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The Use of Building Services to Enhance the Quality of Life

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Abstract:

Housing has a lot of definitions but in short it can be defined as the provision of shelter including all amenities and services such as water, electricity and waste management systems. The provision of housing units in human settlements does not only satisfy the physical and biological needs of man, but also quality of life as well. This quality of life can only be achieved if adequate housing is provided. The Ghana vision 2020 developmental document has policies which are geared towards the provision of adequate and affordable housing for all Ghanaians. The Home Finance Company (HFC) estimates that the annual housing demands of Ghana will be around 130,000 units at the current population growth rate. However only 40% of this number has actually been met bringing about a housing deficit. This deficit is further compounded with high rate of population growth and urbanisation. Over the years, there have been efforts to combat this deficit and this has brought about the development of a lot of private estates. The quality of these housing communities in terms of availability of services and amenities in a number of cases leaves much to be desired. Assuoyeboah Social Security and National Investment Trust (SSNIT) Flats was used as a case study which confirmed some of the pitfalls in the area of basic services provision. The research concluded by suggesting solutions to problems at the Assuoyeboah SSNIT flats and this can be applied in the planning and setting up of other housing communities in the region and nation at large.

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Introduction

Building services can be termed as infrastructural facilities that can be found in a building or community. Infrastructure is a system that supports the operation of a setup and therefore it supports the livelihood in buildings or communities. Basic services come in the form of water supply, electricity, waste water, refuse collection, sewage disposal, telephone and antenna supply into buildings. Taking the early cave man into consideration he had no services in his cave and therefore the only use of his cave was for sleeping. Every other activity had to be done outside the cave. In Ghana, there is a phenomenon of people occupying uncompleted buildings. These buildings are also mostly without accompanying services. This situation sends such occupants back to the cave situation even though living in a modern society. The provision of clean water and adequate sanitation is one of the basic needs for people in Third World countries. The 1981-1990 decade was declared the "International Drinking Water Supply and Sanitation Decade" by the United Nations, following comprehensive reports prepared in the sixties and seventies by the World health Organization for the UN, covering nearly the entire Third World. From these reports the following picture emerges:

- Over half of the Third World population has no safe water to drink.
- Over three-quarters have no kind of sanitation. [1].

The World Health Organization further reports that by 1995 about 72% of the urban population of Third World countries were adequately served with some form of water supply but only 22% of the Third World's rural population had " Reasonable" access to safe water. As far as sanitation is concerned only 25% of urban population in the Third World will have their houses connection to a public sewage disposal system by 1995 and only 55% of the people in the urban areas will be with some other form of excreta disposal facilities. Examples are bucket latrines and pot privies. [2].

Also here there is a considerable difference between available facilities for the urban and the rural population. In 2000 only l8% of the rural people had adequate excreta disposal facilities. [3]. In addition to these figures one must consider that with the steadily growing population in the Third World countries, the number of people without access to safe water and without sanitation is also growing. [4]. This applies equally to the provision of electricity. In addition, the tendency in developing countries is to supply electricity, if it is available in the form of hydro-power, thermal power or from generating plants, to urban areas first, where industrial establishments are normally found. Electrical energy can be put to many uses and constitutes the basic factor for industrial, social and economic development in these countries, so, the urban population benefits first from this energy source.

Therefore services can be termed as the spine of building in terms of functionality. Services can make a house a home and therefore has a major role to play in the built environment. Services constitute basic needs of people in developing countries. Research has shown that over half of the third world population has inadequate or no access to these services and this is adversely affecting the general socio-economic development of their countries. [1]. In Ghana majority of houses are built without services. Services come into these buildings after the completion of the buildings. Therefore service lines such as electricity, water and telephone are just laid haphazardly within the built environment. This situation affects the functionality and aesthetics of the buildings. This further affects the productivity of occupants resulting in low standard of living. In Ghana many buildings especially apartment buildings are constructed without much in depth into services incorporated within the buildings, forgetting that services form the spine of the buildings. Functionality is mostly taken into consideration but how easy these services lines can be maintained is the major problems. This is also buttressed by the haphazard nature of the service lines therefore degrading the aesthetic value of the structures. Easy maintenance means low cost of maintenance and therefore even though initial cost might be a little higher, money used for maintenance will be saved. This is essential because services takes about 60% of total building cost and therefore must be seriously handled. [5].

This study seeks to bring a new awareness into the architectural and construction world in Ghana in the area of provision of basic services to improve the quality of life of its occupants. The objective of this research is therefore to assess the availability of building services in residential apartments, to assess their functionality and aesthetics and to assess how their placement affects the lives of its occupants. The research seeks finally to make recommendations on service provision in building apartments that will be aesthetically pleasing and functionally useful.

Methodological approach

This research was done using a case study approach. An estate was purposively chosen to serve as the case under study. The purpose of adopting a case study approach was to illuminate the general by looking at the particular and to study an issue in detail. [6].

Data and Variables.

Qualitative data was gathered mainly through interview guides, questionnaires and photographs. According to Burns and Groove (1993), qualitative research which is descriptive in nature is useful in providing detailed analysis of research attributes such as behaviour, opinions, perceptions and knowledge of a particular individual or group

on the phenomenon.[7]. In this regard, the financiers, developers and residents were asked appropriate questions for data. For this research the variables used are water, electricity, waste management and telephone and TV connections.

Interviews.

The data collection of this project was a top down approach. The financer of the housing setup SSNIT was the first on the list of interviewee. Here the questions asked were geared toward knowing how, when, and why the housing set up was built. Other questions asked include the following;

1. The materials for the construction of service channels.
2. The methods of constructing.

Messrs A - Lang group was the next on the list. This company was the construction company that built the Asuoyehoa SNNIT block of flats and therefore the questions asked were solely on construction of service channels.

Questionnaire.

A questionnaire was made specifically to know the response of tenants in terms of aesthetics, functionality including ease of maintenance of building services. These questionnaires were given to all tenants within the setup. This was done to give all the tenants an opportunity to bring their views on board in order to give a vivid picture of the situation at hand.

Case study area.

In l974, the Social Security and National Insurance Trust (SSNIT) requested Messers Architectural Associates to draw up a comprehensive development plan and design rental residential apartments which included flats and single family house types with a minimum accommodation of two bedrooms. This was after SNNIT had acquired land at Asuoyeboa, a community outside the central business district of Kumasi, the Capital town of Ashanti Region of Ghana. Buildable land was scarce and also expensive. This led the group to acquire this land at Asuoyeboa which is at the peripheral of Kumasi so that they could provide economical rental apartments. The design of the apartment blocks were not done in isolation. There was an already existing Asuoyeboa planning scheme and this was the basis of the design. Asuoyeboa is located on the latitude 7 34'N - 7 38'N and longitude 6^{o} 54'W - 66'W. The site has total acreage of two hundred and ten (210) and forms part of Asuoyeboa planning scheme. It is on the Kumasi-Sunyani trunk road and about 9 miles from the central business district of Kumasi. It is bounded on the north by a site set for Ghana Armed Forces Housing Scheme; on the west by the Technical Tertiary College now University College of Education of Winneba Kumasi campus; on the south by the Kumasi-Sunyani trunk and on the east by proposed housing scheme.

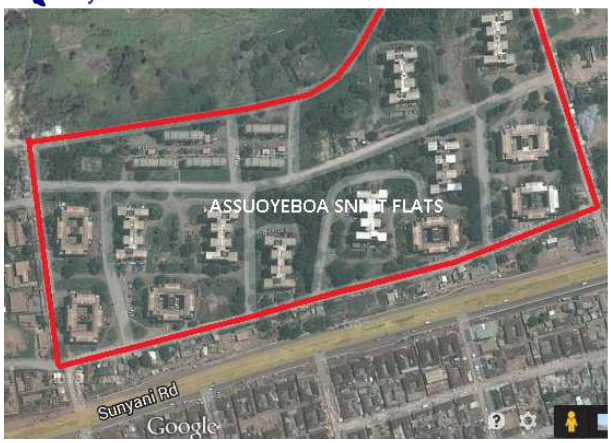

Figure 1. Satellite image of site edged red (Source: Google Maps).

Results and Discussion

The Asuoyeboa SSNIT flats are generally multi- storey blocks occupying about 39m by 51m area. Designs have been made to accommodate 20 to 30 households in limited space because of scarcity and high demand of build able land. The type of flat available are:

1. One bed room with living room
2. Two bed room with living room
3. Three bed room with living room.

All these flats have some basic services existing within them. These basic services are; electricity, water, waste disposal, telephone network and T V antenna.

Water Supply

Water system used in the supply of water into the various flats is the indirect water supply system in which water flows into a reservoir or tank before it is distributed to the areas where water is needed. Five (5") diameter PVC pipes are used as rising mains which supply to eight (8) 750 gallons overhead tanks on each block. Initially 8" diameter and anodized copper communication pipes were used and later changed to 5" diameter PVC pipes. Four inch (4") diameter PVC pipes were used as branch - off from communication pipes. The plumbing in general has gentle bends but there is low pressure in high rising areas making it impossible for water to flow into the overhead tanks and distribute it into the various areas. This has created water shortages and inconveniences in all the flats. Residents are now storing water in the poly tanks or galvanized aluminium tanks and barrels which are kept in balconies, entrance lobbies and within domestic spaces. Presently residents fetch water from the stand pipes in the courtyards and basement by using water holes. The other problem with the overhead tanks is that they are not serviced and have algae and fungi growing in and around them.

Electricity

The whole site is connected to the national grid for the supply of electricity. Two (2) (11000 volt - 315KVA) three (3) phase transformers are used to supply electricity to all the blocks on the estate. The conventional system of street lighting was used and so far 59 streets lights are provided in the area where the blocks of flat are being occupied. Each flat in all the blocks has its own meter.

Lightening conductors are provided on all the blocks to arrest lightening. All rooms have adequate lighting of either 4 or 2 feet fluorescent as well as incandescent lamps. Switches and lighting fittings are conveniently positioned. Another major challenge facing occupants in the estate is the frequent power cut-off and current fluctuations as a result of inadequate transformers to provide the ever increasing energy needs. Some of them use electric stove and therefore the frequent power cut-offs makes it difficult sometimes to cook. There are some instances where the current fluctuation breaks down the electrical gadgets of some occupants. This situation coupled with water shortages makes life unpleasant in the estates remarked by occupants.

Waste disposal

Initially no official garbage collection service was designated in the area so the residents had problem with getting rid of their refuse. The north- western part of the site which is very close to the roads was used to dump their refuse. The refuse or garbage piles up or heaps and serves as the breeding point of mosquitoes and other insects. The garbage is sometimes burnt to clear it and the smoke with the foul scent also created another problem on site. The built up garbage dumps are also blown away by the winds littering the area. Some residents nearby the estate have also taken opportunity and dump their refuse there. The decomposition of the refuse gives an unhygienic environment. Flies feed on the decomposed matter and carry them to the houses which can easily bring an epidemic. Rodents are also attracted to the site by the indiscriminate disposal or dumping of refuse. New refuse collection structures with collection bins were later provided so that the residents could dump their refuse. However, the sustainability of this was a problem as collection trucks delayed and hence refuse still ended up being dumped at the old site. Information gathered from residents during interviews shows that it was not sustainable due to:

i. Lack of proper waste management in Ghana and therefore trucks could not come regularly. This made refuse to heap up and the collection was a problem.
ii. A disagreement between the management of SSNIT and Block executives of the flats over who to pay for the cost of a new waste management. This resulted in the continuance dumping of garbage in the open.

After all these deliberations, a private refuse collection company has taken up the mantle and is handling refuse at Asuoyeboa very well. They have been provided with bins for each flat and these bins they come on certain days to dispose off. This company was gladly accepted by residents because it was a cheaper option.

Drainage and Sewage

The slope of the site is adequate for sewage run off. All waste and soil pipes are concealed in ducts within the flats and there

are inspection chambers along the sewer line. Water closets (WC) are connected to a 4" single stack pipe which draws soil waste into a central septic tank sited close to the valley. Sinks and showers are drained by 2" diameter pipes into 3" diameter waste water pipes then drained into the central sewer. Rain water from roofs drain into exposed 4" diameter drain pipes to underground drains. There are frequent blockages in the drains due to bad user habits such as choking of drains with food, dirt when washing their utensils and bowls. In some instances connecting joints of drains are not well sealed causing leakages. Even though there are covered drains characterizing the site, there is one open drain on the southern periphery (truncated V- drain) chocked with weeds and some parts sand. This sometimes causes flooding at the southerly part of the site when it rains.

Telephone and TV antenna

There is the existence of telephone lines but these are connected into various flats through windows and balconies. This therefore gives an unpleasant sight aesthetically and changes the outlook of the original design of the buildings. VHF antennas are also installed on roofs of buildings. This is also aesthetically displeasing because every household has one on the roof and this degrades the sky line of this development.

Recommendations and Conclusion

Recommendations

This research has identified a lot of lapses at the Asuoyeboa SSNIT flat in terms of services. This section therefore outlines the possible solutions to these lapses. These recommendations are based on the findings and discussions done above.

Water

It is recommended that pumps should be used to pump water into the setup and then smaller pumps used to pump water to the overhead tanks which already exist. This will then help to ensure regular supply of water. This is feasible because this system has worked effectively for an occupant in the setup. However, to ensure that these pumps work effectively to achieve regular supply of water, they should be powered by solar electricity which is more reliable.

Electricity

The power cut-off within the SSNIT flats should be arrested with solar electrification systems. Although the initial cost of installing a solar panel is high, it will ensure uninterrupted electricity supply to occupants of the flat and would require no payment of electricity bills. A panel should be installed at the top most parts of every block and then a battery room created to carry electric current to the various flats. Considering the payment of an average electricity bill of 35.00 Ghana cedis a month for a year, the costs will be 420.00 Ghana

cedis. With this analysis, five years of electricity payment will total to 2,100.00 Ghana cedis. Therefore with 36 flats in each block, the total electricity payment per block for five years will be 75,600 Ghana cedis. This amount can be used to install a solar panel for the block. There is however a need for further research into solar power provision.

Waste Disposal

A lot has been done about waste disposal but there are still problems. It is suggested that an incinerator should be constructed on the site to cater for refuse collection. Refuse will now not be left to overflow but taken to the incinerator. This will keep the neighbourhood free from rubbish spilling all over. With the use of incinerator, refuse will not heap and regular payments by residents will also be dealt with. However if the incinerator constructed is not done or sited well, it can also bring about other environmental problems. Drains found in the vicinity should be covered to avoid rubbish or refuse from choking them. These drains when covered should be accessible for cleaning by the provision of inspection chambers.

Telephone lines and TV Antenna

Even though telephone supplies from the mains are normally overhead, mains should be received at a point on the building and distributed though the walls of th building. Whe this is pre-planned, the wiring is normally done before plastering of building for better aesthetics. With the TV antenna, the idea of individual antenna or mast should be discouraged. One big mast or antenna should be installed on the roof top of each block and connected to various flats through ducts.

Conclusion

In a nut shell, Asuoyeboa SNNIT flats were well planned, designed and developed to help reduce the incidence of housing shortage in Ghana. However there are some short comings associated with the housing units with respect to service provision. This is because not much of services were taken into consideration at the planning stages. In view of this, services provided were not adequately functional. A number of flaws have really been found. The recommendations therefore suggest possible solutions to these service problems for life improvement. Some of these life improvements are:

- Easy access to water due to recommendations above will shorten the time residents use in various activities involving water and thus will have time for other productive work.
- Electricity gives energy to homes for lighting and for powering a lot of gadgets. Without its regular supply, life becomes unbearable and therefore regular supply will improve upon the quality of life.
- A sick person is definitely of lower life quality than a healthy person. Uncovered drained and filthy environment is a path to unhealthy people. Recommendations will help mitigate this and make residents healthy.

- All the above and good telephone and antenna systems will improve upon aesthetics. Aesthetics psychologically gives soundness and thus the residents will enjoy soundness as an improvement of life.

These could be used as a basis for the development of future housing units of this nature which will eventually help improve the quality of life of occupants of the facility.

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