate that may be used for allotting width is 14 ft. This allows for 4 ft as patron lane space, 1 ft trey elide, 2 ft counter width, 4'/r ft for workers, and 2'/r ft for back bar.
- Some commercial cafeteria counters may be 70 to 80 ft long, but counters over 50 ft long are frequently considered inefficient. Twenty feet is usually thought of as a minimum but, under special conditions and where a limited menu is served, 6 to 8 ft may be sufficient.
- Some planners use, as a rough guide, one counter or line for every 250 to 300 patrons served, but arrival rate, speed of service, and turnover are more reliable factors to consider in establishing the number of lines required.

Receiving and storage areas:

- Although the average operation may find a dock 8 ft deep and 12 ft long sufficient for receiving items, this would not be sufficient for a large one. The space requirement in square feet for food storage for 30 days has been calculated by some as approximately one half the total served or, if 1,000 are served, 500 sq ft may be used as a tentative figure for total food storage needs.
- COMMON STORAGE- The volume of canned food needed to serve 100 persona three meals daily for one month is estimated at approximately 45 cases of 6/10's or equivalent. The maximum stack height will be 8 or 9 cases or approximately 72 in.
- Storeroom aisles may be as narrow as 36 in., but 42 or 48 approximal. are preferred. Wider aisles may be required if trucks are used. A 3-ft skid on a hydraulic jack needs maneuvering room.
- Allow 1'/ to 2 in. as free space for ease of positioning. Add thickness of shelving to interspace when stating measurements between centers.



		Abs. Min.	Des. Min.	Comfortable
Ap	Public circ'n	1-0 to 4-6	1-6 to 5-0	1-9 to 1-0
As	Service aisle	1-0 to 4-6	4-0 to 5-0	4-0 to 5-6
B	To wall	1-8 to 2-0	2-0 to 2-6	2-0 to 3-0
C	Between units	0 to 1	1 to 1-0	1-0
	Length	1-8 to 2-0	2-1 to 2-4	2-4 to 3-6
	Width	1-8 to 2-0	2-2 to 2-3	2-4 to 2-6

all dimensions in feet and inches

		Abs. Min.	Des. Min.	Comfortable
Ap	Public circ'n	*1-10 to 4-6	2-3 to 5-0	3-0 to 5-0
As	Service aisle	1-0 to 3-6	3-6 to 4-0	3-9 to 4-0
C	Between units	0 to 1	4 to 8	8
	Length	1-8 to 2-0	2-3 to 2-4	2-4 to 2-6
	Width	1-8 to 2-0	2-2 to 2-3	2-4 to 2-6

*Lower range only if chairs, etc., do not project into aisle

Fig. 4 Table and chair units.

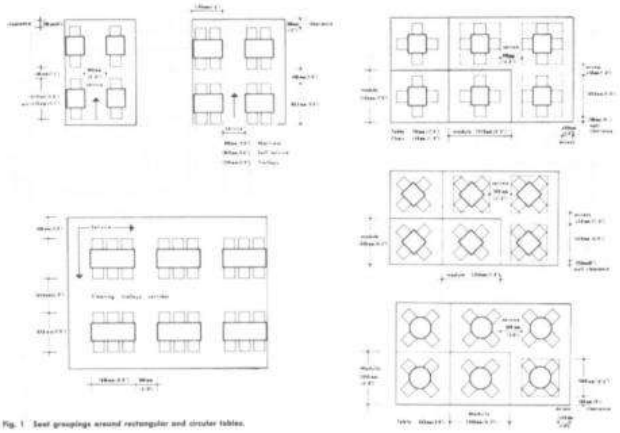


Fig. 1 Seat groupings around rectangular and circular tables.

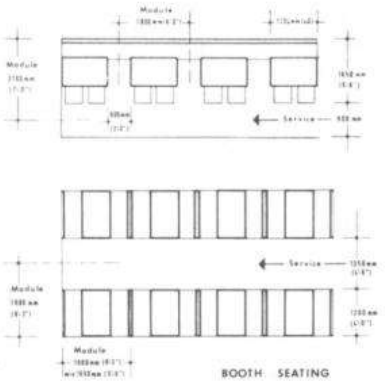
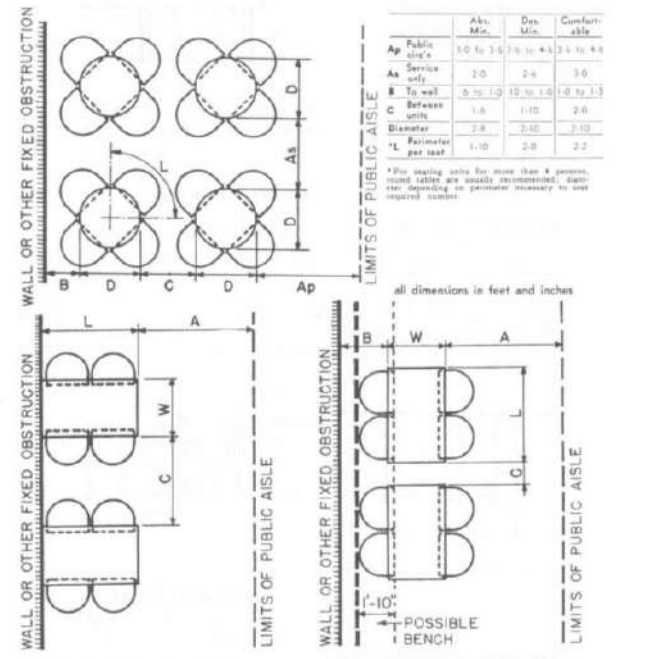


Fig. 2 Banquette seating arrangements and limiting dimensions including space for access and service.

Fred Lawson, *Restaurant Planning and Design*, The Architectural Press, Ltd., London, 1973.



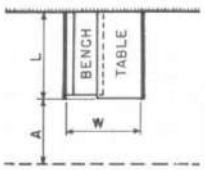
		Abs. Min.	Des. Min.	Comfortable
Ap	Public circ'n	1-0 to 3-6	1-6 to 4-6	3-6 to 4-6
As	Service only	2-0	2-6	3-0
B	To wall	6 to 1-0	10 to 1-0	1-0 to 1-3
C	Between units	1-6	1-10	2-6
	Diameter	2-8	2-10	3-10
*L	Perimeter per seat	1-10	2-0	2-2

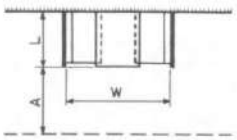
*For seating units for more than 4 persons, round tables are usually recommended; diameter depending on perimeter necessary to seat required number.

		Abs. Min.	Des. Min.	Comfortable
A	Service or pub. circ'n	2-0 to 3-6	2-6 to 4-6	3-0 to 5-0
C	Between units	3-0 to 3-6	3-6 to 4-0	3-9 to 4-0
	Length	3-6	3-10 to 4-0	4-0
	Width	1-8 to 2-0	2-0 to 2-3	2-4 to 2-6

		Abs. Min.	Des. Min.	Comfortable
A	Service or pub. circ'n	3-6 to 4-6	4-6 to 5-0	5-0 to 5-6
B	To Wall	2-0	2-0 to 2-6	2-0 to 3-0
C	Between units	0 to 1-0	1-0	1-6
	Length	3-6	3-10 to 4-0	4-0
	Width	1-8 to 2-0	2-0 to 2-3	2-4 to 2-6

Fig. 4 (continued) Table and chair units.





2 PERSONS SIDE BY SIDE

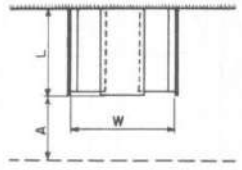
	Abs. Min.	Des. Min.	Comfortable
Service A and pub. circ'n	2-6	3-0	3-6
Length	3-6	3-9	4-0
Width	3-0	3-3	3-6

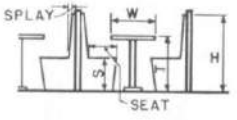
Note: This type not ordinarily recommended.

2 PERSONS FACE TO FACE

	Abs. Min.	Des. Min.	Comfortable
Service A and pub. circ'n	2-6 to 3-0	3-0 to 4-0	3-6 to 5-0
Length	2-0	2-2 to 2-6	2-6
Width	4-10 to 5-6	5-7 to 5-6	6-8 to 5-10

dimensions in feet and inches





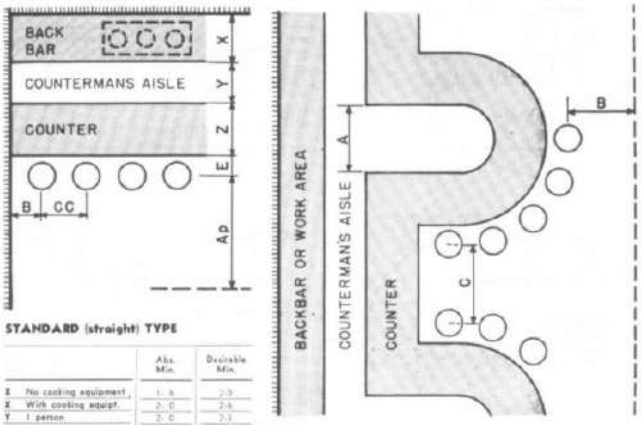
4 PERSONS

	Abs. Min.	Des. Min.	Comfortable
Service A and pub. circ'n	3-6 to 3-0	3-0 to 4-0	3-6 to 5-0
Length	3-6	3-9 to 4-0	4-0 to 4-2
Width	4-10 to 5-6	5-2 to 5-6	5-8 to 5-10

BOOTH FURNITURE HEIGHTS

	Abs. Min.	Des. Min.	Comfortable
H	3-0 to 3-6	3-3	4-0
S	1-5 to 1-6	1-5 to 1-6	1-6
T	2-5	2-5 to 2-6	2-6
W	1-8 to 2-0	2-0 to 2-2	2-4 to 2-6
Seat	1-4 to 1-5	1-5 to 1-6	1-6 to 1-8
Splay	0 to 0-1	0-2 to 0-3	0-3½ to 0-4

Fig. 5 Booths.



STANDARD (straight) TYPE

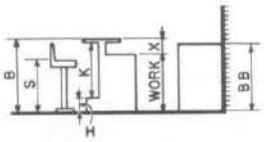
	Abs. Min.	Desirable Min.
X No cooking equipment	1-6	2-0
X With cooking equipt.	2-0	2-6
Y 1 person	2-0	2-3
Y 2 or more persons	2-6	2-9
Z	1-10	3-0
E	9	1-2
Ap	3-6	4-6
B	1-0	1-2
CC	1-10	2-0

Variations in Shape

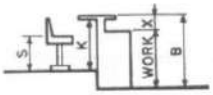
	Usual Minimum
A	2-6 to 3-6
B	2-6 to 4-6
C	2-6 to 3-6

dimensions in feet and inches

HEIGHTS



LEVEL FLOOR



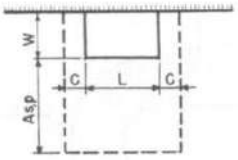
DROPPED FLOOR

	Range of Dimensions		Range of Dimensions
B	2-6 to 3-6	X	1-2 to 1-3
BB	3-0 to 3-6	Work	2-4 to 2-7
H	7 to 10	S	1-6 to 2-6
K	1-4 to 2-8		

	Range of Dimensions
B	3-0 to 3-6
K	2-4 to 2-10
S	1-6 to 2-1
X	1-2 to 1-3
Work	2-4 to 2-8

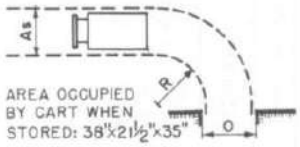
Fig. 6 Food bars.

Serving Units



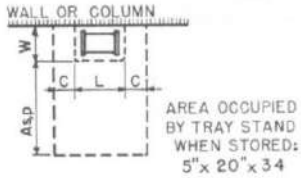
SERVING TABLE (& sideboard)

	Abs. Min.	Des. Min.	Comfortable
As Service only	2-6	3-0	3-6
Ap Public circ'n	2-0	2-6	3-0
C Clearance to adjacent units	2-0	2-3	2-6
Length (tray)			
Width (tray)			



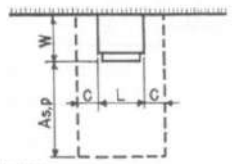
SERVING CART

	Abs. Min.	Des. Min.
As Service only	2-0	2-6
R Turn radius	3-0	3-6
O Door opening width	2-0	2-6



TRAY STAND

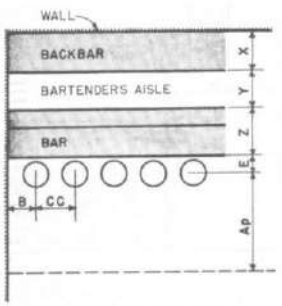
	Abs. Min.	Des. Min.	Comfortable
As Service only	2-6	3-0	3-6
Ap Public circ'n	2-0	2-6	3-0
C Clearance to adjacent units	2-0	2-3	2-6
Length (tray)			
Width (tray)			



WATER COOLER

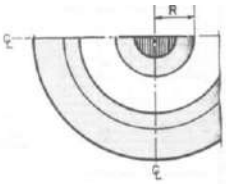
	Abs. Min.	Des. Min.	Comfortable
As Service only	2-6	3-0	3-6
Ap Public circ'n	2-0	2-6	3-0
C Clearance to adjacent units			
Length			
Width			

Fig. 7 Serving units.



STRAIGHT TYPE—with or without stools

	Abs. Min.	Des. Min.	Comfortable
Ap Public aisle	3-6 to 4-6	4-0 to 5-0	4-6 to 6-0
B Stool to wall	1-0 to 1-0	1-0 to 1-6	1-9 to 1-6
CC Stool cent. to cent.	1-9 to 2-0	2-0	2-2 to 2-6
B Stool to bar	9 to 1-0	1-0	1-1 to 1-2
X Back bar	1-6 to 1-7	1-8 to 2-0	2-0 to 2-2
Y Bartender's aisle	2-0 to 2-2	2-6	3-0
Z Bar	2-3 to 2-6	2-8 to 2-9	2-8 to 2-9

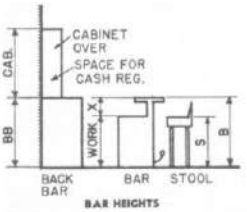


Bar length: Allow from 1 ft. 6 in. to 1 ft. 10 in. per person for standup bars; 2 ft. for each stool.

Bar depth: No increase in depth is needed for more than 1 bartender, as each man should be provided with his own set-up space in the work counter and backbar.

Service bars: These are usually from 2 to 6 ft. long for lower service; from 10 to 12 ft. long at 2 bartenders are needed for peak service periods. No flattop, counter overhang, or plate rail required. Location is often adjacent to kitchen and concealed from patrons; however, advertising values sometimes cause it to be set in public view. In the latter case, a rear rail or similar device, to discourage patrons from standing at the bar, is often advisable.

dimensions in feet and inches



BAR HEIGHTS

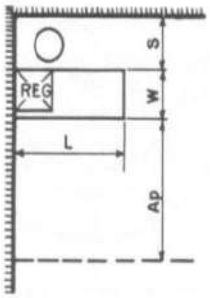


RAIL OR STEP

P — 7 to 10
H — 7 to 10

	Usual Min.	Usual Max.
B	3-6	3-9
BB	5-0	5-6
Cab	1-0 to 1-10	2-0 to 2-7
S	2-4 to 2-6	2-7
Work	2-4	2-6
X	1-8 to 1-10	1-11 to 2-0

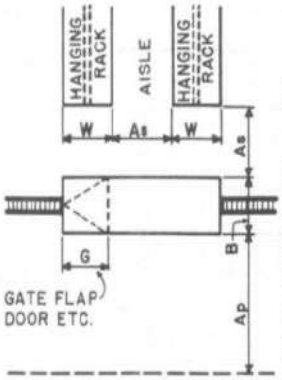
Fig. 8 Liquor bars.



CASHIER'S DESK and COUNTER

	Usual Minimum
S Cashier's Aisle	2-0 to 2-6
Ap Public Aisle	3-6 to 5-0
Length	4-0 to 8-0
Width	2-0 to 2-4

Fig. 9 Handining spaces.



CHECK ROOM

	Abs. Min.	Des. Min.	Comfortable
Ap	3-0	4-0	6-0
As	2-6	2-9	3-3
B	1-0	1-6	1-8
C	2-0	3-0	5-0
G	1-6	1-9	2-0
W	1-10	2-0	2-0

dimensions in feet and inches

2.6.4 Refrigerated and low temperature storage:

1. Allocation in preliminary planning may be as follows: 20 to 35 percent for meat (portion ready meats require '/ to '/, less space than carcass or wholesale cuts); 30 to 35 percent for fruits and vegetables; 20 to 25 percent for dairy products, including those in serving areas; 10 to 25 percent for frozen foods; and 5 to 10 percent for carry-over foods, salads, sandwich material, and bakery products. A requirement of 15 to 20 cu ft of refrigeration per 100 complete meals has also been used by some planners.
2. Approximately 0.25 to 0.50 cu ft of refrigerated walk-in space was provided per meal served, and frozen walk-in space.
3. A walk-in becomes feasible for an operation serving 300 to 400 meals per day, and refrigerated pass-throughs can be added when from 400 to 500 meals are served per day
4. Aisles of 30 in. are usually too narrow; 42 in. are desirable. If mobile equipment is moved in and out, aisles may have to be wider. Walk-ins that are 8 to 9 ft wide and about 10 ft long are minimum size. This allows for two storage areas 30 in. wide with a 3 to 4 ft aisle.
5. Doors should be a minimum of 42 in. wide to admit large crates and containers or be sized to suit mobile equipment.

- Sanitation areas:

  - Dishwashing areas: The dimensions may be only 30 to 36 in. for a single tank machine, 60 to 72 in. for sinks, or 7 to over 30 ft for a conveyor-type machine.
  - Pot and pan section: When allowing space for the pot and pan section, 40 sq ft is generally regarded as a minimum for the smallest unit. The free work aisle between the sinks and other equipment should be 4 ft wide. The space allowance above the minimum will vary widely depending upon the type equipment used and the volume of pots and pans handled.

- Employee facilities:

  - Facilities for employees may include locker and lounge area, toilets, showers, time-recording equipment, hand basins near work areas, and dining rooms. An employee entrance should be so located that the employees may go directly to the dressing rooms without passing through the dining room or production area.
  - Locker and lounge area: Whether individual lockers or common cupboard, sufficient space should be allowed for personal clothing to hang without crowding or wrinkling.
  -
- The depth from front to back should be a minimum of 20 in.
- Suitable size for an employee lounge depends largely on scheduling of workers and the policies of individual establishments.
- A cot or daybed, 36 in. by 6 ft, should be provided in the women's room.

- Toilets and showers: They should be separated from food areas by a hallway or double entrance. Supply one wash bowl for every 8 to 10 workers, one toilet stool for every 12 to 15 women, and one urinal and one toilet stool for every 15 men. Toilet compartments measure approximately 3 by 41/, to 5 ft.
- Time recording management: Provide space for a recorder near and within view of the office. Wall hung card racks of sufficient capacity are recommended for the number of workers, both full and part time, who are likely to be employed during an accounting period. Estimated space for a clock recorder is approximately 18 in. wide by 12y. in. deep and 18 in. high, and a rack of 50 cards approximately 1 1/2, by 2 1/2 by 34 ½ in.
  - Guest facilities:
  - The size of the area should be based on probable need for waiting, type of service, and number of persons likely to congregate at one time. If there is a lounge or hallway adjacent to the dining room, this may provide some waiting space.
  - Cashier:
  - Preferred location for the cashier's desk or counter, is on the right-hand side of the door when leaving, in order to avoid cross-traffic and resulting congestion.
  - Coat- checking:
  - Use of coat trees in dining areas is formed "necessary but never desirable." These occupy approximately 20 by 20 in., are 72 in. high, and can accommodate 8 garments per costumer. Overshoe racks are considered undesirable; umbrella racks, desirable in check rooms.

2.7 TIME SAVER STANDARDS (BUILDING TYPES)- KITCHENS

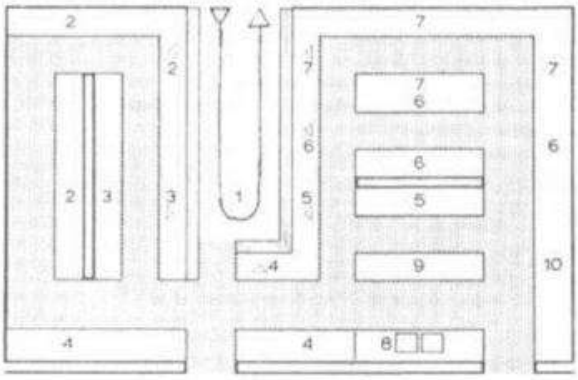


Fig. 2 Hotel or restaurant kitchen. Capacity: With this layout, a 200-seat restaurant will be able to handle three full sittings. This layout can also take care of a hotel with 100 guests and can also accommodate a restaurant open to the general public, an outdoor restaurant, and a private dining area for parties and conferences (altogether, 400 guests). Waiters' passageway: in the center. Kitchen: Linear arrangement with large installations in the rear. See Legend for explanation of numbers.

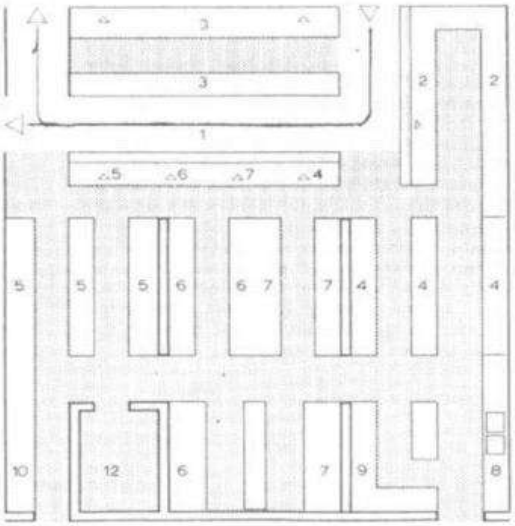


Fig. 3 Large restaurant kitchen for restaurants with many private party and conference facilities or with commissary and catering capacity for other businesses. Suitable also for large hotel with large restaurant for the general public. Capacity: 800–1,000 persons (e.g., 200 seats and fourfold reoccupancy). Waiters' passageway: tangential, with food buffet situated in front. The waiter has access to beverages and other items from the waiters' passageway in the kitchen and from the dining room side as well. The buffet looks over the dining rooms. Kitchen: Linear arrangement with fitted berths for large apparatus. See Legend for explanation of numbers.

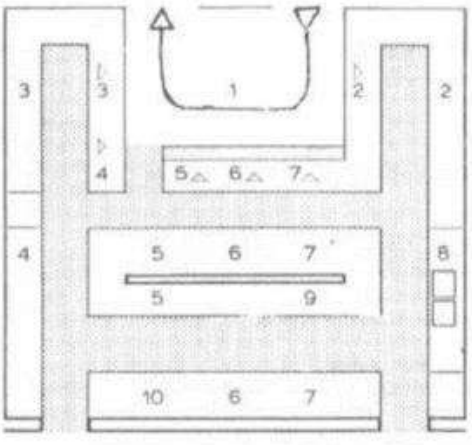


Fig. 4 Restaurant kitchen especially suited for city or excursion restaurants. Capacity: as in Fig. 1. Waiters' passageway: tangential. Kitchen: The cooking, roasting, grill, and frying apparatus are planned as wall structures. See Legend for explanation of numbers.

Legend for Restaurant and Hotel Kitchen Layouts (Figs. 1 to 6)

(Layouts: Scale 1:300)

1. Waiters' passageway—meal and beverage counter—dish return
2. Dishwashing area (dishes, glasses, silver)
3. Beverages—preparation and serving
4. Pastry (cookies, cakes, ice cream, dessert)—preparation and serving
5. Cold kitchen (cold appetizers, salad, fish)—preparation and serving
6. Warm kitchen—saucier/rôtisseur area (sauces, roasts, grill, fish)—preparation including large apparatus area and serving
7. Warm kitchen—entremétier area (soups, vegetables, entrées)—preparation including large apparatus area and serving
8. Pot and pan washing—casserolier area
9. Vegetable preparation
10. Meat preparation
11. Vegetable cold storage
12. Meat cold storage
13. Economat (dry storage)
14. Beverage cold storage
15. Linen, dish, cleaning supplies storage
16. Staple goods storage
17. Goods acceptance and control
18. Empty goods and garbage collecting rooms

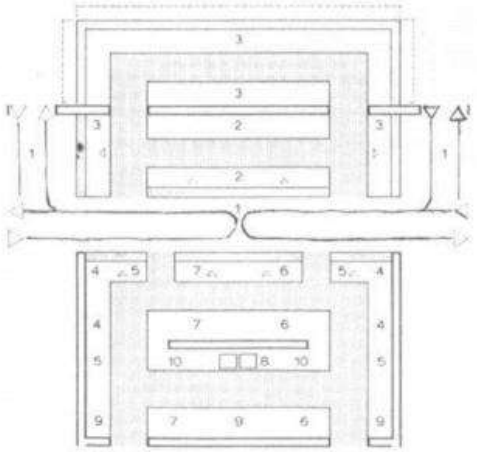
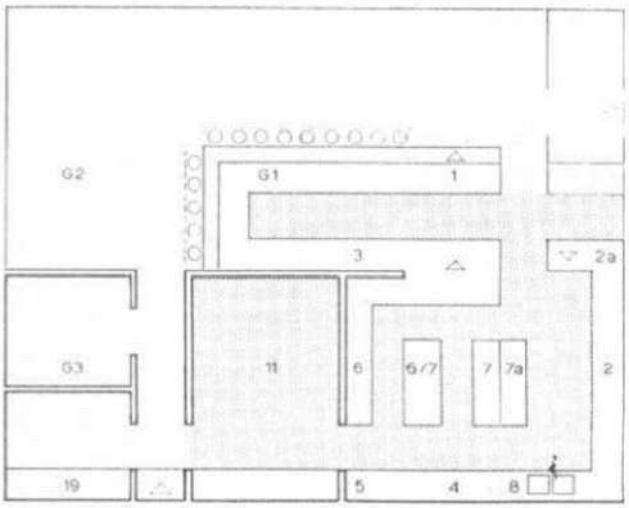


Fig. 6 Large restaurant kitchen for restaurants with many auxiliary rooms, bowling alleys, garden, and a snack bar projecting into the main dining room. Suitable for a highly frequented city restaurant or for an excursion spot with various conference rooms, etc. Capacity: 1,000–1,200 persons. Waiters' passageway: tangential. Buffet and washing-up zone (dish return) placed in front. The waiter can pick up drinks and other items at two places in the kitchen, the drinks coming partly from the bar. Kitchen: Warm kitchen as wall structure with central serving area; cold kitchen and pastry area divided with two serving areas each, symmetrically arranged. See Legend for explanation of numbers.



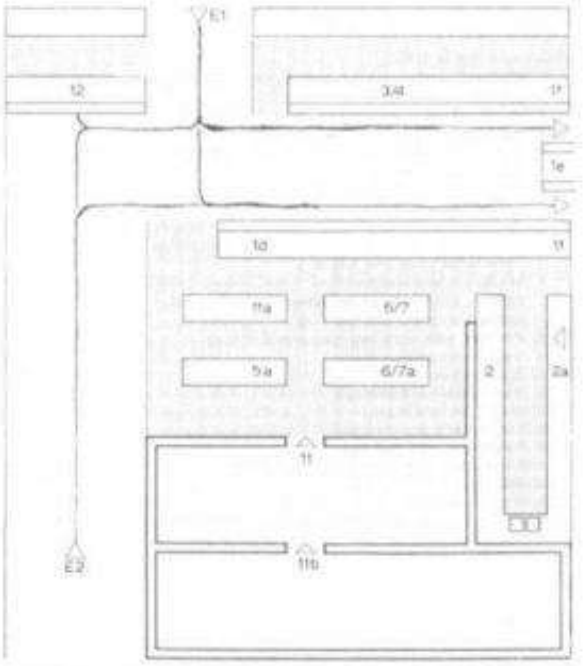


Fig. 8 Self-service restaurant suitable for department stores or office buildings. Kitchen: no independent production; outside delivery and preparation via deep-freeze, boiling-in-the-bag (Nacka), or Régéthermic methods.

Legend:

1d. Self-service buffet with grill and fry unit
1e. Salad dressings, spices, cutlery reserves
1f. Cashier
2. Dishwasher
2a. Dish return
3/4. Sandwich unit, cakes, ice cream, coffee, beverages; service available at an outdoor café
5a. Cold preparation table
6/7. Defrosting, warming-up apparatus front, serviceable on two sides (convection ovens, heating appliances for the Nacka system or Régéthermic ovens)
11. Cold storage and storage (varies in size according to system of servicing and rhythm of delivery)
11a. Refrigerator front, serviceable on two sides
11b. Delivery, empty goods, intermediary storage, personnel cloakroom
12. Kiosk—sales on the inside and to customers on the street
E1. Entrance from street
E2. Entrance from building (department store, office building, etc.)

Fig. 7 Snack bar (Pub, tavern, bistro, café, or restaurant). Capacity: 55–60 seats (five- or six-fold reoccupancy over lunchtime, twofold in the evening; at other times, a well-run café, cake, and snack business). The kitchen deals primarily with ready-to-serve articles. In a city business with daily delivery, the storage space does not have to be especially large.

Legend:

1. Meal and beverage serving counter
2. Dishwasher
2a. Dish return
3. Beverage buffet with mixer, toaster, ice-cream container, etc.
4. Oven and small pastry station
5. Garde-manger
6. Saucier / rôtisseur
6/7. Range
7. Entremétier
7a. Cooking vat and high-performance steam cooker
6/7b. Warming cupboard and warm serving counter with warming lamps
8. Pot and pan washing
11. Storage, empty goods, office; instead of cold storage rooms—cold storage and freezer cupboards
19. Employees' toilets
G1. Bar counter—also for meals
G2. Dining room with table seating
G3. Guests' toilets / make-up room / telephone booths

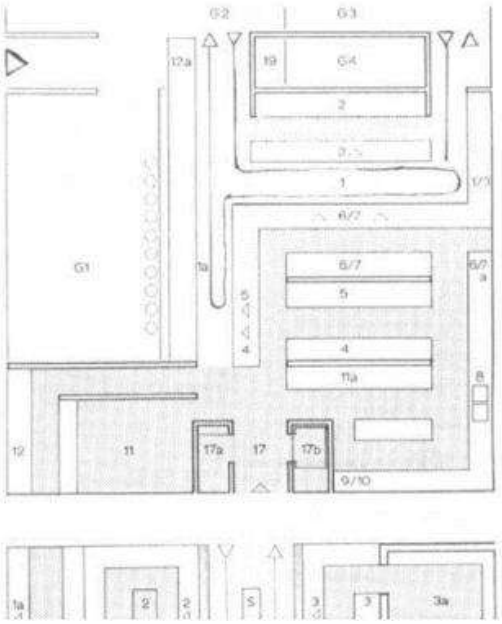
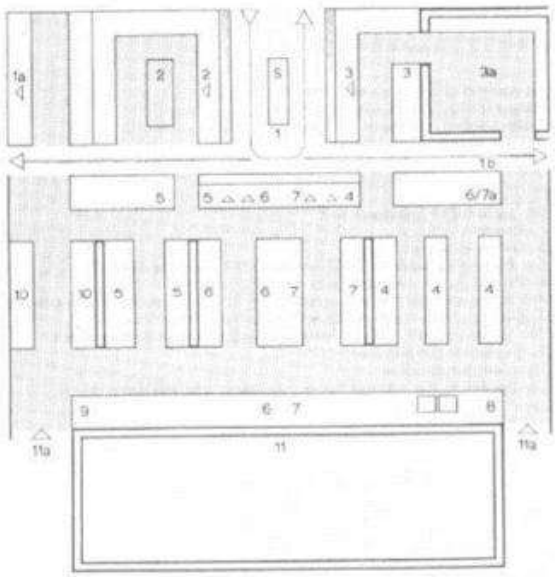


Fig. 10 Restaurant for travelers (Highway restaurant, or café-restaurant at a busy intersection in the city). Capacity:
- Snack—45–50 seats (200 persons every hour)
- Restaurant—80 seats—(two- or threefold reoccupancy during meals; at other times, coffee, ice cream, pastry, and sandwich service)
- Grill—40 seats (one- or twofold reoccupancy, high standard service) Kitchen: Linear-wall arrangement, approximately equal balance between freshly prepared meals and ready-to-serve meals. Storage, empty goods, and personnel cloakrooms in the cellar.

Legend:

1. Waiters' passageway
1a. Service corridor for snacks, and cold meal and pastry-serving counter for restaurant
1/3. Waiters—Beverage self-service
2. Dishwasher
4. Pastry
5. Cold kitchen
6/7. Warm kitchen (roast, grill, fry), bain-marie in the serving counter
6/7a. Cooking and frying apparatus (2 vats, 1 pan)
8. Pot and pan washing
9/10. Meat and vegetable preparation
11. Storage for the day
11a. Cupboard group, cooled and not cooled
12. Kiosk facing the street
12a. Cigarette machine
17. Goods delivery
17a. Office
17b. Elevator to cellar
19. Employee toilets
G1. Snack area with about 40 seats and seats at the bar
G2. Restaurant
G3. Grill restaurant, possibly with small bar for espresso coffee, aperitifs, whisky, and other spirits
G4. Guests' toilets



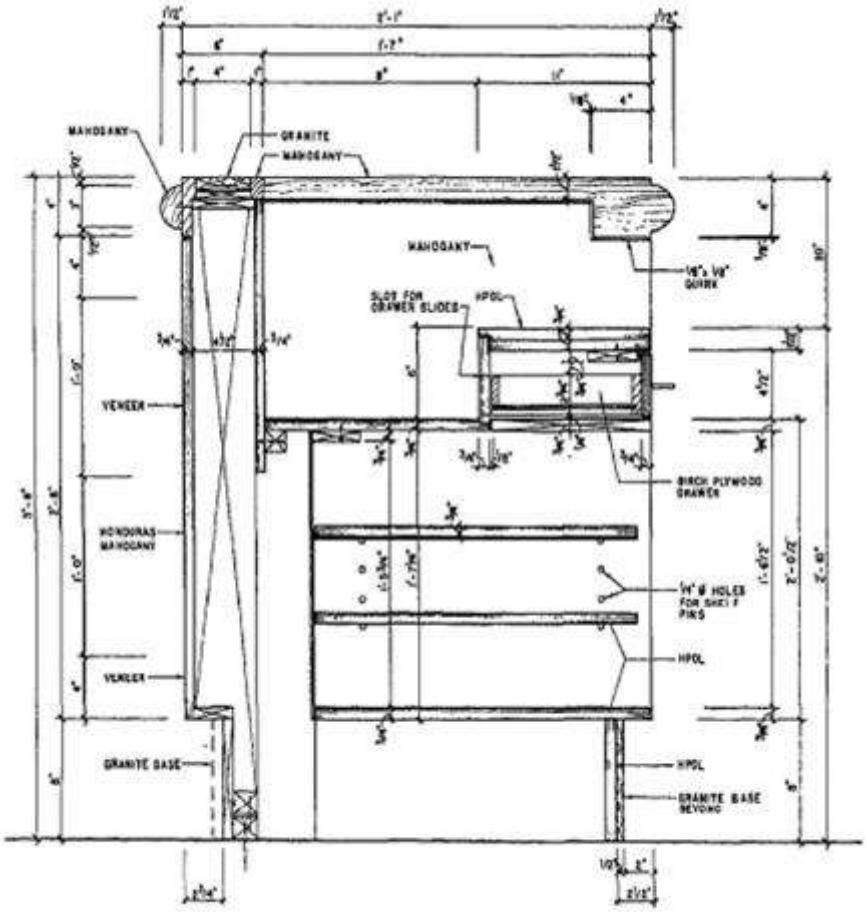
G2. Restaurant
G3. Grill restaurant, possibly with small bar for espresso coffee, aperitifs, whisky, and other spirits
G4. Guests' toilets

Fig. 11 Large hotel-restaurant kitchen also for large restaurants with some auxiliary rooms and with outside deliveries or production for other organizations (variant of Figs. 3 and 6). Capacity: 800–1000 persons. Waiters' passageway: in the center, with a special serving link to the garden (or, for instance, to a bowling alley) and directly connecting to the auxiliary rooms. Kitchen: Linear arrangement with rear side of large apparatus.

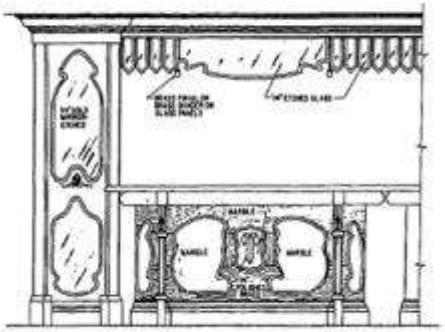
Legend:

1. Waiters' passageway
1a. Meal and beverage serving to garden
1b. Access to auxiliary rooms
2. Dishwashing area
3. Beverage serving area
3a. Beverage cold storage (day cellar)
4. Pastry
5. Cold kitchen
6. Warm kitchen—saucier / rôtisseur area
7. Warm kitchen—entremétier area
8. Pot and pan washing
9. Vegetable preparation
10. Meat preparation
11. Cold storage and storage rooms
11a. Accesses to delivery, empty goods room, and intermediary storage, office, personnel cloakrooms and toilets
5 Service accessories (cash register)

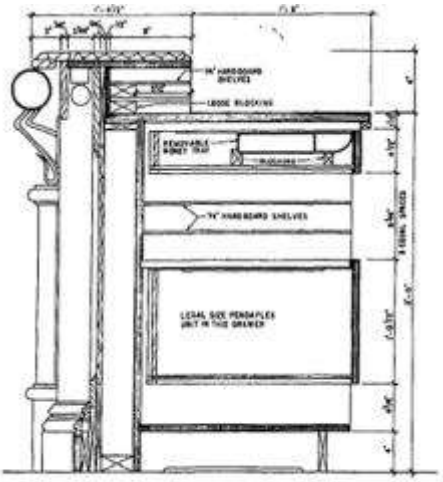
2.8 TIME SAVER STANDARDS (INTERIOR DESIGN):



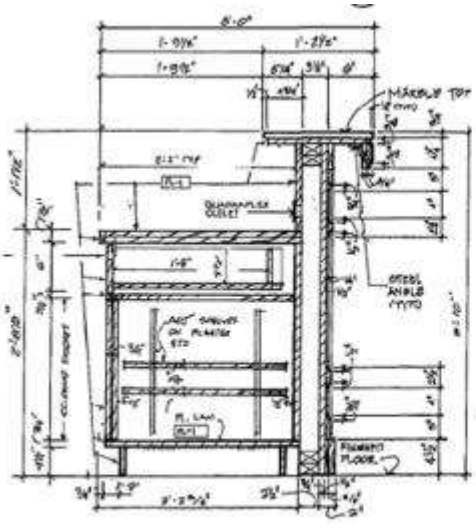
VERTICAL SECTION AT RECEPTION DESK



PARTIAL ELEVATION-FRONT DESK
TROPICANA HOTEL

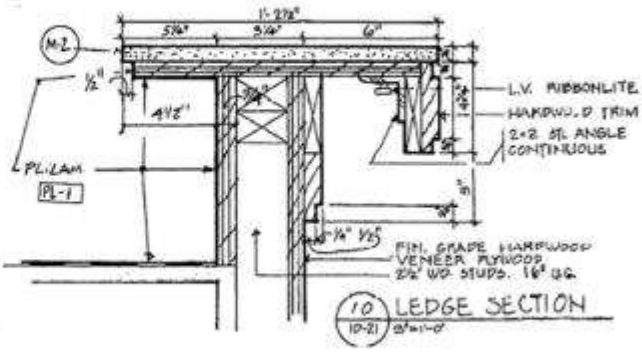


VERTICAL SECTION
REGISTRATION DESK TROPICANA HOTEL

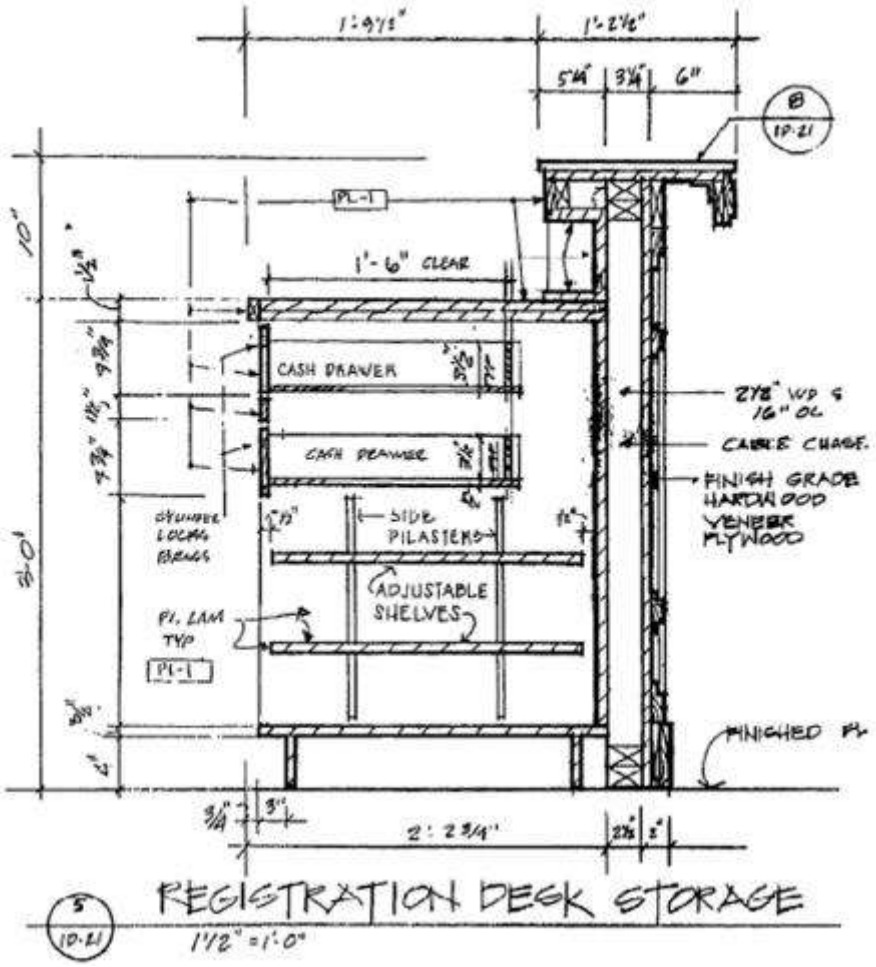


RECEPTION DESK STORAGE

TROPICANA HOTEL

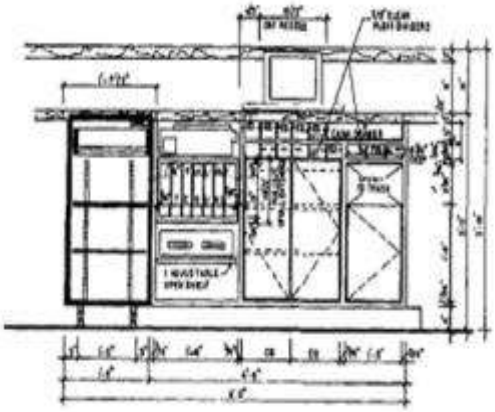


REGISTRATION DESK TROPICANA HOTEL

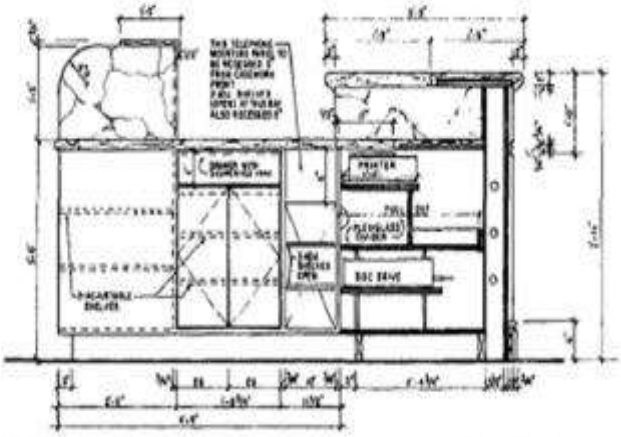


REGISTRATION DESK STORAGE

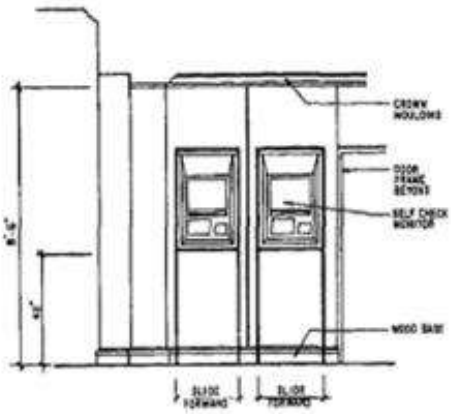
1½" = 1'-0"



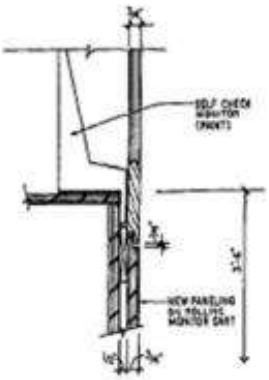
ELEVATION - REGISTRATION COUNTER



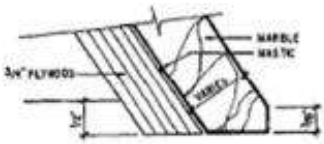
ELEVATION/SECTION - REGISTRATION COUNTER



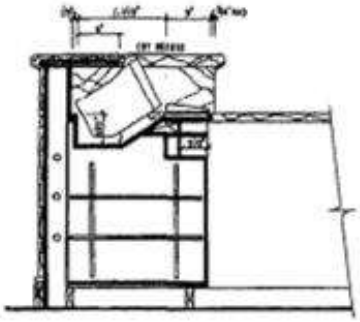
ELEVATION
AT SELF CHECK MONITOR



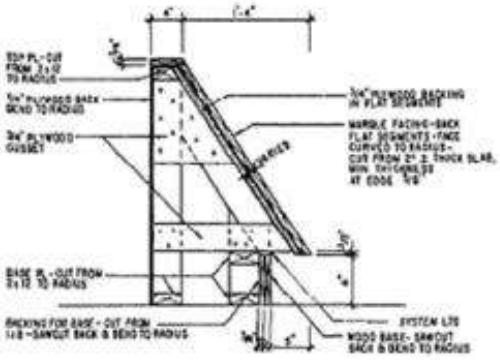
SECTION DETAIL
AT SELF CHECK MONITOR



SECTION DETAIL-
SETTEE



ELEVATION/SECTION-
REGISTRATION COUNTER



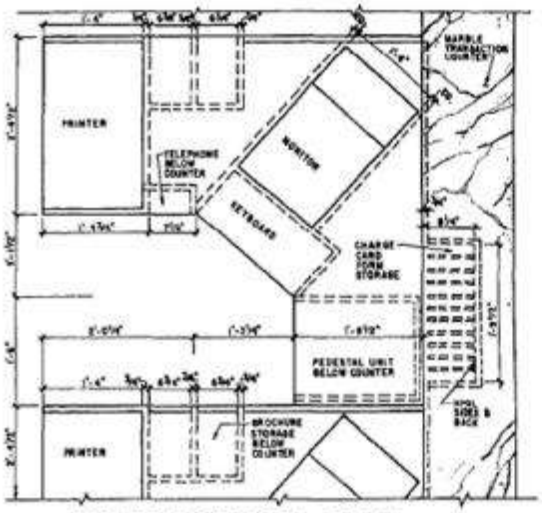
SECTION-CIRCULAR SETTEE BACK

3. Elevators servicing the hotel guest rooms should be readily visible from the front desk. This is not always feasible in extremely large hotels.

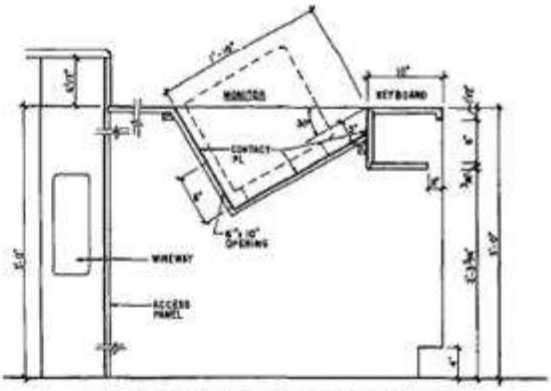
4. The front desk should be designed in such a way as to take into consideration the various users it will accommodate. Special attention should be given to the fact that hotel guests may be physically challenged or chairbound. The overall height, writing surfaces, and overhangs should be designed to accommodate a hotel guest seated in a wheelchair.

5. The basic front desk design should avoid, wherever possible, visual obstructions that block sightlines or create blind spots. Accordingly, columns and high walls should be avoided.

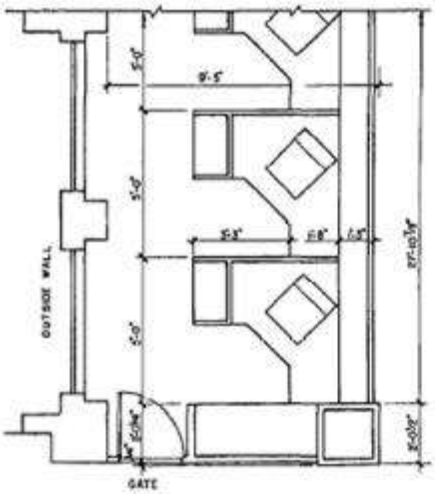
6. Equipment and custom elements that are typically incorporated within the front desk include computer monitors/CRTs with keyboards and printer, room racks, reservation racks, information racks, room status displays, mail drawers, key drawers, alpha guest listings, message-waiting display, credit card imprinters, fax and telex, guest/employee paging system, automatic wake-up system, electric receptacles, cable chases, alarm systems, and file and cash drawers.



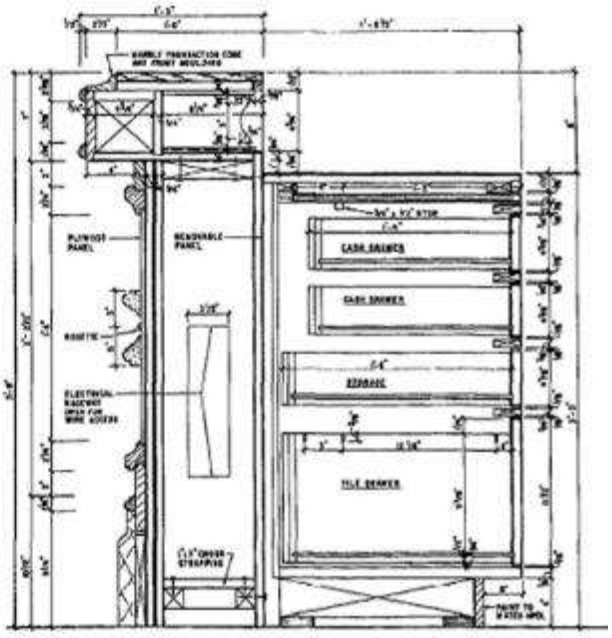
ENLARGED PARTIAL PLAN
REGISTRATION COUNTER
GRAND FLORIDIAN HOTEL



SECTION AT REGISTRATION DESK
GRAND FLORIDIAN HOTEL



PARTIAL PLAN
REGISTRATION COUNTER
GRAND FLORIDIAN HOTEL



SECTION AT COUNTER
GRAND FLORIDIAN HOTEL

project the appropriate hospitality image while at the same time integrating all of the required technologies. Figures 10 to 13 show examples of architectural working drawings and details that meet many of these requirements.

The design of a front desk or registration desk can take many forms and be constructed with a variety of materials. Regardless of the design vocabulary used or architectural style, certain important design considerations must be observed.

1. The number of persons actively staffing the counterlike facility will dictate both the width and overall depth of the front desk. It is suggested that between 5–7 ft be allocated per staff workstation and that one workstation be allocated for every 125–150 rooms. For every additional 125–150 rooms, an additional workstation should be provided. Peak check-in/check-out loads could require even more staff workstations.
2. The front desk should be easily accessible from and to the main hotel entrance. "Easily accessible" strongly implies clear visibility.

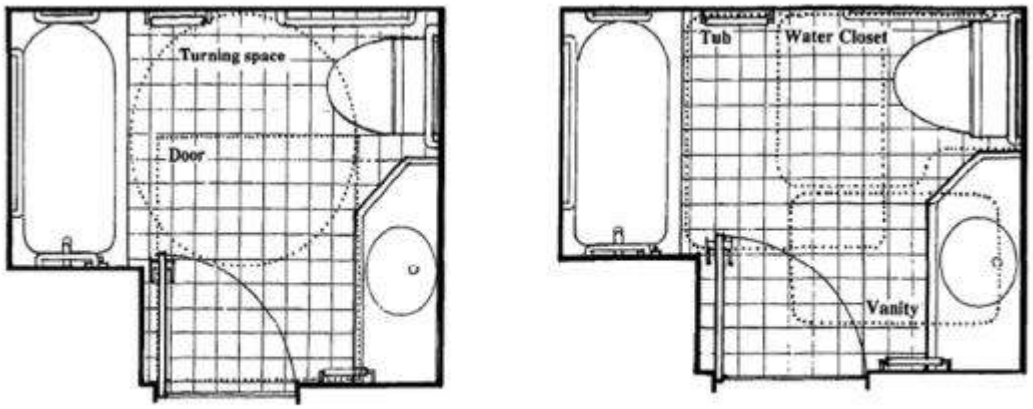
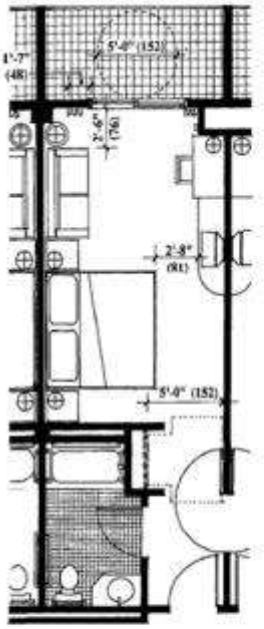


Fig. 9 These two diagrams illustrate the same bathroom plan with the required clearances for door operation and turning space and access to each fixture, including the tub/shower, vanity, and water closet. Clearances for maneuvering space, door operation, and individual fixtures can "overlap." Because of the vertical characteristics of wheelchairs, clearances can include toespace (9" high) below water closet and kneespace (2'3" high) below vanities.



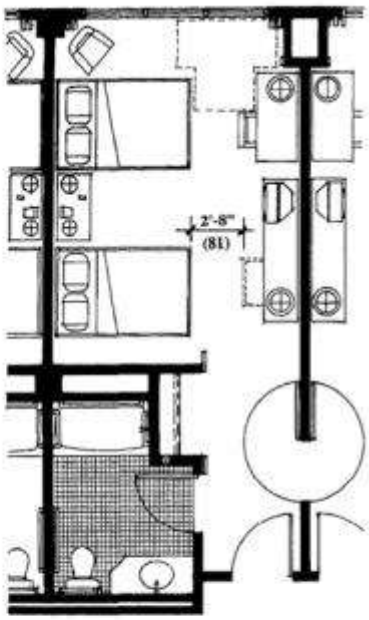
Suite with 14' Bay-spacing

Fig. 8 Accessible suites should meet the same requirements for accessible guestrooms and guest baths. Because suites are usually more generous in terms of space, providing accessibility is less difficult. If a small kitchenette is included, a kneespace 2'3" high should be provided below the sink. A countertop height of 2'10" (2" lower than standard) is suitable for both ambulatory guests and guests in wheelchairs. A pull-out tabletop at a height of 2'6" provides a workspace for guests in wheelchairs. The kitchenette should include a 5'0" turning space.



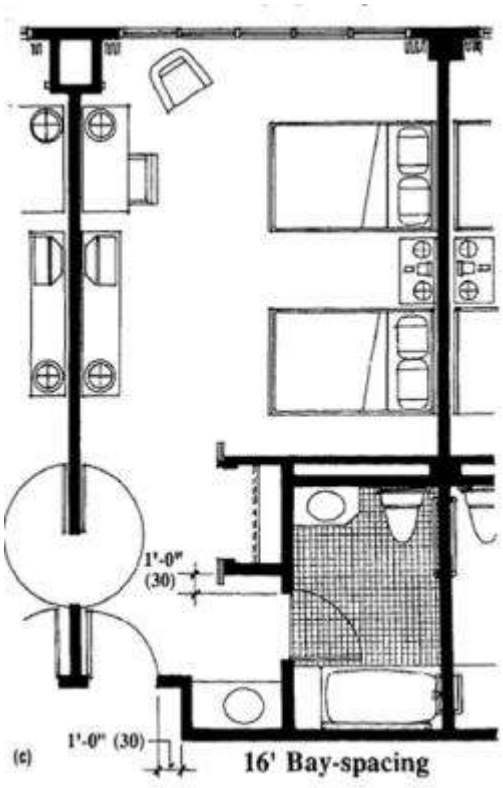
12' Bay-spacing

Fig. 6 This alternative 12'0" bay-spacing design requires the dresser to be offset from the foot of the bed. The bathroom wall is stepped back to provide clearances for the bathroom door and connecting door. The heating/cooling unit projects into the room to allow access to the thermostat. If balconies are provided, a minimum depth of 5'0" is recommended to allow guests with wheelchairs to turn around.

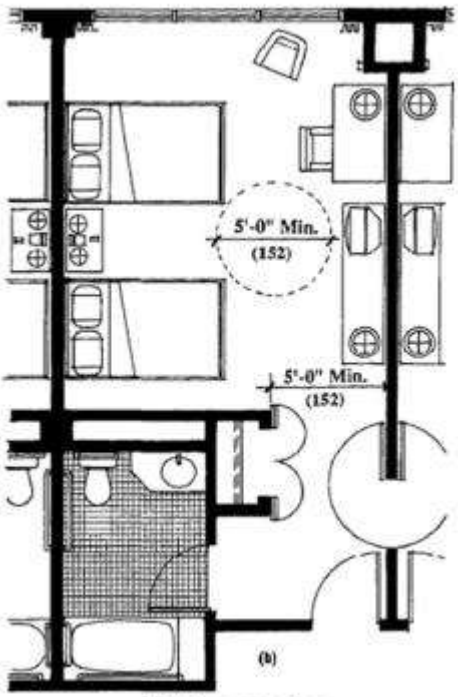


13' Bay-spacing

Fig. 7 A 13'0" bay-spacing provides room for wheelchair clearances, including a turning space in front of the closet and at the foot of the beds, an access aisle between the beds, a T-turnaround at the window aisle for access to temperature controls and blinds and drapes, door clearances, and a bathroom that meets ANSI standards.



16' Bay-spacing



15' Bay-spacing

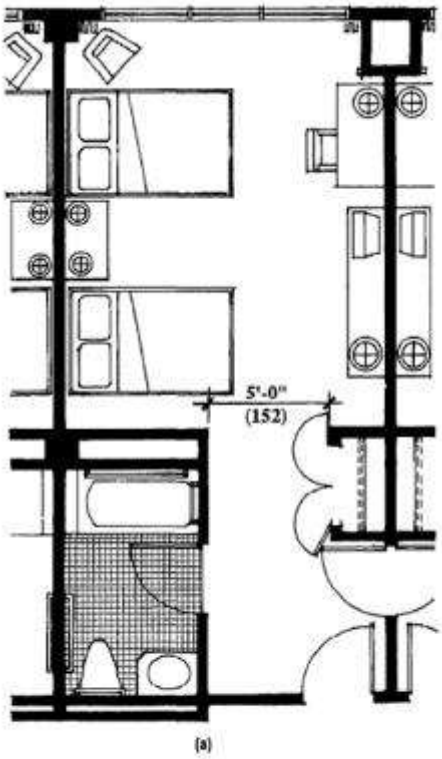


Fig. 5 Bay-spacings of *(a)* 14', *(b)* 15', and *(c)* 16' can easily accommodate guests with restricted mobility.

Guestroom Plans

Accessible guestrooms have design features and floor plans that provide the maneuvering clearances for guests with limited mobility. Figures 6 to 9 show sample plans of guestrooms and bathrooms with the required:

- Widths and clearances at the entry, connecting, closet, and bathroom doors
- Maneuvering space in front of the closet, in the sleeping area, and within the bathroom
- Clearances to use and transfer to fixtures in the bathroom
- Clearances to open dresser drawers, to maneuver into kneespace at the desk, and to access the bed, bedside table, windows, blinds, and thermostat

Clearances may depend on the design of specific furnishings. The width of the access aisle at the bed is determined by the design of the bedside table. Access to dressers is determined by the width of the drawer. The maneuvering space to turn into the desk is determined by the width of the kneespace.

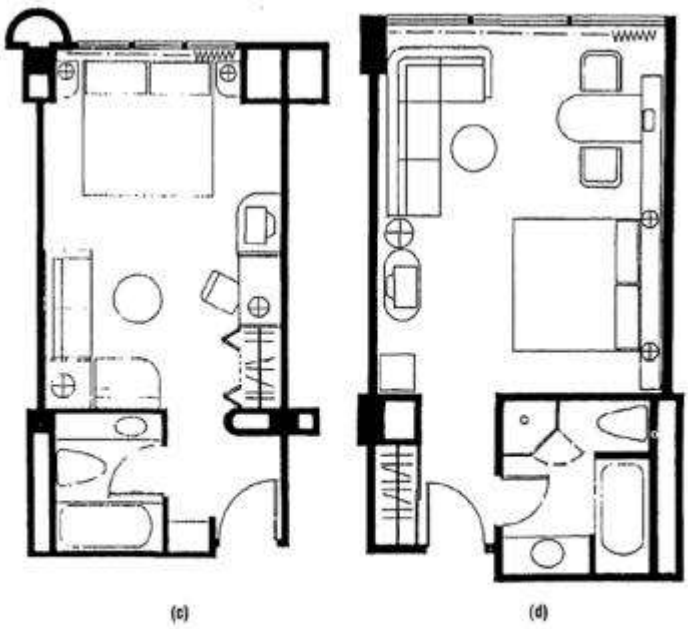


Fig. 2 Guestroom plans. *(a)* Typical double-double finishes plan: vinyl wallcovering (WC), paint (P), carpet (C), ceramic tile *(CT)* identified and keyed to legend. *(b)* King-studio (Holiday Inn): standard layout with armoire unit and large lounge area including a convertible sofa. *(c)* Reversed layout (Sheraton, Washington, D.C.): unusual room with bed placed in front of window and lounge area near bathroom. *(d)* Luxury king room (Sheraton Grande, Los Angeles): oversized room with shelf/ledge in place of headboard, large desk surface, and lounge area; four-fixture bathroom.

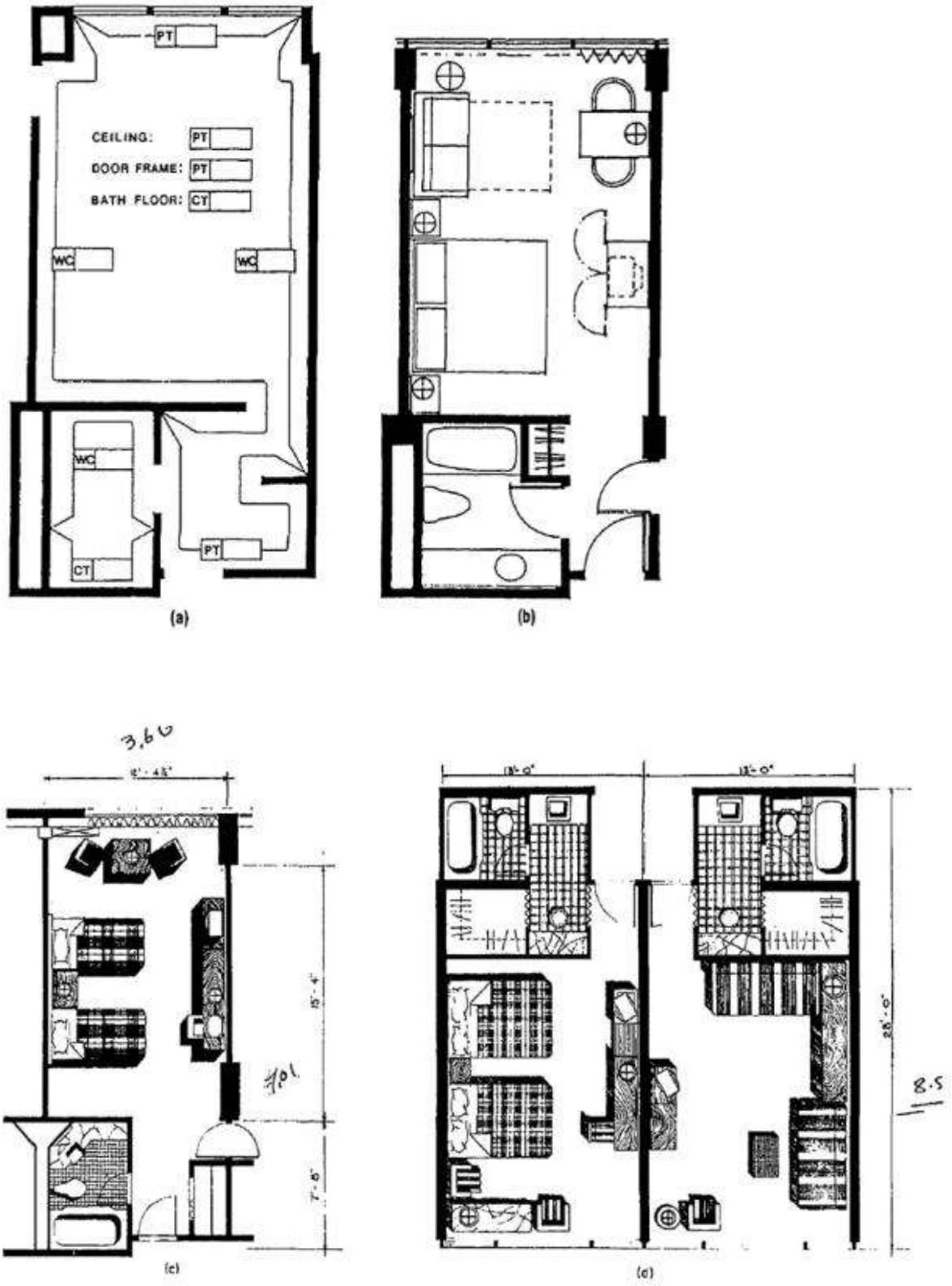
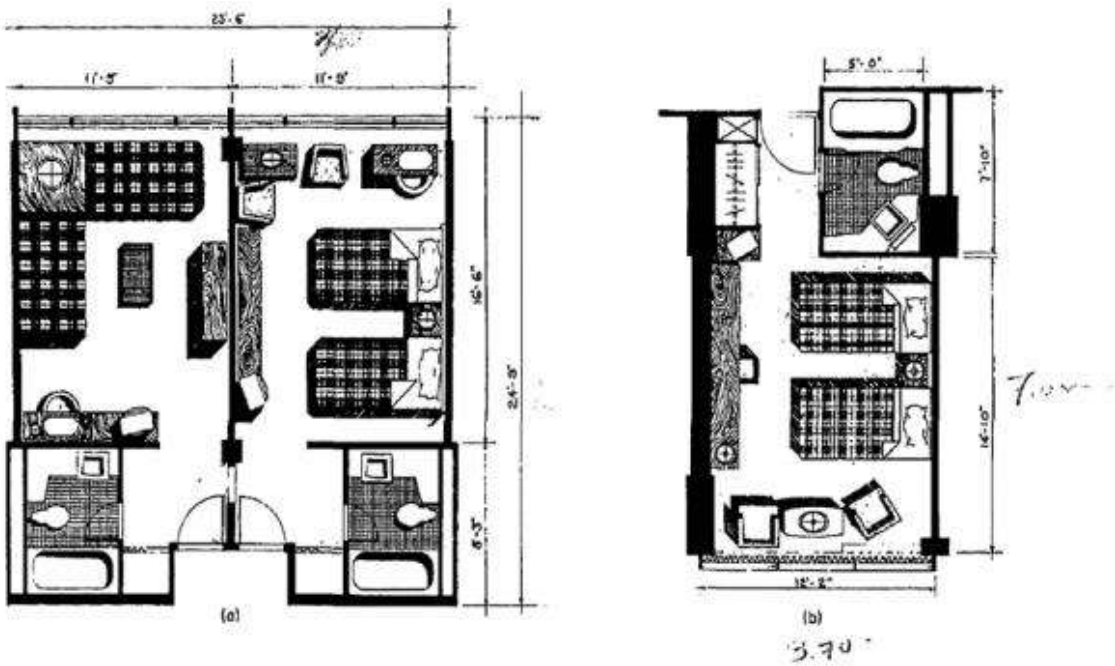


Fig. 1 *(a)* Uris Brothers Hotel, New York. *(b)* Americana Hotel, New York, typical tower room. *(c)* Loews N.Y. Motel, typical room. *(d)* Causeway Inn, Tampa, Florida.



2.8.1 Snack bar –

- Corner pub, bistro, cafe, restaurant: capacity 55-60 seats (2-4 place turnover at lunchtime, 2 in evenings). Between lunch and evening meals: serving coffee, cakes and snacks. Kitchen: supplied predominantly with pre-prepared items. Storeroom need not be particularly large if deliveries are daily.

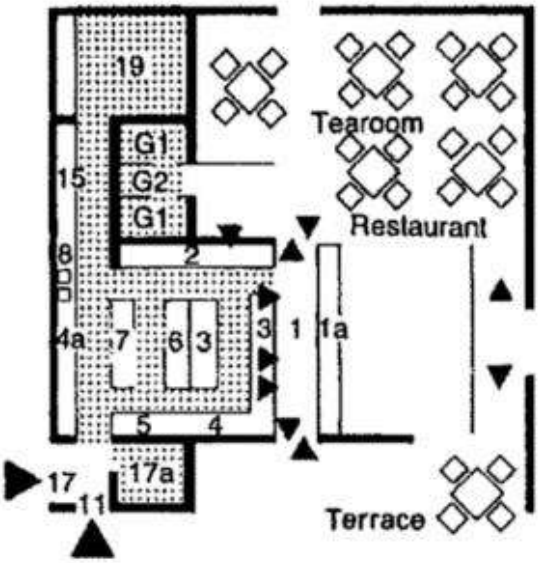


1 Snack bar

1	meals and drinks servery
2	dishwasher
2a	crockery returns
3	drinks bar with mixer, toaster, food containers etc.
4	oven for small pastry items
5	food storage
6	rotisserie
6/7	cooker rings
7a	water boiler and steam machine
8	pot and pan washer
11	stores/office; catering size refrigerators and freezers instead of cold store
19	staff toilets
G1	bar counter
G3	customer toilets

2.8.2 Cafe-restaurant-

With tea room. Urban business in heavy traffic location



1	waiters' walkway
1a	service counter and cash tills
2	dishwasher
3	drinks bar with mixer, toaster, ice cream freezer etc.
4	pastry preparation
4a	pastry oven
5	sandwich preparation
6	reheating equipment (e.g. soup)
7	cooker rings
8	pot and pan washer
11	empties
15	linen store
17	deliveries and (a) store
19	staff toilets and cloakroom
G1	toilets
G2	telephone cubicle

2 Café-restaurant

2.8.3 Cafe:

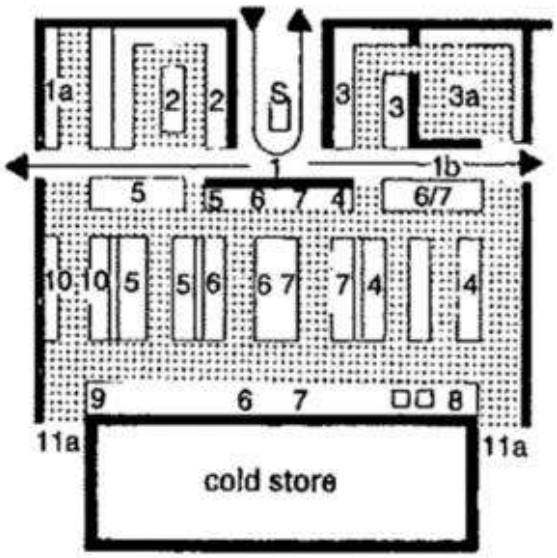
Alcohol-free drinks, except bottled premium beer, liqueurs etc., patisserie and light food- cold and hot.

2.8.4 Tea room:

Alcohol-free drinks, patisserie, sandwiches. Capacity approx. 150 seats, continuous operation 6.30 - 24.00. Kitchen: predominantly pre-prepared items, little storage.

2.8.5 Large hotel restaurant kitchen-

Also, for large catering establishments with side rooms, external deliveries or production for outside companies. Capacity 800-1000 people. Waiters' walkway: in the center with special service in the garden or also bowling alley and direct access to the side rooms. Kitchen: cell system fronted by the backs of the large appliances.

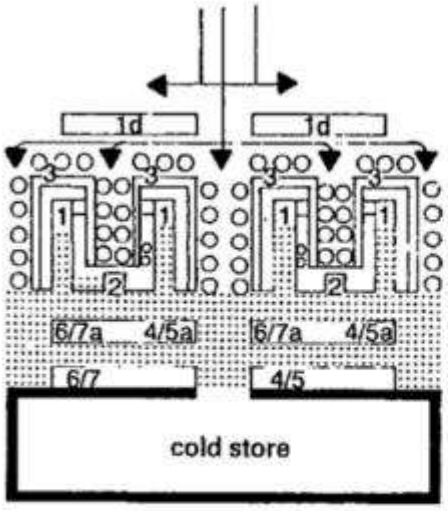


1	waiters' walkway
1a	garden service counter
2	dish-washing area
3	drinks counter
3a	drinks cellar
4	pastry counter
5	cold dishes
6	hot dishes and sauces
6/7	table with hot store
8	pot and pan washer
9	vegetable preparation
10	meat preparation
11a	deliveries, and access to stores, offices, staff cloakrooms and toilets
S	service accessories and tills

3 Large hotel restaurant kitchen

2.8.6 Restaurant with buffet and vending machines-

For fast midday meals in canteens, department stores and motorway services. Capacity 500 people/h. Kitchen: only warming of preprepared foodstuffs, except for salads and soups.

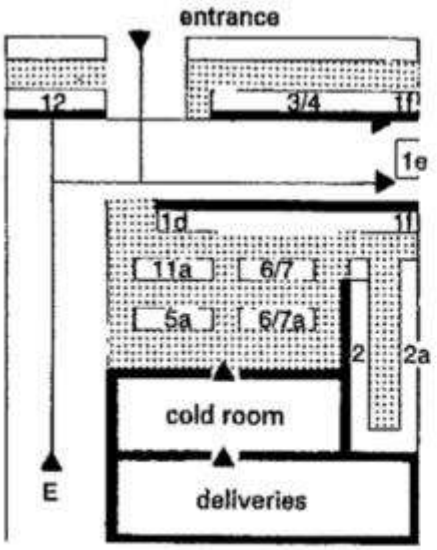


1	serving aisles in U-shaped counters
1d	vending machines
2	link between two counters with covered dishwashers, operated from both sides, each with two rinsing basins
4/5	cold meal preparation
4/5a	cold servery (salads, ices, desserts)
6/7	griddle, soup heater, water boiler etc.
6/7a	hot servery (bain-marie, hotplates)

4 Restaurant with buffet and vending machines

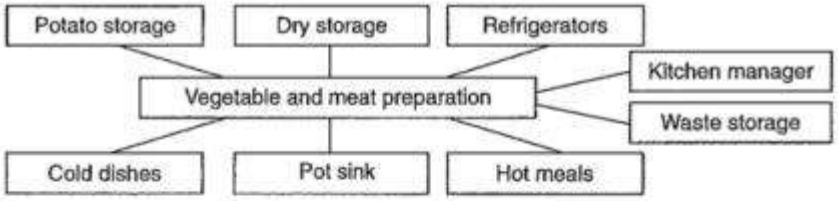
2.8.7 Self-service restaurant-

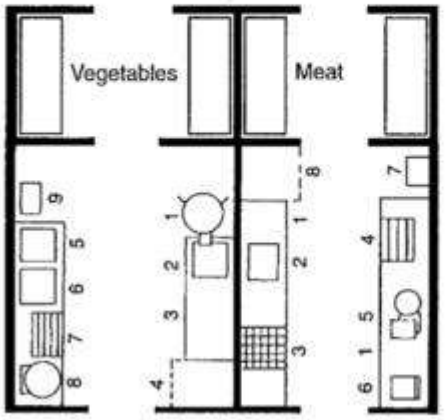
Suitable for department stores or attached to offices. Kitchen: no in-house production. Outside delivery and preparation using deep frozen process



1d	self-service buffet with grill and chip fryer
1e	sauces, condiments, cutlery
1f	cash till
2	dishwasher
2a	crockery returns
3/4	food and drinks servery (service to street possible)
5a	cold meal preparation table
6/7	heating units, used from both sides
6/7a	hot meal preparation table
11a	refrigerators, used from both sides
12	sales kiosk (serving inside and to street)
E	entrance

5 Self-service restaurant





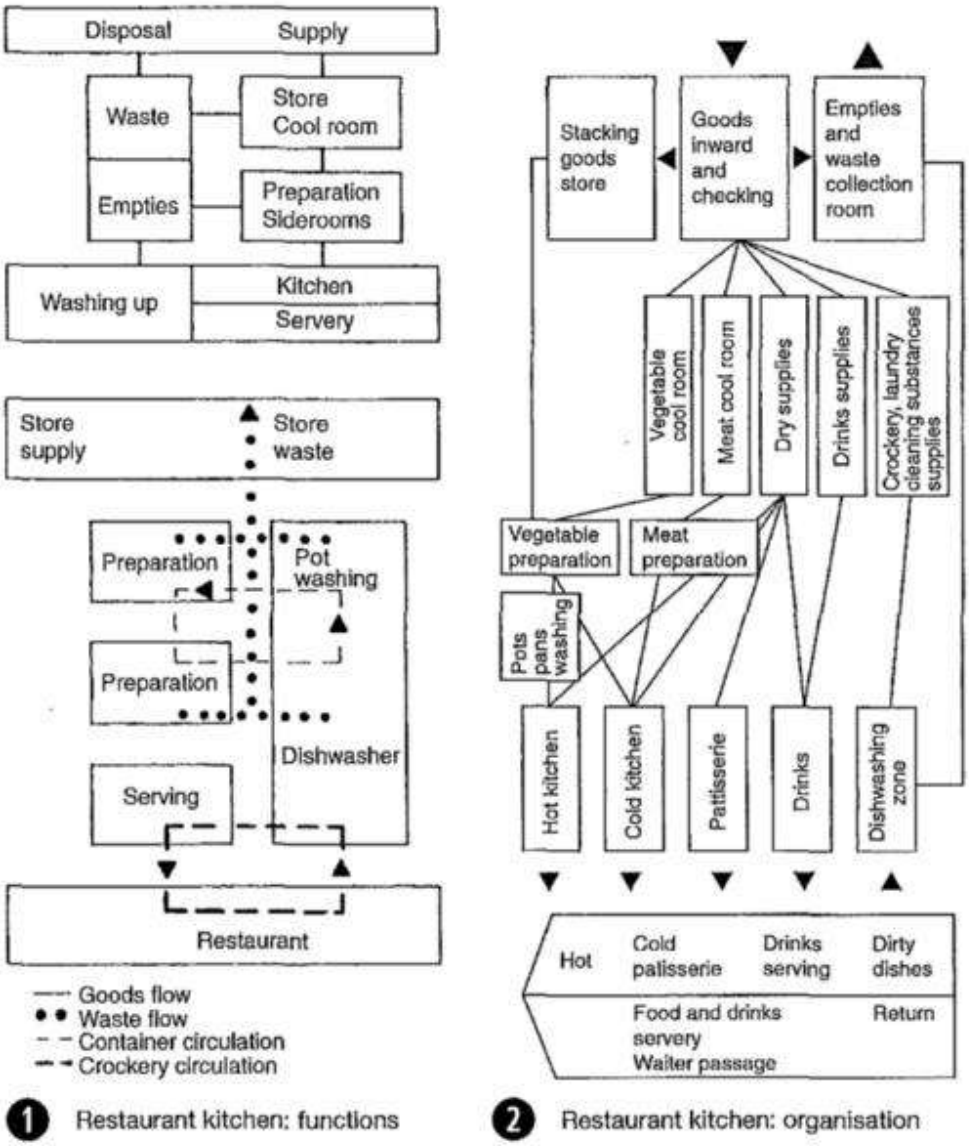
1 Peeling machine
2 Drip tray
3 Cleaning surface
4 Holding surface
5 Universal machine
6 Cutting board
7 Sink + Worktable
8 Hand wash basin
9 Worktable
10 Slicers
11 Freezer
12 Bench scale
13 Stir/beat machine

6 Separate preparation of vegetables and meat

2.8.8 Function and organization of the restaurant kitchen-

The capacity of the kitchen is primarily dependent on the number of customer seats, customer expectations (type, extent and quality of the meals offered), the proportion of products freshly prepared from raw (in contrast to ready-prepared food) and the rate of customer turnover all day or at mealtimes (consumer frequency).

In fast food restaurants the rule of thumb for seat changes is about 1-3 times per hour, in conventional restaurants about 2. In specialty and evening-based restaurants, the guests stay on average for 1.3-2 hours



2.8.9 Percentage of total kitchen space requirement-

Differentiated according to small, medium and large kitchens, floor area values for individual functions are be based on.

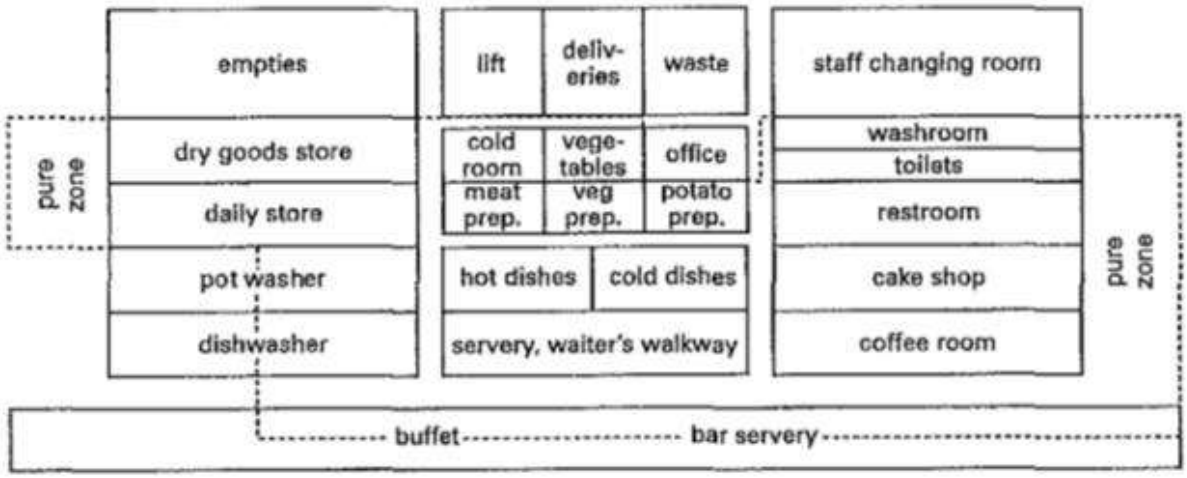
- Aisle widths in storage, preparation and production areas differ according to whether they are purely traffic routes or also overlap the service area. Working aisle widths should be 0.90-1.20 m, side traffic routes with (temporary) overlapping use 1.50-1.80 m and main traffic routes (transport and two-way through traffic) 2.10-3.30 m wide. For kitchen areas in small to medium restaurants, aisle widths of 1.00-1.50 m should be sufficient.
- Bistros, snack bars, small cafes - or specialty restaurants with 40-60 seats- are classified as small operations. Small to medium units (70-1 00 places) require on the other hand carefully zoned and fully equipped kitchen facilities. Large businesses (service areas, fast food restaurants, large hotel kitchens) achieve considerably higher place numbers, often with an integrated eating bar or self service areas.

Seats	80	120	200
goods inward	0.05–0.075	0.05–0.067	0.05–0.06
empties	0.05–0.075	0.05–0.067	0.05–0.06
waste/rubbish	0.05–0.075	0.03–0.050	0.03–0.04
delivery/disposal	0.15–0.225	0.13–0.183	0.13–0.16
cold room meat	0.05–0.075	0.05–0.067	0.04–0.05
cold room fruit and vegetables	0.05–0.075	0.05–0.067	0.04–0.05
cold room dairy products	fridge	0.03–0.05	0.03–0.05
cold room cold service	fridge	fridge	0.02–0.03
cool room drinks	fridge	fridge	0.05–0.07
freezer room	0.05–0.075	0.05–0.067	0.06–0.08
cooled goods delivery	0.15–0.225	0.183–0.25	0.24–0.32
store dry goods	0.15–0.175	0.117–0.13	0.09–0.1
store drinks	0.075–0.1	0.1–0.117	0.08–0.1
store non-food	0.075–0.1	0.067–0.083	0.07–0.08
cooled goods storage	0.3–0.375	0.283–0.33	0.24–0.28
vegetable preparation	0.075–0.1	0.067–0.083	0.04–0.05
meat preparation	0.075–0.1	0.05–0.067	0.04–0.05
fish/poultry preparation	0	0.03–0.05	0.03–0.04
hot kitchen	0.325–0.35	0.217–0.23	0.16–0.18
cold kitchen	0	0.05–0.067	0.04–0.05
patisserie	0	0	0.04–0.05
pot washing	0.05–0.075	0.05–0.067	0.03–0.04
office kitchen manager	0	0	0.03–0.04
kitchen facilities	0.525–0.625	0.47–0.567	0.41–0.5
dishwasher	0.1–0.125	0.1–0.117	0.09–0.1
service/waiter office	0.075–0.1	0.083–0.1	0.07–0.08
dishwasher/office	0.175–0.225	0.183–0.217	0.16–0.18
= Total	1.3–1.675	1.25–1.55	1.18–1.44

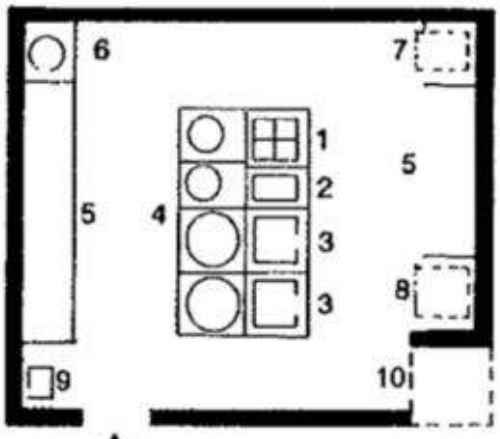
❸ Kitchen areas: space required (m^2/seat)

Area	Proportion (%)
goods delivery including inspection and waste storage	10
storage in freezer, cold and dry rooms	20
daily store	
vegetable and salad preparation area	2
cold dishes, desserts	8
patisseries/cakes	8
meat preparation	2
cooking area	8
washing area	10
traffic area	17
staff rooms and office	15
Total	100

❹ Basis for dimensions and space requirements

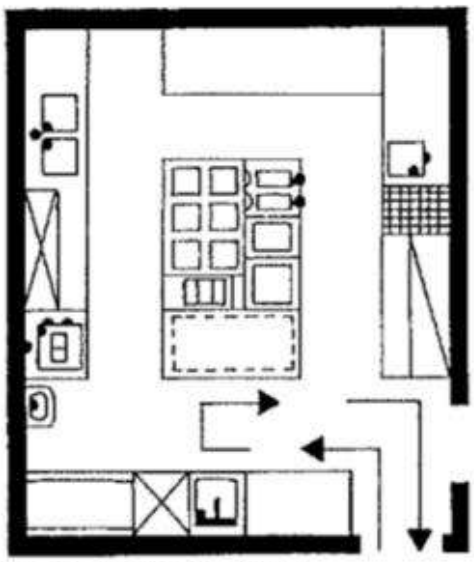


5 Kitchen areas: classification and relationships of functional areas in clean and unclean zones (if earth-covered vegetables are prepared, this must take place in a separate part of the unclean area!)



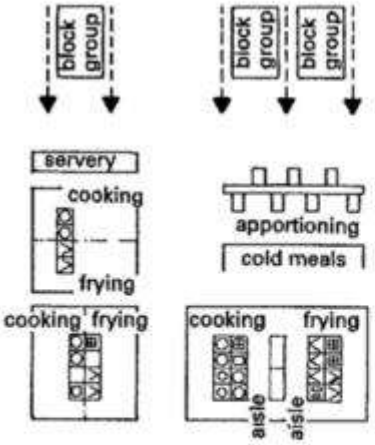
1 cooker
2 deep fat fryer
3 griddle
4 water boiler
5 work surface
6 cooker
7 double-deck oven
8 convectomat
9 hand basin
10 storage area

1 Basic organisation of the hot kitchen → **2** – **3**

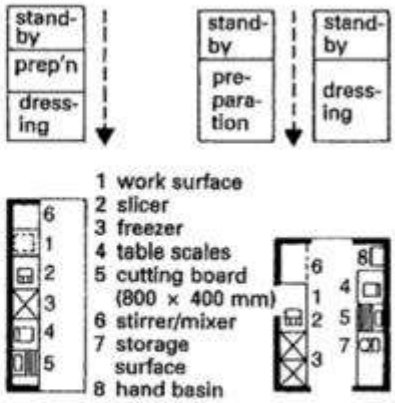


1. production in block

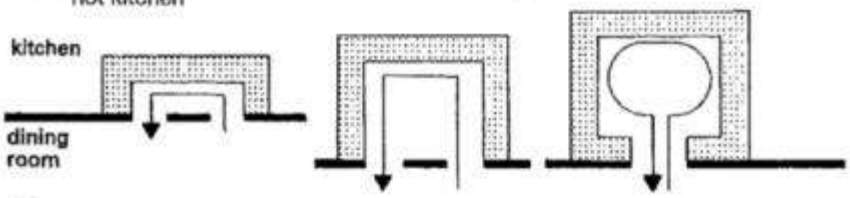
2 Kitchen for restaurant with 60–100 places



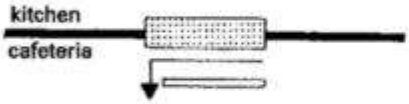
5 Functions and organisation of hot kitchen



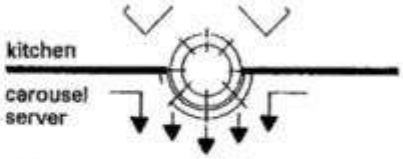
6 Organisation of cold kitchen



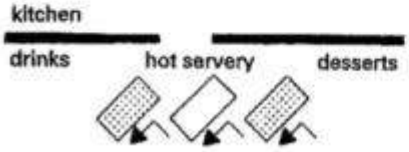
7 Servery, waiter walkway



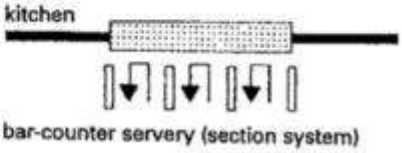
8 Self-service restaurant



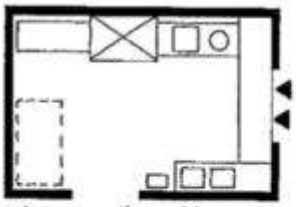
9 Self-service restaurant



10 Free-flow restaurant

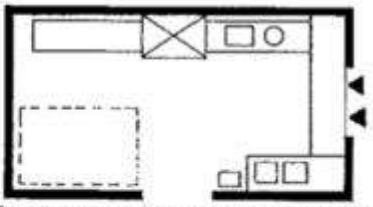


11 Self-service restaurant



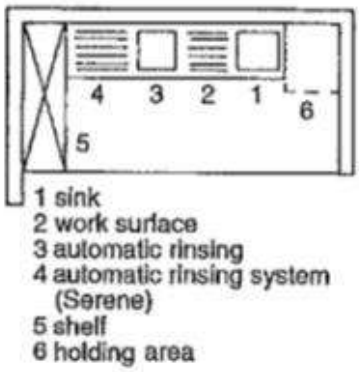
1: returns, sorting table; 2: sink; 3: waste clearance; 4: pre-wash; 5: dishwasher; 6: discharge table; 7: crockery area

12 Basic solution: dishwashing area

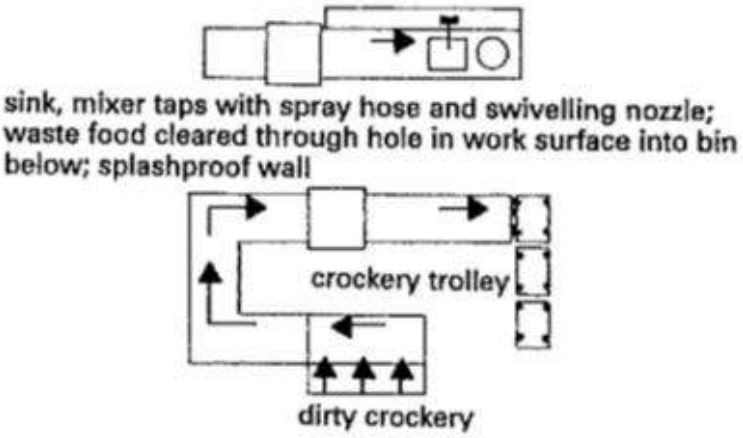


1: returns, sorting table; 2: sink; 3: waste clearance; 4: pre-wash; 5: dishwasher 6: discharge table; 7: crockery area

13 Basic solution: dishwashing area

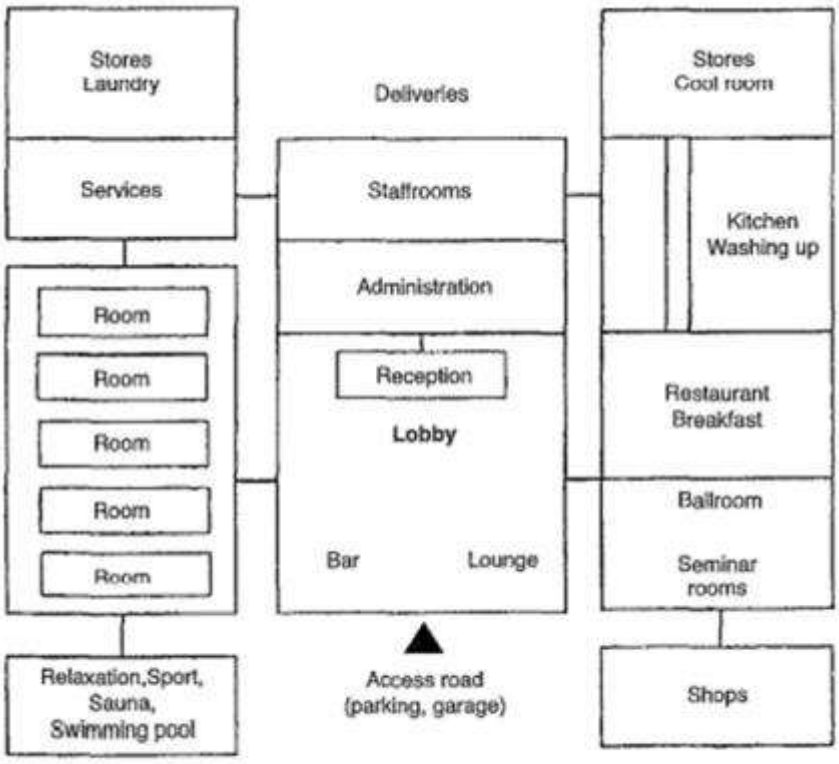


14 Basic solution: pot washing area



15 Functions and components of the dishwashing area

A scheme of the basic room and route relationships within a hotel is shown below



2 Room and access scheme of a hotel

The percentages of hotels' surface areas required for the various functions are shown below

1.	guest rooms, bathrooms, corridors, room service	50–60%
2.	public areas, lobby, reception etc.	4–7%
3.	catering	4–8%
4.	events, ballroom, seminar rooms	4–12%
5.	wellness/ fitness area	5–10%
6.	other areas, cosmetics, hairdresser	1–2%
7.	management, administration	1–2%
8.	service area, kitchen, staff rooms, stores	9–14%
9.	building services	5–10%

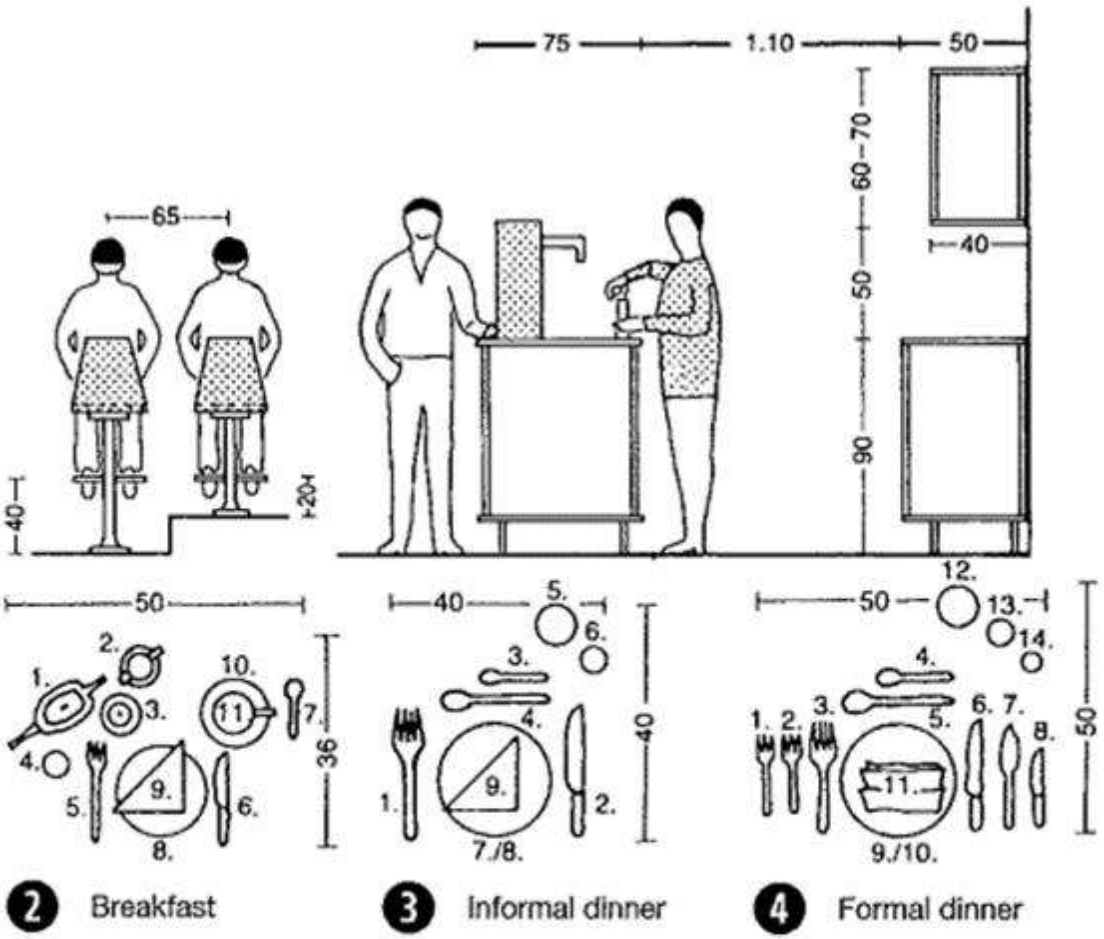
Parking and garage areas and special areas (e.g. wellness and bathing area) are also to be taken into account (and can vary widely according to the range of services)

	Hotel type	m^2/room
1.	luxury	90–110
2.	first class	60–70
3.	comfort	50–60
4.	standard (holiday hotel, motel)	40–60
5.	tourist (low-budget)	15–20

4 Guideline values for (above) shares of hotel surface area taken by each function and (below) gross areas per room in various categories of hotel

5 Stars (Luxury): as before, but single room 18m2 , double room 26m2, (minimum size, see above), 2% of the hotel rooms as suites (at least two), each with an armchair/sofa per bed, additional washbasin in double rooms and suites, additional colour television in suites, reception lobby.

To be able to eat in comfort, one person requires a table area around 60 em wide and 30-40 cm deepThis provides sufficient distance between adjacent diners. Although an additional 20 cm space in the centre for dishes and large bowls is sometimes desirable, an overall width of 80-85 cm is suitable for a dining table. If the food is served on plates, then 70 cm is sufficient, and for fast food 60 cm table depth.

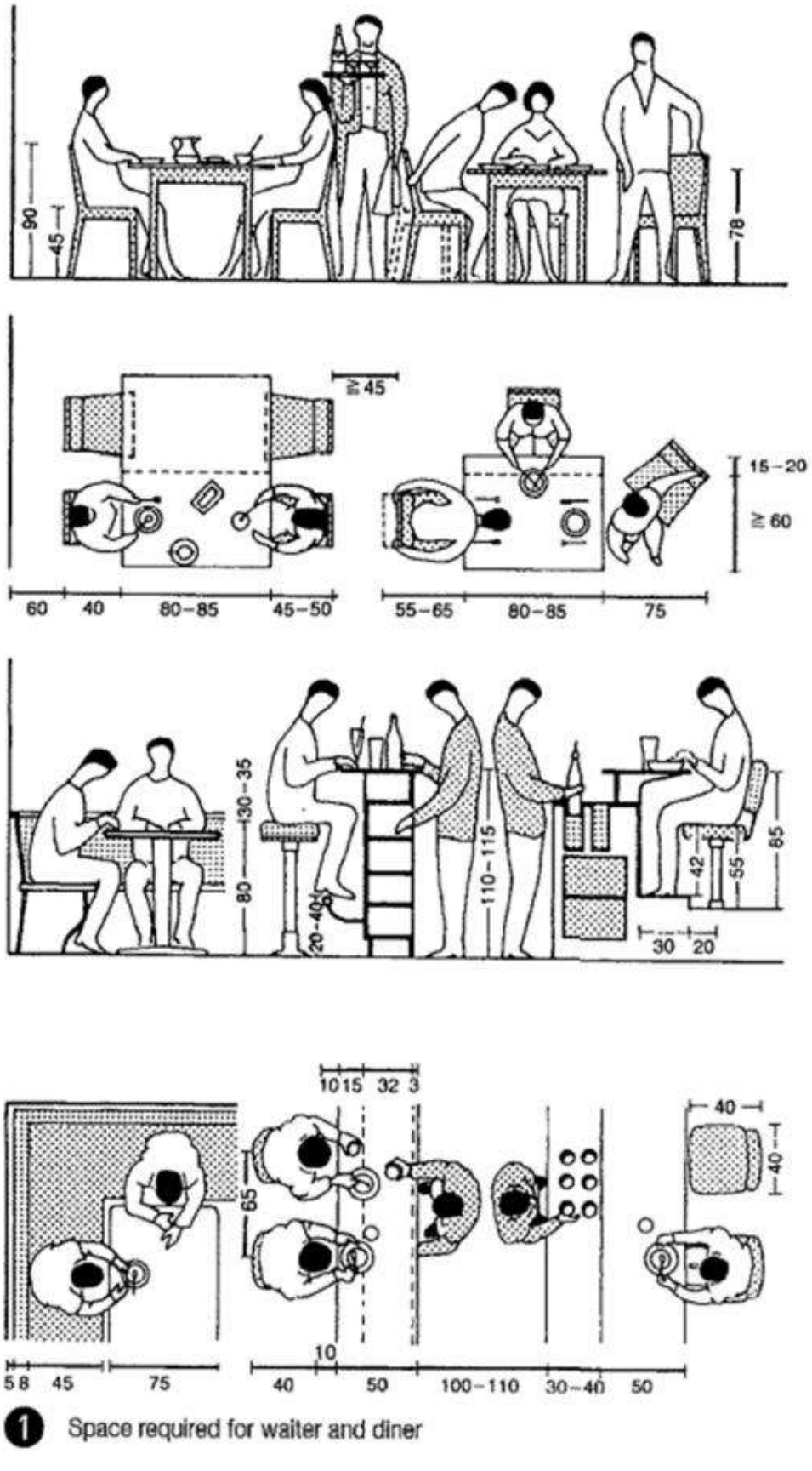


2 Breakfast setting: 1 tea or coffee pot; 2 milk jug; 3 jam or butter bowl; 4 sugar bowl; 5 dessert fork; 6 dessert knife; 7 coffee or tea spoon; 8 dessert plate; 9 napkin; 10 saucer; 11 coffee cup

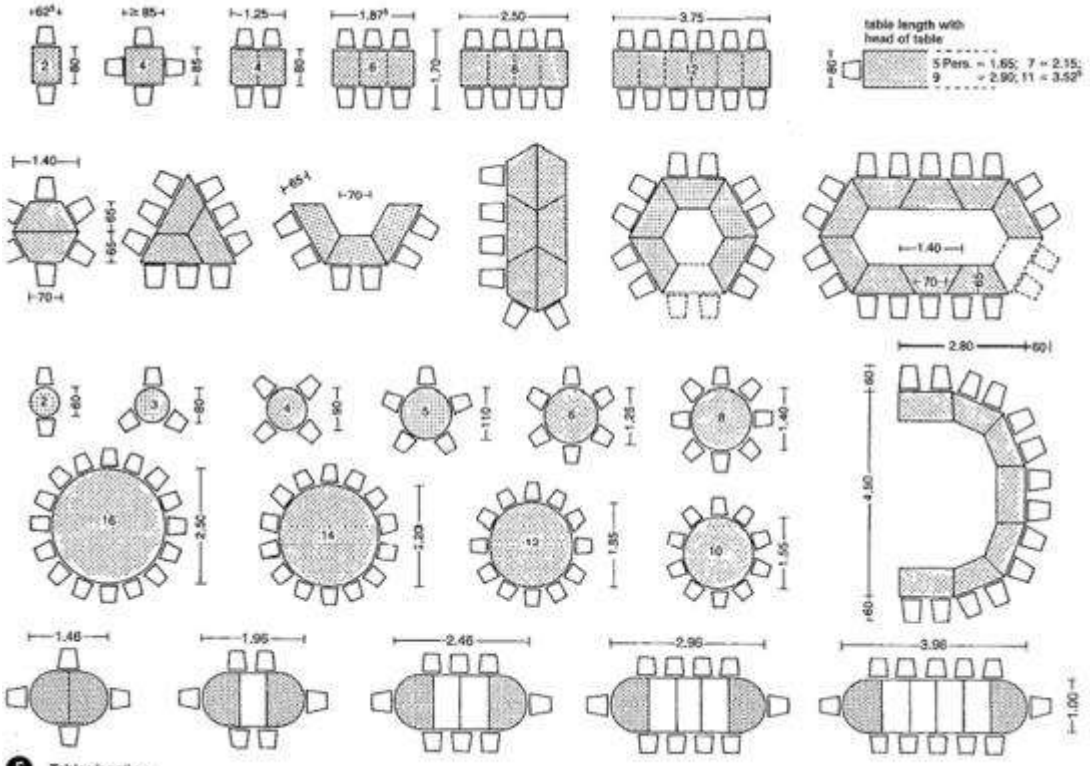
3 Informal dinner setting: 1 fork; 2 knife; 3 soup or dessert spoon; 4 spoon; 5 beer glass, 6 wine or dessert wine glass; 7 soup bowl; 8 dinner plate; 9 napkin

4 Formal dinner setting: 1 dessert fork; 2 fish fork; 3 fork, 4 soup or dessert spoon; 5 spoon; 6 knife; 7 fish knife; 8 dessert knife; 9 soup bowl; 10 dinner plate, 11 napkin; 12 beer glass; 13 red or white wine glass; 14 liqueur or dessert wine glass

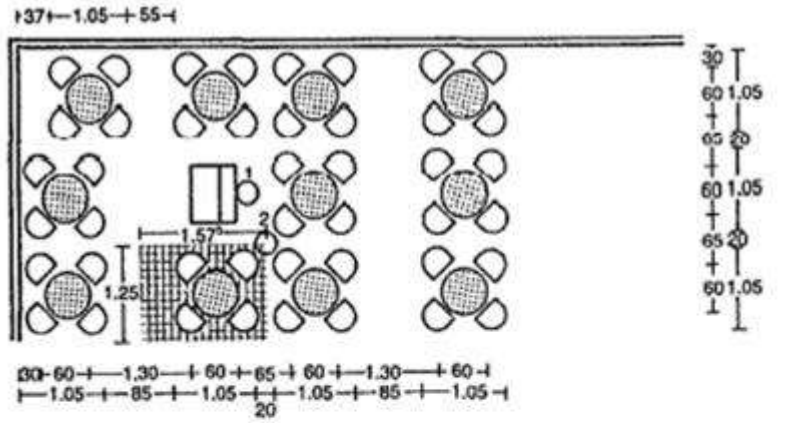
Distance between table and wall greater than equal to 75 cm because the chair alone requires a space of 50 cm. If the space between table and wall is also used for access, the distance should be greater than 100cm. Round tables need a little more space, a difference of up to 50 cm



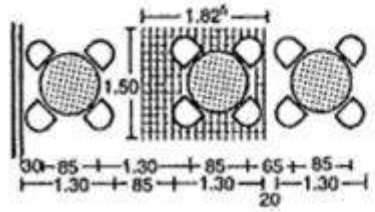
1 Space required for waiter and diner



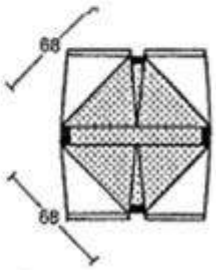
5 Tables/seating



5 Closest table spacing

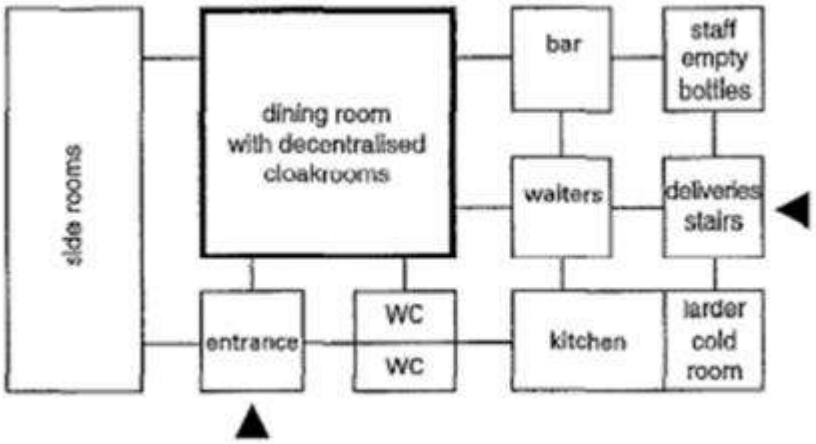


6 Tables in a café



7 Zuntz table

Larger dining rooms should be split into zones. Kitchen, side rooms, toilets and sanitary installations should be grouped around the dining room, also in the basement.

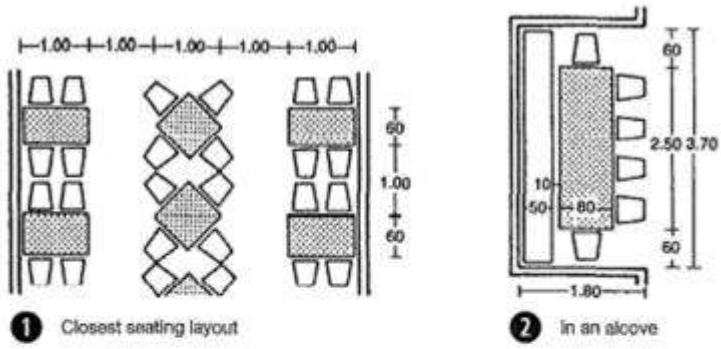


8 Functional scheme of a small restaurant

Type	Seat occupancy per meal	Kitchen floor area (m^2/cover)	Dining room floor area (m^2/seat)
exclusive restaurant	1	0.7	1.8–2.0
restaurant with rapid turnover, e.g. department store	2.5	0.5–0.6	1.4–1.6
standard restaurant	1.5	0.4–0.5	1.6–1.8
inn, guest house	1	0.3–0.4	1.6–1.8
for storerooms, personnel rooms etc., add approx. 60%			
cover = seat × seat turnover.			

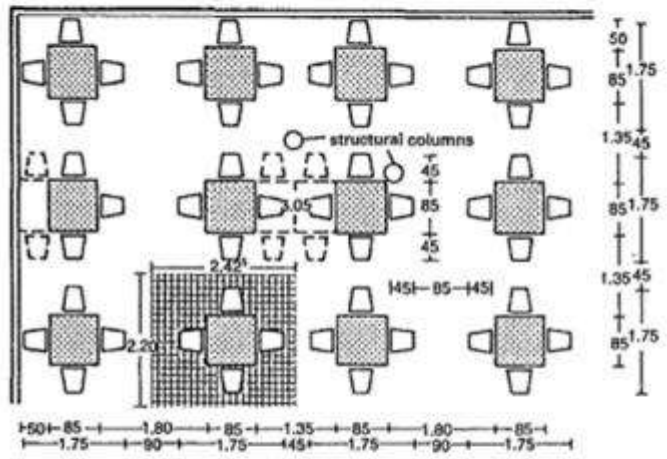
11 Space requirements

Columns in a dining room are best located in the centre of a group of tables or at the corners of the tables. The ceiling heights of dining areas with a floor area less than equal to 50 m2 = 2.50 m, > 50 m2 = 2.75 m and >100m2 greater than equal to 3.00 m; above or below galleries greater than equal to 2.50 m.

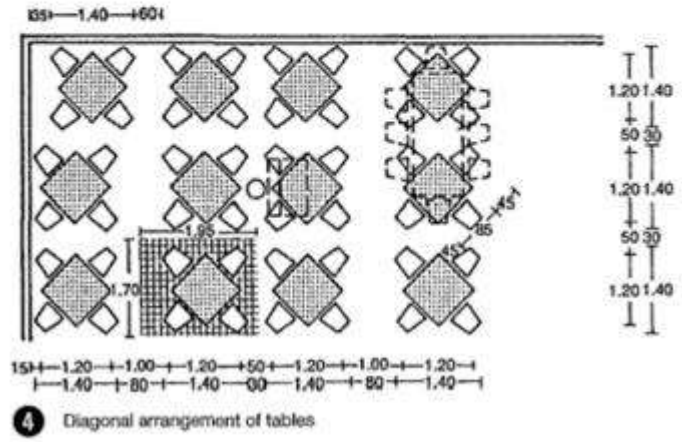


1 Closest seating layout

2 In an alcove



3 Parallel arrangement of tables



4 Diagonal arrangement of tables

Emergency exits 1.0 m wide per 150 people using them. Minimum clear width of aisles in restaurants 0.80 m, doors 0.90 m.

Floor area of dining room	Usable walking width
≤100 m²	≥1.10 m
≤250 m²	≥1.30 m
≤500 m²	≥1.65 m
≤1000 m²	≥1.80 m
>1000 m²	≥2.10 m

9 Usable width of stairs

Toilets in public houses, bars or restaurants: Stairs to toilets, wash, staff and storage rooms, usable width less than equal to 1.1 0 m. Clear walkthrough height less than equal to 2.10 m measured vertically. Window area less than equal to 1/10 of the floor area of a restaurant

Dining places	WCs, gents	WCs, ladies	Urinals, no.	Channel (m)
≤50	1	1	2	2
≤50–200	2	2	4	3
= 200–400	3	4	n	4
≥400	– decision for each case –			

10 Toilet facilities

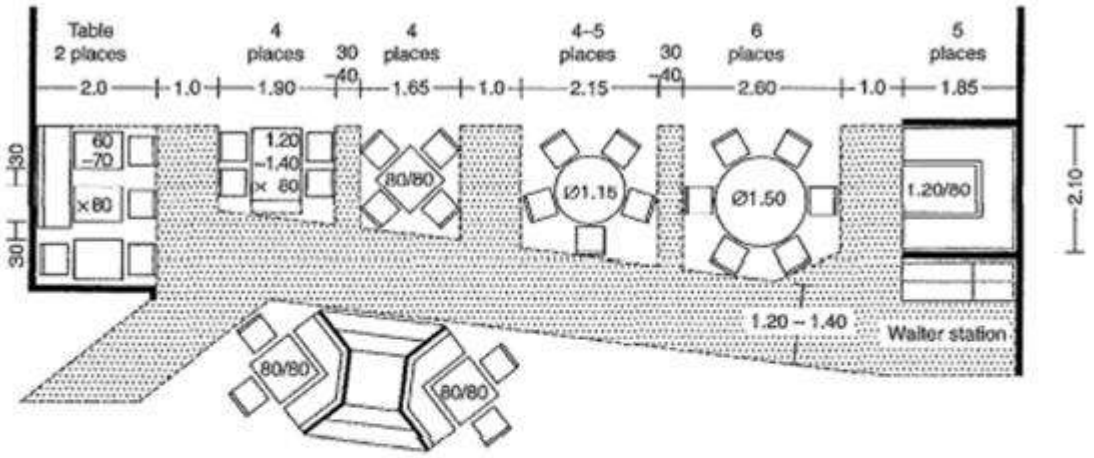
Furnishing (tables)	No. places	Waiter (m²/place)	Self-service (m²/place)
square	4	1.25	1.25
rectangular	4	1.10	1.25
rectangular	6	1.00	1.05
rectangular	8	1.10	1.10

12 Total space required for dining room: 1.4–1.6 m²/place

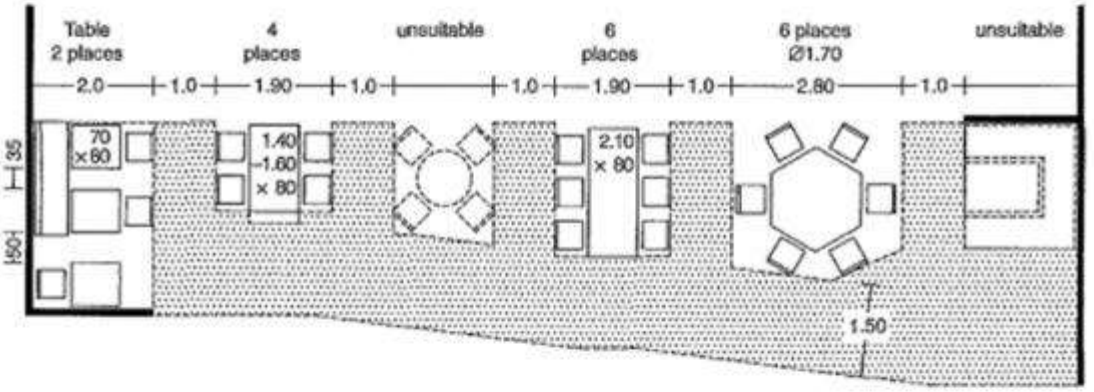
main aisles	min. 2.00 m wide
intermediate aisles	min. 0.90 m wide
side aisles	min. 1.20 m wide

13 Aisle widths

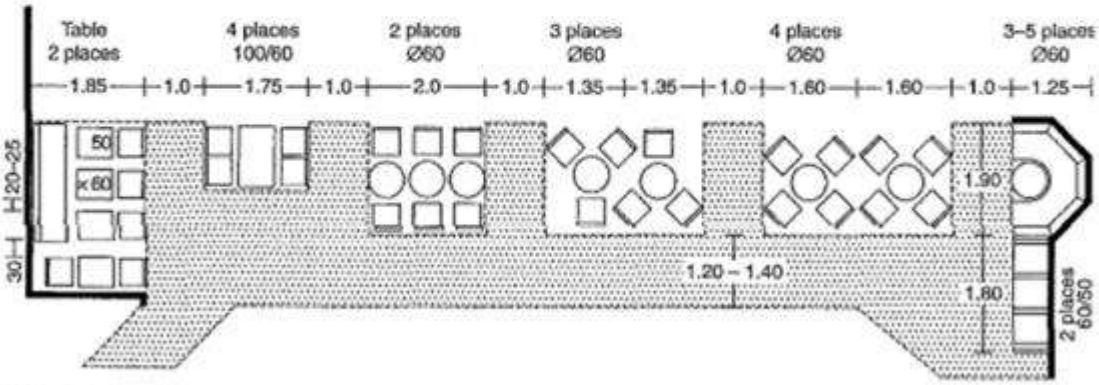
Diagonal arrangement of the tables generally takes up less space than an aligned pattern, with a space saving of up to 35%.



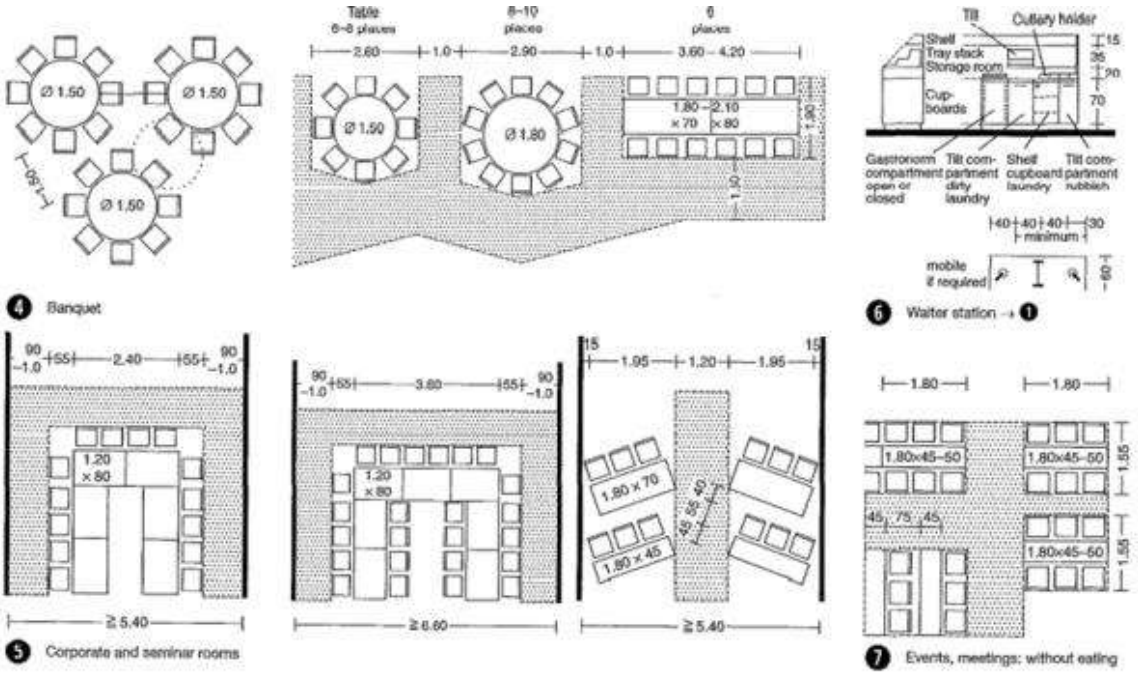
1 Table sizes in a restaurant: with predominantly plate service the table depth can be reduced to 70 cm



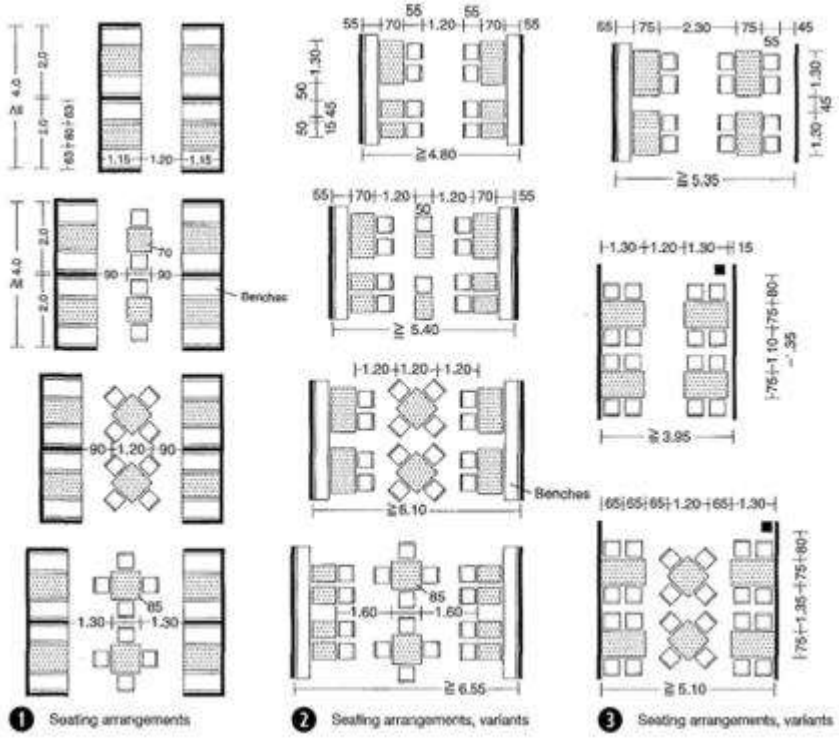
2 In a self-service restaurant



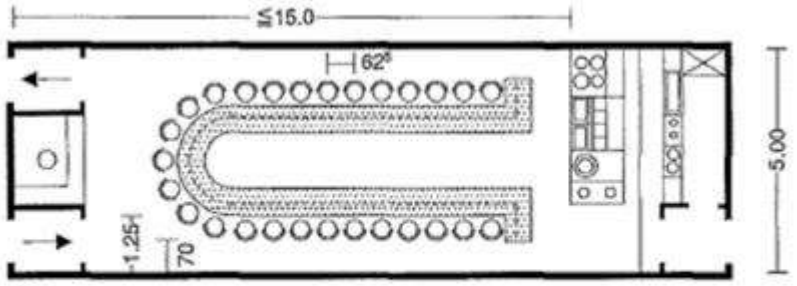
3 Bistro–café–bar



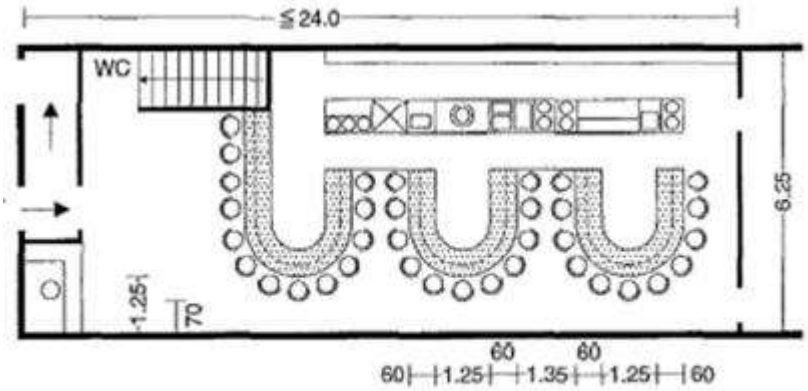
Tables and chairs are kept as small as possible and tightly grouped.



The customer space, 1.50-2.15 m2 per person, features groups of seats and the longest possible bar at which to eat.

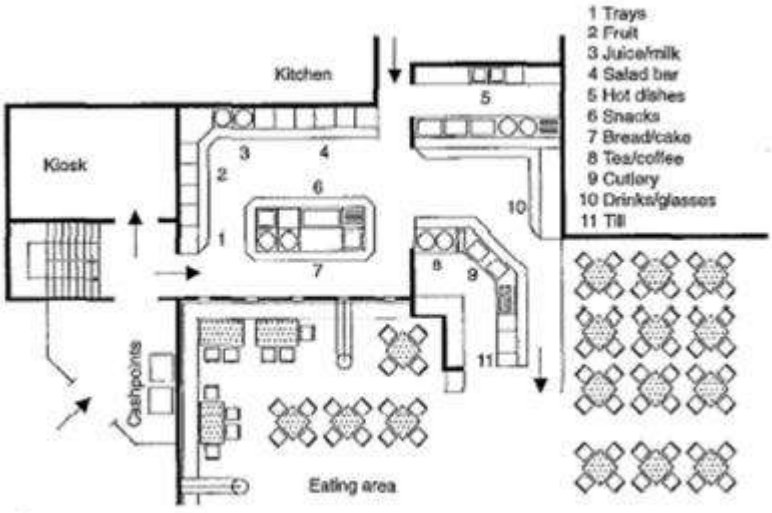


5 Space required for a horseshoe-shaped bar for eating



6 Space required for a horseshoe-shaped bar for eating, variant

a built-in kiosk will be able to serve food on the pavement as well as indoors



7 Example of a fast food restaurant, self-service

2.9 NATIONAL BUILDING CODE

2.1. NATIONAL BUILDING CODES

MEANS OF ACCESS:

Other Buildings For all assembly buildings like, Hotels, theatres, cinema houses, assembly halls, stadia; educational buildings; markets, hospitals; industrial buildings, and other buildings which attract large crowds, the means of access shall not be less than -

Sl No.	Width of Means of Access m	Length of Means of Access m
i)	12.0	200
ii)	15.0	400
iii)	18.0	600
iv)	24.0	above 600

Minimum Setbacks:

Setbacks based on Plot Sizes The following table may be referred to for deciding the minimum setbacks for different-size plots in various use zones. The size of plots should be decided after taking into account the provisions of the National Housing Policy and Urban Land (Ceiling and Regulation) Act. The setbacks, if necessary, may be changed depending upon the local situations and specified in the Development Plans and Building bye-laws:

Setbacks with respect to Abutting Road Width

Sl No. (1)	Front Open Space, Min m (2)	Width of Street Fronting the Plot m (3)
i)	1.5[1]	Up to 7.5[1]
ii)	3.0	7.5 to 18
iii)	4.5	18 to 30
iv)	6.0	Above 30

[1] For buildings up to a maximum height 7 m.

NOTE – In case a building abuts two or more streets, the value of open spaces is to be based on the average width of streets, subject to a minimum of 1.8 m for Sl No. (ii), (iii) and (iv).

A. Front Setback

Note: For streets less than 7.5 m in width, the distance of the building (building line) shall be at

At least 5m from the center line of the street.

B. Rear and Side setback for building heights above.

The open areas provided in the buildings can be used for the following permissible activities:

a. Garden, rockery, water well and well structures, plant nursery, water pool, swimming pool (if uncovered), platform around a tree, landscaping, tank, fountain, bench, chabutra with open top and unenclosed on sides by walls and the like.
b. Drainage culvert, conduit, catch pit, gully pit, chamber, gutter and the like.
c. Compound wall, gate, un-storied porch and portico, canopy, slide, swing, uncovered staircase, ramps areas covered by chajja and the like.
d. Watchmen's booth, suction tank and pump-house, garbage shaft, sanitary block, parking lock up garages, electric cabin or substations and such other utility structures meant for the services of the building under consideration.

Table 4 Side and Rear Open Spaces for Different Heights of Buildings

(Clause 8.2.3.1)

Sl No.	Height of Building m	Side and Rear Open Spaces to be Left Around Building m
(1)	(2)	(3)
i)	10	3
ii)	15	5
iii)	18	6
iv)	21	7
v)	24	8
vi)	27	9
vii)	30	10
viii)	35	11
ix)	40	12
x)	45	13
xi)	50	14
xii)	55	16
xiii)	70	17
xiv)	120	18
xv)	Above 120	20

NOTES

1 For buildings above 24 m in height, there shall be a minimum front open space of 6 m.

2 Where rooms do not derive light and ventilation from the exterior open space, the width of such exterior open space as given in col 3 may be reduced by 1 m subject to a minimum of 5 m and a maximum of 8 m. No further projections shall be permitted.

3 If the length or depth of the building exceeds 40 m, add to col (3) ten percent of length or depth of building minus 4.0 m subject to maximum requirement of 20 m.

For high-rise buildings and buildings other than residential, the following additional provisions shall be ensured:

a) The width of the abutting main street shall not be less than 12 m and one end of this street shall join another street not less than 12 m in width.
b) The approach to the building and open spaces on all sides up to 6 m width and the layout shall be done in consultation with the Chief Fire Officer of the city.
c) The main entrance to the plot shall be of minimum 6 m width to allow easy access to the fire engine.

Ventilation shaft

For ventilating the spaces for water-closets and bath rooms, if not opening on to front, side, rear or interior open spaces is given below:

Sl No.	Height of Building	Size of Ventilation Shaft	Minimum One Dimension of the Shaft
	m	m^2	m
(1)	(2)	(3)	(4)
i)	Up to 10	1.2	0.9
ii)	12	2.8	1.2
iii)	18	4.0	1.5
iv)	24	5.4	1.8
v)	30	8.0	2.4
vi)	Above 30	9.0	3.0

NOTES

1 For buildings of height above 30 m, a mechanical ventilation system shall be installed besides the provision of minimum ventilation shaft.

2 For fully air conditioned residential/business buildings, the ventilation shaft need not be insisted upon, provided the air conditioning system works in an uninterrupted manner, also, provided there is an alternative source of power supply.

Accessory building

The following accessory buildings may be permitted in the open spaces:

a) In an existing building, a sanitary block of 2.4 m in height subject to a maximum of 4 m2 in the rear open space at a distance of 1.5 m from the rear boundary may be permitted, where facilities are not adequate.

b) Parking lock-up garages not exceeding 2.4 min height shall be permitted in the side or rear open spaces at a distance of 7.5 m from any road line or the front boundary of the plot.

c) Suction tank and pump room each up to 2.5 m2 in are

GROUND COVERAGE & FAR

S.No.	Hierarchy of Commercial Centre	Maximum Ground Coverage	(%)	Maximum FAR		Maximum Height	(m)	Other Controls
		Plains	Hills	Plains	Hills	Plains	Hills	
1.	Cluster Centre Convenience Shopping	40	40	60	60	15	6	
2.	Neighbourhood Centre	30	35	100	100	15	9	
3.	Community Centre	25	30	100	100	26	15	
5.	Sub city centre	--	--	--	--	--	--	Controls to be as per requirement
6.	City Centre	25 (MPD, pg 59)	--	150 (MPD, pg 59)	--	--	--	Other controls to be as per requirement
7.	Hotel	40 (MPD, pg 59)	--	225	--	--	--	Other controls to be as per requirement

WATER SUPPLY

A public protected water supply system aims to supply safe and clean water in adequate quantity, conveniently and as economically as possible. Rising demand of water due to rapid urbanization is putting enormous stress

S. No.	Institutions	Litres per head per day
1	Hospital (including laundry) a. no of beds exceeding 100 b. no. of beds not exceeding 100	a. 450 (per bed) b. 340 (per bed)
2	Hotels	180 (per bed)
3	Hostels	135
4	Restaurants	70 (per seat)

FIRE FIGHTING:

The CPHEEO Manual recommends fire-fighting water demand as a function of population, i.e. water demand for fire-fighting purposes = $100\sqrt{P}$, where P stands for a forecasted population that may be adopted for communities larger than 50,000. It is desirable that one-third of fire-fighting.
The requirements from part of the service storage. The balance requirement may be distributed in several static tanks at strategic points.
These static tanks may be filled from nearby ponds, streams, or canals by water tankers wherever feasible.
The pressure required for fire-fighting would have to be boosted by fire engines.

SOLID WASTE MANAGEMENT

Municipal Solid Waste (MSW) is the trash or garbage that is discarded day to day in human settlements. According to MSW Rules 2000 MSW includes commercial and residential wastes generated in municipal or notified areas in either solid or semisolid form excluding industrial hazardous wastes but including treated bio-medical wastes. Waste generation encompasses activities in which materials are identified as no longer being of value (being in the present form) and are either thrown away or gathered together for disposal. The following table indicates the waste generation per capita per day for estimation and forecast of waste generation for the future for planning purposes:

S.No.	Land use type	Estimated waste generation
1	Residential refuse	0.3 to 0.6 kg/cap/day
2	Commercial refuse	0.1 to 0.2 kg/cap/day
3	Street sweepings	0.05 to 0.2 kg/cap/day
4	Institutional refuse	0.05 to 0.2 kg/cap/day

FOOTPATHS AND PATHWAYS

Footpaths

Footpath should be normally designed for a pedestrian Level of Service (LOS) B, thereby providing wide pedestrian facilities for safe, pleasant, and comfortable walking. Under resource constraints, LOS C may be adopted for deciding the width of the footpath mentioned in Table 2. The width of footpaths depends upon the expected pedestrian traffic and may be fixed with the help of the following norms subject to not being less than 1.8 m.

The land use adjacent to roads significantly influences the generation of pedestrian traffic. Recommended width of footpath along various land uses are given in

Table 2 Capacity of Footpath and Design
(*Clause* 4.3.2.1.1)

Sl No.	Width of Footpath	Design Flow in Number of Persons Per Hour			
		In Both Directions		All in One Direction	
	m	LOS B	LOS C	LOS B	LOS C
(1)	(2)	(3)	(4)	(5)	(6)
i)	1.8	1 350	1 890	2 025	2 835
ii)	2.0	1 800	2 520	2 700	3 780
iii)	2.5	2 250	3 150	3 375	4 725
iv)	3.0	2 700	3 780	4 050	5 670
v)	3.5	3 150	4 410	4 725	6 615
vi)	4.0	3 600	5 040	5 400	7 560

Table 3 Required Width of Footpath as per Adjacent Land Use
(*Clause* 4.3.2.1.1)

Sl No.	Description	Width m
(1)	(2)	(3)
i)	Minimum free walkway width and residential/mixed use areas	1.8
ii)	Commercial/Mixed use areas	2.5
iii)	Shopping frontages	3.5 to 4.5
iv)	Bus stops	3
v)	High intensity commercial areas	4

AREA AND HEIGHT LIMITATIONS

General The limitation of area and height of buildings of different occupancy classes and types of construction shall be achieved by specifying it in terms of FAR, which shall take into account the various aspects that govern in specifying FAR as given below:
a) Occupancy class;

b) Types of construction;
c) Width of street fronting the building and the traffic load;
d) Locality where the building is proposed and the density;
e) Parking facilities;
f) Local fire fighting facilities;
g) Water supply, drainage and sanitation facilities.

Restrictions in the Vicinity of Aerodromes

- For buildings in the vicinity of aerodromes, the maximum height of such buildings shall be decided in consultation with the Airports Authority of India who shall be responsible for issuing the no objection certificate. This shall be in accordance with the concerned notification of the Ministry of Civil Aviation, Govt of India.
- For the purpose of 9.5.1, new buildings and structures coming up in the vicinity of an aerodrome shall be subjected to height restrictions in accordance with the subject notification. No building or structure higher than the height specified in the subject notification shall be constructed or erected and no tree which is likely to grow or ordinarily grows higher than the height specified in the subject notification shall be planted on any land within the specified radius from the aerodrome reference point, as given in the notification.

OFF-STREET PARKING SPACES

- Each off-street parking space provided for vehicles shall be as follows: a) For cars, the minimum parking space is to be 3 m × 6 m when individual parking space is required and 2.75 m × 5 m when common parking space is required. b) Space for scooter/two-wheeler and bicycle to be not less than 1.25 m2 and 1.00 m2, respectively. c) Area for each equivalent car space inclusive of the circulation area is 23 m2 for open parking, 28 m2 for ground floor covered parking, and 32 m2 for the basement

- In buildings of mercantile (commercial), industrial and storage type, in addition to the parking spaces provided, a space at the rate of 3.5 m × 7.5 m, shall be provided for loading and unloading activities, for each 1 000 m2 of floor area or fraction thereof.

REQUIREMENTS OF PARTS OF BUILDINGS

for public buildings and sites as accessible and barrier-free for elders and persons with disabilities, shall also be complied with.

Plinth

- Main Buildings The plinth or any part of a building or outhouse shall be so located with respect to the surrounding ground level that adequate drainage of the site is assured. The height of the plinth shall be not less than 450 mm from the surrounding ground level.
- Interior Courtyards and Covered Parking Every interior courtyard shall be raised at least 150 mm above the determining ground level and shall be satisfactorily drained.

Habitable Rooms

- Height The height of all rooms for human habitation shall not be less than 2.75 m measured from the surface of the floor to the lowest point of the ceiling (bottom of slab). In the case of pitched roof, the average height of rooms shall not be less than 2.75 m.
- The minimum clear head room under a beam, folded plates or eaves shall be 2.4 m. In the case of air-conditioned rooms, a height of not less than 2.4 m measured from the surface of the floor to the lowest point of air conditioning duct or the false ceiling shall be provided.

- Size The area of habitable room shall not be less than 9.5 m2 , where there is only one room with minimum width of 2.4 m. Where there are two rooms, one of these shall not be less than 9.5 m2 and the other not less than 7.5 m2 , with a minimum width of 2.1 m.

Kitchen

- Height The height of a kitchen measured from the surface of the floor to the lowest point in the ceiling (bottom slab) shall not be less than 2.75 m, except for the portion to accommodate floor trap of the upper floor.

Bathrooms and Water-Closets

- Height The height of a bathroom or water-closet measured from the surface of the floor to the lowest point in the ceiling (bottom of slab) shall not be less than 2.1 m.
- Size The area of a bathroom shall not be less than 1.8 m2 with a minimum width of 1.2 m. The floor area of the water closet shall be 1.1 m2 with a minimum width of 0.9 m. If bath and water-closet are combined, its floor area shall not be less than 2.8 m2 with a minimum width of 1.2 m.

Staircase/Exit Requirements

The following minimum width shall be provided for staircases for respective occupancies:

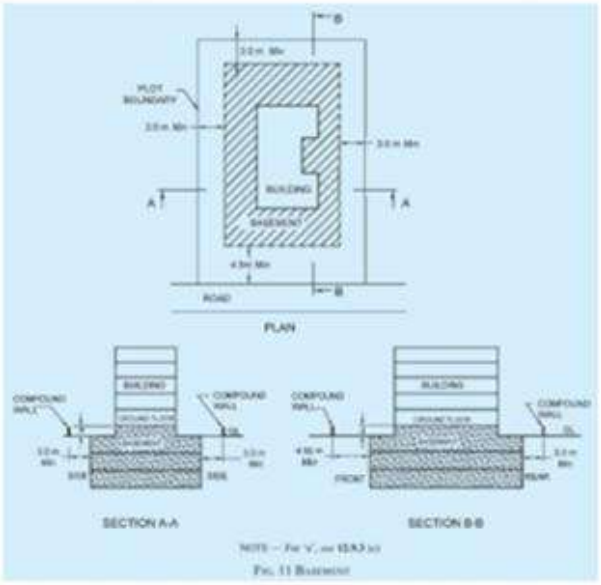
a) Residential (A-2) : 1.00 m NOTE — For row housing with 2 storeys, the minimum width shall be 0.75 m. b) Residential (A-1, A-3 and A-4) : 1.25 m

c) Residential hotel (A-5 and A-6) : 1.50 m

d) Assembly : 2.00 m

NOTE - The width of stairs may be accepted to be 1.50 m in case of assembly occupancy having less than 150 persons

e) Educational: 1.50 m f) Institutional: 2.00 m g) All other occupancies: 1.50 m



REQUIREMENTS FOR ACCESSIBILITY IN BUILT ENVIRONMENT FOR ELDERS AND PERSONS WITH DISABILITIES

These requirements deal with barrier-free access to, movement within and around buildings, by elderly persons and persons with disabilities who may have non-ambulatory disabilities, ambulatory disabilities, sight disabilities, hearing disabilities, disabilities of incoordination, aging, allergies, heart and lung diseases, epilepsy, hemophilia, incontinence, enterostomy, etc

Car Park Entrance and Parking Controls

The car park entrance shall have a height clearance of at least 2 600 mm. If a payment machine is provided, it shall provide all control at a height between 800 mm and 1 000 mm.

Accessible Car Parking Space Dimensions and Surface Requirements The accessible car parking space shall meet the following requirements:

a) The minimum width of the parking space for a car shall be 3 900 mm and the minimum length shall be 5 400 mm. This minimum width includes the transfer area beside the car with a minimum of 1 500 mm.

b) Two accessible parking spaces with one shared transfer area are widely used and shall have a minimum width of 6 300 mm (see Fig. 38).

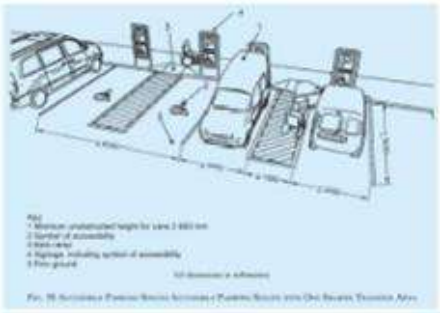
c) The designated accessible parking spaces shall be located on a gradient not greater than 1:50, throughout its length and its width.

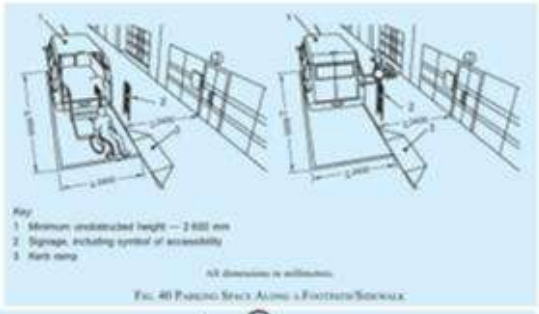
d) The accessible route of 1 200 mm width shall be provided for wheelchair users to pass behind vehicles that may be backing out (see Fig. 39).

e) Parking space along the footpath/sidewalk -For roadside parking of an accessible van, the minimum dimensions shall be 9 000 mm × 2 400 mm with a kerb to access the nearest footpath/sidewalk (see Fig. 40).

f) Van parking with auxiliary movable ramps - The size and design of accessible vehicles may vary as some are fitted with ramps or hoists at the side or at the rear.

Kerb Ramp from Parking Space to an Adjacent Higher Pedestrian Path The kerb ramp should be located in close proximity to the designated accessible parking area connecting the accessible path of travel to the main entrance. The kerb ramp width should be a minimum of 1 000 mm





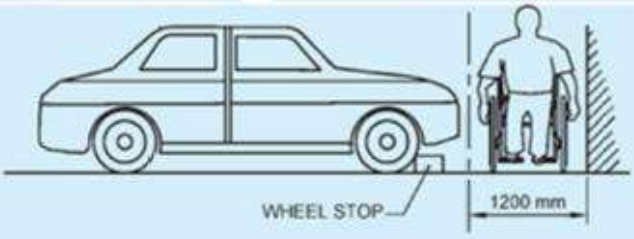


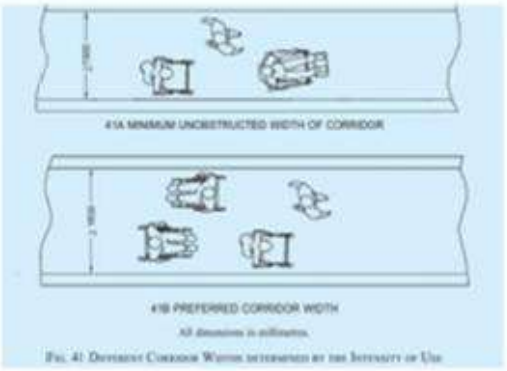
FIG. 39 ACCESSIBLE ROUTE WIDTH FOR WHEELCHAIR USERS TO PASS BEHIND A PARKED VEHICLE

APPROACH TO THE BUILDING

The entry to the building shall be facilitated by the following: a) Space should be provided for passenger drop-off points for taxis, public transport, and also for large vehicles such as vans, etc, as near as possible to the main accessible entrance. Vehicle drop-off areas should be a minimum of 9 000 mm in length, have a minimum width of 3 600 mm, and be served by a kerb ramp

ACCESS AT THE ENTRANCE AND WITHIN THE BUILDING

a) Access to the building entrance shall be in accordance with B-4.
b) A clear, firm, and level landing of at least 1 800 mm × 1 800 mm shall be provided on either side of the entrance door.
c) The width of the accessible entrance door shall not be less than 900 mm and the width of the corridors or passageways leading to and from such access door shall not be less than 1 200 mm.
d) In multi-storey buildings, the accessible entrance shall have an accessible route leading to the lifts.



Doors Leading into Corridors

Doors shall not open outwards from rooms directly into a frequently used corridor, with the exception of doors to accessible toilets and service ducts. Where a door opens into an infrequently used corridor such as emergency exit, the corridor width shall allow a clear space of 900 mm within the corridor when the door is open. Such doors shall be located clear of any sloping floor surfaces in the corridor.

Level Changes

Vertical circulation includes the provision of ramps, stairs, and lifts, as well as escalators, moving walks, and lifting platforms.

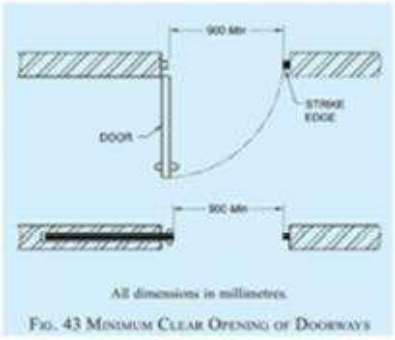
Ramps

Ramps of an appropriate design shall be provided at all changes in level other than those served by an accessible lift or accessible lifting mechanism accommodating the specific requirements of persons with disabilities.



All dimensions in millimetres.

FIG. 42 SPACE REQUIRED FOR 90° TURN



All dimensions in millimetres.

FIG. 43 MINIMUM CLEAR OPENING OF DOORWAYS

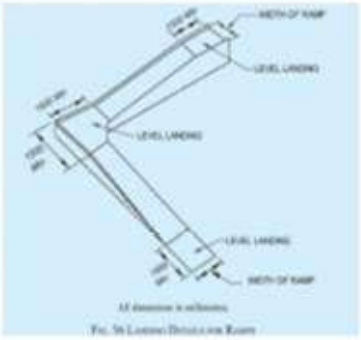


Table 10 Requirements for Ramp

(Clause B-6.2.2)

Sl No.	Level Difference	Maximum Gradient of Ramp	Ramp Width mm	Handrail on Both Sides	Other Requirements
(1)	(2)	(3)	(4)	(5)	(6)
i)	150 mm to 300 mm	1:12	1 200	√	—
ii)	301 mm to 750 mm	1:12	1 500	√	Landings after every 5 m of ramp run
iii)	751 mm to 3 000mm	1:15	1 800	√	Landings after every 9 m of ramp run
iv)	More than 3 000 mm	1:20	1 800	√	Landings after every 9 m of ramp run

2.10 INDIAN STANDARD CODE FOR HOTELS AND RESTAURANTS:

2.10.1 BUILDING

In the absence of air-conditioning all openings to the outer air includingdoors, windows, sky lights shall be effectively screened with tight fitting screens free from holes with wire gauge conforming to IS: 1568-

1960*. The doors when not in use shall be kept in closed position. Selfclosingscreened doors to the outer air shall open outwards. Other methods approved by the authority shall be employed to ensure the absence of flies.

2.10.2 FLOORS

The floors of all rooms in which food or drink is stored, prepared or served and of all washing placed shall be of such construction as to be impervious, easily cleansed, smooth and in good repair. All floors shall be kept clean and free from litter. Dustless method of floor cleaning shall be used, ail except emergency floor cleaning shall be done during the period when least amount of food and drink is exposed.

2.10.3 WALLS

The walls shall have a smooth, non-absorbent surface, free from cracks and crevices to facilitate their efficient cleaning. The walls of all rooms in which food or drink is prepared or utensils are washed shall have a smooth washable surface up to a minimum height of 2-O m from the floor.

2.10.4 CEILING

Ceiling shall be clean, leak-proof and have a smooth non-absorbent surface free from cracks and crevices to facilitate their efficient cleaning. These should be such that they do not harbour vermin.

2.10.5 DOOR & WINDOWS

The floors of all rooms in which food or drink is stored, prepared or served and of all washing placed shall be of such construction as to be impervious, easily cleansed, smooth and in good repair. All floors shall be kept clean and free from litter. Dustless method of floor cleaning shall be used, ail except emergency floor cleaning shall be done during the period when least amount of food and drink is exposed.

2.10.6 LIGHTING

TABLE 1 RECOMMENDED VALUES OF ILLUMINATION

The lighting of some of these locations will be determined primarily by aesthetic considerations and the recommended illumination values as given in IS : 3646 (Part II)-1966* may be taken as a guide only.

Sl No.	Areas	Illumination, Lux
(1)	(2)	(3)
i)	Entrance halls	150
ii)	Reception and accounts	300
iii)	Dining rooms (tables)	100
iv)	Lounges	150
v)	Bedrooms:	
	a) General	100
	b) Dressing tables, bed heads, etc	200
vi)	Writing rooms (tables)	300
vii)	Corridors	70
viii)	Stairs	100
ix)	Laundries	200
x)	Kitchens	†200
xi)	Goods and passenger lifts	70
xii)	Clockrooms and toilets	†200
xiii)	Dining rooms:	
	a) Tables	100
	b) Cash desks	300
xiv)	Self service-counters	300

*Code of practice for interior illumination: Part II Schedule for values of illumination and glare index.

†Supplementary local lighting should be provided over kitchen equipment and mirrors.

2.10.7 VENTILATION

In case of ran-air-conditioned buildings the minimum standards of mechanica ventilation shall be maintained as given

TABLE 2 VENTILATION REQUIREMENTS FOR NON-AIRCONDITIONED BUILDINGS

Sl No.	Area	Air Changes per Hour
(1)	(2)	(3)
i)	Living rooms	3
ii)	Dining and lounge	2-3
iii)	Big kitchen	12
iv)	Small kitchen	6
v)	Toilets	6

2.10.8 WATER SUPPLY

There shall be adequate supply of safe and potable water. Running water shall be easily accessible to all rooms in which food is prepared or utensils are washed. Requirements for water supply for hotels and restaurants shall be as given

TABLE 3 WATER SUPPLY REQUIREMENTS FOR HOTELS AND RESTAURANTS

Sl. No.	Description	Non-Airconditioned (Litres per Day)	Air Conditioned (Litres per Day)
(1)	(2)	(3)	(4)
i)	Hotels (per bed)	180	275
ii)	Restaurants (per seat)	70	97

NOTE — In hotels where laundry is provided arrangement for an extra quantity of 120 litres per bed should be made.

2.10.9 STORAGE OF WATER

For the storage of water, proper receptacles made of galvanized iron or other suitable material shall be used. Such receptacles shall he kept covered with tight fitting lids and shall have screw caps at the bottom for draining out residual water. The receptacles shall be placed on a stand or a platform rasily accessible for the purpose of maintenance and cleaning, The receptacles shall be examined and cleaned regularly.

2.10.10 DRAINAGE

Adequate arrangements shall be made for satisfactory drainage of all sewage and waste water. Harmful waste water, such as water containing kitchen waste, &all be saticfactorily disposed of. The drainage shall be so designed as to cause no stagnation at the maximum discharge rate fur which the different units are designed. The requirements for firments for drainage and sanitation shall conform to the requirements given

TABLE 5 REQUIREMENTS OF DRAINAGE AND SANITATION FITMENTS IN RESTAURANTS

(Clause 14.1.1)

Sl No.	Fitments	For Male Public	For Female Public	For Male Staff	For Female Staff
(1)	(2)	(3)	(4)	(5)	(6)
i)	Water-closets	1 for 50 seats up to 200 seats; and for over 200 seats, add at the rate of 1 per 100 seats or part thereof	1 for 50 seats up to 200 seats; and for over 200 seats, add at the rate of 1 per 100 seats or part thereof	1 for 1-15 persons 2 for 16-35 persons 3 for 36-65 persons 4 for 66-100 persons	1 for 1-12 persons 2 for 13-25 persons 3 for 26-40 persons 4 for 41-57 persons 5 for 58-77 persons 6 for 78-100 persons
ii)	Ablution taps	1 in each water-closet	1 in each water-closet	1 in each water-closet	1 in each water-closet
		1 water tap with draining arrangements shall be provided for every 50 persons or part thereof in the vicinity of water-closets and urinals.			
iii)	Urinals	1 per 50 seats	—	Nil up to 6 persons 1 for 7-20 persons 2 for 21-45 persons 3 for 46-70 persons 4 for 71-100 persons	—
iv)	Wash basins	← 1 for every water-closet provided →			
v)	Kitchen sinks and dish washers	← 1 in each kitchen →			
vi)	Slop or service sinks	← 1 in the restaurant →			

NOTE 1 — Some of the water closets may be of European style, if desired.

NOTE 2 — It may be assumed that two-thirds of the number are males and one-third females.

iv)	Wash basins	1 per 10 persons omitting the wash basins installed in the room suite	1 per water-closet and urinal provided	1 per water-closet provided	1 for 1-15 persons 2 for 16-35 persons 3 for 36-65 persons 4 for 66-100 persons	1 for 1-12 persons 2 for 13-25 persons 3 for 26-40 persons 4 for 41-57 persons 5 for 58-77 persons 6 for 78-100 persons
v)	Baths	1 per 10 persons omitting occupants of the room with bath *en suite*	—	—	—	—
vi)	Slop sinks	1 per 30 bedrooms, minimum 1 per floor	—	—	—	—
vii)	Kitchen sinks and dish washers	← 1 in each kitchen →				

NOTE 1 — Some of the water closets may be of European style if desired.

NOTE 2 — It may be assumed that two-thirds of the number are males and one-third females.

Septic tanks conforming to I**S: 2470 (Part I)- 1963* or IS: 2470 (Part II)**-l964 shall be provided if required by the authority. The gradient of the drains should be such that no water stagnates any where within the premises. Where no sewerage is provided for the final outfall, soak pits or cess pools to the satisfaction of the Authority should be provided.

TABLE 6 STORAGE TEMPERATURES FOR FOODSTUFF

Sl No.	Names of Articles	Storage Temperature °C
(1)	(2)	(3)
i)	Meat, meat products, poultry	0·00 to 1·50
ii)	Fresh fish and sea food	−2·00 ,, −0·50
iii)	Dairy products and eggs	0·50 ,, 2·50
iv)	Fresh fruit and vegetables	2·00 ,, 4·50
v)	Ice-creams	−14·50 ,, −12·00

NOTE 1 — Potatoes need no refrigeration, but should be stored away from light.

NOTE 2 — Fish and sea foods shall be stored in separate compartments so as not to affect other materials.

2.10.11 KITCHEN

Kitchen shalt be sufficiently spacious and should be of a size in proportionto the average number of diners catered for at one meal, The floor spice in the kitchen shall be calculated at the rate of0.5 me Min per diner. In case of snack bars, soda fountains, etc, the service-cumdispensing area shall be treated as part of the kitchen.

The minimum size of the kitchen should not be less thnn 10 rnp and none of the sides less than 2.4 meter. Exhaust fans should have provisions of grease filters for collecting grease.

2.10.12 STORAGE AND HANDLING EQUIPMENT

All containers and utensils shall be stored at a height of not less than. 430 mm above the floor in a clean, dry place protected from flies, splash, dust, overhead leakage, and other contamination.

2.10.13 FIRE SAFETY REQUIREMENTS

All buildings and particularly buildings having more than one storey shall be provided with liberally desigl:cd safe-fire-resistant exists or escapes.

The exits shall be so placed that they are always immediately accessible and each is capable of taking all the persons on that floor as alternative escape routes may be rendered unsuitable and/or unsafe due to fire.

Escape route shall be well-ventilated as persons using the escapes are likely to be overcome by smoke and/or fumes which may enter from floor.

Basements- It is essential that the fire resistance of the basement conforms to the highest order and all columns for separating the upper structure shall have grading not less than the standards laid down for Grade 3.

III. SITE INVENTORY

3.1 DEMOGRAPHIC OF BSANAND DIST. AHMEDABAD

With a 2025 estimated population of about **8.16 million** in the city and **9.31 million** in its metro region, Ahmedabad stands as Gujarat's most populous urban center. According to the 2011 Census, the city had **5.58 million** residents. The **sex ratio** in the municipal limits was **898 females per 1,000 males** (child sex ratio: 848 girls per 1,000 boys), while the broader district recorded a sex ratio of **904 per 1,000** (child ratio: 857). Literacy rates are strong: the city averaged **88.29%** literacy (male 92.30%, female 83.85%), with district-wide literacy at **85.31%** (male 90.74%, female 79.35%)

Religions in Ahmedabad

Religion	Percent
Hindu	81.56%
Muslim	13.51%
Not Stated	0.12%
Jain	3.62%
Sikh	0.24%
Christian	0.85%
Buddhist	0.08%
Other	0.04%

Religiously, Ahmedabad is predominantly **Hindu (≈ 81.6%)**, followed by **Muslims (≈ 13.5%)**, **Jains (≈ 3.6%)**, **Christians (≈ 0.85%)**, **Sikhs (≈ 0.24%)**, **Buddhists (≈ 0.08%)**, with small shares of "other religions" (≈ 0.04%) and "not stated" (≈ 0.12%).

3.2 TOPOGRAPHY

For the purposes of this report, the geographical coordinates of **SANAND** are:

- **Latitude**: ~ 23.0° N
- **Longitude**: ~ 72.38° E (Sanand taluka area)
- **Elevation at town center**: ~ 38 m (≈ 124 ft.) above sea level.

Sanand town is part of the vast **Gujarat Plains** region, with flat terrain forming part of the Sabarmati river basin

From elevation models (~10-30 m resolution elevation data):

- **Within ~2 miles (~3 km)**
    - **Min elevation**: ~10 m (~33 ft.)
    - **Max elevation**: ~65 m (~213 ft.)
    - Average **~31 m (≈ 102 ft.)**
- **Within ~10 miles (~16 km)**
    - Elevation range in surrounding taluka: **10 m – 65 m** (~33 ft. – 213 ft.), so variation up to **~185 ft**.
- **Within ~50 miles (~80 km)**
    - Larger Ahmedabad-Gujarat plains remain largely flat; typical elevation ~30–40 m, max occasional rises near gentle uplands, so **variation under ~200 ft**.



3.2.1 SEISMIC ACTIVITY:

Zone III: This zone corresponds to a **Moderate Damage Risk Zone**, liable to **MSK VII** levels.
The **IS code assigns a zone factor (Z)** of **0.16** for Zone III. Major cities in this zone include Chennai, Mumbai, Kolkata, Bhubaneswar, Ahmedabad, Vadodara, Pune, Lucknow, and Sanand (in the Ahmedabad region).

CITY	STATE	ZONE
SANAND	GUJRAT	III

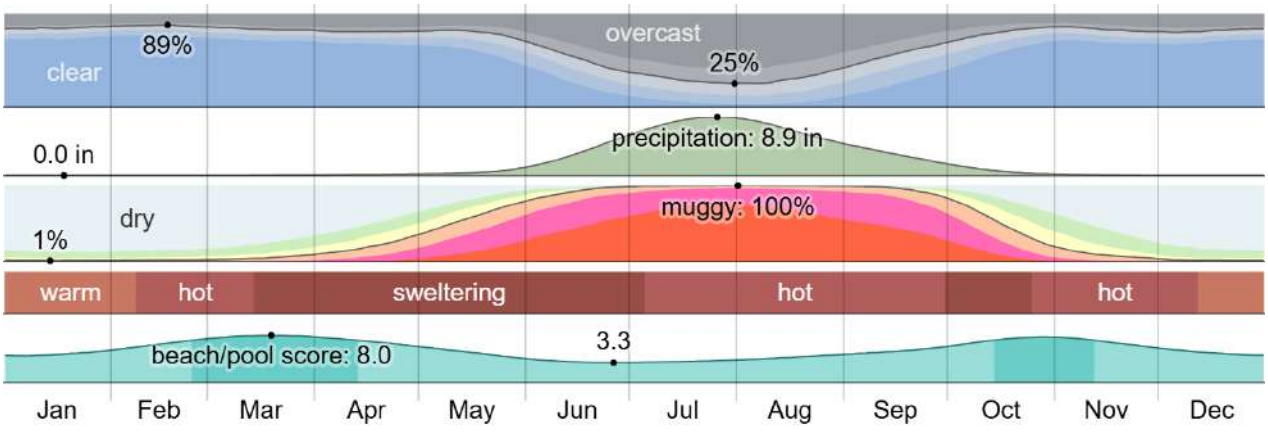
3.2.2 SOIL TYPE:

The soils around Sanand belong to the **deep, alluvial loam-clay** category characteristic of Central Gujarat plains (Quaternary deposits). They are **very deep**, **well to moderately drained**, and slightly saline and sodic in parts of the taluka. The terrain is nearly **level** (< 2 % slope), unlike the interfluvial hill slopes seen in Agra soils. The local climate has a **mean annual temperature of ~27 °C (80.6 °F)** and **mean annual rainfall of ~757 mm (~30 inches)**, supporting moderate moisture retention soils under arable and industrial usage.

3.3 CLIMATE-

In Sanand, the **wet season (mid-June to mid-September)** is **hot, humid, and mostly cloudy**, while the **dry season** (October through May) is **sweltering and predominantly clear**, with hot temperatures year-round. Over the course of the year, daily high temperatures typically range from **82 °F (28 °C)** in January up to about **106 °F (41 °C)** in May, and rarely dip below **55 °F (13 °C)** or exceed **109 °F (43 °C)**

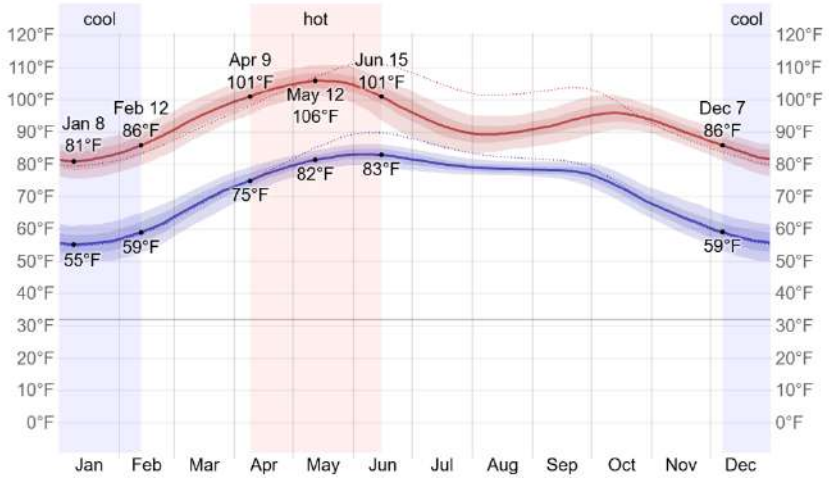
Based on the **beach/pool score** (which favours clear, rainless days with perceived temperatures between 75–90 °F), the **best times for hot-weather activities in Sanand** are from **mid-November to early March**, peaking in **early February**



3.3.1 Average Temperature in Sanand

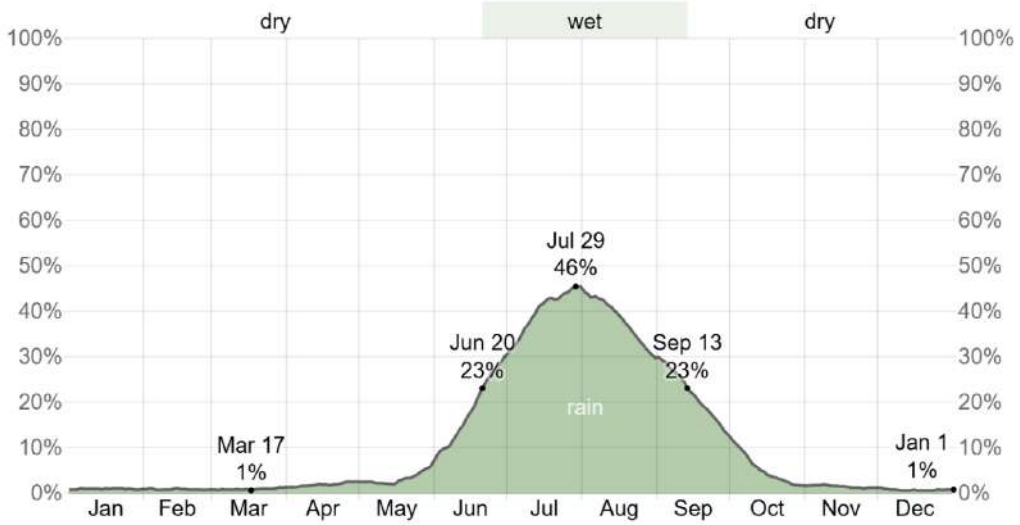
The hot season in Sanand lasts for about 2.2 months, from April 9 to June 15, with average daily highs remaining above 38 °C (100 °F). The hottest month is May, featuring typical temperatures of 41 °C (105.8 °F) during the day and 28 °C (82 °F) at night.

The cool season spans around 2.1 months, from December 7 to February 12, characterized by average daily highs below 30 °C (86 °F). January is the coldest month, with daily temperatures ranging from approximately 13 °C (55 °F) to 28 °C (82 °F).



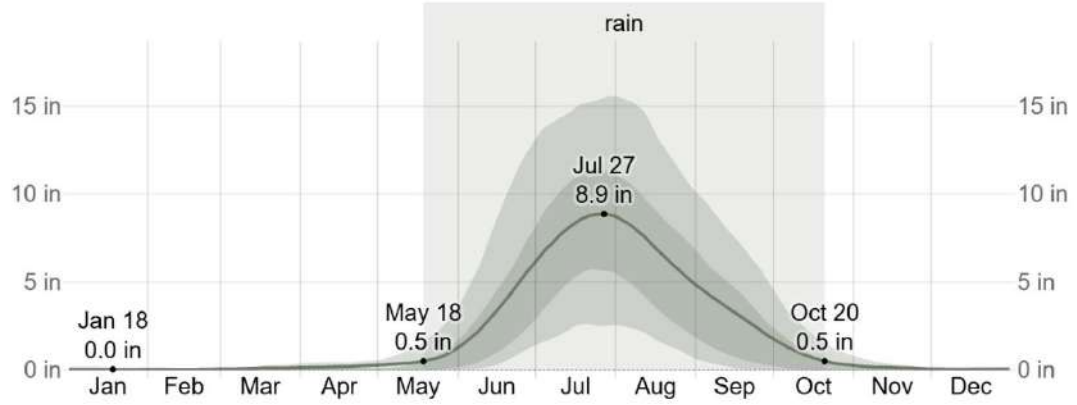
3.3.2 Precipitation

A wet day in Sanand is defined as one with at least **0.04 in (1 mm)** of precipitation. The **wetter season** extends for approximately **2.8 months**, from **June 20 to September 13**, during which a given day has a **greater than 23% chance** of rainfall. **July is the wettest month**, averaging about **12.5 rainy days**, while the **driest month is December**, with only **~0.2 wet days**. Notably, **rain alone** is the only form of precipitation, with its probability peaking at **46% around July 29**



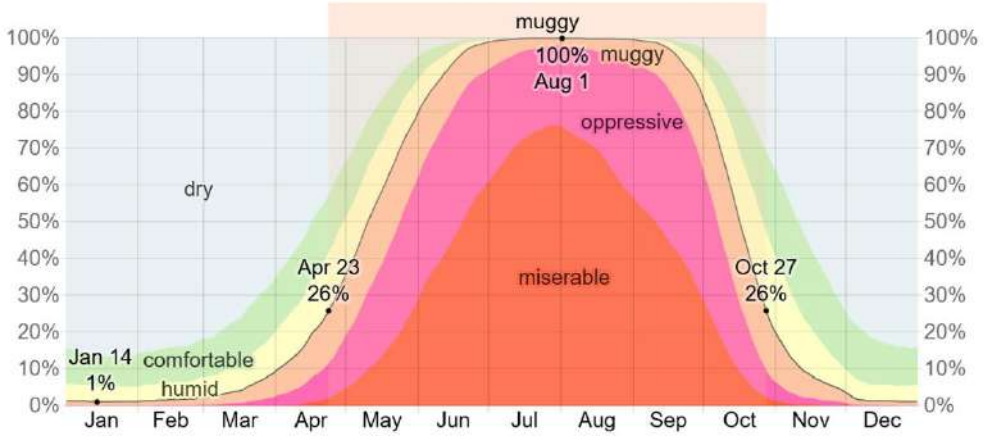
3.3.3 Rainfall

To illustrate intra-month variation, Sanand's **rainy period** lasts approximately **5.1 months**, spanning **May 18 to October 20**, during which any **rolling 31-day total rainfall** stays **at or above 0.5 inches**. Rainfall peaks in **July**, registering up to **8.4 inches** in a sliding monthly average. From **October 20 to May 18**, forming the **rainless period** of about **6.9 months**, 31-day rainfall falls below 0.5 inches, with **January** recording the **least rainfall** (~0.0 inches).



3.3.4 Humidity

The muggier period in Sanand extends over approximately 6.1 months, from April 23 to October 27. During this time, the dew point rises enough to make conditions feel muggy, oppressive, or even miserable on at least 26% of the days. This means that for nearly half the year, outdoor conditions may feel uncomfortably humid, especially during the daytime. **The peak of this discomfort occurs in August**, which records the highest average number of muggy days—**around 30.9 days**, essentially the entire month. Such levels of humidity can significantly impact thermal comfort, especially when combined with high temperatures. In contrast, **the least humid part of the year is January**, with an average of only **0.3 days** experiencing similar muggy conditions, offering a brief respite of dry, more comfortable air. This stark seasonal variation makes it crucial to consider humidity control in architectural and planning decisions, especially for ventilation, cooling, and material selection

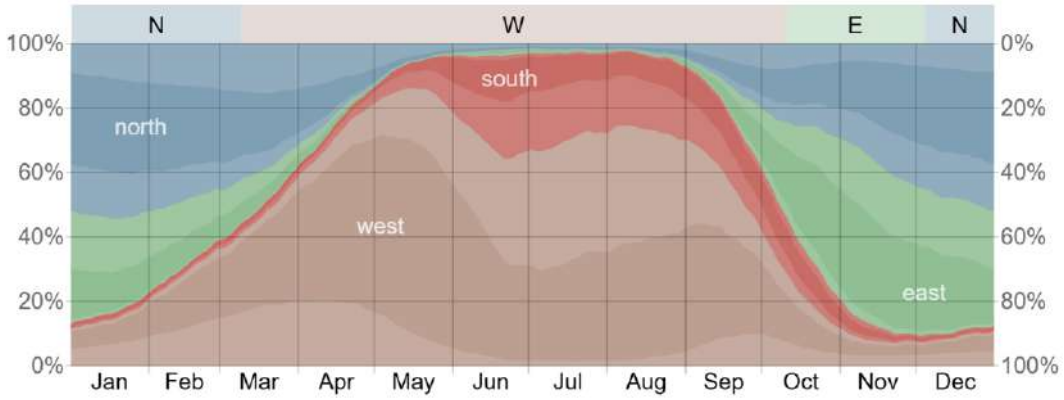


3.3.5 Wind

The **windiest span in Sanand lasts about four months**, stretching from **April 22 to August 22**, when the **hourly average wind speed consistently exceeds ~13.6 km/h (~8.5 mph)**. **June** is the **peak wind month**, with an average speed close to **18.9 km/h (~11.8 mph)**, while **October** offers the calmest air—mean speeds dipping to **8.4 km/h (~5.2 mph)**.

Wind direction shifts dramatically with the seasons: from **March 9 through October 10**, winds predominantly blow from the **west**, reaching a seasonal high of **86% on May 14**. Then, between **October 10 and December 4**, **easterly winds** take over—peaking at **53% on November 8**. From **December 4 to March 9**, **northerly winds** dominate, with **52% frequency recorded on January 1**.

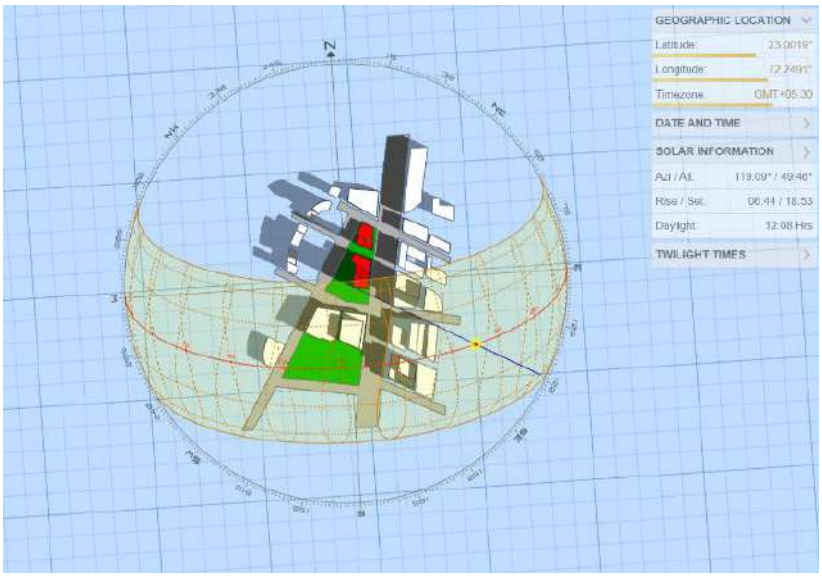
These patterns suggest a pronounced seasonal wind regime—useful for everything from natural ventilation design to planning outdoor structures and shading in architectural projects.



3.4 SUNPATH-

The sun path diagram for Sanand (Latitude 23.0019°N, Longitude 72.2491°E) reveals critical solar movement data essential for climate-responsive architectural design. The site experiences a sunrise at 06:44 and sunset at 18:53, resulting in approximately 12.08 hours of daylight. At the time of analysis, the solar azimuth and altitude are 119.09° and 49.46°, respectively—indicating the sun's southeast position in the morning with a moderately high altitude in the sky. The solar envelope indicates that maximum solar gain occurs from the southeast to southwest arc, especially during summer months when the sun travels a higher and longer path.

This data supports strategic orientation of built forms and fenestrations. North-facing façades remain shaded most of the day, making them ideal for minimal heat gain, while south and southwest exposures require adequate shading devices such as vertical fins or overhangs to mitigate harsh afternoon sun. Open green zones and public areas are best located on the eastern and northern edges, benefiting from softer morning sunlight and avoiding peak afternoon heat. Overall, this sun path analysis informs passive design strategies to optimize thermal comfort and energy efficiency in the Sanand climate context.



3.5 CLIMATE ANALYSIS IN BUILDING-

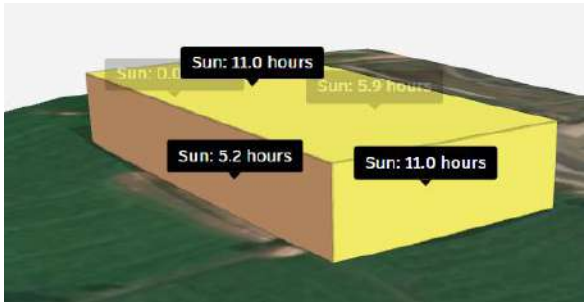
To ensure the proposed **5-star hotel** design is contextually responsive and environmentally efficient, a series of detailed climatic simulations were conducted using **Adobe Forma**. These simulations—covering solar path, wind direction, and temperature analysis—were run on a representative building mass placed at the actual site location in **Sanand.** The objective was to study how natural elements interact with the built form throughout the year. The sunlight analysis provided insight into optimal orientation and shading strategies, while wind simulations informed natural ventilation potential and facade articulation. Temperature mapping further helped identify thermal hotspots and areas requiring passive cooling solutions. These simulations form the backbone of the project's sustainable design intent, ensuring a comfortable and **energy-efficient** environment for future occupants.

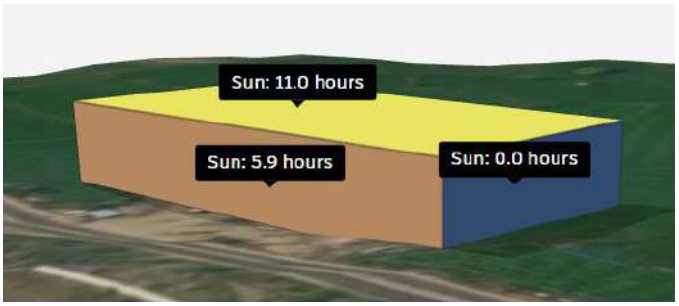
3.6 SUN HOURS ANALYSIS

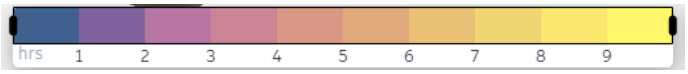
A detailed **sun hours** analysis was carried out for four representative months of the year—covering both summer and winter extremes—to understand the site's **solar exposure** and inform passive design strategies. The simulation, conducted using **Adobe Forma**, revealed the daily duration and intensity of sunlight received across various parts of the building mass. This helped identify zones with prolonged exposure, which are ideal for placing solar panels or sunlit public areas, as well as areas needing shading elements to prevent overheating. The data serves as a crucial tool in optimizing natural daylight while minimizing glare and solar gain, enhancing both energy efficiency and **occupant comfort** in the proposed hotel.

FEBRUARY-

To understand the solar exposure across different facades of the proposed hotel design, a sun hours analysis was conducted for the month of February using Adobe Forma. The simulation, performed on a massing model located on the exact project site, revealed significant variations in sunlight exposure due to orientation and surrounding topography. The southern and western facades received maximum solar gain, with sun exposure reaching up to **11 hours per day**, indicating ideal zones for passive solar strategies and solar energy integration. In contrast, the northern façade exhibited minimal sunlight, with areas showing as low as **0 hours of direct sun**, suggesting potential

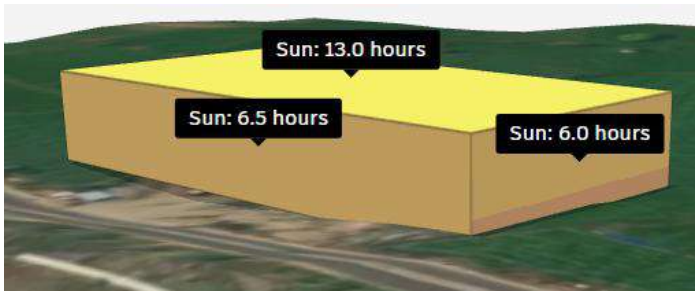


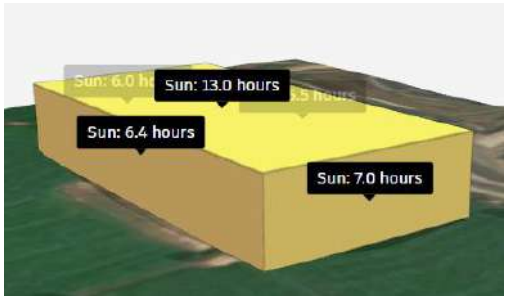




MAY-

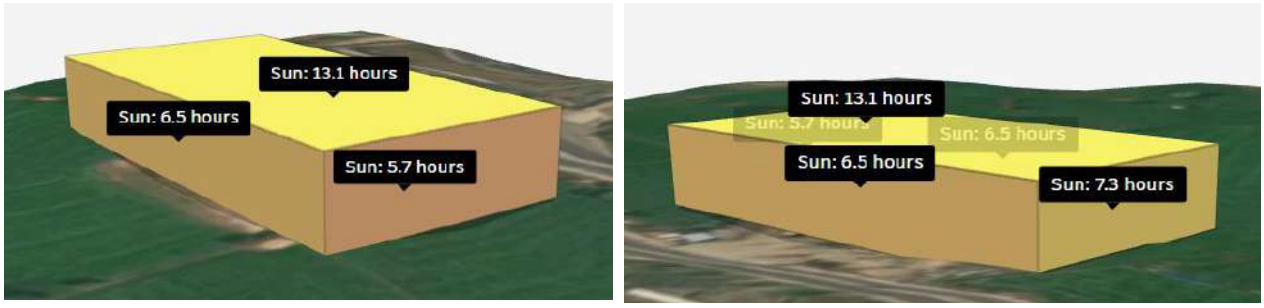
A peak summer month, show that the building receives abundant sunlight with certain roof areas achieving up to **13 hours** of sun exposure, while other facades receive between **6 to 7 hours** depending on orientation and shadow impact. This variation provides vital insights for optimizing **rooftop amenities**, **solar panel** placements, shading devices, and thermal **comfort zones**. The analysis further aids in refining the building's massing and facade articulation to reduce heat gain in summer while ensuring adequate daylight throughout the year. This data-driven approach strengthens the sustainable intent of the design by aligning architectural decisions with the site's climatic potential.





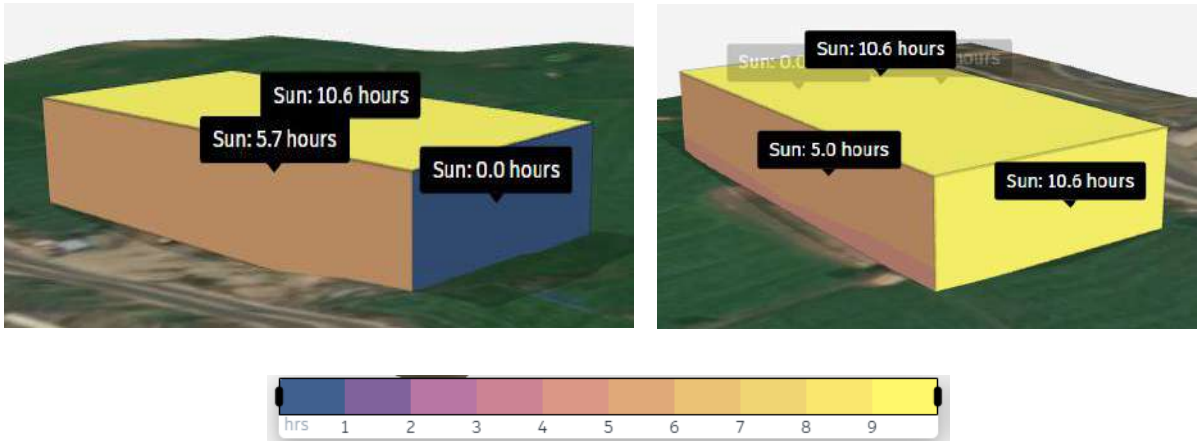
AUGUST-

The analysis revealed that the rooftop receives maximum solar exposure, with peak values reaching up to **13.1 hours** per day, making it a suitable zone for solar panel installations or recreational spaces that benefit from direct sunlight. Vertical surfaces showed moderate sun exposure, with some façades receiving as low as **5.7 hours** and others up to **7.3 hours** of sunlight daily. This variation in exposure will play a critical role in informing the building's façade design, passive cooling strategies, and placement of fenestrations to balance natural lighting and thermal gain. The results reinforce the importance of climate-responsive design in maximizing user comfort while optimizing energy performance



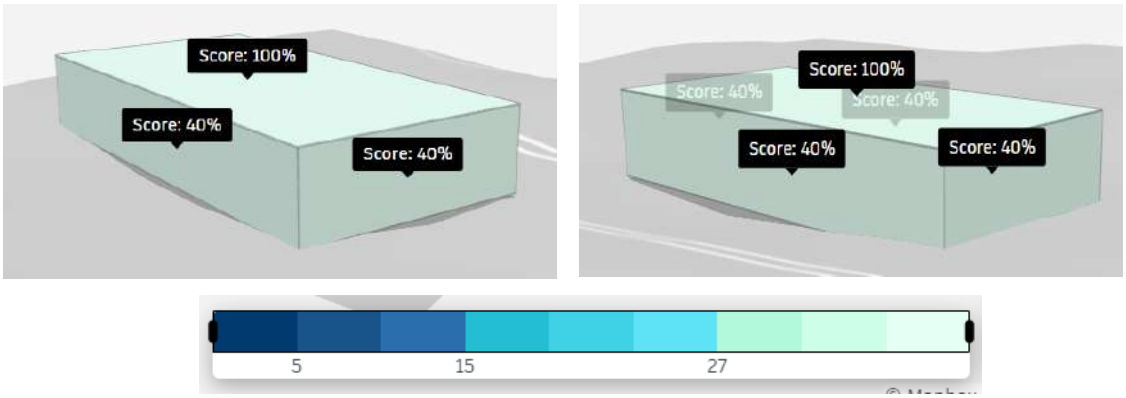
DECEMBER-

The **south and southeast-facing** facades receive the highest sunlight, with values peaking around **10.6** hours per day, while certain **north-facing zones remain in full shade with zero sun exposure**. This distribution highlights the need for strategic space planning—placing public or solar-dependent functions such as lobbies, lounges, or **energy-harvesting** systems in high-exposure zones, while reserving shaded areas for back-of-house or utility services. The insights from this simulation will guide passive design interventions like facade articulation, fenestration placement, and shading devices to optimize thermal comfort and energy efficiency during **winter months**.



3.6.1 DAY LIGHT POTENCIAL

The daylight potential analysis for the proposed building site in GIDC Sanand, Gujarat, reveals significant variations in light exposure across the structure. The analysis indicates that the top surface of the building achieves a **maximum score of 100%,** reflecting optimal daylight penetration, while the middle and lower sections **score 40% and 40%** respectively, suggesting moderate to **limited natural light** availability. This data underscores the need for **strategic design** considerations, such as incorporating additional glazing or light wells, to enhance **interior illumination**, particularly in **the lower levels**, ensuring a balance between **natural lighting** and **energy efficiency** in the final construction plan.



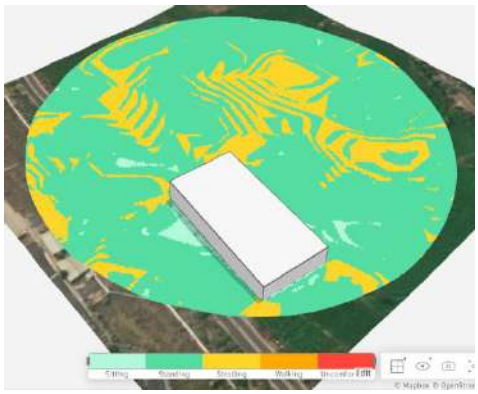
3.6.2 WIND ANALYSIS

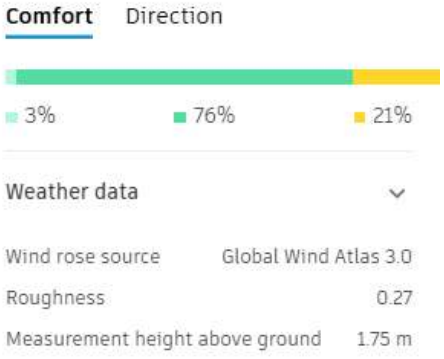
The wind analysis simulation conducted on the proposed building in **GIDC Sanand**, Gujarat, at 11:14 AM IST on Sunday, July 27, 2025, using the advanced **Autodesk Forma** software, provides comprehensive insights into the **building's aerodynamic performance**. The simulation reveals significant variations in **wind pressures**, with the upper facade experiencing peak **velocities** due to prevailing winds, while the lower levels exhibit reduced exposure, indicating potential stagnation zones that could affect ventilation. These findings emphasize the necessity of incorporating **aerodynamic shaping**, such as **windbreaks** or **streamlined contours**, into the design to mitigate pressure imbalances, enhance structural stability, and optimize **natural ventilation** across all levels of the building, ensuring a resilient **and efficient architectural** solution.

3.6.3 WIND COMFORT ANALYSIS-

The **Global Wind Atlas 3.0** with a roughness of **0.27** and a measurement **height of 1.75m**, provides valuable insights into pedestrian comfort levels. The analysis indicates that **76%** of the surrounding area falls within the **comfortable "Standing" range**, while **21%** is suitable for **"Strolling**" and **3%** for **"Sitting,"** with no significant areas classified as **"Uncomfortable."** The color-coded wind rose overlay highlights that the majority of the site experiences moderate **wind speeds**, with localized zones of higher activity, suggesting that

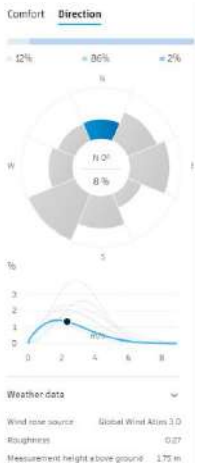
the building's design effectively mitigates excessive **wind exposure**. These findings support the integration of minor adjustments, such as **windbreaks or landscaping**, to further enhance **pedestrian comfort** across the site

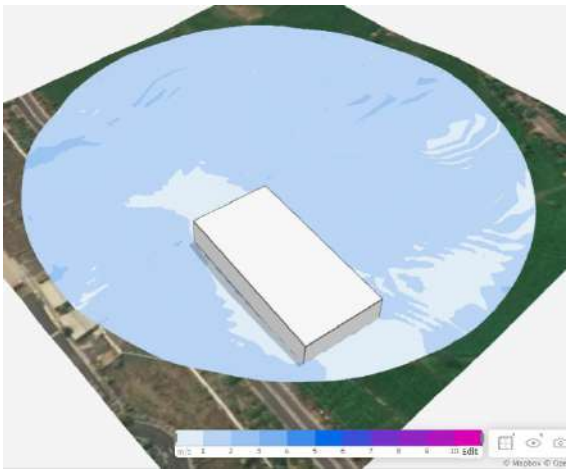




3.6.4 WIND DIRECTION ANALYSIS-

The Global Wind Atlas 3.0 with a **roughness of 0.27** and a measurement **height of 1.75m**, highlights the predominant wind patterns affecting the site. The wind rose diagram indicates that **86% of winds originate from the north (N 0°),** with **8% from the west and 2% from the east**, while the wind speed distribution peaks at **approximately 2 m/s**, with a **maximum of 3 m/s**. The spatial analysis overlay shows a consistent **north-to-south wind flow across the site**, with **velocities ranging from 1 to 3 m/s**, suggesting that the building's orientation should align with this **dominant northerly** wind to optimize **natural ventilation** and **minimize wind load** on the structure





3.6.5 SUN PATH ANALYSIS

Based on the **geographic location** at **latitude 23.005972° N** and **longitude 72.249801° E**, within the GMT+05:30 timezone. The sun path diagram illustrates that on this date, the sun rises at 06:11 AM and sets at 18:24 PM, offering a **daylight duration of 12 hours and 12 minutes**, with the **solar azimuth** and **altitude peaking at 131.08° and 59.26°** respectively around midday. The analysis reveals that the building's orientation and height result in **significant shadowing**, particularly from the **northeast to the southwest**, with the **sun's trajectory** indicating prolonged exposure on the **eastern facade in the morning and western facade in the afternoon**. The **day-length** graph further confirms that July, being near the summer solstice, provides the longest daylight hours, suggesting a need for strategic shading devices or glazing on the east and west elevations to mitigate overheating, while the **northern façade remains relatively shaded**, offering potential for **passive cooling design strategies**. These insights are crucial for optimizing the building's energy performance and ensuring **occupant comfort** throughout the year.

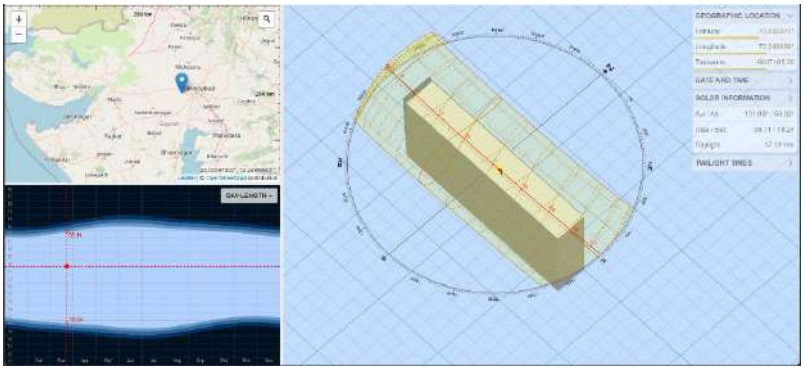


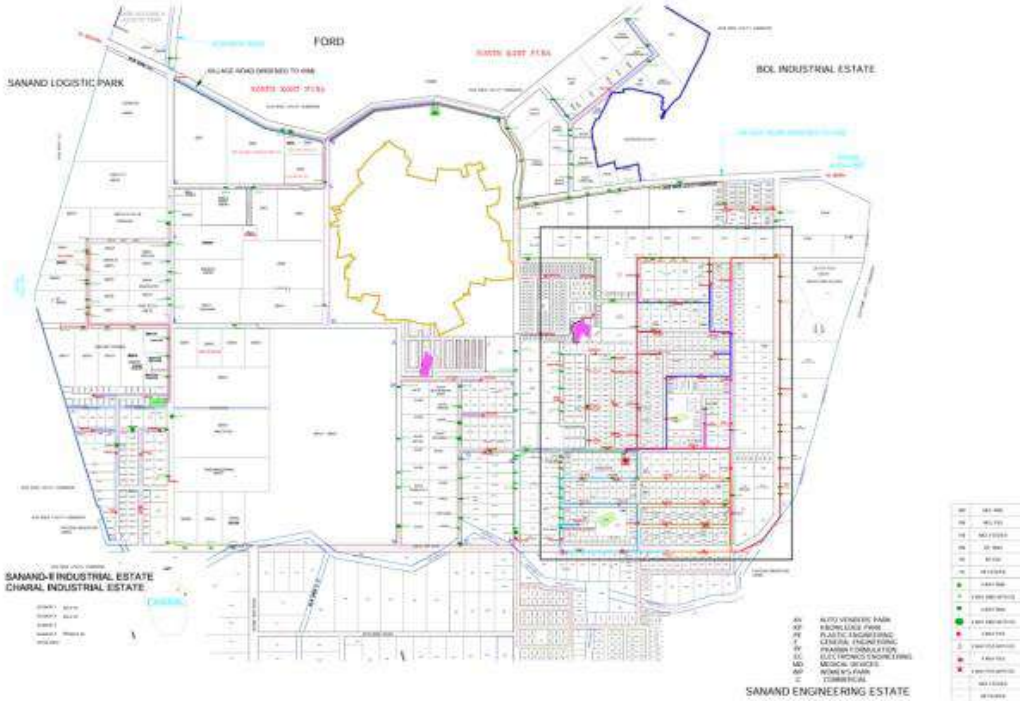
Figure 1: SUN LIGHT ANALYSIS

3.7 UTILITIES & INFRASTRUCTURE

Services

The Electrical, Plumbing and Drainage lines are underground, beneath the pathways.

- The **GIDC Water Supply Division** manages metered water distribution to industries.
- Water is **treated** before supply to ensure compliance with industrial standards.
- Industries requiring **high purity water** often install **on-site RO or filtration units**.
- **Narmada Canal** is the **most reliable and sustainable source**, as per Gujarat Water Infrastructure Ltd. (GWIL) and GIDC planning.
- **Water usage permissions** are regulated by the **Gujarat Pollution Control Board (GPCB)** and **GIDC**.
- Recent projects have encouraged **treated wastewater reuse** for landscaping and industrial cooling.
- Electricity will be supplied at the site from the substation of 66KV.



Item	Details
DISCOM	Uttar Gujarat Vij Company Limited (UGVCL)
Transmission Utility	Gujarat Energy Transmission Corporation Ltd (GETCO)
Nearest Substations	66 kV Sanand, 220 kV Charodi, 132 kV Changodar
Connection Type (Industry)	High Tension (HT) and Low Tension (LT) based on load
Backup Power (Captive)	DG sets and captive power plants used by large industries (e.g., Tata)
Renewables (Optional)	Rooftop solar, net metering via Gujarat Solar Policy
Power Quality	Generally stable; industries can request dedicated feeders for reliability

3.8 HUMAN & CULTURAL

Category	Ahmedabad (City/District)	Sanand (Town/Taluka)
1. Attitude Towards New Development	Highly adaptive to urbanization, smart city growth, and infrastructure projects.	Open to industrial growth; traditional mindset shifting due to urban exposure.
2. Population Density	~8,900 people/km² (urban average).	Lower than Ahmedabad city; increasing due to industrial zones and in-migration.
3. Family Size	4–6 members, mostly nuclear families.	Traditionally joint families; nuclear setups increasing due to job migration.
4. Demographics & Ethnicity	Predominantly Gujarati; includes Marwaris, Jains, Muslims, Parsis, etc.	Majority Gujarati (Patel, Rabari, Koli, etc.); migrant laborers from other states.
5. Gender Ratio	~902 females per 1000 males.	Slightly lower due to male-dominated industrial migration.
6. Age Distribution	Youth-heavy population (15–35 years); supports startup and tech growth.	Younger workforce emerging; migration of youth to cities for education/jobs.
7. Literacy Rate	~86.65% (2011 Census); improving with better education facilities.	~75%; developing due to new schools and industrial skill programs.
8. Religious Composition	Hindu (83–85%), Muslim (12–13%), Jain, Christian, Sikh, Parsi minorities.	Predominantly Hindu; minor Muslim and Jain population.
9. Linguistic Diversity	Gujarati (main), Hindi, English, Urdu.	Gujarati (main), Hindi (migrant workers), limited English.
10. Ethnic Composition	Mixed urban ethnic blend: Gujaratis, Jains, Muslims, Parsis, Tribals.	Dominated by local Gujarati communities (Patel, Koli, Rabari) + migrant laborers.

IV CASE STUDIES

4.1 HILLTON GARDEN INN , PUNE

The Hilton Garden Inn, Pune Hinjawadi is a modern upscale business hotel that epitomises functional luxury and contemporary elegance. Strategically located in the heart of Pune's vibrant IT and corporate hub, the hotel caters to discerning business and leisure travellers seeking comfort, convenience, and global hospitality standards. Just 45 minutes from Pune International Airport, this dynamic property offers seamless connectivity to Rajiv Gandhi Infotech Park, MIDC, and the Mumbai–Pune Expressway



PROJECT	HILLTON GARDEN INN
LOCATION	PUNE
CLIMATE	Humid Subtropical
TOPOGRAPHY	PLAIN LAND
ARCHITECT	JOI DESIGN
COMPLITION YEAR	2021
NO. OF ROOMS	144
SITE AREA	4.77 ACRE
FAR	2







4.1.1 LOCATION



Address: Survey No. 40/3, Hinjawadi-Wakad Road, Hinjawadi Phase I, Pune – 411057, Maharashtra

Landmark:
Located next to Shell petrol pump and close to XION Mall

Strategic Position:

- **In the heart of Rajiv Gandhi Infotech Park**
- **Near International Biotech Park**
- **Proximity to major IT companies like Infosys, TCS,**

Accenture, Cognizant, etc.



PROXIMITY

- **Road Network:**
  - **Excellent connectivity via Mumbai–Pune Expressway**
  - **Easy access to Pimpri-Chinchwad industrial zones**
- **Approach: Direct access from Hinjawadi–Wakad Road**

4.1.2 SITE LOCATION



4.1.3 FACILITIES

Connecting Rooms	Free parking	Free WiFi
Non-smoking rooms	Digital Key	EV charging
On-site restaurant	Outdoor pool	Fitness center
Room service	Meeting rooms	Pets not allowed

4.1.4 VERTICAL ZONING



4.1.5 AREA STATEMENT

Category: 5-Star Business Hotel
Total Guest Rooms: 144
Total Built-Up Area (BUA): ~9,069 m² (≈ 97,600 sq. ft)
Structure: G + 6 Upper Floors + Rooftop Deck + Basement

1. Guest Accommodation Zone

Sub-Zone	Qty / Notes	Area (m²)
King Rooms	**70 units @ 28 m²**	**1,960**
Twin Rooms	**40 units @ 28 m²**	**1,120**
Family Rooms / Suites	**34 units @ avg. 32 m²**	**1,088**
Room Corridors	**Carpeted, 1.8–2m wide (all floors)**	**~500**
Service Rooms	**Housekeeping, janitor closet per floor**	**~60**
Total – Zone 1		**~4,728 m²**

2. F&B (Food & Beverage)

Outlet	Capacity / Design Details	Area (m²)
Garden Grille	**All-day dining, open kitchen concept, buffet + à la carte**	**220**
Garden Bar / Lounge	**Lounge-style seating, bar counter, bar-back wall, TV units**	**80**
Pavilion Pantry	**24/7 grab & go retail, chillers, snacks**	**25**
Total – Zone 2		**~325 m²**

3. Meeting & Event Spaces

Component	Capacity / Fit-Outs	Area (m^2)
Ballroom	**Max 400 pax theatre style; divisible partitions**	**414**
Meeting Room	**U-shape/boardroom layouts, projector, AV panels**	**80**
Pre-function Area	**Waiting zone, buffet service counters**	**70**
Total – Zone 3		**~564 m^2**

4. Recreation & Wellness

Facility	Fit-Out / Equipment	Area (m^2)
Fitness Center	**Cardio machines, weights, changing room**	**80**
Rooftop Pool Deck	**Lounge seating, wooden deck, safety barriers**	**180**
Outdoor Lounge	**Bar stools, partial pergola, planter beds**	**50**
Total – Zone 4		**~310 m^2**

5. Lobby & Public Interface

Sub-Zone	Details	Area (m^2)
Main Lobby	**Double-height, feature lighting, art wall**	**200**
Reception + Concierge	**Front desk, check-in kiosk, concierge desk**	**60**
Business Center	**3–4 work pods, Wi-Fi, printers, teleconferencing**	**60**
Total – Zone 5		**~320 m^2**

6. Back-of-House (BOH) & Services

Functional Areas	Description	Area (m^2)
Main Kitchen + Pantry	**Receiving, cooking line, cold storage**	**~400**
Laundry & Linen Room	**Washing, drying, sorting zones**	**~300**
Staff Dining & Lockers	**Seating for 40, change rooms, WC**	**~200**
Engineering Room	**UPS, HVAC, panel boards**	**~250**

Admin Offices & HR	**GM cabin, staff meeting room, HR, security**	**~200**
Waste & Garbage Segregation	**Organic + Inorganic zones, pest-proofing**	**~100**
Stores (General + F&B)	**Dry store, liquor store, chemical room**	**~200**
Total – Zone 6		**~1,800–2,200 m²**

Component	Features	Area (m²)
Elevators (3 total)	**2 guest + 1 service lift, SS finish**	**~90**
Fire Staircases	**2 shafts, fire-rated doors**	**~120**

Guest Corridors	**On all floors; 1.8–2m wide**	**~500–600**
MEP Duct Shafts	**Plumbing, HVAC risers, electrical shafts**	**~300**
Total – Zone 7		**~1,050 m²**

7 Circulation, Lifts, Vertical Cores

4.1.6 GUEST ROOM TYPOLOGY

Total there are 152 rooms which are majorly classified into 4 categories:

- **King Room:** Standard double bed configuration.
- **King Guest Room with Hill View:** Same as King but with scenic views.
- **Family Room:** Larger layout for families or groups.
- **Twin Room:** Two separate single beds

KING ROOM

The signature feature of the King Room at Hilton Garden Inn Pune Hinjawadi is its perfect blend of comfort, functionality, and scenic views, tailored for modern travelers. The room offers a spacious king-size bed with ergonomic design, a dedicated work area with an adjustable chair, and floor-to-ceiling windows in select rooms that provide panoramic views of the Pune skyline or Mhatoba Hills.





Area: Approx. 27–30 sq. m (290–325 sq. ft)

· **Occupancy:** 2 Adults (1 Child with crib/rollaway bed on request)

· **Bed Type:** 1 King-size bed

· **Amenities:**

- 40” HD TV with satellite channels
- Free Wi-Fi
- Work desk with ergonomic chair
- Tea/coffee maker, minibar (on request)
- Digital Key access (via Hilton Honors app)
- Blackout curtains, iron & board, wardrobe

· **Bathroom:** Walk-in shower, premium toiletries, hairdryer

· **Signature Feature:** Balanced business-leisure layout with ergonomic furniture and tech conveniences, ideal for solo or couple stays.

King Guest Room with Hill View

This premium variant of the King Room offers a more scenic and tranquil experience, thanks to its floor-to-ceiling windows that frame sweeping views of the Mhatoba Hills and Pune’s western skyline. Sized at about 30 square meters (~325 sq ft), it features a luxurious king-size bed, a dedicated work area, blackout curtains, and soundproofing for maximum privacy. Along with standard amenities like Wi-Fi, smart HDTV, and mini-fridge, this room enhances the stay with enhanced lighting, elevated positioning, and premium linens for a serene retreat.







- **Area**: Approx. 30 sq. m (325 sq. ft)
- **Occupancy:** 2 Adults
- **Bed Type:** 1 King-size bed
- **Amenities:**
    - Large window with hill or skyline views
    - All core room amenities: Wi-Fi, TV, tea/coffee, digital key
    - Desk with scenic view, plush chair
    - Soundproofing and blackout curtains
- **Bathroom:** Stylish bath with walk-in shower and premium toiletries
- **Signature Feature**: Panoramic views of Mhatoba Hills, offering a serene, elevated atmosphere perfect for relaxation.

3. Twin Room

The Twin Room is ideal for friends, colleagues, or travelers seeking separate sleeping arrangements without compromising on comfort. Spanning approximately 27 to 30 square meters (~290 to 325 sq ft), the room features two single beds, ergonomically spaced with plush bedding. It comes with all the core Hilton amenities: a functional work desk, tea/coffee maker, mini-fridge, 40-inch flat-screen TV, and free Wi-Fi. The

private bathroom includes a walk-in shower and signature Hilton toiletries. Guests can enjoy natural lighting from large windows and full blackout curtains for privacy and sleep quality.





- **Area:** Approx. 27–30 sq. m (290–325 sq. ft)
- **Occupancy:** 2 Adults (separate beds)
- **Bed Type**: 2 Single beds
- **Amenities:**
    - Same core offerings as King Room
    - Individual beds with plush linen
    - Workstation, blackout curtains
    - Tea/coffee maker, minibar (on request)
    - 40” TV, free Wi-Fi
- **Bathroom:** Walk-in shower with toiletries
- **Signature Feature**: Ideal for colleagues or friends—offering privacy and shared comfort with separate bedding.

Family Room

The Family Room at Hilton Garden Inn Pune is designed with extra space and comfort in mind, catering especially to families or small groups. Covering around 30–32 square meters (~325–345 sq ft), this room includes a king-size bed with plush bedding and can easily accommodate 2 adults and 1–2 children with the option of an extra bed or crib. It includes a comfortable seating area, a generous work desk, and large windows offering a bright, airy ambiance. Like other rooms, it features individual air-conditioning, a 40-inch HD TV, free high-speed Wi-Fi, and a tea/coffee station. The bathroom is equipped with a walk-in shower, premium toiletries, and fresh towels.





Area: Approx. 30–32 sq. m (325–345 sq. ft)

- **Occupancy:** 2 Adults + 1–2 Children
- **Bed Type:** 1 King-size bed + space for crib/rollaway

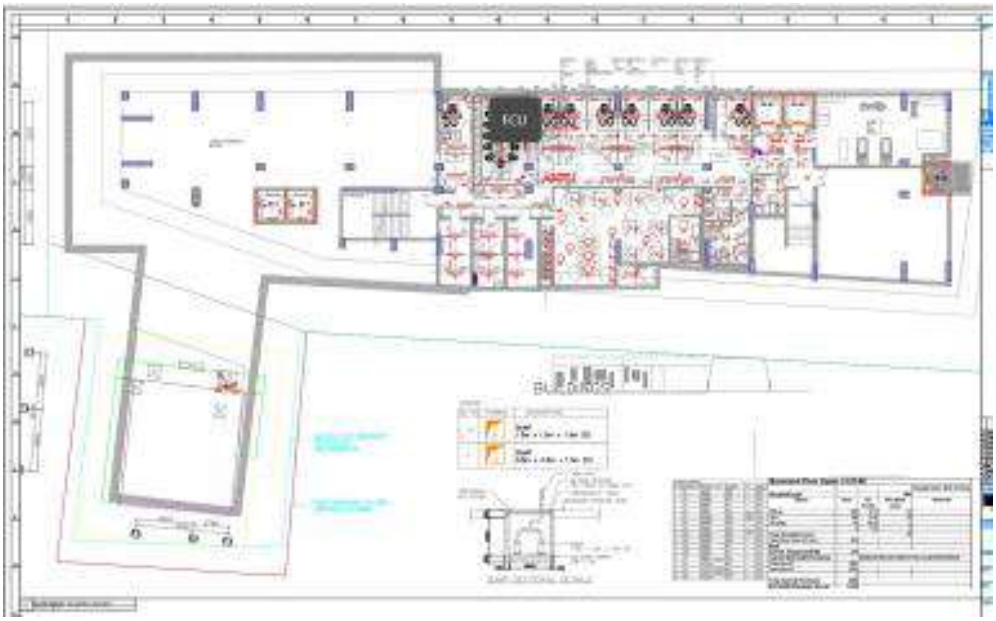
Amenities:

- Larger floor space and seating area
- 40” HD TV, free Wi-Fi
- Tea/coffee setup, mini-fridge
- Work desk, wardrobe, blackout curtains
- Iron & board, extra storage

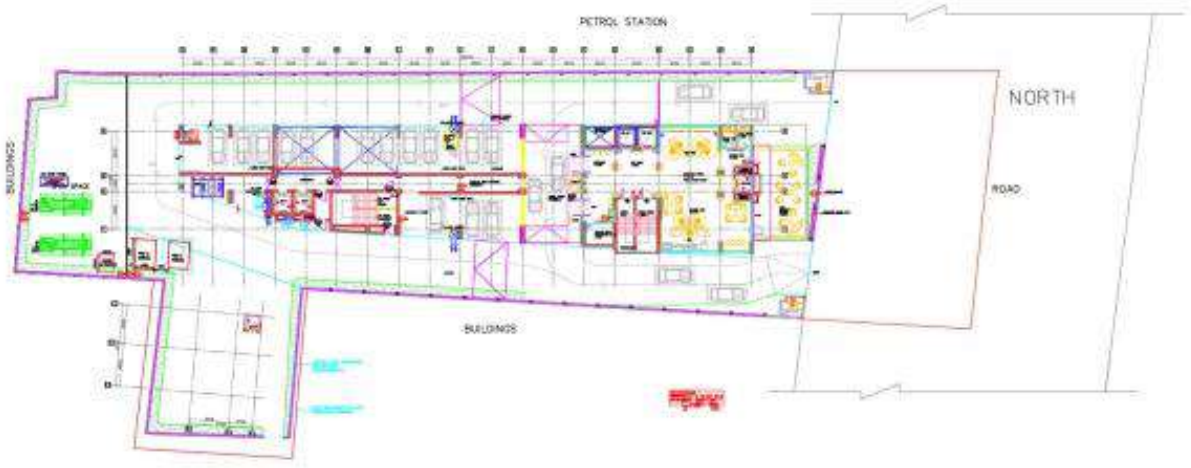
- **Bathroom:** Spacious layout with walk-in shower, toiletries
- **Signature Feature:** Extra space for families or longer stays, with flexibility for additional sleeping arrangements.

4.1.7 FLOOR PLANS

Basement Floor Plan



Ground Floor Plan



First Floor



Second Floor



Third Floor



Fourth Floor



Fifth Floor



Sixth Floor



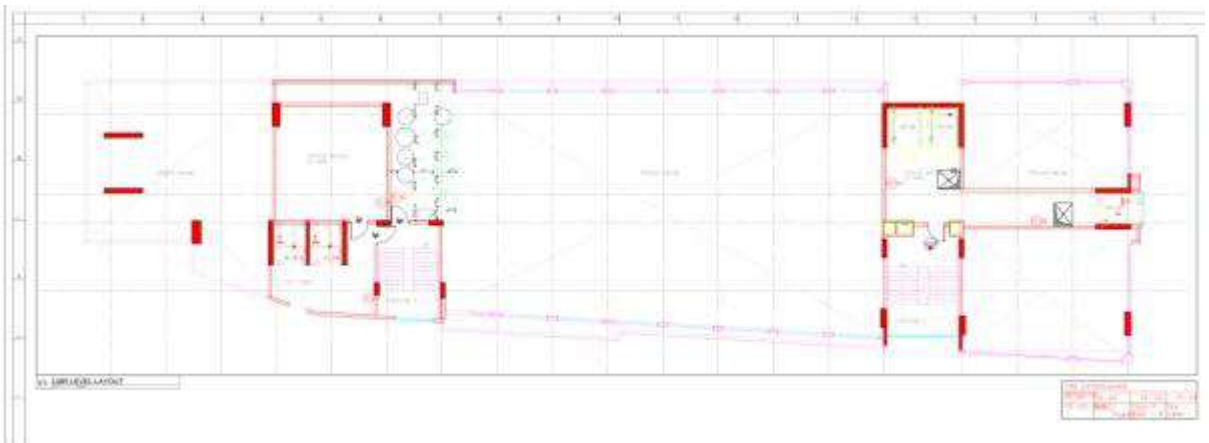
Seventh Floor



Terrace Floor Plan



LMR Layout



VIWES / INTERIOR SPACES

Guest Room Interiors

- **King Room / Twin Room / Family Room / Hill View Room**
  - Modern, neutral colou.r palettes (beige, grey, soft wood tones)
  - Ergonomic furniture with built-in lighting
  - Soft carpets or wooden flooring
  - Minimalist wall decor with local art accents
  - Floor-to-ceiling windows (in select rooms)
  - Compact bathrooms with walk-in glass showers and premium fittings

2. Food & Beverage Areas

The Garden Grille (All-Day Dining Restaurant)

- Seating capacity: ~80–100 guests
- Contemporary design with soft lighting and open kitchen
- Buffet and à la carte services
- Indoor + semi-outdoor seating areas

4.1.8 The Garden Bar





- Lounge-style seating with a chic bar counter
- Cocktail menu and light snacks
- Ambient lighting with casual café-style furniture










Craft
Beer



24/7 Pavilion Pantry





- Grab-and-go setup near the lobby
- Compact retail-style layout with beverages, snacks and essentials.

3. Business & Meeting Spaces

Meeting Rooms / Boardrooms

- Multiple meeting rooms (flexible partitioning)
- Capacity: 10 to 150 guests
- Sleek interiors with foldable seating, projection setup, and acoustic walls
- Neutral walls, wood-finish accents, and integrated A/V equipment

Business Center

- 24/7 access for guests
- Workstations, printing/scanning stations
- Minimalist layout with enclosed cubicles

4. Lobby & Reception

- Spacious double-height lobby with natural lighting
- Marble/tile flooring with modern chandeliers

- Soft-toned furniture with lounge seating
- Digital check-in kiosks and Hilton Honors Desk
- Art walls featuring local Pune-inspired design








5. Wellness & Fitness

Fitness Center (Gym)

- Open 24/7
- Modern cardio and strength-training equipment
- Mirrors, rubber flooring, and water station
- TV screens and music system

6. Rooftop Pool & Lounge

- Rooftop swimming pool with wooden deck and loungers
- Cityscape and hill views from the terrace
- Adjacent outdoor seating for sunbathing or cocktails
- Poolside bar service available in the evenings





4.2 CASE STUDY: TAJ HOTEL, BHOPAL

4.2.1 INTRODUCTION

The Taj Lakefront, Bhopal epitomises true luxury. Overlooking the upper lake and just25 minutes from the international airport, this iconic landmark symbolises the soul of Bhopal and its vision for tomorrow. The magnificent structure by the lakefront redefines fine living with its modern interiors, ornate and luxurious finishes. The design is intuitive to the region and inspired by the bell metal craft of Tikamgarh, the lakes and Zari work ofBhopal, the paisley prints of Bagh, the Durries of Sironj, and the Terracotta art of the state's tribal areas.

Ready to be the new landmark of the city, it opens its doors to the world with 152 guest rooms, multi-cuisine and award-winning restaurants, recreation facilities, Jiva spa, modern meeting spaces, well-equipped conference rooms, and the city's largest banqueting facilities

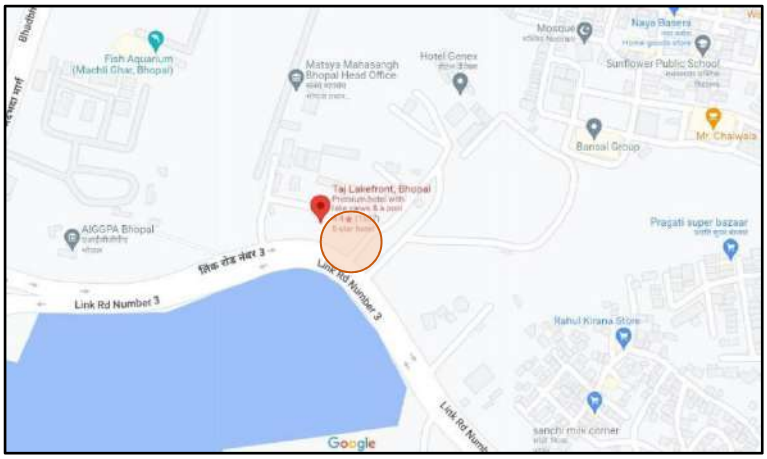


Details:

PROJECT	**TAJ LAKEFRONT**
LOCATION	BHOPAL
CLIMATE	Humid Subtropical
TOPOGRAPHY	PLAIN LAND
ARCHITECT	JOI DESIGN
COMPLITION YEAR	2021
NO. OF ROOMS	152
SITE AREA	4.77 ACRE
FAR	2

4.2.2 LOCATION

It is close to the Van Vihar National Park, Sanchi Stupa, National Museum of Mankind, Taj-ul-Masajid, and many such wonders of the city. Located near Bhadbhada Road Chauraha, Link Rd Number 3, Bhopal, Madhya Pradesh Overlooking the upper lake.



4.2.3 SITE BOUNDARY



Figure 2 Site boundary

Site Boundary
Circulation within the Site

4.2.4 Site Characteristics:

- The site has kind of trapezium shape having curved edge in front.
- As we look into the site planning of taj the front part is designed with pleasing landscapeby which guests can connect with its lush greenery.
- Back part of the site is used for the services.
- The building shape is evolved by the curved front edge of the site.

Circulation of the site is designed in that way so that no congestion will occur.

4.2.5 FACILITIES

These are the following facilities and amenities that Hotel Taj is providing to their guests.

Outdoors
- ✓ Outdoor furniture
- ✓ Sun terrace
- ✓ Terrace
- ✓ Garden

Activities
- ✓ Evening entertainment
- ✓ Games room

Food & Drink
- ✓ Bar
- ✓ Restaurant

Internet

WiFi is available in all areas and is free of charge.

Parking

Free private parking is possible on site (reservation is not needed).
- ✓ Electric vehicle charging station

Reception services
- ✓ Invoice provided
- ✓ Concierge service
- ✓ Currency exchange
- ✓ Express check-in/check-out
- ✓ 24-hour front desk

Cleaning services
- ✓ Daily housekeeping
- ✓ Trouser press Additional charge
- ✓ Ironing service Additional charge
- ✓ Dry cleaning Additional charge
- ✓ Laundry Additional charge

Business facilities
- ✓ Business centre
- ✓ Meeting/banquet facilities

Safety & security
- ✓ Fire extinguishers
- ✓ CCTV outside property
- ✓ CCTV in common areas
- ✓ Smoke alarms
- ✓ Security alarm
- ✓ Key card access
- ✓ 24-hour security

General
- ✓ Air conditioning
- ✓ Lift
- ✓ Family rooms
- ✓ Non-smoking rooms
- ✓ Room service

Outdoor swimming pool

Free! All pools are free of charge
- ✓ Open all year
- ✓ Opening times
- ✓ All ages welcome
- ✓ Pool/beach towels
- ✓ Pool bar
- ✓ Infinity pool
- ✓ Pool is on rooftop

Wellness
- ✓ Fitness
- ✓ Full body massage
- ✓ Hand massage
- ✓ Head massage
- ✓ Couples massage
- ✓ Foot massage
- ✓ Neck massage
- ✓ Back massage
- ✓ Spa/wellness packages
- ✓ Spa lounge/relaxation area
- ✓ Spa facilities
- ✓ Pool/beach towels
- ✓ Massage
- ✓ Spa and wellness centre Additional charge
- ✓ Fitness centre

4.2.6 APPROACH ROAD

- 18 m wide arterial road named Link RD number 3 is connecting the Taj hotel to the various locations of the city.
- 12 m wide service lane is given in the right side of the site.



4.2.7 VERTICAL ZONING

Here is the conceptual section of the taj hotel to explain the



4.2.8 AREA STATEMENT

Name		No. of Units	Area (sq.m.)	Total Area	%
	Total No. of Keys	152			
	No. of Floors	10			
A.	**Guest Room Mix**				
	Executive Suite	141	66	9306	80
	Twin Bedroom	5	33	165	10
	King bedroom	5	33	165	10
	Presidential Suite	1	152	152	
	Total Area (Sum)			**9788**	
B.	**Guest Floor Services**				
I	**Corridor Area**				
	Type Floor Corridor	1	180	**180**	30
II	**Housekeeping Static or Typical Floors**				
	Housekeeping Static or Typical Floors	1	185	**185**	32
III	**Lifts**				
	Guest Elevators	2	55	**110**	19
	Service Lift Lobby	2	55	**110**	19
IV	**Fire Protection**				
	Fire Escape Stairs	2	30	**60**	10
	Total Area (Sum)			**585**	
C.	**Public Areas**				
I	**Entrance Lobby**				
	Port Cochere	1	40	**40**	15
	Entrance Lobby Waiting Areas Front Desk	1	100	**100**	38
	Front Desk	1	40	**40**	14
	Luggage Store	1	15	**15**	6
	Bell Man	1	4	**4**	8
II	**Business Centre**				
	Store	1	36	**36**	13
			5	**5**	2
III	**Public Utilities**				
	Public Toilet	1	30	**30**	10

	Total Area (Sum)			**270**	
D.	**F&B Outlets**				
	Bar (Special) - 30 Covers	1	100	**100**	25
	Multi-Cuisine Restaurant - 120 Covers	1	300	**300**	75
	Total Area (Sum)			**400**	

E.	**Banquets**				
	Banquet Hall	2	225	**450**	62
	Pre-Function Area	2	80	**160**	22
	Conference Room	1	50	**50**	6
	Banquet Toilets	1	60	**60**	10
	Total Area (Sum)			**720**	

F.	**Recreation Facilities**				
	Swimming Pool	1	100	**100**	32
	Pool Change Room	1	50	**50**	16
	Gym	1	100	**100**	32
	Massage Room	1	6	**6**	10
	Saloon	1	50	**50**	10
	Total Area (Sum)			**306**	

G.	**Retail Archade**				
	Retail Shops	1	25	**25**	
	Total Area (Sum)			**25**	
BOH					

A.	**Material Management**				
	Truck Dock	2	20	**40**	34
	Holding Area	1	38	**38**	34
	Veg Wash	1	2.5	**2.5**	2
	Purchase & Reciving Off	1	20	**20**	15
	Purchase Office Manager	1	18	**18**	15
	Total Area (Sum)			**118.5**	

B.	**Main Store**				
	General Store	1	120	**120**	75
	Linen	1	10	**10**	6

	Unassign Store	1	10	**10**	6
	Liquor	1	10	**10**	6
	Crockery	1	6	**6**	3
	Mis	1	2	**2**	2
	Fuel	1	2	**2**	2
	Total Area (Sum)			**160**	

C.	**Garbage**				
	Loading	1	20	**20**	30
	Trash Garbage(Dry)	1	8	**8**	12
	Trash Garbage Refrigerator (wet)	1	15	**15**	24
	Garbage Truck	1	12	**12**	18
	Coal Room	1	5	**5**	8
	Circulation Space	1	5	**5**	8
	Total Area (Sum)			**65**	

D.	**Front Office : Admi/Acc/IT**				
	GM	1	151	**151**	44
	Sec to GM	1	9	**9**	2
	FO Mgr Couples as duty manager)	1	5	**5**	1
	Revenue Manager	1	8	**8**	2
	Reservation Office	1	8	**8**	2
	Work Station	1	25	**25**	8
	Discussion Room (Commom Meeting)	1	4	**4**	1
	Chief Accountant- Refer Staff Reqmnt	1	15	**15**	5
	Credit Manager	1	8	**8**	2
	Cashier	1	5	**5**	1
	Controller	1	8	**8**	2
	Payroll Manager	1	5	**5**	1
	Account Record Room	1	10	**10**	2
	Meeting room	1	10	**10**	2
	Computer Room	1	17	**17**	8
	UPS	1	35	**35**	12
	Recorde	1	10	**10**	2
	Storage and Copy8ing	1	9	**9**	2
	Total Area (Sum)			**347**	

E.	**Sales**				
	Rooms Mgr	1	8	**8**	18

	Banquet Mgr	1	8	**8**	18
	Workstation	2	5	**10**	22
	Discussion Room	1	10	**10**	22
	Storage and Copying	1	8	**8**	20
	Total Area (Sum)			**44**	

F.	**F&B**				
	Multi Cuisine Main Kitchen	1	85	**85**	**20**
	Room Services Main Kitchen	1	20	**20**	5
	Pastery	1	32	**32**	7
	Bakery	1	20	**20**	4
	Commissary prep Kitchen	1	40	**40**	9
	Common Dishwash	1	20	**20**	5
	Central Potwash	1	12	**12**	2
	Pot Store	1	8	**8**	3
	Banquet BOH & Store	1	130	**130**	30
	Cold Kitchen	1	18	**18**	4
	Café Kitchen	1	12	**12**	2
	Show Kitchen\Back Pantry Area for bar	1	8	**8**	2
	Bar Counter	1	15	**15**	3
	Chief Counter	1	5	**5**	2
	Chief Office	1	8	**8**	2
	Total Area (Sum)			**433**	

G.	**House Keeping**				
	Issue / Trailer / Dirties Collection	1	5	**5**	4
	House Keeper Executive	1	10	**10**	10
	House Keeping Assistant	1	8	**8**	8
	Hsk Office + House Keeper (as per Ap.)	1	16	**16**	15
	Dead Store	1	30	**30**	28
	F&B Circulatipon	1	5	**5**	5
	Guest Supply Store	1	10	**10**	10
	Bulk Lenin Store	1	5	**5**	5
	Tailor	1	10	**10**	10
	Upholestry Store	1	5	**5**	5
	Lost & Found	1	5	**5**	5
	Total Area (Sum)			**104**	

H.	**Human Resources**				

	HR Mgr	1	8	**8**	14
	Sec	1	4	**4**	7
	Traing Room	1	20	**20**	35
	Training Mgr	1	4	**4**	7
	Discussion	1	20	**20**	35
	Total Area (Sum)			**56**	

K	**Security & Time Office**				
	Staff Entry & Time Keeper/cctv	1	10	**10**	
	Security Mgr	1	8	**8**	
	Total Area (Sum)			**18**	

L.	**Repair and Maintenance**				
	Head of Engg	1	8	**8**	
	Asst Engg	1	8	**8**	
	Secured Store	1	10	**10**	
	Paint Shope	1	10	**10**	
	Engg Store	1	10	**10**	
	Carpentry	1	10	**10**	
	Spare Parts	1	5	**5**	
	Total Area (Sum)			**61**	

J.	**Staff Facility**				
	Male Toilets & Lockers	1	100	**100**	
	Male Executive Toilets and Lockers	0	0	**0**	
	Female Toilets and Lockers	1	70	**70**	
	Kitchen	1	25	**25**	
	Staff Cafeteria	1	90	**90**	
	Staff Recreation Area	1	15	**15**	
	Total Area (Sum)			**300**	

I.	**Miscellenouis**				
	Divers Rest Room	1	15	**15**	
	Drivers Toilet	1	22	**22**	
	Microbiologist	1	8	**8**	
	Total Area (Sum)			**45**	

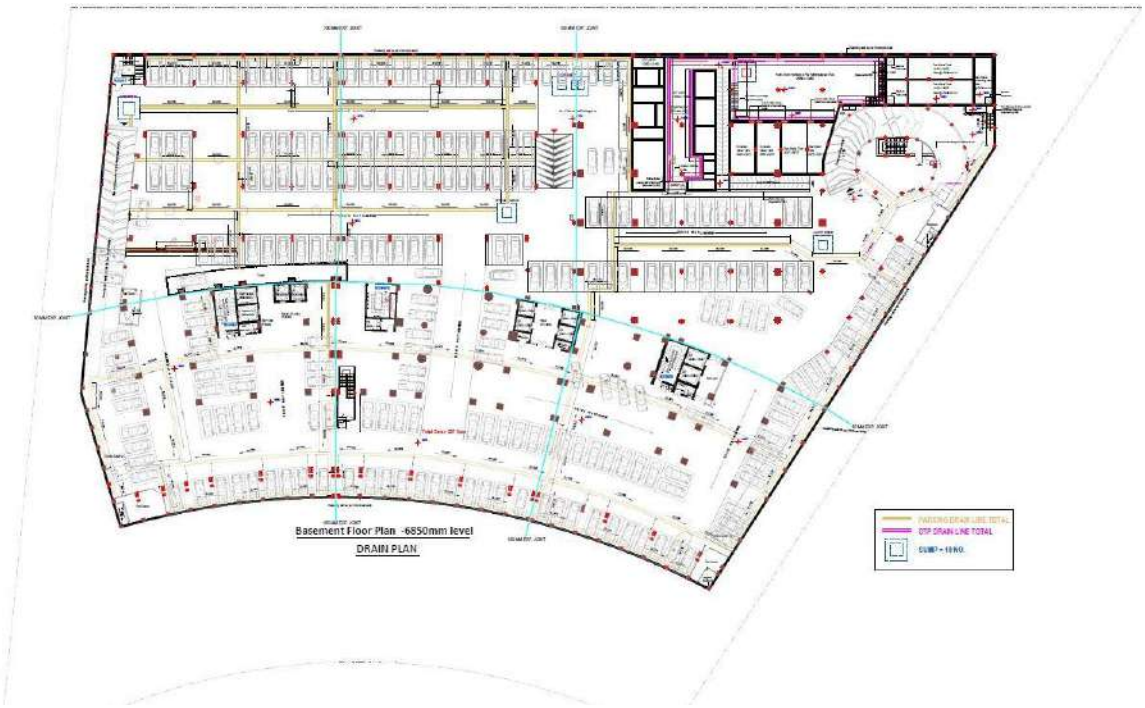
4.2.9 FLOOR PLANS

Basement 3:
WTP, Fire Pumps, and Domestic, raw and fire tanks

Basement 2 Plan:

Basement 2 is comprised with service amenities like STP, ETP, WTP, fire tank, domestic water tank, etc., and parking spaces
Car Parking Space = 350

Sump Pumps (DG) to collect ground water and send it back to lake to save the foundation
Water treated in STP is sent to chiller and gardening purpose



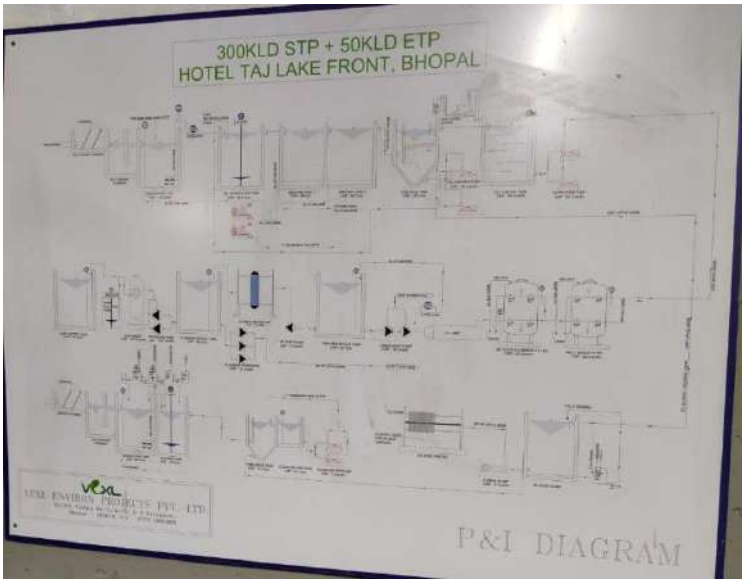
Raw Water tank Capicity: 90 KL & 125 KL

Domestic Water tank Capicity:118 KL & 123 KL

Fire Water tank Capicity: 1. 200 KL, 2. 200 KL

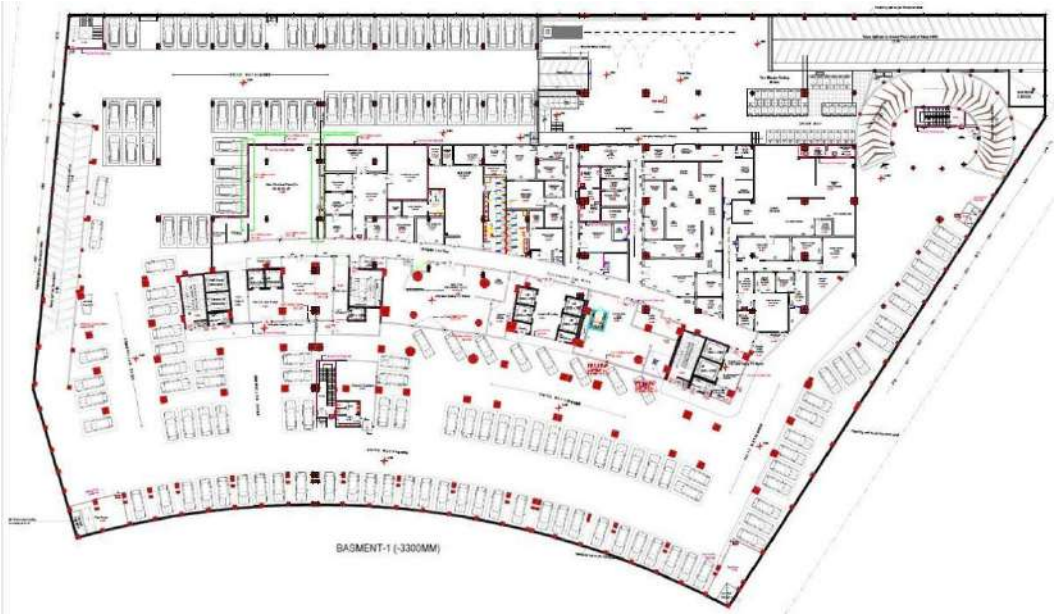
WTP Process: Raw Water - Sand Filter - Activated Carbon - Hyper Filtration

Kitchen/Boilers

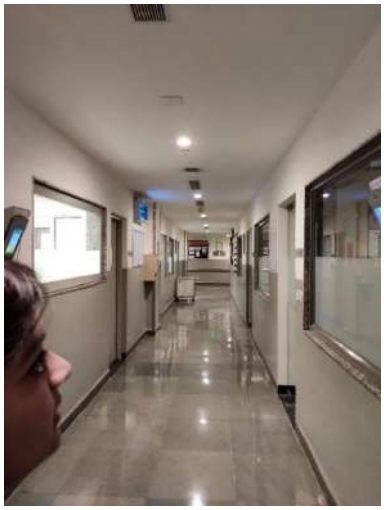


Basement 1 Plan:

- Basement 1 mainly consist of different types of Offices spaces like Housekeeping office , Finance Office, Sales office, Engg office and Canteen, Storage, Laundry spaces etc.
- It also has parking spaces and services outlet.
- All the staff of taj lakefront uses basement 1 as an entrance and parking space respectively.
- Car Parking Space: 250 ECS
- Grey Fans for fresh air, Red Fans for smoke extraction through fire shaft

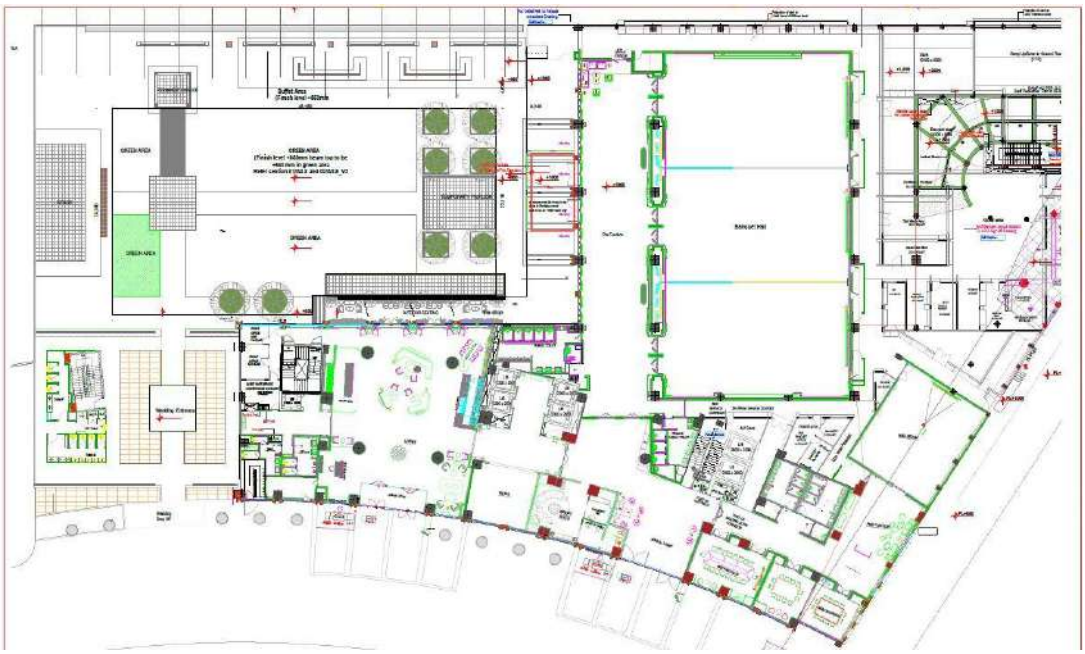






Ground Floor Plan:

- The entrance lobby of the hotel has grand luxury feel as it has triple heighted spaces with very attractive false ceiling consist of cove lighting.
- There is a separate entrance has been provided including Banquet Hall, Meeting room, conference rooms.
- A Banquet Hall can be divided as 3 halls by automatic temporary panels. Washroom for Banquet guests is accessible from Pre-Function Area which act asa buffer space for guest.
- 2 Banquet Halls, Sheesh Mahal: Small banquet hall and Raj Mahal: Big Banquet Hall.
- 33kv Incoming line for transformer



- 2 DG, 1250 kVA and 1010 kVA, it take 8 seconds for backup and DG room is sound proof with the layering of glass fibre, reduces the sound from 95 dB to 65 dB and upto 45 dB in guest floors.



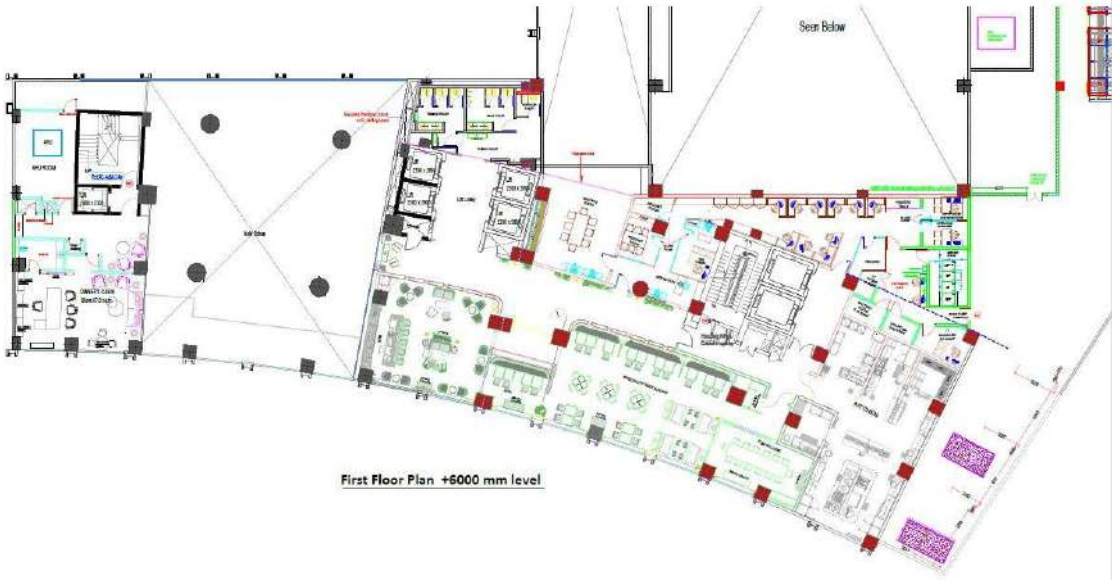





First Floor Plan:

- This floor has a Chinese Restaurant with a wonderful Chinese theme based interiors Ming restaurant + Bar.
- Private Dining Restaurants are also provided in this floor.

Chiller are located on the back



- 3 Chillers 350 tons each











Second Floor Plan:

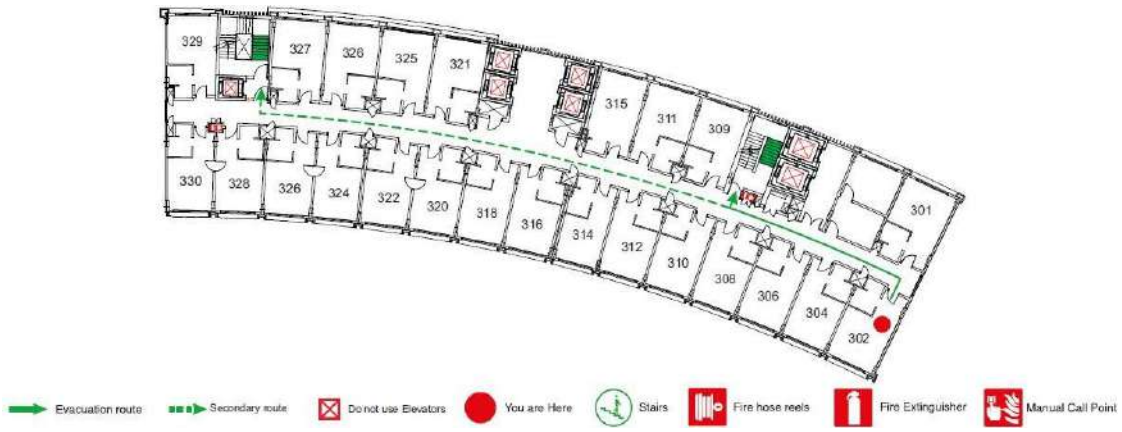
- Restaurant Seating's are provided in this floor. Kitchen including cooking, store, washing space has been provided. Live kitchen is also there.
- Amenities like Gym, Spa & sauna, Saloon etc. are provided with top classfacilitie



Service Floor 2.5:

Typical Floor Plan (3rd to 7th) Floor :

- 24 guest rooms including Executive Suites, Twin Bedrooms are there in this floor.
- Housekeeping Room are also there in this room for room services.
- Specialty of these typical floor is that interior of lobby and corridors are fully different which gives different types of feeling at each different floor. FCU in Room s 1.5 T, Suites 2 T









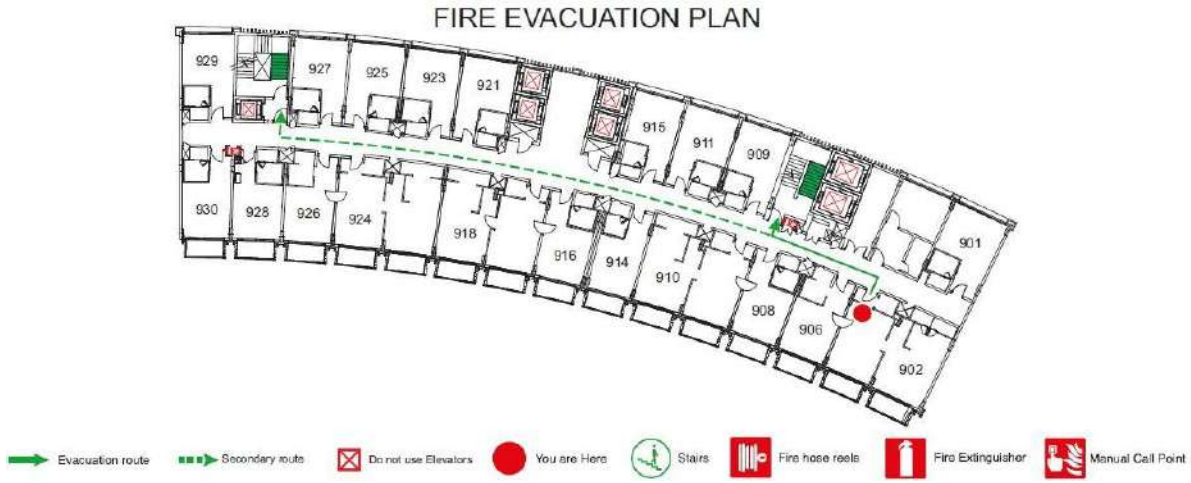


8th Floor Plan:

- 15 guest rooms including Executive Suites, King Bedrooms and 1 presidential suite are there in this floor.



- **9th Floor Plan:**
- 20 guest rooms including Executive Suites, Twin Bedrooms are there in this floor.

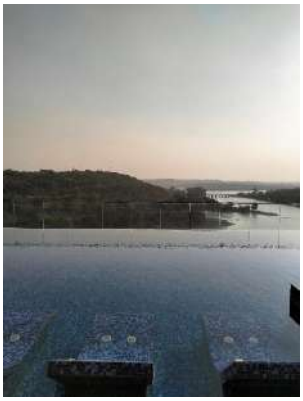


9.5th Floor: Pool filtration, plumbing shafts end her & exhaust ducts of bathrooms end here

10th Floor Plan: Open terrace lounge, club area with the view of swimming pool is provided in the top floor of this Hotel.









GUEST ROOM TYPOLOGY

Total there are 152 rooms which are majorly classified into 4 categories:

- Executive Suite
- Twin Room
- King Room
- Presidential Suite

Executive Suite

Tranquility and luxury unite in the Executive Suites at the Taj Lakefront, Bhopal. Extravagant and spacious, these suites, with the option of interconnecting rooms, are ideal for vacationing with family and friends. The breakfast table, the plush seating, a dressing area and state-of-the- art bathrooms are the perfect setting that your memories deserve. Indulge in the breath-taking views of the lake and Taj's signature service for a truly luxurious retreat.





Size: 66 sq.m

Signature Feature: Spacious two-room suites overlooking the lake

Occupancy Details: Up to 3 guests. Max Adults: 3, Max Children: 2



OTHER CONVENIENCES

- Tea-coffee maker
- Forest Essentials bath amenities
- Air conditioning
- Separate living area
- Electronic safe.
- WiFi
- Iron & ironing board
- In-room bottled water
- Minibar
- Newspaper
- Full-length mirror, hair dryer, weighingscale
- 49-inch Smart LED TV

Twin Room

Framed by the picturesque backdrop of the hills, the Deluxe Rooms are the epitome of tranquillity and relaxation. The decor seamlessly merges the aesthetic philosophy of Madhya Pradesh with a European flair. Fully-equipped with quality amenities, including digital connectivity with smart TV and Taj's signature service, the Deluxe Rooms offer an unmatched experience of comfort. Includes complimentary access to the hotel gym and wet areas.

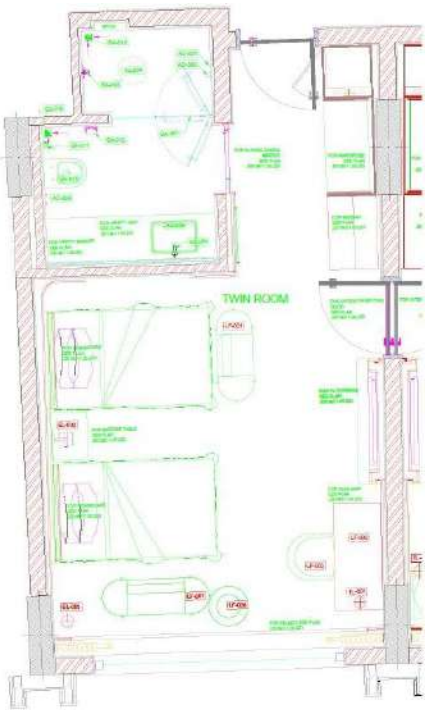




SIZE: 33 sq.m

SIGNATURE FEATURE: Spectacular vistas of the hills

Occupancy Details: Up to 3 guests. Max Adults: 3, Max Child



OTHER CONVENIENCES

- Tea-coffee maker
- Forest Essentials bath amenities
- Choice of smoking & non-smoking accommodation
- Air conditioning
- WiFi
- Iron & ironing board
- In-room bottled water
- Minibar
- Newspaper
- Full-length mirror, hair dryer, weighing scale
- 49-inch Smart LED TV
- Shower Cubicle

King Room

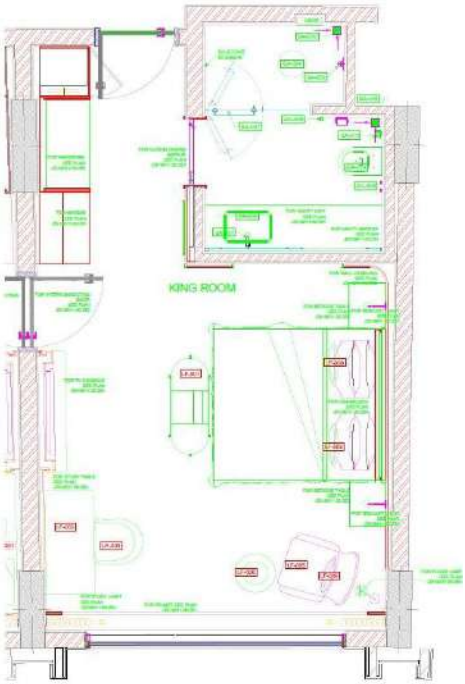
Framed by the picturesque backdrop of the hills, the Deluxe Rooms are the epitome of tranquillity and relaxation. The decor seamlessly merges the aesthetic philosophy of Madhya Pradesh with a European flair. Fully equipped with quality amenities, including digital connectivity with smart TV and Taj's signature service, the Deluxe Rooms offer an unmatched experience of comfort. Includes complimentary access to the hotel gym and wet areas.



SIZE: 33 sq.m

SIGNATURE FEATURE: Spectacular vistas of the hills

Occupancy Details: Up to 3 guests. Max Adults: 3, Max Children: 2



OTHER CONVENIENCES

- Tea-coffee maker
- Forest Essentials bath amenities
- Choice of smoking & non-smoking accommodation
- Air conditioning
- WiFi
- Iron & ironing board
- In-room bottled water
- Minibar
- Newspaper
- Full-length mirror, hair dryer, weighing scale
- 49-inch Smart LED TV

Presidential Suite

Bhopal is the land of the Nawabs and Begums, and epitomizing this rich culture is the Presidential Suite of the Taj Lakefront, Bhopal. With interiors that give an ethereal glimpse into the bygone era and a private balcony in every room overlooking the glorious city, the Presidential Suite is a perfect union of the multitude of generations. A lavish experience, embodied by an elegant living room, a plush dining area and a palatial master bedroom, await your presence in the opulence of the Presidential Suite at the Taj Lakefront, Bhopal.





SIZE: 152 sq.m

SIGNATURE FEATURE: A regal experience in the heart of the country

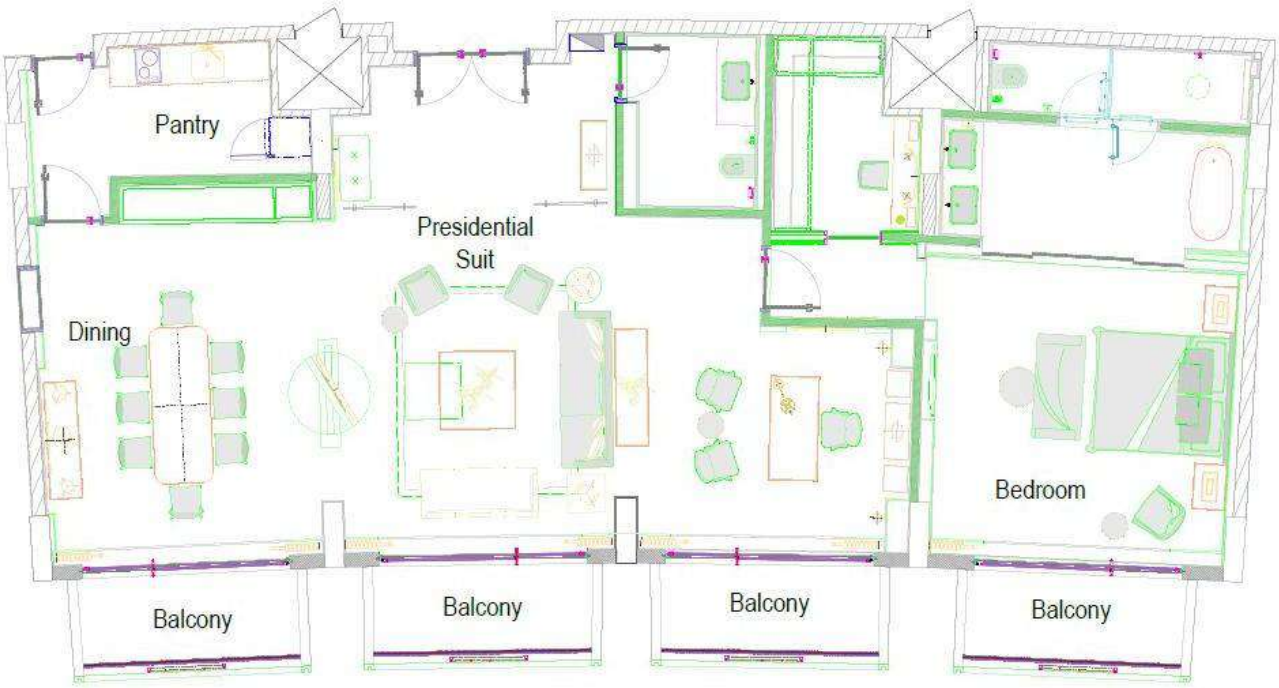
Occupancy Details: Up to 3 guests. Max Adults: 3, Max Children: 2





OTHER CONVENIENCES

- Forest Essentials bath amenities
- Air conditioning
- Bedroom with private balcony or verandah & bathroom
- Living room with dining area, bedroom & bathroom
- Electronic safe.
- Tea coffee maker
- WiFi
- Iron & ironing board
- In-room bottled water
- Minibar
- Newspaper
- Full-length mirror, hair dryer, weighing scale
- 49-inch Smart LED TV
- Lake View
- Private Pantry



4.2.10 VIEW/INTERIOR OF SPACES



Spa & Sauna



PDR



Banquet Hall



Swimming pool



Restaurant Seating



Lounge/Bar

4.2.11 SERVICES









4.2.12 INFERENCES

- Smoke extraction fans should be there in basement.
- Water tanks can be placed in basement with stp and wtp.
- Duct opening can be treated with landscaping
- Large banquet halls can be divided in to 2 or more parts for more no. of enevts,
- Services should not be compromised.
- Guest floors can be divided into different interior themes for having different identity
- Different lanes for waiting, drop off and pickup.

4.3 DESK APPRAISAL: AVASA, HYDERABAD

4.3.1 INTRODUCTION



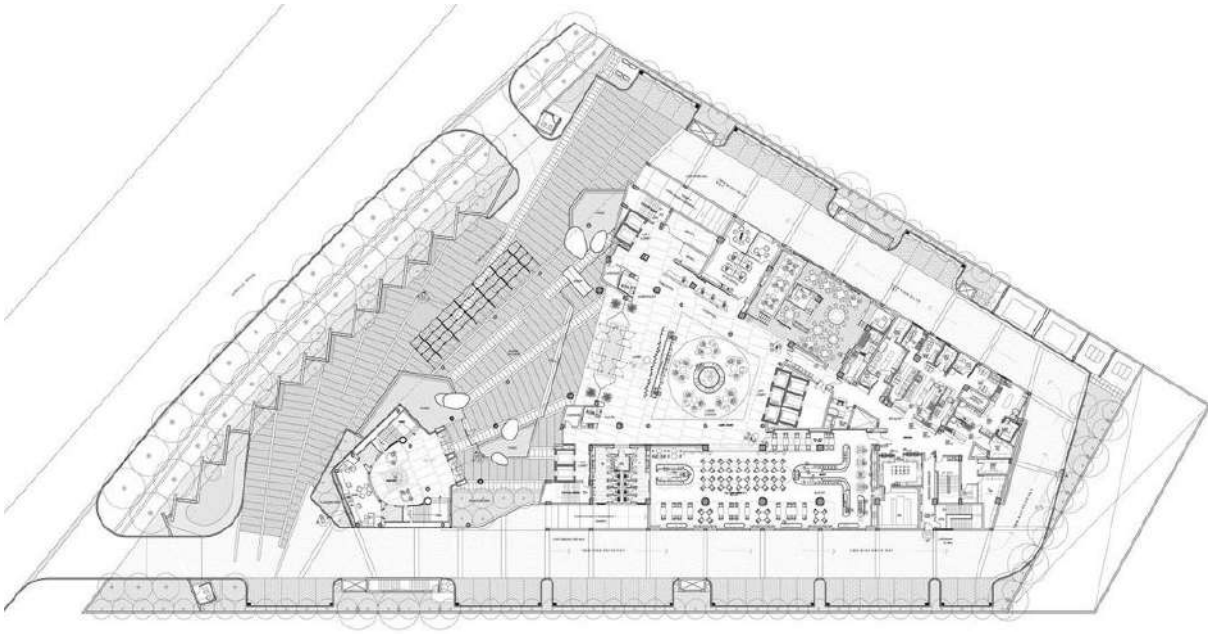
PROJECT	AVASA
LOCATION	Hyderabab
CLIMATE	Tropical wet and dry climate
TOPOGRAPHY	Plain
ARCHITECT	Nandu Associates
COMPLETION YEAR	2012
SITE AREA	2.02 Acres
NO OF ROOMS	217

Design Concept

1.It was designed with STEPPED TERRACE GARDENS with respect to the site.
2. It intimate interlude for reIaxation, business & convention.
3. With 98% of the lighting being led, Avasa is a highly environment friendly.

4.3.2 SITE PLAN

- The site is wide towards the front road and narrows Down towards the back.
- The building follows the site, forming the letter 'A',
- Due to limited open space on site, continuous green space has been conceived in the form of stepped terracesthird level to the top flooR.



4.3.3 FACILITIES

1. It is a 11 floor frame structure with stepped terrace gardens.
2. It consists of 217 rooms
3. 3 banquet halls
4. 3 F&B restaurants Sky lounge

5.Business lounge, SPA, Swimming pool











LOUNGE:

- Two atriums have been created to characterize the areas that they represent
- The lobby atrium at the ground level connects the grand lobby and the banquet halls.
- The central atrium is conceived at the third level and has been created under the stepped terraces, creating a sense of openness and a distinct scale
- This adds to the feeling of grandeur as one stands in the atrium

ELEVATORS:

- There are total 14 floors including 3 basements
- 3 guest lifts with 8 people capacity are present at entrance lobby
- And 2 guest lifts are present at the entrance which Leads directly to sky bar in 10th&11th floors
- And 2 guest lifts are present at the entrance which leads directly to banquet halls in third floor
- 3 service lifts of capacity 13persons [1000kg] are present At service area from lower basement to 11 floor
- In total there are 7 guest lifts and 3 service lifts
- Size of 3 guest lifts 2x2.Sm
- Size of 4 guest lifts 3x2.Sm
- Size of 3 service lifts 3x2.5

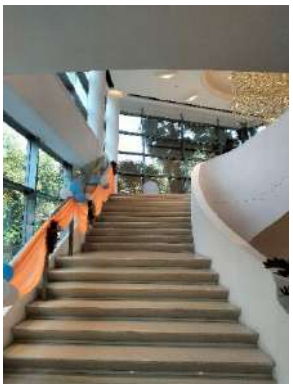
BANQUET HALL- 3No.s.

- CONSTELLATION It has a separate entrance and a pre function area. It can accommodate 250 seating and it had common area for buffey this hall can be divided if required, by a sound proof partition giving two halls
- VEGA It had a capacity of seating of 100 people
- NOVA It had a capacity of seating of 100 people









Bars And Restaurant:

- Indian restaurant of capacity 250
- Ohm-Chinese restaurant capacity -70
- Bridge lounge Coffee shop for guests BAR Sky lounge is a bar designed as a bridge between 10th & 11th floors

Recreation:

- Gym- 12x9m
- Spa - 12x9m
- Swimming pool — 200sqm depth varies from 34feet capacity — 1Iakh 50 thousand liters.



Conference Banquet Halls:

There are five conference halls which can accommodate all types of conferences, meetings, seminars, workshops & product

- 145.8 sq.m.
- 100 seat well equipped and well manned

Room Facilities:

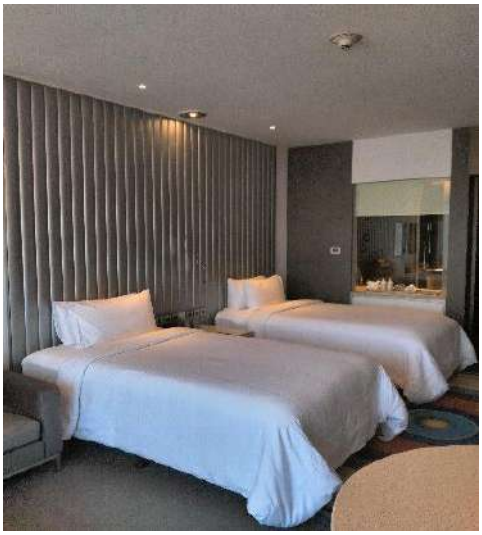
- Individually controlled air conditioning,
- Sound proof rooms,
- Telephone-two per room
- International and national dialing
- Broad band internet access
- Tea /coffee makers
- sprinklers and smoke detectors
- fax machine available on request
- Electric current 220v SO cycles











Meet Orion

- Boardroom
- 74 sq.m.
- 2S seater
- Situated away from disturbances

Meet Omni

- Boardroom/ Classroom
- 70 sq.m.
- 2S seater

Bridge Business Club

- Lounge + Bar
- Formal
- Area — 180 sq.m.
- Capacity — 4S







4.3.4 ROOM TYPOLOGY

Dwelling Room Types

- AVASA SILVER
- AVASA PLATINUM
- AVASA STUDIO SUITE
- AVASA GALLERY SUITE

Avasa Silver

- Room —35 sqm Toilet —7 sqm LCD TV
- iPod docking station Wired & wireless broadband, internet Electronic safe Personal bar, Iron Board Complimentary Buffet Breakfast

Avasa Platinum Club



- Room — 35 sqm Toilet —7 sqm
- LCD TV; I Pod docking station Wired & wireless broadband internet access Electronic safe , 1 Person bar, Iron Board Complimentary Buffet Breakfast
- One Way Airport Convenience Media Hub, Happy Hour cocktails at Bridge Business Club.

Avasa Junior Suite

- Room —40 sqm,
- Toilet —12 sqm LCD TV,
- iPod docking station Wired & wireless broadband internet Electronic safe, Personal bar,
- Iron Board
- Complimentary Buffet Breakfast An hours' use of the Meeting room Two-way Airport conveyance

Avasa Gallery Suite

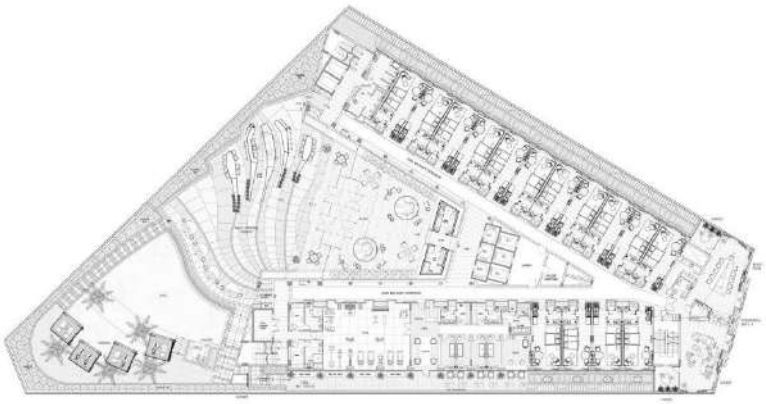
- Room -70sqm, Toilet —l2sqm LCD TV,
- iPod docking station,
- Wired & wireless broadband internet Electronic safe, Personal bar,
- Iron Board
- Complimentary Buffet Breakfast 2 hours use of the Meeting room Two-way Airport conveyance
- Complimentary Cocktails at Bridge Business Club



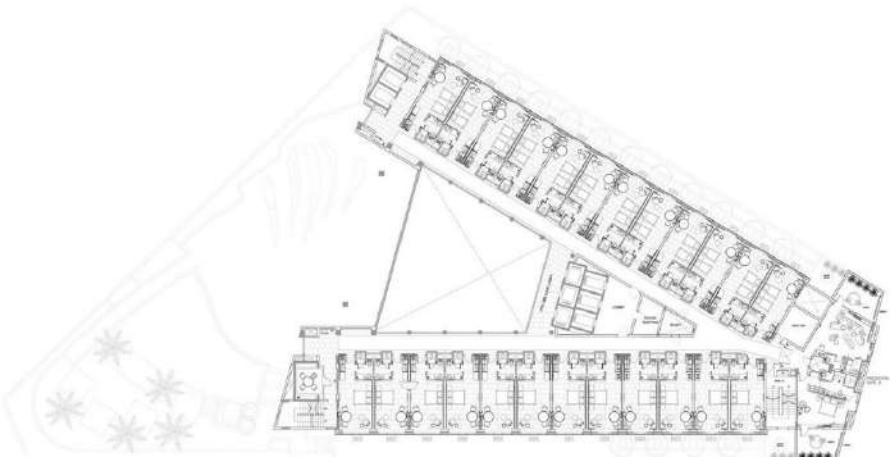


4.3.5 FLOOR PLANS

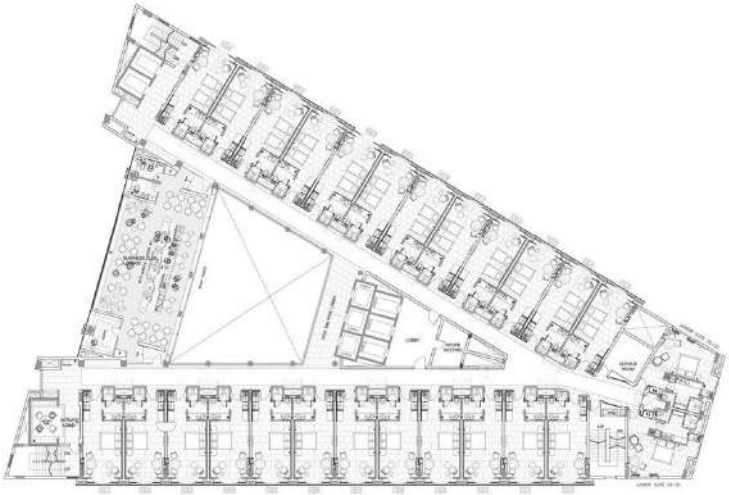
3rd Floor Plan



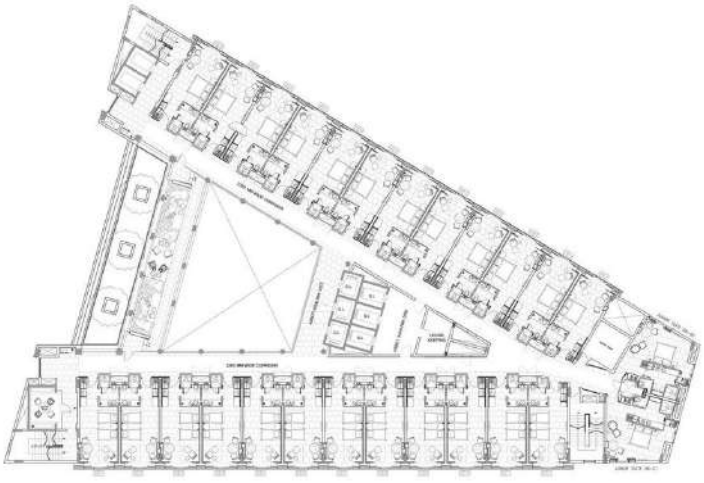
4TH Floor Plan



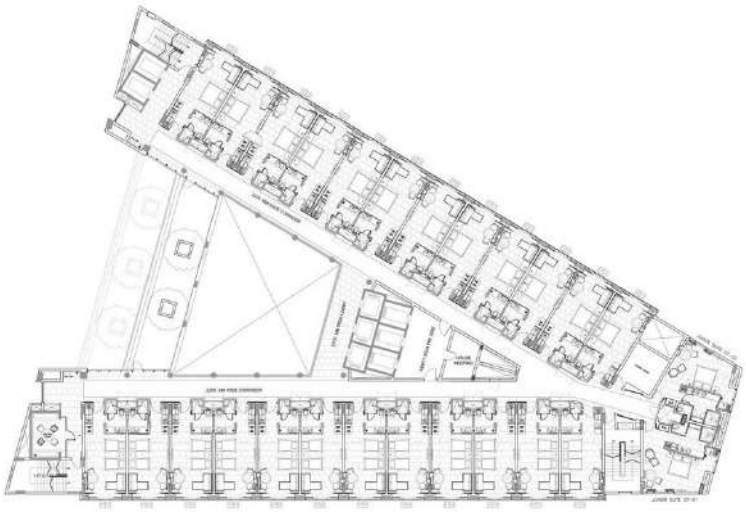
5TH Floor Plan



6TH Floor Plan



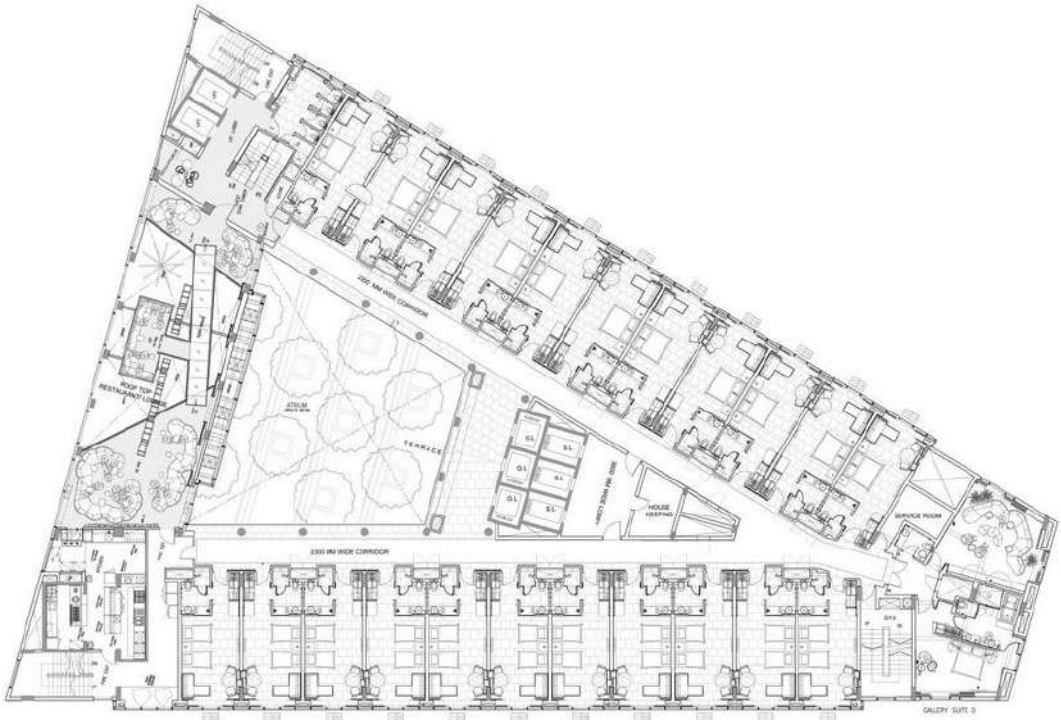
7TH Floor Plan



8TH Floor Plan



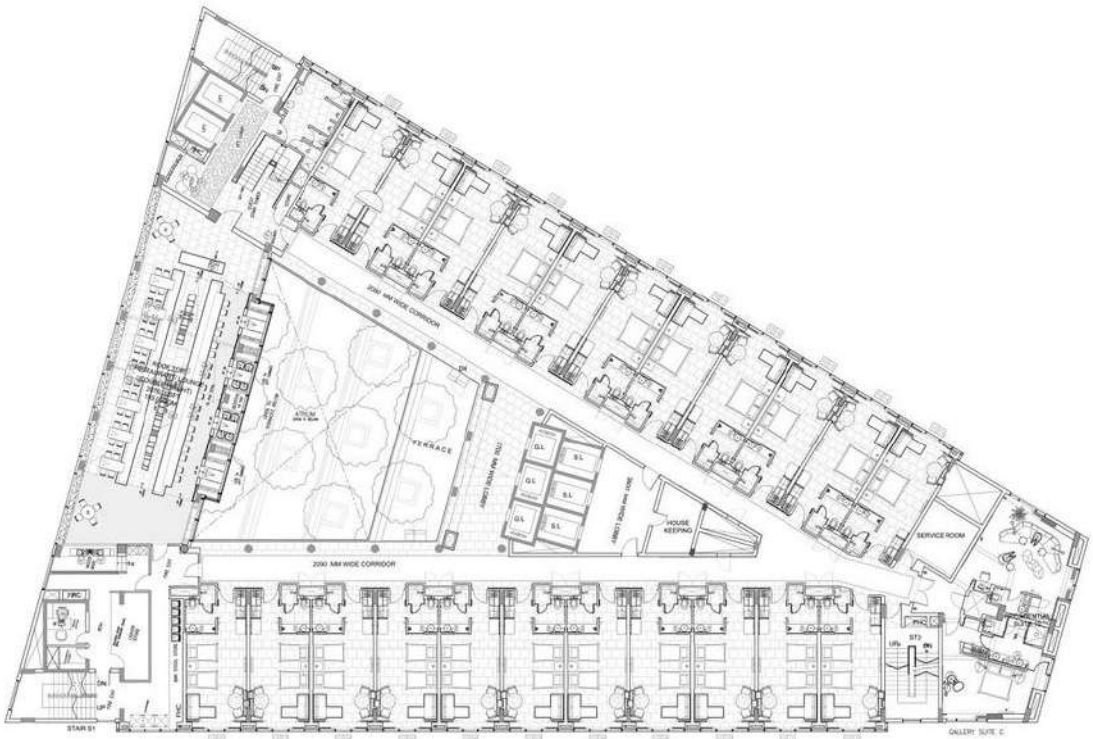
9TH Floor Plan



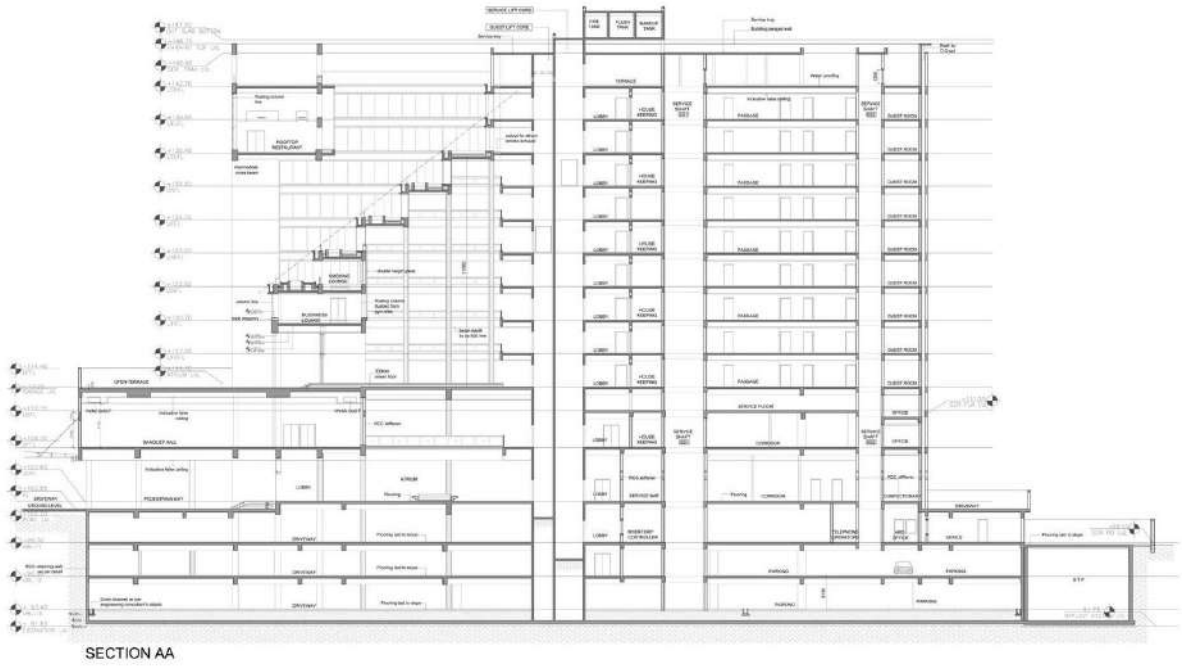
10TH Floor Plan



11TH Floor Plan



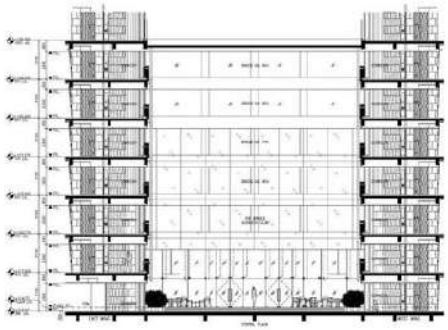
4.3.6 SECTION



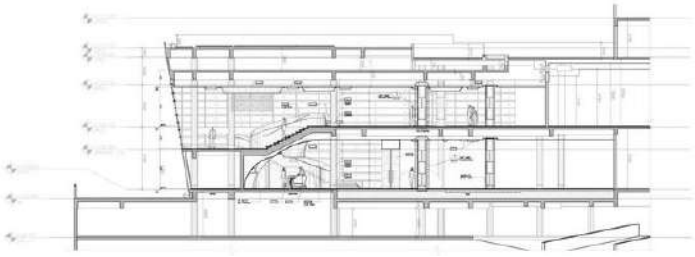
Sectional Details



SECTION 1-SECTION THROUGH TERRACE AND CENTRAL PLAZA



SECTION 2-SECTION THROUGH CENTRAL PLAZA FACING TERRACE



4.3.7 SERVICES

Water Supply And Treatment:

- Source: Bore well & Municipal water
- 2no.Of raw water tanks: 60kI.Each
- 1 Ro-water tank 20kl Watertank:120kI. Each FIRE WATER TANK MOTORS
- 2 treated water tank.
- 2 no of fire watertank100kl.Each-the hotel has its own system of filtration, chlorination and changing of water. There is a confinuous purification of swimming pool water in swimming pool tank is changed every 3months.

WATER PLANT IN LOWER BASEMENTFIRE WATER TANK MOTORS SWIMMING POOL WATER TANK

- Water purification is done in 3 tanks sedimentation tank, carbon tank filter, sharpen tank filter
- Hydro pneumatic system is used for pumping water from ground to upper floors
- Sewage: include both liquid and solid waste. Vertical shafts are provided for sewage

Guest Floor---Service Floor---Lower Floor---To Underground Pipes---Master Pit---To Main Sewer.

To have working space and to have easy access vertical shafts are provided at each floor. Wet wells and sumps are provided where the sewage is allowed to settle for sometime before it is pumped to the Next pipe for final disposal. For maintenance of the sewage disposal system pumps and ejectors are used Sewage: include both liquid and solid waste. Vertical shafts are provided for sewage

4.3.8 INFERENCES

Planning:

- The hotel was designed with respect to the site and the landscape is provided in the form of stepped gardens as there is no space for landscape in the site
- The bell captain, reception desk, information desk and ” . administration area are all visible to the guests on entering the lobby. all the public areas are located on " ground and first floor only leaving the above areas to be used as guest floors thus lending privacy to the upper” floors Entrance to the banquet and conference halls on first floor is provided separately on entrance porch of the hotel & separate lifts were provided to them

Atrium: the atrium is 33 meters high with light taken from the sides. it gives better view from all floor.

4.4 DESK APPRAISAL: TAJ GATEWAY HOTEL, PUNE

4.4.1 4.3.1 INTRODUCTION

The gateway is a mid-market brand in the 5 star segment by the taj group of hotels and largely caters to the non-fussy, modern executives. The intent was to design a structure to compliment the image associated with the taj brand yet be true to the "gateway" focus of creating sanctuaries that refresh, refuel and renew the modern day traveller.The design remains true to the brand signature, crisp, courteous, warm and welcoming. The colour palette of red, grey and white standardised for this particular brand has been adhered to and used in the most innovative of ways thus creating bold, elegant, straightforward and an inviting visual appeal. The master planning is efficient and sensitive to the given site with proper zoning with climatically and contextually appropriate orientation of the building which would also flaunt the building elevation. The hotel planning adheres to the principle of zoning into 7 simple divisions stay, hangout, meet, work, workout, unwind and explore.

Located at the heart of the it action and only minutes away from the industrial hub, the gateway hotel pune is the most preferred choice of stay among business travellers as well as leisure seekers.

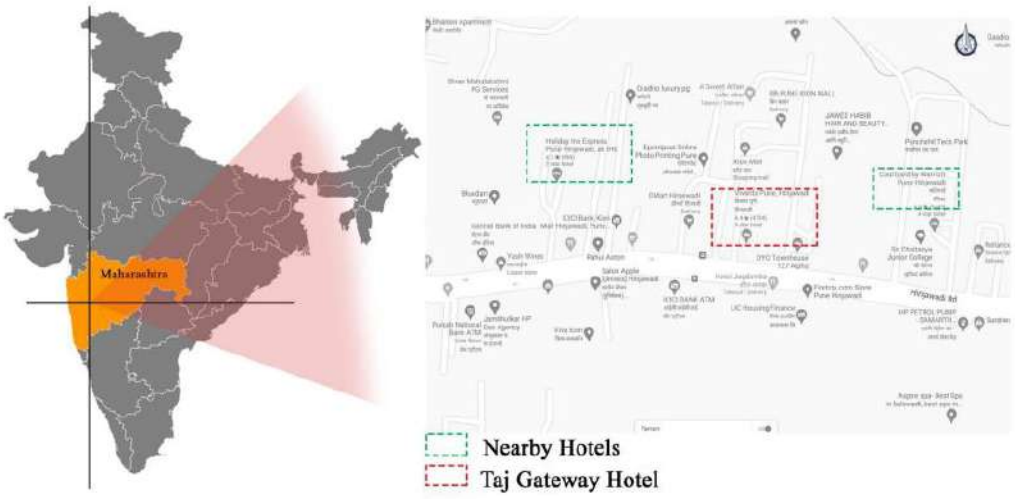


PROJECT	**TAJ GATEWAY HOTEL**
LOCATION	PUNE
CLIMATE	Hot Semi Arid Climate
TOPOGRAPHY	PLAIN LAND

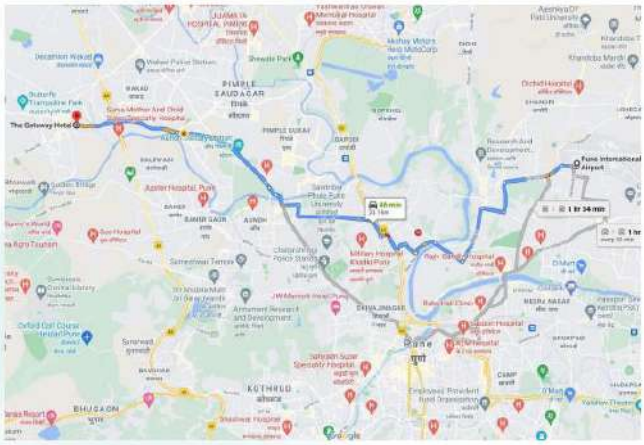
ARCHITECT	Edifice Consultants , Mumbai
COMPLITION YEAR	2013
NO. OF ROOMS	141
SITE AREA & FAR	2.35cre & 2

4.4.2 4.3.2 LOCATION

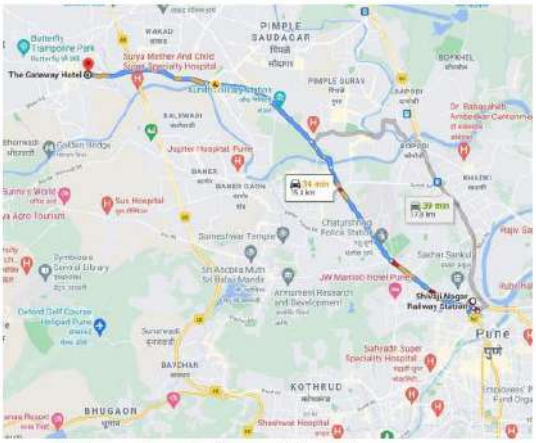
Gateway Hotel Hinjawadi is located in the heart of the IT Corridor of Pune and off the Pune - Mumbai Highway. IT is easily accesible from the industrial areas of PCMC Talegaon and 45 mins away from Chakan MIDC. The hotel is 30 mins away from the city centre and 1 hour from the airport.



4.4.3 4.3.3 ACCESSIBILITY



Distance from Airport 22.5km



Distance from Railway station 16km

4.4.4 4.3.4 AREA STATEMENT

Name	No. of units	Area sq.m.	Total Area	%
Total no.of keys	140			
No.of floors	10			
A. Guest Room Mix				
Double Bed Room	118	185.00	21830	80
Twin Bed Room	16	175.00	2800	10
Suite	6	400.00	2400	10
Toal Area(Sum)			27030	
B. Guest Floor Services				
i. Corridor Area				
Type floor corridor	1	180.00	180	30
iii. Housekeeping Static on typical floors				
Housekeeping Static on typical floo	1	185.00	185	32
iv. Lifts				
Guest Elevators	2.0	55.00	110	19
Service Lift Lobby	2.0	55.00	110	19
v. Fire Protection				
Fire Escape Stairs	2.0	30.00	60	10
Toal Area(Sum)			585	

C.	**Public Areas**				
i.	**Entrance Lobby**				
	Porte Cochere	1.0	40.00	**40**	15
	Entrance Lobby Waiting Area	1.0	100.00	**100**	38
	Front Desk	1.0	40.00	**40**	14
	Luggage Store	1.0	15	**15**	6
	Bell man	1.0	4.00	**4**	2
ii.	**Business Centre**	1.0	36.00	**36**	13
	Store	1.0	5.00	**5**	2
iii.	**Public Utilities**				
	Public Toilets	1.0	30.00	**30**	10
	Toal Area(Sum)			**270**	
D.	**F&B Outlets**				
	Bar (Special) - 30 covers	1.0	100.00	**100**	25
	Multi-cuisine restaurant-120 covers	1.0	300.00	**300**	75
	Toal Area(Sum)			**400**	
E.	**Banquets**				
	Banquet Hall	2.0	225.00	**450**	62
	Pre-Function Area	2.0	80.00	**160**	22
	Conference Room	1.0	50.00	**50**	6
	Banquet Toilets	1	60.00	**60**	10
	Toal Area(Sum)			**720**	
F.	**Recreation Facilities**				
	Swimming Pool	1	100	**100**	**32**
	Pool Change Room	1.0	50	**50**	**16**
	Gym	1.0	100.00	**100**	**32**
	Massage Rooms	1.0	6.00	**6**	**10**
	saloon	1.0	50.00	**50**	**10**
	Toal Area(Sum)			306.00	
G.	**Retail Arcade**				
	Retail Shops	1.0	25.00	**25**	
	Toal Area(Sum)		25.00		
	FOH				
A.	**Material Management**				
	Truck Dock	2.0	20.00	**40**	34
	Holding area/ Receiving Dock	1.0	38.00	**38**	34
	Veg wash	1.0	2.50	**2.5**	2
	Purchase & recieving off	1.0	20.00	**20**	15
	Purchase Office Manager	1.0	18.00	**18**	15
	Toal Area(Sum)			**118.5**	
B.	**Main Store**				
	General Store	1.0	120.00	**120**	75
	Linen	1.0	10.00	**10**	6
	Unassign Store	1.0	10.00	**10**	6
	Liquor	1.0	10.00	**10**	6
	Crockery Store	1.0	6	**6**	3
	Mis	1.0	2.00	**2**	2
	Fuel	1.0	2.00	**2**	2
	Toal Area(Sum)			160.00	

D. Front Office : Admi/ Acc/ IT		45		
GM	1.0	151.00	151	44
Sec to GM	1.0	9.00	9	2
FO Mgr (couples as duty manager	1.0	5.00	5	1
Revenue Mgr.	1.0	8.00	8	2
F & B Mgr	1.0	8.00	8	2
Reservation office	1.0	25.00	25	8
Work stations	1.0	4.00	4	1
Discussion room (common meeting	1.0	15.00	15	5
Chief Accountant-refer staff reqmnt	1.0	8.00	8	2
Credit Manager	1.0	5.00	5	1
Cashier	1.0	8.00	8	2
Controller	1.0	5.00	5	1
Payroll Manager	1.0	5.00	5	1
Accounts Record Room	1.0	10.00	10	2
Meeting Room	1.0	10.00	10	2
Computer room & Mgr	1.0	17.00	17	8
UPS	1.0	35.00	35	12
Records	1.0	10.00	10	2
Storage and Copying	1.0	9.00	9	2
Toal Area(Sum)			**347**	

E. Sales				
Rooms Mgr	1.0	8.00	8	18
Banquet Mgr	1.0	8.00	8	18
Workstation	2.0	5.00	10	22
Discussion room	1.0	10.00	10	22
Storage and Copying	1.0	8.00	8	20
Toal Area(Sum)			**44**	

F. F&B				
Multi Cuisine main kitchen	1.0	85.00	85	20
Room Service Kitchen (along with CS kitchen)	1.0	20.00	20	5
Pastery	1.0	32.00	32	7
Bakery	1.0	20.00	20	4
Commissary prep kitchen	1.0	40.00	40	9
Common Dishwash	1.0	20.00	20	5
Central Pot wash	1.0	12.00	12	2
Pot Store	1.0	8.00	8	3
Banquet BOH & Store	1.0	130.00	130	30
Cold kitchen	1.0	18.00	18	4
Cafe Kitchen	1.0	12.00	12	2
Show Kitchen (not required)	1.0	8.00	8	2
BackPantry area for Bar	1.0	15.00	15	3

G. House Keeping				
Issue / Tailor / Dirties collection	1.0	5	5	4
House Keeper Executive	1.0	10	10	10
House keeping Assistance	1.0	8	8	8
Hs/k Office + House keeper (as per Ap)	1.0	16	16	15
Dead store/unused textile/room, F&B in circulation / night cleaner	1.0	30	30	28
Guest Supply Store	1.0	5	5	5
Bulk Linen store	1.0	10	10	10
Tailor	1.0	5	5	5
Upholestry Store	1.0	10	10	10
Lost & Found	1.0	5	5	5
Toal Area(Sum)			104	

H. Human Resources				
HR Mgr(cabin based on AP manpo	1.0	8	8	14
Sec (workstation based on AP man	1.0	4	4	7
			0	
Training Room	1.0	20	20	35
Training Mgr	1.0	4	4	7
Discussion / interview room	1.0	20	20	35
Toal Area(Sum)			56	

I. Security & Time Office			
Staff entry & time keeper/cctv	1.0	10	10
Security Mgr	1.0	8	8
Toal Area(Sum)			18

J. Repairs and Maintenance			
Head of Eng	1.0	8	8
Asst Eng	1.0	8	8
Secured store	1.0	10	10
Paint shop	1.0	10	10
Eng store	1.0	10	10
Carpentary	1.0	10	10
Spare Parts	1.0	5	5
Toal Area(Sum)			61

K. Staff Facility			
Male toilets & Lockers	1.0	100	
Male executive toilets and lockers	0.0		
Female toilets & Lockers	1.0	70	
Kitchen	1.0	25	
Staff Cafeteria (3 shifts)	1.0	90	
Staff Recreation area	1.0	15	
Toal Area(Sum)		300	

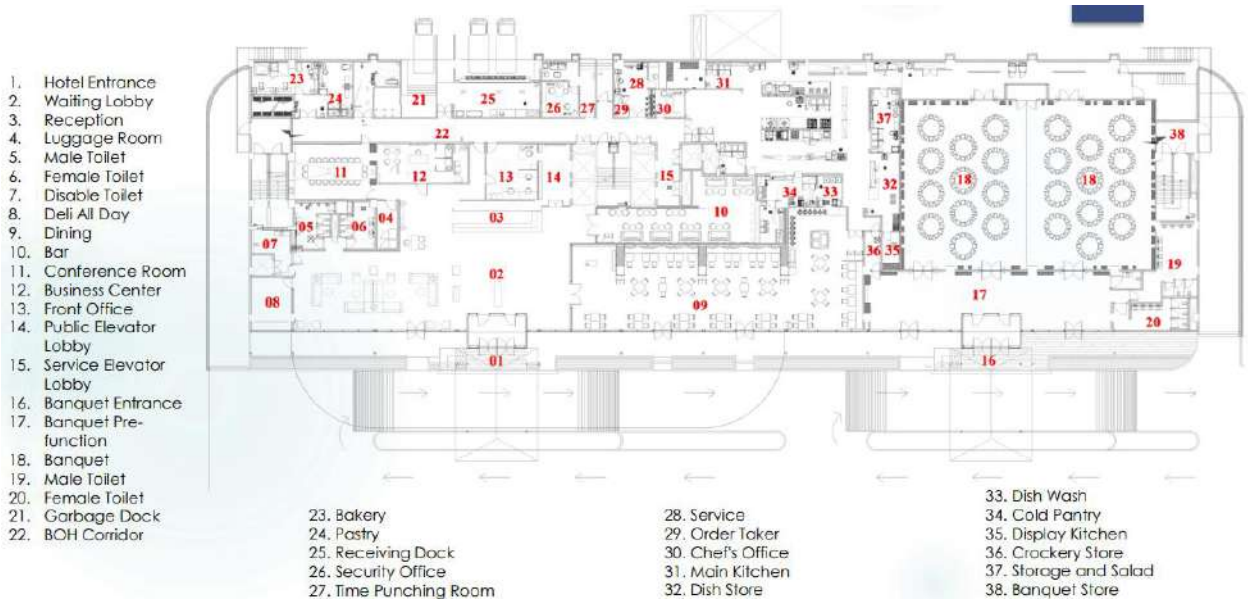
M.	Other BOH areas (exc mech)			
I.	**Mechanical Areas**			
	LV room	1.0	56.0	**56**
	Indoor Transformers	2.0	22.0	**44**
	LT Panel	1.0	74.0	**74**
	DG Generator Room	1.0	97.0	**97**
	Chiller Plant Room	1.0	125.0	**125**
	Rain water Tank(105cubic meter)	105 Cubic Meter		
	Municipal Tank	123 Cubic Meter		
	Raw Water Tank	123 Cubic Meter		
	Fire Tank	105 Cubic Meter		
	Treated Water Tank	123 Cubic Meter		
	Salt Storage	1.0	12.0	**12**
	Pump Room(Fire)	1.0	20.0	**20**
	Pump Room(Raw + Soft+WTP)	1.0	60.0	**60**
	Boiler Room with Pumps and heat	1.0	58.0	**58**
	STP with pumps and equipments	1.0	80.0	**80**
	Work Shop	1.0	22.0	**22**
	Engineering Office	1.0	8.0	**8**
	Engineering Store	1.0	10.0	**10**
	Control Room	1.0	15.0	**15**
	Underground Oil storage tanks	1.0	190.0	**190**
	Swimming pool filtration plant	1.0	12.0	**12**
	Toal Area(Sum)			**487**

ii.	**Mechanical Areas on terrace**			
	Cooling Towers	1.0	135.0	**135**
	Overhead Tanks	1.0	12.0	**12**
	Ventilation/Exhaust fans	14.0	12.0	**168**
	Flushing tank+Cooling tower tank	3.0	9.0	**27**
	Staircase pressurisation fans	3.0	11.0	**33**
	Lift Pressurisation fans	2.0	2.2	**4.4**
	Scrubber for kitchen exhaust	1.0	5.0	**5**
	Toal Area(Sum)		186.2	**384.4**

N.	**Parking**	181	
	Basement 2		1700
	Basement 1		1420
	Total Wall Thickness and circulation		**3120**

4.4.5 4.3.5 FLOOR PLANS

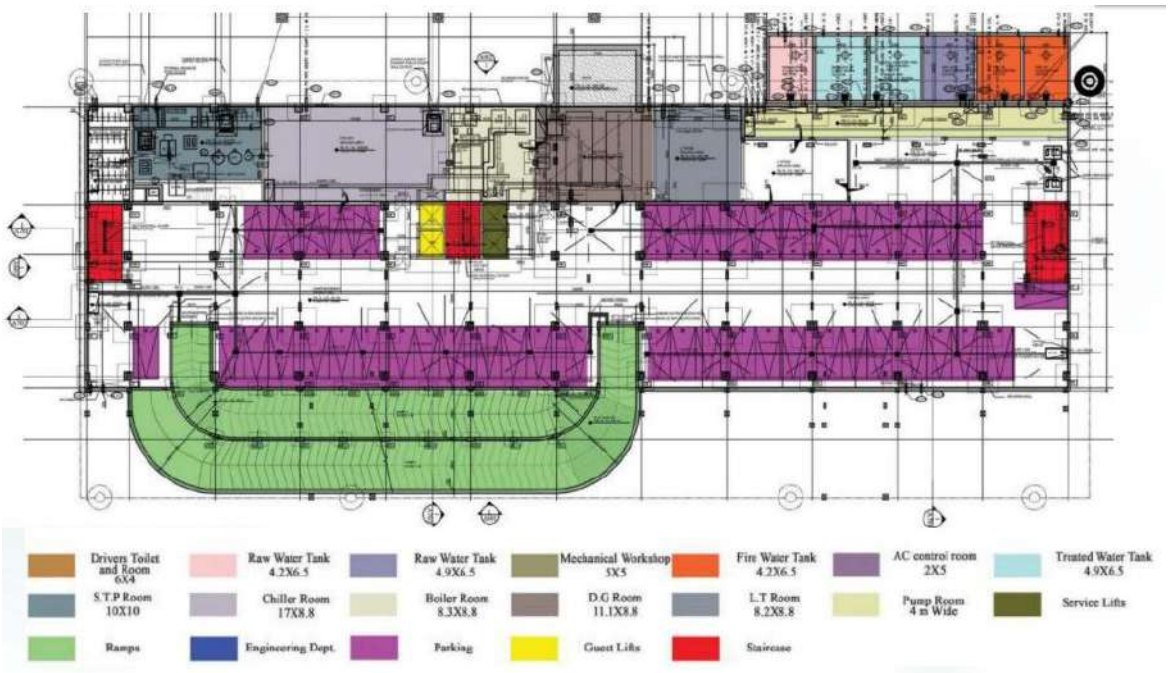
Ground Floor Plan



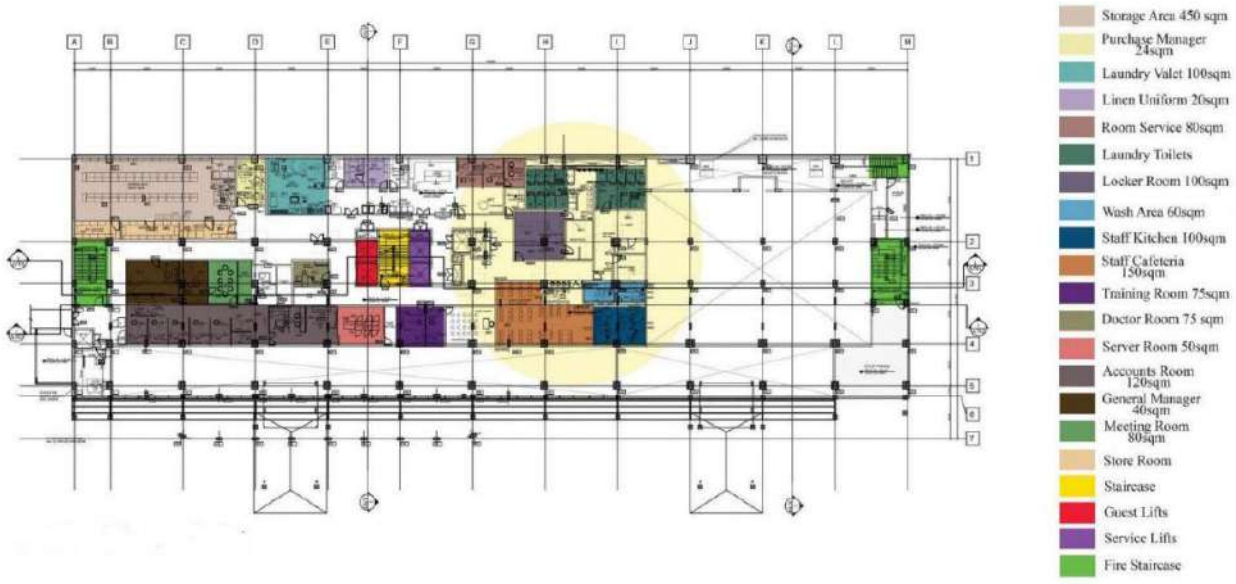
Lower Basement Plan:



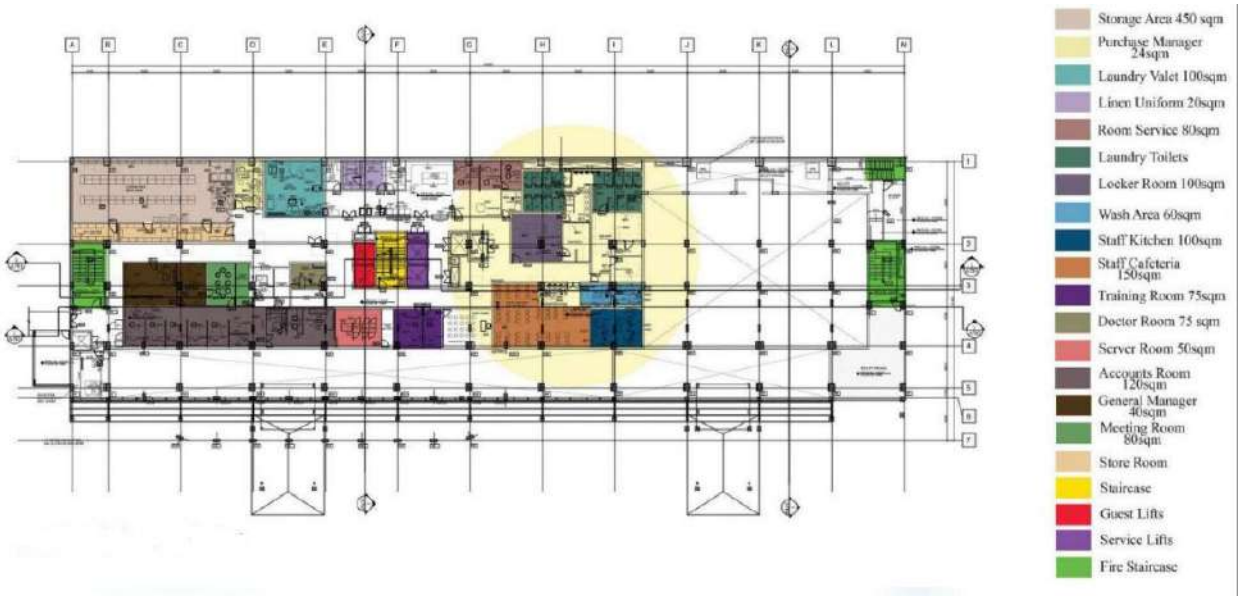
Upper Basement Plan



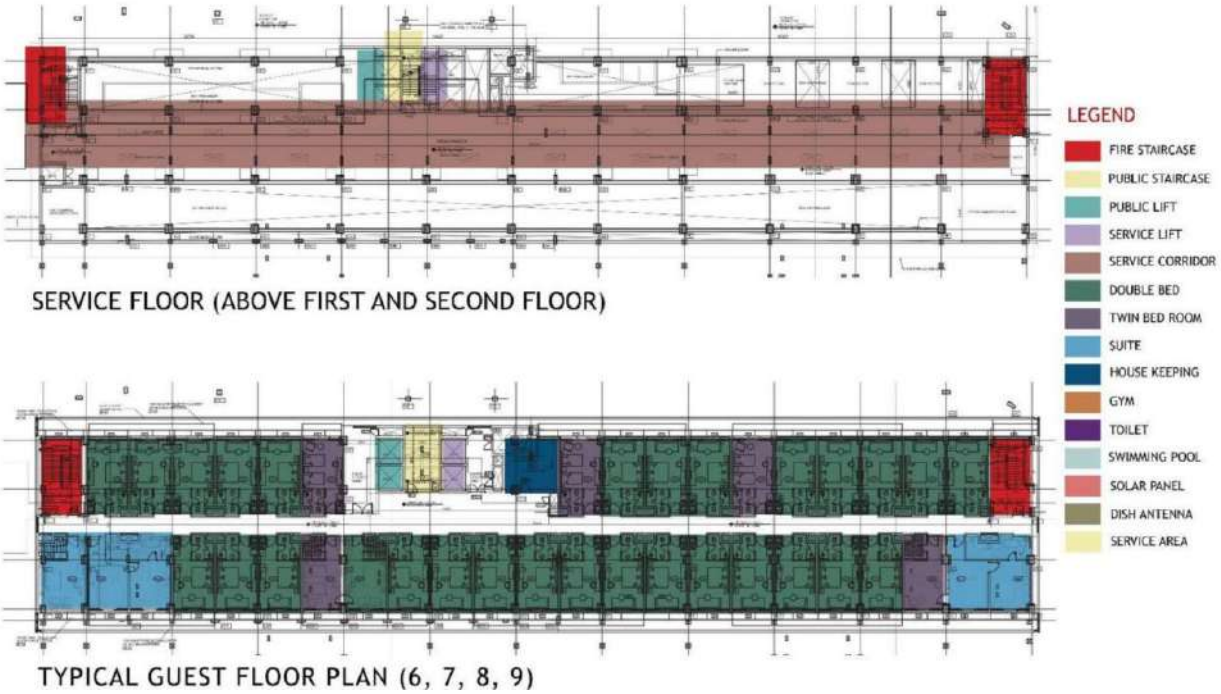
Ground Floor Plan:



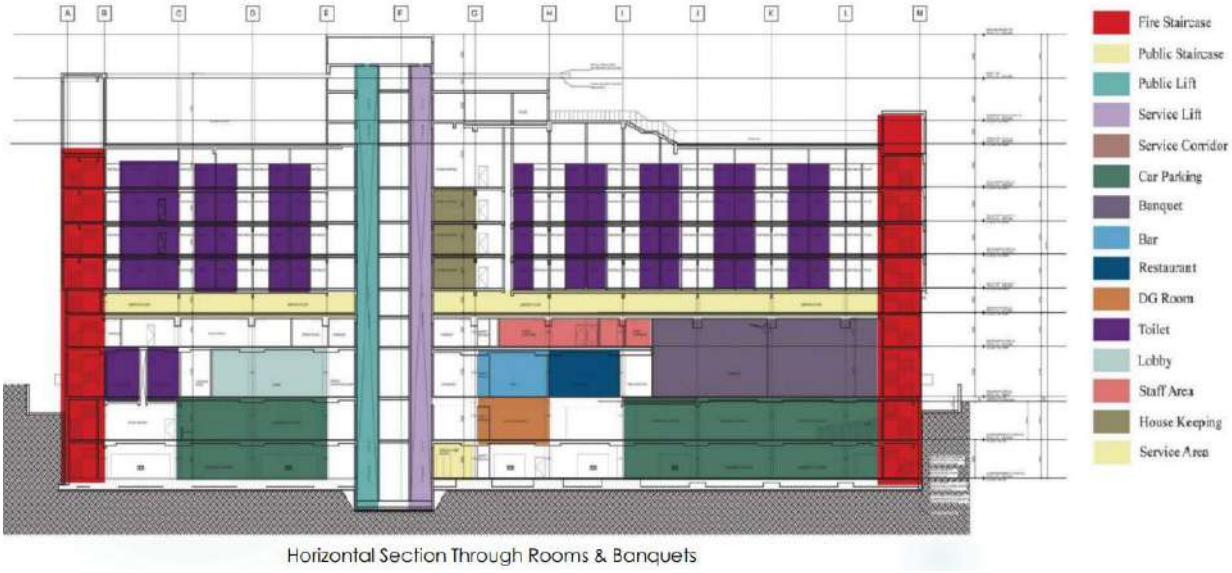
First Floor Plan:



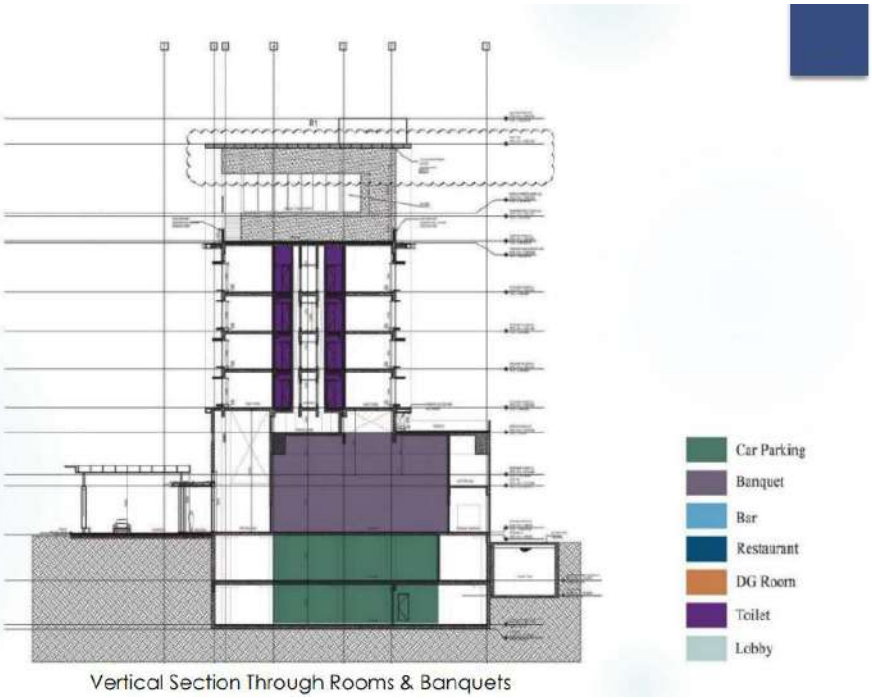
Service Floor And Typical Guest floor Plan:



4.4.6 4.3.6 SECTIONS



Horizontal Section Through Rooms & Banquets



Vertical Section Through Rooms & Banquets

4.4.7 4.3.7 SCHEDULE OF INTERIOR FINISHES

IHCL-K - SCHEDULE OF FINISH

S.N	CODE	ELEMENT	AREA	MATERIAL	BRAND	CODE	IMAGE
	ACP						
1	AF-01	G WRAP	G WALL	ACP	TIMEXBOND	TMX-126 METALLIC GREY (DARK GREY)	
2	AF-02	WINDOW CHAJJA PROJECTION	GUEST FLOOR	ACP	TIMEXBOND	TMX-102 METAL SILVER (MEDIUM GREY)	
3	AF-03	CANOPY ROOF	ENTRY	ACP	TIMEXBOND	TMX-126 METALLIC GREY (DARK GREY)	
4	AF-04	CANOPY	PATHWAY COVER	METAL CANOPY /ACP	TIMEXBOND	TMX-102 METAL SILVER (MEDIUM GREY)	
	WALL FINISH						
5	AF-05	WALL CLADDING	EXTERIOR WALL	STONE CLADDING	GREY GRANITE	ROUGH FINISH	
7	AF-06A	WALL FINISH	GUEST FLOOR, WALL BETWEEN LEDGES.	EMULSION	ASIAN ACE EXTERIOR EMULSION	COLOR -L169 EGGSHELL (ASIAN COLOR PALETTE)	
8	AF-07	WALL FINISH	RAMP WALL	PLASTER FINISH	WHITE WASH	COLOR -L149 EGGSHELL (ASIAN COLOR PALETTE)	
	FLOORING						
9	AF-08	FLOORING	ENTRY FLOORING	STONE FLOORING-	INDIAN IVORY	BUSH HAMMERED FINISH	
10	AF-09	RAMP FLOORING	ENTRY FLOORING	STONE FLOORING-	INDIAN IVORY	BUSH HAMMERED FINISH	
11	AF-10	FLOORING	SERVICE ENTRY FLOORING	KOTA STONE		ROUGH FINISH	
	WINDOW						
12	AF-11	WINDOW FRAME	GUEST ROOM	METALLIC PAINT	ASIAN METAL PRIMER	METALLIC GREY 8292 (MEDIUM GREY)	
13	AF-12	WINDOW GLASS	GUEST ROOM	CLEAR GLASS	SAINTGOBIN	DGU,6 mm KT 140 + 12 mm clear glass + 6 mm clear glass	
14	AF-13	GLAZING FRAME	GROUND FLOOR	METALLIC PAINT	ASIAN METAL PRIMER	METALLIC GREY 8292 (MEDIUM GREY)	
15	AF-14	GLAZING GLASS	GROUND FLOOR	CLEAR GLASS	SAINTGOBIN	10 mm ST 136 (GRAPHITE COOLLITE)	
	OTHERS						
16	AF-15	RAILING	SWIMMING POOL LEVEL	SS FINISH BRUSHED			
17	AF-16	RAILING GLASS	SWIMMING POOL LEVEL	GLASS	SAINTGOBIN	12MM THK TEMPERED WITH MIRROR EDGE POLISHING	
18	AF-17	RAMP RAILING	ENTRY	SS FINISH BRUSHED			
19	AF-18	CANOPY COLUMN	ENTRY	METALLIC PAINT	ASIAN METAL PRIMER	METALLIC GREY 8292 (MEDIUM GREY)	
20	AF-19	ROLLING SHUTTERS	SERVICE ENTRY	METALLIC PAINT	DUCO	8294-ASIAN (DARK GREY)	
21	AF-20	LOUVERS	SWIMMING POOL LEVEL	METALLIC PAINT	DUCO	8294-ASIAN (DARK GREY)	
22	AF-21	GLASS	SWIMMING POOL	CLEAR GLASS	SAINTGOBIN	12MM THK TEMPERED WITH MIRROR EDGE POLISHING	

4.4.8 4.3.8 SERVICES

Disposal Area





Laundary






Staff Area





5 COMPARATIVE ANALYSIS

Spaces	Spaces	Case Study 1 Hilton Garden Inn, Pune	Case Study 2 Taj Lakefront, Bhopal	Desk Appraisal 1 Avasa, Hyderabad	Desk Appraisal 2 Taj Gateway, Pune	Inferences
Lobby	Front desk	60	38	...	40	60
	Lounge area	200	160	...	30	200
	Toilets	48	48	...	30	48
	Luggage store	10	...	...	10	10
	Bell man	4	...	...	04	04
	Guest lifts	10	...	...	16	16
	Business centre	60	...	...	31	31
	Retail shops	25	14	...	25	25
Offices	General manager	15	14	...	10	15
	Secretary GM	10	...	...	05	05
	FO MGR	...	...	...	05	05
	Revenue MGR	...	...	...	08	08
	F & B MGR	...	...	...	08	08
	Reservation office	...	...	...	10	10
	Work- station	...	...	...	16	16
	Discussion rooms	...	...	...	15	15
	Chief accountant	...	...	...	05	05
	Credit manager	...	...	...	05	05
	Cashier	...	...	...	05	05
	Controller	...	...	...	10	10
	Payroll manager	...	...	...	10	10
	Accounts records		...	...	05	05
	Meeting room	80	...	...	08	08
	Computer room MGR	...	...	...	05	05
	UPS	...	...	...	35	35
	Records	...	...	...	10	10
	Storage & copying	...	...	...	...	...
	Sales MGR	...	...	...	09	09
	Banquets MGR	...	22	...	18	22
Banquets	Banquet hall	...	...	...	...	...
	Pre-function area	...	...	...	...	...
	Conference room	...	...	...	...	...
	Toilets	Included	...	...	...	...
Recreational Facilites	Swimming pool	180	...	...	...	180
	Pool change room	...	...	...	...	...
	Gym	80	...	...	...	80
	Massage rooms	...	...	...	...	...
	Saloon	...	...	...	...	...
Guest Room	Double bed rooms	...	...	...	...	...
	Twin bed rooms	...	...	...	...	...
	Suites	...	...	...	...	...
	Jr. Suites	...	...	...	...	...
	Gallery Suite	...	...	...	...	...
F & B Outlets	Multi Cuisine Rest.	...	...	...	...	...
	Bar	...	...	...	...	...
	Coffee Shop	...	...	...	...	...
	Bakery	...	...	...	...	...

Human Resources	HR Manager	...	...	...	...	...
	Sec	...	...	...	...	...
	Training room	...	...	...	...	...
	Training MGR	...	...	...	...	...
	Interview Room	...	...	...	...	...
Kitchen	Main Kitchen	115	...	85	115	115
	Room Service Kit	30	...	5	11	35
	Pantry	32	...	8	32	32
	Bakery	32	...	8	32	32
	Commissary	30	...	6	30	30
	Dishwash	20	...	20	20	20
	Pot wash	20	...	15	20	20
	Cold kitchen	18	...	8	18	18
	Cafe kitchen	15	...	6	15	15
	Show kitchen	8	...	4	8	8
	Bar pantry	15	...	6	15	15
	Bar counter	10	...	6	10	10
	Chef's office	8	...	6	8	8
House Keeping	Issue/tailor/dirties	8	8	8	8	8
	Housekeeper ex.	...	...	...	...	...
	House keeper asst.	...	...	...	...	...
	H/SK office	...	...	...	...	...
	Dead store	...	...	...	...	...
	Guest supply store	30	30	30	30	30
	Bulk linen store	...	...	...	...	...
	Tailor	...	...	...	...	...
	Upholstery store	...	...	...	...	...
	Lost & found	5	5	5	5	5
Security	Staff Entry & Time	...	...	...	...	...
	Security MGR	8	8	8	8	8
Staff Facility	Staff Facilities	300	...	...	300	300
	Male toilets &	...	...	100	...	100
	Lockers	...	...	0	...	7
	Female toilets &	...	...	...	...	7
	Kitchen	400	...	25	...	25
	Staff cafeteria	...	...	90	...	90
	Staff recreation	...	...	15	...	15
Repair & Maintenance	Head of Engg.	...	...	8	...	8
	Asst. Engg.	...	...	8	...	8
	Secured Store	...	...	...	...	8
	Paint Shop	...	...	...	...	10
	Engg. Store	...	...	10	...	10
	Carpentry	...	...	...	...	10
	Spare Parts	...	...	5	...	10
	Workshop	...	...	...	120	120
	Accounts	...	...	...	100	100
	Back of house space	...	...	...	180	180
Miscellaneous	Driver Rest Room	...	...	15	...	15
	Drivers Toilet	...	...	22	...	22
	Microbiologist	...	...	8	...	8

	Service Area	300	...	...	...	300
	LV room	...	...	56	56	56
	Indoor transformers	...	...	44	44	44
	LT panel	...	...	74	74	74
	DG generator room	...	...	97	97	97
	Chiller plant	...	...	125	...	125
	Rain water tank	...	...	105 cu.m	105 cu.m	105 cu.m
	Municipal tank	...	...	123 cu.m	123 cu.m	123 cu.m
	Raw water tank	120 cu.m	...	123 cu.m	50 cu.m	123 cu.m
	Fire tank	...	120 cu.m	105 cu.m	105 cu.m	105 cu.m
	Treated tank	...	20 cu.m	123 cu.m	50 cu.m	123 cu.m
BOH Services	Salt storage	...	...	12	172	172
	Pump room (fire)	...	...	20	20	20
	Pump room	...	...	60	90	90
	Boiler room	...	...	58	58	58
	STP	...	...	60	160	160
	Workshop	...	...	22	120	120
	Engineering office	...	...	8	...	8
	Engineering store	...	...	10	...	10
	Control room	...	...	15	...	15
	Oil storage tanks	...	...	...	...	...
	Swimming pool	180	...	15	...	180
	Filtration plant	...	...	15	...	15

6 INFRENCES

1) **Clear Functional Zoning**
   The spatial layout of the hotel is well-segregated into **public**, **semi-public**, and **private** zones, ensuring efficient circulation and privacy control for both guests and staff.
2) **Compact and Efficient Layout**
   The design emphasizes **compact planning**, particularly in BOH (back-of-house), kitchen, and room service zones, indicating a cost-effective and operationally sound approach.
3) **Business-Driven Program**
   The space allocation and amenity mix (meeting rooms, business center, small-scale ballroom) point toward a **corporate hotel model** aimed at business travelers.
4) **Sustainable Design Considerations**
   There is visible intent to integrate **passive design strategies**, such as:

   - **Natural daylighting** in corridors and public zones
   - **Rooftop amenities** to reduce building footprint
   - Reduced energy consumption through efficient planning

5) **Balanced Public Spaces**
   Public interaction zones (lobby, lounge, restaurant) are kept moderate in scale, avoiding over-dimensioning. This suggests a focus on functionality over grandeur.
6) **Standardized Room Design**
   All room types (King, Twin, Family) appear to follow **modular planning**, enhancing constructability and simplifying service delivery.
7) **Operational Efficiency**
   Core areas like laundry, storage, and staff movement are consolidated to reduce travel distances and operational costs. This reflects a **lean staffing and service model**.
8) **Amenity Placement for Visual Appeal**
   Rooftop amenities such as the **pool, gym, and terrace lounge** provide both functionality and aesthetic value, while preserving lower floors for high-value areas.
9) **Low-Waste Circulation**
   Corridors, lift cores, and staircases are designed with minimal redundancy, reflecting **precise circulation planning**.
10) **Contextual Design Response**
    The use of materials, color palettes, and proportions suggests sensitivity to **climatic and urban context**, tailored for Pune's environment and user demographics.

7 REFERENCESG

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