# 5 Star Hotel

Sanand, Ahmedabad, India

BACHELOR OF ARCHITECTURE

BY

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MAULANA AZAD NATIONAL INSTITUTE OF TECHNOLOGY, BHOPAL

DEC 2025

Samiks

5 Star Hotel

Sanand, Ahmedabad, India

Dec, 2025

# ARC 551 – Thesis Project

## 5 Star Hotel

### Sanand, Ahmedabad, India

**Submitted by:**

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9th Semester, 5th Year

**UNDER THE GUIDANCE OF**

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## CANDIDATE DECLARATION

**The Thesis Project in the subject ARC 511, entitled "5 Star Hotel, Sanand, Ahmedabad, 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.**

**Date: 1st-2nd Dec, 2025** **Samiksha Vaval**
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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 subjectARC-5201, Thesis Project.**

Date1st-2nd Dec, 2025 **Dr. Manmohan Kapshe**

**Thesis Guide**

## CERTIFICATION OF EXAMINATION

**The Bachelor of Architecture Thesis Viva-Voce examination of Ms. Samiksha Vaval Scholar No.211110018 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 Hyderabad as a desirable destination for luxury travelers.

# ACKNOWLEDGEMENT

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# 1 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 enhance the function and aesthetic of business hotel .
- To understand difference between business and tourist hotel.
- 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

### 1.4.1 **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




*Figure 1 Site Location*

## 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%

SITE PLAN WITH DIMENSION`

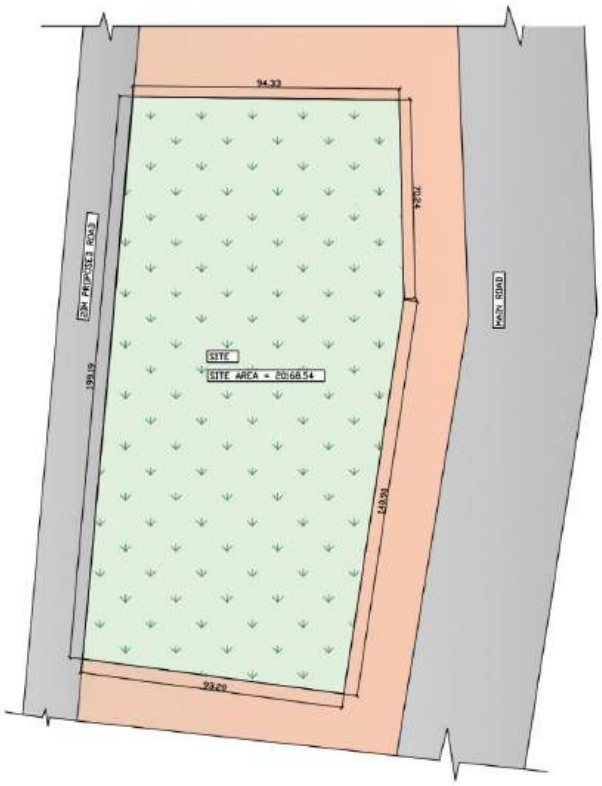



*Figure 2 Site Dimensions*




*Figure 3 SITE DETIAL FROM RFP*

## 1.6 PROPOSING AGENCY

**Name of the Proponent**:Gidc Sanand

SITE LOCATION ON MASTER PLAN

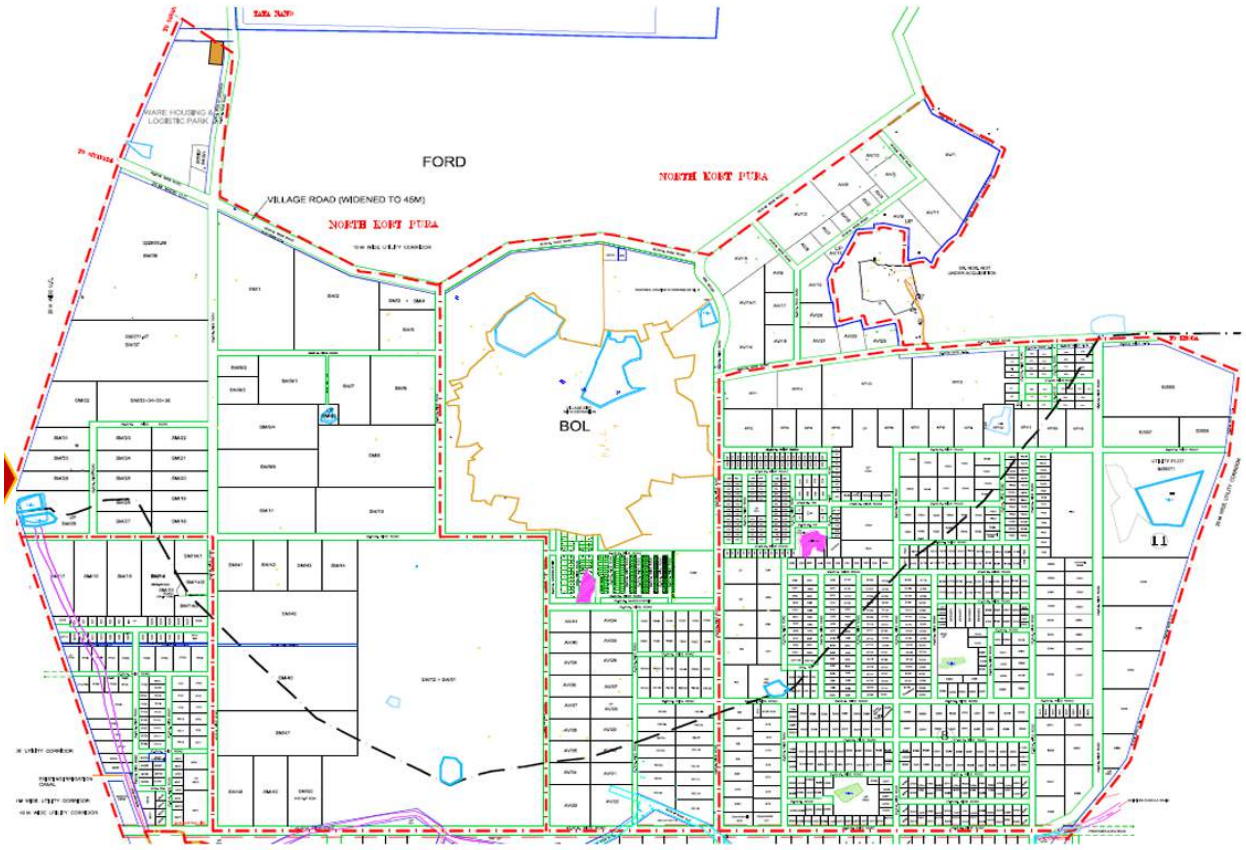



*Figure 4 PROPOSED DEVELOPMENT PLAN OF GIDC SANAND*

## 1.7 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.

## 1.8 Social Infrastructure

### 1.8.1 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.
-

### 1.8.2 Healthcare Facilities Nearby:

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




*Figure 5 SITE PROXIMITY*

1. Sanand GIDC Gate no. 1
2. Sanand GIDC Gate no. 2
3. Gujarat Gas CNG Pump
4. Nayara Petrol Pump
5. Suspa Pneumatics India Private Limited
6. Yazaki India Private Limited
7. Gabriel India Limited Sanad
8. Adient India Pvt
9. Tata Motors
10. Micron Technology
11. JBM Auto Limited
12. Tata Sanand Vehicle Assembly Plant
13. GIDC Office Sanand
14. Nestle India Limited
15. Hitachi Hi-Rel Power Electronics
16. Sub Centre Bol ( Hospital )
17. BOL Industrial Estate GISC 2

18. Omspace Rocket & Exploration

19. Nayara Petrol Pump

20. Hindustan Coca Cola Beverages

21.Jaivel Aerospace Ahemdabad

22. Magneti Marelli Motherson Auto System

23.BOL Post Office

24. Maxxis Rubber India Private Limited

25. Doctor House BOL

26.Indutotherm ( India ) Private Limited

27. Nivea India Private Limited

28. Arabelle Solutions

29. India Japan Lighing Pvt Ltd

30.Emcure Pharmaceuticals Limited Sanand

31. Primary Health Centre Zolapur

## 1.9 Site Accessibility




*Figure 6 SITE ACCESSIBILTY*

## 1.10 Site vegetation



*Figure 7 SITE VEGETATION*

## 1.11 Wind Flow

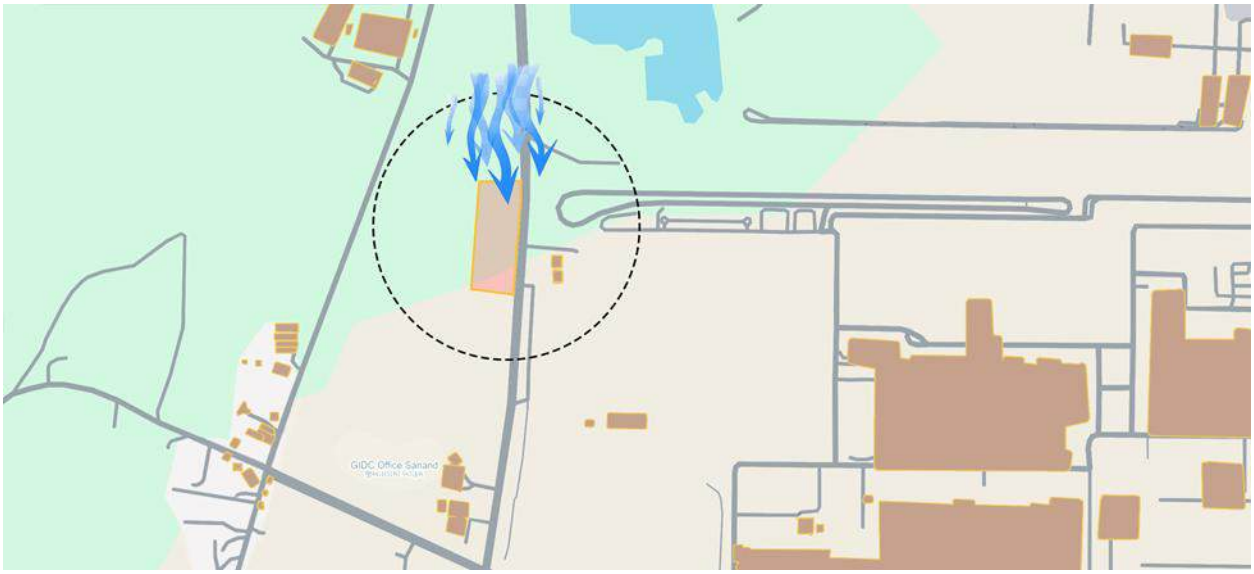



*Figure 8 WIND FLOW (N - S)*

## 1.12 DESIGN BRIEF

- **Project Title: Development of a 5-star hotel in Sanand, Ahmedabad, Gujarat.**
- **Proposing Authority: Industrial zone under GIDC (Gujarat Industrial Development Corporation)**
- **Surrounding Features:** 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.

## 1.13 Broad Scope of Work:

### 1.13.1 The scope of work includes but is not limited to:

Development of the 5 Star Hotel at Sanand shall have:

a. Rooms

b. Conference Hall / Convention Hall

c. Restaurant and bar

d. Health club

e. Banquet Hall

f. 24/7 Café

g. Spa

h. Swimming Pool

i. Admin Block, Entrance Foyer and lobby

j. Commercial Space

k. Ballroom

l. Basement for parking and services

### 1.13.2 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.

### 1.13.3 Key Differentiators:

Strategic Location Within an Industrial Hub

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

Business-First Design Philosophy

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

Smart Room Technology

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

Purpose-Built Meeting & Conference Spaces

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

Efficient Service Networks

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

2. Quick Access & Transit Connectivity
    a. 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.
3. Work-Life Balance Amenities
    a. Rooftop café for after-hours relaxation or informal networking
    b. Fitness center and wellness zone to maintain well-being during tight schedules
    c. Sound-insulated rooms and smart lighting to improve rest quality for peak productivity

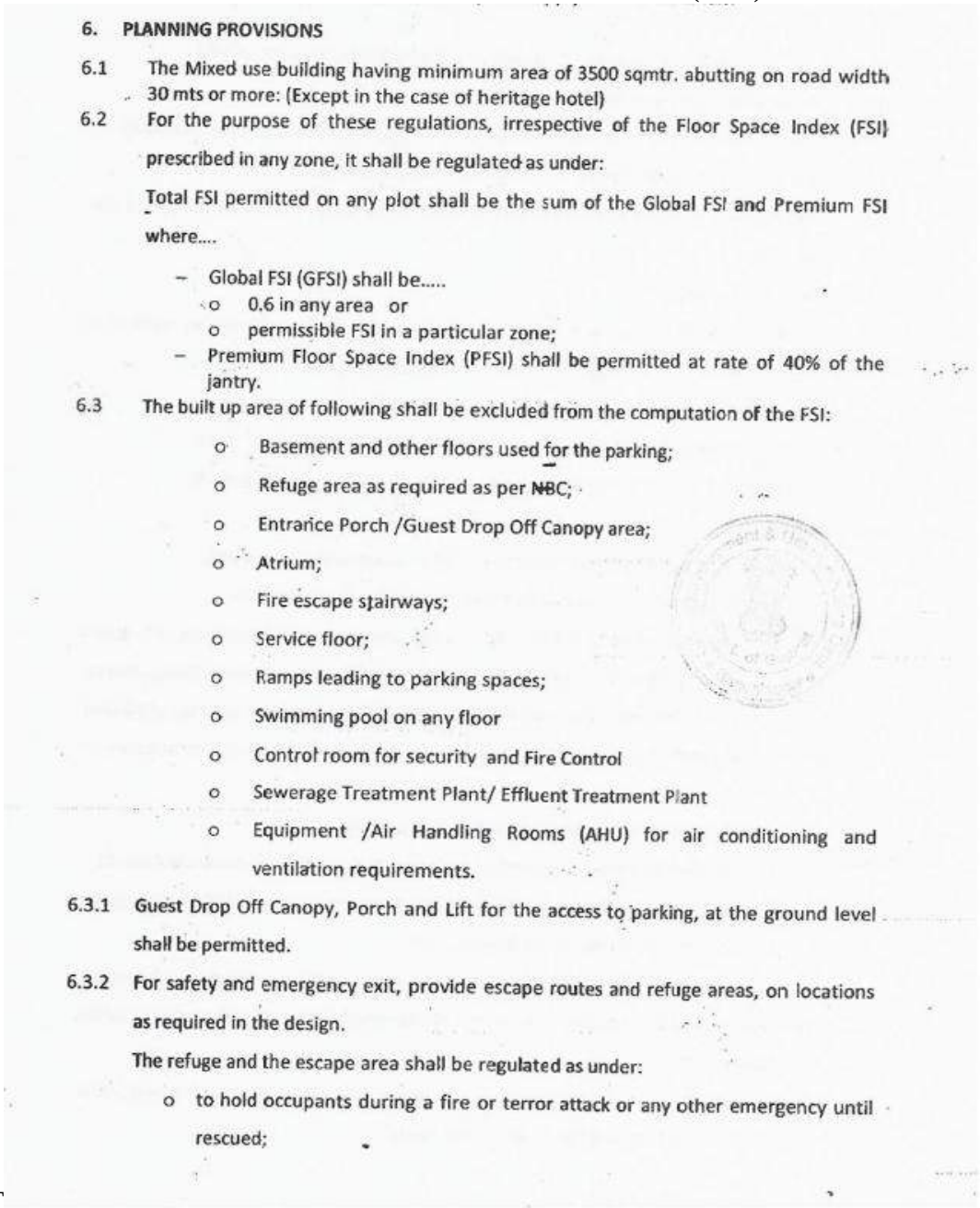
### 1.13.4 How It Enhances Meeting & Accommodation Experiences

| 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 |

# 2 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;

*Figure 9GOVERNMENT OF GUJRAT GUIDLINE*

- 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.

*Figure 10GOVERNMENT OF GUJRAT GUIDLINE*

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.

GENERAL DEVELOPMENT CONTROL **REGULATION 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. |

*Figure 12 REGULATION OF GUJRAT INDUSTRIAL DEVELOPMENT CORPORATION*

**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.

*Figure 11GENERAL DEVELOPMENT CONTROL REGULATION*

**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 |

*Figure 13 GUJRAT INDUSTRIAL DEVELOPMENT CORPORATION*

**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. |

*Figure 14 DISTANCE BETWEEN TWO DETACHED STRUCTURE*

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.

*Figure 15PLINTH*

**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

*Figure 16 HEIGHT OF FLOOR*

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.

*Figure 17STAIR AND LOBBY*

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.

*Figure 18SANITARY*

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 building shall be lighted and ventilated by sufficient number of windows. ventilators and sky lighting inclusive of doors opening on outside open having clear opening of not less than 1/7 of the floor area abutting on open air space of width not less than 1/3 of the height of the part of the building abutting such open space.
- Providied these requirement may be relaxed if artificial lighting and ventilations are installed to the satisfaction of the GIDC
- The ventilation so provided under the above regulation shall be subject to the satisfaction requirements of Factory Act if applicable.
- Every stair case provided under foregoing clauses shall be lighted and ventilated to the 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 sq. mtr. on each storey in such of the wall of the stair case which abuts on such 1 sq. mtr. open air space to light and ventilate such stair case.
- In case of commercial buildings & public buildings, the ventifilation in each room shall 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: l) 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 computing FSI.

"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.

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.

## 2.1 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 | | |

| FACILITIES & SERVICES | 1* | 2* | 3* | 4* | 5*/ 5*D | Yes/ No | COMMENTS |
|---|---|---|---|---|---|---|---|
| Health – Fitness | 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 |

*Figure 19CHECKLIST*

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 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.<br><br>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.<br><br>All 4 Star, 5 Star and 5 Star Deluxe hotels shall provide a safe in the room. |
| Mini bar / Fridge<br>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.<br>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.<br><br>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.<br>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.<br><br>The almirah / cupboard doors in the differently abled room should be sliding to enable opening the same by the differently abled person.<br><br>Blinking light in the room and bathroom should also be connected with the door bell for the hearing impaired.<br><br>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.<br><br>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<br><br>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.<br><br>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.<br><br>For new hotels coming up after 01.04.2017, the minimum door width of such public rest room (unisex) shall be minimum 90 cm.<br><br>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:**<br><br>One Multi – cuisine Restaurant cum Coffee Shop open from 07.00 am. To 11.00 pm., one specialty Restaurant and 24 hr. Room Service.<br><br>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.<br><br>**Cities other than grade A cities:**<br>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<br>5 Star Deluxe | | | | | | | **Grade A cities:**<br><br>One 24 hour Multi Cuisine Restaurant cum Coffee Shop, one Specialty Restaurant and 24 hr. Room Service.<br><br>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.<br><br>**Cities other than Grade A cities:**<br><br>One 24 hour Multi Cuisine Restaurant cum Coffee Shop and 24 hr. Room Service. One Specialty Restaurant would be desirable. |

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|---|---|---|---|---|---|---|---|
| Grade A: Delhi, ** Mumbai, Kolkata, Chennai, Bangalore, Pune, Hyderabad, Secunderabad.<br><br>Note: The Ministry of Tourism may review and revise the cities falling under the Grande 'A' from the time to time.<br><br>** 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.<br><br>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.<br><br>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 |

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| | | | | | | | 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.<br><br>The supervisory or the skilled staff may have training or skill certification as follows:<br><br>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:<br><br>Degree / Diploma from Central or Star IHMs/ FCIs or from NCHMCT affiliated IHMs or from other reputed Hospitality Schools.<br><br>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 | | |

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|---|---|---|---|---|---|---|---|
| **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 | | |

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| 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.<br><br>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 |

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| | | | | | | | 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.<br><br>(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.<br><br>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.<br><br>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.

## 2.2 GUIDELINES FOR SECURITY MEASURES IN HOTELS:

### 2.2.1 EXTERNAL ACCESS OF CONTROL:

I. 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.

II. PERIMETER SECURITY SYSTEM

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

(a) 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.

(b) 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.

(c) 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.

III. 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.

IV. 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.

V. PATROLLING

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

### 2.2.2 MATERIAL ACCESS CONTROL:

I. GUEST BAGGAGE CHECK

(a) 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

(b) Handheld bags must be checked at the entry point.

· PEOPLE ACCESS CONTROL:

I. WALK-IN GUESTS

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

II. 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.

III. 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.

IV. VISITOR MANAGEMENT SYSTEM

A visitor management system is essential. All visitors must be given a 'Visitor Pass'.

### 2.2.3 · INTERNAL ACCESS CONTROL:

I. Within the hotel there should be restriction on access to different parts of the hotel.

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

III. Entrances to areas such as Boiler Rooms, Mal Rooms, Computer Rooms, Switch Boards and Control Rooms should remain locked when not in use.

IV. It is also necessary to establish a procedure for the accountability of their keys.

V. LIFT USAGE

(a) The practice of people entering the lobby and taking the lift to any floor must be stopped.

(b) 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.

### 2.2.4 OTHER SECURITY MEASURES:

I. 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.

II. 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.

III. TRASH MANAGEMENT

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

### 2.2.5 CRISIS MANAGEMENT PLAN:

I. 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.

II. 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.

III. 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.

## 2.3 ITC HOTEL MANUAL:

### 2.3.1 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.

### 2.3.2 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.

### 2.3.3 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** 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.

### 2.4.1 Lobby, Reception and House Phones:

### 2.4.2 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.

### 2.4.3 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.

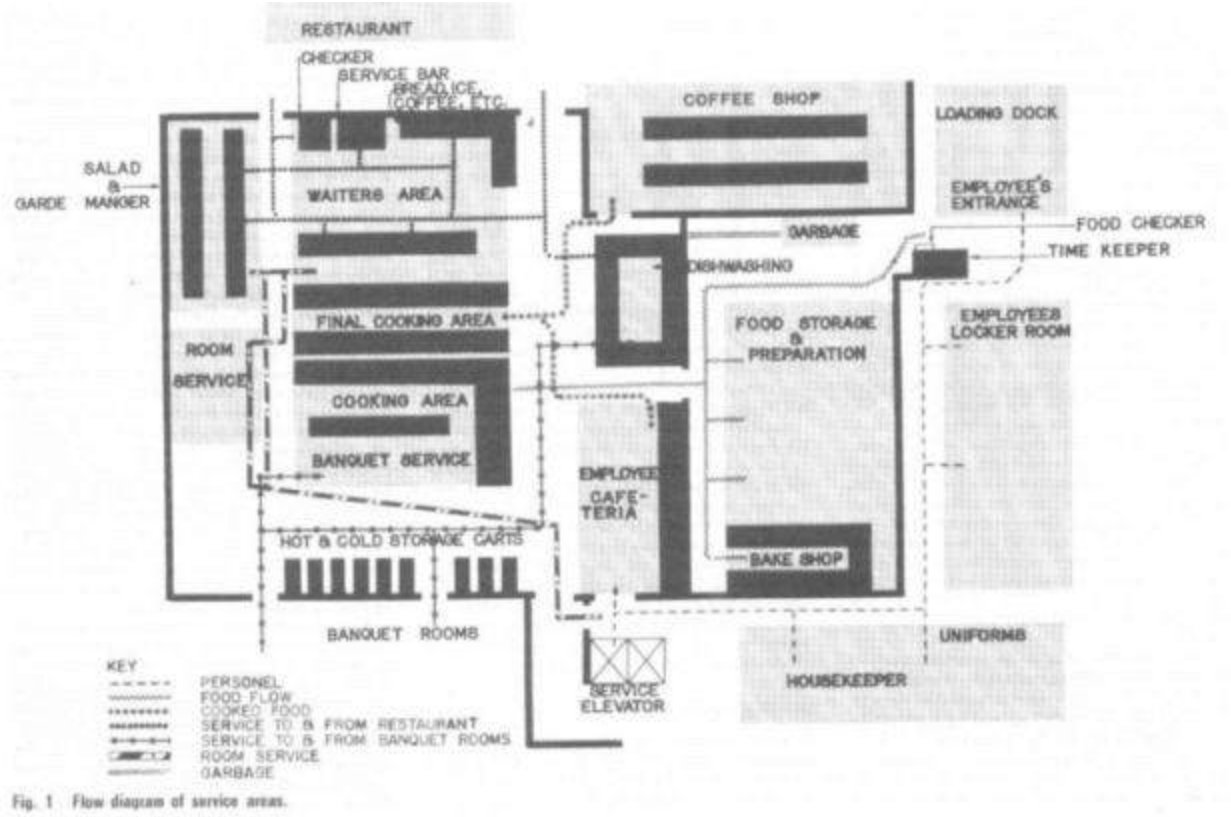



*Figure 20 FLOW DIAGRAM OF SERVICE AREA*

- 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.

### 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.

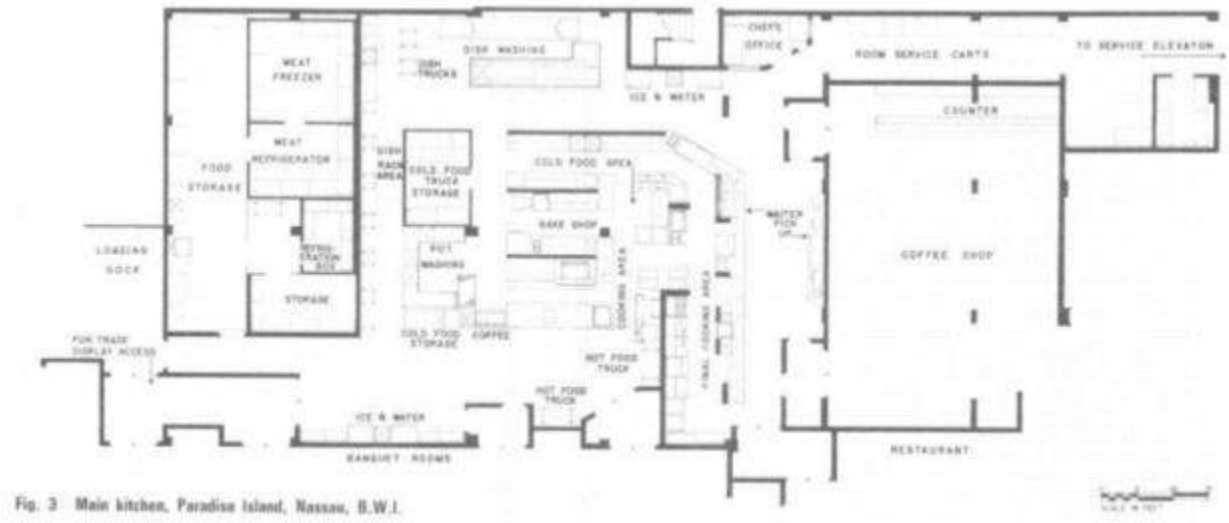


Fig. 3 Main kitchen, Paradise Island, Nassau, B.W.I.

*Figure 21MAIN KITCHEN*

- 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.

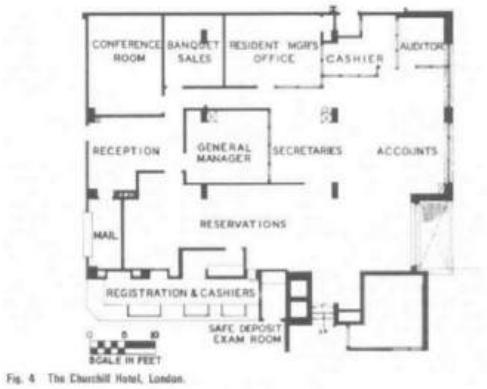


Fig. 4 The Churchill Hotel, London.

### 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.

### 2.5.15 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.

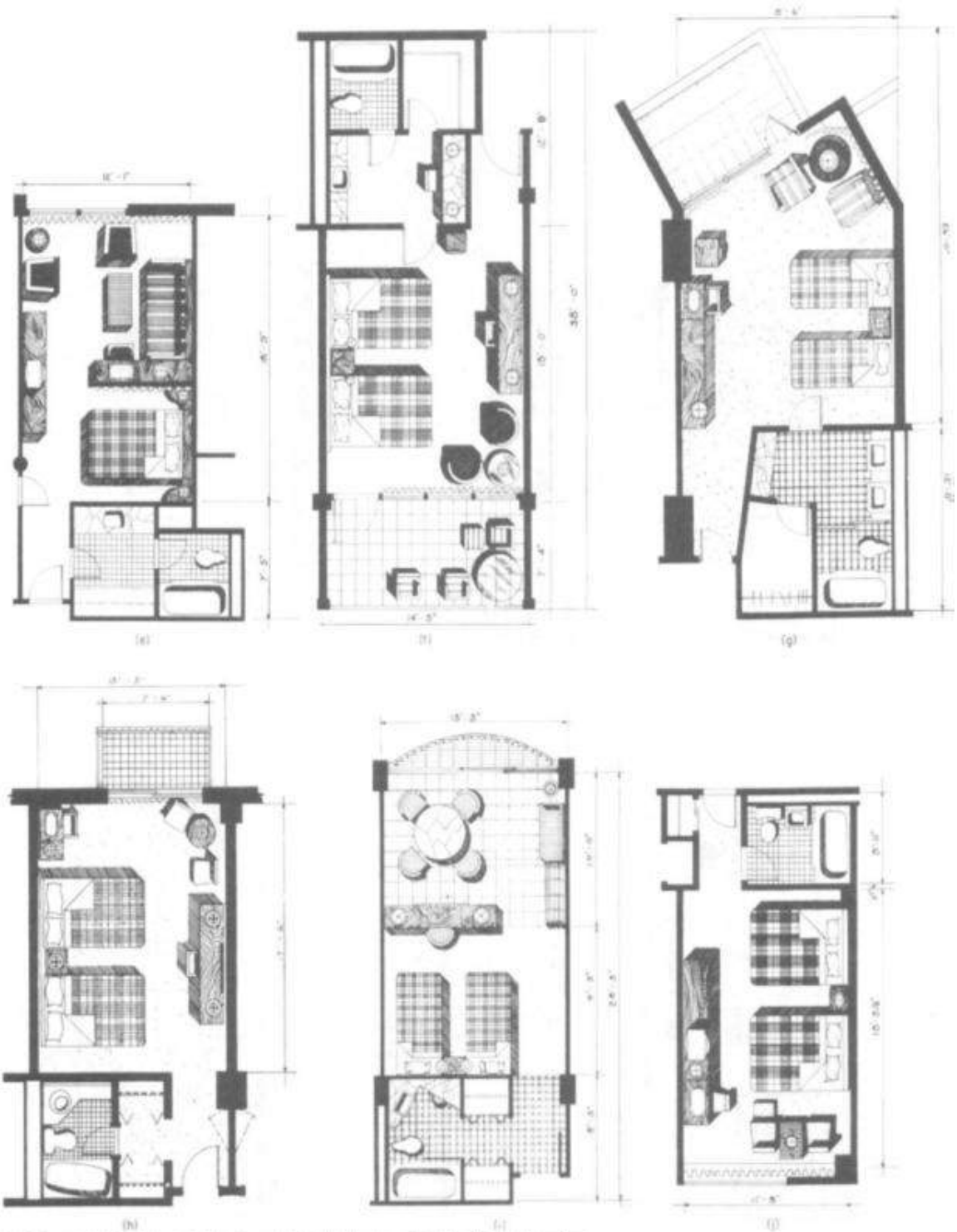


Fig. 5 (cont.) (e) Tampa International Inn, Tampa, Florida. (f) Indies House, Duck Key, Florida. (g) Americana Hotel, Bal Harbour, Fluvida. (h) Paradise Island Hotel, Paradise Island, Bahamas. (i) Americana of Puerto Rico, typical room layout. (j) Massena Motor Inn, Massena, N.Y.

*Figure 22ROOM TYPE*



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.

## 2.6 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.

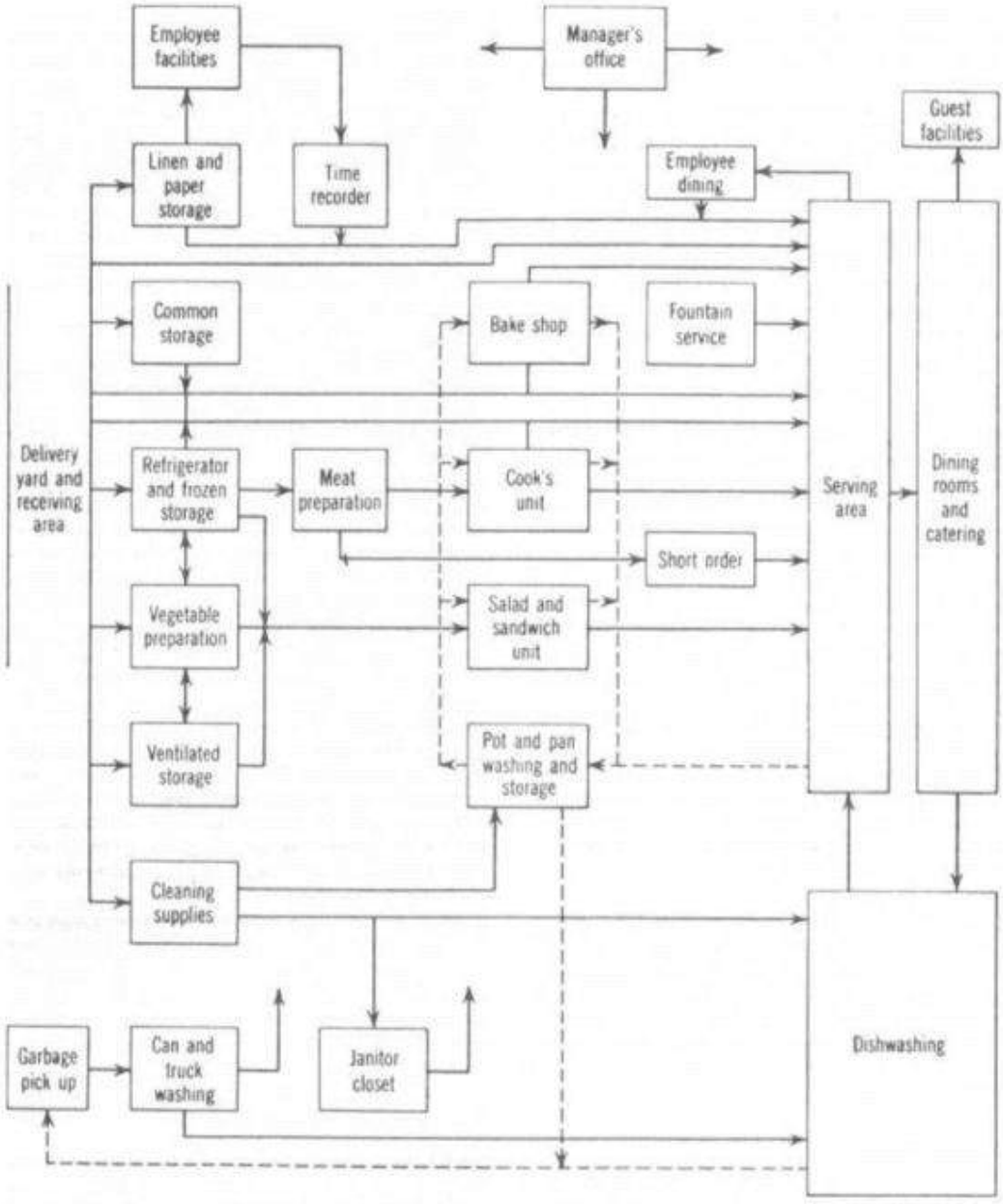



Fig. 1 Flow diagram showing functional relationships.

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

**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 |

    - The square footage given is to be multiplied by the maximum number of meals estimated per hour of service.
    - 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.
    - 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.
    - Work centers at right angles to traffic lanes are efficient.
    - 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.

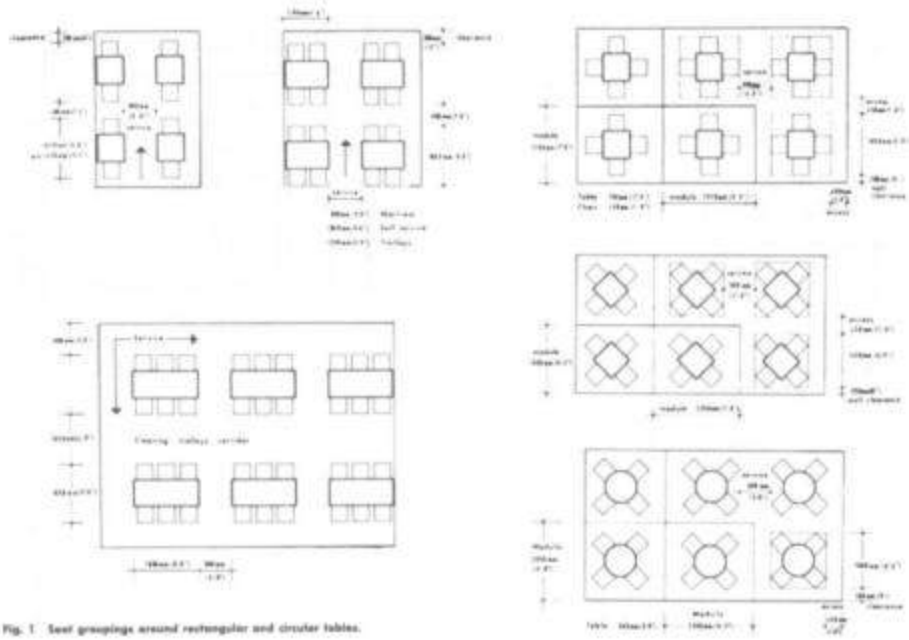


Fig. 1 Seat groupings around rectangular and circular tables.

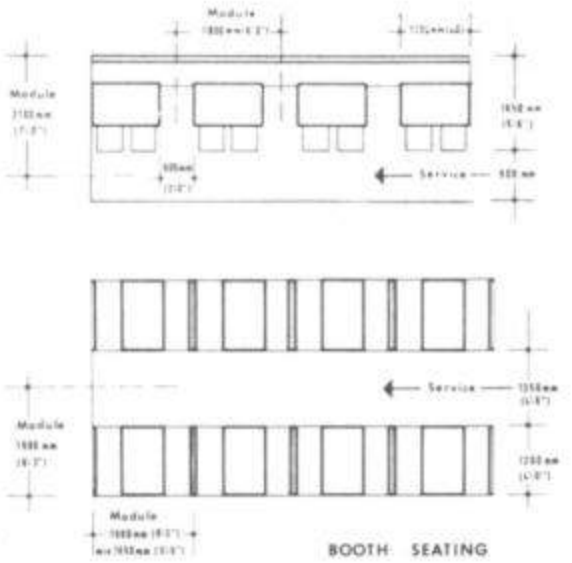
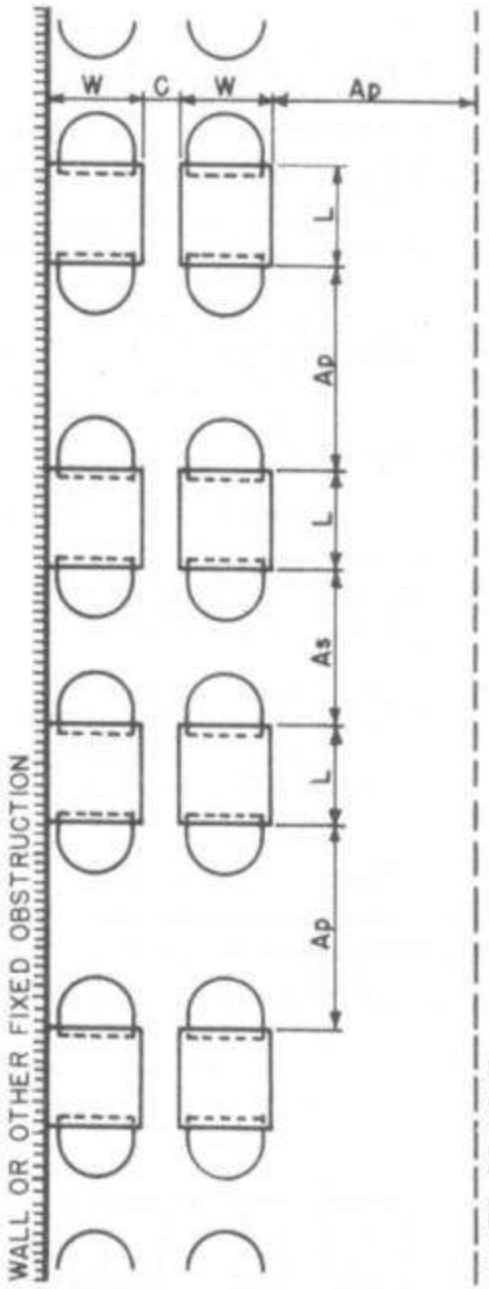
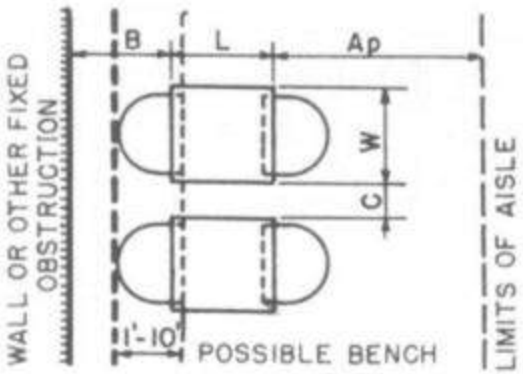



Fig. 2 Banquette seating arrangements and Setting dimensions including space for access and service.

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



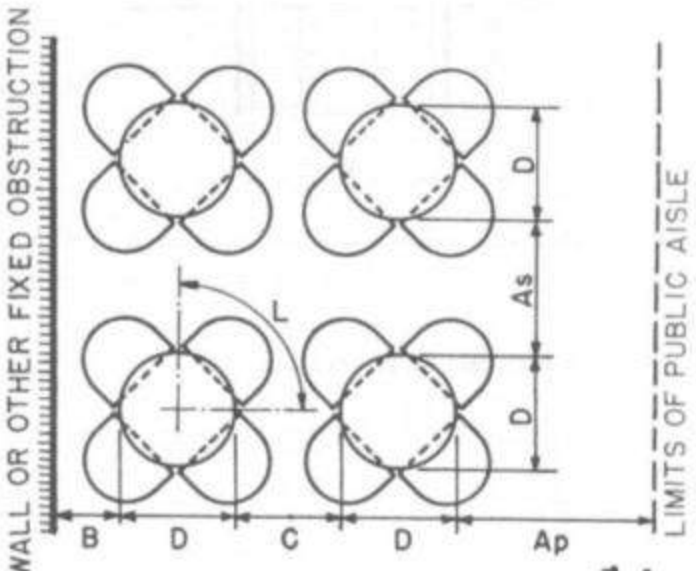

| | Abs. Min. | Des. Min. | Comfortable |
|---|---|---|---|
| Ap Public circ'n | 3-0 to 4-6 | 3-6 to 5-0 | 3-9 to 5-0 |
| As Service aisle | 3-6 to 4-6 | 4-0 to 5-0 | 4-0 to 5-6 |
| B To wall | 1-8 to 2-0 | 2-0 to 2-6 | 2-0 to 3-0 |
| C Between units | 0 to 8 | 6 to 1-0 | 1-0 |
| Length | 1-8 to 2-0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

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 | 3-0 to 3-6 | 3-6 to 4-0 | 3-9 to 4-0 |
| C Between units | 0 to 3 | 4 to 6 | 6 |
| 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

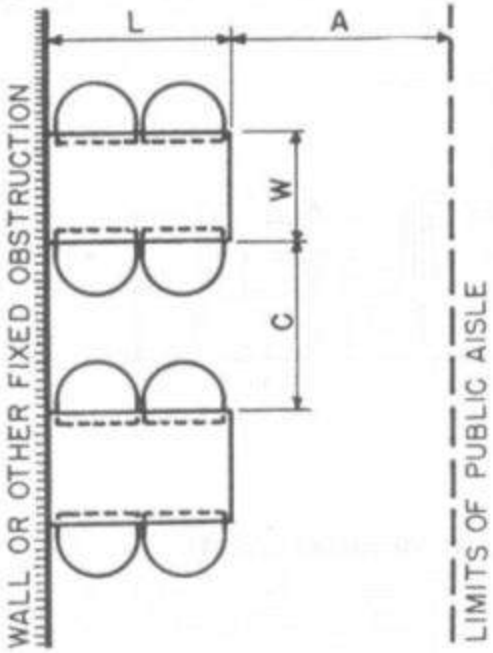
Fig. 4 Table and chair units.



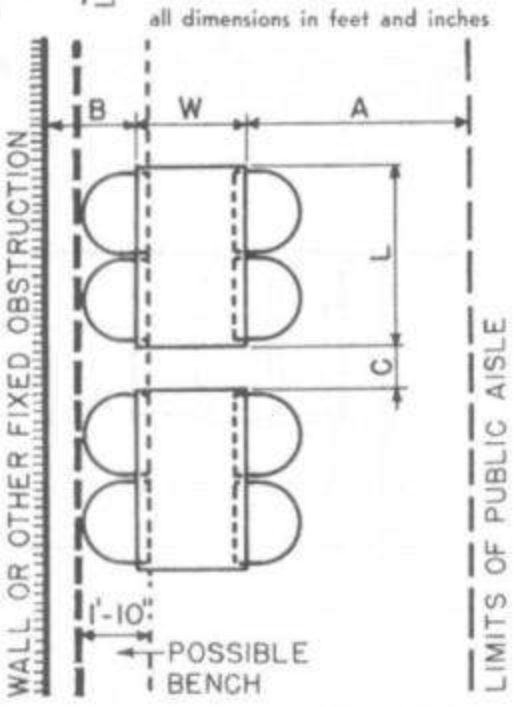

| | | Abs. Min. | Des. Min. | Comfort-able |
|---|---|---|---|---|
| Ap | Public circ'n | 3-0 to 3-6 | 3-6 to 4-6 | 3-6 to 4-6 |
| As | Service only | 2-0 | 2-6 | 3-0 |
| B | To wall | 6 to 1-0 | 10 to 1-0 | 1-0 to 1-3 |
| C | Between units | 1-6 | 1-10 | 2-0 |
| Diameter | | 2-8 | 2-10 | 2-10 |
| *L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

all dimensions in feet and inches

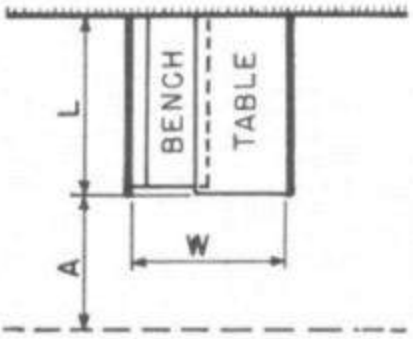


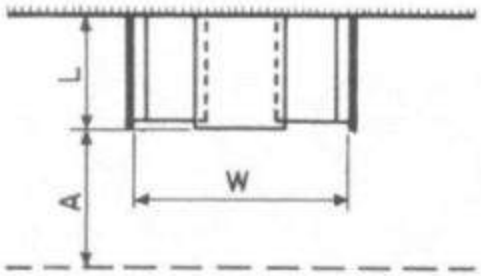

| | | Abs. Min. | Des. Min. | Comfort-able |
|---|---|---|---|---|
| A | Service or pub. circ'n | 2-0 to 3-6 | 2-6 to 4-6 | 3-0 to 5-0 |
| C | Between units | 3-0 to 3-6 | 3-6 to 4-0 | 3-9 to 4-0 |
| Length | | 3-6 | 3-10 to 4-0 | 4-0 |
| Width | | 1-8 to 2-0 | 2-0 to 2-3 | 2-4 to 2-6 |




| | | Abs. Min. | Des. Min. | Comfort-able |
|---|---|---|---|---|
| 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**

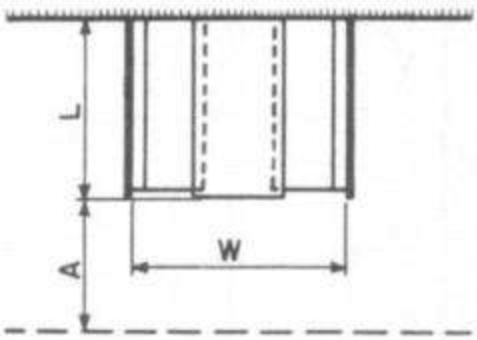
| | Abs. Min. | Des. Min. | Comfort-able |
|---|---|---|---|
| Service A and pub. circ'n | 2-6 | 3-0 | 3-6 |
| Length | 3-6 | 3-9 | 4-0 |
| Width | 3-0 | 3-3 | 3-6 |

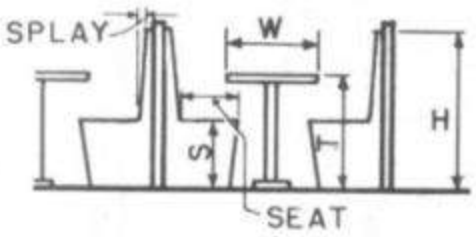
Note: This type not ordinarily recommended.

**2 PERSONS FACE TO FACE**

| | Abs. Min. | Des. Min. | Comfort-able |
|---|---|---|---|
| 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 | 5-2 to 5-6 | 5-8 to 5-10 |

dimensions in feet and inches




**4 PERSONS**

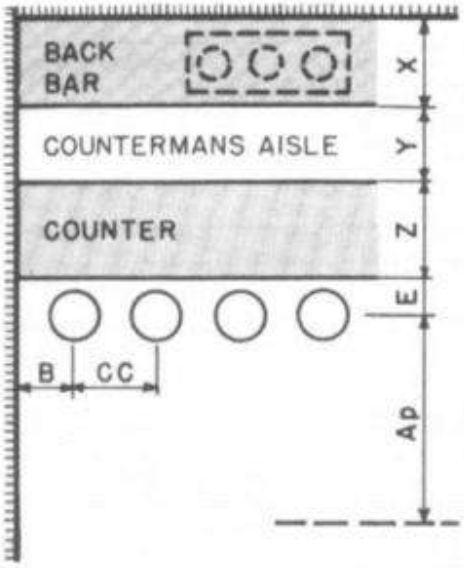
| | Abs. Min. | Des. Min. | Comfort-able |
|---|---|---|---|
| Service A and pub. circ'n | 2-6 to 3-0 | 3-0 to 4-0 | 3-6 to 5-0 |
| Length | 3-6 | 3-9 to 4-0 | 4-0 to 4-2 |
| Width | 4-10 to 5-6 | 5-2 to 5-6 | 5-8 to 5-10 |

**BOOTH FURNITURE HEIGHTS**

| | Abs. Min. | Des. Min. | Comfort-able |
|---|---|---|---|
| H | 3-0 to 3-6 | 3-6 | 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 0-3 | 0-2 to 0-3 | 0-3½ to 0-4 |

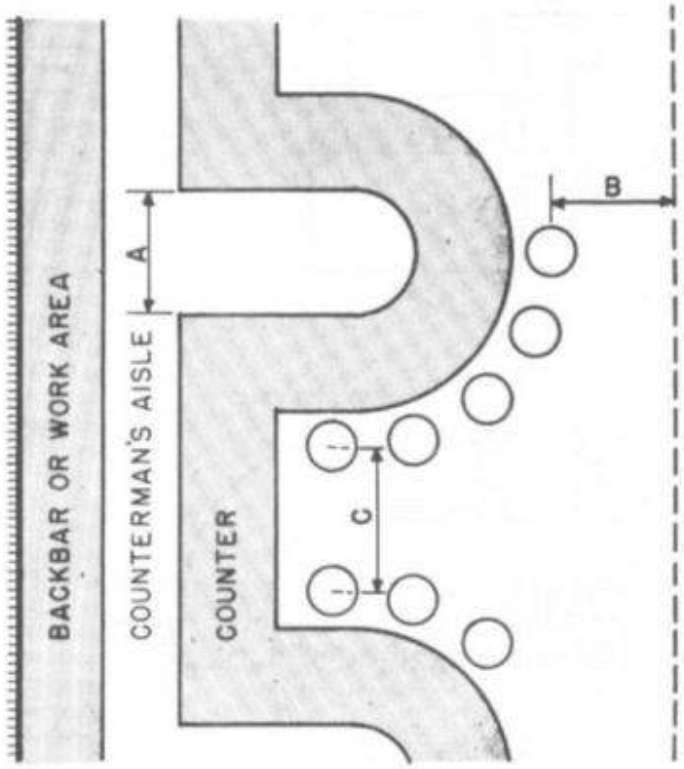
Fig. 5 Booths.

*Figure 23 SEATING DIMENSION*




**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 | 2-0 |
| E | | 9 | 1-2 |
| Ap | | 3-6 | 4-6 |
| B | | 1-0 | 1-2 |
| CC | | 1-10 | 2-0 |

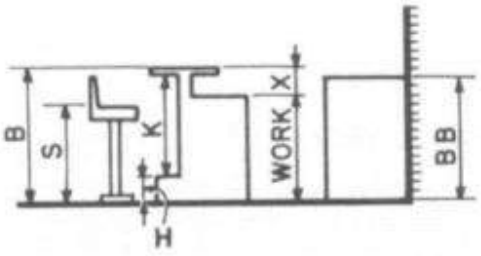



**Variations in Shape**

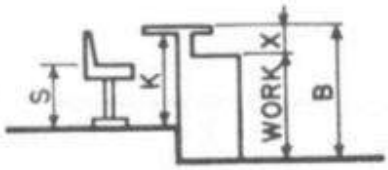
| | Usual Minimum |
|---|---|
| A | 2-6 to 3-6 |
| B | 2-6 to 4-6 |
| C | 2-9 to 5-6 |

dimensions in feet and inches

**HEIGHTS**




LEVEL FLOOR



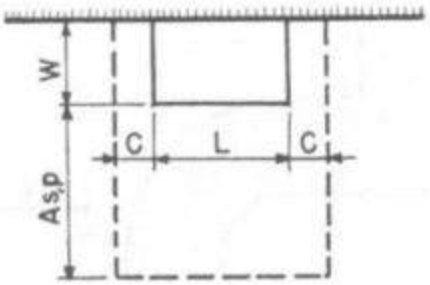

DROPPED FLOOR

| | 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 | 2-4 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.

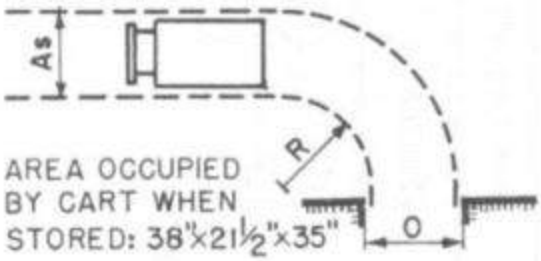
Serving Units




**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 / Width | | 30" x 20" x 42" is average. | | |

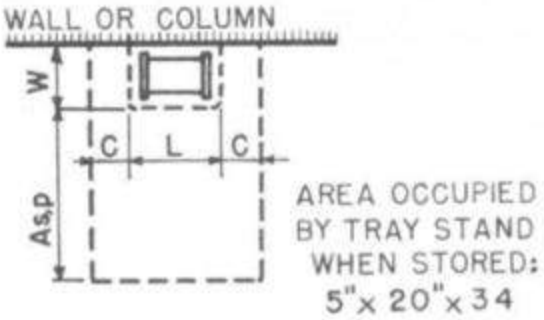
Display tables (hors d'oeuvres, etc.) usually 5' 0" x 2' 0"; (wines), 3' 0" round.




**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 |

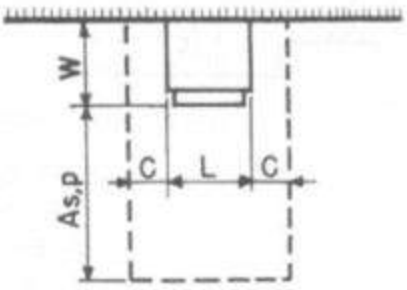
Approx. area when stored: 38" x 21½" x 35"




**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) | | Depends on type of restaurant. | | |

Approx. area of stand, stored: 5" x 20" x 34"




**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 | Can arrange on top or front | | |
| Length / Width | | Depends on capacity and if glass storage included. | | |

Fig. 7 Serving units.

*Figure 24 BAR AREA DIMENSION*

### 2.6.4 Refrigerated and low temperature storage:

- 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.
- Approximately 0.25 to 0.50 cu ft of refrigerated walk-in space was provided per meal served, and frozen walk-in space.
- 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
- 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.
- 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:

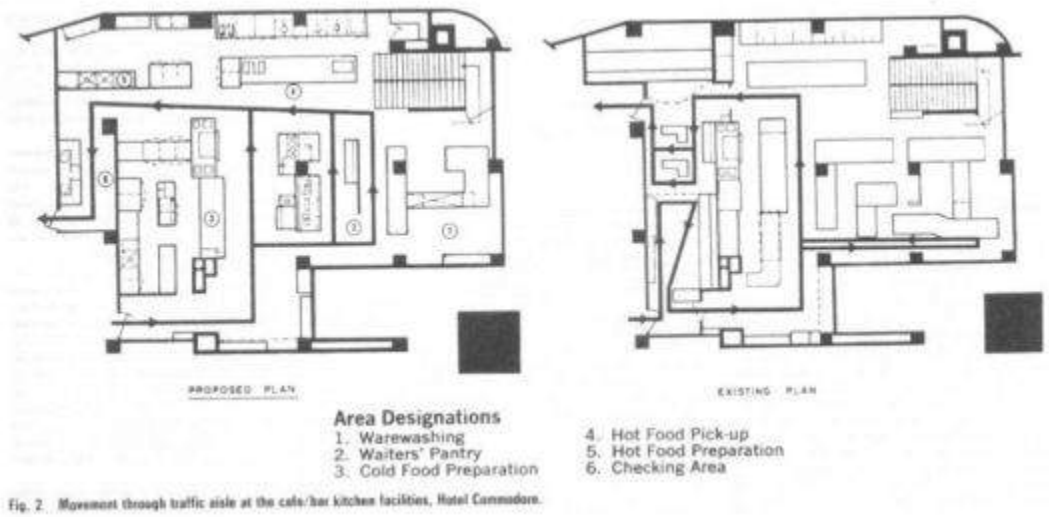



Fig. 2. Movement through traffic aisle at the cafe/bar kitchen facilities, Hotel Commodore.

*Figure 25 RESTAURANT AREA DIMENSION*

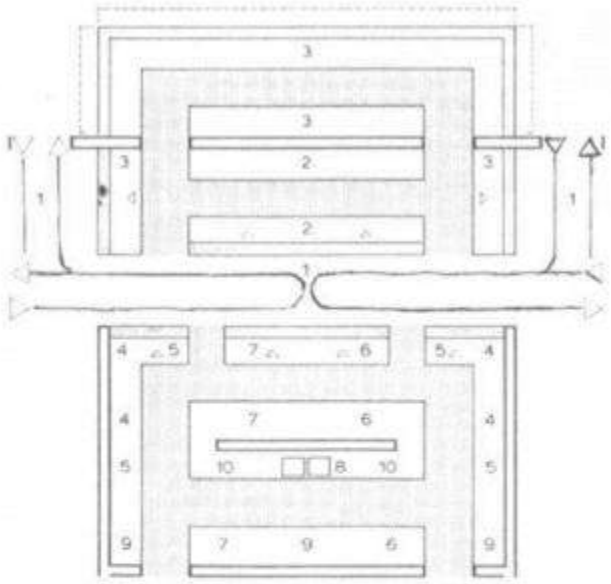


Fig. 6 Large restaurant kitchen for restaurants with many auxiliary rooms, bowling alleys, garden, and a snack bar projecting into the main dining room. Suitable for a highly frequented city restaurant or for an excursion spot with various conference rooms, etc. Capacity: 1,000–1,200 persons. Waiters' 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.

**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

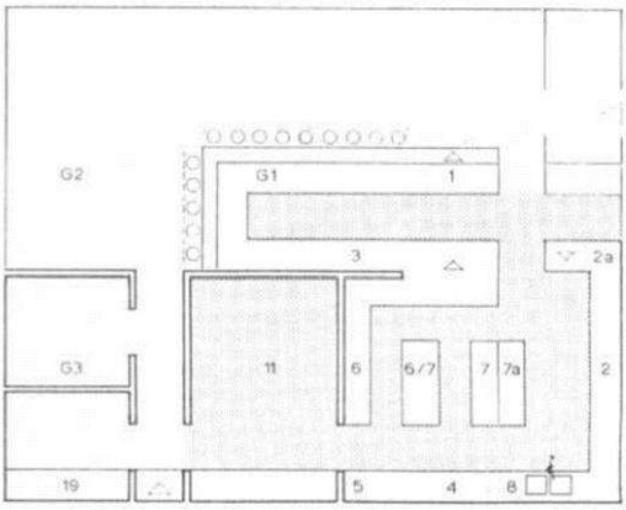
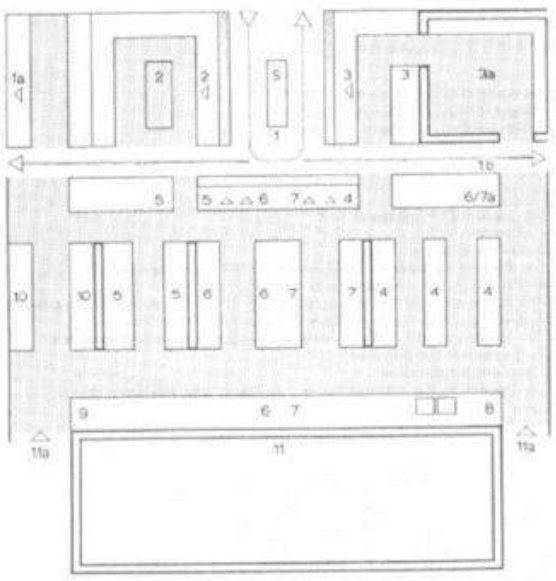



Fig. 7 Snack bar (Pub, tavern, bistro, café, or restaurant). Capacity: 55–60 seats (five- or six-fold reoccupancy over lunchtime, twofold in the evening; at other times, a well-run café, cake, and snack business). The kitchen deals primarily with ready-to-serve articles. In a city business with daily 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



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
S Service accessories (cash register)



Fig. 12 Café-restaurant with tearoom, or a city restaurant in a busy district.

- Café: alcohol-free beverages, except for bottled beer; pastry and small meals—cold and warm
- Tearoom: alcohol-free beverages, pastry, sandwiches. Capacity: About 150 seats (continuous service from early morning to midnight or later). Kitchen: extensive use of precooked meals; little storage.

Legend:

1. Waiters' passageway
1a. Serving stations and cash register
2. Dishwasher
3. Beverage buffet with mixer, toaster, ice cream container, etc.
4. Pastry
4a. Pastry oven
5. Sandwich unit
6. Defrosting and heating equipment, soup vats
7. Oven, grill, frying apparatus
8. Pot and pan washing
11. Day stores, empty goods (staple goods in cellar)
15. Linen storage
17. Delivery
17a. Office
19. Employees' washrooms, cloakroom for waiters (cloakroom and washrooms for kitchen employees in cellar)
G1. Tearoom
G2. Café-restaurant
G3. Terrace or garden
G4. Washrooms
G5. Telephone booths

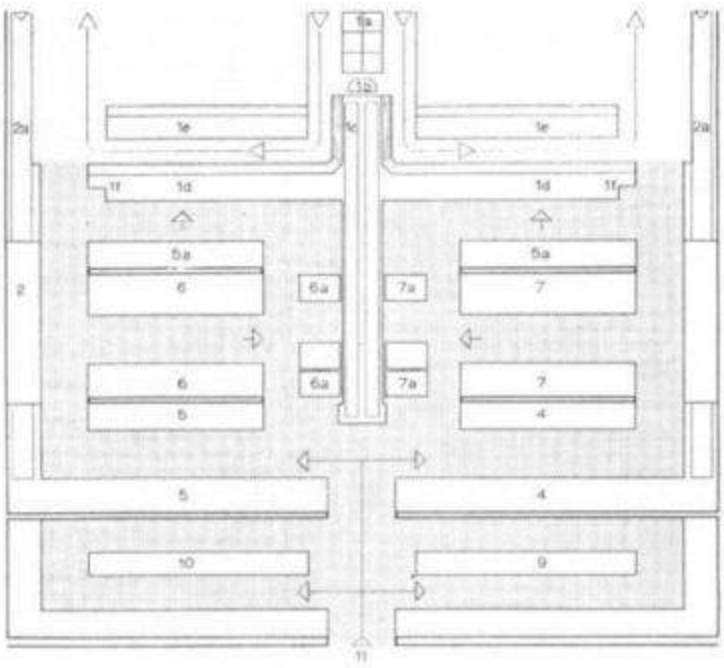



Fig. 13 Student dining hall or cafeteria with two-sided self-service buffet and conveyor belt. Capacity: 12 persons per minute × 2 = 24 persons. Without cash payment: hourly capacity, 1,400 persons. With cash circulation: hourly capacity, 1,100 persons. Seating: at least 340 seats. Kitchen: fully equipped linear arrangement, planned for automatic equipment.

Legend:

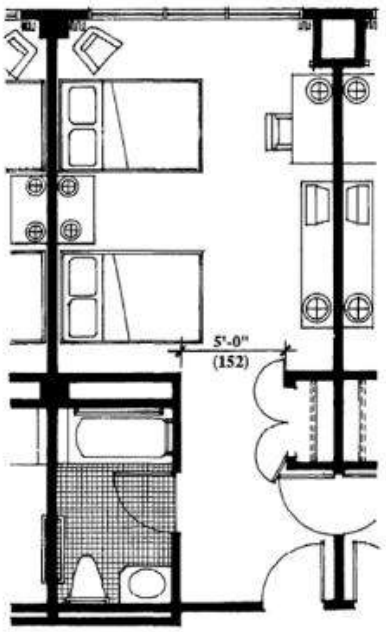
1a. Platter and cutlery trolley
1b. Distribution help, regulation of conveyor-belt speed, dietary food storage
1c. Conveyor belt for standard menu
1d. Self-service buffet—Menu:

| | |
|---|---|
| 1 soup of the day | various salads |
| 1 stew | various desserts |
| 1 standard menu | dairy products |
| 1 dietary food | 5 cold beverages (beer, wine, carbonated beverages, juice) |
| 2 cold meals | |

1e. Salad dressings, condiments, cutlery
1f. Cash register
2. Dishwasher
2a. Soiled-dish conveyor belt
4. Pastry
5. Garde-manger
5a. Portioning table for cold meals, salads, and desserts
6. Roast kitchen, possibly with roasting automats
6a. Warm-storage trolleys—portioning of meat, sauces, dietary foods
7. Cooking kitchen, possibly with automatic steam cookers
7a. Warm-storage trolleys for portioning of vegetables, entrées
9. Vegetable preparation
10. Meat preparation
11. Access to the storage rooms, delivery, and auxiliary rooms

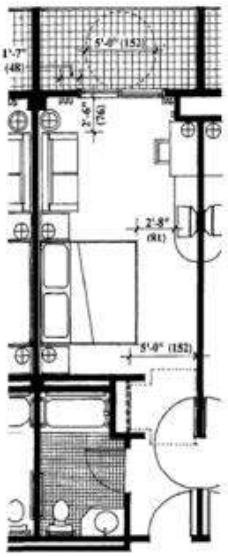
## 2.8 TIME SAVER STANDARDS (INTERIOR DESIGN):

*Figure 26 RECPTION DESK DETAIL*



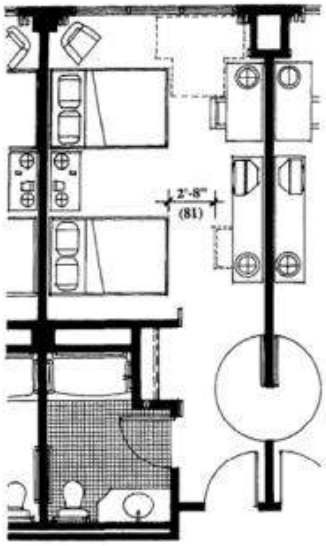

14' Bay-spacing

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



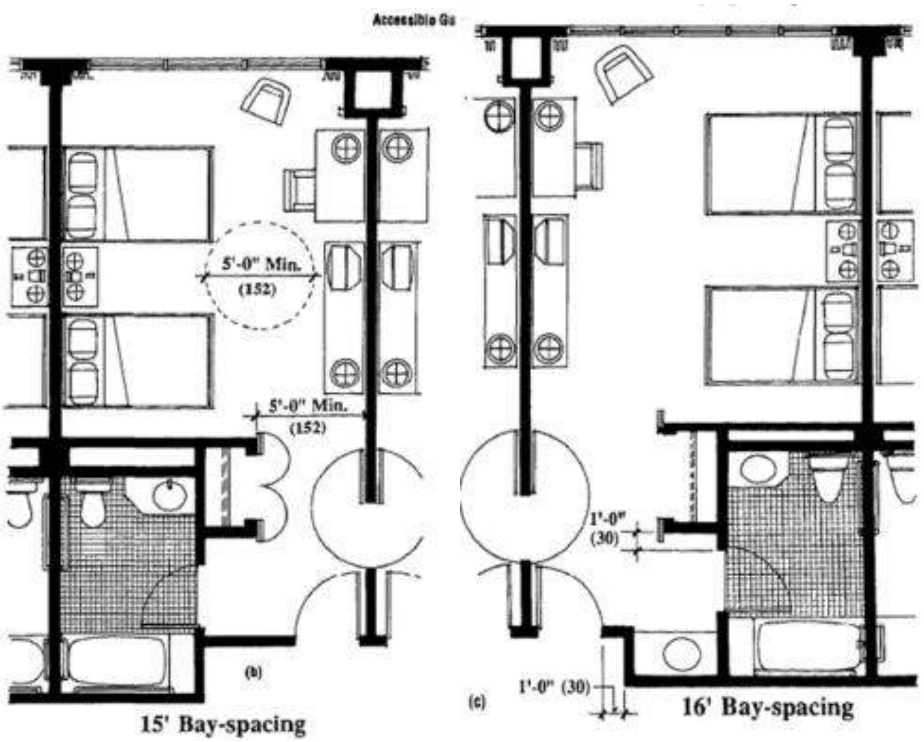

12' Bay-spacing

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.




15' Bay-spacing

16' Bay-spacing

### 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.

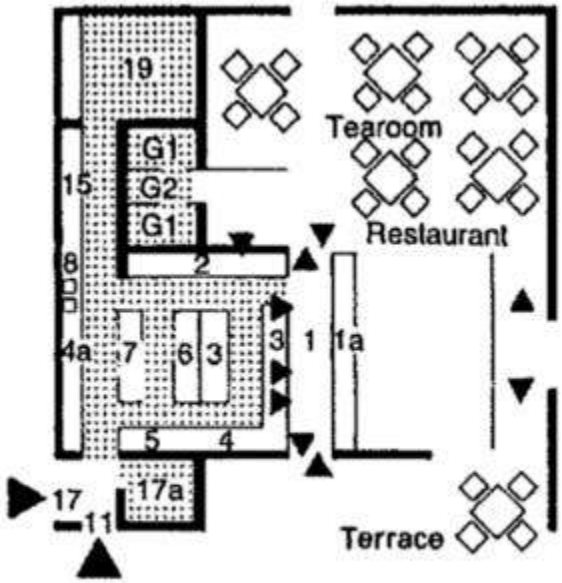



| | |
|---|---|
| 1 | meals and drinks servery |
| 2 | dishwasher |
| 2a | crockery returns |
| 3 | drinks bar with mixer, toaster, food containers etc. |
| 4 | oven for small pastry items |
| 5 | food storage |
| 6 | rotisserie |
| 6/7 | cooker rings |
| 7a | water boiler and steam machine |
| 8 | pot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

1 Snack bar

### 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

*Figure 27 CAFE RESTAURANT*

### 2.8.3 Cafe:

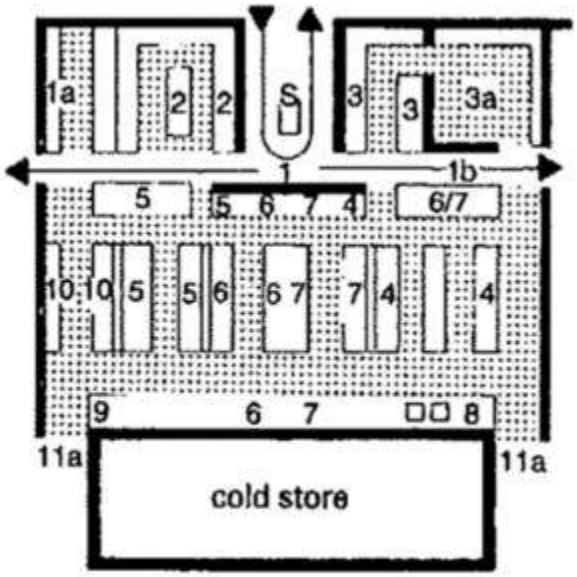
Alcohol-free drinks, except bottled premium beer, liqueurs etc., patisserie and light food- cold and hot.

### 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.

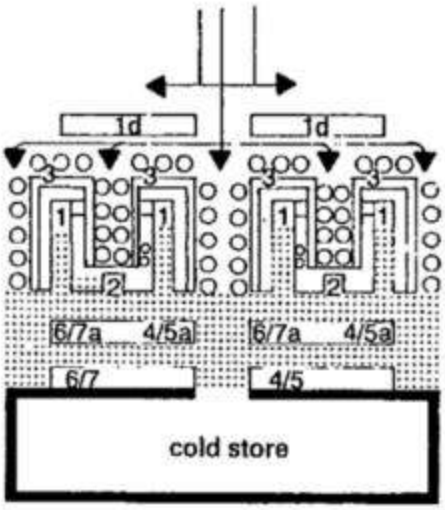



| | |
|---|---|
| 1 | waiters' walkway |
| 1a | garden service counter |
| 2 | dish-washing area |
| 3 | drinks counter |
| 3a | drinks cellar |
| 4 | pastry counter |
| 5 | cold dishes |
| 6 | hot dishes and sauces |
| 6/7 | table with hot store |
| 8 | pot and pan washer |
| 9 | vegetable preparation |
| 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.

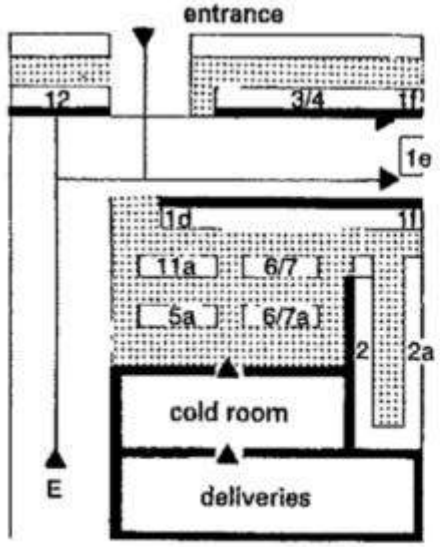



| | |
|---|---|
| 1 | serving aisles in U-shaped counters |
| 1d | vending machines |
| 2 | link between two counters with covered dishwashers, operated from both sides, each with two rinsing basins |
| 4/5 | cold meal preparation |
| 4/5a | cold servery (salads, ices, desserts) |
| 6/7 | griddle, soup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

4 Restaurant with buffet and vending machines

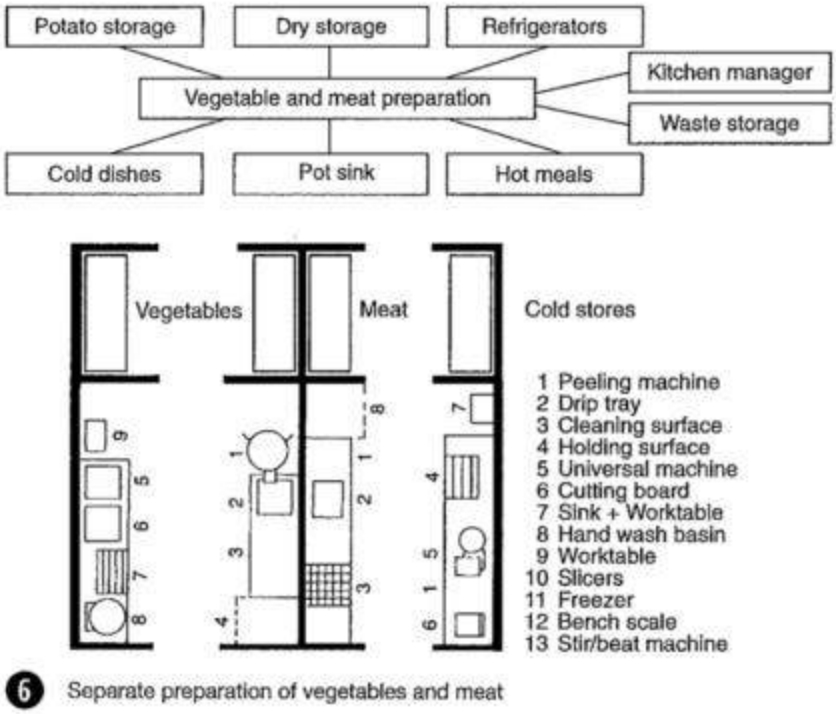
### 2.8.7 Self-service restaurant-

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

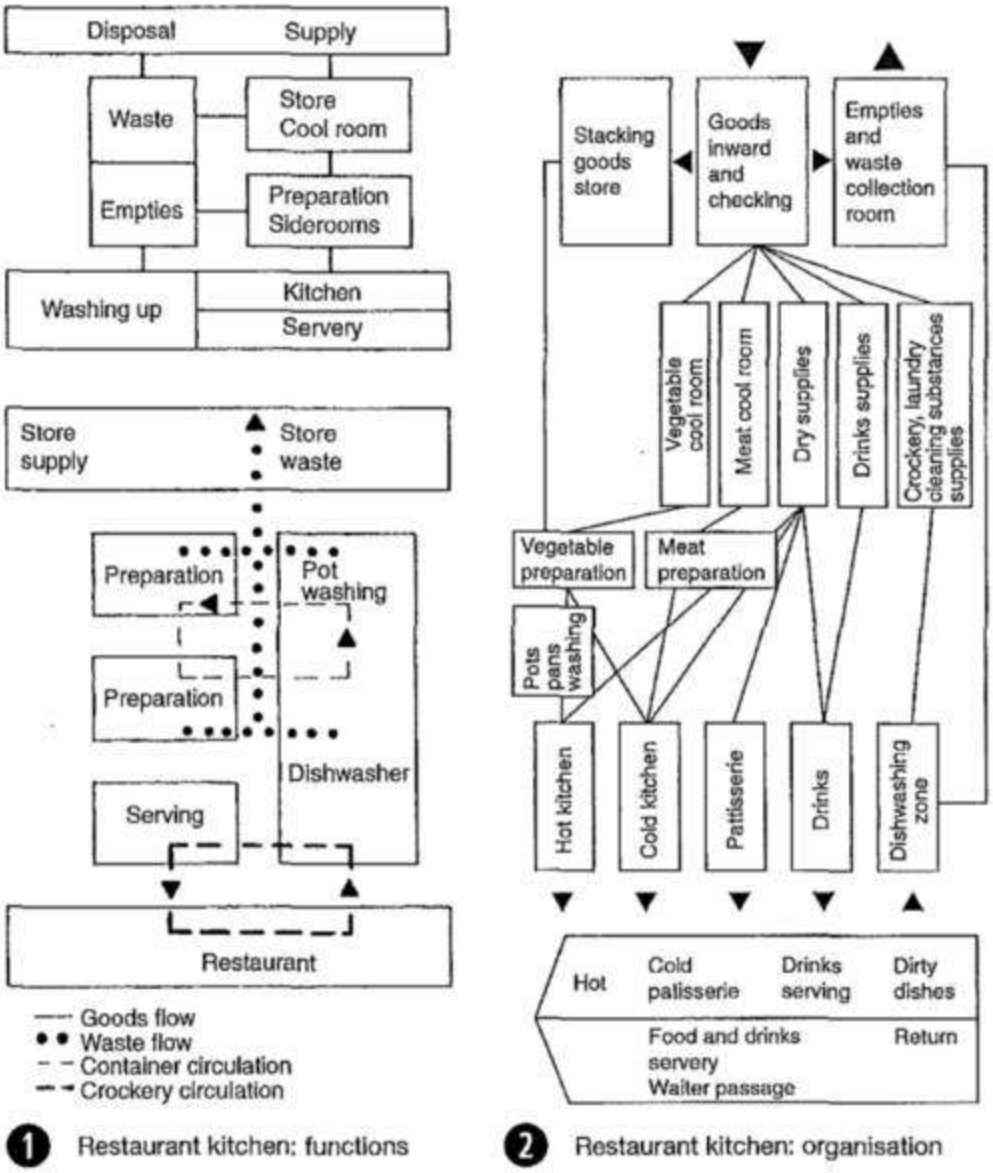



6 Separate preparation of vegetables and meat

### 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.

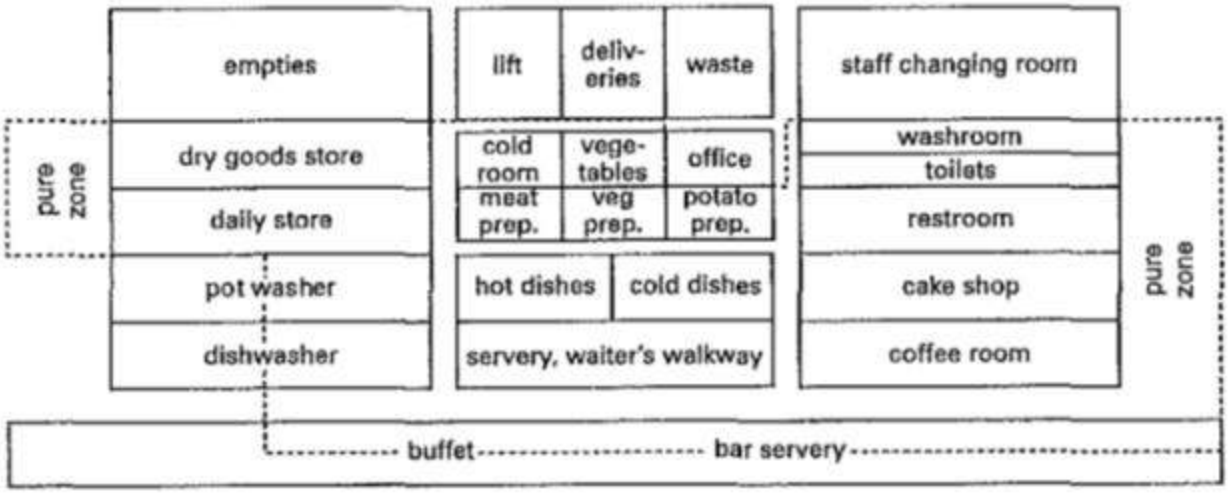
- Aisle widths in storage, preparation and production areas differ according to whether they are purely traffic routes or also overlap the service area. Working aisle widths should be 0.90-1.20 m, side traffic routes with (temporary) overlapping use 1.50-1.80 m and main traffic routes (transport and 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 |

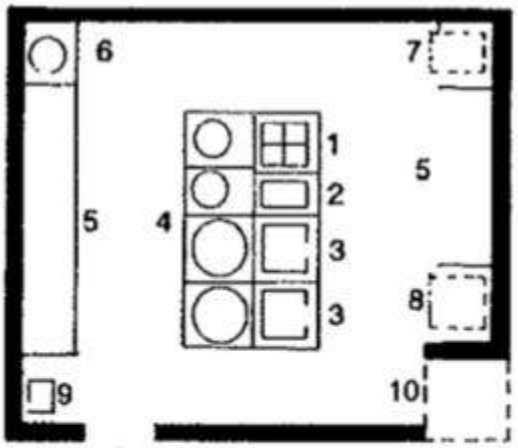
❸ Kitchen areas: space required ($m^2$/seat)

| 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

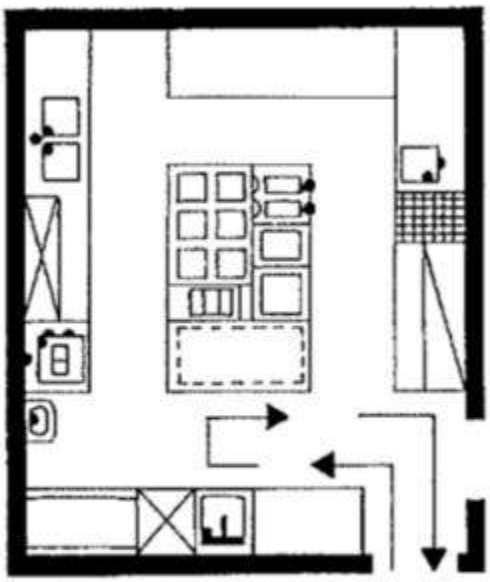



**5** Kitchen areas: classification and relationships of functional areas in clean and unclean zones (if earth-covered vegetables are prepared, this must take place in a separate part of the unclean area!)



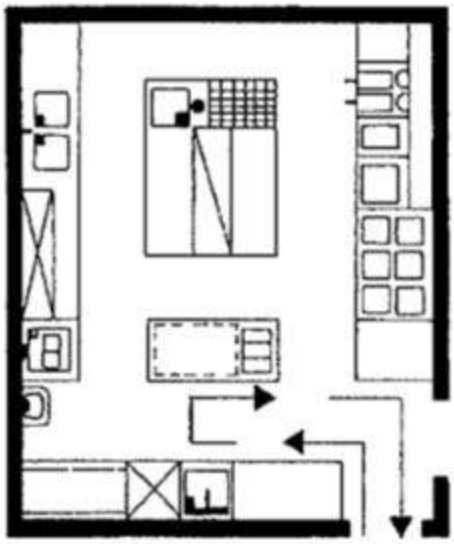

1 cooker
2 deep fat fryer
3 griddle
4 water boiler
5 work surface
6 cooker
7 double-deck oven
8 convectomat
9 hand basin
10 storage area

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



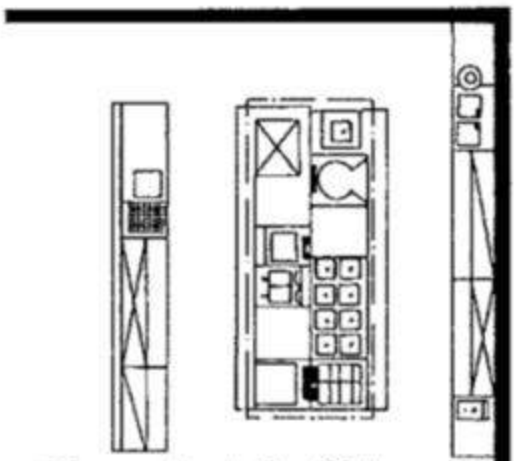
1. production in block

**2** Kitchen for restaurant with 60–100 places



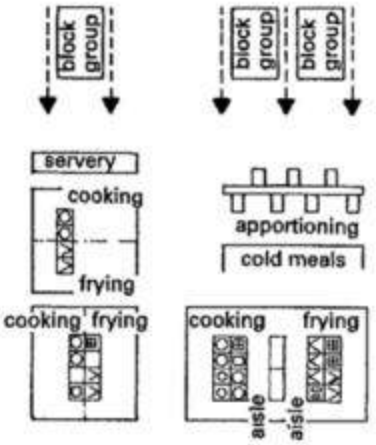
2. production in line

❸ Kitchen for restaurant with 60–100 places

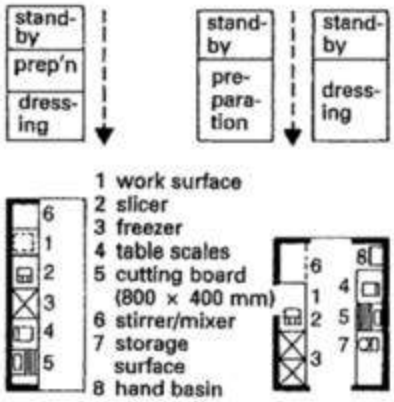


**cooking:** cooker, boiler (80 l), work surface, eight-ring hob, two ovens, bain-marie, hot cupboard
**frying:** griddle, work surface, twin deep fat fryer, frying pan, hot-air oven with table

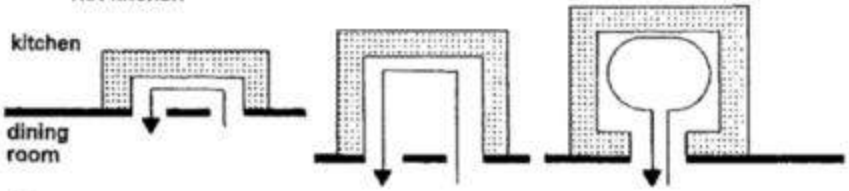
❹ Restaurant kitchen for 150–200 meals



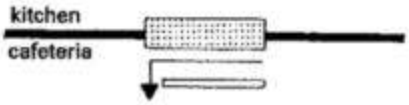

5 Functions and organisation of hot kitchen



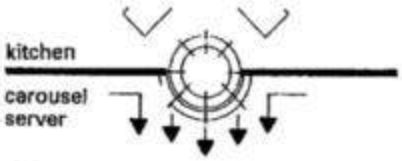

6 Organisation of cold kitchen



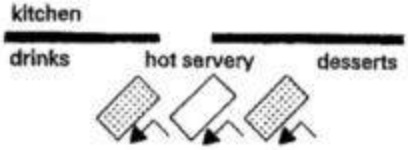

7 Servery, waiter walkway



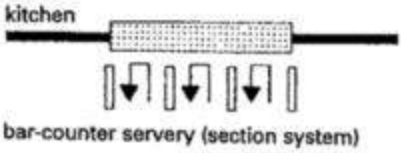

8 Self-service restaurant



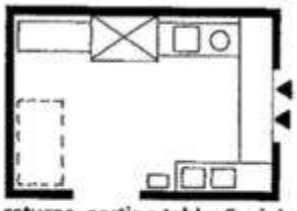

9 Self-service restaurant




10 Free-flow restaurant

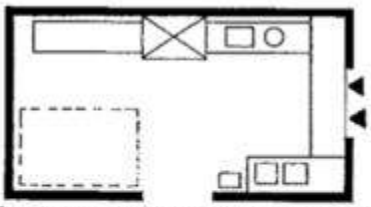



11 Self-service restaurant



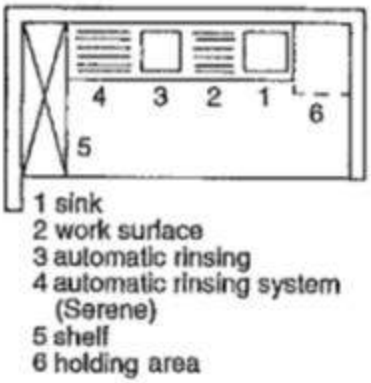
1: returns, sorting table; 2: sink; 3: waste clearance; 4: pre-wash; 6: dishwasher; 6: discharge table; 7: crockery area

12 Basic solution: dishwashing area

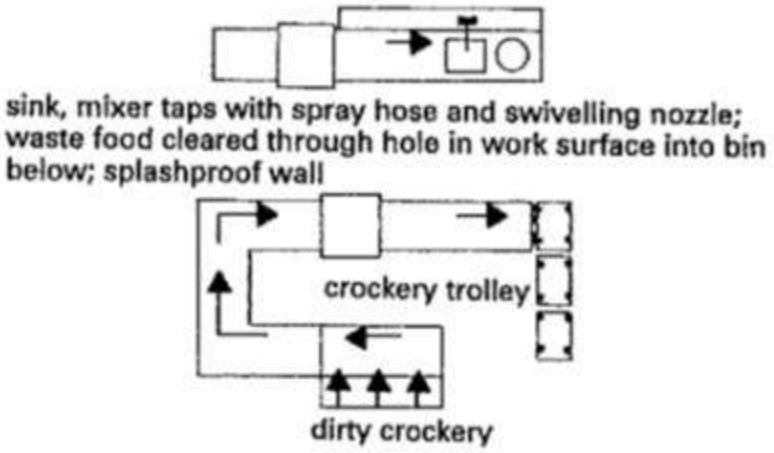


1: returns, sorting table; 2: sink; 3: waste clearance; 4: pre-wash; 5: dishwasher 6: discharge table; 7: crockery area

13 Basic solution: dishwashing area

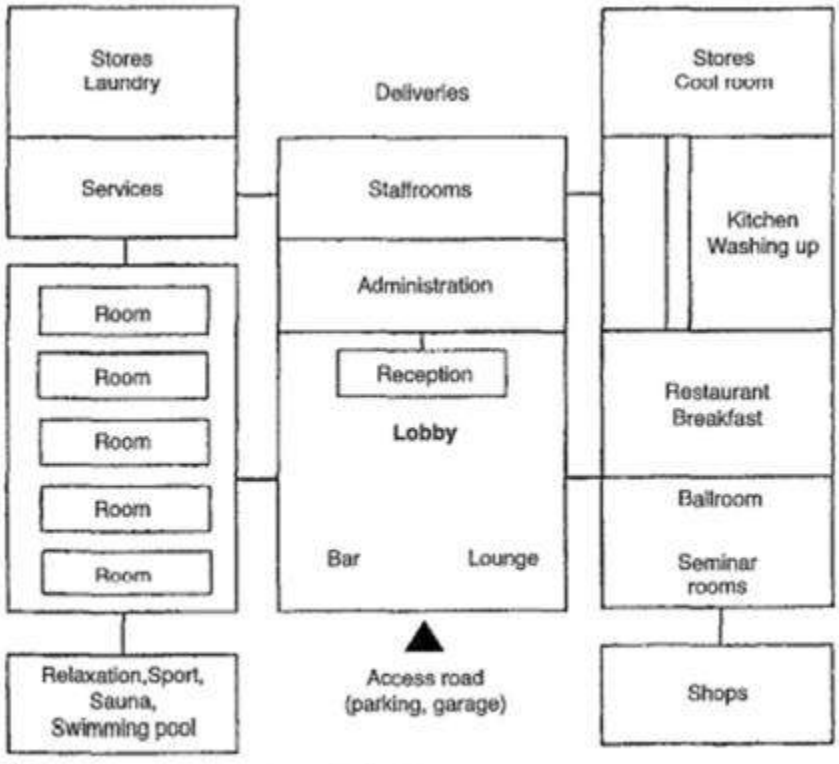



14 Basic solution: pot washing area




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)

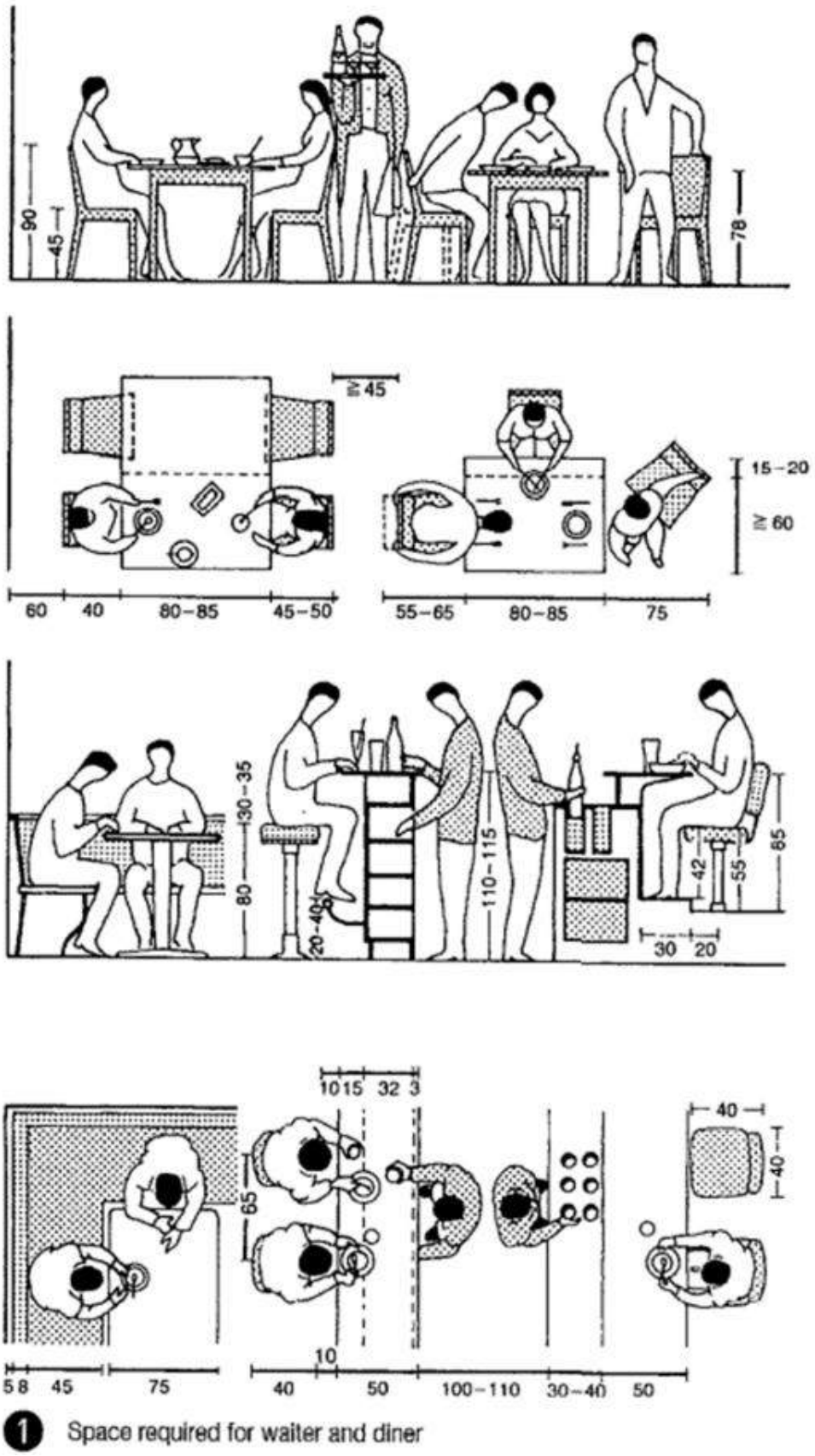
| | Hotel type | $m^2$/room |
|---|---|---|
| 1. | luxury | 90–110 |
| 2. | first class | 60–70 |
| 3. | comfort | 50–60 |
| 4. | standard (holiday hotel, motel) | 40–60 |
| 5. | tourist (low-budget) | 15–20 |

**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

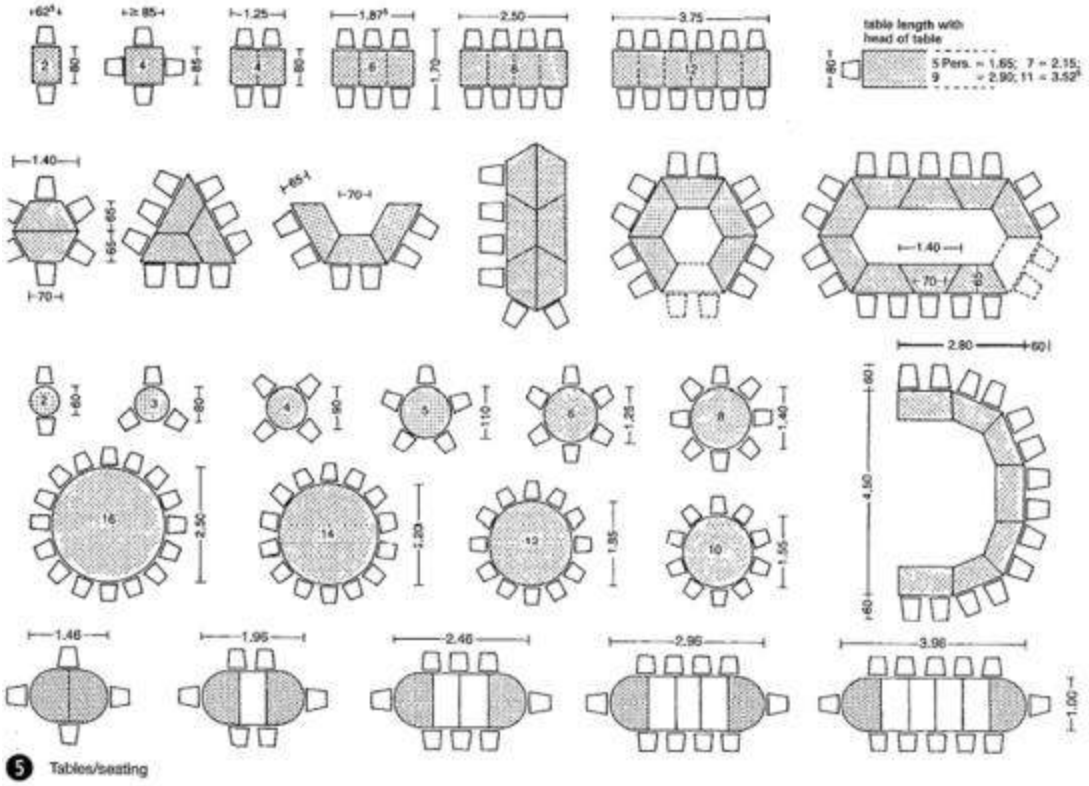
5 Stars (Luxury): as before, but single room 18m2 , double room 26m2, (minimum size, see above), 2% of the hotel rooms as suites (at least two), each with an armchair/sofa per bed, additional washbasin in double rooms and suites, additional colour television in suites, reception lobby.

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.

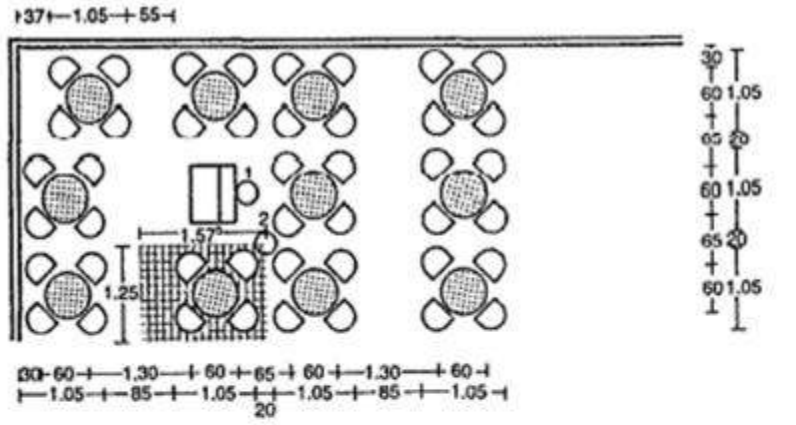
Distance between table and wall greater than equal to 75 cm because the chair alone requires a space of 50 cm. If the space between table and wall is also used for access, the distance should be greater than 100cm. Round tables need a little more space, a difference of up to 50 cm.



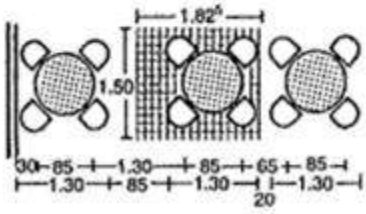

1 Space required for waiter and diner



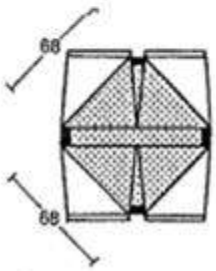

5 Tables/seating



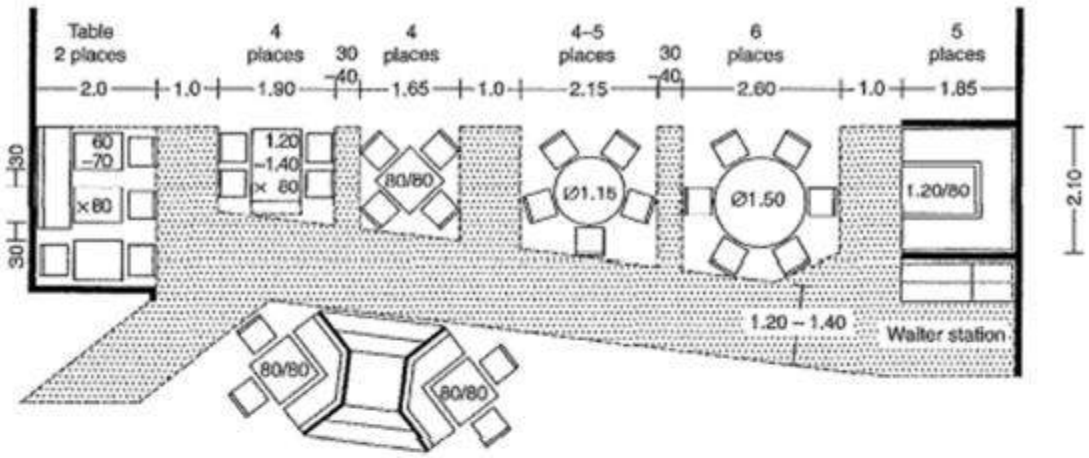
5 Closest table spacing



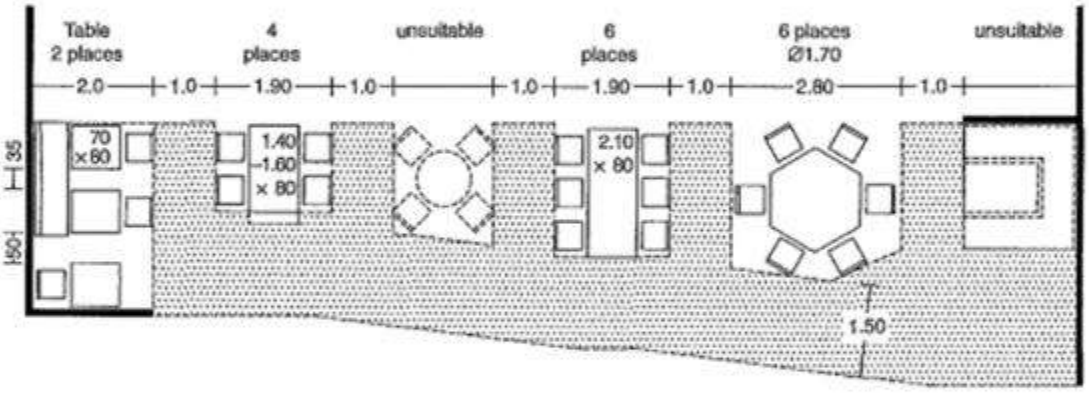
6 Tables in a café



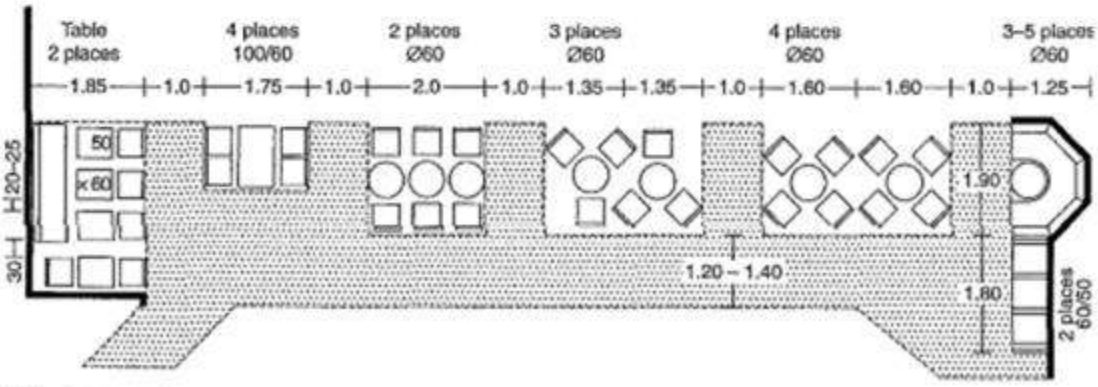
7 Zuntz table



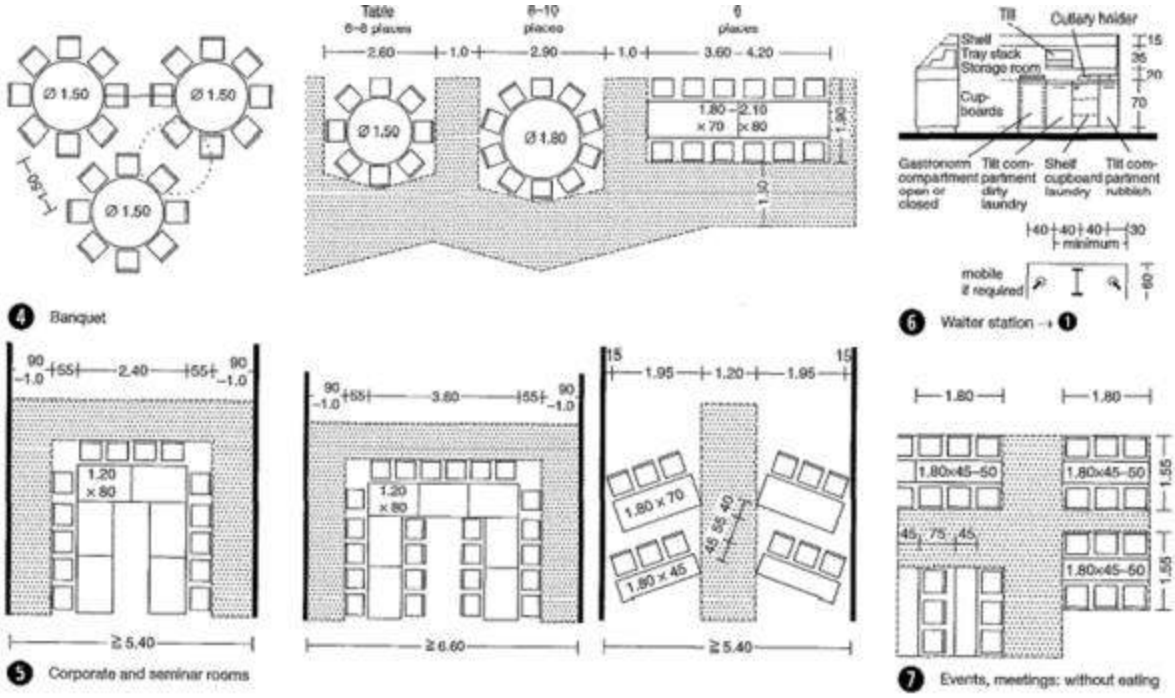

1 Table sizes in a restaurant: with predominantly plate service the table depth can be reduced to 70 cm




2 In a self-service restaurant




3 Bistro–café–bar

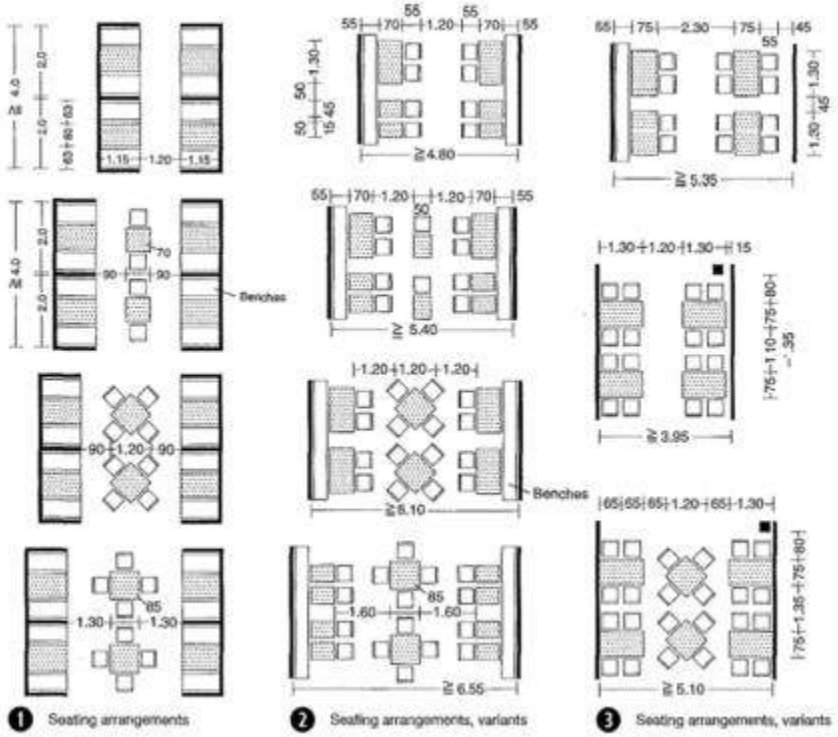



4 Banquet

6 Waiter station → 1

5 Corporate and seminar rooms

7 Events, meetings: without eating




1 Seating arrangements

2 Seating arrangements, variants

3 Seating arrangements, variants

**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:

| *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).

**Setbacks with respect to Abutting Road Width**

**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 (2) | Side and Rear Open Spaces to be Left Around Building m (3) |
|---|---|---|
| (1) | | |
| 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 3 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:

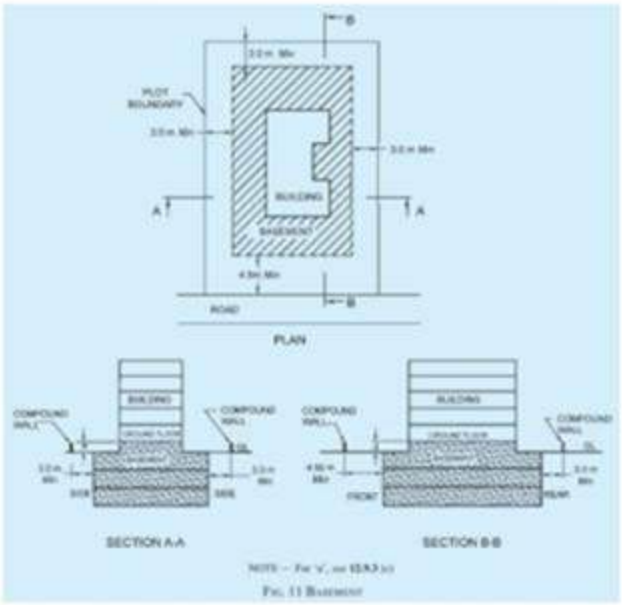
a) Residential (A-2) : 1.00 m NOTE — For row housing with 2 storeys, the minimum width shall be 0.75 m. b) Residential (A-1, A-3 and A-4) : 1.25 m

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).

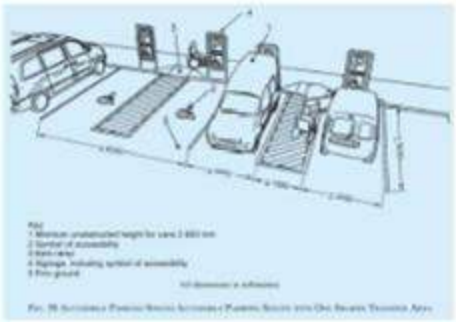
c) The designated accessible parking spaces shall be located on a gradient not greater than 1:50, throughout its length and its width.

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



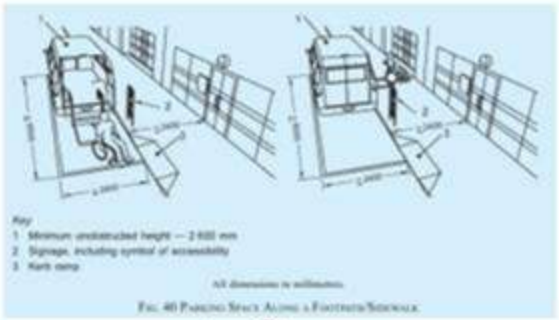





FIG. 39 ACCESSIBLE ROUTE WIDTH FOR WHEELCHAIR USERS TO PASS BEHIND A PARKED VEHICLE

**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.

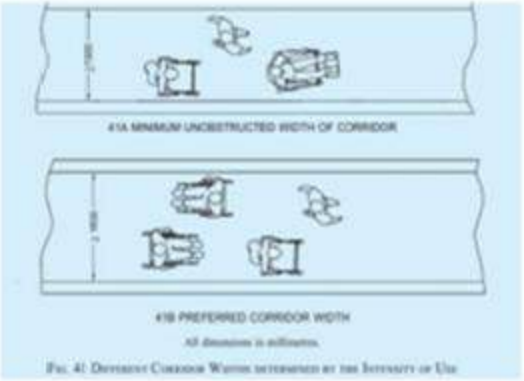


FIG. 41 DIFFERENT CORRIDOR WIDTHS DETERMINED BY THE INTENSITY OF USE

***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.



FIG. 42 SPACE REQUIRED FOR 90° TURN

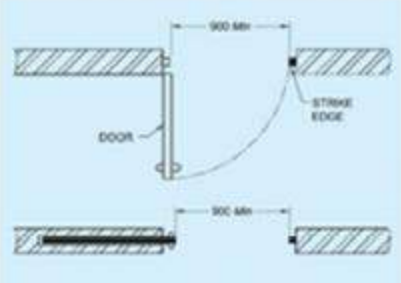


FIG. 43 MINIMUM CLEAR OPENING OF DOORWAYS

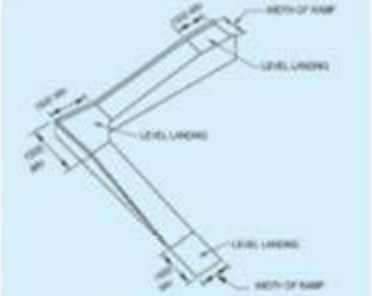



**Table 10 Requirements for Ramp**
(*Clause* B-6.2.2)

| 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 |

## 2.9 INDIAN STANDARD CODE FOR HOTELS AND RESTAURANTS:

### 2.9.1 BUILDING

In addition to the recommendations in the code the building in which food service establishment is located shall also conform to the local building byelaws in force. The building should be of a permanent nature and maintained in a proper stateof repair and cleanliness.

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.

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.

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.

DOOR AND WINDOWS

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

### 2.9.2 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.

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 |

### 2.9.3 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.

### 2.9.4 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.

### 2.9.5 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 4 REQUIREMENTS OF DRAINAGE AND SANITATION FITMENTS IN HOTELS**

(*Clause* 14.1.1)

| Sl No. | Fitments | For Residential Public and Staff | For Public Rooms | | For Non-Residential Staff | |
|---|---|---|---|---|---|---|
| | | | For Males | For Females | For Males | For Females |
| (1) | (2) | (3) | (4) | (5) | (6) | (7) |
| i) | Water-closets | 1 per 8 persons omitting occupants of the room with attached water-closets; minimum of 2 if both sexes are lodged | 1 per 100 persons up to 400 persons; and for over 400, add at the rate of 1 per 250 persons or part thereof | 2 per 100 persons up to 200 persons; and for over 200, add at the rate of 1 per 100 persons or part thereof | 1 for 1-15 persons<br>2 for 16-35 persons<br>3 for 36-65 persons<br>4 for 66-100 persons | 1 for 1-12 persons<br>2 for 13-25 persons<br>3 for 26-40 persons<br>4 for 41-57 persons<br>5 for 58-77 persons<br>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 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 persons or part thereof | — | Nil up to 6 persons<br>1 for 7-20 persons<br>2 for 21-45 persons<br>3 for 46-70 persons<br>4 for 71-100 persons | — |
| 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<br>2 for 16-35 persons<br>3 for 36-65 persons<br>4 for 66-100 persons | 1 for 1-12 persons<br>2 for 13-25 persons<br>3 for 26-40 persons<br>4 for 41-57 persons<br>5 for 58-77 persons<br>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 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<br>2 for 16-35 persons<br>3 for 36-65 persons<br>4 for 66-100 persons | 1 for 1-12 persons<br>2 for 13-25 persons<br>3 for 26-40 persons<br>4 for 41-57 persons<br>5 for 58-77 persons<br>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<br>1 for 7-20 persons<br>2 for 21-45 persons<br>3 for 46-70 persons<br>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.

### 2.9.6 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.

### 2.9.7 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.

### 2.9.8 STORAGE OF FOOD STUFF

All perishable food shall be stored at the temperatures as given in

**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.

### 2.9.9 ACOUSTICS

Food service establishments (hotels, restaurants, etc) shall adopt suitable noise control measures to provide adequate sound insulation against various noise sources which would cause disturbance to human comfort and efficiency.

### 2.9.10 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.

**TABLE 7 CLASSIFICATION OF STRUCTURAL COMPONENTS**

| Grade No. | Time in Hours, Minimum Resistance Against Standard Fire | Fire Load and Class of Fire Which Structural Element may Withstand | |
|---|---|---|---|
| | | Fire Load in kcal/cm² | Class of Fire |
| (1) | (2) | (3) | (4) |
| 1 | 6 | 1 100 000 and over | Very high |
| 2 | 4 | 550 000 to 1 100 000 | High |
| 3 | 2 | 275 000 to 550 000 | Medium |
| 4 | 1 | less than 275 000 | Low |
| 5 | ½ | — | Very low |

# 3 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**.



*Figure 28 SEISMIC ACTIVITY*

### 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**

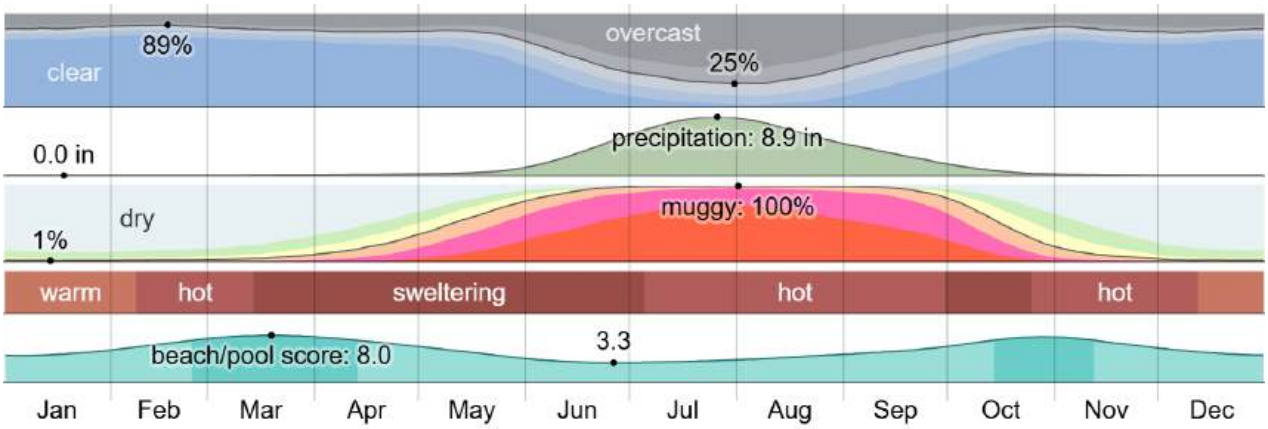



**Figure 29: CLIMATIC EXPERIENCE IN SANAND AROUND THE YEAR**

### 3.3.1 Average Temperature in Agra

**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)**.

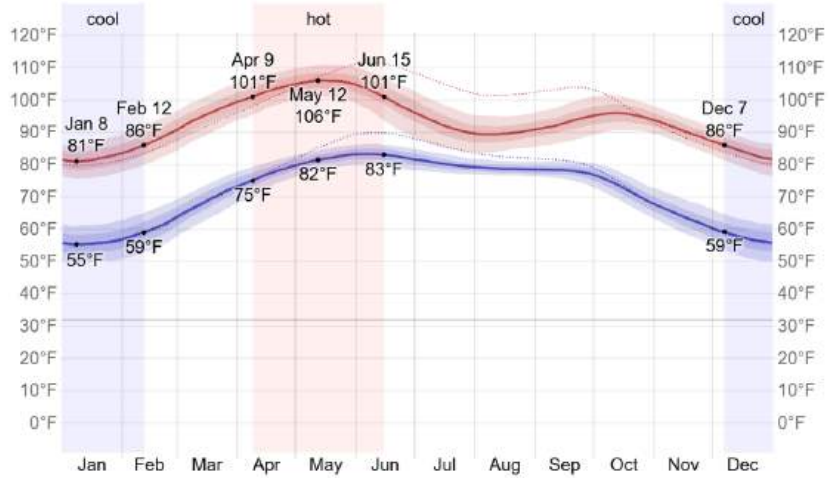



**Figure 30 : TEMPERATURE IN SANAND ANUALLY**

### *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**

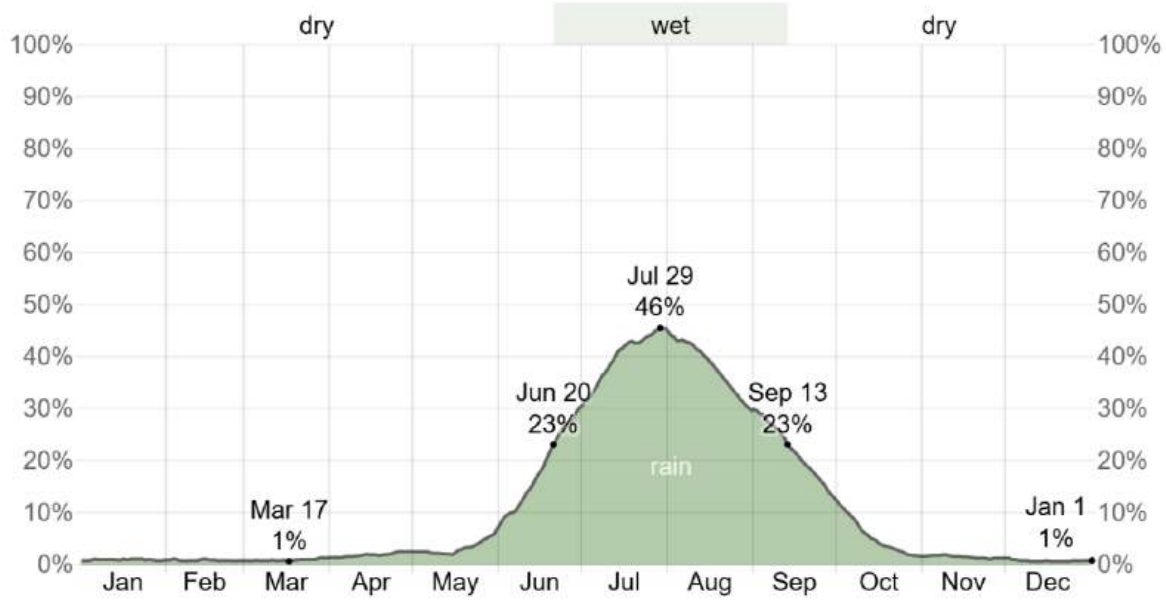
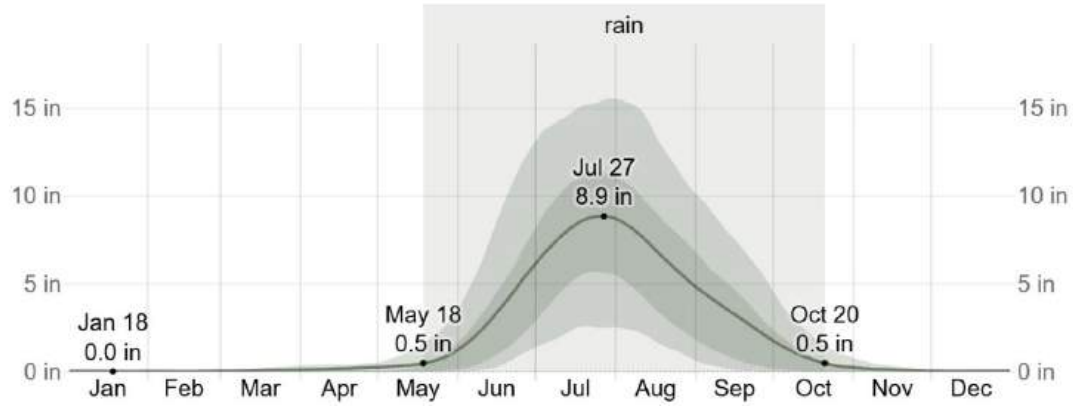



**Figure 31: AVERAGE PRECIPTATION IN SANAND**

### 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).

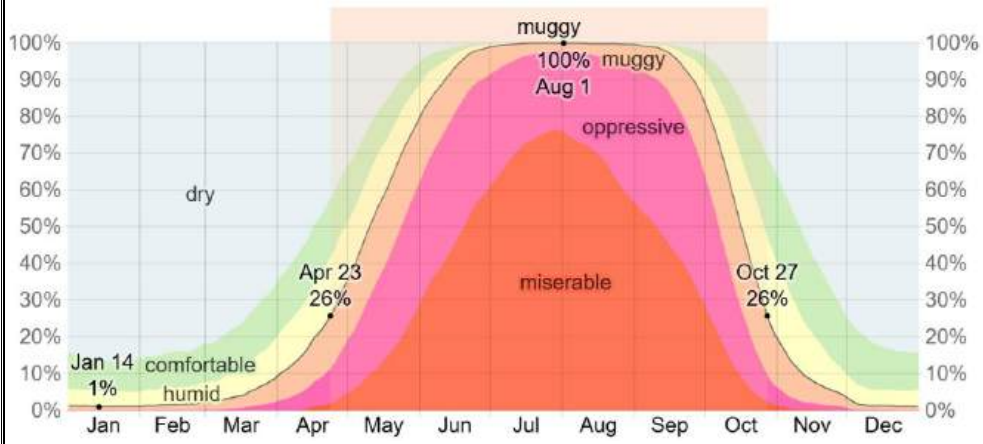
**Figure 32: AVERAGE RAINFALL IN SANAND**



### 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

*Figure 33Figure 37: AVERAGE HUMIDITY IN SANAND*

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.

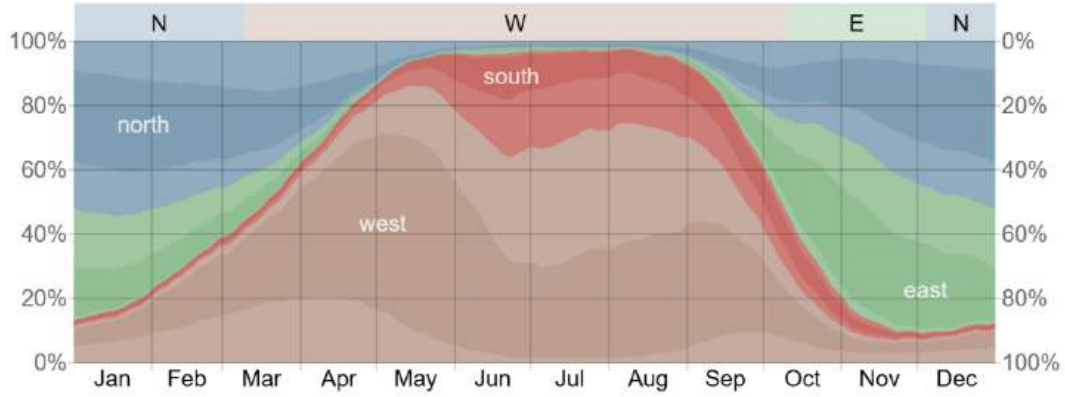



**Figure 34: AVERAGE WIND SPEED IN SANAND**

## 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.

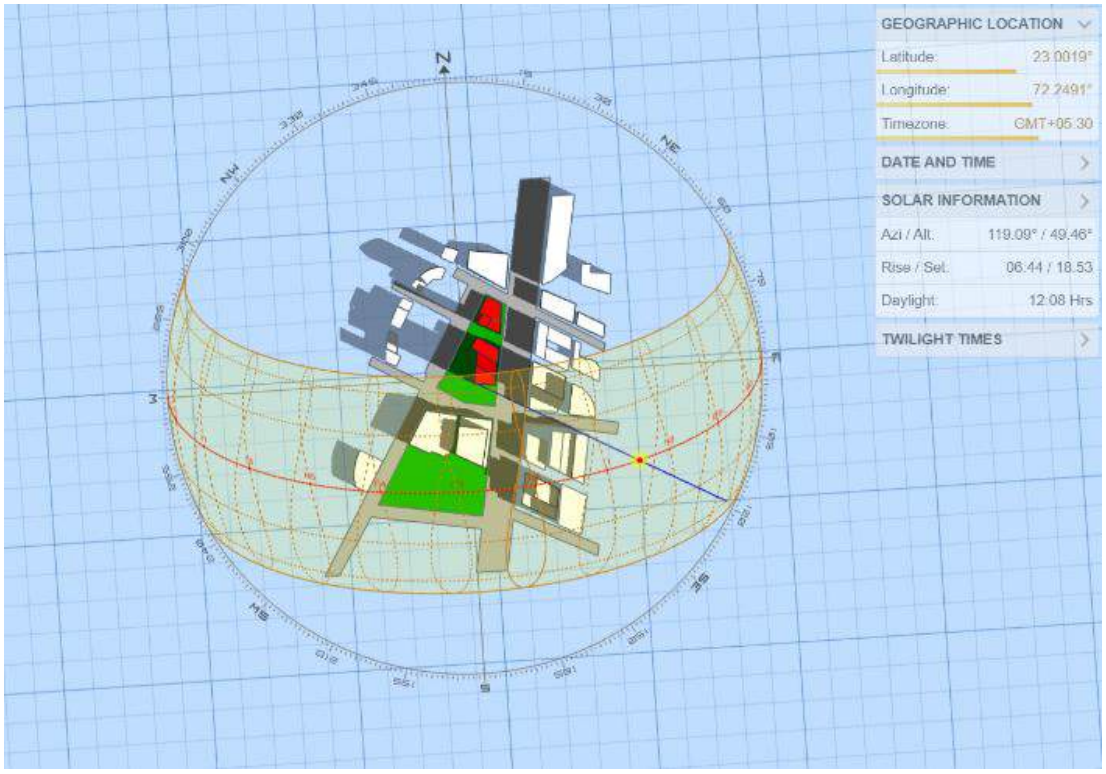
This data supports strategic orientation of built forms and fenestrations. North-facing façades remain shaded most of the day, making them ideal for minimal heat gain, while south and southwest exposures require adequate shading devices such as vertical fins or overhangs to mitigate harsh afternoon sun. 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.

**Figure 35: SUNPATH ANALYSIS**

## 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 zones for service areas or thermal insulation focus. Intermediate zones showed moderate exposure, such as **5.2 to 5.9 hours**, indicating a balance of shading and daylighting potential. This analysis plays a critical role in optimizing façade design, spatial planning, and energy efficiency strategies for the hotel in alignment with climate-responsive architecture.

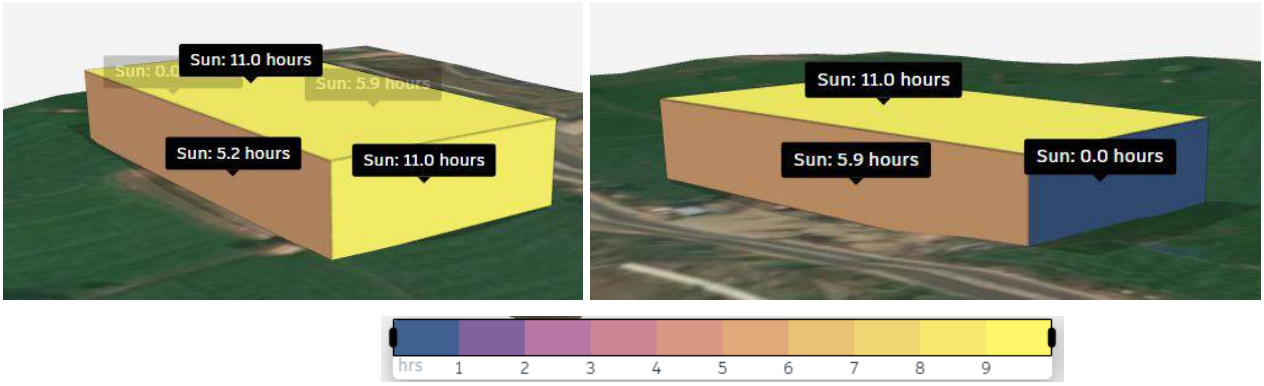



**Figure 36: SUN HOUR ANALYSIS OF FEBRUARY MONTH**

**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.

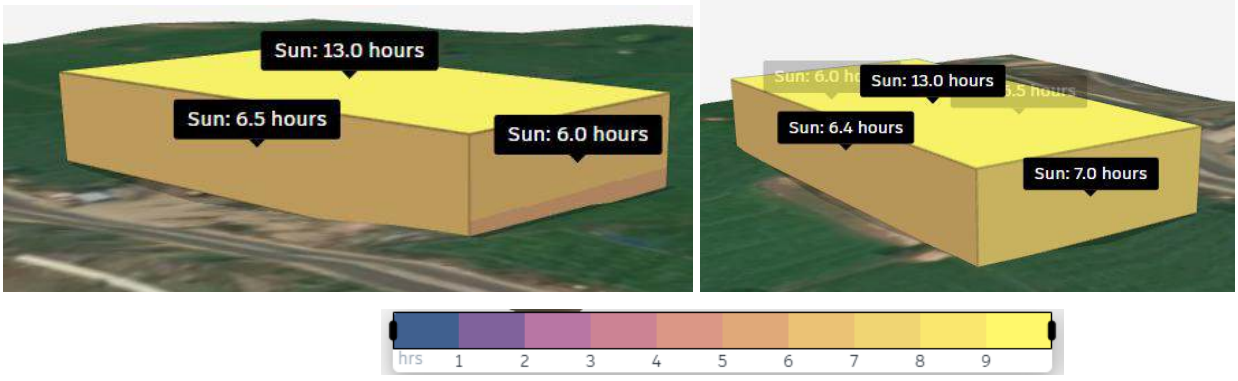



**Figure 37: SUN HOUR ANALYSIS OF MAY MONTH**

**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.

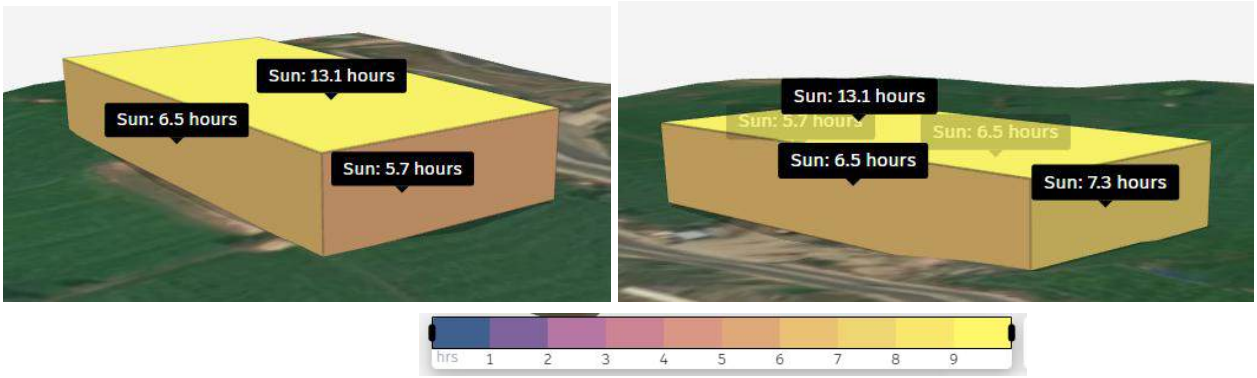



**Figure 38: SUN HOUR ANALYSIS OF AUGUST MONTH**

**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**.

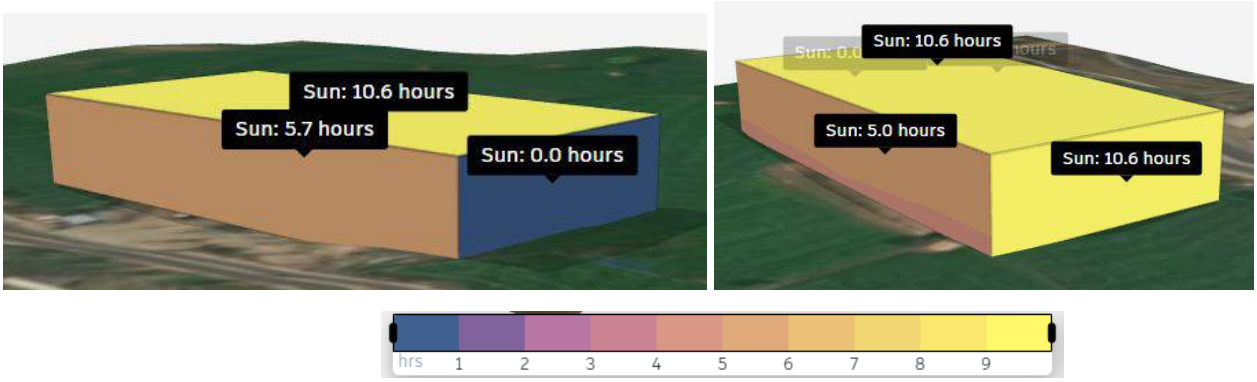



**Figure 39: SUN HOUR ANALYSIS OF DECEMBER MONTH**

### 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.

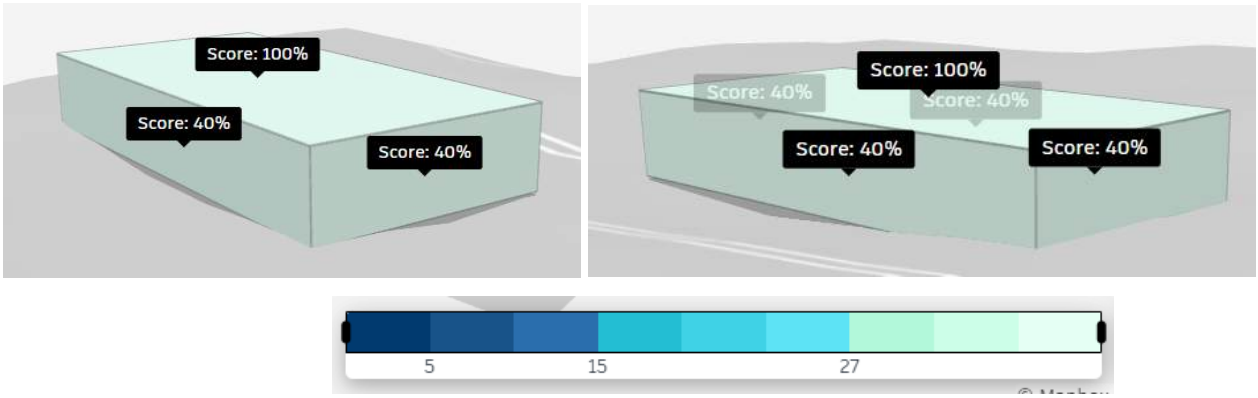



**Figure 40: DAY LIGHT POTENCIAL**

### 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.

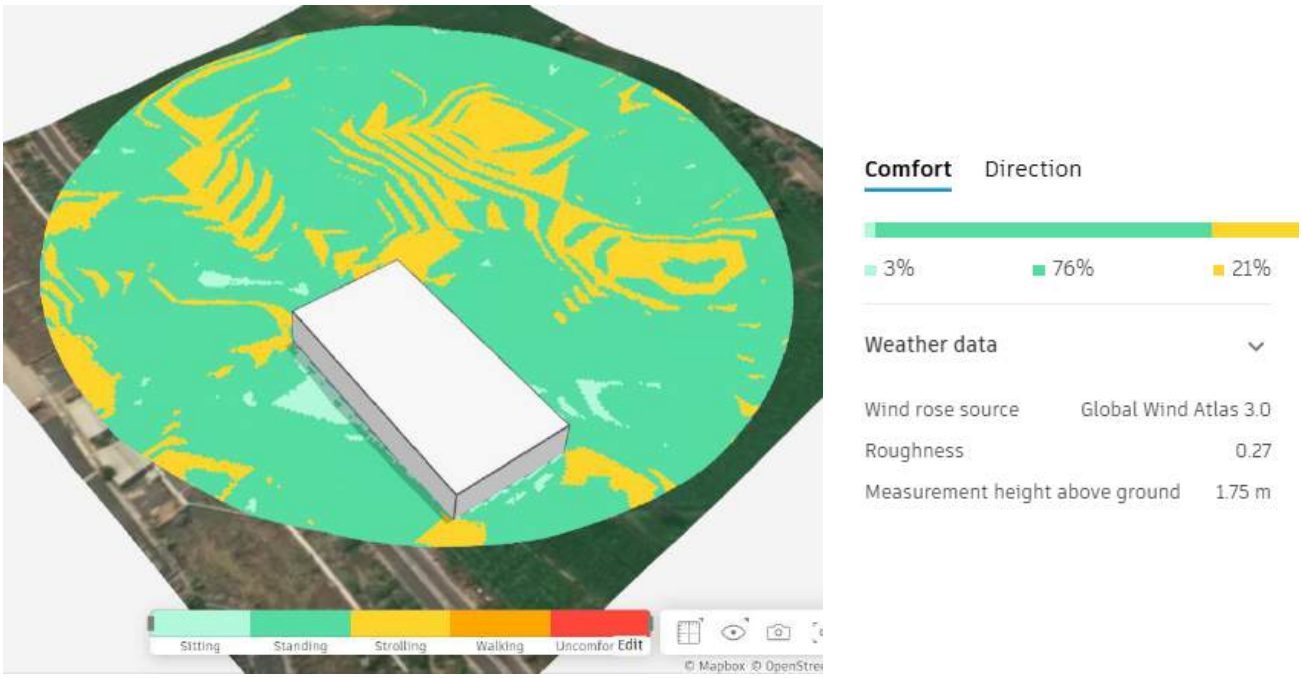



**Figure 41: WIND COMFORT ANALYSIS**

### 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.

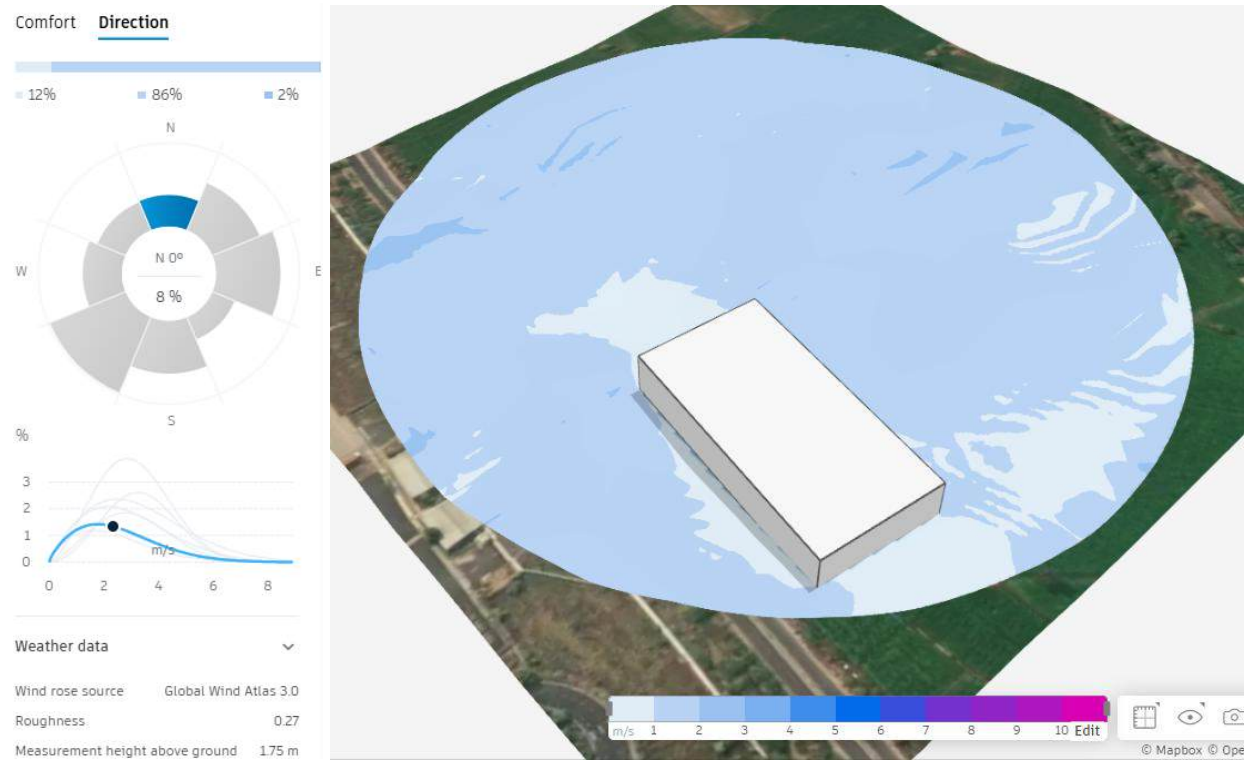



**Figure 42: WIND DIRECTION ANALYSIS**

### 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 facade 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.

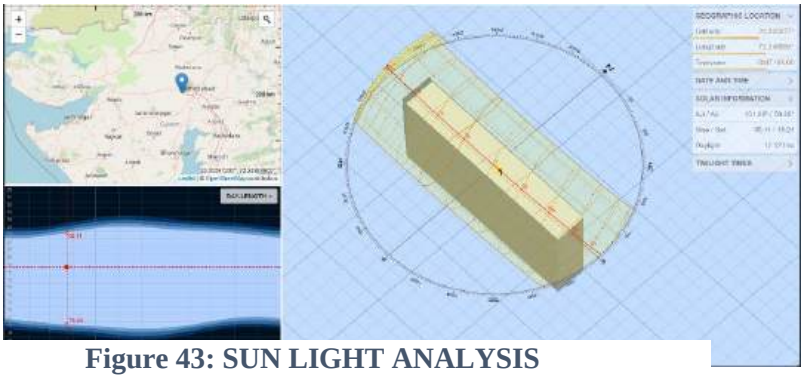
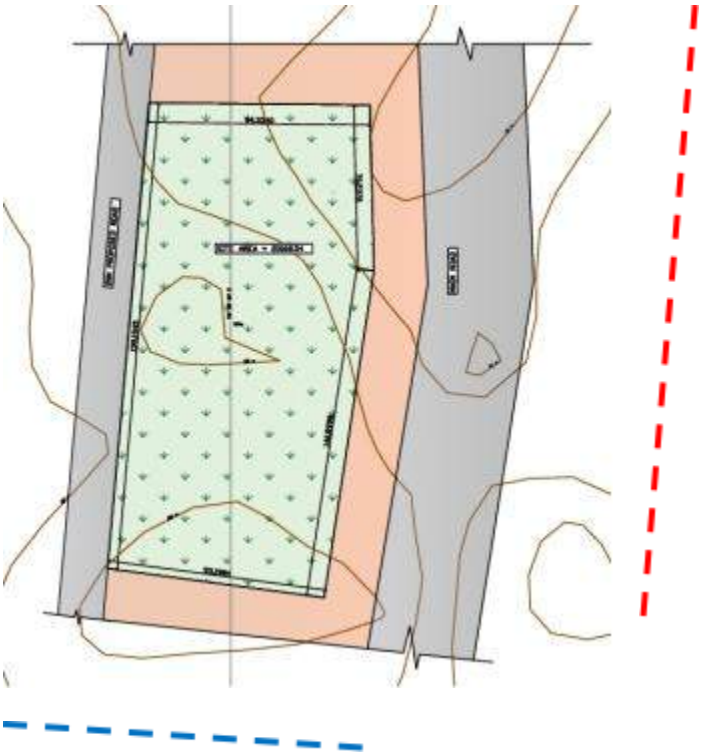
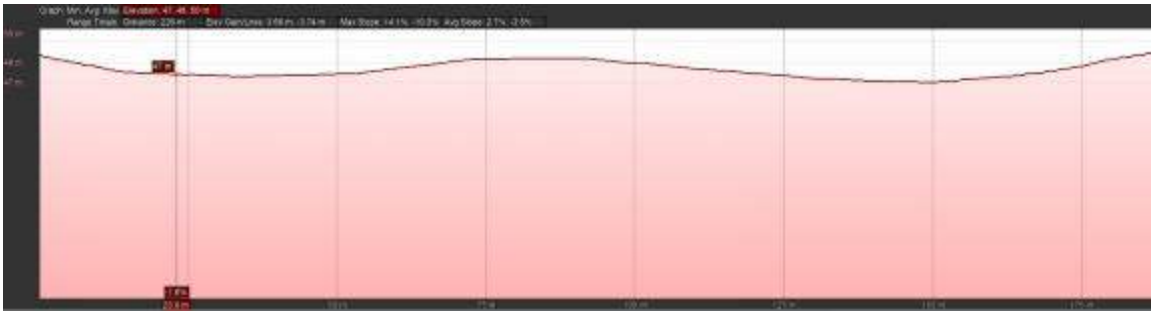


**Figure 43: SUN LIGHT ANALYSIS**

## 3.7 . TOPOGRAPHY





Red Axis Slope





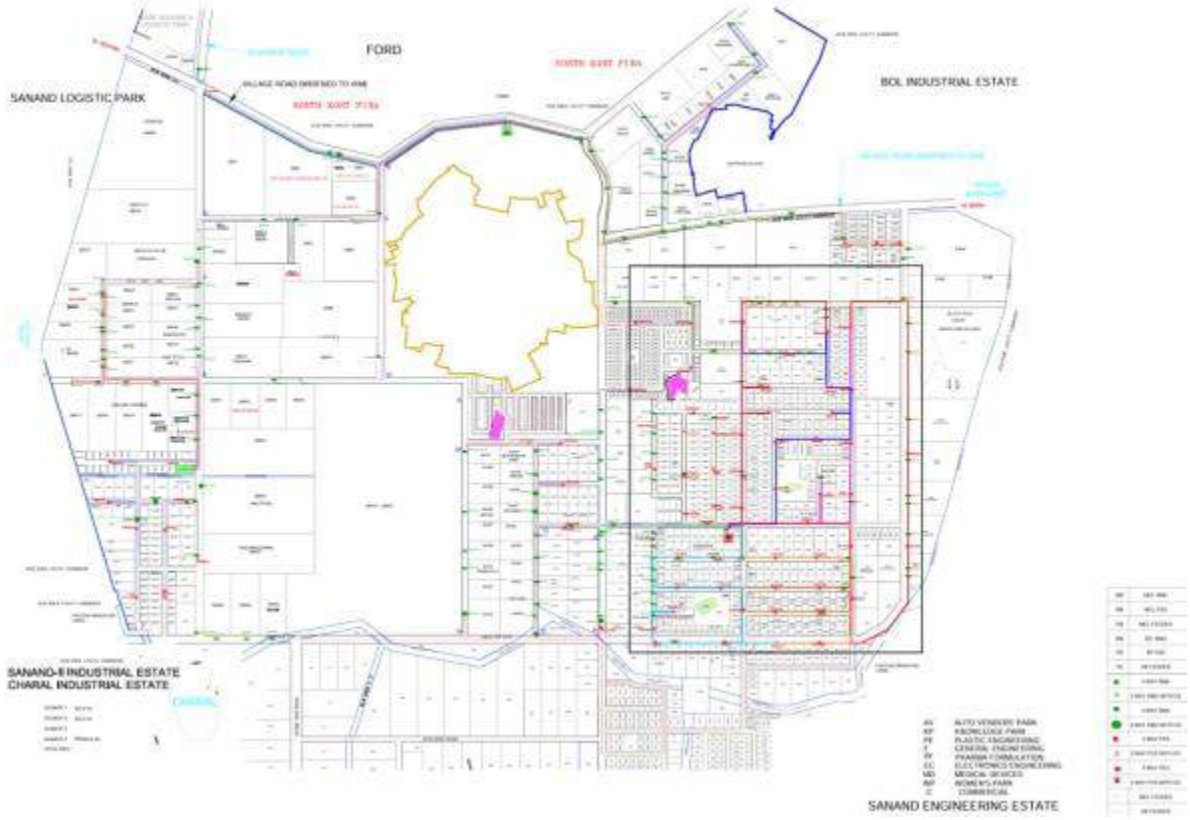
Blue Axis Slope

## 3.8 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 66 kV .

| 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 |

## 3.9 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. |

## 3.10 DECADEWISE ARCHITECTURAL FEATURES OF AHEMDABAD

### 3.10.1 1.1 Pre-1940s – Sultanate & Colonial Period

INFLUENCES

- Indo-Islamic Sultanate architecture

- Mughal and British Colonial styles
- Traditional Hindu-Jain craftsmanship

Structures:

- Mosques (Jama Masjid, Sidi Saiyyed Mosque)
- **Pol houses** in the Walled City
- British-era institutions and rail stations

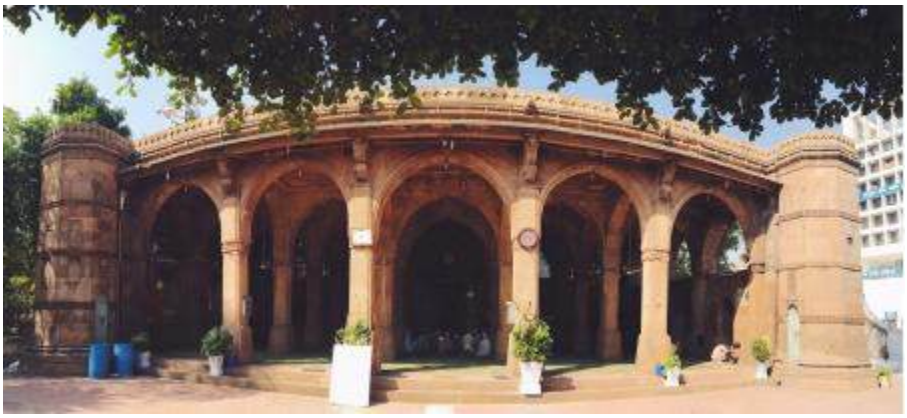
Materials:

- Local sandstone and limestone
- Teak wood (in Pol houses)
- Lime plaster

Design Elements:

- Intricate **jalis (latticed screens)**
- Courtyards, overhanging balconies (otlas)
- Sloped roofs with wooden brackets
- Arches and domes

Infrastructure:



- Organic street networks in Pols
- Water tanks, stepwells

- Colonial rail and road systems



### 3.10.2 1.2 1940s–1950s – Early Modernism & Post-Independence

Influnce

- Functional Modernism
- Industrial growth (Textile mills)
- Nehruvian development ideals

Structures:

- Government housing schemes
- Textile mill complexes
- Institutional buildings

**Materials**:

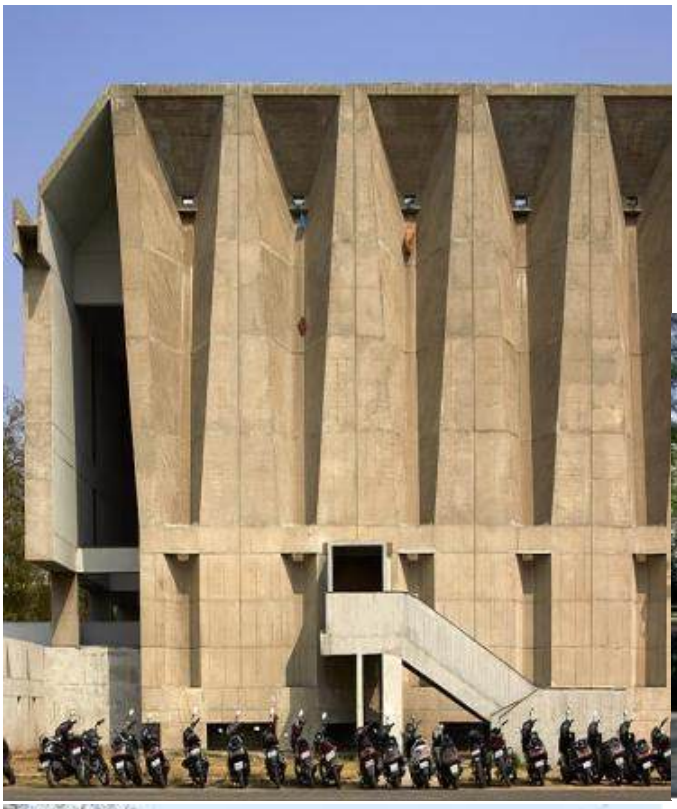
- Reinforced Cement Concrete (RCC)
- Brick masonry
- Steel for frames and trusses

Design Elements:

- Simple, box-like forms
- Flat roofs
- Minimal ornamentation
- Ventilation-focused design

Infrastructure:

- Planned grid layouts for new neighborhoods
- Industrial zones in areas like Naroda
- Initial road expansion beyond walled city







### 3.10.3 1.3 1950s–1960s – Modernist Icons: Le Corbusier & Kahn

Influnce

- International Modernism
- Brutalism (Le Corbusier, Louis Kahn)
- Fusion of Western ideals with Indian climate needs

Structures:

- Mill Owners' Building
- ATMA House

- Indian Institute of Management (IIM-A)

**Materials:**

- Exposed concrete (béton brut)
- Brick
- Deep shading devices

Design Elements:

- **Brise-soleil**, deep overhangs
- Large structural masses
- Symmetry and monumental geometry

**Infrastructure**:

- Academic campuses like IIM and CEPT
- Early development of modern roads
- Transition from walled city to western expansion




### 3.10.4 1970s–1980s – Institutional Growth & Low-Cost Housing

Influnce

- Vernacular Modernism
- Human-centric design (B.V. Doshi, Correa)
- Focus on social equity

Structures:

- CEPT University
- Vastu Shilpa low-income housing
- GIDC industrial estates

Materials:

- Local brick and exposed concrete
- Mud bricks in rural experiments
- Ferrocement and cost-effective alternatives

Design Elements:

- Courtyard-based housing clusters
- Modular, low-rise development
- Sun-shading walls and sloped elements

Infrastructure:

- GIDC Industrial townships
- Slum rehabilitation initiatives
- First city development plans (AUDA formation)





### 3.10.5 1990s – Post-Liberalization Urban Boom

Influnce

- Globalization & economic liberalization
- IT and real estate investments
- Consumerism in built form

**Structures:**

- Shopping malls (Iscon, Himalaya Mall)
- Corporate offices
- Gated residential townships

Materials:

- Glass curtain walls
- Aluminum cladding
- Concrete frame structures

**Design Elements:**

- Glazed façades
- Atriums and escalators in malls
- Elevated podiums in housing

Infrastructure:

- SG Highway development
- Widespread private vehicles

- Rise of suburb areas (Satellite, Bopal, Bodakdev)




### 3.10.6 2000s – Riverfront & Urban Redevelopment

Influence:

- Urban renewal
- Public-private partnerships (PPP)
- Mixed-use masterplanning

**Structures:**

- Sabarmati Riverfront
- High-rise apartments and offices
- BRTS (Bus Rapid Transit System) stations

Materials:

- RCC, composite cladding
- Sustainable materials in public buildings
- Recycled stone/tiles in riverfront paths

**Design Elements:**

- Waterfront promenades
- Universal accessibility features
- Transit-oriented design

Infrastructure:

- BRTS corridors
- Bridges and river bunding
- Organized green spaces




### 3.10.7 2010s–Present – Smart City & Sustainable Urbanism

**.** Influence:

- Smart Cities Mission
- Sustainability & climate resilience
- Heritage conservation (UNESCO listing)

**Structures:**

- Ahmedabad Metro
- Smart schools, hospitals
- Revived havelis and heritage markets

Materials:

- Solar panels, low-emission glass
- Eco-friendly bricks
- Green roof and façade systems

**Design Elements:**

- Smart lighting and IoT-integrated spaces
- Adaptive reuse of heritage sites
- Mixed-income vertical developments

Infrastructure:

- Metro network & multi-modal hubs

- Solar-powered civic buildings
- Smart parking, surveillance & traffic control








| Decade | Influence | Materials | Design Elements | Infrastructure Highlights |
|---|---|---|---|---|
| Pre-1940s | Indo-Islamic, Colonial | Stone, wood, lime | Jalis, domes, courtyards | Organic Pols, stepwells |

| | | | | |
|---|---|---|---|---|
| 1940s–50s | Industrial, Functional Modernism | Brick, RCC | Minimalist, utilitarian | Planned housing, textile zones |
| 1950s–60s | Le Corbusier, Kahn | Exposed concrete, brick | Brise-soleil, geometric forms | CEPT, IIM, institutional zones |
| 1970s–80s | Humanistic Modernism | Local brick, ferrocement | Cluster housing, cost-efficient | GIDC, low-income housing |
| 1990s | Liberalized market | Glass, aluminum, RCC | Gated layouts, vertical rise | Suburban spread, malls, roads |
| 2000s | Urban redevelopment | Composite panels, RCC | Public waterfronts, mixed-use | Riverfront, BRTS |
| 2010s–Now | Smart city, Green Design | Solar, eco-bricks, glass | Heritage reuse, digital controls | Metro, IoT urban systems |

# 4 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,**



*Figure 44 HILTON PUNE PHOTO*







*Figure 45 GROUP PHOTO*

**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

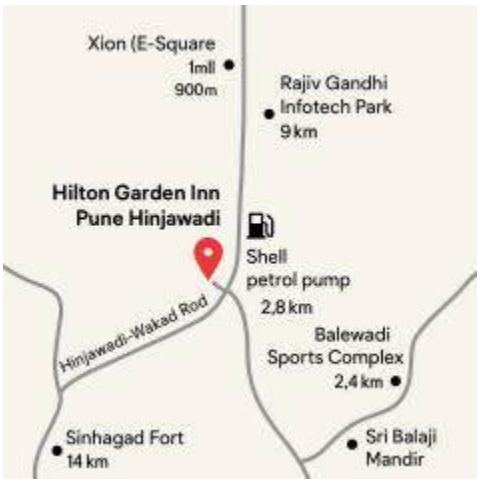



**Address: Survey No. 40/3, Hinjawadi-Wakad Road, Hinjawadi Phase I, Pune – 411057, Maharashtra**

**· 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**

**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 (m²) |
|---|---|---|
| **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 m²** |

**4. Recreation & Wellness**

| Facility | Fit-Out / Equipment | Area (m²) |
|---|---|---|
| **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 m²** |

**5. Lobby & Public Interface**

| Sub-Zone | Details | Area (m²) |
|---|---|---|

| | | |
|---|---|---|
| **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 m²** |

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

| Functional Areas | Description | Area (m²) |
|---|---|---|
| **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** |

**7. Circulation, Lifts, Vertical Cores**

| 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** |

### 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.**

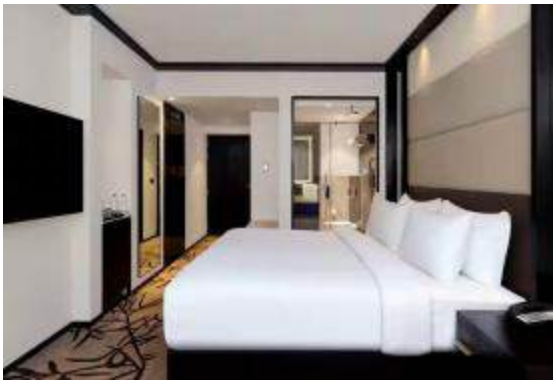




*Figure 46 HILTON ROOM PHOTO*

- **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.**

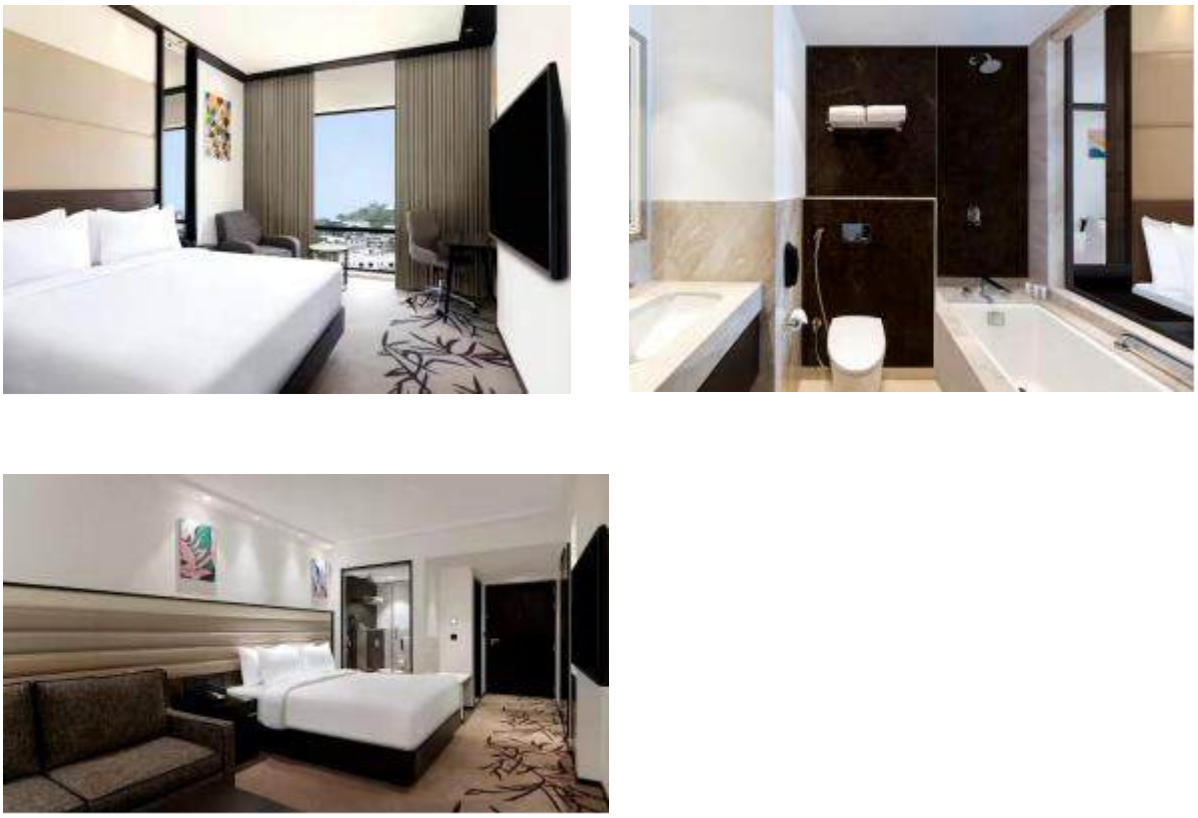


*Figure 47 KING ROOM PHOTO*

- **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.**

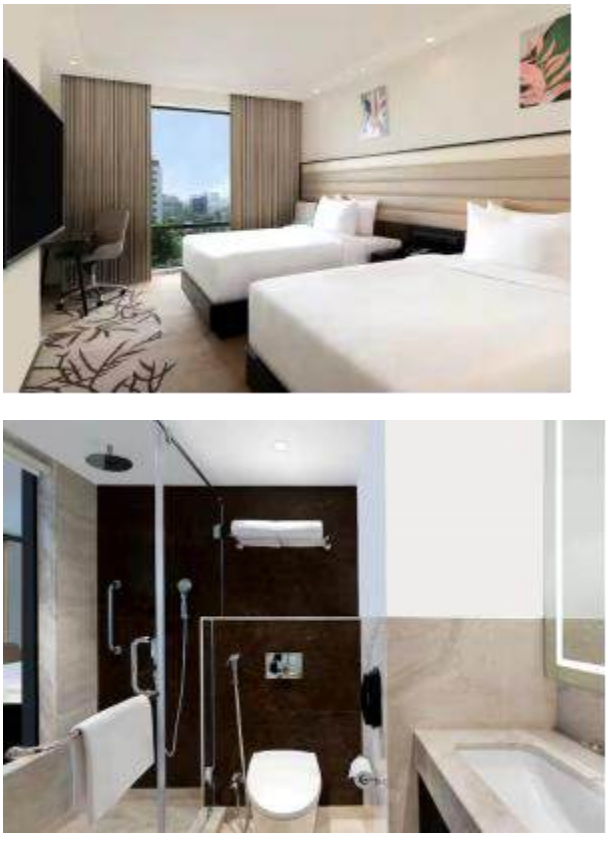


*Figure 48 TWIN ROOM PHOTO*

- **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.**

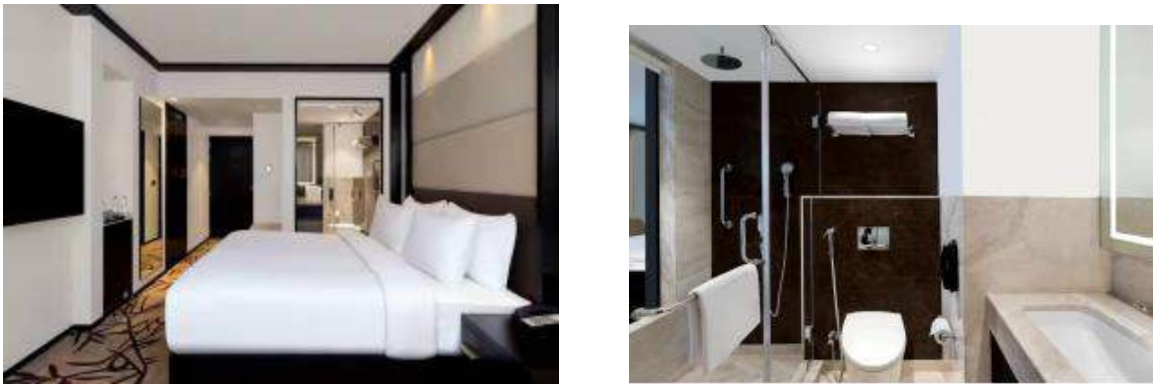


*Figure 49 FAMLIY ROOM*

**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**

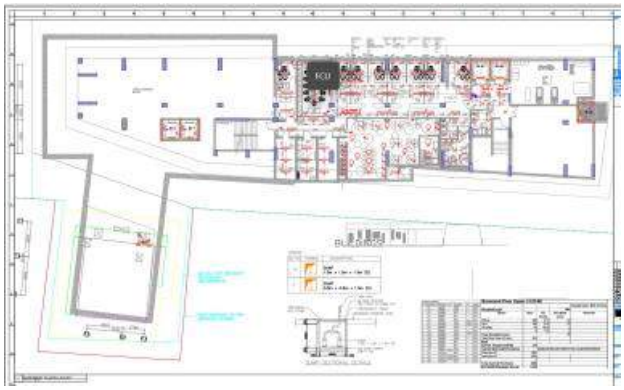
**Amenities:**

- **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**



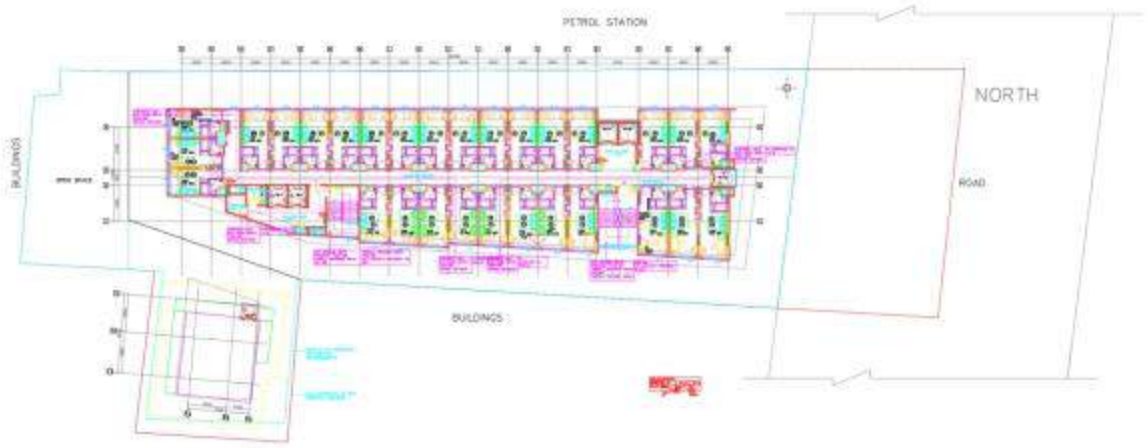

**Second Floor**




**Third Floor**




**Fourth Floor**




**Fifth Floor**




**Sixth Floor**



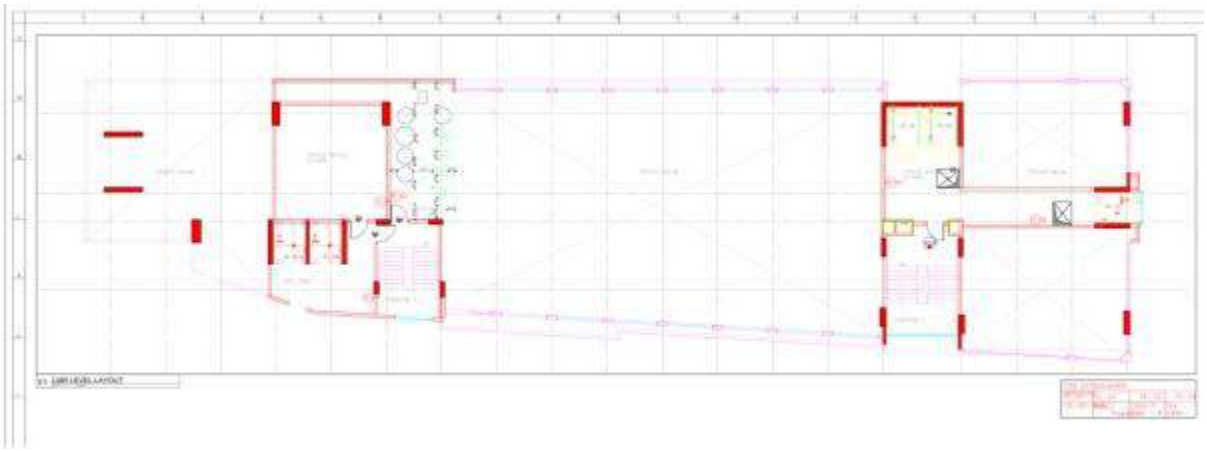

**Seventh Floor**




**Terrace Floor Plan**



**LMR Layout**



**VIWES / INTERIOR SPACES**

**1. 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**

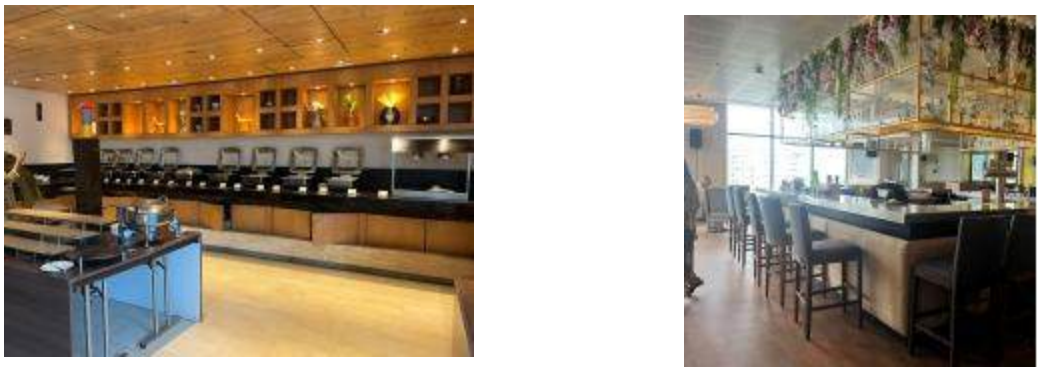


*Figure 50 RESTAURENT*









**24/7 Pavilion Pantry**

- **Grab-and-go setup near the lobby**

- **Compact retail-style layout with beverages, snacks and essentials.**





*Figure 51RESTAURANT*

### 💼 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**





*Figure 52 RECEPTION*





### 🧘 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**



*Figure 53SWIMMING POOL*

**SERVICES**

## 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



*Figure 54 Taj Lakefront at night & Group photograph*

**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.

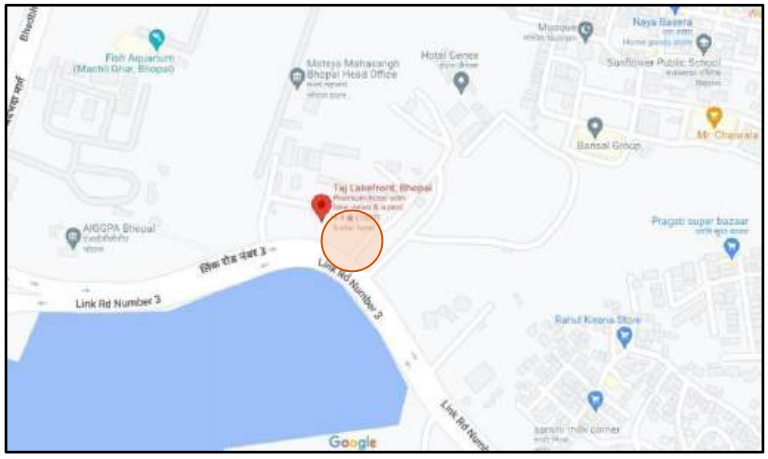



*Figure 55 Location on google maps*

### 4.2.3 SITE BOUNDARY




*Figure 56 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.




*Figure 57 Approach Road*

### 4.2.7 VERTICAL ZONING

Here is the conceptual section of the taj hotel to explain the vertical zoning.




*Figure 58 Vertical Zoning*

### 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 |

*Figure 59 Area Statement Taj - 1*

| | | | | | |
|---|---|---|---|---|---|
| | **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 |

*Figure 60 Area Statement Taj - 2*

| | | | | | |
|---|---|---|---|---|---|
| | 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 |

*Figure 61 Area Statement Taj - 3*

| | | | | | |
|---|---|---|---|---|---|
| | 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** | | | | |

*Figure 62 Area Statement Taj - 4*

| | | | | | |
|---|---|---|---|---|---|
| | 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** | |

*Figure 63 Area Statement Taj - 5*

| M. | Other BOH (exer mech) | | | | |
|---|---|---|---|---|---|
| I | Mechanical Areas | | | | |
| | LV Room | 1 | 56 | 56 | |
| | Indoor Transformers | 2 | 22 | 44 | |
| | LT Panel | 1 | 74 | 74 | |
| | DG Generator Room | 1 | 97 | 97 | |
| | Chiller Plant Room | 1 | 125 | 125 | |
| | Rainwater Tank | 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 | 12 | 12 | |
| | Pump Room (Fire) | 1 | 20 | 20 | |
| | Pump Room (Raw + Soft + WTP) | 1 | 60 | 60 | |
| | Boiler Room with Pump and Heat | 1 | 58 | 58 | |
| | STP with Pump and Equipment's | 1 | 80 | 80 | |
| | Work Shop | 1 | 22 | 22 | |
| | Engineering Office | 1 | 8 | 8 | |
| | Engineering Store | 1 | 10 | 10 | |
| | Control Room | 1 | 15 | 15 | |
| | Underground Oil Storage Tank | 1 | 190 | 190 | |
| | Swimming Pool Filtration Plant | 1 | 12 | 12 | |
| | | | | | |
| | Total Area (Sum) | | | 487 | |
| | | | | | |
| II | Mechanical; Areas on Terrace | | | | |
| | Cooling Towers | 1 | 135 | 135 | |
| | Overhead Tank | 1 | 12 | 12 | |
| | Ventilation/Exhaust Fans | 14 | 12 | 168 | |
| | Flushing Tanks/ Cooling Tower Tanks | 3 | 9 | 27 | |
| | Staircase Pressurisation Fans | 3 | 11 | 33 | |
| | Lift Pressurisation Fans | 2 | 2.2 | 4.4 | |
| | Sorubber for Kitchen Exhaust | 1 | 5 | 5 | |
| | | | | | |
| | Total Area (Sum) | | 186.4 | 384.4 | |

| N. | Parking | | | | |
|---|---|---|---|---|---|
| | Basement 2 | | | 1700 | |
| | Basement 1 | | | 1420 | |
| | | | | | |
| | Total Wall Thiockness and Circulation | | | 3120 | |

*Figure 64 Area Statement Taj - 6*

### 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.

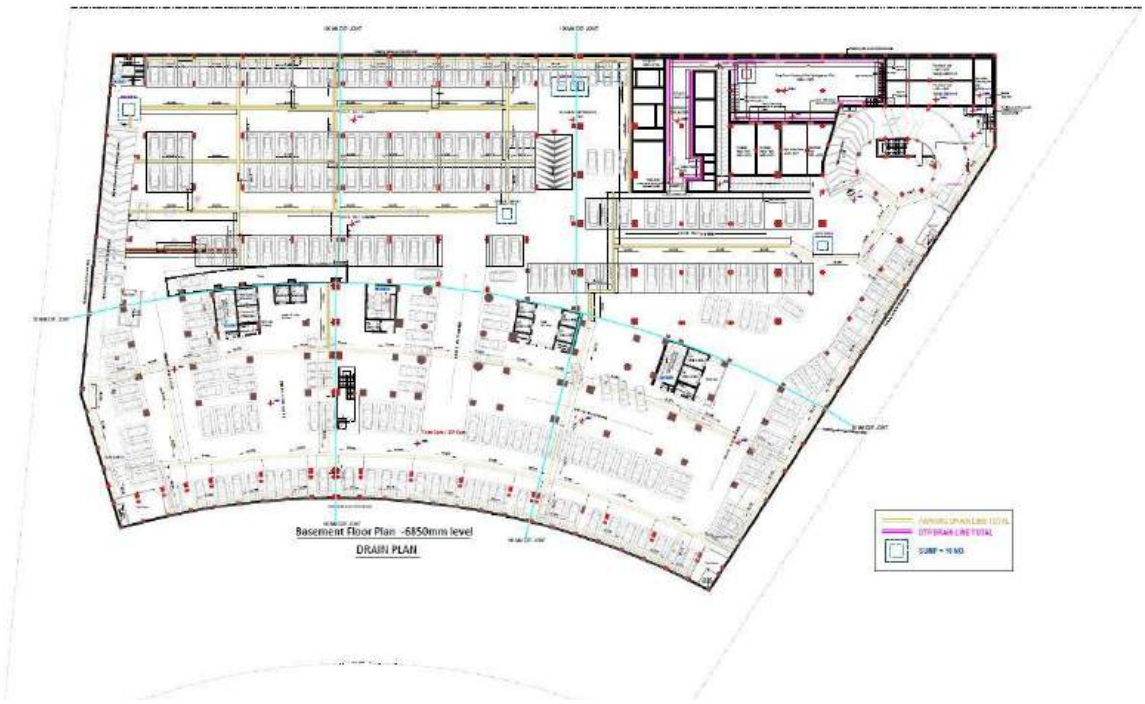



*Figure 65 Basement 2 Plan*

**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/**







*Figure 66 Basement 2*

**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




*Figure 67 Basement 1 Plan*



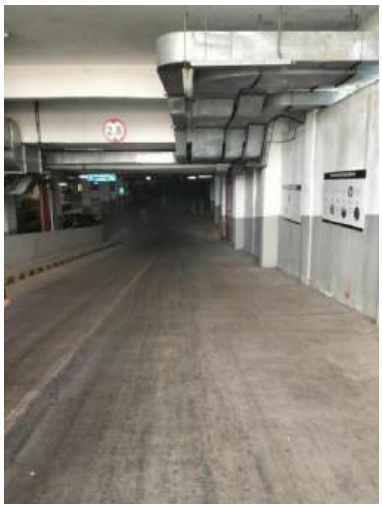


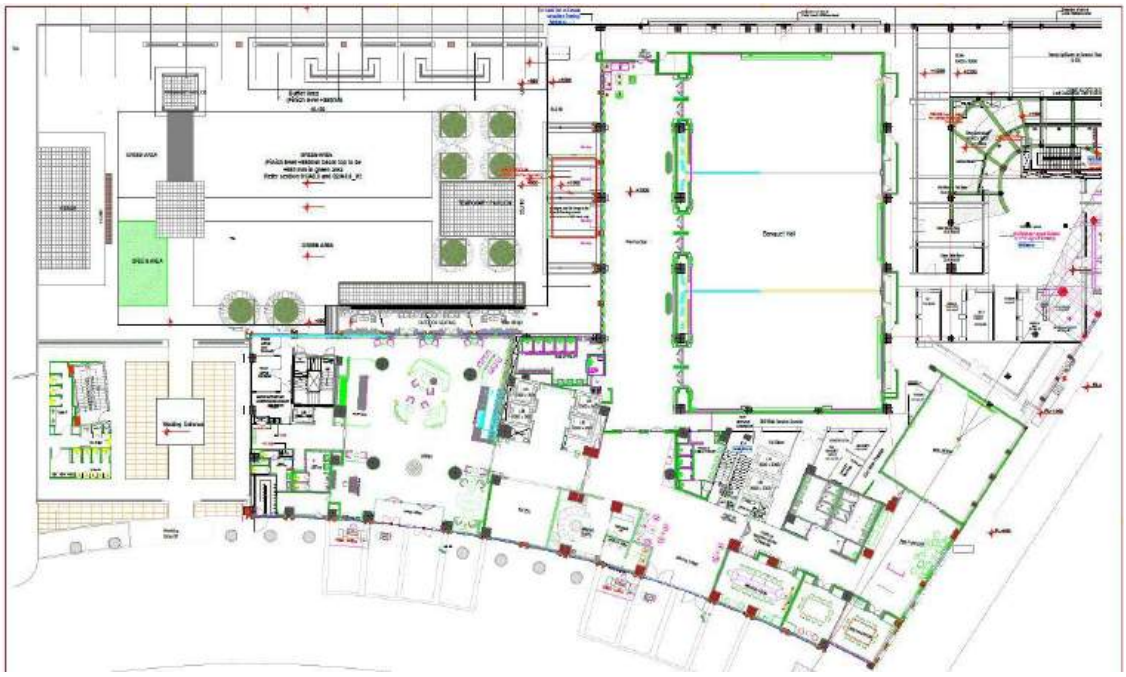




*Figure 68 Services in Basement 1*

**Ground Floor Plan:**

- The entrance lobby of the hotel has grand luxury feel as it has triple heightedspaces with very attractive false ceiling consist of cove lighting.
- There is a separate entrance has been provided including Banquet Hall, Meetingroom, 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.



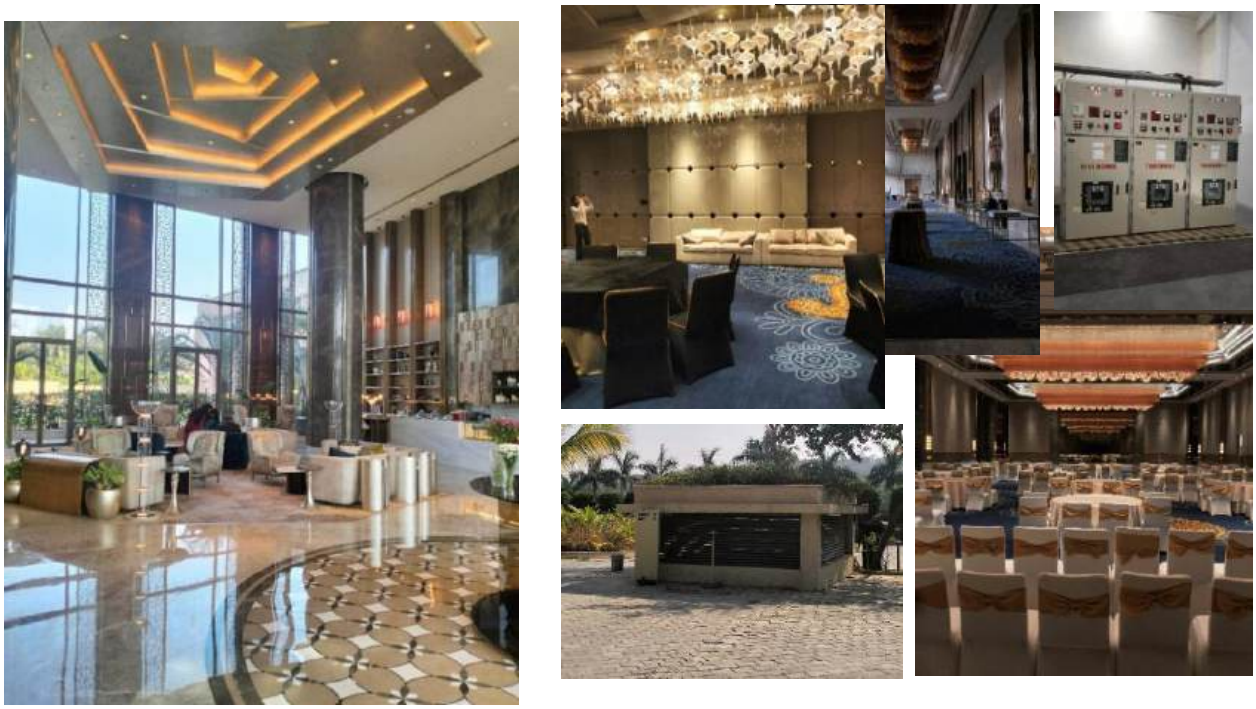
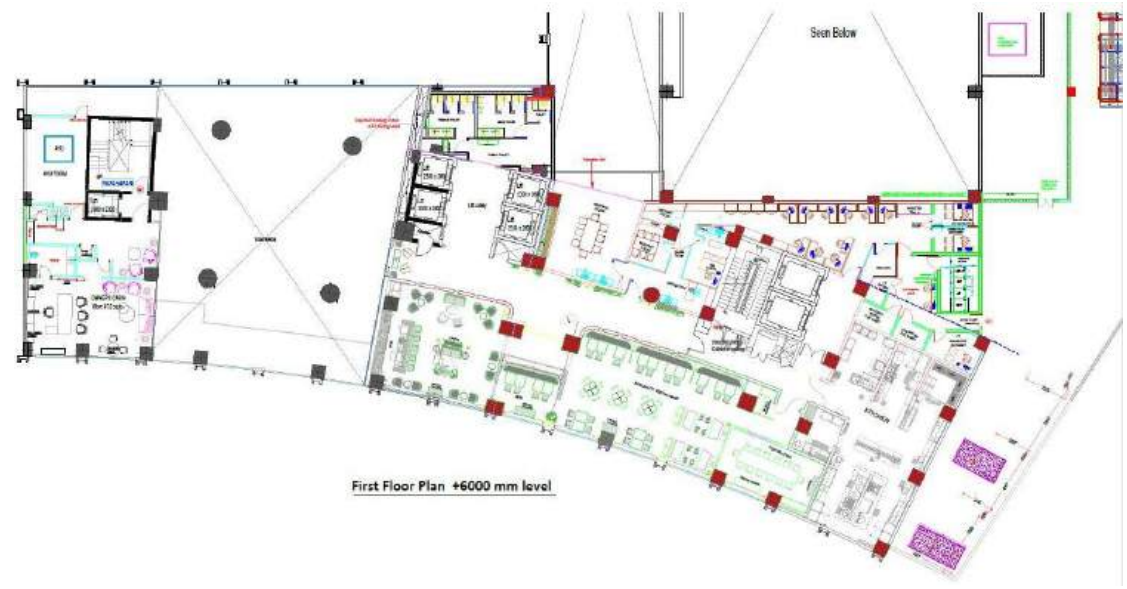


*Figure 69 Ground floor plan and pictures (reception, banquet, duct opening, UPS)*

**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 terrace of first floor
- 3 Chillers 350 tons each



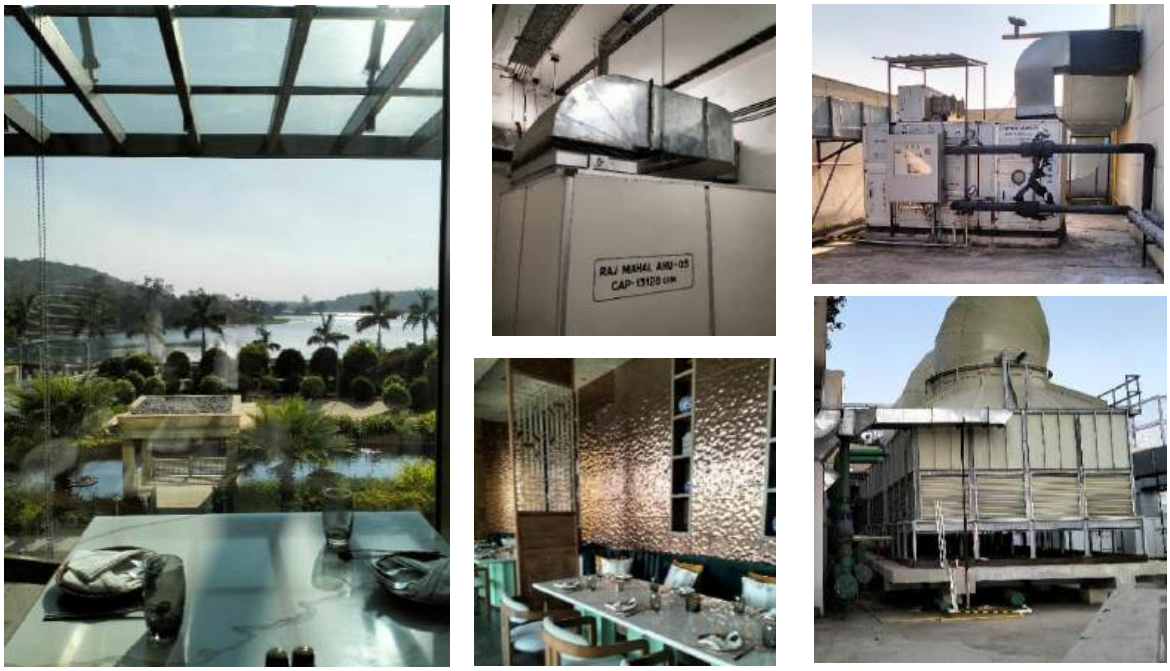



*Figure 70 First floor plan and pictures (restaurant & chiller)*

**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



*Figure 71 Second Floor plan*

**Service Floor 2.5:**

*Figure 72 Pipelines and other services in service floor*

**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 fullydifferent which gives different types of feeling at each different floor. FCU in Rooms 1.5 T, Suites 2 T




*Figure 73 Typical FLoor plan 3rd to 7th*



*Figure 74 Guest room*

**8th Floor Plan:**

- 15 guest rooms including Executive Suites, King Bedrooms and 1 presidentialsuite are




*Figure 75 8th floor plan*

*Figure 76 9th floor planFigure 77 8th floor plan*

there in this floor.

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

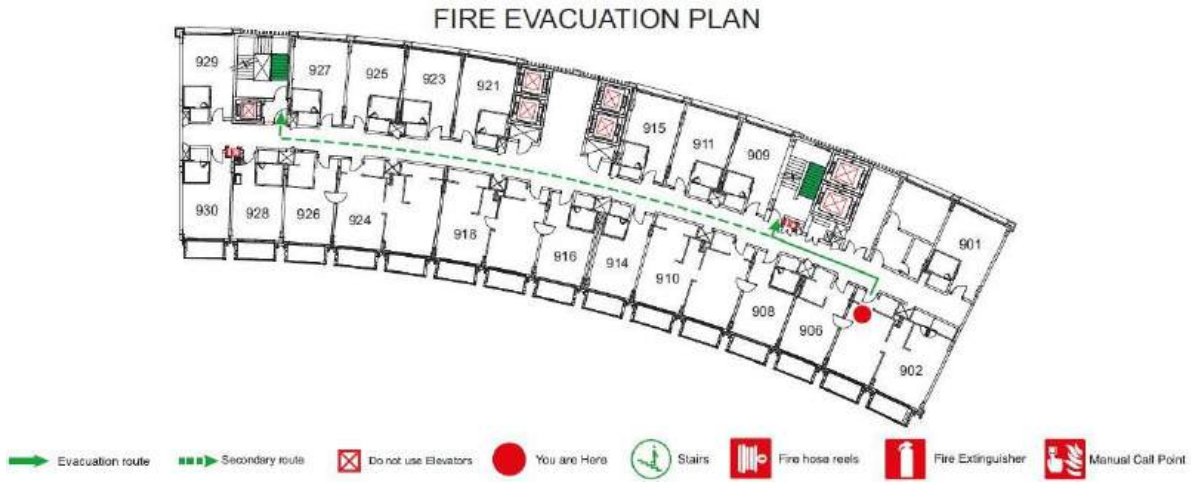



*Figure 78 9th floor plan*

*Figure 79 10th floor plan and pictures (rooftop rest. bar & swimming pool)Figure 80 9th floor plan*

**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

SAMIKSHA VAVAL
211110018

**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



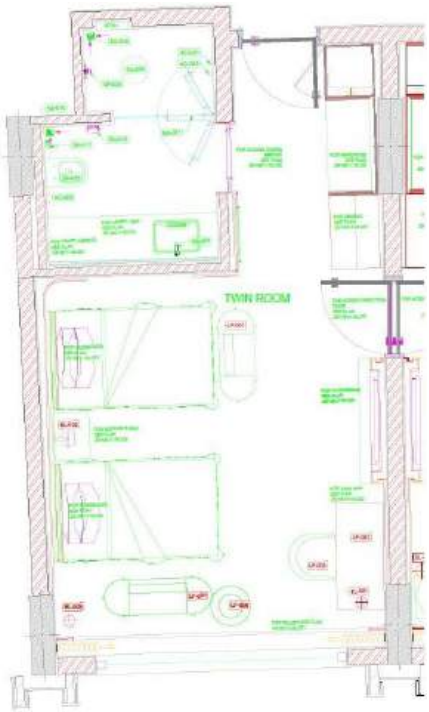


complimentary access to the hotel gym and wet areas.

**SIZE**: 33 sq.m

**SIGNATURE FEATURE**: Spectacular vistas of the hills

**Occupancy Details**: Up to 3 guests. Max Adults: 3, Max 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
- Shower Cubicle

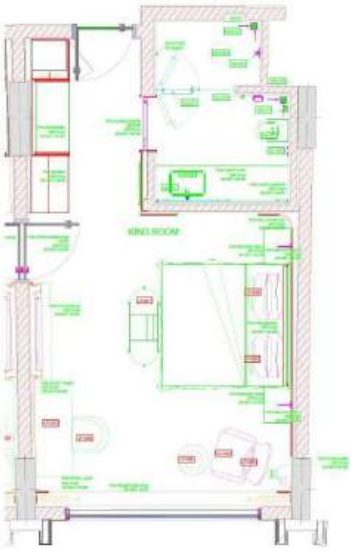
*Figure 81 Twin room plan & photos*

**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**

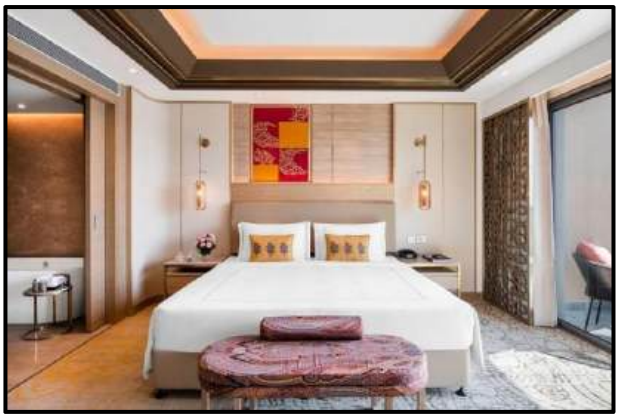
- Tea-coffee maker
- Forest Essentials bath amenities
- Choice of smoking & non-smoking accommodation
- Air conditioning
- WiFi
- Iron & ironing board
- In-room bottled water
- Minibar
- Newspaper
- Full-length mirror, hair dryer, weighing scale
- 49-inch Smart LED TV

**Presidential Suite**

*Figure 84 Kina room plan and photo*

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



*Figure 87 Presidential suite photos*

**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

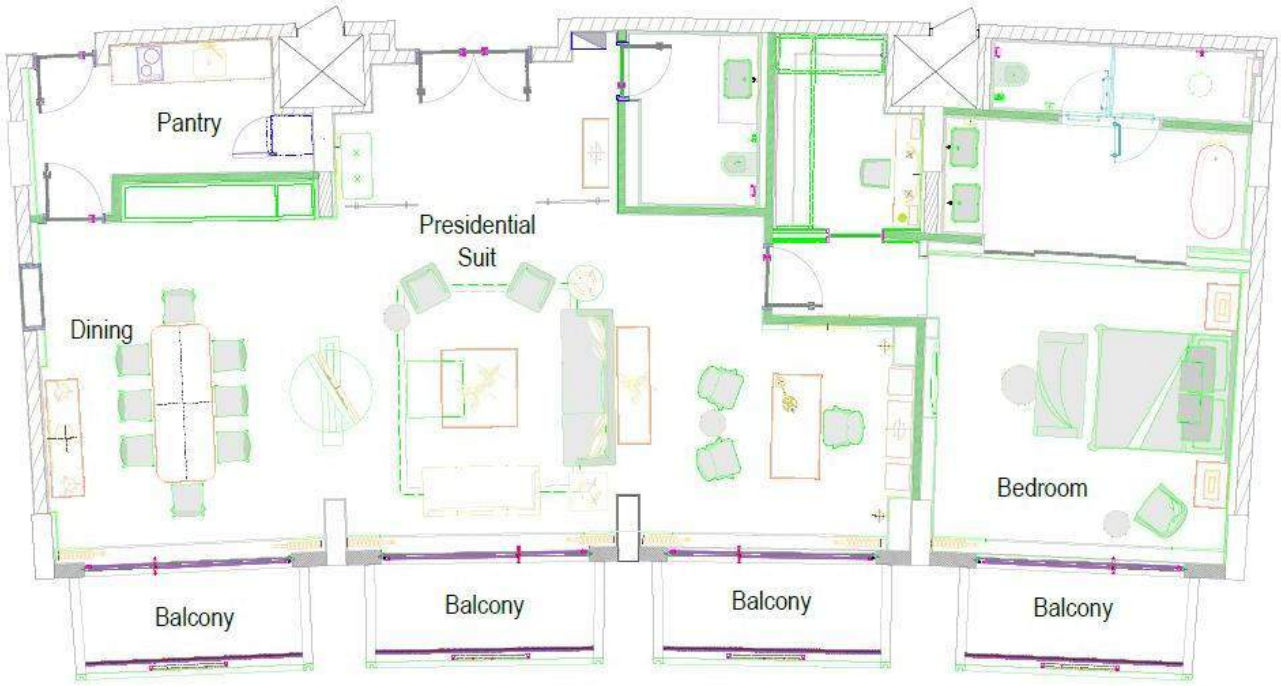



*Figure 90 Presidential suite plan*

## 4.2.10 VIEW/INTERIOR OF SPACES



Spa & Sauna



PDR



Banquet Hall



Swimming pool



Restaurant Seating



Lounge/Bar

## 4.2.11 SERVICES








*Figure 92a LT & HT Panel Room, Fire Fighting & Electrical Tray*

### 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: THE LEELA PALACE, NEW DELHI

### 4.3.1 Introduction

An Indian luxury hospitality group, the Leela Palaces, Hotels and Resorts was founded back in the year 1987 by Captain C.P Krishnan Nair. The group was named by him after his wife, Leela. The group includes 8 luxury palaces and hotel that are located across India in Goa, Mumbai, Bangalore, Trivandrum, Gurgaon, Udaipur, New Delhi and Chennai. The Leela Palace New Delhi was designed by John Gerondelis and was inaugurated in the year 2011.

**Architect:** John Gerondelis
**Founder:** C. P. Krishnan Nair
**Type:** Hospitality
**Use:** Hotel
**Location:** New Delhi, Delhi

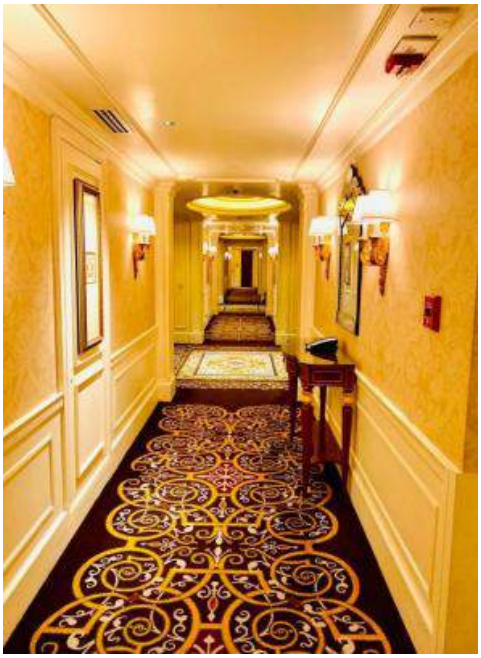
**Status:** operational, inaugrated in year 2011
**Site area:** 3 acres
**Built up area:** 42,300 sqm
**No. of keys:** 211
**Year of completion:** 2011

It is the majestic Leela Palace where India's rich culture meets Lutyen'sarchitecture. The design of the hotel is reminiscent of the classic refined residential palaces found in North India, as well as the architectural queues found in the work of Sir Edwin Lutyens in the Parliament Building and the Hyderabad House, incorporating colonnades, an interesting intersection of spaces and playful architectural features.The Leela Palace, one of the finest heritage style hotels of India is renowned for its outstanding hospitality and world- class facilities. The hotel has an age-old charm that makes every

guest have an insight of India's rich culture and history.Every nook of the hotel makes you feel like royalty and offers and experience like never before.







### 3.1.1 LOCATION

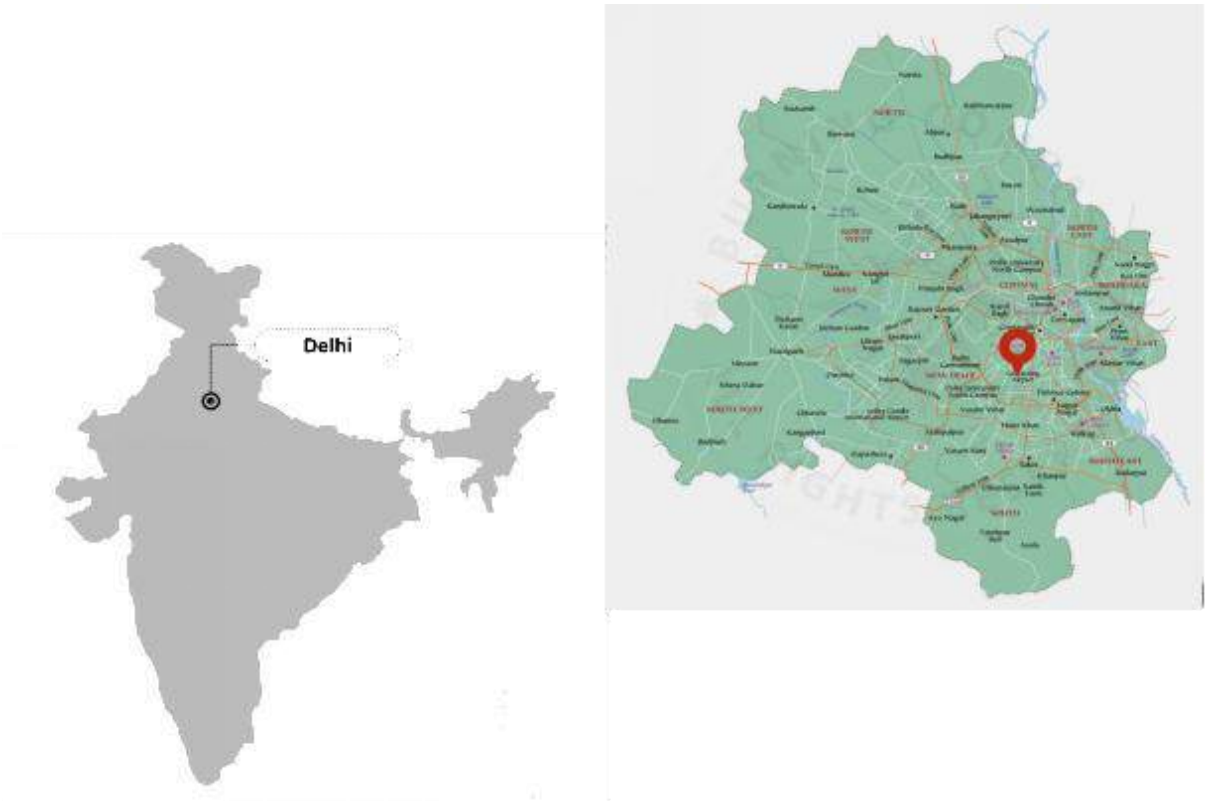
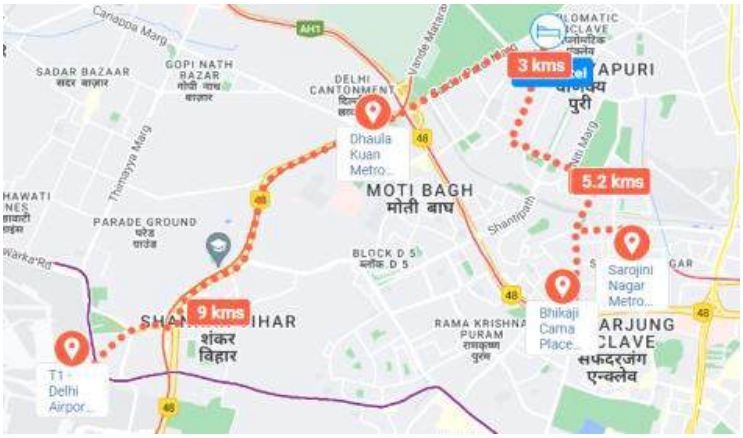



FIGURE 18: LOCATION OF THE LEELA

## ACCESSIBILITY:

T1 Delhi Airport: 8.6KM
Sarojini Nagar Metro Station: 1KM
BhikajiCama Place Metro Station: 1KM
Dhaula Kuan Metro Station: 4.3KM










This South Delhi hotel is located on three prime acres adjacent to the Safdarjung Railway Station in New Delhi, India. This 211-key luxury hotel contains oversized guestrooms and service apartments. The seven-story building is organized around a 1,000 SM function lawn, supported by an additional 585 SM of banquet facilities and five food and beverage outlets, a rooftop infinity-edge swimming pool and a 549 SM spa and fitness center. The property includes spa suites including whirlpool balconies, as well as a well-appointed Maharaja Suite. The luxury hotel property consists of a 42,300 SM development including a 24,810 SM hotel and 17,490 SM of parking for 547 automobiles in three basements.

### 3.1.2 DESIGN PHILOSOPHY

The Leela Palace exemplifies the magnificent architecture, grace and elegance of Lutyens' Delhi.Every inch of this opulent and overstated,magpie's nest is decorated in something shiny. An enormous Persian rug covers the entire lobby, with separate sitting areas defined by mirrored Venetian screens and plenty of shimmering silk sofas.Simple cream walls are offset by color from plush rugs, classic Indian embroideries, and Regency furniture.Every empty space is filled with cut glass vases with fresh flowers (over 15,000) delivered daily.

The entire property is designed according to Vastu principles (Indian Feng Shui) and is filled with bespoke commissions by acclaimed modern Indian artists.Its 260 rooms and suites combine traditional Indian opulence with sleek contemporary decor and amenities in typical Leela luxury. The rooms and suites are painstakingly decorated to stunning effect, with elements spanning from handcrafted tapestries to the Presidential Suite's gold leaf ceilings.Dining options include the striking glass-house Qube,offering an eclectic global menu and show kitchens, overlooking the Leela's gardens; Jamavar for traditional Rajasthani and north Indian cuisine; and new outposts of the acclaimed restaurants Le Cirque (French and Italian) and Megu (Japanese).

### 3.1.3 ROAD NETWORK

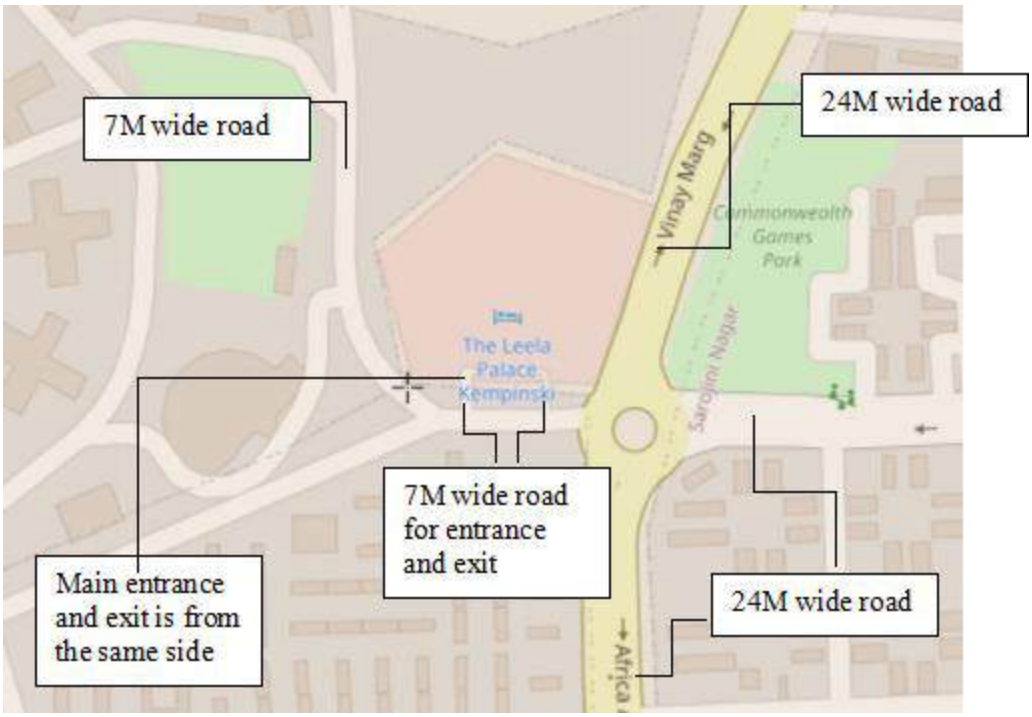



FIGURE 19: HEIRARCHY OF ROADS ONSITE

### 3.1.4 AREA STATEMENT

| S.NO. | PARTICULAR | AREA |
|---|---|---|
| | **HOTEL BUILDING-1** | NO. OF FLOORS-4B+G+11 |
| 1. | **Total plot area** | 12,140.6 sq.m. (3 acres) |
| 2. | **Permissible ground coverage** | 4,856 sq.m. |
| 3. | **Ground Coverage achieved** | 4831.30 sq.m. |
| 4. | **Permissible FAR @ 2.25** | 27,315 |
| 6. | **Achieved FAR**<br>Ground Floor FAR | 27,189.95 sq.m.<br>4,277.65 |

| | | |
|---|---|---|
| | First Floor FAR | 2,124.54 |
| | Second Floor FAR | 2,417.78 |
| | Third Floor FAR | 2,365.05 |
| | Fourth Floor FAR | 2,273.29 |
| | Fifth Floor FAR | 2,367.93 |
| | Sixth Floor FAR | 2,235.74 |
| | Seventh Floor FAR | 2,280.21 |
| | Eighth Floor FAR | 2,280.21 |
| | Ninth Floor FAR | 1,977.95 |
| | Tenth Floor FAR | 1,006.42 |
| | Eleventh Floor FAR | 203.44 |
| | Basement-1 (B.O.H.) | 1,379.74 |
| 7. | **Total Non-FAR area** | **34,362.69** |
| | Basement-1 Area | 7,485.29 |
| | Basement-2 Area | 7,485.29 |
| | Basement-3 Area | 7,485.29 |
| | Basement-4 Area | 7,485.29 |
| | Atrium Area | 738.21 |
| | Service Floor Area | 3,683.32 |
| 8. | Built up area (FAR + Non-FAR) | 61,552.64 |
| 9. | Permissible Green Area (50% of Open Area) | 3,642.00 |
| 10. | Green area achieved | 4,373.61 (@ 60.04 % of Open Area or 36.03 % of plot area) |
| 11. | Road (Paved) Area | 2,244.46 |
| 12. | Surface Parking Area | 690.63 |
| 13. | Height of the Building | 58.975 m |

| | | |
|---|---|---|
| 14. | Parking Details | For Commercial: 3 ECS/100 sq.m of FAR (27,189.95 m2 )<br>815.69 |

**AREA DISTRIBUTION FOR GUEST ROOMS/SUITS:**

| **GUEST ROOMS** | |
|---|---|
| **Total guest rooms- 254** | |
| Grand deluxe room-124 Rooms | 51 $m^2$/549$ft^2$ |
| Premiere room-59 Rooms | 55 $m^2$/592$ft^2$ |
| Royal premiere room-6 Rooms | 25 $m^2$/269$ft^2$ |
| Royal club room-36 Room | 55 $m^2$/592$ft^2$ |
| Royal club parlor-6 Rooms | 65 $m^2$/700$ft^2$ |
| Executive suite-7 Rooms | |
| Luxury suite-7 Rooms | 90 $m^2$/970$ft^2$ |
| Grand suite with plunge pool-1 Room | |
| Royal suite with plunge pool-1 Room | 101 $m^2$/1090$ft^2$ |
| Maharaja suite-1 Room | 141 $m^2$/1520$ft^2$ |
| Presidential suite-1 Room | 446 $m^2$/4800$ft^2$ |
| Also a room specially designed for handicapped | |

**AREA DISTRIBUTION FOR AMENITIES AND FACILITIES:**

| **RESTAURANTS AND CAFETERIAS** |
|---|

| | |
|---|---|
| Jamavar-Indian | 611 $m^2$ |
| The Cirque-French-Italian | 500 $m^2$ |
| Megu-Japanese | 408 $m^2$ |
| The Qube- Multi- cuisine | 384.5 $m^2$ |
| The Library Bar | 340 $m^2$ |
| The Lobby Lounge | 340 $m^2$ |
| **FUNCTION AREAS** | |
| Grand Ballroom | 3485 $m^2$ |
| Grand Ballroom I | 1800 $m^2$ |
| Grand Ballroom II | 1660 $m^2$ |
| Royal Ballroom | 1100 $m^2$ |
| Royal Ballroom I | 670 $m^2$ |
| Royal Ballroom II | 430 $m^2$ |
| Meeting Room 1 | 250 $m^2$ |
| Meeting Room 2 | 240 $m^2$ |
| Meeting Room 3 | 240 $m^2$ |
| Meeting Room 4 | 370 $m^2$ |
| Chairman's Boardroom | 550 $m^2$ |
| Le Cirque Boardroom | 681 $m^2$ |
| Diya | 400 $m^2$ |
| Maya | 400 $m^2$ |
| The Terrace | 5330 $m^2$ |
| MEGU Terrace (Lower Deck) | 840 $m^2$ |

| | |
|---|---|
| **RECREATION SPACES** | |
| Swimming Pool (Rooftop infinity edge pool) | |

| | |
|---|---|
| Pool deck area<br>Lockers, toilets<br>Spa and fitness center<br>Gym area | 549 $m^2$ |
| **ADMINISTRATIVE FRONT OFFICE** | |
| Front Desk | 72 $m^2$ |
| Front Office Manager | 20 $m^2$ |
| Assistant Manager | 20 $m^2$ |
| Credit manager | 16.4 $m^2$ |
| Director of Rooms | 25.6 $m^2$ |
| Reception/Secretary | 16.4 $m^2$ |
| Reservation Area | 42 $m^2$ |
| Reservations Manager | 20 $m^2$ |
| Telephone Operators | 34.7 $m^2$ |
| Safe Deposit Box | 11 $m^2$ |
| General Cashier | |
| Count Room | 20 $m^2$ |
| Work Area/Mail | 34.7 $m^2$ |
| Storage | 25.6 $m^2$ |
| | 20 $m^2$ |
| **FOOD PREPARATION** | |
| Kitchen | 2206 $m^2$ |
| Bakery | 170 $m^2$ |
| Main Kitchen | 2036 $m^2$ |
| o Grinder Room | 20 $m^2$ |
| o Butchery | 150 $m^2$ |

| | |
|---|---|
| ○ Seafood Prep. Room | 203 $m^2$ |
| ○ Vegetable storage cold room | 300 $m^2$ |
| ○ Non-veg storage cold room | 100 $m^2$ |
| ○ Walk-in chillers | 170 $m^2$ |
| ○ Wine Storage | 306 $m^2$ |
| ○ Beverage Storage | 170 $m^2$ |
| ○ Dry food storage | 250 $m^2$ |
| ○ China storage | 250 $m^2$ |
| Kitchen for individual cafeteria/restaurants | 20 $m^2$ |
| Night Pantry | 20 $m^2$ |
| Food Controller Office | 25.6 $m^2$ |
| Chef's office | |
| Toilets | |

| **RECEIVING AREA** | |
|---|---|
| Loading Dock | 136 $m^2$ |
| Receiving Area | 203 $m^2$ |
| Receiving Office | 25.6 $m^2$ |
| Purchasing Office | 34.7 $m^2$ |
| Garbage Collection | 135.4 $m^2$ |
| **EMPLOYEE AREA** | |
| Entrance | 50 $m^2$ |
| Security | 20 $m^2$ |
| Reception | 34.7 $m^2$ |
| Manager office | 27.4 $m^2$ |
| Training and educational department | 100 $m^2$ |

| | |
|---|---|
| Training area | 67.7 $m^2$ |
| HR Department | 20 $m^2$ |
| Interview Rooms | 34.7 $m^2$ |
| Waiting area | 20 $m^2$ |
| Record Room | 34.7 $m^2$ |
| First Aid | 25.6 $m^2$ |
| The Palace (Staff Café) | 100 $m^2$ |
| Locker Room and Toilets | 305.6 $m^2$ |
| PPE Station | 15 $m^2$ |
| **LAUNDRY** | |
| Linen and Uniform Room | 90 $m^2$ |
| Soiled Linen Room | 42 $m^2$ |
| Stitching and storage area | 34 $m^2$ |
| Laundry | 670 $m^2$ |
| Laundry supervisor | 20 $m^2$ |
| Machinery<br>• Washing machines<br>• Dryer machines<br>• Iron machine<br>• Marking machine | |
| Hanging area | 300 $m^2$ |
| Office of Controller | 20 $m^2$ |
| **HOUSEKEEPING** | |
| Control Room | 50 $m^2$ |
| Maintenance room | 20 $m^2$ |
| Record Room | 34.7 $m^2$ |

| | |
|---|---|
| Reception | 30 $m^2$ |
| Supply Storage Area | 34.7 $m^2$ |
| House keeper room | 20 $m^2$ |
| Lost and Found Room | 20 $m^2$ |
| Linen storage | 300 $m^2$ |
| Flower Storage Room | 500 $m^2$ |

| **SALES AND CATERING** | |
|---|---|
| Reception/Waiting | 15 $m^2$ |
| Director of Sales | 34.7 $m^2$ |
| Sales Representative | 103 $m^2$ |
| Director of Public Relations | 25.6 $m^2$ |
| Catering Manager | 34.7 $m^2$ |
| Banquet Manager | 70 $m^2$ |
| Beverage Manager | 34.7 $m^2$ |
| Convention services | 40.2 $m^2$ |
| Copying and storage | 51 $m^2$ |
| **ACCOUNTING** | |
| Waiting | 16.4 $m^2$ |
| Controller | 31.1 $m^2$ |
| Auditor office | 16.4 $m^2$ |
| Accounting work | 136 $m^2$ |
| Record Room | 70 $m^2$ |
| **ENGINEERING SERVICES** | |
| Head Engineer Office | 31 $m^2$ |
| Assistance Engineers | 34.7 $m^2$ |

| | |
|---|---|
| Carpentry workshop | 100 $m^2$ |
| Plumbing Workshop | 51 $m^2$ |
| **SERVICES AND MECHANICAL AREAS** | |
| BMS Control Room | 100 $m^2$ |
| Fire Safety Office | 500 $m^2$ |
| Electrical Room | 256 $m^2$ |
| UPS room | 150 $m^2$ |
| EPABX room | 200 $m^2$ |
| RO Plant | 50 $m^2$ |
| Compressor Unit | 80 $m^2$ |
| Diesel and oil storage tank | 300 $m^2$ |
| IVS System room | 150 $m^2$ |
| STP plant | 500 $m^2$ |
| Boilers | 36.6 $m^2$ |
| ATB Plant | 40 $m^2$ |
| AHU | 50 $m^2$ |
| Swimming pool plant | 50 $m^2$ |
| LT Room | 200 $m^2$ |
| HT Room | 200 $m^2$ |
| Fire Pumps | 36.6 $m^2$ |
| RO Plant | 20 $m^2$ |

### 3.1.5 SITE PLANNING

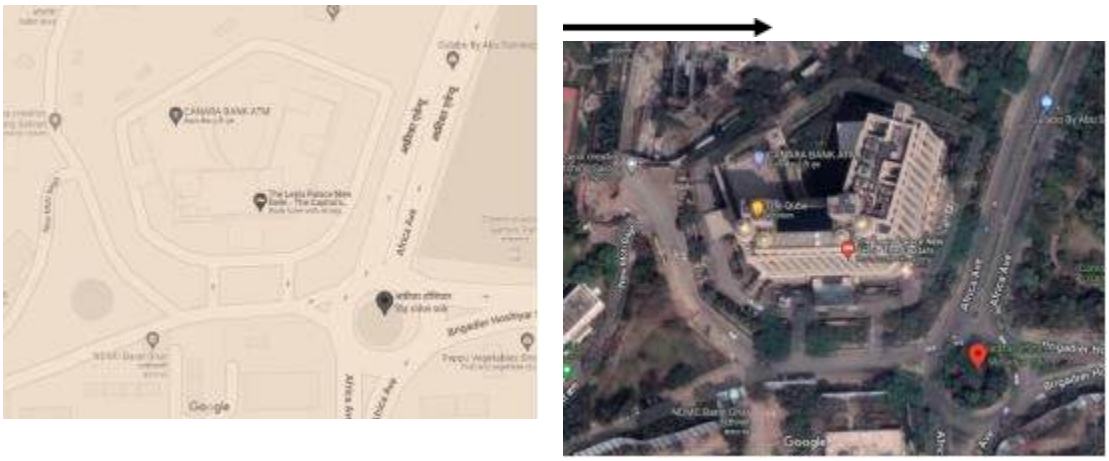


FIGURE 20: SITE PLAN

**Site character:**

- The site is in irregular shape having 3 entry and exit points.
- The site area is very less, therefore planning is also very compact
- Efficient landscaping measures have been taken in site planning
- The design and envelope of the building is in harmony with the site surroundings.
- It stands out in the middle of the surroundings and at the same time merges with it due to its Lutyens's Delhi architectural style and Mughal appearance.

**Site orientation:**

- The orientation of this building is **North- east** which is most suitable according to the conditions.



GARDEN AREA AT THE BACK SIDE



WATERBODY WITH GREEN AREAS






LANDSCAPING



PORCH AT THE MAIN ENTRANCE



RECEPTION AREA

### 3.1.6 FLOOR PLANS

Floors-

- Tower A and B
- A- has 11 floors, while B has 10 floors
- At the convergence of two towers, the core area has 4 lifts
- Core- lift landing- Butler pantry and electrical room
- LV room (low voltage)- communication lines

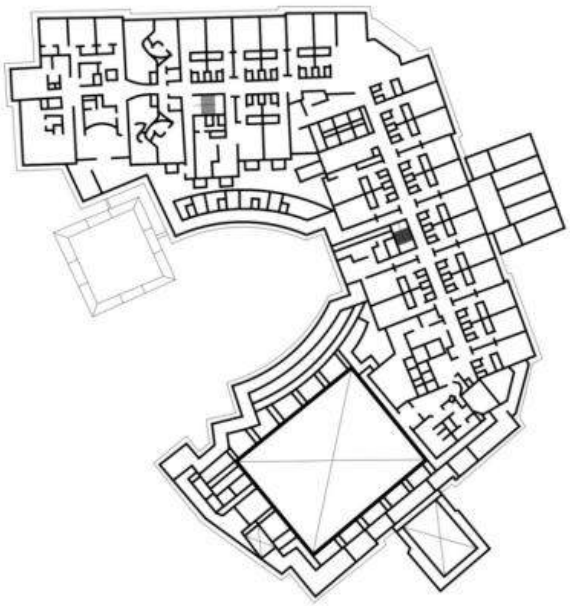


FIGURE 21: TYPICAL FLOOR PLAN OF TOWER A



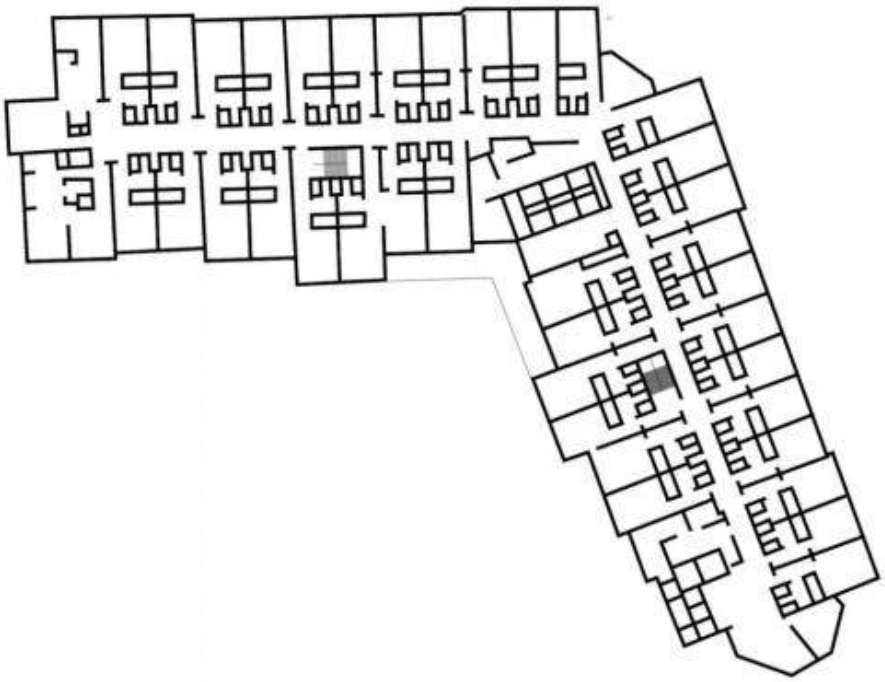



FIGURE 22: TYPICAL FLOOR PLAN OF TOWER B




Service floor

- 10 and 11th floor
- Height is less so inaccessible

Fire safety

- Fire separation system (operates on 80°C)
- Fire cylinders of 5 types- A, B, C, CO2, K (Kitchen in silver color)

**Terrace floor(10th)**

Air handling unit

- Cooling towers
- Solar water heater
- Solar panels on facade and floor

HR unit (Heat recovery)

Full heighted walls on terrace

Solar Panels-

- Used for water heating

Swimming pool plant

- Temperature maintenance
- Water supply tank on the top of machine room of lift (40KLD

### 3.1.7 VERTICAL ZONING / LAYOUT OF FLOOR PLATES

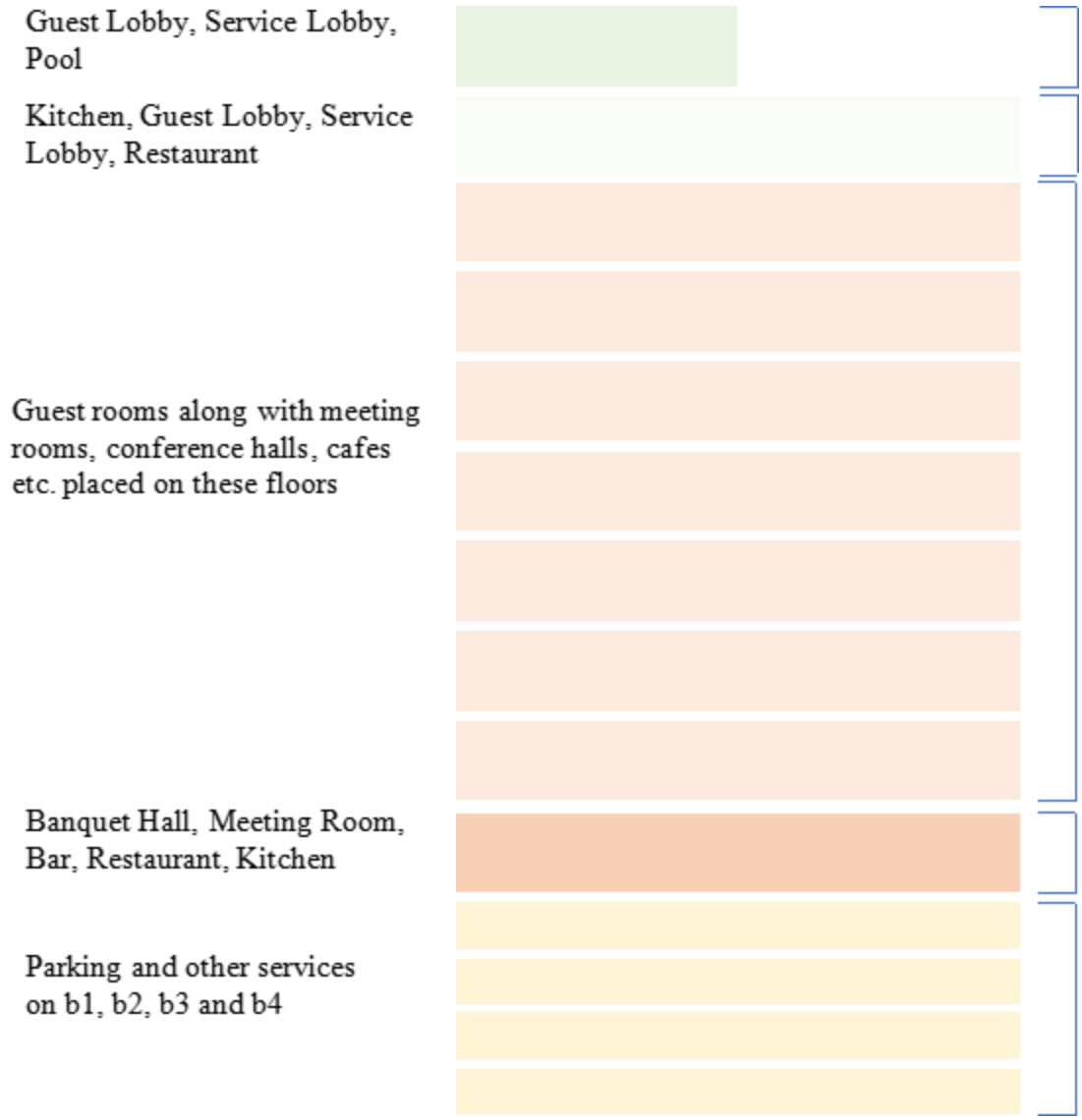



FIGURE 23: VERTICAL ZONING / LAYOUT OF FLOOR PLATES

### 3.1.8 INTERIORS

i) **Philosophy-** Blend of aesthetic sensibility, modern amenities and reflecting the essence of India

ii) Main idea was taken from Lutyens's Delhi and colonial past which pictured in the interiors:

- Serenaded domes and columns imitating Lutyens' could be identified with elegant round arches
- European charm with Mughal magnificence
- Gold gilded furniture and Murano chandeliers
- Mother-of-pearl inlay work
- Large Venetian glass mirrors
- Bidri artwork from Uttar Pradesh on the walls and ceiling
- Warm and cozy lighting













**SPACE MODULES:**

**(1) LOBBY:**

- Connected with reception, waiting area, help desk, banquet halls, lifts, stairs and washrooms.
- Seating and fire equipment were provided at adequate distances
- Indoor plantation with mother- of pearl flooring
- Intricate carving on walls and fine sculptures of Indian art





**(2) LOBBY LOUNGE:**

- Edwardian elegance with classical European style
- Waiting area for the visitors to enjoy the introducing culinary of the hotel with gold- lined furniture





**(3) RECEPTION AREA**

- Spacious and efficiently planned to reduce traffic during busy hours
- Turkish carpets are used which adds royal look



**(4) ROOMS AND SUITES**

- There are in total 11 type of rooms and suites available for an unforgettable experience

- GRAND DELUXE ROOM:

- The spaces are well defined in these rooms
- They are the smallest type of room on the basis of area i.e., around 552 sq.ft. (51sq.m.)
- They are spread across the second to seventh floor of the hotel



- PREMIERE ROOM:

- Gives homely feeling to the guests due to its vibrant colors with regal ambience
- Garden majestic view from the windows with 'Devi' statue.
- These are also located on the second to seventh floors of the hotel.

- Rooms are quite spacious with area around 592 sq.ft. (55 sq.m.)



- ROYAL PREMIERE ROOM:

- The brightest and well-ventilated rooms that let in sunshine and natural light with most serene views of the greenery.
- The size is same as premiere rooms i.e., 592 sq.ft. (55 sq.m.)
- Stylized marble finished bathrooms with soaking bath tub



- ROYAL CLUB ROOM:

- 24-hour personal butler services are provided along with complimentary limousine service.
- Club lounge facilities along with use of meeting rooms.
- The size is same as premiere rooms i.e., 592 sq.ft. (55 sq.m.)



- ROYAL CLUB PARLOUR:

- These suites exude the charm of Lutyens's architecture and Indian royal interiors adorned with exquisite art work.
- The suites are available with city skyline views and area of around 700 sq.ft. (65 sq.m.)
- Spacious bathroom with rain shower head and oversized bedrooms that include lounge area, round the clock Butler service
- In- built Ad Nortam mirror screen and spa mood lighting



- EXECUTIVE SUITE:

- Spacious and elegant two bay suite with living room, bedroom and a bathroom
- Warm and rich accented décor with colorful brocade and exquisite handcrafted tapestries on the walls
- Wooden flooring with contemporary art blend



- LUXURY SUITE:

- Plush, royal and opulent spacious suite with size 970 sq.ft. (90 sq.m.)
- Includes lounge area, separate bedroom and oversized luxurious bathroom



- GRAND SUITE WITH PLUNGE POOL:

- Indian theme of floor-to-ceiling columns and regal arches
- Two bay suites located on the ninth floor with size 1090 sq.ft. (101 sq.m.)
- Open to sky private pool with temperature controlled jacuzzi
- Casual seating around the pool



- ROYAL SUITE WITH PLUNGE POOL:

- Largest open- to sky plunge pool with temperature controlled jacuzzi
- Royal in look



- MAHARAJA SUITE:

- Two bay suites with floor-to-ceiling ornate doors with area around 1520 sq.ft. (141 sq.m.)
- Grand living room with temperature-controlled plunge pool area with jacuzzi overlooking city skyline.



- PRESIDENTIAL SUITE:

- Epitome of uber luxury spanning around 4800 sq. ft (446 sq.m.)
- Resembles the palatial grandeur of the royal heritage of India.
- Opulence of gold leaf ceilings, intricate woodwork, pure silver and semi- precious stone art pieces and deep-toned tapestries are some of the striking features
- An eight-bay suite comes with private gymnasium, two separate living rooms with powder room, private study room, private dining room that seat around 12 people, 24-hour in room dining, fully functional butler's pantry, separate bedroom with a walk- in wardrobe and sprawling bathroom, Jacuzzi, a rain shower head and a couple spa suite.
- Comes with an additional bedroom to accommodate more guests.
- Equipped with bullet proof glass







**(5) RESTAURANTS**

- **<u>JAMAVAR</u>- Indian specialty restaurant**

- Signature fine dining restaurant of Leela
- Based on the 16th century Jamavar shawls of Kashmir, semblances of the 'paisley' pattern of these shawls can be found in the interiors of this restaurant.
- One of its kind Maharaj tables is present for large functions.







- **<u>LE CIRQUE</u>- Franco- Italian Restaurant**

- French and Italian cuisine with the grand landmark restaurant of New York

- Avant- Garde bar with walk- in wine cellar, an interactive chef's table and Delhi's most prestigious show kitchen and exclusive private dining rooms











- **<u>MEGU</u>- Japanese specialty restaurant**

- Multi dining rooms along with spectacular Buddha Hall
- Private dining room, Kimono which serves up to eight guests
- Sushi bar is also present







- **<u>THE LIBRARY BAR</u>**

- Set on the terrace surrounded by water walls and fire torches







- **<u>THE QUBE</u>- ALL DAY DINING**

- Alfresco feeling and designed like a glasshouse
- Live kitchen and chefs are available







**(6) BANQUET HALLS and BALLROOMS**

- 2 inside Banquet halls- Diya and Maya, while on the terrace of the hotel and Megu lower deck.
- 2 Ballrooms- Grand and Royal









**(7) MEETING ROOMS and BOARD ROOMS**

- Meeting room- 4 in nos.
- Chairman's Boardroom and Le Cirque Boardroom



**(8) WELLNESS**

- Spa facilities are provided
- Yoga and meditation





**(9) SWIMMING POOL**

- Pool is on the terrace of the tenth floor
- Seating and sunlounges are provided







### 3.1.9 BACK OF THE HOUSE SERVICES (FLOORWISE)



Fire safety-

- 4 types of pumps are used- Jockey pump, Hydrant, sprinkler and design engine pump which work in the same hierarchy as mentioned
- Fire supply tank- 2 tanks of capacity 125 KLD
- Water supply tank- 40 KLD on roof



Electrical-

- LT Panel room- Connects to all the spaces and rooms in the hotel
- HT Panel room- NDMC lines(11000Kv)

These lines goes to the transformers (Step down transformer- 2 nos. of 2000KV)- converts to 400/415 KV

- RTCC room- Changes ratio

BMS Control Room-



- BMS control room- Building management system- Smart systems to control all activities using sensors and currently aim to control the lift and the pump as well.

Had approach to the 3 chiller plants (2 nos. of 600 TR/ 1 no. of 400 TR)

- Generator (DG set) room- Consists of 2 diesel and 1 PNG based generators of capacity 2000 KV each

Has diesel backup of 34000 liters

The time lapse was of only 7 sec. and it hardly takes 15 sec. delay to get electricity back

Automatic operated

UPS room-

- Also known as server room.
- It provides emergency light in all high risk service areas (generally two lights)
- It has no link to the main supply. So even in case of no light, there will be no blackout
- Servers available at the time of crisis
- EPABX room- IT rooms with system managers



Receiving Area-

- Connected to the exit
- Only accessible by the staff

Back-end service circulation

- 3 lifts with alarm for front office in case of emergency (ERD)
- Fire staircase



- Fire safety precautions like fire extinguisher and fire hydrant are placed near the lifts.

Laundary (Guest/ Staff)-

- The laundary is equipped with washing machines, dryer machines, iron machine, marking machine as well as hanging area.
- Dry cleaning (Buzel Rossaire)- 3 machines
- 4-5 driers
- Office of Controller



- Linen and Uniform Room
- Solid linen room

Housekeeping control room

Lost/ found

**Basement B2 level**

RO plant-

- 6000 liters/ hr.
- Laundry fed
- It has two tanks. One is the main tank and the other one is the storage tank.

Compressor unit-

- Centralized for all cold rooms

- Found in fewer projects.
- The entire system is imported.



Oil and grease tank ( separating for water

Storage for diesel/ petrol

Water body tank (on G-floor)

IVS system (controls Vodafone/Jio networks)

STP plant-

- Divided on two floors
- Capacity- 400 KLD
- STP recycled water used in cooling towers.

Variable frequency drive (VFD)- LEED measure

- Helps in less power consumption
- Brizansia technologies



**Basement B4 level**

STP plant- (MBR based)

- Sludge holding area
- Live monitoring

Boilers

- 3 in nos.- 2 PNG based and 1 for backup
- Only one is used per month
- Jali is provided in floor to evaporate the residue of fuel gases

Steam boilers

- 600 litres per hour
- Water treatment plant connected
- NDMC line connection
- Water tanks provided (3alternate)

ATB plant

- 2 nos. of collection tank for sop water

### 3.1.10 LEED MEASURES

**RATING: LEED Platinum NC Category rating**

Hotel Leela Palace followed green building practices to substantially reduce or eliminate negative environmentalimpacts and designed to reduce operating costs, to contribute health and wellbeing of the occupant and reducepotential liability resulting from indoor air quality problems. Project team has considered several environmentfriendly design and measures which led to meet 'LEED India Platinum Rating' requirements.

Project is rated under five environmental categories:

Sustainable Sites, Water Efficiency, Energy & Atmosphere, Material & Resources and Indoor Environmental Quality. An additional category, Innovation & Design Process, addressed for sustainable building expertise as well as design measures which are not covered under the five environmental categories.

**Integrated with Green Building Design and Features to meet LEED Platinum standards:**

- Energy Efficient Glass with a U Value of 0.077 btu/h ft 2.
- Insulated roof with reflective Stone finish and terrace gardens.
- Use of Combined Cooling Heating and Power (CCHP) System.
- More than 50% energy savings over ASHRAE 90.1-2004 baseline.
- 100% waste water treatment on site.
- Reuse of Waste water in irrigation, Flushing and Cooling Towers.
- 30% fresh air for spaces over ASHARE 62.1with Heat recovery system\
- Thermal comfort as per ASHARE 55.1-2004
- Low approach cooling towers
- CO sensors for Basement car parking
- Efficient exterior lighting

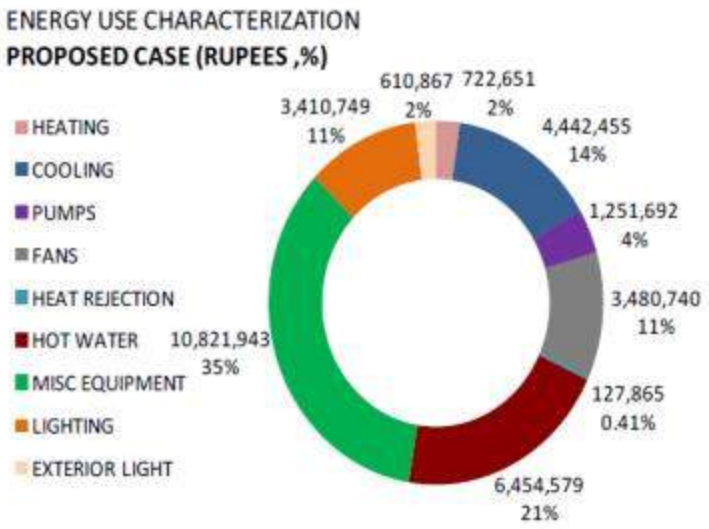



FIGURE 24: ENERGY USE CHARACTERIZATION

**Measures:**

- Optimized orientation
- Optimum Window to Wall Ratio
- Rooms are design to get glare free daylight
- Double glazed windows to reduce heat gain
- High visible light transmittance for glazing
- 90% areas are direct line of site to outside toget natural views as per LEED requirement
- High performance building envelope
- Roof garden and high SRI tiles
- Energy management system for rooms
- Efficient air distribution system
- Demand control ventilation
- Premium efficiency pumps
- Efficient sensor-based elevator system
- Vertical Green Walls

- Electricity generation at site from Natural gas
- Waste Heat Recovery for cooling and Heating
- Vapor absorption machine (VAM) for chilledwater generation
- Condenser heat recovery for laundry andkitchen
- Chilled water for kitchen refrigeration

- Hotel Leela Palace site is well located with pedestrian access to ample number of basic services and publictransportation services like bus and rail to reduce pollution from private automobile use.
- Designed, implemented erosion & sedimentation control measures during construction and post occupancy byretaining top fertile soil for landscaping within site, reduction in air pollution and water pollution through efficientstorm water management and dense landscaping.
- Project parking is designed as per Delhi Development authority. Parking is facilitated with electrical chargingstations so as to encourage usage alternative fuel vehicles and also considered exclusive parking spaces for car poolservices to reduce environmental impacts.





- Designed efficient Rain Water Harvesting (RWH) system to recharge site aquifer through recharge pits so asto reduce storm water run-off volumes after post development and these RWH pits will be cleaned and maintainedperiodically.
- All exposed roof of Hotel Leela Palace are cent percent covered with vegetation and high Solar ReflectiveIndex (SRI) paint material to maximize energy savings and minimize heat island effects.
- Sewage Treatment Plant (STP) is designed which shall treat 100% waste water generated from the buildingduring post occupancy phases of the project to eliminate potable water usage for irrigation, cooling tower makeupand flushing,

- By installation of low flow fixtures, project saves potable water to an extent of 41%.By efficient envelope, lighting and systems, project saves 56.93% in energy costs over ASHRAE 90.1 – 2004baseline.
- All the building energy systems and system components are commissioned, measured and verified in accordancewith the operational requirements of the building owner and the design intent.
- Designed measurement & verification plan to verify the cost savings associated with energy efficiency measuresincorporated into the design, and to provide a recalibrated energy model that will serve as a tool for building operators in identifying and remedying causes of underperformance.
- Reduced ozone depletion and support early compliance with the Montreal Protocol through HCFC & Halonfree based HVAC&R and fire suppression systems.
- Diverted more than 95% of construction waste from landfills and routed to recycling zones and reused theconstruction waste appropriately.
- To encourage recycling activities, Hotel Leela Palace facilitated separate space for segregation and collection ofrecyclables (Paper, Plastic, Metals, Glass etc.,) generated in the project during occupancy.
- Locally sourced materials with high recycled content and rapidly renewable content to reduce impacts resultingfrom extraction and processing of new virgin materials and environmental impacts.






- Declared as NO SMOKING zone and well communicated to building occupants through web check-in andsignage's.
- Maintained Construction Indoor Air Quality (IAQ) during construction and before occupancy as per SheetMetal Air Conditioning National Association (SMACNA) guidelines.
- Designed ventilation systems as per ASHRAE 62.1 – 2004 Std and monitored through CO2 sensorsconnected to Building Management Systems (BMS) to contribute health & wellbeing of the building occupant.

- Reduced the quantity of indoor air contaminants that are odorous or potentially irritating harmful to thecomfort and well-being of installer and building occupants through low emitting adhesives & sealants, paints,composite wood.





- Selected Carpet Rug Institute (CRI) Green Label Indoor Air Quality Test Program certified carpets.
- 81% of the building occupants are having individual control over lighting systems and thermal comfort topromote the productivity and wellbeing of the occupants.
- Designed comfortable thermal environment throughout the year as per ASHRAE 55 Std in view of Delhiclimatic conditions.
- To decrease the consumption of potable water for flushing & landscaping water requirements treated waterfrom STP is used.
- To reduce the site disturbance, green area provide in our project is 25% more than the local norms. The specieswhere selected of native/adaptive nature to reduce the consumption of water.
- Car parking with 3% of Alternate fuel vehicles with electrical charging points provided in our project.5 % of the car parking for car pool is provided in our project.

**Energy conservation and Eco-friendly Measures –**

**1. Dual Fuel Gas Generator – 1900 KW**

In dual fuel engines equipped with a carburetor, an air/gas mixture is brought to the cylinders and thencompressed. A small amount (about 8% of the energy-input) of gasoil is injected for the ignition of the mixture.

**2. Heat Recovery Vapor Absorption Machine**

Our hotel is equipped with dual fuel gas generator of 1900 KW. The flue gas waste heat is being used to run theVapor Absorption Machine. The heat recovery is approximately 720 TR capacity.





## 4.4 DESK APPRAISAL: TAJ VIVANTA, BANGLORE

### 4.4.1 INTRODUCTION



- Standing at the main entrance to the International Tech Park, Bangalore (ITPB).
- Located 45 km away from the Airport, 18 km away from the CBD of the city.
- Gateway statement between the IT Park and the developing city around ft.
- Architects: WOW Architects I Warner Wong Design
- Location: Whitefield, Bangalore, Karnataka, India
- Collaborator: Spazzio Design Architecture
- Client: The Indian Hotels Company Limited (IHCL)
- Area: 19638.0 sqm
- Project Year: 2009

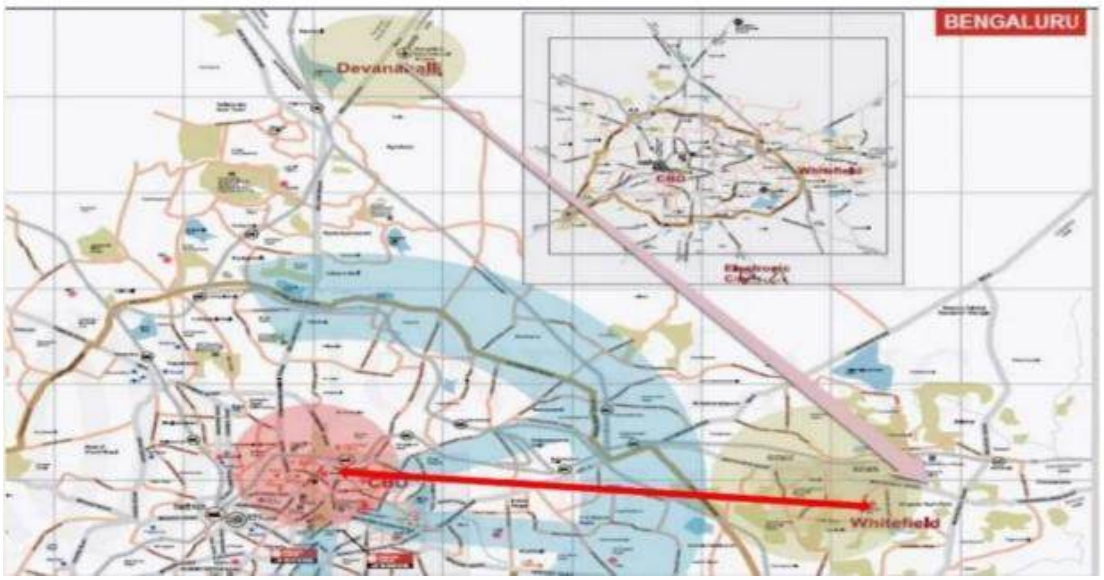
The Taj MG Road, Bengaluru, a 5 star hotel in Bangalore, is a reflection of city's cosmopolitan flavour. With the entrance of the Silicon Valley, it has embraced change. From laidback to quick-paced, from local to global, from the traditionalist to the modernist, but always welcoming, as a people and as a hotel. Its décor mirrors this change with its chic, new age furnishing. Old recipes are made with a lighter hand. Cocktails are now made by mixologists who dabble fearlessly - revitalizing traditional recipes with new ingredients. Newly refreshed elegance is everywhere as is state-of-the-art technology.

Location-wise, you are in the heart of Bangalore, equidistant to both - the centres of culture and the hubs of technology. Attractions near our 5 star hotel in Bangalore include Lal Bagh, Commercial Street and the 1 MG-Lido Mall. For business, there's the business centre, an up-to-date boardroom with audio-visual facilities. For pleasure, trust our Concierge to plan anything your heart desires, from romantic dinners to sightseeing tours.

### 4.4.1 LOCATION

FIGURE 25: LOCATION OF TAJ VIVANTA, BANGALORE


CONCOR
Whitefield Main Rd
Vivanta by Taj
Whitefield
Brigade Tech Park


BENGALURU
Devanahalli
CBD
Whitefield

### 4.4.2 CONCEPT

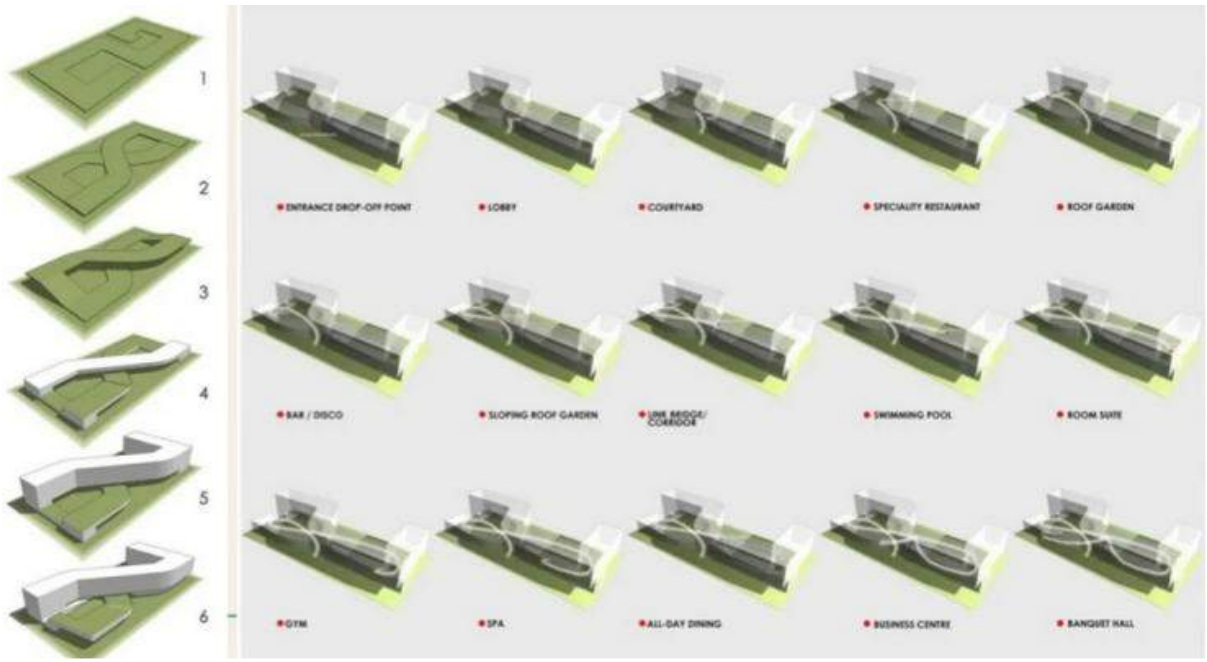


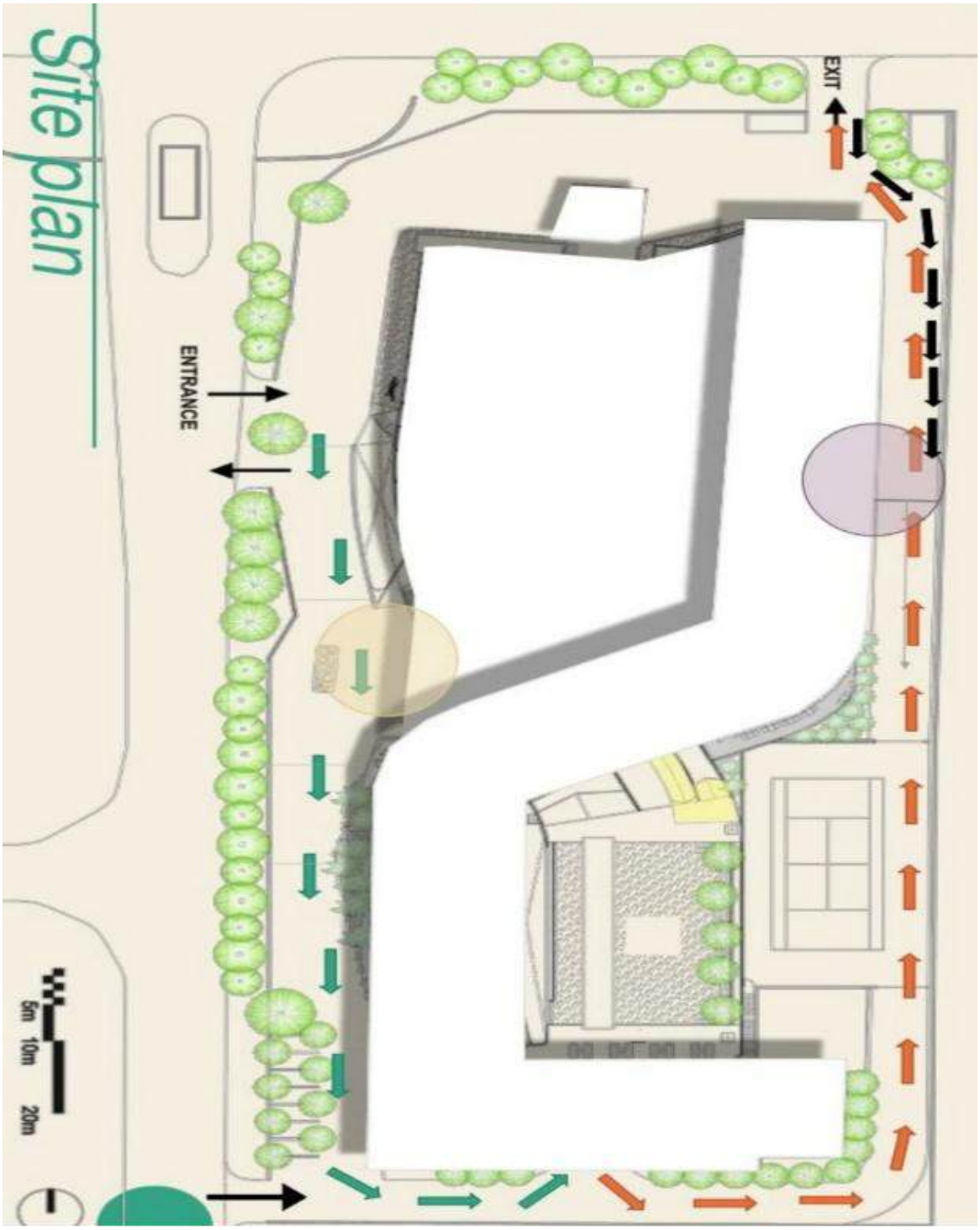




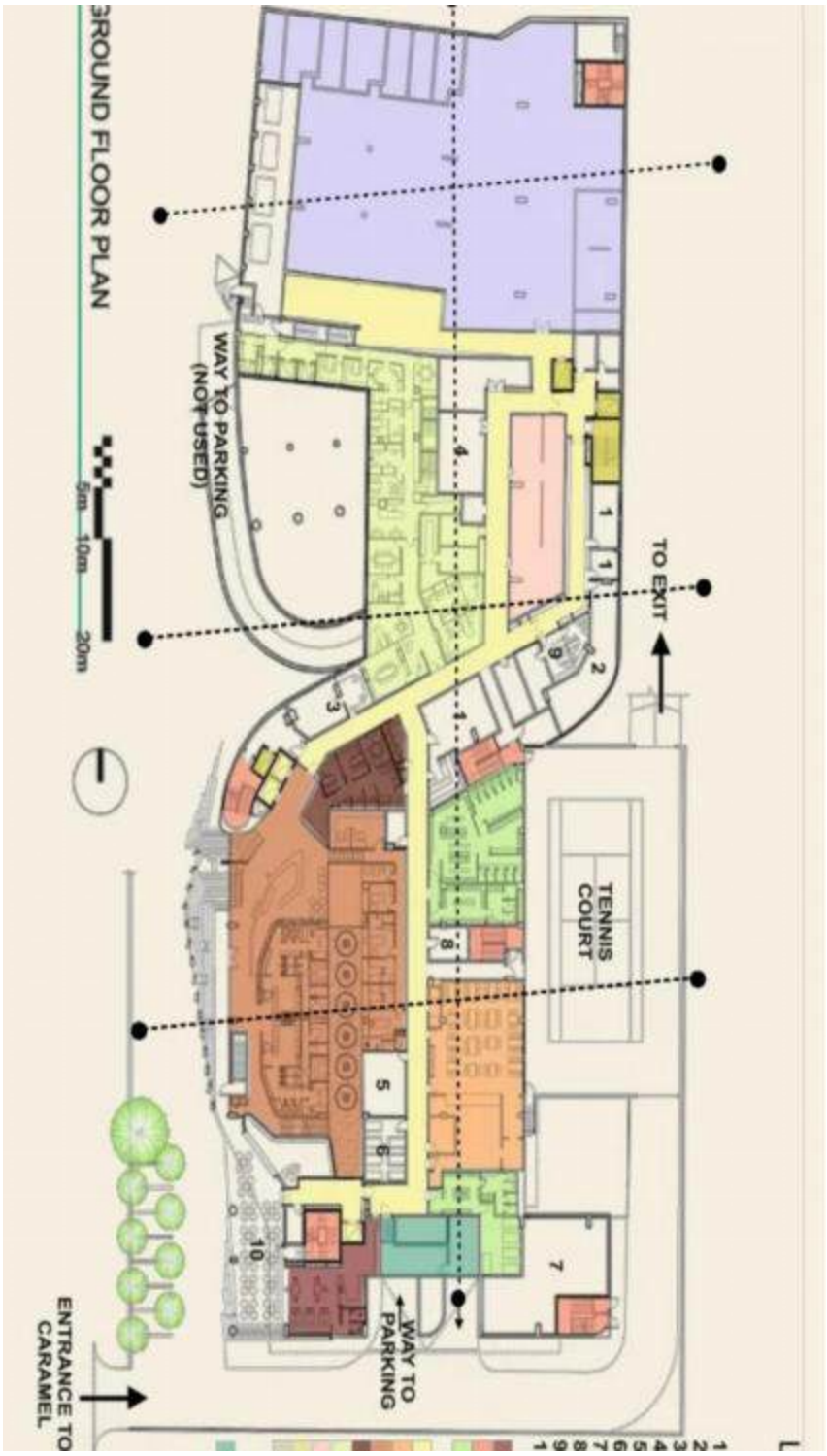

FIGURE 26: FORM DEVELOPMENT WITH CONCEPT

### 4.4.3 SITE PLAN

FIGURE 27: SITE PLAN



### 4.4.4 FLOOR PLANS




**GROUND FLOOR PLAN**

**LEGEND**

1. LENIN ROOM
2. HOUSE KEEPING OFFICE
3. IT ROOM
4. LIQUOR STORE
5. TRAINING ROOM
6. BUNKER ROOM
7. STP
8. ELECTRICAL PANAL ROOM
9. STAFF OFFICE
10. 
11. 
12. CARAMEL OUTDOOR SEATING
13. CARAMEL PASTRY SHOP
14. FIRE EXIT

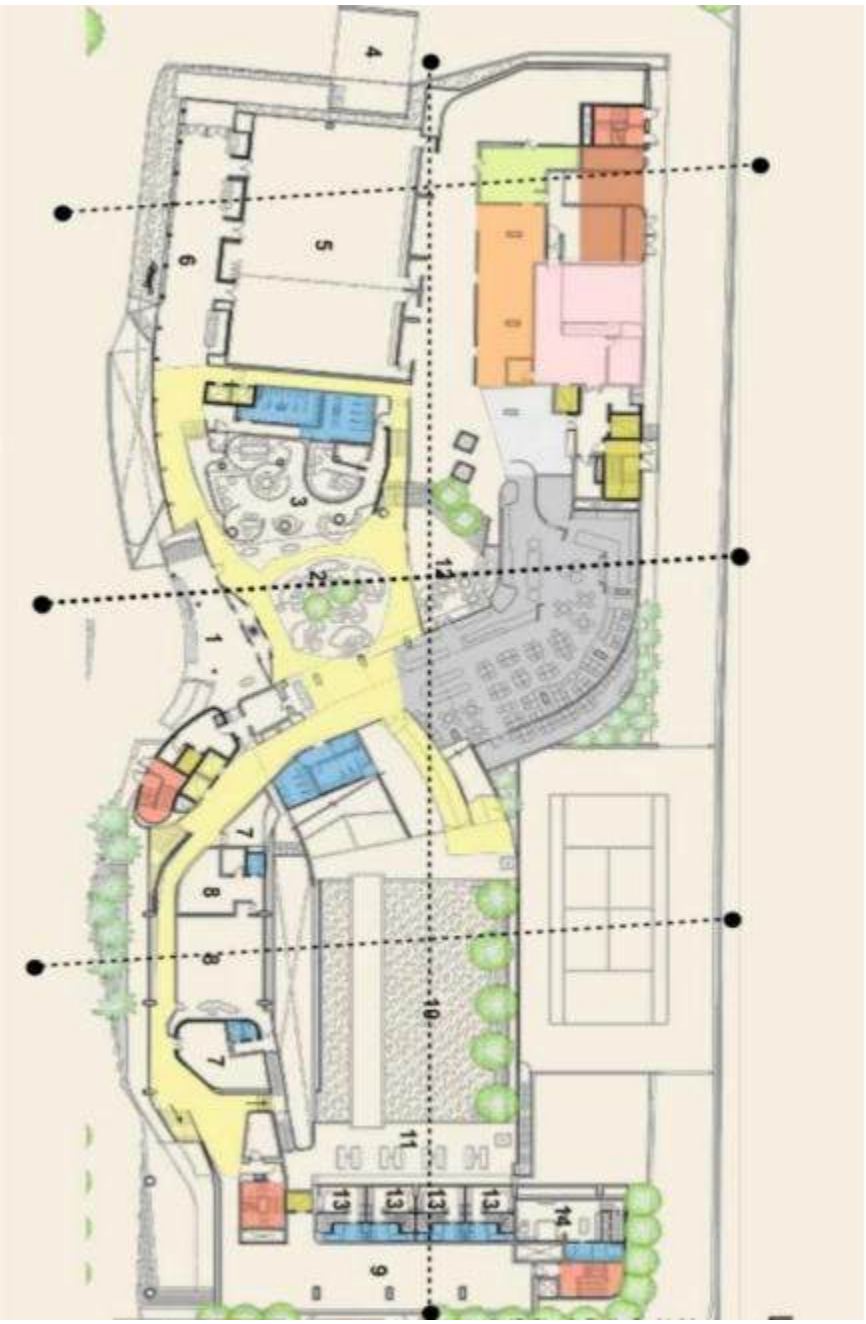
15. LADIES/GENTS LOCKER ROOM
16. CIRCULATION
17. STAFF CAFE SPA
18. HR ROOM COMPLEX
19. EXECUTIVE OFFICE ROOMS
20. KITCHEN SUPPORT STORE
21. SERVICE LIFTS/STAIRS
22. SERVICES (STORE+ BATTERY+AHU UNIT+ HVAC+LV/LT )
23. SWIMMING POOL
24. PLANT ROOM

FIGURE 28: GROUND FLOOR PLAN









**FIRST FLOOR PLAN**

**LEGEND**

1. ENTRANCE PORCH
2. LOBBY
3. AGENDA (BUSSINESS CENTER)
4. BANQUET ENTRY PORCH
5. BANQUET HALL
6. PRE-FUNCTION AREA
7. SHOP GYM
8. BANQUET HALL.2
9. SWIMMING POOL
10. POOL LOUNGE.
11. CASCADES
12. LOFT SUITE
13. NIRVANA PRESIDENTIAL SUITE
14. TIME ROOM & SECURITY
15. FIRE EXIT
16. LOADING AND UNLOADING AREA
17. CIRCULATION
18. BAKERY
19. MAIN KITCHEN

20. IN ROOM DINING
21. AREA LATITUDE ( ALL DAY DINER)
22. TOILET SERVICE LIFTS/STAIRS

FIGURE 29: FIRST FLOOR PLAN

**SECOND FLOOR PLAN**

**LEGEND**

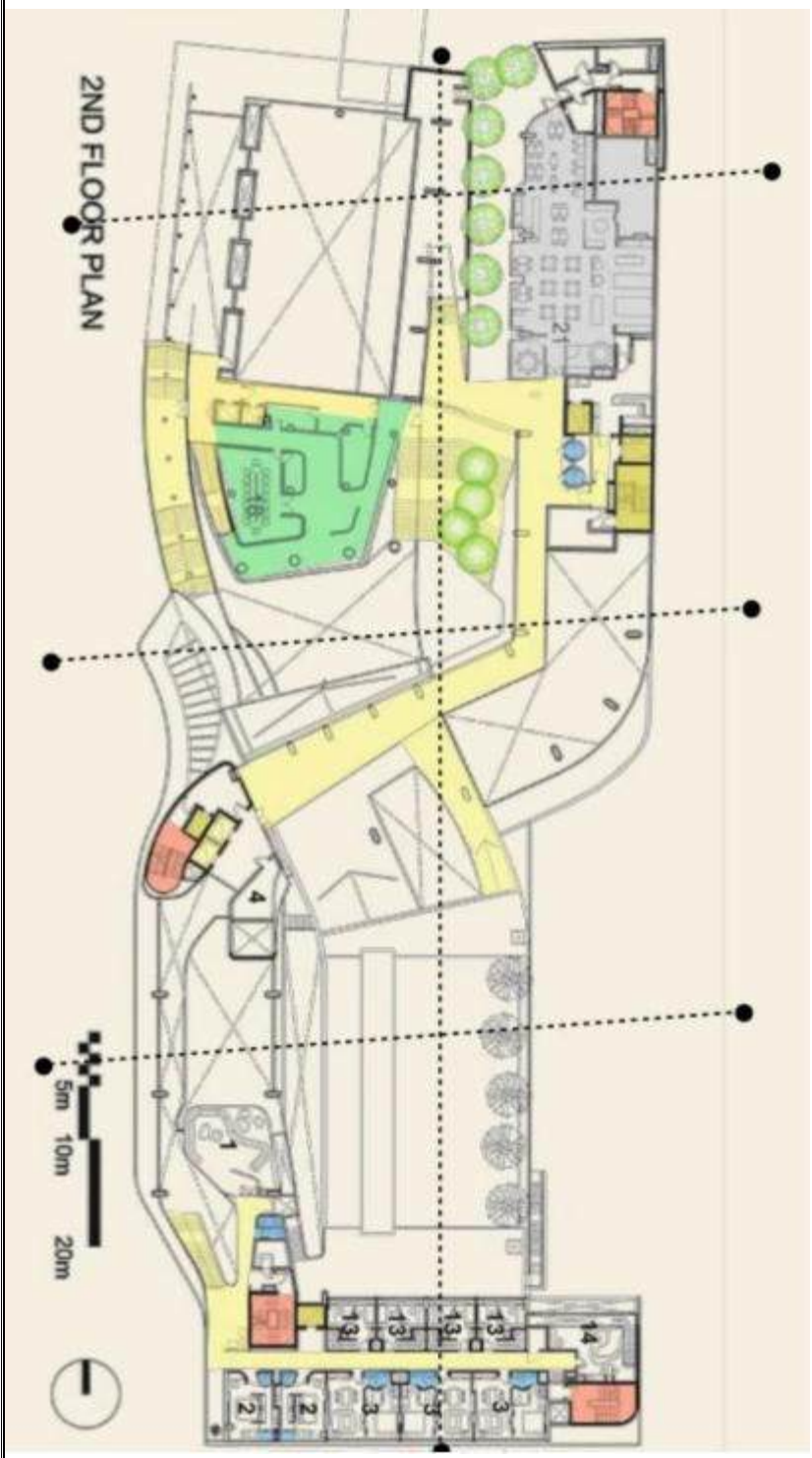
1 VIP LOUNGE

2 CHARM/DELIGHT ROOM

3 DELUXE ALLURE SUITE

4 LENIN

13 LOFT SUITE




14 NIRVANA PRESIDENTIAL SUITE

AGENDA(BUSSINESS CENTER)

FIRE EXIT

TERRACOTA (SPECIALITY RESTAURANT)

CIRCULATION

TOILET

SERVICE LIFTS/STAIRS

FIGURE 30: SECOND FLOOR PLAN




**THIRD FLOOR PLAN**

**LEGEND**

1 INDULGENCE ROOM

2 CHARM/DELIGHT ROOM

3 DELUXE ALLURE SUITE

4 LENIN

5 TEMPTATION SUITE

FIRE EXIT

TEASE KITCHEN

TEASE BAR & RESTAURANT-MIDDLE EAST SEATING

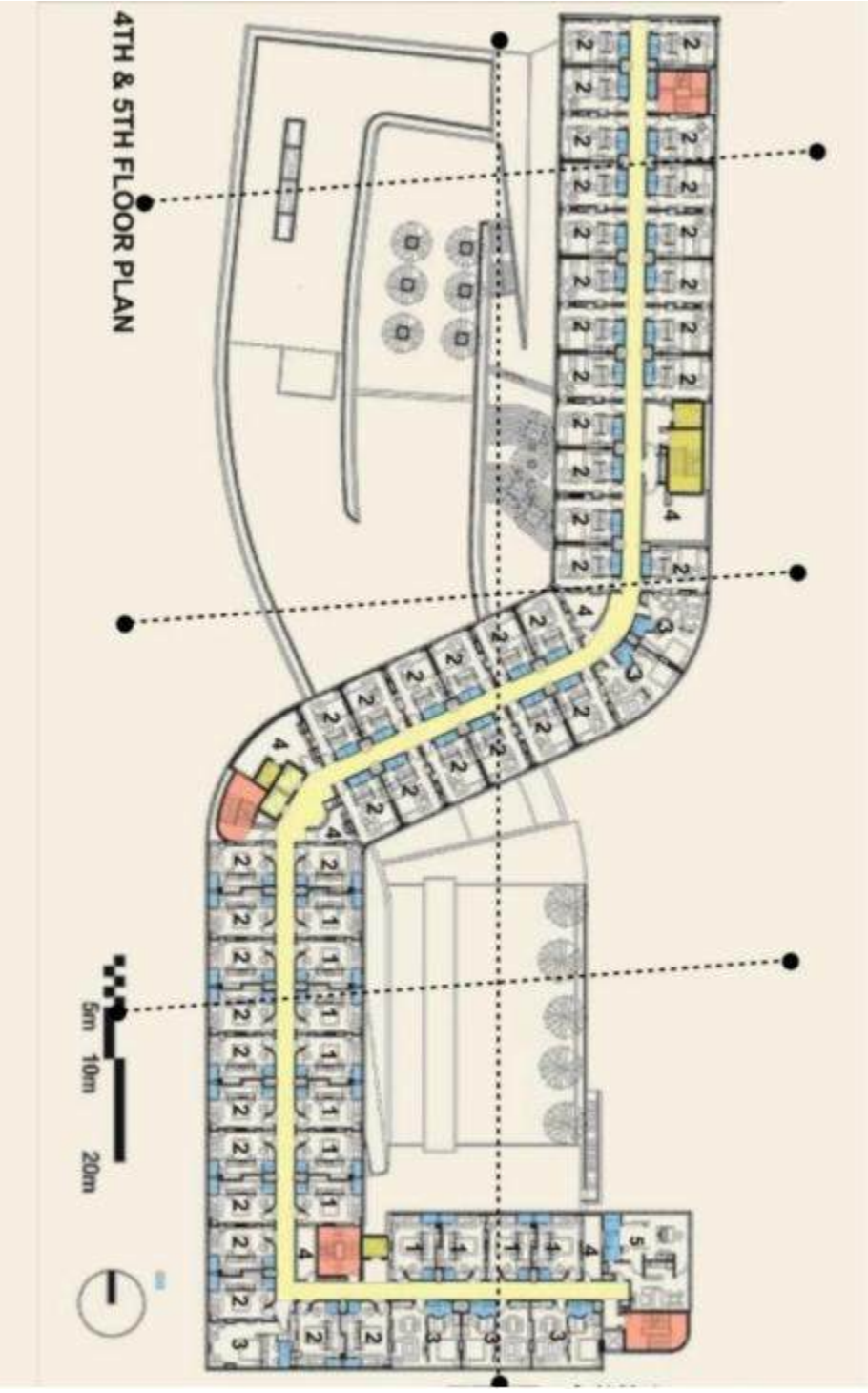
TEASE-HIGH ENERGY ZONE

TEASE-LAWN SEATING

CIRCULATION

TOILET

FIGURE 31: THIRD FLOOR PLAN




**FOURTH FLOOR PLAN**

**LEGEND**

1 INDULGENCE ROOM

2 CHARM/DELIGHT ROOM

3 DELUXE ALLURE SUITE

4 LENIN

5 TEMPTATION SUITE

FIRE EXIT

CIRCULATION

TOILET

SERVICE LIFTS/STAIRS

### 3.2.3 ELEVATIONS







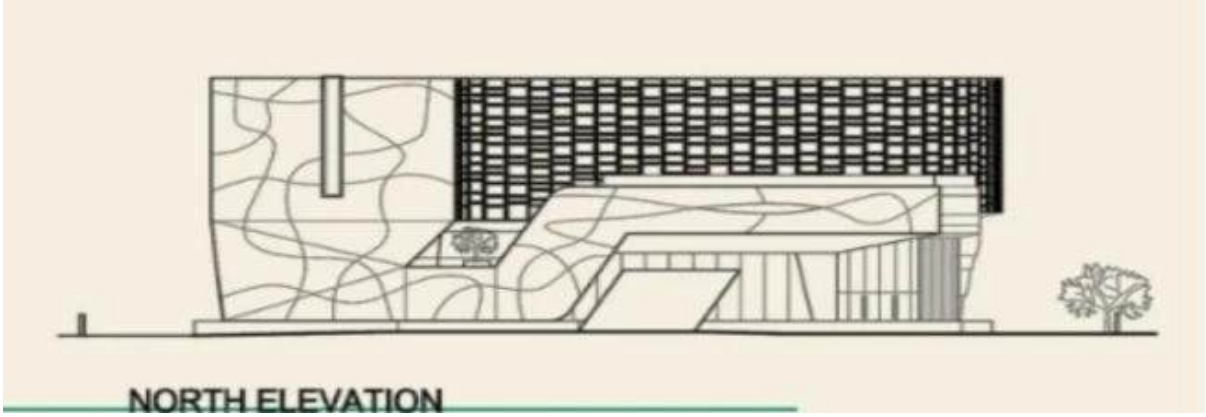
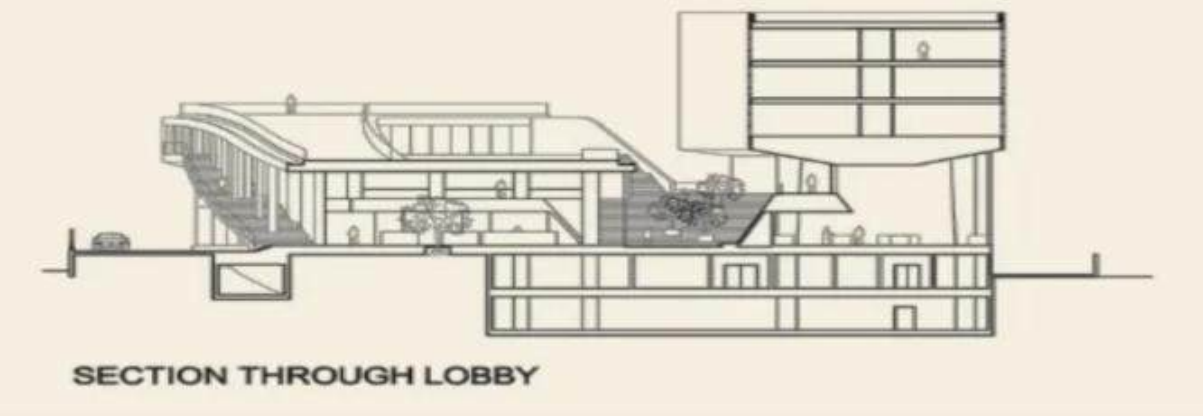
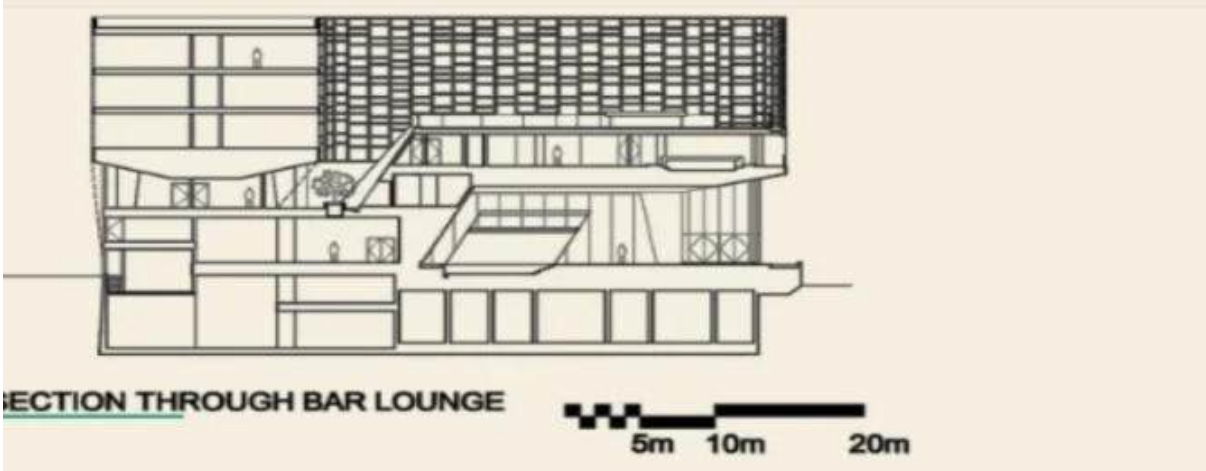


FIGURE 33: ELEVATIONS

### 3.2.4 SECTIONS



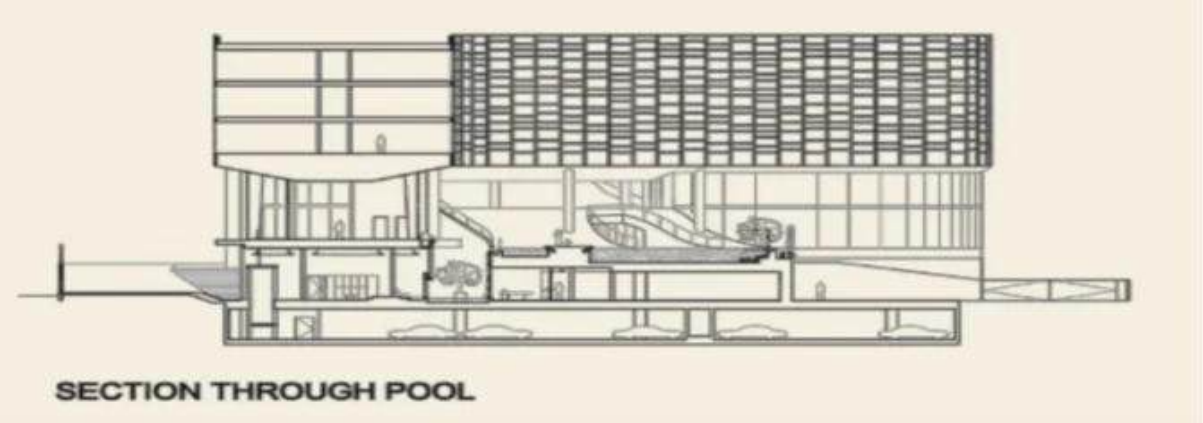




FIGURE 34: SECTIONS

### 3.2.5 PUBLIC SPACES

### A. RECREATIONAL POOL – CELCIUS:



- Dimensions: length - 25.15 Meters
- width -10.75 Meters (1 m = 3.2 feet)
- Depth of the Pool - 1.2 Meters (approx.4 feet)
- A separate KIDS pool: length - 25.15 Meters;
- width -3 Meters;
- Depth - 0.18 to o.65 Meters
- Temperature display
- Two watches displayed
- Water treatment plant with chlorination
- Timings: 6 am to 9 pm.



B.



**D. RECREATIONAL – FITNESS GYM :**

• Open 24-hours, instructor available from 6:3o a.m. to 9:oo p.m.

• Equipped with Life Fitness circuit training and cardio machines

• Free weights

• Personal training

• Yoga & Aerobics in an exclusive area adjacent to the gym

THE EQUIPMENT INCLUDES :

• 3 Treadmills

• 3. Static cycle

• 3. Elliptical bike

• i EFX

• 3. Stepper,

• 7 Individual single station machines

• 2 Flexible machines for anterior and posterior thigh muscles.

• Flat bench



## E. RECREATIONAL SPA: JIVA



• 3 treatment suites.

The suites have been innovatively designed around a soothing garden

— Prithvi - 192 Sq ft

— Vayu - 192 Sq ft

— Akash - 192 Sq ft

• Relaxation room with two heated loungers

• Spa operational hours: Wet areas - 07:00 hrs - 20:00 hrs Treatments - o8: oo hrs. - 20:00 hrs.

• A beauty salon

• Separate steam and sauna room

• Experiential showers

• Changing rooms and personal amenities

• Long term fitness regime for regular guests





**F. LOUNGE – RHYTM :**



• You'll find Rhythm near the fitness center.

• A chilled out space, where guests living in Indulgence rooms and suites are invited.

• This lounge presents a stunning view of the pool.

• Enjoy complimentary hi-tea or select alcohol from 6 PM to 10 PM.

**G. BOARDROOM – AGENDA :**



• VGA Laptop Presentation Capabilities, Motorized Screen

• 63 inch LCD, Video and Audio Conferencing with session recording capabilities

• Video conferencing codec

• Polycom, 7 Boundary microphones on the table

• Tilt boxes with Lan Network, DVD Player

• Room Control (Lights, Volume, VC, Presentation switching, camera pan, recording, TV controls) all on one interface

• AC thermostat in room



**H. LATITUDE – ALL DAY DINER**

Corner from the Lobby

• Inside outside experience for the salubrious climate of the city

• Open interactive kitchens with display counters, mood lighting, HD TV.

• Hours: 24 hrs



**I. TEASE –THE BAR:**

• The high-octane bar

• Eclectic style - modern interiors designed with an Indian contemporary feel enhanced in the artwork inside.

• Replete with mirrors and rough textured walls.

• 3 zones: – Restaurant – Bar – High energy Zones

• Hours – 3pm to 12am

**TERRACOTTA – INDIAN RESTAURANT:**

• Indian Specialty Restaurant

• Open interactive Kitchens

• Hours:

– Lunch: 12pm – 2:45pm

– Dinner: 7pm – 11.30pm






terracotta

J. **BALLROOMS**

A. **Tango 1 and 2**

• Ballrooms Inbuilt AV features( Drop Down Screen, Drop Down Projector)

• Pillar less Halls

• Modular tables from Forbes - UK & Buzzer assistance

• Interface with complete room





**K. CARAMEL– THE DELICATESSEN:**



• Indoor and Outdoor seating – view of Tech Park and enjoy the climate

• Cuisine type: Bakery, Confectionary, Frappes and Smoothies, Homemade ice creams, Souvenir & Patisserie.

• Hours: 24 hrs control (lights, volume, drop down screen, projector control)

| Name of the outlet | Concept /Cuisine | Covers | Total Area |
|---|---|---|---|
| Latitude | 24 hr. All Day Dining - Inspired World Cuisine | 100 | 6239 sq ft |
| Terracotta | Indian Specialty -North West Frontier Cuisine | 80 | 3389 sq ft |
| Tease | High Energy Bar | 66 | 3401 sq ft |
| Caramel | Delicatessen | 12 | 230 sq ft |
| Room Service | In room Dinning | - | |
| Banquets | Events | - | 5527 sq ft |
| | | | |

### 3.2.6 GUEST ROOMS

#### A. CHARM OR DELIGHT:



Complimentary personal tea/coffee makers, mineral water & newspapers.

• Use of pool, fitness centre and wet areas of the Jiva spa

• TreatYourself cabinet with a selection of drinks, snacks, chocolate treats and beverages (charge applies)

• Rest Easy menu with choice of pillows

• Yoga kit, aromatic diffuser on request

• 24-hour in room dining



• Room size- 327 sq ft

• Ergonomically designed study table and chair

• Television - 32" LCD TV screen with home theatre system and

surround sound to personalize your entertainment

• Internet Protocol telephone

• Bathrooms with shower cubicles (rain shower) and toilet area

• Bath amenities are Forest Essentials made from natural ingredients

• l00% cotton robes

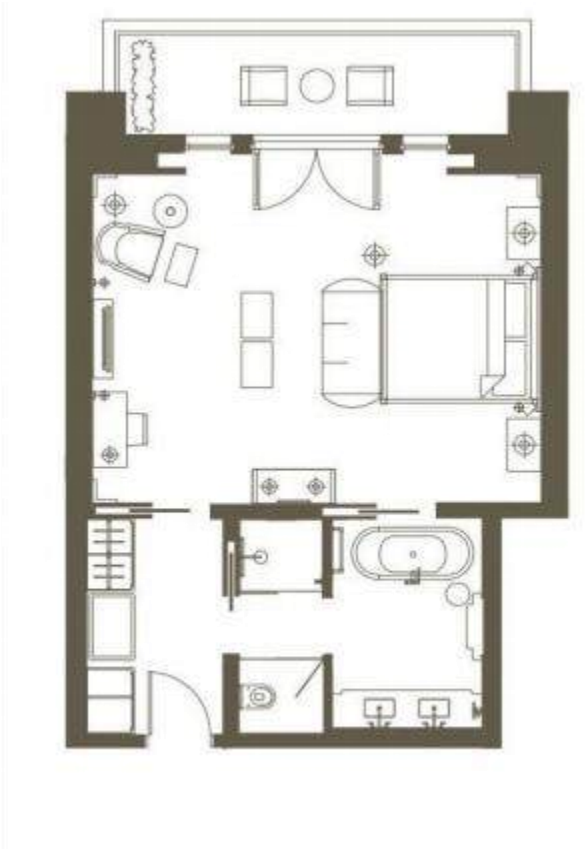
• Cotton towels

• Wall-mounted makeup mirror, and hair drier

• Electronic safe

• Housekeeping service twice daily - morning cleaning and evening turndown

• Rollaway beds and cribs available on request.



• Deluxe Allure Suite - 447 sq ft

• Wifi services for resident guests (terms and conditions apply)

* Basic access - complimentary

* Premium access - at a nominal charge

• Access to Rhythm Lounge

• SPA voucher worth Rs. 500/- per stay

(To be used against treatments only)

• Happy Hours at the Rhythm Lounge

• Complimentary 24 Hr Wifi at Rhythm Lounge

• Complimentary 2 hours usage of

Meeting Rooms Agenda/Oval (On availability)

• Complimentary Tea/Coffee and Cookies at

Rhythm

lounge during operating hours

• Complimentary pressing

• All the Services provided for Charm and Delight

**B. LOFT SUITE**



• Loft Suite - 925 sq. ft

• Double level suite.

• All services as seen in Allure Suite

• These face the Pool.

• Access from the upper level.

• Upper level includes Living Room, Toilet and Study Space

• Lower level includes Bedroom and Toilet



**C. TEMPTATION**



• Premium Temptation Suite - 770 sq. ft

• All Services Provided for Loft Suite

• Double level Room

• Access from Upper level

## D. PRESIDENTIAL NIRVANA SUITE







Presidential Nirvana Suite - 970 sq. ft

• Double Level

• All Service

### 3.2.7 FACILITIES PROVIDED

**ESSENTIALS**

- Babysitting
- Car hire service
- Currency exchange
- Doctor on call 24-hour
- laundry/dry cleaning
- Postal/parcel services
- Travel and tours
- desk Airport and railway transfers
- Shoeshine
- Valet to assist with packing and unpacking

**LEISURE SERVICES**

- 24-hour in-room dining
- Jiva spa
- On-demand video and music I-Radio
- Beauty salon
- Fitness centre
- Cycling Outdoor
- swimming pool
- Choice of music in-car CDs
- Fitness centre
- Yoga and Aerobics

**CONCIERGE SERVICES**

- Car rentals
- Sightseeing tours
- Special services such as floral arrangements
- Shopping guidance

**WELLNESS AMENITIES**

- Steam and sauna facilities
- Unisex Saloon
- Three Aromatherapy rooms
- Relaxation Lounge
- Outdoor Pool
- Gym

### 3.2.8 MATERIALS

• Workmanship defects embraced – raw rustic look



• Bush-Hammer finish; enhancing or hide the texture

of exposed concrete

• In places where conc. is inappropriate– stone or timber

paneling

• 'Flux lines' embedded in concrete interior and

exterior – symbolize brand, avoid/conceal expansion joints

• All local materials to avoid carbon expenditure

• Ground plane becomes green roof

• Highly reflective glass with dark and light tinted ones – save energy







### 3.2.10 OTHER FACTORS

**1. SERVICES:**

• Linen Room which accommodates 4 rotations of clothes

• Support Kitchen – Major Storage and preliminary cutting

• In house doctor – doctor for one hour and on on-call

• Departments – Dean – Finance – Sales – Food and Beverage – Learning and development – Security – Front office/ Reception

• LT/HT, HVAC in the huge machinery room in the basement.

• Fire exits

• Waste water treatment room.

**2. PLANTS AND MACHINERY:**

• Screw Chillers — 25oTr X 03 No's — Kirloskar

• Dg Set's — 750 Kva X 02 No's — Cummins

• Transformers — l000 Kva X 02 No's

• Hot Water Boilers— 2 Lacs K. Calories Per Hour

• so KI Per Hour— Ro Plant For Water Treatment

• Sewage Treatment Plant — 200 KI Per Day

**3. SUSTAINABLE MEASURES:**

• Water Savings Initiatives

— 8o% use of recycle water within hotel premises i.e. irrigation, Flushing and cooling towers — Flow control device in Water taps for guest rooms.

— Touch less Sensor water taps in lockers

• Energy Savings Initiatives Motion Sensors in Public area toilets

— Timers On External Lighting

— 5 KW Solar Panel commissioned last year which supply fire exits lights for entire hotel.

— In process to replace 12 v, 50 \n/ halogen with 7 watt LED in guest room . 40% LED's has already been fixed and rest will be done by March 2016.

**4. WATER USAGE:**

• Basement— 3 tanks

• Roof —7 tanks

• isoL/C/D

• 9 kitchens— l000L/hr

• Total usage — 48000 KL/day

## 4.5 Comparative analysis study

| COMPARATIVE STUDY | | | | |
|---|---|---|---|---|
| **Facility / Feature** | **Hilton Garden Inn Pune** | **Taj Lakefront Bhopal** | **The Leela Palace New Delhi** | **Vivanta Bengaluru Residency Road** |
| **Guest Room Count** | 144 rooms | 152 rooms + 10 suites | 254 rooms and suites | 98 rooms, 12 suites (Residency Road) |
| **Lobby Area (approx.)** | ~2,000–2,500sq.ft. | ~3,000sq.ft. | Over 5,000sq.ft. | ~1,200–1,500sq.ft. |
| **Lobby Facilities/Features** | Reception, concierge, check-in kiosk, waiting lounge, café/bar, business centre nearby | Grand reception, concierge, art displays, lounge, lake view terrace | Large reception, lounge seating clusters, art, floral decor, lounge, boutique desk | Reception, lounge, event directory, café access |
| **Room Types & Special Features** | King, Twin, Family, Accessible; all with smart amenities | Deluxe Lake View, Deluxe City View, Suites with living areas, accessibility options | Grand Deluxe, Royal Club, Executive Suites, Maharaja Suite; luxury amenities | Superior, Deluxe, Executive, Residency Suites; premium linen |
| **Standard Room Size** | ~28–32sqm | ~33sqm (Deluxe), ~76sqm (Suite) | 51sqm+ (rooms), larger suites | 26–55sqm |
| **Room Facilities** | Free Wi-Fi, HDTV, fridge, safe, rain shower, tea/coffee | Smart TV, minibar, safe, coffee/tea, desk, city/lake view | Marble bath, rain shower, Wi-Fi, club for suites, Nespresso | TV, tea/coffee, minibar, walk-in shower, turndown |
| **Total Event Space** | 5,313sq.ft., largest hall 4,455sq.ft. | 1,116sqm (12,012sq.ft), largest ballroom 880sqm | 7,716sq.ft. event space, 10 meeting rooms | Multiple meeting/banquet halls, business centre |
| **Meeting/Banquet Rooms** | 2–4 dedicated rooms | 4 meeting rooms + banquet venues | 10 meeting rooms + ballroom | 4 meeting rooms + banquet |
| **Swimming Pool** | Rooftop outdoor pool | Outdoor infinity pool | Rooftop temperature-controlled pool | Outdoor pool |
| **Spa/Wellness** | Fitness centre | J Wellness Spa, gym, yoga, steam | ESPA spa, gym, salon, multi-storey wellness | Spa, gym, steam, fitness centre |
| **Dining Facilities** | 2 restaurants, rooftop bar, lobby café, 24hr room service | 3 restaurants (Infinity, House of Ming, Machan), bar | 4 specialty restaurants, Library Bar | 3–4 venues (Mynt, Swirl, Karavalli, Wink bar) |
| **Business Centre** | Yes, with Wi-Fi, printing, secretarial services | Business centre, banquet hall | Advanced business centre, Club Lounge, AV tech | Full business centre, high speed AV |
| **Parking/Transport** | Self/valet parking, EV chargers, taxi desk | Free/valet parking, secure garage | Free/valet, airport transfer (BMW fleet, incl. electric) | Ample parking, valet, airport transfer (on request) |
| **Child/Family Facilities** | Family rooms, connecting, cribs on request | Kids' play area, family pools | Babysitting, family rooms, special menus | Cots, play area, babysitting |
| **Sustainability** | Eco-friendly façade/materials, energy efficient | EarthCheck certified, water/energy management | Sustainable initiatives, local sourcing, green awards | Eco-certified (Whitefield), green programs |
| **Location/Proximity** | Hinjawadi (IT hub), 30min to Pune centre | Lakefront, 25min from airport | Chanakyapuri (Diplomatic Enclave), near embassies, | Residency Road, Bengaluru centre |

| | | | | |
|---|---|---|---|---|
| **Unique Design/USP** | Modern, open, functional, terrace pool | Regal interiors, Indian art, panoramic lake view | Palatial theme, art, luxury marble, highly awarded | Business-focused, central, blend of historic and tech areas |
| **Tech & Connectivity** | Free Wi-Fi, digital key, mobile check-in | Free Wi-Fi, smart TV, business tech support | Advanced in-room tech, Blu-ray, Bose, hybrid event support | Wi-Fi, smart TVs, AV systems |
| **Accessibility/Security** | Wheelchair access, lifts, CCTV, keycard, 24x7 security | Accessible rooms, security staff, CCTV | Accessible rooms, CCTV, uniformed staff, universal design | Accessible, CCTV, secure elevators |
| **Pets Policy** | Not pet-friendly | Not specified | Not pet-friendly | Pets allowed (Whitefield) |
| **Recreation** | Gym, rooftop pool, business centre | Yoga, lakeside walking, spa therapies, park access | Gardens, art tours, spa, lounge | Recreation lounge, spa, central shopping access |
| **Awards & Recognition** | Built 2022, strong user ratings | Newest luxury, eco certifications | "World's 50Best", Condé Nast Traveller, many others | Multiple hospitality and green awards |
| **Service Area (Back-of-House)** | Includes kitchen (main+satellite), staff locker rooms, laundry, engineering, stores, loading bay. Often 15–20% of built-up area (~4,000sq.ft. estimated) | Main and banquet kitchens, laundry, staff rest area, admin, stores/loading, maintenance; typically ~20% built-up area (~6,000sq.ft.+) | Multiple kitchens, in-house bakery, staff cafeteria, laundry, admin, storage, large service corridors (~12,000sq.ft.+). | Main kitchen, laundry, staff lounge, storage, admin/support rooms (~2,800–3,200sq.ft. est.). |
| **Office Area (Admin Zone)** | GM office, sales/marketing, accounts, HR, security, small boardroom; adjacent to service core. Typically ~1,000sq.ft.. | GM, HR, finance, events, security and legal, with meeting rooms and records; ~1,500sq.ft. (adjacent to staff zone). | Executive office suite, HR, sales, finance, banquet sales, boardroom; all with dedicated access; ~3,000sq.ft.. | GM and executive offices, sales/HR/finance/admin, boardroom/staff meeting, 600–1,000sq.ft. est.. |

# 5 Inference

## 5.1 ENTRANCE

- Entry includes dedicated vehicular movement lanes for drop-off, pick-up, and bypass
- Circular driveway or loop entry is commonly used for efficient traffic management
- Entry canopy or covered drop-off zone provided for weather protection
- Single-entry system preferred for ease of surveillance and guest control
- Visual axis leads toward the reception or main lobby to enhance sense of arrival

## 5.2 SECURITY AND LUGGAGE

- Baggage scanning provided before entering the main lobby
- Screening zone is enclosed or air-conditioned to manage comfort and avoid heat transfer
- Service entry is kept isolated from guest access zones

- Vestibule or enclosed glass lobby provided to maintain interior temperature
- Air curtains or minimal airlock systems used for climate separation
- Guest luggage is handled by bell desk near entrance and moved via service routes

## 5.3 SERVICES

- Service rooms such as STP, pump rooms, and electrical panels are located in basements
- HVAC system includes chillers in enclosed basement zones and cooling towers at higher levels
- Pump rooms are positioned 500–600mm below the water tanks for gravity efficiency
- Water tanks planned with approx. 2 sqm per room key
- HVAC requirement averages around 1.5 sqm per room key
- Engineering workshops and maintenance areas included within service core
- Panel rooms and RO plants located near service corridors or basements

## 5.4 PUBLIC AREAS

- Reception counters accommodate 3–5 staff with dedicated check-in kiosks
- Luggage room placed behind reception and connected to service lift
- Minimum of 2 guest lifts, 1 luggage lift, and 1–2 service lifts are standard
- Lifts are grouped near lobby to reduce passenger wait time (~45 seconds target)
- Public lobby lounges are used as transition and informal seating zones
- Built-up area ranges from 100 to 125 sqm per room key depending on hotel tier
- Lounge spaces also serve as emergency assembly points, often with nearby restrooms

## 5.5 DINING AND BANQUET

- All-day dining designed for 0.75–1 person per key seating capacity
- Buffet counters designed linearly or with islands, 0.1m per key on average
- Dining seating mix: approx. 60–70% 2-seaters, 20–30% 4-seaters, and 5–10% sofas
- Banquet spaces vary from intimate halls to ballroom layouts
- Banquets have adjoining pre-function zones (~1/3rd size of hall)
- Separate banquet entry or access preferred to avoid guest congestion
- Laundry facilities located in service basements or separate service blocks
- Service corridors connect banquet with kitchens and storage

## 5.6 OTHER DETAILS

- Clear zoning between hotel, banquet, retail, and service areas to avoid cross-circulation
- Fire escape staircases provided every 30–45 meters
- Doors are recessed 150–200mm from corridor walls for visual uniformity
- Corridors are carpeted and 1.5–1.9m wide for guest comfort
- Toilet shafts are shared between two rooms and sized ~1.35 x 0.75m
- All rooms are centrally air-conditioned

- Furniture dimensions (typical):
- Table – 750mm
- Bed – 550mm
- Side/Coffee Table – 450–550mm
- Guest toilet layouts include:
- 4-fixture: WC, wash basin, shower, bathtub
- 5-fixture: WC, 2 wash basins, shower, bathtub

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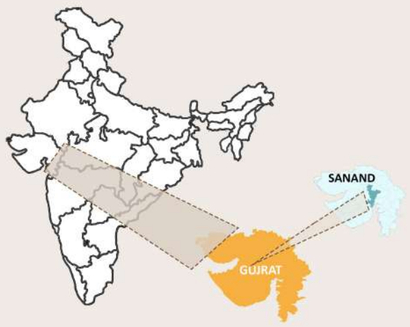
# SITE ANALTSIS

# 5-STAR HOTEL AT SANAND, AHMEDABAD

**Name of the project:** Proposed 5-Star Category Hotel at Sanand.
**Location:** GIDC Sanand-II (Plot SM-39/5), Sanand-II Industrial Estate., Sanand, Ahemdabad at Gujrat.
**Site Coordinates:** 23°00'21.5"N, 72°14'59.6"E




## PROJECT DETAILS:

| S. NO. | DESCRIPTION | PROPOSED |
|---|---|---|
| 1 | SITE AREA(SQM | 20,168.54 |
| 2 | SITE AREA(ACRE) | 4.98 |
| 3 | GROUND COVERAGE | 40% |
| 4 | FAR | 1.8 |
| 5 | FRONT SETBACKS | 9M |
| 6 | REAR & SIDE SETBACKS | 9M |
| 7 | BUILDING HEIGHT | ND |

## CLIMATE:

The average wind speed in Ahemdabad is 3.77 m/s with the maximum wind speed of around 5.25 m/s. The average ambient temperature remains 38.1°C, varies from 7.8°C to 44.5°C. The average relative humidity remains around 53.8%, varies from 35% to 79.5%. Windrose of Ahemdabad shows that predominantly wind blow from the W - about 16.85% of all wind directions.

**RAINFALL (mm)**
Min - 0.6
Max - 310.1
Avg - 783.6 Annually

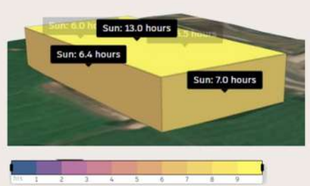
**WIND SPEED(m/s)**
Min - 2.33
Max - 5.25
Avg - 3.77

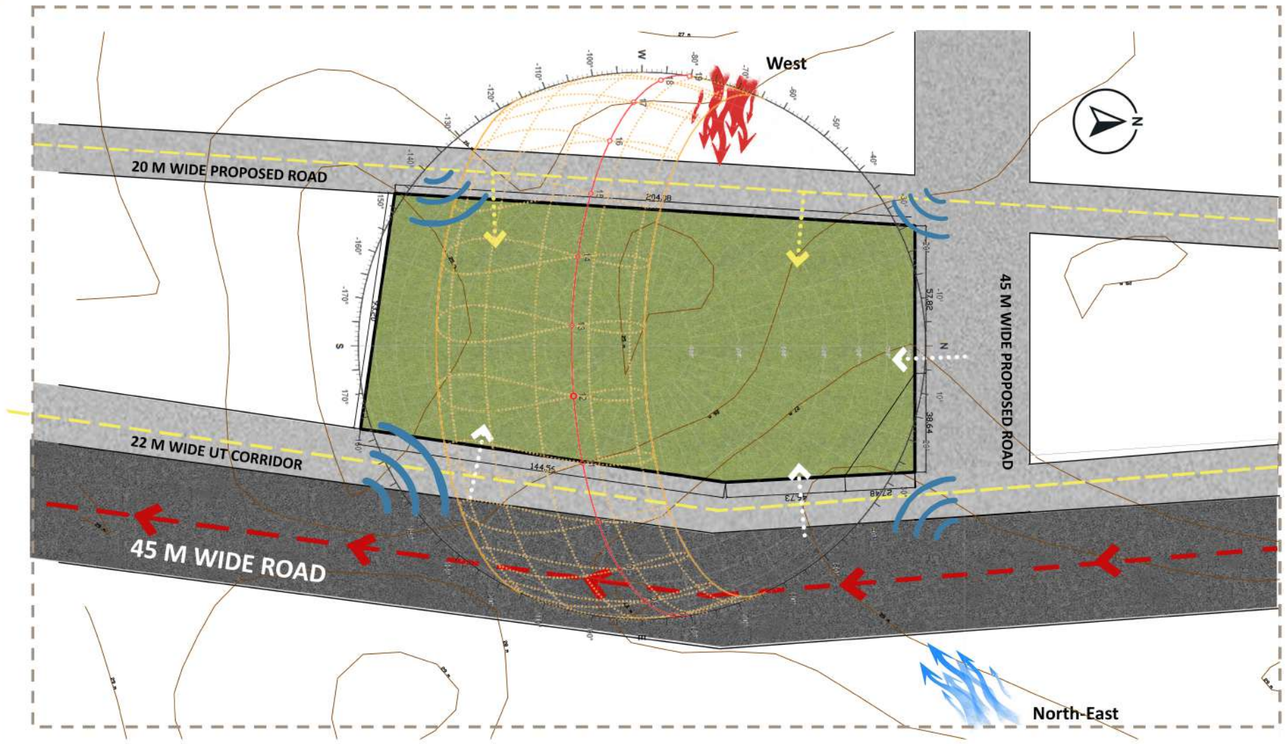
**HUMADITY (%)**
Min - 35
Max - 79.5
Avg - 53.8

**TEMPERATURE (C)**
Min - 7.8
Max - 44.5
Avg - 38.1

## AVERAGE HOURS OF SUNSHINE:

In sanand, Ahemdabad at an average it recieves 12 hours of sunshine everyday.




**LEGENDS -**

WINTER WIND
SUMMER WIND
ACCESS POINTS
SERVICE ENTRANCE
VEHICULAR MOVEMENT
CORRIDOR
NOISE

## ADVANTAGES & DISADVANTAGES OF SITE:

**Advantages -**

**1. Good Accessibility & Circulation** – Triple road frontage allows separate guest, Banquet and service entries without conflicts.

**2. Large, Flat Plot** – Large Plot Size – Offers flexibility for landscaping, circulation, and building placement.

**3.Favorable Site Potential** – The large site area and flat terrain provide flexibility in building orientation, zoning of functions, and future expansion opportunities.

**Disadvantages -**

**1. Poor Surroundings & Views –** No scenic/natural external views, reliance on internal atrium for guest experience.

**2. Environmental Issues –** Noise, dust, and possible odor from nearby industries; air quality concerns.

**3. Heat & Pollution Impact –** Heat island effect and industrial expansion may increase cooling demand and reduce comfort.

## SITE SURROUNDINGS & VIEWS:



FRONT ROAD VIEW



BACK VIEW

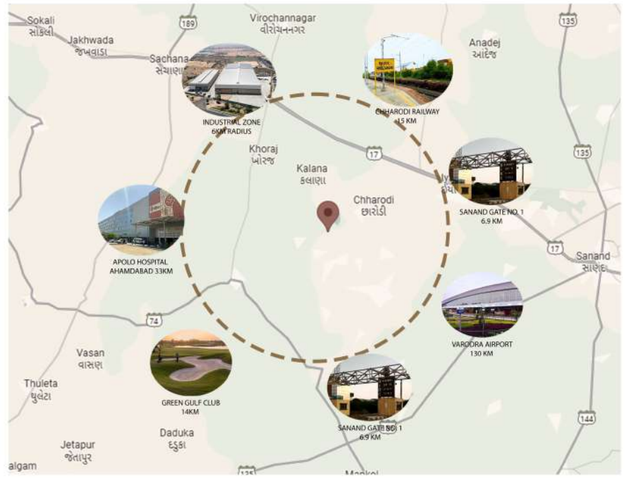


RIGHT SIDE VIEW



LEFT SIDE VIEW

## PROXIMITY:




## PROXIMITY PHYSICAL INFRASTRUCTURE (UTILITY):

66/11 KV SUBSTATIONS DISTANCE FROM SITE



### POWER -

* Three 66/11 kv substations are operational.
* Two 66/11 kv substations arender planning.


GIDC WATER TANK 70 KM FROM SITE

### WATER -

* GIDC will provide water at the plot doorstep.
* As per norms GIDC will provide 13.5 kld/ha area of land alloted.

### GAS -

* Gujrat State Petronet Ltd. would supply gas in the estate till the doorstep.
* The company needs to directly apply for gas to GSPL.

### WASTE INFRASTRUCTURE -

* For liquid waste - NIL (The company has to take it to ETP's)
* For solid waste - two disposal facilities are available, Naroda & Vatva.
The company has to transpot their solid waste to these sites themselves.
The sites are around 50 km from Sanand.

## TOPOGRAPHY AND SOIL TYPE:

The Sanand region in Gujarat is characterized by deep alluvial loam–clay soils of the Central Gujarat plains. These soils offer high bearing capacity and structural stability, making them favorable for construction foundations. Their loamy nature supports vegetation and landscaping, while the clay content ensures strength but requires proper drainage solutions to prevent waterlogging or shrinkage issues.

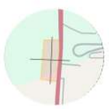


PLAN



Section through Red -Axis

## INFERENCES FROM THE SITE:



### ORIENTATION -

- Due to the orientation of site, the building will be placed with the longer axis on N-S . The longer side of the building will be facing the sun from the south.

### SHADING -

- Due to the hot and dry climate, specifically harsh summers of ahemdabad adequate shading measures are also necessary to project the building from direct solar radiation, should be shaded by shading devices.



### LIGHTING-

- A courtyard/ atrium setting would be good enough to have natural light.

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| S.No. | Spaces | Taj Lakefront, Bhopal | Area | Hilton, Pune | Area | Taj Gateway, Pune | Area | Westin Gurgaon, New Delhi | Area |
|---|---|---|---|---|---|---|---|---|---|
| 1 | Lobby / Front of House | Front desk | 40 | Lobby | 160 | Lobby | 140 | Lobby | 730 |
| | | Lounge | 90 | Lounge | 50 | Lounge | ... | Lounge | ... |
| | | Toilets | 34 | Toilets | 30 | Toilets | 20 | Toilets | 20 |
| | | Luggage store | 10 | Luggage store | ... | Luggage store | 13 | Luggage store | 13 |
| | | Guest lifts | 25 | Guest lifts | ... | Guest lifts | ... | Guest lifts | ... |
| | | Business centre | 31 | Business centre | ... | Business centre | 25 | Business centre | 31 |
| | | Retail shops | 35 | Retail shops | 40 | Retail shops | ... | Retail shops | ... |
| 2 | Offices / Admin | GM | 20 | GM | 25 | GM | 25 | GM | 20 |
| | | Secretary GM | 12 | | | | | | |
| | | MGR | 20 | | | | | | |
| | | Reservation FO | 28 | Reservation FO | ... | Reservation FO | 20 | Reservation FO | 20 |
| | | F&B MGR | 25 | | | | | | |
| | | Discussion rooms | 15 | | | | | | |
| | | Cashier | 5 | Cashier | ... | Cashier | 5 | Cashier | 5 |
| | | Controller | 5 | Control Room | 10 | Control Room | 8 | Control Room | 5 |
| | | Payroll MGR | 5 | | | | | | |
| | | Accounts | 10 | Accounts | 20 | Accounts | 10 | Accounts | 10 |
| | | Records | 10 | | | | | | |
| | | HR | 15 | HR | 15 | HR | 10 | HR | 5 |
| 3 | Banquets & Conferences | Banquet hall | 450 | Banquet hall | 560 | Banquet hall | 400 | Banquet hall | 450 |
| | | Pre-function | 90 | Pre-function | 140 | Pre-function | 60 | Pre-function | 90 |
| | | Conference rooms | 68 | Conference rooms | 55 | Conference rooms | 100 | Conference rooms | 68 |
| | | Banquet MGR | 18 | Banquet MGR | 22 | Banquet MGR | 20 | Banquet MGR | 18 |
| 4 | Guest Rooms | Double rooms | 27 | Double rooms | 33 | Double rooms | 30 | Double rooms | 30 |
| | | Suites | 18 | Suites | 38 | Single rooms | 40 | Single rooms | 40 |
| | | Twin | 33 | Twin | 33 | Suites | 20 | Suites | 20 |
| | | | | | | | | | |
| 5 | F&B Outlets | All-day dining | 100 | All-day dining | 160 | All-day dining | 100 | Multi-cuisine | 140 |
| | | Specialty restaurant | 80 | Specialty restaurant | 140 | Specialty restaurant | 80 | Specialty restaurant | 90 |
| | | Coffee shop | 40 | Coffee shop | 50 | Coffee shop | 40 | Coffee shop | 30 |
| | | Bar | 60 | Bar | 140 | Bar | 60 | Bar | 70 |
| 6 | Kitchen & Support | Main | 55 | Main | 120 | Main | 110 | Main | 115 |
| | | Room service | 20 | Room service | 35 | Room service | 25 | Room service | 35 |
| | | Pantry | 20 | Pantry | 25 | | | | |
| | | Bakery | 20 | Bakery | 15 | Bakery | 20 | Bakery | 25 |
| | | Commissary | 20 | Commissary | 15 | Commissary | 20 | Commissary | 20 |
| | | Dishwash | 20 | Dishwash | 20 | Dishwash | 25 | Dishwash | 20 |
| | | Cold kitchen | 12 | Cold kitchen | 12 | Cold kitchen | 14 | Cold kitchen | 12 |
| | | Show kitchen | 12 | Show kitchen | 14 | Show kitchen | 14 | Show kitchen | 12 |
| | | Bar pantry | 10 | Bar pantry | 12 | Bar pantry | 10 | Bar pantry | 12 |
| | | Chef office | 5 | Chef office | 8 | Chef office | 6 | Chef office | 8 |
| 7 | Recreational Facilities | Swimming pool | 100 | Swimming pool | 160 | Swimming pool | 90 | Swimming pool | 90 |
| | | Gym | 50 | Gym | 25 | Gym | 50 | Gym | 50 |
| | | Massage rooms | 20 | | | Spa | 20 | Spa | 20 |
| | | Salon | 15 | | | | | | |
| 8 | Housekeeping & Laundry | Linen | 20 | Linen | 15 | Linen | 20 | Linen | 20 |
| | | Store | 10 | Store | 10 | Store | 10 | Store | 10 |
| | | Laundry | 15 | Laundry | 15 | Laundry | 15 | Laundry | 15 |
| | | Staff lockers | 15 | | | | | | |
| | | HK MGR | 5 | HK MGR | 5 | HK MGR | 5 | HK MGR | 5 |
| 9 | Security | Control | 15 | Security office | 15 | Control | 15 | Control | 15 |
| | | Staff entry | 10 | | 10 | Staff entry | 10 | Staff entry | 10 |
| | | Timekeeper | 10 | Timekeeper | | | | | |
| 10 | Staff Facilities | Dining | 50 | Dining | 52 | Dining | 50 | Dining | 50 |
| | | Changing | 40 | Changing | ... | Changing | 40 | Changing | 40 |
| | | Lockers | 30 | Lockers | 30 | Lockers | 30 | Lockers | 30 |
| | | Toilets | 20 | Toilets | 20 | Toilets | ... | Toilets | ... |
| 11 | BOH / Engineering Services | Mechanical | 40 | Mechanical | 45 | Mechanical | 40 | Mechanical | 40 |
| 12 | Miscellaneous | Pump | 20 | Pump | 20 | Pump | 20 | Pump | 20 |
| | | DG | 20 | DG | 40 | DG | 40 | DG | 40 |
| | | Electrical | 40 | Electrical | 25 | Electrical | 20 | Electrical | 20 |
| | | Drivers rest | 15 | Drivers rest | 20 | Drivers rest | 15 | Drivers rest | 15 |
| | | Stores | 20 | Stores | 22 | Stores | 20 | Stores | 20 |






## INFERENCES FROM CASE SUDIES:

### ENTRANCE -

- ENTRY LANES DIVIDED INTO 3 PARTS (DROP OFF, LANE, PICK UP LANE, BYPASS LANE) WITH 3.3 M WIDTH EACH.
- MINIMUM 4 M WIDE ENTRANCE PLAZA FOR WAITING, SECURITY CHECK, AND CONCIERGE PICK-UP BAGS.
- LANES DIVIDED FOR SMOOTH TRAFFIC CIRCULATION.

### SECURITY & LUGGAGE -

- BAGGAGE SCANNER INSIDE HOTEL WITH AC TO REDUCE HEAT GENERATION.
- TEMPERATURE INSIDE HOTEL: 22–23°C.
- AIR LOCK LOBBY/PRESSURIZED LOBBY AT ENTRANCE TO MAINTAIN INSIDE TEMPERATURE; AVOID HEAT WAVES WHEN DOORS OPEN.
- AIR LOCK: 3–4 M WIDE WITH SLIDING DOORS/MOTION SENSORS.
- REVOLVING DOORS AT ENTRANCE WHERE SPACE ALLOWS.
- BAGGAGE SCANNER AND LUGGAGE CHECK SPACE AFTER ENTRANCE.

### DINING & BANQUET -

- ALL-DAY DINING + 24×7 BREAKFAST.
- SEATING: 0.75–1 SQM/PERSON (BUFFET).
- BUFFET LENGTH = 1.2 M PER 25 PEOPLE.
- SEATING: 35 SQM FOR FAMILIES (5–10%).
- BANQUET HALL: 200–300 SQM PER 100 PEOPLE.
- SERVICE CORRIDOR LINKING BANQUET WITH KITCHEN.
- CLEAR HEIGHT = 5–5.5 M.

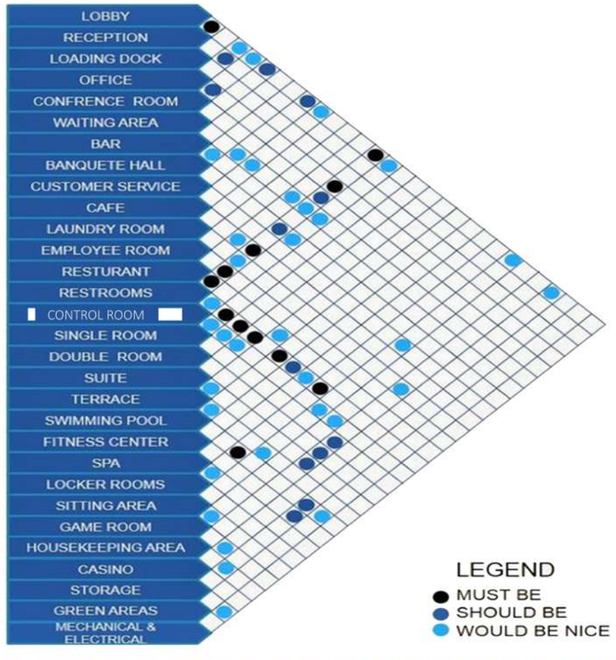
### PUBLIC AREAS -

- MINIMUM 4 STAFF AT RECEPTION + 4–5 KIOSKS FOR RECEPTION, WORKING 24×7.
- LUGGAGE ROOM CONNECTED WITH LUGGAGE ELEVATOR.
- SMALL SPACE FOR LUGGAGE CHECK AFTER ENTRANCE.
- SEPARATE LIFTS FOR LUGGAGE, SERVICE, AND GUESTS.
- 2 SERVICE LIFTS (GARBAGE) + 2 GUEST LIFTS + 1 LUGGAGE LIFT WITH STRUCTURE ELEVATOR.
- 25-PASSENGER LIFT IN LUXURY HOTEL (1.5 M/S).
- MAX WAITING TIME FOR LIFT: 45 SEC, DESIGN SPEED ~5 KM/H, HANDLING CAPACITY: 3 MIN.
- ISOLATED HIDDEN SERVICE SPACE: 2.25 STAFF PER KEY.
- LOBBY LOUNGE: 1.5 SQM/KEY.
- LOBBY CAN DOUBLE AS EMERGENCY ASSEMBLY POINT.
- SHOULD HAVE SEPARATE RESTROOMS FOR 200 SQM PUBLIC SPACE, MAX 40 SEATING.
- RECEPTION, LOBBY, GUEST LIFT, BANQUET SHOULD BE NEAR EACH OTHER.

### OTHER DETAILS -

- SEPARATE TRAFFIC CIRCULATION FOR HOTEL/RETAIL/ BANQUET.
- BANQUET SEPARATED FROM HOTEL TO AVOID CROWDING.
- STAIRCASES EVERY 40-45 M.
- DOORS: 200–150 MM INSIDE CORRIDOR (NOT VISIBLE FROM CORRIDOR).
- CORRIDOR WIDTH: 2.0–3.0 M.
- SHAFTS FOR TOILETS.

## PROXIMITY:




### LIST OF PROGRAM SPACES

1. LOBBY
2. RECEPTION
3. LOADING DOCK
4. OFFICES
5. CONFRENCE ROOM
6. WAITING AREA
7. BAR
8. BANQUETE HALL
9. CUSTOMER SERVICE
10. CAFE
11. LAUNDRY ROOM
12. EMPLOYEE ROOM
13. RESTURANT
14. RESTROOMS
15. CONTROL ROOM
16. SINGLE ROOM
17. DOUBLE ROOM
18. SUITE
19. TERRACE
20. SWIMMING POOL
21. FITNESS CENTER
22. SPA
23. LOCKER ROOMS
24. SITTING AREA
25. GAME ROOM
26. HOUSEKEEPING AREA
27. CASINO
28. STORAGE
29. GREEN AREAS
30. MECHANICAL & ELECTRICAL ROOM

## EVOLUTION OF ARCHITECTURE IN AHEMDABAD REGION:



**Karnavati Period**
Detailing from temples and stepwells, highlighting the ornate craftsmanship and carving traditions of pre-Islamic architecture in



**Sultanate Period**
The iconic "Tree of Life" stone latticework, celebrated for its artistic finesse and cultural symbolism in Ahmedabad's



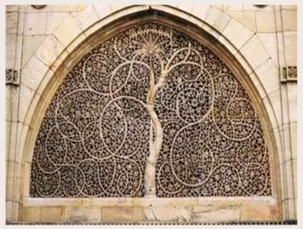
**Modern Period**
A bold modernist landmark incorporating brise-soleil, pilotis, and climate-responsive design — illustrating the city's

## DESIGN PHILOSOPHY:

The design philosophy of this 5-star hotel is based on creating a history, cultural and modern luxury. It is inspired by traditional gujrati stepwell and the central inner courtyard or atrium, open to sky through a large skylight, serves as the heart of the building, flooding interiors with natural light. Accomodation rooms are arranged around the inner courtyard, which creates internal view for the guests, blending cultural with modern hospitality need. This form not only creates dynamic internal views but also enhances energy-efficiency by reducing artificial lighting needs.



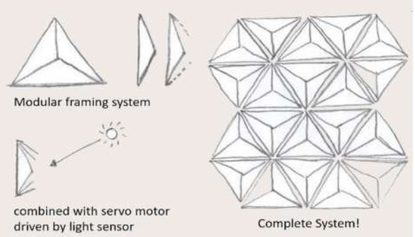
The stepped design of the building is inspired by Rani-ki-Vav in Ahmedabad, where spaces beautifully descend in layers. Just like the stepwell, the rooms are arranged in a stepped form, creating terraces at every level. These terraces include green areas and vertical gardens, making the building modern, eco-friendly, and connected to cultural heritage.



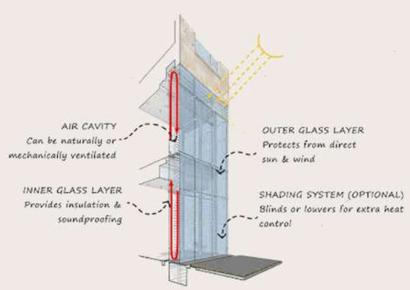
As guests walk through the garden, the jaali screening allows them to experience a sense of Ahmedabad's cultural heritage also acts as a cultural element reflecting sidi sayyad mughal architecture of Ahemdabad.

## KINETIC FACADE:

The kinetic façade functions as a climate-responsive skin, where modular triangular panels rotate according to sunlight intensity using servo-motor and sensor control. Designed for Ahmedabad's hot-dry climate, the system minimizes heat gain and glare while allowing controlled daylight and outward views. The movement of the modules creates a dynamic visual identity, aligning with the luxury experience of the 5-star hotel and enhancing environmental performance.

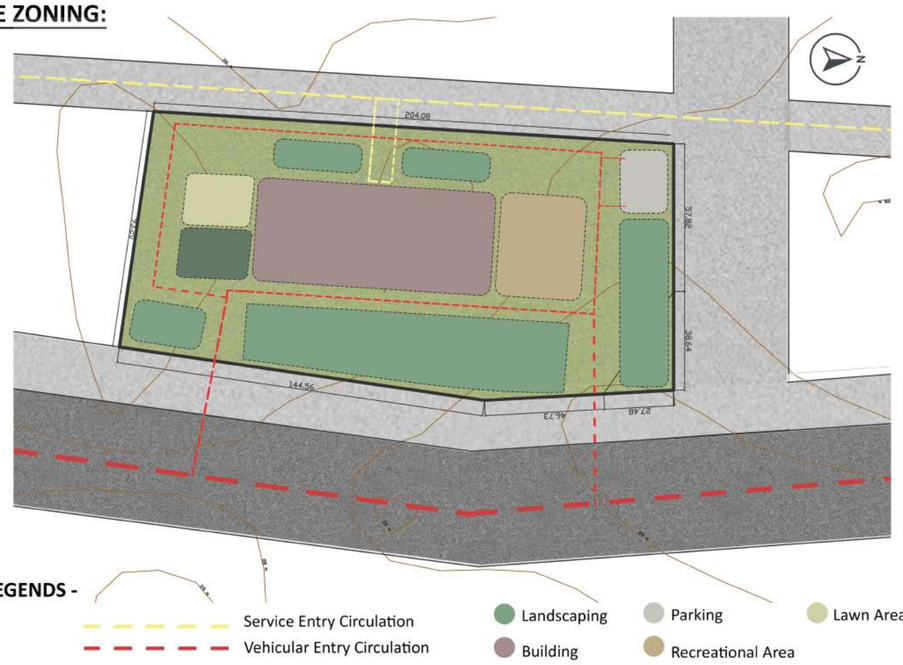



## DOUBLE SKIN GLASS FACADE:




The Double Skin Facade is designed to suit Sanand's hot–dry climate by reducing direct solar heat gain and improving thermal performance.A ventilated air cavity between the two glass layers allows hot air to escape, lowering cooling load and enhancing indoor comfort.Integrated shading elements reduce glare and control daylight penetration for a pleasant guest experience.This system supports energy efficiency, acoustic insulation, and aligns with sustainable 5-star hotel design standards.

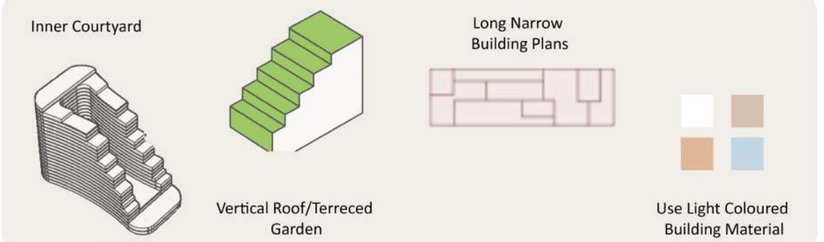
## SITE ZONING:



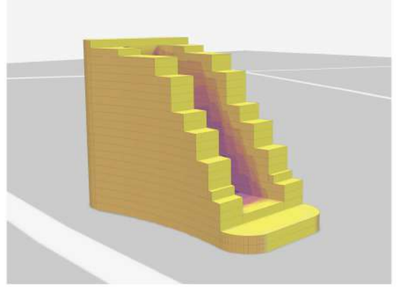

## VERTICAL ZONING:




## CLIMATE RESPONSIVE METHODS:




## STIMULATIONS:



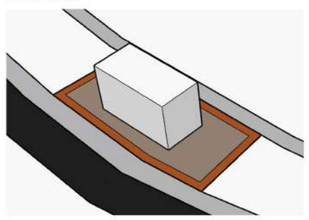
* The yellow zones represent maximum sun exposure (7–9+ hours), showing that the outer façades of the hotel receive sufficient daylight.

* The purple/blue areas (2–3 hours) indicate shaded zones, mostly in the central courtyard/void.



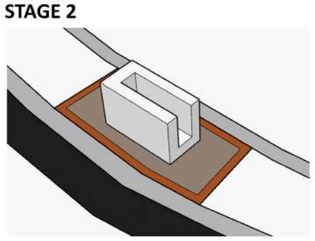

## FORM EVOLUTION:

**STAGE 1**



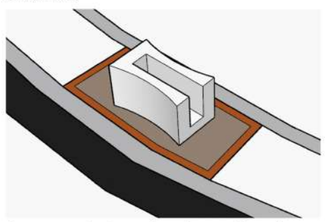
The cuboidal box covers 40% of the ground as mentioned in the RFP.

**STAGE 2**



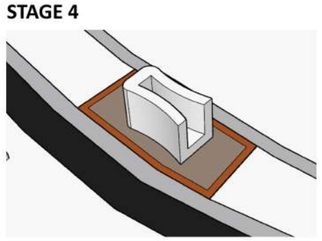
An internal void is introduced to create an interior courtyard space.

**STAGE 3**



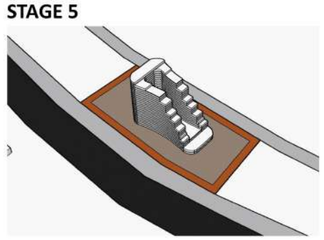
Curvature is introduced to soften the rigid form and open central space respond to site context and movement.

**STAGE 4**



The form is refined to enhance movement and architectural expression.

**STAGE 5**



The structure evolves into a stepped form with green roof design, integrating facade articulation and the hotel a modern and iconic character.

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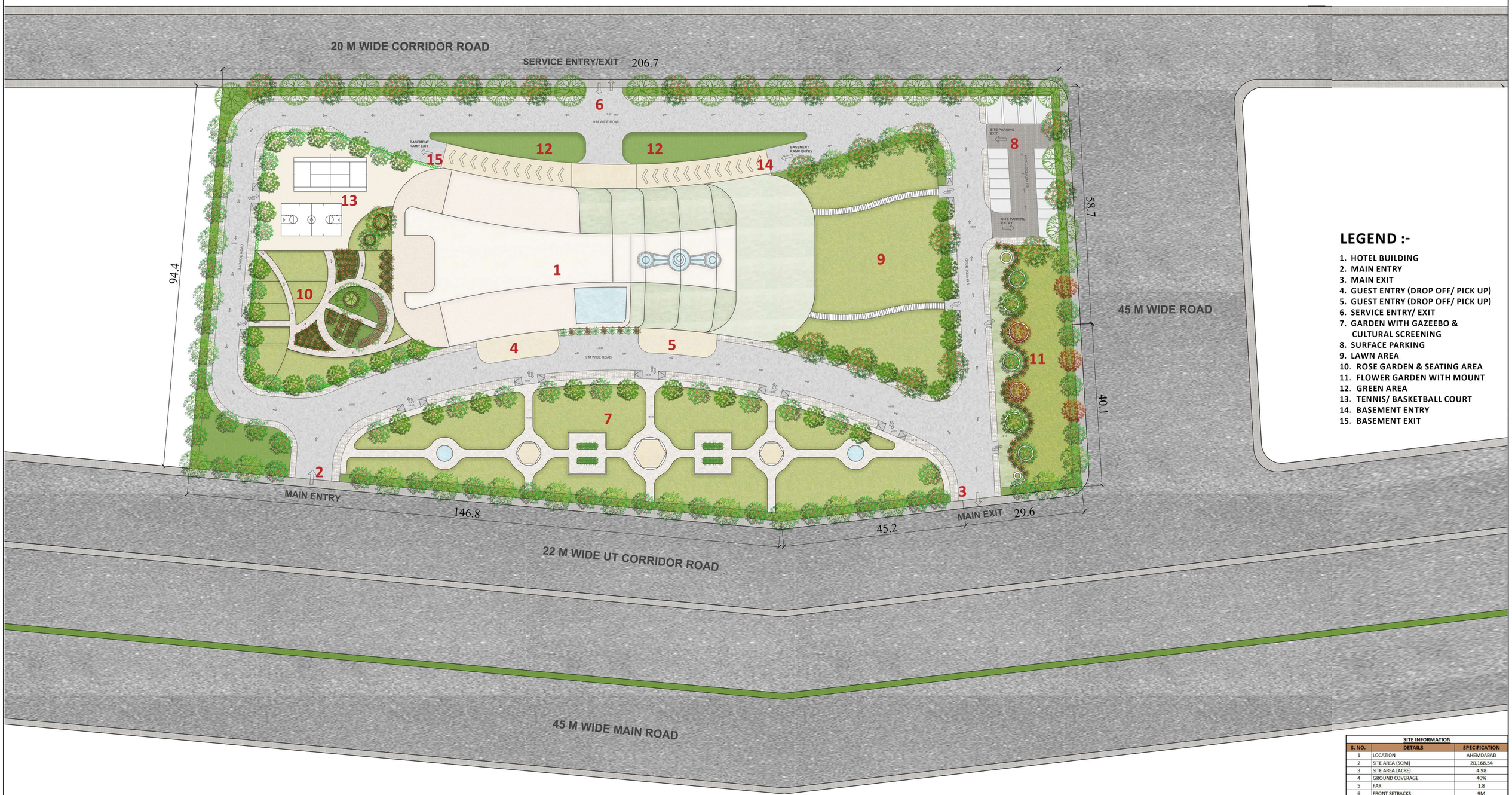



## LEGEND :-

1. HOTEL BUILDING
2. MAIN ENTRY
3. MAIN EXIT
4. GUEST ENTRY (DROP OFF/ PICK UP)
5. GUEST ENTRY (DROP OFF/ PICK UP)
6. SERVICE ENTRY/ EXIT
7. GARDEN WITH GAZEEBO & CULTURAL SCREENING
8. SURFACE PARKING
9. LAWN AREA
10. ROSE GARDEN & SEATING AREA
11. FLOWER GARDEN WITH MOUNT
12. GREEN AREA
13. TENNIS/ BASKETBALL COURT
14. BASEMENT ENTRY
15. BASEMENT EXIT

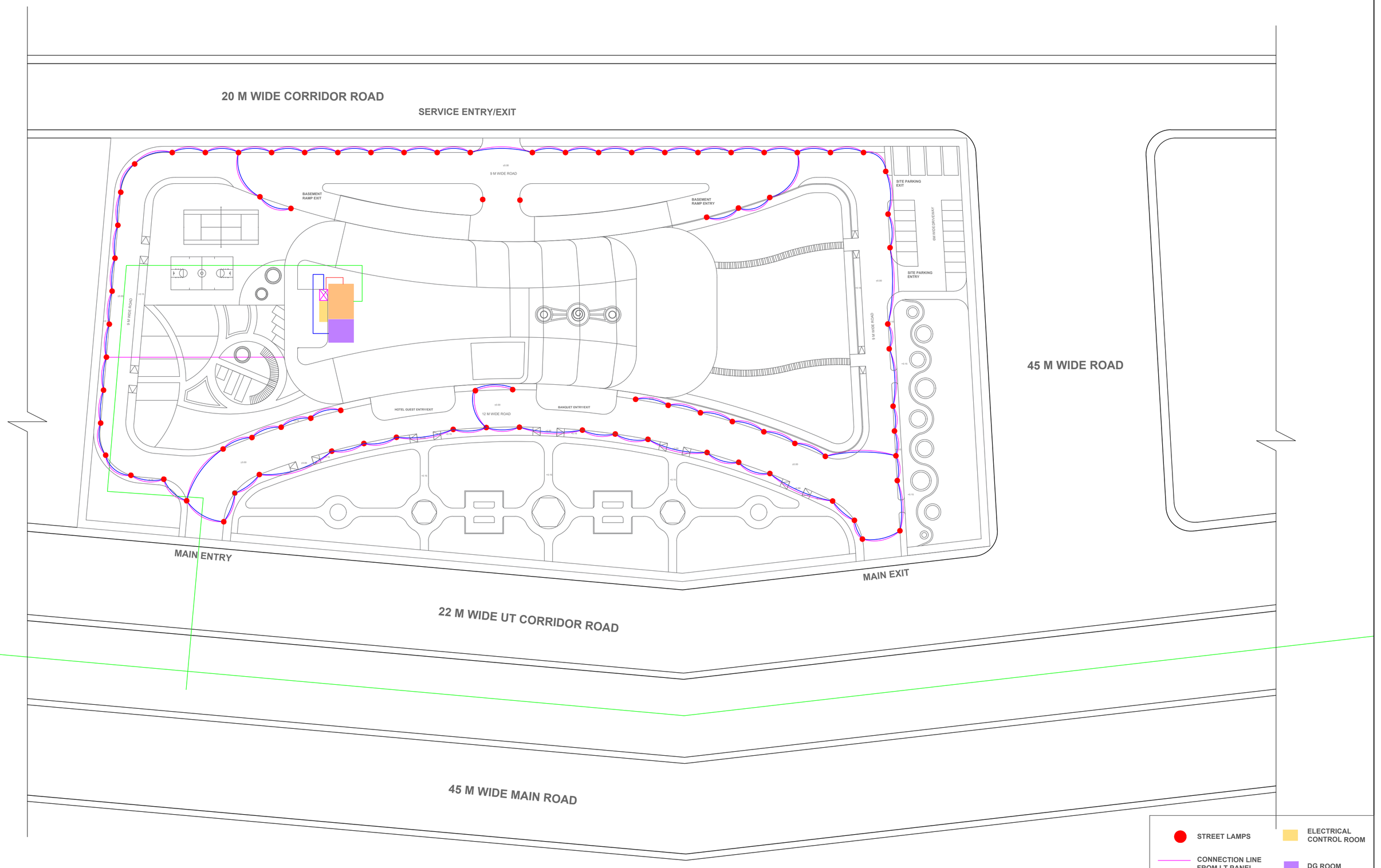
**SITE INFORMATION**

| S. NO. | DETAILS | SPECIFICATION |
|---|---|---|
| 1 | LOCATION | AHEMDABAD |
| 2 | SITE AREA (SQM) | 20,168.54 |
| 3 | SITE AREA (ACRE) | 4.98 |
| 4 | GROUND COVERAGE | 40% |
| 5 | FAR | 1.8 |
| 6 | FRONT SETBACKS | 9M |
| 7 | REAR & SIDE SETBACKS | 9M |
| 8 | BUILDING HEIGHT | ND |

**Built-Up Area and Building Floor Calculations**

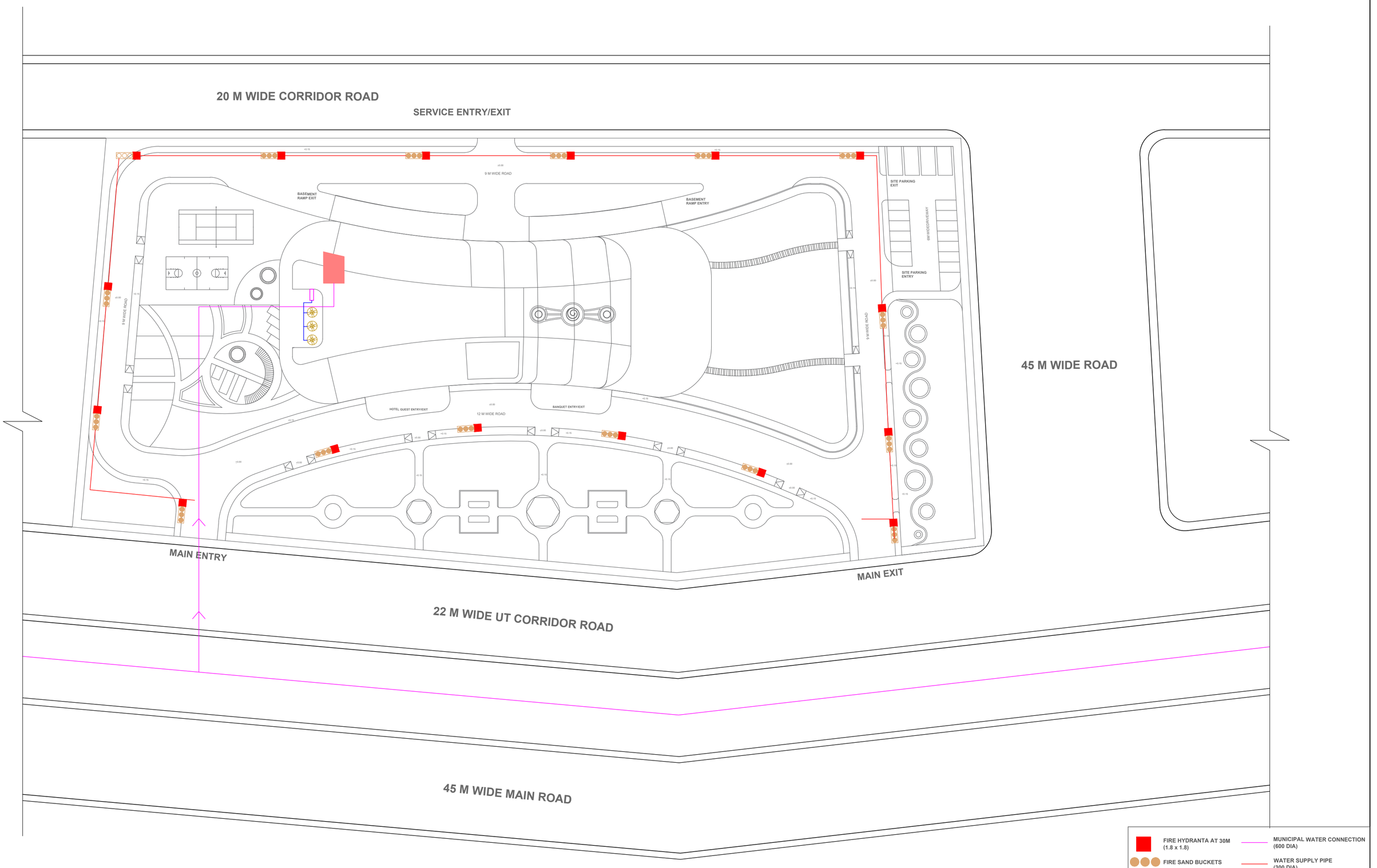
| S.No. | Site Area(Sqm) | Max GC(40%) | FAR | Max Built-Up Area (Sqm) | No. of Buildings |
|---|---|---|---|---|---|
| 1 | 20,168.54 | 8000 | 1.8 | 36000 | 1 |

| NORTH | PROJECT | LOCATION | DRAWING | DEALT BY | GUIDED BY | SCALE | SHEET NO. |
|---|---|---|---|---|---|---|---|
| | 5 STAR HOTEL, SANAND AHMEDABAD | LAND - GIDC PHASE 2 SANAND DISTRICT - AHMEDABAD AREA - 4.9 ACRES | SITE PLAN | SAMIKSHA VAVAL 211110018 9TH SEM THESIS | DR. MANMOHAN KAPSHE | 1:450 | 04 |




## Site Electrical Plan

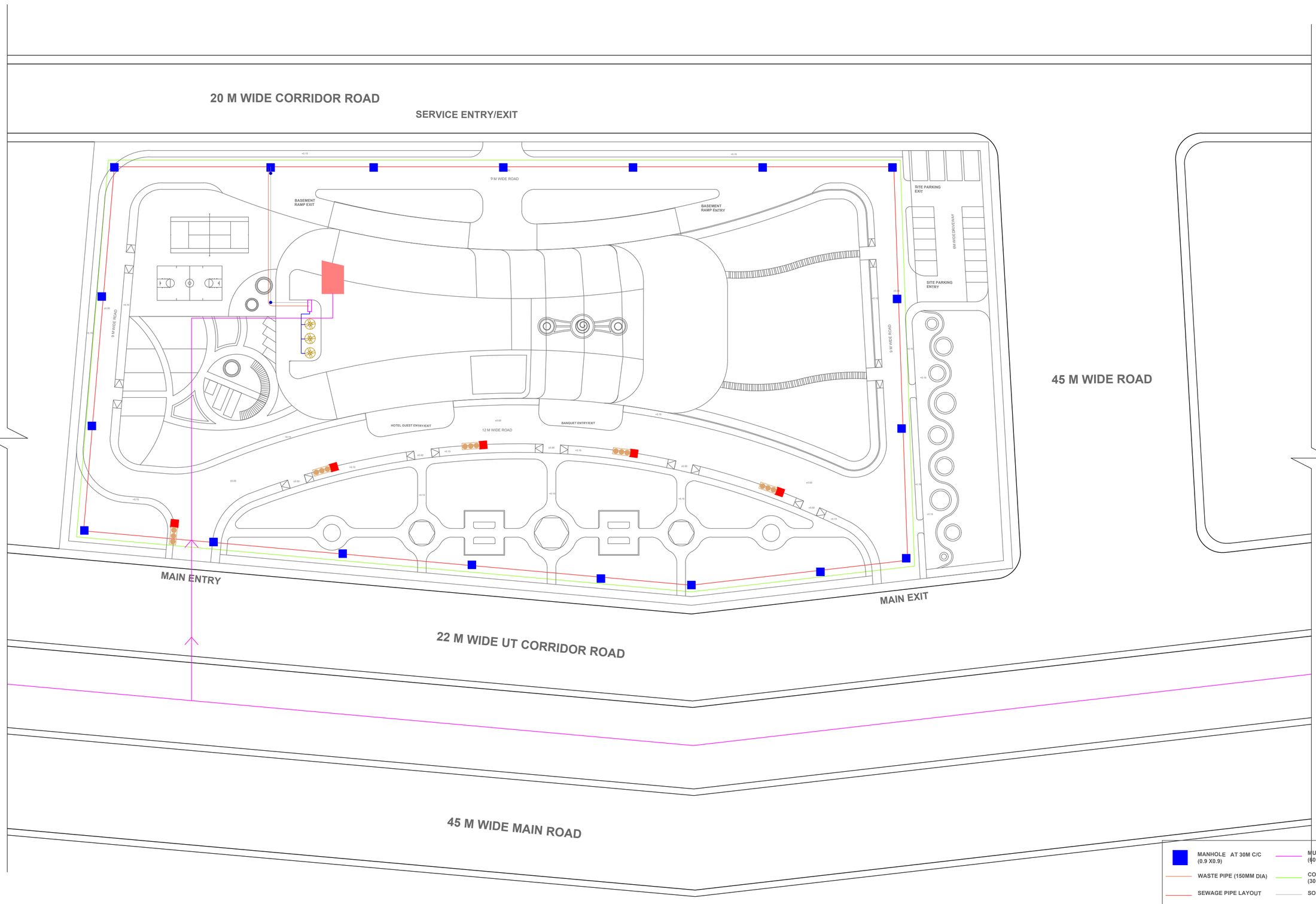
Scale - 1:600




## Site Fire Fighting Plan

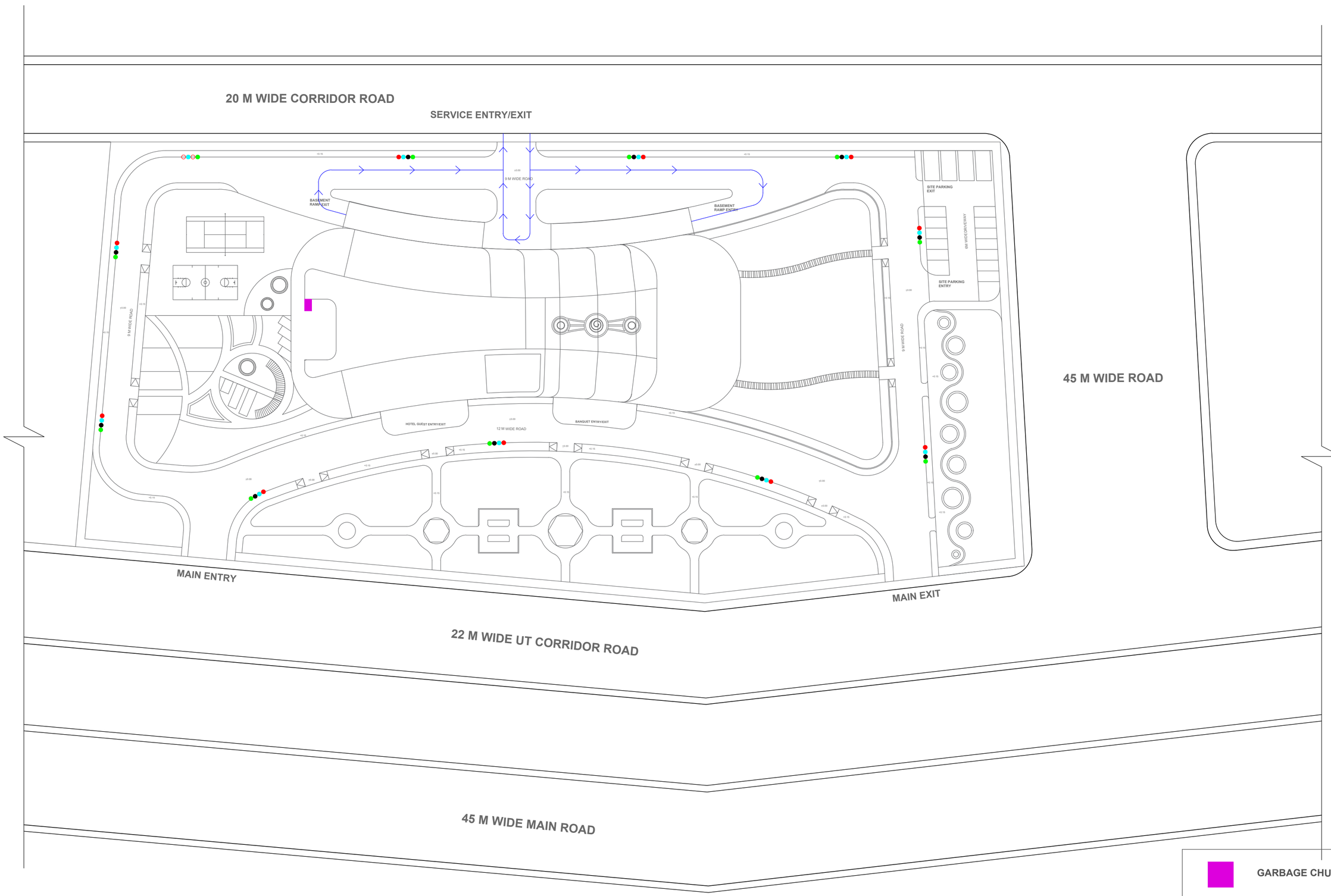
Scale - 1:600

| NORTH | PROJECT | LOCATION | DRAWING | GUIDED BY | SCALE | DEALT BY | SHEET NO. |
|---|---|---|---|---|---|---|---|
| N | 5 STAR HOTEL, SANAND AHEMDABAD | LAND - GIDC PHASE 2 SANAND DISTRICT - AHEMDABAD AREA - 4.9 ACRES | SITE SERVICES | DR. MANMOHAN KAPSHE | 1:600 | SAMIKSHA VAVAL 211110018 9TH SEM THESIS | 05 |




## Site Water Supply & Sanitation Plan

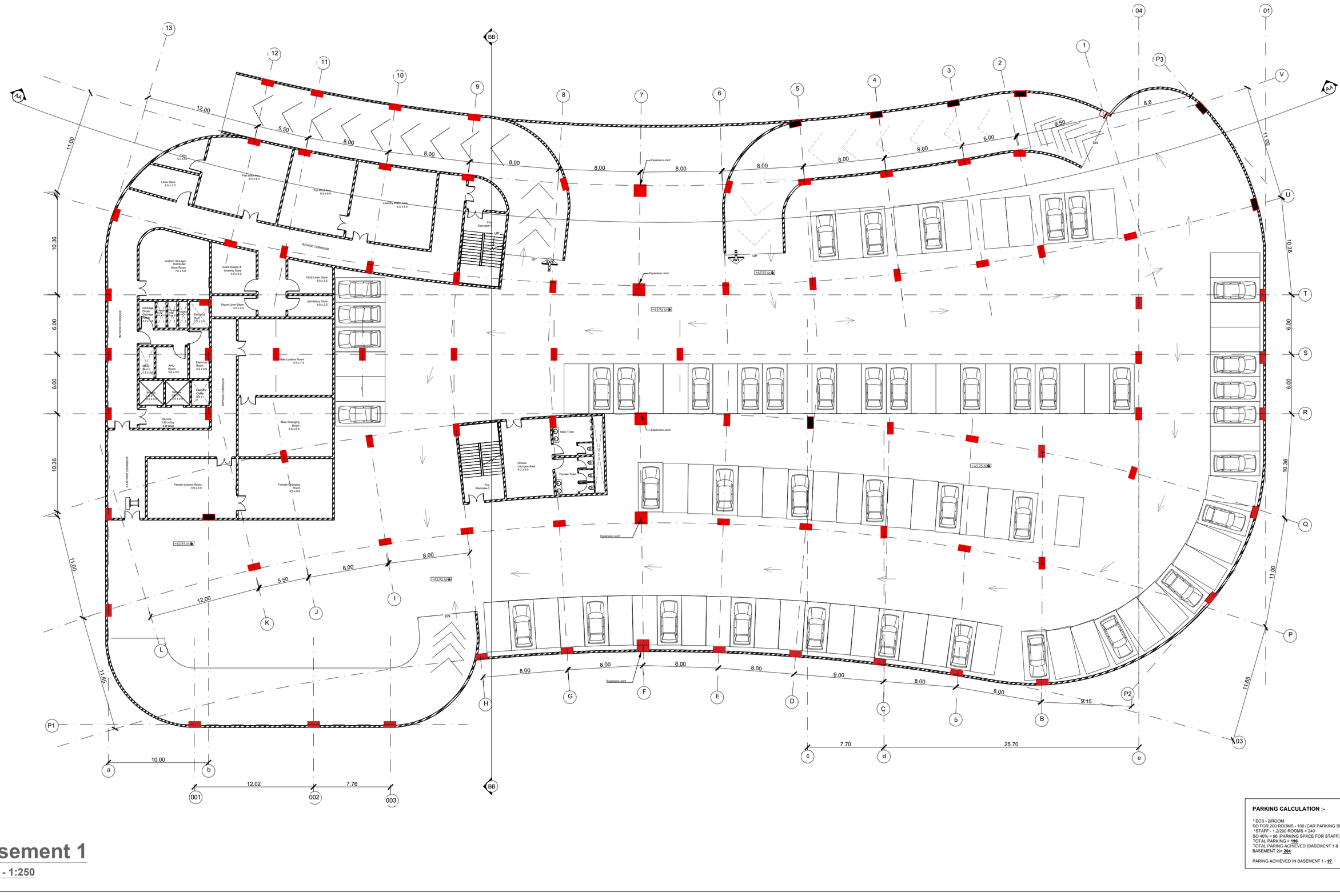
Scale - 1:600



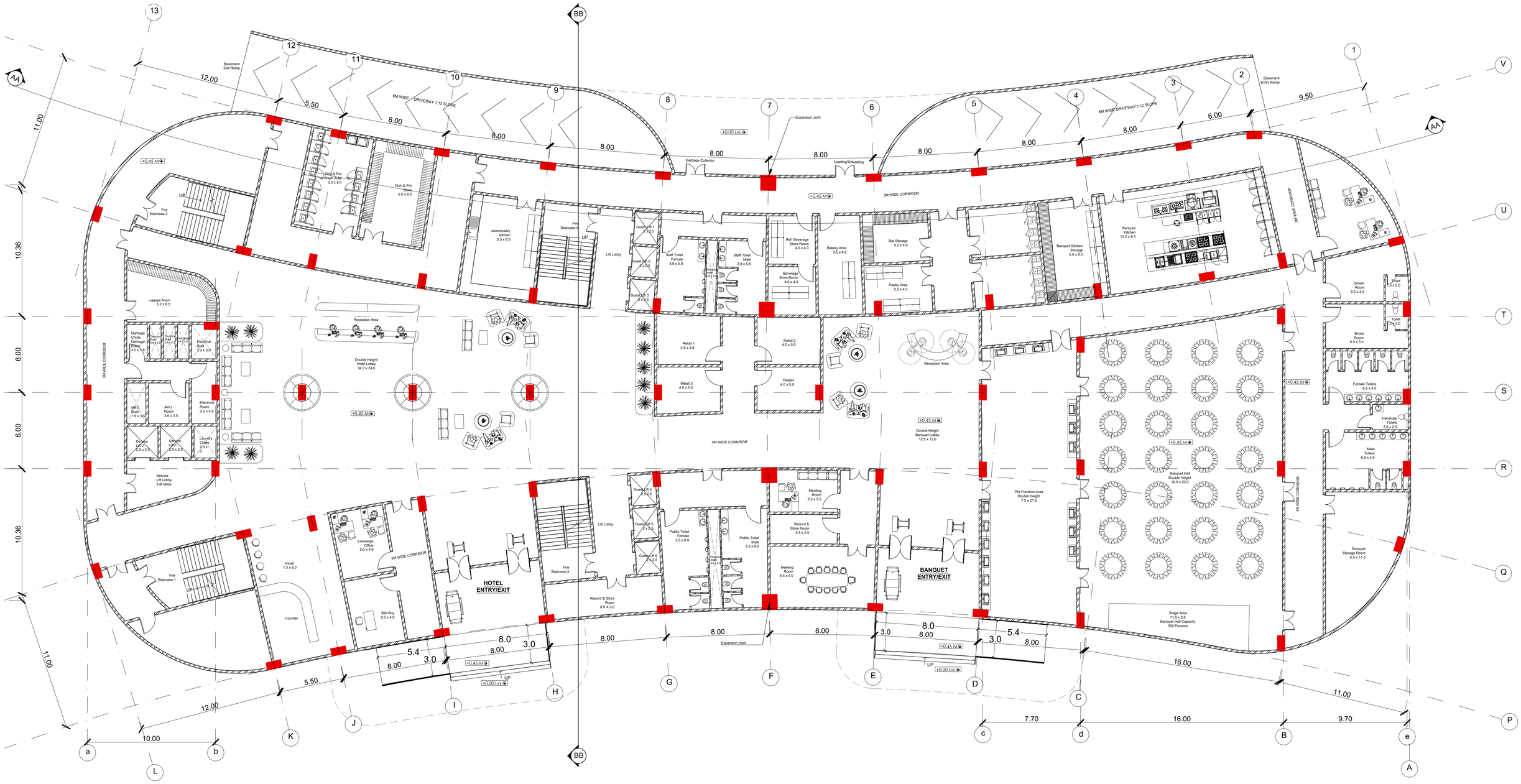

## Site Water Management Plan

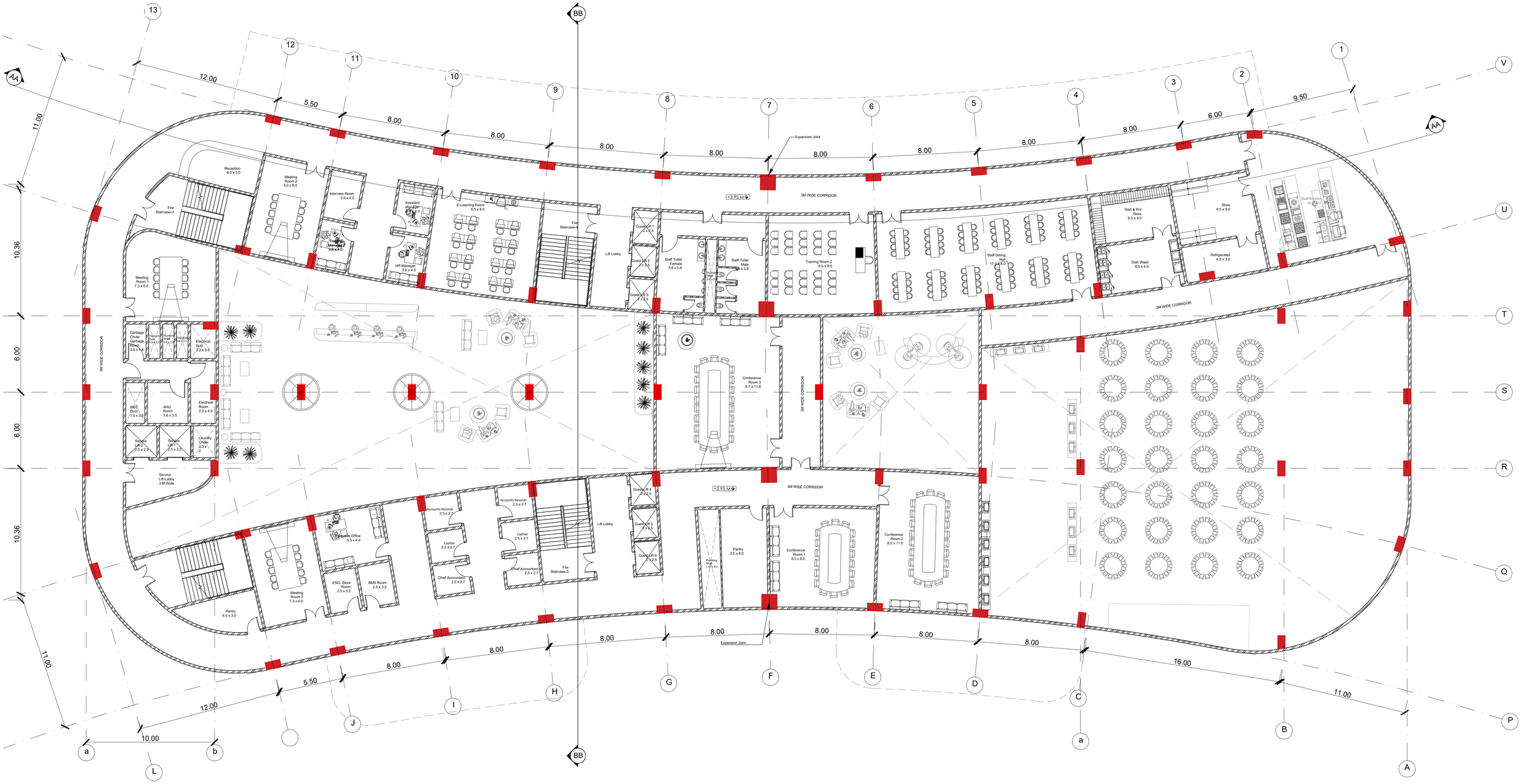
Scale - 1:600

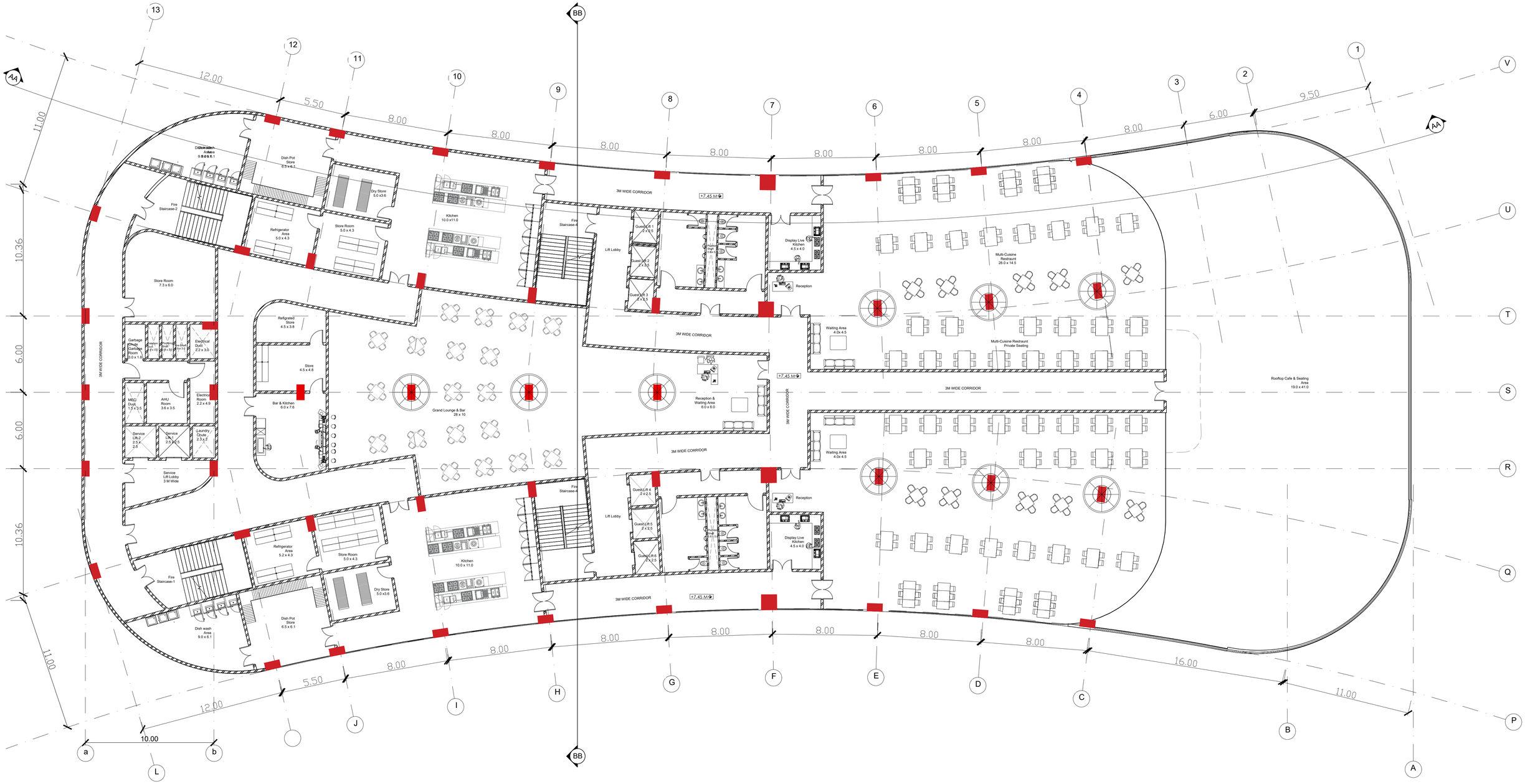
| NORTH | PROJECT | LOCATION | DRAWING | GUIDED BY | SCALE | DEALT BY | SHEET NO. |
|---|---|---|---|---|---|---|---|
| N | 5 STAR HOTEL, SANAND AHEMDABAD | LAND - GIDC PHASE 2 SANAND DISTRICT - AHEMDABAD AREA - 4.9 ACRES | SITE SERVICES | DR. MANMOHAN KAPSHE | 1:600 | SAMIKSHA VAVAL 211110018 9TH SEM THESIS | 06 |




| NORTH | PROJECT | LOCATION | DRAWING | GUIDED BY | SCALE | DEALT BY | SHEET NO. |
|---|---|---|---|---|---|---|---|
| N | 5 STAR HOTEL, SANAND AHEMDABAD | LAND - GIDC PHASE 2 SANAND DISTRICT - AHEMDABAD AREA - 4.9 ACRES | BASEMENT PLANS | DR. MANMOHAN KAPSHE | 1:250 | SAMIKSHA VAVAL 211110018 9TH SEM THESIS | 07 |


Basement Exit Ramp
Basement Entry Ramp
6M WIDE DRIVEWAY 1:12 SLOPE
Expansion Joint
Garbage Collector
Loading/Unloading
+0.00 Lvl
+0.45 M
3M WIDE CORRIDOR
4M WIDE CORRIDOR
Fire Staircase-4
Fire Staircase-2
Fire Staircase-1
Fire Staircase-3
UP
Dish & Pot Wash Area 5.5 x 8.0
Dish & Pot Store 5.5 x 8.0
commissary kitchen 5.5 x 8.0
Lift Lobby
Guest Lift 1 2.4 x 2.5
Guest Lift 2 2.4 x 2.5
Guest Lift 3 2.4 x 2.5
Guest Lift 4 2.4 x 2.5
Guest Lift 5 2.4 x 2.5
Guest Lift 6 2.4 x 2.5
Staff Toilet Female 3.8 x 5.8
Staff Toilet Male 3.8 x 5.8
Ref. Beverage Store Room 4.0 x 4.0
Beverage Store Room 4.0 x 4.0
Bakery Area 3.5 x 8.0
Bar Storage 5.2 x 4.0
Pastry Area 5.2 x 4.0
Banquet Kitchen 13.0 x 8.0
Banquet Kitchen Storage 5.0 x 8.0
Groom Room 6.5 x 3.5
Toilet 1.5 x 2.0
Toilet 1.5 x 2.0
Bridal Room 6.5 x 3.5
Female Toilets 6.5 x 4.0
Handicap Toilets 3.0 x 2.0
Male Toilets 6.5 x 4.0
Banquet Storage Room 6.5 x 11.5
Luggage Room 5.2 x 6.5
Garbage Chute Garbage Room 3.0 x 3.5
Duct 1.5 x 1.5
Duct 1.5 x 1.5
Duct 1.5 x 1.5
Electrical Duct 2.2 x 3.5
MEP Duct 1.5 x 3.5
AHU Room 3.6 x 3.5
Electrical Room 2.2 x 4.9
Service Lift 2 2.5 x 2.5
Service Lift 1 2.5 x 2.5
Laundry Chute 2.5 x 2.5
Service Lift Lobby 3 M Wide
Reception Area
Double Height Hotel Lobby 34.0 x 24.0
Retail 1 4.0 x 5.0
Retail 2 4.0 x 5.0
Retail 3 4.0 x 5.0
Retail4 4.0 x 5.0
Reception Area
Double Height Banquet Lobby 12.5 x 12.0
Pre Function Area Double Height 7.5 x 21.0
Banquet Hall Double Height 16.0 x 22.0
Stage Area 11.0 x 3.5 Banquet Hall Capacity 350 Persons
Meeting Room 5.5 x 3.5
Record & Store Room 5.5 x 2.5
Meeting Room 8.5 x 5.0
Record & Store Room 8.5 X 3.0
Public Toilet Female 3.5 x 8.0
Public Toilet Male 3.5 x 8.0
Concierge Office 5.0 x 4.0
Bell Boy 5.0 x 4.0
Counter
Kiosk 7.3 x 6.0
HOTEL ENTRY/EXIT
BANQUET ENTRY/EXIT
12.00
5.50
8.00
8.00
8.00


Reception 6.0 x 3.0
Meeting Room 2 5.0 x 8.0
Interview Room 2.6 x 4.0
Assistant Manager 2.6 x 4.0
E-Learning Room 8.5 x 8.0
Fire Staircase-4
Lift Lobby
Guest W.R.1 2.4 X 2.5
Guest W.R.2 2.4 X 2.5
Guest W.R.3 2.4 X 2.5
Staff Toilet Female 3.8 x 5.8
Staff Toilet Male 3.8 x 5.8
Pump Room 1.4 x 1.5
Training Room 2 8.5 x 8.0
Staff Dining Hall 17.0 x 8.0
Dish & Pot Store 6.5 x 4.0
Store 6.5 x 5.0
Dish Wash 6.5 x 4.0
Refrigerated 6.5 x 3.0
Staff kitchen 10.0 x 8.0
3M WIDE CORRIDOR
Expansion Joint
+3.95 M
Fire Staircase-1
Meeting Room 1 7.3 x 6.0
Training Manager 2.6 x 4.0
HR Manager 2.6 x 4.0
Garbage Chute Garbage Room 3.0 x 3.0
Duct 1.5 x 3.0
Duct 1.5 x 3.0
Electrical Duct 2.2 x 3.0
M/E Duct \ 1.5 x 3.0
AHU Room 3.6 x 3.5
Electrical Room 2.2 x 4.9
Service Lift-2 2.5 x 2.5
Service Lift-1 2.5 x 2.5
Laundry Chute 2.5 x 2
Service Lift Lobby 3 M Wide
Conference Room 3 9.7 x 11.8
Guest W.R.4 2.4 X 2.5
Guest W.R.5 2.4 X 2.5
Guest W.R.6 2.4 X 2.5
Pantry 3.5 x 8.0
Pumping Shaft 1.45 x 4.0
Conference Room 1 8.5 x 8.0
Conference Room 2 8.5 x 11.0
Pantry 6.0 x 3.0
Meeting Room 2 7.3 x 6.0
Accounts Office 5.5 x 4.4
ENG. Store Room 2.5 x 3.2
BMS Room 2.5 x 3.2
Accounts Records 2.5 x 2.7
Cashier 2.5 x 2.7
Chief Accountant 2.5 x 2.7
Fire Staircase-3
Lift Lobby
Accounts Records 2.5 x 2.7
Cashier 2.5 x 2.7
Chief Accountant 2.5 x 2.7
Fire Staircase-2
11.00
10.36
6.00
10.36
11.00
12.00
5.50
8.00
8.00
8.00

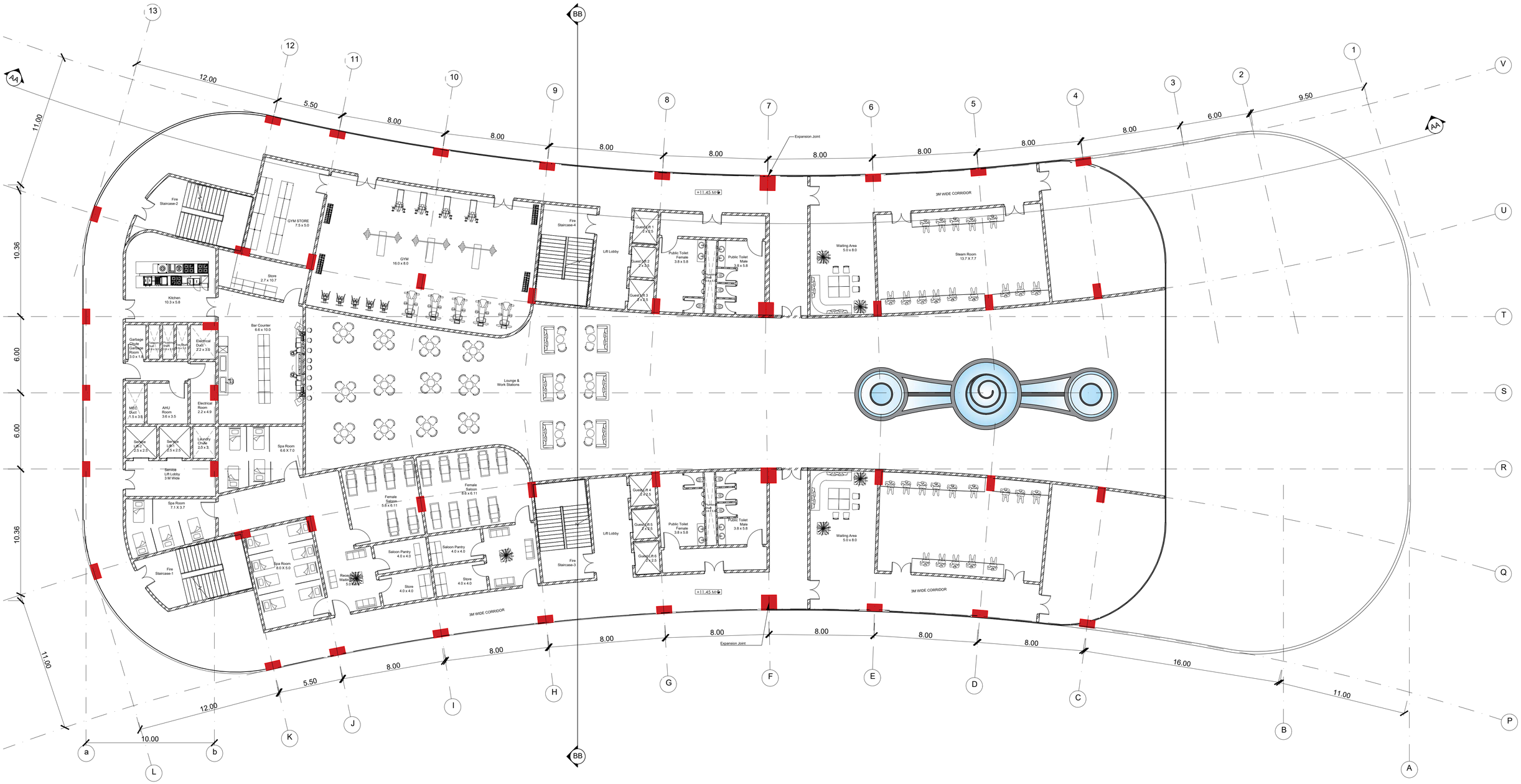



## Second Floor Plan

Scale - 1:150

Floor Area - 3670 Sqm

| NORTH | PROJECT | LOCATION | DRAWING | DEALT BY | GUIDED BY | SCALE | SHEET NO. |
|---|---|---|---|---|---|---|---|
| | 5 STAR HOTEL, SANAND AHEMDABAD | LAND - GIDC PHASE 2 SANAND DISTRICT - AHEMDABAD AREA - 4.9 ACRES | SECOND FLOOR PLAN | SAMIKSHA VAVAL 211110018 9TH SEM THESIS | DR. MANMOHAN KAPSHE | 1:150 | 10 |

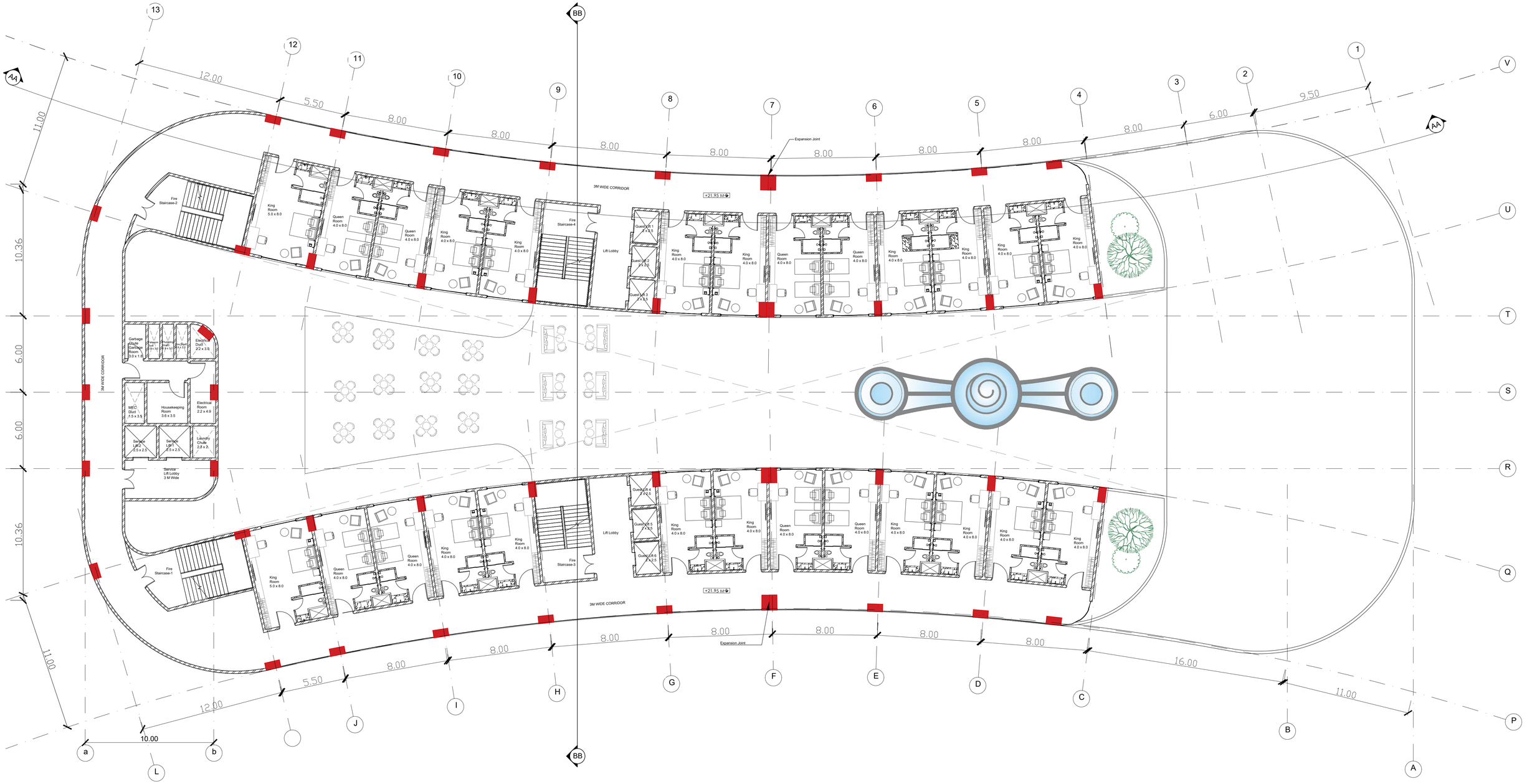



## Third Floor Plan

Scale - 1:150

Floor Area - 3670 Sqm

| NORTH | PROJECT | LOCATION | DRAWING | DEALT BY | GUIDED BY | SCALE | SHEET NO. |
|---|---|---|---|---|---|---|---|
| | 5 STAR HOTEL, SANAND AHEMDABAD | LAND - GIDC PHASE 2 SANAND DISTRICT - AHEMDABAD AREA - 4.9 ACRES | THIRD FLOOR PLAN | SAMIKSHA VAVAL 211110018 9TH SEM THESIS | DR. MANMOHAN KAPSHE | 1:150 | 11 |

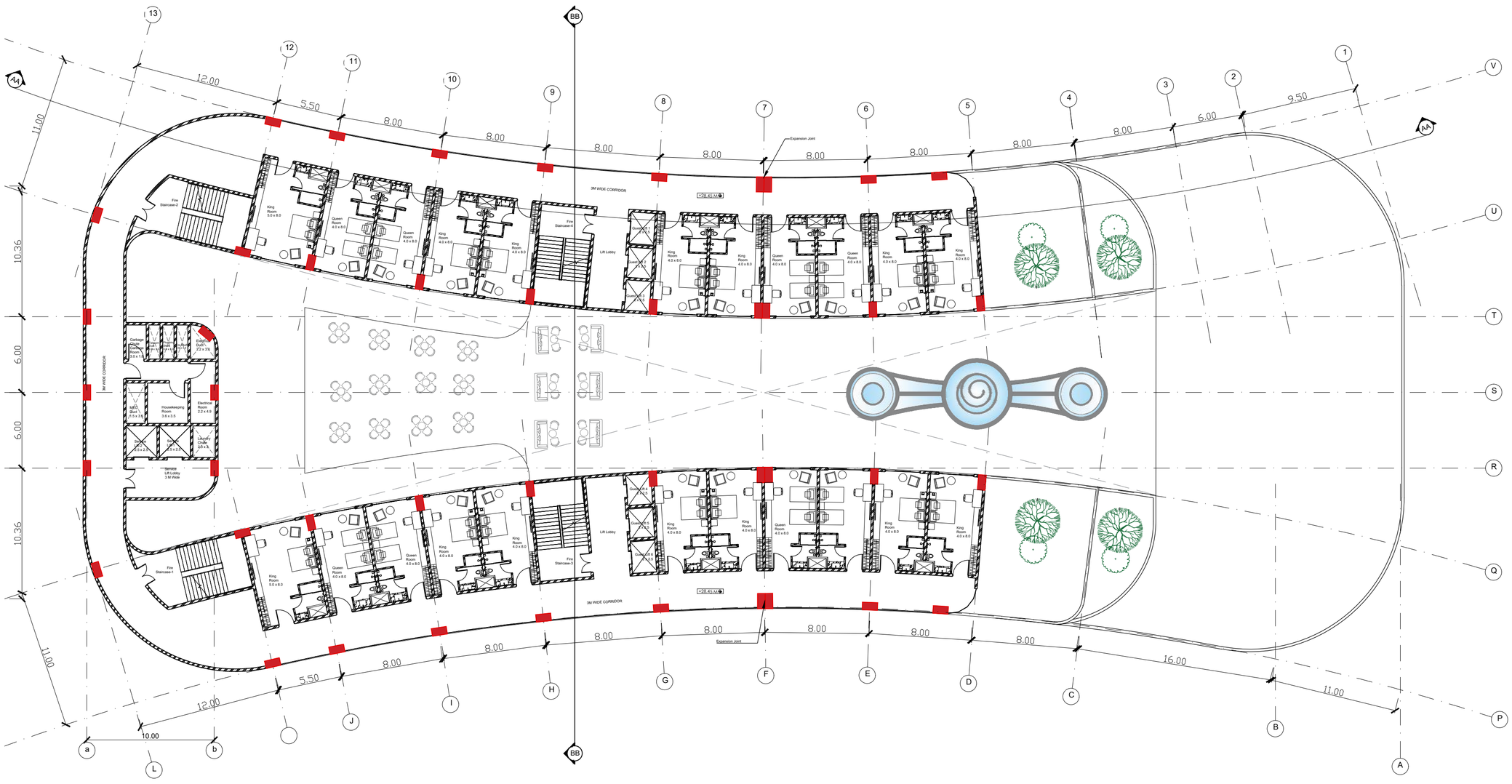


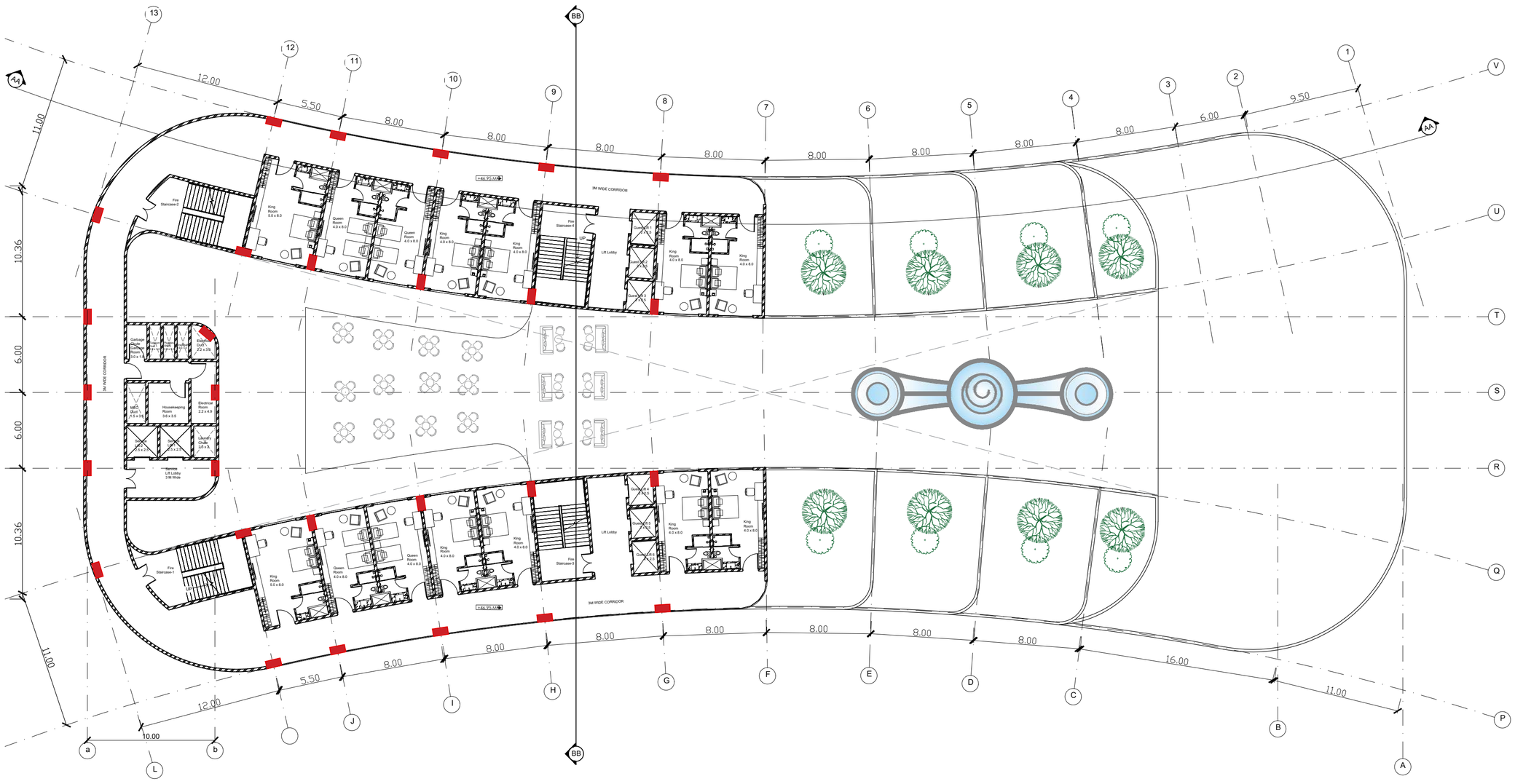

## 5th to 7th Floor Plan

Scale - 1:150

Floor Area - 3670 Sqm

| NORTH | PROJECT | LOCATION | DRAWING | DEALT BY | GUIDED BY | SCALE | SHEET NO. |
|---|---|---|---|---|---|---|---|
| | 5 STAR HOTEL, SANAND AHEMDABAD | LAND - GIDC PHASE 2 SANAND DISTRICT - AHEMDABAD AREA - 4.9 ACRES | GUEST FLOOR PLAN | SAMIKSHA VAVAL 211110018 9TH SEM THESIS | DR. MANMOHAN KAPSHE | 1:150 | 12 |


13
12
11
10
9
8
7
6
5
4
3
2
1
V
U
T
S
R
Q
P
A
B
C
D
E
F
G
H
I
J
L
a
b
AA
BB
12.00
5.50
8.00
8.00
8.00
8.00
8.00
8.00
8.00
8.00
8.00
6.00
9.50
11.00
10.36
6.00
6.00
10.36
11.00
12.00
5.50
8.00
8.00
8.00
8.00
8.00
8.00
8.00
8.00
16.00
11.00
10.00
Expansion Joint
3M WIDE CORRIDOR
+28.45 MT
Fire Staircase-2
Fire Staircase-4
Fire Staircase-1
Fire Staircase-3
Lift Lobby
Service Lift Lobby 3 M Wide
Garbage Disposal Room 3.0 x 1.5
Toilet 1.5 x 1.5
Toilet 1.5 x 1.5
Toilet 1.5


13
12
11
10
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8
7
6
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4
3
2
1
BB
AA
V
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H
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E
D
C
B
A
a
b
12.00
5.50
8.00
8.00
8.00
8.00
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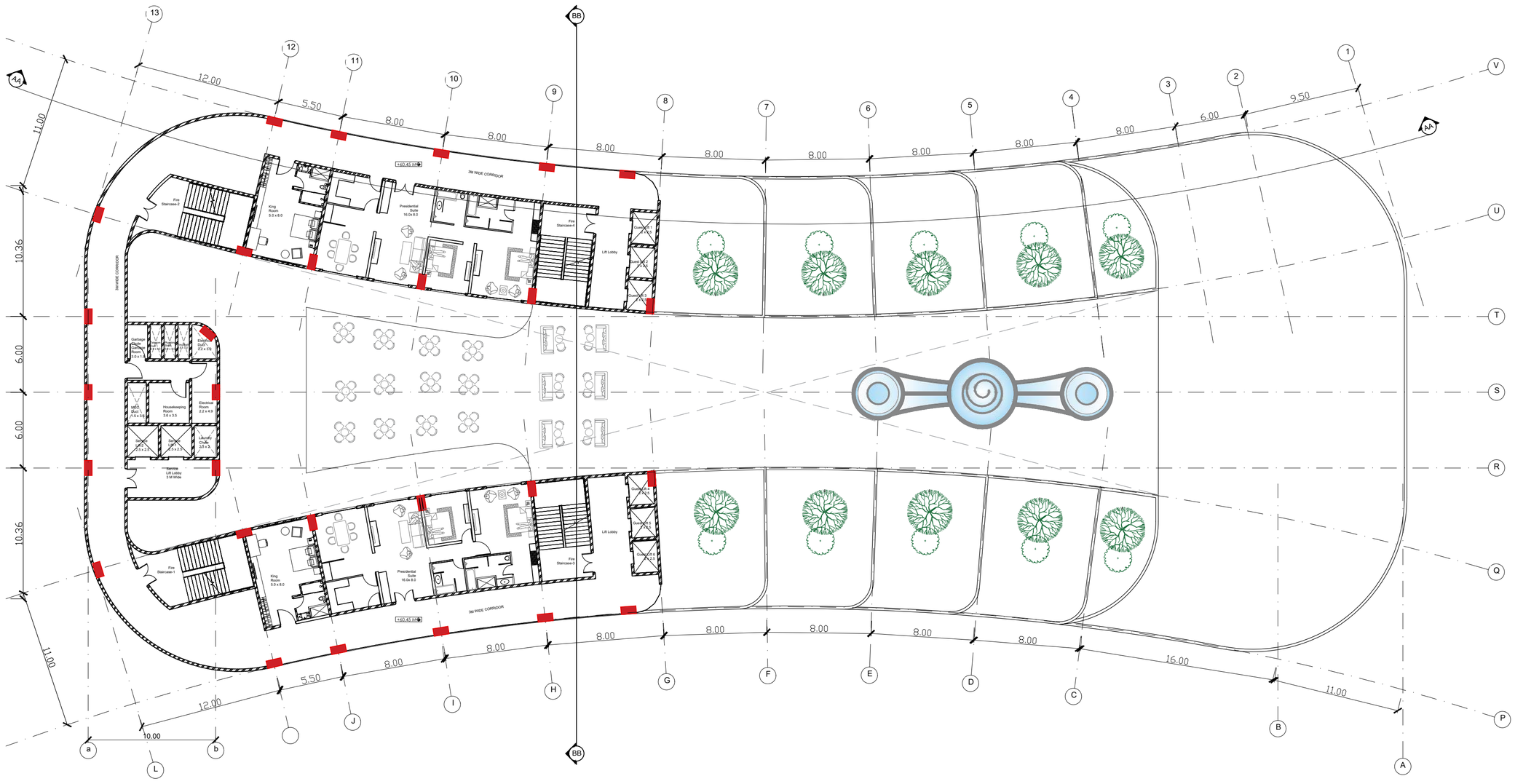
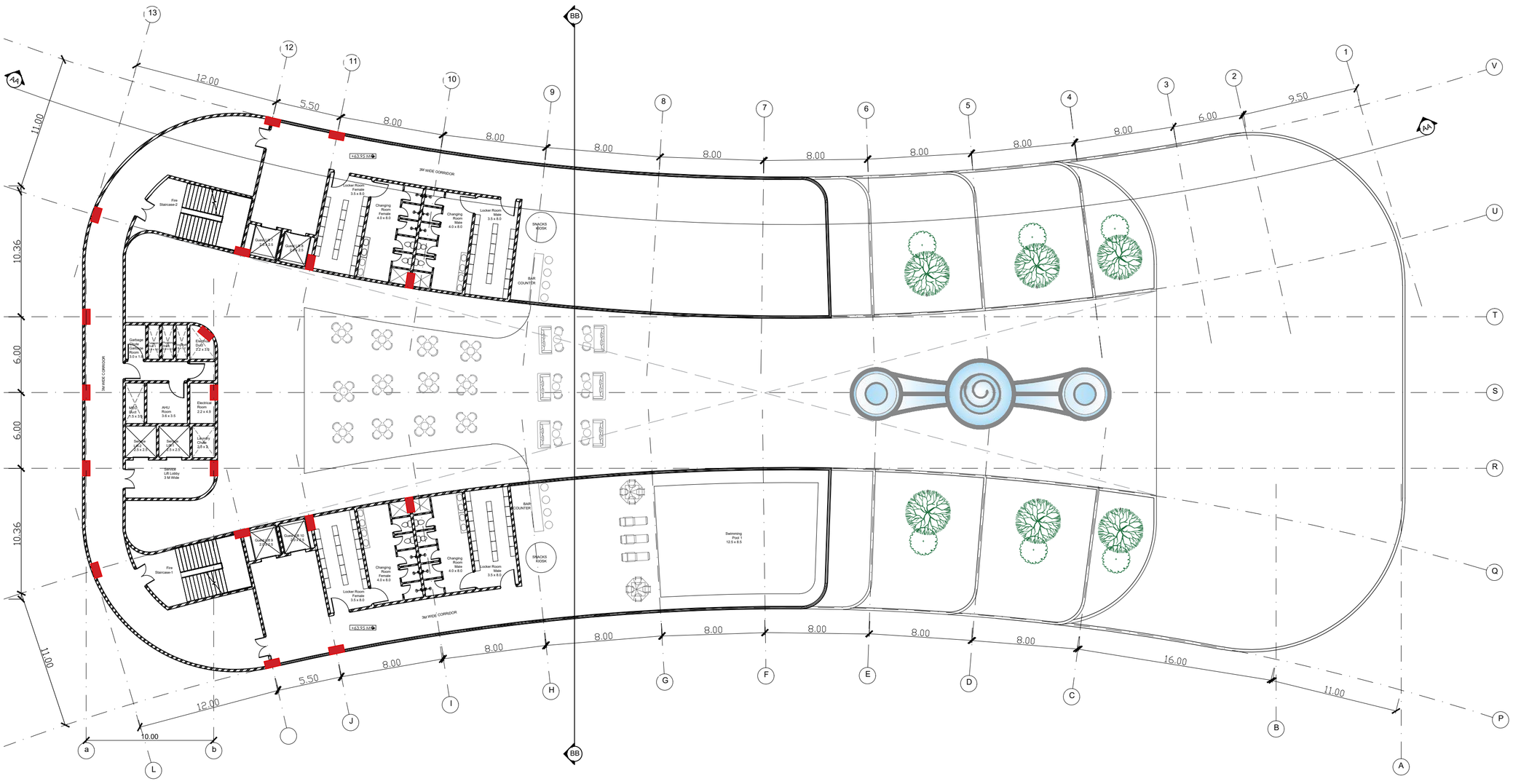
8.00
8.00
8.00
8.00
6.00
9.50
11.00
10.36
6.00
6.00
10.36
11.00
16.00
11.00
10.00
3M WIDE CORRIDOR
+44.95 M
Fire Staircase-2
Fire Staircase-4
Fire Staircase-1
Fire Staircase-3
Lift Lobby
Service Lift Lobby 3 M Wide
King Room 5.0 x 8.0
Queen Room 4.0 x 8.0
King Room 4.0 x 8.0
Garbage Chute Room 3.0 x 3.5
Housekeeping Room 3.6 x 3.5
Electrical Room 2.2 x 4.9
Laundry Chute 2.0 x 3
Deluxe Suite 8.0 x 8.0
Garbage Chute 2.2 x 3.5
MEP Shaft 2.5 x 16
Duct 2.5 x 2.5
Duct 2.5 x 2.5
Duct 2.5 x 2.5




## 17th Floor Plan

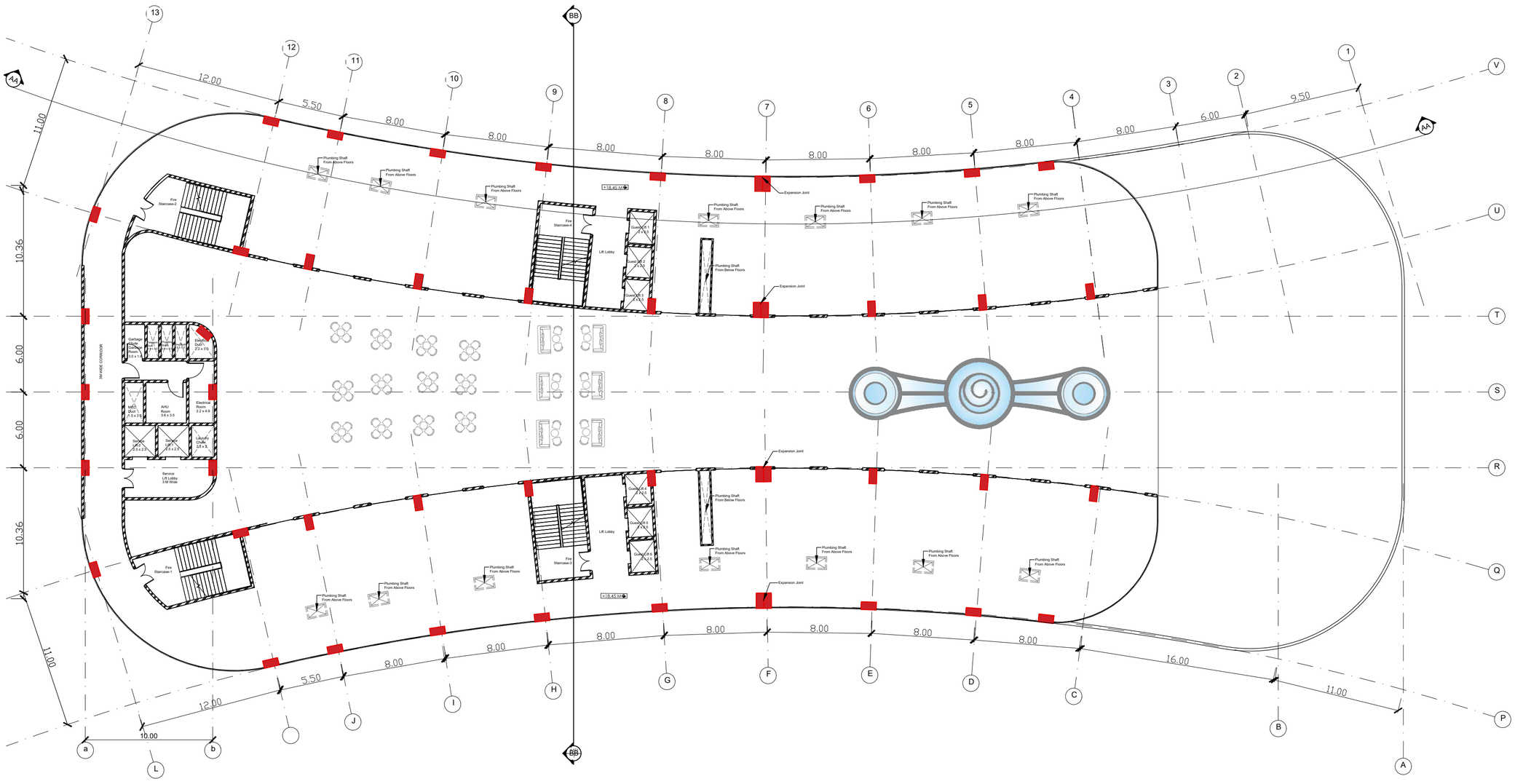
Scale - 1:250



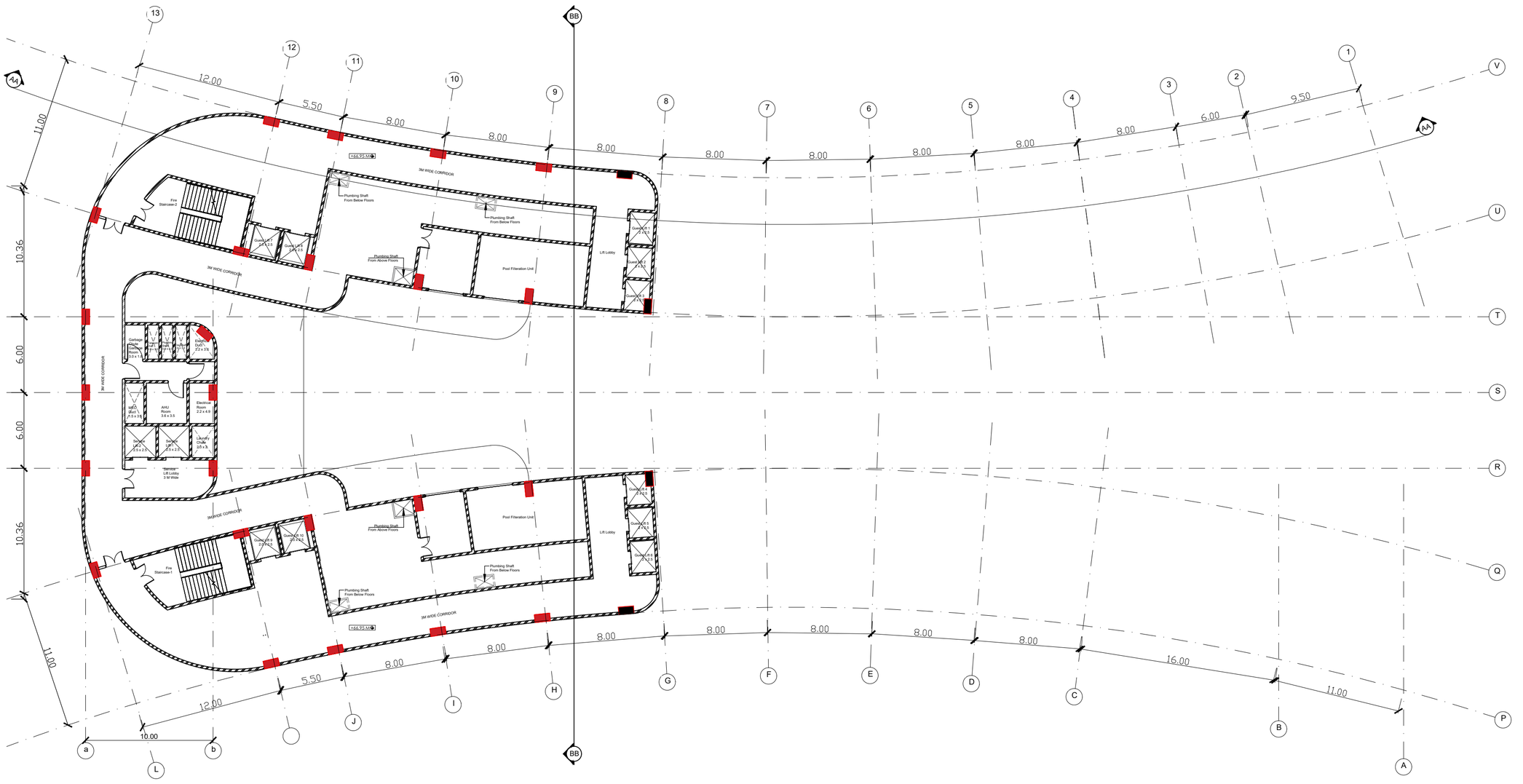

## Terrace Floor Plan

Scale - 1:250

| NORTH | PROJECT | LOCATION | DRAWING | GUIDED BY | SCALE | DEALT BY | SHEET NO. |
|---|---|---|---|---|---|---|---|
| N | 5 STAR HOTEL, SANAND AHEMDABAD | LAND - GIDC PHASE 2 SANAND DISTRICT - AHEMDABAD AREA - 4.9 ACRES | GUEST FLOOR PLANS | DR. MANMOHAN KAPSHE | 1:250 | SAMIKSHA VAVAL 211110018 9TH SEM THESIS | 15 |

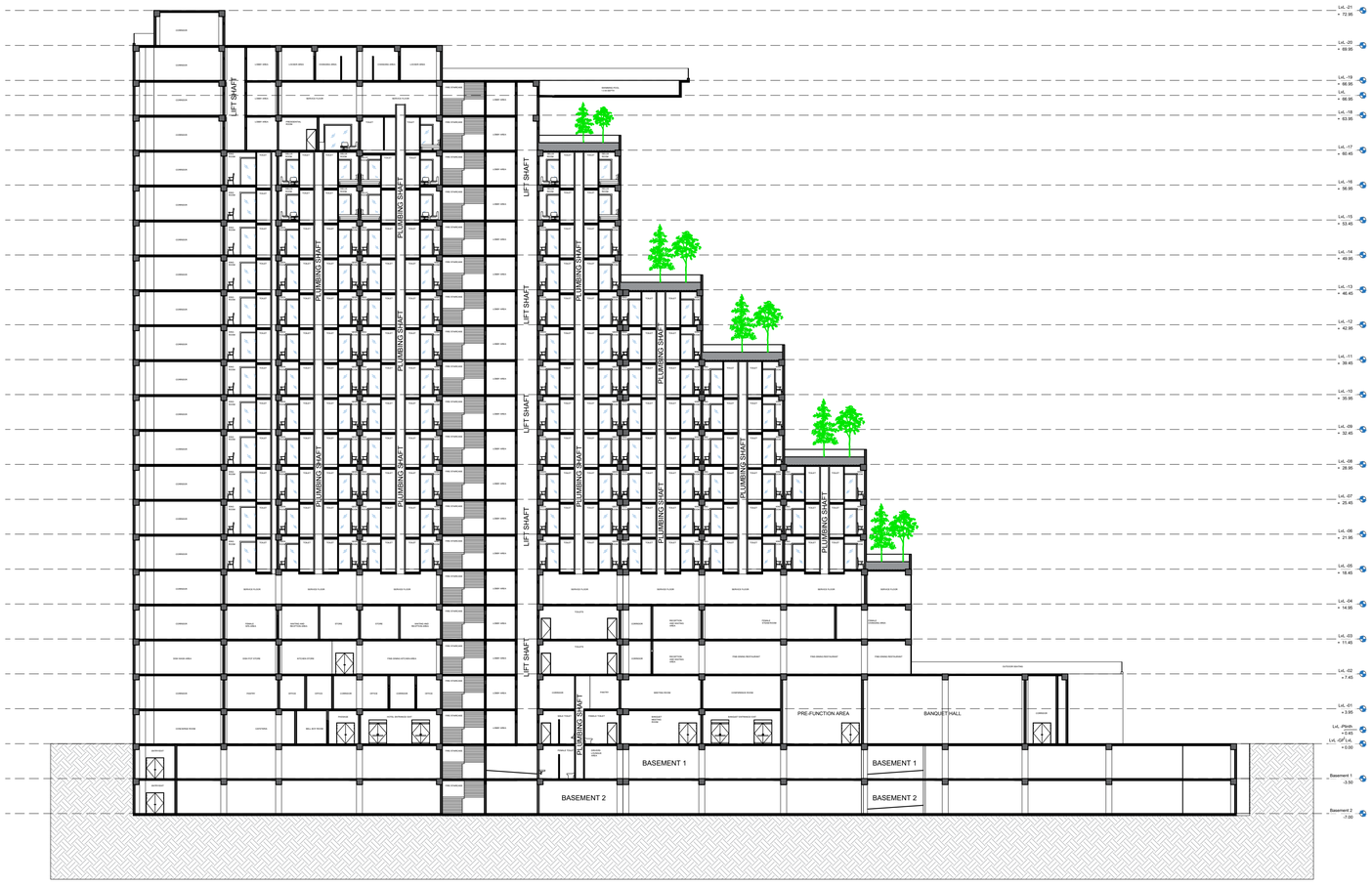



## Below Guest Floors
## 4th Floor Plan
**Scale - 1:250**

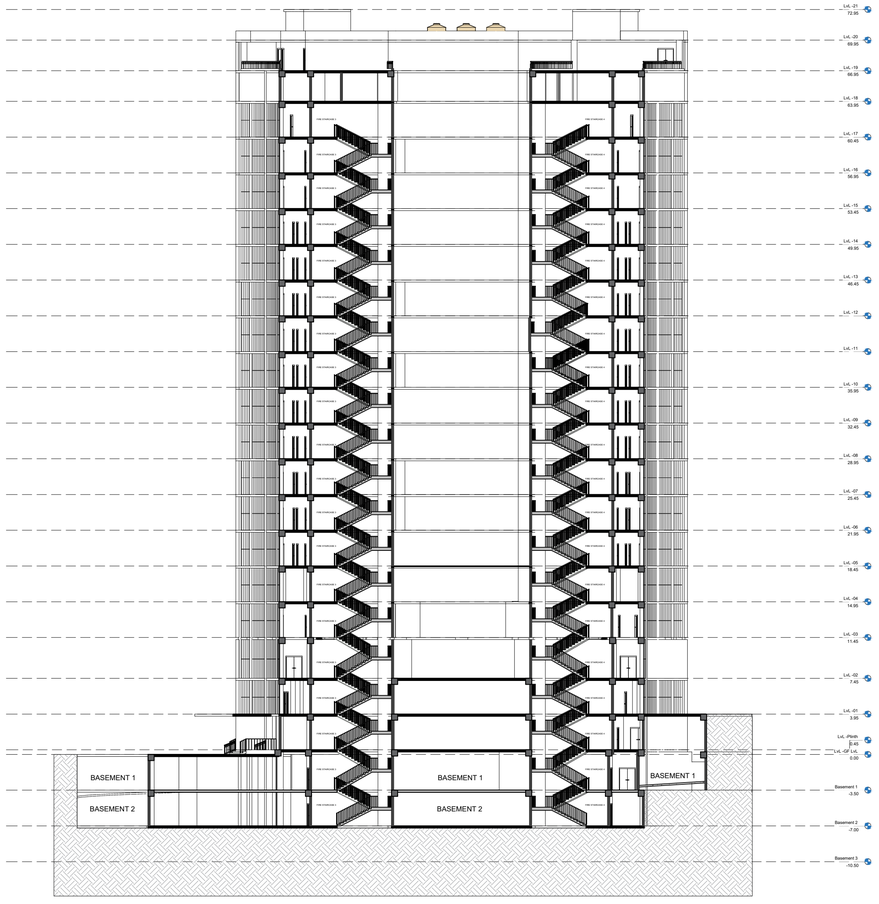



## Below Terrace
## 18th Floor Plan
**Scale - 1:250**

| NORTH | PROJECT | LOCATION | DRAWING | GUIDED BY | SCALE | DEALT BY | SHEET NO. |
|---|---|---|---|---|---|---|---|
| N | 5 STAR HOTEL, SANAND AHEMDABAD | LAND - GIDC PHASE 2 SANAND DISTRICT - AHEMDABAD AREA - 4.9 ACRES | SERVICE FLOOR PLANS | DR. MANMOHAN KAPSHE | 1:250 | SAMIKSHA VAVAL 211110018 9TH SEM THESIS | 16 |

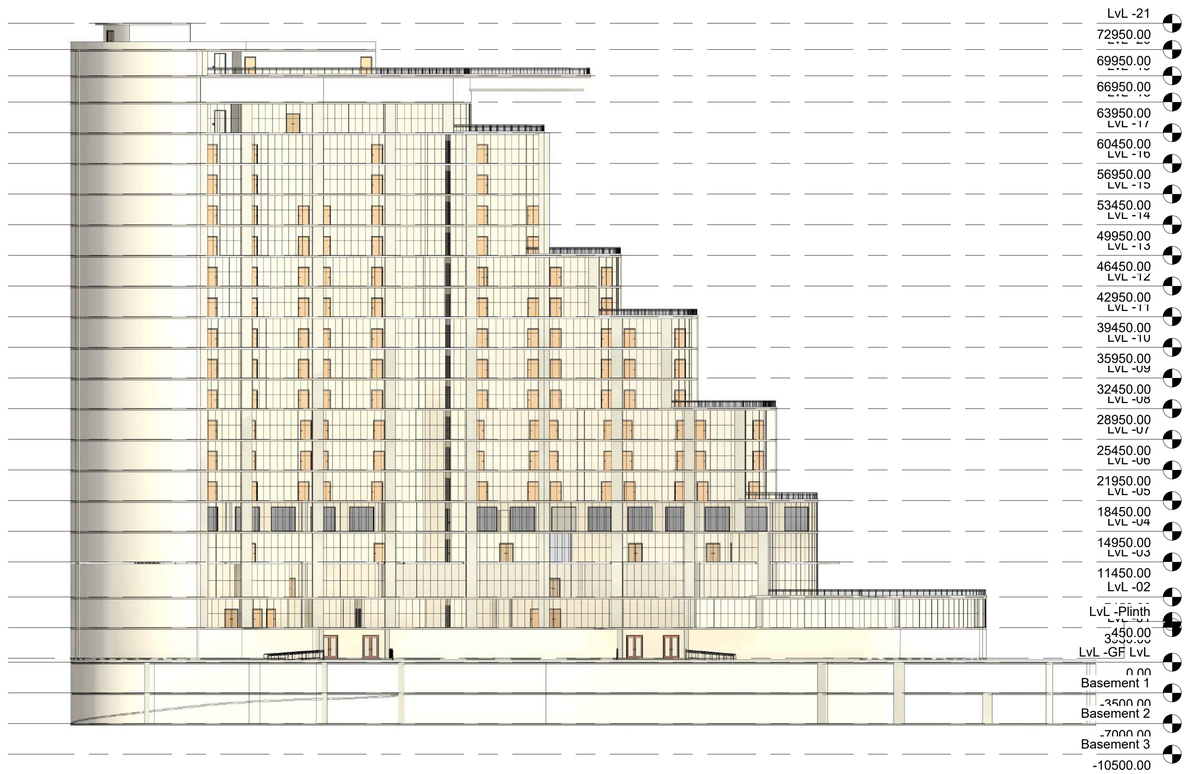



## SECTION AA



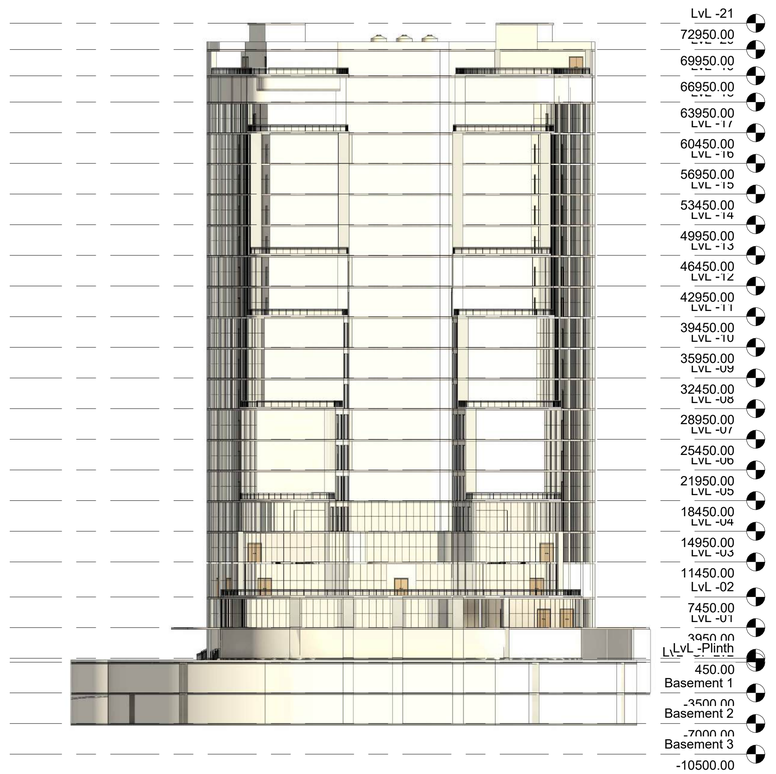

## SECTION BB

| NORTH | PROJECT | LOCATION | DRAWING | DEALT BY | GUIDED BY | SCALE | SHEET NO. |
|---|---|---|---|---|---|---|---|
| | 5 STAR HOTEL,<br>SANAND<br>AHMEDABAD | LAND - GIDC PHASE 2 SANAND<br>DISTRICT - AHMEDABAD<br>AREA - 4.9 ACRES | SECTIONS | SAMIKSHA VAVAL<br>211110018<br>9TH SEM<br>THESIS | DR. MANMOHAN KAPSHE | 1:300 | 17 |




1 FRONT ELEVATION

1 : 350




2 SIDE ELEVATION

1 : 350

NOTE -

All Dimensions are in M

5 - Star Hotel
Sanand
Ahmedabad

ELEVATIONS

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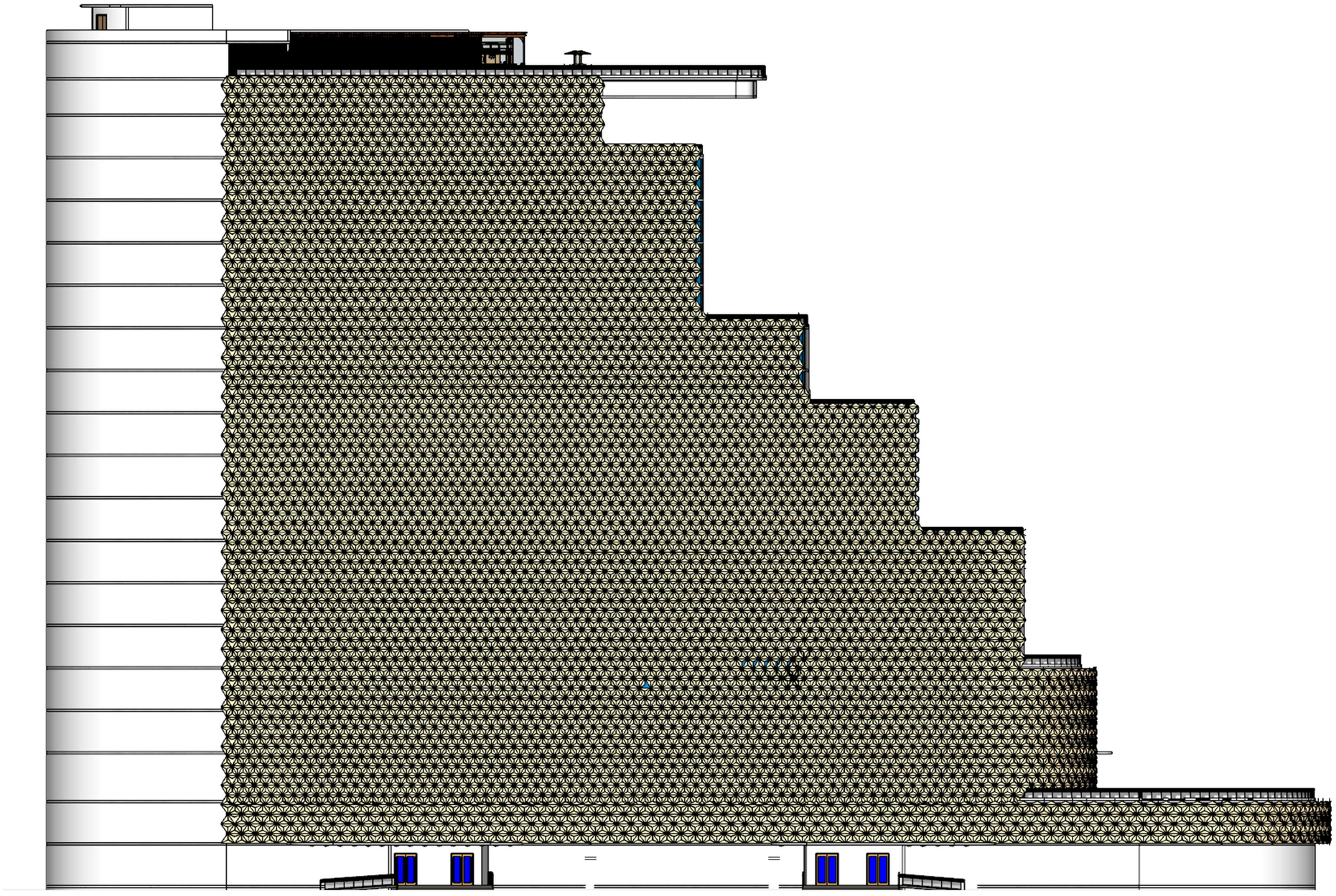
Dr. Manmohan Kapshe

Samiksha Vaval
211110018
9th Sem Thesis

Sheet No.

18



FRONT ELEVATION
Scale - 1:200

NOTE -

All Dimensions are in M

5 - Star Hotel
Sanand
Ahmedabad

ELEVATIONS

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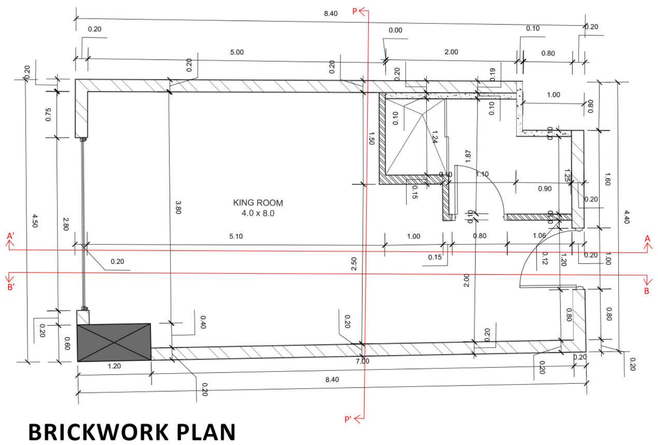
Samiksha Vaval
211110018
9th Sem Thesis

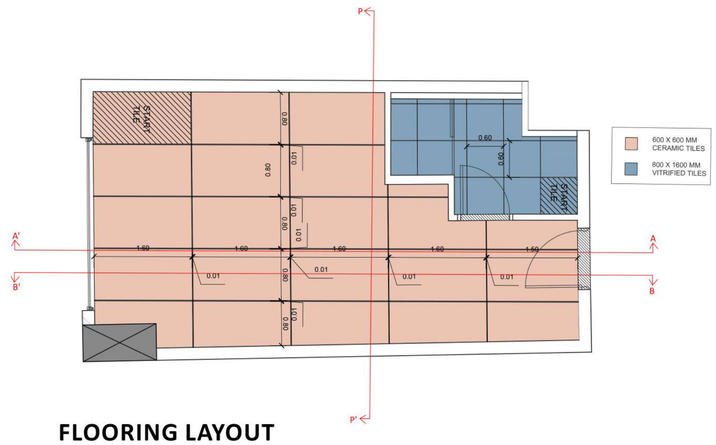
Sheet No.
20

# ELECTIVE : INTERIOR DESIGN ( KING ROOM )

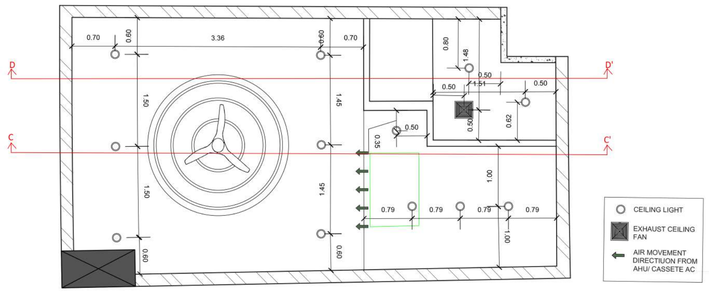
# 5-STAR HOTEL AT SANAND, AHMEDABAD



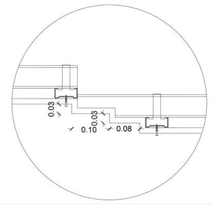

BRICKWORK PLAN



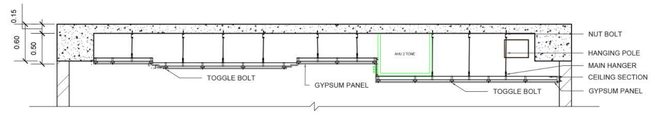

FLOORING LAYOUT



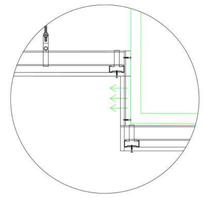

FALSE CEILING LAYOUT



DETAIL A




SECTION CC'



DETAIL B




PRESENTATION PLAN




SECTION BB'




SECTION PP'




SECTION AA'

## VIEWS :-













## COLOUR PALATTE :-






## PRICE RANGE :-

| Material | Typical Size / Panel | Approx-Price Range |
|---|---|---|
| Flooring (Vetrified tile) | e.g., 600×1200 mm or 1200×600 mm | ₹ 50 – ₹ 150 per ft² |
| Wall panel laminate (HPL/laminate panel) | per ft² cost for wall panelling | ₹ 65 – ₹ 250 per ft² |
| Wall marble sheet / decorative marble panel | e.g., panel size 8'×4' (~32 ft²) or per ft² | ₹ 200 – ₹ 400 per ft² |
| Wood veneer (used in furniture) | per ft² sheet or decorative veneer | ₹ 50 – ₹ 150 per ft² |



SAMIKSHA VAVAL | 211110018
THESIS GUIDE - DR. MANMOHAN KAPSHE

# ELECTIVE : LANDSCAPE DESIGN

# 5-STAR HOTEL AT SANAND AHMEDABAD

## SOFTSCAPE AND HARDSCAPE - LANDSCAPE PLANTATION AND PAVEMENT MATERIAL PLAN

### NATIVE TREES :-

Native trees like Neem and Karanj are used for their hardiness, deep shade, and drought tolerance. They require low maintenance, thrive in Ahmedabad's dry heat, and enhance ecological balance while providing natural cooling and shelter in parking and open areas.

| 1. Native Trees | | | | | | |
|---|---|---|---|---|---|---|
| S.No. | Local Name | Botanical Name | Description | Height & Spread | Legend | Image |
| 1 | Neem | *Azadirachta indica* | Evergreen, medicinal, excellent shade, drought-tolerant. | H- 15–25 m<br>S- 10–20 m | | |
| 2 | Amaltas / Golden Shower | *Cassia fistula* | Deciduous, bright yellow flower clusters in summer. | H- 10–15 m<br>S- 8–12 m | | |
| 3 | Kachnar / Orchid Tree | Bauhinia variegata | Medium tree with purple-pink orchid-like flowers. | H- 6–10 m<br>S- 6–8 m | | |
| 4 | Indian Coral Tree | Erythrina variegata | Leaf-shedding tree with scarlet flowers; used for contrast. | H- 6–9 m<br>S- 6–8 m | | |

### CREEPERS /GROUNDCOVERS :-

Groundcovers and border shrubs like Duranta, Ixora, and Wedelia are used to define edges, add texture, and maintain greenery year-round. These species are sun-tolerant, low-maintenance, and ideal for pathways, garden beds, and parking borders, ensuring a neat and lush look.

| 3. Creepers AND Groundcovers | | | | | | |
|---|---|---|---|---|---|---|
| S.No. | Local Name | Botanical Name | Description | Height & Spread | Legend | Image |
| 1 | Bougainvillea | Bougainvillea glabra / spectabilis | Woody climber, brilliant bracts, thrives in heat. | Climb 2–8 m | | |
| 2 | Madhumalti / Rangoon Creeper | Quisqualis indica | Fast-growing, fragrant climber with white-to-red flowers; excellent for pergolas and walls; heat-tolerant. | Climber up to 6–10 m | | |
| 3 | Spider Lily | Hymenocallis littoralis | Tropical perennial with white fragrant flowers. | H- 0.5–0.8 m<br>S- 0.6 m | | |
| 4 | Gulab / Rose | Rosa hybrida | Ornamental flowering shrub with multiple colour varieties; blooms year-round in warm climate; ideal for garden beds, planters, and terrace displays. | H- 0.6–1.2 m<br>S- 0.6–1 m | | |
| 5 | Duranta / Golden Duranta | Duranta erecta / Duranta repens | Evergreen shrub with bright golden-yellow foliage; forms dense, bushy hedges; adds colour contrast in sunny areas. | H- 0.6–1.2 m<br>S- 0.6–1 m | | |

### FLOWERING TREES :-

Flowering trees such as Copper Pod, Gulmohar and Plumeria add seasonal color, vibrancy, and visual focus to the site. Their bright blossoms and moderate canopy create a pleasant environment for guests, especially around party lawns, entrances, and seating areas.

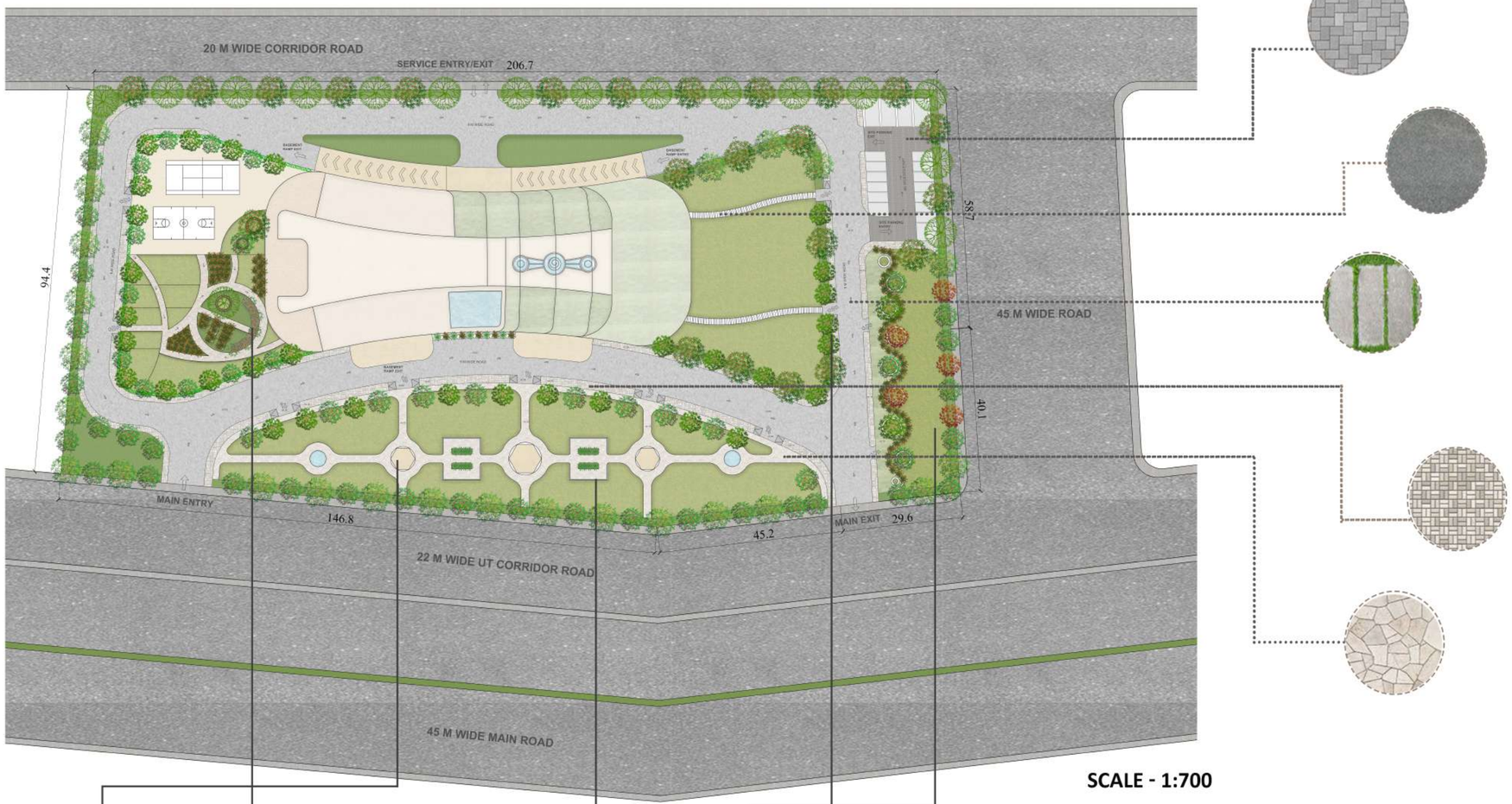
| 2. Flowering Trees(Colour & Avenue) | | | | | | |
|---|---|---|---|---|---|---|
| S.No. | Local Name | Botanical Name | Description | Height & Spread | Legend | Image |
| 1 | Gulmohar / Flame Tree | Delonix regia | Brilliant red–orange flowers; umbrella crown. | H- 8–12 m<br>S -10–15 m | | |
| 2 | Plumeria / Champa | Plumeria alba / rubra | Medium small tree, fragrant white/pink blooms. | H- 4–8 m<br>S- 4–6 m | | |
| 3 | Kamini / Orange Jasmine | Murraya paniculata | Fragrant white flowers, dense evergreen hedge. | H- 1–3 m<br>S- 1–3 m | | |

### PAVEMENT MATERIALS :-

A well-balanced combination of durable, heat-reflective, and weather-resistant materials—such as asphalt for roads, concrete blocks for parking, interlocking pavers for walkways, and natural stones for garden areas—ensures smooth circulation, visual harmony, and thermal comfort. Proper drainage slopes and permeable joints are integrated to handle monsoon runoff, making the design efficient and sustainable for Ahmedabad's hot and dry climate.

| Pavement Materials | | | | |
|---|---|---|---|---|
| S. No. | Location (Usage on Site) | Material Name | Material Description | Image |
| 1 | Parking | Concrete Interlocking Paver | Modular cement concrete interlocking blocks, grey finish, thickness 60–80 mm. High load-bearing capacity, uniform look, and non-slippery surface. Best for vehicle driveways and parking zones. | |
| 2 | Roads | Concrete Asphalt | Hot-mix bituminous concrete road; durable, skid-resistant, heat-tolerant, and low-maintenance surface ideal for vehicular movement. | |
| 3 | Lawn Area Pathways | Permeable Grass Pavers | Brick or concrete tiles in basket weave pattern; warm texture and natural tone blend with softscape. Used for casual walkways within lawns and garden zones. | |

| Pavement Materials | | | | |
|---|---|---|---|---|
| S. No. | Location (Usage on Site) | Material Name | Material Description | Image |
| 4 | Pathways Around Site | Heavy Duty Concrete Block Paving | Grey interlocking concrete paver blocks arranged in herringbone pattern. Strong, uniform, non-slippery surface with easy maintenance. Ideal for pedestrian movement and service paths. | |
| 5 | Garden Pathways | Random Stone Paving | Irregular natural flagstone paving in light tone. Provides a natural aesthetic, good grip, and blends seamlessly with green areas and planting beds. | |




SCALE - 1:700

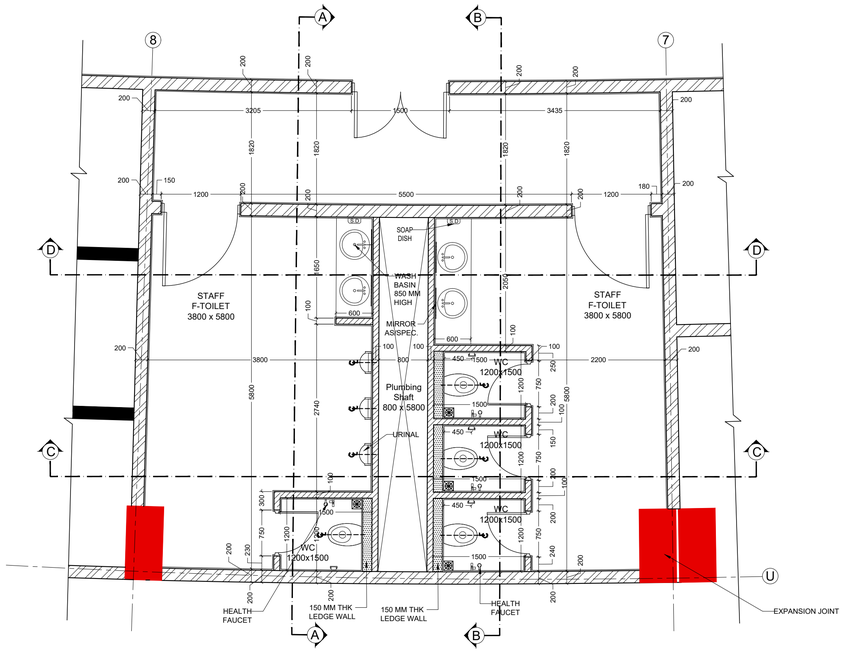




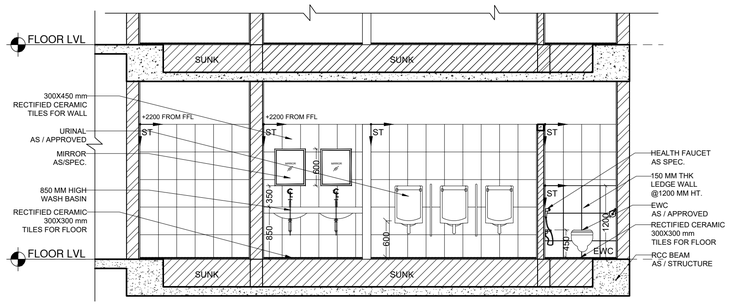




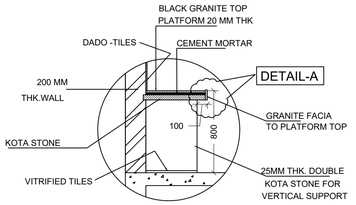


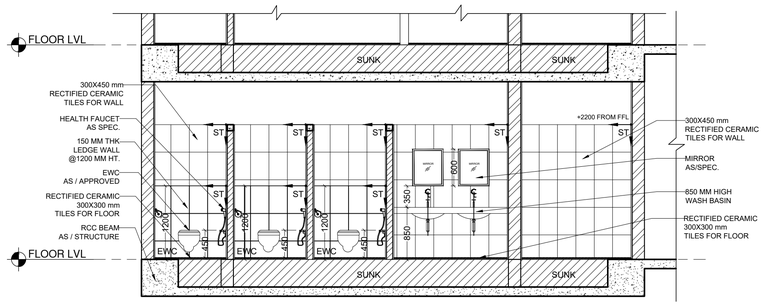

BRICK WORK DETAIL PLAN
TYPICAL GROUND FLOOR TO 3rd FLOOR



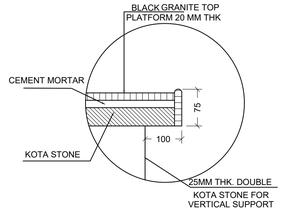

SECTION - AA



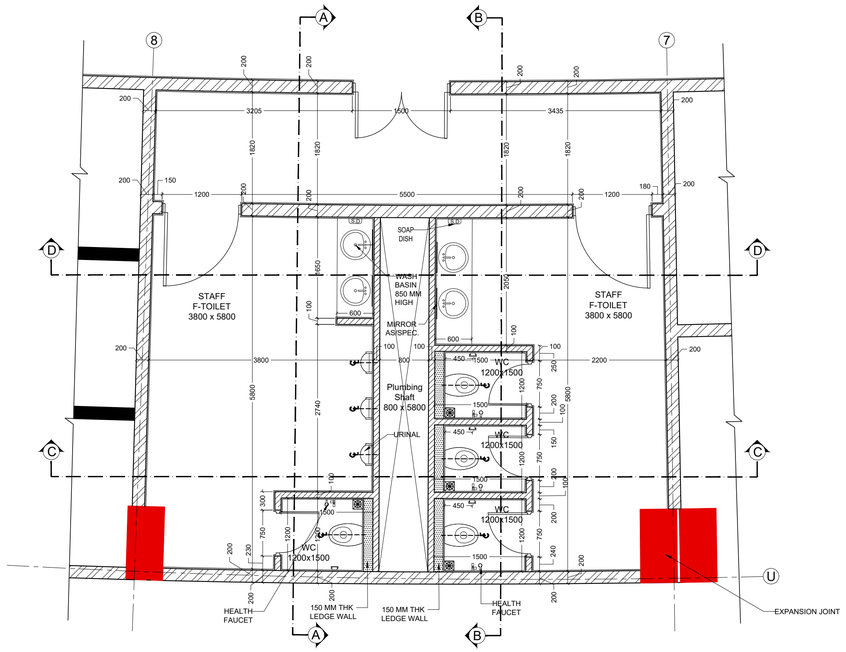

DETAIL - B



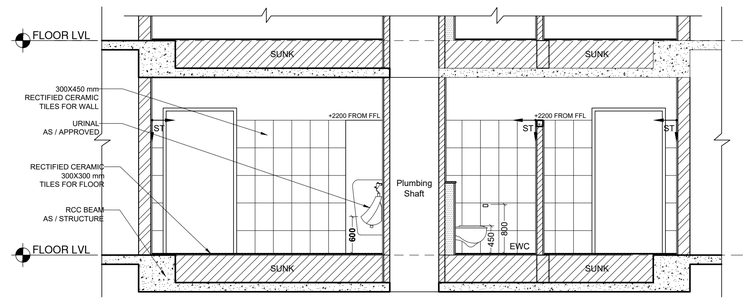

SECTION - BB



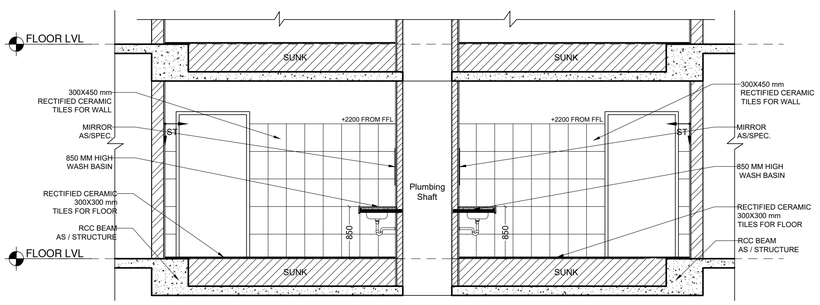

DETAIL - A




BRICK WORK DETAIL PLAN
TYPICAL GROUND FLOOR TO 3rd FLOOR




SECTION - CC




SECTION - DD

| NORTH | PROJECT | LOCATION | DRAWING | DEALT BY | GUIDED BY | SCALE | SHEET NO. |
|---|---|---|---|---|---|---|---|
| | 5 STAR HOTEL,<br>SANAND<br>AHEMDABAD | LAND - GIDC PHASE 2 SANAND<br>DISTRICT - AHEMDABAD<br>AREA - 4.9 ACRES | WORKING DRAWING DETAILS<br>(TOILET DETAILS) | SAMIKSHA VAVAL<br>211110018<br>9TH SEM<br>THESIS | DR. MANMOHAN KAPSHE | 1:50 | 22 |



