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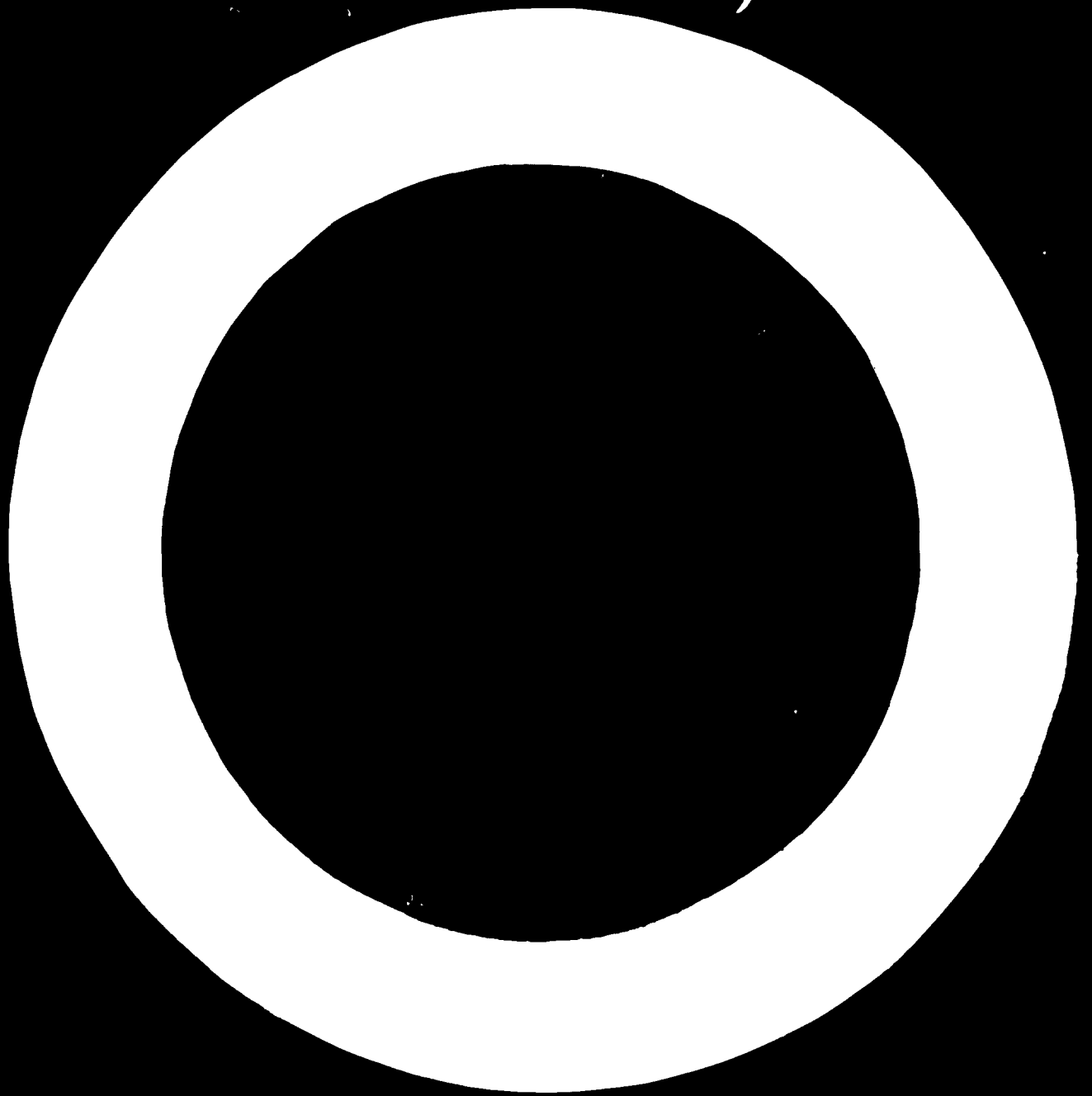
TRADITIONAL AND INDUSTRIALIZED HOUSING
CONSTRUCTION IN NIGERIA^{1/}

by

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INTRODUCTION

Nigeria is a fast developing country having a population of approximately 60,000,000. It is situated on the west coast of Africa.

Nigeria is blessed with abundance of natural raw materials in form of timber, granites, laterites, gravels, limestones, clay and sand.

Shelter is one of the absolute essentials for the physical survival of man. Housing deficiency in both quantitative and qualitative terms is a universal problem. But given the urban character of industrial activities and the sub-standard conditions of most urban dwellings, accelerated urbanisation poses very serious problems for a nation about to launch into an era of rapid economic and social transformation. In addition, there is the need to replace the dwellings damaged by war and make provision for the housing requirements on the growth in population. But the heavy capital requirements of modern and durable dwelling construction has made housing universally dependent on the provision of credit. The low per capita income which characterises the country's relative under-development mean that such credit dependence is much greater still. In view of these considerations, the Federal and State Governments promised to expand credit facilities for housing construction through loans to Building Societies, Housing Corporations and the various Staff Housing Schemes.

An important, though indirect, way of promoting housing is the provision of both land and building materials at reasonable prices. In order to make up for the short-fall between the domestic production and demand for essential materials like cement, iron rods and roofing sheets, the Government will continue to facilitate the importation of these items. Equally important is the industrial programme of the Governments, which includes the rehabilitation of war-damaged cement works and the establishment of new plants, steel rolling mills as well as the proposed establishment of an integrated iron and steel complex. All these measures should be adequate to sustain the imminent building boom during the Plan period.

PREFABRICATION IN NIGERIA

Traditional Building

(a) Prefabrication in simple terms is the construction of structures in whole or in parts as we often see in site. For example making of precast beams, floor etc.

(b) It could be defined as a factory-made-house with nearly sixty per cent of the major components made and transported from the factory to the building site thus creating a simple line. Prefabrication has been in existence in one way or the other in Nigeria in the form of insitu. This later developed to blocks and bricks prefabrication. Mechanised prefabrication has only gained ground in the developed countries of Europe and America.

(c) Most of the traditional buildings several years ago, consisted of mud walls, untreated timber, mats etc. with prefabricated doors and windows frames and roof.

(d) Modern House - mostly insitu construction with limited pre-fabrication (blocks, bricks, doors, windows, roof members are also included.)

Industrialised Prefabrication

Wooden houses (ATP-System Building) are now being produced by African Timber and Plywood (Nigeria) Limited in their factories at Sapele. The "ATP-System Building" was introduced in order to assist to overcome the housing needs of the growing population of Nigeria. The "ATP-System Building" consists of the following specification:-

Materials: Selected Nigerian hardwoods full treated against termites, rot, and woodworm by a vacuum pressure process which forces preservatives deep into the wood.

Walls: Outer. Full panels, window, and door panels consist of 3" x 2" (net $2\frac{7}{8}$ x $1\frac{7}{8}$ ") framing, 8' or 10' high by 3'4" wide, clad on exterior side with nailed, vertical, tongued and grooved boarding ex 1" nominal ($\frac{5}{8}$ " finished) or horizontal weather boarding as required. Boarding is fully interlocked. Panels are pre-drilled for bolting. Internal linings of 6mm (approx $\frac{1}{4}$ ") Cresta plywood, for paint finish, or Crestalux decorative plywood, (available in a choice of attractive

species) usually delivered to site in loose bundles, cut to size, for fixing after panels have been bolted together and pipe and wire runs have been incorporated. Overall wall thicknesses is 4".

Inner. Modular partition panels supplied with 6mm Cresta plywood cladding on one side only of the 3" x 2" framing. Loose linings are supplied for on site fixing to the other face of the panel. Plywood is an extremely stiff material providing great rigidity to brace panels.

Doors: Standard "Crestador" flush doors. Flush finished with Cresta exterior plywood. Also available, batten doors - boarded and framed.

Windows: Available in various types. Louvre windows are most frequently specified. Our 4, 8 and 12 louvre windows will accept most metal systems locally available. Internal frame size $34\frac{7}{8}$ " x $44\frac{3}{4}$ ". We also make timber shutters to fit 4 and 8 louvre windows if required.

Roof: Light weight timber trusses of various approved designs depending on span. Supplied made up or in bundled, marked components for on site assembly. Wide span trusses supplied in two sections for on site assembly. Gable ends clad in vertical tongued and grooved boarding to match wall panels. Purlins are 4" x 2", or 3" x 2" and are supplied cut to size or in random lengths. Fascia boarding supplied in random lengths.

Ceilings: If required 3" x 2" and 2" x 2" noggins and plywood for ceiling boarding can be supplied.

External and Internal Floor and Wall Plates: Pre-drilled external 5" x 3" floor plates supplied in standard lengths to be strongly secured to concrete slab or foundation with ragbolts or safely fastened to timber foundation where employed. Pre-drilled 4" x 3" wall plates supplied in standard lengths, to hold panels firmly in line and to receive trusses.

Door and Window Linings and Sills: Precut to length and bundled for fixing on site to avoid damage.

Main Posts: Corner Posts, junction posts and verandah posts are cut to length and pre-drilled. Corner posts have specially machined cover slips, and can be braced with metal straps into concrete to provide maximum anchorage.

Other Systems - (Block Houses)

Sandcrete blocks are now being produced in Nigeria by a number of factories on a large scale. Some produce up to 10,000 blocks per day; smaller industries using small mechanized system are producing up to 1,500 blocks per day as opposed to hand operated types producing only 500 blocks per day.

RAW MATERIALS

Wood and Timber - Producing 10,000,000 cu. ft. of sawn timber annually about 75% of these are available for building purposes and joining work. Some Nigerian timber have been tested and found suitable for building purposes in Nigeria. Particularly for the fabrication of doors and window frames, roof members, construction of prefabricated wooden panels, furniture and joinery and the production of plywood. We have two major plywood factories producing for both export and local use. Over 250 S'mill factories in Nigeria producing well seasoned lumber for export and local use.

Cement

Nigeria has four major cement factories producing about 30-40 per cent of the country's needs.

Laterites and Iron

A lot of laterites is available in Nigeria, and iron has been discovered in commercial quantity in some parts of the country.

Sand - River and streams sand are available for the manufacture of blocks etc.

Gravels

Gravels are obtainable locally mostly from Abeokuta and other parts of Western State of Nigeria.

Latecite Blocks for Building

Laterites are available in Nigeria. There are indications that laterite compressed under high pressure can make very strong building blocks and replace the use of sandcrete blocks in building.

Straw for Making Boards

The Department of Cocoa Research at Ibadan is experimenting on the use of straw for making ceiling boards in buildings. Research work continues in order to make them durable and waterproof.

Groundnut Husks for Board

It is the desire of the Building Research Institute in Nigeria to carry out further research on this waste product for the production of cheap but durable building materials. Over 150,000 tons of groundnut husks are available annually in the Northern States.

Wood Waste

Waste materials from wood and plywood (saw-dust) from Sawmills and Plymill factories have also been used for the production of ceiling boards. A lot of research is required to make the boards durable and water-proof under the condition of heavy rainfall occurring in Nigeria.

BUILDING PLANS AND ACTIVITIES

Considering Nigeria's population at 60,000,000, this country's housing need would be about 600,000 units per annum. Such a gigantic construction programme could only be executed by means of an extremely sound system of aided self help. States Housing Corporation, Banks, Building Societies should be involved. The present rate of need of 600,000 units annually may arise to 800,000 by the end of the century. Prefabrication with the attendant speed of erection can only be the answer to meet this increasing need.

PROGRAMMES AND PROJECTS

During the Plan period (Nigeria Second National Development Plan 1970 - 74) the Federal and States Governments plan to disburse £ 19,075 millions for Town and Country Planning.

The break-down of this figure is as follows:-

	1970-71	1971-72	1972-73	1973-74	Total
All the 12 States projects	2,070	2,653	3,944	5,121	13,788
Federal Government projects	0,710	1,550	1,592	1,435	5,287
Total all Governments	2,780	4,203	5,536	6,556	19,075

PROBLEMS CONFRONTING NIGERIA
AS REGARDS TO HOUSING

- (i) Lack of sufficient funds by a lot of local building contractors, thereby resulting in delays for completion of projects.
- (ii) Lack of trained technical man-power to execute major projects.
- (iii) Most of our local builders dread the ideal of erecting building (say of single storey type) entirely in wood because of two main reasons.
 - (a) Insect attack on the timber
 - (b) Fire hazards.

Research already carried out by African Timber and Plywood (Nigeria) limited, revealed that locally grown Nigerian hardwoods, manufactured into components which are then vacuum pressure impregnated with "Tanalith C" preservatives approved by the International Wood Preservation Industrial Standard Committee ensures maximum and permanent against termites, other insects and fungi attacks.

The subject of fire - how it starts and how it spreads is complex, but sufficient to say that a timber house is as safe as any other building.

Steel: This has to be imported in the form of beams like windows, doors, steel section for roof trusses, etc. Most of these take a long time to deliver, thereby causing delays.

Cement: Locally produced cement are not enough, so we have to rely on importation from other countries. Due to the subsequent inflow and relative scarcity of imported cement, there are bound to be a fluctuation in the price of cement, thereby impeding progress in building.

Architect Designed Buildings: Many Nigerian prospective house owners do not use the services of trained architect as they should. This has resulted in contractors producing buildings of very poor qualities. Not only this, it has resulted in loss of money, material and life where a number of buildings have collapsed due to having been erected from poorly prepared plans.

Transportation: Lack of adequate transportation system to convey materials from Ports or Railway Stations to building site, thereby increasing cost of building.

CONCLUSION

From the foregoing, it is absolutely clear that Nigeria is in need of adequate method in solving the growing housing problems. It is reckoned that unless a positive approach is made to provide housing units in really large numbers annually, the resultant effect of lack of accommodation will cause untold hardship on both the government and the governed.

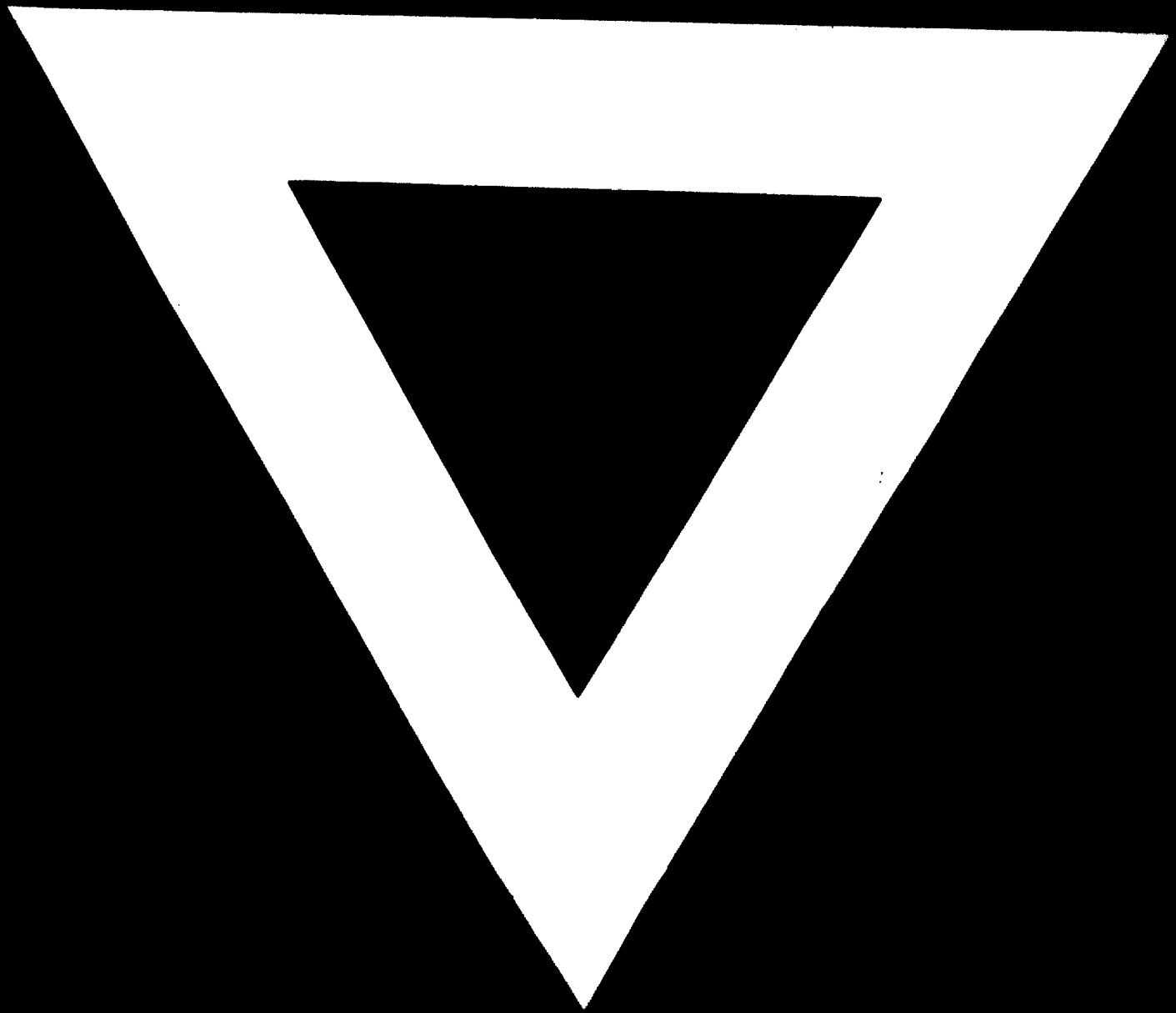
It is the belief that of the 600,000 units required annually, government and its housing corporations can build as a start, about 100,000 annually, using the industrialized system. This represents less than a fifth of the annual requirements, but it is believed that with time, it is possible that this proportion can be increased to a quarter or a third of the annual needs. In effect, it means that the private sector will still, and for a long time to come, provide a large proportion of the housing requirements in this area.

Effect of the Industrialized System: Since not much study has been given to the cost of the provision of housing by the industrialized system, it can only be expected that, at least for a start, it will only render the provision of housing quicker. The cost may not necessarily be cheaper. It can be hoped, however, that this research into the use of our local materials and possible reduction in the cost of building materials will become not only quicker, but also cheaper to purchase or let.

The expectation that at the best only about a third of the housing needs can be constructed with the use of the industrialized building system is to us a sufficient guarantee that the building industry and the traditional method cannot be adversely affected. If at all, it will only encourage the construction of the more expensive houses by the traditional method; as well as force a greater degree of efficiency and skill into the building industry.

It may be pertinent to mention that with the growing backlog in the provision of homes, the present rate need of 600,000 units annually might rise to 800,000 units annually by the turn of the century. The cry of the people of Nigeria during the last decade was on the scarcity of houses and the exorbitant high rent. This situation has remained the same.





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