REDEVELOPMENT OF MAFCO MARKET

By

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A REPORT

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AIKTC
SCHOOL OF ARCHITECTURE

CERTIFICATE

This is to certify that the Design Dissertation titled **REDEVELOPMENT OF MAFCO MARKET** is the bonafide work of the student **JUNAID PATEL** from Final Year B. Arch of AIKTC School of Architecture and was carried out in college under my guidance.

Sign of the guide:

Name of the guide: PROF. PARAG RAWOOL

Sign of the Dean: _____

Date: 1ST March

DECLARATION

I hereby declare that this written submission entitled

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Signature of the Student:

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1. ABSTRACT

A public market has traditionally be defined as a municipally owned and operated building where vendors sell fresh fruits and vegetables from stalls. The market place has always been a landmark of the city. Public markets create a hub of activities and social gatherings of people that enhances the entire area. It reflects civic importance of being connected through gathering and interaction which are an essential part of the inter- cultural urban life.

Redevelopment of MAFCO market, project that will consolidate facilities **for selling and distribution of food for consumers** "this Food Port" will transform into community hub that shapes a "**new model between consumer and seller**."

The terminal market for perishable goods will act as a catalyst to activate the surrounding neighbourhood, it will also revitalise the foodscape of public spaces and plazas where buyers and sellers meet and vashi area in terms of exchange of goods, simplifying one of the complex urban relationships between architecture and food. Creating MAFCO market as retail terminal hub introduces public and seller relationship in city strong. wholesale market did not cater regular public interventions, which creates a problem for a common people. Emphasizing on MAFCO market will create opportunities of retail market as a plaza for public interventions.

3.1 Background Study :

Food remains so for humanity as a whole. This continues to be the basic needs of humanity for unending generations. I have tried to depict the concept in a simple aesthetic way as possible. The roundness depicts our globe which continues its rotating and revolving from time immemorial. The first and foremost of the three 'Roti' or food.

Then started the relation between food and architecture Colonial expansion and modernist planning stressed the essential relation between urbanism and food production, at the scales of both the garden and agriculture. This volume gives a variety of perspectives—from architectural and landscape history to geography—to connect the garden, market, city, and beyond through the lenses of modernism, technology, scale, social justice, and fashion.

• Agriculture is the most important sector of Indian Economy. Indian agriculture sector accounts for 18 % of India's gross domestic product (GDP) and provides employment to 50% of the countries workforce. India is the world's largest producer of pulses, rice, wheat, spices and spice products.

• Agriculture and Food Industry. Agriculture plays a vital role in India's economy. Over 58% of the rural households depend on agriculture as their principal means of livelihood. India is the largest producer, consumer and exporter of spices and spice products.

• Agriculture sector has been the singe longest provides of employment to the rural people of the Maharashtra state with newly 55% of the state population depending on agriculture for the livelihood

• Disease agro-climatic conditions, strong research support try four agricultural universities presence of national research cutters for grapes citrus onion acrylic and pomegranate, horticulture faring strong co-operative network, logistical advantage etc. because of close proximity to Mumbai port.

- **Project Idea:**

Bombay to Mumbai saw a great deal of change in life style and communication etc. New culture of bars, pubs, disco's, and entertainment plaza has evolved. But people are running short of time to enjoy all at a time as activities are scattered at different places, requiring a lot of time for travel & adequate transport for the same which may not always be available.

To incorporate these changes, up gradation of amenities is necessary. There is a need of urban form that draws people together for enjoyment. Areas such as market place can be the solution to these changes. It will consist of a shopping area where each and everything will be available, roadside shopping will give the feeling of a fashion trip. In short an urban market can be an independent identity to create urban space that would be active and interesting at all hours contributing to the life and excitement of the city.

Since there are existing markets, which because of all the above conditions have lost their effect and incentive as a Public Market, this proposition of Redevelopment comes into picture. As these markets exist in urban ranges and are halfway found, they have a great deal of chances to flourish.

The objectives:

- To develop an understanding of the relationship between the urban activities and their attendant places.
- To provide some explanation for the distribution of such space through the city region.
- To identify some informally recognized squares and places.

Market spaces in the city fall in a category that is public and interrelated. It is the life seen at places and streets, cafes and cinemas. The other kind is private of gardens terrace and balconies. While the former needs crowds, noise, movement, the latter requires seclusion, quietness and calm. The city should respond to both the needs and activities for they are equally important parts of the urban environment.

Market open spaces are the matrix of this two-fold life. This study deals with the former kind of market space where we find different experiences, which makes life creative and stimulating and which gives character and quality.

3.1.1 What is Market?

1. A regular gathering of people for the purchase and sale of provisions, livestock, and other commodities.
   "They wanted to browse around the street market"
2. An area or arena in which commercial dealings are conducted.

An actual or nominal place where forces of supply and demand operate, and where buyers and sellers interact (directly or through intermediaries) to trade goods, services, or instruments or contracts, for money or barter.

Markets include mechanisms or means for the following,

• Determining price of the traded item,

• Communicating the price information,

• Facilitating deals and transactions, and

• Effecting distribution. The market for a particular item is made up of existing and potential customers who need it and have the ability and willingness to pay for it.

3.1.2 What is Food Market?

Food marketing is something which is defined as the activities that take place within the food system be- tween the farm gate and the consumer. This includes processing, wholesaling, retailing, food service, and transportation functions and excludes all functions performed by producers on the farm. Types of markets in India and their classifications

1. Wholesale market,
2. Retail market,
3. Fairs,

1. Wholesale Markets:

These markets are further subdivided into On the basis of location or importance:

I. Primary wholesale markets: These markets are held periodically, either once or twice every week. Agricultural produce are brought from neighbouring villages. In these types of markets, sale of commodities like fruits, vegetables, food grains, all household requisites takes place. For e.g.: Village market.

II. Secondary wholesale market: These types of markets are generally at district or taluka headquarters. Small merchants purchase from a primary wholesale market and sell in these markets. Sometimes cultivators themselves sell their produce in these markets. Each market comprises an area with a 10-20 miles radius. These are also known as 'mandis'. For e.g.: District and taluka market. The secondary wholesale market is in permanent operation. They are not seasonal in nature or they don't deal in special produce. Large volumes of produce are traded here. Commission agents and brokers are involved for specialized functioning.

III. Terminal markets: These are the type of markets in which the produce is either finally dispatched-off directly to consumer or processors or assemble for shipment to foreign countries. These markets are the parts where cold-storages and warehouses are available/ cover a wide area, may be state. These markets are located in major metropolitan areas. These are located at major ports dealing with export and import produce.

2. **Retail markets:** These markets are placed all over the city or town under municipal control. These types of markets deal in all types of produce and serve the needs of the city people as well as of the villages in surrounding. This particular type of market is located in a particular locality. Cloth market is in one locality and vegetable, fruit, and grain market are in different localities. There is direct selling of the produce to the consumer.

3. **Fairs:** These markets take place on religious occasions, at or around a pilgrim center. Some markets deal in agricultural produce, livestock etc., for e.g. Magh Mela at Allahabad. There are various dimensions of markets

On the basis of time:

a. Very short period markets: These markets are held for few hours during the day time and are mostly for highly perishable commodities like fruits, vegetables, fish, milk, etc.

b. Short period market: In these markets, commodities that are sold are perishable and can be traded for some time. The commodities are like oilseeds and food grains.

c. Long period markets: Time span available is long to adjust supply and demand even by managing production. These markets can be for manufactured goods and machinery.

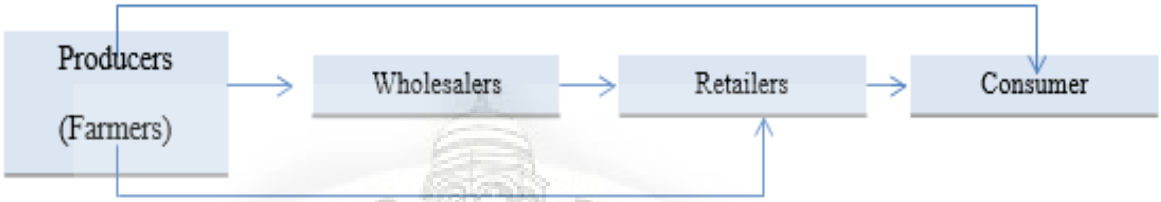
On the basis of extent of public intervention:

I. Regulated markets: In these types of markets, the business is done as per the rules and regulations by the statutory market organization. The charges for Market are fixed and standardized and practices are regulated by the Agricultural Produce Market committee.

II. Unregulated markets: In these types of markets, the business is conducted without any set of rules and regulations. Traders themselves frame the rules and conduct business. These markets may suffer from various defects in functioning.

3.1.3 HOW FOOD REACHES CONSUMER?

In rural areas, the source of food comes from what is grown on the farmers land and purchases if any from a local rural market. For urban areas, the food depends not on economic and cultural factors. The obvious source is a market, retailers who operate from fixed premises, who receive their supply from wholesalers or directly from the producers.



In economic terms, there exists competition between the markets. There is a perfect competition when the buyers and sellers have a perfect knowledge of demand and supply prices when there are large number (buyers and sellers) to the imperfect competition when there is an individual or a single unit (firm) dominating the market, by monopoly i.e. a single seller or monopsony i.e. a single buyer. The market can be seen with the degree of public intervention. Markets are huge with respect to types of products sold, transportation of produce quality and quantity are standardized.

The suitability of existing wholesale market and proposed market are influenced by population growth, urban land use pattern changes and the development in transport system (Modern). Wholesale markets are located at a focal point for transport facilities, close to retailing areas.

These are certain principles that do not occur in wholesale markets:

- When produce is brought, market is not cleaned.
- Produces are not sold separately as per the qualities.
- There is no gradation of produces before selling.
- Selling of produce is not done by standard weights and standard packages.
- There is a lack of information that creates uncertainty.

There is need of improvised working conditions for consumers. Physical changes required, hence retail market.

There is an inability in existing marketing systems to overcome the increased demand that causes congestion and delays. Space required for efficient handling of commodities is insufficient and hence the area of market is overcrowded leading to spilling over on streets. There is no provision for waste disposing off, limited parking facilities. More flexible and cost effective manner for marketing produce can be achieved if there are the improvements in storage facilities.

Outside Forces (why no shifting market):

Changes can occur due to development plans which are not in control of marketing authority. The desire to redevelop as part of the city leads to relocation of existing market or environmental change. The traders may not be willing to move, the people working in the existing market might experience difficulties to move their place of employment. There is a need to analyse the negative effects of relocating market prior to it.

After China, India is the second largest producer of vegetables and fruits. Vegetables and fruits are common in small marginal farmer as they are more labour intensive; it produces recurring income, high value in the market gives risk management mechanism against crop failure, offer possibilities of value addition.

The market price of the perishables fluctuates, there is instability in market price as the fruit and vegetables are most perishable in nature. They require more capital intensive post-harvesting.

There is high wastage of crops caused due to lack of cold storage facilities. There is no availability of market which is fully equipped to handle the crops.

When there is a lack of proper handling and poor post-harvest practices on the farm or at a rural place, leads to loss of stock before reaching the market. (in case if the small and marginal farmer are willing to sell their produce direct to urban market it brings there changes against them. First, the huge quantity, second the competitive process and third the same quantity and consistent quality), these conditions are not fulfilled by the farmers.

3.1.4 Urban markets and the future of cities:

Urban planners are mainly concerned with the sustainability and the vulnerability of the development of their cities, as well as with the level of urban segregation and equity issues but often feel less concerned with urban food security.

• A city will be less vulnerable, the more its inhabitants are able to adequately feed themselves.

• Urban food distribution chain will be more sustainable when public investments in market facilities and infrastructure make main contribution to local economic and social development

• If the food needs of low income cities are not adequately met, in terms as well –managed and efficient market infrastructure and services, the tendency towards segregation within the city will be strengthened

• Food access difficulties have been among the main causes of urban violence

• The enrichment of equity within a city also requires that decision makers be adequately know the act and make the best use available instruments are resources to support the development of complex food systems which include of followings individuals with different economic ,social and political powers and objectives.

• The food security of low –income urban consumers is an important dimension of cities, it should therefore be a priority.

• Urban food order increases and gradually outstrips the capacity of the surrounding areas to provide urban needs. Consequently food supply sources are increasingly distant from the urban and per-urban areas.

• Existing market and transport infrastructure and facilities in both rural and urban areas become increasingly inadequate to handle the growing food quantities. Food supply flows grow to be more complex while transport and marketing costs increase.

• Urban life styles, both spouses working, traffic conditions, longer distances between residential areas and central markets, increase the need for convenience foods for mid-day meals, retail outlets nearer residential areas and more convenient shopping hours.

3.1.5 MAFCO Introduction:

A Market is a space that serves as an assembly trading place for agricultural commodity. The growth rate of agricultural products is increasing at 8% per year. To cater the upgrading demands of food supply we need to upgrade the markets which fulfill both the economic and social needs. Upgrading fruit and vegetable markets is one way to improve access to business opportunities in rural and urban areas.

MAFCO Stands for Maharashtra agro and fruit processing corporation was a company owned by the government of Maharashtra, india. The site of MAFCO market extending to the vashi township, thane – belapur road, covers approximately 11 hecters. It mainly serves between vashi – sanpada. The market is partially active due to improper functioning and circulation. MAFCO was constructed in 1972 as a wholesale market, but due to APMC in the vicinity its function became less. As APMC is largest wholesale market in india, MAFO market loss its essence.

3.1.6 Need for the market hub :

India is an agrarian economy. Approximately 70% of people are dependent on agriculture for their income. India agriculture is dependent on rain and Indian economy is dependent on agriculture. That is main reason why marketing of agriculture products is dependent on demand and supply condition. In early days the farmers were worried about the selling of their produce and the output of farming and due to low quality they could not fetch a good price. The produce had many defects and in 1928 the royal commission studied this. There weren't enough marketing activities carried on by the farmers. the regulated markets was suggested by the royal commission commencing with the regulated markets and accordingly various market committees were incorporated. The three basic functions of this committee were

1) To meet the demand of the Increase in population and industrial advancement,
2) To Increase the quality of agriculture produce,
3) To fetch some good price for the farmers.

The agriculture sector has been one of the most important components of the Indian economy. The incrementing trend of agricultural production has brought, in its wake, new challenges in terms of finding market for the marketed surplus. There is also a need to respond to the challenges and opportunities, that the global markets offer in the liberalized trade regime. To benefit the framing community from the new global markets access opportunities, the internal agricultural marketing system in the country needs to be integrated and strengthened. Government of India is striving to prepare the Indian agricultural markets and marketing environment so as to provide maximum benefit to the producers and in turn, compete with the global markets. Agriculture and agricultural marketing reforms and creation of marketing infrastructure has been initiated the above purpose.

With an increasing working population, rising disposable income and international exposure, the fast growing Indian market is witnessing a paradigm shift in its aspiration and lifestyle. While, food products capture almost 53 per cent of private consumption expenditure and their demand rises consistently at almost 8 per cent, the consumer basket is continuously undergoing change in favour of perishable (such as fruits, vegetables, animal protein, milk etc.) and healthy, hygienic products. The consumer today stands at the threshold of a competitive world where the organized food retailer awaits to utilize numerous opportunities to serve this divers demand.

Vashi is the first node in navi Mumbai to be developed by CIDCO. It has a mix of residential and commercial complexes. The population density has been increased over the years due to development plans and job opportunity sector. The demand of food supply has been increased over the 10 years.

3.1.7 WHY?

MAFCO market has lost its essence today, existing as a wholesale market. There is an inability in existing marketing systems to overcome the increased demand that causes congestion and delays. Space required for efficient handling of commodities is insufficient and hence the area of market is overcrowded leading to spilling over on streets. There is no provision for waste disposing off, limited parking facilities. More flexible and cost effective manner for marketing produce can be achieved if there are the improvements in market planning and functions.

Outside Forces (why no shifting market):

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The second largest employment generating sector is a retail industry. Wholesale markets can be improvised. The efficiency of a market can be improvised by a promotion of direct contact with the consumers, promotion of the marketing system, increasing the number of buyers and sellers, introducing services and facilities like cold storage, go-downs.

3.2 AIM:

The aim is to cater the increasing demands of suuply by revitalization of MAFCO market as a retail market hub for vashi – sanpada and make it more functional.

3.3 OBJECTIVES:

- To revitalize the market for the increasing population in next 20 years.
- To maintain hygienic environment through developing proper garbage disposal system and maintainance.
- Creating feasible circulation through design.
- Creating feasible space for loading / unloading.
- An inviting premise where there shall be no confusion as what is meant for what comparing to the present market scenarios, i.e. a clear planning approach which shall reduce the commotion confused system of functioning of such establishments.
- There should be proper inventory management by segmenting product category to increse space in shop.
- zoning to regulate the space
- connectivity to reduce traffic congestion

3.4 SCOPE:

The market is getting congested due to improper circulation of goods and pedestrians.

- To create proper management of vendors in the market.
- To accommodate people to visit market by maintaining clean and hygienic environment.
- To create security facility for parking and movements around site.
- To revitalize the partially active market to cater the increasing food supply for next 20 years.

3.5 LIMITATIONS:

It has already been for decades that number of producers and consumers were searching alternatives for re-establishing local food market, because they were dissatisfied with the large scale regionally concentrated market.

3.6 RESEARCH METHODOLOGY:

- Understanding the Project and Its Need
- Thorough Study of the Similar/related Cases through Literature Studies
- Analysis, Based On Both Types of Case Studies and Comparison with the Existing Standards, Carving out the Area Requirements
- Conducting Live Case Studies to Understand the Functionality of the Project.
- Taking interview from the local customers regarding facilities provided.
- Collecting information from primary and secondary sources.
- Analysis of the Shortcoming /drawbacks/issues From the Case Studies.
- Finding out the Best Possible Solutions to the Issues / Shortcomings/drawbacks
- Application of the Same to Thesis Project and Coming Up With the Final Design Output.

4.1 DEFINITIONS AND DESCRIPTIONS:

4.1.1 PRE COOLING AND COLD STORAGE (PC AND CS)

The Maharashtra state agricultural marketing board undertook the first initiative in state (1990), and even in the country, to promote the use of temperature management technology (TMT) by setting up of pc and csimplented pc and cs facilities. Since facilities under the co-operative sector. The principal objective was to promote exports of fresh fruits and vegetable from the state. The MSAMB then identified technology, imported the technology, planned and implemented panda cs facilities. Since then, under the guidance of the MSAMB, 32 pc and cs facilities have been set up in the co-operative sector in the state. Due to this pioneering effort by the MSAMB, today Maharashtra is a largest exporter of fresh grapes from also successfully exported fresh pomegranate and mango using the pc and cs facilities.

MSAMB Has gave technical guidance to establish 32per-cooling and storage facilities of co- operative societies in the state. Grapes have been exported from these facilities

Efforts taken for promotion of cold storage

- In response to finding by an expert committee setup by the goi(1998)that identified a need for 12 lakes mt of additional cold storage capacity and the need flirt creation of another 8 lakes mt cold storage capacity through expansion, repair and modernization of existing cold storage in the country, the gom has taken initiatives to promote are setting up of a cold storage in the state .
- Director of marketing, gom and the MSAMB have taken a lead in promoting the construction of commercial cold storage for perishable horticultural produce by APMCs and farmers co- operative.
- The MSAMB has prepared detailed project proposals of cold storage for APMCs and the farmer's cooperative societies in the state.
- APMC sola has set up a commercial cold storage in its premise. It is in the process of setting up a pack house, precooling and cold storage as a common facility.

MSAMB's projects for promotion of cold storage:

- MSAMB with the financial assistance from APEDA New Delhi and Rashriya krishi vikas yojana [RKVY] established 13 Export Facility centres on the land of APMCs, co-operative societies and institutions. Construction of 6 export facility centres in under progress. These export facility centres includes precooling, cold stage, pack house facilities and ripening chambers in some places.
- In addition to this 20 modern marketing facilities and 3 flower export facility centres will be established by MSAMB. Out of which 19 Modern marketing facilities and 2 flower export facilities are under construction

Necessity of godowns:

- To store food grains in scientific manner, minimise losses and maintain quality.
- To avoid damage damage by rats, birds, small insects etc. And deterioration in quality of the grains.
- Non-availability of storage faculties at the farmers, forces them to sell their produce during peak harvest season, when prices are the lowest depriving of remunerative prices.

Benefits of godowns:

- Scientific storage leads to maintain quality of food grains.
- In godowns, frequent spraying of insecticides and fumigation of food grains make them safe from rats, and small insects.
- Remunerative price is reeled for food grain, stored in godowns leading to improved income to the farmers.
- The farmers can expect pledge loan of 70% against stored produced.
- If godown is run on commercial and professional lines by farmer's cooperative sales and purchase societies, it will lead to an increase in their incomes and helps in employments generation.

4.1.2 Fruits and Vegetable Waste Management :

Solid waste management is one of the most basic needed services provided by municipal authorities in the country to keep urban centres clean. However, it is among the most poorly rendered services the systems applied are unscientific, out-dated and inefficient

Fruit and vegetable waste that generates from market, by handling, processing and grading. An average of 50-60 Metric Tonne of ORGANIC waste per day is generated, some of this waste ends up as animal feed and some of it could returned to the land as a nutrient. It is an important fact, that waste of fruit and vegetable is a potential energy source, methane. Up to 50% of fruit and vegetable waste could be potentially converted to this fuel. The anaerobic digestion of vegetable by-products has the potential to produce both energy (methane) and heat. Anaerobic digestion is completed by heating materials to a temperature between 35 to 50 degrees °C in an oxygen free environment. Most agricultural anaerobic digestion systems will use manure as a primary component and add materials such as vegetable waste. Fruit and vegetable byproducts may hold more methane.

The fruit and vegetable processing market includes both fresh and processing value-adding activities in daily. The major waste streams are organic waste; including fruit and vegetable peel and other waste parts and other raw material wastes.

Handling, grading processes and packaging activities also generate waste. planning where to locate additional bins to store sorted materials, work place safety representatives and will not impact negatively on food hygiene, safety and other standards. to successfully implement actions employee training and awareness may be required and support the introduction of new equipment or processes, such as better segregation of wastes.

Common methods of managing fruit and vegetable waste are as below:

1. Return fruit and vegetable waste to the field on which it was grown to enhance the fertility of soil.
2. Store the culled fruit and vegetables in a pile or burned area for a limited time
3. Feed fruit and vegetable waste to livestock

4. Process fruit and vegetable waste to separate juice from pulp
5. Dispose of fruit and vegetable waste in landfill areas.

Managing Fruit and Vegetables waste

The management process for managing waste of fruit and vegetables are as following Store the fruit and vegetable waste on site:

A provisional solution is storing fruit and vegetable waste on site to final disposal or reuse of materials. To use this process, the waste may be transferred by mechanical methods to a location that has been prepared for holding the culls. At a lowest, the holding area needs to be burned to capture and hold rainfall and any liquids that have formed from the decomposition of the vegetables and fruit waste.
Storage in tanks is use as other options for such a site include with easy access for removing liquids or solids for later management. The waste stored need to be crushed, if possible, to allow available liquid to better evaporate. Crushing the culled fruit and vegetables and placing them in a burned area helps control the runoff, makes easier managing the material, allows extra liquids to evaporate and volume reduces that will need to be managed at a later time.

Fruit and vegetable waste back to the field:

A better option is returning fruit and vegetable waste to the field. This method returns the waste back to the growing field, where the nutrients can be recycled which will fertile the soil and enhance the productivity of farmers. Advantages in this process are: The nutrients in the fruit and vegetable waste can be available for the next crop. Organic matter in fruit and vegetable waste increases the soil fertility.

The method of segregating the fruit and vegetable waste into juice and pulp is completes by using a press. Typical systems are screw presses that can effectively segregate the juice from the pulp. After separation, each fraction has its purpose for different reasons. If the

Waste/culls are of good food quality they can be used as juices in food applications based on available markets. As a component of foods the pulp can also potentially be used. For those culls that are not of human food quality, the separated pulp can be used as one component of compost or animal food. This pulp can also be used as a soil amendment or as composting process one component. The juice can also be used as a feedstock for ethanol production or anaerobic digestion processes. For either process, there should be a market for the final products methane or ethanol.

Animals can be fed by this pulp, Fruit and vegetable juice will be easier to transport chain and apply to the receiving field, Fruit and vegetable juice can be a feedstock for ethanol or anaerobic digestion processes, Fruit and vegetable juice is easier to store than whole matter.

5 : CASE STUDIES:

5.1: Case study 1: Crawford market.

One of South Mumbai's most famous market.
Named after Arthur Crawford
After India's independence, renamed as Mahatma Jyotirao Phule.
The market covers an area of 22,471 sq. m.
Open from 11:00 am to 8:00 pm.
Wholesale fruit, vegetable and poultry market.
Pet stores, imported items & other basic products of daily use.

Table 1 DETAILS OF THE PROJECT:

Figure 1 EXTERIOR VIEW

Mahatma Jyotiba phule market Premises designed for wholesale and retail trade in fruits, vegetable, fish, meat, etc. now functions only as retail.

Facilities:

- A closed market hall.
- Wholesale trade of seasonal fruits.
- Service area, area for washing, toilets, feathering area for poultry, etc.

Crawford market is one of south Mumbai most famous markets. It was named after Arthur Crawford, the first municipal commissioner of the city. The market is placed opposite the Mumbai police headquarters, ust north of Victoria terminus railway station and west of j.j.flyover at a busy intersection. The market house a wholesale fruits, vegetable and poultry market. One end of the market is a pet store. Most of seller inside the market no day sells imported items such as foods, cosmetics, household and the gift items. it was the wholesale market from fruit until Mumbai march 1996, when whole trade were reloced to navi Mumbai (new Bombay).

The building completed in 1896 was donated to the city by cowasji Jahangir. After Indian independence, it was renamed after maharashtrian social reformer, mahatma Jyotiba phule. in 1882, the building was the in first India to be lit up by electricity.

Observations and conclusions:-

There is too much of mix up of activity, which results on haphazard development of market complex without proper separation of functions.

There is inadequate service arena. Which cause traffic congestion all around the site

Refuse the collection system of market complex is in dismal state, due to haphazard development Overall toilet block are less and not easy to locate; taking consideration demand for them.

No proper defined service and loading and updating bays. The function is done from road which results into congestion.

Unhygienic situation of non-required section; pavement along Dr. Ambedhar road is unattractive Not enough parking spaces

No proper defined circulation; each street is defined entity. Office of shop owners-not integrated with the shop.

Draw backs:

- Entrance to the building occupied by trucks.
- Poultry slaughtered on the site.
- No. of chicken slaughtered per day in a slot-4000
- Blood connection in vats-used later on.
- Cutting and gating platform
- Garbage-major hindrance ever within market place.
- No crossing of any kind.
- Pathway littered between stall.

Congestion is major problem, especially in mango peak season, when there are about 600 trucks carrying they fruits. Even on other days, entrances to the building and to the occupied by trucks and unloading activate.

Non-veg sections are characterized by smell and lack of hygiene.

All the meat sold in both the mutton and beef section comes from the abattoir at donor but, the poultry is slaughtered on the site itself.

poultry is not selected fresh but is pooled and slaughtered in lots No. of chicken slaughtered a day-4000 Slaughtered in one spot.

Cutting and feathering platform with boiling vats to faculties' feather separation.

Form:

Like some English country market, Crawford market consisted of structures placing facing the three main roads with a courtyard in the centre-fountain

Main building has a prominent clock tower crowed by a cupola, with a gable.

The corner orientation of the main building gives it a striking appearance. View in the front open space is occupied by parking a lot and three wide roads that make up that junction. The market maintains its scale beautifully.

Also, the high banked stalls offer a very good view of the wares available but restrict the vision to that row of stall itself.

The edifice is the blend of Norman and gothic architectural styles. The fries on the outside entrance depicting India farmer and the stone fountains inside were designed by Lockwood Kipling, father of novelist Rudyard Kipling. The market cover an area of 22,471 sq m (24,000 sq ft.) which 5,515 sq m (6,000sq ft) is occupied by the building itself. The structure was built using coarse buff coloured kurla stone, with Redstone form bassein. It has a 15 m high skylight awning designed to allow the sunlight light up the market place.

Reasons for demolishing outer structure:

- Exterior of facade is damaged, windows are broken and growth of vegetable on facade,
- Most of the rooms on upper floors are not use
- Accumulation of garbage between facade and building edge
- Broken staircases
- Brocken drainage system
- Brocken passages on upper floors

• No proper allotted shop or storage for fruit retailer's • They block the passage for storage and display.	Pet shop attracts people from different part of the city. It is the main tourist attraction of the market.

Lanes are occupied by storage, Sections are not segregated properly. this compact the space .

Table 2 **SWOT ANALYSIS:**

Strengths	Weaknesses
• OLDEST WHOLESALE MARKET • THE SITE NEAR TO THE NAGPUR RAILWAY STATION • RESIDENTIAL AREA COMMERCIAL AREA AND MANY PUBLIC AMENTITES ARE NEAR • SANTRA MARKET • MAHATMA PHULE MARKET	• TRAFFIC AT ANY TIME OF THE DAY BECAU SE OF RAILWAYS STATON • MAIN RAILWAYS STATION IS JUST OPPOSITE OF THE MARKET • NO PRPPER SPACE FOR GARBAGE DUMPING PARKING AND FOR LOADING AND UNLOADING
OPPORTUNITIES	THREATS
• THE MARKET CAN BE TOURIST ATTRACTION • THE WHOLE AERA CAN BE CONVERTED INY O A PUBLIC INTER ACTION SPACE OR PLAZA • PARKING CAN BE PROVIDED BY PROPER DISTRIBUTIONOF AREA WHICH WILL RESOLVE TRAFFIC ISSUES	• AS VENDORS HAVE DEVELOPED SLUMS BEHIND THE MARKET THEY WILL NOT GIVE UP THAT AREA EASILY • AS COTTON MARKET AND SANTRA MARKET ARE FAR FROM EACH OTHER THERE WILL BE DIFFICULTY IN CONNECTING THEM PROPERLY

5.2 : Case study 2: Gaondevi Bhaji Market , Thane.

Figure 2: LOCATION PLAN

- Market is located at walking distance from railway station.
- Market **does get confined to one product** or commodity it deals with various commodities at same time.
- Market serves with day to day required things.
- Market deals with various commodities like **vegetables, fruits, onion potatoes, clothes, worship stuffs (puja stuff), snacks corner, Electricals, accessories**, tailors and many more etc.
- This market is present on Ground floor of an office building.
- There are **small cubicles** for the vendors where the vendors have **customized their own furniture** according to their product need. The **furniture varies from vendor to vendor** it more likely depends on what they sell and the kind of display they require.

Total number of cubicles – 156

Size of cubicles around 0.9m x 1.5, 1.2 x1.5 m 0.90m in height.

Some shops remain closed.

Figure 3: GROUND FLOOR PLAN

Market is occupied on ground floor.

- There is **well defined circulation** lane in the market. There are **5 different entries** to the market.
- There is **visual connectivity** to the market as there are no shops but the cubicles that allow visual connectivity. The height of furniture in the cubicle might restrict visions at certain level.
- The vendors have their own dustbin near cubicle the waste is thrown into the dustbin hence factor **cleanliness is maintained**.

Figure 4: ZONING

- This plan shows the different cubicles selling different product. Vegetable and fruit vendors are the maximum vendors in the market. Due to the maintainace of cleanliness and hygiene customers tend to visit the market.

- The central core of the market is occupied by the vendors who deal in perishables. Here the vendors take the advantage of technology they provide home service to the customers who order goods over the call and also to whom, who come to them on regular basis.

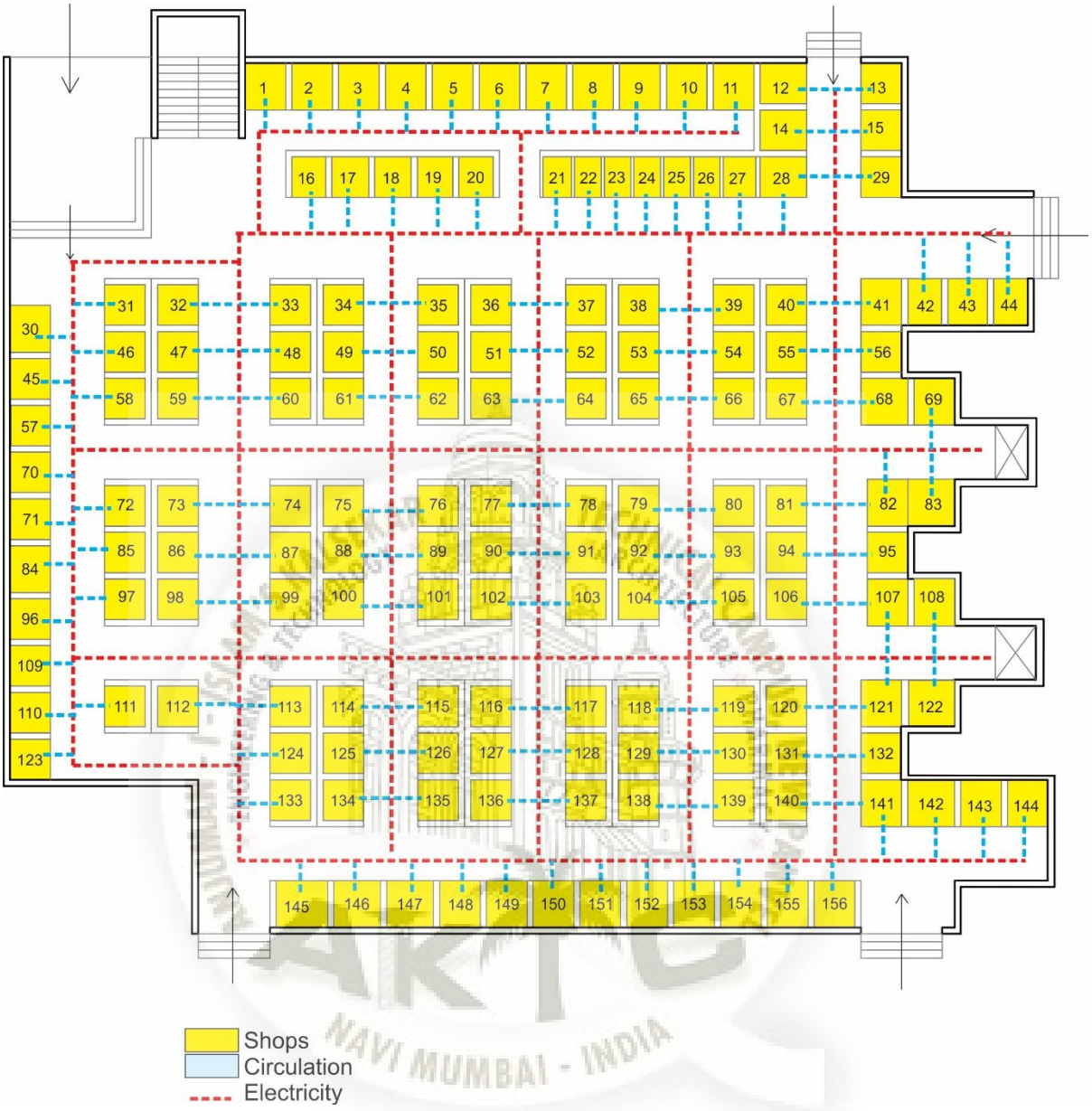
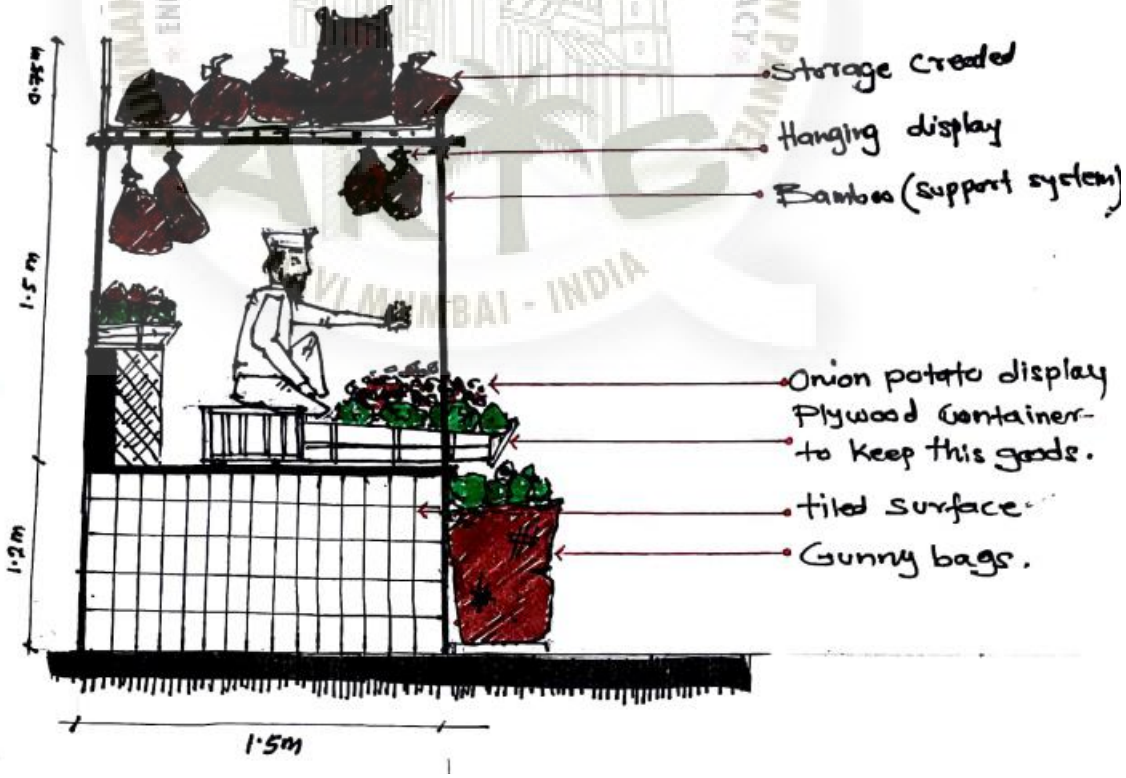


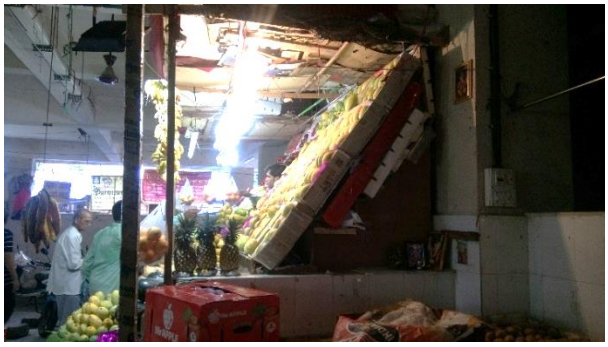
Figure 5: CIRCULATION PATTERN

- The plan above shows the utility in the market.
- The plan shows the electrical layout of the market.
- The main line of electricity runs through the main circulation lanes and the vendors have taken sub-connections from the mainline for their cubilces or shops.

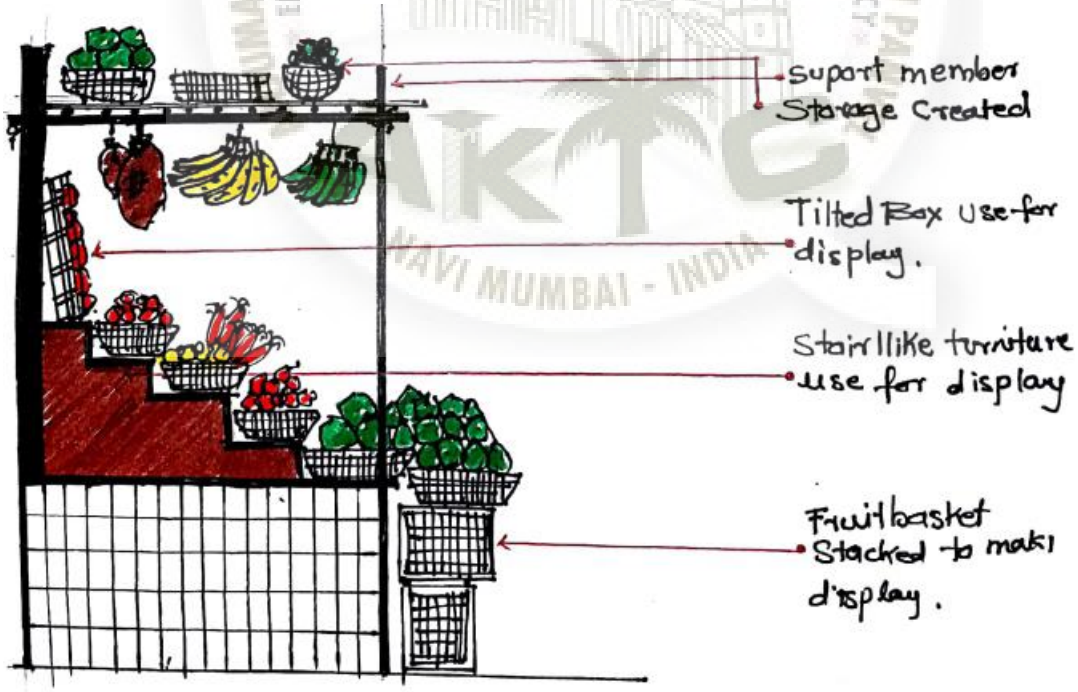
- The vendor sits in his cubicle. Has his furniture customized according to his need. Since the cubicle is of **0.9m in height vendors get the space below the platform for the storage**.
- They have **made doors for the storage** so their things remain in security.
- The **walls of the cubicles are tiled** by the vendors.



Potato and onion vendor



- The vendor has totally **transformed** his **cubicle with** his **furniture**.
- The **display techniques attracts the customers**.
- The vendor has **created loft using cardboards and bamboo**.

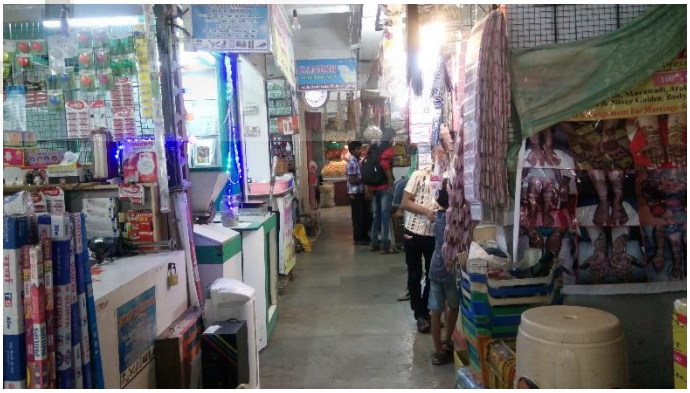


View of small general store

View of ceiling showing main electrical line running

Some of the cubicles are enclosed by shutters

View of ceiling showing main electrical line running



View of lane with shops of electrical and other accessories

- Some of the cubicles remain unused hence other vendors put their extra stuffs over the other platforms
- During morning time the vendors are seen busy setting up their stalls.

View through circulation lane

View through circulation lane

- Lack of natural light and air ventilation
- Use of appliances like fans, tube lights, and bulbs is done throughout the day.

- Shops present at peripheral of market get little advantage of natural light.

View of a primary lane in the market

- The cubicle along with new furniture. Stall is yet to set up.
- But it can be seen for display there are two different furniture and space between is left for

Customized furniture of a vendor

- The cubicle at the corner gets advantage of attracting more customers. Since the place is at junction.

- Shops present at peripheral of market get little advantage of natural light.

View of lane (different stalls like fruits, clothes, spices.)

5.3: Case study 3: fruit and vegetable market, Mohali.

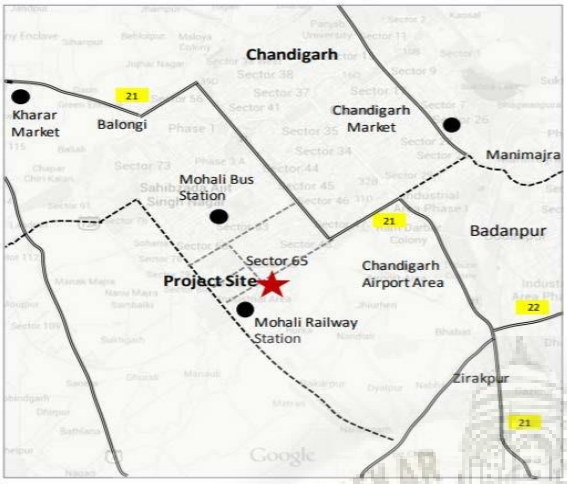


Figure 6 **LOCATION MAP**

ARCHITECTS	**SARBJIT SINGH BAHGA**
PROJECT	**Fruit And Vegetable Market.**
Location	**MOHALI**
Total land area	**13.75 acres**

Table 3:DETAIL OF PROJECT

FIGURE AND GROUND TO UNDERSTAND THE GROUND COVERAGE WHICH IS 35 % OF THE TOTAL PLOT

The state-of-the-art Fruit and Vegetable Market, Mohali is the first such market not only in Punjab but in the entire North India. It is built on a plot of 12 acres in Sector-65, Mohali. The site of the market becomes part of the 20-acre development scheme comprising general shopping area and offices.

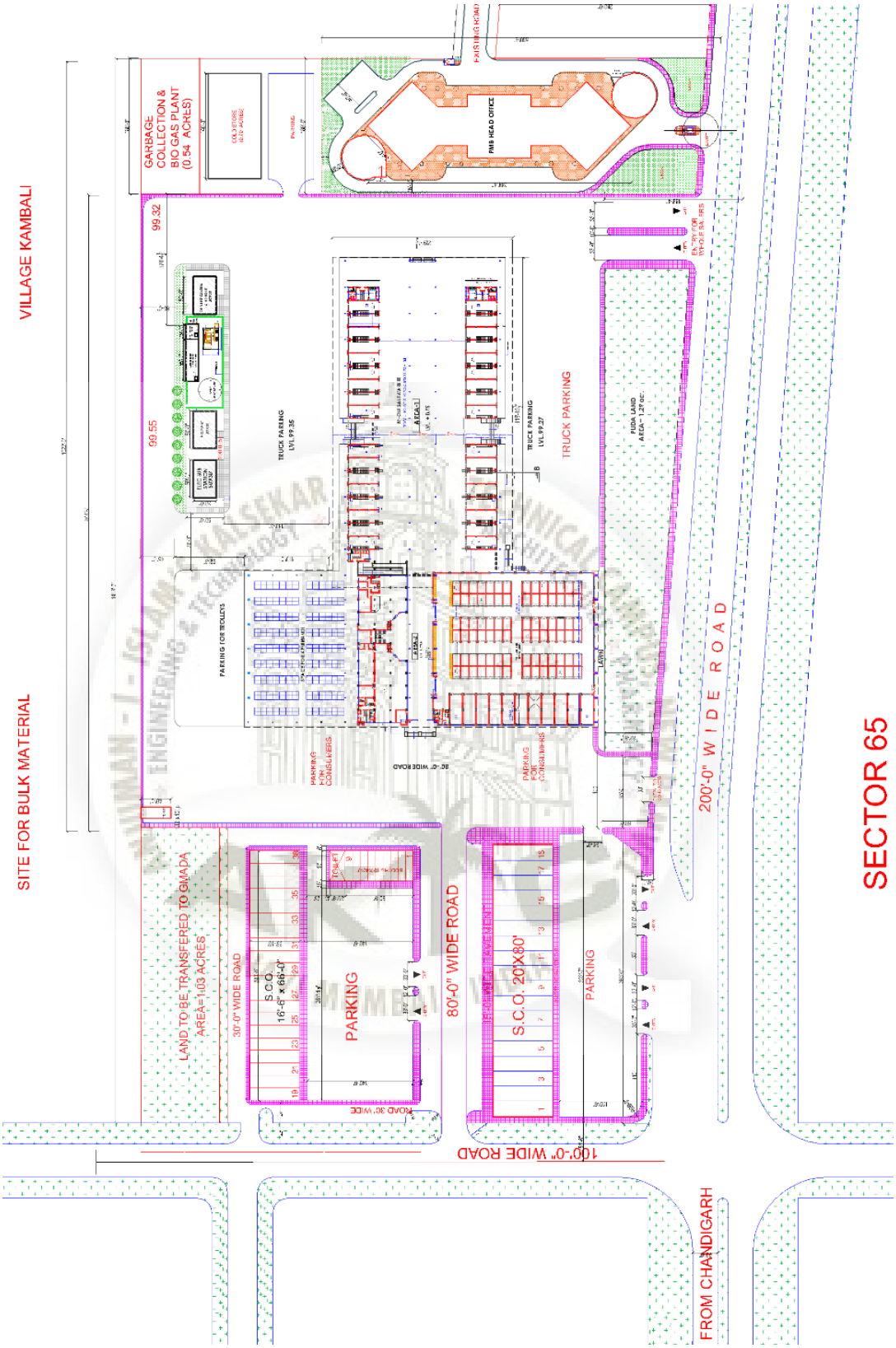


Figure 7: MASTER PLAN

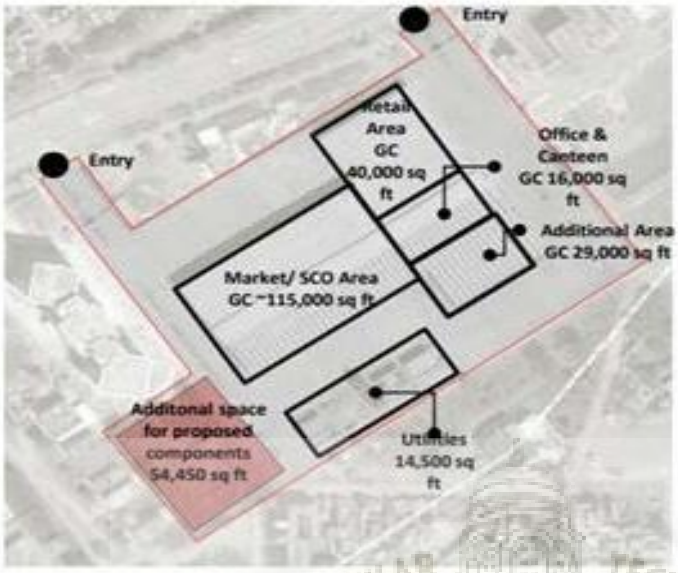


Figure 8: ZONING OF MARKET

Figure 9: LAYOUT PLAN OF VEHICULAR MOVEMENT

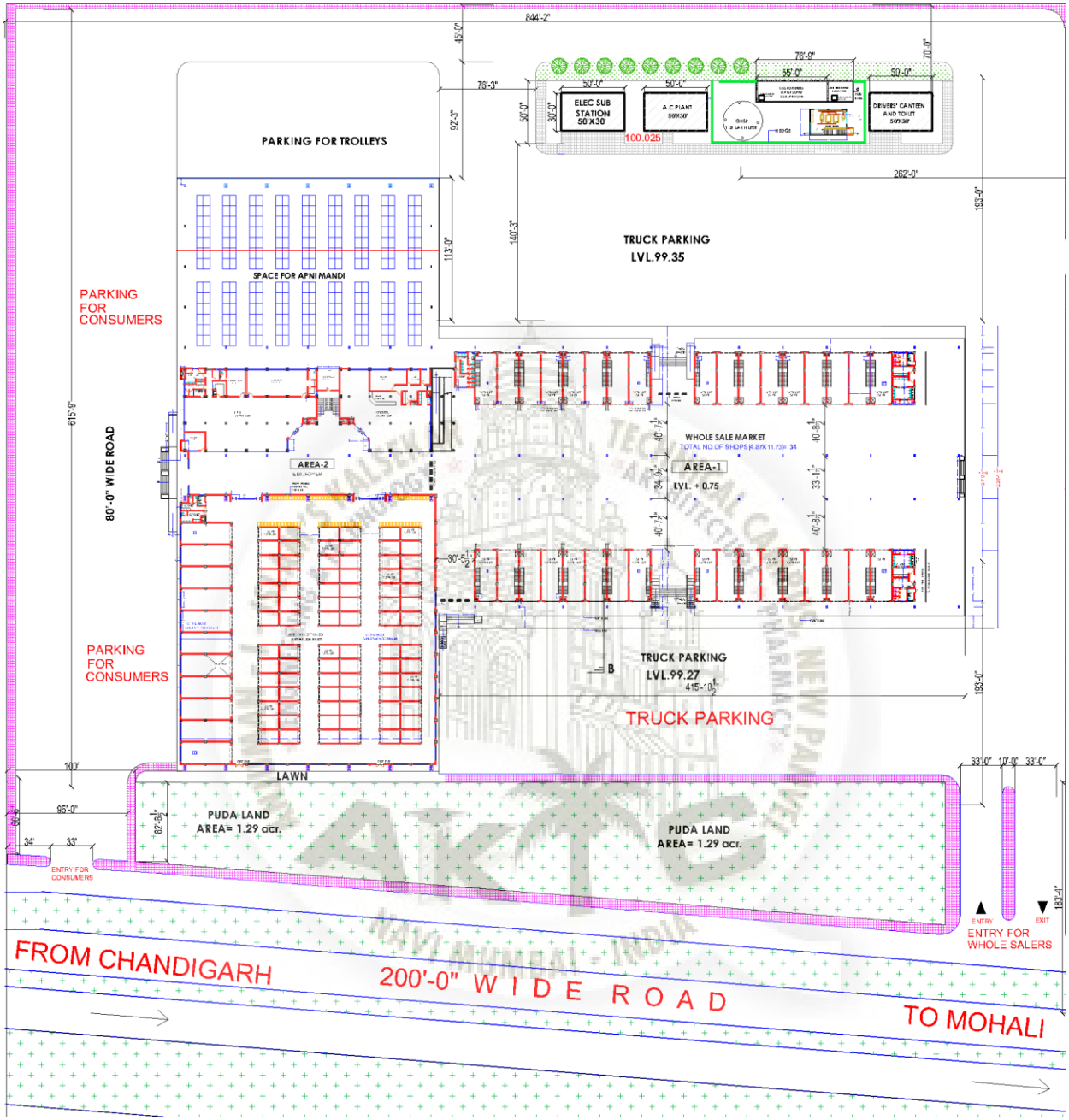


Figure 10: GROUND FLOOR PLAN

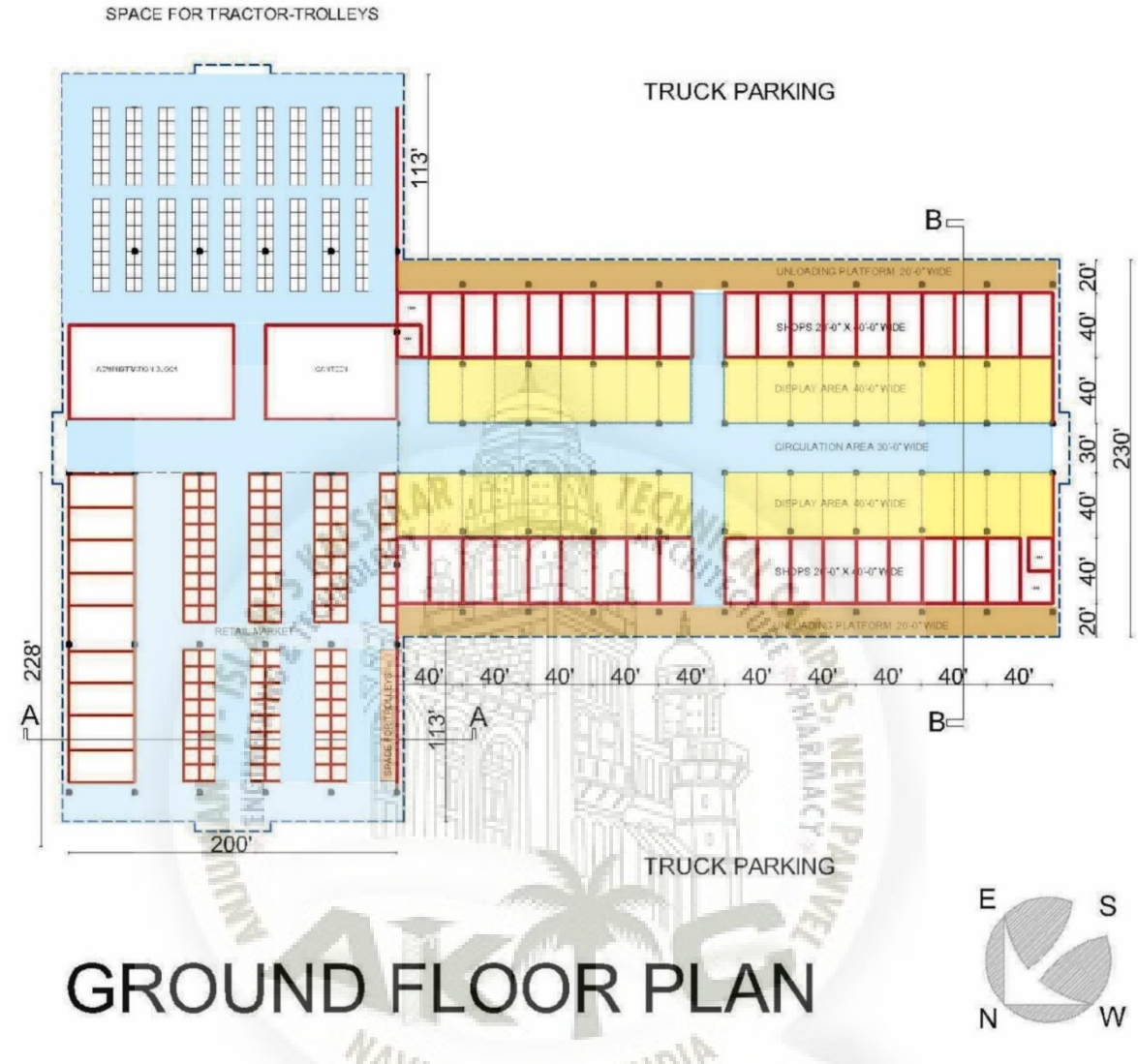


Figure 11: GROUND FLOOR PLAN

Farmer's market

Retail market

Wholesale market

Space for trolley

Display area

Circulation area

Loading and unloading platform

The layout plan of the market include a fully covered market besides the general facilities like,

- cold store/ ripening chamber,
- garbage collection and disposal,
- workers' canteen,
- water works,
- air-conditioning plant etc.
- Provision has been made for adequate parking for **all types of vehicles coming to the market**. **for segregation of different types of commuters for instance Separate entries and exits have been planned**, the wholesalers and retailers have separate ingress and egress to the market.

MATERIALS, STRUCTURE AND CONSTRUCTION

- Pre-Engineered Steel Structure: The entire structure of the market has been designed in hi-tensile, pre-engineered steel – popularly known as PEB structure.
- The option of considering the large covered area with huge spans, this was considered most viable.
- The entire roof and partial facades are maintenance free and durable as they are cladded in powder- coated profiled steel sheets
- puffed panels of 100 mm thick were used from top and sides to cover the air-conditioned retail market. These panels are most effective for thermal insulation.

wholesale market :

- The **main market is T-shaped** the block comprises mainly three wings
- The **larger flange** of the 'T' **consists of 34 wholesale shops**
- **Size of shop is 16'0" x 38'0**" and these shops are **double storied**
- There is a provision of **3-metre wide platform outside** the shop for **unloading purpose** of unloading **towards the parking plot**.
- There are **two rows of display platform on both sides with a circulation path of 30 feet wide**.

Retail market:

- The smaller flange of the T consist of retail market on the front side
- It comprises of 84 small shops
- Shops are fully enclosed and are centrally air conditioned.
- Size of small shops is 15'0" x 10'0"
- There are also 11 larger shops, size of this shops is 16'0" x 38'0".

VIEW OF THE RETAIL MARKET

VIEW OF THE RETAIL MARKET

LOADING AND UNLOADING AREA

VIEW OF MARKET

VIEW OF MARKET

INTERNAL VIEW OF FARMER'S

Farmer's Market :

- The other smaller flange is planned as farmer's market.
- Also known as Apni Mandi. Here the farmers get bring their produce to sell it to the consumers. They directly sell to the consumers thus this eliminates the middle man.
- This is beneficial to both farmer and consumer
- There are 234 raised platforms of each 6' x 8' in size
- The platforms are for display. Here the farmers display their produce and sell it to the consumers directly
- There is 10 feet wide circulation path defined between two platforms
- This market is covered with roof but open on sides.

INTERNAL VIEW OF FARMERS MARKET

EXTERIOR VIEW OF FARMERS MARKET

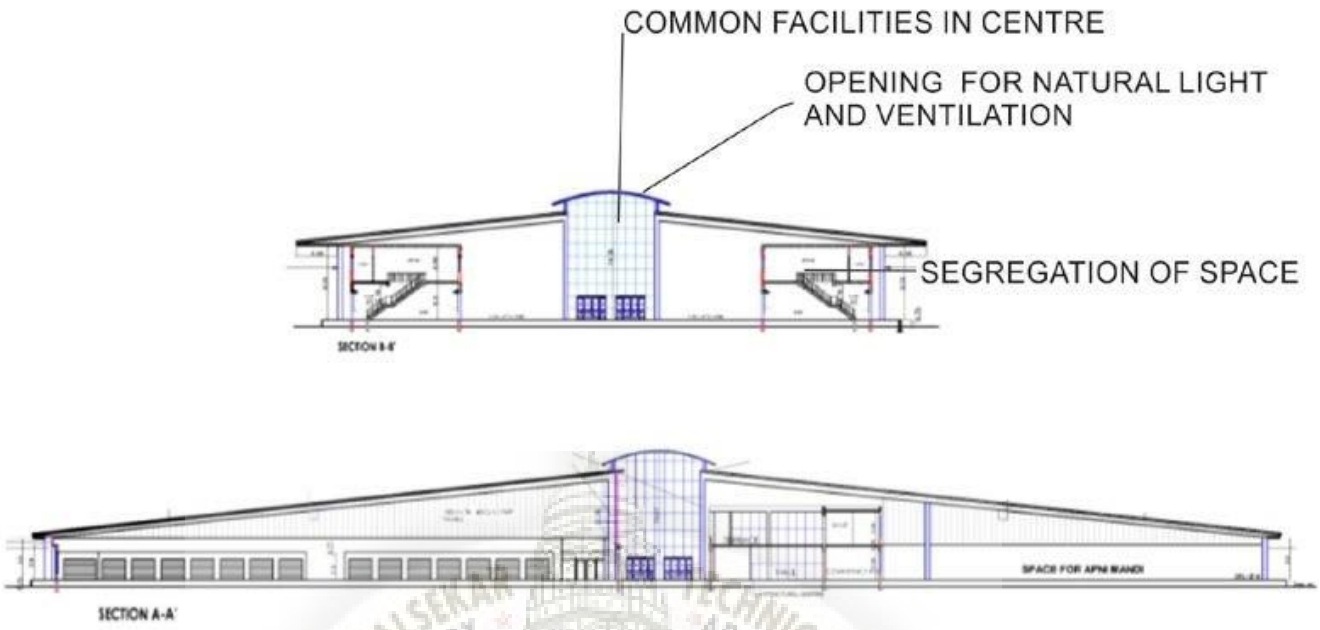


Figure 12: SECTION OF MARKET

- Double storied block is partially sandwiched between the apni mandi and retail market.
- It houses the common facilities like office, canteen, bank, police control room, first-aid room etc.
- This block is easily accessible from all the wings of the market.
- The air-conditioned retail market is covered from top and sides by 100 mm thick puffed panels.

Table 4: SWOT ANALYSIS

Strengths	Weakness
• site in well connected by multiple means of transportation • The site consists history of Wholesale and Retail Area	• Intersection of public pathway and vehicular pathway. • Biogas plant on site due to which air has a very unpleasant smell
opportunities	Threats
• Give the residents of the locality a place to look forward to as a local terminal marketing.	Traffic congestion due to multiple means of transport.

5.4: Case study no.4: Trade hub for agricultural produce market committee (apmc) at latur.

Figure 13: LOCATION PLAN

• Site is located in MIDC area.
• 45 m wide latur-khandapur road on east,
• 30 m wide proposed road on north and 40 m wide proposed road on west of plot
• Site is located around 8 km from Latur city & 2.5 km from state highway 77.
• Site is surrounded by agriculture fields & CRPF quarters on north side.

Table 5: DETAILS OF THE PROJECT

Figure 14: PLANNING IDEA

Design inspiration
Ganj golai • Ganj golai is situated within the heart of the latur city and is a two storey structure, which was built in 1917. • Shri Faiyajuddin was the planner of this structure and it consists of a temple of goddess jagdamba located in the centre. **Ganj golai with temple in the centre jagdamba temple design concept.**

Table 6: CONCEPTUAL PLANNING

CONCEPT RADIAL PLANNING Inspired by the Ganj Golai Market.
EAST-WEST AXIS OF PLANNING As governed by the plot geometry, by the East – West Axis physically segregated Plot A and Plot B can be visually connected.
EASE OF CIRCULATION Radial and Concentric Driveways and Pathways, segregation and at the same time connecting all spaces, offering easy Vehicular and Pedestrian movement

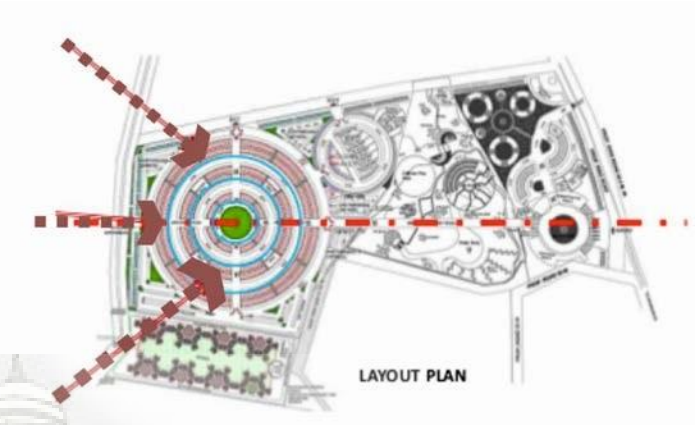


Figure 15: LAYOUT PLAN

Market area bifurcation according to planning.

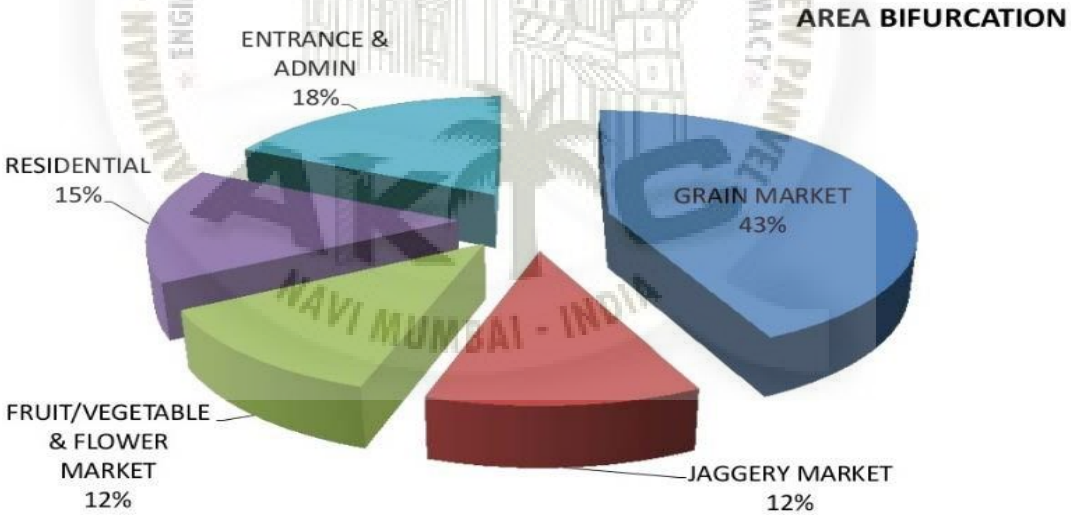


Figure 16: AREA BIFURCATION

Zoning of market into 6 main components.

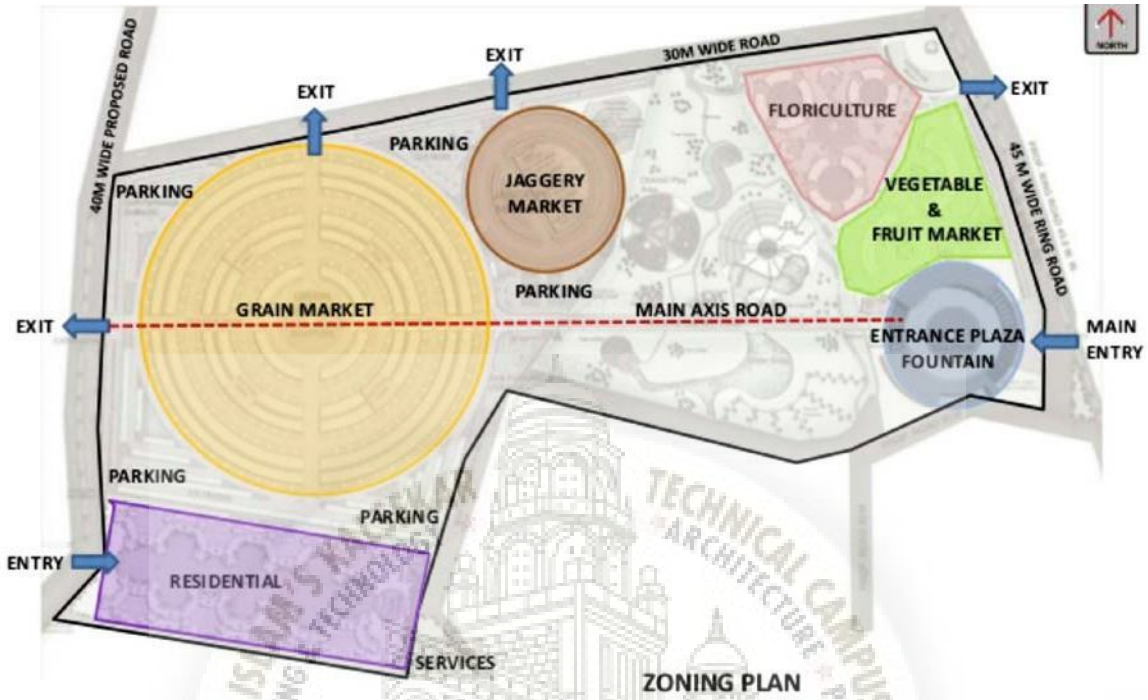


Figure 17: ZONING

Vehicular and pedestrian movements in the market.

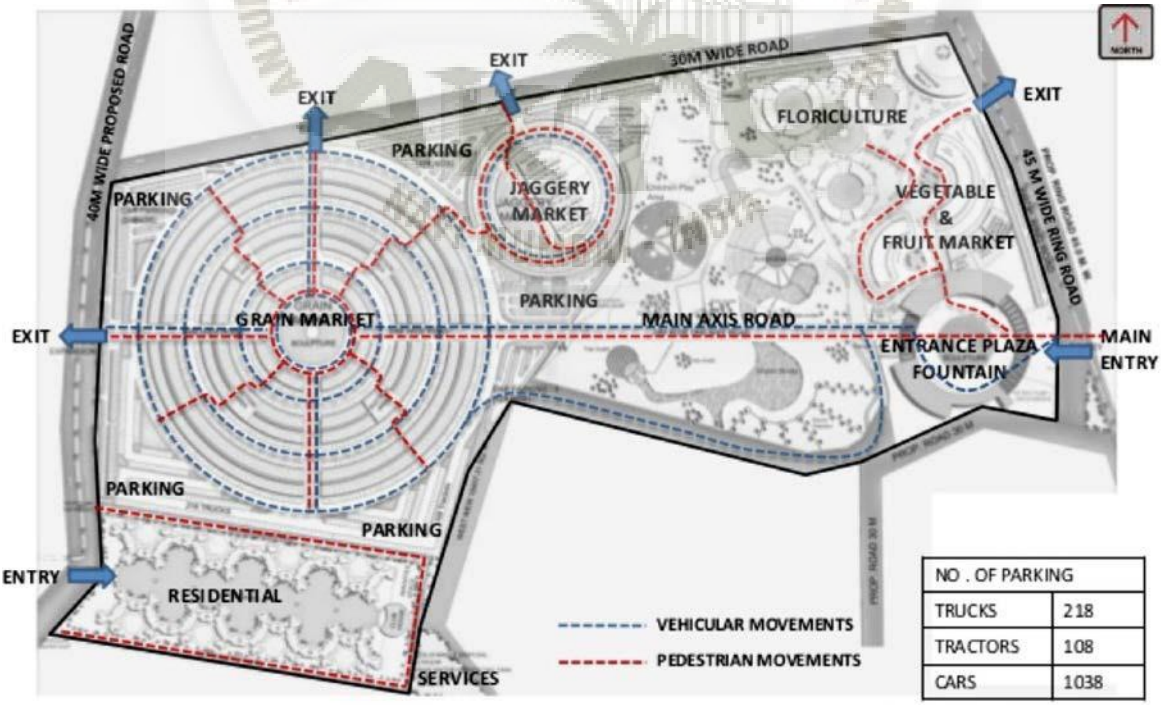


Figure 18: MOVEMENTS IN THE MARKET

AREA STATEMENT

GRAIN MARKET FEATURES:	
1. SHOPS	932 Nos. (BUILT UP AREA 685 SQ.FT EACH)
2. MULTIUSE SHOPS	115 Nos. (BUILT UP AREA 345 SQ.FT EACH)
3. AUCTION AREA	4 Nos. (BUILT UP AREA 17500 SQ.FT EACH)
4. TOILET BLOCKS	32
5. SHOP'S CORRIDOR AREA	5.0 M WIDE
6. BULK STORAGE	65,000 SQ.FT
7. HAMAL BHAWAN	8,600 SQ.FT
8. GUMASTA BHAWAN	1,000 SQ.FT
9. KISAN GHAR	2,500 SQ.FT
10. TRUCK PARKING	220 Nos.
11. CAR PARKING	950 Nos. (INCL. VISITORS)
12. TRACTOR PARKING	108 Nos.
13. TWO WHEELER PARKING	250 Nos.

Table 7: AREA STATEMENT

AREA STAEMENT OF GRAIN SHOP

GRAIN SHOP BUILT-UP AREAS	
OFFICE	11.10 Sq.m.
TOILET	2.70 Sq.m.
STORAGE AREA	53.56 Sq.m.
LOBBY	3.14 Sq.m.
PLATFORM	7.54 Sq.m.
TOTAL	78.04 Sq.m.
	840.023 Sq.ft.

Table 8: AREA STATEMENT OF GRAIN SHOP

GROUND FLOOR PLAN FIRST FLOOR PLAN LONGITUDINAL SECTION

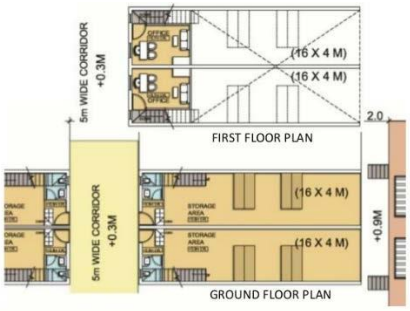


Figure 19: PLAN

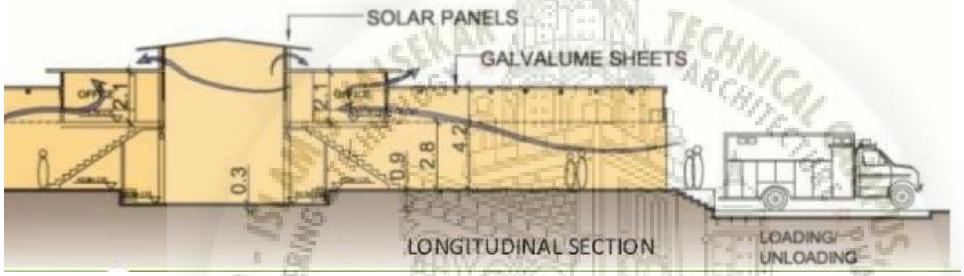


Figure 20: SECTION

AREA STATEMENT OF JAGGERY MARKET

JAGGERY MARKET FEATURES:	
1. SHOPS	210 Nos. (BUILT UP AREA 260 SQ.FT EACH)
2. MULTIUSE SHOPS	95 Nos. (BUILT UP AREA 345 SQ.FT EACH)
3. AUCTION AREA	6 Nos. (TOTAL BUA 92,000 SQ.FT)
4. TOILET BLOCKS	6
5. SHOP'S CORRIDOR AREA	3 M WIDE
6. HAMAL BHAWAN	8,600 SQ.FT
7. GUMASTA BHAWAN	8,600 SQ.FT
8. COVERED GODOWNS	53,000 SQ.FT
9. CAR PARKING	436 Nos. (INCL. VISITORS)
10. TWO WHEELER PARKING	100 Nos.

Table 9: AREA STATEMENT

AREA STATEMENT OF VEGETABLE AND FLOWER MARKET

VEGETABLE & FLOWER MARKET FEATURES	
1. SHOPS	80 Nos. (BUILT UP AREA 340 SQ.FT EACH)
2. MULTIUSE SHOPS	130 Nos. (BUILT UP AREA 345 SQ.FT EACH)
3. AUCTION AREA	2 Nos. (BUILT UP AREA 16,000 SQ.FT EACH)
4. TOILET BLOCKS	6
5. SHOP'S CORRIDOR AREA	3 M WIDE
6. HAMAL BHAWAN	5,300 SQ.FT
7. GUMASTA BHAWAN	7,500 SQ.FT
8. POTATO SORTING & GRADING	9,900 SQ.FT
9. COLD STORAGE	8,660 SQ.FT
10. GRADING & PACKING HOUSE	7,180 SQ.FT
11. BANANA RIPENING CHAMBER	7,180SQ.FT
12. KISAN GHAR	10,700 SQ.FT
13. WEIGH BRIDGE & PETROL PUMP	68,000 SQ.FT
14. CAR PARKING	200 Nos. (INCL. VISITORS)
15. TWO WHEELER PARKING	100 Nos.

Table 10: AREA STATEMENT

AREA STATEMENT OF VEGETABLE SHOP

SHOP DETAIL/SECTIONS :VEGETABLE SHOP (6m X 8m)	
AREAS OFFICE	11.10 Sq.m.
TOILET	2.70 Sq.m.
STORAGE AREA	23.40 Sq.m.
LOBBY	3.14 Sq.m.
PLATFORM	7.54 Sq.m.
TOTAL	47.88 Sq.m.
	515.38 Sq.ft.

Table 11: AREA STATEMENT

GROUND FLOOR PLAN FIRST FLOOR PLAN LONGITUDINAL SECTION:

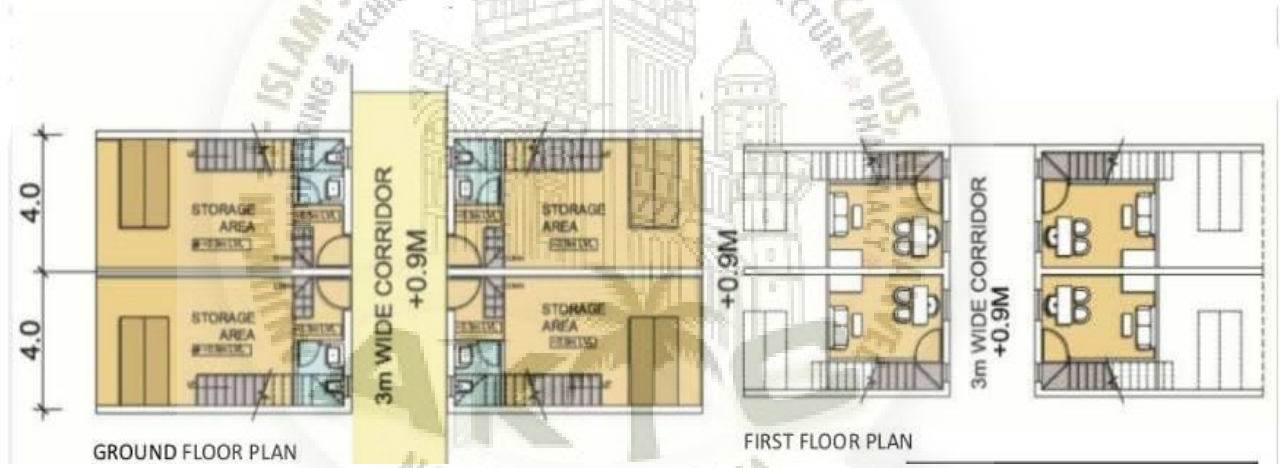


Figure 21: PLAN

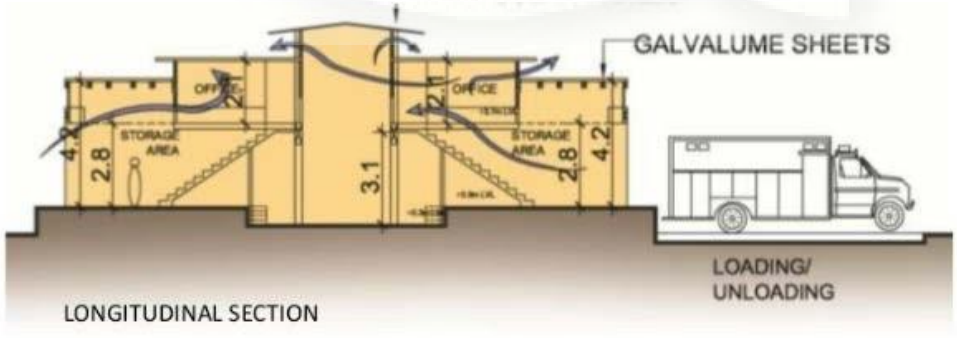


Figure 22: SECTION

5.5: Case study no.5: Mercabarna flor market. Spain.

Figure 26 VIEW OF THE MARKET

PROJET DETAILS

Architects	Willy Müller Architects
Location	08830 St Boi de Llobregat, Catalonia, Spain
Area	15000.0 sq.m
Project Year	2008

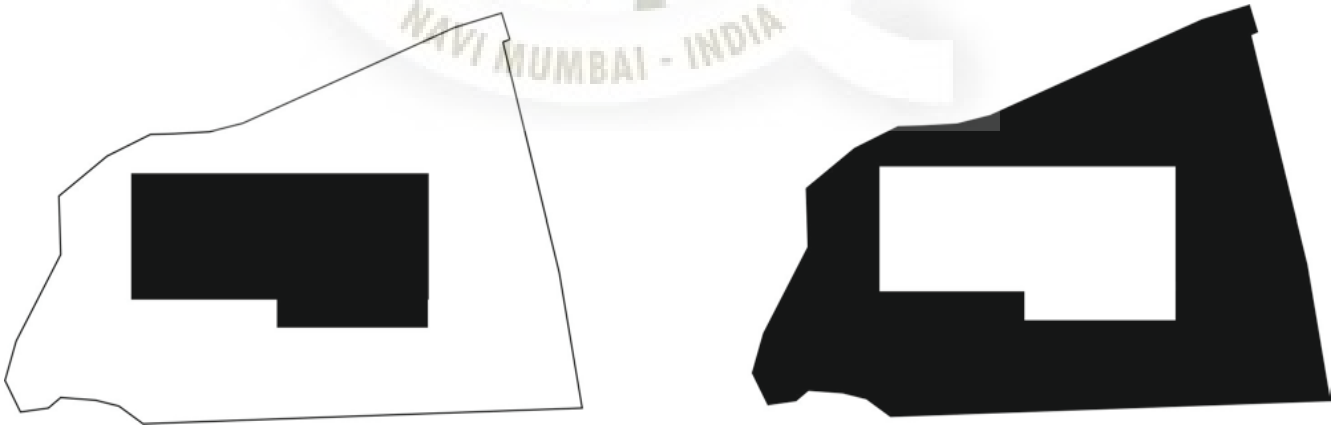


FIGURE AND GROUND TO UNDERSTAND THE TOTAL GROUND COVERAGE

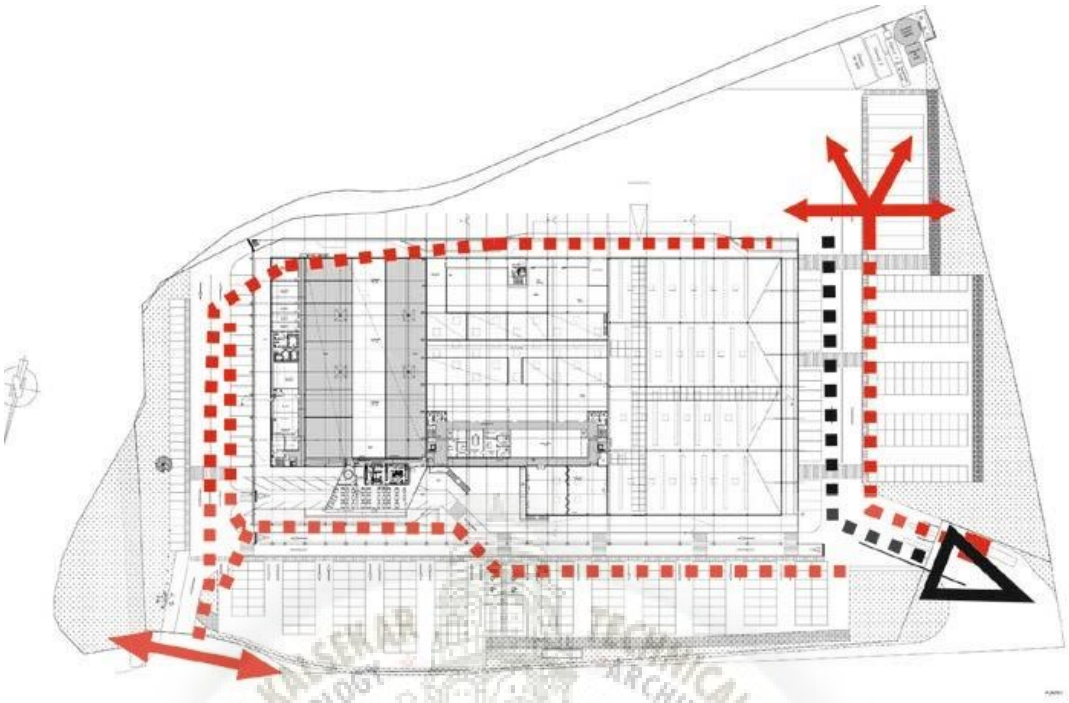


Figure 23: **VEHICULAR MOVEMENT ON SITE**

The complex also includes 500 parking spaces, loading and unloading area with 240 linear feet of docks

Concept of designing

- **Aiming to become an icon building** in the field of public utility, is designed **to cover basic folds and colours that express some identity** arguments related to the sector of activity that receives.

- **The large deck and parallel linear geometries of different shades, but not symmetrical forms, mimic the visual image of fields with different crops that we get from the air in the area** of the Llobregat, **the coloured stripes symbolize the colour variety offered flowers and plants, while the analogy with a shell gives an organic character** consistent with the activity and movement that unfolds within it.

- In the words of the architect, "is like a **big shell**, in the most organic, symbolizing the shell of an animal. That is, under the shell there is anything that moves, that is high activity generated by the market. "

Figure 24: **ELEVATIONS OF THE MARKET**

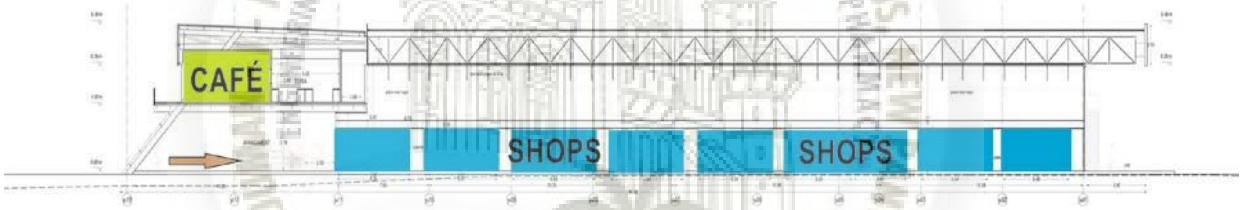


Figure 25: SECTION OF THE MARKET

Description

The deck is the integrating element of this market is highlighted with a border of many colours that rises and falls to organize entries in different areas of the building, a touch of mobility and in keeping with this graphic image of the Flower Market.

This cover is a combination of folds between floor, wall and ceiling, among which are access, the loading and unloading areas or protected areas around the campus, with protection and facade.

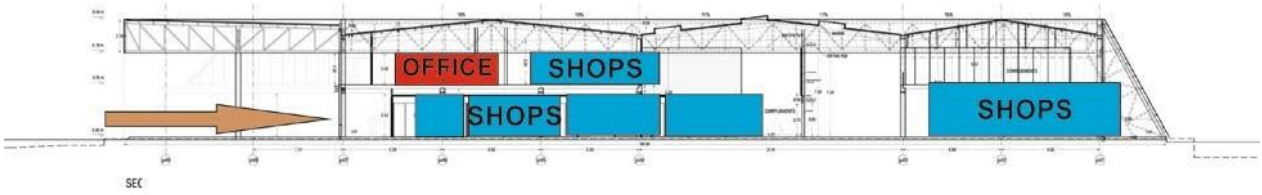


Figure 26: **SECTION OF THE MARKET**

Table 12: BASIC STATISTIC OF THE MARKET

Spaces	Inside developed in three sectors
• Flower Zone	The area has **3300m2** with cold stores to ensure its proper preservation.
• Area plant	With a special cover, which allows you to maintain adequate levels of daylight and air conditioning systems for land, very beneficial to plants, avoiding sudden temperature changes, occupies **4300 m2.**
• Area-ons	The area that hosts business dried flowers and accessories has a great exhibition and storage space, **3800 m2**

Sustainability

• Photovoltaic panels on the roof

On the cover of the market has installed a carpet of 3000 m2 photovoltaic panels occupying 30% of the total of that deck and produces energy.

• Air conditioning systems for low power

HVAC system has a low energy, supplied by 3condensing boilers and a compact mural, which flows heat through a radiant floor, avoiding instant temperature changes which must not drop below 15 º C or exceed the 26 º C and maintain certain point of moisture. This radiant floor occupies an area of 4,000 m2 and is a major technological Europe carpets.

In hot weather has a system that generates cold from evaporation of water.

Structure

A space serves them on their own roof, walls and floor, or structures all together in one shell. These features were achieved through a metal structure, angular and covered with sheets of zinc and

recovering **the idea of an impressionist painting of a combination of coloured lines its perimeter**, where a high ceiling, with falls of light perpendicular and tickets, embraces domestic sectors.

Structure should have sufficient deformation capacity to be extended, depending on their role and this formal pattern in which Mueller based his project continued in force **despite the fact that over certain period of time the project became more complex and needed to implement certain changes**.

Materials

The structure is steel.

The cover is made with bright zinc plates in different colours and decorated with coloured stripes perimeter panels. Inside the various stands are delimited by walls of glass specially treated to avoid condensation.

Installation of fire protection systems designed to measure, such as watertight doors that isolate certain areas from the rest of the market.

5.6: Case study no.6: Market hall france - marly-le-roi.

Figure 27: LOCATION AND PLAN WITH RESPECT TO NEIGHBOURHOOD

Table 13: **PROJECT DETAILS:**

Architects	AMELLER, DUBOIS & ASSOCIATES
Location	FRANCE - MARLY-LE-ROI
Area	16400 SQM
Project Year	2014

The market hall is situated in an exceptionally central location in Marly–le–Roi, surrounded by houses and overlooked by the railway.

Its design comprises a dual challenge: to create an attractive building, likely to bring about a lively neighbourhood, and fit into a much landscaped environment despite the presence of a large mineral slab and plenty of parking.

Planning is done considering 5 main components which are

The hall

The forecourt

The covered parking

Housing

Exterior parking

The hall

Figure 28: **SECTION SHOWING ACTIVITIES**

Exterior stalls are disposed around the square hall. Stairs situated in a manner to direct the circulation around the stalls provide access to the parking below. A side road controlled by retractable bollards enables easy loading unloading to the shops.

The plan of the future multi-modal transport hub follows urban development to the west along the Fontenelle Street.

The covered parking

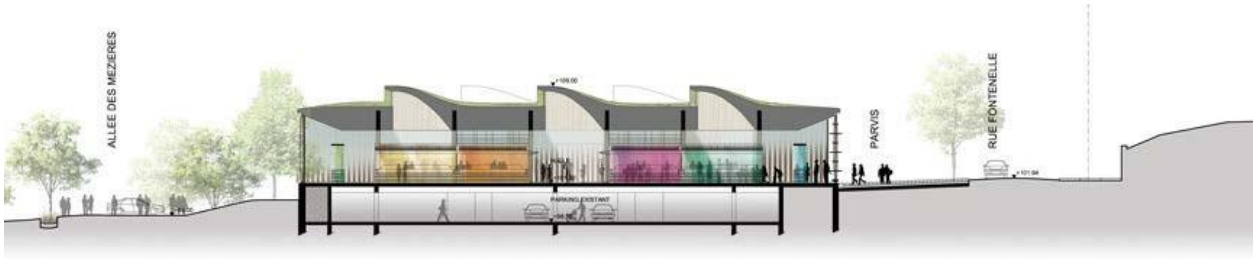


Figure 29: **SECTION OF THE MARKET**

The existing parking is maintained and brought up to standards. its extension benefits from pleasant and luminous parking space. An elevator gives access to the court from the exterior as well as the interior parking. **Its glass treatment makes it a discreet and contemporary element of the court.** The space in and around of the parking patio constitutes a transitional space between the new market hall and the housing project, and offers a recreational spaces like seating areas and shade. Creating a visual link between the forecourt and the landscaped parking, as tops of the trees emerging from the patio are similar to those in the planted parking lot.

Exterior parking

In order to conform to the terrain's topography the parking lot is organized in a flexible manner, and fuses the parking spaces with the vegetation. The natural character of the place is given by planting the trees in bulks instead of aligning them. With its soft and curved shaped, the exterior parking stands out from the repetitive strict alignments of traditional outdoor parking lots, and thus fits smoothly into the project's general composition.

Housing

A housing program is to complete the operation.

Achieving these twelve housing units is not an integral component of the project, to the west of site. It is nevertheless an important issue, given its presence in western boundary of the site. Designing firm defined a construction on two levels clad with wood and resting on the parking; it would be treated as three sliding modules oriented east-west. This principle of fragmentation allows the residence to better integrate itself into the site. The scale of the building thus divided reveals the covered market and adapts well to a primarily suburban environment.

5.7: Inferences:

Fruit and Vegetable Market, Mohali.

- Zoning of market should be done in manner in which auxiliary spaces are well connected internally from all parts. There should be proper segregation of space in terms of activities.

Trade Hub for Agricultural Produce Market Committee (APMC) at Latur

- Segregated plot a and plot b can be visually connected.by the concept radial planning, Radial and concentric driveways and pathways which are segregated and at the same time connected by all spaces, offering easy vehicular and pedestrian movement

Gavdevi Bhaji Market , Thane

- Zoning of shops according to products sold created a clean and hygienic environment for the consumers, pathways segregated at the same time connected by all spaces invites consumers to the market.

Crawford Market.

- Too much of mix up of activity, which results on haphazard development of market complex without proper separation of functions. Limited activities in a market space to avoid confusion and compaction which will lead to traffic congestion.
-

Mercabarna flor market, Spain.

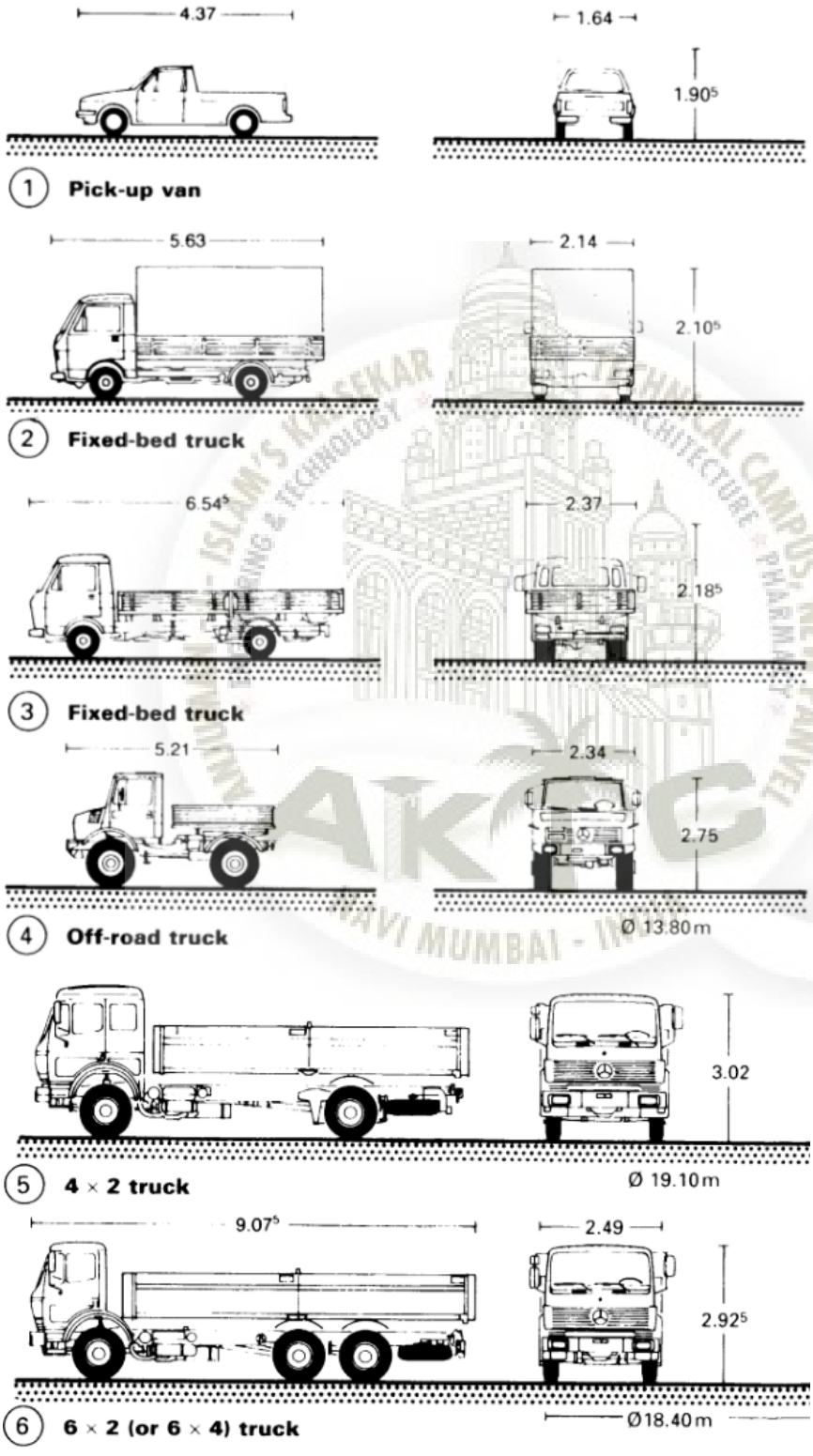
- An icon building in the field of public utility is designed to cover basic folds and colours that express some identity arguments related to the sector of activity that receives.

Market Hall France - Marly-Le-Roi.

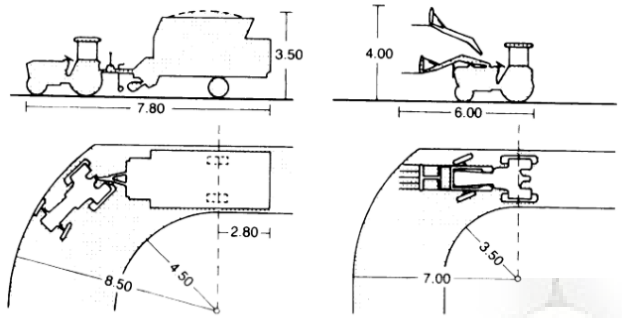
- Space without columns, which gives the building a complete flexibility of internal planning of design and evolution.

6.1: Standards and Data Collection

Vehicles dimension

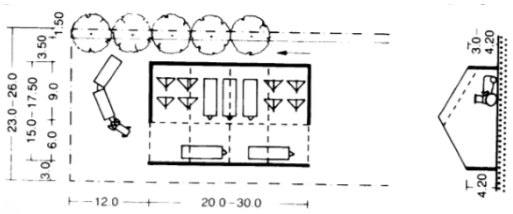


Farm vehicles dimension and turning radius

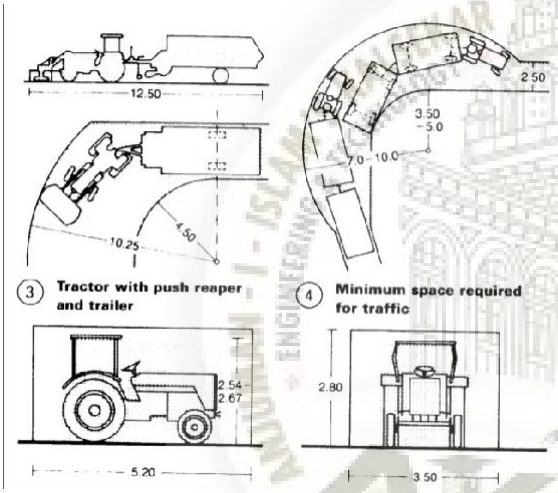


1 Tractor with trailer

2 Tractor with front loader

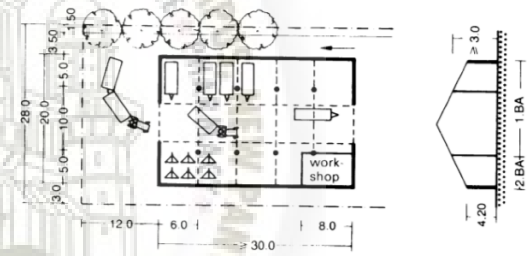


6 Small machine shed with side gangway

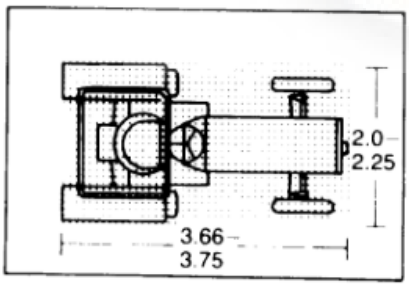


3 Tractor with push reaper and trailer

4 Minimum space required for traffic



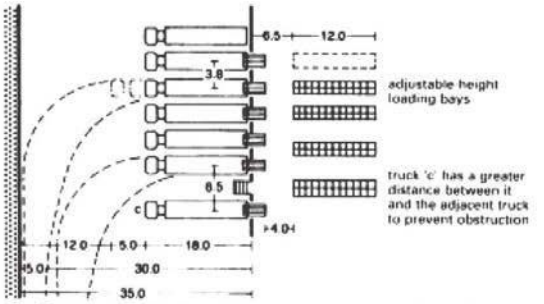
7 Large machine shed with central gangway: supported structure



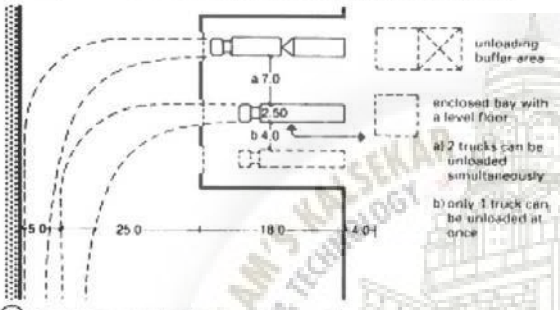
trailer	(m²)	length	width	height
green fodder	12	6.95	2.35	2.26
dry fodder	19			2.94
green fodder	11	7.80	2.46	2.45
dry fodder	17			3.10
green fodder	12	7.25	2.25	2.30
dry fodder	18			3.25
green fodder	14	8.00	2.35	2.25
dry fodder	20			2.90
guide size for trailers	13–20	7.70	2.40	3.10
guide for shed areas		8.70	3.40	3.40

5 **Minimum space for single standard tractor (base size of garage area)**

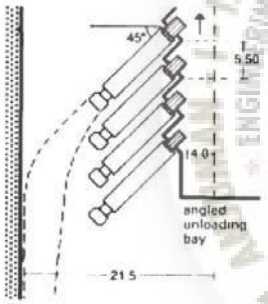
Turning and Parking



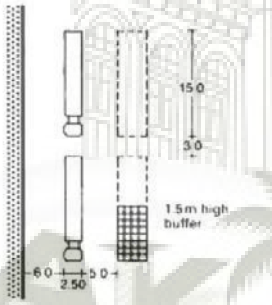
① **Close-packed loading and unloading bays; vehicles parked close together must ease forward a little before they can drive off**



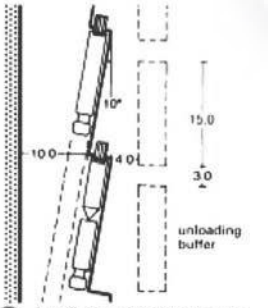
② **Loading and unloading bays take up the most space in the yard**



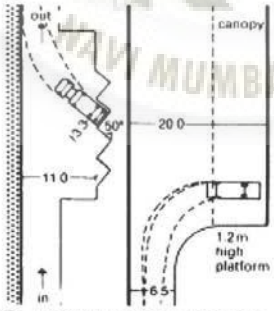
③ **Loading and unloading bays**



④ **Loading and unloading bay**



⑤ **Loading and unloading bay with raised platform and side unloading**



⑥ **Minimum space requirement for loading bays**

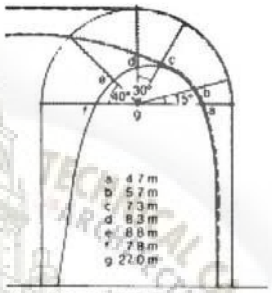
An example of the ideal depth of yard for articulated trucks with overall lengths of 18m is shown in ①. Calculations based on experience show that under these conditions a length of 35m is required for access. Even the longest articulated truck can then be driven swiftly in and out. This is an important factor in controlling the turn-round of the vehicles on scheduled runs. If the above-mentioned conditions cannot be met, the saw-toothed bay layout, with an angle of 10°–15° offers a practical solution.

See also ③, ⑤ + ⑥.

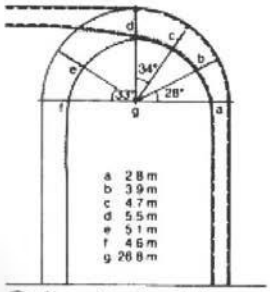
The largest turning radius for an articulated truck is about 12.00m.

The safe distance to be allowed between two adjacent trucks is a minimum of:

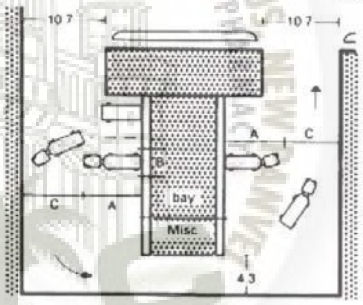
- 1.50m with the use of a loading dock;
- 3.00m with the use of loading doors.



⑧ **Normal turning circle dimensions for a 15m long articulated truck**

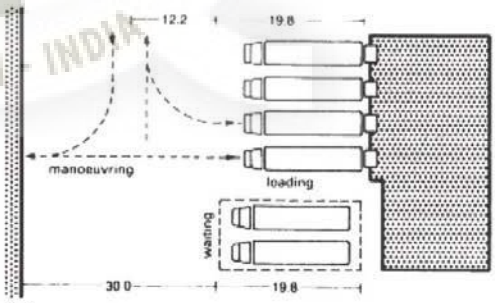


⑨ **Normal turning circle dimensions for a truck with a rigid chassis and long wheelbase**

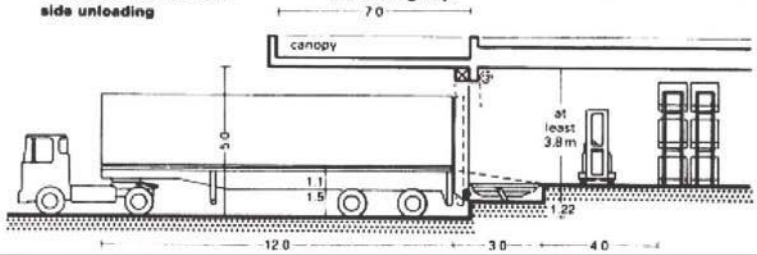


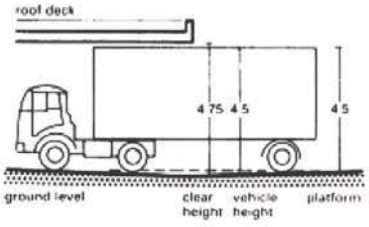
A articulated truck	B unloading position	C manoeuvring area
10.7	3.0	14.0
	3.7	13.1
	4.3	11.9
12.2	3.0	14.6
	3.7	13.4
	4.3	12.8
13.7	3.0	17.4
	3.7	14.9
	4.3	14.6

⑩ **Loading and unloading in a courtyard**



⑪ **Traffic driving clockwise on the right-hand side of the road**



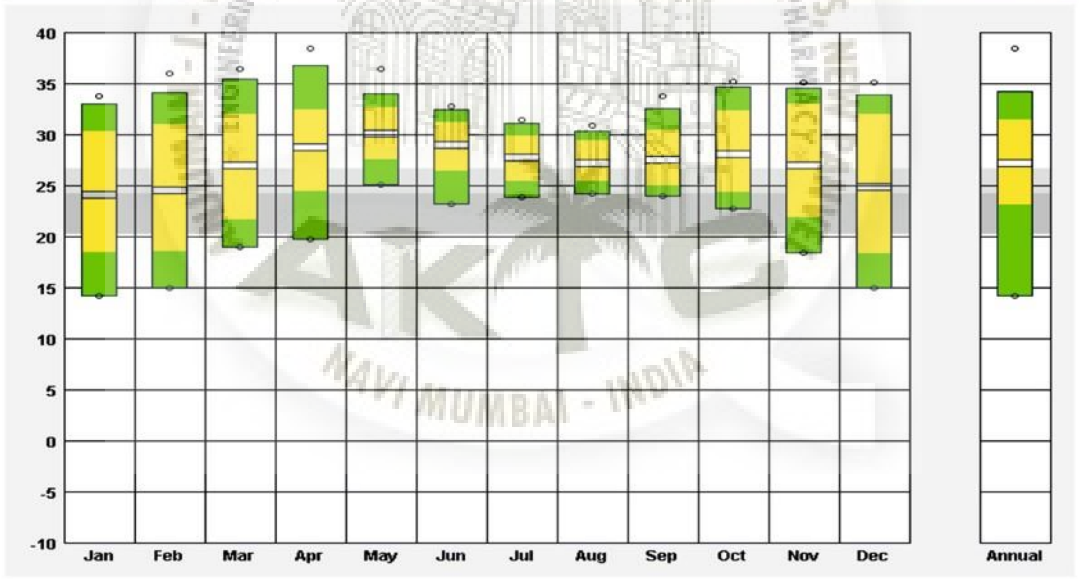


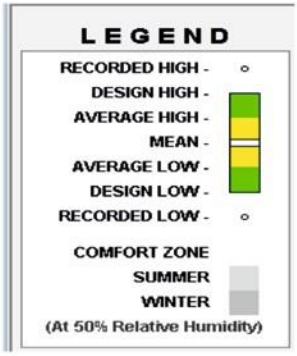
Climatic data of vashi (navi mumbai):

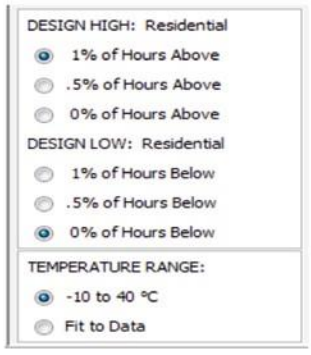
Navi Mumbai temperature varies from 22°C to 36°C. In winter temperature is between 17°C to 20°C while summer temperature ranges from 36°C to 41°C. Out of total rainfall, 80% rainfall is experienced during June to October. Average annual rainfall is 2000-2500 mm and humidity is 61-86 %.

TEMPERATURE RANGE OF VASHI

	January	February	March	April	May	June	July	August	September	October	November	December
Avg. Temperature (°C)	23.4	24.1	26.5	28.6	30.1	29.1	27.4	27.1	27.1	28	26.7	24.8
Min. Temperature (°C)	18.1	18.8	21.7	24.3	26.5	26.1	25.1	24.6	24.4	23.9	21.5	19.1
Max. Temperature (°C)	28.8	29.5	31.4	33	33.7	32.2	29.8	29.7	29.9	32.2	32	30.6
Avg. Temperature (°F)	74.1	75.4	79.7	83.5	86.2	84.4	81.3	80.8	80.8	82.4	80.1	76.6
Min. Temperature (°F)	64.6	65.8	71.1	75.7	79.7	79.0	77.2	76.3	75.9	75.0	70.7	66.4
Max. Temperature (°F)	83.8	85.1	88.5	91.4	92.7	90.0	85.6	85.5	85.8	90.0	89.6	87.1
Precipitation / Rainfall (mm)	0	0	0	0	12	566	1042	700	383	83	6	1







Yearly sun graph of vashi:

Sun Graph in summer at Vashi:

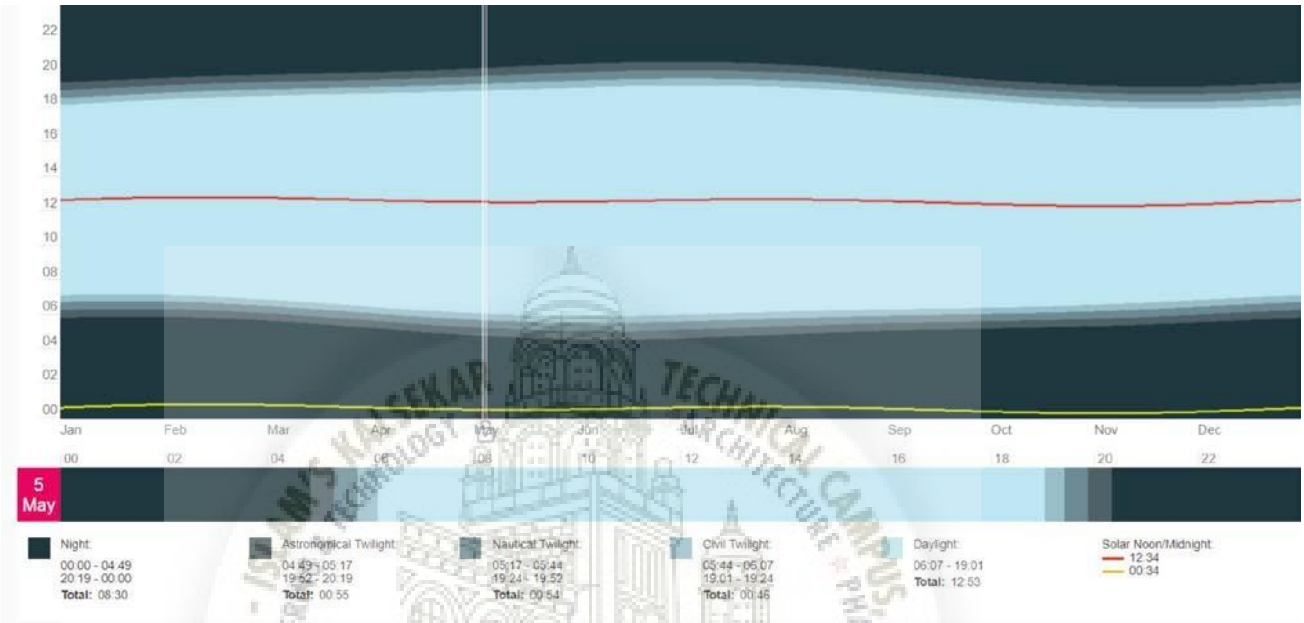


Figure 30: **SUN GRAPH IN SUMMER**

Sun Graph in Rainy Season at Vashi:

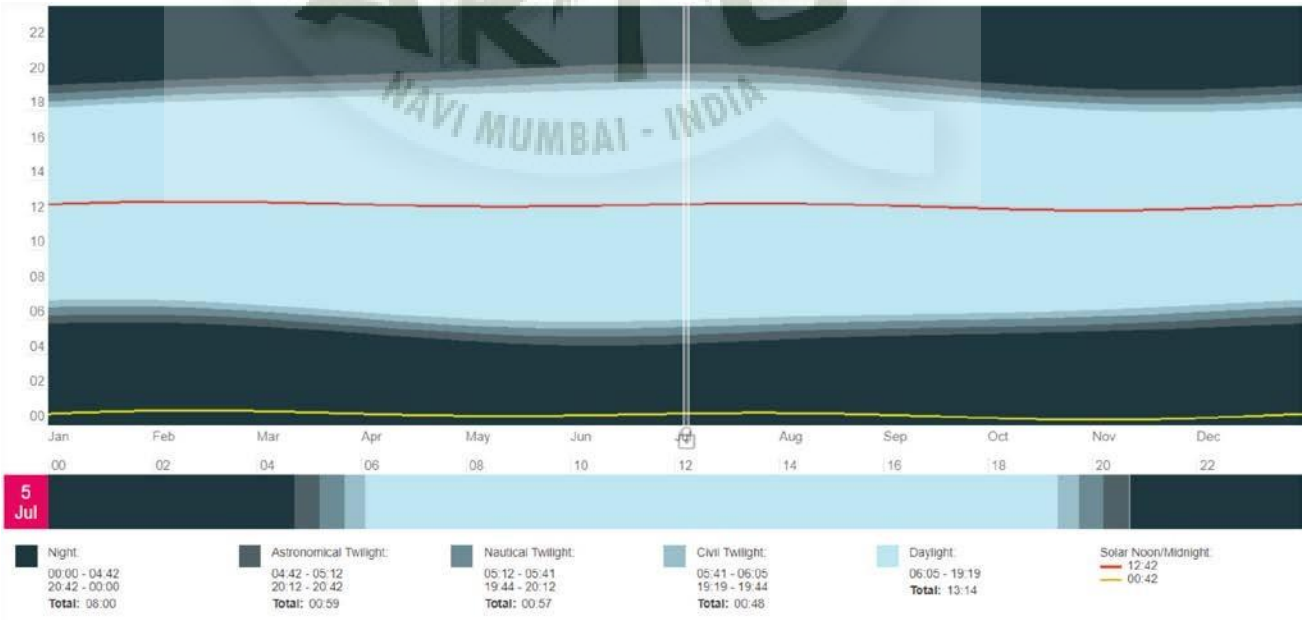


Figure 31: SUN GRAPH IN RAINY SEASON

Sun Graph in winter at Vashi:

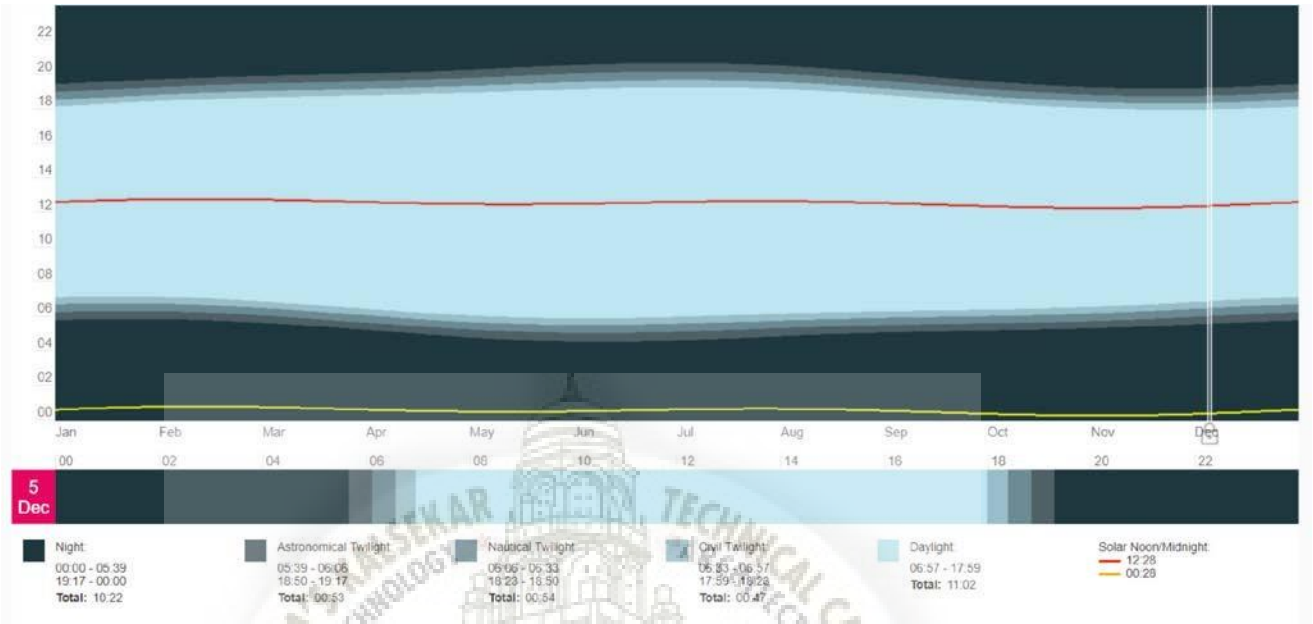
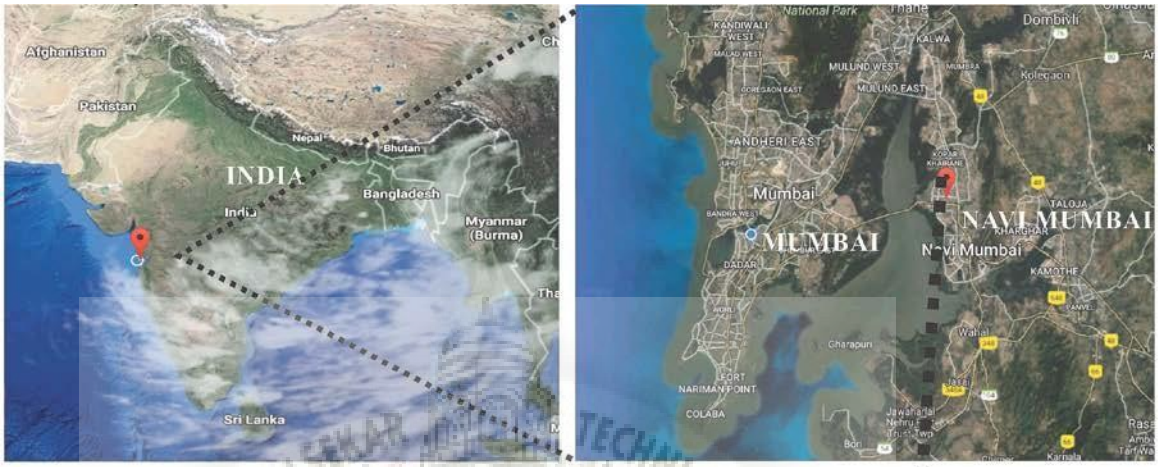


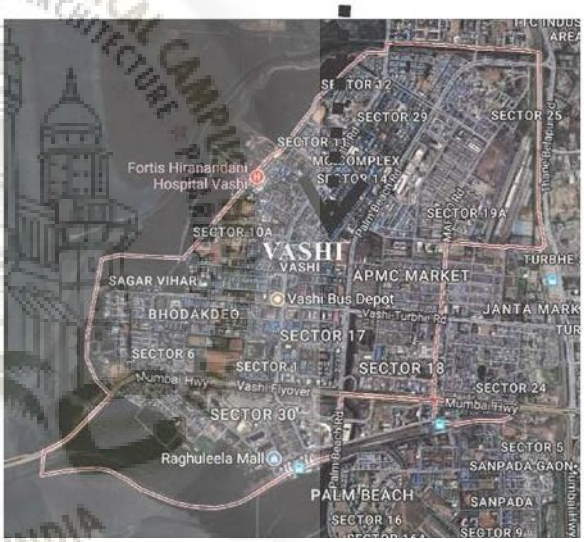
Figure 32: **SUN GRAPH IN WINTER**

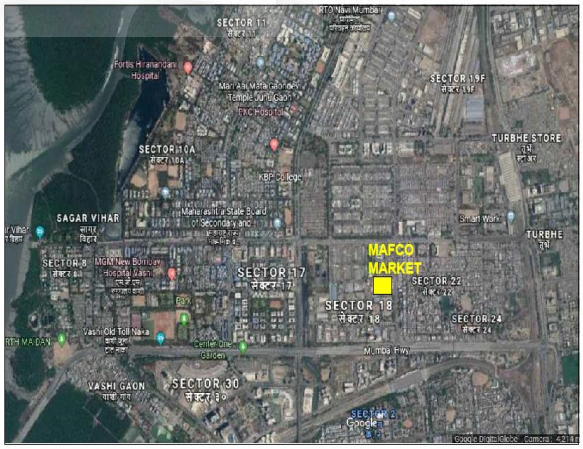
7. Site analysis:



SITE JUSTIFICATION:

- The centralised location of site.
- Nearness to main Mumbai-Pune highway.
- Well connected with vashi & sanpada railway stations.
- Vashi being a highly residential area justifies the proposal its being next to residential neighbourhoods.
- Nearness to APMC market.





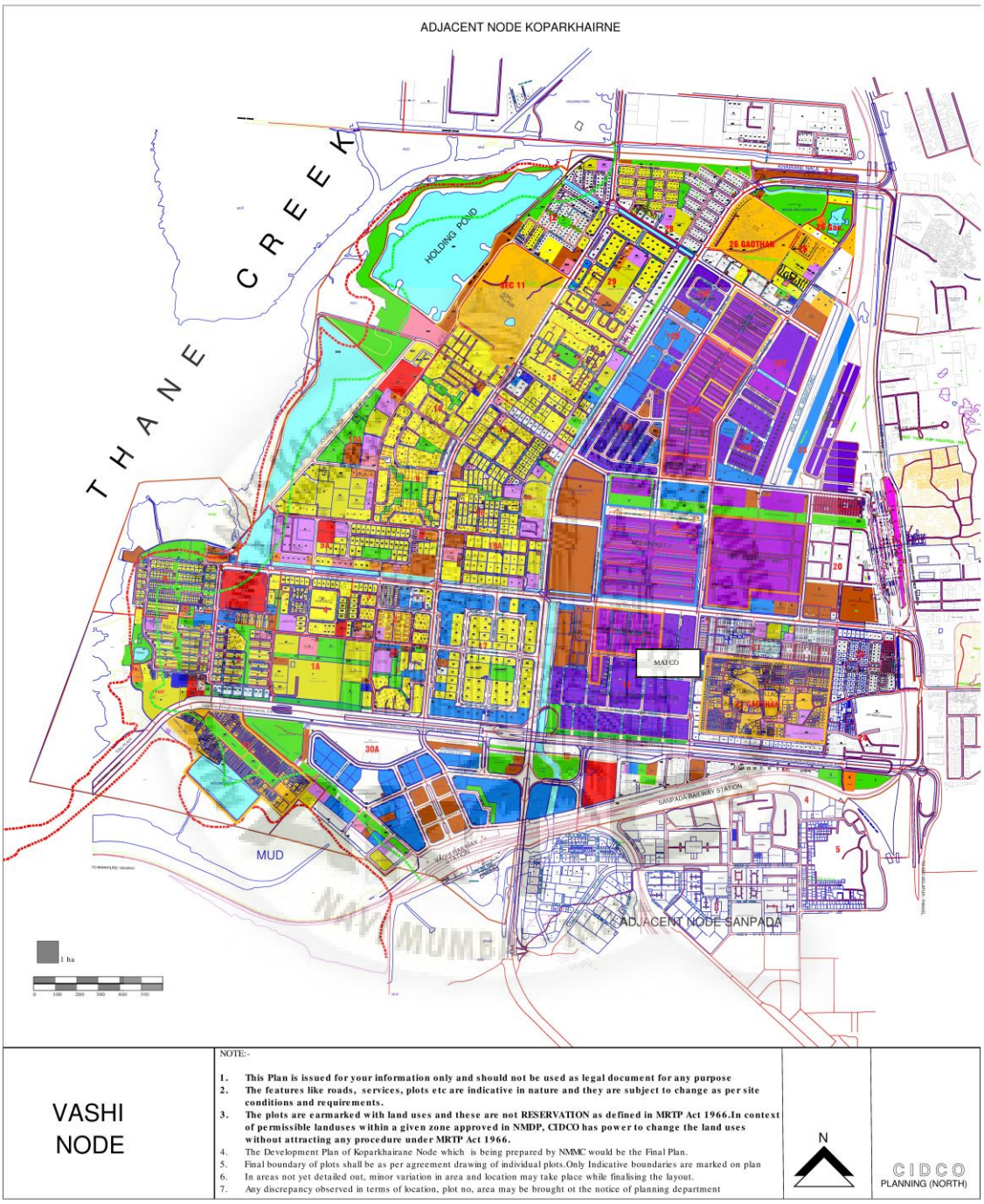
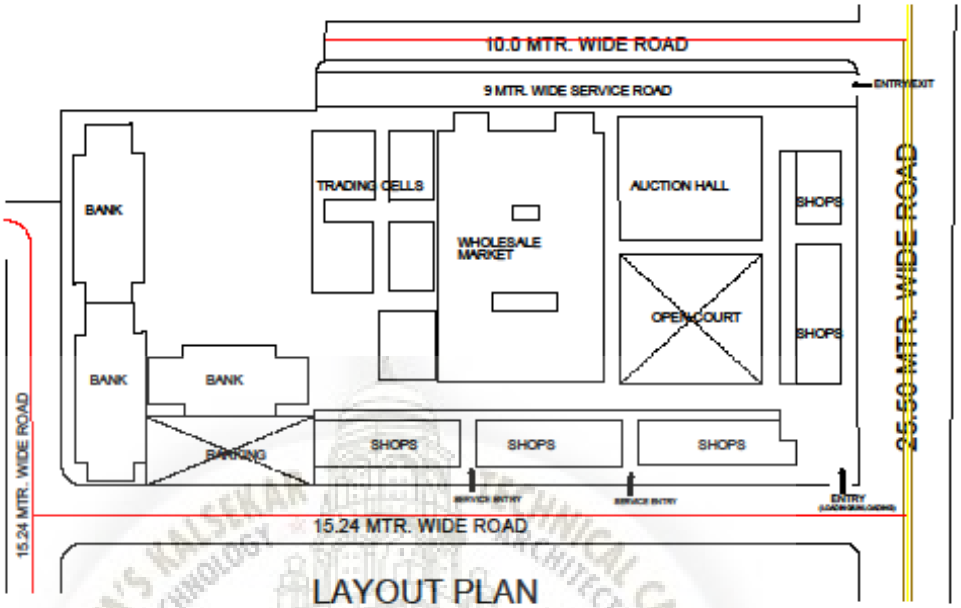


Figure 33: LOCATION OF MAFCO ACCORDING TO DEVELOPMENT PLAN OF VASHI.

LOCATION OF MAFCO ACCORDING TO DEVELOPMENT PLAN OF VASHI.



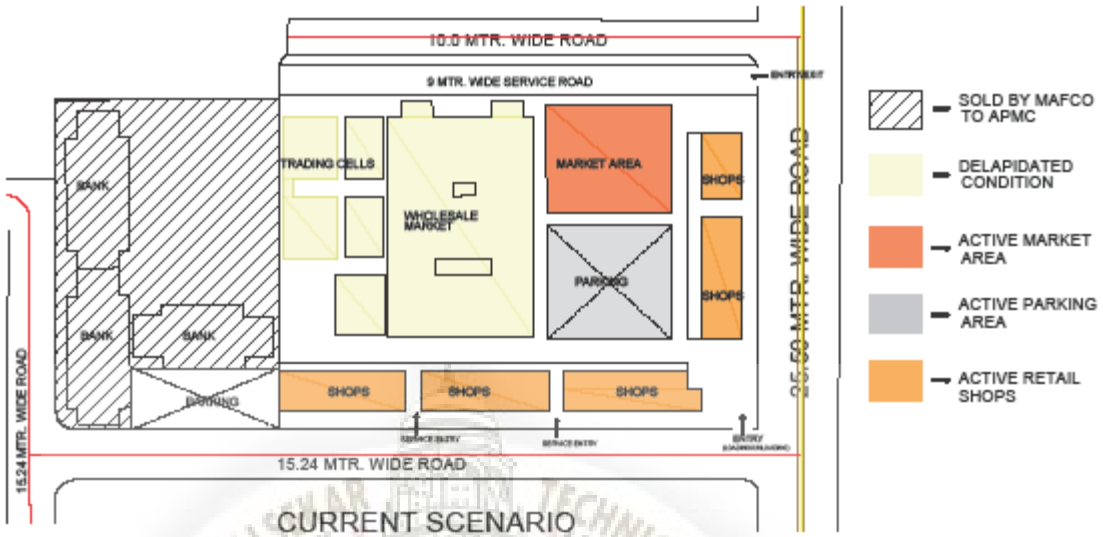
SITE LOCATION:

The site of MAFCO market which is to be redeveloped is located in vashi sector no 18, navi Mumbai, Maharashtra.

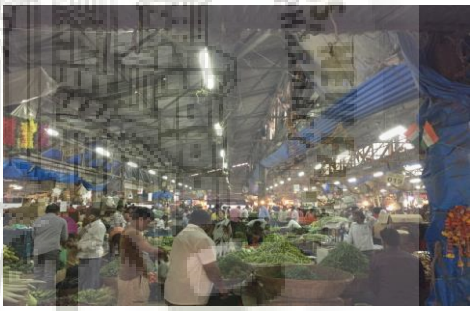
SITE AREA:

The site of MAFCO market comprises of 11 hecters (19027 sq.mt. approx.) of land at the the time of construction in 1972. Now the site comprises of 15000 sq.mt. as the remaining plot is sold to APMC market.

CURRENT SCENARIO OF SITE:



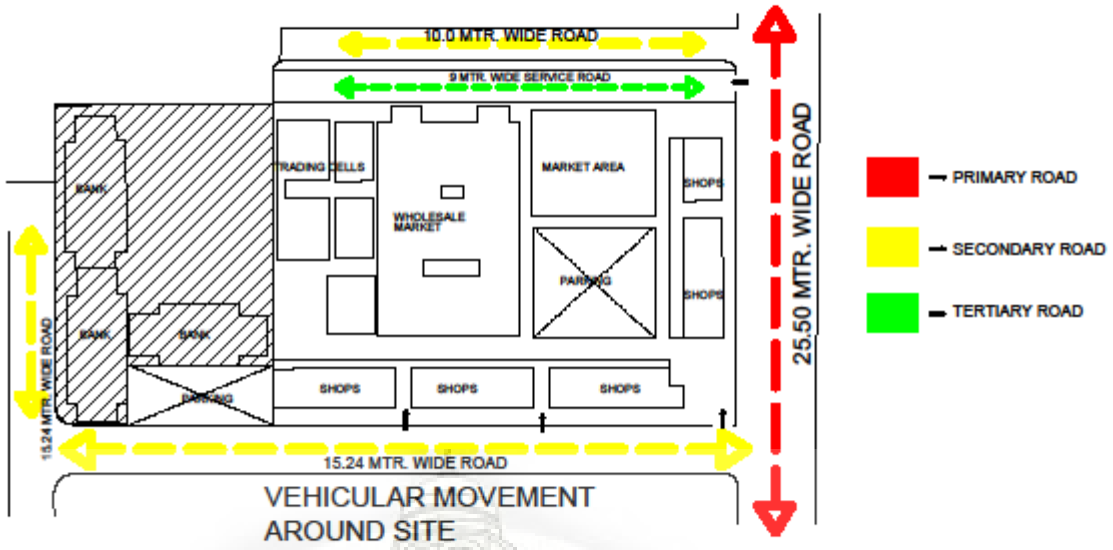
Main structure is in dilapidated condition



present scenario of market area

Present status of open court

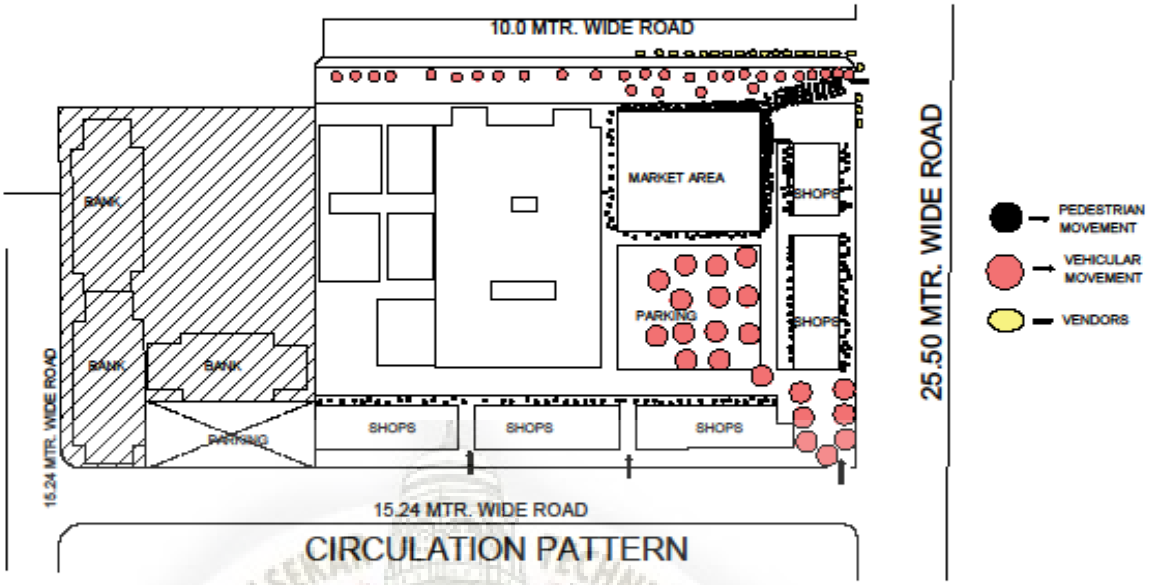
retail shops at roadside



- The site is abutting roads on three sides, one is 25.5M wide other road is 15.24M wide and 10M wide.
- .primary road connects the site to Mumbai-pune highway and vashi railway station.
- Major heavy vehicular circulation is on 15.24M wide road from 4pm. To 9pm, the rest of the time, all the trucks are parked alongside of the road.
- This road is used for heavy vehicles for loading and unloading of goods.

Primary road connecting to Mumbai-pune highway

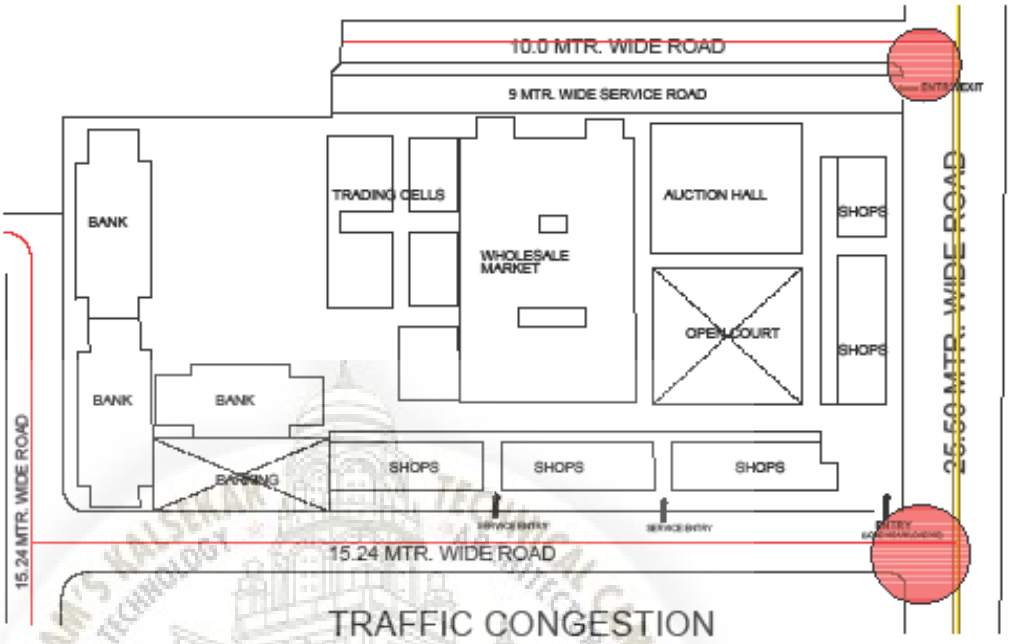
heavy vehicles circulation



CIRCULATION PATTERN

Vehicular and pedestrian entry are same which creates congestion in circulation of market.

Enchroachment of vendors along site boundary, due to improper functioning of market.



TRAFFIC CONGESTION

Due to the service vehicles directly exits to main junction,

it creates traffic congestions at nodes.

Due to congestion of space , no proper storage space which overflows the vendors selling area. Hence narrowing pedestrian movements around the galas.

8. Space programme:

SR. NO.	SPACE	NOS.	SUB-SPACE	TYPE OF SPACE	QUALITY OF SPACE	CAPACITY (USERS)	AREA (SQ. M) (AREA PER SHOP X NOS)
1	VEGETABLE GALA	120	WORK STATION	PUBLIC	SEMI OPEN	25/GALA	8X120=960
2	FRUIT GALA	80	WORK STATION	PUBLIC	SEMI OPEN	25/GALA	8X80=640
3	MUTTON GALA	10	WORK STATION	PUBLIC	SEMI OPEN	10-15	8X10=80
4	CHICKEN GALA	10	WORK STATION	PUBLIC	SEMI OPEN	10-15	8X10=80
5	EGGS GALA	5	WORK STATION	PUBLIC	SEMI OPEN	25-30	8X5=40
6	DRY FISH	2	WORK STATION	PUBLIC	SEMI OPEN	10-15	8X2=16
7	GENERAL STORE,GROCERY	10	WORK STATION	PUBLIC	CLOSED	15-20	12X10=120
8	CLOTHING & FASHION SECTION	10	WORK STATION	PUBLIC	CLOSED	20-40	15X10=150
9	ELECTRICITY GOODS & HARDWARE	3	WORK STATION	PUBLIC	CLOSED	20-25	12X3=36

SR. NO.	SPACE	NOS.	SUB-SPACE	TYPE OF SPACE	QUALITY OF SPACE	CAPACITY (USERS)	AREA (SQ. M) (AREA PER SHOP X NOS)
10	TAILORING	2	WORK STATION	PUBLIC	CLOSED	15-20	12X2=24
11	CANTEEN	1	DINING	PUBLIC	SEMI OPEN	80-90	10X10=100
12	TEA/SNACKS	2	DINING	PUBLIC	CLOSED	30-40	18X2=36
13	PAN SHOP	1	SMOKING ZONE	PUBLIC	SEMI OPEN	60-80	6X1=6
14	ADMIN		WORK STATION	PRIVATE	CLOSED		100 SQ.MTS
15	TOILET	2		PUBLIC	CLOSED	50-60	30X2=60

Table 14: SPACE PROGRAMME

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