GHANA: A PROPOSAL FOR AN AFFORDABLE HOUSING AND CLINIC DEVELOPMENT

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INTRODUCTION

Clients
Steve Robinson, Robinson Financial Group
Drew Mardis, Divine Design Investments LLC
Edinam Folikumah, Sons Development LLC

Goals
Design and construct cost-effective housing for the Ghana middle class population that is economically feasible for residents and offers them peace of mind for daily living. Design and construct a medical clinic potentially with other community center features for the housing community that provides healthcare and builds good will.

Location
Near the city of Winneba and on the outskirts of Accra, the capital of Ghana, Africa. A plot of land has been donated by the Queen Mother leader of this area for this purpose.
**Scope**

**Housing**
The project will generate programming information and create schematic designs for one or more housing model designs, depending on programming outcomes driven by residents' needs. This may lead to housing features that reflect distinctive cultural contrasts of some of the tribal groups of Ghana. The housing is primarily intended for members of the Ewe tribe. The first phase of homes will be for-profit to establish the project financially. The goal is to build 1000 free homes for the poor by 2020 and would be non-profit in organizational structure.

**Clinic**
The project will generate programming information and create schematic designs for a small medical clinic. This project will be non-profit in organizational structure.

**Potential users**
Housing and clinic: Middle class workers and their families who seek housing and work in and around the capital city of Accra.

**General Deliverables**
A programming and schematic design report that includes the following:

1. Preliminary, broad goals
INTRODUCTION

2. Programming information
- 3 or more precedent case descriptions
- Preliminary definition of the problem
- Client profile
- Site analysis
- Exploration of potential products, their sources, costs, and availability for the projects’ interiors (both architectural finishes, furnishings and equipment)
- Analysis of potential change of the design solution through time (desirability for adding on to homes and clinic, for example).

Based on the above information and its analysis:

3. Restate the problem
A general statement that identifies what the problem is, who the constituents are, and what the goals are based on the programming information

4. Develop schematic designs
Working with development team and potential construction design/build companies, develop one or more potential solution options:
- Bubble diagrams, diagnostic diagrams, site diagrams, plans, elevations
  - Distinct marriage and religious culture/activities must be taken into the design and space planning.
  - The design will display flexibility of adapting additional wings/spaces as a family grows or shrink in number.
- Several perspective sketches suitable for describing the project to potential investors
- Preliminary furnishings, fixtures and equipment lists
- Site plan and design arrangement:
  - We will develop an overall site plan of 4~6 housing units and the clinic that provide outdoor spaces for various social activities.
  - Consideration for religious activities of different clans and religions such as Christianity and local religions
This project involves the design of two structure types to be co-located on a site [unidentified] in the Winneba region, 69.1 kilometers from the capital city of Accra. One of these structures is a health clinic, and the other is a prototype for a single family home. The clinic is viewed as a necessary and desirable amenity for the housing development. The project targets two different users tied to the necessary phases of the project:

**Phase 1 (Mid-users)**
- Middle class clients, typically government office workers, will buy the property which will help and compete the project until it reaches 1,000 housing space by 2020.

**Phase 2 (End-users)**
- When the project reaches 1,000 housings, they will be provided for low income clients, primarily Ewe tribe members who will ultimately live in the space.

The clinic is viewed as a central feature of the housing development. While out of the scope of this project, planning should anticipate the addition of other community buildings nearby such as a gathering place, post office or small market.

The home prototype must respond to current forces that will affect its acceptance by residents. Ghana is experiencing modernization in part through the effects of Western influence. As such, it is necessary that the project’s architectural solutions balance existing culture/tradition and modernization of the society. The housing must offer a quality of living that is desirable to the mid-users to invest in. Thus, the project will seek to address the needs and wants of both mid and the end-users while retaining the client’s vision of modernization of Ewe tribe. Cost, construction ease, and maintenance issues are important factors in the design, as is cultural appropriateness.
Ghana:
- Ghana is one of the top gold producers in the world. However, the economy heavily relies on agriculture (35% of GDP) and provides 60% of the workforce's jobs.

- The culture is characterized by a bustle and vibe of colorful and musical gatherings. Celebration of festivals is an essential part of life, whether for childbirth, rites of passage, puberty, marriage or death.

- Accra is inhabited by about 4 million people and the 11th largest metropolitan area in Africa. It is also the center of a wide range of nightclubs, restaurants and hotels.

- Temperature varies between 23 and 31 Celsius degrees (73.4 and 87.8 Fahrenheit degrees) throughout the year, but includes a wet season during summer (July). Cooler months tend to be more humid. During warmer months, the city experiences a breezy “dry heat” that feels less warm.

- Its population is a very youthful one, and 56% of the population is under 24 years of age. This predominance of young people is not expected to decline. Population of Ghana consists of 45% immigrants from various regions of the continent which contributes to diversity of Ghana.
Phase 1

Middle class government workers and their families who seek comfortable housing and work in and around the capital city of Accra in Ghana are the initial users who will buy the property that fund for the completion of the entire project.

Phase 2

Low income workers, especially Ewe tribal members, who need housing that improve their quality of lives, while the facility being affordable and easy to maintain.

The Ewe lives in the southeastern part of Ghana and are of patrilineal leadership. The founder of the community becomes the chief and his successors are typically his paternal kin. The Ewes are known for their ancestral worship as well as their unique language. Chiefs, especially, communicate with ancestors for advices and such. Most Ewe members can trace their ancestry, too, so it shows how they are tied to their ancestry and rituals. It is also a patrilineal society.

Central cultural highlights

1. Strong sense of family: Since the founder is the chief and he is succeeded by his male relatives, many families can trace their ancestry through their paternal side all the way to the original tribe family members. Extended family is also very crucial to the Ewe culture. They typically all live together in family units.

2. Code of ethics for the chiefs: Chiefs must keep their heads covered at all times in public and cannot be seen drinking since he is the voice of his people and must be of clear mind. They must also not see or touch a corpse, but can lead a service if the dead has already been buried. The Ewe chief has a very strict code of ethics that he is required to live by.

3. Kente cloths: Kente weaves form unique cloths called Adan udo were derived from the Akan ethnic group. It is made by a type of silk and cotton. Kente cloth is an essential aspect of the Ewe culture. Adanudo features “bright, rich colors and pictures, often on silk, rayon or cotton” (Obiorah, date). Kente, formally the privilege of kings and chiefs, is now available for everyone, but expensive to produce, because the textiles, especially popular ones, are produced by certain tribes only and by hand.
Located in Freedom Park, a township near Cape Town, South Africa, 10x10 low-cost housing project was developed by MMA Architects. The project includes a sandbag construction approach that incorporates sustainable, energy-efficient, techniques. There are 10 adjacent plots, on which the Design Indaba 10x10 housing challenge would be built, with each home ranging between 387 square feet and 452 square feet. The frame of each home is constructed from timber, which is then stacked with sandbags that are filled with local sand to insulate the walls of the building. The 10x10 homes are built with innovative systems called Ecobeams. These beams have been extensively tested and comply with all National Home Builders Registration Council (NHBRC) requirements and add structural integrity to the homes.
Villages in India are starting to look a bit different thanks to stark blue rooftops made from recycled agricultural and packaging waste. Modroof panels are incredibly durable, able to withstand water and fire, and last much longer than other roofing materials. Typically homes are roofed with concrete or corrugated metal, which can create problems from unbearably uncomfortable heat, leaking during monsoon season, and even health issues.

In areas where poverty is rampant, sometimes a roof over one’s head simply isn’t enough. Corrugated metal roofs are costly, can be dangerous, and are insufferably hot during summer months. That’s where Modroof by Re-Materials comes in; it’s an affordable modular paneling system made from fortified, recycled cardboard pulp that keeps residents drier, safer, and leaves them with leftover money in their pockets.

MODROOF, INDIA
Designed by Blaanc, Emerging Ghana is a plan for an eco-affordable single family house for emerging middle class of Ghana. It is a modular single-family home that is built using local materials, local labor, and best sustainable design, all for a low cost of about $12,500 USD. Modular by nature, the home can expand as funds come in and as the family grows. Construction materials are all locally sourced using rammed earth walls, dahoma wood, and bamboo. Local people will be taught how to build their homes, which gives them a new skill set and boosts the economy. The homes use solar passive design with a south-facing structure and large overhangs that provide shade. A solar hot water tank on the large roof provides hot water for the kitchen and bathroom.
A. Atelier COLE, Building Trust International, and Habitat for Humanity teamed up to design bamboo based structure, adaptable and flood-resistant.

B. Each site-specific house is built using local labor and sustainable building techniques to keep its environmental footprint, construction costs, and maintenance costs to a minimum.

C. A split-roof and operable shutters allow natural ventilation to flow through the home while the angled and overhanging canopies mitigate solar heat gain.
Material Ranking table
This section explores different types of materials in order to find efficient construction solutions for the project.

Rankings: 5 - most appropriate, 4 - moderately appropriate, 3 - appropriate, 2 - slightly inappropriate, 1 - inappropriate
N - need to contact the company, R - research required

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<th>Basic construction</th>
<th>Climate</th>
<th>Energy usage</th>
<th>Availability</th>
<th>Cost</th>
<th>Skill req.</th>
<th>Access to tools</th>
<th>Maintenance cost/ labor</th>
<th>Cultural preference</th>
<th>Flexibility</th>
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The chart explores a number of different materials possible to use in Ghana. The intention was to select the most appropriate building materials in terms of economy and function due to the weather and environments of Ghana. Higher the total number is the most appropriate. Some variables were difficult to be ranked, so they are added as letters to show relative relation and to help comparison of products.

Due to the client’s vision and own building material, selection of construction materials were omitted from the project. However, the chart still explores possibilities of other construction materials available, and feasible in Ghana.
The housing clusters achieve maximal use of the site and allow for shared communal kitchens and bathrooms. They are also a great example for the versatility of the housing units.
Example of one of the housing clusters:
To minimize the cost, residential housing cluster accommodates a central large kitchen. Each housing will have a stove and other basic kitchen features, but extensive cooking will happen in the large kitchen. It promotes social interactions and bond of the community through shared kitchen and outdoor space between the housing units.
Each residential unit has a small kitchen for heating up food, etc. Plan A is designed for families of 4 or less people. The children’s room is placed away from the living room to control noise and to provide privacy, so the children can study.
Plan B is for families over 5 people. It demonstrates the flexibility of the housing units to change according to the size of the family.
The clinic accommodates a large waiting space which can turn into a lecture space for public health education for the residents. There are a number of concerned health hazards, such as AIDS, present in Ghana. Thus, the space will be utilized for health education possibly to prevent certain health issues.

Vents above the interior ceilings will help natural ventilation of the entire space except the storage attached to the lab for security. Natural ventilation will help minimizing the operation costs especially during the hotter seasons.
Outdoor space around the clinic provides shaded social areas around the clinic. These areas can be used for multiple purposes as the residents wish. Ewe tribe members use outdoor space with shades to have clan meetings and ordinary social gatherings. It is to provide a social space for both adults and children. Sometimes, they can also be used for certain rituals or religious activities.
Information extracted from: Interview with Dr. Daniel VanDerme of Florida State University— an expert of family medicine, on November 11th, 2016.

• 1 nurse station for every 2-3 doctors that practice in the office—administer shots etc
• Doctor’s office is inside each exam rooms (patient room/doctors room same thing)
• Lab facility—microscope, blood testing, anemia testing (not very elaborate) 6x8 probably big enough
• Area more secure than others (lockable cabinets or separate room) more expensive medical equipment (basic drugs, no narcotics) SECURE
• Privacy is different there, some covered area, open air within the building, cross breezes
• Need some sort of holding area for beds for more urgent care (someone passed out, pregnant women etc.)
• Mostly built by what can be affordable (SQ footage)
• General rule for doctor—1500 square feet per practicing doctor ideally but with limited resources it is most likely to be around 500 sq ft per doctor
• Approx. 5-10x10 areas
• Need an administrative task area (record keeping) nurse or a person hired only for administration
• Group health teaching could be a very important feature for when weather permits, general health education such as pregnancy preventing STDs etc. Pull benches out and hold classes when clinic is closed—public health classes
• Don’t necessarily need a waiting room. A waiting room can accommodate only up to 3-4 people at the most for queueing.
• Build it for 2, but maybe staff it for one (thinking ahead for the future)
• Air flow is very important!! And sun shade
Information extracted from: Interview with Edi’s father, who is a current resident in Ghana.

**What makes Ghana(Ewe) homes distinctive?**
Marriage rituals and ceremonies are performed. Knocking, flower, ----marriage. Qualified by the ritual. Initiate you into womanhood. Heritage from mother.
Meat sharing --- younger for protein. Sharing of anything elders are most respected They have a very distinct culture of marriage. They perform certain ceremonies and rituals. That of Christians will differ in some ways according to the religion. Respect for elderly people is a commonsense such as eating etiquettes where supper starts when the oldest person starts. The elderly are some of the most highly respected individuals within the clan. Heritage is through the mother, which shows a stronger presence in family hierarchy and culture in contrast to our familiar patrilineal societies.

**What features of design ideas should be kept or newly developed (created anew)?**
As a member of the Ewe tribe, what traditions from history would you like to see reflected in the new face of architecture in Ghana? For example: kent clothe patterns, designs, or particular features within the homes?
Everyone is different, due to education, religion, and income. mango/ coconut trees and other natural plants in/out of the house. In terms of decoration, they are open to all. According to his other answers, the normal low income community has no or very limited sense of house decoration or preference of style or art. Our second phase client will most likely have less preference of any art or decoration according to Charles. However, ritual spaces are important for both Christians or non-Christians, so the design must integrate their religious activity in the the living space. Results from the Photo Study may provide a better sense of their preferred visual interest in living spaces.
In your opinion, what do you see as one of the greatest needs for your community right now? No natural resources like gold etc. Value education most. Want to industrialize. Plastic waste is huge problem. Get investors to support this cause and improve upon livelihood. Want to industrialize-biggest need

How would that impact them or improve quality of life within the community? Is it related to special occasions such as festivals? How?
Since Ghana doesn’t really have many natural resources like gold and other precious metals etc., the Ewe value their education very highly. Charles wants the area to industrialize as well as address the issue of plastic waste management, since waste is such a large issue. He wants to get investors involved to support this cause and improve upon the livelihood within the community.

What do you do to spare time or rest when you are home? If you don’t have any activity, what would you like to do at home? (for Worlanyo Bani-cousin)
Charles: Different games such as cards and playing music.

What would be something(s) you would like to see brought into the newly developed homes? Have tv sets, satellite dishes, social amenities. More modern amenities. Observing Edi and Charles, they seem to more fond of modern amenities than their traditional ways, perhaps, due to their limited lifestyle. Average Ewe people have not enough income for many choices of life, so they want to provide a wider range of choice in their living through the project.

What is the biggest need at home in everyday life? Why do they need it?
When Charles was asked what the biggest need at home is, he started talking about education.
The social position and income status of most Ewe members are very limited, and their almost only way of escaping the poverty is through education. Thus, it will be critical to provide a proper learning space for the children in regards to the client’s desire. Dance and etc. Christian and traditional festivals are some of the activities that can be used as social events for families and the community. Cooking is also a large social activity within the home and typically involves the entire family (i.e. providing food/cooking/fishing etc.). Each clan has their own meeting place which requires shade. The individual clan meeting spaces can be arranged through house/clinic arrangement.

Is there a particular style/art that Ewe tribe prefer? It can be color scheme, or a type of decoration.

Traditional religion dominates the country. Small shelters between two houses can be used for religious activities, or even sometimes in the open (like temples). Or in front of the house. Every clan has a space for religious practices/ceremonies. There are different types of gods for various things like fertility, fishing, war etc.

- Inside home, religious practice.

Some Christians, and local religion.

Clans have their own gods---- providing a space outside the home for the community to perform religious rituals separately from the other clans, by arranging the housings? Etc.

It is possible to provide not only only the interior plan, but also house arrangement that displays how religious activities can be involved. Each clan has their own place to meet, so it may be important to provide such a space through house arrangement.

What are some family activities? ----more for clinic/social space.

Christian/traditional festivals.

Discuss of living, issues of shelter
SUMMARY & ANALYSIS OF SURVEYS
FOR PERSONS 25 & OLDER

Emergent ideas from distributed resident surveys
Religious space is very important (bible reading, relics, space for prayer etc.)
Space for storage for work tools or business products
Some sort of security (gate, decorative barred/covered windows)
Lockable doors/windows
Families make decisions as a unit (so family room is very important, central)
Business is very important-access to busy street is important (lotto tickets, farming,....)
Some sort of radio or tv (most people spend free time)
Develop communal space for personal businesses-selling space
Modern amenities: stove, tv, refrigerator

SURVEY QUESTIONS
First please tell us about you:
What is your age? ________
Are you a parent in the house where you currently live? (circle one) yes no
What is your gender? (circle one) male female prefer not to say
1. What do you need the most in your home that you don’t have now?
2. What is the most inconvenient thing about your house you currently live in?
3. What are some common activities in the house? This could be hobbies, job-related tasks, and relationship/family activities. Please list up to 5 activities.
4. What is the most important activity that happens at home?
5. What is the best feature of your house you live in right now?
6. What will you bring with you if you had to leave your home right now? List up to 3, and explain briefly why you chose this item.
SUMMARY & ANALYSIS OF SURVEYS
FOR PERSONS 25 & OLDER

7. How big is your family now? Would extended family members live with you in the future? (ex. grandparents, siblings, cousins, or other people)

8. What do you do in your spare time or to relax when you are at home?

9. What are the most important features of the home for your children? (some possibilities are privacy, places to play, or other things) List up to 3 features.

10. If the family needs to make an important decision, who makes it and how is it decided?

11. What cultural/traditional elements would you want to see in your future home? (some examples might include a place for photographs, or a special symbol or design on doors or other places)

12. If you run a family business, describe your needs by answering these questions. If you do not have a home business, then skip this question.
   · What do you sell or produce in this business, or what service do you offer?
   · What equipment do you use or need in your home?
REFERENCES


