RE-DEVELOPMENT OF RAILWAY STATION, CUTTACK

THESIS (AR 8081)

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The redevelopment of a railway station is a strategic and transformative initiative aimed at modernizing, enhancing, and optimizing the functionality and infrastructure of an existing railway facility. Railways play a pivotal role in the transportation network of a region, serving as vital nodes that connect people and goods across cities and regions. As urbanization and population growth continue, the need to upgrade railway stations becomes imperative to meet the evolving demands of commuters and ensure a seamless, efficient, and sustainable transportation system. The process of redeveloping a railway station typically involves collaboration between railway authorities, government agencies, urban planners, architects, and the local community. Stakeholder engagement and feedback play a crucial role in shaping the redevelopment plans to ensure that the upgraded station meets the diverse needs of its users.

Indian Railways (IR) owns and manages one of the largest Railway networks of the world with over 64,000 Route Kilometres (Km) and 7,000 stations. Operations of the Indian Railways (IR) are overseen by Ministry of Railways (MOR), Government of India and 16 Zonal Railways headed by General Managers. The IR carries more than 17.5 million passengers every day and some of the major Railway stations handle 100-200 million passengers per annum. Most of the Railway stations have been built over 100 years ago, and have a limited and aging infrastructure that handles an ever increasing number of passengers. The Railway stations are also located in the middle of the citiesand offer enormous potential for re-development and commercial expansion. New passenger terminals are also being developed in cities where existing terminals cannot meet the future demand. Railway officials said that the government aims to complete the work of these stations by 2025. "Our internal target to complete redevelopment at these stations is by 2025," a senior official said. The redevelopment work is being done under the 'Amrit Bharat Station Scheme'. The cost of the redevelopment is projected at Rs.24,470 crore. Union railway minister Ashwini Vaishnaw said that the development of these stations is a major focus of the government. "Our prime minister is personally monitoring the progress of these railway stations. He has given inputs in designs of these stations and will be laying the foundation of these 508 stations," he said. "It is aimed to provide modern passenger amenities along with ensuring well-designed traffic circulation, inter-modal integration and well-designed signage for guidance of passengers," the Prime Minister's Office (PMO) said. The design of these station buildings will be inspired by local culture, heritage, and architecture, it added. Launched in February, the Amrit Bharat Station Scheme envisages the development of stations on a continuous basis with a long-term approach. It involves the preparation of 'master plans' and their implementation in phases to improve the amenities at the stations.

A primary objective of the station design will be environmental acceptability, sustainability and energy efficiency. Station designers will create an environmentally responsible Railway Station that exceeds current standards and practices within the transit industry, creates a healthier, more ecologically responsible Station environment, and complies with all applicable environmental laws. Materials used in the station complex must be eco-friendly. The building should be energy efficient. Rain Water Harvesting, use of Solar Panels for electricity and Waste Management are options to reduce the energy requirement for the Station building. Green/landscaped area must be increased and coordinated with the pedestrian and vehicular traffic.

I have introduced a new mode of circulation in the railway station which is similar to the circulation of the airport, the major concern was to reduce the confusion in way finding and to avoid unnecessary accidents in railway station. The building is 80% naturally ventilated and naturally lighted during day time.A large air floating structure is designed over the railway track connecting both terminal buildings which is called as the Air-Concourse. It act as a waiting hall and a commercial area in the railway station.

NEED FOR THE STUDY

The Efficient Movement of Customers/Passengers

The design of the Station shall allow for a free-flow of passengers to avoid a buildup of dangerous congestion within the Station, in particular, on platforms and escalators. Travel distances shall be minimized. Travel routes should be as direct as possible. After customer safety and security, moving customers efficiently through the Station to and from trains is the highest priority of the Station design. Customer flow will take precedence over other Station functions and non-transit facilities in the Station design. From the moment a customer enters the Station premises until he exits, movement must be unimpeded. Each function should have distinct areas and space must be allotted according to the priority of the function. The highest allocation of area must be made for free circulation. Incoming and outgoing volume of passenger must be handled separately. To reduce the waiting passenger's interference into the circulation area, adequate waiting space is to be provided.

The Stations should be merging with the other existing transportation systems. Railway Station design shall facilitate convenient transfers to other Mass Transit System lines and modes of public transportation toward a goal of achieving a seamless local and regional inter-modal public transportation network. The surrounding areas must be planned and designed to maximize free flow traffic movement, and to avoid traffic jams inside and outside the Station campus. Customer must be provided with enough options to leave the station campus as they complete their journey, it could be in the form of regional buses, taxis, auto-rickshaws or the Mass Rapid Transit System (MRTS). All these services must be available to customer within walking distance of 500.

The station should provide ease of access for all travelers by minimizing physical and psychological impediments to their use of the Station. The positioning and character of the Station's access points will have a critical influence in satisfying this requirement. The Station design must comply with the requirements of Indian Disability Acts (IDA), and the relevant provisions of American Disabilities Act (ADA) that prescribe the specific configurations and requirements for public facilities to accommodate persons with physical impairments.

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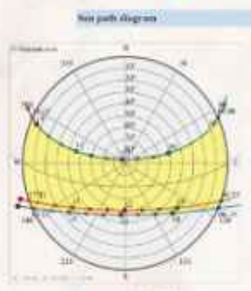
The Station design shall provide sufficient circulation elements to allow for the free and safe flow of passengers. Space shall be provided for queuing at all circulation and passenger service elements. The queuing areas should provide sufficient space for passengers to queue at all circulation elements, service areas and decision points without disrupting the movement through other passenger flow routes.

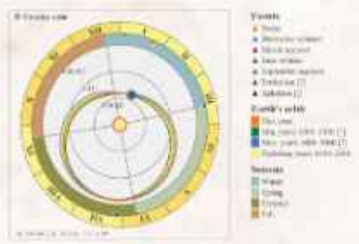
PROJECT SCOPE

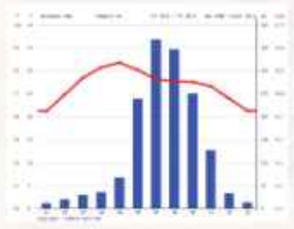
Physical Infrastructure:
Evaluation and enhancement of the station building, platforms, tracks, and related infrastructure to meet modern standards and accommodate increased passenger loads.
Technological Integration:
Implementation of modern technologies for improved operational efficiency, including upgraded signaling systems, automated ticketing, and real-time information displays.
Safety and Security Measures:
Assessment and enhancement of safety and security features, such as surveillance systems, emergency response protocols, and crowd management strategies.
Passenger Amenities:
Improvement of passenger facilities, including waiting areas, restrooms, ticketing counters, information kiosks, and other amenities to enhance the overall passenger experience.
Accessibility Features:
Implementation of accessibility features, such as ramps, elevators, and tactile paving, to ensure the station is easily accessible for passengers with disabilities.
Commercial Spaces:
Creation of commercial spaces for shops, cafes, and other businesses to improve passenger services and generate revenue.
Technological Infrastructure:
Implementation of modern technologies for improved operational efficiency, including upgraded signaling systems, automated ticketing, and real-time information displays.
Environmental Sustainability:
Integration of environmentally sustainable practices, such as energy-efficient lighting, waste management, and the incorporation of green spaces.
Community Engagement:
Involvement of the local community and stakeholders in the redevelopment process to gather input, address concerns, and foster a sense of ownership.
Economic Impact:
Assessment of the economic impact, including job creation, business opportunities, and revenue generation, to ensure the project contributes positively to the local economy.
Intermodal Connectivity:
Improvement of connectivity with other modes of transportation, such as buses, taxis, and metro systems, to create a seamless transportation network.

SITE LOCATION: CUTTACK, ODISHA, INDIA
SITE AREA: 59ACRES (238629 SQM)

CLIMATIC FACTORS







RAIN FALL:

MAXIMUN:- 10.7 INCHES
MINIMUM:- 5.6 INCHES
AVERAGE:- 8.6 INCHES

WIND SPEED

MAXIMUN:- 15.2KM/H
MINIMUM:- 6.7KM/H
AVERAGE:- 8.5KM/H

HUMIDITY

MAXIMUN:- 100%
MINIMUM:- 10%
AVERAGE:- 32%

TEMPERATURE

MAXIMUN:- 38 DGREE CELSIUS
MINIMUM:- 16 DGREE CELSIUS
AVERAGE:- 29 DGREE CELSIUS

VISIBLITY

MAXIMUN:- 10KM
MINIMUM:- 8KM
AVERAGE:- 9KM

Cuttack, like much of Odisha, experiences a tropical climate with distinct wet and dry seasons. Here's a general overview:

Summer (March to June):
Temperature: High temperatures during the summer months can range from 30°C to 40°C (86°F to 104°F).
Humidity: The region can experience high humidity levels during this period.
Monsoon (July to September):
Cuttack receives a significant amount of rainfall during the monsoon season.
Heavy and frequent rainfall can lead to flooding in some areas, as Cuttack is situated on the banks of the Mahanadi River.
Post-Monsoon (October to November):
Temperatures start to decrease, and humidity levels may vary.
This period is relatively more comfortable than the peak of summer.
Winter (December to February):
Temperature: Winter temperatures are mild, ranging from around 10°C to 25°C (50°F to 77°F).
This is the most pleasant time to visit, with lower humidity and cooler temperatures.
Cyclones:
Odisha, including Cuttack, is prone to tropical cyclones, especially during the pre-monsoon and post-monsoon periods. These cyclones can bring heavy rainfall and strong winds.

HYDROLOG

Cuttack ground water level was at level of 2.08 meters below ground level in 2019, up from 1.9 meters below ground level previous year, this is a change of 9.50%.

Mahanadi River run's around the cuttack district, which contributes the major water needs of this district.

SOIL TYPE
East and South Eastern Coastal : Alluvium Lateritic Red Soil
Mid Central Table Land: Lateritic alluvium

TOPOGRAPHY:
The conture line is taken for 1 metre length, the site looks flat from the various point on the site.
The natural topography can be altered to have a better water flow towards the nearby drain.
SLOPES:
Their is no specified slope in the site, therefore the rain water has no surface run off. In usual railway station the slope runs towards the railway track zone .
DRAINAGE:
Their no natural slope is fround in the site, therefore it important to provide water drainage system in side side. Where in the existing site they have taken man-made drainage arround the site boundries.
In the modern stations the drainage line is directly connected towards the Sewage water Treatment Plant system.
SOIL EROSION:
Top soil erosion can happen frequently in this site, because this site doesn't have any particular water draining option. The water table level is at 2.08m, therefore the soil also absorves only less amount of water.
Soil erosion can be prevented only by planting more trees are by paving inter locking tiles above the ground level.

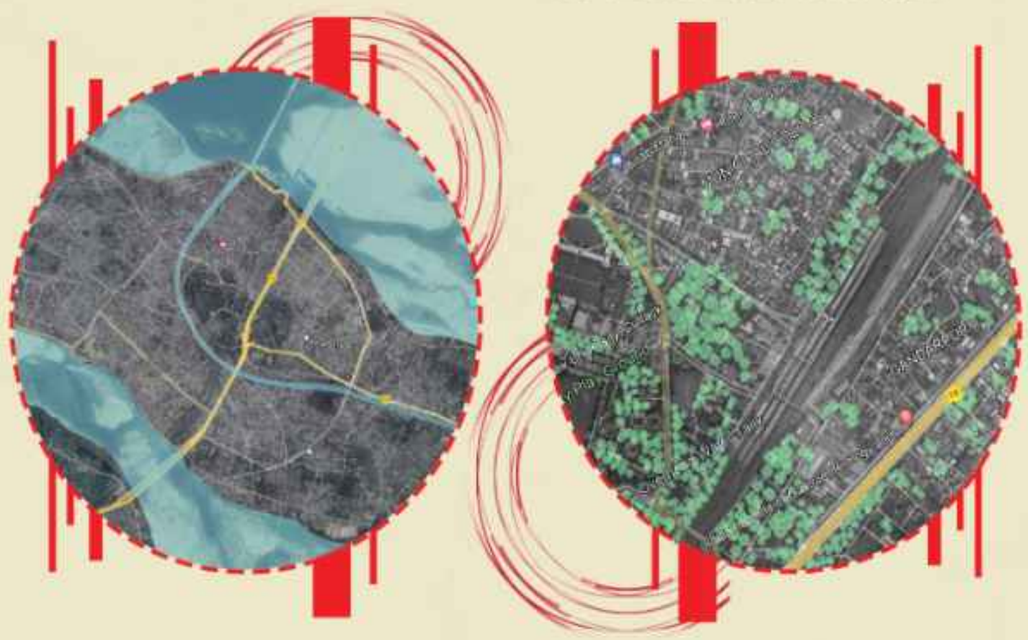
WILD LIFE

Cuttack, being an urban area, may not have a significant presence of wildlife within the city limits. However, the surrounding regions and the state of Odisha, in general, are home to diverse wildlife. The wildlife in and around Cuttack is influenced by the region's varied topography, which includes coastal areas, rivers, wetlands, and nearby forested regions.

TOPOGRAPHY

VEGETATION

Tropical Forests:
Cuttack falls within the tropical zone, and the region may have patches of tropical forests.You can find a variety of tree species adapted to the tropical climate, such as teak, sal, mahua, and bamboo.
Mangroves:
Given its proximity to the coast and the Mahanadi River, there may be areas with mangrove vegetation, especially in the nearby coastal regions.
Agricultural Lands:
The outskirts of Cuttack and the surrounding areas are likely to feature extensive agricultural lands. Common crops include rice, wheat, pulses, and various fruits and vegetables.
Urban Greenery:
Within the city of Cuttack, you can find parks, gardens, and urban green spaces with a mix of ornamental plants, trees, and flowering plants.
Floral Diversity:
The region is likely to support a diverse range of flora, including various flowering plants, shrubs, and grasses.



The station is located in the Gandarpur area of Cuttack Municipal corporation. Cuttack Railway Station site is surrounded by Residential and Industrial zones. The station can be approached from both West and East sides, west side being the primary access.

Malgodown road in the west side connects to the west entry of the station via 2 roads parallel to each other. College square road is a 2-directional, undivided 2-lane road which connects to the station Gate no. 2. While station road is a 2-directional, divided 4-lane road which connects to the station Gate no. 1 and serve as the main entrance.

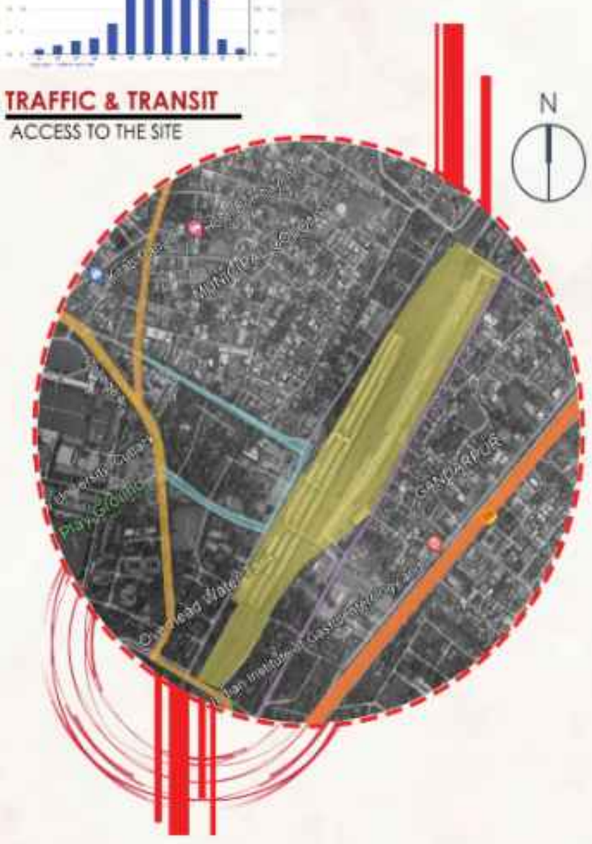
Badshahi road on the Eastern side connects to the station. It is a 2-directional, divided 6-lane road with additional 2 lanes of service roads. This road is part of NH-55 and NH-16, which is part of Golden Quadrilateral Plan.

The site can be divided into west side building and east side building, which majorly connects two differt line. The east side building which targets the people coming from the national highways and the west side building connects the state highway which goes into the city limit.

The road which run's inside site also matters where it allows easy flow of the human foot fall and doesn't allow must of the traffic.

TRAFFIC & TRANSIT

ACCESS TO THE SITE



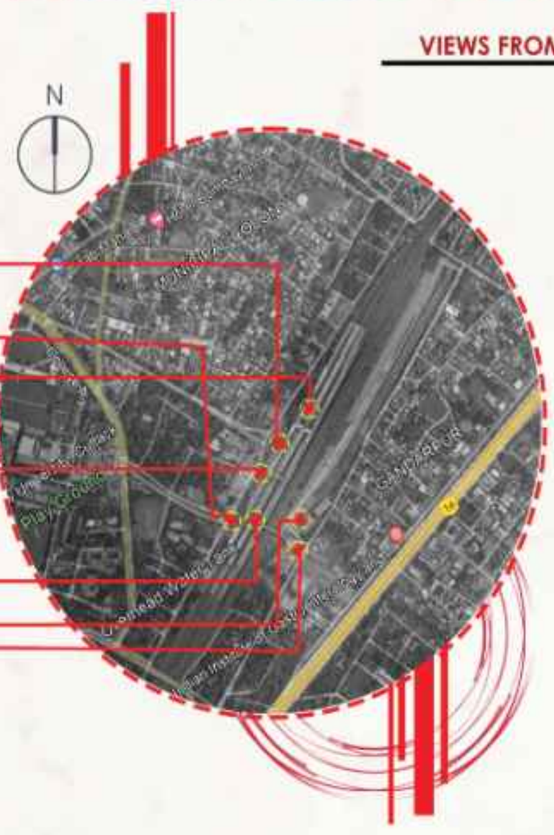
SITE
NATIONAL HIGHWAY
ROAD ON-SITE
STATE HIGHWAY
SECONDARY ROAD

PLATFORM

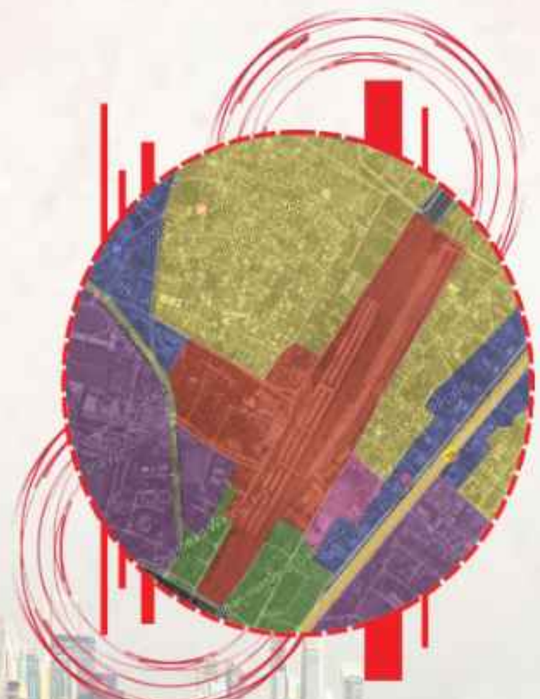
RMS OFFICE

RAILWAY TRACK

VIEWS FROM SITE



NEIGHBOURHOOD



DENSITY AND ZONING:
The site located at the outer zone of the city limit, where the railway station connects multiple parts of the city easly.
The site is mostly covered with the residential buildings and instutional buildings.
The site is also integrated with multiple transport facilities.

LAND MARKS & HISTORIC BUILDINGS:
Their is no historic building found arround the building, only few small temples can found and few goverment buildings are placed around the site.

SPATIAL PATTERNS:
Cuttack is not a properly planned city, where the city have been developed industrial growth and population.
Its majorly zoned as the residential and industrial and instutional zones.

NEIGHBOURHOOD:
West part is majorly covered with the residencial blocks and the instutional buildings.
East side building is covered with the residencial buildings and commercial buildings.

SITE
RESIDENCE
COMMERCIAL BLOCKS
INSTUTIANL BUILDINGS
GREENERIES
INDUSTRIAL

NATURAL FACTORS:
The site looks flat from all the sides it doesn't a large scale contures. The existing trminal building resembles a old fort structure.
Landscaping is not worked out properly, only few trees and shurbs can be found out in the site.

VISUAL RESOURCES:
STP hase been proposed in the site limit.
Railway yard has been placed in east side of the station.
3 FOB's have been used in the station to connect the island platforms.
Muiltple mural and sculptures are placed inside the terminal building to show out their cultural art forms.

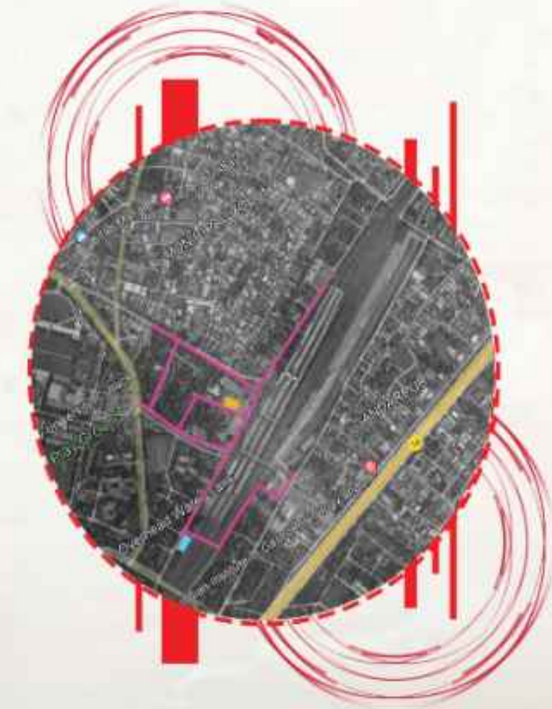
SEWAGE:
Sewage have been placed at the boundary level and its connected to the proposed STP pit directly.
sewage line also run's along the edges of the railway track to prevent the track line from flooding.

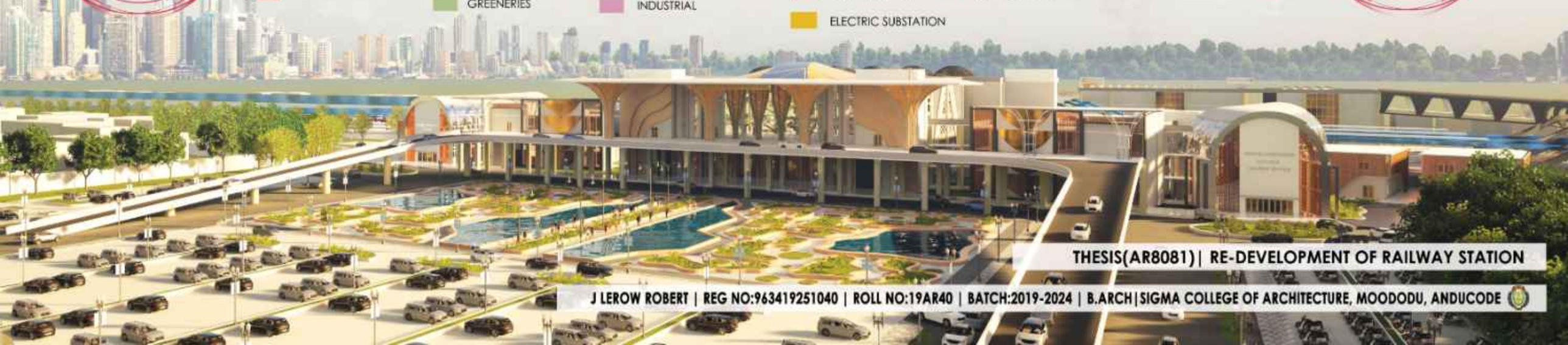
ELECTRIC POWER SUPPLY:
Its mantatory to have electric sub station in all the railway station to prevent from the power cut.

WATER:
The site have direct connection from the municpal cooperation water supply and drinking R.O water is also provided to the railway station.

DRAINAGE LINE
PROPOSED STP
ELECTRIC SUBSTATION

UTILITIES





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CONCEPT: SELF-NAVIGATION DESIGN

Self-navigation refers to the ability of a system, entity, or device to navigate or move through its environment autonomously, without external guidance or direct human control. This capability involves the use of sensors, algorithms, and other technologies to perceive the surroundings, make decisions, and execute movements or actions without constant intervention from external sources. Self-navigation is often associated with advanced technologies such as robotics, autonomous vehicles, drones, and smart systems that can operate, adapt, and respond to changing conditions independently. The goal is to enable entities to navigate and interact with their surroundings efficiently, safely, and without the need for continuous human input.

Passenger Flow Management: Utilizing sensors and data analytics to monitor passenger movement within the station. This information can be used to optimize the layout, manage crowds, and improve overall passenger experience.

Communication and Information Systems: Providing self-navigation capabilities for information kiosks, digital signage, and communication systems within the station. This allows passengers to easily find information, navigate the station, and receive real-time updates on train schedules.

USER → FLOW → SPACES

PASSENGERS MOVING TOWARDS THE PLATFORM FOR THE DEPARTURE LOBBY

CORE AREA WHERE PASSENGERS MOVE IN AND OUT

PASSENGERS MOVING TOWARDS THE EXIT FOR THE PLATFORM

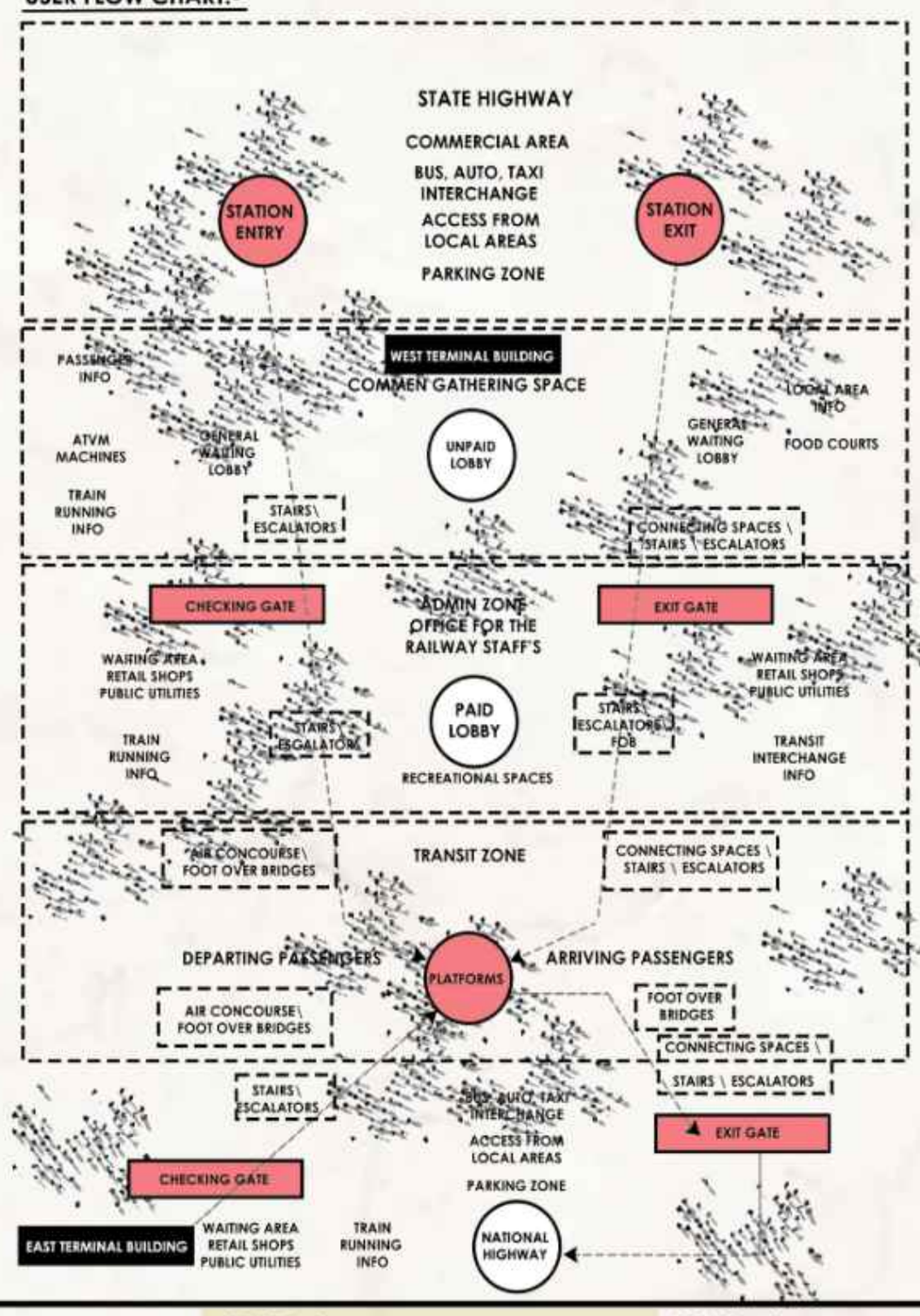
-In the case of the railway station majorlly only four types of user's are taken in. where the platform zone act as the major core area of the railway station.

-The user movement can be split in parts, people moving towards the core and people moving down from the core, i.e. people moving towards the platform and people moving out from the platform.

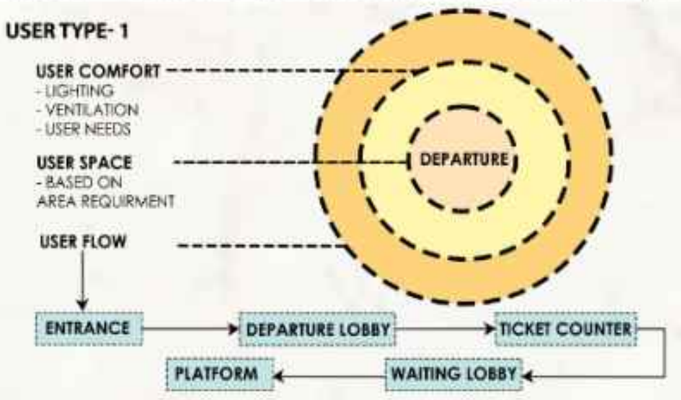
USER'S

USER TYPE 1	USER TYPE 2	USER TYPE 3	USER TYPE 4
USER'S IN DEPARTURE	USER'S IN ARRIVAL	PUBLIC INSIDE STATION	RAILWAY OFFICERS

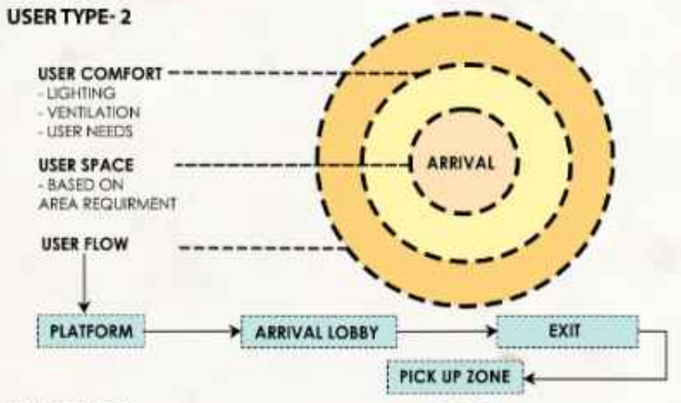
USER FLOW CHART:-



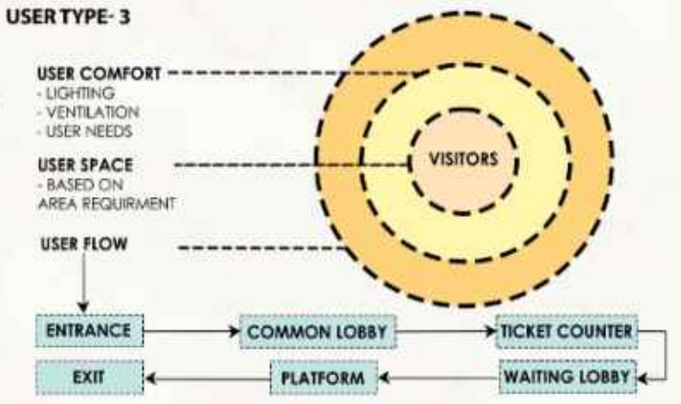
USER TYPE- 1



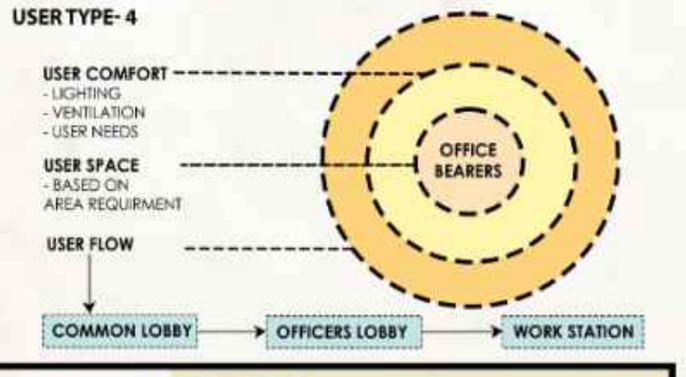
USER TYPE- 2



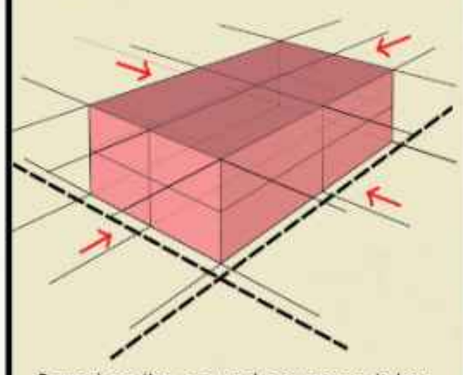
USER TYPE- 3



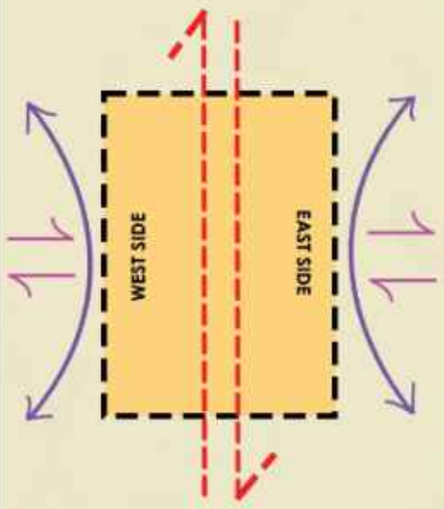
USER TYPE- 4



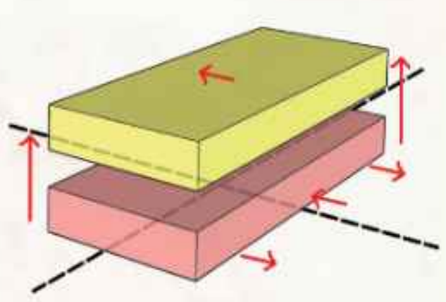
STAGE:- 1



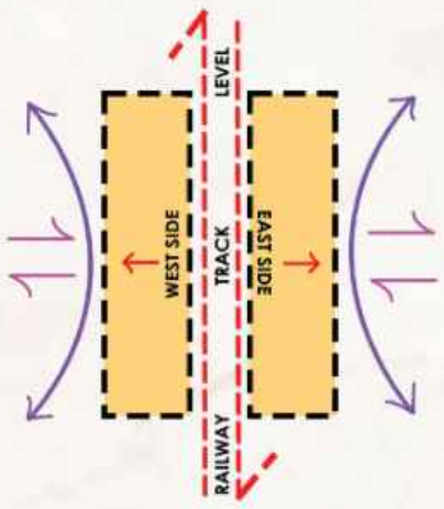
Based on the ground coverage taken from the local bylaws is taken as a block, the condition offers access from east and west side of the site.



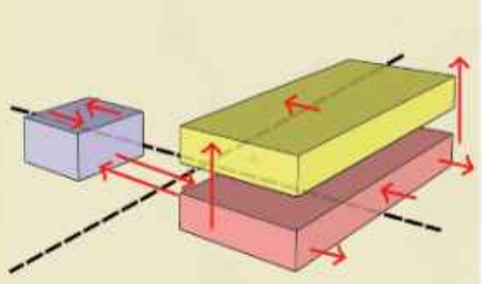
STAGE:- 2



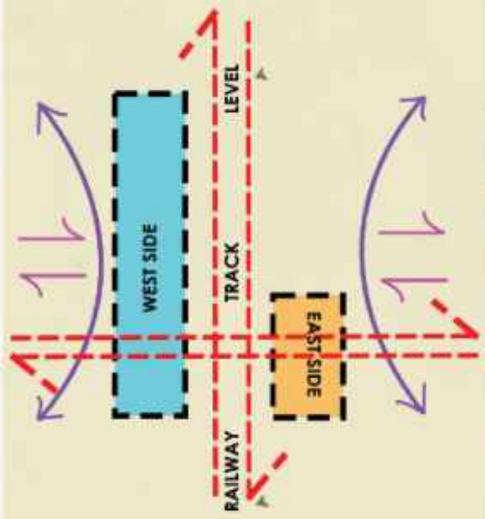
The work flow is majorly seprated as two elements which is deprature and arrival. This elements works as the major part for the self navigation.



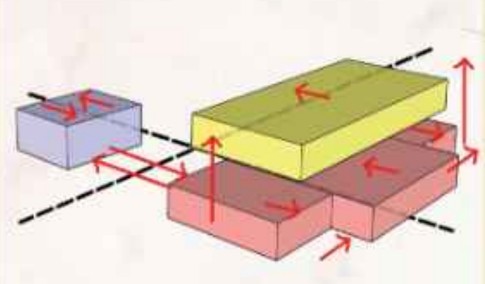
STAGE:- 3



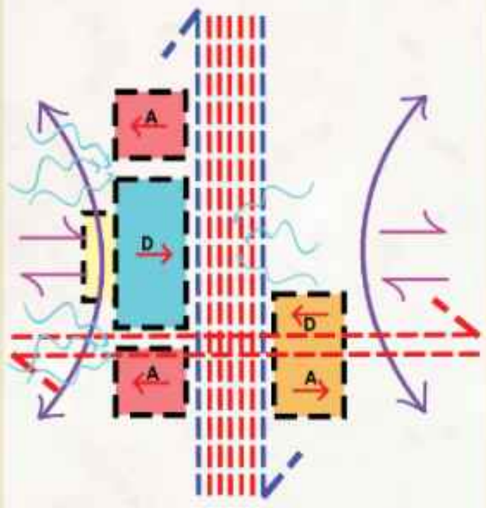
To change the work floe in the site as more functional and to reduce the human foot fall the terminal building is splited up into two parts majorly.



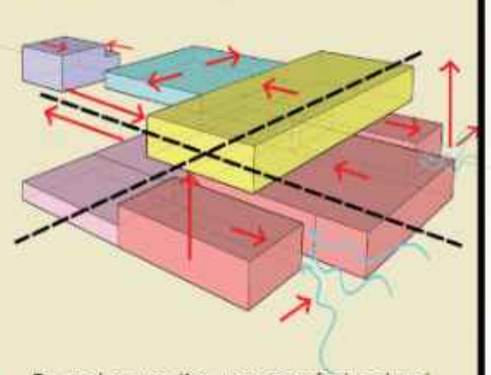
STAGE:- 4



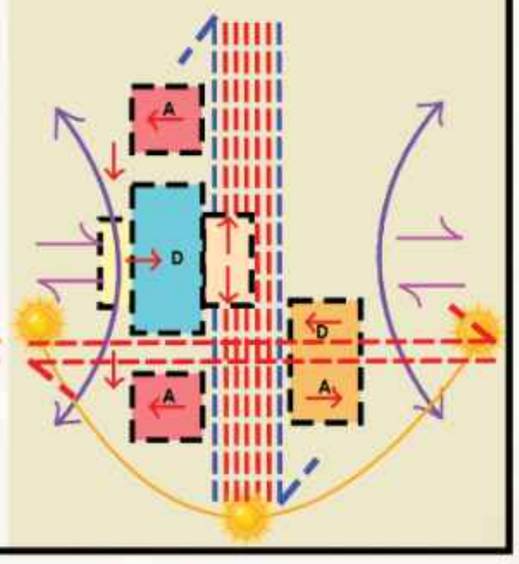
As self navigation is the major concept the work flow is not stopped in any point. Where flow from east and west building is also not stopped.



STAGE:- 5

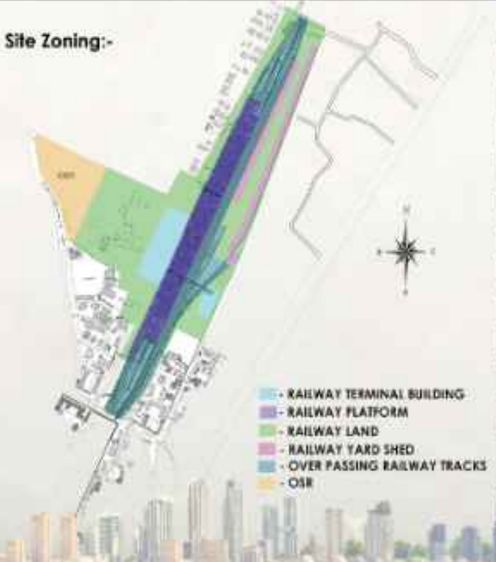


To make sure the user comfort natural lighting and ventilation is taken into the block, which split up the major block into multiple spaces.



Site plan based on plot coverage:-

Site Zoning:-



Site Zoning based on site condition:-

PLOT SPLIT UP			
1	MAXIMUM PLOT COVERAGE	40%	91451.6 SQM
2	MINIMUM PUBLC OPEN SPACE	40%	91451.6 SQM
3	MINIMUM VEGETATION ON SITE	10%	23862.9 SQM
4	OSR	10%	23862.9 SQM

According to the user analysis done the maximum human foot fall comes through the west terminal building which is directly connected to wards the city core, where it is connected through the state highways. Where only less number of human foot fall is noted on the east side, which is connected through the national highway.

AREA SPLIT UP BASED ON USER ANALYSIS:-				
DEPARTURE LOBBY		24800SQM		
1	WEST BUILDING DEPARTURE	85% USERS	21050SQM	
2	EAST BUILDING DEPARTURE	15% USERS	3720SQM	
ARRIVAL LOBBY		3840SQM		
3	WEST BUILDING ARRIVEL	85% USERS	3263SQM	
4	EAST BUILDING ARRIVEL	15% USERS	576SQM	

West terminal: the major foot fall fall over thes west side from where it is directly connected through the centeri city.
East terminal: only 15% of the footfall falls over the east side, where it is connected towards the national highways which takes people from outer district.

J LEROW ROBERT | REG NO:963419251040 | ROLL NO:19AR40 | BATCH:2019-2024 | B.ARCH|SIGMA COLLEGE OF ARCHITECTURE, MOODODU, ANDUCODE

Hey let me tell you about how the self navigation design works in this project !!!

VISUAL IMPACT >>>> USER FLOW

Hey Guy's lets look over the cuttack railway station design... This guy Lerow Have worked around 6 month's in this design... Let's see what he have made out.....

VISUAL IMPACT :-
Most of the people when the travel into a new place they will easly find difficult to around the space, Here I took it as a task, where I tried to improve the thing's which easly visually answer the user's questions, which can save time for them.

USER FLOW :-
The entire design is planned based on the user flow from the entry to the exit from the site. User flow made in the way where in some places even with out any visual elemnts support the user can move into the place.

1 DIRECTING TO ELEVATED DRIVEWAY

So I can see the direction board directing me to the departure lobby, so I want to drive over the Elevated driveway.....

VISUAL IMPACT :-
While a person enter into the railway station he can see the direction board first, so without any confusion he can move towards the elevated driveway.

USER FLOW :-
To ensure the user comfort the design is made as where even without the help of the direction board any one into the site can find out the departure lobby.

2 DIRECTING TOWARD'S AIR-CONCOUSE

Now I have entered into the departure lobby, I have seen something on the ceiling integrating me to move up stairs. On the right side they have placed directory display.....

VISUAL IMPACT :-
From the entrance of the departure lobby the people can see a directory strighlty which tells them about the current location and where they want to go. And we have sinage at the ceiling level to move through up.

USER FLOW :-
From the entrance I have straightly placed the ramp and esclator to move up, where the user will clearly under stand that they want to move up stairs to get into the air-concourse.

3 DIRECTING TOWARD'S THE PLATFORM

Wow!!! here we have a large waiting space... we have some commercial spaces to... they are also displaying the train's time of arrival and departure from the station....

VISUAL IMPACT :-
Here we have placed a large waiting hall, where people can see the directory display and train schedule display near the entrance and waiting area, where people can sit near the stair's or esclotor to the platform which they want to move down.

USER FLOW :-
Air-Concourse is a large air floating structure placed above the railway track. Where people can only visually or orally understand which platform the want to move down. Help desk and directories are placed around the air-concourse.

4 DIRECTING TOWARD'S THE DEPARTURE TRAIN

Now Iam in the platform, I can see the Display's around the platform directing towards the coach number and still I can see the train shedule display's...

VISUAL IMPACT :-
The passangers can move towards the coach number by seeing the coach display in the plaftform roofing and we have placed small sitting area's and guide line's in the platform. People should move only in the guided area for safty purpose.

USER FLOW :-
People can move directly towards their coach number mentioned in their train tickets by seeing the coach number display placed over the platform roofing. They can wait until the train arrive the station and get into the train once it reach the station.

5 DIRECTING TOWARD'S THE ARRIVAL LOBBY

Now I have got out of the train... I want to move out of the station.. I can see a directory pointing me to move towards the subway to get out of the station.....

VISUAL IMPACT :-
In every coach line in the platform level, I have placed a directory display, where the user can see it and move towards the ramp taking them into a subway connected directly to the arrival lobby.

USER FLOW :-
Once the user see's the directory display and move into the subway ramp, it act as a oneway, which direct the user's directly into the arrival lobby of the station.

7 DIRECTING TO ELEVATED DRIVEWAY

So now Iam out of the arrival lobby.... I can see my taxi running out of the pre-paid taxi parking.... And Iam ready to move out of the Cuttack Railway Station....

VISUAL IMPACT :-
Directoies display and display post are placed integateing how to move out of the railway station and move towards are places inside the station boundary.

USER FLOW :-
From the arrival lobby a long road of around 300m we can see the exit gate of the station, We can also see the bike parking and the car parking placed in the roadway leading towards the exit gate.

6 DIRECTING TOWARD'S THE EXIT GATE

Now Iam in the arrival lobby of the railway station.... I can see the exit gate directly... I can also see the help desk and pre-book taxi service, this is so helpfull for me.....

VISUAL IMPACT :-
I have kept the design so simple for the arrival lobby, where people can see a triple storey high roofing, which itself directing the user towards the exit gate. The landscape also direct the people to the exit gate.

USER FLOW :-
From the subway the arrival lobby is connected directly where the user's can move straightly towards the exit gate without any interruptions.

THESIS(AR8081) | RE-DEVELOPMENT OF RAILWAY STATION

J LEROW ROBERT | REG NO:963419251040 | ROLL NO:19AR40 | BATCH:2019-2024 | B.ARCH | SIGMA COLLEGE OF ARCHITECTURE, MOODODU, ANDUCODE

SITE LOCATION: CUTTACK, ODISHA, INDIA
SITE AREA: 59ACRES (238629 SQM)

AREA STATEMENT: REDEVELOPMENT OF CUTTACK RAILWAY STATION			
TOTAL SITE AREA: 59ACRES (238629 SQM)			
REGULATION : ODA NORMS 2023 (TP/ LOCAL NORMS FORM CONSTRUCTION)			
PLOT SPLIT UP			
1	MINIMUM PLOT COVERAGE	40%	95452.0 SQM
2	MINIMUM PUBLIC OPEN SPACE	40%	95452.0 SQM
3	MINIMUM VEGETATION ON SITE	20%	23862.9 SQM
4	FAR	28%	23862.9 SQM
5	MINIMUM ROAD WIDTH	12M	
6	HEIGHT OF HIGH RISE BUILDING	28.70 SQM	
7	PARKING 40% OF TOTAL BUILT UP AREA		
8	FAR	5	
9	MAXIMUM BUILT UP AREA	1790952.8	95452.0
SET BACK			
1	FRONT	6M MINIMUM	
2	REAR	6M MINIMUM	
3	OTHER SIDES	3.1M MINIMUM	
4			
BUILDING TO BE RETAINED			
1	PLOT AREA	238629.0SQM	
2	TRAIN SERVICE SHED 1	7200SQM	
3	STORAGE SHED 1	5400SQM	
4	STORAGE SHED 2	2800SQM	
PLATFORMS & RAILWAY TRACK			
1	ISLAND PLATFORM	5	
2	TRACTION FLOTTING(ELEC)	5	
3	RAILWAY LINE TRACK	7	
4	TOTAL NO OF TRACKS	24	
EXISTING STRUCTURES			
1	MULTI BUILDING	2300SQM	
2	FOOT OVER BRIDGE	2	
3	RAIL CUM GATES	2	
4	UNIT 3001	NO BUILDING	

SCALE:- 1:1000

1. ENTRANCE
2. EXIT
3. BUS STAND
4. FOUR WHEELER PARKING
5. TWO WHEELER PARKING
6. THREE WHEELER PARKING
7. TAXI PARKING
8. DISABLED PARKING
9. STP AND ELECTRIC SUB STATION
10. STAFF CAR PARKING
11. STAFF TWO WHEELER PARKING
12. WEST DEPARTURE BLOCK
13. REST HOUSE
14. WEST ARRIVAL BLOCK 1
15. RAILWAY OFFICE
16. WEST ARRIVAL BLOCK 2
17. RAILWAY PROTECTION FORCE
18. GOVERNMENT RAILWAY POLICE
19. RAILWAY MAIL SERVICE
20. PARCEL OFFICE
21. AIR CONCOURSE
22. PLATFORM 1
23. PLATFORM 2&3
24. PLATFORM 4&5
25. EAST DEPARTURE BLOCK
26. EAST ARRIVAL BLOCK
27. RAILWAY SERVICE SHED
28. RAILWAY GOODS STORAGE 1
29. RAILWAY GOODS STORAGE 2
30. ELEVATED DRIVE WAY
31. FOOT OVER BRIDGE 1
32. FOOT OVER BRIDGE 2
33. EAST BUILDING PARKING

STATE HIGH WAY 12M WIDE

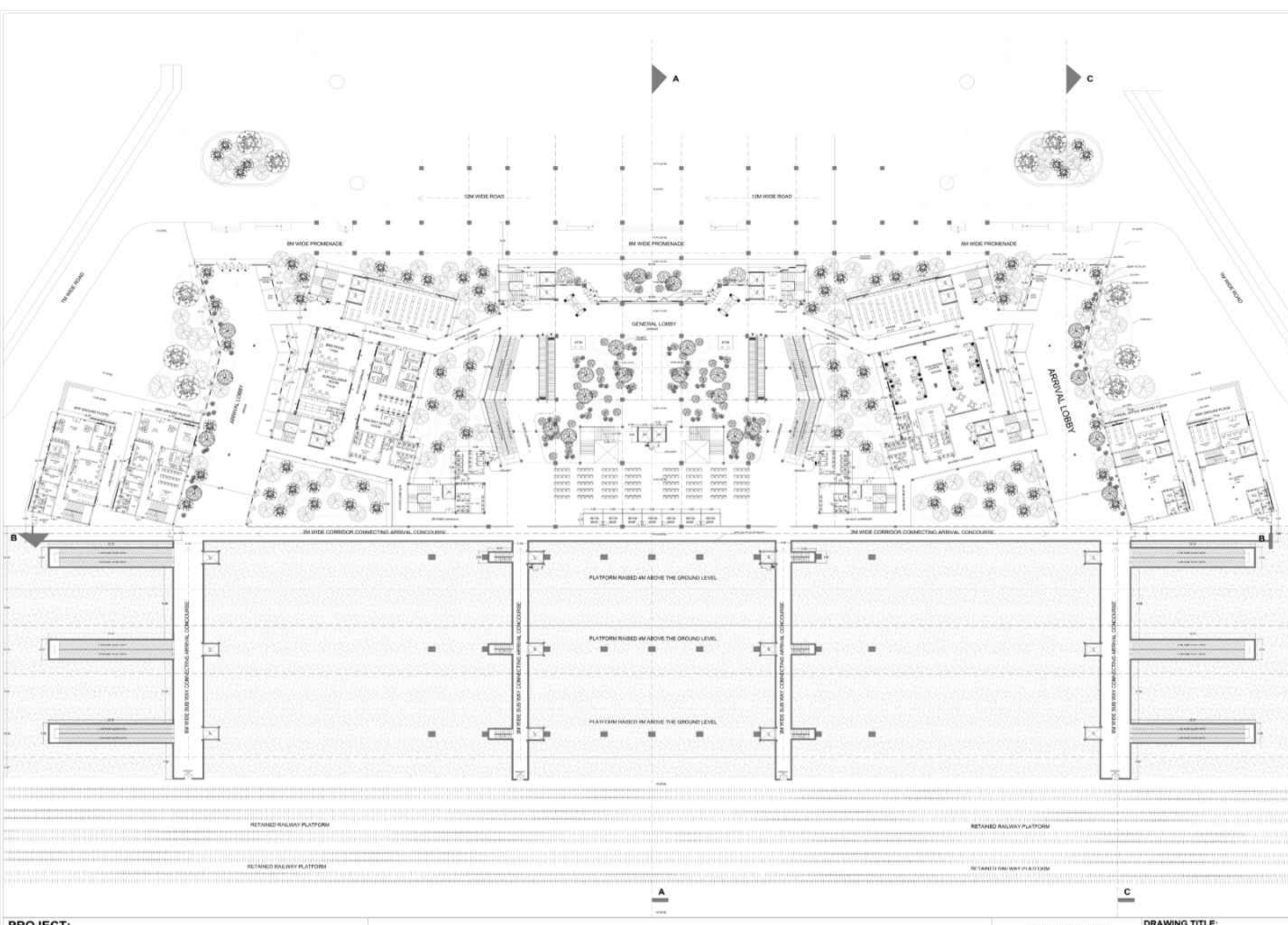
7M WIDE SERVICE ROAD

9M WIDE ROAD

NATIONAL HIGH WAY 24M WIDE

MASTER PLAN - RE-DEVELOPMENT OF RAILWAY STATION, CUTTACK

THESIS(AR8081)| RE-DEVELOPMENT OF RAILWAY STATION
J LEROW ROBERT | REG NO:963419251040 | ROLL NO:19A840 | BATCH:2019-2024 | B.ARCH|SIGMA COLLEGE OF ARCHITECTURE, MOODODU, ANDUCODE



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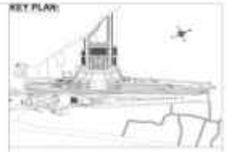


NOTES

1. ALL DIMENSIONS ARE IN METERS UNLESS AND OTHERWISE SPECIFIED
2. ALL LEVELS ARE IN METERS

SCHEDULE OF JOINERIES

S.NO.	TYPE	LOCATION	SILL HEIGHT	OPENING SIZE
1	D	-	0	1.5X2.1
2	D1	-	0	1.2X2.1
3	D2	-	0	1.2X2.1
4	D3	-	0	1X2.1
5	D4	-	0	0.9X2.1
6	D5	-	0	0.6X2.1
7	D6	-	0	1X2.1
8	SD	-	0	0.6X2.1
9	W	-	0.9M	1.6X1.2
10	W1	-	0.9M	2.2X1.2
11	V	TOILET	1.65M	0.6X.45

AREA STATEMENT

ARCHITECTURAL DRAWING

NOTE :- ALL DIMENSIONS ARE IN MM.

DRAWING TITLE :-

GROUND FLOOR PLAN DRAWING

DRAWN BY :-

J LEROW ROBERT

SCALE :-

1:250

DATE :-

04-06-2024

BATCH :-

2019 - 2024

SEM & YEAR :-

X & VTH YEAR

ACADEMIC YEAR :-

2023 - 2024

SUBJECT :-

AR8081- THESIS

GUIDED BY :-

AR. ABIRAMI

COLLEGE NAME :-

SIGMA COLLEGE OF ARCHITECTURE

NEAR ELAPATHUR (MODERN) ANGUCODE POST, KANYAKUMARI DISTRICT, TAMILNADU - 629 166

SEAL & SIGN

DRG NO.

6

ORIENTATION:

PROJECT:

REDEVELOPMENT OF RAILWAY STATION, CUTTACK

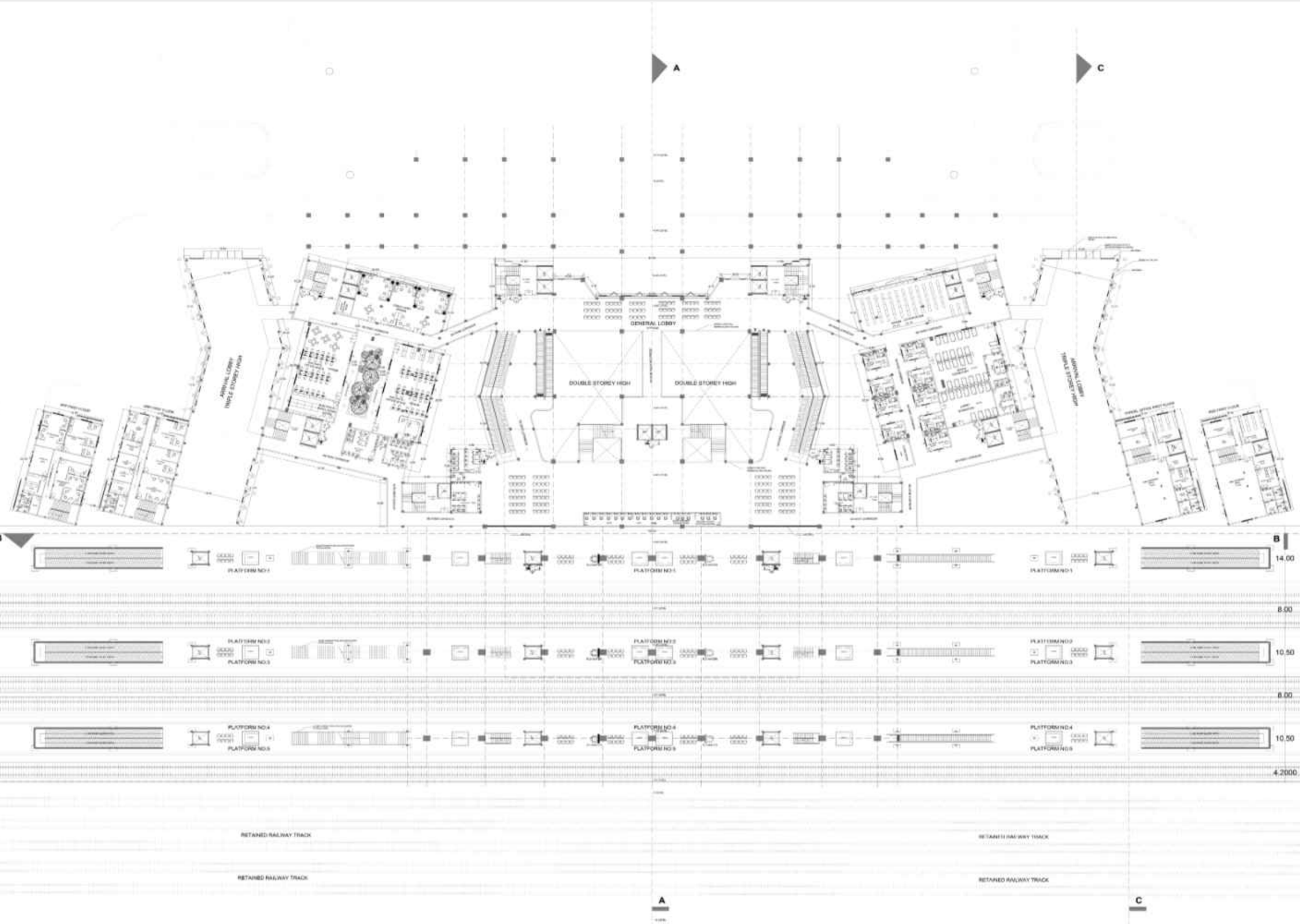
REG NO :- 963419251040

ROLL NO :- 19AR40

DRAWING TITLE:

GROUND FLOOR PLAN

SIGN & SEAL



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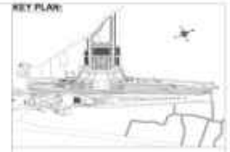

NOTES

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SCHEDULE OF JOINERIES

S.NO.	TYPE	LOCATION	SILL HEIGHT	OPENING SIZE
1	D	-	0	1.5X2.1
2	D1	-	0	1.2X2.1
3	D2	-	0	1.2X2.1
4	D3	-	0	1X2.1
5	D4	-	0	0.9X2.1
6	D5	-	0	0.6X2.1
7	D6	-	0	1X2.1
8	SD	-	0	0.6X2.1
9	W	-	0.9M	1.6X1.2
10	W1	-	0.9M	2.2X1.2
11	V	TOILET	1.65M	0.6X.45

AREA STATEMENT

ARCHITECTURAL DRAWING

DRAWING TITLE:-
FIRST FLOOR PLAN DRAWING

DRAWN BY:-
J LEROW ROBERT

SCALE:-
1:250

DATE:
04-06-2024

BATCH:-
2019 - 2024

SEM & YEAR:
X & VTH YEAR

ACADEMIC YEAR:-
2023 - 2024

SUBJECT:-
ARS081- THESIS

GUIDED BY:-
AR. ABIRAMI

COLLEGE NAME:
SIGMA COLLEGE OF ARCHITECTURE

NEAR ELAYATHUR, MODAKKU ANJUCODE POST, KANYAKUMARI DISTRICT TAMILNADU 629 166

SEAL & SIGN

DRG NO.
7

ORIENTATION:

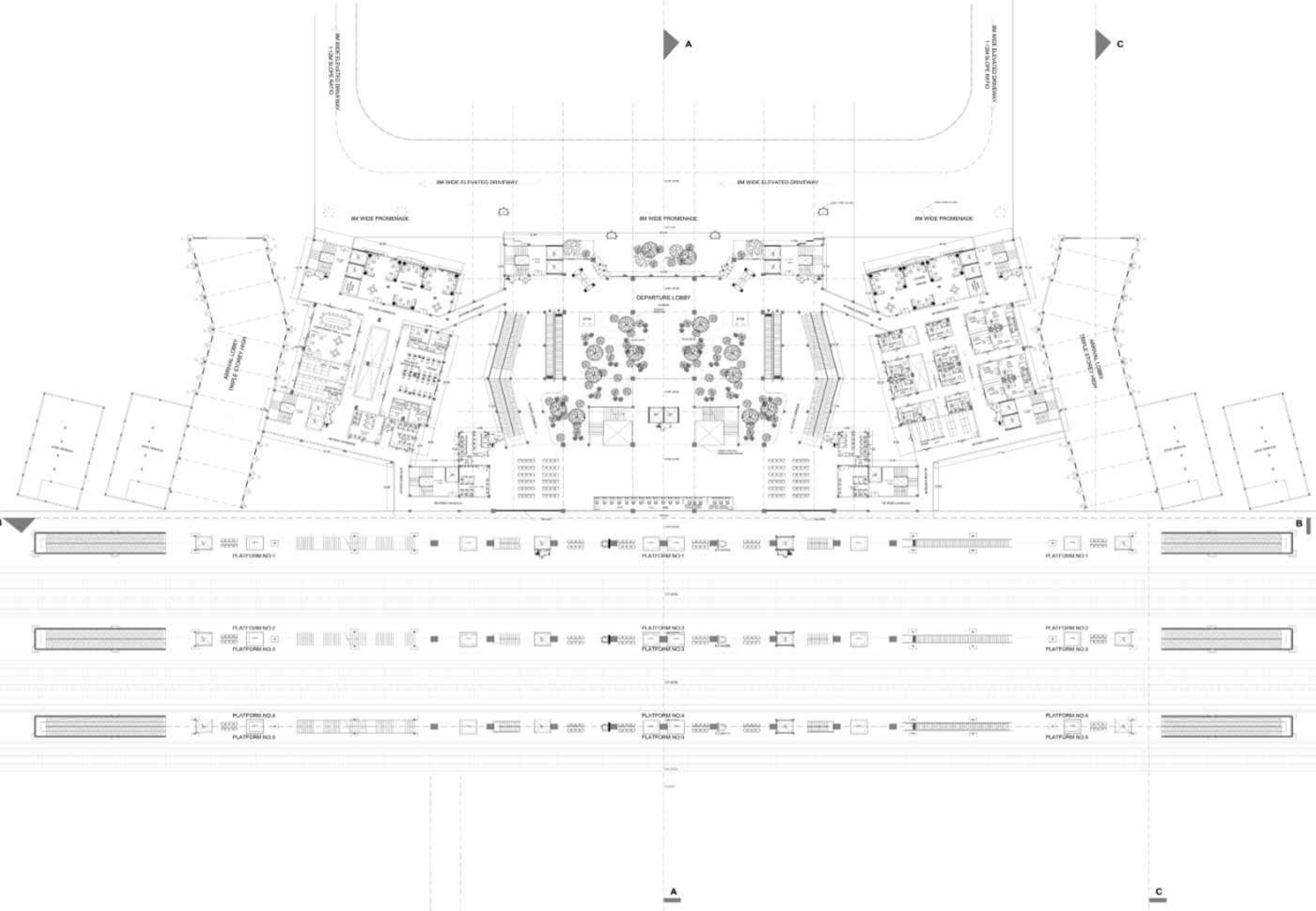
PROJECT:
REDEVELOPMENT OF RAILWAY STATION, CUTTACK

REG NO:- 963419251040

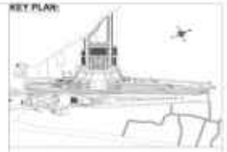
ROLL NO:- 19AR40

DRAWING TITLE:
FIRST FLOOR PLAN

SIGN & SEAL



KEY PLAN:



NOTES

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SCHEDULE OF JOINERIES

S.NO.	TYPE	LOCATION	SILL HEIGHT	OPENING SIZE
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2	D1	-	0	1.2X2.1
3	D2	-	0	1.2X2.1
4	D3	-	0	1X2.1
5	D4	-	0	0.9X2.1
6	D5	-	0	0.6X2.1
7	D6	-	0	1X2.1
8	SD	-	0	0.6X2.1
9	W	-	0.9M	1.6X1.2
10	W1	-	0.9M	2.2X1.2
11	V	TOILET	1.65M	0.6X.45

AREA STATEMENT

ARCHITECTURAL DRAWING

DRAWING TITLE :-
SECOND FLOOR PLAN DRAWING

DRAWN BY :-
J LEROW ROBERT

SCALE :-
1:250

DATE :-
04-06-2024

BATCH :-
2019 - 2024

SEM & YEAR :-
X & VTH YEAR

ACADEMIC YEAR :-
2023 - 2024

SUBJECT :-
AR8081- THESIS

GUIDED BY :-
AR. ABIRAMI

COLLEGE NAME :-
SIGMA COLLEGE OF ARCHITECTURE

NEAR ELAYATHUKUDI, MEDIKKADU,
ANGUCODE POST,
KANYAKUMARI DISTRICT,
TAMILNADU. 629 168

SEAL & SIGN

DRG NO.
8

ORIENTATION:

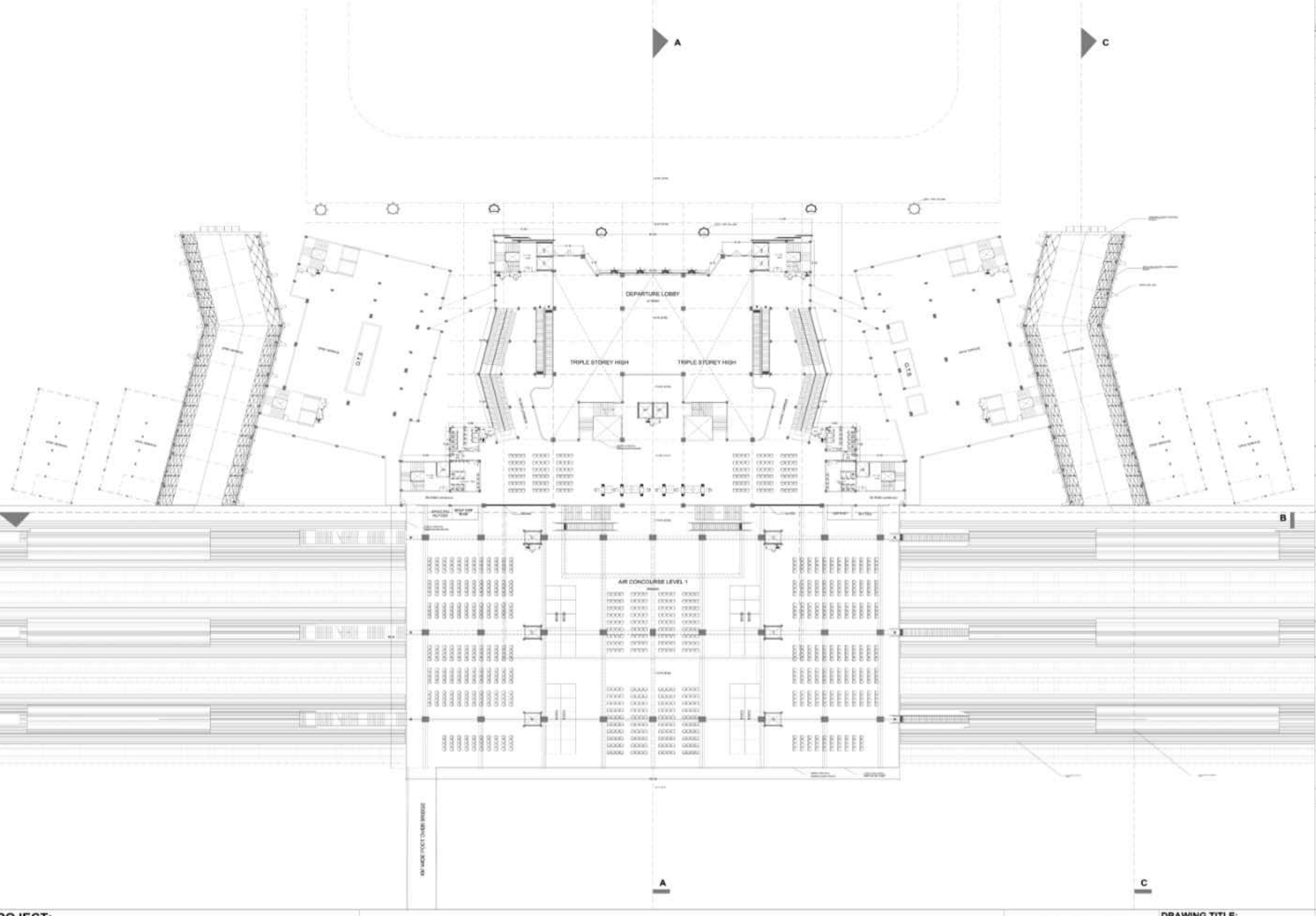
PROJECT:
REDEVELOPMENT OF RAILWAY STATION, CUTTACK

REG NO :- 963419251040

ROLL NO :- 19AR40

DRAWING TITLE:
SECOND FLOOR PLAN

SIGN & SEAL



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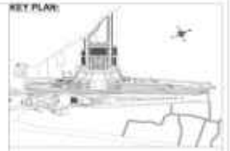

NOTES

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SCHEDULE OF JOINERIES

S.NO.	TYPE	LOCATION	SILL HEIGHT	OPENING SIZE
1	D	-	0	1.5X2.1
2	D1	-	0	1.2X2.1
3	D2	-	0	1.2X2.1
4	D3	-	0	1X2.1
5	D4	-	0	0.9X2.1
6	D5	-	0	0.6X2.1
7	D6	-	0	1X2.1
8	SD	-	0	0.6X2.1
9	W	-	0.9M	1.6X1.2
10	W1	-	0.9M	2.2X1.2
11	V	TOILET	1.65M	0.6X.45

AREA STATEMENT

ARCHITECTURAL DRAWING

DRAWING TITLE :-
THIRD FLOOR PLAN DRAWING

DRAWN BY :-
J LEROW ROBERT

SCALE :-
1:250

DATE
04-06-2024

BATCH :-
2019 - 2024

SEM & YEAR :-
X & VTH YEAR

ACADEMIC YEAR :-
2023 - 2024

SUBJECT :-
AR8081- THESIS

GUIDED BY :-
AR. ABIRAMI

COLLEGE NAME :-
SIGMA COLLEGE OF ARCHITECTURE

SEAL & SIGN

DRG NO.
9

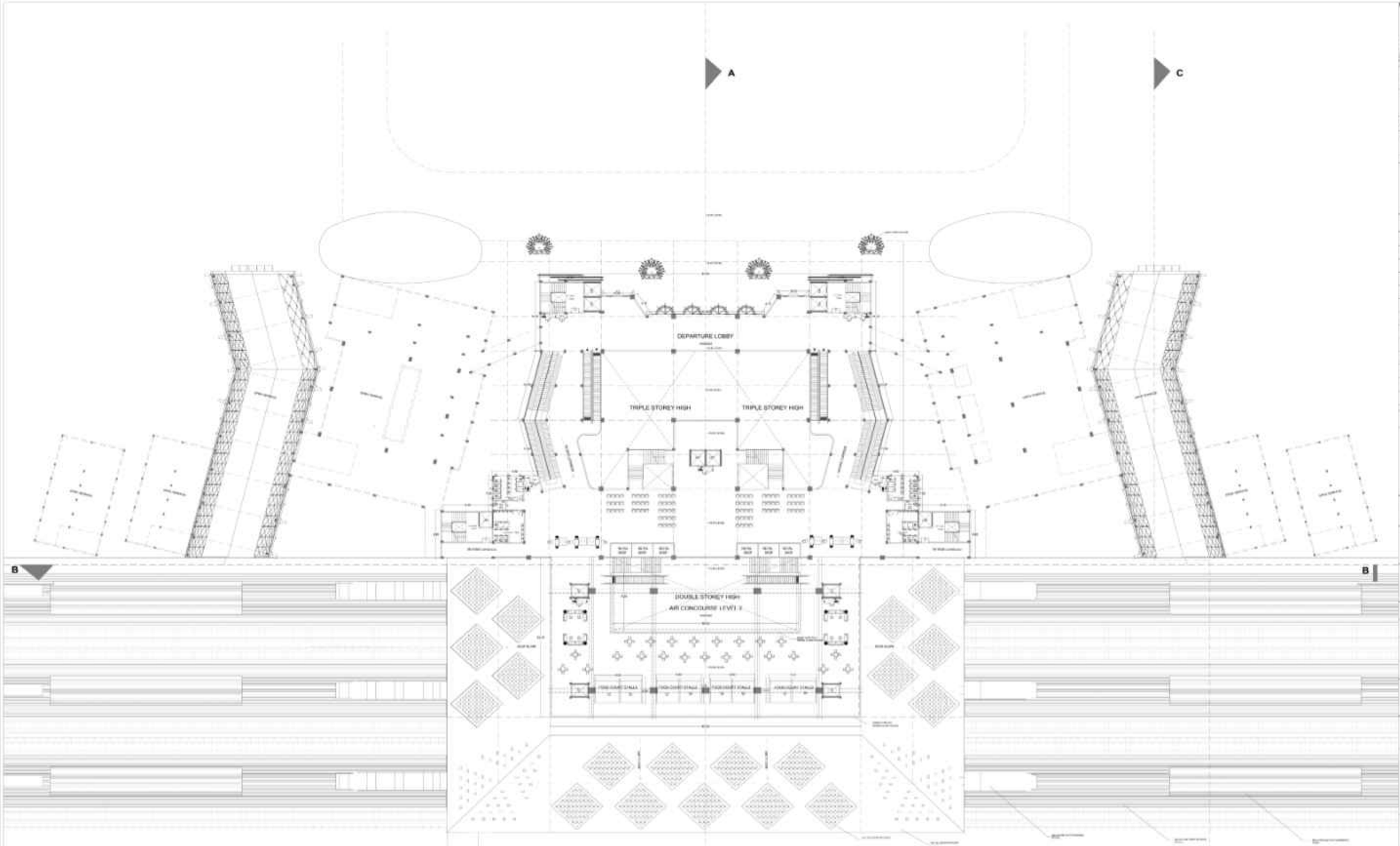
ORIENTATION:

PROJECT:
REDEVELOPMENT OF RAILWAY STATION, CUTTACK

REG.NO :- 963419251040
ROLL NO :- 19AR40

DRAWING TITLE:
THIRD FLOOR PLAN

SIGN & SEAL



KEY PLAN:

NOTES

1. ALL DIMENSIONS ARE IN METERS UNLESS AND OTHERWISE SPECIFIED.
2. ALL LEVELS ARE IN METERS.

SCHEDULE OF JOINERIES

S.NO.	TYPE	LOCATION	SILL HEIGHT	OPENING SIZE
1	D	-	0	1.5X2.1
2	D1	-	0	1.2X2.1
3	D2	-	0	1.2X2.1
4	D3	-	0	1X2.1
5	D4	-	0	0.9X2.1
6	D5	-	0	0.6X2.1
7	D6	-	0	1X2.1
8	SD	-	0	0.6X2.1
9	W	-	0.9M	1.6X1.2
10	W1	-	0.9M	2.2X1.2
11	V	TOILET	1.65M	0.6X.45

AREA STATEMENT

ARCHITECTURAL DRAWING

NOTE :- ALL DIMENSIONS ARE IN MM.

DRAWING TITLE :-
FOURTH FLOOR PLAN DRAWING

DRAWN BY :-
J LEROW ROBERT

SCALE :-
1:250

DATE :-
04-06-2024

BATCH :- 2019 - 2024

SEM & YEAR :- X & VTH YEAR

ACADEMIC YEAR :-
2023 - 2024

SUBJECT :-
AR8001- THESIS

GUIDED BY :-
AR. AMIRAM

COLLEGE NAME :-
SIGMA COLLEGE OF ARCHITECTURE

NEAR ELAYATHUR, MEDIKURICHI, ANGUCODE POST, KANYAKUMARI DISTRICT, TAMILNADU. 629 168

SEAL & SIGN

ORG NO.
10

ORIENTATION:

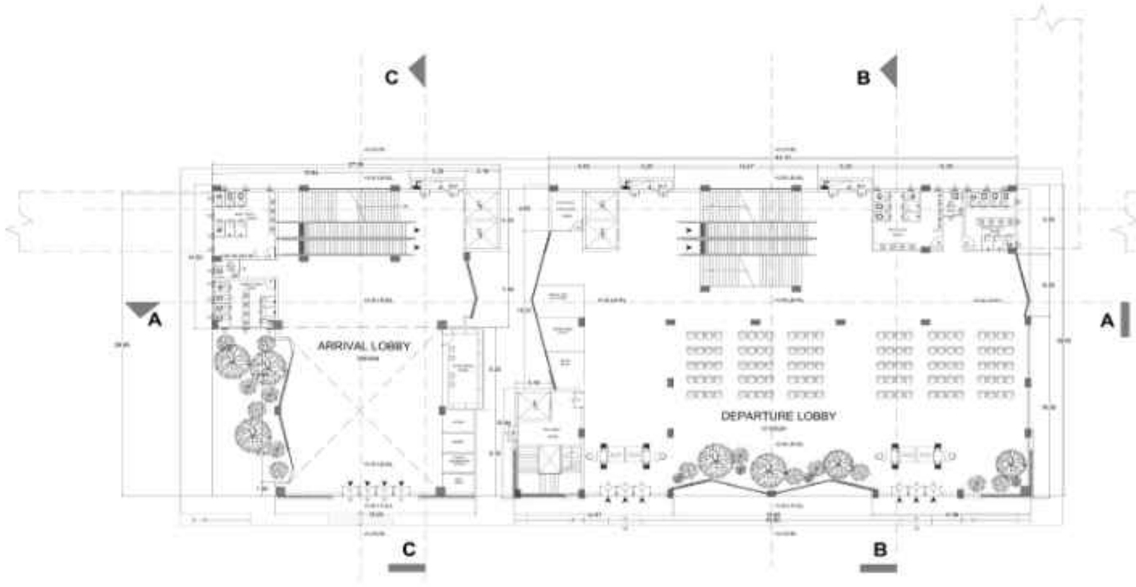
PROJECT:
REDEVELOPMENT OF RAILWAY STATION, CUTTACK

REG NO :- 963419251040

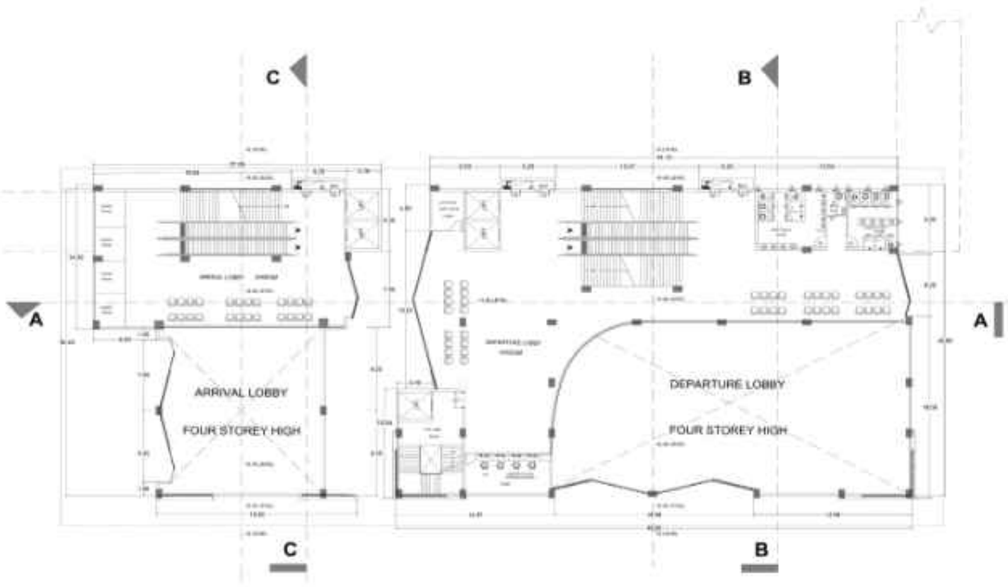
ROLL NO :- 19AR40

DRAWING TITLE:
FOURTH FLOOR PLAN

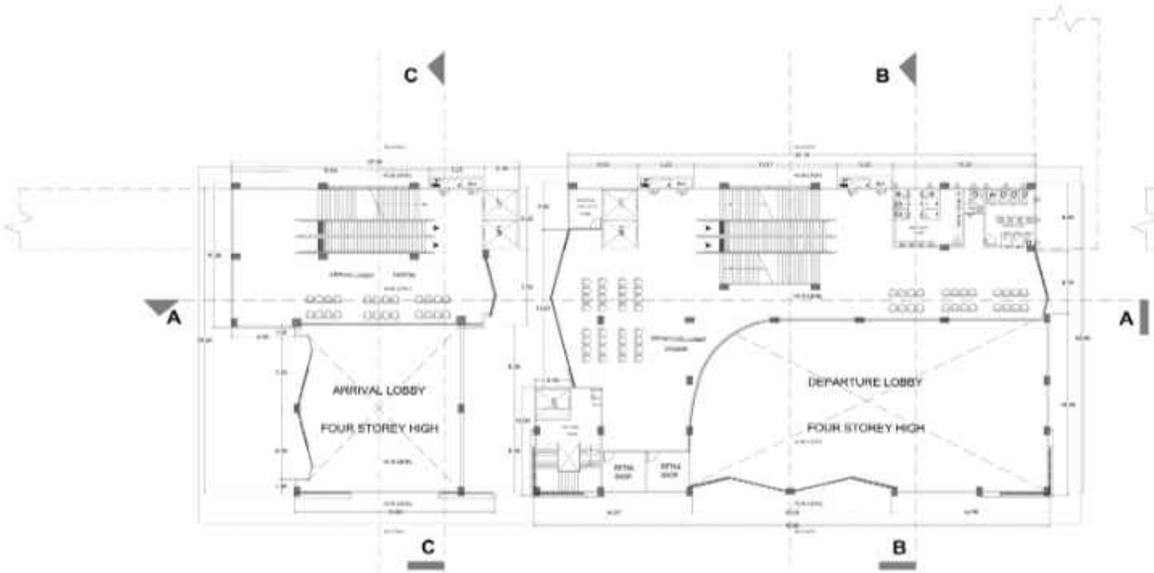
SIGN & SEAL



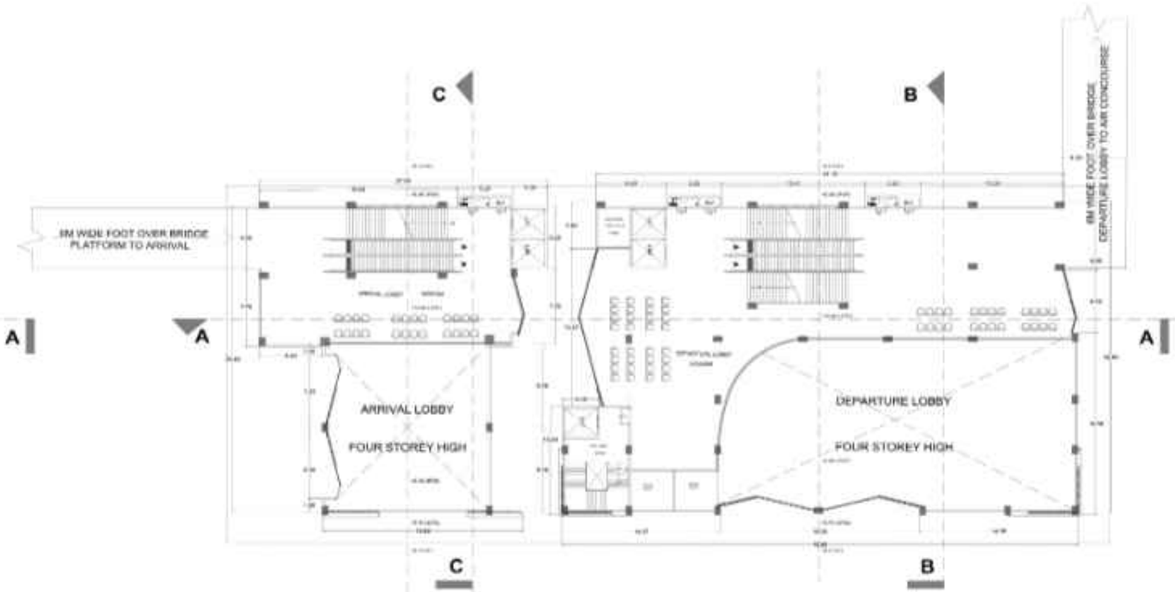
EAST TERMINAL GROUND FLOOR PLAN



EAST TERMINAL FIRST FLOOR PLAN



EAST TERMINAL SECOND FLOOR PLAN



EAST TERMINAL THIRD FLOOR PLAN

KEY PLAN:

NOTES

1. ALL DIMENSIONS ARE IN METERS UNLESS AND OTHERWISE SPECIFIED.
2. ALL LEVELS ARE IN METERS.

SCHEDULE OF JOINERIES

S.NO.	TYPE	LOCATION	SILL HEIGHT	OPENING SIZE
1	D	-	0	1.5X2.1
2	D1	-	0	1.2X2.1
3	D2	-	0	1.2X2.1
4	D3	-	0	1X2.1
5	D4	-	0	0.9X2.1
6	D5	-	0	0.6X2.1
7	D6	-	0	1X2.1
8	SD	-	0	0.6X2.1
9	W	-	0.9M	1.6X1.2
10	W1	-	0.9M	2.2X1.2
11	V	TOILET	1.65M	0.6X.45

AREA STATEMENT

ARCHITECTURAL DRAWING

DRAWING TITLE :-
EAST TERMINAL FLOOR PLAN DRAWING

DRAWN BY :-
J LEROW ROBERT

SCALE :-
1:200

DATE :-
04-06-2024

BATCH :-
2019 - 2024

SEM & YEAR :-
X & VTH YEAR

ACADEMIC YEAR :-
2023 - 2024

SUBJECT :-
AR8081- THESIS

GUIDED BY :-
AR. ABIRAMI

COLLEGE NAME :-
SIGMA COLLEGE OF ARCHITECTURE

SEAL & SIGN

DRG NO.
11

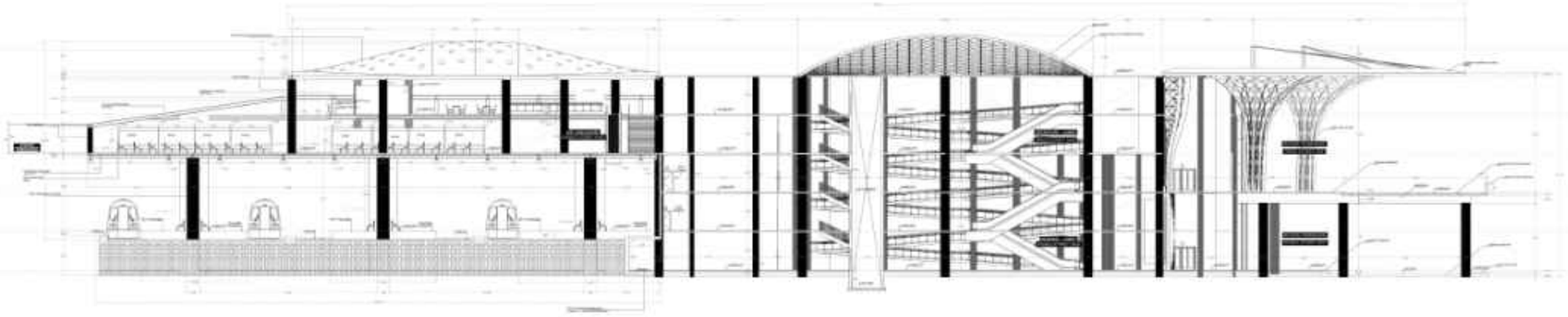
ORIENTATION:

PROJECT:
REDEVELOPMENT OF RAILWAY STATION, CUTTACK

REG.NO:- 963419251040
ROLL NO:- 19AR46

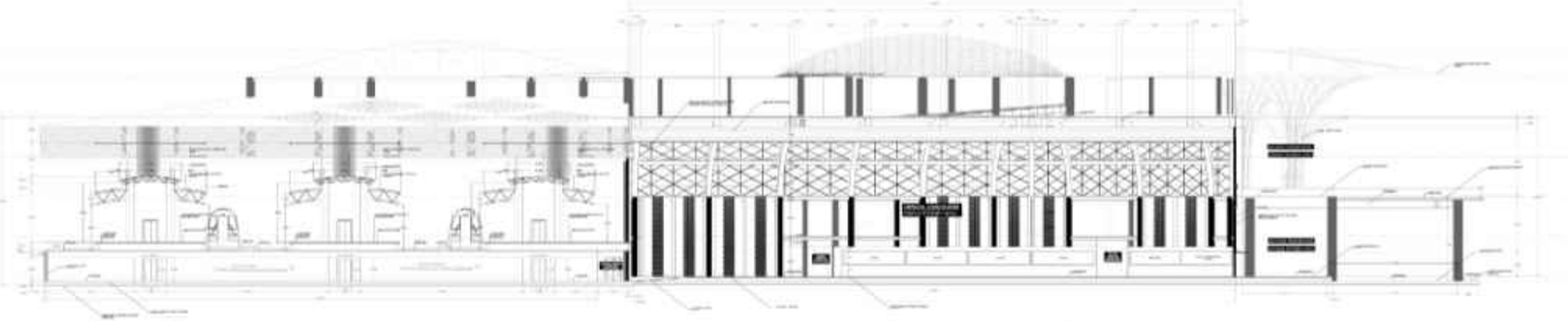
DRAWING TITLE:
EAST TERMINAL FLOOR PLAN

SIGN & SEAL

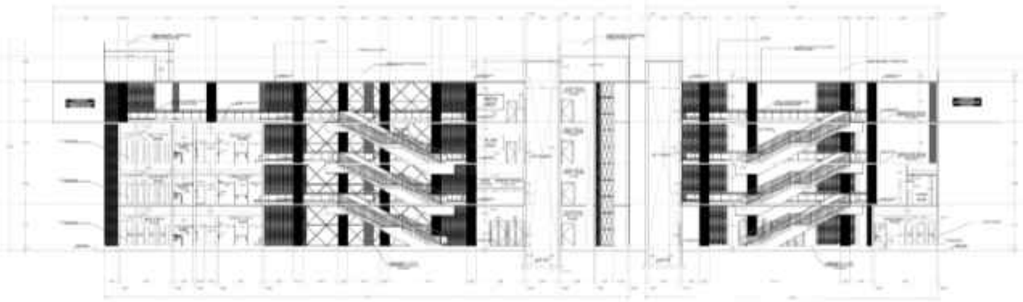


WEST TERMINAL BUILDING SECTION- AA

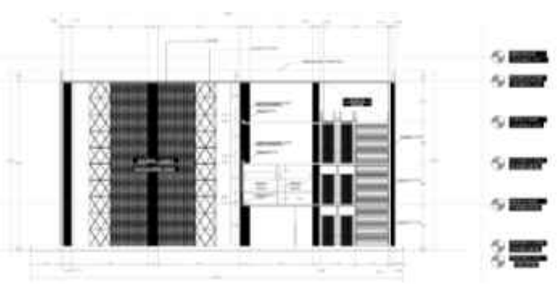
WEST TERMINAL BUILDING SECTION- BB



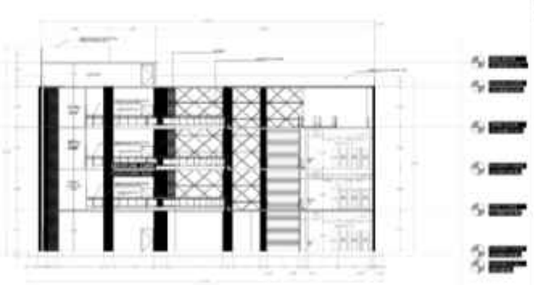
WEST TERMINAL BUILDING SECTION- CC



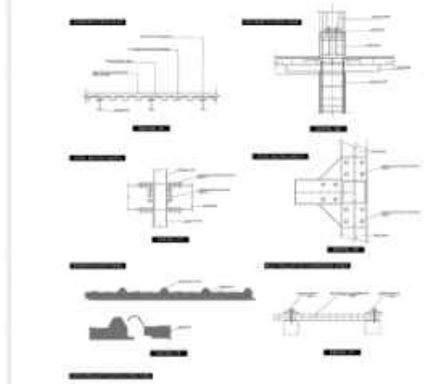
EAST TERMINAL BUILDING SECTION- AA

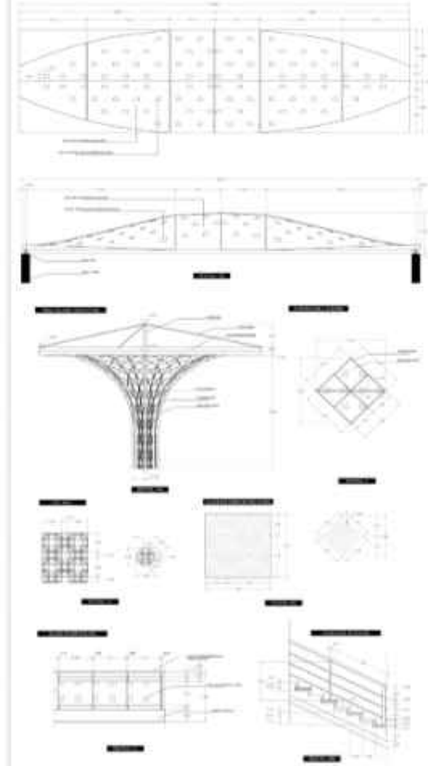


EAST TERMINAL BUILDING SECTION- BB



EAST TERMINAL BUILDING SECTION- CC





NOTES

1. ALL DIMENSIONS ARE IN METERS UNLESS AND OTHERWISE SPECIFIED.
2. ALL LEVELS ARE IN METERS.

SCHEDULE OF JOINERIES

S.NO.	TYPE	LOCATION	SILL HEIGHT	OPENING SIZE

AREA STATEMENT

ARCHITECTURAL DRAWING

NOTE :- ALL DIMENSIONS ARE IN METER

DRAWING TITLE:-

SECTION DRAWING

DRAWN BY:-

J LEROW ROBERT

SCALE:-

1:200

DATE:-

04-06-2024

BATCH:

2019 - 2024

SEM & YEAR:-

X & VTH YEAR

ACADEMIC YEAR:-

2023 - 2024

SUBJECT:-

AR8081- THESIS

GUIDED BY:-

AR. ABIRAMI

COLLEGE NAME:-

SIGMA COLLEGE OF ARCHITECTURE

NEAR KUZHITHURAI, KOODIYOU, ANDUKKUR POST, NANGUNERI DISTRICT, TAMILNADU - 627 116

SEAL & SIGN

ORG NO.

12

ORIENTATION:

PROJECT:

REDEVELOPMENT OF RAILWAY STATION, CUTTACK

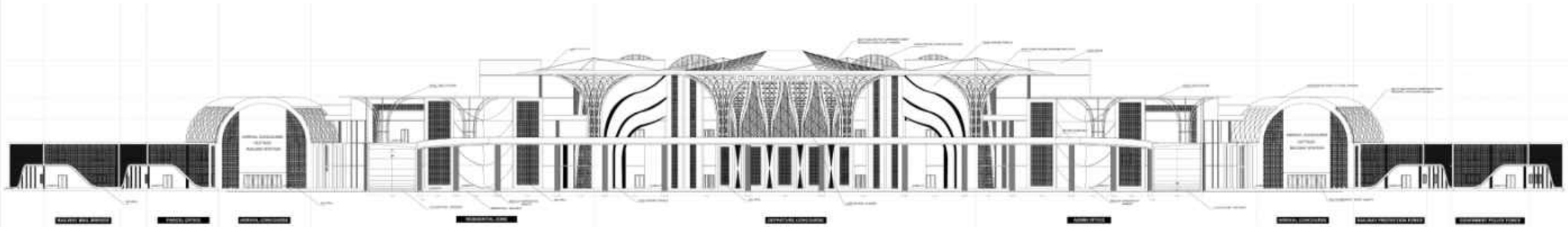
REG NO :- 5634192510401

ROLL NO :- 19AR40

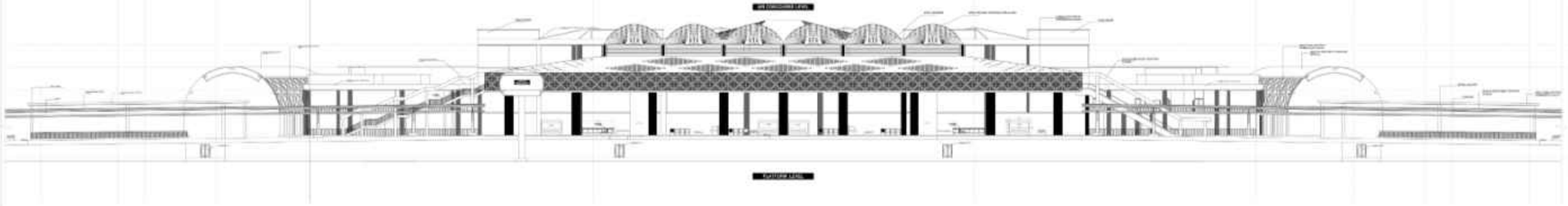
DRAWING TITLE:

WEST & EAST TERMINAL SECTION DRAWINGS

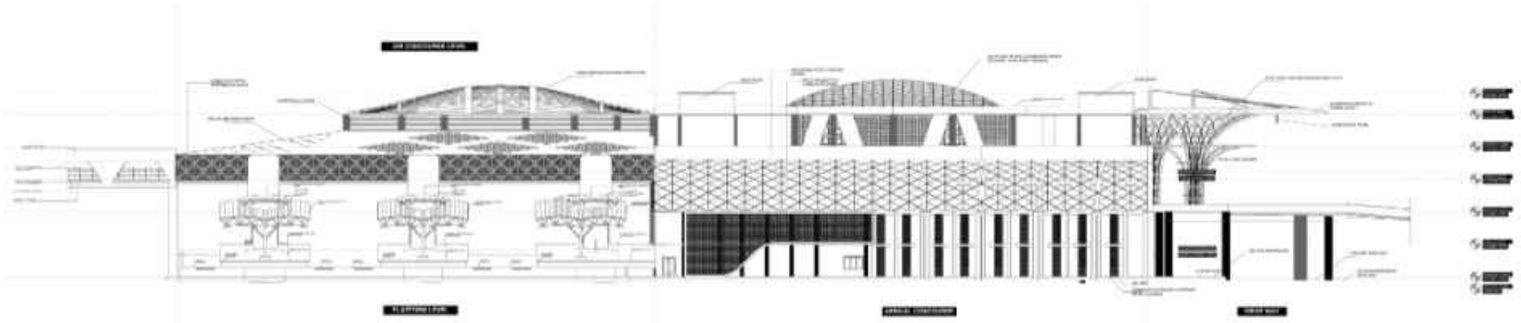
SIGN & SEAL



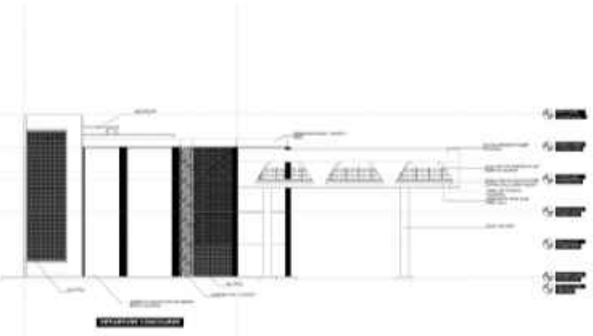
WEST TERMINAL BUILDING NORTH ELEVATION



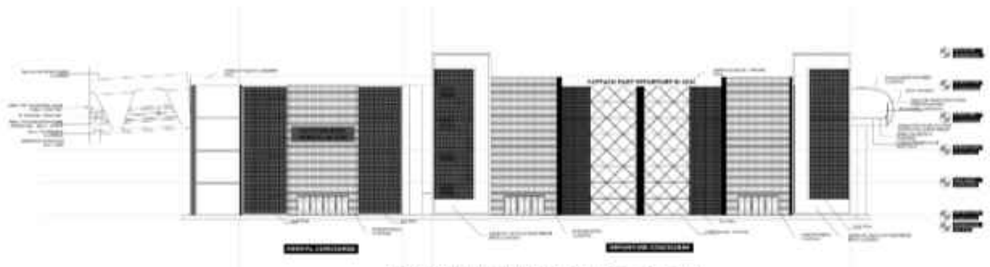
WEST TERMINAL BUILDING SOUTH ELEVATION



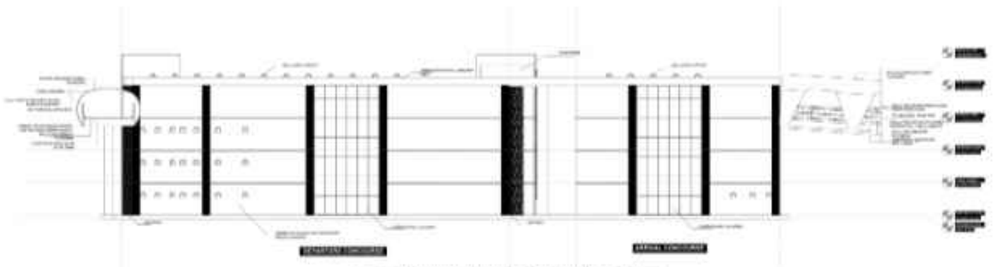
WEST TERMINAL BUILDING WEST ELEVATION



EAST TERMINAL BUILDING WEST ELEVATION



EAST TERMINAL BUILDING NORTH ELEVATION



EAST TERMINAL BUILDING SOUTH ELEVATION

KEY PLAN:

NOTES

1. ALL DIMENSIONS ARE IN METERS UNLESS AND OTHERWISE SPECIFIED
2. ALL LEVELS ARE IN METERS

SCHEDULE OF JOINERIES

S.NO	TYPE	LOCATION	SILL HEIGHT	OPENING SIZE

AREA STATEMENT

ARCHITECTURAL DRAWING

DRAWING TITLE:-
ELEVATION DRAWING

DRAWN BY:-
J LEROW ROBERT

SCALE:
1:250

DATE:-
04-06-2024

BATCH:-
2019 - 2024

SEM & YEAR:-
X & VTH YEAR

ACADEMIC YEAR:-
2023 - 2024

SUBJECT:-
AR8081-THESIS

GUIDED BY:-
AR. ASIRAMI

COLLEGE NAME:-
SIGMA COLLEGE OF ARCHITECTURE

SEAL & SIGN

DRG NO
13

ORIENTATION:

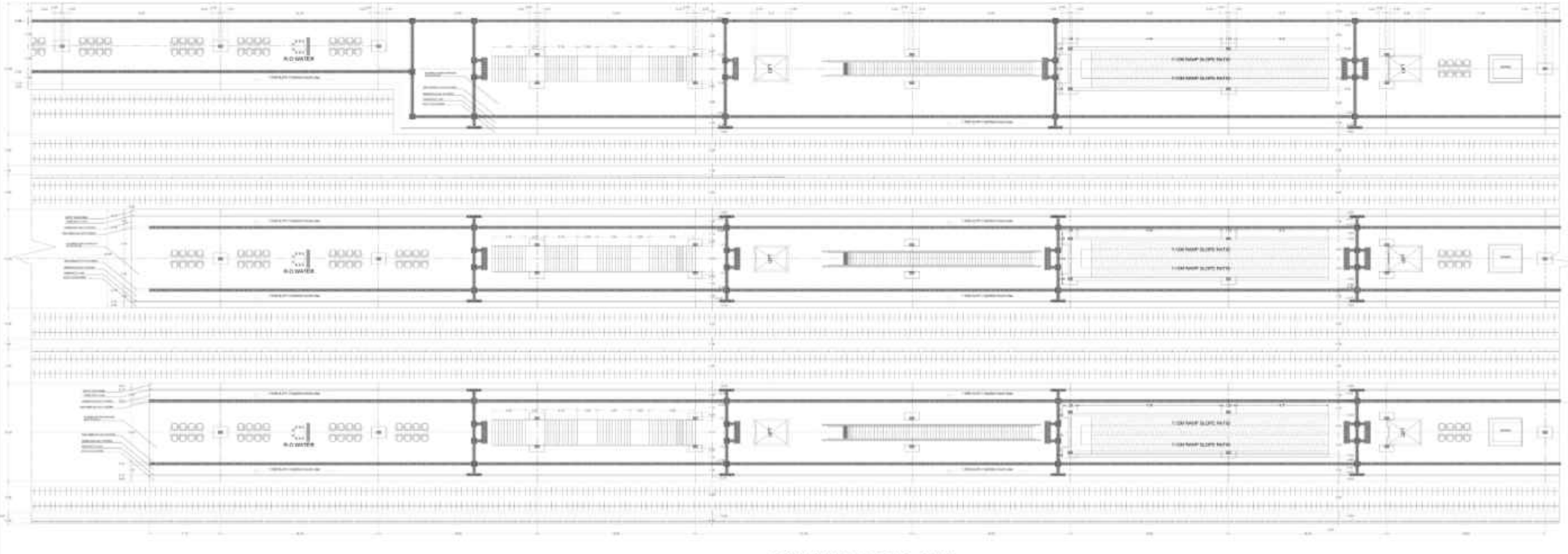
SIGN & SEAL

PROJECT:
REDEVELOPMENT OF RAILWAY STATION, CUTTACK

REG. NO :- 963419251040

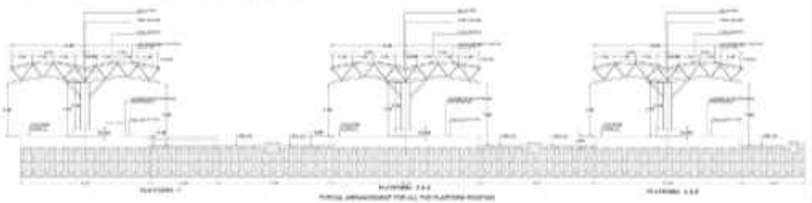
ROLL NO :- 19ARI40

DRAWING TITLE:
ELEVATION DRAWING

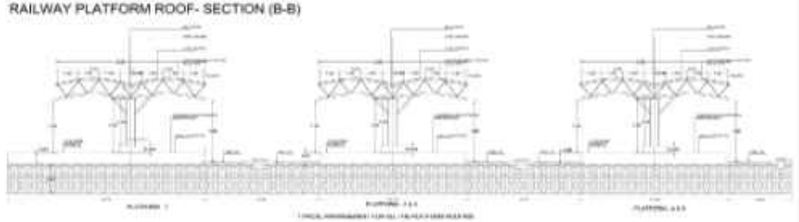


RAILWAY PLATFORM- PLAN

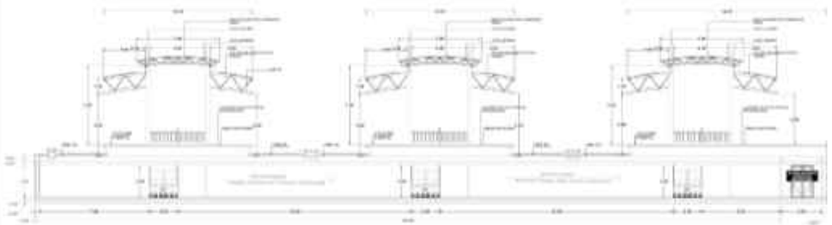
RAILWAY PLATFORM ROOF- SECTION (A-A)



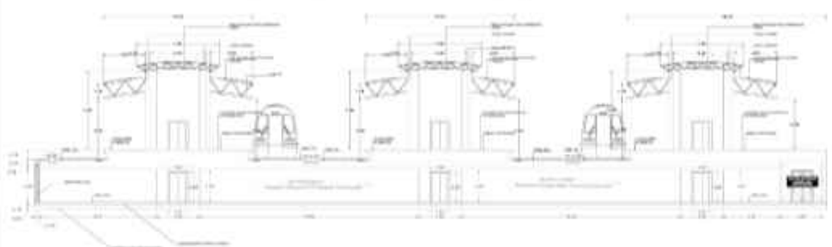
RAILWAY PLATFORM ROOF- SECTION (B-B)



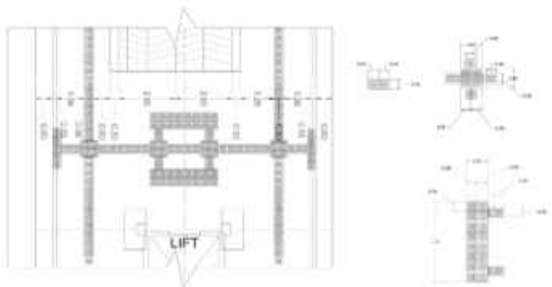
RAILWAY PLATFORM TO ARRIVAL CONNECTING SUBWAY- SECTION (A-A)



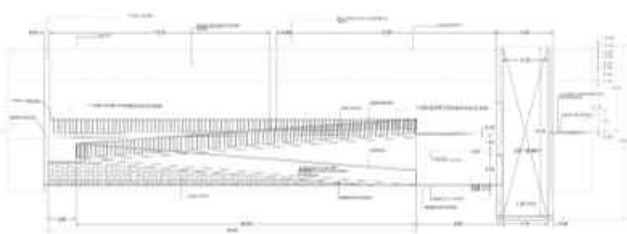
RAILWAY PLATFORM TO ARRIVAL CONNECTING SUBWAY- SECTION (B-B)



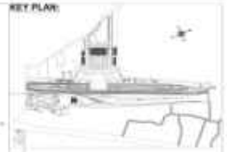
RAILWAY PLATFORM TACTILE DETAIL DRAWING



RAILWAY PLATFORM TO ARRIVAL CONNECTING SUBWAY- SECTION (C-C)



KEY PLAN:



NOTES

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SCHEDULE OF JOINERIES

S.NO.	TYPE	LOCATION	SILL HEIGHT	OPENING SIZE

AREA STATEMENT

ARCHITECTURAL DRAWING

DRAWING TITLE :-

DETAIL DRAWING

DRAWN BY :-

J LEROW ROBERT

SCALE :-

1:150

DATE

04-06-2024

BATCH :-

2019 - 2024

SEM & YEAR

X & VTH YEAR

ACADEMIC YEAR :-

2023 - 2024

SUBJECT :-

ARK081- THESIS

GUIDED BY :-

AR. ARIRAMI

COLLEGE NAME:-

SIGMA COLLEGE OF ARCHITECTURE

SEAL & SIGN

DRG NO.

14

ORIENTATION:

PROJECT:

REDEVELOPMENT OF RAILWAY STATION, CUTTACK

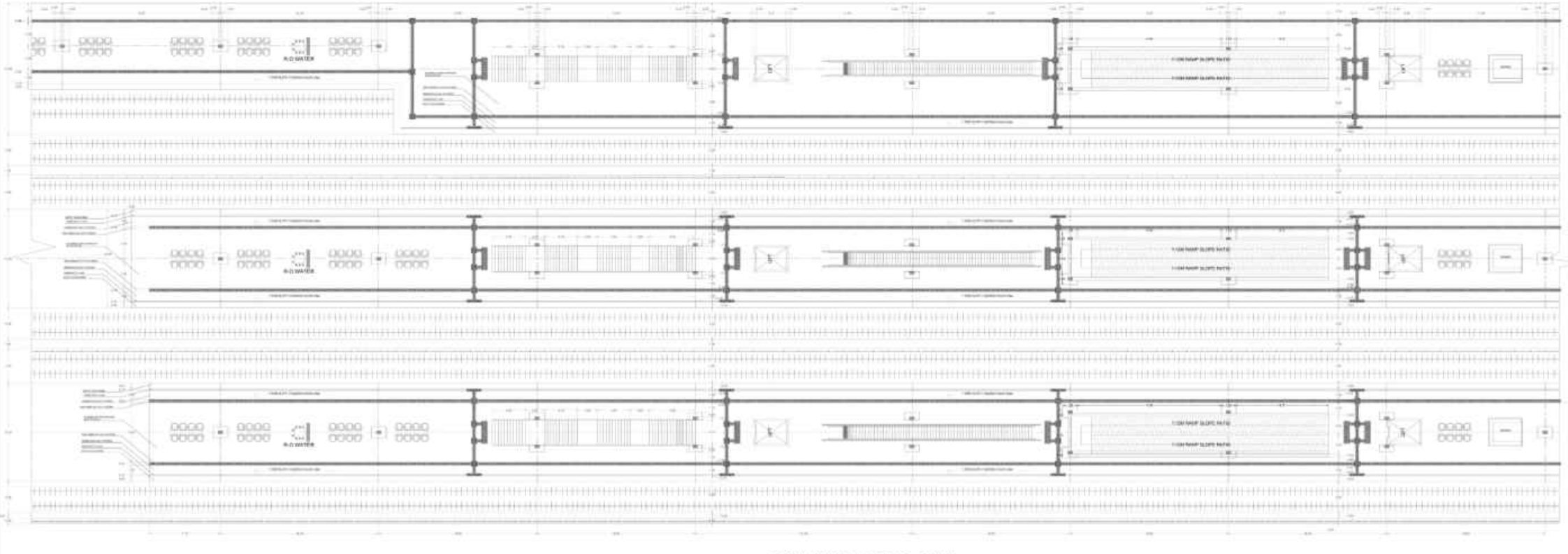
REG NO.- 9634192510I0

ROLL NO.- 19AR40

DRAWING TITLE:

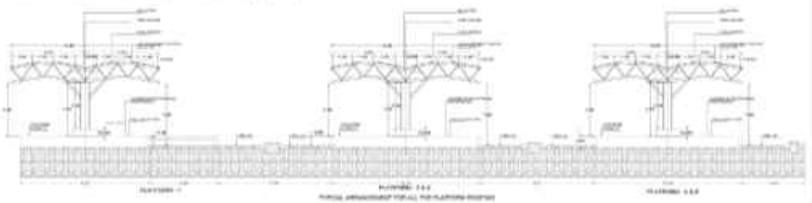
PLATFORM DETAIL DRAWING

SEAL & SIGN

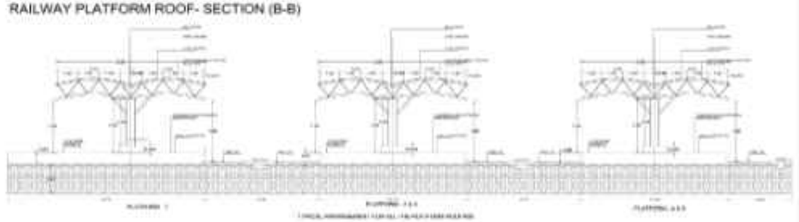


RAILWAY PLATFORM- PLAN

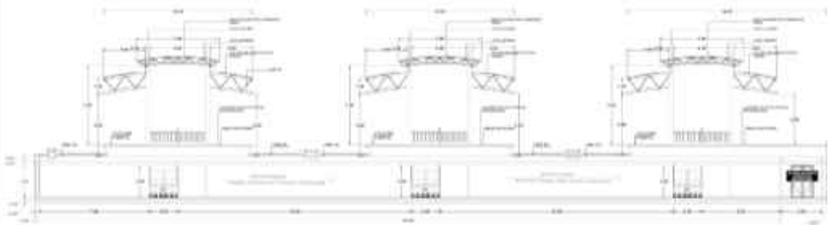
RAILWAY PLATFORM ROOF- SECTION (A-A)



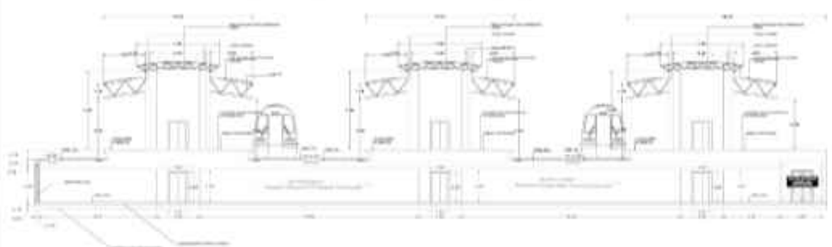
RAILWAY PLATFORM ROOF- SECTION (B-B)



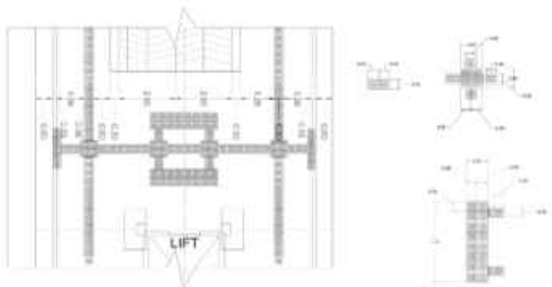
RAILWAY PLATFORM TO ARRIVAL CONNECTING SUBWAY- SECTION (A-A)



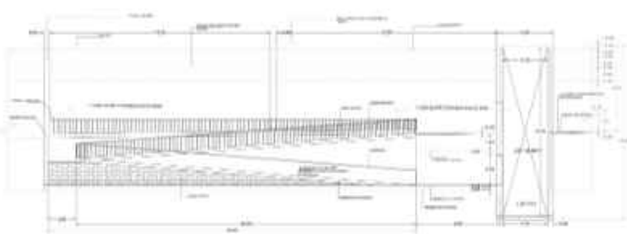
RAILWAY PLATFORM TO ARRIVAL CONNECTING SUBWAY- SECTION (B-B)



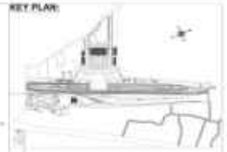
RAILWAY PLATFORM TACTILE DETAIL DRAWING



RAILWAY PLATFORM TO ARRIVAL CONNECTING SUBWAY- SECTION (C-C)



KEY PLAN:



NOTES

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2. ALL LEVELS ARE IN METERS.

SCHEDULE OF JOINERIES

S.NO.	TYPE	LOCATION	SILL HEIGHT	OPENING SIZE

AREA STATEMENT

ARCHITECTURAL DRAWING

DRAWING TITLE :-

DETAIL DRAWING

DRAWN BY :-

J LEROW ROBERT

SCALE :-

1:150

DATE

04-06-2024

BATCH :-

2019 - 2024

SEM & YEAR

X & VTH YEAR

ACADEMIC YEAR :-

2023 - 2024

SUBJECT :-

ARK081- THESIS

GUIDED BY :-

AR. ARIRAMI

COLLEGE NAME:-

SIGMA COLLEGE OF ARCHITECTURE

SEAL & SIGN

DRG NO.

14

ORIENTATION:

PROJECT:

REDEVELOPMENT OF RAILWAY STATION, CUTTACK

REG NO.- 9634192510I0

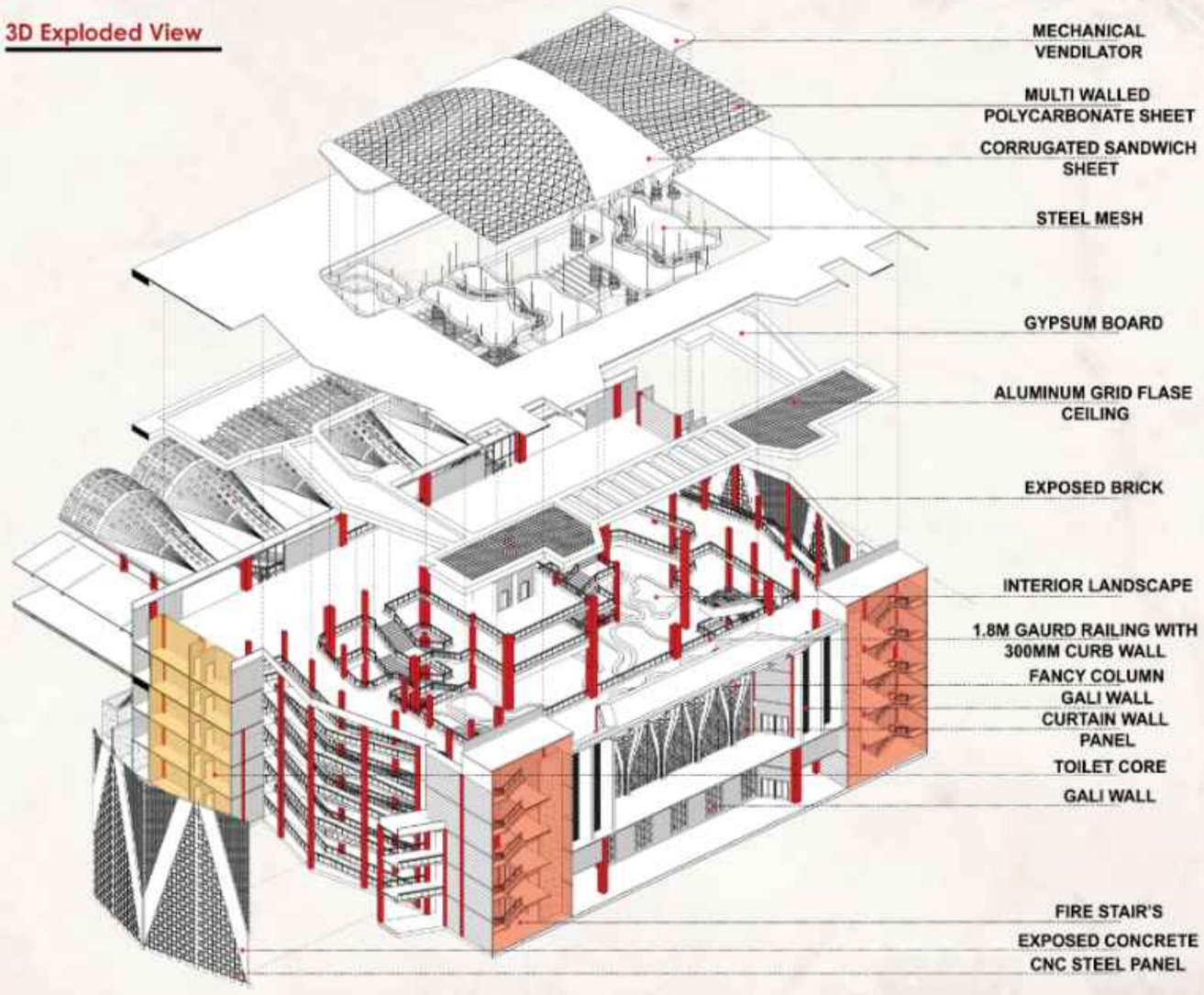
ROLL NO.- 19AR40

DRAWING TITLE:

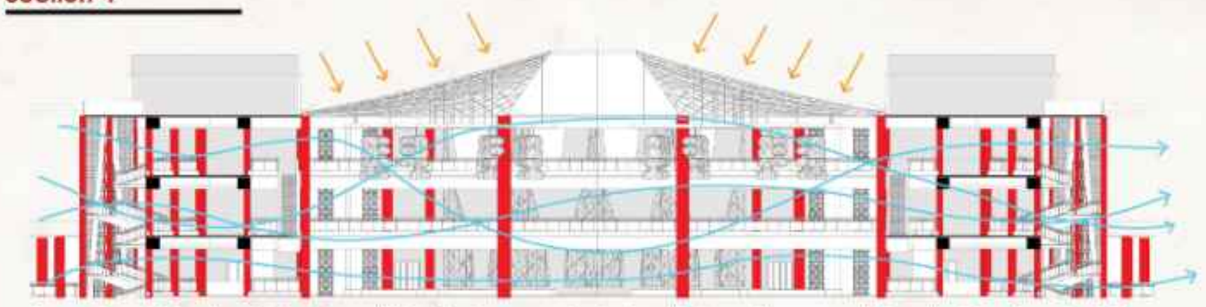
PLATFORM DETAIL DRAWING

SEAL & SIGN

3D Exploded View

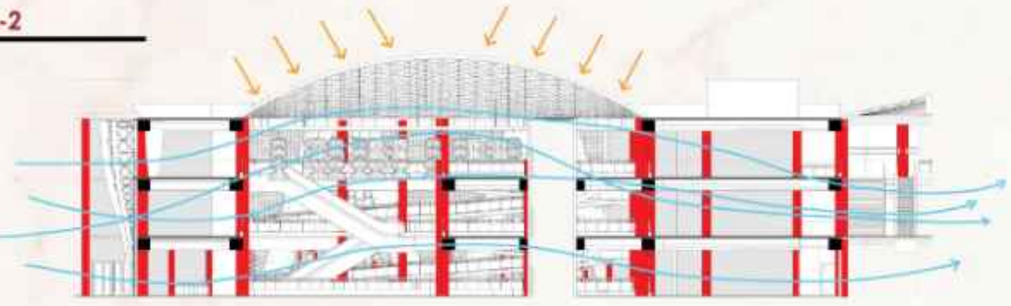


Section-1

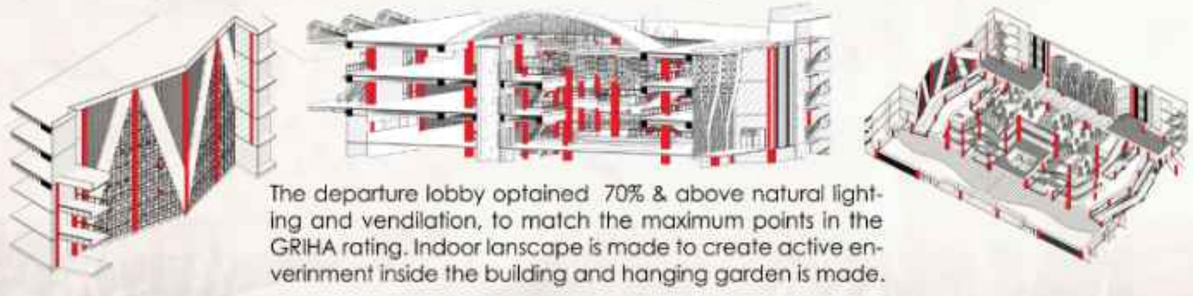


Departure lobby is a triple storey high block connected directly from the ground floor by the elevated drive-way, east and west is completly left as open with brick screen which makes the free flow of the air.

Section-2



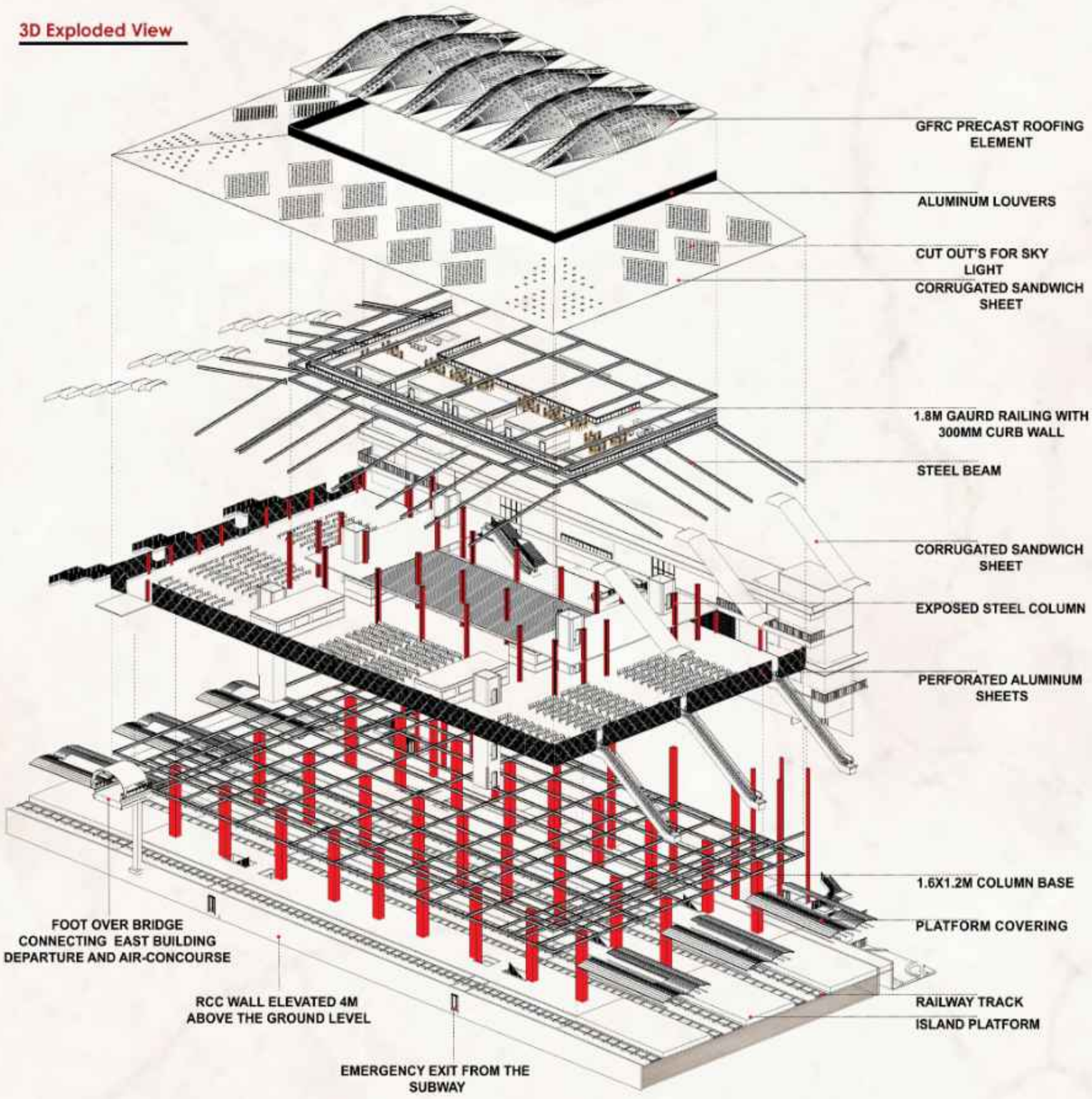
Departure lobby have a large sky light area which is made of multi walled polycarbonate sheet and steel framing, level 4 and 5 is connected with the air-concourse. jali wall is placed in the north and south side of the departure lobby, to maintain the cross vendilation in side the building.



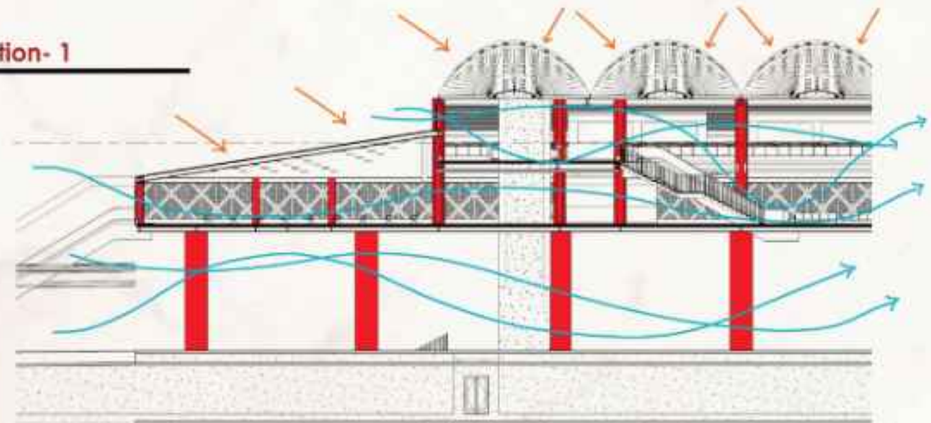
The departure lobby optained 70% & above natural lighting and vendilation, to match the maximum points in the GRIHA rating. Indoor lanscape is made to create active enverinment inside the building and hanging garden is made.

J LEROW ROBERT | REG NO:963419251040 | ROLL NO:19AR40 | BATCH:2019-2024 | B.ARCH|SIGMA COLLEGE OF ARCHITECTURE, MOODODU, ANDUCODE

3D Exploded View

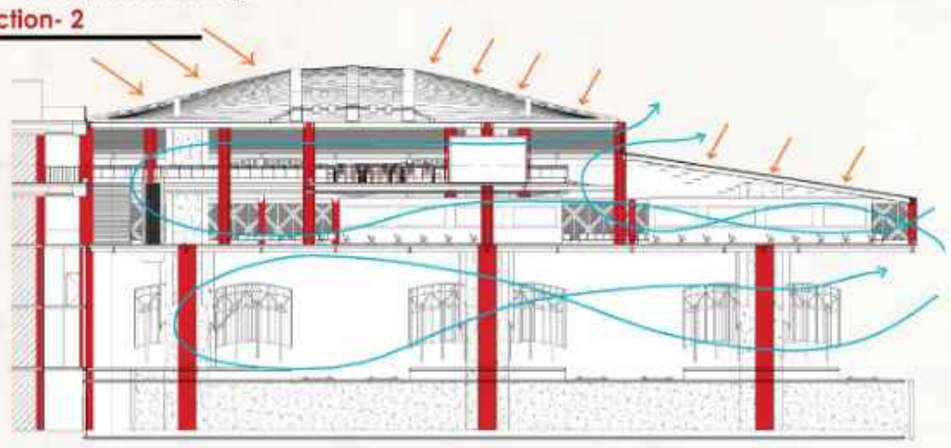


Section- 1



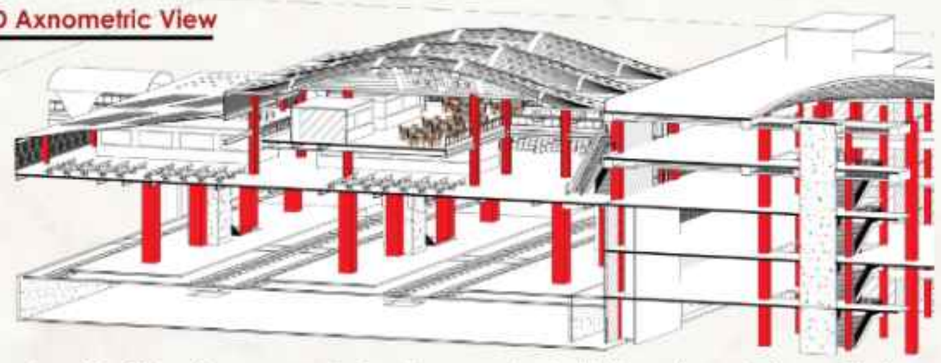
Level 1 of the airconcourse is sourrounded with perforated aluminum sheet, where it takes in natural ventilation and sun light, level 2 is covered with aluminum louvers and GFRC precast roofing.

Section- 2



Level 1 of the airconcourse have waiting area and seating area and it havee 14 kiosk. level 2 of the airconcourse have lounge and food court with dinning area. The air-concourse level 1 & 2 with the double storey high sky light.

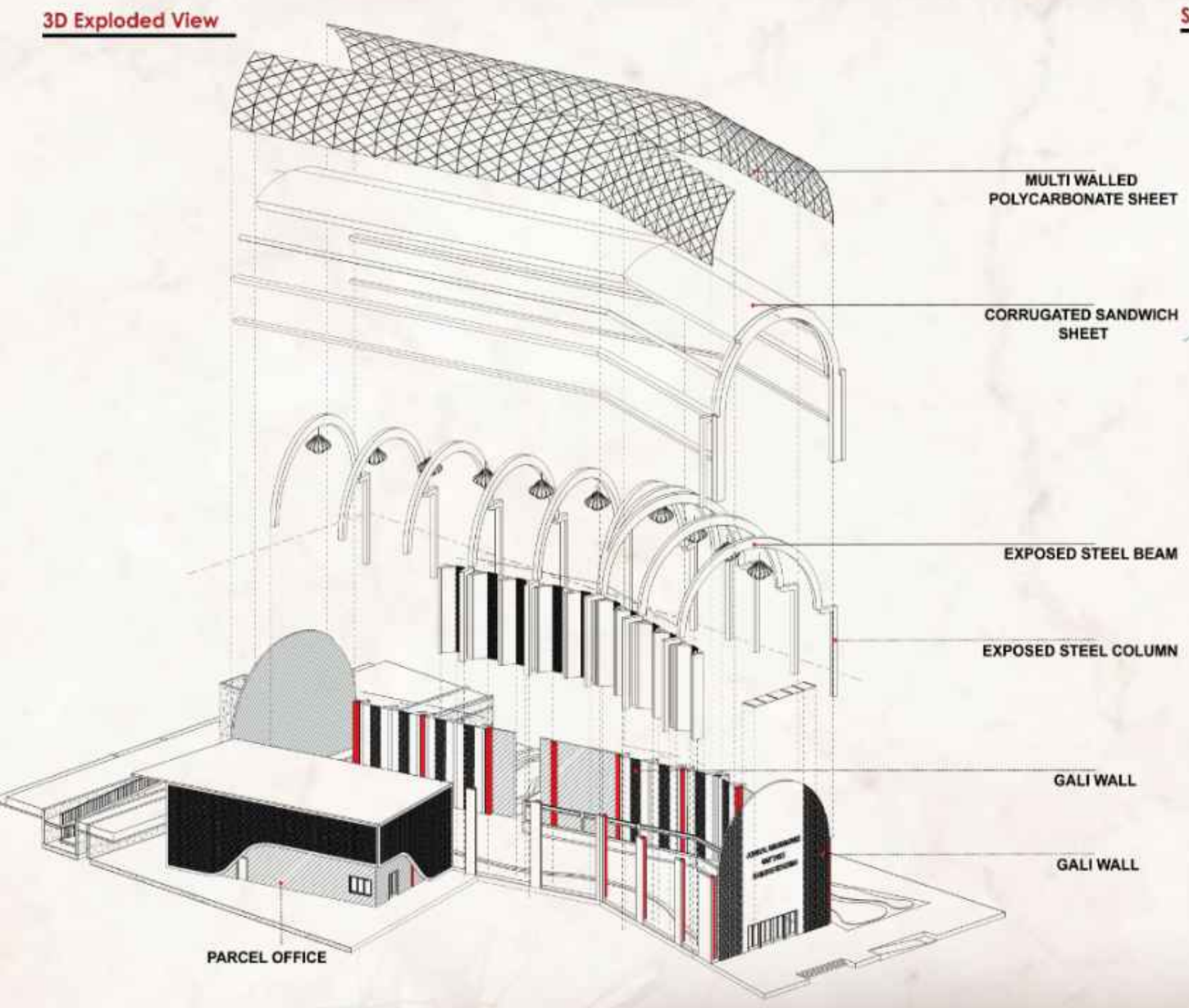
3D Axnometric View



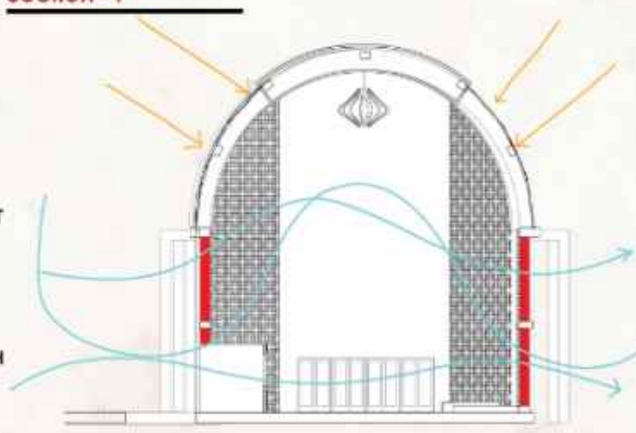
Level 1 of the airconcourse is directly connected with the railway platform with the help of lift, stairs and escalator. Level 2 is connnected with stairs and escalator at the core area which is double storey high.

J LEROW ROBERT | REG NO:963419251040 | ROLL NO:19AR40 | BATCH:2019-2024 | B.ARCH|SIGMA COLLEGE OF ARCHITECTURE, MOODODU, ANDUCODE

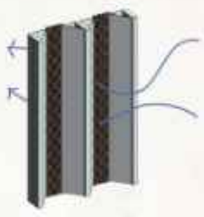
3D Exploded View



Section- 1

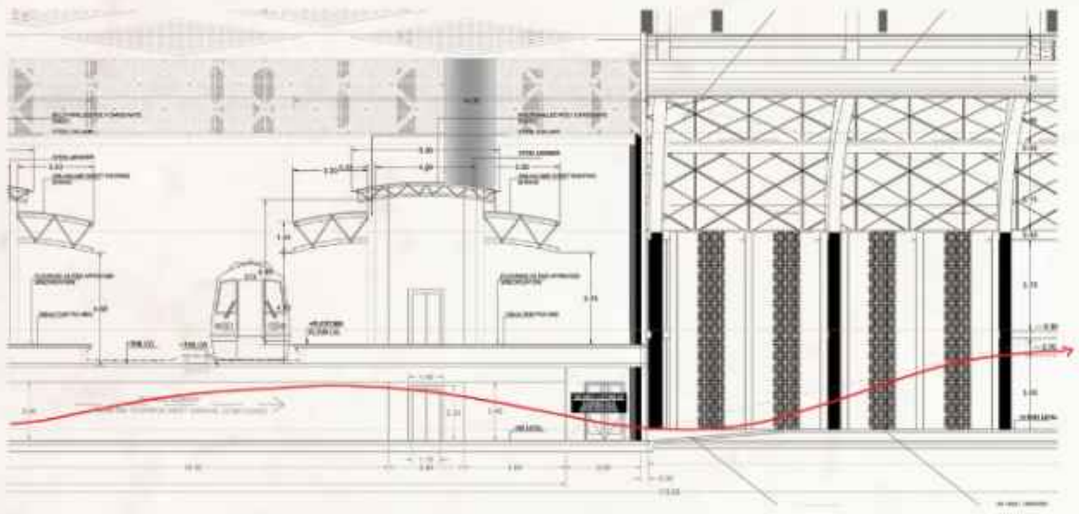


SUN LIGHT AND WIND FLOW



Jali wall is placed at both the side of the arrival concourse , which allow's the air flow from one side to another.

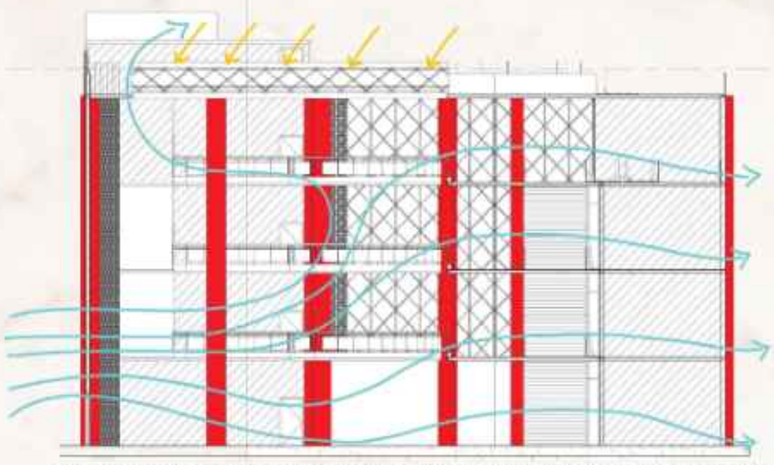
The arrival concourse is splited into two parts in the west side terminal building. The arrival concourse is made in the form which directs the people towards the exit gate directly, the platform is connected to arrival lobby by a subway.



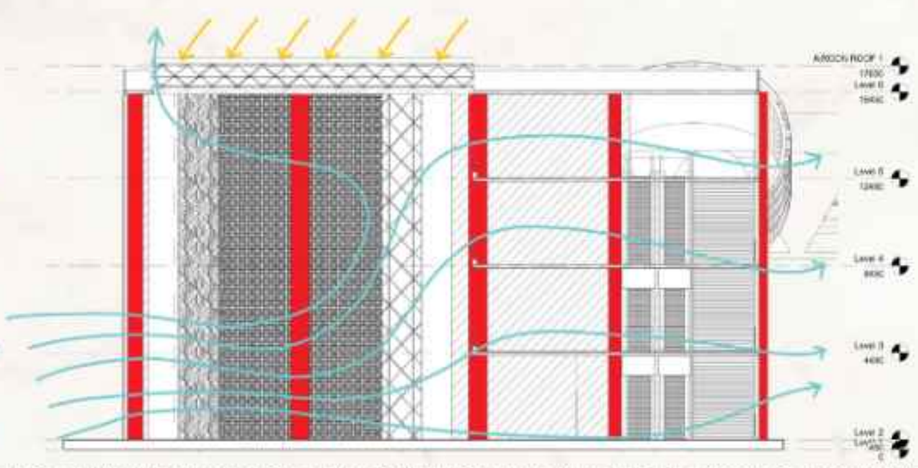
The platform is connected with the arrival lobby directly with the subway and the subway is have a intermediate passage which extended towards the ground floor connecting all the blocks in the west side terminal building.

J LEROW ROBERT | REG NO:963419251040 | ROLL NO:19AR40 | BATCH:2019-2024 | B.ARCH|SIGMA COLLEGE OF ARCHITECTURE, MOODODU, ANDUCODE

SECTION- 1, DEPARTURE BLOCK

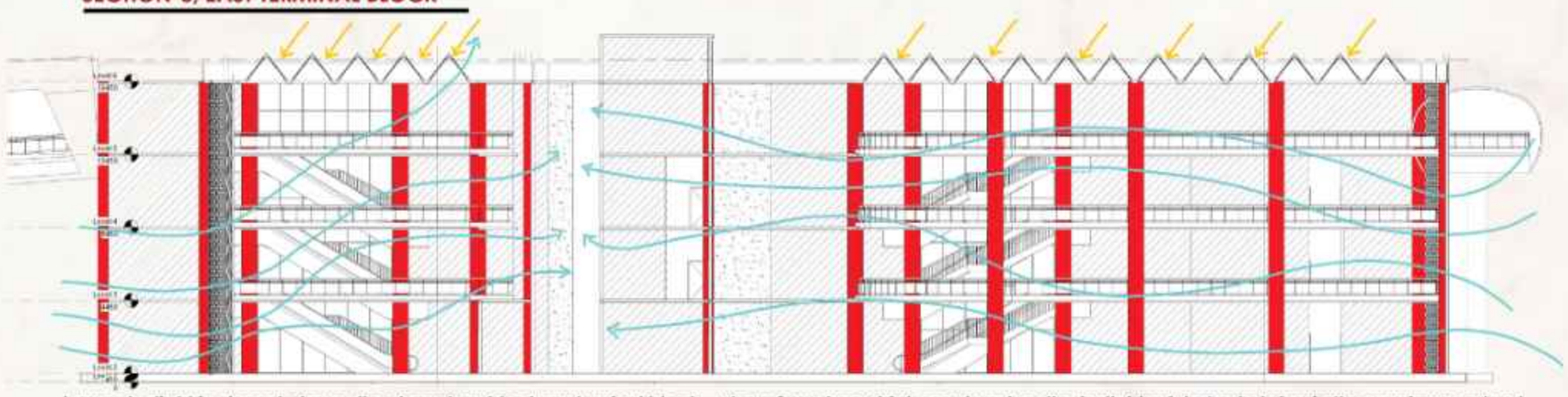


SECTION-2, ARRIVAL BLOCK



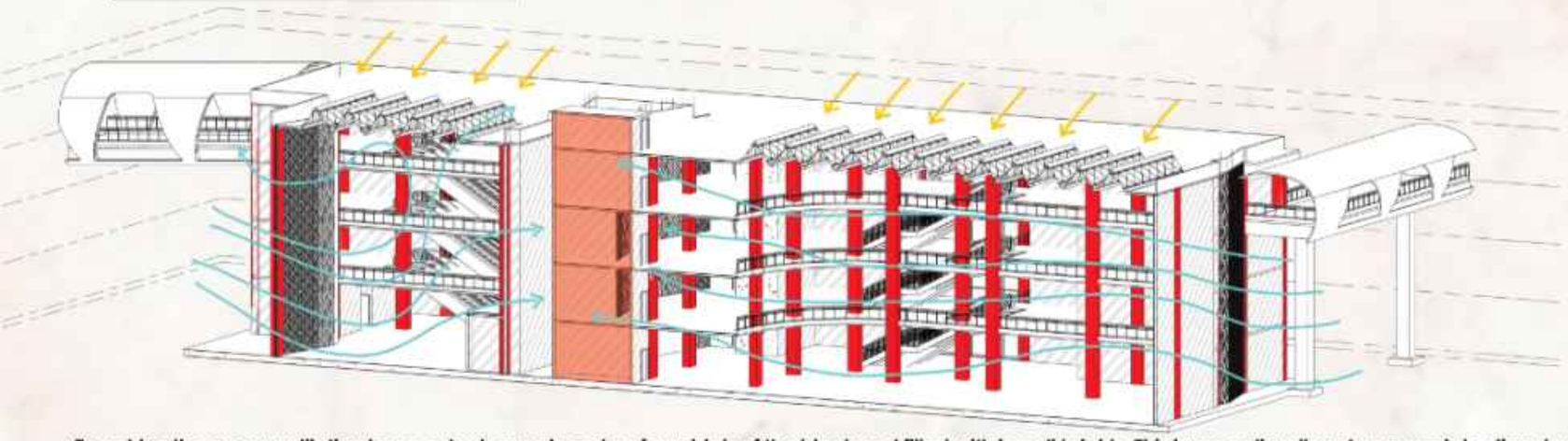
East terminal block is seprated into two parts majorly as departure block on right and arrival block on the right. Where departure block is directly connected to the air-concourse through the foot over bridge and a foot over bridge run's from the platform level which is directly connect to the east building arrival lobby.

SECTION-3, EAST TERMINAL BLOCK



Large sky light is placed above the departure block and arrival block , where four storey high courtyard on the both block helps to bring in the maximun natural lighting all over the day. This helps the building to optimize maximun energy and hepls the building to reduce the need of electricity during day time.

3D-SECTION , EAST TERMINAL BLOCK



To achive the cross ventilation large cutouts are placed on four side's of the block and filled with in gali brick's. This large gali walls act as a semi shading device and allow the wind to pass through it. This building is 80% naturally lighted and vendilated during the day time. Both the block travel's only in onway.

East Building Plot Coverage- 2600 Sqm

East Building takes 15% of over all population of the station, where 760 people comes to the east block per hour.

Departure lobby area is calculated as 1.5 sqm per person, which is splited as four levels. Where this four level specifically need to match the airconcourse level and saticfy the railway schedule of finishes.

This whole building run's as one way, where from the departure block a foot over bridge runs towards the west building air-concourse and from the platform a foot over bridge run's towards the arrival block.

This 15% of over all population of the station will applicable for the parking also.

The east terminal block is connected with the national highway where it leads to the other districts of the odisha.

The East terminal block is connected with the west block with foot over bridges to avoid unnessery railway accidents and it restrict the people to cross over the railway tracks.

Most numbers of the railway accidents is note as railway track cross over, to avoid it majorly we need to redirect the cirrculation in the entier system.

To make the people to move easly as well as to avoid the railway accidents this one way travel techniqe is used. in this entier system people gets circullated in only one direction. where if a person gets into the departure concourse, he will be directed to the air-concourse level. And from the air-concourse level he will be directed to the platform level while his\her train arrives to the railway station. And from the platform level he\she will be directed towards the foot bridge of the east arrival block. From the east arrival block he\she is directed towards the exit.

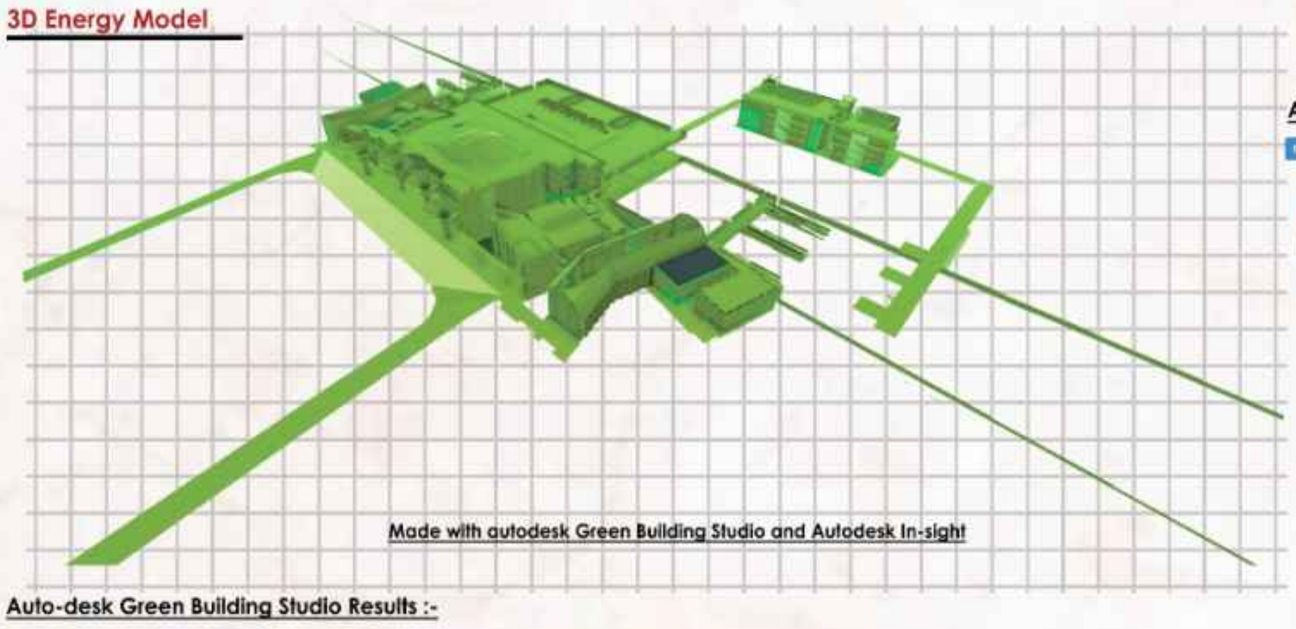
This entier system based on the pricipals deerived from the (world class railway station work manuval), where they have clearly mentioned that the arrival block and the departure block to be seprated from one another to distribute the easy movement of the human foot prints.

As the major offices and control elements are placed in the west main block, east block is kept very simple, where only ticke counters, booking office, kisok and waiting lobby is placed. The west building only tragets the easy flow of people towards the destination.

As the cuttack comes under the sesmic zone 3 the design is also kept as simple, where only skin is worked in the east building for the atheistic of the building.

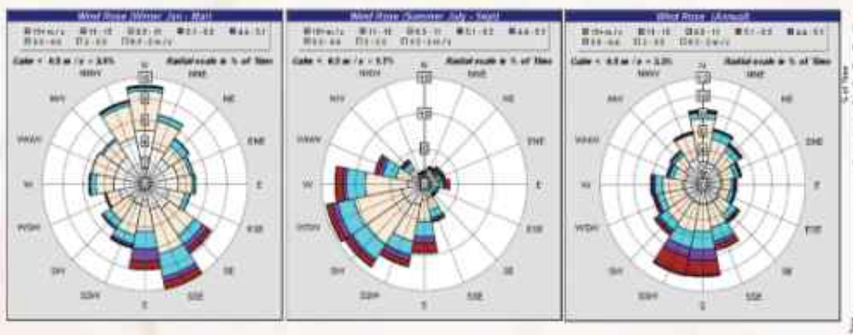
Gali walls and large sky lights are placed arround the building to reduce the need of the external energy. where this building optimize arround 80% of the energy required for the lighting and ventilation during day time and produce electricity with the help of the solar panels which is retrain for the later use. The need of the electricity is reduced to the maximum. The heavy mechanical elements like lift, escalator are only worked by the external energy source, to maintain the temperature during the heat summer HVLS fans are used.

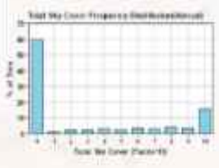
3D Energy Model

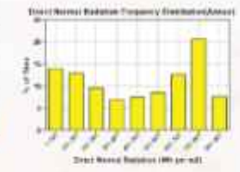


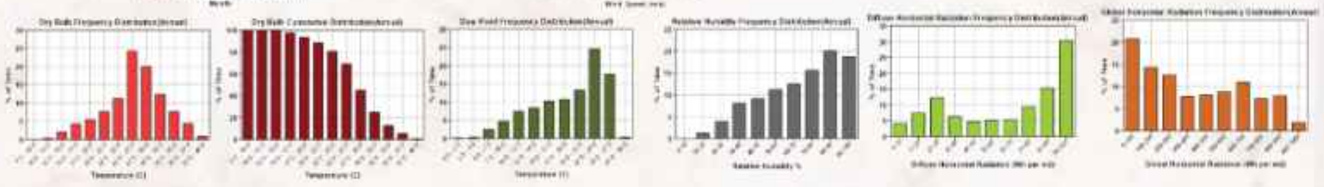
Made with autodesk Green Building Studio and Autodesk In-sight

Auto-desk Green Building Studio Results :-

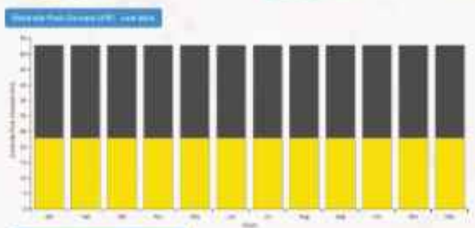


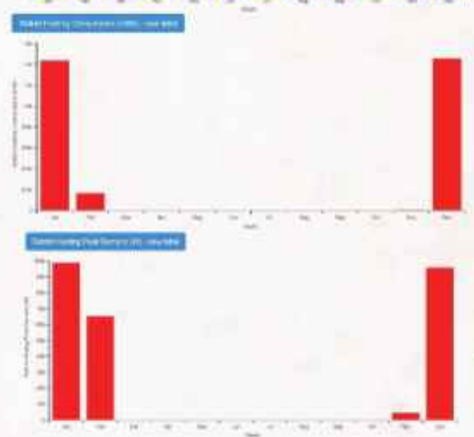


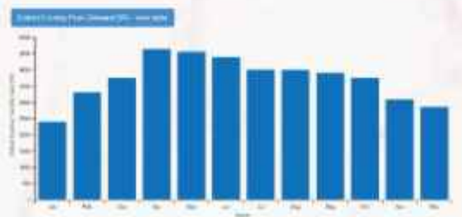


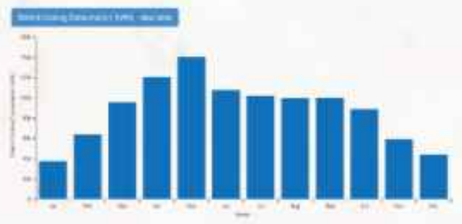


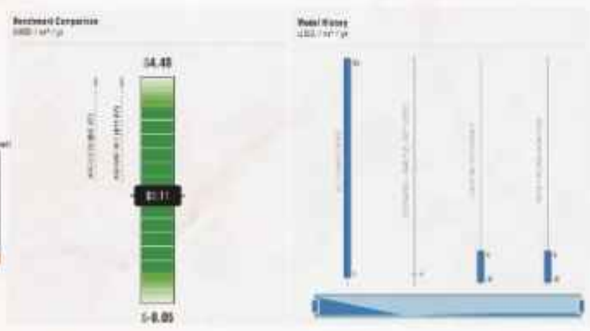
Auto-desk Open Studio Results :-

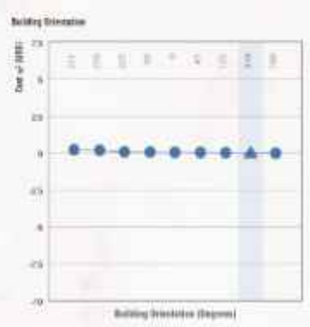












WWR - Northern Walls

Window-Wall-Ratio (glazing area / gross wall area) interacts with window properties to impact daylighting, heating & cooling.

Current Setting:
30%

Window Shades - North

Shades can reduce HVAC energy use. The impact depends on other factors, such as window size and solar heat gain properties.

Current Setting:
2/3 Win Height

WWR - Eastern Walls

Window-Wall-Ratio (glazing area / gross wall area) interacts with window properties to impact daylighting, heating & cooling.

Current Setting:
15%

Window Shades - East

Shades can reduce HVAC energy use. The impact depends on other factors, such as window size and solar heat gain properties.

Current Setting:
2/3 Win Height

Window Glass - East

Glass properties control the amount of daylight, heat transfer & solar heat gain into the building, along with other factors.

Current Setting:
Tri-LoE

Lighting Efficiency

Represents the average internal heat gain and power consumption of electric lighting per unit floor area.

Current Setting:
20.49 W/m² - 3.23 W/ft²

Daylighting & Occupancy Controls

Represents typical daylight dimming and occupancy sensor systems.

Current Setting:
Occupancy Controls

Plug Load Efficiency

The power used by equipment i.e. computers and small appliances; excludes lighting or heating and cooling equipment.

Current Setting:
10.76 W/m²

Wall Construction

Represents the overall ability of wall constructions to resist heat losses and gains.

Current Setting:
14-inch ICF

Roof Construction

Represents the overall ability of roof constructions to resist heat losses and gains.

Current Setting:
10.25-inch SIP

Infiltration

The unintentional leaking of air into or out of conditioned spaces; often due to gaps in the building envelope.

Current Setting:
Blower Door

HVAC

Represents a range of HVAC system efficiency which will vary based on location and building size.

Current Setting:
High Eff. Package Terminal AC

Operating Schedule

The typical hours of use by building occupants.

Current Setting:
8AM

PV - Panel Efficiency

The percentage of the sun's energy that will be converted to AC energy. Higher efficiency panels cost more, but produce more energy for the same surface area.

Current Setting:
20.4 %

PV - Payback Limit

Use the payback period to define which surfaces will be used for the PV system. Surfaces with shading or poor solar orientation may be excluded.

Current Setting:
30 yr

PV - Surface Coverage

Defines how much roof area can be used for PV panels, assuming area for maintenance access, rooftop equipment and system infrastructure.

Current Setting:
90 %

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