

Planning and Scheduling of Modern Infrastructural Facilities for a Township at Singaperumal Koil, Kancheepuram

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ABSTRACT: The townships are planned with “walk to work” concept, built up with public private partnership, integrated in nature can be the future of the cities developing in India. They will be self sufficient, self managed and self governed units, with well defined and well designed residential, commercial, retail and recreational areas; self owned and created infrastructure, integrated waste management systems, energy efficient management systems, water resource management systems, and other amenities in place thus reducing the pressure on the local governing bodies and the city resources. The main aim of this project is to develop Energy Efficient Management Framework for Infrastructure Facilities. This framework will form the basis of workable and flexible sets of comprehensive procedures able to be amended with regard to specifications, design, standards, human resources and legislation as well as accommodating the cost of whole-life values. The land use planning and design principles for new towns as embodied in Housing and Development Board structural model. This has lead to the efficient use of land resources to house people and activities, efficient movement of people, goods and services, adequate provision of facilities, and a harmonious spatial pattern of land uses. Asset management techniques able to take account of the full range of factors in less stable environments require to link contributory variables including population analyses life-cycle analysis, national design specifications, building codes, procurement routes, and project management tools towards re-build and retro-fitting

KEYWORDS: Township; Modern Facilities;

I. INTRODUCTION

Integrated townships are clusters of housing and commercial businesses with associated infrastructure such as roads, schools, hospitals, convenience shopping, villas, drainage and sewage facilities. Townships typically comprises of residential, commercial, recreational and other elements necessary to create a conducive environment for living. Facility management is subject to continuous innovation and development, under pressure to reduce costs and to add value to the core business of the public or private sector client organization. Facility managers have to operate at two levels: strategic-tactical and operational. In the former case, clients, customers and end-users need to be informed about the

potential impact of their decisions on the provision of space, services, cost and business risk. In the latter, it is the role of a facility manager to ensure corporate and regulatory compliance plus the proper operation of all aspects of a building to create an optimal, safe and cost effective environment for the occupants to function.

Infrastructure asset management is the combination of management, financial, economic, engineering, and other practices applied to physical assets with the objective of providing the required level of service in the most cost-effective manner. Infrastructure asset management is the integrated, multidisciplinary set of strategies in sustaining public infrastructure assets such as water treatment facilities, sewer lines, roads, utility grids, bridges, and railways. It is the process of monitoring and maintaining facilities systems, with the objective of providing the best possible service to users (appropriate for public infrastructure assets). In a 2009 Global Job Task Analysis the International Facility Management Association (IFMA) identified eleven core competencies of facility management. These are:

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communication; emergency preparedness and business continuity; environmental stewardship and sustainability; finance and business; human factors; leadership and strategy; operations and maintenance; project management; quality; real estate and property management; and technology.

Modern Facility management involves the effective management of the following:

- Safety
- Fire safety
- Security
- Maintenance, testing and inspections
- Cleaning
- Operational
- Tendering
- Commercial property management
- Business continuity planning
- Space allocation and changes
- Energy efficiency

The objectives of this study are manifold and they are as follows:

- To analyze the transportation facilities and type of structures at Singaperumalkoil.
- To select a site and give a proposal for township.
- To maintain functionality and comfort of the space.
- Planning of township by using modern infrastructural facilities.
- To suggest energy efficiency techniques through bio gas, solar panel and lightning arrestors. To develop the selected location by improving the infrastructure facilities.
- To enhance the quality of life for the people.
- To adopt energy efficiency techniques in the building, thereby reducing the cost.

II. SITE DETAILS

Situated on GST Road, between Chennai and Chengalpattu, Singaperumalkoil offers a fine blend of offices and shops, homes and apartments. It is currently in a stage where large-scale residential development is on the cards.

Being well developed, Singaperumalkoil boasts of an amalgamation of hospitals, educational institutions, restaurants, and supermarkets. Government Higher Secondary School, Brindavan Public School, and SRM University are a few reputed institutions in the region. Reputed hospitals in the locality include JSP Hospital, Apollo Clinic, and SRM General Hospital.

As of 2001 India census Singaperumalkoil had a population of 8057. Males constitute 51% of the population and females 49%. Singaperumalkoil and at 2011 the population in Singaperumalkoil city/town is 13,963 as per the survey of census.

- There are 3,520 House Holds in Singaperumalkoil.
- There are 7,176 males; There are 6,787 females.

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Table 2.1. Residential Building Details

Township	I class building	II class building	III class building	Total
Singaperumalkoil	403	98	26	648
Anna nagar	350	114	22	586
Paraari	134	121	35	390
Sangarankuttai	37	11	2	150
Santhaimedu	269	26	12	407
Vinchayampaakam	382	73	3	558
Thirutheri	309	60	8	477
Sathyanagar	45	29	52	158
Bagavathsinghnagar	75	37	34	146
Total	2004	569	194	3520

Table 2.2. Facilities in Singaperumal kovil

Type of Structures	Number of structures
Marriage Hall	9
Star Hotel	4
Restaurant	18
Motels	18
Road side hotel	35
Flower shop	9
Vegetable shop	18
Miscellaneous	143
Government school	3
Private school	2
Banks	7
ATM centre	22
General hospital	3
Dental hospital	5
Medical shop	17
Industries	7
Total	292

III. METHODOLOGY

The methodology adopted for this study is shown in the flow chart 1 below. The literatures can be seen in the references of the current paper.

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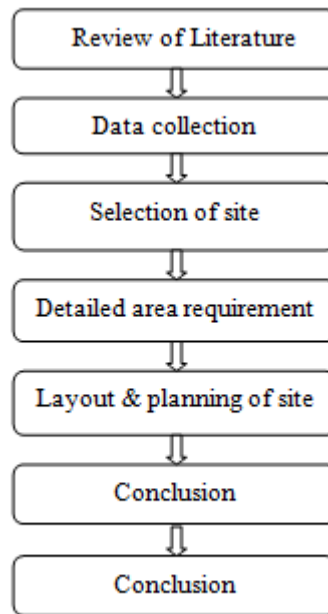


Fig. 3.1. Flow chart

IV. SITE SELECTION

In order to planning for a township, there is a need of more empty space availability land area without any interference of buildings. After proper analyzing of various sites at SingaperumalKoili came to know that there is availability of required area for the planning of township.

Site Area	: 126 Acres
Soil	: Black soil
Topography	: Oriented towards West.
Climate	: The climate of the district is classified as warm & humid.
Temperature	: Maximum temperature at summer 38°C(105°F) and winter 30°C (96°F) minimum temperature at summer 24°C (72°F) and winter 17°C (62°F). The average annual temperature in SingaperumalKoili is 28.3 °C. In a year, the average rainfall is 1140 mm.
Rainfall	: The south west monsoon starts towards the end of October or the beginning of November , heralded by thunder-storms and hold till January when the monsoon fades out.
Summer, Winter	: Dry weather from march- September. March to may is the hot season. The coolest months of the year are December – February.

V. RESULTS AND DISCUSSION

The project area covers 126 acres in which in which it is planned to design a township with providing all facilities and good infrastructure framework. The preparation of a township for the urban knowledge industry development project at high lands requires good approach towards the projects and ensures a high-end residential and knowledge industry with emphasis on safeguarding the natural elements within the site. All natural features like ponds and streams were protected. Special emphasis was given to the urban form and character of space around the capital complex which were to be relocated to the site.

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The planning of Integrated townships are clusters of housing and commercial businesses with associated infrastructure such as roads, schools, hospitals, club house, apartment, food court, party hall, convenience shopping, villas, sports centre, drainage and sewage facilities.

The following features were been going to be adopted for the planning of a new modern infrastructural township

Population Details

High Rise Apartment

- No. of blocks -10 (3BHK)
- Total floor - G + 10
- In Each floor - 16 flats
- In each flat - 5ppl
- In each floor – $16 \times 5 = 80$ ppl
- $80 \text{ ppl} \times 10 \text{ floor} = 800$ ppl
- Each block 800 ppl.
- $10 \text{ block} \times 800 \text{ ppl} = 8000 \text{ ppl}$

Total number of population in high rise apartment = 8000.

Mid Rise Apartment

- No. of blocks -25 (3BHK)
- Total floor - G + 4
- In Each floor - 8 Flats
- In each flat - 5ppl
- In each floor – $8 \times 5 = 40$ ppl
- $40 \text{ ppl} \times 4 \text{ floor} = 160$ ppl
- Each block 160 ppl.
- $25 \text{ block} \times 160 \text{ ppl} = 4000 \text{ ppl}$

Total number of population in mid rise apartment = 4000

Total population in apartment = 12,000

Row House Type 1

- No. of houses = 50 (1BHK)
- In each house = 3ppl
- $50 \text{ house} \times 3 \text{ ppl} = 150$ ppl
- Total number of population = 150
- ROW HOUSE TYPE 2
- No. of houses = 80 (2BHK)
- In each house = 4ppl
- $80 \text{ house} \times 4 \text{ ppl} = 320$ ppl

Total number of population = 320

Independent Villa

- No. of houses = 100 (3BHK)
- In each house = 5ppl
- $100 \text{ house} \times 5 \text{ ppl} = 500 \text{ ppl}$

Total number of population = 500

Bungalows

- No. of houses = 25 (4BHK)
- In each house = 6ppl
- $25 \text{ house} \times 6 \text{ ppl} = 150 \text{ ppl}$

Total number of population = 150

Total population in apartment = 1,120

Total number of population in township = 13,120

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