Revamp Kottoor: Master plan for the Development of Rural and Tribal Settlements in Kottoor

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Abstract—To achieve overall development of a large area, a town or a village in a coordinated manner, there must be a plan which envisages the entire town as a single unit. Such a plan is called as ‘Master Plan’. A master plan or a development plan is thus a blueprint of the various proposals that are intended to improve the existing conditions and to control the future growth of the area.

The aim of this project is to prepare a development plan or master plan for the tribal settlements in Kottoor village without affecting the habits and environment of the tribes, to provide an optimal structure within which inhabitants can perform their economic and social functions efficiently and effectively, to provide better quality of life, efficient transportation facilities, promote sustainable development, and mainly to solve the problems of tribal communities that lies within the reach of a civil engineer.

Keywords—settlements, zoning, community hall, anganvadi, compressed earth block, circular house, primary health centre, craft development centre.

I. INTRODUCTION

India has the largest concentration of tribal people anywhere in the world except Africa. The development of the tribal population in India has been one of the major concerns of the Government of our country since the attainment of independence. As we are living in a developing country, there are so many places where development has not reached yet. In search of such places we came to know about Kottoor and after a survey in the area, we decided to prepare a development plan for them, considering the facilities they lack to improve their living conditions without harming their natural habitat to a great extent.

II. FIELD SURVEY

From the field survey that was done on 1st February 2018, we have made several conclusions regarding their requirements.

Kottoor is a small village in Vellanad Block in Trivandrum district of Kerala State, India. It comes under Mannookara Panchayath. It is located 26 km towards East from district headquarters Thiruvananthapuram.

Among the 14 wards in Kuttichal Village Panchayat, the ward containing maximum number of settlements (Chonaampara, 21 settlements) was selected for the survey and the main focus was the settlements with more population, i.e. Podiyam, Plaath, Valipara and Chonampara. Out of 808 people, 452 are male and 356 are female. Most of the people residing in the area are uneducated and about 383 people are unemployed. Children stay in hostels for completing schoolings, which is possible only in some families. Some of the inhabitants are having small scale sales of Turmeric, Tapioca, Plantain, Honey etc. and some others have daily wage works and all these helps them to earn only a little that may not be sufficient for a family growth. Podiyam, Valipara and Choonampara have got 1 anganvadi each, which the Plaath settlement lack. No other educational facilities are available for them. No settlements have got medical facilities except weekly or monthly visit from PHC in Paruthipally which is not so near to these settlements. It is very difficult for them in case of emergency medical assistance.

Houses are provided to the inhabitants through various schemes from Village Panchayat, Block Panchayat, and Tribal Department, but many of them are devoid of house and many are left uncompleted. Left over basements is a common scene there due to inadequate transportation facilities, unprovided funds and construction problems. 3.5 lakhs are provided for the completion of each house, from which the construction of a fully-fledged concrete house is not possible. There, we felt a scope of low cost houses.

The only thing that has been made available to all the households is electricity. There are no proper roads for accessing the regions under consideration. Conditions of the roads are very pathetic. Off roads often leads to dangerous travel. Only 3km road to the whole settlements is paved and about 31 km is left unpaved.
The project area is located in a remote and difficult terrain. At present, there is no State Operated Transport Facility in the entire proposed project area. The only mode of transportation includes shared-taxis (jeeps) for the use of the communities of the region. These shared-taxis are operated by individuals from Kottoor region. Rates for one side travel to the main markets often cost 800 rupees. These taxis ply within and outside the sub-division.

Telephone network is available only in certain spots with the proposed site. In short communication in the form of telephone network (both landline and mobile) is completely absent.

The main settlement that we chose for the construction activities, Plaath, doesn’t have any anganvadi, community hall, schools, etc. Settlements excluding Plaath have their own wells and digged pits for water supply, even though sanitation facilities are available to all of them.

III. ZONING

The whole area under consideration is divided into various zones depending on use.

1) Public Zone: which includes amenities common to all settlements. In this zone, we have included Public Health Centre (PHC) and Anganvadi.

2) Semi-Public Zone: which includes amenities that is particular for each settlement. In this zone, we are constructing Community Centre.

3) Social Zone: which includes amenities and areas for the social activities, where people can interact each other and develop their crafts and capabilities. We are providing recreational centre and craft development centre in this zone.

4) Agricultural Zone: which is the area given with certain provisions for crop protection from wild animals, which is a major issue in the selected area, and where they can successfully do various cultivations.

5) Residential Zone: which includes houses and here, we introduce low cost housing techniques and an example of it.

6) Forest Zone: which is the forest area beyond the reach of commons.

IV. MASTER PLAN ELEMENTS

A. Roads

About 31 km of roads are left unpaved in the selected ward.

Our Proposal: Perforated Interlocking

Permeable interlocking concrete pavements are the best option for the effective storm water management and surface/subsurface drainage interactions. One way is “interlocking pavement”. The interlocking paving stones with its interlocking arrangements allow for both surface and subsurface drainage of seepage of underground water without losing its property of strength and durability. The other way is “perforated interlocking”. The paving units are placed on a bedding layer of permeable aggregates which rests over a base and sub base of open graded aggregates.

B. Public Health Centre

The plan, estimate and 3D representation of a PHC is done in this project. The PHC consists of two stories.

1. Ground floor for allopathic medicine which includes consultation room, observation room, maternity care, pharmacy, reception, etc. and first floor for practicing the traditional treatment methodologies that they practice for years.

C. Anganvadi

The plan, estimate and 3D view of an Anganvadi with the mainly necessary facilities for accommodating up to 30 students is provided through this project.

D. Community Hall

Community centres provide a meeting place and base for activities for local people, where they can conduct various social programs and meetings which helps in improving people’s quality of life by contributing to the social, physical, economic educational and environmental wellbeing of the community. A community hall, with meeting room, toilet, kitchen, etc. which can accommodate above 100 people is proposed and its plan, estimate and 3D view is also given.

E. Recreation Centre and Craft Development Centre

Both of these are given together in a single two-storied building. Craft development centre is provided for the people to come there and practice their craft works, like those with palm leaves, and also teach the various craft works to others and these works can be made to sell in whole sale in open markets in village and earns them money for getting rid of poverty to an extent. Recreational centre is made for the use of aged ones to reunion and have stress relief, children and adults to develop their physical and mental strengths and thus provides recreation. Its plan, estimation and 3D view are given in the project.
F. Agricultural Zone

An area is selected for performing agriculture with sufficient nutritious soil, and it is separate from adjacent zones by “trapezoidal trench” around with 3m depth, and a temporary bridge across it to prevent the passage of wild animals through it and also to enable the travel of people who perform cultivation. Rainwater is collected in this trench and a well is dug at a distance of 15 ft away from the trench. This well will be having water in all seasons and these waters can be used after natural purification. This is the concept of rainwater harvesting that we propose.

G. Low-cost House

For economy and sustainability, we are proposing construction using “compressed mud blocks”. The walls of these houses are built using compressed earth blocks. Since earth is a local material, the soil should preferably have extracted from the site itself or not transported too far away. It is much less energy consuming than country fired bricks (about 4 times less). Its advantages include bio degradable material, ecofriendly, cost-effective, transferable technology, reduces imports, flexible production scale, social acceptance, limiting deforestation, management of resources, job creation opportunity, etc. The soil, raw or stabilized, for a compressed earth block is slightly moistened, poured into a steel press and then compressed either with a manual or motorized press. CEB can be compressed in many different shapes and sizes. Most of the times, it is stabilized with lime or cement.

For economy, as an example, we are proposing a “circular house” in this project. Because, they have less embodied energy, energy efficiency, earthquake and seismic resistance, less expensive, better acoustics, intangible qualities, effective utilization of space due to the absence of useless corners.

V. CONCLUSION

After doing this project, the methodology for the preparation of development plan of an area was made aware of. The project area was first surveyed and the requirements of people was found out, and then zoned to various zones, and structural elements in each zone was decided. The plan, 3D view and estimation for each of them was made. The solutions for the challenges they are facing in agriculture and transportation was also proposed.

Throughout this project, the major concern is sustainability and eco-friendly development methods for the better living conditions of the tribal residing in this village, and to improve their educational, health, social, economic and environmental conditions in the ways that a civil engineer can do.

REFERENCES
