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THE IJE
by Izuchukwu M. Amadi
Architect | Nigeria

HONORABLE MENTION
Inspired by the pyramids of Egypt
INSPIRATION
The design of IJE, which means “journey” in the Igbo language, is called such because of the transformation of the traditional architecture of Egyptian pyramid into a contemporary form.

The concept of the design is a true reflection of African culture and heritage. It showcases the highest iconic symbol that Africa has ever produced, the Egyptian pyramid, which is the most famous structure in Africa. The pyramids of Egypt remain one of the world’s greatest early architectural achievements. The design concept is achieved in an interesting way by having different heights that show hierarchy of space through proper massing and a central courtyard that connects the rooms.

TRADITIONAL ARCHITECTURAL ELEMENTS
Pyramids formed with high pitched roof
Courtyard
Kitchen patio for external cooking
Entrance porch used as an Obi

TRADITIONAL AESTHETIC
The facade system is a modular system, which is practical and cost efficient. The modular bottle panel facade system will give the building excellent performance and durability. The concept is inspired by Kente cloth which is deeply intertwined with the history of the Ashanti nation. The word “Kente” means basket in the Ashanti dialect. Kente cloth designs vary, with the different designs, colors, and patterns each having their own special meanings.

COLOR
Blue --- peacefulness, harmony, good fortune, love
Green --- vegetation, planting, harvesting, growth, good health
Pink --- associated with the female essence of life, calmness, sweetness, tenderness
Red --- political and spiritual associations, bloodshed, sacrificial rites and death
White --- purification, sanctification rites, healing
Yellow --- preciousness, royalty, wealth, fertility (yolk of an egg)

BUILDING MATERIALS AND ISSUE OF HEATING AND COOLING
Facade Cladding: The main facade cladding is recycled PET plastic bottles, encouraging a green, clean, and sustainable environment that is free of non-biodegradable materials. The facade is a way of promoting the African culture of preservation and commitment to exemplary clean environmental actions. The bottle facade acts as an intelligent passive design solution to prevent heat gain and reduce cooling load by providing optimum shading during the hot weather of Africa, regardless of the location of the buildings anywhere in Africa and the orientation of the building on site.

Walls: The building walls are compressed stabilized earth block (CSEB), which are construction blocks made from a mixture of soil and a stabilizing agent (7% cement) compressed by different types of manual or motor-driven press machines. The CSEB is 26.5 X 14 X 10 cm in dimension, the weight is 8 kg, smooth and flat in texture. 35 blocks will make up a square meter. On performance, CSEB has a wet compressive strength of 2mps, a thermal insulation of 1.0 W/mc and a density of 1900 kg/m3.
Floor: The floor is raised by 200-400 mm above the ground level, using bricks and concrete blocks/stones, to define plinth perimeter. It is filled with compacted earth, topped with half bricks and screened with 20 mm of cement mortar.

Fenestrations: The windows are glass casement windows while the doors are wooden panels for the inner doors of 750 mm for WC and 960 mm for rooms. Steel is used for the external doors.

STRUCTURAL ELEMENTS

- Foundation: Because the column is set in the footing, it is 150x300x300 mm in dimension, cast in situ concrete and relatively 500 mm deep below natural ground level depending on the site location.
- Exo-skeleton Structural Frame: 200 mm diameter round inclined bamboo column coated with dark brown low emission glossy paint is the main exo-skeleton structural frame for the facade cladding.
- Column: Prefabricated reinforced columns are aligned and erected over concrete footing. A single column point consists of 4 steel rods of 12 mm diameter each, interconnected with 5 mm steel rod cross bracings to reduce effective length of the column. Light weight concrete is poured on the reinforced concrete column to fill up the gaps and help increase the load barring capacity of the column.
- Beam: Single beam consists of 4 long steel rods, 12 mm in diameter with 5 mm steel rod cross bracings. Light weight concrete is poured on the reinforced concrete beam to fill up the gaps and help increase the load carrying capacity of the beam.
- Truss: Bamboo rafters or trusses supporting bamboo purlins.
- Roofing: Brown shingles for roof covering.

VENTILATION AND AIRFLOW

The rooms are cross ventilated to ensure efficient ventilation with window height at 1800 mm and 1500 mm width for the bedrooms while the living room has large fenestrations. The headroom is at 3200 mm for proper airflow while the facade system and the courtyard encourage passive ventilation (stack effect) and airflow. The high pitched roof ensures proper airflow.

FUNCTIONALITY OF THE AFRICAN KITCHEN

The proposed kitchen is on the private zone at the rear side of the building linking the dining area, store and courtyard. With a U-shaped arrangement, the space is well utilized. The kitchen patio is for outdoor cooking.

REASONS FOR A PROSPECTIVE HOMEOWNER TO BUY THE HOME DESIGN

The design has sustainable local materials: bamboo, 27,723 recycled bottles, and mud. It is also affordable, durable, and has excellent thermal properties and aesthetics compared to a ‘modern’ house.

FEATURES THAT COULD BE BUILDING CODE

The use of recycled PET bottles as a building element to encourage a green, clean environment.