THESIS REPORT ON

“-------(CRUISE TERMINAL), --------(VISHAKHAPATNAM)----------“

A THESIS SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENT FOR THE DEGREE OF:

BACHELOR OF ARCHITECTURE

BY

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(1180101011)

THESIS GUIDE

(AR. ANSHUL SINGH)

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BABU BANARASI DAS UNIVERSITY, LUCKNOW (U.P.).

CERTIFICATE

I hereby recommend that the thesis entitled "(CRUISE TERMINAL), (VISHAKHAPATNAM) under the supervision, is the Bonafede work of the students and can be accepted as partial fulfillment of the requirement for the degree of Bachelor's degree in architecture, school of Architecture and Planning, BBDU, Lucknow.

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Not Accepted

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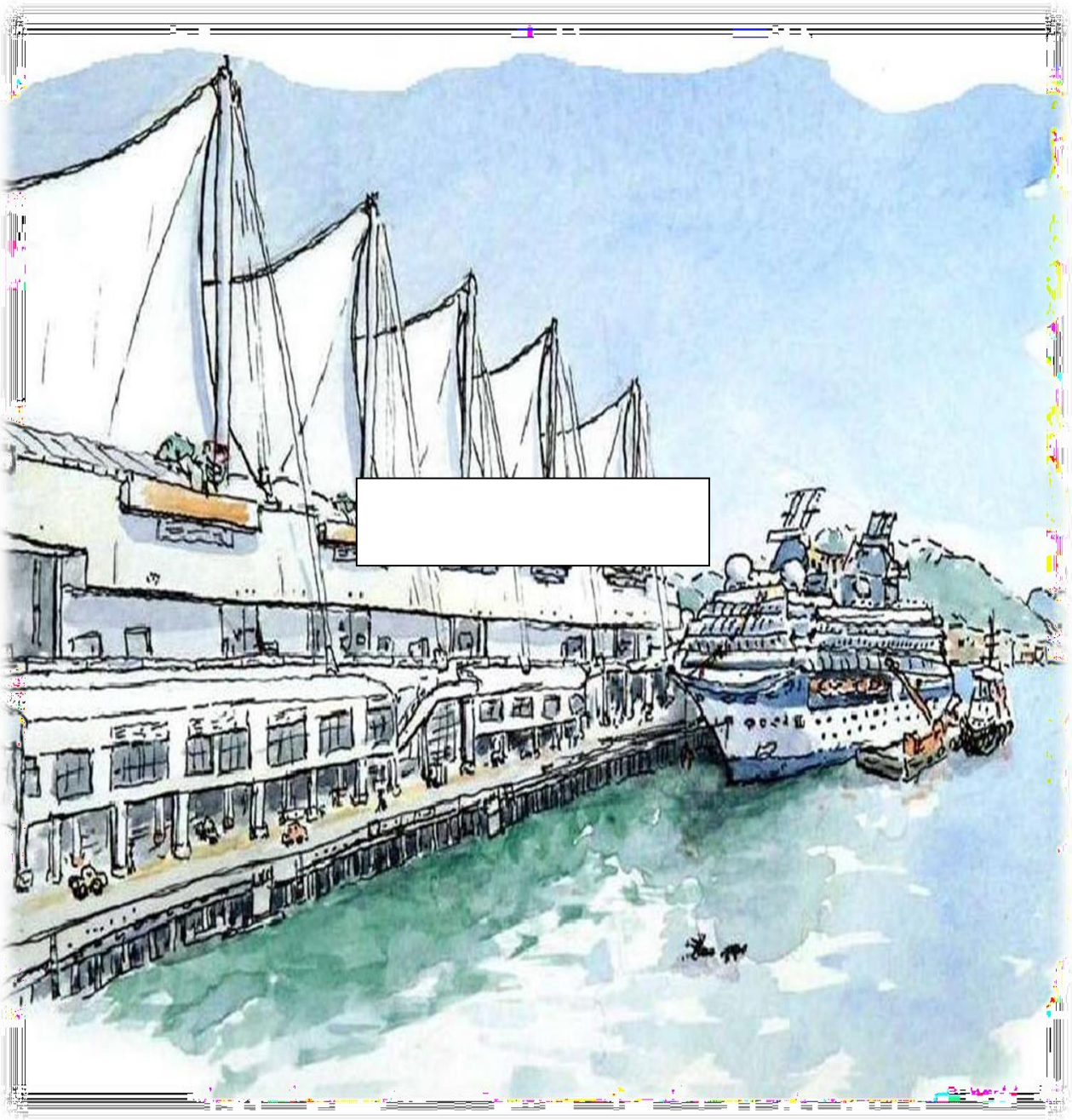
INTERNATIONAL CRUISE

VISHAKHAPATNAM



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INTRODUCTION

Tourism is travel for recreation, leisure, religious, family or business purposes, usually for a limited duration. Tourism is commonly associated with international travel, but may also refer to travel to another place within the same country.

Tourism has been placed on a priority platform in India with the government to stimulate economic and social development since 19th century. Thereby transforming economics has been internationally acknowledged. Cruise tourism represents one such avenue where forreaching developments have been witnessed worldwide

Cruise Tourism is traveling for leisure to various destinations ona ship. The ships are not involved in the transportation industry like the ferries or the cargo ships. A cruise ship or cruise liner is a passengership used for pleasure voyages, where the voyage itself and the ship'samenities are a part of the experience, as well the different destinations along the way.

As Transportation is not the prime purpose, as cruise shipsoperate mostly on routes that return passengers to their originating port, so the ports of call are usually in a specified region of a continent.

In this case the cruise terminal is not a port of call but anintermediate point where the cruise embarks for a day. Thus, spaces are to be designed keeping in mind the duration of stay of the cruise.

NEED TO STUDY

- It is known that in India the international cruise destinations areMumbai, Goa, Cochin and Chennai.

- Since Cruise tourism is one of the most developing industries in India, the need of terminals at such destination is a call of need now.

- Chennai is one such destination which may not be a port of call but has one of the state capitals of Tamil Nādu. Also it is an emerging need for the domestic tourism.

- Thus a Cruise Terminal can enter as a gateway to Chennai for both the domestic as well as the international cruises and can bea landmark.

AIMS AND OBJECTIVES

- The main aim of the design is to provide a cruise terminal whichwill serve as an intermediate port for international cruises and adestination for the domestic cruises as the government seeks togive importance to Goa as an overall tourist destination.

- The terminal should be an initiative to boost cruise tourism within the country as well.

- Also, to have public participation / public spaces which will add to the revenue to the terminal.

- The research will explore various design aspects that will make up a Cruise Terminal and implement it.

SCOPE

- The facilities provided at the present cruise terminals are fallingshort of passenger handlings and services

- Since the terminal is a public building, it will be open to all kinds of passengers with a diverse range of backgrounds.

- The design would serve to be as an important structure and a gateway to Chennai.

LIMITATION

- Statistically, the international terminal will be used 4 times a month.

- Thus areas are to be provided which will keep the terminal will be used during other times as well.

- Since Chennai is an only International terminal in east costal lineas of now . so, the need of space for circulation should be morein numbers.

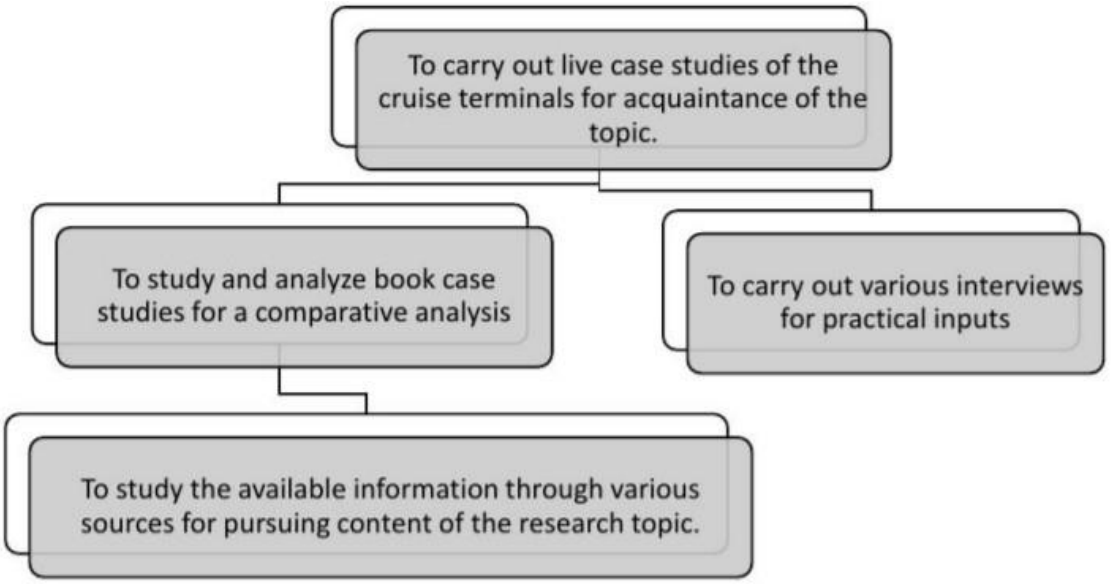
- Thus baggage handling and such service areas are to be looked upon.

- As far as the domestic cruises is concerned, the development is at a slower progress. Statistic shows that the development of domestic cruises will boost after 10yrs.

- Thus an area would be dedicated as future development it but there would be no design for domestic terminal as such.

- To have a stay over the cruise terminal so that the invading people will stay within the boundary.

METHODOLOGY



CASE STUDY

Yokohama

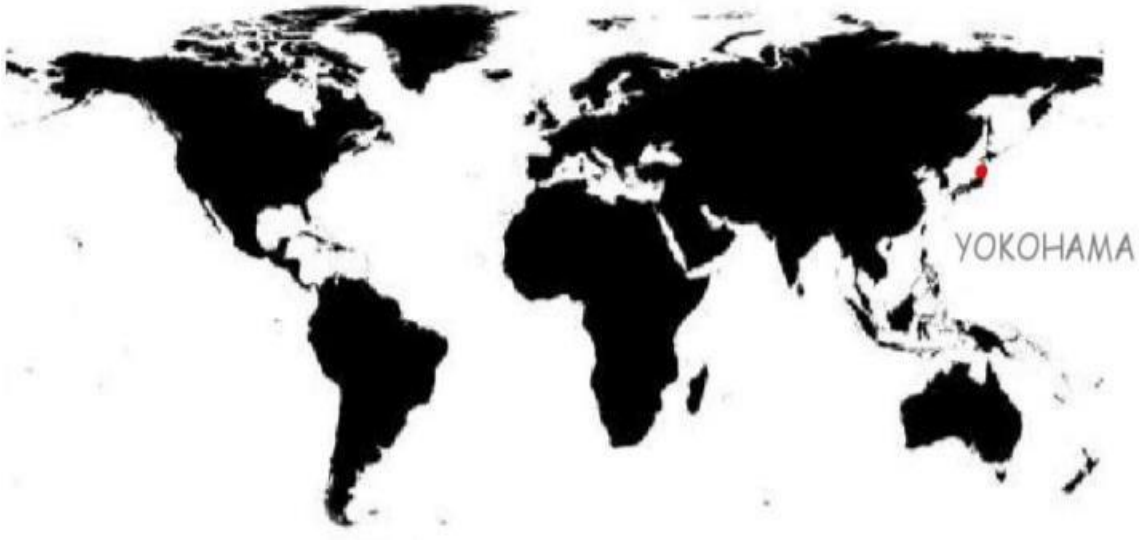
Kai tak

Mumbai cruise terminal

Danish national museum

CASE STUDY

YOKOHAMA INTERNATIONAL CRUISE TERMINAL,JAPAN



LOCATION: Yokohama, Japan

BUILT IN: 2001

BUILDUP AREA: 31,100 SQM

CLIMATE: Humid subtropical climate

CRUISE VESSELS IN 2014: 220

PASSENGERS HANDLED IN 2014: 3,00,000 peoples

SITE AND SURROUNDINGS

The International Passenger Terminal in Yokohama is the largestmarine terminal in Japan. The site had a pivotal role along the city's water front that, if declared a public space, would present YokohamaCity with a continuous structure of open public spaces along the waterfront.

- The triumphant critical reception of the Yokohama InternationalPassenger Terminal was the product of inventive architectural methodology and socially conscious thinking.

- Designed by Foreign Office Architects (FOA) in 1995, the futuristic terminal represented an emergent typology of transportation infrastructure.

- Its radical, hyper-technological design explored new frontiers of architectural form and simultaneously provoked a powerful discourse on the social responsibility of large-scale projects to enrich shared urban spaces.

- The architectural competition for the terminal was famously intense, and winning it required the then-wife-and-husband team of Farshid Moussavi and Alejandro Zaera-Polo to rethink the established template of terminal design.
- Located on an important waterfront site in Japan’s second mostpopulous city, the high-profile commission attracted 660 entries from around the world, the country's largest international competition to date.
- The enormous, 430 meter-long project took eight years and a budget of £150 million to complete, and required FOA to temporarily relocate their studios to Yokohama to supervise construction.
- The public opening of the terminal occurred in 2002, serendipitously coinciding with the final game of the World Cupbeing held only a few miles from the shoreline.

- The striking appearance of the terminal was made possible only by tremendous advances in computer-aided design.

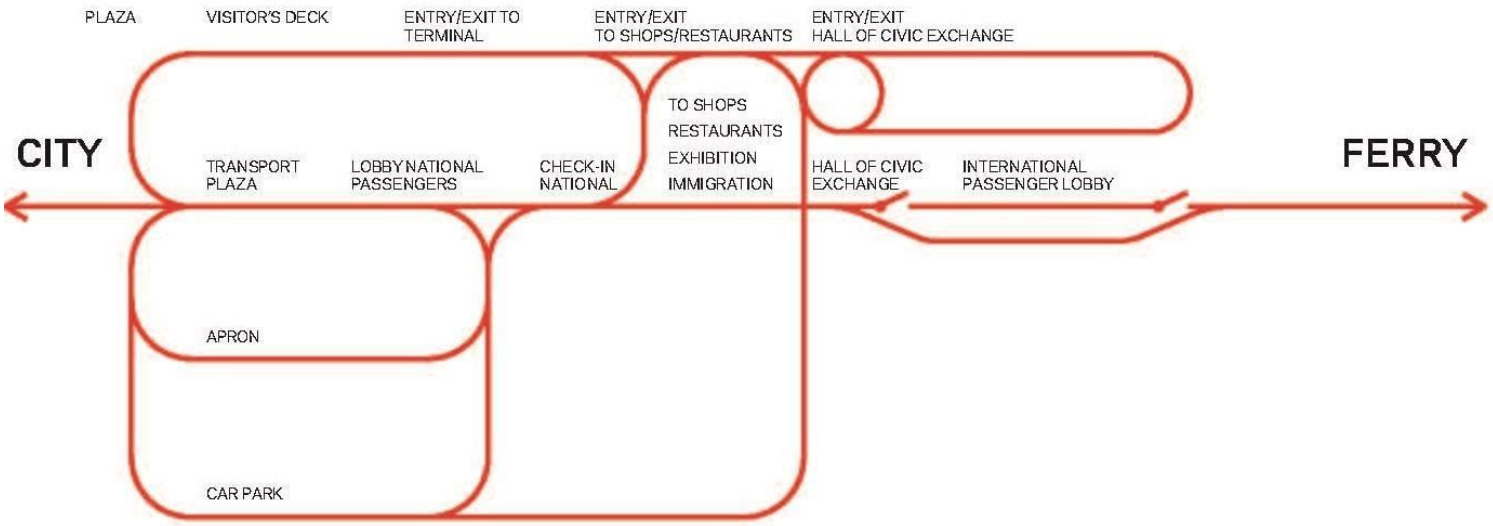
- It was conceived primarily in section, with an incredibly complex series of surfaces that gently curve and fold into a navigable, inhabitable architectural topography.

- Atop the observation deck, the material fabric of the floor rises and falls in wave-like oscillations to create pathways andapertures into the vast, enclosed spaces below.

- These changes in elevation sometimes subtle, sometimessharp were the essence of the novel architectural language invented for the project.

- The building is organized in three vertical levels. Atop a first-floorparking garage, a spacious middle floor contains the terminal's administrative and operational areas, including ticketing, customs, immigration, restaurants, shopping, and waiting areas.
- The steel beams that span the ceiling add a weighty feeling to the space that contrasts sharply with the feel of the observationdeck, which has the sensation of being made of a light, flexible, and easily malleable plane.
- Connecting the three levels are a series of gently sloping ramps,which the architects decided were more effective than stairs at maintaining a continuous and multi-dimensional flow of circulation.

CIRCULATION DIAGRAM



dictates spatial organization.

- The circulation operates as a continuous looped diagram, directly rejecting any notion of linearity and directionality.

- Visitors are taken through paths that meander vertically and horizontally before arriving at any destination, and their sight lines through space are comparably tortuous and indirect.

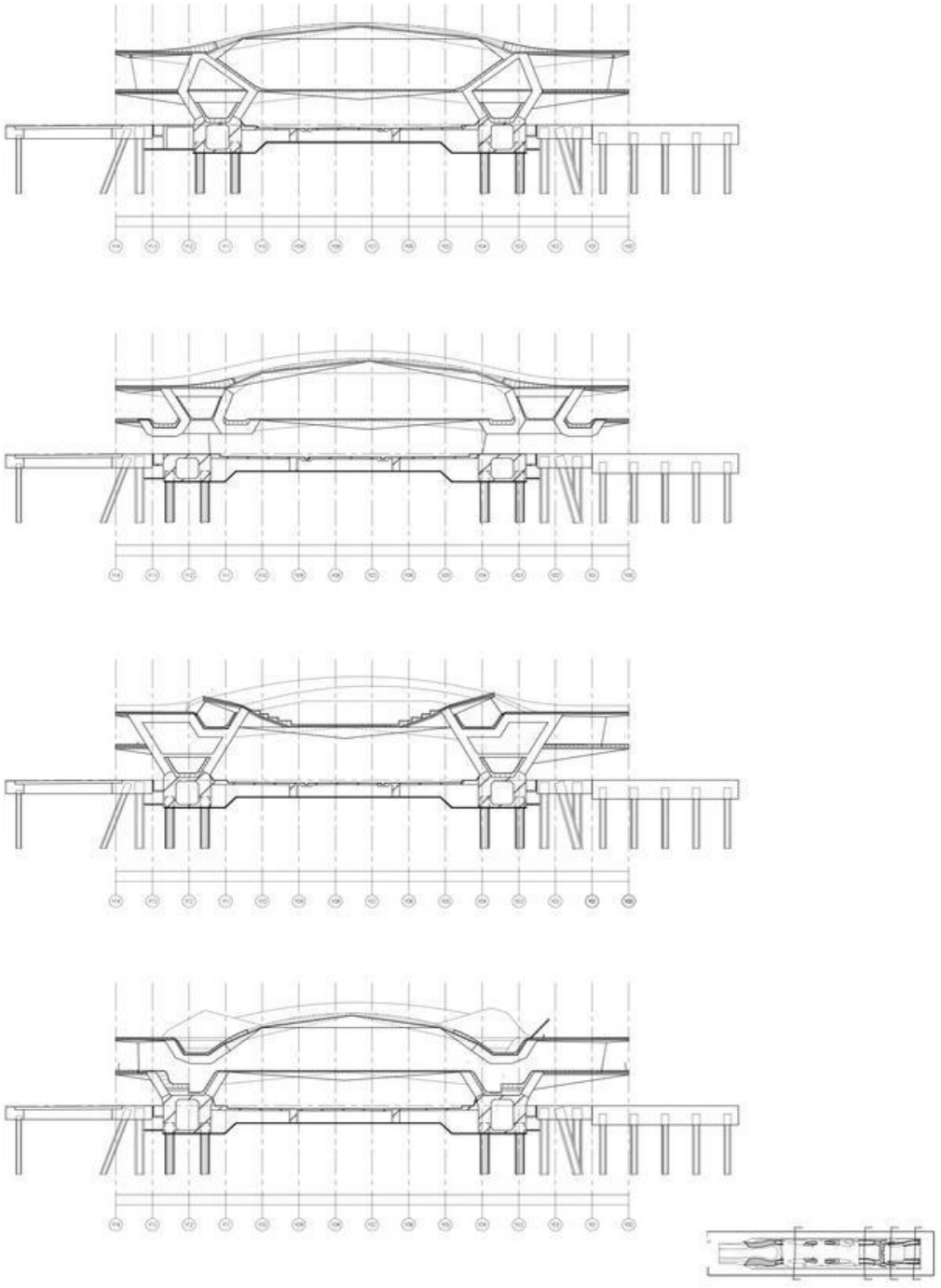
- For all of the chaotic complexity of the materials and formal gestures, the simplicity of this diagram offers a sense of clarity and reveals the process from which the building emerged

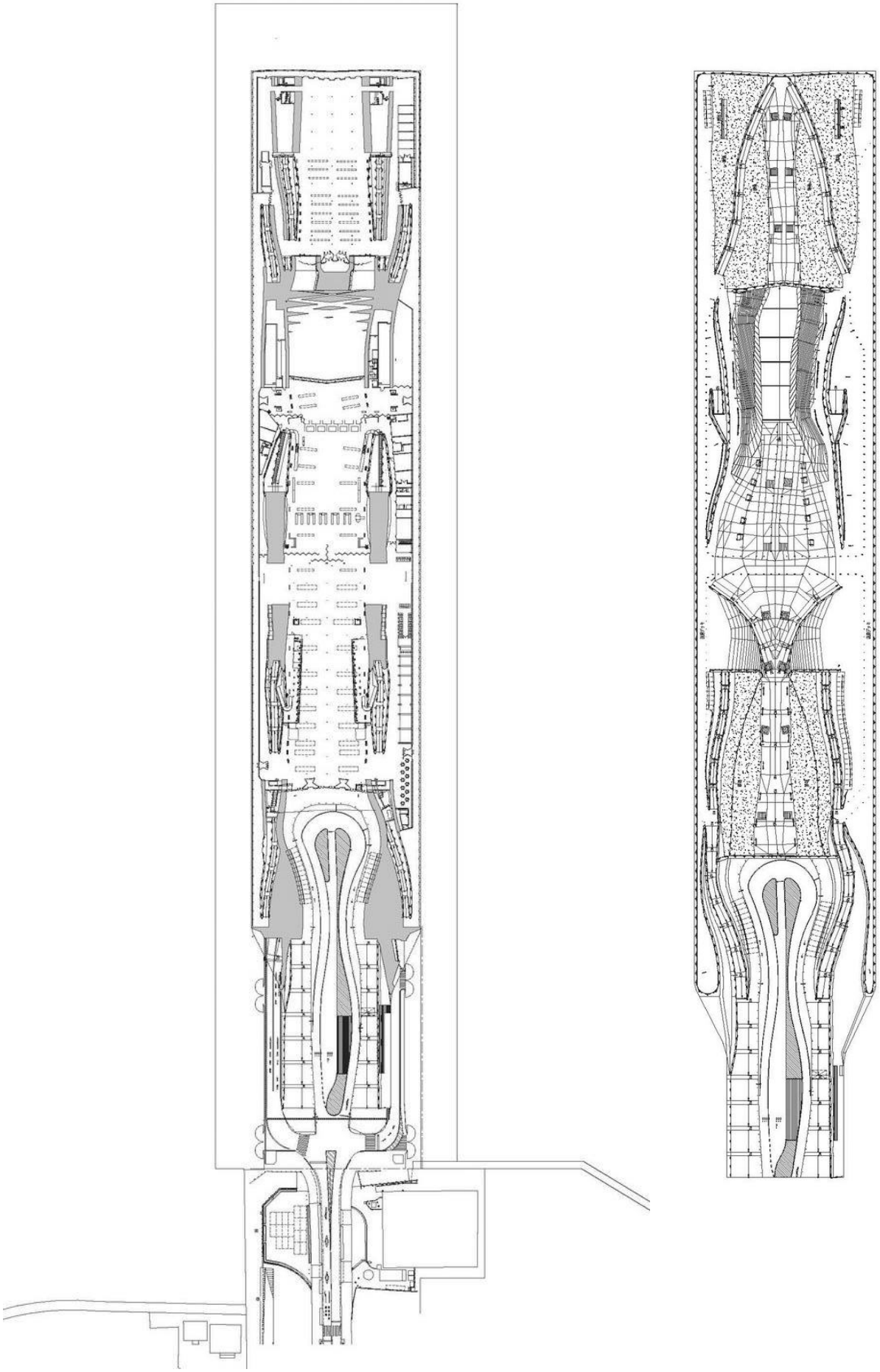
- The greatest conceptual strength of the project is perhaps its sensitive relationship with the urban waterfront.

- With the observation deck doubling as a fully accessible public plaza, the terminal seamlessly emerges from the neighboring Yamashita and

Akaranega Parks to make one uninterrupted, universally accessible urban parkscape.

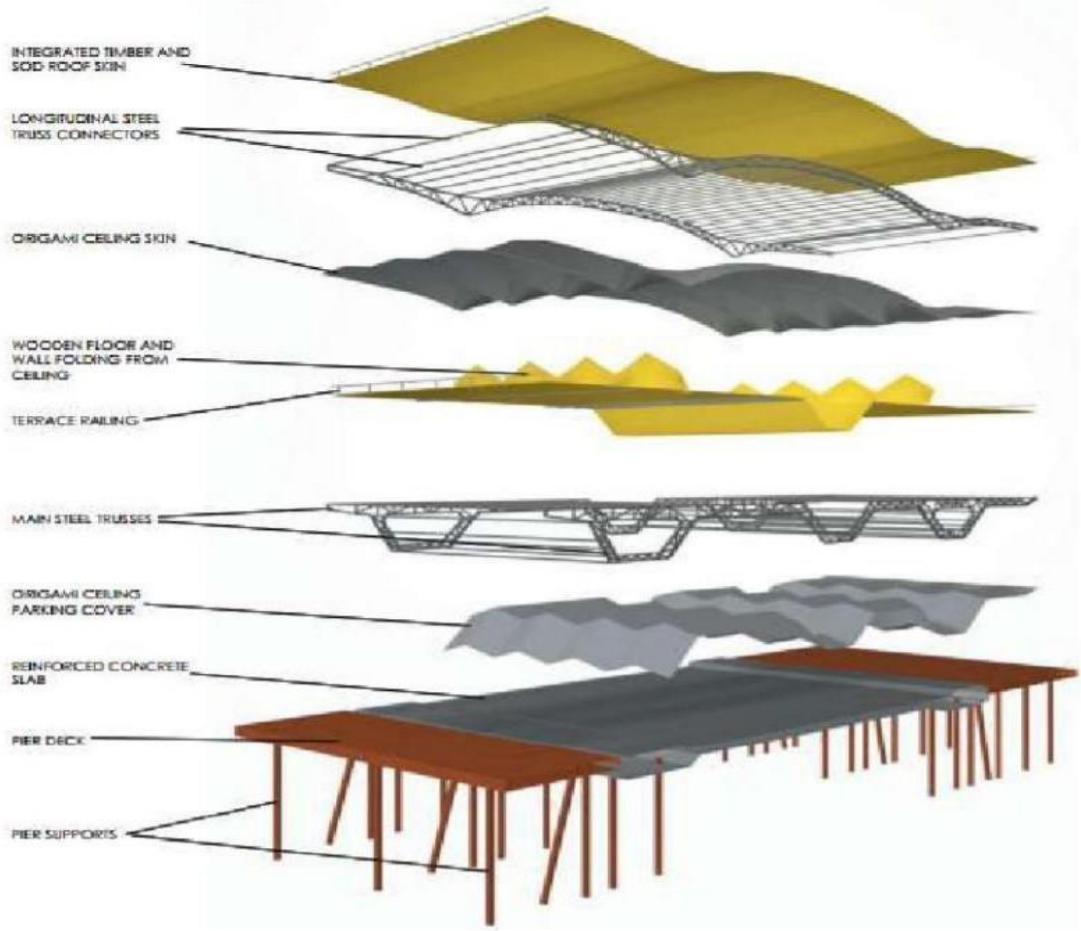
- Its height is calculated to achieve continuity with the shore and to ensure that inland views of the waterfront remain unobstructed.





SECOND FLOOR PLAN

STRUCTURAL SYSTEM



The terminal is a shed building measuring 412 meters in length and composed of 27 steel trusses averaging 42.5 meters in span and placed at 16-meter intervals. The trusses are joined longitudinally by trussed members of conventional configuration, and purlins carrying,either metal cladding or glazing. The trusses are carried on concrete piers extending from the basement parking level through the apron tothe surface of the main level. The large shed employs a unified form through repetitive structural units to enclose a single homogeneous space. The transformation yields a complex of spaces that smoothly incorporates the multiple terminal, civic and garden programmes

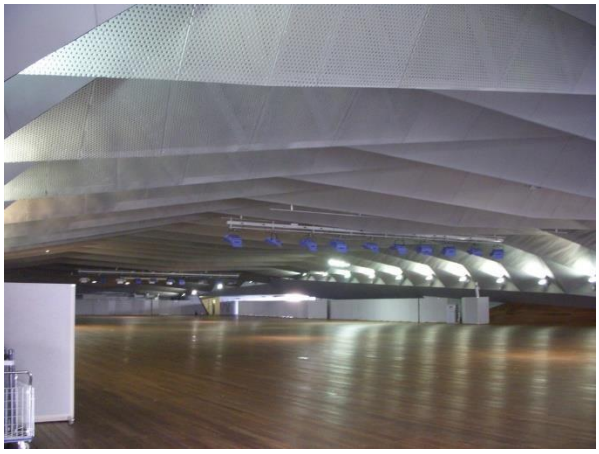
within and below its span.

INTERIORS

PARKING

The first floor is dedicated forparking approximately 400 standard- sized passenger cars, including 28 spaces that can accommodate coaches

LOBBY



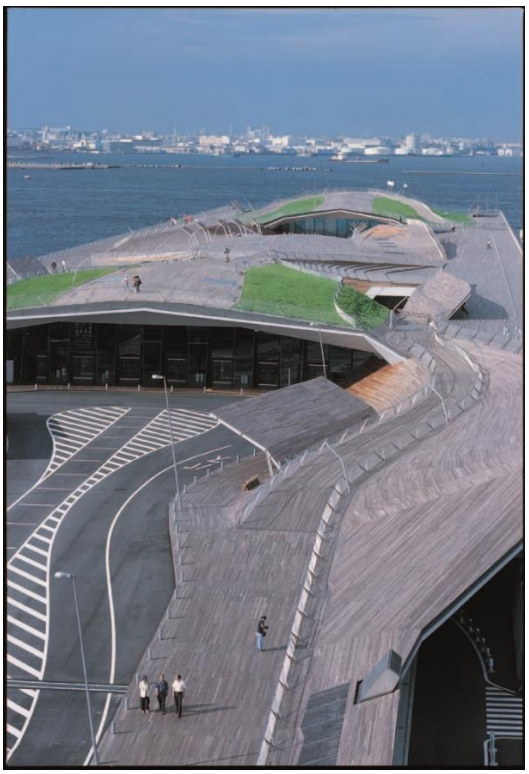
The information desk and check-in counters are located in the 4,400m lobby along with a caféand seven shops. The 35m long check-in counters on either side ofthe Lobby handle the boarding procedures and luggage delivery services.

CRUISE DECKS

The fences are folded Inwards all along the deck to provide room for the connecting boarding bridges. These boarding bridges are requiredto allow the passengers to safely board and disembark from the docked ships.

CIQ FACILITIES (CIQ PLAZA): CIQ(Customs, Immigration and Quarantine)

Facilities are for those passengers arriving On foreign cruise ships who are required to go through the customs, immigration and quarantine procedures. The total area is approximately 3,000m. The conveyor belts provided on both sides of the Plaza can send the passengers' baggage, which has been unloaded from ships onto the apron on the 1st floor, up to the CIQ facilities for inspection.



ROOFTOP PLAZA

The rooftop level is open 24 hours, an open-air plaza furnished with wooden decks and natural grass lawns. The Rooftop Plaza is one of the best locations to enjoy the

scenery of the Yokohama water front district. On a clear day, you canalso see Mt. Fuji in the distance.

OUTDOOR EVENT PLAZA

The space near the entrance to the Osanbashi Hall can be used as a stage for events like mini-concerts and dance performances, with the surrounding functioning as steps audience seat.

CONCLUSION

The Yokahama passenger terminal is a perfect example of tourist friendly terminal. Its unique architecture is very welcoming. All the facilities provided meet the needs of the international cruise terminal.More importantly the spaces in the terminal building are barrier free.The plaza provided at the rooftop is one the special features of this design. The interior spaces are one of the most well planned amongstall the cruise terminal in Japan. The technology used in terms of architecture as well as electronics is advanced. Thus these qualities makes this cruise terminal one of the most modern cruise terminal inthe world.

KAI TAK CUISE TERMINAL

- Project Name: KAI TAK cruise terminal
- Location: Kai tak in hong yong,China
- Climate: Humid subtropicalclimate
- Year: 2013
    - Wong Tung & Partners Ltd
    - Lighting Engineer Danny Li WaI Kit,TinoKwan & Associates
    - Total Area: 52,000m²
    - Award:

Hong Kong Green Building CouncilGreen Building Award

ABOUT THE PROJECT:

- Situated On the Former Airport Runway, The Kai Tak CRUISE Terminal Was Completed In 2013, With the Capacity Of Berthing Two Large, 360m Long Vessel, Each Able to Carry More Than 4000 Passengers And Over 2000 Crew.
- Considering The Development Potential of The Nearby Area, The Cruise Terminal Building Has Been Built To Be Multifunctional And Can Also ServeAs An Event Venue Hosting Various Events During The Typhoon Season When No Ship Business Is Expected.

IN TERMS OF DESIGN:

- The Various Sustainable Element Were Adopted. These Elements Include Four Atria and Large Skylight for Introducing Sunlight, A Landscaped Roof Deck For Alleviating The Heat Island Effect, The Photovoltaic System And Solar Panel, Adoption Of The Kai Tak District Cooling System, Etc.
- The Construction of This Terminal Will Contribute to Hong Kong As A WorldClass International City In Future.

FEATURE OF DESIGN

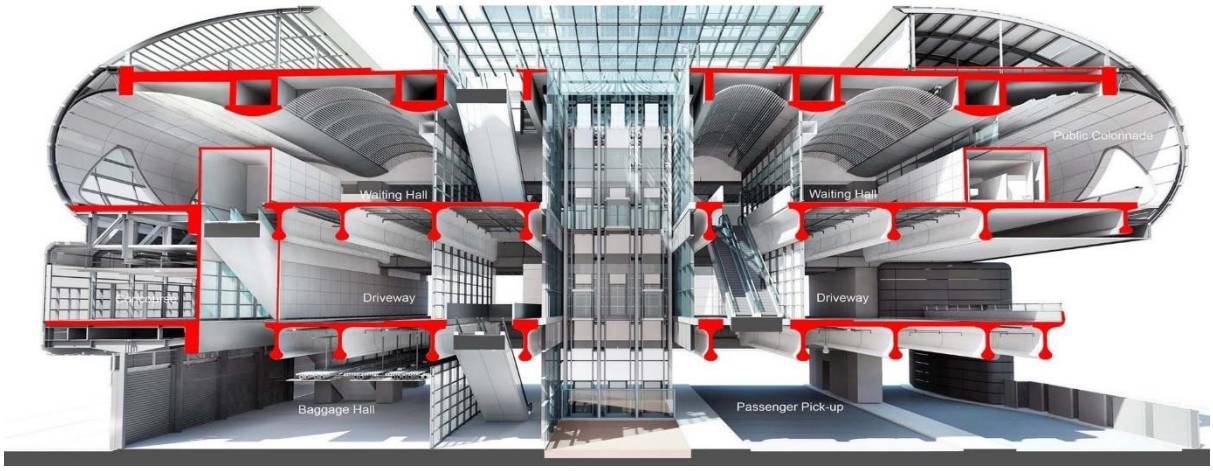
- The linear arrangement of light-filled passenger areas is characterized by its clarity and ease of use.
- The terminal has a generous, rectangular footprint and is arranged over three main levels, encased by a lattice oflarge white ‘fins’ that allow daylight to filter through to the passenger waiting spaces.
- Services are integrated with the structure and the different levels are fused with the surrounding pedestrianwalkways.
- The baggage handling area, customs hall, back-

o f f i c e functions and the passenger arrival area are placed at
ground level, with the passenger drop-off area on the level above.

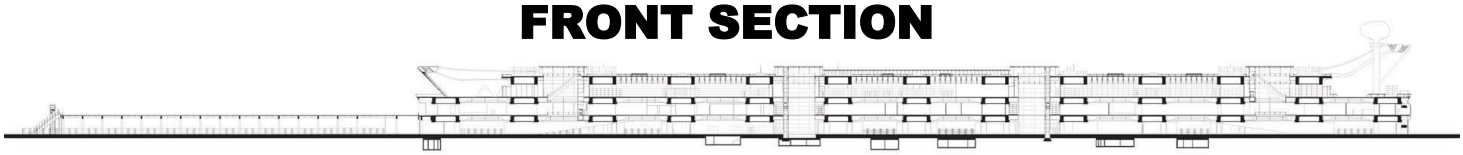
The second floor incorporates the check-in and waiting areas, as well as a public colonnade, shops and cafes.

A pedestrian route starting from the waterfront promenade progresses up through the building and opens ontoa large public roof garden, with open and sheltered spaces for informal picnics and outdoor dining, set against the stunning backdrop of the city.

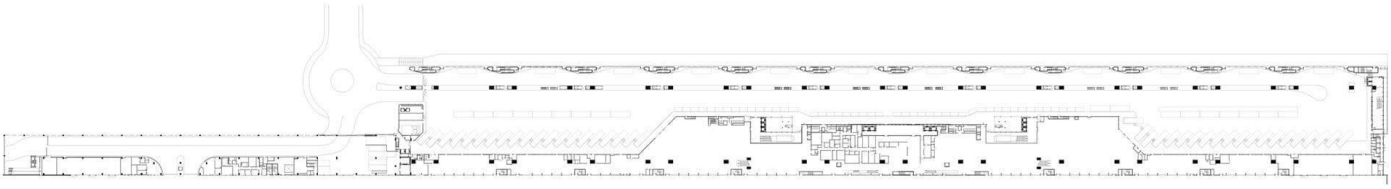
The site on the south-western tip of the former runway has unobstructed views of the eastern entrance to the harbor, framing both Hong Kong Island and Kowloo



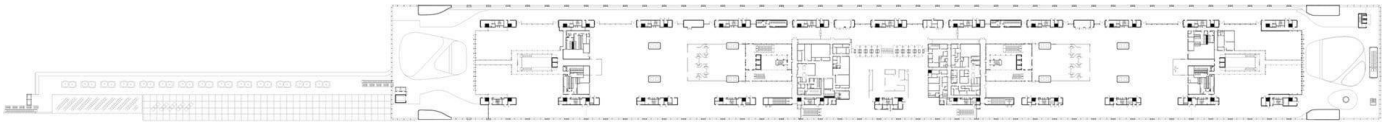
FRONT SECTION



LONG SECTION



GROUND FLOOR PLAN



CONSTRUCTION

The Civil Engineering & Development Department awarded a $407 million contract for stage-one infrastructure works at the former Kai Tak Airport on 2 September 2009. Works started on 4 September for completion in four years. The contract comprises the construction of a 1.8 km (1.1 mi)- long two-lane road, associated drainage, sewerage and water works, and a fireboat berth and public landing steps.

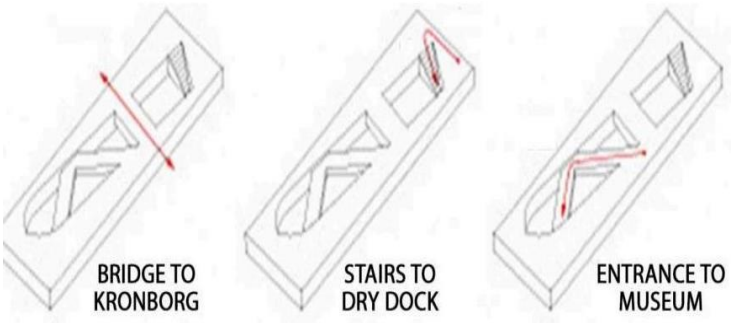
DANISH NATIONAL MARITIME MUSEUM

HELSINGOR, DENMARK

- Project Name: DANISH NATIONAL MARITIME MUSEUM
- Location: Kai takinhongyong, China
- Climate: Humidsubtropical climate
- Year: 2007
- Architect:
- Total Area: 6000SQM

FRONT SECTION

BUILDING LEVEL PLAINING AND CIRCULATION



- The harbour bridge closes off te dockwhile serving as harbour promenade.
- Museum's Auditorium serves as a bridge connecting the adjacent culture yard with the kroborg castle.
- The sloping zig zag bridge navigates visitor to the main eries of three double- level bridge span the dry dock, serving both as an urban connection as well as providing visitors worth short cut to different section of the museum.

- The museum is situated underground around the drydock rather the inside it.
- Building is accessed from the northern part of the site through an inclined bridge that connects the three levels within the building
- The building doesn't reflect any fluid character of the nearby waterbody.
- The long and nobel history of the Danish maritime in a continuous motion within andaround the dock 7 mt below the ground.
- All the – connection exhibition space with the auditorium, classroom , office, café and the dock floor within the museum
- Bridge slopes gently and creates exciting and sculptural space.

- entrance. This bridge unites the old and new as the visitors descend into the museum space ober looking the majestic surrounding above and below ground.

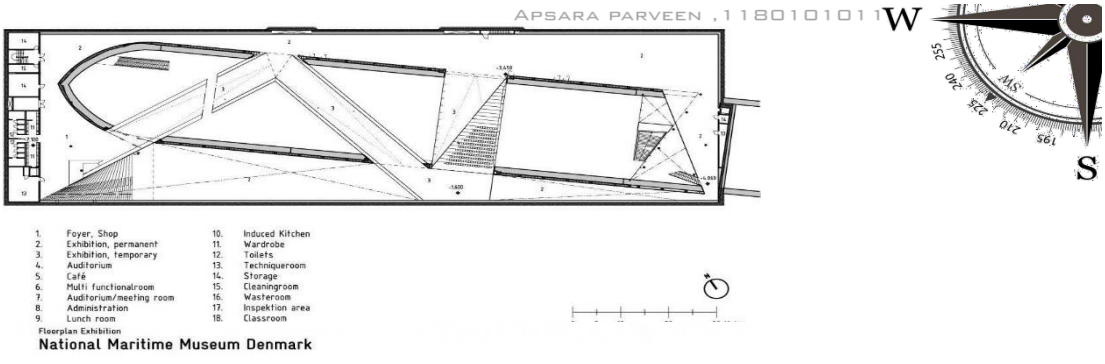
CONCEPT

- A subterranean scheme that combines existing historical element with innovation concept of the galleries and way-finding.
    - eries of three double- level bridge span the dry dock, serving both as an urban connection as well as providing visitors worth short cut to different section of the museum.
    - The museum is situated underground around the drydock rather the inside it.
    - Building is accessed from the northern part of the site through an inclined bridge that connects the three levels within the building
    - The building doesn't reflect any fluid character of the nearby waterbody.
    - The long and nobel history of the Danish maritime in a continuous motion within andaround the dock 7 mt below the ground.
    - All the – connection exhibition space with the auditorium, classroom , office, café and the dock floor within the museum
    - Bridge slopes gently and creates exciting and sculptural space.
- Leaving the 60 YRS dock walls untouched the galleries placed below ground and arranged in acontinuous loop around the dry dock wall making

the dock the centerpiece of the exhibition an open, outdoor area where visitors experience the scale ofship building.

MATERIAL

Since the building is locate underground, it does not change the existing skyline of



By the building underground the museum solves thecirculation with a downward spiraling movement without losing the relation to the entrance.

- Indeed one can speak of entering a different world in this museum.

- The exhibition is split into 2part, with the café as a natural break.
- The café was provided with a separated entrance making it accessible to people whomight not be visitors to themuseum.
- As one can be observed in theplan, 3 space span the dock.
- Two of them act as an entrance path and a space forsmall temporary exhibition as well as shortcut between the two main exhibitions paces.
- The 3rd bridge support the path to the kronborg castle,while containing an auditorium.
- Here, bridge act as a main function space rather than an exhibition space due to the functions happening there.

Mumbai internationalcruise terminal

(CASE STUDY -1)

LOCATION AND SITE CONTEXT:

.LOCATION-Mumbai, India:

BUILT IN- 2000

BUILTUP AREA- 5000m ^ 2

CLIMATE-Hot and Humid climate

CRUISE VESSELS IN 2014- 15

PASSENGERS HANDLED IN 2014 : 25,000.

1. Located at the southern tip of Ballard Estate (Head quarters of Mumbai Port Trust).
2. 2. Surrounded three fourth by the naval base - So it is altogether enveloped as ahighly sensitive zone due to terrorism wholedockyard layout is restricted for civilians unless the port authorities permit them. 3. Navigation channel along the dockyard is also strictly banned for private boating and ferry services. Only pre-classified vessels are allowed to approach the whole dockyard.

3. ORIENTATION:

4. Oriented along north-south and is parallel to the existed l
   good vistas of the whole seascape from the building.
5. Situated at the southern reclaimed skip of thedockyard la

SITE AND SURROUNDING

The port has achieved this position through continuous endeavor to serve the changing needs of maritime trade. Pier terminal is jutting on its 2 sides into the bay, which allow easy mooring of cruises of any scale. Can be approached from the North west side entry (Yellow gate) from the Vallabhadas marg road.

ACCESSIBILITY:

Port has long been the principal gateway to India and has played a pivotal role in the development of the national economy, trade & commerce and prosperity of Mumbai city in particular.

AIRPORT: ChathrapathiShivaji Airport-

STATION: Chathrapathi Shivaji Terminus-15km

PARKING: 150m x 20m wide parking lot on the west side of the terminal for taxis and buses that convey tourists. 50m a 10m parking lot for port authority's vehicles.

S**ERVICES**: Rail running along the quay side-conveysmobile cranes to transfer cargos, in case of necessity. - It also helps in sliding the gangways and adjusts it

properly to the ship's port side. Power station that supplies unlimited power exclusively for the whole dockyard.

EXISTING FACILITIES

- BERTHING FACILITIES:
- Adequate Bollards & Fenders at berth
- Barricaded berth for enhanced security (ISPScompliance.)
- Facilities for loading of provisions/supplies
- Garbage reception facility as per MARPOL
- Gangways of various sizes available
- Ballard pier
- Baggage Handling, Trolleys, Porters
- Parking lots for cars/ buses/taxis
- Terminal capable of handling two vessels paxsimultaneously
- Separate baggage drop off and reclaim area
- Crew sign on/sign off facilities in separate hall.

MAIN FEATURES OF THE TERMINAL

1. Excellent views to the terminal building from the cruises approaching the harbour.
2. Excellent vistas from the building to the whole waterfront.
3. Symmetrical from the quayside and main facade, with flag post of India in front and also in the line of symmetry.
4. Well refurbished facade with vertical concrete curtain walls provides feeling of verticality to the double height building.
5. Aluminum cladded horizontal frame crowns the central building.
6. 10. South and north customs halls are huge double height spaces with ceiling of asbestos vault resting over the steel girders spanning the whole length.

7. .Toilets are of international standards with all the updated remote sensing fixtures.
8. Ceiling is neatly refurbished with gypsum. false ceiling and has provisions for artificial lighting. The floor is of black granite.
9. Large Impressive atrium with flags of different countries hung around explicitly reflects the hospitality of the Port trust. The space brings a feeling of massiveness & rigidity to the structure.
10. The watch tower, oval in plan stands out of the whole skyline with a legible proportion gives it altogether an attractive appeal and also makes the terminal dominant in the whole skyline of dockyard.

- Terminal Facilities:
- Total Terminal area 6000m ^ 2 However only 2500 m ^ 2 used due to fewer vessels calls (low requirement)
- Information Counter of India Tourism, Customs, Immigration.
- Duty Free Shop, Handicrafts Shops, Cyber Cafe.
- Fully Air-conditioned terminal (2500m ^ 2) .
- Foreign Exchange, Police/ Port Security
- Passenger Lounge.

- SITE ZONING:
- Even though the terminal is situated in the same layout of the whole dockyards, it is separated from the container terminals by the indigenous placing of the main entry at the demarcation point.- Opposite to the double storeyed building there is a parking lot for the buses and taxis.
- Entrance is a big 20 m wide road..- Parking for approximately for 30-50 buses
- This parking place is used for the placing of the goods (buses or Bikes, etc) which is used for the export.
- USER ACTIVITY:
-
- Embarking and disembarking procedure will not happen simultaneously because only one cruise approach at a time.
- Personal check in temporary fencing directs them to the South Custom Hall

where hearths check-up is done

- Additional recreation facilities like mothers' room, toilet 8. snack bar are provided.
- After getting the immigration clearance the traveller is allowed to enter the Central concourse.
- Reclaiming the baggage after x-ray search, the tourists have to queue up at the immigration/customs counter.-Walk down to the berth through the mobile gangways.-
- Additional facilities like tourist information cell, waiting area, snack bar, antique shops, and money exchange can be accessed from this space.
- The exit door direct to the porch.
- USER MOVEMENTS: Embarking and disembarking procedure will not happen simultaneously because only one cruise approach at a time.
- **EMBARKING TOURISTS:**
- After personal check the tourists are directed to the Central concourse. After giving baggage for x-ray search they have to receive health check up. -Then they have to queue up for passenger check in procedures:

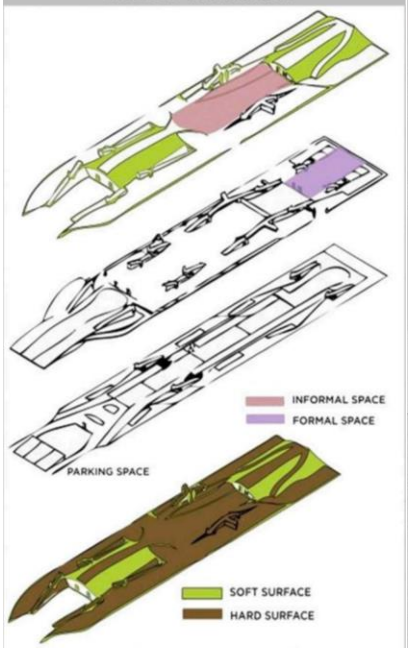
- 1) Tourists with tickets and boarding passes:
- Baggage's are send for x-ray search. After health checkup, they are directed to quayside check gate through a temporary fencing.
- After personal search, they are allowed to embark.
- 2) Tourists with tickets & baggage, but no boarding passes:
- Send baggage for search
- After health checkup, queue up at the immigration/customs counter.
- Obtain boarding passes & computer-generated immigration card by producing tickets and passports.
- 3) Tourists with no tickets and boarding passes: -
- Produce passports and purchase tickets from the travel agency counter adjacent to health checkup.
-

FLOOR LEVEL ANALYSIS:

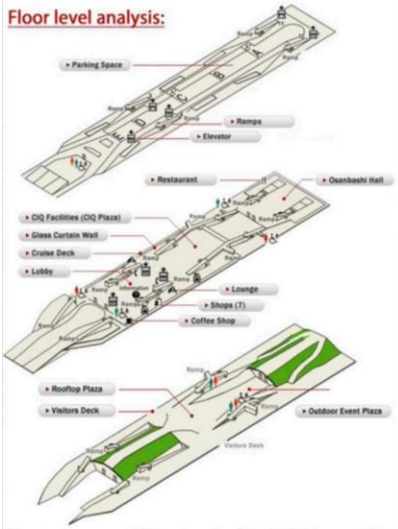
- Ground floor of the building is a open big hall with columns in the center. Four corners of the building has four staircase leading to the FIRST FLOOR.

- .Ground floor hall accompany Tourist information center, India Tourism, Customs, Immigration, Shopping Stalls etc. at the time when International cruise comes to dock to the terminal.
- First floor has the communication center and offices of the terminal the staircase leads to the upper offices.
- Toilets are arranged below the staircase on two sides, each for male and female.
- Upper floor has a long balcony for the viewing purpose this is used to see the ship and also the passengers
- The south and north customs halls are huge double height spaces with ceiling of asbestos vault resting over the steel girders spanning the whole length.-
-
- OFFICERS:
- Circulates mainly in the offices/ check in areas and the recreation lounges
- Baggage checks In procedures:
- FE-Can carry up to 20kg/60x40x30cm. Exceeding this weight must be checked in at the baggage counter.
- CREWS/DOCKERS:
- Transports the baggage, gangway from the vessel to the customs hall and back.
- Additional facilities like rest rooms, snack bar and toilets are provided
- They also assist in the mooring procedures of the vessel.
- Pier terminal is jutting on its 2 sides into the bay, which allow easy mooring of cruises of any scale.
- -Even though the terminal is situated at the same layout of the whole dockyards, it is separated from the container terminal by the indegenous placing of the main entry at the demarcation point.
- Can be approached from the North west side entry (Yellow gate) from the Vallabhadas marg road.- Entry to the building is a continuous road.
- INFERENCE:
- The luxury and comfort associated with cruise vessels translates into a demand for superior infrastructure and facilities even at the ports- call of the cruise vessel A high average spending by cruise tourists has given the sector a high preference in most economies that have a seac

YOKOHAMA INTERNATIONAL CRUISE TERMINAL



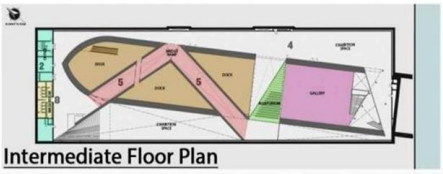
Floor level analysis:



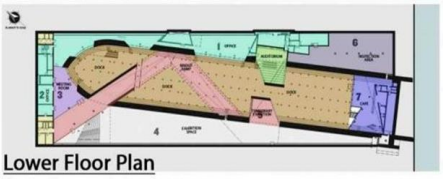
The total area of the terminal is 48,000 msq. The first floor and second floor are dedicated for the parking and terminal and the third floor is dedicated for the citizens. The ground floor is taken for luggage handling facilities such as consignment of domestic luggage and international luggage, Area for moving luggage around lifts, conveyor belts, etc.

BUILDING LEVEL PLANNING AND CIRCULATION

DANISH NATIONAL MARITIME MUSEUM



Intermediate Floor Plan



Lower Floor Plan

• The placement of building around the drydock; underground offers a greater possibility to get daylight horizonta lly into the spaces.

• The exhibition spaces are organized in a circular motion around the dock.
By twisting the geometry slightly so the spaces expand in width when you follow the exhibition and sloping the floor as little as 1:72, a clear sense of direction can be experienced by the visitor.

• Inbuilt stepped seatings are provided in the audiotium space which inturn reduce the need for mechanical equipments in the space.
Full height glazing provided around the space brings in maximum natural lighting in the interiors.

• Each space in the museum is well connected with each other with proper circulation flow and maintained a proper hierarchy of spaces.

By building **underground, the museum solves the circulation with a downward spiraling movement without losing the relation to the entrance.**

Indeed, one can speak of entering a different world in this museum.

Each space in the museum is well connected with other spaces via the exhibiting ramp. The **ramp ensures proper circulation flow connectig various levels and also narrates the history of the region in time.**

The **service wing was seperated from the main functional spaces** without any interruption in the activities carried out in the Museum.

ZONING & SPACIAL ANALYSIS

MUMBAI INTERNATIONAL CRUISE TERMINAL

Floor level analysis:

- Ground floor hall accompany Tourist information centre, India Tourism, Customs, Immigration, Shopping Stalls etc at the time when International cruise comes to dock to the terminal.
- First floor has the communication centre and offices of the terminal the staircase leads to the upper offices.
- Upper floor has a long balcony for the viewing purpose this is used to see the ship and also the passengers.
- The south and north customs halls are huge double height spaces with ceiling of asbestos vault resting over the steel girders spanning the whole length.

Inference

The luxury and comfort associated with cruise vessels translates into a demand for superior infrastructure and facilities even at the ports- call of the cruise vessel.
A high average spending by cruise tourists has given the sector a high preference in most economies that have a seacoast to offer.

Mumbai International cruise terminal provides the maximum facilities in India as compared to the other terminals.
- The planning and zoning of the terminal building is a very simple flow thus making it tourist friendly.
- The spaces are well planned and are also user friendly. Thus these qualities makes Mumbai cruise terminal the best in India.
- The terminal building is only used when the vessel arrives. There are no activities carried otherwise. Thus it is not maintained from time to time.

INTERNATIONAL CRUISE TERMINAL

Source:
1. Passenger Terminal Facility Design Guide - August 2011
2. Portseconomicsmanagement.org/pemp/contents/part3/cruise-terminal-design-equipment/
3. Guidelines for Cruise Terminals - PIANC - September 2016

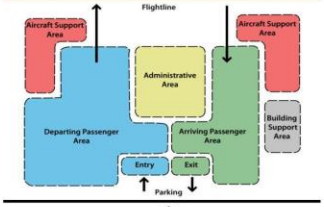
GENERAL LAYOUT OF A CRUISE TERMINAL

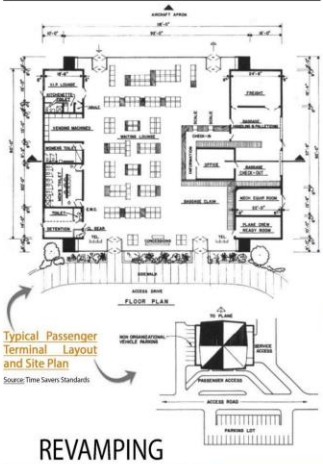
Passenger Terminal facility criteria address functional aspects of Passenger Terminal layout. Terminals are composed of five major areas:

- Departing Passenger Areas
- Arriving Passenger Areas
- Administrative Areas
- Aircraft Support Areas
- Building Support Areas

The main concept is **to separate departing passengers from arriving passengers.**

- Plan the Departing Passenger Area and associated services on one side of the terminal and the Arrival Passenger Area and Baggage Claim on the opposite side.
- Separate Baggage Build-Up and Baggage Break-Down areas to minimize conflict between baggage handling vehicles.



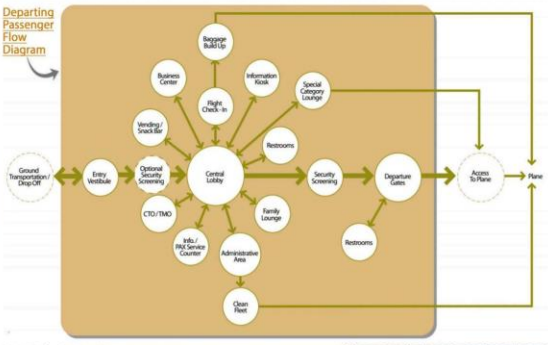


Typical Passenger Terminal Layout and Site Plan

Source: Time Savers Standards

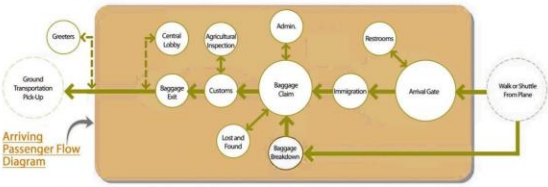
ARRIVAL AND DEPARTURE SPACES

Departing Passenger Flow Diagram



Main Embarkation / Departure spaces:

- **Entry:** some will have a pre-queue for security
- **Bag drop:** includes area for baggage to be queued, processed through x-rays
- **X-ray luggage scanners:** Minimum 2 (when <3,000 pax) to maximum 4 (>5,000 pax)
- **Security:** linear arrangement of lanes, x-rays machines for luggage, security arcs, security staff and port police. Lanes of 12 x 3 m. Minimum 2 Inspection lines (when <1,000 pax) to a maximum of 6 (>5,000 pax).
- **Queuing space :** includes multiple lanes for passengers to process through security controls boarding the vessel.
- **Ticketing (Check-in):** linear arrangement of counters. (recommended of 50 counters – 3 to 5 minutes per counter)
- **Ticket area queue :** where passengers queue before checking in - people can move quickly from ticketing to boarding.
- **Check-In area with counters :** where cruise-line staff process passengers for the designated cruise trip.
- **Waiting area:** ample seating and circulation area
- **Boarding corridor:** last element of the terminal building (1.5 -6 m) where passengers move toward the vessel.
- **Staff offices :** for cruise operator staff, cruise line staff, and port security.
- **Gangway:** critical link for passengers between ship and terminal
- **Other spaces :** spaces where passengers can have their pictures taken, VIP lounges separated from the general embarkation experience, etc.



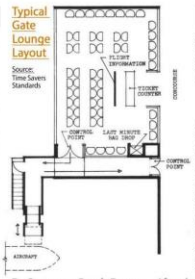
Arriving Passenger Flow Diagram

Main Disembarkation / Arrival spaces:

- **Boarding corridors :** for disembarking passengers.
- **CIQP:** Customs, immigration, quarantine and police spaces.
- **Baggage lay down :** which is often the single largest space in the building. Luggage is brought directly from the ship according to deck level and grouped in via a "lay-down" process that takes place before passengers enter there.
- **Customs areas for passengers :** to proceed after luggage collections to processing counters, and conclude.
- **Meeting spaces** where passengers gather and meet with others and move to ground transportation.

Typical Gate Lounge Layout

Source: Time Savers Standards



STAFF AND BUILDING SUPPORT SPACES

Staff Support Areas

Directly supports terminal ground operation functions of departing and arriving vessels.
Accessed by staff only, these activities include:

- **Baggage Screening**
- **Baggage Build-Up**
- **Baggage Break-Down**
- **Clean Fleet Services**

A. Baggage - These areas must be secure and weather protected. Interior spaces are preferred. Small batches of baggage are taken directly to the aircraft by a terminal truck. Provide direct exterior access for people and vehicles.

B. Baggage Screening - Provide adequate space in larger terminals for baggage X-Ray equipment. Allow space between baggage rows for military dog security searches. Baggage screening is normally located within Baggage Build-Up.

C. Baggage Build-Up - Here the baggage is sorted by destination. Provide sufficient length to enable efficient screening, sorting, and unloading,with direct vessel access.

D. Baggage Break-Down - After baggage is unloaded from arriving aircraft, it is transported to the Baggage Break-Down Area. The conveyor then transfers the baggage into the Baggage Claim Area

E. Clean Fleet Services - Provides supplies such as blankets, pillows, etc. Serves primarily as a warehouse-type space with shelving storage for supplies, office space and work area with tables. Locate adjacent to flightline access for ease of loading and unloading of supplies.

Building Support Spaces

All facilities require support spaces for basic building functions. Theses utilities are the backbone of the building; they provide for the daily operations and include the following:

A. Restrooms - Place at various locations throughout the Terminal to include Central Lobby, Departing Gate Areas, Arriving Passenger Gate Areas, Food Service areas, Special Category Lounge, and Family Lounge.

Restrooms for Central Lobby, Departing Gate, and Arrival Gate Area include:

- Infant changing stations
- Diaper disposal receptacles
- Handicapped accessible facilities
- Electrical outlets beneath mirrors
- Increased ventilation requirements
- Include drinking fountains at all restroom locations
- Benches and clothes hooks for personnel wishing to change clothes or uniforms

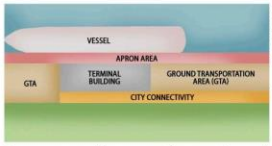
B. Custodial Services - Provide janitorial closets at several locations throughout the Terminal. Include space for cleaning supplies, equipment and a mop sink. Provide separate space for housekeeping supplies if necessary.

C. Mechanical Room - Size rooms and doors to accommodate equipment and maintenance. Locate on an exterior wall of the terminal with direct secure access.

D. Electrical Room - Locate on an exterior wall of the terminal with direct secure access and typically adjacent to the Mechanical Room.

E. Communications Room - Condition space and locate room in the interior of the terminal. Coordinate with Communication Squadrons for current standards and protocols.

APRON AREA OF THE CRUISE TERMINAL



Apron is a fenced/secured area with access control at all entry/egress points.

Home ports: up to 30 m Apron area

- Access for vehicle circulation, parking, unloading, and access for load/unload equipment.

Apron area **provides space for operations of line-handling, baggage movement, processing of wastes, provisioning, emergencies, etc.**

- **Emergency vehicle access.**
- Provisions for site-specific needs of terminal operations, such as vehicle controls.

REVAMPING
BEYPORE PORT
Proposal for the Development of an International Cruise Terminal and Renovation of Beypore Port

DATA COLLECTION

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MES SCHOOL OF ARCHITECTURE

INTERNATIONAL CRUISE TERMINAL

Source:
1. Passenger Terminal Facility Design Guide - August 2011
2. Porteconomicsmanagement.org/pemp/contents/part3/cruise-terminal-design-equipment/
3. Guidelines for Cruise Terminals - PIANC - September 2016

ADMINISTRATIVE AREAS

Administrative spaces are either directly related to passenger processing while other internal offices have little or no contact with passengers.

1. **Terminal Management** - Locate offices to have direct access to other functional areas, especially the Central Lobby. Open-plan office space with work stations is preferred.
2. **Shift Supervisor/Funds** - Private office, located adjacent to Flight Check-In Counter.
3. **Dispatch** - Coordinates ground transportation of passengers and baggage with aircraft and gates.
4. **Break Room** - Size to meet the needs of local staff; equip with refrigerator, microwave, sink, counter space, and seating.
5. **Storage** - Provide separate storage rooms to accommodate administrative, office, and janitorial supplies.
6. **Traffic Management Office (TMO) and Commercial Travel Office (CTO)** - Locate adjacent to Passenger Service Counters and other offices.
7. **Customs/Immigration / Agricultural Inspection Office** - Locate near the Customs Counter in the arrival area. May require separate search room with access to Arriving Gate Area.
8. **Conference/ Training Room**

Customs Inspection Area

GANGWAYS AND GROUND TRANSPORTATION AREA

Gangways

Gangway is the means of getting on and off a ship. In general shipping terms, it refers to **a walkway or bridge connecting the vessel to land.**

Fixed gangway | Fixed telescoping gangway | Mobile adjustable gangway

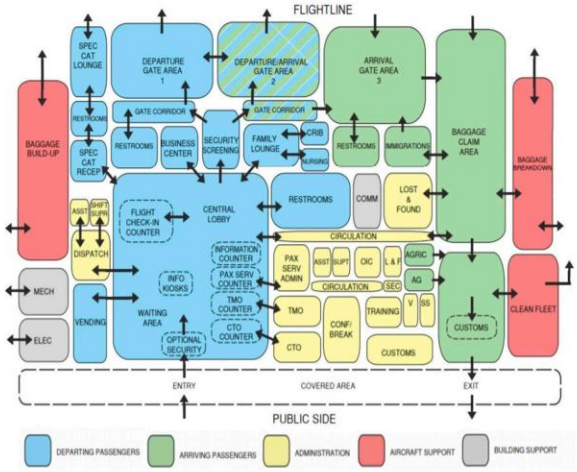
Ground Transportation Area (GTA)

The ground transportation area of a cruise terminal is where **passengers arrive from all transport modes to embark on the cruise.** It is also where they disembark to take any transportation mode to travel inland, usually through public roads and transit systems.

The ground transportation area includes spaces for:

1. **Coach parking** - such as shuttle buses provided by the port or the cruise lines and tour buses provided by the ship and independent excursion buses.
2. **Taxi lines** - with comfortable space around the cars to facilitate loading and unloading.
3. **Drop-off spaces** - such as short-stay car park earmarked for people dropping off or picking up passengers.
4. **Parking spaces** - for passengers that drove to the terminal to take a cruise.
5. **Regional and local connectivity** - to both the local and regional intermodal system, such as the airport, needs to be connected to the home port by rail or road.

TYPICAL CRUISE TERMINAL ZONING - SINGLE LEVEL



DEPARTING PASSENGER AREAS	15,400
Entry Vestibule	200
Central Lobby	5,000
Passenger Support Conveniences	TBD
Passenger Service Kiosks	100
Service Counters • Passenger Service • TMO/CTO • Information • Flight Check-In	500
Optional Counters • Red Cross • Rental Car • Army, Navy, Marine Liaisons	TBD
Special Category Lounge	1,000
Family Lounge	800
Vending/Phones/ATM	300
Business Center	200
Restrooms	300
Security Queue	1,000
Security Screening	500
Passenger Gate Corridor	500
Departing Passenger Gate Area • 2 Departure Gates • Passenger Agent Counters • Passenger Seating Area • Vending	5,000
ARRIVING PASSENGER AREAS	**7,550**
Arrival Gate	5,000
Restrooms	500
Immigration Station	50
Baggage Claim	1,200
Customs/Agriculture Counter	300
Passenger Support Conveniences	TBD
Baggage Claim Exit	500

ADMINISTRATIVE AREAS	5,000
Administrative Offices • TMO/CTO • Terminal Management • Supervisor/Funds • Dispatch • Lost and Found • Customs/Agriculture/Immigration • Break Room • Storage	5,000
Optional • Conference/Training • Army, Navy, Marine Liaisons • Red Cross	TBD
AIRCRAFT SUPPORT AREAS	**5,000**
Baggage Screening/Build-up	2,000
Baggage Break-down	2,000
Clean Fleet	1,000
BUILDING SUPPORT AREAS	**4,500**
Custodial Services	
Mechanical Room	2,000
Electrical Room	500
Communications	2,000
TOTAL NET AREA (in square feet)	**37,450**
TOTAL GROSS AREA (Total Net Area * 1.15) based on an 85% efficiency factor, (in square feet)	**43,067**

Arriving Passenger Area to be zoned on one side of the terminal, and Departing Passenger Gate Area is on the opposite side. Separate Baggage Build-Up/BreakDown areas to distinguish arriving and departing baggage minimizing conflict.

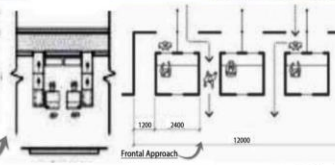
Notional Space Summary for a Cruise Terminal

Source: Passenger Terminal Facility Design Guide - August 2011

CHECK IN COUNTERS

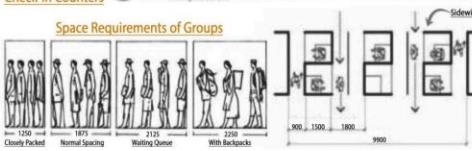
At the check-in counters, passengers show their tickets, **had their seats allocated and if necessary had large items of baggage weighed** and possibly **security screened** for registration and loading into the vessel hold.

Check - in Counter



General Layouts of Check-in Counters

Space Requirements of Groups



DETAILS OF CRUISE VESSELS AT KERALA PORTS

Source: https://www.slideshare.net/PiyushThakur7/international-cruise-terminal-thesis-report-147264653

Cruise Vessels at Kochi	GRT	LENGTH	BEAM	DRAFT	SPEED	PASSENGER	CI
Deutschiand *	22496	172	22.8			416	26
Europa *	28518	196	23.7	6.0		299	27
Europia	37012	200				263	26
Hebridean Spirit *	4200	89	16.8	4.5		54	75
Island Princess	20186	169				575	37
Legend of the Sea	26449	190				1038	58
Maxim Gorkiy	27220	195				474	34
Mermoz	13804	162				281	32
Michael Rose	525	49				13	12
Minerva	12331	135				291	16
Norwigian Crown	34242	188				900	49
Ocean Majesty	10417	135				200	21
Seabourn Spirit *	9975	132	18.9	5.7		160	16
Silver Cloud	16927	156				219	21
Silver Shadow *	28258	183	24.3	6.0		142	26
Silver Wind	16927	156				272	21
Song of Flower	8282	130				157	12
Southern Cross	17042	163				331	29
Star Flyer	2298	112				49	72
Switzerland	15739	162				236	23
Vistamar	7478	121				304	11

- These vessels are having **draft depth less than or equal to 6m which is favourable for berthing at the Beypore Port.**

- Most of these vessels operates internationally with the state ports.

Legend Sea - Cru

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DATA COLLECTION

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RETAIL SHOPS

Source:
1. Time Savers Standards
2. Neuferts Standards

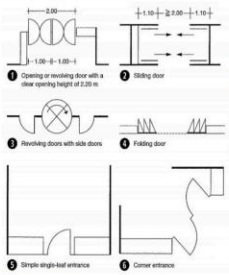
Shopping as an experience should provide fun, which in turn provides profits.
A successful store or shop is one that is designed to merchandise in addition to looking good .
A store can be divided into two principal parts : the exterior, which gives identification, encompasses the storefront, show windows, and displays, and the interior, where the promise of the storefront display is delivered . Briefly stated, the storefront initiates the sale, and the interior consummates it .

Typical Store Layouts

TYPE of ISLAND	L	W
With taller cases	13'-0" Avg min	9'-6" to 13'-0"
Showcases only	10'-0" min	5'-0" to 6'-3"
Tables only	4'-0" to 7'-0"	2'-6" to 3'-0"

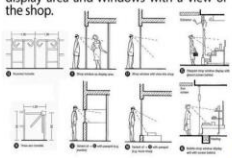
Entrances

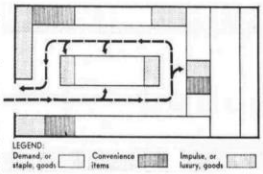
Sales outlets area <2000 m² - door widths > 1m; to those >2000 m² they must be disability-friendly and have automatic doors.
According to the retail regulations:
Clear opening width must be >2.00 m
Clear height >2.20 m.



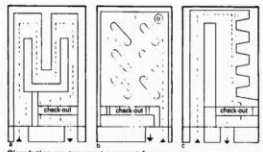
Show Windows

The two basic types are - Windows with display area and Windows with a view of the shop.

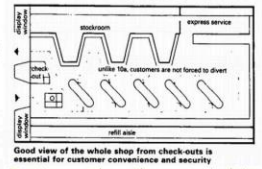




Merchandise is located according to classification : staple goods are unobtrusively yet accessibly placed; luxury items are spotted where the prospective customer cannot help but be attracted to them .
White counter areas are allocated to services : cashier, wrapper, information, etc .

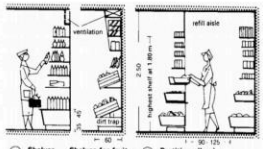


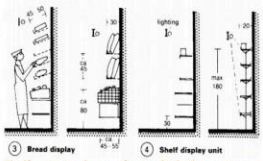
Circulation routes must account for corners (a and c, entrance and exit separate; b, together)



Good view of the whole shop from check-outs is essential for customer convenience and security

Attention must be paid more to circulation routes in larger shops. They must begin at the trolley/ basket pickup and end at the check out.



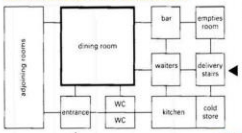


Shelf units in shops - from which the customer picks their own goods should **not be higher than 1.8m and not lower than 0.3m** above the floor level.

RESTAURANTS AND FOOD COURTS

Source:
1. Time Savers Standards
2. Neuferts Standards

Functional Layout of a Restaurant



These drawings highlight several critical dimensions. Aisle circulation must be adequate in width ; other clearances to consider include chair depth from edge of table and clearance between chairs.

Tables/ Seating Plans

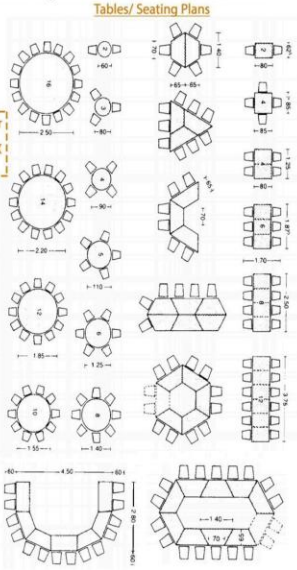
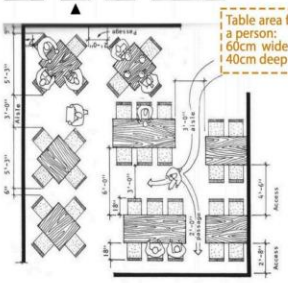
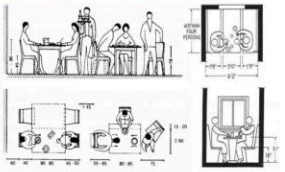
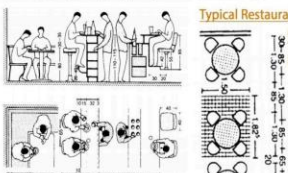


Table area for a person: 60cm wide X 40cm deep

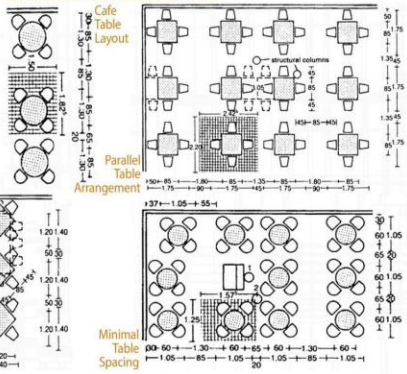


Space requirements for Server and Diner





Typical Restaurant table arrangements



Walkway widths

dining floor area	walkway width
up to 100 m²	≥ 1.10 m
up to 250 m²	> 1.30 m
up to 500 m²	≥ 1.65 m
up to 1000 m²	> 1.80 m
over 1000 m²	≥ 2.10 m

Minimum width of escape routes - 1.00m per 150 people

Floor Area Requirements

type	chair occupancy per meal	kitchen area required (m²/cover)	dining area required (m²/seat)
exclusive restaurant	1	0.7	1.8-2.0
restaurant with high seat turnover	2-3	0.5-0.6	1.4-1.6
normal restaurant	1.5	0.4-0.5	1.6-1.8
inn/ guesthouse	1	0.3-0.4	1.6-1.8

approx. 80% supplement is added for storage rooms, personnel rooms etc.
cover = seat + no. of seat changeovers

Aisle widths

main aisles	mi
intermediate aisles	mi
side aisles	mi

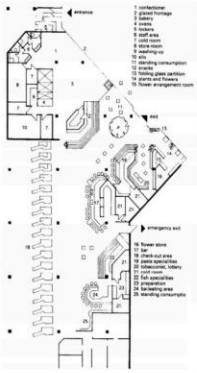
Toilet facilities

customer places	toilets men	toilets women
50	1	1
50-200	2	2
200-400	3	4
400	- determine in ind	

Total space requirem dining rooms: 1.4-1.6

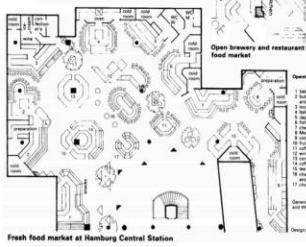
tables	seats	waiter servic m²/se
square	4	1.25
rectangular	4	1.10
rectangular	6	1.05
rectangular	8	1.05

FOOD COURTS



Food Courts are that houses group outlets that sells va products. Customer sit and eat on the take the food away.
With attractive di market style en they offers a pleasa environment.

Typical Food Co



Fresh food market at Hamburg Central Station

REVAMPING BEYPORE PORT

Proposal for the Development of an International Cruise Terminal and Renovation of Beypore Port

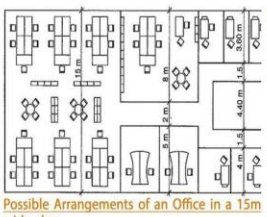
DATA COLLECTION

FATHIMA NAZEER
MES16AR13
SEMESTER - 10
MES SCHOOL OF ARCHITECTU

OFFICE SPACES

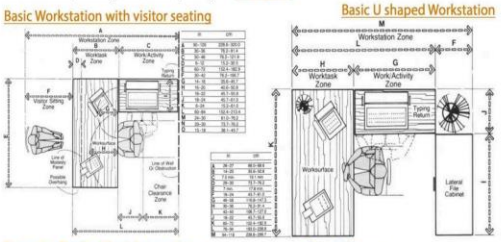
Source:
1. Time Savers Standards
2. Neufferts Standards

For a cruise hub, **closed and open office spaces** are required.
- Closed plan offices have full-height walls or partitions dividing the space into office with doors.
- **Private offices are typically located along the window walls.**
- Administrative support is housed in workstations along corridors or in shared rooms.
- The advantages include a controlled environment, security and visual privacy.



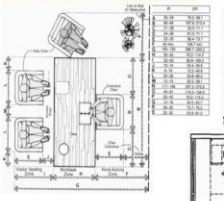
Possible Arrangements of an Office in a 15m wide plan

Basic Workstation with visitor seating

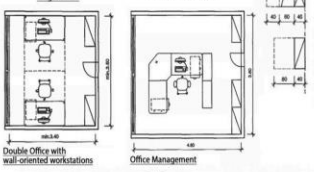


Basic U shaped Workstation

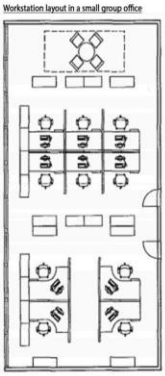
Executive Desk with visitor seating

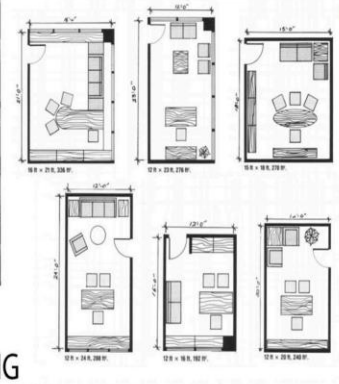


Typical Office Layouts



Workstation layout in a small group office



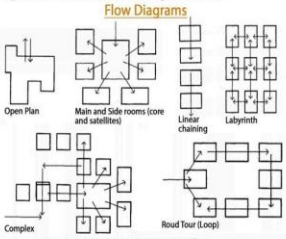


MUSEUMS

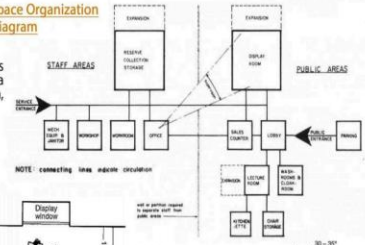
Source:
1. Time Savers Standards
2. Neufferts Standards

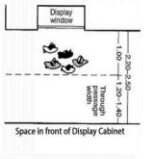
Collection of devices, weapons, clothing, written documents etc. which show the cultural development of a geographically restricted area (ethnological museum, open-air museum, local history museum).

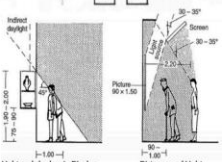
Flow Diagrams

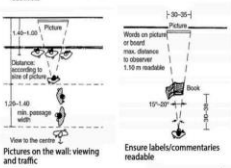


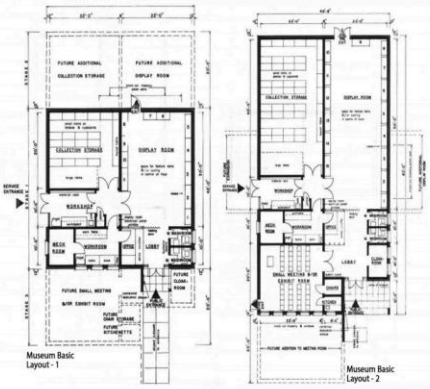
Space Organization Diagram

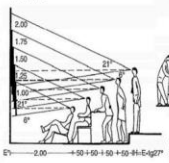












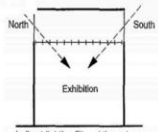
Lighting

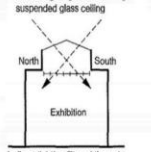
There should be **no direct daylight fallin objects as this could cause damage.** Th rooms should be provided with flexible li **no permanently built-in lights, no fixed v lights.**

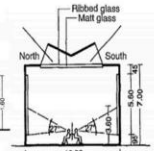
Guidelines for lighting

Very sensitive display objects - 50-80 lx
Sensitive display objects - 100-150 lx
Less sensitive display objects - 150-300 lx
UV radiation must not be exceed 25 W/m²

It must be possible to completely darken al In public rooms where no items are entrance area, cafe, library, a greater amou



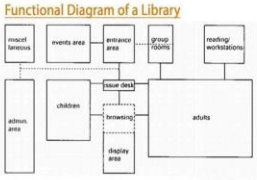




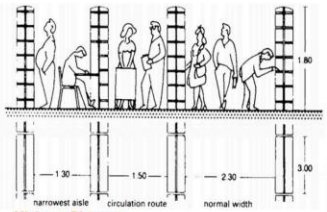
LIBRARY

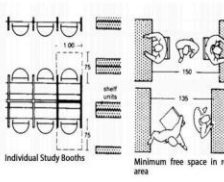
Source:
1. Neufferts Standards

Functional Diagram of a Library

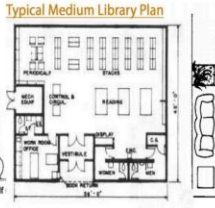


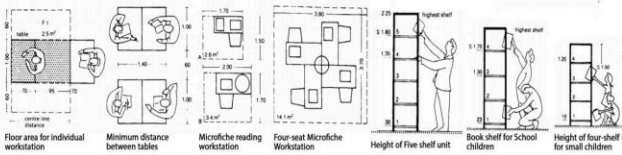
Minimum Distances





Typical Medium Library Plan





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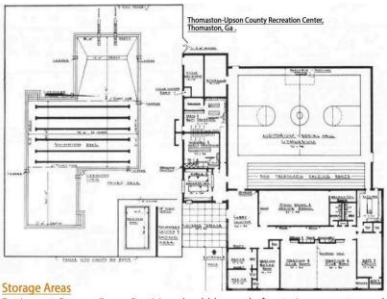
RECREATION CENTERS

Source:
1. Time Savers Standards

Recreation buildings should be **functionally designed to make possible a varied program of activities for all ages and both sexes.** Recreation buildings should provide a safe, healthful, and attractive atmosphere in which every person in the community or neighborhood has the opportunity to enjoy his leisure by participation in activities of a social, creative, cultural, or physical nature .



Storage Areas

Equipment Storage Room Provision should be made for storing apparatus and equipment.
- There should be **an opening 6 ft wide with louvered flush doors between the social hall, gymnasium and the storage room .** This will permit passage of the most bulky equipment.
- The **minimum size of the storage room should be approximately 250 sq ft.**
- Appropriate bins, shelves, and racks are suggested.

AMPHITHEATRE

Source:
https://filestore.scouting.org/filestore/designdevelop/pdf/D-301TheAmphitheater.pdf

This form of gathering space provides seating capacity and stage area for shows and entertainment for guests and campers.
- It should be located on a gradual slope with an attractive stage background.
- An adequate degree of buffer area can be provided from conflicting activities.

Recommendations:

STAGE RECOMMENDATIONS:
1. 24'-0" x 12'-0"
2. APPROX. 16" ABOVE GRADE
3. HANDRAIL ALONG REAR AND SIDES OF STAGE
4. OPTIONAL STAGE MATERIALS: CONCRETE SONATUBE WOOD DECKING QUARRY FINDS COMPOSITE MATERIAL

SEATING RECOMMENDATIONS:
1. LOCATE FIRST ROW 20' FROM STAGE
2. 4' BETWEEN ROWS
3. 16" FROM GRADE TO TOP OF BENCH 4. THREE SECTIONS WITH TWO AISLES
5. 3' TO 4' AISLE WIDTH
6. EACH BENCH SECTION CONSTRUCTED IN MULTIPLES OF 10' LENGTHS
7. OPTIONAL BENCH MATERIALS: CONCRETE WOOD STONE COMPOSITE MATERIAL

SOUND RECOMMENDATIONS:
1. CONSTRUCT SOUNDUV ROOM WITH SUBSTANTIAL MATERIAL SUCH AS MASONRY OR STONE. SUBSTANTIAL WOOD FRAME CONSTRUCTION ONLY TO COMPLY WITH APPLICABLE BUILDING CODES.
2. SOUND ENHANCING SYSTEM
3. INSTALL CONDUIT BETWEEN SOUNDUV ROOM AND STAGE

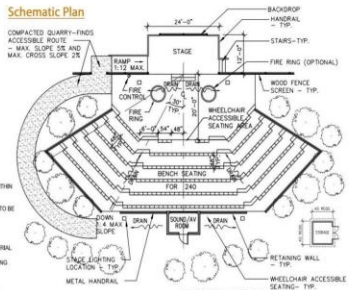
LIGHTING/ELECTRICAL RECOMMENDATIONS:
1. PROVIDE LOW-LEVEL AISLE LIGHTING
2. PROVIDE OVERHEAD GENERAL LIGHTING (WITHIN TREES IF POSSIBLE)
3. PROVIDE DIRECTIONAL STAGE LIGHTING
4. ALL ELECTRICAL CONNECTIONS & OUTLETS TO BE ON GFI BREAKERS FOR EXTERIOR USE.
5. OPTIONAL FOOT LIGHTS

FIRE RING RECOMMENDATIONS:
1. METAL OR OTHER NON-COMBUSTABLE MATERIAL
2. MINIMUM OF ONE FIRE RING
3. REMOVE ALL TREES WITHIN 20'-0" OF FIRE RING

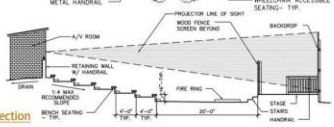
DRAINAGE RECOMMENDATIONS:
1. SURFACE DRAINAGE PREFERRED
2. CATCH BASINS, AREA DRAINS, AND FRENCH DRAINS ALTERNATE AS NEEDED.

ANCILLARY FACILITIES:
1. ACCESSIBLE RESTROOM FACILITIES, MALE AND FEMALE, TO BE PROVIDED IF THERE IS NOT A NEARBY BUILDING WITH ADEQUATE RESTROOMS.

Schematic Plan



Schematic Section



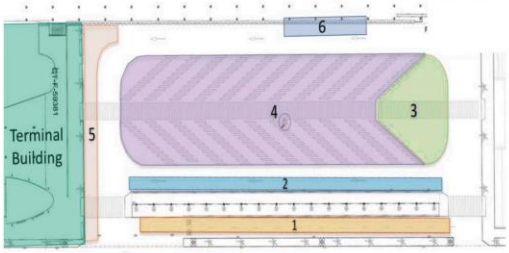
GROUND TRANSPORTATION AREA (GTA) AND PARKING

Source:
1. Guidelines for Cruise Terminals - PIANC - September 2016 2. Neufferts Standards

Ground Transportation Area (GTA) - Space next to the terminal building and the quay operational area where passengers arrive from all modes of transport.

Following spaces are required:
1. Coaches Park: for shuttle and tour buses
2. Taxi ranks: with pedestrian walkway of width of at least 1.5 m
3. Kiss and ride: short stay parking area for people accompanying the passengers
4. Parking: for employees, ship agents, porters and all workers

Ground Transportation Counter/Kiosk - Provide space for rental car, base transport, taxi cab, bus, subway, or rail transportation information. In small and medium terminals, the Information Counter may provide this function.

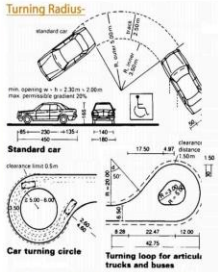


Typical Ground Transportation Area of a Cruise Terminal Bulding

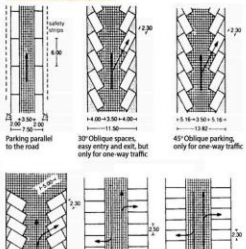
Legend:-
1- Taxi Stands 2- Taxi Stands 3- Private Vehicles
4- Excursion buses 5- Shuttle buses 6- Public buses

PARKING

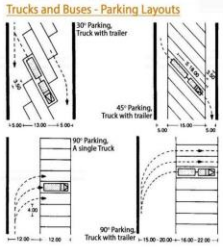
Turning Radius-



Cars - Parking Layouts

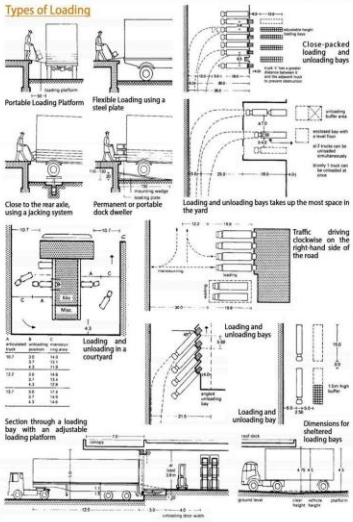


Trucks and Buses - Parking Layouts



LOADING BAYS

Types of Loading



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SITE ANALYSIS

SITE ANALYSIS

There construction proposal has stared happening on our site currently, no proper road to approach, full of polluted air with coal and dust layers, public transport should extend till this point, need lot of parking space, If this place is going to be cruise terminal then site need lot of development,

Located on the East Coast of India in between Chennai and Kolkata (latitude 17o 41' N and longitude 830 17' E), Port of Visakhapatnam, was opened to commercial shipping on 7 th Oct. 1933. The Port is serving hinterland comprising of Andhra Pradesh, Telangana, Odisha, Maharashtra, Jharkhand and Chhattisgarh and parts of northern India. Including NCR.

Site location

Site is located 7.3 acre area. about The 330m-long cruise berth and terminal building behind the vizag port area.

PLOT AREA : 28,882 sqm(7.3) acre.

ADDRESS : 22-77-13/A, Port Area, Visakhapatnam, Andhra Pradesh 530001

CURRENT LAND USE: unmanaged terminal

NEW PROPOSAL : International cruise terminal

DESIGN CONSIDEREATION

project

The proposed structure is planned partly on land side and partly on sea side of the existing channel berth to accommodate vessels of capacity 100,000 GRT with 300m LOA, 36.0m Beam and 8.50m draft vessels. It is proposed to construct new berth of 180m length and 2nos of mooring dolphins on either side with a total length of 330m parallel to the existing

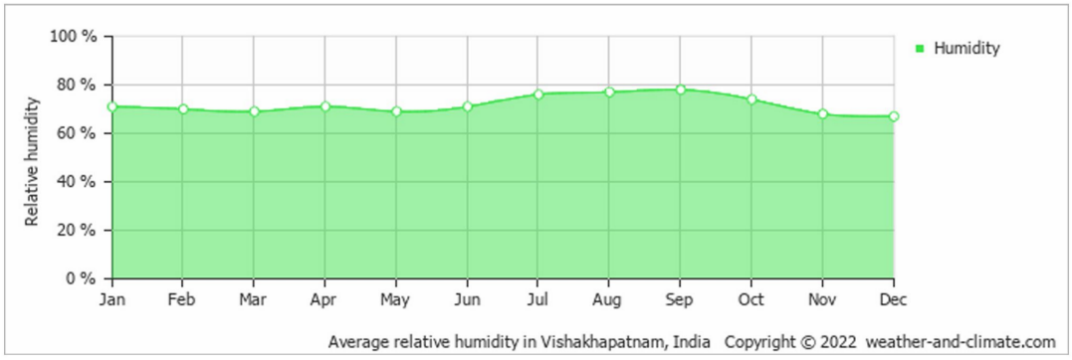
Features of Cruise-cum-coastal cargo Terminal

- A berth of 180 m length and 37.6 m width
- Four mooring dolphins – two each on either side of the berth to make a total length of 330 meters
- Total berth area (330 m*37.6m) : 12408 Sqm
- Back up area: 15,000 sqm.
- Total area under construction: 27408 Sqm
- A terminal building of 2,000 sq. mts. with all amenities
- Adequate parking space
- Excellent road connectivity

Tourism

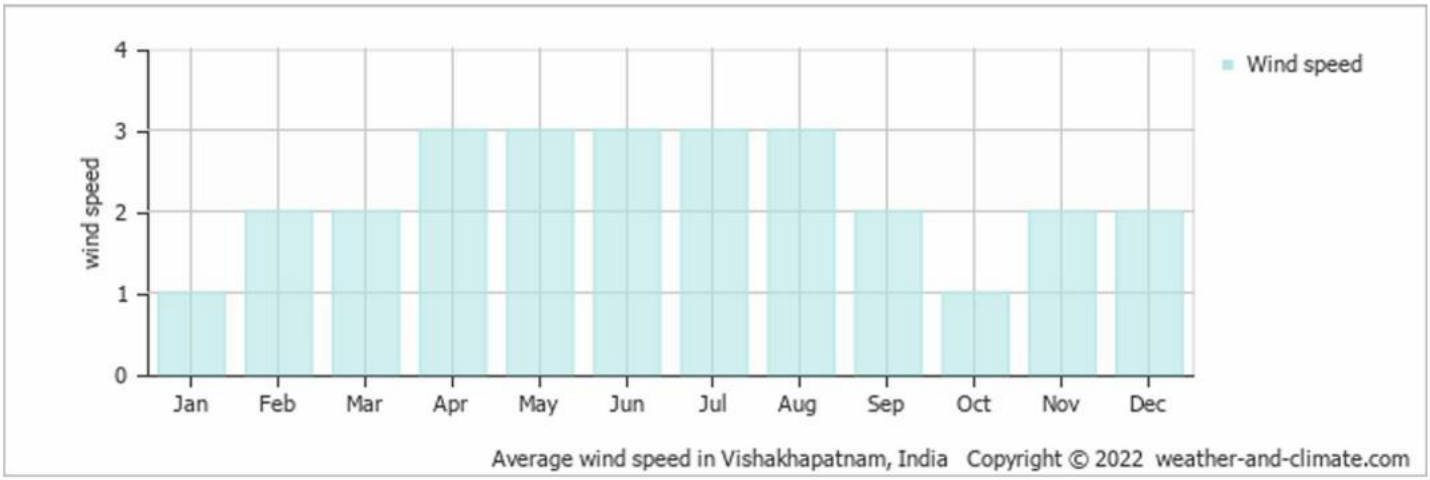
Visakhapatnam is the biggest city in the state of Andhra Pradesh. It has a unique geographical feature of being encircled by the Eastern Ghats and the Bay of Bengal. The city has immense tourism potential with the presence of a unique combination of tourism spots of heritage, religious, adventure, beaches, wildlife

RELATIVE HUMIDITY



WIND

The predominant direction of wind is South-West and North-East for most of the time. The maximum wind speed recorded is 110KMPH.



The HUMIDITY is comparatively high and fairly uniform throughout the year. The annual mean value of daily relative humidity recorded varies from 72% to 76%. Highest recorded value is 81% and lowest recorded value is 64%

VISIBILITY : is good throughout the year as fog is infrequent at sea in all seasons. Reduction in visibility is mostly due to heavy rainfall during the South-West

monsoon. The highest monthly average duration recorded of fog is 0.1 day in some months from December to May

Cyclones: Cyclones are common to occur in the Bay of Bengal. Average number of cyclones occurring at Vishakhapatnam is 3 to 4 per year. Cyclonic storms and depressions occur with greatest frequency is August, October and November generally.

OCEANOGRAPHIC DATA:

Geo technical Conditions:

The results of soil investigations carried out in the vicinity of the proposed Channel Berth (near General Cargo Berth) indicates that, the subsurface profile up to (-)19.00m generally consists of Sand with shell fragments. Stiff Black clay mixed with fine sand is encountered between the (-) 19.00m to (-) 32.50m depth and thereafter layer of weathered Rock encountered.

Waves

Deep water waves: the predominant direction of waves during April to September (South West monsoon period) is South-West whereas, during the period from November to February (North-East monsoon period), the predominant direction is North East.

Tides

The tide levels from Chart Datum at Visakhapatnam Port are given below:

Highest High Water Level- (+) 2.38 m

Mean High Water Level Springs-(+) 2.06m

Mean High Water Level Neaps-(+) 1.50m

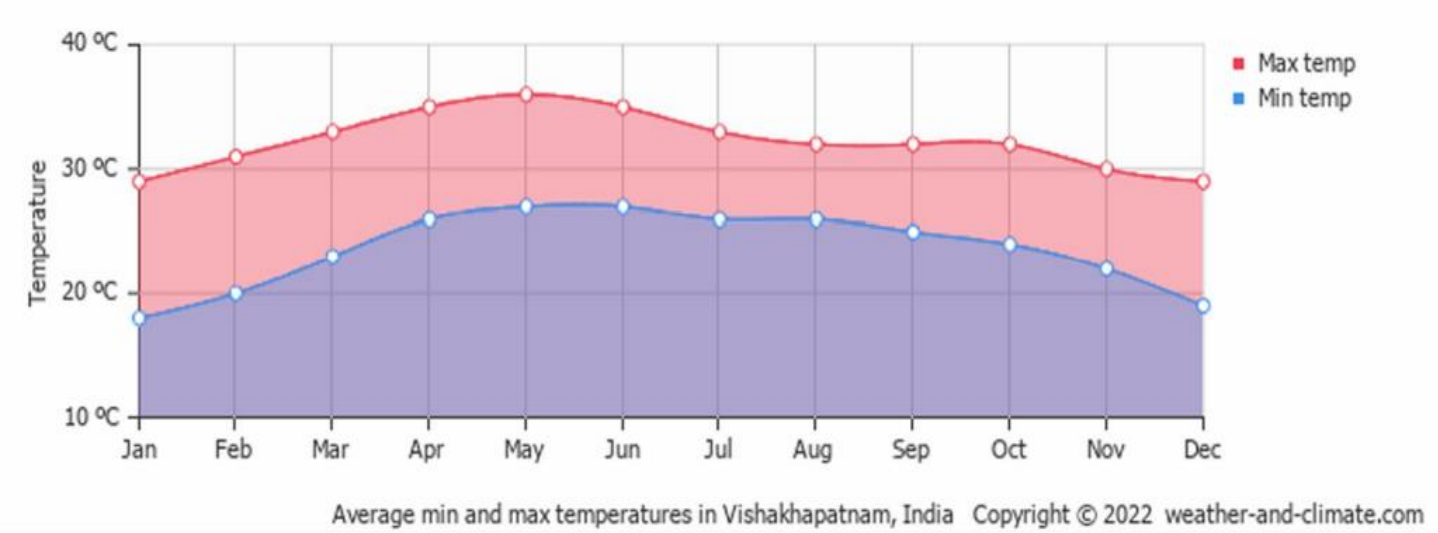
Mean Sea Level- (+) 0.80 m

Mean Low Water Springs- (-) 0.16m

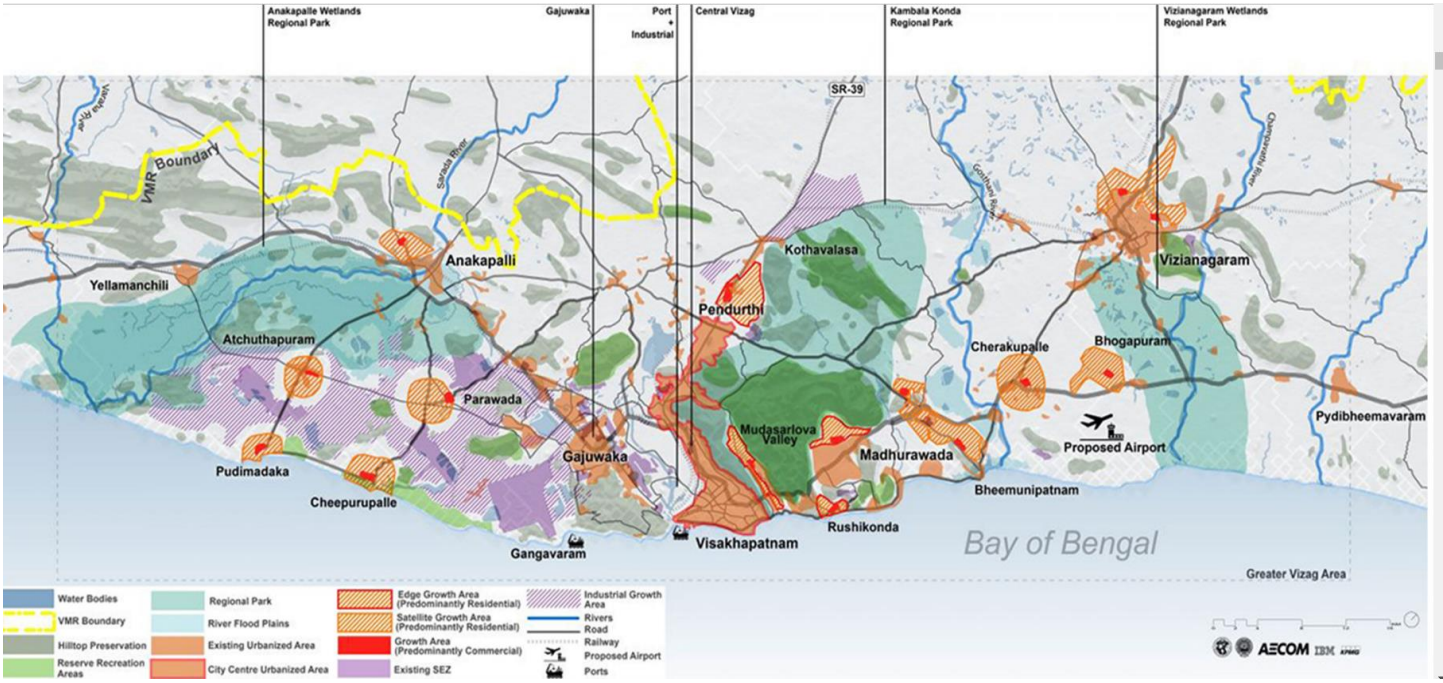
Mean Low Water Neaps-(+) 0.50m

47

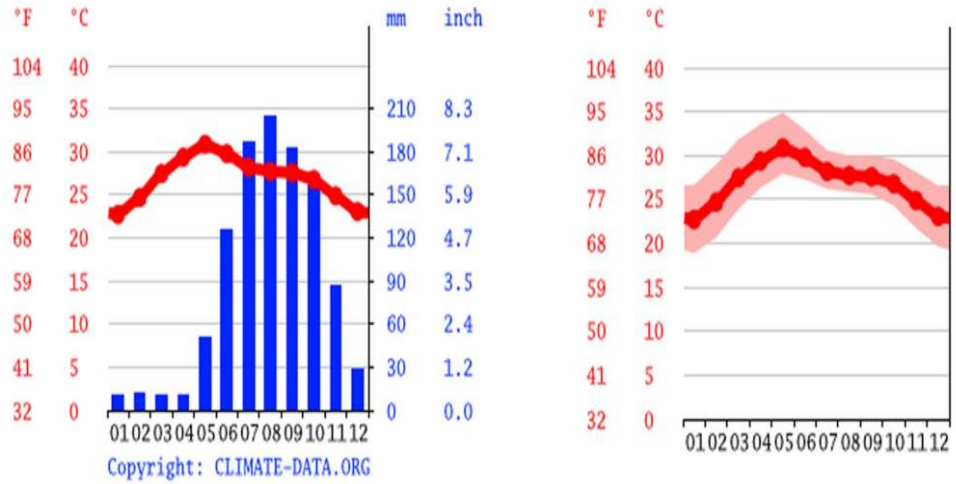
Chart datum-(-) 0.00



Lowest Low Water Level- (-) 0.55 m

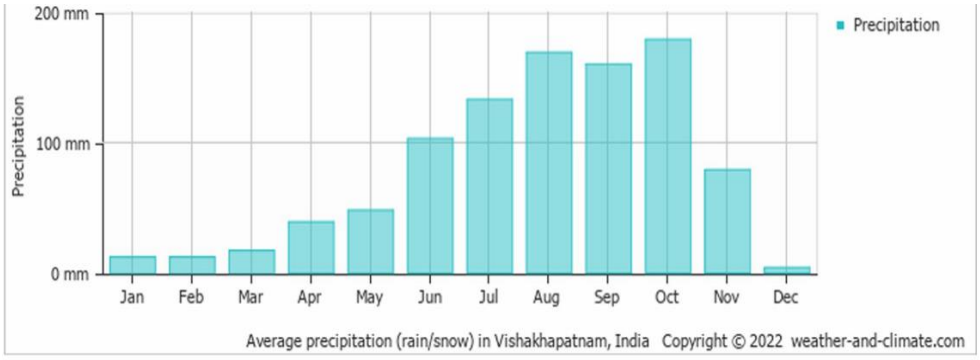


CLIMATE ANALYSIS

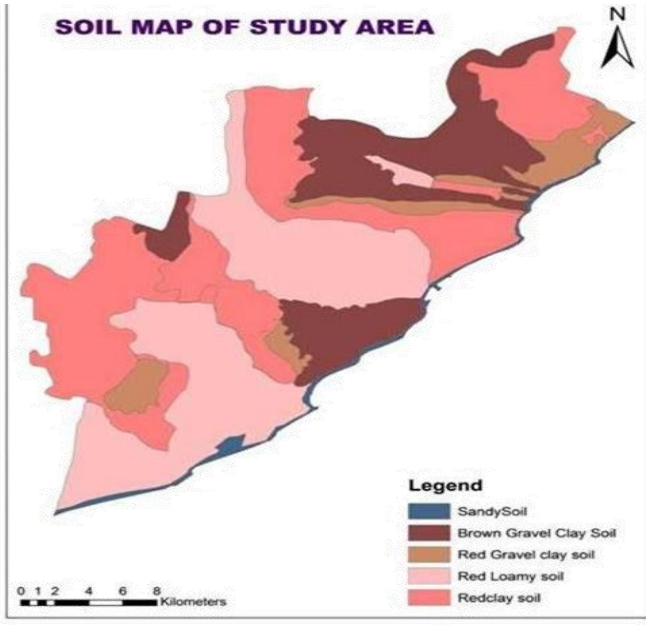


	January	February	March	April	May	June	July	August	September	October	November	December
Avg. Temperature °C (°F)	22.7 °C (72.9) °F	24.7 °C (76.4) °F	27.5 °C (81.4) °F	29.4 °C (84.9) °F	30.9 °C (87.5) °F	29.8 °C (85.6) °F	28.2 °C (82.7) °F	27.7 °C (81.9) °F	27.6 °C (81.6) °F	26.8 °C (80.2) °F	24.9 °C (76.8) °F	23.1 °C (73.5) °F
Min. Temperature °C (°F)	18.9 °C (66) °F	20.6 °C (69.2) °F	23.9 °C (75) °F	26.3 °C (79.4) °F	27.9 °C (82.2) °F	27.3 °C (81.1) °F	26.2 °C (79.1) °F	25.8 °C (78.5) °F	25.6 °C (78) °F	24.3 °C (75.7) °F	21.8 °C (71.2) °F	19.6 °C (67.3) °F
Max. Temperature °C (°F)	26.6 °C (79.9) °F	29 °C (84.2) °F	31.8 °C (89.3) °F	33.6 °C (92.4) °F	34.9 °C (94.8) °F	32.9 °C (91.2) °F	30.6 °C (87.1) °F	30 °C (86) °F	30 °C (86) °F	29.6 °C (85.3) °F	28.1 °C (82.6) °F	26.6 °C (79.9) °F
Precipitation / Rainfall mm (in)	11 (0)	12 (0)	10 (0)	10 (0)	51 (2)	125 (4)	187 (7)	205 (8)	182 (7)	163 (6)	87 (3)	28 (1)
Humidity(%)	73%	71%	70%	73%	72%	73%	79%	81%	83%	80%	74%	72%
Rainy days (d)	2	2	2	1	3	10	14	14	14	12	5	2
avg. Sun hours (hours)	9.0	9.4	10.1	10.4	10.7	11.0	10.7	10.3	9.4	8.9	9.1	9.0

Visakhapatnam are in the middle and the summers are that easy to define. Visakhapatnam has a tropical climate. when compared with winter, the summers have much more rainfall. the climate here the month with the highest relative humidity is September (82.98 %). The month with the west relative humidity is march(69.97 %) The month with the highest number of rainy days is September (19.13 days). the month with the lowest number of rainy days is April (1.93 days).The best time to visit are January, February, march, august, November, December.



	January	February	March	April	May	June	July	August	September	October	November	December
Min. Water Temperature	25.4	25.9	27.3	28.3	29	28.8	28.3	28.1	28.9	28.4	26.9	25.6
°C (°F)	77.7	78.6	81.1	82.9	84.2	83.8	82.9	82.6	84	83.1	80.4	78.1
Avg. Water Temperature	25.6	26.5	27.9	28.7	29.4	29.3	28.5	28.5	29.1	29.3	27.8	26.2
°C (°F)	78.1	79.7	82.2	83.7	84.9	84.7	83.3	83.3	84.4	84.7	82	79.2
Max. Water temperature	25.9	27.3	28.3	29	29.6	29.9	28.8	28.8	29.6	29.6	28.4	26.9
°C (°F)	78.6	81.1	82.9	84.2	85.3	85.8	83.8	83.8	85.3	85.3	83.1	80.4



The rainy season persists during the South-West monsoon and also during North East monsoon. September and October are the wettest months of the year with an average rainfall of 167.3mm and 259.3mm respectively. The average annual rainfall is about 973.6mm. The average annual rainfall is about 973.6mm. The average number of rainy days per year is 50.

and nature.

The tourist footfall in Visakhapatnam during 2017 was 2.06 crores of which foreign tourists constitute 1.04 lakhs. The proposed facility is designed to accommodate ships of length (LOA) up to 300 meters, 36.0m Beam and 8.50m draft. The scheme is proposed to be developed under the Scheme - Financial assistance to Central Agencies for Tourism Infrastructure Development.

Project Viability

- The project facility has a life period of 50 years. Financial analysis is carried out over a project period of 15 years duly considering the residual value at the end of 15th year.
- Financial IRR of the project : 3%
- Financial IRR of the project with 50% as grant under Central Sector Scheme from the Ministry of Tourism to promote tourism : 10%
- The project will have spin off benefit in terms of foreign exchange earnings, creation of employment which has the potential to transform Visakhapatnam as an ideal tourism spot on the East Coast.

Cruise Tourism Potential

- Visakhapatnam is the biggest city in the state of Andhra Pradesh. Visakhapatnam has seemingly discovered its new identity after 2014 and is now emerging as the business and technology hub and also as a travel and leisure destination.
- Development of Fintech Valley - a world class center of innovation with an ecosystem of Global financial services with the convergence of companies, Government and academia to achieve unmatched business goals and successes.
- Vizag is also being developed as a travel destination. The yachting festival held here brought into focus the bustling city's huge tourism potential.

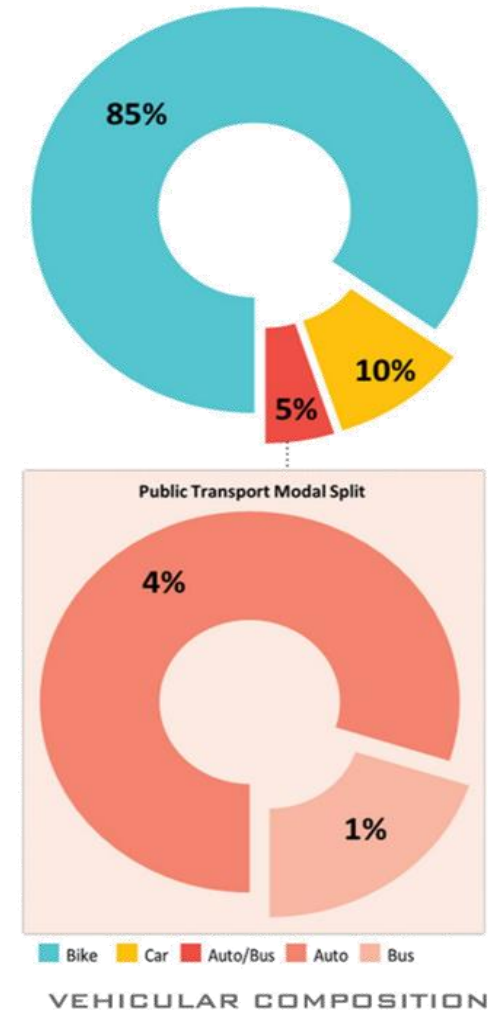
PUBLIC TRANSPORT

The total road network within the port limits is about 85 km out which 23.5 km is available within the operational area connecting the entire stacking areas for free movement of vehicles. A 12.47 km port connectivity road was implemented jointly by the port and through a spv visakhapatnam port road limited". This flyover cum road project facilitates smooth movement of cargo traffic between port and national highway-5.The port is well connected by a 4 lane road to nh-5 (chennai-kolk- atal with access to tamil nadu and odisha/west bengal. The distance to chennai is 790 km, while that to Bhubaneswar is 442 km.

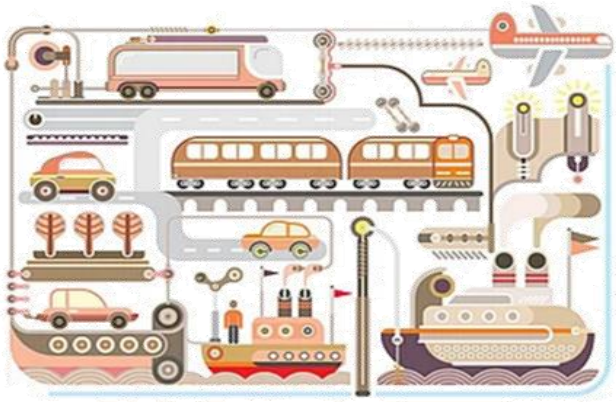
public transport system (pts) in Visakhapatnam is primarily road-based

bus transport. Apart buses capture about 85% of all the trips made by public transport whereas para transit ser vices share the balance 15% in commuting passengers. The total share of public transport is less than 20% against the minimum desire co 55% share for visakhapatnam. Dwaraka bus complex is the major bus station in the city.

VISAKHAPATNAM also known as vizag, wikha or waltair, is the largest and most populous city in the indian state of Andhra pradesh, and its proposed administrative capital it in between the eastern Ghats and the coast of the bay of Bengal. it is the second-largest city on the east coast of India after chennal and the fourth landest in south India it is one of the four smart cities of andhra pradesh selected under the smart cities mission and benves as the headquarters of visakhapatnam district, with an estimated output of $43.5 million if in the ninth largest contributor to india's gross domestic product as of 2016

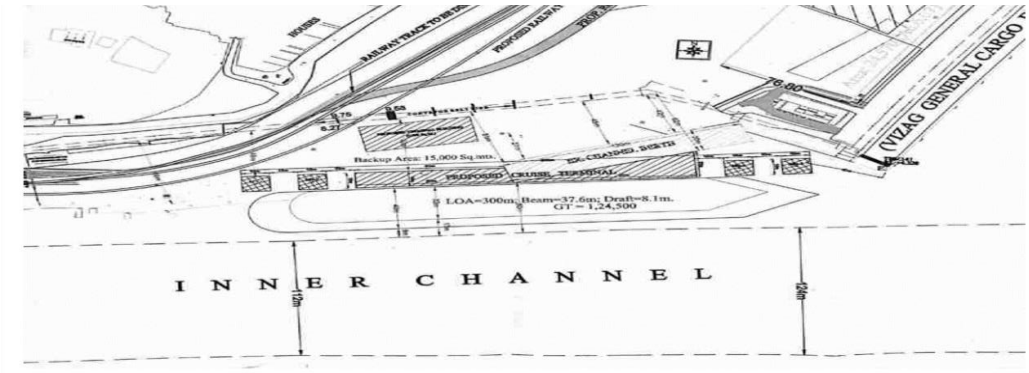


VEHICULAR COMPOSITION



Cumulative Vehicular registrations

Category	2002	2003	2004	2005
Motor Cycles (2 Wheelers)	1,78,143	1,97,534	2,19,158	2,43,033
Motor Cars, Jeeps (4 Wheelers)	17757	20360	23511	27065
Autos	9993	11718	13212	14771
APSRTC	503	491	495	521



STRENGTH

- Road width and Connectivity- Direct and easier connectivity to the town and railway station for cargo transportation. Availability of basic services in closer proximity.
- Historical prominence in trade and commerce and Urdu making yards attracts cruise passengers.
- Breakwaters helps in the smooth navigation of vessels at the wharf.7. Available 5m wharf depth that is suitable for the smooth navigation of small to medium vessels.
- Availability of open platform in front of wharf for loading/ unloading activities.

WEAKNESS

- Unplanned placement of buildings on the site created difficult proper cargo handling and cruise passenger circulations
- Absence of public toilets within the port for the workers and visitors to use.
- Poor and unhygienic working condition creates health hazards in them.
- Unplanned placement of buildings on the site created difficult proper cargo handling and cruise passenger circulations

OPPORTUNITY

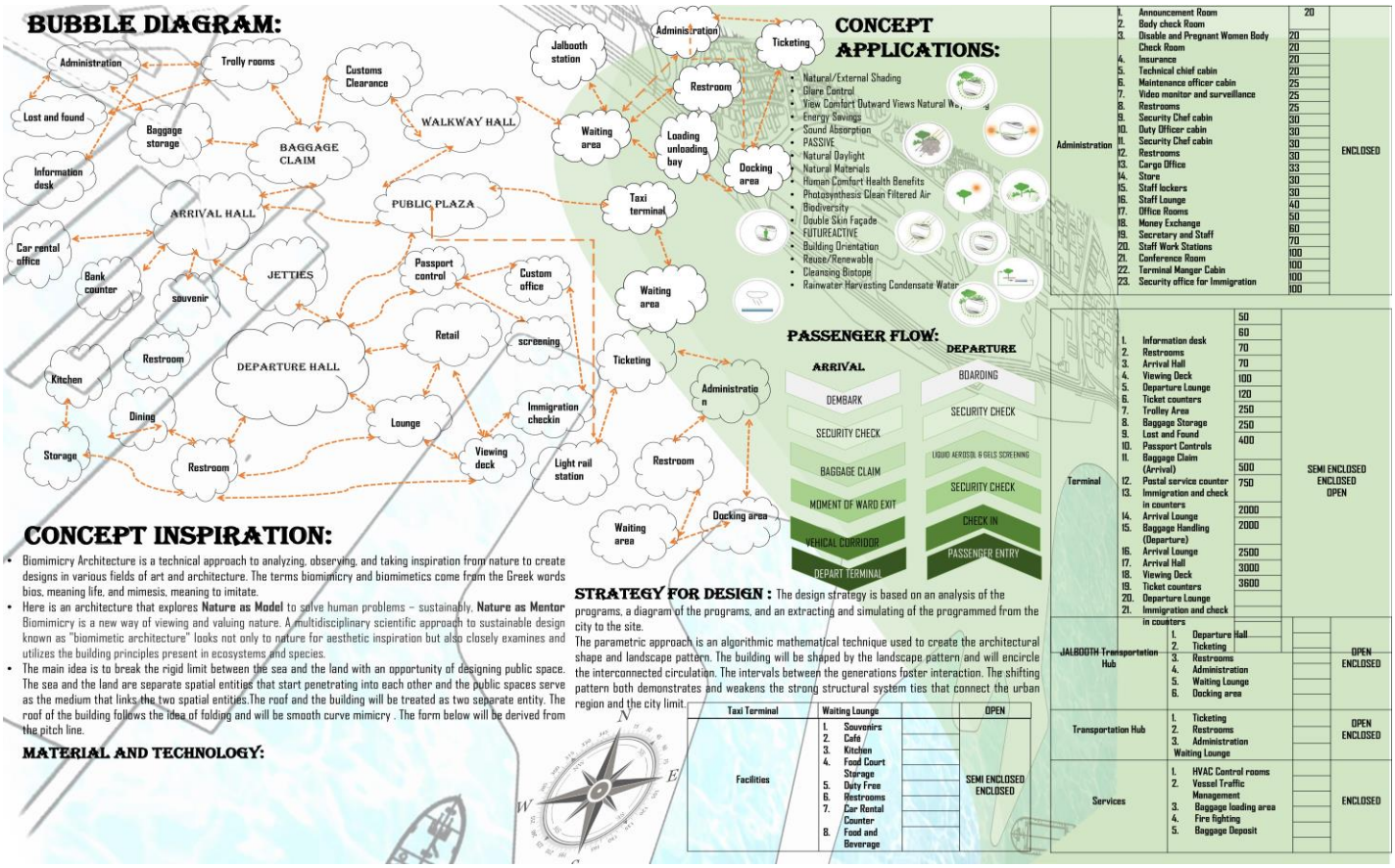
Development of Cruise Terminal is chosen in the Outer Harbour at existing Channel Berth location in view of the following advantages:

- Simpler approach
- Cleaner area as all the berths in the outer harbour are fully mechanized
- No cargo stacks are in the outer harbour

- Berth is directly connected to the beach road into the city
- Highly secured area.

THREAT

- Undesignated open spaces utilized for the dumping of materials that were brought for transshipment.
- Felling of trees if required for construction activities.



1.Total site area dedicated for port related space	**=2000+15000-1700m²**
2.Total site area for cruise terminal and GTA	-
3.TOTAL SITE ARE OF COMMERCIAL NEAR PORT-	
OCCUPANCY	ACCESS width(in m)
Group E- Office (built up area b/w 1500-6000m²	5
Group H- storage (built up area b/t 700-400m²)	7
Group A2: Lodging houses & Special Residential (built up area b/W 1500-6000m²	5
OCCUPANCY	

No90	Space	Exiting area	Requred area (in **m^2**) /person	No. Of unit to be provided	Total proposed area (in sq.M)
PORT RELATED SPACE					
1	GATE HOUSE	82	1.2-1.5	1	90
2	SECURITY CHECKPOSTS	194	1.2-1.5	7	112
3	Office of the DR, director, supply and transport	102	5.9	1	130
4	Port admin building	288	5.9	1	300
5	SPC office	180	5.9	1	200
6	Mechanical garage	115	1.2-1.5	1	150
7	Mechanical AEE office	396	5.9	1	525
8	workshop	137	1.2-1.5	1	180
9	HED store	130	5.9	1	130
10	Power house	100	1.2-1.5	1	120
11	Transit shed	789	1.2-1.5	1	800
12	Ware house	487	1.2-1.5	2	1900
13	canteen	460	5.9(for 100 people)	1	600

14	Worker Rest room	-	5.9(for 20 people)	1	120
15	Residential quarter& dormitory	1168	Dormetry-5.9(30 bed)	1	1500
	TOTAL BUILT UP AREA				

Number of occupants in the office space= 1900m²/5.9= 322 people

Number of occupants in the warehouse and workshops = 2080/30= 69 people

Number of occupants in group A2 1500/5.9= 254 people

Total no. Of occupants = 322+69+254= 645 people

No. Of males- 23 of total population – 430 people

No. Of female- 1/3 of total population – 215 people

OCCUPANCY	**OCCPANT LOAD**
Group E- Office	5.9
Group H- storage	30
Group A2: Lodging houses & Special Residential	5.9
OCCUPANCY	**OCCPANT LOAD**

Group E- Office	5.9
Group H- storage	30
Group A2: Lodging houses & Special Residential	5.9

Maximum permissible Built up area on the site= FSIxToral site are =
Maximum permissible coverage on the site = 60% of the Total site area=
Maximum permissible Floor space index- weighted average of 3 occupancies=
Maximum coverage Least v=coverage of the 3 occupancies- 6%=

Group-E offices:

Total built-up area =

- For 1sr 1260m² → no. of car lots= 1260/90=14 lots
- For remaining 662m²→ no. of car lots 1025/60=11 lots
- Total car lot= 14+11=25 lots of sizes 2.75mx 5.5m
- Two wheeler lots =(25x2.75mx5.5m)x0.25/3m²
- (25% of the car area=32 lots of sizes 1.5m x 2m
- Differently abled lots = 25x2.75x5.5)x0.03 (5.5x(275+1.5))m²
- 3% of total car area= - lots of sizes 5.5 x 4.25.

- **Residential quarter& dormitory:**
- Total built-up area =1630 m²
- For 1sr 1260m² → no. of car lots= 1260/90
- For remaining 370m^2→ no. of car lots 370/60 =6 lots
- Total car lot= 14+6=18 lots of sizes 2.75mx 5.5m
- Two wheeler lots =(20x2.75mx5.5m)x0.25/3m²

- (25% of the car area=25 lots of sizes 1.5m x 2m
- Differently abled lots = 20x2.75x5.5)x0.03/
  (5.5x(275+1.5))m²
- 3% of total car area= -1 lots of sizes 5.5 x 4.25

Ware houses & Workshop:

- Total built-up area =3790 m²
- Total car lot= 370/250=15 lots of sizes 2.75mx 5.5m
- Two wheeler lots =(15x2.75mx5.5m)x0.25/3m²
- (25% of the car area=19 lots of sizes 1.5m x 2m
- Differently abled lots = 15x2.75x5.5)x0.03/
  (5.5x(275+1.5))m²
- 3% of total car area= -1 lots of sizes 5.5 x 4.25

Ware houses & Workshop:

- Total built-up area =3790 m²
- **Total car lots**= 25+20+15 = 60 lots of sizes 2.75mx 5.5m
- Two wheeler lots =32+25+19=76lots of sizes 1.5m x 2m
- Differently abled lots = 2+1+1 = 4lots of sizes 5.5 x 4.25

- **FIRE FIGHTING REQUIREMENTS** -Provide 5M clear space around the building for the fire engine Fire Exit Staircase
- Width: Min 75 cm
- -Riser: Max 19 cm
- Tread: Min 15 cm
- no. of Steps in a single fight: Not more than 16 Numbers
- Handrail Height: Min 100 cm

Office space	COUNT
Number of occupants	322
No. Of male- 2/3rd of total population	217
No. Of female 1/3rd of total population-	109

For male	
No. Of water closet= 217/25=9	9
No. Of urinals = 217/25=9	9
For female	
No. of WC=1.9/15=8	8
Wash basin= one on each floor	

RAINWATER HARVESTING TANK: According to KMBR - Minimum 9- capacity of the storage tank of the rain water storage arrangement h shall be at the rate given below: n0. OF Group D-50 liters/m² of Covered area

Amount of rainwater to being stored 12706 X 50 L=635300 L =635.3 m³

Total Capacity of the rainwater harvesting tank = 640 m³

So, providing a tank of size! (LXBXH)-16 X 10 X 4 m³.

- DESIGN FOR DIFFERENTLY ABLED:-Every such building shall have easy access to the main entrance through a ramp.
- Ramps: -
- Maximum gradient of ramp-shall not exceed 1:12
- -finished with non-slippery material -Minimum width of ramp-120 cm,
- provided with handrails of 80 cm height on both sides
- -Entrance landing of 120cm * 150 cm shall be provided adjacent to ramp
- Toilets: - Minimum size of toilet shall be 1.5m * 1.75m .
- -Minimum clear opening of the door shall be 90 cm wide, the door shall swing out, or be sliding or folding type.
- -Suitable arrangements of vertical/horizontal handrails with 5cm clearance from the wall shall be provided in the toilet
- .-Water closet seat shall be 50 cm above from the floor level
- -Parking facilities: -3% of the required parking subject to a minimum of one car space, shall be provided near the entrance, exclusively for use of the differently
- -abled with maximum travel distance of 30 metres, from the building entrance.
- -Width of such parking bay shall be at least 3.6 metres Disabled3.501.402.50+

The proposal of the project consists of a Cruise Terminal and Transportation Hub that facilitates the passengers of the Cruise Terminal. The proposed design program will be dedicated to both the tourists and citizens. The building will act as a multifunctional place that will house different activities for the public. The terminal will include arrival and departure halls along with their services and facilities, but when there is no transportation season the spaces will be transformed into housing festivals, exhibitions and different temporary activities to add liveliness and to attract the public. Understanding spaces of the case studies have helped in figuring out the areas and the number of units needed for each functional space.

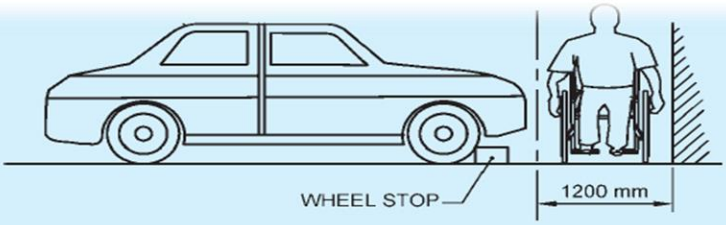
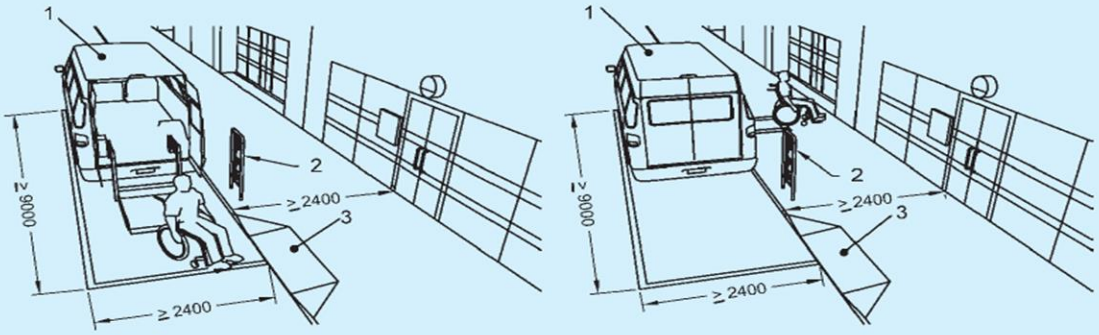


FIG. 39 ACCESSIBLE ROUTE WIDTH FOR WHEELCHAIR USERS TO PASS BEHIND A PARKED VEHICLE



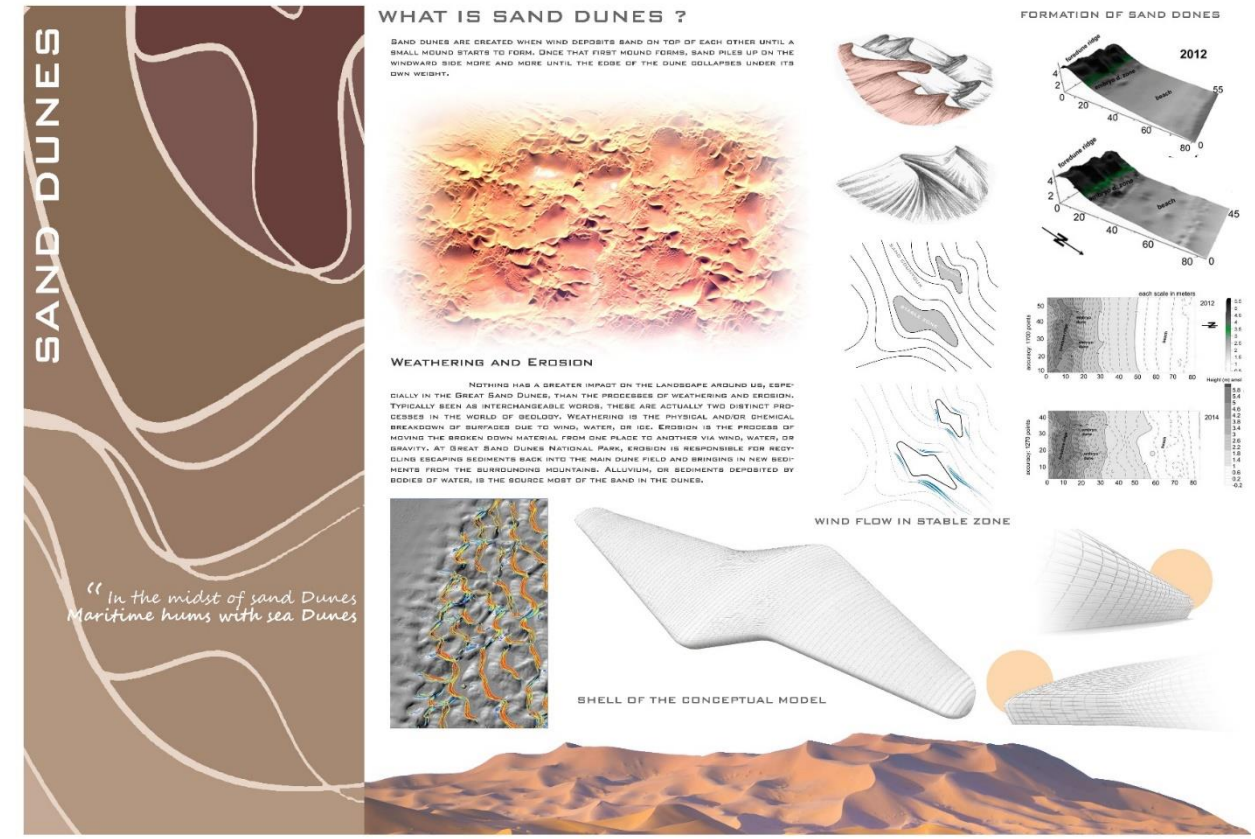
Key
1 Minimum unobstructed height — 2 600 mm
2 Signage, including symbol of accessibility
3 Kerb ramp

All dimensions in millimetres.

FIG. 40 PARKING SPACE ALONG A FOOTPATH/SIDEWALK

CONCEPT

CONCEPT



CONCEPT INSPIRATION:

- Biomimicry Architecture is a technical approach to analyzing, observing, and taking inspiration from nature to create designs in various fields of art and architecture. The terms biomimicry and biomimetics come from the Greek words bios, meaning life, and mimesis, meaning to imitate..
- The main idea is to break the rigid limit between the sea and the land with an opportunity of designing public space. The sea and the land are separate spatial entities that start penetrating into each other and the public spaces serve as the medium that links the two spatial entities.The roof and the building will be treated as two separate entity. The roof of the building follows the idea of folding and will be smooth curve mimicry . The form below will be derived from the pitch line
- **FORM EVOLITUION**

- The reason for choosing the seashell is it is related to the sea itself and it has different variant organic shapes, the broken shell dedicating the different shape and never ending architecture even after broken the shell looks like an massive unique structure

- **FLUDITY ARCHITECTURE** is a new and evolved style of the architecture the fluidity of architecture is the interaction of multiple elements from the scale of the building the function of the building the flow of people similar to flow of the building shape When it comes to building something visually striking and unique for people to observe, utilizing techniques of form and shape is certainly one way to create a breathtaking structure, and these fluid architectural designs are incorporating sleek lines and soft curves to showcase a beautiful flowing appearance.my thesis is utilizing the concept of fluidity as an architecture methodology

- Here taking the concept biomimicry for bio means the come from nature and mimicry means mimicking the shape of that biology here taking two elements from the ocean one is sell and one is water representing the heart and the softest the move this and also representing the fluid architecture

Architecture character concept

ARCHITECTURE CHARECTER CONCEPT As a building type, the terminal must provide functionality for its users but it also offers great opportunity for expression of form contextual materials, precedence of history, aspects of light, color, volume and the potential to inform its site and environment. Transient buildings like this terminal provide their own precedents and cues, consistent with their contexts.

STRATEGY FOR DESIGN: The design strategy is based on an analysis of the programs, a diagram of the programs, and an extracting and simulating of the programmed from the city to the site.

The parametric approach is an algorithmic mathematical technique used to create the architectural shape and landscape pattern. The building will be shaped by the landscape pattern and will encircle the interconnected circulation. The intervals between the generations foster interaction. The shifting pattern both demonstrates

and weakens the strong structural system ties that connect the urban region and the city limit.

- Natural/External Shading
- Glare Control
- View Comfort Outward Views Natural Wayfinding
- Energy Savings
- Sound Absorption
- PASSIVE
- Natural Daylight
- Natural Materials
- Human Comfort Health Benefits
- Photosynthesis Clean Filtered Air
- Biodiversity
- Double Skin Façade
- FUTUREACTIVE
- Building Orientation
- Reuse/Renewable
- Cleansing Biotope

Administration	1. **Announcement Room**	**20**	**ENCLOSED**
	2. **Body check Room**	**20**	
	3. **Disable and Pregnant Women Body Check Room**	**20**	
	4. **Insurance**	**20**	
	5. **Technical chief cabin**	**20**	
	6. **Maintenance officer cabin**	**25**	
	7. **Video monitor and surveillance**	**25**	
	8. **Restrooms**	**25**	
	9. **Security Chef cabin**	**30**	
	10. **Duty Officer cabin**		

	11. **Security Chef cabin** 12. **Restrooms** 13. **Cargo Office** 14. **Store** 15. **Staff lockers** 16. **Staff Lounge** 17. **Office Rooms** 18. **Money Exchange** 19. **Secretary and Staff** 20. **Staff Work Stations** 21. **Conference Room** 22. **Terminal Manger Cabin** 23. **Security office for Immigration**	**30** **30** **30** **33** **30** **30** **40** **50** **60** **70** **100** **100** **100** **100**	

- Rainwater Harvesting Condensate Water

Terminal	**Information desk** **1. Restrooms** **2. Arrival Hall** **3. Viewing Deck** **4. Departure Lounge** **5. Ticket counters** **6. Trolley Area** **7. Baggage Storage** **8. Lost and Found** **9. Passport Controls** **10. Baggage Claim (Arrival)** **11. Postal service counter** **12. Immigration and check in counters** **13. Arrival Lounge** **14. Baggage Handling (Departure)** **15. Arrival Lounge** **16. Arrival Hall** **17. Viewing Deck** **18. Ticket counters** **19. Departure Lounge** **20. Immigration and check in counters**	**50** **60** **70** **70** **100** **120** **250** **250** **400** **500** **750** **2000** **2000** **400** **2000** **2500** **500**	**SEMI ENCLOS** **ENCLOS** **OPEN**

		3000	
		750	

JALBOOTH Transportation Hub	**1. Departure Hall** **2. Ticketing** **3. Restrooms** **4. Administration** **5. Waiting Lounge** **6. Docking area**	**3600** **50** **60** **100** **150** **200**	**OPEN** **ENCLOSED**
Transportation Hub	**1. Ticketing** **2. Restrooms** **3. Administration** **4. Waiting Lounge**	**50** **60** **100** **150**	**OPEN** **ENCLOSED**
Services	**1. HVAC Control rooms** **2. Vessel Traffic Management** **3. Baggage loading area** **4. Fire fighting** **5. Baggage Deposit**	**100** **100** **100** **100** **150**	**ENCLOSED**

		250	

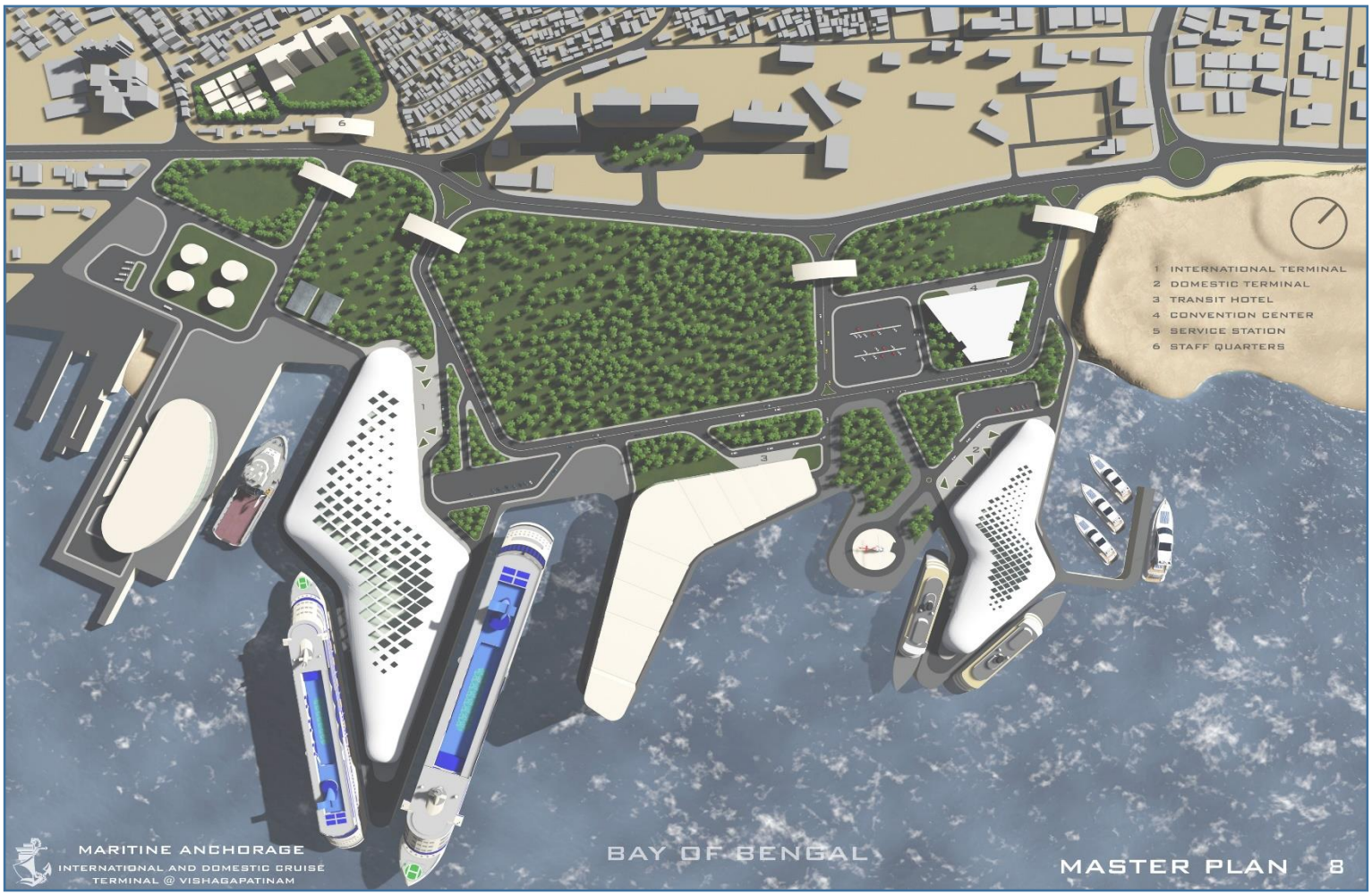
Facilities	**1. Souvenirs**	**20**	**SEMI ENCLOSED**
	2. Café	**30**	
	3. Kitchen	**1000**	**ENCLOSED**
	4. Food Court Storage	**100**	
	5. Duty Free		
	6. Restrooms	**80**	
	7. Car Rental Counter	**30**	
	8. Food and Beverage		
		60	

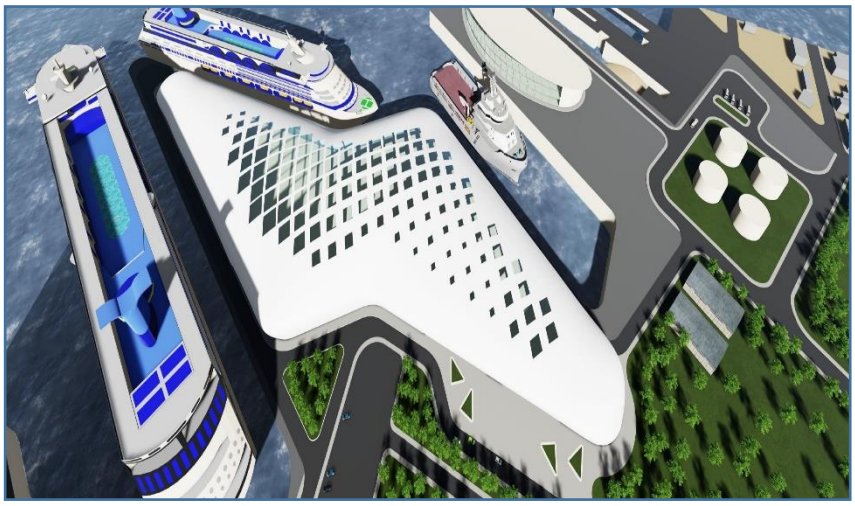
PLAN

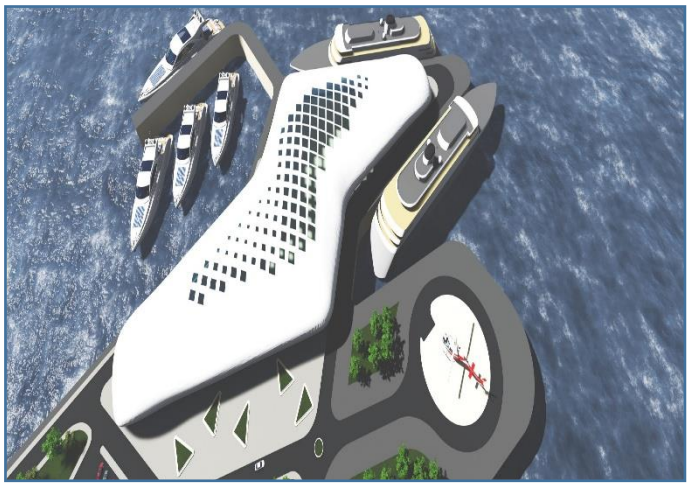
ELEVATION

SECTION

3D VIEWS


1 INTERNATIONAL TERMINAL
2 DOMESTIC TERMINAL
3 TRANSIT HOTEL
4 CONVENTION CENTER
5 SERVICE STATION
6 STAFF QUARTERS
MARITINE ANCHORAGE
INTERNATIONAL AND DOMESTIC CRUISE TERMINAL @ VISHAGAPATINAM
BAY OF BENGAL
MASTER PLAN 8





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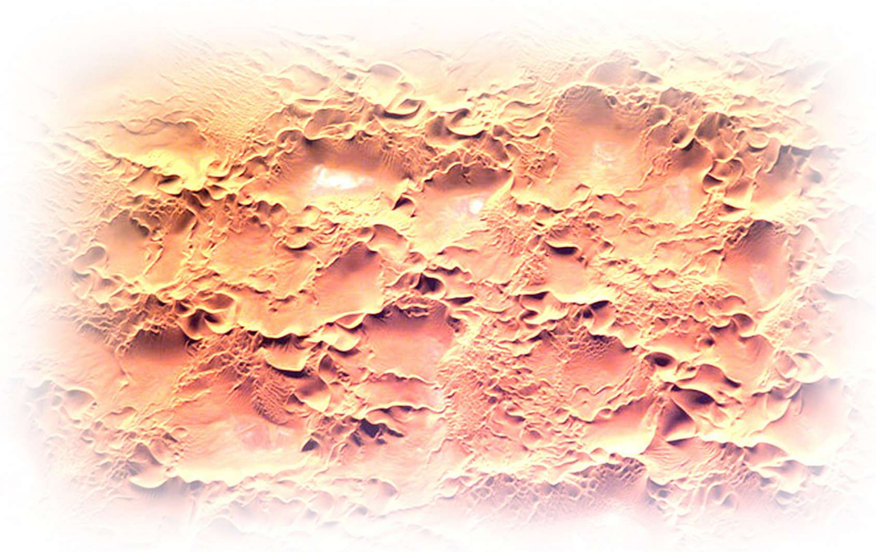
SAND DUNES

"In the midst of sand Dunes
Maritime hums with sea Dunes

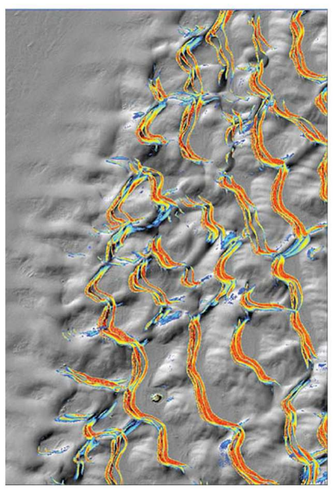
WHAT IS SAND DUNES ?

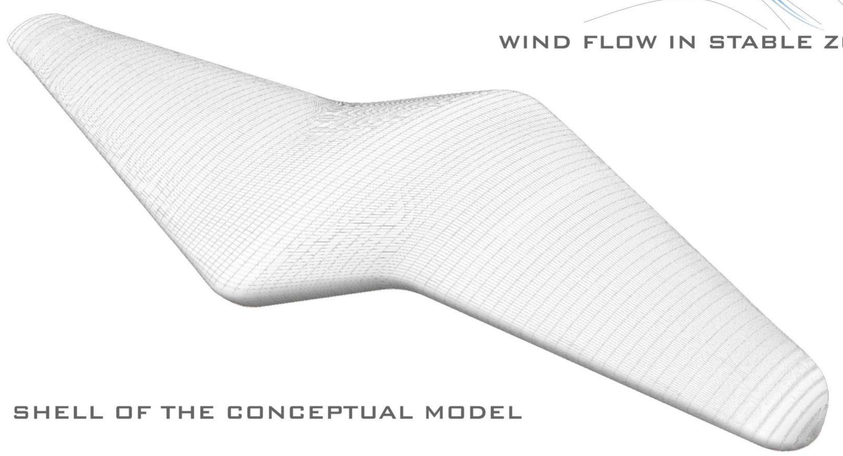
Sand dunes are created when wind deposits sand on top of each other until a small mound starts to form. Once that first mound forms, sand piles up on the windward side more and more until the edge of the dune collapses under its own weight.



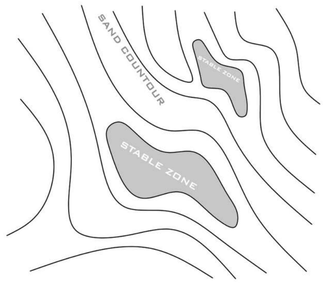
Weathering and Erosion

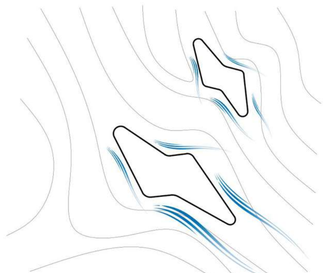
Nothing has a greater impact on the landscape around us, especially in the Great Sand Dunes, than the processes of weathering and erosion. Typically seen as interchangeable words, these are actually two distinct processes in the world of geology. Weathering is the physical and/or chemical breakdown of surfaces due to wind, water, or ice. Erosion is the process of moving the broken down material from one place to another via wind, water, or gravity. At Great Sand Dunes National Park, erosion is responsible for recycling escaping sediments back into the main dune field and bringing in new sediments from the surrounding mountains. Alluvium, or sediments deposited by bodies of water, is the source most of the sand in the dunes.





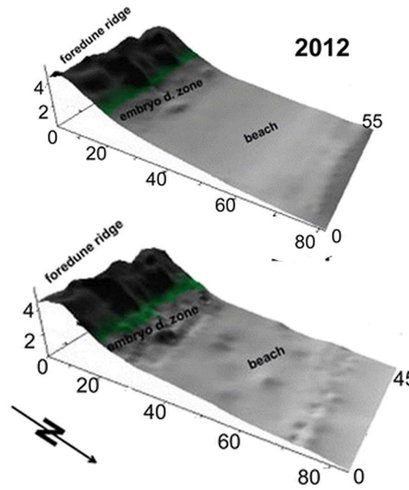
SHELL OF THE CONCEPTUAL MODEL

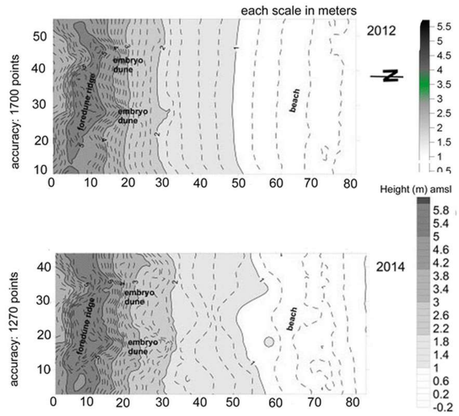


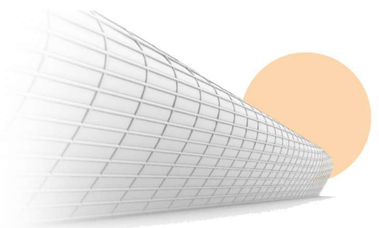


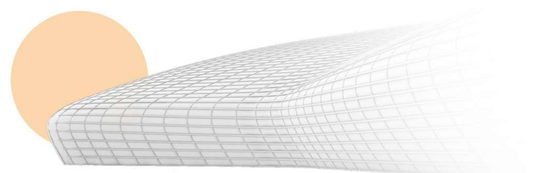
WIND FLOW IN STABLE ZONE

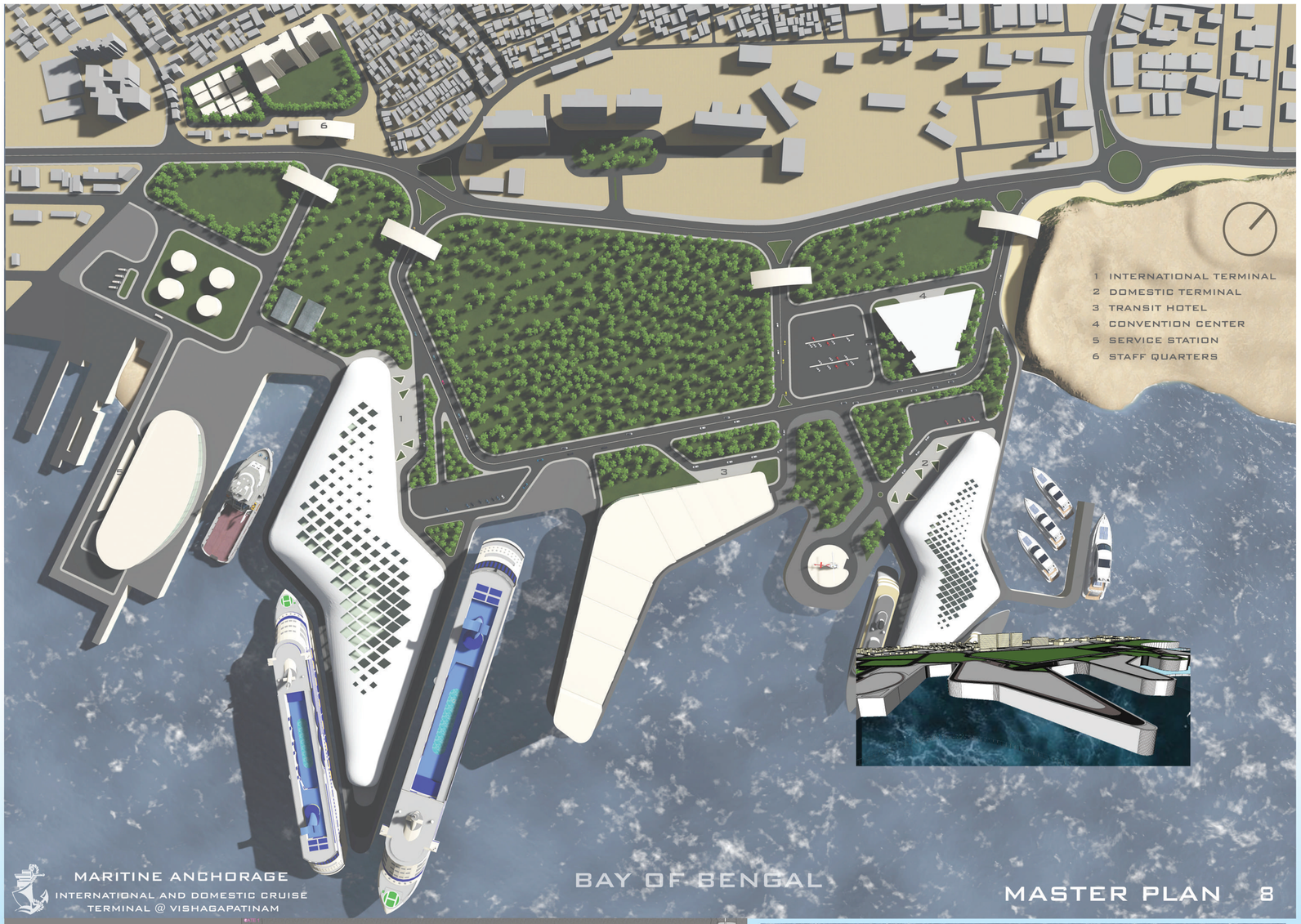
FORMATION OF SAND DONES

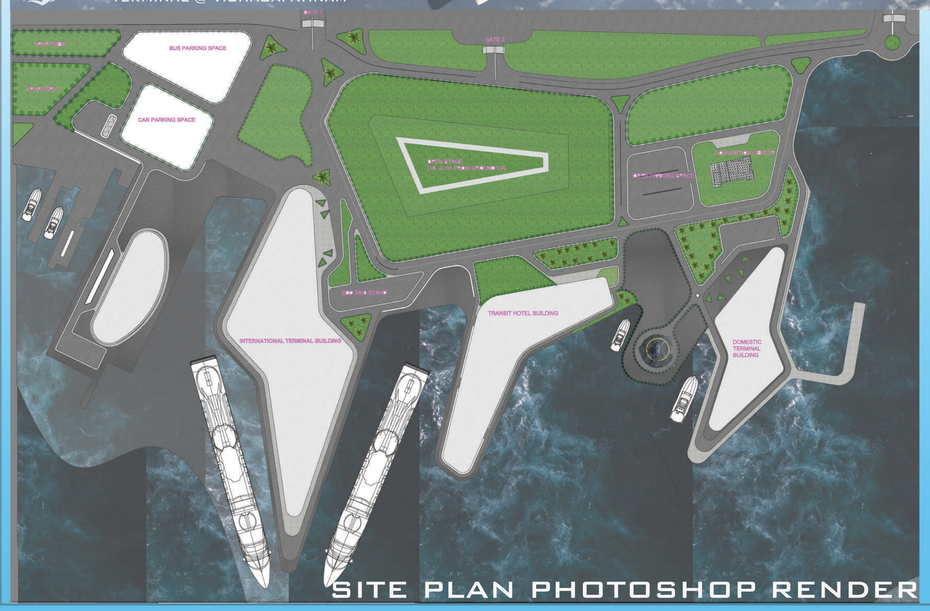


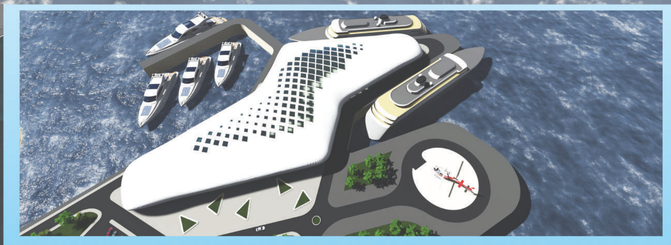


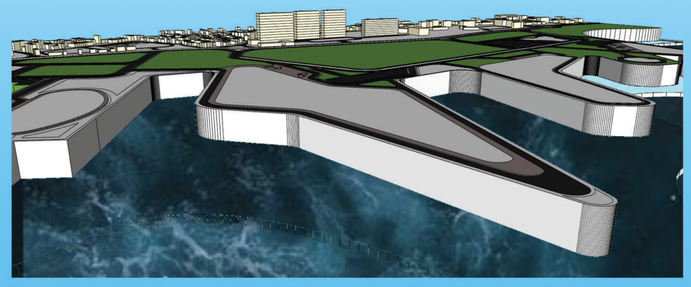












Materials:

Titanium Dioxide (02) is an anti-microbial moral created by a process

which rystallizas titanic iron are into nano liquid fonn. Exposed to UV light in the sub 400 range. TI02 becomes a photo catalyst ocidizer (PCO) As well whitch croutes hydroxyl radtaculs and superacide font. Which are two times stronger disinfectants than chlorine and 1.5 times stronger a disinfectant than conc.

Titanium Dioxide Nanoparticles (TiO2):

The titanium diotide nanoparticles are added to concrete to improve its properties. This white pigment is used as an excellent reflective coating. Or added to paints, cements and windows for its sterilizing properties. The titanium diacid breaks down organic pollutants volatile organic compounds and bacterial membranes through powerful photocatalytic reactions, reducing air pollutants when it's applied to outdoor surfaces. Being hydrophilic gives self cleaning properties to surfaces to which it is applied, because the rain water is attracted to the surface and forms sheets which collect the pollutants and dirt particles previously broken down and wushas them off.

The raiulting concrete surface has a white colour that retains its
chitopmy vary counsely (Mann 2006).

One ApplicationExterior Glass Treatment

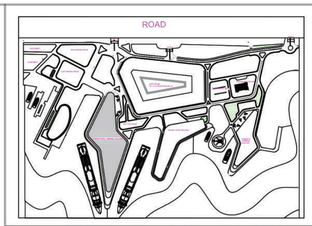
Worl d's Most Advance Powerful And Durable Medical Grade Surface Coating System.

Self cleaning glass advantages:

Gun reduce window maintenance costs by 60%
Alternative to powerwashing
Use 50% lean water, chemicaluand labor to clean windows Treatment leaves no visual distortion or haziness
Helps keep glass looking crystal clear for up to four years ROL of 40%... OR MORE!

How does a window clean itself.

in smmary, then, here's how a titanium dioxide coated window gets it self dean through photocatalysis and hydrophilia
1-When UV light (the yellow arrow shown on pic.) shines on the titanium dioxide coating, electrons (the tiny, negatively charged particles inside atoms) are released.
2- The electrons interact with water molecules (H20) in the air, breaking them up into hydroxyl radicals (OH), which are highly reactive, shortlived,
uncharged forms of hydroxide ions (OH-).
3-These agile hydroxyl radicals attack the



KEY PLAN

SCALE	NTS
UNITS	METERS

MARITINE ANCHORAGE

INTERNATIONAL AND DOMESTIC TERMINAL

NOTES

PROJECT NAME

TOTAL SITE AREA	357,571,S.qm
GROUND COVERAGE	81,562 S.qm
BUILT-UP AREA	229.249 S.qm
FSI (1)	357,571,S.qm

INDIVIDUAL BUILDING

INTERNATIONAL BUILDING	67,138 S.qm
DOMESTIC BUILDING	27,112 S.qm
TRANSIT HOTEL & MUSEAUM	97814 S.qm
CONVENTION CENTER	6440 S.qm
SERVE STATION	17,138 S.qm
INDIVIDUAL RESIDENCE	3,262 S.qm
APPARTMENT	8880 S.qm

SHEET TITLE: SITE DETAIL VIEWS

SHEET NO.

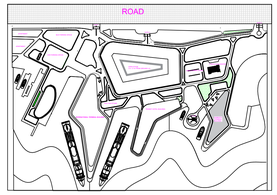
REMARK

GUIDE NAME -AR. AANSHUL SINGH

THESIS COORDINATOR- AR. AANSHUL SINGH
AR. SATYAM SRIVASTAVA

NAME	APSARA PARVEEN
REG NO.	1180101011
YEAR	Vth yr. SEMESTER - 10

SCHOOL OF ARCHITECTURE,
BBD UNIVERSITY. FAIZABAD, LKO



KEY PLAN

SCALE	1:200
UNITS	METERS

MARITINE ANCHORAGE

INTERNATIONAL AND DOMESTIC TERMINAL

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SHEET TITLE-- DOMESTIC TERMINAL GROUND FLOOR

SHEET NO.

REMARK

GUIDE NAME -AR. AANSHUL SINGH

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AR. SATYAM SRIVASTAVA

NAME	APSARA PARVEEN
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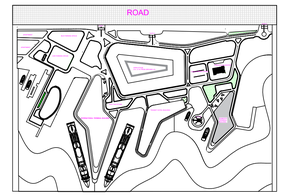

KEY PLAN

SCALE	1:200
UNITS	METERS

MARITINE ANCHORAGE

INTERNATIONAL AND DOMESTIC TERMINAL

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SHEET TITLE-- DOMESTIC TERMINAL FIRST FLOOR

SHEET NO.

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AR. SATYAM SRIVASTAVA

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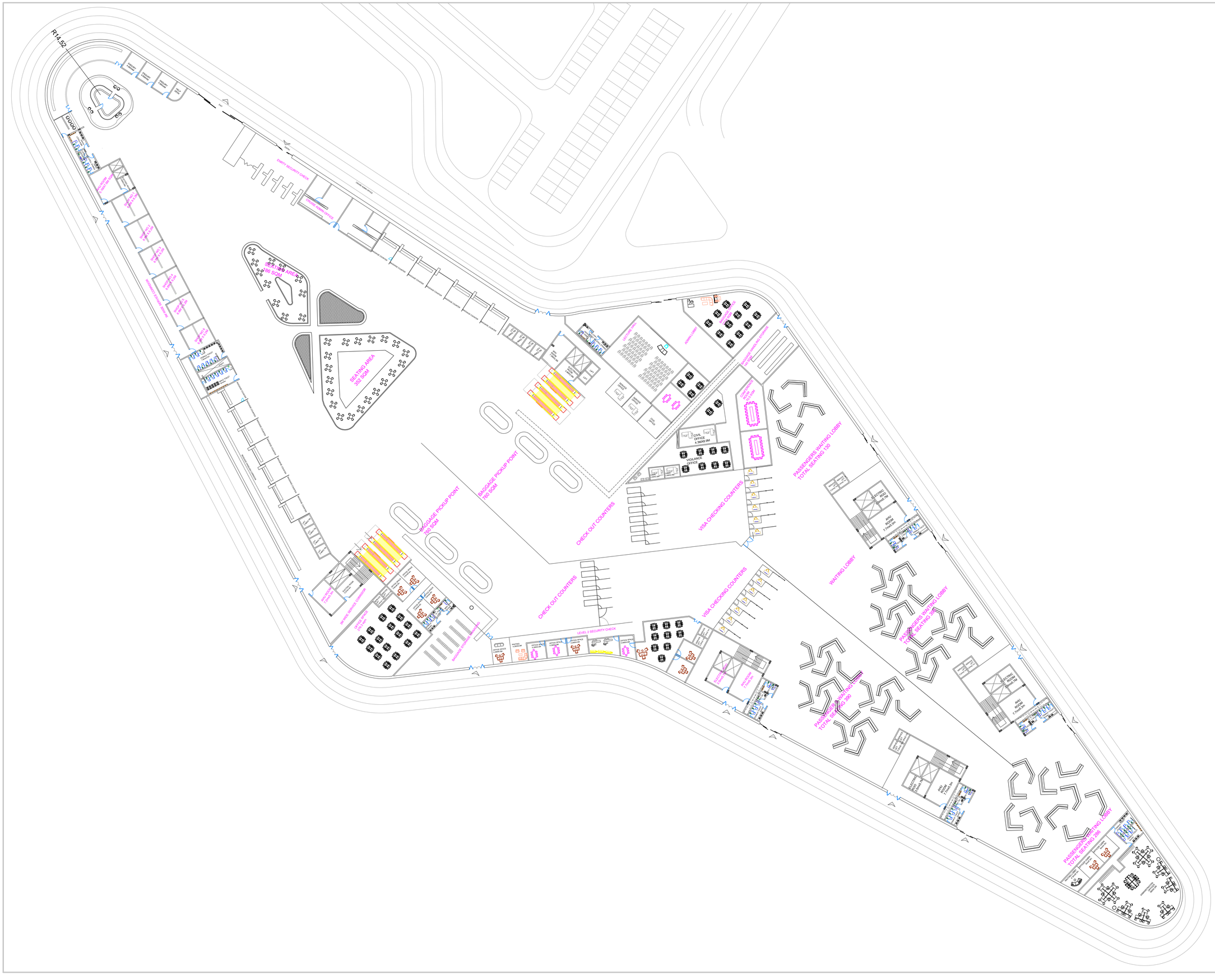

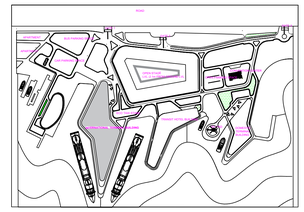

KEY PLAN

SCALE	1:200
UNITS	METERS

MARITINE ANCHORAGE

INTERNATIONAL AND DOMESTIC TERMINAL

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SHEET TITLE INTERNATIONAL TERMINAL GROUND FLOOR

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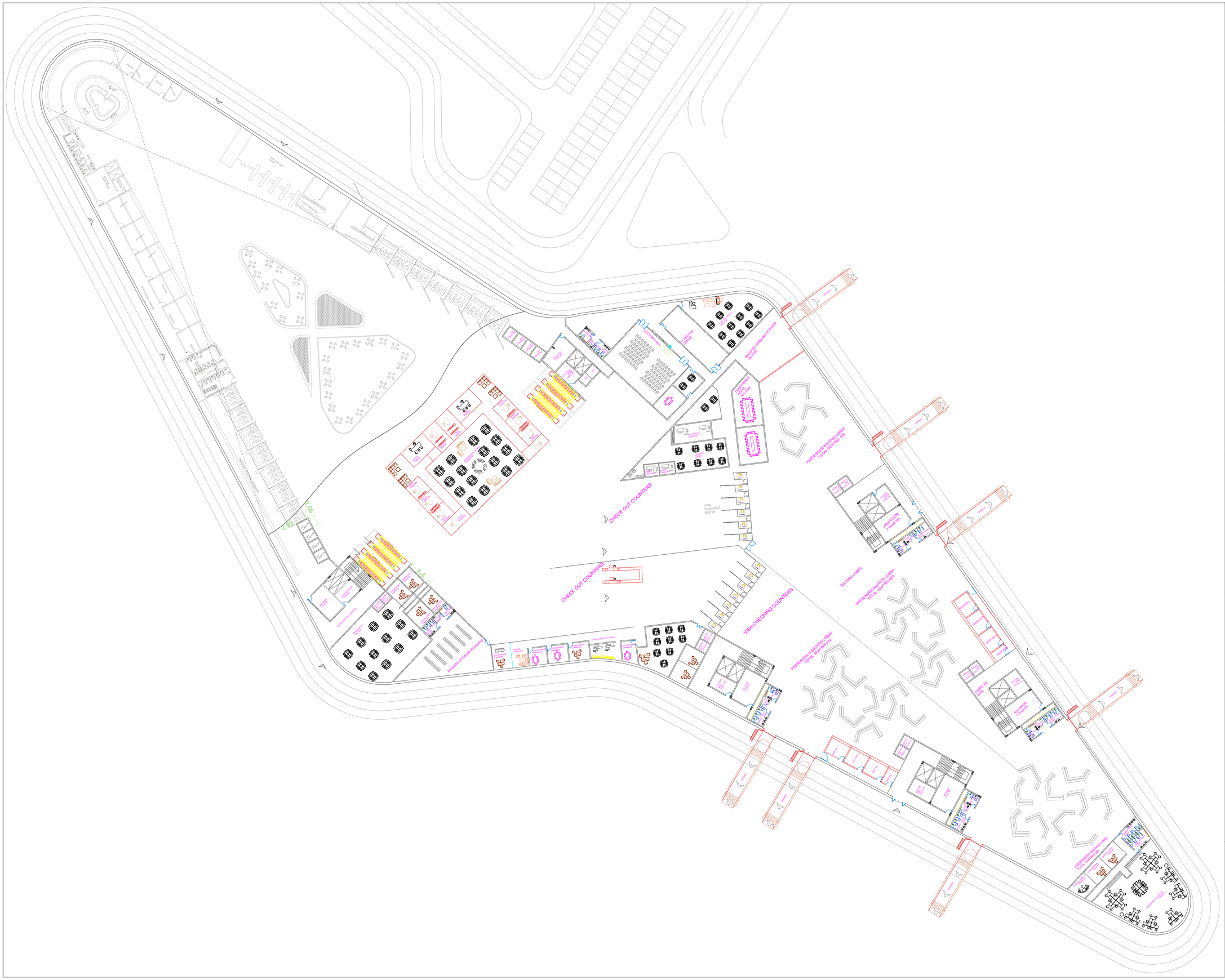

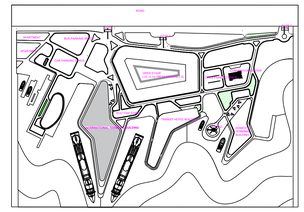

KEY PLAN

SCALE	1:200
UNITS	METERS

MARITINE ANCHORAGE

INTERNATIONAL AND DOMESTIC TERMINAL

NOTES

N

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CONVENTION CENTER	6440 S.qm
SERVE STATION	17,138 S.qm
INDIVIDUAL RESIDENCE	3,262 S.qm
APPARTMENT	8880 S.qm

SHEET TITLE: DOMESTIC TERMINAL FIRST FLOOR

SHEET NO.

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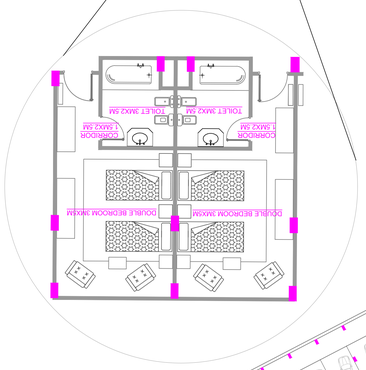
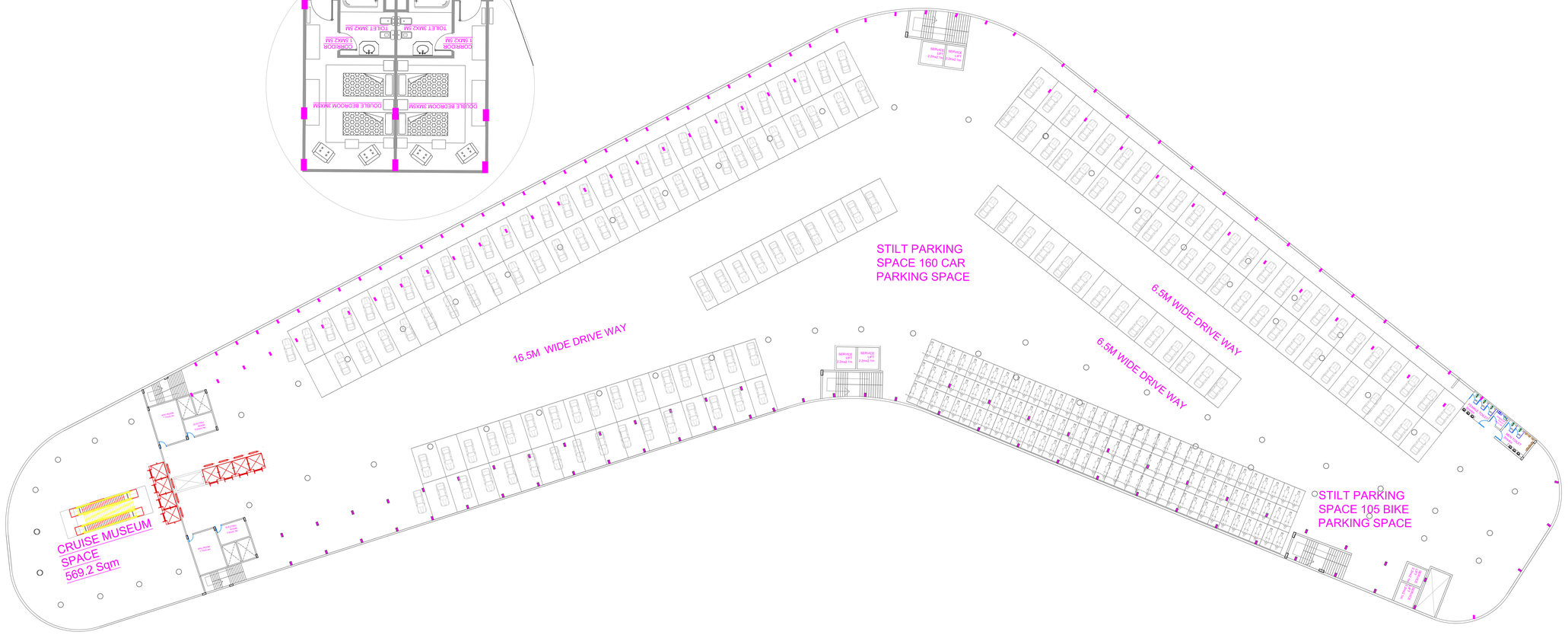
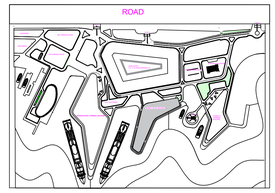




TRANSIT HOTEL& MUSEUM

1. TRANSIT HOTEL & MUSEUM 97814 S.qm
2. 780 S.QM IS DEDICATED FOR BEDROOM REST 97,034 FOR OTHER
3. ATRIUM 2024 SQM
4. NO. OF BED IN TRANSIT IS 110
5. RESTAURANT SEATING AREA IS 163
6. NO. OF CAR PARKING SPACE - 160 ECS 18 SQM
7. NO. OF 2 WHEELER PARKING SPACE - 105 ECS 4.5 SQM



KEY PLAN

SCALE	1:200
UNITS	METERS

MARITINE ANCHORAGE

INTERNATIONAL AND DOMESTIC TERMINAL

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CONVENTION CENTER	6440 S.qm
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APPARTMENT	8880 S.qm

SHEET TITLE: TRANSIT HOTEL FLOOR PLAN

SHEET NO.

REMARK

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THESIS COORDINATOR- AR. AANSHUL SINGH
AR. SATYAM SRIVASTAVA

NAME	APSARA PARVEEN
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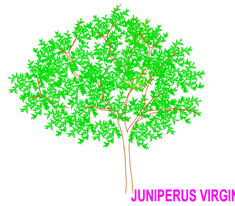


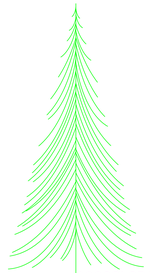
JUNIPERUS VIRGINIANA

SOFT SCAPE

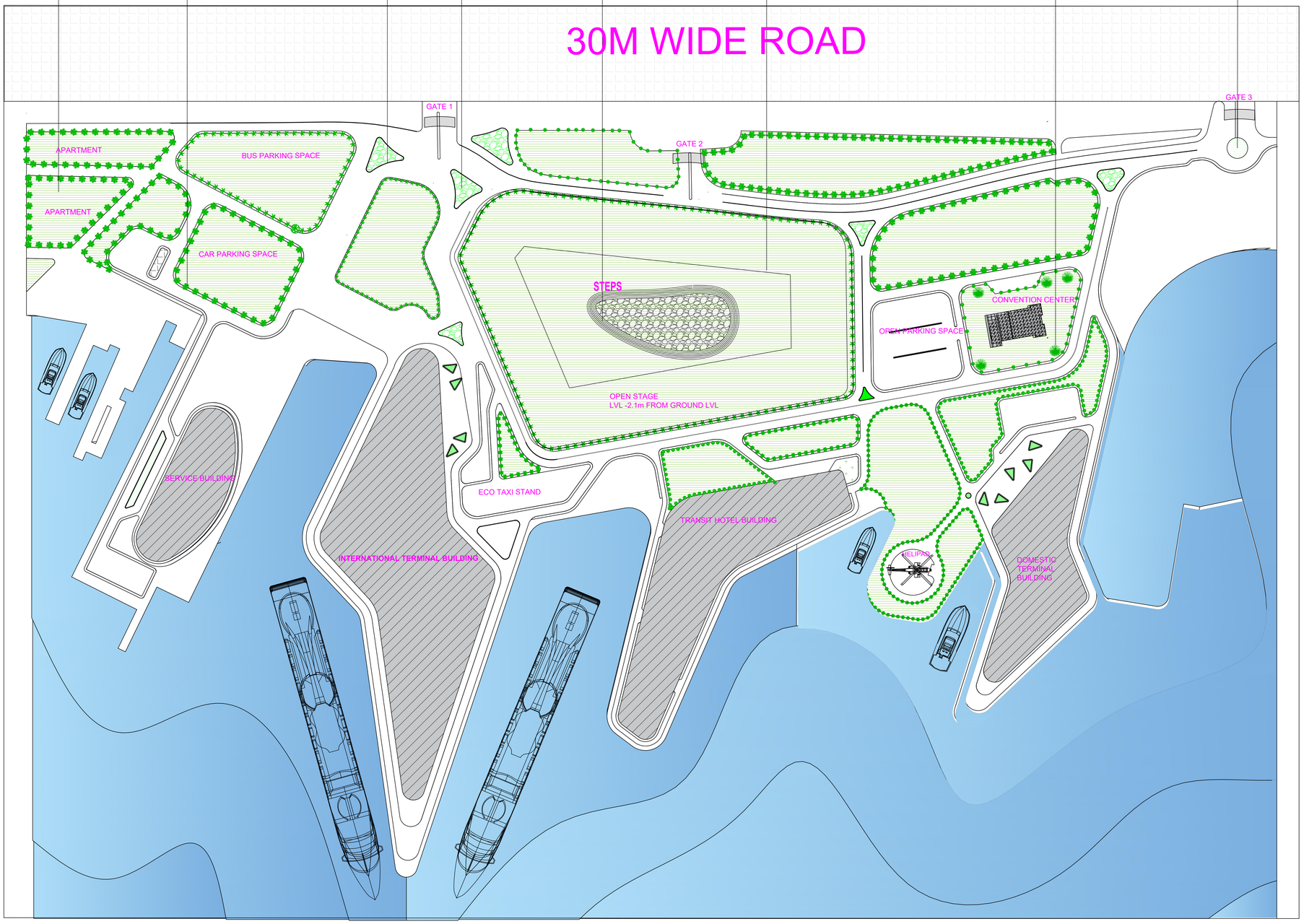
SABAL PALMETTO

PEBBLES

MAGNOLIA GRANDIFLORA



COCCOLOBA UNIFERA



BOTANICAL NAME	MAGNOLIA GRANDIFLORA
LOCAL NAME	SOUTHERN MAGNOLIA
TYPE	DECIDUOUS / QUICK GROWING
HEIGHT	15M–21M
SPREAD	12M–15M
FLOWERING SEASON	AUG–SEP
COLOUR OF FLOWER	ORANGE
FRAGRANCE	YES
LIGHT REQUIREMENT	FULL SUN
REMARK	PREFERS WARM MOIST CLIMATE. IT CAN BE SUCCESSFULLY GROWN IN SUBHUMID CLIMATE.IT REQUIRES DEEP WELL DRAINED LIGHT SOIL.
USAGE	ITS A BEAUTIFUL TALL TREE WITH DENSE FOLIAGE & CONICALCROWN. MUCH ADMIRED FOR ITS GOLDEN BALL OF FLOWERS.. VERY SUITABLE FOR ROAD SIDE PLANTATION

BOTANICAL NAME	SABAL PALMETTO
LOCAL NAME	SABAL PALM
TYPE	DECIDUOUS /SMALL TO MED SIZED
HEIGHT	10M – 13M
SPREAD	9M – 13M
FLOWERING SEASON	SCENTED FLOWERS APPEAR THROUGHOUT YEAR
COLOUR OF FLOWER	YELLOW
FRAGRANCE	–
LIGHT REQUIREMENT	FULL SUN
REMARK	GROWS IN WIDE RANGE OF CLIMATIC CONDITIONS. IT CAN ALSO WITH STAND EXCESSIVE DROUGHT
USAGE	IT IS ONE OF THE MOST BEAUTIFUL TREES IN INDIA SO PLANTED IN PARKS IN CLUMPS & ALSO ALONG SMALL CITY ROADS

BOTANICAL NAME	JUNIPERUS VIRGINIANA
LOCAL NAME	EASTERN RED CEDAR
TYPE	EVERGREEN TREE
HEIGHT	7 M – 10M
FLOWERING SEASON	FLOWER THROUGHOUT THE YEAR
COLOUR OF FLOWER	BRIGHT RED
FRAGRANCE	–
LIGHT REQUIREMENT	FULL SUN
REMARK	GROWS WELL IN WARM HUMID AND MOIST SOIL
USAGE	PLANTED AT THE BACKGROUND OF SMALL GARDENS,AROUND THE BORDERS OF LAKES,POOLS AND TANKS

BOTANICAL NAME	AVICENNIA GERMINANS
LOCAL NAME	BLACK MANGROVE
TYPE	EVERGREEN
HEIGHT	10–15 M
SPREAD	2.5 –4 M
COLOUR OF FLOWER	STAR SHAPED YELLOWISH GREEN
FRAGRANCE	–
FLOWERING SEASON	MARCH – APRIL
LIGHT REQUIREMENT	FULL SUN
REMARK	GROWS IN ANY TYPE OF SOIL
USAGE	PLANTED TO DEFINE AVENUES

BOTANICAL NAME	COCCOLOBA UNIFERA
LOCAL NAME	SEA GRAPE
TYPE	EVERGREEN
HEIGHT	4 M
SPREAD	3 M
FLOWERING SEASON	SCENTED FLOWERS APPEAR THROUGHOUT THE YEAR
COLOUR OF FLOWER	WHITE WITH YELLOW THROAT
FRAGRANCE	YES
LIGHT REQUIREMENT	FULL SUN
REMARK	FLOWERS BETTER IN POOR AND POROUS SOIL

KEY PLAN

SCALE	1:200
UNITS	METERS

MARITINE ANCHORAGE

INTERNATIONAL AND DOMESTIC TERMINAL

NOTES

PROJECT NAME	
TOTAL SITE AREA	357,571,S.qm
GROUND COVERAGE	81,562 S.qm
BUILT-UP AREA	229.249 S.qm
FSI (1)	357,571,S.qm

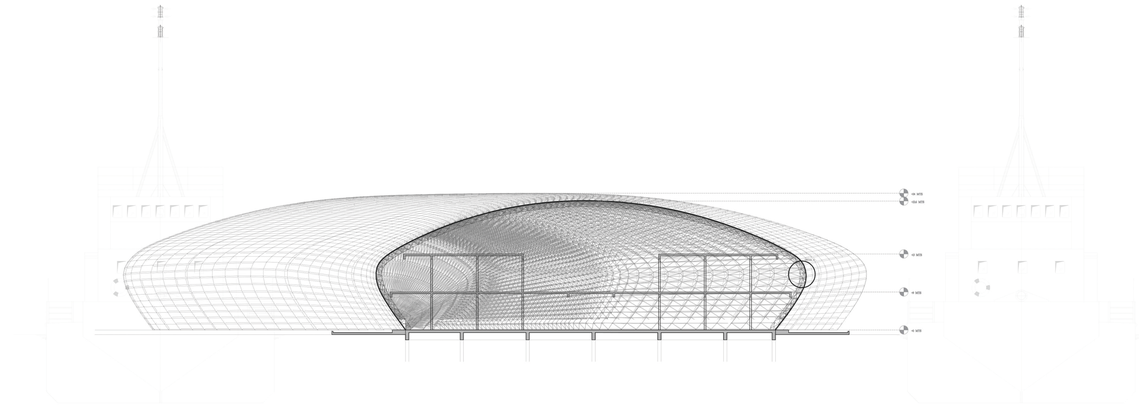
INDIVIDUAL BUILDING

INTERNATIONAL BUILDING	67,138 S.qm
DOMESTIC BUILDING	27,112 S.qm
TRANSIT HOTEL & MUSEAUM	97814 S.qm
CONVENTION CENTER	6440 S.qm
SERVE STATION	17,138 S.qm
INDIVIDUAL RESIDENCE	3,262 S.qm
APPARTMENT	8880 S.qm

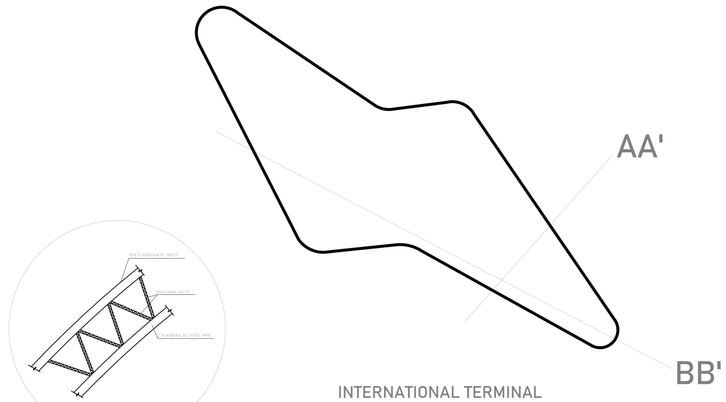
SHEET TITLE	SITE PLAN
SHEET NO.	
REMARK	

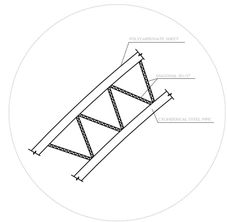
NAME	APSARA PARVEEN
REG NO.	1180101011
YEAR	Vth yr. SEMESTER - 10

SCHOOL OF ARCHITECTURE,
BBD UNIVERSITY. FAIZABAD, LKO

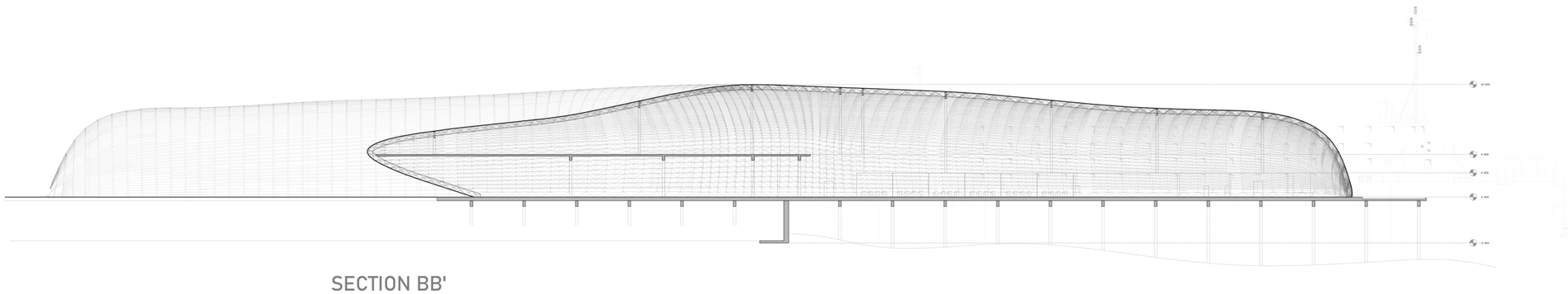


SECTION AA'





DETAIL A



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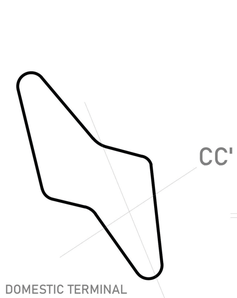

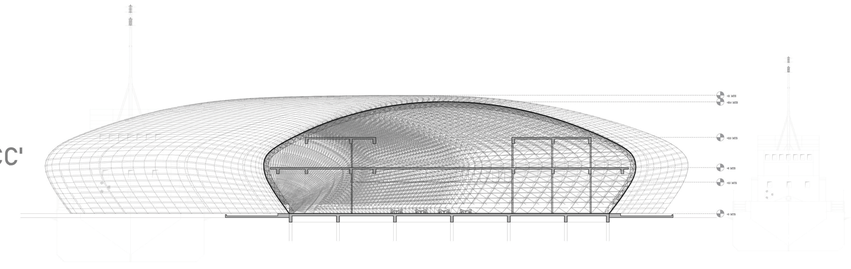

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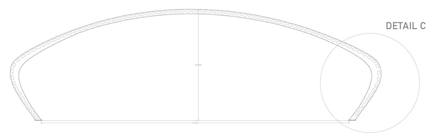
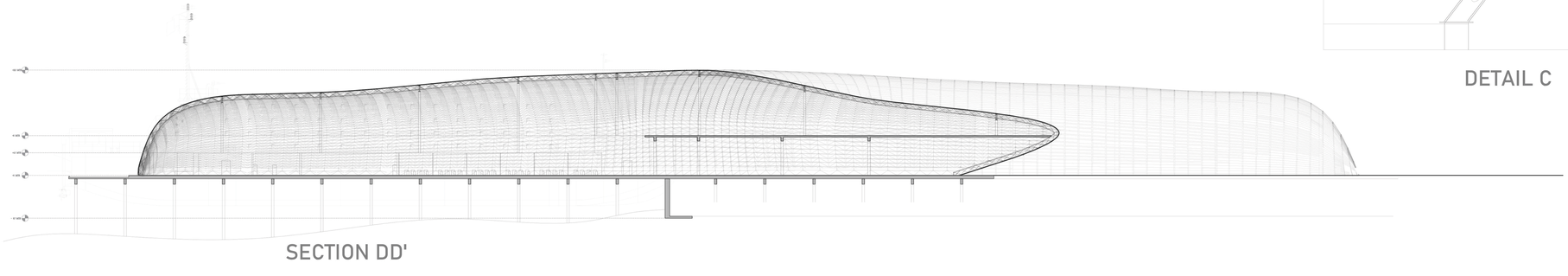


DETAIL B

DETAIL C



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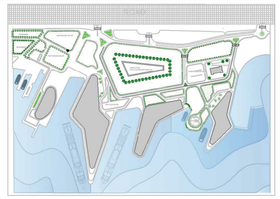


KEY PLAN

SCALE	NTS
UNITS	METERS

MARITINE ANCHORAGE

INTERNATIONAL AND DOMESTIC TERMINAL

NOTES

PROJECT NAME	
TOTAL SITE AREA	357,571.S.qm
GROUND COVERAGE	81,582 S.qm
BUILT-UP AREA	229.249 S.qm
FSI (1)	357,571.S.qm

INDIVIDUAL BUILDING	
INTERNATIONAL BUILDING	67,138 S.qm
DOMESTIC BUILDING	27,112 S.qm
TRANSIT HOTEL & MUSEAUM	97814 S.qm
CONVENTION CENTER	6440 S.qm
SERVE STATION	17,138 S.qm
INDIVIDUAL RESIDENCE	3,282 S.qm
APPARTMENT	8880 S.qm

SHEET TITLE SECTIONS

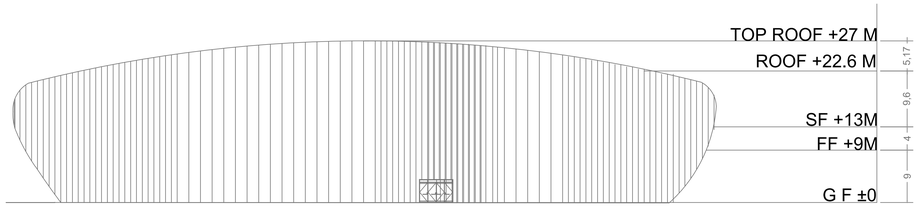
SHEET NO.

REMARK

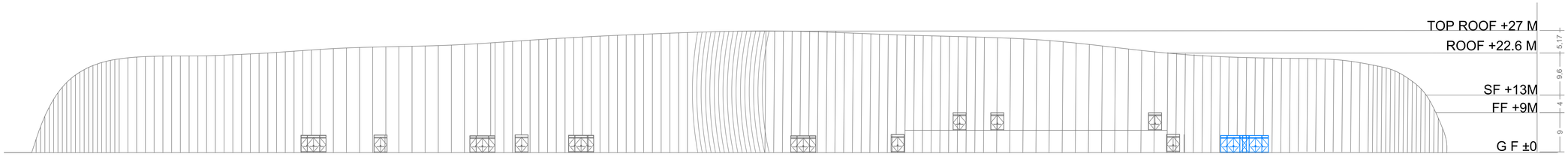
NAME	APSARA PARVEEN
REG NO.	1180101011
YEAR	Vth yr. SEMESTER - 10

SCHOOL OF ARCHITECTURE,
BBD UNIVERSITY. FAIZABAD, LKO

INTERNATIONAL CRUISE TERMINAL

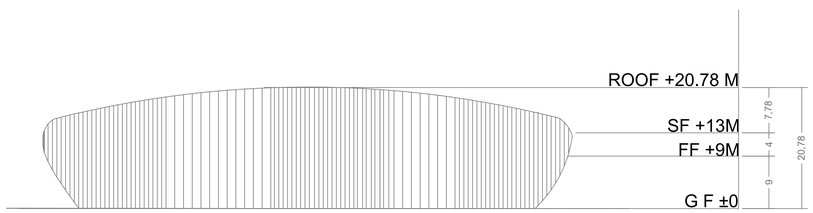


FRONT ELEVATION



SIDE ELEVATIOM

DOMESTIC CRUISE TERMINAL



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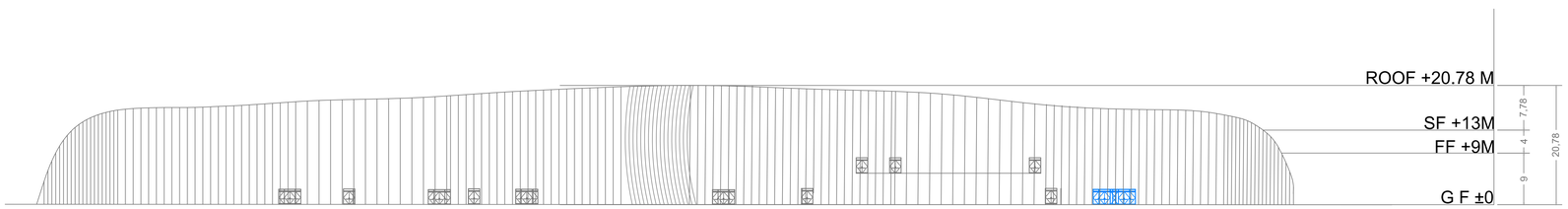

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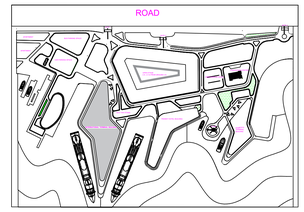


KEY PLAN

SCALE	
UNITS	METERS

MARITINE ANCHORAGE

INTERNATIONAL AND DOMESTIC TERMINAL

NOTES

PROJECT NAME	
TOTAL SITE AREA	357,571,S.qm
GROUND COVERAGE	81,562 S.qm
BUILT-UP AREA	229.249 S.qm
FSI (1)	357,571,S.qm

INDIVIDUAL BUILDING

INTERNATIONAL BUILDING	67,138 S.qm
DOMESTIC BUILDING	27,112 S.qm
TRANSIT HOTEL & MUSEAUM	97814 S.qm
CONVENTION CENTER	6440 S.qm
SERVE STATION	17,138 S.qm
INDIVIDUAL RESIDENCE	3,262 S.qm
APPARTMENT	8880 S.qm

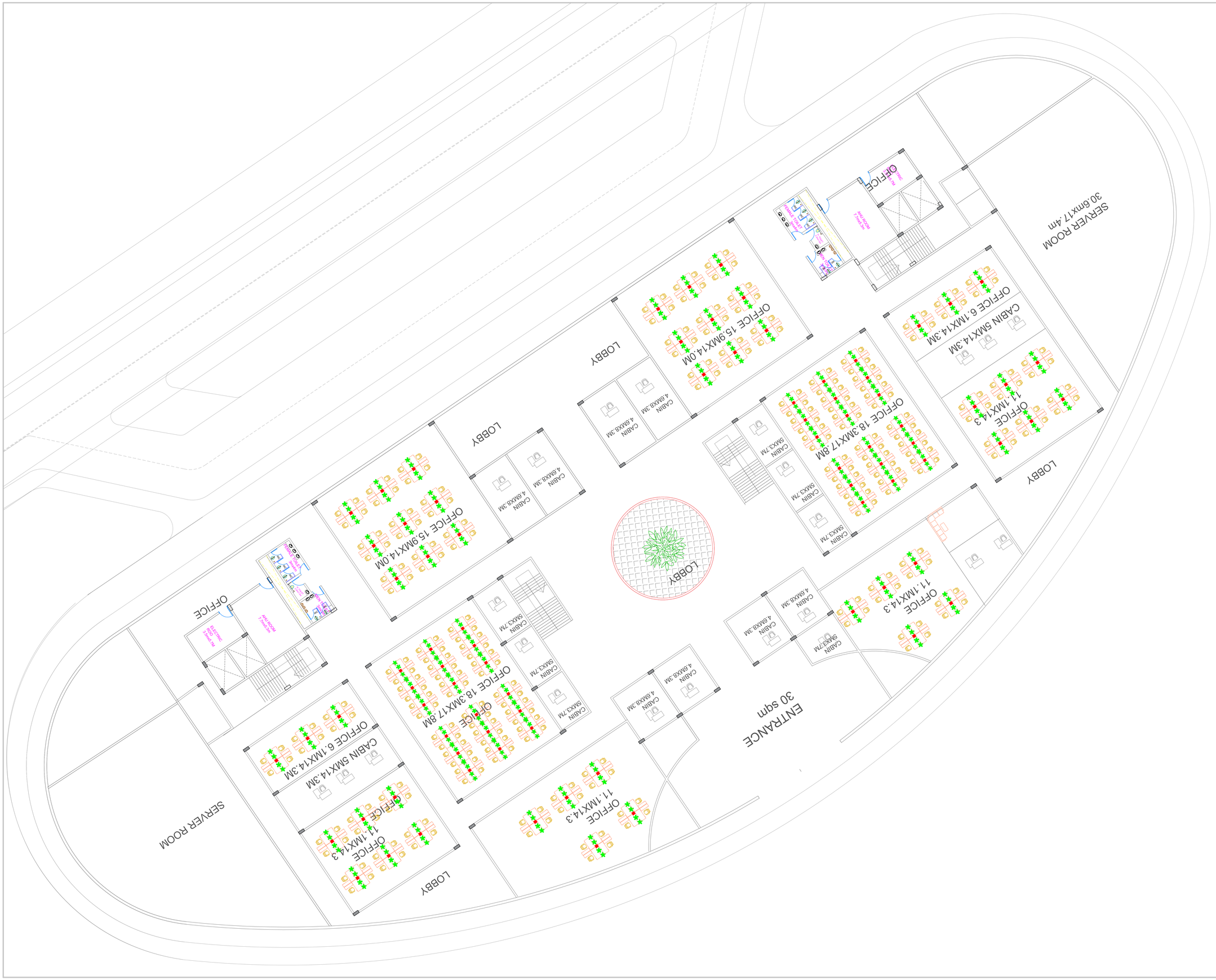
SHEET TITLE	TERMINAL BUILDING ELEVATION
SHEET NO.	
REMARK	

GUIDE NAME -AR. AANSHUL SINGH

THESIS COORDINATOR- AR. AANSHUL SINGH
AR. SATYAM SRIVASTAVA

NAME	APSARA PARVEEN
REG NO.	1180101011
YEAR	Vth yr. SEMESTER - 10

SCHOOL OF ARCHITECTURE,
BBD UNIVERSITY. FAIZABAD, LKO



KEY PLAN

SCALE	1:200
UNITS	METERS

MARITINE ANCHORAGE

INTERNATIONAL AND DOMESTIC TERMINAL

NOTES

N

PROJECT NAME	
TOTAL SITE AREA	357,571,S.qm
GROUND COVERAGE	81,562 S.qm
BUILT-UP AREA	229.249 S.qm
FSI (1)	357,571,S.qm

INDIVIDUAL BUILDING

INTERNATIONAL BUILDING	67,138 S.qm
DOMESTIC BUILDING	27,112 S.qm
TRANSIT HOTEL & MUSEAUM	97814 S.qm
CONVENTION CENTER	6440 S.qm
SERVE STATION	17,138 S.qm
INDIVIDUAL RESIDENCE	3,262 S.qm
APPARTMENT	8880 S.qm

SHEET TITLE: SERVICE BLOCK FLOOR PLAN

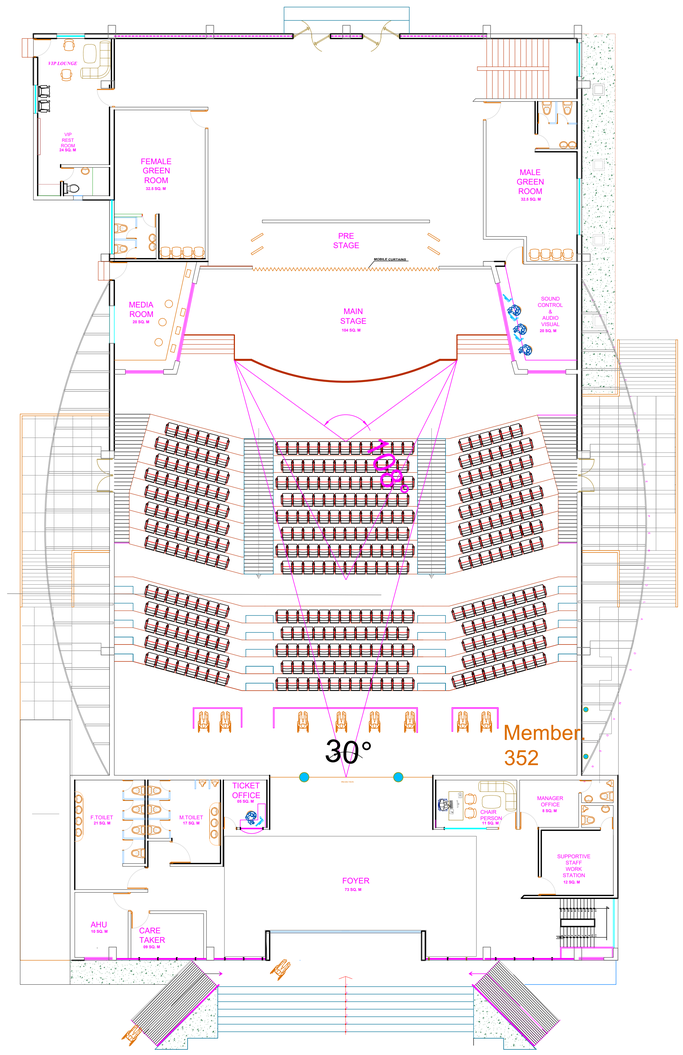
SHEET NO.

GUIDE NAME -AR. AANSHUL SINGH

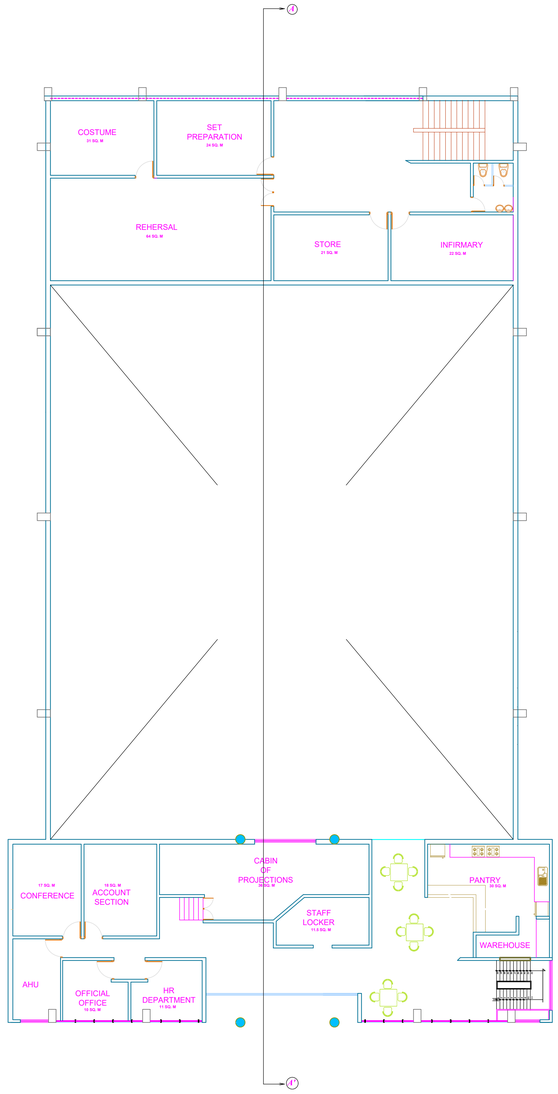
THESIS COORDINATOR- AR. AANSHUL SINGH
AR. SATYAM SRIVASTAVA

NAME	APSARA PARVEEN
REG NO.	1180101011
YEAR	Vth yr. SEMESTER - 10

SCHOOL OF ARCHITECTURE,
BBD UNIVERSITY. FAIZABAD, LKO



GROUND FLOOR



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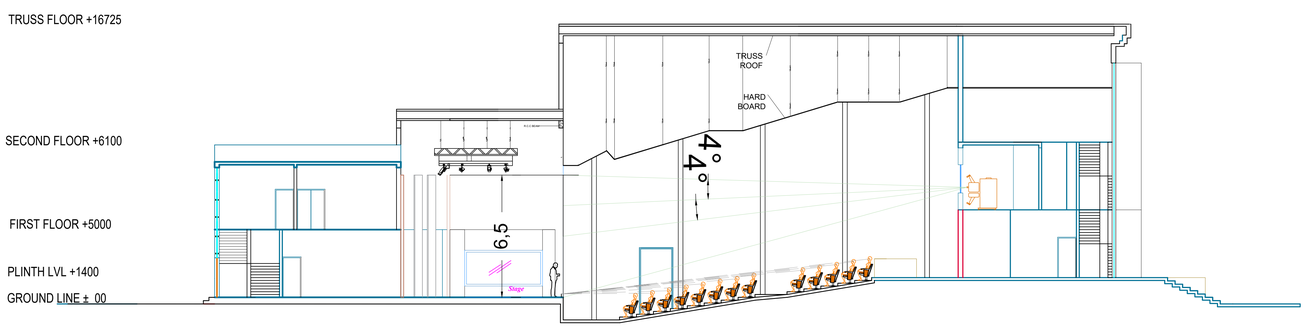
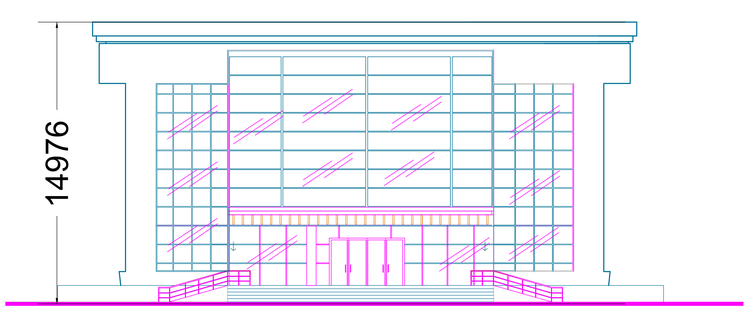
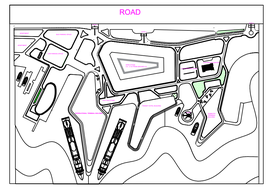


SECTION-AA'



ELEVATION



KEY PLAN

SCALE	1:200
UNITS	METERS

MARITINE ANCHORAGE

INTERNATIONAL AND DOMESTIC TERMINAL

NOTES

PROJECT NAME

TOTAL SITE AREA	357,571,S.qm
GROUND COVERAGE	81,562 S.qm
BUILT-UP AREA	229.249 S.qm
FSI (1)	357,571,S.qm

INDIVIDUAL BUILDING	
INTERNATIONAL BUILDING	67,138 S.qm
DOMESTIC BUILDING	27,112 S.qm
TRANSIT HOTEL & MUSEAUM	97814 S.qm
CONVENTION CENTER	6440 S.qm
SERVE STATION	17,138 S.qm
INDIVIDUAL RESIDENCE	3,262 S.qm
APPARTMENT	8880 S.qm

SHEET TITLE

CONVETION CENTER FLOOR PLAN, SECTION , ELEVATION

SHEET NO.

REMARK

GUIDE NAME -AR. AANSHUL SINGH

THESIS COORDINATOR- AR. AANSHUL SINGH
AR. SATYAM SRIVASTAVA

NAME	APSARA PARVEEN
REG NO.	1180101011
YEAR	Vth yr. SEMESTER - 10

SCHOOL OF ARCHITECTURE,
BBD UNIVERSITY. FAIZABAD, LKO