



NBRRI REPORT NO. 12

CLIMATOLOGICAL AND SOLAR DATA FOR NIGERIA
(FOR THE DESIGN OF THERMAL COMFORT IN BUILDINGS)

NIGERIAN BUILDING AND ROAD RESEARCH INSTITUTE

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By

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Soon after its establishment, the Nigerian Building and Road Research Institute undertook a review of the urgent needs of the construction industry. One of the priority areas that emerged was the need to provide the various practitioners in the industry with the vital information, data and parameters they need in the performance of their professional assignments. Perhaps the most glaring was the scarcity of climatological data for the design of buildings for thermal comfort. Such data, as were available, were very limited and scattered in limited publications by overseas research organisations and one or two foreign books on tropical architecture. To remedy this situation and serve other needs, the Nigerian Building and Road Research Institute undertook to generate a wide range of data by the collation and analysis of meteorological records, theoretical computation and direct measurements. The data thus generated have been published in various reports:

NBRRRI Report No. 6 — Solar data for building design in Nigeria.

NBRRRI Report No. 7 — Measurement of global solar radiation in Nigeria.

NBRRRI Report No. 11 — Solar radiation distribution maps of Nigeria.

To further facilitate the use of these data for architectural design, it was decided to produce a single and compact publication containing all data available within the Institute which are relevant to such design. The outcome of this decision is this report which consists of three sections. Section A deals with climatological data based on meteorological records for a period of over forty years. Section B contains solar positions, shadow throws and angles, invaluable for the design of louvres and shading devices. Section C deals with the application of solar times and sunshine duration to the design of roofs (horizontal surfaces) and walls (vertical surfaces). Typical design examples have been provided.

This report is an indispensable handbook for architects, building technologists and engineers. As far as is known, this is the first publication of its kind in Nigeria. It is intended to update the data as and when found necessary. To this end, constructive comments on this report will be most welcome

A. O. MADEDOR
Director

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1. The Climatological Data given in this handbook are based on the published and unpublished normals of the Department of Meteorological Services, Lagos, Nigeria.
2. The base map for the isograms of mean temperature, maximum and minimum temperature ever recorded and the rainfall distribution map has been used by courtesy of the Federal Survey Office, Lagos.
3. Our gratitude goes to Drs. A. O. Madedor and C. E. Nwachuku, Director and Assistant Director respectively of the Nigerian Building and Road Research Institute for their interest, advice and encouragement in this work.
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