Facility Planning

(BHA 507)

National Council for Hotel Management and Catering Technology

(An Autonomous Body Under Ministry of Tourism, Govt. of India)

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PREFACE

National Council for Hotel Management and Catering Technology
(An Autonomous Body Under Ministry of Tourism, Govt. of India)

Gyan Bhushan, IES
Sr Economic Advisor and CEO, NCHMCT
Ministry of Tourism, Govt of India

Entering your fifth semester, you stand at the threshold of transforming knowledge into expertise and preparing for leadership in the dynamic world of Hospitality Management. This student handbook has been meticulously crafted to provide you with a comprehensive understanding of the principles, practices, and strategies that are essential for success in the dynamic hospitality industry. As the global hospitality landscape continues to evolve, the role of hotel managers become increasingly multifaceted. This handbook written as per the new curriculum based on NEP is a reflection of our commitment to equipping you with the knowledge and skills that will make you not just a successful hotelier but a true hospitality professional.

I would like to extend my gratitude to the dedicated team of educators and industry experts who have contributed their expertise to this textbook. Their collective wisdom ensures that you receive the most relevant and up-to-date information. Remember, in the world of hospitality, the guest is at the heart of everything we do. I invoke you to approach your studies with the same spirit of guest-centricity. It has been a deliberate effort to keep the language used in the student handbook as simple as possible. Necessary pictorial illustrations, formats and review questions have been included to help the learners understand the concept without any difficulty. I wish you a rewarding and enriching learning experience.

Comments and suggestions are welcome for further improvement of the book.

Gyan Bhushan, IES

ACKNOWLEDGEMENTS

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TABLE OF CONTENTS

Unit-1

Hotel Star Classification and Guidelines

Overview

This unit will provide the learner with information about:

1. The classification system for hotels and alternative accommodation in India (including Hotel Project Approvals).
2. The parameters for classification under various categories, including, but not limited to Star Classification.
3. The constitution and role of HRACC.

Learning Objectives

S. No.	Sub-Unit	Learning Topics	Key learning objectives/ At the end of this subunit, the learners will be able to:
1.1	Introduction	• Overview • Need for Classification	1. Conceptual clarity about the need for classification, the procedures involved and why it is a key aspect of Facility Planning.
1.2	Criteria for star rating of hotels (architecture, facilities, features & services) 1–5 star deluxe, heritage and apartment hotels	• Various accommodation types and the categories under which they are classified	1. Understanding the Facility Planning aspects and standards for Hotels from a classification-perspective. 2. Identify the defining characteristics at each star category level.
1.3	Constitution of Hotels and Restaurants Approval and Classification Committee (HRACC)	• Constitution for 4* , 5* and 5* Deluxe Categories • Constitution for 1, 2 & 3 star categories ☒ • Appellate authority • Role of HRACC	1. Understand the Constitution of HRACC pertaining to varion classes of Accommodation including hotels 2. Understand the role of the HRACC in the Classification process

1.4	Formats used for applying / reapplying for classification	• Application process and formats for hotel classification and Re-classification • Centralized online portal	1. Specify the relevant documents and formats for classification application. 2. To be able to define the flow of the classification process from application to classification/ rejection/ appeal/ disposal of appeal.
1.5	Necessary Licenses, permits, NOCs and clearances required at different stages of hotel project approval and classification.	HOTEL PROJECT APPROVAL • Pre- Construction & Construction Phase (Project Stage) CLASSIFICATION • Operational Hotels and Alternative Accommodation.	1. List needed licenses, permits, and clearances for operating in the pre-construction and construction phases. 2. Compliance with regulatory requirements (Environment/ Fire/ Excise/ Municipal Authority/ FSSAI/ Labour etc.)

1.1 INTODUCTION

1.1.1 Classification of Hotels and Hotel Classification

✓ Classification of Hotels

Hotel classification is the process of grouping hotels into different types based on specific characteristics. This helps in organizing and understanding the diverse hotel industry. Key criteria for classification include:

• Size and Number of Rooms: Hotels can be categorized as small, medium or large based on their room count.

• Location: Hotels are often classified by their setting, such as urban, suburban, resort, airport, or highway hotels.

• Target Market and Clientele: This distinguishes hotels that cater to

"There are three things that make a hotel famous – location, location, location."
- Ellsworth Milton (E. M.) Statler

Figure 1.1 Quote by Mr. Statler

Purpose: This system is crucial for:

• Traveller Selection: It empowers travellers to easily choose hotels that align with their specific needs and preferences.

• Regulation and Standards: It assists tourism authorities in setting and maintaining industry standards.

✓ **Hotel Classification (Star Rating)**

This refers to the formal grading system, often managed by government or tourism bodies that assign star ratings or other categories to hotels to signify their quality and standards.
In India: The system is overseen by the **Ministry of Tourism** through the Hotel and **Restaurant Approval and Classification Committee (HRACC).** Hotels are classified into:

• Star Categories: Ranging from 1-Star to 5-Star Deluxe.
• Heritage Categories: Heritage Basic, Heritage Classic, and Heritage Grand.

Criteria for Classification: The formal rating is based on a comprehensive set of criteria, including:

• Room Size and Quality: Standards for room dimensions and furnishings.
• Lobby and Public Area Standards: The quality and upkeep of common areas.
• Service Standards and Staffing: The level of service provided and the staff-to-guest ratio.
• Safety, Security, and Hygiene: Adherence to regulations concerning safety, security, and cleanliness.

1.1.2 Need for Classification

The classification of hotels is a crucial system that benefits everyone involved in the hospitality industry, from guests to hotel operators and government bodies. While this process is voluntary, it provides a clear and standardized way to communicate the quality, services offered, and facilities of a lodging establishment.

For Customers (Guests): The classification system acts as a reliable guide, helping guests choose a hotel that meets their expectations and budget. A star

rating, for example, gives a quick snapshot of what a guest can anticipate in terms of service and amenities.

For Hotel Operators: This system is vital for business success. It helps hotels:

- Establish their brand and reputation.
- Define their target audience and tailor their services accordingly.
- Guide marketing efforts to attract the right customers.

Did you know?

While the Hotel and Restaurant Approval and Classification Committee (HRACC) is responsible for conducting inspections and evaluations, the official classification certificate is granted by the Ministry of Tourism upon successful compliance with all criteria.

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MINISTRY OF TOURISM
सत्यमेव जयते

Figure 1.2 Certificate Awarding Body

The Classification System in India In India, the Ministry of Tourism has established a detailed classification system. Hotels are categorized from 1-star to 5-star deluxe, and there are also special categories for heritage and apartment hotels. These ratings are based on strict criteria, including:

- Building design and facilities
- Room size
- Service standards

Hotels must apply to be classified and undergo inspections to ensure they meet these standards before receiving their official rating.

Benefits of Classification Proper classification not only guarantees a certain standard of service for guests, but it also provides significant advantages for hotels. It allows them to benefit from government incentives, get a boost from tourism promotion, and ensures they maintain operational standards.

Classification and Facility Planning: For industry professionals, hotel classification is a fundamental tool for planning, developing, and operating a hotel. It helps in:

- Determining space needs
- Allocating resources efficiently
- Implementing sustainable practices

By adhering to these classification standards, hotel professionals can comply

with regulations, enhance overall quality, and ensure they provide excellent customer service.

Check Back Questions:

Q.1 What is the difference between 'Classification of Hotels' and 'Hotel Classification'?
Q.2 How does the hotel classification system help customers in choosing hotels?
Q.3 Which organization awards classification in India?
Q.4 How does hotel classification support facility planning in the hospitality industry?

1.2 Criteria for classification of hotel (architectural facilities, features and services) 1-5 star deluxe, heritage and apartment hotels

Various accommodation types and the categories under which they are classified

Hotel classification is a quality control system for the hospitality industry, evaluating infrastructure, services, and facilities. In India, this voluntary system is managed by the Ministry of Tourism (MoT) through the **Hotel and Restaurant Approval and Classification Committee (HRACC).**

Hotels are categorized into different tiers to indicate varying standards in:

- Building and room quality
- Operational efficiency
- Range of services
- Environmental practices
- Guest convenience

Did you know?

Did you know that Kerala, a state in southern India, has the largest number of 5-star hotels in the country? It's known for its beautiful backwaters, lush greenery, and stunning beaches, making it a popular tourist destination.

Figure 1.3 Kerala

Star Categories

Hotels are categorized into different tiers to indicate varying standards in:

• 1-Star • 2-Star • 3-Star • 4-Star • 5-Star • 5-Star Deluxe

Additionally, there are distinct categories for Heritage Hotels and Apartment Hotels.

Did you know?

An apartment hotel offers the comforts of home and hotel services for extended stays, typically requiring a minimum length of stay.

Figure 1.4 Apartment Hotels

Eligibility and Process

To receive a classification, a hotel must:

1.Submit an application in the required format.
2.Provide all necessary documents.
3.Undergo a physical verification process.
4.Be scored based on a detailed checklist.

Once certified, the classification is valid for five years.

Detailed Category Breakdown

1-Star Hotel:

• Focuses on budget accommodation.
• Minimum room size: 120 sq. ft without an attached bathroom.
• Basic amenities include clean bedding, soap, towels, and water.
• Daily housekeeping, reception, and safety provisions are mandatory.

2-Star Hotel:

• Minimum room size: 120 sq. ft without an attached bathroom.

Did you know?

Hotel classification in India mainly focuses on infrastructure—room size, building features, and amenities—while service quality remains subjective and varies by guest expectations.

Figure 1.5 HRACC guidelines (Taj palace Mumbai)

• At least 50% of rooms must be air-conditioned.
• Offers 16-hour room service.
• Includes a basic restaurant.
• Provides telephone, laundry, and wake-up call services.

Rooms are expected to be clean and moderately comfortable

3-Star Hotel:

• Minimum room size: 130 sq. ft without an attached bathroom.
• All rooms must be air-conditioned.
• Features one multi-cuisine restaurant and a coffee shop.
• Offers 24-hour room service.
• Provides internet access and business facilities like conference rooms.
• Staff, including front office and service personnel, must be trained.

4-Star Hotel:

• Minimum room size: 140 sq. ft without an attached bathroom.
• The entire building, including public areas, is fully air-conditioned.
• Includes multiple restaurants, often with specialty dining, and a coffee shop.
• Offers a health club or gym and a business center.
• Provides high-speed internet, a concierge desk, and valet parking.

5-Star Hotel:

• Minimum room size: 200 sq. ft without an attached bathroom.
• Features superior fittings and design.
• Extensive facilities, including spa, pool, specialty dining, & a business lounge.
• Offers concierge and butler services.
• Advanced security includes CCTV and electronic key systems.
• Provides high-speed internet and enhanced security measures.

5-Star Deluxe Hotel:

• Includes all the facilities of a 5-star hotel without an attached bathroom.
• Offers presidential suites and private check-in/check-out.
• Provides 24/7 butler service and limousine pickup.
• Enhanced security features such as metal detectors and Baggage X-ray machines.

• Designed to meet the highest international luxury standards.

Other Hotel Categories

• Heritage Hotels:

• These hotels operate in historic buildings such as palaces, havelis, and forts.
• They are classified as Heritage, Heritage Classic, or Heritage Grand.
• Their original architecture is preserved while incorporating modern amenities.
• They are known for showcasing regional art, culture, and cuisine.

Did you know?

While the concept of serviced apartments (or apartment hotels) is rapidly growing in India, one of the earliest "purpose-built, stand-alone serviced apartments" was Savoy Suites, launched in Noida in 2003 by Ascot Hotels & Resorts. This marked a significant step in offering a home-like alternative to traditional hotels for business travelers.

Figure 1.6 Savoy Suites

Tented Accommodation.

While the concept of serviced apartments The Ministry of Tourism has established specific classification guidelines for Tented Accommodation to promote and standardize eco-friendly and experiential stays. To receive official approval, these units must comply with standards related to safety, hygiene, basic facilities, and environmental sustainability. This system helps ensure a quality experience for guests while encouraging responsible tourism practices.

Figure 1.7 Tented Accomodation

• Apartment Hotels:

• Provide furnished units with kitchenettes.
• Ideal for long stays, families, and business travelers.
• Combine hotel services with the feel of a home.
• Target guests on extended trips, such as relocating families or medical tourists.
• Laundry Facility

Hotel Star Classification Criteria: Facilities, Features & Services

Criteria	1*	2*	3*	4*	5*/5*D
Room Size (sq. ft.)	120	120	130	140	200
A/C Rooms	25%	25%	50%	100%	100%
Attached Bathrooms	All	All	All	All	All
Bathroom Size (sq. ft.)	30	30	36	36	45
In-room Safe	Desirable	Desirable	Desirable	Necessary	Necessary
Mini-bar/Fridge	Desirable	Desirable	Necessary	Necessary	Necessary
Restaurant	1 dining room	1 dining room	1 multi-cuisine	1 multi-cuisine + 1 specialty	1 multi-cuisine + 1 specialty
Room Service	Desirable	Necessary	24 hr.	24 hr.	24 hr.
Doctor on Call	Necessary	Necessary	Necessary	Necessary	Necessary
Internet Service (Wi-fi)	Desirable	Desirable	Necessary	Necessary	Necessary
Supervisory Staff	20%	20%	40%	40%	80%
Skilled Staff	20%	20%	30%	30%	60%

Table 1.1 Hotel Star Classification Criteria (Table adapted from MoT HRACC Guidelines)

For a more detailed and comprehensive breakdown of the hotel star classification criteria, including specifics on facilities, features, and services for each rating, you can refer to the official document from the Ministry of Tourism, Government of India. The complete guidelines are available at: https://tourism.gov.in/sites/default/files/2024-02/1667476361.pdf.

A Floatel is a floating hotel on water, a Motel is a roadside hotel for motorists, and a Roatel is a mobile hotel in a

Figure 1.8 Special types of hotels

HERITAGE HOTELS

Heritage Hotels is a distinct and niche subset of Indian hospitality that seeks to protect and safeguard the rich cultural, architectural, and historical heritage of the country.

The Ministry of Tourism has divided Heritage Hotels into three different subcategories—Heritage Basic, Heritage Classic, and Heritage Grand—primarily based on criteria like the age of the property, architectural integrity, and the level of luxury and services offered.

Did you know?

India's oldest continuously operating heritage hotel is The Lalit Great Eastern, Kolkata, which first opened its doors in 1840 as the Auckland Hotel. Often called the "Jewel of the East," it has hosted legendary guests including Mark Twain, Rudyard Kipling, and Queen Elizabeth II.

Figure 1.9 The Lalit Great Eastern at night

Guests can expect personalized service, authentic food, cultural performances, and unique experiences that are a reflection of India's regal heritage. Such hotels play a big role in the growth of tourism by fusing luxury stays with heritage conservation.

Heritage Hotels are required to retain at least 50% of the original construction to retain the historical identity and character of the building. Even these hotels, however, have modern amenities to provide comfort to the guests while retaining the heritage experience authenticity. The interior of such hotels includes antique furniture, traditional artefacts, and culturally sensitive elements that remind one of the histories of the place.

Did you know?

Tourism revived Rajasthan's Kalbelia dance after snake charming was banned in 1972. The nomadic community transformed it into a professional art, now showcased at festivals and heritage hotels. Recognized by UNESCO in 2010, it provides livelihood and global fame.

Figure 1.10 Kalbelia Dancer

Classification Criteria for Heritage Hotels

Criteria	Heritage Basic	Heritage Classic	Heritage Grand
Built Before	1950	1935	1935
Minimum Rooms	5 rooms (10 beds)	15 rooms (30 beds)	15 rooms (30 beds)
Architectural Changes	New construction cannot exceed 50% of the total built-up area and must be in traditional architectural styles.	New construction cannot exceed 50% of the total built-up area and must be in traditional architectural styles.	New construction cannot exceed 50% of the total built-up area and must be in traditional architectural styles.
Special Features	General ambience must conform to the heritage concept.	Must conform to the heritage concept and provide at least one sporting facility.	All public and private areas should have superior appearance and decor. At least 50% of the rooms must be air-conditioned (or have heating in hill stations). Must provide at least two sporting facilities.
Cuisine	Must offer traditional cuisine of the area.	Must offer traditional cuisine, with 4-5 items closely approximating continental cuisine.	Must offer both traditional and continental cuisine.
Management	Can be run by the family and/or professionals. Judged on quality of service and experience.	Can be run by the family and/or professionals. Judged on quality of service and experience.	Can be run by the family and/or professionals. Judged on quality of service and experience[1][2][3][4].
Bar	Desirable	Necessary	Necessary

Table 1.2 Classification Criteria for Heritage Hotels (Table adapted from MoT HRACC Guidelines)

For a more detailed breakdown of the hotel star classification criteria, you can refer to the official document from the Ministry of Tourism, Government of India. The complete guidelines are available at https://tourism.gov.in/sites/default/files/2020-02/051820120222241_0.pdf

APARTMENT HOTELS

Apartment Hotels offer a unique segment of lodging specially tailored to serve clients needing long or extended stays, combining the comforts of home with hotel-like amenities. Apartment Hotels are larger than traditional hotels since they provide fully equipped apartments with separate living, sleeping, and cooking areas, thereby allowing guests to cook their own meals and keep their living area up to standard. The Government of India's Department of Tourism has a voluntary scheme to classify these hotels into 3, 4, 5, and 5 Star Deluxe

categories, ensuring they provide standardized, world-class services. The Hotel & Restaurant Approval & Classification Committee (HRACC) inspects and assesses these hotels based on their facilities and services.

Classification Criteria for Apartment Hotels

Criteria	3* & 4*	5* & 5*D
Minimum lettable rooms	10	10
Minimum floor area (Studio)	250 sq.ft.	251-350 sq.ft.
Minimum floor area (1 bedroom)	500-650 sq.ft.	500-650 sq.ft.
Air-conditioning	50% of apartments	All apartments
Internet Connection	Desirable	Necessary
Bar	Not mentioned	Not mentioned
Swimming Pool	Desirable	Necessary
Business Center	Necessary	Necessary
Lifts	Necessary	Necessary

Table 1.3 Classification Criteria for Apartment Hotels (Table adapted from MoT HRACC Guidelines)

For a more detailed breakdown of the hotel star classification criteria, you can refer to the official document from the Ministry of Tourism, Government of India. The complete guidelines are available at https://tourism.gov.in/sites/default/files/2020-02/070920121109530_0.pdf

TimeShare and Condominium Hotels

Timeshare hotels are referred to as vacation ownership hotels. The concept is that for a set period which may be one week or more in a year the person gets the right to enjoy the stay and other facilities and services in an apartment are any other type of lodging in a tourist complex. It is like an advanced purchase of time in holiday accommodation. Here the purchaser has to pay a one-time capital sum and then an annual contribution towards the maintenance of the property. The fee usually covers services such as cleaning and maintenance of apartment and public areas, electricity, gas, water, etc. Avalon resorts. Sterling resorts, Mahindra holding, etc. are the few time-share hotels in India.

Figure 1.11 TimeShare Hotels

Check Back Questions:

Q.1.What is the primary purpose of hotel classification in India, and which government organization governs this system?

Q.2. Compare the minimum room size and air-conditioning requirements for a 2-Star hotel versus a 4-Star hotel.

Q.3. What is the main objective of Heritage Hotels in India, and what percentage of their original building design must they retain?

Q.4. For what type of clients are Apartment Hotels primarily designed, and what key feature distinguishes them from traditional hotels?

1.3 Constitution of Hotel and Restaurant Approval and Classification Committee

The hotel classification process in India is governed by a structured committee system established by the Ministry of Tourism to ensure uniformity, transparency, and credibility in rating hotels. This committee work collaboratively to evaluate, classify, and monitor hotels according to prescribed standards.

1.3 1 For 4 & 5 Star Categories (including 5 Star Deluxe):

 Chaired by Additional Director General (Tourism), Govt. of India/ Chairperson (HRACC) or a representative nominated by him/her

- Representative from FHRAI
- Representative from HAI
- Representative from IATO
- Representative from TAAI

- Principal Institute of Hotel Management OR his / her representative who shall be the member of teaching faculty of the Institute Regional Director, India tourism Office/ Director or Manager of Local India tourism office.

- Member Secretary HRACC

Classification Criteria for Heritage Hotels

Star Category	Amount in Rs.5-
1 – Star	6,000
2 – Star	8,000
3 – Star	10,000
4 – Star (with or without Alcohol service)	15,000
5 – Star (with or without Alcohol service)	20,000
5 – Star Deluxe	25,000

Table 1.4 Application fees for various categories (Table adapted from MoT

1.3.2 For 1, 2 & 3 Star Categories:

• Secretary (Tourism) of the concerned State Govt. or Additional Secretary (Tourism) or Director (Tourism) or Additional Director (Tourism) of the concerned State Govt. (provided the last two are not below the rank of Joint Secretary to the concerned State Govt. / UT Administration) or Regional Director of concerned India tourism Office, Regional Director, India tourism who is also Member Secretary, Regional HRACC, will Chair the Committee.

• Regional Director, India tourism Office / Director or Manager of Local India tourism office
• Representative from FHRAI
• Representative from HAI
• Representative from IATO
• Representative from TAAI

• Principal Institute of Hotel Management OR his / her representative who shall be the member of teaching faculty of the Institute.

Quorum: The Chairperson and any three members form a quorum for the committee.

The inspection committee uploads signed recommendations, along with necessary licenses, NOCs, and permissions, to the hotel classification portal. The Chairperson (HRACC)/Joint Secretary (Tourism)/Additional Director General (Tourism) approves or rejects these recommendations expeditiously, provided all documentation is complete.

Did you know?

The full form of NIDHI, by the Ministry of Tourism, is "National Integrated Database of Hospitality Industry.

Figure 1.12 Nidhi

Appellate Authority: If dissatisfied with the HRACC's decision, hotels can appeal to the Secretary (Tourism), Government of India, for review and reconsideration within 30 days of receiving the classification/re-classification communication.

Did you know?

Applying for Your Star: It's All Online! India's hotel classification is now fully digitized via the Ministry of Tourism's online portal, https://nidhi.tourism.gov.in/
This centralized system ensures transparency and efficiency in application and re-classification processes. Fees are exclusively payable through digital methods.

Figure 1.13 India's online hotel

1.4 Formats used for applying / reapplying for classification

To obtain classification or re-classification for hotels, the Ministry of Tourism employs a comprehensive online application system that necessitates the use of specific formats and submission of detailed documentation.

Application Process and Formats for Hotel Classification

The entire application process, including initial project approval and classification/re-classification for operational hotels, is managed through a dedicated online portal.

Centralized Online Portal:

- All applications must be submitted digitally via the official Ministry of Tourism portal: https://nidhi.tourism.gov.in/
- Application fees are payable exclusively through digital payment methods, such as RTGS/NEFT/Debit/Credit Cards.

Did you know?

A homestay is an accommodation where guests stay in a private room or space within a local's home, whereas a BnB (Bed & Breakfast) is typically a smaller business with a limited number of guest rooms, also located within the owner's residence.

Figure 1.14 Homestay Vs BnB

Did you know?

A 7-star hotel is really just a marketing term?

Official hotel classification in India stops at 5-Star Deluxe—there's no government-approved 6-star or 7-star rating anywhere in the world. Hotels like Burj Al Arab or Pangu 7 Star Beijing use "7-star" purely as branding to signal ultra-luxury.

Figure 1.15 Burj Al Arab

Key Formats (Annexures) and their Detailed Contents:

The guidelines provide several standardized formats, known as Annexure, which applicants must complete and submit as part of their classification request.

1. Annexure-I: General Terms, Conditions & Application Format for Approval of Hotels at the Project Level This detailed format is crucial for hotels that are under construction and seek preliminary approval for their proposed star category (ranging from 1-Star to 5-Star, or Heritage Basic). It requires comprehensive information about the project

o Proposed Hotel Name: The name under which the hotel will operate.

o Promoter Details: Information about the individual, company, or group developing the hotel.

o Contact Information: Full postal address, phone numbers, and email.

o Ownership Status: Whether the owner is a Public/Private Limited Company, Partnership, Proprietorship, etc.

o Site Details: Exact location, proof of land title (e.g., lease deed, sale deed), current land use certificate, and proximity to key landmarks like airports, railway stations, and city centers.

o Project Overview: A brief feasibility report, the proposed star category, and detailed plans for guest accommodations (number of rooms, their size in square meters, and bathroom dimensions).

o Public Area Information: Descriptions and sizes of the lobby, reception, various restaurants, coffee shops, bars, banquet/conference halls, health club/gym, swimming pool, and parking facilities.

o Accessibility: Details on provisions made for differently-abled guests.

Did you know?

The Ministry of Tourism was formed in 1967, and was separated from the culture portfolio in 2002 to become an independent ministry.

Figure 1.16 MOT requirements and year of formation

o Environmental & Safety Measures: Information on eco-friendly practices, waste disposal systems, water harvesting, fire fighting measures, and security features.

o Timelines: Expected date of completion of the hotel project.

o Financials: Proposed capital structure and cost of the project.

o Attachments: Requires submission of blue prints/building plans sanctioned by the local authority.

2. Annexure-II: General Terms, Conditions & Application Format for Classification/Re-classification of Operational Hotels This format is specifically designed for hotels that are already functioning and wish to apply for their initial star classification or re-classification (from 1-Star to 5-Star Deluxe, or Heritage Classic/Grand). It requires similar detailed information as Annexure-I but focuses on the existing operational status:

o Hotel Identification: Current name and full postal address of the operational hotel.

o Ownership and Operational Dates: Status of the owner and the date when the hotel commenced operations.

o Site and Location Details: As required for project-stage applications.

o Applied Star Category: The specific star category the hotel is seeking.

o Operational Details: Number and dimensions of existing rooms and bathrooms, details of air-conditioning systems (whether centrally air-conditioned or individually controlled).

o Public Area Details: Comprehensive information on existing public areas such as the lobby, reception, various restaurants, coffee shops, bars, banquet/conference halls, health club/gym, swimming pool, and parking.

Did you know?

The only major difference between 5 star and 5 star deluxe only a 5 star deluxe hotel will have an on premise laundry, baggage X-ray machine.

Figure 1.17 Major Difference between 5* and 5*deluxe hotels

o Accessibility & Amenities: Details of facilities for differently-abled guests and other amenities.

o Environmental & Safety Compliance: Information on existing eco-friendly practices, waste management, fire fighting, and security systems.

o Mandatory Document Uploads: Applicants must upload valid and current certificates/licenses/NOCs from relevant authorities. These include:

- Trade License
- Fire Department No Objection Certificate (NOC)
- Health NOC
- Police Department NOC
- Pollution Control Board Consent
- Bar License (if the hotel has a bar)
- Sanctioned Building Plans (indicating guest rooms, public areas, etc.)
- Compliance reports for statutory requirements.
- Any document in a local language must be accompanied by a duly certified/attested/notarized English translation.

3. Annexure-III: Checklist of Facilities and Services This annexure serves as a comprehensive self-assessment tool. Applicants must meticulously go through this checklist, confirming the availability and quality of various facilities and services offered by their hotel. This helps the HRACC committee verify that the hotel meets the specific standards required for the star category it is applying for.

4. Annexure-IV: Format for Undertaking This is a legally binding document where the applicant provides an undertaking to the Ministry of Tourism. In this format, the applicant confirms that they have thoroughly read and understood all the terms, conditions, and guidelines related to hotel classification and agrees to abide by them. It also includes commitments related to not seeking an upgradation for a specified 'lock-in' period if certain benefits are availed.

5. Annexure-V: Affidavit (For Approval of Hotel at Project Stage) This affidavit, which must be executed on a non-judicial stamp paper, is a sworn statement for hotels applying for project stage approval. It legally affirms that the hotel project has successfully obtained all necessary approvals, permissions, clearances, and No Objection Certificates (NOCs) from relevant government and

regulatory bodies. This includes clearances related to Coastal Regulation Zone (CRZ), Environment & Forests, State Pollution Control Board, Police, Fire Department, Municipal/Local Authority, and Airports Authority of India, among others.

पर्यटन मंत्रालय
Ministry of Tourism

अतुल्य भारत
Incredible India

CERTIFICATE

Awarded to

HOTEL ABC
Unit Name

1234 PARK STREET, BBD BAG East Calkolata - India
Unit Address

AWB000987
NIDHI ID

Accommodation Unit/Hotel (Lettable Rooms: 41)
Category: Sub-Category

3-Star
Certification

This Certificate has been awarded after relevant assessment & recommendations by the Ministry of Tourism. The Unit must be in compliance with all guidelines and regulations throughout the full period of validity of the classification for the category applicable along with other terms and conditions as introduced by the Ministry from time to time. This certificate is not a substitute for any other NOCs-Permissions/Clearances, otherwise required by the organisation to set up and operate a [illegible] business, and as prescribed by the Local Authorities (Panchayat or Municipal) and/or State Government/Union Territory Administration and/or Government of India. The guidelines governing the said Certificate is available on the website www.nidhi.tourism.gov.in

Issued on : 06/06/9095
Valid till : 06/06/2300
Certificate No : 08008025342[illegible]

Figure 1.18 Sample 3 Star Certificates

6. Annexure-VI: Affidavit (For Classification/Re-classification of Operational Hotels) Similar to Annexure-V, this affidavit is required for operational hotels applying for classification or re-classification. It serves as a legal declaration that the hotel has obtained and maintains all necessary licenses and clearances to operate legally.

Replying to Classification Decisionsof Operational Hotels)

While the primary "replying" is the hotel's initial application and submission of documents, the process also involves responses to the committee's findings:

• **Deficiency Compliance:** If the HRACC identifies any deficiencies during the inspection, the hotel must address and comply with these deficiencies within a maximum period of 3 months. Failure to do so will result in the rejection of the application.

• **Appeal Process:** If a hotel is not satisfied with the HRACC's classification or re-classification decision, it has the right to appeal. The appeal must be submitted to the Secretary (Tourism), Government of India, for review and reconsideration within 30 days from the date of receiving the communication about the classification decision.

These formats ensure a standardized, transparent, and comprehensive evaluation process for hotel classification in India.

Check Back Questions:

Q.1.Explain the difference in the composition of the classification committee for 4 & 5-star hotels and for 1, 2 & 3-star hotels.

Q.2. Critically evaluate the role of standardized annexures in the hotel classification process.

1.5 Necessary Licenses, permits and clearances required at different stages of hotel project development

The establishment and operation of a hotel in India involves a multi-stage process that requires securing a wide range of regulatory approvals. These permissions are essential for legal compliance and are typically grouped based on the project's development phase.

This is governed by various authorities at the central, state, and local levels, ensuring that hotels meet all standards related to land use, construction, safety, health, and labour. From the initial conceptualization of a hotel project to its day-to-day operations, obtaining the correct licenses and permits is a mandatory step that underpins a hotel's legal standing and operational integrity.

The Ministry of Tourism (MoT) plays a key role, particularly through the Hotel and Restaurant Approval and Classification Committee (HRACC), which evaluates a hotel for its official classification. To even be considered for this voluntary classification, a hotel must first demonstrate compliance by possessing all the necessary licenses and permits, underscoring the critical link between regulatory approval and a hotel's official standing.

1. Pre-Construction & Construction Phase (Project Stage)

Before and during the construction of a hotel, the following permissions are required:

1. **Land Use Permit:** Required from local authorities to construct the hotel.
2. **Building Plan Approval:** Blueprints must be signed by the owner and architect and approved by the competent authority.
3. **Municipal Authority Approvals:** General approvals from the Municipal Authority.
4. **Police Authority Approvals:** Approvals from the Concerned Police Authority.
5. **Environmental Clearances:** Approvals from the Pollution Control Board or Ministry of Environment & Forests.
6. **Airport Authority Clearance:** An Approval/NOC from the Airports Authority of India is needed for projects near an airport.
7. **Completion Certificate:** Issued by the competent authority upon project completion.

2. Post-Construction Phase / Operational Stage

Once the hotel becomes operational, the following licenses and permits are essential:

1. **Hotel Registration:** A certificate or license from the Municipality/Corporation registering the establishment as a hotel.
2. **Fire NOC:** A No Objection Certificate from the local Fire Service Department.

2. Post-Construction Phase / Operational Stage

Once the hotel becomes operational, the following licenses and permits are essential:

1. **Hotel Registration:** A certificate or license from the Municipality/Corporation registering the establishment as a hotel.
2. **Fire NOC:** A No Objection Certificate from the local Fire Service Department.
3. **Affidavit for Clearances:** An affidavit on a prescribed format for all clearances on a Stamp Paper of Rs. 100.
4. **Bar License:** Mandatory for hotels seeking 4-Star with Alcohol Service, 5-Star with Alcohol Service, and 5-Star Deluxe classification.
5. **Trade License:** A license to operate as a hotel.
6. **Health NOC:** A clearance certificate from the Municipal Health Officer/Sanitary Inspector.
7. **Police NOC:** A No Objection Certificate from the Police Department.
8. **Pollution Control Consent:** Consent to operate from the State Pollution Control Board.
9. **Environmental NOC:** An NOC from the Ministry of Environment & Forests (if applicable).
10. **Airport Authority NOC:** An NOC from the Airport Authority of India for hotels near the Airport (if applicable).
11. **CRZ Clearance:** Coastal Regulation Zone clearance (if applicable).
12. **Land Use Permission:** Permission for the land use.
13. **Sanctioned Building Plans:** Building plans duly sanctioned/approved by the competent authority.
14. **Occupancy Certificate:** An occupancy certificate.
15. **Sewage Treatment Plant:** A Sewage Treatment Plant is required for hotels that obtained a completion certificate on or after April 1, 2012.

3. For Classification by Ministry of Tourism (HRACC) -

To be eligible for classification under HRACC, the hotel must ensure:

- Submission of all the above licenses and permits as supporting documents.

- Submission of all the above licenses and permits as supporting documents.
- Compliance with safety, health, environment, and labour laws.
- Scoring based on inspection, documentation, and infrastructure standards.

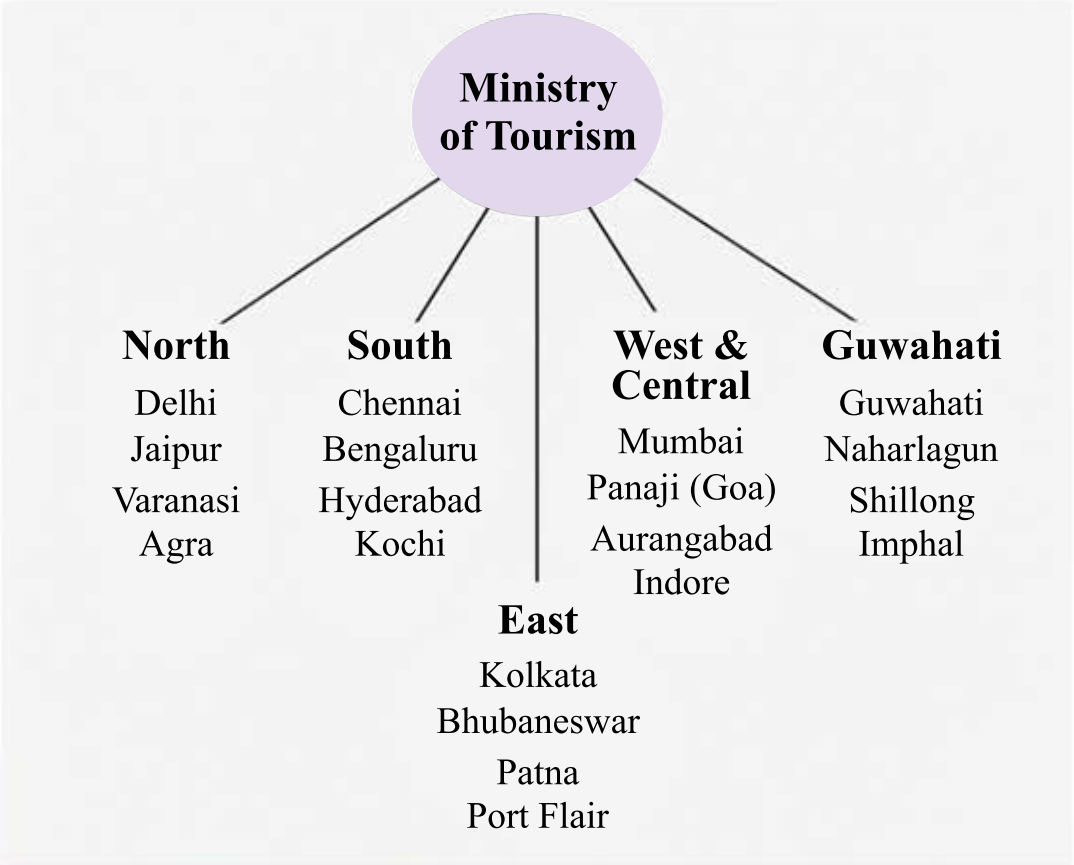


Figure 1.19 Organizational Structure of Ministry of Tourism Regional Offices in India

Check Back Questions:

Q.1.List any three licenses or permits which are required before starting the construction of a hotel project in India? Name the issuing authorities.

Q.2. Why is the Fire Safety Clearance critical before opening a hotel, and which agency provides it?

Q.3.What is the significance of the Ministry of Tourism's hotel classification

Licenses, Permits, and Clearances in Hotel Project Development

Stage	Approval / License	Issuing Authority	Purpose / Justification
Pre-Construction & Construction Phase (Project Stage)	Land Use Permit	Local authorities	To legally construct the hotel.
	Building Plan Approval	Competent authority (e.g., Municipal Corporation, ULB)	To ensure blueprints and plans meet legal requirements for construction.
	Approvals from the Municipal Authority	Municipal Authority	General approvals for the project within the municipality's jurisdiction.
	Police Authority Approvals	Concerned Police Authority	To ensure the project adheres to local law and order regulations.
	Environmental Clearances	Pollution Control Board or Ministry of Environment & Forests	To ensure the project complies with environmental regulations.
	Airport Authority Clearance	Airports Authority of India (AAI)	To get a No Objection Certificate (NOC) for projects located near an airport.
	Completion Certificate	Competent authority (e.g., Municipal Corporation, ULB)	Issued upon project completion to certify that construction is finished.
Operational Hotels and Alternative Accommodation (Classification)	Hotel Registration Certificate	Municipality / Corporation	To legally register the establishment as a hotel.
	Fire NOC	Fire Service Department (Local Fire Brigade Authority)	To certify that the hotel complies with fire safety regulations.
	Affidavit for Clearances	N/A (Self-declaration on stamp paper)	A sworn statement provided by the applicant to support that all necessary clearances have been obtained.
	Bar License	State Excise Department	To legally serve alcohol. Mandatory for 4-Star with Alcohol Service, 5-Star with Alcohol Service, and 5-Star Deluxe classification.
	Trade License	Municipal Corporation or Urban Local Body (ULB)	To legally operate a business as a hotel.
	Health NOC	Municipal Health Officer/Sanitary Inspector	To certify that the hotel meets public health and sanitation standards.
	Police NOC	Police Department	To get a No Objection Certificate from the police.
	Consent to operate	State Pollution Control Board	To get consent to operate the hotel in compliance with pollution control regulations.
	Environmental NOC	Ministry of Environment & Forests	To get a No Objection Certificate (NOC) where applicable.
	Airport Authority NOC	Airport Authority of India (AAI)	To get a No Objection Certificate (NOC) for hotels near an airport.
	CRZ clearance	Ministry of Environment, Forest and Climate Change (MoEF&CC) or State Coastal Zone Management Authority (CZMA)	To get Coastal Regulation Zone clearance where applicable.
	Land use permission	Local authorities	To get permission for the land use.
	Sanctioned Building Plans	Competent authority	To provide the approved building plans.
	Occupancy Certificate	Local municipal authority or development authority	To certify that the building is safe and suitable for occupancy.
	Sewage Treatment Plant	N/A (Infrastructure requirement)	To handle sewage treatment (not mandatory for hotels that obtained a completion certificate before April 1, 2012).

Table 1.5 Table adapted from MOT nidhi+ website

1.6 Let Us Sum Up

India's hotel classification is regulated by the Ministry of Tourism under HRACC and it imposes quality standardization, service, and amenities in various categories from 1-Star to 5-Star Deluxe, and Heritage and Apartment Hotels too. There are various architecture and service standards to be adhered to for each category as guidelines for the planning of the hotels and guest expectations.

Heritage Hotels emphasize the retention of traditional architecture with contemporary comfort, while Apartment Hotels are for long stay visitors with home amenities. Apartment Hotels are for long stay visitors with home amenities.

Apart from classification, hotels receive a myriad of permits and licenses at each step—construction, operation, and ongoing operation. These guarantee legal compliance, safety, and service levels critical to the hospitality sector.

REVIEW QUESTIONS

Fill in the blanks

a) The _____ is the online portal used for submitting hotel classification applications.

b) For 4 & 5 star hotels, the committee is chaired by the _____ or their nominee.

c) The minimum quorum for a classification committee meeting includes the Chairperson and _____ members.

d) _____ annexure is a legally binding declaration confirming hotel approvals at the project stage.

e) Annexure-III is the _____ tool for facilities and services self-assessment.

True or False

a) The classification committee for 1, 2 &3 star hotels is chaired by a central government officer. **T/F**

b) Hotels dissatisfied with HRACC decisions can appeal to the Secretary (Tourism), Government of India. **T/F**

c) Annexure-VIII is the format for financial declaration. **T/F**

d) The same application format is used for both new and operational hotels. **T/F**

e) The HRACC inspection committee must upload its recommendations on the centralized cloud portal. **T/F**

Multiple Choice Questions

a) What is the minimum room size required for a 5-Star hotel?

i. 120 sq. ft ii. 150 sq. ft iii. 200 sq. ft iv. 250 sq. ft

b) Which classification category includes presidential suites, butler service, and limousine pickup?
i. 4-Star ii. Heritage Classic iii. 5-Star Deluxe iv. Apartment Hotel

c) Which of the following is not mandatory in a 1-Star hotel?

i. Attached bathroom ii. Lobby area iii. Fire safety iv. Restaurant

d) Who acts as Member Secretary of the HRACC for 1, 2 & 3-Star classifications?
i. Secretary (Tourism), GOI ii. Regional Director, India tourism iii. Principal of IHM iv. Director (Tourism), State

e) Which heritage sub-category requires a building to be constructed before 1935? i. Heritage ii. Heritage Classic iii. Heritage Grand iv. Heritage Premium

Short Answer Type Questions

a) List three responsibilities of the Hotel & Restaurant Approval and Classification Committee (HRACC).

b) State two key differences between a 3-Star and a 5-Star hotel.

c) Mention two criteria used to classify a hotel as a Heritage Hotel.

d)What are two main features of a 5-Star Deluxe hotel that set it apart from a regular 5-Star?

Long Answer Type Questions

1. What is the significance of star classification in hotels? Discuss the different

criteria used to classify 1-Star to 5-Star Deluxe hotels, including architectural and service features.

2. Explain the role and constitution of the Hotel & Restaurant Approval and Classification Committee (HRACC). Describe how the committee ensures transparency in hotel classifications.

3. Discuss the unique features, classification criteria, and significance of Heritage Hotels in India. How do these hotels balance modern comfort with

Open Book Questions

1. "Hotel star classification plays a vital role in defining guest expectations and operational standards for hotels." Justify this statement by explaining three ways in which star classification benefits both hotel operators and guests, with relevant examples from different star categories.

2. "Heritage Hotels in India not only preserve architecture but also create a unique cultural experience for guests." Justify this statement by discussing the eligibility criteria of Heritage Hotels and explaining how design and services enhance guest experiences with two examples.

3. "Licenses, permits, and clearances form the backbone of hotel project development and ensure legal compliance." Justify this statement by explaining the role of at least three key licenses at different stages of hotel development, and why failing to obtain them can affect hotel operations.

Activities	
Activity 1	Students to visit two hotels of different star categories (e.g., 3-Star and 5-Star). Observe and document differences in infrastructure, services offered, room size, public areas, and amenities. Prepare a comparative report highlighting the criteria that justify their respective star classifications.
Activity 2	Collect classification checklists and application formats (Annexures I to VIII) used by the Ministry of Tourism. Create a chart showing which annexure is applicable at which stage (e.g., project stage vs. operational stage) and what documents are required for each.
Activity 3	Conduct a group presentation or role play simulating the HRACC inspection process. Assign roles to students as committee members (e.g., MoT officer, hotel association rep, IHM Principal). Review a fictional hotel's documents and perform a mock classification decision based on the checklist.

Unit-2

Hotel Design

Overview

This unit enables learner the skills they need to plan, organize, and carry out hotel projects. It highlights how to create unique and prosperous hospitality spaces by balancing the needs of guests, space functioning, aesthetics, regulatory requirements and sustainable certification.

Learning Objectives

S. No.	Sub-Unit	Learning Topics	Key learning objectives/ At the end of this subunit, the learners will be able to:
1	2.2 Basic Terminologies	Definitions	Define and explain the basic terminologies
2	2.3 Hotel Design Consideration and Automation	Various design consideration	• Enlist and describe the various types of architectures & building plan • Differentiate the suitable material and workmanship required for hotel project. • Identify the factors that contributed to find suitable location
3	2.4 Project Management	Learn how to develop your project management skills.	• Describe the basic concepts & principles of project management • Identify and analyse the different development approaches taken towards project delivery. • Discuss the value and benefits that a PMO can bring to an organization.
4	2.5 Types of Feasibility Report	Meaning and understanding of feasibility report	• Explain the purpose of feasibility report • List various feasibility reports
5	2.6 Role of Hospitality professionals	Prime responsibilities	• Recognize and understand the efforts of hospitality professionals.

6	2.7 Systematic layout planning pattern (SLP)	• Fundamentals of planning • Framework of planning	• Define the importance of planning • Explain the SLP framework
7	2.8 Building Envelope 2.8.1 Building and exterior facilities 2.8.2 Building t ypes, 2.8.3 Structural frame, 2.8.4 Exterior facilities 2.8.5 Parking areas 2.8.6 Land scaping and grounds, 2.8.7 Types of drawings: Plan views, Elevation views, detail views, models, section views, Three Dimensions mechanical views, single line diagram (SLD), Refracted ceiling plans, Hotel signage and sub signage	HOTEL PROJECT APPROVAL • Pre- Construction & Construction Phase (Project Stage) CLASSIFICATION • Operational Hotels and Alternative Accommodation.	1. List needed licenses, permits, and clearances for operating in the pre-construction and construction phases. 2. Compliance with regulatory requirements (Environment/ Fire/ Excise/ Municipal Authority/ FSSAI/ Labour etc.)
8	2.9 Planning for Front of the House 2.9.1 Procedure for determining space considering the guiding factors for guest room/ public facilities, 2.9.2 Support facilities &	• Space considering the guiding factors for front of the house in hotel • Widely followed norms for space consideration	• List down the factors affecting the space requirements for guest areas in hotel

9	2.10 Estimation of construction cost	• Factors contributing the construction cost • General guidelines for allocating costs	• Explain the importance of various factors affecting the construction cost.
10	2.11 Planning for Back of the House 2.11.1 Workflow in back of the house (receiving, garbage and staff movement – lockers, change room, cafeteria and administrative office)	• Space considering the guiding factors for back of the house in hotel • Widely followed norms for space consideration	• List down the factors affecting the space requirements for back areas in hotel
11	2.12 Approximate requirement & estimation of water/ electrical load, gas, ventilation	• Factors determining energy consumption in hotel • Major areas of energy consumption in hotel	• List the factors that determine the energy requirement • Explain the procedure for estimation of water/ electrical load, gas, ventilation
12	2.13 Green hotel practices/ Certification	• Modern sustainable hotel practices. • Leading Certification for hotels	• Describe the eco-practises followed in hotels. • List the major certification adopted by hospitality industry.

2.1 INTODUCTION

Any business organization's primary goal is to turn a profit. This depends on how a company operates as well as how it presents itself, particularly in the hotel and hospitality industry. The main goal of any hotel property is to draw in more guests and visitors and ensure that their stays are unforgettable.

As a result, it becomes crucial to prioritize meeting their requirements and accommodations while highlighting the finest aspects of the regional customs

and culture. A lot of this is determined by a property's architecture and design.

2.2 Basic Terminologies:

Floor Area: of a building is the total area of the floor in between walls and consists of the floor and all rooms, veranda, passage, corridors, staircases, entrance hall, kitchen, store, bathroom & WC.

Carpet Area: means the net usable floor area of an apartment, which includes the area covered by internal partition walls but excludes the area covered by external walls, service shafts, balcony or verandah (exclusive), and open terrace area (exclusive)

Plinth Area: It is the covered built-up area measured at the floor level of any story or at the floor level of the basement. Plinth area is also called as built-up area and is the entire area occupied by the building including internal and external walls. Plinth area is generally 10-20% more than carpet area.

Super Built-up Area: The super built-up area is the total sum of the built-up area and the space area occupied by common areas, including the corridor, the lift lobby, the elevator, etc. In some cases, builders even include amenities such as pools, gardens, and clubhouses, in the common area the lobby, staircase, elevator, shafts, clubhouse, etc.

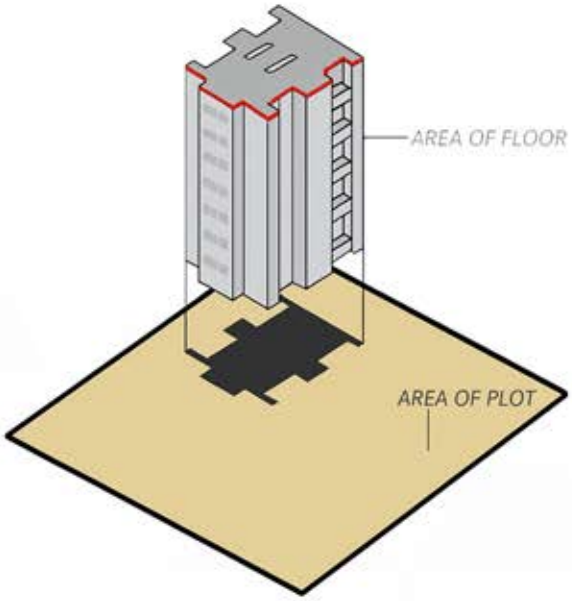
Super built-up area = Built-up area + proportionate common area Or,

Super built-up area = Carpet area (1+loading factor). The loading would be in the range of 15% to 50%, depending on builder and the exact location.

Floor Space Index (FSI): Floor Space Index (FSI) is the ratio between the total built-up area and plot area allowed by the government for a particular locality.

Floor Area Ratio: It is calculated by dividing the total covered area i.e., Plinth area of all floors by the area of the plot.

Floor Area Ratio (FAR) = Total covered area of all the floor / Plot Area



Floor Area Ratio (FAR) = Total covered area of all the floor

=30,000 / 15,000

=2.00

Check Back Questions:

Q.1 Establish relation between super built area & carpet area.

Q.2 Define plinth Area?

2.3 Hotel design Consideration and Automation

1. Attractive Appearance: Appearance-for a sector that thrives on showcasing virtually anything under the sun to its visitor, building of a hotel must be as impressive as its interiors. Its distinctive features begin from the designing itself.

Our various civilizations over the ages and their influence can be seen in the architecture of some modern structures even today. Various prominent architecture styles are Indian, Greek, Roman, Christan, Romanesque, Islamic, Renaissance, Gothic, Art Nouveau, Modern, Innovative etc.

2. Efficient Plan: The modern-day constructions, including hotel properties, by and large fall in the innovative and international architectural styles. Over the years some building designs and construction plans have withstood the test of time and become so popular that they are emulated by many players in the industry. Some of the popular types of modern building plans are as follows:

• **Modular construction:** This is the most recent and promising development in the construction of hotel buildings. The technique has cut down the construction time and costs by as much as 40 per cent as compared to traditional construction methods. In this method, room units are constructed separately and hoisted into place with the help of cranes.

• **Slip forming:** Slip form construction was first used in the 1930s in the building and erection of grain storage silos and other similar structures. Early slip forming techniques relied on hydraulic jacks and the pouring of concrete into a form work made of timber. Today, slip forming is used to build everything from silo complexes, chimneys, reservoirs, medium- to high-rise housing developments, to office buildings, hotels, hospitals, bridge support piers, in ground shafts to dams and power stations.

• **Arch design:** Arch building designs have hundred per cent useable clear span space and do not have any beams, poles and trusses. They are easy to construct and most of the buildings are erected in just a few days. These buildings are well ventilated and have better air flow than other building types. These buildings are very cost effective and have very low cost in developing heating, ventilation and air-conditioning system. The maintenance cost of these buildings is also very low, and they are fire resistant.

• **Cylinder-like structure:** The cylinder-like design of a hotel building has a distinctive appearance and has the following advantages:

o Concentration of service and utility equipment at the center core.
o Lower construction and operating costs.
o All guest rooms on the outer side with view
o Ready-made for the popular roof top revolving restaurant or lounge
o Minimum resistance to wind
o Suitable for site where land costs are high and minimum area is available
o Compatibility with circumferential ramps leading to parking.

• **Curtain Wall:** In this system, the exterior wall of each floor is hung on the iron or steel frame so that the wall supports only its own weight and not the floors above it. This method of construction reduces the overall weight of a building, which allows it to be built higher, and permits the extensive use of glass on the facade.

3. Good location: The main factors in looking for a suitable site for hotel are:

Financial aspect of the site- it includes the cost of land, construction cost, cost related to building system, research and development cost etc.

General aspect of the site-

- Accessibility of transport, especially from airports and railway stations.
- Existence of present and planned future social centers.
- Special attraction in location e.g. Tourist spot, parks etc
- Proximity to business & corporate centers
- Residential or non-residential areas
- Level of sound during nights
- Access for service deliveries
- Good sub soil to eliminate excessive foundation cost.

4. Suitable material: Availability of raw materials and other inputs is essential for successful implementation of the project. The requirement of various inputs like raw material and labour must be estimated based on turnover. The various building materials that are commonly used in modern construction are as

- **Brick-** A brick may be defined as a block of clay or other ceramic used for construction and decorative facing. These costs relatively little, resist dampness and heat, and can last longer than stone they can be laid in a variety of intricate patterns, such as checker, herringbone, basket weave, or Flemish bond.

- **Concrete-** It is the most widely used construction material in the world. Concrete is the only major building material that can be delivered to the job site in a plastic state. This unique quality makes concrete desirable as a building material because it can be moulded to virtually any form or shape. Qualities of concrete as a building material are its strength, economy, and durability.

- **Polymer Concrete-** Another composite material used in architectural elements is polymer concrete, a formulation of thermo set resins and aggregate that simulates stone. The polymer concrete surface also has several advantages over real stone because it does not absorb moisture, dirt or graffiti.

Americans. Steel not only acts as a frame but also provides tensile strength to the building. It doesn't rot and can be easily moulded.

• **Glass-** It is widely used for construction purpose nowadays. Frames that can be of wood or steel support them. It is common to see buildings which are made entirely of glass from all sides. This has become possible due to production of more durable glasses.

• **Fiber Glass-** For specialty applications, fibreglass decorative architectural elements are fast becoming the first choice among building owners and architects. Not only is the installed cost of fibreglass less than that of traditional materials, but also composites are easier to install and maintain. Technological advances such as new finishes that better simulate traditional material make fibre-reinforced plastic (FRP) nearly indistinguishable from the real thing.

5. Good Workmanship: This entails the selection of appropriate technology, and plants and machinery which ensures efficient and economical operations. Technology must be chosen based on specific requirements of the enterprise.

6. Sound financing: A proper determination of the cost of the project is essential for determining its viability and profitability. Any financial institution entertains an entrepreneur based on the cost estimates of the project. For any cost over-run, the entrepreneur would find it difficult to arrange for the extra fund for completion of the project which usually leads to time over-run, fund flow etc. Hence, there is a need for proper determination of the cost of capital.

7. Competent Management: In the real world of facility planners have a lot of activities fall under their responsibilities. The basic building design, layout, and planning of the facilities, services, and equipment to be planned very carefully with an eye on the promoter, management & human manpower, and targeted clientele.

Competent management can be defined as the ability to meet organizational objectives, use available resources efficiently, maintain high levels of employee performance and professionalism, and provide excellent service to customers.

Did you know?

The Kailash (Kailasa) Temple at Ellora, Maharashtra, is one of the world's most extraordinary examples of ancient rock-cut architecture constructed in the 8th century CE. The entire temple was carved vertically from a single massive basalt rock cliff, a feat that required removing an estimated 400,000 cubic feet (or roughly 200,000–400,000 tons) of stone.

Hotel Automation

Automation in hotel construction refers to the integration of smart systems and cutting-edge digital technology during the planning, design, and construction stages of the hotel structure. Efficiency gains, project cost reductions, mistake reduction, improved team communication, and future-proofing the hotel's infrastructure for intelligent operations are the main goals.

Hotel automation at designing - phase can be achieved by including infrastructure for self-service kiosks, mobile check-in areas, Internet of Things devices in guest rooms, HVAC monitoring and centralized control systems, automation aspects into hotel architecture.

Some popular software is Procore, AutoCadd, Oracale Hospitality etc.

Hotel automation at construction - project management automates budgeting, procurement, scheduling, and documentation. Real-time updates on status, automated reminders, and tracking of tasks can be included.

Check Back Questions:

Q.1 Which is the most widely used construction material?
Q.2 What is the significance of project cost?

2.4 Project management

The process of planning and executing a project by synchronizing various constituent activities to achieve its accomplishment within the desired timelines and available resources is called project management. An important aspect of project management is cost control and time management. The project manager

would always aim to accomplish activities in the shortest possible time without compromising on the quality of work and the cost involved.

C.P.M. and PERT

Modern management uses two forms of network analysis or techniques in most scheduling projects as sequencing models:

- Critical Path Method (CPM)
- Program Evaluation and Review Technique (PERT)

They enable the management to plan and implement a project, and to achieve the desired goals of timely completion with optimum use of available human, material, and financial resources.

PERT: The development of PERT began in US navy around 1958 when the navy was faced with the task of production of Polaris Missile System under severe time constraints. The major challenge was the time frame and the cost performance of the project. It took longer time to complete and cost a lot more than estimated. A research team was assembled to tackle the problem and that in effect resulted in the development of PERT.

In most of the projects the activity times are not known with certainty, and they may be assumed as random variables. In such cases where activity time are not known, PERT can be used for planning, scheduling, and controlling the projects. In PERT, for each activity, three-time estimates can be obtained:

1. Optimistic time estimate (To) - minimum time in which activity can be completed in favorable conditions.

2. Most likely time estimate (Tm) - minimum time in which activity can be completed under normal conditions.

3. Pessimistic time estimate (Tp) - maximum time in which activity can be completed in unfavorable conditions.

Critical Path- It is defined as the longest duration between the first and last node of a project. While tracing the path from first node to last node, one should always move along the direction of arrows. The length of CP determines the minimum duration in which project can be completed. All the activities on CP are called critical or bottleneck activities.

Critical Path Method (CPM), on the other hand, was the result of an industrial effort which was jointly initiated by DuPont Company and Remington Rand Univac between 1940 to 1943 for the Manhattan project, which was conducted by US, UK, and Canada during WWII for production of first nuclear weapons. The objective of the CPM research team was to determine how best to reduce the time required to perform routine plant overhead, maintenance, and construction work. In essence, they were interested in determining the optimum tradeoff of the project duration and the total project cost. CPM is a network diagramming technique used to predict total project duration.

A CPM model includes the following:

- List of all the activities involved in the project.
- Dependence of each activity on one another.
- Estimated time required to complete each activity.

Advantages of PERT/CPM:

1. It covers all the phases of project management: Project planning, Time & resource estimation, basic scheduling, Time cost tradeoff, Resources allocation, Project control.

2. It compels management to plan projects as time – event analysis cannot be made without planning.

3. Facilitate management to control of a project.

4. Provides a clear and unambiguous way of documenting the plan and schedules and communicating the time and cost performance of the projects to team and management.

5. It helps in dividing activities function wise and responsibility wise which makes it possible to coordinate the work of different agencies involved in the completion of the project.

Limitation of PERT/CPM:

1. CPM assumes that there is a certain time for the activity performance. In real life the assumed time interval may not be realized.

2. CPM does not offer statistical analysis in determination of estimates of time.

3. CPM is a static planning model and not dynamic controlling device. Any

change in the network leads to repetition of the entire evaluation.

4. PERT is not suitable for routine planning.

5. PERT emphasizes only on time and not on costs.

6. PERT is not a complete system of cure for all devices. For instance, it forces planning, it doesn't do planning. It creates an environment for effective control, but it cannot provide automatic control.

Comparison of CPM and PERT

Key Words	PERT	CPM
Devised by	US Navy	DuPont Company
Model	Probabilistic model	Deterministic model
Orientation	Event oriented	Activity oriented
Dummy activities	Use of dummy activities required for representing the proper sequencing	Use of dummy activities is not required
Repetition	Used for non-repetitive jobs	Used for repetitive jobs
Purpose	Mainly used for planning and scheduling research & development programmes	Used for construction and business programmes
Control	Used as an important control device	Cannot be used as a control device
Cost	Doesn't consider cost	Deals with cost of project
Time Estimates	Three-time estimates considered	Only one time is considered
Crashing	The crashing concept is not applicable to PERT.	Crashing is a compression technique applied to CPM, to shorten the project duration, along with the least additional cost.
Classification of activities	Doesn't classify activities on critical or non-critical nature	Classifies activities on critical or non-critical nature

Check Back Questions:

Q.1 Differentiate between CPM & PERT.
Q.2 List 02 limitation of CPM/PERT.

2.5 Types of Feasibility Report

A Feasibility Report evaluates the viability of a proposed project across various key dimensions before decision-makers allocate resources. The key types of feasibility reports are:

- Technical Feasibility: Technical feasibility evaluates an expert system's technical complexity, including the possibility of carrying out it with different techniques and resources.
- Economic Feasibility: To determine if a proposed project can be implemented, minimize risks, and assess the project's profitability, information must be gathered and analysed. It's necessary to consider the project's chances of success or failure in accordance with the local market and its demands. Furthermore, it is essential to evaluate the company's potential to maintain profitability throughout a specific time frame.
- Legal Feasibility: identifies any legal constraints that might prohibit implementation by examining if the project complies with all applicable laws and regulations, which include those pertaining to zoning, licensing, permits, tax implication and proprietary information.
- Market Feasibility: Before the project proceeds further, market feasibility examines the product or service's demand, market trends, target customer base.
- Operational Feasibility: assesses if the new project can be supported by the organization's current activities, resources, and procedures. This involves reviewing the current employees, organizational design, procedures, and managerial capabilities.
- Schedule/Time Feasibility: examines any scheduling limitations, key dates, and the project timeline to determine whether or not the project can be finished in the allotted time.

Depending on the business sector and context of the project, a single feasibility report may address all or some of these types. Accurate reports reduce the chance of costly failures and help firms in making data-driven, intelligent choices.

Check Back Questions:

Q.1 A feasibility report serves as a critical tool for organizations – True or false- why
Q.2 State the purposes of a feasibility report.

2.6 Role of Hospitality professionals

Overall, hospitality professionals are hearts of the industry, ensuring guests have pleasant, safe, and memorable experiences while supportive the operational and business objectives of hospitality establishments. The primary role of hospitality professionals is:

- Making Sure the Design Is Guest-Centric
- Improving Efficiency of Operations
- Creating a Better Image of Brand
- Delivering Unique and Lasting Experiences
- Considering Safety and Compliance Foremost

Check Back Questions:

Q.1 List the primary roles of hospitality roles?
Q.2 Guest centric design will lead to better guest experience. State True or False

2.7 Systematic layout planning pattern (SLP)

Systematic refers to an organized, disciplined, to a problem or project assigned. Systematic layout planning is an organized way to conduct layout planning; it consists of a framework of phases, a pattern of procedures and a set of conventions for identifying, rating and visualizing the elements and areas involved in a plan.

All layouts planning, rests on three fundamentals of:

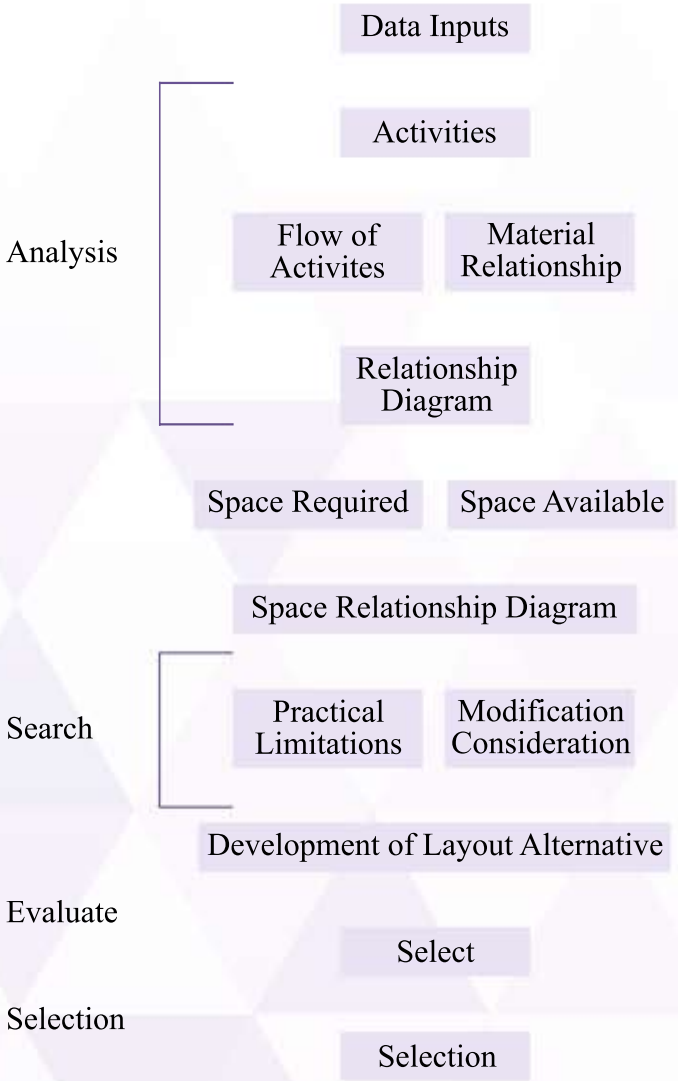
- Relationships between the activities of layout.
- Space of each activity in area, in amount, in kind and in shape.
- Adjustment of relationships and space into an effective plan.

By applying above three fundamentals, planner assures better decision and layout.

SLP is a framework of four planning phases:

- Analysis
- Search
- Evaluation
- Selection

HOTEL FACILITY PLANNING



Flow Diagram of Systematic Layout Plan

Check Back Questions:

Q.1 State the fundamentals of SLP
Q.2 What are the framework of planning phase?

2.8 Building Envelope

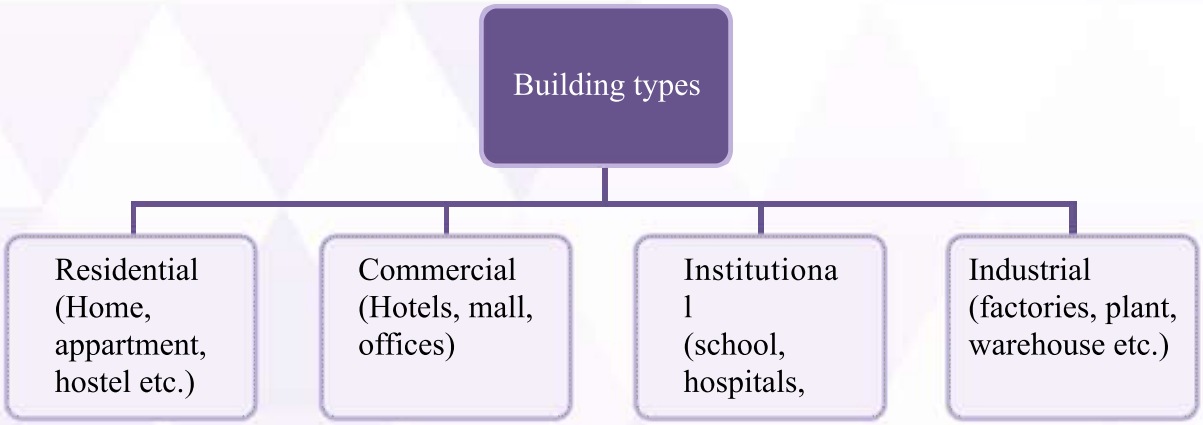
It is the physical wall dividing the interior of a hotel structure from the exterior environment. It comprises all the external elements that work together to shield building occupants from weather, temperature extremes, moisture, wind, dust, and noise, including walls, foundations, roofs, windows, doors, and floors.

2.8.1 Building and exterior facilities:

Comprise of parking lot, gardens, pathways, exterior lightings, signage, boundary walls and waste disposal/ recycling areas.

2.8.2 Building types:

Comprise of parking lot, gardens, pathways, exterior lightings, signage, boundary walls and waste disposal/ recycling areas.



2.8.3 Structural frame: Common Types of Structural Frames in Hotels

•**Steel framing:** common in modern construction particularly for high rise and modular hotels.

•**Concrete frames:** Traditional, robust and durable choices for building worldwide.

• **Modular and prefabricated frames:** Modular steel or concrete structural 'pods' for rooms, stacked and connected on site.

• **Hybrid structure frames:** Some hotels combine the best qualities of both materials by using concrete for guestroom flooring and structural steel for open areas like lobbies and ballrooms.

2.8.4 Exterior facilities:

The external amenities and design features that influence a hotel's first impressions, guest experience, and operational efficiency are known as its exterior facilities. Contemporary hotels use a range of outdoor amenities to draw visitors, make them feel comfortable, and create memorable experiences.

2.8.5 Parking areas:

Provide accommodations for vehicles and, with the right upkeep, can assist avoid accidents. Parking spaces, preferably in separate areas, are generally required as follows:

1. 1 parking space for each guest room (may sometimes be reduced to 0.8 per guest room);
2. 1 parking space for every 5 restaurant seats.
3. 1 parking space for every 3 employees.
4. 2 parking spaces for delivery and service trucks (in addition to space for a truck at the service entrance).

Parking stalls should be adequate for the largest cars commonly used; 19 ft is the recommended minimum length. Planning for only medium and small-size cars invites trouble. Parking stalls 10 ft wide are recommended; where space is limited 9-ft stalls may be used.

2.8.6 Landscaping and grounds:

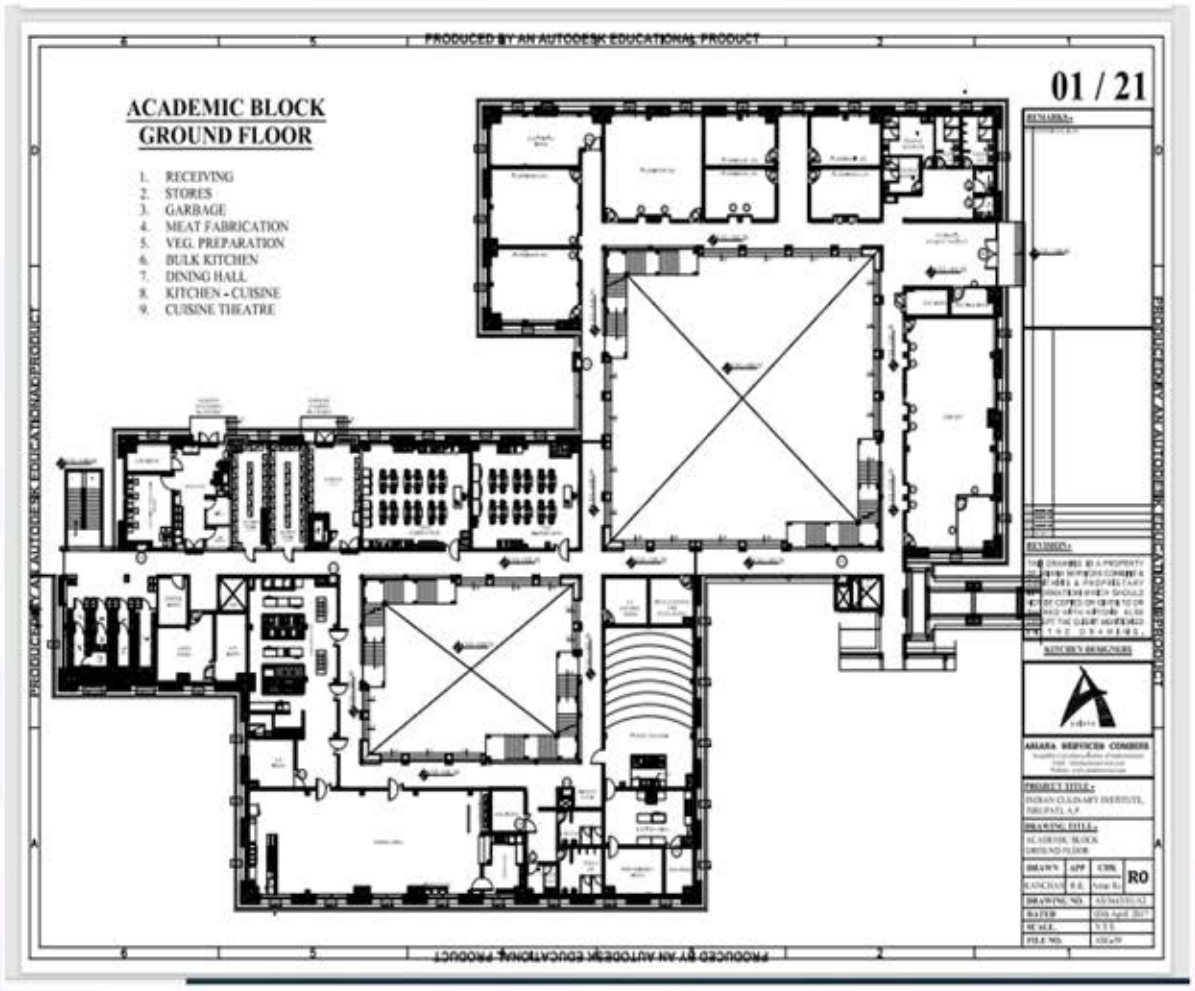
Landscape spaces and green spaces enhance environmental quality, offer opportunities for recreation, improve aesthetics, act as emergency access and provide possible future expansions. It is one of the things the guest sees first. Well-kept, neatly defined lawns and drives will make a favourable impression.
A site 2 acres in area with at least 300 ft of frontage is recommended as minimum.

2.8.7 Types of drawings:

A building's blueprint is a set of drawings that depict the layout of the building's components, including the rooms, its dimensions, windows, doors, and other information that would otherwise require thousands of words to express to a reader.

A blueprint is made up of lines, numbers, symbols, and a few phrases. Readers of a good blueprint should be able figure out all the technical aspects. Drafting a blueprint is an architect's primary duty.

• **Plan views:** It is the most common view and is used very frequently. A plan view is akin to seeing a room from the top. This plan view serves as a basis for various calculations, such as, electrical outlets, security alarm system requirements, sizes and number of furnishings, and determination of HVAC (heating, ventilation, and air-conditioning).



• **Elevation views:** Determining the design of the external wall is aided by elevation views. What proportion of the windows would be made of glass, what sort of windows would be utilized, what kind of material would be used for the wall, how the wall would be oriented, the areas of the balcony, and—most importantly—whether the balcony would provide an umbrella effect for the lower level.

• **Details view:** It may be a plan view or an internal elevation depiction of something that other perspectives are unable to adequately capture. In-depth inspections of the internal walls, the placement of permanent assets, equipment, and their functions may be particularly crucial for upcoming building renovations.

• **Perspective Views and Models:** This is an effective way to market ideas. In essence it is a three-dimensional representation of a proposed structure that is typically shown to the owners. By displaying the locations of trees, parking lots, sidewalks, etc., it

might be made even more attractive. The model's objective is to assist spectators in visualizing and putting themselves in the suggested environments.

Section views: Section views of a building's walls, roof, or foundation can be either vertical or horizontal cutaway views. It shows what kind of material might be used in the building where insulation is intended to be used. It sometimes helps in energy conservation practices also.

• **Three Dimensions:** A digital, interactive, or visual representation of a hotel's layout, services, and construction in three dimensions is called a 3D map in hotel design. Generally used for Visualization, Presentation and Communication Wayfinding and Navigation etc.

• **Mechanical Views:** This is the most widely used blueprint that provides a separate concept for each of the building's mechanical and electrical systems. A particular set of symbols may be used for each mechanical view. Separate mechanical views may be used to display systems such as air conditioning, plumbing, closed-circuit television, fire safety, security, etc.

• **Single line diagram (SLD):** A single line diagram (SLD) in hotel design is used to visually represent the entire electrical distribution network of a hotel. SLDs help architects, electrical engineers, and facility managers plan, design, and manage the power system efficiently by outlining the flow of electricity from the incoming utility supply through main switchboards, distribution panels, and down to individual loads such as lighting, HVAC, elevators, and guest rooms.

• **Refracted Ceiling Plans:** A reflected ceiling plan (RCP) is a drawing that depicts how a room's ceiling would seem if it were reflected onto the floor, as though it could be seen via a floor-mounted mirror.

• **Hotel signage and sub signage:** The extensive network of signs positioned across a hotel's grounds to direct, educate, and improve the visitor experience is known as hotel signage. While sub signage refers to the more specialized or localized signs that complement the main signage system, signage is necessary for wayfinding, safety, brand expression, and operational efficiency.

Did you know?

AutoCAD is a leading software widely used by architects and designers for hotel blueprints and architectural projects. It provides powerful capabilities for both 2D drafting and 3D modelling, including the ability to create detailed sectional (cross-section) views of hotel designs.

Check Back Questions:

Q.1 Name the constituents of building envelop.
Q.2 Which type of building is appropriate for Section view?

2.9 Planning for Front of the House:

2.9.1 Procedure for determining space considering the guiding factors for guest room/ public facilities, support facilities & services, hotel administration, internal roads/ budget hotel/ 5-star hotel

Whether a hotel is five-star or budget, calculating up how much space it requires is a methodical process driven by operational requirements, standards for the guest experience, and legal requirements.

Too much space results in excessive investment and building-maintenance costs. Too little space makes it difficult for the hotel owners to realize satisfactory profits and, in service areas, causes crowding, reduces speed, and increases payroll.

Space Allocation of the various facilities is an important aspect of designing and planning a hotel project. Following are some ground rules that evolved in the industry and widely followed norms for Space Consideration.

- Guest rooms block area – 65-75 % of the hotel
- Public facility (Lobby, dining room, swimming pool etc.) – 10-20%
- Support facilities (Kitchen stewarding, laundry etc.) – 10-15%
- Hotel Administration – 01-02 %

GUEST ROOM BLOCK:

The total sq. ft. area for the guest room block varies between 65-75% of the total floor area of the hotel. The net guest room area included living space, bathroom and water closet as follows:

- Budget category hotel: 120-200 sq. ft.
- Standard hotel: 180-325 sq. ft.
- First Class hotel: 325-375 sq. ft.
- Luxury hotel: 375-450 sq. ft.
- To determine the total area of the guest room block including corridor, elevators, stairways, storage, generally add 50% of the net guest room area in total guest room area.
- The minimum finish width of the corridor on guestroom floor is usually 6 ft. which may be reduced to 5 Ft. if guest room doors are opening inside.

2.9.2 Support facilities:

These are required to run the public facilities-e.g., Swimming Pool- Filtration Plant and Pump house is support facility.

Restaurant- Kitchen are services required for guests.

The amount of space allocated here varies between 10 to 15 % of the total floor area of the hotel which depends upon the public facilities provided by the hotel.

Food Preparation

- Coffee shop kitchen: 10 to 25% of the coffee shop area
- Main dining room kitchen (Any specialty restaurant): 30 to 45% of the specialty restaurant area.
- Banquet kitchen (formal dining): 20 to 30% of the meeting room area.
- Room Service: 01 sq. ft/ guestroom
- F&B Storage area (dry fruits, liquor etc.): 35 to 40 % of kitchen space.

Housekeeping

- Laundry- 07 sq. ft./ guest room
- Linen storage (not on the guest floor) – 03 sq. ft./ guest room
- Guest Laundry (receive and dispatch area) – 0.8 to 1.5 sq. ft./ guest room
- Uniform Issuing- 01 sq. ft./ guest room

(Restaurants, Spa, Lobby, Washrooms, Banquets, Conference Halls, Lounge etc.) Amount of space allocated to the various public facilities will fluctuate. It varies between 10 to 20% of the total floor area of the entire hotel

Front Office

It varies between 2 to 6 % of the total floor area of the hotel. Main lobby (for the circulation and movement of guests) is 7 to 11 sq. ft. /guestroom

- Seating area- 0.7 to 1 sq. ft. / guestroom
- Front Desk- 3 to 4 sq. ft. / guestroom
- Left Luggage Room- 0.5 to 1 sq. ft. / guestroom
- Public washrooms- 0.5 to 1 sq. ft. / guestroom for gents and ladies

Retail Shop

A gift/ sundry shop is included with 1 to 1.5 sq. ft/guestroom. The size of the

outlet can range from 100 to 1200 sq ft depending on whether they are desk operations or regular shops.

Food and Beverage Service

Varies between 4 to 6% of the total floor area of the hotel

- Coffee shop- 15 to 18 sq. ft./ seat
- Specialty Restaurant-18 to 20 sq. ft./ seat
- Formal dining- 20 to 22 sq. ft./ seat
- Cocktail lawn- 15 to 18 sq. ft./ seat

Function Space

Can range from none to substantial depending on market requirement. When meeting space included it varies between 1 to 2 meeting seat/ guestroom, Function space could be of various nature.

- Ball room/Banquet hall- 10 to 12 sq. ft./ seat
- Conference / Meeting room- 10 to 12 sq. ft./ seat
- Board room- 12 to 16 sq. ft./ seat

Pre function area – 25 to 40 % of the meeting room area

Recreational Facility

Can range from none to extensive depending on market requirement

- Swimming pool- 10 -20 sq. ft./ guest room
- Locker/Shower/Toilet Area- 02 sq. ft./ guest room
- Health Club- 02 sq. ft./ guest room
- Greenery required- 1500 sq. ft. lump sum
- Circulation Area- It varies from 15 to 20 % of the total public area (excluding meeting room area as it is already considered under pre function area)

Did you know?

Super Potato is a renowned Japanese interior design firm, famous for its influential work in hotel & hospitality design globally. Their projects include Four Season Dubai, Westin Gurgaon etc.

Check Back Questions:

Q.1 Why Space Allocation of the various facilities is an important aspect of the designing and planning a hotel project

Q.2 How much space should be allocated while planning for a 100 cover Coffee Shop?

2.10 Estimation of construction cost

Cost associated with hospitality facilities varies from type of hotel as well as location of the hotel. Total Cost of a hotel project includes the following:

- Cost of land
- Cost associated with land development
- Building and Construction cost
- Cost of land escaping
- Cost of Building systems such as Heating ventilation, and air conditioning, lighting system, building transportation system, water supply system, safety and security system, waste and garbage management system, energy management system, rainwater harvesting system, property management systems and so on.
- Cost of furniture, fixtures, and equipment
- Cost of interiors
- Cost associated with legal aspects
- Fee of hotel consultants, engineers, interiors, and legal experts etc.
- Working capital & contingencies.

However, actual construction cost will depend on other factors also like type of service, category of hotel, type of target market etc.

Did you know?

The most expensive hotel in India in terms of construction cost is The Leela Palace New Delhi. The overall construction investment was roughly ₹750–900 crore. When land purchase was considered, the project's total cost came to about ₹1,600 crore.

Check Back Questions:

Q.1 List down the factors that are included in the total cost of hotel project.

Q.2 What other elements might influence the overall cost of the hotel?

2.11 Planning for Back of the House: Work flow in back of the house (receiving, garbage and staff movement – lockers, change room, cafeteria and administrative office)

A hotel's Back of House (BOH) planning is essential for smooth operations and employee happiness, which has a direct impact on the visitor experience.

Receiving

- Receiving office-0 .3 to 0.5 sq. ft/guestroom
- Receiving platform- 100 to 250 sq. ft

A Garbage Room

It is required for quantities of garbage, bottles, cans, and cartons, which accumulate between daily removals or longer intervals over the weekends. The typical allotment for the garbage room of 0.75 sq ft per guest room is generally satisfactory. The use of garbage- and trash-disposal equipment will also influence the size of the room.

Hotel Employee facilities

- Locker/change room/ restrooms- 06 to 10 sq. ft/ guestroom
- Cafeteria- 04 sq. ft/ employee

Hotel administration

- Can range between 01 to 02 % of the total floor area of the hotel. It includes the Executive Offices as well as Sales, Accounting Personnel, and any other admin support offices.
- A total of 10 sq. ft./ guest room is allocated for this category.

Hotel administration

• Can range between 01 to 02 % of the total floor area of the hotel. It includes the Executive Offices as well as Sales, Accounting Personnel, and any other admin support offices.

• A total of 10 sq. ft./ guest room is allocated for this category.

Other storage areas, Maintenance and MISCELLANEOUS

• Hotel general storage- 03 to 07 sq. ft./ guest room.

• Meeting room storage- 01 to 1.5 sq. ft./seat OR 10 to 20% of meeting room area.

• Miscellaneous storage (Garbage, empty bottles, cans etc.)- 01 to 1.8 sq. ft./ guest room

• Telephone switch board and equipment- 1.3 to 02 sq. ft./ guest room.

• Computer room (Main server along with battery backup)- 01 to 1.5 sq. ft./ guest room.

• Mechanical, Electrical and Air handling rooms and systems- 13 to 18 sq. ft./ guest room.

• Maintenance workshop- 05 sq. ft./ guest room.

• Security- 0.3 to 0.6 sq. ft./ guest room.

• Circulation- 10% of the total area for support facilities and services.

Area Type	% of Total Area (approx.)	Formula Example (sq.ft.)
Guest rooms (net)	65–75%	100rooms×350sq.ft.=35,000
Public Facilities	10–20%	10,000
Support facilities	15–20%	7,500
Administration	1–2%	1,000
Corridors & circulation	20% of net guest room	7,000
Mechanical rooms	10% of built-up area	5,000
Internal roads/landscape	Site-dependent	N/A

Table: Space Calculation Example (Illustrative for 100-room Hotel)

Check Back Questions:

Q.1 List down the areas need to be considered while planning the back area space calculations.

Q.2 How much room should be set aside for the hotel's laundry when it

2.12 Approximate requirement & estimation of water/ electrical load, gas, ventilation

Approximate requirement & estimation of water will depend on the type of hotel, the services provided, and the number of guests. The following are the most accepted benchmarks and standards as per the CENTRAL GROUND WATER AUTHORITY.

For more information, kindly visit the link

Source:
https://cgwa-noc.gov.in/landingpage/Guidlines/NBC2016WatRequirement.pdf

S. No.	Type of Building	Domestic litres per head/ day	Flushing Litres per head/ day	Total Consumption Litres per head/ day
1	Hotels (up to 3 star) excluding laundry, kitchen, staff and water bodies	120	60	180
2	Hotels (4 star and above) excluding laundry, kitchen, staff and water bodies	260	60	320
3	Restaurants and food court including water requirement for kitchen: a) Restaurants b) Food Court	55	15	70
		25	10	35

Approximate requirement & estimation of electrical load is determined by several variables, including the hotel's size, star rating, amenities for guests, HVAC system, and occupancy pattern.

• Standard Room Average: 3–6 kW connected load per room, including lighting, HVAC, plugs, and basic appliances.

• For a modern hotel with central HVAC and amenities, 4–5 kW per room is typical.

• For luxury hotels, this value can go up to 6–8 kW per room.

Major areas of consumption:

• Air-conditioning: 50–70%

• Lighting: 10–20%

• Kitchen: 10–20%

• Laundry, elevators, pumps, and other

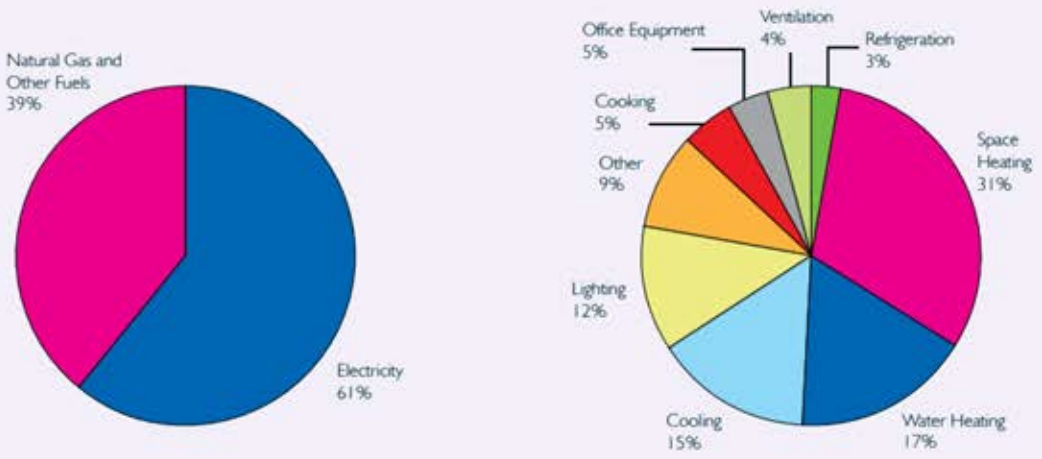


***Figure 2** – Typical energy end use in a hotel*
Source - http://epa.gov/cleanenergy/documents/sector-meeting/4bii_hotelenergy.pdf

Approximate requirement & estimation of gas mainly covering kitchen use, water heating, and laundry.

Most hotels in India use Liquefied Petroleum Gas (LPG) cylinders and PNG (Piped Natural Gas) in urban areas.

Gas Consumption Benchmarks

a. Per Room/Guest Estimate

• Midscale to luxury Indian hotel: **2–5 kg LPG per room per month.**

• Large/luxury hotels with substantial laundry, banquets, and 24/7 hot water: **Up to 4–5 kg LPG per room per month.**

b. Gas use for kitchens & laundry:

• Industry sources indicate commercial kitchens typically require ~0.8–1.2 kg LPG per meal served.

• For a 100-room hotel serving 250 full meals/day: 200–300 kg LPG/month for kitchen alone.

• Laundry/boilers: 2–5 m^3/h PNG for hot water boilers in large properties

Approximate Ventilation Requirement Estimation:

Proper ventilation is important in any environment, but it's even more important in a kitchen setting. Bringing in the right amount of "fresh air" can be the difference between a healthy and unhealthy work environment.

The number of times the entire amount of air in a room is changed every hour is referred to as the Air Changes per Hour (ACH).

Space Type	Air Changes per Hour (ACH)
Guest rooms	4–6 ACH
Kitchens	15–60 ACH
Laundries	10–15 ACH
Restaurants	8–12 ACH
Meeting/Ballrooms	6–20 ACH

The most often used method of measuring airflow is CFM, or cubic feet per minute.

As mentioned above, in Kitchen/ Bakery air needs to be exchanged completely 15 times every hour.

E.g. Find CFM of CCFP kitchen dimensions: L 60ft, W 25ft & H 12ft.

Solution- Volume of CCFP kitchen= 60 X 25 X 12= 18,000 Cubic feet

As per industry standard, Air Changes per Hour (ACH) in kitchen is 15 ACH

i.e. 15 times air change in 01 hour or 60 minutes

01-time air change in 04 minutes

If we want air to be replaced within 04 minutes, then:

18,000 Cubic feet/ 04 minutes = 4,500 Cubic feet per minute (CFM)

Check Back Questions:

Q.1 List down the factors that are included in the total cost of hotel project.

Q.2 What other elements might influence the overall cost of the hotel?

2.13 Green hotel practices/ Certification

Green hotel practices sometimes referred to as sustainable or eco-friendly initiatives are a collection of methods employed by hotels to minimize their influence on the environment, lower expenses, and attract eco-aware tourists.

Key Green Hotel Practices are:

• Energy Efficiency: installation of LED lights, smart HVAC systems, installation of renewal energy, using energy efficient equipment.

• Water conservation: rainwater harvesting, greywater recycling, encouraging guest to reuse towel &linen, installing low water flow faucet, showers etc.

• Integrating energy management into hotel's culture: by energy management training to employee, tracking and reporting energy consumption, by awarding incentive or recognition.

• Eco-Friendly Construction and Operations: utilizing low-embodied energy, sustainable building materials and maximizing natural lighting and ventilation.

• Sustainable Food and Beverage Service: sourcing local and seasonal ingredients, in-house water filtration to reduce bottled water use etc.

• Integrating energy management into hotel's culture: by energy management training to employee, tracking and reporting energy consumption, by awarding incentive or recognition.

Major Green hotel certification followed in India:

• **'Travel for LiFE'** program under Mission LiFE- launched by Ministry of Tourism to bring large-scale behavioural change amongst tourists and tourism businesses, significantly impacting environmental protection and climate action.

For more information, kindly visit the link

https://nidhi.tourism.gov.in/home/page/travel-for-life

RENEWABLE ENERGY

ITC HOTELS

SOLAR CONCENTRATORS

ITC MAURYA has installed the World's First On-site Paraboloid Solar Concentrator to meet it's thermal requirement of steam and hot water

PERFORMANCE ANALYSIS OF LAST THREE YEARS

Sl No	Description	Values	Unit
1	Steam Pressure delivery	6	bar
2	Steam enthalphy at 6 bar(g)	658	kcal/kg
3	Make -up temperature	25	C
4	Make -up enthalphy at 25C	25	kcal/kg
5	Conversion factor from kcal to kWh	861	
6	Conversion from kg steam to kwh	0.77	kg/kwh
7	Total steam production	227660	kg
8	Equalent Power generation	176183	kwh
9	Energy Production	0.634	TJ

RENEWABLE ENERGY

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9	Energy Production	0.634	TJ

Courtesy: ITC hotels Ltd.

• **LEED certification:** offers a framework for healthy, efficient, and cost-effective green buildings, providing environmental and social benefits. It serves as a globally recognized symbol of sustainability leadership, supported by a committed community of organizations and individuals driving market transformation.

• **IGBC Green Resorts rating system:** launched by Indian Green Building Council to address the need of sustainable development in hospitality sector. This rating programme is a tool which enables the designer to apply green concepts and reduce environmental impacts that are measurable.

• **GRIHA (Green Rating for Integrated Habitat Assessment):** rating system It was founded by TERI (The Energy and Resources Institute, New Delhi) with support from MNRE (Ministry of New and Renewable Energy, Government of India) along with a handful of experts in the sustainability of built environment from across the country.

• **Responsible Tourism Society of India (RTSOI) certification:** Formed in 2008, at the directive of the Ministry of Tourism, Govt of India, the founding members of Ecotourism Society of India comprised of 13 widely experienced, eco-sensitive professionals from the Tourism industry, state government departments of tourism and forests, wildlife conservation, NGOs and also Members of Parliament.

• **The Green Key certificate:** is the leading standard for excellence in the field of environmental responsibility and sustainable operation within the tourism industry. In India, the Green Key certificate is being implemented by the Centre for Environment Education (CEE) Ahmedabad.

• **Green Globe sustainable tourism certification:** Sustainable Travel and Tourism certification and auditor. It is an Affiliate Member of UN Tourism.from across the country.

Did you know?

RECOMMENDED LIGHTING LEVELS FOR HOTELS

Hotel Area	Average Foot Candles	Hotel Area	Average Foot Candles
Hallways	10.0	Guest Rooms	20.0
Lobby	10.0	Front Desk	75.0
Dining / Function Rooms	15.0	Kitchen	75.0

Check Back Questions:

Q.1 Enlist 02 key green practises in hotel.

Q.2 Describe 01 Major green hotel certification followed in India.

REVIEW QUESTIONS

Multiple Choice Questions

1. Find the odd one out: Carpet Area/Plinth Area/Super built up Area/ Garbage Area

2. Find the odd one out: Concrete/Steel/Glass/Garden

3. Find the odd one out: Travel for LiFE/ LEED / RTSOI/ HRACC

4. Space allocated for a formal dining area is 10-12 sq. ft. Per seat / 15-18 sq. ft. Per seat/ 20-22 sq. ft. Per seat/ 35-40 22 sq. ft. Per seat.

5. Recommended ACH for a commercial kitchen is 4–6 ACH/ 6-8 ACH/ 10-12 ACH/ 15-60 ACH

Fill in the blanks

1. _____ provides accommodations for vehicles.

2. _____ feasibility evaluates an expert system's technical complexity, including the possibility of carrying out it with different techniques and resources.

3. _____ is the physical wall dividing the interior of a hotel structure from the exterior environment.

4. _____ is used to visually represent the entire electrical distribution network of a hotel.

5. 'Travel for LiFE' program under Mission LiFE- launched by _____.

True or False

1. Carpet area: means the net usable floor area.

2. Three-time estimates considered in PERT.

3. All hotels in India use Liquefied Petroleum Gas (LPG) cylinders.

4. Shortest path in network diagram is critical path.

5. Green hotel certification is mandatory for in India.

Short Answer Type Questions

1. List the essential elements to be included in a feasibility report.

2. Suggest 02 energy saving actions for kitchen and F&B service department.

3. Why proper ventilation is important for any environment?

4. What is the purpose of Green Hotel Certification?

5. Discuss different phases of layout planning

Long Answer Type Questions

1. Discuss the points to be considered for hotel design.
2. List the disadvantage, if too much space allocation done to back of the house areas
3. How hotel signage and sub signage improve guest experiences?
4. Name and describe any 05 types of maps used in hotel construction projects.
5. Explain the design considerations for back area of hotels.

Open Book Questions

1. Calculate the Approximate requirement & estimation of water & electricity for a 200 keys 5-star luxury hotel.
2. Define SLP. Discuss different phases of layout planning with flow diagram.

Activity

1. List 05 LEED Certified hotels in India.
2. Calculate CFM for all kitchen and bakery in your institute.
3. List down environmentally friendly steps which can be followed in your institute.
4. What is the primary purpose of RERA?

Unit-3

Designing and Planning of Rooms Division

Overview

This unit will equip the learners with the ability to effectively design and do the planning of the Rooms Division of the hotel. Hotels are commonly divided into two main divisions based on their operational functions: Rooms Division & Food and Beverage (F&B) Division. The Rooms Division is one of the most critical components of a hotel, responsible for generating the majority of the property's revenue. It directly influences guest satisfaction, operational efficiency, and revenue management of the hotel.

Learning Objectives

S. No.	Sub-Unit	Learning Topics	Key learning objectives/ At the end of this subunit, the learners will be able to:
1	3.1 Introduction	Designing and Planning of Rooms Division	To explain importance of effective designing and planning of Rooms Division in a hotel.
2	3.2 Various types of lobbies, front desk arrangements, according to types of hotel & hotel floor plan	• Types of lobbies o Atrium Lobby o Linear (Rectilinear) Lobby o Zonal Lobby o Centralized Lobby o Open Plan Lobby o Split-Level Lobby o Courtyard-Style Lobby o Double-Height Lobby o Enclosed Lobby • Front desk arrangements o L-shaped o U-shaped: o Straight or Linear o Curved or Circular	1. Define the term hotel lobby and explain its role with respect to hotel. 2. Identify and describe various types of hotel lobbies. 3. Compare and contrast the different types of lobbies in terms of their characteristics. 4. Identify the different front desk arrangements found in different types of hotels. 5. Understand and analyze how front desk arrangements vary based on hotel types.

3	3.3Factors to be considered for ambience & décor (Fixture & fittings, furniture & furnishings, lighting (temperature and lux levels) & color scheme, floor finishes, wall covering)	• Different factors for selecting: o Fixture &Fittings o Furniture & Furnishings o Lighting o Colour scheme o Floor finishes o Wall covering	1. Draw line between Learning objectives and key learning objectives. 2. Identify the Fixture &Fittings 3. Able to distinguish between Furniture & Furnishings 4. Appreciate the importance of lighting. 5. Identify the various types of light and discuss their significance. 6. Explain the role performed by colour scheme in enhancing the guest rooms' appearance. 7. Define the floor finishes and wall coverings. 8. Discuss the importance of floor finishes & wall coverings.
4	3.4 Porch, travel desk, Bell boy desk/ luggage rooms/ security checks points etc	• Porch, Travel desk, Bell desk, Luggage room, Security Check points • Designing characteristics	1. List and explain the role of different front-office areas in the smooth functioning of a hotel. 2. List factors to be adhered while planning & designing these areas
5	3.5Room types: Typical floor plan of Guest rooms and bathrooms, shafts, staircases and features of physically challenged room & washroom	• Floor plan of guest rooms & Bathrooms, shafts & staircases • Features of physically challenged room & washroom	1. Draw the different types of guest rooms' floor plan. 2. Define physically challenged guest and its various types. 3. Enlist different features & facilities of a guest room for a physically challenged guest.
6	3.6 Space management	• Laundry, Control desk, Storages, Pantry, Uniform room • Strategies for space management	1. List the points that may help to manage the space. 2. Appreciate the effective utilization of space.

3.1 INTRODUCTION

The rooms division department of a five-star hotel plays an essential role in providing premium hospitality experiences. It is the main source of income generation for hotel; it includes two main departments responsible for providing accommodation and related guest services. To meet the high expectations of guests, this division's design and layout must strategically combine innovative technology, practical layout, aesthetic appeal, and operational efficiency. Every component, from the lobby to the guest rooms, needs to be thoughtfully designed to complement the target market, brand identity, and operational effectiveness. A well-designed rooms division in facility planning involves effective space planning, accessibility, sustainability, safety rules, technological integration and strategically arranging all important areas such as front desk, guest rooms, and support areas. It helps in maximizing both guest comfort and hotel's operations. The effective designing and planning of rooms division plays a vital role in streamlining services that to be given to guests and simultaneously ensuring staff well-being, with its design reflecting the hotel's brand and current industry trends.

3.2 VARIOUS TYPES OF LOBBIES & FRONT DESK ARRANGEMENTS

LOBBY:

The hotel lobby serves as the first point of contact between guests and the hospitality experience. It significantly impacts the first impression. An effectively designed lobby takes account of things like lighting, furnishings, accessibility, circulation, and spatial design.

Types of lobbies: The architectural design consideration of lobby is influenced by factors such as the hotel's brand identity, target clientele, cultural context, location, and functional requirements. Based on this hotel lobbies are categorized as follows:

1. Atrium Lobby
2. Linear (Rectilinear) Lobby
3. Zonal Lobby
4. Centralized Lobby
5. Open Plan Lobby
6. Split-Level Lobby

Did you know?

According to Guinness Book World Records, the Hyatt Regency San Francisco has the biggest hotel lobby in the world. Its atrium lobby is the size of a 17-story structure, with dimensions of 350 feet long by 160 feet wide by 170 feet high. The lobby is renowned for being spacious and for having a 35-foot sculpture named "Eclipse" in it.

7. Courtyard-Style Lobby
8. Double-Height Lobby
9. Enclosed Lobby

1. Atrium Lobby: A hotel's atrium lobby generally refers to as a grand, multi-story, enclosed space, open central area that is several storeys high and is frequently topped with a wide skylight or glazed (glass) roof. It provides a grand entrance area and frequently establishes the hotel's architectural style. This design allows the natural light to illuminate the hotel's interior. It is a specific type of enclosed lobby that emphasises on light, verticality, and spaciousness. The central open area rises across several stories and is frequently surrounded by rooms and balconies. It is commonly found in luxury hotels and resorts. Example: Le Méridien, New Delhi.

Atrium Lobby

2. Linear (Rectilinear) Lobby: A linear lobby likely refers to a long, narrow lobby space that extends in a straight line, as opposed to a central or open-plan lobby. The layout of this lobby is organized along a straight line, often emphasizing clarity, order, and direct movement through the space. It is generally used in hotels to maximize space and create an efficient flow. It is ideal for both small and large hotels, especially for business hotels and hotels situated in dense urban environments with space limitations.

Linear (Rectilinear) Lobby

3. Zonal Lobby: It is a modern, strategic redesign of traditional hotel lobbies. The zonal lobby separates the space into discrete functional zones, each of which serves a particular guest requirement or activity, rather than providing a single, extensive area for all guests. This concept enhances the guest experience as well as the effectiveness of hotel operations. This idea is a reaction to the hotel lobby's changing function, which has evolved from being merely a place to check-in to becoming a multi-functional space for guests. This concept is a prevalent design trend in hotels across all segments, from budget-friendly to luxury or large chain hotels.

Zonal Lobby

4. Centralized Lobby: In hotels, a central lobby is a large, central space that acts as the main entrance and orienting point for guests. It serves as a hub connecting different areas of the hotel and is usually situated close to the main entrance. With a central reception desk, it typically has a square or circular arrangement. It provides a central area to guests for unwinding, check-in, check-out and socializing. Many traditional grand hotels and large convention hotels utilize a centralized lobby design. Older Hyatt Regency Hotels not only famous for their atriums, these atriums also function as centralized lobbies, with all key functions opening onto the expansive central space.

Centralized lobby

Source:*https://www.travelifemagazine.com/kiroro-tribute-portofolio-hotel-hokkaido/*

5. Open Plan Lobby: An open-plan layout in hotel lobbies is a prominent and increasingly popular modern design approach that moves away from the traditional or compartmentalized reception areas and removes physical barriers (like walls or partitions) to create a spacious and multi-functional environment. Instead of a distinct front desk and separate waiting areas, an open-plan lobby integrates various functions into a fluid, multi-purpose space. This design enhances the sense of space, flow, and sociability, and is especially popular in contemporary hotels. Key features of this type of lobby includes that it uses furniture and lighting to define spaces. It is common in modern chain hotels.

Open Plan Lobby

Source:*https://surl.li/rgmyhj*

6. Split-Level Lobby: A "split-level lobby" in a hotel refers to a lobby space that is designed on multiple levels, connected by a short set of stairs or a ramp. Unlike a traditional, single-floor lobby, a split-level design incorporates slight elevation changes within the same general area, creating distinct zones or experiences. This architectural style is often used to create visual interest, guide traffic flow, and define functional zones within the lobby space. Many modern luxury and boutique hotels utilize this concept.

Split-Level Lobby

7. Courtyard-Style Lobby: A "courtyard-style hotel lobby" is a design concept where the main lobby space of a hotel is built around or directly incorporates an open or covered central courtyard. This courtyard often features landscaping, water elements, seating, and sometimes even F&B outlets, creating a distinctive and often serene atmosphere for guests. Key features of this type of lobby include outdoor elements and central landscaping. It blends indoor-outdoor experience. It is common in Heritage hotels and boutique resorts.

Courtyard Lobby

8. Double-Height Lobby: A "double-height lobby" is an architectural design feature where the main entrance hall or reception area of a building, particularly a hotel, extends vertically through two or more stories, one floor with ceilings extending two or more stories high. Instead of having a ceiling at the standard floor height, the ceiling is raised to the level of the next floor or even higher, creating a dramatically tall and expansive space. It's key features emphasis on vertical space; often includes large artworks or chandeliers. It is common in Luxury hotels and skyscraper hotels.

The Peninsula Hotel Hong Kong Double Heighted Lobby

Source:*https://www.google.com/imgres?imgurl*

9. Enclosed Lobby: An enclosed lobby in a hotel generally refers to a fully indoor, climate-controlled entry and reception area that is separated from the outdoor environment. The layout of such a lobby is compact, fully enclosed area often isolated from other parts of the hotel. Mostly found in contemporary hotels, especially those in urban centers, airports, or regions with diverse climates. Airport hotels & Hotels in regions with extreme temperatures rely on such type of lobby for soundproofing and climate control.

The Leela, Gandhinagar Luxury Hotel in Gujarat

Source:*https://www.google.com/imgres?imgurl*

Check Back Questions:

1. Define Atrium.
2. What is a linear lobby?
3. What do you understand by the term "Courtyard Lobby"?

Fill in the blanks

1. A _____ lobby in a hotel refers to a lobby design where the floor is divided into two or more levels.
2. In _____ lobby, the primary public entrance and reception area serves as the singular, main hub that connects various parts of the hotel.
3. A_____ lobby is a strategic design approach where the lobby space is divided into distinct zones.

Front Desk Arrangements, According to Types of Hotel & Hotel Floor Plan

Front Desk Arrangement by Hotel Type

The front desk, or reception area, is the heart of a hotel's lobby and the first point of contact for guests. Its arrangement and design are crucial for creating a positive first impression, ensuring operational efficiency, and reflecting the hotel's brand and type. The different front desk arrangements include:

Did you know?

The Celeste Hotel in Orlando, a Tribute Portfolio Hotel, has a front desk that is part of a space-themed lobby, with staff referred to as "Mission Control".

1. L-shaped
2. U-shaped:
3. Straight or Linear
4. Curved or Circular

Common Front Desk Shapes and their Characteristics:

1. L-shaped: The L-shape configuration has gained attention for its unique blend of functionality and design versatility. This arrangement offers distinct advantages in optimizing space, enhancing workflow, and fostering a more engaging guest welcome. This design offers a large surface area for multiple tasks and can fit well into corners, maximizing space. Generally found in a boutique hotel, the longer side of the L may face the entrance and serve as the check-in/check-out counter while the shorter side might be used for concierge services or luggage storage assistance.

L-Shaped Front Desk

2. U-shaped: A U-shaped front desk arrangement in hotels is a common and highly functional design choice, particularly for larger lobbies or hotels with high guest traffic. It provides a multi-sided workstation for receptionists, allows for three connected work surfaces; a central front-facing main counter (facing the entrance or toward the guest) and two side extensions extending backward, (encloses the staff working area). It is ideal for busy reception areas with multiple staff; this shape provides even more surface area and storage options. Luxury Hotels often use this design as it blends form with multi-functionality. On the contrary properties having limited space, it optimizes staff efficiency in smaller lobby areas.

U-Shaped Front Desk

3. Straight or Linear: It is one of the most common and traditional designs used in hotel lobbies. It is constituted of a single, continuous straight line front desk, typically facing the main entrance. It serves as the central point for guest check-in/check-out, concierge services, and other guest interactions. This minimalist design takes up less space while still offering sufficient surface area for essential tasks. It is ideal for Business Hotel (feature a professional and modern look) and Budget Hotel (prioritize efficiency and functionality).

Straight or Linear Front Desk

4. Curved or Circular: Curved or uniquely shaped front desk arrangements in hotels are a popular design trend that serves both aesthetic and functional purposes. In hotels it offers a sophisticated and often more welcoming aesthetic compared to traditional straight desks. This design aims to create a sense of flow and softness, making the lobby feels more inviting and less rigid. Popular across high-end or contemporary hotels and boutique hotels use it to create a unique, artistic appearance.

Curved or Circular Front Desk

Check Back Questions:

MULTIPLE CHOICE QUESTIONS (MCQS)

1. Which of the following is not an advantage of U-shaped Front desk?
a) Space Optimization
b) Better Guest Engagement
c) Congestion
d) Efficient workflow

2. _____ front desk minimalist design takes up less space while still offering sufficient surface area for essential tasks.
a) Straight or linear
b) U-shaped
c) L-shaped

d) Curved

3. A _____ Lobby is a modern, strategic redesign of traditional hotel lobby to fulfill specific guest needs and support different activities.

a) Centralized
b) Zonal
c) Atrium
d) Rectangular

3.3 Factors to be considered for Ambience & Decor

- Fixture & Fittings,
- Furniture & Furnishings
- Lighting (temperature & lux levels)
- Colour Scheme
- Floor Finishes
- Wall covering

Hotel designers can create a harmonious and impactful environment through FF&E (Furniture, Fixtures, and Equipment), that not only looks appealing but also profoundly enhances the guest experience and reinforces the hotel's unique brand.

- **Fixtures and Fittings:** These are items that are permanently attached to the building structure and would typically cause damage if removed. They are considered part of the real estate. Examples: showers, faucets, wardrobes, vanity units etc.

Fixtures

Factors to be considered for Fixture & Fittings based on hotels Ambience & Decor

Several key factors must be considered to ensure a cohesive, functional, and aesthetically pleasing environment. Below given is a structured list:

1. Align fixtures and fittings with the hotel's design concept and theme (e.g., modern, classic, luxury, etc). It must incorporate a consistency in colour schemes, materials, and textures.

2. Use high-quality materials for a luxurious look and choose finishes that complement the décor (e.g., brushed gold for luxury).

3. Fixtures should harmonize with wall colours, upholstery, flooring, and artwork.

4. It must integrate with furniture & soft furnishings like: fittings must blend or enhance furniture (e.g., lamps, curtain rods, doorknobs).

5. It must prioritize ergonomic and user-friendly designs for the guest comfort & experience.

6. Use fixtures that maximize space utility (e.g., wall-mounted lighting, built-in wardrobes).

7. It must be sustainable & efficient (e.g., energy-efficient lighting: LED and plumbing fixtures: low-flow taps).

8. Emphasis on technology integration such as smart lighting, climate control etc. It should be integrated seamlessly with décor.

9. Fixtures must comply with the safety standards (e.g., fire safety, electrical) and accessibility standards.

10. Prefer to choose lighting that enhances ambiance and mood (e.g., warm lighting for a cozy feel, cool lighting for modern minimalism).

- **"Furniture" and "Furnishings":** While often used together, "furniture" and "furnishings" refer to distinct but related categories of items used to equip and decorate a space. It generally refers to the items used to make a space or hotel area functional and aesthetically pleasing. Examples of furniture are chairs, tables, beds etc. and examples of furnishings are curtains, drapes, blinds, rugs, carpets, cushions etc.

GuestRoom

Source:
https://tranducfurnishings.com/wp-content/uploads/2021/06/Ritz-Carlton-Grand-Lake-Florida-2v22.jpg

Key factors for furniture and furnishings to be considered for ambience & decor:

While selecting them, several critical factors must be considered to ensure aesthetic cohesion, guest comfort, and brand identity. Following are the key elements to be taken into account:

a. The FF&E should consistently convey the Hotel Concept & Brand like: it is a luxury boutique, budget-friendly, business hotel, or a resort.

b. Pay attention to furniture proportions relative to room size. It should facilitate guests' movement & consider seating arrangements that promote conversation or privacy as needed.

c. Maintain a consistent design aesthetic across all areas of the hotel such as lobby, guest rooms, dining areas, public spaces etc. to reinforce brand identity.

d. Adhere current trends and prioritize durable and timeless designs while ensuring longevity of the furniture and furnishing's investment.

e. Choose furnishing colours that complement lighting and room size.

f. Use materials that enhance the desired atmosphere such as: wood for warmth and velvet for luxury.

g. While selection adhere lighting integration to determine how natural and artificial lighting interact with furnishings (e.g., reflective vs. absorbent surfaces).

h. Use suitable colour and design for proper space optimization such as: light-coloured furniture can make small spaces feel larger.

i. Select furnishings that can withstand frequent use and are easy to clean and maintain, especially in high-traffic areas.

• **Lighting:** Lighting is a crucial element in creating the ambience and decor of hotels, far beyond mere illumination. It significantly impacts the guest experience, influencing mood, operational efficiency, aesthetics, perception of space, and even brand identity. It involves understanding various units and applying recommended levels based on the specific area and its purpose.

Did you know: Chandelier

Many proudly preserve these luxury properties majestic masterpieces, not just as lighting fixtures, but as glowing heirlooms of hospitality history.

Lighting

Key Units of Light Measurement:

• **Lux (Lx):** It is the international standard unit of illuminance. It measures luminous flux (total amount of visible light emitted by a source) per unit area. It's the most common unit used to specify recommended light levels for different spaces.

o 1 lux = 1 lumen per square meter (1 lumen/m2)

• **Kelvin (K):** Kelvin measures the colour temperature of light.

o Warm tones (2700K - 3000K)

o Neutral tones (around 4000K)

o Cool tones (3500K and above, or above 4700K for very cool)

Recommended Lux Levels for Hotel Areas:

It's important to note that these are general guidelines, and actual requirements can vary based on hotel style, design, and specific functions. However, they provide a good starting point:

• Reception Area: 300-500 lux (to make it easily visible and welcoming)
• Lobby Area: 100-300 lux (balancing ambiance with functionality)
• Guest Rooms (general): 100-300 lux (ambient, with task lighting up to 300 lux for reading/working)
• Guest Room Bathrooms: 150-300 lux (with good lighting at the mirror for tasks like grooming)
• Corridors, Staircases and Hallways: 100-200 lux (for safe navigation)
• Restaurants & Dinning areas: 100-200 lux (warm and inviting)
• Bars and Lounges: 50-100 lux (for a relaxed atmosphere)
• Meeting/Conference Rooms: 300-500 lux (for productivity and visibility)
• Swimming Pools and Recreational Areas: 100-200 lux
• Kitchens: 200-300 lux (for safe and efficient food preparation)
• Offices (Hotel Staff): 300-500 lux
• Emergency exits: ≥ 1 lux (minimum required)

Note: These values are based on standards such as CIBSE, IESNA, and ISO 8995-1:2002 (Lighting of Indoor Work Places).

Lightning factors to be considered for ambience & decor

Lighting is not just about illuminating a space; it makes a space feel inviting or stimulating.

Key factors to consider for ambience & decor include:

a. Selection of type of lighting to be used must be based upon the requirement such as ambient lighting (general illumination), task lighting (specific activities) and accent lighting (to draw attention).

b. It should help in creating warm and cool environment depending upon the requirement.

c. Use light intensities to create zones and interest as different areas have different requirement.

d. Depending on the needs of the activity, dimmer switches can be used to change

e. Choose light fixtures that complement the overall decor style of the room.

f. Maximize natural light by keeping windows unobstructed and using sheer curtains.

g. Use smart lighting systems to allow for colour and intensity adjustments, creating dynamic and customizable ambiance.

• **Colour Scheme:** The colour scheme in a hotel is a crucial element of its interior design, significantly impacting guest perception, mood, and overall experience. The "dimensions of colour" in hotels refer to the various ways colour is utilized and perceived to create a specific atmosphere, influence guest emotions, and reinforce brand identity. Creating the perfect ambiance and decor in a hotel heavily relies on a well-thought-out colour scheme.

Colour Scheme

When choosing a colour scheme, several key factors must be considered to create the desired atmosphere, reinforce branding, and ensure guest comfort.

Below mentioned are the key factors to be considered:

a. Depending upon the hotel type colour scheme may be decided such as: luxury hotels often use classic neutrals like white, deep greys, or muted tones like creams, gold or deep blue to convey elegance opulence, sophistication, and timelessness.

b. A hotel can go for a colour scheme that not only looks appealing but also strategically communicates its brand identity. A consistent colour palette reinforces branding.

c. Based on the hotel's target clientele, colours can be used like hotels targeting families may use warm and cheerful colours with friendly tones like soft yellows, oranges, pastels and soft blues to make the environment feel welcoming.

d. Adopt colour scheme considering the cultural and regional influence of colours. Colours convey different meanings across cultures (e.g., red for luck in China, white for mourning in some cultures).

e. It helps in developing perception related to space (e.g., lighter colours to be used to make a room feel larger and darker colours can draw a space in).

f. While considering current trends, hotels are going with biophilic design and using colours with earthy tones and muted colours.

g. Hotels must promote timelessness in addition to ambience and decor in order to prevent periodic, expensive restorations.

• **Floor Finishes:** Floors are an important aspect of hotel interiors as they are both functional and decorative. The guest's first impression of a hotel is largely determined by the appearance of the flooring in the lobby, the guest corridors, restaurants, guestroom, and so on. In order to establish the mood, aesthetic, and practicality of hotel interiors, floor finishes are essential. The flooring selection affects the space's comfort, safety, longevity, and upkeep in addition to its visual appeal. While choosing floor finishes for improving hotel ambiance and décor, the following important considerations should be taken into account:

Floor Finishes

Floor Finishes factors to be considered for ambience & decor of hotels

1. Architect & hotelier (designers and operators) must select floor finishes that optimize functionality, guest experience, and operational efficiency.

2. It must align well with the hotel's brand, theme, aesthetics and desired ambiance.

3. It must have sound absorption properties to minimize noise transfer between rooms and in public areas.

4. The material, colour, and texture have to coordinate with the wall finishes, furnishings, lighting, and other décor components of hotel.

5. To encourage sustainability practices, hotels prefer to use floor finishes made of recycled materials and low Volatile Organic Compounds (VOCs) having long life cycle and matching to their hotel's decor and ambience.

6. Materials that can tolerate continuous foot traffic, such as granite, marble, vitrified tiles, or terrazzo, are needed in high-traffic areas including lobbies, pathways, restaurants, and banquet halls.

7. For comfort and elegance, softer flooring, such as wood or carpet, may be used in guest rooms and suites.

8. Along with ambience and decor also pay attention towards budget for the purchase and installation cost, also consider the long-term maintenance expenses before making a decision. The choice must take the hotel's budget into account.

9. Ideal for meeting spaces, hallways, and guest rooms, carpet, cork, and vinyl flooring can improve acoustic comfort, absorb sound, and lower noise levels.

10. Particularly in rooms and suites, materials like carpet, premium vinyl, or oak flooring provide a cozy and plush underfoot sensation that enhances guest comfort.

• **Wall Coverings:** Wall coverings are an essential part of a hotel's interior design. They have significant effects on the atmosphere, tone, and visual identity of different areas. In keeping with the hotel's theme and operational requirements, the right materials, textures, and finishes are chosen to improve both appearance and practicality. When selecting wall coverings for hotel interiors, the following elements should be taken into account:

Wall Coverings

Wall Coverings factors to be considered for hotel ambience and decor:

1. Wall coverings should match with the hotel's design motif (modern, classic, minimalist, or opulent), target audience, and brand positioning.

2. To produce a unified visual experience, patterns, textures, and colours should blend well with the flooring, furnishings, lighting, and artwork.

3. In conference rooms, corridors, lobbies, meeting rooms, guest rooms, and lounges, materials like sound-absorbing wall coverings, fabric panels, acoustic tiles and wood panels help to reduce noise level and enhance guest comfort.

4. Wall paper options like: Leather, 3D panels, cloth, or stone cladding, gives walls depth and makes them interesting.

5. The hotel's green activities and indoor air quality are supported by the use of eco-certified wallpaper, recycled materials, and non-toxic, low-VOC paints.

6. Signature wall features such as murals or customized patterns can reinforce hotel's brand identity and create a memorable impression.

7. To improve the overall ambiance, wall colour should be balanced with both artificial and natural illumination.

Check Back Questions:

Fill in the blanks

1. In hotel's bathrooms, _____ resistance is a critical safety consideration while selecting floor finishes.
2. _____ is the standard unit for measuring illuminance in hotels, defined as one lumen per square meter.
3. To create a calming atmosphere in guest rooms, hotels typically use_____ colours such as blues and greens, which promote relaxation and better sleep.

3.4 Porch, Travel desk, Bell desk, Luggage room, Security check points etc.

• **Porch**

It is generally referred to a covered area adjoining an entrance to a building and usually having a separate roof. It isn't just an entry point; it serves multiple functions such as waiting area, socializing space, luggage handling and traffic flow.

Porch of a hotel

Designing characteristics of Porch:

• The porch should be proportionate to the size and architectural style of the main building.
• It should seamlessly integrate with the hotel's existing architecture (e.g., colonial, modern, victorian, rustic).
• Its roof can be flat, sloped, or gabled, and provides shelter from sun, rain, and snow.
• Materials like stone pavers, stamped concrete, durable outdoor tiles, etc. can be used.
• Pathways and steps must be well illuminated.
• Use different types of lighting like up-lighting, down-lighting, accent lighting and task lighting to enhance the visual appearance.
• Signage board must clearly display the hotel's name and incorporate the hotel's logo.
• Ensure strong signals of WIFI for guests waiting and must have subtle background music.
• Discreetly placed CCTV cameras for safety and monitoring.

• **Travel Desk**

The travel desk design should align with the hotel's overall aesthetic and level of luxury. It should be able to offer flight/train/bus bookings, car rentals, local tours, event tickets, visa assistance, currency exchange, airport transfers (Pick-up & drop), travel insurance, luggage storage to their primary guests like: leisure travellers, business travellers, families, and international tourists. This will influence the services and overall design.

Travel Desk

Designing Characteristics of Travel Desk:

1. Ideally, it should be easily accessible and visible from the main lobby entrance.
2. The counter height may range from 40-42 inches (102-107 cm).
3. Desk must be durable, easy-to-clean, and aesthetically pleasing.
4. Material used for construction must complement the hotel's existing decor.
5. Clearly label or put signage of "Travel Desk" so guests can easily find it.
6. Designated space for the displays of brochures and maps.
7. Consider digital screens for displaying local attractions, tour packages, weather forecasts, or real-time travel information. This concept is modern, dynamic, and eco-friendly.

- **Bell Desk**

Designing a hotel's bell desk involves creating a functional, efficient, and aesthetically pleasing space that serves as a crucial point of contact for guests. It's often the first and last impression guests have of the hotel, so its design needs to reflect the hotel's brand and commitment to service.

Bell Desk

Designing Characteristics of Bell Desk:

1. It must be placed proximity to entrance and front desk.
2. The height of a bell desk in a hotel typically ranges from 4.3 to 4.6 feet and the width depends on the size of the hotel lobby and the amount of luggage handled.
3. Desk material must be durable, easy-to-clean and that complement the hotel's overall aesthetic (e.g., polished wood, marble, or granite).

4. Ensure convenient and discreet access to back-of-house areas like luggage rooms, staff elevators, and storage areas for bell carts and equipment.
5. Sufficient storage space to store large pieces of luggage and a designated area to park luggage trolleys.
6. Counter should be technology integrated and space for a computer to access the Property Management System (PMS) for guest details, room numbers, and luggage tracking.
7. To reflect the hotel's brand, consider subtle branding elements like a hotel logo or unique design features that tie into the hotel's identity.
8. Bell staff should have a clear view of the hotel's entrance, lobby, and front desk to anticipate guest arrivals and needs.
9. Desk must ensure adequate space for bell staff to move around, access equipment, and perform their duties comfortably.
10. Apart from Luggage Handling procedures, staff must be able to carry out other important operational considerations like: paging system, mail and message handling, newspaper delivery, errand cards and log books.

- **Luggage Room**

It is a place where the luggage of the guest is stored. It is situated in the back of the house area near to the bell desk for an easy access. Designing a hotel luggage room requires a balance of functionality, security and efficient planning. Comprehensive guidelines are mentioned below:

Luggage Room

Designing Characteristics of Luggage room:

1. It should be within the proximity to Lobby/Reception with clear Signage.

2. Space allocation to the luggage room depends on the hotel's capacity, target clientele (e.g., business vs. leisure, group tours), and expected luggage volume.

3. Distinct zones to be created for checked-in luggage, outgoing luggage, oversized items, and potentially long-term storage.

4. Requires carefully designing, if feasible, incorporate one-way flow with a clear entrance and exit to minimize congestion.

5. It must have proper storage solutions and required equipments.

6. Proper installation of surveillance devices covering all angles especially entrance.

7. Ensure clear and unobstructed emergency exits that comply with fire safety regulations.

8. Adequate lighting to retrieve luggage and good ventilation to prevent stale odours and moulds' growth.

• Security check point

Designing a security checkpoint for a hotel requires a balance between ensuring guest safety and providing a welcoming, hospitable environment. It's not about creating a fortress, but rather a seamless and effective security layer.

Security Check

Designing characteristics of Security check point:

1. The main entrance (both guest & employee) should be the prime security checkpoint.
2. Limit the number of entrances and exits to make monitoring more manageable.
3. Secure secondary entrances during off-peak hours.
4. Design the flow of guests and luggage in a clear, intuitive manner to avoid bottlenecks and confusion, while directing them through the security area.
5. Itegrate security measures discreetly into the hotel's design and aesthetics. This could involve using bollards that blend with the architecture, or hidden detection systems.
6. If applicable, create designated drop-off zones for vehicles that allow for potential vehicle inspection away from the main building entrance.
7. Access control systems like key card systems, biometric scanners and electronic locks to reduce the chances of thefts and unpleasant activity.
8. Install high-resolution CCTV cameras in key areas: entrances, lobbies, corridors, parking lots, public spaces, and vulnerable areas.
9. Establish a clear area for baggage screening at the entrance. Use X-ray scanners and metal detectors for effective functioning.
10. Use physical barriers or bollards to control vehicle access and prevent unauthorized entry.
11. Ensure proper lighting in all public areas, including entrances, walkways, and parking lots, to discourage criminal activity and enhance visibility for surveillance.

Check Back Questions:

Multiple Choice Questions (MCQs)

1. Which of these is NOT typically a function of a hotel porch?
a) Luggage handling
b) Guest registration
c) Waiting area
d) Socializing space

2. What is the primary purpose of a hotel's travel desk?
a) Newspaper delivery and tours

b) Luggage tagging
c) Arranging transportation and tours
d) Financial transactions

3. Which security feature is most important for a hotel luggage room?

a) Decorative lighting
b) CCTV surveillance
c) Musical entertainment
d) Fragrance dispensers

3.5 Rooms types: Typical floor plan of guest rooms and bathrooms, shafts, staircases

"Guest room floor configurations" refer to the overall design and arrangement of guest rooms on a particular floor of a hotel. This goes beyond just the layout of an individual room and considers how multiple rooms interact within the floor plan, as well as the types of rooms offered. Therefore, to plan guest rooms on the different floors of a hotel, prioritize layouts that offer comfort, privacy, and convenience to the guest and ensures optimal functionality, operational efficiency and the strategic placement of guest rooms based on the building configuration.

- **Some of the variants in the design layout of guest rooms are as follows:**

1. Double-loaded block: A Double Loaded Corridor Floor Plan features a central corridor running the entire length of the building, with guest rooms located on both sides. Therefore, it is termed as "double loaded." This layout is highly efficient and commonly used in hotels as it allows for maximum room density per floor. Staircases and elevators are strategically placed, either at the ends or in the center, to ensure convenient access and compliance with safety regulations. Vertical shafts for plumbing, HVAC, and electrical services are typically integrated within the design, often placed adjacent to the bathrooms to streamline utility connections and maintenance.

2. Double-loaded T-shaped blocks: A T-shaped floor configuration in hotel design features central corridors in each wing that are double-loaded. This layout allows for an efficient use of both vertical and horizontal circulation, with

staircases, and service shafts typically placed at the intersection of the "T" for centralized access. This layout is capable of being developed into cross; also economical, but requires three staircases.

3. Single-loaded block: A single-loaded block is a building configuration where guest rooms or units are located on only one side of a corridor, with the opposite side left open or facing a courtyard, garden, or open space.

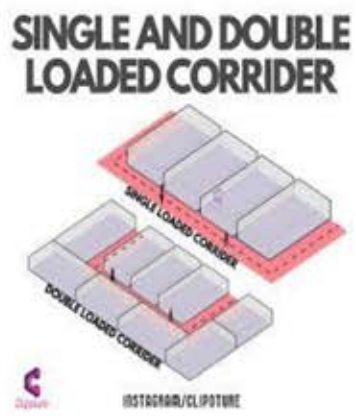
4. Square block: A square block is a hotel building layout where guest rooms are arranged around a central courtyard or atrium, forming a square or near-square shape. This configuration allows for efficient circulation with corridors running along all four sides and can accommodate a large number of rooms.

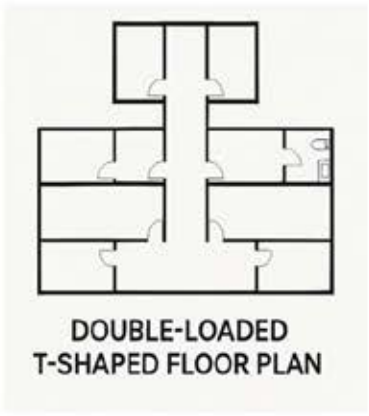
5. Y Plan: The Y Plan is a hotel building configuration with three wings radiating from a central core. This central hub typically houses vertical circulation elements like elevators and stairs, as well as service areas. Each wing can accommodate guest rooms, enabling natural light and ventilation from multiple directions.

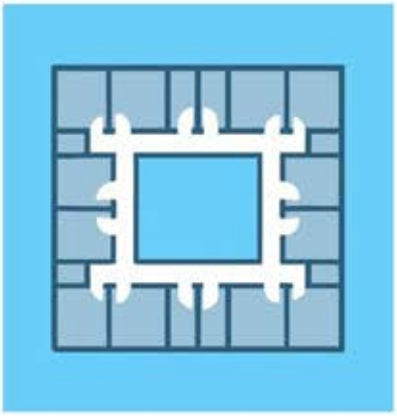
6. Tri-arch Plan: The Tri-arch Plan is a hotel layout featuring three interconnected wings or blocks, often forming a U or E-shaped configuration with a central core for vertical circulation and services.

7. Circular Plan: A Circular Plan is a hotel layout where rooms and facilities are arranged in a circular or radial configuration around a central core. The central area often contains elevators, staircases, lobbies, or service zones, while guest rooms are positioned along the outer ring, offering maximum exposure to natural light and panoramic views. This needs to be handled carefully; avoid uncomfortable, inward-facing rooms; it cannot be expanded.

8. Circular with Central Core: It is a hotel design where guest rooms or functional areas are arranged in a circular layout around a centralized vertical core. This central core typically houses elevators, staircases, service shafts, and sometimes lobbies or utility areas, ensuring efficient vertical movement and centralized services. The outer ring accommodates rooms, offering uniform access to views, natural light, and ventilation. This design has similarities to the first square block. But, in order to prevent awkward space, this too needs to be handled carefully. This arrangement reduces the length of the corridor and is very space efficient.

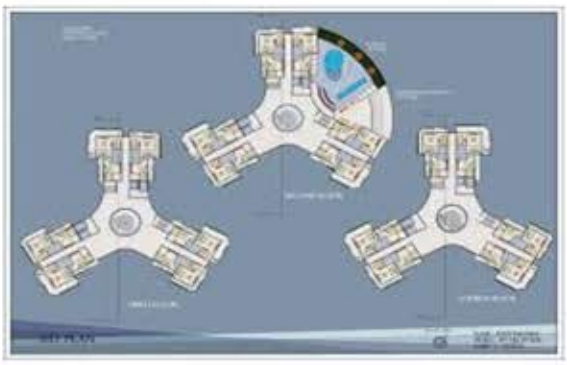






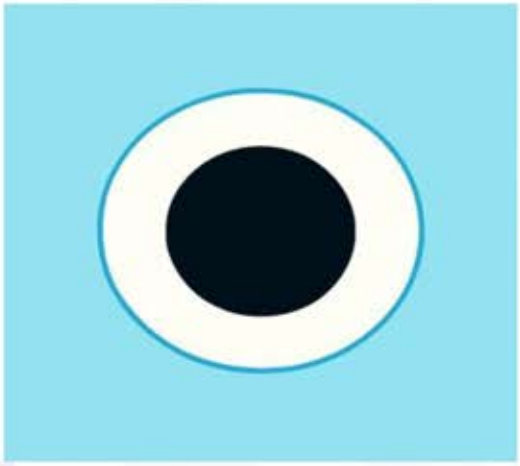
Square block

Y-Plan



Tri-arch Plan

Circular Plan



Circular with Central Core

Floor Plans of Guest Rooms

• **Guest Bathrooms:** Modern hotel bathrooms are designed with clearly defined wet zones (shower, bathtub) and dry zones (vanity area, water closet) to enhance user convenience and reduce water spillage. This zoning ensures the bathroom remains hygienic and safe.

• **Shafts:** A shaft is an enclosed duct or vertical channel that passes through several levels of a building and is mostly used to manage and arrange necessary MEP (mechanical, electrical, and plumbing) services. Proper planning avoids disruption and enhances maintainability.

Types of Shafts:

1. Plumbing Shaft: It handles drainage and water supply lines and is often situated next to restrooms or damp sections of guest rooms. It helps in reducing pipe runs and makes maintenance easier by assisting in the vertical stacking of plumbing lines.

2. Electrical Shaft: Contains conduits, electrical wire, and occasionally cable or internet lines. It ensures the electricity supply to guest rooms and other hotel areas.

3. HVAC Shaft: Contains air conditioning, ventilation, and heating system ducts and support system for temperature control, exhaust, and fresh air intake.

4. Fire/Smoke Shaft: A component of fire safety systems, it directs heat or smoke out of a structure. It improves evacuation and fire safety protocols.

5. Lift Shaft (Elevator): A vertical container in which elevators travel from one floor to another. It has safety features, control wiring, and guide rails.

6. Garbage or Linen Chute Shaft: This vertical shaft is used to dispose of waste or move dirty linen straight to collecting locations.

Staircases:

Staircases are essential for vertical circulation and emergency evacuation.

a) Location
- Should be visible and accessible from all guest areas.
- At least two staircases per floor for fire safety.

b) Design and Dimensions
- Minimum width: 1.2 meters (wider in high-occupancy hotels).
- Tread depth: 300 mm; Riser height: 150 mm.
- Landings at regular intervals for safety.

c) Types of Staircases

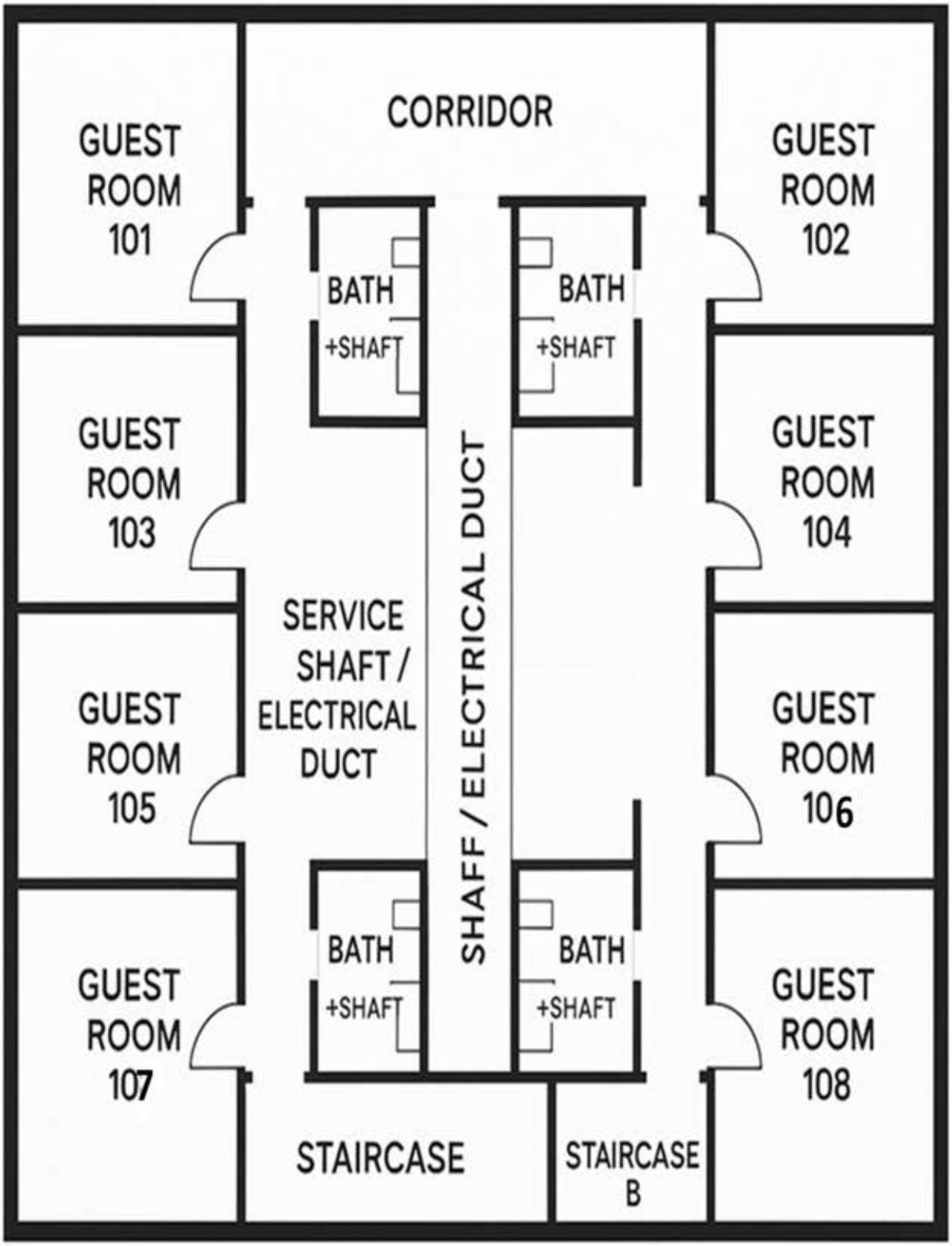
- Main Guest Staircase: Often decorative, near the lobby.
- Service Staircase: For staff, linen, and service access.
- Fire Escape Staircase: Enclosed, fire-resistant, with direct access to the outside.

d) Accessibility

- Provide handrails, non-slip treads, and contrasting step edges.
- Staircases should be supplemented by elevators and ramps for universal accessibility.

e) Compliance

- Must conform to local building codes, fire department guidelines, and disability act or norms as per region (for physically challenged access).



The planning of elevators is to be in accordance with the positioning of the staircase

Floor plan of guest rooms and bathrooms, shafts and staircases

Different types of physically challenged guests in a hotel

When discussing physically challenged guests or the persons with disability in a hotel, it's important to recognize that "physically challenged" is a broad term encompassing a variety of disabilities. In professional hospitality communication, a respectful and inclusive term for physically challenged guests is 'specially-abled' guests, who are also referred as 'Divyangjan'. Hotels strive to provide an inclusive and comfortable experience for all guests, and understanding these different needs is crucial.

The main types of physically challenged guests a hotel might encounter:

1. Guests with Mobility Impairments
2. Guests with Visual Impairments
3. Guests with Hearing Impairments
4. Guests with Speech Impairments
5. Guests with Learning Disabilities/Cognitive Impairments

FACILITIES FOR DIFFERENTLY ABLED GUESTS IN INDIAN AND INTERNATIONAL HOTELS

Features of Guest Room and Washroom for Physically Challenged Guest

Creating a truly accessible guest room for physically challenged guests goes beyond basic compliance and focuses on providing comfort, independence, and a seamless experience. Here's a comprehensive list of facilities and features:

I. General Room Layout and Space:

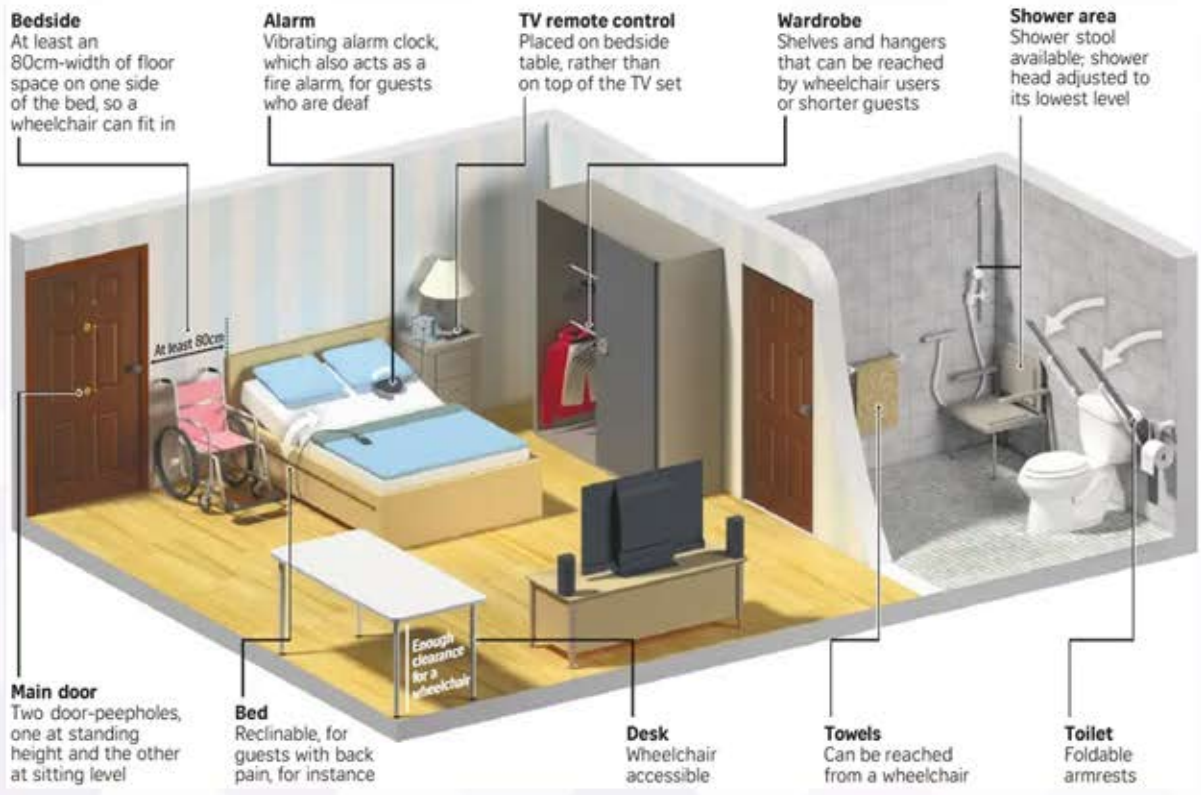
• For ease of access and close proximity to guest elevators, rooms should ideally be on the ground or lower floors.

• To make place for wheelchairs and other mobility aids, doorways in the entrance, bathroom and connecting rooms should be at least 90 cm wide.

• Adequate floor space or turning space (at least 60 inches in diameter) throughout the guest room, particularly in front of furniture, the bed, and in the bathroom, to accommodate wheelchair spins of 180 or 360 degrees.

• The room should have smooth, non-slip flooring (such as hardwood or pile carpet with non-slip backing) for easy mobility and to reduce trips and falls.

• A clear, unhindered route from the room's door to every part of it, including, the amenities, bed and bathroom.



General Guest Room Layout of a Disabled Guest

II. Sleeping Area and Bedroom:

• Bedroom must have low heighted bed; the height typically ranges from 20-23 inches or 46-56 cm from the floor to the top of the mattress. It helps the guest to easily transfer from a wheelchair to bed.
• A firm mattress on the bed can provide better support to guest to transfer from bed to wheelchair.
• Underneath the bed, provide sufficient clearance space to accommodate portable lift equipment if needed.
• On both sides of the bed, ample clear space to be there for wheelchair maneuvering.
• Facility of low-height furniture, a low peephole, and a cabinet with low cloth hangers to be there in a room.
• Cordless telephone facility in the room with direct calling to the operator or front desk.

Bedroom of a Physically Challenged guest

III. Bathroom Facilities:

• The minimum door width of the bathrooms for people with disabilities in hotels must be minimum 90 cm so that the guest wheelchairs (or provided by the hotel) should be easily accessible through the door.

• Suitable fittings, such as a low vanity unit with a low wash basin with wheelchair accessibility, a wall-mounted seat or a folding shower seat (or a

sturdy, portable shower chair) and a hand shower in the shower area are required in the bathroom for guests with disabilities.

A wall-mounted sink with knee clearance underneath for wheelchair users, along with lowered mirrors and accessible faucets.

• A facility of curbless, roll-in shower with an ample space and non-slip flooring in bathroom.

• Grab Bars should be strategically placed around the WC (on the side and behind), in the shower/bathtub area, and near the sink for stability and support.

• A handheld showerhead with an adjustable height.

• Accessible Toilet with a raised toilet seat (17-19 inches or 45-50 cm from the floor) with clear space for lateral transfer.

• Towel racks and other bathroom amenities positioned at an accessible height or lowered heights.

Washroom for a disabled guest

IV. Controls and Communication:

• Accessible controls of light switches, thermostats, and other room controls (e.g., for curtains, television) should be placed at an accessible height (typically 15-48 inches or 30-120 cm from the floor) and be easy to operate (rocker switches, large buttons, remote controls).

• For the hearing impaired guest, the room must have a doorbell that are loud and have blinking facility in the restroom and room.

• Standard audible alarms, potentially with lower frequencies for guests with mild to moderate hearing impairments.

• Guests with hearing impairments, visual alarms for emergencies (fire, smoke), doorbell alerts, and telephone rings with flashing lights to be equipped in the rooms.

Visual Fire Alarms

Flash light Doorbell

V. Furniture and Amenities:

• Desks, tables, and nightstands should be at an appropriate height with knee clearance for wheelchair users.

• Sliding doors are beneficial for the person with a disability; it makes it easier for them to open the doors of the cabinet or wardrobe.

• Lowered hanging rods, shelves, and accessible safes within the closet.

• Amenities like hair dryers, magnifying vanity mirrors, and tea/coffee makers must be kept at a lowered or at an accessible height for guests ease.

• Sufficient lighting in the guest rooms with easily accessible light switches and pathways must be well-lit.

• Important signage in Braille and guest's room number to be placed on the wall next to the door (not on the door itself).

Built-in Wardrobe

VI. Technology and Safety:

• Easy access to Wi-Fi facility to the guest.

• Lowered door peephole for wheelchair users.

• Instead of knobs, lever-style door handles to be used for the doors

• Light door with magnetic door stoppers to prevent them from swinging or help in closing.

Door with Lowered peephole

VII. Public area:

• At the entrance ramps must be provided and the minimum door width should be one meter for the easy access of wheel chair.

• All public areas should provide ramps with anti-slip floor facility.

• Free accessibility in all public areas, and to at least one restaurant in 5 star and 5 star deluxe hotel.

Ramp facility at hotel entrance

VIII. Public Restrooms:

• All star category hotels should have a public washroom for differently abled guests (unisex) with minimum door width of 90 cm that allows easy accessibility of wheel chair (made available by the hotel).

• Low height urinal facility with grab bars to be provided.

Washroom for disabled guest in Public area

IX. Staff Training and Services:

• Training should be imparted to Staff to deal with guest having disability.

• Train staff with disability awareness, etiquette, and how to provide assistance to guests with various needs respectfully and effectively.

• Staff should be equipped with the information about accessible transportation options and local services available for guests with disabilities.

Hotel Staff assisting disabled guest

Check Back Questions:

Fill in the blanks

1. _____ is the most common hotel floor configuration where guest rooms are arranged on both sides of a central corridor for maximum efficiency.

2. For wheelchair-accessible guest rooms, doorways must have a minimum clearance width of _____ to allow easy passage.

3. _____ are vertical spaces that house service lines such as plumbing, electrical conduits, HVAC, and drainage.

3.6 Space management in hotels with respect to Laundry, Control desk, Stores, Pantry and Uniform room

Space management is critical in hotels to ensure efficient operations, minimize costs, and enhance both guest and staff experiences. Properly managing the spaces used for laundry, control desk, store, and uniform room is essential for smooth operations. Each of these areas plays a significant role in the overall space management. It can impact staff productivity, guest experience, and even operational costs.

1. Laundry

Laundry is a vital back-of-the-house operation in hotels. It directly supports guest satisfaction and overall hygiene standards. The hotel laundry handles cleaning, drying, pressing, and delivery of all types of linen, including guest room linen, staff uniforms, and restaurant linen. Large hotels usually have an in-house laundry, while smaller hotels may outsource it. Effective space management in hotel laundry operations is crucial for efficiency, cost-effectiveness, and maintaining high standards of cleanliness. A well-planned layout minimizes movement and maximizes productivity. The goal is to create a logical flow from soiled linen intake to clean linen storage and distribution.

Laundry of a Hotel

Strategies for space management:

• Linear or U-shaped layouts are popular configurations that are used to arrange equipment in a sequential order for: sorting, washing, drying, finishing (ironing, folding) and storing. It helps in streamlining the process and saving the time

• Choosing the right equipment is paramount to space optimization and efficiency.

• Stackable units can be used for places with space constraint to increase the efficiency. They allow a hotel to double its capacity without increasing the room's footprint.

• Multi-functional machines such as washer-dryer combination units can save space. However, their capacity might be a limiting factor for larger operations.

• Depending upon the hotel's size, occupancy rates, and laundry volume, choose machine of appropriate size, number and capacity.

• Maximizing vertical space utilization for making laundry room more spacious and organized.

• Wall-mounted shelving and racks to be used for storing detergents, cleaning supplies, and other essentials.

• Pull-out/folding stations or ironing boards that can be tucked away in walls when not in use provides valuable work surfaces without occupying permanent floor space.

• Use of labelled bins and mobile carts, to keeps the floor clear and promotes a smooth workflow.

• One important consideration in space management is whether to handle laundry inside or externally. Although it takes up a lot of space and money up front, an on-premise laundry (OPL) gives more control over the quality and availability of linens and is frequently less expensive over time.

2. Housekeeping Control Desk

The control desk is the nerve center of housekeeping operations. It requires an efficient space for communication, record-keeping, and coordination. Effective space management in this area is crucial for ensuring smooth communication, streamlined processes, and a productive work environment.

Housekeeping control desk

Strategies for space management:

• The control desk should be strategically located near the Executive Housekeeper's office and easily accessible by all housekeeping staff. Its central position allows for seamless communication and coordination.

• The arrangement of equipment, files, and other items should be logical and intuitive; minimizing unnecessary movement and time wasted searching for information.

• The process of de-cluttering and sorting to be adhered on regular basis. Discard unnecessary items and ensure that the space is not cluttered with outdated documents or unused equipment.

• Modern hotels prefer to be technology integrated, to administer staff

assignments, maintenance requests and room status; hotels are using software and mobile applications. It is conserving space and decreases the demand for paper documentation. Space being occupied earlier by the computer can now be used for some other tasks.

3. Stores (Storeroom)

Storeroom is a very important area in a hotel. It stores different items ranging from guest supplies, cleaning agents, linens, extra equipment, to food and beverage items of a hotel. Effective space management guarantees easy access, cuts down on waste, and enhances hotel operations as a whole.

Store

Strategies for space management:

• Allocate space and design to store only after calculating the needs and requirements. Such as assess the types and quantities of items to be stored (e.g., linens, cleaning supplies, F&B dry goods, maintenance tools, spare parts, etc.).

• Organize the space into logical zones based on item categories for smooth flow.

• To increase space efficiency use vertical space with high shelving, and employ mobile storage units or bins for easy access.

• Store must have sufficient shelves and racks for the proper space utilization.

• Install flexible or adjustable shelving to store various items sizes and quantities.

• Make use of vertical space for storing items.

• Mobile Shelving Systems can be used for large or less frequently accessed items. It considers compact storage systems on rails to eliminate wasted aisle space.

• Install tall shelving units that reach the ceiling for maximizing the vertical space management. It can be accessed by using step stools or ladder.

• Neither under stock nor over stock the items. Track supplies in real-time and minimize waste by implementing a robust inventory management system. It helps in space management and keep informing about space needs.

• Technology integration and use of RFID technology helps to track the supplies and maintain inventory accordingly.

4. Pantry

A hotel's housekeeping staff keeps cleaning materials, new linens, guest amenities, and equipment in a housekeeping pantry, a special storage space on each guest level. It provides linen to housekeeping staff for day-to-day activities, guaranteeing prompt and effective guest room service. Effective space management in a hotel pantry is critical for a number of reasons, including ensuring efficient operations, timely guest service, and optimal use of resources. A well-organized pantry ensures that staff can quickly access what they need, and maintains a clean, hygienic environment.

Housekeeping pantry

Strategies for space management:

• Pantries must be strategically located. It is preferred to be typically placed near service elevators or central areas for easy supply movement and reduced staff travel time.

• Efficient space utilization practices can be used such as vertical shelving, baskets, and make use of even wall-mounted storage system to store items and manage limited space in an effective way.

• Sort the pantry into distinct zones to keep the items according to the type and its purpose. Establish distinct areas for different products. It will help the staff to find products more easily and the workflow is streamlined with proper utilization of space.

• The pantry layout should be designed to minimize staff movement. A "work triangle" concept, similar to residential kitchens, can be adapted to place high-traffic items and workstations in close proximity.

• Maximize the utilization of vertical space management with tall shelving units. With tall shelf units, it becomes possible to store more products without increasing the pantry's physical footprint by using its entire height.

• Changing the depth of pantry shelves can significantly improve space management in housekeeping. For storing single rows of supplies, such as cleaning sprays, small bottles etc, shallower shelves (6–8 inches) are ideal as they prevent items from getting lost at the back. Larger housekeeping equipment, bulk chemicals, or linen supplies can be accommodated on deeper shelves.

• Invest in making modular and adjustable shelves. Shelves that have height adjustment capabilities, because of its adaptability, it will become convenient to store things of different sizes, such as from big bags to tiny items.

• Use of storage baskets or pull-out shelves is revolutionary for deeper storage. It helps to trace items easily without having to relocate anything in the front; it makes it simple to access stuff at the back.

• Hotels frequently need to store a large amount of products. Nowadays, mobile racking systems are providing significant solution to save space by eradicating wasted aisle space. This process helps staff to build an aisle as and when required to store the things.

• Give careful consideration to the pantry’s door back. Use space “Over-the-Door

Organizers". Smaller, lighter things like tissue papers, TCM (tea, coffee maker) supply sachets and other items can be stored in over-the-door racks or organizers.

5. Uniform Room

• The uniform room of a hotel is responsible for issuing, collecting, and maintaining staff uniforms of the hotel and it plays a vital role in well groomed presentation of the staff and building their morale. An efficient space management in the hotel's uniform room ensures in the smooth uniform handling, employee productivity, and asset control.

Uniform Room

Strategies for space management:

• On average, the hotel recommends an allocation of space for uniform room between 4–6 square feet per guest room, depending on the volume of uniform inventory and soiled linens or uniforms are stored.

• Space must be allocated depending on the number of staff, uniform types, and frequency of uniform exchange.

• Equipments like racks, mobile trolleys, hangers, telephones and computer system must be kept in the allocated or designated space.

• Sufficient hanging space for uniforms and use of mobile uniform stands can also be beneficial.

• Installation of shelves and racks for stacking uniforms.

• Use tall shelf units to make the finest use of the vertical space. By using the maximum height, more items can be stored without increasing the uniform room's physical footprint by using its entire height.

• Space can be managed by placing hampers or boxes for temporary storage of soiled uniforms before laundry dispatch after that it can be removed.

• The uniform room can be situated in the basement or back-of-house area for convenience and to expedite the issue and collection process.

• It should be situated close to staff lockers, staff entrances, and the laundry.

Check Back Questions:

Fill in the blanks

1. The _____ of a hotel is responsible for issuing, collecting, and maintaining staff uniforms to the employees of the hotel

2. _____ is the recommended laundry room design principle that organizes workstations from soiled linen collection to clean storage to minimize handling and movement.

3. The uniform room should include mobile _____ to provide flexible storage solutions that can adapt to changing uniform inventory needs

LET US SUM UP:

A hotel's rooms division serves as its operational core, handling all of the important guest service aspects from check-in to check-out. To provide flawless guest experiences, its layout and design must ensure functionality, aesthetic coherence, and effective use of available space. The lobby, which is at the heart of this section, greatly affects circulation and first impressions with its layout and different front desk configurations. Carefully chosen atmosphere and décor, such as the ideal arrangement of furniture, fixtures, flooring, lighting, and colour schemes, are key contributors to enhance guests' comfort. Supporting elements like the porch, travel desk, bell desk, luggage room, and security checkpoints are also integral for smooth operations. Efficient planning of back-of-house areas ensures operational efficiency and staff productivity. Additionally, guest room floor plans must be ergonomically designed with proper inclusion of bathrooms, shafts, and staircases, adhering to architectural norms. Overall, Rooms Division planning is a holistic process that integrates functional design with brand identity and guest-centric hospitality.

REVIEW QUESTIONS

Multiple Choice Questions

1. Why should uniform rooms have separate counters for issue and return?

a) To reduce staff movement
b) To save cost of manpower
c) To avoid congestion and confusion
d) To reduce laundry cost

2. Why should housekeeping pantries be located strategically on guest floors?

a) To save energy consumption
b) To minimize time and effort of attendants
c) To improve interior decoration
d) To reduce cost of cleaning agents

3. Why should storerooms be designed with proper ventilation?

a) To enhance the aesthetic appeal
b) To prevent dampness, and bad odors
c) To save space
d) To improve lighting

4. Which furniture design is best suited for uniform rooms?

a) Heavy wooden tables
b) Movable counters and labeled racks
c) Decorative cabinets
d) Upholstered sofas

5. The housekeeping control desk should ideally be located.

a) At the far end of the hotel
b) Centrally, near EHKs office
c) Inside the general manager's office
d) In the basement near the laundry

True or False

1. Thoughtful artwork does not enhance the aesthetic appeal of a hotel.

2. Furnishings include movable items like chairs and tables, while furniture refers to decorative accessories like curtains and rugs.

3. The uniform room should be located near guest areas for easy access.

4. Vertical space utilization is recommended for storage in hotel back-of-house areas.

5. A travel desk should be located in a secluded area of the hotel to ensure privacy.

Fill in the blanks

1. _____ design is essential to minimize noise from the lobby and ensure privacy at the desk.

2. _____ are permanently attached to the building structure and would cause damage if removed, such as built-in wardrobes or plumbing systems.

3. _____ measures the colour temperature of light.

4. Floor finishes must have ____ absorption properties to minimize noise transfer between rooms and in public areas.

5. _____ is a place where the luggage of the guest is stored.

Short Answer Type Questions

1. Enlist any two disadvantages of a Courtyard Lobby in Hotels.

2. List three key design considerations for a hotel porch.

3. Write any two benefits of mobile shelving systems in hotel storerooms.

4. List any four key design elements to be considered while planning a hotel porch.

5. How task lighting is different from accent lighting?

Long Answer Type Questions

1. Explain the importance of workflow optimization in hotel laundry operations.

2. Briefly explain the strategic placement of front desk in the Lobby.

3. Illustrate the space management strategies to be adopted in the uniform room of a five star hotel for the proper utilization of the space.

4. Explain the importance of technology integration at the bell desk counter of a five star hotel.

5. How Property Management System (PMS) contributes to efficient guest service and luggage management at the bell desk?

Activity Questions

1. Analysis Task: Create a checklist of 10 space management considerations for setting up a new uniform room in a 300-room hotel.

2. Design Task: Sketch a lobby layout for a boutique hotel, labelling the types of lighting (ambient/task/accent) and justifying your choices.

Application Based Questions

Scenario: A new 200-room business hotel is being built in an urban center with limited space. The owners want a lobby that maximizes efficiency while creating a welcoming atmosphere for corporate guests.

Question: Propose a comprehensive lobby design that includes:

- The most suitable lobby type and why it is suitable.
- Optimal front desk arrangement.

Open Book Questions:

1) Explain the key design characteristics of a hotel security checkpoint. How can hotels ensure guest safety while maintaining a welcoming atmosphere, and what technologies and strategies can be integrated to enhance the security without compromising aesthetics?

2) Discuss the concept of an open-plan lobby in modern hotels. How does this design differ from traditional lobby layouts, and what are its key features and advantages in enhancing guest experience and spatial functionality?

Unit-4

Designing and Planning of Food & Beverage Division

Overview

This unit will equip the learners with the ability to analyse various design considerations and layout plans for different F & B outlets. They shall be able to determine the space & equipment requirements for different F & B outlets as well. The learners shall be able to appreciate the need of budgeting & forecasting while planning for F & B facility. The unit will also equip them about the knowledge of Ambience and Décor of an F &B outlet. The learners shall also gather information about planning of special spaces and various support services while designing the F & B division.

Learning Objectives

S. No.	Sub-Unit	Learning Topics	Key learning objectives/ At the end of this subunit, the learners will be able to:
1	4.2 Layout & Design considerations for F & B Outlets (Restaurant, Bar, In Room Dining, Banquet, QSR)	• Definition of Design • Definition of Layout • Importance of Design considerations & layout in facility planning. • Layout & Design considerations for various outlets.	1. Define Design considerations 2. Define Layout planning 3. Appreciate the importance of Design considerations & Layout planning 4. Distinguish between and analyse the key-factors that are considered while planning different F & B outlets.
2	4.3 Space & Equipment requirement for F & B Outlets	• Variables for calculating space requirements • Space calculation using a module • Categories of equipment	1. List down the variables to be measured while finalising space requirements 2. Draw & calculate space using a module setup example 3. Categorise various F & B equipment to make a comprehensive list

		• Concept of Flow in facility planning	4. Appreciate the role of Flow patterns in department's operations
3	4.4 Developing specifications for various restaurant equipment	• Use of specifications in restaurant business • Process of developing equipment specifications	1. Recognise the reasons for creating accurate specifications 2. Create equipment specific specifications sheet
4	4.5 Budgeting & forecasting	• Role of budgeting & forecasting • Purpose of budgeting & forecasting • Structured process of budgeting & forecasting	1. Define budgeting & forecasting 2. Identify the need for budgeting & forecasting 3. Explain the step by step process of budgeting & forecasting
5	4.6 Ambience & Décor	• Perceptions of atmosphere • Components affecting ambience & décor -Lighting & Colour Scheme -Floor Finish -Wall Covering	1. Comprehend about outlet specific atmospheres 2. Summarise the various factors affecting the atmosphere in dining space 3. Identify various lights, floor finishes, wall covering 4. Comprehend about and appreciate the impact of different lights, colours, floor finishes & wall covering in overall ambience & décor
6	4.7 Planning the Special Spaces	• Planning considerations for incorporating special spaces: -Smoking Zones -DJ booth -Bar -Buffets	1. Identify the specific needs to plan the special spaces 2. Comply with set-up specific considerations while establishing Special Spaces
7	4.8 Planning of various support services	• Specific needs for planning support services:	1. Identify the specific needs to plan the support services

		-Pantry -Back Area -Staff Facilities	2. Comply with set-up specific considerations while designing support services

1.1 INTODUCTION

The designing and planning of Food & Beverage division revolves around defining guest experiences, operational efficiency and profitability. The facility planning is considered to be successful when the designed F & B outlets have a fine balance between functionality, aesthetics and sustainability.

The planning process begins with the understanding of positioning, whether the outlet is going to be a part of hotel operations or it's going to be a standalone business; and the type of F & B service operation being chosen. Like a restaurant, café, bar, in-room-dining, banquet, QSR, drive-through etc. Each format has its unique features and design demands in terms of spatial allocation, flow of work in production & service area and guest interaction. The use of technology and the continuous up-gradation patterns have transformed traditional strategies; the emphasis has shifted towards the need for adaptability and innovation. Smart equipment, automation, POS & order management systems, contactless technologies, data driven designs and enhanced guest experience through technology are a few of the examples of such development.

The aspects related to space zoning, circulation patterns and integration of operations with regard to number of equipment depending on the type of outlet is another thing which has to be synchronised well before putting things into physical reality. Developing various equipment specifications as per the need of

the business sets a solid foundation for the facility planning process. By putting sincere efforts into budgeting & forecasting for the business, the management proceeds towards sustainability of the project.

The coordination with architects, interior designers and operational teams is a must to ensure that the design choices are in accordance with brand identity and service concept. There may be a need for special spaces like – DJ booth, smoking zones etc. and also the need to plan for various support services like – back area & other staff facilities. Real-industry examples, case studies and expert opinions are helpful in providing with a comprehensive understanding of how thoughtful facility planning leads to guest satisfaction, employee productivity and overall sustainability-success of the F & B division.

Check Back Questions:

1. What are the three main motives behind designing and planning of F & B division?
2. How does technological advancement affect the design & layout of F & B outlets?

4.2 Layout & Design considerations for F & B Outlets

The terms 'Design' and 'Layout' need to be understood in their true sense before we proceed to understand the considerations of design and layout while planning for F&B outlets of different nature and scale.

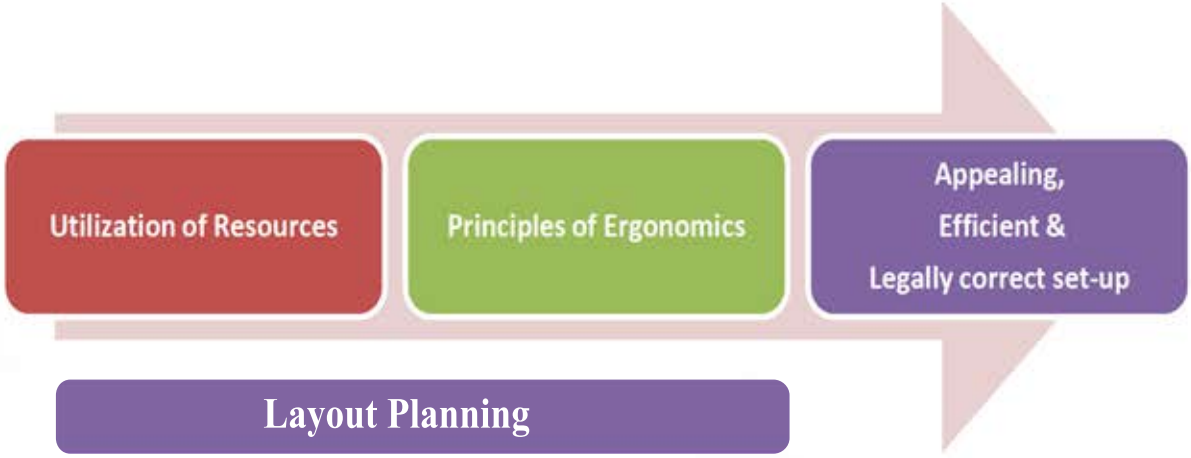
'Design' is the broad function which starts from the conceptualization of a foodservice facility project and takes into account all the functions that are necessary to develop the concept into a structural and operational reality.

Some of the design functions are being listed here:

'Layout'is the function of planning process which is limited to the arrangement of the physical facilities for the foodservice operation. The layout dictates the operational effiiency. While planning the layout for a foodservice facility usually 60% area is allotted for service operations and 40% is given to the food production section, this may vary in the ratio of 65 : 35 and sometimes can go to 70 : 30 also, depending upon the type of operation being chosen. The layout of kitchen shall be discussed in a separate chapter. From the food & beverage service point of view, the layout planning should be aiming for the operational efficiency.

The layout should be such that it ensures the optimum utilization of resources – of space, of equipment and of labour. The flow of People and Products should be in complete harmony with the comfort and safety standards and also with the theme of the facility. While being appealing to the customers, the layout should also adhere to the legal requirements and also be incorporating energy-efficienct concepts.

Finally, technology integration – such as POS systems, digital displays, smart & automated machines, surveillance etc. can greatly influence layout decisions. The objective is to create a place that not only symbolizes the spirit of the brand but also stimulates staff productivity and ensures a remarkable client experience.



Layout & Design considerations:

With intent to ensure profitability and maximum return on investment; various aspects are attended while finalising the design and layout of an outlet. A list of such guidelines is being given here:

1. The first step is to conclude upon the type of concept and service style being chosen for the restaurant; whether it is a Themed restaurant, Speciality restaurant, Fine-dine, Ethnic restaurant, Coffee shop or a Grill room etc. This gives an idea and information about the number of guests to be catered in the available area in a certain amount of time. The service style directly influences layout decisions. For instance, fine dining necessitates more spacious distance between tables and distinct service areas for privacy and ambiance, whereas quick-service restaurants need a compact, functional structure for high turnover.

2. A square table of 3ft is good for seating four people whereas a round table of 4ft diameter seats six people comfortably, a rectangular table of 2.5 ft x 5ft can seat six people. The placement of tables may be in a diagonal or rectangular pattern depending on the need. Drop leaf tables (for example: a 3ft square table opens to a 52 inches round) find their utility in Banquet and IRD functions. Bars also have a large bar-counter alongside the other table-setup in the outlet.

3. The number, placement and size/shape of side-stations depend on the type of establishment and the number of covers to be catered by each station. This is an integral part of the layout planning so as to ensure a smooth flow for the employees serving the food & beverage material.

4. The design and layout has to be in complete synchronization with the Menu being offered at the facility. It gives us an idea about the clientele that is to be catered to. The nature of the menu influences how guests interact with the dining space. For example, a fine dining menu with multi-course meals may require larger tables, wider spacing for privacy, and more formal seating. Some specific speciality menus may require special service equipment to be ready at the service-stations across the dining area, this need to be considered beforehand.

In hotel operations, every extra second saved in service can increase table turnover and revenue. This is why the F&B layout is often called the 'Silent Salesman' of the restaurant.

5. The layout is also dependent upon the space & symmetry available for the FOH (Front of the House) of a restaurant. A cuisine-speciality restaurant with a live-kitchen concept having open-air seating near small golf-course of a hotel shall have different style of layout setting as compared to a coffee shop situated on the ground floor right after the lobby.

6. The BOH (Back of the House) areas vary in terms of their size and utility depending upon the type of restaurant. Other than the kitchen, there are areas like – storage, staff areas, and dishwashing stations. The space allocation to these sections and the safety, hygiene and other regulations has an overall impact on the design and layout of the facility.

7. The QSR (Quick Service Restaurants) and similar setups may also have a concept of MOH (Middle of the House). This set-up may be needed as a routing area in food delivery business, or a large dispensing section for an outlet that runs multiple options like – dine-in, take-away or drive-through. In such a case, the overall layout is planned by keeping the MOH as a centre and high traffic point of the outlet.

8. Ergonomics for the workstations that can significantly enhance comfort, reduce the risk of injury, and improve productivity while working play an important role in the layout design. For instance, in the Bar area and at the Bar-counter bartender's workspace should follow the 'speed rail' or 'cockpit' design, keeping all tools, glassware, and ingredients within easy reach.

9. There are certain service areas in the F & B division which require a 'Shifting' type of layout that may be adjusted as per the need of the function being carried out. One such example is Banquet, where the use of partitions in a big hall, movable furniture and food counters and other temporary structures depending on the Banqueting-event are a regular feature. The layout planning of such area requires ample amount of focus on the utilization and design of the available space in such a manner that it proves to be modification-friendly as and when required.

10. IRD (In Room Dining) section of F&B division that does not have direct customer footfall but is strategically very important in completing the overall operational structure of the department in a hotel as it is responsible for serving food directly to the guest rooms. The layout planning of IRD mainly consists of two factors – strategic location in the hotel (ideally between the kitchen and guest room corridors, to minimize delivery time) and storage-friendly design (as a number of trolleys and other service equipment are a key part of operations). A satellite pantry or small finishing kitchen is often integrated within the In-Room Dining section; it is used to plate food, reheat items, prepare beverages, and check order accuracy before dispatch.

11. The hours of operations also play an important role in the overall design and layout of the facility. The service area needs to be planned in such a manner that it can be daily readied-up (cleaning, maintenance etc.) in the available time between the operating hours.

12. Safety measures are adhered to with precise guidelines and requirements. Emergency exit routes, fire safety guidelines etc. are planned and ensured at the very beginning of the project so as to achieve an operations friendly and safe layout of the facility.

13. The facility should be planned in a manner that there is barrier free environment for the specially-able guests. The comfort of the elderly and the children must also be incorporated to the maximum intent possible.

14. Energy-efficiency is another aspect that runs parallel to the planning of safety in the layout and design. For instance, the use of induction based buffets and live-cooking counters (in place of traditional buffet-fuel and LPG) contribute to the safety and energy efficiency in the service area.

15. The F & B areas are high revenue generating sections for the hotel and the operational reputation of the department is always under great scrutiny and stress; hence, the overall set-up, design and layout of the facility should be such that employee supervision and other management tasks are made simple.

Check Back Questions:

Fill in the blanks:

1. The study of people's efficiency in working environment is known as _____.

2. _____ refers to the broad function of developing the entire foodservice facility.

3. Layout deals with the arrangement of _____ _____ for the F & B service operation.

4.3 Space & Equipment requirement for F & B Outlets

Just like the other layout & design considerations, the space requirement is also highly dependent upon the type of outlet, theme, the menu, service-style, budgeted sales and estimated number of covers to be catered in a certain amount of time. Certain variables considered for calculating the space requirement for dining area are given as under:

- Types of seating
  - o Tables and chairs
  - o Counters and counter-tables
  - o Combinations
- Table sizes and Table shapes required
- Pattern of arranging the tables
- Aisle space desired
- Number of service stations required

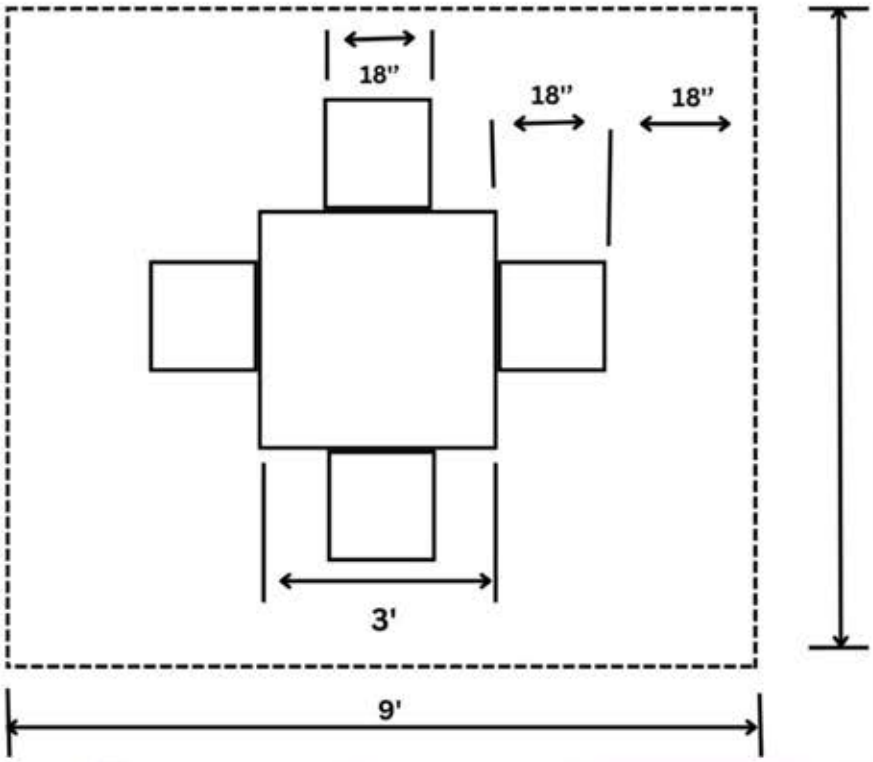
Some of the general guidelines for space (seating and service) allocation in various types of dining spaces are as under:

Type of Foodservice Outlet	Space allotment per Cover
Fine-dine	18 square feet
Restaurant	14 square feet
Coffee shop	12 square feet
Bar	8 square feet
Banquet	10 square feet
Cocktail parties, cafeteria	6 square feet

It is also suggested that the minimum aisle space for customer access be kept as 18 inches and service aisle be kept as 36 inches. Combined service & access aisle may go up to 54 inches depending upon the type of foodservice area.

Let's understand the space calculation with an example of a dining space that consists of square tables with four chairs each laid out in a rectangular pattern setup. We will calculate the size of a module depending upon the given choices:

1. Table – square of 36 x 36 inches, for four people
2. Seating space – 18 inches (occupied position)
3. Service & access aisle – 36 inches combined
4. Table arrangement – rectangular pattern



The module size for this example is 9 ft x 9 ft square which is 81 square feet area for four persons. If this module is to be used for a dining room with 100 seats, the total area required would be 2025 square feet. The space per seat gets reduced when a diagonal pattern of setting the tables is used instead of rectangular pattern; dining space can be set in less than 1750 ft2 for 100 seats of the same size. Similar modules for the other sizes and types of seating arrangements can also be developed.

There may be a need of various types of equipment in the dining area and the overall quantities and variety is always as per the design factors established in the

planning stage of the establishment. Other than the seating facilities for the guests; the equipment requirement may come under the categories of:

- Food Holding and Service Equipment
  - o Chafing dishes, holding cabinets, plate warmers, soup tureens etc.
- Service Ware
  - o Trays, cutlery, crockery, service utensils, covers etc.
- Beverage Service Equipment
  - o Coffee machines, juice dispensers, bar service equipment, kettles etc.
- Support Equipment
  - o Sideboards, racks, trolleys etc.
- Miscellaneous Equipment
  - o POS terminals, communication equipment, desks, supplies-stations, signage, sanitation & safety equipment etc.

While setting up the equipment and workstations in the dining area, the concepts of Flow guides the overall layout. The flow also has categories like product flow, employee flow, customer flow and a combination of these three as well. This flow during work determines the amount of traffic near equipment and thus effects the space requirements of the facility. The following principles should be applied:

1. Keep the flow as straight-line paths as much as possible.
2. Minimise the amount of cross-flow or cross-traffic.
3. Minimise back-tracking.
4. Minimise by-passing.

Check Back Questions:

1. What are the variables considered for calculating the space requirement for dining area?
2. How the flow criteria and principles of flow effect the design & layout of a dining space?

4.4 Developing specifications for various restaurant equipment

In the food and beverage sector, facility planning is a crucial undertaking that calls for careful consideration and detailed study. Creating precise equipment specifications is one of the most important parts of this process. By following specifications, we can make sure that the chosen equipment fits the restaurant's operational style, menu needs, capacity, safety regulations, and long-term objectives.

Specifications describe the precise requirements for an equipment item before it is purchased or fabricated. Dimensions, capacity, power supply, construction material, performance standards, safety and hygienic requirements, and servicing needs are usually covered while writing specifications. Creating accurate and understandable specifications is essential for a number of reasons:

- To ensure compatibility with the existing conditions.
- To adhere to local regulations and food safety compliance.
- To ensure procurement accuracy by eliminating misunderstandings with suppliers.
- To ensure long term cost effectiveness, maintenance and durability.

The process of developing Equipment Specifications starts with assessing the operational needs which includes restaurant's concept, service style, projected guest volume, peak-hour demand, menu mix etc. this is followed by considering the workflow & space availability, accurate measurements and planned workflow are noted. Clearly defining the technical requirements is the next step, the detailed Technical and Performance Standards include the material of construction (example – stainless steel grade 304), capacity & size (example – 100 plate capacity warmer), power & utility requirements (example – 1.0 kWh, 240 V three phase power), compliance standards (example – ISI certified) etc. the easy serviceability by user & maintenance schedule or AMC needs may also be a part of specifications, energy efficiency & safety criteria is also added to complete the process.

Specification	
Name	Electric Plate warmer carl (1-Holder)
Model	GL-1
Size (mm)	450 x 485 x 770
Hp	0.4k W
Volts	220-240 V
Net Weight	31kg

Product Details

A specifications sheet for equipment should have the following details to minimise the possibility of errors on both ends i.e. the buyer and the supplier:

1. Equipment name/type 2. Model number 3. Capacity 4. Material 5. Dimensions	6. Power/utility requirements 7. Safety standards 8. Special notes – customised working needs etc. 9. Special notes – supply or installation costs etc.

Specifications are a mandatory tool to bridge the gap between concept and execution. The correct equipment increases service efficiency and improves customer satisfaction. Clearly designed specifications ensure that the equipment selected supports the desired guest experience, operates efficiently, and contributes to the long-term success of the F & B business.

Check Back Questions:

1. Why do we need to develop accurate and understandable specifications for equipment purchase?
2. List the steps followed in developing equipment specifications.

4.5 Budgeting and forecasting

The Food and Beverage division being one of the most dynamic and revenue-critical area of any hotel business needs due attention on budgeting & forecasting, because of the complexity of dealing with perishable inventory and the need to balance quality, guest experience, and profitability, budgeting and forecasting are foundational tools for long-term success.

Budgeting is a planned outline about the allocation of money to achieve specific financial goals in a defined time period, and Forecasting is the process of predicting the future revenues & expenses; a future estimate based upon historical data, market trends and other relevant factors. Effective financial planning enables us to set realistic targets and optimizes resources in order to drive sustainable growth. When setting up a new Food and Beverage (F&B)

outlet, these tools help transform a planned concept into a financially sustainable business.

The purpose of including budgeting and forecasting in the facility planning process is to Justify the Investment [Return on Investment & Payback Period are calculated, Forecasted revenues and budgeted costs allow for the calculation of key financial metrics to justify the facility investment]. For instance, a new restaurant being planned in a metropolitan city anticipates a monthly footfall of approximately 3,000 guests during its first year of operation. Forecasts indicate that each customer would spend an average of ₹500, resulting in projected monthly sales of ₹15 lakhs. Based on these estimates, the budget is structured accordingly: ₹30 lakhs are allocated for kitchen and dining equipment, ₹10 lakhs for interiors, ₹5 lakhs for technology infrastructure such as point-of-sale systems, billing software, and inventory management tools, ₹8 lakhs for pre-opening marketing efforts and necessary licenses, and ₹7 lakhs are reserved as a contingency fund. Without accurate forecasting to inform such budgeting decisions, the project could face serious financial misalignments, including cost overruns or inadequately sized facilities that fail to meet anticipated demand.
A well studied and structured budgeting & forecasting helps us in gaining control over the below mentioned crucial aspects while setting-up a new facility:

• Cost Control & Optimal Resource Allocation:

The design and setup phase calls for substantial fixed and variable expenses — research & development, material, labour, energy etc. A detailed budget allows managers to project these costs relative to expected revenues. Forecasting the setting-up phase expenses accurately enables proactive measures to control cost percentages and manage the facility plan effectively.

Understanding projected guest flow, staff needs, and production volumes (from forecasts) informs efficient kitchen layout, dining room configuration, and service pathways. It has to be ensured that funds are available for critical facility elements like HVAC, plumbing, electrical systems, and safety features.

• Determining scope and scale:

Accurate planning as per the menu, the outlet and the projected sale per cover helps us in establishing correct markers for one-time capital expenditures, like equipment and interior décor etc. and also paves way to plan for recurring expenditures like utilities and payroll etc. in the coming future. Without this

foresight, it's quite possible for a new restaurant to overspend or run short on funds during setup.

Sales Forecasting specifies the necessary parking, storage requirements, kitchen area, and seating capacity. Increased facility size or more effective equipment may be justified by high projected sales.

Budgeting costs aids in figuring out how much can be set aside for certain facility components (for example – automated vs. manual equipment, high-end finishes vs. standard).

• Feasibility and Decision-Making:

Before investing in a 50-seater casual restaurant, for example, a detailed financial plan can project annual revenues of ₹1.2 crore and estimate capital requirements of ₹40 lakh. This enables the owner to assess whether the return on investment is acceptable before moving forward.

• Securing Funding:

Banks and investors require concrete projections before extending loans or capital. A professionally prepared forecast — a project that shows reaching breakeven within the first 18 months, increases credibility and instils confidence in stakeholders.

• Risk mitigation and Phased development:

Once the outlet set-up begins, comparing actual development and expenses to the original budget allows for proactive adjustments. Identifying potential financial shortfalls or overruns early through budgeting helps in course correction or scaling back plans to avoid financial distress. The process of phased development gives an opportunity to assess various stages and ensure financial viability, especially in large projects. Phased rollout can also be a good strategy for the projects which show slow growth in initial forecasts.

• Performance Monitoring and Corrective approaches:

It is the responsibility of facility planner to periodically monitor the progress of the project and take corrective steps whenever any variance is seen among the planned and actual development. While setting up the facility, due to some unprecedented external factors, there may be a deviation from the designed path of progress and subsequently it affects the budgets. This deviation may be in

material to be used etc.; supplier negotiations and other such options need to be explored in such a situation.

Integrating Budgeting and Forecasting with the Facility Planning for F & B:

Establishing a solid financial plan for a new F&B outlet follows a structured, step-by-step process that integrates market research, financial modelling, and ongoing review.

Concept Development & Feasibility Study

The concept, menu, service style, customers, pricing, facilities and their respective scales must be defined at the beginning. Initial forecasts of revenue and key costs determine if a project is financially viable. Location also plays a major role.

Space allocation and Sizing

Based upon the forecasted guest count as per the type of outlet, the dining room seating capacity, waiting areas, rest room spaces are planned.

Menu items & volume forecast

Based upon the menu items and their forecasted sales (Stars and other items as in BCG matrix), we plan for number & sizes of kitchen & service equipment. Kitchen and store area space needs are also determined.

Forecasting the Staff

It gives an opportunity to plan for back of the house space, locker rooms, offices needs and other staff facilities.

Equipment Selection

Based upon the budget, the quality and quantity of equipment is decided. The capacities and heavy-duty features are dependant of the sales forecasts.

Efficient Layout and Workflow-design

The forecast of customer flow pattern, peak hours rush etc. dictates the service pathways, buffets and side station positioning, desks and POS locations etc.

Cash flow management

Budgets and forecasts help create a cash flow projection to ensure funds are available at each stage of construction/renovation.

Contingency Planning

Unforeseen issues (construction delays, material cost increases) are common in facility projects. A well-defined budget includes a contingency fund. Forecasts can help identify potential risks that might require this fund.

Energy efficiency & Sustainability

Energy-efficient equipment, water-saving fixtures, and sustainable materials can have higher upfront costs but lead to significant long-term savings in utility forecasts.

A new restaurant facility's forecasting and budgeting provide a number of intrinsic issues that may have a big impact on the precision of the planning and the financial results. Uncertainty is one of the main problems, especially for new businesses without past data. Without a tested business model, it becomes challenging to forecast customer behaviour, sales trends, and operational requirements. Furthermore, outside variables like natural disasters, economic downturns, changes in consumer preferences, and the arrival of new rivals can significantly impact expected performance. Another major concern is data accuracy; relying on outdated or unreliable market data can lead to flawed forecasts. Moreover, there is often a tendency toward bias in projections, where planners may be overly optimistic or pessimistic, skewing the financial outlook.

A frequent and costly oversight is the underestimation of capital expenditure (CAPEX). Facility development projects are well-known for exceeding initial budgets due to unforeseen construction issues, regulatory delays, or scope creep.

Addressing these challenges requires a balanced, data-informed approach, combined with prudent risk management and contingency planning.

Several recommended practices should be adhered to in order to increase the precision and efficacy of forecasting and budgeting in restaurant facilities planning. It is crucial to take a cautious and realistic approach, with modest revenue projections and reasonable expense estimates that allow for unforeseen variances. It is equally crucial to conduct in-depth research, which includes benchmarking against competitors to obtain valuable insights, examining consumer behaviour, and conducting a full market analysis. One effective strategy is to develop multiple planning scenarios—including best-case, worst-case, and most-likely outcomes—to prepare for a range of possible situations and enhance decision-making flexibility. Additionally, budgeting and forecasting should be treated as dynamic processes rather than one-time exercises. Regular review and adjustment of these financial plans, based on actual performance and changing conditions, help ensure ongoing relevance and control. Lastly, it is crucial to involve key stakeholders such as architects, contractors, chefs, and operations managers in the planning process. Their

practical knowledge and expertise contribute significantly to creating realistic and executable plans that align with both the physical design and operational goals of the restaurant.

Budgeting and forecasting plays a vital role in the facility planning. They offer a disciplined approach to financial control, reduce risk by making assumptions transparent, and ensure that the business grows profitably. By applying these tools, whether you're launching a small neighbourhood café or a large fine-dining restaurant, one can lay a strong foundation for both short-term success and long-term sustainability.

Check Back Questions:

Fill in the blanks:

1. The purpose of including budgeting and forecasting in the facility planning process is to _____ ___ _____.

2. Energy-efficient equipment and sustainable materials can have higher _____ _____but lead to significant long-term _____in utility forecasts.

4.6 Ambience and Décor

For an F&B outlet, ambience is the overall atmosphere and mood created by the space, including lighting, music, temperature, and the general feel of the place. Décor, on the other hand, refers to the physical elements within that space; like furniture, wall coverings, table settings, floor finishes and colour schemes that contribute to how the outlet looks and feels.

Together, the ambience and décor work to define the dining experience. For example, a dimly-lit cafe with vintage furniture and soft jazz playing creates a relaxed, intimate ambience, while the decor of rustic wood tables, warm colours, and plant accents into the cafe would add to that homely, comforting vibe.

The whole idea is about creating something to make an impression upon the guests as the atmosphere is one of the inducements for people to dine out. The creation of atmosphere is not just limited to the factors mentioned above, it also includes the methods and warmth in the way service personnel carry themselves

and perform their duties. Staff's pleasantness mixed with promptness, the abilities enhanced with service-attitude and service-styles laced with showmanship give a fine-tuning of success in the grand scheme of things. Similarly, the combination of colours with comfort, music with mood, safety with set-up and privacy with planning helps us in achieving an atmosphere that ensures repeat-business.

The customers perceive the atmosphere upon the way their senses feel aligned towards the overall impact created by the facility. This perception travels through aspects ranging from safety, privacy, comfort, excitement etc. and the customers always subconsciously assess the quality of the restaurant. Let's categorise the perceptions of atmosphere:

• **Visuals:** the lighting levels, travel of eyes upon the fixtures and decorations, the use of wall coverings in order to expand or contract the visual space.
[Example: using rustic wooden panels for a farm-to-table restaurant or tropical prints for a beach-themed café]

• **Contact surfaces-Touch & Temperature:** perception of touch, the comfort of contact with furniture, floor, tableware and fabrics of table-linen. And the temperature plays a vital role in providing the assessment of touch of various surfaces.
[Example: having a collection of very fine bone-china and expensive silverware in an Al-Fresco setting may go in vain if the temperature is not appropriate for dining]

• **Noise:** the decibel level of conversations from other tables, music or live-performances, the sounds from ancillary work areas.
[Example: use of two swing-doors that have a space between them, separating the dining area from the back area and designed in such a way that back-area sounds do not reach the front of the house and this space may also be utilised by service personnel for necessary supplies and other useful setup]

• **Smell:** the odours from the materials in dining area, body odours, cooking aromas from live counters, use of room fresheners etc.

[Example: a live eggs-to-order trolley is a common feature for breakfast service in hotels, the location should be chosen in such a manner that it has minimum impact on the other pleasant scents created purposefully in the dining space]

• **Degree of muscle activity:** this is about the perception registered in the guest's subconscious which deals with the amount of muscle activity. It may also include the movements by others i.e. the servers and other guests. [Example: In a discotheque, the congested and heavy activity environment is desired and supported, whereas the scenario changes while moving towards a lounge-bar setting]

In connection to the above mentioned perception points, the taste and quality of menu offerings and the warmth carried by the serving personnel also adds to the atmosphere.

The components that affect the overall ambience & décor may be summarized as:

• The use of Colours in the dining area
• Illumination conditions
• Noise levels
• Temperature
• Smells
• Furniture – type/quality, seating styles, layout of tables
• Tableware – flatware, hollowware, glassware & condiments
• Table Linen
• Shape & size of dining area & landscaping of the space
• Menu design
• Employees' uniforms and appearance

4.6.1 Lighting & colour scheme

In a foodservice facility, the lighting and colours are interrelated. It is imperative that we understand them in union in order to grasp the impact of the lighting & colour scheme on the foodservice facility design.

To understand lighting, one has to appreciate the available forms of it and their respective uses. It's really not necessary to depend upon artificial lights all the times, making good use natural sunlight for the daytime operations may be a

good method depending upon the type of foodservice facility being designed. Direct lighting is chosen for clear visibility and adequate illumination, Indirect lighting helps in creating a warm atmosphere and Spotlights are used to highlight specific décor elements which in turn adds to visual interests.

The artificial lightings chosen for the purpose may vary in terms of forms and features, Incandescent lighting generates warm lights and heat also, Fluorescent lighting provides cooler lights, LEDs and CFLs are also options for energy efficiency. Colourful lights may also be used when they add value and purpose. Colourful lights can alter the appearance of other colours by enhancing, muting, or distorting them based on the light's hue and intensity. For instance, red lighting can make warm tones like orange and pink appear more vivid while dulling cooler shades like blue or green, thereby affecting the overall perception of food, decor, and ambiance in a dining environment. Illumination and its proper uses add to the better appearance of the food & beverage being served and also enhance the overall impact of the server's uniforms, foodservice equipment and décor of the dining space.

The lighting scheme should correlate with the meal timings to set the appropriate mood; bright lighting for breakfast and lunch that promotes energy and alertness, and softer, dimmed lighting during dinner to create a relaxed, intimate atmosphere. This enhances the dining experience and influences customer satisfaction and dining duration. It is very much necessary that the overall lighting conditions and patterns match the theme & concept of the facility.

Lighting is also used to adjust the appearance of certain physical features of the dining space, low ceiling appears high if it is very well lit and similarly a high ceiling shall appear low if it is dim lit. If a long wall is lit with continuous and even lights, it appears longer. Lights must be used to provide a smooth travel of the eyes while ensuring focus on certain décor elements and avoiding the mundane sections.

From ancient feasts in candlelit chambers to today's fine-dining restaurants, the flicker of a candle has always been a symbol of warmth, intimacy, and timeless elegance.

Foodservice lighting levels (how brightly a surface is illuminated) typically range between 50-500 Lux. For fine dine it is 50-150 Lux, 300-500 Lux for breakfast-Lunch & buffets. Lighting in the foodservice area is also an indication about seat turnover, high lighting levels denote high seat turnover and low lighting levels are indicative of relaxed and prolonged dining experience. Lighting level in public traffic areas must adhere to the safety standards. In all areas, the lighting level should be such that it makes all elements of the surroundings visible. Spending a great deal of efforts on colour scheme is of no use if it is ruined by poor lighting in the later impact.

Colour, colour pattern or colour scheme is a force that motivates people to choose, like choosing a car, or some clothes; people are also driven by colour when they choose places to dine out. Colours may stimulate hunger and also induce feelings. Humans carry certain emotional responses to colours: for instance Red excites and stimulates, Orange exhilarates, Yellow boosts morale, Green imparts tranquillity, Blue lends leisure, Purple creates elegance and Brown relaxes.

Colour schemes play a vital role in shaping the ambiance and influencing customer behaviour. Warm colours like red, orange, and yellow stimulate appetite and create a lively, energetic atmosphere, making them suitable for casual dining or fast food outlets. In contrast, cool colours such as blue, green, and violet evoke calmness and relaxation, ideal for fine dining or lounge settings.

Monochromatic colour schemes use different shades, tints, and tones of a single colour to create a harmonious and elegant look, often enhancing visual consistency. Complementary colours, which are opposite each other on the colour wheel (like - blue and orange), add vibrant contrast and can highlight focal points in décor. Meanwhile, contrasting colour schemes (such as black and white or dark and light tones) are used to create bold, dramatic effects or draw attention to specific areas like counters, food displays, or signage. Strategic use of colour enhances both aesthetic appeal and functional zoning in foodservice spaces.

An indicative guide to colour usage in Foodservice Facilities (Kazarian, 1989) is being given here for your reference:

1. The use of warm reds, browns, yellows, gold, and oranges enhances the appearance of foods.

2. Where emphasis is to be placed on fast service & high turnover; warm colours should dominate the major areas.

3. Use colours in dining areas that are flattering to people. Colours that tend to look people pale (green & grey) should be avoided.

4. Use light colours in small areas to create the impression of size.

5. Use warm colours in rooms that are windowless.

6. High ceilings can be made to appear lower by using dark colours.

7. Emphasizing horizontal lines by dark colours will make a ceiling appear lower.

8. Low ceilings can be overcome by emphasizing vertical lines with dark colours.

9. The end walls of long narrow rooms should be a warmer or deeper hue than the other walls to make them approach and make the room even squarer.

10. Undesirable features of a room can be painted the same colour as their background so as not to emphasise them.

11. Each room or area should have a mixture of warm and cool colours.

12. Adjoining rooms or areas are best painted in harmonious colours.

13. Avoid using too many different colours in one room or area.

14. Use light colours to make objects appear larger if they are to be emphasised.

15. Use dark colours to make rooms appear smaller.

16. Use brilliant colours to bring attention to signs or other features.

17. Dark-coloured objects appear to be smaller than they really are.

18. Maintain proper contrast to permit differentiation of objects from their backgrounds.

19. Avoid highly reflective colours that tend to tire the eyes.

4.6.2 Floor Finish

Proper floor finish selection in the F&B division is critical for operational efficiency and safety. It also adds in creating a lasting impression on guests. It is an integral aspect of facility planning to balance form, function, and regulatory requirements while finalising floor finishes of various areas in F & B division.

While choosing floor finishes for F&B operations, several key factors must be carefully considered to ensure optimal performance, safety, and aesthetics. Slip resistance is paramount in all areas; it directly impacts the safety of both staff and guests. There are high-risk areas such as kitchens and dishwashing zones where spills are common. Water and chemical resistance is also important, especially in kitchens, bars, and dish wash areas, where exposure to liquids, grease, and cleaning agents is frequent.

The ease of cleaning is another critical consideration. Floors should have smooth, sealed, or non-porous surfaces. Floors should prevent the accumulation of dirt and bacteria, thereby supporting high hygiene standards. Furthermore, the flooring must offer durability and load-bearing capacity to withstand the constant movement of carts, heavy equipment, and high foot traffic without cracking or deteriorating quickly.

Cost is a major influencing factor and should be evaluated not only in terms of initial purchase and installation but also with regard to ongoing maintenance and lifecycle costs. Ultimately, aesthetics play a vital role in creating a cohesive and appealing atmosphere. The flooring should reflect the brand identity and complement the overall ambience of the F&B outlet, especially in customer-use areas like dining rooms and bars.

Various types of floor finishes are used in the Food and Beverage (F&B) division; each suited to specific operational needs and environments. Ceramic

tiles are commonly installed in kitchens and restrooms due to their durability, stain resistance, and ease of cleaning. However, they can become slippery when wet unless a textured finish is used, which can pose a safety risk in high-traffic areas.

Epoxy flooring, a seamless resin-based finish, is widely used in kitchens and storage areas. It is highly hygienic, resistant to chemicals, and non-porous, making it ideal for spaces requiring frequent cleaning. Slip-resistant variants are also available, enhancing its safety profile. The main drawback is that it demands professional installation and careful surface preparation.

Vinyl Composition Tile (VCT) or Luxury Vinyl Tile (LVT) is often chosen for dining areas and corridors due to its cost-effectiveness, aesthetic flexibility, and comfort underfoot. While it performs well in customer-facing spaces, it is less durable in high-moisture environments, limiting its use in back-of-house operations.

Quarry tiles, made from unglazed ceramic, are known for their exceptional durability and slip resistance, making them ideal for wet and greasy areas such as commercial kitchens. Despite these benefits, their hard surface can be uncomfortable to stand on for long periods, and they offer limited colour choices.

Natural stone finishes, such as granite, marble, or slate, are typically reserved for upscale dining or lobby areas where appearance is a priority. These materials offer a high-end aesthetic and are extremely durable, but they come with a high price tag, require periodic sealing, and may become slippery when wet.

Wood flooring is sometimes used in specialty or fine-dining restaurants, especially those emphasizing traditional or cultural ambiance, such as Japanese, Mediterranean, or farm-to-table establishments. Wood adds warmth, character, and an inviting aesthetic. However, it is susceptible to moisture, scratching, and wear, requiring regular maintenance and protective treatments to ensure longevity in high-traffic areas.

There may be some more choices like Rubber flooring, Terrazzo flooring and concrete flooring, either polished or stained. These may be opted when durability and low maintenance cost is the prime need.

The key areas and specific flooring needs may be summarised as:

Area	Requirements
Storage Areas	Durable, moisture-resistant
Dishwashing Area	Sloped for drainage, non-slip
Dining Areas	Aesthetic, durable, easy to maintain
Bars	Resistant to spills and stains, attractive finish
Restrooms	Water-resistant, hygienic, non-porous

4.6.3 Wall Covering

Wall coverings must serve both aesthetic and functional purposes while creating a welcoming and visually appealing atmosphere for guests. Wall covering contributes to the overall dining experience and ambience. At the same time, these finishes must ensure durability in high traffic zones and withstand frequent physical contact without showing signs of fade or decay. Easy cleaning and maintenance are also critical, particularly in restrooms and bar areas where hygiene is a top priority. In addition, these materials should offer enhanced resistance to moisture, stains, and impact to maintain both cleanliness and appearance over time. The selected finishes should reflect the brand identity and align with the overall interior design concept of the establishment. Lastly, all materials must comply with relevant hygiene and fire safety regulations to ensure a safe and correct environment.

Decorative wall panels are widely used in dining areas, lobbies, and bars due to their high aesthetic value and customizable textures and colours. They contribute significantly to the ambiance of the space and can also provide moderate sound absorption. However, unless properly sealed, these panels may be less resistant to moisture and stains.

Vinyl wall coverings, particularly commercial-grade varieties, are common in corridors, restrooms, and dining areas. These materials are durable, washable, and available in a wide range of patterns and finishes, making them both practical and decorative. Their smooth surface allows for easy maintenance, and depending on the finish, they can offer a moderate degree of light reflectivity, enhancing brightness in enclosed areas. However, vinyl coverings may peel in humid conditions, especially in restrooms.

Painted drywall finished with washable or scrub-able paints is a cost-effective

choice for general areas, providing a clean and modern appearance. It is easy to repaint or update and offers a broad range of colour options. Light coloured & semi-gloss paints can reflect ambient lighting effectively, contributing to a well-lit interior. Despite these benefits, painted drywall is susceptible to scuffing, marking, and staining, particularly in high-traffic zones.

Ceramic or porcelain tiles are typically applied to walls in restrooms and behind wet bars due to their exceptional water resistance, durability, and ease of cleaning. These tiles also reflect a high amount of light, which helps brighten smaller or enclosed spaces. However, their hard surfaces can create echoes and amplify sound, which may not be desirable in dining areas.

Wood panelling or veneers are favoured in specialty or fine-dining restaurants for their warm, natural look that enhances ambiance and supports brand identity. In addition to their rich visual appeal, wood finishes can also absorb sound, helping to control noise levels and create a more intimate dining atmosphere. On the downside, wood is sensitive to moisture, can scratch easily, and typically requires sealing and regular maintenance to retain its appearance.

Stainless steel and other metal finishes are occasionally used on walls in high-use bar backs or storage areas. These finishes are durable, hygienic, and lend a modern, industrial look. Metals reflect a significant amount of light, which can improve visibility in functional spaces, but they do not aid in noise absorption and may create a visually cold or utilitarian atmosphere not suited to all types of establishments.

Fiberglas Reinforced Panels (FRP) are frequently installed in storage rooms, service corridors, and receiving areas. Known for their moisture resistance, durability, and cost-effectiveness, FRP panels are ideal for utilitarian back-of-house zones and are typically not appropriate for guest-facing environments.

The key areas and specific wall covering requirements may be summarised as:

Area	Wall Covering Requirements
Dining Rooms	Aesthetic appeal, easy to clean, scuff-resistant
Bars	Stain-resistant, moisture-resistant, stylish finish
Restrooms	Waterproof, mold-resistant, easy to sanitize
Corridors & Service Routes	Durable, abrasion-resistant, low-maintenance
Storage & Receiving Areas	Impact-resistant, washable, economical

Check Back Questions:

1. How does the choice of lighting affect the overall ambience of a restaurant?

2. Why is it important to align the décor theme with the type of cuisine being served?

4.7 Planning for the Special Spaces

Depending upon the type of foodservice outlet, there may be a need to plan and design certain special spaces like smoking zones, DJ booth, Bar and Buffets etc. These spaces are not an integral part of every F &B outlet; these are planned and established with specific needs. There are certain requirements that need to be met while putting things in place; the functional, legal, environmental, and customer experience considerations must be meticulously studied, planned and executed.

4.7.1 Smoking Zone

Such spaces must be thoughtfully integrated to comply with local regulations while ensuring that the smoking area does not disrupt the dining environment or public health standards. Some of the key planning considerations for incorporating a smoking zone in a foodservice facility are being listed here:

1. Full compliance with local & national public health regulations, smoking bans etc. must be ensured.

2. Physical separation between non-smoking areas and smoking zones; separate ventilation system should also be installed.

3. Clearly displayed signs are needed.

4. As far as possible, smoking zones should be located outdoors and should be positioned far enough from main entrances, waiting areas or non-smoking dining areas.

5. Accessibility to the smoking zones should be planned in such a manner that the flow of service and experience of non-smoking guests is not compromised.

6. For the smoking guests, comfort should be well planned. Irrespective of the smoking zone being indoor or outdoor, there should be proper ventilation, shelter, comfortable seating, lighting & aesthetic provision of service facilities.

7. Waste disposal facilities and routine must be well-planned.

8. Non-combustible materials should be used for furniture and décor to reduce fire risks.

9. The size and capacity of the smoking zone should align with the type of establishment, peak hours rush and other sales factors that determine the number of people who might use the smoking zone facility.

10. The overall planning of smoking zone must align with the brand image of the establishment.

4.7.2 DJ Booth

A DJ booth in a foodservice space does more than just playing music; it helps set the mood, adds excitement, and shapes how guests perceive the brand. When you plan it thoughtfully, a DJ booth can elevate guests' experience without getting in the way of their comfort and safety.

It should fit naturally with your space's design and the way you serve your guests. Some of the key planning considerations for incorporating a DJ booth in a foodservice facility are being listed here:

1. The clarity about how the DJ booth will be used is the first step, whether it will be used for live DJ, background music control, some specific events etc. whether the guest performances are also going to be a part.

2. Depending upon the above mentioned, the location and fixtures of the booth are planned: central, corner, elevated with stage-space, near the bar, fixed or movable, dance floor requirements etc.

3. The set-up or layout should not interrupt the safety guidelines, fire exits, and service flow and table layouts.

4. The overall acoustic planning of the complete space works hand in hand with the plan of DJ booth setup. The soundproof panels, zoned speaker systems etc. are planned accordingly. Legal regulations and compliance is also a mandatory part.

5. Adequate power supply, ports, cables and other DJ equipment friendly setup must be present for flawless execution.

6. The visibility and guest interaction facilities must be planned in accordance to the idea and theme of the outlet. Careful planning of the uses of lighting at the DJ booth can solve the purpose here. The booth must be well integrated with house lighting; ambient effects & integration of video/visual parts is needed.

7. The booth must be ergonomically designed. Also the comfort of DJ & other personnel at the booth should be a priority as there may be long sets of work.

8. Security at the booth must be planned well, given the type of high energy atmosphere. Locks, storage and limited access should be planned from the beginning.

9. Infrastructure for future additions and upgrades should be included in the planning & design.

10. Focus upon balancing the energy with elegance.

4.7.3 Bar

Planning a bar within a foodservice facility requires a comprehensive approach that integrates design, functionality, aesthetics, safety, and regulatory compliance. A well-designed bar enhances the facility's revenue potential, ambience, and guest experience. Some of the key planning considerations for incorporating a Bar in a foodservice facility are being listed here:

1. Aligning the Bar with the overall concept, clientele and service style is the first step in planning. This determines the function of the bar whether it is going to be a full service cocktail bar, a beer & wine station, only a service bar, or a show bar with flair bartending.

2. Guest seating pattern must be planned in connection with the above mentioned. The complexity of drinks menu should also be considered at this stage.

3. The type of equipment, especially the types & quality of glassware and the other service equipment shall depend upon the previous two points.

4. Strategic location of the bar is necessary for better sales, positioning it near high traffic zones attracts attention.

5. The legal considerations and all licensing requirements must be fulfilled.

6. The set up of a bar needs the harmony and completion of the three aspects; the plumbing connections, the electrical connections and the drainage facilities.

7. The design must provide for efficient stock access, refrigerated storage and flexibility for quick reconfiguration.

8. The guest and bartender interaction and adequate comfort & spacing must be planned.

9. Aesthetics & atmosphere, ergonomics & efficiency, safety & hygiene, acoustics & ambience etc. should all be planned with intent to fulfil the conceptual goals and sales targets.

10. The staffing & service efficiency is a vital feature in the success of bar operations and all the planning should revolve around the clear idea about the purpose/type of bar being designed in the foodservice area.

4.7.4 Buffets (Hot, Cold & Dessert)

In order to ensures that a buffet is efficient, safe, visually appealing, and enjoyable for all guests, certain factors must be considered while planning the buffets in a dining facility. These considerations may be summed as:

1. The buffet or the set of buffets must align with the menu, meal timings, type of establishment and the clientele. A cold buffet designed for breakfast service in a coffee shop and a makeshift buffet designed to serve dinner in a banquet hall are supposed to be separately & significantly equipped with the needed features.

2. Design of the buffet and its location in the area should be such that it adds to overall service comfort and does not create unnecessary traffic or disturbance in the service flow.

3. Adequate spacing and logical food placement must be ensured.

4. The fuel/heat source chosen for buffet should ensure the safety & comfort. There may be use of induction, buffet-fuel cans, hotplates or even heating lamps as per the need.

5. Temperature control (both hot & cold) and food protection facilities like covers/guards must be always in place and in perfectly working conditions.

6. Appropriate equipment with the desired portion control should be planned in

7. The buffet should be built with such materials that the aesthetic appeal remains in effect right from beginning to the meal end periods. For example - the use of cloth runner in banquet function may have gravy stains by the end of meal period which makes the look non-presentable and unappetising.

> Switching to induction-based buffets and live cooking can reduce energy use by 40% while making the service area safer and cooler for both guests and staff.

8. Plan buffets in order to provide diverse offerings, so that it acts as a wow factor generating setup for the guests. Imagine placing large variety of teas, sweetening options, varieties of milk, a large array of crockery and serving pots; how this setup can convert a simple tea-time into a memorable affair.

9. Always plan and design the upgrades friendly setup.

10. Buffets add to the versatility in service and this must be the top most priority of buffet design and setup – make it versatile.

Check Back Questions:

1. Why is it important to have a separate and well-ventilated smoking zone in a restaurant?
2. How does a facility planner decide upon the location of buffets in dining area?

4.8 Planning of various support services

Usually the people who come to a restaurant or other type of foodservice facility, they have a perception about the facility being run only with the dining area and the kitchen. However, the F & B department's functions require certain support services as well and we have studied these as ancillary departments in previous semesters as well. While planning for the support services, effective management of the space available is the most crucial aspect for a facility planner. Here are a few key features to be considered while planning for the

Support Service Area	Key Features/Considerations
Pantry	Near kitchen, storage, assembly area, easy cleaning, hygiene
Dish wash Area	Separation of soiled/clean wares, good ventilation, safe equipment
Back Area	Efficient material flow, proper storage zones, security, pest control
Staff Facilities	Lockers, restrooms, comfortable breaks, hygiene, welfare, support

4.8.1 Pantry

This area is for making snacks and beverages for quick service. Based on this operational aspect certain arrangements must be made, these may be summarised as:

1. Keep the pantry's location adjacent to the main kitchen & service areas to facilitate quick and easy access for the staff.

2. Ingredients storage facilities should be organised in accordance to the menu and sales patterns.

3. Dedicated spaces for assembling, portioning and temporary handling of the food items are an essential part of pantry design.

4. Given the type of quick service items being dispatched from pantry; there should be utmost care in providing for the hygienic and food safety related situations.

5. The communication units, i.e. telephones, order display screens etc. must be placed ergonomically and should add to the overall efficiency of pantry operations.

4.8.2 Back area and Dish wash

Back area is the place which Handles delivery, receiving, and bulk storage of raw materials and non-food supplies. Whereas the Dish was area Cleans and sanitizes all dishes, utensils, and kitchen equipment.

Planning Considerations for Back area are as under:

1. There should be a provision of separate zones for receiving, inspection, and storage.

2. The storage space and facilities must also be segregated on the basis of dry, refrigerated, frozen provisions.

3. Anti-pest measures, sealed doors, and regular hygiene checks are also to be ensured.

4. The planning & setup of back area should be inventory management friendly.

5. The ergonomic arrangement is considered a priority for material handling and movement.

6. For security reasons, restricted access and surveillance must also be ensured to prevent losses, thefts etc.

The planning considerations for Dish wash may be summarised as:

1. The location should be planned in a way that it is positioned close to both the kitchen and dining/service area for efficient movement of dirty and clean items.

2. Separate entry/exit points for soiled and clean wares must be established to prevent cross-contamination.

3. There must be sufficient space for scrapping, soaking, washing, rinsing, sanitizing, and drying.

4. Since this area has a lot of heat and moisture; proper ventilation and drainage to handle heat and moisture is to be ensured.

5. Commercial dishwashers are installed as per volume; provision for manual washing should also be given wherever necessary.

6. For the purpose of hygiene & safety, slip-resistant flooring, clear signage, personal protective equipment for staff etc. should be a part of planning.

4.8.3 Staff Facilities

These facilities are designed with intent to provide amenities for staff wellbeing, supporting their productivity and morale. Certain elements and consideration to be integrated while planning for staff facilities are:

1. Good condition changing rooms along with the separate washroom facilities and amenities must be given. High standards of hygiene must be in place. Also with a provision of lockers to keep safe the personal belongings and uniforms.

2. There must be a provision of comfortable, well-ventilated staff break-rooms with basic amenities like microwave, seating, drinking water etc. Well planned dining areas/staff cafeteria is also an integral part of staff facilities planning.

3. Hand-wash and sanitisation counters should be provided at convenient locations.

4. Providing the employees with a dedicated training room, notice boards for official communication helps in maintaining a positive brand image.

5. First aid and mental well being facilities should also be planned and provided with.

Check Back Questions:

1. Why should the pantry be located close to both the kitchen and the service area?

2. Why is it essential to provide adequate changing rooms and lockers for F&B staff?

LET US SUM UP:

The designing and planning of a Food & Beverage (F&B) division is a comprehensive process that involves strategic considerations to ensure operational efficiency, guest satisfaction, and business profitability. A well-thought-out layout and design are fundamental to the success of various F&B outlets, including restaurants, bars, in-room dining, banquet halls, and Quick Service Restaurants (QSRs). The space allocation and flow of operations must be aligned with the outlet's concept and service style, ensuring that movement of guests and staffs happens smoothly while maintaining comfort, safety, and aesthetic appeal. Developing precise equipment specifications is another crucial aspect, as it ensures that each piece of equipment is compatible with the operational requirements, menu offerings, capacity needs, and safety regulations. Specifications take into account dimensions, construction material, energy efficiency, and maintenance requirements, eliminating procurement errors and supporting long-term operational goals.

Budgeting and forecasting are vital to the planning process, where financial estimates for equipment, infrastructure, and operational costs must be accurately projected to ensure a profitable investment. The ambiance and décor of the outlet significantly influence guest perception and experience. Elements like lighting, colour schemes, floor finishes, and wall coverings are thoughtfully chosen to complement the theme and create a welcoming environment that resonates with the target clientele. Special spaces such as smoking zones, DJ booths, bars, and buffet areas require careful spatial planning to integrate seamlessly into the overall layout without compromising on safety standards, service flow, or guest comfort. Additionally, planning for support services, including pantries, back-of-house areas, and staff facilities, is integral to maintaining smooth operations. These areas should be designed ergonomically, with adequate space for storage, staff welfare, and service efficiency. Overall, the chapter emphasizes that facility planning in F&B is a multi-dimensional task that balances aesthetics with functionality, integrates technology for operational excellence, and aligns with safety, energy efficiency, and regulatory standards to create a facility that enhances both guest experience and business outcomes.

REVIEW QUESTIONS

Multiple Choice Questions

1. Which is an example of a 'Shifting' type layout option used in banquet halls?

a) Fixed dining booths
b) Drop leaf tables
c) Movable partitions and temporary food counters
d) Built-in buffet counters

2. Which of the following details is listed under Special Notes in an Equipment Specification Sheet?

a) Model number and dimensions
b) Supply or installation costs
c) Safety standards compliance
d) Power utility specifications

3. The 'Degree of Muscle Activity' as an atmosphere perception point refers to:

a) The level of physical activity required by servers while carrying trays
b) The subconscious assessment by guests regarding movement and spatial comfort
c) The intensity of workout in a gym attached to the restaurant
d) The ergonomic design of kitchen equipment

4. Which of the following colour strategies is recommended to make a small dining area appear larger?

a) Use dark colours on walls and ceilings
b) Use light colours to create an impression of spaciousness
c) Paint walls in contrasting brilliant colours
d) Emphasize horizontal lines with dark shades

5. Why careful acoustic planning is done while setting up a DJ booth in a restaurant?

a) To ensure the booth is visually aligned with the décor theme
b) To enhance power supply to DJ equipment
c) To control sound distribution and prevent noise disruption
d) To allow for the installation of future LED display systems

Fill in the blanks

1. The layout should ensure optimum utilization of resources such as _____, _____, and _____.

2. Creating precise _____ specifications ensures that the selected equipment matches the restaurant's menu needs, capacity, and _____ regulations.

3. Professional workspaces are_____ designed. [choose from these options – ergonomically/quickly/grammarly]

4. Facility development projects are well-known for exceeding initial budgets due to unforeseen _____ issues, _____ delays, or scope creep.

5. Foodservice lighting levels typically range between ____to_____Lux.

True or False

1. Dark colours are used to make rooms appear larger.

2. The legal considerations and all licensing requirements must be fulfilled while planning a Bar set-up.

3. Efficient material flow, proper storage zones, security and pest control are the key considerations while planning a back area of restaurant.

4. Adequate spacing and logical food placement is Not to be considered in buffet set-up.

5. Brilliant colours do not bring any attention to signs or other features.

Short Answer Type Questions

1. Define the terms 'Design' and 'Layout'.

2. Write a note on the Perceptions of Atmosphere.

3. Define 'Budgeting and Forecasting'. What is its importance in restaurant facility planning?

4. List any five types of floor finishes used in commercial restaurants.

5. List any five types of wall coverings used in commercial bars.

Long Answer Type Questions

1. Explain the various layout and design considerations to be kept in mind while planning for F & B division in a hotel.

2. Write an essay on the impact of ambience and decor on the customers of foodservice business.

3. 'A restaurant's guest experience is only as good as the well-being of its staff', justify this sentence with a facility planner's point of view in designing the staff facilities.

4. Describe the step by step process of 'Integrating Budgeting and Forecasting with the Facility Planning for F & B division'.

5. Discuss how facility planners influence the design, functionality, and emerging trends in the Food & Beverage industry. Support your answer with relevant examples.

Activity Questions

1. Students to be divided in small groups, and the groups after visiting a five star hotel in the area; are to submit a report on 'key considerations for planning various areas of F & B department in a hotel'.

Crossword Activity

Across

1. The process of predicting the future revenues & expenses.

3. An open air restaurant.

5. The science of designing and arranging workplaces, products and systems so that they fit the people who use them.

7. A passage or walkway between rows of seats or other objects, allowing people to move through.

10. Foodservice lighting levels typically range between 50-500 ___.

11. This study is a systematic analysis done before starting a project to determine whether it is practical, viable and worth pursuing.

12. The arrangement of the physical facilities for the foodservice operation.

13. Planned outline about the allocation of money to achieve specific financial goals.

14. This area is a part of QSR operations, used as routing area & dispensing section.

15. A thin French pancake, also used in Gueridon trolley flambé recipes.

Crossword Activity

Down

2. F & B layout is also known as the _____ salesman.

4. These tables are favourites for banquets and IRD because they transform shapes for flexible service.

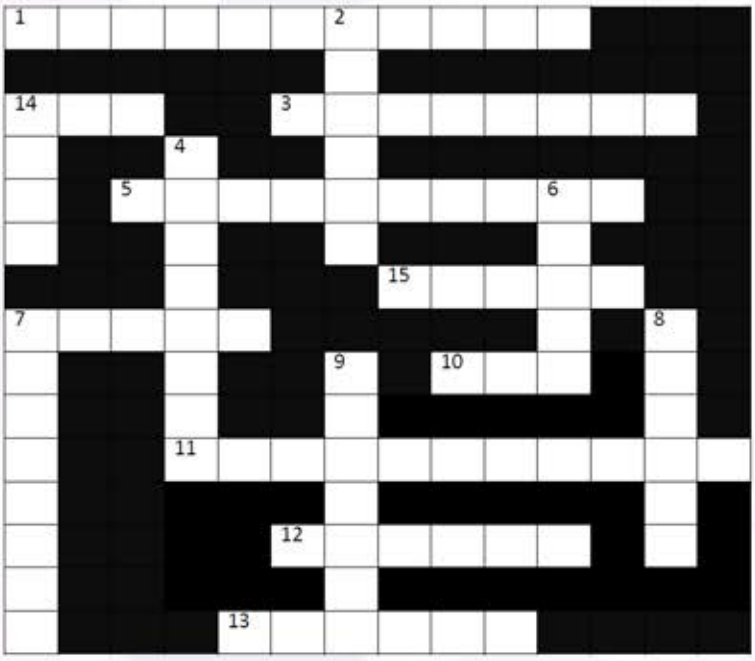
6. The money a business spends to buy, upgrade or extend the life of physical assets.

7. The overall atmosphere and mood, the general feel of the place.

8. Area for making snacks and beverages for quick service.

9. Red & yellow colour combination in fast food outlets is known as ketchup and _____ effect.

14. The design and layout must be in synchronization with this, as it defines the clientele and service requirements.



Open Book Questions

1. Which are various support services that need deliberate planning while being set-up in F & B division? Mention some key consideration while planning these facilities. Also explain the need of staff facilities with appropriate illustrations.

2. Customers have certain perceptions about atmosphere in a foodservice facility. Explain how the overall ambience & decor of the outlet impacts the clientele-type and business. What are the general considerations you will keep in mind if you are planning to open a new cocktail-bar in your city?

Works Cited

Kazarian, E. A. (1989). Foodservice Facilities Planning, third edition. New York: Van Nostrand Reinhold.

Unit-5

Designing and Planning of Food Production

Overview

This unit will equip the learners with the ability to compare various design considerations required for planning Food Production unit in a hotel. They will be able to design layout of live or interactive kitchen, cloud kitchen and conventional kitchen. They will be able to learn about the advent of technology in planning equipment in food production. They will be able to plan the ventilation systems, kitchen tiles and wall finishes. The unit will deliver information on back of the house planning including staff movement and locker facilities.

Learning Objectives

S. No.	Sub-Unit	Learning Topics	Key learning objectives/ At the end of this subunit, the learners will be able to:
1	5.2 Principles of kitchen layout & design configuration	• Overview of kitchen layout principles • Importance of design in food production	1. Explain the significance of kitchen layout in food production. 2. Identify the core principles guiding kitchen design.
2	5.2.1 Key Principles for kitchen layout and design in Food Production	• Efficiency of workflow • Ergonomics and safety • Sanitation standards	1. Describe the sequence of operations for efficient workflow. 2. List the key zones required in a kitchen layout. 3. Recognize the ergonomics and safety standards in design. 4. Explain the importance of sanitation in kitchen planning.
3	5.2.2 Factors affecting kitchen design	• Menu complexity and type of service • Staff requirements • Budget constraints	1. Identify factors that influence kitchen design. 2. Explain how menu complexity affects layout planning.

		• LocalRegulatory requirements	3. Describe the impact of budget and staff needs on design decisions. 4. Recognize the role of regulatory compliance in design.
4	5.3 Planning of live, interactive kitchen, cloud kitchen and conventional kitchen	• Live & interactive kitchen • Cloud kitchen • Conventional kitchen	1. Definition of live, interactive, cloud, and conventional kitchens. 2. Describe the design features specific to each kitchen type. 3. Compare the planning considerations for each kitchen type.
5	5.4 Kitchen work flow and planning for receiving, storage, pre-preparation, preparation, pick up and pot wash area	• Workflow and equipment for receiving • Storage planning (dry, cold, frozen) • Pre-preparation and preparation area planning • Pick-up and pot wash area design	1.Outline the workflow for receiving, storage, and preparation areas. 2. List the important equipment required for the key area. 3. Explain the importance of FIFO in storage planning. 4. Compare the design and functionality of pick-up and pot wash areas.
6	5.5 Effect of technology (Automation and semi automation) in kitchen design	• Overview of automation and semi-automation • Role of technology in kitchen operations	1. Identify the role of automation and semi-automation in kitchen design. 2. Explain how technology enhances kitchen efficiency
7	5.5.1 Key Technologies in Kitchen Design	• Automated cooking systems • Semi-automated appliances • Inventory management software	1. List examples of key technologies used in kitchen design. 2. Describe the functions of automated and semi-automated equipment. 3. Recognize the use of inventory management tools.
8	5.5.2 Impact of Automation on Kitchen Design	• Layout and Space planning • Equipment selection • Workflow planning • Hygiene and safety	1. Explain how technological integration alters kitchen layout. 2. Describe the role of automation and semi automation in equipment selection. 3. Briefly explain the role of modern technologies in workflow planning

		• LocalRegulatory requirements	3. Describe the impact of budget and staff needs on design decisions. 4. Recognize the role of regulatory compliance in design.
9	5.5.3 Benefits and challenges of Automation and Semi-Automation	• Improved efficiency and consistency • Cost reduction and labour savings • Enhanced safety and precision	1. List the benefits of technological integration in kitchen design. 2. Explain how technology improves efficiency and safety. 3. Elaborate the financial implications on the business with the use of technology.
10	5.6 Kitchen environmental planning (Air pollution & ventilation)	• Control Air pollution • Ventilation systems • Regulatory compliance	1. Describe the role of ventilation in kitchen planning. 2. Identify methods to control air pollution in kitchens. 3. Explain the importance of maintaining a compliant kitchen environment.
11	5.7 Kitchen flooring & wall finishes	• Selection of flooring materials • Selection of wall finishes - Durability and hygiene considerations	1. List suitable flooring and wall finish materials for kitchens. 2. Explain the importance of durability and hygiene in material selection. 3. Recognize the impact of finishes on kitchen safety and aesthetics.
12	5.8 Vendor management	• Vendor selection and evaluation • Contract Negotiations • Performance monitoring and Relationship management	1. Describe the process of selecting and evaluating vendors. 2. Provide an overview on the contract negotiation and vendor on-boarding. 3. Identify methods to monitor vendor performance.
13	5.9 Back of the House planning of Food production	• Layout and zoning of back-of-house areas • Workflow optimization • Staff facility planning	1. Outline the layout of back-of-house food production areas. 2. Explain the importance of workflow optimization. 3. Describe the need for staff facilities (e.g., lockers, break rooms).
14	5.10 Stores -	• Layout of dry, cold,	1. Identify the layout requirements for dry,

	Stores layout and planning (dry, cold and bar), Work flow in back of the house (receiving, garbage and staff movement-Lockers),Various equipment of the stores	and bar stores • Workflow (receiving, garbage, staff movement) • Equipment for store management	1. Identify the layout requirements for dry, cold, and bar stores. 2. Describe the workflow for receiving, garbage disposal, and staff movement. 3. List the essential equipment for effective store management.

5.1 INTRODUCTION

The unit has been structured to help learners understand the essential concepts and practical applications of planning professional kitchens and food production spaces. A well-designed food production area is the backbone of any foodservice operation, and gaining knowledge in this domain ensures efficiency, safety, and customer satisfaction. Through this unit, learners will not only explore the theoretical aspects of design but also understand how these principles are applied in real-world hospitality and foodservice businesses.

While studying this unit the learners will develop an understanding of the principles of kitchen layout and configuration, which are fundamental in ensuring smooth workflow, optimal space utilization, and compliance with hygiene standards. Exposure to different types of kitchens; including live interactive kitchens, cloud kitchens, and conventional setups, will prepare learners for diverse career opportunities in both modern and traditional hospitality formats. By learning about workflow planning across critical areas such as receiving, storage, pre-preparation, preparation, pick-up, and pot wash, students will grasp how a kitchen operates as a well-connected system that directly influences food quality and service speed.

The unit also introduces learners to the role of technology in kitchen design, focusing on automation and semi-automation. This knowledge is particularly valuable in today's rapidly changing industry, where smart equipment, robotics, and advanced cooking systems are reshaping efficiency and labor management. Additionally, kitchen environmental planning, which includes aspects like ventilation, air pollution control, and sustainable practices, enables students to design kitchens that are not only efficient but also environmentally responsible.

Practical considerations such as kitchen flooring, wall finishes, vendor management, and back-of-the-house planning will help learners appreciate the finer details of creating safe, durable, and functional workspaces. Moreover, understanding stores planning i.e. dry, cold, along with back-of-the-house workflows related to receiving, garbage disposal, and staff movement equips students with the ability to design comprehensive systems that minimize wastage and enhance operational efficiency.

By the end of this unit, learners will be able to critically analyze, plan, and design food production spaces that meet international standards of safety, hygiene, and efficiency.

5.2 Principles of Kitchen Layout & Design Consideration

Design and planning of food production is an essential process in order to achieve proper flow of food production, proper utilisation of resources and satisfaction of customers. The type of service provided, the size of the operations, the resources available, and the adherence to mandatory legal regulations is taken into account in the design process.

1 - Kitchen Layout and Planning

5.2.1 Key Principles for kitchen layout and design in Food Production

Effective kitchen layout and design in food production facilities improves efficiency, hygiene, safety, and adaptability to ensure smooth operations and compliance. The following principles are to be considered while planning a food production operation for a facility.

> Workflow and Flow of Materials:

This principle focuses on continuous movement of raw material and staff through the kitchen areas. Care must be taken to ensure there is no unnecessary movement, backtracking or cross contamination.

The layout should allow a well-defined sequence of operations.

o Receiving: The raw materials are collected in this section.
o Storage: The raw material is segregated and set aside in the various areas of storage eg: dry stores, refrigerated stores, and frozen stores.
o Preparation: The raw materials required for preparation are taken initial processing as per the need or requirement (e.g., vegetable washing, butchery).
o Cooking: The processed raw materials are converted into finished goods using various cooking methods (e.g., poaching, baking, grilling, and steaming).
o Service/Dispatch: The finished food is plated or portioned and kept at the food pass to be served to the guests.
o Dishwashing/Pot Washing: The soiled crockery and cutlery from the service are cleaned at the dishwashing area and the pots and pans used in the kitchen are cleaned in the pot washing area.

An optimized workflow minimizes labour costs, reduces food waste, and improves speed of service, directly impacting profitability.

> Ergonomics and Safety:

This principle relates to the layout of the workspace- for the ease, efficiency and safety of the kitchen staff. It reduces physical strain and mitigates the chance of accidents.

o Workstation Heights: Work counters and equipment should be placed at an appropriate height to prevent stooping or over reaching.
o Adequate Aisle Space: Ample clearance for movement of staff movement and equipment transport should be designed (e.g., trolleys) to prevent collisions.
o Non-Slip Flooring: Proper drainage and non-slippery surfaces should be installed to reduce the risk of slipping.
o Proper Lighting: Sufficient lighting without harsh glare in all work areas to minimize eye strain and to create a safe lighting for equipment operation.
o Strategic Equipment Placement: Rearranging equipment to eliminate accidents and to ensure safe operation spaces.

A focus on ergonomics and safety leads to a healthy workforce, reduced employee absenteeism from work, fewer workers' compensation claims, and a more productive environment.

> Sanitation and Hygiene:

In every food business, it is very crucial to uphold the high-level standards of hygiene to avoid any food borne diseases. The structure has to accommodate efficient cleaning and sanitation procedures.

o Material Selection: Choosing the material for work surfaces should be given careful consideration. They should be non-porous, washable, and resilient (e.g., stainless steel for work surfaces, washable paints/tiles for walls).

o Smooth Surfaces: The surface or work areas must be free from cracks, crevices, and sharp corners to avoid accumulation of the dirt, grease, and bacteria.

o Proper Drainage: Adequate floor drains must be made available close to the work areas. The sloping must be proper for effective cleaning and stopping water accumulation.

o Waste Management: Strategically there should be created more than one waste collection point and they must be labelled properly for segregation of wastes. Clean schedules should be established in time for disposal of wastes in a timely manner.

o Handwashing Stations: More than one handwashing sink with soap and paper towel must be installed in the workplace.

Did you know?

PROFESSIONAL KITCHENS ARE OFTEN CALLED "CULINARY HIGHWAYS" BECAUSE THE IDEAL LAYOUT ALLOWS CHEFS AND STAFF TO MOVE LIKE TRAFFIC ON A ONE-WAY STREET—WITHOUT EVER BUMPING INTO EACH OTHER!

It has been observed that strict compliance with the cleanliness standards not only guarantees the health of the guest, but also safeguards the reputation of the firm and makes it compliant with the health regulations.

> Flexibility and Expandability:

A well-planned kitchen enables the organisation to plan for advancement in the menu, technology and operations, therefore preventing expensive renovations in the future.

o Modular Equipment: Making use of equipment that can be easily realigned or replaced to suit to the progressing demands.

o Utility Planning: Designing utility lines (electrical, plumbing, gas) with enough allowance and accessibility for future alterations or pivots.

o Multi-purpose Areas: Spaces designed to have more than one use expand flexibility.

This principle protects long-term investment of the stakeholders, by allowing the facility to remain competitive by adapting to the latest culinary enhancement, and ensures operational continuity without any significant interruptions.

> Supervision and Communication:

The design must enable effective management control and support simple, effective communication by all members of kitchen staff.

o Clear Sightlines: Planning the kitchen with few blind spots so that supervisors can observe activities from multiple locations.

o Centralized Dispatch/Pass: An effectively designed pass area may be used as a central communication point between back-of-house and front-of-house teams.

o Open Kitchen Concepts: Although they demand particular considerations, these types of designs inherently facilitate visibility and interaction.

Improved supervision guarantees standard food quality, improved compliance with procedures, enhanced staff responsibility, and faster resolution of operational problems.

> Energy and Resource Efficiency:

Contemporary kitchen design integrates eco-friendly practices to reduce energy (electricity, gas) and water consumption, keeping operational expenditure as well as environmental footprint to the barest minimum.

o Energy-Efficient Equipment: Investing in energy efficient appliances.
o Zoning and Automation: Temperature control for various segments of the kitchen and utilization of automated systems for lighting and ventilation.
o Water Conservation: Installation of low-flow fixtures and high-efficiency dishwashers.
o Waste Heat Recovery: Investigation into systems that have the ability to recover heat from equipment.

Investments like these saves on utility costs, supports the hotel's sustainability efforts, and attracts green-conscious guests.

Check Back Questions:

1. List any two features that ensure ergonomics and safety in a kitchen workspace.
2. Name one energy efficient practice that helps in water conservation in kitchen.

5.2.2 Factors Affecting Kitchen Design

While planning the kitchen layout and design, the following factors should be taken into account:

o Type of Menu

The character of the menu is the most important single factor in kitchen planning. A bakery, for instance, will require proofing cabinets, deck ovens, and extensive dry storage for flour, while a multi-cuisine restaurant will require a range of specialist equipment for Indian, Continental, and Oriental foods. A live seafood counter requires tanks, ice storage, and specialist preparation facilities too. Thus, the menu determines directly the type of cooking gear, refrigeration, preparation areas, and even storage configuration required to meet production objectives effectively.

o Type of Service – à la carte, buffet, banquet

Different service styles make different requirements on the kitchen. An à la carte restaurant needs to have a design that accommodates made-to-order meals with rapid turnaround, or several cooking lines and large mise-en-place storage. Buffet service, however, calls for bulk cooking capacity, hot holding stations, and dish replenishment counters. Banquet kitchens need high-volume batch production capacity, bulk storage, and efficient plating areas. Therefore, the service style itself will directly impact equipment choice, workflow, and service counters.counter requires tanks, ice storage, and specialist preparation facilities too. Thus, the menu determines directly the type of cooking gear, refrigeration, preparation areas, and even storage configuration required to meet production objectives effectively.

o Space availability

The overall size and shape of space provided will establish functional feasibility by design. Compact kitchens call for compact, multi-purpose equipment, but large areas have separate butchery, bakery, and garde-manger zones. The layout should also allow for free segregation of raw and cooked food streams for reasons of hygiene. Even ceiling height will decide ventilation opportunities and stacking of equipment. Lastly, the kitchen should comfortably occupy the provided square foot without compromising safety, workflow effectiveness, and ergonomics.

o Volume of production

Capacity for production is based on the number of customers and the level of service. A kitchen serving 50 guests daily needs a very different scale of equipment than one serving 1,000. High production demands greater capacity refrigeration, bigger cooking ranges, larger preparation space, extensive storage space, and equivalent dishwashing capacity. Projection of maximum production ensures that the kitchen can produce at peak time.

o Staff strength and skill level

The number of staff and their culinary skills will help us decide the work areas and equipment. Experienced cooks can be assisted by fewer and more specialized equipment and inexperienced or train staff can be assisted with semi-automated equipment and simpler work areas. Staff numbers also dictate aisle width, counter length, and movement flow to avoid crowding and to create a working area.

o Budget for construction and equipment

A realistic budget sets strict boundaries of what is possible. High-tech imported equipment, sophisticated extraction gear, and premium finishes are enticing, but costs can rapidly escalate. The budget will have to walk a fine line between performance and expense and allow for future maintenance. Cost-efficient local alternatives can usually be chosen if they are acceptable in terms of performance, keeping the kitchen within budget limits without compromising on safety and hygiene.

o Local regulations

Local laws and regulations are not negotiable and need to be included in the design process right at the beginning. Food storage temperatures, isolated washing rooms, and disposal of wastes are governed by health regulations. Fire officials will recommend minimum distances between equipment, fire-fighting systems, emergency doors, and flame protection practices. Ventilation, electrical loads, drainage, and employee facilities could be controlled by other codes. Compliance prevents fines and promotes safe operations.

o Ventilation and lighting

Good ventilation is needed to take out heat, smoke, grease, and odours from the kitchen. In the absence of a well-designed exhaust system, staff discomfort and

damage to equipment can ensue, while poor airflow also threatens to contaminate food. Lighting is also crucial to provide a view for food preparation and to aid hygiene. Natural light is an added advantage but needs to be supplemented by adequate artificial light in order to provide consistent, safe working conditions.

o Future growth

A well-designed kitchen must not only accommodate today's requirements but also possibilities for future growth. Whether you are expecting to add to your menu, add live cooking stations, or receive more guests, the kitchen must be expansion-friendly. Modular equipment, adequate utility lines, and additional storage capacity can expansion-proof the kitchen, and money saved on future

Check Back Questions:

1. How does the type of menu influence kitchen equipment selection?
2. Why is it important to consider staff skill levels when designing a kitchen?

5.3 Planning Live, Interactive, Cloud, and Conventional Kitchens

Kitchens are the focal point of a hotel's food and beverage (F&B) operations, having a direct impact on guest satisfaction, operational effectiveness, and profitability. It is important to take into consideration their design, equipment, workflow.

Let us discuss the planning of live and interactive kitchens, cloud kitchens and conventional kitchens.

- Live and Interactive kitchens

Design Consideration

The design of live and interactive kitchens is centred on sight, using open floor plans or glass partitions to enable guests to see the kitchen from the dining room. Cooking areas are often located perpendicular to dining tables so as to maximize visual appeal and accessibility. Visually, kitchens use stunning, functional material with warm overhead lighting to avoid harsh fluorescents. Counters are

typically made of quartz, granite, or man-made stone, often using faux drawer faces for a softer, inviting look. Noise management is important in avoiding ruining the dining experience, utilizing acoustic ceiling panels or spray-on acoustic fibre to dampen the sound of clanging pots.

Equipment Planning

Appliances in live and interactive kitchens must not only be attractive but also practical, with easy-to-clean surfaces like stainless steel, decorative glass, and subway tile back walls. Low-profile flues, around 7 feet high, are constructed from functional but decorative materials like mirror, copper, or brass to be as beautiful as they are functional.

2- Live and Interactive Kitchen

- Cloud Kitchen

Design

Cloud kitchens are designed for maximum efficiency of food preparation and delivery with no dine-in spaces. The space is small, focusing on high-volume production in a low-footprint location. Workspaces are streamlined to achieve quick food preparation, with unobstructed zoning for preparation, assembly, and packaging. Specialized packaging and order pickup areas are essential to provide immediate handoffs to delivery drivers. These

3- U- shaped layout

4 Single Layout

areas generally feature shelving for fulfilled orders and insulated storage for the upkeep of food quality. The design does away with front-of-house space, limiting the structure to only operational flow, which makes cloud kitchens functional in smaller areas than conventional restaurant kitchens. Layout accommodates a linear flow from preparation to packaging, with minimal movement and the ability for small groups of workers to produce high volume. Constant order pattern analysis and prep time analysis further optimize efficiency, bringing operations into sync with high-delivery demand times.

Equipment Planning

The appliances in a cloud kitchen are optimized for delivery-geared operations. Central equipment consists of ranges, convection ovens, deep fat fryers, and refrigerators to accommodate varied menu items. New to cloud kitchens are dedicated packaging stations with heat-sealing machines, labelling systems, and insulated containers to provide food safety and quality transit assurance.

- Conventional Kitchens

Design

Conventional kitchens are designed as back-of-house spaces, away from customer view, to accommodate multifaceted F&B functions like room service, restaurant dining, and banquet. Standard configurations are single-line (Pullman), galley, L-shape, U-shape, island, and G-shape, with unobstructed staff flow through the "work triangle" (stove, sink, refrigerator).Efficiency is the

3-Parallel (Galley) shaped Layout

4 - L shaped Layout

prime focus of workflow planning, with definitive of roles (e.g., executive chef, sous chef, station chefs) and work-time-motion studies to boost productivity. Kitchens are divided into cold (commissary, butchery, garde manger, bakery) and hot (Indian tandoor/gravy, Continental, Chinese, halwai) divisions to plan operations for heavy guest volumes.

Equipment Planning

They utilize bulk utensils such as ranges, induction cook-tops, convection ovens, deep fat fryers, steamers, grills, and tilting skillets. Mechanical equipment includes mixers, peelers, mincers, refrigerators, and dishwashers.

5 - Island Kitchen layout

Comparative Analysis of the equipment selection for Cloud kitchen, Live/Interactive Kitchen and Conventional Kitchen

Equipment Category	Cloud Kitchen	Live/Interactive Kitchen	Conventional Kitchen
Cooking Equipment	Compact induction ranges, combi ovens, fryers with timers	Show-style induction cooktops,teppanyaki grills, open-flame ranges	Heavy-duty burners, bulk cooking ranges, tilting pans
Ventilation	Basic exhaust hoods, sometimes ductless	High-end chimneys with quiet operation & glass hoods for visibility	Industrial chimneys and duct systems for grease and smoke
Preparation Equipment	Space-saving prep tables, food processors	Sleek, open workstations, minimal noise tools	Standard prep counters, grinders, mixers
Storage (Cold & Dry)	Upright freezers, compact chillers	Under-counter chillers (for aesthetics), display chillers	Walk-in cold rooms, deep freezers, bulk dry racks
POS & Ordering Systems	Integrated POS with online delivery, multiple tablet stations	Kiosk-based or mobile POS with customer view	Traditional billing counters or restaurant POS systems
Food Holding & Warming	Heated cabinets, insulated delivery bags	Heated display counters, visible warming trays	Bain marie, heat lamps, hot cases
Plating & Garnishing Area	Minimal, behind the scenes	Open garnishing counter with aesthetic tools	Internal service counter, out of guest view
Dishwashing Area	Compact under-counter dishwashers or outsourced	Discreet or off-stage dish clearing	Full-scale dishwashers with 3-sink systems
Waste Management	Sealed bins, compostable delivery packaging	Designated concealed bins, often less visible	Traditional large bins, back-of-house segregation

Technology Integration	IoT-enabled inventory & order tracking	Live camera feeds, AV systems for customer engagement	Limited tech, unless recently upgraded
Customer Interaction Area	Not applicable	Integral (cooking in front of guest), needs showmanship	Not a priority; customers rarely access kitchen
Space Requirements	Minimal (~200–300 sq. ft)	Medium to large (~300 – 600 sq. ft)	Large (~600–1000 + sq. ft)
Aesthetics	Functional, not a priority	High-priority — aesthetic counters, chef uniforms, lighting	Neutral or utility-focused, often not visible
Safety Equipment	Fire suppression system, CCTV for remote monitoring	Display-safe fire protection, staff training for guests' safety	Industrial fire blankets, hoods, extinguishers

Check Back Questions:

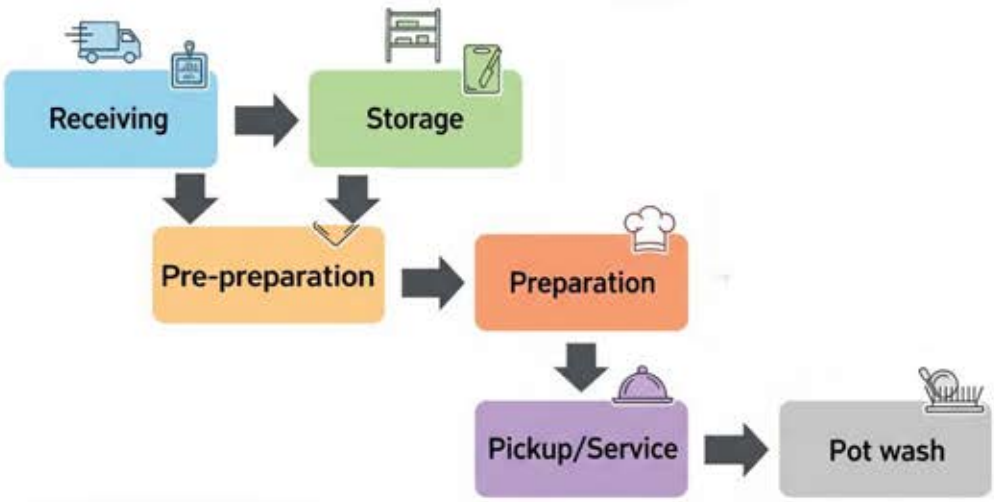
1. How does the design of a cloud kitchen differ from a conventional kitchen?
2. List two pieces of equipment essential for a cloud kitchen's delivery operations.

5.4 Kitchen work flow and planning for receiving, storage, pre- preparation, preparation, pick up and pot wash area

Kitchen planning and workflow are critical domains of hotel operation that ensure efficient food production, cleanliness, and customer satisfaction. An efficient flow of the kitchen is required to ensure food safety, effectiveness, and quality output. A rational flow of work facilitates smooth operations, keeps unprocessed food from coming in contact with processed food there by upholding the hygiene standards. Let us understand the workflow and planning considerations for the six key kitchen sub-departments: receiving, storage, pre-preparation, preparation, pick-up, and pot wash.

- Receiving Area

The receiving area of a hotel facility is an important hub where ingredients, supplies, and raw materials are received, inspected, and brought into the kitchen. Goods are received from suppliers at a specific receiving dock where employees carefully check the quality, quantity, and condition of items against purchase orders. After acceptance, the commodities are either delivered to storage for future use or transported straight to preparation areas, promoting smooth supply flows to facilitate the activities of the hotel.



6 - Workflow of Food Production Operations

Planning and Workflow Considerations for Receiving

- o Receiving area must be located near the rear entrance of the hotel which can be accessed by the suppliers.
- o An area of 150-200 sq ft needs to be designated for receiving and inspection.
- o A raised platform should be made available for unloading of the good and other raw material from the delivery vehicles.
- o Weighing scales, stainless steel inspection tables, hand wash sinks, and trolleys are some of the

Planning a receiving area is very important and needs to be done thoughtfully. It must be located near the rear entrance and docks so that the suppliers can reach it. Weighing scales, stainless steel inspection tables, hand wash sinks, and carts are some of the necessary equipment needed in the receiving area. For safety and hygiene, have non-slip floors, clear aisles, and pest control. Lastly, workflow

- Storage Area

Workflow within the storage facility of a kitchen is significant in ensuring ingredient quality and fluid operations. Dry storage maintains non-perishables such as grains and spices in dry and cool conditions, whereas cold storage keeps perishables such as dairy and meat in refrigerators or freezers at specific temperatures. The use of first-in, first-out (FIFO) inventory control enables freshness, reduces wastage, and facilitates cost control. By integrating storage with receiving and pre-preparation spaces, the workflow allows for smooth ingredient flow, minimizing downtime and adherence to food safety standards, overall improving kitchen productivity.

There should be good planning of storage while considering types, equipment, layout, cleanliness, and workflow integration to ensure effective storage. Dry storage must take up 15-25% of kitchen space, stored at 10 to 22°C and 50-60% humidity, whereas cold storage consists of walk-in refrigerators (2 to 5°C) and freezers (-18to0°C) with high-value items like liquor being in different sections. Equipment like stainless steel or polymer shelving, walk-in coolers with digital temperature reading, and inventory tracking systems ensures durability, sanitation, and FIFO adherence. The design should locate storage close to receiving and pre-preparation stations, utilizing modular to provide flexibility and ease of cleaning. Safety and hygiene practices, such as 6-inch clearances from the wall and floor, proper ventilation, and locking storage for hazardous or valuable materials, avoid pest problems, mold, and theft, and provide a safe and effective storage environment.

- Pre-Preparation Area

The process in the pre-preparation section ensures efficient kitchen management by undertaking first-stage food preparation operations including cleaning,

cutting, and portioning. Cleaning entails washing vegetables, fruits, and proteins to provide cleanliness, cutting and chopping processes like dicing, slicing, or trimming prepare ingredients for cooking, and portioning produces mise en place, including measured spices or marinated meat, that ensures efficiency during busy cooking hours. By providing a continued flow from storage to pre-preparation and on to cooking spaces, this process decreases preparation time, ensures consistency of food quality, and assists with overall kitchen productivity.

Preparation area planning necessitates diligent attention to space, location, equipment, sanitation, and workflow integration. It should be located between preparation and storage areas to maximize ingredient flow, with 20-30% of kitchen space assigned by menu complexity. Key equipment comprises stainless steel prep tables with integral sinks, vegetable peelers and slicers (e.g., 6-8 kg capacity), color-coded cutting boards to avoid cross-contamination, and refrigerators for short-term storage of prepped ingredients. Safety and hygiene are ensured through multiple sinks for handwashing, sanitizing stations, non-slippery surfaces, and sufficient illumination for precise tasks, and different sections for raw meat, seafood, and vegetables. Clean routes to preparation zones and synchronization with storage ensure constant availability of raw material inputs, improving efficiency and safety.

8 - Preparation area

- Preparation Area

The flow in the preparation area is critical since it includes the last leg of cooking and assembly of dishes that impacts dish quality and speed of service. This area deals with cooking procedures like grilling, frying, baking, or sautéing, specific to the hotel's menu and dining ideas. Plating comes in next, concerned with visual appeal, and quality control guarantees dishes comply with the

9 Preparation Area

establishment's standards prior to movement to the pick-up area. Through coordination with the pre-preparation zone for prompt ingredient delivery and fast transfer to the pick-up zone, the preparation process maximizes kitchen efficiency, reduces service time delay, and increases guest satisfaction.

Optimal planning of the preparation zone includes strategic placement, sufficient area, specialized equipment, sanitation, and workflow incorporation. Centrally located in the kitchen, proximal to pre-preparation and pick-up zones, it takes up a usual 30-40% of kitchen space. The essential equipment comprises cooking ranges, induction cook-tops, convection ovens, grills, deep fat fryers, steamers, and small equipment such as mixers grinders, blenders, and toasters, and utensils such as stockpots, sauté pans, knives, and tongs. The design must have specialist zones (e.g., sauce, roast, pastry) to optimize efficiency, and maintain a "work triangle" (refrigerator, sink, stove) of 15-22 ft perimeter. Hygiene and cleanliness are maintained through exhaust hoods, ventilation systems, fire extinction systems, easily accessible fire extinguishers, and raw and cooked food stations to avoid cross-contamination. Proper synchronization with pre-preparation and pick-up points keeps the ingredient flow smooth and enables efficient service, which aids operational excellence.

- Pick-Up Area

The pick-up area is an essential transition location where prepared foods are picked up by service staff or delivery staff to provide smooth coordination between kitchen and front-of-house functions. The process includes having chefs place completed dishes on the pass for servers to pick up, having a final quality check to verify presentation and order accuracy, and handing off dishes to front-of-house personnel or delivery drivers in cloud kitchens. The streamlined process reduces service wait times, preserves food quality, and increases guest

satisfaction by ensuring accurate and timely delivery of dishes.

The pick-up area should be located close to the preparation area and dining room entrance for easy and speedy service, occupying a small area of 50-80 square feet. The necessary equipment is heated passes or warming lamps to preserve food temperatures, order organization shelves or counters, and kitchen display systems (KDS) to track orders, especially in cloud kitchens.

- Pot Wash Area

The process in the pot wash section is crucial to maintaining cleanliness and providing a steady flow of clean equipment, utensils, and cookware, which directly contributes to kitchen efficiency. Scraping food particles from utensils and pots first, washing in dishwashers or manual sinks, sanitizing to health requirements, and storing returned clean items in their specific places follow each other. By coordinating with preparation zones to provide a constant supply of clean cookware and scheduling the cleaning so that it doesn't cause

interruptions during busy periods, the pot wash zone avoids bottlenecks, maintains food safety, and allows smooth kitchen operation, ultimately improving productivity and health regulation compliance. It needs to be located close to preparation and pre-preparation zones but not in close proximity to prevent contamination, and 10-15% of the kitchen space can be dedicated. Basic equipment involves the use of three-compartment sinks for sanitizing, rinsing,

Check Back Questions:

1. How does the pick-up area contribute to guest satisfaction?
2. List the equipment used in the pre-preparation areas to prevent cross contamination.

5.5 Effect of Technology (Automation and Semi-Automation) in Kitchen Design

Automation and semi-automation are revolutionizing kitchen designs in the hospitality industry, enabling hotels to enhance efficiency, reduce costs, and improve guest satisfaction. Let us understand the new age technologies used in modern kitchens, its impact on the kitchen design, benefits and challenges in automation influencing kitchen layout, equipment, workflow, and operational strategies.

Automation: Fully mechanized processes that replace human labour, such as robotic cooking arms or automated inventory systems.

Semi-Automation: Technology that assists human staff, such as smart ovens with preset cooking programs or kitchen display systems (KDS) for order management.

5.5.1 Key Technologies in Kitchen Design

- Semi-Automated Cooking Equipment

Cutting edge technologies like combi-ovens, automatic pizza makers, and sous-vide machines transform the way kitchens work.

o More efficient and consistent products

o Provides uniform food quality through computerized control of food preparation

o Eliminates human error with controlled temperature and time.

o Save labour costs by replacing repetitive operations.

10 - Automatic Pizza Maker

- Kitchen Display Systems (KDS)

Kitchen Display Systems (KDS), a subset of touch screen monitors coupled with point-of-sale (POS) systems

o Automated kitchen processes eliminate paper tickets, minimizing errors, and optimizing order accuracy.

o They allow real-time communication between front-of-house and kitchen staff.

o Permits seamless coordination and faster service.

11 - Kitchen Display System

o Essential for cloud kitchens, as it allows precise order tracking and management.

o Maximizes workflow, reduces delays, and enables high-volume performance in high-pressure situations.

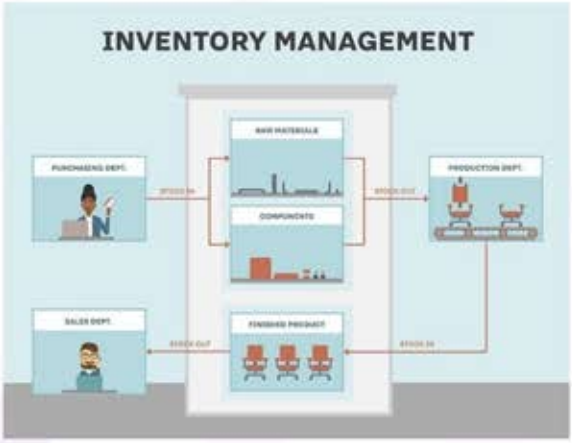
- Inventory Management Systems

Improves the efficiency of the kitchen by monitoring stock levels and reordering automatically

Eliminated food waste through first-in, first-out (FIFO) tracking.

o Systems make optimal use of storage by forecasting demand and minimizing overstocking, ensuring efficient use of ingredients.

o The systems provide seamless updates to inventory, reducing costs, streamlining operations, and maintaining a level of materials for efficient kitchen workflows.



12 - Inventory Management

- Robotics and Conveyor Systems

Robotics and conveyor belts, such as robotic arms to cook or plate and conveyor

13 - Conveyor Belt

belts for dish delivery to pick-up points are a wonderful technological advancement.

o Improve the efficiency of the kitchen to a great extent in heavy-volume operations.

By making repetitive tasks automated, these systems improve output, enabling quicker service and less physical exertion on personnel.

o Enhances working speed, reduces labour requirements, and assists in maintaining consistent performance in high-traffic kitchen operations.

- Smart Appliances

Smart appliances like IoT-ready refrigerators, remotely monitored ovens, and energy-saving dishwashers enhance kitchen performance.

14 - Sous vide machine

o They deliver real-time information on equipment condition, reducing downtime, and maintaining consistent operation.

o Through the integration of sophisticated monitoring and energy-conserving features, smart appliances enable operation reliability and sustainability and lower long-term costs.

- Cleaning and Sanitation Technology

Cleaning and sanitation technologies like automated dishwashing, UV sanitizers, and self-cleaning ovens promote kitchen hygiene and efficiency by ensuring health code compliance.

o These systems optimize cleaning functions, especially in pot wash facilities, reducing the time spent on cleaning and elevating efficiency levels.

o By optimizing and automating sanitation functions, they enhance hygiene levels, reduce labour requirements, and promote a uniform, safe kitchen environment.

5.5.2 Impact of Automation on Kitchen Design

- Layout and Space Planning

Automation simplifies kitchen planning by allowing efficient layouts with smart equipment. The equipment is placed to minimize staff mobility with automated equipment in the centre to achieve efficient workflow, as well as modular configurations to offer flexibility to accommodate future upgrades, for flexible and efficient kitchen operations.

- Equipment Selection

Aesthetics, integration, and energy efficiency are the top considerations in choosing equipment for automated kitchens. Kitchen flows are maximized by choosing equipment that is easily integrated with Kitchen Display Systems (KDS) and inventory software. Automated appliances that look visually appealing, like the new age combi ovens, improve the visiting experience for open or interactive kitchens. Energy-efficient appliances are a good choice for contemporary, cost-effective, and guest-focused kitchen designs because they lower operating costs and cater to sustainability trends.

- Workflow planning

Cutting edge technologies maximizes kitchen operations by simplifying processes, minimizing labour, and allowing employees to concentrate on high-skilled tasks such as plating or guest interaction, allowing service quality to be improved. IoT platforms give real-time feedback for detecting and resolving workflow bottlenecks, allowing operations to improve continuously.

- Hygiene and Safety

Use of technology facilitates kitchen safety and hygiene by integrating sophisticated technologies that ensure compliance and mitigate risks. Automated cleaning equipment, including self-cleaning ovens and UV sanitizers, lowers the risks of contamination, where high hygiene levels are maintained. Automated safety features, such as sensors in automated equipment, including auto-shutoff

for overcooked ovens, help to reduce accidents, resulting in a safe working environment. Technologies with accurate temperature control and sanitation monitoring also help to ensure health code compliance, facilitating a safe and compliant kitchen facility.

- Staff Training

Technological advancements need specialized training facilities to equip staff in operating sophisticated systems, using technology applications. By changing the nature of staff roles from manual labour to supervision and management of automated systems, training processes need to be followed to gain technical expertise.

5.5.3 Benefits and Challenges of Automation and Semi-Automation

Kitchen automation and semi-automation enhances efficiency and consistency in the kitchen which leads to customer satisfaction, reduced costs. Since automation reduces preparation and service time, these technologies are very important in high-volume uses like banquets or delivery operations. Automation enables scalable cloud kitchen models and high-demand seasons with minimal additional resources.

However, it can be an expensive as an initial investment and may require large capital outlay. The sophisticated systems require regular maintenance and technical support, increasing the operational cost. Staff adaptation requires extensive training to transition to technology-based processes, which could be time-consuming and expensive. Retrofitting kitchens for automation could be challenging in installed kitchens because the space is limited, thus it is less practical in older institutions. Over-reliance on automation also causes disruption when equipment fails, potentially impacting operations and service.

Check Back Questions:

1. How do smart appliances contribute to kitchen sustainability?
2. What is the primary benefit of using semi-automated cooking equipment like combi ovens?

5.6 Kitchen Environmental Planning: Air Pollution and Ventilation

Kitchen environmental planning is critical to ensuring a safe, efficient, and compliant operational kitchen. Cooking produces pollutants like smoke, grease, and smells that affect workers' health, food quality, and customer satisfaction. Proper ventilation systems remove such pollutants, provide excellent air quality, and ensure compliance with health and safety regulations. Let us understand the air pollution, ventilation strategies and their impact on kitchen operations.

- Air Pollution in Kitchens – Source and Impact

Kitchen operations generate a variety of pollutants, including particulate matter (PM) like grease particles and smoke from frying, grilling, or roasting of food. Volatile organic compounds (VOCs) from food cooking oils, spices, food spoilage, and cleaning products like detergents and sanitizers add to the list of pollutants. These pollutants are dangerous to the health of kitchen staff in terms of respiratory health, allergy, or fatigue through long-term exposure. Grease accumulation in exhaust pipes creates the risk of fire hazard thereby compromising safety. Odors that penetrate into dining areas, particularly in live or interactive kitchens, can damage guest experience by drifting away from the ambience. Effective ventilation and hygiene measures are necessary to mitigate health and environmental risks. Failure to control pollutants also invites regulatory non-compliance with health and safety regulations, risking fines or closures, and hence pollution control measures become an imperative necessity.

- Ventilation Systems in Kitchens

Ventilation systems in the kitchen, such as makeup air systems, exhaust systems, mechanical ventilation, and natural ventilation, are critical to controlling pollutants and ensuring a safe, efficient working environment. Exhaust systems consist of canopy hoods (wall-mounted, island, or low-profile) placed over cooking appliances to remove heat, smoke, and grease, proximity hoods that are placed closer to equipment for greater efficiency in reduced spaces, and compensating hoods that incorporate makeup air to equalize pressure. Makeup air systems provide fresh air to drive out spent air, avoiding negative pressure and back drafts that diminish HVAC performance. Mechanical ventilation, through the use of fans and ductwork, provides constant airflow, essential for large-volume kitchens, while natural ventilation, though less dependable due to mixed airflow, can support smaller arrangements.

- Maintenance of Kitchen ventilation systems

Regular maintenance and cleaning of kitchen exhaust ventilation systems are necessary to enhance safety and efficiency. This includes monthly cleaning of regular grease filter and duct to prevent fire hazard, as required by NFPA 96. Access panels should be included in duct design to facilitate cleaning and inspection, optimizing maintenance practices. Incorporation of automated equipment like UV-C lights or electrostatic precipitators prevents build-up of grease and odours, enhancing system performance, reducing fire hazards, and providing a clean kitchen ambiance while facilitating compliance with safety standards.

- Regulatory Compliance

o NFPA 96: NFPA 96 sets preventive and operational requirements for fire safety designed to minimize the potential fire hazard of private and public commercial cooking operations. Controls ventilation and fire protection for commercial cooking, and requires fire-resistant materials and suppression systems.

o AASHRAE Standards: ASHRAE (American Society of Heating, Refrigerating and Air-Conditioning Engineers) develops and publishes standards with guidelines in various areas of HVAC (Heating, Ventilation, and Air Conditioning) and refrigeration systems. They specify minimum ventilation rates and indoor air quality standards for enclosed environments.

o Local Health Codes: Mandate periodic inspections, cleaning schedules, and air quality monitoring to ensure compliance.

o HACCP Guidelines: Require ventilation to prevent cross-contamination and maintain food safety.

Check Back Questions:

1. How do exhausts systems help improve kitchen safety?
2. What is the purpose of makeup air systems in kitchen ventilation?

5.7 Kitchen Flooring and Wall Finishes

Kitchen flooring and wall finishes are necessary for safety, hygiene, and

effectiveness of a functioning kitchen. Some of the materials used for flooring are quarry tiles, which are resistant, non-slip, and grease-proof, suitable for high-traffic kitchens; epoxy resin, providing seamless, water-resistant, and cleanable surfaces; porcelain tiles, offering durability with aesthetic flexibility; and vinyl, a budget-friendly, non-slip material resistant to moisture and stains.

Quarry tiles

Epoxy Resin

Porcelain tiles

Vinyl

Types of Flooring used in Food Production

Wall finishes should be moisture-proof, easy to clean, and visually appealing, particularly for live or interactive kitchens, to create guest appeal while ensuring functionality. Wall finishes consist of stainless steel, highly durable and sanitary to clean; ceramic tiles, moisture-proof and coming in many designs for live kitchens; fibreglass-reinforced panels (FRP), economical and sanitary to clean; and acrylic or vinyl wall coverings, offering moisture resistance and visual attractiveness for interactive kitchens.

Ceramic tiles

Stainless steel

Fibreglass-reinforced plastic (FRP)

Acrylic-style or PVC

Types of Wall Finishing used in Food Production

Check Back Questions:

1. Name two materials used for kitchen flooring that are resistant to moisture.
2. List the suitable wall finishing that offers moisture resistance and visual attractiveness?

5.8 Vendor Management

Vendor management involves the overseeing of relationships between service providers and suppliers to ensure effective maintenance, construction, and design of kitchen facilities. Vendors supply a variety of supplies like cooking equipment, ventilation systems, wall finishes, and flooring, and therefore their administration is vital for quality, compliance, and cost control.

- Vendor Management Process

Vendor management is a structured process with emphasis on vendor selection, hiring, tracking, and relationship maintenance. It is integrated with the hotel's operational and strategic objectives. The process is divided into four broad parts

o Business Objectives

Set clear objectives, such as HACCP-approved hygiene standards, durability in mass production, or aesthetic finish for live kitchens. Use SMART goals (Specific, Measurable, Achievable, Relevant, Time-bound) to align vendor deliverables. Specify requirements for the flooring or ventilation systems.

o Vendor Selection

Identify suppliers with expertise in food production equipment, such as NSF-certified or KDS-integrated refrigerators, for example. Evaluate suppliers based on certifications, dependability, and experience working on similar projects (e.g., cloud kitchens) to guarantee compliance with food safety regulations. Conduct due diligence to verify the financial stability checks and testimonials.

o Contract Negotiation and On-boarding

Vendor on-boarding and contract negotiation align vendors with project goals through clear terms and vendor training. Negotiations establish service level agreements (SLAs) with Key Performance Indicators for delivery schedules, defect levels, and cost compliance, including maintenance requirements (e.g., NFPA 96-compliant ventilation cleaning) and penalties for non-compliance. On-boarding includes training sessions to familiarize vendors with kitchen specifications, e.g., 16-gauge stainless steel wall panels, to finish the work on time, in accordance with hygiene, and effectively for successful project delivery.

o Performance Monitoring and Relationship Management

Performance monitoring ensures vendors meet contractual obligations and maintaining long-term vendor relationships in food manufacturing facilities. It involves tracking Key Performance Indicators like delivery time, defect rates (e.g., faulty tiles), and vendor management software (VMS) for effective tracking. Regular checks and feedback improve vendor performance, while open communication resolves issues in a timely manner.

- Benefits of Effective Vendor Management

Effective vendor management in food production facilities provides cost effectiveness through favourable terms. The cost monitoring compliance provides quality control through dependable vendors providing safe and clean materials and equipment (e.g., NSF or HACCP certified). This lowers the risk of supply chain disruptions through thorough screening and contingency planning. It maximizes operational effectiveness through on-time delivery and quality installation, to meet project schedules. Healthy vendor relationships create long-term value, promoting innovation and reliability for consistent kitchen performance and compliance.

Summary

Vendor management ensures procurement of quality, compliant equipment and materials for walls, floor coverings, and ventilation. By establishing clear goals, selecting reliable vendors, negotiating solid contracts, and monitoring performance, hotels are able to achieve safe, efficient, and cost-effective kitchen designs.

Check Back Questions:

1. What is the primary goal of vendor management in kitchen design?
2. List two Key Performance Indicators (KPIs) used in performance monitoring.

5.9 Back-of-the-house (BOH) planning for food production

Back-of-the-house (BOH) planning for food production unit encompasses all the behind-the-scenes operations vital for delivering quality meals and ensuring the

overall success of the establishment.

Here are key aspects of BOH planning for food production:

- Kitchen layout and workflow

o Design for Efficiency: The kitchen layout should be optimized for a smooth workflow, minimizing unnecessary movement and preventing bottlenecks. Consider the flow from receiving ingredients to preparation, cooking, plating, and finally, dishwashing.
o Linear Flow: Design a logical sequence (receiving → storage → pre-preparation → preparation → pick-up → pot wash) to minimize cross-traffic.
o Work Triangle: Optimize the refrigerator-sink-stove triangle (15-22 ft perimeter) for efficiency.
o Work Zones: Use clear delineation (e.g., flooring colours, partitions) to separate functional areas and enhance workflow clarity. Divide the kitchen into distinct work zones, such as prep areas, cooking stations, dishwashing stations, and plating areas.
o Equipment Placement: Strategically place equipment based on the natural flow of work and ease of access for the staff.
o Mise en place: Encourage the practice of "everything in its place" before service to streamline operations during peak hours.

- Inventory management and storage

o Organized Storage: Maintain a well-organized storage area, categorizing items (dry goods, refrigerated, frozen, etc.) and labelling them clearly with names, dates received, and expiration dates.
o FIFO Method: Implement the "First In, First Out" (FIFO) method for stock rotation to ensure older items are used before newer ones, minimizing spoilage and waste.
o Optimal Stock Levels: Keep inventory levels as low as possible while meeting demand to reduce waste and optimize storage space.
o Technology Integration: Consider using inventory management software to track stock levels, monitor usage, forecast demand, and automate reordering.

- Staffing and scheduling

o Determine Staffing Needs: Assess the required number of staff based on your menu, production volume, and service hours.
o Create a Staffing Matrix: Develop a staffing matrix that outlines the roles and

responsibilities of each team member during different shifts and ensures adequate coverage.
o Cross-Training: Cross-train staff members for different stations and roles to enhance flexibility and adaptability during peak times or staff shortages.
o Communicate Clearly: Establish clear communication channels between BOH and front-of-house (FOH) teams to avoid errors and ensure timely service.

- Sanitation and food safety

o Adherence to Standards: Ensure strict compliance with all local health codes, food safety regulations, and HACCP protocols.
o Cleaning Procedures: Implement regular and thorough cleaning and disinfection schedules for the entire kitchen and all equipment.
o Hand Hygiene: Emphasize and enforce proper hand washing techniques and glove use among food handlers to prevent cross-contamination.
o Equipment Maintenance: Regularly inspect and maintain kitchen equipment to ensure proper functioning and prevent safety hazards.

- Technology and equipment

o Kitchen Display Systems (KDS): Digital screens replacing traditional paper tickets can streamline order flow and improve communication between FOH and BOH.
o Automated Systems: Explore smart appliances and IoT devices for tasks like remote monitoring of ovens or refrigerators that track inventory, which can potentially lower labour costs and improve consistency.
o Right Tools: Invest in appropriate and well-maintained kitchen equipment that meets the specific needs of your menu and operations.

By focusing on these elements, a well-planned and efficiently run Back Of House operation can significantly contribute to the success of your food production and the overall customer experience

Check Back Questions:

1. What is the main goal of optimizing kitchen layout in BOH planning?
2. Elaborate on the point that a well-planned BOH layout prevents bottlenecks during service.

5.10 Stores – Stores layout and planning (dry, cold and bar), Workflow in back of the house (receiving, garbage and staff movement- Lockers)

Stores form the cornerstone of hotel kitchen operations, ensuring the safe and efficient storage of ingredients and beverages. Store layout, workflow and equipment selection combined with effective back of the house processes are critical for food production efficiency, hygiene and cost control.

Types of Storage facilities in Food Production:

- Dry Storage

Food Storage Stock Rotation
FIFO Checklist

Food Storage Stock Rotation
First-In-First-Out

Dry storage rooms are used to house non-perishable goods such as grains, spices, and canned products in a layout close to the receiving area to reduce transport distance and off heat sources to preserve quality, taking up 10-15% of kitchen area at 10 to 20°C and 50-60% humidity. It should be equipped with non-porous shelves with adjustable stainless steel or polymer shelving provides durability and sanitation, with 6-inch clearance from the walls and floor to avoid pest infestation. The products are stored as per category with clear labels for FIFO inventory. The dry store should be well-lit, well-ventilated spaces to prevent mold and spoilage. Dry storage includes, pest control, and secure storage for valuable products, providing hygiene, safety, and effective ingredient control.

- Cold Storage

Cold storage is used to for storage of highly perishable foods such as dairy, meat, seafood, and fruits. The setup includes walk-in coolers/freezers with insulated panels and electronic temperature control, reach-in units for high-use items, and individual units for raw meat, seafood, dairy. Cold storage units are placed next to receiving and pre-preparation sections for efficient flow, taking 5-10% of the kitchen area. Based on the perishability and nature of usage, the food is store in refrigerators (2 to 5°C) and deep freezers (-18 to -10°F). Hygiene and safety are

ensured through easy-to-clean surfaces, automatic door closers, and alarm for temperature fluctuations, for food safety, quality, and health standards compliance.

- Bar Storage

Bar storage in hotel facilities is used to store alcoholic and non-alcoholic beverages, like wines, spirits, and mixers, safely in a configuration near the bar service area or dining room entrance to enable efficient service. This section of store occupies 2-5% of the total kitchen space based on volume of service. The design consists of temperature-regulated wine cellars (10 to 15°C for wine, 2 to 5°C for beer), lockable cabinets for expensive spirits, and shelved storage for bottles, glasses, and bar equipment, with efficient ventilation to manage humidity and mold.

15 - wine storage unit

Workflow in Back of the House

Well planned Back of House workflow allows for the seamless integration of stores with receiving, waste disposal, and employee movement, minimizing disruptions and enhancing productivity.

- Workflow of Receiving Areas

Workflow in Receiving includes suppliers offloading goods to an allocated external loading dock, where receiving staff check quality, quantity, and condition against purchase orders prior to transferring goods to dry, cold, or bar storage, or directly into pre-preparation area. Inventory management software provides precise tracking of goods, simplifying operations, reducing delays, and providing high-quality ingredients into the kitchen, enhancing efficiency and compliance.

- Garbage Management Workflow

Waste management process involves sorting waste from pre-preparation, preparation, and pot wash; into organic, recyclable, and hazardous waste categories. Multiple colour coded dustbins are placed in the work areas for collecting waste and transferring them to outside points of disposal. The garbage management area is 50-100 sq ft in size near the pot wash and preparation areas with accessibility to outside disposal points, using stainless steel bins, compactors, waste chutes, and cleaning stations, supported by non-slip floors, proper drainage, and ventilation for cleanliness and odour control.

16 - Garbage management workflow

Coordination with receiving and pot wash areas ensures efficient waste collection and disposal, maintains cleanliness and complies with environmental regulations.

- Staff Movement and Lockers

Staff movement and lockers workflow in back of house areas ensures efficient and hygiene operation. The staff is routed through designated staff entrances to the locker rooms to change, then to workstations in a logical sequence (e.g., receiving → storage → pre-preparation) to eliminate cross-traffic, with lockers storing uniforms, personal items, and hygiene supplies. The locker rooms are placed near staff entrances, but away from food production areas to prevent contamination. The staff room are equipped with lockers to keep the personal belongings, benches and beds to relax, hand wash sinks, vanity mirrors, shoe polishing units and waste disposal units. The room is well ventilation, offering hygiene, reducing congestion, enhancing morale, and maintaining operating efficiency.

- Equipment used in stores

Equipment selection allows for storage conditions, inventory management, and workflow efficiency.

o Equipment used in Dry Store

• Shelving Units: Stainless steel shelves for proper food storage. The high of the shelf are adjustable for convenience.
• Pallet jacks: For moving heavy product in dry and refrigerated storage, at the same time to transport heavy boxes from the receiving areas to the store.
• Air Conditioner / Dehumidifier: Controls temperature and humidity to prevent spoilage.
• FIFO Labelling System: Ensures effective inventory rotation (First In, First Out).
• Sealed Food Containers or Bins: For large quantities of ingredients like flour or sugar. Keep out pests and moisture.
• Weighing Scales: To divide or share ingredients to produce.
• Trolley/Cart: For carrying heavy/bulky items safely.
• Pest Control Devices: Rat Traps and Ultrasonic Repellents for food safety and to maintain hygiene.

o Cold Storage Equipment

• Walk-in Chillers / Freezers: Used to store perishables items in bulk.
• Temperature Monitoring System: Delivers uniform cooling; includes alarms for temperature breach.
• Blast Freezer/Chiller: Rapidly freezes hot food to safe storage temperature.
• Lighting (Moisture-proof LED): Provides lighting at low-temperature environments.
• Storage Trays/Bins: Food-grade plastic or stainless steel for hygienic segregation storage of products.
• Colour-coded Containers: To avoid cross-contamination during storageof meat, veg and dairy products.
• Fire Suppression System (CO_2 type): Perfect for Class B fires (flammable liquids like alcohol, spirits) and Class C fires (electrical equipment). They discharge carbon dioxide gas, which smothers fire without harming electronics.

o Bar Storage Equipment

• Wine Beer Coolers: Temperature-controlled units organise and safe storage of

wine 10-15°C and beer 2-3°C.
• Locked Cabinet: Needed for Storage of expensive alcohol bottles
• Bar Trolley/Transport Cart: Convenient transport to service bars.
• Glass Racks/Crates: For storage and transportation of bar glassware.
• Inventory Software: To track inventory in real time and control.

Check Back Questions:

1. How does the placement of bar storage near the dining room entrance benefit operations?
2. What is the benefit of routing staff through designated entrances?

LET US SUM UP:

This unit analyses the designing and planning and of food production facilities to enhance efficiency, safety, and guest satisfaction in hotel operations. It comprises of principles kitchen design and layout arrangement to optimize workflow, safety, and flexibility. The unit delves into the planning of different types of kitchens like live and interactive, cloud, and conventional. Detailed workflow for major areas, such as receiving, storage, pre-preparation, preparation, pick-up, and pot wash, are outlined to allow for hygiene and productivity. The inclusion of technology, both automated and semi-automated, contributes to modernizing kitchen design and operations. Environmental planning talks about pollutants released in the air due to kitchen operations and ventilation to provide a safe and compliant kitchen environment. Selection of appropriate flooring and wall finishes receives priority for safety and aesthetics, while vendor management enables streamlining of raw materials received by the hotel. Back-of-the-house planning takes into consideration layout of the area, staff movement, and the locker facility planning requirements. The unit concludes with a complete analysis of store layout, workflow, and equipment for dry, cold, and bar storage. Overall, these elements deliver an integrated framework for developing efficient, compliant, and sustainable food production units.

REVIEW QUESTIONS

Multiple Choice Questions

1. Which principle focuses on minimizing unnecessary movement and cross-contamination in a kitchen?
a) Ergonomics and Safety
b) Workflow and Flow of Materials
c) Sanitation and Hygiene
d) Energy and Resource Efficiency

2. What is a benefit of automation in high-volume operations?
a) Increased preparation time
b) Reduced service time
c) Higher labour costs
d) Limited scalability

3. Which standard sets guidelines for minimum ventilation rates?
a) NFPA 96
b) ASHRAE Standards
c) HACCP Guidelines
d) Local Health Codes

4. Which flooring material is budget-friendly and resistant to stains?
a) Epoxy resin
b) Vinyl
c) Quarry tiles
d) Porcelain tiles

5. What percentage of kitchen area is typically allocated for dry storage?
a) 5-10%
b) 10-15%
c) 15-20%
d) 20-25%

Fill in the blanks

1. Vendor management ensures compliance with _____ hygiene standards.

2. Cross-training enhances staff _____ during peak times.

3. Automation requires extensive _____ to adapt staff to new systems.

4. The _____ principle ensures minimal movement between cooking, prep, and storage areas.

5. Automated systems in kitchens improve _____ and reduce labour costs.

Short Answer Type Questions

1. What is the main goal of optimizing workflow in a kitchen layout?

2. How do acoustic panels benefit live and interactive kitchens?

3. Briefly explain the work triangle concept in kitchen design?

4. How do acoustic panels benefit planning of live and interactive kitchens?

5. What is one impact of technological integration on kitchen layout planning?

Long Answer Type Questions

1. Describe the workflow and planning considerations for the six key kitchen sub-departments (Receiving, Storage, Pre-Preparation, Preparation, Pick-Up, and Pot Wash Area). Explain how an optimized workflow contributes to food safety, efficiency, and cost control in a hotel kitchen.

2. Assess the factors affecting kitchen design (Type of Menu, Type of Service, Space Availability, Volume of Production, Staff Strength, Budget, Local Regulations, Ventilation and Lighting, Future Growth). Provide a case study of a hotel kitchen design that effectively addresses at least three of these factors, justifying your choices.

3. Analyse the impact of automation and semi-automation technologies (e.g., semi-automated cooking equipment, Kitchen Display Systems, robotics) on kitchen design planning. Include a discussion on how these technologies affect layout, equipment selection, workflow, hygiene, and staff training.

4. Elaborate on the key aspects of Back-of-the-house (BOH) planning for food production, including kitchen layout, inventory management, staffing, sanitation, and technology integration. Discuss how a well-planned BOH operation contributes to the overall success of a hotel's food production unit.

Open Book Questions

1. Research and compare the latest advancements in semi-automated cooking equipment (e.g., combi ovens, sous-vide machines) used in the hotel industry. Discuss how these technologies could be integrated into a cloud kitchen design, citing at least two benefits and one challenge.

2. Explore the environmental impact of traditional kitchen operations versus those using energy-efficient equipment and waste heat recovery systems. Prepare a report summarizing your findings, supported by examples from the unit's Energy and Resource Efficiency section.

Activity

1. Store Inventory Game: Students will participate in a hands-on activity where they manage a mock store (dry, cold, and bar sections) using FIFO labelling and inventory tracking. They will rotate stock, record usage, and discuss how this impacts cost control and hygiene, submitting a brief reflection (150-200 words).

2. Kitchen Layout Design Challenge: In groups, students will design a floor plan for a live and interactive kitchen using graph paper or digital tools. They must incorporate the work triangle, clear sightlines, and non-slip flooring, presenting their design with a 5-minute explanation of how it meets the unit's principles.

Resource Books

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