

TRICHY INTEGRATED BUS TERMINUS

A THESIS

Submitted in partial fulfillment of the requirements for the award of
Bachelor of Architecture degree

By

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DEPARTMENT OF ARCHITECTURE
SCHOOL OF BUILDING AND ENVIRONMENT

SATHYABAMA

INSTITUTE OF SCIENCE AND TECHNOLOGY
(DEEMED TO BE UNIVERSITY) Accredited

With Grade “A” by NAAC

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CHENNAI - 600 119

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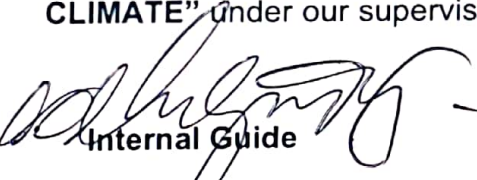
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BONAFIDE CERTIFICATE

This is to certify that this Project Report is the bonafide work of **Jayasurya (39210026.)** who carried out the project entitled “**CONSTRUCTION TECHNIQUES AND ECONOMICAL FOR CONSTRUCTION OF SHIPPING CONTAINER AND CONTAINER ARE SUITABLE FOR WORM AND HUMID CLIMATE**” under our supervision from June 2023 to November 2023.


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DECLARATION

I, **Jayasurya. p** hereby declare that the Project Report entitled "**CONSTRUCTION TECHNIQUES AND ECONOMICAL FOR CONSTRUCTION OF SHIPPING CONTAINER AND CONTAINER ARE SUITABLE FOR WORM AND HUMID CLIMATE**" done by me under the guidance of Ar. Gopiraj (Internal) and Ar. Ramji .S(External) is submitted in partial fulfillment of the requirements for the award of Bachelor of Architecture degree at Sathyabama Institute of Science and Technology.

DATE: 22-05-2024

PLACE: Chennai


SIGNATURE OF THE CANDIDATE

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JAYASURYA P

THESIS SYNOPSIS

Andhra Pradesh government has taken up GNSS (Galeru Nagari Sujala Sravanthi) project. It is one of the projects in Y.S.R kadapa district for facilitating water to the dry lands of the Pulivendula. Due to this storage of water 26 surrounding villages were drowned. Villagers of this 26 villages were allotted plots in the respective rehabilitation in the nearby areas giving all sorts of compensation.

Talla Proddatur is also one of the rehabilitated villages. In Talla Proddatur village there is proposal for the government high school. Designing a high school with all required and convenient infrastructure facilities with reused and recycled materials and passive design strategies in Talla Proddatur village Admin, Library, Pri primary, Primary, High school blocks, Kitchen and dining area and Play ground all these are the spatial requirements planned in school.

For construction locally available materials (kadapa stone pieces, granite waste pieces) are used for wall and roof materials. Recycled and reused waste materials can be used as construction materials. Building with these types of materials are sustainable, eco friendly and can reduce the cost of construction.

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1.INTRODUCTION

1.1 INTRODUCTION

Tiruchirappalli, sometimes referred to as Trichy, is a well-known Indian city in Tamil Nadu that is renowned for its strategic position and historical significance. Trichy, an urban hub that is expanding quickly, has witnessed a notable rise in both population and automobile traffic. The construction of new bus terminals that can meet the city's changing transportation needs is desperately needed in order to handle this expansion and enhance urban mobility.

The Value of Modern Bus Terminals

In order to overcome the present issues with the city's transportation infrastructure, Trichy needs new bus terminals. They are essential hubs that support effective transportation, lessen traffic, and give passengers a smooth travel experience. Bus stations that are well-planned and run may greatly improve the city's public transit system, enhancing the standard of living for locals and fostering economic growth.

Problem Synopsis

The Central Bus Stand and Chatram Bus Stand, two of Trichy's busiest bus terminals, are frequently packed and have several operating issues. Their potential to handle the city's expanding transportation demands is hampered by problems including inadequate facilities, bad design, ineffective administration, and restricted capacity. In order to address these issues and for future expansion, it is evident that new, contemporary bus terminals are required.

Goals

The following are the main goals of this study:

Examine the Current Infrastructure: Determine how well-performing and in good shape the Trichy bus terminals are now.

Determine Needs and Conditions: Considering both present and future transportation patterns, ascertain the precise requirements and demands for new bus terminals.

Provide Design Solutions: Create design concepts that integrate the newest developments in technology, sustainability, and usefulness.

Boost Operational Efficiency: Make suggestions on how to make new bus terminals more passenger-friendly and operationally efficient.

Encourage Sustainable Practices: To reduce your influence on the environment, use sustainable design and operating procedures. Study Area

The planning and design of new bus terminals in Trichy would be the main focus of this project. It will take into account elements like the choice of location, design of the terminal, facilities for passengers, accessibility, integration with other forms of transportation, and use of smart technology and environmentally friendly methods.

Research Issues

What are the main shortcomings of Trichy's current bus terminals?

What architectural elements are necessary for new bus terminals to fulfill the population of Trichy's present and future needs?

In what ways might the new bus terminals employ technology to improve customer experience and efficiency?

What eco-friendly techniques may be used in the planning and management of Trichy's new bus terminals?

1.2 NEED OF THE PROJECT

Tamil Nadu, India's Tiruchirappalli, often known as Trichy, is a metropolis that is growing quickly. Trichy is a major hub for commerce, education, and culture, and it sees a large amount of commuter traffic every day. The Central Bus Stand and Chatram Bus Stand, two of the city's busiest bus terminals, are finding it difficult to handle the increasing demand. Building additional bus terminals is necessary to solve the present transportation issues and facilitate Trichy's further expansion.

These days, Trichy's bus terminals are always packed, especially during rush hour. Inefficiencies, delays, and a bad passenger experience are caused by this congestion. By distributing the passenger load more fairly, new bus terminals will ease traffic and improve the general effectiveness of the public transportation network.

Modern bus stations with improved amenities and services may greatly enhance the traveler experience. Travel may be made more enjoyable with amenities like food courts, retail stores, clean bathrooms, and cozy waiting places. Travelers' convenience and happiness can also be improved by integrating automated ticketing systems, Wi-Fi access, and real-time information displays.

Bus terminal operational effectiveness is essential for reducing delays and guaranteeing efficient transit operations. Bus turnaround times can be shortened and traffic flow can be improved with new bus terminals that have efficient layouts. Operational performance may be further improved by effective management systems, such as those that include real-time monitoring and automatic scheduling.

A smooth travel experience depends on effective integration with various forms of transportation, such as local transit systems, metro services, and railroads. By putting new bus terminals in convenient locations and with user-friendly designs, intermodal connection may be promoted and the need for private automobiles can be decreased.

There will be a greater need for public transit as Trichy grows. By offering the infrastructure required to handle more passengers and buses, new bus terminals will be essential in facilitating this expansion. Properly designed terminals may also boost local economic activity, which benefits the city's overall growth.

A crucial factor in contemporary infrastructure developments is sustainability. Eco-friendly design features including solar panels, rainwater collection, energy-efficient lighting, and green construction materials can be included into new bus stations. By putting sustainable techniques into effect, Trichy's future urban development projects will be held to a higher standard and the environmental impact would be mitigated.

When it comes to public transit, accessibility and safety are top priorities. Modern bus station designs can incorporate sophisticated safety elements including well-lit spaces, emergency response systems, and surveillance systems. Furthermore, the terminals will be more inclusive if they have ramps, elevators, and spaces set out for seats for those with disabilities.

1.3 AIM AND OBJECTIVE

This project's main goal is to build brand-new, contemporary bus terminals in Tiruchirappalli (Trichy) that will improve the sustainability, accessibility, and efficiency of the city's public transportation system—enhancing the overall traveler experience and fostering the city's ongoing growth and development.

Evaluate the Demand and Current Infrastructure. Examine the functionality and state of Trichy's current bus terminals. To comprehend the present and anticipated passenger loads and traffic patterns, do a demand analysis. **Determine the Essential Needs** Establish the precise specifications, including those related to capacity, amenities, and services, for new bus terminals. In order to get opinions and insights, interact with stakeholders such as travelers, transportation providers, and city planners. **Create Design Concepts** Develop design proposals that integrate contemporary architectural and technical elements for future bus stations. Make sure that plans incorporate necessities like food courts, bathrooms, waiting areas, and shop sections. **Boost Efficiency in Operations** Provide bus operations and passenger flow optimization design and methods to cut down on delays and bottlenecks. Put in place cutting-edge management tools, such as electronic ticketing, real-time monitoring, and automatic scheduling. **Encourage Multimodal Connectivity** Create new terminals with seamless interaction with other travel options in mind, such local transit, metro services, and railroads Make sure that transfer and entry locations are simple to find in order to improve citywide mobility. **Include Technology** To enhance the traveler experience, integrate smart technology including automated services, Wi-Fi connectivity, and real-time information displays. To improve service delivery and optimize terminal operations, use data analytics.

1.4 METHODOLOGY

Data Collection Methods

Questions and Surveys

Passenger Surveys: Ask people who regularly use bus terminals about their experiences, preferences, and ideas for enhancements.

Employee Surveys: Get feedback on operating issues and possible improvements from bus terminal operators and employees.

Conversations

To obtain a variety of viewpoints on the project, conduct in-depth interviews with important stakeholders, such as local business owners, transit authorities, and city planners.

Studies by Observation

Make on-site observations at bus terminals that are currently in use to evaluate passenger movement, areas of congestion, and the effectiveness of existing amenities.

To find operational inefficiencies and capacity problems, keep track of your peak and off-peak consumption trends.

Case Studies

Examine the achievements of other cities' bus terminal projects to find creative ideas and best practices that Trichy might use.

Analyze these terminals' operating tactics, technological integration, and design.

Analysis of Documents

Examine the available plans, papers, and records on the bus terminal assessments from the past, urban development plans, and Trichy's transportation infrastructure.

Data Analysis Techniques

Measurement and Evaluation

Analyze survey data using statistical methods to spot important trends and patterns in passenger preferences and usage.

Based on anticipated passenger loads, do a capacity study to establish the necessary dimensions and amenities for future bus terminals.

Analysis of Qualitative Data

To find recurring themes and insights into possibilities and difficulties, do a thematic analysis of open-ended survey responses and interview transcripts.

Examine case study data to identify pertinent takeaways and recommended procedures.

Comparative Evaluation

To identify weaknesses and potential areas for development, assess how well Trichy's bus terminals now compare to those in other cities.

Determine which operational plans and design concepts work best for Trichy by evaluating them.

Site Selection and Design Proposals

Site Selection Standards

Determine suitable sites for new bus terminals by considering variables such as ease of access, closeness to important transit lines, space availability, and possibilities for intermodal integration.

Utilize geographic information systems (GIS) to map and assess potential sites.

Design and Development

Work together with urban planners and architects to create design concepts that combine sustainable building practices, contemporary architectural principles, and user-friendly elements.

Make sure that the designs take into account the necessities for amenities, maximize passenger flow, and improve accessibility and safety.

Integration of Technology

Determine which smart technologies, such as automated ticketing, real-time information systems, and surveillance systems, may be included into the new bus terminals to increase productivity.

Make plans for integrating energy-efficient systems with renewable energy sources.

2 LITERATURE STUDY

2.1 SITE SELECTION

1. Key Location

- **Conveniently situated next to National Highway 45, Panjappur offers great access to various regions of Tamil Nadu and beyond.**
- **Gateway to Southern Trichy: This location allows visitors to enter Trichy from all directions and provides access to the southern districts of the city.**

2. Available space • Plenty of Space: There is enough space in the vicinity to build a sizable terminal, and there is room to grow in the future.

• **Cost-Effective Land Acquisition: Purchasing land in Punjab is probably less complicated by legal issues and more affordable than in more developed urban regions.**

3. Decreased Traffic in Cities

- **Decentralization:** By removing traffic from the congested city center, the IBT in Panjappur serves to improve traffic flow in Trichy and reduce congestion.

4. Assistance with Urban Development

- **Economic Boost:** By drawing enterprises, generating employment, and promoting ancillary activities, the construction of the IBT can propel economic growth in Pakistan.
- **Urban Planning:** Complies with the city's more comprehensive plans for urban development, which prioritize sustainable growth and balanced development.

5. Key Location

- **Conveniently situated next to National Highway 45,** Panjappur offers great access to various regions of Tamil Nadu and beyond.
- **Gateway to Southern Trichy:** This location allows visitors to enter Trichy from all directions and provides access to the southern districts of the city.

6. Available space • Plenty of Space: There is enough space in the vicinity to build a sizable terminal, and there is room to grow in the future.

- **Cost-Effective Land Acquisition:** Purchasing land in Punjab is probably less complicated by legal issues and more affordable than in more developed urban regions.

7. Lessening of Urban Congestion

- **Decentralization:** By removing traffic from the congested city center, the IBT in Panjappur serves to improve traffic flow in Trichy and reduce congestion.

8. Encouragement of Urban Development

- **Economic Boost:** By drawing enterprises, generating employment, and promoting ancillary activities, the construction of the IBT can propel economic growth in Pakistan.
- **Urban Planning:** Complies with the city's more comprehensive plans for urban development, which prioritize sustainable growth and balanced development.

2.2 SITE PLANNING :

Key Components of the Site Plan

site Design and Zoning

Bus Bays and Platforms: Areas set aside specifically for intercity and intracity buses, providing less traffic and easier navigation.

Passenger Facilities: Convenience stores, food courts, bathrooms, ticket desks, and waiting places are all thoughtfully positioned.

Administrative Offices: Areas designated for staff offices, operational control rooms, and terminal management.

Parking Zones: Two-wheelers, private cars, and buses all have their own parking areas.

Drop-off and Pick-up Zones: To improve traffic flow, clearly designate places for passengers to be dropped off and picked up.

Connectivity and Accessibility

Road Network Integration: Easy entry and exit with direct access to National Highway 45 (NH45) and associated roads.

Links to public transportation: incorporation of autorickshaws, local bus services, and potential railroad or metro connections.

Pedestrian Pathways: Well-lit, secure walkways for pedestrians that connect various areas of the terminus

Facilities and Services

Water Supply and Sewage Management: Sturdy water supply networks and effective sewage handling, including treatment centers.

Telecommunications and electricity: Modern telecommunications infrastructure, backup generators, and a enough power supply.

Smart technologies include automated ticketing systems, Wi-Fi connectivity, security cameras, and real-time information displays.

Features of Sustainability

Green building practises include the use of eco-friendly construction methods, energy-efficient designs, and sustainable materials.

Renewable Energy: To lessen carbon footprint, install solar panels and energy-efficient lighting systems.

Water management: To encourage sustainable water usage, rainwater collecting systems and water recycling facilities are installed.

trash Management: To reduce the influence on the environment, implement extensive trash segregation and recycling programs.

USER SPACE ACTIVITY ANALYSIS

SPACE	PRIMARY USER	SECONDARY USER	ACTIVITY	PROXIMITY WITH...
ENTRANCE LONGUE	Passengers	Visitors, staff	Enquiry, ticket counters, cloak room, etc.,	Waiting space, intra city buses, and other vehicles.
WAITING AREA	Passengers	Visitors, staff, commercial staff,	Waiting, relaxation	Denaturing platform, shops, entrance, restaurants.
INTRRA CITY BUSES	Passengers	Visitors, crew members	Alighting and boarding	Entrance lounge. Alighting area.
ALIGHTING (INTER CITY BUSES)	Passengers	Visitors, crew members	alighting	Intra city buses, other vehicles
BOARDING (INTERCITY BUSES)	Passengers	Visitors, crew members	boarding, time keeping, current booking	waiting lounge layover space
LAYOVER SPACES (BUS)	Crew members	Terminal staff	Bus parking, crew rest place	Boarding platform
RESTAURAN AND SNACK BAR	Passengers	Visitors, crew members Terminal staff	Dining, relaxing.	waiting lounge, boarding platform
SHOP AND RECRPTION	Passengers	Visitors	Shopping, relaxing	waiting lounge, boarding platform
ADMINISTRATION OFFICE	Terminal staff	Crew members	Maintenance, management	Crew resting area
RENTAL OFFICE	officials	Visitors and public	-	-
REST ROOMS	Passengers	-	accommodation, rest, stay	Entrance lounge

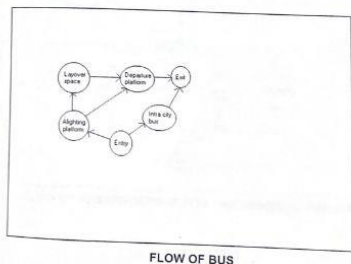


Figure 31 2.2.1 user space activity analysis

Security and Safety

Surveillance Systems: For increased security, CCTV cameras and monitoring systems are placed throughout the terminal.

Emergency Services: Spaces set aside for police outposts, fire stations, and emergency medical services.

Fire safety measures include installing fire detection and suppression equipment, as well as having designated escape routes and emergency exits.

Facilities for Passengers

Air-conditioned waiting areas including chairs, charging stations, and information kiosks are designed to provide comfort to patrons.

Food and Retail Options: A variety of retail stores and food courts providing basic products and services. Clean and well-maintained bathrooms with amenities for people with disabilities are available for use.

Future Growth

Scalable design refers to a layout that may be expanded upon in the future to handle more passengers. Flexible spaces are multifunctional workspaces that can be changed to suit changing needs.

Detailed Site Plan

Entry and Exit Locations

Main Entrance: With broad entry gates and various lanes to avoid jams, this entry is situated off of NH45. Secondary Entrances: Extra ports of entry for emergency escapes and service vehicles.

Platforms and Bus Bays

Intercity buses have designated platforms with lots of room for passengers to embark and get off.

Intracity Buses: To reduce confusion and simplify operations, local buses operate in separate bays.

Layover Zones: Spaces set out for buses to park so they don't block traffic on moving platforms.

Movement of Passengers

The main passenger concourse, or central concourse, provides easy access to all platforms, facilities, and services.

Directional signage directs travelers to various parts of the terminal using legible, multilingual signage.

Retail and Commercial Spaces

Food Courts: Offering a range of dining alternatives, food courts are conveniently accessible.

Retail Stores: A variety of stores offering necessities for vacation,

Facilities for Administration and Assistance

Management Offices: Administrative offices centralized for convenient collaboration.

Maintenance and Service Areas: Car repair shops, employee lounges, and storage facilities.

Links for Parking and Transportation

Bus Parking: A sizable lot with servicing bays for buses that are not in use.

Parking for private automobiles is available in plenty, and electric vehicle charging facilities are available.

Cycle Stands: Specific stands designed to support environmentally responsible cycling.

Landscapes and Verdant Areas

Parks and Gardens: Verdant spaces that promote relaxation and aesthetic appeal.

Planting trees strategically will give shade and enhance the quality of the air.

2.3 ZONING :

Zone of Bus Operations

This region is used for bus-related operations, such as layover and arrival zones.

Bus platforms: Set apart spaces for passengers to be loaded and unloaded, including distinct zones for intercity and intracity buses.

Bus Bays: These are parking spaces with rudimentary facilities for drivers and conductors where buses stay in between runs.

Layover Area: A place set up for buses to park during off-peak times or breaks; it should be far from busy platforms to avoid traffic jams.

Service Area: Bus repair and maintenance facilities, including gas stations and repair shops.

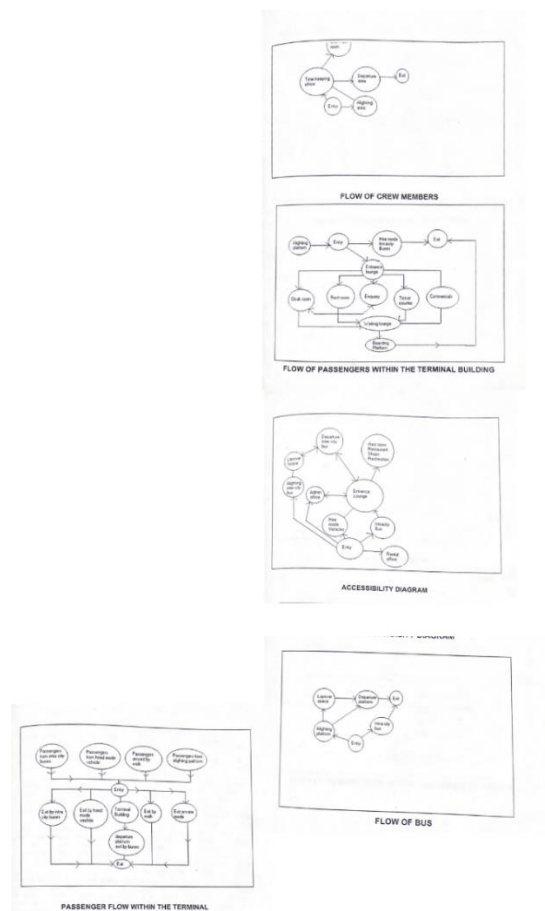


Figure 32 2.3.1 zoning

Zone for Passenger Facilities

The comforts and services offered to passengers waiting for their buses are the main emphasis of this zone.

Concourse: A central area designed for the convenience of passengers that includes information kiosks, ticket booths, waiting areas, and directional signs.

Restrooms: Spacious, immaculate restrooms with separate areas for men, women, and those with disabilities.

Food Court: A dining area that provides travelers and passengers with a range of food and drink alternatives.

Retail Zone: Stores and kiosks offering souvenirs, newspapers, magazines, refreshments, and travel necessities.

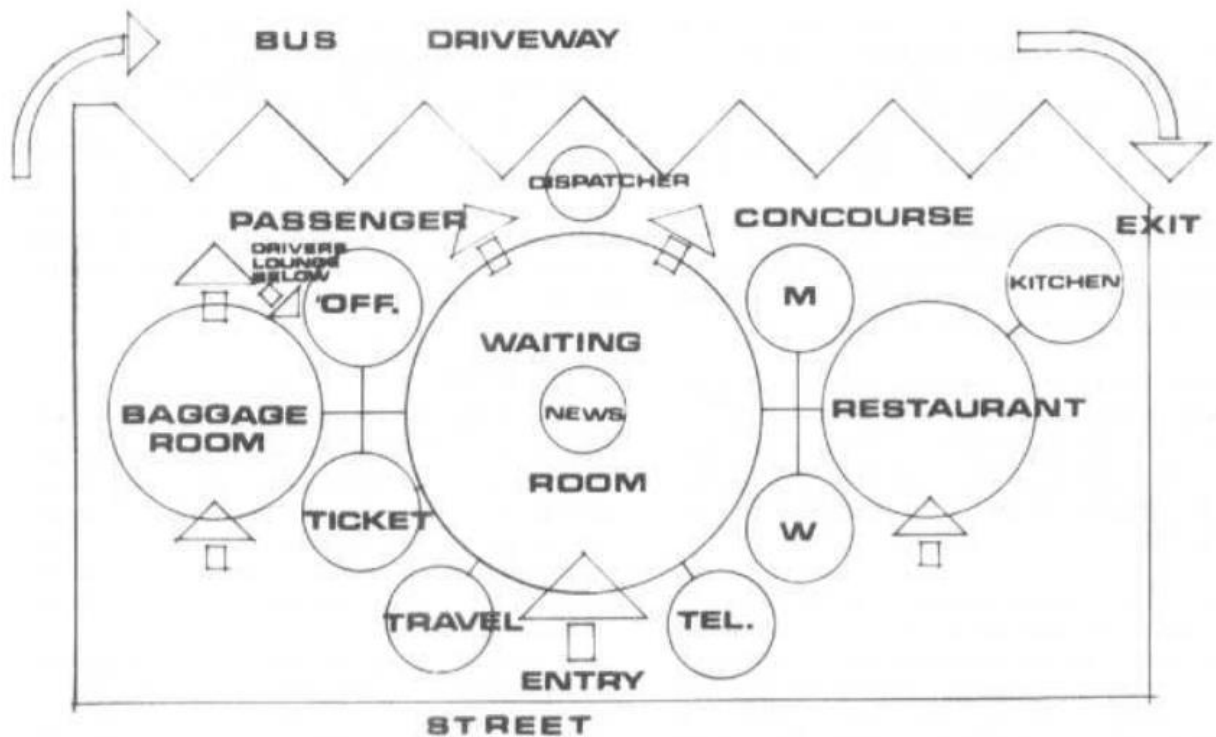


Figure 33 2.3.2 zoning

Zone of Administration

Administrative offices and terminal management and operations support facilities are located in this zone.

Managers, supervisors, and administrative personnel at the terminal have centralized office space in the terminal administration office.

Operations Control Room: A communication system-equipped monitoring and control center with CCTV surveillance and real-time information displays.

Staff amenities include locker rooms, rest facilities, and break rooms for service staff and terminal employees.

Security Office: The headquarters for security guards in charge of guaranteeing the protection and safety of travelers and property.

Zone for Parking and Transportation

This area has parking spaces for private automobiles, buses, and two-wheelers in addition to spaces for other forms of transit.

Bus Parking: Specialized parking spaces with fuelling stations and repair bays for buses that are not in use.

Parking for automobiles: Plenty of spots for cars, cabs, and other vehicles, including special locations for charging electric vehicles.

Two-Wheeler Parking: Safely store bicycles and motorbikes on stands or racks to encourage environmentally friendly modes of transportation.

Public transportation connectivity includes integration with taxis, autorickshaws, buses, and maybe even future rail or metro connections.

Buffer Zones and Green Spaces

The endpoint is dotted with green spaces and buffer zones that offer safety buffers, aesthetic appeal, and environmental advantages.

Landscaped gardens: Well-kept green spaces with flowers, trees, and bushes to improve the area's aesthetic appeal and give travelers a place to unwind.

Buffer Zones: To avoid confrontations and guarantee pedestrian safety, open spaces and landscaped areas act as safety buffers between various zones.

Ecological Zones: Areas near and around the endpoint where natural habitats are preserved with the least amount of disruption to nearby ecosystems.

Zones for emergencies and services

These areas are set aside for maintenance, critical support tasks, and emergency services.

Emergency Response Center: A hub for law enforcement, fire, and emergency medical services (EMS) in the event of an emergency.

First aid stations are conveniently located locations with emergency medical supplies and first aid kits on hand to help travelers right away.

Workshops, storage spaces, and equipment yards are examples of maintenance and service facilities used to keep up terminal vehicles, infrastructure, and amenities.

2.4 DEPARTMENTS :

Transportation Division:

Supervises the infrastructure and systems of public transportation.

Tasks include organizing the IBT's layout, scheduling and arranging bus routes, monitoring intercity and intracity bus operations, and making sure all transportation laws are followed.

Organizing and Creating:

carrying out traffic analyses and feasibility studies to establish the necessity of an IBT and choose the best site for it.

coordinating with urban planners and other pertinent agencies to incorporate the IBT into the city's plans for urban development and transportation.

constructing the IBT's bus bays, passenger amenities, and transit connections, as well as its structure, design, and operating plan.

Rules and Adherence:

ensuring that the IBT project conforms with safety norms, environmental restrictions, and transportation rules.

securing the authorization and permissions required from regulatory bodies in order to build and run the IBT.

Within the IBT grounds, keeping an eye on and enforcing adherence to operating rules, laws, and regulations pertaining to transportation.

Coordination of Public Transportation:

coordinating the integration of bus routes, timetables, and services at the IBT with transit authorities, bus operators, and other stakeholders.

organising stakeholder involvement and public consultations to get feedback on bus amenities, services, and accessible features.

putting policies into place to improve the IBT's connection and transfer opportunities between various public transit choices.

Infrastructure Management:

supervising the building, upkeep, and modernization of the IBT's transportation infrastructure, including parking lots, bus lanes, and access roads.

Overseeing traffic lights, signs, and other traffic control equipment to guarantee pedestrian safety and efficient traffic flow in the vicinity of the IBT.

putting in place technological solutions and intelligent transportation systems (ITS) to increase operational effectiveness and distribute traveler information.

Customer Support and Background:

defining service criteria and quality standards for the IBT's passenger comforts, ticketing, and information services.

Keeping an eye on consumer happiness and feedback to pinpoint problem areas and improve the overall traveler experience.

assisting and supporting travelers, especially those with special needs, in order to maintain inclusivity and accessibility inside the IBT.

Crisis Intervention and Emergency Response:

Creating strategies and procedures for emergency readiness in case of accidents, natural catastrophes, or security threats that could affect the IBT.

coordinating with law enforcement, emergency response teams, and medical providers to guarantee prompt and efficient handling of situations on the IBT property.

enhancing employee preparedness and public knowledge of emergency protocols by holding training sessions, awareness campaigns, and drills.

Department of Urban Development:

Oversees the development and planning of urban areas.

Tasks: Assists with environmental evaluations, zoning permissions, and site purchase for the IBT project. makes sure the terminal complies with development standards and blends in nicely with the urban fabric of the city.

Department of Public Works (PWD):

Accountable for overseeing civil engineering and developing infrastructure.

Building roads, utilities, and other civil works necessary for the IBT are among the tasks. guarantees appropriate utility, road, and drainage connections to the endpoint.

Department of Revenue:

Oversees land purchase, income collection, and land record keeping.

Tasks: Assists with the registration, transfer, and purchase of land for the IBT project. guarantees unambiguous land titles, settles ownership conflicts, and manages issues pertaining to income.

Local Business:

Provides facilities and services for the municipality.

Tasks: Issues the licenses and permissions required for the IBT's building and operation. oversees the public health, sanitation, and waste management services at the terminal.

Authority for Transportation:

In charge of regulating and supervising transportation activities.

Tasks: Keeps an eye on adherence to operating requirements, safety standards, and transportation restrictions. carries out coordination with transport organizations and interested parties to guarantee the IBT runs well.

Security and Safety Organizations:

It is your responsibility to make sure the IBT grounds are safe and secure.

Tasks: To protect travelers, employees, and property, deploy security guards, establish surveillance systems, and put safety procedures into place.

2.5. STANDARDS

VARIOUS MODES TO REACH THE TERMINAL

A transport terminal is the main gateway to the city. The national gateway to the city is predominately through rail and road and the international gateway is through airport and harbor

The existing situation analysis at present the terminals were made to establish the demand - capacity issue and environmental, social issues etc. and to draw objective of a new terminal.

A comprehensive study of the data and the case studies of few bus terminals helped to refine the requirements. The brief was formulated based on the standard, surveys and requirements provided by the corporation.

The concept was formulated based on the passengers requirements upon which a better managed intra city and inter city bus terminal can be designed.

PASSENGER ANALYSIS

Currently 3900 inter city buses arrive and depart from madras city, daily catering to over 84,000 people/day.

Boarding from terminal - 70% Rest from wayside stops- 30%

A city is a function of many activities and is constantly subject to movement, be it of people, vehicle or goods

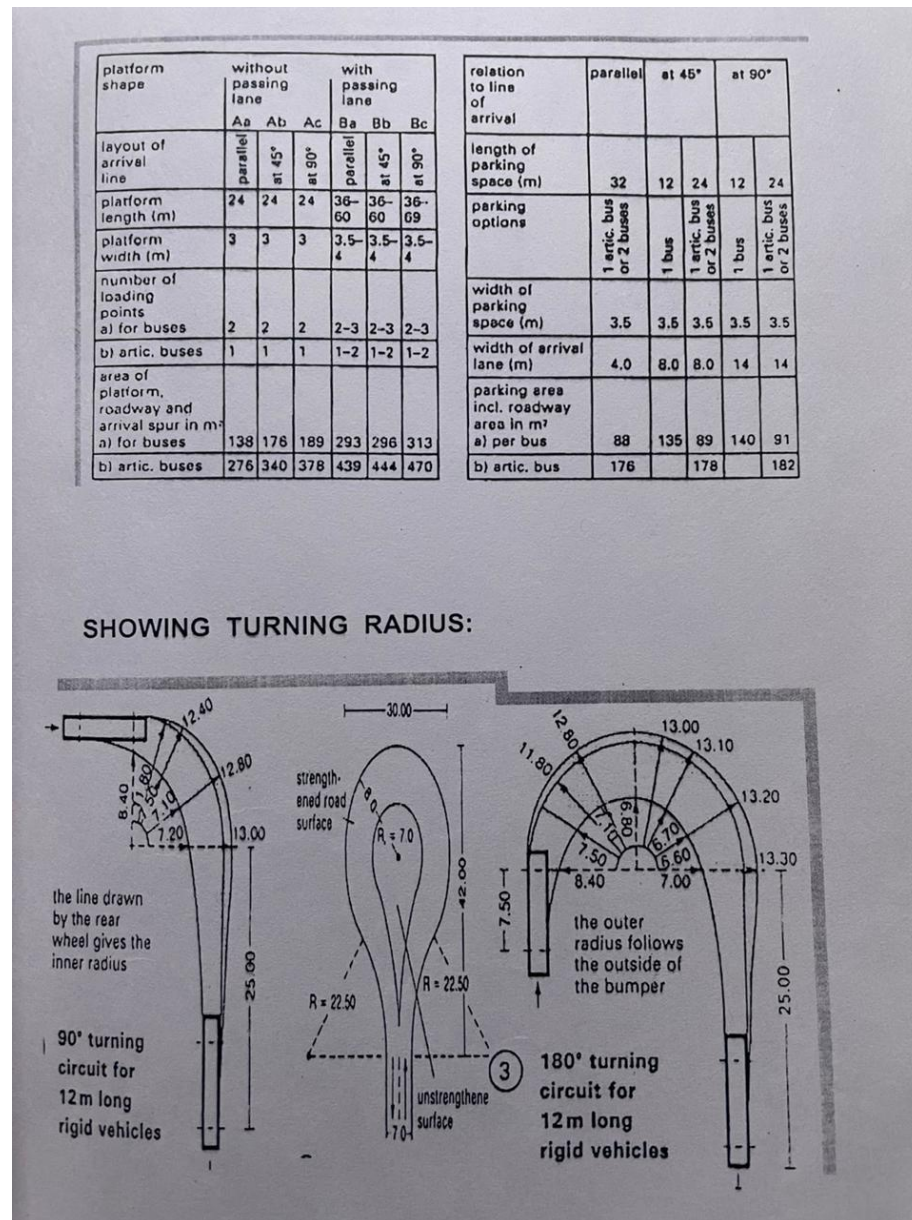


Figure 342.5.1 standards

Improvement of urban transportation service is the call of the hour as the present situation is one of chaos what with traffic jams, congestion., air and noise pollution, accidents dominating the scenario.

Currently efforts are being made to supply satisfactory standards of urban transportation service.

Increasing interest is being shown in the possibilities of expanding public transportation, that is travel through buses and trains as a means to improve the position of transit lines and partly in the hope of reducing the seemingly insatiable demand for new highways and mounting congestion.

* Short stage coaches carrying passengers and parcels first started operating as early as 1800 over predetermined areas in London.

* In July 1829, a retired Seaman named Shilibeer started the first usage of short stage carriage called the omni bus, drawn by three horses abreast. The name omnibus was derived from the Latin meaning of, for all.

* It was in 1831, that the first steam driven omni bus was introduced by Walter Hancock. In 1832, the stage carriage act was amended to safeguard the interests of the passengers and other road users and it became necessary for all drivers and conductors to be licensed.

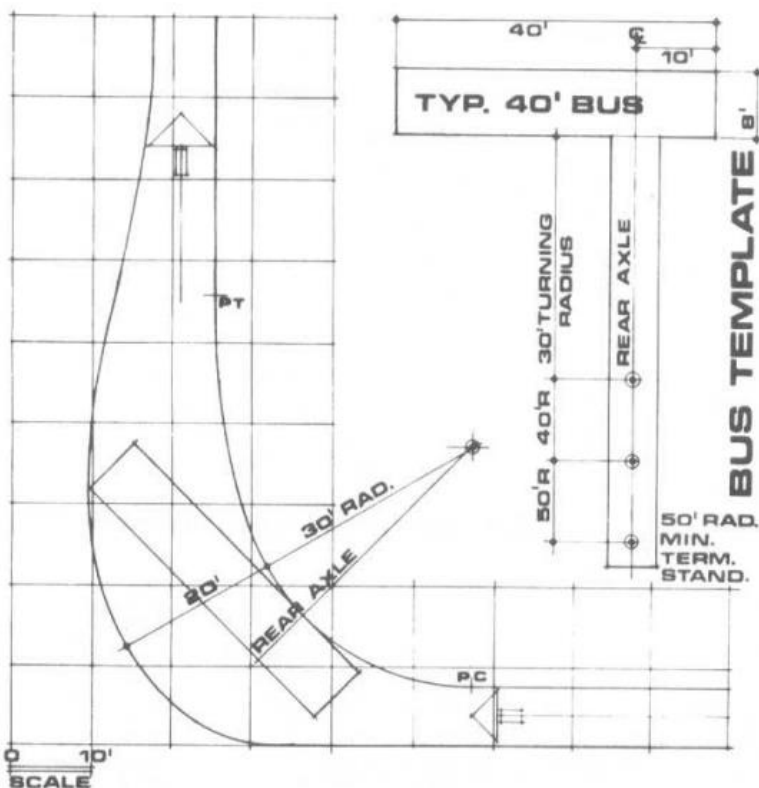
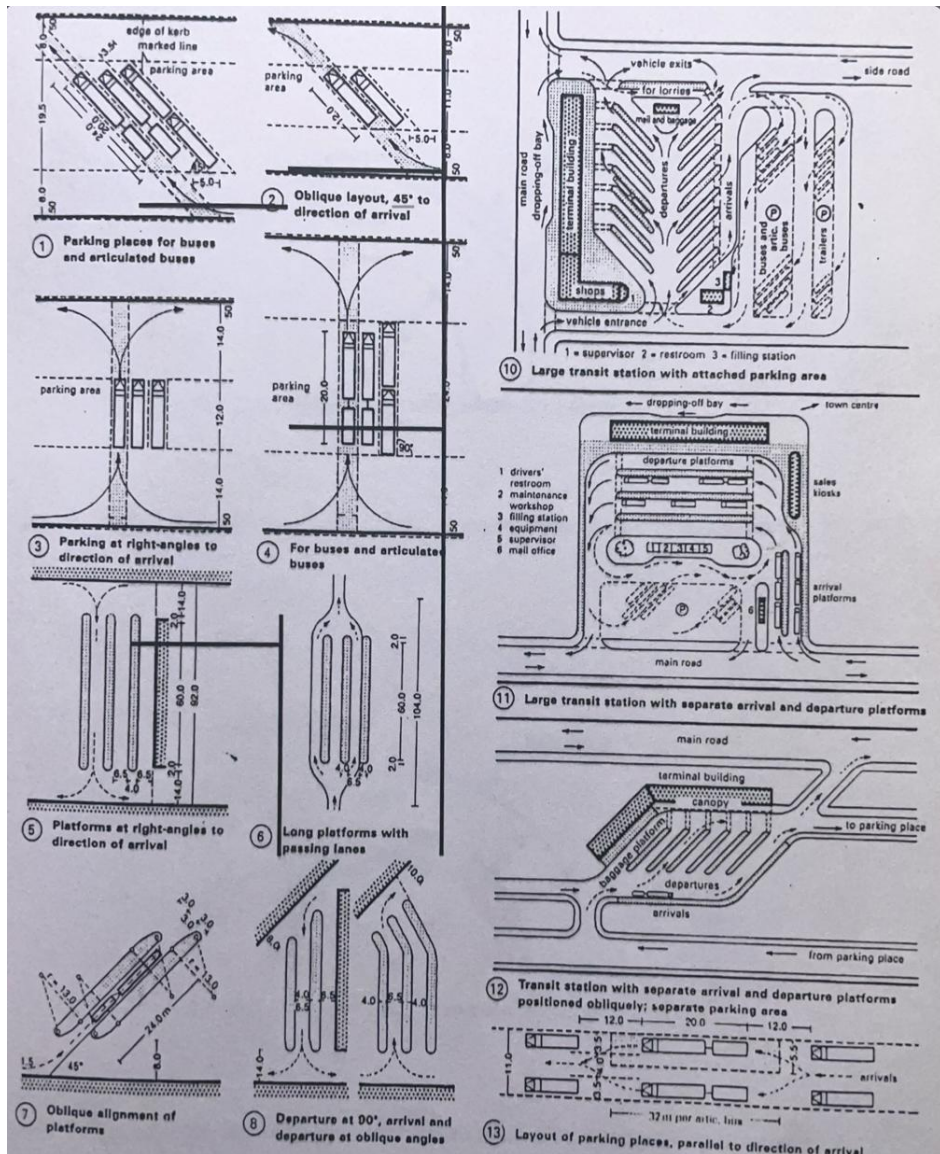


Figure 352.5.2 standards

- * Travel in these early steam omnibus was precarious and frequent breakdowns due to accidents, and as a precaution to safeguard pedestrians, it was necessary that a man carrying a red flag walked in front of all mechanically propelled vehicles
- * In 1881, London road car company, which was the largest organization in London was introduced.
- * For the first time, tickets as receipts for fares paid came about and as a check on the conductors.
- * In October 1899, appeared the first petrol driven bus. This was followed by many types propelled by steam, electricity and petrol.
- * Double Decker's were introduced, with a maximum capacity of 60 passengers.
- * Terminals are now, a part of the world of leisure, a resort for the urban tourist, the shopper and



traveler.

Figure 36 2.5.3 standards

* Terminals are now a new travel matrix. A bus terminal is the hub of a system and not an end in itself.

BUS GEOMETRICS

Bus data or Bus geometrics, or the physical dimensions and maneuverability of the bus determine the width of roadways, shapes of platforms, column spacing, ceiling heights and other aspects of bus-level design.

The apparently insignificant detail of the right-side loading of buses often restricts terminal design possibilities.

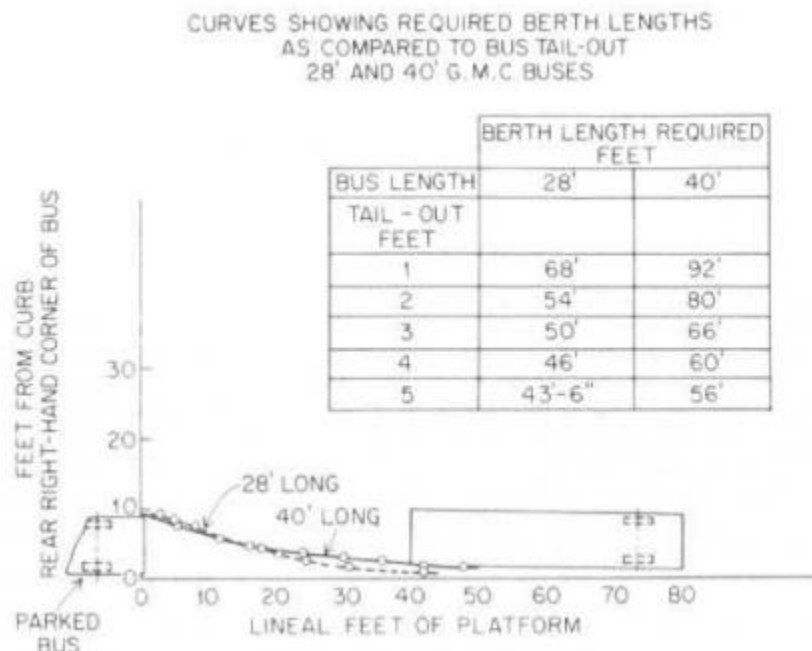


Figure 372.5.4 standards

SAW-TOOTH BAYS

- * Angle of pitch increases so does the distance between each bay.
- * Passenger safety and control are particularly important when detailing saw-toothed bays.

Diagonal of pitch increases so does the distance between each bay.

Passenger safety and control are particularly important when detailing saw-toothed bays.

- * ram explaining saw- tooth bays.

BUS ROADWAYS

- * 3.6M wide single lane runway for a 2.6M wide bus and 8M wide double lane runway.
- * Avoid sharp grade changes and side clearance at entry should be 30Cm.

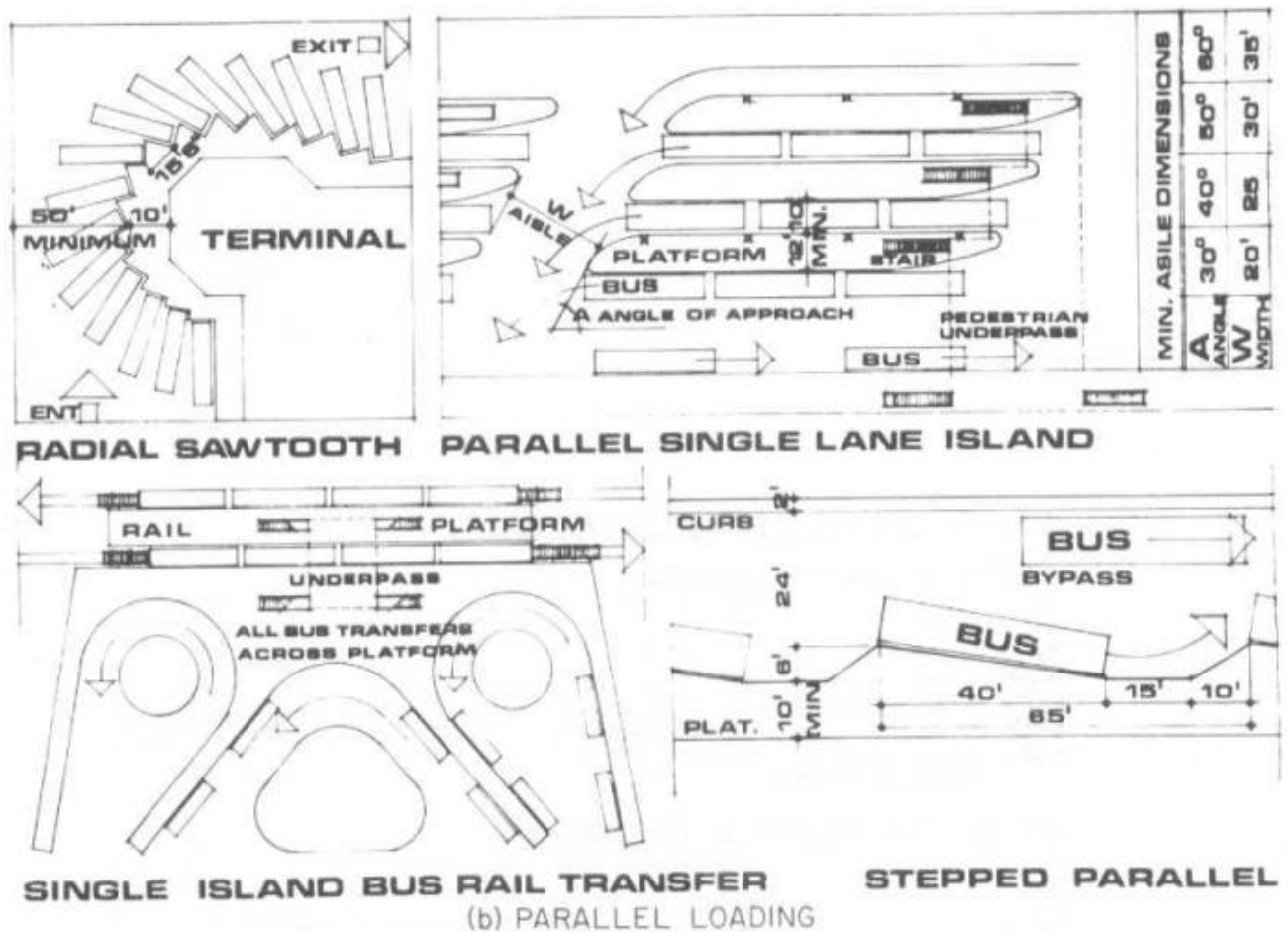


Figure 38 2.5.5 Types of bus stop

BUS STOPS

* Roadway widened by 3M at bus stops corner buildings at outgoing ends.

Sweep path

When a bus turns normally it turns about a point which is somewhere on the center line of the rear axis. This is true whether motion is forward or backward.

The turns required to accomplish the movement and positioning of buses are variable and differ considerably with the equipment encountered.

The turning template provides convenient graphic method to determine minimum clearances required.

Ramp design

- * Roadway ramping, down or up, at entrances and exits to runaway should not be of sharp grade changes resulting in discomfort to passengers or rough treatment of equipment.
- * Allowance in ramp design must be made for future buses with longer wheel base and overhang.
- * Door headroom must be atleast 12 feet with allowances for deck and a half and double deck buses.
- * The ramp ratios plays an significant role while designing the bus terminus.

RAMP RATIOS

- * Minimum side clearance is 12 inch.
- * More than 1.5m - 1:10
- * More than 3m - 1:2

STRAIGHT SAWTOOTH LOADING

1. Efficient - employed where lot is comparatively narrow and deep
2. Passenger has direct approach to loading door
3. Baggage truck can operate between buses for side loading.

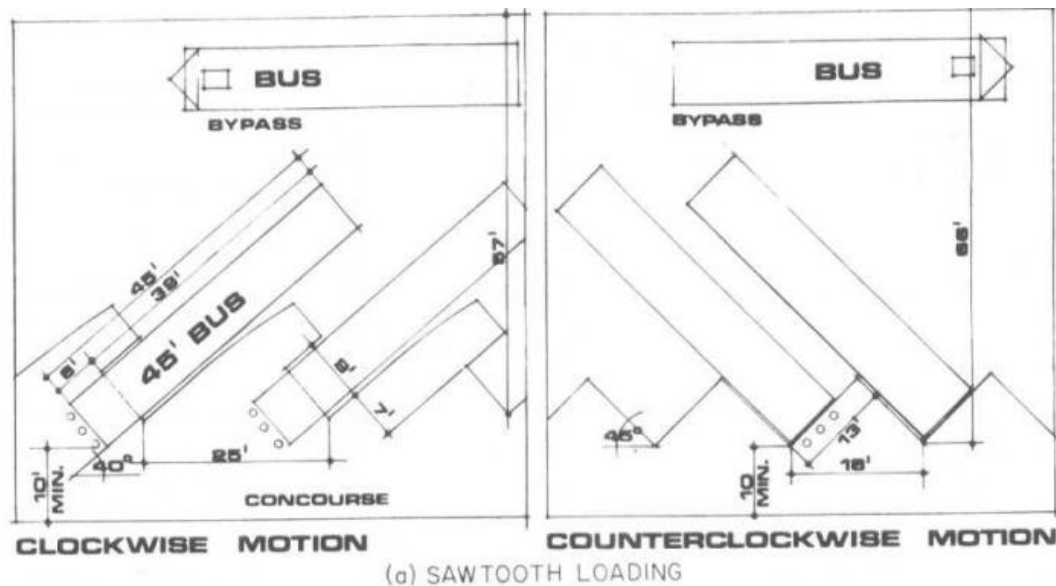


Figure 39 2.5.6 clockwise counterclockwise motion

Parallel loading

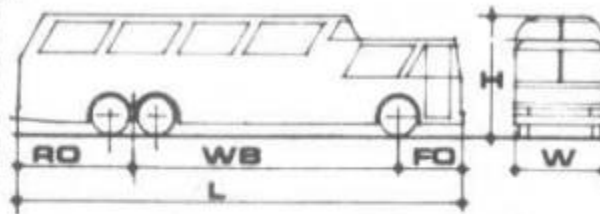
1. Requires excessive amount of space.
2. Buses must usually wait until first bus exits.

3. Large terminal requires pedestrian under/overpass facilities to protect passengers while crossing lanes.

BUS SPECIFICATIONS

40' SCENICRUISER

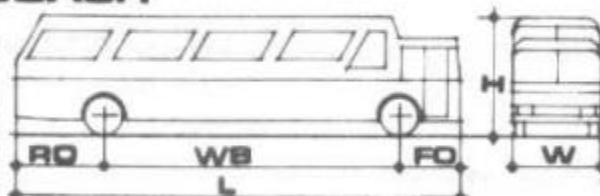
L	LENGTH	40' 0"
W	WIDTH	8' 0"
H	HEIGHT	10' 11"
WB	WHEEL BASE	23' 7"
RO	REAR OVERHANG	10' 7"
FO	FRONT "	5' 9"
OR	MIN. OUTSIDE TURNING RADIUS	42' 4"



GMC INTERCITY COACH

L
W
H
WB
RO
FO
OR

40' 0"
8' 0"
10' 11"
28' 8"
8' 0"
5' 9"
45' 0"



FUTURE DEVELOP.

L
W
H
WB
RO
FO
OR

45' 0"
8' 0"
12' 0"
28' 8"
10' 7"
5' 9"
50' 7"

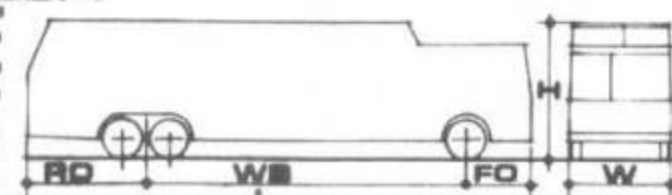


Figure 40 2.5.7 bus specification

Single island bus Rail Transfer.

RIGHT - ANGLE LOADING:

The dis-advantages of right angle loading are the following,

1. Out swinging bus door which forms a barrier around which passenger must pass Bus maneuvering difficult.

RADIAL SAWTOOTH LOADING:

1. Most efficient - Buses swing into position along natural driving arc

Space required at front is minimum.

2. wide space at rear making maneuvering easy

3 CASE STUDY

3.1 LITERATURE CASE STUDY :

3.1.1. The ISBT kashmere gate

Location: The ISBT Kashmere Gate is next to the famed Kashmere Gate neighborhood in northern Delhi. It is well situated adjacent to various notable attractions including the Old Delhi Railway Station.

Size and Capacity: The terminal is rather large, with several platforms and bus bays. Every day, a lot of bus movements and passenger traffic may be accommodated by it.

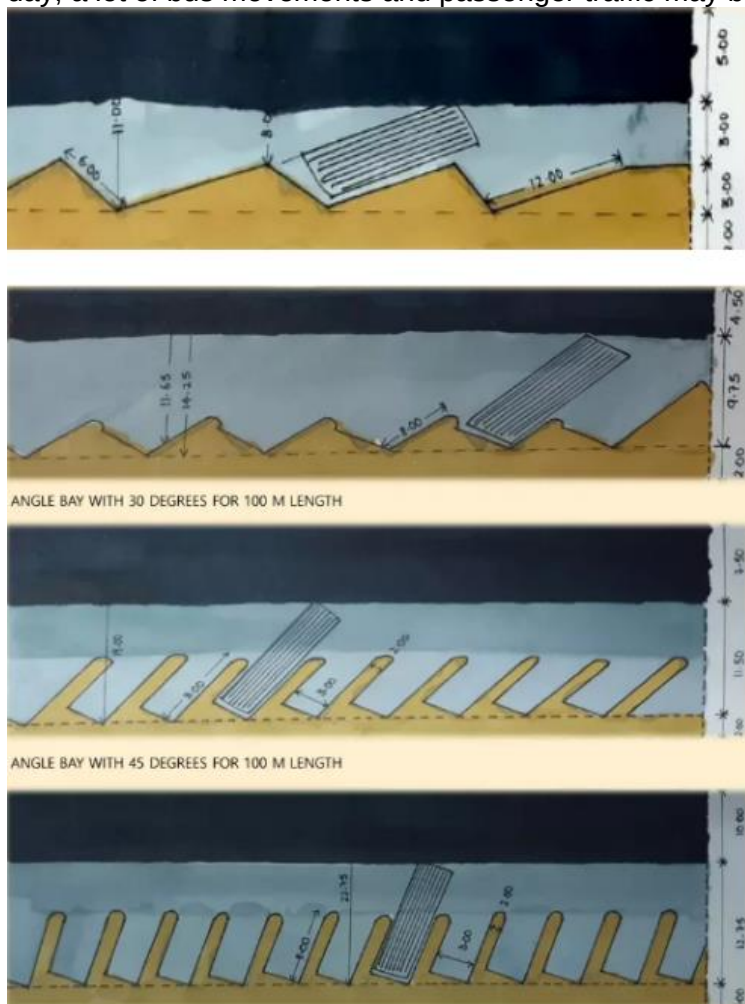


Figure 41 3.1.1 Types of bus stop in The ISBT kashmere gate

Facilities and Extras:

Bus Platforms: There are many platforms and bays at the ISBT Kashmere Gate that are assigned to distinct routes and destinations. Passenger boarding and disembarking facilities are available on these stations.

The terminal features a large passenger concourse that is furnished with waiting lounges, information desks, ticket counters, and seating places.

Retail Outlets: Passengers can purchase a variety of goods and services from a variety of retail outlets, such as restaurants, shops, and convenience stores.

Restrooms: For the comfort of travelers, spotless and well-kept restrooms are offered.



Figure 423.1.2 The ISBT kashmere gate

Parking: With specific parking zones and entry/exit locations, the ISBT offers parking facilities for cars, taxis, and two-wheelers.

Security: To guarantee the safety and security of travelers and their belongings, the terminal is outfitted with security cameras, guards, and police stations.

Information Displays: Real-time updates on bus timetables, arrivals, departures, and other pertinent information are available via digital display boards and information displays.

Accessibility Features: The ISBT has ramps, special sitting sections, and accessible facilities to make it accessible to travelers with impairments.

Design principles

1. Segregation of different modes of transport & activities.
2. Segregation of alighting and boarding platforms.
3. Segregation of incoming and outgoing passengers at two levels.

Circulation

1. An efficient circulation pattern is followed in the ISBT. There is segregation in circulation of buses and non bus (other light vehicles) traffic due to the difference in movement character.
2. There is a separate entry and exit points for inter-city and intra-city bus services.
3. There is a proper segregation for vehicular and pedestrian movement.



Figure 43 **3.1.2 The ISBT kashmere gate**

Connectivity in Transport:

Bus Services: Offering a broad range of intercity and interstate bus services to several locations throughout North India and beyond, the ISBT Kashmere Gate acts as a key hub for both state-run and private bus operators.

Metro Connectivity: The Kashmere Gate Metro Station, which is close by and offers easy access to various sections of the city, connects the terminal well to the Delhi Metro network.

Railway Connectivity: Passengers may effortlessly switch between bus and train services because to the ISBT's closeness to the Old Delhi Railway Station.

Introduction to region

MAHARANA PRATAP ISBT. An interstate bus terminal. The refurbished ISBT has been developed in such a way to provide maximum number of conveniences and latest facilities to the passengers.

The ISBT kashmere gate was initially constructed by the DDA in 1976 and transferred to transport department in 1993.

The maharana pratap inter-state bus terminal or MMTC at kashmere gate is the oldest and the largest in india catering to buses from delhi and six other states i e Haryana.

Punjab, Himachal pradesh Jammu and Kashmir Uttar pradesh. Rajasthan.

Kashmere gate is located in north delhi in the old delhi area in close vicinity to the red fort and the old delhi railway station

Connectivity

The kashmere gate station of the delhi metro, lies on both the red (Dilshad garden

-Rithala) and yellow lines (Jahangir puri - HUDA city center). It is a transfer station between the red line on the lowest level. Kashmere gate also serves as the headquarters for the delhi metro

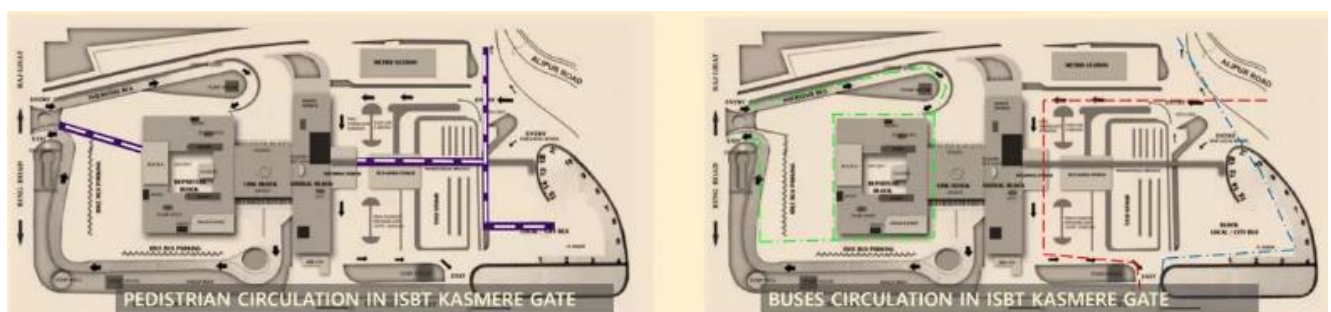


Figure 443.1.3 circulation The ISBT kashmere gate

Regional connection: Enables the mobility of people and products by offering essential connection between Delhi and nearby states.

Mobility Hub: Acts as a hub for bus services, facilitating easy transitions between various forms of transportation.

Economic Impact: Promotes trade, commerce, and tourism by making areas more accessible and mobile. This helps local economies grow.

Social Equity: By offering accessible and reasonably priced transportation choices, it improves accessibility for commuters, especially those from low-income backgrounds.

Reduction of Congestion: By rerouting intercity bus traffic to a specific terminal, this reduces congestion in the city core of Delhi.

Environmental Benefits: By centralizing bus operations in a controlled environment, it lowers vehicle emissions and pollutants in the city core.

Enhances passenger safety and security by means of improved infrastructure, surveillance systems, and policing.

Urban Development: Encourages business and residential investment by serving as a catalyst for urban development in the neighborhood.

Learnings:

interaction: Improved overall connection is achieved by seamless interaction with existing transit options, such as the Delhi Metro and railroads.

Sustainability: Long-term profitability depends on environmentally friendly design elements and sustainable practices.

Community Engagement: The success and acceptability of the project are guaranteed when local communities and stakeholders are involved.

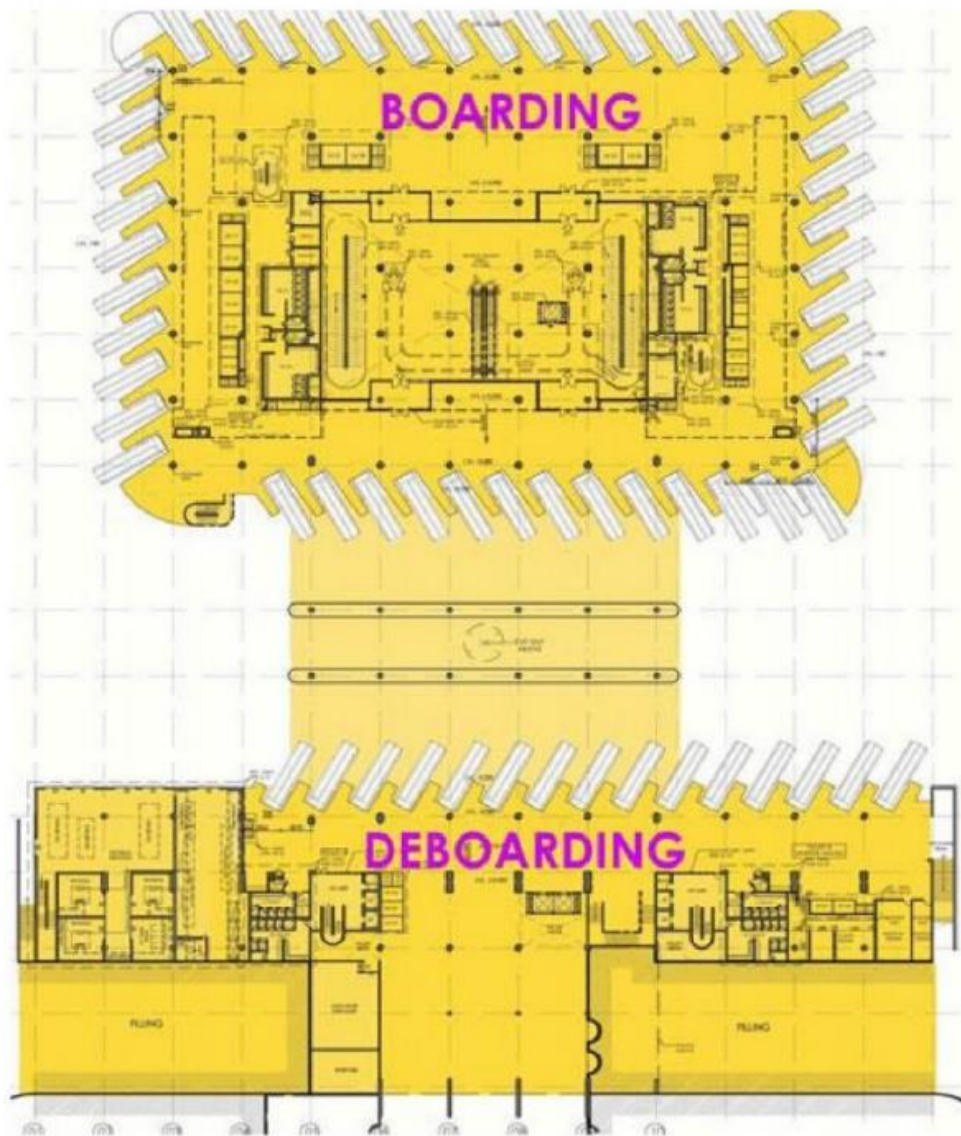


Figure 453.1.4 plan of The ISBT kashmere gate

Operations and Management:

The Delhi Transport Corporation (DTC), a state-owned transport corporation in charge of bus services in Delhi, is in charge of managing and running the ISBT Kashmere Gate.

A committed crew of employees works around the clock at the terminal to handle security, ticketing, and other operational duties.

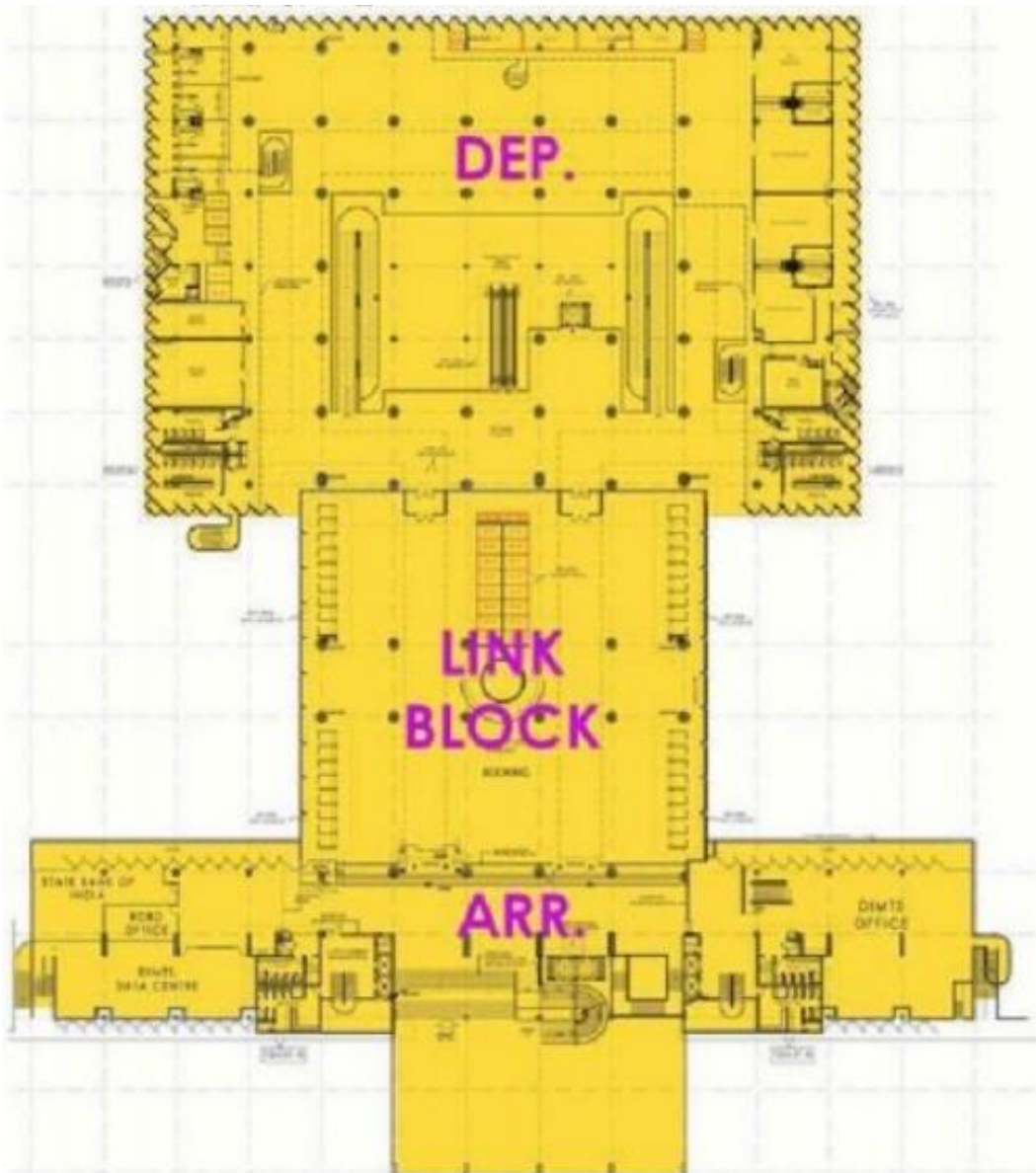


Figure 463.1.5 plan of The ISBT kashmere gate

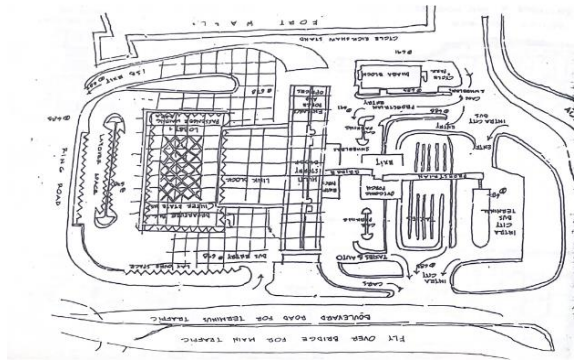
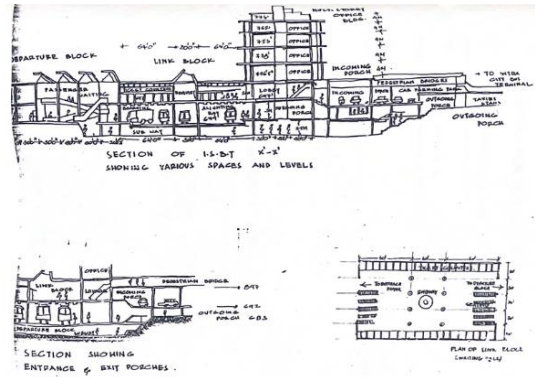


Figure 473.1.6 plan and section of The ISBT kashmere gate



3.2. The Vadodara central bus station, Gujarat

Overview of the area

S.T. bus depot, also known as the major bus terminus of Vadodara, is situated outside M.S.U. Sayajiganj and close to the railway station. The B.S.R.T.C. developed the bus depot in 1958. Over 2,300 trips and approximately 1,25,000 passengers from various parts of Gujarat state, including the north and north-east, east, south, and saurashtra-kutch, as well as adjacent states of Rajasthan, Madhya Pradesh, and Maharashtra, are handled daily by the central bus terminus.

On the design of the new bus terminal in Vadodara

2014 saw the completion of the Sphere Cube Infrastructure PT. Ltd. bus terminal design in Vadodara City.

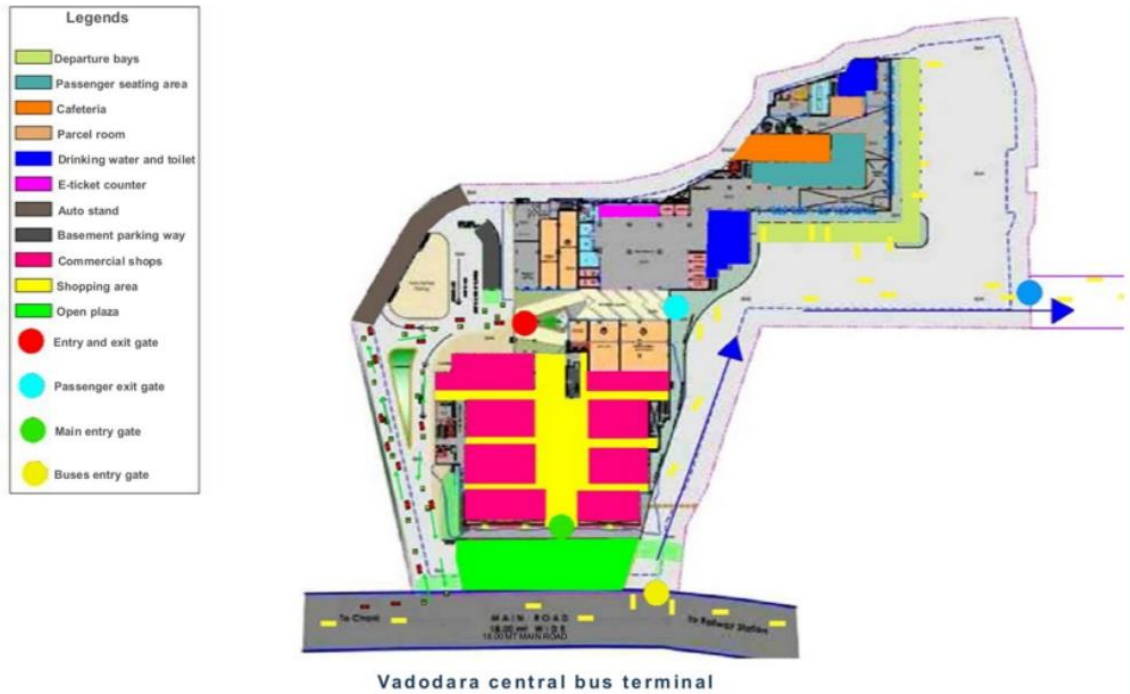
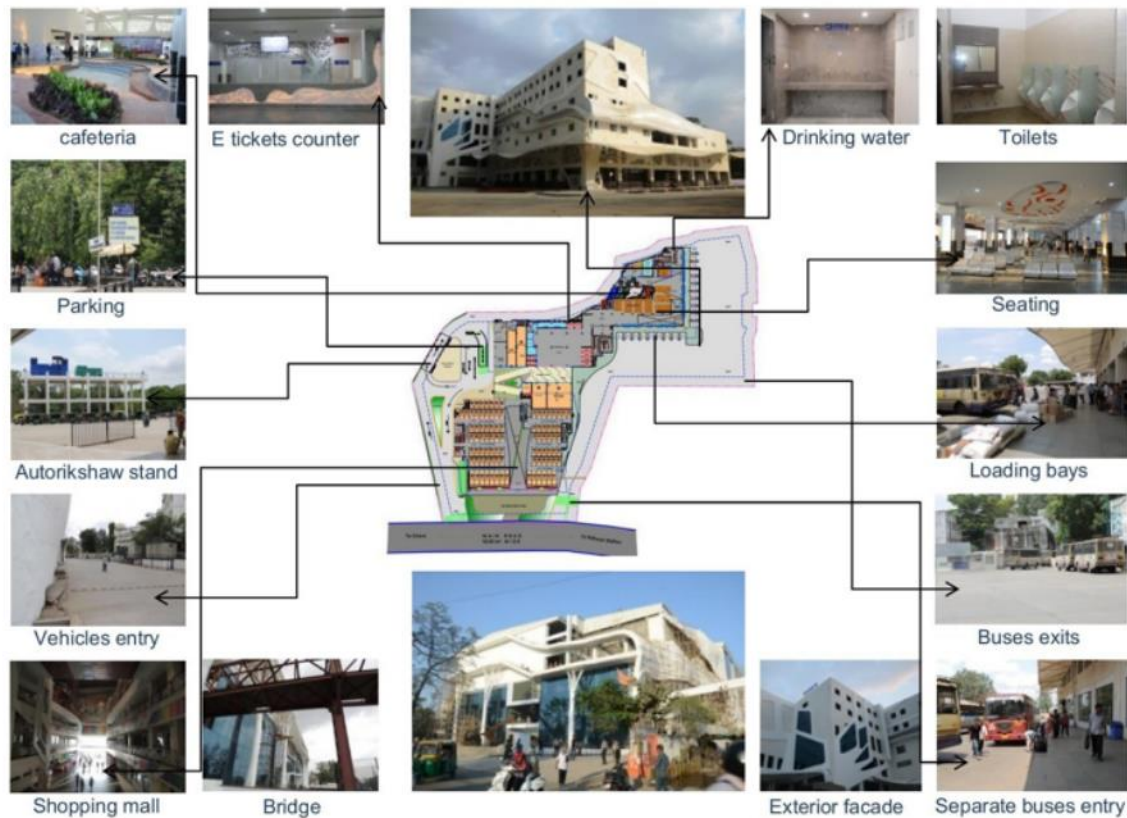


Figure 483.2.1 The Vadodara central bus station, Gujarat

a group of Cube Construction Engineering Ltd., working on the Gujarati State Road Transport Corporation PPP project to build Vadodara's major bus terminal.

Image 4.2.1: Location of the Vadodara Central Bus Station



esign values

1. Separate lanes for pedestrians, private automobiles, and buses to ensure traffic safety
2. Independent parking spaces for taxis, auto rickshaws, private automobiles, and buses.
3. A creative worldwide standard layout and design. Many paths for foot traffic.
4. The building's atrium public plazas and spacious foyers.
5. Well-thought-out passenger pick-up and drop facilities A planned bridge would connect the second floor of the bus terminal to platform no. 6 of the railway station.

Passengers will be able to quickly and safely visit both terminals thanks to this. It serves 1550 busses a day from three states: Maharashtra, Rajasthan, and MP.

Specific parts

1. The main building's rather central location houses the main structure, which is surrounded by all of the staff and passenger amenities and has a central waiting area for a shopping center.

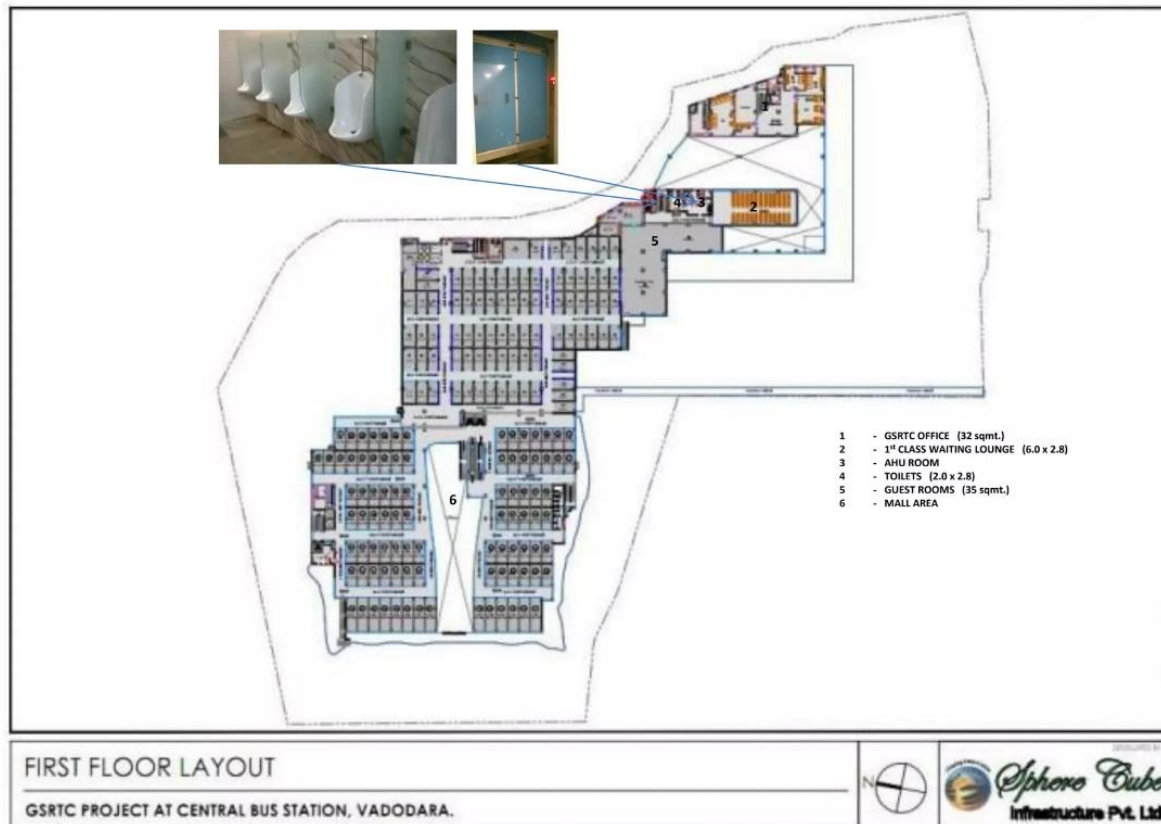


Figure 493.2.3 The Vadodara central bus station, Gujarat

2. An indoor roadway with grids of 4.5 m by 6 m is supported by a column and beam framework. It contains a decent amount of glass and solid materials together.

• Third floor: food courts, game zone, megaplex; Second floor: flea market, art and craft market; Conclusions

One entry and one exit are available for all bus routes from the main road to the terminal, therefore one-way traffic flow is utilized for convenient and smooth driving as well as control over traffic movement.

Bus idle parking for all routes

have been arranged in a way that doesn't impede buses departing or entering the terminal
There is a separate entrance and exit for passengers.

Other cars approach their own parking spaces by using this passenger entry and exit. There is also a separate parking area for cars in the basement. Therefore, travelers utilizing the terminal

do not have to go far from the parking area.

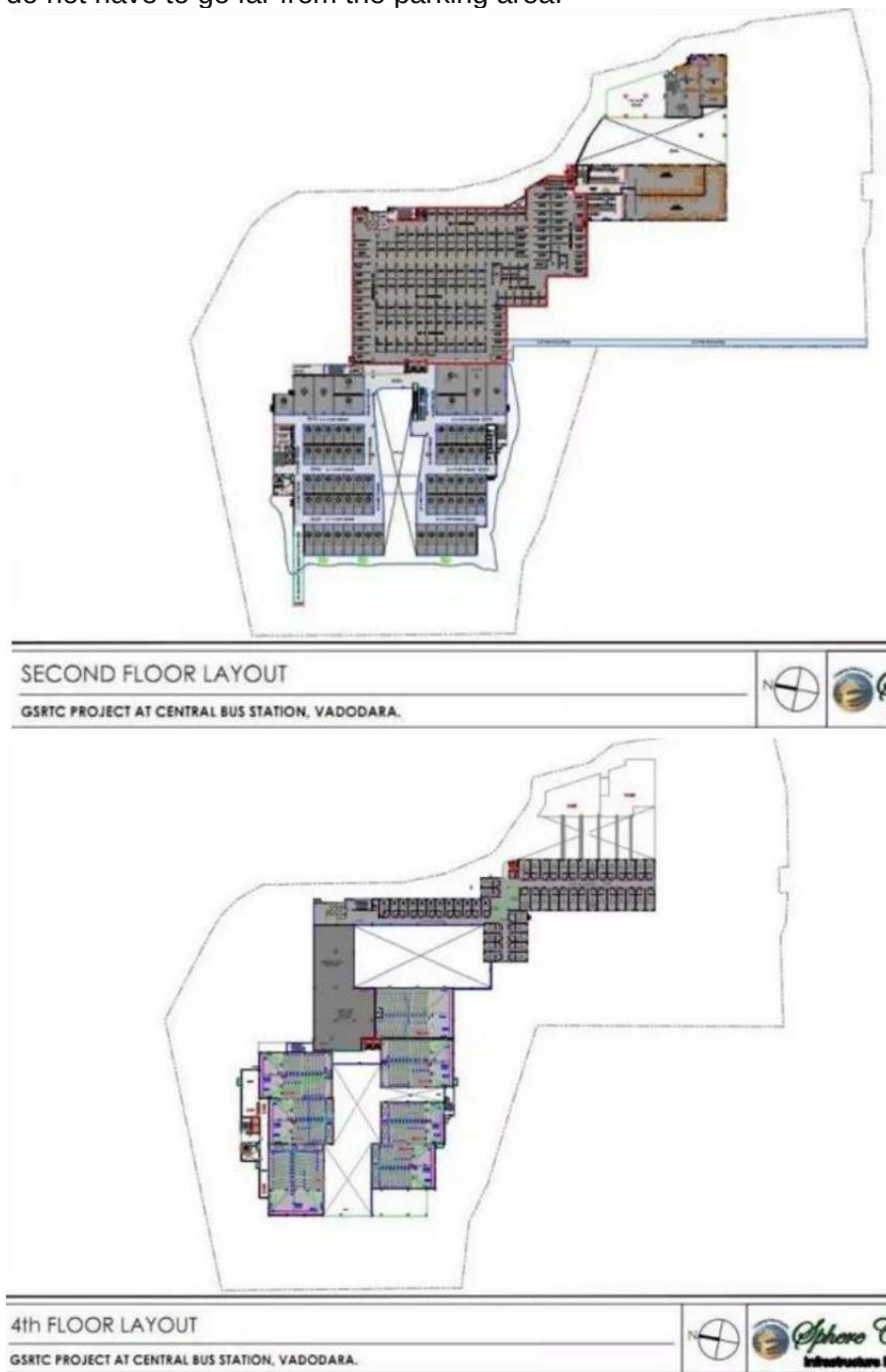


Figure 503.2.4 The Vadodara central bus station, Gujarat ,plan

The commercial area includes a food court with 22 outlets, 400 retail stores with an average size of 25 to 35 square meters each, a flea market, and a seven-screen multiplex operated by Cinepolis India.

He has twenty platearms on his terminal.

Parking space for ten buses, ticket counters, an information desk, and a 200-person waiting area comprise the cafeteria (74K7 CLOAK ROOM, 12 shops, a medical shop, tourist information, and a cabin portion.

A semi-open area with a water body. BO PEMATRIES FOR 120 GUEST ROOMS &. Therefore, there are male and female restrooms with a portable water area in the female first-class waiting hall, accommodating 200 people.

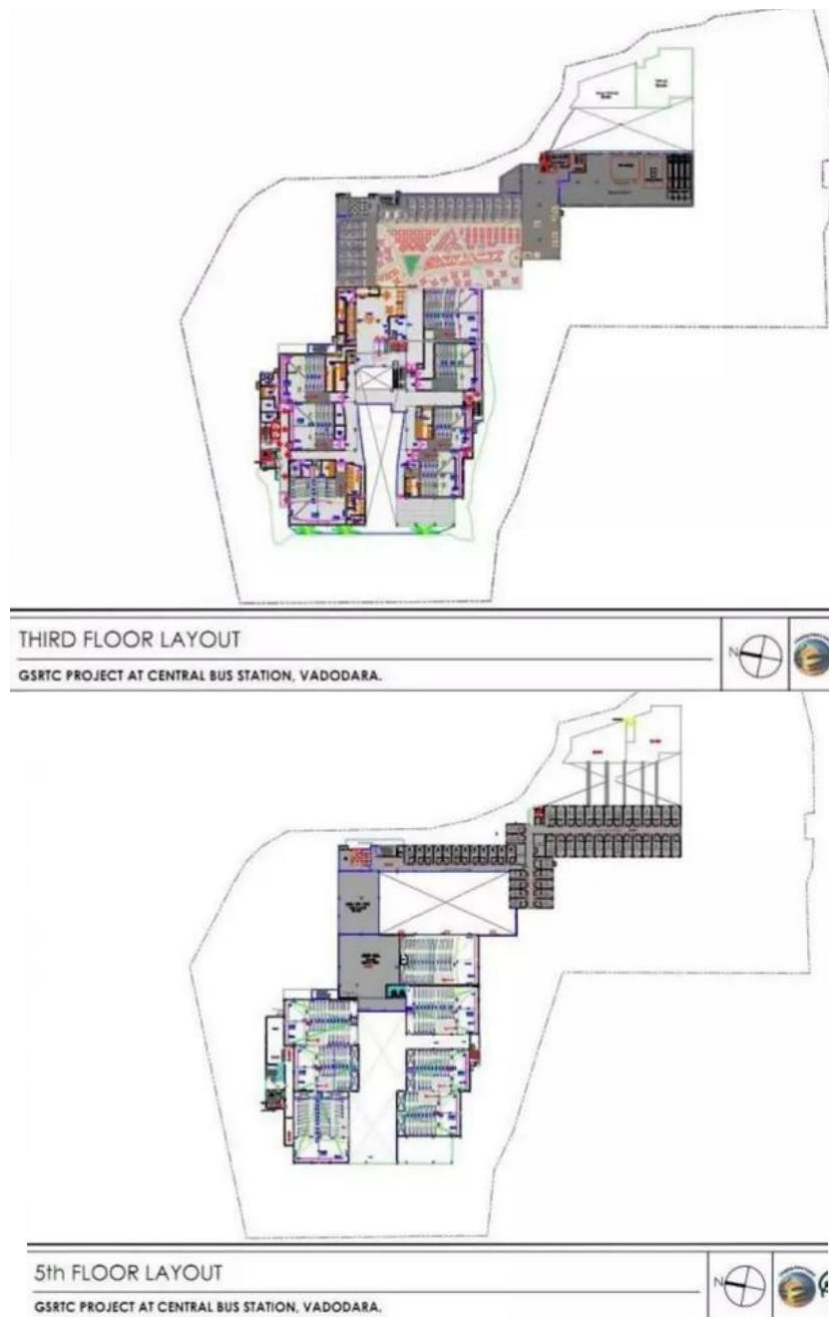


Figure 51 **3.2.5 The Vadodara central bus station, Gujarat ,plan**

3.3.Kilambakkam bus terminus

Kilambakkam Bus Terminus, also known as Kalaingar Centenary Bus Terminus, is a bus terminal serving bus services to Tamil Nadu's southern regions. It is located at Kilambakkam, Urupakkam, along GST Road, outside of Chennai. Spread on 88.52 acres (358,200 m²), it was constructed to relieve traffic at the Chennai Mofussil Bus Terminus in Koyambedu. It went into service on May 1. The majority of its bus traffic will flow to cities in southern Tamil Nadu, including Cuddalore, Pondicherry, Sengottai, Kumbakonam, Thanjavur, Dindigul, Kanniyakumari, Madurai, Thoothukudi, Tiruchirappalli, and Tirunelveli. Operated by TNSTC, SETC, KSRTC, SWIFT, and contractual (omni) buses, it is an integrated bus terminus.

MTC buses will link it to other areas of the Chennai Metropolitan Area and the suburbs. After the building

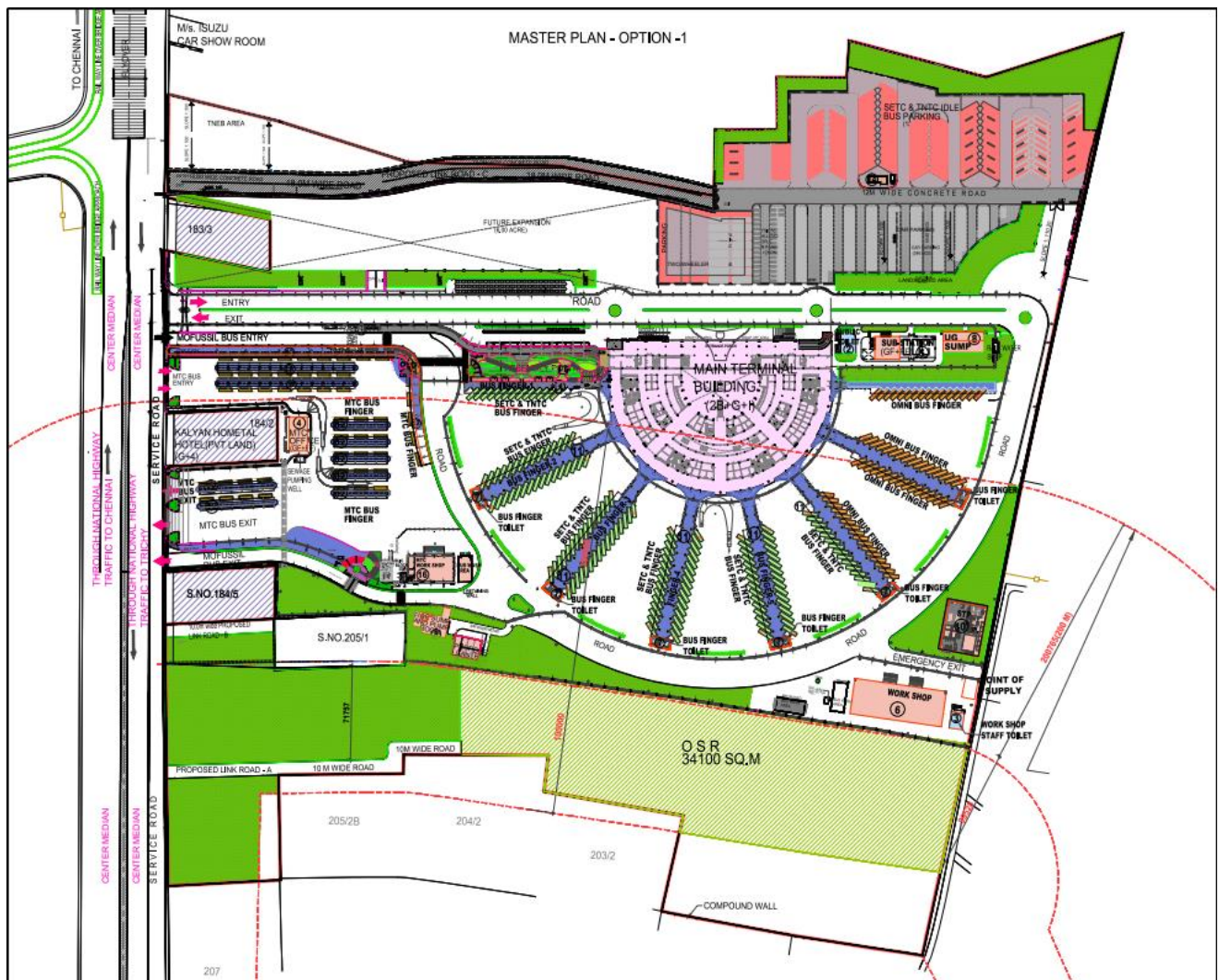


Figure 52 3.3.1 Kilambakkam bus terminus

Location: Grand Southern Trunk Road, Kilambakkam Bus Terminus, Chennai, Tamil Nadu, India.

Strategic Location: Located on the GST Road, which provides easy access to the city of Chennai and surrounding areas.

Chennai's outskirts: Situated on the city's southern edge, offering easy access to locations in southern Tamil Nadu and other states.

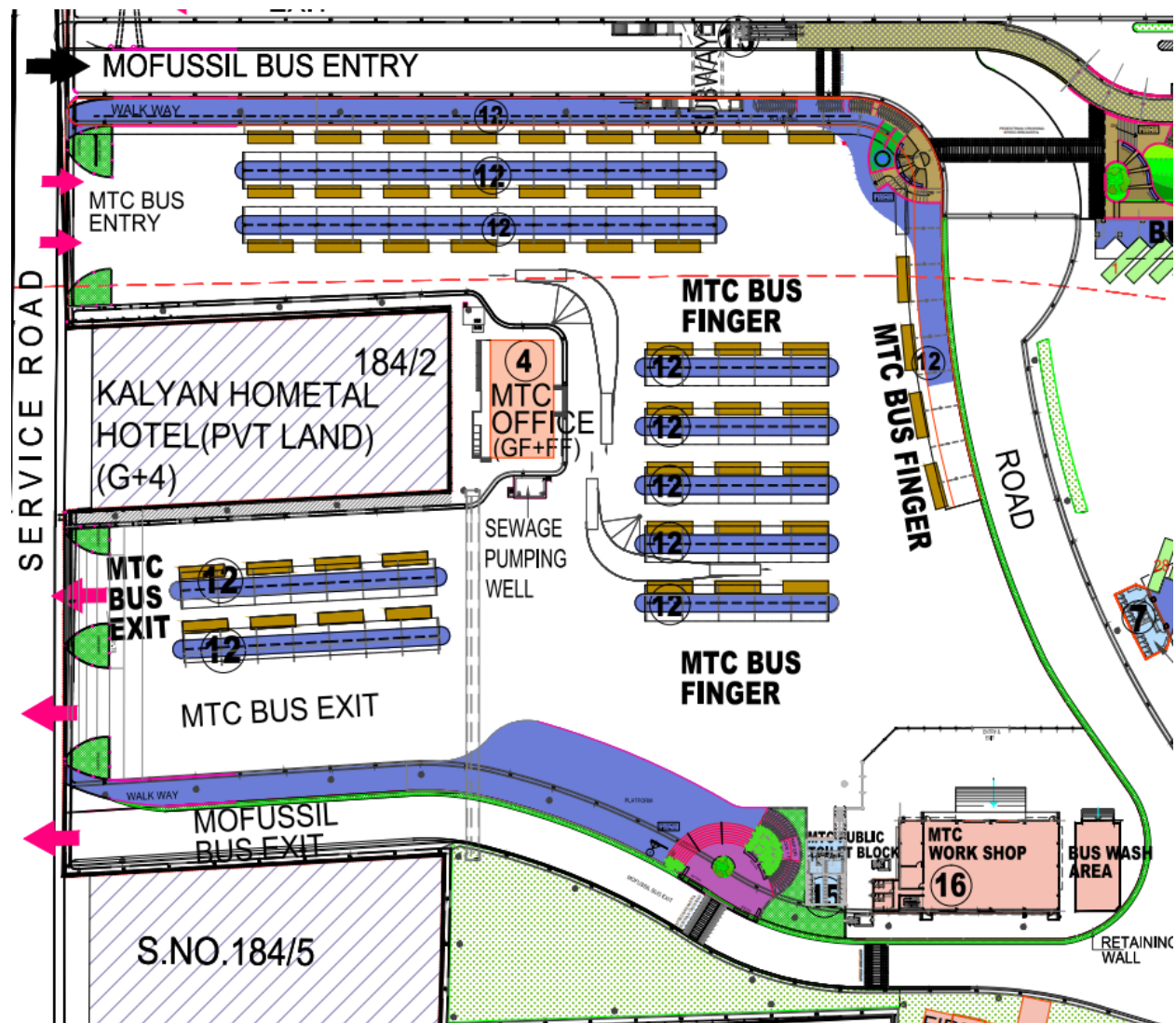


Figure 533.3.2 Kilambakkam bus terminus

Facilities:

Modern Amenities: Outfitted with contemporary conveniences and amenities to improve traveler comfort and convenience.

Several Platforms: Has several bus platforms with special bays for getting on and off the bus.

Waiting lounges, seating options, lavatories, drinking water stations, and restaurants are examples of passenger amenities.

Intermodal Connectivity: Integrated with local bus lines and suburban train stations, allowing for smooth passenger transfers.

Parking Facilities: Provides plenty of room for drivers to park their personal cars and two-wheelers, making it convenient for commuters.

Services: Bus Services: Connects Chennai with locations in Tamil Nadu and surrounding states, acting as a significant hub for intra- and inter-city bus services.

Regular bus operations are conducted to meet the increased demand from commuters heading to and from Chennai.

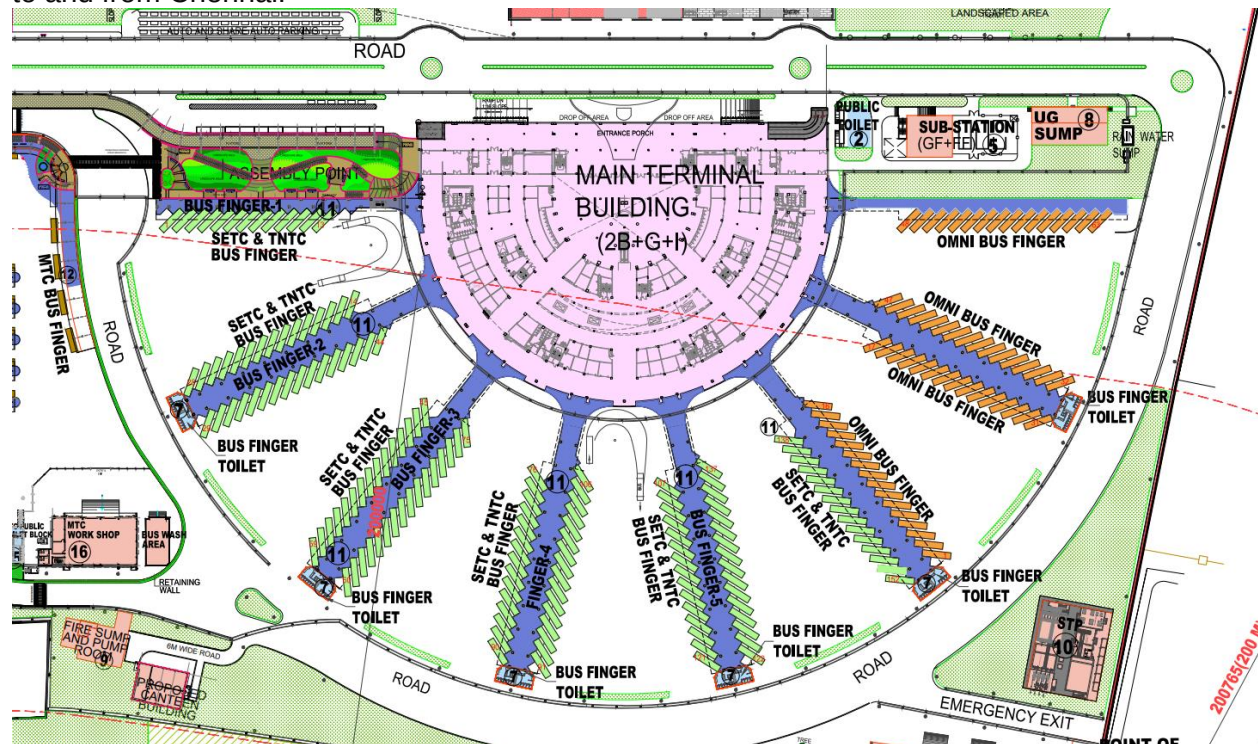


Figure 543.3.3 Kilambakkam bus terminus

Travel to a variety of locations is made easier, including well-liked tourist attractions, places of pilgrimage, business districts, and residential neighborhoods.

Ticketing: Sets up counters where travelers may buy tickets for the places they want to go.

Security and Safety:

Security Staff: Put in place security staff to make sure that travelers and their goods are safe and secure.

Surveillance: outfitted with cameras for keeping an eye on the property and discouraging illegal activity
Emergency Response: Outfitted with first-aid supplies and emergency response

mechanisms to handle any unanticipated circumstances quickly.

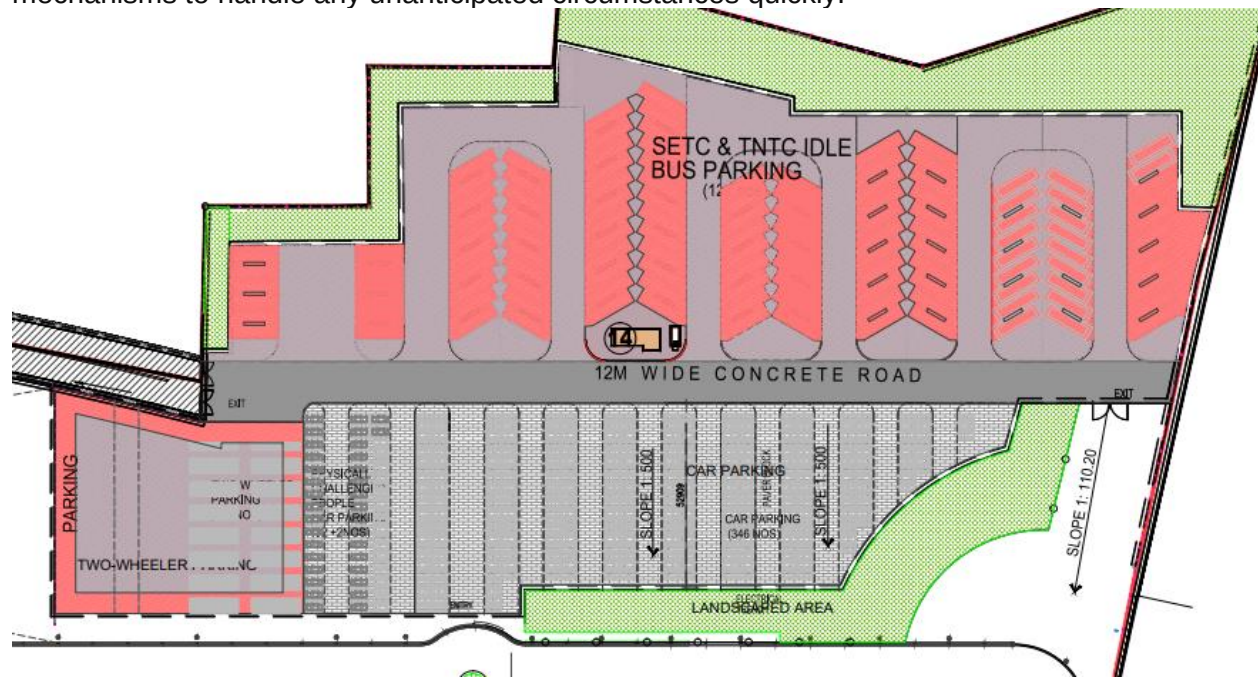


Figure 55 3.3.4 Kilambakkam bus terminus

Importance:

Improves regional connection between Chennai and adjacent states like Karnataka and Kerala, as well as between Chennai and southern Tamil Nadu.

Economic Impact: Promotes trade, commerce, and tourism by making areas more accessible and mobile. This boosts economic activity.

Social cohesion: strengthens relationships between communities and promotes cross-cultural dialogue, enhancing the social fabric of the area.

Phase 1: Reaching and Going Away

Bus Arrival: Buses arrive at certain platforms or bays according to their routes and destinations.

Passenger disembarkation: After getting off the bus, passengers unpack their bags and walk to the terminal buildings or departure locations.

Departure Preparation: Buses are cleaned, refueled, and undergo routine inspections by terminal workers before they leave.

Step 2: Ticketing and Boarding

Boarding Procedure: Riders who have waited in the allocated spots move to the appropriate bus stops to board.

Ticketing: Before boarding the bus, passengers pay tickets at ticket counters or electronic ticketing machines.

Loading Baggage: Riders place their belongings in the bus's allotted storage spaces or baggage compartments.

Step 3: Take Off

Boarding Completion: Following the completion of boarding, terminal employees make sure that every passenger is seated and that their luggage is safely stored.

Announcement of Departure: When buses depart, terminal employees notify passengers to be ready for departure.

Bus Departure: The buses leave the platforms and go in the direction of their destinations.

Step 4: Support for Operations

Traffic Management: Buses are moved smoothly both inside the terminal and on the surrounding roads thanks to coordination between terminal employees and traffic authorities.

Security and Surveillance: To guarantee the safety and security of patrons, buses, and facilities, security staff keep an eye on the terminal's grounds and CCTV footage.

Assistance for travelers: Employees at the terminal assist travelers by answering any questions or concerns they may have and by providing information on bus timetables, routes, and amenities.

Step 5: Upkeep and Sanitation

Maintenance inspections: To guarantee smooth operations, terminal workers do regular maintenance inspections on infrastructure, equipment, and facilities.

Cleaning: To uphold hygienic and sanitary standards, cleaning personnel do routine cleaning tasks like sweeping, mopping, and rubbish collecting.

Restocking: To guarantee continuous service delivery, supplies including tickets, information pamphlets, and consumables are replenished as needed.

Step 6: Ongoing Evaluation and Enhancement

input Gathering: In order to find areas for improvement and resolve any problems or concerns, terminal management gathers input from stakeholders and travelers.

Performance Assessment: Key performance metrics including passenger satisfaction, on-time performance, and safety requirements are used to measure the terminal's performance on a regular basis.

Continuous Improvement: Terminal management takes actions to improve customer service, operational efficiency, and performance based on input and performance reviews.

3.4. CHENNAI MOFUSSIL BUS TERMINUS

Where It Is and How to Get There:

CMBT, Koyambedu, Chennai, Tamil Nadu, India is the address.

Strategic Location: Located in the Koyambedu neighborhood, with good access to Chennai's city center and adjacent areas.

Accessibility: It is conveniently accessible for commuters because to its excellent connections to major highways, the Chennai Metro, and local bus services.

Facilities:

Dimensions: Encompassing more than 37 acres, it can house many bus stops and passenger facilities.

Platforms: Six bays totaling 180 bus bays allow for the daily handling of almost 2,000 buses. Large waiting spaces, bathrooms, food courts, shops, ticket kiosks, and information desks are among the passenger amenities.

Parking: Offers plenty of spaces for two-wheelers, cabs, and private automobiles.

Integration of Technology:

Digital Displays: Real-time updates on bus timetables, arrivals, and departures are available through information kiosks and digital display boards.

Online Ticket Booking: To improve convenience, travelers can make ticket reservations online

Security and Safety:

Surveillance: Outfitted with security guards and CCTV cameras to guarantee the safety of passengers.

Emergency Services: To handle any medical or safety issues, first-aid stations and emergency response teams are on hand.

Environmental Factors to Be Considered

Sustainable Practices: The phrase encompasses eco-friendly methods including energy-efficient systems and trash management.

Services: Bus services both within and between states

using a number of sites.

LITERATURE CASE STUDY | CHENNAI MOFUSSIL BUS TERMINUS | SITE PLAN

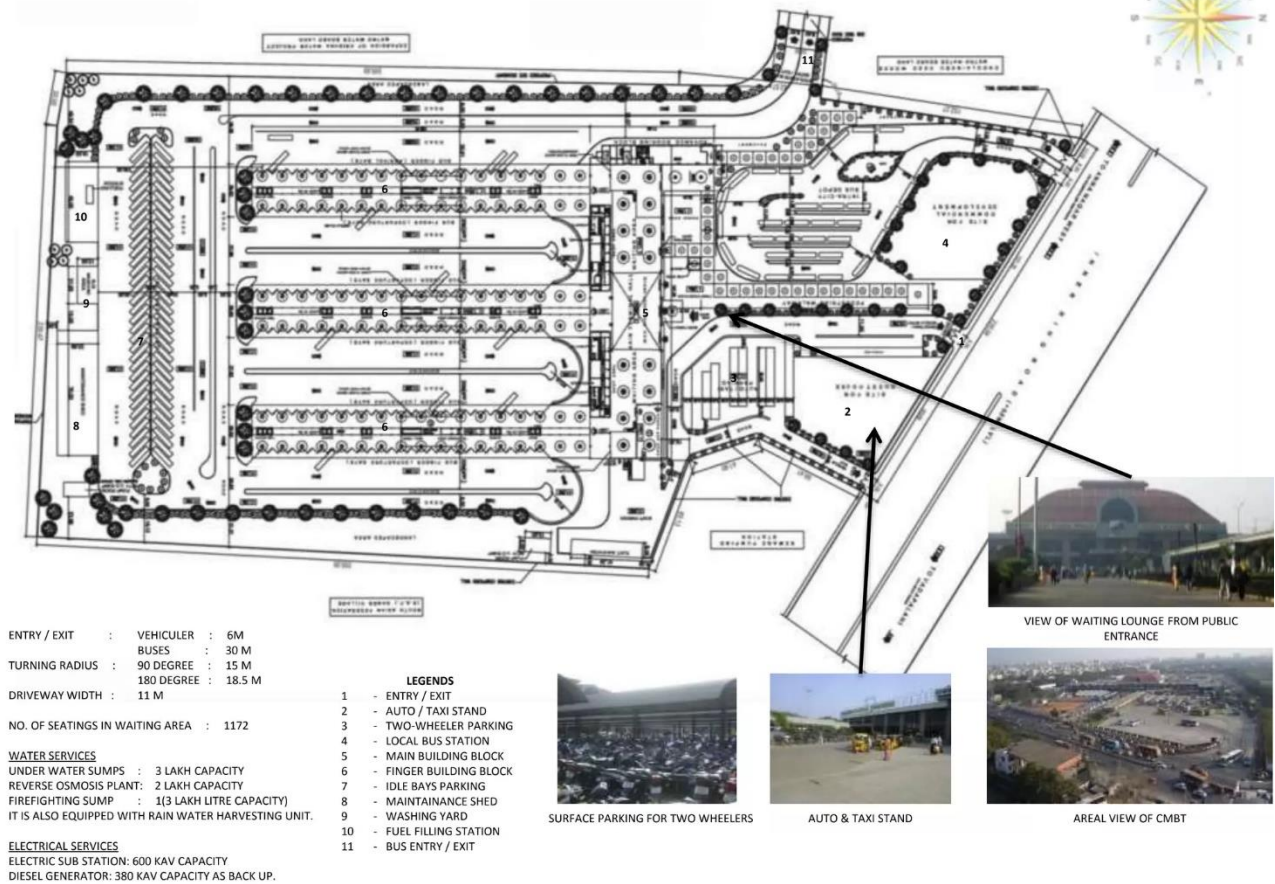


Figure 56**3.4.1 CHENNAI MOFUSSIL BUS TERMINUS**

Buses from Tamil Nadu and other states including Andhra Pradesh, Karnataka, and Kerala stop often at CMBT, which acts as a significant center.

It runs both commercial and state-owned transportation companies' buses.

Regularity and Extent:

Buses run frequently in order to meet the increasing demand from commuters.

Travel to a variety of locations, including cities, towns, and rural places, is made easier by the terminal.

Assistance for Passengers:

Passengers can get assistance from staff with questions, tickets, and boarding procedures. Information desks provide passengers assistance and direction.

Local Interconnectedness:

By connecting Chennai to other regions of Tamil Nadu and other states, CMBT improves regional connectivity by enabling the flow of people and products.

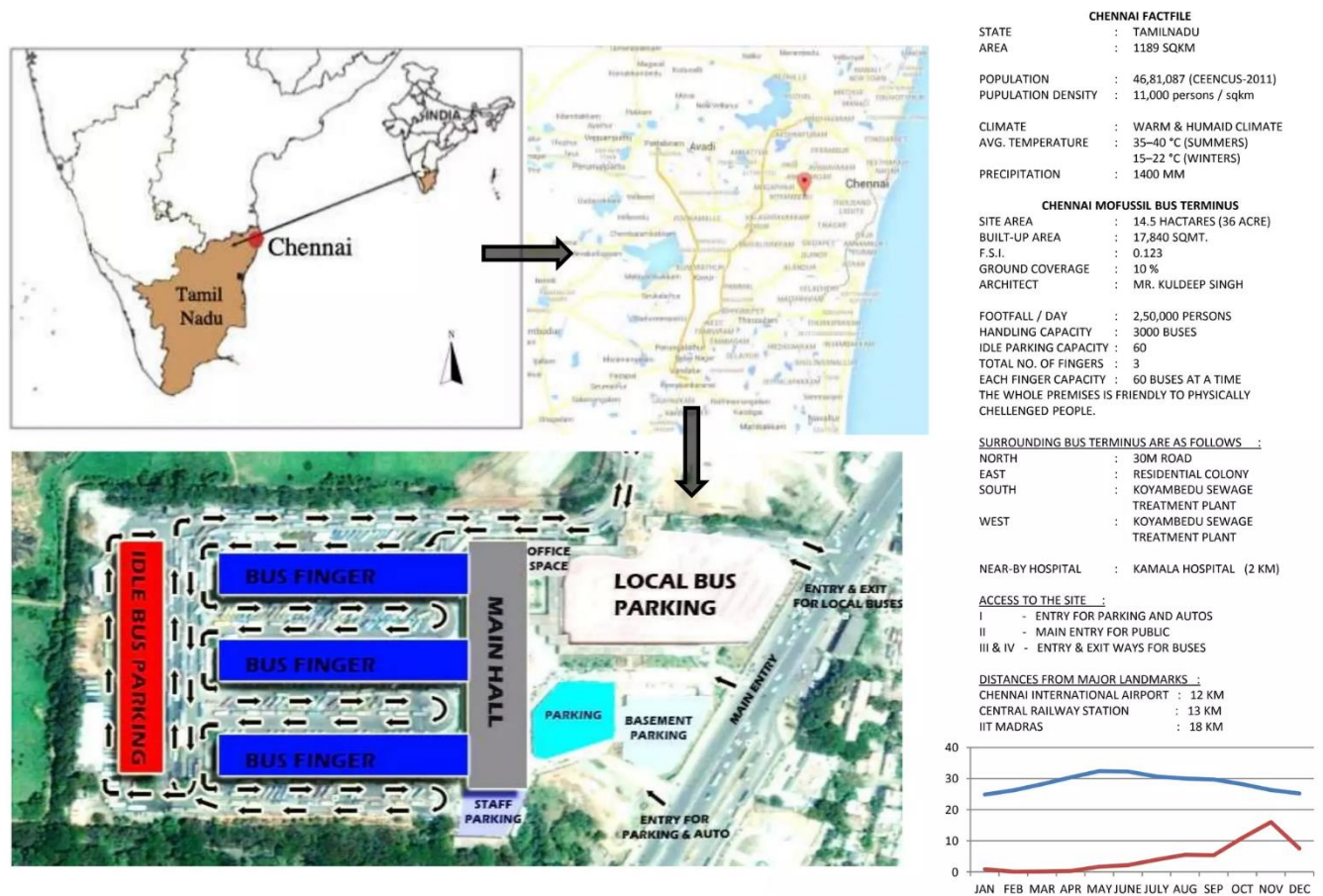
Economic Repercussions:

Through promoting trade, commerce, and tourism, the terminus strengthens local and regional economies.

It serves as a point of entry for tourists, encouraging trade and cross-cultural interactions.

Social Cohesion:

LITERATURE CASE STUDY | CHENNAI MOFUSSIL BUS TERMINUS | ABOUT THE CITY & SITE AND SURROUNDINGS



Through the provision of accessible and reasonably priced transportation choices, CMBT fosters

social justice and inclusion.
 By linking disparate populations, it promotes social cohesiveness and communication.

Problems and Prospects: Problems:

Handling the large number of buses and people, especially during rush hours and holiday seasons, is known as congestion.
 Maintenance: Making sure that facilities and infrastructure are maintained in order to preserve service quality.

Future Objectives:

Plans for facility upgrades and expansion in order to handle rising passenger volume and improve service effectiveness.
 Enhancements in Technology: Using cutting edge technology to improve security, passenger information systems, and traffic control.

LILERATURE CASE STUDY | CHENNAI MOFUSSIL BUS TERMINUS | FINGER BLOCK PLAN

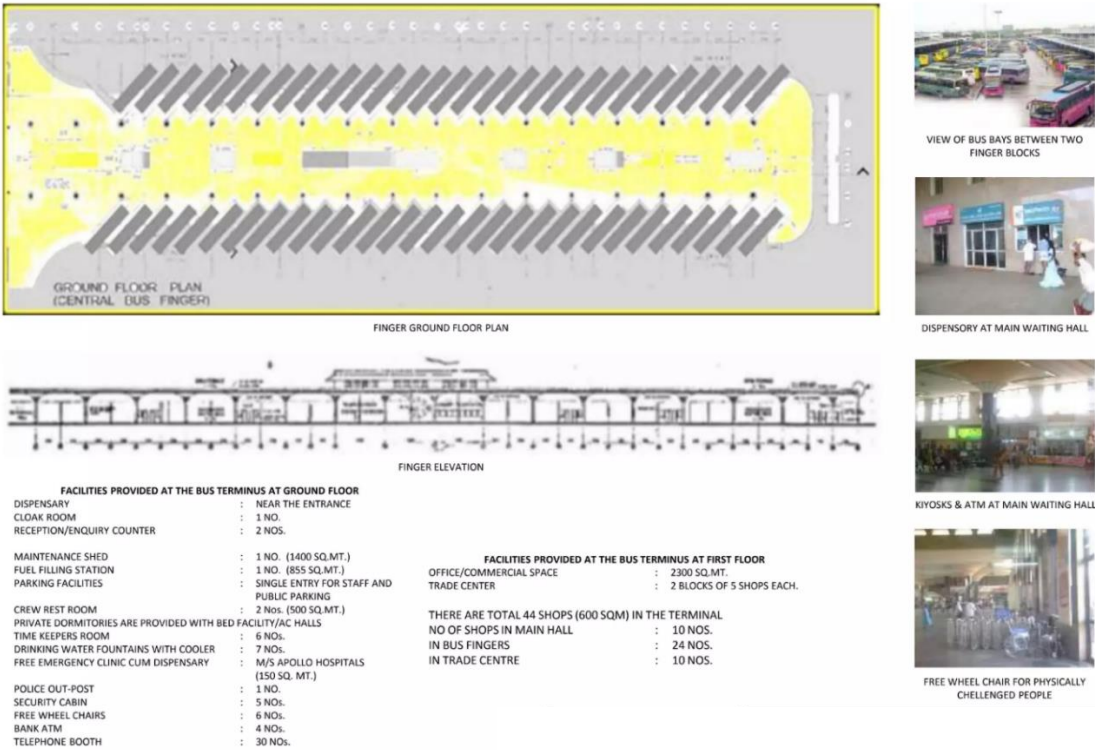


Figure 583.4.3 CHENNAI MOFUSSIL BUS TERMINUS

4.1 Site Study And Analysis

On the Tiruchi - Madurai Highway, Tiruchi Corporation intends to develop a new integrated bus terminus at Panjappur.

The Corporation chose to build a new integrated bus terminus at Panjappur in order to replace the aging Central Bus Stand at Cantonment, which is unable to handle the dramatic rise in passengers and buses operated by both the State and private parties.

The proposed Integrated Bus Terminus is expected to occupy an area of around 40 acres, of which approximately 32.90 acres will be dedicated to the truck terminal and approximately 5.20 acres will be developed as a multi-utilities center with commercial spaces.

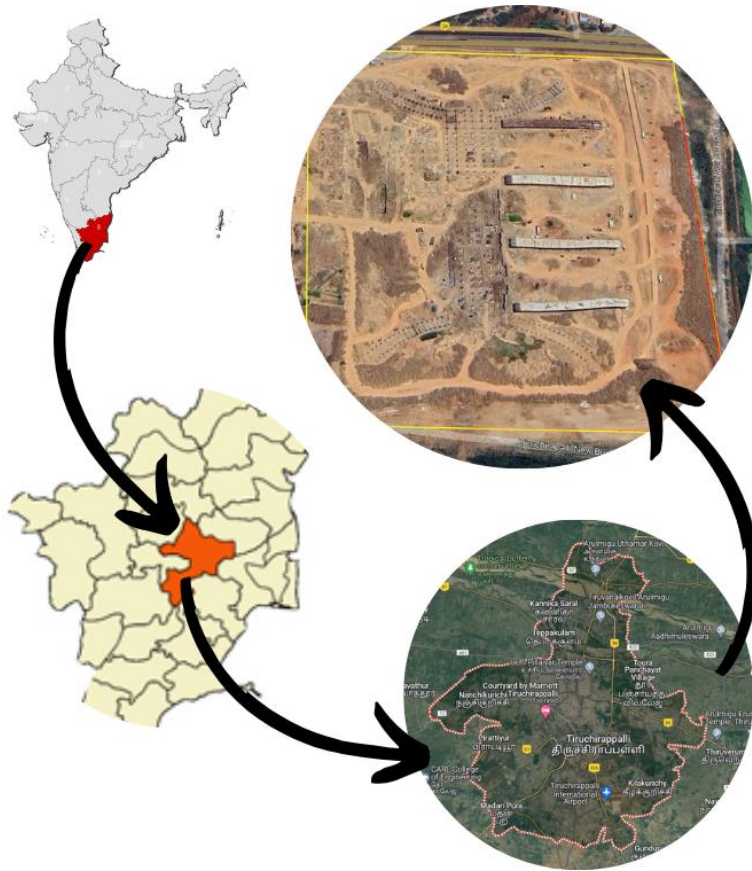


Figure 594.1.1 Site Study And Analysis

The IT's roadways and bays could support up to 404 buses and seat at least 10,000 passengers at once, according to the officials.

200 buses would be moving, and 100 buses would have designated spots for brief stays.

"Even travelers may go to the train station and airport from the new IBT in ten minutes. There are many elevated routes under construction to relieve the congestion caused by car traffic, so they may enjoy hassle-free traffic flow.

It is suggested that the new IBT have a separate terminal for trucks, omnibuses, and other vehicles in addition to markets, stores, and a number of other amenities. He went on, "It would definitely change Tiruchy's face."

the bus station and building a center for multipurpose amenities. The establishment of concrete roadways, rainfall and stormwater drains, and a truck terminal

Even though all of the mofussil buses are currently run from the current Central bus terminal, which is around 10 km away from the planned Panchapur IBT,

Cost of land is very less

Good availability of water in the feature also

4.1.2 Access to site: The site has one -side access (i.e. from Chennai by pass),

Site Particulars: The site is almost square in shape, which measures about 56 acres south and side. covered with thick greenery.

The main road runs from Srirangam to Trichy. 50% of the total site area is

Soil type: The soil type is clay soil, which is good for foundation and vegetation.

Micro climate: Presence of 50% vegetation in the site and the green belt on the southern side of the site reduces the site temperature up to 2degrees

Prevailing wind is from N-W to S-W

Rain water is flowing towards N-E and S-W i.e. the slope is towards N-E & S-W and diagonally rise in the contour level from S-E to N-W considering this slope there is a existing pipe line on the N-E corner of the site

Existing gardens in the site modifying all the effects (like heat effect, air movement & slope) by increasing the area for radiation and transpiration, shading the ground, breaking and diverting the wind direction and trapping the wind with in the stand.

The result is a cooler, more humid, more stable microclimate.

4.1.3•Site Analysis

Over the last decade there has been a noticeable evolution of the factors affecting this kind of architecture, a new philosophy has been applied to the design and construction of the bus terminal buildings. This occurred particularly in countries which benefited from the favorable economic climate of the decades, where the need for transport, for both people and freight increased considerably. This evolution has been characterized by two related phenomena; the functional

classification of the station and its role in the wider arena of town planning and urban retro air adverse unification of the form, structure and aesthetic of these

Accessibility

The site is accessible by road ways, railways. It is easily accessible by both public road transport and by private vehicles. The Trichy railway station is about 6 km away and it is about 10 km away from the International airport.

. Surroundings

There are no important buildings in the vicinity. Surrounding land use are North - Mango orchards

South - vacant land

East - plantation

West - vacant land

. Vegetation

50% of the total site area is covered with orchards like mango, coconut, guava and some thick greenery. Thick ground cover is present in the eastern side of the site.

4.1.4. Climate and rainfall

Hot dry climatic condition prevails in the area, In summer (from the month of March to May) minimum and maximum temperatures ranges from 25 C to 42 C and in winter temperature ranges from 13C to 32C.

Wind direction

The prevailing wind is from North-West to South-East. The local wind direction is from North-East to South-West.

Rainfall

More than 75% of the rainfall (86 cm) is received during the South-West monsoon, that is from June to September.

* and the site can be considered as flat, covered by red laterite soil.

Micro climate

Presence of 50% vegetation in the site and the HUDA green belt on the southern side of the site reduces the site temperature to a high extend.

4.1.5* Hydrology

Water table level is too high and hence chief water source is bore wells

Utilities

Electric lines are passing through the site from which electricity can be accessed.

Underground telephone cables are running along the site boundary.

Context

Due to the absence of buildings in the close vicinity of the site, any immediate architecture context is absent. The closest significant buildings are in the rock Fort which is located about 6 km away from the



site.

Figure 604.1.2 Site Study And Analysis

5.1 ARCHITECTURAL DESIGN

5.1.1 SPATIAL REQUIREMENT

sno	SPACE	AREA(SQ.M)
1	ARRIVAL PLATFORM	
	BAGGAGE TROLLEY AREA	100
	BAGGAGE LOCKER	50
	ENQUIRY ROOM	50
	RESERVATION COUNTER	30
	STALL/SHOPS	90
	PUBLIC TOILET	100
	CAFETERIA	150
	ATM's	50
	DRINKING WATER	15
	SECURITY ROOM	25
	WAITING ROOM	500

SNO	SPACE	AREA
2	DEPARTURE PLATFORM	
	BAGGAGE AREA	75
	PORTER ROOM	25
	BAGGAGE LOCKER	30
	WAITING AREA	100
	STALL/SHOP	150
	ATM's	50
	PUBLIC TOILET	100
	DRINKING WATER	25
	SECURITY ROOM	25
	RESERVATION COUNTER	75
	DELUXE WAITING HALL	200
	ENQUIRY ROOM	50

SNO	SPACE	AREA(SQ.M)
5	PARKING AREA	
	GROUND PARKING	1000
	AUTO/TAXI	2000
6	ADMINISTRATION AREA	
	GENRAL ADMIN	100
	DIRECTOR ROOM	20
	GENRAL MANAGER ROOM	20
	RECORD ROOM	60
	ACCOUNT DEPT	100
	TRAFFIC DEPARTMENT	100
	MAINTENANCE DEPT	100
	MECHANICAL DEPT	100
	PURCHASE DEPT	50
	CONTROL ROOM	25
	CANTEEN	200
7	SEVICE AREA	
	AC PLANT ROOM	100
	ELECTRIC SUBSTATION	300
	GENERATOR ROOM	50
	PUMP ROOM	100
	FIRE FIGHTING ROOM	100

SNO	SPACE	AREA (SQ.M)
8	RECREATIONAL	
	RESTAURANT	500
	FOOD COURT,PLAY ZONE	5000
	THEATER (SMALL SCREEN)	500

SNO	SPACE	AREA (SQ.M)
3	SUPPORT SERVICE	
	POLICE FACILITY	30
	MONITOR ROOM	25
	GENRAL STAFF ROOM	50
	RETIRING ROOM FOR DRIVERS AND CONDUCTORS	400
	CANTEEN	200

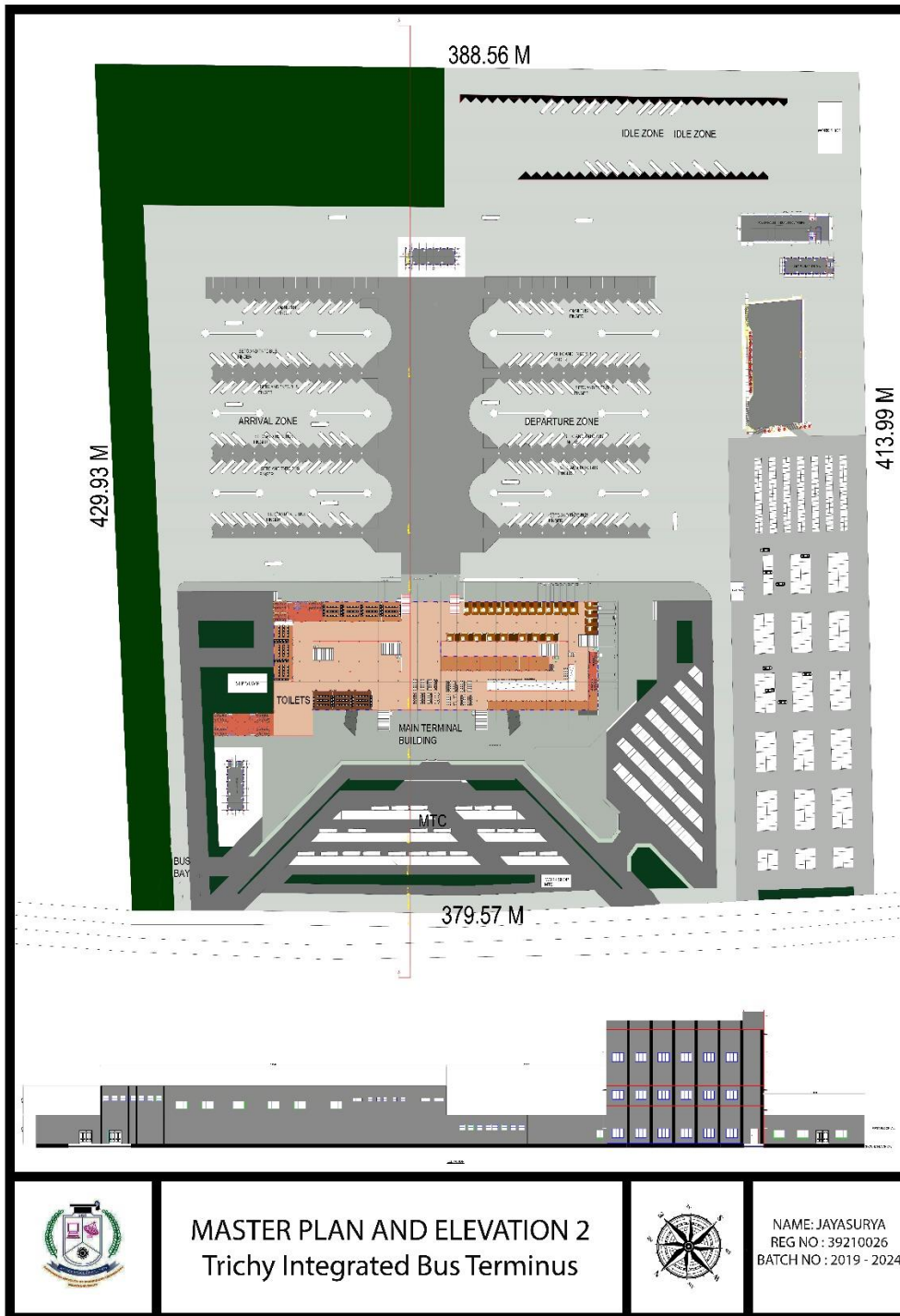
SNO	SPACE	AREA(SQ.M)
4	SERVICE STATION	
	WORKSHOP AREA	500
	WORKSHOP	200
	LOCKER ROOM	25
	REST ROOM	50
	ENGINEER ROOM	20
	INCHARGE ROOM	15
	TOILET	50
	FUEL STATION	500

5.1.1.1 SPATIAL REQUIREMENT

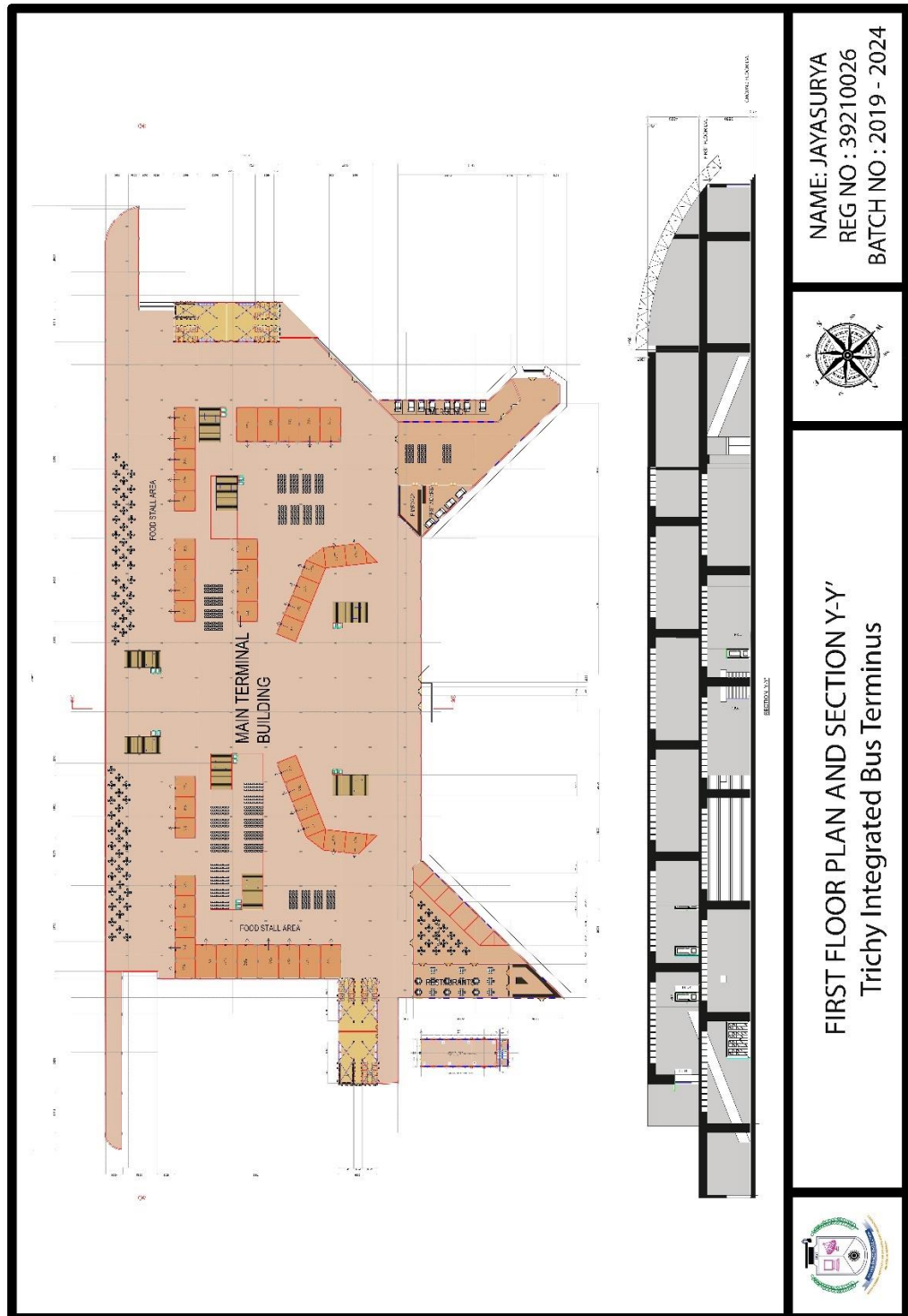
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5.1.3. MASTER PLAN 2



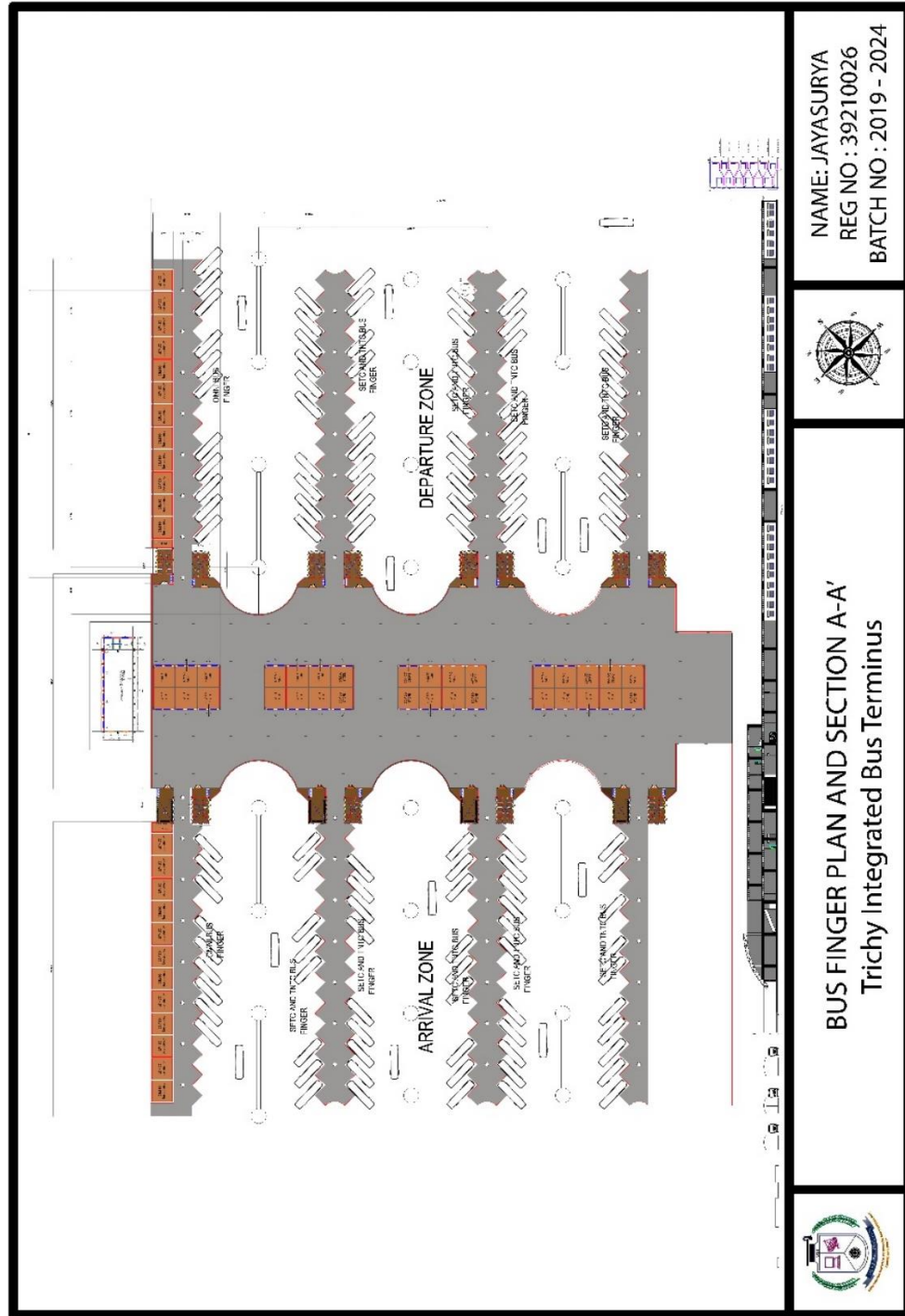
5.1.4. GROUND FLOOR PLAN



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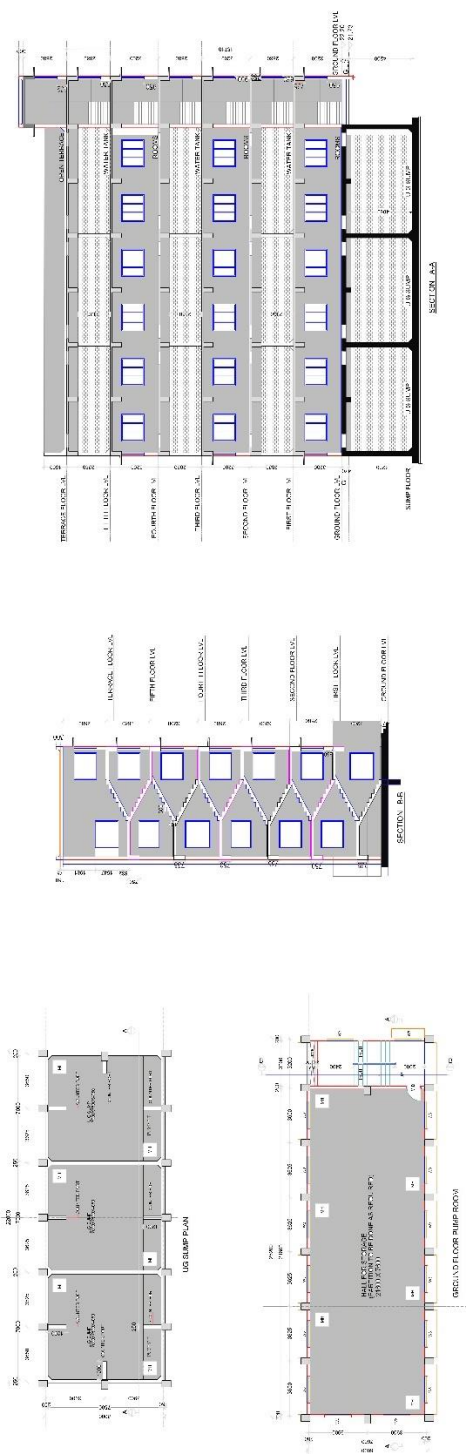


5.1.6. BUS FINGERS



Architectural drawings of the second and fourth floors of the First Health Center. The second floor plan shows a large central area labeled 'SECOND FLOOR' with dimensions 100'-0" by 100'-0". The fourth floor plan shows a similar layout with dimensions 100'-0" by 100'-0". Both plans include a staircase and a small room labeled 'STAIRS'. The drawings are oriented with North at the top.

AREA STATEMENT :		
BASEMENT FLOOR (UG SUMP)	:	176.00 SQ.M
GROUND FLOOR (ROOMS)	:	202.00 SQ.M
FIRST FLOOR (OHT)	:	202.00 SQ.M
SECOND FLOOR (ROOMS)	:	202.00 SQ.M
THIRD FLOOR (OHT)	:	202.00 SQ.M
FOURTH FLOOR (ROOMS)	:	202.00 SQ.M
FIFTH FLOOR (OHT)	:	202.00 SQ.M
TOTAL	:	1386.00 SQ.M

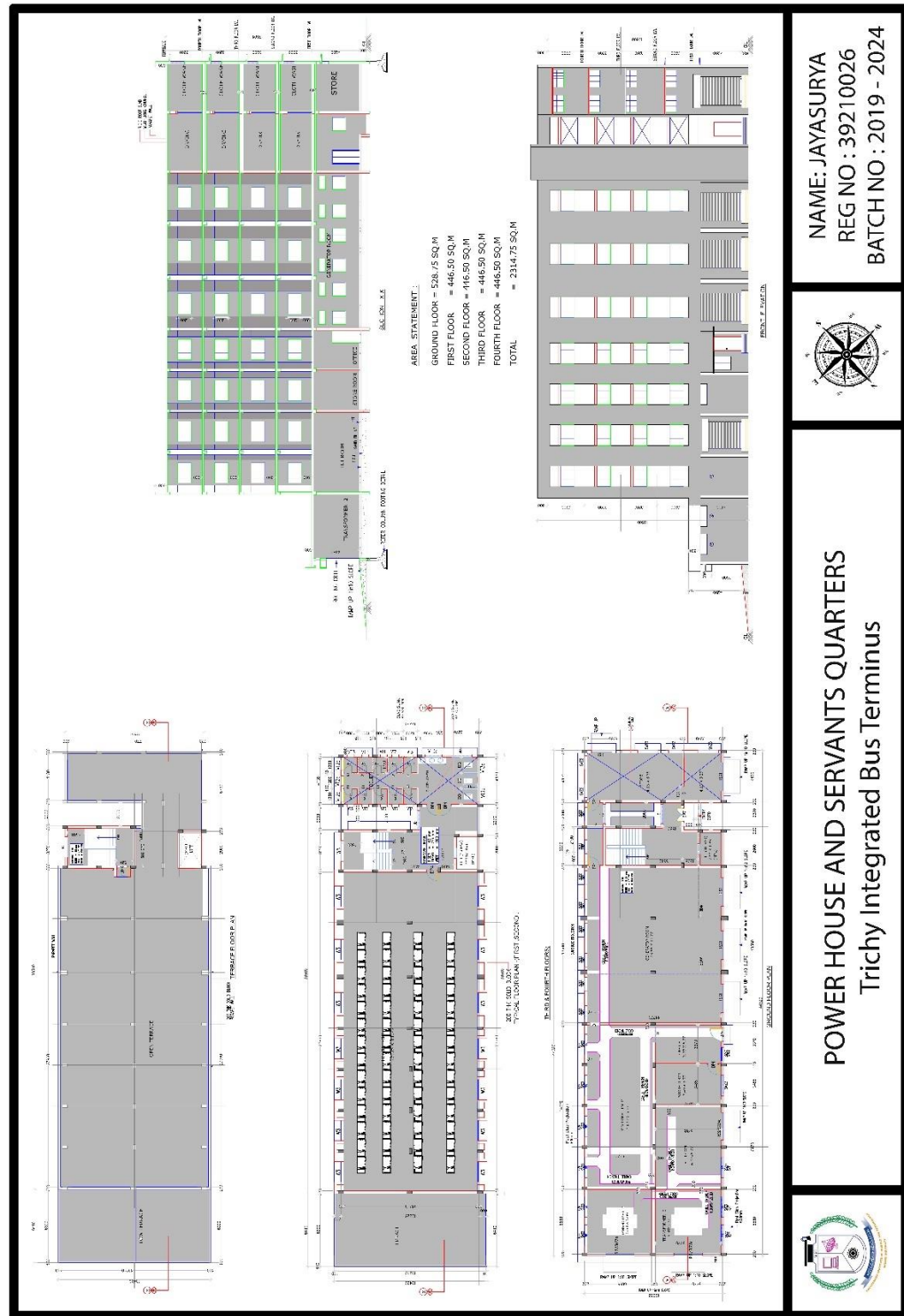


6 LAKH LITRES SUMP
FLOOR PLANS AND SECTION
Trichy Integrated Bus Terminus



NAME: JAYASURYA
REG NO : 39210026
BATCH NO : 2019 - 2024

5.1.8. POWER HOUSE



POWER HOUSE AND SERVANTS QUARTERS Trichy Integrated Bus Terminus



NAME: JAYASURYA
REG NO : 39210026
BATCH NO : 2019 - 2024

