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"Integrated Planning and Development of Market for Smart City"

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ABSTRACT–"Integrated Planning and Development of Market for Smart City" is theterm which acts as a medium for development in market infrastructure. It iss influenced by many factors such as physical aspects, social and marginal aspects.The most fundamental of which is the size and use of selling space, Market planning and its relationship to traffic circulation and parking. In this report we focus on planning of market with all facilities for vendors, improved resource use efficiency, solid waste management system, infrastructure safety measures. We making market for smart city by taking smart decisions using smart technologies and services. This report deals with study and development of market which helps to making smart City. We define market with various services which are delivered to its vendors in an effective and efficient manner. The problems of rural and urban Vegetable and fruit markets are not uniform, and that smart market development has to be applied in combination with place-based approach by proposing the integrated planning and development of Market.These article provides information on how to prepare layouts and building designs, choose equipment and the storage facilities for produce in the market. Also it provides the provision regarding the Solid waste management.

Keywords: smart development, integrated planning of market, AutoCAD, anthropometric design parameters, infrastructure safety measures , Mechanical Ventilation.

I. INTRODUCTION

The term rural and public market has changed in meaning over time and still differs from place to place. The main aim of project is to provide a simple step-by-step approach to developing markets. It concentrates on general principles governing planning and operational efficiency of rural and urban markets. In India, public market has traditionally been defined as a municipally owned and operated building where vendors sell fresh food from open stalls. They typically focus on the sale of a full array of fresh, healthful, value added, and prepared foods often locally grown or produced. They usually include a seasonal, outdoor farmer's market component. Public markets are located in and/or create a public space in the community. This is the visible aspect of a market – the creation of an inviting, safe, and lively place that attracts a wide range of people. As an effective placewhere people mix, markets can become the heart and soul of a community, its common ground, a place where people interact easily, and a setting where other community activities take place.In case of Solapur, market refers to vegetable markets, which offer fresh fruits and vegetables. Basically these markets can be permanent, semi-permanent (morning-Evening shift) and mobile vendors. Vendors are required to pay rental fees for the area they occupy. These markets sell all types of fruit and vegetables. These markets act as a wholesale market for vegetable and fruits with small vendors purchasing from these markets for their business.

II. AIMS AND OBJECTIVES

The main aim of project is to provide a simple step-by-step approach to developing Markets. The major objective is to understand the policy environment and develop Recommendation based on the study, which protects and promotes systematic Development of vegetable markets. The specific objectives are:

i. To study and understand the existing problems and issues of vegetable and fruit markets.
ii. To review the existing reports and policies related to vegetable markets.

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iii. To recommend the policies for better planning and management of the vegetable and fruit market in Jule Solapur.

III. THEORETICAL FORMULATION

The total site area of 3600 sq.m is required to accommodate the given covered space area (including sales, utility, administration, and other amenities) should be in the ratio of between 1:4 and 1:3, but can be in the range of 1:5 to 1:2.5 depending upon the context. The overall site area required in square meters can thus be obtained by multiplication of the gross market area and factor of 2.5 to 5, allowing traffic Circulation, parking and site landscaping.

The main factors to be considered while designing a new market as follows:

i. Provision of adequate space is essential, for sales areas, administration, storage, specialized facilities, circulation and parking.
ii. The provisioned space should allow for future expansion needs as well as flexibility according to changing social and economic circumstances of the market.
iii. This flexibility should be addressed by building design as well.
iv. In simple rural and urban markets, especially for peak periods, emphasis should be given to the use of low-cost covering of sales area, by using permanent light-weight shade structures or retractable blinds.
v. For traffic control segregation of pedestrian and hand-cart movement from heavy delivery vehicles must be carried out.
vi. Solid-waste management system includes biogas plant.
vii. Provision of fire resistance for building safety measures considering standards of IS Code 1641-1988.
viii. Provision of mechanical ventilation HVAC system for building because lac of natural ventilation in some areas of market building.
ix. Occupational health and safety implications.
x. Emergency, security and safety plans.

IV. PARAMETRIC INVESTIGATION

I. PLANNING OF SHOP IN THE MARKET

Market designed for vegetables, fruits, dry fruits and Masala section, groceries section and meat section on the basis of requirements of equipment and arrangements by considering the anthropometric human body dimensions concept for easy circulation and comfort to the vendors and customers. In the market building there are total 50 shops, in which 48 shops having same dimensions of 2.65m×3.3m and 2 shops having area 15.53m sq. each. Each shop having rolling shutter provision for overnight storage of produce.

Sr. No.	Shop Section	Total No. of shops
1	Vegetable shops	16
2	Fruit shops	10
3	Dry fruits and masala shops	8
4	Groceries shops	7
5	Meat shops	9

Table No. 4.1: Illustrating Total Nos. Of Shops In Market

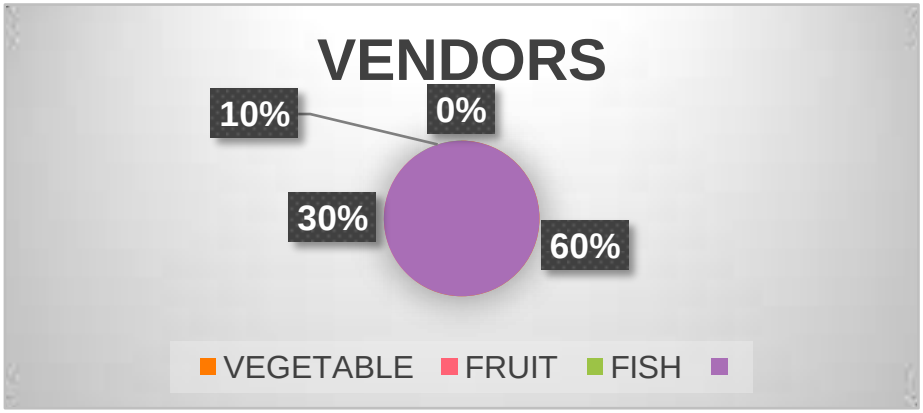

Fig. No. 4.1: Illustrating percentile representation of vendors in the market by survey done in JuleSolapur.

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II. ARRANGEMENT OF SHOPS IN THE DIFFERENT SECTIONS OF THE MARKET

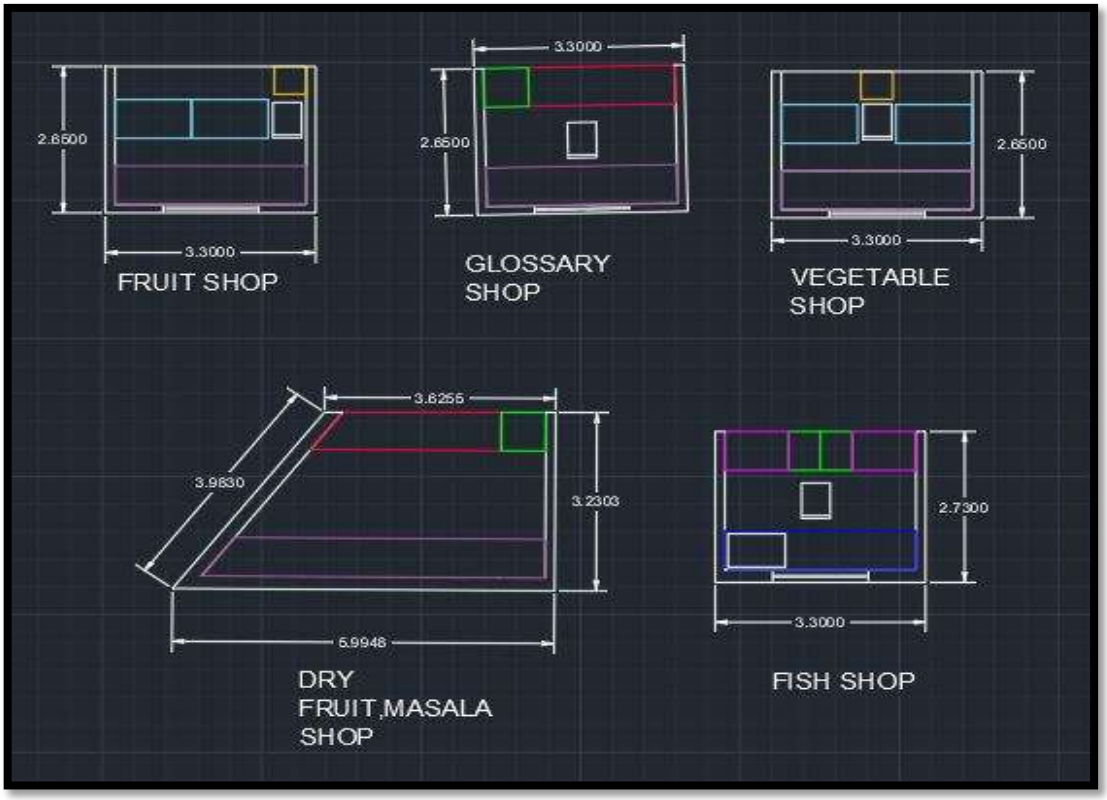

Fig. No. 4.2: Illustrating Arrangement of Racks in Fruit and Groceries Shop, Vegetables Shop, Dry fruits and Masala Shop, Meat Shop.

III. PHISICAL INFRASTRUCTURE OF THE MARKET:

The total site area of the market is 3600sq m. There are various Services and facilities provided in the market as follows: -

i. Built-up area of market: - 1500sq m.
ii. Vegetable shop section- 139.92sq m
iii. Fruits shops- 87.45sq m
iv. Dry fruits shops- 41.765sq m
v. Masala shops- 41.765sq m
vi. Groceries shops- 61.21sq m
vii. Meat shops- 78.705sq m
viii. Movable shops- 52.47sq m
ix. Main canteen-1No.
x. Cafeteria- 2 Nos.
xi. Cold room and cool room for Vegetable and fruits section with 18 metric tons Storage capacity- 89.75sq m.
xii. Cold room for meat section with 7 metric tons storage capacity- 44. 88sq.m
xiii. Generator room-1 No. having area – 22 Sq.m with 250KVA capacity.
xiv. Overhead water tank each of 5000 litre capacity – 3Nos; with deep tube well
xv. Separate men's toilet and women's toilets
xvi. Readymade toilet blocks outside of market- 2 Nos.
xvii. Watchman cabin- 2Nos.
xviii. Main entrance gate of market- 2
xix. Internal entrance- 1 entrance of 5m through which loading vehicle easily go inside the market, 2 entrance at main canteen with stairs, 2 entrance at both corners having inner slope for handcart's movement.
xx. Staircase- 1main dog-legged staircase and 1 emergency circular staircase.
xxi. Parking area: - total area = 570sq.m
xxii. Loading/ Un-loading area (Godown)
xxiii. Biogas plant at outside of market at the corner site.

IV. PARKING AREA PROVISION IN THE MARKET

The Parking area provided in the market is shown in table No.-4.2 and parking area Layout plan is shown in fig. No. 5.3.

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Sr. No.	Type of Vehicle	Total Area provided in the market (sq.m)
1	Four wheeler/ Loading Vehicles	390
2	Two wheeler/bicycle	180

Table No. 4.2: Illustrating Parking Area in The Market for Different Types of Vehicles

V. RESULTS AND DISCUSSION

I.FORMULATION OF THE MARKET

On the basis of survey, site visits and data collection, the provisions required for vegetables and fruits and meat market, the Layout of market is developed. The design of fixed elements such as buildings and infrastructure developed in market has to be done. They are demonstrated by using drawings or illustrations of actual market projects, supplemented with general descriptions of the organization of market buildings, typical materials, structures and servicing arrangements. The master plan of the market shown in fig no. 5.1.

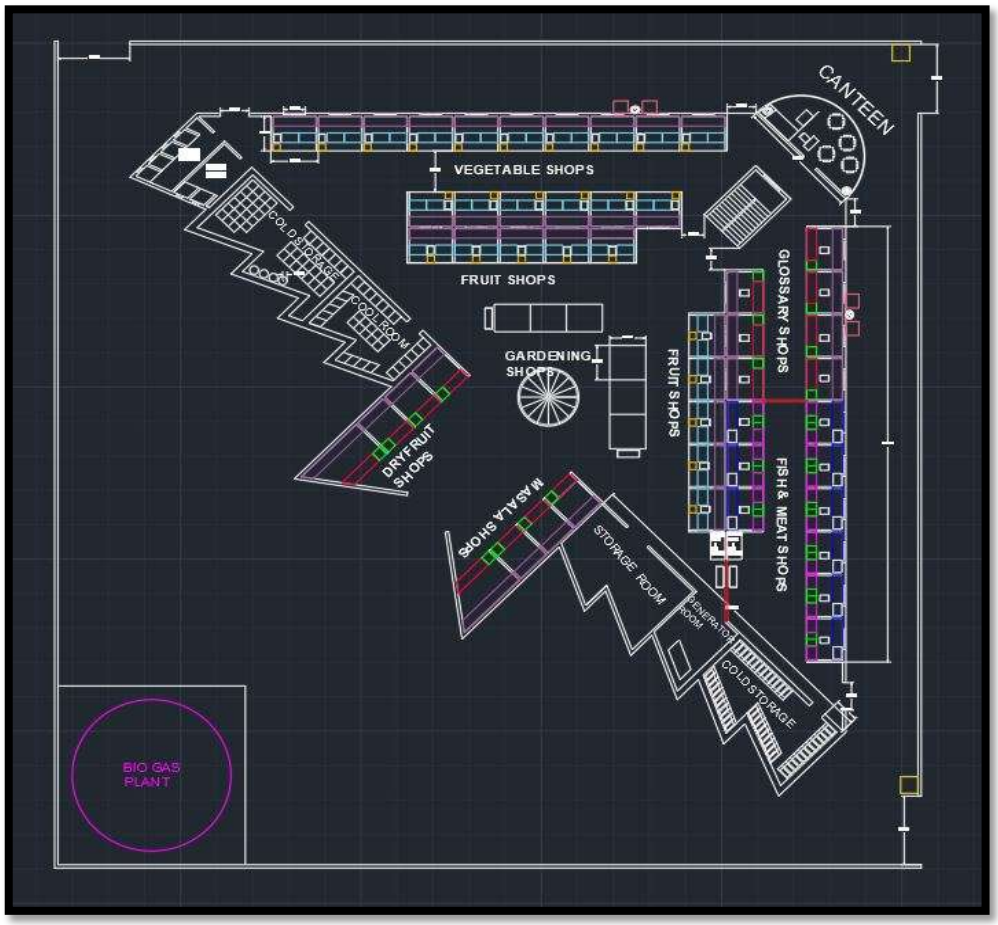

Fig No. 5.1: Illustrating The Master Plan Of The Market

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Fig No. 5.2: Illustrating The Implementationof Wet Riser System, Lavout of HVAC Ventilation Svstem.

Fig. No. 5.3: Illustrating The Parking Area Layout Plan,Water Supply and Plumbing Layout Plan

VI. CONCLUSION

- A good smart cafeteria, a well planned and managed parking system , Separate toilet systems for ladies and gents with both fixed and movable toilets ,cold storage, A well, neat and cleanest market which adds a greatest factor in smart city projects.
- After applying all this services and technique the overall problems of vendors and public market reduced. Due to this social, economical and overall status of public market increased.
- As per our research the total project cost is nearly 9,00,00,000 rupees and a total of revenue generated by the rent and electricity generation is estimated around 24,00.000 rupees yearly and can be increased.

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