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INTERNATIONAL CRUISE TERMINAL, GOA

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1] ABSTRACT

Cruise terminal is an infrastructure that acts as an anchor to floating luxury hotels i.e. cruise ships. These terminal berths shall therefore inculcate an intriguing fabric for tourists globally. However, the practise of erecting temporary structures prior to the arrival of cruise on that particular port of call prevailed for a longer time. The time consumed during the disembarkation, embarkation and immigration brought a considerable amount of disinterest in tourists as they are eager to explore the port they have arrived at. Providing a terminal thus results in an experience of the region. It provides a path in itself which can maintain the continuity of travel. Cruise Terminal should act as a red carpet welcome to the tourists on that port of call instead of mere transition from sea to terrain. Handling a large number of passengers in a short amount of time requires a terminal building, parking areas, and good access to the local transport system, particularly airports.

The thesis aims in understanding a proper transition of people to and fro the cruise ships, while inculcating design ideologies resulting into appropriate function to the structure.

2] BACKGROUND

2.1 History of Cruise Tourism

Cruise Tourism is a kind of travel for pleasure. Also, it is the theory and practice of touring, the business of accommodating, entertaining and attracting tourists (Oxford English Dictionary, 2005) traditionally it was used as a travel resource. After the Second World War however, around the 1920s there was decline in use of cruises and the travel made a shift from oceanic to air as a great deal of inventions were made in passenger aircrafts. Cruise Tourism thus became a new kind of tourism around 1970s, the role of cruise now fundamentally changed from ‘mode of transportation’ to a ‘leisure holiday experience’

2.2 History of Goa Port

Goa, a tiny emerald land on the west coast of India, the 25th state of the Union states of India, was liberated from Portuguese rule in 1961. It was a part of Union Territory of Goa, Daman & Diu till 30th May 1987 when it was carved out of form a separate state. Goa covers an area of 3702 square kilometres and comprises two Revenue district viz North Goa and South Goa. Boundaries of Goa State are defined in the North Terekhol river which separates it from Maharashtra, in the East and South by Karnataka State and West by Arabian Sea. Goa lies in

Western Coast of India and is 594 Km (by road) away from Mumbai city. The Population of Goa is 1.82 M with Panaji as its capital city.

2.3 Mormugao Port

Mormugao Port, commissioned in 1885 is one of the oldest ports on the west coast of India in the state of Goa and is blessed with a protected open type natural harbour. Over the years, it

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has developed a deep draft channel. With its location at the mouth of the Zuari River, it is a crucial component in the flourishing export industry of the state of Goa. It became one amongst the major ports of the country in 1964 and has been relentlessly serving the nation in its economic development.

Maritime transportation is a major means of international trade. The proposed development will mark a boost to the commercial activity in the region. Proposed modernization and expansion will lead to development of Vasco Bay and thus will benefit the Mormugao Port by increasing the port capacity as well as helpful to the local people to improve their livelihood. The proposed development will improve the Port infrastructure for various activities such as fishing, cargo handling operations and tourism. Fishing industry will get boost through the development of modern fishing Jetty and other facilities which will lead to export of Marine products. Cruise facilities will positively impact the tourism industry. This will benefit the Port and hence the State of Goa.

2.4 Indian Scenario on Cruise Tourism

The initiatives undertaken to bring in synergy in the functionality of various stakeholders have resulted in a nearly four-fold jump in cruise callings on Indian ports in the last two years. The cruise industry accounts for a significant portion of the contribution to the national economy. The total cruise callings on five ports including Chennai, Cochin, Mumbai, Mangalore and Mormugao were 138 ships carrying a total of 1.76 lakh passengers in fiscal 2017-18. Cruise tourism is currently one of the fastest developing verticals in the Indian tourism sector. Over the years, cruise tourism has been recognised as an active component in the economic growth of any country and we also see it as a major source of employment because of its labour-intensive nature and the significant multiplier effect on employment The next five years the cruise callings will increase to 1000 and reach 2000 in 10 years.

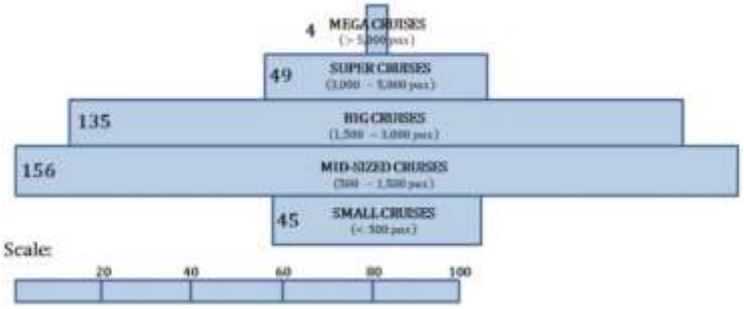
2.5 Type of Ports

Home Port: - The cruise vessels begin their itinerary from home port. Cruises commonly arrive early in the day so that passengers proceed to customs and immigration, have their luggage (un)loaded, and make their flight connections. Minor repairs may also be undertaken.

Port of Call: - It is a transit port visited for only a few hours within a day, or overnight, and requires a fast and efficient system for transporting passengers to the points of interest or recreational spots. Operational considerations are a critical factor on which the design of a cruise terminal is carried out at a specific port.

Hybrid Port: -They are used for both home-porting and transit activities. The terminal is designed to handle home-port and visitor flows at the same time

2.6 Cruise Vessel Characteristics



Size of cruise ship according to passenger carrying capacity

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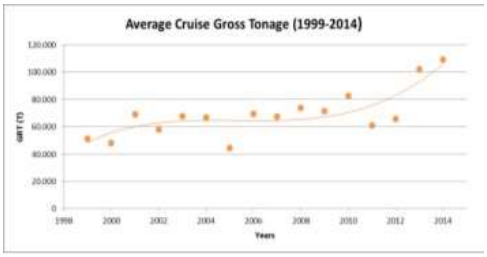
Growth of cruise vessels

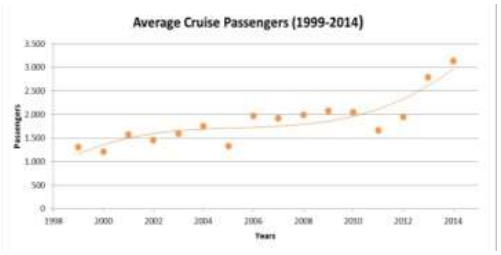
Cruise Vessels have continued to grow in all dimensions for over 40 years. Following graphs identify the range of vessels being delivered over the past 15 years

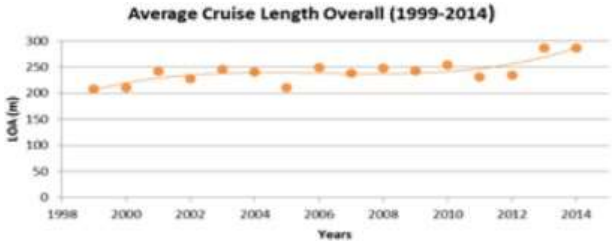
Gross Tonnage has increased by 120% up to 1.10.000 GT

Average Cruise Passengers has increased by 138% up to 3,100 Pax

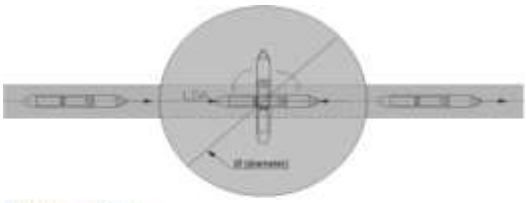
Average Length Overall has increased by 50% up to 300m.

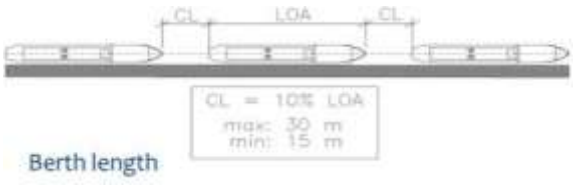






Cruise characteristics





Design Drivers for Cruise Ships

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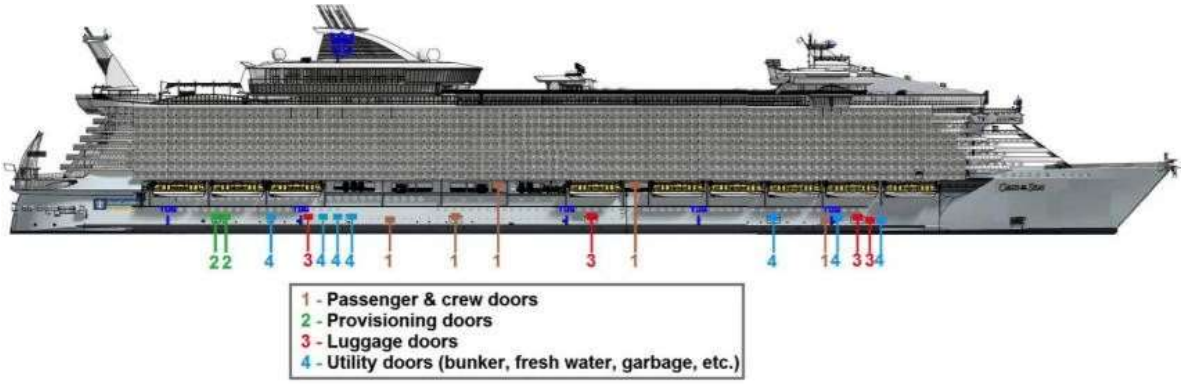
Evolution of Cruise Ships



Apron Area Vessel Doors

2.7 Cruise Terminal Design and Equipment

1. Cruise Terminal

Cruise terminals are designed to serve the requirements of cruise vessels and their passengers. At the same time, they have to be integrated with transport, tourism, and urban planning strategies of the port-city and nearby destinations. From a maritime viewpoint, cruise terminals need to fulfil minimum requirements for draft, berthing lines, and navigation channels for cruise ships. Inside the cruise terminal, there are provisions for various spaces, including the apron area, terminal building, and ground transportation. Due to the nature of their customers and the nature of cruise operations, connectivity to the city, car parking, and public transport facilities are particularly important.

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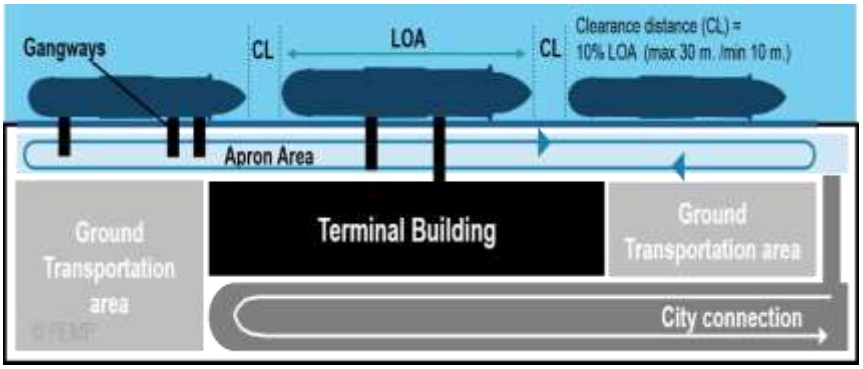

Components of Terminal Building

Maritime Infrastructure

The core consideration for cruise terminal design is related to the expected technical characteristics of the cruise ships. Indicators, such as the tonnage, overall length (LOA), beam, and draft of modern cruise ships, along with the passenger capacity, and the number of crew on board, are the most considered. Due to the range of cruise vessel types, sizes related to cruise ships scale of dimensions and capacities, and conditions requested by vessel operators, the maritime infrastructure of a cruise terminal depends on several factors such as

-number, size and class of cruise vessels

-characteristics of vessel type

-operational conditions due to weather

-operational needs of stevedoring and potential berthing patterns

The berth area length required for safe mooring and securing the vessel allows for a minimum clearance of 10% of the vessel's overall length (LOA). Where turning basins are required, a diameter of two times the LOA plus an allowance for adverse weather conditions.

Apron Area of Cruise Terminal

Aprons are fenced secured areas immediately adjacent to the cruise building and vessel service doors. While cruise vessel loading can occur with small widths of apron surface, the wider and less obstructed the surface in the area, the better. The apron area provides space for any of the following operations.

- Stevedoring services
- Supplies
- Access for vehicle
- Emergency vehicle access.
- Provisions for site-specific needs of terminal operations, such as vehicle controls

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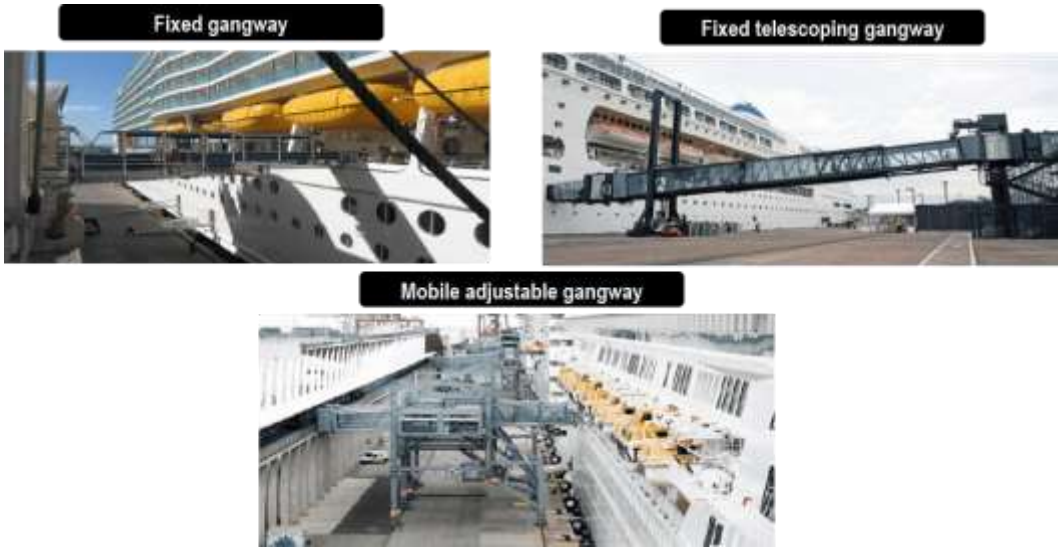
- Gangways.



Types of Gangways

Embarkation and Disembarkation Process

- Entrance space is a gathering space for passengers arriving at the terminal, a shelter from the weather, a place to seek information, and a place to queue for the next step in the process.
- Bag drop space where bags are brought for the security check and organizing prior to loading onto the ship.
- Luggage Security controls (X-ray scanners) that allow thorough luggage monitoring, and detecting objects that are not allowed to be taken on board.
- Queuing space that includes multiple lanes for passengers to process through security controls boarding the vessel.
- Passenger security controls (passenger X-ray lanes), with operating schedules adapted to the size of traffic, peak hours, and other local and cruise-ship requirements.
- Ticketing where passengers pick up their tickets before the check-in if not available through prior arrangements.
- Ticket area queue where passengers queue before checking in so that people can move quickly from ticketing to boarding.
- Check-In area with counters where cruise-line staff process passengers for the designated cruise trip. The use of new technologies like mobile applications or bar-coded wristbands in the check-in process is already bringing changes in the layout of this area.
- Waiting areas for checked-in / ticketed passengers to wait until boarding can begin. This space is large enough to allow for ample seating and circulation area,

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as well as space for cruise information and other pre-travel material the cruise lines have.

- Boarding corridors where passengers move toward the vessel.
- Staff offices for cruise operator staff, cruise line staff, and port security.
- Other spaces, such as spaces where passengers can have their pictures taken, VIP lounges separated from the general embarkation experience, even weddings and other special group spaces.

3] INTRODUCTION

Cruise tourism is a luxury travel through ship. India with its vast and beautiful coastline, virgin forests and undisturbed islands, rich historical and cultural heritage, can be a fabulous tourist destination. Hence, Tourism in India is growing rapidly. As a result, Cruise Tourism has tremendous potential in India.

Cruise terminal on the other hand is gateway to that destination. Goa is a popular tourist destination worldwide. Cruise terminal in Goa leads to create the essence of its culture on a global platform

Aim

1. To investigate architectural infrastructure required to improve Cruise Tourism.
2. To evaluate current global trends and best practices for Transit Oriented Development

Objective

1. To design the international port of arrival as per global standards.
2. To ensure a convenient transition within the terminal and intermodal to the city which suits best for the tourists.
3. To evaluatconstruction parameters for Waterfront projects.
4. To evaluate methods of attaining sustainability and protecting marine biodiversity

4] CASE STUDY CONCLUSIONS

Sr. No.	ASPECT	YOKOHAMA	SAN FRANCISCO CRUISE TERMINAL	ICTM	KAITAK	REMARKS
1	Location	Yokohama , Japan 35.27–00°N 139.38–46°E.	San Francisco, California 37.8053° N, 122.4012° W	Ballard Pier Extension, Mumbai Latitude 18º 56.3' N, Longitude 72º 45.9' E	Kai Tak, Hongkong 22.3062° N, 114.2134° E	Strategic location if cruise terminal is an importanat criterion
2	Type of Port	Port of call Home Port	Port of call Home Port	Port of Call	Port of call Home Port	Impacts Footprint of Building
3	Area	Total Built-Up Area 30,000 sq. m Terminal Area 18,400 sq. m	Total Built-Up Area 58,700 sq. m Terminal Area - 8175.46 sq. m	Total Built-Up Area 5,000 sq.m Terminal Area 5,000 sq. m	Total Built-Up Area 40,600 sq. m Terminal Area 32,000 sq. m	
4	Berth Details	4 Nos (2 domestic, 2 International) 4- 30,000 ton-class (700 passengers and 170 crew) or 2- 70,000 ton-class cruise ship at once (1,300 passengers and 325 crew)	1 Nos (50x580)m 100 ship calls every year(4,00,000 passengers)	1 Nos (250x25)m 1 Small Cruise Ship (500 passengers and 150 crew)	2 Nos Each (425x35)m 2 mega size cruise ships simultaneously (4,500 passengers and 1,200 crew each)	Impacts Footprint of Building
5	Footfall	2,800	4,00,000	500	10,800	Impacts Footprint of Building
6	Climate	Continental	Mediterranean Climate	Tropical	Humid Sub-Tropical	
7	Connectivity	24 mins- Haneda Airport 7 mins- Sakuragicho Station Access road perpendicular	25 mins from San Francisco International Airport 3 min Embarcadero & Sansome St Access Road Parallel to the Site	40 mins- CSMI Airport 15 mins- CST Station Yellow Gate on PD Mellow Road	40 mins- Hong Kong Airport 10 mins- Elevated Monorail Elevated walkway parallel to site	

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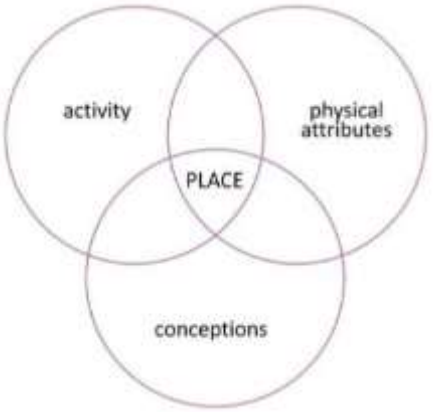
5] LITERATURE REVIEW

A] Costal Waterfront Development

Human settlement from earlier times paved its way adjacent to a waterbody. Evolution brought about industries and port harbour development in coastal areas. With the formation of CBD coastal waterfronts can be characterised by a full activity of port infrastructure that is well-defined as a large area of communication between urban expansion and water.



-Place in a Space

The purpose of this literature reviewed is to provide meaning to coastal places as an urban design process. It explores ways in which water can communicate with urban context to bring about an emotional experience for the user.

It thus acknowledges a place in a space containing three attributes i.e., the form (physical attributes), function it provides (activity) and psych spatial characteristics (conceptions) which form an integral part for overall development to create a sense of appropriation.

Waterfront approach

A waterfront in a district clearly forms as an edge of that district (according to Kevin Lynch- Image of City). Although instead of bringing economic transformation to the city one can also create meaningful connections between the city and water frontage. This can be brought about by creating a mixture of cultural, aesthetic, environmental and urban meanings. Thus, by designing with mental, social and physical aspects, a unique phenomenon of meaningful connection of water frontage and city can be formed.

Research analysis

The research suggests a combination of Intermediary space, Integrative space and Expressive space thus providing the waterfront space with a meaningful transformation

1. Intermediary Space

The intermediary space provides interplay with meaning and design formulation- it constructs a mental reference by making use of symbolic schematizations. Thus, the coastal space itself

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becomes a symbol that intermediates between perception and experience.

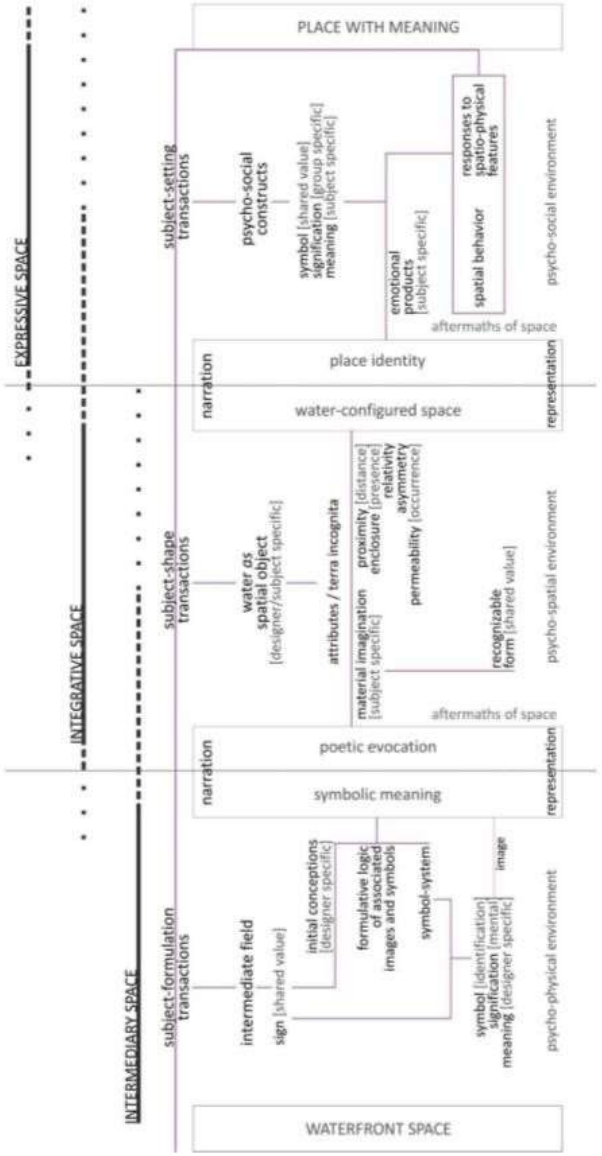
2. Integrative Space

Integrative spaces bring about a human centred development as a product of conceptual, configurational and meaningful aspects. The complex urban systems are thus developed as they define the user edge relation opposite to usual economic, trade driven factors as basis of design.

3. Expressive Space

Integrative spaces bring about a human centred development as a product of conceptual, configurational and meaningful aspects. The complex urban systems are thus developed as they define the user edge relation opposite to usual economic, trade driven factors as basis of design.

As a result, ways to make coastal places speak of the user can be brought about through proper design ideologies in an urban context.



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B] Cultural adaptations on Architecture

Architecture holds the power of physical manifestation of the culture of a community. Traditionally, the architecture of a context was conscious towards nature and the built environment consisted of naturally available materials of that area.

With the advent of modernity, concrete and steel became the only solution for designs. Thus, the link with the traditional environment began to doom in their living environment. The innovation in technology also brought about fabricated solutions to human comfort.

This report aims on studying ways to blend the very essence of tradition and culture with architecture thus tying up the missing links. The study of the optimum use of natural resources i.e. the sun, rain and wind as much required to liven up the spaces, to revive the traditional spatial hierarchy with respect to orientation, provide the cultural and religious focal points in these spaces can result to adaptation of diminishing cultural context in design.

Architecture gives an identity to a civilization. It is an ever-evolving dialogue between past and future. A culture may be formed when people of like-minded attitudes, values, beliefs, and behavioural scripts come together. Architecture plays an important role in providing shelter against climatic conditions. This then in addition to economic and political influences creates a pattern of a region. Architecture plays a role to depict culture in the form of spatial similarity. It helps the culture and tradition to travel in time and keep it in continuity.

Since ancient times, the depiction of culture of a region was portrayed through structures. Agoras were designed as gathering halls to recognize their customary social and political congregations. The funerary temples in Egypt provide for the worship of deceased pharaohs and such structures reflect their cultural belief in ‘life after death’. Even though modernism is a culture in itself many traditional cultural beliefs still have their existence in contemporary architecture. Thus, there may have been changes in visual appearance but physicality of a space of that region tends to attain the same comfort through interdependence of design and culture. As Winston Churchill says “We shape buildings thereafter buildings shape us”

Culture and Climate

Culture of a place is deeply influenced by climate. ‘Society’s response to every dimension is mediated by culture’ - Cultural Dimensions of Climate Change Impacts and Adaptation. Cultural patterns shift over time; they are not stationary but are rather lived by people and are altered when people participate in it. The culture of a place is obtained when a sustainable way of living is achieved. Although innovations in technology, changes in factors of economy, growth and climate may result in changes in cultural adaptations. Climate change for instance- global warming has led to changes in lifestyle of people. Adapting to sustainable means of behaviour is the culture of the present. Thus, cultural adaptation works useful, as it takes in accordance with the survival of the fittest.

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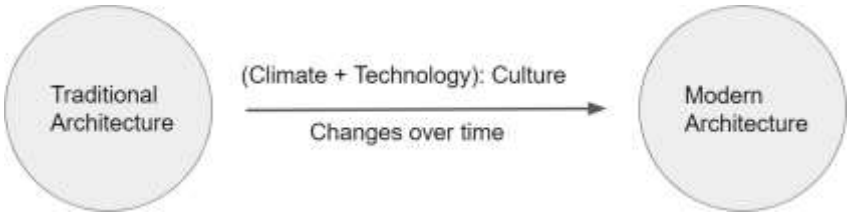

Transition in Architectural Practices

'Traditional architecture is that way of building which makes serious use of the familiar symbolic forms of a particular culture of a particular people in a particular place'

'Modern architecture, or modernist architecture, was an architectural movement or architectural style based upon new and innovative technologies of construction, particularly the use of glass, steel, and reinforced concrete; the idea that form should follow function (functionalism); an embrace of minimalism'

Research implementation and strategies

Waterfront forms an integral part of an urban context. The idea is to design state of art waterfront development which includes International Cruise Terminal, and a multipurpose space. The International Cruise Terminal forms a gateway to tourists all around the world. On the other hand, multipurpose spaces- (restaurants, cafes, recreational spaces) form an interactive zone for the people of the urban settlement, cultural adaptation while designing becomes essential as to provide a pause for the user in that environment.

The design will thus portray the tradition and culture of the city for the tourists and provide an ambience that feels home alike for the people residing in the same cultural context. Thus, implementation of cultural adaptation will help to revitalize the public environment.

Analysis of data:-

From the above study, following approach can be made

A thorough research can be made on

1. The construction materials (local) which suits best for that context.
2. Climatic influence which dominates the space
3. Traditional practices may be emerging from religious beliefs.
4. New technology prevailing in the current scenario.

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- Implementation of the research can be made through proper development strategies. This may bring about ways to merge all factors resulting into a design which is not only culturally sound but also paves a way to futuristic ideologies.

Conclusion

After Independence, the British Architectural influence on India diminished and modernism paved its way. However, modernism seemed to be partially fulfilling the functional aspects. As a result, a need for balancing progressive means and traditional principles of building is essential while designing. It not only maintains the traditional and cultural context of that region but also brings about long term environmental quality in design.

6] ARCHITECTURAL INTERVENTIONS - CONCLUSIONS

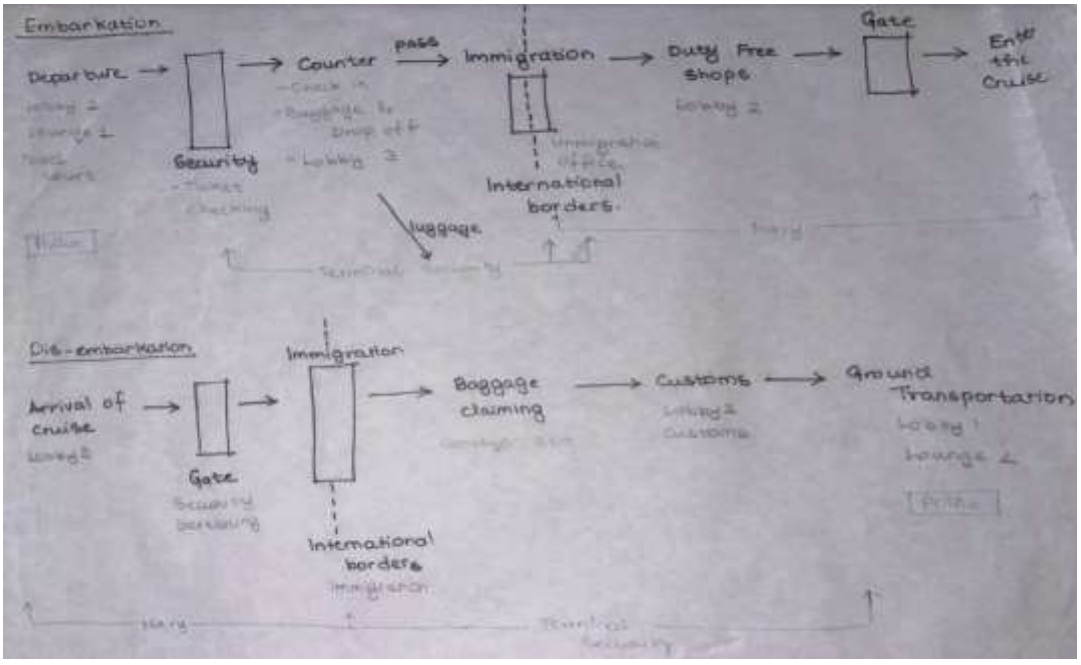
The following Architectural interventions can be made from the following research:-

1. To design a Cruise Terminal as per Global International Standards with state-of-the-art facility that portrays progressive aspirations of India.

2. To create an iconic built form which also promotes regional and local culture.

3. To create a unique waterfront destination for local residents. To make provisions for sustainable initiatives which promote development without increasing the Carbon footprint.

   The study led to the following movement of passengers inside the terminal building



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