



ACHARYA'S NRV SCHOOL OF ARCHITECTURE
SOLADEVANAHALLI, BENGALURU -560107

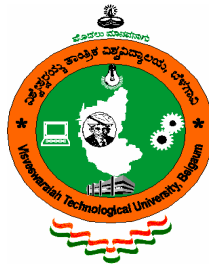
MUMBAI INTERNATIONAL CRUISE TERMINAL
ARCHITECTURE DESIGN PROJECT (THESIS) – 2022-23

Submitted in partial fulfillment of the Requirements for the
“Bachelor of Architecture” Degree Course

Submitted by : Sandesh C
USN : 1AA18AT047
Guide : Prof. Malavika Jayachandran

A project report submitted to
VISVESHWARAYA TECHNOLOGICAL UNIVERSITY
“Jnana Sangama”, Machhe, Belgaum – 590018

ವಿಶ್ವೇಶ್ವರಯ್ಯ ತಾಂತ್ರಿಕ ವಿಶ್ವವಿದ್ಯಾಲಯ, ಬೆಳಗಾವಿ - ೫೯೦೦೧೮



CERTIFICATE

This is to certify that this thesis report titled **Mumbai International Cruise Terminal** by **Sandesh C** of X SEMESTER B. Arch, USN No. 1AA18AT047, has been submitted in partial fulfillment of the requirements for the award of undergraduate degree **Bachelor of Architecture (B. Arch)** by Visveshwaraya Technological University VTU, Belgaum during the year 2022- 23.

Prof. Malavika Jayachandra

Guide

Prof. Sanjyot Shah

Principal

Examined by :

1)Internal Examiner :

2)External examiner 1 :

3)External examiner 2 :

DECLARATION

This thesis title “Mumbai International Cruise Terminal”, submitted in partial fulfillment of the requirement for the award of the under graduate of Bachelor of architecture is my original work to the best of my knowledge.

The sources for the various information and the data used have been duly acknowledged.

The work has not been submitted or provided to any other institution/ organization for any diploma/degree or any other purpose.

I take full responsibility for the content in this report and in the event of any conflict or dispute if any, hereby indemnify Acharya’s NRV School of Architecture and Visveshwaraya Technological University, Belagavi, and its official representatives against any damages that any raise thereof.

Sandesh C

1AA18AT047

ACKNOWLEDGEMENT

Before proceeding, I would like to express my gratitude to all those who, intentionally or unintentionally, directly or indirectly aided me in preparing this paper. Without the professional guidance of the professors, no academic project or endeavour can be completed successfully. I would especially want to thank my mentor, **Ar. Malavika Jayachandran**, for her invaluable direction, support, and supervision, without which this project would not have been accomplished. My profound gratitude goes to all of the contributors to my research, including the academics and experts who provided thoughtful comments to my numerous inquiries and enquiring observations. This report would not have been a success without their assistance. I really would like to express my gratitude to my parents for providing me with steady moral support over the course of my study as well as to the numerous others who contributed their time, energy, and spirit to this report. I am really appreciative to these people for making my project so practical and clear to me and for enlightening me on a variety of topics that would be beneficial to me in the future. I also want to thank all the department heads for providing me with the assistance I needed to learn the necessary information. In the end, I would like to thank **Acharya's NRV School of Architecture**, for providing me with the opportunity to work on this project.

Sandesh C

ABSTRACT

Since its inception, the cruise industry is constrained by ships (supply) and not by the availability of passengers (demand). As a result, ships of all the major lines sail at nearly 100% capacity year-round. Cruise lines have been able to increase market penetration with the introduction of new ships with larger capacities into the fleet. Lines also increase yields by constraining supply. However, there is a large market opportunity as the industry is very small in comparison to worldwide tourism with a penetration rate of less than 4%. In 2016, the estimated north American market penetration is 3.3% as compared to 1.4% for Europe and 0.04% for Asia with more than 4.3 billion persons.

India is the fastest-growing economy in the world today. Its GDP continues to grow steadily at over 7% since 2014. In 2015, India overtook China in terms of GDP growth. Additionally, the International Monetary Fund (IMF) predicts that India is likely to retain this status until 2020. The IMF also projects India's growth in FY16 17 at 7.5% as compared to the global economic forecast at around 3.5%. India is a USD \$2 trillion economy (at current prices). Within the Asia Pacific region India is ranked 11th in terms of

international tourist arrivals (2.88%) More than 8 million foreign tourists arrived in India in 2015 at an annual growth rate of 4.5%.

Indian nationals departing for visits abroad was 20.4 million with an 11.1% growth rate and domestic tourist visits accounted for more than 1.4 billion.

Overall earnings for tourism reached more than USD\$21 billion in 2015.

The expansion of e-visas for nationals of 161 countries in 2016 (up from 43 countries in 2014) has led to a sharp increase in inbound traffic with this figure rising to almost 11 million foreign tourist visitors in 2016. In 2016 with the three top drivers were

- 1) visiting friends and family
- 2) vacationing
- 3) business with the latter being very strong

Currently due to a booming economy. Both domestic and international travel are growing very fast. International air travel will grow rapidly as unlike domestic travel where one has the option of taking a rail or road route, going abroad means taking a flight.

The cruise industry is small and will grow extensively requiring additional berths and destinations to accommodate vessels over the next 25 years on a worldwide basis. Cruise lines are strategically looking at where cruise

vessels can be deployed as new builds come in line in greater numbers over the next 5 years. As noted above, the penetration rate of cruise tourism for India is very low primarily because there are not cruise brands dedicated to the Indian market focusing on domestic deployments. Those that have tried have failed due to a myriad of policy and procedural issues that did not allow the brands to make revenue while homeporting from an Indian port. The ability of India to create a cruise tourism market and more importantly to create a pivotal moment that allows for substantial growth is upon the country now. Creating a platform for success will allow the industry to flourish.

For destinations and itineraries to be successful, the cruise berths must accommodate a variety of brands and vessel types (from large to small) and the upland tourism infrastructure issues must be addressed to grow port opportunities in the existing Indian ports and those looking to come on line as the region expands. India will need to become a region as it is currently not recognized due to its limited consumer demand and market presently observed. Asia, the Middle East, the Caribbean, Aus./NZ, and others will be pulling cruise vessel deployments to open new consumer markets over the next 3 to 5 years.

India and particularly Mumbai must create domestic and international consumer demand, produce higher yields, lower costs of operations and alleviate policies that negatively impact cruise line deployment and growth to become a regional cruise destination of substance with an opportunity to grow.

TABLE OF CONTENTS

- i. Certificate**
- ii. Declaration**
- iii. Acknowledgement**
- iv. Abstract**

1. Introduction.....	01-02
2. Background study.....	03-08
3. Aim.....	09
4. Scope.....	09
5. Limitation.....	09
6. What is a cruise terminal	10
7. Role of government	
8. Design Methodology	05
9. Site Analysis.....	06-13
10. Standards.....	14-19
11. Case Study.....	20-24

- a. Mumbai International Cruise Terminal

12.Literature Study.....	25-39
a. Yokohama International Cruise Terminal	25-29
b. Qingdao International Cruise Terminal	30-33
c. Sydney International Cruise Terminal	34-39
13.Area Statement.....	40
14.Comparative Study.....	41
15.Inference.....	42
16.Thesis Proposal.....	43-44

TABLE OF FIGURES

1. INTRODUCTION.....	01-02
2. BACKGROUND STUDY.....	03-08
3. AIM.....	09
4. SCOPE.....	09
5. LIMITATION.....	09
6. WHAT IS CRUISE TERMINAL?	10
7. MUMBAI INTERNATIONAL CRUISE TERMINAL.....	01
8. MUMBAI	02
9. ROLE OF GOVERNMENT	
10.IMPORTANCE OF CRUISE TERMINAL.....	03
11.INFLOW AND OUTFLOW.....	03
12.GLOBAL CRUISE ROUTE.....	04
13.SOUTH ASIAN CRUISE ROUTE.....	04
14.DESIGN METHODOLOGY	05
15.SITE ANALYSIS	06
16.SITE ANALYSIS	07
17.EXISTING VEGETATION	08
18.VEHICULAR AXIS	08

19.TRAFFIC	08
20.NOISE AND ODOUR	09
21.VISUALLY PLEASING SPACES	09
22.REFRESHMENTS	09
23.LAND USE MAP	10
24.MACRO CLIMATE	10
25.AVERAGE WIND SPEED	11
26.AVERAGE RELATIVE HUMIDITY	11
27.AVERAGE PRECIPITATION	12
28.VEHICLE: GALLOPING NUMBERS	13
29.TRAVEL INDICATOR	13
30.AIR QUALITY TRENDS	13
31.STANDARDS	14
32.ANTHROPOMETRY	15-19

MUMBAI INTERNATIONAL CRUISE TERMINAL

33.SITE CONTEXT	20
34.OLD AND PRESENT TERMINAL	20
35.DESIGN APPROACH	21
36.FLOOR PLANS	22

37.EMBARKATION TIME	23
38.DISEMBARKATION TIME	23
39.AREA STATEMENT	24

YOKOHAMA INTERNATIONAL CRUISE TERMINAL

40.BRIEF	25
41.VIEWS	25
42.NO RETURN CIRCULATION DIAGRAM	25
43.DESIGN APPROACH	26
44.FLOOR PLANS	27
45.LONGITUDIANL SECTION	27
46.LATITUDINAL SECTION	27
47.EMBARKATION TIME	28
48.DISEMBARKATION TIME	28
49.AREA STATEMENT	29

QINGDAO INTERNATIONAL CRUISE TERMINAL

50.BRIEF	30
51.VIEWS	30
52.DESIGN APPROACH	31
53.MASTER PLAN	32

54.GRAPHICAL ANALYSIS	32
55.FLOOR PLANS AND FAÇADE	33
SYDNEY INTERNATIONAL CRUISE TERMINAL	
56.INTRODUCTION	34
57.VIEWS	34
58.DESIGN APPROACH	35
59.MASTER PLAN	36
60.PATHWAY	37
61.EMBARKATION TIME	37
62.DISEMBARKATION TIME	37
63.VENUE CAPACITY STATEMENT	38
64.AREA STATEMENT	39
65.AREA STATEMENT	39
66.AREA STATEMENT	40
67.COMPARATIVE STUDY	41
68.INFERENCE	42
69.THESIS PROPOSAL	43
70.THESIS PROPOSAL	43

INTRODUCTION

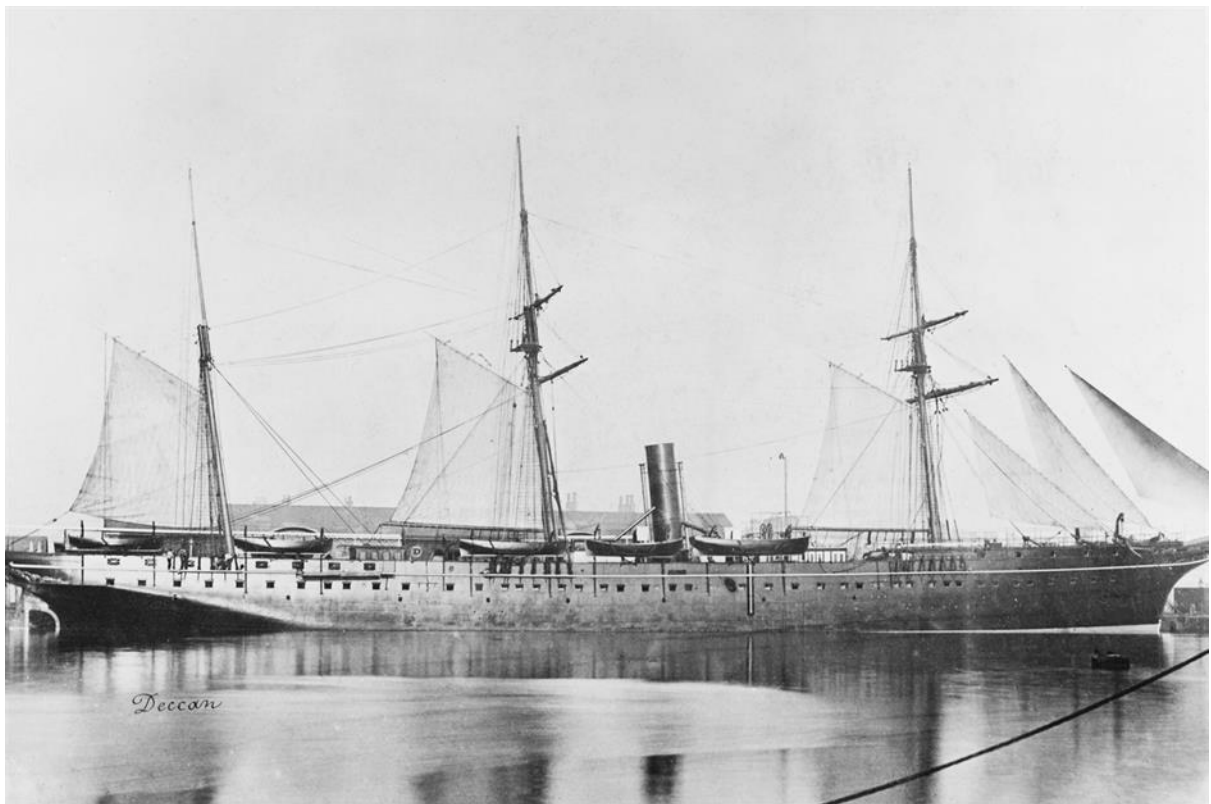


‘Cruise shipping’ is one of the most dynamic and fastest growing components of the leisure industry worldwide. It is fast emerging as a new marketable product. India with its vast and beautiful coastline. Virgin forests and undisturbed idyllic islands, rich historical and cultural heritage, can be a fabulous tourist destination for cruise tourists. With the Indian economy developing at a steady pace, middle class growing in number and increasingly possessing disposal incomes which could be spent on leisure activities, Indians could also take on cruise shipping in a big way, since its inception, the cruise industry is constrained by ships (supply) and not by the availability of passengers (demand).

As a result, ships of all the major lines sail at nearly 100% capacity year round. Cruise lines have been able to increase market penetration with the introduction of new ships with larger capacities into the fleet. Lines also increase yields by constraining supply. However, there is a large market opportunity as the industry is very small in comparison to worldwide tourism with a penetration rate of less than 4%. In 2016, the estimated north American market penetration is 3.3% as compared to 1.4% for Europe and 0.04% for Asia with more than 4.3 billion persons.

BACKGROUND STUDY

With a golden history of hundreds of years, Mumbai never fails to mesmerize its visitors amidst the heritage monuments. This brightest jewel of the country addresses over 15 million Mumbaikars, including well-heeled industrialists, ravishing celebrities and eminent artists. Formerly called Bombay, the Island City is dotted with several beaches and a natural harbour. On the tourism map of India, Mumbai has always entertained the maximum traffic from overseas. Being the city of Bollywood, Mumbai allures thousands of aspirant actors and artists from all over the country.



Experience its dazzling nightlife in bars, lounges, pubs, discotheques and beaches. Uncover the spiritual side of the magnificent city in its places of worship. Parks, gardens, museums, shopping malls, amusement parks, beaches and lakes define the charisma of this economic hub. The Port of Mumbai provides both the supply and demand side of the equation for cruise line deployment due to its overall tourism infrastructure inclusive of an International Airport, roadways and hotel venues within a reasonable proximity to the City and Tourism center; the appeal of the City of Mumbai in particular as a travel destination; and the ability of the port to accommodate vessels on peak weekend days is good. Port of Mumbai registered a considerable growth over the period 2007 to 2016 with regards to its cruise operations.

Cruise vessels visiting Mumbai nearly trebled with passengers visiting Mumbai doubling up during the said period. From 20 vessels in 2007 with just over 7,000 passengers, Mumbai port grew to 47 vessels in 2015 with nearly 14,500 passengers on board. Vessel calls grew at a CAGR of 20.75% with an average YOY growth of 27.58%. On the other hand passenger flows grew at a CAGR of 12.80% with an average YOY growth of 24.86%; thus depicting that more and more cruise lines are now acknowledging the potential of Mumbai to be a key cruise destination.

Vessel calls at Mumbai trebled in the last 5 years from 20 in 2007 to 47 in 2015. It may be reasonable to conclude that the cruise lines view Mumbai as a good destination for their international voyages, and more vessels can be expected to call at Mumbai in the future. Presently, cruise vessels are handled at Ballard Pier Extension (BPX) berth at Indira Dock which has a terminal building for this purpose. This is a multi-purpose berth, right inside the cargo port and is used extensively for berthing of larger, beamier and over-dimensional vessels which are on the increase. Moreover, BPX berth is the only deep-drafted berth free from all beam restrictions and capable of berthing vessels up to 10.5m draft.

The Port of Mumbai commissioned a study and appointed M/s. Zebec Marine Consultants (I) Pvt. Ltd. in the year 2007 as consultants for preparation of DPR for new Cruise Terminal for Mumbai Port. M/S. Zebec Marine Consultants (I) Pvt. Ltd. studied various locations and suggested the different potentially fit sites viz. Sewree/Powder Work Bunder, Ferry Wharf, Apollo Bunder, Nariman Point, Oyster Rock for locating Cruise Terminal.

On basis of assessment matrix for above locations; location near Oyster Rock, Colaba was found to be most suitable. Detailed Project Report was submitted by Consultant based on selected suitable site. The report was

presented in stake holders meeting wherein Naval authorities raised the issue of Helicopter landing station close to the proposed facility may raise security concerns, especially during visits made by VIPs and the Approach Channel demarcated for the Cruise Vessels falls on the assigned Naval anchoring zone. NOC from Navy was not possible hence it was then decided to upgrade the existing terminal to International Level. To review and improve the Cruise Services in Indian Major Ports, the Indian Port Association (IPA) has appointed the Consultants M/S. Bermello Ajamil & Partners, Inc. (B&A),Ernst & Young LLP (EY LLP) and Finance for Cruise Destinations (F4CD) Consortium to submit an Action Plan for Development of Cruise Tourism in India. The interim report has been submitted by the Consultants.

They have suggested to IPA that Mumbai Port Trust should master plan the dedicated cruise facilities by considering long term view of multiple uses.

They have also suggested that the Port should upgrade/modernize the Cruise Terminal to International Standards and adopt a PPP model for Operation & Maintenance of the upgraded/modernized Cruise Terminal at Mumbai Port.

In line with the above, the Port of Mumbai in 2016 has appointed M/s. Planet 3 studios Architects Pvt. Ltd.(consortium) as the consultants for up gradation/modernization of existing structure to the international standard

including designing and providing Project Management Consultancy. The Port of Mumbai has also appointed Indian Institute of Technology, Madras as a proof consultant. The process for appointment of Transaction Advisor for Transaction, Financial and Legal Services for the project has been initiated by Mumbai Port Trust and is expected to be commissioned within a month. The process for obtaining statutory clearance viz. from Environment Ministry etc. has already been initiated and is expected to be in place once the project starts.



As illustrated above, a new Modernised Cruise Terminal is proposed to be tentatively located at the same place i.e. at BPX in the west of the main harbour channel. The Terminal should be of international standard comprising

of a berthing structure for cruise vessels of at least 2000-passengers with a terminal building. With the above background, the Detailed Feasibility Report for the Upgradation/Modernization of International Cruise Terminal at Indira Dock, Mumbai prepared by Civil Engineering Department, Mumbai Port Trust is presented here for request for grant of funds for executing the project.

AIM

The aim of the project is to create a world-class cruise terminal which would have the character of the city and also serve a tribute to the marine life

SCOPE

The scope of the project is to design a cruise terminal in which functionality plays a huge role because it would be serving to the vast number of people

LIMITATION

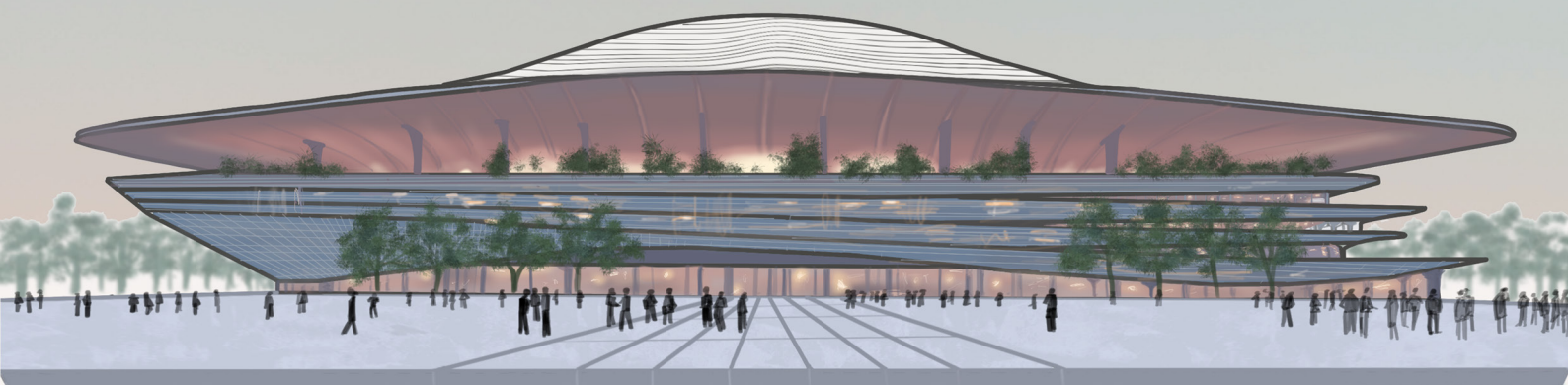
The project is limited to design the terminal only with using the current situation and future plans of Mumbai Port Authority.

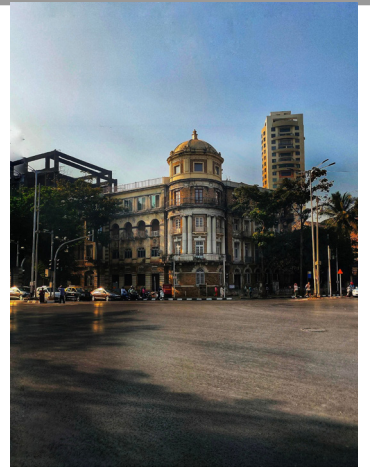
Services and other sensitive areas such as logistics has been detailed as per the standards and inference from case studies

WHAT IS A CRUISE TERMINAL?

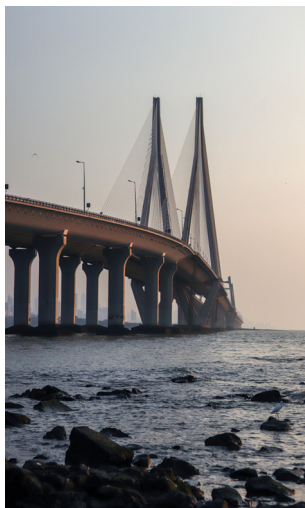
The cruise terminal building is the main structure where domestic and international passengers embark and disembark watercraft. The terminal is the front door to the ports and serves as the public interface between the waterside and landside elements. Passenger terminals may vary greatly in size. A small ferry terminal servicing a commuter ferry may just have the means to tie up the vessel and a waiting area for passengers. Passengers may be loaded onto a ship from the wharf by a gangway or by a linkspan. Goods packed in containers may be driven onto the vessel by a vehicle which then detaches itself from the container and returns to shore.

MUMBAI INTERNATIONAL CRUISE TERMINAL





MUMBAI DIARIES



ROLE OF GOVERNMENT OF INDIA IN BOOSTING THE CRUISEINDUSTRY

Indian constitution and statutory act have elaborated provisions related to the governments of ports it includes,

- Trade
- Maintenance
- Working methodology of ports

Major acts are:

- The coastline vessels act (1938)
- The Indian port act (1875)
- The Indian ports act (1908)
- Merchant shipping act (1958)
- The major Port trust or MPT act (1963)

The major Port trust or MPT act, 1963 got rebude which deals with

- Transfer of assets from central government to boards
- Committee of boards
- Port trust securities
- Power to raise loans

IMPORTANCE OF CRUISE TERMINAL



Contributes significantly to the economy



Tourism boost



employment opportunity



stress free vacation



Marine biology development



Ship Building



Ship breaking



Marine reasearch



explore unreachable spaces

INFLOW AND OUTFLOW

OUTFLOW

LOGISTICS FOR CRUISE TRIPS

HOME PASSENGERS

CREW MEMBERS

PUBLIC

FUEL

INFLOW

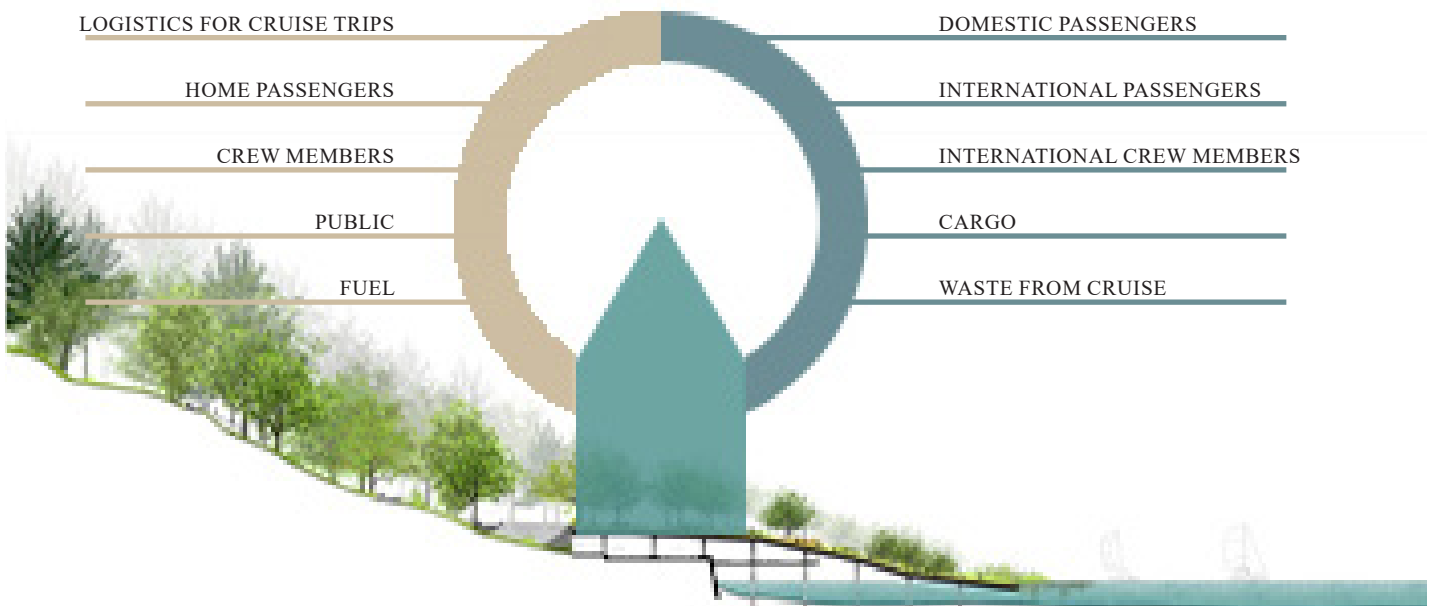
DOMESTIC PASSENGERS

INTERNATIONAL PASSENGERS

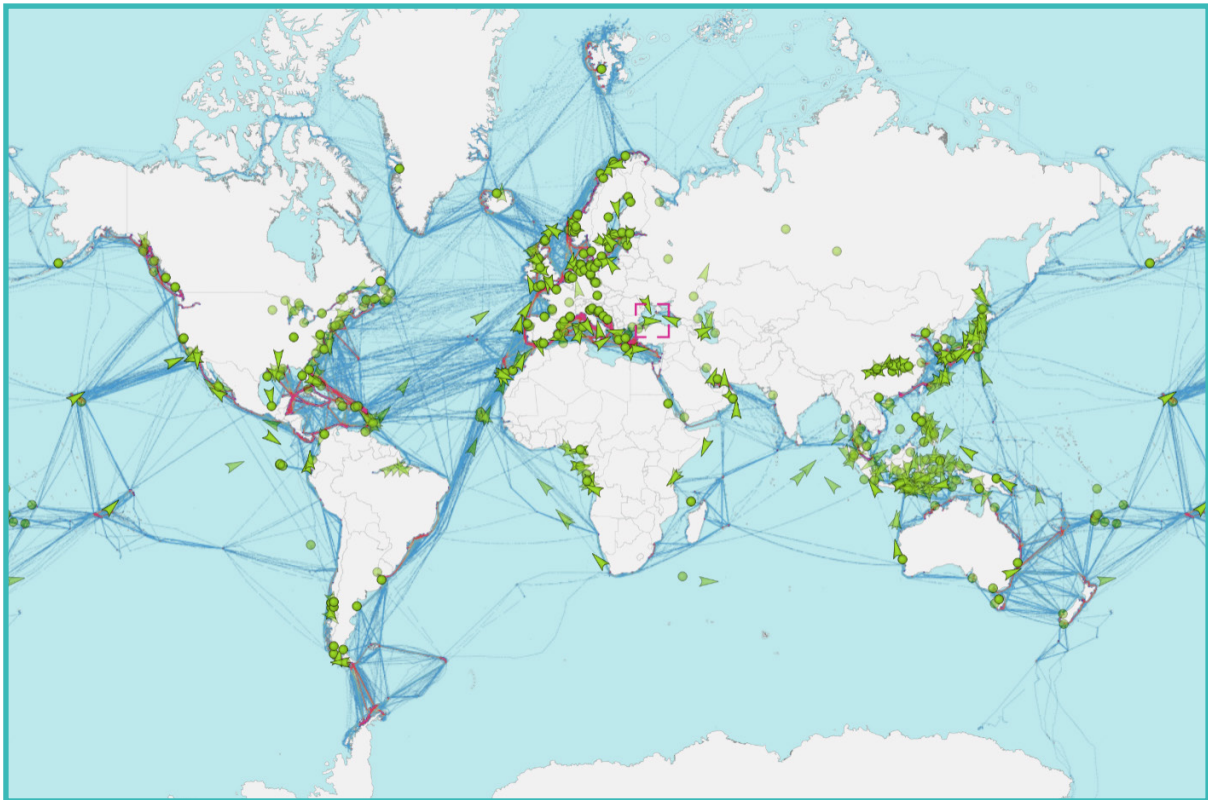
INTERNATIONAL CREW MEMBERS

CARGO

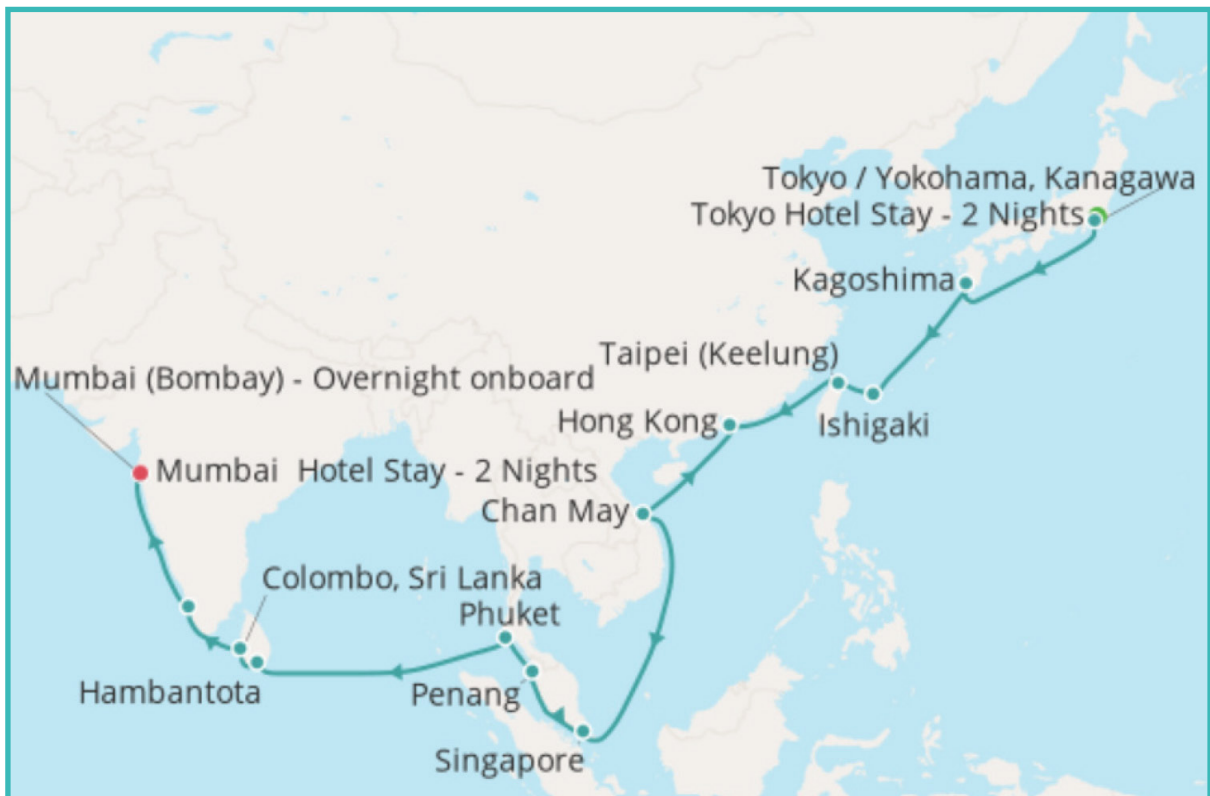
WASTE FROM CRUISE



GLOBAL CRUISE ROUTE



SOUTH ASIAN CRUISE ROUTE



DESIGN METHODOLOGY

TOPIC SELECTION

THOROUGH AND **COMPARITIVE CASE** STUDY OF GLOBAL CRUISE TERMINALS.

YOKOHAMA
CRUISE
TERMINAL

QINGDAO
CRUISE
TERMINAL

MARINA
BAY CRUISE
TERMINAL

SYDNEY
CRUISE
TERMINAL

CURRENT PROPOSALS IN INDIA AND ITS **DESIGN OPPORTUNITY AND SCOPE**

MUMBAI
CRUISE
TERMINAL

GOA
CRUISE
TERMINAL

KOCHI
CRUISE
TERMINAL

NEW
MANGALORE
CRUISE
TERMINAL

VISHAKAPATANAM
CRUISE TERMINAL

FINALISING **MUMBAI CRUISE TERMINAL** BASED ON COMPARITIVE STUDY OF THE PROPOSALS.

SITE ANALYSIS

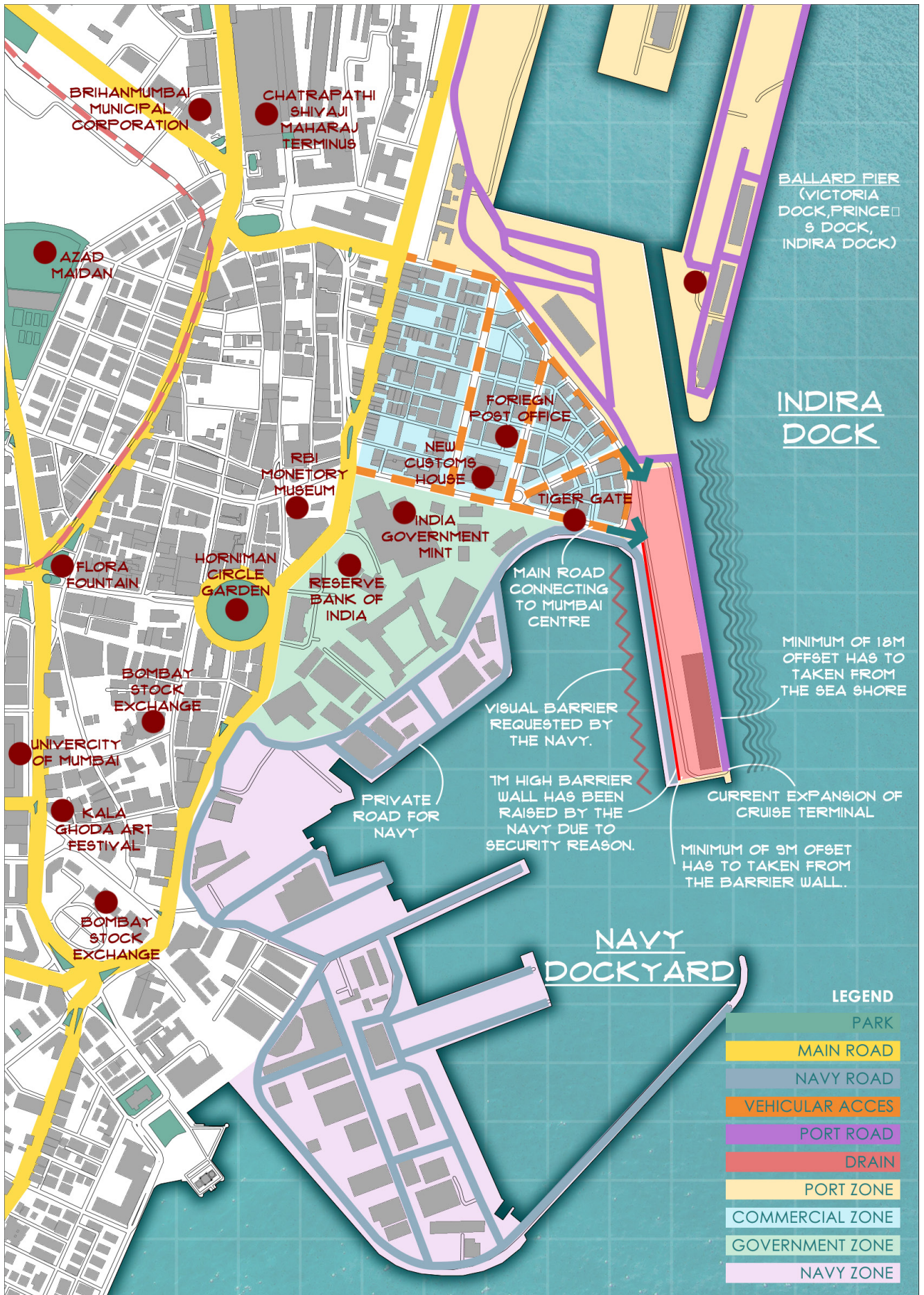
UNDERSTANDING THE **PRESENT AND FUTURE ASPECTS** OF THE TERMINAL.

CONTEXT
ANALYSIS

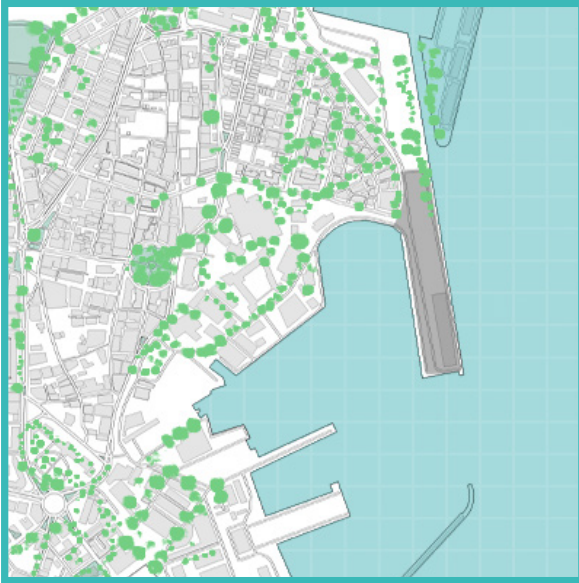
FUTURE PLANS OF
MbPT
(MUMBAI PORT
TRUST)

GLOBAL CRUISE
INDUSTRIAL
STANDARDS

DESIGN PROPOSAL

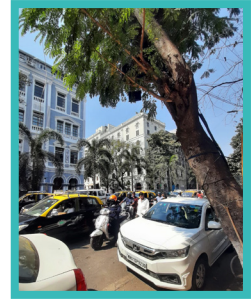


MACRO MAP ANALYSIS



EXISTING VEGETATION

According to bmc's census in 2018 there are about 29.75 lakh trees in mumbai which mainly consist of Wad, Pimpal, Umber, Kanchan, Kadamba, Gunj, Palas, Nim, Mahogany, Moh, Bahawa, Sag, Arjun, Ain, Kinjal, Sita Ashok, Undal, Nagkeshar, Champa, Shivan, Shirish, Karanj, Bakul, Bell, Taman, Hirda, Behda, Coconut, Amla, Khair, Tetu, Mango, Putranjiva, Wild Almond, Bibba, Parijatak, Rita, Sandalwood and Phanas



VEHICULAR AXIS



TRAFFIC



NOISE AND ODOUR

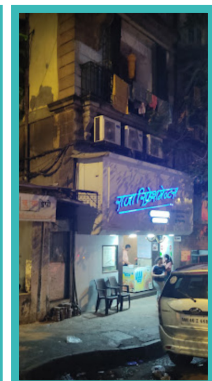


VISUALLY PLEASING SPACES



REFRESHMENTS

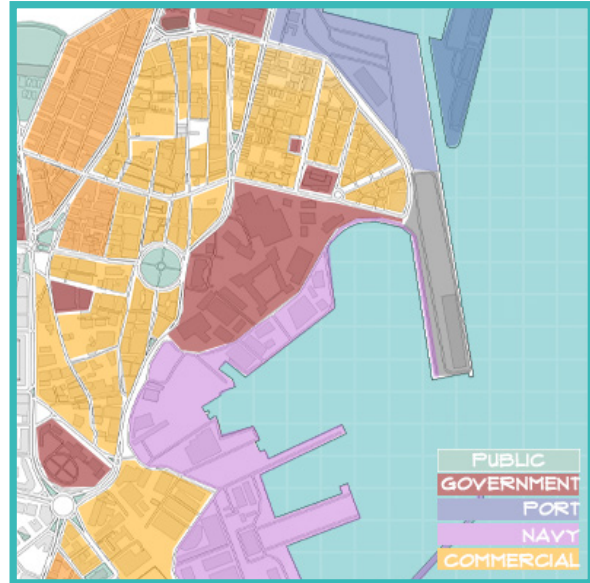
The map shows us that there are very little refreshment spaces near our site. it is very important to have refreshment space in a commercial hub like this because it will play a huge role in boosting the efficiency of the workers. Hence public spaces need to be given importance in the design which will help the common people of mumbai to relax in their stressfull work hours



LAND USE MAP

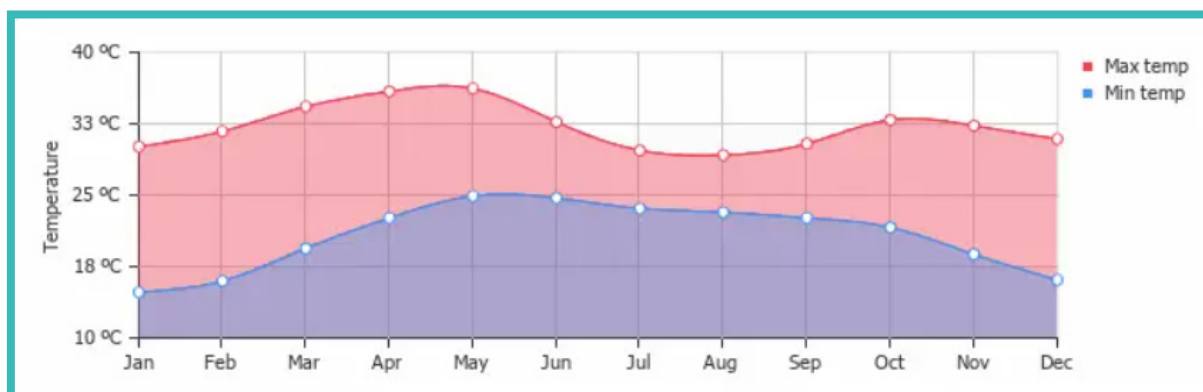
The map shows us that the site is located at a very commercial zone of Mumbai. It is predominantly covered with commercial spaces and hubs. It also has some of the very important public buildings such as Reserve Bank of India, etc.

It has no tolerance navy zone right next to it on the western side which in turn uses half of the docking space for the navy purpose leaving the eastern side for commercial usage.



On the northern side we have the port which could be used for future expansion and there is a garage space near which helps in cruise management.

MACRO CLIMATE



AVERAGE TEMPERATURE

MINIMUM
TEMPERATURE

21°C

AVERAGE
TEMPERATURE

31°C

MAXIMUM
TEMPERATURE

36°C



AVERAGE WIND SPEED

MINIMUM
SPEED

3 M/S

AVERAGE
SPEED

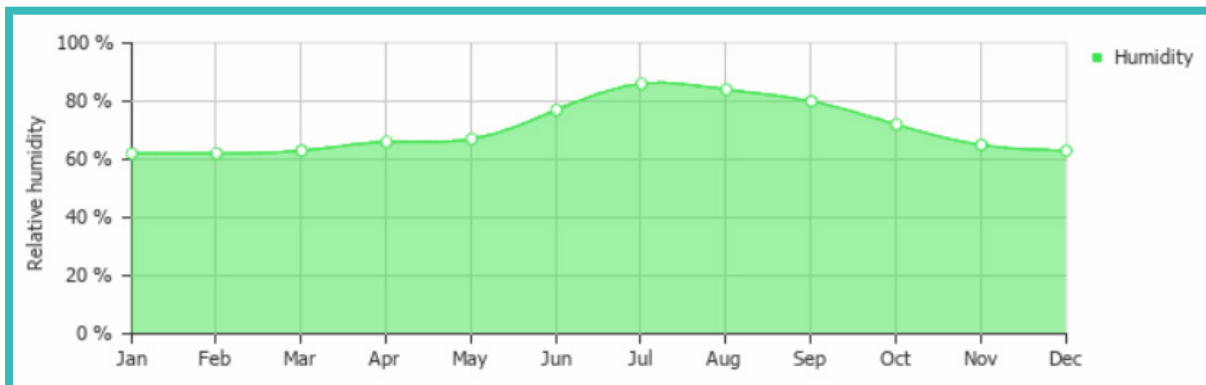
5.2 M/S

MAXIMUM
SPEED

6.4 M/S

ON AVERAGE,
THE MOST WIND
IS SEEN IN JULY.

ON AVERAGE,
THE LEAST
WIND IS SEEN
IN JANUARY.



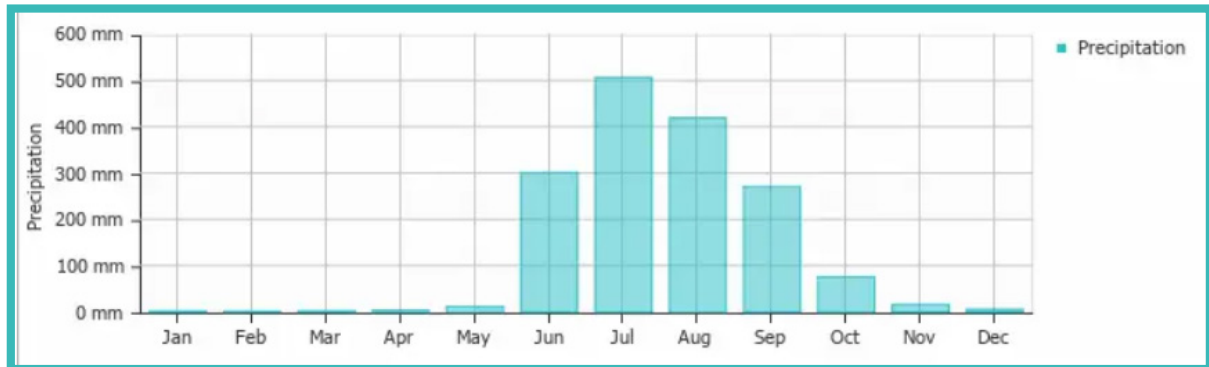
AVERAGE RELATIVE HUMIDITY

AVERAGE
PERCENTAGE

71%

ON AVERAGE,
JULY IS THE MOST
HUMID MONTH, AT
86.0%.

ON AVERAGE,
JANUARY IS THE
LEAST HUMID
MONTH, AT 62.0%.



AVERAGE PRECIPITATION

AVERAGE
PRECIPITATION

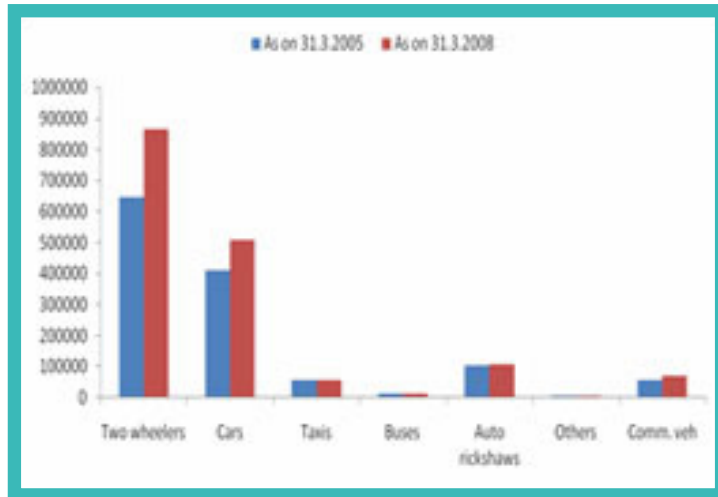
1603 MM

A LOT OF RAIN (RAINY SEASON) FALLS IN THE MONTHS: JUNE, JULY, AUGUST AND SEPTEMBER.

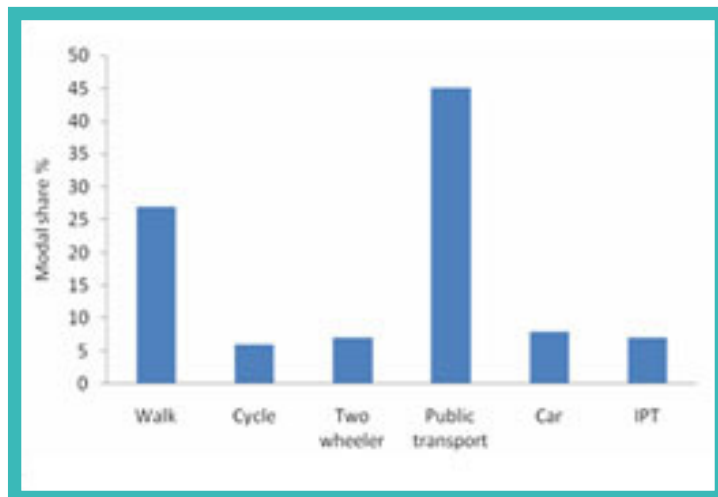
ON AVERAGE, FEBRUARY IS THE DRIEST MONTH WITH 0 MM (0 INCHES) OF PRECIPITATION.

MUMBAI HAS DRY PERIODS IN JANUARY, FEBRUARY, MARCH, APRIL, MAY, NOVEMBER AND DECEMBER.

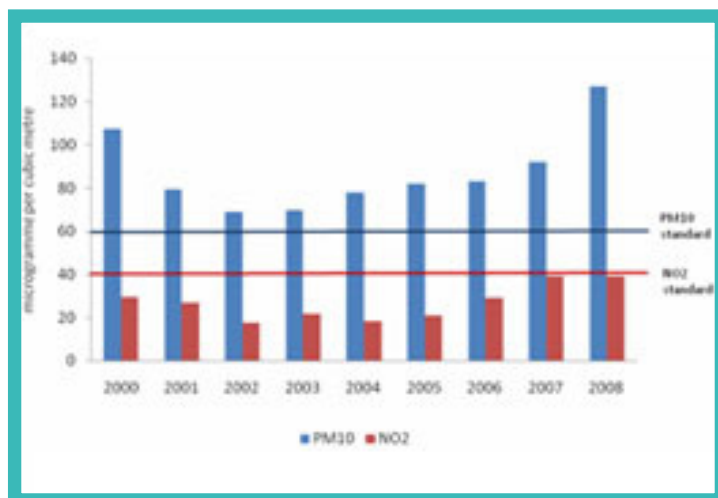
ON AVERAGE, JULY IS THE WETTEST MONTH WITH 506 MM (19.9 INCHES) OF PRECIPITATION.



VEHICLE: GALLOPING NUMBERS



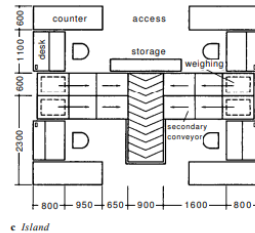
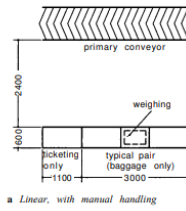
TRAVEL INDICATOR



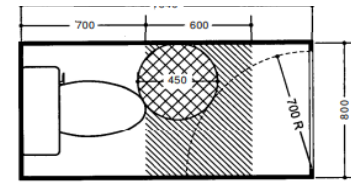
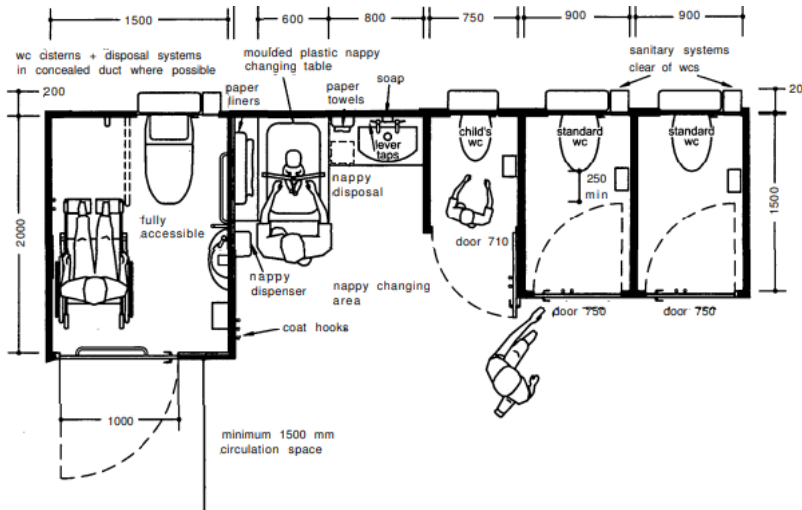
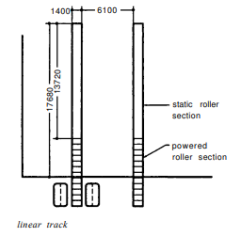
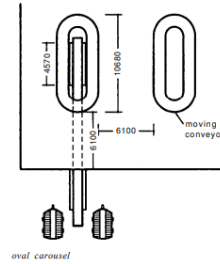
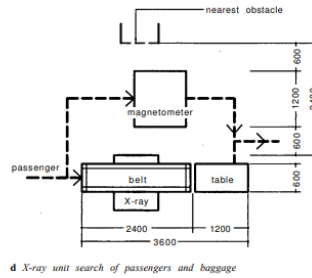
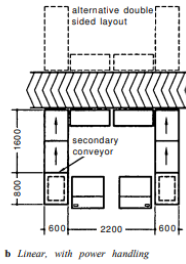
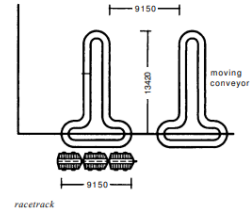
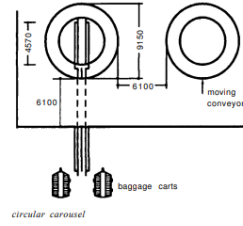
AIR QUALITY TRENDS – ANNUAL AVERAGE LEVELS OF PM10 AND NOX

STANDARDS

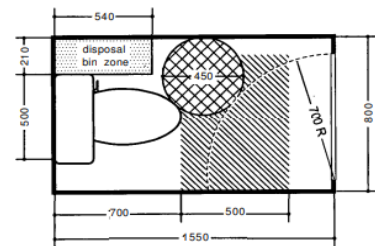
7.11 Check-in installations without security control:



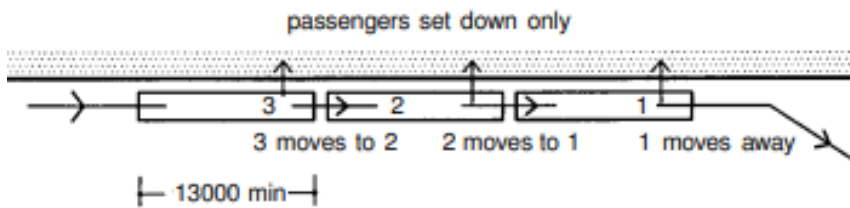
7.13 Four types of baggage reclaim installation



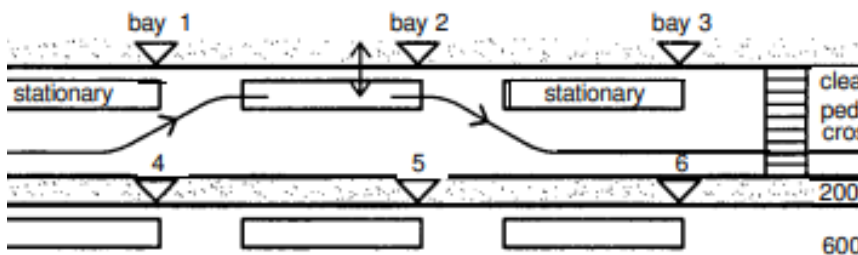
3.6 WC cubicle, inward-opening door, no sanitary bin zone

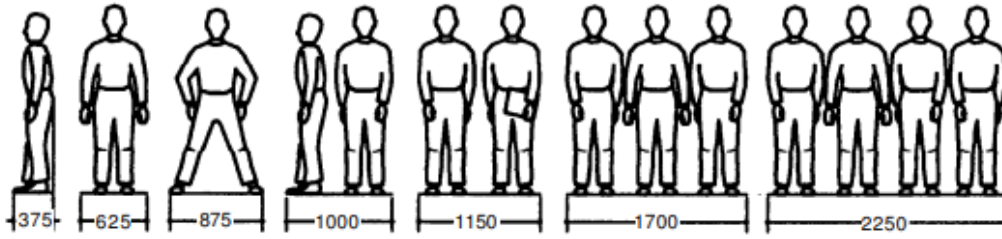


3.7 WC cubicle, inward-opening door, sanitary bin zone

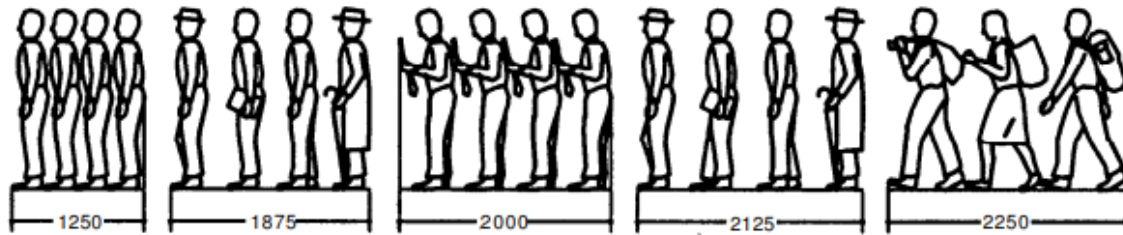


Shunting, where a vehicle only sets down passengers on the concourse fore moving off to park or pick up more passengers. This avoids waiting to cupy a pre-determined bay, and reduces effective journey time

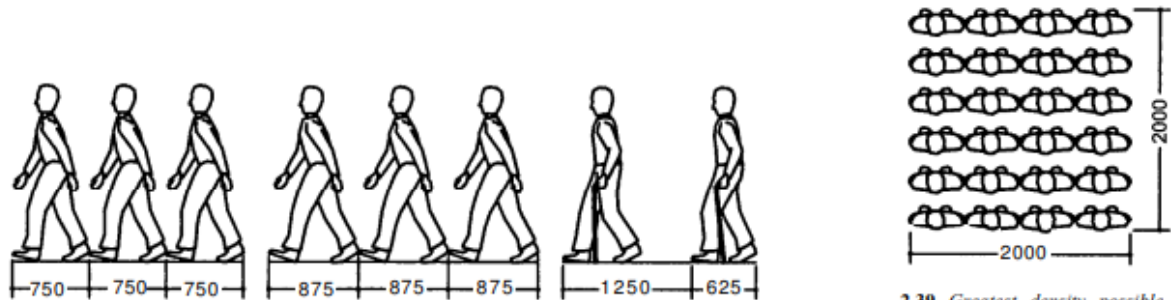




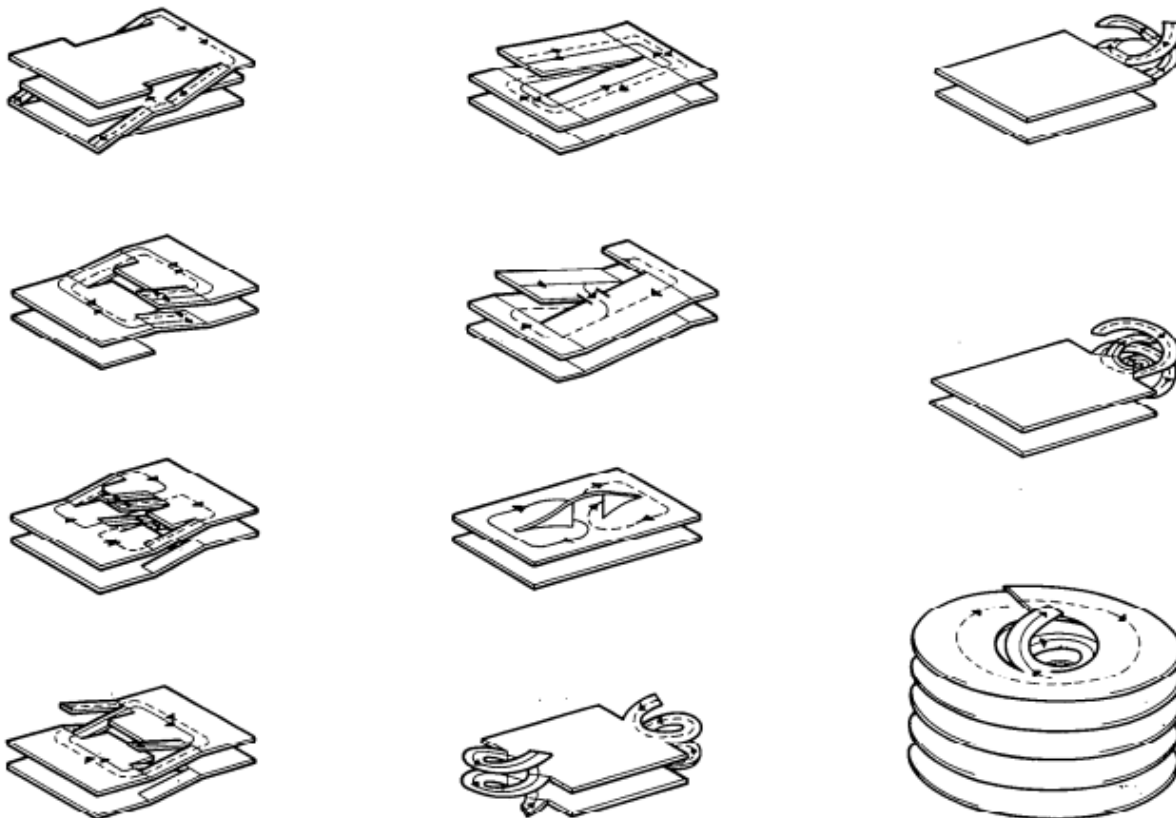
2.36 Space requirements between walls allowing 10 per cent for easy movement



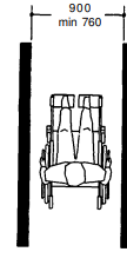
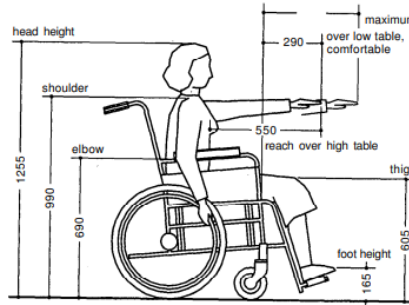
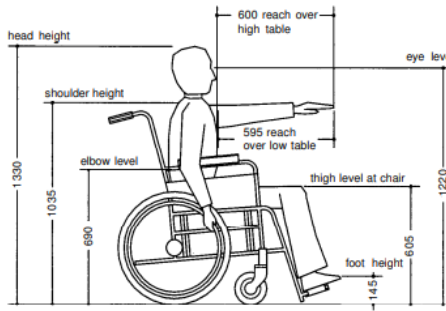
2.31 Space requirements for closely spaced groups



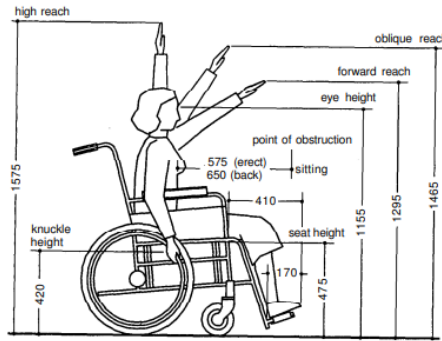
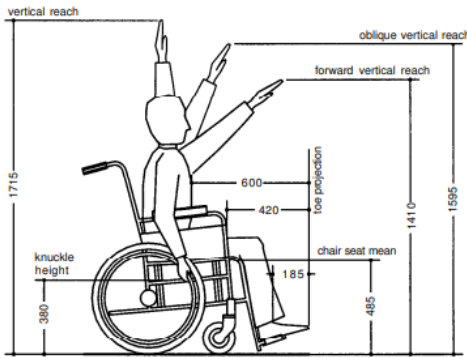
2.39 Greatest density possible 6



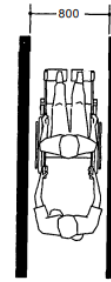
4.39 Types of multi-storey car parks



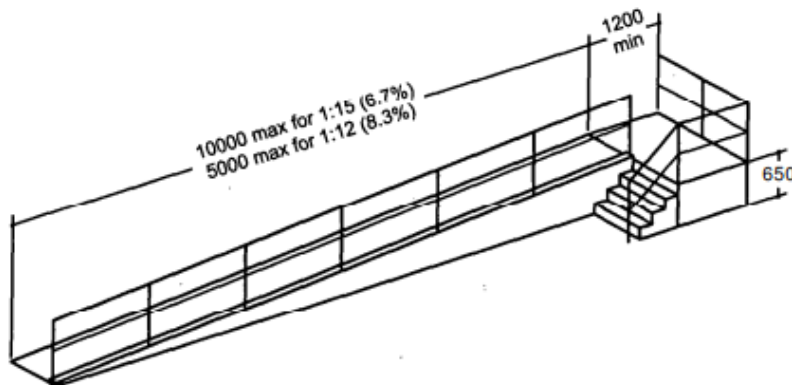
2.23 Forward movement for self-propelled wheelchair



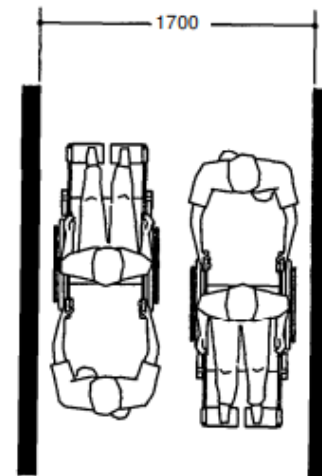
2.21 Dimensions of adult female wheelchair users



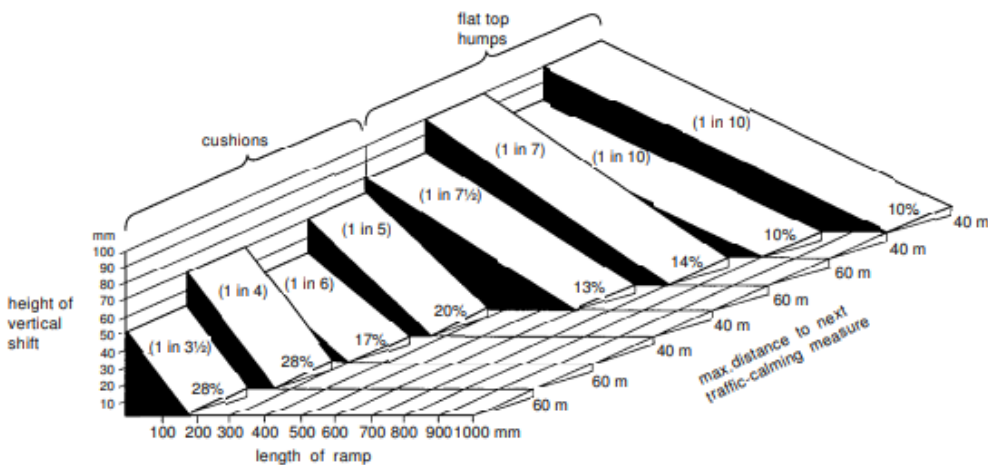
2.24 Forward movement for wheelchair with attendant



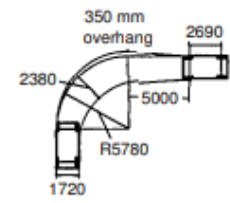
2.22 Wheelchair ramp of rise 650 mm



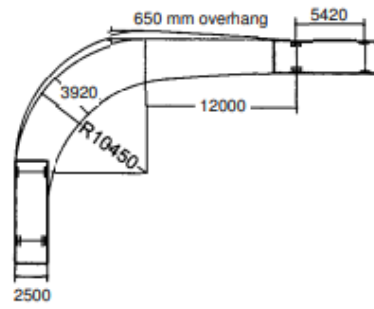
2.25 Passing place for two wheelchairs with attendants



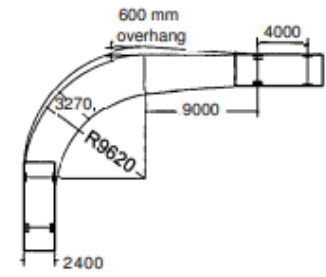
4.9 Results of research into ramp dimensions for 85 percentile speed of 32 kph (20 mph)



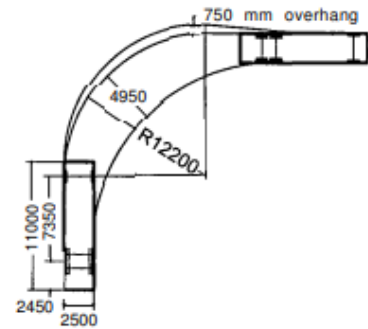
a private car



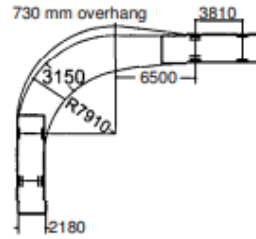
b pantehnicon



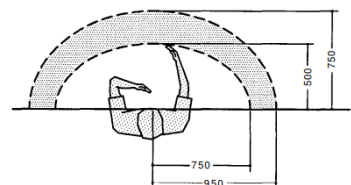
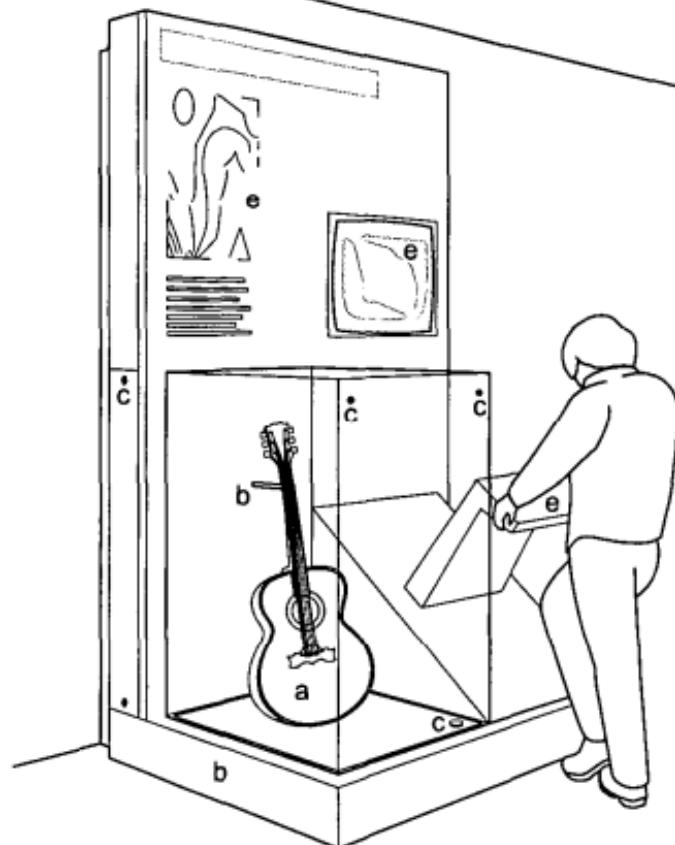
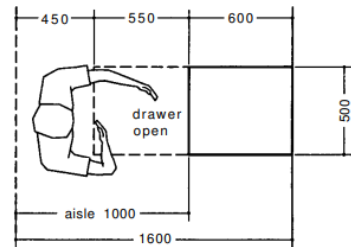
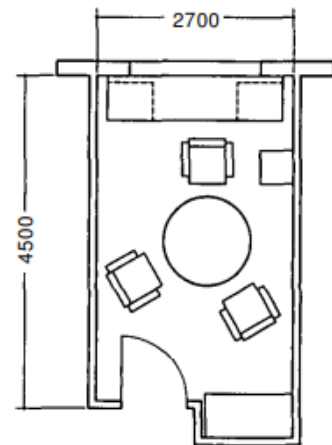
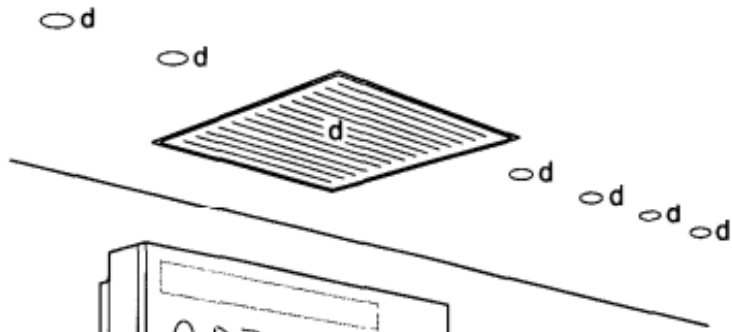
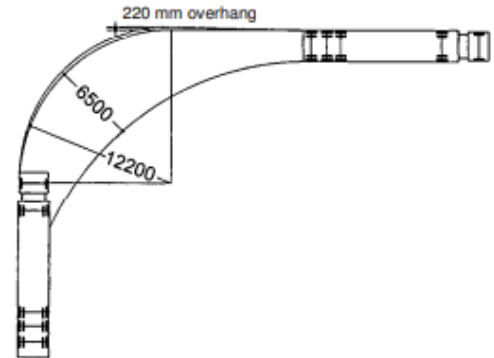
c refuse collection vehicle

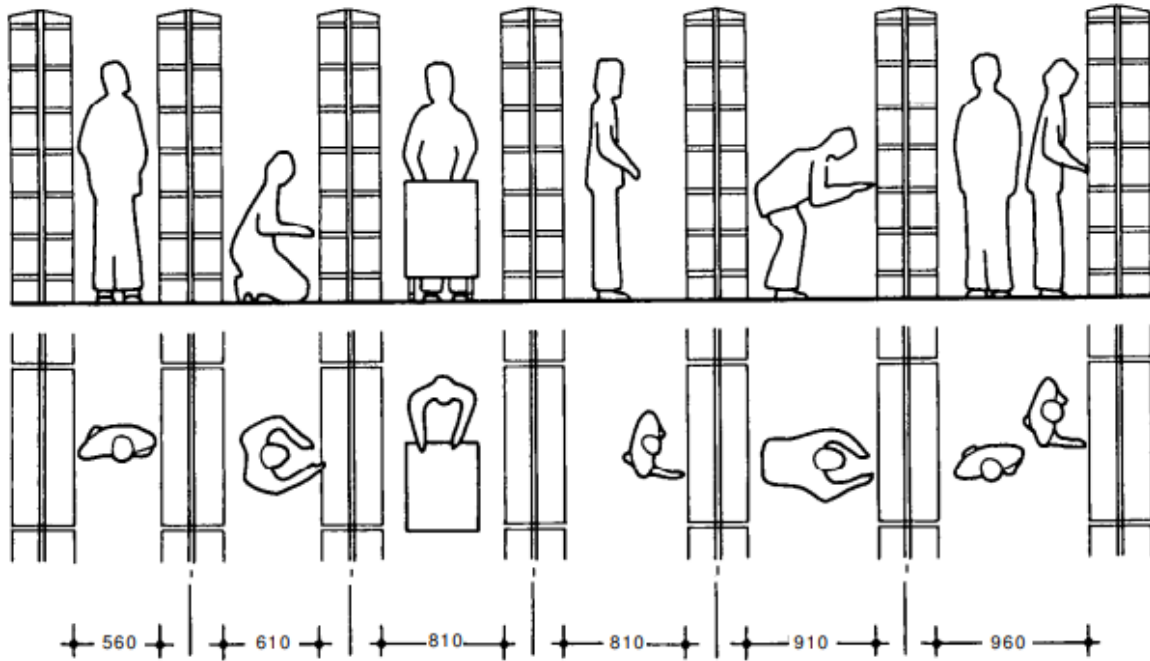


d medium commercial vehicle

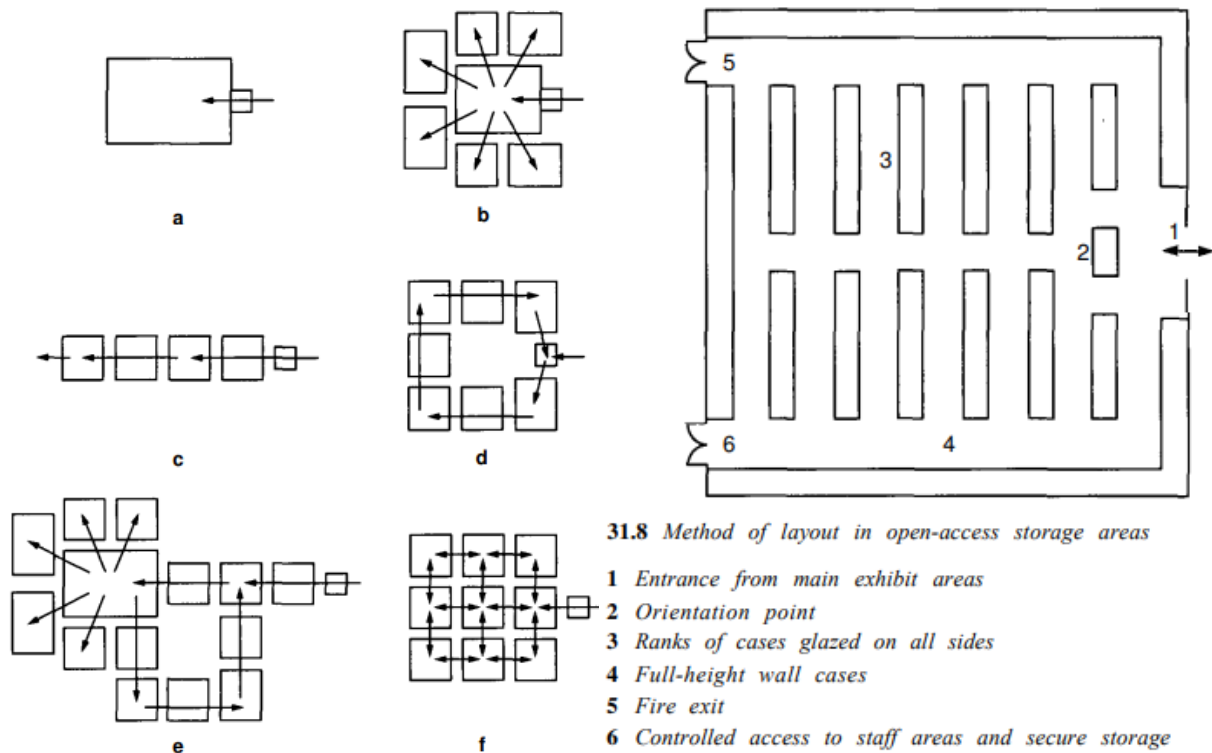
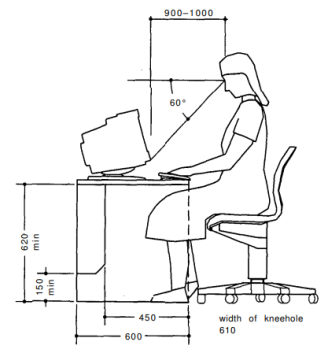
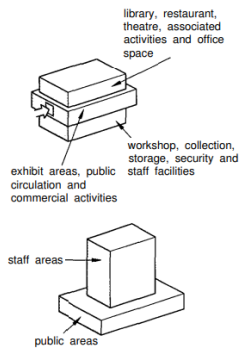


e fire appliance



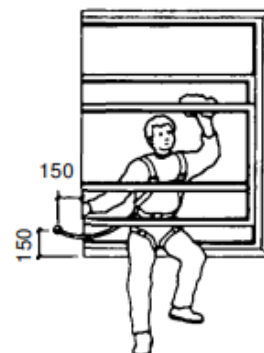
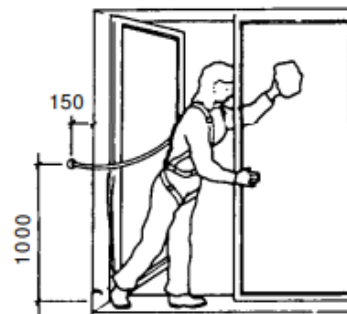
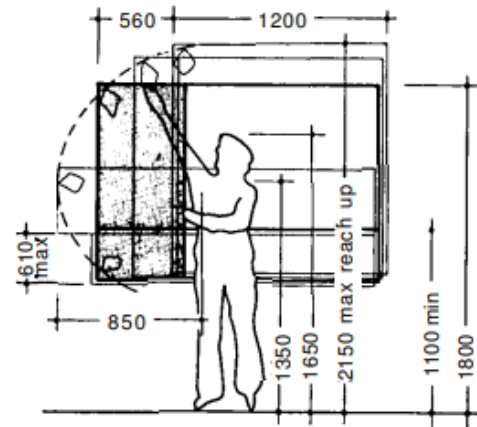
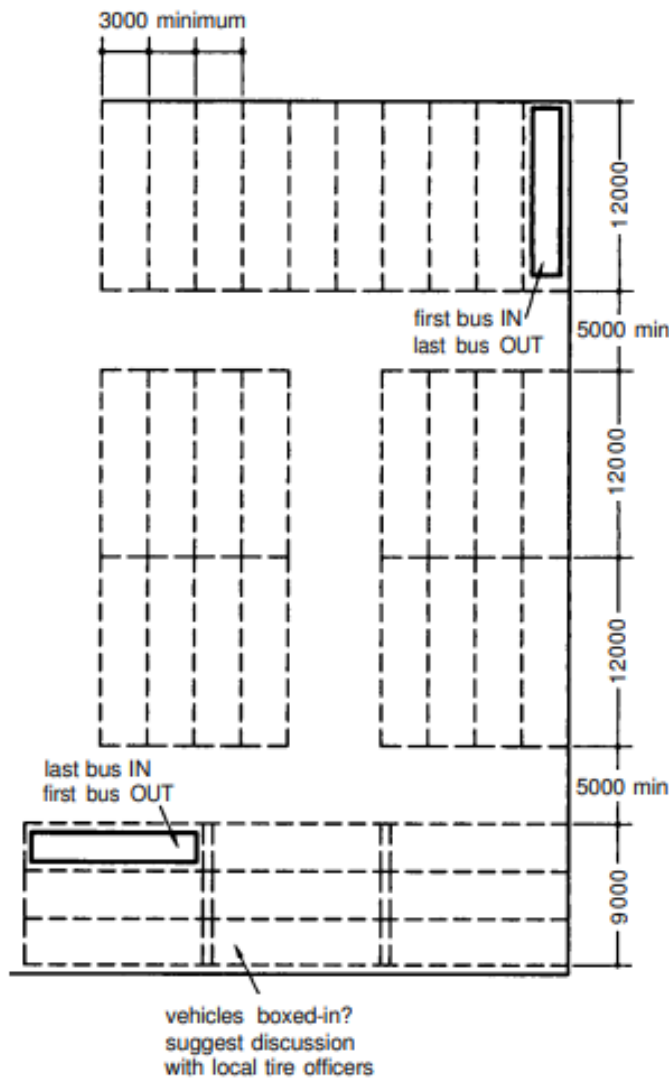
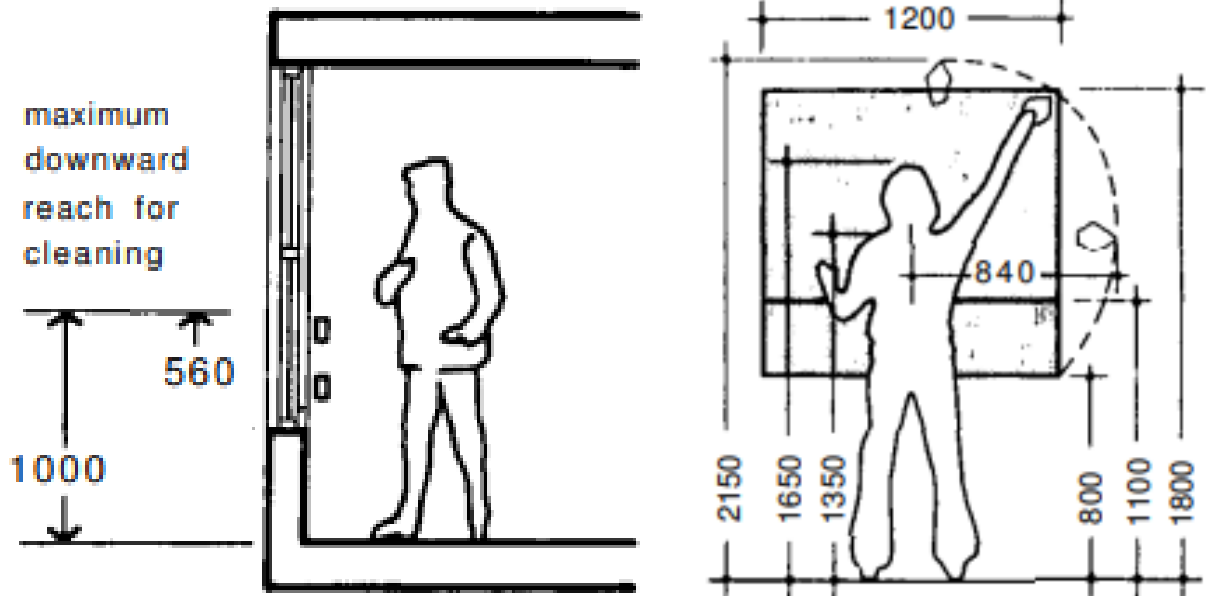


32.8 Minimum clearances in shelving areas for various attitudes: narrow aisles



31.8 Method of layout in open-access storage areas

- 1 Entrance from main exhibit areas
- 2 Orientation point
- 3 Ranks of cases glazed on all sides
- 4 Full-height wall cases
- 5 Fire exit
- 6 Controlled access to staff areas and secure storage



7.27 Bus garaging layout for where the buses are parked in a pre-determined order to get the maximum number of buses in the available space, subject to the fire officer's limitations

CASE STUDY

MUMBAI INTERNATIONAL CRUISE TERMINAL

ARCHITECTS: PLANET 3 STUDIOS

CLIENT: MUMBAI PORT AUTHORITY

LOCATION: INDIRA DOCK, BALLARD
PIER

CITY: MUMBAI

COUNTRY: INDIA

AREA: 12000 M²

BUILTUP: 48000 M²

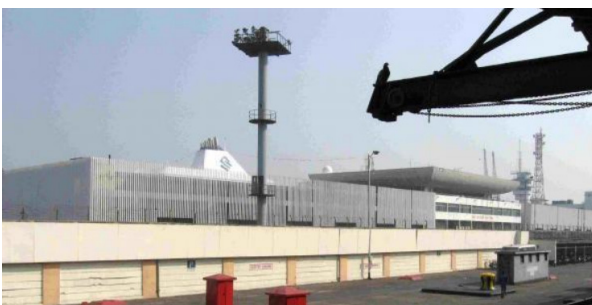
YEAR: IN CONSTRUCTION

COST: \$97.4 MILLION DOLLARS

SITE CONTEXT



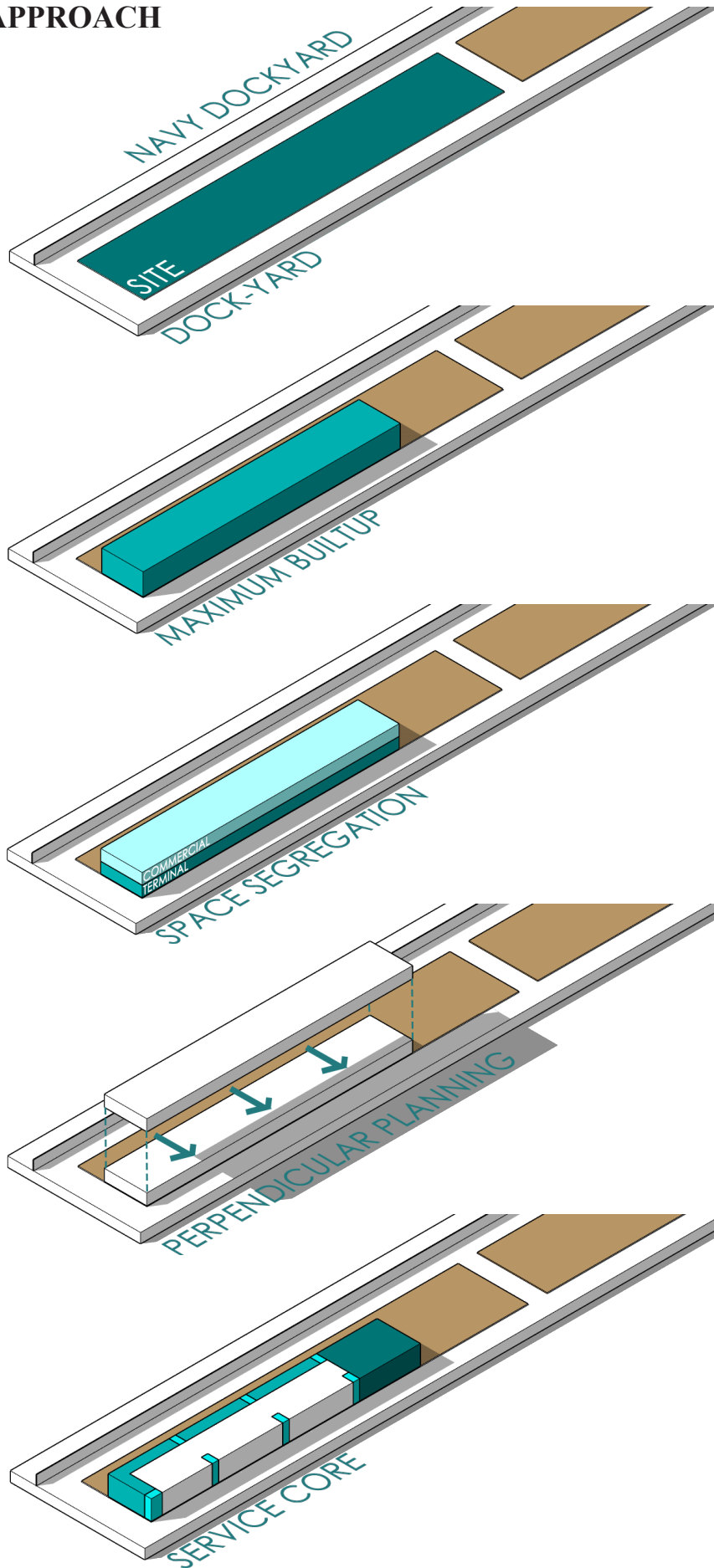
OLD TERMINAL



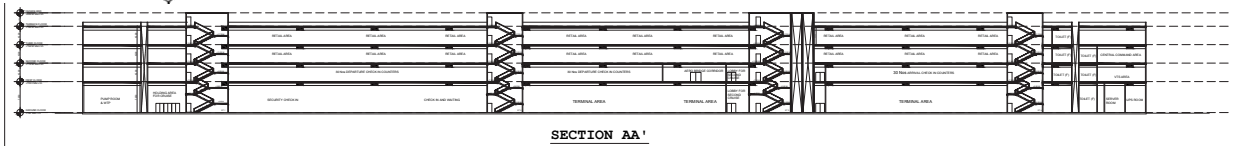
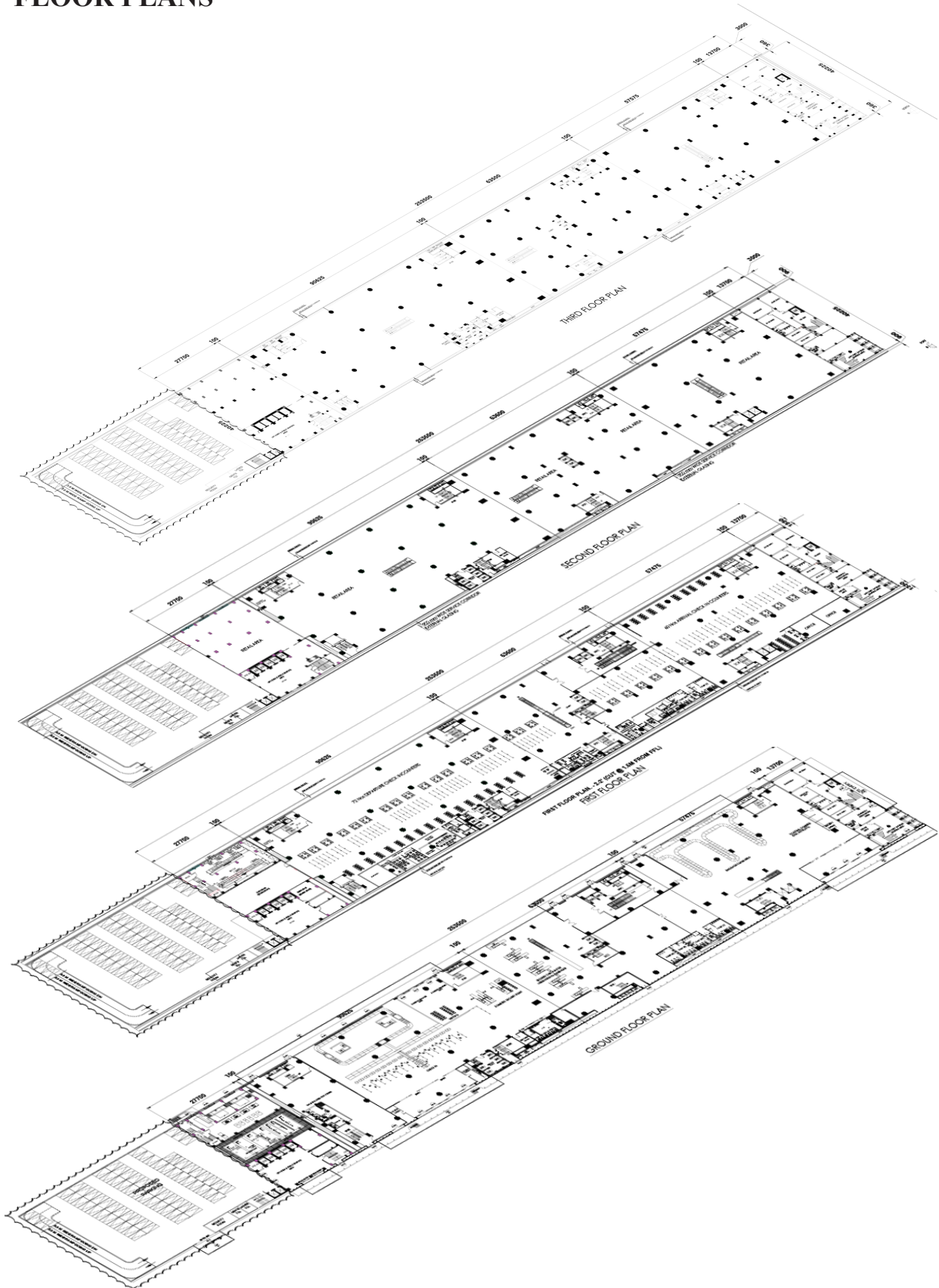
PRESENT TERMINAL



DESIGN APPROACH



FLOOR PLANS



EMBARKATION TIME

MODE OF TRANSPORT - CAR



MODE OF TRANSPORT - TAXI / BUS



DISEMBARKATION TIME



AREA STATEMENT

SR. NO	SPACE	REASON FOR AREA DERIVATION	FINAL AREA (SQ.M)			
				44	BAGGAGE HANDLING INCLUDING ALL BANK OFFICE WORK	400 SQ.M
A	ACCOUNTS DEPARTMENT					
1	ACCOUNTS AND RECORD KEEPING	AVG. 1.2 SQ.M WITH STORAGE SPACE	60 SQ.M	45	DUTY FREE SHOP FOR DEPARTURE	3 NO.S - 4 SQ.M EACH 450 SQ.M
2	CASH FLOW ANALYSIS	AVG. 1.2 SQ.M	40 SQ.M	46	BANK EXTENSION COUNTER	AS PER CLIENTS REQUIREMENTS 90 SQ.M
3	SALARY ADMINISTRATION	AVG. 1.2 SQ.M	40 SQ.M	47	BASIC KIOSK	5 NO- 15 SQ.M EACH 200 SQ.M
4	INSURANCE TAXATION	AVG. 1.2 SQ.M	60 SQ.M	48	FIRST AID ROOM	AS PER CLIENTS REQUIREMENTS 100 SQ.M
B	OFFICE REQUIREMENTS			49	CAFÉ WITH KITCHEN	AS PER CLIENTS REQUIREMENTS 100 SQ.M
5	TERMINAL MANAGER	INCLUDES 1 MANAGER CABIN- 25 SQ.M	100 SQ.M	50	TOILETS	15 WES PER 3000 PEOPLE AS PER STANDARDS 7500 SQ.M
6	SECRETARY AND STAFF WAITING	AVG. 1.2 SQ.M	120 SQ.M	E	OTHER FACILITIES	
7	DUTY OFFICER	AVG. 1.2 SQ.M	120 SQ.M	51	RESTAURANT WITH KITCHEN	2 SQ.M PER PERSON (FOR 2000 PEOPLE) 2000 SQ.M
8	SECURITY CHIEF	AVG. 1.2 SQ.M	120 SQ.M	52	INTERNET SURFING BOOTHS	8 BOOTHS- 3 SQ.M PER BOOTH 240 SQ.M
9	TECHNICAL CHIEF	AVG. 1.2 SQ.M	120 SQ.M		COMMERCIAL SPACE	2 COMPLETE FLOORS OF 40,000SQ. M EACH 80000 SQ. M
10	MAINTENANCE OFFICE	AVG. 1.2 SQ.M	120 SQ.M	53	TOILETS	15 WES PER 3000 PEOPLE AS PER STANDARDS 7500 SQ.M
11	STAFF / OFFICER OFFICE	AVG. 1.2 SQ.M	120 SQ.M	F	OTHER STAFF FACILITIES	
12	ANNOUNCEMENT ROOM	-	30 SQ.M	54	STAFF LOUNGE	- 300 SQ.M
13	VIDEO MONITOR ROOMS	-	30 SQ.M	55	STAFF SIGN IN/ SIGN OUT ROOM	AS PER CASE STUDY 100 SQ.M
14	CONFERENCE ROOMS	TAKING 2 SQ.M INTO 30 PEOPLE THAT IS 60+20 SQM CIRCULATION	240 SQ.M	56	STAFF RESTROOMS	2 WES PER LADIES AND GENTS WASHROOMS FOR 300 PEOPLE 600 SQ.M
15	TOILETS	4 WES PER 300 PEOPLE AS PER STANDARDS	1200 SQ.M	57	SECURITY STAFF	- 100 SQ.M
16	LIFE GUARD	AS PER CASE STUDY	20 SQ.M	58	STORE	AS PER CLIENTS REQUIREMENTS 100 SQ.M
17	FIRE FIGHTING OFFICE WITH PARKING FOR FIRE ENGINES	OFFICE - 30 SQ.M + 20 SQ.M STORAGE 2 ENGINES PARKING	50 SQ.M 250 SQ.M	G	FOR MAINTENANCE	
18	AC PLANT ROOMS		100 SQ.M	59	STORES	AS PER CLIENTS REQUIREMENTS 100 SQ.M
C	ARRIVAL SPACES REQUIREMENT			60	OFFICE ADMINISTRATION	- 30 SQ.M
21	PASSENGER HALL	TAKING 1.5 SQ.M PER PERSON INTO CONSIDERATION WITH 7500 PASSENGERS	10000 SQ.M	H	TOTAL	SQUARE METERS 56,000.000
22	SHIP ARRIVAL LOUNGE WITH CORRIDOR	300 PEOPLE	360 SQ.M	I	CIRCULATION SPACE	28% OF TOTAL AREA 15,680.000
23	IMMIGRATION AND CHECK INS	AS PER CASE STUDY	300 SQ.M	J	TOTAL BUILT-UP	SQUARE METERS 71,680.000
24	INFORMATION COUNTER	-	200 SQ.M			17.71 ACRES
25	TOURIST INFORMATION CENTER	AS PER CLIENTS REQUIREMENTS	75 SQ.M			
26	CHILD CARE CENTRE	AS PER CASE STUDY	90 SQ.M			
27	BAGGAGE LOST AND FOUND	AS PER CASE STUDY	40 SQ.M			
28	TROLLEY ROOM	AS PER CASE STUDY	200 SQ.M			
29	BAGGAGE HANDLING INCLUDING ALL BACK OFFICE WORK	-	1200 SQ.M			
30	DUTY FREE SHOP FOR ARRIVAL	3 NO.S - 4 SQ.M EACH	450 SQ.M			
31	BANK EXTENSION COUNTER	AS PER CLIENTS REQUIREMENTS	90 SQ.M			
32	RENT-A-CAR COUNTER	AS PER CLIENTS REQUIREMENTS	60 SQ.M			
33	BASIC KIOSK	5 NO - 15 SQ.M EACH	200 SQ.M			
34	FIRST-AID ROOM	AS PER CLIENTS REQUIREMENTS	90 SQ.M			
35	CAFÉ WITH KITCHEN	AS PER CLIENTS REQUIREMENTS	120 SQ.M			
36	TOILETS	15 WES PER 3000 PEOPLE AS PER STANDARDS	4500 SQ.M			
D	DEPARTURE SPACES REQUIREMENT					
37	PASSENGER HALL	TAKING 1 SQ.M PER PERSON INTO CONSIDERATION WITH 7500 PASSENGERS	10000 SQ.M			
38	SHIP DEPARTURE LOUNGE WITH CORRIDOR	300 PEOPLE	360 SQ.M			
39	IMMIGRATION AND CHECK-INS	AS PER CASE STUDY	300 SQ.M			
40	INFORMATION COUNTERS, WITH BOOK OFFICES	-	100 SQ.M			
41	CHILD CARE CENTRE	AS PER CASE STUDY	100 SQ.M			
42	BAGGAGE LOST AND FOUND	AS PER CASE STUDY	40 SQ.M			
43	TROLLEY ROOMS	AS PER CASE STUDY	100 SQ.M			

LITERATURE STUDY

YOKOHAMA INTERNATIONAL CRUISE TERMINAL

ARCHITECTS: FOREIGN OFFICE ARCHITECTS

CLIENT: OSABANSHI PORT AUTHORITY

LOCATION:KANAGAWA

CITY:YOKOHAMA

COUNTRY:JAPAN

AREA:48000 M²

BUILTUP: 153000 M²

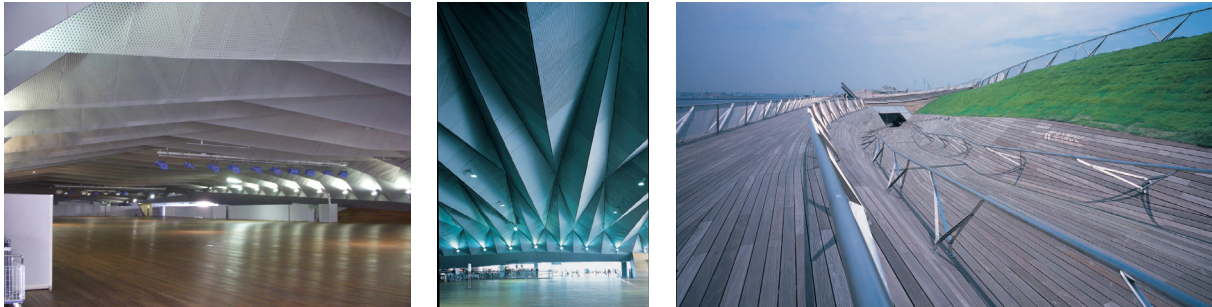
YEAR:2002

COST: \$367 MILLION DOLLARS

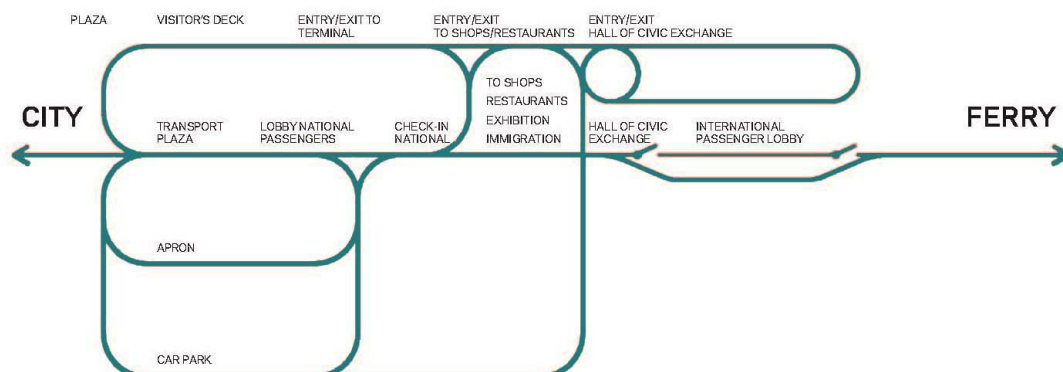
BRIEF

Yokohama International Passenger 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.

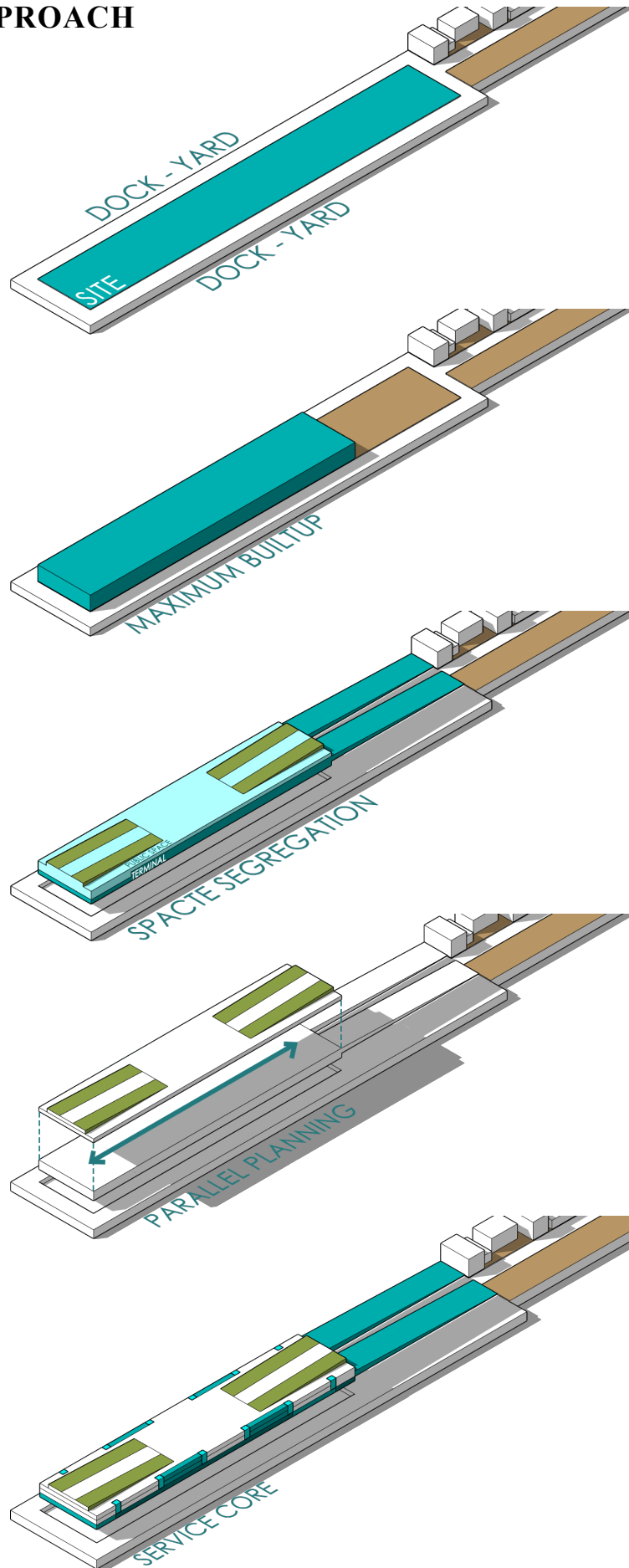
VIEWS



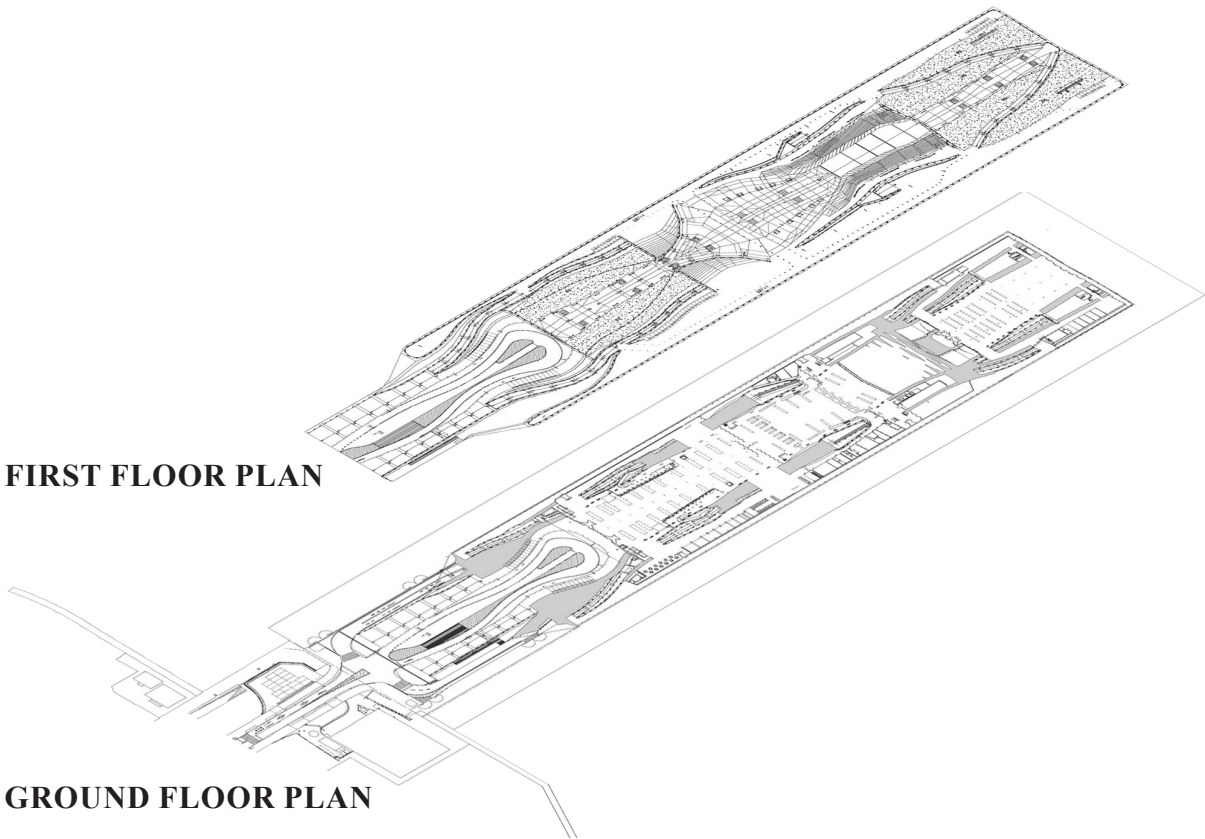
NO RETURN CIRCULATION DIAGRAM



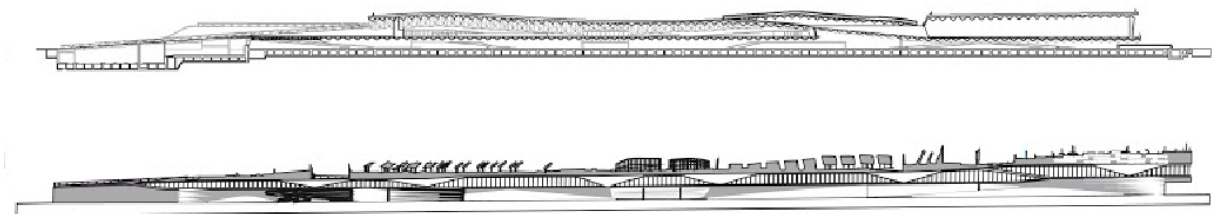
DESIGN APPROACH



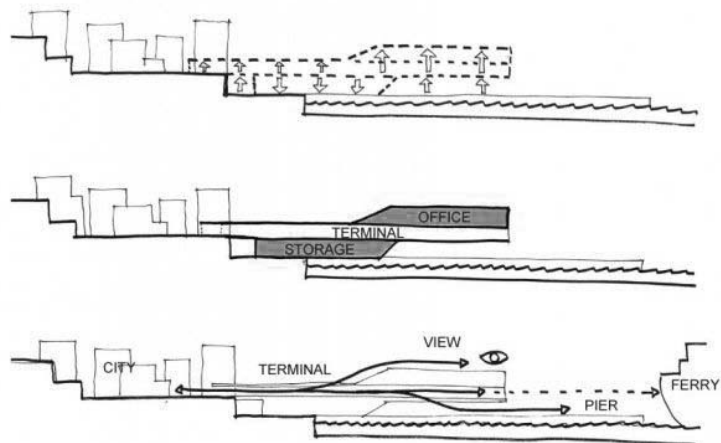
FIRST FLOOR PLAN



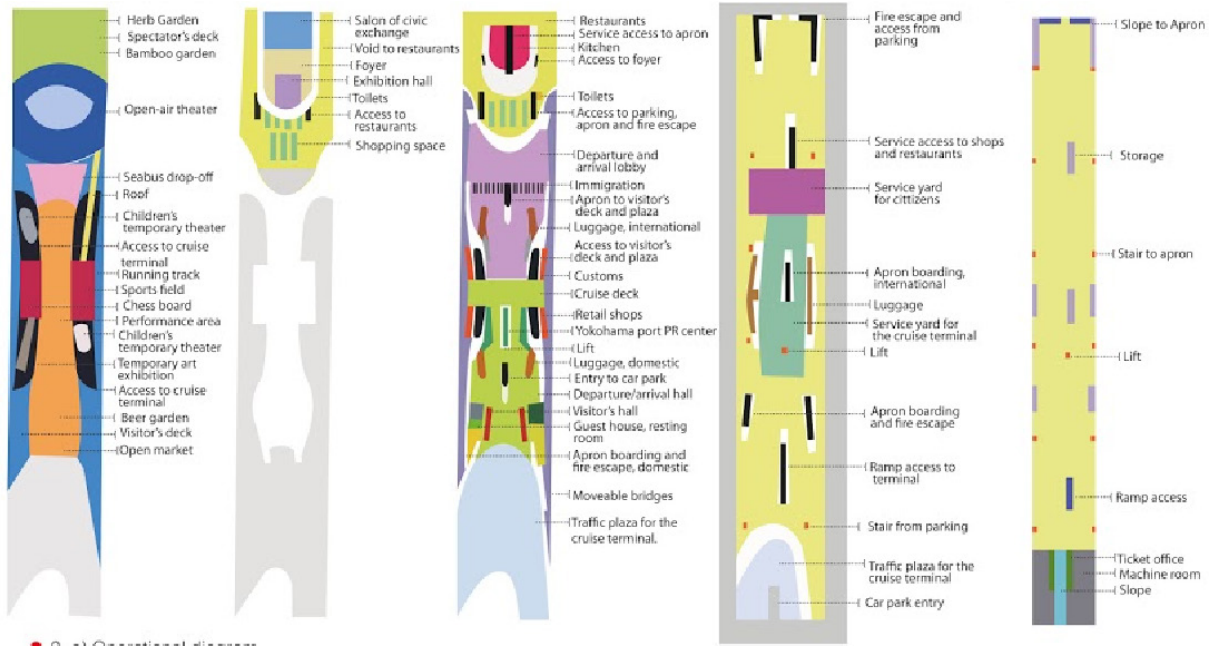
GROUND FLOOR PLAN



LONGITUDINAL SECTION



LATITUDINAL SECTION



EMBARKATION TIME

MODE OF TRANSPORT - CAR



MODE OF TRANSPORT - TAXI / BUS



DISEMBARKATION TIME



AREA STATEMENT

SR. NO	SPACE	REASON FOR AREA DERIVATION	FINAL AREA (SQ. M)			
				44	BAGGAGE HANDLING INCLUDING ALL BANK OFFICE WORK	400 SQ.M
A	ACCOUNTS DEPARTMENT					
1	ACCOUNTS AND RECORD KEEPING	AVG. 1.2 SQ.M WITH STORAGE SPACE	60 SQ.M	45	DUTY FREE SHOP FOR DEPARTURE	3 NO.S - 4 SQ.M EACH 450 SQ.M
2	CASH FLOW ANALYSIS	AVG. 1.2 SQ.M	40 SQ.M	46	BANK EXTENSION COUNTER	AS PER CLIENTS REQUIREMENTS 90 SQ.M
3	SALARY ADMINISTRATION	AVG. 1.2 SQ.M	40 SQ.M	47	BASIC KIOSK	5 NO- 15 SQ.M EACH 200 SQ.M
4	INSURANCE TAXATION	AVG. 1.2 SQ.M	60 SQ.M	48	FIRST AID ROOM	AS PER CLIENTS REQUIREMENTS 100 SQ.M
B	OFFICE REQUIREMENTS			49	CAFÉ WITH KITCHEN	AS PER CLIENTS REQUIREMENTS 100 SQ.M
5	TERMINAL MANAGER	INCLUDES 1 MANAGER CABIN- 25 SQ.M	100 SQ.M	50	TOILETS	15 WES PER 3000 PEOPLE AS PER STANDARDS 7500 SQ.M
6	SECRETARY AND STAFF WAITING	AVG. 1.2 SQ.M	120 SQ.M	E	OTHER FACILITIES	
7	DUTY OFFICER	AVG. 1.2 SQ.M	120 SQ.M	51	RESTAURANT WITH KITCHEN	2 SQ.M PER PERSON (FOR 2000 PEOPLE) 2000 SQ.M
8	SECURITY CHIEF	AVG. 1.2 SQ.M	120 SQ.M	52	INTERNET SURFING BOOTHS	8 BOOTHS- 3 SQ.M PER BOOTH 240 SQ.M
9	TECHNICAL CHIEF	AVG. 1.2 SQ.M	120 SQ.M		OSABANSHI HALL	2 COMPLETE FLOORS OF 40,000SQ. M EACH 80000 SQ. M
10	MAINTENANCE OFFICE	AVG. 1.2 SQ.M	120 SQ.M	53	TOILETS	15 WES PER 3000 PEOPLE AS PER STANDARDS 7500 SQ.M
11	STAFF / OFFICER OFFICE	AVG. 1.2 SQ.M	120 SQ.M	F	OTHER STAFF FACILITIES	
12	ANNOUNCEMENT ROOM	-	30 SQ.M	54	STAFF LOUNGE	- 300 SQ.M
13	VIDEO MONITOR ROOMS	-	30 SQ.M	55	STAFF SIGN IN/ SIGN OUT ROOM	AS PER CASE STUDY 100 SQ.M
14	CONFERENCE ROOMS	TAKING 2 SQ.M INTO 30 PEOPLE THAT IS 60+20 SQM CIRCULATION	240 SQ.M	56	STAFF RESTROOMS	2 WES PER LADIES AND GENTS WASHROOMS FOR 300 PEOPLE 600 SQ.M
15	TOILETS	4 WES PER 300 PEOPLE AS PER STANDARDS	1200 SQ.M	57	SECURITY STAFF	100 SQ.M
16	LIFE GUARD	AS PER CASE STUDY	20 SQ.M	58	STORE	AS PER CLIENTS REQUIREMENTS 100 SQ.M
17	FIRE FIGHTING OFFICE WITH PARKING FOR FIRE ENGINES	OFFICE - 30 SQ.M + 20 SQ.M STORAGE 2 ENGINES PARKING	50 SQ.M 250 SQ.M	G	FOR MAINTENANCE	
18	AC PLANT ROOMS		100 SQ.M	59	STORES	AS PER CLIENTS REQUIREMENTS 100 SQ.M
C	ARRIVAL SPACES REQUIREMENT			60	OFFICE ADMINISTRATION	30 SQ.M
21	PASSENGER HALL	TAKING 1.5 SQ.M PER PERSON INTO CONSIDERATION WITH 7500 PASSENGERS	10000 SQ.M	H	TOTAL	SQUARE METERS 89,250.000
22	SHIP ARRIVAL LOUNGE WITH CORRIDOR	300 PEOPLE	360 SQ.M	I	CIRCULATION SPACE	23% OF TOTAL AREA 20,527.500
23	IMMIGRATION AND CHECK INS	AS PER CASE STUDY	300 SQ.M	J	TOTAL BUILT-UP	SQUARE METERS 1,09,777.500
24	INFORMATION COUNTER	-	200 SQ.M			1,09,777.500 27.12 ACRES
25	TOURIST INFORMATION CENTER	AS PER CLIENTS REQUIREMENTS	75 SQ.M			
26	CHILD CARE CENTRE	AS PER CASE STUDY	90 SQ.M			
27	BAGGAGE LOST AND FOUND	AS PER CASE STUDY	40 SQ.M			
28	TROLLEY ROOM	AS PER CASE STUDY	200 SQ.M			
29	BAGGAGE HANDLING INCLUDING ALL BACK OFFICE WORK	-	1200 SQ.M			
30	DUTY FREE SHOP FOR ARRIVAL	3 NO.S - 4 SQ.M EACH	450 SQ.M			
31	BANK EXTENSION COUNTER	AS PER CLIENTS REQUIREMENTS	90 SQ.M			
32	RENT-A-CAR COUNTER	AS PER CLIENTS REQUIREMENTS	60 SQ.M			
33	BASIC KIOSK	5 NO - 15 SQ.M EACH	200 SQ.M			
34	FIRST-AID ROOM	AS PER CLIENTS REQUIREMENTS	90 SQ.M			
35	CAFÉ WITH KITCHEN	AS PER CLIENTS REQUIREMENTS	120 SQ.M			
36	TOILETS	15 WES PER 3000 PEOPLE AS PER STANDARDS	4500 SQ.M			
D	DEPARTURE SPACES REQUIREMENT					
37	PASSENGER HALL	TAKING 1 SQ.M PER PERSON INTO CONSIDERATION WITH 7500 PASSENGERS	10000 SQ.M			
38	SHIP DEPARTURE LOUNGE WITH CORRIDOR	300 PEOPLE	360 SQ.M			
39	IMMIGRATION AND CHECK-INS	AS PER CASE STUDY	300 SQ.M			
40	INFORMATION COUNTERS, WITH BOOK OFFICES	-	100 SQ.M			
41	CHILD CARE CENTRE	AS PER CASE STUDY	100 SQ.M			
42	BAGGAGE LOST AND FOUND	AS PER CASE STUDY	40 SQ.M			
43	TROLLEY ROOMS	AS PER CASE STUDY	100 SQ.M			

LITERATURE STUDY

QINGDAO INTERNATIONAL CRUISE TERMINAL

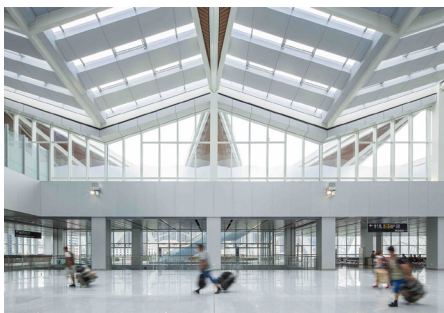
ARCHITECTS:CCDI - JING STUDIO,
 CCDI - MOZHAO STUDIO
CLIENT: COSCO SHIPPING HOLDINGS
 CO.
LOCATION:SHIBEI DISTRICT
CITY:QINGDAO
COUNTRY:CHINA
AREA:59920 M²
BUILTUP: 149800 M²
YEAR:2015
COST: \$6.2 BILLION DOLLARS

BRIEF

For this project, inspiration of the architectural form came from the “sail”, which is famous in Qingdao, The city of Sailing, as well as rows of pitched roof from Qingdao’s historical architecture. To further express the mechanical beauty, the steel structure is exposed on the exterior without curtain walls, so that the structural form becomes the most powerful language of the façade. The interior sprung roof reveals the main structure as possible as it can, so that passengers are still able to read the structural logic and mechanical beauty of the architecture.

The combination of different programs makes the cruise terminal become a daily leisure place for the public. At night when artificial lights bright up the indoor space, the transparent glass curtain wall will transform the entire architecture into a lantern illuminating the surrounding public plaza and green space.

VIEWS



CENTRAL LOBBY

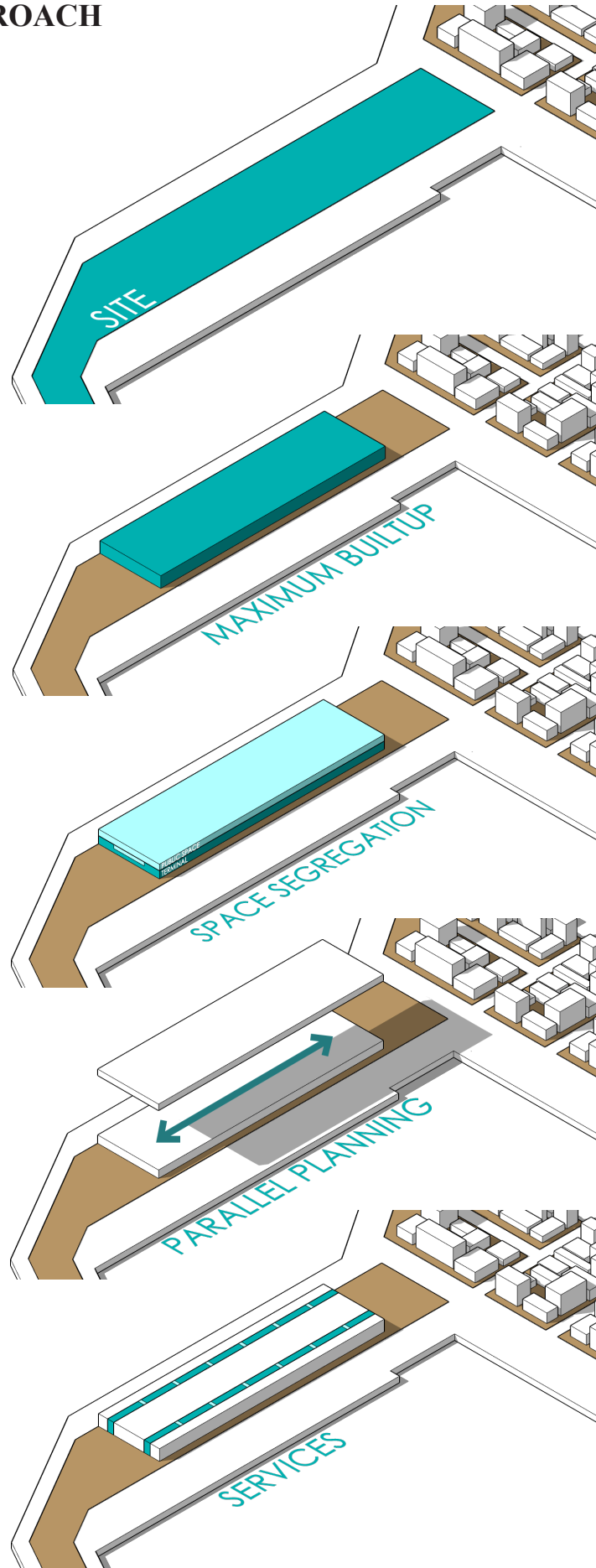


VIEWING DECK

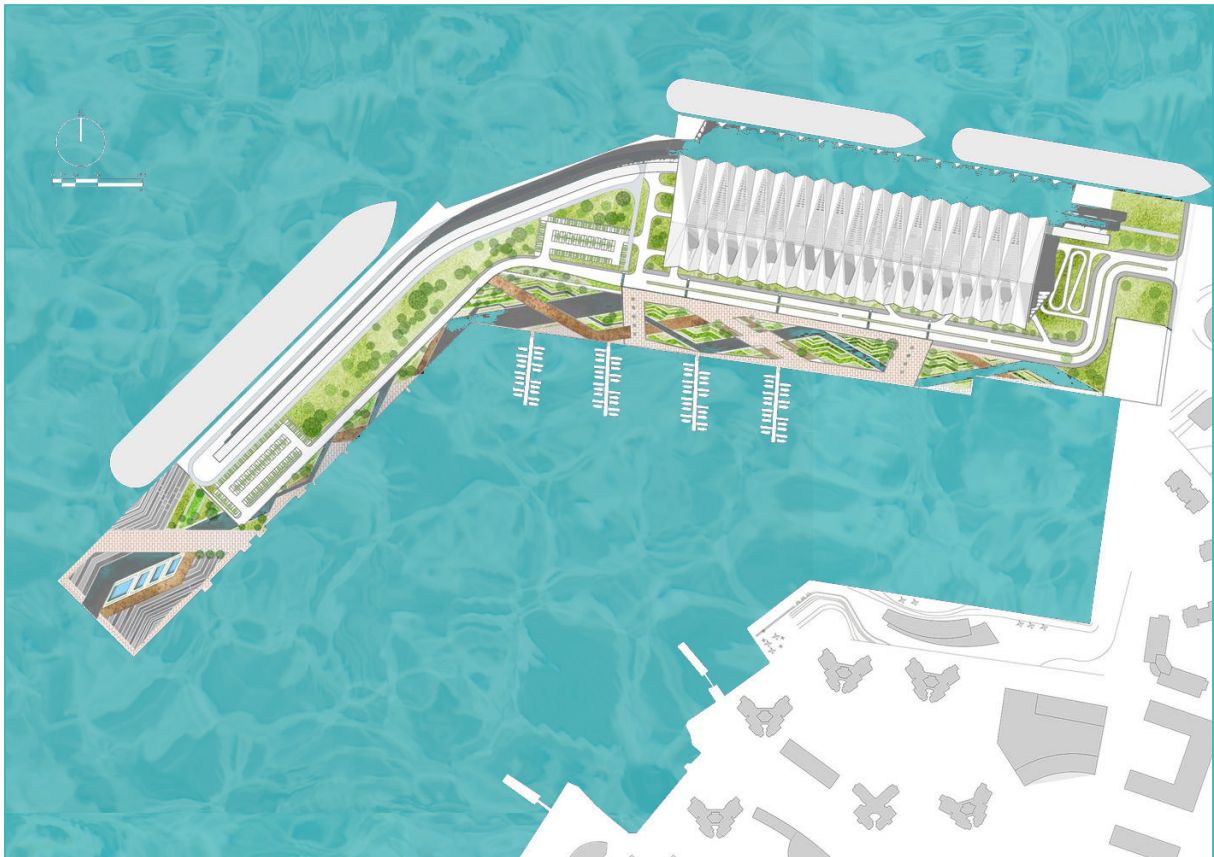


FACADE

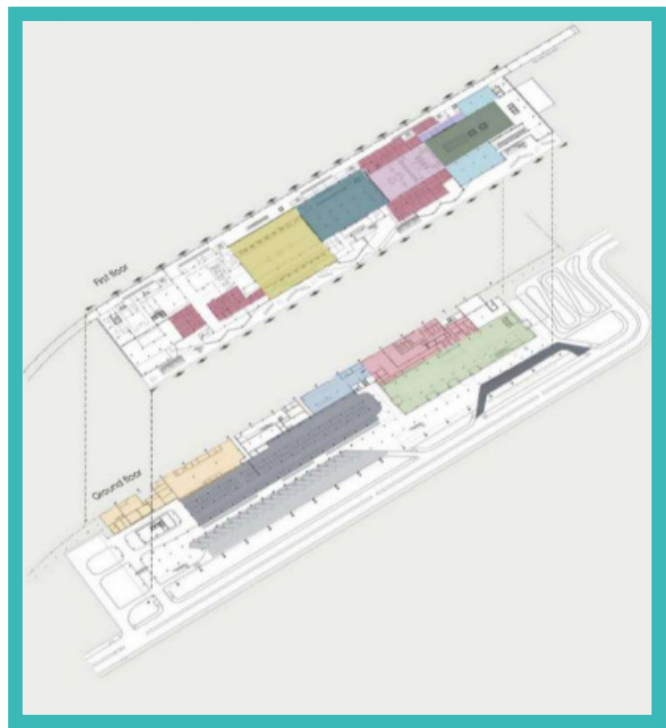
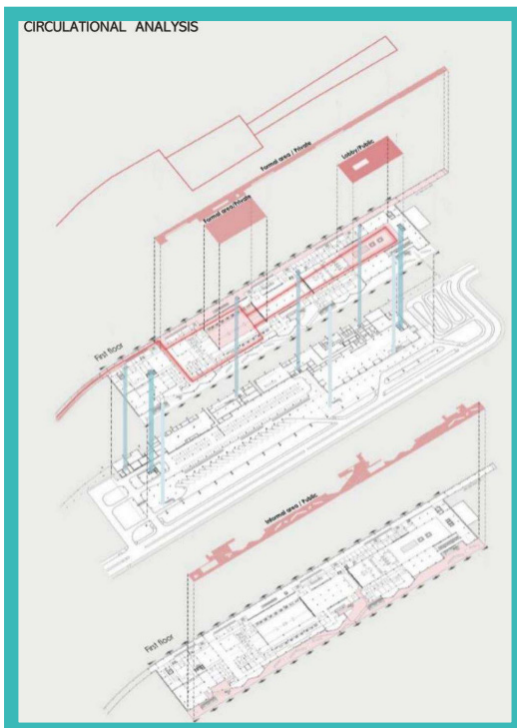
DESIGN APPROACH



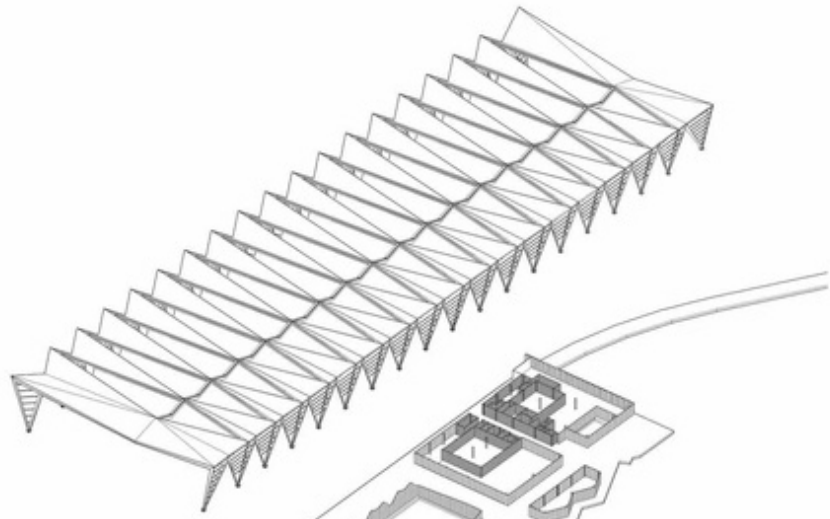
MASTER PLAN



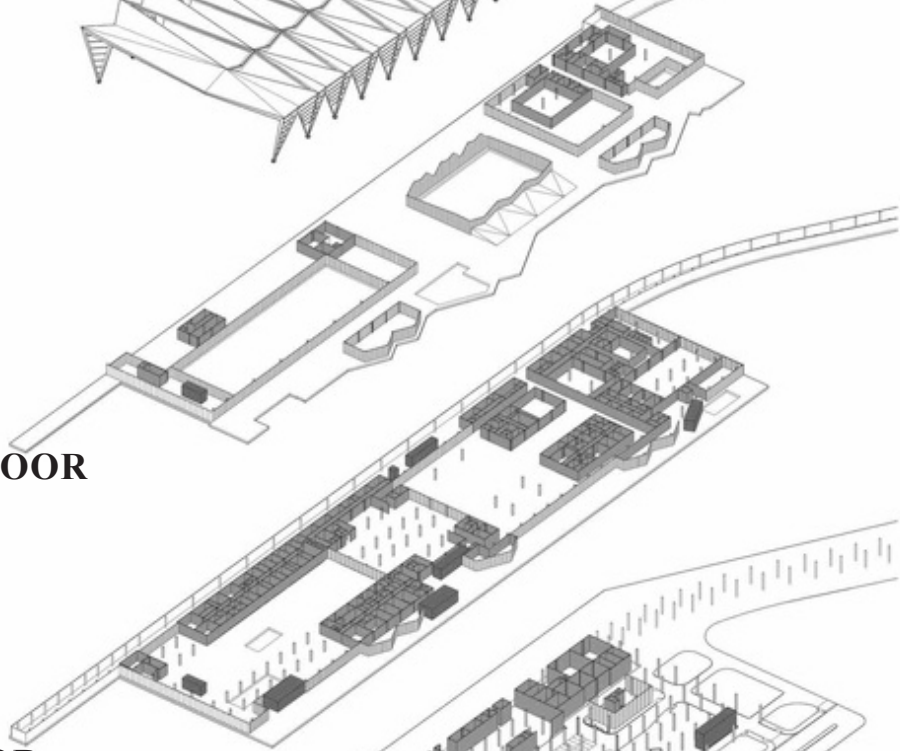
GRAPHICAL ANALYSIS



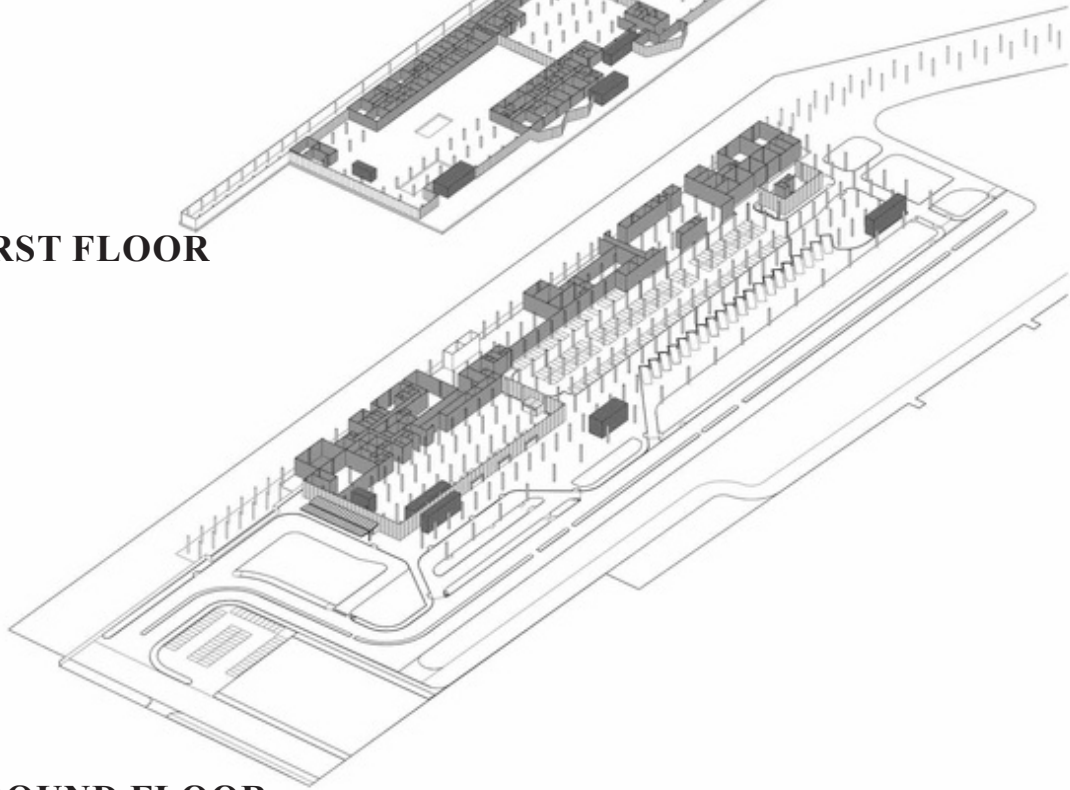
FACADE



SECOND FLOOR



FIRST FLOOR



GROUND FLOOR

LITERATURE STUDY

SYDNEY INTERNATIONAL CRUISE TERMINAL

ARCHITECTS:CCDI - JING STUDIO, CCDI
- MOZHAO STUDIO

CLIENT: COSCO SHIPPING HOLDINGS
CO,LTD.

LOCATION:SHIBEI DISTRICT

CITY:QINGDAO

COUNTRY:CHINA

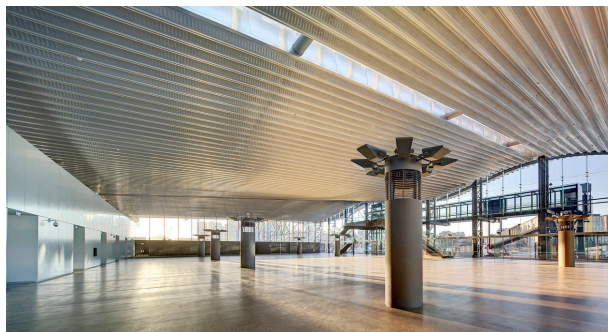
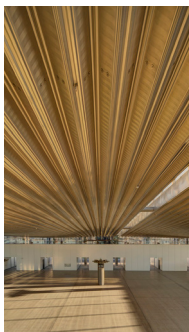
AREA:59920 M²

BUILTUP: 149800 M²

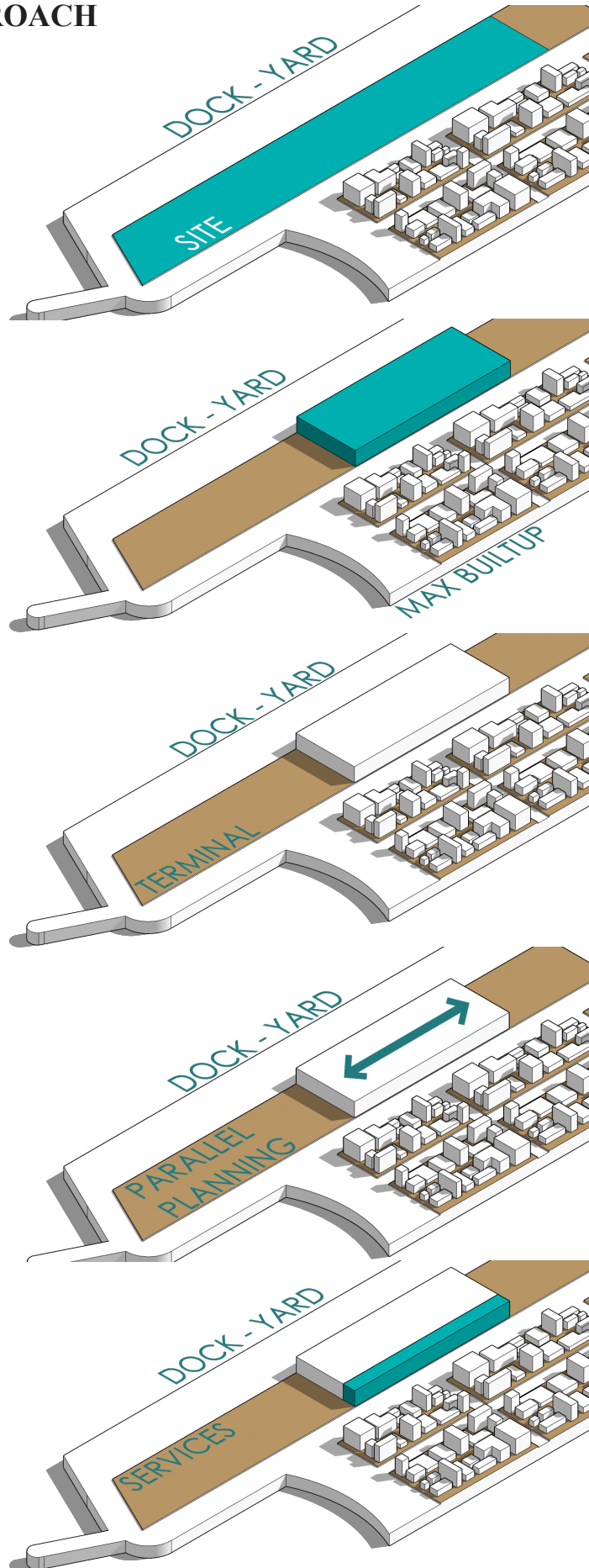
YEAR:2015

COST: \$6.2 BILLION DOLLARS

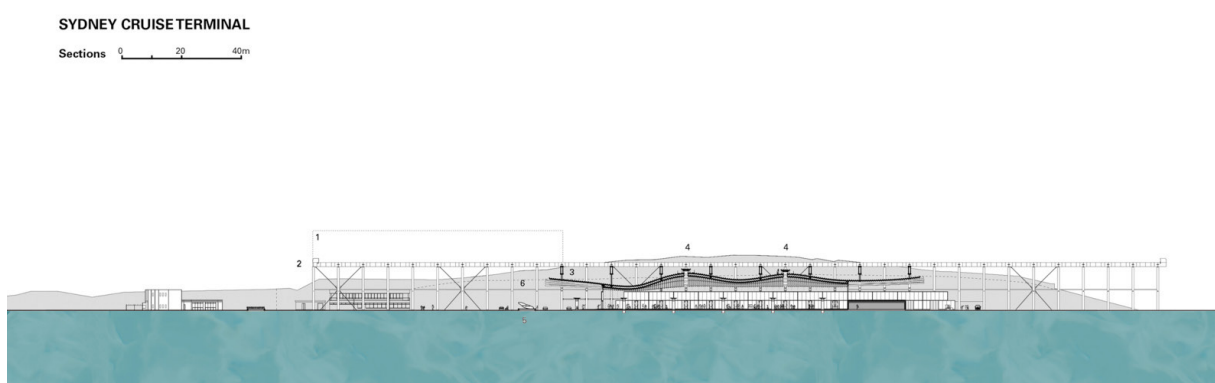
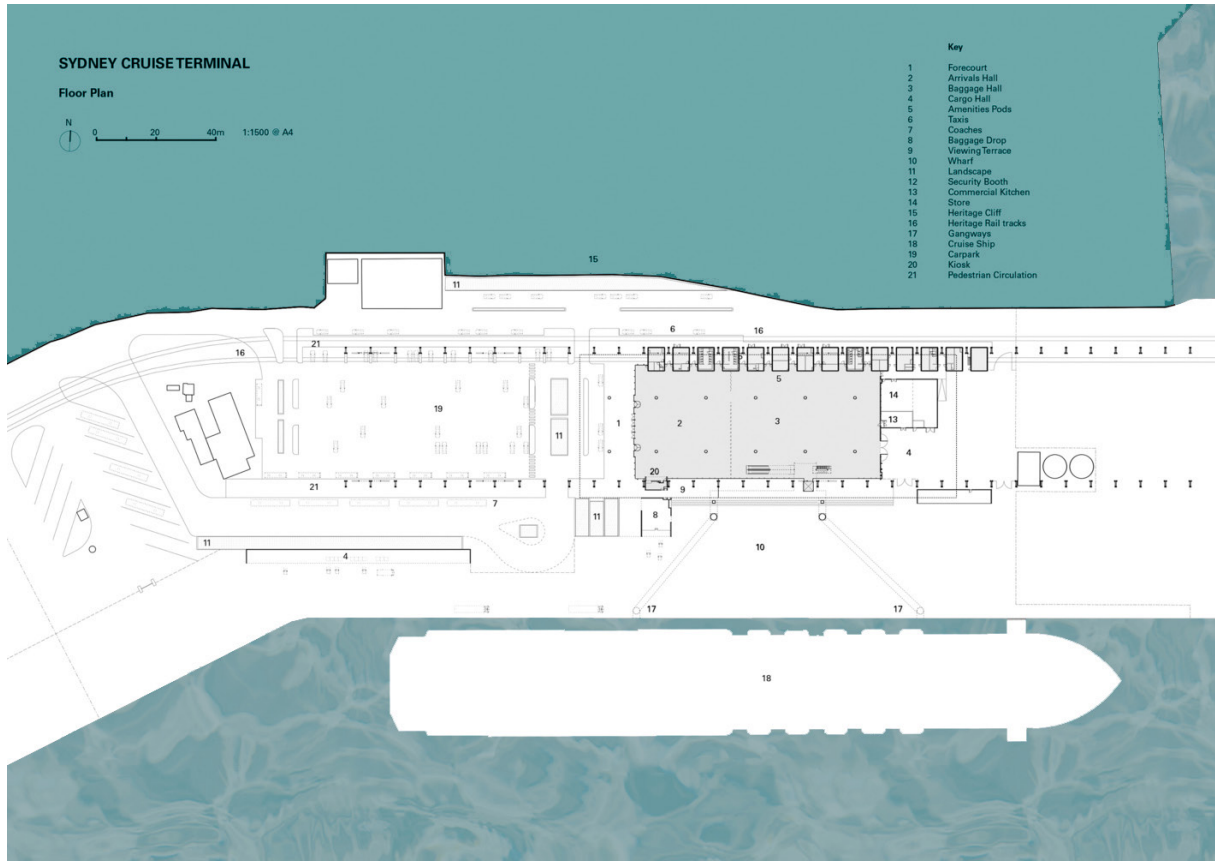
VIEWS



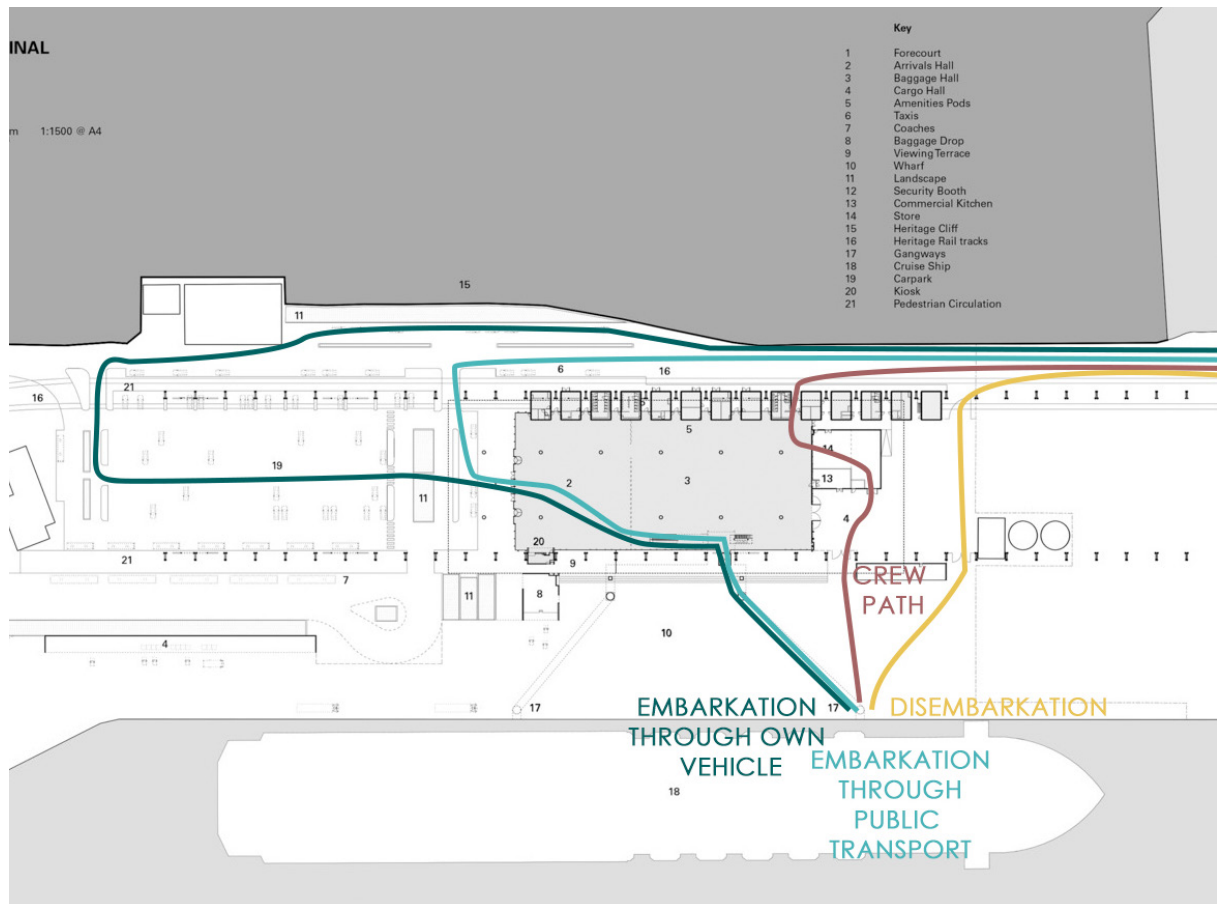
DESIGN APPROACH



MASTER PLAN



PATHWAY



EMBARKATION TIME

MODE OF TRANSPORT - CAR



MODE OF TRANSPORT - TAXI / BUS



DISSEMBARKATION TIME



Venue Capacity Statement

TERMINAL (INDOOR)

Cost (excluding GST)	
\$10,000	
\$ 9,000	For charities and NFPs

Capacity	
Banquet	1200 pax
Cocktail	2500 pax

Dimensions	
Floor Space	3,500 sqm
Length	100m
Breadth	45m
Ceiling Height	12m
Rigging Weights	Up to 2 tonnes

CAR PARK (OUTDOOR)

Cost (excluding GST)	
\$5,000	Admin building toilet facility x 1 toilet

Capacity	
	168 vehicles with overflow for 400 vehicles

Dimensions	
Floor Space	5,000 sqm useable space
Length	100m
Breadth	50m

WHARF (OUTDOOR)

Cost (excluding GST)	
\$5,000	No external toilet facilities but indoor facilities can be used

Dimensions	
Floor Space	4,500 sqm
Length	100m
Breadth	45m

AREA STATEMENT

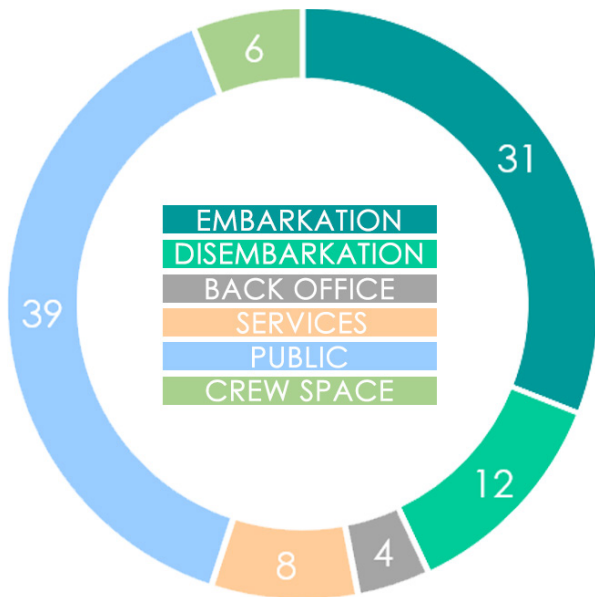
SR. NO	SPACE	REASON FOR AREA DERIVATION	FINAL AREA (SQ.M)			
				44	BAGGAGE HANDLING INCLUDING ALL BANK OFFICE WORK	400 SQ.M
A	ACCOUNTS DEPARTMENT					
1	ACCOUNTS AND RECORD KEEPING	AVG. 1.2 SQ.M WITH STORAGE SPACE	60 SQ.M	45	DUTY FREE SHOP FOR DEPARTURE	3 NO.S - 4 SQ.M EACH 450 SQ.M
2	CASH FLOW ANALYSIS	AVG. 1.2 SQ.M	40 SQ.M	46	BANK EXTENSION COUNTER	AS PER CLIENTS REQUIREMENTS 90 SQ.M
3	SALARY ADMINISTRATION	AVG. 1.2 SQ.M	40 SQ.M	47	BASIC KIOSK	5 NO - 15 SQ.M EACH 200 SQ.M
4	INSURANCE TAXATION	AVG. 1.2 SQ.M	60 SQ.M	48	FIRST AID ROOM	AS PER CLIENTS REQUIREMENTS 100 SQ.M
B	OFFICE REQUIREMENTS			49	CAFÉ WITH KITCHEN	AS PER CLIENTS REQUIREMENTS 100 SQ.M
5	TERMINAL MANAGER	INCLUDES 1 MANAGER CABIN- 25 SQ.M	100 SQ.M	50	TOILETS	15 WES PER 3000 PEOPLE AS PER STANDARDS 7500 SQ.M
6	SECRETARY AND STAFF WAITING	AVG. 1.2 SQ.M	120 SQ.M	E	OTHER FACILITIES	
7	DUTY OFFICER	AVG. 1.2 SQ.M	120 SQ.M	51	RESTAURANT WITH KITCHEN	2 SQ.M PER PERSON (FOR 2000 PEOPLE) 2000 SQ.M
8	SECURITY CHIEF	AVG. 1.2 SQ.M	120 SQ.M	52	INTERNET SURFING BOOTHS	8 BOOTHS- 3 SQ.M PER BOOTH 240 SQ.M
9	TECHNICAL CHIEF	AVG. 1.2 SQ.M	120 SQ.M		VIEWING DECKS	2 COMPLETE FLOORS OF 40,000SQ. M EACH 80000 SQ. M
10	MAINTENANCE OFFICE	AVG. 1.2 SQ.M	120 SQ.M	53	TOILETS	15 WES PER 3000 PEOPLE AS PER STANDARDS 7500 SQ.M
11	STAFF / OFFICER OFFICE	AVG. 1.2 SQ.M	120 SQ.M	F	OTHER STAFF FACILITIES	
12	ANNOUNCEMENT ROOM	-	30 SQ.M	54	STAFF LOUNGE	- 300 SQ.M
13	VIDEO MONITOR ROOMS	-	30 SQ.M	55	STAFF SIGN IN/ SIGN OUT ROOM	AS PER CASE STUDY 100 SQ.M
14	CONFERENCE ROOMS	TAKING 2 SQ.M INTO 30 PEOPLE THAT IS 60+20 SQM CIRCULATION	240 SQ.M	56	STAFF RESTROOMS	2 WES PER LADIES AND GENTS WASHROOMS FOR 300 PEOPLE 600 SQ.M
15	TOILETS	4 WES PER 300 PEOPLE AS PER STANDARDS	1200 SQ.M	57	SECURITY STAFF	- 100 SQ.M
16	LIFE GUARD	AS PER CASE STUDY	20 SQ.M	58	STORE	AS PER CLIENTS REQUIREMENTS 100 SQ.M
17	FIRE FIGHTING OFFICE WITH PARKING FOR FIRE ENGINES	OFFICE - 30 SQ.M + 20 SQ.M STORAGE 2 ENGINES PARKING	50 SQ.M 250 SQ.M	G	FOR MAINTENANCE	
18	AC PLANT ROOMS		100 SQ.M	59	STORES	AS PER CLIENTS REQUIREMENTS 100 SQ.M
C	ARRIVAL SPACES REQUIREMENT			60	OFFICE ADMINISTRATION	- 30 SQ.M
21	PASSENGER HALL	TAKING 1.5 SQ.M PER PERSON INTO CONSIDERATION WITH 7500 PASSENGERS	10000 SQ.M	H	TOTAL	SQUARE METERS 93,750.000
22	SHIP ARRIVAL LOUNGE WITH CORRIDOR	300 PEOPLE	360 SQ.M	I	CIRCULATION SPACE	36% OF TOTAL AREA 33,750.000
23	IMMIGRATION AND CHECK INS	AS PER CASE STUDY	300 SQ.M	J	TOTAL BUILT-UP	SQUARE METERS 1,27,500.000
24	INFORMATION COUNTER	-	200 SQ.M			1,27,500.000
25	TOURIST INFORMATION CENTER	AS PER CLIENTS REQUIREMENTS	75 SQ.M			31.50 ACRES
26	CHILD CARE CENTRE	AS PER CASE STUDY	90 SQ.M			
27	BAGGAGE LOST AND FOUND	AS PER CASE STUDY	40 SQ.M			
28	TROLLEY ROOM	AS PER CASE STUDY	200 SQ.M			
29	BAGGAGE HANDLING INCLUDING ALL BACK OFFICE WORK	-	1200 SQ.M			
30	DUTY FREE SHOP FOR ARRIVAL	3 NO.S - 4 SQ.M EACH	450 SQ.M			
31	BANK EXTENSION COUNTER	AS PER CLIENTS REQUIREMENTS	90 SQ.M			
32	RENT-A-CAR COUNTER	AS PER CLIENTS REQUIREMENTS	60 SQ.M			
33	BASIC KIOSK	5 NO - 15 SQ.M EACH	200 SQ.M			
34	FIRST-AID ROOM	AS PER CLIENTS REQUIREMENTS	90 SQ.M			
35	CAFÉ WITH KITCHEN	AS PER CLIENTS REQUIREMENTS	120 SQ.M			
36	TOILETS	15 WES PER 3000 PEOPLE AS PER STANDARDS	4500 SQ.M			
D	DEPARTURE SPACES REQUIREMENT					
37	PASSENGER HALL	TAKING 1 SQ.M PER PERSON INTO CONSIDERATION WITH 7500 PASSENGERS	10000 SQ.M			
38	SHIP DEPARTURE LOUNGE WITH CORRIDOR	300 PEOPLE	360 SQ.M			
39	IMMIGRATION AND CHECK-INS	AS PER CASE STUDY	300 SQ.M			
40	INFORMATION COUNTERS, WITH BOOK OFFICES	-	100 SQ.M			
41	CHILD CARE CENTRE	AS PER CASE STUDY	100 SQ.M			
42	BAGGAGE LOST AND FOUND	AS PER CASE STUDY	40 SQ.M			
43	TROLLEY ROOMS	AS PER CASE STUDY	100 SQ.M			

AREA STATEMENT

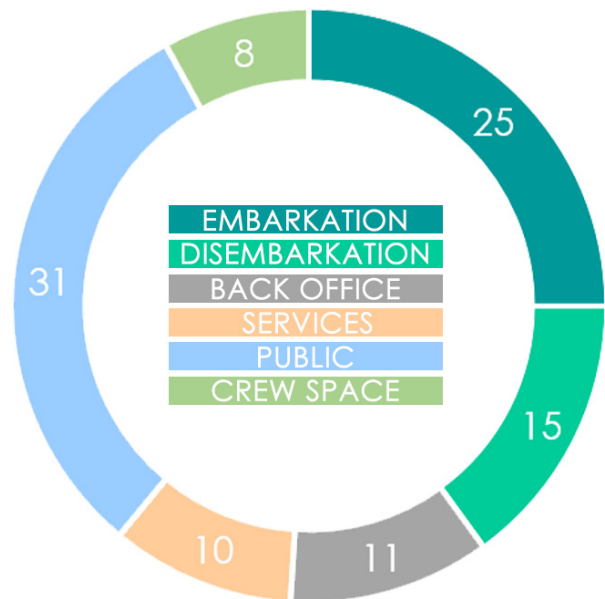
SR. NO	SPACE	REASON FOR AREA DERIVATION	FINAL AREA (SQ.M)			
				45	DUTY FREE SHOP FOR DEPARTURE	3 NO.S - 4 SQ.M EACH 450 SQ.M
A	ACCOUNTS DEPARTMENT			46	BANK EXTENSION COUNTER	AS PER CLIENTS REQUIREMENTS 90 SQ.M
1	ACCOUNTS AND RECORD KEEPING	AVG. 1.2 SQ.M WITH STORAGE SPACE	60 SQ.M	47	BASIC KIOSK	5 NO- 15 SQ.M EACH 200 SQ.M
2	CASH FLOW ANALYSIS	AVG. 1.2 SQ.M	40 SQ.M	48	FIRST AID ROOM	AS PER CLIENTS REQUIREMENTS 100 SQ.M
3	SALARY ADMINISTRATION	AVG. 1.2 SQ.M	40 SQ.M	49	CAFE WITH KITCHEN	AS PER CLIENTS REQUIREMENTS 100 SQ.M
4	INSURANCE TAXATION	AVG. 1.2 SQ.M	60 SQ.M	50	TOILETS	15 WES PER 3000 PEOPLE AS PER STANDARDS 7500 SQ.M
B	OFFICE REQUIREMENTS			E	OTHER STAFF FACILITIES	
5	TERMINAL MANAGER	INCLUDES 1 MANAGER CABIN- 25 SQ.M	100 SQ.M	54	STAFF LOUNGE	- 300 SQ.M
6	SECRETARY AND STAFF WAITING	AVG. 1.2 SQ.M	120 SQ.M	55	STAFF SIGN IN/ SIGN OUT ROOM	AS PER CASE STUDY 100 SQ.M
7	DUTY OFFICER	AVG. 1.2 SQ.M	120 SQ.M	56	STAFF RESTROOMS	2 WES PER LADIES AND GENTS WASHROOMS FOR 300 PEOPLE 600 SQ.M
8	SECURITY CHIEF	AVG. 1.2 SQ.M	120 SQ.M	57	SECURITY STAFF	- 100 SQ.M
9	TECHNICAL CHIEF	AVG. 1.2 SQ.M	120 SQ.M	58	STORE	AS PER CLIENTS REQUIREMENTS 100 SQ.M
10	MAINTENANCE OFFICE	AVG. 1.2 SQ.M	120 SQ.M	F	FOR MAINTENANCE	
11	STAFF / OFFICER OFFICE	AVG. 1.2 SQ.M	120 SQ.M	59	STORES	AS PER CLIENTS REQUIREMENTS 100 SQ.M
12	ANNOUNCEMENT ROOM	-	30 SQ.M	60	OFFICE ADMINISTRATION	- 30 SQ.M
13	VIDEO MONITOR ROOMS	-	30 SQ.M	G	TOTAL	SQUARE METERS 6,210.000
14	CONFERENCE ROOMS	TAKING 2 SQ.M INTO 30 PEOPLE THAT IS 60+20 SQM CIRCULATION	240 SQ.M	H	CIRCULATION SPACE	28% OF TOTAL AREA 1,738.800
15	TOILETS	4 WES PER 300 PEOPLE AS PER STANDARDS	1200 SQ.M	I	TOTAL BUILT-UP	SQUARE METERS 7,948.800
16	LIFE GUARD	AS PER CASE STUDY	20 SQ.M			7,948.800 1.96 ACRES
17	FIRE FIGHTING OFFICE WITH PARKING FOR FIRE ENGINES	OFFICE - 30 SQ.M + 20 SQ.M STORAGE 2 ENGINES PARKING	50 SQ.M 250 SQ.M			
18	AC PLANT ROOMS		100 SQ.M			
C	ARRIVAL SPACES REQUIREMENT					
21	PASSENGER HALL	TAKING 1.5 SQ.M PER PERSON INTO CONSIDERATION WITH 7500 PASSENGERS	10000 SQ.M			
22	SHIP ARRIVAL LOUNGE WITH CORRIDOR	300 PEOPLE	360 SQ.M			
23	IMMIGRATION AND CHECK INS	AS PER CASE STUDY	300 SQ.M			
24	INFORMATION COUNTER	-	200 SQ.M			
25	TOURIST INFORMATION CENTER	AS PER CLIENTS REQUIREMENTS	75 SQ.M			
26	CHILD CARE CENTRE	AS PER CASE STUDY	90 SQ.M			
27	BAGGAGE LOST AND FOUND	AS PER CASE STUDY	40 SQ.M			
28	TROLLEY ROOM	AS PER CASE STUDY	200 SQ.M			
29	BAGGAGE HANDLING INCLUDING ALL BACK OFFICE WORK	-	1200 SQ.M			
30	DUTY FREE SHOP FOR ARRIVAL	3 NO.S - 4 SQ.M EACH	450 SQ.M			
31	BANK EXTENSION COUNTER	AS PER CLIENTS REQUIREMENTS	90 SQ.M			
32	RENT-A-CAR COUNTER	AS PER CLIENTS REQUIREMENTS	60 SQ.M			
33	BASIC KIOSK	5 NO - 15 SQ.M EACH	200 SQ.M			
34	FIRST-AID ROOM	AS PER CLIENTS REQUIREMENTS	90 SQ.M			
36	TOILETS	15 WES PER 3000 PEOPLE AS PER STANDARDS	4500 SQ.M			
D	DEPARTURE SPACES REQUIREMENT					
37	PASSENGER HALL	TAKING 1 SQ.M PER PERSON INTO CONSIDERATION WITH 7500 PASSENGERS	10000 SQ.M			
38	SHIP DEPARTURE LOUNGE WITH CORRIDOR	300 PEOPLE	360 SQ.M			
39	IMMIGRATION AND CHECK-INS	AS PER CASE STUDY	300 SQ.M			
40	INFORMATION COUNTERS, WITH BOOK OFFICES	-	100 SQ.M			
41	CHILD CARE CENTRE	AS PER CASE STUDY	100 SQ.M			
42	BAGGAGE LOST AND FOUND	AS PER CASE STUDY	40 SQ.M			
43	TROLLEY ROOMS	AS PER CASE STUDY	100 SQ.M			
44	BAGGAGE HANDLING INCLUDING ALL BANK OFFICE WORK	-	400 SQ.M			

COMPARITIVE STUDY

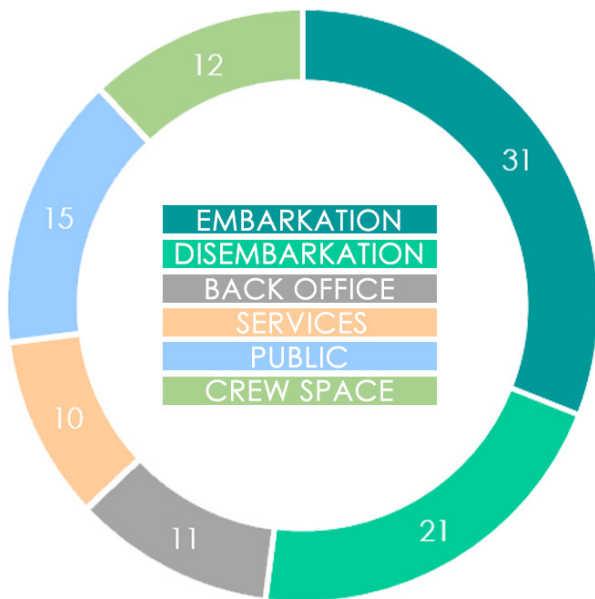
DONUT CHART OF SPACE ALLOCATION



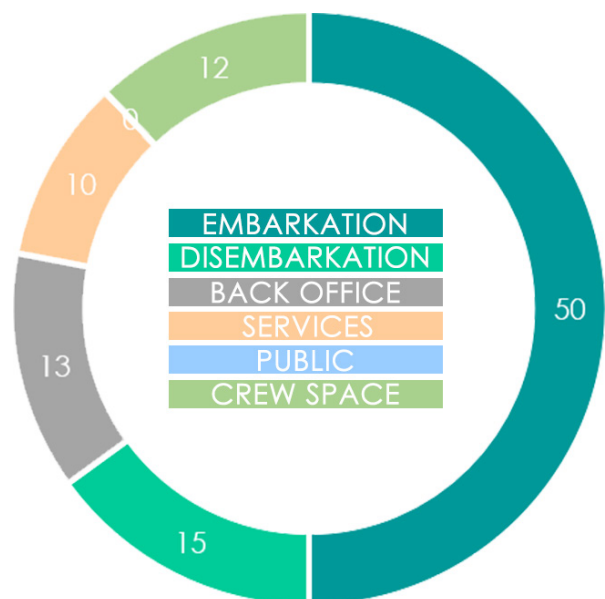
MUMBAI CRUISE TERMINAL



YOKOHAMA CRUISE TERMINAL



QINGDAO CRUISE TERMINAL



SYDNEY CRUISE TERMINAL

INFERENCE

MUMBAI INTERNATIONAL CRUISE TERMINAL

- It has a very compact plan when compared with other global cruise terminals.
- Public space is neglected.
- Capable of handling close to 3000 passengers.
- Has more potential for commercial space
- Not grand enough

YOKOHOMA CRUISE TERMINAL

- Very functional plan due to the introduction of parallel planning.
- Has immense space for public.
- The dockyards are the main advantage for this level of functionality.
- embarkation and disembarkation is very quick
- new technologies introduced.

QINGDAO CRUISE TERMINAL

- One of the grand terminals in china.
- Parallel planning has brought in great functionality.
- Introduction of public spaces in terminal is on of its kind.
- Adequate usage of single dockyard.
- Has security concerns

WHITE BAY CRUISE TERMINAL

- functionality is the main concern
- no public space allotted
- no space wasted
- introduction of open plans
- has executed in a very low budget
- the ground coverage is very low for these scale of buildings

THESIS PROPOSAL

SR. NO	SPACE	CASE STUDY DERIVATION	REASON FOR AREA DERIVATION	FINAL AREA (SQ.M)
A	ACCOUNTS DEPARTMENT			
1	ACCOUNTS AND RECORD KEEPING	RANGES FROM 1.2-1.5SQ.M PER PERSON	AVG. 1.2 SQ.M WITH STORAGE SPACE	60 SQ.M
2	CASH FLOW ANALYSIS		AVG. 1.2 SQ.M	40 SQ.M
3	SALARY ADMINISTRATION	RANGES FROM 1.2-1.5SQ.M PER PERSON	AVG. 1.2 SQ.M	40 SQ.M
4	INSURANCE TAXATION	RANGES FROM 1.2-1.5SQ.M PER PERSON	AVG. 1.2 SQ.M	60 SQ.M
B	OFFICE REQUIREMENTS			
5	TERMINAL MANAGER	RANGES FROM 1.2-1.5SQ.M PER PERSON	INCLUDES 1 MANAGER CABIN- 25 SQ.M	100 SQ.M
6	SECRETARY AND STAFF WAITING	RANGES FROM 1.2-1.5SQ.M PER PERSON	AVG. 1.2 SQ.M	120 SQ.M
7	DUTY OFFICER	RANGES FROM 1.2-1.5SQ.M PER PERSON	AVG. 1.2 SQ.M	120 SQ.M
8	SECURITY CHIEF	RANGES FROM 1.2-1.5SQ.M PER PERSON	AVG. 1.2 SQ.M	120 SQ.M
9	TECHNICAL CHIEF	RANGES FROM 1.2-1.5SQ.M PER PERSON	AVG. 1.2 SQ.M	120 SQ.M
10	MAINTENANCE OFFICE	RANGES FROM 1.2-1.5SQ.M PER PERSON	AVG. 1.2 SQ.M	120 SQ.M
11	STAFF / OFFICER OFFICE	RANGES FROM 1.2-1.5SQ.M PER PERSON	AVG. 1.2 SQ.M	120 SQ.M
12	ANNOUNCEMENT ROOM	AVG. 15 SQ.M	-	30 SQ.M
13	VIDEO MONITOR ROOMS	AVG. 30 SQ.M	-	30 SQ.M
14	CONFERENCE ROOMS	3 NO.S	TAKING 2 SQ.M INTO 30 PEOPLE THAT IS 60+20 SQM CIRCULATION	240 SQ.M
15	TOILETS		4 WES PER 300 PEOPLE AS PER STANDARDS	1200 SQ.M
16	LIFE GUARD	-	AS PER CASE STUDY	20 SQ.M
17	FIRE FIGHTING OFFICE WITH PARKING FOR FIRE ENGINES	RANGES FROM 1.2-1.5SQ.M PER PERSON AVG 75 SQ.M PER ENGINE	OFFICE - 30 SQ.M + 20 SQ.M STORAGE 2 ENGINES PARKING	50 SQ.M 250 SQ.M
18	AC PLANT ROOMS			100 SQ.M
C	ARRIVAL SPACES REQUIREMENT			
21	PASSENGER HALL	RANGES FROM 1.2-1.5SQ.M PER PERSON	TAKING 1.5 SQ.M PER PERSON INTO CONSIDERATION WITH 7500 PASSENGERS	10000 SQ.M
22	SHIP ARRIVAL LOUNGE WITH CORRIDOR	RANGES FROM 1.2-1.5SQ.M PER PERSON	300 PEOPLE	360 SQ.M
23	IMMIGRATION AND CHECK INS	AVG 1 COUNTER PER 300 PEOPLE	AS PER CASE STUDY	300 SQ.M
24	INFORMATION COUNTER	AVG 50 SQ.M	-	200 SQ.M
25	TOURIST INFORMATION CENTER	AVG 25 SQ.M	AS PER CLIENTS REQUIREMENTS	75 SQ.M
26	CHILD CARE CENTRE	-	AS PER CASE STUDY	90 SQ.M
27	BAGGAGE LOST AND FOUND	-	AS PER CASE STUDY	40 SQ.M
28	TROLLEY ROOM	AVG 50-100 SQ.M	AS PER CASE STUDY	200 SQ.M
29	BAGGAGE HANDLING INCLUDING ALL BACK OFFICE WORK	AVG BETWEEN 300-500 SQ.M	-	1200 SQ.M
30	DUTY FREE SHOP FOR ARRIVAL	-	3 NO.S - 4 SQ.M EACH	450 SQ.M
31	BANK EXTENSION COUNTER	-	AS PER CLIENTS REQUIREMENTS	90 SQ.M
32	RENT-A-CAR COUNTER	20 SQ.M	AS PER CLIENTS REQUIREMENTS	60 SQ.M
33	BASIC KIOSK	-	5 NO - 15 SQ.M EACH	200 SQ.M
34	FIRST-AID ROOM	-	AS PER CLIENTS REQUIREMENTS	90 SQ.M
35	CAFÉ WITH KITCHEN	AVG 20-40 SQ.M	AS PER CLIENTS REQUIREMENTS	120 SQ.M

D	DEPARTURE SPACES REQUIREMENT			
37	PASSENGER HALL	RANGES FROM 1.2-1.5SQ.M PER PERSON	TAKING 1 SQ.M PER PERSON INTO CONSIDERATION WITH 7500 PASSENGERS	10000 SQ.M
38	SHIP DEPARTURE LOUNGE WITH CORRIDOR	RANGES FROM 1.2-1.5SQ.M PER PERSON	300 PEOPLE	360 SQ.M
39	IMMIGRATION AND CHECK-INS	AVG 1 COUNTER PER 300 PEOPLE	AS PER CASE STUDY	300 SQ.M
40	INFORMATION COUNTERS, WITH BOOK OFFICES	AVG 50 SQ.M	-	100 SQ.M
41	CHILD CARE CENTRE	-	AS PER CASE STUDY	100 SQ.M
42	BAGGAGE LOST AND FOUND	-	AS PER CASE STUDY	40 SQ.M
43	TROLLEY ROOMS	AVG 50-100 SQ.M	AS PER CASE STUDY	100 SQ.M
44	BAGGAGE HANDLING INCLUDING ALL BANK OFFICE WORK	AVG BETWEEN 300-500 SQ.M	-	400 SQ.M
45	DUTY FREE SHOP FOR DEPARTURE	-	3 NO.S - 4 SQ.M EACH	450 SQ.M
46	BANK EXTENSION COUNTER	-	AS PER CLIENTS REQUIREMENTS	90 SQ.M
47	BASIC KIOSK	-	5 NO- 15 SQ.M EACH	200 SQ.M
48	FIRST AID ROOM	-	AS PER CLIENTS REQUIREMENTS	100 SQ.M
49	CAFÉ WITH KITCHEN	AVG 20-40 SQ.M	AS PER CLIENTS REQUIREMENTS	100 SQ.M
50	TOILETS	-	15 WES PER 3000 PEOPLE AS PER STANDARDS	7500 SQ.M
E	OTHER FACILITIES			
51	RESTAURANT WITH KITCHEN	-	2 SQ.M PER PERSON (FOR 2000 PEOPLE)	2000 SQ.M
52	INTERNET SURFING BOOTHS	-	8 BOOTHS- 3 SQ.M PER BOOTH	240 SQ.M
	COMMERCIAL SPACE	-	2 COMPLETE FLOORS OF 40,000SQ. M EACH	80000 SQ. M
53	TOILETS	-	15 WES PER 3000 PEOPLE AS PER STANDARDS	7500 SQ.M
F	OTHER STAFF FACILITIES			
54	STAFF LOUNGE	50-100 SQ.M	-	300 SQ.M
55	STAFF SIGN IN/ SIGN OUT ROOM	-	AS PER CASE STUDY	100 SQ.M
56	STAFF RESTROOMS	-	2 WES PER LADIES AND GENTS WASHROOMS FOR 300 PEOPLE	600 SQ.M
57	SECURITY STAFF	RANGES FROM 1.2-1.5SQ.M PER PERSON		100 SQ.M
58	STORE	-	AS PER CLIENTS REQUIREMENTS	100 SQ.M
G	FOR MAINTENANCE			
59	STORES	-	AS PER CLIENTS REQUIREMENTS	100 SQ.M
60	OFFICE ADMINISTRATION	RANGES FROM 1.2-1.5SQ.M PER PERSON		30 SQ.M
H	TOTAL		SQUARE METERS	96,000.000
I	CIRCULATION SPACE		27% OF TOTAL AREA	25,920.000
J	TOTAL BUILT-UP		SQUARE METERS	1,21,920.000
			1,21,920.000	30.12 ACRES

THESIS PROPOSAL

The main motive of the structure was to derivate a form from the endangered species which are exclusively found in indian ocean. Due to large amount of commercial hunting most of the sea mammals have been listed on the endangered list, even till date the commercial poaching in indian ocean is unregulated

The most peculiar feature of Mumbai city is the dominating pillars and the large domes which are extensively used through out the city. Hence this feature was interpreted in a very abstract way in the structure.

The structure is very fluidic in nature, just like the sea is. With soft curves, to make circulation easier and unhindered, and un-obstructed interior spaces. It was also very essential for me to pay an ode to the king of the ocean, the blue whale. In India as poaching in the sea is not regulated, the maximum whales found dead are in regions surrounding the Indian peninsula.

CONCEPT



FORM



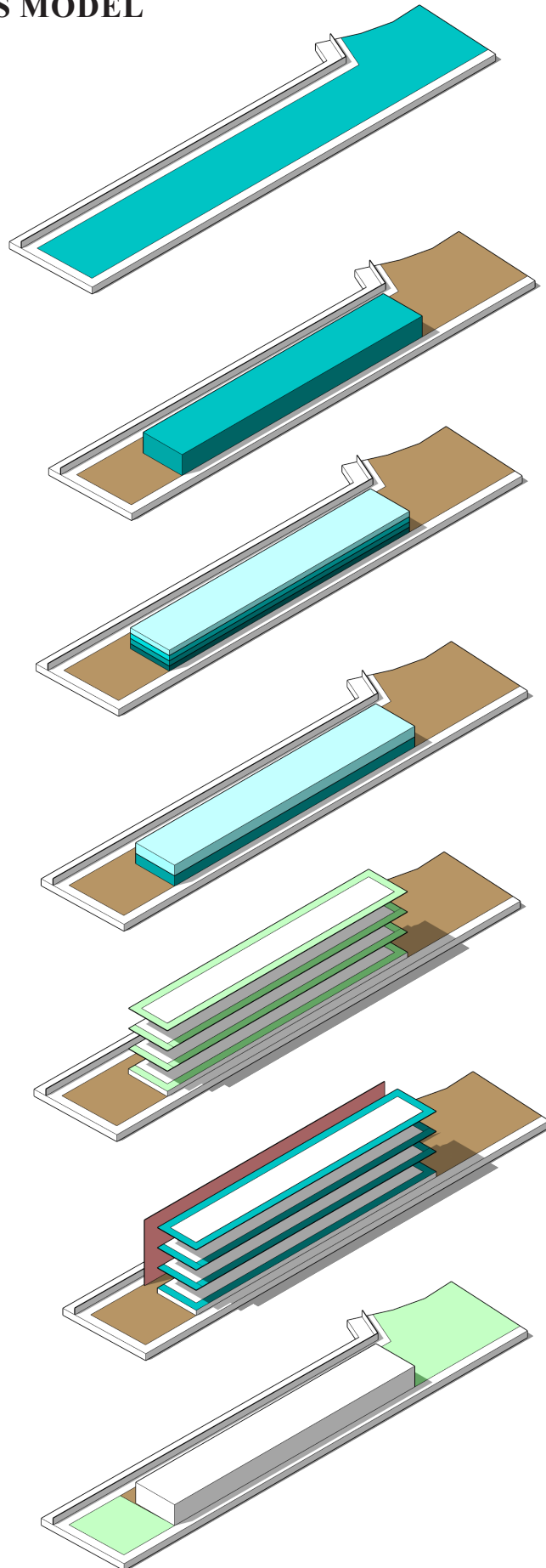
CHARACTER



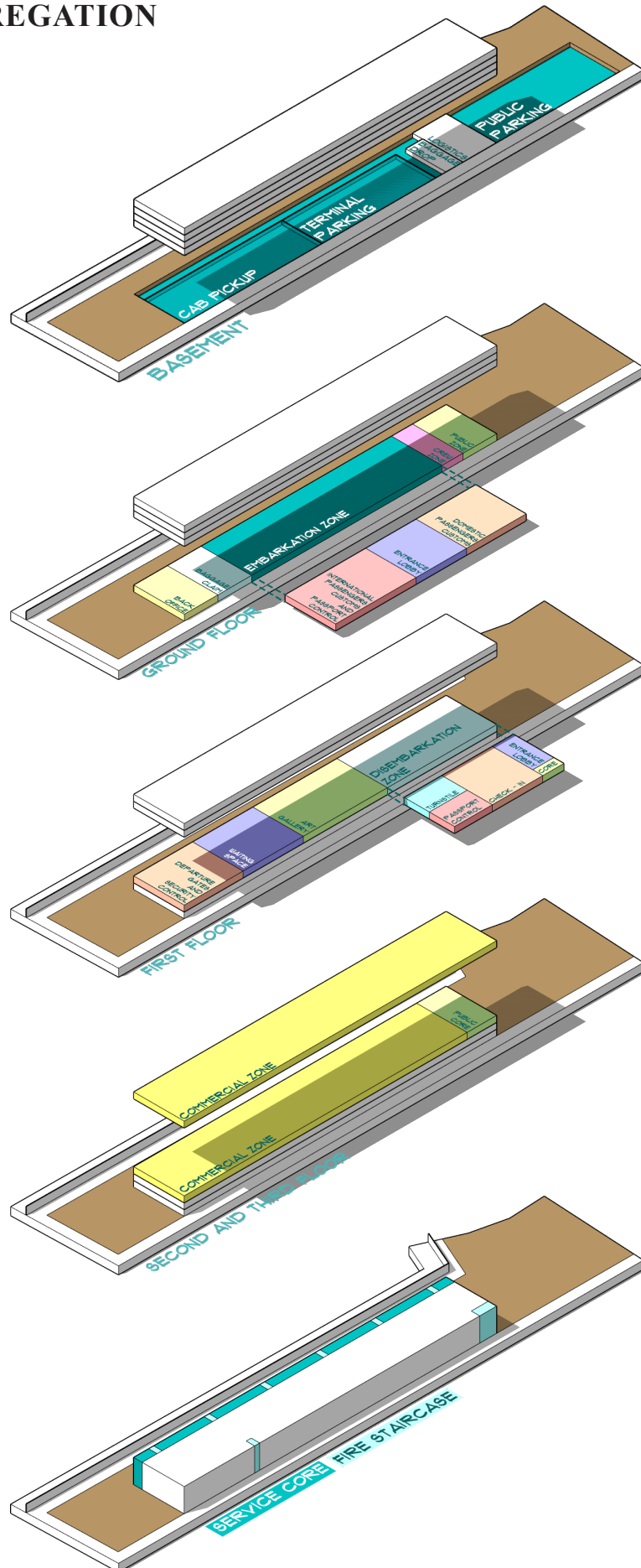
COMBINATION



DESIGN SERIES MODEL



SPACE SEGREGATION





EAST SIDE VIEW



WEST SIDE VIEW



BIBLIOGRAPHY

- <https://weather-and-climate.com/average-monthly-precipitation-Rainfall,-mumbai,India>
- <https://porteconomicsmanagement.org/pemp/contents/part3/cruise-terminal-design-equipment/>
- <https://www.worldwildlife.org/stories/whales-on-the-move>
- https://www.youtube.com/watch?v=J3_bAIsnZw0
- <https://displate.com/displate/829521?ref=1636>
- https://issuu.com/wisitsan_disyawongs/docs/architectural_academic_project
- <https://www.archdaily.com/26679/aqaulis-pier-andrew-bedov>
- https://www.slideshare.net/PiyushThakur7/international-cruise-terminal-the-sis-report-147264653?from_action=save
- <https://www.archdaily.com/874265/qingdao-cruise-terminal-ccdi-mozhao-studio-and-jing-studio>
- <https://www.theindiaforum.in/article/does-india-have-inequality-problem>
- <https://blogs.aludecor.com/mumbai-international-cruise-terminal-showcases-ar-santha-gours-eccentric-aesthetics/?amp>
- <https://www.slideshare.net/okolieuchekwuwu/ferry-terminal>
- <https://www.pianc.org/publications/marcom/guidelines-for-cruise-terminals>
- <https://bermelloajamil.com/categories/>
- <https://porteconomicsmanagement.org/pemp/contents/part3/cruise-terminal-design-equipment/>
- <https://thecharette.org/aty-2022-results/>
- <https://www.architectsjournal.co.uk/news/broadway-malyan-beats-big-names-to-land-miami-cruise-terminal>
- <https://greenbuildingcanada.ca/2019/find-waste-materials-build-house/>
- [https://www.indianholiday.com/blog/two-new-cruises-launch-in-mumbai/#:~:text=The%20Mumbai%20Port%20Trust%20\(MbPT\)%%20at%20Princess%20Dock%2C%20Mazgaon](https://www.indianholiday.com/blog/two-new-cruises-launch-in-mumbai/#:~:text=The%20Mumbai%20Port%20Trust%20(MbPT)%%20at%20Princess%20Dock%2C%20Mazgaon)
- https://mumbaiport.gov.in/index3_n.asp?sslid=260&subsublinkid=655&langid=1
- <https://www.forbes.com/sites/annabel/2022/07/25/8-of-the-worlds-most-beautiful-cruise-terminals/?sh=1fad987e1b03>



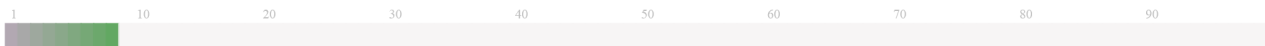
The Report is Generated by DrillBit Plagiarism Detection Software

Submission Information

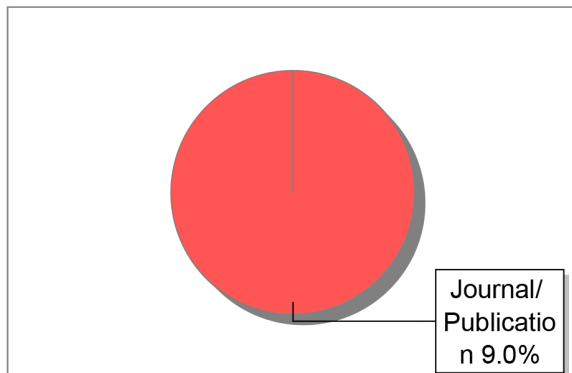
Author Name	Sandesh C
Title	MUMBAI INTERNATIONAL CRUISE TERMINAL
Paper/Submission ID	742261
Submission Date	2023-05-15 11:33:49
Total Pages	80
Document type	Thesis

Result Information

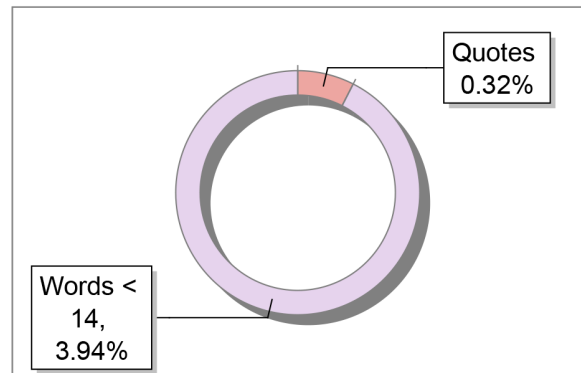
Similarity **9 %**



Sources Type



Report Content



Exclude Information

Quotes	Excluded
References/Bibliography	Excluded
Sources: Less than 14 Words Similarity	Excluded
Excluded Source	0 %
Excluded Phrases	Not Excluded

A Unique QR Code use to View/Download/Share Pdf File





DrillBit Similarity Report

9

SIMILARITY %

7

MATCHED SOURCES

A

GRADE

A-Satisfactory (0-10%)

B-Upgrade (11-40%)

C-Poor (41-60%)

D-Unacceptable (61-100%)

LOCATION	MATCHED DOMAIN	%	SOURCE TYPE
1	msrit-bucket.s3-us-west-2.amazonaws.com	3	Publication
2	www.istiee.unict.it	1	Publication
3	Thesis Submitted to Shodhganga Repository	1	Publication
4	researchspace.ukzn.ac.za	1	Publication
5	www.istiee.unict.it	1	Publication
6	shipmin.gov.in	1	Publication
7	us.v-cdn.net	1	Publication