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## Desert Wave

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# Desert Wave

**Erratum**  
true

# DESERT WAVE

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## HONORABLE MENTION

Inspired by the vernacular architecture of northern Nigeria



## **ETHNIC GROUP INSPIRATION**

Nigeria lies in Western Africa, with its southern coast washed by the waters of the Gulf of Guinea. This defines the country's major architectural peculiarity and objective – to shield homes from extreme daytime temperatures and to make the terrain livable. It is the land's climate which is mostly responsible for the form and shape of the buildings.

Because architectural traditions of northern Nigeria fully depend on and are inspired by its nature and environment, the materials, shapes, colors and decor are all identified by the distinctive character of life in the land. Its unique style is developed on seemingly arid soil.

There are two principal climate sub-zones in Nigeria. Along the coast, the temperatures and humidity levels remain high throughout the year. Inland, temperature variations depend on the season, and humidity levels are lower. Accordingly, the country comprises of two major territories, each with its specific civil engineering and construction. This project is designed to suit the dry and hot conditions of inland Nigeria (north), where living comfort calls for “self-contained” dwelling structures, providing sufficient shielding from excessive sun exposure.

## **TRADITIONAL ARCHITECTURAL ELEMENTS INCORPORATED**

This design was mainly inspired by the traditional architecture of north Nigeria. Among the most typical features are: massive, solid walls with small window openings; south- or north-facing habitable rooms, toilets and bathrooms located along periphery walls; open fire cooking zones typical of the African kitchen, separate from the living zone.

The idea of this design is to contrast the ‘oasis’ inside the dwelling and its ascetic facade merging with the uremic environment. Space-wise, the design refers to the traditional geometry of inland Nigeria's architecture, dominated by square and rectangular shapes. The cylinder, which we integrated into the design, references the shape of sacral African constructions and rondavelles. The floor area is divided into a private recreation zone and a common guest zone by the traditional impluvium, which refreshes both zones simultaneously.

## **TRADITIONAL AESTHETICS**

The exterior walls, built from mud brick, lend the entire design a peculiar African feel and aesthetic, practically without using any other decor or ornamentation. The principal front was designed as a rhythm-making dead wall with vertical elements imitating sand-drifts and dunes. The wavy structure references the movement patterns of a caravan, the wind, or a reptile making their way through the desert. The structural shape of the wall turns the sunlight into an intricate pattern of shades and shadows, while also performing a practical task – shielding the building from the hot sun as if behind a screen.

The lateral facade continues the minimalist appearance of the exterior of the building. The windows here are arranged as a sequence of narrow openings, which give an impression of a colonnade resembling the temples of ancient Egypt. The cylinder (the rondavelle) is decorated with timber studs projecting throughout the entire surface of the wall. These elements are quite typical of African architecture as structural carriers whose edges form an original decor on the facade walls.

## **BUILDING MATERIALS**

The stone base of the foundation rests in the dips/holes, made in the soil and rammed with lime. The structure of the building includes the traditional load-bearing walls, made from compressed, stabilized blocks. As the primary materials, organic mud-brick was used as one of the most viable, reliable and lasting natural

construction materials for this matter. Abundance of argillo-arenaceous soil in the area accounts for the wide use of the material as it also helps to reduce construction costs for those living in the hot and dry African climate.

The interior walls are plastered with a mix of sand and clay with straw and other dry binding agents, for better thermal insulation. This plaster mix may be easily applied, even by the hand, which will lend the walls a vivid roughness and relief. This type of mix is not as strong as the chemically bound cement plaster so it requires lime or asphaltic binder if used for exterior walls. The roof is constructed of load-bearing concrete beams along the entire width of the ceiling, connected with wooden beams, which override the open spaces in the guest zone. Every room is furnished with skylights, which other uses includes vertical ventilation. The impluvium is specifically designed to collect rain water.

### **HEATING, COOLING, VENTILATION AND AIRFLOW**

The issues of heating, cooling, ventilation and airflow are resolved through the use of natural and organic materials. Firstly, the thick mud brick walls keep the indoor premises cool. The dimensional design of the building is cubic which, combined with perpendicular location of windows, allows for air-flow. Another important feature is the perforation of the roof – partial in private rooms, via the skylights, and complete in the guest zone or living room zone.

### **THE AFRICAN KITCHEN**

The African kitchen is a significant traditional element in this design. Its placement and layout conform with safety and venting regulations, as the periphery wall is perforated and allows for removal of kitchen odor. The kitchen area contains the classical cooking block alongside the traditional African kitchen and is fully separated from the residential area of the house.

### **WHY A PROSPECTIVE HOMEOWNER WOULD CHOOSE THIS DESIGN**

In this design, emphasizes is placed on the beauty and uniqueness of African architecture, with as much subtlety, modernity and affordability as possible. The main idea is to focus on the interior space -- to make it ultimately diverse and varied, yet affordable. It is not another regular house; it's about today's interpretation of traditional African architecture – ornamental on the outside, and functional on the inside.

### **FEATURES THAT COULD BE BUILDING CODE**

The unique peculiarity of this design is the wavy wall which is an interpretation of regular clay walls, common in Africa. The wavy shape is the reflection of naturally uneven shapes typically present in manually built houses. In this design, this feature combines functionality and decor. It is believed that such reference to tradition lends purity and subtlety to both form and structure.

