REORGANIZING THE MARKET SPACE OF VASHI A.P.M.C

By

SAYED AYAZ ALI

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CERTIFICATE

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Name of the Student: SAYED AYAZ ALI

Roll No: 13 ARC 29

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INDEX

ABSTRACT

Reorganizing the market space of A.P.M.C, project that will consolidate facilities **for selling and distribution of food for farmers** "this Food Port" will transform community hub that shapes a "**new model between consumer and producer**."

The diversity of program will reflect the full food chain **of perishable goods at A.P.M.C**, as well as a new foods cape of public spaces and plazas where **producers and consumers meet**, the terminal market for perishable goods will act as a catalyst to activate the surrounding neighbourhood, it will also **revitalise the railway yard of Turbhe**, exemplifying one of the complex **urban relationships between architecture and food.**

Food defines us who we are and where we come from. Historically, the development of cities has been **inextricably connected to its production**, supply and distribution. Vashi A.P.M.C. is the biggest **market dealing in large quantities of different fruits and vegetables**, attracting produce from all important production belts, this market also caters to the needs of **Thane**, **Kalyan** and **Bhiwandi** apart from **Mumbai** and **Navi Mumbai**.

The human population has become increasingly removed from sites of agricultural production and less aware of how their own food is made, to regenerate this awareness the direct relationship between producer and consumer which has been now separated by an ever-expanding line **of middle-man entities including distributors**, **processors and retailers**. This food movement demonstrates the individual and commercial consumer demand to change this relationship, but the scale of most local farms and their distribution networks makes it difficult for suppliers to meet growing demands. **A.P.M.C have the potential to alleviate this bottleneck of inefficiency by consolidating supplies into shared facilities for farmers and locating them strategically within cities**

3. Background Study

It all started with very famous slogan of Indian socialism which is ‘Roti, kapda aur makaan’. This 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

3.1 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.

3.2 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,

- 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.

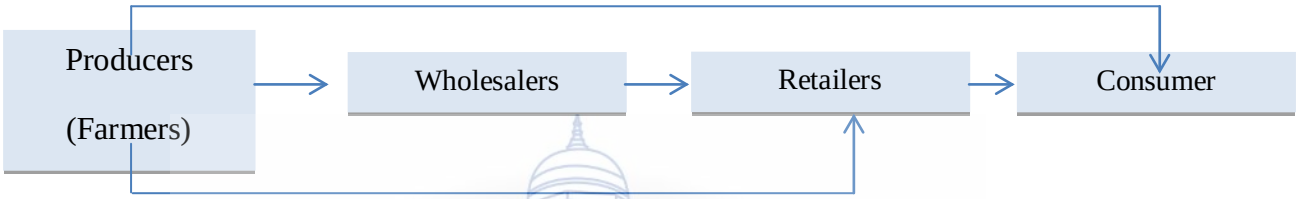
3.3 On the basis of extent of public intervention:

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.

3.4 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. 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.

Wholesale markets are located at a focal point for transport facilities, close to retailing areas. 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).

Characteristics of Wholesale Market:

Markets are huge with respect to types of products sold, transportation of produce quality and quantity are standardized.

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.
- Facilities for storage are not used or sometimes not available.

There is need of improvised working conditions for both producers and consumers.

Physical Changes required for 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 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.

The large supply chain of the middleman is created as the small, marginal farmers are not able to sell their produce directly to the consumers due to long distance.

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. The produces and the consumers get poor deal due to middlemen controlling the market.

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 farmers, promotion of auction system of the marketing system, increasing the number of buyers and sellers, introducing services and facilities like cold storage, go-downs.

3.5 Evolution of Market

- From Ancient Traditional Market to modern day Shopping Malls

Table 1 EVOLUTION OF MARKET

period	cause	Action	Bazaar design	Spacing type	Locating market space
Elam	1-Frequency Products 2-The beginning of urbanization 3-To acquire wealth through trade, which were developed 4-Commercial by land and sea	1. Commercial relation between the civilizations of Sumer, Mesopotamia, Egypt, Indian and Elam.	The shape-up	Commercial district of the Shush city	Commercial centres and temples in the city centre
Mad	Continuation of the Elamite civilization	The development of human societies, early urban civilization	Was in the embryonic stage.	At the beginning of the shape-up	Sharestan gates outside the scope of the Suburbs.
Achaemenian	Commercial communications of land and sea by digging the Suez Canal growing, the expansion of trade relations with the West and East.	The conquest of human societies, early urban civilization	The main Bazaar share in Iran's cities	According to the architectural characteristics of this period the Bazaar structure is Roofing-flat beams	Within the city and the street range
Seleucids	Commercial communications	Inside the city, making the city the grid, the creation of a field at the intersection of two streets perpendicular turbine	The intersection of the street and the main square of city	Continuation of the Achaemenid period	Within the city and the street range
Parthian	The presence and the role of the Government in the industry and all-encompassing commercial and international exchanges.	Expand the Bazaar in the vicinity of the main way.	The Bazaar element in the current sense found the body.	Genesis street perpendicular to each other. As the Bazaar became the beating heart of the city and neighbourhoods are formed in their path.	Establishment of a Bazaar in the city and in the vicinity of the main way.

period	**cause**	**Action**	**Bazaar design**	**Spacing type**	**Locating market space**
Sasanian	The security of communication routes, the emergence of sustainable housing development centres such as: industry, business, shop, caravan stay on the side of the city gate.	Urban boom, the growth of economic relation and fancy goods consumption	The establishment of shops for each specialty craft and craft in a subclass in the hearts of Sharstaan	The Bazaar as organization element flux neighborhoods appeared outside.	Body Bazaar around the gates of the city and along the entry routes into the outer flow.
Early Islamic market	Development of commercial and industrial space and an increase in social communications, the development of caravan routes and caravanserais.	Bazaar and economic main city centres of production of goods and storage of monetary exchange	The trade part of the original order or in one of the minor orders the supply of any goods in a certain place.	Construction of the permanent Bazaara made late in the spaces the first century Ah.	Establishment of a Bazaar in the city and in the vicinity of the main way.
Safavid	Security created in the Safavid Iran's foreign relations and development.	New order next to the old order	Develop relationships with other countries and a boom extension product-the main market in the city.	Creation the planned Bazaar of the urban thought-Increasing the number of caravansaries next to Bazaar	Establishment of a Bazaar in the city and in the vicinity of main roads and this trend has continued until now.
Zandieh	Similar to the Safavid period.	Similar to the Safavid period.	Similar to the Safavid period.	Construction activity and construction of the vakil Bazaar and many Caravanserai in Shiraz	Similar to the Safavid period. This trend continues.
Qajar	Bio of kings towards manifestations of urban planning in the West and continuing improvement in the next era, still continues.	Increase of urban population and the construction of new towns and streets in the old town and within tissue was dispersed order in the city's gay.	Street of Istanbul as the site bought and sold foreign goods and tourism,The entries of certain goods in Iranian Bazaars weaken Iranian goods.	Construction Bazaars, construction of shops and commercial passages designed in the streets in the city.	Establishment of a Bazaar in the city and in the vicinity of the main way.

period	**cause**	**Action**	**Bazaar design**	**Spacing type**	**Locating market space**
Pahlavi	The emergence of political relations with the Government of the Pahlavi period, Bazaar and use the street and need to move cars in the city	Construction of commercial centers and shops on the two sides of the streets. The rise of commercial goods at the level of construction in the Bazaars due to the political reaction street passages with the Pahlavi period	Business development leading to the passage.	New office space, such as banks, offices, institution-public and private, and shops such as row in the street wall, Construction passages in the Laleh Zar and Republic street and around the Baharestan square is emerged.	The establishment of the market and shops in the city and in the vicinity of the road construction in the city.
The period of the Islamic revolution and after it	The development of a comprehensive industry find, technology, urban development, trade, relation with other countries, become specialized in the supply of products and new products in specialized commodity supply centres	As a results of population growth and urban development figures large in the metropolis and to find the construction of streets, highways,	Attention to the macro-economic flow of capital into commercial complexes and passages, along with the emergence of commercial building massive highways	Non-construction of Islamic markets, construction of the row in the city shops and the main ways of constricting highways, and shopping malls, recreational and commercial passages, virtual shopping malls.	At the level of the city streets and highways, Virtual shopping centres.

3.6 PRESENT STATUS OF AGRICULTURAL MARKETING

Government organized marketing of agriculture in the country through the network of regulated markets established under the provisions of the Agricultural Produce Market Act enacted by the states and union territories. As 7177 markets covered under regulation on 31/3/2001. In addition there are 27924 rural periodical markets or hats. About 15 % of these in markets have been brought under the ambit of the regulation.

- The regulated markets have helped in mitigating the market handicaps of producer's sellers. It had also provided physical facilities and institutional environment to the wholesalers' commission agents, Traders and other functionaries for conducting activities.
- It was envisaged that these regulated markets will provide facilities and services which would attract the farmers and buyers creating competitive trade environment thereby offering best of prices to the producer- sellers.
- Some studies of regulated markets show that they have achieved limited success in providing need based services and facilities conducive to achieving greater marketing efficiency. Most of these markets lack requisite facilities for handling the produce arriving in the yard. General in rural markets and tribal hats in particular remained out of the ambit of the development.
- Over a period of time these markets have acquired the status of institution with control and restrictions providing no help in direct marketing organised marketing organised retailing smooth supply of raw material to agro-processing units competitive trading information exchange adoption of innovative marketing technologies and system etc. as was envisaged under the provision of the Act (Chapter on conduct of business powers and duties of the market committee). Monopolistic tendencies and practices have prevented development of free and competitive trade in primary markets future markets (or secondary markets) use of new tools and techniques in pre harvest management and post-harvest management in handling exports agro based industries ware housing etc. Some prominent activities like grading standardization scientific storage linked with finance search for suitable markets for excess of marketable surplus education of farmers in pre and post-harvest management and facilities in the markets have become secondary activities. Marketing development funds have been siphoned to public ledger account by the state authorities adversely effecting modernization and infrastructure development vital for operational efficiency.
- The importance of liberalizing agricultural markets is recognized by the Governments worldwide. In South Africa Agricultural Marketing is changed from controlled marketing to a free

system. In Holland the grower's co-operatives are acquiring new companies a specialized in commodity export and Import to achieve high degree of professionalism in marketing.

- The ever increasing production spread of latest technologies which is changing the socio economic environment increasing demand for downsizing the distribution chain reducing the marketing margins between the producers and the ultimate consumers challenges emerging out of globalization and liberalization in the post WTO period required a vibrant dynamic and assimilative marketing structure and system.

3.7 Details of shifting of wholesale trade of agriculture commodities from greater Mumbai to Navi Mumbai

Table 2 SHIFTING OF MARKET FROM MUMBAI TO NAVI MUMBAI.

Sr. No.	Name of the market	Year of shifting	Market area in hectare	No. of galas	No. of office blocks	Project cost in crore
1	Onion and potato market (Dadar market)1981	1981	7.92	238	-	4.06
2	Spices and condiments market	1991	660	272	272	28.32
3	Food grain market	1993	16.50	412	356	24.19
4	Fruit & vegetable market (Crawford market & Dadar)	1996	17.19	1965	364	117.00

3.8 What is APMC?

Agricultural Produce Market Committee (APMC) is a statutory market committee which is constituted by the State Government in respect of trade in certain notified agricultural or livestock or horticultural products, under the Agricultural Produce Market Committee Act issued by that state government.

3.8.1 APMCs are intended to be responsible for:

- Providing **market-led extension services to farmers**,
- Promoting agricultural processing including activities for value addition in agricultural produce,
- Ensuring transparency which is needed in pricing system and transactions taking place in market area;
- Ensuring payment for agricultural produce sold by farmers on the same day,
- Publicizing data on arrivals and rates of agricultural produce brought into the market area for sale,
- **Setup and promote public private partnership** in the management of agricultural markets
- There are about 4843 sub-market yards regulated and 2477 principal regulated markets based on geography (the apmcs) regulated by the respective apmcs in India.

The typical amenities available in or around the APMCs are: auction halls, weigh bridges, godowns, **shops for retailers**, canteens, roads, lights, drinking water, police station, post-office, bore-wells, warehouse, **farmers amenity centre**, tanks, Water Treatment plant, **soil-testing Laboratory**, toilet blocks, etc.

Legal Background of APMCs

Under Constitution of India, agricultural marketing is a **state (provincial) subject**. While intra-state trades fall **under the jurisdiction of state governments**, inter-state trading comes under **Central or Federal Government** Thus; agricultural markets are established and regulated mostly under the **various State APMC Acts.**

Most of the state governments and Union Territories have since enacted legislations (Agriculture Produce Marketing Committee Act) to **achieve an efficient system of buying and selling of agricultural commodities** and to **provide for development of agricultural produce markets**. Except the States of Jammu and Kashmir, Kerala, Manipur and small Union Territories such as Dadra and Nagar Haveli,

Andaman and Nicobar Islands, Lakshadweep, etc. all other States and UTs in the country have enacted such State Marketing Legislations. The purpose of these Acts is basically the same i.e. regulation of trading practices, increased market efficiency through **reduction in market charges**, elimination of superfluous intermediaries and protecting the interest of producer-seller.

The whole geographical area in the State is been divided and each one is declared as a market area which is managed by the Market Committee (APMC) constituted **by the State Government**. States also constitute a Market Board which supervises these market committees. APMCs generally consist of representatives of **farmers, traders, warehousing entities, registrar of cooperative societies** etc. Market Boards generally consists of chairmen of all APMCs, representatives from the relevant Government Departments etc.

Once a particular area is declared as a market area and falls under the jurisdiction of a Market Committee**, no person or agency is allowed to freely carry on wholesale marketing activities**. APMC Acts provide that first sale in the notified agricultural commodities produced in the region such as **cereals, pulses, edible oilseed, fruits and vegetables and even goat, chicken, sheep, fish, sugar** etc., can only be conducted under the aegis of the APMC, through its licensed commission agents, and subject to payment of various taxes and fee. The producers of agricultural products are thus forced to first sale in these markets.

3.8.2The main differences in Acts of different states/UTs are been noted in the following areas:-

Market Committee – There are differences in no. of market committees and number of members therein, the appointment of committee members etc.

Commodity coverage – A few states cover all the commodities while others provide the list.

Agricultural Marketing Boards – variations in powers exercised by the Boards in different states i.e. their role changes from advisory to binding.

Demarcation of flow and functions between Director Marketing and Board – Administrative structure for the implementation structure of the Act vary from state to state in terms of functions assigned

3.8.3 Functioning Of Apmcs: Issues Involved

The APMC system was introduced to prevent distress sale by farmers to their creditors, to protect farmers from the exploitation of traders and intermediaries and to ensure better prices and timely payment for their produce through the auctions in the APMC area. However, APMC Acts confine the farmer from entering into direct contract with any processor/ manufacturer/ bulk processor as the produce is required to be bash through these regulated markets. Over a period of time, these markets have gained the status of restrictive and Monopolistic markets, which **is harming the farmers rather than helping them to realise remunerative prices**.

The APMC Act conduct APMC as an arm of the state and the market fee as the tax levied by the state government, rather than as a fee charged for providing services, which acts as a major blockage in creating a national common market. Various taxes, fees/charges and cess are levied on the trades conducted in the markets or Mandis are also marked under the APMC Act. APMCs charge a market fee from buyers, and a licensing fee from the commissioning agents who deal between farmers and buyers. They also charge small licensing fees from a whole range of functionaries (loading agents, warehousing agents etc.). In addition, commissioning agents charge commission fees on transactions between buyers and farmers. The levies and other market charges imposed by states vary widely. Statutory levies/mandi tax, VAT etc. all add up to hefty amounts, create market distortions with cascading effects and strong entry barriers. Further, number of licences are necessary to trade in different market areas in the same State. All this has led to a highly segregated and high-cost agricultural economy, which prevents economies of scale and seamless movement of agri goods across district and State borders.

APMC operations are hidden from division as the fee collected, which are at times exorbitant, is not under State legislature's approval. Agents in an APMC may get together to form a cartel. This rises a monopsony (a market situation where there is only one buyer who then exercises control over the price at which he buys) situation. Produce is procured at manipulatively discovered price and sold at higher price, defeating the main purpose of APMCs.

Further, APMCs play dual role of regulator and Market. Consistently, their role as regulator is undermined by vested interest in lucrative trade. Generally, member and chairman are nominated/elected out of the agents operating in that market.

Exporters, processors and retail, these chain operators cannot procure directly from the producer as the produce is required to be channelized through licensed traders and regulated markets. There is, in the process, an enormous increase in the cost of marketing and because of this farmers end up getting a low price for their produce. Monopolistic practices and modalities of the state-controlled markets have prevented private investment in the sector. Thus, the monopoly of state Government regulated wholesale markets has prevented development of a competitive marketing system on a pan-India basis, providing no help to farmers in direct marketing, managing retailing, a smooth raw material supply to agro-processing industries and adoption of innovative marketing system and technologies

3.8.4. Model APMC Act of 2003

An efficient agricultural marketing is essential for the development of the agriculture sector as it provides outlets and incentives for increased production and contributes to the commercialization of subsistence farmers. Worldwide Governments have recognized the importance of liberalized agriculture markets. Keeping, this in view, Ministry of Agriculture formulated a model law on agricultural marketing - State Agricultural Produce Marketing (Development and Regulation) Act, 2003 and the state governments has been requested to suitably amend their respective APMC Acts for deregulation of the marketing system in India, in marketing infrastructure to promote investment, thereby motivating the corporate sector to undertake direct marketing and to facilitate a national market.

The Model APMC Act, 2003 is provided for the freedom of farmers by which they can sell their produce. The farmers could sell their produce directly to the contract-sponsors or in the market set up by private individuals, consumers or producers. The Model Act also boosted the competitiveness of the market of agricultural produce by allowing common registration of market intermediaries.

3.8.5.Salient Features of the Model APMC Act

The Preamble of the Act is to provide for **improvement of efficient marketing system**, **promotion of agri-processing and agricultural exports and to lay down procedures and** systems for putting in place an **effective infrastructure for the marketing of agricultural produce**.

Legal persons, farmers and local authorities are permitted to apply for the establishment of new markets for agricultural produce in any area. Under the existing law, **markets are setup at the efforts of State Governments alone**. Consequently, in a market area, more than one market can be established by any persons, farmers and consumers.

There will be no compulsion on the growers to sell their produce through existing markets administered by the Agricultural Produce Market Committee (APMC). However, **agriculturist who does not bring his produce to the market area for sale will not be allowed for election to the APMC**

Separate terms are made for notification of 'Special Markets' or 'Special Commodities Markets' in any market area for **specified agricultural commodities to be run in addition to existing markets.**

A new Chapter on **'Contract Farming'** added to provide for compulsory registration of all contract farming sponsors, resolution of disputes, recording of contract farming agreements, if any, arising out of such agreement, absolution from levy of market fee on produce covered by contract farming agreements and **to provide for brokerage to producers'** title/ possession over his land from any claim arising out of the agreement.

Arrangements are made for **direct sale of farm produce to contract farming** sponsor from farmers' field without the necessity of looping it through any notified markets.

Arrangements are made for imposition of single point levy of market fee on the sale of notified agricultural products in any market area and discretion provided to the State Government to fix graded levy of market fee on different types of sales.

Licensing of any market functionaries is dispensed with and a time bound procedure for registration is laid down. Registration for market functionaries provided to operate in one or more than one market areas.

Commission agency in any loop relating to notified agricultural produce involving an agriculturist is prohibited and there will be no deduction towards commission from the sale proceeds payable to agricultural seller.

Arrangement is made for the purchase of agricultural produce through private yards or directly from agriculturists in much more than one market area

Provision made to create a direct contact of producer and consumers for the establishment of consumers'/ farmers' market to facilitate direct sale of agricultural produce to consumers.

Provision is made for resolving of disputes, if any, arising between private market/ consumer market and Market Committee.

State Governments conferred power to exempt any agricultural produce brought for sale in market area, from payment of market fee.

Market Committees allows to use its funds among others to create facilities like **grading, standardization and quality certification; to create updated infrastructure on its own or through public-private partnership for post harvest handling of agricultural produce and advancement of modern marketing system**

The State Agricultural Marketing Board made specifically responsible for:

setting up of a segregate marketing extension block in the Board to provide market-led extension services to farmers;

Funds of the State Agricultural Marketing Board permitted to be handled for promoting either on its own or through public private partnership, for the following:

market survey, grading, , research, standardization, quality certification of the products, etc.;

Development of quality testing and communication infrastructure.

Development of cyber, media and long distance infrastructure relevant to marketing of agricultural and allied commodities.

As per the final report submitted in January 2013by the Committee of State Ministers, in-charge of Agriculture Marketing to Promote Reforms, only 16 States have amended their Act and only 6 states have notified the amended Rules. **Some States in India which do not have APMC Act** and **some have partially amended their Act**. For a single licensing system Karnataka Model provides, offers automated auction and post auction facilities. It also provides storage and warehouse-based sale of produce; facilitate commodity funding, prices dissemination by leveraging technology and private sector investment in marketing infrastructure.

The Model APMC Act does not go far enough to develop a national or even state level common market for agriculture commodities. The Act holds the mandatory requirement of **the buyers having to pay APMC charges even when the produce is sold directly outside the APMC area.** Though the Model Act provides for **setting up of markets by private sector**, this is not adequate to create competition even within the state since the owner will have to collect fees/taxes on behalf of the APMC in addition to their own charges.

3.9. Total number of APMC's:

Table 3 TOTAL NUMBER OF APMC

Sr. No.	Name of the state	Wholesale	Rural primary	total	Principal	Submarket Yards	Total
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1	Andhra Pradesh	331	574	905	331	574	905
2	Arunachal Pradesh	22	63	85	16	115	131
3	Assam	405	735	1140	20	206	226
4	Bihar	325	1469	1794	APMR ACT REPEALED		
5	Jharkhand	201	603	804	28	173	201
6	Goa	4	24	28	1	7	8
7	Gujarat	205	129	334	199	201	400
8	Haryana	284	194	478	106	178	284
9	Himachal Pradesh	42	35	77	10	40	50
10	Jammu and Kashmir	16	8	24	APMR ACT NOT YET IMPLEMENTED		
11	Karnataka	507	730	1237	153	354	507
12	Kerala	348	1014	1362	APMR ACT NOT ENACED		
13	Madhya Pradesh	246	1321	1567	246	275	521
14	Chhattisgarh	2	1132	1134	73	112	185
15	Maharashtra	881	3500	4381	300	581	881
16	Manipur	24	94	118	APMR ACT NOT ENACTED		
17	Meghalaya	35	88	123	2	0	2
18	Mizoram	10	105	115	APMR ACT NOT IMPLEMENTED		
19	Nagaland	19	174	193	18	0	18
20	Odisha	398	1150	1548	45	269	314
21	Punjab	425	1346	1771	149	276	425
22	Rajasthan	434	312	746	129	305	434
23	Sikkim	7	12	19	1	0	1
24	Tamil nadu	300	677	977	277	15	292
25	Tripura	84	554	638	21	0	21
26	Uttar Pradesh	584	3464	4048	249	346	613
27	Uttarakhand	36	30	66	25	33	58
28	West Bengal	279	2925	3204	44	641	685
29	A and N islands	0	28	28	NIL	NIL	NIL
30	Chandigarh	1	0	1	1	0	1
31	D and H haveli	0	8	8	APMR ACT NOT TENACTED		
32	Daman and diu	0	2	2	APMR ACT NOT ENACTED		
33	Delhi	30	0	30	8	10	18
34	Lakshadweep	0	0	0	APMR ACT NOT ENACTED		
35	puducherry	4	5	9	4	5	9
TOTAL		6489	22,505	28,994	2456	434	7190

3.10.COMPARATIVE ANALYSIS OF APMC ALL OVER INDIA.

Table 4 ANALYSIS OF APMC ALL OVER INDIA

Sr. No.	Name of the state	Area in sq.kms. •	Total Population •	Total Regulated markets	Area covered by each(3/5)	Requirement of market (col.3/r3)	Population served by each markets(col.4/5)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1	Andhra Pradesh	275069	84665533	905	303.94	3501	93553
2	Arunachal Pradesh	83743	1382611	131	639.26	1066	10554
3	Assam	78438	31169272	226	347.07	998	137917
4	Bihar	94163	103804637	0	0.00	1198	0
5	Jharkhand	79714	32966238	201	396.59	1015	164011
6	Goa	3702	1457723	8	462.75	47	182215
7	Gujarat	196024	60383628	400	490.06	2495	150959
8	Haryana	44212	25353081	281	157.34	563	90224
9	Himachal Pradesh	55673	6856509	54	1030.98	709	1269772
10	Jammu and Kashmir	222236	12548926	12	0.00	2828	0
11	Karnataka	191791	61130704	512	374.59	2441	11 9396
12	Kerala	38863	33387677	0	0.00	495	0
13	Madhya Pradesh	308144	72597569	536	574.90	3922	135443
14	Chhattisgarh	136034	25540196	184	739.32	1731	138805
15	Maharashtra	307713	112372972	881	349.28	3916	127552
16	Manipur	22327	2721756	0	0.00	284	0
17	Meghalaya	22429	2964007	2	11214.50	285	1482004
18	Mizoram	21081	1091014	0	0.00	268	0
19	Nagaland	16579	1980602	18	921.06	211	110033
20	Odisha	155707	41947358	436	357.13	1982	96210
21	Punjab	50362	27704236	424	118.78	641	65340
22	Rajasthan	342240	68621012	443	772.55	4356	154901
23	Sikkim	7096	607688	1	7096.00	90	607688
24	Tamil nadu	130058	72138958	283	459.57	1655	254908
25	Tripura	10493	3671032	21	499.67	134	174811
26	Uttar Pradesh	240928	199581477	615	391.75	3066	324523
27	Uttarakhand	53484	10116752	58	922.14	681	174427
28	West Bengal	88752	91347736	457	194.21	1130	199886
29	A and N islands	8249	379944	Nil	0.00	105	0
30	Chandigarh	114	1054686	1	114.00	1	1054686
31	D and H haveli	491	342853	0	0.00	6	0
32	Daman and diu	112	242911	0	0.00	1	0
33	Delhi	1483	16753235	15	98.87	19	1116882
34	Lakshadweep	32	64429	0	0.00	0	0
35	puducherry	479	12444464	9	53.22	6	138274
Total		3288015	1.21E+09	7114	462.19	41847	170114

3.11.APMC Market in Vashi, Navi Mumbai

INTRODUCTION: The best fruits and vegetables can be found at wholesale markets. For the people of Mumbai one can go to fort and for people of Navi Mumbai, APMC Market in Vashi is the best option. Vashi is been planned as an upmarket residential as well as commercial township in the city of Navi Mumbai. It is a premier city in Navi Mumbai and was one of the first "nodes" developed by CIDCO with FSI of 1.33 APMC Market Vashi is the biggest market in Navi Mumbai for wholesale agricultural produce and is located in Sector 19 and part of Sector 18.currently FSI of APMC node has increase from 1.33 to 2.5-3. APMC is considered the largest marketing yard for agriculture produce in India with an annual business worth Rs 10,000 crore and revenue of over Rs 150 crore that is generated by levy of various cess on farmers and traders.

APMC is abridgement for Agricultural Produce Market Committee. Unlike other supermarkets in India where one has to pay retail price for all the produce, here one can get goods at a wholesale price. Which means the amount one pays is significantly less hence many people come here to do their complete shopping of perishable like fruits and vegetables for the week. The market area is very crowded in the morning as this is the time when farmers from across the state come to sell their produce. You will also find retailer, vendors and some agents who come here to buy fresh fruits and vegetables at whole sale price to be later sold at their own establishments. Trucks from selected parts of India and Maharashtra especially Nashik, Pune, Sangli and Satara come here to load and unload many fruits, vegetables and whole grains.

3.12.Fruits and Vegetables at APMC Market

The market is mainly divided into five different separate sections for different types of produce. There is a patch with vegetable market, fruit market, separate sections where sugar and jaggery are sold, an onion and potato market patch and a section for food grains. **APMC Vashi has become one of biggest agricultural market in Asia**. At APMC Market you will find the widest range of fruits some which you may not even know names of. As soon as the season of a particular fruit arrives one will be sure to find it here. Take your pick from whole varieties fruits like Mangoes, Strawberry, Apples, Sitaphal, Watermelons, Papaya, Grapes, Chikkoos and many more. The fruits here are the freshest and you won't find the same quality in a retail store as the chain of supply is long from farmers to consumer and what's more you don't pay exorbitant rates of the retail markets. So all those who really love fruits they directly buy it from here at lower price, they just come over the weekend and buy a different fruits to last for a whole week. With regular shopping at APMC one will be well on their way to a healthy lifestyle.

3.13.Vashi APMC: The trade hub that feeds Mumbai

Spread over a stretch of 122 hectares, the Mumbai Agricultural Produce Market Committee (APMC) at Vashi is entry point of all food grains and vegetables meant for the extended region of Metropolitan Mumbai but it also caters Thane , kalyan and Bhiwandi.

Every day, nearly 1,800 tonnes of vegetables unload here which enough to provide 90 grams to each of the 2.02 crore residents of Mumbai, Thane and Navi Mumbai. products came into the yard from vegetable producing areas like Nashik, Pune, Satara, Sangli and other parts of Maharashtra as well as from outside the state.

"The supply centres of vegetables change with season to season. At times, almost 80 % of the produce could be from the state. It can, however, dip to as low as 40 % at times with vegetables coming from outside the state," Avinash Patil sir, deputy secretary of the APMC, said.
These vegetables imported by farmers are then weighed and sorted accordingly in the yard according to their quality. As per rules, a committee of APMC officials, traders and farmers are supposed to grade the quality of the produce within the market complex.

Farmers complain that only a part of this lot is graded according to wholesaler, in violation of the rules. As per rules ant act of APMC, the farmer has to pay APMC a sum ranging from 0.2 % to 2 % as fee for facilitating the sale of his produce, accordingly to the use of facilities.

After separation, the stock is then sold directly or with the help of commission agents, who charge anywhere between 8 to 15 % from the farmer for helping him sells his produce. Under the existing rules, they are supposed to take only between 2 to 8 per cent.

Interestingly, under the new Model APMC Act, the central government has stated that no commission should be taken from the farmer.
In a long supply chain, in which the wholesalers who buy the produce from the farmers then ferry the produce to the retailer who then sells it to consumers. the farmer seems to come off as the worst affected. There could be a price difference of almost 50-60 per cent by the time the product reaches a consumer.

3.14.System of sale

Wholesaler-to-wholesaler

Wholesaler-to-agents

Wholesaler-to-retailer

Wholesaler-to-consumers

Methods of sale carried out by APMC market

3.14.1.Sale by sample

It is the most convenient method of sale where the produce is systematically graded. it saves the cost of transportation and inspection. However, utmost honestly in the dealing is to be followed. The producer or the consumption agent show the sample to the trader and finalizes the price. Example- during the auction of Chillies, the Buyer quotes the price for the produce by looking at the samples. This sale by sample is also practiced in food grain sector. Food grain such as wheat, rice, etc. are brought by buyers and to verify that the quality matches the sample they hit the gunny bag with Sickle and check the food grains

3.14.2.Open auction:

The farmers undertake a bidding process in which the commission agents bid over the prices of the produce being auctioned and the produce is sold by the Farmer to the highest bidder.

3.14.3.Dara sale

In this system of sale, the assemblages of grains of different quantity/quality are sold at a fixed price. The benefit is that within a short time a large number of sales can be affected .hence all the Buyer may get better quality of produce at an average price. Also, the farmer will not pay out more on HYV seeds or any such agricultural inputs which will increase the quality of the produce if the method of sale is Dara sale. example-this type of sale is practices in onion and potato market.

3.14.4.Hatta sale (under cover)

This method of sale is legally not permitted to be practice in the regulated markets. But it is learnt that Hatta or undercover sale is practiced in the fruit and vegetables market.**Codes: 1finger = 10 □, 1 tappi =1 □1 fist= 100 □for example 3 fingers and then tapping the finger 2time would communicate price of □32/kg** If prices are acceptable to both the parties, lapping hands signals the deal was done. The main reason why it is practiced is well justified by the wholesalers in the market. According to them there has been a sharp increase in the number of retail clients visiting the A.P.M.C market. It the prices offered to the wholesale buyers are negotiated via talking or discussing loudly, even the retail buyers would demand a similar price which would not be acceptable to the wholesale buyers or sellers. So, with a view of maintaining confidentiality of wholesale prices the Hatta system is often practiced in the market.

3.15.PARTICIPANTS

- Producers / seller (FARMER)
- Commission agents.
- Brokers.
- Traders.
- Wholesaler.
- Retailers.
- Mathadi and mapadi workers.
- Consumers.

3.16.DETAILS OF FRUIT AND VEGETABLE MARKET

- -Fruit market: 670galas
- -vegetable market: 320galas
- Area of a gala : 18 sq. m
- .Merchant + Mathadi and mapadi worker =6 to 8 person /gala
- Average total population 12000
- Average floating population 4000
- Average total population 16000
- Average truck arrival 1000-1500/day
- Total area 1719.5acres for fruit and vegetable market.

3.17.Existing scenario

- planning of existing markets have not been efficiency linked and quality driven
- inside the market the land use patters is faulty space allocated to marketing activities are quite enormous, while parking in circulation area either openly ignored
- The shops and godowns are not functional liability oriented and cultural friendly this result into overall mess of space in the market for handling .
- Facilities to handle the produce and adding the value to the commodity as well as extending shell- life are either in adequate.
- There is no facility of food certification, grading and scoring to export the produce , it should be first of all graded and should be certified.
- Facilities being absent in the market, thus keeping the farmers away from availing the opportunity of exporting their produce.
- Infrastructure within the market yard is not proper.

3.17.1.General problem faced by the farmers in APMC

- Insufficient space
- Transportation problem
- Law price realization
- Measurement not accurate
- lack of loading facilities/rest houses
- Lack of grading facilities
- Auction system not transparent

3.17.2.General problems faced by the traders in APMC

- Insufficient space
- No facility for dumping and repacking
- No facility for lodging for the traders
- Parking facility not available
- Cold storage not available
- No sorting and grading facility

3.18. Facilities Infrastructure Available in the Market or nearby Market

Table 5 FACILITIES IN AND AROUND APMC

Sr. No.	Facilities/Infrastructure	Number	Capacity
1.	Cold Storage	20	30,000MT
2.	Waxing/Grading Line	01	3 Ton/hour
3.	Ripening chambers	01	7 Ton
4.	Packaging unit	01	8Ton
5.	Vapour Treatment Plant	01	
6.	Rest House for farmers	01	30 no.
7.	Post Office	01	
8.	Banks	15	
9.	Independent Police Station	01	
10.	Central Facility building station	05	
11.	Weigh bridges	08	
12.	Dispensary	01	
13.	Export House	02	
14.	Sanitary Blocks	04	
15.	Passenger transport facility	-	
16.	Restaurants/Canteen	-	

3.19. The adjoining table gives an idea of where the commodities to MAPMC come from:

Table 6 WHERE THE COMMODITIES TO MAPMC COME FROM.

Lady's finger, tomatoes, cabbage, mint	**Local farm.**
Coriander, Methi, spinach, radish, Brinjal.	**Bangalore.**
Drum stick	**Gujarat.**
Peas	**Jabalpur, Indore.**
Apple	**J&k, HP, new Zealand and Australia.**
Oranges	**Nagpur.**
Pomegranates	**Solapur, Sangola taluka.**
Grapes	**Sangli and Nashik.**
Chiku	**Thane and Dahanu.**
Pineapple	**Kerala and Karnataka.**
Mango	**Karnataka, Sindhudurg and Ratnagiri.**
Lime	**Solapur district.**
Green chilly	**Andhra Pradesh and Karnataka.**
Onions and potatoes	**Shirur and paranda.**
Bananas	**Jalgaon, bhusawal and nanded.**

3.20. COMMODITY SEASONS AT APMC VASHI

Table 7 COMMODITY SEASONS AT APMC AT VASHI

Sr. no.	Name of commodity	Begin	End	Peak
1.	Banana	Round the year		
2.	Citrus lime	Aug.	Dec.	Sep., Oct., Nov.
3.	Citrus Mosambi	Feb., Sep.	Dec., Apr.	Oct., Nov., mar.
4.	Citrus orange	Feb., Sep.	May., Dec.	Mar., Apr., Nov.
5.	Grapes	Mar.	May	Mar., Apr.
6.	Guava	Nov.	May	Dec., Apr.
7.	Mango	Mar.	June	Apr., may
8.	Pomegranat e	Nov., Feb.	Jan., Apr.	Dec., mar
9.	Ber	Oct.	Jan.	Nov., Dec.
10.	Apple	Aug.	Nov.	Sep., Oct.
11.	Papaya	Round the year		
12.	Sapota	Round the year		
13.	Brinjal	Round the year		
14.	Cabbage	Dec.	Mar.	Jan., Feb.
15.	Cauliflower			
16.	Onion	Oct., mar.	Dec., may.	Nov., Apr.
17.	Potato	Feb.	May.	Mar., Apr.
18.	Tomato	Round the year		

3.21.Daily arrival of produce in quintals

Table 8 DAILY ARRIVAL OF PRODUCE IN QUINTALS

Market	Daily arrivals (in quintals)
Onion-potato	25000
Fruits	11000
Vegetables	16000
Dry-fruits& spices	27000
Food grains & pulses	40000
Total	119000

3.22. Product Handling and Wastage

In APMC, product Handling is majorly performed manually by labours. Theselaborers work on daily basis and transfer goods and commodity from one katta (shop) to another katta or from katta to trucks. On the other hand product handling during trading between AMPR and retailers or semi-wholesalers is done in 3 ways:

i) Trucks:

Trucks and Tempos are used as medium of road transportation in order to cover shorter distance and to reach the interiors of city.

ii) Railways:

Railways are also used as a medium of transportation goods to longer distances. They are comparatively cheaper when it comes to road transportation.

iii) Steamers:

Some of the commodities from APMC Market are also exported. Therefore, Steamers are used as a medium of water transportation. Daily wages of labourer's in APMC A are as follows:

Kg	Amount
30kg	5/-
50kg	8/-

3.22.1.Wastage-

Generally, in all the sectors of APMC the production of wastage is very low. However, in Fruits and Vegetables Market, wastage is up to 35% of the overall produce as these goods are perishables in nature. Hence, in order to reduce this wastage, the wholesalers sell them at a lesser amount compared to the original price.

3.22.2.Transport Facilities

For the smooth functioning of the entire market, efficient and effective transportation is a must. Transportation facilities are widely used from Village APMC/ Mills to APMC and from APMC to retailers/ Semi-wholesalers and vice-versa. Any type of obstacles during transportation can largely hamper the working in the APMC market. There are 3 modes of transportation:

1) Road transport – Trucks and Tempo's

2) Rail transport

3) Water transport – Steamers

Daily average arrivals of all Agricultural commodities are 3500 trucks per day approx.

1truck has the loading capacity of 10 tonnes (approx.). Transportation cost forms a major cost factor compared to the other cost of a commodity. Higher the transportation cost, higher will be the price of the commodity.

Trucks and Tempo's deliver the goods area wise and the cost is barred by their customer. A single transport agency receives agency receives approx 30 to 35 contracts on a daily basis. There are various associations formed in order to managed in order to manage the transportation facilities such as:-

Mathadi kamgaar pranit Association

Retail Motor Transport-

Tempo Owners Association-

Local Tempo Associated These association handle the entire day to day working of transportation. These committees also provide solution to the local transportation problems.

3.23.Factors Affecting Price

The pricing decision is dependent on a number of factors:

- **Main Market-**
  The Commission agents update the A.P.M.C merchants about the prevalent market prices on a day to day basis. The prices in the A.P.M.C market change accordingly

- **Season and Supply-**
  During the winter season from December to February, the supply decreases and thus the price rises during this period. Price varies during the other season as per the supply. For eg. If there is a very heavy rainfall and the crop has damaged, then the prices will rise. Basically, it is dependent on the demand-supply conditions.

- **Brand-**
  There are a lot of brands available in case of grains and this has a major impact on the prices. There are certain well established brands which enjoy high recognition and are sold for higher prices.

- **Multi-Commodities Exchange (MCX)-**
  Today, due to the emergence of multi-commodities exchange and easy internet accessibility, the merchants pricing decision are affected by the prevalent MCX prices.

- **Transport conditions-**
  The transport route and charges also affect the prevalent prices of the grains.

- **Rains-**
  This is a major factor in determining the total quantity of production, which is the total supply which determines the price in coordination with the demand.

3.24.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.

3.24.1.APMCS and Urban Food Marketing

No meaningful progress in enhancing the food marketing for urban consumers can be achieved without an adequate understanding of urban food marketing systems. The issues include the followings:

•The formulation of urban or municipal policies,

•The execution of investment and development programs,

•The planning , construction and management of urban wholesale markets, food loading and unloading areas , docks ,stations and transport infrastructure

•The maintenance and upgrading of public infrastructure as well as the provision of commom facilities like water, toilets ,lighting , drainage , sewage and waste disposal,

•The regulation of public land occupancy and construction,

•The levying of municipal taxes and market fee,

•The control of food quality and sale-point hygiene;

•The promotion of security throughout the urban area;

•The regulation of commercial activities; and

•The control of unauthorized food-trading activities.

•Decision-makers are not fully aware of the issues involved.

•Policy and investment decision are often taken on a non-technical basic or are imposed by Central Government;

•Resources which are available are insufficient to address the large number of problems. Resources are not increased according to with the increase in responsibilities;

•Disbursement procedures for loads received from Central Government and other Agencies are cumbersome;

•Staffs are insufficient. Its technical and managerial skill is inadequate with respect to food marketing, problem analysis, programmed design, implementation, monitoring and follow-up, etc.

•Dialogue with the private sector is insufficient;

•Co-ordination and collection with Central Government is inadequate

•Public investments in badly planned market infrastructure do not contribute to local economics and social development;

•Private investment in food marketing is not stimulated;

•Municipal revenues generated by market activities are adequately reinvested, markets are not properly maintained and services to market users remain insufficient;

•Municipal regulation is not respected and not updated to reflect changes in the food economy and commercial practices;

•Urban consumers for accessing food paid higher prices than they need be.

An urban food supply chain and distribution policy requires clear goals and objectives as well as clearly defined institutional roles and responsibilities.

•Issues in Urban on Food Availability

•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.

3.25. **NEED FOR THE TERMINAL MARKETS**

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 sale of produce in the market yard is carried on by open auction method. During any deal or transaction cost, quantity, details of buyers and details of sellers, etc. For appropriate weighting of farmers produce, the committee has established a different weighing department. A regular inspection is carried on for this department. The committee also undertakes grading. In case any defaults in payment by the buyer the market committee helps in setting the dispute.

The agriculture produce 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.

•The current marketing system, characterized by a long, fragmented supply chain, high wastages as the movement is more, low share of producers in price, is inadequately equipped to meet the growing needs of consumers for quality and safe/hygienic food.

•Considering the above factors, there is thus an urgent need for a radical shift from the prevailing marketing system towards an efficient as well as sophisticated marketing model to take shape so as to maximize returns to the key stakeholders namely the growers as well as consumers, both in the international as well as the domestic markets.

•Moreover, positive consumption and demographic trends in the domestic markets are driving up demand for high quality produce and lack of adequate mechanism which can deliver quality produce to the Indian palate can only invite imports from other countries.

•Creation of Terminal Market Complexes by organizing growers at the backend and creating a transparent and efficiently price discovery mechanism and interface with off takers (with state of the art infrastructure and managerial competence) at the front end Maharashtra and help realize the true potential of the sector.

•To benefit the farming community from the new global market access opportunities, the internal agricultural marketing system in the country needs to be integrated and strengthened. Government of Indian agricultural markets and marketing environment with maximum facilities, So as to provide maximum benefit to the producers and in turn, compete with the global markets.

3.26.Farmer Point of View:

- Market yards are something long felt need of the farming community of India as it goes a long way in ensuring higher remuneration to them through proper weighing, cleaning, grading and end up with better price realization of their produce. The farmers look forward to a regulated market yard as a dependable infrastructure for furtherance of their economic goal.
- With an increasing working population of our country, rising disposable income and greater international exposure, the fast growing Indian market is witnessing a paradigm move in its aspirations and lifestyle. While, almost 53 % of private consumption expenditure is captured by food products and their demand rises consistently at almost 8 per cent, the consumer basket is continuously undergoing change in flavour of perishables (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 diverse demand.
- The present marketing system, characterized by a long, fragmented supply chain, high wastage, low share of producers in price, is inadequately to meet the growing needs of consumers for quality and safe/hygienic food. Although, India producers almost 10 per cent of world trade. This small market share can be attributed largely due to weak post-harvest infrastructure, inadequate extension support chain in the state of Maharashtra.
- Considering the above factors, there is thus an urgent need for a radical shift from the prevailing marketing system towards an efficient as well as sophisticated marketing model to take shape so as to maximize returns to the key stakeholders namely the growers as well as consumers, both in the international as well as 5he domestic markets. Moreover, positive consumption and demographic trends in the domestic markets are driving up demand to the Indian palate can only invite imports from other countries.
- Creation of Terminal Market Complexes by organizing growers at the backend and creating a transparent and efficiency price discovery mechanism and interface with off takers (with state of the art infrastructure and managerial competence) at the front end will go a long way in transforming of the sector.

To summarize, the following objectives will be met by the creation of Terminal Market Complexes:

- Produce is sorted it is brought to the market
- Produce is segregated based on quality before sale
- Standard weighment and packaging is achieved
- Accurate price information is shared
- Adequate storage infrastructure is created
- Improving returns of the farmers
- Enhance marketing of the farmers
- Reduce wastage and post-harvest losses
- Increase exports and foster competitiveness
- Ensure transparency
- Reduce quality of produce
- Modernize operation with IT Applications

Thus, in order to harness the potential of the emerging consumer demand (domestic and international), a professionally managed competitive alternate marketing structure that provides multiple choices to farmers for sale of produce along with a comprehensive solution to meet key needs of the stakeholders is necessary. Such a system entails a high investment cost and efficient management skills, each of which can be infused by inviting private sector participating in the sector. Thus, The Terminal Market Complexes were conceptualized with the objective of fulfilling the above goals.

3.27.Role of state government

- To decide location of the terminal markets and provide government to give related permission and appoint financial institutions to select private entrepreneur.
- State Level Executive committee has been set up by the government of Maharashtra under the chairman of hon'ble minister for marketing. The Nodal officer for this MTM is the principal secretary for co-operation and marketing and the Addition Nodal officer is the director of marketing, Maharashtra state.
- The state Level committee has selected the following institutions as financial institution for the modern terminal markets in the state

Table 9 TERMINAL MARKET AND INSTITUTION

NO	Modern terminal market	Name of institution
1	Mumbai(Thane)	YES BANK Ltd
2	Mumbai	NABARAD Consultancy services private Ltd
3	Nagpur	APITCO Ltd, Hyderabad.

3.27.1.Government of India Participation

- A Floor subsidy of 25% of respective project cost may be offered to private entrepreneur for setting up terminal market complex.
- During competitive bidding, all bidders well be eligible to quote bid subsidy from 25% up to 40% of their respective project cost with maximum subsidy of INR 50 Corer.

Bidding process

The selection of the private entrepreneur for each terminal market will be made on competitive bidding, following two-bid system i.e. request for qualification and request for proposal.

3.27.2.Status of Terminal Markets-

- Government of India initially decided to set up 8 Terminal markets in various states and later on 21terminal markets have been proposed
- Terminal markets will be set up at Mumbai, Nasik and Nagpur in the state

Mumbai terminal Market

- The estimated project cost is ₹200-250 corer
- Estimated handling capacity per day is 3000 MT
- Area required is 125 acres. Government land has been identified at babgaon, tal-bhivandi, dist -thane.
- The said land has been handed over to the Maharashtra State Agricultural marketing board. MSAMB has the taken the possession of 92 acres of land
- The RFQ Process has been completed and REP stage is in final stage.

Nashik terminal market.

- The estimated project cost is ₹60 crore.
- Estimate handling capacity per day is 1000MT
- Area is required is 100 acres
- Process of transfer of government land at pimprisaiyad is under progress.

Nagpur terminal market

- The estimated projected cost is ₹70 corer.
- Estimated handling the capacity per day is 750 MT
- Area required is 100 acres
- Land of 100 acres at mouje waranga dist Nagpur has been identified and decision taken by government of Maharashtra to transfer of land to MSAMB

3.28.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

3.28.1.**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.

3.28.2.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

3.28.3.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.
-

3.28.4.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 heips in employments generation.
- The times limit of this scheme is upto 30th march 2007.

3.29.The salient features of the schema are as follows

- **Nodal agency**: director of marketing, Maharashtra state, pune
- **Eligible organisations**: the construction/expansion of rural godown can be taken up by individuals' farmers, group of farmers/ grower, partnership/ proprietary firms, non-government orientation, self-help groups, companies, cooperative societies, agriculture produce marketing committee. Marketing boards and agro- processing corporation in the country. Assistance is also available for renovation/ expansion of rural godows.

- **Location**: the construction of godown has to be made outside the limits of Municipal Corporation, with a minimum capacity of 100 mt and restricted to a maximum capacity of 10,000 MT.

- **Credit linked assistance**: subsidy under the scheme is linked to institutional credit and available only to such project which is financed by commercial banks, co-operative banks, nationalised banks and regional; rural banks. Loan to the entrepreneurs, from banks for the construction of godowns would be over a period of 10years, and should be repaid in 11 instalments with a moratorium. On repayment of 2 years. Within 15 months the construction of godown shall be completed.

3.29.1.Nature of the scheme

- 25% governments subsidy
- 25% own funds investment
- 50% bank loan
- If the entrepreneur possesses own land' 10% of estimated godown cost will be considered as land cost out of his own investment.

3.29.2. Subsidy: on the capital cost of the project subsidy under the scheme shall be provided, as below:

- The rate of subsidy will be 25% of the capital cost of the project. In case where the entrepreneur belongs to S.C./S.T. the rate of subsidy shall be 33.33 per cent
- From 1st oct. 2004few changes made in by central govt. In this scheme are for farmers, agricultural graduates, co-op. Societies state and central warehousing corporation are eligible for 25% subsidy and reaming can be 15% subsidy.
- Minimum size of godows eligible for subsidy would be 100 MT
- for releasing subsidy Capital cost of the project under the scheme shall be calcuted as follows:
- For godowns upto capacity of 1000 MT, actual cost or Rs.2000/- per ton storage capacity, whichever is lower.

- For godows exceeding capacity of 1000 MT, actual cost or Rs.1500/- per ton storage capacity, whichever is lower.
- For renovation/ expansion of godown constructed by cooperatives with assistance from NCDC, actual cost or Rs.500/-per tone of storage capacity, whichever is lower.
- Amount of subsidy calculated as above, shall be further restricted to a maximum storage capacity of 10,000 MT and further to a maximum amount of Rs.37.50 lakhs, for each project. entrepreneur belongs SC/ST, maximum amount of subsidy shall be Rs.50 lakhs,for each project.
- Subsidy for the project under the scheme, shall be realised through the NABARD for project finance by commercial, cooperative and regional rural banks.
- The capacity of the godown, will be calculated 1,8 MT per sq.m. of floor area with an average heihg of the less than4.5m. minimum capacity should be 100 MT in some cases permission should be required from related office-For that NABARD is going to issue the guideline for the same.

Training: the will be arrange to be officers and honorary person for maintaining godows, scientific storage, record etc.

3.30.SCHEMES, AMMENDMENTS OF ACTS AND LAWS WHICH MAKES THIS PROPOSAL A REALITY OF PURPOSE.

- FDI in retail increased to 51% on November session parliament in 2012.
- The Maharashtra state agricultural board schemes:
    1. COLD STORAGE SCHEMES.
    2. SHETKARI BAZAAR (FARMER'S MARKET).
- The centre's approval on setting up of private retail setups under the amendment in 2002 of APMC ACT1967.
- The collaboration of nation council of state agricultural marketing boards (COSAMB) with the world union of wholesale markets.
- Terminal wholesale market & pre harvest centres, information centres proposed under the banner of schemes in national horticulture board.

3.31.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 apmc, 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 apmc. 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.

3.31.1.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.

4. Objectives

- To provide a premium hub for the perishable industry of our country as it being an agriculture based economy .the purpose is to promote the good practice of transaction eradicating the middlemen and bringing closeness to the farmer to folk relationship. Also to establish premise which supports healthy clean transactions both foreign & local thus making it easy for the final consumer to choose directly from the whole seller based on the input of produce & quality of it.
- One of the key objectives of the Maharashtra state agriculture marketing board (MSAMB) to facilitate more efficient marketing of agricultural produce.
- A hub where so many practitioners of agriculture come under set of single roof an establishment to upgrade them with the pure & progressive framing techniques becomes a moral responsibility where the help of the horticulture board comes to play.
- 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.
- Consumers to get proper protection against the exploitation by the middlemen so that it lead to a healthy marketing.
- To provide a green building solution at market nodes where vehicular movements are high.
- Workshop for post-harvest technology (horticulture centre) & Introduction of vertical farming to small farmers to improve productivity.
- Small farmers market farm to folk relationship.
- zoning to regulate the space
- connectivity to reduce traffic congestion
- Direct marketing space (enable farmers to meet the specific demands of wholesalers or traders).
- revitalisation of turbhe railway yard
- direct purchase from farmers without any license
- contract farming: -Direct contract between producers & processing factories

5. Methodology

- Understanding the Project and Its Need
- Collecting Information from Primary and Secondary Sources
- Thorough Study of the Similar/related Cases through Literature Studies
- Conducting Live Case Studies to Understand the Functionality of the Project.
- Analysis, Based On Both Types of Case Studies and Comparison with the Existing Standards, Carving out the Area Requirements
- 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.

6. Scope and limitations.

- To study and to improve the existing trade practices related to the supply of fruit and vegetable at Vashi apmc.
- Processing of a terminal market of fruit and vegetable.
- A rational approach to calculate the quantum of area for transaction of trade and thereafter to calculate the minimum land requirement.
- Studying vegetable and fruit market out of all five market of apmc Vashi.

7.1.1. Case study: 1.BURSA WHOLESALE GREENGROCERS AND FISHMONGERS MARKET IN TURKEY.

Figure 1 VIEW OF BURSA WHOLESALE MARKET

market planning were segregated in produce market , fish market and building tower with administrative offices ,restaurant and hotel Outbuildings include a post for the gendarme as well as weigh stations and motor vehicle access control points

Figure 2 FIGURE AND GROUND TO KNOW THE GROUND COVERAGE OF MARKET WHICH IS APPROX. 20%

Table 10 DETAILS OF THE PROJECT

Architects	**Tuncer Cakmakli Architects**
Project	**Bursa Wholesale Greengrocers and Fishmongers Market**
Location	**Bursa, Turkey**
Design Time	**2006-2008**
Completion time	**2010**
Total land area	**304.000 m2**
Client	**Municipality of Bursa**

7.1.2.Design ideology on bursa market:

To create a great gathering places of a community, functions such as wholesale trade are more and more frequently relegated to architecturally insignificant, anonymous warehouse spaces: a worldwide trend with negative repercussions for both the cultural traditions of trade, as well as for the individual labour's experience of work.

The design of Bursa's wholesale greengrocer's and fishmonger's markets, maintain the idiom of the high, **vaulted bazaar**, **connecting the new buildings symbolically and functionally** with long-standing Central Asian architectural and cultural traditions.

The necessity of social function of a market is to fairly and transparently negotiate the quality and price of consumer goods through the **complex interactions of many public like producers**, brokers, and retailers together within a common space. By bringing these encounters together under one roof as **a terminal market** which fully extended of supply, demand, and quality which access by all parties to the transaction at once, resulting in the most accurate evaluation of value

The forms of the two buildings resemble stadiums:

A market only works when goods are on display and transactions can be observed.

The panoptical form is as appropriate to the activities of a market.

The constellation of the naturally-ventilated spaces allows the municipality to ensure the efficient, safe distribution of food products to its citizens.

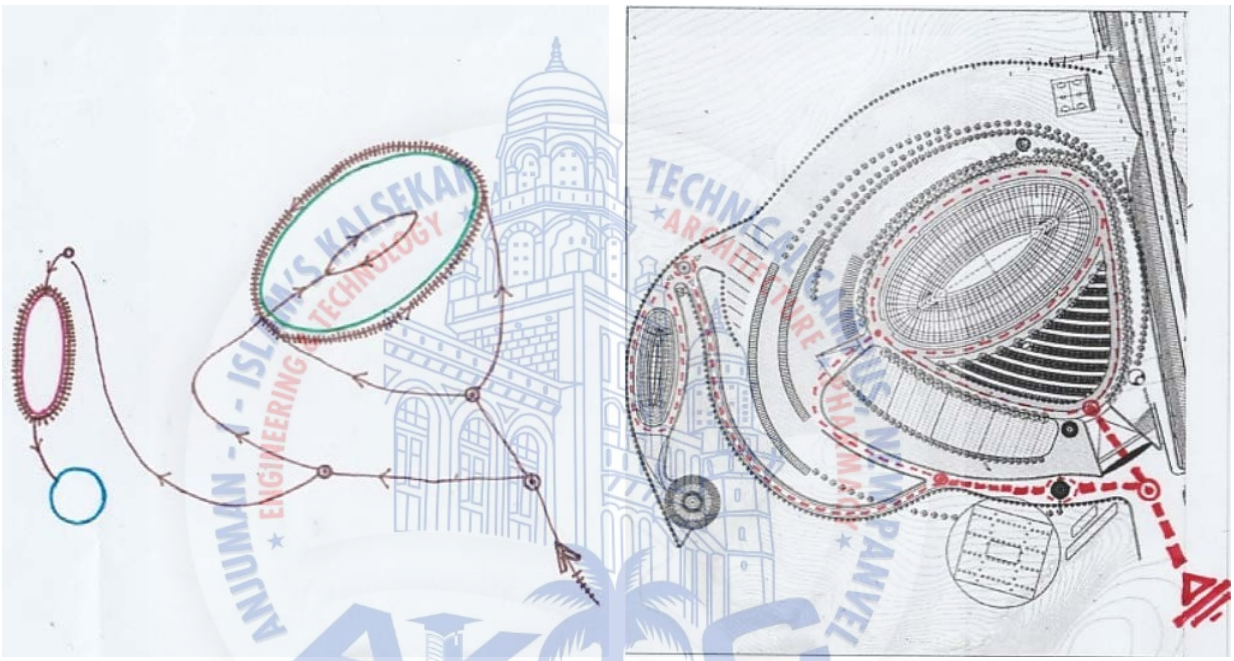
By consolidating the wholesale trade of produce and fish for the city of Bursa in a single location, the municipality is able to monitor the goods for quality and also to ensure that health regulations are followed.

Table 11 AREA STATEMENT

Area statement	
TRUCK ENTRANCE	400 M2
RETAIL ENTRANCE	1,200 M2
RECREATION AREA	50,000 M2
ROADS	84,000 M2
PARKING AREA	20,000 M2

Table 12 TOTAL BUILD UP AREA

Total construction area	
Greengrocers	51,700 M2
Fishmongers	7,500 M2
Administration	2,500 M2
Gendarmerie	380 M2



Patterns of vehicles in the market complex

- The complex patterns of vehicle, material, and pedestrian traffic are carefully coo rdinated within fluid, elliptical shapes, which in turn are bordered by brokers' offices.
- The rational form of the 350 meter-long greengrocer's market is designed to facilitate easy orientation, efficient exchange, and optimal routing of foodstuffs from suppliers to retailers and restaurateurs – all of which keeps down transaction costs.
- An animated space and architecture that is representative of the energy and productivity of the labourers, as well as of the city of Bursa.

7.1.3.MATERIALS, STRUCTURE AND CONSTRUCTION

- Reinstalling steel into the architecture of the Wholesale Greengrocer's Market, apart from all the functional conventionality.
- A high area topped with a steel spanned arched roof provides a healthy and orderly atmosphere for trade,
- As it is with grand bazaars of authentic Turkish architecture.
- Steel allowed reflecting Greengrocer's Market's unique character; and therefore, was the most suitable material.
- .The building structure realized with steel structure and prefabricated reinforced concrete.
- The roads and the floors are made of reinforced concrete and the surfaces are realized as walls made of glass and brick.
- The roof is covered with galvanized, trapeze, and dyed sheet metal.
- Woodworks and doors were made of steel and the animated doors, aluminium material.
- Illuminating realized with basic industrial products and daylight.

Figure 3 INNER VIEW OF THE MARKET

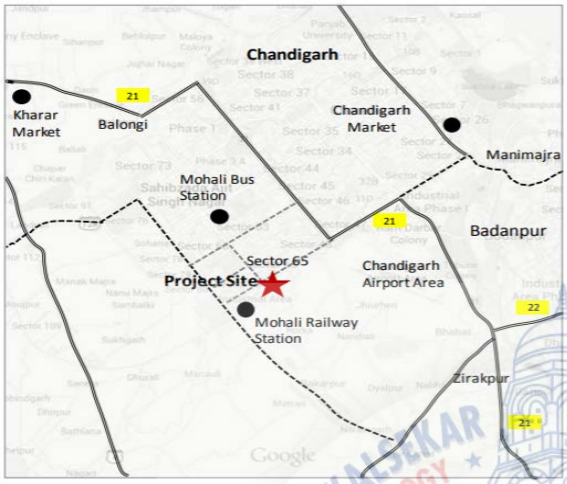
7.1.4.SWOT analysis:

Table 13SWOT ANALYSIS

Strengths	Weakness
• Bursa was the first capital of the Ottoman Empire and is today the centre of manufacturing in Turkey • The fertile grounds around Bursa produce some of the country's best produce. • A centralized control point from which it monitor the Bursa's food supply.	• it sits at the base of the 2.000 meter-high Uludağ mountain • admin block at one corner • only one exit point from the site • located far from the residential sector • No public interaction as a plaza
Opportunities	**Threats**
• The market can be tourist attraction • Parking can be provided by proper distribution of area and multiple exit points.	• Both the market are not connected structurally • Located near the main highway therefore no local transport service available.

7.2.0.Case study 2: FRUIT AND VEGETABLE MARKET, MOHALI

Figure 4 DETAIL OF PROJECT



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

Figure 5 LOCATION MAP

Figure 6 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.

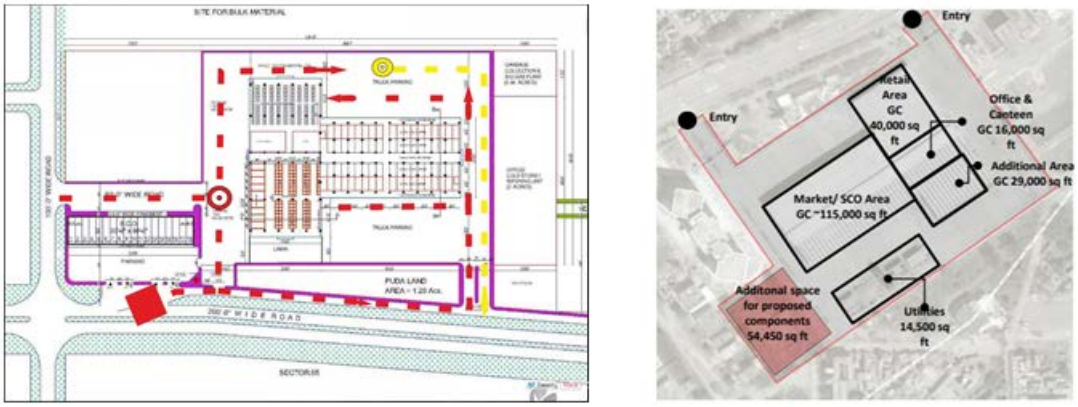


Figure 7 LAYOUT PLAN VEHICULAR MOVEMENT AND ZONNING

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.

7.2.1.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.

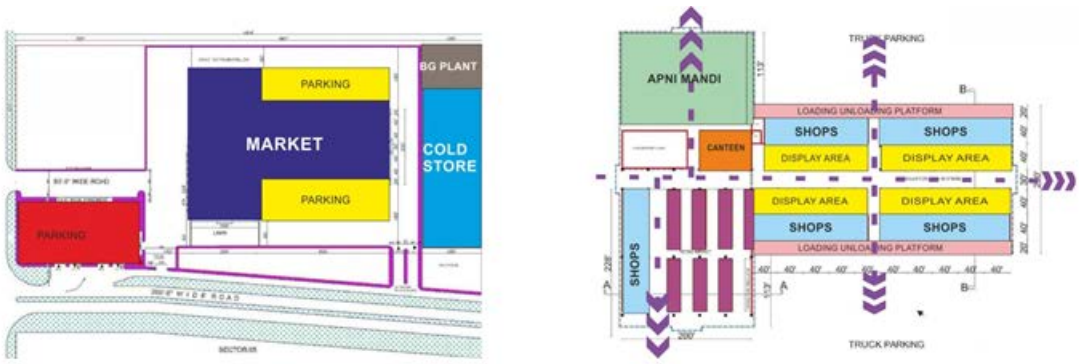


Figure 8 PLANNING AND INTERNAL MOVEMENT

- The main market is a t-shaped block comprises mainly three wings.
- The larger flange of the T accommodates 34 wholesale shops.
- Double storied shops and each shop has a size of 16'-0”x38'-0”.
- For unloading a 3-metre wide platform has been provided on the outer side of the shops that is towards the parking lot.
- 40-feet wide display platform has been provided in front of each shop.
- 2 rows of display platform on either side together with 30 feet wide circulation spine in between have been covered from top in the form of an atrium.
- One on the front side accommodates retail market, Out of the two smaller flanges of the T.
- The fully enclosed and centrally air-conditioned retail market comprises 84 small shops of h15'-0”x10'-0”.
- There are 11 larger shops of 16'-0”x38'-0”.
- Farmers' market or “apni mandi” has been planned at smaller flange.
- After the grand success of weekly apni mandi in various sectors of the city this has been added in this modern market.
- Elimination of middle man because the farmers will bring their produce directly to this place and sell it to the consumers, thus.
- **This model is beneficial both to the farmers and consumers.**
- Apni mandi is fully covered from top but open on the sides.
- It accommodates 234 raised platforms of 6'x8' size each.
- platforms shall be allocated temporarily to the famers to display their produce and sell it to the consumers directly.
- These platform and 10 feet wide circulation arteries in between have been planned in a Cartesian pattern for easy movement.

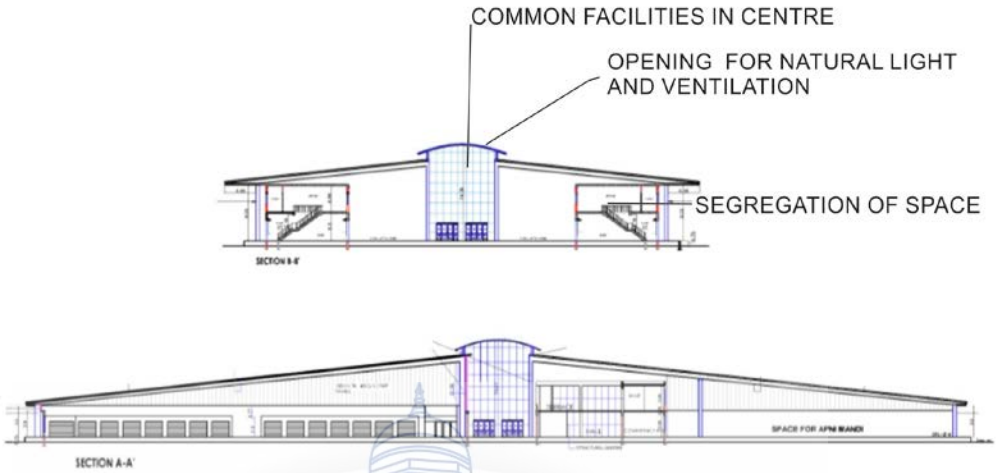


Figure 9 SECTION OF MARKET

- 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.

7.2.2. SWOT analysis:

Table 14 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.

7.3.0.CASE STUDY no.3 TRADE HUB FOR AGRICULTURAL PRODUCE MARKET COMMITTEE (APMC) AT LATUR

Table 15 DETAILS OF THE PROJECT

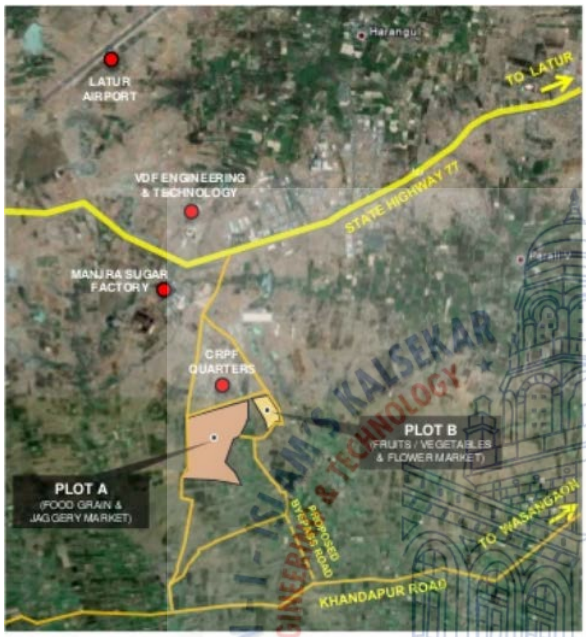


Figure 10 LOCATION MAP

• 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.

Figure 11 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.**

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

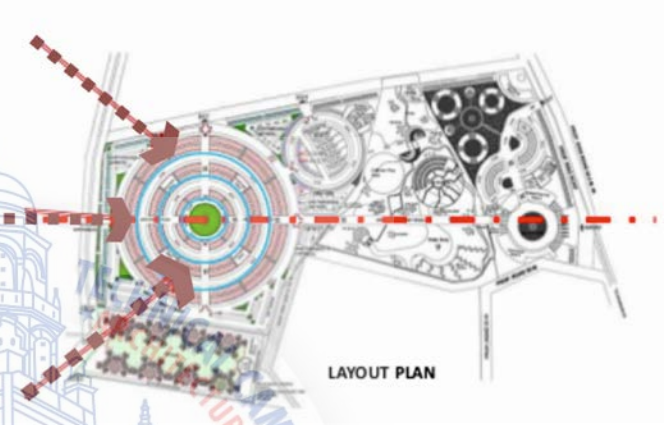


Figure 12 LAYOUT PLAN

7.3.1.Market area bifurcation according to planning.

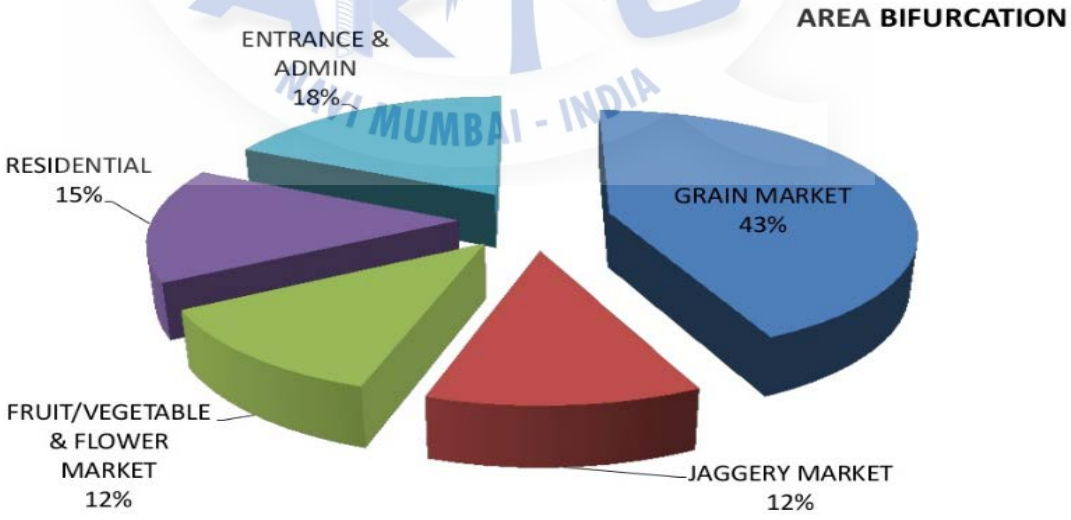


Figure 13 AREA BIFURCATION

7.3.2. Zoning of market into 6 main components.

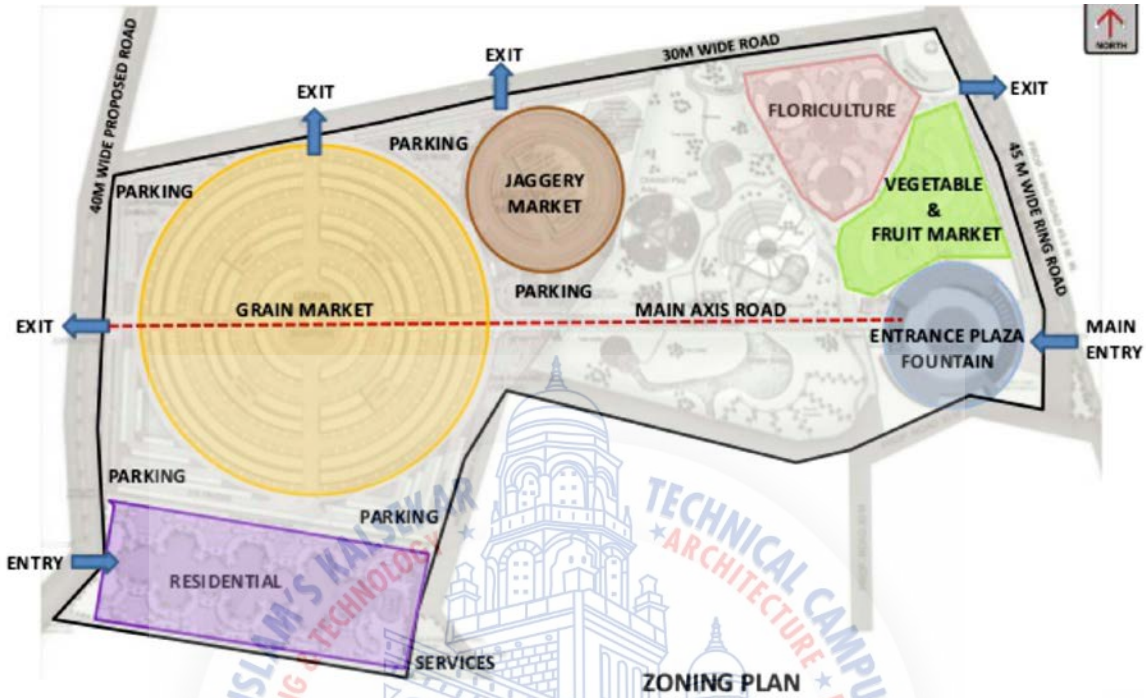


Figure 14 ZONING

7.3.3. Vehicular and pedestrian movements in the market.

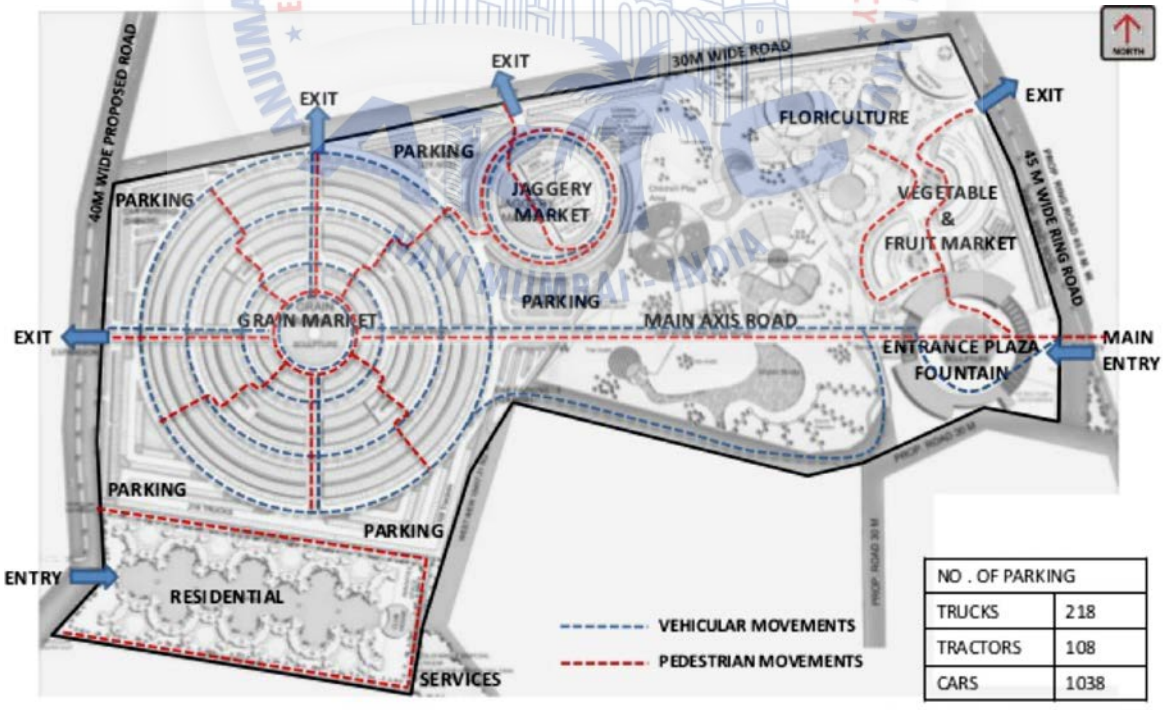


Figure 15 MOVEMENTS IN THE MARKET

Table 16 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 17 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.

7.3.4. GROUND FLOOR PLAN FIRST FLOOR PLAN LONGITUDINAL SECTION

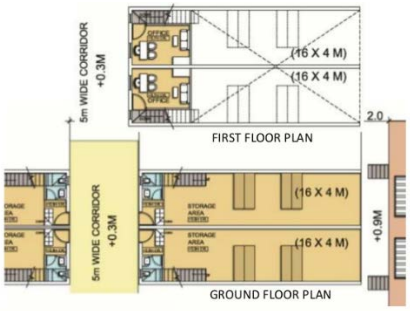


Figure 16 PLAN

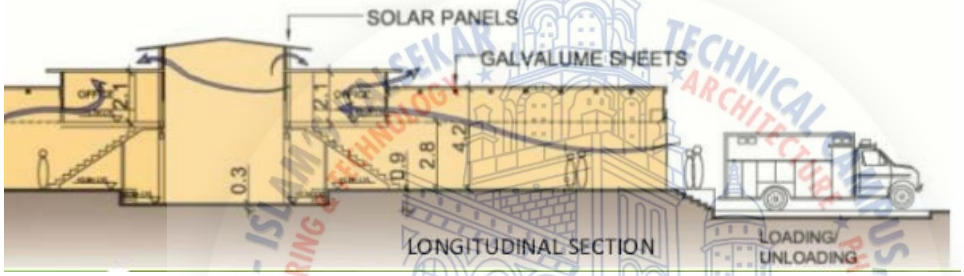


Figure 17 SECTION

Table 18 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 19 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 20 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.

7.3.5.GROUND FLOOR PLAN FIRST FLOOR PLAN LONGITUDINAL SECTION

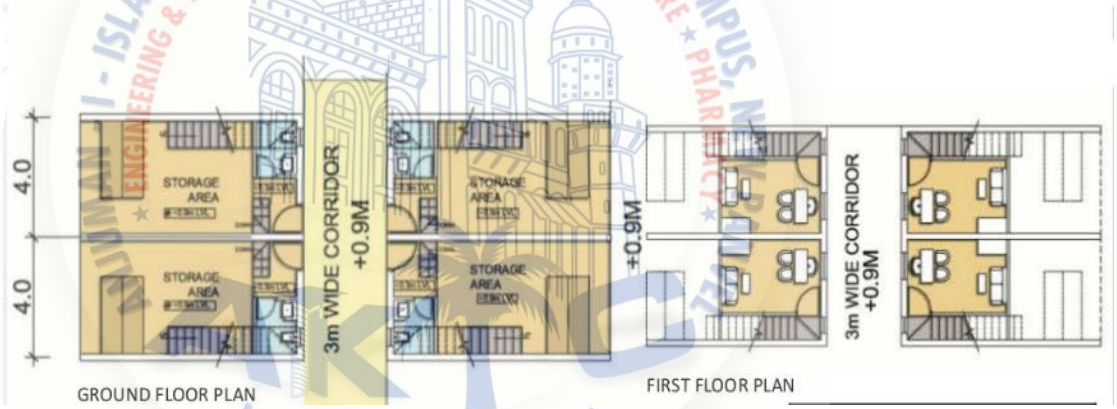


Figure 18 PLAN

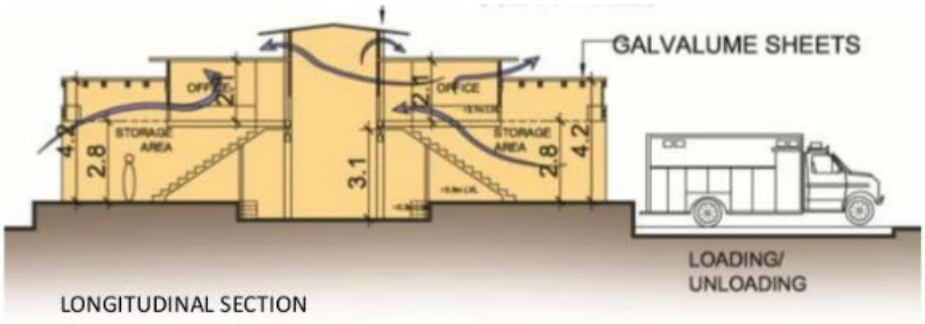


Figure 19 SECTION

7.4.0.Case Studies : 4 **CHOUDHARY HIRA SINGH WHOLESALE FRUIT AND VEGETABLE MARKET, AZADPUR, DELHI, INDIA**

Figure 20 DEMARCATION OF MARKET

APMC, AZADPUR – AN OVER VIEW

1. Establishment Year : 1977

2. Main Objective : To facilitate marketing of Fruits & Vegetables (F&V), and implement regulation meant for safeguarding interest of farmers, producers/sellers and consumers.

3. Name of the Principal Market yard : Ch. Hira Singh Wholesale F&V Market, Azadpur

4. Name of the Sub-yards : 1. Kela-Siding Azadpur

2. F&V Market, Okhla

5. Area of Market Yard / sub-yard : About 90 acres (excluding Kela siding, which is on lease from Indian Railways)

6. Market Area : GNCT of Delhi vide notification dated 02.09.14 has reduced the market area to that of market yard/subyard.

Act & Rules :

1. The Delhi Agricultural Produce Marketing (Regulation) Act, 1998 (Delhi Act No. 7 of 1999)

2. The Delhi Agricultural Produce Marketing (Regulation) General Rules 2000.

3. Market Fee (Taken by APMC) : 1% of the total sale value of commodity.

4. Commission (Taken by Commission Agent) : 6% of the total sale value of commodity.

5. Contribution given by APMC to DAMB : 20% of the total income of APMC

Figure 21 MARKET PLAN

- Arrival of goods is mostly from gate 3& gate 4, which reduces congestion.
- E-trading block for local wholesaler loading of goods is segregated.
- Multi-level building blocks.
- Block planning is done.

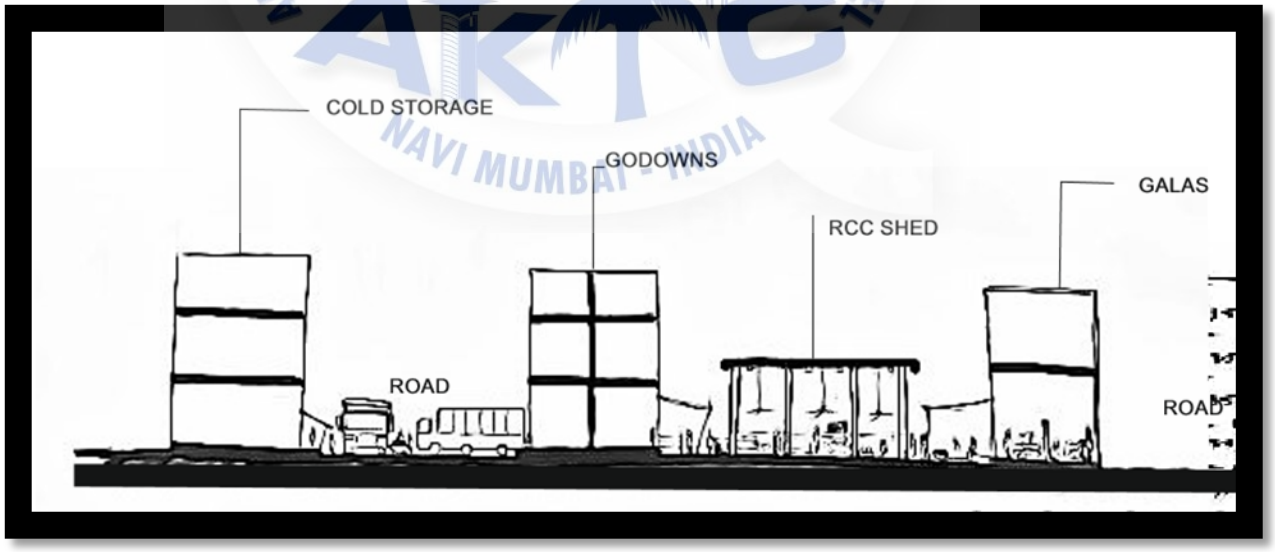


Figure 22 SECTION OF VEGETABLE AND FRUIT MARKET BLOCKS

7.4.1. BASIC STATISTICS:

Table 21 AREA STATEMENT

SNo.	Descriptions		Azadpur Yard	Okhla Sub-yard
1.	NSM area		43.65 Acres	9.98 Acres
2.	Cement Godown area		7.00 Acres	-
3.	NFM area		29.18 Acres	-
4.	No. of Big Shops		438	50
5.	Size of Big Shops		12'x53'	12'x53'
5.	No. of Small Shops		928	218
6.	Size of Small Shops		10'x18'	12'x12'
7.	Covered Auction Sheds	**No.**	**Area**	**3 Nos.**
	A Block NSM	1	3272 Sqm	1536 Sqm
	C Block NSM	1	3272 Sqm	832 Sqm
	Potato & Onion Shed	1	6000 Sqm	832 Sqm
	Grower Shed	1	2900 Sqm	
	Cement Godown Area	3	7766 Sqm	
	NFM Phase-II	7	19618 Sqm	
	NFM Phase-I	8	29214 Sqm	
	Total	**22**	**72042 Sqm**	**3200 Sqm**
8.	No. of Banks		6	2
9.	No. of Cold Storage		7	0
10.	No. of Licences upto 31.3.15			
	(i)	Commission Agents (B category)	2121	190
	(ii)	Wholesale traders (A category)	1554	145
	(iii)	Cold Storage (D category)	06	0
	(iv)	Palledar (G category)	01	0
	(v)	Farmers I-Cards	131	0
11.	No. of Notified Commodities			
	(i)	Fruits	50	50
	(ii)	Vegetables	68	68

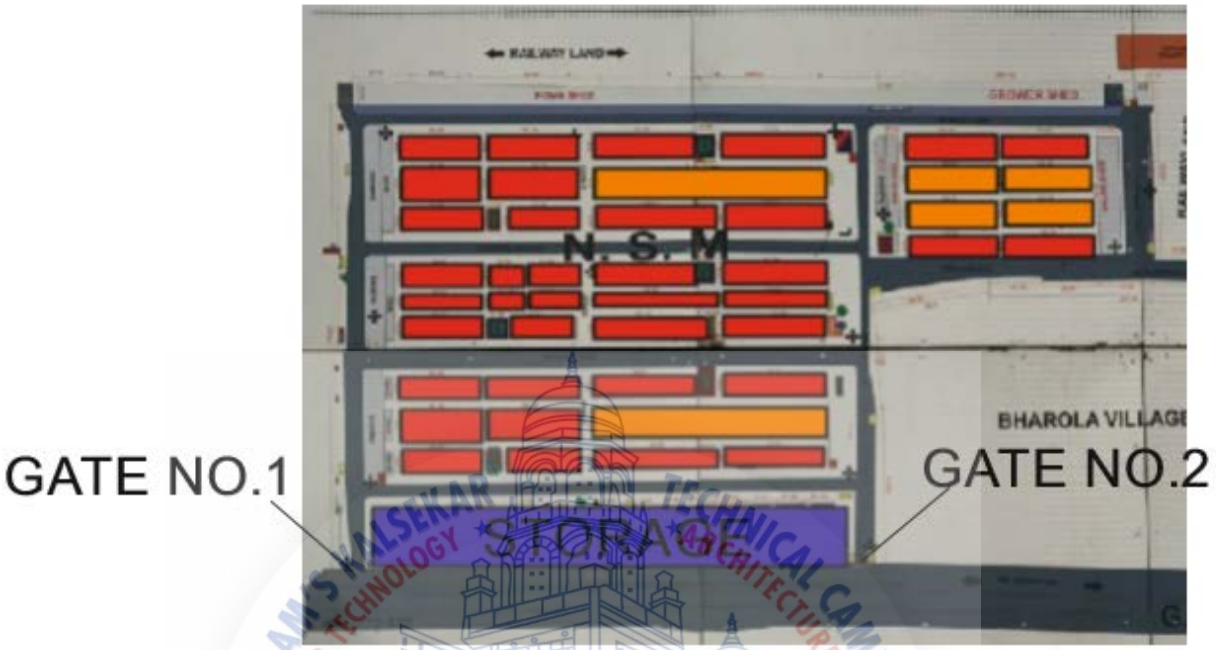


Figure 23 ONE PATCH OF MARKET

- As cold storage is on one side, internally transport of products is more.
- Which add-on to the movements in the market
- No segregation of Government Company blocks and local market blocks.
- No green patches
- Market is separated in two different parts.
- As a market no rules as such is followed in terms of height of the private building block (shops and Godowns.)

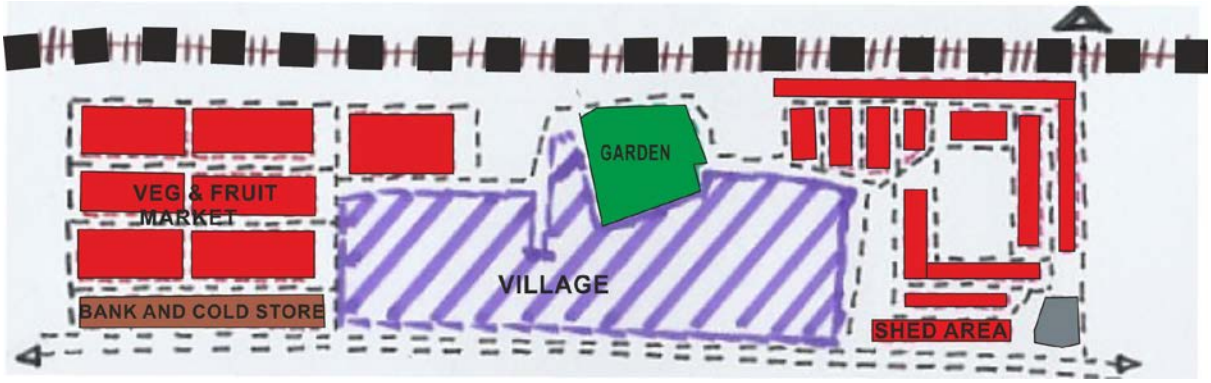


Figure 24 ZONING OF MARKET

• ILLEGAL SETTLEMENT OF RETAILER VENDORS IN THE MARK ET, NARROW ROADS GET BLOCKED BY THE VENDORS FROM BOTH THE SIDES, ROAD GETS COMPACT AND PEOPLE AS TO HINDER. • AS AZADPUR MARKET IN VERY BIG AND STRUCTURALLY THERE IS NO PROPER PLANING FOR RECREATIONAL SPACES AS CAFÉ OR FOOD CORNER	• AS MARKET GALAS ARE OWNED BY DIFFERENT OWNER, SO ACTIVITIES DONE THERE IS PARTICULARLY ON GALA LEVEL, AS SEEN IN GRADING OF PRODUCTS IS DONE IN FRONT OF THE GALA. • AS GRADING OF PRODUCT IS DONE , IT IS SEGREGATED AND STORED IN GALAS OR GODOWNS AND THE LEFTOVER ARE THROWN ON THE ROAD AND KEPT UNCLEAN. WHICH CREATE HYGIENE PROBLEMS.

RETAILER MARKET IS AT THE EDGE OF WHOLESALER BLOCKS AND ACT AS A BUFFER BETWEEN PARKING AREA FOR LOCALS AND MAIN MARKET, ITS PLACEMENT IS PROPER TO FILTER THE CROWD AND REDUCE CONGESTION IN THE MAIN MARKET.	AS FOR LOADING AND UNLOADING PRODUCTS ARE STACK ON ROAD IN FRONT OF GALAS AND GODOWNS, WHICH COMPACTS THE SPACE IN AND AROUND AND CREATES PROBLEMS FOR FREE FLOW MOVEMENT INTERNALLY.

• INSUFFICIENT STORAGE IN COLD HOUSE AND ROUGH HANDLING WHILE PLACEMENT, DAMAGES PRODUCTS AND THEN ITS THROWN ON THE ROAD, WHICH POLLUTE THE MARKET AREA.	• THERE IS NO SEGREGATION OF SERVICE PARKING AND LOCAL PARKING.

• IN ONE SHOP 10-12 PEOPLE WORK AS A LABOUR ON A DAILY BASES AND GET PAID ACCORDING TO THE WORK. • FOR GRADING AND PACKING THEY OCCUPIE LOADING AND UNLOADING BAY	• THERE IS NO REST ROOM FOR THE WORKER O R FOR THE TRUCK DRIVERS. • SHEDS ARE OPEN THROUGH AND THROUGH, THERE IS NO PARTITION AND STORAGE.

7.4.2. SWOT analysis:

Table 22 SWOT ANALYSIS

Strengths	Weakness
• Arrival of goods is mostly from gate 3& gate 4. This reduces congestion. • E trading block • For local wholesaler loading of goods is segregated. • Multi-level building blocks. • Block planning is done.	• As cold storage is on one side, internally transport of products is more. • Which add-on to the movements in the market • No segregation of government company blocks and local market blocks. • No green patches • Market is separated in two different parts. • As a market no rules as such is followed in terms of height of the private building block (shops and godowns.)
opportunities	Threats
• Give the residents of the locality a place to look forward to as a local terminal marketing. • There can be two transactions, one for Delhi and another one for multi-state.	• Traffic congestion due to multiple means of transport. • Village in middle of the market

7.5.0.Case study 5: CRAWFORD MARKET

Table 23 DETAILS OF THE PROJECT

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.

Figure 25 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.

7.5.1.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.

7.5.2.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.

7.5.3.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.

7.5.4.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 .

7.5.5. SWOT analysis.

Table 24 SWOT ANALYSIS

Strengths	Weaknesses
• OLDEST WHOLESALE MARKET • THE SITE NEAR TO THE NAGPUR RAILWAY STATION • RESIDENTIAL AREA COMMERCIAL AREA AND MANY PUBLIC AMENTITES ARE NEA R • 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

7.6.0. Case study: 6 MERCABARNA FLOR MARKET. SPAIN

Figure 26 VIEW OF THE MARKET

Table 25 PROJET DETAILS

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

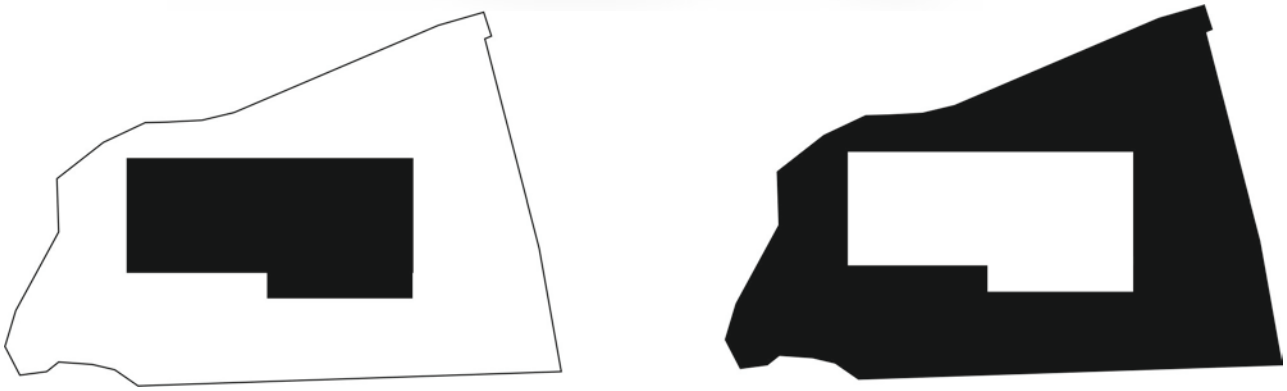


Figure 27 FIGURE AND GROUND TO UNDERSTAND THE TOTAL GROUND COVERAGE

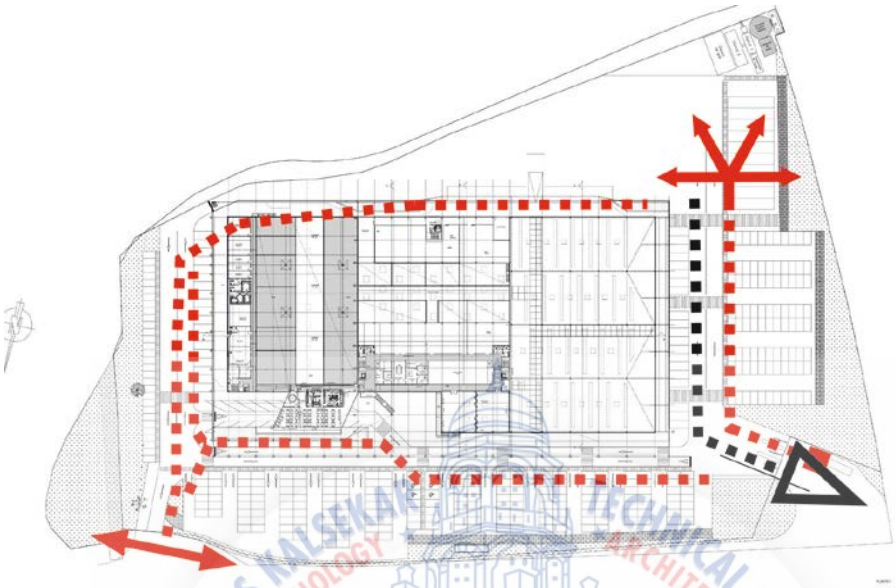


Figure 28 VEHICULAR MOVEMENT ON SITE

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

7.6.1. 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. "

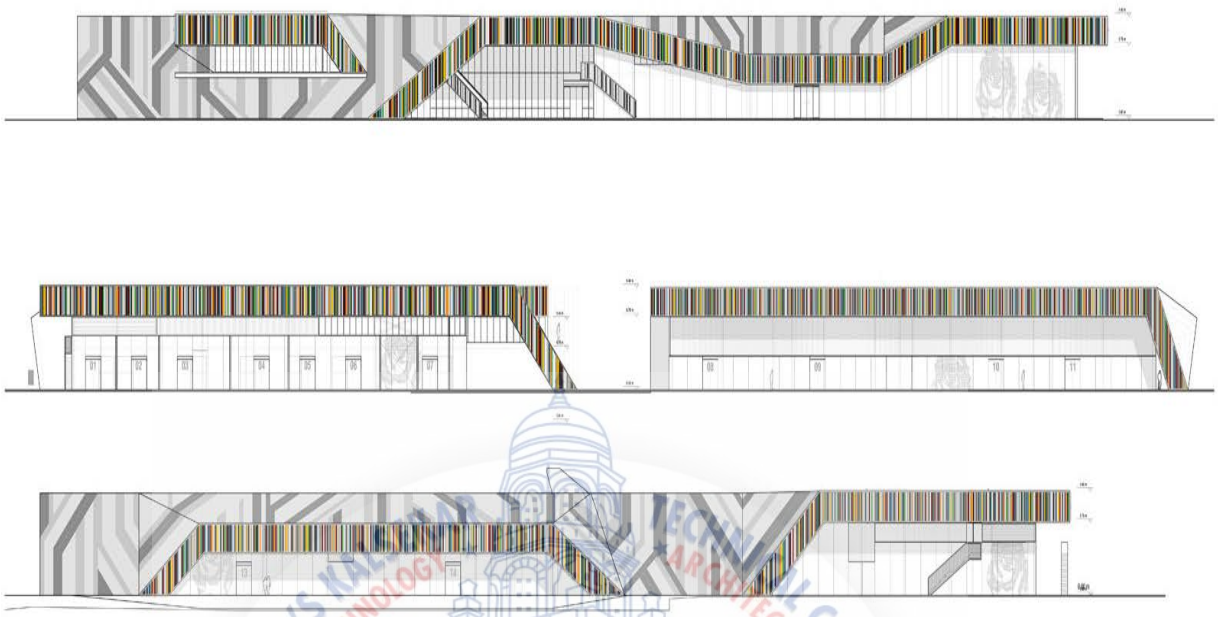


Figure 29 ELEVATIONS OF THE MARKET

Figure 30 SECTION OF THE MARKET

7.6.2. 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.

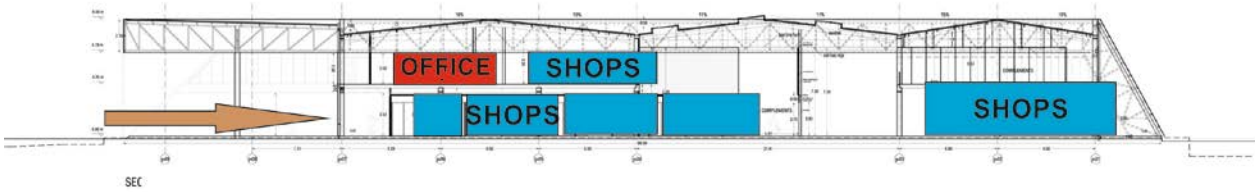


Figure 31SECTION OF THE MARKET

Table 26 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**

7.6.3. 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.

7.6.4. 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**.

7.6.5. 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.

7.7.0. Case study: **7 MARKET HALL FRANCE - MARLY-LE-ROI**

Figure 32 LOCATION AND PLAN WITH RESPECT TO NEIGHBOURHOOD

Table 27 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

7.7.1. The hall

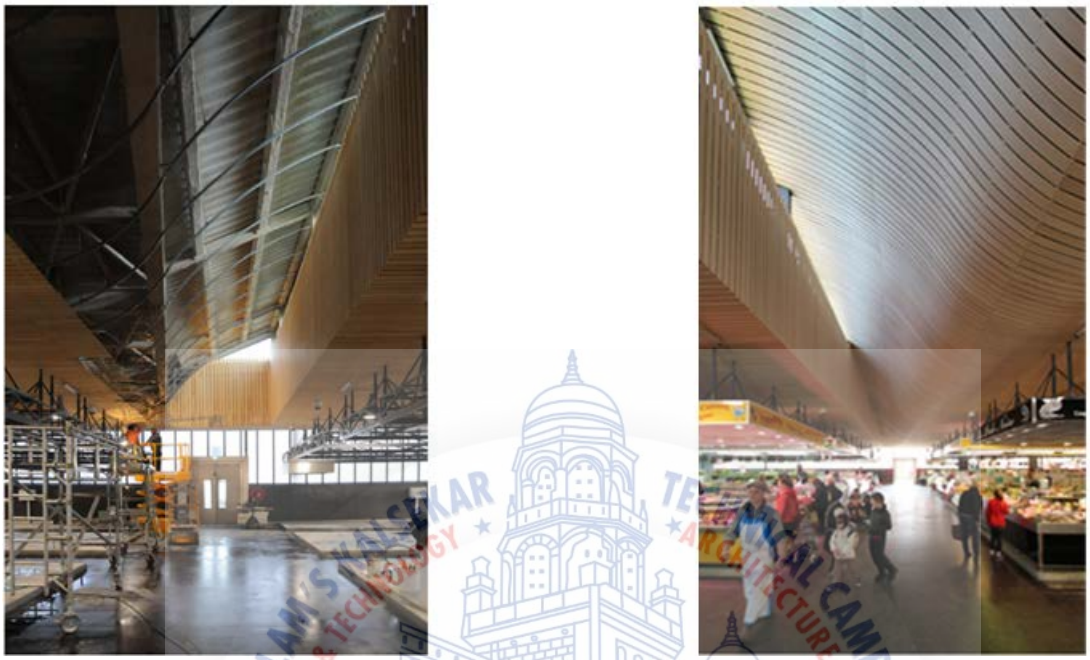


Figure 33 INTERNAL VIEW OF THE MARKET HALL

The shape of the hall is simple, strictly square. Slight movements of the roof allow the introduction of zenithal light facing north. **The hall is free of columns**, which gives the building a complete flexibility of internal planning of design and evolution. The underside of the hall is covered with wood cladding which ensures pleasant acoustics.

7.7.2. The forecourt

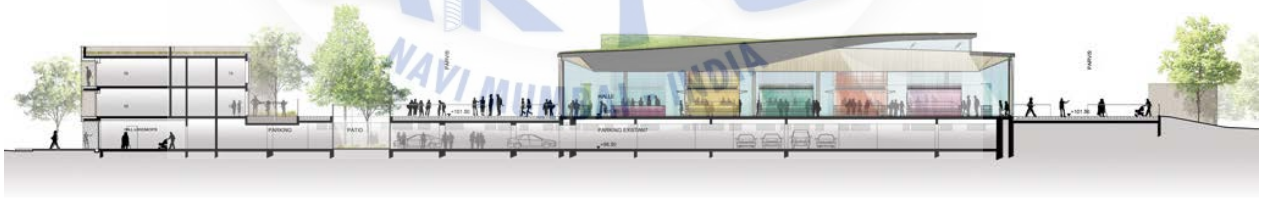


Figure 34 SECTION SHOWING ACTIVITIES

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.

7.7.3. The covered parking

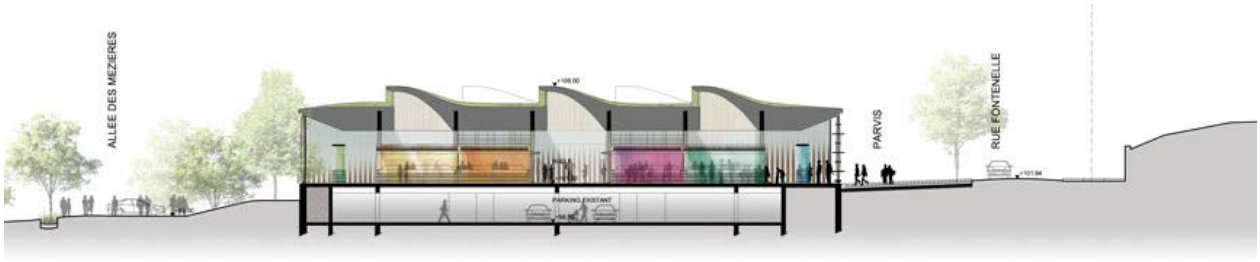


Figure 35 SECTION OF THE MARKET

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.

7.7.4. 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.

7.7.5. 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.

7.8.0. CASE STUDY: 8 VASHI APMC FOR FRUIT AND VEGETABLE

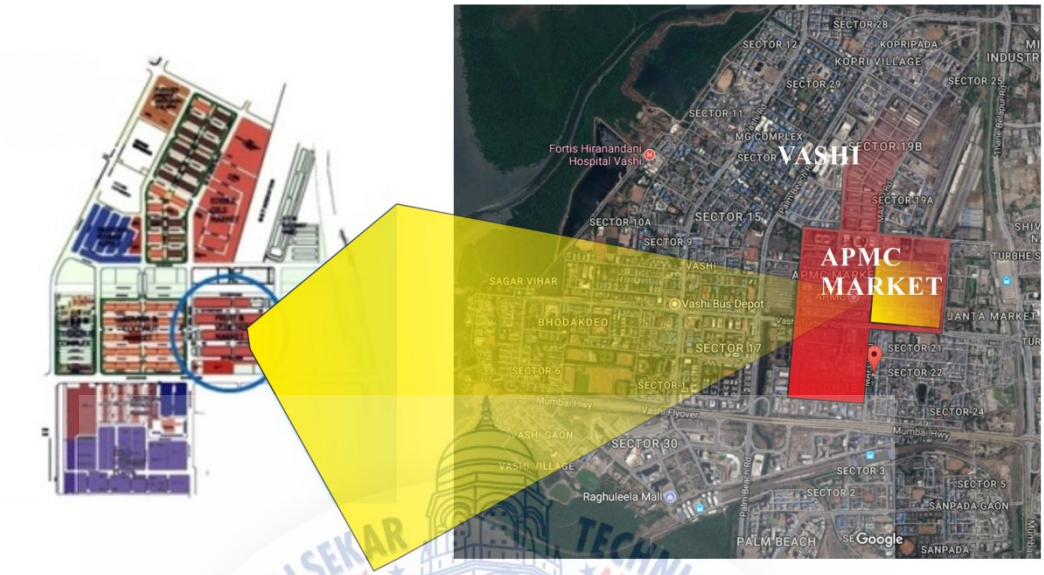


Figure 36 LOCATION MAP WITH DEMARCATION OF SITE

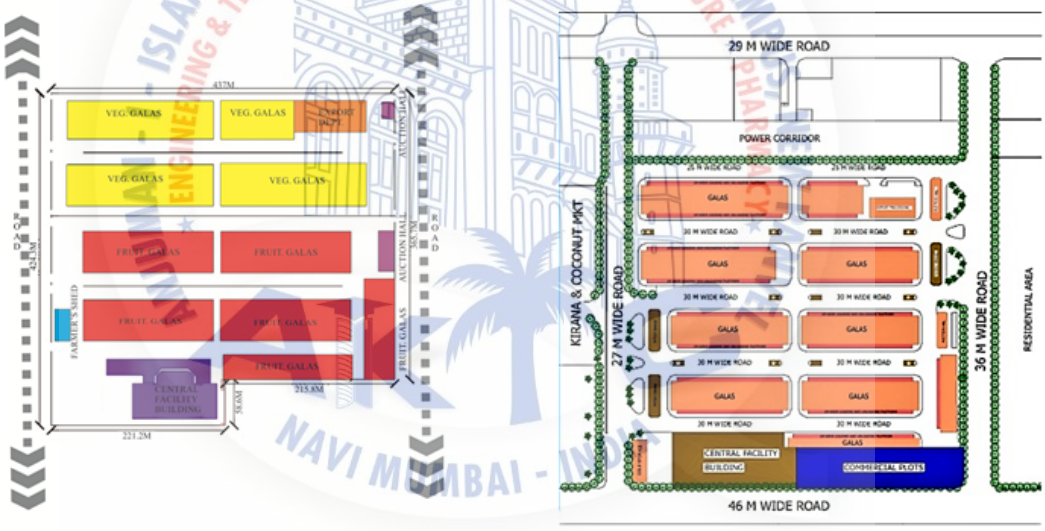


Figure 37 SITE PLAN WITH CURRENT CONDITION

Table 28 BASIC STATISTIC OF SITE

Total Area Of Plot	171950sq.m
Area For Parking And Internal Roads	63365sq.m
% Of Road Upon Total Plot Area	36.85%
Area Of Galas	46879.47sq.m
Total Area Of Facility Building	90000sq.m (approx.)

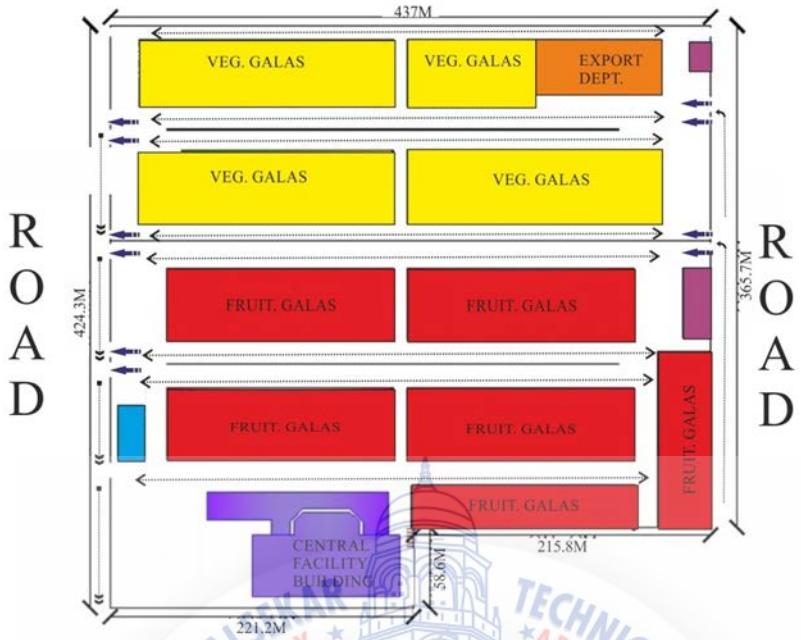


Figure 38 ACCESSIBILITY TO THE SITE

7.8.1. Accessibility to the site and parking along,

The access to the site is unidirectional with the entry being from the east end of the site & the exit being at west end.

The probable drawing of the site is that the loading bays being at 90 degrees to the parking, this leads to unnecessary congestion between the trucks during the peak hours of operation & creating turning problems.

7.8.2. Surface runoff disposal & solid waste disposal,

The solid waste throughout the market is accumulated at the edge of the galas which makes the place more filthy & decaying by just lying there without any treatment throughout the site.

This leads to a foul smell which can be very unhygienic.

Every week the municipality has appointed certain contractors who come & clean up the mess usually on a Sunday when the market is closed.

7.8.3. Utilities provided on site,

The common utilities like the toilets on site are scarce compared to the total employment the site provides.

The bank is adequately placed.

canteen don't operate at night hours which is the crucial business hours & would be helpful to the truck drivers who came a long way travelling .drinking water facilities are adequate.

7.8.4. Swot Analysis

Table 29 SWOT ANALYSIS

Strengths	Weaknesses
• The site is centrally located as far as the incursion of goods coming from all directions of the state is concerned. • near the JNPT port & proposed airport for export • Inside a total market area complex dedicated for the purpose of trade. • proposed railway yard adjacent to site • Traffic control as an internal market complex possible.	• Existing structures has to be demolished phase wise. • disruption of current trade if construction commences • An Octroi charge has started affecting the incursion of transport vehicles. • Getting the required amount of water supply and electricity for the proposal will be a problem due to already allotted energy usage forum.
OPPORTUNITIES	THREATS
• To establish a new modern wholesale retail market based on the norms followed by the world union of wholesale market. • Increase the land use of the site by multiple activity or programmes rather than just a regular market as it sits in the heartland of the sprawl. • Give the residents of the locality a place to look forward to as per local terminal marketing.	• Reconstruction of the site will lead to unrest among the existing traders whose business will be at loss. • will put off the jobs of Mathadis and Mapadis • Construction in MIDST of existing market yard will disturb the flow of work & hence might not be appreciated.

7.9.0. Literature Case Study: ANALYSIS OF NDDB & CLUSTER MODEL FOR MARKETING OF VEGETABLES

Introduction:

India is the world largest producer of many vegetables but there still exists huge gap between per capita demand and supply due to enormous waste during post-harvest handling & marketing. These losses are a missed opportunity to recover value for the benefit of farmers. The deploying of appropriate strategic and operating models, will allow the efficient closure of gaps between demand and supply so as to contribute to doubling farmers' income.

The gap between demand and supply is due to ineffective market links, poor handling and lack of consolidation on both the demand-side and supply-side. On the supply side, the government has agenda to promote modern cultivation practices and collaborative farming. On the demand side, the government has example of nddb's vegetable marketing initiative, ie. Mother dairy fruit & vegetable pvt ltd (safal). Other dairy fruit & vegetable pvt ltd (safal)

7.9.1.Post-harvest supply chain systems

- Supply chain management represents the management of the entire set of production, manufacturing/transformation, distribution and marketing activities by which a consumer is supplied with a desired product.
- Post-harvest supply chain encompasses the planning and managing of all activities involved in procurement, preconditioning, and delivery system of farm produce.
- Marketing of horticultural crops is quite complex and risky due to the perishable nature of the produce, seasonal production and bulkiness.
- The marketing arrangements at different stages play an important role in price levels at various stages viz. From farm gate to the ultimate user. These features make the marketing system of vegetables to differ from other agricultural commodities, particularly in providing time, form and space utilities.
- While the market infrastructure is better developed for food grains, but vegetables markets are not that well developed and markets are congested and unhygienic.

- The middlemen and wholesale businessmen purchase the agricultural products from the farmers at a lower price.
- In turn, fresh vegetables and fruits purchased at the lower price from the farmers are sold out to retail businessmen at higher price and the retail businessmen sell those agricultural products further at higher price to the consumers. As a result, the farmers get only the lower price for their produce whereas the consumers have to pay higher price for the same produce. Vegetable farmers are the most vulnerable. Even if prices soar to one of the highest levels, they only get a third or fourth of the prices in retail markets. Vegetables are a perishable commodity; therefore, retailers can't take the risk of losses from Leftover vegetables, which will be of no value after a few hours. At urban retail markets, onions, tomato, cabbage and cauliflower are being sold for □80-120 a kg, three-four times the prices farmers get. For farmers, input costs have been rising and in turn growers do not get value to produce.
- High inflation has generated cost pressures and this has also impacted profits.

- Supply chain development not only benefits the private sector but also creates spinoffs that stimulate social, economic and environmental sustainable development in the region (employment generation, added value, minimization of product losses etc. The specific gains are:
- Reduction of product losses in transportation and storage.
- Increasing of selling radius and revenue from sales.
- productivity improvement
- high customer satisfaction
- increased profit
- on time delivery
- tracking and tracing to the source
- better control of product safety and quality
- Better information about the flow of products, markets and technologies.
- Transparency of the supply chain.
- dissemination of technology, capital and knowledge among the chain partners
- large investments and risks are shared among partners in the chain
- gross capital formation at back-end and in agriculture allied business

7.9.2. The **NDDB** (national dairy development board) model can be understood in its 2 main product formats – for milk and the case of safal for fruits & vegetables.

a**) Dairy model**

b) **Vegetables model**

- dairy model

In the case of milk, the model is centred on farm to market collaboration through cooperatives of farmers for –milk procurement at rural gate milk treatment and packaging at processing unit dairy product distribution to consumer-gate (this can be through 3rd party channels)

- vegetables model

On seeing the success in milk supply chain, mother dairy fruit & vegetable pvt ltd (safal) was especially conceived to adapt and replicate same in the marketing of vegetables and fruits. the safal model is primarily as follows –

1. procurement on receipt of supply from farmers at Delhi hub
2. distribution operations from Delhi hub
3. retail to consumers from owned outlets
4. Backward linkage through extension work on quality requirement and handling.

7.9.3. SAFAL had forayed into Bangalore market by opening a SAFAL F&V Auction centre.

The Delhi model was changed into that of a terminal market and the original plan comprised a central auction facility with 100 wholesale shops.

A 10,000 tonne capacity cold storage for bulk produces like potato. Initially managed by NDDB, the intention was to gradually involve farmers' associations to become partners in the project.

The backward linkage for F&V would be through 42 collection centres, to be set up in the local farm produce growing areas.

The forward linkage was planned through 8 to 10 cash-and-carry grocery stores to be constructed at strategic locations in the city, in addition to four such stores at the auction market itself.

The model, without own captive retail as was the case in Delhi, required competing with existing wholesalers and hence did not meet related success.

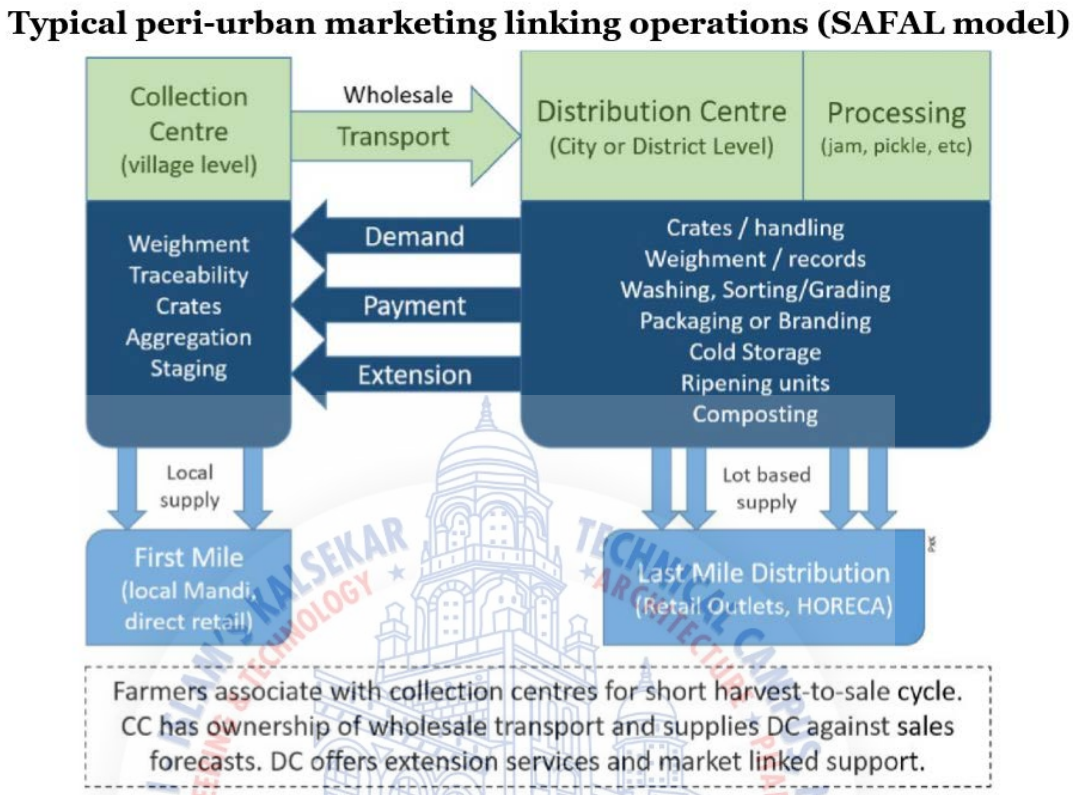


Figure 39 TYPICAL PERI-URBAN MARKETING LINKING OPERATIONS

1. Recommendation to alleviate instability: To alleviate instability in market supply, production and pricing
2. Causes of instability in onion, tomato and potatoes in market: On enquiring from SAFAL team on causes for instability in market level prices of said crops, it was informed that a key aspect was the vagaries of consumers. As per SAFAL, the consumer is always willing to explore new price point opportunities.
3. Technology needed in preconditioning, storage, transportation at village level
4. Technology needed at merchandising level
5. Technology needed in preconditioning, storage, transportation at District (intermediate) level and at City (Wholesale level
6. Infrastructural and Professional management to help farmers receive support on post-harvest supply chain
7. Measures to identify and promote production clusters (peri-urban) around NCR region.
8. Any related issues to creating robust & efficient marketing for vegetables.

7.9.4.**Operational Model** (Recommended Pilot for Execution) The following may be considered by implementing agencies and implemented to test operational models and explore the scope for replication in various regions:

1. Establish an operating team/organisation to develop and execute aggregation centres at district, with Delhi/NCR as the primary target market.

2. Each aggregation centre will be designed in a modular fashion, each module to handle 7 tons per day of fresh produce. Localised scalability will be possible by adding modules of 7 or 15 tons capacity each.

3. Each aggregation centre will implement the following activities:

a. Serve as collection points for vegetable farmers in a 10 kilometre radius (i.e. each centre will become a fist level hub at the back-end)

b. Serve as pre-conditioning facility for market linkage of fresh produce (i.e. prepare produce for Delhi market and for distant markets per need)

c. Serve as Dispatch centres of retail-ready produce to wholesale markets (i.e. directly connect prepared produce to wholesalers at target market)

d. Serve as procurement centres for wholesalers registered in NAM (i.e. option to assay and place orders for produce at each centre)

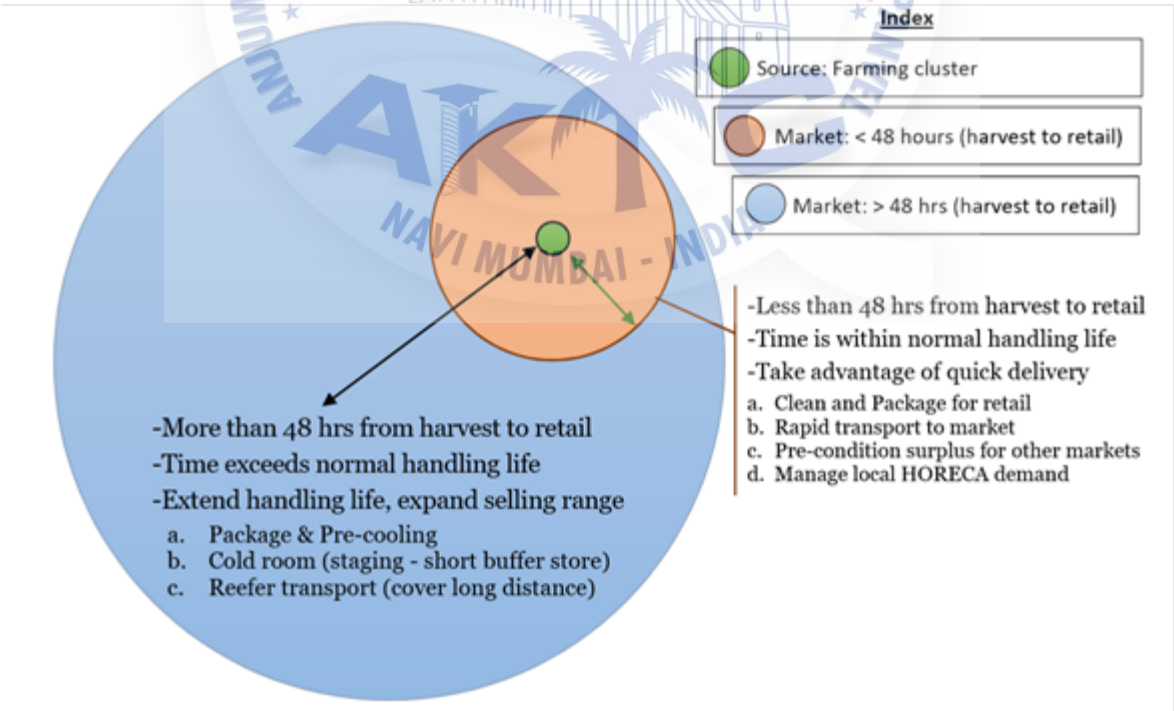


Figure 40 BASIC STATISTIC OF SAFAL MODEL

Market Range and Technology: The following assumptions are taken:

i. Cluster has small vegetable farmers with Delhi market as target

ii. Cultivators require localised aggregation to facilitate market access

iii. Excess production is not finding market access - surplus is available

iv. There is scope to increase production with improved market linkage

v. Land for aggregation centre is available (approx. 1 to 2 acre).

7.9.5. Two key operational models are recommended:

i. Consolidation and streamlining of existing selling cycle into local Delhi market. The operations bring qualitative improvement in supply system and improved delivery fulfilment ratios. There may be no immediate transaction level gains but volumes handled would increase and add to revenue.

ii. Produce in surplus to existing market linkage would be routed to distant urban centres. A radius of 300 kms is thumb-rule adopted to deploy cold-chain infrastructure to allow perishable produce to travel longer distance. The supply side would be empowered with a logistics bridge and productivity enhancement linked to non-local demand would be promoted.

Organisational Model: to operate these aggregation centres with transport, it is recommended that implementing agencies identify private entrepreneurs to execute the supply chain. On the other hand, keeping in view the success of NDDB in dairy chain, similar government driven interface can also be explored.

8.0. Inference:

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

Choudhary Hira Singh Wholesale Fruit and Vegetable Market, Azadpur, Delhi, India.

- When market is divided in two patches it increases the internal movements of perishable goods which increases the percentage of wastage due to rough handling of produce, to reduce the wastage planning should be done in one patch catering all activities

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.

Vashi APMC for Fruit and Vegetable.

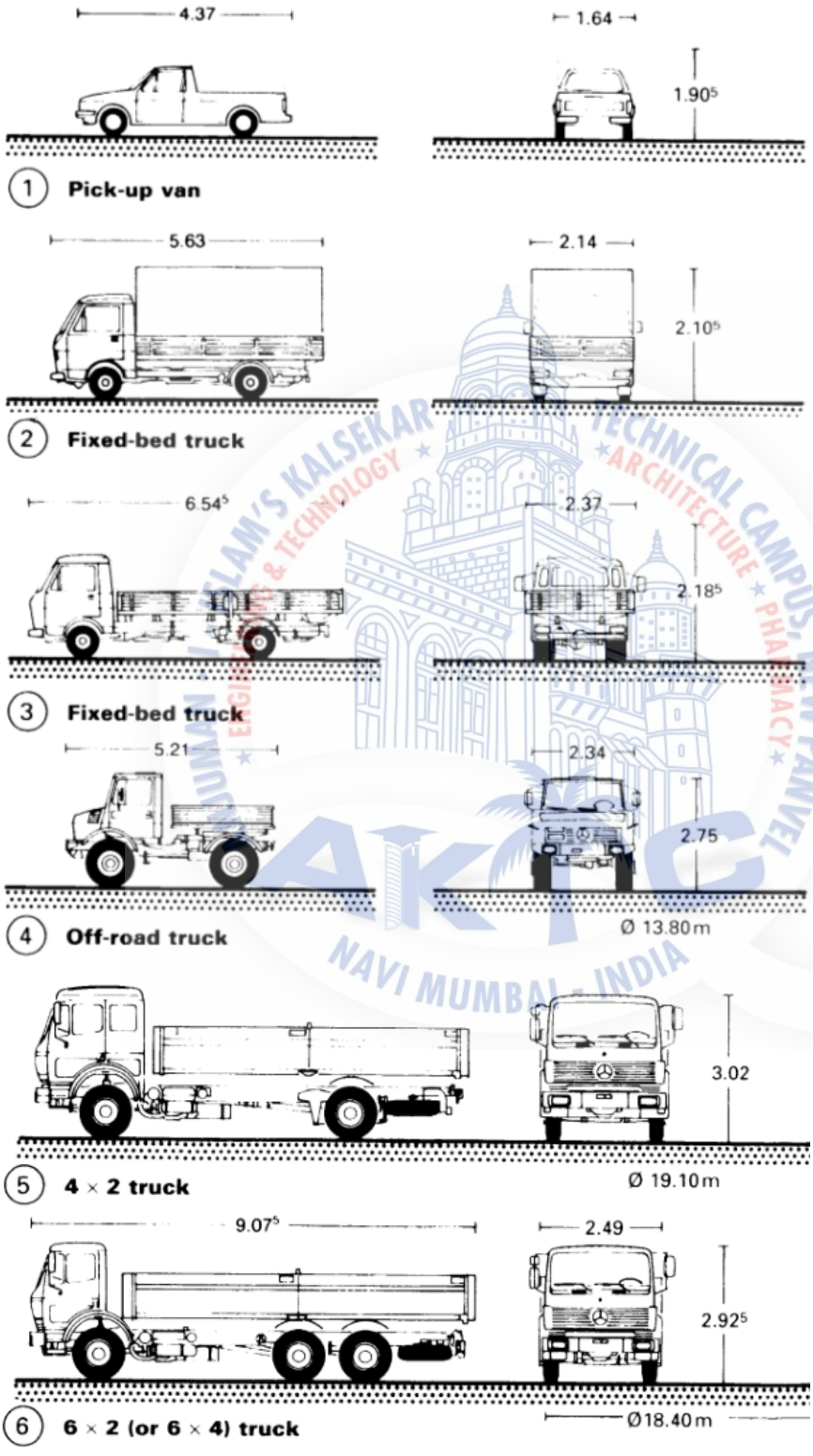
- there should not be any dead ends in the design as the structure is going to face the heavy loaded vehicles the main aspects for the should be smooth circulation of heavy loaded vehicles . no vehicle should be taken a u turn in a design as it becomes very difficult in case of heavy vehicles.

Analysis of Nddb & Cluster Model for Marketing of Vegetable.

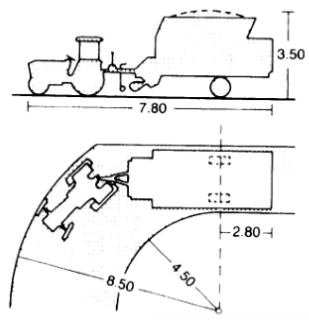
- Scope to increase production with improved market linkage implementing agencies identify private entrepreneurs to execute the supply chain similar government driven interface can also be explored.

9.0. Standards and Data Collection

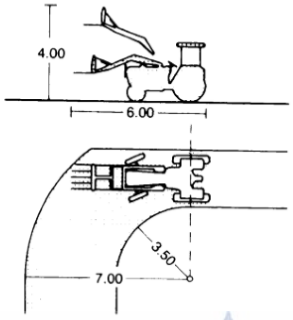
9.1. Vehicles dimension



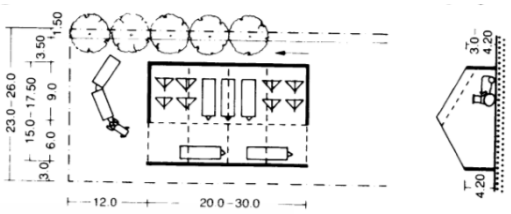
9.2. Farm vehicles dimension and turning radius



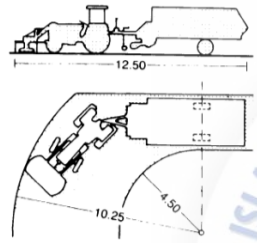
1 Tractor with trailer



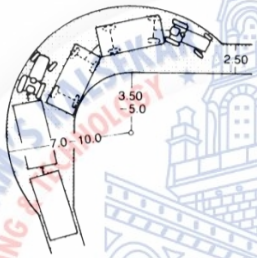
2 Tractor with front loader



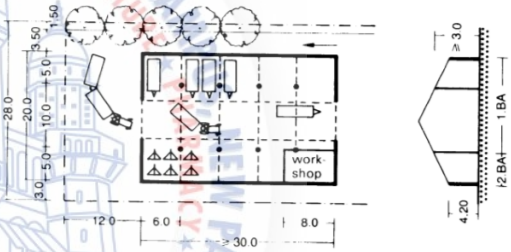
6 Small machine shed with side gangway



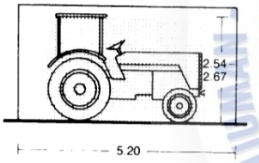
3 Tractor with push reaper and trailer

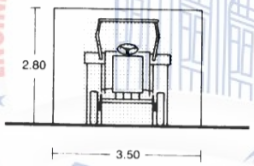


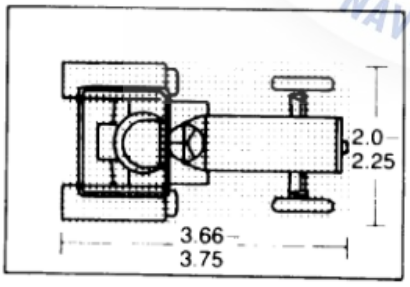
4 Minimum space required for traffic



7 Large machine shed with central gangway: supported structure



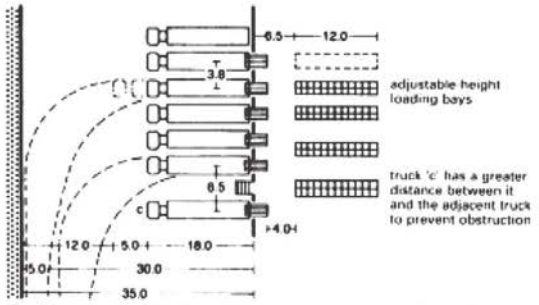




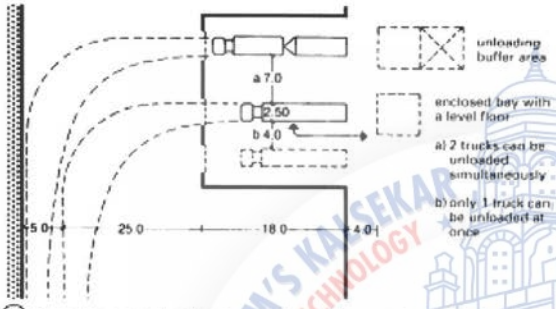
trailer	(m³)	length	width	height
green fodder	12	6.95	2.35	2.26
dry fodder	19			2.94
green fodder	11	7.80	2.46	2.45
dry fodder	17			3.10
green fodder	12	7.25	2.25	2.30
dry fodder	18			3.25
green fodder	14	8.00	2.35	2.25
dry fodder	20			2.90
guide size for trailers	13–20	7.70	2.40	3.10
guide for shed areas		8.70	3.40	3.40

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

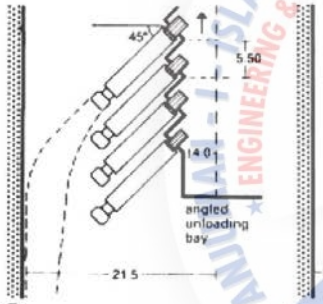
9.3. Turning and Parking



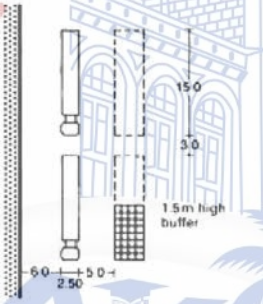
① **Close-packed loading and unloading bays; vehicles parked close together must ease forward a little before they can drive off**



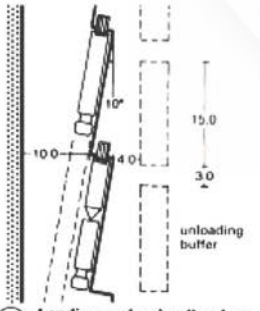
② **Loading and unloading bays take up the most space in the yard**



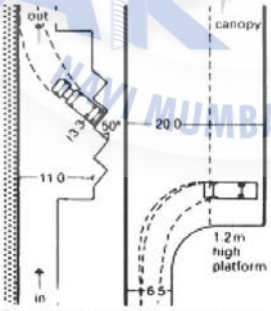
③ **Loading and unloading bays**



④ **Loading and unloading bay**



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



⑥ **Minimum space requirement for loading bays**

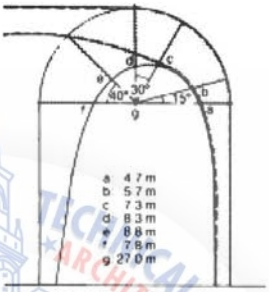
An example of the ideal depth of yard for articulated trucks with overall lengths of 18m is shown in ①. Calculations based on experience show that under these conditions a length of 35m is required for access. Even the longest articulated truck can then be driven swiftly in and out. This is an important 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.

→ ③, ⑤ + ⑥.

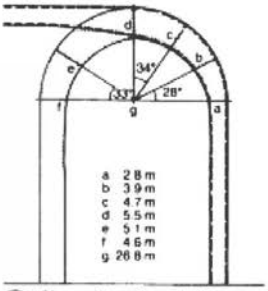
The largest turning radius for an articulated truck is about 12.00m.

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

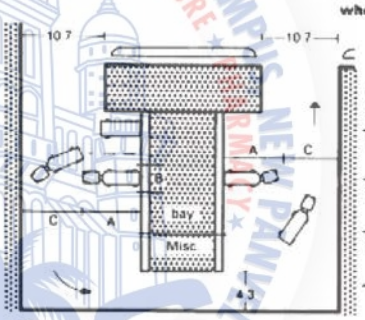
- 1.50m with the use of a loading dock;
- 3.00m with the use of loading doors.



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

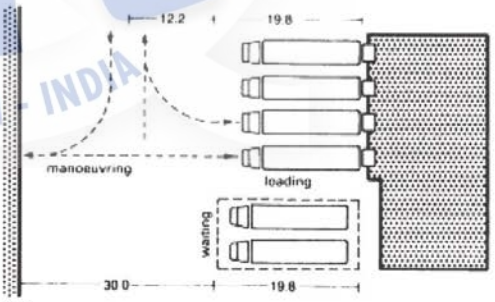


⑨ **Normal turning circle dimensions for a truck with a rigid chassis and long wheelbase**

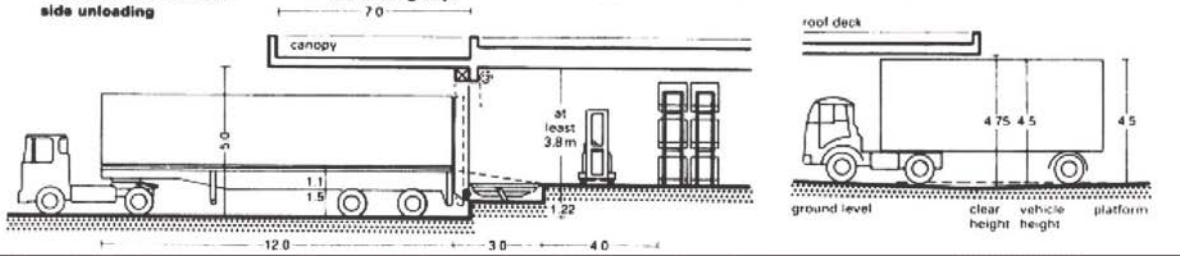


A articulated truck	B unloading position	C manoeuvring area
10.7	3.0	14.0
	3.7	13.1
	4.3	11.9
12.2	3.0	14.6
	3.7	13.4
	4.3	12.8
13.7	3.0	17.4
	3.7	14.9
	4.3	14.6

⑩ **Loading and unloading in a courtyard**



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



10.0. SITE JUSTIFICATION

Figure 41OF THE SITE LOCATIONAND DEMARCATION

Figure 42 DEMARCATION OF APMC AT VASHI

10.1. ACCESSIBILITY AND SITE INFLUENCE

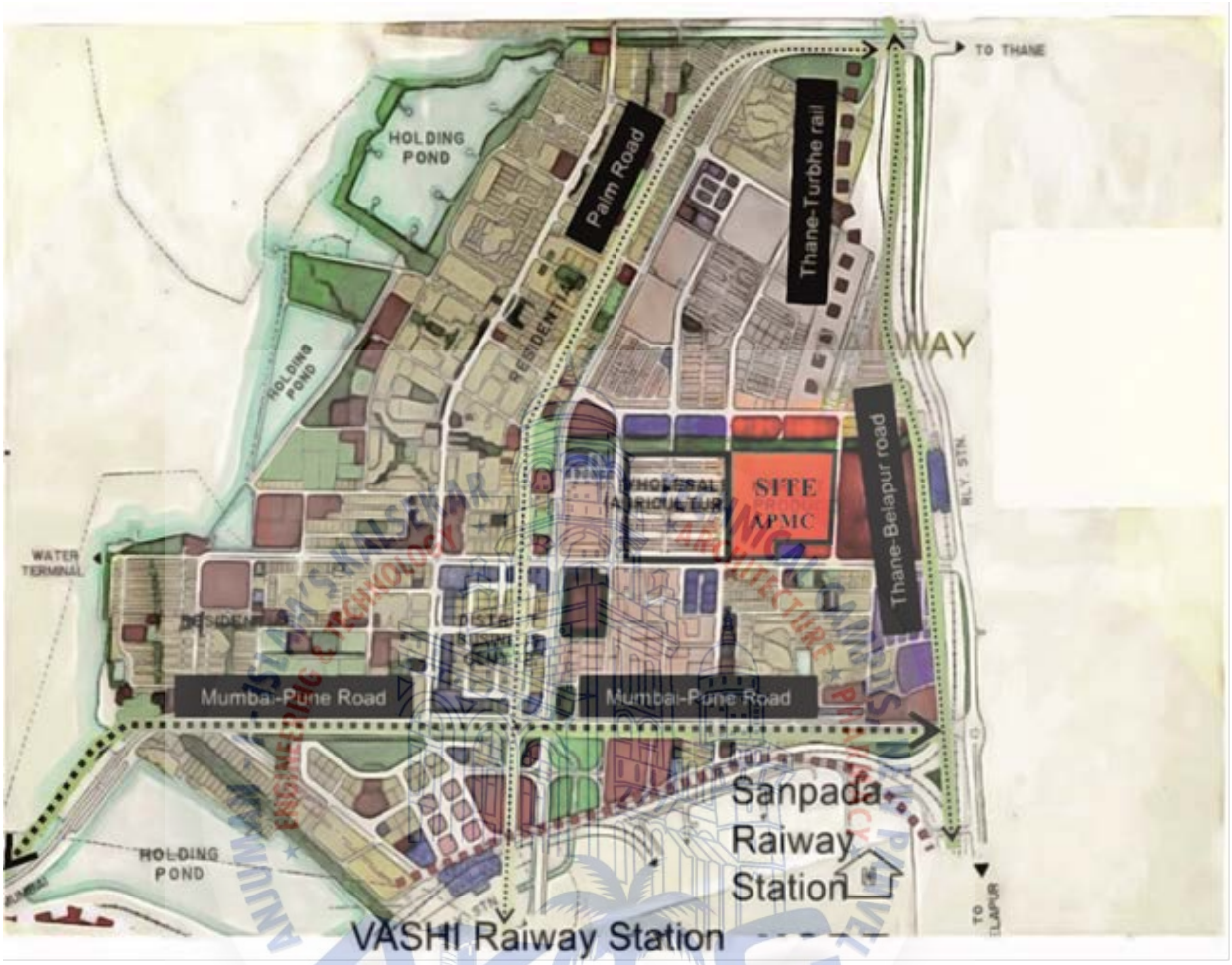


Figure 43 ACCESSIBILITY AND SITE INFLUNCE

Site location:

the site of agriculture produce market committee, vegetable and fruit market which is to be redevelop, is located is located in sector 18, Turbhe Vashi ,Navi Mumbai, Maharashtra,india.

Site area:

The vegetable and fruit market comprises of 17.19 hectare (171950sq.m) of land from the total A.P.M.C. market, which is spread over 72.76 hectare (727600)

10.2. SITE: CURRENT SCENARIO

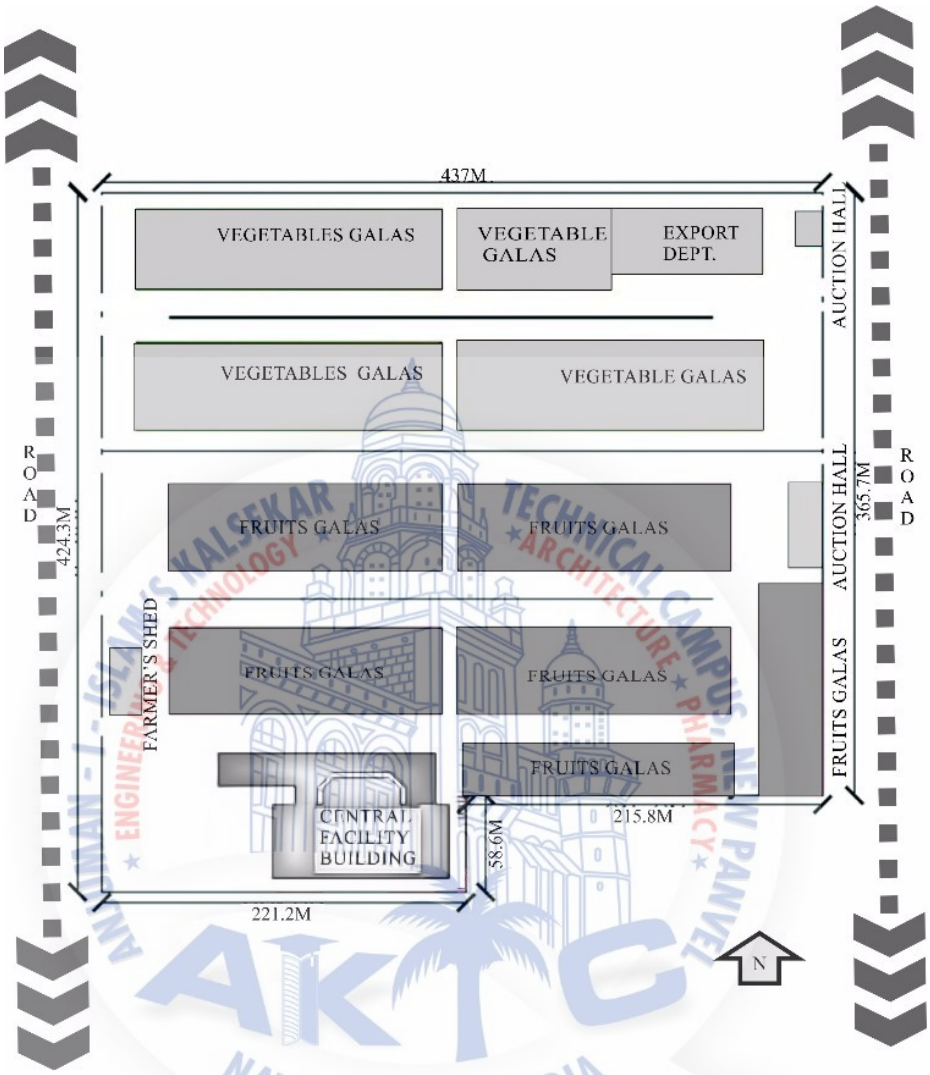


Figure 44 CURRENT SCENARIO OF SITE

Total Area of Plot=**171950sq.m**

Area for Parking and Internal Roads = 63365sq.m

% of Road upon Total Plot Area =36.85%

Area of Galas = 46879.47sq.m

Total Area of Facility Building =90000sq.m (approx.)

10.3. Current site Scenario

- The site is abutting roads on three sides, one is 36M wide other road is 27M wide and 45M wide.
- This road are majorly used for the truck circulation and parking.
- Major heavy vehicular circulation is on 36M wide road and 27M wide from 4am. To 10am, the rest of the time, all the trucks are parked alongside of the road.

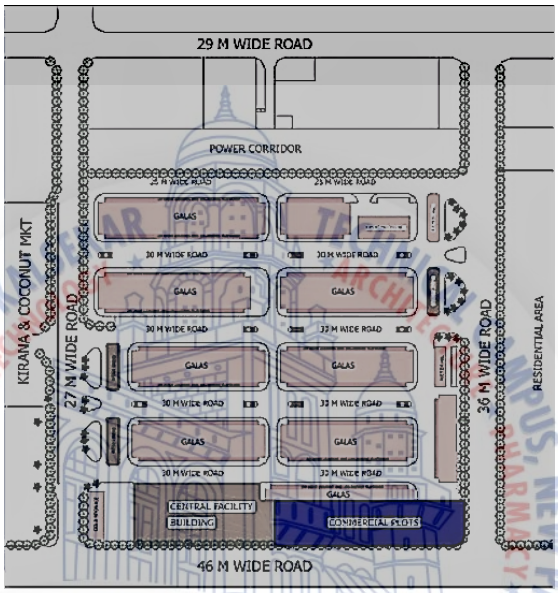


Figure 45 EXISTING PLANNING OF THE MARKET

1. Farmers who want to sell individually **don't have a designated space**; hence it's done under a bamboo shed.
2. **No residential accommodation for excess amount of workers** leads them to stay on the upper levels & sleep in galas during night time.

10.3. Current site Scenario

- Some extra canteens are given out on lease for fulfilling the demand.
- No proper space for packaging, as it usually happens in the gala itself, for export it takes place in the auction halls.

- Due to over use of provided office & more no. of brokers the spaces juxtapose to the gala alleys, usually with a desk and chairs.
- Waste lying under the bays and no defined parking leads to chaos.

10.4. ACCESSIBILITY AND SITE INFLUNCE FOR INFLOW AND OUTFLOW

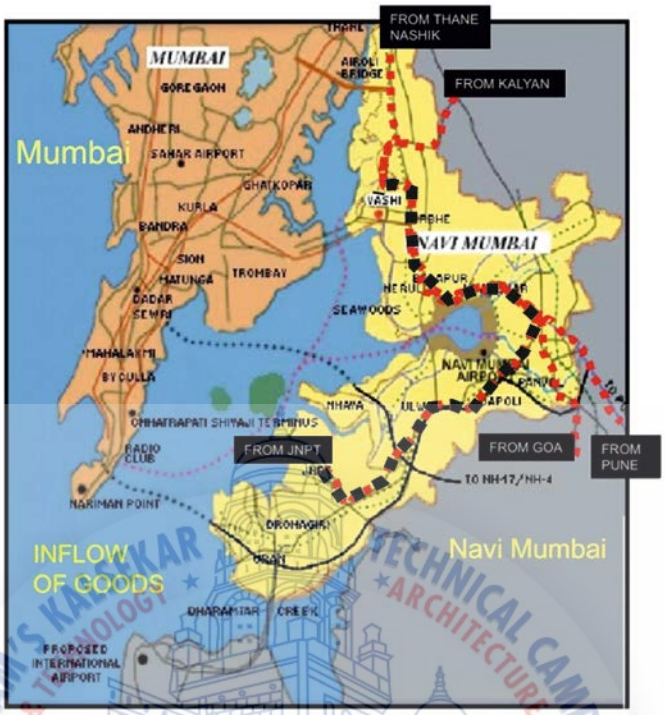


Figure 46 MAJOR INFLOW OF GOODS FROM VARIOUS PARTS OF THE COUNTRY USUALLY AT NIGHT

Figure 47 MAJOR OUTFLOW OF GOODS TO VARIOUS PARTS OF THE COUNTRY

10.5. 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 %.

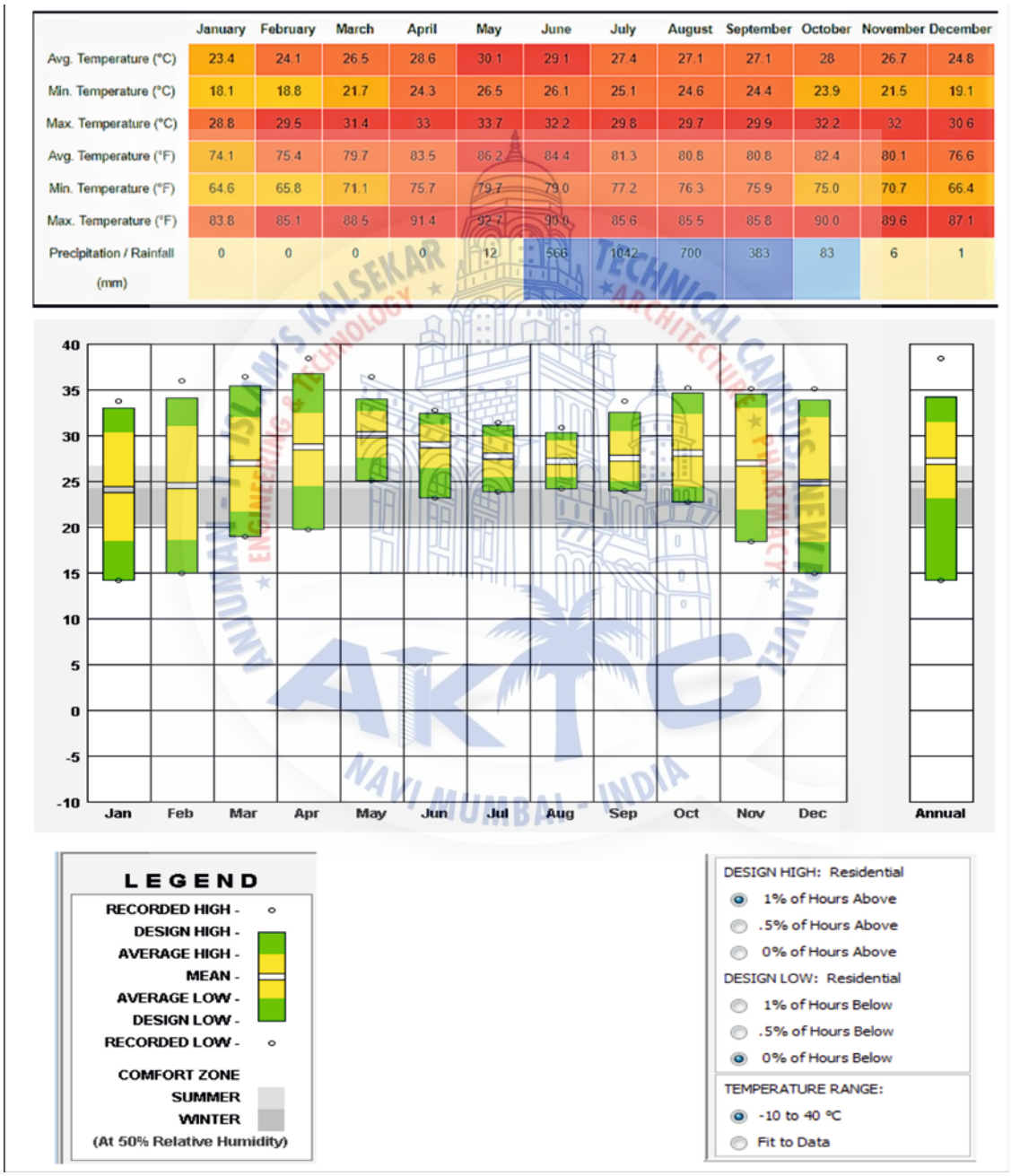


Figure 48 TEMPERATURE RANGE OF VASHI

10.5.1. YEARLY SUN GRAPH OF VASHI

Sun Graph in summer at Vashi

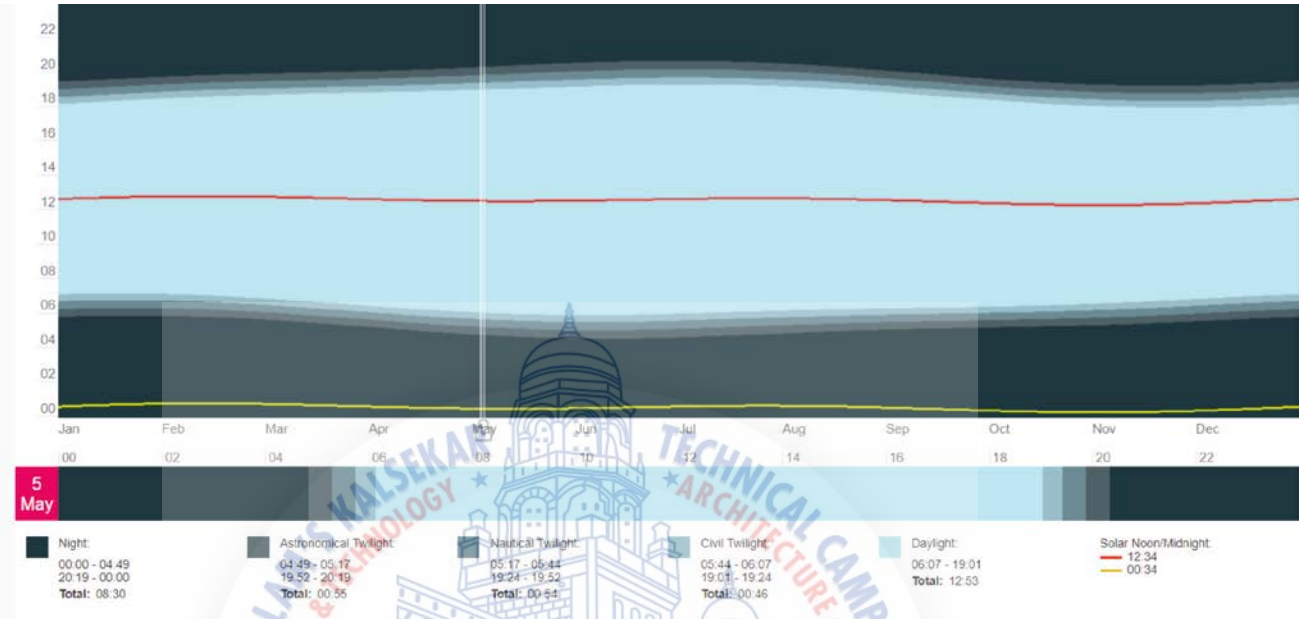


Figure 49 SUN GRAPH IN SUMMER

Sun Graph in Rainy Season at Vashi

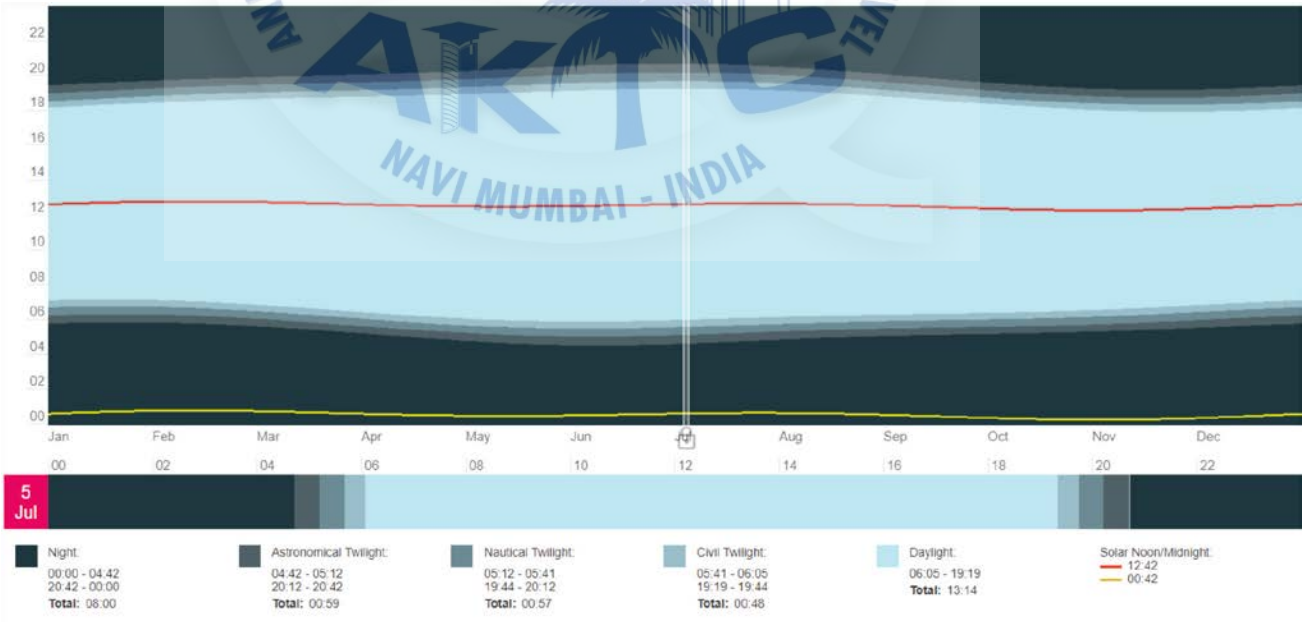


Figure 50 SUN GRAPH IN RAINY SEASON

Sun Graph in winter at Vashi

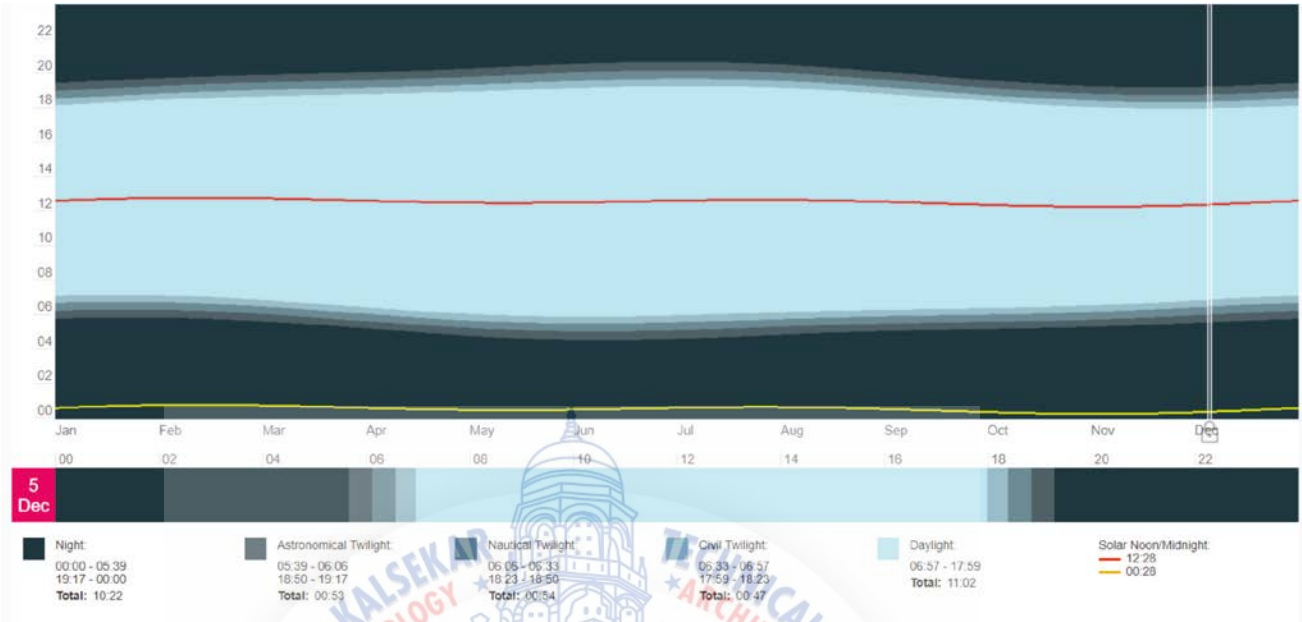
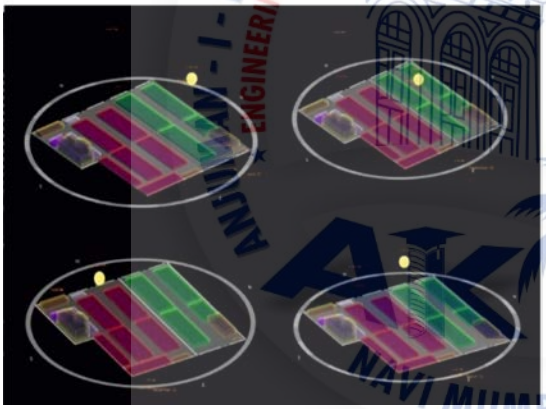
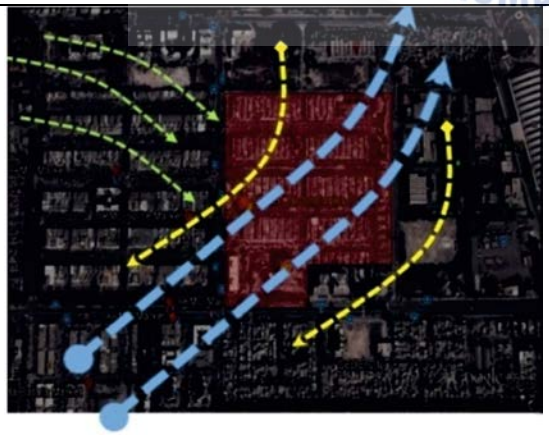


Figure 51 SUN GRAPH IN WINTER

10.5.2. CLIMATIC INFLUENCES ON SITE.

	SOLAR POSITION ON THE SITE AT DIFFERENT TIME OF THE YEAR • MARCH • JUNE • SEPTEMBER • DECEMBER.
	WIND DIRECTIONS ON THE SITE. Based on IMD observations, predominant wind direction in Navi Mumbai is southwest in monsoon and north-east during rest of the year.

11.0. Core market infrastructure:

1. Market building:

- Shops
- Storage
- Offices
- Display area
- Toilets: Owner-Worker

2. Loading and uploading platform.

- Auction hall:
- Price display

3. Weightment infrastructure:

- Weighing machine
- Record room
- Toilets

4. Vehicular parking:

- Heavy vehicles
- Car and bike parking

5. Storage:

- Ware house
- Storage room
- Security cabin

11.1. SPACE PROGRAM

Administration building

1. Head office
2. Reception
3. Waiting area
4. Staff area
5. Manager cabin
6. Toilets
7. Pantry
8. Storage
9. Record room
10. Research laboratories
11. Seminar halls
12. Meeting rooms
13. Building management

11.2. Facilities and services:

1. Farmers rest house
2. Workers rest area
3. Canteen
4. Police station
5. Bank
6. Medical stores
7. Clinic
8. General stores
9. Drinking water
10. Toilets
11. Export facilities
12. Recreational spaces

11.3. SPACE PROGRAM:

SR. NO.	SPACE	NOS.	SUB-SPACE	TYPE OF SPACE	QUALITY OF SPACE	CAPACITY (USERS)	AREA (SQ. M)
1	FRUIT GALA	700	WORK STATION	SEMI PUBLIC	SEMI OPEN	10/GALA	30X700=21000
2	VEGETABLE GALA	400	WORK STATION	SEMI PUBLIC	SEMI OPEN	10/GALA	40X400=16000
3	FARMER'S MARKET	1	WORK STATION	PUBLIC	SEMI OPEN	100-150	1X5000=5000
4	TRADER'S OFFICE	100	WORK STATION	PRIVATE	CLOSED	500-600	100X16 =1600
5	RETAILER'S OFFICE	100	WORK STATION	PRIVATE	CLOSED	500-600	100X16=1600
6	APMC OFFICE	1	WORK STATION	PRIVATE	CLOSED	50-60	1X1000=1000
7	WORKER'S UNION OFFICE	1	WORK STATION	PRIVATE	CLOSED	10	1X50=50
8	EXPORT DEPT. OFFICE	1	WORK STATION	PRIVATE	CLOSED	20-25	1X150=150
9	E-TRADING BLOCK	1	WORK STATION	SEMI PUBLIC	CLOSED	100-150	1X1000=1000
10	KNOWLEDGE CENTRE	1	WORK STATION	PUBLIC	SEMI OPEN	60-70	1X1000=1000
11	WAREHOUSE	4	STORAGE	PRIVATE	CLOSED		4X2500=10000
12	AUCTION HALL	2	WORK STATION	SEMI PUBLIC	CLOSED	100	2X1000=2000
13	COLD STORAGE	2	STORAGE	PRIVATE	CLOSED		2X3000=6000
14	CENTEEN	3	DINING	PUBLIC	SEMI OPEN	150	3X150=450

Table 30 SPACE PROGRAM

SPACE PROGRAM:

SR. NO.	SPACE	NOS.	SUB-SPACE	TYPE OF SPACE	QUALITY OF SPACE	CAPACITY (USERS)	AREA (SQ. M)
15	FARMER'S DORMITORY	5	RESTROOM	SEMI PUBLIC	CLOSED	30	5X25=125
16	WORKER'S DORMITORY	20	RESTROOM	SEMI PUBLIC	CLOSED	100	20X100=2000
17	BANKS	1	WORK STATION	PUBLIC	CLOSED	100	1X500=500
18	DRIVER'S DORMITORY	5	RESTROOM	SEMI PUBLIC	CLOSED	30	5X25=125
19	PARKING BAY	600	PARKING	PRIVATE	SEMI OPEN	150	600X40=24000
20	SUB STATION	1	-	PRIVATE	SEMI OPEN		1X150=150
21	MACHINERY GARAGE	1	WORK STATION	PUBLIC	SEMI OPEN		1X300=300
22	GATEKEEPER'S CADIN	5	WORK STATION	PUBLIC	CLOSED	10	5X10=50
23	COMMOM FACILITY	-			SEMI OPEN		10000
20	TOTAL						106800

Table 31 SPACE PROGRAM

12.0. Bibliography

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13.List of figure

14.List of Tables