SHAHBAN SHAH

5 Star Hotel

Sanand , Gujarat, India

Dec, 2025

5 Star Hotel

Sanand, Gujarat, India

BACHELOR OF ARCHITECTURE

BY

SHAHBAN SHAH
211110004

DEPARTMENT OF ARCHITECTURE AND PLANNING

MAULANA AZAD NATIONAL INSTITUTE OF TECHNOLOGY, BHOPAL

DEC 2025

ARC 511 – Thesis Project

5 Star Hotel

Sanand Gujarat, India

Submitted by:

Shahban Shah
211110004

B. ARCH
9th Semester, 5th Year

UNDER THE GUIDANCE OF

Prof. Preeti Onkar

DEPARTMENT OF ARCHITECTURE AND PLANNING

MAULANA AZAD NATIONAL INSTITUTE OF TECHNOLOGY

BHOPAL (MP)-462003

© MAULANA AZAD NATIONAL INSTITUTE OF TECHNOLOGY, BHOPAL – 2025 ALL RIGHTS RSERVED

DEPARTMENT OF ARCHITECTURE AND PLANNING

MAULANA AZAD NATIONAL INSTITUTE OF TECHNOLOGY, BHOPAL

1 CANDIDATE DECLARATION

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

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

Date: 1st – 2nd Dec, 2025

Shahban Shah
211110004

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-511, Thesis Project.

Date: 1st – 2nd Dec, 2025

Prof. Preeti Onkar
Thesis Guide

CERTIFICATION OF EXAMINATION

The Bachelor of Architecture Thesis Viva-Voce examination of Mr Shahban shah Scholar No.211110004, was held on 1/12/2025 to 2/12/25.

Dr. Nakul Dhagat
Head of Department

Dr. Vicky Lalramsangi
Thesis Coordinator

2 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.

3 ACKNOWLEDGEMENT

The completion of this thesis report has been one of the most significant parts of our thesis study. We would like to acknowledge everyone who has helped us throughout in the completion of this Thesis Report, directly or indirectly.

At this moment of accomplishment, first of all we would like to thank our Thesis Coordinator & Guide Prof. Vicky Lalramsangi & Guide Prof. Preeti Onkar. This work would not have been possible without their guidance, support and encouragement. Their insightful leadership and knowledge benefited us to successfully overcome many difficulties through the process and taught us a lot. Their valuable suggestions helped us make our work better. Thank you so much for your continuous support and presence whenever needed.
We would like to express our deep appreciation and indebtedness to our teachers and supervisors for their endless support, kindness, and understanding during the project duration.

Furthermore, we would like to thank our fellow batch mates and seniors. Their help and support has helped us throughout our Thesis work. Last but not the least; we would like to thank all our relatives, family, and friends who supported us in one way or another and the Great Almighty for his blessings.

4 TABLE OF CONTENTS

Contents

1 CANDIDATE DECLARATION 4
2 ABSTRACT 5
3 ACKNOWLEDGEMENT 6
4 TABLE OF CONTENTS 7
5 LIST OF FIGURE 9
6 DESIGN BRIEF 12
6.1 INTRODUCTION 12
6.2 AIM 12
6.3 OBJECTIVES 12
6.4 SITE LOCATION 12
6.4.1 Location: GIDC Sanand-II (Plot SM-39/5), ... 12
6.5 PROJECT DETAILS 12
6.6 PROPOSING AGENCY 15
6.7 SITE PROXIMITY & SURROUNDINGS 15
6.8 SOCIAL INFRASTRUCTURE 16
6.8.1 Educational Institutions Nearby: 16
6.8.2 Healthcare Facilities Nearby: 16
6.9 SITE ACCESSIBILITY 18
6.10 DESIGN BRIEF 18
6.11 BROAD SCOPE OF WORK: 18
6.11.1 The scope of work includes but is not limited to: 18
6.11.2 What Makes This Business Hotel Different from Others 18
6.11.3 Key Differentiators: 19
6.11.4 How It Enhances Meeting & Accommodation Experiences 19
7 LITERATURE REVIEW 20
7.1 GUJARAT COMPREHENSIVE DEVELOPMENT CONTROL REGULATIONS - 2017 20
7.2 REGULATIONS FRO HOTELS AND MIXED USE DEVELOPMENT (2016) OF GOVERNMENT OF GUJRAT 23
7.3 MINISTRY OF TOURISM GUIDELINES: 25
7.4 TIME SAVER STANDARDS (BUILDING TYPES)- HOTEL: 38
7.4.1 BACK OF THE HOUSE: 38
7.4.2 LAUNDARY FACILITIES: 40
7.4.3 GUEST ROOMS: 40
7.4.4 BANQUETING FACILITIES: 42
7.4.5 SPACE ALLOTMENTS 43
7.4.6 PUBLIC SPACE 45
7.4.7 FOOD AND BEVERAGE SERVICE SPACE 47
7.4.8 GUEST-ROOM SPACE 51
7.4.9 GENERAL SERVICE SPACE 51
7.4.10 DINING ROOMS: 53
7.5 TIME SAVER STANDARDS (BUILDING TYPES)- KITCHENS: 55
7.6 TIME SAVER STANDARDS (INTERIOR DESIGN): 59
7.6.1 Cafe-restaurant- 61

7.6.2 Cafe:....62
7.6.3 Tea room:....62
7.6.4 Large hotel restaurant kitchen- 62
7.6.5 Restaurant with buffet and vending machines-....63
7.6.6 Self-service restaurant- 63
7.6.7 Function and organization of the restaurant kitchen-....64
7.6.8 Percentage of total kitchen space requirement- 65
7.7 MODEL BUILDING BYLAWS:....75

8 SITE INVENTORY....132

8.1 DEMOGRAPHIC OF SANAND DIST. AHMEDABAD....132
8.2 TOPOGRAPHY....132
8.2.1 SEISMIC ACTIVITY:....133
8.2.2 SOIL TYPE: 133
8.3 CLIMATE-....134
8.3.1 Average Temperature in Agra 134
8.3.2 Precipitation....134
8.3.3 Rainfall 135
8.3.4 Humidity....135
8.3.5 Wind 136
8.4 SUNPATH- 136
8.5 CLIMATE ANALYSIS IN BUILDING-....137
8.5.1 DAY LIGHT POTENCIAL....139
8.5.2 WIND ANALYSIS....140
8.5.3 WIND COMFORT ANALYSIS- 141
8.5.4 WIND DIRECTION ANALYSIS- 141
8.6 . TOPOGRAPHY 143
8.7 UTILITIES & INFRASTRUCTURE 144

9 CASE STUDIES....145

9.1 HILLTON GARDEN INN , PUNE 145
9.1.1 LOCATION....147
9.1.2 SITE LOCATION and virtcal zoning....148
9.1.3 FACILITIES....148
9.1.4 AREA STATEMENT....148
9.1.5 GUEST ROOM TYPOLOGY 151
9.1.6 FLOOR PLANS....154
9.1.7 The Garden Bar....159
9.2 CASE STUDY: TAJ HOTEL, BHOPAL 163
9.2.1 INTRODUCTION 163
9.2.2 LOCATION....164
9.2.3 SITE BOUNDARY 165
9.2.4 Site Characteristics: 165
9.2.5 FACILITIES....165
9.2.6 APPROACH ROAD....166
9.2.7 VERTICAL ZONING 166
9.2.8 AREA STATEMENT....167
9.2.9 FLOOR PLANS....172
GUEST ROOM TYPOLOGY 156
9.2.10 VIEW/INTERIOR OF SPACES 160
9.2.11 SERVICES....160
9.2.12 INFERENCES....161

9.3 DESK APPRAISAL: TAJ GATEWAY HOTEL, PUNE 161
9.3.1 4.3.1 INTRODUCTION 161
9.3.2 4.3.2 LOCATION 162
9.3.3 4.3.3 ACCESSIBILITY 163
9.3.4 4.3.4 AREA STATEMENT 164
9.3.5 4.3.5 FLOOR PLANS 168
9.3.6 4.3.6 SECTIONS 170
9.4 DESK APPRAISAL: DOUBLE TREE HILTON 171
9.4.1 INTRODUCTION 172
9.4.2 LOCATION 172
9.4.3 SITE INFORMATION 172
9.4.4 MATERIALS 172
9.4.5 CONCEPT: 172
9.4.6 AREA STATEMENT : 173
9.4.7 Accommodation Details 173
9.4.8 Meeting & Event Spaces 173
9.4.9 Dining & Amenities 173
10 INFERENCE 176
10.1 ENTRANCE 176
10.2 SECURITY AND LUGGAGE 176
10.3 SERVICES 176
10.4 PUBLIC AREAS 177
10.5 DINING AND BANQUET 177
10.6 OTHER DETAILS 177
11 REFERENCES 178
BOOKS AND MANUALS 178

5 LIST OF FIGURE

Figure 1 Site Dimensions 14
Figure 2 SITE DETIAL FROM RFP 15
Figure 3 PROPOSED DEVELOPMENT PLAN OF GIDC SANAND 15
Figure 4 SITE PROXIMITY 16
Figure 5 SITE ACCESSIBILTYF 17
Figure 6CHECKLIST 25
Figure 7 FLOW DIAGRAM OF SERVICE AREA 39
Figure 8CHUITE 40
Figure 9ROOM AREA 41
Figure 10ROOM TYPE 41
Figure 11NO OF GUEST ROOM 44

Figure 12 BUILDING HEIGHT CALCULATION....44
Figure 13 RESTAURANT AREA DIMENSION....55
Figure 14 RECPTION DESK DETAIL....59
Figure 15 CAFE RESTAURANT....62
Figure 16 SEISMIC ACTIVITY....133
Figure 17: CLIMATIC EXPERIENCE IN SANAND AROUND THE YEAR....134
Figure 18 : TEMPERATURE IN SANAND ANUALLY....134
Figure 19: AVERAGE PRECIPTATION IN SANAND....135
Figure 20: AVERAGE RAINFALL IN SANAND....135
Figure 21Figure 37: AVERAGE HUMIDITY IN SANAND....135
Figure 22: SUNPATH ANALYSIS....137
Figure 23: SUN HOUR ANALYSIS OF FEBRUARY MONTH....138
Figure 24: SUN HOUR ANALYSIS OF MAY MONTH....138
Figure 25: SUN HOUR ANALYSIS OF AUGUST MONTH....139
Figure 26: SUN HOUR ANALYSIS OF DECEMBER MONTH....139
Figure 27: DAY LIGHT POTENCIAL....140
Figure 28: WIND COMFORT ANALYSIS....141
Figure 29: WIND DIRECTION ANALYSIS....142
Figure 30 HILTON PUNE PHOTO....145
Figure 31 GROUP PHOTO....146
Figure 32 HILTON ROOM PHOTO....151
Figure 33 KING ROOM PHOTO....152
Figure 34 TWIN ROOM PHOTO....153
Figure 35 RESTAURENT....159
Figure 36 RECEPTION....162
Figure 37SWIMMING POOL....163
Figure 38 Taj Lakefront at night & Group photograph....163
Figure 39 Location on google maps....164
Figure 40 Site boundary....165
Figure 41 Area Statement Taj - 1....167
Figure 42 Area Statement Taj - 2....167
Figure 43 Area Statement Taj - 3....168
Figure 44 Area Statement Taj - 4....169
Figure 45 Area Statement Taj - 5....170
Figure 46 Area Statement Taj - 6....171
Figure 47 Basement 2 Plan....172
Figure 48 Basement 2....149
Figure 49 Basement 1 Plan....149
Figure 50 Services in Basement 1....150
Figure 51 Ground floor plan and pictures (reception, banquet, duct opening, UPS)....151
Figure 52 First floor plan and pictures (restaurant & chiller)....152
Figure 53 Second Floor plan....153
Figure 54 Pipelines and other services in service floor....153
Figure 55 Typical FLoor plan 3rd to 7th....153
Figure 56 Guest room....154
Figure 57 8th floor plan....154
Figure 58 9th floor planFigure 59 8th floor plan....154

Figure 60 9th floor plan 155
Figure 61 10th floor plan and pictures (rooftop rest. bar & swimming pool)Figure 62 9th floor plan..... 155
Figure 63 Executive suite floor plan & photos 157
Figure 64 Twin room plan & photosFigure 65 Executive suite floor plan & photos 157
Figure 66 Twin room plan & photos..... 158
Figure 67 King room plan and photoFigure 68 Twin room plan & photos 158
Figure 69 King room plan and photo 159
Figure 70 Presidential suite photosFigure 71 King room plan and photo..... 159
Figure 72a LT & HT Panel Room, Fire Fighting & Electrical Tray..... 161
Figure 73a LT & HT Panel Room, Fire Fighting & Electrical Tray..... 161
Figure 74 Taj Gateway..... 162
Figure 75a Location Map..... 163
Figure 76 Location Map & Accessibility..... 163
Figure 77 Taj Gateway Area Statement - 1..... 164
Figure 78 Taj Gateway Area Statement - 2..... 165
Figure 79 Taj Gateway Area Statement - 3..... 166
Figure 80 Taj Gateway Area Statement - 4..... 167
Figure 81Taj Gateway Area Statement - 5..... 168
Figure 82 Upper Basement & Ground floor plan..... 169
Figure 83 First floor plan, Service floor plan & typical guest floor plan..... 170
Figure 84 Sections..... 171

6 DESIGN BRIEF

6.1 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.

6.2 AIM

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

6.3 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.

6.4 SITE LOCATION

Name of the Project**:** Proposed 5 Star Hotel

6.4.1 **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

6.5 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`



v

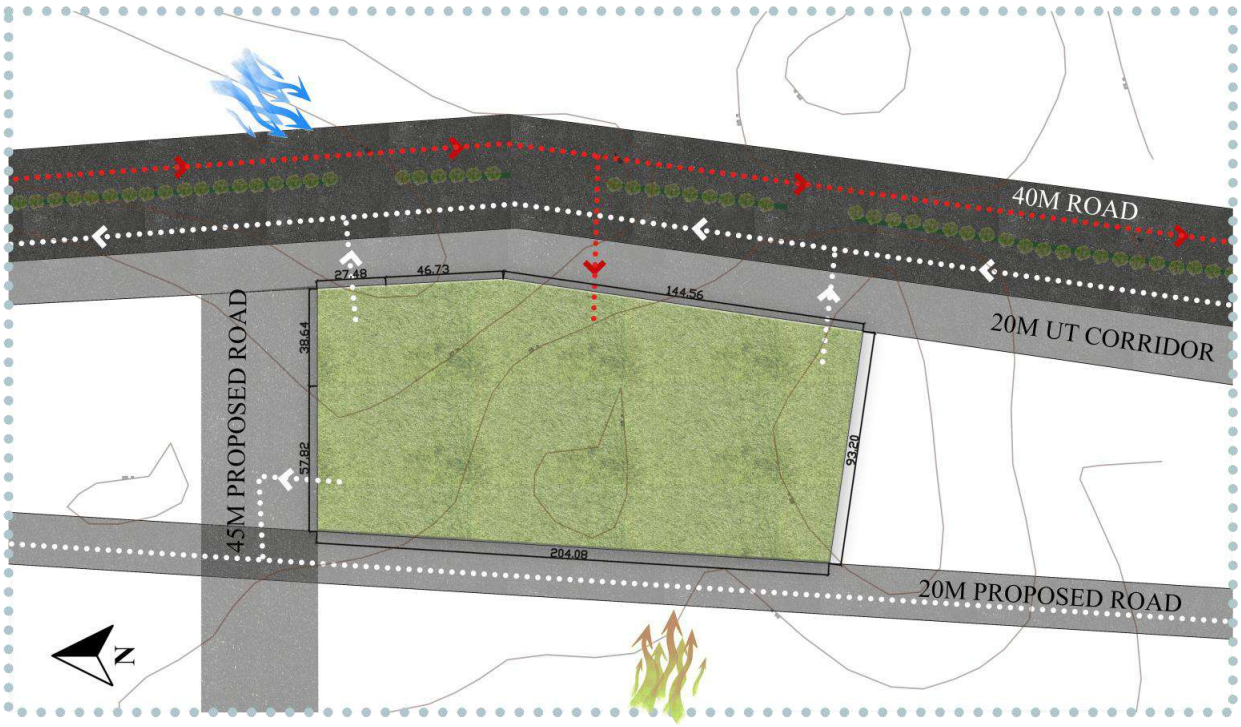


Figure 1 Site Dimensions



Figure 2 SITE DETIAL FROM RFP

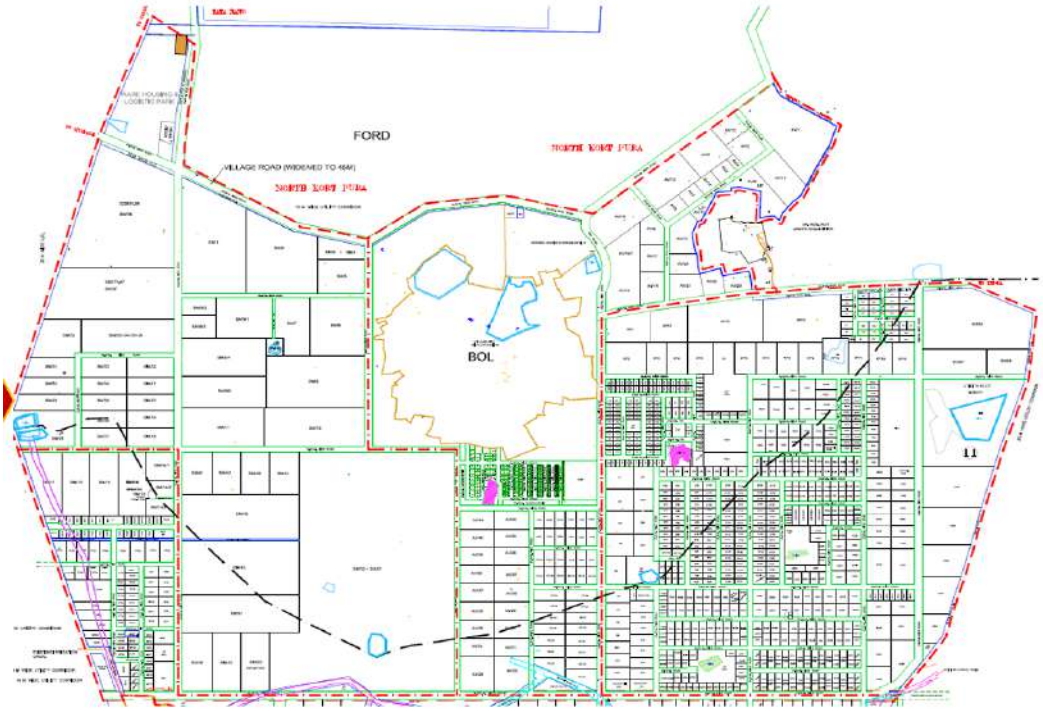


Figure 3 PROPOSED DEVELOPMENT PLAN OF GIDC SANAND

6.6 PROPOSING AGENCY

Name of the Proponent:Gidc Sanand

SITE LOCATION ON MASTER PLAN

6.7 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.

6.8 Social Infrastructure

6.8.1 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.
-

6.8.2 Healthcare Facilities Nearby:

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



Figure 4 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



Figure 5 SITE ACCESSIBILTYF

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



6.9 Site Accessibility

6.10 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.

6.11 Broad Scope of Work:

6.11.1 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

6.11.2 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.

6.11.3 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

6.11.4 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

7 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.

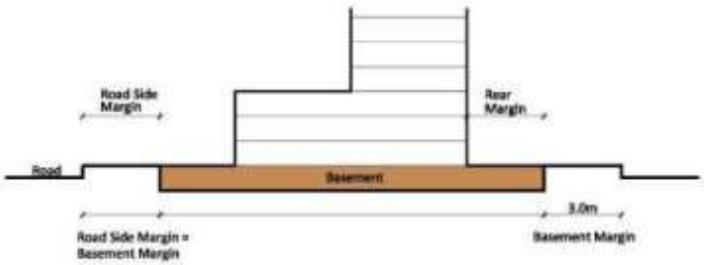
7.1 Gujarat Comprehensive Development Control Regulations - 2017

8.7 Basement

In a Building-unit, the Basement shall be permitted on the following conditions.

8.7.1 Margins

1. No Basement shall be permitted in the required Road side marginal space.
2. The side and rear side margins for the basement shall be 3.0mt from the Building-unit/Plot boundary. A combined shared basement parking. shall be permitted using full marginal space other than road side margin of building unit with the consent of the adjoining building unit owner for new development.



8.7.3 Height of Basement

Maximum Height of the Basement shall be 3.8mts and minimum height shall be 2.8mts from finished basement floor level to finished upper level.

8.7.4 Permissible uses in basement

1. Permitted uses in Basement are: parking, safe deposit vault, A.C. Plant, storage other than inflammable material.
2. No habitable use shall be permitted in the basement.
3. Permitted uses in Basement of a Hospital Building: Radiation-producing device, Radiation Therapy Room, MRI or X-Ray room.
4. For basements exclusively for parking, any other permissible use is permitted only in basement level-1 up to a maximum area of 25% of the total built-up-area of the basement floor. This non-parking area shall be calculated towards the computation of FSI.

12.1 Floor Space Index (F.S.I)

The maximum permissible FSI, the chargeable FSI on a Building-unit shall be regulated as per the table below.

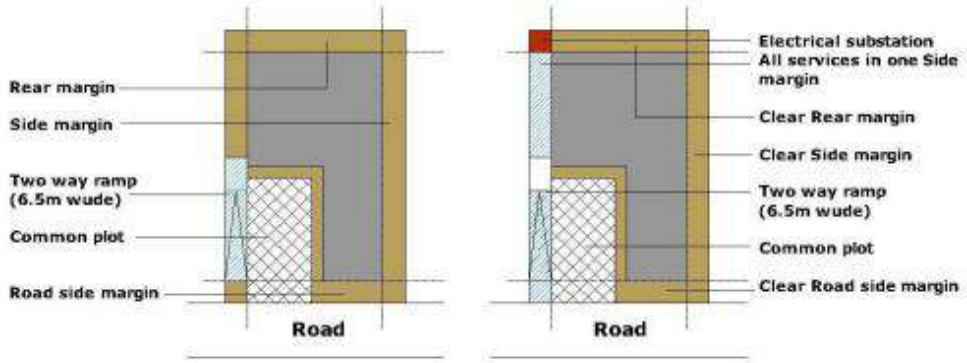
Table 12.1-1 Use Zone and F.S.I. : Category D1 AUDA.

Sr. No.	Use Zone	FSI Permissible		
		Base (Free)	Chargable (40% of the jantri rate)	Maximum
1	Core Walled City	2.0	**Nil**	**2.0**
2	Gamtal	2.0	**Nil**	**2.0**
3	Gamtal Extension	1.2	**Nil**	**1.2**
4	Residential Zone I	1.8	0.9	2.7
5	Residential Zone II	1.2	0.6	1.8
6	Residential Zone III	0.3	Nil	0.3
7	Commercial Zone	1.8	0.9	2.7
9	GIDC Estate	GIDC1	2.0	Nil	2.0
10	GIDC Estate	GIDC2	1.0	Nil	1.0

Table 12.2-3: Minimum Road and other Side Margins : Residential zone 2 for GMC

Sr No.	Plot Size (in sq.m)	Margins (in mt.)			
		Along Town Roads	In case of Interior	Rear	Sides
1	330	6.0	5.0	3.0	2.75
2	504	6.0	6.0	4.0	3.0
3	750	6.0	7.0	5.0	4.0
4	900	6.0	8.0	6.0	4.5
5	1100	6.0	10.0	7.0	5.0
6	1650 & Above	6.0	12.0	8.0	6.0
Note: The end plots in different categories of plots with the area differing from its category the margins applicable shall be of the same category.					

10. **Refuge Area for Building with height more than 40mts:** Cantilever Refuge area required as per Planning Regulations No. 23 may be permitted.



13.7 Parking

13.7.1 Minimum Requirements for Parking

Parking spaces shall be provided within the Building-unit as under:

No.	Type of Use	Minimum Parking Required	Visitor's Parking
1	Affordable Residential Apartments with dwelling units of built-up area up to 66 sq.mts.	10% of utilised FSI	An additional 10%, of the required parking space shall be provided as Visitors parking.
2	Affordable Residential Apartments with dwelling units of built-up area more than 66 sq.mts.	20% of utilised FSI	10% of the required parking space shall be provided as Visitors parking.
3	Commercial Use	50% of respective utilised FSI	20% of the required parking shall be provided as Visitors parking.

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

6. PLANNING PROVISIONS

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

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

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

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

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

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

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

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

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

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

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

6.3.3 Margins and Built-up area:

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

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

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

6.3.5 Height of building:

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

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

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

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

6.3.6 Parking:

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

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

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

d. Mechanical parking shall be allowed at any level.

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

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

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

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

7.3 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 6CHECKLIST

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

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

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

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

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

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

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

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

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

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

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

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

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

Checklist of Services and Facilities (Annexure III)

D Desirable

N Necessary

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

7.4 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.

7.4.1 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.

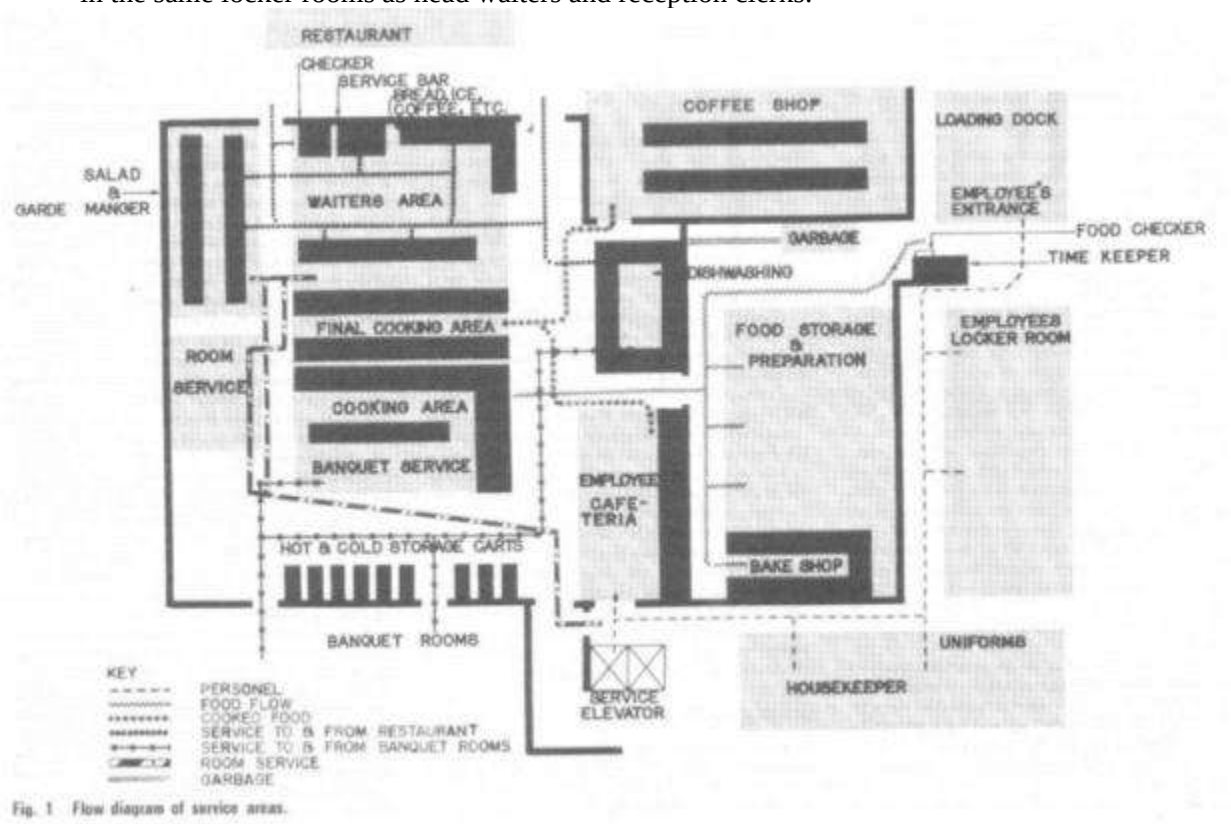


Figure 7 FLOW DIAGRAM OF SERVICE AREA

- 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.

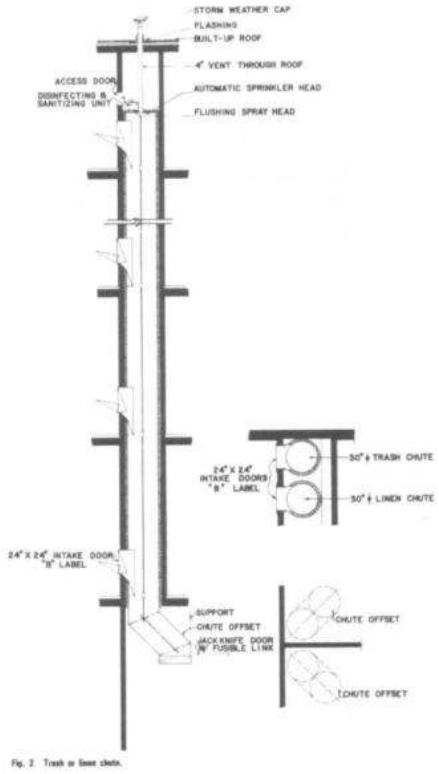


Figure 8CHUITE

7.4.2 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.

7.4.3 GUEST ROOMS:

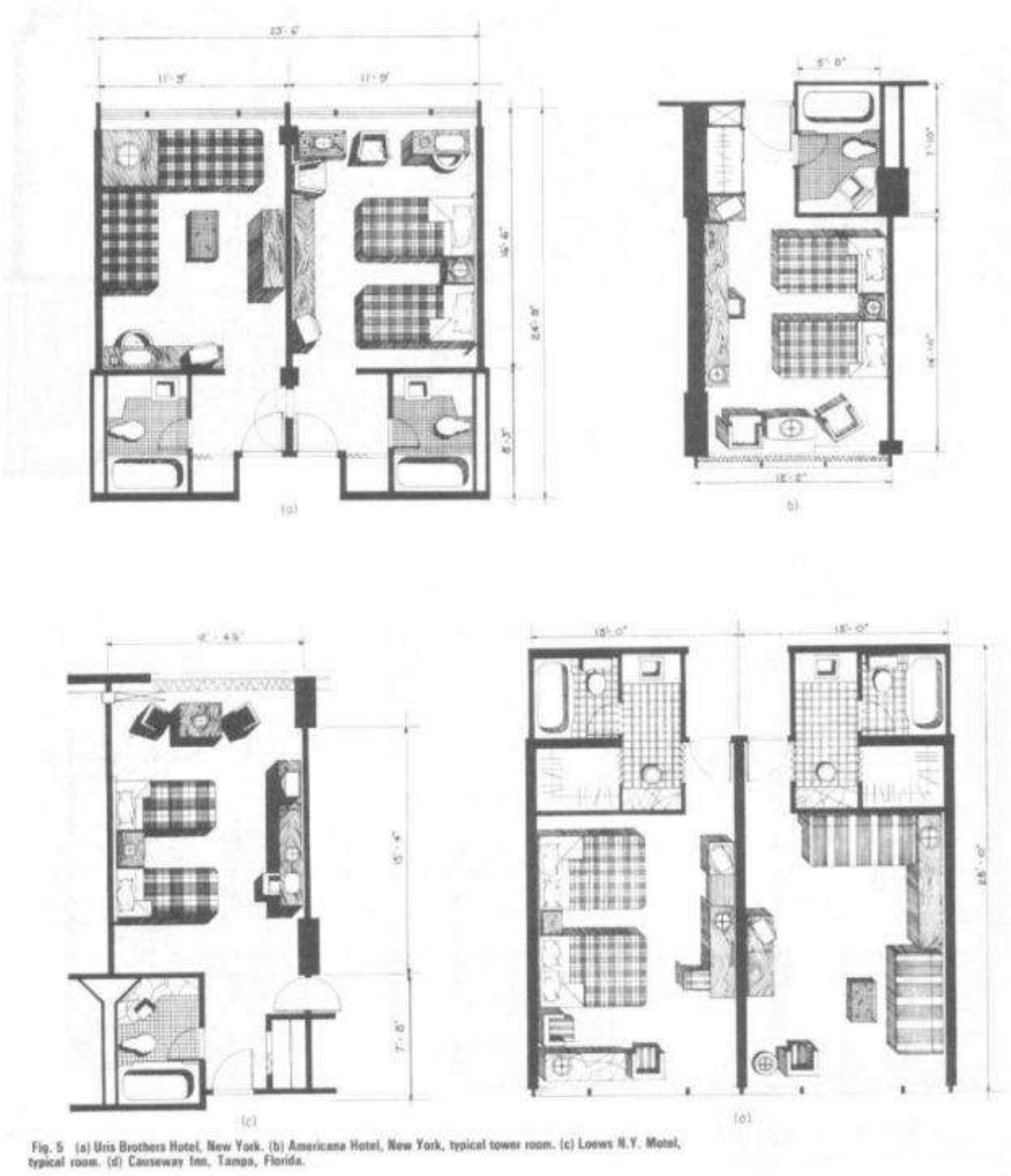


Fig. 5 (a) Uris Brothers Hotel, New York. (b) Americana Hotel, New York, typical tower room. (c) Loews N.Y. Motel, typical room. (d) Causeway Inn, Tampa, Florida.

Figure 9ROOM AREA

Figure 10ROOM TYPE



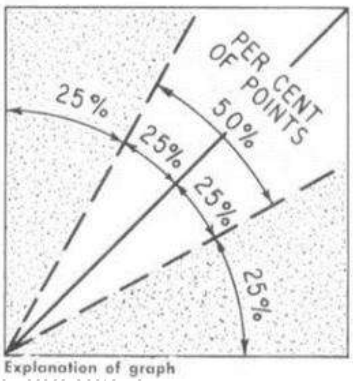
Fig. 5 (cont.) (k) Chicopee Motor Inn, Chicopee, Massachusetts. (l) and (m) Thomas Circle Motor Hotel, Washington, D.C. (n) Riverview Motor Hotel, New York.

7.4.4 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.

7.4.5 SPACE ALLOTMENTS

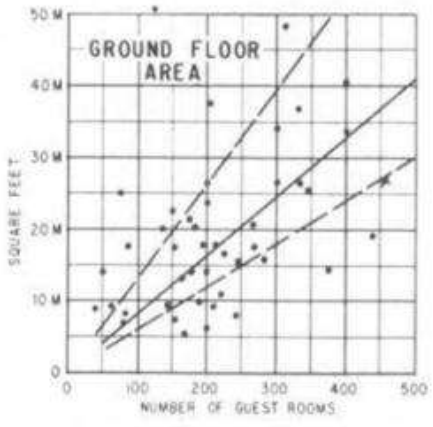
Hotel has six main space divisions, classified according to function :
(1) Public space
(2) Concession space
(3) Subrental space



(4) Food and beverage service space
(5) Guest-room space
(6) General-service space

at least 50 per cent of the total area should be productive space .

Ground floor



.

Height-

Figure 11NO OF GUEST ROOM

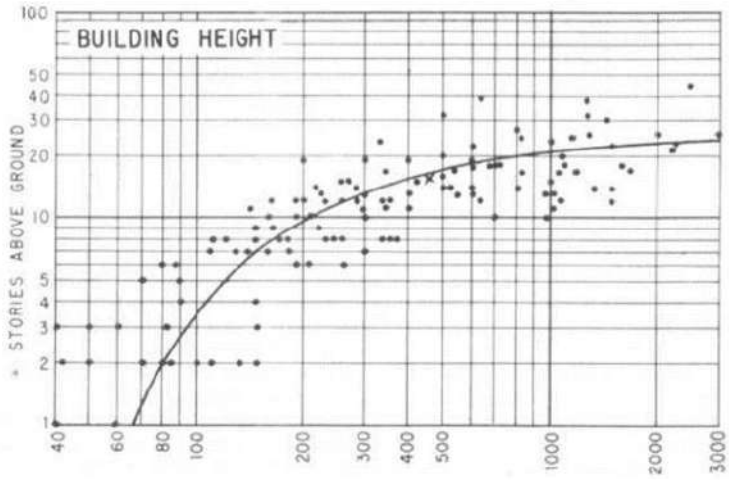
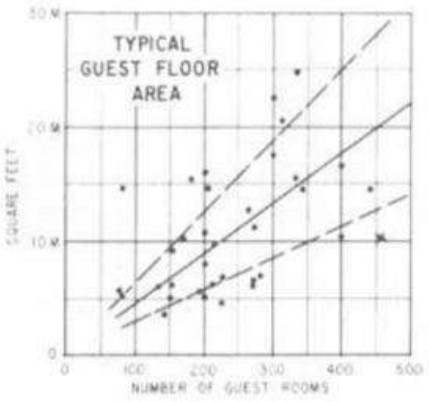
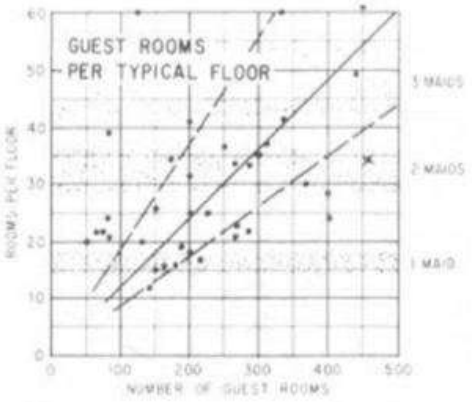


Figure 12 BUILDING HEIGHT CALCULATION

· Guest-floor area –

Typical guest-floor area usually covers about 55 per cent of the ground-floor area. Usually, each maid is assigned to about 16 rooms. If feasible, the number of guest rooms on the typical floor should be a multiple of 16 or quite close to it. On the graph, the horizontal bands indicate that one maid would handle from 14 to 18 rooms.

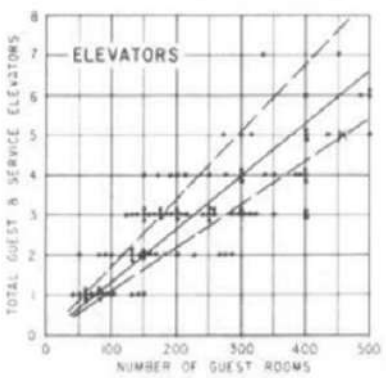




· Guest-floor stairways –

Guest-floor stairways tend to increase in number with the number of guest rooms on the typical floor. guest-room door to the nearest stairway entrance usually require a minimum of two stairways on the typical floor. two stairways are usually enough if there are no more than 40 guest rooms per floor In general, there are about 15 to 20 rooms per stairways.

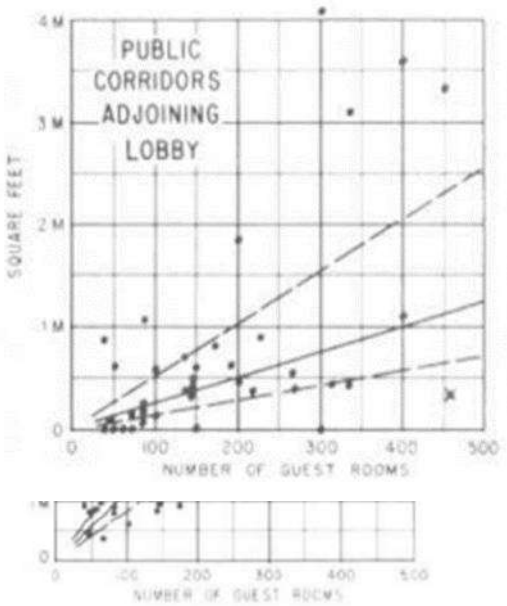




· Elevators-

.

7.4.6 PUBLIC SPACE

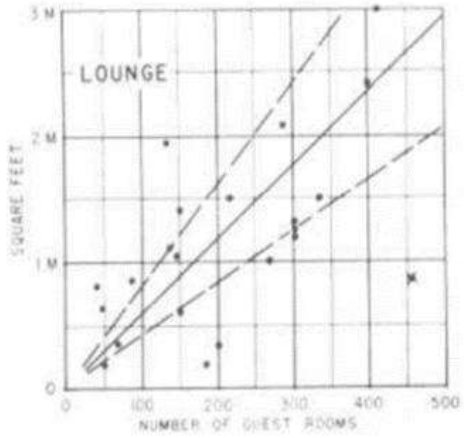


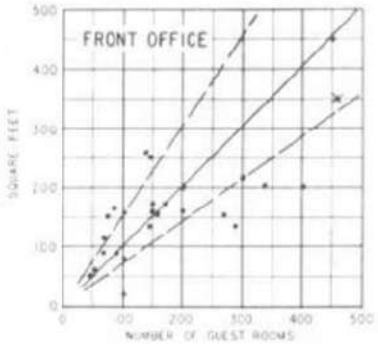
Public space comprises those areas that are open to the public as necessary auxiliaries. Promoting guest convenience ore, the lobby, lounge, public toilets, and entertainment rooms.

· Lobby – Front office

· Lounge-

The lounge is usually allotted about 6 sq 1t per guest room. half the hotels studied use only 4 sq ft and a few even cut this area to 2 sq ft per guest room.

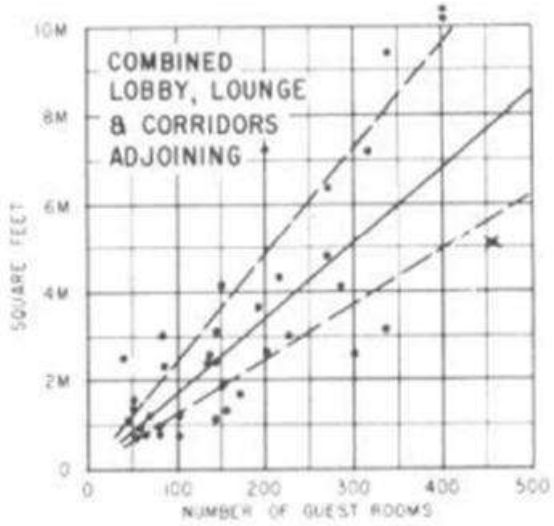


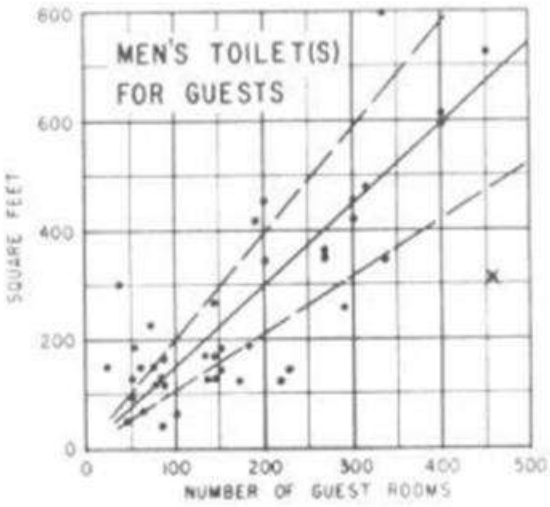


· Public corridors adjoining the lobby-

· The combined lobby, lounge, and adjoining corridors-

The combined lobby, lounge, and adjoining corridors are quite flexible in the allotment of space. average allotment of about 16 sq ft per guest room. Some hotels, however, have reduced this nonproductive area to 12 sq ft per guest room.



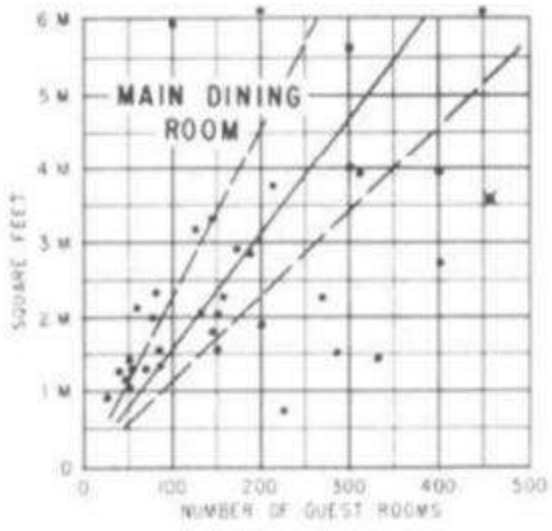


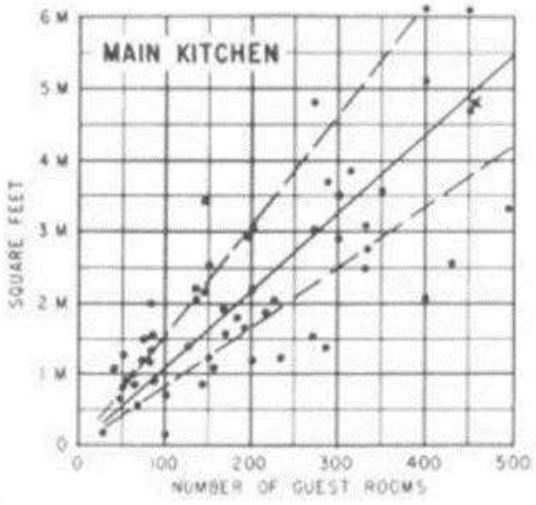
.

7.4.7 FOOD AND BEVERAGE SERVICE SPACE

Used for the receiving, storage, preparation, and service of food and beverages for guests, the general public, and employees. It includes the receiving area, storerooms for food and beverage supplies, China glassware, and silver, and also the kitchen, restaurants, banquet hall, private dining rooms, employees' dining area, food service pantries bar, cocktail lounge, and garbage room (sometimes with an incinerator).

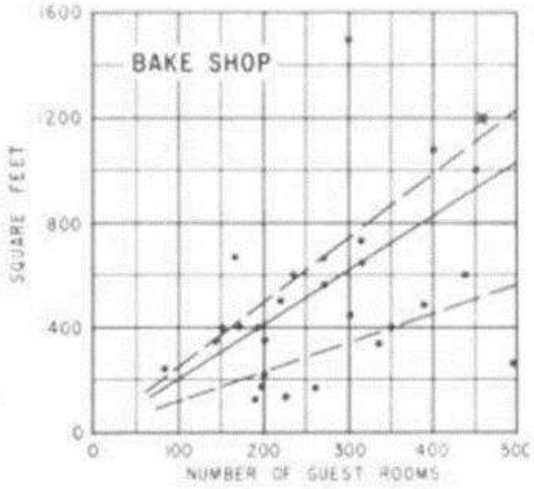
Dining room-
About 16 sq it per seat is required for the dining room. The allotment varies from 18 sq ft for de luxe dining rooms to 14 sq ft for popular priced places.

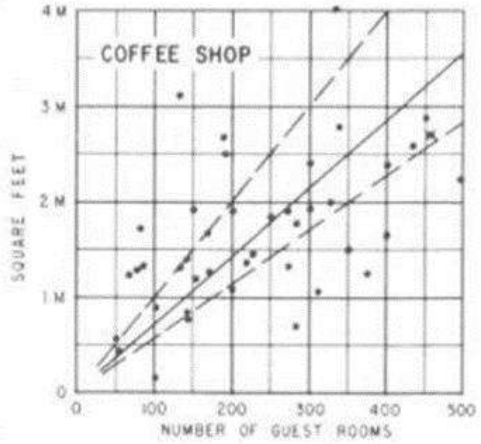




Main kitchen-
kitchen is is customarily 40 to 45 per cent of the dining room

Bake shop
The typical allotment is 2 sq ft per guest room. If a separate bake shop is provided, its area is usually equal to 20 per cent of the kitchen area.

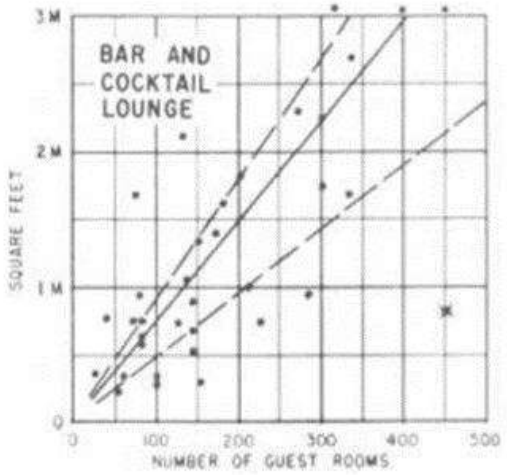




Coffee shop-
Coffee shop provides quick food service at moderate prices. 7 sq ft per guest room is the usual allotment. area required per seat in coffee shops is about 18 sq ft per seat for counter service only, (this area includes the counter), 16 sq ft per seat for both counter and table service, and 14 sq ft per seat for table service only.

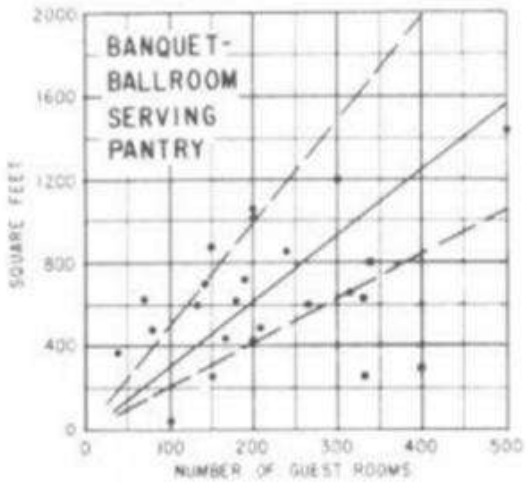
bar and cocktail lounge-

The bar and cocktail lounge may be separated, adjoining, or combined. The area is provided, 7 .5 sq ft per guest room is the typical allotment.



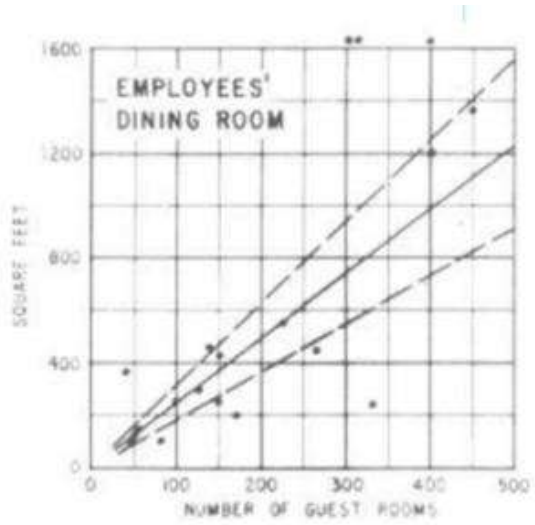
Banquet-ballroom serving pantry-

A separate room is provided adjacent to the banquet hall, with plate warmers, hot-top serving tables, refrigerators, serving counters, coffee urns, and sometimes dishwashing facilities. the requisite space allotment per 100 banquet seats varies with the function of the pantry. the requisite space allotment per 100 banquet seats varies with the function of the pantry.



Employees' dining room-

An employees' dining room is provided for the bellmen, maids, elevator operators, and the like other employees such as the staff from the front office and the accounting department usually eat in the coffee shop. the basis of 18 sq ft per sent and the number of employees to be seated at one time.



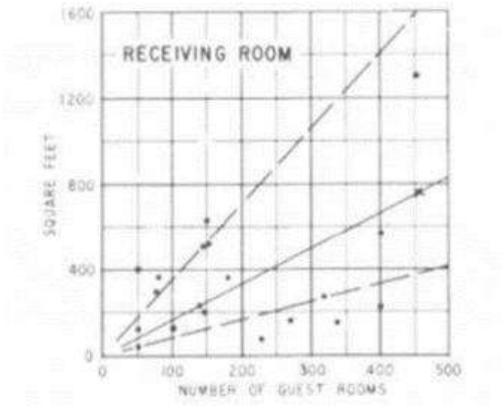
Beverage storeroom-

Beverage storeroom(s) should be provided separately from general food store-room. Beer and soft drinks are desirably, but not necessarily, stored in separate rooms. The typical allotment is 1 .4 sq it of beverage storage area per guest room was only for wine and liquor . Probably 2 sq ft of total beverage storage should normally be allotted per guest room.

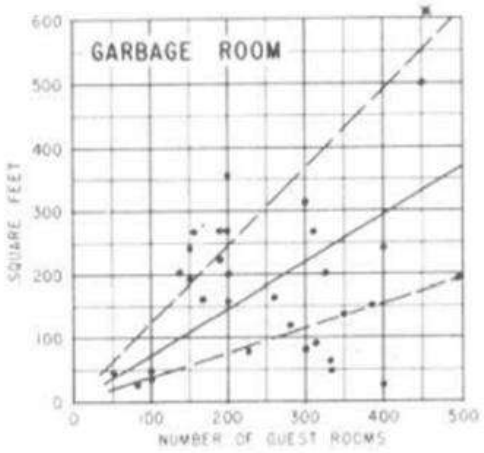


receiving room-

receiving room is provided for food, beverages, linen, and other supplies which, upon arrival, are customarily checked against delivery slips, weighed, counted, and inspected. The typical allotment for the receiving room is 1.6 sq ft per guest room.



garbage room-
The typical allotment for the garbage room of 0 .75 sq ft per guest room is generally satisfactory.



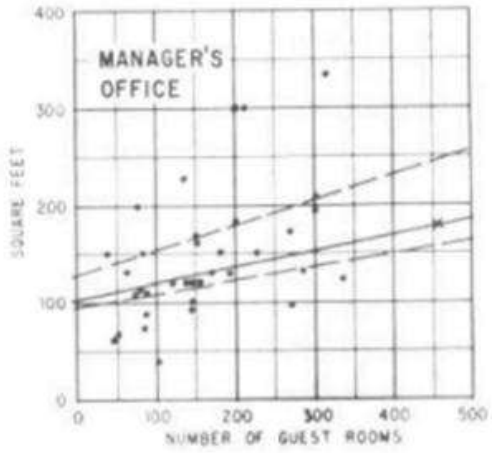
7.4.8 GUEST-ROOM SPACE

This division includes the guest rooms together with guest bathrooms, clothes closets, and entrance vestibules, the sum of which is the area that the guest rents. Also included are the necessary auxiliary areas found on the typical floor, such as guest corridors, stair wells, elevator shafts, and maid's closets.

7.4.9 GENERAL SERVICE SPACE

Non-productive space, includes those areas for general administration, operation, maintenance, and storage that are not otherwise classified. They include executive and administrative offices; areas devoted to the handling and storage of linen; help's quarters; maintenance shops; rooms for housing the mechanical equipment for heat, light, power, ventilation, and refrigeration; and also certain storerooms.

Manager’s office-
manager's office requires a minimum area of about 100 sq ft. The activities in this office seldom justify more than 200 sq ft About 140 sq ft is the most common space allotment, regardless of the size of the hotel.



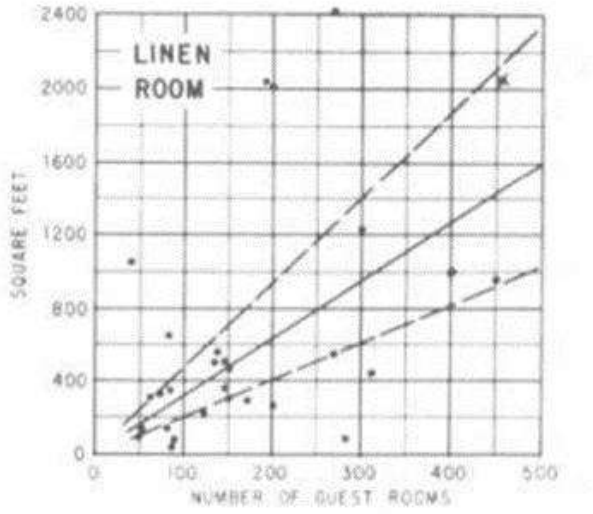
accounting office-

The accounting office should have a minimum area of about 100 sq ft to accommodate one person at a desk with appropriate record-keeping and filing equipment. typical area of the accounting office for a 200-room hotel is shown on the graph as 200 sq ft, whereas for a 400-room hotel it is 300 sq ft.



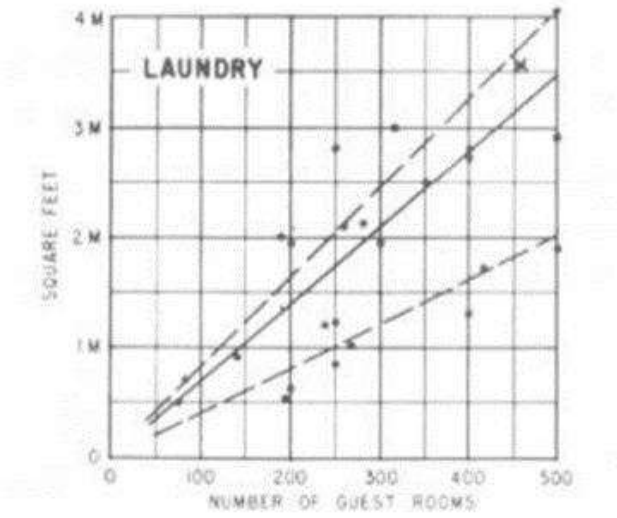
linen room-

A linen room is necessary to accommodate the housekeeper's office and the shelves of neatly stacked linens, together with the counter over which the maids receive their supplies. allotment for the main linen room is usually from 2 to 4.5 sq ft per guest room.



laundry-

A laundry is sometimes operated by the hotel. allotted 7 sq ft per guest room. In a few cases, the allotment is only 4 sq ft per guest room.



7.4.10 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

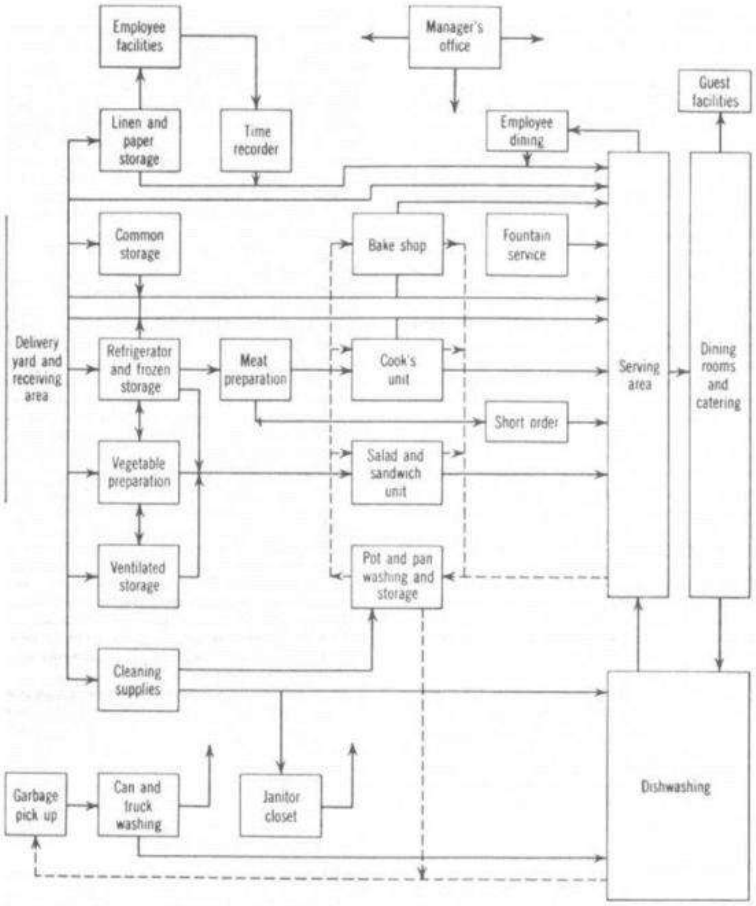


Fig. 1 Flow diagram showing functional relationships.

- .

7.5 TIME SAVER STANDARDS (BUILDING TYPES)- KITCHENS:



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

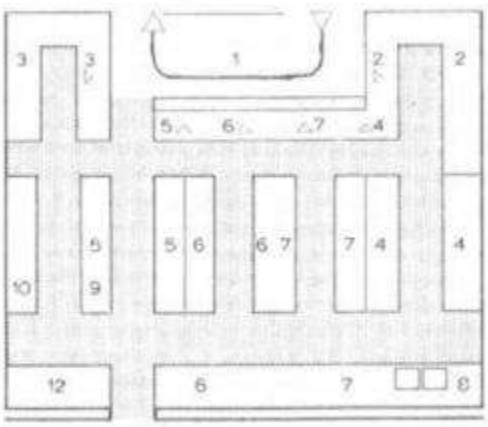


Fig. 1 Hotel or restaurant kitchen or French restaurant of high standard. Capacity for main meals: Hotel—100–200 persons / menu, 100 persons / à la carte. Restaurant—200–300 persons / mealtime from 11:30 to 1:30. Waiters' passageway: tangential. Kitchen: Linear arrangement with large installations in the rear. See Legend for explanation of numbers.

Figure 13 RESTAURANT AREA DIMENSION

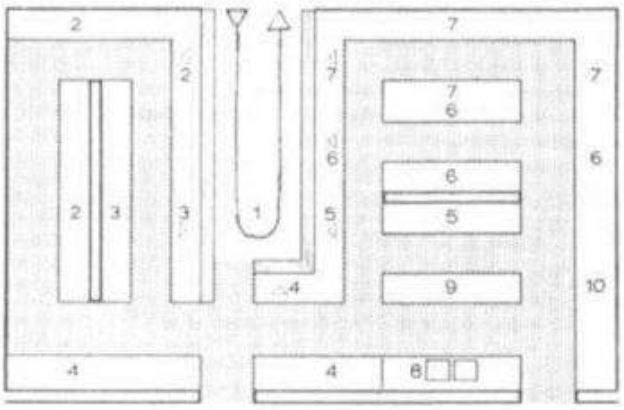


Fig. 2 Hotel or restaurant kitchen. Capacity: With this layout, a 200-seat restaurant will be able to handle three full sittings. This layout can also take care of a hotel with 100 guests and can also accommodate a restaurant open to the general public, an outdoor restaurant, and a private dining area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

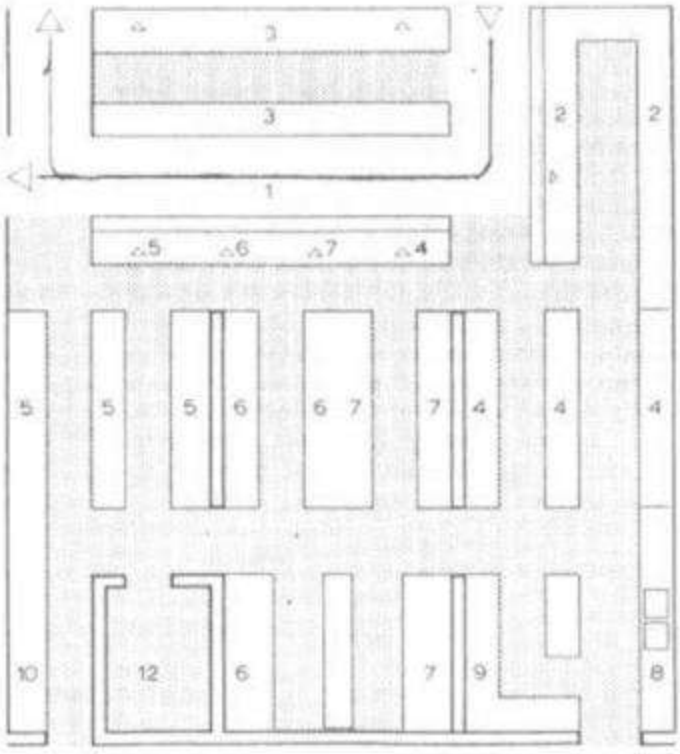
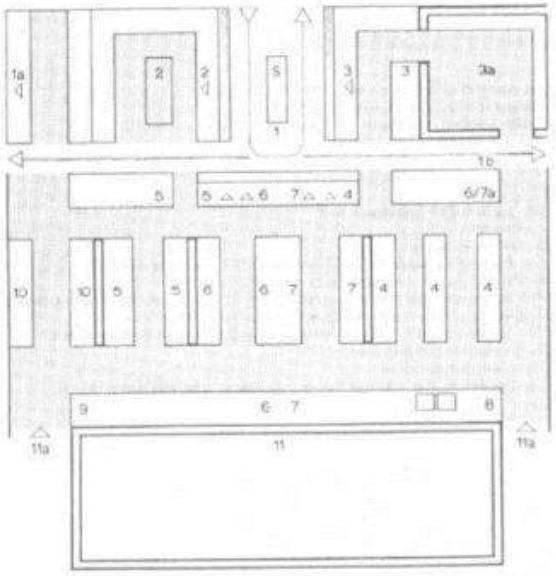


Fig. 3 Large restaurant kitchen for restaurants with many private party and conference facilities or with commissary and catering capacity for other businesses. Suitable also for large hotel with large restaurant for the general public. Capacity: 800–1,000 persons (e.g., 200 seats and fourfold reoccupancy).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



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)

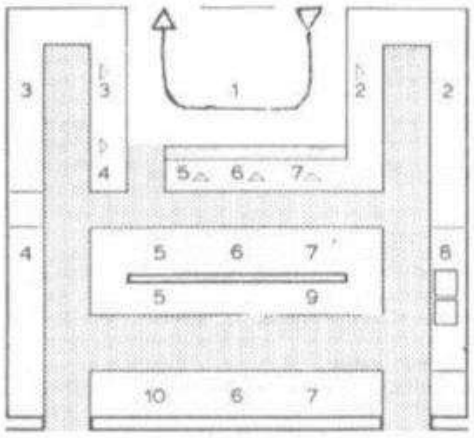


Fig. 4 Restaurant kitchen especially suited for city or excursion restaurants. Capacity: as in Fig. 1. Waiters' passageway: tangential. Kitchen: The cooking, roasting, grill, and frying apparatus are planned as wall structures. See Legend for explanation of numbers.

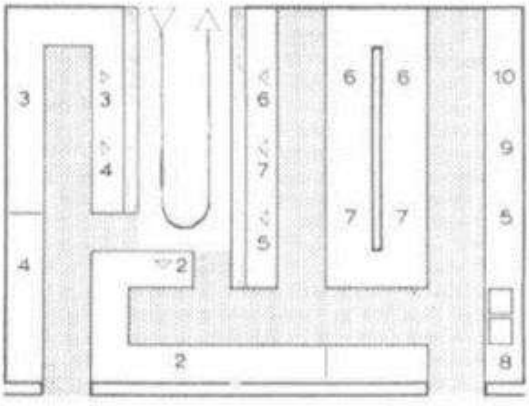


Fig. 5 Restaurant kitchen. Capacity: This arrangement is conceived for a very busy city restaurant of good quality (approximately 600 persons—e.g., 150 seats with fourfold reoccupancy). Waiters' passageway: in the center. Kitchen: The cooking, roasting, grill, and frying apparatus are planned as wall structures. See Legend for explanation of numbers.



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

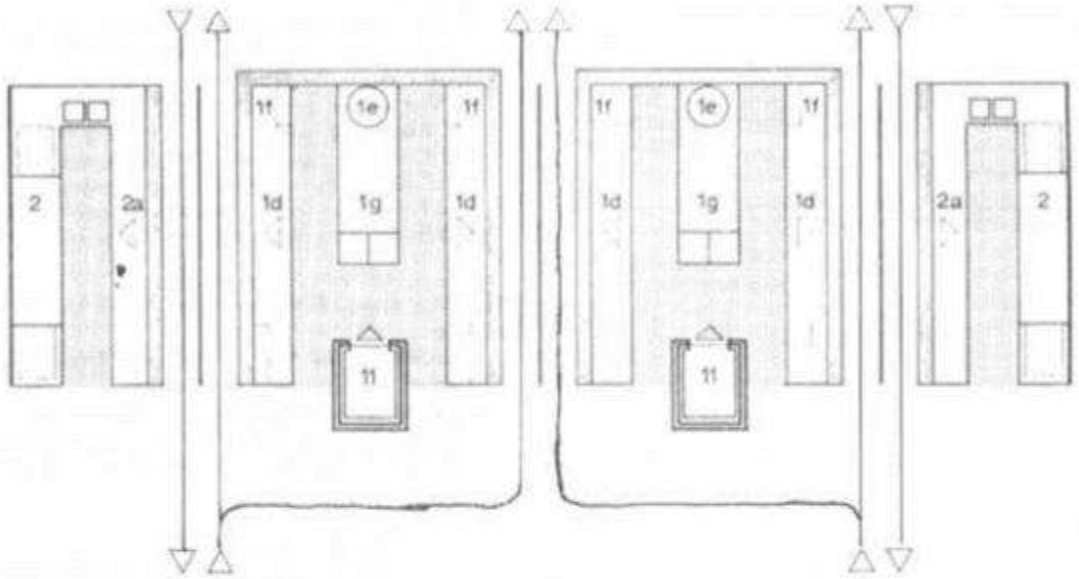
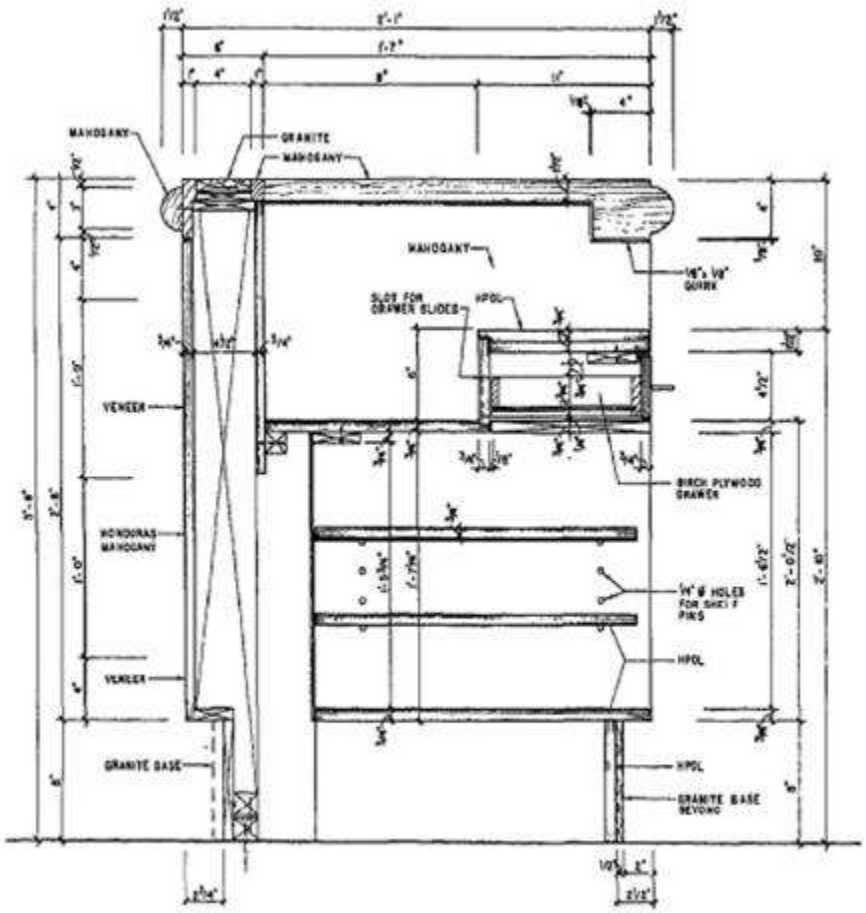


Fig. 14 Student dining hall or cafeteria with four self-service buffets. Capacity: at least 1,500 persons per hour. Seating: at least 400 seats. Kitchen: outside delivery of meals with standard or conveyor-type elevator.

Legend:

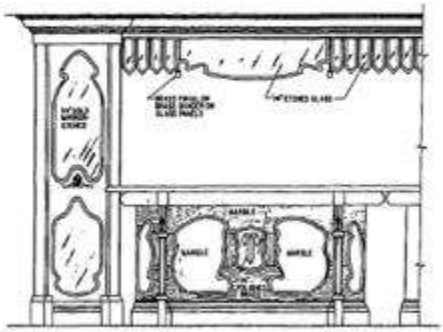
1d. Self-service buffet—menu as in Fig. 13
1e. Circular device for salad dressings, condiments, extra cutlery, etc.
1f. Cash register
1g. Preparation table with trolley stand
2. Dishwasher
2a. Soiled-dish return
11. Standard or conveyor-type elevator connection to meal-preparation kitchen

7.6 TIME SAVER STANDARDS (INTERIOR DESIGN):

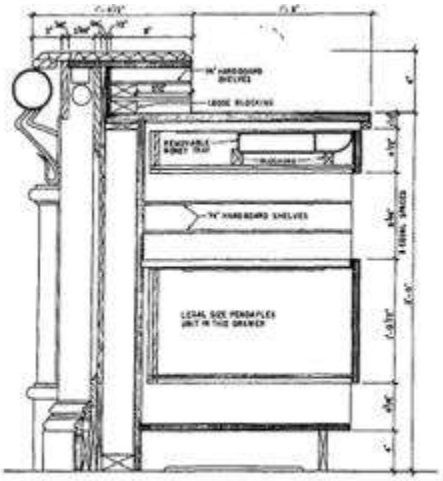


VERTICAL SECTION AT RECEPTION DESK

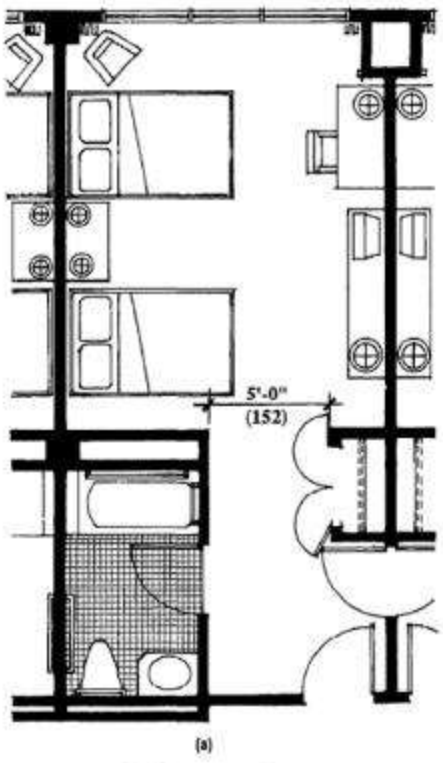
Figure 14 RECPTION DESK DETAIL



PARTIAL ELEVATION-FRONT DESK
TROPICANA HOTEL



VERTICAL SECTION
REGISTRATION DESK TROPICANA HOTEL



14' Bay-spacing

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

Guestroom Plans

Accessible guestrooms have design features and floor plans that provide the maneuvering clearances for guests with limited mobility. Figures 5 to 9 show sample plans of guestrooms and bathrooms with the required:

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

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

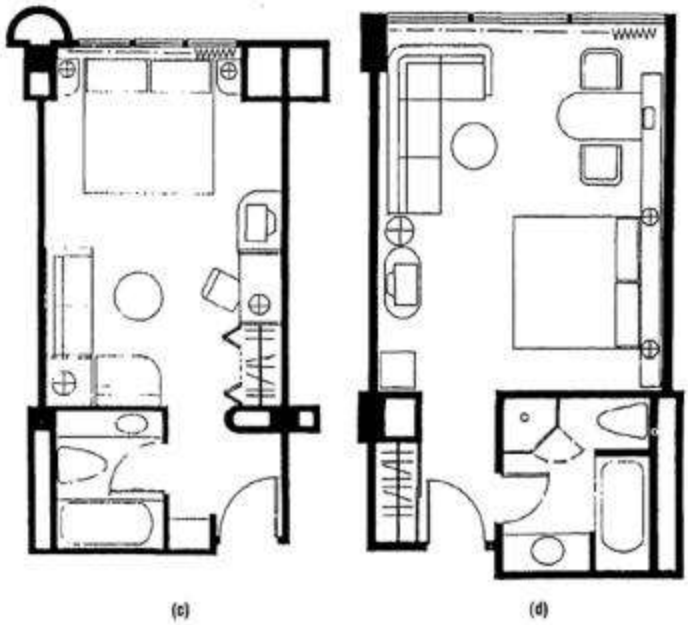


Fig. 2 Guestroom plans. *(a)* Typical double-double finishes plan: vinyl wallcovering (WC), paint (P), carpet (C), ceramic tile *(CT)* identified and keyed to legend. *(b)* King-studio (Holiday Inn): standard layout with armoire unit and large lounge area including a convertible sofa. *(c)* Reversed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

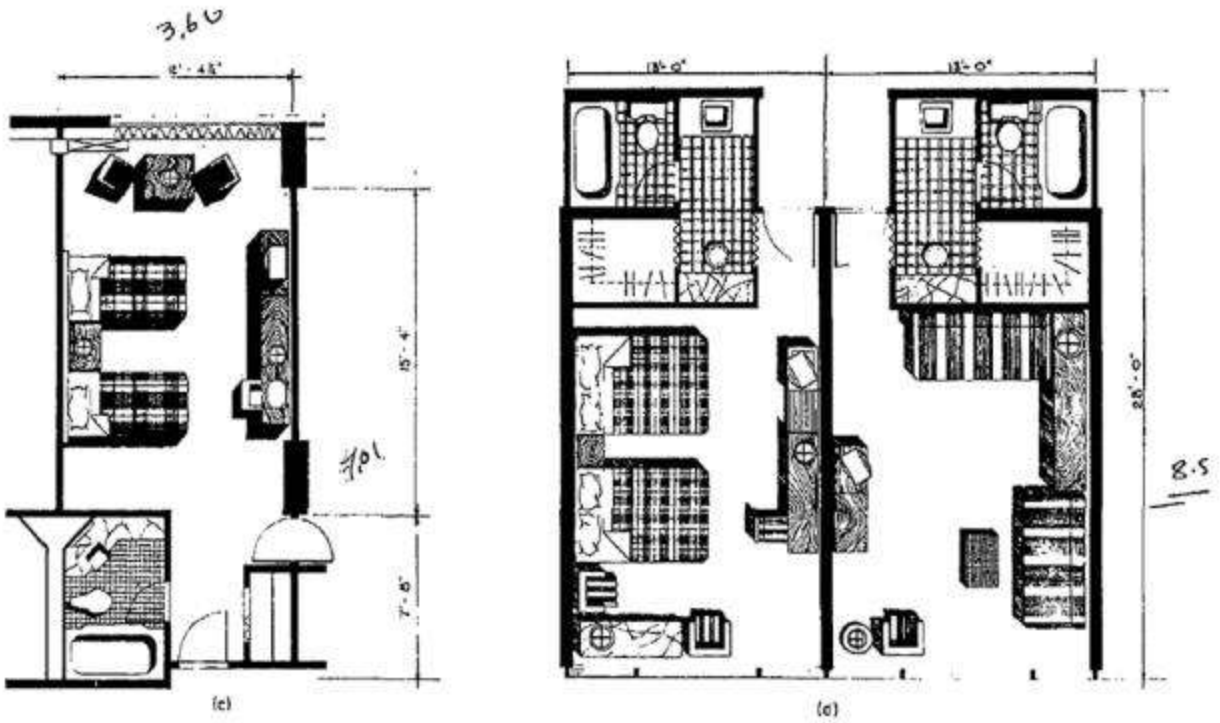
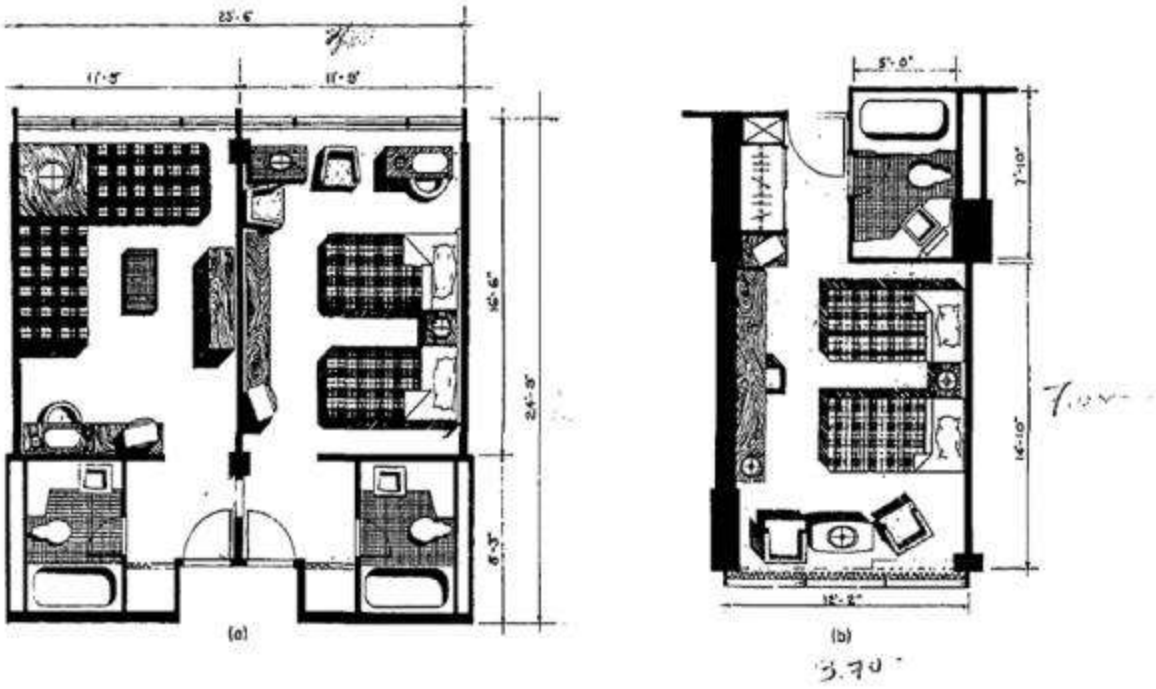
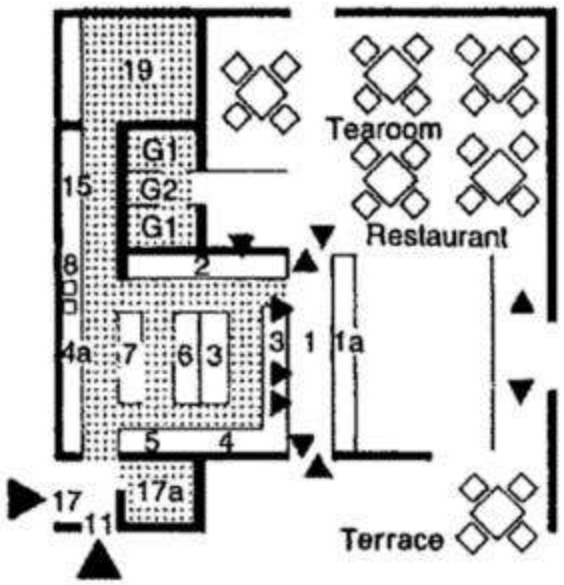


Fig. 1 *(a)* Uris Brothers Hotel, New York. *(b)* Americana Hotel, New York, typical tower room. *(c)* Loews N.Y. Motel, typical room. *(d)* Causeway Inn, Tampa, Florida.



7.6.1 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 15 CAFE RESTAURANT

7.6.2 Cafe:

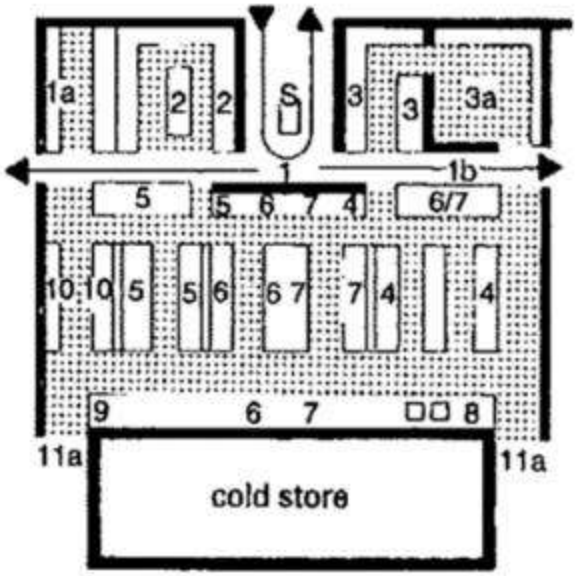
Alcohol-free drinks, except bottled premium beer, liqueurs etc., patisserie and light food- cold and hot.

7.6.3 Tea room:

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

7.6.4 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.

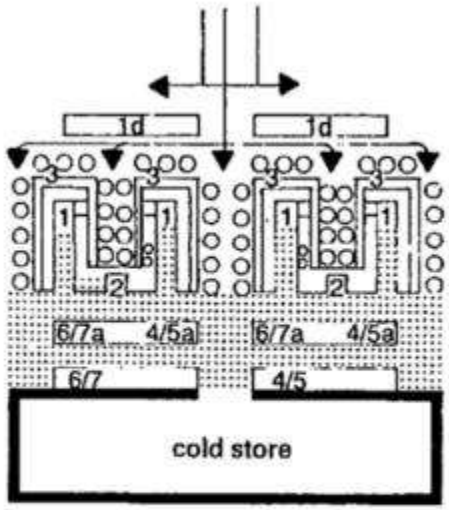


1	waiters' walkway
1a	garden service counter
2	dish-washing area
3	drinks counter
3a	drinks cellar
4	pastry counter
5	cold dishes
6	hot dishes and sauces
6/7	table with hot store
8	pot and pan washer
9	vegetable preparation
10	meat preparation
11a	deliveries, and access to stores, offices, staff cloakrooms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

3 Large hotel restaurant kitchen

7.6.5 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.

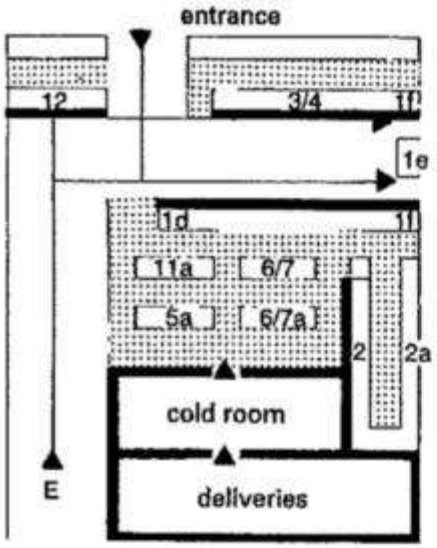


1	serving aisles in U-shaped counters
1d	vending machines
2	link between two counters with covered dishwashers, operated from both sides, each with two rinsing basins
4/5	cold meal preparation
4/5a	cold servery (salads, ices, desserts)
6/7	griddle, soup heater, water boiler etc.
6/7a	hot servery (bain-marie,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

4 Restaurant with buffet and vending machines

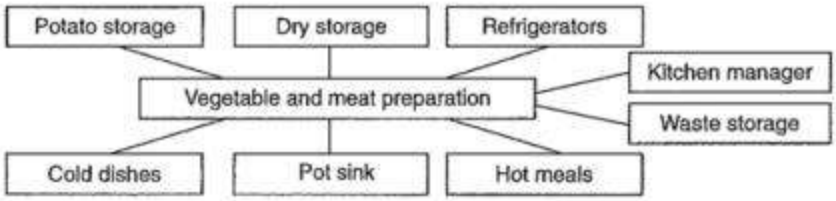
7.6.6 Self-service restaurant-

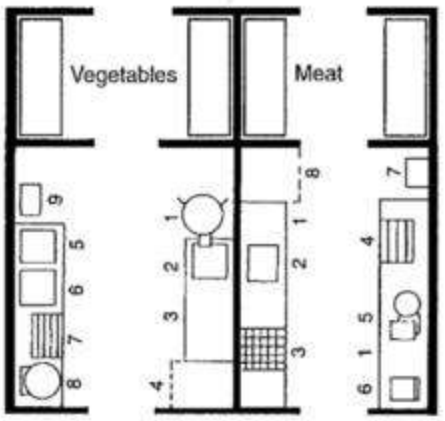
Suitable for department stores or attached to offices. Kitchen: no in-house production. Outside delivery and preparation using deep frozen process.



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

5 Self-service restaurant





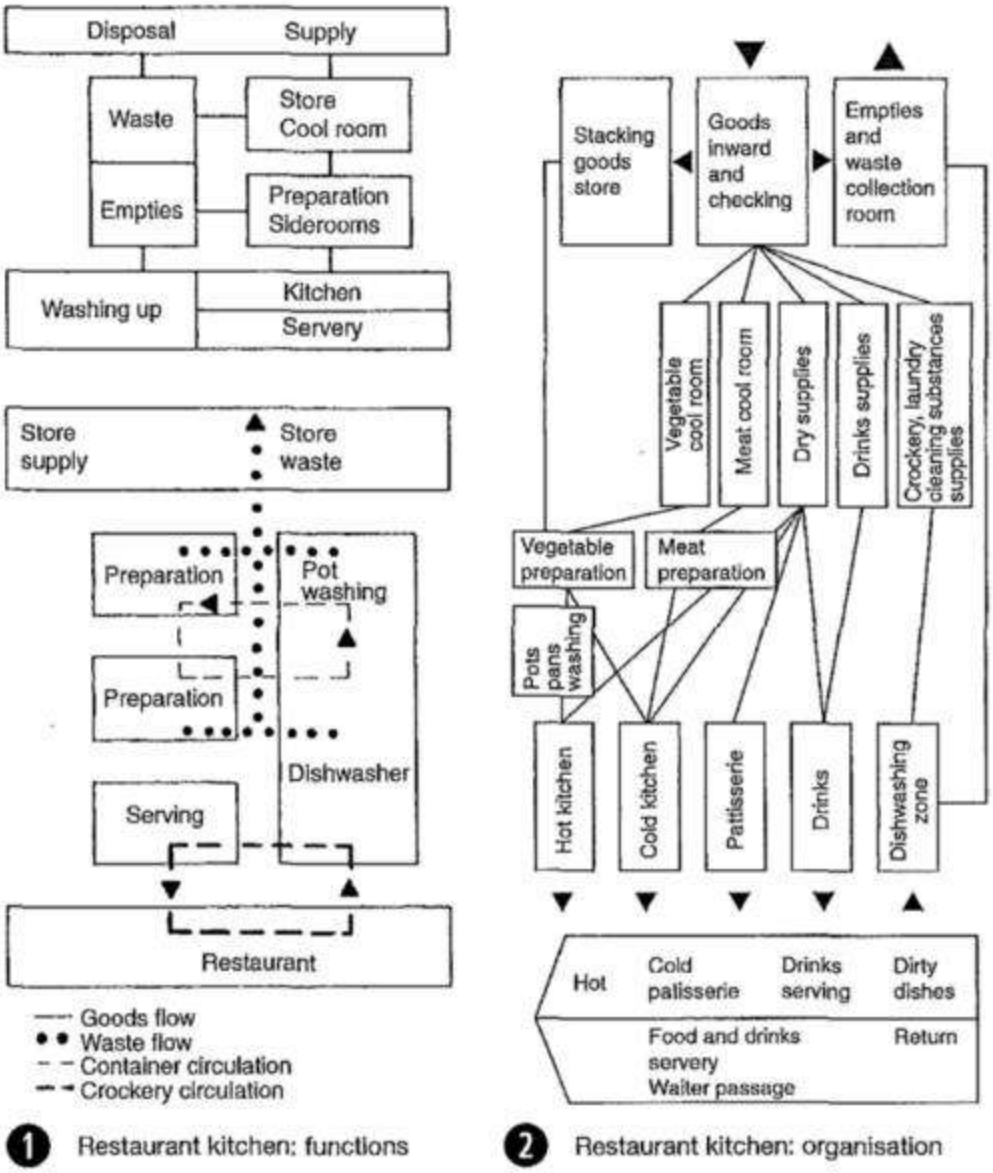
1 Peeling machine
2 Drip tray
3 Cleaning surface
4 Holding surface
5 Universal machine
6 Cutting board
7 Sink + Worktable
8 Hand wash basin
9 Worktable
10 Slicers
11 Freezer
12 Bench scale
13 Stir/beat machine

6 Separate preparation of vegetables and meat

7.6.7 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.



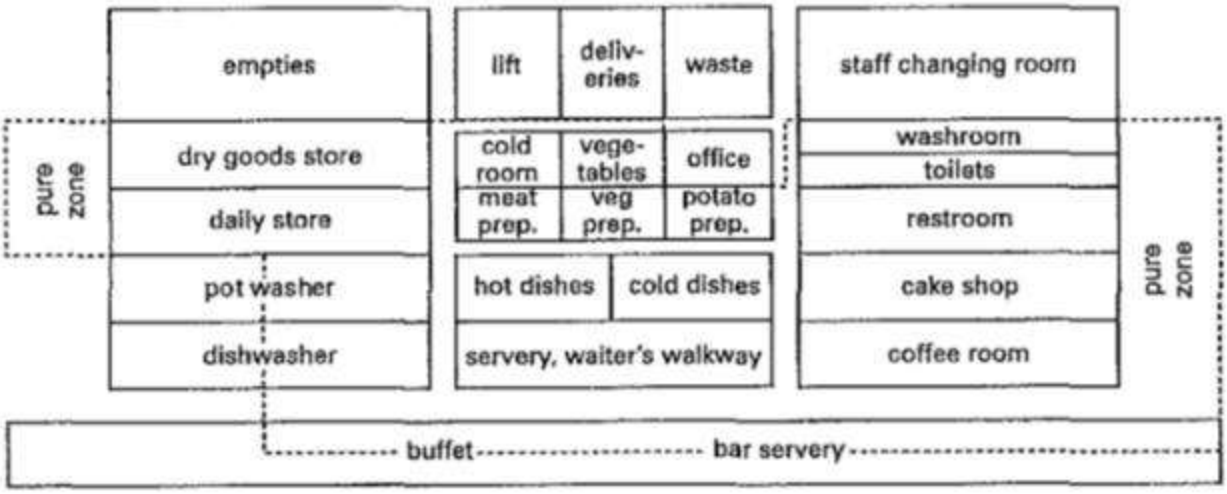
7.6.8 Percentage of total kitchen space requirement-

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

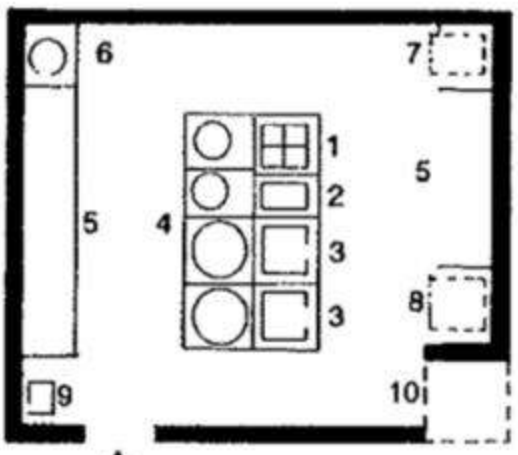
- Aisle widths in storage, preparation and production areas differ according to whether they are purely traffic routes or also overlap the service area. Working aisle widths should be 0.90-1.20 m, side traffic routes with (temporary) overlapping use 1.50-1.80 m and main traffic routes (transport and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

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

4 Basis for dimensions and space requirements

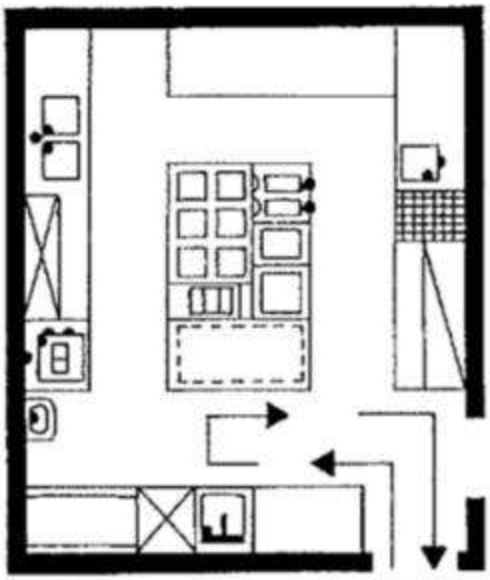


5 Kitchen areas: classification and relationships of functional areas in clean and unclean zones (if earth-covered vegetables are prepared, this must take place in a separate part of the unclean area!)



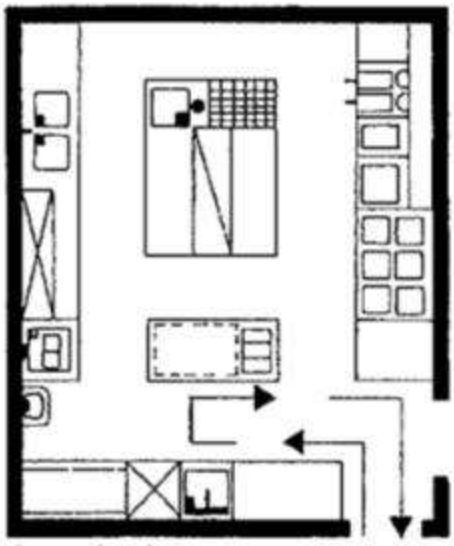
1 cooker
2 deep fat fryer
3 griddle
4 water boiler
5 work surface
6 cooker
7 double-deck oven
8 convectomat
9 hand basin
10 storage area

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



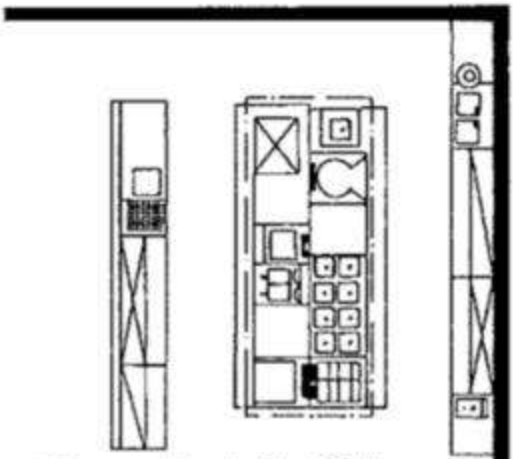
1. production in block

2 Kitchen for restaurant with 60–100 places



2. production in line

3 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

4 Restaurant kitchen for 150–200 meals

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)

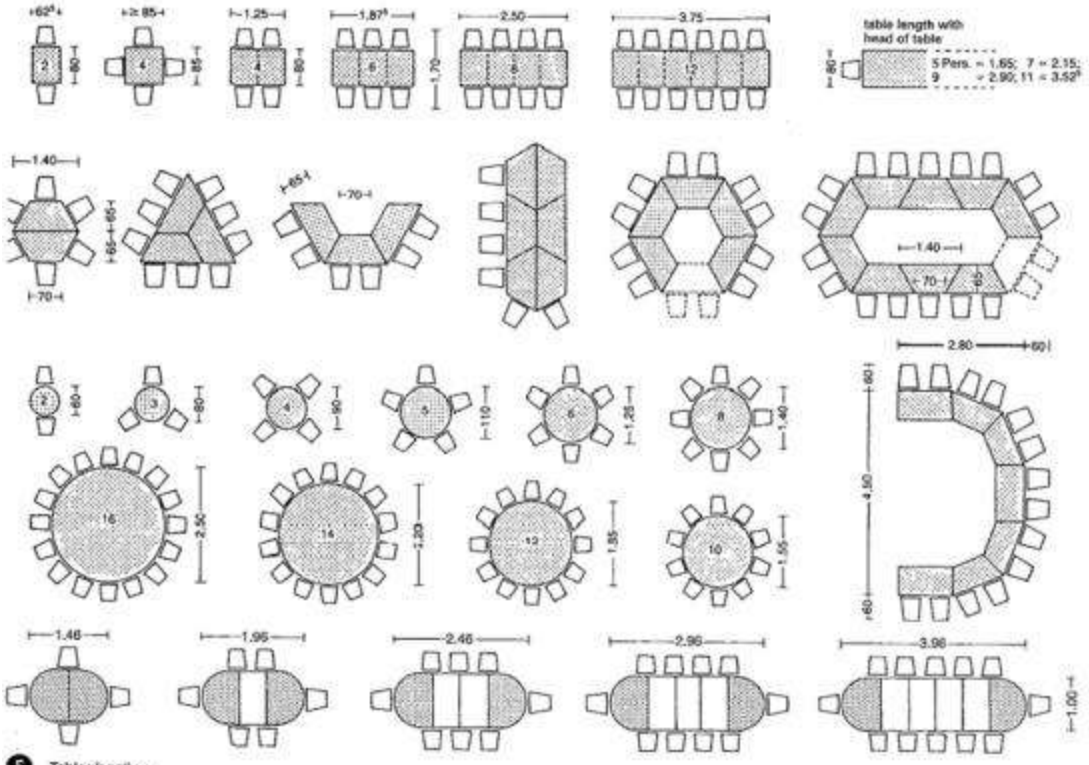
	Hotel type	m^2/room
1.	luxury	90–110
2.	first class	60–70
3.	comfort	50–60
4.	standard (holiday hotel, motel)	40–60
5.	tourist (low-budget)	15–20

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

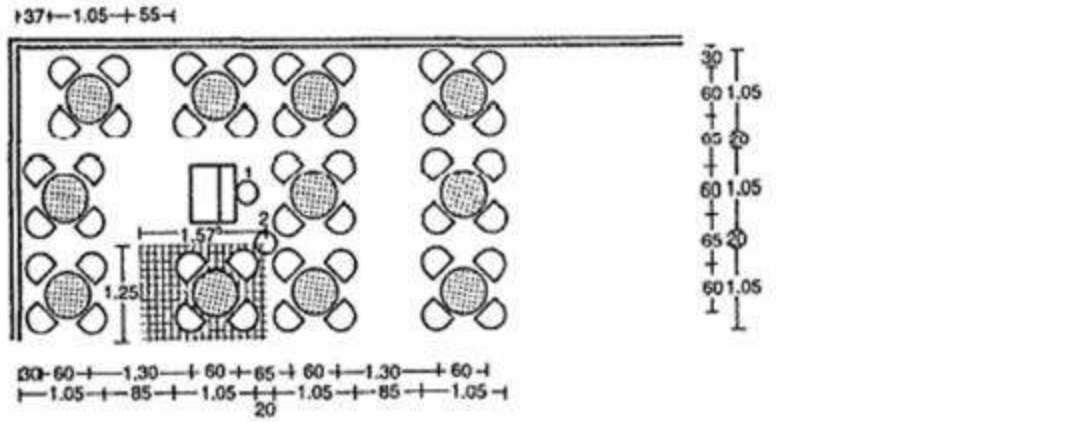
5 Stars (Luxury): as before, but single room 18m2 , double room 26m2, (minimum size, see above), 2% of the hotel rooms as suites (at least two), each with an armchair/sofa per bed, additional washbasin in double rooms and suites, additional colour television in suites, reception lobby.

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.

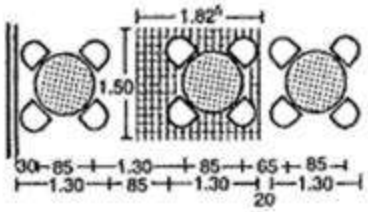
Distance between table and wall greater than equal to 75 cm because the chair alone requires a space of 50 cm. If the space between table and wall is also used for access, the distance should be greater than 100cm. Round tables need a little more space, a difference of up to 50 cm.



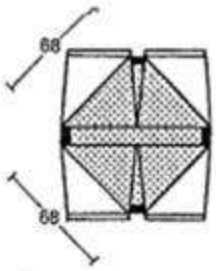
5 Tables/seating



5 Closest table spacing

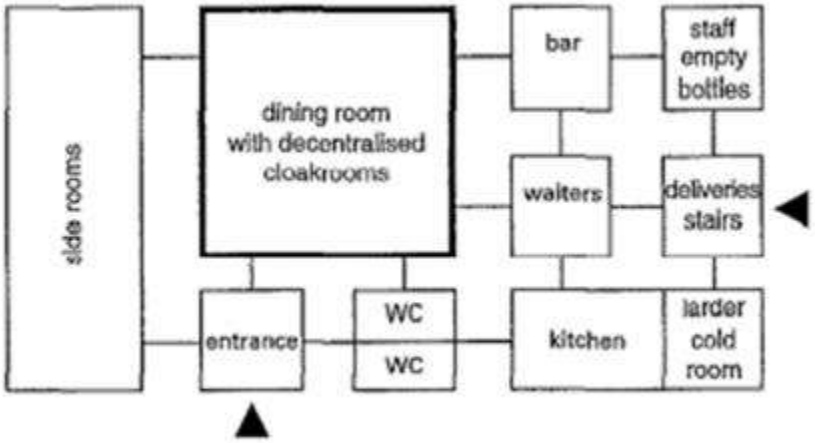


6 Tables in a café



7 Zuntz table

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



8 Functional scheme of a small restaurant

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

11 Space requirements

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

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

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

9 Usable width of stairs

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

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

10 Toilet facilities

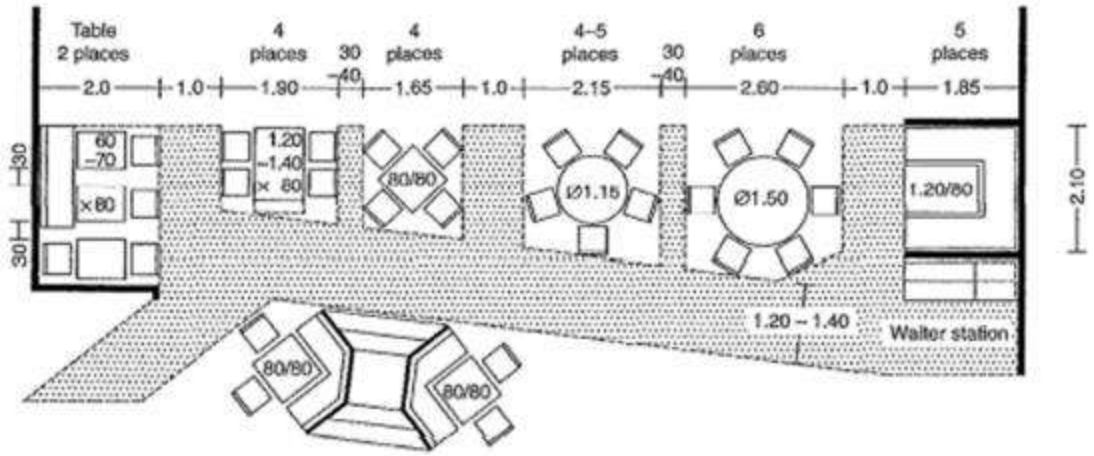
Furnishing (tables)	No. places	Waiter (m²/place)	Self-service (m²/place)
square	4	1.25	1.25
rectangular.	4	1.10	1.25
rectangular	6	1.00	1.05
rectangular	8	1.10	1.10

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

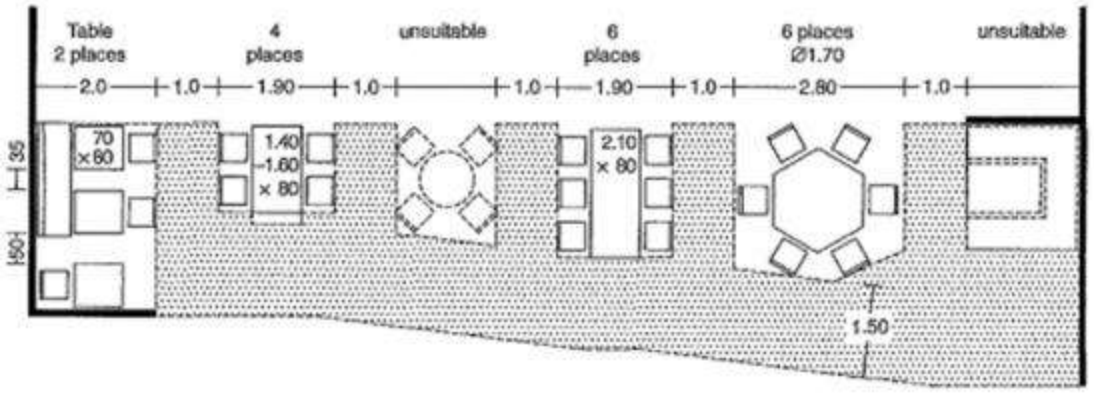
main aisles	min. 2.00 m wide
intermediate aisles	min. 0.90 m wide
side aisles	min. 1.20 m wide

13 Aisle widths

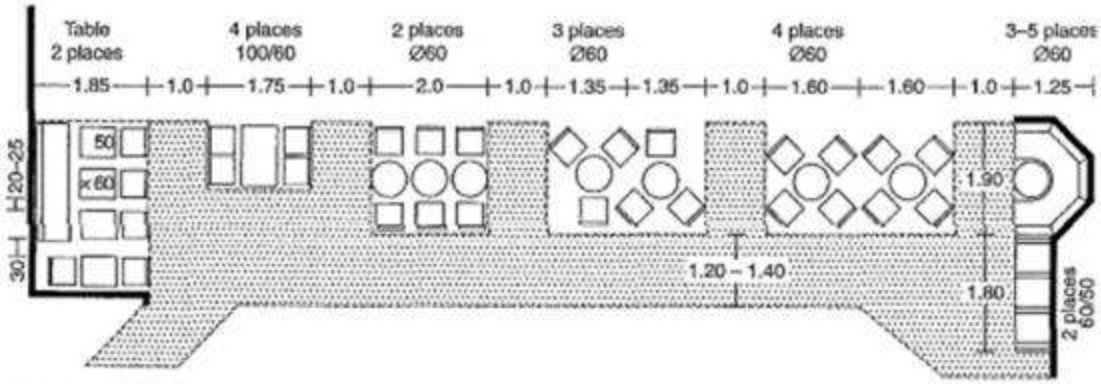
Diagonal arrangement of the tables generally takes up less space than an aligned pattern, with a space saving of up to 35%.



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



2 In a self-service restaurant



3 Bistro–café–bar

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

1

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;

7.7 MODEL BUILDING BYLAWS:

Parking standard

Parking space shall be provided for different types of development as per norms given in Master Plan/Development Plan or as given below: 3.3.1 The following Table 3.1 may be referred to for deciding the

parking norms for different use zone/activities only minimum required value of ECS and NOT a range should be specified in the development plan. It can be changed in subsequent plan depending upon need based upon local vehicle ownership, mass transportation and consequent parking needs

Hotel	3 ECS / 100 sqm of floor area	For Population between 2- 10 lakh – 1 car parking space for every 4 guest room. For Population between 10-50 lakh – 1 car parking space for every 3 guest room. For Population more than 50 lakh – 1 car parking space for every 2 guest room[2].

.Staircase/Exit Requirements

A	Residential buildings (dwellings) NOTE — For row housing with 2 storeys, the min. width of shall be 0.75	1.0 m
B	Residential hotel buildings	1.5 m
C	Assembly buildings like auditoria, theatres and cinemas	2.0 m
D	Educational building	1.5 m
E	Institutional buildings	2.0 m
F	All other buildings	1.5 m

Table 4.6 Per Capita water requirement for various Occupancies/Uses

Sl. No.	Type of Occupancy	Consumption per head per day (in lt.)
1.	Residential	
	a) In living units	135
	b) Hostels	135
	c) Hotels with lodging accommodation (per bed)	180
	d) Hotels (5 star and above)	340

Sanitary Requirements for Hotels

Table 4.10 Sanitary Requirements for Hotels

Sl. No.	Sanitary Unit	For Residential Public staff	For non residential Staff	
			For male	For female
1.	Water Closet (W.C.)	One per 8 Persons omitting occupants of the attached water closet minimum of 2 if both sexes are lodged	1 for 1-15 persons 2 for 16-35 persons 3 for 36-65 persons 4 for 66-100 persons	2 for 1-12 persons 4 for 13-25 persons 6 for 26-40 persons 8 for 41-57 persons 10for 58-77 persons 12for78-100 persons Add 1 for every 6 persons or part thereof.
2.	Ablution Taps	One in each W.C.	One in each W.C.	One in each W.C.
3.	Urinals	Nil	Nil upto 6 persons 1 for 7-20 persons 2 for 21-45 persons 3 for 40-70 persons 4 for 71-100 persons	Nil
4.	Wash Basins	One per 10 persons omitting each basin installed in the room / suite	1 for 15 persons 2 for 16-35 persons 3 for 36-65 persons 4 for 66-100 persons	1 for 1-12 2 for 13-25 3 for 26-40 4 for 41-57
5.	Baths	One per 10 persons, less occupants of room with bath in suite	Nil	Nil
6.	Cleaner's Sinks	One per 30 Bed rooms (one per floor minimum)	Nil	Nil
7.	Kitchen Sink	One in each Kitchen	One in each Kitchen	One in each Kitchen

Table 4.5 Size of Ventilation Shaft

Height of Building (m)	Size of ventilation shaft (sq m)	Minimum size of shaft (m)
Upto 10.0	1.2	0.9
Upto 12.0	2.8	1.2
Upto 18.0	4.0	1.5
Upto 24.0	5.4	1.8
Upto 30.0	8.0	2.4
Above 30.0	9.0	3.0

PART 4 FIRE AND LIFE SAFETY

Table 7 — (*Continued*)

Sl No.	Type of Building Occupancy	Type of Installation								Water Supply (litre)		Pump Capacity (litre/min)	
		Fire Extinguisher	First Aid Hose Reel	Wet Riser	Down Comer	Yard Hydrant	Automatic Sprinkler System	Manually Operated Electronic Fire Alarm Systems (*see* Note 1)	Automatic Detection and Alarm System (*see* Note 2)	Under-ground Static Water Storage Tank Combined Capacity for Wet Riser, Yard Hydrant and Sprinklers per Set of Pumps	Terrace Tank over Respective Tower Terrace	Pump Near Underground Static Water Storage Tank (Fire Pump) with Minimum Pressure of 3.5 kg/cm^2 at Remotest Location	At the Terrace Tank Level with Minimum Pressure of 3.5 kg/cm^2
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
2)	15 m and above but not exceeding 30 m	R	R	R	NR	R	R	R	R	150 000	20 000	(*see* Note 11)	NR
3)	Above 30 m in height	R	R	R	NR	R	R	R	R	200 000	20 000	(*see* Note 11)	NR
e)	**Hotels (A-6)**	R	R	R	NR	R	R	R	R	250 000	20 000	(*see* Note 12)	NR

e) Hospital, Nursing Homes, etc. 2.40 m.

4.24.7.1 Ramps

a. The ramp to basement and parking floors shall not be less than 7.2m wide for two way traffic and 4 m wide for one way traffic, provided with Gradient of 1:10 for cars and 1:15 for heavy vehicles. At curved portions of the ramp or for circular ramps the slope should not be more than 1:12.

b. Ramps may also be provided in the setbacks which can be sloped considering unhindered movement of fire engine and in no case the gradient shall be less than 1:10.

8 SITE INVENTORY

8.1 DEMOGRAPHIC OF SANAND 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%)

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%).

8.2 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 16 SEISMIC ACTIVITY

8.2.1 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

8.2.2 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.

8.3 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 17: CLIMATIC EXPERIENCE IN SANAND AROUND THE YEAR

8.3.1 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 18 : TEMPERATURE IN SANAND ANUALLY

8.3.2 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**

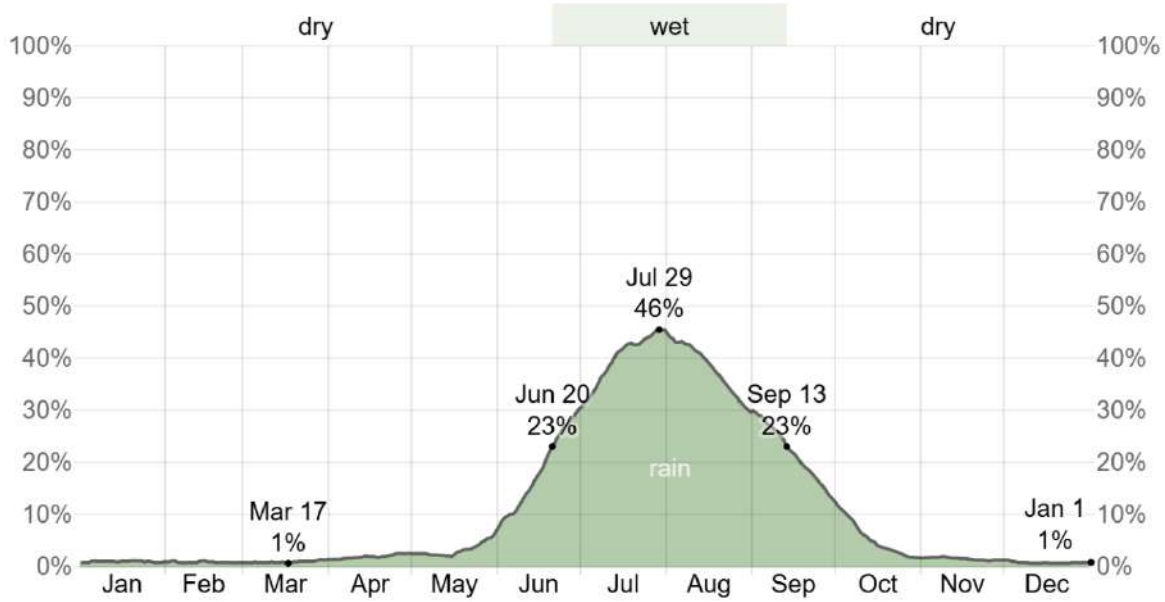


Figure 19: AVERAGE PRECIPTATION IN SANAND

8.3.3 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).

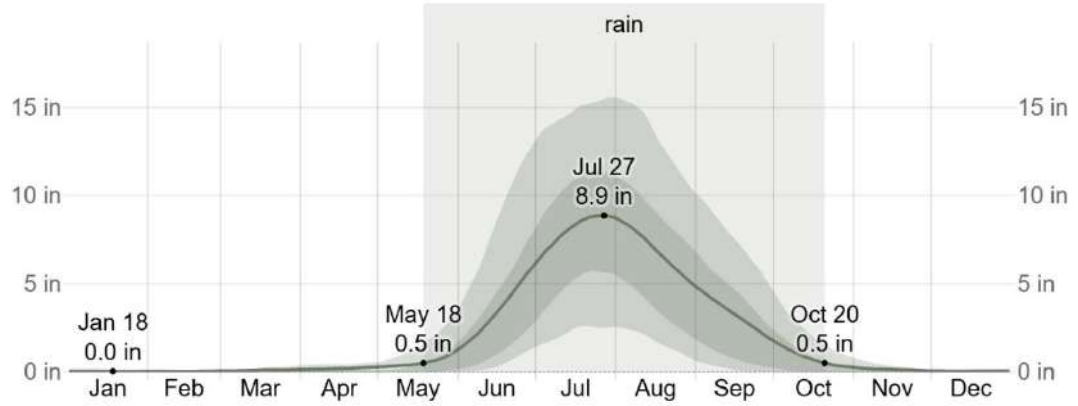


Figure 20: AVERAGE RAINFALL IN SANAND

8.3.4 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,***

Figure 21Figure 37: AVERAGE HUMIDITY IN SANAND

*which records the highest average number of muggy days—**around 30.9 days**, essentially the entire month. Such levels of humidity can*

significantly impact thermal comfort, especially when combined with high temperatures. In contrast, **the**



least humid part of the year is January, with an average of only **0.3 days** experiencing similar muggy conditions, offering a brief respite of dry, more comfortable air. This stark seasonal variation makes it crucial to consider humidity control in architectural and planning decisions, especially for ventilation, cooling, and material selection.

8.3.5 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.

8.4 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.

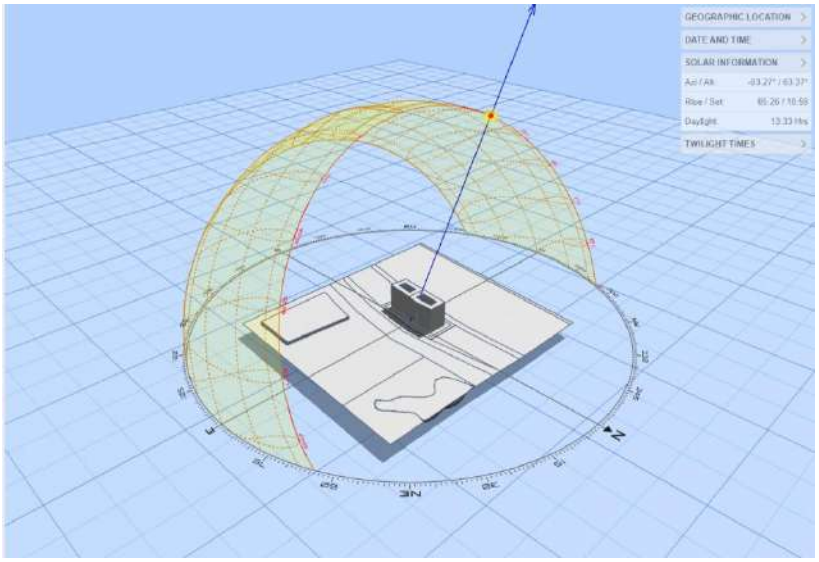


Figure 22: SUNPATH ANALYSIS

8.5 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.

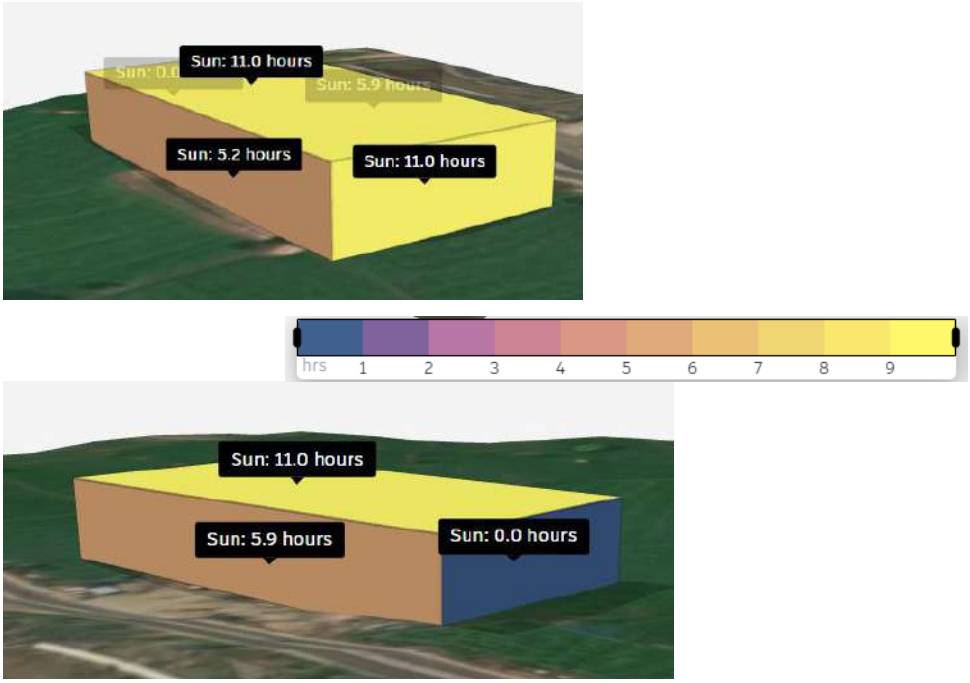


Figure 23: SUN HOUR ANALYSIS OF FEBRUARY MONTH

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.

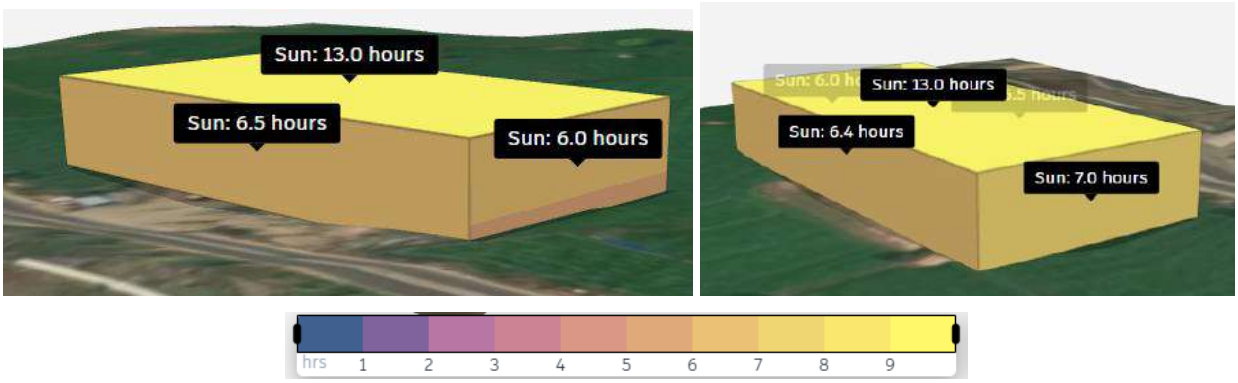


Figure 24: SUN HOUR ANALYSIS OF MAY MONTH

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.

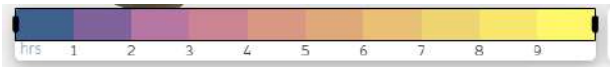
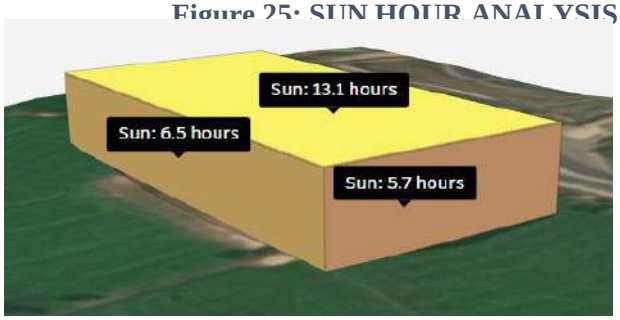
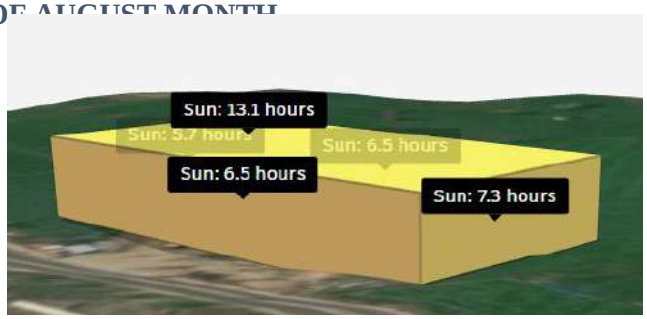


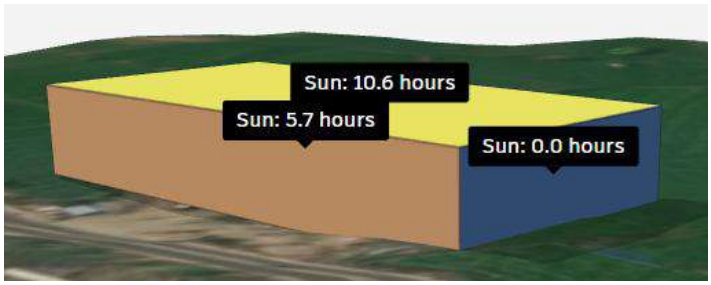
Figure 25: SUN HOUR ANALYSIS OF AUGUST MONTH

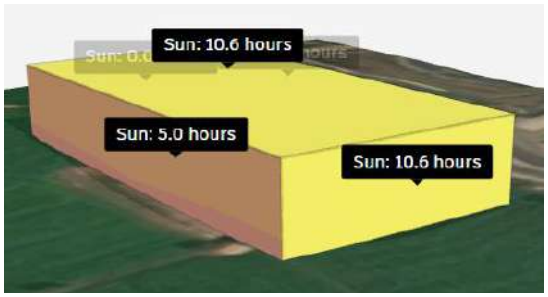




DECEMBER-

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**.





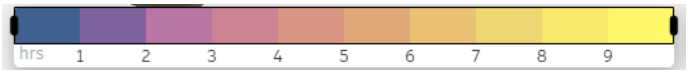


Figure 26: SUN HOUR ANALYSIS OF DECEMBER MONTH

8.5.1 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.

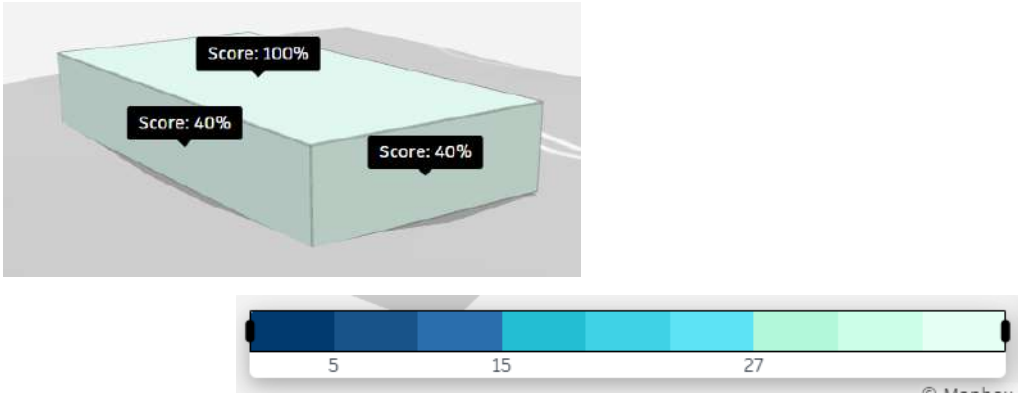
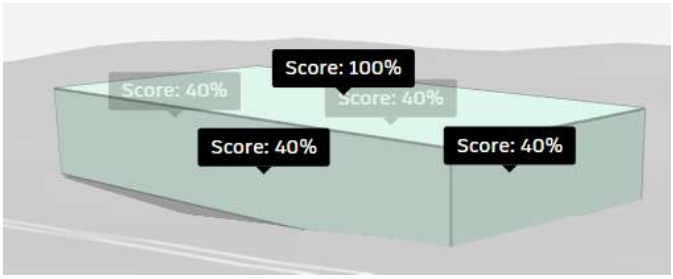


Figure 27: DAY LIGHT POTENCIAL



8.5.2 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.

8.5.3 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.

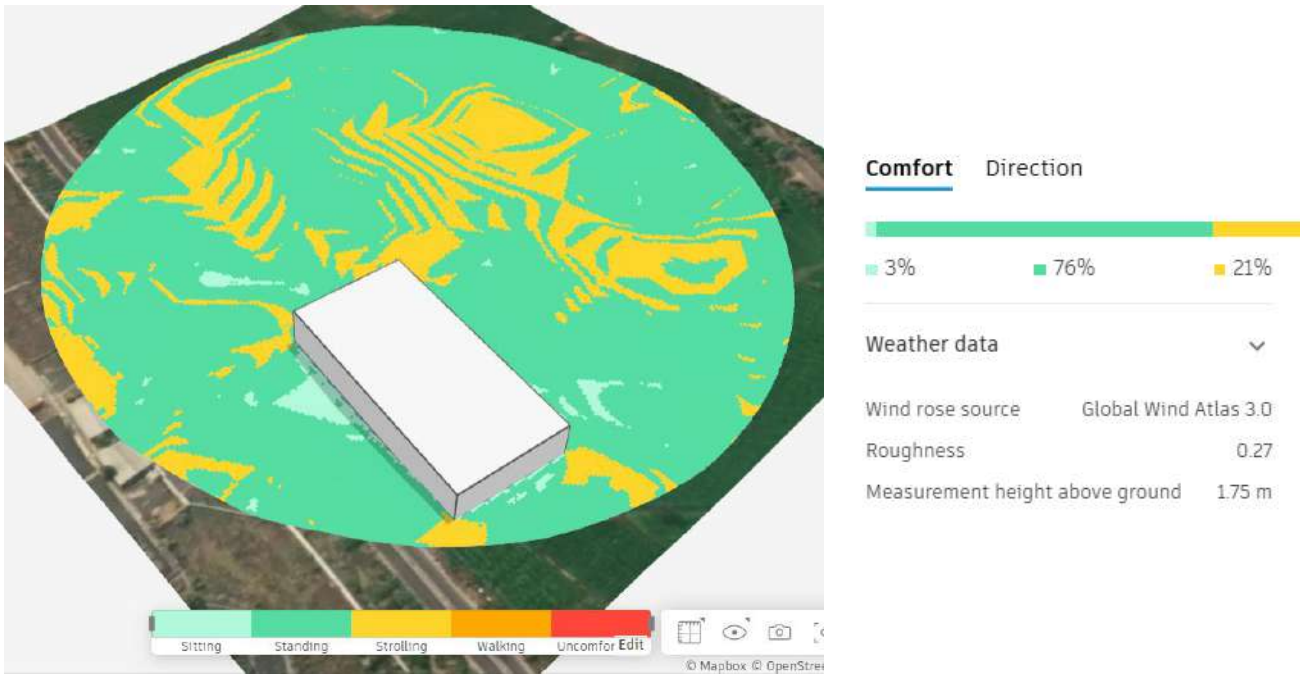
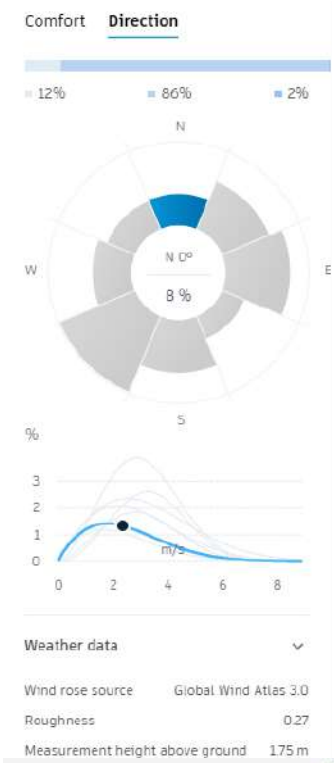


Figure 28: WIND COMFORT ANALYSIS

8.5.4 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.



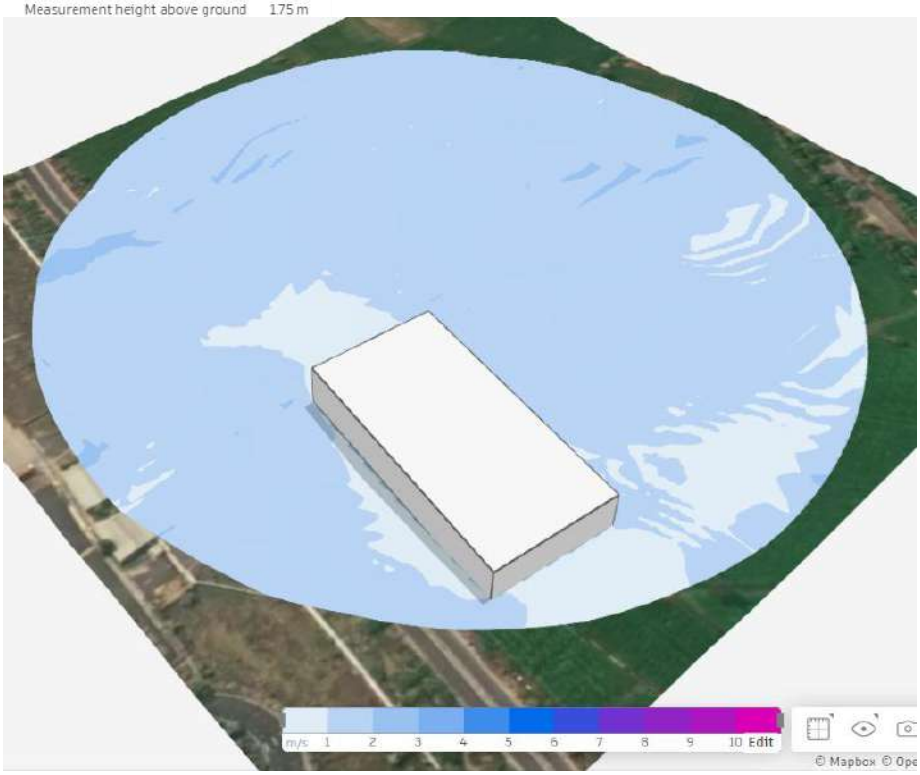
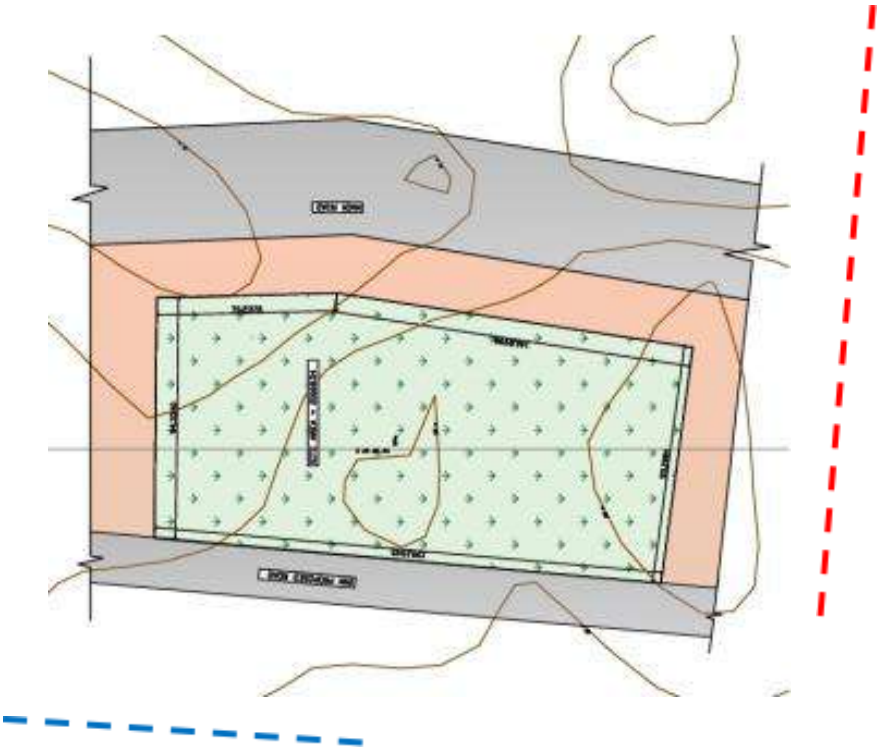
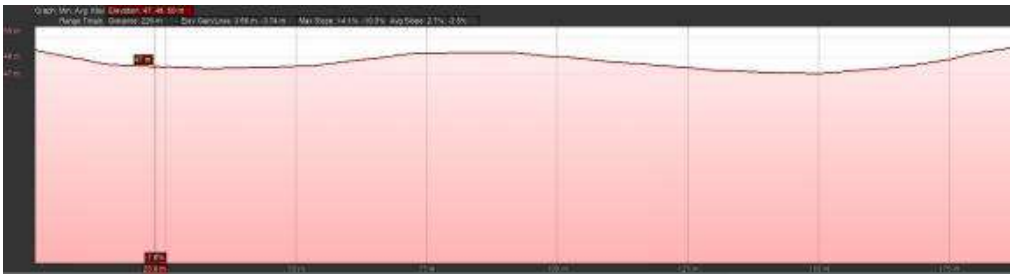


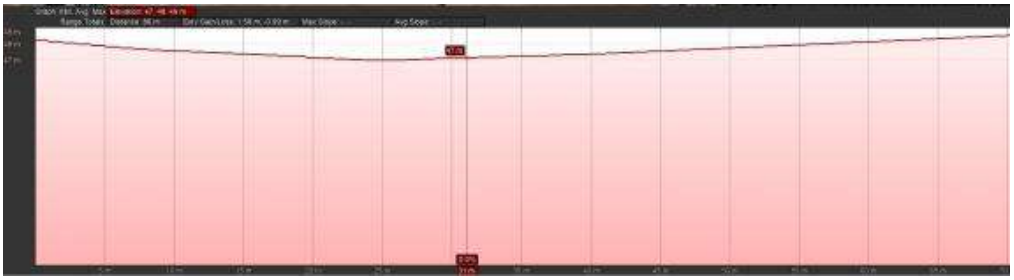
Figure 29: WIND DIRECTION ANALYSIS

8.6 . TOPOGRAPHY





Red Axis Slope



Blue Axis Slope

8.7 UTILITIES & INFRASTRUCTURE

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

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

Electricity will be supplied at the site from the substation of 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

9 CASE STUDIES

9.1 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 30 HILTON PUNE PHOTO







Figure 31 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

9.1.1 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

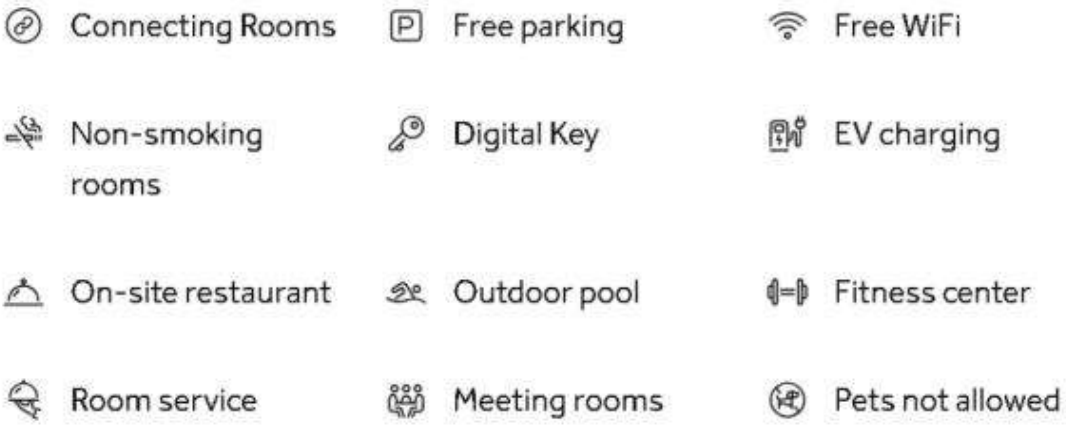
- **Road Network:**
  - **Excellent connectivity via Mumbai–Pune Expressway**
  - **Easy access to Pimpri-Chinchwad industrial zones**
- **Approach: Direct access from Hinjawadi–Wakad Road**

9.1.2 SITE LOCATION and virtcal zoning





9.1.3 FACILITIES



9.1.4 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

9.1.5 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 32 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 33 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 34 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.

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

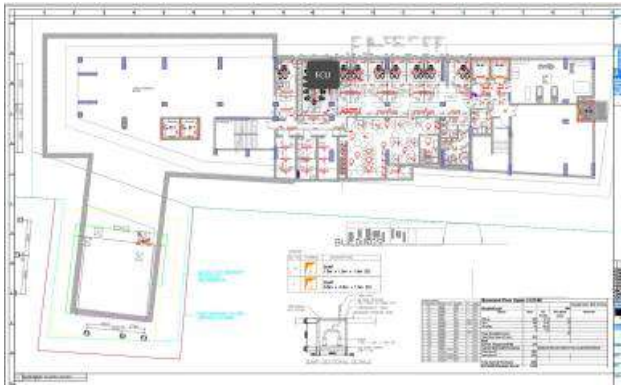
Amenities:

- 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.

9.1.6 FLOOR PLANS

Basement Floor Plan







First Floor



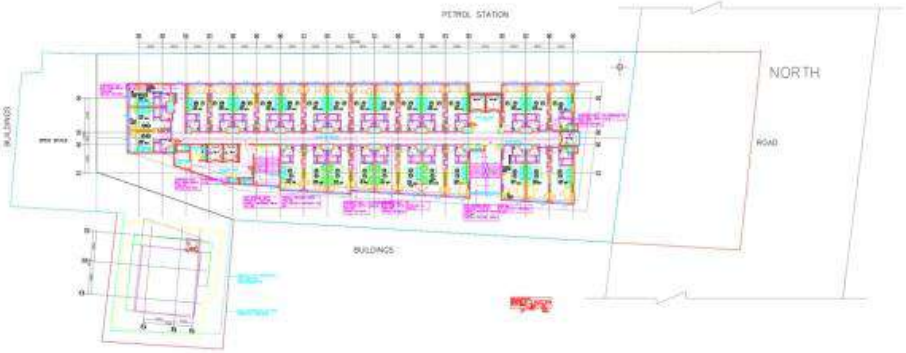
Second Floor



Third Floor



Fourth Floor



Fifth Floor

Sixth Floor





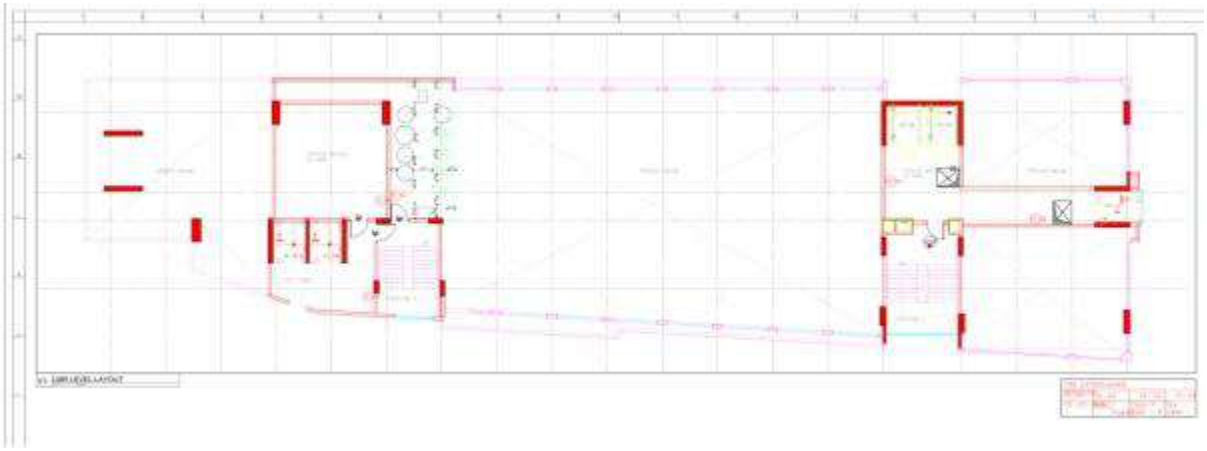
Seventh Floor



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

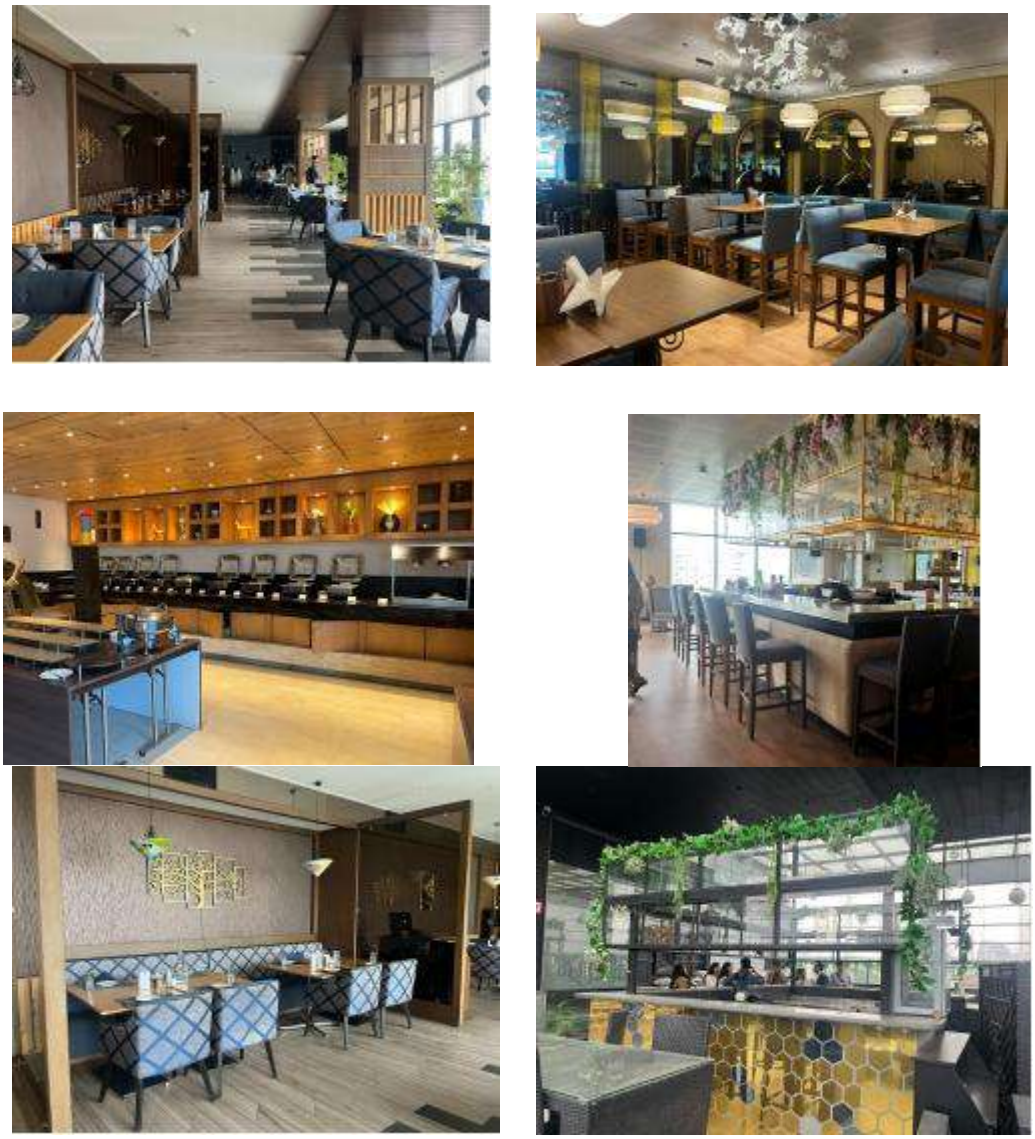
The Garden Grille (All-Day Dining Restaurant)

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

9.1.7 The Garden Bar

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

Figure 35 RESTAURENT











24/7 Pavilion Pantry

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

3. Business & Meeting Spaces

Meeting Rooms / Boardrooms

- Multiple meeting rooms (flexible partitioning)
- Capacity: 10 to 150 guests
- Sleek interiors with foldable seating, projection setup, and acoustic walls

- Neutral walls, wood-finish accents, and integrated A/V equipment

Business Center

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

4. Lobby & Reception

- Spacious double-height lobby with natural lighting
- Marble/tile flooring with modern chandeliers
- Soft-toned furniture with lounge seating
- Digital check-in kiosks and Hilton Honors Desk
- Art walls featuring local Pune-inspired design







Figure 36 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 37SWIMMING POOL

9.2 CASE STUDY: TAJ HOTEL, BHOPAL

9.2.1 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 38 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

9.2.2 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 39 Location on google maps

9.2.3 SITE BOUNDARY



Figure 40 Site boundary

Site Boundary

Circulation within the Site

9.2.4 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.

9.2.5 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

9.2.6 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.

9.2.7 VERTICAL ZONING

9.2.8 AREA STATEMENT

Nam						
		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
A.						
		Total Area (Sum)			**400**	
	E.	**Banquets**				
		Banquet Hall	2	225	**450**	62
		Pre-Function Area	2	80	**160**	22
B.		Conference Room	1	50	**50**	6
I		Banquet Toilets	1	60	**60**	10
		Total Area (Sum)			**720**	
II						
	F.	**Recreation Facilities**				
		Swimming Pool	1	100	**100**	32
III		Pool Change Room	1	50	**50**	16
		Gym	1	100	**100**	32
		Massage Room	1	6	**6**	10
IV		Saloon	1	50	**50**	10
		Total Area (Sum)			**306**	
	G.	**Retail Archade**				
C.		Retail Shops	1	25	**25**	
I						
		Total Area (Sum)			**25**	
	BOH					
	A.	**Material Management**				
		Truck Dock	2	20	**40**	34
II		Holding Area	1	38	**38**	34
		Veg Wash	1	2.5	**2.5**	2
III		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 42 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 43 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 44 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.	**Miscelienouis**				
	Divers Rest Room	1	15	**15**	
	Drivers Toilet	1	22	**22**	
	Microbiologist	1	8	**8**	
	Total Area (Sum)			**45**	

Figure 45 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 46 Area Statement Taj - 6

9.2.9 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.

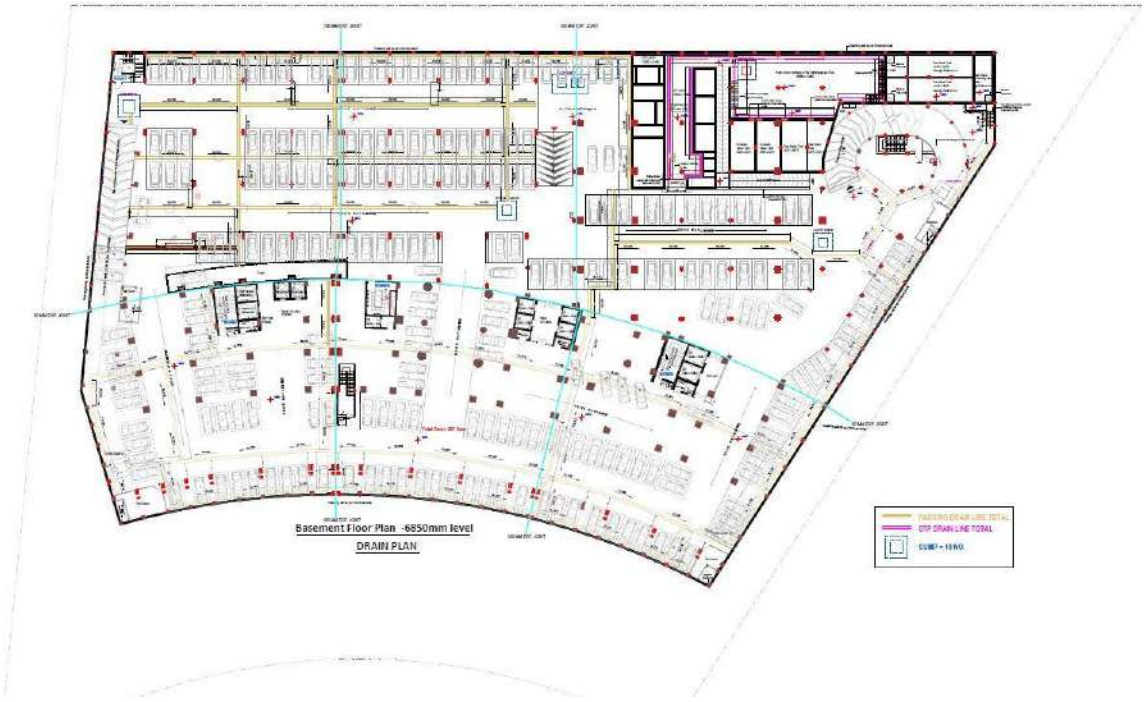


Figure 47 Basement 2 Plan

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/ Boilers/



Figure 48 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

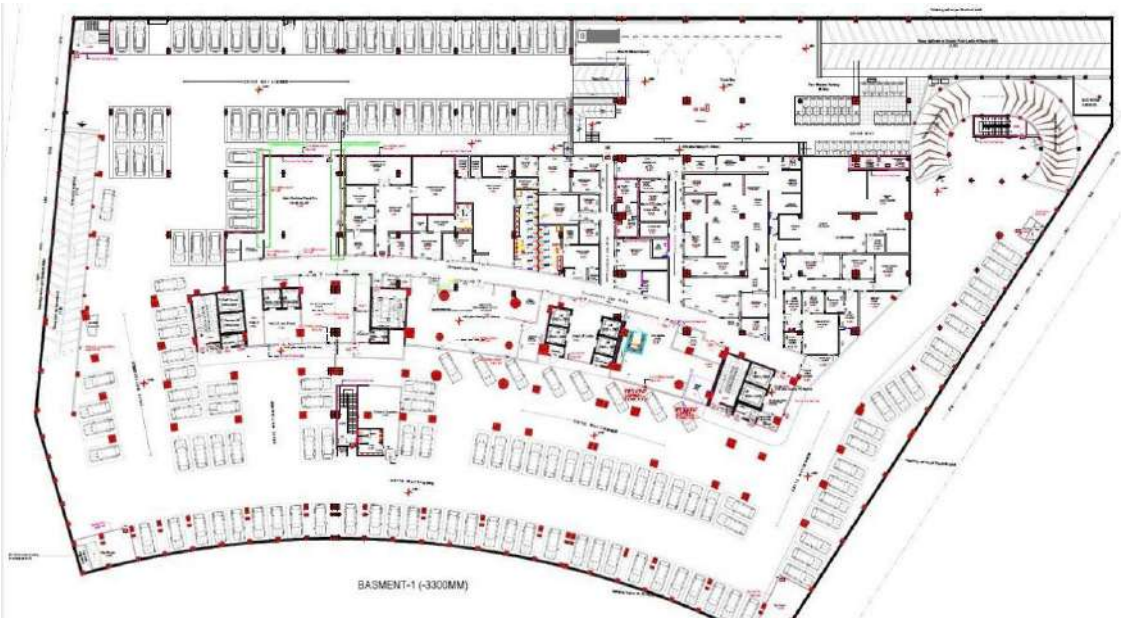


Figure 49 Basement 1 Plan

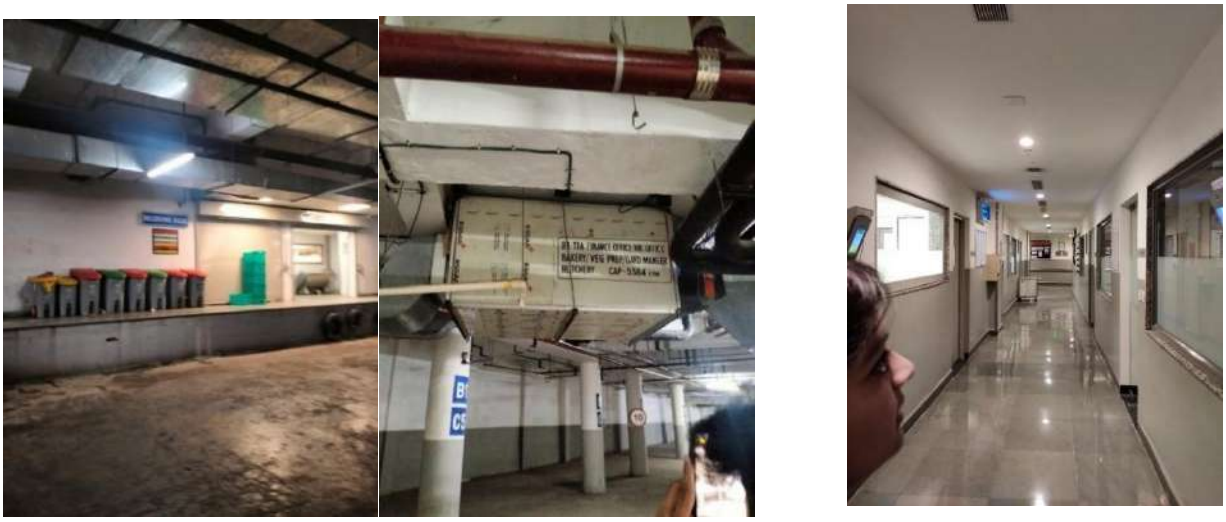
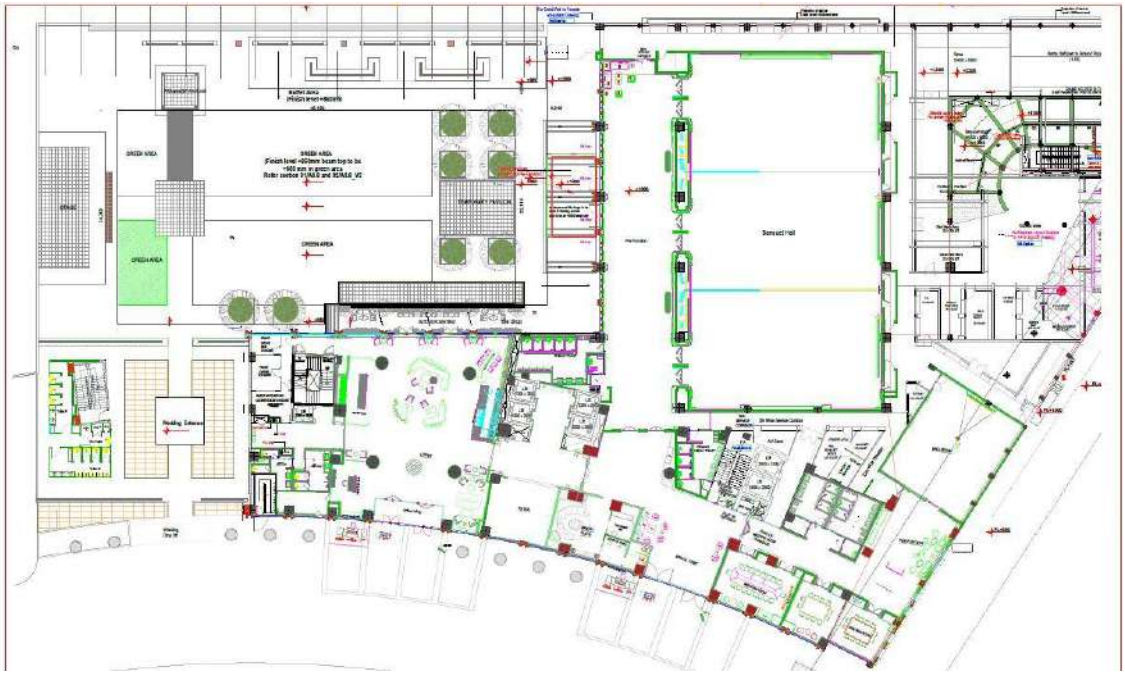


Figure 50 Services in Basement 1

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.



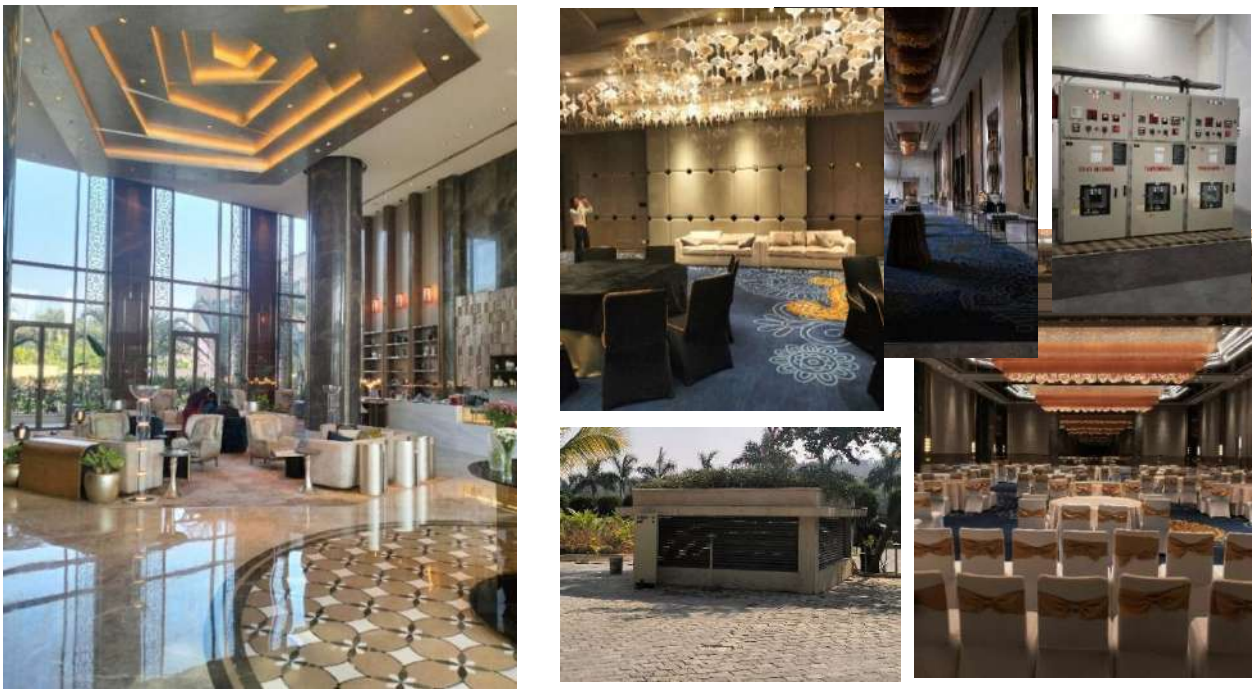


Figure 51 Ground floor plan and pictures (reception, banquet, duct opening, UPS)

First Floor Plan:

- This floor has a Chinese Restaurant with a wonderful Chinese theme based interiors Ming restaurant + Bar.
- Private Dining Restaurants are also pr
- Chiller are located on the back terrace
- 3 Chillers 350 tons each

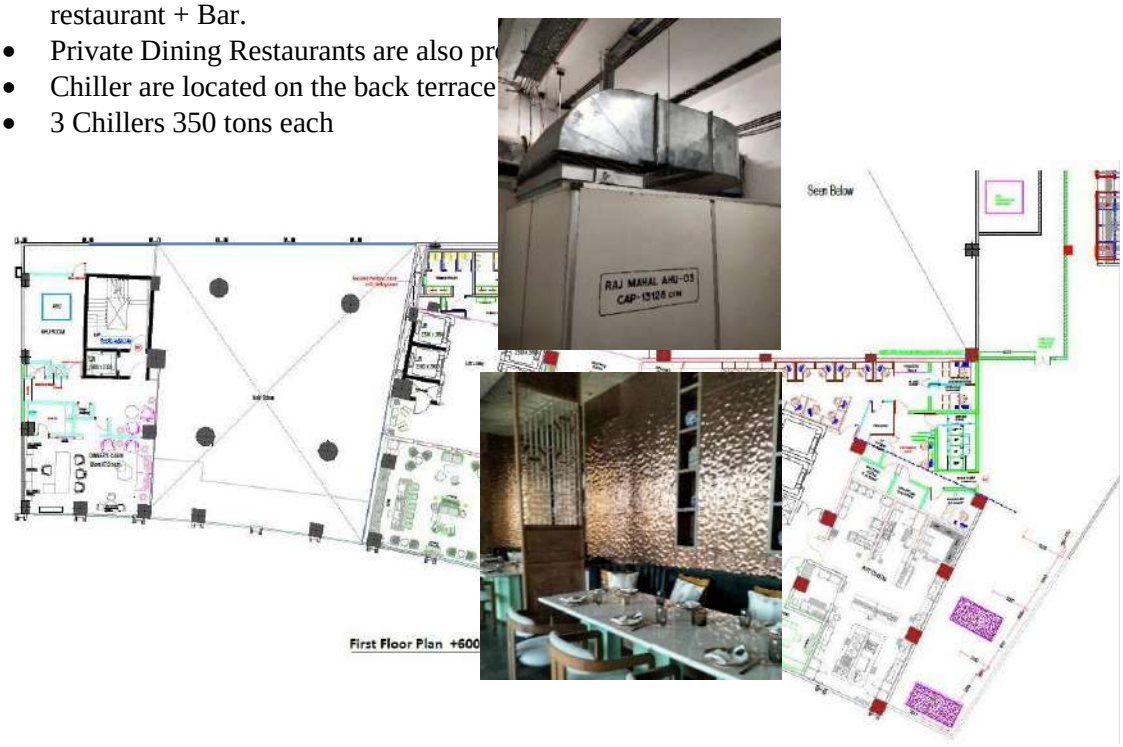








Figure 52 First floor plan and pictures (restaurant & chiller)

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 53 Second Floor plan

Service Floor 2.5:

Figure 54 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 55 Typical FLoor plan 3rd to 7th



Figure 56 Guest room

8th Floor Plan:

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



Figure 57 8th floor plan

Figure 58 9th floor planFigure 59 8th floor plan

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

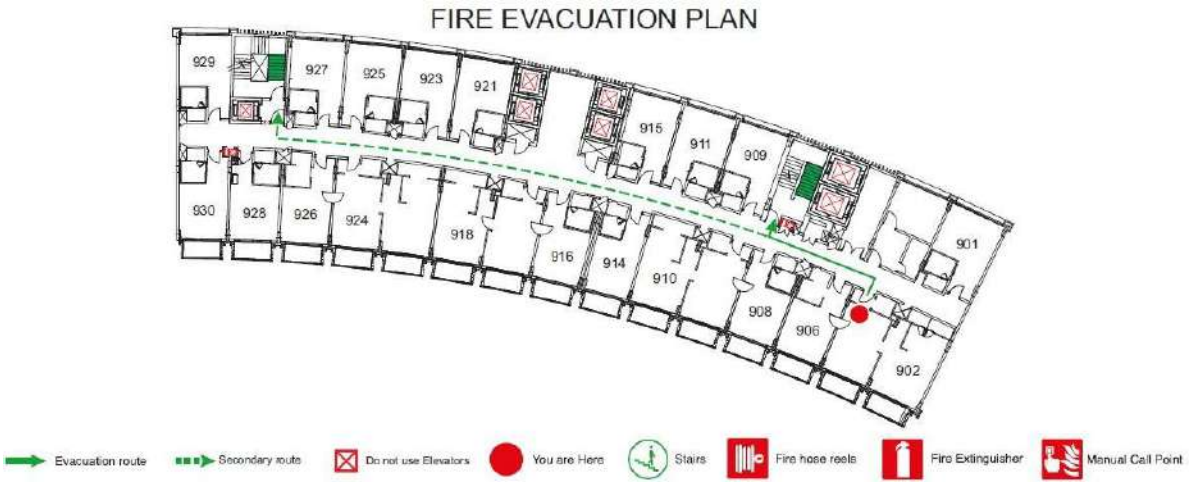


Figure 60 9th floor plan

Figure 61 10th floor plan and pictures (rooftop rest. bar & swimming pool)Figure 62 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



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



Figure 63 Executive suite floor plan & photos

Twin Room

Figure 64 Twin room plan & photosFigure 65 Executive suite floor plan & photos

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

King Room *Figure 66 Twin room plan & photos*

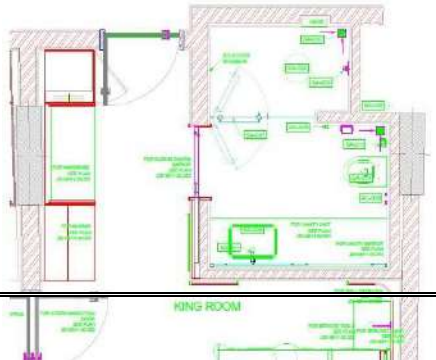
Framed by the picturesque backdrop of the hills, the Deluxe Rooms are the epitome of tranquillity and relaxation. The decor seamlessly merges the aesthetic philosophy of Madhya Pradesh with a European flair. Fully equipped with quality amenities, including digital connectivity with smart TV and Taj's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



SIZE: 33 sq.m

SIGNATURE FEATURE: Spectacular vistas of the hills

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



OTHER CONVENIENCES

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

Presidential Suite

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

Figure 69 King room plan and photo





9.2.10 VIEW/INTERIOR OF SPACES



Spa & Sauna



PDR



Banquet Hall



Swimming pool



Restaurant Seating



Lounge/Bar

9.2.11 SERVICES







Figure 72a LT & HT Panel Room, Fire Fighting & Electrical Tray

9.2.12 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.

9.3 DESK APPRAISAL: TAJ GATEWAY HOTEL, PUNE

9.3.1 4.3.1 INTRODUCTION

The gateway is a mid-market brand in the 5 star segment by the taj group of hotels and largely caters to the non-fussy, modern executives. The intent was to design a structure to compliment the image associated with the taj brand yet be true to the "gateway" focus of creating sanctuaries that refresh, refuel and renew

the modern day traveller.The design remains true to the brand signature, crisp, courteous, warm and welcoming. The colour palette of red, grey and white standardised for this particular brand has been adhered to and used in the most innovative of ways thus creating bold, elegant, straightforward and an inviting visual appeal. The master planning is efficient and sensitive to the given site with proper zoning with climatically and contextually appropriate orientation of the building which would also flaunt the building elevation. The hotel planning adheres to the principle of zoning into 7 simple divisions stay, hangout, meet, work, workout, unwind and explore.

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

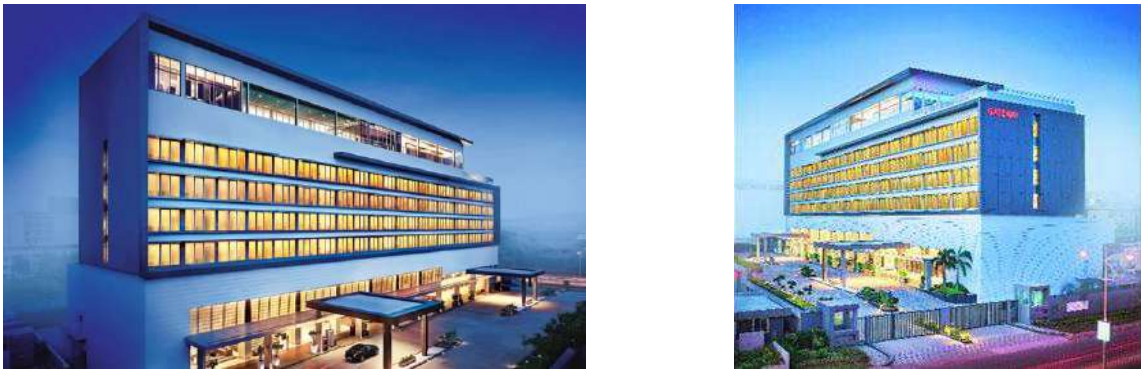


Figure 74 Taj Gateway

PROJECT	**TAJ GATEWAY HOTEL**
LOCATION	PUNE
CLIMATE	Hot Semi Arid Climate
TOPOGRAPHY	PLAIN LAND
ARCHITECT	Edifice Consultants , Mumbai
COMPLITION YEAR	2013
NO. OF ROOMS	141
SITE AREA & FAR	2.35 acre & 2

9.3.2 4.3.2 LOCATION

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

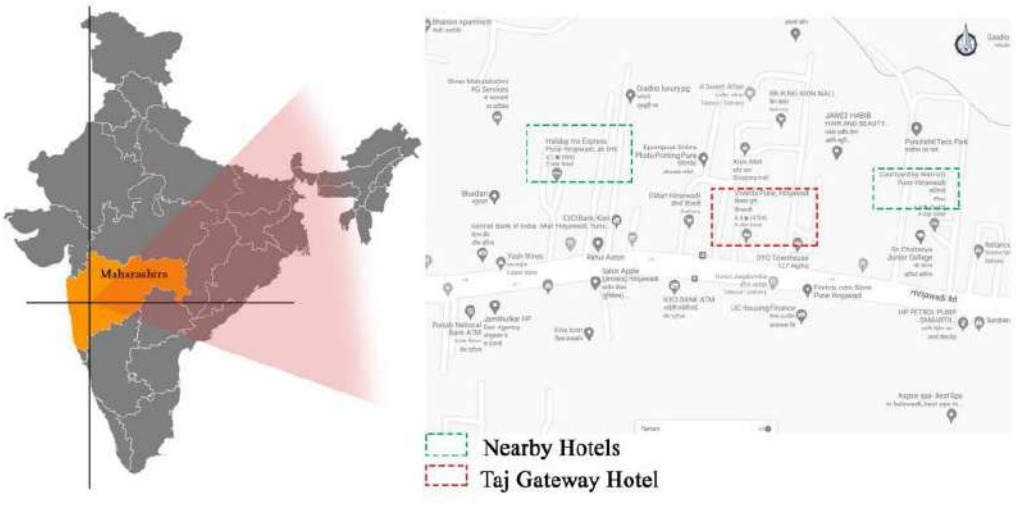


Figure 75a Location Map

9.3.3 4.3.3 ACCESSIBILITY

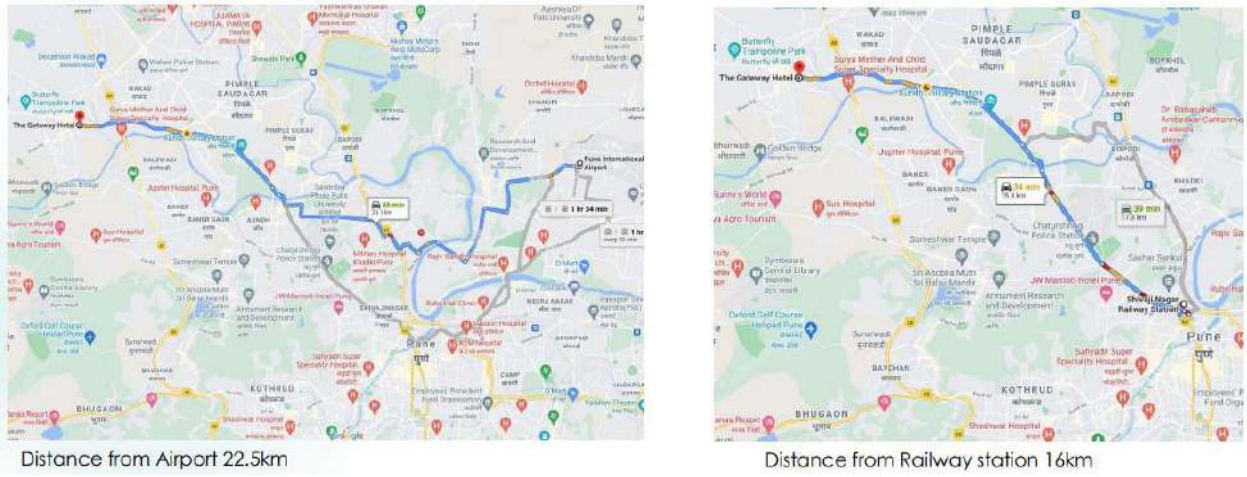


Figure 76 Location Map & Accessibility

9.3.4 4.3.4 AREA STATEMENT

Name	No. of units	Area sq.m.	Total Area	%
Total no.of keys	140			
No.of floors	10			
A. Guest Room Mix				
Double Bed Room	118	185.00	**21830**	80
Twin Bed Room	16	175.00	**2800**	10
Suite	6	400.00	**2400**	10
Toal Area(Sum)			**27030**	
B. Guest Floor Services				
i. Corridor Area				
Type floor corridor	1	180.00	**180**	30
iii. Housekeeping Static on typical floors				
Housekeeping Static on typical floo	1	185.00	**185**	32
iv. Lifts				
Guest Elevators	2.0	55.00	**110**	19
Service Lift Lobby	2.0	55.00	**110**	19
v. Fire Protection				
Fire Escape Stairs	2.0	30.00	**60**	10
Toal Area(Sum)			**585**	
C. Public Areas				
i. Entrance Lobby				
Porte Cochere	1.0	40.00	**40**	15
Entrance Lobby Waiting Area	1.0	100.00	**100**	38
Front Desk	1.0	40.00	**40**	14
Luggage Store	1.0	15	**15**	6
Bell man	1.0	4.00	**4**	2
ii. Business Centre	1.0	36.00	**36**	13
Store	1.0	5.00	**5**	2
iii. Public Utilities				
Public Toilets	1.0	30.00	**30**	10
Toal Area(Sum)			**270**	
D. F&B Outlets				
Bar (Special) - 30 covers	1.0	100.00	**100**	25
Multi-cuisine restaurant-120 covers	1.0	300.00	**300**	75
Toal Area(Sum)			**400**	

Figure 77 Taj Gateway Area Statement - 1

E. Banquets				
Banquet Hall	2.0	225.00	**450**	62
Pre-Function Area	2.0	80.00	**160**	22
Conference Room	1.0	50.00	**50**	6
Banquet Toilets	1	60.00	**60**	10
Toal Area(Sum)			**720**	
F. Recreation Facilities				
Swimming Pool	1	100	**100**	32
Pool Change Room	1.0	50	**50**	16
Gym	1.0	100.00	**100**	32
Massage Rooms	1.0	6.00	**6**	10
saloon	1.0	50.00	**50**	10
Toal Area(Sum)			306.00	
G. Retail Arcade				
Retail Shops	1.0	25.00	**25**	
Toal Area(Sum)		25.00		
FOH				
A. Material Management				
Truck Dock	2.0	20.00	**40**	34
Holding area/ Receiving Dock	1.0	38.00	**38**	34
Veg wash	1.0	2.50	**2.5**	2
Purchase & recieving off	1.0	20.00	**20**	15
Purchase Office Manager	1.0	18.00	**18**	15
Toal Area(Sum)			**118.5**	
B. Main Store				
General Store	1.0	120.00	**120**	75
Linen	1.0	10.00	**10**	6
Unassign Store	1.0	10.00	**10**	6
Liquor	1.0	10.00	**10**	6
Crockery Store	1.0	6	**6**	3
Mis	1.0	2.00	**2**	2
Fuel	1.0	2.00	**2**	2
Toal Area(Sum)			160.00	

Figure 78 Taj Gateway Area Statement - 2

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

E. Sales				
Rooms Mgr	1.0	8.00	8	18
Banquet Mgr	1.0	8.00	8	18
Workstation	2.0	5.00	10	22
Discussion room	1.0	10.00	10	22
Storage and Copying	1.0	8.00	8	20

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

Figure 79 Taj Gateway Area Statement - 3

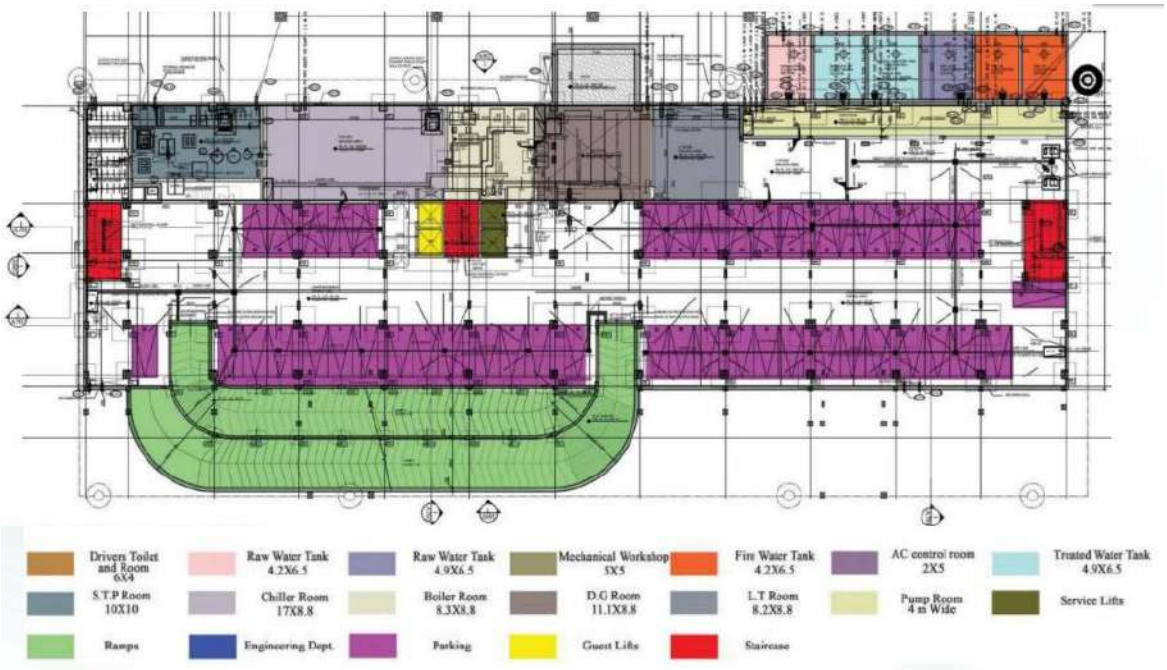
G. House Keeping				
Issue / Tailor / Dirties collection	1.0	5	5	4
House Keeper Executive	1.0	10	10	10
House keeping Assistance	1.0	8	8	8
Hs/k Office + House keeper (as per Ap)	1.0	16	16	15
Dead store/unused textile/room, F&B in circulation / night cleaner	1.0	30	30	28
Guest Supply Store	1.0	5	5	5
Bulk Linen store	1.0	10	10	10
Tailor	1.0	5	5	5
Upholestry Store	1.0	10	10	10
Lost & Found	1.0	5	5	5
Toal Area(Sum)			104	
H. Human Resources				
HR Mgr(cabin based on AP manpo	1.0	8	8	14
Sec (workstation based on AP man	1.0	4	4	7
			0	
Training Room	1.0	20	20	35
Training Mgr	1.0	4	4	7
Discussion / interview room	1.0	20	20	35
I. Security & Time Office				
Staff entry & time keeper/cctv	1.0	10	10	
Security Mgr	1.0	8	8	
Toal Area(Sum)			18	
J. Repairs and Maintenance				
Head of Eng	1.0	8	8	
Asst Eng	1.0	8	8	
Secured store	1.0	10	10	
Paint shop	1.0	10	10	
Eng store	1.0	10	10	
Carpentary	1.0	10	10	
Spare Parts	1.0	5	5	
Toal Area(Sum)			61	
K. Staff Facility				
Male toilets & Lockers	1.0	100		
Male executive toilets and lockers	0.0			
Female toilets & Lockers	1.0	70		
Kitchen	1.0	25		
Staff Cafeteria (3 shifts)	1.0	90		
Staff Recreation area	1.0	15		
Toal Area(Sum)		300		

Figure 80 Taj Gateway Area Statement - 4

M.	**Other BOH areas (exc mech)**			
i.	**Mechanical Areas**			
	LV room	1.0	56.0	**56**
	Indoor Transformers	2.0	22.0	**44**
	LT Panel	1.0	74.0	**74**
	DG Generator Room	1.0	97.0	**97**
	Chiller Plant Room	1.0	125.0	**125**
	Rain water Tank(105cubic meter)	105 Cubic Meter		
	Municipal Tank	123 Cubic Meter		
	Raw Water Tank	123 Cubic Meter		
	Fire Tank	105 Cubic Meter		
	Treated Water Tank	123 Cubic Meter		
	Salt Storage	1.0	12.0	**12**
	Pump Room(Fire)	1.0	20.0	**20**
	Pump Room(Raw + Soft+WTP)	1.0	60.0	**60**
	Boiler Room with Pumps and heat	1.0	58.0	**58**
	STP with pumps and equipments	1.0	80.0	**80**
	Work Shop	1.0	22.0	**22**
	Engineering Office	1.0	8.0	**8**
	Engineering Store	1.0	10.0	**10**
	Control Room	1.0	15.0	**15**
	Underground Oil storage tanks	1.0	190.0	**190**
	Swimming pool filtration plant	1.0	12.0	**12**
	Toal Area(Sum)			**487**
ii.	**Mechanical Areas on terrace**			
	Cooling Towers	1.0	135.0	**135**
	Overhead Tanks	1.0	12.0	**12**
	Ventilation/Exhaust fans	14.0	12.0	**168**
	Flushing tank+Cooling tower tank	3.0	9.0	**27**
	Staircase pressurisation fans	3.0	11.0	**33**
	Lift Pressurisation fans	2.0	2.2	**4.4**
	Scrubber for kitchen exhaust	1.0	5.0	**5**
	Toal Area(Sum)		186.2	**384.4**
N.	**Parking**	181		
	Basement 2			1700
	Basement 1			1420
	Total Wall Thickness and circulation			**3120**

Figure 81Taj Gateway Area Statement - 5

9.3.5 4.3.5 FLOOR PLANS



Ground Floor Plan:

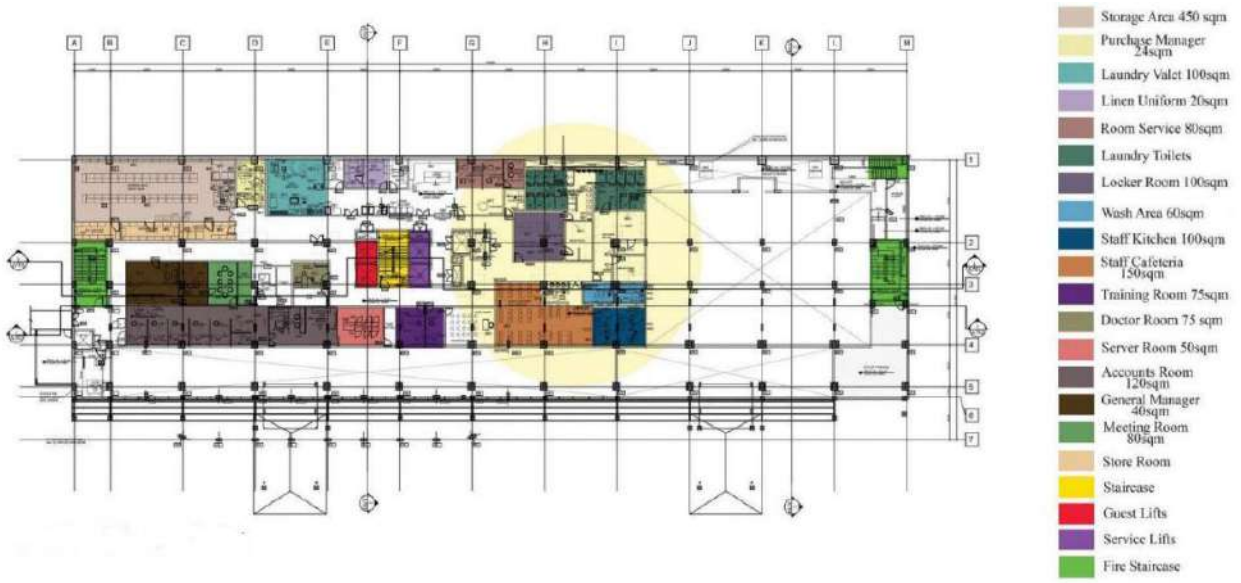
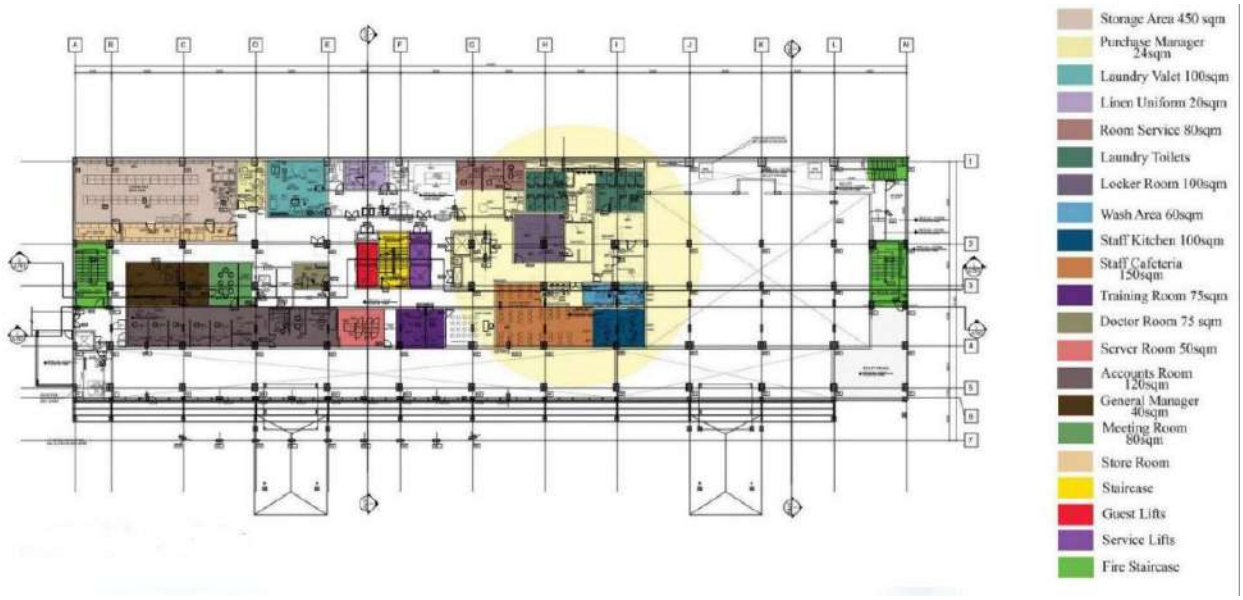


Figure 82 Upper Basement & Ground floor plan

First Floor Plan:



Service Floor And Typical Guest Floor Plan:

9.3.6 4.3.6 SECTIONS

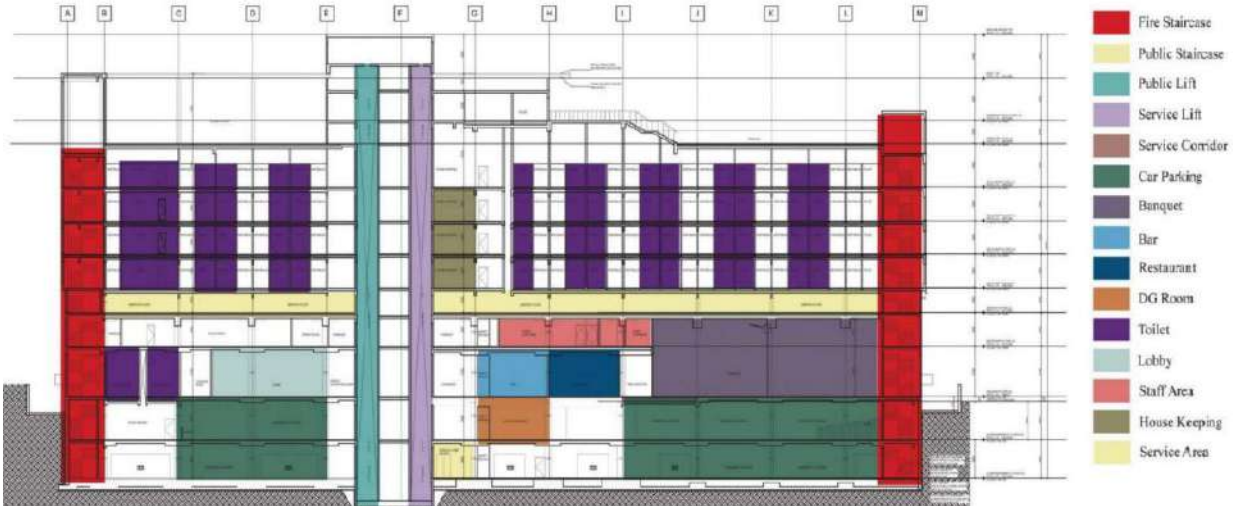


Figure 83 First floor plan, Service floor plan & typical guest floor plan

Horizontal Section Through Rooms & Banquets

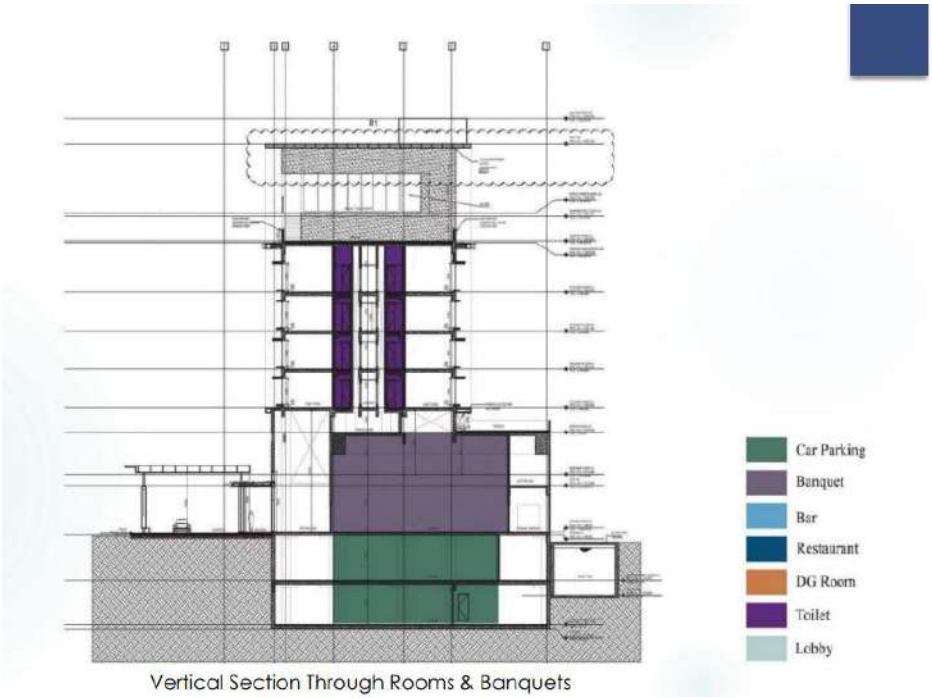


Figure 84 Sections

9.4 DESK APPRAISAL: DOUBLE TREE HILTON



Figure 36 DOUBLE TREE HILTON HOTEL

9.4.1 INTRODUCTION

Nestled in the heart of Ahmedabad, the DoubleTree by Hilton offers a harmonious blend of contemporary elegance and traditional Indian hospitality. Strategically located on Ambli Bopal Road in Vikram Nagar, this upscale hotel provides guests with panoramic views of the cityscape and seamless access to major attractions like Iscon Mega Mall and the Sri Sri Radha Govindji Temple. From the moment guests step into the hotel, they're welcomed with the brand's signature warm chocolate chip cookie—a gesture that sets the tone for a stay characterized by comfort and personalized service. The hotel boasts 173 well-appointed rooms and suites, each designed with modern aesthetics and equipped with amenities that cater to both business and leisure travelers.

Culinary enthusiasts can indulge in a diverse range of dining options, with restaurants offering international cuisines that cater to varied palates. For relaxation and rejuvenation, guests can take advantage of the rooftop swimming pool, state-of-the-art fitness center, and spa facilities. HiltonBeyond its luxurious accommodations and amenities, DoubleTree by Hilton Ahmedabad stands out for its commitment to providing a memorable guest experience, making it a preferred choice for travelers seeking both comfort and convenience in Gujarat's vibrant capital.

9.4.2 LOCATION

LOCATION : Ambli Rd, Vikram Nagar, Ahmedabad,Gujarat 380058.

SITE AREA : 2.8 acre

ARCHITECTS : Studio symbiosis

NO OF STOREY : G+14 HOSPITALITY

RATING : 5 star rated

ROOMS : 173 rooms

9.4.3 SITE INFORMATION

: Site is situated at the main road which makes the access easy for the guest. Site is surrounded by the residential buildings with high skyline which creates the necessity of unique design to make it stand out from the other tall structure. Proximity of the nearby airport is 20km and the railway station is 5kmWithin 5km radius there are 5malls ,zoo, national parks ,gardens

9.4.4 MATERIALS

: The front entrance is done with the cantilevered structural member covered with aluminum panels the waves are also covered with aluminum panels both the sides are properly designed with the seamless lighting and the windows are made up of glass which helps the light to reflect

9.4.5 CONCEPT:

Using fold lines as movement trajectories and perception along with programmatic requirements, the project’s form demonstrates a sense of elegance with soft, subtle touches. Seamless waves flowing on the landscape and flowing on the façade are the focal point for this full service five star property The building comprises of three waves which are very carefully translated into dramatic key spaces on the lower floors and on the upper floors they translate into room grids with focus on standardized room sizes.The guests are welcomed by the architecture of the canopy that follows the seamless nature of the design proposal, emerging from the ground and morphing back into it.

9.4.6 AREA STATEMENT :

9.4.7 Accommodation Details

Room Type	Quantity	Average Size	Features
Deluxe Rooms	132	~32 sq. meters (344 sq. ft.)	King or Twin beds, modern amenities
Executive Rooms	34	~32 sq. meters (344 sq. ft.)	Access to Executive Lounge, enhanced services
Suites	7	~67 sq. meters (721 sq. ft.)	Separate living area, premium amenities
Total Rooms	173		

1.1.1.1

9.4.8 Meeting & Event Spaces

Venue	Area (sq. ft.)	Ceiling Height	Maximum Capacity	Setup Types
Grand Ballroom	5,010	23 ft.	600	Theater, Banquet, Reception
Ballroom 2	3,248	23 ft.	350	Theater, Banquet
Ballroom 1	1,750	17 ft.	200	Theater, Banquet
Studio 4	924	12 ft.	55	Theater, Banquet
Studio 3	494	12 ft.	25	Theater
Studio 2	234	12 ft.	20	Theater
Studio 5	325	12 ft.	10	Theater
Studio 6	352	12 ft.	20	Theater

Total Meeting Space 7,061 sq. ft.

9.4.9 Dining & Amenities

Facility	Details
Restaurants	2 (including an all-day dining restaurant)
Fitness Center	Fully equipped gym
Swimming Pool	Rooftop pool with city views
Spa	

	Wellness treatments available
Business Center	Comprehensive business services
Parking	Basement and surface parking available

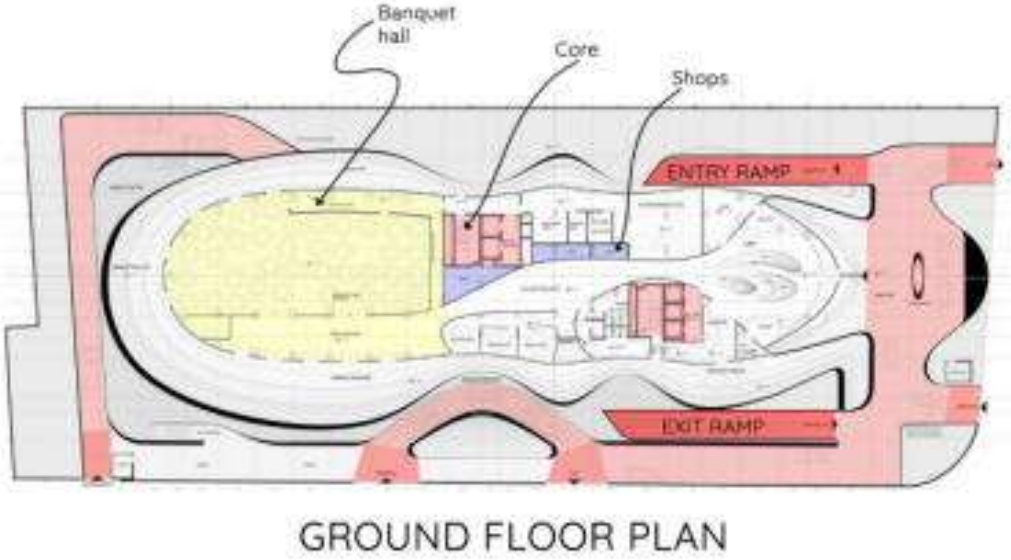


Figure 37 DOUBLE TREE HILTON FLOOR PLAN

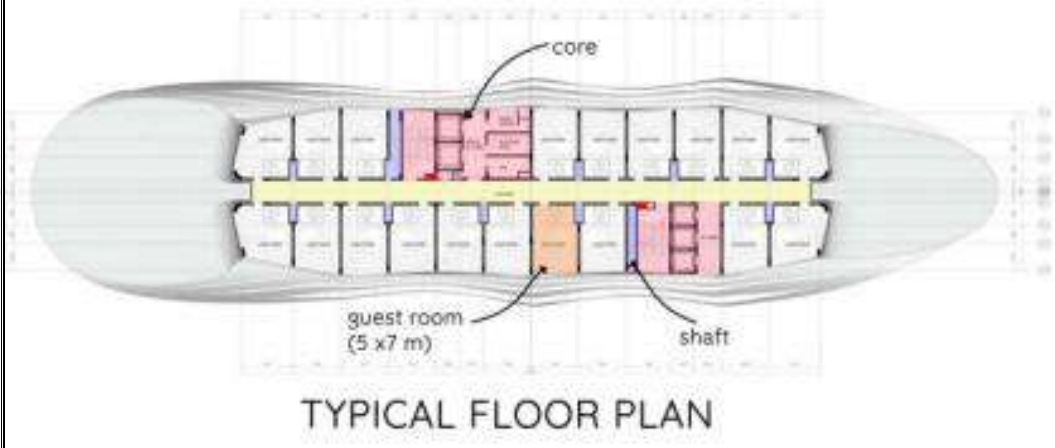


Fig 2.3.1 Floor plan of double tree hilton

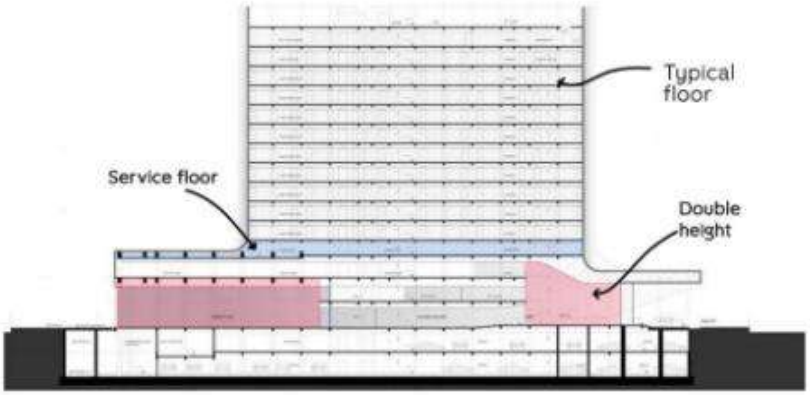


Fig 2.3.2 Section A of Double tree hilton

Figure 38DOUBLE TREE HILTON SECTION

Figure 39 DOUBLE TREE HILTON PLAN

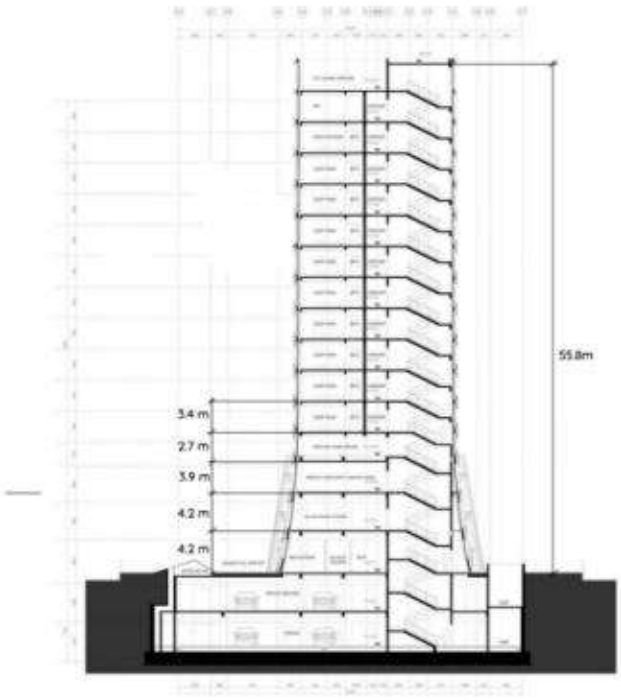


Fig 2.3.3 Section B of Double tree hilton









10 Inference

10.1 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

10.2 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

10.3 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

10.4 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

10.5 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

10.6 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

11 REFERENCES

Books and Manuals

- https://www.bis.gov.in/standards/technical-department/national-building-code/
- Callender, J. H. (2012). Time-Saver Standards for Building Types. New York: McGraw-Hill.
- Ministry of Tourism, Government of India. (2018). Guidelines for Classification/Re-classification of Hotels. Ministry of Tourism, India.
- Neufert, E., & Neufert, P. (2012). Architects' Data (4th ed.). Wiley-Blackwell.
- ITC Hotels. (2018). ITC Hotel Manual: Design, Layout, and Operational Standards. ITC
- https://sist.sathyabama.ac.in/sist_naac/documents/1.3.4/1722-b.arch-arch-batchno-38.pdf
- https://www.hilton.com/en/hotels/amddidi-doubletree-ahmedabad/gallery/
- https://www.tajhotels.com/en-in
- https://mohua.gov.in/upload/uploadfiles/files/MBBL.pdf
- https://udd.gujarat.gov.in/pdf/L/Notification/FINAL%20Comprehencive%20GDCR.pdf

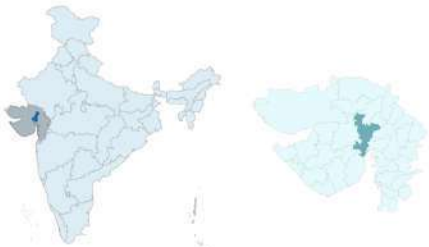

MEHWAR
THESIS GUIED PRO. PREETI ONKAR SHAHBAN SHAH | 211110004| THESIS 2025

SITE ANALYSIS

5 STAR HOTEL AT SANAND

INTRODUCTION

The proposed 5-star hotel site at Sanand, Gujarat, lies within a dynamic industrial corridor near Ahmedabad. Surrounded by automobile and manufacturing hubs, it caters primarily to business clients, corporate meetings, and industrial delegates. The design envisions a luxury that blends hospitality excellence with the professional needs of global travelers.



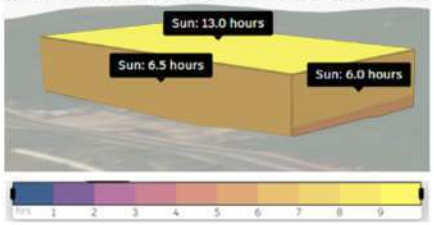
Location: GIDC Sanand-II (Plot SM-39/5),
Sanand-II Industrial Estate,
District - Ahmedabad
State - Gujarat
Site Coordinates : 23°00'21.5"N, 72°14'59.6"E

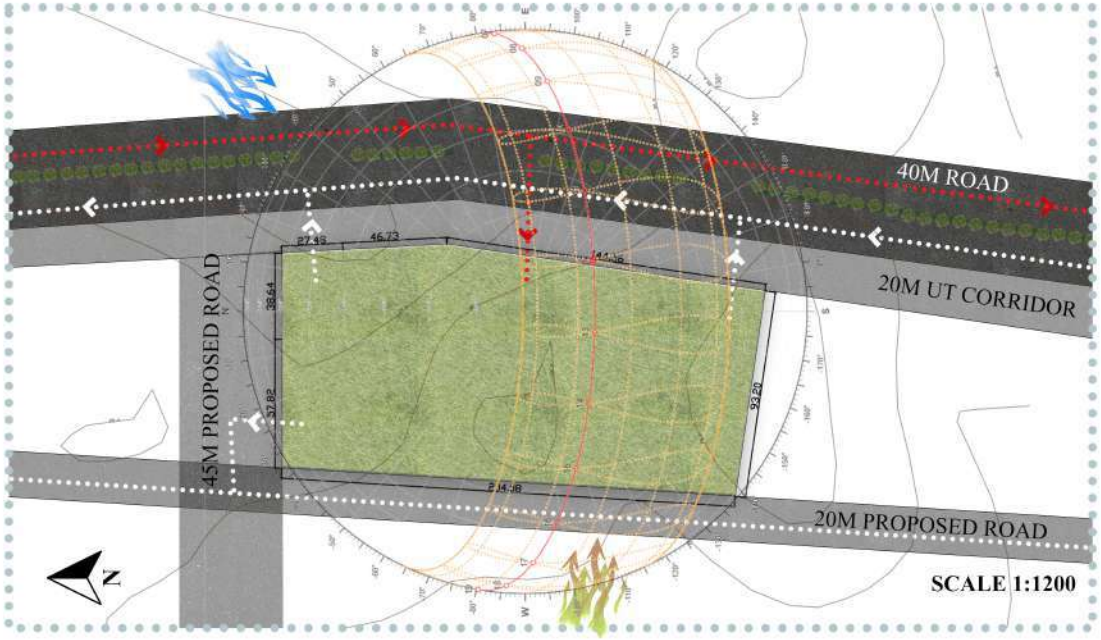
S. NO.	DESCRIPTION	PROPOSED
1	SITE AREA(SQM	20,168.54
2	SITE AREA(ACRE)	4.98
3	GROUND COVERAGE	40%
4	FAR	1.8
5	FRONT SETBACKS	9M
6	REAR & SIDE SETBACKS	9M
7	BUILDING HEIGHT	ND

CLIMATE

SANAND EXPERIENCES A HOT SEMI-ARID CLIMATE WITH SCORCHING SUMMERS (UP TO 40 °C), MILD WINTERS (13–20 °C), AND A DISTINCT MONSOON SEASON (750–800 MM RAINFALL, JULY–AUGUST PEAK). THE REGION FACES HEAT STRESS AND INTENSE RAIN EVENTS, MAKING CLIMATE-RESPONSIVE STRATEGIES—SHADING, VENTILATION, DRAINAGE, AND DROUGHT-RESISTANT LANDSCAPING ESSENTIAL IN HOTEL DESIGN.

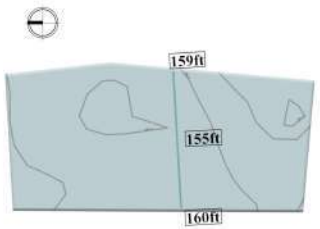
SUN HOUR ANALYSIS OF MAY MONTH



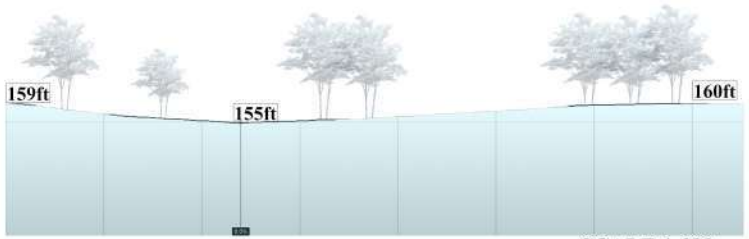


SOIL TYPE AND TOPOGRAPHY

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.



KEY PLAN



SITE SECTION

SITE AND SURROUNDING VIEW





S

Dual road frontage for separate guest & service entries
Large plot enabling landscaping, zoning, and buffers
Flat terrain reduces levelling cost
Proximity to Ahmedabad, airport & industries
Atrium for daylight and unique guest experienc

W

No scenic surroundings → reliance on interiors
Noise, dust, and odour from industries/roads
Harsh climate increases HVAC demand
Limited public transport & poor pedestrian access
Dependence on water supply in industrial zone

O

otential to become an iconic landmark in Sanand
Atrium landscape as central design focus
Demand from MNCs, business travellers & events
Scope for sustainability showcase (energy, water, green façade)
Limited competition of luxury hotels nearby

T

Industrial growth → more noise, traffic & pollution
Regulatory/zoning changes may affect hotel use
Reliance mainly on corporate clients, fewer tourists
Urban heat island effect → higher cooling loads
Strong competition from Ahmedabad city hotels

SHAHBAN SHAH | 21111004 | SECA
THESIS 2025

GUIDE :- PROF. PREETI ONKAR
COORDINATOR :- PROF. VICKY LALRAMSANGI

CASE STUDY

COMPARATIVE ANALYSIS (5 STAR HOTEL)






SPACES	SPACE REQUIRED	CASE STUDY : 1 TAJ, BHOPAL	CASE STUDY : 2 HILTON, PUNE	DESK APPRAISAL : 1 DOUBLE TREE HILTON, AHMEDABAD	DESK APPRAISAL : 2 TAJ GATEWAY PUNE
		AREA	AREA	AREA	AREA
SITE AREA		4.77	0.55	2.5 ACRE	3 ACRES
TOTAL KEYS		182	144	173	254
NO OF STORIES			G+8	G+14	4B + G+ 11
LOBBY	Front Desk	40	25	40	40
	Lounge Area	100	80	150	200
	Toilets	30	28	60	30
	Luggage Store	15	8	20	15
	Bell Man	4	6	10	4
	Guest Lifts	55 X 2	40X2	60	11
	Business Centre	35	65	135	35
	Retail Shops	25	50X2	50	25
OFFICES	General Manager	151	20	30	15
	Secretary GM	9	9	15	9
	FO Mgr	5	7		5
	Revenue Mgr	8	8	15	8
	F&B Mgr		9	15	8
	Reservation Office	8	9	30	15
	Work Stations	25	15	20	16
	Discussion Rooms	4	10	25	15
	Chief Accountant	15	10	15	9
	Credit Manager	8	8	15	5
	Cashier	5	8	15	9
	Controller	8	8	10	5
	Payroll Manager	5	8	10	5
	Accounts Records	10	10	20	10
	Meeting Room	19	30	15	10
	Computer Room Mgr	17	12	130	17
	UPS	35	12	25	35
	Records	10	20	20	10
	Storage & Copying	9	20	8	8
	Sales Mgr	8	12	10	18
	Banquets Mgr	8	12	25	18
BANQUETS	Banquet hall	225 X 2	400	800	450
	Pre Function area	80 X 2	100+128	150	160
	Conference room	50	85	60	50
	Toilet	60	62	70	60
	Ballroom				
	Outdoor Terrace				
	Banquet BOH n Kitchen	130	71		
RECREATIONAL AREA	Swimming pool	100	60	100	100
	pool change room	30	20	30	30
	Gym	100	58	75	100
	Massage rooms	6	5	8	6
	Toilets	50		20	50
GUESTROOMS	King Bedroom	33 X 5	23.5 X 19	4224	27
	Executive Suite	66 X 161	28.3 X 14	1068	
	Twin Bed Rooms	33 X 5	25 X 25		30
	Suites	152 X 1	28 X 8	669	45
F & B OUTLETS	Multi-Cuisine Rest.	300	640	250	300
	Bar	100	195	80	100
	Coffee Shop			80	50
	Bakery	20		40	60
KITCHEN	Main Kitchen	85	80	80	85
	Room Service Kit	20	30	20	20
	Pastry	32	20	15	32
	Bakery	20	20	25	20
	Commissary	40	20	25	40
	Dishwash	20	15.5	20	20
	Pot Wash	12	9	10	15
	Cold Kitchen	18	14.8	15	18
	Cafe Kitchen	12		15	12
	Show Kitchen	8		15	8
	Bar Pantry			15	15
	Bar Counter	15		10	5
	Chef s Office	13	4	5	8
HOUSE KEEPING	Issue/Tailor/Dirties	5	5	8	5
	House Keeper Ex.	10	10	10	10
	House Keeper Asst.	8	8	8	8
	H/K Office	10	10	10	10
	Dead Store	30	15	20	30
	Guest Supply Store	10		8	5
	Bulk Linen Store	5		10	10
	Tailor	10		5	5
	Upholstery Store	5		10	10
	Lost & Found	5	6	5	5
HUMAN RESOURCES	HR Manager	8	8	8	8
	Sec	4	5	5	6
	Training Room	20	20	50	20
	Locker Room	10	10	5	6
	Interview Room	8	8	10	20
SECURITY	Staff Entry & Time Keeper	10		15	10
	Security Mgr	8		10	8
STAFF FACILITY	MALE TOILETS & LOCKERS	100 70	42	70 40	100
	KITCHEN	25		30	25
	STAFF CAFETERIA	90		80	90
	STAFF RECREATION AREA	15	50	15	15
REPAIR & MAINTAINANCE	HEAD OF ENGG	8		10	8
	ASST ENGG	8		10	8
	SECURED STORE	10		10	10
	PAINT SHOP	10		10	10
	ENGG STORE	10		10	10
	CARPENTRY	10		10	10
	SPARE PARTS	5		5	5
MISCELLANEOUS	DRIVERS REST ROOM	15		20	15
	DRIVERS TOILETS	22		25	22
	MICROBIOLOGIST	8		10	8
BOH SERVICES	LV Room	56	63	50	56
	Indoor Transformers	22 X 2		40	44
	LT Panel	74		50	74
	DG Generator Room	97		75	97
	Chiller Plant	123		100	123
	Rain Water Tank	105 CUM		80	103M3
	Municipal Tank	123 CUM		80	123M3
	Raw Water Tank	123 CUM		80	123M3
	Fire Tank	105 CUM		80	12
	Treated Tank	123 CUM		80	20
	Salt Storage	12		10	60
	Pump Room (Fire)	20		25	58
	Pump Room	60		50	85
	Boiler Room	58		50	22
	STP	80		75	8
	Workshop	22		20	10
	Engineering Office	8		10	15
	Engineering Store	10		10	140
	Control Room	15		10	15
	Oil Storage Tanks	100		100	
	Swimming Pool Filtration Plant	12		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.

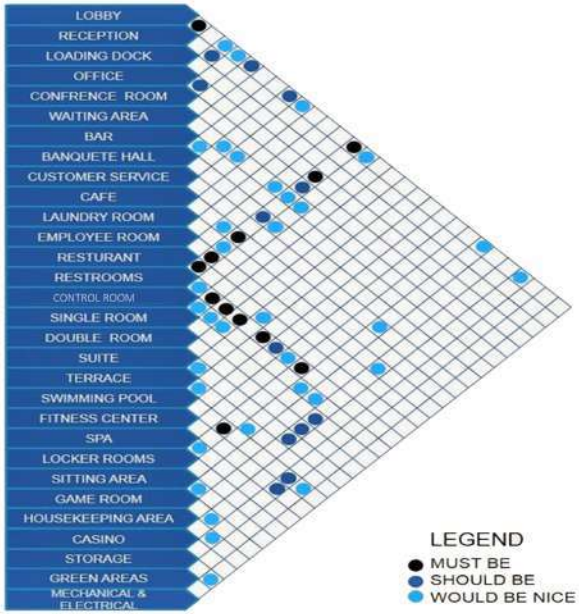
PUBLIC AREAS -

- 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.

INFERENCES FROM CASE SUDIES:



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

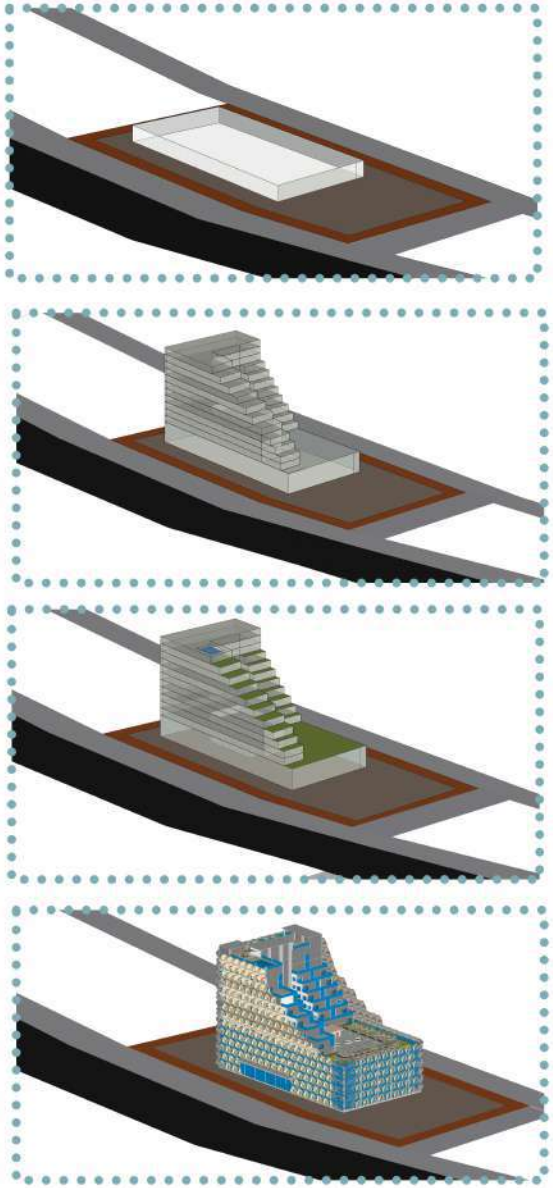
SHAHBAN SHAH |21111004 | SECA
THESIS 2025

GUIDE :- PROF. PREETI ONKAR
COORDINATOR :- PROF. VICKY LALRAMSANGI

CONCEPT

INDUSTRIAL OASIS (5 STAR HOTEL)

FORM EVOLUTION



"THE HOTEL FORM EVOLVES FROM A SIMPLE SITE-ALIGNED BLOCK, RISING VERTICALLY TO ESTABLISH IDENTITY. IT THEN STEPS DOWN TO CREATE HUMAN-SCALE TERRACES, WHILE A CENTRAL ATRIUM INTRODUCES LIGHT AND VENTILATION. FINALLY, INTEGRATED GREEN COURTS AND LANDSCAPED EDGES TRANSFORM THE MASS INTO AN INDUSTRIAL OASIS WITHIN THE INDUSTRIAL AREA"

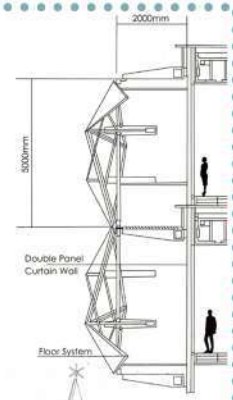
LUXURY IN THE HEART OF PRODUCTIVITY"

WHY OASIS? SANAND IS A HUB OF MANUFACTURING, WHERE SPEED, SCALE, AND MACHINERY DEFINE THE LANDSCAPE. THE PEOPLE VISITING HERE CORPORATE TRAVELERS, INTERNATIONAL DELEGATES, AND LEISURE TOURISTS SEEK REST, COMFORT, AND INSPIRATION. THIS HOTEL WILL EMBRACE THE INDUSTRIAL I DENTITY RATHER THAN HIDE IT, AND COUNTERBALANCE IT WITH NATURE, WATER, AND WARMTH, CREATING A DUAL EXPERIENCE:

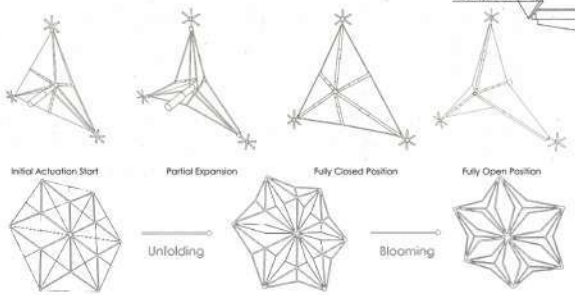
•OUTSIDE: A BOLD ARCHITECTURAL FORM ROOTED IN INDUSTRIAL EXPRESSION. INSIDE:
•A LUSH, CALM ENVIRONMENT - AN OASIS IN THE HEART OF INDUSTRY CORE CONCEPT STATEMENT"WHERE THE GEOMETRY OF INDUSTRY MEETS THE TRANQUILITY OF NATURE OFFERING HIGH-END HOSPITALITY IN A GREEN AMIDST SANAND'S INDUSTRIAL RHYTHM



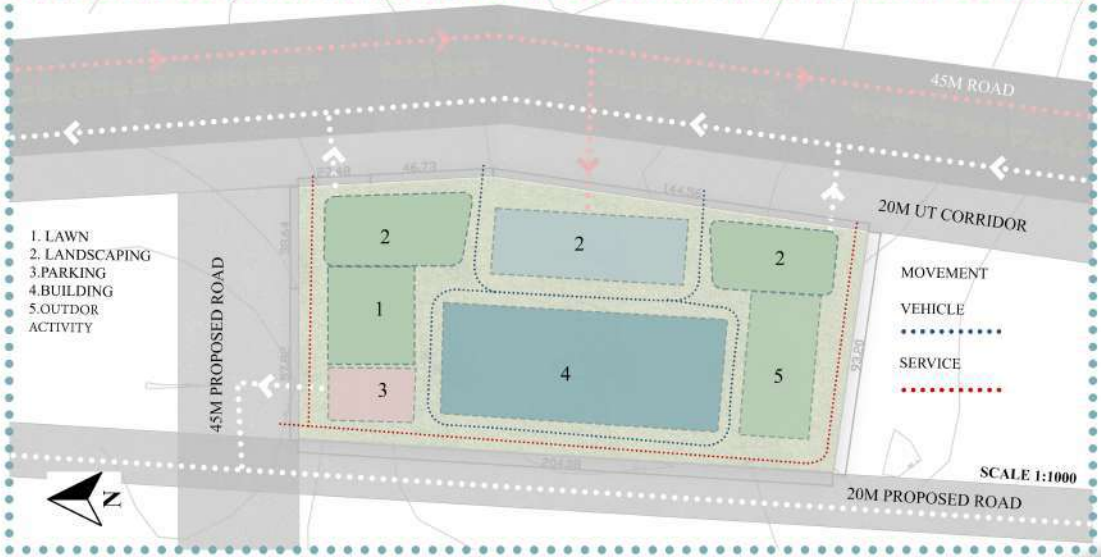
"THE ATRIUM ACTS AS THE HEART OF THE HOTEL, MERGING LIGHT, AIR, AND NATURE INTO ONE SPACE."



KINETIC FACADE



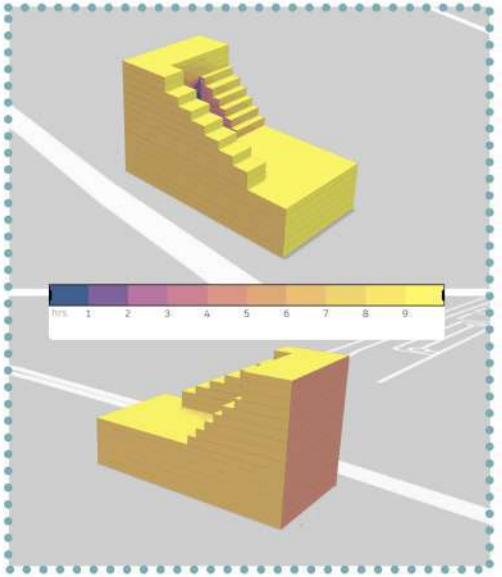
EACH SHADING ELEMENT IS HINGED AND OPERATES WITH A TELESCOPIC ARM SYSTEM ALLOWING ROTATIONAL MOTION. FULLY POWERED AND AUTOMATED VIA COMPUTER-CONTROLLED LINEAR ACTUATORS AND SUN-TRACKING SENSORS. MAINTAINS BALANCE THROUGH INDIVIDUALLY ANCHORED UNITS ENGINEERED FOR WIND AND LOAD RESISTANCE."



THEMETIC INFERENCES



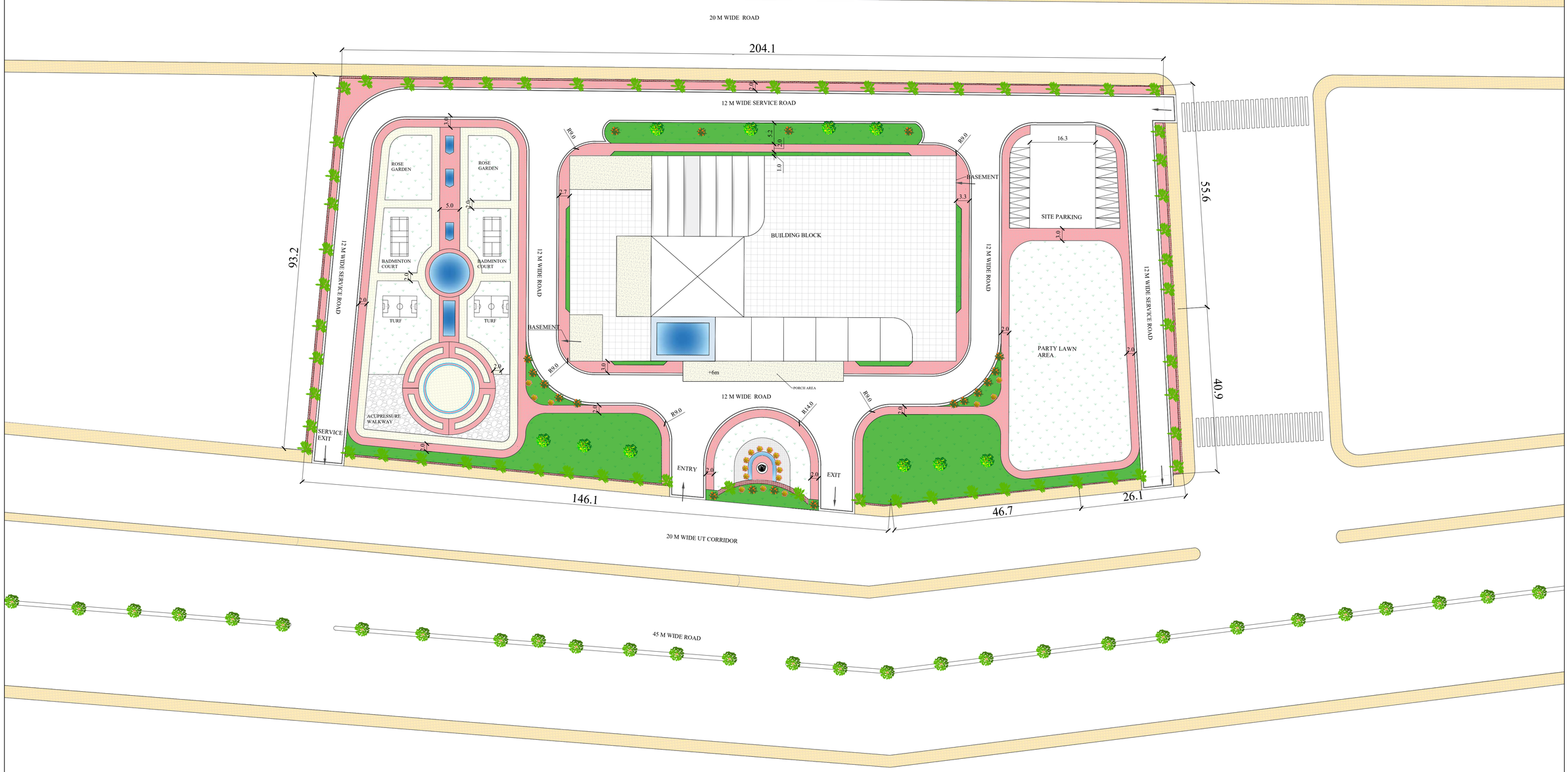
"AJRAKH-INSPIRED JALIS WEAVE CULTURE INTO THE INDUSTRIAL SKIN OF THE HOTEL."



Roof top - club,bar
Service Floor
12F- Guest room
11F- Guest room
10F- Guest room
9F- Guest room
8F- Guest room
7F- Guest room
6F- Guest room
5F- Guest room
4F- Guest room
3F- Guest room
2F-Gym,spa,saloon,
1F-Restaurant, bar, meeting area
Service floor
Ground floor - lobby ,banquet,office area
Basement 1 - parking, service area
Basement 2- parking, mep

SHAHBAN SHAH | 211110004 | SECA
THESIS 2025

GUIDE :- PROF. PREETI ONKAR
COORDINATOR :- PROF. VICKY LALRAMSANGI

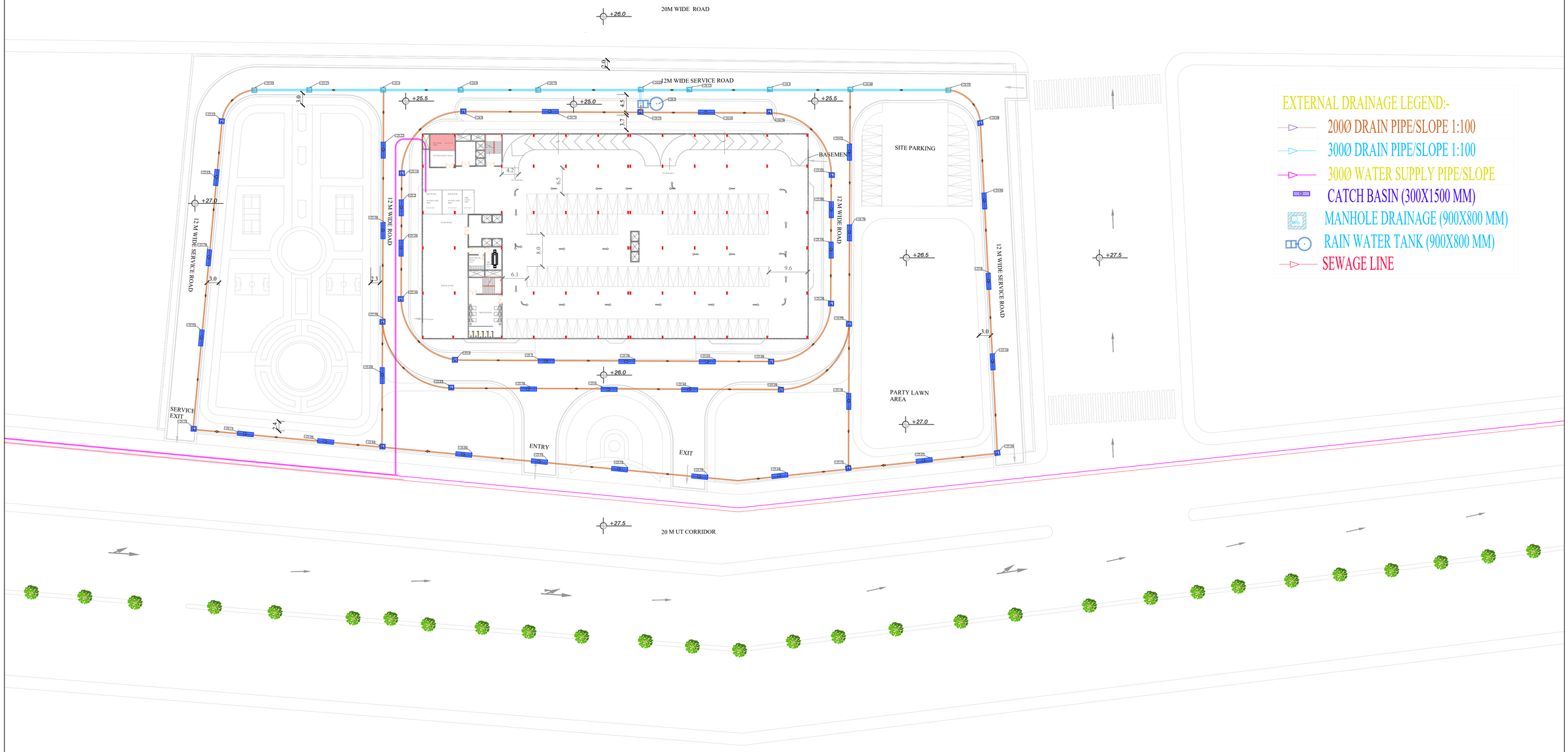


S. NO.	DESCRIPTION	PROPOSED
1	SITE AREA(SQM	20,168.54
2	SITE AREA(ACRE)	4.98
3	GROUND COVERAGE(MAX)	40%(8000)
4	GROUND COVERAGE ON SITE	5000
5	TOTAL BUILT UP	36300

S. NO.	DESCRIPTION	PROPOSED
6	FAR	1.8
7	FRONT SETBACKS	9M
8	REAR & SIDE SETBACKS	9M
9	BUILDING HEIGHT	ND

SITE PLAN

DRAWING	DRAWING	NORTH	PROJECT	SHEET TITLE		DETAIL BY	GUIDE BY	DRG. NO.
SITE PLAN	ALL DIMENSION ARE IN METER SCALE 1:500		5 STAR HOTEL , SANAND GUJRAT	SITE PLAN WITH CALCULATION		SHAHBAN SHAH (211110004)	PROF. PREETI ONKAR (THESIS GUIDE) PROF. VICKY LALRAMSANGI (THESIS COORDINATOR)	4



EXTERNAL DRAINAGE LEGEND:-

- 200Ø DRAIN PIPE/SLOPE 1:100
- 300Ø DRAIN PIPE/SLOPE 1:100
- 300Ø WATER SUPPLY PIPE/SLOPE
- CATCH BASIN (300X1500 MM)
- MANHOLE DRAINAGE (900X800 MM)
- RAIN WATER TANK (900X800 MM)
- SEWAGE LINE

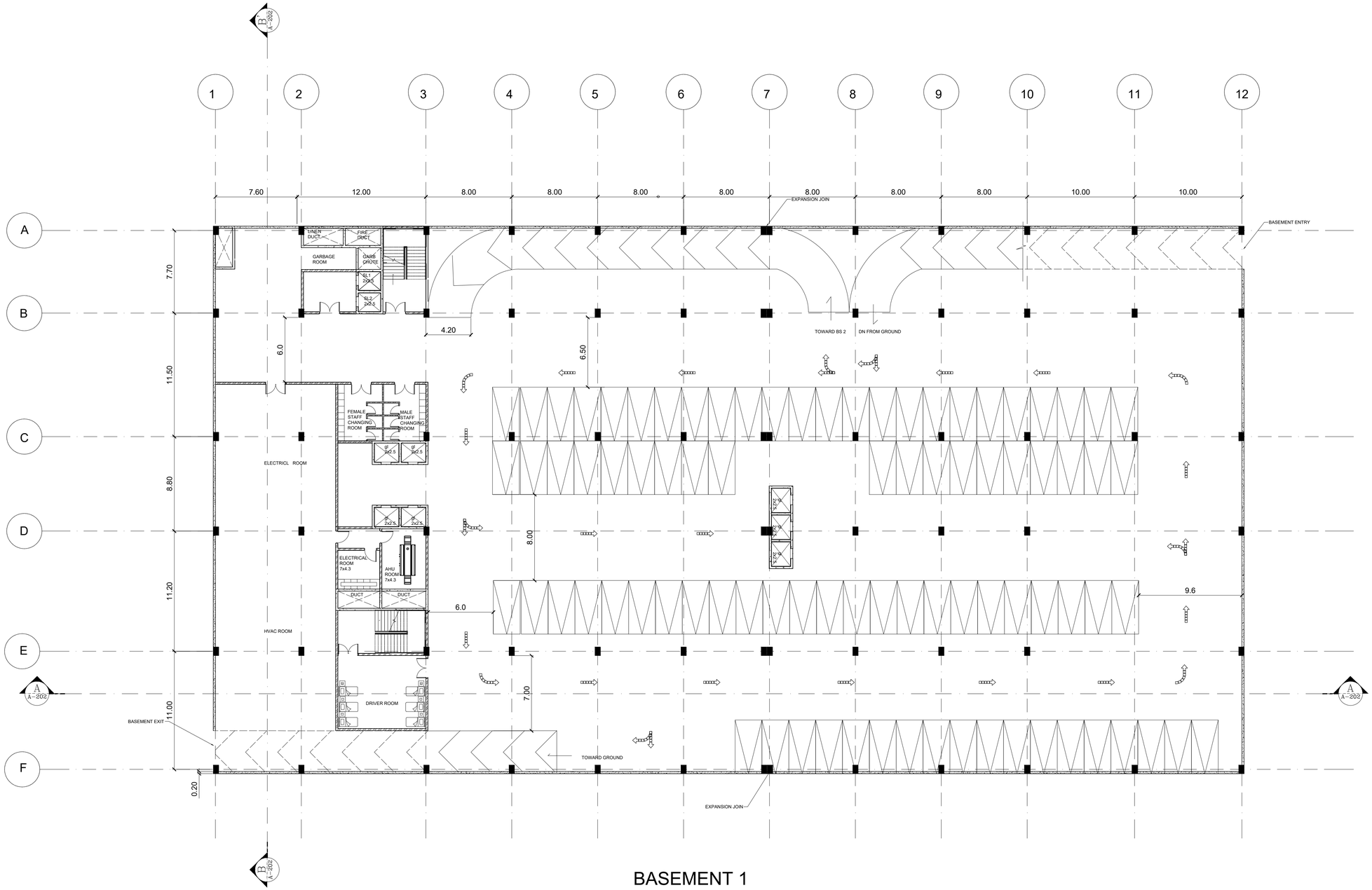
Table 4.6 Per Capita water requirement for various Occupancies/Uses

Sl. No.	Type of Occupancy	Consumption per head per day (in lt.)
1.	Residential	
	a) In living units	135
	b) Hostels	135
	c) Hotels with lodging accommodation (per bed)	180
	d) Hotels (5 star and above)	340

Water Supply & Sanitation			
User	**Nos**	**Water requirement (L per day)**	**Total Requirement (in litres)**
Beds	200	400	**80000**
Total Water Demand			**80000**
			80 cum.
Size of UG Tank (h=3) (provide 2 UGT)			**3x5x6**

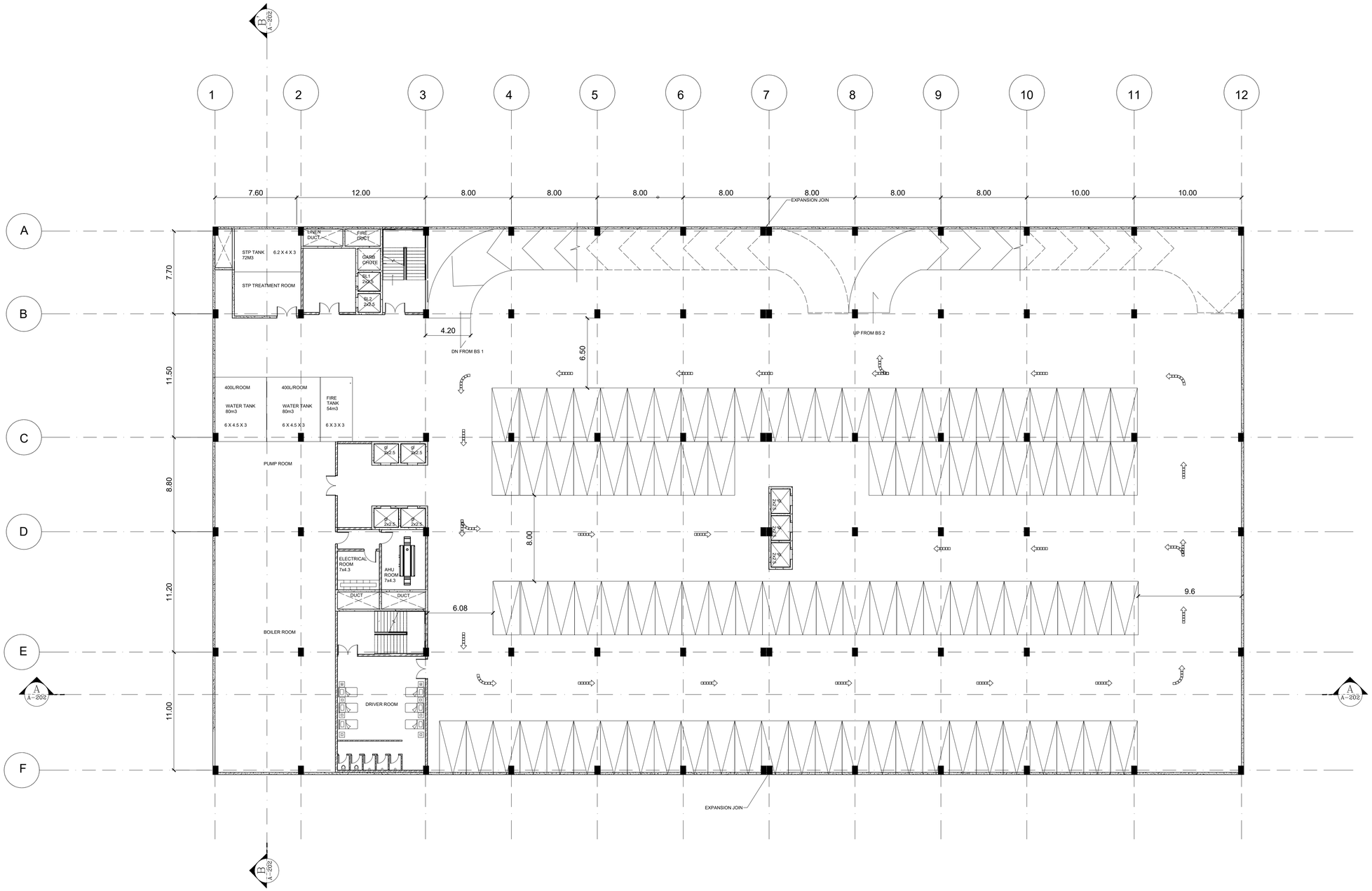
STP	
Total Water Demand	80000
90% of 297500	72000
KLD	72Cu.M
Dimensions (h=3m)	6.2 X 4 X3

DRAWING	DRAWING	NORTH	PROJECT	SHEET TITLE		DETAIL BY	GUIDE BY	DRG. NO.
SITE PLAN	ALL DIMENSION ARE IN METER SCALE 1:500		5 STAR HOTEL , SANAND GUJRAT	SITE PLAN WITH ACLCULATION		SHAHBAN SHAH (211110004)	PROF. PREETI ONKAR (THESIS GUIDE) PROF. VICKY LALRAMSANGI (THESIS COORDINATOR)	5



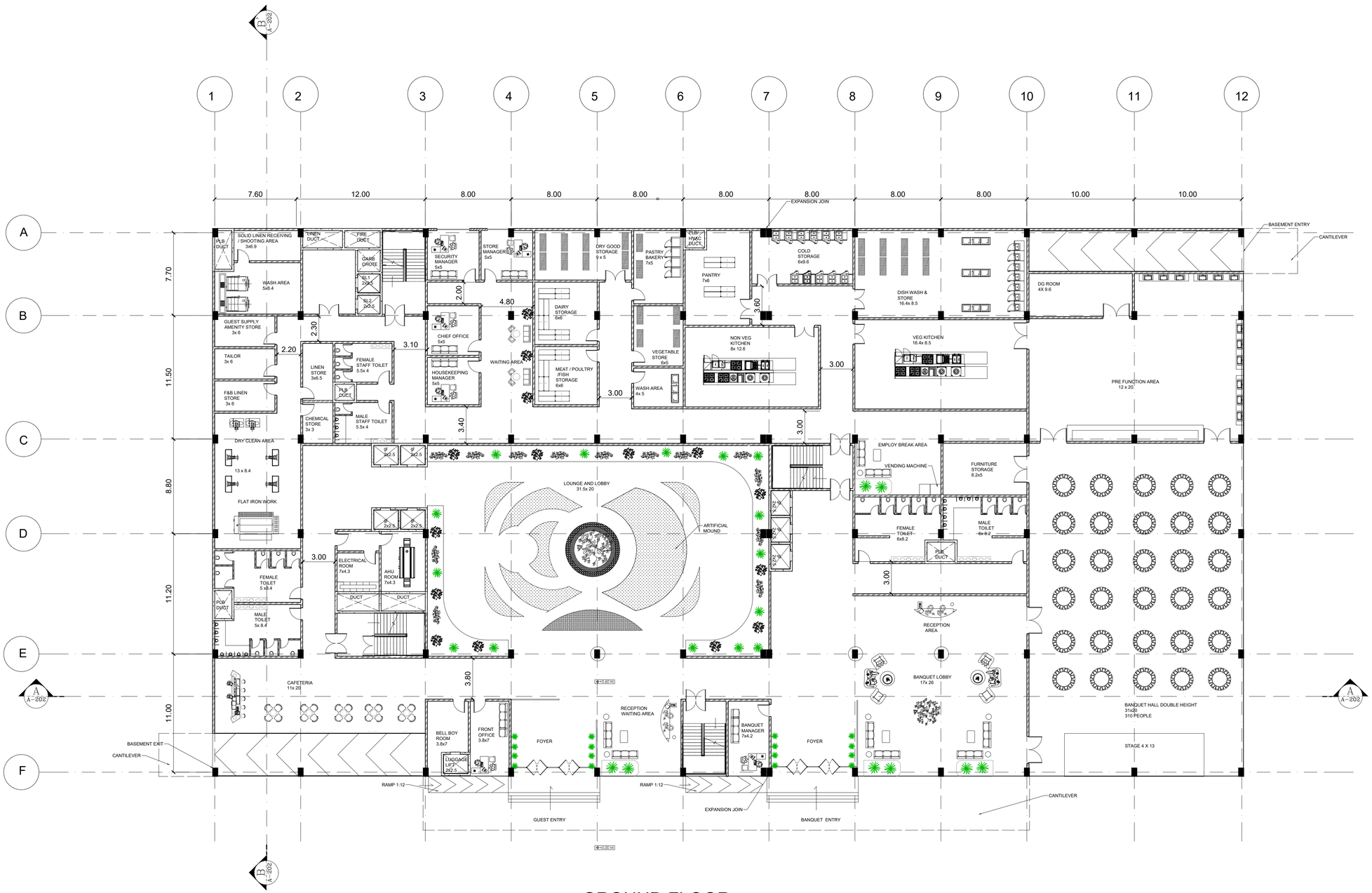
BASEMENT 1

DRAWING	DRAWING	NORTH	PROJECT	SHEET TITLE		DETAIL BY	GUIDE BY	DRG. NO.
FLOOR PLAN	ALL DIMENSION ARE IN METER SCALE 1:200		5 STAR HOTEL , SANAND GUJRAT	FLOOR PLAN WITH BASIC STRUCTURE		SHAHBAN SHAH (211110004)	PROF. PREETI ONKAR (THESIS GUIDE) PROF. VICKY LALRAMSANGI (THESIS COORDINATOR)	6



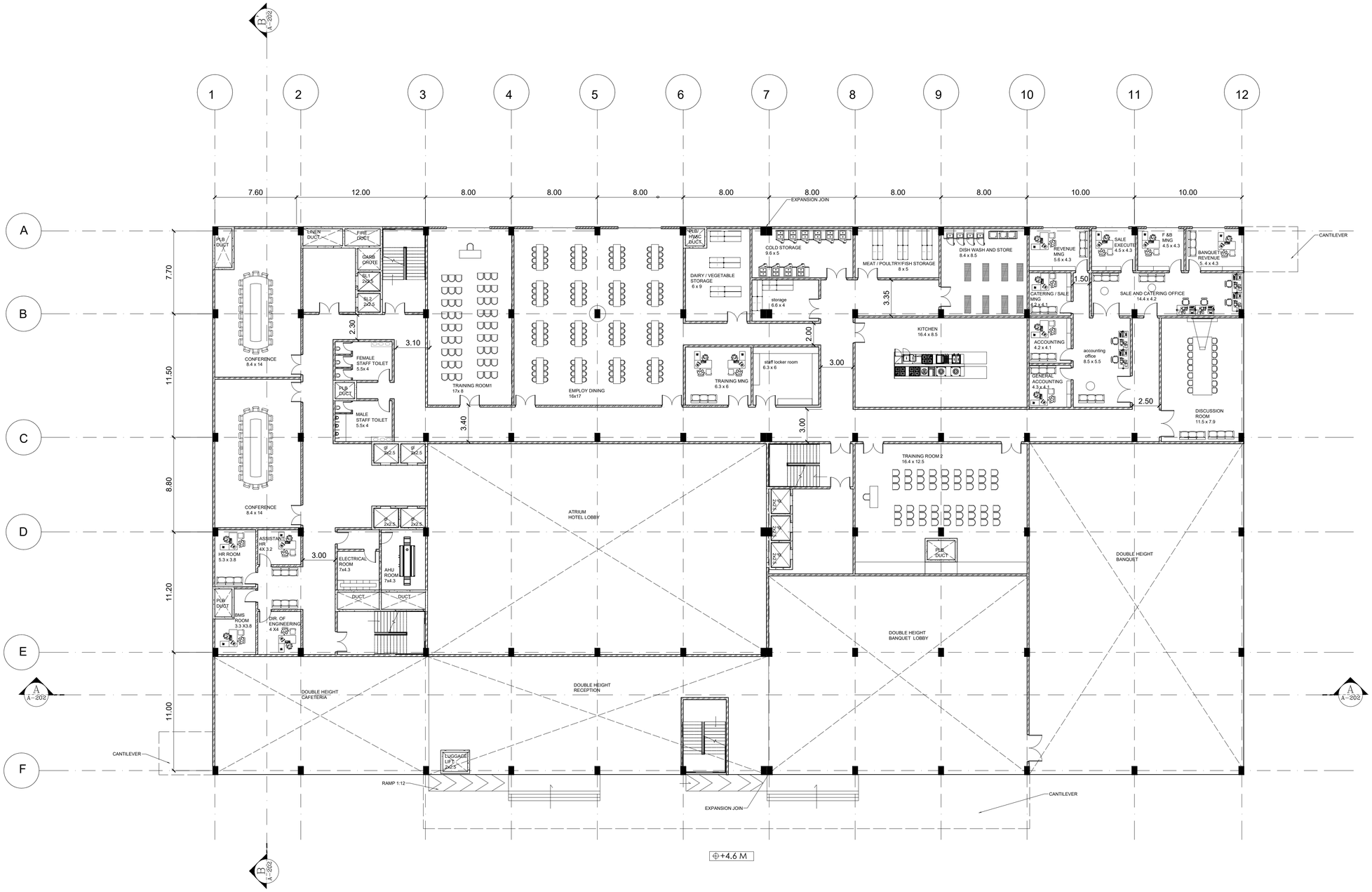
BASEMENT 2

DRAWING	DRAWING	NORTH	PROJECT	SHEET TITLE		DETAIL BY	GUIDE BY	DRG. NO.
FLOOR PLAN	ALL DIMENSION ARE IN METER SCALE 1:200		5 STAR HOTEL , SANAND GUJRAT	FLOOR PLAN WITH BASIC STRUCTURE		SHAHBAN SHAH (211110004)	PROF. PREETI ONKAR (THESIS GUIDE) PROF. VICKY LALRAMSANGI (THESIS COORDINATOR)	7



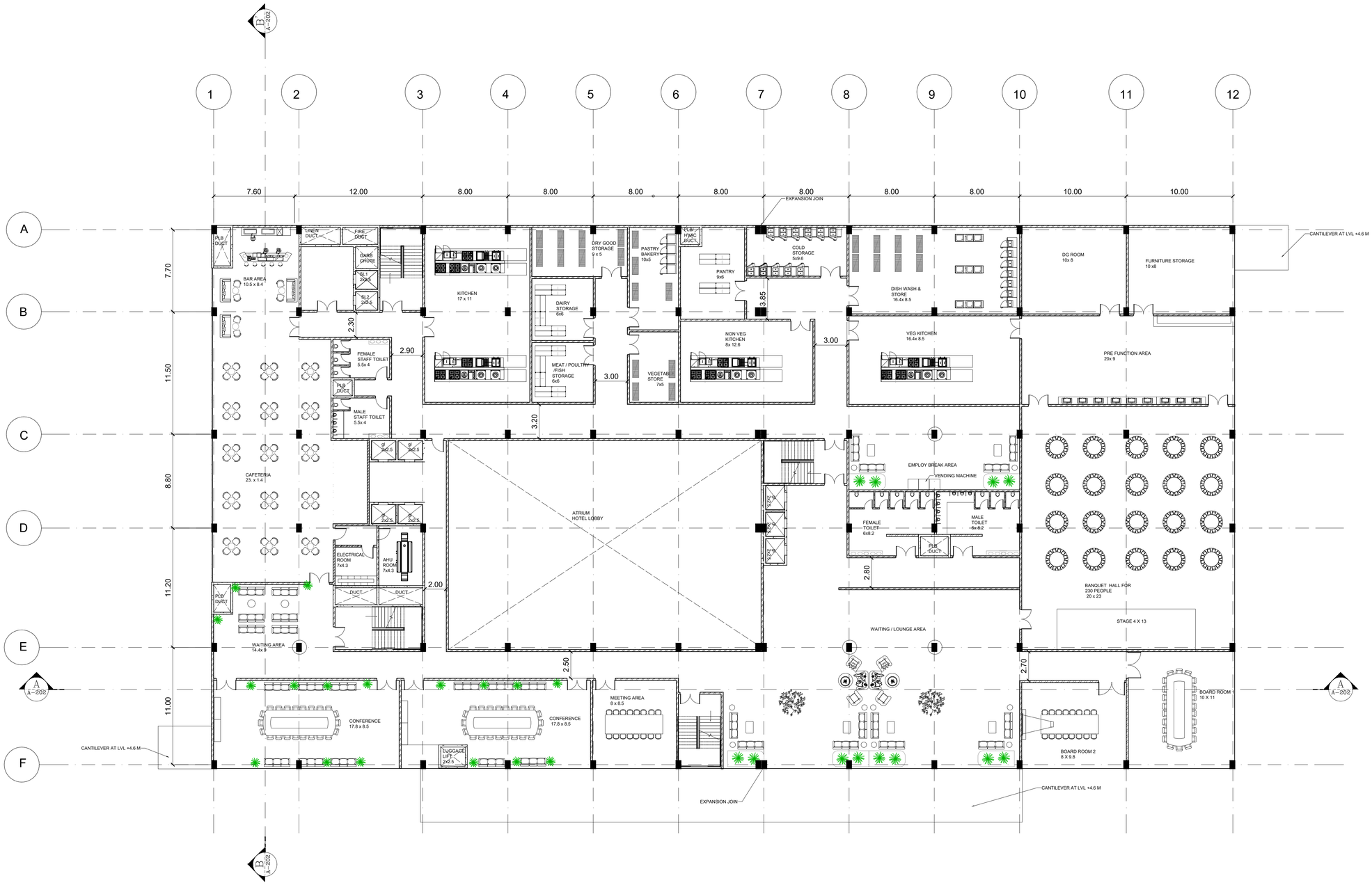
GROUND FLOOR

DRAWING	DRAWING	NORTH	PROJECT	SHEET TITLE		DETAIL BY	GUIDE BY	DRG. NO.
FLOOR PLAN	ALL DIMENSION ARE IN METER SCALE 1:200		5 STAR HOTEL , SANAND GUJRAT	FLOOR PLAN WITH BASIC STRUCTURE		SHAHBAN SHAH (211110004)	PROF. PREETI ONKAR (THESIS GUIDE) PROF. VICKY LALRAMSANGI (THESIS COORDINATOR)	8



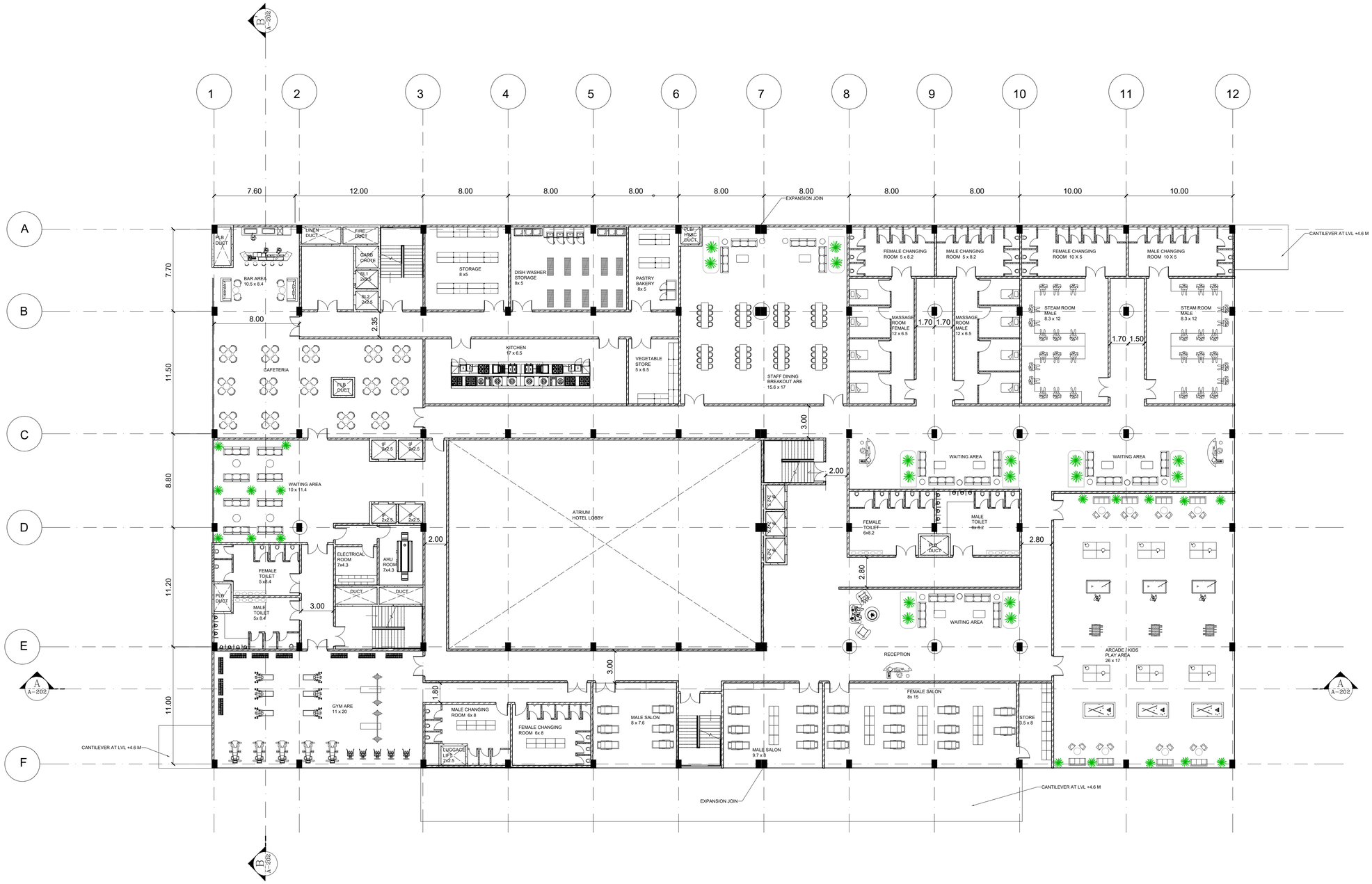
1ST FLOOR

DRAWING	DRAWING	NORTH	PROJECT	SHEET TITLE		DETAIL BY	GUIDE BY	DRG. NO.
FLOOR PLAN	ALL DIMENSION ARE IN METER SCALE 1:200		5 STAR HOTEL , SANAND GUJRAT	FLOOR PLAN WITH BASIC STRUCTURE		SHAHBAN SHAH (211110004)	PROF. PREETI ONKAR (THESIS GUIDE) PROF. VICKY LALRAMSANGI (THESIS COORDINATOR)	9



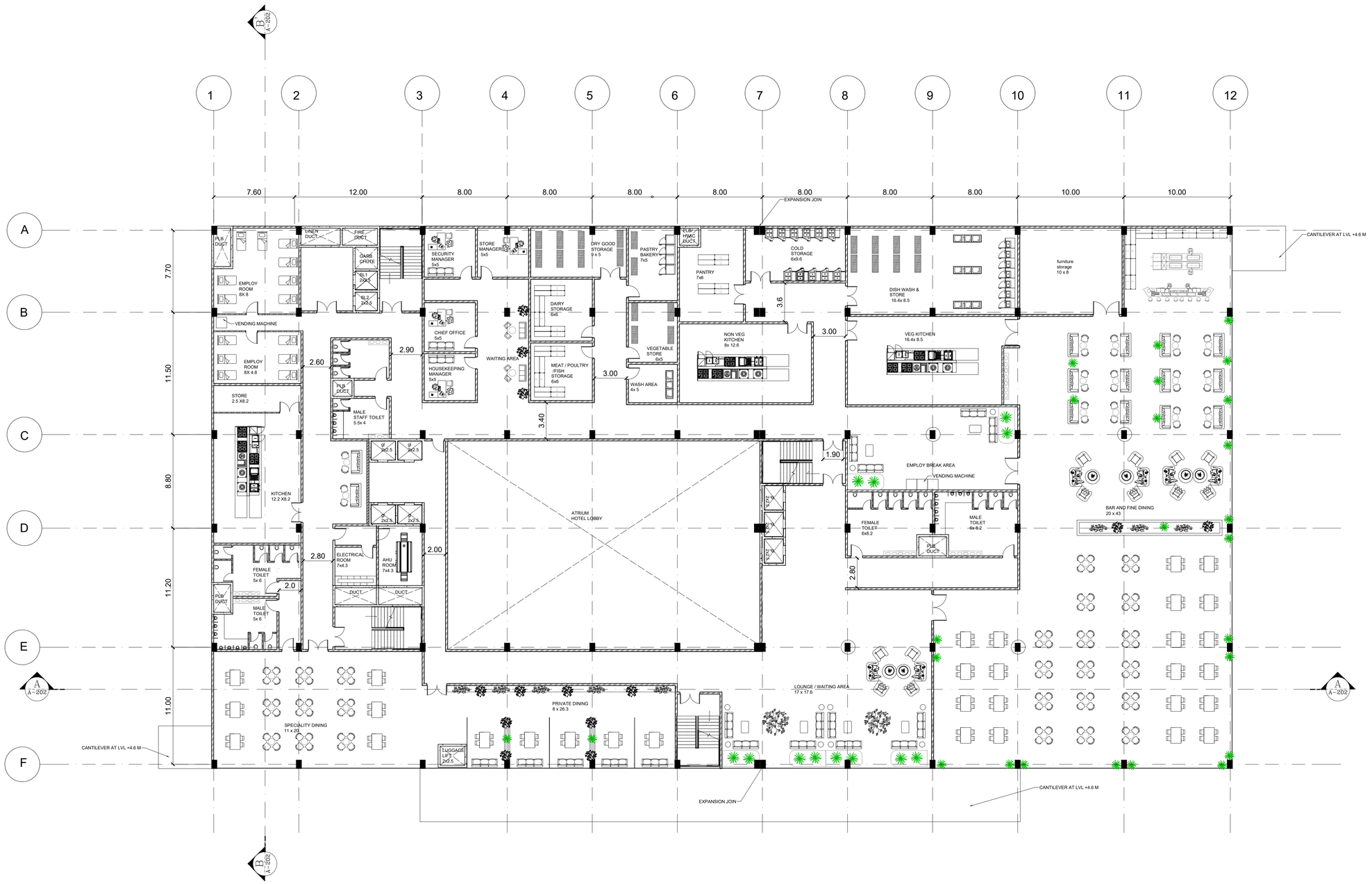
2ND FLOOR +8.6 M

DRAWING	DRAWING	NORTH	PROJECT	SHEET TITLE		DETAIL BY	GUIDE BY	DRG. NO.
FLOOR PLAN	ALL DIMENSION ARE IN METER SCALE 1:200		5 STAR HOTEL , SANAND GUJRAT	FLOOR PLAN WITH BASIC STRUCTURE		SHAHBAN SHAH (211110004)	PROF. PREETI ONKAR (THESIS GUIDE) PROF. VICKY LALRAMSANGI (THESIS COORDINATOR)	10



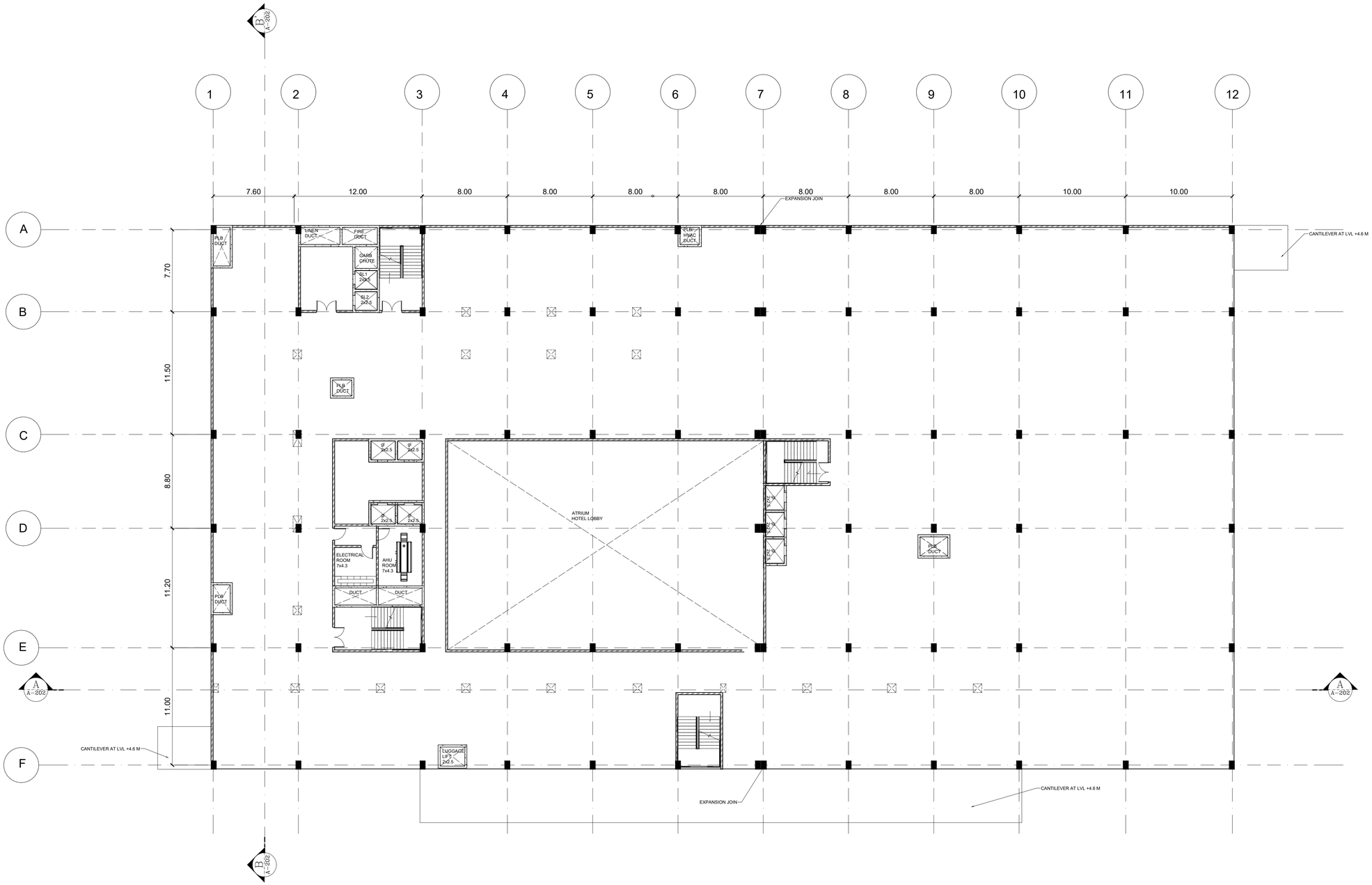
3RD FLOOR

DRAWING	DRAWING	NORTH	PROJECT	SHEET TITLE		DETAIL BY	GUIDE BY	DRG. NO.
FLOOR PLAN	ALL DIMENSION ARE IN METER SCALE 1:200		5 STAR HOTEL , SANAND GUJRAT	FLOOR PLAN WITH BASIC STRUCTURE		SHAHBAN SHAH (211110004)	PROF. PREETI ONKAR (THESIS GUIDE) PROF. VICKY LALRAMSANGI (THESIS COORDINATOR)	11



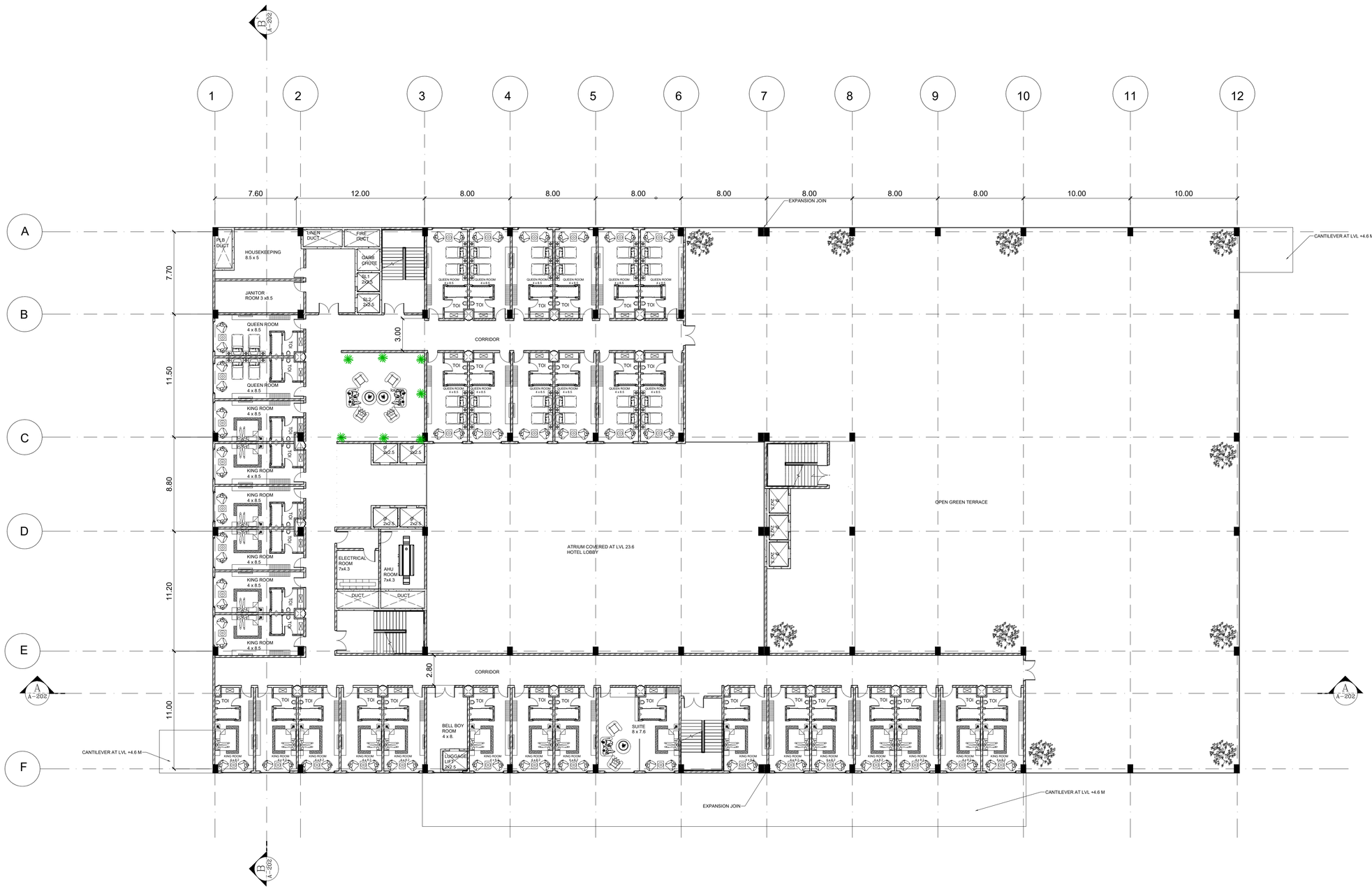
4TH FLOOR

DRAWING	DRAWING	NORTH	PROJECT	SHEET TITLE		DETAIL BY	GUIDE BY	DRG. NO.
FLOOR PLAN	ALL DIMENSION ARE IN METER SCALE 1:200		5 STAR HOTEL , SANAND GUJRAT	FLOOR PLAN WITH BASIC STRUCTURE		SHAHBAN SHAH (211110004)	PROF. PREETI ONKAR (THESIS GUIDE) PROF. VICKY LALRAMSANGI (THESIS COORDINATOR)	12



5TH FLOOR

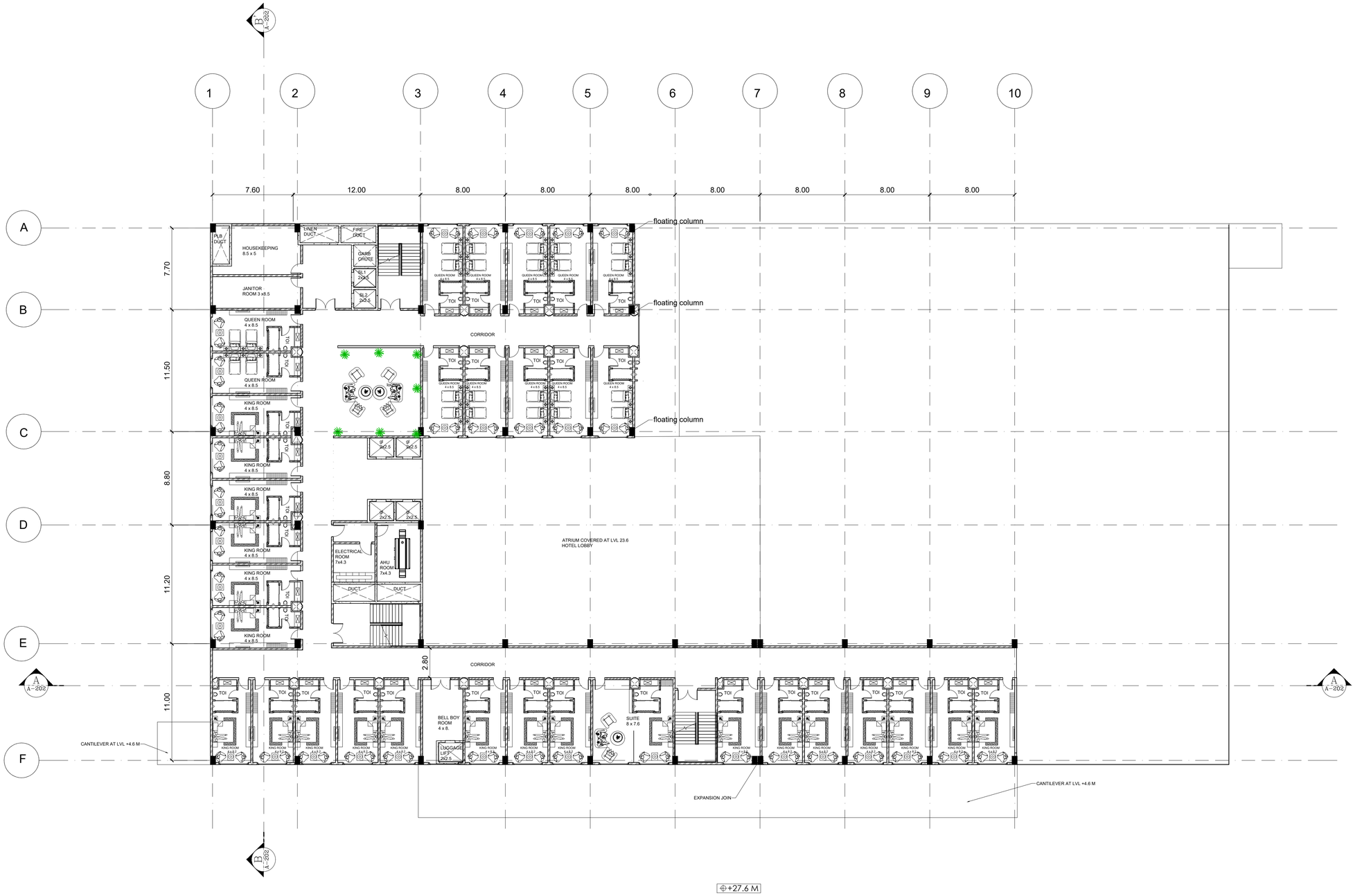
DRAWING	DRAWING	NORTH	PROJECT	SHEET TITLE		DETAIL BY	GUIDE BY	DRG. NO.
FLOOR PLAN	ALL DIMENSION ARE IN METER SCALE 1:200		5 STAR HOTEL , SANAND GUJRAT	FLOOR PLAN WITH BASIC STRUCTURE		SHAHBAN SHAH (211110004)	PROF. PREETI ONKAR (THESIS GUIDE) PROF. VICKY LALRAMSANGI (THESIS COORDINATOR)	13



+23.6 M

6TH FLOOR

DRAWING	DRAWING	NORTH	PROJECT	SHEET TITLE		DETAIL BY	GUIDE BY	DRG. NO.
FLOOR PLAN	ALL DIMENSION ARE IN METER SCALE 1:200		5 STAR HOTEL , SANAND GUJRAT	FLOOR PLAN WITH BASIC STRUCTURE		SHAHBAN SHAH (211110004)	PROF. PREETI ONKAR (THESIS GUIDE) PROF. VICKY LALRAMSANGI (THESIS COORDINATOR)	14



7TH FLOOR

DRAWING	DRAWING	NORTH	PROJECT	SHEET TITLE		DETAIL BY	GUIDE BY	DRG. NO.
FLOOR PLAN	ALL DIMENSION ARE IN METER SCALE 1:200		5 STAR HOTEL , SANAND GUJRAT	FLOOR PLAN WITH BASIC STRUCTURE		SHAHBAN SHAH (211110004)	PROF. PREETI ONKAR (THESIS GUIDE) PROF. VICKY LALRAMSANGI (THESIS COORDINATOR)	15



8TH FLOOR

+31.6 M



9TH FLOOR

+35.6 M



10TH FLOOR

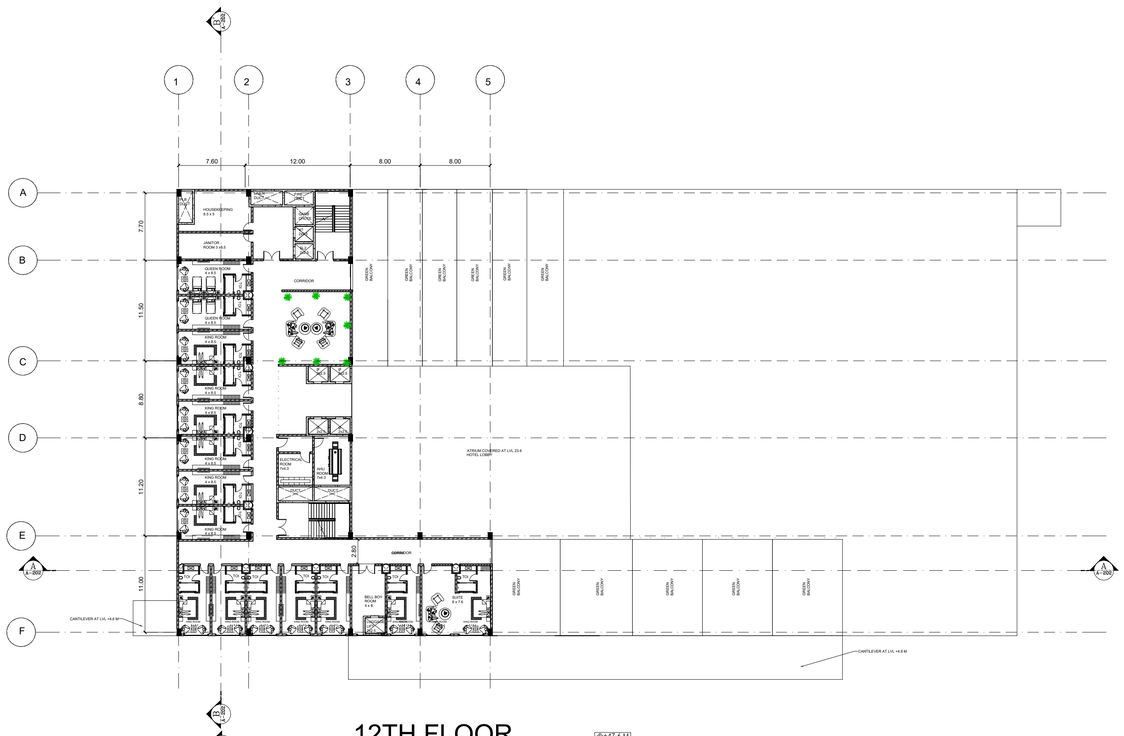
+39.6 M



11TH FLOOR

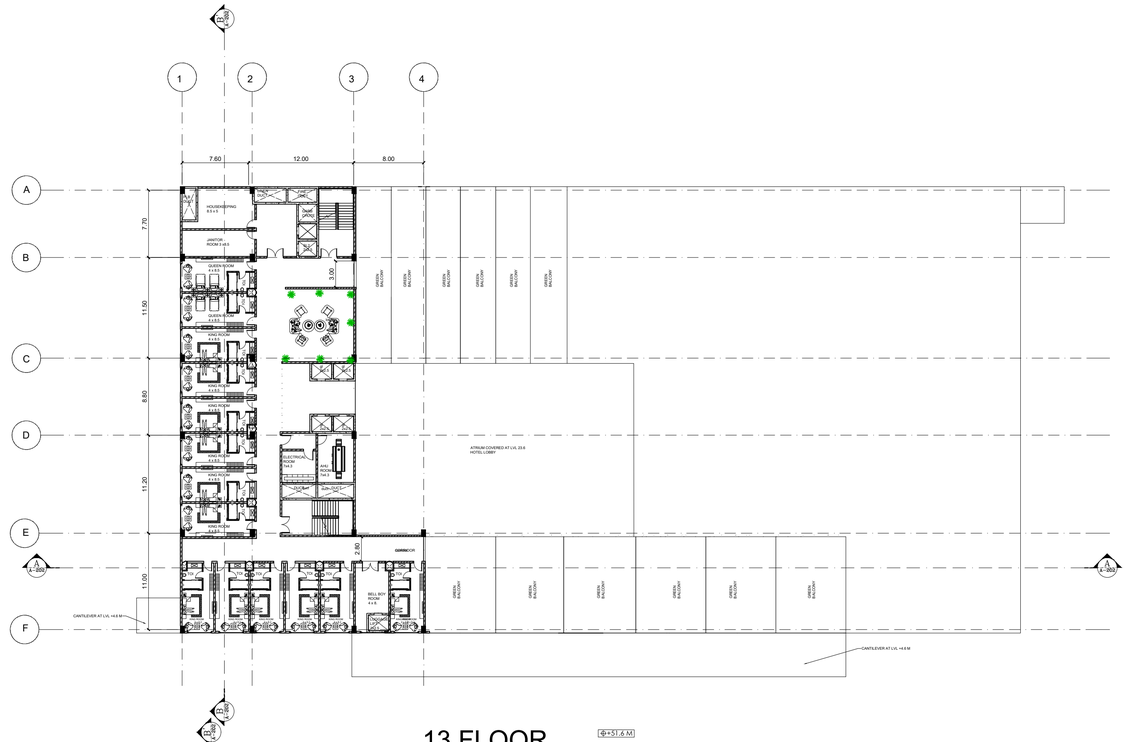
+43.6 M

DRAWING	DRAWING	NORTH	PROJECT	SHEET TITLE		DETAIL BY	GUIDE BY	DRG. NO.
FLOOR PLAN	ALL DIMENSION ARE IN METER SCALE 1:350		5 STAR HOTEL , SANAND GUJRAT	FLOOR PLAN WITH BASIC STRUCTURE		SHAHBAN SHAH (211110004)	PROF. PREETI ONKAR (THESIS GUIDE) PROF. VICKY LALRAMSANGI (THESIS COORDINATOR)	16



12TH FLOOR

+47.6 M



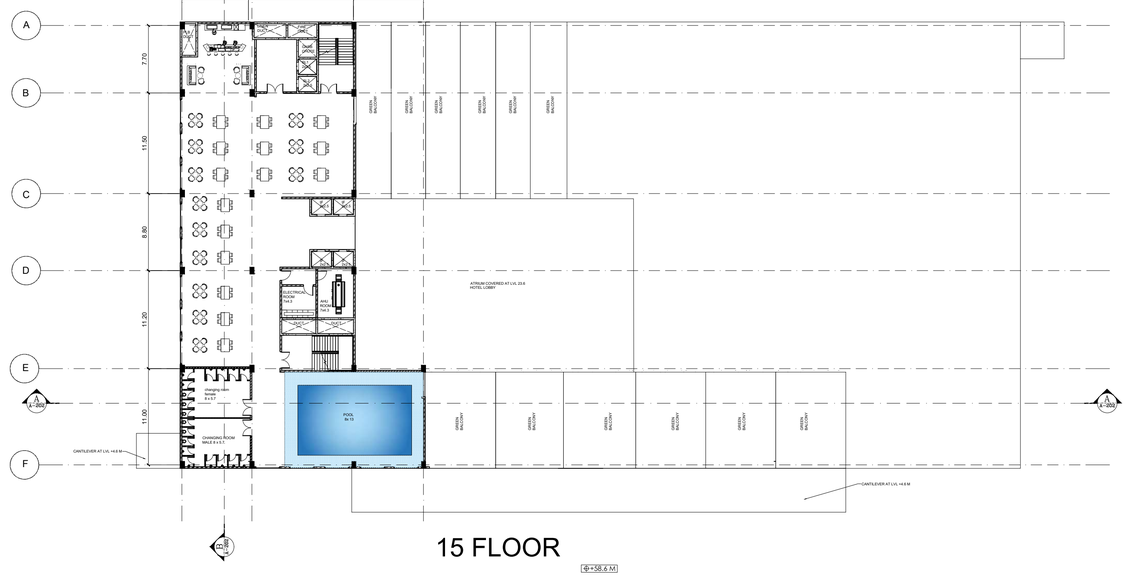
13 FLOOR

+51.6 M



14 FLOOR

+55.4 M

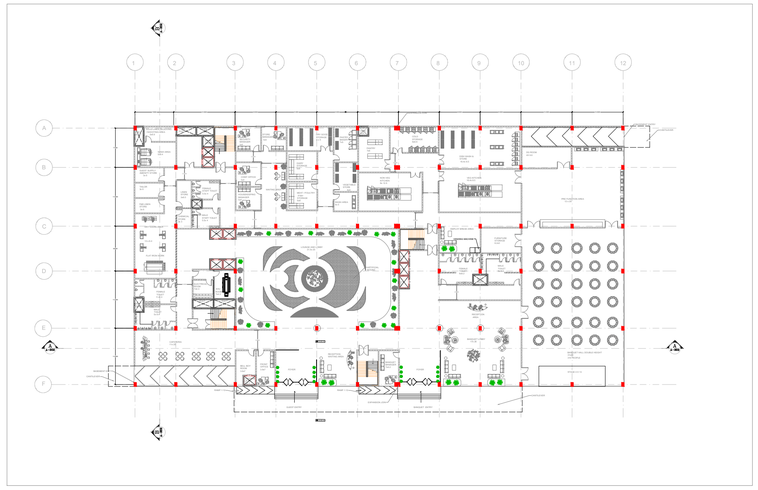


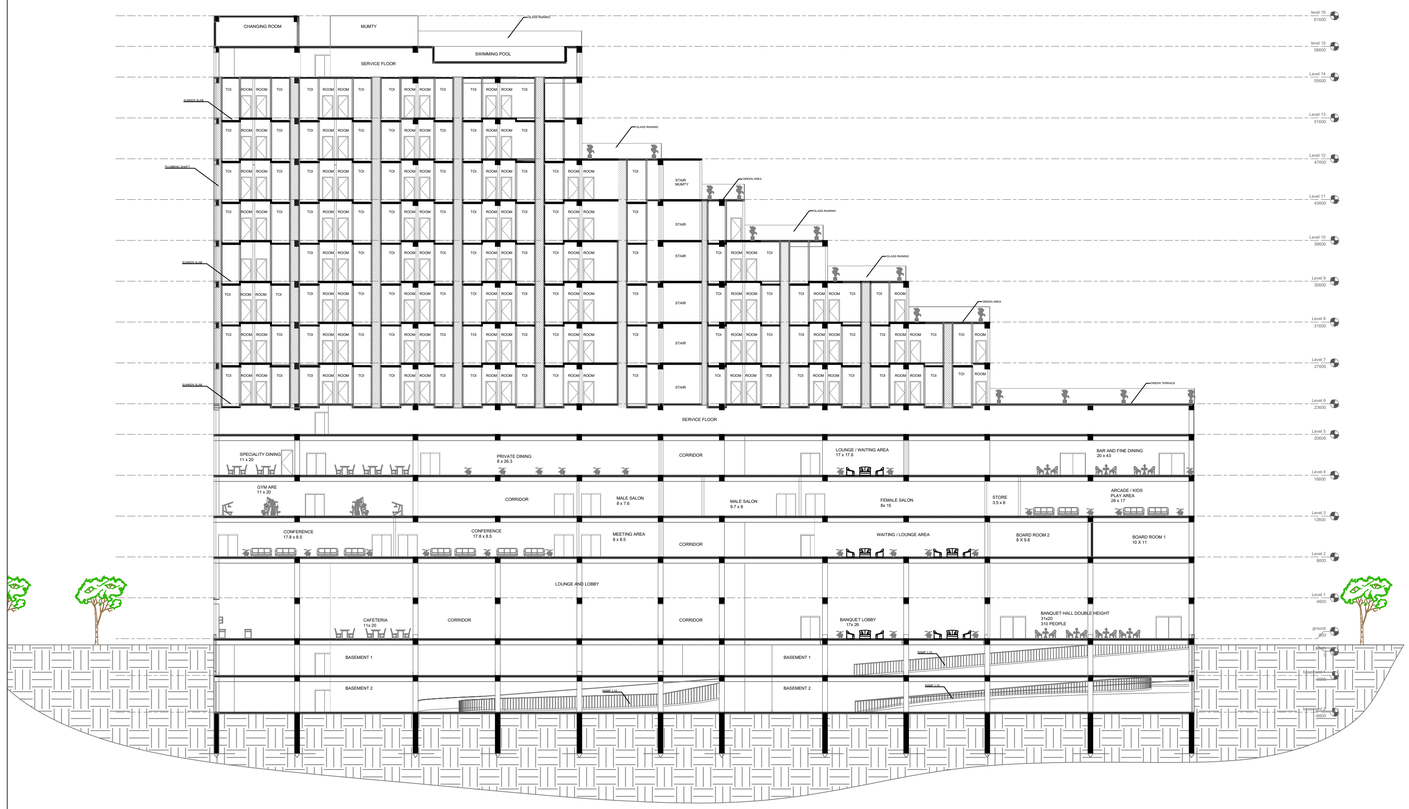
15 FLOOR

+58.6 M

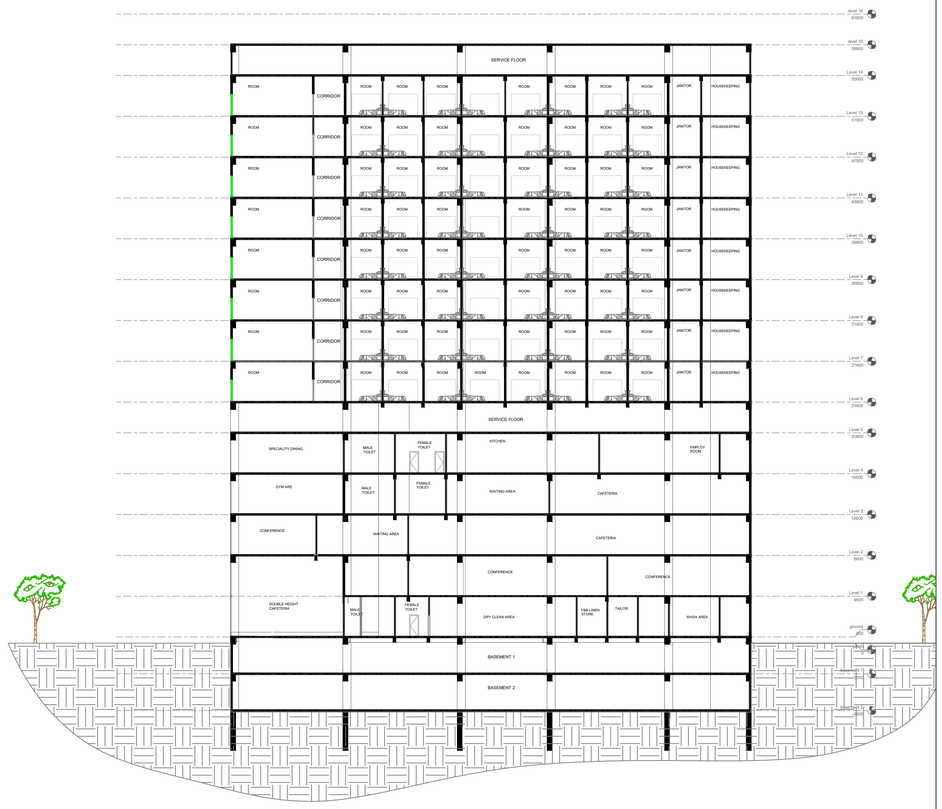
DRAWING	DRAWING	NORTH	PROJECT	SHEET TITLE		DETAIL BY	GUIDE BY	DRG. NO.
FLOOR PLAN	ALL DIMENSION ARE IN METER SCALE 1:350		5 STAR HOTEL , SANAND GUJRAT	FLOOR PLAN WITH BASIC STRUCTURE		SHAHBAN SHAH (211110004)	PROF. PREETI ONKAR (THESIS GUIDE) PROF. VICKY LALRAMSANGI (THESIS COORDINATOR)	17

KEY PLAN
SCALE 1:600



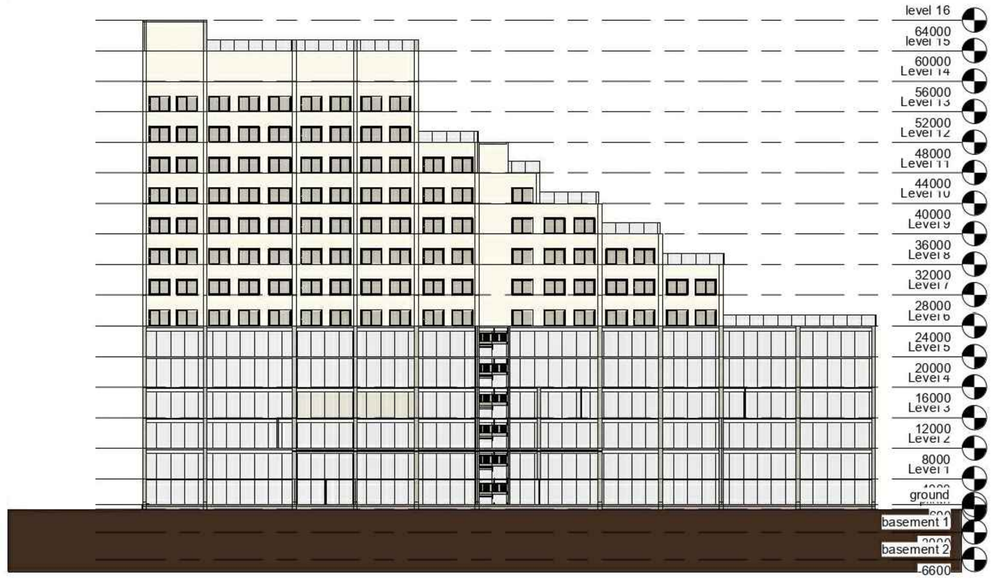


SECTION AA'

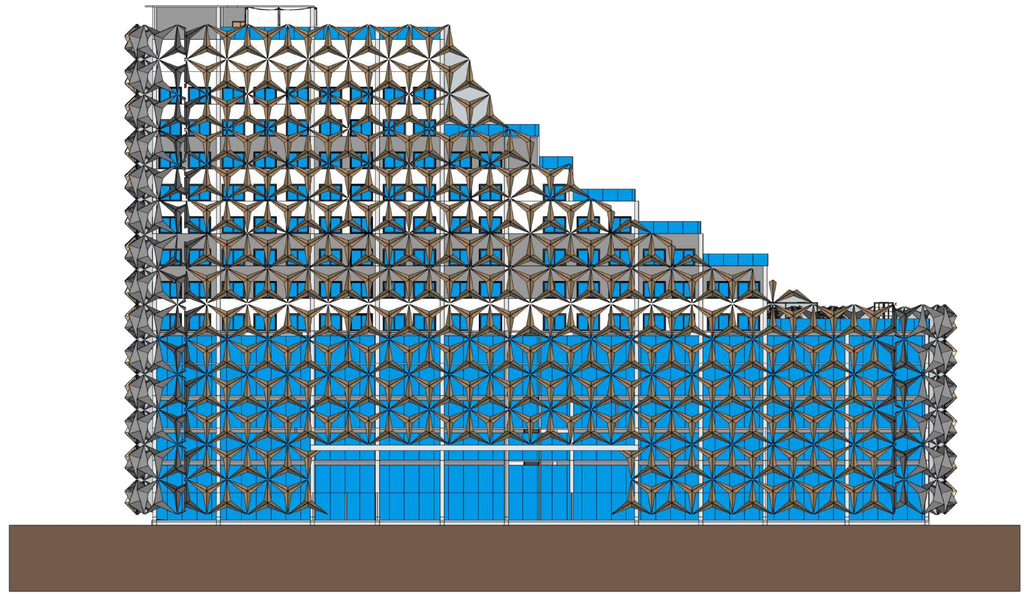


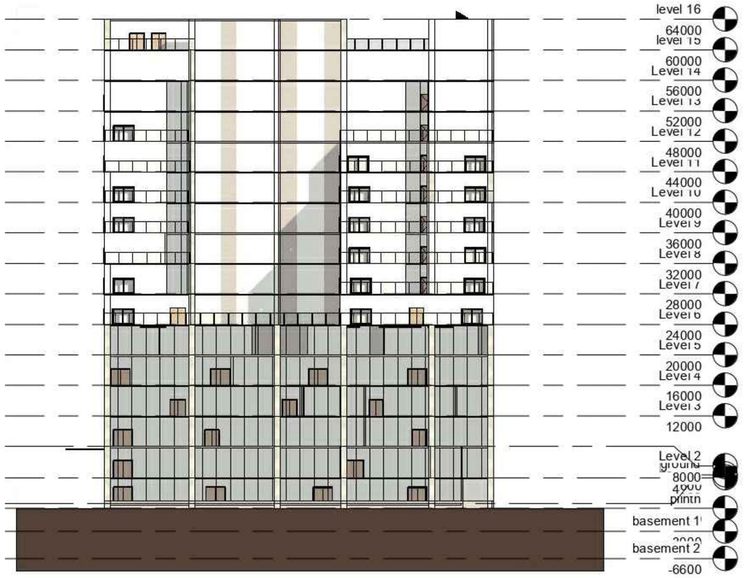
SECTION BB'

DRAWING	DRAWING	NORTH	PROJECT	SHEET TITLE		DETAIL BY	GUIDE BY	DRG. NO.
SECTION AA'& BB'	ALL DIMENSION ARE IN METER SCALE 1:300		5 STAR HOTEL , SANAND GUJRAT	SECTION DETAIL		SHAHBAN SHAH (211110004)	PROF. PREETI ONKAR (THESIS GUIDE) PROF. VICKY LALRAMSANGI (THESIS COORDINATOR)	18

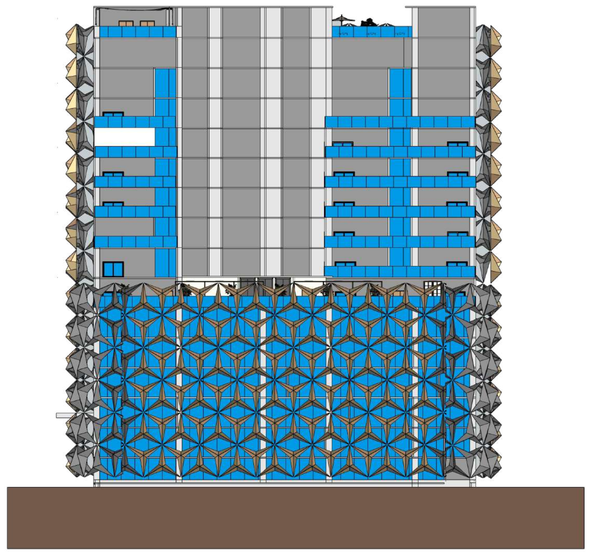


1 SOUTH ELEVATION
1 : 400

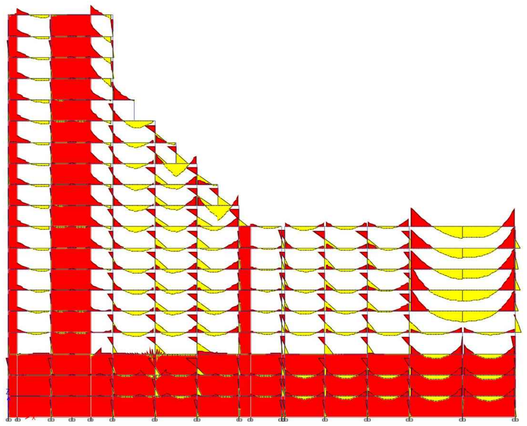




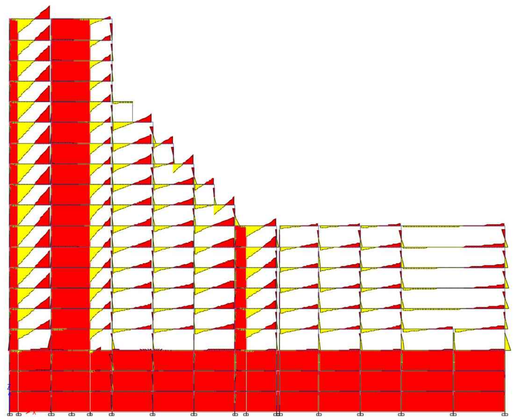
2 EAST ELEVATION
1 : 400



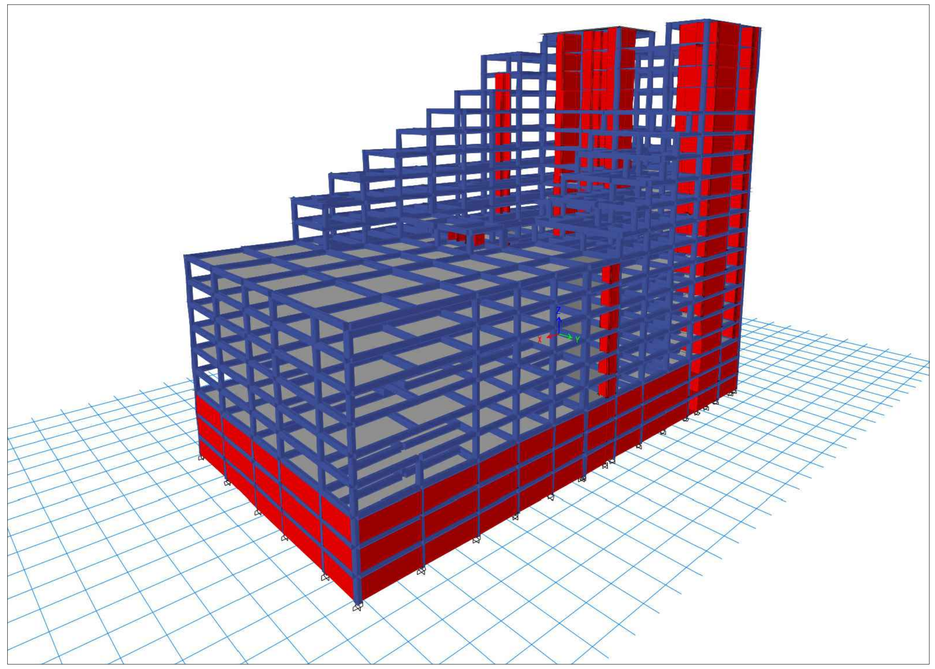
DRAWING	DRAWING	NORTH	PROJECT		DETAIL BY	GUIED BY	DRG NO
ELEVATION	ALL DIMENSION ARE IN M		5 STAR HOTEL SANAND GUJRAT		SHAHBAN SHAH 211110004	PROF PREETI ONKAR (THESIS GUIDE) PROF. VICKY LALRAMSANGI (THESIS COORDINATORE)	19



BENDING MOMENT GRAVITY LOAD DEAD + LIVE LOAD DIAGRAM



BENDING MOMENT LATERAL LOAD EARTHQUAKE DIAGRAM



Base Reactions

File Edit Format-Filter-Sort Select Options

Units: As Noted Hidden Columns: No Sort: None Filter: None

Base Reactions

	Output Case	Case Type	Step Type	Step Number	FX kN	FY kN	FZ kN
▶	Dead	LinStatic			-1.189E-06	0	950007.4216
	Live	LinStatic			0	0	172100.2772
	Modal	LinModEigen	Mode	1	1.0969	-1.185	0
	Modal	LinModEigen	Mode	2	-1.9322	-1.5548	0
	Modal	LinModEigen	Mode	3	1.4033	-2.8072	0
	Modal	LinModEigen	Mode	4	-1.1481	-0.0259	0
	Modal	LinModEigen	Mode	5	-5.3089	-2.4542	0
	Modal	LinModEigen	Mode	6	1.658	-9.4887	0

Base Reactions

File Edit Format-Filter-Sort Select Options

Units: As Noted Hidden Columns: No Sort: None Filter: None

Base Reactio

	Output Case	Case Type	Step Type	Step Number	FX kN	FY kN
	Modal	LinModEigen	Mode	10	-1.063	-0.4915
	Modal	LinModEigen	Mode	11	-5.9714	2.8884
	Modal	LinModEigen	Mode	12	4.4976	4.5544
	EQX	LinStatic	Step By Step	1	-11017.5062	0
	EQX	LinStatic	Step By Step	2	-11017.5062	0
	EQX	LinStatic	Step By Step	3	-11017.5062	0
	EQY	LinStatic	Step By Step	1	-6.115E-07	-8029.87
	EQY	LinStatic	Step By Step	2	-6.115E-07	-8029.87
	EQY	LinStatic	Step By Step	3	-6.115E-07	-8029.87

SCHEDULE OF SLABS

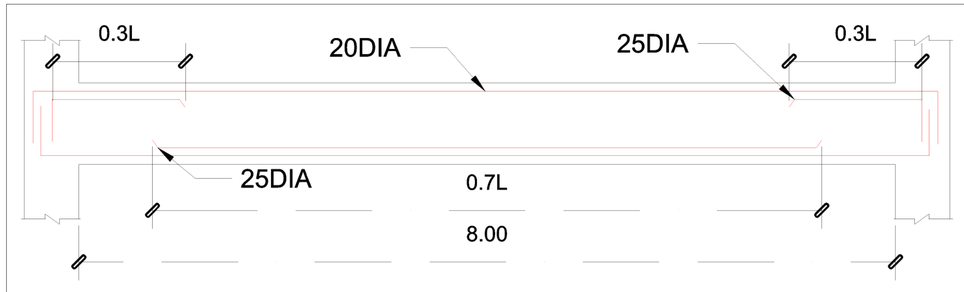
SLAB MKD.	THICKNESS	TYPE	REINFORCEMENT		REMARKS
			SHORT BARS	LONG BARS	
S1	125	TWOWAY	12T@150C/C	10T@150C/C	
S2	150	TWOWAY	12T@150C/C	10T@150C/C	
S3	125	ONEWAY	12T@150C/C	10T@150C/C	
S4	125	ONEWAY	12T@150C/C	8T@150C/C	
S5	125	TWOWAY	12T@150C/C	8T@150C/C	

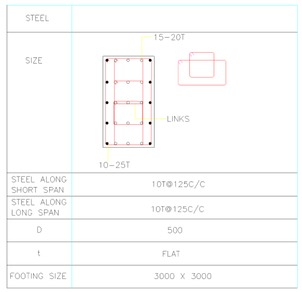
LIVE LOAD – IS CODE 875 PART 2
DEAD LOAD– FLOOR 75MM FLOORING
20 DENSITY
0.15 KN
TERRACE– 20X0.15= 3KN/M^2
SUNKEN – 300MM (DEPTH)
20X0.3= 6KN/M^2

FOOTING 11000 KN LOAD (1500 DEPTH)
SIZE 5 X 5
TOP BAR =12DIA
SIDE BAR = 12DIA
BOTTOM JAAL = 20DIA/100C/C

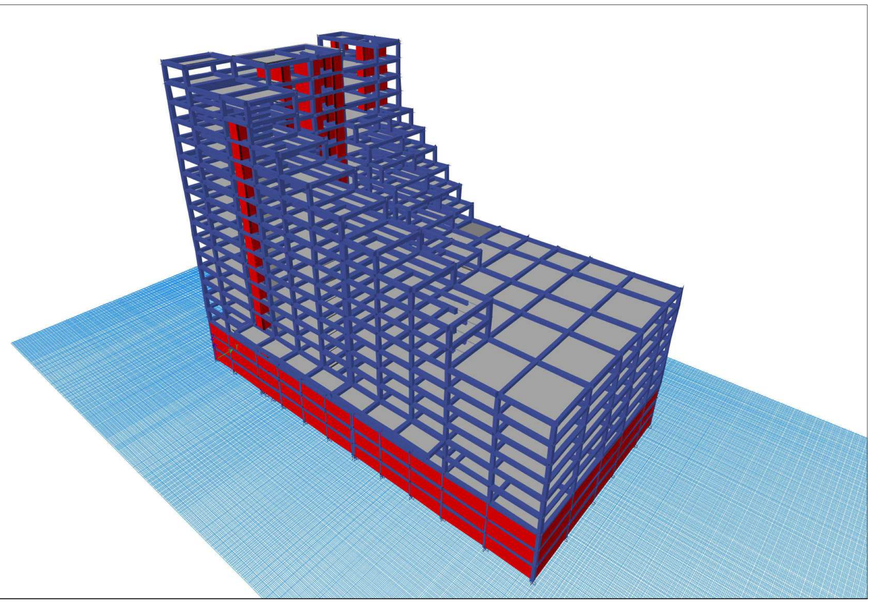
POOL= 1.2M(DEPTH) X 10(DENSITY)
=12KN/M^2
WALL LOAD = 4M(HEIGHT) – 0.8 = 3.2
WALL THICKENS (0.2) ,
20 DENSITY
3.2 X 02 X 20 = 12.8KN/M

SLAB CONCRETE = M30
BEAM CONCRETE = M30
FOOTING CONCRETE = M30
COLUMN CONCRETE = M40

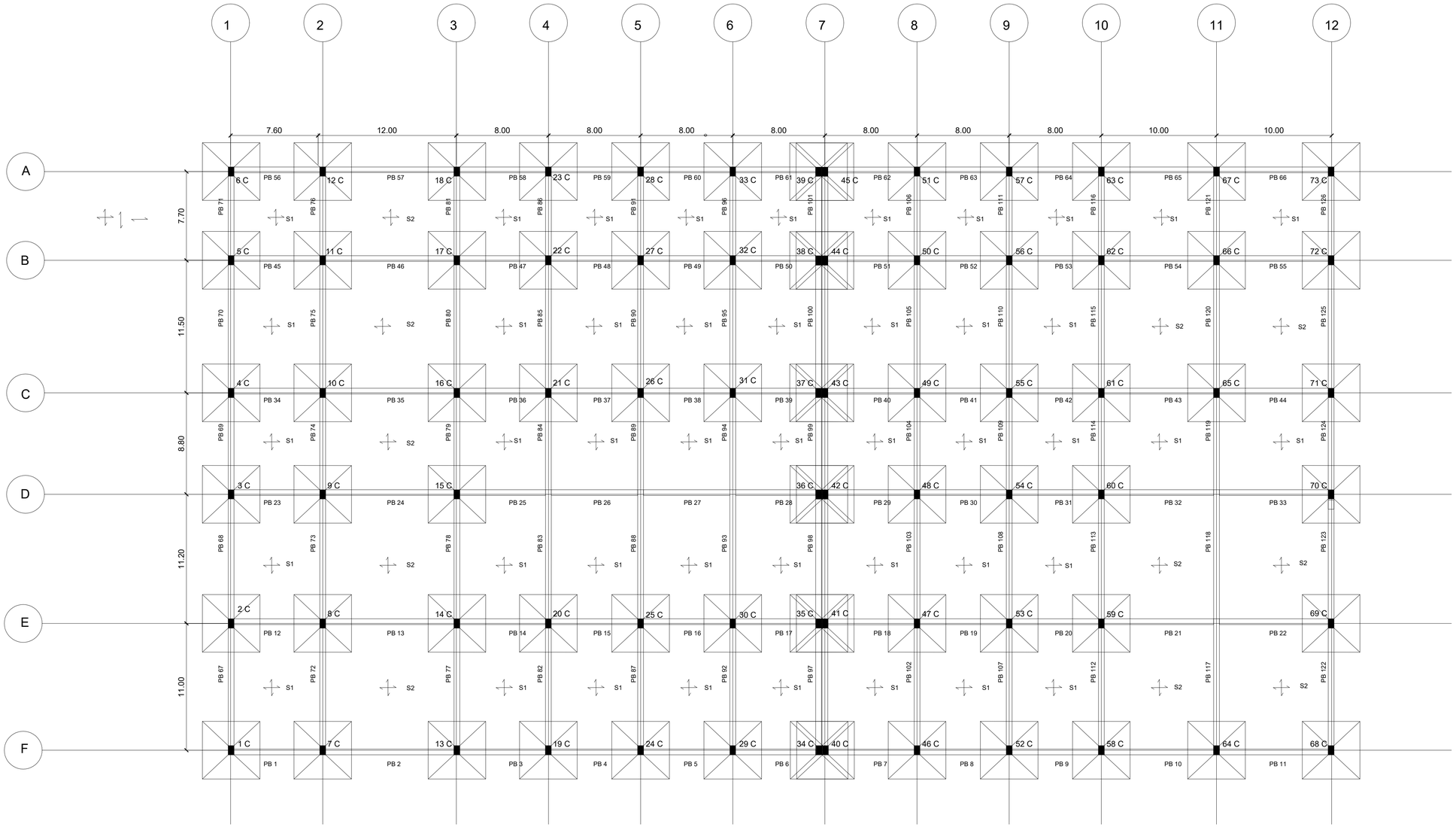




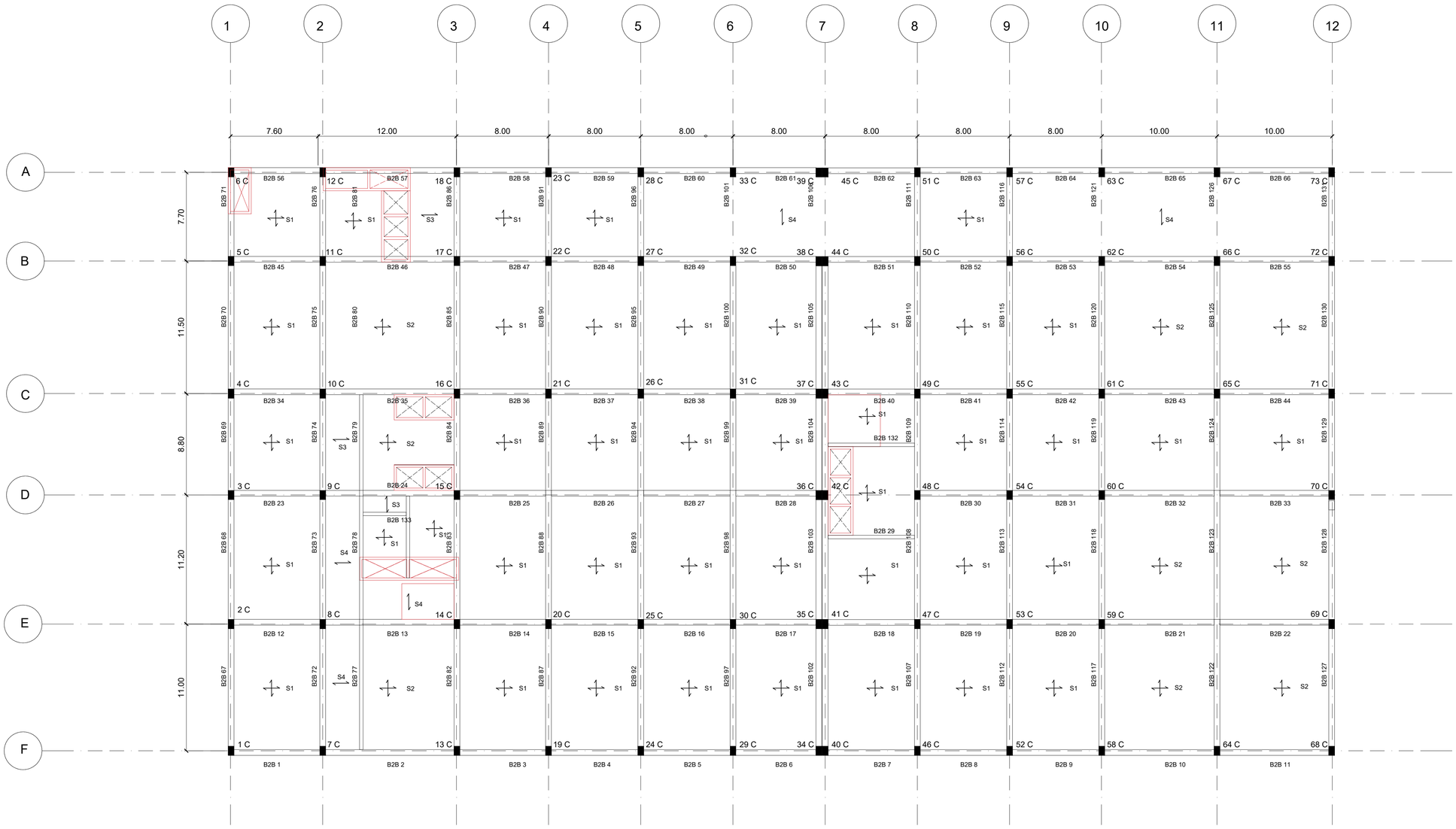
SCALE 1:30



DRAWING	DRAWING	NORTH	PROJECT	STRUCTURE GUIDE		DETAIL BY	GUIDE BY	DRG. NO.
FRAMING PLAN	ALL DIMENSION ARE IN METER		5 STAR HOTEL , SANAND GUJRAT	ER. SOHAIL KHAN (UNIVERSE STRUCTURE DESIGNER)		SHAHBAN SHAH (211110004)	PROF. PREETI ONKAR (THESIS GUIDE) PROF. VICKY LALRAMSANGI (THESIS COORDINATOR)	17

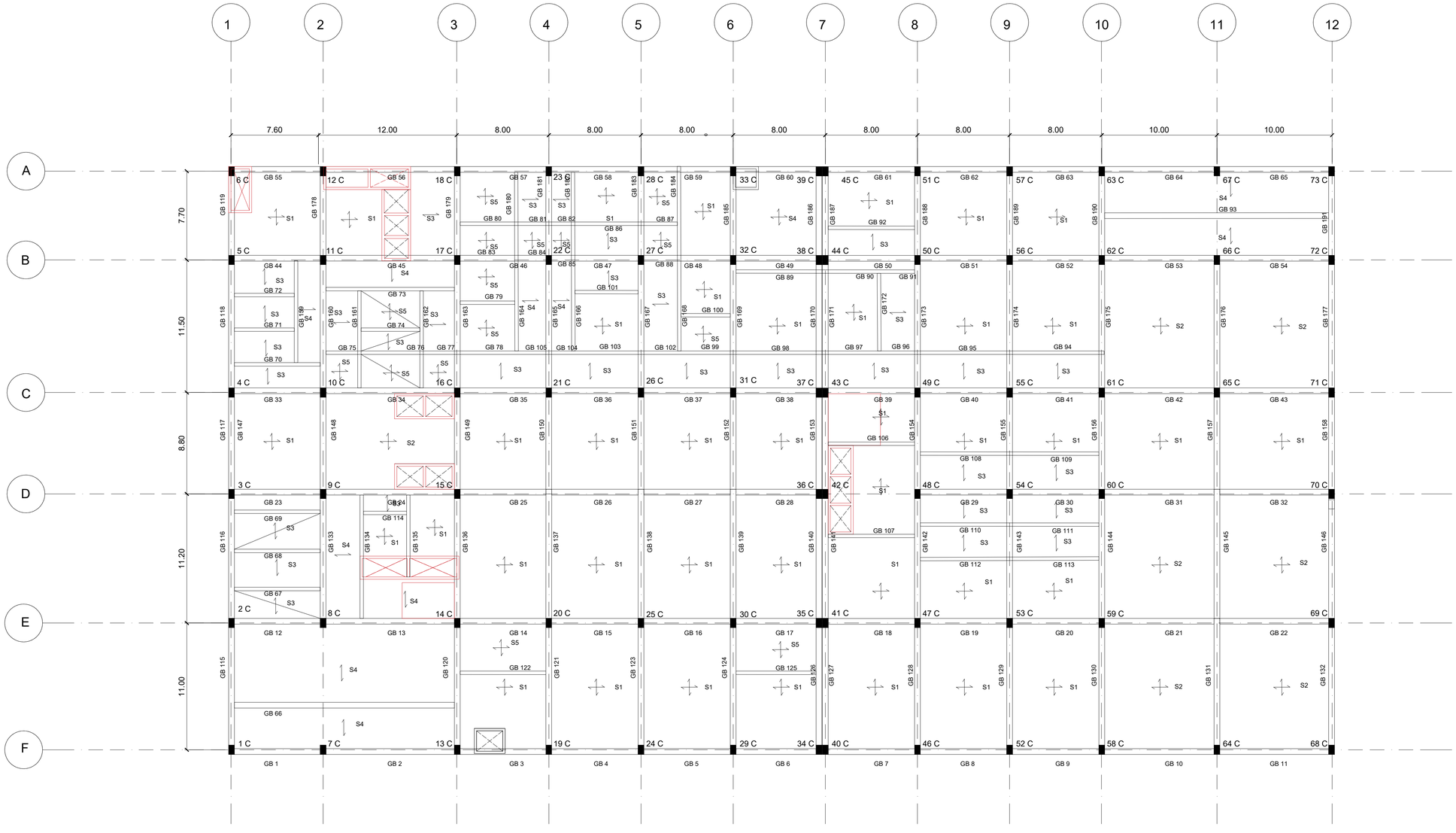


DRAWING	DRAWING	NORTH	PROJECT	STRUCTURE GUIDE	DETAIL BY	GUIDE BY	DRG. NO.
FRAMING PLAN	ALL DIMENSION ARE IN METER SCALE 1:200		5 STAR HOTEL , SANAND GUJRAT	ER. SOHAIL KHAN (UNIVERSE STRUCTURE DESIGNER)	SHAHBAN SHAH (211110004)	PROF. PREETI ONKAR (THESIS GUIDE) PROF. VICKY LALRAMSANGI (THESIS COORDINATOR)	



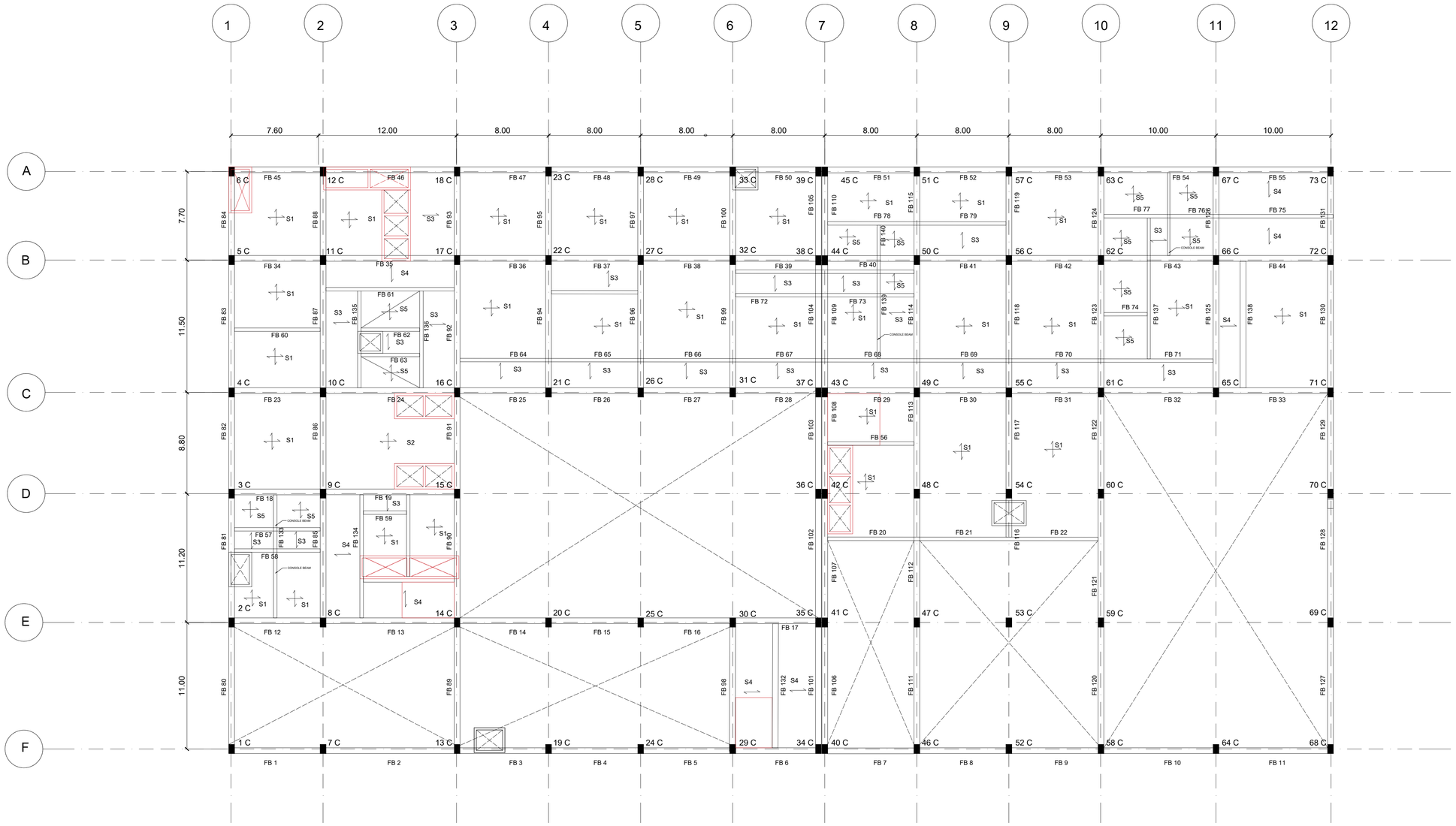
BASEMENT FRAMING PLAN

DRAWING	DRAWING	NORTH	PROJECT	STRUCTURE GUIDE		DETAIL BY	GUIDE BY	DRG. NO.
FRAMING PLAN	ALL DIMENSION ARE IN METER SCALE 1:200		5 STAR HOTEL , SANAND GUJRAT	ER. SOHAIL KHAN (UNIVERSE STRUCTURE DESIGNER)		SHAHBAN SHAH (211110004)	PROF. PREETI ONKAR (THESIS GUIDE) PROF. VICKY LALRAMSANGI (THESIS COORDINATOR)	18



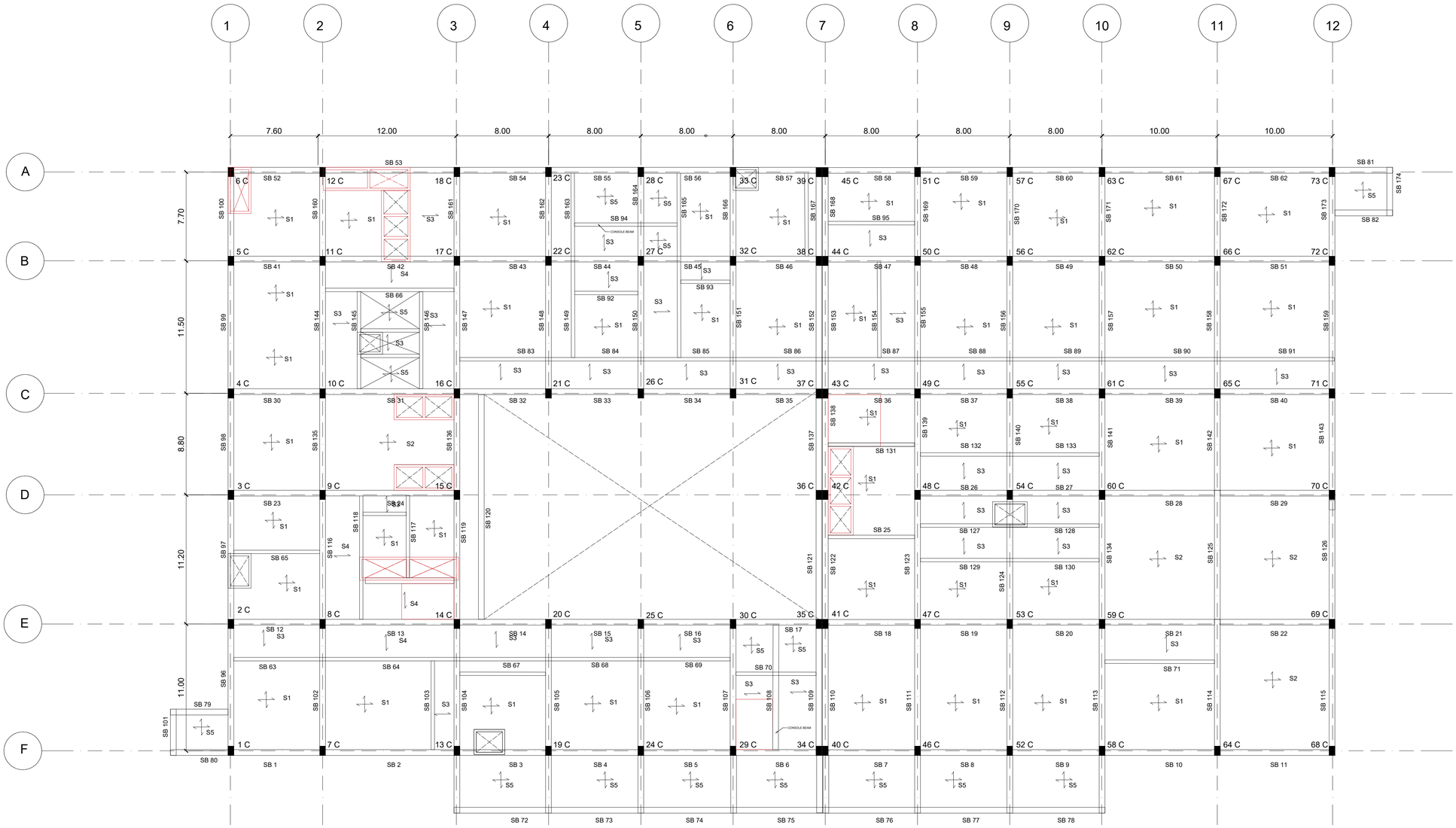
GROUND FLOOR FRAMING PLAN

DRAWING	DRAWING	NORTH	PROJECT	STRUCTURE GUIDE		DETAIL BY	GUIDE BY	DRG. NO.
FRAMING PLAN	ALL DIMENSION ARE IN METER SCALE 1:200		5 STAR HOTEL , SANAND GUJRAT	ER. SOHAIL KHAN (UNIVERSE STRUCTURE DESIGNER)		SHAHBAN SHAH (211110004)	PROF. PREETI ONKAR (THESIS GUIDE) PROF. VICKY LALRAMSANGI (THESIS COORDINATOR)	19



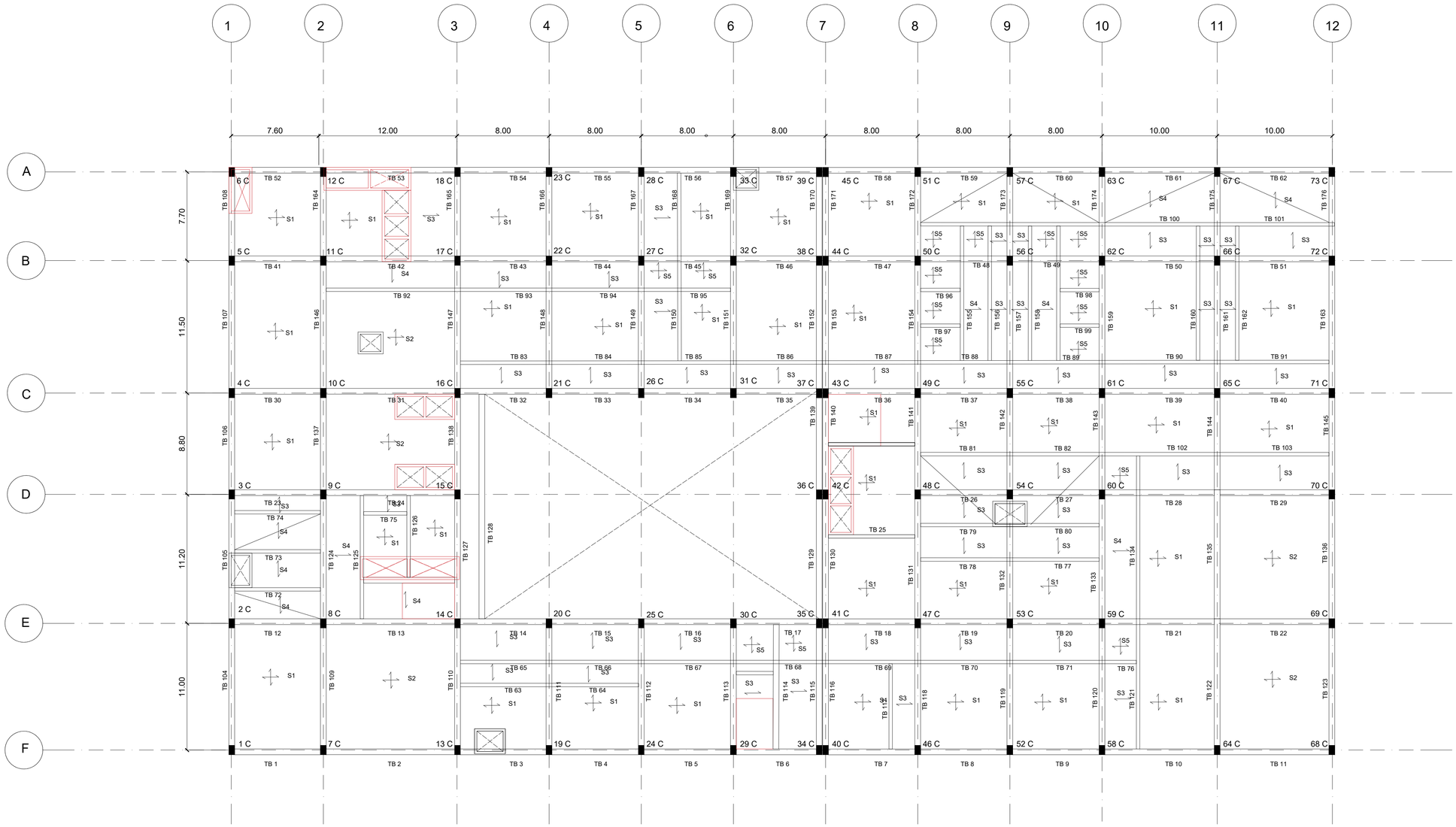
FIRST FLOOR FRAMING PLAN

DRAWING	DRAWING	NORTH	PROJECT	STRUCTURE GUIDE		DETAIL BY	GUIDE BY	DRG. NO.
FRAMING PLAN	ALL DIMENSION ARE IN METER SCALE 1:200		5 STAR HOTEL , SANAND GUJRAT	ER. SOHAIL KHAN (UNIVERSE STRUCTURE DESIGNER)		SHAHBAN SHAH (211110004)	PROF. PREETI ONKAR (THESIS GUIDE) PROF. VICKY LALRAMSANGI (THESIS COORDINATOR)	20



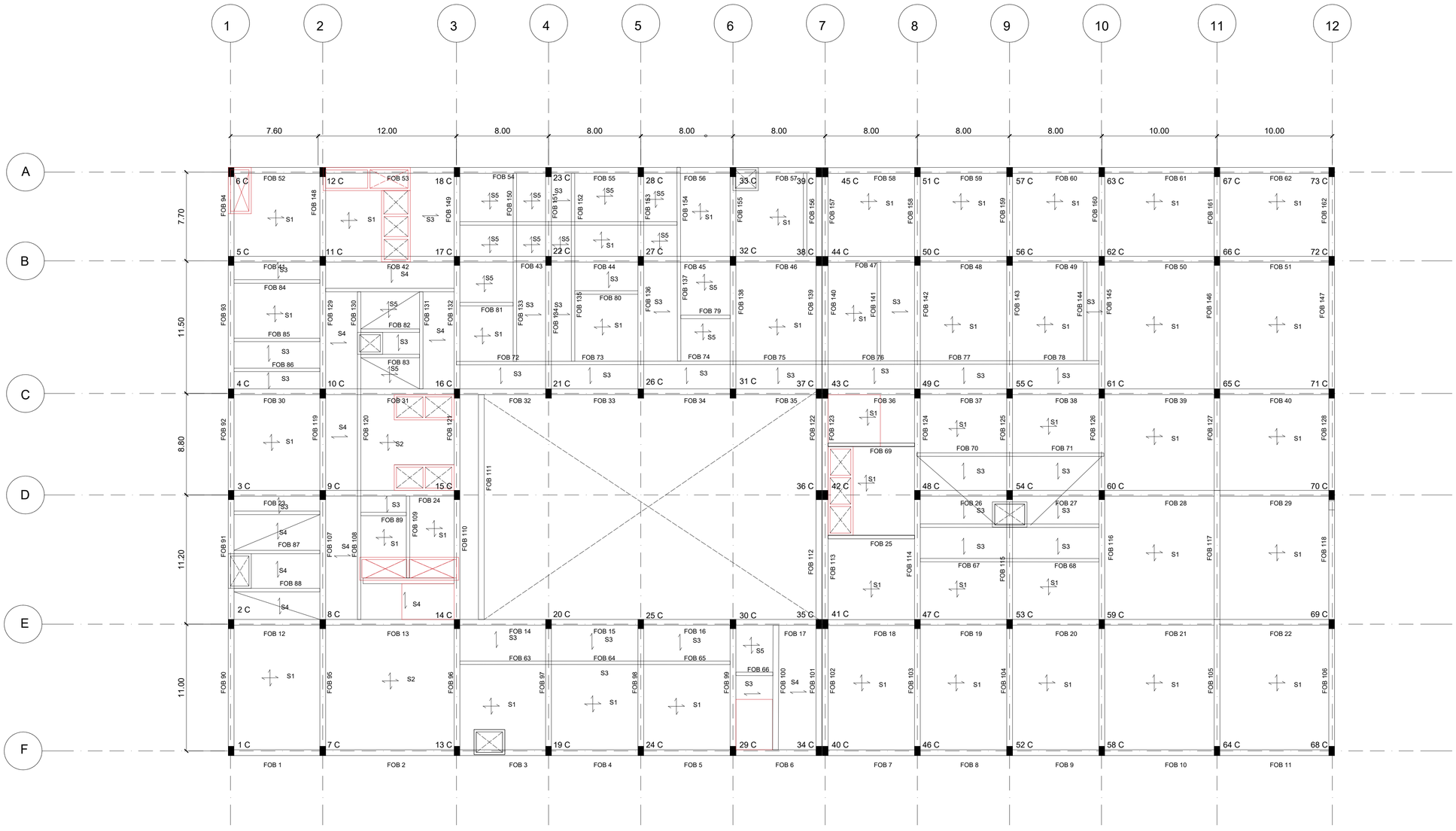
SECOND FLOOR FRAMING PLAN

DRAWING	DRAWING	NORTH	PROJECT	STRUCTURE GUIDE		DETAIL BY	GUIDE BY	DRG. NO.
FRAMING PLAN	ALL DIMENSION ARE IN METER SCALE 1:200		5 STAR HOTEL , SANAND GUJRAT	ER. SOHAIL KHAN (UNIVERSE STRUCTURE DESIGNER)		SHAHBAN SHAH (211110004)	PROF. PREETI ONKAR (THESIS GUIDE) PROF. VICKY LALRAMSANGI (THESIS COORDINATOR)	21



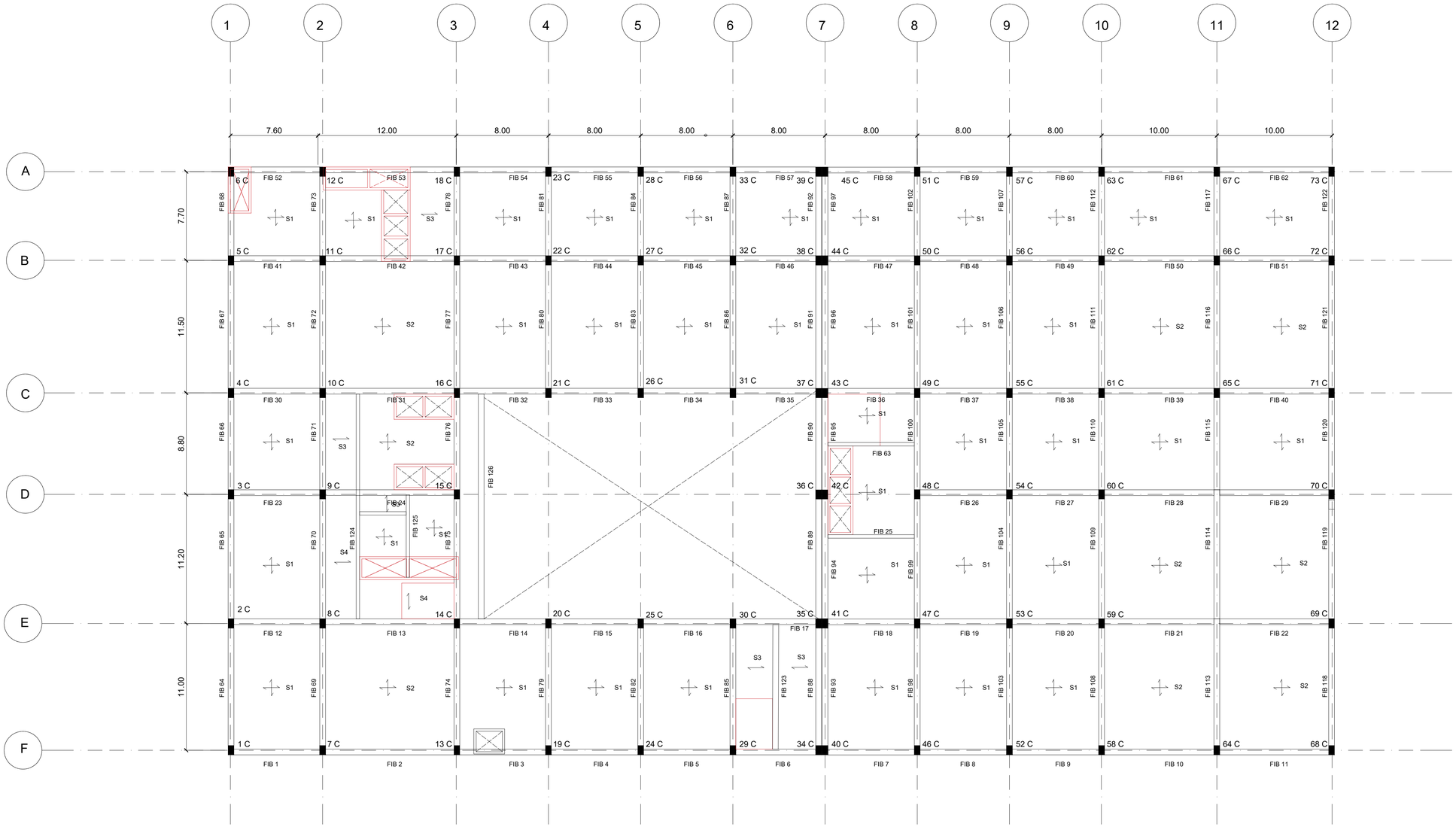
THIRD FLOOR FRAMING PLAN

DRAWING	DRAWING	NORTH	PROJECT	STRUCTURE GUIDE		DETAIL BY	GUIDE BY	DRG. NO.
FRAMING PLAN	ALL DIMENSION ARE IN METER SCALE 1:200		5 STAR HOTEL , SANAND GUJRAT	ER. SOHAIL KHAN (UNIVERSE STRUCTURE DESIGNER)		SHAHBAN SHAH (211110004)	PROF. PREETI ONKAR (THESIS GUIDE) PROF. VICKY LALRAMSANGI (THESIS COORDINATOR)	22



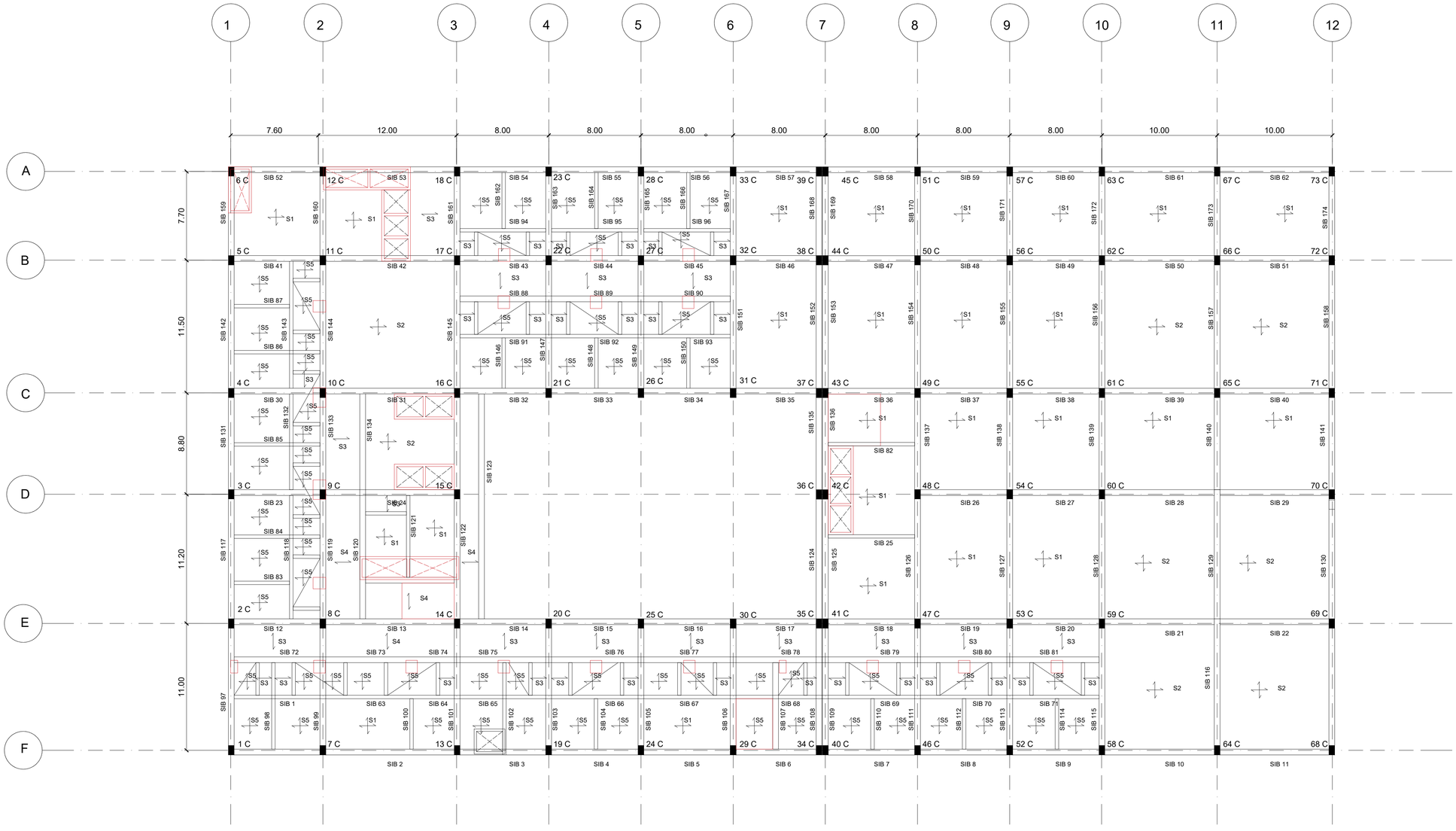
FOUR FLOOR FRAMING PLAN

DRAWING	DRAWING	NORTH	PROJECT	STRUCTURE GUIDE		DETAIL BY	GUIDE BY	DRG. NO.
FRAMING PLAN	ALL DIMENSION ARE IN METER SCALE 1:200		5 STAR HOTEL , SANAND GUJRAT	ER. SOHAIL KHAN (UNIVERSE STRUCTURE DESIGNER)		SHAHBAN SHAH (211110004)	PROF. PREETI ONKAR (THESIS GUIDE) PROF. VICKY LALRAMSANGI (THESIS COORDINATOR)	23



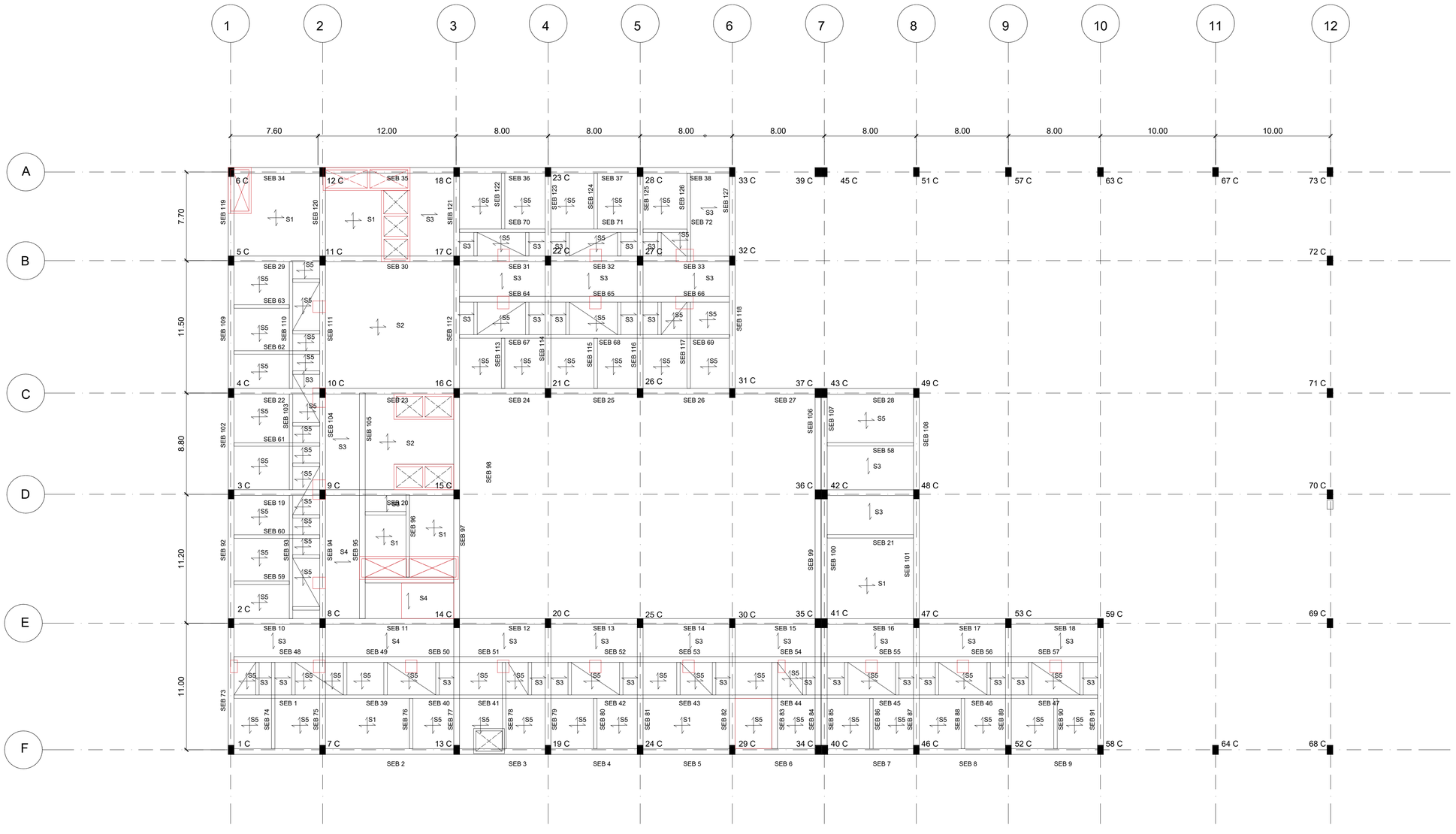
FIVE FLOOR FRAMING PLAN

DRAWING	DRAWING	NORTH	PROJECT	STRUCTURE GUIDE		DETAIL BY	GUIDE BY	DRG. NO.
FRAMING PLAN	ALL DIMENSION ARE IN METER SCALE 1:200		5 STAR HOTEL , SANAND GUJRAT	ER. SOHAIL KHAN (UNIVERSE STRUCTURE DESIGNER)		SHAHBAN SHAH (211110004)	PROF. PREETI ONKAR (THESIS GUIDE) PROF. VICKY LALRAMSANGI (THESIS COORDINATOR)	24



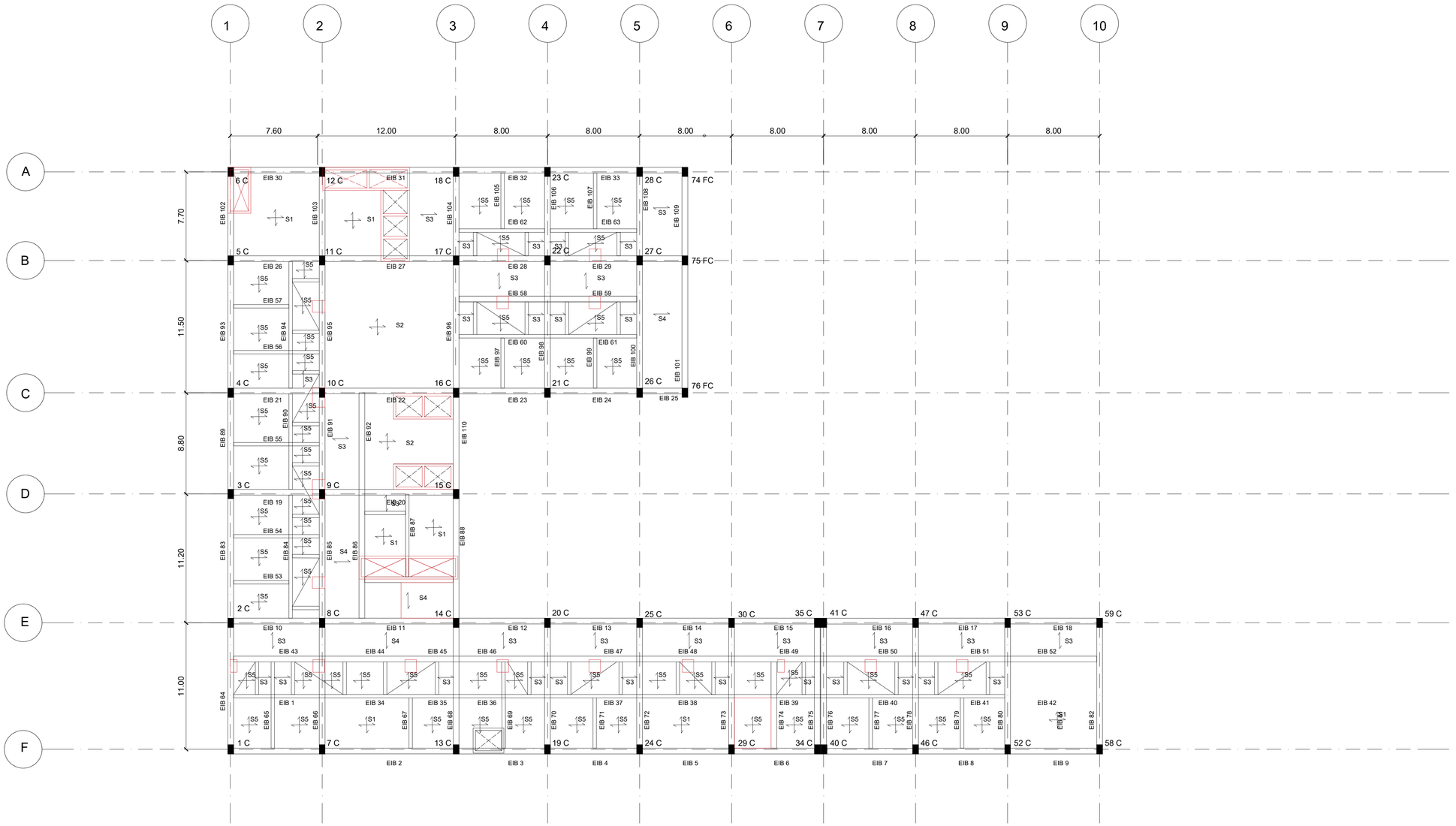
SIX FLOOR FRAMING PLAN

DRAWING	DRAWING	NORTH	PROJECT	STRUCTURE GUIDE		DETAIL BY	GUIDE BY	DRG. NO.
FRAMING PLAN	ALL DIMENSION ARE IN METER SCALE 1:200		5 STAR HOTEL , SANAND GUJRAT	ER. SOHAIL KHAN (UNIVERSE STRUCTURE DESIGNER)		SHAHBAN SHAH (211110004)	PROF. PREETI ONKAR (THESIS GUIDE) PROF. VICKY LALRAMSANGI (THESIS COORDINATOR)	25



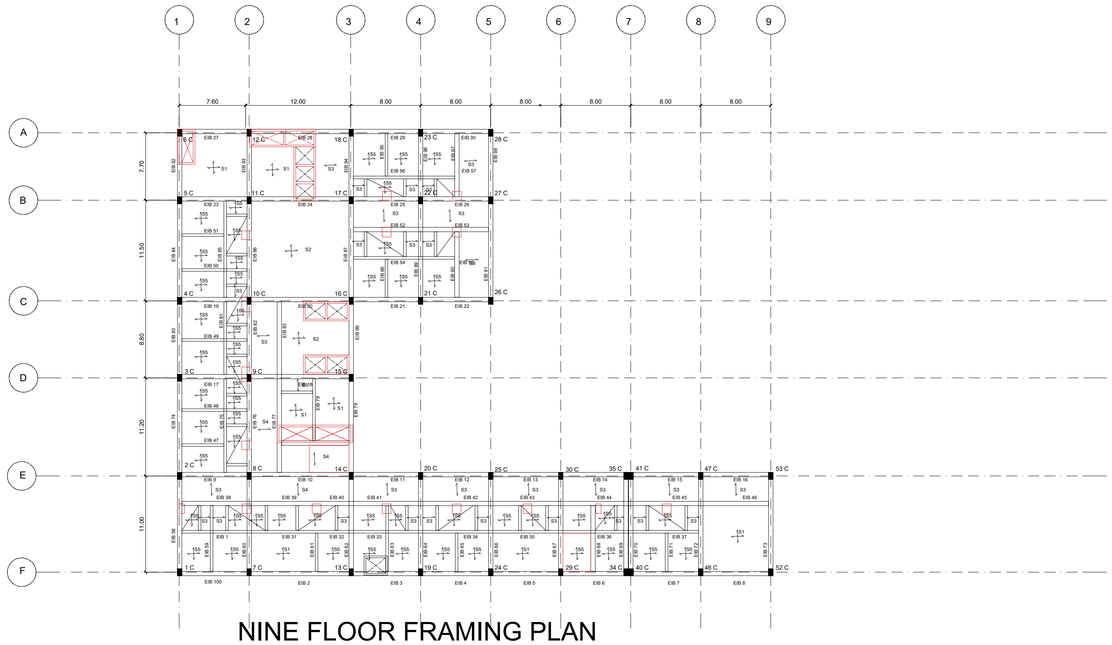
SEVEN FLOOR FRAMING PLAN

DRAWING	DRAWING	NORTH	PROJECT	STRUCTURE GUIDE	DETAIL BY	GUIDE BY	DRG. NO.
FRAMING PLAN	ALL DIMENSION ARE IN METER SCALE 1:200		5 STAR HOTEL , SANAND GUJRAT	ER. SOHAIL KHAN (UNIVERSE STRUCTURE DESIGNER)	SHAHBAN SHAH (211110004)	PROF. PREETI ONKAR (THESIS GUIDE) PROF. VICKY LALRAMSANGI (THESIS COORDINATOR)	26

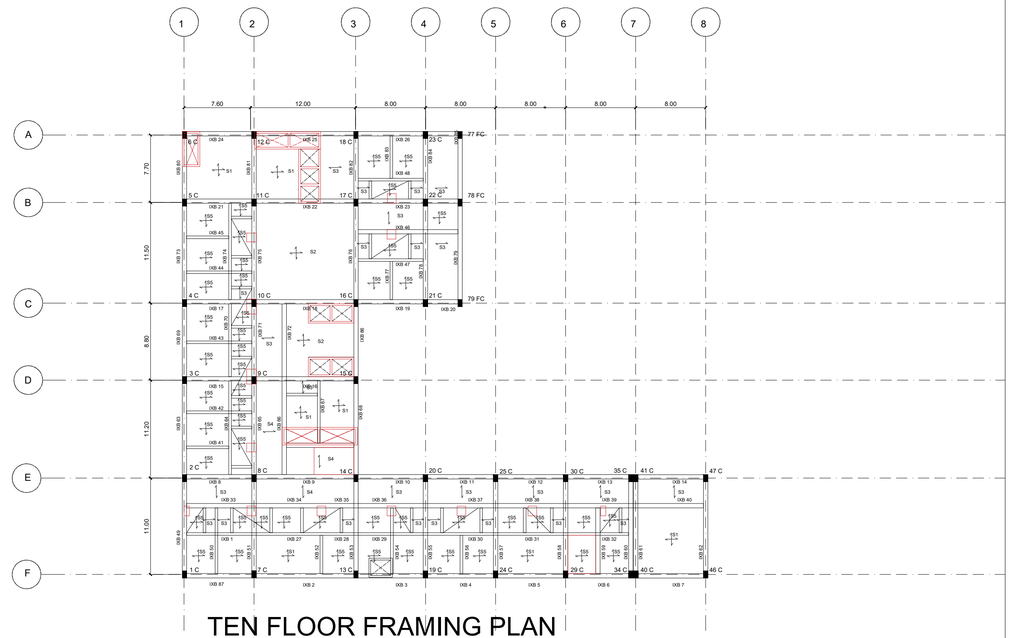


EIGHT FLOOR FRAMING PLAN

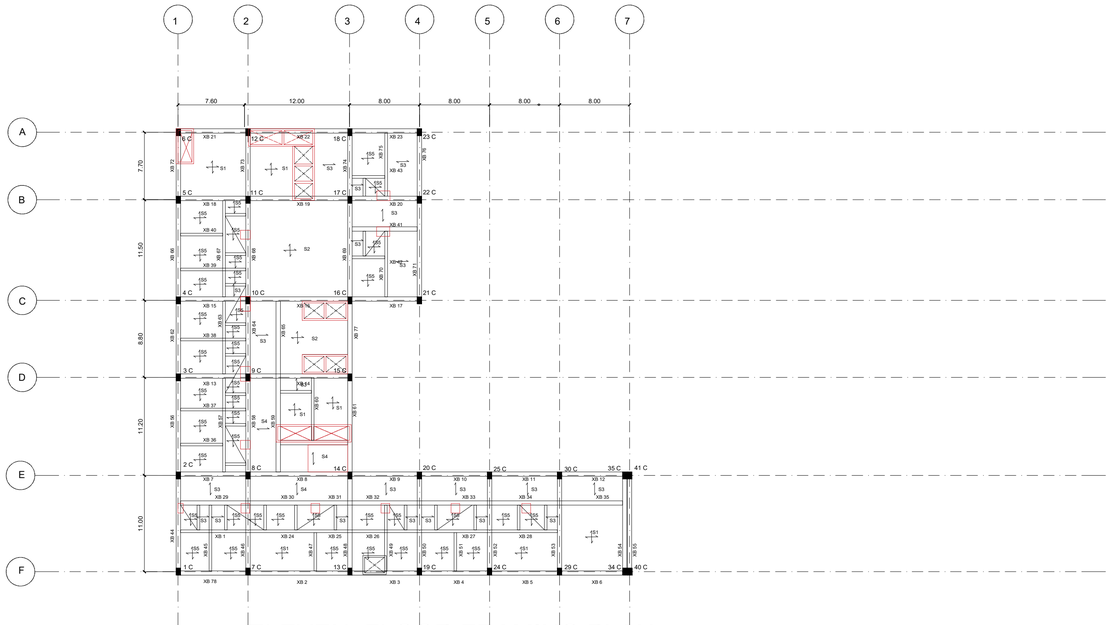
DRAWING	DRAWING	NORTH	PROJECT	STRUCTURE GUIDE		DETAIL BY	GUIDE BY	DRG. NO.
FRAMING PLAN	ALL DIMENSION ARE IN METER SCALE 1:200		5 STAR HOTEL , SANAND GUJRAT	ER. SOHAIL KHAN (UNIVERSE STRUCTURE DESIGNER)		SHAHBAN SHAH (211110004)	PROF. PREETI ONKAR (THESIS GUIDE) PROF. VICKY LALRAMSANGI (THESIS COORDINATOR)	27



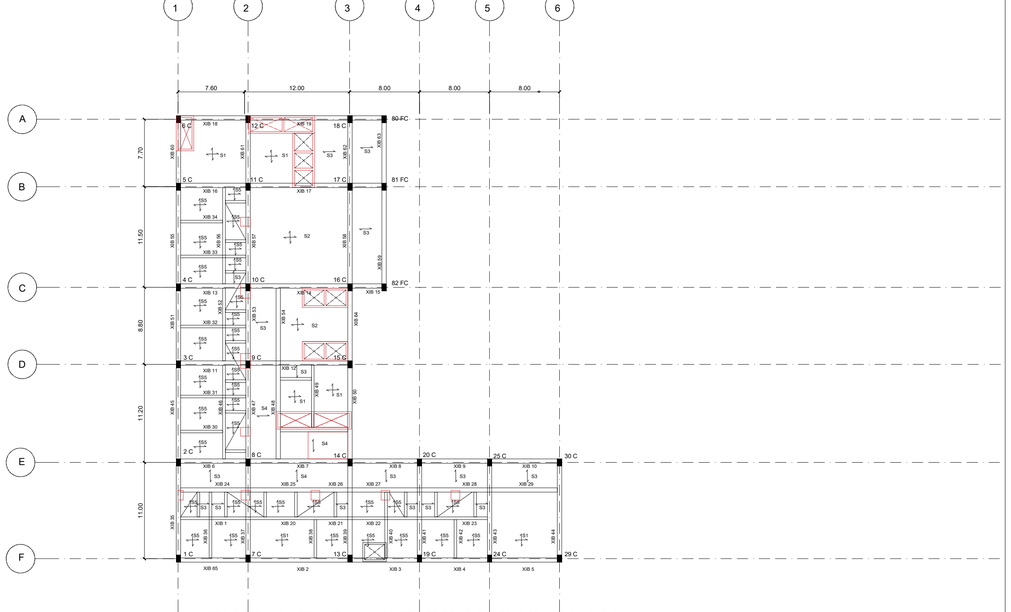
NINE FLOOR FRAMING PLAN



TEN FLOOR FRAMING PLAN

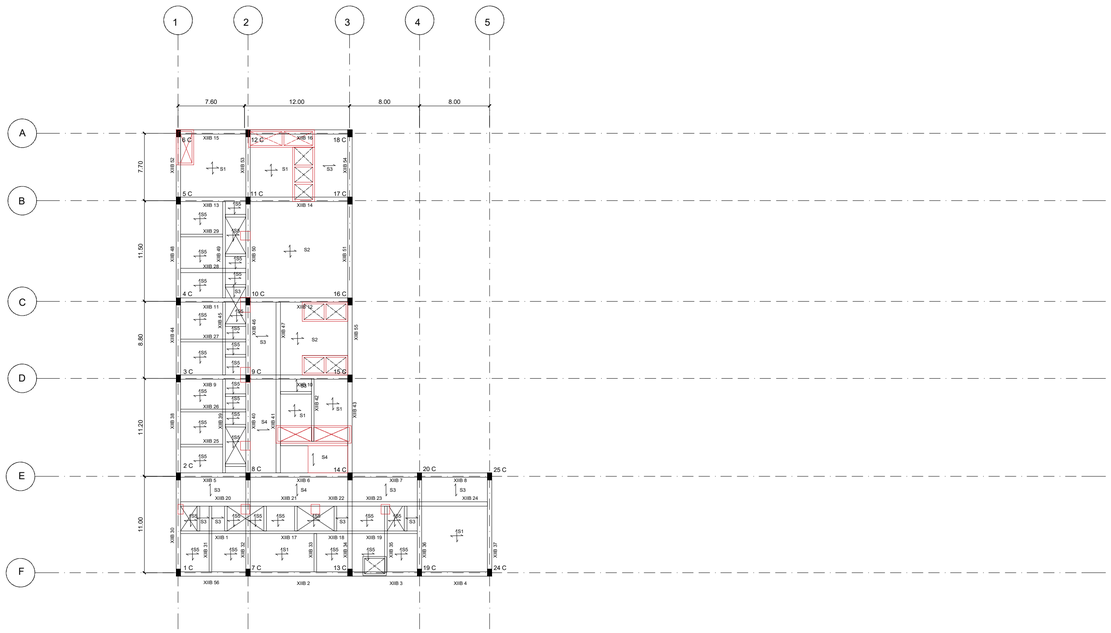


ELEVEN FLOOR FRAMING PLAN

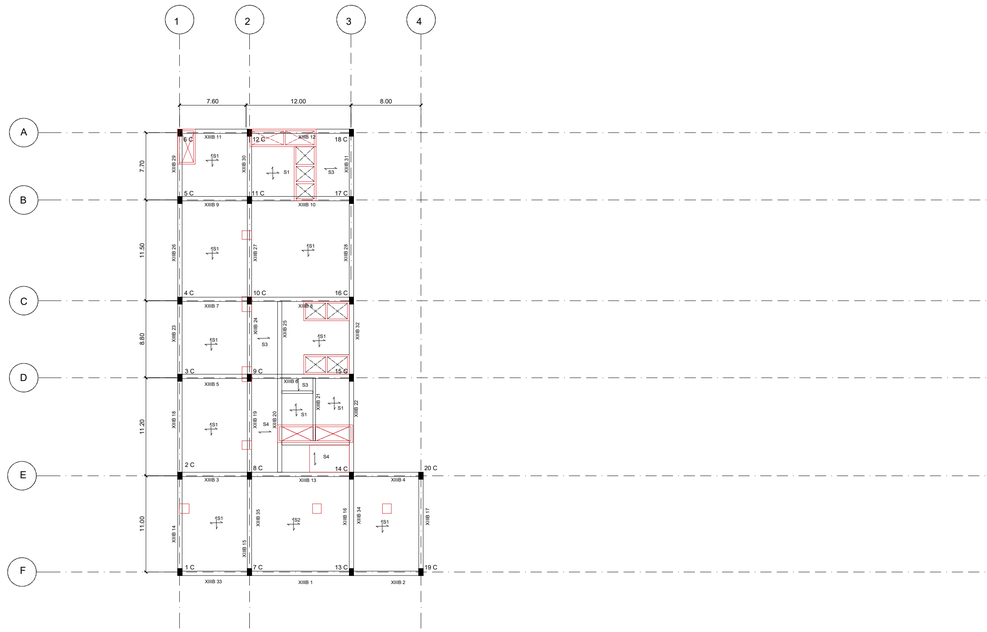


TWELVE FLOOR FRAMING PLAN

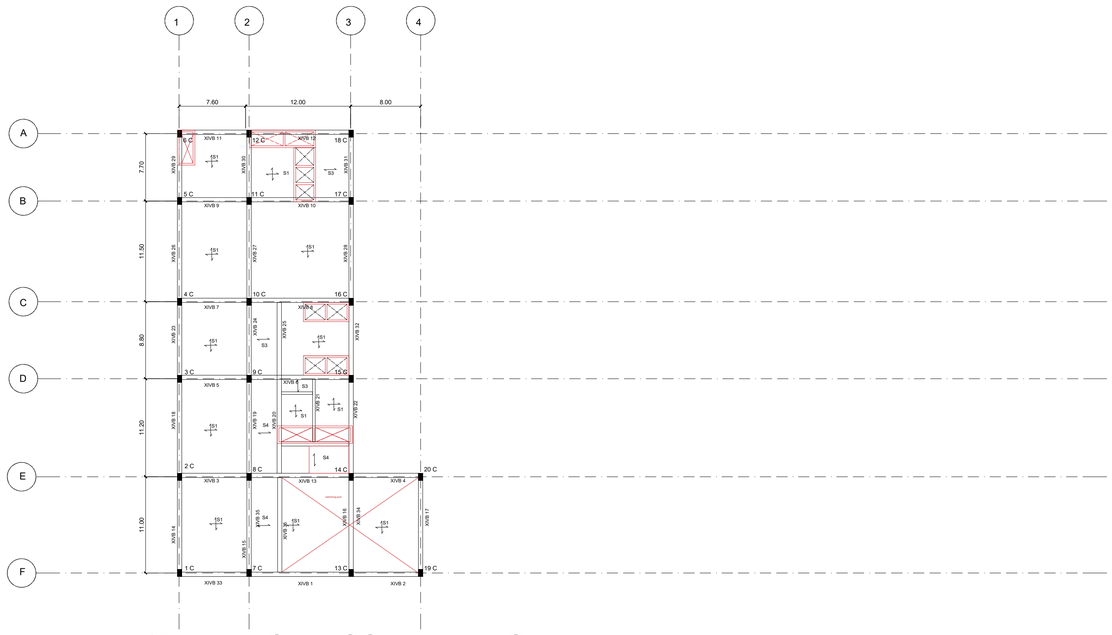
DRAWING	DRAWING	NORTH	PROJECT	STRUCTURE GUIDE		DETAIL BY	GUIDE BY	DRG. NO.
FRAMING PLAN	ALL DIMENSION ARE IN METER SCALE 1:350		5 STAR HOTEL , SANAND GUJRAT	ER. SOHAIL KHAN (UNIVERSE STRUCTURE DESIGNER)		SHAHBAN SHAH (211110004)	PROF. PREETI ONKAR (THESIS GUIDE) PROF. VICKY LALRAMSANGI (THESIS COORDINATOR)	28



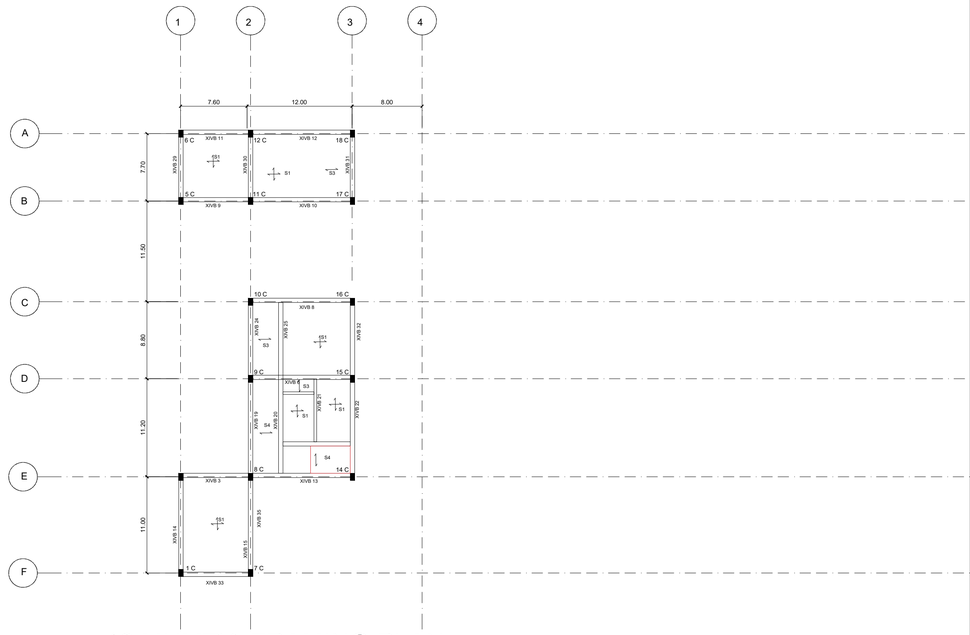
13 FLOOR FRAMING PLAN



14 FLOOR FRAMING PLAN

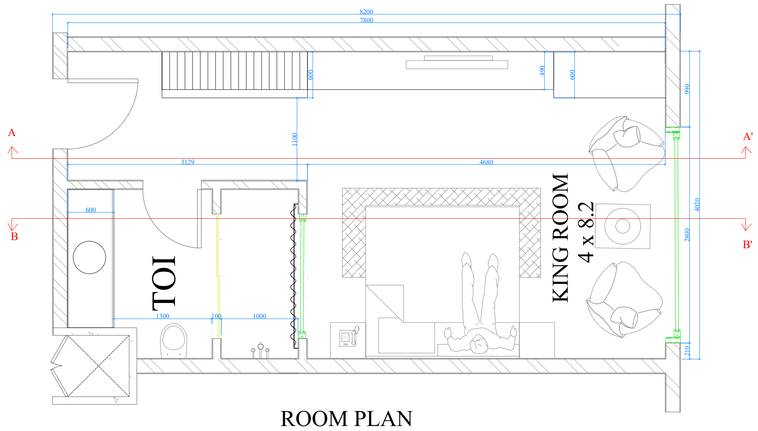


15 TERRACE FLOOR FRAMING PLAN

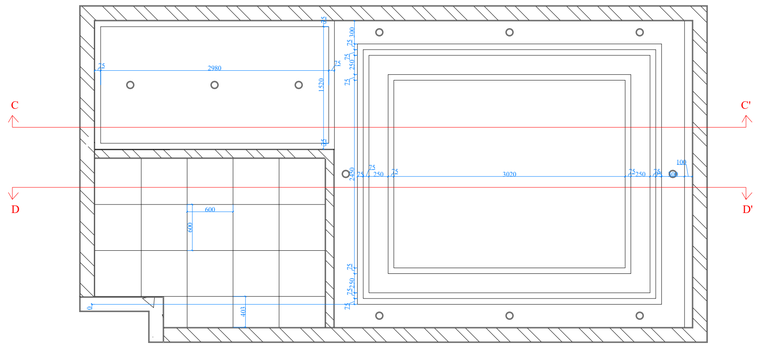


16 MUMTY FRAMING PLAN

DRAWING	DRAWING	NORTH	PROJECT	STRUCTURE GUIDE		DETAIL BY	GUIDE BY	DRG. NO.
FRAMING PLAN	ALL DIMENSION ARE IN METER SCALE 1:350		5 STAR HOTEL , SANAND GUJRAT	ER. SOHAIL KHAN (UNIVERSE STRUCTURE DESIGNER)		SHAHBAN SHAH (211110004)	PROF. PREETI ONKAR (THESIS GUIDE) PROF. VICKY LALRAMSANGI (THESIS COORDINATOR)	29

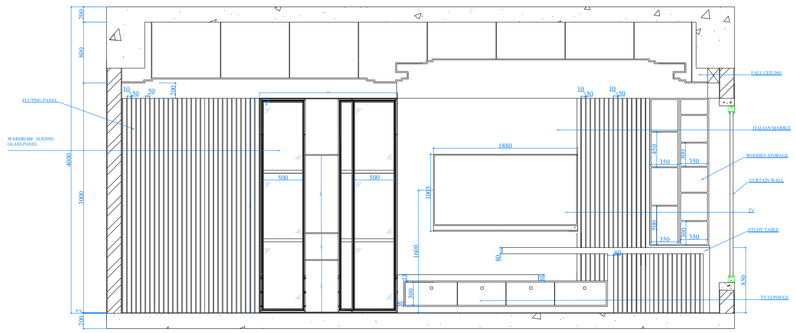


ROOM PLAN

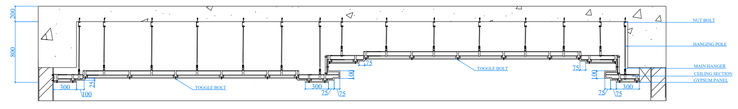


CEILING PLAN

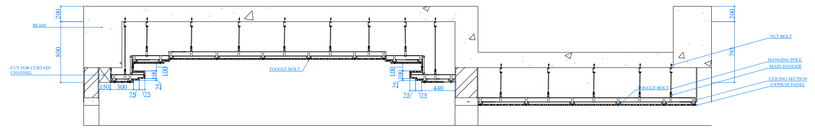




SECTION AA'

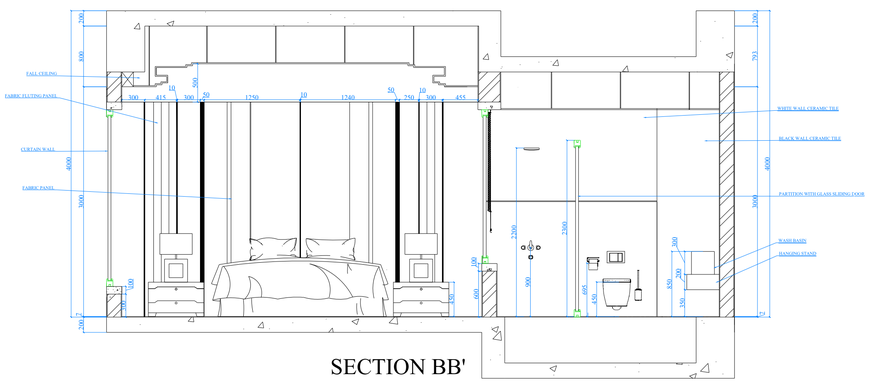


SECTION CC'

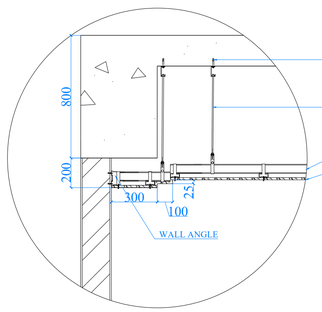


SECTION DD'



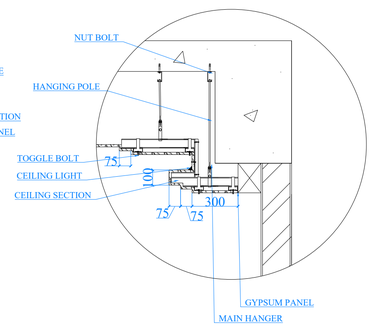


SECTION BB'



DETAIL PART

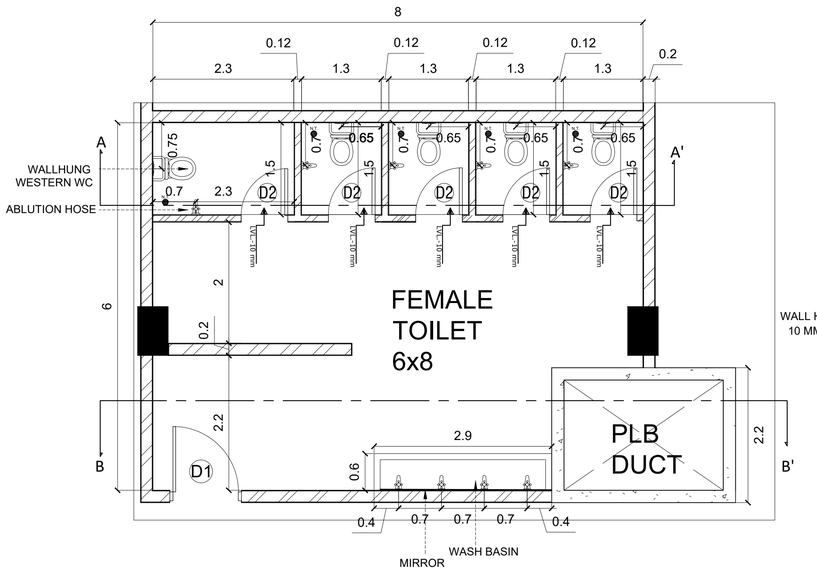
SCALE 1:20



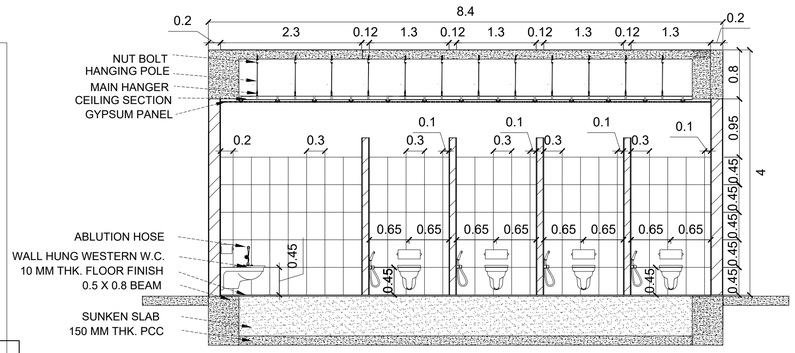
DETAIL PART



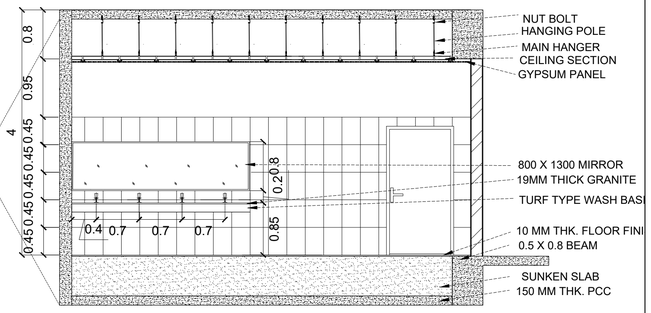
DRAWING	DRAWING	NORTH	PROJECT	SHEET TITLE		DETAIL BY	GUIDE BY	DRG. NO.
INTERIOR DETAIL	ALL DIMENSION ARE IN METER SCALE 1:40		5 STAR HOTEL , SANAND GUJRAT	INTERIOR DESIGN		SHAHBAN SHAH (211110004)	PROF. PREETI ONKAR (THESIS GUIDE) PROF. VICKY LALRAMSANGI (THESIS COORDINATOR)	30



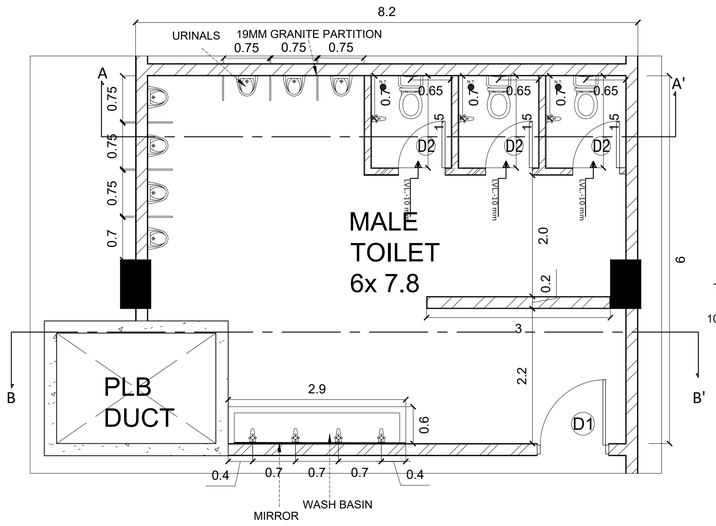
PLAN FEMALE TOILET



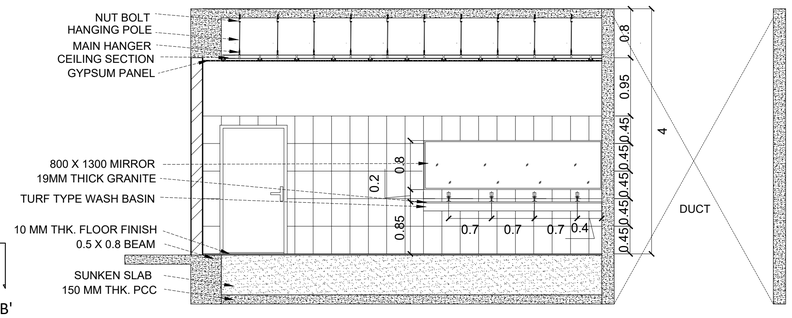
FEMALE TOILET SECTION AA'



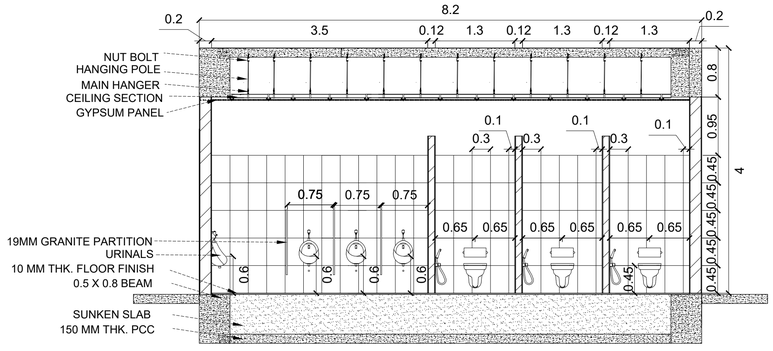
FEMALE TOILET SECTION BB'



PLAN MALE TOILET



MALE TOILET SECTION AA'



MALE TOILET SECTION BB'

DRAWING	DRAWING	NORTH	PROJECT	SHEET TITLE		DETAIL BY	GUIDE BY	DRG. NO.
WORKING DETAILS	ALL DIMENSION ARE IN METER SCALE 1:50		5 STAR HOTEL , SANAND GUJRAT	TOILET WORKING DETAILS		SHAHBAN SHAH (211110004)	PROF. PREETI ONKAR (THESIS GUIDE) PROF. VICKY LALRAMSANGI (THESIS COORDINATOR)	35















