Study on Dwelling Unit (House) in Rural Area

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Abstract— Rural Housing aims to improve rural people's jobs in a fair and reasonable manner, both socially and environmentally, by giving them better access to various resources such as physical, human, mechanical, social capital, administrations, and control over useful capital, enabling them to further develop their livelihoods on a sustainable and impartial basis. The importance and benefits of dwelling unit (House) construction in rural areas are emphasized in this study.

Keywords: Dwelling Unit (House), Rural Area

I. INTRODUCTION

A. *Rural Housing*

There are unique perspectives on what comprises "Rural areas", where Rural "closes" and Urban "starts". There is no all-around acknowledged definition and it might be helpful to take on the methodology of UN Natural surroundings in seeing Urban and Rural as a continuum of settlements what's more accentuate the linkages between Urban areas and rural areas. Fig. 1 and 2 show the rural housing units.

Fig. 1: Rural Housing (Internet Source)

Such linkages regularly appear as streams of capital, work, and products among urban and rural areas. For example, urban areas are reliant upon the import of food from rural areas which are thusly reliant upon the urban assembling base for merchandise and high request administrations.

Fig. 2: Rural Housing (Usarghar, Dombivli)

B. *Importance of Rural Housing*

Rural housing is important not only for the majority of the population who live in rural areas but also for the country's overall economic development.

Rural housing is regarded as having greater importance in the country today than it was during the country's development. It is a procedure that seeks to improve usefulness, increase financial correspondence and desire, and provide security in a friendly and monetary turn of events.

Rural Housing in straightforward terms can be characterized as the method involved with working on the personal satisfaction and economy in the remote and provincial pieces of the country. These rural areas might be secluded and inadequately populated, in any case, by and large, they offer a beautiful regular setting with a rich culture. These regions have commonly been subject to agribusiness and normal assets for their monetary upswing. Presently the nearby networks take a more extensive viewpoint, where they are looking for financial development through the travel industry.

II. RURAL AREAS AND HOUSEHOLD CHARACTERISTICS

Rural areas are regularly alluded to as those areas outside of the city or urban limit or outskirts where populaces are spatially scattered.

Agriculture is the super monetary action that gives open positions. Here amazing open doors for financial advancement are frequently seen as restricted, prompting the movement of physically fit people to the "brilliant city lights" and leaving a persisting of Generally Vulnerable, Under-Educated, Old, and extremely youthful populace.

These families are regularly to a great extent reliant upon social awards and settlements from relatives working in the urban areas. Their pay is compelled as the rural economy isn't adequately energetic to give them occupations or independent work open doors. Ladies structure most of the rural populace and female-headed families are especially hindered.

Their average cost for basic items is high because they spend more on basic social administrations like food and water, cover, energy, wellbeing and education, and transportation and interchange administrations. Literacy and education levels are also low in the poorest families.

The fundamental targets of Rural Housing Programs have been the mitigation of neediness and joblessness through the formation of an essential social and monetary framework, arrangement of preparing rural jobless youth, and giving work to minor Farmers/Laborers to put occasional and long-lasting movement to urban areas down

III. LITERATURE SURVEY

Many researchers carried out different research in a rural area development in terms of housing units and low-cost roads etc. Few are listed below.

Iyer, S. K. (1965) stated that when developing programs to improve rural housing, we must resist the

temptation to impose urban (mainly middle class) values on rural areas. Therefore, the nature and scale of rural housing shortages are so different that the problem of rural housing can only be addressed by exclusive policies.

A set of village visits was carried out by *Bhide, S (2009)* as part of a study on rural housing that was sponsored by Holcim Limited. They stated that the situation for rural housing in India is still ambiguous. Facilitators are insufficient, and solutions are slow to emerge. Unlike their urban counterparts, most people in rural areas have multiple uses for their homes. As a result, they require more covered space. This fact, combined with relatively low rural incomes, has already exacerbated the dire housing conditions in Indian villages. In addition to the federally funded Indira Awas Yojana (IAY), many state governments have created programs to alleviate poverty. housing shortages and improve living conditions.

Report on Bharat Nirman- A time-bound plan for rural infrastructure by the Government of India in partnership with State Governments and Panchayati Raj Institutions *(2009)* describes the Government of India's time-limited rural infrastructure plan in collaboration with the state government and the Panchayati Raj Institutions. Bharat Nirman brings an additional 10 million hectares of land under safe irrigation, connects all villages with a population of 1,000 (500 in hills / tribal areas) by road, and 6 million homes for the poor. It proposes to supply drinking water to 74,000 homes in the country and power 125,000 villages that do not yet have these facilities. 66,882 villages that are not accessible by phone are also serviced under this program.

Maulik G. et.al. (2016) investigated the urban housing problem in India and suggested solutions to overcome it. They investigated a variety of quick and low-cost construction techniques, as well as various stakeholders, their roles and responsibilities, and user groups. The research paper seeks to propose an accessible and sustainable model for addressing the problem of housing needs based on the findings. The scale of India's housing problem is too large for a single entity to address. Furthermore, collaborative efforts and effective coordination among these disparate entities are required to develop a scalable and sustainable model that can address India's rapidly growing housing crisis.

To do a good job in building new rural housing, we must have an innovative concept of inheritance. With the help of *Xiwen Xu (2019)* study on New Rural Housing Construction, we can understand how to build a new countryside from several perspectives:

1) Geographical perspective: The traditional form of living space is the result of a synthesis of regional natural factors and national folk culture, as well as social, economic, and technological evolution.
2) From a construction standpoint, good things worth inheriting must be preserved. At the same time, the selection of appropriate industrial products and proportional new construction methods updates all aspects of current social, economic, and technological development.

A vision for the construction of a new rural housing project that "builds the happiness of the village and returns to the beauty of the minefield".

IV. RURAL HOUSING OBJECTIVES AND STRATEGIES

The main objectives which will be incorporated in the design include:

1) Material Availability
2) Cost efficiency
3) Labour Resource Optimization
4) Design for Human adaptation

A. Material Availability and Cost Efficiency

Utilizing locally available materials gives different benefits. It diminishes the Fossil fuels and related toxins (counting ozone harming substance discharges) needed for construction. It upholds neighborhood organizations and feeds cash into the local economy. Furthermore, one of the delights of arranging with nearby materials is that they appear to have a place and improve the locale's novel feeling of the spot.

What establishes "local" shifts somewhat, contingent upon the kind of material. The heavier the material, the more energy it devours and the more contaminations radiated during transport, and accordingly the nearer the source ought to be.

Using Locally Available Materials because Locally made items are less expensive than their imported counterparts because their vehicle costs are not as high and they do not include import duty. Using standard, readily available parts where appropriate to limit substitution costs and loading of custom parts.

On-site reuse and reprocessing of development, destruction, and exhuming materials, as well as bringing in recuperated and reused materials in place of more expensive essential material.

Using a suitable cycle during the planning stage to protect materials from harmful elements such as the sun, temperature variations, rain, or wind, and to isolate critical segments of the structure or frameworks from harm.

B. Labor Resource Optimization

Labour timetables can be adjusted to place the ideal individuals in the right task to accomplish functional greatness.

Planning plans and dealing with your Labour force is among the most fundamental obligations of running your distribution force (DC). All things considered, on the off chance that there's nobody there to stack, dump, pick and boat, work grinds to a halt. Past that, you measure representative execution to decide whether functional objectives are being met - and when they aren't, you refine cycles to make enhancements.

C. Design for Human Adaptation:

Giving warm solace to the tenants in order to expand their efficiency by building envelope contemplations, for example, intelligent material, low-E windows, window coloring, and sun-powered overshadowing.

Arrangement of adequate sunshine to decrease the utilization of fake lights.

Giving offices regular ventilation for keeping up with solid air quality and newness in and around the spaces.

The thought of Fire Stopping and Passive Fire Protection measures. Opposing Natural Hazards utilizing

retrofitting strategies, for example, ferro-concrete facade, mud dividers, and so forth.

V. STAGES OF PLANNING, DESIGNING, AND CONSTRUCTION OF RURAL HOUSING

Stages of Planning, Designing, and Construction of Sustainable Building are:

Stage 1: Study of Existing Projects.
Stage 2: Initial Feasibility Study.
Stage 3: Selection of Design approach and materials
Stage 4: Planning and designing of the structure
Stage 5: Cost Analysis.

1) Stage 1: Study of Existing Projects -

A study of the Existing Projects would be made in order to understand the dos and don'ts on the Site.

2) Stage 2: Initial feasibility study -

A site in a Rural area will be selected considering the availability of materials to be incorporated in the design process and the availability of workers and tools and equipment required for the project at optimum rates so as to achieve economy in the construction.

3) Stage 3: Selection of Design approach and materials -

Considering the locality i.e. Rural, a Ground Floor Frame Structure will be proposed. The materials will be locally sourced so as to impart sustainability to the building.

4) Stage 4: Planning and designing of the structure -

According to the best principles of sustainable building, the plan, section, and elevation of the building will be made using the software AutoCAD. The ground floor plan of this study is shown in the Fig 3.

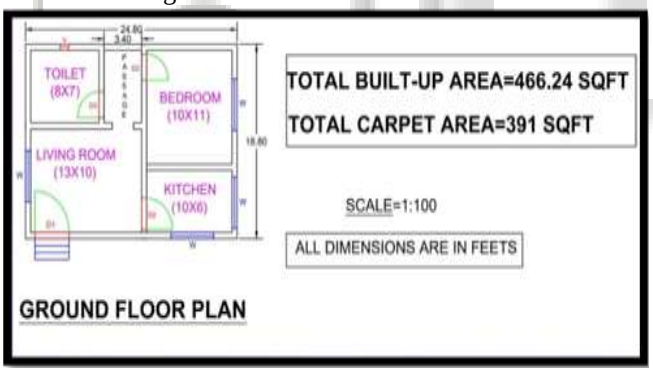

Fig. 3: Ground Floor plan considered for this study

Further, the structural design will be made using STAAD Pro software.

5) Stage 5: Cost Analysis –

Detailed cost analysis is done below on the basis of the Plan shown in Fig 3 and represented in the Tabular form in Table 1.

Subject Work	Rural House Design (Rate In Rs)	Normal Design (Rate In Rs)	Difference (In Rs)
Roof/Slab	200	700	500
Plinth	190	800	610
Flooring	70	180	110
False Ceiling	70	150	80
Paint	12	35	23
Gypsum Plaster	20	32	32
Electric	80	200	120
Plumbing	80	260	180
Total Rate/Sq Ft	Rs 722	Rs 2357	Rs 1655

Table 1: Detailed Cost Analysis

VI. BUILDING COST AND POINTS WHERE WE CAN WORK

We are looking for ways to move rural areas to urban areas and meet the housing needs of people living below the poverty line by providing economical, fast, high-quality, low-cost housing technology. The structure development cost can be separated into two sections in particular:

Building Material Cost: 35 to 40 %
Labour Cost: 65 to 70 %

Currently, the cost of building materials in rural housing is lower because we use locally available materials, and the cost of labour can be reduced by properly planning our work schedule. Cost-cutting measures include the selection of more capable materials or the implementation of a more elaborate plan. Regions from where cost can be deducted are:

1) Reduce plinth region by utilizing a more slender wall concept for ex.15 cm thick strong concrete block wall.
2) Use locally accessible material in a creative structure like soil concrete brick instead of burnt brick.
3) Use energy proficiency materials that consume less energy like concrete blocks instead of burnt brick.
4) Use harmless to the ecosystem materials which are substitutes for customary structure parts like use R.C.C. Door and window outlines instead of wooden edges.
5) Pre-Plan each part of a house and justify the planned method for lessening the size of the part in the structure.
6) By arranging every single part of a house the wastage of materials because of the destruction of the spontaneous part of the house can be kept away from.
7) Each component of the house should be checked if needed and should not be used if not needed.

VII. CONCLUSION

- Rural Housing is a course of subjective and quantitative changes to further develop conditions in rural locales. Such a cycle should be an incorporated program were all parts of rural life ought to be considered.
- Advancement and support to the private area players by the Indian Government because of which both the general population and private area has put forth extensive attempts for the upliftment of the area in India which has brought about moral, social, and ecological advantages. Assuming the part as an inspiration, and a facilitator, the Public authority had embraced various improvement drives for rural India.
- With a dream to make a fantastic provincial foundation on the rear of transport and telecom offices, arrangement of schooling and clinical offices to every single country family, the strings really must be woven together to mirror the greatest amount of meaning of rural area for the development Indian economy.

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