ARCHITECTURAL DESIGN PORTFOLIO

SEM- 9

GROUP NAME- 1) MANISH NARENDRA PAWAR

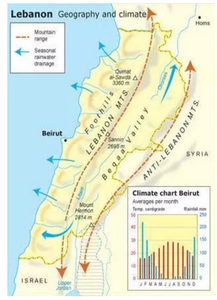
2) GAURI VIJAYSINGH RAJPUT

SITE STUDY- PORT OF BEIRUT

INTRODUCTION:
The Port of Beirut is the main port in Lebanon and it is one of the most beneficial, commercial architecture in Lebanon

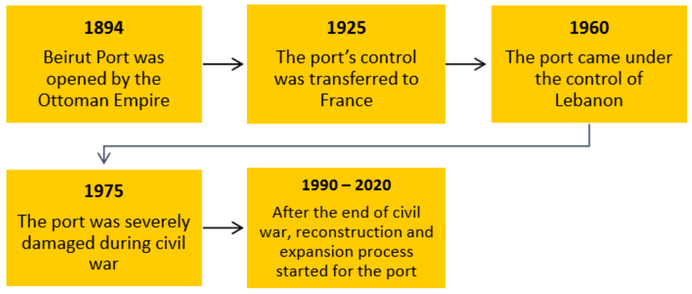
LOCATION:
Beirut, Lebanon

ESTABLISHMENT:
It was founded in 1887 under the reign of Ottomas and has since been the western eastern link in the Middle east area. The Port of Beirut has a total area of 1200000 sqm

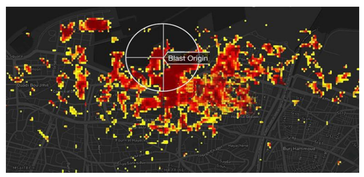


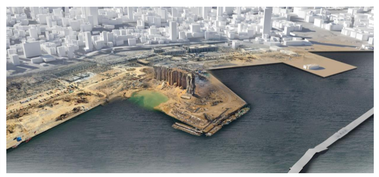
HISTORY OF THE PORT:

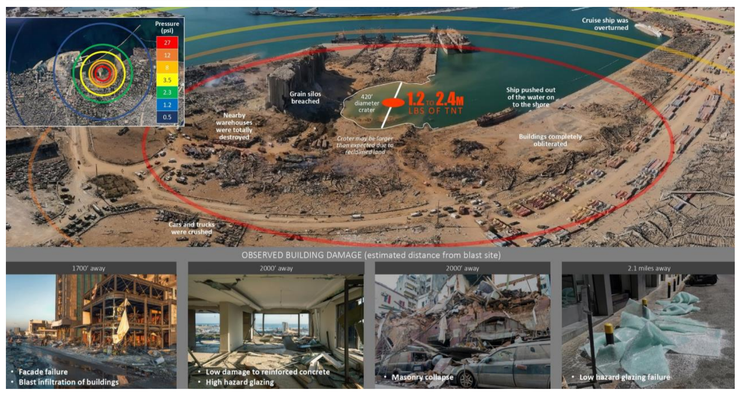
- It first opened in 1887 and is located on the city's northern Mediterranean coast.
- The port has since grown to become one of the largest, busiest ports along the Eastern Mediterranean seaboard, and serves as the main entry point into the country along with the Beirut airport.
- The port is owned by the Lebanese government but is currently managed by a temporary committee led by Hassan Koraytemand six other members spanning several religious and political groups.
- Port of Beirut is located centrally between three continents (Asia, Africa, and Europe), making it an important trading Centre for many ages. Since the 15th century BC, the Port of Beirut has been an important commercial and economic center for the Arab world.



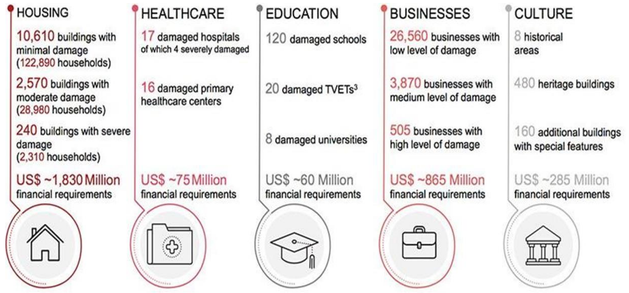
ANALYSIS OF BEIRUT PORT EXPLOSION 2020:
On 4 August 2020, a fire broke out at a port warehouse in Beirut, Lebanon. The warehouse stored 2,750 metric tons of confiscated AN along with other hazardous materials, including fireworks. Approximately 28 minutes after the fire was reported, the AN detonated in a massive explosion that resulted in 200 fatalities, 6,000 people injured, 300,000 left homeless and more than $15 billion in property damage



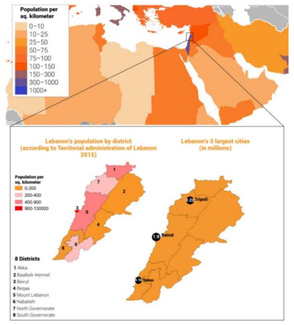




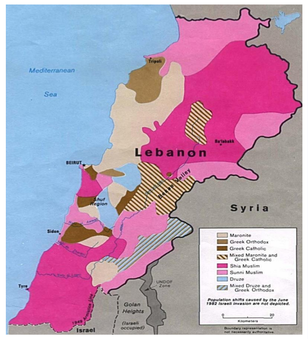
DAMAGE TO PROPERTY:



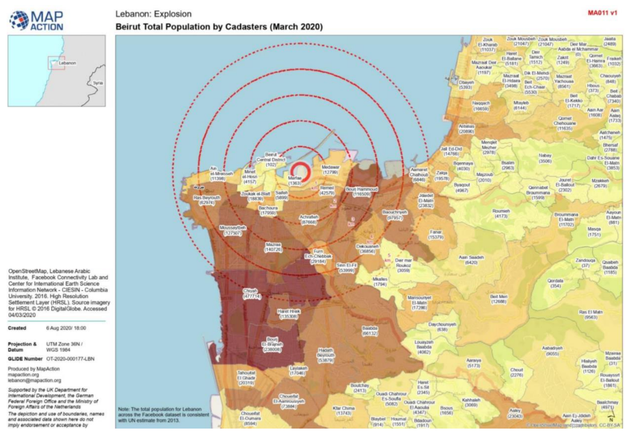
DEMOGRAPHICS:



POPULATION DENSITY BY COUNTRY IN THE MIDDLE EAST AND NORTH AFRICA (2015)

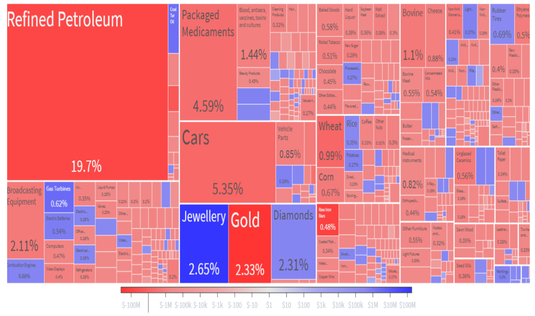


RELIGIOUS GROUPS



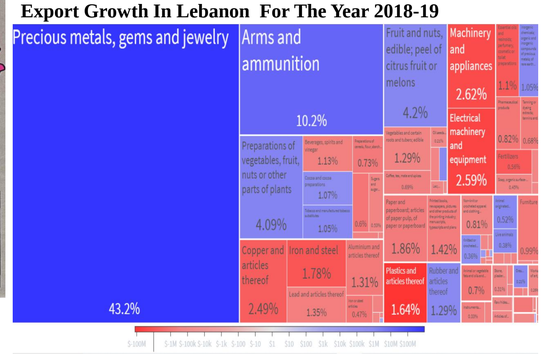
BEIRUT TOTLA POPULATION BY CADASTERS (2020)

IMPORT GROWTH IN LEBANON FOR THE YEAR 2018-19



CURRENT SITUATION FOR IMPORT EXPORT AT LEBANON

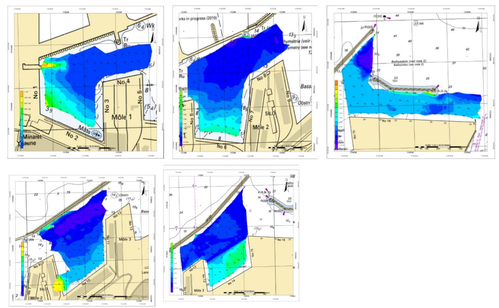
Export Growth In Lebanon For The Year 2018-19



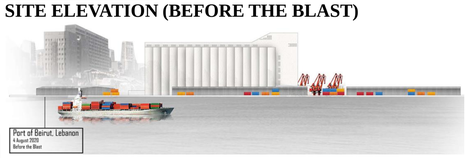
HYDROGRAPHICS:
In addition to exports and imports, the terminal handles significant container transshipments.

- The following data would determine the size and accommodation of vessels according to their draft and buoyancy with loaded cargo.

• These bathymetric measurements give us an image of the seabed that could be studied for mapping the ship movement by avoiding collision of the ship hull with reefs or other marine geological landscapes.

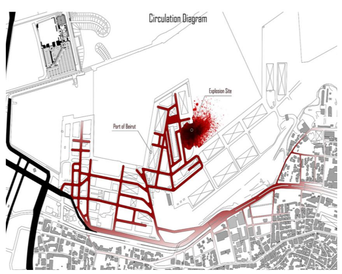


SITE ELEVATION (BEFORE THE BLAST)

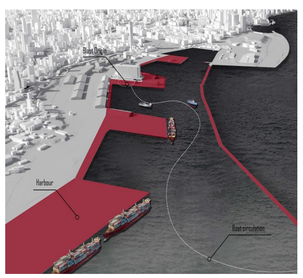


SITE ELEVATION (AFTER THE BLAST)

CIRCULATION DIAGRAM

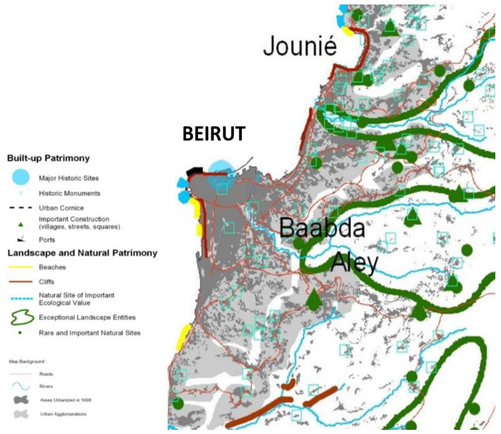


BOAT CIRCULATION DIAGRAM

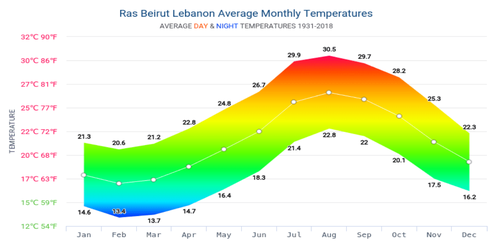


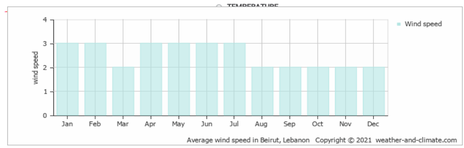
ENVIRONMET ISSUES

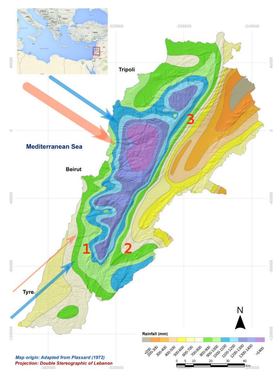
Lebanon, especially Beirut and its suburbs, suffered a massive garbage crisis, mainly from July 2015 up to March 2016. ▪ The issue began when authorities shut down the main landfill site originally used for Beirut's garbage south-east of the city and failed to provide any alternative solutions for months. ▪ In March 2016, the government finally came up with a temporary solution to establish two new landfills East and South of the city to store the garbage, while several municipalities across the country, in an unprecedented move, began recycling and managing waste more efficiently, building waste-management facilities and relying on themselves rather than the central government. . BEIRUT ▪ Moreover, Beirut has a lack of green areas with just two main public gardens .In fact, concrete roofs cover 80% of the capital area

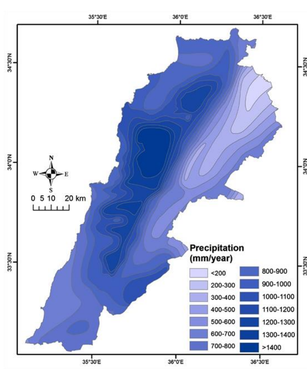


CLIMATE ANALYSIS:





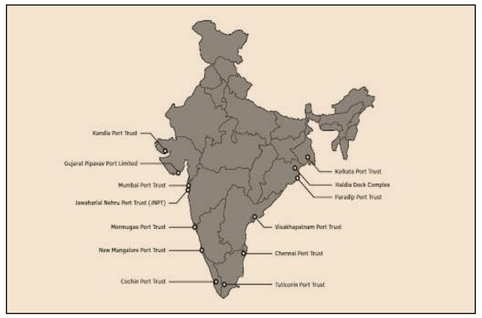




CASE STUDY OF A PORT- COCHIN PORT

INTRODUCTION:

- Cochin is known as " Queen of Arabian Sea ".
- Cochin Port is one of the 12 major ports in India and is located on the south west coast of India, in the state of Kerala.
- Port has two wharfs (Ernakulum wharf and Mattancherry wharf)
- The major items handles at the port are high value, low volume cargos such as spices ,tea , and coffee, cashew kernels and garments. It also deals with crude oil, fertilizers and coals, etc.
- CPT is a regular member of ports and harbor.



LOCATION:

Cochin, an all weather natural Harbor is located strategically close to the busiest international sea routes:

1. Gulf to Singapore and Far East (Distance from Cochin Port - 11 Nautical Miles)

2. Suez to Singapore / Far East (Distance from Cochin Port 74 Nautical Miles)

HISTORY:

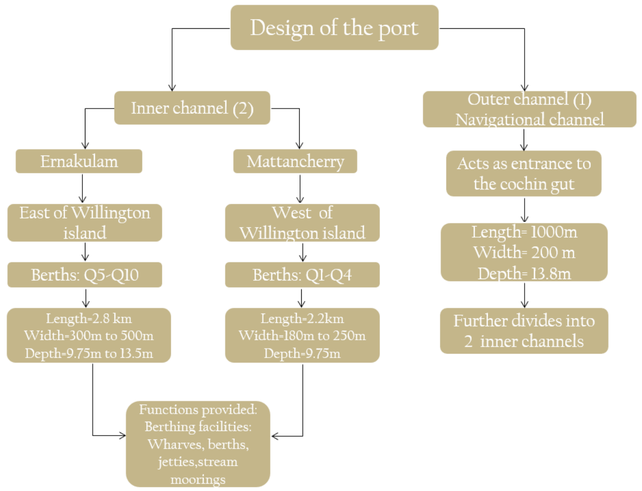
1341 AD	• Naturally formed due to flood • Closure of the ancient port of Muziris and widening of Cochin Gut.
1920	• Lord Willingdon(chairman) selected Sir Robert Bristover to head project.
1932	• The Maritime Board of British India declared the Port of Cochin as a major port and was opened to all vessels up to 30 feet draught.
1939	• Port completion
1964	• After the Independence, the port was taken over by the government of India,

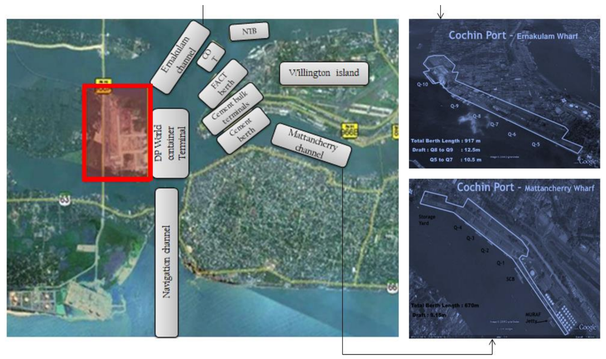
Lord Willingdon

Sir Robert Bristover

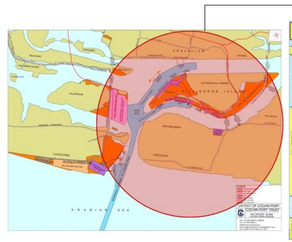
Cochin port trust in 1948

DESIGN OF THE PORT:

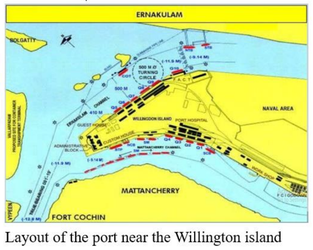




ZONING OF THE PORT:



Zoning map of Cochin port



Layout of the port near the Willington island

Zoning map of Cochin port

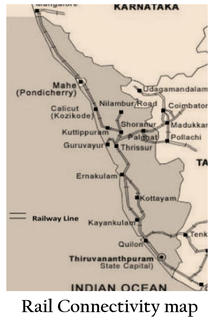
Layout of the port near the Willington island

a. The entry to the port is through the Cochin gut between the peninsular headland Vypeen and Fort Kochi.
b. Limit extend upto the entire backwaters and the connecting creeks and channels.
c. From the navigational channel it divides itself into two Mattancherry and Ernakulam channels.
d. It is also the largest port of India .
e. Lies on 2 islands: Vallarpadam and Willingdon island towards the fort kochi river mouth opening onto the Laccadive sea.
f. No other port enjoys this closeness to the maritime highway.
g. This advantage put cochin port in commanding position to the exploit the massive east west ocean trade.

RAILWAY AND ROAD CONNECTIVITY:

- NH 17 – Cochin to Panvel takes off from Edapally at Cochin.
- NH-47 – Salem to Kanyakumari Passes through Cochin.NH 49 – Cochin to Madurai/ Dhanushkodi, takes off from NH 47 from Kudanoor at Cochin.
- NH 47 A – National highway link connecting Willing don Island and NH 47 at Kudanoor
- Cochin has direct access to the southern and national rail network allowing 12 connections to all major industrial and population centres.

Road Connectivity map

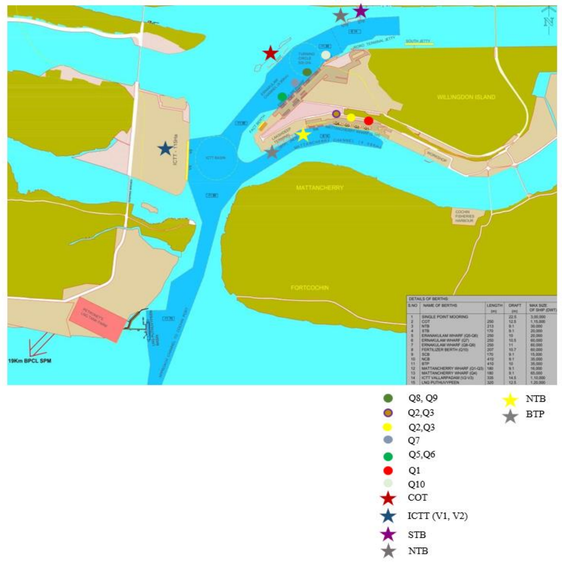


Rail Connectivity map

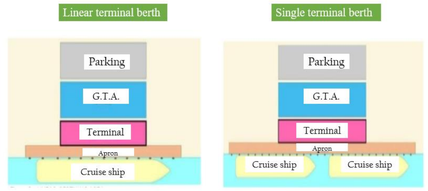
BERTHS OF ERNAKULUM AND MATTANCHERRY::

- The 1024 m long Ernakulam Wharf has six alongside berths, five for general cargo and a fertilizer berth.
- Besides there are three oil berths in the Ernakulum channel.
- On the Mattancherry Channel there are four alongside berths, for general cargo, one Boat Train Pier and two jetties for miscellaneous cargo.

COT: Crude/ Pol
NTB: Pol
STB: Pol
ERNAKULAM WHARF (Q5 - Q6): Dry cargo /CBFS
ERNAKULAM WHARF (Q7): Dry Cargo
ERNAKULAM WHARF(Q8 - Q9): Dry Cargo
FERTILIZER BERTH (Q 10): Fertilizers / Phos acd
SCB: Liquid bulk
NCB: Dry / liquid bulk
B.T.P: Liquid bulk
MATTANCHERRY WHARF (Q1): Dry bulk
MATTANCHERRY WHARF (Q2 & Q3) COASTAL BERTH: dry bulk
MATTANCHERRY WHARF (Q4): Liquid bulk
ICTT VALARPPADAM (V2-V3): Containers
LNG PUTHUVYPIN: LNG



TYPES OF BERTHING AREA:



Apron – The area immediately in front Of or behind a wharf shed

G.T.A. – Goods Transport Agency

STORAGE FACILITIES:

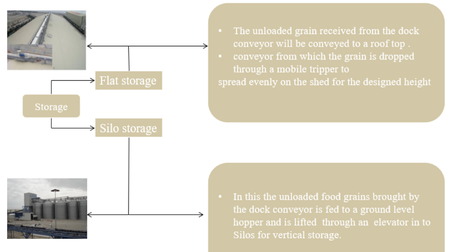
- The Cochin port has sufficient storage area to support its operations.
- There are 11 sheds and 7 warehouses for cargo storage covering a cumulative area of 65,000 m2

Details of cargo storage facilities

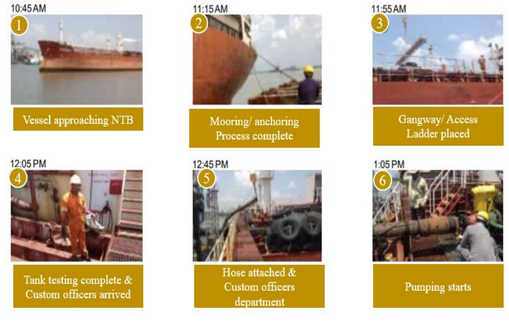
Covered Area (Transit Sheds and Overflow sheds)		
Location	**Total Sheds**	**Area (Sqm)**
Mattancherry Wharf	6	19,160
Ernakulam Wharf	4	13,200
Container Freight Station	1	10,000
Grand Total	**11**	**42,360**
Covered Area (Warehouses)		
Location	**Total Sheds**	**Area (Sqm)**
Mattancherry Wharf	4	11,800
Ernakulam Wharf	1	2,960
Cement Godown	1	1,000
BTP	1	8,000
Grand Total	**7**	**21,760**

Storage Sheds at Mattancherry and Ernakulam Wharf

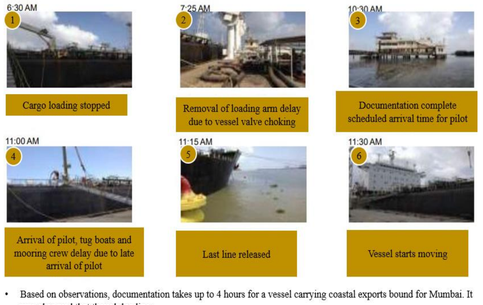
STORAGE FACILITY:



BERTHING OF DORADOS - FOREIGN EXPORT VESSEL TO COLOMBO

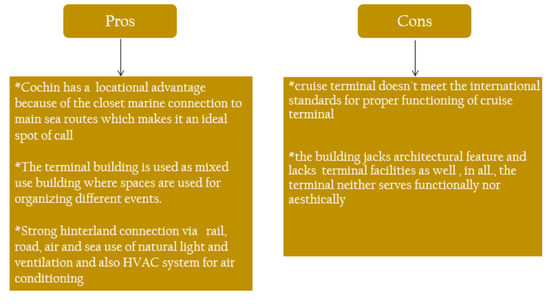


UN- BERTHING OF PRUDENT- COASTAL EXPORT VESSEL TO MUMBAI



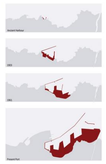
- Based on observations, documentation takes up to 4 hours for a vessel carrying coastal exports bound for Mumbai. It was observed that though loading.

PROS AND CONS

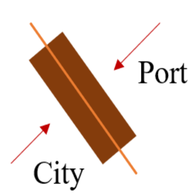


PORT- ORIGINAL PLAN (BEFORE EXPLOSION), ZONING, MASTERPLAN

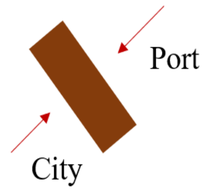
ORIGINAL ZONING:
As a contribution to a collective research on Mediterranean port cities, the city of Beirut was mapped on several scales. Research shows that the port of Beirut occupies a large portion of the city's waterfront. The rest of the waterfront is highly privatized with limited public accessibility.



CONCEPT OF THE DESIGN



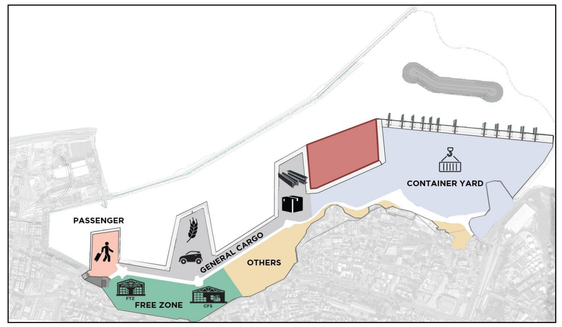
There is a scar between the city and the port after the blast



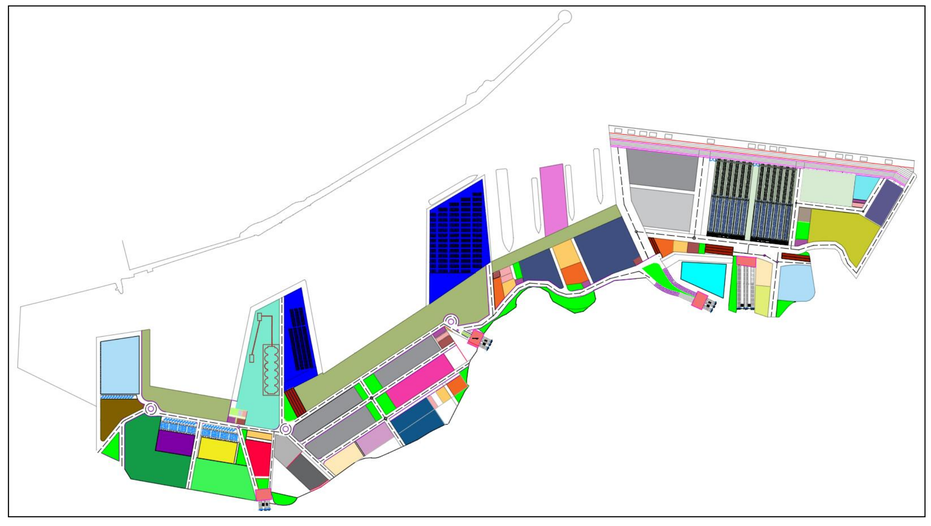
The aim is to create a generator element between this two

- Due to the explosion, the port and city have been severely Damaged and have become a separate entity falling apart from each other
- So the aim is to create a generator element through the Design
- The explosion have damaged the household of majority People and their occupations too
- The port's import rate is about 80%
- Due to major damage to the silos building it has affected the city very much also the void between the city and the port has to be brought near which we are trying to modelize through Our ideas

BASIC ZONING WHILE PLANNING THE PORT OF BEIRUT:

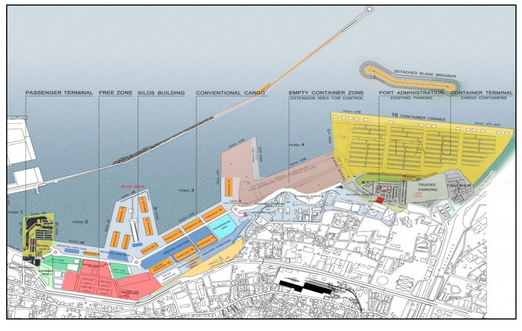


MASTERPLAN:



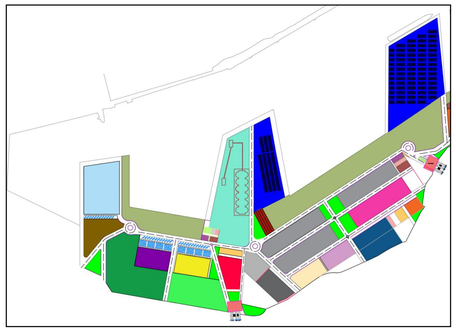
INTEGRATION OF CITY AND OPTIMIZATION INTO PORT TERMINALS:

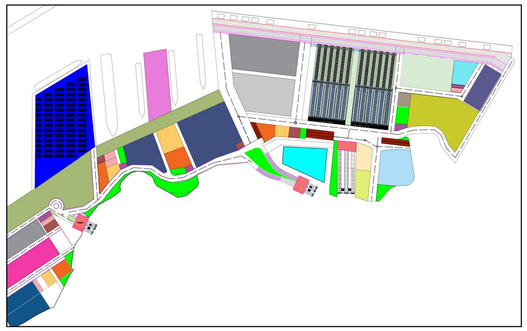
ORIGINAL PLANNING OF THE PORT OF BEIRUT (BEFORE BLAST):



LEGENDS	
ENTRANCE GATES	WAREHOUSE FOR SILOS PROCESS + PACKAGE
ENTRANCE CANOPY	
VEHICLE CARGO	OPEN STORAGE YARD
PARKING	GANTRY AREA
GREEN SPACES	PORT ADMIN
WEIGH BRIDGE AREA	MEMORIAL
EXISTING PORT ADMIN	RECREATIONAL SPACE
OPER. ADMIN	PUBLIC GARDEN
M & R G+1	FISHING HARBOUR
M & R YARD	PASSENGER TERMINAL
WORKER'S CANTEEN	ENTRANCE CANOPY
ELE.	ENTRANCE CANOPY
RTG MAINTENANCE	INCOMING REFERS CARGO
RTG YARD	OUTGOING REFERS CARGO
OD CARGO	CONTAINER YARD
WAREHOUSE TYPE 1	LOADING & UNLOADING AREA
WAREHOUSE TYPE 2	PIER
BERTHING AREA	REFER YARD
INCUBATION CENTRE+ DUTY FREE MARKET	CONTAINER CARGO

DIFFERENT PARTS OF THE MASTER PLAN WITH DETAILED EXPLANATION:





So we have firstly designed the container terminal areas and it's departments Referring a few animated videos and videos related to the working of the container terminal we have designed the areas.

- Entry: So we have mainly provided an entry with multiple lanes and gate cabins as per the requirements besides the port administration building. Multiple in and out lanes are provided for in and out of the cargo as well as the passengers.
- Parking: Parking area is also provided besides the gate complex and on the other side of the parking area more entry is provided. A canopy is provided at the end point of the gate complex and thus the arrivals an departure takes place.
- Berthing facilities and buffer lanes: So at the edge of the sea port berthing takes place and the red, grey and pink portion are the buffer zones that we have given as the truck turn around lanes which helps the equipment to operate independently without waiting for previous or next to work
- Incoming and outgoing cargo areas: So according to the new technology, vertical stacking we have provided and designed this areas which include incoming refer cargo and outgoing refer cargo areas.
- OD Cargo: We have give an od cargo which is the over dimensional cargo in between these areas which is an area in which cargo extends beyond the normal transported cargo maybe 20' to 40' or above that. It gets transported in flat racks or open tops. Besides it is the worker's canteen and the electrical room. Moving on to the RTG yard it includes the intermodal operations to ground or stack containers It also has a RTG and maintenance room for certain essential services and a canteen separated through a green buffer zone in between
- Weighbridge: Also at certain distances we have given weighbridge areas which functions as keeping a record of the weights of the incoming and outgoing cargos
- Loading and unloading zone: So through the main entry the cargo will be taken inside to the loading and unloading cargo area , the cargo will be unloaded and loaded and vertical stacking and other operations will be performed here.
- Warehouses: Also we have provided two warehouses which includes the storage of special containers, grabs and plumbs that are not in actual use.
- Vehicle and container cargo: Near the gate cabins we have also given vehicle cargo and container cargo area for some operational services. Near the existing port admin we have provided operational admin G+3 building, maintenance and repair yard and the M and R yard shed G+1 building .The yard will be an open storage king of an area.
- Service entry: One more service entry is given to the other side of the port admin building.
- Empty container zone and repairs facility area: Next the empty container zone's entry include again separate gate complex with 2 gate cabins and 6 lanes. So we have provided the empty container zone and the repair facility area together. Getting inside through this lanes the cargo will be moved to the empty container yards we have given 2 such yards with M and R facilities , and workers' canteen in between them, and which will be easily accessible too.
- General and conventional cargo and free zone area: So, we have given a different entry point with 7 lanes which further divide into 2 for general and conventional cargo zone .This entry has accessibility to both the operational sides and not only the general and cargo one. So first of all we have given the weighbridge to record and get the weights of the items, next the loading and unloading part will be done a the will be carried through huge vehicles for storage to the warehouses Here we have merged the free zone area with the general and conventional cargo storage spaces and incubation center as well
- Silos: Silos placement is done near the sea side only because the inlet outlet procedure has a need to place the this building near the sea shore itself for easy procedures One more entry is being provided for the silos and free trade zone areas
- Passenger terminal: Next is the passenger terminal area in which passengers board and disembark from passenger ships such as cruise ships and ferries. Here we have provided multiple entries and a main entry near the drop off point .First parking for around 300 passengers and a few buses is provided • Then as passengers entry at the drop off 8 security check posts are being provided where the passengers will be stopped for certain inspection .And then the security screening is given for certain objects inspection for security purposes • For booking a desk is provided and for baggage procedures an area is allotted which is accessible from many points .For healthcare purposes health facilities area also provided and toilets are placed in such a way that passengers will go inside a buffer and the access the toilets .Waiting area is given which is a very imp part of the port where passengers can seat and relax till any other step is in line. For record and inspection of the identity of passengers custom zone is also given which is a very essential part of the security procedures . The chilling zone means the food court areas, parks and the lounges are being kept near to each other .
- Memorial and port admin : The planning of the memorial and port admin is in process but the areas are allotted also as a huge space is being remaining we are yet to conclude with if we should create recreational spaces, or a vocab centre, or something else.

PASSENGER TERMINAL CASE STUDY: PIER 27

INTRODUCTION:

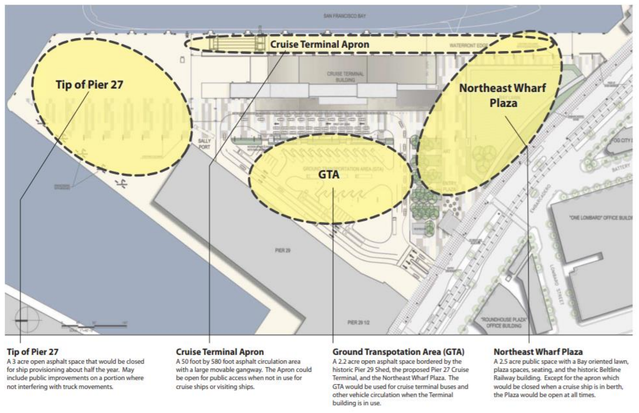
- Open Space and Public Access are core components of the Port's Pier 27 efforts.
- This plan includes the creation of a new public space, the Cruise Terminal Plaza at Pier 27, intended to enrich the experiences of waterfront neighbors, visitors, and cruise passengers alike.

LOCATION:

- Located between the James r. Herman cruise terminal and the Embarcadero, this 2.5-acre plaza is arranged in several zones to allow everyday passive recreation, maximize views of the Bay, and provide activities and attractions for site visitorsV

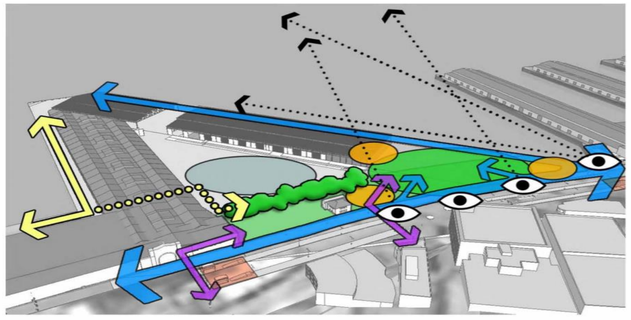
SITE PLANNING OVERVIEW:

Following is the site planning overview which depicts the entire area programme of the terminal building as well as the surrounding spaces and circulation between them



SITE PLANNING DIAGRAM:

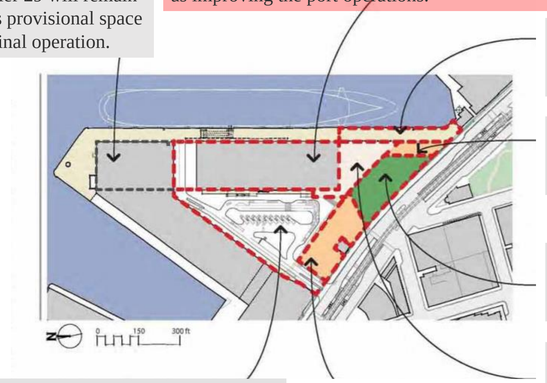
Site composite site planning diagram depicting the built and unbuilt spaces and the circulation between them.



EARLY DESIGN DRIVERS:

PROVISIONAL SPACE
The northern portion of the pier 27 shed building that intersects with pier 29 will remain intact and continue to serve as provisional space with truck access for the terminal operation.

CRUISE SHIP TERMINAL
The new cruise ship terminal will provide San Francisco with a more fitting port of entry, improving the experience of passengers as well as improving the port operations.



WATERVIEW/ SECURITY EDGE

PLAZA ENTRY PORTAL/ GATE HOUSE

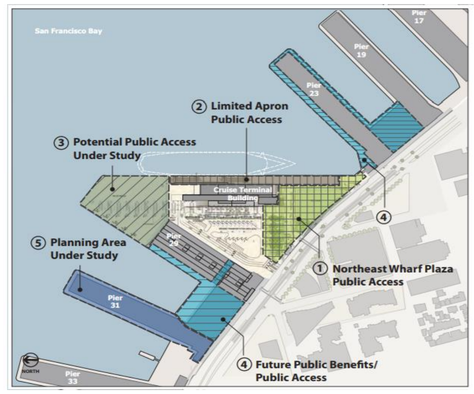
MULTI-USE RECREATIONAL AREA

MAIN EVENT SPACE

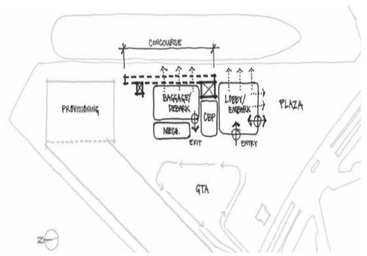
GROUND TRANSPORTATION AREA

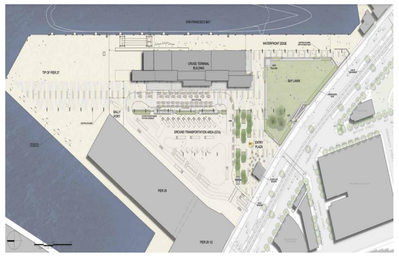
BELTLINE PLAZA

PUBLIC SPACES ACROSS THE BUILDING:

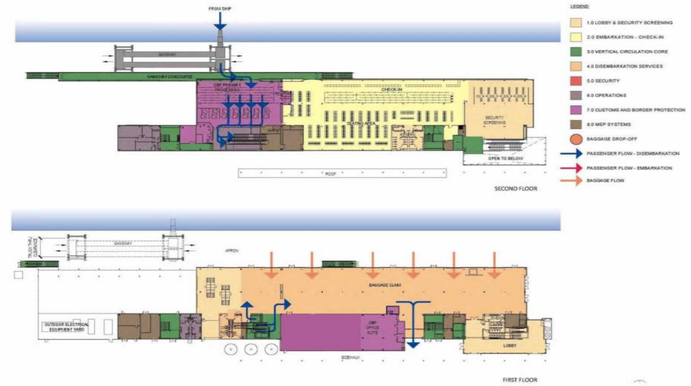


BASIC ZONING AND FINAL SITE PLAN:

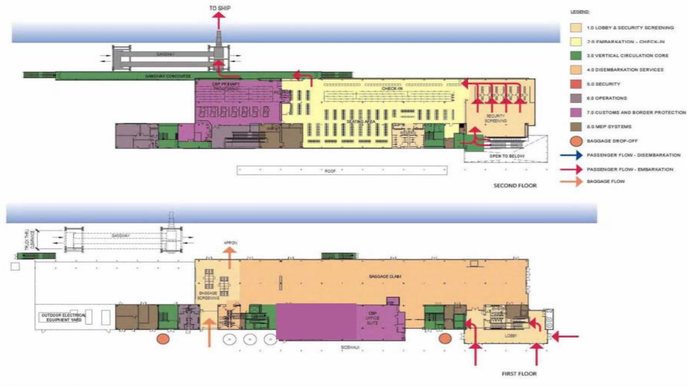




TERMINAL CIRCULATION DIAGRAM (DEBARKATION)

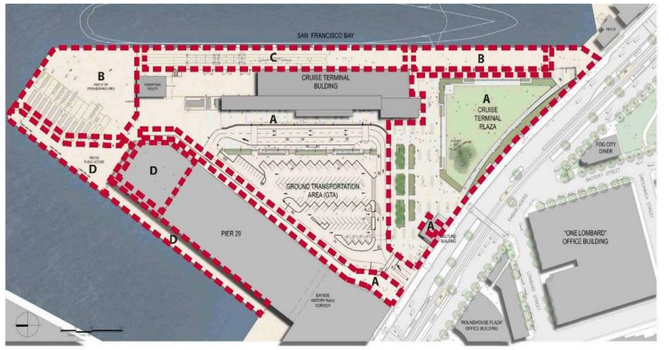


TERMINAL CIRCULATION DIAGRAM (EMBARKATION)



GROUND TRANSPORTATION AREA CIRCULATION DIAGRAM

SPACES ANALYSIS:



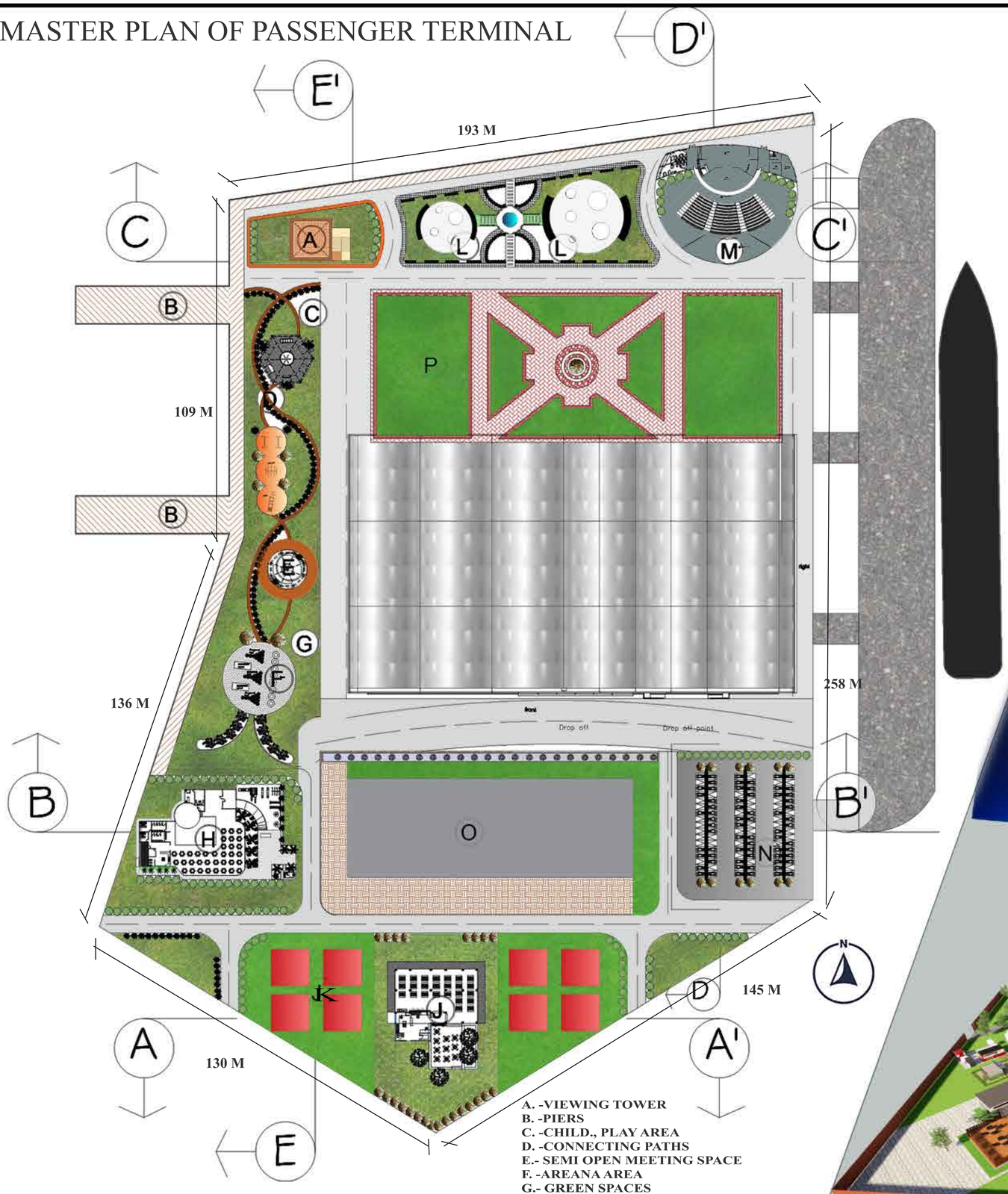
A **Cruise Terminal Plaza, Public Restrooms, Pier 29 South Edge, Walkway at Terminal**
Open at all times. Restrooms (anticipated opening September 2015) to be open from 30 minutes before dawn to 30 minutes after sunset and maintained by Port.

B **Pier 27 Apron at Plaza & Pier 27 Provisioning Area**
Closed when ship is in berth and the day before and after. Open all other days from 30 minutes before dawn to 30 minutes after sunset.

C **Pier 27 Apron at Terminal**
Closed when ship is in berth and the day before and after, and when there are 4 or fewer days between ships. Open other days from 30 minutes before dawn to 30 minutes after sunset. (Anticipated to open August, 2015)

D **Pier 27 Tip, Pier 29 North End of Shed & Pier 29 North Apron**
Open from 30 minutes before dawn to 30 minutes after sunset.

MASTER PLAN OF PASSENGER TERMINAL



A. -VIEWING TOWER
B. -PIERS
C. -CHILD., PLAY AREA
D. -CONNECTING PATHS
E.- SEMI OPEN MEETING SPACE
F. -AREANA AREA
G.- GREEN SPACES
H. -EVENT CENTER
I. -OUTDOOR GAMES(PLAY GROUND)
J. -CAFETERIA
K. -ARTIST DISPLAY AREA
L. -EXHIBITION AND FOOD KISOK
M. -AMHITHEATRE
N. -PARKING
O. -MARKETS
P. - GARDEN

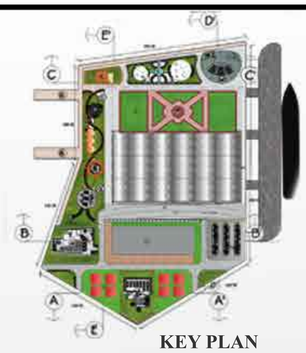
NORTH SIDE SITE VIEWS

N -W SITE VIEWS

S-W SITE VIEWS

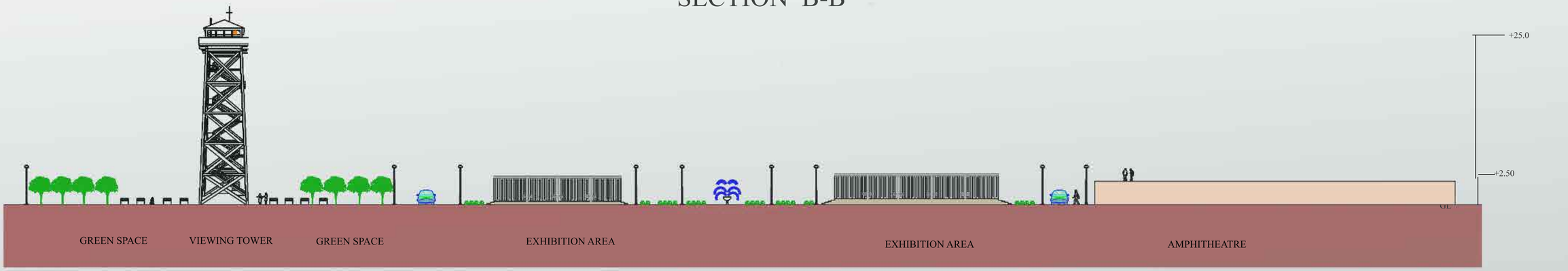
S-E SITE VIEWS

SECTION A-A'

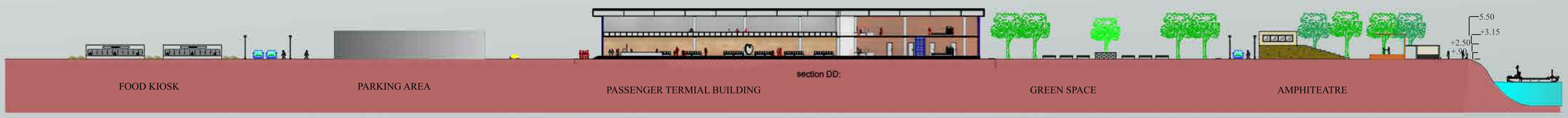


KEY PLAN

SECTION B-B'

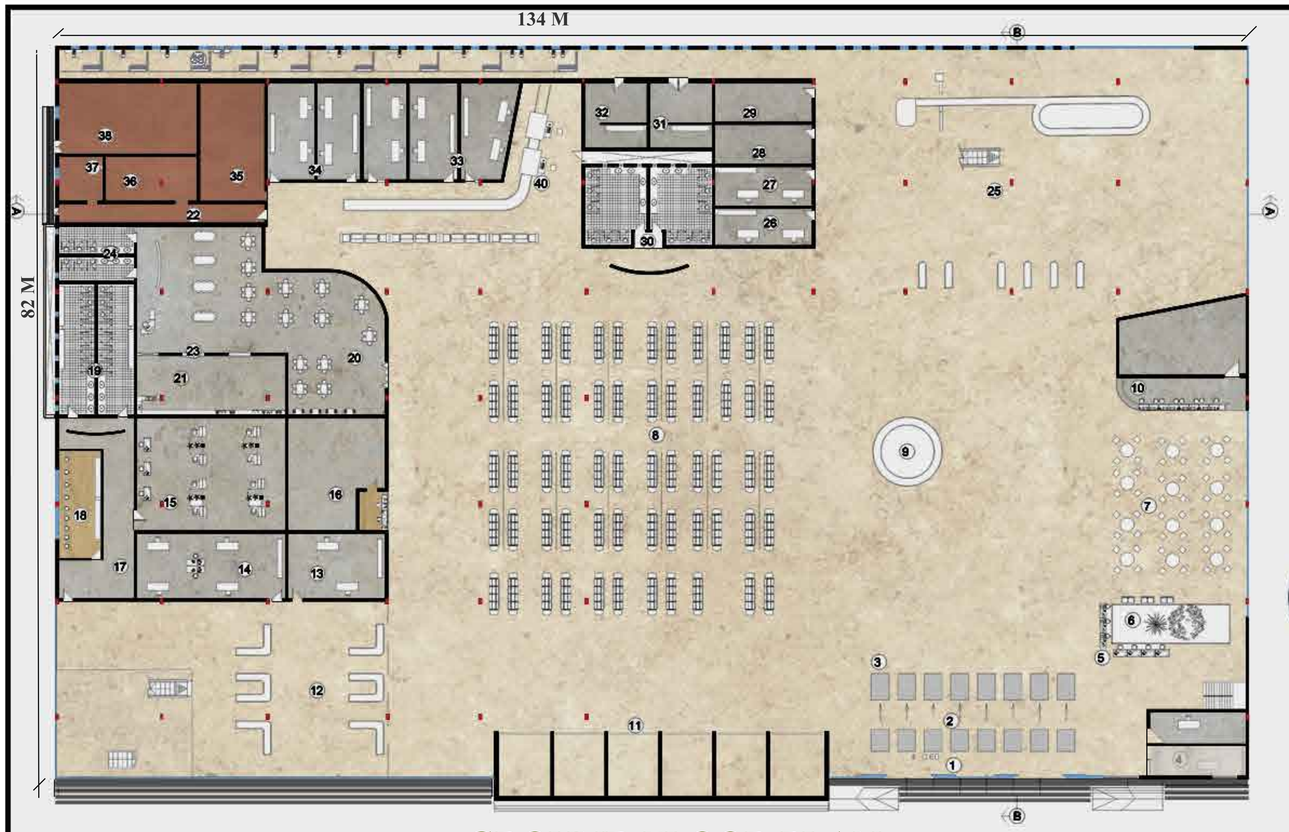


SECTION C-C'



SECTION D-D'

SECTION E-E'

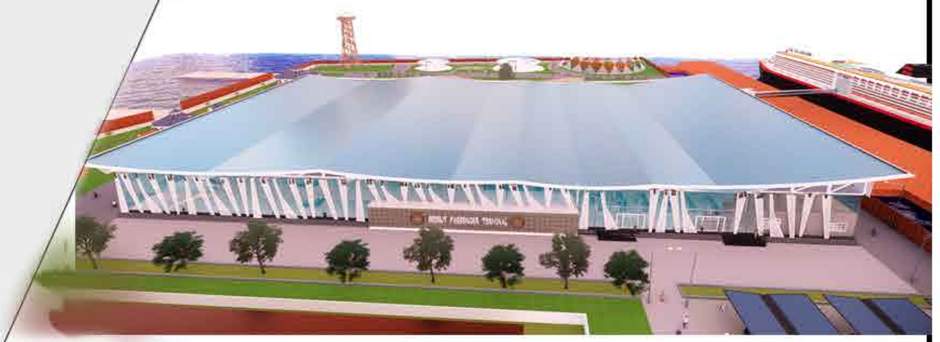


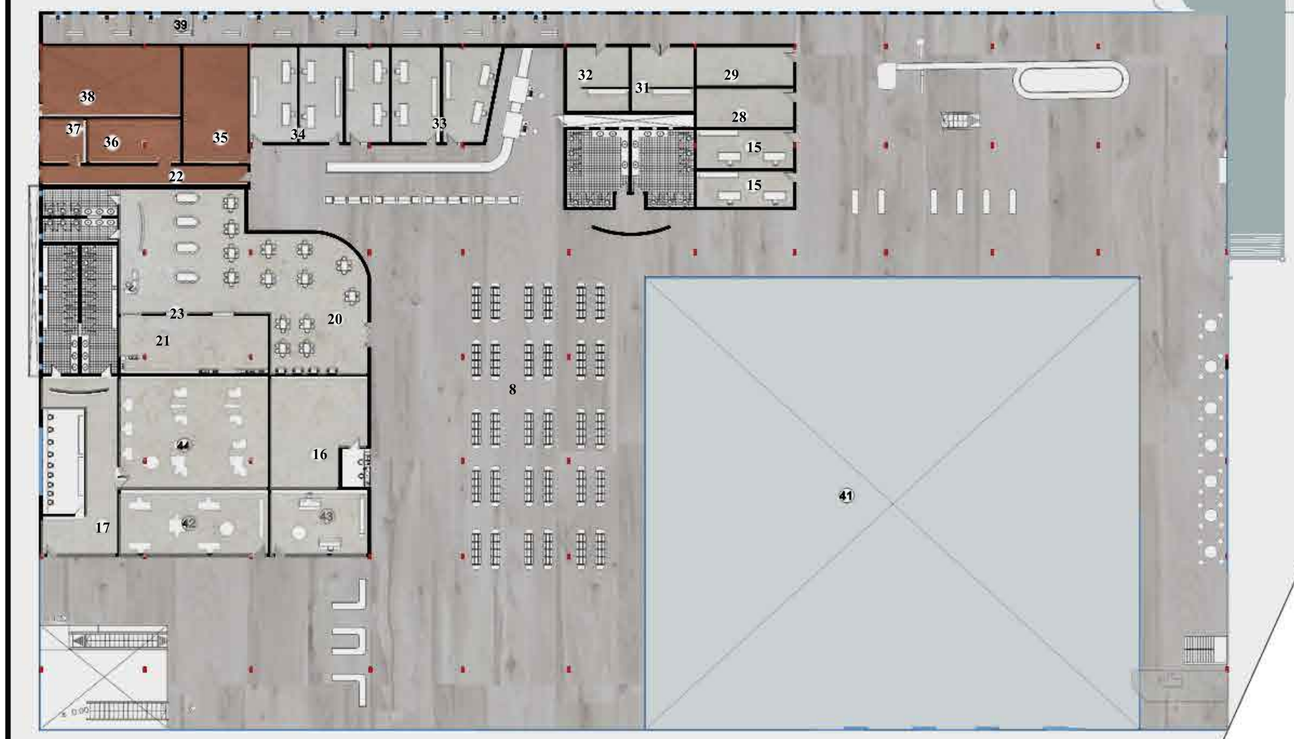
GROUND FLOOR PLAN

1	ENTRANCE LOBBY	97 SQ.M
2	SECURITY CHECK POST	57.5 SQ.M
3	SECURITY SCREENING POST	69S Q.M
4	SECURITY OFFICE	84.32 SQ.M
5	RECEPTION	23 SQ.M
6	SPILL OUT SPACE	57.90 SQ.M
7	SITTING AREA	194 SQ.M
8	WAITING AREA FOR PASSENGER	1110 SQ.M
9	SCULPTURE CORT	89 SQ.M
10	INFO, DESK	118 SQ.M
11	DUTY FREE SHOPS	293 SQ.M
12	BAGGAGE SCREENING	366 SQ.M
13	EXAMINATION ROOM	80 SQ.M
14	MEETING ROOM	120 SQ.M
15	CUSTOMS OFFICE TYPE	216 SQ.M
16	HEALTH ROOM	138 SQ.M
17	LOBBY	37S Q.M
18	CUSTOMS OFFICE TYPE 2	58 SQ.M
19	TOILET 1	125 SQ.M
20	CAFÉ DINNING AREA	400 SQ.M
21	KITCHEN FOR CAFÉ	112 SQ.M

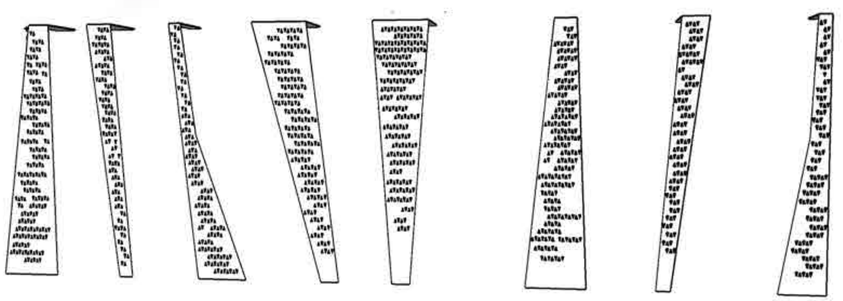
22	PASSSAGE FOR SERVICE ROOM	50 SQ.M
23	COUNTER AND PACKING	
24	TOILET 2	52 SQ.M
25	BAGGAGE HALL	500 SQ.M
26	VIDEO SURVELLIENCE ROOM	45 SQ.M
27	TECHINCAL CHIEFS OFFICE	50 SQ.M
28	TRANSPORT MANAGER OFFICE	50 SQ.M
29	PASSENGER TER, MANAGER OFFICE	50 SQ.M
30	TOILET 3	125 SQ.M
31	CONFERENCE ROOM 1	50 SQ.M
32	CONFERENCE ROOM 2	50 SQ.M
33	IMMIGRATION AND CUSTOM CHECK	180 SQ.M
34	IMMIGRATION RECORD	170 SQ.M
35	IMMIGRATION MACHINE STORAGE	90 SQ.M
36	AC PLANT ROOM	25 SQ.M
37	ELECTRICAL ROOM	25 SQ.M
38	STORAGE	125 SQ.M
39	PUBLICLY USE SPACE	146 SQ.M
40	HELP DESK COUNTER	
41	DOUBLE HEIGHT WAITING AREA	
42	SLEEPING LOUNGE	120 S Q.M
43	INFO DESK	80 SQ.M
44	VIP LOUNGE	200 SQ.M

VIEWS

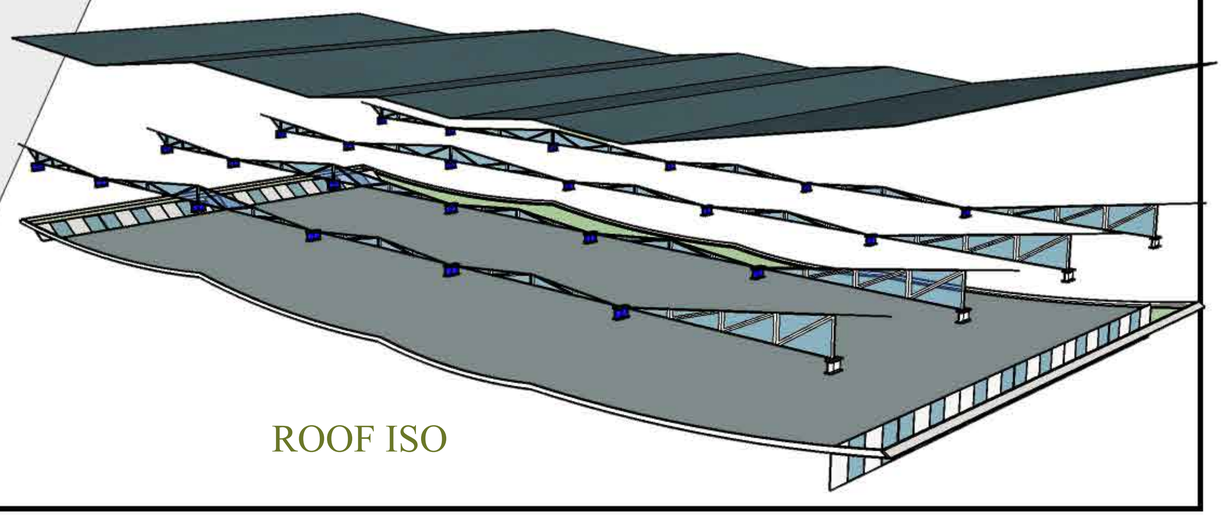




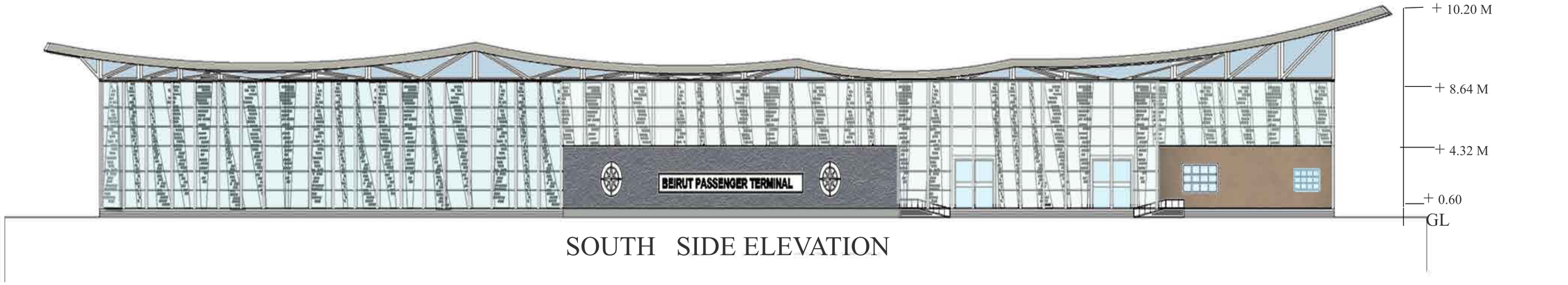
FIRST FLOOR PLAN



FACADE PERFORATED CNC PANEL

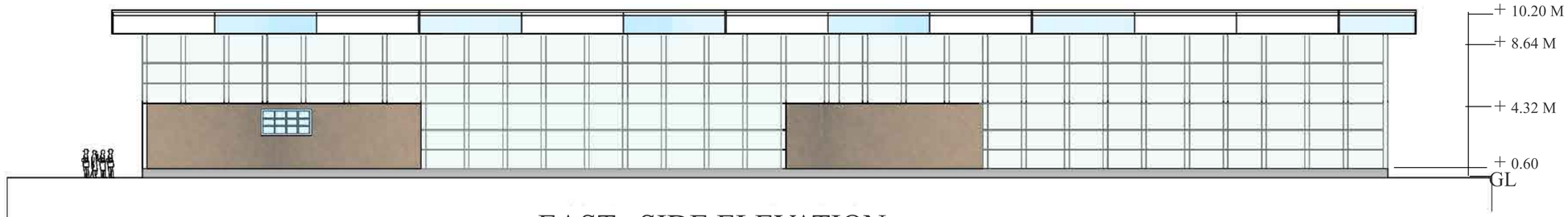


ROOF ISO

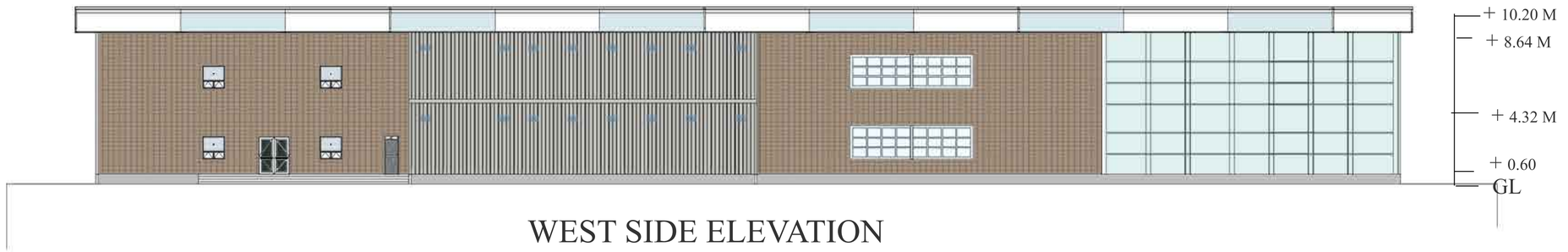


SOUTH SIDE ELEVATION

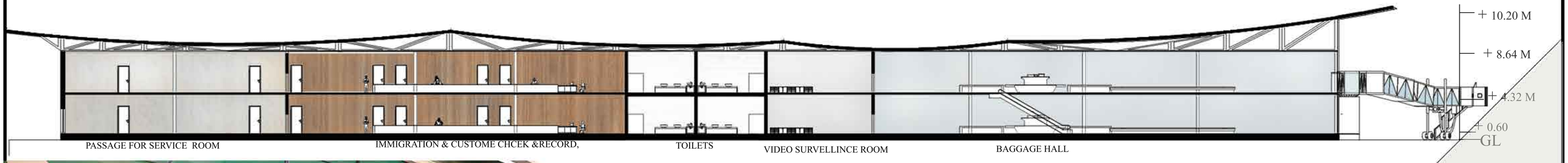
NORTH SIDE ELEVATION



EAST SIDE ELEVATION



WEST SIDE ELEVATION

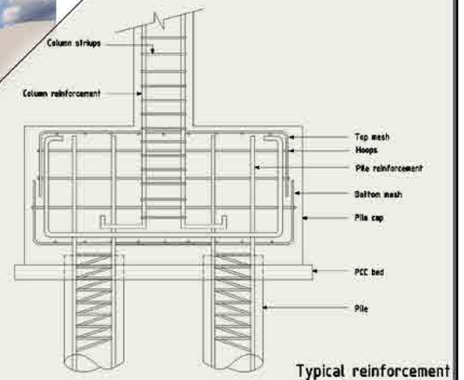


section FF;

ENTRANCE

SITE VIEW

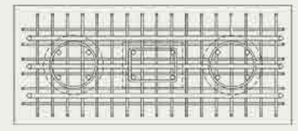
BIRD EYE VIEW



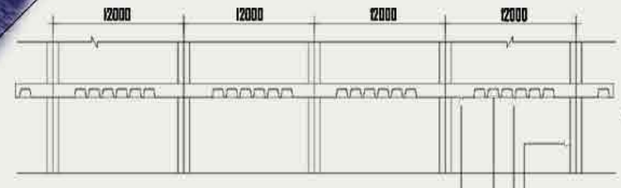
SECTION

Typical reinforcement of a pile cap with pile and column
Scale 1:10

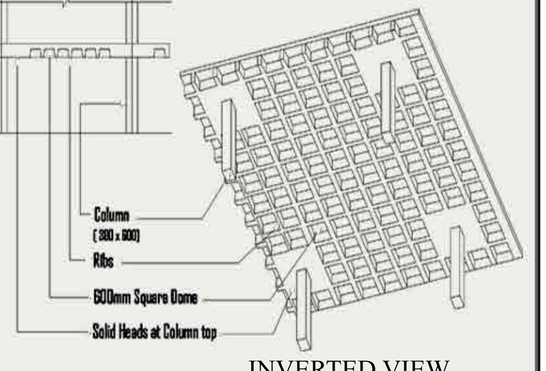
PILE FOUNDATION



Pile cap plan showing all the reinforcement
Scale 1:10



KEY SECTION



WAFFLE SLAB

INVERTED VIEW

section DD:

SITE & TERMINAL VIEWS


S-W VIEW


WEST VIEW


S-E VIEW


N-W VIEW


VIEW THROUGH VIEWING TOWER


VIEW THROUGH MARKET & CAFE AREA


VIEW THROUGH CHILD, PLAY AREA & GREEN SPACES


VIEW THROUGH EAST SIDE& GREEN SPACES


VIEW THROUGH PIER SHIP CONNECTIVITY


VIEW THROUGH CHILD, PLAY AREA & GREEN SPACES

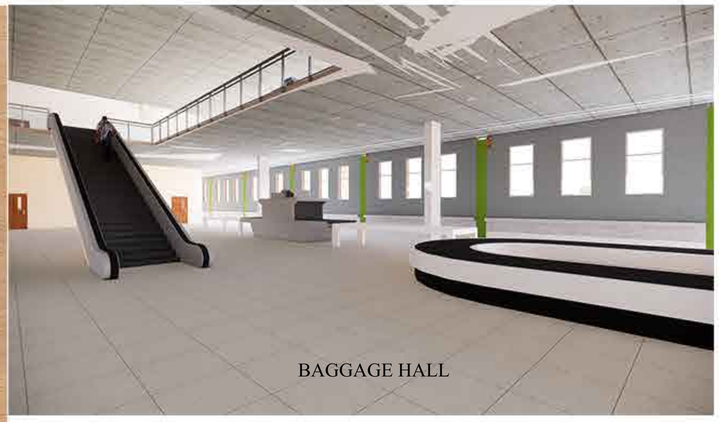

VIEW THROUGH PARKING & SHIP CONNECTIVITY


VIEW THROUGH GREEN SPACES

INTERIOR SPACES


SECURITY CHECK & SCREENING


BAGGAGE HALL


BAGGAGE HALL


WAITING AREA TYPE 1


IMMIGRATION CHECK & RECORD


DOUBLE HEIGHT COURTYARD SPACE


WAITING AREA TYPE 2


BAGGAGE SCREENING


HEALTH ROOM


SCULPTURE CORT


WAITING AREA ON FIRST FLOOR


WAITING AREA ON FIRST FLOOR