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THE COLLAPSE OF BUILDINGS IN NIGERIA

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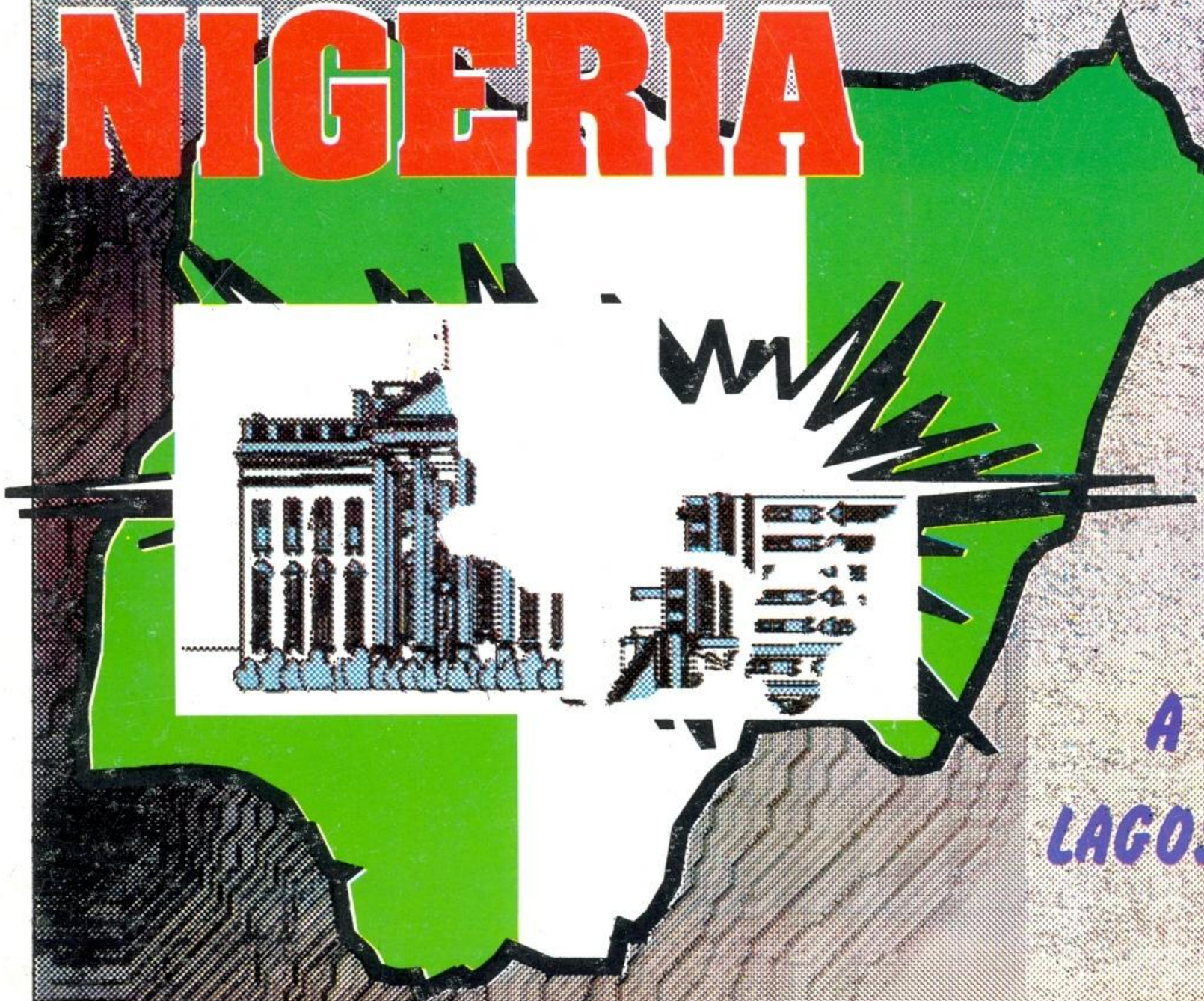

A CASE STUDY OF LAGOS / IBADAN AREAS (PHASE 1)

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BUILDING COLLAPSE IN NIGERIA

1. INTRODUCTION

Shelter forms one of man's most cherished needs and plays a vital role in the socio-economic development of any country. Its capital intensive nature makes it necessary for care to be taken in the provision of durable houses that will stand the test of time and offer good value for investment.

In Nigeria, cases of building collapse abound and the rate of collapse has attained an alarming proportion. The cases leave gory tales of destruction of lives and properties. The attendant economic losses and traumatic effects to the clients (building owner), contractors and the society at large is usually not quantifiable. Generally the issue of building collapse raises a lot of concern among Government, Stake holders and the general public whenever it is published in the national dailies. Questions are usually asked and unconfirmed reasons for the collapses are levelled against suspected bodies or individuals involved in the construction. In some cases, probe panels are constituted to investigate collapse. Usually, experience and records show that most of the questions asked in the event of a collapse are left largely unanswered for a number of reasons which are discussed later in this study. The net effect is that lessons are often not learnt from existing cases to guide against future occurence. This study is aimed at addressing these and other issues related to building collapse in Nigeria.

2. AIM AND OBJECTIVE

This study is aimed at investigating the reported cases of building collapse in Nigeria with a view to among other things:

(a) highlighting failure modes in buildings,

(b) identifying the causes of building collapse,

(c) determining the relevant preventive measures and

(d) creating a data bank for future use.

3. METHODOLOGY

This study was phased into three: Phase 1 covers the current study area of Lagos and Ibadan, which has been taken as representative of the south west zone. The other two phases will cover the northern and eastern zones of Nigeria. This will provide a broad outlook on the issue of building collapse in Nigeria. Literature review carried out focused on measures which guard against structural and foundation failures, in Engineering practice. Questionnaires were developed and administered to professionals in the construction industry, contractors, Federal and State Ministries involved in the construction process in Ibadan and Lagos. To strengthen the information base generated, oral interviews were held with people living near/around collapsed building sites. Random tests of construction materials from the collapsed sites were carried out. Also, trial pits were excavated at some sites to assist in obtaining evider on the nature and type of soil and foundations.

4. PROJECT IMPLEMENTATION/STUDY FOCUS

A total of eight sites in the South - West zone were investigated. (five in Lagos and three in Ibadan). Questionnaires were distributed to seven hundred people. One hundred and fifty questionnaires were administered to staff in the Federal and State Ministries involved in the construction process. Five hundred and fifty questionnaires were distributed among skilled/unskilled labour force and professionals in the building construction industry. Five hundred and sixty

questionnaires were returned/retrieved, representing 80%. The questionnaires were basically structured to have relevant information on the building collapse location, time of collapse, probable cause of collapse, skill of labour force, experience and qualification of building construction professionals involved in the construction and age of collapsed building. Appendix 1 shows a sample of the questionnaire used for the study.

5. LITERATURE REVIEW

In structural design, when a structure becomes unsafe for use, it is assumed to have attained limit state. Limit state design provides an acceptable probability that a structure will be safe for use in its working life. Limit states can be placed into two main categories namely: the ultimate limit state and the serviceability limit state. The former is concerned with the maximum load carrying capacity of the structure, while the latter is concerned with the durability and deformation behaviour of structures.

The environmental and structural function of buildings, depend on the particular limit state applied. In many cases, design criteria indicate the relevant features that must be considered. For example, the criteria that should be considered for a particular design may emphasize durability or deformation more than strength. An economic design however takes into account variations in the magnitude of the loading which are likely to occur during the life of a building. Similarly, allowances should be made for the anticipated variations in the concrete strength and the reinforcement in the structure. These variations referred to as characteristic strength are clearly stated in the codes of concrete practice. The code recommends that, the ultimate limit state should be considered in structural