

**SIMPLIFIED PROCEDURE FOR ESTIMATING
AIR CONDITIONING COOLING LOADS IN
GHANA.**

KNUST

**A THESIS SUBMITTED TO THE GRADUATE SCHOOL OF
KWAME NKRUMAH UNIVERSITY OF SCIENCE AND TECHNOLOGY, KUMASI.**

**BY
UBA FELIX**

**IN PARTIAL FULFILMENT OF THE REQUIREMENTS
FOR
THE DEGREE OF MASTER OF SCIENCE
IN
MECHANICAL ENGINEERING**

OCTOBER, 2011

CERTIFICATION

I certify that this thesis satisfies all the requirements as a thesis for the degree of Master of Science.

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**Head of Department Mechanical
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KNUST

This is to certify that we have read this thesis and that in our opinion it is fully adequate, in scope and quality, as a thesis for the degree of Master of Science.

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DECLARATION

I hereby declare that all information in this document has been obtained and presented in accordance with academic rules and ethical conduct. I also declare that, as required by these rules and conduct, I have fully cited and referenced all material and results that are not original to this work.

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ABSTRACT

SIMPLIFIED PROCEDURE FOR ESTIMATING AIR CONDITIONING COOLING LOADS IN GHANA.

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Undersized or oversized air conditioning equipment leads to high operational cost, frequent breakdown and accelerated wear of equipment. Wrong sizing of equipment is often the result of inaccurate procedures employed to estimate the cooling load of the air conditioned space.

Air conditioning cooling load of buildings have been extensively researched. Today, computer programs are available on the market for more accurate estimation of cooling load. All the same, what appears to be the established practice among equipment suppliers and service providers in the air conditioning industry in Ghana is to size air conditioners for all applications by multiplying the net floor area by the same cooling load factor to arrive at space cooling load. Estimating the load by use of computer program or other accurate procedure is hardly the practice. Availability of cooling load factors that take into account the building glazing, orientation, ventilation requirements, usage pattern, among other factors, will be a more accurate and user-friendly tool that air conditioning service providers could employ to estimate cooling load of buildings to reasonable accuracy and thereby size or select the required equipment correctly.

The transfer function method (**TFM**), which is a well-known cooling or heating load estimation procedure that has been adopted by **ASHRAE**, was programmed in this thesis to predict the hourly and daily average cooling load due to different types of walls, roofs and fenestration that are typically found in building construction in Ghana today. This has been used to develop cooling load factors that simplify load estimation using a worksheet.

Sample calculations of cooling load estimated using the worksheet were compared with the result of cooling load estimated using a computer program and the agreement was found to be satisfactory.



DEDICATION

I dedicate
this thesis to my lovely sweetheart,
AGNES KWARTENG MENSAH

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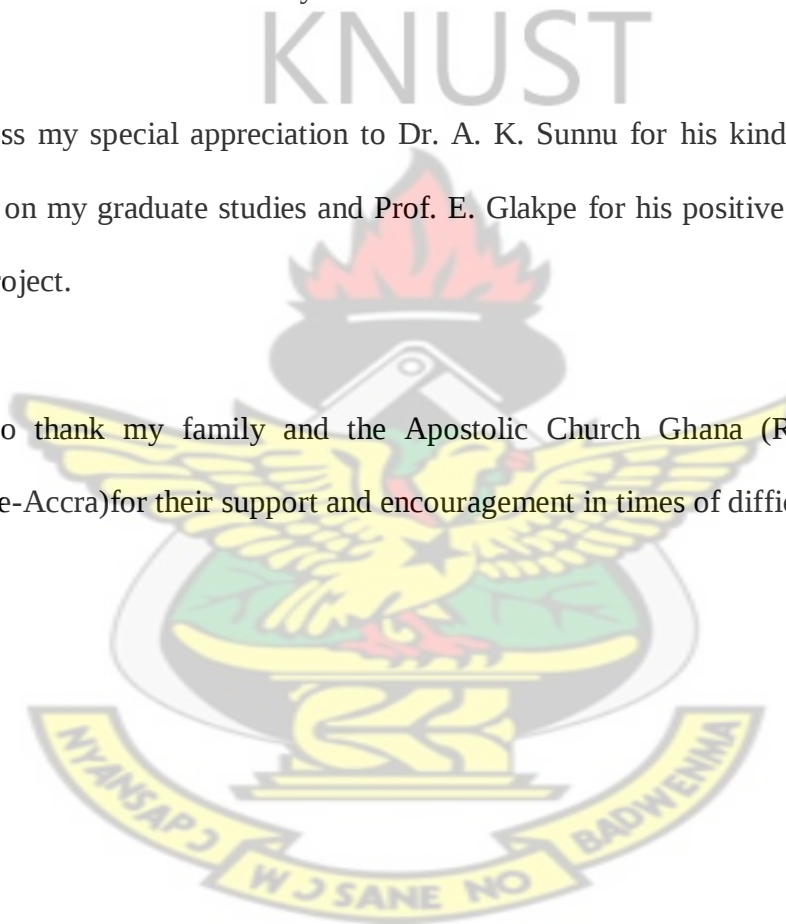


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NOMENCLATURE

A/C	Air-conditioner
A	area, ft^2 (m^2)
$a_{i,k}$, $a_{o,k}$, $a_{o,k}$	Transfer function coefficients
a_s	Stack coefficient of table 7.2, $(\text{ft}^3 / \text{min})^2 / (\text{in}^4 \cdot ^\circ\text{F}) [(\text{L/s})^2 / (\text{cm}^4 \cdot (\text{m/s})^2)]$
a_w	Wind coefficient of table 7.3, $(\text{ft}^3 / \text{min})^2 / (\text{in}^4 \cdot \text{mi/h}^2) \{(\text{L/s})^2 / [(\text{cm}^4 \cdot (\text{m/s})^2)]\}$
c_n	Conduction transfer function coefficients
d_n	Conduction transfer function coefficients
E_t	Equation of time
F	Solar heat gain coefficient
h_{con}	Convection heat transfer coefficient, $\text{Btu}/(\text{h} \cdot \text{ft}^2 \cdot ^\circ\text{F}) [\text{W}/(\text{m}^2 \cdot \text{K})]$
h_i	Indoor surface heat transfer coefficient, $\text{Btu}/(\text{h} \cdot \text{ft}^2 \cdot ^\circ\text{F}) [\text{W}/(\text{m}^2 \cdot \text{K})]$
h_o	Outdoor surface heat transfer coefficient, $\text{Btu}/(\text{h} \cdot \text{ft}^2 \cdot ^\circ\text{F}) [\text{W}/(\text{m}^2 \cdot \text{K})]$
h_s	Heat transfer coefficient of space between panes of double glazing, $\text{Btu}/(\text{h} \cdot \text{ft}^2 \cdot ^\circ\text{F}) [(\text{W}/(\text{m}^2 \cdot \text{K}))]$
HVAC	Heating, ventilating, and air-conditioning
I_o	Extraterrestrial irradiance, $\text{Btu}/(\text{h} \cdot \text{ft}^2) (\text{W}/\text{m}^2)$
I_{dif}	Diffuse irradiance on horizontal surface, $\text{Btu}/(\text{h} \cdot \text{ft}^2) (\text{W}/\text{m}^2)$
I_{dir}	Beam (direct) irradiance at normal incidence, $\text{Btu}/(\text{h} \cdot \text{ft}^2) (\text{W}/\text{m}^2)$
$I_{\text{glo,hor}}$	Global horizontal irradiance, $\text{Btu}/(\text{h} \cdot \text{ft}^2) (\text{W}/\text{m}^2)$
$I_{\text{glo,p}}$	Global irradiance on tilted plane, $\text{Btu}/(\text{h} \cdot \text{ft}^2) (\text{W}/\text{m}^2)$
N	Number of days in month
n	Day of year ($n = 1$ for January 1)
Q	Heat flow with subscripts c for cooling load, h for heating load, “lat” for latent load, “floor” for heat flows to floor, etc.
q	Heat flux, $\text{Btu}/(\text{h} \cdot \text{ft}^2) [\text{W}/\text{m}^2]$

SC	Shading coefficient
SHGF	Solar heat gain factor, Btu/(h . ft ²) (W/m ²)
T	Temperature, °R or °F (K or °C)
T _a	Dry-bulb air temperature, °F (°C)
T _{dif} , T _{dir}	Transmissivities of glazing for diffuse and direct radiation
T _e	Temperature of envelope, °F (°C)
T _i	Indoor air temperature, °F (°C)
T _O	Outdoor air temperature °F (°C)
T _{O,av}	Average outdoor temperature on design day, °F (°C)
T _{O,max}	Design outdoor temperature, °F (°C)
T _{os}	Sol-air temperature, °F (°C)
T _{os,t}	Sol-air temperature of outside surface at time t, °F (°C)
t _{sol}	Solar time, h
U	Overall heat transfer coefficient, Btu/(h .ft ² .°F) [W/(m ²)
V	Volume, ft ³ / m ³
$\dot{V}$	Flow rate, ft ³ /min (m ³ /s or L/s)
$\dot{V}_o$	Outdoor airflow rate, L/s
v	Wind speed, mi/h (ft/s, m/s); velocity
W _o	Humidity ratio of indoor air
α	Absorptivity for solar radiation
β_s	Altitude angle of sun (=90° - θ_s)
ΔT	Indoor temperature difference, T _i – T _O °F (K)
Δt	Time step h
δ	Declination

θ_i	Incidence angle of sun on plane (angle between normal of plane and line to sun)
θ_p	Zenith angle plane (tilt from horizontal, up > 0)
θ_s	zenith angle of sun
λ	Latitude
ρ	Density, lb _m /ft ³ (kg/m ³)
ρ	Reflectivity
ρ_g	Reflectivity of ground
Φ_p	Azimuth of plane (positive for orientations west of south)
Φ_s	Azimuth of sun
ω	Solar hour angle
ω	Angular velocity, rad/s
ω_{ss}	Sunset hour angle
abs	Absolute pressure
atm	Atmospheric pressure
c	Cooling loads
d	Dry
h	Heating loads
t	“Thermal” for units of energy and power, e.g., kW _t
wet	Wet bulb (temperature)

CHAPTER ONE:INTRODUCTION

1.1 BACKGROUND

Ghana has been experiencing a steady growth in electric power demand in the last two decades as a result of increasing economic activity and improvement in the standard of living such as the use of air conditioners in both commercial and residential buildings. As a result, demand for electricity today far outstrips supply resulting in unstable and poor quality supply and load shedding. To meet this increasing demand for electricity and improve supply quality requires two approaches, namely, generate more power and or economize the use of available power by avoiding wastage (Koranteng *et al.*, 2010).

The use of air conditioners is becoming a standard feature in occupied spaces such as offices, shops and private houses today. From surveys carried out by the Energy Foundation in Ghana, among others, air conditioners represent over 60% of the power usage in air conditioned buildings. Thus, efficient use of air-conditioners in buildings will contribute immensely to reduce energy misuse in buildings and thereby reduce the strain on the national electricity grid. The same applies to lighting which is also a major source of power misuse in building where it has been done with no or little regard for energy efficiency.

Energy-efficient air conditioning application in a building depends on three main players, namely, the architect or building designer, the air conditioning service provider and the end user. The first requirement is energy-efficient design of the building which depends on the architect, then followed by energy-efficient selection and installation of the air conditioning equipment which falls on the air conditioning service provider. The last and equally important player is the end user whose behavior pattern such as setting of the thermostat and care of the air conditioner also affects its power usage.

Extensive use of glazing in the external walls of buildings that are exposed to direct sunlight has become an unhealthy trend in building construction in Ghana today thereby resulting in unnecessarily high air conditioning cooling load of such buildings. This is an issue that needs to be addressed with building designers to ensure efficient use of glazing in buildings to reduce lighting cost by maximizing use of day lighting and at the same time minimizing cooling load.

Selection of energy-efficient air conditioner (A/C) depends on two factors, namely, energy-efficiency of the equipment and correct size or cooling capacity of the equipment for any particular application. On the issue of efficiency of A/C equipment, energy labeling has been introduced in the country which requires manufacturers to affix energy labels on air conditioners, fridges, freezers and other similar energy-consuming appliances coming on Ghanaian market to enable buyers to make informed choice. Thus, selecting an efficient brand of air conditioner is no more a problem of lack of knowledge other than what level of energy rating the purchaser is prepared to pay for.

Selection of the appropriate size or capacity is where the problem is because it is not backed by accurate estimation of the space cooling load (Kareem B. 2002). A rule of thumb approach that many service providers apply in Ghana is to determine the space cooling load by multiplying the floor area of the air conditioned space by a cooling factor of 600 Btuh/m² which does not account for the effect of important load influences such as wall glazing, building orientation, sun exposure, internal heat generating devices and the usage pattern of the space. When selection is not based on reasonable estimate of the space cooling load, what is more likely to occur is over-sizing or under-sizing of the air conditioner which in either

case results in increased power consumption and accelerated equipment wear (Sam C. M. *et al.*, 1998)

1.2 JUSTIFICATION

Air conditioning of occupied space such as offices, commercial buildings and private homes, has become a way of life due to the indoor comfort that the air conditioner provides. Air conditioners are also used to facilitate proper performance of some industrial processes by creating and maintaining a controlled atmosphere for the process.

There are several factors that need to be considered in choosing a suitable air conditioning system for any application. These include type and capacity of the system, its energy efficiency and the capital and running cost of the system. Air conditioning systems have a better energy efficiency rating today than they used to be in the past partly due to the application of micro-technology in their control systems and also improved quality of power supply.

For accurate estimation of cooling load which is the first requirement for correct sizing of cooling equipment, computer-based load estimation programs are available on the market today. One major problem with the load estimation software is the cost which the average A/C service provider finds to be prohibitive. In Ghana, consultations carried out show that only a few A/C companies possess load estimation software and these are mainly local agents or branches of multinational A/C companies that have the software supplied by their mother companies. Figure 1.1 shows some interface of a load estimation software by the name LATS Load developed by LG, a South Korean manufacturer of A/C, that is used by its local LG agent in Ghana.

Though use of load estimation software gives accurate estimation of the cooling load of a building, these are not convenient practical tools, especially for the majority of small scale services providers because of the time required for data input and the basic computer skill required of the user (Ansari F. A.*et al.* 2005). For this reason, user-friendly load estimating tools have been developed by the A/C industry in several countries to aid their local technicians and general service providers to carry out quick load estimation and equipment selection to reasonable accuracy.

One example of the above is the load estimation worksheet developed by Trane, a major A/C equipment manufacturer in the United State of America (W. C. Whitman and W. M. Johnson, 1995). A copy of this worksheet is shown in Appendix A1 (Table A1.1 to Table A1.2). This worksheet is a user-friendly practical load estimating tool that service providers will find very handy and efficient for their day to day activities. Unfortunately, this worksheet and accompanying load factors are based on American climatic conditions and building style and materials. In Ghana where the design and materials of building construction as well as solar heat loads are different from what pertains in America, the use of the Trane load estimation worksheet or similar load estimation tool that has been developed for colder regions can only lead to inaccurate estimation.

TABLE 1.1: Sample dialogue boxes to be filled when using the LATS Load (LG Software)

The figure displays four screenshots of the LATS Load software interface, arranged in a 2x2 grid. The top-left and bottom-left screenshots show the 'Create Project' dialog box, while the top-right and bottom-right screenshots show the 'Indoor Unit Properties' dialog box.

Top-Left Screenshot: 'Create Project' Dialog Box

This dialog box contains the following fields and controls:

- Country:** Brazil (selected in dropdown)
- State/Province:** (empty dropdown)
- City:** CARAVELAS (selected in dropdown)
- Design Conditions:**

	Indoor			Outdoor		
Cooling	DBT	27.0 deg C		DBT	31.8 deg C	
	WBT	19.5 deg C		WBT	25.1 deg C	
	RH	50.0 %		RH	58.5 %	
Heating	DBT	20.0 deg C		DBT	17.3 deg C	
	WBT	13.8 deg C		WBT	15.8 deg C	
	RH	50.0 %		RH	86.0 %	
- Altitude:** 4 m
- Buttons:** <Back, Next>, Cancel, Finish

Top-Right Screenshot: 'Indoor Unit Properties' Dialog Box

This dialog box contains the following fields and controls:

- Buttons:** Open load, Add floor, Add space, Remove row, Remove all
- Table:**

Floor	Room	Total Cool_Load(kW)	Sensible Cool_Load(kW)	Heating Load(kW)
Floor-001	room1	1.54	1.13	-0.52
- Buttons:** <Back, Next>, Cancel, Finish

Bottom-Left Screenshot: 'Create Project' Dialog Box

This dialog box contains the following fields and controls:

- Customer Information:** Name, Address, City, State/Province, Country, Phone Number, Fax Number, Email
- Contractor Information:** Name, Address, City, State/Province, Country, Phone Number, Fax Number, Email
- Buttons:** <Back, Next>, Cancel, Finish

Bottom-Right Screenshot: 'Indoor Unit Properties' Dialog Box

This dialog box contains the following fields and controls:

- Indoor Unit:**
 - IDU Type:** CASSETTE 4WAY (selected in dropdown)
 - IDU Model:** LRNN216TDA0 (selected in dropdown)
 - Height difference from ODU:** Below (selected in dropdown), 3.0 m
 - Diagram:** A schematic diagram showing the connection between the Indoor Unit (IDU) and the Outdoor Unit (ODU).
- Unit : kW**
- Table:**

	Total Cooling	Sensible Cooling	Heating
IDU Capacity	6.34	4.50	4.88
Design Load	1.54	1.13	-0.52
%	411.7	398.2	-938.5
- Buttons:** Accessories, OK, Cancel

Source: LG Ghana Ltd, Accra

1.3 OBJECTIVE

1.3.1 General Objective

The main objective of this research is to develop a simplified air-conditioning load estimation worksheet and accompanying load factors for use by air conditioning service providers in the practical estimation of air conditioning cooling load in Ghana.

1.3.2 Specific Objective

The specific objectives of the research include;

- a. To determine the design conditions (indoor and outdoor temperatures) in Ghana.
- b. To determine the cooling factors based on typical building constructions and building materials in Ghana.
- c. To develop practical A/C load estimation tool in the form of spreadsheet with the load factors to aid air conditioning practice in Ghana.

1.4 METHODOLOGY

The research was carried out in the following stages:

- a. Consultation with
 - Energy Foundation
 - A selected number of reputable air conditioning service providers in Ghana
 - Architects via the Faculty of Architecture and the Ghana Institution of Architects to seek their assistance to identify the typical features of building construction in Ghana
- b. Reviewing the theory of air conditioning load estimation in buildings.
- c. Analysis of sample computer-based program for estimation of air conditioning load
- d. Studies and analyses of heat transfer in typical sample(s) of building construction in Ghana.

The end parts of the thesis was supported with a;

- e. Verification of accuracy of the load estimation tool developed by comparison with cooling load estimated using computer-based load estimation program.

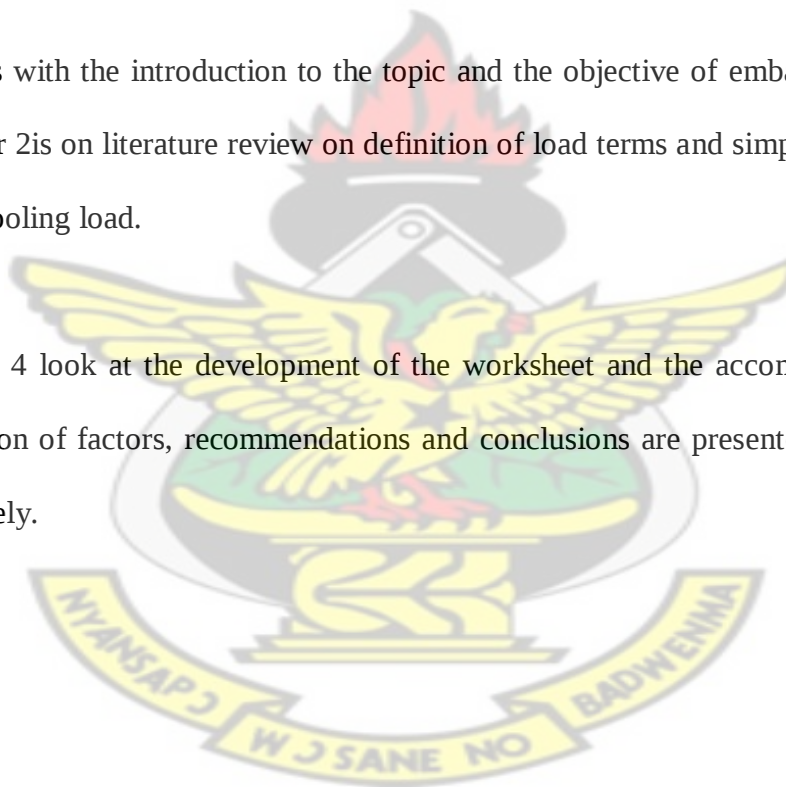
1.5 SCOPE OF WORK AND THESIS ORGANIZATION.

This research briefly introduces the principal components of cooling load of a building, namely, wall transmission, solar effect, internal heat gain (light, equipment, occupants) orientation of building, etc.

The indoor design condition was set at 24°C and a relative humidity of 50% applied to buildings of different constructions. The outdoor condition was extracted from long term climatic data obtain from Meteorological Department of Ghana.

Chapter 1 deals with the introduction to the topic and the objective of embarking on such a project. Chapter 2 is on literature review on definition of load terms and simplified method of estimation of cooling load.

Chapters 3 and 4 look at the development of the worksheet and the accompanying factors while verification of factors, recommendations and conclusions are presented in Chapters 5 and 6 respectively.



CHAPTER TWO:LITERATURE REVIEW

2.1 INTRODUCTION

Buildings are constructed to provide a safe and comfortable internal environment at all variation in external conditions. The extent to which the desired interior conditions can be economically maintained is one important measure of the success of a building design. Although control of inside conditions is usually attributed to the active heating and cooling systems, the design of heating, ventilation, and air-conditioning (HVAC) must start with an examination of the thermal characteristics of the envelope. They influence both the equipment capacity and the energy required for its operation (Stoecker W. F. *et la.* 1982).

2.2 DEFINITION OF TERMS

Heat gain is the rate at which energy is transferred to or generated within a space. It has two components, sensible heat and latent heat, which must be computed and tabulated separately. Heat gains usually occur in the following forms: solar radiation through openings, heat conduction through boundaries with convection and radiation from the inner surface into the space, sensible heat convection and radiation from the internal objects, ventilation and infiltration air and Latent heat gains generated within the space.

Cooling load is the rate at which energy must be removed from a space to maintain the temperature and humidity at the desired values. The cooling load will generally differ from the heat gain at any instant of time, because radiation from the inside surface of the walls and interior objects as well as the solar radiation coming directly into the space through openings does not heat the air within the space directly. The radiant energy is mostly absorbed by floors, interior walls, and furniture, which are then cooled primarily by convection as they attain temperatures higher than that of the room air. Only when the room air receives the

energy by convection does this energy become part of the cooling load. The storage characteristics of the structure and interior objects determine the thermal lag and therefore the relationship between heat gain and cooling load. Figure 2.1 illustrates the information. The reduction in peak cooling load because of the thermal lag can be important in sizing the cooling equipment.

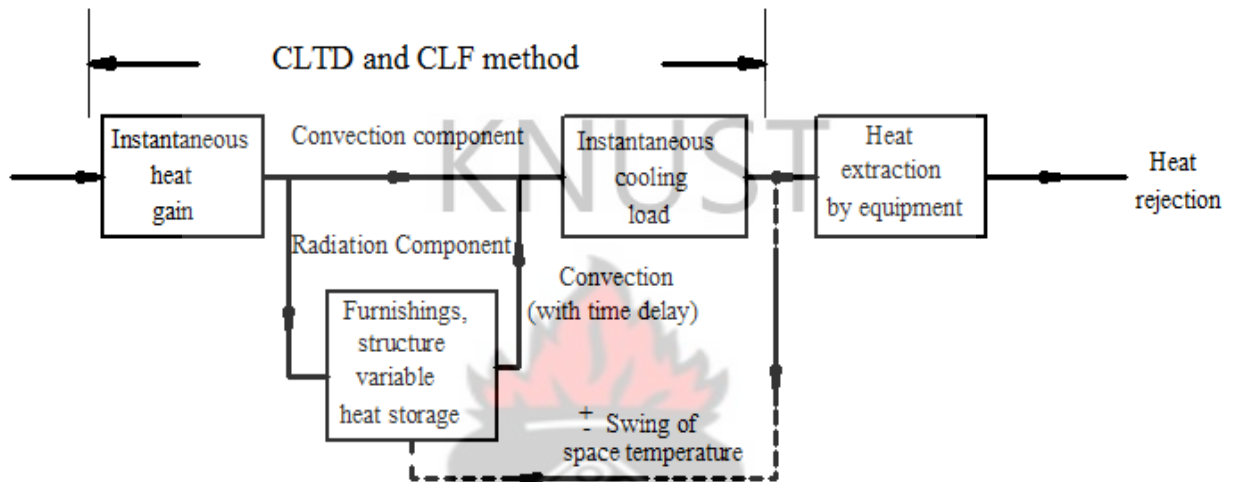


FIGURE 2.1: Schematic relation of heat gain to cooling load.

Source: ASHRAE, 1981.

Heat extraction rate is the rate at which energy is removed from the space by the cooling and dehumidifying equipment. It is equal to the cooling load when the space conditions are constant and equipment is operating. However, this is rarely true because some fluctuation in room temperature is necessary for the control system to operate. Because this cooling load is also below the peak or design value most of the time, intermittent or variable operation of the cooling equipment is required. Figure 2.2 shows the relation between heat gain and cooling load and the effect of the mass of the structure; though the heat gain by the three constructions are the same, the rate at which the heat is conducted into the room space are not the same due to the mass differences of the constructions. The attenuation and delay of the peak heat gain is very evident especially for heavy construction.

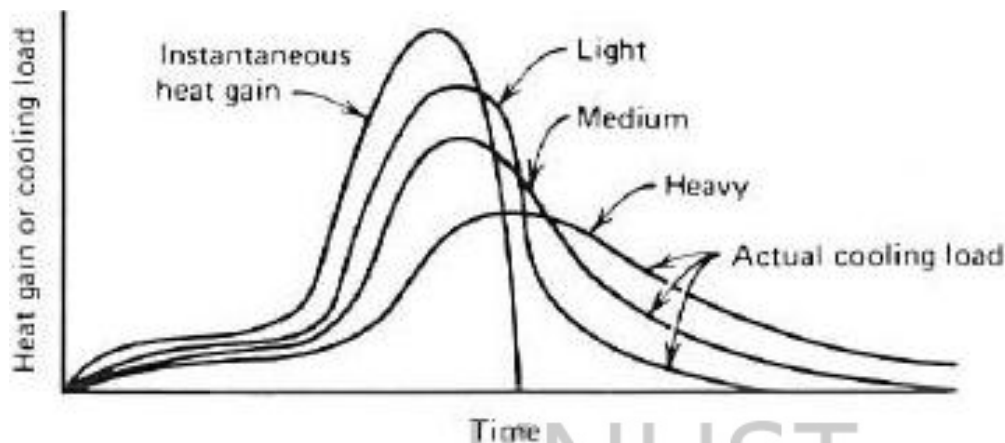


FIGURE 2.2: Actual cooling load and solar heat gain for light, medium, and heavy constructions.

Source: ASHRAE, 1981.

Load factors are the average thermal energy (load) absorbed or released into a space over a period of time per unit component of thermal load. The load factors come in two forms either as heating load or cooling load. The underlying reason for the load factors is that, by the First Law of Thermodynamics, the heat gain into a space over a period of time should be equal to cooling load required to be extracted by the HVAC equipment.

2.3 IMPORTANCE OF COOLING LOAD ESTIMATION

Correct calculation of heating and cooling loads is the essential first step for successful HVAC system design. As has been thoroughly documented, properly sized systems, compared to over-sized systems, have lower installation cost, perform better, operate more efficiently, and impose less demand on utilities (Proctor *et al.*, 1995).

A cause of over-sizing is lack of confidence in load calculation methods. That is, practitioners do not know (or do not believe) the accuracy of the procedures and thus use conservative assumptions and/or apply safety factors to calculated loads. Most A/C equipment breakdowns

can be attributed to the vast error between actual space load and the equipment capacity; these identify weaknesses at the side of service providers. In fact, it is surprisingly difficult to make rigorous comparisons of calculated and actual building cooling loads (James *et al.*, 1997) but the error of difference can be reduced.

2.4 FACTORS THAT AFFECT THERMAL LOAD

The various factors that influence space cooling load are;

- a. Geographical site conditions (latitude, longitude, wind velocity, precipitation etc.)
- b. Outdoor design conditions (temperature, humidity etc.)
- c. Indoor design conditions
- d. Building characteristics (materials, size, and shape)
- e. Configuration (location, orientation and shading)
- f. Operating schedules (lighting, occupancy, and equipment)

Climate has a major effect on building performance, HVAC design and energy consumption. It is also pertinent to the assessment of thermal comfort of the occupants. The key objectives of climatic design include:

- a. To reduce energy cost of a building
- b. To use "natural energy" as far as possible instead of mechanical system and power
- c. To provide comfortable and healthy environment for people

2.5 WHOLE HOUSE WORKSHEET (TRANE AC ESTIMATING TOOL)

Whole house worksheet is a cooling load estimation tool prepared by TRANE Company of the United State of America. The tool is made up of a worksheet supported by six Tables of load data (Table A to F). Table A, contains heating factors for both doors and windows;

Table B, cooling factors for both doors and windows; Table C, adjustment factors for heating; Table D, infiltration multiples for both heating and cooling conditions; Table E, construction factors for both heating and cooling loads and Table F, duct loss multiples for both.

TRANE's estimation worksheet is based on building practices and materials of construction commonly found in America and other temperate climates. For the climatic condition, building practice and construction materials prevailing in Ghana, the TRANE estimation tool is inappropriate for load estimation

TRANE's worksheet also does not take into account the different orientation of building walls which is probably of minor significant in America and other temperate regions in the northern hemisphere. This is hardly the case in Ghana where surfaces facing the east and west where the sun respectively rises and sets receive more radiations compared to the north and south facing surfaces.

2.6 TOOLS FOR ESTIMATING COOLING LOAD

Step-by step procedure for estimating building thermal load has been presented in different forms to reduce the laborious work that air-conditioning service provider's experience. These range from the use of software, worksheet with accompanying load factors and data on similar installation, all in the intent to give the demand side of a zone or space (Ansari *et al.*, 2005; Hui *et al.*, 1998). Extensive use of these three techniques yields a sense of judgment (rule of thumb) which comes with experience and understanding of the effects of the various thermal load components.

2.7 APPROXIMATE METHOD OF ESTIMATING COOLING LOAD

The desire is to have a simplified estimation tool that gives an accuracy reasonably close to what is obtained using a computer software. Before the introduction of worksheet as a simplified estimation procedure, what was available for load estimation was air-conditioning estimating data which does not account for the geographical location, material properties and orientation of the building, among others. From the large number of air-conditioning installations that have been made, sufficient operating data became available for arriving at general value/data for some classes of buildings. Though the data is derived under the same conditions as pertaining in Ghana, its disadvantages are numerous; it does not account for solar effects, material properties etc., which renders it ineffective for accurate estimation.

2.8 LOAD CALCULATION TECHNIQUE

The theory of A/C load estimation is based on four different techniques or methods. The four techniques are:

- Cooling load temperature difference technique (CLTD/CLF),
- Total equivalent temperature differential or time averaging technique (TETD/TA),
- Transfer function method technique (TFM),
- Radiant Time Series (RTS)

These different techniques may yield close results for the same input information which is primarily due to the way each method handles the solar effect and building dynamics. The underlying principle common to all the four techniques is that heat flow rates are not instantaneously converted to loads.

The transfer function method is the preferred method among the four because the rest were derived from it in the quest to simplify its application.

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CHAPTER THREE:THEORY OF LOAD ESTIMATION.

3.1 INTRODUCTION

Heating and cooling loads are the thermal energy that must be supplied to or removed from the interior of a building in order to maintain the desired comfort conditions; and this forms the demand side of the building.

Calculating the load of a building's envelop is complicated by the fact that there is the effect of heat storage in the mass of the building due to its thermal inertia to heat response, and this requires that sizing an HVAC equipment for space conditioning should start with an energy balance.

3.2 PRINCIPLE OF HEAT GAIN CALCULATION

Heat gain is the rate at which energy is transferred to or generated within a space. It has two components, sensible heat and latent heat, which must be computed and tabulated separately, see Figure 3.1. Heat gains usually occur in the following forms:

- a. Transmission through window/fenestration
- b. Transmission through walls and roofs.
- c. Heat Energy generated within space
- d. Ventilation and infiltration air.

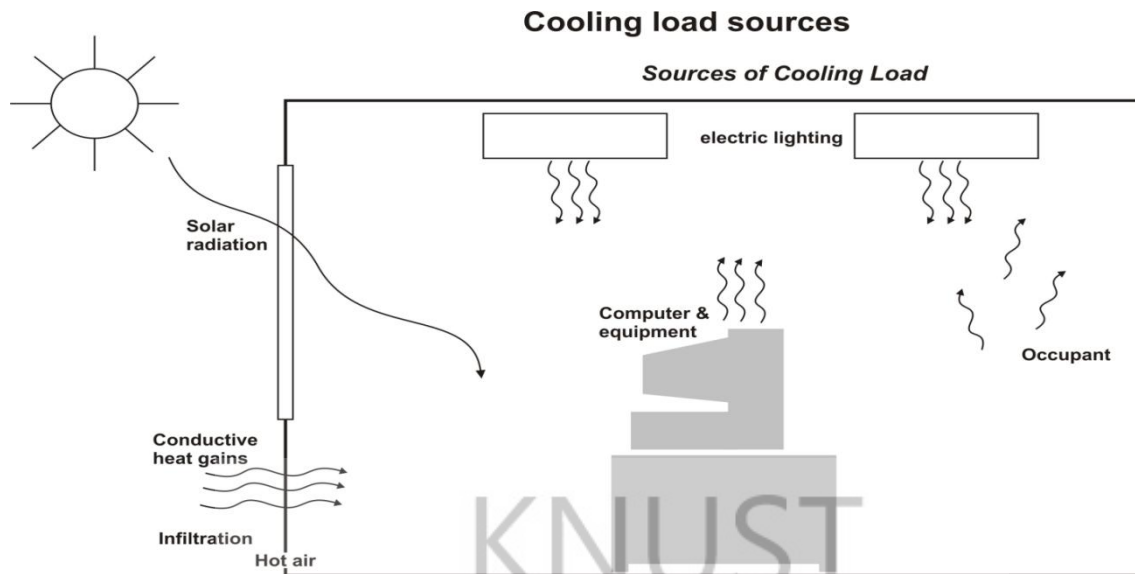


FIGURE 3.1: Cooling load sources

3.3 TRANSMISSION THROUGH WALLS AND ROOFS

In this thesis the Transfer Function Method (TFM) is employed to account for the transient storage effects and limits of static analysis of the enclosure components.

This approach was developed by the ASHRAE Task Group on Energy Requirements in 1981. In the TFM, two elements are identified: the driving elements and the response elements. The TFM calculates the response of a system by the following basic assumptions:

Discrete time steps (all functions of time are represented as series of values at regular time steps, hourly in present case)

Linearity (the response of a system is a linear function of the driving terms and of the state of the system)

Causality (the response at time t can depend only on the past, not on the future)

3.3.1 Conductive heat across external surfaces

The conductive transfer defined in TFM form by ASHRAE is expressed as;

$$\dot{Q}_{cond,t} = - \sum_{n \geq 1} d_n \dot{Q}_{cond,t-n\Delta t} + A \left(\sum_{n \geq 0} b_n T_{sol,t-n\Delta t} - T_i \sum_{n \geq 0} c_n \right) \quad (3.1)$$

where

A = area of roof or wall, m²

Δt = time step = 1 h

$T_{sol,t}$ = sol-air temperature of outside surface at time t .

b_n, c_n, d_n = coefficient of conductive transfer function (attached from ASHRAE, 1977,)

$\dot{Q}_{cond,t}$ = conductive heat gain at time t .

3.3.2 Sol-air temperature

Sol-air temperature, T_{sol} , is the fictitious temperature of the outdoor air which, in the absence of radiative exchanges on the outer surface of the roof or wall, would give the same rate of heat transfer, Q , through the wall or roof as the actual combined heat transfer mechanism between the sun, the surface of the roof or wall, the outdoor air and the surroundings (ASHRAE, 1981). T_{sol} , is the outdoor temperature increased by an amount to account for the effect of solar radiation.

If the surrounding environment can be characterized by a single temperature to account for the radiative flux $\alpha I/A$, the sol-air temperature, is defined as;

$$T_{sol} = T_o + \frac{\alpha I}{h_o} - \frac{\Delta q_{ir}}{h_o} \quad (3.2)$$

where

h_o = surface heat transfer coefficient for radiation and convection, W/ (m².K)

I = global solar irradiance on surface, W/m².

Δq_{ir} = correction to infrared radiation transferred between surface and environment if the sky temperature is different from T_o , W/m^2 .

In practice, one assumes that $\Delta q_{ir}/h_o$ varies from zero for vertical surfaces to 3.9 K for upward-facing surfaces and the values of $\alpha I/h_o$ ranges from 0.026 for light-coloured surface, while 0.052 represents maximum value for dark-surfaces (ASHRAE Handbook Fundamentals, 1981).

3.3.3 Insolation on surfaces

The amount of radiation incident on an inclined surface is the algebraic sum of the direct radiation reflected from the ground and diffuse sky radiation incident on a surface and usually called global radiation with subscript “glo” (Duffie A. J. *et al.*, 1980; Kreider F. J. *et al.*, 1994). From Hay, 1979, if unshaded flat surface is tilted at an angle θ_p , it sees a fraction

$$F_{sky} = \frac{1 + \cos \theta_p}{2} \quad (3.3)$$

of isotropic radiation from the sky and a fraction

$$F_{grd} = \frac{1 - \cos \theta_p}{2} \quad (3.4)$$

of isotropic radiation reflected by the ground

where

θ_p = zenith angle, angle of tilt from the horizontal surface, as in Fig. 3.2

Therefore the global irradiance on the tilted plane is

$$I_{glo, p} = I_{dir} \cos \theta_i + I_{dif} \frac{1 + \cos \theta_p}{2} + I_{glo, hor} \rho_g \frac{1 - \cos \theta_p}{2} \quad (3.5)$$

and

$$I_{glo, hor} = I_{dir} \cos \theta_s + I_{dif} \quad (3.6)$$

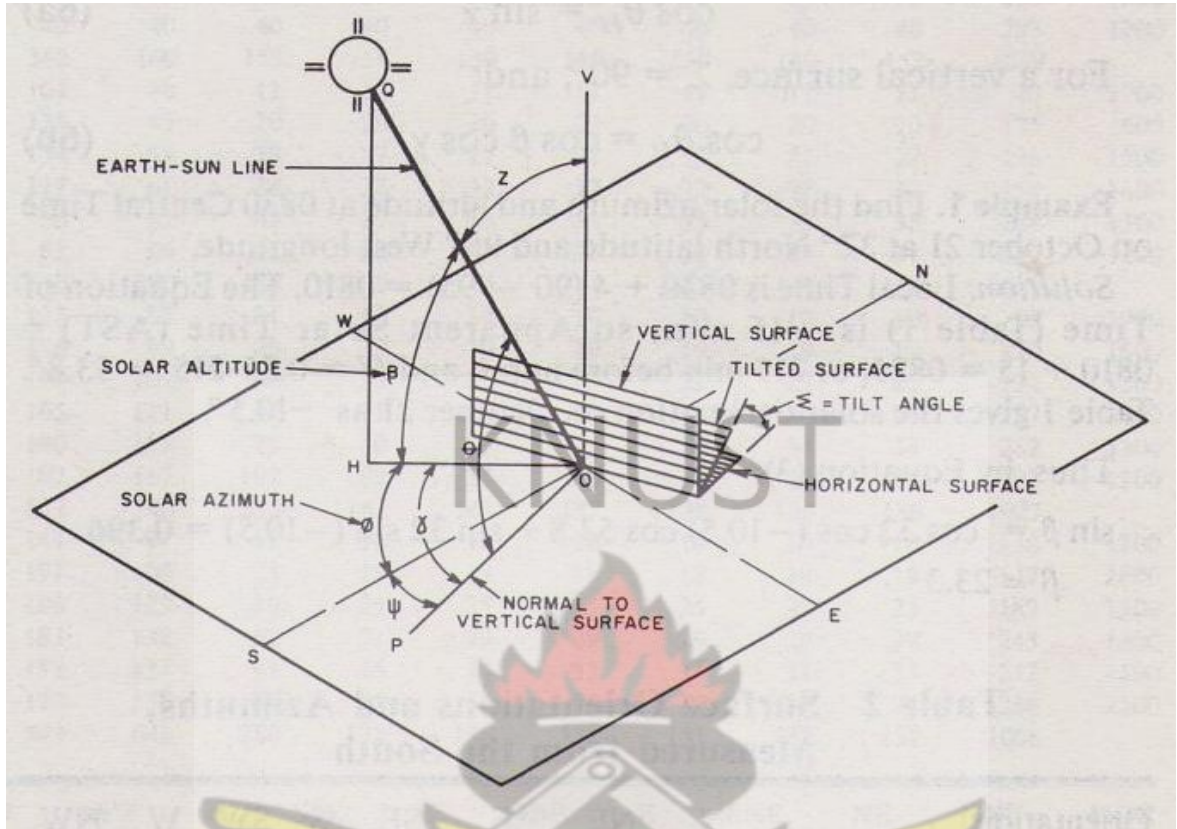


FIGURE 3.2: Angle of incidence of the sun on plane surface.

Source: ASHRAE, 1989.

where

I_{dir} = direct radiation

θ_i = incidence angle (an angle between normal of plane and line from sun)

θ_s = zenith angle for any latitude, λ

I_{dif} = diffuse irradiance on a horizontal surface

ρ_g = reflectivity of the ground, see Table 3.2

For vertical surfaces, the angle $\theta_p = 90^\circ$ and Equation (3.7) simply reduces to;

$$I_{glo, \text{ vert}} = I_{dir} \cos \theta_i + \frac{I_{dif}}{2} + \frac{I_{glo, \text{ hor}} \rho_g}{2} \quad (3.7)$$

According to Hottel, 1976,

$$I_{dir} = I_0 \left[a_0 + a_1 \exp \left(-\frac{k}{\cos \theta_s} \right) \right] \quad (3.8)$$

The coefficients; a_0 , a_1 and k depend on the state of the atmosphere; they are listed in Table 3.1 for 23 km and 5km visibility, the correction factors r_0 , r_1 , and r_k that depend on the time of the year and climate. A , is the altitude of the observer in kilometers and must be less than 2.5 km.

From Liu and Jordan, 1960, the diffuse irradiance on a horizontal surface can be estimated from a relation (Duffie A. J. *et al.*, 1980; Kreider F. J. *et al.*, 1994);

$$I_{dif} = (0.271 I_0 - 0.2939 I_{dir}) \cos \theta_s \quad (3.9)$$

TABLE 3.1: Coefficients of clear-day model. (From Hottel, 1976.)

a) Coefficients a_0 , a_1 , and k as a function of altitude a above sea level (in kilometers), for the levels of visibility				
	23 km (14.3 mi) visibility		5 km (3.11 mi) visibility	
a_0	$r_0[0.4237 - 0.00821 \times (6.0 - A)^2]$		$r_0[0.2538 - 0.0063 \times (6.0 - A)^2]$	
a_1	$r_1[0.6055 + 0.00595 \times (6.5 - A)^2]$		$r_1[0.7678 + 0.0010 \times (6.5 - A)^2]$	
k	$r_k[0.2711 - 0.01858 \times (2.5 - A)^2]$		$r_k[0.2490 - 0.0810 \times (2.5 - A)^2]$	
(b) Correction factors r_0 , r_1 and r_k				
Climate type	r_0		r_1	r_k
	Visibility			
	23 km	5 km		
Tropical	0.95	0.92	0.98	1.02
Mid latitude summer	0.97	0.96	0.99	1.02
Subarctic summer	0.99	0.98	0.99	1.01
Mid latitude winter	1.03	1.04	1.01	1.00

Source: (Kreider et al., 1994)

TABLE 3.2: Reflectivity of common exterior surfaces. (Based on Hun and Calfell, 1977, and Threlkeld, 1970.)

Surface	Reflectivity ρ_g
Natural surfaces (no vegetation)	
Snow (fresh)	0.75
Soil (clay, loam, etc.)	0.14
Water (relatively large incidence angles)	0.07
Artificial surfaces	
Bituminous and gravel roof	0.13
Blacktop, old	0.10
Building surfaces, dark (red brick, dark paints, etc.)	0.27
Building surfaces, light (light brick, light paints, etc.)	0.60
Concrete, new	0.35
Concrete, old	0.25
Crushed rock surface	0.20
Earth roads	0.04
Vegetation	
Coniferous forest (winter)	0.07
Leaves, dead	0.30
Forests in autumn, ripe field crops, plants	0.26
Grass, dry	0.20
Grass, green	0.26

Source: (Kreider et la., 1994)

3.4 HEAT GENERATED WITHIN SPACE

Heating or electrical components and occupants that produce heat during operation affect heating and cooling load and have to be accounted for. The contribution of these to air conditioning load is much easier to estimate from data available in literature. Heat generated within space depends on the internal heat generating devices and the usage pattern of the space.

3.4.1 Light

The amount of heat gain in the space due to lighting depends on the wattage of the lamps and the type of the fixture. When fluorescent lighting is used, the energy dissipated by the ballast must also be included in the internal load.

$$\dot{Q} = (q_{lr})(F_u)(F_b) \quad (3.10)$$

Where

$\dot{Q}$ = heat gain from lamp, W

q_{lr} = lamp rating, W

F_u = utilization factor or fraction of installed lamps in use

F_b = ballast factor for fluorescent lamps = 1.2 for most common fluorescent fixtures

F_u , is assumed to be 1, for conditions where all the lamps are in use (Stoecker W. F. *et al.* 1982; ASHRAE, 1981).

In some cases the power density for lighting in offices buildings are around 20 to 30 W/m²(Kreider F. J. *et al.*, 1994), which is not a good practice to assume nominal wattage per unit area (ASHRAE, 1981).

3.4.2 Equipment

Heat from appliances such as photocopiers, computer, motors, etc. affect the cooling load of building. In estimating a cooling load, heat gain from all heat-producing appliances can be calculated from the equation which applies to laboratory and kitchen equipment:

$$\dot{Q} = 0.16\dot{q}_r \quad (3.11)$$

where $\dot{Q}$ = heat gain from lamp, W

$\dot{q}_r$ = input rating of the hooded appliance, W

In this equation it is assumed, the convected and latent heats are negligible when appliances are installed under an effective hood, (ASHRAE, 1981).

3.4.3 Occupancy

The rate at which the cooling load is affected by the occupants depend on the activities, modes of dress, and environmental conditions. Table 3.3, gives some practical values for these rates stated in ASHRAE, 1981.

TABLE 3.3: Rates of heat gain from occupants of conditioned space.

Degree of Activity	Typical Application	Table Heat Adult, Male		Total Heat		Sensible Heat		Latent Heat	
		Watts	Btu/h	Watts	Btu/h	Watts	Btu/h	Watts	Btu/h
Seated at rest	Theater, movie	115	400	100	350	60	210	40	140
Seated, very light work	Offices, hotels, apts	140	480	120	420	65	230	55	190
writing									
Seated, eating	Restaurant	150	520	170	580	75	255	95	325
typing	Offices, hotels, apts	185	640	150	510	75	255	75	255
	Retail Store, bank	235	800	185	640	90	315	95	325
Standing, light work or walking or walking slowly									
Light bench work	Factory	255	880	230	780	100	345	130	435
Walking, 1.5 m/s light machine work	Factory	305	1040	305	1040	100	345	205	695
Bowling	Bowling alley	350	1200	280	960	100	345	180	615
Moderate dancing	Dance hall	400	1360	375	1280	120	405	255	875
Heavy work, heavy machine work, lifting	Factory	470	1600	470	1600	165	565	300	1015
Heavy work, athletics	Gymnasium	585	2000	525	1800	185	635	340	1155

Source: ASHRAE, 1981.

The latent heat gain caused by occupants can be considered as an instantaneous cooling load, but the total sensible heat gain is not converted directly to cooling load.

The load contribution of occupants at time, t , is given by:

$$\dot{Q}_t = \dot{q}_{s,t} + \dot{q}_{l,t} \quad (3.12)$$

$$\dot{q}_{s,t} = N_o * S.H.G. \quad (3.13a)$$

$$\dot{q}_{l,t} = N_o * L.H.G. \quad (3.13b)$$

where

$\dot{Q}_t$ = total heat gain from occupants, W

$\dot{q}_{s,t}$ = total sensible heat gain at time t .

$\dot{q}_{l,t}$ = total latent heat gain at time t .

S. H. G = sensible heat gain

L. H. G = latent heat gain

No. = number of occupants

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3.5 VENTILATION AND INFILTRATION

The entry of outside air into a room or space influences both the air temperature and the humidity level in the space. Usually a distinction is made between the two effects, referring to the temperature effect as sensible load and the humidity effect as latent load. Heat gain or loss due to the entry of outside air at time t , is then expressed as;

$$q_{is} = 1.23 \dot{V}(T_o - T_i) \quad (3.14)$$

$$q_{il} = 3012 \dot{V}(W_o - W_i) \quad (3.15)$$

where

$\dot{V}$ = volumetric flow rate of outside air, L/s

W = humidity ratio, water to air, kg/kg

T_o = out-door temperature

T_i = in-door temperature

Infiltration, defined as the uncontrolled entry of outside air directly into the building, results from natural forces, e.g., wind and buoyancy due to the difference between inside and outside. Ventilation, on the other hand, is air intentionally brought into the building by mechanical means.

Volume of ventilation air required in a space is easy to calculate based on the number of occupants and activity, among others. Once this volume is worked out, Equations 3.14 and 3.15 is applied to obtain the ventilation component of space cooling load.

Estimating the infiltration load is more difficult and uncertain due to the challenge posed by the estimation of the infiltration air volume. As split and window A/C units which have the widest application in Ghana do not possess inbuilt ventilation facility, infiltration is one component of A/C load that is difficult to estimate accurately. One procedure that is often used to estimate the volume of infiltration air is the number of Air Changes per Hour (ACH) (ASHRAE, 1982, 1991; Kreider F. J. *et al.*, 1994).

The number of air changes per hour that occur due to leakage varies according to the tightness of construction, the number of windows, the degree of outside exposure, the physical location, etc., of the space to be conditioned. One air change per hour means that the entire volume of a space will be replaced by air from an outside source once every hour. The amount of fresh air that infiltrates is stated as the volume, $\dot{V}$, of outdoor air that crosses the building boundary and needs to be conditioned [ft^3/min , m^3/s or L/s]. to express it in air changes per hour; it is divided by the building's volume, as $\dot{V}/V$, (Kreider F. J. *et al.*, 1994).

The number of air changes per hour for a small building with no internal pressurization can be estimated as a function of wind speed and temperature differences;

$$ACH = a + bV + c(t_o - t_i) \quad (3.16)$$

where

t_o = outdoor temperature, °C

t_i = indoor temperature, °C

a, b, c = experimentally determined constants

V = wind speed, m/s

ACH = number of air-change per hour

TABLE 3.4: Infiltration constants

Quality of construction	a	b	c
Tight	0.150	0.010	0.007
Average	0.200	0.015	0.014
Loose	0.250	0.020	0.022

Source: Stoecker W. F. *et la.*, 1982

3.6 TRANSMISSIONS THROUGH WINDOW

Heat gain due to solar energy incident on a surface depends upon the physical characteristics of the surface. Surface optical properties are describe by

$$\tau + \rho + \alpha = 1 \quad (3.17)$$

where

τ = transmittance

ρ = reflectance

α = absorptance

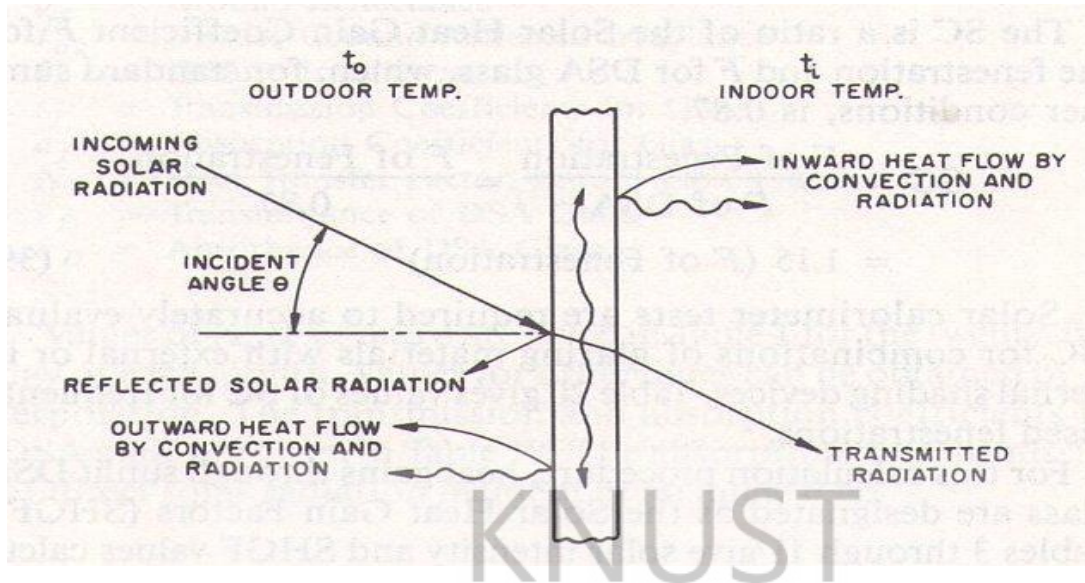


FIGURE 3.3: Optical properties of glazing materials

Source: ASHRAE, 1989.

The value of each of these terms has a pronounce effect on solar-heat gain (Stoecker W. F. *et la.* 1982). The variation of these three quantities (i.e. for three types of glass: A = DSA (double strength sheet), B = 6 mm clear glass, C = 6 mm gray, bronze, or green tinted heat absorbing glass) with the incidence angle θ_i is shown in Fig. 3.1. The radiation transmitted to the interior of the building is assumed to be entirely absorbed.

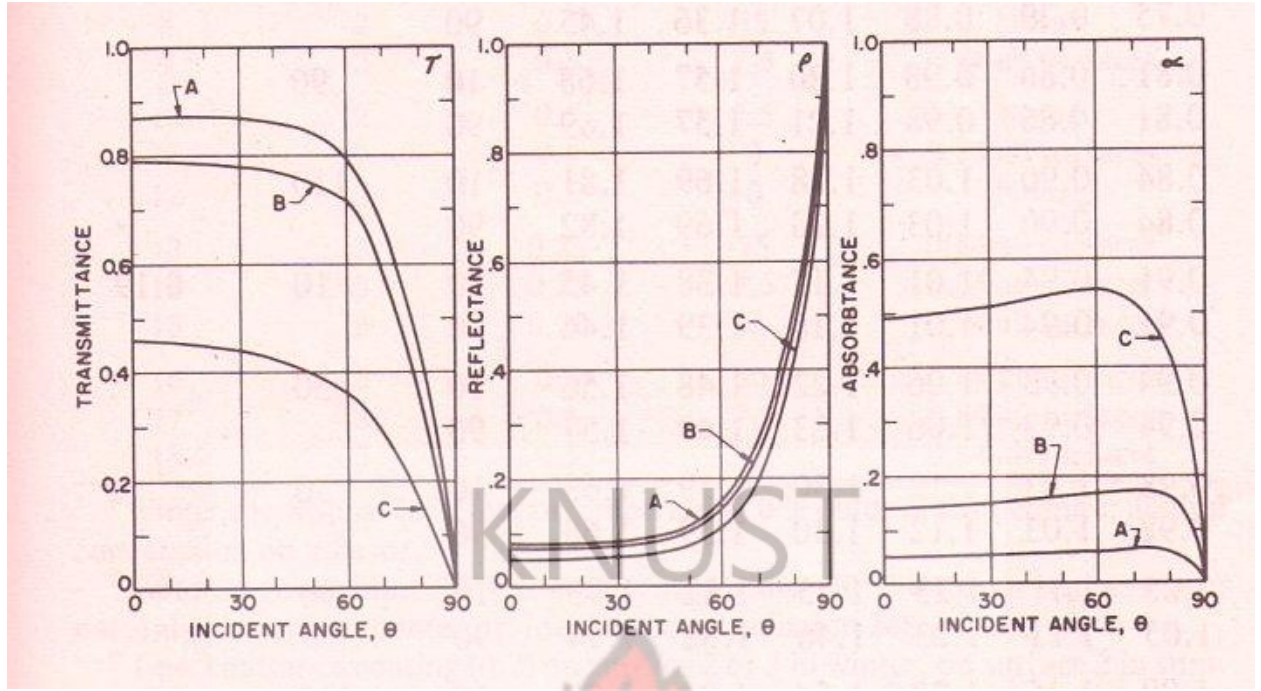


FIGURE 3.4: Solar transitivity, reflectivity and absorptivity as a function of incidence angle.

Source: Kreider F. J. *et al.*, 1994

The heat gain $\dot{Q}$ of the interior per unit window, A , area, in the absence of solar radiation is expressed as

$$\frac{\dot{Q}}{A} = U(T_o - T_i) \quad (3.18)$$

In the presence of solar heat gain Equation (3.12) becomes

$$\frac{\dot{Q}}{A} = U(T_o - T_i) + \tau I + \frac{\alpha I h_i}{h_i + h_o} \quad (3.19)$$

where the term on the right represent conduction (without solar), transmitted solar radiation, and extra heat gain due to solar radiation absorbed by the glass for single-pane glass. In the case of double glazing the transmitted solar radiation and extra heat gain due to solar radiation absorbed by the glasses becomes;

$$\frac{\dot{Q}_{sol}}{A} = I \left[\tau + \alpha_o \frac{U}{h_o} + \alpha_i U \left(\frac{1}{h_s} + \frac{1}{h_o} \right) \right] \quad (3.20)$$

and

$$\frac{1}{U} = \frac{1}{h_i} + \frac{1}{h_s} + \frac{1}{h_o} \quad (3.21)$$

where

I = global solar irradiance on surface, W/m^2

h_i = heat transfer coefficient (radiation plus convection) at interior surface

h_s = heat transfer coefficient of the space between panes

h_o = heat transfer coefficient (radiation plus convection) at exterior surface

α_o, α_i = absorptivities of outer and inner panes

Eqn. (3.20) reduces into

$$\frac{\dot{Q}_{sol}}{A} = FI \quad (3.22)$$

where

$$F = \tau + \alpha_o \frac{U}{h_o} + \alpha_i U \left(\frac{1}{h_s} + \frac{1}{h_o} \right) \quad (3.23)$$

Other terms, shading coefficient and solar heat gain factor, SC and SHGF respectively, are introduced for practical purposes which are dependent on the incident angle and on the surface heat transfer coefficients. SC is defined as the ratio of F for the glazing in question divided by F for reference glazing. The reference glazing has $F = 0.87$.

$$SC = \frac{F}{0.87} = 1.15F \quad (3.24)$$

$$SHGF = FI \quad (3.25)$$

with

$$F = 0.87 \quad (3.26)$$

$$\frac{\dot{Q}_{sol}}{A} = SC * SHGF \quad (3.27)$$

Therefore, the heat gain per unit window area, A in the presence of solar radiation is,

$$\frac{\dot{Q}}{A} = U(T_o - T_i) + SC * SHGF \quad (3.28)$$

3.3 PRINCIPLE OF COOLING LOAD ESTIMATION

Heat radiated within a space by an appliance, or conducted through the wall or ceiling, and latent heat from infiltration and occupancy etc., are not simultaneously converted into load; a significant fraction of the radiated heat is absorbed and stored by some structures in the enclosure, thus postponing its contribution to the cooling load of the room. For each heat gain component $\dot{Q}_{gain}$, the corresponding cooling load $\dot{Q}_{load}$ at constant indoor temperature T_i is calculated by using another set of coefficients v_n and w_n , of the room transfer function.

$$\begin{aligned} \dot{Q}_{load,t} = & v_0 \dot{Q}_{gain,t} + v_1 \dot{Q}_{gain,t-\Delta t} + v_2 \dot{Q}_{gain,t-2\Delta t} + \dots - w_1 \dot{Q}_{load,t-\Delta t} \\ & - w_2 \dot{Q}_{load,t-2\Delta t} \end{aligned} \quad (3.29)$$

where

$\dot{Q}_{gain}$ = heat gain

$\dot{Q}_{load}$ = cooling load

v_n, w_n = transfer function coefficients

t = time, h

The transfer function coefficient for a variety of room construction types are listed in Tables 3.5 and 3.6; all index 2 or higher are zero; $v_{n \geq 2} = w_{n \geq 2} = 0$ and $w_1 = 1$. In this case $\dot{Q}_{load}$ is the response while $\dot{Q}_{gain}$ forms the driving term.

Equation (3.29) is applied separately to each heat gain type (i.e. lighting, occupant, transmission through walls etc.). For lights, the coefficients depend on the arrangement of the fixture and the ventilation system; (ASHRAE, 1981; Kreider F. J. *et al.*, 1994), see Table 3.6.

TABLE 3.5: The value of w_1 for different room air circulation rates and envelope construction

Room Envelope Construction ^a	2-in. Wood Floor	3-in. Concrete Floor	6-in. Concrete Floor	8-in. Concrete Floor	12-in. Concrete Floor	Room Air ^b Circulation & Type of Supply and Return
Specific Mass Ib/ft ² of floor area	10	40	75	120	160	
	-0.88	-0.92	-0.95	-0.97	-0.98	Low
	-0.84	-0.9	-0.94	-0.96	-0.97	Medium
	-0.81	-0.88	-0.93	-0.95	-0.97	High
	-0.77	-0.85	-0.92	-0.95	-0.97	Very high
	-0.73	-0.83	-0.91	-0.94	-0.96	

^a Floor covered with carpet and rubber pad; for a floor covered only with floor tile, take next w_1 value down the column.

^b Low ventilation rate-minimum required to cope with cooling load due to lights and occupants in interior zone. Supply through floor, wall, or ceiling diffuser. Ceiling space not vented.
Medium: medium ventilation rate, supply through floor, wall, or ceiling diffuser. Ceiling space not vented
High: Room air circulation induced by primary air of induction unit or by fan coil unit. Return through ceiling space.
Very high: High room circulation used to minimize temperature gradient in a room. Return through ceiling space.

SOURCE: ASHRAE Handbook, Fundamentals Volume, 1985.

TABLE 3.6: Coefficients of room transfer functions

Heat Gain Component	Room Envelope Construction	Dimensionless		
		v_0	v_1	v_2
Solar heat gain through glass with no interior shading and heat generated by equipment and people, which is dissipated by radiation	Light	0.224	$=1+w_1-v_0$	0
	Medium	0.194	$=1+w_1-v_0$	0
	Heavy	0.187	$=1+w_1-v_0$	0
Conduction heat gain through exterior walls, roofs, partitions and doors, and windows with blinds or drapes	Light	0.703	$=1+w_1-v_0$	0
	Medium	0.681	$=1+w_1-v_0$	0
	Heavy	0.676	$=1+w_1-v_0$	0
Heat generated by lights	Light	0	=“a” in Table 3.12	$=1+w_1-v_1$
	Medium	0	=“a” in Table 3.12	$=1+w_1-v_1$
	Heavy	0	=“a” in Table 3.12	$=1+w_1-v_1$
Heat generated by equipment and people, which is dissipated by convection, and energy gain due to ventilation and infiltration air	Light	1	0	0
	Medium	1	0	0
	Heavy	1	0	0

SOURCE: ASHRAE Handbook, Fundamentals Volume, 1985.

CHAPTER FOUR: DEVELOPMENT OF LOAD FACTORS

4.1 INTRODUCTION

This section of the thesis deals with the analysis of the envelope to develop factors that characterize the time dependence of the transient heat, apart from the room thermal properties of building materials available, to the response of the hourly insolation on their external surfaces. Available materials for various constructions are shown in Appendix A1 (Table A1.3 to A1.9). With an indoor temperature of 25°C and 50 % relative humidity specified for the envelope, the heating gain and cooling factors are estimated for all heat gain components on hourly bases.

4.2 TIME MEAN YEAR (HOTTEL MODEL)

Ghana is located within latitudes 5 to 13 degrees, with Accra being the capital on latitude 5.6°N. The day for the maximum amount of radiations received by surfaces during the year long is chosen to be the design day. On this day the solar radiation incident on any part of the country is assumed to be maximum. From Equation (3.4) to (3.9), the day with the maximum radiation on surfaces within these latitudes is obtained using latitude 5.6° N with the assumption that the climatic conditions across Ghana is the same or varies slightly. Iterating “n” in the equations, the maximum intensity for vertical and horizontal surfaces are calculated, see Appendix A2 (Table A2.1 to A2.10). “n” is then found to be within 80th to 91st day of the year, (i.e. 21st March to 1st April).

4.3 SOL-AIR TEMPERATURE

The Sol-air temperature is obtained from Equation (3.2). It depends on the orientation and colour of the surface; see values of sol-air temperatures in Appendix A2 (Tables A2.1 to A2.10 and Figure A2.1) for different orientations of surfaces. The values are developed for values of $\Delta q_{ir}/h_o$ ranging from zero for vertical surfaces to 3.9 K for upward-facing surfaces (the sky overhead is colder than the rest of the environment) and the following values of $\alpha I/h_o$; 0.026 for light-coloured surface and 0.052 representing the usual maximum value for dark-surfaces (ASHRAE Handbook Fundamentals, 1981). In Figure A2.1 the sol-air temperature for horizontal and vertical surfaces are plotted against time of day in hours.

4.4 TRANSMISSION THROUGH WALL AND ROOFS

4.4.1 Heat gain factors for walls and roofs.

The factors produced are for building construction and materials commonly used in Ghana. Two types of walls are considered in this research; shaded walls (not exposed to direct sunlight) and sunlit walls (exposed to direct sunlight)

The technique for calculating the space cooling load component as a result of heat gain through exterior walls and roofs involves the concept of sol-air temperature with the conductive heat gain at time “t” calculated from Equation (3.1). Therefore, T_{sol} and T_i are the driving elements while $\dot{Q}_{cond,t}$ is the response element.

Once the necessary numerical values of the transfer function coefficient have been obtained from Table A1.3 to A1.9, calculation of loads is simple for application to spreadsheet. The

function is iterated until the result converges to a steady daily pattern or the average heat gain is obtained. The various heat gain factor in hour-by-hour basis is given in column nine of Appendix A4 from the expression given below;

$$\begin{aligned} \frac{\dot{Q}_{cond,1}}{A} = & \frac{d_1 \dot{Q}_{cond,1-1}}{A} - \frac{d_2 \dot{Q}_{cond,1-2}}{A} - \frac{d_3 \dot{Q}_{cond,1-3}}{A} + b_0 T_{os,1-0} + b_1 T_{os,1-1} + b_2 T_{os,1-2} \\ & + b_3 T_{os,1-3} - T_i \sum_{n \geq 0} C_n \end{aligned} \quad (4.1)$$

where the subscript in $\dot{Q}_{cond,1}$ represent the heat conducted per unit area at time, $t_{loc, civ.} = 1: 00$ AM (local civil time on longitude 0°) at the external surface of envelope.

4.4.2 Cooling factors for walls and roofs.

The Cooling Load at constant Temperature

At this stage both T_i and $\dot{Q}_{cond,t}$ have being stated explicitly on hourly base. The heat available for the equipment to extract at time, t , is dependent on the time-delay characteristics, v_n and w_n . Therefore, $\dot{Q}_{c,t}$, the cooling load (heat available for the equipment to extract at time, t) is given by ;

$$\frac{\dot{Q}_{c,1}}{A} = v_0 \frac{\dot{Q}_{cond,1}}{A} + v_1 \frac{\dot{Q}_{cond,1-1}}{A} - w_0 \frac{\dot{Q}_{c,1-1}}{A} \quad (4.2)$$

where the subscript in $\dot{Q}_{c,1}$ represent the heat available per unit area at time, $t_{loc, civ.} = 1: 00$ AM (local civil time on longitude 0°) that is to be extracted by the HVAC equipment, see Appendix A4 for cooling factors on hourly basis for both roofs and walls available.

4.5 HEAT GENERATED WITHIN SPACE

4.5.1 Lighting

4.5.1.1 Heating loads factors for Compact Fluorescent Lamp(CFL) and fluorescent Lamps

Unlike the heat flow through walls that attenuates, the heat released or conducted into the room by the lamp(s) is/are constant and is expressed per unit lamp from Equation (3.10) as;

$$\frac{\dot{Q}_{light}}{q_{lr}} = (F_u)(F_b) \quad (4.3)$$

where F_u representing the fraction of lights that is switched on has the value $F_u = 1$ when all the lamps are switched on and $F_b = 1$ for CFL or 1.2 for fluorescent lamps

Thus, expression for the heating load in Equation (4.3) then becomes;

$$\frac{\dot{Q}_{light}}{q_{lr}} = 1 \quad (4.4a)$$

for CFL lamps

and

$$\frac{\dot{Q}_{light}}{q_{lr}} = 1.2 \quad (4.4b)$$

for fluorescent lamps.

The heating load factors are shown in column two of Appendix A3 for various occupancy time schedules.

4.5.1.2 Cooling loads factors for CFL and fluorescent Lamps

The cooling load factor is a function of the building mass, air-circulation rate, type of fixture, and time. From Equation (3.29), the cooling load of the lamps is analyzed under three floor constructions; light, medium and heavy constructions. See Appendix A3 for cooling load factors for concrete floors constructions.

4.5.2 Equipment

4.5.2.1 Heat gain factors for equipment

The heat released by the equipment into a space at any particular time in the room is given in Section 3.4.2 as;

$$\dot{Q}_{heatgain} = \dot{Q}_c = 0.16\dot{q}_r \quad (4.5a)$$

Expressing the heat gain per equipment rating is therefore given by;

$$\frac{\dot{Q}_{heatgain}}{\dot{q}_r} = 0.16 \quad (4.5b)$$

The 0.16 forms the heat gain factor for most office and laboratory equipment.

4.5.2.2 Cooling Loads Factors for Equipment

The heat generated by equipment in a conditioned space is dissipated by either radiation or convection. The values of cooling and heating loads of such equipment are given in Appendix A5.

4.5.3 Occupancy

4.5.3.1 Latent Heat Gain for Occupants

From Equation 3.12 to 3.13 and Table 2.2 the heat gain into the room is instantaneous, therefore the cooling load is the same as the latent heat gain per number of occupants (i.e. $v_0 = 1$, $v_1 = 0$, $v_2 = 0$, and $w_1 = 0$). Equation 3.13b then reduces to;

$$\frac{\dot{Q}_{l,t}}{N_o} = \frac{\dot{Q}_{c,t}}{N_o} = L.H.G$$

The latent heat gain in Equation (4.3) depends on the activities involved in the space and is given in Table 3.3.

4.5.3.2 Sensible Heat Gain for Occupants

Unlike latent heat gain, the sensible heat gain from the occupants is not instantly converted to cooling load for the equipment (A/C) to extract. From Equation 3.13a, the sensible heat gain per number of occupants becomes;

$$\frac{\dot{Q}_{s,t}}{N_o} = S.H.G. \quad (4.7a)$$

where the sensible heat gain depends on the activities in the conditioned space, see Table 3.3.

4.5.3.3 Cooling Load for Occupants

Table 3.3 shows that the time dependence of the cooling load of occupants is influenced by the type of activity within the envelope. To satisfy the 1st law of thermodynamics, we assume that the heat gain factors per person for every activity are equal to the cooling load factors.

4.6 INFILTRATION AND VENTILATION

4.6.1 Heat Gain Factors

The out-door air enters into the air-conditioned space through window cracks and opened doors and windows. In general practice the amount of air that infiltrates into the space is specified in Air Changes per Hour (ACH); that is

$$ACH = \frac{\dot{V}}{V} \quad (4.8)$$

where

$\dot{V}$ = the amount of air that enters into the enclosure within one hour

V = the volume of the space to be conditioned, m^3

The ACH can be calculated from the Equation 4.8 for three conditions; tight, average and loose openings. Appendix A6 gives the number of air changes for these three conditions depending on the number of leakage areas from Eqn. (3.12).

Dividing both sides of Equation 3.14 and 3.15 by the volume and the ACH of the space, it reduces to,

$$\frac{\dot{Q}_{is}}{V * ACH} = \frac{\dot{Q}_{is}}{\dot{V}} = 1.23 (t_o - t_i) \quad (4.9a)$$

$$\frac{\dot{Q}_{il}}{V * ACH} = \frac{\dot{Q}_{il}}{\dot{V}} = 3012 (W_o - W_i) \quad (4.9b)$$

Combining the two equations yields;

$$\frac{\dot{Q}_T}{\dot{V}} = 1.23 (t_o - t_i) + 3012 (W_o - W_i) \quad (4.10)$$

where

$\dot{V}$ = flow rate of outside air, m^3/h

An alternative method is to trace the process on a psychrometric chart using the properties of the indoor and outdoor conditions.

The average heating loads for both sensible and latent is given in Appendix A6.

4.6.2 Cooling Load

Both sensible and latent heat gains are released instantly into the space from the information obtained from Table 2.2 (i.e. $v_0 = 1$, $v_1 = 0$, $v_2 = 0$, and $w_1 = 0$). The heat gain factors are then equal to the cooling factors. Table A6.2 Heat gain of air change for infiltration through leakage areas.

4.7 TRANSMISSIONS THROUGH WINDOW

Likewise, the walls and glazing are the major source of the heat gain in an envelope and deserves careful consideration. The solar heat transmitted into the space is calculated with the help of SC and SHGF. The SC for various glasses in Table 4.1 is used to calculate the solar effect on surfaces for various orientations from Equation 3.28 in Appendix 7. The conductive heat through the glazing material is produced for different U-values from Equation 3.28; see Appendix A7 for the heat gain factors for different glazing.

4.8 DESIGN OF WORKSHEET

The main aim of the worksheet is to account for all the thermal loads without a safety factor. To achieve that, all the components of the heat load must be estimated to reasonable accuracy. If the estimation is properly done, the need for unusually large safety factor becomes unnecessary. The

worksheet in Figure 4.1 is the designed simplified load which accounts for all the space cooling load components.

TABLE 4.1: SC and Overall heat transfer coefficient, U, W/m²K

Type of glass	No interior shading
Single glass	
i. Clear	1
ii. -ditto-	0.95
iii.-ditto-	0.84
iv. Heat absorbing	0.71
v. Tinted	0.71
vi Reflective coated	0.3-0.6
Type of glass	U W/m ² K
Single glass, low emittance	5.9

SOURCE: ASHRAE, 1982



FIGURE 4.1: Air Conditioning Load Estimation WorkSheet

CUSTOMER NAME: _____		HOUSE No.: _____	
ADDRESS: _____		TEL: _____	
CITY: _____		DATE: _____	

SECTION A: WALL TRANSMISSION*						
ITEM	WEST W ₁	EAST W ₂	NORTH W ₃	SOUTH W ₄	FLOOR W ₅	CEILING W ₆
Gross Area (m ²)	a					
Glazing Area (m ²)	b					
Net Area* (m ²)	c = a - b					
Load Factor (Table A)	d					
Load (W)	e = d * c					
Total Load for Section A = $\Sigma W_1 = W_1 + W_2 + W_3 + W_4 + W_5 + W_6 =$ W						

SECTION B: OCCUPANCY		SECTION C: LIGHT & EQUIPMENT	
No. of People	a	Floor Area (m ²)	a
Load Factor (Table B)	b	Light (W)	b = 20 * a
Total Load (W)	c = a * b	Equipment (office and Commercial space) (W)	c = 20 * a
		or	
		Equipment (known heat generation) (W)	d
		Total Load for SECTION C (W)	e = b + c
			or
			e = b + d

SECTION D: INFILTRATION & VENTILATION					
Volume of Space (m ³)	a				
ACH	b				
Inf. Vol.	c = b * a				
Total Inf. Load (W)	d = c * 12.5				

SECTION E: SOLAR LOAD					
ITEM	WEST	EAST	NORTH	SOUTH	
Area (m ²)	a				
Load Factor (Table F)	b				
	c = a * b + a * 116.98				
Total Solar Load (W)					

SUMMATION OF SECTIONAL LOADS						
ITEM	SECT. A	SECT. B	SECT. C	SECT. D	SECT. E	ESTIMATED LOADS (W)
Section Load (W)						

Factor of Safety (Ranges from 0%-5%)	f = 1 - R	
Estimated Cooling Load (W)	a	
Corrected Estimated Load (W)	b = a * f	
	c = b *	
Corrected Estimated Load (Btu/h)	3.412	

* Wall here applies to the vertical walls, floor and ceiling and the net wall area is the wall area excluding area of glazing

4.9 SUMMARY OF FACTORS

The summary of the load factors for the various components are extracted from the Appendix A1-A9 and all cooling loads are given in W/m² except for occupancy. In the case where usage is used, it means time schedules. The summaries are shown in the tables below.

TABLE 4.2: Cooling load factors for Occupants, W/person

DEGREE OF ACTIVITY	SENSIBLE HEAT	LATENT HEAT	TOTAL
Seat at rest	60	40	100
Seated, very light work writing	65	55	120
Seated, eating	75	95	170
Seated, light work, typing	75	75	150
Standing, light work, or walking slowly	90	95	185
Light bench work	100	130	230
Walking, 1.3 m/s, light machine work	100	205	305
Bowling	100	180	280
Moderate dancing	120	255	375
Heavy work, heavy machine work, lifting (Factory)	470	300	770
Heavy work, athletics (Gymnasium)	185	340	525

TABLE 4.3: Cooling load factors for equipment

USAGE	EQUIPMENT
HEAVY	0.16
Medium	0.12

TABLE 4.4: Air Change per Hour (ACH.)

ACH	DOOR TRAFFIC INTENSITY		
	LIGHT	MEDIUM	HIGH
	0.23	0.32	0.4

Example: **Light** – office, **Medium** – conference room, **High** – waiting room, bank etc.

TABLE 4.5: Cooling load factors for lamps

USAGE	CLF	FLUORESCENT
Heavy	1.00	1.20
Medium	0.81	0.98
Low	0.82	0.96

TABLE 4.6: Cooling load factors for clear glass, W/m²

SOLAR HEAT TRANSMISSION FOR CLEAR GLASS					
TYPE OF GLASS	WEST	EAST	NORTH	SOUTH	SHADED
Clear glass, single	331	198	133	111	133

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TABLE 4.7: Cooling load factors for Walls, Floor and Roofs, W/m²

CONSTRUCTION (WALL, FLOOR AND ROOFS)	SUNLIT					SHADED
	NORTH	SOUTH	EAST	WEST	HOR.	
4-in. light weight concrete roof					24.11	3.03
6-in. heavyweight concrete roof					7.27	1.38
4-in. lightweight concrete wall	12.73	15.28	12.95	13.29		6.77
4-in. heavyweight concrete wall	28.65	33.79	50.45	55.22		14.89
4-in. common brick wall	21.61	25.77	40.43	38.80		10.89
4-in. heavyweight concrete block wall	27.56	32.26	41.72	56.92		14.93
4-in. hollow block	14.83	17.58	23.32	28.69		7.84
frame with 3/4-in. gypsum board wall	24.15	27.09	29.60	63.41		14.11
4-in. heavyweight concrete floor deck					53.75	8.37
4-in. lightweight deck with false ceiling					25.52	3.85

CHAPTER FIVE: VERIFICATION OF LOAD FACTORS

5.1 INTRODUCTION

As has been stated earlier, load estimation software are available today on the market for calculating the design air conditioning load of a building. The purpose of designing simplified load factors and accompanying worksheet is to provide a simple practical alternative to the use of the computer software. Thus, it is necessary to check the accuracy of the cooling load factors by comparing the result obtained by using that to that of using a computer software to estimate the cooling load of sample air conditioned spaces. The sample spaces used for this validation are two halls in the terminal building of the Kotoka International Airport in Ghana.

The cooling load of the two halls as well as other areas of the airport that were part of rehabilitation being undertaken at the Airport were estimated using a Carrier load estimation software HAP v3.07 in 2002 by RAM Engineering, a local engineering consultancy company that was involved in the rehabilitation works. The loads estimated are also compared with the capacity of air conditioning units installed which have been successfully operating at the halls.

5.2 SAMPLE SPACES AND DESIGN DATA

5.2.1 Description of sample space

The Kotoka International Airport underwent a major rehabilitation that was completed in 2004 to improve general infrastructure and increase passenger handling capacity. As part of the rehabilitation, the Check-in hall and the Meeters & Greeters hall of the Terminal building at the airport were restructured and new air conditioning units provided. The air conditioning system

was designed and supplied by York Air Conditioning company of the United Kingdom. The design data of the air conditioning system in the two spaces are tabulated in Table 5.1.

TABLE 5.1: Air Conditioning Design Data of the Sample Spaces

ITEM	SAMPLE SPACE	
	CHECK-IN	MEETERS & GREETERS
Design space temp.	24°C	26°C
Occupancy	800	445 persons
Activity	Standing	Walking through
Lighting heat gain	20 W/m ² of net area	20 W/m ² of net area
Equipment Load	20 W/m ² of net area	20 W/m ² of net area
Fresh Air/person	6 L/s	6 L/s
Air Change (ACH)	0.25	0.25
Shading Coefficient	1	1
Wall	Hollow sandcrete block (non-insulated)	Hollow sandcrete block (non-insulated)
Floor	Basement plant room below floor	On the ground
Roof	4-in concrete slab over concrete beams underneath, above is air conditioned Departure/Immigration area	Underground space beneath car park area for passenger offloading at main entrance to Terminal building

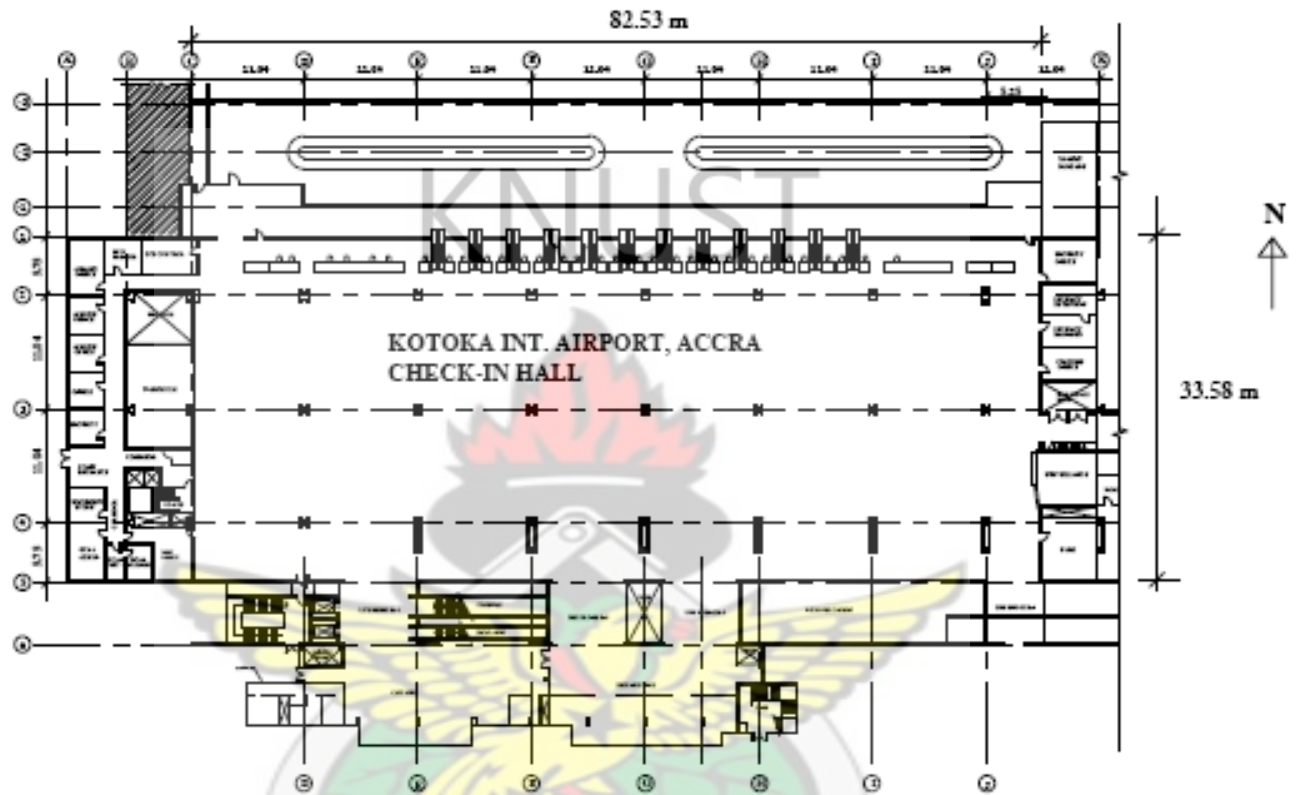
Air Change rate (ACH):

i. Check-in Hall

With a space volume of 8,313m³, the 6 l/s fresh air per person for 800 persons corresponds to 17,200m³ per hour which is equivalent to 2.08 ACH. Thus actual ACH used in the estimation is 2.08+0.25 = 2.33

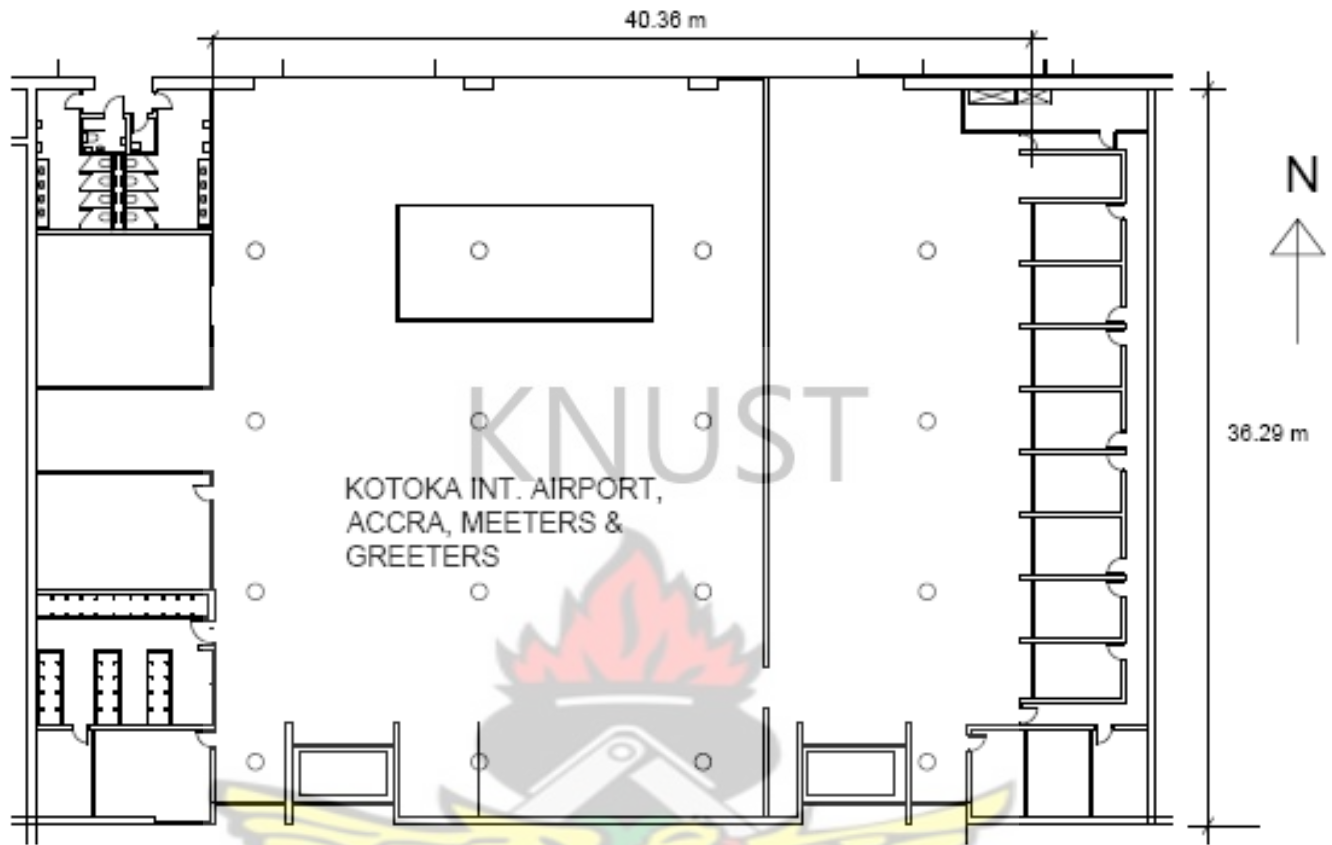
ii. Meeters and Greeters Hall

With a space volume of 4394 m³, the 6 l/s fresh air per person for 445 persons corresponds to 9,6123m³ per hour which is equivalent to 2.19 ACH. Thus actual ACH used in the estimation is 2.19+0.25 = 2.44. In addition, because it is a transition space with high door opening rate, the space temperature if maintained at 26°C. This is reckoned with by reducing the rate due to ventilation and air change whilst the other factors calculated based on 24°C are maintained at their value in the verification.



Note: South and West facing walls of the Check-in hall border air conditioned areas and half of the space above (first floor) is air conditioned.

FIGURE 5.1: Sample 1: KOTOKA INT. AIRPORT, ACCRA: CHECK-IN HALL



Note: South facing wall of the Meeters and Greeters hall border air conditioned areas and two thirds of the space above (first floor) is air conditioned.

.FIGURE 5.2: Sample2: KOTOKA INT. AIRPORT, ACCRA: MEETERS & GREETERS

5.3.2 Comparison of Results

The air conditioning load estimated using the spreadsheet are given in Appendix A8. The result is compared with that obtained by RAM engineering and the capacity of air conditioning installation in the following table:

Item	Sample Space	Installed AC	Estimated, RAM		Estimated, UBA	
		Q_{inst} , kW	Q_{RAM} , kW	Deviation, %	Q_{UBA} , kW	Deviation, %
1	1. Check-In	564	541	-3.7	576	+2.1
2	2. Meeters&Greeters	234	230	-1.7	240	+2.6

The above is a clear evidence of the accuracy of the simplified load estimation procedure using the load factors and spreadsheet. In both cases, the result it gives does not deviate from the capacity of the air conditioner installed at the place by more than 2.6% and since this is positive, its usage gives a reasonable factor of safety.

CHAPTER SIX: DEVELOPMENT OF WORKSHEET MANUAL

6.0 INTRODUCTION

A building or room gains heat from many sources. Inside occupants, computers, copiers, machinery, and lighting all produce heat. Warm air from outside enters through open doors and windows, or as 'leakage' through the structure. However the biggest source of heat is solar radiation from the sun, beating down on the roof and walls, and pouring through the windows, heating internal surfaces. The sum of all these heat sources is known as the heat gain (or heat load) of the building, and is expressed either in **BTU** (British Thermal Units) or **kW** (Kilowatts). The ability of a tool to account for all these loads makes it reliable for such a work.

This chapter explains how the worksheet should be used and the type of data required to be fed into the worksheet to account for the space cooling components through the various sections given in it.

6.1 ESTIMATING COOLING LOAD

This sections looks at how to apply the worksheet to account for the various components of the space cooling load with high precision.

6.1.1 Section A: Wall Transmission

The possible heat gain into a space through a wall or roof is by the solar effect and the temperature difference across the wall and it is affected by the surface area. The first requirement in this section is to find the net area, in m^2 and selecting the appropriate load factor depending on the type of wall and it's orientation. This information is given in Table A.

6.1.2 Section B: Occupancy

The amount of heat released into a space from occupants is a factor of the activities they are involved in and those factors are given in Table B.

6.1.3 Section C: Light & Equipment

Light and equipment form part of the internal heat loads. The amount of heat released can be accounted through two means: multiplying the number of appliance by a density of 20W/m^2 or multiplying the number of appliance by the heat load when given.

6.1.4 Section D: Infiltration & Ventilation

A limitation occurs when estimating the total heat gain for section D (i.e. the amount of leakage area for the structure in selecting the ACH. factors). Higher values give a corresponding bigger heat gains; it is therefore recommended that in estimating the infiltration load i.e. ACH. factors should be selected from the Table D according to the types of building or its usage.

6.1.5 Section E: Solar Load

The possible heat gain into a space through a window is by the solar effect and the temperature difference across the glazing and it is affected by the surface area. The first requirement in this section is to find the net area, in m^2 and selecting the appropriate load factor depending on the type of glazing and it's orientation. This information is given in Table F.

6.1.6 Summation of Sectional Loads

The summation of sectional load part combined the entire load from the various sections in the raw state. To account for any unforeseen circumstances a factor of safety should be selected between 0 to 5 % depending on how accurate the data obtained for the estimation is. The corrected space loads are given in both imperial and standard units: BTU or kW.



CHAPTER SEVEN: CONCLUSION AND RECOMMENDATION

7.1 CONCLUSION

Most A/C equipment breakdowns are due to over or under sizing it. Reducing these will need an accurate A/C estimating tool.

Calculating the cooling load in the design of air-conditioning system for buildings is a tough job and has high fault risk because of reliance on many tables and formulas. Using computer for this calculation reduces design time and minimizes the risk of mistake.

In this study, all the specific objectives have been met;

- i. The design conditions i.e. indoor condition is 24°C with a relative humidity of 50% for comfort conditioning and an average outdoor condition of 32.9°C
- ii. The worksheet developed accounts for all the various principal space cooling loads, and
- iii. It is portable/handy requiring no especial skills or external power to work with

The worksheet is meant to act as a quick reference for service providers when on the field where they don't have their computers.

The cooling load calculation worksheet described in the thesis is simply based on the transfer function method. It may be called a computer version of cooling load estimation tool. Surprisingly enough it gives very reliable results, which are almost the same as those obtained by the sophisticated and costly commercial software developed and marketed by the renowned air-

conditioning calculation bodies. It is very easy to use and require quite few number of data input as compared to the computer software.

7.2 RECOMMENDATION

The worksheet produced is a quick air-conditioning estimation tool for service providers in the tropics.

It comes with six sections each accounting for a specific heat gain component:

Section A, accounts for the transmission through walls and roofs;

Section B, and Section C account for internally generated heat;

Section D, for heat gains through infiltration; and

Section E, for the transmission through glazing (windows).

From the results obtained from sample A and B the order of heat gains level is; section E > section D > section A > section B > section C. Thus, the sums of the last two sections don't even go beyond the value of section A. The implication here is that the main heat gain components for A/C cooling load are the solar heat gain (heat gain through glazed windows), infiltration and conduction through walls and roofs respectively and have to be given attention as such.

To meet the requirement of the objective, "To produce a simplified procedure for estimating cooling load", orientations of building are all approximated to the nearest co-ordinates of North, East, South and West.

7.3 FURTHER STUDIES OR RESEARCH

- i. Further work is necessary to develop factors for five and six inches thick walls but these are reasonably approximated by the 4 inches thick wall.
- ii. Similarly work should be carried out to develop more accurate factors for the northern half of the country where the climate is generally hotter than that in Greater Accra whose meteo-data has been used to develop the factors in this thesis.
- iii. Local editions of the conductive heat transfer and the room transfer function coefficients bn , cn , dn , vn and wn should be developed to verify those published in ASHRAE books.



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TABLE A1.1: Worksheet prepared by TRANE.



New Construction
Whole House Worksheet

Customer's Name _____ Address _____
 City _____ State _____ Zip _____ Telephone Number _____

WINTER: Inside Design Temp _____ °F—Outside Design Temp _____ °F = Heating Temp Difference _____ °F
 SUMMER: Outside Design Temp _____ °F—Inside Design Temp _____ °F = Cooling Temp Difference _____ °F

HEATING		COMMON DATA SECTION				COOLING	
BTUH LOSS	HEATING FACTOR	SUBJECT		SQ. FT.	COOLING FACTOR	BTUH GAIN	
	FROM TABLE E	GROSS WALL			FROM TABLE E		
		DOORS & WINDOWS (Table A or B)					
		NET WALL					
		CEILING					
		FLOORS					
Infiltration Btu/hr	= Heating Table D	x 10 x 1.1/60 x Volume (Cu. Ft.)	Volume (Cu. Ft.)	x 1.1/60 x ΔT x Cooling Table D	= Infiltration Btu/hr		
	=	x 0.18333 x		x 0.01833 x x	=		
		SUB-TOTAL BTUH LOSS (per 10°F)					
x		ADJUSTMENT FACTOR (Table C)					
		TOTAL BTUH LOSS					
		PEOPLE _____ x 300 BTUH GAIN (Assume 2 persons per bedroom)					
		APPLIANCES BTUH				1200	
		SUB-TOTAL BTUH GAIN (room sensible only)					
x		DUCT LOSS/GAIN FACTOR (Table F)				x	
		SUB-TOTAL BTUH (Sensible Gain)					
		MOISTURE REMOVAL (sub total x 1.3)				x 1.3	
		TOTAL BTUH LOSS/GAIN					

TABLE A—HEATING—DOORS & WOOD FRAME WINDOWS (PER 10°F)
 For sliding glass doors - use factors for the same type window construction.

Window & Door Types	Frames			x Area	= Btuh Loss
	Wood	TIM	Metal		
Single Pane Clear	9.90	10.45	11.55		
With Storm	4.75	5.25	6.50		
Double Pane Clear	5.51	6.09	7.25		
With Storm	3.41	3.85	4.90		
Triple Pane Clear	3.80	4.39	5.46		
Jalousie Single	—	—	11.0		
Single w/storm	—	—	5.0		
Skylights Single	11.07	11.69	12.92		
Double	6.65	7.35	8.75		
Door Wood Only	4.60	—	—		
Wood w/storm	3.20	—	—		
Urethane Core (R-5)	—	—	1.90		
Urethane Core (R-5) w/storm	—	—	1.70		
TOTALS					

TABLE B — COOLING — DOORS & WINDOWS
 Factors assume windows have inside shading by draperies or venetian blinds and sliding glass doors are treated as windows.

Direction	SINGLE GLASS			DOUBLE GLASS			TRIPLE GLASS			x Area	= BTUH GAIN
	TEMP. DIFF.	TEMP. DIFF.	TEMP. DIFF.	TEMP. DIFF.	TEMP. DIFF.	TEMP. DIFF.	TEMP. DIFF.	TEMP. DIFF.			
N	18	22	28	14	16	18	11	12	13		
NE & NW	37	41	45	31	33	35	26	27	28		
E & W	52	56	60	44	46	48	38	39	40		
SE & SW	46	49	53	38	41	43	33	34	35		
S	28	32	36	23	26	27	19	20	21		
Skylights	164	168	172	141	143	145	132	136	140		
Wood 1	8.6	10.9	13.2	8.6	10.9	13.2	8.6	10.9	13.2		
Metal 2	3.5	4.5	5.4	3.5	4.5	5.4	3.5	4.5	5.4		
TOTALS											

① For wood doors and polystyrene core metal doors
 ② For urethane core metal doors

TABLE C — ADJUSTMENT FACTORS — (HEATING)

°F. Temperature Diff.	30	40	50	60	70	80	90
Adjustment Factor	3	4	5	6	7	8	9

TABLE D — INFILTRATION MULTIPLIERS
 Winter Air Changes Per Hour

Floor Area	900 or less	900-1500	1500-2100	over 2100
Best	0.4	0.4	0.3	0.3
Average	1.2	1.0	0.8	0.7
Poor	2.2	1.6	1.2	1.0

For each fireplace add:

	Best	Average	Poor
	0.1	0.2	0.6

Summer Air Changes Per Hour

Floor Area	900 or less	900-1500	1500-2100	over 2100
Best	0.2	0.2	0.2	0.2
Average	0.5	0.5	0.4	0.4
Poor	0.8	0.7	0.6	0.5

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Source: Whitman et al., 1995.

TABLE A1.2: Heat gain and cooling load factor for TRANE worksheet

HEAT LOSS & GAIN FACTORS

**TABLE E
CONSTRUCTION FACTORS HEATING & COOLING**

TABLE E CONSTRUCTION FACTORS HEATING & COOLING		Cooling Factor [°F. Temp. Diff.]		
Heating Factor ①	TYPE OF CONSTRUCTION	15°	20°	25°
WALLS (Use Sq. Ft.)				
	Walls — wood frame w/sheeting & siding, veneer or other finish			
2.71	A) No insulation, 1/2" Gypsum Board	5.0	6.4	7.8
0.90	B) R-11 Cavity insulation + 1/2" Gypsum Board	1.7	2.1	2.6
0.80	C) R-13 Cavity insulation + 1/2" Gypsum Board	1.5	1.9	2.3
0.70	D) R-13 Cavity insulation + 3/4" Bead Board (R-2.7)	1.3	1.7	2.0
0.60	E) R-19 Cavity insulation + 1/2" Gypsum Board	1.1	1.4	1.7
0.50	F) R-19 Cavity insulation + 3/4" Extruded Poly	0.9	1.2	1.4
Masonry Walls				
5.10	A) Above grade No insulation	5.8	8.3	10.9
1.44	B) Above grade + R-5	1.6	2.3	3.1
0.77	C) Above grade + R-11	0.9	1.3	1.6
1.25	D) Below grade No insulation	0.0	0.0	0.0
0.74	E) Below grade + R-5	0.0	0.0	0.0
0.51	F) Below grade + R-11	0.0	0.0	0.0
CEILINGS (Use Sq. Ft.)				
5.99	A) No insulation	17.0	19.2	21.4
1.20	B) 2"-2½" insulation R-7	4.4	4.9	5.5
0.88	C) 3"-3½" insulation R-11	3.2	3.7	4.1
0.53	D) 5¼ "-6½" insulation R-19	2.1	2.3	2.6
0.48	E) 6"-7" insulation R-22	1.9	2.1	2.4
0.33	F) 8"-9½" insulation R-30	1.3	1.5	1.6
0.26	G) 10"-12" insulation R-38	1.0	1.1	1.3
0.23	H) 12"-13" insulation R-44	0.9	1.0	1.1
3.08	I) Cathedral type No insulation (roof/ceiling combination)	11.2	12.6	14.1
0.72	J) Cathedral type R-11 (roof/ceiling combination)	2.8	3.2	3.5
0.49	K) Cathedral type R-19 (roof/ceiling combination)	1.9	2.2	2.4
0.45	L) Cathedral type R-22 (roof/ceiling combination)	1.8	2.0	2.2
0.40	M) Cathedral type R-26 (roof/ceiling combination)	1.6	1.8	2.0
FLOORS (Use Sq. Ft. OR Linear Ft.)				
	Floors over unconditioned space (use sq. ft.)			
1.56	A) Over basement or enclosed crawl space (not vented)	0.0	0.0	0.0
0.40	B) Same as "A" + R-11 insulation	0.0	0.0	0.0
0.26	C) Same as "A" + R-19 insulation	0.0	0.0	0.0
3.12	D) Over vented space or garage	3.9	5.8	7.7
0.80	E) Over vented space or garage + R-11 insulation	0.8	1.3	1.7
0.52	F) Over vented space or garage + R-19 insulation	0.5	0.8	1.1
0.24	Basement Floors (use sq. ft.)	0.0	0.0	0.0
	Concrete slab floor unheated (use linear ft.)			
8.10	A) No edge insulation	0.0	0.0	0.0
4.10	B) 1" edge insulation R-5	0.0	0.0	0.0
2.10	C) 2" edge insulation R-9	0.0	0.0	0.0
	Concrete Slab floor duct in slab (use linear ft.)			
19.00	A) No edge insulation	0.0	0.0	0.0
11.40	B) 1" edge insulation R-5	0.0	0.0	0.0
9.30	C) 2" edge insulation R-9	0.0	0.0	0.0

① Heating Factor for 10° Temperature Rise

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TABLE F

Calculate only if duct is located in an unconditioned space.

DUCT LOSS MULTIPLIERS

Case I - Supply Air Temperatures Below 120°F	Duct Loss Multipliers	
	Winter Design Below 15°F	Winter Design Above 15°F
Duct Location and Insulation Value		
Exposed to Outdoor Ambient		
Attic, Garage, Exterior Wall, Open Crawl Space - None	1.30	1.25
Attic, Garage, Exterior Wall, Open Crawl Space - R2	1.20	1.15
Attic, Garage, Exterior Wall, Open Crawl Space - R4	1.15	1.10
Attic, Garage, Exterior Wall, Open Crawl Space - R6	1.10	1.05
Enclosed in Unheated Space		
Vented or Unvented Crawl Space or Basement - None	1.20	1.15
Vented or Unvented Crawl Space or Basement - R2	1.15	1.10
Vented or Unvented Crawl Space or Basement - R4	1.10	1.05
Vented or Unvented Crawl Space or Basement - R6	1.05	1.00
Duct Buried In or Under Concrete Slab		
No Edge Insulation	1.25	1.20
Edge Insulation R Value = 3 to 4	1.15	1.10
Edge Insulation R Value = 5 to 7	1.10	1.05
Edge Insulation R Value = 7 to 9	1.05	1.00
Case II - Supply Air Temperatures Above 120°F		
Duct Location and Insulation Value		
Exposed to Outdoor Ambient		
Attic, Garage, Exterior Wall, Open Crawl Space - None	1.35	1.30
Attic, Garage, Exterior Wall, Open Crawl Space - R2	1.25	1.20
Attic, Garage, Exterior Wall, Open Crawl Space - R4	1.20	1.15
Attic, Garage, Exterior Wall, Open Crawl Space - R6	1.15	1.10
Enclosed in Unheated Space		
Vented or Unvented Crawl Space or Basement - None	1.25	1.20
Vented or Unvented Crawl Space or Basement - R2	1.20	1.15
Vented or Unvented Crawl Space or Basement - R4	1.15	1.10
Vented or Unvented Crawl Space or Basement - R6	1.10	1.05
Duct Buried In or Under Concrete Slab		
No Edge Insulation	1.30	1.25
Edge Insulation R Value = 3 to 4	1.20	1.15
Edge Insulation R Value = 5 to 7	1.15	1.10
Edge Insulation R Value = 7 to 9	1.10	1.05

DUCT GAIN MULTIPLIERS

Duct Location and Insulation Value	Duct Gain Multiplier
Exposed to Outdoor Ambient	
Attic, Garage, Exterior Wall, Open Crawl Space - None	1.30
Attic, Garage, Exterior Wall, Open Crawl Space - R2	1.20
Attic, Garage, Exterior Wall, Open Crawl Space - R4	1.15
Attic, Garage, Exterior Wall, Open Crawl Space - R6	1.10
Enclosed in Unconditioned Space	
Vented or Unvented Crawl Space or Basement - None	1.15
Vented or Unvented Crawl Space or Basement - R2	1.10
Vented or Unvented Crawl Space or Basement - R4	1.05
Vented or Unvented Crawl Space or Basement - R6	1.00
Duct Buried In or Under Concrete Slab	
No Edge Insulation	1.10
Edge Insulation R Value = 3 to 4	1.05
Edge Insulation R Value = 5 to 7	1.00
Edge Insulation R Value = 7 to 9	1.00

ESTIMATED PROCEDURES

1. Fill in customer information.
2. Record inside and outside design temperatures; find temp difference.
3. Measure length of each outside wall, multiply each by ceiling height. Record the total sq. ft. of exposed wall under "gross wall".
4. Using Tables A and B, determine the total area for windows & doors & enter in common data section.
5. Determine Net Wall by subtracting windows and doors from gross.
6. Measure & record total ceiling area.
7. Measure and record total floor area for floors over crawl space or basement. Total floor edge length (perimeter) if floor is a slab.
8. Using Table E select construction type and use the corresponding heat and cool factors on the form.
9. Determine BTUH Loss & Gain in Tables A and B by multiplying the area of glass and doors by the multiplier under the specified temperature difference. Enter total BTUH Loss/Gain on worksheet.
10. On worksheet, multiply the areas x the factors and total as instructed.

Source: Whitman et al., 1995.

TABLE A1.3: Transfer function Coefficient for External wall

CHAPTER 22

ASHRAE Handbook of Fundamental

Table 39 Transfer Function Coefficients for Exterior Walls

(Time interval = 1.0 hr)

No.	Construction (Note 1) Description	Code Numbers of layers	Coefficients b_n and d_n (Note 2)								U	$\sum_{n=0} c_n$		
					$n = 0$	$n = 1$	$n = 2$	$n = 3$	$n = 4$	$n = 5$	$n = 6$			
			b	d										
1	4" face brick, 2" insulation, and 4" l.w. concrete block	A0, A2, B3, C2, E1, E0	b 0.00000 d 1.00000		0.00046 -1.73771	0.00225 0.90936	0.00150 -0.13373	0.00016 0.00496	-0.00001			0.102	0.00437	
2	4" l.w. concrete	A0, C14, E1, E0	b 0.0015 d 1.0000		0.0299 -0.8364	0.0319 0.1360	0.0034 -0.0026					0.225	0.0667	
3	4" face brick, air space, and 8" common brick	A0, A2, B1, C9, E1, E0	b 0.00000 d 1.00000		0.00001 -2.50273	0.00017 2.25782	0.00068 -0.88178	0.00058 0.14098	0.00013 -0.00804	0.00001 0.00016		0.246	0.00158	
4	4" face brick, air space, and 8" h.w. concrete block	A0, A2, B1, C8, E1, E0	b 0.00000 d 1.00000		0.00037 -1.90441	0.00302 1.16519	0.00334 -0.24119	0.00069 0.01264	0.00003 -0.00017			0.275	0.00745	
5	4" face brick, air space, and 8" l.w. concrete block	A0, A2, B1, C7, E1, E0	b 0.00000 d 1.00000		0.00030 -1.89103	0.00274 1.16153	0.00344 -0.25248	0.00084 0.01568	0.00004 -0.00029			0.220	0.00736	
6	4" face brick, air space, and 8" clay tile	A0, A2, B1, C6, E1, E0	b 0.00000 d 1.00000		0.00003 -2.25069	0.00058 1.76504	0.00150 -0.56434	0.00082 0.06627	0.00011 -0.00257	0.00003		0.221	0.00304	
7	4" face brick, air space, and 2" h.w. concrete	A0, A2, B1, C5, E1, E0	b 0.00003 d 1.0000		0.00239 -1.64772	0.00757 0.74816	0.00316 -0.06385	0.00018 0.00147				0.350	0.01333	
8	4" face brick, air space, and 4" common brick	A0, A2, B1, C4, E1, E0	b 0.00000 d 1.00000		0.00086 -1.79201	0.00485 0.98014	0.00378 -0.16102	0.00050 0.00609	0.00001 -0.00003			0.301	0.01000	
9	4" face brick, air space, and 4" h.w. concrete block	A0, A2, B1, C3, E1, E0	b 0.00005 d 1.00000		0.00387 -1.52669	0.01158 0.64703	0.00460 -0.05586	0.00025 0.00128				0.309	0.02035	
10	4" face brick, air space, and 4" l.w. concrete block	A0, A2, B1, C2, E1, E0	b 0.00003 d 1.00000		0.00286 -1.50943	0.01029 0.65654	0.00504 -0.07415	0.00037 0.00212				0.248	0.01859	
11	12" h.w. concrete	A0, A1, C11, E1, E0	b 0.00000 d 1.00000		0.00029 -1.86853	0.00303 1.09284	0.00412 -0.21487	0.00105 0.01094	0.00005 -0.00009			0.421	0.00854	
12	8" h.w. concrete with 2" insulation	A0, A1, C10, B6, E1, E0	b 0.00000 d 1.00000		0.00028 -1.71064	0.00155 0.89735	0.00118 -0.16643	0.00015 0.00728	-0.00002			0.115	0.00316	
13	8" h.w. concrete with 1" insulation	A0, A1, C10, B5, E1, E0	b 0.00000 d 1.00000		0.00064 -1.66125	0.00303 0.83196	0.00202 -0.14508	0.00023 0.00613	-0.00002			0.187	0.00592	
14	8" h.w. concrete with air space	A0, A1, C10, B1, E1, E0	b 0.00002 d 1.00000		0.00199 -1.51622	0.00817 0.64218	0.00467 -0.08370	0.00044 0.00288	0.00001 -0.00001			0.339	0.01530	
15	8" h.w. concrete	A0, A1, C10, E1, E0	b 0.00009 d 1.00000		0.00676 -1.37101	0.01821 0.46271	0.00602 -0.02787	0.00024 0.00013				0.490	0.03132	
16	4" face brick, 8" common brick with 1" insulation	A0, A2, C9, B2, E1, E0	b 0.00000 d 1.00000		0.00000 -2.60527	0.00008 2.30575	0.00034 -0.97167	0.00035 0.19281	0.00009 -0.01643	0.00001 0.00046		0.154	0.00087	
17	4" face brick, 8" common brick with air space	A0, A2, C9, B1, E1, E0	b 0.00000 d 1.00000		0.00001 -2.35214	0.00022 1.98104	0.00090 -0.73353	0.00080 0.12178	0.00019 -0.00859	0.00001 0.00021		0.243	0.00213	
18	Wall with 4" face brick, air space and 4" l.w. block	A0, A2, B1, C14, E0	b 0.0000 d 1.0090		0.0008 -1.6216	0.0049 0.7861	0.0040 -0.1094	0.0006 0.0038				0.175	0.0103	
19	Wall with fiberglass insulation and stucco outside finish	A0, A6, B4, A6, E0	b 0.0158 d 1.0000		0.0447 -0.2480	0.0065 0.0098						0.088	0.0670	
20	Two sided brick wall	A0, A2, B1, A2, E0	b 0.0000 d 1.0000		0.0024 -1.6620	0.0078 0.7764	0.0034 -0.0777	0.0002 0.0019				0.358	0.0138	
21	Brick wall, 8" concrete block and no air space	A0, A2, C7, A6, E0	b 0.0000 d 1.0000		0.0013 -1.5966	0.0077 0.7590	0.0064 -0.1067	0.0009 0.0037				0.274	0.0163	
22	Brick wall with 4" concrete block	A0, A2, B1, C3, A6, E0	b 0.0000 d 1.0000		0.0049 -1.4750	0.0130 0.5870	0.0044 -0.0694	0.0002 0.0007				0.307	0.0225	
23	Brick wall with 8" concrete block	A0, A2, B1, C8, A6, E0	b 0.0000 d 1.0000		0.0005 -1.8688	0.0034 1.1013	0.0035 -0.2127	0.0006 0.0095	-0.0001			0.274	0.0080	
24	Brick wall with 6" concrete block	A0, A2, B1, C15, A6, E0	b 0.000000 d 1.000000		0.000033 -2.080189	0.000984 1.488946	0.001650 -0.427814	0.000863 0.045657	0.000108 -0.001680	0.000003 0.000017		0.133	0.003319	
25	Frame wall with 4" brick veneer	A0, A2, B6, A6, E0	b 0.00037 d 1.00000		0.00823 -1.03045	0.00983 0.20108	0.00125 -0.00726	0.00001				0.121	0.01969	
26	Frame Wall	A0, A6, B6, A6, E0	b 0.1977 d 1.00000		0.06317 -0.25848	0.01064 0.01072	0.00006					0.124	0.09364	
27	Metal curtain wall with 3" insulation	A0, A3, B12, A3, E0	b 0.02704 d 1.00000		0.05335 -0.07705	0.00337 0.00013						0.091	0.08376	
28	Metal curtain wall 2" insulation	A0, A3, B6, A3, E0	b 0.06695 d 1.00000		0.09049 -0.01493	0.00077						0.130	0.12821	
29	Metal curtain wall with 1" insulation	A0, A3, B5, A3, E0	b 0.16228 d 1.00000		0.06684 -0.00255	0.00008						0.230	0.22920	
30	Wall 12" concrete with 2" insulation on the outside	A0, A3, B6, C11, A6, E0	b 0.00000 d 1.00000		0.00002 -1.91762	0.00030 1.12612	0.00049 -0.20839	0.00015 0.00847	0.00001 -0.00005			0.114	0.00097	
31	Wall 8" curtain with 2" insulation on the outside	A0, A3, B6, C10, A6, E0	b 0.00001 d 1.00000		0.00060 -1.41996	0.00205 0.47090	0.00084 -0.02089	0.00004 0.00006				0.118	0.00354	
32	Wall 4" concrete with 2" insulation on the outside	A0, A3, B6, C5, A6, E0	b 0.00055 d 1.00000		0.00735 -0.94420	0.00482 0.05025	0.00021 -0.00008					0.122	0.01293	

Note 1. Construction is defined by code number for various layers. The thermal properties of layers designated by code numbers are given in Table 41.
 Note 2. U , b 's and c 's are in BTU/(hr) (sq ft) (°F deg), and d is dimensionless. Blank space represents zero.

Note 1. Construction is defined by code number for various layers. The thermal properties of layers designated by code numbers are given in Table 41.
 Note 2. U , b 's and c 's are in BTU/(hr) (sq ft) (F deg), and d is dimensionless. Blank space represents zero.

Source: ASHRAE, 1989

TABLE A1.4: Transfer function Coefficient for External wall (continued)

Air-Conditioning Cooling Load												
Table 39 . . . Transfer Function Coefficients for Exterior Walls (Continued)												
(Time Interval = 1.0 hr)												
No.	Construction (Note 1)	Code Numbers of Layers	Coefficients b_n and d_n (Note 2)								U	$\sum_{n=0} c_n$
	Description		$n = 0$	$n = 1$	$n = 2$	$n = 3$	$n = 4$	$n = 5$	$n = 6$			
33	Wall 12" concrete with 2" insulation on the inside	A0, C1F, B6, A6, E0	b 0.00000 d 1.00000	0.00002 -1.97154	0.00039 1.28223	0.00081 -0.32855	0.00034 0.03282	0.00003 -0.00087		0.113	0.00159	
34	Wall 8" concrete with 2" insulation on the inside	A0, C10, B6, A6, E0	b 0.00000 d 1.00000	0.00072 -1.47387	0.00312 0.60020	0.00183 -0.07846	0.00017 0.00197			0.117	0.00584	
35	Wall 4" concrete with 2" insulation on the inside	A0, C5, B6, A6, E0	b 0.00058 d 1.00000	0.01005 -0.99721	0.00982 0.17610	0.00904 -0.00367	0.00001			0.122	0.02140	
36	Frame wall with 3" insulation	A0, A1, B1, B4, E1, E0	b 0.00509 d 1.00000	0.02644 -0.59602	0.00838 0.08757	0.00010 -0.00002				0.081	0.04001	
37	Frame wall with 2" insulation	A0, A1, B1, B3, E1, E0	b 0.00984 d 1.00000	0.03810 -0.57344	0.00809 0.08074	0.00003				0.112	0.05666	
38	Frame wall with 1" insulation	A0, A1, B1, B2, E1, E0	b 0.02069 d 1.00000	0.06369 -0.53187	0.01131 0.06834	0.00001				0.178	0.09570	
39	Frame wall without insulation	A0, A1, B1, E1, E0	b 0.07874 d 1.00000	0.18185 -0.37759	0.02157 0.02246	0.00001				0.424	0.28217	
40	2" insulation with 12" h.w. concrete	A0, A1, B3, C11, E1, E0	b 0.00000 d 1.00000	0.00001 -2.19085	0.00015 1.64918	0.00035 -0.51523	0.00017 0.06550	0.00002 -0.00241	0.00001	0.113	0.00070	
41	2" insulation with 8" h.w. concrete	A0, A1, B3, C10, E1, E0	b 0.00000 d 1.00000	0.00025 -1.69333	0.00127 0.85832	0.00090 -0.14902	0.00010 0.00598	-0.00001		0.115	0.00252	
42	2" insulation with 8" common brick	A0, A1, B1, C9, E1, E0	b 0.00000 d 1.00000	0.00002 -2.09226	0.00029 1.49037	0.00059 -0.43637	0.00025 0.05102	0.00002 -0.00162	0.00001	0.105	0.00117	
43	2" insulation with 8" h.w. concrete block	A0, A1, B1, C8, E1, E0	b 0.00001 d 1.00000	0.00089 -1.50859	0.00317 0.65148	0.00151 -0.09296	0.00010 0.00211			0.109	0.00568	
44	2" insulation with 8" l.w. concrete block	A0, A1, B1, C7, E1, E0	b 0.00001 d 1.00000	0.00081 -1.52490	0.00339 0.69509	0.00196 -0.11032	0.00018 0.00399	-0.00001		0.099	0.00634	
45	2" insulation with 8" clay tile	A0, A1, B1, C6, E1, E0	b 0.00000 d 1.00000	0.00009 -1.86423	0.00088 1.13668	0.00115 -0.26957	0.00029 0.02282	0.00001 -0.00035		0.099	0.00242	
46	2" insulation with 4" h.w. concrete	A0, A1, B1, C5, E1, E0	b 0.00017 d 1.00000	0.00031 -1.21336	0.00465 0.30574	0.00059 -0.01507				0.119	0.00922	
47	2" insulation with 4" common brick	A0, A1, B1, C4, E1, E0	b 0.00003 d 1.00000	0.00178 -1.38159	0.00426 0.50316	0.00130 -0.05635	0.00004 0.00038			0.114	0.00741	
48	2" insulation with 4" h.w. concrete block	A0, A1, B1, C3, E1, E0	b 0.00032 d 1.00000	0.00664 -1.13405	0.00794 0.28947	0.00101 -0.01615	0.00001			0.114	0.01592	
49	2" insulation with 4" l.w. concrete block	A0, A1, B1, C2, E1, E0	b 0.00021 d 1.00000	0.00593 -1.16325	0.00618 0.34519	0.00168 -0.02937	0.00003 0.00004			0.105	0.01703	
50	2" insulation with 4" clay tile	A0, A1, B1, C1, E1, E0	b 0.00010 d 1.00000	0.00034 -1.26692	0.00662 0.40135	0.00146 -0.03721	0.00003 0.00010			0.110	0.01185	
51	4" face brick 2" insulation and 12" h.w. concrete	A0, A2, B1, C11, E1, E0	b 0.00000 d 1.00000	0.00000 -2.77682	0.00001 2.82359	0.00007 -1.27057	0.00007 0.24210	0.00008 -0.01709	0.00043	0.110	0.00018	
52	4" face brick 2" insulation and 8" h.w. concrete	A0, A2, B1, C10, E1, E0	b 0.00000 d 1.00000	0.00001 -2.77931	0.00017 1.74119	0.00033 -0.49535	0.00013 0.04028	0.00001 -0.00102		0.112	0.00065	
53	4" face brick 2" insulation and 8" common brick	A0, A2, B1, C9, E1, E0	b 0.00000 d 1.00000	0.00000 -2.67788	0.00002 2.60619	0.00012 -1.10886	0.00012 0.19586	0.00003 -0.01264	0.00028	0.098	0.00029	
54	4" face brick, air space and 12" h.w. concrete	A0, A2, B1, C11, E1, E0	b 0.00000 d 1.00000	0.00000 -2.62783	0.00009 2.51419	0.00040 -1.05796	0.00040 0.18675	0.00010 0.01193	0.00001 0.00027	0.287	0.00100	
55	4" face brick, air space and 8" h.w. concrete	A0, A2, B1, C10, E1, E0	b 0.00000 d 1.00000	0.00000 -2.13032	0.00010 1.50600	0.00114 -0.39174	0.00180 0.02828	0.00058 -0.00062	0.00004 0.00002	0.314	0.00364	
56	4" face brick, 2" insulation and 8" h.w. concrete block	A0, A2, B3, C8, E1, E0	b 0.00000 d 1.00000	0.00051 -2.09407	0.00071 1.42522	0.00019 -0.33797	0.00001 0.02092	-0.00035		0.107	0.00147	
57	4" face brick, 2" insulation and 8" l.w. concrete block	A0, A2, B3, C7, E1, E0	b 0.00000 d 1.00000	0.00004 -2.10971	0.00051 1.47715	0.00081 -0.37861	0.00023 0.02866	0.00002 -0.00067		0.096	0.00161	
58	4" face brick, 2" insulation and 8" clay tile	A0, A2, B3, C6, E1, E0	b 0.00000 d 1.00000	0.00000 -2.44946	0.00009 2.11710	0.00030 -0.75882	0.00020 0.10222	0.00003 -0.00468	0.00006	0.097	0.00062	
59	4" face brick, 2" insulation and 4" h.w. concrete	A0, A2, B3, C5, E1, E0	b 0.00000 d 1.00000	0.00000 -1.79933	0.00032 0.90739	0.00131 -0.09009	0.00069 0.00250	0.00005 0.00250		0.116	0.00237	
60	4" face brick, 2" insulation and 4" common brick	A0, A2, B2, C4, E1, E0	b 0.00000 d 1.00000	0.00012 -1.98722	0.00084 1.20279	0.00082 -0.22850	0.00014 0.01033	-0.00006		0.111	0.00192	
61	4" face brick, 2" insulation and 4" l.w. concrete block	A0, A2, B2, C3, E1, E0	b 0.00001 d 1.00000	0.00057 -1.71940	0.00225 0.84375	0.00117 -0.09022	0.00009 0.00268			0.111	0.00409	
62	4" face brick with 8" common brick	A0, A2, C9, E1, E0	b 0.00000 d 1.00000	0.00000 -2.2097	0.0007 1.6914	0.0019 -0.5296	0.0012 0.0632	0.0001 -0.0024		0.302	0.0039	
63	8" h.w. concrete block with 1" insulation	A0, A1, C8, B2, E1, E0	b 0.00000 d 1.00000	0.00021 -1.4583	0.0070 0.6156	0.0031 -0.0872	0.0002 0.0022			0.173	0.0125	
64	8" h.w. concrete block	A0, A1, C8, E1, E0	b 0.0004 d 1.00000	0.0004 -1.1621	0.0310 0.3132	0.0065 -0.0139	0.0001			0.402	0.0551	
65	8" l.w. concrete block with insulation	A0, A1, C7, B2, E1, E0	b 0.00000 d 1.00000	0.00019 -1.4580	0.0070 0.6409	0.0037 -0.0996	0.0003 0.0037			0.149	0.0130	

Source: ASHRAE, 1989

TABLE A1.5: Transfer function Coefficient for External wall (concluded)

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Table 39 Transfer Function Coefficients for Exterior Walls (Concluded)										
(Time Interval = 1.0 hr)										
No.	Construction (Note 1) Description	Code Numbers of Layers	Coefficients b_n and d_n (Note 2)							
			$n = 0$	$n = 1$	$n = 2$	$n = 3$	$n = 4$	$n = 5$	$n = 6$	
66	8" l.w. concrete block	A0, A1, C7, E1, E0	b 0.0002 d 1.0000	0.0123 -1.1655	0.0271 0.3509	0.0075 -0.0245	0.0002 0.0002			0.294
67	4" face brick, 8" clay tile and 1" insulation	A0, A2, C6, B2, E1, E0	b 0.0000 d 1.0000	0.0000 -2.2886	0.0003 1.8666	-0.0008 -0.6650	0.0005 0.1043	0.0001 -0.0061	0.0001	0.142
68	4" face brick, 8" clay tile and airspace	A0, A2, C6, B1, E1, E0	b 0.0000 d 1.0000	0.0000 -2.1290	0.0007 1.5667	-0.0019 -0.4781	0.0011 0.0605	0.0001 -0.0029		0.221
69	4" face brick with 8" clay tile	A0, A2, C6, E1, E0	b 0.0000 d 1.0000	0.0001 -1.9926	0.0017 1.3232	-0.0034 -0.3341	0.0014 0.0285	0.0001 -0.0007		0.275
70	8" clay tile with 1" insulation	A0, A1, C6, B2, E1, E0	b 0.0000 d 1.0000	0.0002 -1.8072	0.0020 1.0721	-0.0024 -0.2513	0.0006 0.0213	-0.0004		0.151
71	8" clay tile with air space	A0, A1, C6, B1, E1, E0	b 0.0000 d 1.0000	0.0007 -1.6476	0.0051 0.8490	-0.0052 -0.1597	0.0010 0.0103			0.231
72	8" clay tile	A0, A1, C6, E1, E0	b 0.0000 d 1.0000	0.0020 -1.5111	0.0107 0.6712	-0.0076 -0.0910	0.0009 0.0026			0.296
73	4" h.w. concrete with 2" insulation	A0, A1, C5, B3, E1, E0	b 0.0002 d 1.0000	0.0045 -1.2260	0.0060 0.3418	-0.0009 -0.0187				0.119
74	4" h.w. concrete with 1" insulation	A0, A1, C5, B2, E1, E0	b 0.0005 d 1.0000	0.0094 -1.1763	0.0106 0.3011	-0.0013 -0.0157				0.200
75	4" h.w. concrete with air space	A0, A1, C5, B1, E1, E0	b 0.0017 d 1.0000	0.0267 -1.0298	0.0252 0.1837	-0.0024 -0.0071				0.381
76	4" h.w. concrete	A0, A1, C5, E1, E0	b 0.0078 d 1.0000	0.0705 -0.8789	0.0355 0.0753	-0.0011 -0.0001				0.585
77	4" face brick, 4" common brick and 1" insulation	A0, A2, C4, B2, E1, E0	b 0.0000 d 1.0000	0.0004 -1.7939	0.0024 1.0913	-0.0023 0.2206	0.0004 0.0151	-0.0002		0.174
78	4" face brick, 4" common brick and air space	A0, A2, C4, B1, E1, E0	b 0.0000 d 1.0000	0.0011 -1.6408	0.0065 0.8149	-0.0053 -0.1359	0.0008 0.0073			0.301
79	4" face brick with 4" common brick	A0, A2, C4, E1, E0	b 0.0000 d 1.0000	0.0035 -1.4987	0.0142 0.6252	-0.0075 -0.0656	0.0006 0.0012			0.415
80	4" common brick	A0, A1, C4, E1, E0	b 0.0015 d 1.0000	0.0015 -1.0401	0.0330 0.2114	-0.0381 -0.0040	0.0044 -0.0040			0.460
81	4" h.w. concrete block	A0, A1, C3, E1, E0	b 0.0101 d 1.0000	0.0890 -0.7809	0.0457 0.0861	-0.0015 -0.0002				0.480
82	4" face brick, 4" l.w. concrete block and 1" insulation	A0, A2, C2, B2, E1, E0	b 0.0000 d 1.0000	0.0012 -1.5846	0.0052 0.7760	-0.0032 -0.1323	0.0003 0.0055			0.153
83	4" face brick, 4" l.w. concrete block and air space	A0, A2, C2, B1, E1, E0	b 0.0000 d 1.0000	0.0032 -1.4228	0.0118 0.5787	-0.0059 -0.0713	0.0005 0.0023			0.246
84	4" face brick with 4" l.w. concrete block	A0, A2, C2, E1, E0	b 0.0001 d 1.0000	0.0072 -1.3110	0.0194 0.4487	-0.0066 -0.0329	0.0003 0.0004			0.319
85	4" l.w. concrete block and 1" insulation	A0, A1, C2, B2, E1, E0	b 0.0006 d 1.0000	0.0129 -1.0784	0.0175 0.3137	-0.0028 -0.0257				0.161
86	4" l.w. concrete block and air space	A0, A1, C2, B1, E1, E0	b 0.0018 d 1.0000	0.0319 -0.9152	0.0346 0.2013	-0.0042 -0.0105				0.263
87	4" l.w. concrete block	A1, C2, E1, E0	b 0.0181 d 1.0000	0.1223 -0.5447	0.0504 0.0306	-0.0012				0.391
88	4" face brick, 4" clay tile and 1" insulation	A0, A2, C1, B2, E1, E0	b 0.0000 d 1.0000	0.0008 -1.6784	0.0039 0.8825	-0.0029 -0.1650	0.0004 0.0083			0.169
89	4" face brick, 4" clay tile and air space	A0, A2, C1, B1, E1, E0	b 0.0000 d 1.0000	0.0022 -1.5195	0.0098 0.6769	-0.0060 -0.0950	0.0006 0.0037			0.281
90	4" face brick and 4" clay tile	A0, A2, C1, E1, E0	b 0.0001 d 1.0000	0.0060 -1.3861	0.0187 0.5138	-0.0075 -0.0424	0.0004 0.0006			0.381
91	4" clay tile and 1" insulation	A0, A1, C1, B2, E1, E0	b 0.0003 d 1.0000	0.0081 -1.1988	0.0137 0.3768	-0.0027 -0.0343	0.0001 0.0001			0.175
92	4" clay tile and air space	A0, A1, C1, B1, E1, E0	b 0.0010 d 1.0000	0.0227 -1.0394	0.0305 0.2496	-0.0048 -0.0153	0.0001			0.303
93	4" clay tile	A0, A1, C1, E1, E0	b 0.0035 d 1.0000	0.0521 -0.9042	0.0445 0.1533	-0.0034 -0.0021				0.419
94	Sheet metal with 1" insulation	A0, A3, B2, B1, A3, E0	b 0.1424 d 1.0000	0.0479 -0.0013						0.191
95	Sheet metal with 2" insulation	A0, A3, B3, B1, A3, E0	b 0.0770 d 1.0000	0.0389 -0.0028	0.0001					0.116
96	Sheet metal with 3" insulation	A0, A3, B4, B1, A3, E0	b 0.0461 d 1.0000	0.0369 -0.0072	0.0003					0.084

Note 1. Construction is defined by code numbers for various layers. The thermal properties of layers designated by code numbers are given in Table 41.
Note 2. U , b 's and c 's are in BTU/(hr) (sq ft) (F deg), and d is dimensionless.

Source: ASHRAE, 1989

TABLE A1.6: Transfer function Coefficient for roofs

Air-Conditioning Cooling Load

Table 40 . . . Transfer Function Coefficients for Roofs
(Time Interval = 1.0 hr)

No.	Construction (Note 1) Description	Code Numbers of Layers	Coefficients b_n and d_n								U	$\sum_{n=0} c_n$
				$n = 0$	$n = 1$	$n = 2$	$n = 3$	$n = 4$	$n = 5$	$n = 6$		
				b	d	b	d	b	d	b		
1	Roof terrace system	A0, C12, B1, B6, E2, E3, C5, E4, E5, E0	b	0.00000	0.00008	0.00048	0.00039	0.00006			0.082	0.00101
			d	1.0000	-1.7304	0.8564	-0.1161	0.0024				
2	4" wood with 2" insulation	A0, E2, E3, B6, B9, E4, E5, E0	b	0.000000	0.000000	0.000028	0.000155	0.000180	0.000055	0.000005	0.064	0.000423
			d	1.000000	-2.297995	1.866496	-0.659069	0.103380	-0.006350	0.000118		
3	2.5" wood with 2" insulation	A0, E2, E3, B6, B8, E4, E5, E0	b	0.0000	0.0001	0.0008	0.0011	0.0003			0.076	0.0023
			d	1.0000	-1.6700	0.8423	-0.1499	0.0078	-0.0001			
4	1" wood with 2" insulation	A0, E2, E3, B6, B7, E4, E5, E0	b	0.0001	0.0034	0.0063	0.0014	0.0000			0.083	0.0112
			d	1.0000	-1.0856	0.2270	-0.0069	0.0000				
5	4" wood with 1" insulation	A0, E2, E3, B5, B9, E4, E5, E0	b	0.0000	0.0000	0.0001	0.0003	0.0003	0.0001		0.085	0.0008
			d	1.0000	-2.2211	1.7256	-0.5741	0.0836	-0.0047	0.0001		
6	2.5" wood with 1" insulation	A0, E2, E3, B5, B8, E4, E5, E0	b	0.0000	0.0002	0.0017	0.0017	0.0003			0.095	0.0039
			d	1.0000	-1.5931	0.7497	-0.1210	0.0056				
7	1" wood with 1" insulation	A0, E2, E3, B5, B7, E4, E5, E0	b	0.0003	0.0082	0.0103	0.0014				0.115	0.0202
			d	1.0000	-1.0046	0.1845	-0.0046					
8	8" l.w. concrete	A0, E2, E3, C16, E4, E5, E0	b	0.00000	0.00002	0.00046	0.00133	0.00079	0.00011		0.092	0.00271
			d	1.00000	-1.91091	1.22135	-0.31019	0.03001	-0.00095	0.00001		
9	6" l.w. concrete	A0, E2, E3, C15, E4, E5, E0	b	0.0000	0.0004	0.0034	0.0036	0.0007			0.109	0.0081
			d	1.0000	-1.4904	0.6549	-0.0937	0.0037				
10	4" l.w. concrete	A0, E2, E3, C14, E4, E5, E0	b	0.0001	0.0055	0.0141	0.0045	0.0002			0.134	0.0244
			d	1.0000	-1.0698	0.2665	-0.0143	0.0001				
11	6" h.w. concrete	A0, E2, E3, B6, C13, E4, E5, E0	b	0.00000	0.00015	0.00076	0.00050	0.00005			0.088	0.00146
			d	1.00000	-1.45612	0.53302	-0.06110	0.00082				
12	4" h.w. concrete with 2" insulation	A0, E2, E3, B6, C5, E4, E5, E0	b	0.0000	0.0007	0.0016	0.0005				0.090	0.0028
			d	1.0000	-1.2437	0.2877	-0.0128					
13	2" h.w. concrete with 2" insulation	A0, E2, E3, B6, C12, E4, E5, E0	b	0.0001	-0.0025	0.0029	0.0003				0.091	0.0058
			d	1.0000	-1.1570	0.2229	-0.0022					
14	6" h.w. concrete with 1" insulation	A0, E2, E3, B5, C13, E4, E5, E0	b	0.0000	0.0004	0.0016	0.0007				0.123	0.0027
			d	1.0000	-1.4117	0.4844	-0.0513	0.0006				
15	4" h.w. concrete with 1" insulation	A0, E2, E3, B5, C5, E4, E5, E0	b	0.0000	0.0017	0.0029	0.0006				0.126	0.0052
			d	1.0000	-1.1988	0.2503	-0.0103					
16	2" h.w. concrete with 1" insulation	A0, E2, E3, B5, C12, E4, E5, E0	b	0.0004	0.0057	0.0045	0.0003				0.131	0.0109
			d	1.0000	-1.1034	0.1885	-0.0018					
17	Steel sheet with 2" insulation	A0, E2, E3, B6, A3, E4, E5, E0	b	0.0025	0.0258	0.0156	0.0007				0.092	0.0446
			d	1.0000	-0.5996	0.0822	-0.0003					
18	Steel sheet with 1" insulation	A0, E2, E3, B5, A3, E4, E5, E0	b	0.0085	0.0505	0.0179	0.0004				0.134	0.0773
			d	1.0000	-0.4700	0.0476						
19	Roof terrace system	A0, C12, B1, B6, E2, E3, C5, E0	b	0.0000	0.0007	0.0025	0.0011	0.0001			0.106	0.0044
			d	1.0000	-1.6150	0.7406	-0.0848	0.0008				
20	4" wood with 2" insulation	A0, E2, E3, B6, B9, E0	b	0.0000	0.0006	0.0002	0.0006	0.0004	0.0001		0.077	0.0013
			d	1.0000	-2.0806	1.4613	-0.4365	0.0550	-0.0023			
21	2.5" wood with 2" insulation	A0, E2, E3, B6, B8, E0	b	0.0000	0.0000	0.0034	0.0025	0.0003			0.093	0.0068
			d	1.0000	-1.4326	0.5865	-0.0809	0.0023				
22	1" wood with 2" insulation	A0, E2, E3, B6, B7, E0	b	0.0012	0.0160	0.0150	0.0011				0.109	0.0353
			d	1.0000	-0.8098	0.1357	-0.0007					
23	4" wood with 1" insulation	A0, E2, E3, B5, B9, E0	b	0.0000	0.0000	0.0005	0.0012	0.0006	0.0001		0.106	0.0024
			d	1.0000	-1.9836	1.3387	-0.3742	0.0434	-0.0017			
24	2.5" wood with 1" insulation	A0, E2, E3, B5, B8, E0	b	0.0000	0.0017	0.0068	0.0035	0.0003			0.130	0.0123
			d	1.0000	-1.3557	0.5121	-0.0634	0.0015				
25	1" wood with 1" insulation	A0, E2, E3, B5, B7, E0	b	0.0043	0.0385	0.0202	0.0007				0.170	0.0637
			d	1.0000	-0.7314	0.1061	-0.0003					
26	8" l.w. concrete	A0, E2, E3, C16, E0	b	0.0000	0.0002	0.0024	0.0038	0.0012	0.0001		0.126	0.0077
			d	1.0000	-1.6545	0.8775	-0.1734	0.0115	-0.0002			

Source: ASHRAE, 1989

TABLE A1.7: Transfer function Coefficient for Roofs

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Table 40 Transfer Function Coefficients for Roofs (Concluded)

(Time Interval = 1.0 hr)

No.	Construction (Note 1)	Code Numbers of Layers	Coefficients b_n and d_n (Note 2)								U	$\sum_{n=0} c_n$	
	Description			$n = 0$	$n = 1$	$n = 2$	$n = 3$	$n = 4$	$n = 5$	$n = 6$			
27	6" l.w. concrete	A0, E2, E3, C15, E0	b	0.0000	0.0031	0.0125	0.0067	0.0006				0.158	0.0229
			d	1.0000	-1.2340	0.4188	-0.0408	0.0007					
28	4" l.w. concrete	A0, E2, E3, C14, E0	b	0.0013	0.0293	0.0336	0.0040					0.213	0.0682
			d	1.0000	-0.8134	0.1367	-0.0031						
29	6" h.w. concrete with 2" insulation	A0, E2, E3, B6, C13, E0	b	0.0000	0.0014	0.0037	0.0013	0.0001				0.118	0.0065
			d	1.0000	-1.3445	0.4428	-0.0434	0.0002					
30	4" h.w. concrete with 2" insulation	A0, E2, E3, B6, C5, E0	b	0.0002	0.0050	0.0063	0.0008					0.119	0.0123
			d	1.0000	-1.1248	0.2344	-0.0065						
31	2" h.w. concrete with 2" insulation	A0, E2, E3, B6, C12, E0	b	0.0016	0.0151	0.0084	0.0003					0.122	0.0254
			d	1.0000	-0.9605	0.1682	-0.0001						
32	6" h.w. concrete with 1" insulation	A0, E2, E3, B5, C13, E0	b	0.0001	0.0036	0.0068	0.0016					0.192	0.0121
			d	1.0000	-1.3001	0.3991	-0.0361	0.0001					
33	4" h.w. concrete with 1" insulation	A0, E2, E3, B5, C5, E0	b	0.0008	0.0117	0.0100	0.0008					0.200	0.0233
			d	1.0000	-1.0800	0.2015	-0.0051						
34	2" h.w. concrete with 1" insulation	A0, E2, E3, B5, C12, E0	b	0.0054	0.0314	0.0108	0.0001					0.206	0.0477
			d	1.0000	-0.9091	0.1407							
35	Steel sheet with 2" insulation	A0, E2, E3, B6, A3, E0	b	0.0213	0.0642	0.0087						0.125	0.0942
			d	1.0000	-0.2474	0.0026							
36	Steel sheet with 1" insulation	A0, E2, E3, B5, A3, E0	b	0.0601	0.1025	0.0055						0.213	0.1681
			d	1.0000	-0.2124	0.0004							

Note 1. Construction is defined by code number for various layers. The thermal properties of layers designated by code numbers are given in Table 41.

Note 2. U , b 's and c 's are in BTU/(hr) (sq ft) (F deg), and d is dimensionless.

Source: ASHRAE, 1989



TABLE A1.8: Transfer function Coefficient for Partitions, Floors, and Ceiling wall

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Table 43 . . . Transfer Function Coefficients for Interior Partitions, Floors, and Ceilings
(Time Interval = 1.0 hr)

No.	Construction (Note 1) Description	Code Numbers of Layers	Coefficients b_n and d_n (Note 2)								U	$\sum_{n=0}^{\infty} U_n$
			$n = 0$	$n = 1$	$n = 2$	$n = 3$	$n = 4$	$n = 5$	$n = 6$			
1	4" clay tile with $\frac{1}{2}$ " plaster	E0, E1, C1, E1, E0	b 0.0033 d 1.0000	0.0424 -0.9447	0.0325 0.1613	0.0021 -0.0017					0.374	0.0800
2	4" l.w. concrete block with $\frac{1}{2}$ " plaster	E0, E1, C2, E1, E0	b 0.0048 d 1.0000	0.0514 -0.8456	0.0339 0.1397	0.0018 -0.0015					0.314	0.0919
3	4" h.w. concrete block with $\frac{1}{2}$ " plaster	E0, E1, C3, E1, E0	b 0.0092 d 1.0000	0.0705 -0.8203	0.0318 0.0874	0.0008 -0.0001					0.421	0.1123
4	4" common brick with $\frac{1}{2}$ " plaster	E0, E1, C4, E1, E0	b 0.0014 d 1.0000	0.0265 -1.0753	0.0272 0.2209	0.0027 -0.0033					0.406	0.0578
5	4" h.w. concrete with $\frac{1}{2}$ " plaster	E0, E1, C5, E1, E0	b 0.0068 d 1.0000	0.0527 -0.9033	0.0226 0.0738	0.0005					0.499	0.0826
6	8" clay tile with $\frac{1}{2}$ " plaster	E0, E1, C6, E1, E0	b 0.0000 d 1.0000	0.0018 -1.5522	0.0055 0.7047	0.0056 -0.0947	0.0006 0.0025				0.274	0.0165
7	8" l.w. concrete block, plastered both sides	E0, E1, C7, E1, E0	b 0.0002 d 1.0000	0.0106 -1.2098	0.0214 0.3736	0.0054 -0.0248	0.0001 0.0001				0.271	0.0377
8	8" h.w. concrete block, plastered both sides	E0, E1, C8, E1, E0	b 0.0004 d 1.0000	0.0141 -1.1995	0.0231 0.3293	0.0043 -0.0132	0.0001				0.360	0.0420
9	8" common brick, plastered both sides	E0, E1, C9, E1, E0	b 0.0000 d 1.0000	0.0005 -1.7862	0.0037 0.9878	0.0040 -0.1802	0.0008 0.0081	-0.0001			0.306	0.0090
10	8" heavy concrete plastered both sides	E0, E1, C10, E1, E0	b 0.0001 d 1.0000	0.0055 -1.3984	0.0131 0.4782	0.0038 -0.0273	0.0001 0.0001				0.430	0.0226
11	12" heavy concrete plastered both sides	E0, E1, C11, E1, E0	b 0.0000 d 1.0000	0.0002 -1.8959	0.0023 1.1220	0.0029 -0.2203	0.0007 0.0107	-0.0001			0.372	0.0061
12	4" clay tile	E0, C1	b 0.0908 d 1.0000	0.2519 -0.3738	0.0279 0.0018						0.590	0.3704
13	4" l.w. concrete block	E0, C2	b 0.1112 d 1.0000	0.2189 -0.2440	0.0136 0.0003						0.454	0.3437
14	4" h.w. concrete block	E0, C3	b 0.2080 d 1.0000	0.3271 -0.2363	0.0128 0.0001						0.717	0.5479
15	4" common brick	E0, C4	b 0.0516 d 1.0000	0.2266 -0.5275	0.0484 0.0108	0.0003					0.676	0.3269
16	4" h.w. concrete	E0, C5	b 0.2170 d 1.0000	0.4082 -0.3411	0.0221 0.0002						0.982	0.6473
17	8" clay tile	E0, C6	b 0.0008 d 1.0000	0.0269 -0.9872	0.0413 0.1962	0.0069 -0.0049	0.0001				0.372	0.0760
18	8" l.w. concrete block	E0, C7	b 0.0109 d 1.0000	0.0955 -0.6275	0.0446 0.0395	0.0013 -0.0001					0.370	0.1523
19	8" h.w. concrete block	E0, C8, E0	b 0.0036 d 1.0000	0.0438 -0.9441	0.0309 0.1435	0.0017 -0.0009					0.403	0.0800
20	8" common brick	E0, C9, E0	b 0.0000 d 1.0000	0.0021 -1.5586	0.0091 0.6889	0.0052 -0.0821	0.0005 0.0016				0.339	0.0169
21	8" h.w. concrete	E0, C10, E0	b 0.0006 d 1.0000	0.0155 -1.2467	0.0203 0.3362	0.0028 -0.0094					0.489	0.0392
22	12" h.w. concrete	E0, C11, E0	b 0.0000 d 1.0000	0.0010 -1.7442	0.0053 0.9050	0.0040 -0.1395	0.0005 0.0041				0.425	0.0108
23	Frame, partition with $\frac{1}{2}$ " gypsum board	E0, E1, B1, E1, E0	b 0.0729 d 1.0000	0.1526 -0.3986	0.0159 0.0208						0.388	0.2414
24	1" wood	E0, B7, E0	b 0.0879 d 1.0000	0.1653 -0.3276	0.0096 0.004						0.391	0.2628
25	2" wood	E0, B10, E0	b 0.0044 d 1.0000	0.0485 -0.7656	0.0300 0.0820	0.0014 -0.0003					0.267	0.0843
26	3" wood	E0, B11, E0	b 0.0000 d 1.0000	0.0060 -1.2012	0.0156 0.3563	0.0051 -0.0218	0.0002 0.0001				0.202	0.0269
27	4" wood	E0, B9, E0	b 0.0000 d 1.0000	0.0004 -1.6363	0.0035 0.8198	0.0039 -0.1362	0.0008 0.0060				0.161	0.0086
28	Frame partition with 1" wood	E0, B7, B1, B7, E0	b 0.0018 d 1.0000	0.0281 -0.9163	0.0244 0.1789	0.0018 -0.0009					0.214	0.0561
29	2" furniture	E0, B10, B1, B10, E0	b 0.0000 d 1.0000	0.0002 -1.7820	0.0020 1.0138	0.0028 -0.2044	0.0008 0.0135	-0.0001			0.142	0.0058
30	3" furniture	E0, B11, B1, B11, E0	b 0.00000 d 1.00000	0.00000 -2.65321	0.00002 2.63820	0.00015 -1.22726	0.00027 0.27415	0.00014 -0.02738	0.00002 0.00110		0.107	0.0006
31	2" h.w. concrete floor deck	E0, A5, C12, E0	b 0.0505 d 1.0000	0.0691 -0.6662	0.0011						0.362	0.1207
32	4" h.w. concrete floor deck	E0, A5, C5, E0	b 0.0111 d 1.0000	0.0405 -0.8507	0.0072 0.0229						0.341	0.0588
33	4" l.w. concrete floor deck	E0, A5, C2, E0	b 0.0200 d 1.0000	0.0710 -0.5878	0.0120 0.0116						0.243	0.1030

Source: ASHRAE, 1989

TABLE A1.9: Transfer function Coefficient for Partitions, Floors, and Ceiling wall

Air-Conditioning Cooling Load

Table 43 Transfer Function Coefficients for Interior Partitions, Floors, and Ceilings (Concluded)

(Time Interval = 1.0 hr)

No.	Construction (Note 1)	Code Numbers of Layers	Coefficients b_n and d_n								U	$\sum_{n=0} c_n$
	Description			$n = 0$	$n = 1$	$n = 2$	$n = 3$	$n = 4$	$n = 5$	$n = 6$		
34	8" h.w. concrete floor deck	E0, A5, C10, E0	b d	0.0002 1.0000	0.0062 -1.3198	0.0084 0.3840	0.0012 -0.0118				0.305	0.0106
35	8" l.w. concrete floor deck	E0, A5, C7, E0	b d	0.0013 1.0000	0.0199 -0.9849	0.0167 0.1677	0.0012 -0.0016				0.216	0.0391
36	2" wood deck	E0, A5, B10, E0	b d	0.0020 1.0000	0.0245 -0.9025	0.0174 0.1271	0.0010 -0.0008				0.201	0.0449
37	3" wood deck	E0, A5, B11, E0	b d	0.0000 1.0000	0.0029 -1.3381	0.0083 0.4614	0.0030 -0.0347	0.0001 0.0003			0.161	0.0143
38	2" h.w. concrete deck with false ceiling	E0, A5, C10, E4, E5, E0	b d	0.0056 1.0000	0.0191 -0.8552	0.0028 0.0084					0.180	0.0275
39	4" h.w. concrete deck with false ceiling	E0, A5, C5, E4, E5, E0	b d	0.0010 1.0000	0.0083 -0.9694	0.0040 0.0461	0.0001 -0.0003				0.175	0.0134
40	4" l.w. concrete deck with false ceiling	E0, A5, C2, E4, E5, E0	b d	0.0020 1.0000	0.0195 -0.8295	0.0104 0.0534	0.0004 -0.0003				0.144	0.0323
41	8" h.w. concrete deck with false ceiling	E0, A5, C10, E4, E5, E0	b d	0.00001 1.00000	0.00081 -1.43128	0.00212 0.47458	0.00068 -0.02140	0.00003 0.00017			0.165	0.00365
42	8" l.w. concrete deck with false ceiling	E0, A5, C7, E4, E5, E0	b d	0.0001 1.0000	0.0035 -1.2039	0.0065 0.2980	0.0014 -0.0085				0.134	0.0115
43	2" wood deck with false ceiling	E0, A5, B10, E4, E5, E0	b d	0.0001 1.0000	0.0048 -1.1372	0.0078 0.2530	0.0014 -0.0061				0.129	0.0141
44	3" wood deck with false ceiling	E0, A5, B11, E4, E5, E0	b d	0.00000 1.00000	0.00039 -1.57274	0.00223 0.69111	0.00169 -0.07957	0.00022 0.00176			0.112	0.00453
45	12" h.w. concrete deck with false ceiling	E0, A5, C11, E4, E5, E0	b d	0.00000 1.00000	0.00004 -1.92879	0.00036 1.13565	0.00048 -0.20935	0.00012 0.00893	0.00001 -0.00009		0.159	0.00101
46	4" wood deck with false ceiling	E0, A5, B9, E4, E5, E0	b d	0.00000 1.00000	0.00002 -2.00785	0.00033 1.31626	0.00074 -0.31761	0.00033 0.02445	0.00003 -0.00050		0.098	0.00145
47	Steel deck with false ceiling	E0, A5, A3, E4, E5, E0	b d	0.0749 1.0000	0.0853 -0.1257	0.0022 0.0001					0.186	0.1624

Note 1. Construction is defined by code number for various layers. The thermal properties of layers designated by code numbers are given in Table 41.

Note 2. U , b 's and c 's are in Btu/(hr) (sq ft) (F deg) and d is dimensionless.

Source: ASHRAE, 1989

TABLE A2.1: Sol-air temperature for west facing wall

t _{loc}	n	B	E _t	t _{sol}	sinδ	δ	w	λ	cosθ _s	θ _s	sinφ _s	φ _s	θ _p	φ _p	cosθ _i	θ _i	r ₀	r ₁	r _k	A	a0	a1	k	I _o	I _{dir}	I _{dif}	I _{glor,hor}	I _{glo,vert}	T _o	T _{os}		
																														^a /h _o = 0.026 ^a /h _o = 0.052		
0.00	91.00	9.89	-4.34	-0.07	0.07	3.81	-181.08	5.60	-0.99	170.53	0.11	6.58	90.00	90.00	0.02	88.92	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	0.0	0.00	0.00	0.00	25.60	25.6	25.6	
1.00	91.00	9.89	-4.34	0.93	0.07	3.81	-166.08	5.60	-0.96	163.21	-0.83	-56.20	90.00	90.00	-0.24	103.88	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	0.0	0.00	0.00	0.00	25.30	25.3	25.3	
2.00	91.00	9.89	-4.34	1.93	0.07	3.81	-151.08	5.60	-0.86	149.63	-0.95	-72.58	90.00	90.00	-0.48	118.85	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	0.0	0.00	0.00	0.00	25.10	25.1	25.1	
3.00	91.00	9.89	-4.34	2.93	0.07	3.81	-136.08	5.60	-0.71	135.14	-0.98	-78.86	90.00	90.00	-0.69	133.79	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	0.0	0.00	0.00	0.00	24.90	24.9	24.9	
4.00	91.00	9.89	-4.34	3.93	0.07	3.81	-121.08	5.60	-0.51	120.41	-0.99	-82.24	90.00	90.00	-0.85	148.71	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	0.0	0.00	0.00	0.00	24.70	24.7	24.7	
5.00	91.00	9.89	-4.34	4.93	0.07	3.81	-106.08	5.60	-0.27	105.58	-1.00	-84.45	90.00	90.00	-0.96	163.48	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	0.0	0.00	0.00	0.00	24.50	24.5	24.5	
6.00	91.00	9.89	-4.34	5.93	0.07	3.81	-91.08	5.60	-0.01	90.70	-1.00	-86.10	90.00	90.00	-1.00	176.04	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	0.0	0.00	0.00	0.00	25.00	25.0	25.0	
7.00	91.00	9.89	-4.34	6.93	0.07	3.81	-76.08	5.60	0.25	75.80	-1.00	-87.47	90.00	90.00	-0.97	165.58	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	370.8	64.22	155.18	64.22	25.00	26.7	28.3	
8.00	91.00	9.89	-4.34	7.93	0.07	3.81	-61.08	5.60	0.49	60.88	-1.00	-88.75	90.00	90.00	-0.87	150.86	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	619.6	91.82	393.33	91.82	25.40	27.8	30.2	
9.00	91.00	9.89	-4.34	8.93	0.07	3.81	-46.08	5.60	0.70	45.95	-1.00	-89.89	90.00	90.00	-0.72	135.95	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	744.3	105.69	623.18	105.69	26.30	29.0	31.8	
10.00	91.00	9.89	-4.34	9.93	0.07	3.81	-31.08	5.60	0.86	31.03	-1.00	-88.08	90.00	90.00	-0.52	121.01	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	809.6	113.83	807.60	113.83	27.40	30.4	33.3	
11.00	91.00	9.89	-4.34	10.93	0.07	3.81	-16.08	5.60	0.96	16.13	-1.00	-84.34	90.00	90.00	-0.28	106.05	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	842.4	118.35	927.58	118.35	30.00	33.1	36.2	
12.00	91.00	9.89	-4.34	11.93	0.07	3.81	-1.08	5.60	1.00	2.09	-0.52	-31.18	90.00	90.00	-0.02	91.08	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	853.2	119.93	972.59	141.12	31.00	34.7	38.3	
13.00	91.00	9.89	-4.34	12.93	0.07	3.81	13.92	5.60	0.97	13.98	0.99	83.26	90.00	90.00	0.24	76.12	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	845.2	118.75	938.88	356.08	32.50	41.8	51.0	
14.00	91.00	9.89	-4.34	13.93	0.07	3.81	28.92	5.60	0.88	28.87	1.00	87.74	90.00	90.00	0.48	61.15	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	816.0	114.68	829.25	533.95	33.50	47.4	61.3	
15.00	91.00	9.89	-4.34	14.93	0.07	3.81	43.92	5.60	0.72	43.80	1.00	89.67	90.00	90.00	0.69	46.21	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	756.5	107.15	653.21	642.45	34.50	51.2	67.9	
16.00	91.00	9.89	-4.34	15.93	0.07	3.81	58.92	5.60	0.52	58.72	1.00	88.93	90.00	90.00	0.85	31.29	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	643.2	94.36	428.28	639.61	32.20	48.8	65.5	
17.00	91.00	9.89	-4.34	16.93	0.07	3.81	73.92	5.60	0.28	73.64	1.00	87.66	90.00	90.00	0.96	16.52	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	417.7	69.84	187.47	454.13	31.10	42.9	54.7	
18.00	91.00	9.89	-4.34	17.93	0.07	3.81	88.92	5.60	0.03	88.55	1.00	86.31	90.00	90.00	1.00	3.96	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	167.2	8.13	12.35	172.07	30.50	35.0	39.4	
19.00	91.00	9.89	-4.34	18.93	0.07	3.81	103.92	5.60	-0.23	103.43	1.00	84.72	90.00	90.00	0.97	14.42	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	0.0	0.00	0.00	0.00	29.40	29.4	29.4	
20.00	91.00	9.89	-4.34	19.93	0.07	3.81	118.92	5.60	-0.47	118.27	0.99	82.61	90.00	90.00	0.87	29.14	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	0.0	0.00	0.00	0.00	28.40	28.4	28.4	
21.00	91.00	9.89	-4.34	20.93	0.07	3.81	133.92	5.60	-0.68	133.02	0.98	79.46	90.00	90.00	0.72	44.05	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	0.0	0.00	0.00	0.00	27.00	27.0	27.0	
22.00	91.00	9.89	-4.34	21.93	0.07	3.81	148.92	5.60	-0.84	147.56	0.96	73.81	90.00	90.00	0.52	58.99	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	0.0	0.00	0.00	0.00	26.40	26.4	26.4	
23.00	91.00	9.89	-4.34	22.93	0.07	3.81	163.92	5.60	-0.95	161.38	0.87	59.98	90.00	90.00	0.28	73.95	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	0.0	0.00	0.00	0.00	26.00	26.0	26.0	
Average																															31.7	35.4
																											577.41	419.92				

TABLE A2.2: Sol-air temperature for east facing wall

t _{loc}	n	B	E _t	t _{sol}	sinδ	δ	w	λ	cosθ _s	θ _s	sinφ _s	φ _s	θ _p	φ _p	cosθ _i	θ _i	r ₀	r ₁	r _k	A	a0	a1	k	I _o	I _{dir}	I _{dif}	I _{glor,hor}	I _{glo,vert}	T _o	T _{os}	
																													^a /h _o = 0.02/ ^a /h _o = 0.05		
0.00	91.00	9.89	-4.34	-0.07	0.07	3.81	-181.08	5.60	-0.99	170.53	0.11	6.58	90.00	270.00	-0.02	91.08	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	0.0	0.00	0.00	0.00	25.60	25.60	25.60
1.00	91.00	9.89	-4.34	0.93	0.07	3.81	-166.08	5.60	-0.96	163.21	-0.83	-56.20	90.00	270.00	0.24	76.12	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	0.0	0.00	0.00	0.00	25.30	25.30	25.30
2.00	91.00	9.89	-4.34	1.93	0.07	3.81	-151.08	5.60	-0.86	149.63	-0.95	-72.58	90.00	270.00	0.48	61.15	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	0.0	0.00	0.00	0.00	25.10	25.10	25.10
3.00	91.00	9.89	-4.34	2.93	0.07	3.81	-136.08	5.60	-0.71	135.14	-0.98	-78.86	90.00	270.00	0.69	46.21	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	0.0	0.00	0.00	0.00	24.90	24.90	24.90
4.00	91.00	9.89	-4.34	3.93	0.07	3.81	-121.08	5.60	-0.51	120.41	-0.99	-82.24	90.00	270.00	0.85	31.29	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	0.0	0.00	0.00	0.00	24.70	24.70	24.70
5.00	91.00	9.89	-4.34	4.93	0.07	3.81	-106.08	5.60	-0.27	105.58	-1.00	-84.45	90.00	270.00	0.96	16.52	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	0.0	0.00	0.00	0.00	24.50	24.50	24.50
6.00	91.00	9.89	-4.34	5.93	0.07	3.81	-91.08	5.60	-0.01	90.70	-1.00	-86.10	90.00	270.00	1.00	3.96	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	0.0	0.00	0.00	0.00	25.00	25.00	25.00
7.00	91.00	9.89	-4.34	6.93	0.07	3.81	-76.08	5.60	0.25	75.80	-1.00	-87.47	90.00	270.00	0.97	14.42	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	370.8	64.22	155.18	406.71	25.00	35.57	46.15
8.00	91.00	9.89	-4.34	7.93	0.07	3.81	-61.08	5.60	0.49	60.88	-1.00	-88.75	90.00	270.00	0.87	29.14	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	619.6	91.82	393.33	626.37	25.40	41.69	57.97
9.00	91.00	9.89	-4.34	8.93	0.07	3.81	-46.08	5.60	0.70	45.95	-1.00	-89.89	90.00	270.00	0.72	44.05	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	744.3	105.69	623.18	650.15	26.30	43.20	60.11
10.00	91.00	9.89	-4.34	9.93	0.07	3.81	-31.08	5.60	0.86	31.03	-1.00	-88.08	90.00	270.00	0.52	58.99	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	809.6	113.83	807.60	554.74	27.40	41.82	56.25
11.00	91.00	9.89	-4.34	10.93	0.07	3.81	-16.08	5.60	0.96	16.13	-1.00	-84.34	90.00	270.00	0.28	73.95	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	842.4	118.35	927.58	384.80	30.00	40.00	50.01
12.00	91.00	9.89	-4.34	11.93	0.07	3.81	-1.08	5.60	1.00	2.09	-0.52	-31.18	90.00	270.00	0.02	88.92	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	853.2	119.93	972.59	173.33	31.00	35.51	40.01
13.00	91.00	9.89	-4.34	12.93	0.07	3.81	13.92	5.60	0.97	13.98	0.99	83.26	90.00	270.00	-0.24	103.88	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	845.2	118.75	938.88	118.75	32.50	35.59	38.68
14.00	91.00	9.89	-4.34	13.93	0.07	3.81	28.92	5.60	0.88	28.87	1.00	87.74	90.00	270.00	-0.48	118.85	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	816.0	114.68	829.25	114.68	33.50	36.48	39.46
15.00	91.00	9.89	-4.34	14.93	0.07	3.81	43.92	5.60	0.72	43.80	1.00	89.67	90.00	270.00	-0.69	133.79	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	756.5	107.15	653.21	107.15	34.50	37.29	40.07
16.00	91.00	9.89	-4.34	15.93	0.07	3.81	58.92	5.60	0.52	58.72	1.00	88.93	90.00	270.00	-0.85	148.71	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	643.2	94.36	428.28	94.36	32.20	34.65	37.11
17.00	91.00	9.89	-4.34	16.93	0.07	3.81	73.92	5.60	0.28	73.64	1.00	87.66	90.00	270.00	-0.96	163.48	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	417.7	69.84	187.47	69.84	31.10	32.92	34.73
18.00	91.00	9.89	-4.34	17.93	0.07	3.81	88.92	5.60	0.03	88.55	1.00	86.31	90.00	270.00	-1.00	176.04	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	167.2	8.13	12.35	8.13	30.50	30.71	30.92
19.00	91.00	9.89	-4.34	18.93	0.07	3.81	103.92	5.60	-0.23	103.43	1.00	84.72	90.00	270.00	-0.97	165.58	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	0.0	0.00	0.00	0.00	29.40	29.40	29.40
20.00	91.00	9.89	-4.34	19.93	0.07	3.81	118.92	5.60	-0.47	118.27	0.99	82.61	90.00	270.00	-0.87	150.86	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	0.0	0.00	0.00	0.00	28.40	28.40	28.40
21.00	91.00	9.89	-4.34	20.93	0.07	3.81	133.92	5.60	-0.68	133.02	0.98	79.46	90.00	270.00	-0.72	135.95	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	0.0	0.00	0.00	0.00	27.00	27.00	27.00
22.00	91.00	9.89	-4.34	21.93	0.07	3.81	148.92	5.60	-0.84	147.56	0.96	73.81	90.00	270.00	-0.52	121.01	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	0.0	0.00	0.00	0.00	26.40	26.40	26.40
23.00	91.00	9.89	-4.34	22.93	0.07	3.81	163.92	5.60	-0.95	161.38	0.87	59.98	90.00	270.00	-0.28	106.05	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	0.0	0.00	0.00	0.00	26.00	26.00	26.00
Average																														31.57	35.16

TABLE A2.3: Sol-air temperature for south facing wall

t_{loc}	n	B	E_t	t_{sol}	$\sin\delta$	δ	w	λ	$\cos\theta_s$	θ_s	$\sin\phi_s$	ϕ_s	θ_p	ϕ_p	$\cos\theta_i$	θ_i	r_0	r_1	r_k	A	a0	a1	k	I_o	I_{dir}	I_{dif}	$I_{glor,hor}$	$I_{glo,vert}$	T_o	T_{os}	
																														$^{\circ}/h_o = 0.02(^{\circ}/h_o = 0.052$	
0.00	91.00	9.89	-4.34	-0.07	0.07	3.81	-181.08	5.60	-0.99	170.53	0.11	6.58	90.00	0.00	0.16	80.59	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	0.0	0.00	0.00	0.00	25.60	25.60	25.60
1.00	91.00	9.89	-4.34	0.93	0.07	3.81	-166.08	5.60	-0.96	163.21	-0.83	-56.20	90.00	0.00	0.16	80.75	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	0.0	0.00	0.00	0.00	25.30	25.30	25.30
2.00	91.00	9.89	-4.34	1.93	0.07	3.81	-151.08	5.60	-0.86	149.63	-0.95	-72.58	90.00	0.00	0.15	81.29	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	0.0	0.00	0.00	0.00	25.10	25.10	25.10
3.00	91.00	9.89	-4.34	2.93	0.07	3.81	-136.08	5.60	-0.71	135.14	-0.98	-78.86	90.00	0.00	0.14	82.17	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	0.0	0.00	0.00	0.00	24.90	24.90	24.90
4.00	91.00	9.89	-4.34	3.93	0.07	3.81	-121.08	5.60	-0.51	120.41	-0.99	-82.24	90.00	0.00	0.12	83.31	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	0.0	0.00	0.00	0.00	24.70	24.70	24.70
5.00	91.00	9.89	-4.34	4.93	0.07	3.81	-106.08	5.60	-0.27	105.58	-1.00	-84.45	90.00	0.00	0.09	84.66	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	0.0	0.00	0.00	0.00	24.50	24.50	24.50
6.00	91.00	9.89	-4.34	5.93	0.07	3.81	-91.08	5.60	-0.01	90.70	-1.00	-86.10	90.00	0.00	0.07	86.10	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	0.0	0.00	0.00	0.00	25.00	25.00	25.00
7.00	91.00	9.89	-4.34	6.93	0.07	3.81	-76.08	5.60	0.25	75.80	-1.00	-87.47	90.00	0.00	0.04	87.55	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	370.8	64.22	155.18	63.48	25.00	26.65	28.30
8.00	91.00	9.89	-4.34	7.93	0.07	3.81	-61.08	5.60	0.49	60.88	-1.00	-88.75	90.00	0.00	0.02	88.91	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	619.6	91.82	393.33	97.07	25.40	27.92	30.45
9.00	91.00	9.89	-4.34	8.93	0.07	3.81	-46.08	5.60	0.70	45.95	-1.00	-89.89	90.00	0.00	0.00	89.92	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	744.3	105.69	623.18	116.19	26.30	29.32	32.34
10.00	91.00	9.89	-4.34	9.93	0.07	3.81	-31.08	5.60	0.86	31.03	-1.00	-88.08	90.00	0.00	0.02	89.01	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	809.6	113.83	807.60	151.62	27.40	31.34	35.28
11.00	91.00	9.89	-4.34	10.93	0.07	3.81	-16.08	5.60	0.96	16.13	-1.00	-84.34	90.00	0.00	0.03	88.43	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	842.4	118.35	927.58	175.01	30.00	34.55	39.10
12.00	91.00	9.89	-4.34	11.93	0.07	3.81	-1.08	5.60	1.00	2.09	-0.52	-31.18	90.00	0.00	0.03	88.21	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	853.2	119.93	972.59	183.84	31.00	35.78	40.56
13.00	91.00	9.89	-4.34	12.93	0.07	3.81	13.92	5.60	0.97	13.98	0.99	83.26	90.00	0.00	0.03	88.38	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	845.2	118.75	938.88	177.22	32.50	37.11	41.72
14.00	91.00	9.89	-4.34	13.93	0.07	3.81	28.92	5.60	0.88	28.87	1.00	87.74	90.00	0.00	0.02	88.91	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	816.0	114.68	829.25	155.82	33.50	37.55	41.60
15.00	91.00	9.89	-4.34	14.93	0.07	3.81	43.92	5.60	0.72	43.80	1.00	89.67	90.00	0.00	0.00	89.77	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	756.5	107.15	653.21	121.90	34.50	37.67	40.84
16.00	91.00	9.89	-4.34	15.93	0.07	3.81	58.92	5.60	0.52	58.72	1.00	88.93	90.00	0.00	0.02	89.09	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	643.2	94.36	428.28	100.23	32.20	34.81	37.41
17.00	91.00	9.89	-4.34	16.93	0.07	3.81	73.92	5.60	0.28	73.64	1.00	87.66	90.00	0.00	0.04	87.75	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	417.7	69.84	187.47	70.03	31.10	32.92	34.74
18.00	91.00	9.89	-4.34	17.93	0.07	3.81	88.92	5.60	0.03	88.55	1.00	86.31	90.00	0.00	0.06	86.31	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	167.2	8.13	12.35	16.05	30.50	30.92	31.33
19.00	91.00	9.89	-4.34	18.93	0.07	3.81	103.92	5.60	-0.23	103.43	1.00	84.72	90.00	0.00	0.09	84.86	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	0.0	0.00	0.00	0.00	29.40	29.40	29.40
20.00	91.00	9.89	-4.34	19.93	0.07	3.81	118.92	5.60	-0.47	118.27	0.99	82.61	90.00	0.00	0.11	83.50	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	0.0	0.00	0.00	0.00	28.40	28.40	28.40
21.00	91.00	9.89	-4.34	20.93	0.07	3.81	133.92	5.60	-0.68	133.02	0.98	79.46	90.00	0.00	0.13	82.32	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	0.0	0.00	0.00	0.00	27.00	27.00	27.00
22.00	91.00	9.89	-4.34	21.93	0.07	3.81	148.92	5.60	-0.84	147.56	0.96	73.81	90.00	0.00	0.15	81.40	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	0.0	0.00	0.00	0.00	26.40	26.40	26.40
23.00	91.00	9.89	-4.34	22.93	0.07	3.81	163.92	5.60	-0.95	161.38	0.87	59.98	90.00	0.00	0.16	80.81	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	0.0	0.00	0.00	0.00	26.00	26.00	26.00
Average																											628.78	128.40		29.54	31.08

TABLE A2.4: Sol-air temperature for north facing wall

t_{loc}	n	B	E_t	t_{sol}	$\sin\delta$	δ	w	λ	$\cos\theta_s$	θ_s	$\sin\phi_s$	ϕ_s	θ_p	ϕ_p	$\cos\theta_i$	θ_i	r_0	r_1	r_k	A	a_0	a_1	k	I_o	I_{dir}	I_{dif}	$I_{glor,hor}$	$I_{glo,vert}$	T_o	T_{os}		
$^a/h_o = 0.026^2/h_o = 0.052$																																
0.00	91.00	9.89	-4.34	-0.07	0.07	3.81	-181.08	5.60	-0.99	170.53	0.11	6.58	90.00	180.00	-0.16	99.41	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	0.0	0.00	0.00	0.00	25.60	25.6	25.6	
1.00	91.00	9.89	-4.34	0.93	0.07	3.81	-166.08	5.60	-0.96	163.21	-0.83	-56.20	90.00	180.00	-0.16	99.25	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	0.0	0.00	0.00	0.00	25.30	25.3	25.3	
2.00	91.00	9.89	-4.34	1.93	0.07	3.81	-151.08	5.60	-0.86	149.63	-0.95	-72.58	90.00	180.00	-0.15	98.71	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	0.0	0.00	0.00	0.00	25.10	25.1	25.1	
3.00	91.00	9.89	-4.34	2.93	0.07	3.81	-136.08	5.60	-0.71	135.14	-0.98	-78.86	90.00	180.00	-0.14	97.83	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	0.0	0.00	0.00	0.00	24.90	24.9	24.9	
4.00	91.00	9.89	-4.34	3.93	0.07	3.81	-121.08	5.60	-0.51	120.41	-0.99	-82.24	90.00	180.00	-0.12	96.69	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	0.0	0.00	0.00	0.00	24.70	24.7	24.7	
5.00	91.00	9.89	-4.34	4.93	0.07	3.81	-106.08	5.60	-0.27	105.58	-1.00	-84.45	90.00	180.00	-0.09	95.34	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	0.0	0.00	0.00	0.00	24.50	24.5	24.5	
6.00	91.00	9.89	-4.34	5.93	0.07	3.81	-91.08	5.60	-0.01	90.70	-1.00	-86.10	90.00	180.00	-0.07	93.90	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	0.0	0.00	0.00	0.00	25.00	25.0	25.0	
7.00	91.00	9.89	-4.34	6.93	0.07	3.81	-76.08	5.60	0.25	75.80	-1.00	-87.47	90.00	180.00	-0.04	92.45	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	370.8	64.22	155.18	31.78	25.00	25.8	26.7	
8.00	91.00	9.89	-4.34	7.93	0.07	3.81	-61.08	5.60	0.49	60.88	-1.00	-88.75	90.00	180.00	-0.02	91.09	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	619.6	91.82	393.33	73.42	25.40	27.3	29.2	
9.00	91.00	9.89	-4.34	8.93	0.07	3.81	-46.08	5.60	0.70	45.95	-1.00	-89.89	90.00	180.00	0.00	90.08	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	744.3	105.69	623.18	114.14	26.30	29.3	32.2	
10.00	91.00	9.89	-4.34	9.93	0.07	3.81	-31.08	5.60	0.86	31.03	-1.00	-88.08	90.00	180.00	-0.02	90.99	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	809.6	113.83	807.60	123.73	27.40	30.6	33.8	
11.00	91.00	9.89	-4.34	10.93	0.07	3.81	-16.08	5.60	0.96	16.13	-1.00	-84.34	90.00	180.00	-0.03	91.57	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	842.4	118.35	927.58	117.39	30.00	33.1	36.1	
12.00	91.00	9.89	-4.34	11.93	0.07	3.81	-1.08	5.60	1.00	2.09	-0.52	-31.18	90.00	180.00	-0.03	91.79	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	853.2	119.93	972.59	118.78	31.00	34.1	37.2	
13.00	91.00	9.89	-4.34	12.93	0.07	3.81	13.92	5.60	0.97	13.98	0.99	83.26	90.00	180.00	-0.03	91.62	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	845.2	118.75	938.88	118.75	32.50	35.6	38.7	
14.00	91.00	9.89	-4.34	13.93	0.07	3.81	28.92	5.60	0.88	28.87	1.00	87.74	90.00	180.00	-0.02	91.09	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	816.0	114.68	829.25	114.68	33.50	36.5	39.5	
15.00	91.00	9.89	-4.34	14.93	0.07	3.81	43.92	5.60	0.72	43.80	1.00	89.67	90.00	180.00	0.00	90.23	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	756.5	107.15	653.21	107.15	34.50	37.3	40.1	
16.00	91.00	9.89	-4.34	15.93	0.07	3.81	58.92	5.60	0.52	58.72	1.00	88.93	90.00	180.00	-0.02	90.91	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	643.2	94.36	428.28	94.36	32.20	34.7	37.1	
17.00	91.00	9.89	-4.34	16.93	0.07	3.81	73.92	5.60	0.28	73.64	1.00	87.66	90.00	180.00	-0.04	92.25	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	417.7	69.84	187.47	69.84	31.10	32.9	34.7	
18.00	91.00	9.89	-4.34	17.93	0.07	3.81	88.92	5.60	0.03	88.55	1.00	86.31	90.00	180.00	-0.06	93.69	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	167.2	8.13	12.35	8.13	30.50	30.7	30.9	
19.00	91.00	9.89	-4.34	18.93	0.07	3.81	103.92	5.60	-0.23	103.43	1.00	84.72	90.00	180.00	-0.09	95.14	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	0.0	0.00	0.00	0.00	29.40	29.4	29.4	
20.00	91.00	9.89	-4.34	19.93	0.07	3.81	118.92	5.60	-0.47	118.27	0.99	82.61	90.00	180.00	-0.11	96.50	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	0.0	0.00	0.00	0.00	28.40	28.4	28.4	
21.00	91.00	9.89	-4.34	20.93	0.07	3.81	133.92	5.60	-0.68	133.02	0.98	79.46	90.00	180.00	-0.13	97.68	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	0.0	0.00	0.00	0.00	27.00	27.0	27.0	
22.00	91.00	9.89	-4.34	21.93	0.07	3.81	148.92	5.60	-0.84	147.56	0.96	73.81	90.00	180.00	-0.15	98.60	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	0.0	0.00	0.00	0.00	26.40	26.4	26.4	
23.00	91.00	9.89	-4.34	22.93	0.07	3.81	163.92	5.60	-0.95	161.38	0.87	59.98	90.00	180.00	-0.16	99.19	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	0.0	0.00	0.00	0.00	26.00	26.0	26.0	
Average																											628.78	98.55			29.2	30.4

TABLE A2.5: Sol-air temperature for north-west facing wall

t _{oc}	n	B	E _t	t _{sol}	sinδ	δ	w	λ	cosθ _s	θ _s	sinφ _s	φ _s	θ _p	φ _p	cosθ _i	θ _i	r ₀	r ₁	r _k	A	a0	a1	k	I _o	I _{dir}	I _{dif}	I _{glor,hor}	I _{glo,vert}	T _o	T _{os}	
																														°/h _o = 0.02/h _o = 0.05%	
0.00	91.00	9.89	-4.34	-0.07	0.07	3.81	-181.08	5.60	-0.99	170.53	0.11	6.58	90.00	135.00	-0.10	95.87	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	0.0	0.00	0.00	0.00	25.60	25.60	25.60
1.00	91.00	9.89	-4.34	0.93	0.07	3.81	-166.08	5.60	-0.96	163.21	-0.83	-56.20	90.00	135.00	-0.28	106.46	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	0.0	0.00	0.00	0.00	25.30	25.30	25.30
2.00	91.00	9.89	-4.34	1.93	0.07	3.81	-151.08	5.60	-0.86	149.63	-0.95	-72.58	90.00	135.00	-0.45	116.63	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	0.0	0.00	0.00	0.00	25.10	25.10	25.10
3.00	91.00	9.89	-4.34	2.93	0.07	3.81	-136.08	5.60	-0.71	135.14	-0.98	-78.86	90.00	135.00	-0.59	125.86	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	0.0	0.00	0.00	0.00	24.90	24.90	24.90
4.00	91.00	9.89	-4.34	3.93	0.07	3.81	-121.08	5.60	-0.51	120.41	-0.99	-82.24	90.00	135.00	-0.69	133.36	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	0.0	0.00	0.00	0.00	24.70	24.70	24.70
5.00	91.00	9.89	-4.34	4.93	0.07	3.81	-106.08	5.60	-0.27	105.58	-1.00	-84.45	90.00	135.00	-0.74	138.05	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	0.0	0.00	0.00	0.00	24.50	24.50	24.50
6.00	91.00	9.89	-4.34	5.93	0.07	3.81	-91.08	5.60	-0.01	90.70	-1.00	-86.10	90.00	135.00	-0.75	138.89	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	0.0	0.00	0.00	0.00	25.00	25.00	25.00
7.00	91.00	9.89	-4.34	6.93	0.07	3.81	-76.08	5.60	0.25	75.80	-1.00	-87.47	90.00	135.00	-0.72	135.65	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	370.8	64.22	155.18	64.22	25.00	26.67	28.34
8.00	91.00	9.89	-4.34	7.93	0.07	3.81	-61.08	5.60	0.49	60.88	-1.00	-88.75	90.00	135.00	-0.63	129.13	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	619.6	91.82	393.33	91.82	25.40	27.79	30.17
9.00	91.00	9.89	-4.34	8.93	0.07	3.81	-46.08	5.60	0.70	45.95	-1.00	-89.89	90.00	135.00	-0.51	120.61	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	744.3	105.69	623.18	105.69	26.30	29.05	31.80
10.00	91.00	9.89	-4.34	9.93	0.07	3.81	-31.08	5.60	0.86	31.03	-1.00	-88.08	90.00	135.00	-0.38	112.11	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	809.6	113.83	807.60	113.83	27.40	30.36	33.32
11.00	91.00	9.89	-4.34	10.93	0.07	3.81	-16.08	5.60	0.96	16.13	-1.00	-84.34	90.00	135.00	-0.21	102.41	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	842.4	118.35	927.58	118.35	30.00	33.08	36.15
12.00	91.00	9.89	-4.34	11.93	0.07	3.81	-1.08	5.60	1.00	2.09	-0.52	-31.18	90.00	135.00	-0.04	92.03	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	853.2	119.93	972.59	119.93	31.00	34.12	37.24
13.00	91.00	9.89	-4.34	12.93	0.07	3.81	13.92	5.60	0.97	13.98	0.99	83.26	90.00	135.00	0.15	81.39	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	845.2	118.75	938.88	279.73	32.50	39.77	47.05
14.00	91.00	9.89	-4.34	13.93	0.07	3.81	28.92	5.60	0.88	28.87	1.00	87.74	90.00	135.00	0.33	70.87	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	816.0	114.68	829.25	407.64	33.50	44.10	54.70
15.00	91.00	9.89	-4.34	14.93	0.07	3.81	43.92	5.60	0.72	43.80	1.00	89.67	90.00	135.00	0.49	60.89	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	756.5	107.15	653.21	486.98	34.50	47.16	59.82
16.00	91.00	9.89	-4.34	15.93	0.07	3.81	58.92	5.60	0.52	58.72	1.00	88.93	90.00	135.00	0.59	53.63	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	643.2	94.36	428.28	471.41	32.20	44.46	56.71
17.00	91.00	9.89	-4.34	16.93	0.07	3.81	73.92	5.60	0.28	73.64	1.00	87.66	90.00	135.00	0.65	49.44	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	417.7	69.84	187.47	325.26	31.10	39.56	48.01
18.00	91.00	9.89	-4.34	17.93	0.07	3.81	88.92	5.60	0.03	88.55	1.00	86.31	90.00	135.00	0.66	48.71	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	167.2	8.13	12.35	115.62	30.50	33.51	36.51
19.00	91.00	9.89	-4.34	18.93	0.07	3.81	103.92	5.60	-0.23	103.43	1.00	84.72	90.00	135.00	0.62	51.57	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	0.0	0.00	0.00	0.00	29.40	29.40	29.40
20.00	91.00	9.89	-4.34	19.93	0.07	3.81	118.92	5.60	-0.47	118.27	0.99	82.61	90.00	135.00	0.54	57.49	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	0.0	0.00	0.00	0.00	28.40	28.40	28.40
21.00	91.00	9.89	-4.34	20.93	0.07	3.81	133.92	5.60	-0.68	133.02	0.98	79.46	90.00	135.00	0.41	65.56	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	0.0	0.00	0.00	0.00	27.00	27.00	27.00
22.00	91.00	9.89	-4.34	21.93	0.07	3.81	148.92	5.60	-0.84	147.56	0.96	73.81	90.00	135.00	0.26	75.02	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	0.0	0.00	0.00	0.00	26.40	26.40	26.40
23.00	91.00	9.89	-4.34	22.93	0.07	3.81	163.92	5.60	-0.95	161.38	0.87	59.98	90.00	135.00	0.08	85.27	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	0.0	0.00	0.00	0.00	26.00	26.00	26.00
Average																														30.91	33.84

TABLE A2.6: Sol-air temperature for north-east facing wall

t_{oc}	n	B	E_t	t_{sol}	$\sin \delta$	δ	w	λ	$\cos \theta_s$	θ_s	$\sin \phi_s$	ϕ_s	θ_p	φ_p	$\cos \theta_i$	θ_i	r_0	r_1	r_k	A	a0	a1	k	I_o	I_{dir}	I_{dif}	$I_{glo,hor}$	$I_{glo,vert}$	T_o	T_{os}	
																														$^{\circ}/h_o = 0.02 (^{\circ}/h_o = 0.05)$	
0.00	91.00	9.89	-4.34	-0.07	0.07	3.81	-181.08	5.60	-0.99	170.53	0.11	6.58	90.00	225.00	-0.13	97.41	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	0.0	0.00	0.00	0.00	25.60	25.60	25.60
1.00	91.00	9.89	-4.34	0.93	0.07	3.81	-166.08	5.60	-0.96	163.21	-0.83	-56.20	90.00	225.00	0.06	86.79	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	0.0	0.00	0.00	0.00	25.30	25.30	25.30
2.00	91.00	9.89	-4.34	1.93	0.07	3.81	-151.08	5.60	-0.86	149.63	-0.95	-72.58	90.00	225.00	0.23	76.46	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	0.0	0.00	0.00	0.00	25.10	25.10	25.10
3.00	91.00	9.89	-4.34	2.93	0.07	3.81	-136.08	5.60	-0.71	135.14	-0.98	-78.86	90.00	225.00	0.39	66.86	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	0.0	0.00	0.00	0.00	24.90	24.90	24.90
4.00	91.00	9.89	-4.34	3.93	0.07	3.81	-121.08	5.60	-0.51	120.41	-0.99	-82.24	90.00	225.00	0.52	58.54	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	0.0	0.00	0.00	0.00	24.70	24.70	24.70
5.00	91.00	9.89	-4.34	4.93	0.07	3.81	-106.08	5.60	-0.27	105.58	-1.00	-84.45	90.00	225.00	0.61	52.26	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	0.0	0.00	0.00	0.00	24.50	24.50	24.50
6.00	91.00	9.89	-4.34	5.93	0.07	3.81	-91.08	5.60	-0.01	90.70	-1.00	-86.10	90.00	225.00	0.66	48.90	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	0.0	0.00	0.00	0.00	25.00	25.00	25.00
7.00	91.00	9.89	-4.34	6.93	0.07	3.81	-76.08	5.60	0.25	75.80	-1.00	-87.47	90.00	225.00	0.65	49.11	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	370.8	64.22	155.18	290.33	25.00	32.55	40.10
8.00	91.00	9.89	-4.34	7.93	0.07	3.81	-61.08	5.60	0.49	60.88	-1.00	-88.75	90.00	225.00	0.60	52.84	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	619.6	91.82	393.33	459.52	25.40	37.35	49.30
9.00	91.00	9.89	-4.34	8.93	0.07	3.81	-46.08	5.60	0.70	45.95	-1.00	-89.89	90.00	225.00	0.51	59.52	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	744.3	105.69	623.18	492.73	26.30	39.11	51.92
10.00	91.00	9.89	-4.34	9.93	0.07	3.81	-31.08	5.60	0.86	31.03	-1.00	-88.08	90.00	225.00	0.35	69.39	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	809.6	113.83	807.60	422.73	27.40	38.39	49.38
11.00	91.00	9.89	-4.34	10.93	0.07	3.81	-16.08	5.60	0.96	16.13	-1.00	-84.34	90.00	225.00	0.18	79.86	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	842.4	118.35	927.58	300.27	30.00	37.81	45.61
12.00	91.00	9.89	-4.34	11.93	0.07	3.81	-1.08	5.60	1.00	2.09	-0.52	-31.18	90.00	225.00	-0.01	90.50	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	853.2	119.93	972.59	149.80	31.00	34.89	38.79
13.00	91.00	9.89	-4.34	12.93	0.07	3.81	13.92	5.60	0.97	13.98	0.99	83.26	90.00	225.00	-0.19	100.94	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	845.2	118.75	938.88	118.75	32.50	35.59	38.68
14.00	91.00	9.89	-4.34	13.93	0.07	3.81	28.92	5.60	0.88	28.87	1.00	87.74	90.00	225.00	-0.35	110.77	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	816.0	114.68	829.25	114.68	33.50	36.48	39.46
15.00	91.00	9.89	-4.34	14.93	0.07	3.81	43.92	5.60	0.72	43.80	1.00	89.67	90.00	225.00	-0.49	119.48	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	756.5	107.15	653.21	107.15	34.50	37.29	40.07
16.00	91.00	9.89	-4.34	15.93	0.07	3.81	58.92	5.60	0.52	58.72	1.00	88.93	90.00	225.00	-0.62	127.99	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	643.2	94.36	428.28	94.36	32.20	34.65	37.11
17.00	91.00	9.89	-4.34	16.93	0.07	3.81	73.92	5.60	0.28	73.64	1.00	87.66	90.00	225.00	-0.71	134.88	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	417.7	69.84	187.47	69.84	31.10	32.92	34.73
18.00	91.00	9.89	-4.34	17.93	0.07	3.81	88.92	5.60	0.03	88.55	1.00	86.31	90.00	225.00	-0.75	138.67	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	167.2	8.13	12.35	8.13	30.50	30.71	30.92
19.00	91.00	9.89	-4.34	18.93	0.07	3.81	103.92	5.60	-0.23	103.43	1.00	84.72	90.00	225.00	-0.75	138.43	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	0.0	0.00	0.00	0.00	29.40	29.40	29.40
20.00	91.00	9.89	-4.34	19.93	0.07	3.81	118.92	5.60	-0.47	118.27	0.99	82.61	90.00	225.00	-0.70	134.24	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	0.0	0.00	0.00	0.00	28.40	28.40	28.40
21.00	91.00	9.89	-4.34	20.93	0.07	3.81	133.92	5.60	-0.68	133.02	0.98	79.46	90.00	225.00	-0.60	127.07	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	0.0	0.00	0.00	0.00	27.00	27.00	27.00
22.00	91.00	9.89	-4.34	21.93	0.07	3.81	148.92	5.60	-0.84	147.56	0.96	73.81	90.00	225.00	-0.47	118.04	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	0.0	0.00	0.00	0.00	26.40	26.40	26.40
23.00	91.00	9.89	-4.34	22.93	0.07	3.81	163.92	5.60	-0.95	161.38	0.87	59.98	90.00	225.00	-0.31	107.96	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	0.0	0.00	0.00	0.00	26.00	26.00	26.00
Average																											577.41	219.02		30.83	33.68

TABLE A2.7: Sol-air temperature for south-west facing wall

t_{oc}	n	B	E_t	t_{sol}	$\sin \delta$	δ	w	λ	$\cos \theta_s$	θ_s	$\sin \phi_s$	ϕ_s	θ_p	ϕ_p	$\cos \theta_i$	θ_i	r_0	r_1	r_k	A	a0	a1	k	I_o	I_{dir}	I_{dif}	$I_{glor,hor}$	$I_{glo,vert}$	T_o	T_{os}	
																														$^{\circ}/h_o = 0.02(^{\circ}/h_o = 0.052$	
0.00	91.00	9.89	-4.34	-0.07	0.07	3.81	-181.08	5.60	-0.99	170.53	0.11	6.58	90.00	45.00	0.13	82.59	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	0.0	0.00	0.00	0.00	25.60	25.60	25.60
1.00	91.00	9.89	-4.34	0.93	0.07	3.81	-166.08	5.60	-0.96	163.21	-0.83	-56.20	90.00	45.00	-0.06	93.21	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	0.0	0.00	0.00	0.00	25.30	25.30	25.30
2.00	91.00	9.89	-4.34	1.93	0.07	3.81	-151.08	5.60	-0.86	149.63	-0.95	-72.58	90.00	45.00	-0.23	103.54	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	0.0	0.00	0.00	0.00	25.10	25.10	25.10
3.00	91.00	9.89	-4.34	2.93	0.07	3.81	-136.08	5.60	-0.71	135.14	-0.98	-78.86	90.00	45.00	-0.39	113.14	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	0.0	0.00	0.00	0.00	24.90	24.90	24.90
4.00	91.00	9.89	-4.34	3.93	0.07	3.81	-121.08	5.60	-0.51	120.41	-0.99	-82.24	90.00	45.00	-0.52	121.46	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	0.0	0.00	0.00	0.00	24.70	24.70	24.70
5.00	91.00	9.89	-4.34	4.93	0.07	3.81	-106.08	5.60	-0.27	105.58	-1.00	-84.45	90.00	45.00	-0.61	127.74	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	0.0	0.00	0.00	0.00	24.50	24.50	24.50
6.00	91.00	9.89	-4.34	5.93	0.07	3.81	-91.08	5.60	-0.01	90.70	-1.00	-86.10	90.00	45.00	-0.66	131.10	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	0.0	0.00	0.00	0.00	25.00	25.00	25.00
7.00	91.00	9.89	-4.34	6.93	0.07	3.81	-76.08	5.60	0.25	75.80	-1.00	-87.47	90.00	45.00	-0.65	130.89	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	370.8	64.22	155.18	64.22	25.00	26.67	28.34
8.00	91.00	9.89	-4.34	7.93	0.07	3.81	-61.08	5.60	0.49	60.88	-1.00	-88.75	90.00	45.00	-0.60	127.16	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	619.6	91.82	393.33	91.82	25.40	27.79	30.17
9.00	91.00	9.89	-4.34	8.93	0.07	3.81	-46.08	5.60	0.70	45.95	-1.00	-89.89	90.00	45.00	-0.51	120.48	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	744.3	105.69	623.18	105.69	26.30	29.05	31.80
10.00	91.00	9.89	-4.34	9.93	0.07	3.81	-31.08	5.60	0.86	31.03	-1.00	-88.08	90.00	45.00	-0.35	110.61	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	809.6	113.83	807.60	113.83	27.40	30.36	33.32
11.00	91.00	9.89	-4.34	10.93	0.07	3.81	-16.08	5.60	0.96	16.13	-1.00	-84.34	90.00	45.00	-0.18	100.14	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	842.4	118.35	927.58	3.59	30.00	30.09	30.19
12.00	91.00	9.89	-4.34	11.93	0.07	3.81	-1.08	5.60	1.00	2.09	-0.52	-31.18	90.00	45.00	0.01	89.50	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	853.2	119.93	972.59	164.66	31.00	35.28	39.56
13.00	91.00	9.89	-4.34	12.93	0.07	3.81	13.92	5.60	0.97	13.98	0.99	83.26	90.00	45.00	0.19	79.06	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	845.2	118.75	938.88	313.62	32.50	40.65	48.81
14.00	91.00	9.89	-4.34	13.93	0.07	3.81	28.92	5.60	0.88	28.87	1.00	87.74	90.00	45.00	0.35	69.23	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	816.0	114.68	829.25	429.64	33.50	44.67	55.84
15.00	91.00	9.89	-4.34	14.93	0.07	3.81	43.92	5.60	0.72	43.80	1.00	89.67	90.00	45.00	0.49	60.52	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	756.5	107.15	653.21	491.23	34.50	47.27	60.04
16.00	91.00	9.89	-4.34	15.93	0.07	3.81	58.92	5.60	0.52	58.72	1.00	88.93	90.00	45.00	0.62	52.01	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	643.2	94.36	428.28	485.86	32.20	44.83	57.46
17.00	91.00	9.89	-4.34	16.93	0.07	3.81	73.92	5.60	0.28	73.64	1.00	87.66	90.00	45.00	0.71	45.12	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	417.7	69.84	187.47	348.41	31.10	40.16	49.22
18.00	91.00	9.89	-4.34	17.93	0.07	3.81	88.92	5.60	0.03	88.55	1.00	86.31	90.00	45.00	0.75	41.33	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	167.2	8.13	12.35	130.83	30.50	33.90	37.30
19.00	91.00	9.89	-4.34	18.93	0.07	3.81	103.92	5.60	-0.23	103.43	1.00	84.72	90.00	45.00	0.75	41.57	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	0.0	0.00	0.00	0.00	29.40	29.40	29.40
20.00	91.00	9.89	-4.34	19.93	0.07	3.81	118.92	5.60	-0.47	118.27	0.99	82.61	90.00	45.00	0.70	45.76	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	0.0	0.00	0.00	0.00	28.40	28.40	28.40
21.00	91.00	9.89	-4.34	20.93	0.07	3.81	133.92	5.60	-0.68	133.02	0.98	79.46	90.00	45.00	0.60	52.93	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	0.0	0.00	0.00	0.00	27.00	27.00	27.00
22.00	91.00	9.89	-4.34	21.93	0.07	3.81	148.92	5.60	-0.84	147.56	0.96	73.81	90.00	45.00	0.47	61.96	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	0.0	0.00	0.00	0.00	26.40	26.40	26.40
23.00	91.00	9.89	-4.34	22.93	0.07	3.81	163.92	5.60	-0.95	161.38	0.87	59.98	90.00	45.00	0.31	72.04	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	0.0	0.00	0.00	0.00	26.00	26.00	26.00
Average																											577.41	228.62		30.96	33.93



TABLE A2.8: Sol-air temperature for south-east facing wall

t_{oc}	n	B	E_t	t_{sol}	$\sin\delta$	δ	w	λ	$\cos\theta_s$	θ_s	$\sin\phi_s$	ϕ_s	θ_p	ϕ_p	$\cos\theta_i$	θ_i	r_0	r_1	r_k	A	a0	a1	k	I_o	I_{dir}	I_{dif}	$I_{glor,hor}$	$I_{glo,vert}$	T_o	T_{os}	
																														$^a/h_o = 0.02, h_o = 0.05$	
0.00	91.00	9.89	-4.34	-0.07	0.07	3.81	-181.08	5.60	-0.99	170.53	0.11	6.58	90.00	-45.00	0.10	84.13	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	0.0	0.00	0.00	0.00	25.60	25.60	25.60
1.00	91.00	9.89	-4.34	0.93	0.07	3.81	-166.08	5.60	-0.96	163.21	-0.83	-56.20	90.00	-45.00	0.28	73.54	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	0.0	0.00	0.00	0.00	25.30	25.30	25.30
2.00	91.00	9.89	-4.34	1.93	0.07	3.81	-151.08	5.60	-0.86	149.63	-0.95	-72.58	90.00	-45.00	0.45	63.37	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	0.0	0.00	0.00	0.00	25.10	25.10	25.10
3.00	91.00	9.89	-4.34	2.93	0.07	3.81	-136.08	5.60	-0.71	135.14	-0.98	-78.86	90.00	-45.00	0.59	54.14	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	0.0	0.00	0.00	0.00	24.90	24.90	24.90
4.00	91.00	9.89	-4.34	3.93	0.07	3.81	-121.08	5.60	-0.51	120.41	-0.99	-82.24	90.00	-45.00	0.69	46.64	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	0.0	0.00	0.00	0.00	24.70	24.70	24.70
5.00	91.00	9.89	-4.34	4.93	0.07	3.81	-106.08	5.60	-0.27	105.58	-1.00	-84.45	90.00	-45.00	0.74	41.95	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	0.0	0.00	0.00	0.00	24.50	24.50	24.50
6.00	91.00	9.89	-4.34	5.93	0.07	3.81	-91.08	5.60	-0.01	90.70	-1.00	-86.10	90.00	-45.00	0.75	41.11	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	0.0	0.00	0.00	0.00	25.00	25.00	25.00
7.00	91.00	9.89	-4.34	6.93	0.07	3.81	-76.08	5.60	0.25	75.80	-1.00	-87.47	90.00	-45.00	0.72	44.35	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	370.8	64.22	155.18	312.74	25.00	33.13	41.26
8.00	91.00	9.89	-4.34	7.93	0.07	3.81	-61.08	5.60	0.49	60.88	-1.00	-88.75	90.00	-45.00	0.63	50.87	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	619.6	91.82	393.33	476.24	25.40	37.78	50.16
9.00	91.00	9.89	-4.34	8.93	0.07	3.81	-46.08	5.60	0.70	45.95	-1.00	-89.89	90.00	-45.00	0.51	59.39	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	744.3	105.69	623.18	494.18	26.30	39.15	52.00
10.00	91.00	9.89	-4.34	9.93	0.07	3.81	-31.08	5.60	0.86	31.03	-1.00	-88.08	90.00	-45.00	0.38	67.89	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	809.6	113.83	807.60	442.45	27.40	38.90	50.41
11.00	91.00	9.89	-4.34	10.93	0.07	3.81	-16.08	5.60	0.96	16.13	-1.00	-84.34	90.00	-45.00	0.21	77.59	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	842.4	118.35	927.58	332.91	30.00	38.66	47.31
12.00	91.00	9.89	-4.34	11.93	0.07	3.81	-1.08	5.60	1.00	2.09	-0.52	-31.18	90.00	-45.00	0.04	87.97	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	853.2	119.93	972.59	187.43	31.00	35.87	40.75
13.00	91.00	9.89	-4.34	12.93	0.07	3.81	13.92	5.60	0.97	13.98	0.99	83.26	90.00	-45.00	-0.15	98.61	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	845.2	118.75	938.88	26.79	32.50	33.20	33.89
14.00	91.00	9.89	-4.34	13.93	0.07	3.81	28.92	5.60	0.88	28.87	1.00	87.74	90.00	-45.00	-0.33	109.13	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	816.0	114.68	829.25	114.68	33.50	36.48	39.46
15.00	91.00	9.89	-4.34	14.93	0.07	3.81	43.92	5.60	0.72	43.80	1.00	89.67	90.00	-45.00	-0.49	119.11	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	756.5	107.15	653.21	107.15	34.50	37.29	40.07
16.00	91.00	9.89	-4.34	15.93	0.07	3.81	58.92	5.60	0.52	58.72	1.00	88.93	90.00	-45.00	-0.59	126.37	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	643.2	94.36	428.28	94.36	32.20	34.65	37.11
17.00	91.00	9.89	-4.34	16.93	0.07	3.81	73.92	5.60	0.28	73.64	1.00	87.66	90.00	-45.00	-0.65	130.56	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	417.7	69.84	187.47	69.84	31.10	32.92	34.73
18.00	91.00	9.89	-4.34	17.93	0.07	3.81	88.92	5.60	0.03	88.55	1.00	86.31	90.00	-45.00	-0.66	131.29	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	167.2	8.13	12.35	8.13	30.50	30.71	30.92
19.00	91.00	9.89	-4.34	18.93	0.07	3.81	103.92	5.60	-0.23	103.43	1.00	84.72	90.00	-45.00	-0.62	128.43	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	0.0	0.00	0.00	0.00	29.40	29.40	29.40
20.00	91.00	9.89	-4.34	19.93	0.07	3.81	118.92	5.60	-0.47	118.27	0.99	82.61	90.00	-45.00	-0.54	122.51	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	0.0	0.00	0.00	0.00	28.40	28.40	28.40
21.00	91.00	9.89	-4.34	20.93	0.07	3.81	133.92	5.60	-0.68	133.02	0.98	79.46	90.00	-45.00	-0.41	114.44	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	0.0	0.00	0.00	0.00	27.00	27.00	27.00
22.00	91.00	9.89	-4.34	21.93	0.07	3.81	148.92	5.60	-0.84	147.56	0.96	73.81	90.00	-45.00	-0.26	104.98	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	0.0	0.00	0.00	0.00	26.40	26.40	26.40
23.00	91.00	9.89	-4.34	22.93	0.07	3.81	163.92	5.60	-0.95	161.38	0.87	59.98	90.00	-45.00	-0.08	94.73	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	0.0	0.00	0.00	0.00	26.00	26.00	26.00
Average																											577.41	222.24		30.88	33.77

TABLE A2.9: Sol-air temperature for horizontal surfaces wall

t_{loc}	n	B	E_t	t_{sol}	$\sin \delta$	δ	w	λ	$\cos \theta_s$	θ_s	$\sin \phi_s$	ϕ_s	θ_p	ϕ_p	$\cos \theta_i$	θ_i	r_0	r_1	r_k	A	a0	a1	k	I_o	I_{dir}	I_{dif}	$I_{glor,hor}$	$I_{glor,hor}$	T_o	T_{os}	
																														$^a/h_o = 0.026$	$^a/h_o = 0.052$
0.00	91.00	9.89	-4.34	-0.07	0.07	3.81	-181.08	5.60	-0.99	170.53	0.11	6.58	90.00	90.00	0.02	88.92	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	0.0	0.00	0.00	0.00	25.60	21.70	21.70
1.00	91.00	9.89	-4.34	0.93	0.07	3.81	-166.08	5.60	-0.96	163.21	-0.83	-56.20	90.00	90.00	-0.24	103.88	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	0.0	0.00	0.00	0.00	25.30	21.40	21.40
2.00	91.00	9.89	-4.34	1.93	0.07	3.81	-151.08	5.60	-0.86	149.63	-0.95	-72.58	90.00	90.00	-0.48	118.85	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	0.0	0.00	0.00	0.00	25.10	21.20	21.20
3.00	91.00	9.89	-4.34	2.93	0.07	3.81	-136.08	5.60	-0.71	135.14	-0.98	-78.86	90.00	90.00	-0.69	133.79	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	0.0	0.00	0.00	0.00	24.90	21.00	21.00
4.00	91.00	9.89	-4.34	3.93	0.07	3.81	-121.08	5.60	-0.51	120.41	-0.99	-82.24	90.00	90.00	-0.85	148.71	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	0.0	0.00	0.00	0.00	24.70	20.80	20.80
5.00	91.00	9.89	-4.34	4.93	0.07	3.81	-106.08	5.60	-0.27	105.58	-1.00	-84.45	90.00	90.00	-0.96	163.48	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	0.0	0.00	0.00	0.00	24.50	20.60	20.60
6.00	91.00	9.89	-4.34	5.93	0.07	3.81	-91.08	5.60	-0.01	90.70	-1.00	-86.10	90.00	90.00	-1.00	176.04	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	0.0	0.00	0.00	0.00	25.00	21.10	21.10
7.00	91.00	9.89	-4.34	6.93	0.07	3.81	-76.08	5.60	0.25	75.80	-1.00	-87.47	90.00	90.00	-0.97	165.58	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	370.8	64.22	155.18	155.18	25.00	25.13	29.17
8.00	91.00	9.89	-4.34	7.93	0.07	3.81	-61.08	5.60	0.49	60.88	-1.00	-88.75	90.00	90.00	-0.87	150.86	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	619.6	91.82	393.33	393.33	25.40	31.73	41.95
9.00	91.00	9.89	-4.34	8.93	0.07	3.81	-46.08	5.60	0.70	45.95	-1.00	-89.89	90.00	90.00	-0.72	135.95	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	744.3	105.69	623.18	623.18	26.30	38.60	54.81
10.00	91.00	9.89	-4.34	9.93	0.07	3.81	-31.08	5.60	0.86	31.03	-1.00	-88.08	90.00	90.00	-0.52	121.01	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	809.6	113.83	807.60	807.60	27.40	44.50	65.50
11.00	91.00	9.89	-4.34	10.93	0.07	3.81	-16.08	5.60	0.96	16.13	-1.00	-84.34	90.00	90.00	-0.28	106.05	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	842.4	118.35	927.58	927.58	30.00	50.22	74.33
12.00	91.00	9.89	-4.34	11.93	0.07	3.81	-1.08	5.60	1.00	2.09	-0.52	-31.18	90.00	90.00	-0.02	91.08	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	853.2	119.93	972.59	972.59	31.00	52.39	77.67
13.00	91.00	9.89	-4.34	12.93	0.07	3.81	13.92	5.60	0.97	13.98	0.99	83.26	90.00	90.00	0.24	76.12	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	845.2	118.75	938.88	938.88	32.50	53.01	77.42
14.00	91.00	9.89	-4.34	13.93	0.07	3.81	28.92	5.60	0.88	28.87	1.00	87.74	90.00	90.00	0.48	61.15	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	816.0	114.68	829.25	829.25	33.50	51.16	72.72
15.00	91.00	9.89	-4.34	14.93	0.07	3.81	43.92	5.60	0.72	43.80	1.00	89.67	90.00	90.00	0.69	46.21	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	756.5	107.15	653.21	653.21	34.50	47.58	64.57
16.00	91.00	9.89	-4.34	15.93	0.07	3.81	58.92	5.60	0.52	58.72	1.00	88.93	90.00	90.00	0.85	31.29	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	643.2	94.36	428.28	428.28	32.20	39.44	50.57
17.00	91.00	9.89	-4.34	16.93	0.07	3.81	73.92	5.60	0.28	73.64	1.00	87.66	90.00	90.00	0.96	16.52	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	417.7	69.84	187.47	187.47	31.10	32.07	36.95
18.00	91.00	9.89	-4.34	17.93	0.07	3.81	88.92	5.60	0.03	88.55	1.00	86.31	90.00	90.00	1.00	3.96	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	0.0	0.00	0.00	0.00	30.50	26.60	26.60
19.00	91.00	9.89	-4.34	18.93	0.07	3.81	103.92	5.60	-0.23	103.43	1.00	84.72	90.00	90.00	0.97	14.42	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	0.0	0.00	0.00	0.00	29.40	25.50	25.50
20.00	91.00	9.89	-4.34	19.93	0.07	3.81	118.92	5.60	-0.47	118.27	0.99	82.61	90.00	90.00	0.87	29.14	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	0.0	0.00	0.00	0.00	28.40	24.50	24.50
21.00	91.00	9.89	-4.34	20.93	0.07	3.81	133.92	5.60	-0.68	133.02	0.98	79.46	90.00	90.00	0.72	44.05	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	0.0	0.00	0.00	0.00	27.00	23.10	23.10
22.00	91.00	9.89	-4.34	21.93	0.07	3.81	148.92	5.60	-0.84	147.56	0.96	73.81	90.00	90.00	0.52	58.99	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	0.0	0.00	0.00	0.00	26.40	22.50	22.50
23.00	91.00	9.89	-4.34	22.93	0.07	3.81	163.92	5.60	-0.95	161.38	0.87	59.98	90.00	90.00	0.28	73.95	0.95	0.98	1.02	0.00	0.12	0.74	0.39	1373.24	0.0	0.00	0.00	0.00	26.00	22.10	22.10
Average																										628.78	628.78			31.58	39.07

TABLE A2.10: Summary of Sol-air temperature T_{sol} as function of time and of surface orientation, for April 1st at 5.6°N latitude, for Ghana.

Time hr	Air temp., °C	N	NE	E	SE	S	SW	W	NW	HOR
0.00	25.60	25.60	25.60	25.60	25.60	25.60	25.60	25.60	25.60	21.70
1.00	25.30	25.30	25.30	25.30	25.30	25.30	25.30	25.30	25.30	21.40
2.00	25.10	25.10	25.10	25.10	25.10	25.10	25.10	25.10	25.10	21.20
3.00	24.90	24.90	24.90	24.90	24.90	24.90	24.90	24.90	24.90	21.00
4.00	24.70	24.70	24.70	24.70	24.70	24.70	24.70	24.70	24.70	20.80
5.00	24.50	24.50	24.50	24.50	24.50	24.50	24.50	24.50	24.50	20.60
6.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	21.10
7.00	25.00	26.65	40.10	46.15	41.26	28.30	28.34	28.34	28.34	29.17
8.00	25.40	29.22	49.30	57.97	50.16	30.45	30.17	30.17	30.17	41.95
9.00	26.30	32.24	51.92	60.11	52.00	32.34	31.80	31.80	31.80	54.81
10.00	27.40	33.83	49.38	56.25	50.41	35.28	33.32	33.32	33.32	65.50
11.00	30.00	36.10	45.61	50.01	47.31	39.10	30.19	36.15	36.15	74.33
12.00	31.00	37.18	38.79	40.01	40.75	40.56	39.56	38.34	37.24	77.67
13.00	32.50	38.61	38.68	38.68	33.89	41.72	48.81	51.02	47.05	77.42
14.00	33.50	39.39	39.46	39.46	39.46	41.60	55.84	61.27	54.70	72.72
15.00	34.50	40.00	40.07	40.07	40.07	40.84	60.04	67.91	59.82	64.57
16.00	32.20	36.35	37.11	37.11	37.11	37.41	57.46	65.46	56.71	50.57
17.00	31.10	33.04	34.73	34.73	34.73	34.74	49.22	54.71	48.01	36.95
18.00	30.50	30.22	30.92	30.92	30.92	31.33	37.30	39.45	36.51	26.60
19.00	29.40	29.40	29.40	29.40	29.40	29.40	29.40	29.40	29.40	25.50
20.00	28.40	28.40	28.40	28.40	28.40	28.40	28.40	28.40	28.40	24.50
21.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	23.10
22.00	26.40	26.40	26.40	26.40	26.40	26.40	26.40	26.40	26.40	22.50
23.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	22.10
Average	27.99	30.21	33.68	35.16	33.77	31.08	33.93	35.43	33.84	39.07

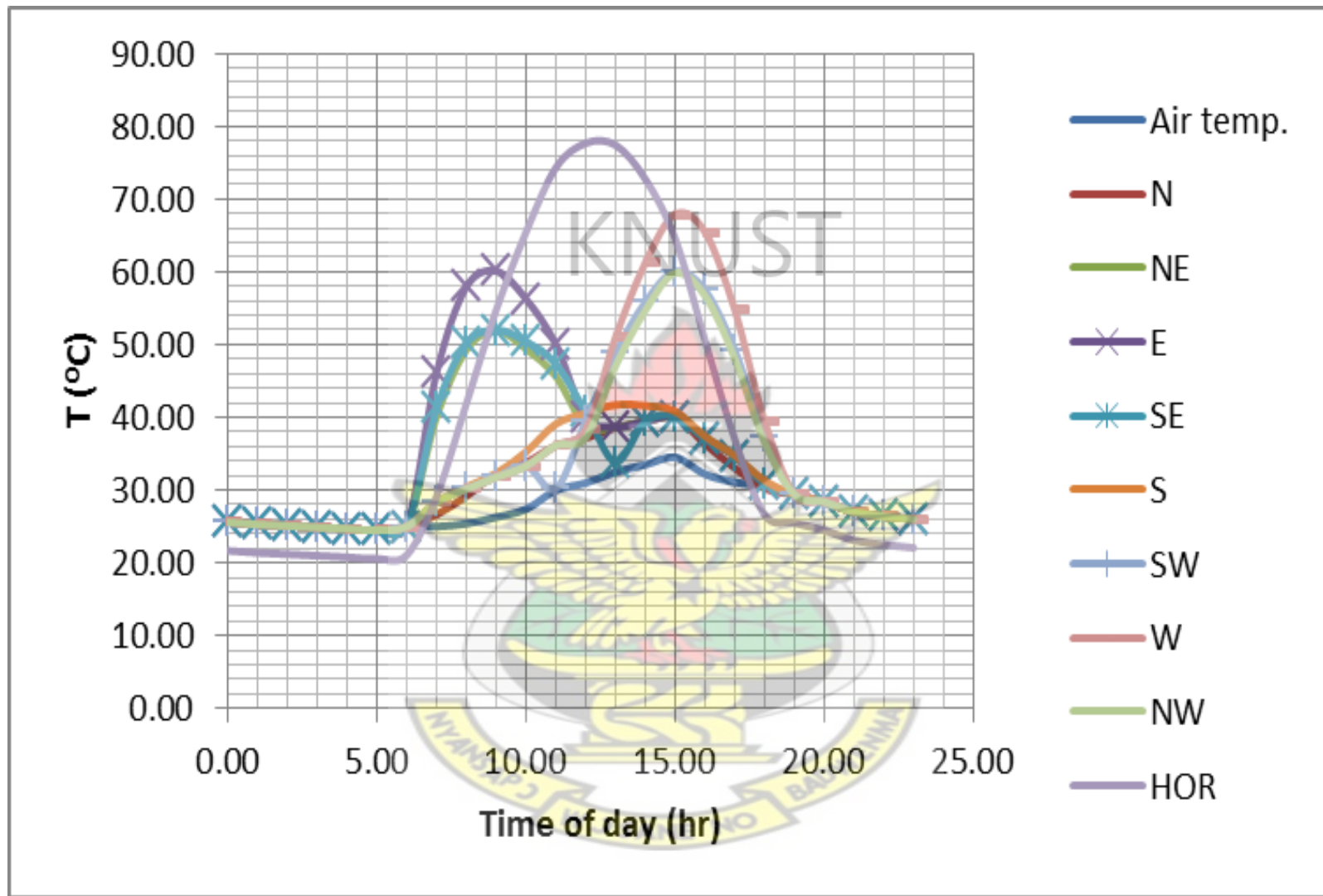


FIGURE A2. 1: Summary of Sol-air temperature T_{sol} as function of time and of surface orientation, for April 1st at 5.6°N latitude, for Ghana.

TABLE A3.1: Heat gain and cooling load factors for CFL lamps used for residential lighting

t	Heat Gain factor	1 st day	2 nd day	3 rd day	4 th day	Cooling Load factor
h						
-2.00	0.00	0.00	0.94	0.96	0.96	0.96
-1.00	0.00	0.00	0.30	0.31	0.31	0.31
0.00	0.00	0.00	0.26	0.27	0.28	0.28
1.00	0.00	0.00	0.23	0.24	0.24	0.24
2.00	0.00	0.00	0.20	0.21	0.21	0.21
3.00	0.00	0.00	0.18	0.19	0.19	0.19
4.00	0.00	0.00	0.16	0.16	0.17	0.17
5.00	0.00	0.00	0.14	0.15	0.15	0.15
6.00	0.00	0.00	0.12	0.13	0.13	0.13
7.00	1.00	0.00	0.11	0.11	0.11	0.11
8.00	1.00	0.65	0.74	0.75	0.75	0.75
9.00	1.00	0.69	0.78	0.78	0.78	0.78
10.00	1.00	0.73	0.80	0.81	0.81	0.81
11.00	1.00	0.76	0.83	0.83	0.83	0.83
12.00	1.00	0.79	0.85	0.85	0.85	0.85
13.00	1.00	0.82	0.87	0.87	0.87	0.87
14.00	1.00	0.84	0.88	0.88	0.88	0.88
15.00	1.00	0.86	0.90	0.90	0.90	0.90
16.00	1.00	0.87	0.91	0.91	0.91	0.91
17.00	1.00	0.89	0.92	0.92	0.92	0.92
18.00	1.00	0.90	0.93	0.93	0.93	0.93
19.00	1.00	0.91	0.94	0.94	0.94	0.94
20.00	1.00	0.92	0.94	0.95	0.95	0.95
21.00	1.00	0.93	0.95	0.95	0.95	0.95
22.00	0.00	0.94	0.96	0.96	0.96	0.96
23.00	0.00	0.30	0.31	0.31	0.31	0.31
Average	1.00					0.82

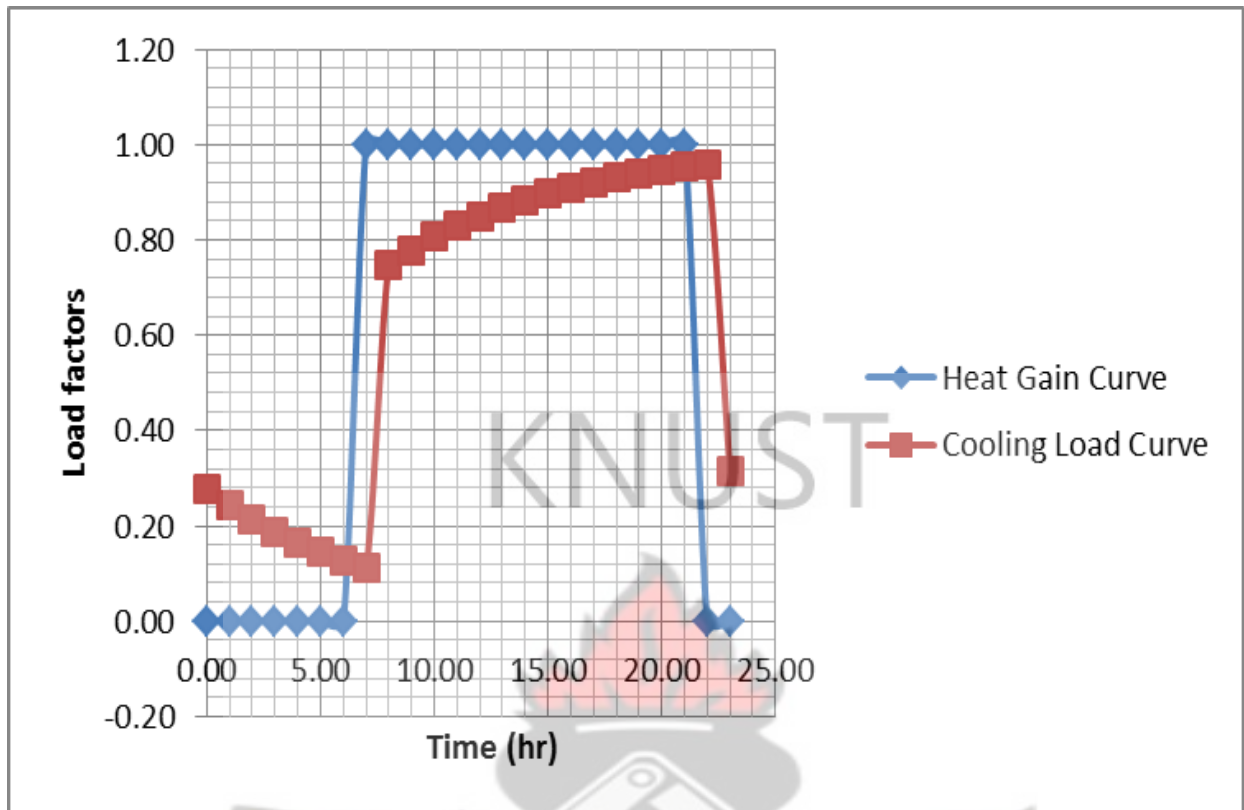


FIGURE A3. 1: A graph of thermal loads against time for CFL lamps used for residential lighting.

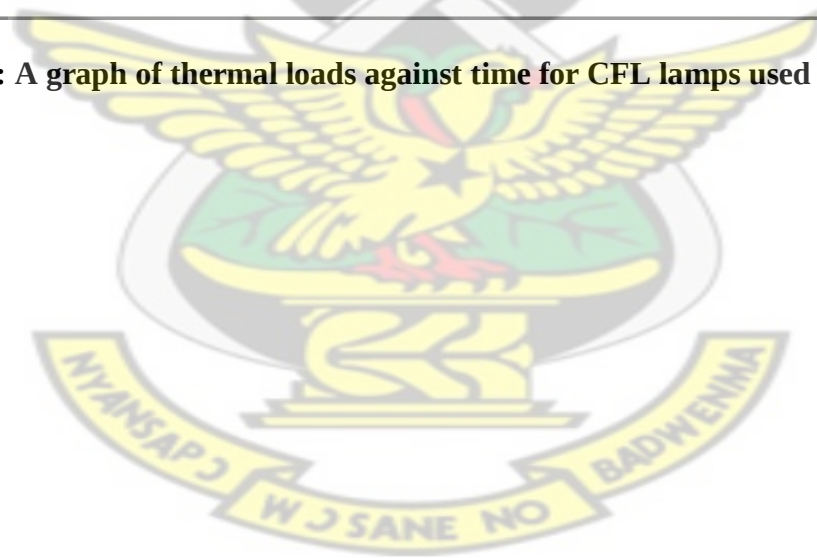


TABLE A3.2: Heat gain and cooling load factors for CFL lamps used for office lighting

t	Heat Gain factor	1 st day	2 nd day	3 rd day	4 th day	Cooling Load factor
h						
-2.00	0.00	0.00	0.26	0.27	0.27	0.27
-1.00	0.00	0.00	0.23	0.24	0.24	0.24
0.00	0.00	0.00	0.20	0.21	0.21	0.21
1.00	0.00	0.00	0.17	0.18	0.18	0.18
2.00	0.00	0.00	0.15	0.16	0.16	0.16
3.00	0.00	0.00	0.14	0.14	0.14	0.14
4.00	0.00	0.00	0.12	0.12	0.12	0.12
5.00	0.00	0.00	0.10	0.11	0.11	0.11
6.00	1.00	0.00	0.09	0.10	0.10	0.10
7.00	1.00	0.65	0.73	0.73	0.74	0.74
8.00	1.00	0.69	0.76	0.77	0.77	0.77
9.00	1.00	0.73	0.79	0.79	0.79	0.79
10.00	1.00	0.76	0.82	0.82	0.82	0.82
11.00	1.00	0.79	0.84	0.84	0.84	0.84
12.00	1.00	0.82	0.86	0.86	0.86	0.86
13.00	1.00	0.84	0.88	0.88	0.88	0.88
14.00	1.00	0.86	0.89	0.89	0.89	0.89
15.00	1.00	0.87	0.90	0.90	0.90	0.90
16.00	1.00	0.89	0.91	0.92	0.92	0.92
17.00	1.00	0.90	0.93	0.93	0.93	0.93
18.00	1.00	0.91	0.93	0.94	0.94	0.94
19.00	1.00	0.92	0.94	0.94	0.94	0.94
20.00	0.00	0.93	0.95	0.95	0.95	0.95
21.00	0.00	0.29	0.31	0.31	0.31	0.31
22.00	0.00	0.26	0.27	0.27	0.27	0.27
23.00	0.00	0.23	0.24	0.24	0.24	0.24
Average	0.87					0.81

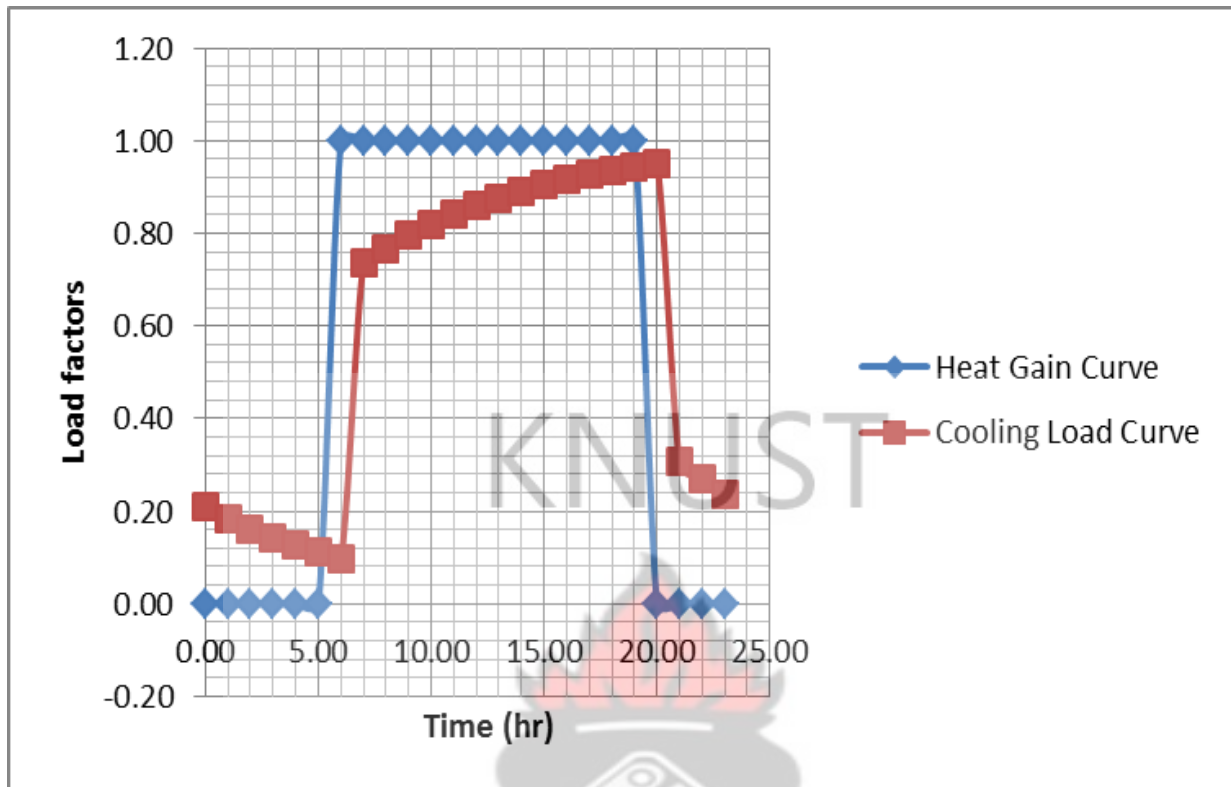


FIGURE A3. 2: A graph of thermal loads against time for CFL lamps used for office lighting.

TABLE A3.3: Heat gain and cooling load factors for fluorescent lamps used for residential lighting

t	Heat Gain factor	1 st day	2 nd day	3 rd day	4 th day	Cooling Load factor
h						
-2.00	0.00	0.00	1.05	1.10	1.11	1.11
-1.00	0.00	0.00	0.28	0.33	0.34	0.34
0.00	0.00	0.00	0.26	0.30	0.31	0.31
1.00	0.00	0.00	0.24	0.28	0.29	0.29
2.00	0.00	0.00	0.22	0.26	0.27	0.27
3.00	0.00	0.00	0.21	0.24	0.25	0.25
4.00	0.00	0.00	0.19	0.23	0.23	0.23
5.00	0.00	0.00	0.18	0.21	0.22	0.22
6.00	0.00	0.00	0.17	0.20	0.20	0.20
7.00	1.20	0.00	0.16	0.18	0.19	0.19
8.00	1.20	0.78	0.92	0.95	0.95	0.96
9.00	1.20	0.81	0.94	0.97	0.97	0.97
10.00	1.20	0.84	0.96	0.98	0.99	0.99
11.00	1.20	0.86	0.98	1.00	1.00	1.00
12.00	1.20	0.89	0.99	1.01	1.02	1.02
13.00	1.20	0.91	1.01	1.03	1.03	1.03
14.00	1.20	0.93	1.02	1.04	1.04	1.04
15.00	1.20	0.95	1.03	1.05	1.05	1.05
16.00	1.20	0.96	1.05	1.06	1.06	1.06
17.00	1.20	0.98	1.06	1.07	1.07	1.07
18.00	1.20	1.00	1.07	1.08	1.08	1.08
19.00	1.20	1.01	1.08	1.09	1.09	1.09
20.00	1.20	1.02	1.08	1.10	1.10	1.10
21.00	1.20	1.04	1.09	1.10	1.10	1.10
22.00	0.00	1.05	1.10	1.11	1.11	1.11
23.00	0.00	0.28	0.33	0.34	0.34	0.34
Average	1.20					0.98

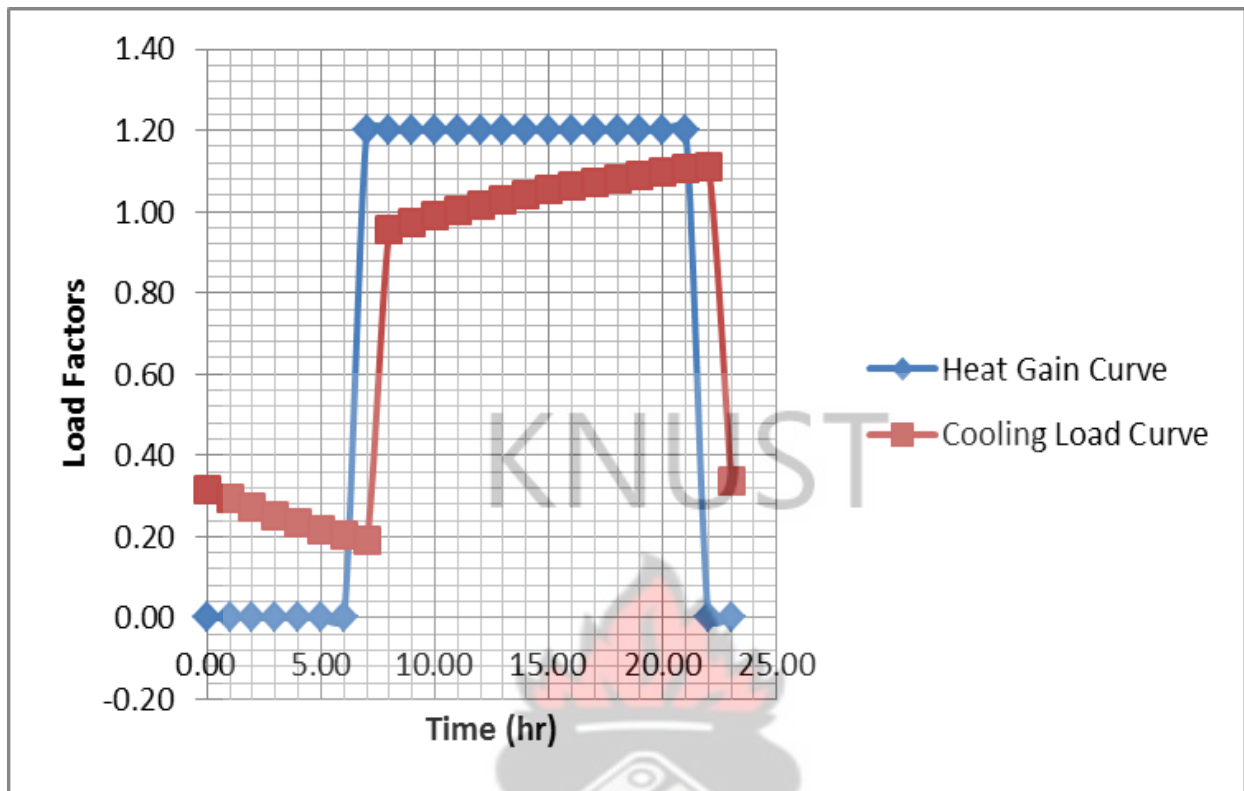


FIGURE A3. 3: A graph of thermal loads against time for fluorescent lamps used for residential lighting.

TABLE A3.4: Heat gain and cooling load factors for fluorescent lamps for office lighting

t	Heat Gain factor	1 st day	2 nd day	3 rd day	4 th day	Cooling Load factor
h						
-2.00	0.00	0.00	0.25	0.29	0.30	0.30
-1.00	0.00	0.00	0.23	0.27	0.28	0.28
0.00	0.00	0.00	0.22	0.25	0.26	0.26
1.00	0.00	0.00	0.20	0.24	0.24	0.24
2.00	0.00	0.00	0.19	0.22	0.22	0.23
3.00	0.00	0.00	0.17	0.20	0.21	0.21
4.00	0.00	0.00	0.16	0.19	0.19	0.20
5.00	0.00	0.00	0.15	0.18	0.18	0.18
6.00	1.20	0.00	0.14	0.16	0.17	0.17
7.00	1.20	0.78	0.91	0.93	0.94	0.94
8.00	1.20	0.81	0.93	0.95	0.95	0.96
9.00	1.20	0.84	0.95	0.97	0.97	0.97
10.00	1.20	0.86	0.97	0.98	0.99	0.99
11.00	1.20	0.89	0.98	1.00	1.00	1.00
12.00	1.20	0.91	1.00	1.01	1.02	1.02
13.00	1.20	0.93	1.01	1.03	1.03	1.03
14.00	1.20	0.95	1.03	1.04	1.04	1.04
15.00	1.20	0.96	1.04	1.05	1.05	1.05
16.00	1.20	0.98	1.05	1.06	1.06	1.06
17.00	1.20	1.00	1.06	1.07	1.07	1.07
18.00	1.20	1.01	1.07	1.08	1.08	1.08
19.00	1.20	1.02	1.08	1.09	1.09	1.09
20.00	0.00	1.04	1.09	1.10	1.10	1.10
21.00	0.00	0.27	0.31	0.32	0.32	0.32
22.00	0.00	0.25	0.29	0.30	0.30	0.30
23.00	0.00	0.23	0.27	0.28	0.28	0.28
Average	1.20					0.96

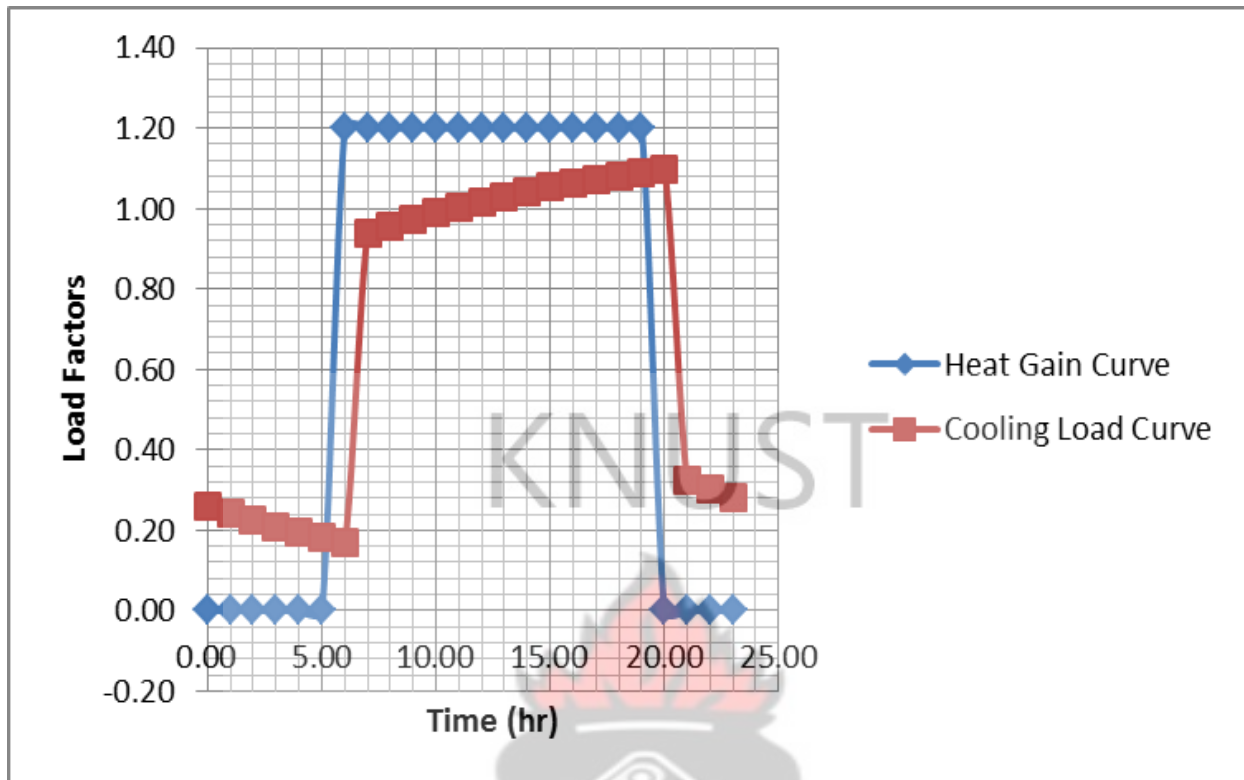


FIGURE A3. 4: A graph of thermal loads against time for fluorescent lamps used for office lighting.

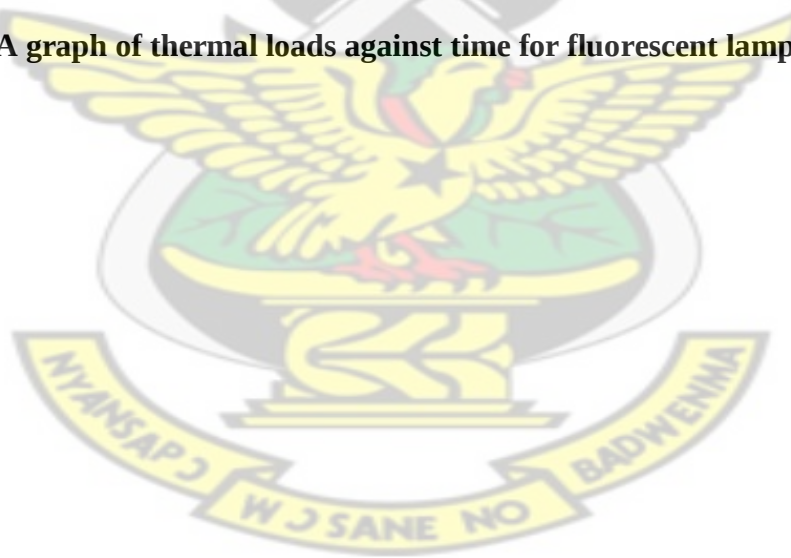


TABLE A4.1: Heat Gain and Cooling load factors for SUNLIT roof terrace system

t h	T _{os} ,t oC	1st day	2nd day	3rd day	4th day	5th day	6th day	Heat Gain factor	1st day	2nd day	3rd day	Cooling load
-5.00	25.50	0.00							0.00			
-4.00	24.50	0.00							0.00			
-3.00	23.10	0.00							0.00			
-2.00	22.50	0.00							0.00			
-1.00	22.10	0.00							0.00			
0.00	21.70	-0.01	4.29	6.13	6.91	7.24	7.38	7.44	1.06	7.32	7.42	7.42
1.00	21.40	-0.04	4.13	5.91	6.67	6.98	7.12	7.18	1.90	7.16	7.24	7.24
2.00	21.20	-0.07	3.96	5.68	6.41	6.71	6.84	6.90	2.56	6.97	7.04	7.04
3.00	21.00	-0.11	3.79	5.44	6.14	6.44	6.57	6.62	3.06	6.77	6.83	6.83
4.00	20.80	-0.16	3.61	5.20	5.88	6.17	6.29	6.34	3.44	6.56	6.60	6.60
5.00	20.60	-0.21	3.43	4.97	5.62	5.90	6.01	6.06	3.72	6.33	6.37	6.37
6.00	21.10	-0.26	3.25	4.73	5.36	5.63	5.74	5.79	3.90	6.10	6.14	6.14
7.00	29.17	-0.32	3.07	4.50	5.11	5.37	5.48	5.52	4.02	5.87	5.90	5.90
8.00	41.95	-0.37	2.90	4.28	4.87	5.12	5.22	5.27	4.09	5.64	5.66	5.66
9.00	54.81	-0.39	2.76	4.10	4.67	4.90	5.01	5.05	4.13	5.43	5.45	5.45
10.00	65.50	-0.32	2.72	4.01	4.55	4.78	4.88	4.92	4.19	5.29	5.30	5.30
11.00	74.33	-0.13	2.80	4.05	4.57	4.80	4.89	4.93	4.31	5.23	5.25	5.25
12.00	77.67	0.21	3.04	4.24	4.75	4.96	5.06	5.09	4.52	5.30	5.31	5.31
13.00	77.42	0.70	3.43	4.59	5.08	5.29	5.37	5.41	4.83	5.48	5.49	5.49
14.00	72.72	1.30	3.94	5.06	5.53	5.73	5.81	5.85	5.22	5.77	5.78	5.78
15.00	64.57	1.98	4.52	5.60	6.06	6.25	6.33	6.37	5.68	6.13	6.14	6.14
16.00	50.57	2.67	5.13	6.17	6.61	6.79	6.87	6.91	6.15	6.54	6.54	6.54
17.00	36.95	3.32	5.69	6.69	7.12	7.30	7.37	7.41	6.61	6.94	6.94	6.94
18.00	26.60	3.87	6.15	7.12	7.53	7.70	7.77	7.81	7.01	7.28	7.29	7.29
19.00	25.50	4.25	6.46	7.39	7.79	7.95	8.02	8.05	7.31	7.54	7.54	7.54
20.00	24.50	4.47	6.59	7.50	7.88	8.04	8.11	8.14	7.48	7.67	7.68	7.68
21.00	23.10	4.54	6.59	7.46	7.83	7.98	8.05	8.08	7.55	7.71	7.71	7.71
22.00	22.50	4.51	6.49	7.33	7.68	7.83	7.90	7.93	7.53	7.66	7.67	7.67
23.00	22.10	4.42	6.33	7.14	7.48	7.63	7.69	7.71	7.45	7.56	7.56	7.56
Average	39.07							6.53				6.54

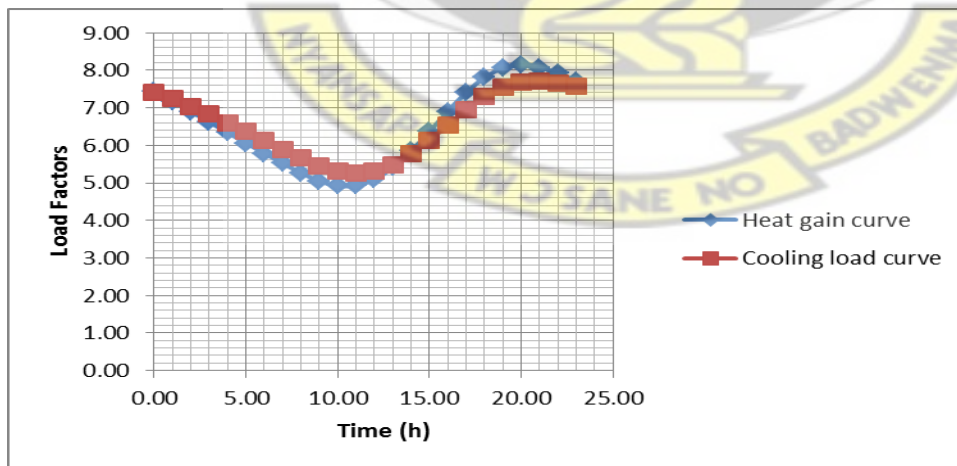


FIGURE A4. 1: Heat Gain and Cooling load factors for SUNLIT roof terrace system

TABLE A4.2: Heat Gain and cooling load factors for SHADED roof terrace system

t h	T _{os} ,t oC	1st day	2nd day	3rd day	4th day	5th day	6th day	Heat Gain factor	1st day	2nd day	3rd day	Cooling load factors
-5.00	29.40	0.00							0.00			
-4.00	28.40	0.00							0.00			
-3.00	27.00	0.00							0.00			
-2.00	26.40	0.00							0.00			
-1.00	26.00	0.00							0.00			
0.00	25.60	0.01	0.91	1.32	1.49	1.56	1.59	1.61	0.26	1.54	1.56	1.56
1.00	25.30	0.02	0.92	1.31	1.48	1.55	1.58	1.59	0.46	1.54	1.56	1.56
2.00	25.10	0.04	0.91	1.29	1.45	1.52	1.55	1.56	0.62	1.53	1.54	1.54
3.00	24.90	0.05	0.90	1.27	1.42	1.49	1.52	1.53	0.75	1.51	1.52	1.52
4.00	24.70	0.05	0.88	1.24	1.38	1.45	1.48	1.49	0.85	1.49	1.49	1.50
5.00	24.50	0.06	0.86	1.20	1.34	1.40	1.43	1.44	0.92	1.45	1.46	1.46
6.00	25.00	0.06	0.83	1.16	1.30	1.36	1.38	1.39	0.97	1.42	1.43	1.43
7.00	25.00	0.05	0.80	1.12	1.25	1.31	1.33	1.34	1.00	1.38	1.39	1.39
8.00	25.40	0.05	0.77	1.08	1.21	1.26	1.29	1.30	1.02	1.34	1.35	1.35
9.00	26.30	0.05	0.74	1.04	1.16	1.22	1.24	1.25	1.04	1.30	1.31	1.31
10.00	27.40	0.05	0.72	1.00	1.12	1.17	1.20	1.21	1.04	1.27	1.27	1.27
11.00	30.00	0.05	0.70	0.97	1.09	1.14	1.16	1.17	1.04	1.23	1.23	1.23
12.00	31.00	0.06	0.69	0.96	1.07	1.12	1.14	1.14	1.05	1.20	1.21	1.21
13.00	32.50	0.10	0.70	0.96	1.06	1.11	1.13	1.14	1.06	1.19	1.19	1.19
14.00	33.50	0.15	0.73	0.98	1.08	1.13	1.15	1.15	1.08	1.19	1.19	1.19
15.00	34.50	0.22	0.78	1.02	1.12	1.17	1.18	1.19	1.12	1.21	1.21	1.21
16.00	32.20	0.31	0.86	1.09	1.18	1.22	1.24	1.25	1.17	1.25	1.25	1.25
17.00	31.10	0.42	0.94	1.17	1.26	1.30	1.32	1.32	1.23	1.30	1.30	1.30
18.00	30.50	0.53	1.03	1.25	1.34	1.38	1.39	1.40	1.30	1.36	1.36	1.36
19.00	29.40	0.63	1.12	1.33	1.41	1.45	1.47	1.47	1.36	1.41	1.41	1.41
20.00	28.40	0.72	1.19	1.39	1.47	1.51	1.52	1.53	1.42	1.46	1.46	1.46
21.00	27.00	0.79	1.25	1.44	1.52	1.55	1.57	1.58	1.47	1.50	1.50	1.50
22.00	26.40	0.85	1.29	1.47	1.55	1.58	1.60	1.60	1.51	1.53	1.53	1.53
23.00	26.00	0.89	1.31	1.49	1.57	1.60	1.61	1.62	1.53	1.55	1.55	1.55
Average	27.99							1.39				1.39

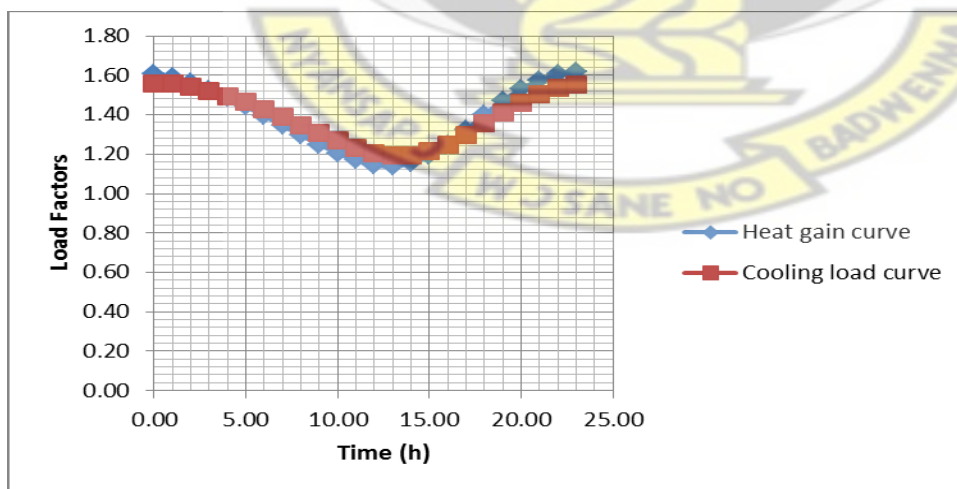


FIGURE A4. 2: Heat Gain and cooling load factors for SHADED roof terrace system

TABLE A4.3: Heat Gain and Cooling load factors for SUNLIT 4-in. l. w. concrete roof

t h	T _{os} , t oC	1st day	2nd day	3rd day	4th day	5th day	6th day	Heat Gain factor	1st day	2nd day	3rd day	Cooling load factors
-5.00	25.50	0.00							0.00			
-4.00	24.50	0.00							0.00			
-3.00	23.10	0.00							0.00			
-2.00	22.50	0.00							0.00			
-1.00	22.10	0.00							0.00			
0.00	21.70	-0.34	5.21	5.22	5.22	5.22	5.22	5.22	6.33	24.18	8.92	8.69
1.00	21.40	-0.77	3.28	3.28	3.28	3.28	3.28	3.28	7.33	19.83	7.01	6.81
2.00	21.20	-1.19	1.77	1.77	1.77	1.77	1.77	1.77	8.33	16.15	5.39	5.22
3.00	21.00	-1.57	0.60	0.60	0.60	0.60	0.60	0.60	9.33	13.05	4.01	3.87
4.00	20.80	-1.90	-0.31	-0.31	-0.31	-0.31	-0.31	-0.31	10.33	10.44	2.84	2.73
5.00	20.60	-2.18	-1.03	-1.02	-1.02	-1.02	-1.02	-1.02	11.33	8.23	1.85	1.76
6.00	21.10	-2.44	-1.59	-1.59	-1.59	-1.59	-1.59	-1.59	12.33	6.37	1.01	0.93
7.00	29.17	-2.63	-2.01	-2.01	-2.01	-2.01	-2.01	-2.01	13.33	4.81	0.30	0.24
8.00	41.95	-2.49	-2.03	-2.03	-2.03	-2.03	-2.03	-2.03	14.33	3.70	-0.08	-0.14
9.00	54.81	-1.22	-0.89	-0.89	-0.89	-0.89	-0.89	-0.89	15.33	3.56	0.39	0.34
10.00	65.50	1.73	1.98	1.98	1.98	1.98	1.98	1.98	16.33	4.80	2.13	2.09
11.00	74.33	6.26	6.44	6.44	6.44	6.44	6.44	6.44	17.33	7.39	5.15	5.11
12.00	77.67	11.81	11.94	11.94	11.94	11.94	11.94	11.94	18.33	10.99	9.10	9.07
13.00	77.42	17.69	17.78	17.78	17.78	17.78	17.78	17.78	19.33	15.12	13.53	13.51
14.00	72.72	23.05	23.12	23.12	23.12	23.12	23.12	23.12	20.33	19.18	17.85	17.83
15.00	64.57	27.23	27.28	27.28	27.28	27.28	27.28	27.28	21.33	22.64	21.52	21.51
16.00	50.57	29.70	29.74	29.74	29.74	29.74	29.74	29.74	22.33	25.06	24.12	24.11
17.00	36.95	30.10	30.13	30.13	30.13	30.13	30.13	30.13	23.33	26.07	25.29	25.27
18.00	26.60	28.16	28.18	28.18	28.18	28.18	28.18	28.18	24.33	25.39	24.73	24.72
19.00	25.50	24.23	24.25	24.25	24.25	24.25	24.25	24.25	25.33	23.16	22.60	22.60
20.00	24.50	19.32	19.33	19.33	19.33	19.33	19.33	19.33	26.33	19.99	19.52	19.52
21.00	23.10	14.69	14.70	14.70	14.70	14.70	14.70	14.70	27.33	16.73	16.34	16.33
22.00	22.50	10.82	10.83	10.83	10.83	10.83	10.83	10.83	28.33	13.77	13.44	13.43
23.00	22.10	7.69	7.70	7.70	7.70	7.70	7.70	7.70	29.33	11.17	10.89	10.89
Average	39.07							10.68				10.68

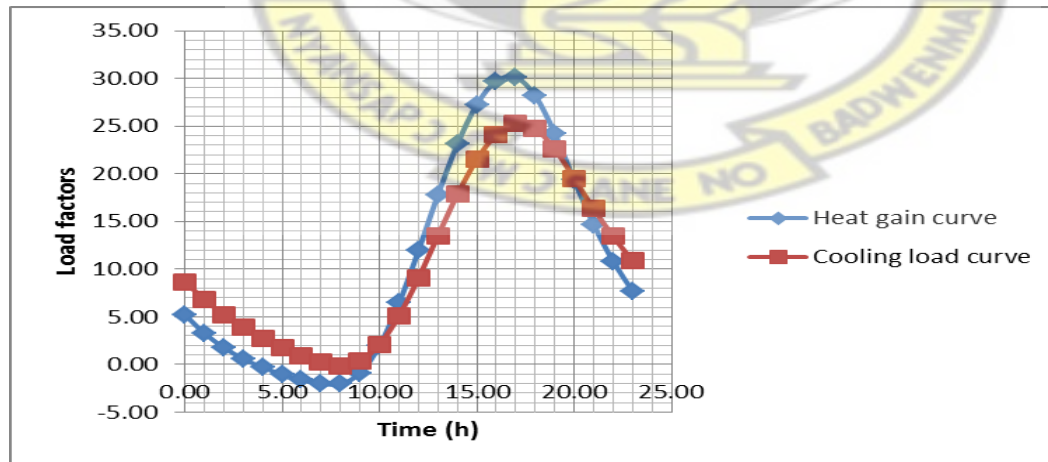


FIGURE A4. 3: Heat Gain and Cooling load factors for SUNLIT 4-in. l. w. concrete roof

TABLE A4.4: Heat Gain and Cooling load factors for SHADED 4-in. l. w. concrete roof

t h	T _{os,t} oC	1st day	2nd day	3rd day	4th day	5th day	6th day	Heat Gain factor	1st day	2nd day	3rd day	Cooling load factors
-5.00	29.40	0.00							0.00			
-4.00	28.40	0.00							0.00			
-3.00	27.00	0.00							0.00			
-2.00	26.40	0.00							0.00			
-1.00	26.00	0.00							0.00			
0.00	25.60	0.20	2.92	2.92	2.92	2.92	2.92	2.92	0.17	3.08	3.13	3.13
1.00	25.30	0.35	2.39	2.39	2.39	2.39	2.39	2.39	0.25	2.69	2.73	2.73
2.00	25.10	0.41	1.91	1.91	1.91	1.91	1.91	1.91	0.27	2.32	2.35	2.35
3.00	24.90	0.39	1.49	1.49	1.49	1.49	1.49	1.49	0.24	1.97	2.00	2.00
4.00	24.70	0.32	1.13	1.13	1.13	1.13	1.13	1.13	0.20	1.65	1.67	1.67
5.00	24.50	0.23	0.83	0.83	0.83	0.83	0.83	0.83	0.14	1.36	1.38	1.38
6.00	25.00	0.13	0.56	0.56	0.56	0.56	0.56	0.56	0.07	1.09	1.11	1.11
7.00	25.00	0.03	0.35	0.35	0.35	0.35	0.35	0.35	0.00	0.86	0.88	0.88
8.00	25.40	-0.01	0.22	0.22	0.22	0.22	0.22	0.22	-0.03	0.69	0.71	0.71
9.00	26.30	0.00	0.17	0.17	0.17	0.17	0.17	0.17	-0.03	0.58	0.59	0.59
10.00	27.40	0.07	0.20	0.20	0.20	0.20	0.20	0.20	0.03	0.54	0.54	0.54
11.00	30.00	0.27	0.36	0.36	0.36	0.36	0.36	0.36	0.17	0.59	0.60	0.60
12.00	31.00	0.66	0.72	0.72	0.72	0.72	0.72	0.72	0.44	0.80	0.81	0.81
13.00	32.50	1.28	1.33	1.33	1.33	1.33	1.33	1.33	0.90	1.21	1.21	1.21
14.00	33.50	2.05	2.09	2.09	2.09	2.09	2.09	2.09	1.49	1.74	1.74	1.74
15.00	34.50	2.89	2.92	2.92	2.92	2.92	2.92	2.92	2.15	2.36	2.37	2.37
16.00	32.20	3.75	3.77	3.77	3.77	3.77	3.77	3.77	2.85	3.03	3.03	3.03
17.00	31.10	4.48	4.50	4.50	4.50	4.50	4.50	4.50	3.49	3.64	3.64	3.64
18.00	30.50	4.86	4.87	4.87	4.87	4.87	4.87	4.87	3.91	4.03	4.04	4.04
19.00	29.40	4.91	4.92	4.92	4.92	4.92	4.92	4.92	4.10	4.20	4.20	4.20
20.00	28.40	4.77	4.78	4.78	4.78	4.78	4.78	4.78	4.13	4.22	4.22	4.22
21.00	27.00	4.47	4.47	4.47	4.47	4.47	4.47	4.47	4.03	4.10	4.10	4.10
22.00	26.40	4.03	4.04	4.04	4.04	4.04	4.04	4.04	3.80	3.86	3.86	3.86
23.00	26.00	3.49	3.49	3.49	3.49	3.49	3.49	3.49	3.47	3.52	3.52	3.52
Average	27.99							2.27				2.27

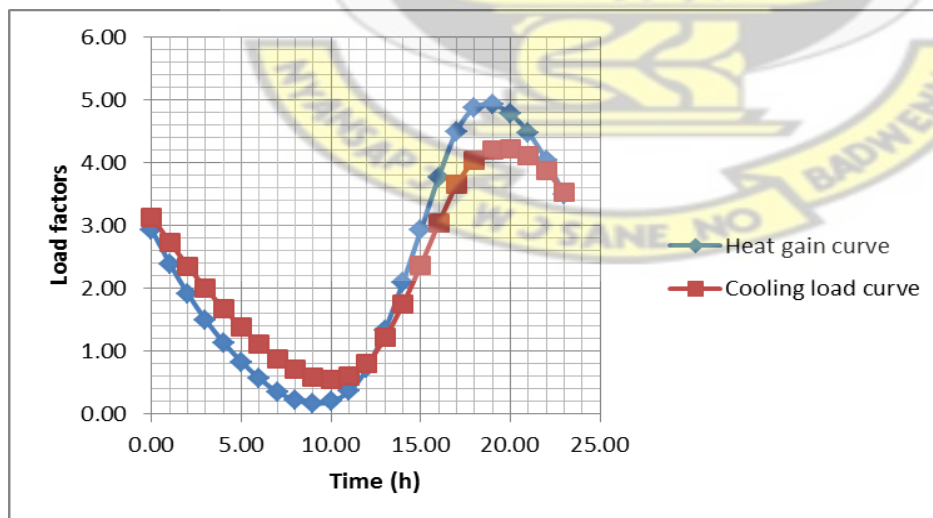


FIGURE A4. 4: Heat Gain and Cooling load factors for SHADED 4-in. l. w. concrete roof

TABLE A4.5: Heat Gain and Cooling load factors for 6-in. h. w. concrete SUNLIT roof

t h	Tos,t oC	1st day	2nd day	3rd day	4th day	5th day	6th day	Heat Gain factor	1st day	2nd day	3rd day	Cooling load factors
-5.00	25.50	0.00							0.00			
-4.00	24.50	0.00							0.00			
-3.00	23.10	0.00							0.00			
-2.00	22.50	0.00							0.00			
-1.00	22.10	0.00							0.00			
0.00	21.70	-0.02	3.85	5.77	6.71	7.18	7.42	7.53	6.33	25.72	7.90	7.62
1.00	21.40	-0.05	3.71	5.57	6.49	6.94	7.17	7.28	7.33	22.64	7.67	7.44
2.00	21.20	-0.09	3.56	5.36	6.26	6.70	6.92	7.03	8.33	20.01	7.43	7.24
3.00	21.00	-0.13	3.41	5.16	6.03	6.46	6.68	6.78	9.33	17.76	7.20	7.04
4.00	20.80	-0.18	3.26	4.96	5.81	6.22	6.43	6.53	10.33	15.84	6.96	6.83
5.00	20.60	-0.23	3.11	4.76	5.58	5.99	6.19	6.29	11.33	14.18	6.73	6.62
6.00	21.10	-0.28	2.96	4.57	5.37	5.76	5.96	6.05	12.33	12.76	6.50	6.40
7.00	29.17	-0.33	2.82	4.38	5.15	5.53	5.72	5.82	13.33	11.52	6.27	6.19
8.00	41.95	-0.38	2.68	4.20	4.95	5.32	5.51	5.60	14.33	10.46	6.04	5.98
9.00	54.81	-0.37	2.60	4.08	4.81	5.17	5.35	5.43	15.33	9.57	5.86	5.81
10.00	65.50	-0.24	2.64	4.07	4.78	5.13	5.30	5.39	16.33	8.88	5.76	5.72
11.00	74.33	0.03	2.83	4.22	4.91	5.25	5.42	5.50	17.33	8.40	5.78	5.74
12.00	77.67	0.46	3.18	4.53	5.19	5.53	5.69	5.77	18.33	8.12	5.92	5.88
13.00	77.42	1.02	3.66	4.97	5.62	5.94	6.10	6.18	19.33	8.02	6.17	6.14
14.00	72.72	1.66	4.23	5.50	6.13	6.44	6.60	6.67	20.33	8.06	6.51	6.49
15.00	64.57	2.34	4.83	6.06	6.68	6.98	7.13	7.20	21.33	8.20	6.90	6.88
16.00	50.57	2.98	5.40	6.60	7.20	7.49	7.64	7.71	22.33	8.38	7.29	7.27
17.00	36.95	3.54	5.89	7.06	7.63	7.92	8.06	8.13	23.33	8.56	7.64	7.63
18.00	26.60	3.95	6.24	7.37	7.93	8.20	8.34	8.41	24.33	8.69	7.91	7.90
19.00	25.50	4.19	6.40	7.50	8.05	8.32	8.45	8.52	25.33	8.71	8.06	8.05
20.00	24.50	4.25	6.40	7.47	8.00	8.26	8.39	8.45	26.33	8.64	8.10	8.09
21.00	23.10	4.21	6.30	7.33	7.85	8.10	8.23	8.29	27.33	8.50	8.04	8.03
22.00	22.50	4.11	6.14	7.15	7.65	7.89	8.01	8.08	28.33	8.32	7.93	7.93
23.00	22.10	3.99	5.96	6.94	7.42	7.66	7.78	7.84	29.33	8.12	7.80	7.79
Average	39.07							6.94				6.95

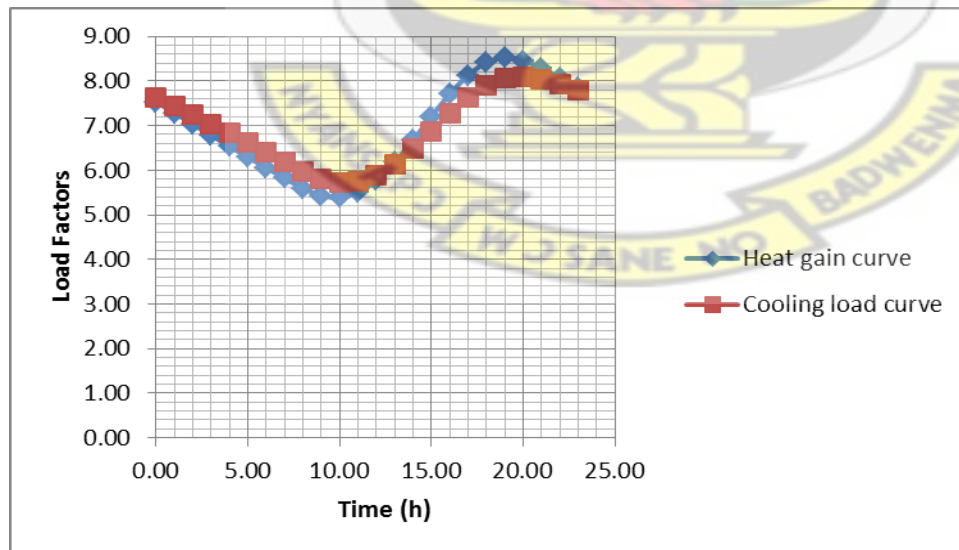


FIGURE A4. 5: Heat Gain and Cooling load factors for 6-in. h. w. concrete SUNLIT roof

TABLE A4.6: Heat Gain and Cooling load factors for 6-in. h. w. concrete SHADED roof

t h	T _{os,t} oC	1st day	2nd day	3rd day	4th day	5th day	6th day	Heat Gain factor	1st day	2nd day	3rd day	Cooling load factors
-5.00	29.40	0.00							0.00			
-4.00	28.40	0.00							0.00			
-3.00	27.00	0.00							0.00			
-2.00	26.40	0.00							0.00			
-1.00	26.00	0.00							0.00			
0.00	25.60	0.01	0.85	1.27	1.48	1.59	1.64	1.66	0.26	1.61	1.64	1.64
1.00	25.30	0.03	0.85	1.26	1.46	1.56	1.61	1.64	0.46	1.60	1.62	1.62
2.00	25.10	0.04	0.84	1.24	1.43	1.53	1.58	1.60	0.63	1.59	1.60	1.60
3.00	24.90	0.05	0.83	1.21	1.40	1.50	1.54	1.57	0.76	1.57	1.58	1.58
4.00	24.70	0.05	0.81	1.18	1.37	1.46	1.50	1.53	0.86	1.54	1.55	1.55
5.00	24.50	0.05	0.79	1.15	1.33	1.42	1.46	1.48	0.94	1.51	1.52	1.52
6.00	25.00	0.05	0.76	1.11	1.29	1.38	1.42	1.44	1.00	1.47	1.48	1.48
7.00	25.00	0.04	0.74	1.08	1.25	1.33	1.37	1.39	1.04	1.44	1.44	1.44
8.00	25.40	0.04	0.71	1.04	1.21	1.29	1.33	1.35	1.06	1.40	1.41	1.41
9.00	26.30	0.04	0.69	1.01	1.17	1.25	1.29	1.31	1.08	1.37	1.37	1.37
10.00	27.40	0.04	0.67	0.99	1.14	1.22	1.26	1.28	1.10	1.33	1.34	1.34
11.00	30.00	0.05	0.66	0.97	1.12	1.19	1.23	1.25	1.11	1.31	1.31	1.31
12.00	31.00	0.07	0.67	0.96	1.11	1.18	1.22	1.24	1.12	1.29	1.29	1.29
13.00	32.50	0.11	0.69	0.98	1.12	1.19	1.23	1.24	1.14	1.29	1.29	1.29
14.00	33.50	0.18	0.74	1.02	1.16	1.23	1.26	1.28	1.18	1.30	1.30	1.30
15.00	34.50	0.26	0.81	1.08	1.21	1.28	1.31	1.33	1.23	1.33	1.33	1.33
16.00	32.20	0.36	0.89	1.15	1.28	1.35	1.38	1.40	1.29	1.38	1.38	1.38
17.00	31.10	0.47	0.98	1.24	1.37	1.43	1.46	1.47	1.36	1.43	1.43	1.43
18.00	30.50	0.57	1.07	1.32	1.44	1.50	1.53	1.55	1.43	1.49	1.49	1.49
19.00	29.40	0.66	1.14	1.39	1.50	1.56	1.59	1.61	1.49	1.54	1.54	1.54
20.00	28.40	0.73	1.20	1.44	1.55	1.61	1.64	1.65	1.54	1.58	1.58	1.58
21.00	27.00	0.78	1.24	1.47	1.58	1.64	1.67	1.68	1.58	1.61	1.61	1.61
22.00	26.40	0.82	1.27	1.49	1.60	1.65	1.68	1.69	1.60	1.63	1.63	1.63
23.00	26.00	0.85	1.28	1.49	1.60	1.65	1.68	1.69	1.62	1.64	1.64	1.64
Average	27.99							1.47				1.47

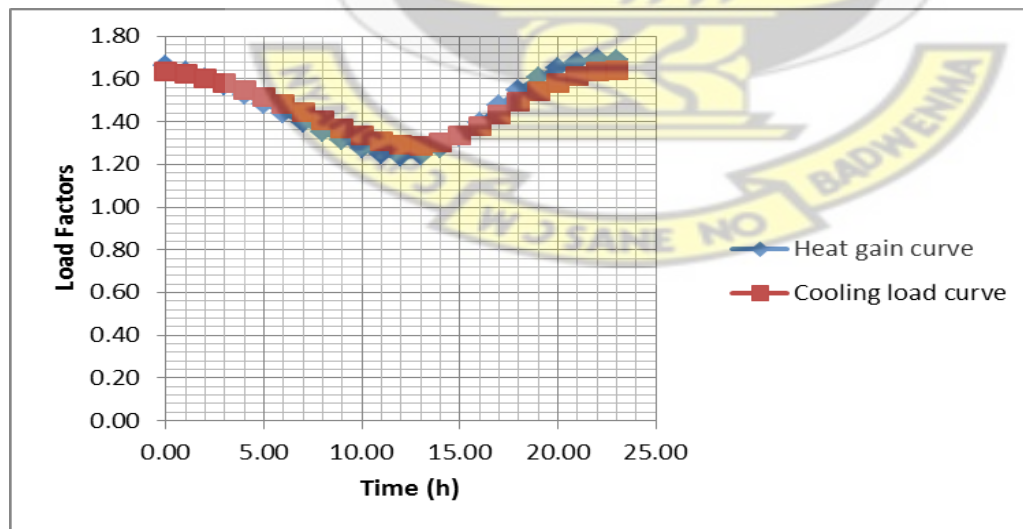


FIGURE A4. 6: Heat Gain and Cooling load factors for 6-in. h. w. concrete SHADED roof

TABLE A4.7: Heat Gain and Cooling load factors for 4-in l. w. concrete WEST facing wall

t h	T _o , t _o C	1st day	2nd day	3rd day	4th day	5th day	6th day	Heat Gain factor	1st day	2nd day	3rd day	4th day	5th day	Cooling load factor
-5.00	29.40	0.00							0.00					
-4.00	28.40	0.00							0.00					
-3.00	27.00	0.00							0.00					
-2.00	26.40	0.00							0.00					
-1.00	26.00	0.00							0.00					
0.00	25.60	0.47	7.35	7.35	7.35	7.35	7.35	7.35	-1.62	7.74	9.86	10.34	10.45	10.47
1.00	25.30	0.70	5.05	5.05	5.05	5.05	5.05	5.05	-2.65	6.15	8.14	8.59	8.70	8.72
2.00	25.10	0.70	3.43	3.43	3.43	3.43	3.43	3.43	-3.29	4.98	6.86	7.28	7.38	7.40
3.00	24.90	0.58	2.28	2.28	2.28	2.28	2.28	2.28	-3.67	4.11	5.87	6.27	6.36	6.38
4.00	24.70	0.39	1.46	1.46	1.46	1.46	1.46	1.46	-3.87	3.44	5.09	5.47	5.55	5.57
5.00	24.50	0.18	0.85	0.85	0.85	0.85	0.85	0.85	-3.97	2.90	4.46	4.81	4.89	4.91
6.00	25.00	-0.04	0.38	0.38	0.38	0.38	0.38	0.38	-4.00	2.46	3.92	4.25	4.33	4.34
7.00	28.30	-0.13	0.13	0.13	0.13	0.13	0.13	0.13	-3.90	2.17	3.54	3.86	3.93	3.94
8.00	30.20	0.49	0.66	0.66	0.66	0.66	0.66	0.66	-3.30	2.40	3.70	3.99	4.06	4.07
9.00	31.80	1.97	2.07	2.07	2.07	2.07	2.07	2.07	-2.10	3.26	4.48	4.75	4.81	4.83
10.00	33.30	3.81	3.87	3.87	3.87	3.87	3.87	3.87	-0.62	4.42	5.56	5.82	5.88	5.89
11.00	36.20	5.76	5.80	5.80	5.80	5.80	5.80	5.80	0.96	5.69	6.77	7.01	7.07	7.08
12.00	38.30	7.95	7.98	7.98	7.98	7.98	7.98	7.98	2.73	7.18	8.19	8.42	8.47	8.49
13.00	51.00	10.55	10.56	10.56	10.56	10.56	10.56	10.56	4.81	8.99	9.94	10.16	10.20	10.22
14.00	61.30	15.10	15.11	15.11	15.11	15.11	15.11	15.11	8.25	12.19	13.08	13.28	13.33	13.34
15.00	67.90	22.71	22.72	22.72	22.72	22.72	22.72	22.72	13.84	17.54	18.38	18.57	18.61	18.62
16.00	65.50	31.68	31.68	31.68	31.68	31.68	31.68	31.68	20.48	23.95	24.74	24.92	24.96	24.97
17.00	54.70	39.04	39.05	39.05	39.05	39.05	39.05	39.05	26.16	29.43	30.17	30.34	30.38	30.39
18.00	39.40	41.74	41.74	41.74	41.74	41.74	41.74	41.74	28.77	31.84	32.54	32.70	32.73	32.74
19.00	29.40	38.32	38.32	38.32	38.32	38.32	38.32	38.32	27.22	30.11	30.77	30.92	30.95	30.96
20.00	28.40	30.44	30.44	30.44	30.44	30.44	30.44	30.44	22.52	25.24	25.85	25.99	26.02	26.03
21.00	27.00	22.02	22.02	22.02	22.02	22.02	22.02	22.02	17.26	19.82	20.40	20.53	20.56	20.56
22.00	26.40	15.43	15.43	15.43	15.43	15.43	15.43	15.43	13.06	15.46	16.00	16.13	16.16	16.16
23.00	26.00	10.67	10.67	10.67	10.67	10.67	10.67	10.67	9.96	12.21	12.72	12.84	12.87	12.87
Average	35.43							13.29						13.29

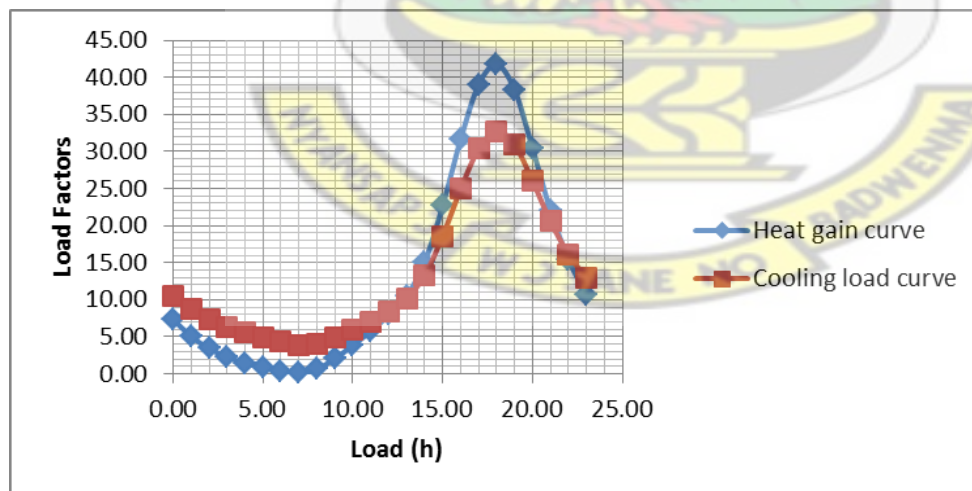


FIGURE A4. 7: Heat Gain and Cooling load factors for 4-in l. w. concrete WEST facing wall

TABLE A4.8: Heat Gain and Cooling load factors for 4-in l. w. concrete EAST facing wall

t h	T _{os} , t _o °C	1st day	2nd day	3rd day	4th day	5th day	6th day	Heat Gain factor	1st day	2nd day	3rd day	4th day	5th day	Cooling load factor
-5.00	29.40	0.00							0.00					
-4.00	28.40	0.00							0.00					
-3.00	27.00	0.00							0.00					
-2.00	26.40	0.00							0.00					
-1.00	26.00	0.00							0.00					
0.00	25.60	0.47	4.31	4.31	4.31	4.31	4.31	4.31	-0.68	5.66	7.10	7.43	7.50	7.52
1.00	25.30	0.70	3.15	3.15	3.15	3.15	3.15	3.15	-1.18	4.79	6.14	6.44	6.51	6.53
2.00	25.10	0.70	2.24	2.24	2.24	2.24	2.24	2.24	-1.53	4.07	5.34	5.63	5.69	5.71
3.00	24.90	0.58	1.54	1.54	1.54	1.54	1.54	1.54	-1.79	3.48	4.68	4.95	5.01	5.02
4.00	24.70	0.39	1.00	1.00	1.00	1.00	1.00	1.00	-1.96	3.00	4.12	4.37	4.43	4.44
5.00	24.50	0.18	0.56	0.56	0.56	0.56	0.56	0.56	-2.08	2.58	3.63	3.87	3.93	3.94
6.00	25.00	-0.04	0.19	0.19	0.19	0.19	0.19	0.19	-2.17	2.21	3.20	3.43	3.48	3.49
7.00	46.15	0.03	0.17	0.17	0.17	0.17	0.17	0.17	-2.04	2.07	3.01	3.22	3.26	3.28
8.00	57.97	3.89	3.98	3.98	3.98	3.98	3.98	3.98	0.69	4.55	5.43	5.63	5.67	5.68
9.00	60.11	12.98	13.03	13.03	13.03	13.03	13.03	13.03	7.05	10.68	11.51	11.69	11.74	11.75
10.00	56.25	22.93	22.97	22.97	22.97	22.97	22.97	22.97	14.17	17.59	18.36	18.54	18.58	18.59
11.00	50.01	29.94	29.96	29.96	29.96	29.96	29.96	29.96	19.46	22.68	23.40	23.57	23.60	23.61
12.00	40.01	32.67	32.68	32.68	32.68	32.68	32.68	32.68	21.94	24.96	25.65	25.80	25.84	25.85
13.00	38.68	31.11	31.12	31.12	31.12	31.12	31.12	31.12	21.52	24.36	25.01	25.15	25.18	25.19
14.00	39.46	27.30	27.31	27.31	27.31	27.31	27.31	27.31	19.51	22.17	22.78	22.91	22.95	22.95
15.00	40.07	24.04	24.04	24.04	24.04	24.04	24.04	24.04	17.75	20.26	20.83	20.96	20.98	20.99
16.00	37.11	22.02	22.02	22.02	22.02	22.02	22.02	22.02	16.75	19.11	19.64	19.76	19.79	19.80
17.00	34.73	20.37	20.37	20.37	20.37	20.37	20.37	20.37	15.94	18.16	18.66	18.77	18.80	18.80
18.00	30.92	18.29	18.29	18.29	18.29	18.29	18.29	18.29	14.79	16.87	17.35	17.45	17.48	17.48
19.00	29.40	15.62	15.62	15.62	15.62	15.62	15.62	15.62	13.19	15.14	15.59	15.69	15.71	15.72
20.00	28.40	12.67	12.67	12.67	12.67	12.67	12.67	12.67	11.32	13.16	13.58	13.67	13.69	13.70
21.00	27.00	10.03	10.03	10.03	10.03	10.03	10.03	10.03	9.60	11.33	11.72	11.81	11.83	11.84
22.00	26.40	7.75	7.76	7.76	7.76	7.76	7.76	7.76	8.08	9.71	10.08	10.16	10.18	10.18
23.00	26.00	5.83	5.83	5.83	5.83	5.83	5.83	5.83	6.75	8.28	8.62	8.70	8.72	8.73
Average	35.16							12.95						12.95

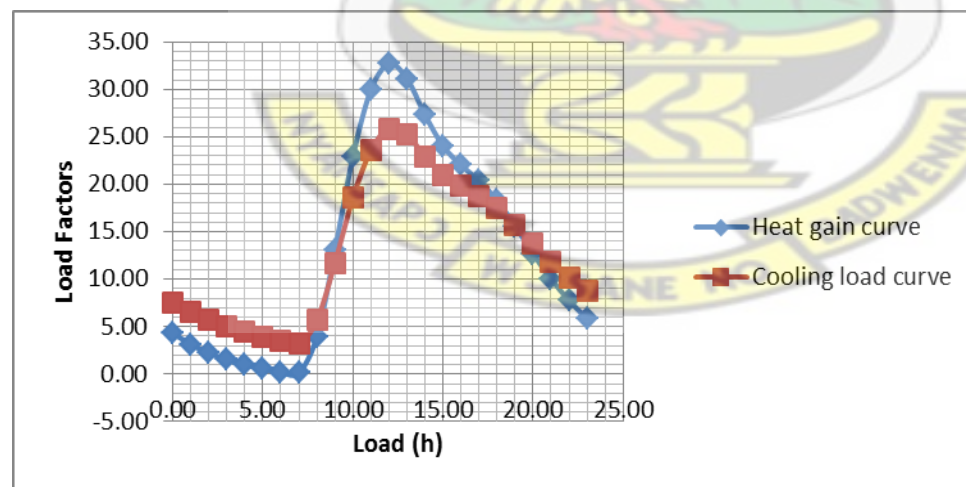
**FIGURE A4. 8: Heat Gain and Cooling load factors for 4-in l. w. concrete EAST facing wall**

TABLE A4.9: Heat Gain and Cooling load factors for 4-in l. w. concrete SOUTH facing wall

t h	T _{os} ,t oC	1st day	2nd day	3rd day	4th day	5th day	6th day	Heat Gain factor	1st day	2nd day	3rd day	4th day	5th day	Cooling load factor
-5.00	29.40	0.00							0.00					
-4.00	28.40	0.00							0.00					
-3.00	27.00	0.00							0.00					
-2.00	26.40	0.00							0.00					
-1.00	26.00	0.00							0.00					
0.00	25.60	0.47	4.29	4.29	4.29	4.29	4.29	4.29	-0.68	4.44	5.60	5.86	5.92	5.93
1.00	25.30	0.70	3.14	3.14	3.14	3.14	3.14	3.14	-1.17	3.64	4.73	4.98	5.04	5.05
2.00	25.10	0.70	2.23	2.23	2.23	2.23	2.23	2.23	-1.52	3.00	4.02	4.25	4.31	4.32
3.00	24.90	0.58	1.53	1.53	1.53	1.53	1.53	1.53	-1.77	2.48	3.44	3.66	3.71	3.72
4.00	24.70	0.39	0.99	0.99	0.99	0.99	0.99	0.99	-1.94	2.05	2.96	3.16	3.21	3.22
5.00	24.50	0.18	0.56	0.56	0.56	0.56	0.56	0.56	-2.06	1.69	2.54	2.73	2.78	2.79
6.00	25.00	-0.04	0.19	0.19	0.19	0.19	0.19	0.19	-2.15	1.37	2.17	2.36	2.40	2.41
7.00	28.30	-0.13	0.02	0.02	0.02	0.02	0.02	0.02	-2.13	1.19	1.94	2.11	2.15	2.16
8.00	30.45	0.50	0.59	0.59	0.59	0.59	0.59	0.59	-1.61	1.50	2.21	2.37	2.41	2.41
9.00	32.34	2.02	2.08	2.08	2.08	2.08	2.08	2.08	-0.47	2.46	3.13	3.28	3.31	3.32
10.00	35.28	4.00	4.04	4.04	4.04	4.04	4.04	4.04	1.02	3.78	4.40	4.54	4.57	4.58
11.00	39.10	6.38	6.40	6.40	6.40	6.40	6.40	6.40	2.81	5.40	5.99	6.12	6.15	6.16
12.00	40.56	9.33	9.34	9.34	9.34	9.34	9.34	9.34	5.03	7.46	8.01	8.14	8.17	8.17
13.00	41.72	12.48	12.49	12.49	12.49	12.49	12.49	12.49	7.43	9.72	10.24	10.35	10.38	10.39
14.00	41.60	15.26	15.26	15.26	15.26	15.26	15.26	15.26	9.62	11.77	12.26	12.37	12.40	12.40
15.00	40.84	17.37	17.37	17.37	17.37	17.37	17.37	17.37	11.40	13.42	13.88	13.98	14.00	14.01
16.00	37.41	18.61	18.61	18.61	18.61	18.61	18.61	18.61	12.60	14.50	14.93	15.03	15.05	15.06
17.00	34.74	18.62	18.62	18.62	18.62	18.62	18.62	18.62	12.97	14.76	15.16	15.25	15.27	15.28
18.00	31.33	17.35	17.35	17.35	17.35	17.35	17.35	17.35	12.44	14.12	14.50	14.59	14.61	14.61
19.00	29.40	15.15	15.15	15.15	15.15	15.15	15.15	15.15	11.23	12.81	13.17	13.25	13.27	13.27
20.00	28.40	12.47	12.47	12.47	12.47	12.47	12.47	12.47	9.65	11.13	11.47	11.54	11.56	11.56
21.00	27.00	9.93	9.93	9.93	9.93	9.93	9.93	9.93	8.08	9.48	9.80	9.87	9.88	9.89
22.00	26.40	7.70	7.70	7.70	7.70	7.70	7.70	7.70	6.68	7.99	8.29	8.35	8.37	8.37
23.00	26.00	5.80	5.80	5.80	5.80	5.80	5.80	5.80	5.44	6.68	6.95	7.02	7.03	7.04
Average	31.08							7.76						7.75

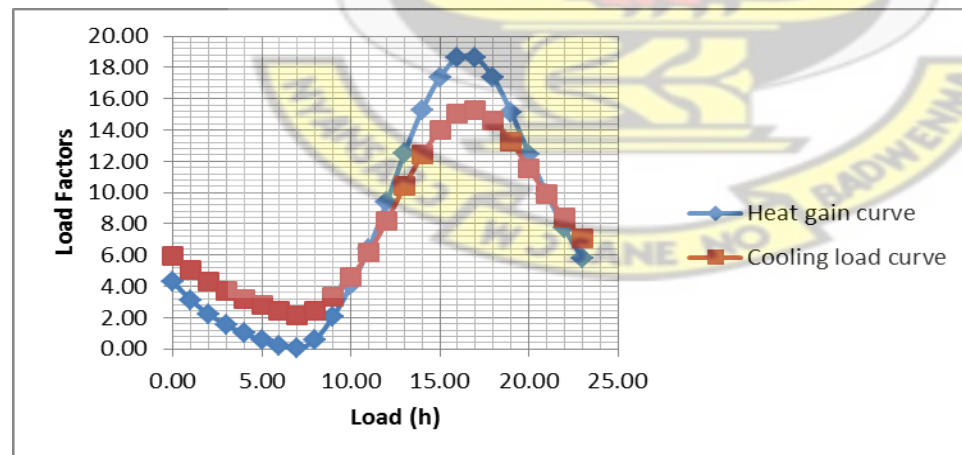


FIGURE A4. 9: Heat Gain and Cooling load factors for 4-in l. w. concrete SOUTH facing wall

TABLE A4.10: Heat Gain and Cooling load factors for 4-in l. w. concrete NORTH facing wall

t h	Tos,t oC	1st day	2nd day	3rd day	4th day	5th day	6th day	Heat Gain factor	1st day	2nd day	3rd day	4th day	5th day	Cooling load factor
-5.00	29.40	0.00							0.00					
-4.00	28.40	0.00							0.00					
-3.00	27.00	0.00							0.00					
-2.00	26.40	0.00							0.00					
-1.00	26.00	0.00							0.00					
0.00	25.60	0.47	4.01	4.01	4.01	4.01	4.01	4.01	-0.59	3.99	5.02	5.26	5.31	5.32
1.00	25.30	0.70	2.96	2.96	2.96	2.96	2.96	2.96	-1.03	3.27	4.25	4.47	4.52	4.53
2.00	25.10	0.70	2.12	2.12	2.12	2.12	2.12	2.12	-1.36	2.68	3.60	3.81	3.85	3.86
3.00	24.90	0.58	1.47	1.47	1.47	1.47	1.47	1.47	-1.60	2.20	3.06	3.26	3.30	3.31
4.00	24.70	0.39	0.95	0.95	0.95	0.95	0.95	0.95	-1.77	1.81	2.62	2.80	2.84	2.85
5.00	24.50	0.18	0.53	0.53	0.53	0.53	0.53	0.53	-1.89	1.47	2.23	2.40	2.44	2.45
6.00	25.00	-0.04	0.18	0.18	0.18	0.18	0.18	0.18	-1.99	1.17	1.89	2.05	2.09	2.09
7.00	26.65	-0.14	0.00	0.00	0.00	0.00	0.00	0.00	-1.98	0.99	1.66	1.81	1.85	1.86
8.00	29.22	0.20	0.28	0.28	0.28	0.28	0.28	0.28	-1.67	1.12	1.75	1.90	1.93	1.94
9.00	32.24	1.26	1.31	1.31	1.31	1.31	1.31	1.31	-0.85	1.78	2.37	2.50	2.53	2.54
10.00	33.83	3.13	3.16	3.16	3.16	3.16	3.16	3.16	0.54	3.01	3.56	3.69	3.72	3.73
11.00	36.10	5.43	5.45	5.45	5.45	5.45	5.45	5.45	2.26	4.58	5.10	5.22	5.25	5.25
12.00	37.18	7.85	7.86	7.86	7.86	7.86	7.86	7.86	4.09	6.27	6.76	6.87	6.90	6.91
13.00	38.61	10.20	10.21	10.21	10.21	10.21	10.21	10.21	5.91	7.96	8.43	8.53	8.55	8.56
14.00	39.39	12.33	12.33	12.33	12.33	12.33	12.33	12.33	7.62	9.55	9.98	10.08	10.10	10.11
15.00	40.00	14.22	14.22	14.22	14.22	14.22	14.22	14.22	9.19	11.00	11.41	11.50	11.52	11.53
16.00	36.35	15.75	15.75	15.75	15.75	15.75	15.75	15.75	10.53	12.24	12.62	12.71	12.73	12.73
17.00	33.04	16.26	16.27	16.27	16.27	16.27	16.27	16.27	11.20	12.79	13.16	13.24	13.26	13.26
18.00	30.22	15.25	15.25	15.25	15.25	15.25	15.25	15.25	10.81	12.31	12.65	12.73	12.75	12.75
19.00	29.40	13.18	13.18	13.18	13.18	13.18	13.18	13.18	9.67	11.08	11.40	11.47	11.49	11.49
20.00	28.40	10.87	10.87	10.87	10.87	10.87	10.87	10.87	8.30	9.63	9.93	10.00	10.02	10.02
21.00	27.00	8.83	8.83	8.83	8.83	8.83	8.83	8.83	7.07	8.32	8.60	8.66	8.68	8.68
22.00	26.40	6.99	6.99	6.99	6.99	6.99	6.99	6.99	5.92	7.10	7.36	7.42	7.44	7.44
23.00	26.00	5.35	5.35	5.35	5.35	5.35	5.35	5.35	4.87	5.97	6.22	6.28	6.29	6.29
Average	30.21							6.65						6.65

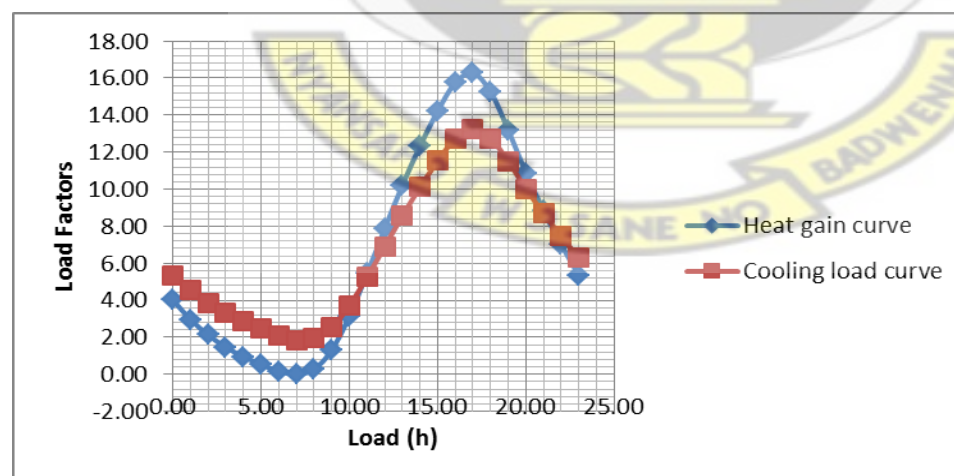


FIGURE A4. 10: Heat Gain and Cooling load factors for 4-in l. w. concrete NORTH facing wall

TABLE A4.11: Heat Gain and Cooling load factors for 4-in l. w. concrete N-E facing wall

t h	T _{os} , t _o C	1st day	2nd day	3rd day	4th day	5th day	6th day	Heat Gain factor	1st day	2nd day	3rd day	4th day	5th day	Cooling load factor
-5.00	29.40	0.00							0.00					
-4.00	28.40	0.00							0.00					
-3.00	27.00	0.00							0.00					
-2.00	26.40	0.00							0.00					
-1.00	26.00	0.00							0.00					
0.00	25.60	0.47	4.27	4.27	4.27	4.27	4.27	4.27	-0.67	5.19	6.51	6.81	6.88	6.90
1.00	25.30	0.70	3.12	3.12	3.12	3.12	3.12	3.12	-1.15	4.35	5.60	5.88	5.94	5.96
2.00	25.10	0.70	2.22	2.22	2.22	2.22	2.22	2.22	-1.51	3.67	4.84	5.10	5.16	5.18
3.00	24.90	0.58	1.53	1.53	1.53	1.53	1.53	1.53	-1.76	3.11	4.21	4.46	4.51	4.53
4.00	24.70	0.39	0.99	0.99	0.99	0.99	0.99	0.99	-1.93	2.64	3.68	3.91	3.97	3.98
5.00	24.50	0.18	0.55	0.55	0.55	0.55	0.55	0.55	-2.05	2.25	3.22	3.44	3.49	3.50
6.00	25.00	-0.04	0.19	0.19	0.19	0.19	0.19	0.19	-2.14	1.90	2.81	3.02	3.07	3.08
7.00	40.10	-0.03	0.12	0.12	0.12	0.12	0.12	0.12	-2.05	1.75	2.61	2.80	2.85	2.86
8.00	49.30	2.74	2.84	2.84	2.84	2.84	2.84	2.84	-0.07	3.50	4.31	4.49	4.53	4.54
9.00	51.92	9.39	9.44	9.44	9.44	9.44	9.44	9.44	4.61	7.96	8.72	8.89	8.93	8.94
10.00	49.38	16.95	16.98	16.98	16.98	16.98	16.98	16.98	10.03	13.18	13.90	14.06	14.10	14.11
11.00	45.61	22.57	22.59	22.59	22.59	22.59	22.59	22.59	14.27	17.23	17.90	18.05	18.09	18.10
12.00	38.79	25.15	25.16	25.16	25.16	25.16	25.16	25.16	16.52	19.30	19.93	20.08	20.11	20.12
13.00	38.68	24.67	24.68	24.68	24.68	24.68	24.68	24.68	16.71	19.33	19.92	20.05	20.08	20.09
14.00	39.46	22.61	22.62	22.62	22.62	22.62	22.62	22.62	15.78	18.24	18.80	18.93	18.96	18.96
15.00	40.07	20.95	20.95	20.95	20.95	20.95	20.95	20.95	15.06	17.37	17.90	18.02	18.04	18.05
16.00	37.11	20.06	20.06	20.06	20.06	20.06	20.06	20.06	14.80	16.98	17.47	17.58	17.61	17.61
17.00	34.73	19.13	19.13	19.13	19.13	19.13	19.13	19.13	14.49	16.53	17.00	17.10	17.13	17.13
18.00	30.92	17.52	17.52	17.52	17.52	17.52	17.52	17.52	13.67	15.59	16.02	16.12	16.14	16.15
19.00	29.40	15.14	15.14	15.14	15.14	15.14	15.14	15.14	12.28	14.09	14.49	14.59	14.61	14.61
20.00	28.40	12.37	12.37	12.37	12.37	12.37	12.37	12.37	10.56	12.26	12.64	12.73	12.75	12.76
21.00	27.00	9.84	9.84	9.84	9.84	9.84	9.84	9.84	8.95	10.54	10.90	10.99	11.00	11.01
22.00	26.40	7.64	7.64	7.64	7.64	7.64	7.64	7.64	7.50	9.00	9.34	9.42	9.44	9.44
23.00	26.00	5.76	5.76	5.76	5.76	5.76	5.76	5.76	6.23	7.64	7.96	8.03	8.05	8.05
Average	33.68							11.07						11.07

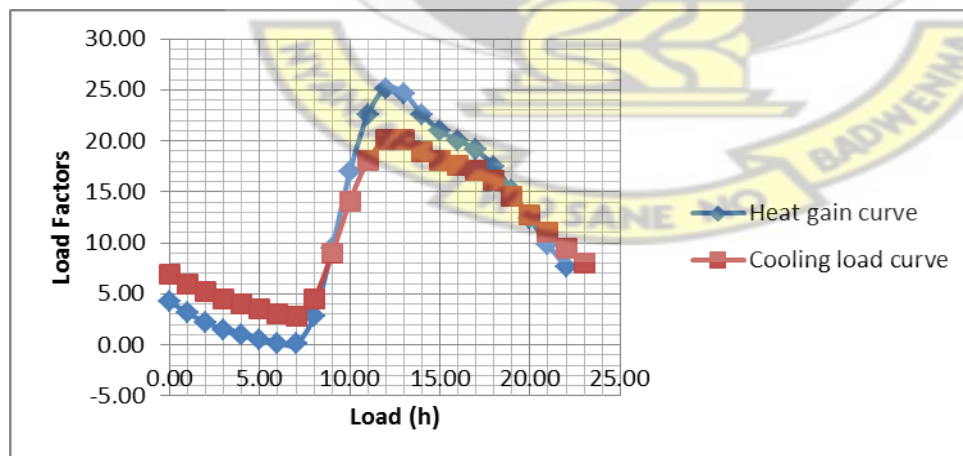


FIGURE A4. 11: Heat Gain and Cooling load factors for 4-in l. w. concrete N-E facing wall

TABLE A4.12: Heat Gain and Cooling load factors for 4-in l. w. concrete N-W facing wall

t h	T _{os} , t _o °C	1st day	2nd day	3rd day	4th day	5th day	6th day	Heat Gain	1st day	2nd day	3rd day	4th day	5th day	Cooling load factor
-5.00	29.40	0.00							0.00					
-4.00	28.40	0.00							0.00					
-3.00	27.00	0.00							0.00					
-2.00	26.40	0.00							0.00					
-1.00	26.00	0.00							0.00					
0.00	25.60	0.47	6.33	6.33	6.33	6.33	6.33	6.33	-1.31	6.59	8.38	8.79	8.88	8.90
1.00	25.30	0.70	4.41	4.41	4.41	4.41	4.41	4.41	-2.15	5.27	6.95	7.33	7.42	7.44
2.00	25.10	0.70	3.03	3.03	3.03	3.03	3.03	3.03	-2.70	4.28	5.86	6.22	6.30	6.32
3.00	24.90	0.58	2.03	2.03	2.03	2.03	2.03	2.03	-3.03	3.53	5.01	5.35	5.43	5.44
4.00	24.70	0.39	1.30	1.30	1.30	1.30	1.30	1.30	-3.23	2.94	4.34	4.65	4.73	4.74
5.00	24.50	0.18	0.75	0.75	0.75	0.75	0.75	0.75	-3.33	2.47	3.78	4.08	4.14	4.16
6.00	25.00	-0.04	0.31	0.31	0.31	0.31	0.31	0.31	-3.38	2.07	3.30	3.58	3.64	3.66
7.00	28.34	-0.13	0.10	0.10	0.10	0.10	0.10	0.10	-3.31	1.81	2.97	3.24	3.29	3.31
8.00	30.17	0.50	0.64	0.64	0.64	0.64	0.64	0.64	-2.73	2.08	3.17	3.42	3.47	3.49
9.00	31.80	1.98	2.07	2.07	2.07	2.07	2.07	2.07	-1.56	2.96	3.99	4.22	4.27	4.29
10.00	33.32	3.81	3.87	3.87	3.87	3.87	3.87	3.87	-0.12	4.14	5.10	5.32	5.37	5.38
11.00	36.15	5.76	5.79	5.79	5.79	5.79	5.79	5.79	1.43	5.43	6.34	6.54	6.59	6.60
12.00	37.24	7.94	7.96	7.96	7.96	7.96	7.96	7.96	3.17	6.93	7.78	7.97	8.02	8.03
13.00	47.05	10.31	10.33	10.33	10.33	10.33	10.33	10.33	5.07	8.60	9.40	9.58	9.63	9.64
14.00	54.70	13.99	14.00	14.00	14.00	14.00	14.00	14.00	7.88	11.21	11.96	12.13	12.17	12.18
15.00	59.82	19.89	19.89	19.89	19.89	19.89	19.89	19.89	12.26	15.39	16.09	16.25	16.29	16.30
16.00	56.71	26.74	26.75	26.75	26.75	26.75	26.75	26.75	17.39	20.33	20.99	21.14	21.18	21.18
17.00	48.01	32.16	32.16	32.16	32.16	32.16	32.16	32.16	21.64	24.40	25.02	25.17	25.20	25.21
18.00	36.51	33.74	33.74	33.74	33.74	33.74	33.74	33.74	23.34	25.94	26.52	26.66	26.69	26.69
19.00	29.40	30.68	30.69	30.69	30.69	30.69	30.69	30.69	21.89	24.33	24.88	25.00	25.03	25.04
20.00	28.40	24.47	24.47	24.47	24.47	24.47	24.47	24.47	18.18	20.47	20.99	21.11	21.14	21.14
21.00	27.00	17.99	17.99	17.99	17.99	17.99	17.99	17.99	14.15	16.30	16.79	16.90	16.93	16.93
22.00	26.40	12.85	12.85	12.85	12.85	12.85	12.85	12.85	10.88	12.91	13.36	13.47	13.49	13.50
23.00	26.00	9.04	9.04	9.04	9.04	9.04	9.04	9.04	8.40	10.31	10.74	10.84	10.86	10.86
Average	33.84							11.27						11.27

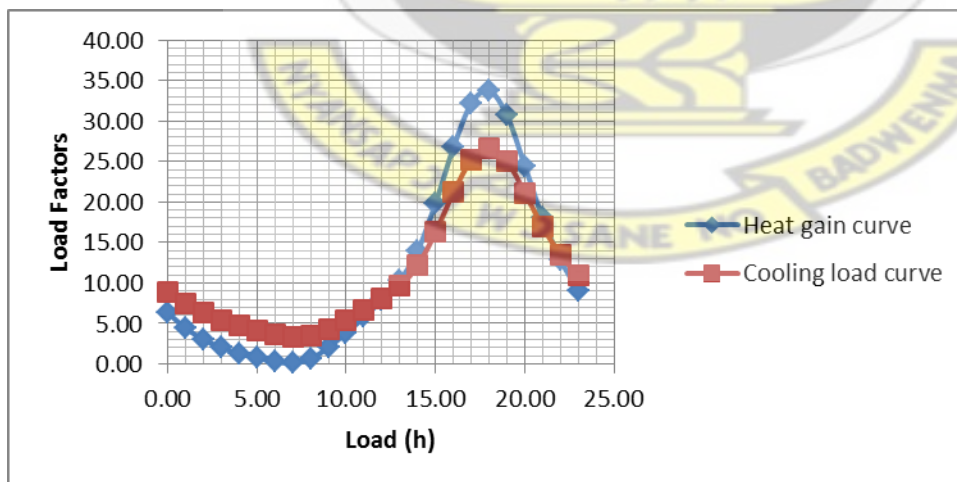


FIGURE A4. 12: Heat Gain and Cooling load factors for 4-in l. w. concrete N-W facing wall

TABLE A4.13: Heat Gain and Cooling load factors for 4-in l. w. concrete S-E facing wall

t h	T _{os} , t oC	1st day	2nd day	3rd day	4th day	5th day	6th day	Heat Gain	1st day	2nd day	3rd day	4th day	5th day	Cooling load factor
-5.00	29.40	0.00							0.00					
-4.00	28.40	0.00							0.00					
-3.00	27.00	0.00							0.00					
-2.00	26.40	0.00							0.00					
-1.00	26.00	0.00							0.00					
0.00	25.60	0.47	4.25	4.25	4.25	4.25	4.25	4.25	-0.66	5.20	6.52	6.82	6.89	6.91
1.00	25.30	0.70	3.11	3.11	3.11	3.11	3.11	3.11	-1.15	4.36	5.61	5.89	5.95	5.97
2.00	25.10	0.70	2.22	2.22	2.22	2.22	2.22	2.22	-1.50	3.68	4.85	5.12	5.18	5.19
3.00	24.90	0.58	1.52	1.52	1.52	1.52	1.52	1.52	-1.75	3.12	4.22	4.47	4.53	4.54
4.00	24.70	0.39	0.99	0.99	0.99	0.99	0.99	0.99	-1.92	2.66	3.69	3.93	3.98	3.99
5.00	24.50	0.18	0.55	0.55	0.55	0.55	0.55	0.55	-2.04	2.26	3.23	3.46	3.51	3.52
6.00	25.00	-0.04	0.19	0.19	0.19	0.19	0.19	0.19	-2.13	1.91	2.83	3.03	3.08	3.09
7.00	41.26	-0.02	0.13	0.13	0.13	0.13	0.13	0.13	-2.03	1.77	2.63	2.82	2.87	2.88
8.00	50.16	2.96	3.05	3.05	3.05	3.05	3.05	3.05	0.09	3.66	4.47	4.65	4.69	4.70
9.00	52.00	9.92	9.98	9.98	9.98	9.98	9.98	9.98	4.99	8.34	9.10	9.27	9.31	9.32
10.00	50.41	17.57	17.61	17.61	17.61	17.61	17.61	17.61	10.48	13.63	14.35	14.51	14.55	14.55
11.00	47.31	23.23	23.25	23.25	23.25	23.25	23.25	23.25	14.75	17.72	18.39	18.54	18.58	18.58
12.00	40.75	26.11	26.13	26.13	26.13	26.13	26.13	26.13	17.22	20.01	20.64	20.78	20.81	20.82
13.00	33.89	26.01	26.02	26.02	26.02	26.02	26.02	26.02	17.68	20.30	20.89	21.03	21.06	21.06
14.00	39.46	23.18	23.18	23.18	23.18	23.18	23.18	23.18	16.25	18.71	19.27	19.40	19.42	19.43
15.00	40.07	20.42	20.42	20.42	20.42	20.42	20.42	20.42	14.78	17.10	17.62	17.74	17.77	17.77
16.00	37.11	19.44	19.45	19.45	19.45	19.45	19.45	19.45	14.46	16.63	17.13	17.24	17.26	17.27
17.00	34.73	18.69	18.70	18.70	18.70	18.70	18.70	18.70	14.25	16.29	16.76	16.86	16.88	16.89
18.00	30.92	17.23	17.23	17.23	17.23	17.23	17.23	17.23	13.52	15.44	15.87	15.97	16.00	16.00
19.00	29.40	14.96	14.96	14.96	14.96	14.96	14.96	14.96	12.19	14.00	14.41	14.50	14.52	14.53
20.00	28.40	12.25	12.25	12.25	12.25	12.25	12.25	12.25	10.52	12.21	12.60	12.69	12.71	12.71
21.00	27.00	9.77	9.77	9.77	9.77	9.77	9.77	9.77	8.92	10.52	10.88	10.97	10.98	10.99
22.00	26.40	7.59	7.59	7.59	7.59	7.59	7.59	7.59	7.50	9.00	9.34	9.41	9.43	9.44
23.00	26.00	5.73	5.73	5.73	5.73	5.73	5.73	5.73	6.23	7.64	7.96	8.04	8.05	8.06
Average	33.77							11.18						11.18

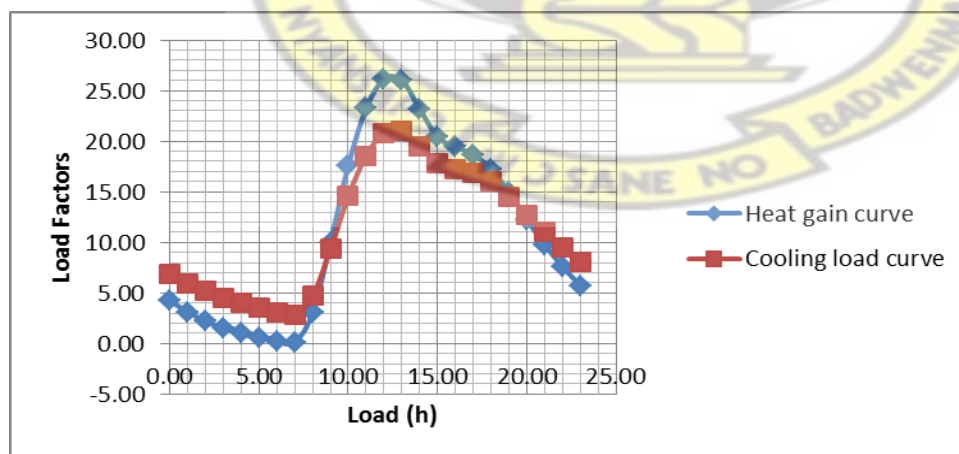


FIGURE A4. 13: Heat Gain and Cooling load factors for 4-in l. w. concrete S-E facing wall

TABLE A4.14: Heat Gain and Cooling load factors for 4-in l. w. concrete S-W facing wall

t h	T _{os} , t oC	1st day	2nd day	3rd day	4th day	5th day	6th day	Heat Gain factor	1st day	2nd day	3rd day	4th day	5th day	Cooling load factor
-5.00	29.40	0.00							0.00					
-4.00	28.40	0.00							0.00					
-3.00	27.00	0.00							0.00					
-2.00	26.40	0.00							0.00					
-1.00	26.00	0.00							0.00					
0.00	25.60	0.47	6.48	6.48	6.48	6.48	6.48	6.48	-1.35	6.72	8.55	8.96	9.05	9.08
1.00	25.30	0.70	4.51	4.51	4.51	4.51	4.51	4.51	-2.23	5.36	7.08	7.47	7.55	7.57
2.00	25.10	0.70	3.09	3.09	3.09	3.09	3.09	3.09	-2.79	4.34	5.96	6.32	6.41	6.43
3.00	24.90	0.58	2.07	2.07	2.07	2.07	2.07	2.07	-3.13	3.57	5.09	5.44	5.51	5.53
4.00	24.70	0.39	1.33	1.33	1.33	1.33	1.33	1.33	-3.33	2.98	4.40	4.73	4.80	4.82
5.00	24.50	0.18	0.77	0.77	0.77	0.77	0.77	0.77	-3.43	2.50	3.84	4.14	4.21	4.23
6.00	25.00	-0.04	0.32	0.32	0.32	0.32	0.32	0.32	-3.48	2.09	3.35	3.64	3.70	3.72
7.00	28.34	-0.13	0.10	0.10	0.10	0.10	0.10	0.10	-3.40	1.83	3.02	3.29	3.35	3.36
8.00	30.17	0.50	0.65	0.65	0.65	0.65	0.65	0.65	-2.82	2.10	3.21	3.47	3.52	3.54
9.00	31.80	1.98	2.07	2.07	2.07	2.07	2.07	2.07	-1.64	2.98	4.03	4.27	4.32	4.33
10.00	33.32	3.81	3.87	3.87	3.87	3.87	3.87	3.87	-0.20	4.15	5.14	5.36	5.41	5.42
11.00	30.19	5.71	5.74	5.74	5.74	5.74	5.74	5.74	1.32	5.41	6.34	6.55	6.59	6.61
12.00	39.56	6.90	6.93	6.93	6.93	6.93	6.93	6.93	2.40	6.24	7.11	7.30	7.35	7.36
13.00	48.81	8.78	8.80	8.80	8.80	8.80	8.80	8.80	3.94	7.55	8.37	8.56	8.60	8.61
14.00	55.84	13.46	13.47	13.47	13.47	13.47	13.47	13.47	7.42	10.81	11.58	11.75	11.79	11.80
15.00	60.04	20.21	20.22	20.22	20.22	20.22	20.22	20.22	12.37	15.56	16.29	16.45	16.49	16.50
16.00	57.46	27.37	27.37	27.37	27.37	27.37	27.37	27.37	17.72	20.72	21.40	21.55	21.58	21.59
17.00	49.22	32.84	32.84	32.84	32.84	32.84	32.84	32.84	22.02	24.84	25.48	25.62	25.66	25.66
18.00	37.30	34.57	34.57	34.57	34.57	34.57	34.57	34.57	23.85	26.50	27.10	27.23	27.26	27.27
19.00	29.40	31.66	31.66	31.66	31.66	31.66	31.66	31.66	22.51	25.00	25.56	25.69	25.72	25.73
20.00	28.40	25.34	25.34	25.34	25.34	25.34	25.34	25.34	18.75	21.09	21.62	21.74	21.77	21.78
21.00	27.00	18.60	18.60	18.60	18.60	18.60	18.60	18.60	14.56	16.76	17.26	17.37	17.40	17.41
22.00	26.40	13.25	13.25	13.25	13.25	13.25	13.25	13.25	11.16	13.23	13.70	13.80	13.83	13.83
23.00	26.00	9.29	9.29	9.29	9.29	9.29	9.29	9.29	8.59	10.53	10.97	11.07	11.10	11.10
Average	33.93							11.39						11.39

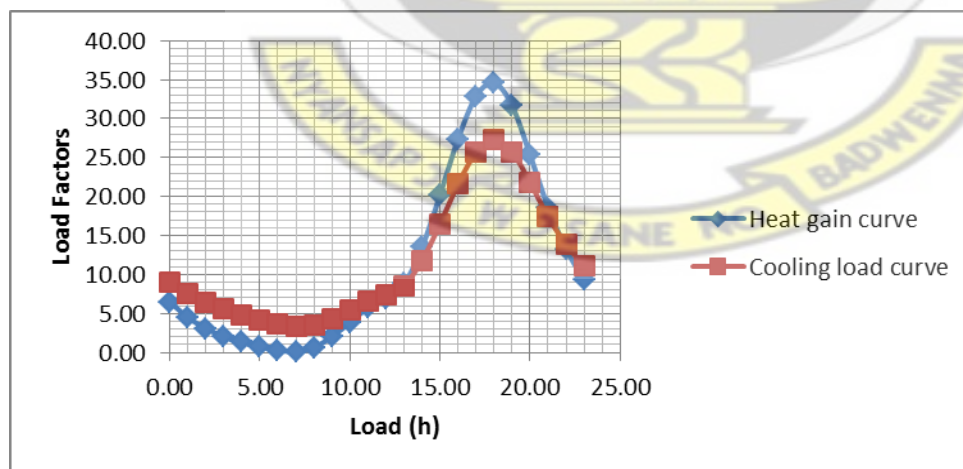


FIGURE A4. 14: Heat Gain and Cooling load factors for 4-in l. w. concrete S-W facing wall

TABLE A4.15: Heat Gain and Cooling load factors for 4-in l. w. concrete SHADED facing wall

t h	Tos,t oC	1st day	2nd day	3rd day	4th day	5th day	6th day	Heat Gain factor	1st day	2nd day	3rd day	4th day	5th day	Cooling load factor
-5.00	29.40	0.00							0.00					
-4.00	28.40	0.00							0.00					
-3.00	27.00	0.00							0.00					
-2.00	26.40	0.00							0.00					
-1.00	26.00	0.00							0.00					
0.00	25.60	0.47	3.56	3.56	3.56	3.56	3.56	3.56	-0.45	2.96	3.73	3.91	3.95	3.96
1.00	25.30	0.70	2.67	2.67	2.67	2.67	2.67	2.67	-0.81	2.40	3.12	3.29	3.32	3.33
2.00	25.10	0.70	1.94	1.94	1.94	1.94	1.94	1.94	-1.09	1.92	2.60	2.75	2.79	2.80
3.00	24.90	0.58	1.35	1.35	1.35	1.35	1.35	1.35	-1.31	1.52	2.16	2.30	2.34	2.34
4.00	24.70	0.39	0.88	0.88	0.88	0.88	0.88	0.88	-1.48	1.18	1.79	1.92	1.95	1.96
5.00	24.50	0.18	0.49	0.49	0.49	0.49	0.49	0.49	-1.60	0.90	1.46	1.59	1.62	1.63
6.00	25.00	-0.04	0.15	0.15	0.15	0.15	0.15	0.15	-1.71	0.64	1.18	1.30	1.32	1.33
7.00	25.00	-0.16	-0.04	-0.04	-0.04	-0.04	-0.04	-0.04	-1.72	0.49	0.99	1.10	1.13	1.13
8.00	25.40	-0.13	-0.06	-0.06	-0.06	-0.06	-0.06	-0.06	-1.63	0.44	0.91	1.02	1.04	1.05
9.00	26.30	-0.01	0.04	0.04	0.04	0.04	0.04	0.04	-1.48	0.48	0.92	1.02	1.04	1.05
10.00	27.40	0.32	0.35	0.35	0.35	0.35	0.35	0.35	-1.17	0.66	1.08	1.17	1.20	1.20
11.00	30.00	0.96	0.98	0.98	0.98	0.98	0.98	0.98	-0.65	1.08	1.47	1.55	1.57	1.58
12.00	31.00	2.12	2.13	2.13	2.13	2.13	2.13	2.13	0.23	1.85	2.22	2.30	2.32	2.33
13.00	32.50	3.68	3.69	3.69	3.69	3.69	3.69	3.69	1.40	2.93	3.27	3.35	3.37	3.37
14.00	33.50	5.32	5.32	5.32	5.32	5.32	5.32	5.32	2.66	4.09	4.41	4.49	4.50	4.51
15.00	34.50	6.95	6.96	6.96	6.96	6.96	6.96	6.96	3.93	5.27	5.58	5.65	5.66	5.67
16.00	32.20	8.46	8.46	8.46	8.46	8.46	8.46	8.46	5.13	6.40	6.69	6.75	6.77	6.77
17.00	31.10	9.30	9.30	9.30	9.30	9.30	9.30	9.30	5.91	7.10	7.37	7.43	7.44	7.45
18.00	30.50	9.22	9.22	9.22	9.22	9.22	9.22	9.22	6.05	7.17	7.43	7.48	7.50	7.50
19.00	29.40	8.68	8.68	8.68	8.68	8.68	8.68	8.68	5.88	6.93	7.17	7.22	7.23	7.24
20.00	28.40	7.92	7.92	7.92	7.92	7.92	7.92	7.92	5.53	6.52	6.74	6.79	6.80	6.81
21.00	27.00	6.97	6.97	6.97	6.97	6.97	6.97	6.97	5.02	5.95	6.16	6.21	6.22	6.22
22.00	26.40	5.82	5.82	5.82	5.82	5.82	5.82	5.82	4.36	5.23	5.43	5.48	5.49	5.49
23.00	26.00	4.62	4.62	4.62	4.62	4.62	4.62	4.62	3.63	4.45	4.63	4.68	4.69	4.69
Average	27.99							3.81						3.81

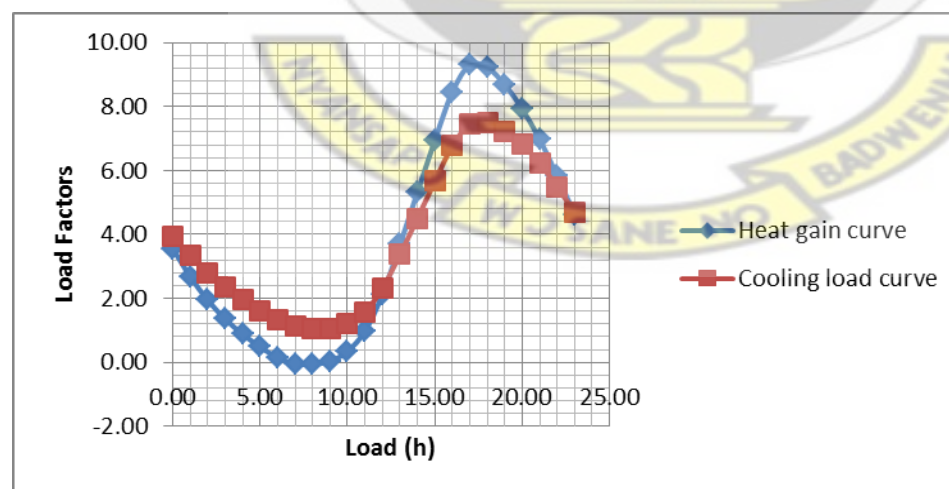


FIGURE A4. 15: Heat Gain and Cooling load factors for 4-in l. w. concrete SHADED facing wall

TABLE A4.16: Heat Gain and cooling factors for 4-in. h. w. concrete WEST facing wall

t h	T _{os} , t oC	1st day	2nd day	3rd day	4th day	5th day	6th day	Heat Gain	1st day	2nd day	3rd day	4th day	5th day	Cooling load factor
-5.00	29.40	0.00							0.00					
-4.00	28.40	0.00							0.00					
-3.00	27.00	0.00							0.00					
-2.00	26.40	0.00							0.00					
-1.00	26.00	0.00							0.00					
0.00	25.60	0.72	31.26	31.35	31.35	31.35	31.35	31.35	-2.85	26.43	33.06	34.56	34.90	34.98
1.00	25.30	1.10	25.02	25.08	25.08	25.08	25.08	25.08	-5.07	22.46	28.69	30.10	30.42	30.50
2.00	25.10	1.16	19.89	19.94	19.94	19.94	19.94	19.94	-6.76	19.11	24.97	26.30	26.60	26.67
3.00	24.90	1.04	15.70	15.74	15.74	15.74	15.74	15.74	-8.02	16.30	21.81	23.06	23.34	23.40
4.00	24.70	0.79	12.27	12.30	12.30	12.30	12.30	12.30	-8.93	13.93	19.11	20.28	20.54	20.60
5.00	24.50	0.46	9.44	9.47	9.47	9.47	9.47	9.47	-9.59	11.90	16.77	17.87	18.12	18.18
6.00	25.00	0.08	7.12	7.14	7.14	7.14	7.14	7.14	-10.03	10.16	14.74	15.78	16.01	16.06
7.00	28.30	0.08	5.59	5.60	5.60	5.60	5.60	5.60	-10.05	8.94	13.24	14.21	14.43	14.48
8.00	30.20	1.61	5.92	5.94	5.94	5.94	5.94	5.94	-8.88	8.97	13.01	13.92	14.13	14.18
9.00	31.80	4.46	7.84	7.84	7.84	7.84	7.84	7.84	-6.69	10.08	13.88	14.74	14.94	14.98
10.00	33.30	7.96	10.60	10.61	10.61	10.61	10.61	10.61	-3.94	11.83	15.40	16.21	16.39	16.44
11.00	36.20	11.88	13.95	13.95	13.95	13.95	13.95	13.95	-0.79	14.04	17.39	18.15	18.33	18.37
12.00	38.30	16.63	18.25	18.25	18.25	18.25	18.25	18.25	3.02	16.96	20.12	20.83	20.99	21.03
13.00	51.00	22.51	23.77	23.78	23.78	23.78	23.78	23.78	7.70	20.80	23.77	24.44	24.59	24.63
14.00	61.30	33.30	34.29	34.29	34.29	34.29	34.29	34.29	15.83	28.14	30.93	31.56	31.70	31.73
15.00	67.90	49.33	50.10	50.11	50.11	50.11	50.11	50.11	27.70	39.28	41.90	42.49	42.63	42.66
16.00	65.50	67.29	67.90	67.90	67.90	67.90	67.90	67.90	41.17	52.05	54.51	55.07	55.20	55.22
17.00	54.70	81.83	82.31	82.31	82.31	82.31	82.31	82.31	52.58	62.81	65.13	65.65	65.77	65.80
18.00	39.40	87.82	88.19	88.19	88.19	88.19	88.19	88.19	58.37	67.99	70.16	70.66	70.77	70.79
19.00	29.40	83.23	83.52	83.52	83.52	83.52	83.52	83.52	56.98	66.02	68.06	68.53	68.63	68.66
20.00	28.40	71.55	71.77	71.77	71.77	71.77	71.77	71.77	50.57	59.07	60.99	61.43	61.53	61.55
21.00	27.00	59.05	59.23	59.23	59.23	59.23	59.23	59.23	43.30	51.29	53.09	53.50	53.60	53.62
22.00	26.40	48.09	48.23	48.24	48.24	48.24	48.24	48.24	36.77	44.28	45.98	46.36	46.45	46.47
23.00	26.00	38.86	38.97	38.97	38.97	38.97	38.97	38.97	31.15	38.20	39.80	40.16	40.25	40.26
Average	35.43							34.65						34.64

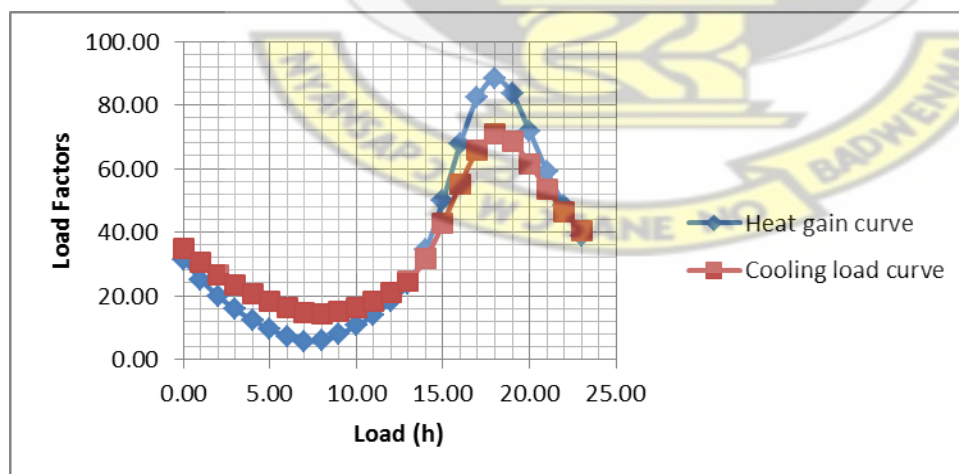


FIGURE A4. 16: Heat Gain and cooling factors for 4-in. h. w. concrete WEST facing wall

TABLE A4.17: Heat Gain and Cooling load factors for 4-in. h. w. concrete EAST facing wall

t h	Tos,t oC	1st day	2nd day	3rd day	4th day	5th day	6th day	Heat Gain factor	1st day	2nd day	3rd day	4th day	5th day	Cooling load factor
-5.00	29.40	0.00							0.00					
-4.00	28.40	0.00							0.00					
-3.00	27.00	0.00							0.00					
-2.00	26.40	0.00							0.00					
-1.00	26.00	0.00							0.00					
0.00	25.60	0.72	18.58	18.63	18.63	18.63	18.63	18.63	-1.43	18.79	23.37	24.41	24.65	24.70
1.00	25.30	1.10	15.09	15.13	15.13	15.13	15.13	15.13	-2.61	16.40	20.70	21.68	21.90	21.95
2.00	25.10	1.16	12.12	12.15	12.15	12.15	12.15	12.15	-3.57	14.29	18.34	19.26	19.46	19.51
3.00	24.90	1.04	9.62	9.64	9.64	9.64	9.64	9.64	-4.34	12.46	16.26	17.12	17.32	17.36
4.00	24.70	0.79	7.51	7.53	7.53	7.53	7.53	7.53	-4.94	10.85	14.42	15.23	15.42	15.46
5.00	24.50	0.46	5.72	5.73	5.73	5.73	5.73	5.73	-5.42	9.42	12.79	13.55	13.72	13.76
6.00	25.00	0.08	4.20	4.21	4.21	4.21	4.21	4.21	-5.78	8.17	11.33	12.04	12.20	12.24
7.00	46.15	0.87	4.09	4.10	4.10	4.10	4.10	4.10	-5.26	7.86	10.83	11.50	11.65	11.69
8.00	57.97	10.68	13.21	13.21	13.21	13.21	13.21	13.21	1.51	13.84	16.63	17.26	17.40	17.44
9.00	60.11	28.34	30.31	30.32	30.32	30.32	30.32	30.32	13.86	25.45	28.07	28.67	28.80	28.83
10.00	56.25	46.32	47.87	47.87	47.87	47.87	47.87	47.87	26.80	37.69	40.16	40.72	40.84	40.87
11.00	50.01	59.48	60.69	60.69	60.69	60.69	60.69	60.69	36.79	47.03	49.35	49.88	50.00	50.02
12.00	40.01	65.98	66.93	66.93	66.93	66.93	66.93	66.93	42.48	52.10	54.28	54.78	54.89	54.91
13.00	38.68	65.37	66.11	66.11	66.11	66.11	66.11	66.11	43.39	52.44	54.48	54.95	55.05	55.08
14.00	39.46	61.79	62.37	62.37	62.37	62.37	62.37	62.37	42.20	50.71	52.63	53.07	53.17	53.19
15.00	40.07	58.70	59.15	59.15	59.15	59.15	59.15	59.15	41.22	49.22	51.03	51.44	51.53	51.55
16.00	37.11	56.51	56.87	56.87	56.87	56.87	56.87	56.87	40.74	48.26	49.96	50.34	50.43	50.45
17.00	34.73	53.66	53.94	53.94	53.94	53.94	53.94	53.94	39.72	46.78	48.38	48.74	48.82	48.84
18.00	30.92	49.61	49.82	49.82	49.82	49.82	49.82	49.82	37.77	44.41	45.91	46.25	46.33	46.34
19.00	29.40	44.17	44.34	44.34	44.34	44.34	44.34	44.34	34.75	40.99	42.41	42.73	42.80	42.82
20.00	28.40	38.25	38.39	38.39	38.39	38.39	38.39	38.39	31.28	37.14	38.47	38.77	38.84	38.86
21.00	27.00	32.67	32.78	32.78	32.78	32.78	32.78	32.78	27.88	33.40	34.65	34.93	34.99	35.01
22.00	26.40	27.42	27.50	27.50	27.50	27.50	27.50	27.50	24.58	29.77	30.94	31.21	31.27	31.28
23.00	26.00	22.67	22.73	22.73	22.73	22.73	22.73	22.73	21.51	26.38	27.49	27.74	27.79	27.81
Average	35.16							33.76						33.75

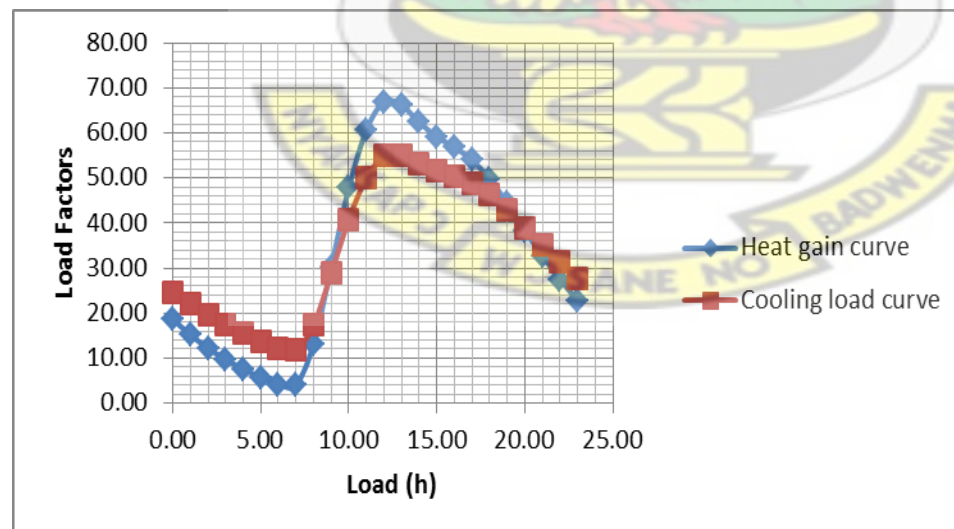


FIGURE A4. 17: Heat Gain and Cooling load factors for 4-in. h. w. concrete EAST facing wall

TABLE A4.18: Heat Gain and Cooling factors for 4-in. h. w.concrete SOUTH facing wall

t h	Tos,t oC	1st day	2nd day	3rd day	4th day	5th day	6th day	Heat Gain factor	1st day	2nd day	3rd day	4th day	5th day	Cooling load factor
-5.00	29.40	0.00							0.00					
-4.00	28.40	0.00							0.00					
-3.00	27.00	0.00							0.00					
-2.00	26.40	0.00							0.00					
-1.00	26.00	0.00							0.00					
0.00	25.60	0.72	16.52	16.56	16.56	16.56	16.56	16.56	-1.19	14.38	17.91	18.71	18.89	18.93
1.00	25.30	1.10	13.47	13.51	13.51	13.51	13.51	13.51	-2.21	12.43	15.75	16.50	16.67	16.71
2.00	25.10	1.16	10.85	10.88	10.88	10.88	10.88	10.88	-3.06	10.71	13.83	14.53	14.69	14.73
3.00	24.90	1.04	8.63	8.65	8.65	8.65	8.65	8.65	-3.74	9.20	12.13	12.79	12.94	12.98
4.00	24.70	0.79	6.73	6.75	6.75	6.75	6.75	6.75	-4.29	7.87	10.63	11.25	11.39	11.42
5.00	24.50	0.46	5.11	5.12	5.12	5.12	5.12	5.12	-4.74	6.70	9.29	9.87	10.00	10.03
6.00	25.00	0.08	3.72	3.73	3.73	3.73	3.73	3.73	-5.09	5.66	8.09	8.64	8.77	8.79
7.00	28.30	0.08	2.93	2.94	2.94	2.94	2.94	2.94	-5.10	5.00	7.29	7.81	7.92	7.95
8.00	30.45	1.62	3.86	3.86	3.86	3.86	3.86	3.86	-3.99	5.51	7.66	8.14	8.25	8.28
9.00	32.34	4.59	6.34	6.34	6.34	6.34	6.34	6.34	-1.83	7.10	9.12	9.58	9.68	9.70
10.00	35.28	8.43	9.79	9.80	9.80	9.80	9.80	9.80	1.01	9.40	11.30	11.73	11.83	11.85
11.00	39.10	13.32	14.39	14.39	14.39	14.39	14.39	14.39	4.67	12.55	14.34	14.75	14.84	14.86
12.00	40.56	19.52	20.36	20.36	20.36	20.36	20.36	20.36	9.32	16.73	18.41	18.79	18.88	18.90
13.00	41.72	26.03	26.69	26.69	26.69	26.69	26.69	26.69	14.29	21.26	22.84	23.19	23.28	23.29
14.00	41.60	32.06	32.57	32.58	32.58	32.58	32.58	32.58	19.04	25.59	27.08	27.41	27.49	27.51
15.00	40.84	37.03	37.44	37.44	37.44	37.44	37.44	37.44	23.17	29.32	30.72	31.03	31.10	31.12
16.00	37.41	40.48	40.79	40.79	40.79	40.79	40.79	40.79	26.31	32.10	33.41	33.70	33.77	33.79
17.00	34.74	41.49	41.73	41.73	41.73	41.73	41.73	41.73	27.82	33.26	34.49	34.77	34.83	34.85
18.00	31.33	40.20	40.39	40.39	40.39	40.39	40.39	40.39	27.74	32.85	34.01	34.27	34.33	34.35
19.00	29.40	36.98	37.13	37.14	37.14	37.14	37.14	37.14	26.28	31.09	32.18	32.42	32.48	32.49
20.00	28.40	32.73	32.85	32.85	32.85	32.85	32.85	32.85	24.01	28.53	29.56	29.79	29.84	29.85
21.00	27.00	28.36	28.46	28.46	28.46	28.46	28.46	28.46	21.55	25.80	26.76	26.98	27.03	27.04
22.00	26.40	24.04	24.12	24.12	24.12	24.12	24.12	24.12	19.01	23.00	23.91	24.11	24.16	24.17
23.00	26.00	20.03	20.08	20.08	20.08	20.08	20.08	20.08	16.57	20.32	21.17	21.37	21.41	21.42
Average	31.08							20.22						20.21

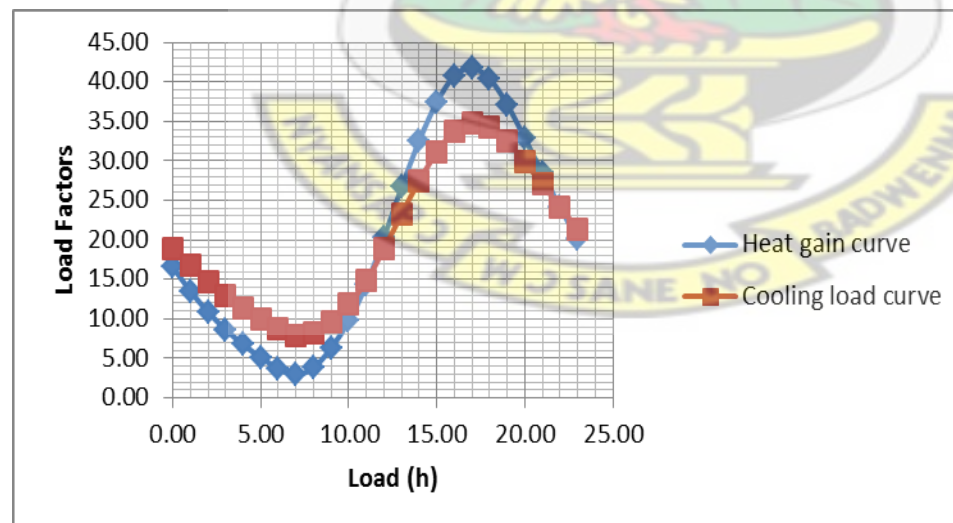


FIGURE A4. 18: Heat Gain and Cooling factors for 4-in. h. w.concrete SOUTH facing wall

TABLE A4.19: Heat Gain and cooling load factors for 4-in. h. w. concrete NORTH facing wall

t h	Tos,t oC	1st day	2nd day	3rd day	4th day	5th day	6th day	Heat Gain	1st day	2nd day	3rd day	4th day	5th day	Cooling load factor
-5.00	29.40	0.00							0.00					
-4.00	28.40	0.00							0.00					
-3.00	27.00	0.00							0.00					
-2.00	26.40	0.00							0.00					
-1.00	26.00	0.00							0.00					
0.00	25.60	0.72	14.87	14.91	14.91	14.91	14.91	14.91	-1.01	12.71	15.82	16.52	16.68	16.72
1.00	25.30	1.10	12.18	12.21	12.21	12.21	12.21	12.21	-1.89	11.01	13.93	14.59	14.74	14.78
2.00	25.10	1.16	9.84	9.87	9.87	9.87	9.87	9.87	-2.64	9.48	12.23	12.85	12.99	13.02
3.00	24.90	1.04	7.83	7.85	7.85	7.85	7.85	7.85	-3.26	8.14	10.72	11.30	11.43	11.46
4.00	24.70	0.79	6.11	6.13	6.13	6.13	6.13	6.13	-3.77	6.94	9.37	9.92	10.04	10.07
5.00	24.50	0.46	4.62	4.63	4.63	4.63	4.63	4.63	-4.19	5.88	8.16	8.68	8.79	8.82
6.00	25.00	0.08	3.34	3.35	3.35	3.35	3.35	3.35	-4.54	4.93	7.07	7.56	7.67	7.69
7.00	26.65	0.01	2.56	2.57	2.57	2.57	2.57	2.57	-4.60	4.30	6.32	6.77	6.88	6.90
8.00	29.22	0.85	2.84	2.85	2.85	2.85	2.85	2.85	-3.97	4.39	6.28	6.71	6.81	6.83
9.00	32.24	3.09	4.65	4.65	4.65	4.65	4.65	4.65	-2.34	5.53	7.31	7.71	7.80	7.82
10.00	33.83	6.80	8.02	8.02	8.02	8.02	8.02	8.02	0.38	7.77	9.44	9.82	9.91	9.93
11.00	36.10	11.25	12.21	12.21	12.21	12.21	12.21	12.21	3.69	10.64	12.21	12.57	12.65	12.67
12.00	37.18	16.19	16.94	16.94	16.94	16.94	16.94	16.94	7.42	13.95	15.43	15.77	15.84	15.86
13.00	38.61	21.15	21.74	21.74	21.74	21.74	21.74	21.74	11.26	17.40	18.79	19.10	19.18	19.19
14.00	39.39	25.98	26.44	26.44	26.44	26.44	26.44	26.44	15.09	20.86	22.17	22.46	22.53	22.55
15.00	40.00	30.49	30.85	30.85	30.85	30.85	30.85	30.85	18.77	24.20	25.42	25.70	25.77	25.78
16.00	36.35	34.33	34.62	34.62	34.62	34.62	34.62	34.62	22.06	27.16	28.32	28.58	28.64	28.65
17.00	33.04	35.89	36.12	36.12	36.12	36.12	36.12	36.12	23.84	28.63	29.72	29.96	30.02	30.03
18.00	30.22	34.80	34.97	34.97	34.97	34.97	34.97	34.97	23.79	28.30	29.32	29.55	29.60	29.61
19.00	29.40	31.86	31.99	31.99	31.99	31.99	31.99	31.99	22.44	26.67	27.63	27.85	27.90	27.91
20.00	28.40	28.40	28.50	28.50	28.50	28.50	28.50	28.50	20.63	24.61	25.52	25.72	25.77	25.78
21.00	27.00	24.93	25.01	25.01	25.01	25.01	25.01	25.01	18.73	22.47	23.32	23.51	23.55	23.56
22.00	26.40	21.35	21.42	21.42	21.42	21.42	21.42	21.42	16.66	20.17	20.97	21.15	21.19	21.20
23.00	26.00	17.92	17.97	17.97	17.97	17.97	17.97	17.97	14.60	17.90	18.65	18.82	18.86	18.87
Average	30.21							17.33						17.32

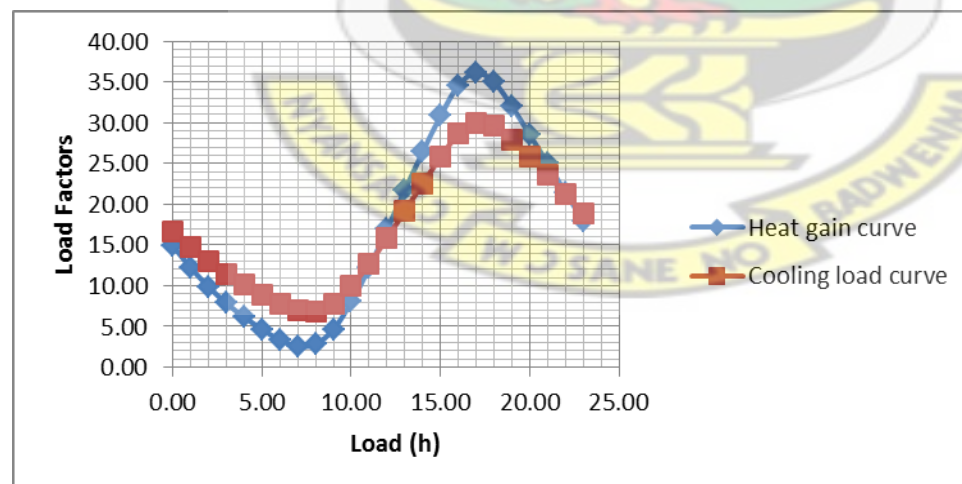


FIGURE A4. 19: Heat Gain and cooling load factors for 4-in. h. w. concrete NORTH facing wall

TABLE A4.20: Heat Gain and cooling load factors for 4-in. h. w. concrete N-E facing wall

t h	T _o , t oC	1st day	2nd day	3rd day	4th day	5th day	6th day	Heat Gain factor	1st day	2nd day	3rd day	4th day	5th day	Cooling load factor
-5.00	29.40	0.00							0.00					
-4.00	28.40	0.00							0.00					
-3.00	27.00	0.00							0.00					
-2.00	26.40	0.00							0.00					
-1.00	26.00	0.00							0.00					
0.00	25.60	0.72	17.62	17.66	17.66	17.66	17.66	17.66	-1.32	17.06	21.22	22.16	22.38	22.42
1.00	25.30	1.10	14.34	14.37	14.37	14.37	14.37	14.37	-2.42	14.85	18.76	19.65	19.85	19.90
2.00	25.10	1.16	11.53	11.56	11.56	11.56	11.56	11.56	-3.33	12.91	16.58	17.42	17.60	17.65
3.00	24.90	1.04	9.15	9.18	9.18	9.18	9.18	9.18	-4.06	11.20	14.66	15.44	15.62	15.66
4.00	24.70	0.79	7.15	7.16	7.16	7.16	7.16	7.16	-4.63	9.71	12.96	13.70	13.86	13.90
5.00	24.50	0.46	5.43	5.45	5.45	5.45	5.45	5.45	-5.10	8.39	11.44	12.14	12.29	12.33
6.00	25.00	0.08	3.98	3.99	3.99	3.99	3.99	3.99	-5.46	7.22	10.09	10.74	10.89	10.92
7.00	40.10	0.60	3.65	3.66	3.66	3.66	3.66	3.66	-5.11	6.80	9.50	10.11	10.25	10.28
8.00	49.30	7.64	10.03	10.03	10.03	10.03	10.03	10.03	-0.25	10.95	13.49	14.07	14.20	14.23
9.00	51.92	20.63	22.50	22.50	22.50	22.50	22.50	22.50	8.86	19.39	21.78	22.32	22.44	22.47
10.00	49.38	34.41	35.87	35.87	35.87	35.87	35.87	35.87	18.78	28.68	30.92	31.43	31.55	31.57
11.00	45.61	44.94	46.08	46.09	46.09	46.09	46.09	46.09	26.76	36.07	38.18	38.65	38.76	38.79
12.00	38.79	50.85	51.75	51.75	51.75	51.75	51.75	51.75	31.78	40.53	42.51	42.96	43.06	43.08
13.00	38.68	51.75	52.45	52.45	52.45	52.45	52.45	52.45	33.46	41.68	43.54	43.96	44.06	44.08
14.00	39.46	50.68	51.23	51.23	51.23	51.23	51.23	51.23	33.76	41.49	43.24	43.64	43.73	43.75
15.00	40.07	49.95	50.38	50.38	50.38	50.38	50.38	50.38	34.23	41.50	43.14	43.52	43.60	43.62
16.00	37.11	49.66	50.00	50.00	50.00	50.00	50.00	50.00	34.94	41.77	43.32	43.67	43.75	43.76
17.00	34.73	48.30	48.56	48.56	48.56	48.56	48.56	48.56	34.87	41.28	42.74	43.07	43.14	43.16
18.00	30.92	45.40	45.61	45.61	45.61	45.61	45.61	45.61	33.68	39.71	41.08	41.39	41.46	41.48
19.00	29.40	40.88	41.04	41.04	41.04	41.04	41.04	41.04	31.28	36.95	38.24	38.53	38.60	38.61
20.00	28.40	35.68	35.81	35.81	35.81	35.81	35.81	35.81	28.30	33.64	34.84	35.12	35.18	35.19
21.00	27.00	30.66	30.76	30.76	30.76	30.76	30.76	30.76	25.32	30.33	31.46	31.72	31.78	31.79
22.00	26.40	25.84	25.92	25.92	25.92	25.92	25.92	25.92	22.35	27.06	28.12	28.37	28.42	28.43
23.00	26.00	21.43	21.49	21.49	21.49	21.49	21.49	21.49	19.55	23.98	24.98	25.21	25.26	25.27
Average	33.68							28.85						28.85

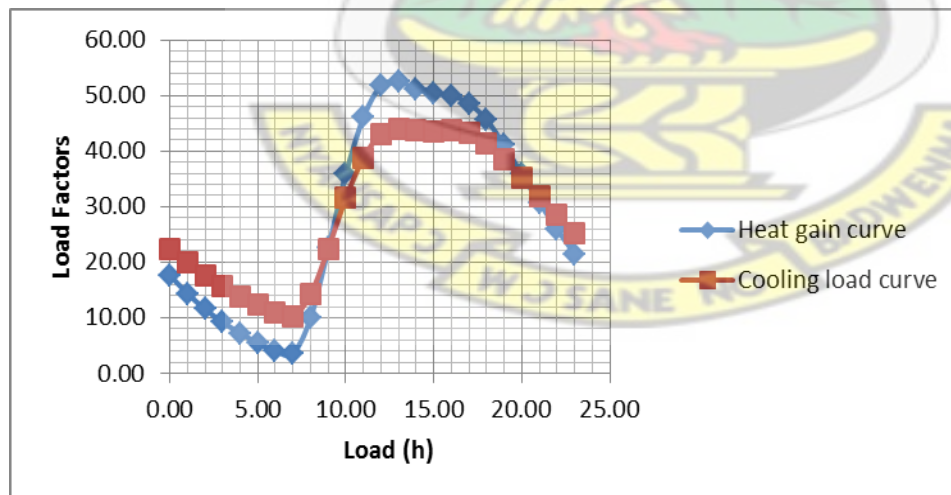


FIGURE A4. 20: Heat Gain and cooling load factors for 4-in. h. w. concrete N-E facing wall

TABLE A4.21: Heat Gain and Cooling load factors for 4-in. h. w. concrete N-W facing wall

t h	T _o , t oC	1st day	2nd day	3rd day	4th day	5th day	6th day	Heat Gain factor	1st day	2nd day	3rd day	4th day	5th day	Cooling load factor
-5.00	29.40	0.00							0.00					
-4.00	28.40	0.00							0.00					
-3.00	27.00	0.00							0.00					
-2.00	26.40	0.00							0.00					
-1.00	26.00	0.00							0.00					
0.00	25.60	0.72	26.25	26.32	26.32	26.32	26.32	26.32	-2.29	22.24	27.79	29.05	29.34	29.40
1.00	25.30	1.10	21.09	21.15	21.15	21.15	21.15	21.15	-4.09	18.96	24.18	25.37	25.63	25.69
2.00	25.10	1.16	16.82	16.86	16.86	16.86	16.86	16.86	-5.50	16.17	21.08	22.19	22.44	22.50
3.00	24.90	1.04	13.30	13.33	13.33	13.33	13.33	13.33	-6.56	13.81	18.42	19.47	19.70	19.76
4.00	24.70	0.79	10.39	10.42	10.42	10.42	10.42	10.42	-7.35	11.80	16.13	17.12	17.34	17.39
5.00	24.50	0.46	7.97	7.99	7.99	7.99	7.99	7.99	-7.94	10.06	14.14	15.06	15.27	15.32
6.00	25.00	0.08	5.96	5.98	5.98	5.98	5.98	5.98	-8.35	8.57	12.40	13.27	13.46	13.51
7.00	28.34	0.08	4.69	4.70	4.70	4.70	4.70	4.70	-8.37	7.54	11.14	11.96	12.14	12.19
8.00	30.17	1.63	5.23	5.24	5.24	5.24	5.24	5.24	-7.21	7.74	11.13	11.89	12.07	12.11
9.00	31.80	4.47	7.29	7.30	7.30	7.30	7.30	7.30	-5.06	8.99	12.17	12.90	13.06	13.10
10.00	33.32	7.96	10.17	10.18	10.18	10.18	10.18	10.18	-2.36	10.85	13.84	14.52	14.67	14.71
11.00	36.15	11.89	13.62	13.62	13.62	13.62	13.62	13.62	0.73	13.15	15.97	16.60	16.75	16.78
12.00	37.24	16.57	17.93	17.93	17.93	17.93	17.93	17.93	4.44	16.12	18.76	19.36	19.50	19.53
13.00	47.05	21.85	22.91	22.91	22.91	22.91	22.91	22.91	8.64	19.62	22.10	22.66	22.79	22.82
14.00	54.70	30.63	31.46	31.46	31.46	31.46	31.46	31.46	15.32	25.64	27.97	28.50	28.62	28.65
15.00	59.82	43.23	43.88	43.88	43.88	43.88	43.88	43.88	24.75	34.44	36.64	37.14	37.25	37.28
16.00	56.71	57.16	57.67	57.67	57.67	57.67	57.67	57.67	35.29	44.40	46.46	46.93	47.04	47.06
17.00	48.01	67.90	68.30	68.30	68.30	68.30	68.30	68.30	43.87	52.44	54.38	54.82	54.92	54.94
18.00	36.51	71.71	72.02	72.02	72.02	72.02	72.02	72.02	47.87	55.92	57.75	58.16	58.25	58.28
19.00	29.40	67.56	67.80	67.81	67.81	67.81	67.81	67.81	46.45	54.02	55.73	56.12	56.21	56.23
20.00	28.40	58.36	58.55	58.55	58.55	58.55	58.55	58.55	41.43	48.54	50.16	50.52	50.60	50.62
21.00	27.00	48.62	48.77	48.77	48.77	48.77	48.77	48.77	35.79	42.48	44.00	44.34	44.42	44.44
22.00	26.40	39.92	40.04	40.04	40.04	40.04	40.04	40.04	30.63	36.91	38.34	38.66	38.73	38.75
23.00	26.00	32.46	32.55	32.55	32.55	32.55	32.55	32.55	26.09	32.00	33.34	33.64	33.71	33.73
Average	33.84							29.37						29.36

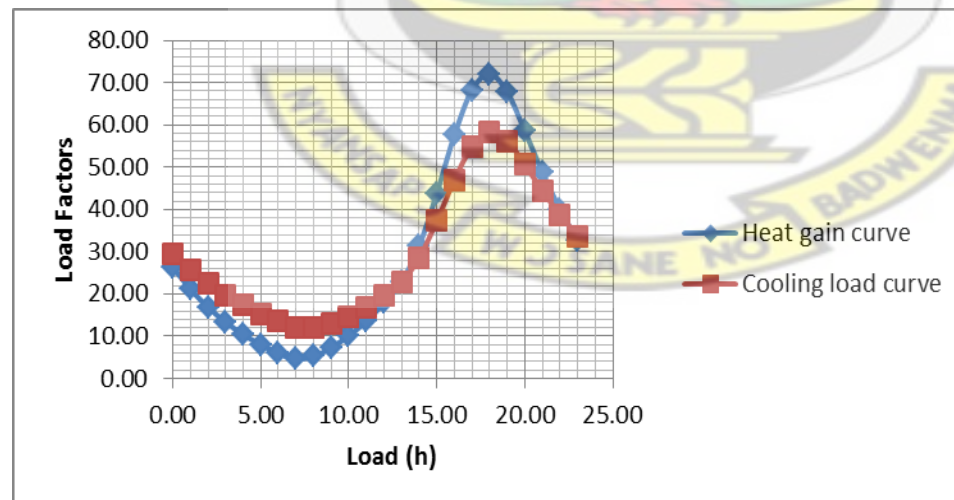


FIGURE A4. 21: Heat Gain and Cooling load factors for 4-in. h. w. concrete N-W facing wall

TABLE A4.22: Heat Gain and cooling load factors for 4-in. h. w.concrete S-E facing wall

t h	T _{os} ,t oC	1st day	2nd day	3rd day	4th day	5th day	6th day	Heat Gain factor	1st day	2nd day	3rd day	4th day	5th day	Cooling load factor
-5.00	29.40	0.00							0.00					
-4.00	28.40	0.00							0.00					
-3.00	27.00	0.00							0.00					
-2.00	26.40	0.00							0.00					
-1.00	26.00	0.00							0.00					
0.00	25.60	0.72	17.54	17.58	17.58	17.58	17.58	17.58	-1.31	17.07	21.23	22.17	22.39	22.44
1.00	25.30	1.10	14.27	14.31	14.31	14.31	14.31	14.31	-2.41	14.87	18.78	19.67	19.87	19.92
2.00	25.10	1.16	11.48	11.51	11.51	11.51	11.51	11.51	-3.31	12.93	16.61	17.44	17.63	17.67
3.00	24.90	1.04	9.11	9.14	9.14	9.14	9.14	9.14	-4.04	11.23	14.69	15.47	15.65	15.69
4.00	24.70	0.79	7.12	7.13	7.13	7.13	7.13	7.13	-4.61	9.74	12.99	13.73	13.89	13.93
5.00	24.50	0.46	5.41	5.42	5.42	5.42	5.42	5.42	-5.07	8.42	11.47	12.16	12.32	12.36
6.00	25.00	0.08	3.96	3.97	3.97	3.97	3.97	3.97	-5.43	7.25	10.12	10.77	10.92	10.95
7.00	41.26	0.66	3.69	3.70	3.70	3.70	3.70	3.70	-5.05	6.87	9.57	10.18	10.32	10.35
8.00	50.16	8.19	10.57	10.57	10.57	10.57	10.57	10.57	0.16	11.36	13.90	14.47	14.60	14.63
9.00	52.00	21.70	23.56	23.56	23.56	23.56	23.56	23.56	9.63	20.16	22.54	23.08	23.20	23.23
10.00	50.41	35.56	37.01	37.02	37.02	37.02	37.02	37.02	19.63	29.52	31.77	32.27	32.39	32.42
11.00	47.31	46.38	47.52	47.52	47.52	47.52	47.52	47.52	27.82	37.13	39.23	39.71	39.82	39.84
12.00	40.75	53.00	53.90	53.90	53.90	53.90	53.90	53.90	33.35	42.09	44.07	44.52	44.62	44.65
13.00	33.89	54.45	55.15	55.15	55.15	55.15	55.15	55.15	35.43	43.65	45.52	45.94	46.03	46.06
14.00	39.46	51.38	51.93	51.93	51.93	51.93	51.93	51.93	34.42	42.15	43.90	44.30	44.39	44.41
15.00	40.07	49.41	49.84	49.84	49.84	49.84	49.84	49.84	34.05	41.32	42.96	43.33	43.42	43.44
16.00	37.11	49.11	49.44	49.44	49.44	49.44	49.44	49.44	34.73	41.56	43.10	43.45	43.53	43.55
17.00	34.73	47.85	48.11	48.11	48.11	48.11	48.11	48.11	34.70	41.12	42.58	42.91	42.98	43.00
18.00	30.92	45.05	45.26	45.26	45.26	45.26	45.26	45.26	33.57	39.60	40.97	41.28	41.35	41.36
19.00	29.40	40.60	40.76	40.76	40.76	40.76	40.76	40.76	31.21	36.88	38.16	38.45	38.52	38.53
20.00	28.40	35.46	35.59	35.59	35.59	35.59	35.59	35.59	28.26	33.59	34.80	35.07	35.13	35.14
21.00	27.00	30.49	30.59	30.59	30.59	30.59	30.59	30.59	25.29	30.30	31.44	31.69	31.75	31.77
22.00	26.40	25.71	25.78	25.78	25.78	25.78	25.78	25.78	22.34	27.05	28.11	28.36	28.41	28.42
23.00	26.00	21.33	21.39	21.39	21.39	21.39	21.39	21.39	19.55	23.98	24.98	25.21	25.26	25.27
Average	33.77							29.13						29.13

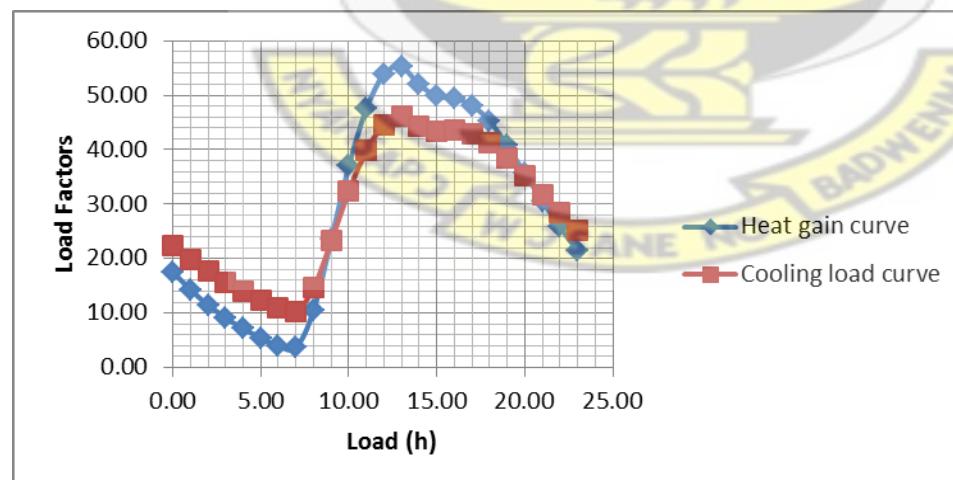


FIGURE A4. 22: Heat Gain and cooling load factors for 4-in. h. w.concrete S-E facing wall

TABLE A4.23: Heat Gain and cooling load factors for 4-in. h. w. concrete S-W facing wall

t h	T _{os} , t _o °C	1st day	2nd day	3rd day	4th day	5th day	6th day	Heat Gain factor	1st day	2nd day	3rd day	4th day	5th day	Cooling load factor
-5.00	29.40	0.00							0.00					
-4.00	28.40	0.00							0.00					
-3.00	27.00	0.00							0.00					
-2.00	26.40	0.00							0.00					
-1.00	26.00	0.00							0.00					
0.00	25.60	0.72	26.89	26.96	26.96	26.96	26.96	26.96	-2.36	22.68	28.35	29.63	29.92	29.99
1.00	25.30	1.10	21.59	21.65	21.65	21.65	21.65	21.65	-4.22	19.32	24.65	25.85	26.13	26.19
2.00	25.10	1.16	17.21	17.25	17.25	17.25	17.25	17.25	-5.66	16.46	21.47	22.61	22.86	22.92
3.00	24.90	1.04	13.60	13.64	13.64	13.64	13.64	13.64	-6.75	14.05	18.76	19.82	20.06	20.12
4.00	24.70	0.79	10.63	10.66	10.66	10.66	10.66	10.66	-7.56	11.99	16.42	17.42	17.65	17.70
5.00	24.50	0.46	8.16	8.18	8.18	8.18	8.18	8.18	-8.15	10.23	14.39	15.33	15.54	15.59
6.00	25.00	0.08	6.11	6.13	6.13	6.13	6.13	6.13	-8.57	8.70	12.62	13.50	13.70	13.75
7.00	28.34	0.08	4.80	4.82	4.82	4.82	4.82	4.82	-8.58	7.66	11.33	12.17	12.36	12.40
8.00	30.17	1.63	5.32	5.33	5.33	5.33	5.33	5.33	-7.42	7.84	11.30	12.08	12.26	12.30
9.00	31.80	4.47	7.36	7.37	7.37	7.37	7.37	7.37	-5.27	9.08	12.33	13.06	13.23	13.27
10.00	33.32	7.96	10.22	10.23	10.23	10.23	10.23	10.23	-2.56	10.92	13.98	14.67	14.82	14.86
11.00	30.19	11.62	13.39	13.40	13.40	13.40	13.40	13.40	0.36	13.04	15.91	16.56	16.71	16.74
12.00	39.56	14.06	15.44	15.45	15.45	15.45	15.45	15.45	2.54	14.45	17.15	17.76	17.90	17.93
13.00	48.81	19.46	20.55	20.55	20.55	20.55	20.55	20.55	6.79	17.99	20.53	21.10	21.23	21.26
14.00	55.84	29.91	30.76	30.76	30.76	30.76	30.76	30.76	14.57	25.10	27.48	28.02	28.14	28.17
15.00	60.04	43.61	44.28	44.28	44.28	44.28	44.28	44.28	24.75	34.64	36.88	37.39	37.51	37.53
16.00	57.46	57.91	58.43	58.43	58.43	58.43	58.43	58.43	35.56	44.86	46.97	47.44	47.55	47.58
17.00	49.22	68.94	69.35	69.35	69.35	69.35	69.35	69.35	44.36	53.11	55.09	55.54	55.64	55.66
18.00	37.30	73.24	73.56	73.56	73.56	73.56	73.56	73.56	48.73	56.95	58.81	59.23	59.33	59.35
19.00	29.40	69.39	69.64	69.64	69.64	69.64	69.64	69.64	47.55	55.28	57.03	57.42	57.51	57.53
20.00	28.40	60.02	60.22	60.22	60.22	60.22	60.22	60.22	42.46	49.72	51.37	51.74	51.82	51.84
21.00	27.00	49.95	50.10	50.10	50.10	50.10	50.10	50.10	36.63	43.46	45.01	45.36	45.44	45.46
22.00	26.40	40.96	41.08	41.08	41.08	41.08	41.08	41.08	31.30	37.72	39.17	39.50	39.58	39.59
23.00	26.00	33.28	33.37	33.37	33.37	33.37	33.37	33.37	26.64	32.67	34.03	34.34	34.41	34.43
Average	33.93							29.68						29.67

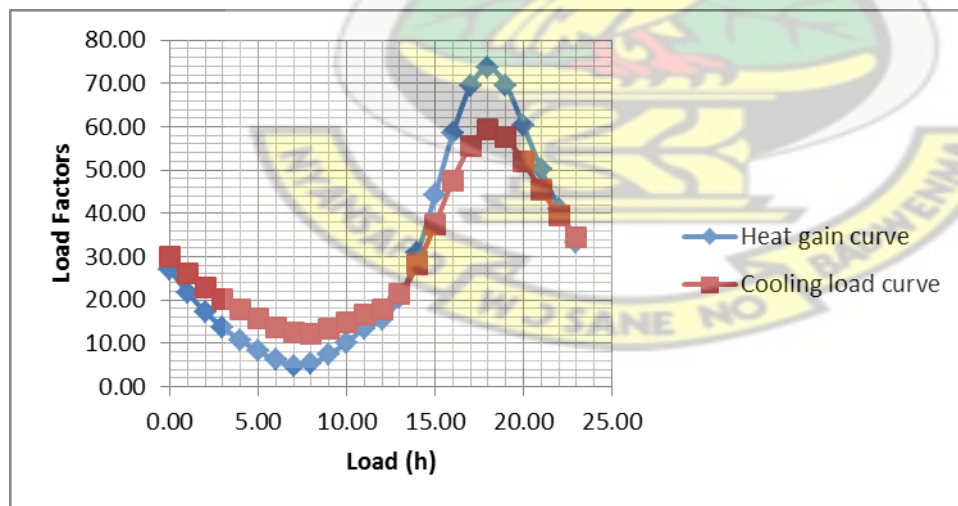
**FIGURE A4. 23: Heat Gain and cooling load factors for 4-in. h. w. concrete S-W facing wall**

TABLE A4.24: Heat Gain and cooling load factors for 4-in. h. w.concrete SHADED facing wall

t h	Tos,t oC	1st day	2nd day	3rd day	4th day	5th day	6th day	Heat Gain factor	1st day	2nd day	3rd day	4th day	5th day	Cooling load factor
-5.00	29.40	0.00							0.00					
-4.00	28.40	0.00							0.00					
-3.00	27.00	0.00							0.00					
-2.00	26.40	0.00							0.00					
-1.00	26.00	0.00							0.00					
0.00	25.60	0.72	11.35	11.38	11.38	11.38	11.38	11.38	-0.61	8.81	10.95	11.43	11.54	11.56
1.00	25.30	1.10	9.43	9.45	9.45	9.45	9.45	9.45	-1.21	7.65	9.66	10.12	10.22	10.24
2.00	25.10	1.16	7.68	7.70	7.70	7.70	7.70	7.70	-1.76	6.57	8.46	8.88	8.98	9.00
3.00	24.90	1.04	6.14	6.16	6.16	6.16	6.16	6.16	-2.24	5.59	7.36	7.76	7.85	7.87
4.00	24.70	0.79	4.79	4.80	4.80	4.80	4.80	4.80	-2.66	4.70	6.37	6.74	6.83	6.85
5.00	24.50	0.46	3.59	3.60	3.60	3.60	3.60	3.60	-3.03	3.88	5.45	5.81	5.89	5.90
6.00	25.00	0.08	2.53	2.54	2.54	2.54	2.54	2.54	-3.36	3.15	4.62	4.95	5.03	5.04
7.00	25.00	-0.07	1.85	1.86	1.86	1.86	1.86	1.86	-3.47	2.65	4.03	4.34	4.42	4.43
8.00	25.40	-0.05	1.45	1.46	1.46	1.46	1.46	1.46	-3.42	2.33	3.63	3.92	3.99	4.00
9.00	26.30	0.18	1.36	1.36	1.36	1.36	1.36	1.36	-3.19	2.21	3.43	3.71	3.77	3.78
10.00	27.40	0.87	1.79	1.79	1.79	1.79	1.79	1.79	-2.63	2.45	3.60	3.86	3.92	3.93
11.00	30.00	2.20	2.92	2.92	2.92	2.92	2.92	2.92	-1.59	3.18	4.26	4.50	4.56	4.57
12.00	31.00	4.62	5.19	5.19	5.19	5.19	5.19	5.19	0.22	4.71	5.73	5.96	6.01	6.02
13.00	32.50	7.66	8.10	8.10	8.10	8.10	8.10	8.10	2.50	6.72	7.67	7.89	7.94	7.95
14.00	33.50	11.00	11.35	11.35	11.35	11.35	11.35	11.35	5.05	9.01	9.91	10.12	10.16	10.17
15.00	34.50	14.46	14.74	14.74	14.74	14.74	14.74	14.74	7.74	11.46	12.31	12.50	12.54	12.55
16.00	32.20	17.77	17.98	17.98	17.98	17.98	17.98	17.98	10.37	13.87	14.66	14.84	14.88	14.89
17.00	31.10	19.65	19.81	19.81	19.81	19.81	19.81	19.81	12.07	15.36	16.11	16.28	16.32	16.32
18.00	30.50	20.13	20.26	20.26	20.26	20.26	20.26	20.26	12.84	15.93	16.63	16.79	16.83	16.84
19.00	29.40	19.88	19.99	19.99	19.99	19.99	19.99	19.99	13.10	16.01	16.67	16.82	16.85	16.86
20.00	28.40	19.02	19.10	19.10	19.10	19.10	19.10	19.10	12.91	15.64	16.26	16.40	16.43	16.44
21.00	27.00	17.59	17.66	17.66	17.66	17.66	17.66	17.66	12.30	14.87	15.45	15.58	15.61	15.62
22.00	26.40	15.61	15.66	15.66	15.66	15.66	15.66	15.66	11.26	13.67	14.22	14.34	14.37	14.38
23.00	26.00	13.42	13.46	13.46	13.46	13.46	13.46	13.46	10.03	12.30	12.81	12.93	12.95	12.96
Average	27.54							9.93						9.93

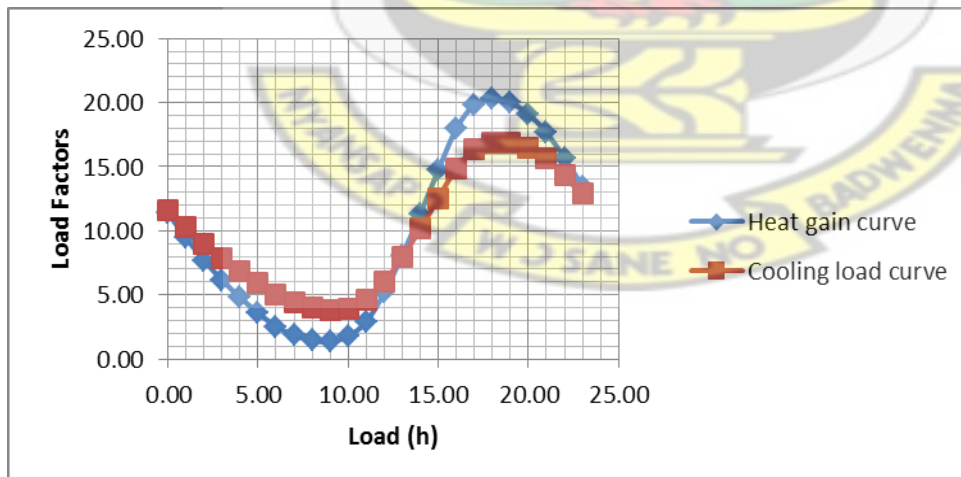


FIGURE A4. 24: Heat Gain and cooling load factors for 4-in. h. w. concrete SHADED facing wall

TABLE A4.25: Heat Gain and cooling load factors for 4-in. common brick WEST facing wall

t h	Tos,t oC	1st day	2nd day	3rd day	4th day	5th day	6th day	Heat Gain factor	1st day	2nd day	3rd day	4th day	5th day	Cooling load factor
-5.00	29.40	0.00							0.00					
-4.00	28.40	0.00							0.00					
-3.00	27.00	0.00							0.00					
-2.00	26.40	0.00							0.00					
-1.00	26.00	0.00							0.00					
0.00	25.60	0.55	27.36	27.41	27.41	27.41	27.41	27.41	-2.62	22.21	27.84	29.11	29.40	29.47
1.00	25.30	0.93	21.76	21.80	21.80	21.80	21.80	21.80	-4.64	18.71	23.99	25.19	25.46	25.52
2.00	25.10	1.07	17.20	17.23	17.23	17.23	17.23	17.23	-6.16	15.78	20.75	21.87	22.13	22.19
3.00	24.90	1.01	13.49	13.52	13.52	13.52	13.52	13.52	-7.29	13.34	18.01	19.07	19.31	19.36
4.00	24.70	0.84	10.50	10.52	10.52	10.52	10.52	10.52	-8.08	11.30	15.69	16.69	16.91	16.96
5.00	24.50	0.58	8.05	8.07	8.07	8.07	8.07	8.07	-8.64	9.59	13.72	14.65	14.86	14.91
6.00	25.00	0.27	6.05	6.06	6.06	6.06	6.06	6.06	-9.00	8.13	12.01	12.89	13.09	13.13
7.00	28.30	0.08	4.54	4.55	4.55	4.55	4.55	4.55	-9.12	6.98	10.63	11.45	11.64	11.68
8.00	30.20	0.67	4.13	4.14	4.14	4.14	4.14	4.14	-8.59	6.55	9.98	10.76	10.93	10.97
9.00	31.80	2.43	5.11	5.11	5.11	5.11	5.11	5.11	-7.16	7.07	10.29	11.02	11.19	11.22
10.00	33.30	4.94	7.01	7.01	7.01	7.01	7.01	7.01	-5.13	8.25	11.27	11.96	12.12	12.15
11.00	36.20	7.88	9.48	9.48	9.48	9.48	9.48	9.48	-2.72	9.85	12.70	13.35	13.49	13.52
12.00	38.30	11.34	12.57	12.58	12.58	12.58	12.58	12.58	0.12	11.94	14.62	15.22	15.36	15.39
13.00	51.00	15.49	16.45	16.45	16.45	16.45	16.45	16.45	3.51	14.61	17.13	17.70	17.83	17.86
14.00	61.30	22.08	22.82	22.82	22.82	22.82	22.82	22.82	8.62	19.07	21.43	21.97	22.09	22.12
15.00	67.90	32.86	33.44	33.44	33.44	33.44	33.44	33.44	16.70	26.52	28.74	29.25	29.36	29.39
16.00	65.50	46.46	46.90	46.90	46.90	46.90	46.90	46.90	26.88	36.11	38.19	38.67	38.78	38.80
17.00	54.70	59.49	59.84	59.84	59.84	59.84	59.84	59.84	36.89	45.56	47.52	47.97	48.07	48.09
18.00	39.40	67.71	67.98	67.98	67.98	67.98	67.98	67.98	43.81	51.96	53.81	54.22	54.32	54.34
19.00	29.40	68.21	68.41	68.41	68.41	68.41	68.41	68.41	45.55	53.22	54.95	55.35	55.44	55.46
20.00	28.40	61.58	61.73	61.74	61.74	61.74	61.74	61.74	42.38	49.58	51.21	51.58	51.67	51.69
21.00	27.00	51.86	51.99	51.99	51.99	51.99	51.99	51.99	36.90	43.67	45.21	45.55	45.63	45.65
22.00	26.40	42.43	42.53	42.53	42.53	42.53	42.53	42.53	31.36	37.73	39.17	39.50	39.57	39.59
23.00	26.00	34.20	34.28	34.28	34.28	34.28	34.28	34.28	26.42	32.40	33.75	34.06	34.13	34.15
Average	35.43							27.24						27.23

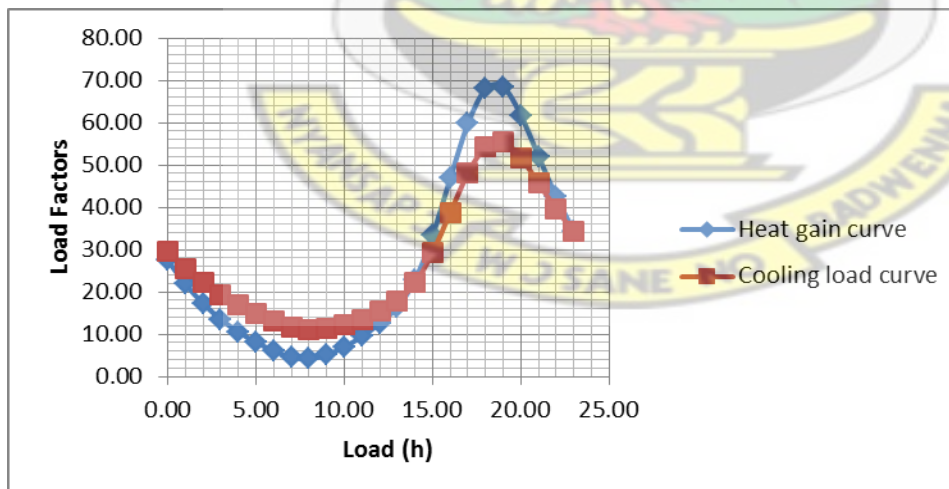


FIGURE A4. 25: Heat Gain and cooling load factors for 4-in. common brick WEST facing wall

TABLE A4.26: Heat Gain and cooling load factors for 4-in. common brick EAST facing wall

t h	T _{os} , t _o °C	1st day	2nd day	3rd day	4th day	5th day	6th day	Heat Gain	1st day	2nd day	3rd day	4th day	5th day	Cooling load
-5.00	29.40	0.00							0.00					
-4.00	28.40	0.00							0.00					
-3.00	27.00	0.00							0.00					
-2.00	26.40	0.00							0.00					
-1.00	26.00	0.00							0.00					
0.00	25.60	0.55	15.89	15.92	15.92	15.92	15.92	15.92	-1.23	15.52	19.32	20.18	20.37	20.42
1.00	25.30	0.93	12.88	12.91	12.91	12.91	12.91	12.91	-2.26	13.50	17.06	17.87	18.05	18.10
2.00	25.10	1.07	10.33	10.35	10.35	10.35	10.35	10.35	-3.09	11.72	15.07	15.83	16.00	16.04
3.00	24.90	1.01	8.18	8.20	8.20	8.20	8.20	8.20	-3.75	10.17	13.32	14.04	14.20	14.23
4.00	24.70	0.84	6.39	6.40	6.40	6.40	6.40	6.40	-4.26	8.83	11.79	12.46	12.61	12.65
5.00	24.50	0.58	4.87	4.88	4.88	4.88	4.88	4.88	-4.65	7.65	10.43	11.07	11.21	11.24
6.00	25.00	0.27	3.59	3.60	3.60	3.60	3.60	3.60	-4.95	6.61	9.23	9.82	9.95	9.98
7.00	46.15	0.23	2.79	2.80	2.80	2.80	2.80	2.80	-4.98	5.88	8.35	8.90	9.03	9.06
8.00	57.97	4.41	6.40	6.40	6.40	6.40	6.40	6.40	-2.06	8.15	10.47	10.99	11.11	11.14
9.00	60.11	15.59	17.13	17.13	17.13	17.13	17.13	17.13	5.75	15.36	17.53	18.02	18.13	18.16
10.00	56.25	29.79	30.98	30.98	30.98	30.98	30.98	30.98	15.87	24.89	26.94	27.40	27.51	27.53
11.00	50.01	42.20	43.11	43.12	43.12	43.12	43.12	43.12	25.04	33.52	35.44	35.88	35.98	36.00
12.00	40.01	50.10	50.81	50.81	50.81	50.81	50.81	50.81	31.37	39.34	41.15	41.56	41.65	41.67
13.00	38.68	52.43	52.98	52.98	52.98	52.98	52.98	52.98	34.01	41.50	43.20	43.59	43.67	43.69
14.00	39.46	50.67	51.09	51.10	51.10	51.10	51.10	51.10	33.86	40.91	42.50	42.87	42.95	42.97
15.00	40.07	47.99	48.32	48.32	48.32	48.32	48.32	48.32	33.01	39.63	41.13	41.47	41.55	41.56
16.00	37.11	45.81	46.06	46.06	46.06	46.06	46.06	46.06	32.39	38.61	40.03	40.34	40.42	40.43
17.00	34.73	43.68	43.87	43.87	43.87	43.87	43.87	43.87	31.72	37.57	38.90	39.20	39.26	39.28
18.00	30.92	40.81	40.96	40.96	40.96	40.96	40.96	40.96	30.46	35.96	37.21	37.49	37.56	37.57
19.00	29.40	36.95	37.06	37.07	37.07	37.07	37.07	37.07	28.44	33.61	34.78	35.05	35.11	35.12
20.00	28.40	32.35	32.45	32.45	32.45	32.45	32.45	32.45	25.81	30.67	31.77	32.02	32.08	32.09
21.00	27.00	27.76	27.83	27.83	27.83	27.83	27.83	27.83	23.07	27.64	28.67	28.90	28.96	28.97
22.00	26.40	23.41	23.47	23.47	23.47	23.47	23.47	23.47	20.38	24.68	25.65	25.87	25.92	25.93
23.00	26.00	19.40	19.44	19.44	19.44	19.44	19.44	19.44	17.83	21.86	22.78	22.98	23.03	23.04
Average	35.16							26.54						26.54

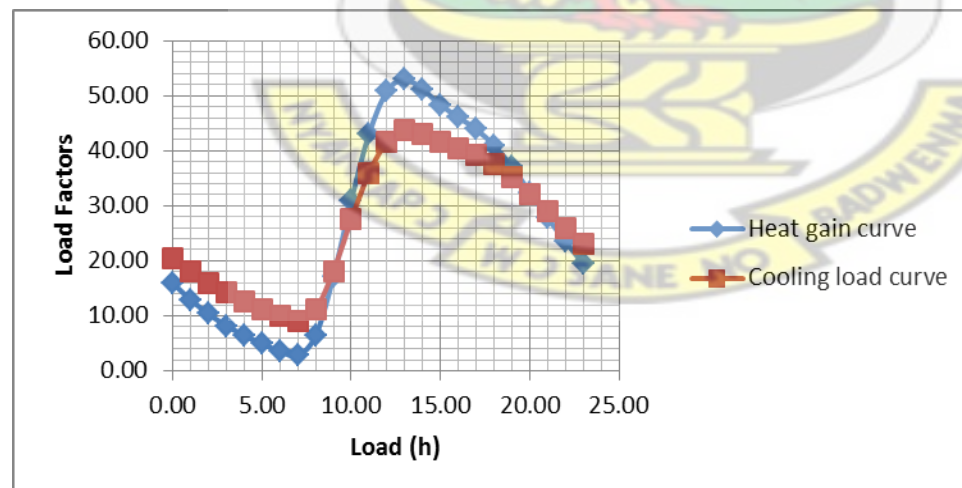


FIGURE A4. 26: Heat Gain and cooling load factors for 4-in. common brick EAST facing wall

TABLE A4.27: Heat Gain and cooling load factors for 4-in. common brick SOUTH facing wall

t h	Tos,t oC	1st day	2nd day	3rd day	4th day	5th day	6th day	Heat Gain factor	1st day	2nd day	3rd day	4th day	5th day	Cooling load factor
-5.00	29.40	0.00							0.00					
-4.00	28.40	0.00							0.00					
-3.00	27.00	0.00							0.00					
-2.00	26.40	0.00							0.00					
-1.00	26.00	0.00							0.00					
0.00	25.60	0.55	14.22	14.25	14.25	14.25	14.25	14.25	-1.03	11.98	14.92	15.59	15.74	15.78
1.00	25.30	0.93	11.60	11.62	11.62	11.62	11.62	11.62	-1.91	10.32	13.09	13.72	13.86	13.89
2.00	25.10	1.07	9.34	9.35	9.35	9.35	9.35	9.35	-2.64	8.85	11.46	12.05	12.18	12.21
3.00	24.90	1.01	7.41	7.43	7.43	7.43	7.43	7.43	-3.23	7.57	10.02	10.57	10.70	10.73
4.00	24.70	0.84	5.79	5.80	5.80	5.80	5.80	5.80	-3.70	6.46	8.76	9.28	9.40	9.42
5.00	24.50	0.58	4.41	4.42	4.42	4.42	4.42	4.42	-4.07	5.48	7.64	8.13	8.24	8.27
6.00	25.00	0.27	3.24	3.24	3.24	3.24	3.24	3.24	-4.36	4.61	6.64	7.10	7.21	7.23
7.00	28.30	0.08	2.37	2.37	2.37	2.37	2.37	2.37	-4.50	3.94	5.85	6.28	6.38	6.40
8.00	30.45	0.68	2.45	2.45	2.45	2.45	2.45	2.45	-4.03	3.90	5.69	6.10	6.19	6.21
9.00	32.34	2.49	3.86	3.86	3.86	3.86	3.86	3.86	-2.68	4.77	6.46	6.84	6.93	6.95
10.00	35.28	5.17	6.23	6.23	6.23	6.23	6.23	6.23	-0.68	6.33	7.91	8.27	8.36	8.37
11.00	39.10	8.62	9.44	9.44	9.44	9.44	9.44	9.44	1.93	8.51	10.00	10.34	10.42	10.43
12.00	40.56	13.07	13.70	13.70	13.70	13.70	13.70	13.70	5.28	11.47	12.87	13.19	13.26	13.28
13.00	41.72	18.16	18.65	18.65	18.65	18.65	18.65	18.65	9.15	14.97	16.29	16.59	16.65	16.67
14.00	41.60	23.15	23.53	23.53	23.53	23.53	23.53	23.53	13.04	18.51	19.75	20.03	20.10	20.11
15.00	40.84	27.54	27.83	27.83	27.83	27.83	27.83	27.83	16.61	21.75	22.91	23.18	23.24	23.25
16.00	37.41	30.91	31.13	31.13	31.13	31.13	31.13	31.13	19.53	24.36	25.45	25.70	25.76	25.77
17.00	34.74	32.67	32.84	32.84	32.84	32.84	32.84	32.84	21.39	25.93	26.96	27.19	27.24	27.26
18.00	31.33	32.51	32.65	32.65	32.65	32.65	32.65	32.65	21.94	26.21	27.18	27.40	27.45	27.46
19.00	29.40	30.68	30.78	30.78	30.78	30.78	30.78	30.78	21.31	25.33	26.24	26.44	26.49	26.50
20.00	28.40	27.63	27.71	27.71	27.71	27.71	27.71	27.71	19.79	23.56	24.42	24.61	24.66	24.67
21.00	27.00	24.15	24.21	24.21	24.21	24.21	24.21	24.21	17.88	21.43	22.23	22.41	22.46	22.46
22.00	26.40	20.63	20.68	20.68	20.68	20.68	20.68	20.68	15.86	19.19	19.95	20.12	20.16	20.16
23.00	26.00	17.25	17.29	17.29	17.29	17.29	17.29	17.29	13.84	16.97	17.68	17.84	17.88	17.89
Average	31.08							15.90						15.89

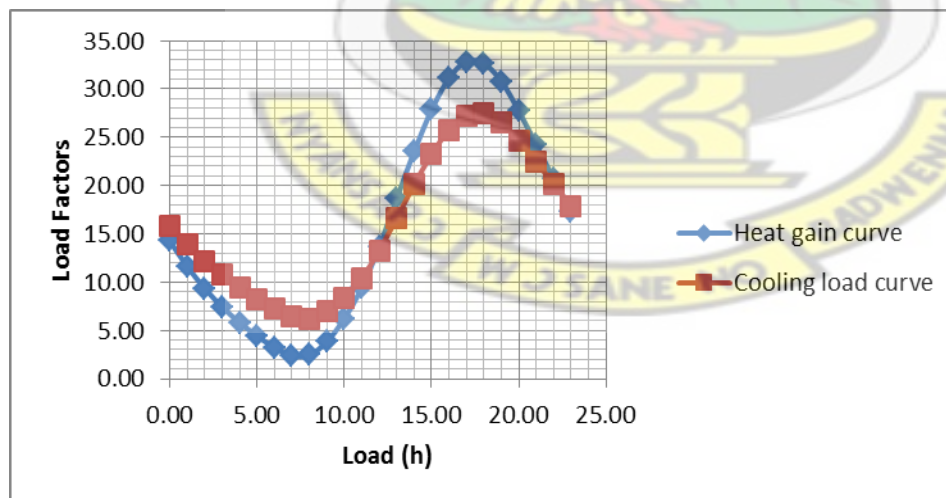


FIGURE A4. 27: Heat Gain and cooling load factors for 4-in. common brick SOUTH facing wall

TABLE A4.28: Heat Gain and cooling load factors for 4-in. common brick NORTH facing wall

t h	Tos, t oC	1st day	2nd day	3rd day	4th day	5th day	6th day	Heat Gain factor	1st day	2nd day	3rd day	4th day	5th day	Cooling load factor
-5.00	29.40	0.00							0.00					
-4.00	28.40	0.00							0.00					
-3.00	27.00	0.00							0.00					
-2.00	26.40	0.00							0.00					
-1.00	26.00	0.00							0.00					
0.00	25.60	0.55	12.78	12.81	12.81	12.81	12.81	12.81	-0.86	10.58	13.17	13.76	13.89	13.92
1.00	25.30	0.93	10.48	10.50	10.50	10.50	10.50	10.50	-1.61	9.15	11.58	12.13	12.26	12.29
2.00	25.10	1.07	8.47	8.49	8.49	8.49	8.49	8.49	-2.25	7.86	10.15	10.66	10.78	10.81
3.00	24.90	1.01	6.74	6.76	6.76	6.76	6.76	6.76	-2.79	6.72	8.87	9.36	9.47	9.49
4.00	24.70	0.84	5.27	5.28	5.28	5.28	5.28	5.28	-3.22	5.71	7.74	8.20	8.30	8.32
5.00	24.50	0.58	4.01	4.02	4.02	4.02	4.02	4.02	-3.57	4.83	6.73	7.16	7.26	7.28
6.00	25.00	0.27	2.93	2.93	2.93	2.93	2.93	2.93	-3.85	4.04	5.83	6.23	6.32	6.34
7.00	26.65	0.06	2.11	2.12	2.12	2.12	2.12	2.12	-4.00	3.42	5.10	5.48	5.57	5.59
8.00	29.22	0.34	1.93	1.93	1.93	1.93	1.93	1.93	-3.76	3.21	4.79	5.15	5.23	5.25
9.00	32.24	1.55	2.78	2.78	2.78	2.78	2.78	2.78	-2.84	3.72	5.20	5.54	5.61	5.63
10.00	33.83	3.93	4.88	4.88	4.88	4.88	4.88	4.88	-1.07	5.09	6.48	6.80	6.87	6.89
11.00	36.10	7.18	7.91	7.92	7.92	7.92	7.92	7.92	1.35	7.14	8.45	8.75	8.82	8.83
12.00	37.18	10.92	11.49	11.49	11.49	11.49	11.49	11.49	4.18	9.62	10.86	11.13	11.20	11.21
13.00	38.61	14.88	15.31	15.32	15.32	15.32	15.32	15.32	7.22	12.34	13.50	13.76	13.82	13.84
14.00	39.39	18.78	19.12	19.12	19.12	19.12	19.12	19.12	10.30	15.11	16.20	16.44	16.50	16.51
15.00	40.00	22.50	22.76	22.76	22.76	22.76	22.76	22.76	13.31	17.83	18.86	19.09	19.14	19.15
16.00	36.35	25.85	26.06	26.06	26.06	26.06	26.06	26.06	16.12	20.37	21.33	21.55	21.60	21.61
17.00	33.04	28.01	28.16	28.16	28.16	28.16	28.16	28.16	18.15	22.15	23.05	23.26	23.30	23.31
18.00	30.22	28.14	28.26	28.26	28.26	28.26	28.26	28.26	18.82	22.57	23.42	23.61	23.66	23.67
19.00	29.40	26.48	26.58	26.58	26.58	26.58	26.58	26.58	18.24	21.77	22.57	22.75	22.79	22.80
20.00	28.40	23.89	23.97	23.97	23.97	23.97	23.97	23.97	16.96	20.28	21.03	21.20	21.24	21.25
21.00	27.00	21.10	21.16	21.16	21.16	21.16	21.16	21.16	15.47	18.59	19.29	19.45	19.49	19.50
22.00	26.40	18.23	18.28	18.28	18.28	18.28	18.28	18.28	13.85	16.78	17.44	17.60	17.63	17.64
23.00	26.00	15.39	15.42	15.42	15.42	15.42	15.42	15.42	12.17	14.93	15.55	15.69	15.72	15.73
Average	30.21							13.62						13.62

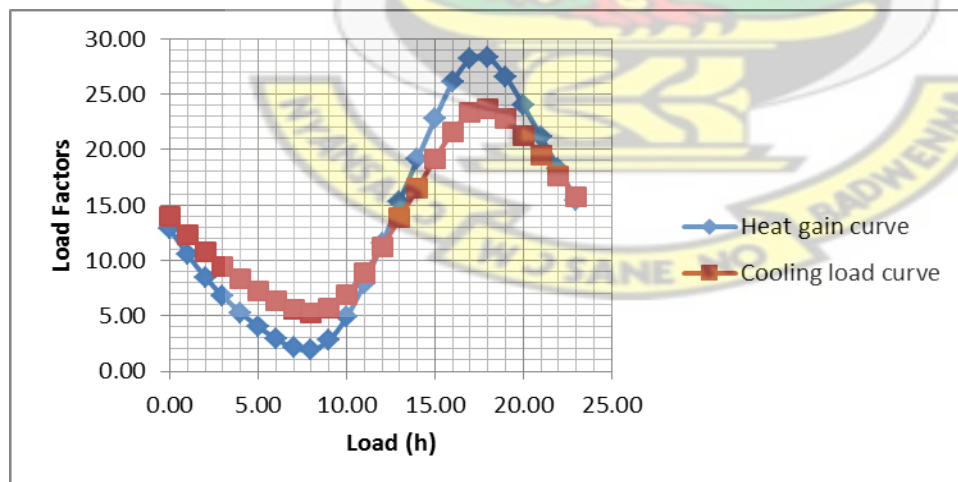


FIGURE A4. 28: Heat Gain and cooling load factors for 4-in. common brick NORTH facing wall

TABLE A4.29: Heat Gain and cooling load factors for 4-in. common brick N-E facing wall

t h	T _{os} , t _o C	1st day	2nd day	3rd day	4th day	5th day	6th day	Heat Gain factor	1st day	2nd day	3rd day	4th day	5th day	Cooling load factor
-5.00	29.40	0.00							0.00					
-4.00	28.40	0.00							0.00					
-3.00	27.00	0.00							0.00					
-2.00	26.40	0.00							0.00					
-1.00	26.00	0.00							0.00					
0.00	25.60	0.55	15.09	15.12	15.12	15.12	15.12	15.12	-1.14	14.12	17.57	18.36	18.53	18.57
1.00	25.30	0.93	12.27	12.29	12.29	12.29	12.29	12.29	-2.09	12.25	15.50	16.23	16.40	16.44
2.00	25.10	1.07	9.85	9.87	9.87	9.87	9.87	9.87	-2.87	10.61	13.66	14.35	14.51	14.54
3.00	24.90	1.01	7.81	7.83	7.83	7.83	7.83	7.83	-3.50	9.17	12.04	12.69	12.84	12.87
4.00	24.70	0.84	6.10	6.11	6.11	6.11	6.11	6.11	-3.99	7.92	10.62	11.23	11.37	11.40
5.00	24.50	0.58	4.65	4.66	4.66	4.66	4.66	4.66	-4.37	6.83	9.36	9.94	10.07	10.10
6.00	25.00	0.27	3.42	3.43	3.43	3.43	3.43	3.43	-4.67	5.85	8.24	8.78	8.90	8.93
7.00	40.10	0.18	2.61	2.62	2.62	2.62	2.62	2.62	-4.74	5.16	7.40	7.91	8.02	8.05
8.00	49.30	3.15	5.03	5.04	5.04	5.04	5.04	5.04	-2.64	6.65	8.76	9.24	9.35	9.37
9.00	51.92	11.29	12.75	12.75	12.75	12.75	12.75	12.75	3.07	11.81	13.79	14.24	14.34	14.36
10.00	49.38	21.96	23.09	23.09	23.09	23.09	23.09	23.09	10.69	18.91	20.77	21.19	21.29	21.31
11.00	45.61	31.64	32.51	32.52	32.52	32.52	32.52	32.52	17.85	25.58	27.33	27.72	27.81	27.83
12.00	38.79	38.24	38.92	38.92	38.92	38.92	38.92	38.92	23.09	30.35	32.00	32.37	32.45	32.47
13.00	38.68	40.94	41.46	41.47	41.47	41.47	41.47	41.47	25.78	32.60	34.15	34.50	34.58	34.59
14.00	39.46	40.81	41.21	41.21	41.21	41.21	41.21	41.21	26.55	32.96	34.42	34.74	34.82	34.84
15.00	40.07	40.09	40.40	40.40	40.40	40.40	40.40	40.40	26.87	32.90	34.27	34.58	34.65	34.66
16.00	37.11	39.63	39.87	39.87	39.87	39.87	39.87	39.87	27.32	32.99	34.28	34.57	34.63	34.65
17.00	34.73	38.88	39.07	39.07	39.07	39.07	39.07	39.07	27.53	32.86	34.06	34.34	34.40	34.41
18.00	30.92	37.09	37.23	37.24	37.24	37.24	37.24	37.24	26.97	31.98	33.12	33.37	33.43	33.45
19.00	29.40	34.07	34.18	34.18	34.18	34.18	34.18	34.18	25.51	30.22	31.29	31.53	31.58	31.60
20.00	28.40	30.13	30.22	30.22	30.22	30.22	30.22	30.22	23.33	27.76	28.76	28.99	29.04	29.05
21.00	27.00	26.04	26.11	26.11	26.11	26.11	26.11	26.11	20.94	25.10	26.05	26.26	26.31	26.32
22.00	26.40	22.08	22.13	22.13	22.13	22.13	22.13	22.13	18.55	22.46	23.34	23.55	23.59	23.60
23.00	26.00	18.37	18.41	18.41	18.41	18.41	18.41	18.41	16.23	19.90	20.74	20.93	20.97	20.98
Average	33.68							22.69						22.68

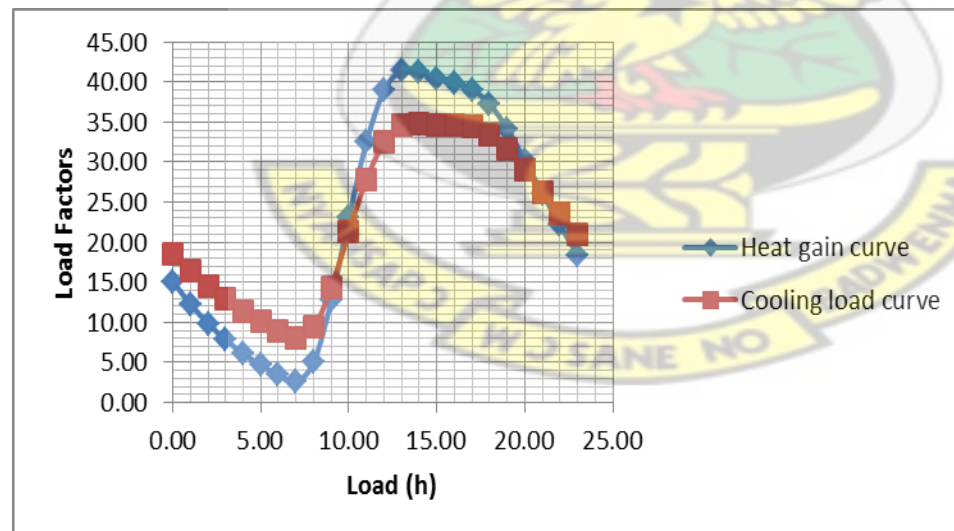
**FIGURE A4. 29: Heat Gain and cooling load factors for 4-in. common brick N-E facing wall**

TABLE A4.30: Heat Gain and cooling load factors for 4-in. common brick N-W facing wall

t h	T _{os} , t _o °C	1st day	2nd day	3rd day	4th day	5th day	6th day	Heat Gain factor	1st day	2nd day	3rd day	4th day	5th day	Cooling load factor
-5.00	29.40	0.00							0.00					
-4.00	28.40	0.00							0.00					
-3.00	27.00	0.00							0.00					
-2.00	26.40	0.00							0.00					
-1.00	26.00	0.00							0.00					
0.00	25.60	0.55	22.90	22.95	22.95	22.95	22.95	22.95	-2.08	18.66	23.36	24.42	24.66	24.72
1.00	25.30	0.93	18.31	18.35	18.35	18.35	18.35	18.35	-3.71	15.79	20.20	21.20	21.43	21.48
2.00	25.10	1.07	14.53	14.56	14.56	14.56	14.56	14.56	-4.97	13.36	17.51	18.45	18.66	18.71
3.00	24.90	1.01	11.43	11.45	11.45	11.45	11.45	11.45	-5.91	11.32	15.22	16.10	16.30	16.35
4.00	24.70	0.84	8.90	8.92	8.92	8.92	8.92	8.92	-6.60	9.60	13.26	14.09	14.28	14.33
5.00	24.50	0.58	6.82	6.83	6.83	6.83	6.83	6.83	-7.09	8.14	11.58	12.36	12.54	12.58
6.00	25.00	0.27	5.09	5.10	5.10	5.10	5.10	5.10	-7.43	6.88	10.12	10.86	11.02	11.06
7.00	28.34	0.08	3.81	3.81	3.81	3.81	3.81	3.81	-7.55	5.90	8.94	9.63	9.79	9.82
8.00	30.17	0.68	3.57	3.57	3.57	3.57	3.57	3.57	-7.04	5.61	8.47	9.12	9.27	9.30
9.00	31.80	2.44	4.68	4.68	4.68	4.68	4.68	4.68	-5.65	6.24	8.93	9.54	9.68	9.71
10.00	33.32	4.95	6.67	6.67	6.67	6.67	6.67	6.67	-3.67	7.50	10.03	10.61	10.74	10.77
11.00	36.15	7.88	9.22	9.22	9.22	9.22	9.22	9.22	-1.31	9.19	11.57	12.10	12.23	12.25
12.00	37.24	11.33	12.36	12.36	12.36	12.36	12.36	12.36	1.46	11.33	13.56	14.07	14.19	14.21
13.00	47.05	15.24	16.03	16.04	16.04	16.04	16.04	16.04	4.61	13.89	15.99	16.47	16.58	16.60
14.00	54.70	20.79	21.41	21.41	21.41	21.41	21.41	21.41	8.96	17.68	19.66	20.11	20.21	20.23
15.00	59.82	29.39	29.87	29.87	29.87	29.87	29.87	29.87	15.47	23.66	25.52	25.94	26.04	26.06
16.00	56.71	40.00	40.37	40.37	40.37	40.37	40.37	40.37	23.48	31.19	32.94	33.33	33.42	33.44
17.00	48.01	49.89	50.18	50.18	50.18	50.18	50.18	50.18	31.17	38.42	40.06	40.43	40.51	40.53
18.00	36.51	55.69	55.91	55.91	55.91	55.91	55.91	55.91	36.22	43.03	44.57	44.92	45.00	45.02
19.00	29.40	55.50	55.68	55.68	55.68	55.68	55.68	55.68	37.24	43.64	45.09	45.42	45.49	45.51
20.00	28.40	50.08	50.21	50.21	50.21	50.21	50.21	50.21	34.62	40.64	42.00	42.31	42.38	42.40
21.00	27.00	42.47	42.57	42.57	42.57	42.57	42.57	42.57	30.36	36.01	37.29	37.58	37.65	37.66
22.00	26.40	35.04	35.12	35.12	35.12	35.12	35.12	35.12	26.01	31.33	32.53	32.81	32.87	32.88
23.00	26.00	28.45	28.51	28.51	28.51	28.51	28.51	28.51	22.06	27.06	28.19	28.45	28.51	28.52
Average	33.84							23.10						23.09

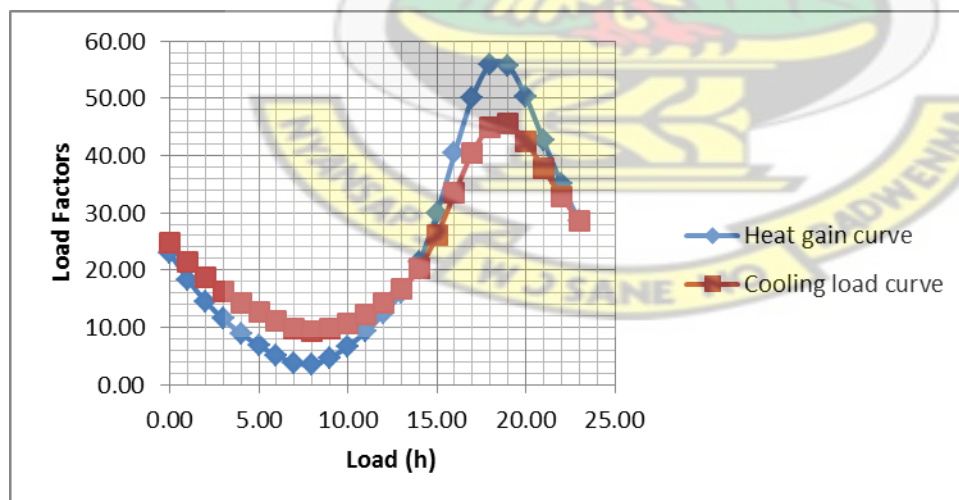
**FIGURE A4. 30: Heat Gain and cooling load factors for 4-in. common brick N-W facing wall**

TABLE A4.31: Heat Gain and cooling load factors for 4-in. common brick S-E facing wall

t h	T _{os} , t _o C	1st day	2nd day	3rd day	4th day	5th day	6th day	Heat Gain factor	1st day	2nd day	3rd day	4th day	5th day	Cooling load factor
-5.00	29.40	0.00							0.00					
-4.00	28.40	0.00							0.00					
-3.00	27.00	0.00							0.00					
-2.00	26.40	0.00							0.00					
-1.00	26.00	0.00							0.00					
0.00	25.60	0.55	15.01	15.05	15.05	15.05	15.05	15.05	-1.13	14.12	17.58	18.36	18.54	18.58
1.00	25.30	0.93	12.21	12.23	12.23	12.23	12.23	12.23	-2.07	12.26	15.51	16.24	16.41	16.45
2.00	25.10	1.07	9.81	9.83	9.83	9.83	9.83	9.83	-2.85	10.62	13.67	14.37	14.52	14.56
3.00	24.90	1.01	7.78	7.79	7.79	7.79	7.79	7.79	-3.48	9.19	12.06	12.71	12.86	12.89
4.00	24.70	0.84	6.07	6.08	6.08	6.08	6.08	6.08	-3.96	7.94	10.64	11.25	11.39	11.42
5.00	24.50	0.58	4.63	4.64	4.64	4.64	4.64	4.64	-4.34	6.85	9.38	9.96	10.09	10.12
6.00	25.00	0.27	3.40	3.41	3.41	3.41	3.41	3.41	-4.64	5.88	8.26	8.80	8.92	8.95
7.00	41.26	0.19	2.61	2.61	2.61	2.61	2.61	2.61	-4.70	5.19	7.43	7.93	8.05	8.08
8.00	50.16	3.39	5.26	5.27	5.27	5.27	5.27	5.27	-2.46	6.84	8.94	9.42	9.53	9.55
9.00	52.00	11.95	13.40	13.40	13.40	13.40	13.40	13.40	3.55	12.28	14.26	14.71	14.81	14.84
10.00	50.41	22.84	23.96	23.96	23.96	23.96	23.96	23.96	11.33	19.54	21.40	21.82	21.92	21.94
11.00	47.31	32.66	33.53	33.53	33.53	33.53	33.53	33.53	18.60	26.32	28.07	28.47	28.56	28.58
12.00	40.75	39.68	40.35	40.35	40.35	40.35	40.35	40.35	24.14	31.40	33.04	33.42	33.50	33.52
13.00	33.89	42.94	43.46	43.46	43.46	43.46	43.46	43.46	27.23	34.06	35.60	35.95	36.03	36.05
14.00	39.46	42.16	42.56	42.56	42.56	42.56	42.56	42.56	27.60	34.01	35.46	35.79	35.86	35.88
15.00	40.07	40.09	40.40	40.40	40.40	40.40	40.40	40.40	27.02	33.05	34.41	34.72	34.79	34.81
16.00	37.11	39.23	39.47	39.47	39.47	39.47	39.47	39.47	27.19	32.86	34.14	34.43	34.50	34.51
17.00	34.73	38.47	38.66	38.66	38.66	38.66	38.66	38.66	27.37	32.70	33.91	34.18	34.24	34.26
18.00	30.92	36.75	36.90	36.90	36.90	36.90	36.90	36.90	26.85	31.86	32.99	33.25	33.31	33.32
19.00	29.40	33.80	33.92	33.92	33.92	33.92	33.92	33.92	25.42	30.13	31.20	31.44	31.49	31.51
20.00	28.40	29.92	30.01	30.01	30.01	30.01	30.01	30.01	23.27	27.70	28.70	28.93	28.98	28.99
21.00	27.00	25.88	25.94	25.94	25.94	25.94	25.94	25.94	20.91	25.07	26.01	26.22	26.27	26.28
22.00	26.40	21.96	22.01	22.01	22.01	22.01	22.01	22.01	18.53	22.44	23.33	23.53	23.57	23.58
23.00	26.00	18.27	18.31	18.31	18.31	18.31	18.31	18.31	16.22	19.90	20.73	20.92	20.96	20.97
Average	33.77							22.91						22.90

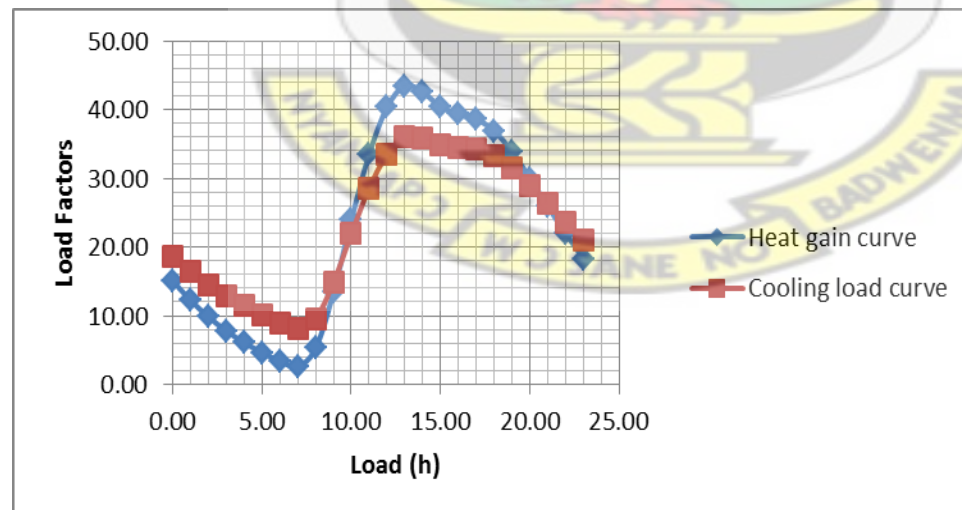


FIGURE A4. 31: Heat Gain and cooling load factors for 4-in. common brick S-E facing wall

TABLE A4.32: Heat Gain and cooling load factors for 4-in. common brick S-W facing wall

t h	T _{os} , t _o C	1st day	2nd day	3rd day	4th day	5th day	6th day	Heat Gain factor	1st day	2nd day	3rd day	4th day	5th day	Cooling load factor
-5.00	29.40	0.00							0.00					
-4.00	28.40	0.00							0.00					
-3.00	27.00	0.00							0.00					
-2.00	26.40	0.00							0.00					
-1.00	26.00	0.00							0.00					
0.00	25.60	0.55	23.48	23.53	23.53	23.53	23.53	23.53	-2.15	19.04	23.84	24.93	25.17	25.23
1.00	25.30	0.93	18.76	18.80	18.80	18.80	18.80	18.80	-3.83	16.09	20.60	21.62	21.85	21.91
2.00	25.10	1.07	14.88	14.90	14.90	14.90	14.90	14.90	-5.12	13.60	17.84	18.80	19.02	19.07
3.00	24.90	1.01	11.70	11.72	11.72	11.72	11.72	11.72	-6.09	11.51	15.50	16.40	16.60	16.65
4.00	24.70	0.84	9.11	9.12	9.12	9.12	9.12	9.12	-6.79	9.75	13.50	14.35	14.54	14.59
5.00	24.50	0.58	6.98	6.99	6.99	6.99	6.99	6.99	-7.29	8.26	11.79	12.58	12.77	12.81
6.00	25.00	0.27	5.22	5.23	5.23	5.23	5.23	5.23	-7.63	6.99	10.30	11.05	11.22	11.26
7.00	28.34	0.08	3.90	3.91	3.91	3.91	3.91	3.91	-7.76	5.98	9.10	9.80	9.96	10.00
8.00	30.17	0.68	3.64	3.65	3.65	3.65	3.65	3.65	-7.24	5.68	8.61	9.27	9.42	9.45
9.00	31.80	2.44	4.73	4.74	4.74	4.74	4.74	4.74	-5.84	6.30	9.05	9.67	9.82	9.85
10.00	33.32	4.95	6.72	6.72	6.72	6.72	6.72	6.72	-3.86	7.56	10.14	10.73	10.86	10.89
11.00	30.19	7.83	9.20	9.20	9.20	9.20	9.20	9.20	-1.53	9.20	11.63	12.18	12.30	12.33
12.00	39.56	10.18	11.23	11.24	11.24	11.24	11.24	11.24	0.50	10.58	12.87	13.39	13.50	13.53
13.00	48.81	13.21	14.03	14.03	14.03	14.03	14.03	14.03	3.05	12.53	14.67	15.16	15.27	15.29
14.00	55.84	19.62	20.26	20.26	20.26	20.26	20.26	20.26	7.95	16.86	18.87	19.33	19.44	19.46
15.00	60.04	29.25	29.74	29.74	29.74	29.74	29.74	29.74	15.14	23.52	25.42	25.84	25.94	25.96
16.00	57.46	40.44	40.82	40.82	40.82	40.82	40.82	40.82	23.56	31.43	33.22	33.62	33.71	33.73
17.00	49.22	50.59	50.89	50.89	50.89	50.89	50.89	50.89	31.46	38.86	40.53	40.91	41.00	41.02
18.00	37.30	56.73	56.96	56.96	56.96	56.96	56.96	56.96	36.76	43.71	45.29	45.65	45.73	45.74
19.00	29.40	56.87	57.04	57.04	57.04	57.04	57.04	57.04	38.02	44.56	46.05	46.38	46.46	46.47
20.00	28.40	51.48	51.61	51.61	51.61	51.61	51.61	51.61	35.47	41.61	43.01	43.32	43.39	43.41
21.00	27.00	43.66	43.76	43.76	43.76	43.76	43.76	43.76	31.09	36.87	38.18	38.48	38.54	38.56
22.00	26.40	35.99	36.07	36.07	36.07	36.07	36.07	36.07	26.61	32.04	33.27	33.55	33.61	33.63
23.00	26.00	29.20	29.26	29.26	29.26	29.26	29.26	29.26	22.54	27.65	28.80	29.06	29.12	29.14
Average	33.93							23.34						23.33

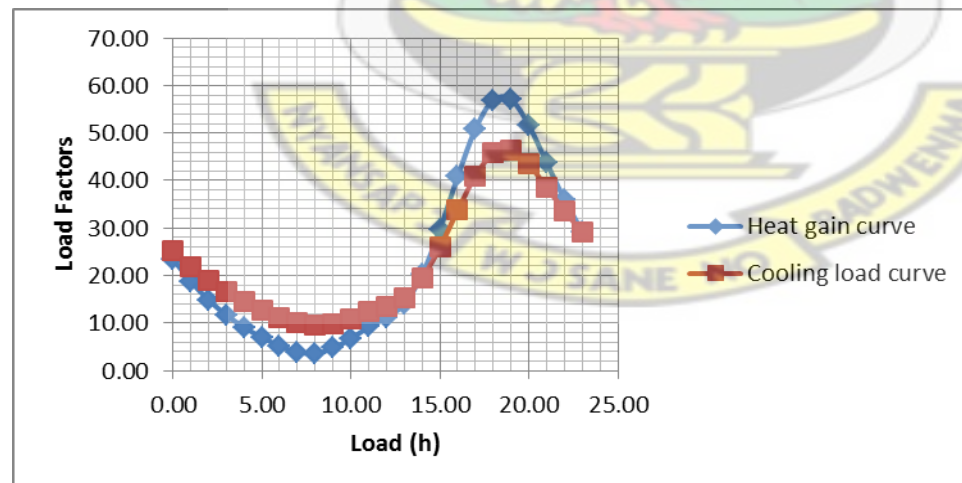
**FIGURE A4. 32: Heat Gain and cooling load factors for 4-in. common brick S-W facing wall**

TABLE A4.33: Heat Gain and cooling load factors for 4-in. common brick SHADED facing wall

t h	T _o , t oC	1st day	2nd day	3rd day	4th day	5th day	6th day	Heat Gain factor	1st day	2nd day	3rd day	4th day	5th day	Cooling load factor
-5.00	29.40	0.00							0.00					
-4.00	28.40	0.00							0.00					
-3.00	27.00	0.00							0.00					
-2.00	26.40	0.00							0.00					
-1.00	26.00	0.00							0.00					
0.00	25.60	0.55	9.73	9.75	9.75	9.75	9.75	9.75	-0.48	7.35	9.13	9.53	9.62	9.64
1.00	25.30	0.93	8.12	8.14	8.14	8.14	8.14	8.14	-0.97	6.40	8.07	8.44	8.53	8.55
2.00	25.10	1.07	6.65	6.66	6.66	6.66	6.66	6.66	-1.43	5.50	7.06	7.42	7.50	7.52
3.00	24.90	1.01	5.33	5.34	5.34	5.34	5.34	5.34	-1.84	4.67	6.14	6.48	6.55	6.57
4.00	24.70	0.84	4.18	4.19	4.19	4.19	4.19	4.19	-2.20	3.92	5.31	5.62	5.70	5.71
5.00	24.50	0.58	3.17	3.18	3.18	3.18	3.18	3.18	-2.50	3.25	4.55	4.85	4.91	4.93
6.00	25.00	0.27	2.27	2.28	2.28	2.28	2.28	2.28	-2.77	2.63	3.86	4.14	4.20	4.21
7.00	25.00	0.05	1.60	1.60	1.60	1.60	1.60	1.60	-2.93	2.15	3.30	3.56	3.62	3.63
8.00	25.40	-0.01	1.18	1.18	1.18	1.18	1.18	1.18	-2.94	1.83	2.92	3.16	3.22	3.23
9.00	26.30	0.06	0.99	0.99	0.99	0.99	0.99	0.99	-2.83	1.66	2.68	2.91	2.96	2.97
10.00	27.40	0.42	1.13	1.14	1.14	1.14	1.14	1.14	-2.50	1.72	2.68	2.89	2.94	2.95
11.00	30.00	1.21	1.76	1.76	1.76	1.76	1.76	1.76	-1.86	2.11	3.01	3.21	3.26	3.27
12.00	31.00	2.71	3.13	3.13	3.13	3.13	3.13	3.13	-0.70	3.03	3.87	4.06	4.11	4.12
13.00	32.50	4.89	5.22	5.22	5.22	5.22	5.22	5.22	0.95	4.45	5.25	5.43	5.47	5.48
14.00	33.50	7.42	7.68	7.68	7.68	7.68	7.68	7.68	2.88	6.17	6.92	7.09	7.13	7.14
15.00	34.50	10.14	10.34	10.34	10.34	10.34	10.34	10.34	4.98	8.08	8.78	8.94	8.97	8.98
16.00	32.20	12.87	13.02	13.02	13.02	13.02	13.02	13.02	7.12	10.04	10.70	10.85	10.88	10.89
17.00	31.10	14.94	15.05	15.05	15.05	15.05	15.05	15.05	8.86	11.60	12.22	12.36	12.39	12.40
18.00	30.50	15.84	15.93	15.93	15.93	15.93	15.93	15.93	9.83	12.41	12.99	13.12	13.15	13.16
19.00	29.40	15.94	16.01	16.01	16.01	16.01	16.01	16.01	10.25	12.67	13.22	13.34	13.37	13.38
20.00	28.40	15.48	15.54	15.54	15.54	15.54	15.54	15.54	10.28	12.55	13.07	13.18	13.21	13.21
21.00	27.00	14.54	14.58	14.58	14.58	14.58	14.58	14.58	9.94	12.08	12.56	12.67	12.70	12.70
22.00	26.40	13.15	13.18	13.18	13.18	13.18	13.18	13.18	9.26	11.27	11.73	11.83	11.86	11.86
23.00	26.00	11.45	11.48	11.48	11.48	11.48	11.48	11.48	8.34	10.23	10.66	10.75	10.77	10.78
Average	27.54							7.81						7.80

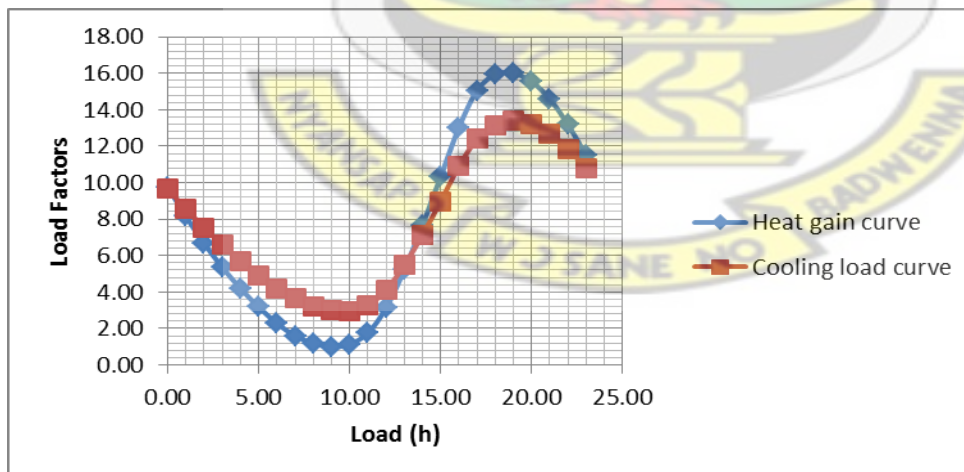


FIGURE A4. 33: Heat Gain and cooling load factors for 4-in. common brick SHADED facing wall

TABLE A4.34: Heat Gain and cooling load factors for 4-in. h. w. concrete block WEST facing wall

t h	Tos,t oC	1st day	2nd day	3rd day	4th day	5th day	6th day	Heat Gain factor	1st day	2nd day	3rd day	4th day	5th day	Cooling load factor
-5.00	29.40	0.00							0.00					
-4.00	28.40	0.00							0.00					
-3.00	27.00	0.00							0.00					
-2.00	26.40	0.00							0.00					
-1.00	26.00	0.00							0.00					
0.00	25.60	0.92	14.83	14.83	14.83	14.83	14.83	14.83	-3.01	16.07	20.39	21.37	21.59	21.64
1.00	25.30	1.31	10.36	10.36	10.36	10.36	10.36	10.36	-4.98	12.95	17.01	17.93	18.14	18.19
2.00	25.10	1.27	7.14	7.14	7.14	7.14	7.14	7.14	-6.26	10.60	14.42	15.29	15.48	15.53
3.00	24.90	1.00	4.82	4.82	4.82	4.82	4.82	4.82	-7.04	8.81	12.40	13.21	13.40	13.44
4.00	24.70	0.64	3.11	3.11	3.11	3.11	3.11	3.11	-7.49	7.41	10.78	11.55	11.72	11.76
5.00	24.50	0.20	1.81	1.81	1.81	1.81	1.81	1.81	-7.74	6.27	9.44	10.16	10.32	10.36
6.00	25.00	-0.23	0.81	0.81	0.81	0.81	0.81	0.81	-7.84	5.32	8.30	8.98	9.13	9.17
7.00	28.30	-0.14	0.54	0.54	0.54	0.54	0.54	0.54	-7.51	4.86	7.66	8.30	8.44	8.48
8.00	30.20	1.87	2.31	2.31	2.31	2.31	2.31	2.31	-5.82	5.81	8.45	9.04	9.18	9.21
9.00	31.80	5.35	5.63	5.63	5.63	5.63	5.63	5.63	-3.07	7.86	10.34	10.90	11.03	11.06
10.00	33.30	9.31	9.49	9.49	9.49	9.49	9.49	9.49	0.08	10.36	12.68	13.21	13.33	13.36
11.00	36.20	13.45	13.57	13.57	13.57	13.57	13.57	13.57	3.42	13.08	15.27	15.77	15.88	15.90
12.00	38.30	18.34	18.42	18.42	18.42	18.42	18.42	18.42	7.33	16.41	18.47	18.93	19.04	19.06
13.00	51.00	24.35	24.40	24.40	24.40	24.40	24.40	24.40	12.07	20.61	22.54	22.98	23.08	23.10
14.00	61.30	36.21	36.24	36.24	36.24	36.24	36.24	36.24	20.87	28.90	30.72	31.13	31.22	31.24
15.00	67.90	53.85	53.87	53.87	53.87	53.87	53.87	53.87	33.80	41.34	43.05	43.44	43.53	43.54
16.00	65.50	72.58	72.59	72.59	72.59	72.59	72.59	72.59	47.76	54.85	56.45	56.81	56.90	56.92
17.00	54.70	85.66	85.67	85.67	85.67	85.67	85.67	85.67	58.15	64.81	66.32	66.67	66.74	66.76
18.00	39.40	87.36	87.37	87.37	87.37	87.37	87.37	87.37	60.96	67.22	68.64	68.96	69.04	69.05
19.00	29.40	76.44	76.44	76.44	76.44	76.44	76.44	76.44	55.10	60.99	62.33	62.63	62.70	62.71
20.00	28.40	58.60	58.60	58.60	58.60	58.60	58.60	58.60	44.23	49.77	51.02	51.30	51.37	51.38
21.00	27.00	42.29	42.29	42.29	42.29	42.29	42.29	42.29	33.99	39.19	40.37	40.64	40.70	40.71
22.00	26.40	30.01	30.01	30.01	30.01	30.01	30.01	30.01	26.12	31.01	32.12	32.37	32.43	32.44
23.00	26.00	21.11	21.12	21.12	21.12	21.12	21.12	21.12	20.30	24.90	25.94	26.17	26.23	26.24
Average	35.43							28.39						28.39

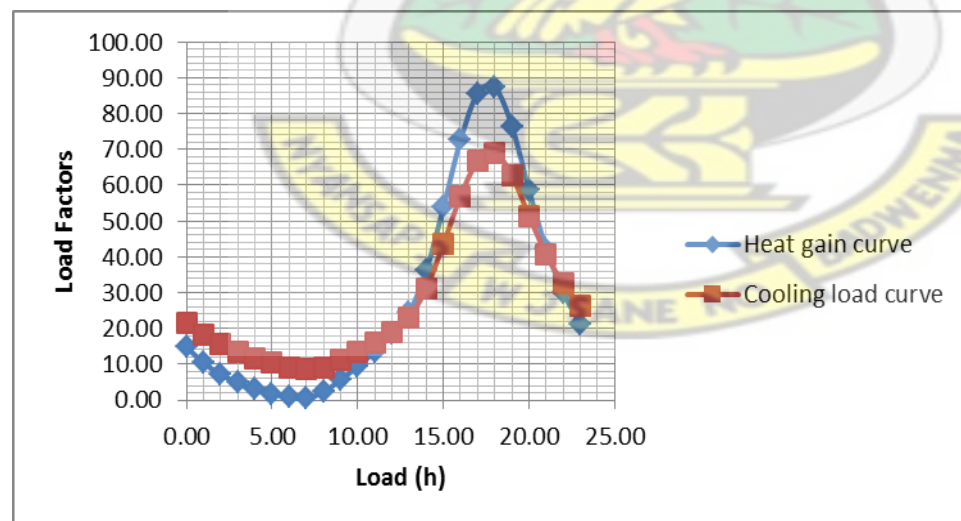


FIGURE A4. 34: Heat Gain and cooling load factors for 4-in. h. w. concrete block WEST facing wall

TABLE A4.35: Heat Gain and cooling load factors for 4-in. h. w. concrete block EAST facing wall

t h	T _{os} , t oC	1st day	2nd day	3rd day	4th day	5th day	6th day	Heat Gain factor	1st day	2nd day	3rd day	4th day	5th day	Cooling load factor
-5.00	29.40	0.00							0.00					
-4.00	28.40	0.00							0.00					
-3.00	27.00	0.00							0.00					
-2.00	26.40	0.00							0.00					
-1.00	26.00	0.00							0.00					
0.00	25.60	0.92	8.78	8.78	8.78	8.78	8.78	8.78	-1.34	11.80	14.78	15.46	15.61	15.64
1.00	25.30	1.31	6.44	6.44	6.44	6.44	6.44	6.44	-2.33	10.03	12.83	13.46	13.60	13.64
2.00	25.10	1.27	4.59	4.59	4.59	4.59	4.59	4.59	-3.06	8.56	11.19	11.78	11.92	11.95
3.00	24.90	1.00	3.16	3.16	3.16	3.16	3.16	3.16	-3.57	7.34	9.82	10.38	10.50	10.53
4.00	24.70	0.64	2.04	2.04	2.04	2.04	2.04	2.04	-3.93	6.33	8.65	9.18	9.30	9.32
5.00	24.50	0.20	1.11	1.11	1.11	1.11	1.11	1.11	-4.20	5.44	7.63	8.12	8.23	8.26
6.00	25.00	-0.23	0.36	0.36	0.36	0.36	0.36	0.36	-4.40	4.67	6.72	7.19	7.29	7.32
7.00	46.15	0.89	1.27	1.27	1.27	1.27	1.27	1.27	-3.49	5.03	6.96	7.40	7.50	7.52
8.00	57.97	13.29	13.53	13.53	13.53	13.53	13.53	13.53	5.14	13.16	14.97	15.38	15.47	15.50
9.00	60.11	34.46	34.62	34.62	34.62	34.62	34.62	34.62	20.01	27.54	29.25	29.63	29.72	29.74
10.00	56.25	54.04	54.14	54.14	54.14	54.14	54.14	54.14	34.18	41.26	42.86	43.22	43.31	43.32
11.00	50.01	65.85	65.92	65.92	65.92	65.92	65.92	65.92	43.39	50.05	51.56	51.90	51.97	51.99
12.00	40.01	68.68	68.73	68.73	68.73	68.73	68.73	68.73	46.66	52.91	54.33	54.65	54.72	54.74
13.00	38.68	63.10	63.13	63.13	63.13	63.13	63.13	63.13	44.17	50.05	51.38	51.69	51.75	51.77
14.00	39.46	55.22	55.24	55.24	55.24	55.24	55.24	55.24	39.94	45.47	46.72	47.00	47.06	47.08
15.00	40.07	49.55	49.57	49.57	49.57	49.57	49.57	49.57	36.99	42.19	43.36	43.63	43.69	43.70
16.00	37.11	46.14	46.14	46.14	46.14	46.14	46.14	46.14	35.41	40.30	41.40	41.65	41.71	41.72
17.00	34.73	42.48	42.49	42.49	42.49	42.49	42.49	42.49	33.57	38.16	39.20	39.43	39.49	39.50
18.00	30.92	37.74	37.74	37.74	37.74	37.74	37.74	37.74	30.87	35.19	36.16	36.39	36.44	36.45
19.00	29.40	31.70	31.70	31.70	31.70	31.70	31.70	31.70	27.17	31.22	32.14	32.35	32.40	32.41
20.00	28.40	25.55	25.55	25.55	25.55	25.55	25.55	25.55	23.25	27.07	27.93	28.13	28.17	28.18
21.00	27.00	20.25	20.26	20.26	20.26	20.26	20.26	20.26	19.79	23.37	24.18	24.37	24.41	24.42
22.00	26.40	15.63	15.63	15.63	15.63	15.63	15.63	15.63	16.67	20.04	20.80	20.97	21.01	21.02
23.00	26.00	11.78	11.78	11.78	11.78	11.78	11.78	11.78	13.98	17.15	17.87	18.03	18.07	18.07
Average	35.16							27.66						27.66

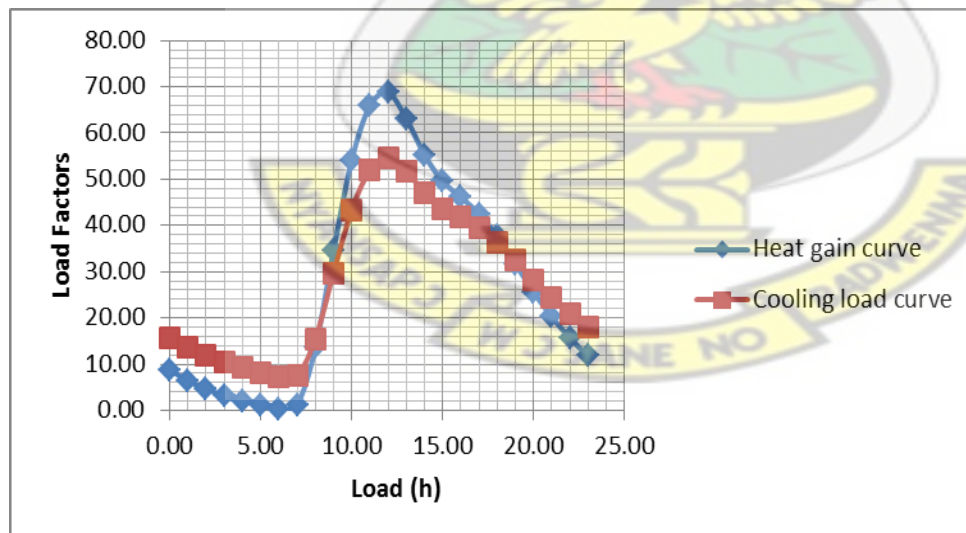


FIGURE A4. 35: Heat Gain and cooling load factors for 4-in. h. w. concrete block EAST facing wall

TABLE A4.36: Heat Gain and cooling load factors for 4-in. h. w. concrete block SOUTH facing wall

t h	Tos,t oC	1st day	2nd day	3rd day	4th day	5th day	6th day	Heat Gain factor	1st day	2nd day	3rd day	4th day	5th day	Cooling load factor
-5.00	29.40	0.00							0.00					
-4.00	28.40	0.00							0.00					
-3.00	27.00	0.00							0.00					
-2.00	26.40	0.00							0.00					
-1.00	26.00	0.00							0.00					
0.00	25.60	0.92	8.68	8.68	8.68	8.68	8.68	8.68	-1.31	9.20	11.58	12.12	12.25	12.27
1.00	25.30	1.31	6.37	6.37	6.37	6.37	6.37	6.37	-2.28	7.60	9.84	10.35	10.46	10.49
2.00	25.10	1.27	4.55	4.55	4.55	4.55	4.55	4.55	-3.00	6.29	8.39	8.87	8.98	9.00
3.00	24.90	1.00	3.13	3.13	3.13	3.13	3.13	3.13	-3.51	5.22	7.20	7.64	7.75	7.77
4.00	24.70	0.64	2.02	2.02	2.02	2.02	2.02	2.02	-3.87	4.33	6.19	6.61	6.71	6.73
5.00	24.50	0.20	1.10	1.10	1.10	1.10	1.10	1.10	-4.14	3.57	5.32	5.71	5.80	5.82
6.00	25.00	-0.23	0.36	0.36	0.36	0.36	0.36	0.36	-4.34	2.91	4.56	4.93	5.01	5.03
7.00	28.30	-0.14	0.24	0.24	0.24	0.24	0.24	0.24	-4.14	2.68	4.23	4.58	4.66	4.67
8.00	30.45	1.89	2.13	2.13	2.13	2.13	2.13	2.13	-2.58	3.82	5.28	5.61	5.68	5.70
9.00	32.34	5.52	5.68	5.68	5.68	5.68	5.68	5.68	0.11	6.14	7.50	7.81	7.88	7.90
10.00	35.28	9.89	9.99	9.99	9.99	9.99	9.99	9.99	3.38	9.05	10.33	10.62	10.68	10.70
11.00	39.10	15.20	15.27	15.27	15.27	15.27	15.27	15.27	7.38	12.70	13.90	14.18	14.24	14.25
12.00	40.56	21.77	21.81	21.81	21.81	21.81	21.81	21.81	12.31	17.31	18.44	18.70	18.76	18.77
13.00	41.72	28.26	28.29	28.29	28.29	28.29	28.29	28.29	17.29	21.99	23.05	23.30	23.35	23.36
14.00	41.60	33.76	33.77	33.77	33.77	33.77	33.77	33.77	21.68	26.10	27.10	27.33	27.38	27.39
15.00	40.84	37.70	37.71	37.71	37.71	37.71	37.71	37.71	25.09	29.24	30.18	30.40	30.45	30.46
16.00	37.41	39.70	39.71	39.71	39.71	39.71	39.71	39.71	27.21	31.11	32.00	32.20	32.25	32.26
17.00	34.74	38.85	38.85	38.85	38.85	38.85	38.85	38.85	27.37	31.05	31.88	32.07	32.11	32.12
18.00	31.33	35.57	35.57	35.57	35.57	35.57	35.57	35.57	25.83	29.28	30.06	30.24	30.28	30.29
19.00	29.40	30.52	30.53	30.53	30.53	30.53	30.53	30.53	22.98	26.22	26.96	27.12	27.16	27.17
20.00	28.40	24.93	24.93	24.93	24.93	24.93	24.93	24.93	19.62	22.67	23.36	23.51	23.55	23.56
21.00	27.00	19.87	19.87	19.87	19.87	19.87	19.87	19.87	16.49	19.36	20.01	20.16	20.19	20.20
22.00	26.40	15.39	15.39	15.39	15.39	15.39	15.39	15.39	13.64	16.34	16.95	17.09	17.12	17.13
23.00	26.00	11.62	11.62	11.62	11.62	11.62	11.62	11.62	11.18	13.72	14.29	14.42	14.45	14.46
Average	31.08							16.57						16.56

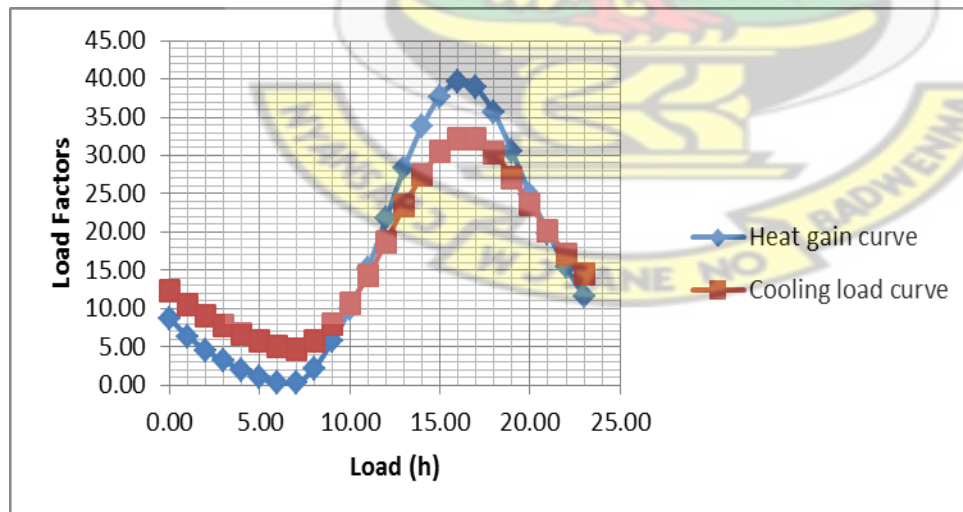


FIGURE A4. 36: Heat Gain and cooling load factors for 4-in. h. w. concrete block SOUTH facing wall

TABLE A4.37: Heat Gain and cooling load factors for 4-in. h. w. concrete block NORTH facing wall

t h	Tos,t oC	1st day	2nd day	3rd day	4th day	5th day	6th day	Heat Gain factor	1st day	2nd day	3rd day	4th day	5th day	Cooling load factor
-5.00	29.40	0.00							0.00					
-4.00	28.40	0.00							0.00					
-3.00	27.00	0.00							0.00					
-2.00	26.40	0.00							0.00					
-1.00	26.00	0.00							0.00					
0.00	25.60	0.92	8.10	8.10	8.10	8.10	8.10	8.10	-1.15	8.25	10.38	10.86	10.97	11.00
1.00	25.30	1.31	6.00	6.00	6.00	6.00	6.00	6.00	-2.03	6.81	8.81	9.26	9.37	9.39
2.00	25.10	1.27	4.31	4.31	4.31	4.31	4.31	4.31	-2.70	5.61	7.49	7.92	8.01	8.04
3.00	24.90	1.00	2.98	2.98	2.98	2.98	2.98	2.98	-3.19	4.63	6.39	6.80	6.89	6.91
4.00	24.70	0.64	1.92	1.92	1.92	1.92	1.92	1.92	-3.54	3.80	5.47	5.84	5.93	5.95
5.00	24.50	0.20	1.04	1.04	1.04	1.04	1.04	1.04	-3.81	3.09	4.65	5.01	5.09	5.11
6.00	25.00	-0.23	0.31	0.31	0.31	0.31	0.31	0.31	-4.01	2.47	3.94	4.28	4.35	4.37
7.00	26.65	-0.23	0.12	0.12	0.12	0.12	0.12	0.12	-3.89	2.21	3.59	3.91	3.98	3.99
8.00	29.22	0.91	1.14	1.14	1.14	1.14	1.14	1.14	-2.95	2.78	4.08	4.37	4.44	4.46
9.00	32.24	3.71	3.85	3.85	3.85	3.85	3.85	3.85	-0.86	4.53	5.75	6.03	6.09	6.11
10.00	33.83	8.09	8.18	8.18	8.18	8.18	8.18	8.18	2.37	7.44	8.59	8.85	8.91	8.92
11.00	36.10	13.01	13.07	13.07	13.07	13.07	13.07	13.07	6.05	10.81	11.89	12.14	12.19	12.20
12.00	37.18	18.13	18.17	18.17	18.17	18.17	18.17	18.17	9.94	14.42	15.43	15.66	15.72	15.73
13.00	38.61	22.93	22.95	22.95	22.95	22.95	22.95	22.95	13.70	17.90	18.86	19.07	19.12	19.13
14.00	39.39	27.30	27.32	27.32	27.32	27.32	27.32	27.32	17.22	21.18	22.07	22.28	22.32	22.33
15.00	40.00	31.12	31.13	31.13	31.13	31.13	31.13	31.13	20.42	24.14	24.98	25.17	25.22	25.23
16.00	36.35	34.03	34.04	34.04	34.04	34.04	34.04	34.04	23.05	26.54	27.34	27.51	27.56	27.56
17.00	33.04	34.11	34.12	34.12	34.12	34.12	34.12	34.12	23.76	27.05	27.79	27.96	28.00	28.01
18.00	30.22	31.15	31.15	31.15	31.15	31.15	31.15	31.15	22.36	25.45	26.15	26.31	26.35	26.35
19.00	29.40	26.47	26.47	26.47	26.47	26.47	26.47	26.47	19.70	22.60	23.26	23.41	23.44	23.45
20.00	28.40	21.83	21.83	21.83	21.83	21.83	21.83	21.83	16.95	19.68	20.30	20.44	20.47	20.48
21.00	27.00	17.80	17.80	17.80	17.80	17.80	17.80	17.80	14.49	17.06	17.64	17.77	17.80	17.81
22.00	26.40	14.03	14.03	14.03	14.03	14.03	14.03	14.03	12.13	14.54	15.09	15.21	15.24	15.24
23.00	26.00	10.74	10.74	10.74	10.74	10.74	10.74	10.74	10.00	12.27	12.78	12.90	12.93	12.93
Average	30.21							14.20						14.20

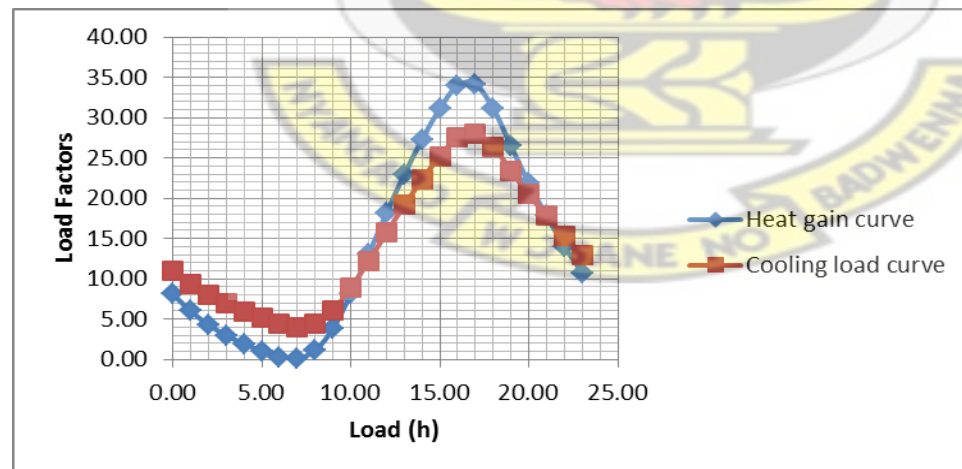


FIGURE A4. 37: Heat Gain and cooling load factors for 4-in. h. w. concrete block NORTH facing wall

TABLE A4.38: Heat Gain and cooling load factors for 4-in. h. w. concrete block N-E facing wall

t	Tos,t	1st day	2nd day	3rd day	4th day	5th day	6th day	Heat Gain factor	1st day	2nd day	3rd day	4th day	5th day	Cooling load factor
h	oC													
-5.00	29.40	0.00							0.00					
-4.00	28.40	0.00							0.00					
-3.00	27.00	0.00							0.00					
-2.00	26.40	0.00							0.00					
-1.00	26.00	0.00							0.00					
0.00	25.60	0.92	8.66	8.66	8.66	8.66	8.66	8.66	-1.31	10.79	13.53	14.15	14.30	14.33
1.00	25.30	1.31	6.36	6.36	6.36	6.36	6.36	6.36	-2.28	9.10	11.67	12.26	12.39	12.42
2.00	25.10	1.27	4.54	4.54	4.54	4.54	4.54	4.54	-2.99	7.70	10.12	10.67	10.79	10.82
3.00	24.90	1.00	3.13	3.13	3.13	3.13	3.13	3.13	-3.50	6.55	8.82	9.34	9.45	9.48
4.00	24.70	0.64	2.02	2.02	2.02	2.02	2.02	2.02	-3.87	5.58	7.72	8.21	8.32	8.34
5.00	24.50	0.20	1.10	1.10	1.10	1.10	1.10	1.10	-4.14	4.74	6.76	7.21	7.31	7.34
6.00	25.00	-0.23	0.35	0.35	0.35	0.35	0.35	0.35	-4.33	4.02	5.91	6.34	6.43	6.46
7.00	40.10	0.54	0.92	0.92	0.92	0.92	0.92	0.92	-3.67	4.18	5.96	6.36	6.45	6.47
8.00	49.30	9.46	9.70	9.70	9.70	9.70	9.70	9.70	2.59	9.97	11.64	12.02	12.10	12.12
9.00	51.92	25.08	25.24	25.24	25.24	25.24	25.24	25.24	13.60	20.53	22.10	22.46	22.54	22.56
10.00	49.38	40.21	40.31	40.31	40.31	40.31	40.31	40.31	24.56	31.08	32.55	32.89	32.96	32.98
11.00	45.61	49.94	50.00	50.00	50.00	50.00	50.00	50.00	32.11	38.23	39.62	39.93	40.01	40.02
12.00	38.79	53.30	53.35	53.35	53.35	53.35	53.35	53.35	35.46	41.22	42.52	42.81	42.88	42.90
13.00	38.68	50.64	50.67	50.67	50.67	50.67	50.67	50.67	34.71	40.12	41.35	41.62	41.69	41.70
14.00	39.46	46.46	46.48	46.48	46.48	46.48	46.48	46.48	32.81	37.90	39.05	39.31	39.37	39.39
15.00	40.07	43.77	43.78	43.78	43.78	43.78	43.78	43.78	31.80	36.58	37.66	37.91	37.96	37.98
16.00	37.11	42.37	42.38	42.38	42.38	42.38	42.38	42.38	31.56	36.05	37.07	37.30	37.36	37.37
17.00	34.73	40.04	40.04	40.04	40.04	40.04	40.04	40.04	30.62	34.84	35.80	36.02	36.07	36.08
18.00	30.92	36.15	36.16	36.16	36.16	36.16	36.16	36.16	28.54	32.51	33.41	33.61	33.66	33.67
19.00	29.40	30.67	30.67	30.67	30.67	30.67	30.67	30.67	25.26	28.99	29.84	30.03	30.07	30.08
20.00	28.40	24.88	24.88	24.88	24.88	24.88	24.88	24.88	21.64	25.15	25.95	26.13	26.17	26.18
21.00	27.00	19.82	19.82	19.82	19.82	19.82	19.82	19.82	18.39	21.69	22.44	22.61	22.64	22.65
22.00	26.40	15.35	15.35	15.35	15.35	15.35	15.35	15.35	15.43	18.53	19.24	19.40	19.43	19.44
23.00	26.00	11.60	11.60	11.60	11.60	11.60	11.60	11.60	12.87	15.79	16.45	16.60	16.63	16.64
Average	33.68							23.65						23.64

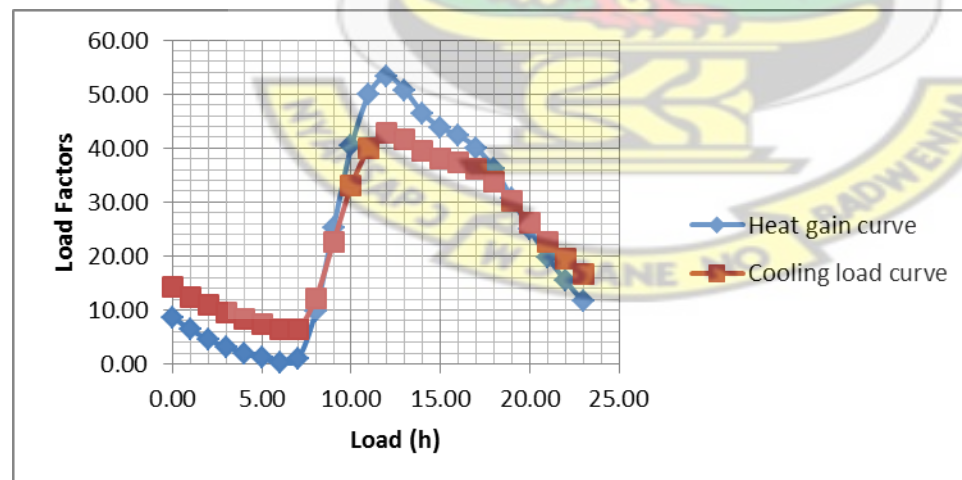


FIGURE A4. 38: Heat Gain and cooling load factors for 4-in. h. w. concrete block N-E facing wall

TABLE A4.39: Heat Gain and cooling load factors for 4-in. h. w. concrete block N-W facing wall

t h	Tos,t oC	1st day	2nd day	3rd day	4th day	5th day	6th day	Heat Gain factor	1st day	2nd day	3rd day	4th day	5th day	Cooling load factor
-5.00	29.40	0.00							0.00					
-4.00	28.40	0.00							0.00					
-3.00	27.00	0.00							0.00					
-2.00	26.40	0.00							0.00					
-1.00	26.00	0.00							0.00					
0.00	25.60	0.92	12.78	12.78	12.78	12.78	12.78	12.78	-2.44	13.68	17.33	18.16	18.35	18.39
1.00	25.30	1.31	9.03	9.03	9.03	9.03	9.03	9.03	-4.08	11.08	14.51	15.29	15.46	15.50
2.00	25.10	1.27	6.28	6.28	6.28	6.28	6.28	6.28	-5.17	9.08	12.31	13.04	13.20	13.24
3.00	24.90	1.00	4.25	4.25	4.25	4.25	4.25	4.25	-5.86	7.53	10.57	11.25	11.41	11.44
4.00	24.70	0.64	2.74	2.74	2.74	2.74	2.74	2.74	-6.28	6.31	9.16	9.81	9.95	9.98
5.00	24.50	0.20	1.57	1.57	1.57	1.57	1.57	1.57	-6.54	5.30	7.98	8.58	8.72	8.75
6.00	25.00	-0.23	0.66	0.66	0.66	0.66	0.66	0.66	-6.67	4.45	6.97	7.54	7.67	7.70
7.00	28.34	-0.13	0.44	0.44	0.44	0.44	0.44	0.44	-6.38	4.07	6.44	6.98	7.10	7.13
8.00	30.17	1.89	2.27	2.27	2.27	2.27	2.27	2.27	-4.73	5.10	7.33	7.83	7.95	7.97
9.00	31.80	5.36	5.60	5.60	5.60	5.60	5.60	5.60	-2.04	7.20	9.30	9.77	9.88	9.90
10.00	33.32	9.31	9.46	9.46	9.46	9.46	9.46	9.46	1.05	9.74	11.70	12.15	12.25	12.27
11.00	36.15	13.46	13.56	13.56	13.56	13.56	13.56	13.56	4.34	12.51	14.36	14.78	14.87	14.89
12.00	37.24	18.26	18.33	18.33	18.33	18.33	18.33	18.33	8.15	15.82	17.56	17.95	18.04	18.06
13.00	47.05	23.52	23.56	23.56	23.56	23.56	23.56	23.56	12.32	19.53	21.17	21.54	21.62	21.64
14.00	54.70	32.91	32.94	32.94	32.94	32.94	32.94	32.94	19.38	26.16	27.70	28.04	28.12	28.14
15.00	59.82	46.51	46.53	46.53	46.53	46.53	46.53	46.53	29.45	35.82	37.26	37.59	37.66	37.68
16.00	56.71	60.80	60.81	60.81	60.81	60.81	60.81	60.81	40.20	46.19	47.55	47.85	47.92	47.94
17.00	48.01	70.11	70.12	70.12	70.12	70.12	70.12	70.12	47.78	53.41	54.68	54.97	55.04	55.05
18.00	36.51	70.34	70.35	70.35	70.35	70.35	70.35	70.35	49.27	54.57	55.76	56.04	56.10	56.11
19.00	29.40	61.22	61.22	61.22	61.22	61.22	61.22	61.22	44.32	49.30	50.42	50.68	50.74	50.75
20.00	28.40	47.36	47.37	47.37	47.37	47.37	47.37	47.37	35.90	40.58	41.64	41.88	41.93	41.94
21.00	27.00	34.80	34.80	34.80	34.80	34.80	34.80	34.80	28.03	32.43	33.43	33.65	33.70	33.71
22.00	26.40	25.12	25.12	25.12	25.12	25.12	25.12	25.12	21.85	25.98	26.92	27.13	27.18	27.19
23.00	26.00	17.94	17.94	17.94	17.94	17.94	17.94	17.94	17.15	21.04	21.92	22.12	22.16	22.17
Average	33.84							24.07						24.07

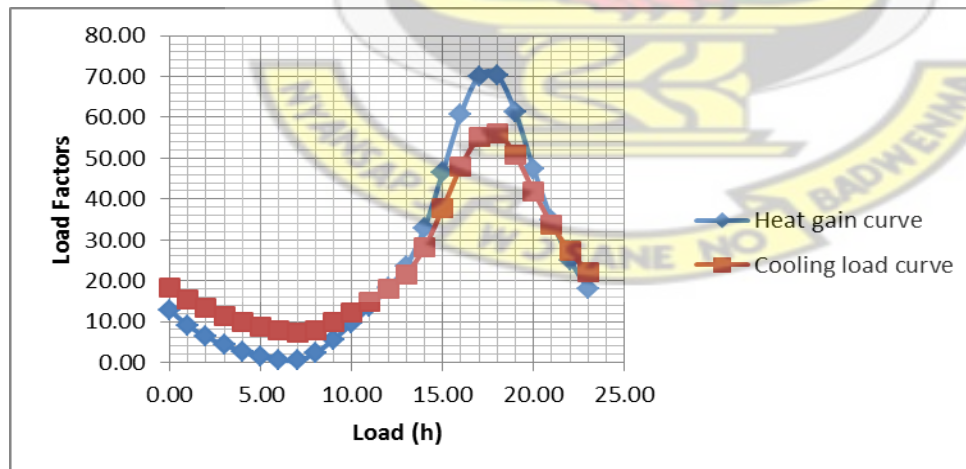


FIGURE A4. 39: Heat Gain and cooling load factors for 4-in. h. w. concrete block N-W facing wall

TABLE A4.40: Heat Gain and cooling load factors for 4-in. h. w. concrete block S-E facing wall

t	Tos,t	1st day	2nd day	3rd day	4th day	5th day	6th day	Heat Gain factor	1st day	2nd day	3rd day	4th day	5th day	Cooling load factor
h	oC													
-5.00	29.40	0.00							0.00					
-4.00	28.40	0.00							0.00					
-3.00	27.00	0.00							0.00					
-2.00	26.40	0.00							0.00					
-1.00	26.00	0.00							0.00					
0.00	25.60	0.92	8.62	8.62	8.62	8.62	8.62	8.62	-1.30	10.81	13.55	14.17	14.31	14.35
1.00	25.30	1.31	6.34	6.34	6.34	6.34	6.34	6.34	-2.26	9.12	11.70	12.28	12.41	12.44
2.00	25.10	1.27	4.53	4.53	4.53	4.53	4.53	4.53	-2.97	7.72	10.15	10.69	10.82	10.85
3.00	24.90	1.00	3.12	3.12	3.12	3.12	3.12	3.12	-3.48	6.57	8.85	9.37	9.48	9.51
4.00	24.70	0.64	2.01	2.01	2.01	2.01	2.01	2.01	-3.84	5.61	7.75	8.23	8.34	8.37
5.00	24.50	0.20	1.10	1.10	1.10	1.10	1.10	1.10	-4.11	4.77	6.78	7.24	7.34	7.36
6.00	25.00	-0.23	0.35	0.35	0.35	0.35	0.35	0.35	-4.31	4.04	5.93	6.36	6.46	6.48
7.00	41.26	0.61	0.98	0.98	0.98	0.98	0.98	0.98	-3.60	4.25	6.03	6.43	6.52	6.54
8.00	50.16	10.15	10.39	10.39	10.39	10.39	10.39	10.39	3.08	10.46	12.13	12.51	12.60	12.62
9.00	52.00	26.36	26.52	26.52	26.52	26.52	26.52	26.52	14.50	21.44	23.01	23.37	23.45	23.47
10.00	50.41	41.48	41.58	41.58	41.58	41.58	41.58	41.58	25.48	32.00	33.48	33.81	33.89	33.91
11.00	47.31	51.46	51.53	51.53	51.53	51.53	51.53	51.53	33.22	39.35	40.74	41.05	41.13	41.14
12.00	40.75	55.62	55.66	55.66	55.66	55.66	55.66	55.66	37.14	42.90	44.20	44.50	44.57	44.58
13.00	33.89	53.48	53.51	53.51	53.51	53.51	53.51	53.51	36.78	42.20	43.43	43.70	43.77	43.78
14.00	39.46	46.59	46.61	46.61	46.61	46.61	46.61	46.61	33.08	38.17	39.33	39.59	39.65	39.66
15.00	40.07	42.40	42.41	42.41	42.41	42.41	42.41	42.41	31.04	35.83	36.91	37.15	37.21	37.22
16.00	37.11	41.25	41.26	41.26	41.26	41.26	41.26	41.26	30.94	35.43	36.45	36.68	36.74	36.75
17.00	34.73	39.28	39.29	39.29	39.29	39.29	39.29	39.29	30.21	34.44	35.40	35.61	35.66	35.68
18.00	30.92	35.66	35.66	35.66	35.66	35.66	35.66	35.66	28.29	32.26	33.16	33.37	33.41	33.42
19.00	29.40	30.35	30.35	30.35	30.35	30.35	30.35	30.35	25.11	28.85	29.69	29.89	29.93	29.94
20.00	28.40	24.67	24.67	24.67	24.67	24.67	24.67	24.67	21.56	25.07	25.87	26.05	26.09	26.10
21.00	27.00	19.69	19.69	19.69	19.69	19.69	19.69	19.69	18.35	21.65	22.40	22.57	22.61	22.62
22.00	26.40	15.27	15.27	15.27	15.27	15.27	15.27	15.27	15.42	18.53	19.23	19.39	19.42	19.43
23.00	26.00	11.54	11.54	11.54	11.54	11.54	11.54	11.54	12.88	15.80	16.46	16.61	16.64	16.65
Average	33.77							23.87						23.87

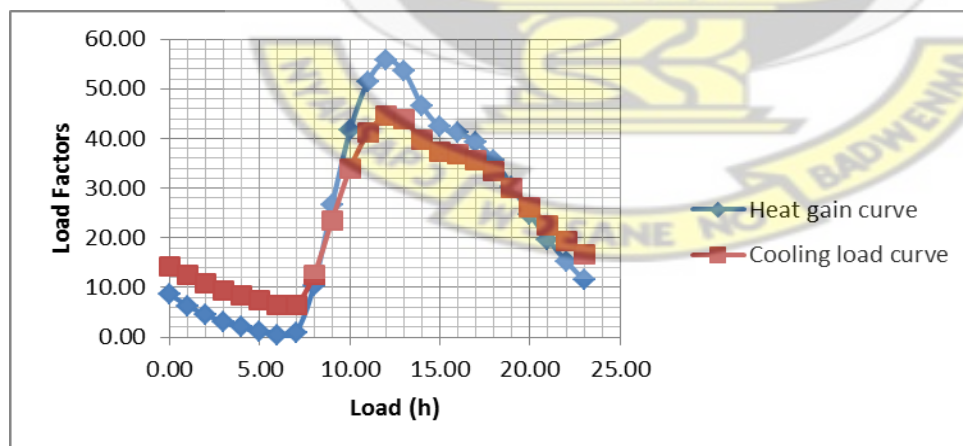


FIGURE A4. 40: Heat Gain and cooling load factors for 4-in. h. w. concrete block S-E facing wall

TABLE A4.41: Heat Gain and cooling load factors for 4-in. h. w. concrete block S-W facing wall

t h	Tos,t oC	1st day	2nd day	3rd day	4th day	5th day	6th day	Heat Gain factor	1st day	2nd day	3rd day	4th day	5th day	Cooling load factor
-5.00	29.40	0.00							0.00					
-4.00	28.40	0.00							0.00					
-3.00	27.00	0.00							0.00					
-2.00	26.40	0.00							0.00					
-1.00	26.00	0.00							0.00					
0.00	25.60	0.92	13.09	13.09	13.09	13.09	13.09	13.09	-2.53	13.94	17.67	18.51	18.70	18.75
1.00	25.30	1.31	9.23	9.23	9.23	9.23	9.23	9.23	-4.22	11.26	14.77	15.56	15.74	15.78
2.00	25.10	1.27	6.41	6.41	6.41	6.41	6.41	6.41	-5.33	9.22	12.51	13.26	13.43	13.47
3.00	24.90	1.00	4.34	4.34	4.34	4.34	4.34	4.34	-6.04	7.64	10.74	11.44	11.60	11.63
4.00	24.70	0.64	2.80	2.80	2.80	2.80	2.80	2.80	-6.46	6.39	9.30	9.96	10.11	10.15
5.00	24.50	0.20	1.61	1.61	1.61	1.61	1.61	1.61	-6.72	5.37	8.10	8.72	8.86	8.90
6.00	25.00	-0.23	0.68	0.68	0.68	0.68	0.68	0.68	-6.85	4.51	7.08	7.67	7.80	7.83
7.00	28.34	-0.13	0.46	0.46	0.46	0.46	0.46	0.46	-6.55	4.13	6.54	7.09	7.22	7.24
8.00	30.17	1.89	2.28	2.28	2.28	2.28	2.28	2.28	-4.89	5.15	7.42	7.93	8.05	8.08
9.00	31.80	5.36	5.61	5.61	5.61	5.61	5.61	5.61	-2.19	7.24	9.38	9.87	9.97	10.00
10.00	33.32	9.31	9.47	9.47	9.47	9.47	9.47	9.47	0.90	9.77	11.78	12.24	12.34	12.36
11.00	30.19	13.12	13.22	13.22	13.22	13.22	13.22	13.22	3.97	12.31	14.20	14.63	14.72	14.74
12.00	39.56	15.11	15.18	15.18	15.18	15.18	15.18	15.18	5.86	13.70	15.48	15.88	15.97	15.99
13.00	48.81	20.82	20.86	20.86	20.86	20.86	20.86	20.86	10.29	17.66	19.32	19.70	19.79	19.81
14.00	55.84	32.58	32.61	32.61	32.61	32.61	32.61	32.61	18.92	25.85	27.42	27.77	27.85	27.87
15.00	60.04	47.55	47.57	47.57	47.57	47.57	47.57	47.57	29.93	36.44	37.92	38.25	38.33	38.34
16.00	57.46	62.11	62.12	62.12	62.12	62.12	62.12	62.12	40.90	47.02	48.40	48.72	48.79	48.81
17.00	49.22	71.56	71.57	71.57	71.57	71.57	71.57	71.57	48.61	54.36	55.66	55.96	56.03	56.04
18.00	37.30	72.21	72.22	72.22	72.22	72.22	72.22	72.22	50.43	55.83	57.06	57.34	57.40	57.41
19.00	29.40	63.27	63.27	63.27	63.27	63.27	63.27	63.27	45.65	50.73	51.88	52.14	52.20	52.21
20.00	28.40	49.02	49.02	49.02	49.02	49.02	49.02	49.02	37.00	41.78	42.86	43.10	43.16	43.17
21.00	27.00	35.93	35.93	35.93	35.93	35.93	35.93	35.93	28.80	33.29	34.31	34.54	34.59	34.60
22.00	26.40	25.86	25.86	25.86	25.86	25.86	25.86	25.86	22.37	26.59	27.55	27.77	27.82	27.83
23.00	26.00	18.42	18.42	18.42	18.42	18.42	18.42	18.42	17.52	21.49	22.38	22.59	22.63	22.64
Average	33.93							24.33						24.32

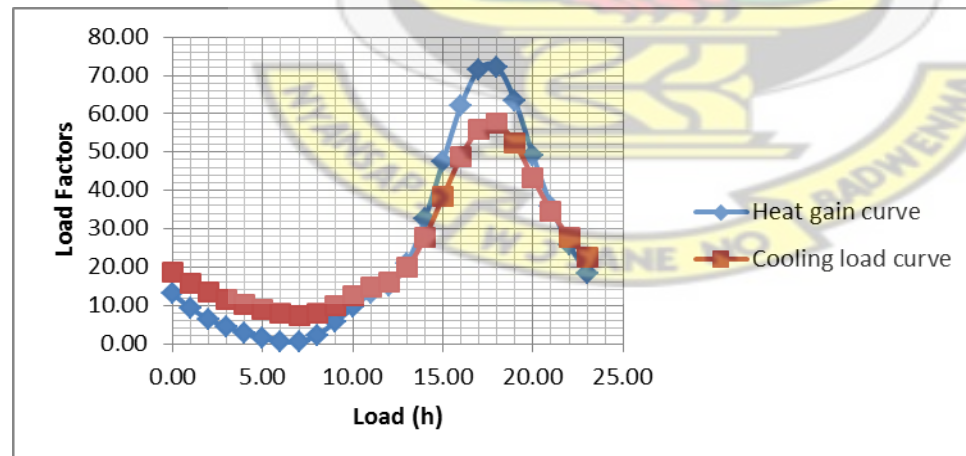


FIGURE A4. 41: Heat Gain and cooling load factors for 4-in. h. w. concrete block S-W facing wall

TABLE A4.42: Heat Gain and cooling load factors for 4-in. h. w. concrete block SHADED facing wall

t h	Tos,t oC	1st day	2nd day	3rd day	4th day	5th day	6th day	Heat Gain factor	1st day	2nd day	3rd day	4th day	5th day	Cooling load factor
-5.00	29.40	0.00							0.00					
-4.00	28.40	0.00							0.00					
-3.00	27.00	0.00							0.00					
-2.00	26.40	0.00							0.00					
-1.00	26.00	0.00							0.00					
0.00	25.60	0.92	7.12	7.12	7.12	7.12	7.12	7.12	-0.88	6.08	7.65	8.01	8.09	8.11
1.00	25.30	1.31	5.36	5.36	5.36	5.36	5.36	5.36	-1.60	4.94	6.42	6.76	6.83	6.85
2.00	25.10	1.27	3.90	3.90	3.90	3.90	3.90	3.90	-2.18	3.97	5.36	5.68	5.75	5.76
3.00	24.90	1.00	2.71	2.71	2.71	2.71	2.71	2.71	-2.62	3.16	4.47	4.76	4.83	4.84
4.00	24.70	0.64	1.74	1.74	1.74	1.74	1.74	1.74	-2.96	2.47	3.70	3.98	4.04	4.06
5.00	24.50	0.20	0.92	0.92	0.92	0.92	0.92	0.92	-3.24	1.87	3.03	3.29	3.35	3.36
6.00	25.00	-0.23	0.24	0.24	0.24	0.24	0.24	0.24	-3.45	1.35	2.43	2.68	2.74	2.75
7.00	25.00	-0.33	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-3.41	1.10	2.12	2.35	2.41	2.42
8.00	25.40	-0.22	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-3.20	1.04	2.00	2.21	2.26	2.28
9.00	26.30	0.14	0.26	0.26	0.26	0.26	0.26	0.26	-2.82	1.17	2.07	2.27	2.32	2.33
10.00	27.40	1.02	1.11	1.11	1.11	1.11	1.11	1.11	-2.06	1.69	2.53	2.73	2.77	2.78
11.00	30.00	2.63	2.68	2.68	2.68	2.68	2.68	2.68	-0.80	2.72	3.52	3.70	3.74	3.75
12.00	31.00	5.47	5.50	5.50	5.50	5.50	5.50	5.50	1.33	4.64	5.39	5.56	5.60	5.61
13.00	32.50	8.82	8.85	8.85	8.85	8.85	8.85	8.85	3.86	6.97	7.68	7.84	7.87	7.88
14.00	33.50	12.30	12.31	12.31	12.31	12.31	12.31	12.31	6.52	9.44	10.11	10.26	10.29	10.30
15.00	34.50	15.68	15.69	15.69	15.69	15.69	15.69	15.69	9.17	11.92	12.54	12.68	12.71	12.72
16.00	32.20	18.67	18.68	18.68	18.68	18.68	18.68	18.68	11.59	14.18	14.76	14.90	14.93	14.93
17.00	31.10	19.76	19.76	19.76	19.76	19.76	19.76	19.76	12.76	15.19	15.74	15.86	15.89	15.90
18.00	30.50	19.17	19.18	19.18	19.18	19.18	19.18	19.18	12.78	15.06	15.58	15.70	15.72	15.73
19.00	29.40	17.95	17.95	17.95	17.95	17.95	17.95	17.95	12.33	14.47	14.96	15.07	15.10	15.10
20.00	28.40	16.27	16.27	16.27	16.27	16.27	16.27	16.27	11.52	13.54	13.99	14.10	14.12	14.13
21.00	27.00	14.18	14.18	14.18	14.18	14.18	14.18	14.18	10.38	12.28	12.71	12.81	12.83	12.84
22.00	26.40	11.69	11.69	11.69	11.69	11.69	11.69	11.69	8.91	10.70	11.10	11.19	11.21	11.22
23.00	26.00	9.22	9.22	9.22	9.22	9.22	9.22	9.22	7.40	9.08	9.46	9.54	9.56	9.57
Average	28.00							8.14						8.13

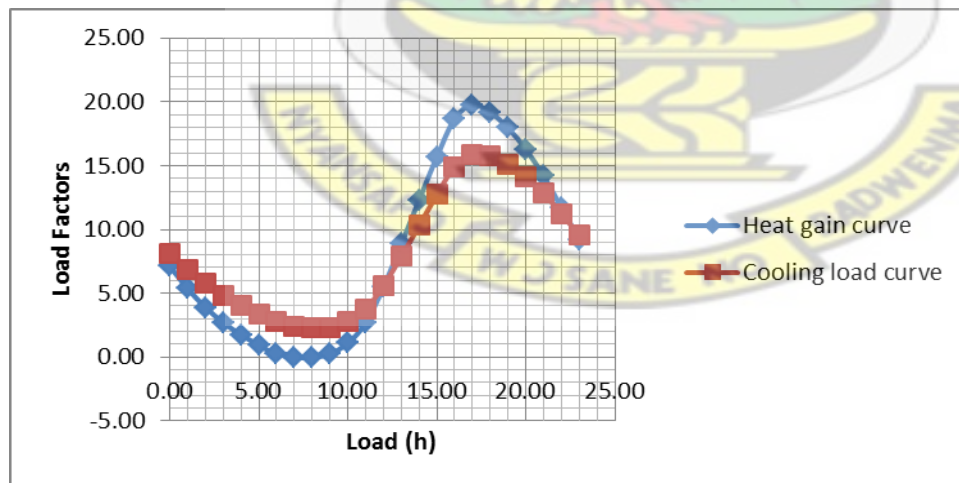


FIGURE A4. 42: Heat Gain and cooling load factors for 4-in. h. w. concrete block SHADED facing wall

TABLE A4.43: Heat Gain and Cooling load factors for 4-in. l. w. concrete block and air space WEST facing wall

t	Tos,t						Heat Gain factor						Cooling load factor
h	oC	1st day	2nd day	3rd day	4th day	5th day		1st day	2nd day	3rd day	4th day	5th day	
-5.00	29.40	0.00						0.00					
-4.00	28.40	0.00						0.00					
-3.00	27.00	0.00						0.00					
-2.00	26.40	0.00						0.00					
-1.00	26.00	0.00						0.00					
0.00	25.60	0.51	8.79	8.79	8.79	8.79	8.79	-1.99	9.16	11.68	12.26	12.39	12.41
1.00	25.30	0.81	6.00	6.00	6.00	6.00	6.00	-3.25	7.23	9.61	10.14	10.27	10.29
2.00	25.10	0.83	4.05	4.05	4.05	4.05	4.05	-4.02	5.83	8.06	8.57	8.68	8.71
3.00	24.90	0.70	2.68	2.68	2.68	2.68	2.68	-4.47	4.79	6.89	7.37	7.48	7.50
4.00	24.70	0.48	1.71	1.71	1.71	1.71	1.71	-4.70	4.00	5.98	6.42	6.52	6.55
5.00	24.50	0.23	0.99	0.99	0.99	0.99	0.99	-4.81	3.38	5.23	5.65	5.75	5.77
6.00	25.00	-0.03	0.44	0.44	0.44	0.44	0.44	-4.84	2.86	4.60	5.00	5.08	5.11
7.00	28.30	-0.14	0.15	0.15	0.15	0.15	0.15	-4.72	2.52	4.15	4.52	4.61	4.63
8.00	30.20	0.52	0.70	0.70	0.70	0.70	0.70	-4.05	2.75	4.29	4.64	4.71	4.73
9.00	31.80	2.16	2.27	2.27	2.27	2.27	2.27	-2.69	3.70	5.14	5.47	5.55	5.56
10.00	33.30	4.29	4.36	4.36	4.36	4.36	4.36	-0.97	5.03	6.39	6.70	6.77	6.79
11.00	36.20	6.57	6.62	6.62	6.62	6.62	6.62	0.88	6.53	7.81	8.10	8.16	8.18
12.00	38.30	9.13	9.16	9.16	9.16	9.16	9.16	2.96	8.27	9.47	9.74	9.80	9.82
13.00	51.00	12.15	12.17	12.17	12.17	12.17	12.17	5.38	10.37	11.50	11.76	11.81	11.83
14.00	61.30	17.31	17.32	17.32	17.32	17.32	17.32	9.30	13.99	15.05	15.29	15.35	15.36
15.00	67.90	25.93	25.94	25.94	25.94	25.94	25.94	15.65	20.06	21.05	21.28	21.33	21.34
16.00	65.50	36.31	36.32	36.32	36.32	36.32	36.32	23.33	27.47	28.41	28.63	28.67	28.69
17.00	54.70	45.13	45.13	45.13	45.13	45.13	45.13	30.11	34.01	34.89	35.09	35.13	35.15
18.00	39.40	48.77	48.77	48.77	48.77	48.77	48.77	33.49	37.15	37.98	38.17	38.21	38.22
19.00	29.40	45.38	45.39	45.39	45.39	45.39	45.39	32.10	35.55	36.33	36.50	36.54	36.55
20.00	28.40	36.56	36.56	36.56	36.56	36.56	36.56	26.89	30.13	30.86	31.03	31.06	31.07
21.00	27.00	26.68	26.68	26.68	26.68	26.68	26.68	20.74	23.79	24.47	24.63	24.67	24.67
22.00	26.40	18.69	18.69	18.69	18.69	18.69	18.69	15.65	18.51	19.16	19.31	19.34	19.35
23.00	26.00	12.85	12.85	12.85	12.85	12.85	12.85	11.86	14.55	15.16	15.30	15.33	15.34
Average	35.43						15.57						15.57

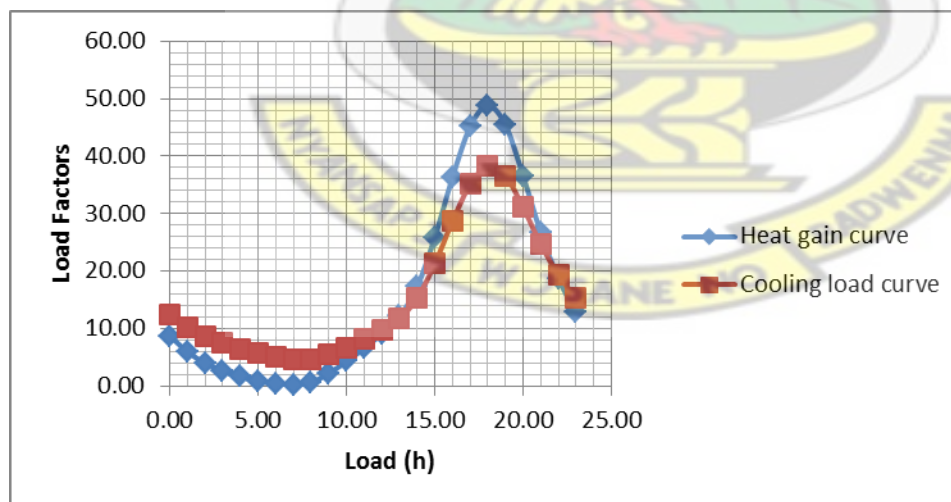


FIGURE A4. 43: Heat Gain and Cooling load factors for 4-in. l. w. concrete block and air space WEST facing wall

TABLE A4.44: Heat Gain and Cooling load factors for 4-in. l. w. concrete block and air space EAST facing wall

t h	T _{os} , t _o °C	1st day	2nd day	3rd day	4th day	5th day	6th day	Heat Gain factor	1st day	2nd day	3rd day	4th day	5th day	Cooling load factor
-5.00	29.40	0.00							0.00					
-4.00	28.40	0.00							0.00					
-3.00	27.00	0.00							0.00					
-2.00	26.40	0.00							0.00					
-1.00	26.00	0.00							0.00					
0.00	25.60	0.51	5.13	5.13	5.13	5.13	5.13	5.13	-0.82	6.68	8.38	8.77	8.85	8.87
1.00	25.30	0.81	3.74	3.74	3.74	3.74	3.74	3.74	-1.41	5.64	7.24	7.60	7.68	7.70
2.00	25.10	0.83	2.66	2.66	2.66	2.66	2.66	2.66	-1.84	4.79	6.29	6.63	6.71	6.73
3.00	24.90	0.70	1.82	1.82	1.82	1.82	1.82	1.82	-2.14	4.09	5.51	5.83	5.90	5.91
4.00	24.70	0.48	1.18	1.18	1.18	1.18	1.18	1.18	-2.34	3.52	4.85	5.15	5.21	5.23
5.00	24.50	0.23	0.66	0.66	0.66	0.66	0.66	0.66	-2.48	3.03	4.27	4.56	4.62	4.63
6.00	25.00	-0.03	0.24	0.24	0.24	0.24	0.24	0.24	-2.58	2.60	3.77	4.03	4.09	4.11
7.00	46.15	0.04	0.21	0.21	0.21	0.21	0.21	0.21	-2.43	2.43	3.53	3.78	3.84	3.85
8.00	57.97	4.20	4.30	4.30	4.30	4.30	4.30	4.30	0.52	5.09	6.13	6.36	6.41	6.42
9.00	60.11	14.32	14.39	14.39	14.39	14.39	14.39	14.39	7.61	11.91	12.88	13.10	13.15	13.16
10.00	56.25	25.92	25.96	25.96	25.96	25.96	25.96	25.96	15.90	19.94	20.86	21.06	21.11	21.12
11.00	50.01	34.48	34.51	34.51	34.51	34.51	34.51	34.51	22.32	26.12	26.98	27.18	27.22	27.23
12.00	40.01	38.15	38.17	38.17	38.17	38.17	38.17	38.17	25.55	29.12	29.92	30.11	30.15	30.16
13.00	38.68	36.76	36.77	36.77	36.77	36.77	36.77	36.77	25.35	28.71	29.47	29.64	29.68	29.69
14.00	39.46	32.50	32.51	32.51	32.51	32.51	32.51	32.51	23.13	26.29	27.00	27.16	27.20	27.21
15.00	40.07	28.56	28.57	28.57	28.57	28.57	28.57	28.57	21.01	23.98	24.65	24.80	24.84	24.84
16.00	37.11	26.00	26.01	26.01	26.01	26.01	26.01	26.01	19.72	22.51	23.14	23.28	23.32	23.32
17.00	34.73	23.99	23.99	23.99	23.99	23.99	23.99	23.99	18.73	21.35	21.94	22.08	22.11	22.11
18.00	30.92	21.58	21.58	21.58	21.58	21.58	21.58	21.58	17.40	19.87	20.42	20.55	20.58	20.58
19.00	29.40	18.51	18.51	18.51	18.51	18.51	18.51	18.51	15.56	17.88	18.40	18.52	18.55	18.56
20.00	28.40	15.08	15.08	15.08	15.08	15.08	15.08	15.08	13.40	15.58	16.07	16.18	16.21	16.21
21.00	27.00	11.94	11.94	11.94	11.94	11.94	11.94	11.94	11.37	13.41	13.88	13.98	14.00	14.01
22.00	26.40	9.24	9.24	9.24	9.24	9.24	9.24	9.24	9.56	11.48	11.92	12.02	12.04	12.04
23.00	26.00	6.95	6.95	6.95	6.95	6.95	6.95	6.95	7.98	9.79	10.20	10.29	10.31	10.31
Average	35.16							15.17						15.17

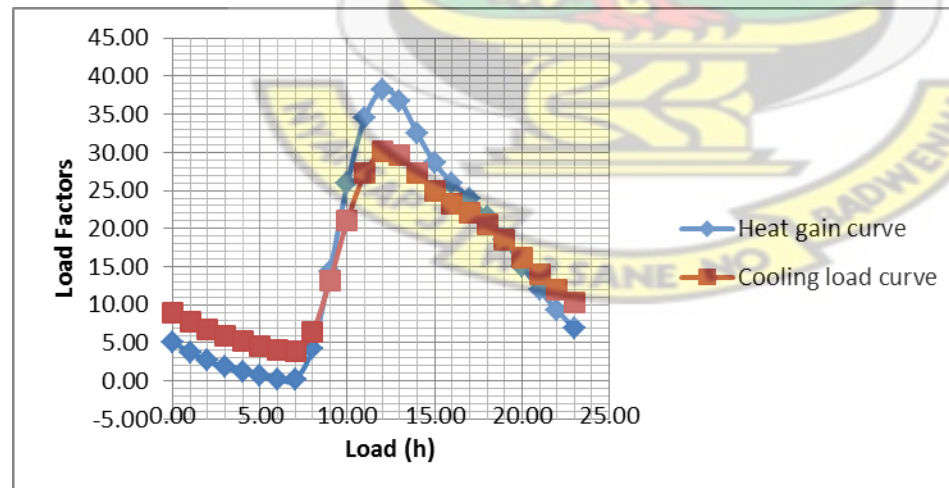


FIGURE A4. 44: Heat Gain and Cooling load factors for 4-in. l. w. concrete block and air space EAST facing wall

TABLE A4.45: Heat Gain and Cooling load factors for 4-in. l. w. concrete block and air space SOUTH facing wall

t h	Tos, t oC	1st day	2nd day	3rd day	4th day	5th day	6th day	Heat Gain factor	1st day	2nd day	3rd day	4th day	5th day	Cooling load factor
-5.00	29.40	0.00							0.00					
-4.00	28.40	0.00							0.00					
-3.00	27.00	0.00							0.00					
-2.00	26.40	0.00							0.00					
-1.00	26.00	0.00							0.00					
0.00	25.60	0.51	5.12	5.12	5.12	5.12	5.12	5.12	-0.81	5.25	6.63	6.94	7.01	7.02
1.00	25.30	0.81	3.73	3.73	3.73	3.73	3.73	3.73	-1.40	4.30	5.59	5.88	5.95	5.96
2.00	25.10	0.83	2.65	2.65	2.65	2.65	2.65	2.65	-1.83	3.53	4.74	5.02	5.08	5.09
3.00	24.90	0.70	1.82	1.82	1.82	1.82	1.82	1.82	-2.13	2.91	4.05	4.31	4.37	4.38
4.00	24.70	0.48	1.18	1.18	1.18	1.18	1.18	1.18	-2.33	2.41	3.48	3.72	3.78	3.79
5.00	24.50	0.23	0.66	0.66	0.66	0.66	0.66	0.66	-2.47	1.98	2.99	3.22	3.27	3.28
6.00	25.00	-0.03	0.24	0.24	0.24	0.24	0.24	0.24	-2.57	1.61	2.56	2.78	2.82	2.83
7.00	28.30	-0.14	0.02	0.02	0.02	0.02	0.02	0.02	-2.55	1.39	2.28	2.48	2.52	2.53
8.00	30.45	0.52	0.62	0.62	0.62	0.62	0.62	0.62	-1.99	1.71	2.55	2.74	2.78	2.79
9.00	32.34	2.22	2.28	2.28	2.28	2.28	2.28	2.28	-0.70	2.77	3.56	3.74	3.78	3.79
10.00	35.28	4.51	4.54	4.54	4.54	4.54	4.54	4.54	1.02	4.29	5.03	5.19	5.23	5.24
11.00	39.10	7.26	7.29	7.29	7.29	7.29	7.29	7.29	3.10	6.17	6.86	7.02	7.06	7.07
12.00	40.56	10.67	10.69	10.69	10.69	10.69	10.69	10.69	5.67	8.55	9.21	9.35	9.39	9.39
13.00	41.72	14.36	14.36	14.36	14.36	14.36	14.36	14.36	8.47	11.19	11.80	11.94	11.97	11.98
14.00	41.60	17.66	17.66	17.66	17.66	17.66	17.66	17.66	11.07	13.62	14.20	14.33	14.36	14.37
15.00	40.84	20.21	20.21	20.21	20.21	20.21	20.21	20.21	13.20	15.60	16.14	16.26	16.29	16.30
16.00	37.41	21.75	21.75	21.75	21.75	21.75	21.75	21.75	14.67	16.92	17.43	17.55	17.57	17.58
17.00	34.74	21.87	21.88	21.88	21.88	21.88	21.88	21.88	15.18	17.30	17.78	17.89	17.91	17.92
18.00	31.33	20.50	20.50	20.50	20.50	20.50	20.50	20.50	14.65	16.64	17.09	17.19	17.21	17.22
19.00	29.40	17.99	17.99	17.99	17.99	17.99	17.99	17.99	13.29	15.16	15.58	15.68	15.70	15.71
20.00	28.40	14.87	14.88	14.88	14.88	14.88	14.88	14.88	11.45	13.21	13.61	13.70	13.72	13.72
21.00	27.00	11.86	11.86	11.86	11.86	11.86	11.86	11.86	9.60	11.25	11.63	11.71	11.73	11.74
22.00	26.40	9.20	9.20	9.20	9.20	9.20	9.20	9.20	7.92	9.48	9.83	9.91	9.93	9.93
23.00	26.00	6.92	6.92	6.92	6.92	6.92	6.92	6.92	6.45	7.91	8.24	8.32	8.34	8.34
Average	31.08							9.09						9.08

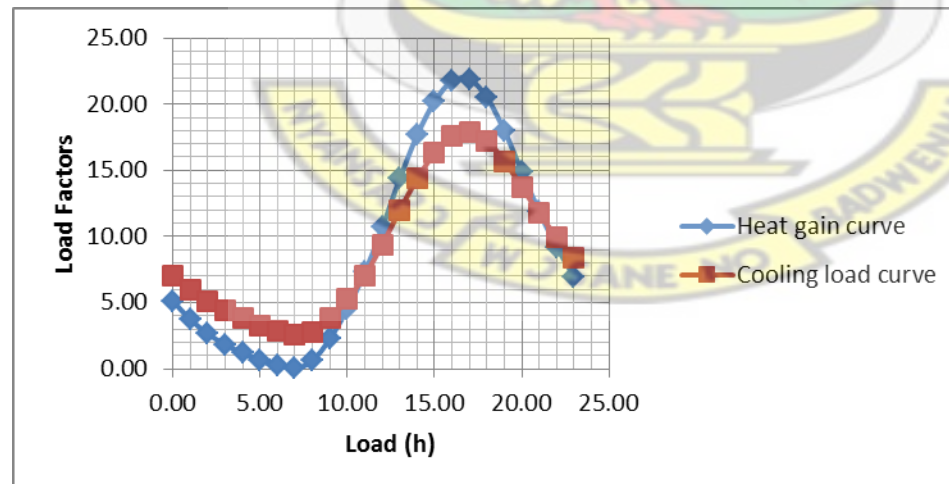


FIGURE A4. 45: Heat Gain and Cooling load factors for 4-in. l. w. concrete block and air space SOUTH facing wall

TABLE A4.46: Heat Gain and Cooling load factors for 4-in. l. w. concrete block and air space NORTH facing wall

t	Tos,t						Heat Gain							Cooling load factor
h	oC	1st day	2nd day	3rd day	4th day	5th day	6th day	factor	1st day	2nd day	3rd day	4th day	5th day	
-5.00	29.40	0.00							0.00					
-4.00	28.40	0.00							0.00					
-3.00	27.00	0.00							0.00					
-2.00	26.40	0.00							0.00					
-1.00	26.00	0.00							0.00					
0.00	25.60	0.51	4.79	4.79	4.79	4.79	4.79	4.79	-0.71	4.72	5.95	6.22	6.29	6.30
1.00	25.30	0.81	3.52	3.52	3.52	3.52	3.52	3.52	-1.24	3.86	5.02	5.28	5.34	5.35
2.00	25.10	0.83	2.53	2.53	2.53	2.53	2.53	2.53	-1.63	3.16	4.25	4.49	4.55	4.56
3.00	24.90	0.70	1.74	1.74	1.74	1.74	1.74	1.74	-1.91	2.59	3.61	3.84	3.89	3.91
4.00	24.70	0.48	1.13	1.13	1.13	1.13	1.13	1.13	-2.11	2.12	3.08	3.30	3.35	3.36
5.00	24.50	0.23	0.63	0.63	0.63	0.63	0.63	0.63	-2.26	1.72	2.63	2.83	2.88	2.89
6.00	25.00	-0.03	0.22	0.22	0.22	0.22	0.22	0.22	-2.37	1.38	2.22	2.42	2.46	2.47
7.00	26.65	-0.16	0.00	0.00	0.00	0.00	0.00	0.00	-2.36	1.15	1.95	2.13	2.17	2.18
8.00	29.22	0.20	0.29	0.29	0.29	0.29	0.29	0.29	-2.02	1.29	2.03	2.20	2.24	2.25
9.00	32.24	1.37	1.43	1.43	1.43	1.43	1.43	1.43	-1.11	2.00	2.71	2.87	2.90	2.91
10.00	33.83	3.48	3.52	3.52	3.52	3.52	3.52	3.52	0.47	3.39	4.05	4.20	4.24	4.24
11.00	36.10	6.15	6.17	6.17	6.17	6.17	6.17	6.17	2.46	5.21	5.83	5.97	6.00	6.01
12.00	37.18	8.99	9.00	9.00	9.00	9.00	9.00	9.00	4.61	7.19	7.77	7.91	7.94	7.94
13.00	38.61	11.76	11.77	11.77	11.77	11.77	11.77	11.77	6.76	9.18	9.73	9.86	9.88	9.89
14.00	39.39	14.29	14.29	14.29	14.29	14.29	14.29	14.29	8.78	11.06	11.57	11.69	11.72	11.72
15.00	40.00	16.53	16.53	16.53	16.53	16.53	16.53	16.53	10.63	12.77	13.26	13.37	13.39	13.40
16.00	36.35	18.36	18.36	18.36	18.36	18.36	18.36	18.36	12.23	14.24	14.70	14.80	14.83	14.83
17.00	33.04	19.05	19.05	19.05	19.05	19.05	19.05	19.05	13.07	14.96	15.39	15.49	15.51	15.52
18.00	30.22	18.01	18.01	18.01	18.01	18.01	18.01	18.01	12.72	14.50	14.90	15.00	15.02	15.02
19.00	29.40	15.68	15.68	15.68	15.68	15.68	15.68	15.68	11.45	13.12	13.50	13.59	13.61	13.61
20.00	28.40	12.97	12.97	12.97	12.97	12.97	12.97	12.97	9.86	11.43	11.79	11.87	11.89	11.89
21.00	27.00	10.53	10.53	10.53	10.53	10.53	10.53	10.53	8.38	9.86	10.20	10.27	10.29	10.30
22.00	26.40	8.34	8.34	8.34	8.34	8.34	8.34	8.34	7.02	8.41	8.73	8.80	8.81	8.82
23.00	26.00	6.39	6.39	6.39	6.39	6.39	6.39	6.39	5.77	7.08	7.37	7.44	7.46	7.46
Average	30.21							7.79						7.78

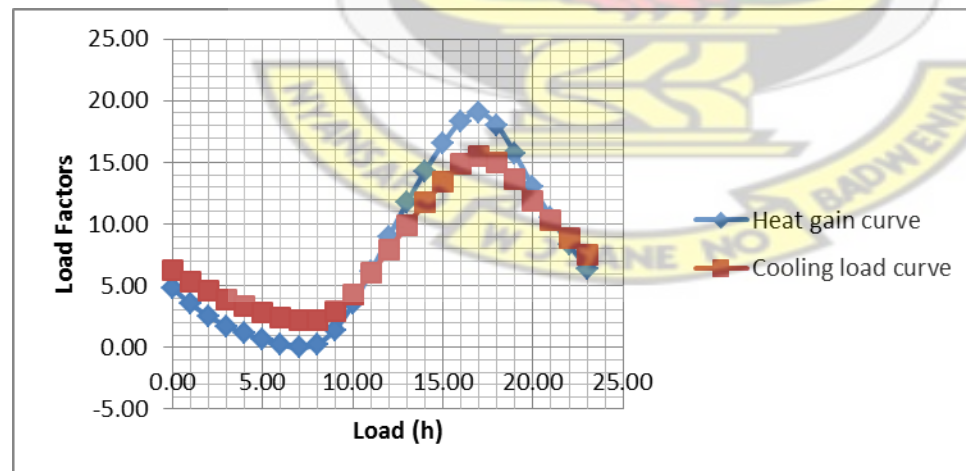


FIGURE A4. 46: Heat Gain and Cooling load factors for 4-in. l. w. concrete block and air space NORTH facing wall

TABLE A4.47: Heat Gain and Cooling load factors for 4-in. l. w. concrete block and air space N-E facing wall

t	Tos,t						Heat Gain factor						Cooling load factor
h	oC	1st day	2nd day	3rd day	4th day	5th day		1st day	2nd day	3rd day	4th day	5th day	
-5.00	29.40	0.00						0.00					
-4.00	28.40	0.00						0.00					
-3.00	27.00	0.00						0.00					
-2.00	26.40	0.00						0.00					
-1.00	26.00	0.00						0.00					
0.00	25.60	0.51	5.08	5.08	5.08	5.08	5.08	-0.80	6.13	7.70	8.05	8.13	8.15
1.00	25.30	0.81	3.71	3.71	3.71	3.71	3.71	-1.39	5.13	6.60	6.94	7.01	7.03
2.00	25.10	0.83	2.64	2.64	2.64	2.64	2.64	-1.81	4.31	5.70	6.01	6.09	6.10
3.00	24.90	0.70	1.81	1.81	1.81	1.81	1.81	-2.10	3.65	4.95	5.25	5.32	5.33
4.00	24.70	0.48	1.17	1.17	1.17	1.17	1.17	-2.30	3.10	4.33	4.61	4.67	4.68
5.00	24.50	0.23	0.66	0.66	0.66	0.66	0.66	-2.45	2.64	3.79	4.05	4.11	4.12
6.00	25.00	-0.03	0.23	0.23	0.23	0.23	0.23	-2.55	2.23	3.31	3.56	3.61	3.63
7.00	40.10	-0.02	0.14	0.14	0.14	0.14	0.14	-2.44	2.05	3.07	3.30	3.35	3.36
8.00	49.30	2.96	3.06	3.06	3.06	3.06	3.06	-0.30	3.92	4.88	5.10	5.14	5.16
9.00	51.92	10.36	10.42	10.42	10.42	10.42	10.42	4.91	8.88	9.78	9.98	10.03	10.04
10.00	49.38	19.14	19.18	19.18	19.18	19.18	19.18	11.21	14.94	15.78	15.97	16.02	16.03
11.00	45.61	25.96	25.98	25.98	25.98	25.98	25.98	16.32	19.83	20.62	20.80	20.84	20.85
12.00	38.79	29.32	29.33	29.33	29.33	29.33	29.33	19.18	22.48	23.23	23.39	23.43	23.44
13.00	38.68	29.08	29.09	29.09	29.09	29.09	29.09	19.62	22.72	23.42	23.58	23.62	23.63
14.00	39.46	26.81	26.81	26.81	26.81	26.81	26.81	18.64	21.55	22.21	22.36	22.40	22.41
15.00	40.07	24.78	24.78	24.78	24.78	24.78	24.78	17.75	20.49	21.11	21.25	21.28	21.29
16.00	37.11	23.61	23.61	23.61	23.61	23.61	23.61	17.37	19.95	20.53	20.66	20.69	20.70
17.00	34.73	22.50	22.50	22.50	22.50	22.50	22.50	16.99	19.41	19.96	20.08	20.11	20.12
18.00	30.92	20.66	20.66	20.66	20.66	20.66	20.66	16.07	18.34	18.86	18.97	19.00	19.01
19.00	29.40	17.94	17.94	17.94	17.94	17.94	17.94	14.49	16.63	17.12	17.23	17.25	17.26
20.00	28.40	14.73	14.73	14.73	14.73	14.73	14.73	12.51	14.52	14.98	15.08	15.10	15.11
21.00	27.00	11.73	11.73	11.73	11.73	11.73	11.73	10.60	12.49	12.92	13.01	13.04	13.04
22.00	26.40	9.10	9.10	9.10	9.10	9.10	9.10	8.88	10.66	11.06	11.15	11.17	11.18
23.00	26.00	6.86	6.86	6.86	6.86	6.86	6.86	7.37	9.04	9.42	9.50	9.52	9.53
Average	33.68						12.97						12.97

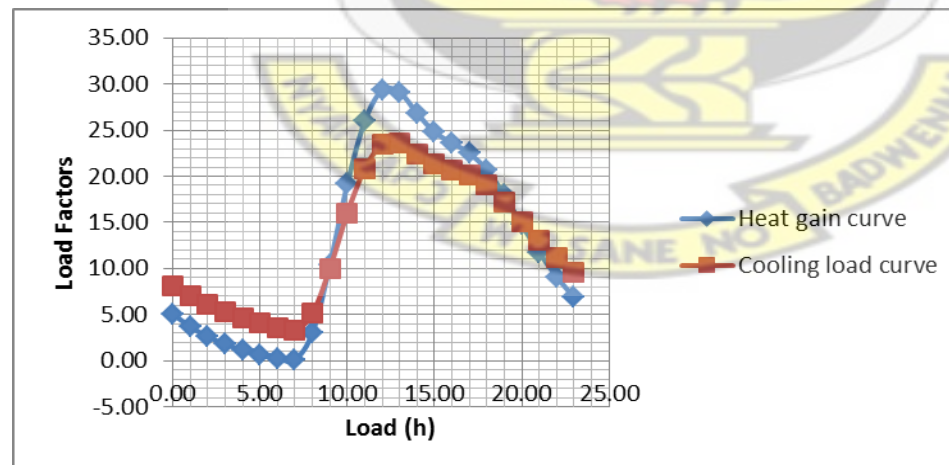


FIGURE A4. 47: Heat Gain and Cooling load factors for 4-in. l. w. concrete block and air space N-E facing wall

TABLE A4.48: Heat Gain and Cooling load factors for 4-in. l. w. concrete block and air space N-W facing wall

t	T _{os,t}	1st day	2nd day	3rd day	4th day	5th day	6th day	Heat Gain factor	1st day	2nd day	3rd day	4th day	5th day	Cooling load factor
h	oC													
-5.00	29.40	0.00							0.00					
-4.00	28.40	0.00							0.00					
-3.00	27.00	0.00							0.00					
-2.00	26.40	0.00							0.00					
-1.00	26.00	0.00							0.00					
0.00	25.60	0.51	7.57	7.57	7.57	7.57	7.57	7.57	-1.60	7.80	9.93	10.41	10.52	10.55
1.00	25.30	0.81	5.24	5.24	5.24	5.24	5.24	5.24	-2.63	6.20	8.20	8.66	8.76	8.78
2.00	25.10	0.83	3.58	3.58	3.58	3.58	3.58	3.58	-3.29	5.02	6.90	7.33	7.42	7.44
3.00	24.90	0.70	2.39	2.39	2.39	2.39	2.39	2.39	-3.69	4.12	5.89	6.29	6.38	6.40
4.00	24.70	0.48	1.53	1.53	1.53	1.53	1.53	1.53	-3.91	3.43	5.09	5.47	5.55	5.57
5.00	24.50	0.23	0.88	0.88	0.88	0.88	0.88	0.88	-4.03	2.87	4.44	4.79	4.87	4.89
6.00	25.00	-0.03	0.37	0.37	0.37	0.37	0.37	0.37	-4.08	2.41	3.88	4.21	4.28	4.30
7.00	28.34	-0.14	0.11	0.11	0.11	0.11	0.11	0.11	-3.99	2.10	3.49	3.80	3.87	3.88
8.00	30.17	0.53	0.68	0.68	0.68	0.68	0.68	0.68	-3.36	2.37	3.67	3.97	4.03	4.05
9.00	31.80	2.17	2.27	2.27	2.27	2.27	2.27	2.27	-2.03	3.35	4.57	4.85	4.91	4.93
10.00	33.32	4.29	4.35	4.35	4.35	4.35	4.35	4.35	-0.36	4.71	5.85	6.11	6.17	6.19
11.00	36.15	6.58	6.61	6.61	6.61	6.61	6.61	6.61	1.47	6.23	7.30	7.55	7.60	7.62
12.00	37.24	9.12	9.14	9.14	9.14	9.14	9.14	9.14	3.50	7.97	8.99	9.21	9.27	9.28
13.00	47.05	11.90	11.91	11.91	11.91	11.91	11.91	11.91	5.72	9.93	10.88	11.10	11.15	11.16
14.00	54.70	16.09	16.10	16.10	16.10	16.10	16.10	16.10	8.94	12.90	13.79	14.00	14.04	14.05
15.00	59.82	22.78	22.79	22.79	22.79	22.79	22.79	22.79	13.93	17.65	18.49	18.68	18.72	18.73
16.00	56.71	30.73	30.73	30.73	30.73	30.73	30.73	30.73	19.87	23.36	24.16	24.34	24.38	24.39
17.00	48.01	37.23	37.24	37.24	37.24	37.24	37.24	37.24	24.95	28.24	28.98	29.15	29.19	29.20
18.00	36.51	39.48	39.48	39.48	39.48	39.48	39.48	39.48	27.22	30.30	31.00	31.16	31.20	31.20
19.00	29.40	36.36	36.37	36.37	36.37	36.37	36.37	36.37	25.83	28.73	29.39	29.54	29.57	29.58
20.00	28.40	29.37	29.37	29.37	29.37	29.37	29.37	29.37	21.70	24.43	25.04	25.18	25.22	25.22
21.00	27.00	21.75	21.75	21.75	21.75	21.75	21.75	21.75	16.97	19.53	20.11	20.25	20.27	20.28
22.00	26.40	15.52	15.52	15.52	15.52	15.52	15.52	15.52	13.02	15.43	15.97	16.10	16.12	16.13
23.00	26.00	10.87	10.87	10.87	10.87	10.87	10.87	10.87	10.00	12.27	12.78	12.90	12.92	12.93
Average	33.84							13.20						13.20

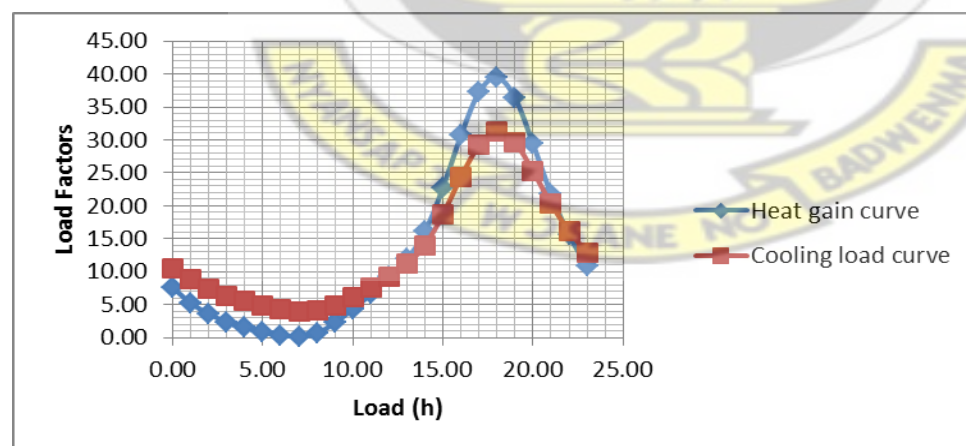


FIGURE A4. 48: Heat Gain and Cooling load factors for 4-in. l. w. concrete block and air space N-W facing wall

TABLE A4.49: Heat Gain and Cooling load factors for 4-in. l. w. concrete block and air space S-E facing wall

t	Tos,t	1st day	2nd day	3rd day	4th day	5th day	6th day	Heat Gain factor	1st day	2nd day	3rd day	4th day	5th day	Cooling load factor
h	oC													
-5.00	29.40	0.00							0.00					
-4.00	28.40	0.00							0.00					
-3.00	27.00	0.00							0.00					
-2.00	26.40	0.00							0.00					
-1.00	26.00	0.00							0.00					
0.00	25.60	0.51	5.06	5.06	5.06	5.06	5.06	5.06	-0.79	6.14	7.71	8.06	8.14	8.16
1.00	25.30	0.81	3.69	3.69	3.69	3.69	3.69	3.69	-1.37	5.14	6.62	6.95	7.03	7.04
2.00	25.10	0.83	2.63	2.63	2.63	2.63	2.63	2.63	-1.79	4.33	5.72	6.03	6.10	6.12
3.00	24.90	0.70	1.81	1.81	1.81	1.81	1.81	1.81	-2.09	3.67	4.97	5.27	5.33	5.35
4.00	24.70	0.48	1.17	1.17	1.17	1.17	1.17	1.17	-2.29	3.12	4.35	4.62	4.69	4.70
5.00	24.50	0.23	0.66	0.66	0.66	0.66	0.66	0.66	-2.43	2.65	3.81	4.07	4.13	4.14
6.00	25.00	-0.03	0.23	0.23	0.23	0.23	0.23	0.23	-2.54	2.25	3.33	3.57	3.63	3.64
7.00	41.26	-0.01	0.15	0.15	0.15	0.15	0.15	0.15	-2.42	2.07	3.09	3.32	3.37	3.38
8.00	50.16	3.19	3.29	3.29	3.29	3.29	3.29	3.29	-0.13	4.09	5.05	5.27	5.32	5.33
9.00	52.00	10.95	11.01	11.01	11.01	11.01	11.01	11.01	5.33	9.30	10.20	10.41	10.45	10.46
10.00	50.41	19.86	19.90	19.90	19.90	19.90	19.90	19.90	11.72	15.46	16.30	16.49	16.54	16.55
11.00	47.31	26.74	26.76	26.76	26.76	26.76	26.76	26.76	16.89	20.40	21.19	21.37	21.41	21.42
12.00	40.75	30.43	30.44	30.44	30.44	30.44	30.44	30.44	19.99	23.28	24.03	24.20	24.24	24.25
13.00	33.89	30.60	30.61	30.61	30.61	30.61	30.61	30.61	20.73	23.83	24.53	24.69	24.73	24.74
14.00	39.46	27.55	27.55	27.55	27.55	27.55	27.55	27.55	19.24	22.16	22.82	22.96	23.00	23.01
15.00	40.07	24.27	24.27	24.27	24.27	24.27	24.27	24.27	17.50	20.24	20.86	21.00	21.04	21.04
16.00	37.11	22.89	22.90	22.90	22.90	22.90	22.90	22.90	16.97	19.55	20.13	20.26	20.29	20.30
17.00	34.73	21.95	21.96	21.96	21.96	21.96	21.96	21.96	16.69	19.11	19.66	19.78	19.81	19.82
18.00	30.92	20.30	20.30	20.30	20.30	20.30	20.30	20.30	15.88	18.15	18.67	18.78	18.81	18.82
19.00	29.40	17.72	17.72	17.72	17.72	17.72	17.72	17.72	14.38	16.52	17.01	17.12	17.14	17.15
20.00	28.40	14.59	14.59	14.59	14.59	14.59	14.59	14.59	12.45	14.46	14.92	15.02	15.04	15.05
21.00	27.00	11.64	11.64	11.64	11.64	11.64	11.64	11.64	10.57	12.46	12.89	12.99	13.01	13.01
22.00	26.40	9.05	9.05	9.05	9.05	9.05	9.05	9.05	8.87	10.65	11.05	11.14	11.16	11.17
23.00	26.00	6.83	6.83	6.83	6.83	6.83	6.83	6.83	7.37	9.04	9.42	9.51	9.53	9.53
Average	33.77							13.09						13.09

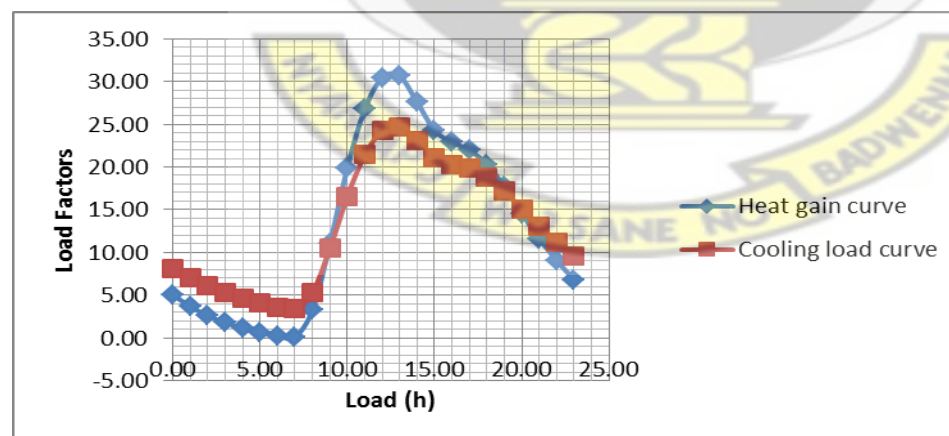


FIGURE A4. 49: Heat Gain and Cooling load factors for 4-in. l. w. concrete block and air space S-E facing wall

TABLE A4.50: Heat Gain and Cooling load factors for 4-in. l. w. concrete block and air space S-W facing wall

t h	T _{os} , t _o C	1st day	2nd day	3rd day	4th day	5th day	6th day	Heat Gain factor	1st day	2nd day	3rd day	4th day	5th day	Cooling load factor
-5.00	29.40	0.00							0.00					
-4.00	28.40	0.00							0.00					
-3.00	27.00	0.00							0.00					
-2.00	26.40	0.00							0.00					
-1.00	26.00	0.00							0.00					
0.00	25.60	0.51	7.76	7.76	7.76	7.76	7.76	7.76	-1.66	7.95	10.13	10.62	10.73	10.76
1.00	25.30	0.81	5.36	5.36	5.36	5.36	5.36	5.36	-2.73	6.30	8.35	8.81	8.92	8.94
2.00	25.10	0.83	3.66	3.66	3.66	3.66	3.66	3.66	-3.40	5.09	7.01	7.45	7.55	7.57
3.00	24.90	0.70	2.44	2.44	2.44	2.44	2.44	2.44	-3.81	4.17	5.98	6.39	6.49	6.51
4.00	24.70	0.48	1.56	1.56	1.56	1.56	1.56	1.56	-4.03	3.47	5.17	5.56	5.64	5.66
5.00	24.50	0.23	0.90	0.90	0.90	0.90	0.90	0.90	-4.15	2.91	4.50	4.87	4.95	4.97
6.00	25.00	-0.03	0.38	0.38	0.38	0.38	0.38	0.38	-4.20	2.43	3.94	4.28	4.35	4.37
7.00	28.34	-0.14	0.11	0.11	0.11	0.11	0.11	0.11	-4.10	2.13	3.54	3.86	3.93	3.95
8.00	30.17	0.53	0.68	0.68	0.68	0.68	0.68	0.68	-3.46	2.39	3.72	4.02	4.09	4.11
9.00	31.80	2.17	2.27	2.27	2.27	2.27	2.27	2.27	-2.14	3.37	4.62	4.90	4.97	4.98
10.00	33.32	4.29	4.35	4.35	4.35	4.35	4.35	4.35	-0.45	4.72	5.90	6.16	6.22	6.24
11.00	30.19	6.52	6.55	6.55	6.55	6.55	6.55	6.55	1.33	6.20	7.30	7.55	7.61	7.62
12.00	39.56	8.01	8.03	8.03	8.03	8.03	8.03	8.03	2.65	7.23	8.26	8.50	8.55	8.56
13.00	48.81	10.16	10.17	10.17	10.17	10.17	10.17	10.17	4.44	8.74	9.71	9.93	9.98	9.99
14.00	55.84	15.37	15.38	15.38	15.38	15.38	15.38	15.38	8.32	12.36	13.28	13.49	13.53	13.54
15.00	60.04	23.07	23.08	23.08	23.08	23.08	23.08	23.08	13.99	17.79	18.65	18.85	18.89	18.90
16.00	57.46	31.43	31.44	31.44	31.44	31.44	31.44	31.44	20.23	23.80	24.61	24.79	24.83	24.84
17.00	49.22	38.03	38.04	38.04	38.04	38.04	38.04	38.04	25.40	28.75	29.51	29.69	29.72	29.73
18.00	37.30	40.45	40.45	40.45	40.45	40.45	40.45	40.45	27.80	30.95	31.67	31.83	31.87	31.88
19.00	29.40	37.50	37.50	37.50	37.50	37.50	37.50	37.50	26.55	29.51	30.19	30.34	30.37	30.38
20.00	28.40	30.40	30.40	30.40	30.40	30.40	30.40	30.40	22.37	25.16	25.79	25.93	25.97	25.97
21.00	27.00	22.49	22.49	22.49	22.49	22.49	22.49	22.49	17.47	20.09	20.68	20.82	20.85	20.85
22.00	26.40	16.01	16.01	16.01	16.01	16.01	16.01	16.01	13.35	15.82	16.38	16.50	16.53	16.54
23.00	26.00	11.18	11.18	11.18	11.18	11.18	11.18	11.18	10.22	12.54	13.07	13.18	13.21	13.22
Average	33.93							13.34						13.34

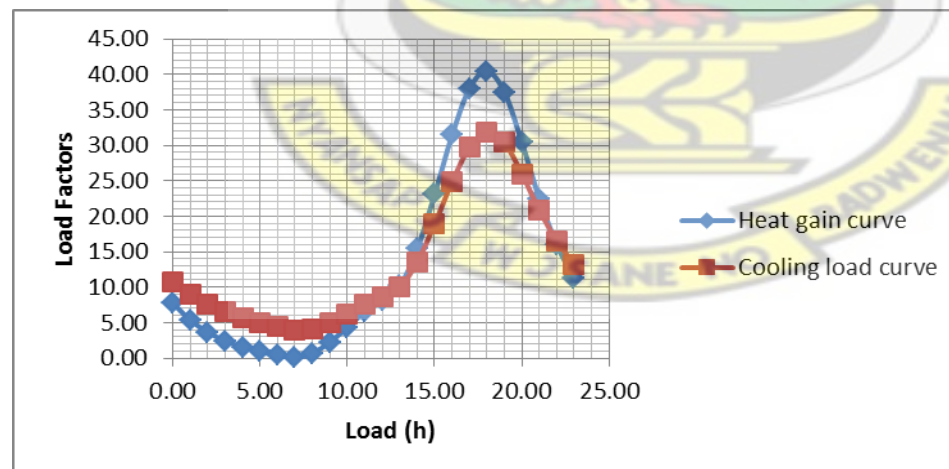


FIGURE A4. 50: Heat Gain and Cooling load factors for 4-in. l. w. concrete block and air space S-W facing wall

TABLE A4.51: Heat Gain and Cooling load factors for 4-in. l. w. concrete block and air space SHADED facing wall

t h	T _{os} ,t oC	1st day	2nd day	3rd day	4th day	5th day	6th day	Heat Gain factor	1st day	2nd day	3rd day	4th day	5th day	Cooling load factor
-5.00	29.40	0.00							0.00					
-4.00	28.40	0.00							0.00					
-3.00	27.00	0.00							0.00					
-2.00	26.40	0.00							0.00					
-1.00	26.00	0.00							0.00					
0.00	25.60	0.51	4.25	4.25	4.25	4.25	4.25	4.25	-0.53	3.51	4.43	4.64	4.69	4.70
1.00	25.30	0.81	3.19	3.19	3.19	3.19	3.19	3.19	-0.96	2.84	3.70	3.90	3.94	3.95
2.00	25.10	0.83	2.32	2.32	2.32	2.32	2.32	2.32	-1.31	2.27	3.08	3.26	3.30	3.31
3.00	24.90	0.70	1.62	1.62	1.62	1.62	1.62	1.62	-1.57	1.79	2.55	2.72	2.76	2.77
4.00	24.70	0.48	1.05	1.05	1.05	1.05	1.05	1.05	-1.76	1.39	2.11	2.27	2.31	2.32
5.00	24.50	0.23	0.58	0.58	0.58	0.58	0.58	0.58	-1.91	1.06	1.73	1.88	1.92	1.92
6.00	25.00	-0.03	0.19	0.19	0.19	0.19	0.19	0.19	-2.03	0.76	1.39	1.53	1.57	1.57
7.00	25.00	-0.17	-0.04	-0.04	-0.04	-0.04	-0.04	-0.04	-2.05	0.57	1.16	1.30	1.33	1.33
8.00	25.40	-0.16	-0.08	-0.08	-0.08	-0.08	-0.08	-0.08	-1.96	0.51	1.07	1.19	1.22	1.23
9.00	26.30	-0.02	0.03	0.03	0.03	0.03	0.03	0.03	-1.78	0.54	1.07	1.19	1.21	1.22
10.00	27.40	0.35	0.38	0.38	0.38	0.38	0.38	0.38	-1.43	0.75	1.24	1.36	1.38	1.39
11.00	30.00	1.07	1.09	1.09	1.09	1.09	1.09	1.09	-0.84	1.21	1.68	1.78	1.81	1.81
12.00	31.00	2.38	2.39	2.39	2.39	2.39	2.39	2.39	0.17	2.09	2.53	2.63	2.65	2.65
13.00	32.50	4.17	4.18	4.18	4.18	4.18	4.18	4.18	1.52	3.33	3.74	3.83	3.85	3.85
14.00	33.50	6.09	6.10	6.10	6.10	6.10	6.10	6.10	2.98	4.68	5.07	5.16	5.18	5.18
15.00	34.50	8.01	8.02	8.02	8.02	8.02	8.02	8.02	4.48	6.08	6.44	6.52	6.54	6.54
16.00	32.20	9.79	9.80	9.80	9.80	9.80	9.80	9.80	5.90	7.40	7.75	7.82	7.84	7.84
17.00	31.10	10.85	10.85	10.85	10.85	10.85	10.85	10.85	6.85	8.27	8.59	8.66	8.68	8.68
18.00	30.50	10.84	10.85	10.85	10.85	10.85	10.85	10.85	7.09	8.42	8.72	8.79	8.80	8.81
19.00	29.40	10.26	10.26	10.26	10.26	10.26	10.26	10.26	6.91	8.16	8.44	8.51	8.52	8.53
20.00	28.40	9.37	9.37	9.37	9.37	9.37	9.37	9.37	6.51	7.69	7.95	8.01	8.03	8.03
21.00	27.00	8.26	8.26	8.26	8.26	8.26	8.26	8.26	5.93	7.03	7.28	7.34	7.35	7.35
22.00	26.40	6.93	6.93	6.93	6.93	6.93	6.93	6.93	5.16	6.20	6.43	6.49	6.50	6.50
23.00	26.00	5.52	5.52	5.52	5.52	5.52	5.52	5.52	4.30	5.28	5.50	5.55	5.56	5.56
Average	27.99							4.46						4.46

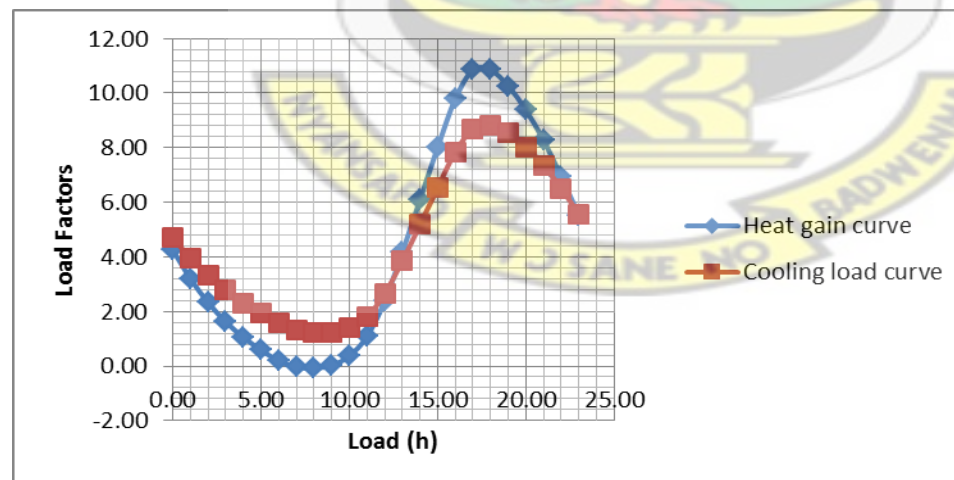


FIGURE A4. 51: Heat Gain and Cooling load factors for 4-in. l. w. concrete block and air space SHADED facing wall

TABLE A4.52: Heat Gain and Cooling load factors for frame, partition with 3/4- in. gypsum board WEST facing wall

t h	Tos,t oC	1st day	2nd day	3rd day	4th day	5th day	6th day	Heat Gain factor	1st day	2nd day	3rd day	4th day	5th day	Cooling load factor
-5.00	29.40	0.00							0.00					
-4.00	28.40	0.00							0.00					
-3.00	27.00	0.00							0.00					
-2.00	26.40	0.00							0.00					
-1.00	26.00	0.00							0.00					
0.00	25.60	0.86	2.21	2.21	2.21	2.21	2.21	2.21	-0.80	7.60	9.51	9.94	10.04	10.06
1.00	25.30	0.70	1.16	1.16	1.16	1.16	1.16	1.16	-1.33	6.57	8.36	8.76	8.86	8.88
2.00	25.10	0.25	0.40	0.40	0.40	0.40	0.40	0.40	-1.70	5.73	7.41	7.79	7.88	7.90
3.00	24.90	-0.21	-0.16	-0.16	-0.16	-0.16	-0.16	-0.16	-1.95	5.03	6.61	6.96	7.04	7.06
4.00	24.70	-0.66	-0.64	-0.64	-0.64	-0.64	-0.64	-0.64	-2.17	4.39	5.87	6.21	6.29	6.30
5.00	24.50	-1.10	-1.09	-1.09	-1.09	-1.09	-1.09	-1.09	-2.39	3.78	5.18	5.49	5.56	5.58
6.00	25.00	-1.25	-1.25	-1.25	-1.25	-1.25	-1.25	-1.25	-2.42	3.38	4.69	4.99	5.05	5.07
7.00	28.30	0.42	0.42	0.42	0.42	0.42	0.42	0.42	-1.21	4.24	5.48	5.75	5.82	5.83
8.00	30.20	4.76	4.76	4.76	4.76	4.76	4.76	4.76	1.84	6.96	8.12	8.39	8.45	8.46
9.00	31.80	9.04	9.04	9.04	9.04	9.04	9.04	9.04	4.93	9.74	10.83	11.08	11.14	11.15
10.00	33.30	12.81	12.81	12.81	12.81	12.81	12.81	12.81	7.74	12.27	13.29	13.53	13.58	13.59
11.00	36.20	16.82	16.82	16.82	16.82	16.82	16.82	16.82	10.78	15.04	16.00	16.22	16.27	16.28
12.00	38.30	21.83	21.83	21.83	21.83	21.83	21.83	21.83	14.56	18.55	19.46	19.66	19.71	19.72
13.00	51.00	30.89	30.89	30.89	30.89	30.89	30.89	30.89	21.16	24.92	25.77	25.97	26.01	26.02
14.00	61.30	49.71	49.71	49.71	49.71	49.71	49.71	49.71	34.56	38.09	38.89	39.07	39.11	39.12
15.00	67.90	69.72	69.72	69.72	69.72	69.72	69.72	69.72	49.10	52.42	53.17	53.34	53.38	53.39
16.00	65.50	83.00	83.00	83.00	83.00	83.00	83.00	83.00	59.38	62.50	63.21	63.37	63.40	63.41
17.00	54.70	82.08	82.08	82.08	82.08	82.08	82.08	82.08	60.17	63.10	63.77	63.92	63.95	63.96
18.00	39.40	65.76	65.76	65.76	65.76	65.76	65.76	65.76	50.37	53.13	53.75	53.89	53.93	53.93
19.00	29.40	41.05	41.05	41.05	41.05	41.05	41.05	41.05	34.46	37.06	37.64	37.78	37.81	37.81
20.00	28.40	21.09	21.09	21.09	21.09	21.09	21.09	21.09	21.27	23.71	24.26	24.38	24.41	24.42
21.00	27.00	11.32	11.32	11.32	11.32	11.32	11.32	11.32	14.61	16.90	17.42	17.53	17.56	17.57
22.00	26.40	6.30	6.30	6.30	6.30	6.30	6.30	6.30	10.99	13.14	13.63	13.74	13.77	13.77
23.00	26.00	3.70	3.70	3.70	3.70	3.70	3.70	3.70	8.94	10.96	11.42	11.52	11.55	11.55
Average	35.43							22.12						22.12

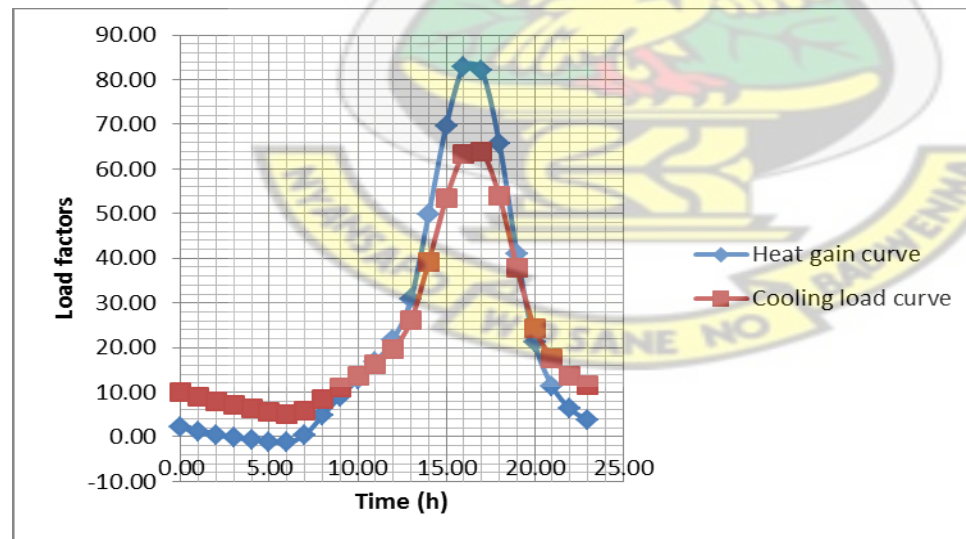


FIGURE A4. 52: Heat Gain and Cooling load factors for frame, partition with 3/4- in. gypsum board WEST facing wall

TABLE A4.53: Heat Gain and Cooling load factors for frame, partition with 3/4- in. gypsum board EAST facing wall

t h	Tos,t oC	1st day	2nd day	3rd day	4th day	5th day	6th day	Heat Gain factor	1st day	2nd day	3rd day	4th day	5th day	Cooling load factor
-5.00	29.40	0.00							0.00					
-4.00	28.40	0.00							0.00					
-3.00	27.00	0.00							0.00					
-2.00	26.40	0.00							0.00					
-1.00	26.00	0.00							0.00					
0.00	25.60	0.86	2.07	2.07	2.07	2.07	2.07	2.07	-0.64	6.33	7.91	8.27	8.35	8.37
1.00	25.30	0.70	1.12	1.12	1.12	1.12	1.12	1.12	-1.13	5.43	6.91	7.25	7.32	7.34
2.00	25.10	0.25	0.39	0.39	0.39	0.39	0.39	0.39	-1.49	4.67	6.07	6.38	6.45	6.47
3.00	24.90	-0.21	-0.17	-0.17	-0.17	-0.17	-0.17	-0.17	-1.75	4.04	5.35	5.65	5.71	5.73
4.00	24.70	-0.66	-0.64	-0.64	-0.64	-0.64	-0.64	-0.64	-1.98	3.46	4.69	4.97	5.04	5.05
5.00	24.50	-1.10	-1.09	-1.09	-1.09	-1.09	-1.09	-1.09	-2.21	2.91	4.07	4.33	4.39	4.40
6.00	25.00	-1.25	-1.25	-1.25	-1.25	-1.25	-1.25	-1.25	-2.25	2.56	3.65	3.90	3.95	3.96
7.00	46.15	7.55	7.55	7.55	7.55	7.55	7.55	7.55	3.80	8.32	9.35	9.58	9.63	9.64
8.00	57.97	34.15	34.15	34.15	34.15	34.15	34.15	34.15	22.14	26.39	27.35	27.57	27.62	27.63
9.00	60.11	57.57	57.57	57.57	57.57	57.57	57.57	57.57	38.81	42.81	43.71	43.92	43.97	43.98
10.00	56.25	67.74	67.74	67.74	67.74	67.74	67.74	67.74	46.86	50.62	51.47	51.66	51.70	51.71
11.00	50.01	65.66	65.66	65.66	65.66	65.66	65.66	65.66	46.70	50.23	51.03	51.21	51.25	51.26
12.00	40.01	54.87	54.87	54.87	54.87	54.87	54.87	54.87	40.49	43.81	44.56	44.73	44.77	44.78
13.00	38.68	40.86	40.86	40.86	40.86	40.86	40.86	40.86	31.81	34.93	35.64	35.80	35.83	35.84
14.00	39.46	33.75	33.75	33.75	33.75	33.75	33.75	33.75	27.51	30.45	31.11	31.26	31.29	31.30
15.00	40.07	32.01	32.01	32.01	32.01	32.01	32.01	32.01	26.70	29.46	30.09	30.23	30.26	30.27
16.00	37.11	30.89	30.89	30.89	30.89	30.89	30.89	30.89	26.25	28.84	29.43	29.56	29.59	29.60
17.00	34.73	27.01	27.01	27.01	27.01	27.01	27.01	27.01	23.89	26.33	26.88	27.00	27.03	27.04
18.00	30.92	21.64	21.64	21.64	21.64	21.64	21.64	21.64	20.42	22.71	23.23	23.35	23.38	23.38
19.00	29.40	15.46	15.46	15.46	15.46	15.46	15.46	15.46	16.29	18.44	18.93	19.04	19.06	19.07
20.00	28.40	11.05	11.05	11.05	11.05	11.05	11.05	11.05	13.23	15.25	15.71	15.82	15.84	15.85
21.00	27.00	7.85	7.85	7.85	7.85	7.85	7.85	7.85	10.93	12.83	13.26	13.36	13.38	13.38
22.00	26.40	5.13	5.13	5.13	5.13	5.13	5.13	5.13	8.89	10.67	11.08	11.17	11.19	11.20
23.00	26.00	3.30	3.30	3.30	3.30	3.30	3.30	3.30	7.42	9.10	9.48	9.56	9.58	9.59
Average	35.16							21.54						21.54

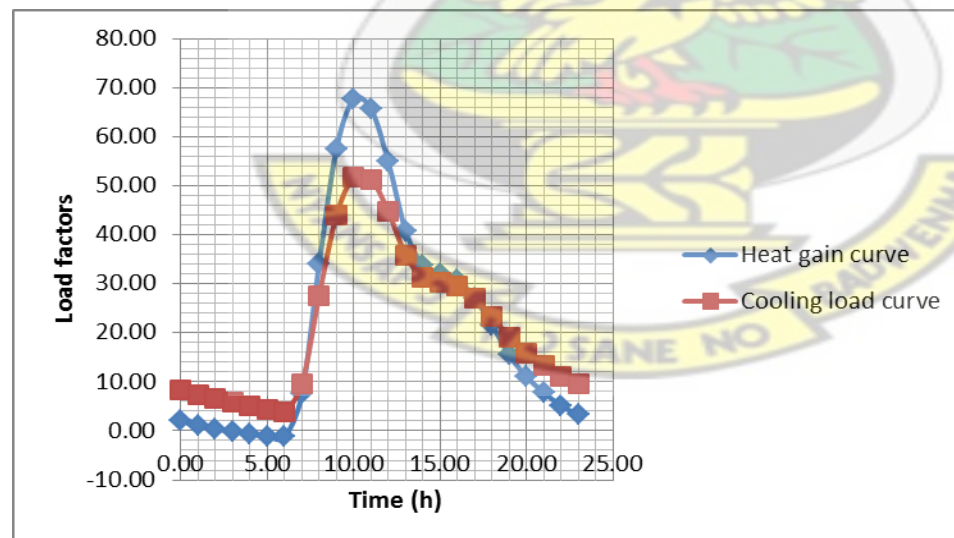


FIGURE A4. 53: Heat Gain and Cooling load factors for frame, partition with 3/4- in. gypsum board EAST facing wall

TABLE A4.54: Heat Gain and Cooling load factors for frame, partition with 3/4- in. gypsum board SOUTH facing wall

t h	T _{os} , t oC	1st day	2nd day	3rd day	4th day	5th day	6th day	Heat Gain factor	1st day	2nd day	3rd day	4th day	5th day	Cooling load factor
-5.00	29.40	0.00							0.00					
-4.00	28.40	0.00							0.00					
-3.00	27.00	0.00							0.00					
-2.00	26.40	0.00							0.00					
-1.00	26.00	0.00							0.00					
0.00	25.60	0.86	2.08	2.08	2.08	2.08	2.08	2.08	-0.64	4.53	5.70	5.97	6.03	6.04
1.00	25.30	0.70	1.12	1.12	1.12	1.12	1.12	1.12	-1.13	3.73	4.83	5.08	5.14	5.15
2.00	25.10	0.25	0.39	0.39	0.39	0.39	0.39	0.39	-1.50	3.08	4.11	4.35	4.40	4.41
3.00	24.90	-0.21	-0.17	-0.17	-0.17	-0.17	-0.17	-0.17	-1.76	2.54	3.51	3.73	3.78	3.80
4.00	24.70	-0.66	-0.64	-0.64	-0.64	-0.64	-0.64	-0.64	-1.99	2.05	2.97	3.18	3.22	3.23
5.00	24.50	-1.10	-1.09	-1.09	-1.09	-1.09	-1.09	-1.09	-2.21	1.59	2.45	2.64	2.69	2.70
6.00	25.00	-1.25	-1.25	-1.25	-1.25	-1.25	-1.25	-1.25	-2.26	1.32	2.12	2.31	2.35	2.36
7.00	28.30	0.42	0.43	0.43	0.43	0.43	0.43	0.43	-1.05	2.30	3.06	3.24	3.28	3.28
8.00	30.45	4.86	4.86	4.86	4.86	4.86	4.86	4.86	2.06	5.21	5.93	6.09	6.12	6.13
9.00	32.34	9.51	9.51	9.51	9.51	9.51	9.51	9.51	5.39	8.35	9.03	9.18	9.21	9.22
10.00	35.28	14.28	14.28	14.28	14.28	14.28	14.28	14.28	8.88	11.67	12.30	12.45	12.48	12.49
11.00	39.10	20.32	20.32	20.32	20.32	20.32	20.32	20.32	13.33	15.95	16.54	16.67	16.70	16.71
12.00	40.56	26.79	26.79	26.79	26.79	26.79	26.79	26.79	18.15	20.61	21.17	21.30	21.33	21.33
13.00	41.72	31.31	31.31	31.31	31.31	31.31	31.31	31.31	21.75	24.06	24.59	24.71	24.73	24.74
14.00	41.60	34.07	34.07	34.07	34.07	34.07	34.07	34.07	24.20	26.37	26.87	26.98	27.00	27.01
15.00	40.84	34.77	34.77	34.77	34.77	34.77	34.77	34.77	25.27	27.32	27.78	27.89	27.91	27.91
16.00	37.41	32.96	32.96	32.96	32.96	32.96	32.96	32.96	24.60	26.53	26.96	27.06	27.08	27.09
17.00	34.74	28.12	28.12	28.12	28.12	28.12	28.12	28.12	21.81	23.62	24.03	24.12	24.14	24.14
18.00	31.33	22.24	22.24	22.24	22.24	22.24	22.24	22.24	18.19	19.88	20.27	20.36	20.38	20.38
19.00	29.40	16.03	16.03	16.03	16.03	16.03	16.03	16.03	14.20	15.80	16.16	16.24	16.26	16.27
20.00	28.40	11.30	11.30	11.30	11.30	11.30	11.30	11.30	11.09	12.59	12.93	13.01	13.02	13.03
21.00	27.00	7.94	7.94	7.94	7.94	7.94	7.94	7.94	8.81	10.23	10.54	10.62	10.63	10.64
22.00	26.40	5.16	5.16	5.16	5.16	5.16	5.16	5.16	6.87	8.19	8.49	8.56	8.58	8.58
23.00	26.00	3.31	3.31	3.31	3.31	3.31	3.31	3.31	5.51	6.75	7.04	7.10	7.12	7.12
Average	31.08							12.66						12.66

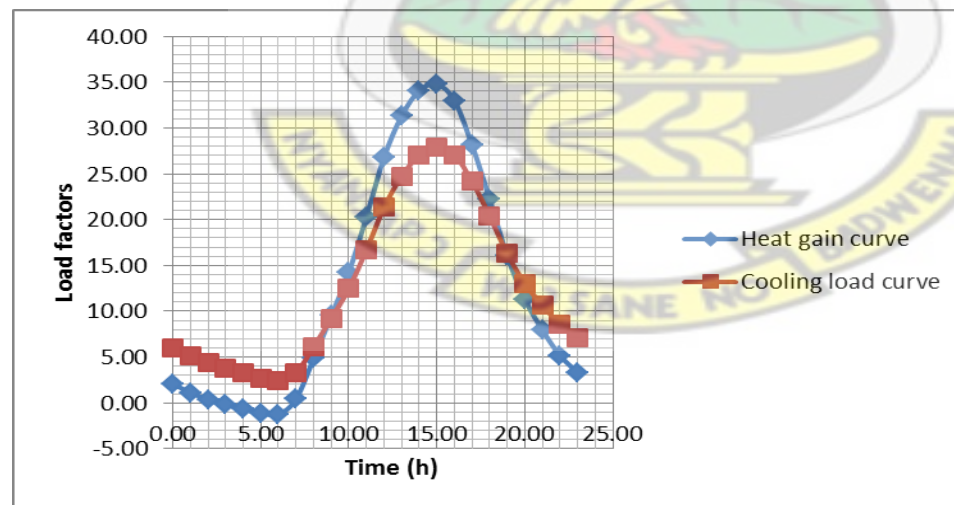


FIGURE A4. 54: Heat Gain and Cooling load factors for frame, partition with 3/4- in. gypsum board SOUTH facing wall

TABLE A4.55: Heat Gain and Cooling load factors for frame, partition with 3/4- in. gypsum board NORTH facing wall

t h	Tos,t oC	1st day	2nd day	3rd day	4th day	5th day	6th day	Heat Gain factor	1st day	2nd day	3rd day	4th day	5th day	Cooling load factor
-5.00	29.40	0.00							0.00					
-4.00	28.40	0.00							0.00					
-3.00	27.00	0.00							0.00					
-2.00	26.40	0.00							0.00					
-1.00	26.00	0.00							0.00					
0.00	25.60	0.86	2.06	2.06	2.06	2.06	2.06	2.06	-0.63	4.03	5.08	5.32	5.37	5.39
1.00	25.30	0.70	1.11	1.11	1.11	1.11	1.11	1.11	-1.11	3.26	4.25	4.48	4.53	4.54
2.00	25.10	0.25	0.38	0.38	0.38	0.38	0.38	0.38	-1.48	2.64	3.57	3.78	3.83	3.84
3.00	24.90	-0.21	-0.17	-0.17	-0.17	-0.17	-0.17	-0.17	-1.74	2.13	3.00	3.20	3.25	3.26
4.00	24.70	-0.66	-0.64	-0.64	-0.64	-0.64	-0.64	-0.64	-1.97	1.66	2.49	2.67	2.72	2.73
5.00	24.50	-1.10	-1.09	-1.09	-1.09	-1.09	-1.09	-1.09	-2.20	1.22	1.99	2.17	2.21	2.22
6.00	25.00	-1.25	-1.25	-1.25	-1.25	-1.25	-1.25	-1.25	-2.24	0.97	1.70	1.86	1.90	1.91
7.00	26.65	-0.23	-0.23	-0.23	-0.23	-0.23	-0.23	-0.23	-1.49	1.53	2.22	2.37	2.41	2.41
8.00	29.22	2.68	2.68	2.68	2.68	2.68	2.68	2.68	0.57	3.41	4.05	4.20	4.23	4.24
9.00	32.24	7.39	7.39	7.39	7.39	7.39	7.39	7.39	3.91	6.58	7.18	7.32	7.35	7.36
10.00	33.83	12.70	12.70	12.70	12.70	12.70	12.70	12.70	7.73	10.24	10.81	10.93	10.96	10.97
11.00	36.10	17.28	17.28	17.28	17.28	17.28	17.28	17.28	11.15	13.50	14.04	14.16	14.19	14.19
12.00	37.18	21.53	21.53	21.53	21.53	21.53	21.53	21.53	14.41	16.63	17.13	17.24	17.27	17.27
13.00	38.61	24.84	24.84	24.84	24.84	24.84	24.84	24.84	17.09	19.17	19.64	19.75	19.77	19.78
14.00	39.39	27.71	27.71	27.71	27.71	27.71	27.71	27.71	19.51	21.47	21.92	22.02	22.04	22.04
15.00	40.00	29.84	29.84	29.84	29.84	29.84	29.84	29.84	21.46	23.30	23.71	23.81	23.83	23.83
16.00	36.35	29.77	29.77	29.77	29.77	29.77	29.77	29.77	21.91	23.64	24.03	24.12	24.14	24.15
17.00	33.04	25.27	25.27	25.27	25.27	25.27	25.27	25.27	19.32	20.94	21.31	21.40	21.42	21.42
18.00	30.22	19.16	19.16	19.16	19.16	19.16	19.16	19.16	15.51	17.04	17.39	17.46	17.48	17.49
19.00	29.40	13.74	13.74	13.74	13.74	13.74	13.74	13.74	12.04	13.48	13.80	13.88	13.89	13.90
20.00	28.40	10.35	10.35	10.35	10.35	10.35	10.35	10.35	9.83	11.18	11.49	11.56	11.57	11.58
21.00	27.00	7.61	7.61	7.61	7.61	7.61	7.61	7.61	8.00	9.27	9.56	9.62	9.64	9.64
22.00	26.40	5.05	5.05	5.05	5.05	5.05	5.05	5.05	6.23	7.42	7.69	7.75	7.77	7.77
23.00	26.00	3.28	3.28	3.28	3.28	3.28	3.28	3.28	4.95	6.07	6.33	6.39	6.40	6.40
Average	30.21							10.77						10.76

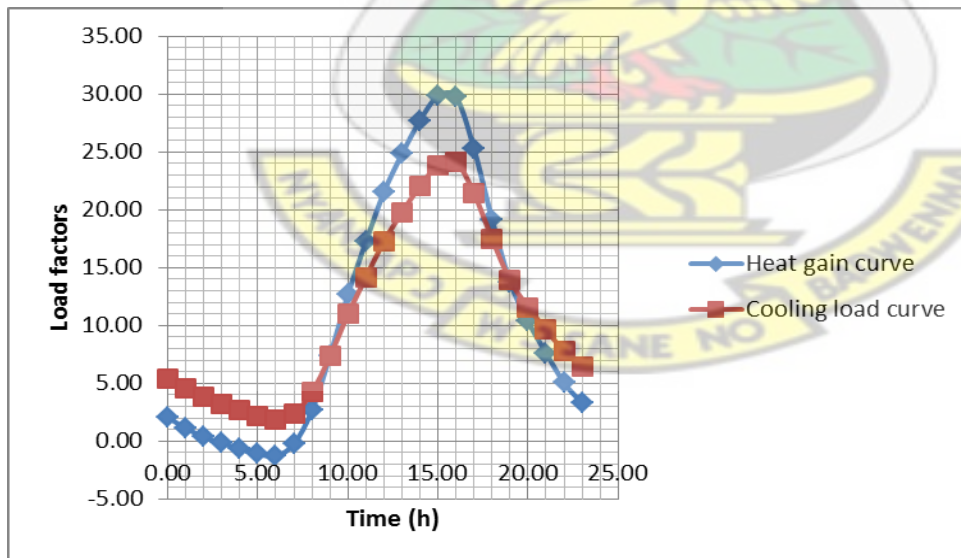


FIGURE A4. 55: Heat Gain and Cooling load factors for frame, partition with 3/4- in. gypsum board NORTH facing wall

TABLE A4.56: Heat Gain and Cooling load factors for frame, partition with 3/4- in. gypsum board N-E facing wall

t h	Tos,t oC	1st day	2nd day	3rd day	4th day	5th day	6th day	Heat Gain factor	1st day	2nd day	3rd day	4th day	5th day	Cooling load factor
-5.00	29.40	0.00							0.00					
-4.00	28.40	0.00							0.00					
-3.00	27.00	0.00							0.00					
-2.00	26.40	0.00							0.00					
-1.00	26.00	0.00							0.00					
0.00	25.60	0.86	2.07	2.07	2.07	2.07	2.07	2.07	-0.64	5.66	7.08	7.40	7.48	7.49
1.00	25.30	0.70	1.12	1.12	1.12	1.12	1.12	1.12	-1.13	4.79	6.13	6.43	6.50	6.52
2.00	25.10	0.25	0.39	0.39	0.39	0.39	0.39	0.39	-1.49	4.07	5.33	5.62	5.68	5.70
3.00	24.90	-0.21	-0.17	-0.17	-0.17	-0.17	-0.17	-0.17	-1.75	3.47	4.66	4.93	4.99	5.00
4.00	24.70	-0.66	-0.64	-0.64	-0.64	-0.64	-0.64	-0.64	-1.98	2.93	4.05	4.30	4.35	4.37
5.00	24.50	-1.10	-1.09	-1.09	-1.09	-1.09	-1.09	-1.09	-2.21	2.41	3.46	3.70	3.75	3.76
6.00	25.00	-1.25	-1.25	-1.25	-1.25	-1.25	-1.25	-1.25	-2.25	2.09	3.08	3.30	3.35	3.36
7.00	40.10	5.13	5.13	5.13	5.13	5.13	5.13	5.13	2.16	6.24	7.16	7.37	7.42	7.43
8.00	49.30	24.48	24.48	24.48	24.48	24.48	24.48	24.48	15.51	19.35	20.22	20.41	20.46	20.47
9.00	51.92	42.44	42.44	42.44	42.44	42.44	42.44	42.44	28.28	31.89	32.70	32.89	32.93	32.94
10.00	49.38	51.29	51.29	51.29	51.29	51.29	51.29	51.29	35.15	38.55	39.31	39.49	39.53	39.54
11.00	45.61	50.97	50.97	50.97	50.97	50.97	50.97	50.97	35.91	39.10	39.82	39.98	40.02	40.03
12.00	38.79	44.45	44.45	44.45	44.45	44.45	44.45	44.45	32.37	35.36	36.04	36.20	36.23	36.24
13.00	38.68	35.55	35.55	35.55	35.55	35.55	35.55	35.55	27.04	29.85	30.49	30.63	30.67	30.67
14.00	39.46	31.74	31.74	31.74	31.74	31.74	31.74	31.74	24.95	27.60	28.20	28.34	28.37	28.37
15.00	40.07	31.32	31.32	31.32	31.32	31.32	31.32	31.32	25.07	27.56	28.13	28.25	28.28	28.29
16.00	37.11	30.65	30.65	30.65	30.65	30.65	30.65	30.65	24.99	27.33	27.86	27.98	28.01	28.01
17.00	34.73	26.93	26.93	26.93	26.93	26.93	26.93	26.93	22.80	25.00	25.49	25.61	25.63	25.64
18.00	30.92	21.62	21.62	21.62	21.62	21.62	21.62	21.62	19.43	21.49	21.96	22.07	22.09	22.10
19.00	29.40	15.45	15.45	15.45	15.45	15.45	15.45	15.45	15.36	17.30	17.74	17.84	17.86	17.87
20.00	28.40	11.04	11.04	11.04	11.04	11.04	11.04	11.04	12.36	14.19	14.60	14.70	14.72	14.72
21.00	27.00	7.85	7.85	7.85	7.85	7.85	7.85	7.85	10.11	11.83	12.22	12.30	12.32	12.33
22.00	26.40	5.13	5.13	5.13	5.13	5.13	5.13	5.13	8.12	9.73	10.10	10.18	10.20	10.20
23.00	26.00	3.30	3.30	3.30	3.30	3.30	3.30	3.30	6.70	8.21	8.56	8.64	8.65	8.66
Average	33.68							18.32						18.32

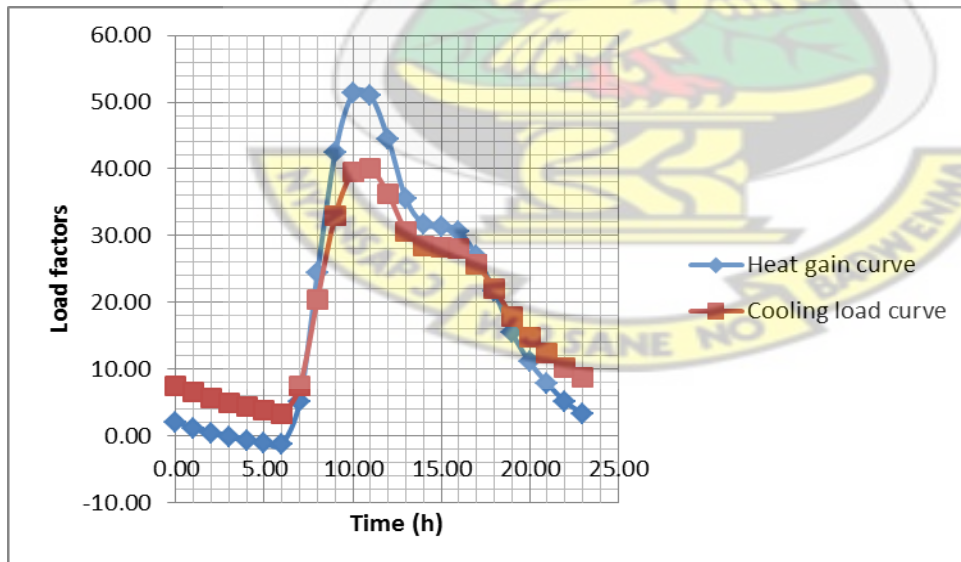


FIGURE A4. 56: Heat Gain and Cooling load factors for frame, partition with 3/4- in. gypsum board N-E facing wall

TABLE A4.57: Heat Gain and Cooling load factors for frame, partition with 3/4- in. gypsum board N-W facing wall

t h	Tos,t oC	1st day	2nd day	3rd day	4th day	5th day	6th day	Heat Gain factor	1st day	2nd day	3rd day	4th day	5th day	Cooling load factor
-5.00	29.40	0.00							0.00					
-4.00	28.40	0.00							0.00					
-3.00	27.00	0.00							0.00					
-2.00	26.40	0.00							0.00					
-1.00	26.00	0.00							0.00					
0.00	25.60	0.86	2.16	2.16	2.16	2.16	2.16	2.16	-0.74	6.51	8.16	8.53	8.61	8.63
1.00	25.30	0.70	1.15	1.15	1.15	1.15	1.15	1.15	-1.26	5.56	7.11	7.46	7.53	7.55
2.00	25.10	0.25	0.40	0.40	0.40	0.40	0.40	0.40	-1.63	4.78	6.24	6.57	6.64	6.66
3.00	24.90	-0.21	-0.16	-0.16	-0.16	-0.16	-0.16	-0.16	-1.89	4.14	5.51	5.81	5.88	5.90
4.00	24.70	-0.66	-0.64	-0.64	-0.64	-0.64	-0.64	-0.64	-2.11	3.56	4.84	5.13	5.20	5.21
5.00	24.50	-1.10	-1.09	-1.09	-1.09	-1.09	-1.09	-1.09	-2.33	3.00	4.20	4.48	4.54	4.55
6.00	25.00	-1.25	-1.25	-1.25	-1.25	-1.25	-1.25	-1.25	-2.36	2.64	3.78	4.03	4.09	4.11
7.00	28.34	0.44	0.44	0.44	0.44	0.44	0.44	0.44	-1.14	3.56	4.63	4.87	4.92	4.94
8.00	30.17	4.79	4.79	4.79	4.79	4.79	4.79	4.79	1.91	6.34	7.34	7.57	7.62	7.63
9.00	31.80	9.03	9.03	9.03	9.03	9.03	9.03	9.03	4.97	9.13	10.07	10.28	10.33	10.34
10.00	33.32	12.80	12.80	12.80	12.80	12.80	12.80	12.80	7.79	11.70	12.58	12.78	12.83	12.84
11.00	36.15	16.82	16.82	16.82	16.82	16.82	16.82	16.82	10.82	14.50	15.33	15.52	15.56	15.57
12.00	37.24	21.37	21.37	21.37	21.37	21.37	21.37	21.37	14.28	17.73	18.51	18.69	18.73	18.74
13.00	47.05	28.20	28.20	28.20	28.20	28.20	28.20	28.20	19.36	22.61	23.34	23.51	23.55	23.56
14.00	54.70	42.49	42.49	42.49	42.49	42.49	42.49	42.49	29.62	32.67	33.36	33.52	33.55	33.56
15.00	59.82	57.60	57.60	57.60	57.60	57.60	57.60	57.60	40.68	43.55	44.20	44.35	44.38	44.39
16.00	56.71	67.21	67.21	67.21	67.21	67.21	67.21	67.21	48.24	50.94	51.55	51.69	51.72	51.73
17.00	48.01	65.03	65.03	65.03	65.03	65.03	65.03	65.03	47.90	50.43	51.00	51.13	51.16	51.17
18.00	36.51	51.55	51.55	51.55	51.55	51.55	51.55	51.55	39.74	42.13	42.67	42.79	42.82	42.82
19.00	29.40	32.63	32.63	32.63	32.63	32.63	32.63	32.63	27.57	29.81	30.32	30.43	30.46	30.46
20.00	28.40	17.77	17.77	17.77	17.77	17.77	17.77	17.77	17.75	19.86	20.34	20.44	20.47	20.47
21.00	27.00	10.18	10.18	10.18	10.18	10.18	10.18	10.18	12.58	14.56	15.01	15.11	15.13	15.14
22.00	26.40	5.91	5.91	5.91	5.91	5.91	5.91	5.91	9.53	11.40	11.82	11.91	11.93	11.94
23.00	26.00	3.57	3.57	3.57	3.57	3.57	3.57	3.57	7.72	9.47	9.86	9.95	9.97	9.98
Average	33.84							18.66						18.66

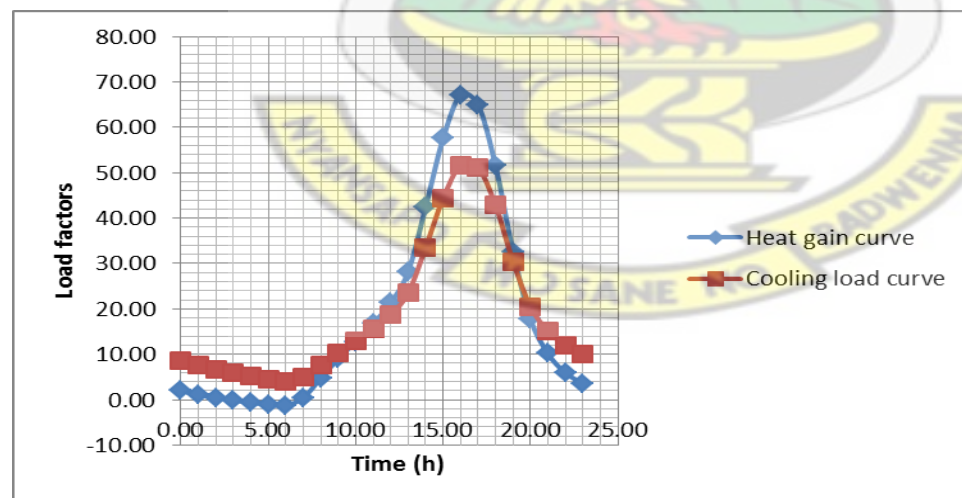


FIGURE A4. 57: Heat Gain and Cooling load factors for frame, partition with 3/4- in. gypsum board N-W facing wall

TABLE A4.58: Heat Gain and Cooling load factors for frame, partition with 3/4- in. gypsum board S-E facing wall

t h	Tos,t oC	1st day	2nd day	3rd day	4th day	5th day	6th day	Heat Gain factor	1st day	2nd day	3rd day	4th day	5th day	Cooling load factor
-5.00	29.40	0.00							0.00					
-4.00	28.40	0.00							0.00					
-3.00	27.00	0.00							0.00					
-2.00	26.40	0.00							0.00					
-1.00	26.00	0.00							0.00					
0.00	25.60	0.86	2.07	2.07	2.07	2.07	2.07	2.07	-0.64	5.68	7.11	7.43	7.51	7.52
1.00	25.30	0.70	1.12	1.12	1.12	1.12	1.12	1.12	-1.13	4.81	6.16	6.46	6.53	6.55
2.00	25.10	0.25	0.39	0.39	0.39	0.39	0.39	0.39	-1.49	4.09	5.36	5.64	5.71	5.72
3.00	24.90	-0.21	-0.17	-0.17	-0.17	-0.17	-0.17	-0.17	-1.75	3.49	4.68	4.95	5.01	5.03
4.00	24.70	-0.66	-0.64	-0.64	-0.64	-0.64	-0.64	-0.64	-1.98	2.95	4.07	4.32	4.38	4.39
5.00	24.50	-1.10	-1.09	-1.09	-1.09	-1.09	-1.09	-1.09	-2.21	2.43	3.48	3.72	3.77	3.78
6.00	25.00	-1.25	-1.25	-1.25	-1.25	-1.25	-1.25	-1.25	-2.25	2.11	3.09	3.32	3.37	3.38
7.00	41.26	5.60	5.60	5.60	5.60	5.60	5.60	5.60	2.47	6.57	7.50	7.71	7.76	7.77
8.00	50.16	26.02	26.02	26.02	26.02	26.02	26.02	26.02	16.57	20.42	21.29	21.49	21.54	21.55
9.00	52.00	43.93	43.93	43.93	43.93	43.93	43.93	43.93	29.33	32.95	33.77	33.96	34.00	34.01
10.00	50.41	52.40	52.40	52.40	52.40	52.40	52.40	52.40	35.98	39.38	40.15	40.33	40.37	40.38
11.00	47.31	52.96	52.96	52.96	52.96	52.96	52.96	52.96	37.34	40.54	41.27	41.43	41.47	41.48
12.00	40.75	47.56	47.56	47.56	47.56	47.56	47.56	47.56	34.60	37.61	38.29	38.44	38.48	38.49
13.00	33.89	36.69	36.69	36.69	36.69	36.69	36.69	36.69	27.98	30.81	31.45	31.59	31.62	31.63
14.00	39.46	28.17	28.17	28.17	28.17	28.17	28.17	28.17	22.70	25.35	25.95	26.09	26.12	26.13
15.00	40.07	29.44	29.44	29.44	29.44	29.44	29.44	29.44	23.89	26.39	26.96	27.08	27.11	27.12
16.00	37.11	29.98	29.98	29.98	29.98	29.98	29.98	29.98	24.59	26.94	27.47	27.59	27.62	27.62
17.00	34.73	26.70	26.70	26.70	26.70	26.70	26.70	26.70	22.68	24.89	25.39	25.50	25.53	25.53
18.00	30.92	21.54	21.54	21.54	21.54	21.54	21.54	21.54	19.41	21.48	21.95	22.06	22.08	22.09
19.00	29.40	15.43	15.43	15.43	15.43	15.43	15.43	15.43	15.37	17.32	17.76	17.86	17.89	17.89
20.00	28.40	11.03	11.03	11.03	11.03	11.03	11.03	11.03	12.39	14.22	14.63	14.73	14.75	14.75
21.00	27.00	7.85	7.85	7.85	7.85	7.85	7.85	7.85	10.13	11.86	12.25	12.34	12.36	12.36
22.00	26.40	5.13	5.13	5.13	5.13	5.13	5.13	5.13	8.14	9.76	10.13	10.21	10.23	10.24
23.00	26.00	3.30	3.30	3.30	3.30	3.30	3.30	3.30	6.72	8.24	8.59	8.67	8.68	8.69
Average	33.77							18.51						18.50

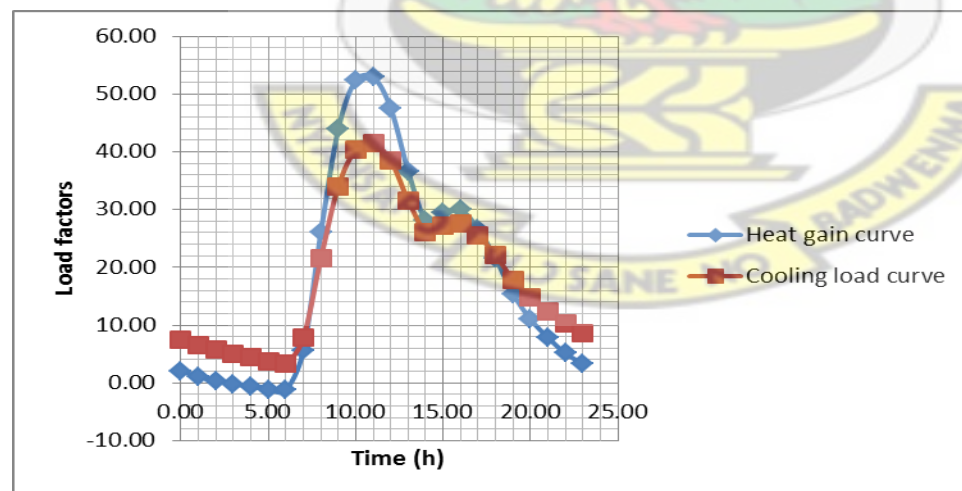


FIGURE A4. 58: Heat Gain and Cooling load factors for frame, partition with 3/4- in. gypsum board S-E facing wall

TABLE A4.59: Heat Gain and Cooling load factors for frame, partition with 3/4- in. gypsum board S-W facing wall

t h	T _{os} , t _o C	1st day	2nd day	3rd day	4th day	5th day	6th day	Heat Gain factor	1st day	2nd day	3rd day	4th day	5th day	Cooling load factor
-5.00	29.40	0.00							0.00					
-4.00	28.40	0.00							0.00					
-3.00	27.00	0.00							0.00					
-2.00	26.40	0.00							0.00					
-1.00	26.00	0.00							0.00					
0.00	25.60	0.86	2.17	2.17	2.17	2.17	2.17	2.17	-0.75	6.60	8.27	8.65	8.73	8.75
1.00	25.30	0.70	1.15	1.15	1.15	1.15	1.15	1.15	-1.27	5.64	7.21	7.56	7.65	7.66
2.00	25.10	0.25	0.40	0.40	0.40	0.40	0.40	0.40	-1.64	4.86	6.33	6.67	6.74	6.76
3.00	24.90	-0.21	-0.16	-0.16	-0.16	-0.16	-0.16	-0.16	-1.90	4.21	5.60	5.91	5.98	6.00
4.00	24.70	-0.66	-0.64	-0.64	-0.64	-0.64	-0.64	-0.64	-2.12	3.62	4.93	5.22	5.29	5.30
5.00	24.50	-1.10	-1.09	-1.09	-1.09	-1.09	-1.09	-1.09	-2.34	3.06	4.28	4.56	4.62	4.64
6.00	25.00	-1.25	-1.25	-1.25	-1.25	-1.25	-1.25	-1.25	-2.37	2.70	3.85	4.11	4.17	4.19
7.00	28.34	0.44	0.44	0.44	0.44	0.44	0.44	0.44	-1.15	3.62	4.70	4.94	5.00	5.01
8.00	30.17	4.79	4.79	4.79	4.79	4.79	4.79	4.79	1.90	6.39	7.41	7.64	7.69	7.70
9.00	31.80	9.03	9.03	9.03	9.03	9.03	9.03	9.03	4.96	9.18	10.13	10.35	10.40	10.41
10.00	33.32	12.80	12.80	12.80	12.80	12.80	12.80	12.80	7.78	11.74	12.64	12.84	12.89	12.90
11.00	30.19	14.44	14.44	14.44	14.44	14.44	14.44	14.44	9.19	12.92	13.76	13.95	14.00	14.01
12.00	39.56	16.17	16.17	16.17	16.17	16.17	16.17	16.17	10.69	14.19	14.99	15.17	15.21	15.22
13.00	48.81	28.36	28.36	28.36	28.36	28.36	28.36	28.36	19.32	22.61	23.36	23.53	23.57	23.57
14.00	55.84	44.85	44.85	44.85	44.85	44.85	44.85	44.85	31.09	34.19	34.89	35.04	35.08	35.09
15.00	60.04	59.78	59.78	59.78	59.78	59.78	59.78	59.78	42.08	44.99	45.65	45.80	45.83	45.84
16.00	57.46	68.63	68.63	68.63	68.63	68.63	68.63	68.63	49.17	51.90	52.52	52.66	52.70	52.70
17.00	49.22	66.70	66.70	66.70	66.70	66.70	66.70	66.70	49.02	51.60	52.18	52.31	52.34	52.35
18.00	37.30	53.61	53.61	53.61	53.61	53.61	53.61	53.61	41.17	43.59	44.14	44.26	44.29	44.29
19.00	29.40	34.21	34.21	34.21	34.21	34.21	34.21	34.21	28.71	30.98	31.49	31.61	31.64	31.64
20.00	28.40	18.43	18.43	18.43	18.43	18.43	18.43	18.43	18.29	20.43	20.91	21.02	21.04	21.05
21.00	27.00	10.41	10.41	10.41	10.41	10.41	10.41	10.41	12.83	14.84	15.30	15.40	15.42	15.43
22.00	26.40	5.99	5.99	5.99	5.99	5.99	5.99	5.99	9.68	11.57	12.00	12.09	12.12	12.12
23.00	26.00	3.59	3.59	3.59	3.59	3.59	3.59	3.59	7.83	9.60	10.00	10.09	10.11	10.12
Average	33.93							18.87						18.86

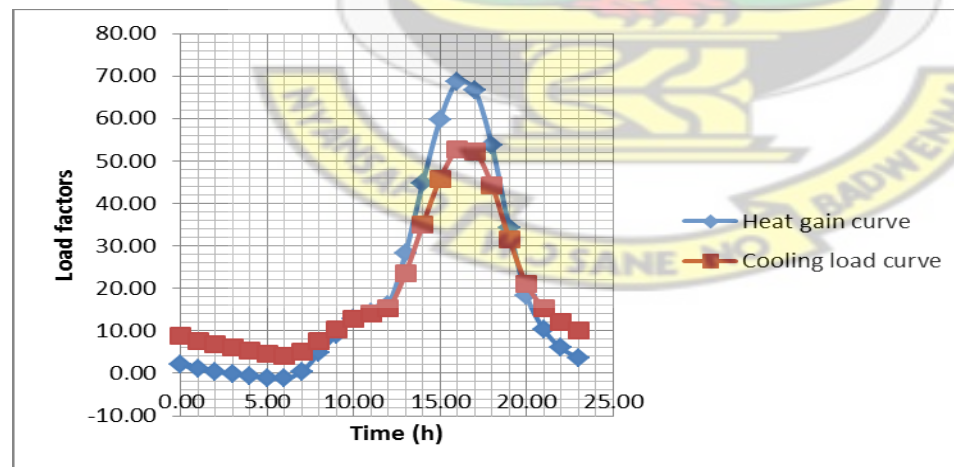


FIGURE A4. 59: Heat Gain and Cooling load factors for frame, partition with 3/4- in. gypsum board S-W facing wall

TABLE A4.60: Heat Gain and Cooling load factors for frame, partition with 3/4- in. gypsum board SHADED wall

t h	Tos,t oC	1st day	2nd day	3rd day	4th day	5th day	6th day	Heat Gain factor	1st day	2nd day	3rd day	4th day	5th day	Cooling load factor
-5.00	29.40	0.00							0.00					
-4.00	28.40	0.00							0.00					
-3.00	27.00	0.00							0.00					
-2.00	26.40	0.00							0.00					
-1.00	26.00	0.00							0.00					
0.00	25.60	0.86	2.05	2.05	2.05	2.05	2.05	2.05	-0.62	2.78	3.55	3.73	3.77	3.77
1.00	25.30	0.70	1.11	1.11	1.11	1.11	1.11	1.11	-1.10	2.09	2.82	2.98	3.02	3.03
2.00	25.10	0.25	0.38	0.38	0.38	0.38	0.38	0.38	-1.47	1.54	2.22	2.38	2.41	2.42
3.00	24.90	-0.21	-0.17	-0.17	-0.17	-0.17	-0.17	-0.17	-1.73	1.10	1.74	1.88	1.91	1.92
4.00	24.70	-0.66	-0.64	-0.64	-0.64	-0.64	-0.64	-0.64	-1.96	0.70	1.30	1.43	1.47	1.47
5.00	24.50	-1.10	-1.09	-1.09	-1.09	-1.09	-1.09	-1.09	-2.19	0.31	0.88	1.00	1.03	1.04
6.00	25.00	-1.25	-1.25	-1.25	-1.25	-1.25	-1.25	-1.25	-2.23	0.12	0.65	0.77	0.80	0.80
7.00	25.00	-0.89	-0.89	-0.89	-0.89	-0.89	-0.89	-0.89	-1.93	0.28	0.78	0.89	0.92	0.92
8.00	25.40	-0.54	-0.54	-0.54	-0.54	-0.54	-0.54	-0.54	-1.62	0.45	0.92	1.03	1.05	1.05
9.00	26.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	-0.99	0.96	1.40	1.50	1.52	1.53
10.00	27.40	1.88	1.88	1.88	1.88	1.88	1.88	1.88	0.17	2.00	2.41	2.51	2.53	2.53
11.00	30.00	4.57	4.57	4.57	4.57	4.57	4.57	4.57	2.10	3.82	4.21	4.30	4.32	4.32
12.00	31.00	8.35	8.35	8.35	8.35	8.35	8.35	8.35	4.83	6.44	6.81	6.89	6.91	6.92
13.00	32.50	11.51	11.51	11.51	11.51	11.51	11.51	11.51	7.19	8.71	9.05	9.13	9.15	9.15
14.00	33.50	14.48	14.48	14.48	14.48	14.48	14.48	14.48	9.47	10.90	11.22	11.29	11.31	11.31
15.00	34.50	16.99	16.99	16.99	16.99	16.99	16.99	16.99	11.48	12.83	13.13	13.20	13.21	13.22
16.00	32.20	17.97	17.97	17.97	17.97	17.97	17.97	17.97	12.48	13.74	14.03	14.09	14.11	14.11
17.00	31.10	15.97	15.97	15.97	15.97	15.97	15.97	15.97	11.45	12.63	12.90	12.96	12.98	12.98
18.00	30.50	13.75	13.75	13.75	13.75	13.75	13.75	13.75	10.21	11.32	11.58	11.63	11.65	11.65
19.00	29.40	11.85	11.85	11.85	11.85	11.85	11.85	11.85	9.12	10.17	10.41	10.47	10.48	10.48
20.00	28.40	9.73	9.73	9.73	9.73	9.73	9.73	9.73	7.85	8.83	9.06	9.11	9.12	9.12
21.00	27.00	7.40	7.40	7.40	7.40	7.40	7.40	7.40	6.37	7.30	7.51	7.56	7.57	7.57
22.00	26.40	4.98	4.98	4.98	4.98	4.98	4.98	4.98	4.78	5.65	5.85	5.90	5.91	5.91
23.00	26.00	3.25	3.25	3.25	3.25	3.25	3.25	3.25	3.62	4.44	4.62	4.67	4.68	4.68
Average	27.99							5.91						5.91

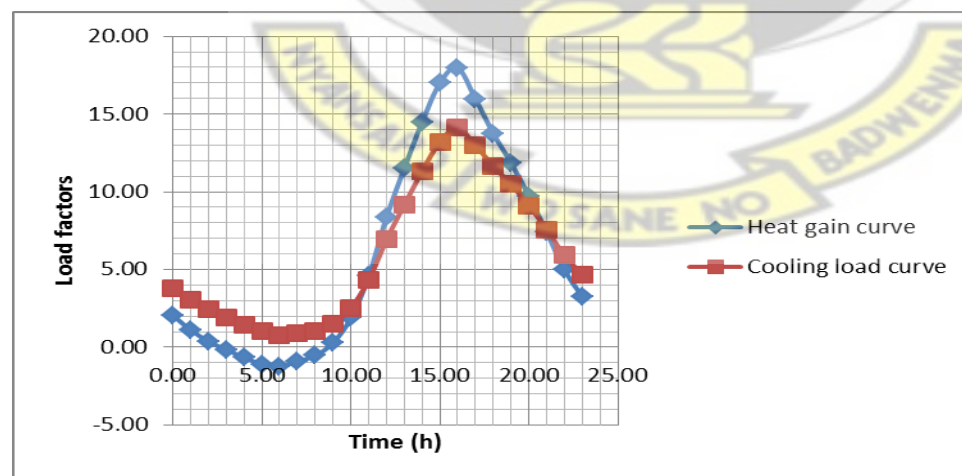


FIGURE A4. 60: Heat Gain and Cooling load factors for frame, partition with 3/4- in. gypsum board SHADED wall

TABLE A4.61: Heat Gain and Cooling load factors for 1-in. wood WEST facing wall

t h	Tos,t oC	1st day	2nd day	3rd day	4th day	5th day	6th day	Heat Gain factor	1st day	2nd day	3rd day	4th day	5th day	Cooling load factor
-5.00	29.40	0.00							0.00					
-4.00	28.40	0.00							0.00					
-3.00	27.00	0.00							0.00					
-2.00	26.40	0.00							0.00					
-1.00	26.00	0.00							0.00					
0.00	25.60	1.31	2.56	2.56	2.56	2.56	2.56	2.56	-0.67	7.99	9.95	10.39	10.49	10.52
1.00	25.30	1.20	1.59	1.59	1.59	1.59	1.59	1.59	-1.13	7.00	8.85	9.26	9.36	9.38
2.00	25.10	0.75	0.88	0.88	0.88	0.88	0.88	0.88	-1.46	6.19	7.92	8.32	8.40	8.42
3.00	24.90	0.30	0.34	0.34	0.34	0.34	0.34	0.34	-1.68	5.51	7.14	7.51	7.59	7.61
4.00	24.70	-0.14	-0.13	-0.13	-0.13	-0.13	-0.13	-0.13	-1.88	4.88	6.41	6.75	6.83	6.85
5.00	24.50	-0.58	-0.58	-0.58	-0.58	-0.58	-0.58	-0.58	-2.08	4.27	5.71	6.03	6.11	6.13
6.00	25.00	-0.68	-0.68	-0.68	-0.68	-0.68	-0.68	-0.68	-2.06	3.91	5.27	5.57	5.64	5.66
7.00	28.30	1.40	1.40	1.40	1.40	1.40	1.40	1.40	-0.56	5.05	6.32	6.61	6.68	6.69
8.00	30.20	6.15	6.15	6.15	6.15	6.15	6.15	6.15	2.79	8.07	9.27	9.54	9.60	9.61
9.00	31.80	10.46	10.46	10.46	10.46	10.46	10.46	10.46	5.93	10.89	12.01	12.27	12.33	12.34
10.00	33.30	14.21	14.21	14.21	14.21	14.21	14.21	14.21	8.76	13.42	14.47	14.71	14.77	14.78
11.00	36.20	18.36	18.36	18.36	18.36	18.36	18.36	18.36	11.91	16.29	17.29	17.51	17.56	17.57
12.00	38.30	23.56	23.56	23.56	23.56	23.56	23.56	23.56	15.84	19.96	20.89	21.10	21.15	21.16
13.00	51.00	33.72	33.72	33.72	33.72	33.72	33.72	33.72	23.22	27.09	27.96	28.16	28.21	28.22
14.00	61.30	54.20	54.20	54.20	54.20	54.20	54.20	54.20	37.79	41.43	42.26	42.44	42.49	42.50
15.00	67.90	74.52	74.52	74.52	74.52	74.52	74.52	74.52	52.62	56.04	56.81	56.99	57.03	57.04
16.00	65.50	86.65	86.65	86.65	86.65	86.65	86.65	86.65	62.19	65.41	66.14	66.30	66.34	66.35
17.00	54.70	83.26	83.26	83.26	83.26	83.26	83.26	83.26	61.35	64.38	65.06	65.22	65.25	65.26
18.00	39.40	64.20	64.20	64.20	64.20	64.20	64.20	64.20	49.69	52.53	53.17	53.32	53.35	53.36
19.00	29.40	38.03	38.03	38.03	38.03	38.03	38.03	38.03	32.73	35.41	36.01	36.15	36.18	36.19
20.00	28.40	18.81	18.81	18.81	18.81	18.81	18.81	18.81	19.97	22.48	23.05	23.17	23.20	23.21
21.00	27.00	10.44	10.44	10.44	10.44	10.44	10.44	10.44	14.20	16.56	17.09	17.21	17.24	17.24
22.00	26.40	6.11	6.11	6.11	6.11	6.11	6.11	6.11	11.02	13.24	13.74	13.85	13.88	13.88
23.00	26.00	3.88	3.88	3.88	3.88	3.88	3.88	3.88	9.21	11.29	11.77	11.87	11.90	11.90
Average	35.43							23.00						22.99

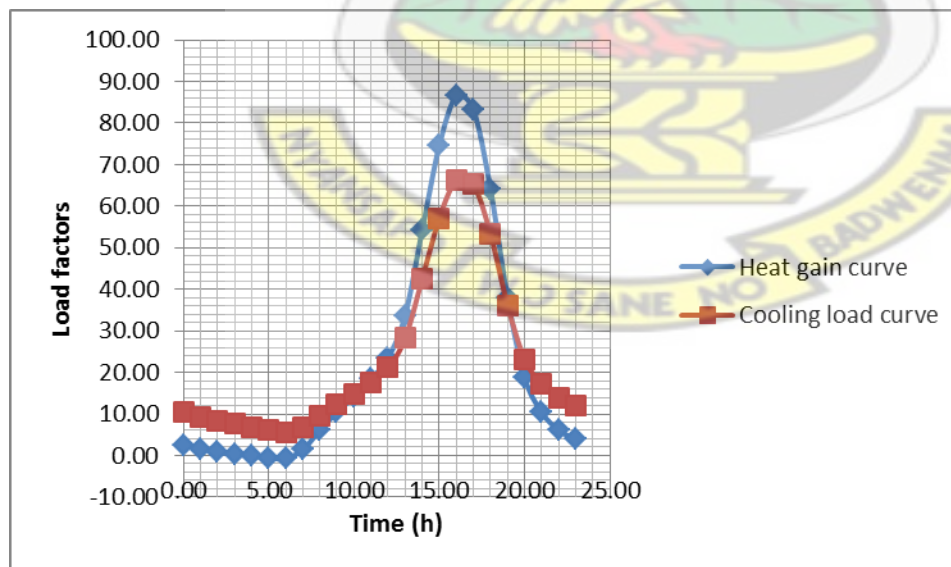


FIGURE A4. 61: Heat Gain and Cooling load factors for 1-in. wood WEST facing wall

TABLE A4.62: Heat Gain and Cooling load factors for 1-in. wood EAST facing wall

t h	T _{os} ,t oC	1st day	2nd day	3rd day	4th day	5th day	6th day	Heat Gain factor	1st day	2nd day	3rd day	4th day	5th day	Cooling load factor
-5.00	29.40	0.00							0.00					
-4.00	28.40	0.00							0.00					
-3.00	27.00	0.00							0.00					
-2.00	26.40	0.00							0.00					
-1.00	26.00	0.00							0.00					
0.00	25.60	1.31	2.48	2.48	2.48	2.48	2.48	2.48	-0.57	6.73	8.38	8.76	8.84	8.86
1.00	25.30	1.20	1.57	1.57	1.57	1.57	1.57	1.57	-1.01	5.85	7.41	7.76	7.84	7.86
2.00	25.10	0.75	0.87	0.87	0.87	0.87	0.87	0.87	-1.33	5.12	6.58	6.91	6.98	7.00
3.00	24.90	0.30	0.34	0.34	0.34	0.34	0.34	0.34	-1.56	4.50	5.88	6.19	6.26	6.27
4.00	24.70	-0.14	-0.13	-0.13	-0.13	-0.13	-0.13	-0.13	-1.76	3.93	5.22	5.52	5.58	5.60
5.00	24.50	-0.58	-0.58	-0.58	-0.58	-0.58	-0.58	-0.58	-1.97	3.38	4.60	4.87	4.93	4.95
6.00	25.00	-0.68	-0.68	-0.68	-0.68	-0.68	-0.68	-0.68	-1.95	3.08	4.22	4.48	4.54	4.55
7.00	46.15	10.31	10.31	10.31	10.31	10.31	10.31	10.31	5.60	10.34	11.41	11.65	11.71	11.72
8.00	57.97	39.69	39.69	39.69	39.69	39.69	39.69	39.69	25.89	30.34	31.35	31.58	31.63	31.64
9.00	60.11	62.58	62.58	62.58	62.58	62.58	62.58	62.58	42.31	46.49	47.44	47.65	47.70	47.71
10.00	56.25	70.69	70.69	70.69	70.69	70.69	70.69	70.69	49.05	52.98	53.87	54.07	54.12	54.13
11.00	50.01	66.63	66.63	66.63	66.63	66.63	66.63	66.63	47.58	51.28	52.11	52.30	52.35	52.36
12.00	40.01	54.21	54.21	54.21	54.21	54.21	54.21	54.21	40.27	43.74	44.53	44.71	44.75	44.76
13.00	38.68	39.77	39.77	39.77	39.77	39.77	39.77	39.77	31.27	34.54	35.28	35.44	35.48	35.49
14.00	39.46	33.68	33.68	33.68	33.68	33.68	33.68	33.68	27.64	30.71	31.40	31.56	31.59	31.60
15.00	40.07	32.72	32.72	32.72	32.72	32.72	32.72	32.72	27.34	30.23	30.88	31.03	31.06	31.07
16.00	37.11	31.56	31.56	31.56	31.56	31.56	31.56	31.56	26.88	29.59	30.20	30.34	30.37	30.38
17.00	34.73	27.25	27.25	27.25	27.25	27.25	27.25	27.25	24.22	26.77	27.35	27.48	27.51	27.51
18.00	30.92	21.55	21.55	21.55	21.55	21.55	21.55	21.55	20.52	22.92	23.46	23.58	23.61	23.62
19.00	29.40	15.24	15.24	15.24	15.24	15.24	15.24	15.24	16.28	18.54	19.05	19.16	19.19	19.19
20.00	28.40	11.05	11.05	11.05	11.05	11.05	11.05	11.05	13.37	15.49	15.97	16.08	16.10	16.11
21.00	27.00	7.99	7.99	7.99	7.99	7.99	7.99	7.99	11.15	13.14	13.59	13.69	13.71	13.72
22.00	26.40	5.33	5.33	5.33	5.33	5.33	5.33	5.33	9.15	11.02	11.44	11.54	11.56	11.57
23.00	26.00	3.64	3.64	3.64	3.64	3.64	3.64	3.64	7.76	9.52	9.92	10.01	10.03	10.04
Average	35.16							22.41						22.40

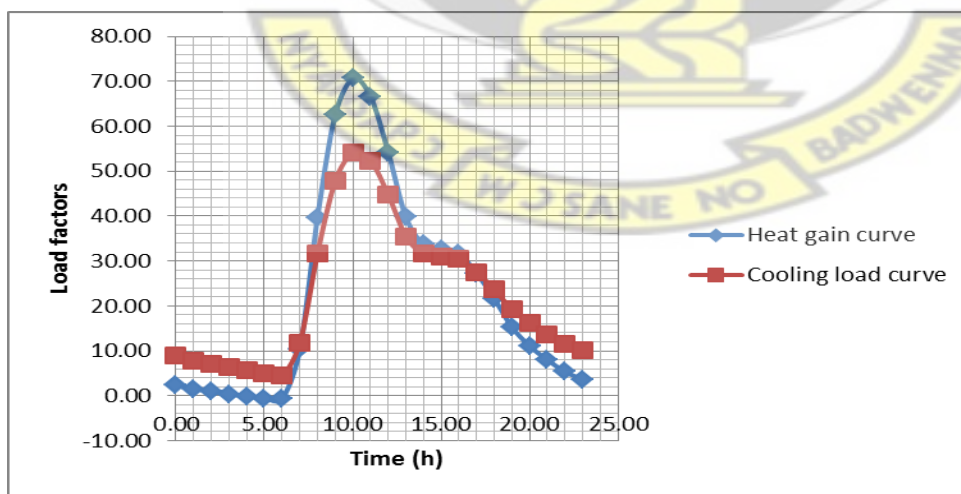
**FIGURE A4. 62: Heat Gain and Cooling load factors for 1-in. wood EAST facing wall**

TABLE A4.63: Heat Gain and Cooling load factors for 1-in. wood SOUTH facing wall

t h	Tos,t oC	1st day	2nd day	3rd day	4th day	5th day	6th day	Heat Gain factor	1st day	2nd day	3rd day	4th day	5th day	Cooling load factor
-5.00	29.40	0.00							0.00					
-4.00	28.40	0.00							0.00					
-3.00	27.00	0.00							0.00					
-2.00	26.40	0.00							0.00					
-1.00	26.00	0.00							0.00					
0.00	25.60	1.31	2.49	2.49	2.49	2.49	2.49	2.49	-0.57	4.93	6.17	6.46	6.52	6.53
1.00	25.30	1.20	1.57	1.57	1.57	1.57	1.57	1.57	-1.01	4.16	5.33	5.59	5.65	5.67
2.00	25.10	0.75	0.87	0.87	0.87	0.87	0.87	0.87	-1.33	3.52	4.62	4.87	4.93	4.94
3.00	24.90	0.30	0.34	0.34	0.34	0.34	0.34	0.34	-1.56	3.00	4.04	4.27	4.33	4.34
4.00	24.70	-0.14	-0.13	-0.13	-0.13	-0.13	-0.13	-0.13	-1.77	2.52	3.50	3.72	3.77	3.78
5.00	24.50	-0.58	-0.58	-0.58	-0.58	-0.58	-0.58	-0.58	-1.98	2.06	2.97	3.18	3.23	3.24
6.00	25.00	-0.68	-0.68	-0.68	-0.68	-0.68	-0.68	-0.68	-1.96	1.84	2.70	2.89	2.93	2.94
7.00	28.30	1.40	1.40	1.40	1.40	1.40	1.40	1.40	-0.47	3.10	3.91	4.09	4.13	4.14
8.00	30.45	6.28	6.28	6.28	6.28	6.28	6.28	6.28	2.97	6.32	7.08	7.25	7.29	7.30
9.00	32.34	11.01	11.01	11.01	11.01	11.01	11.01	11.01	6.39	9.54	10.25	10.41	10.45	10.46
10.00	35.28	15.90	15.90	15.90	15.90	15.90	15.90	15.90	10.00	12.96	13.63	13.78	13.82	13.82
11.00	39.10	22.26	22.26	22.26	22.26	22.26	22.26	22.26	14.68	17.46	18.09	18.24	18.27	18.27
12.00	40.56	28.79	28.79	28.79	28.79	28.79	28.79	28.79	19.58	22.20	22.79	22.93	22.96	22.96
13.00	41.72	33.06	33.06	33.06	33.06	33.06	33.06	33.06	23.04	25.50	26.06	26.18	26.21	26.22
14.00	41.60	35.54	35.54	35.54	35.54	35.54	35.54	35.54	25.33	27.64	28.17	28.29	28.31	28.32
15.00	40.84	35.91	35.91	35.91	35.91	35.91	35.91	35.91	26.20	28.37	28.86	28.97	29.00	29.00
16.00	37.41	33.59	33.59	33.59	33.59	33.59	33.59	33.59	25.20	27.24	27.70	27.81	27.83	27.84
17.00	34.74	28.23	28.23	28.23	28.23	28.23	28.23	28.23	22.06	23.98	24.41	24.51	24.53	24.54
18.00	31.33	22.10	22.10	22.10	22.10	22.10	22.10	22.10	18.25	20.05	20.46	20.55	20.57	20.58
19.00	29.40	15.80	15.80	15.80	15.80	15.80	15.80	15.80	14.19	15.89	16.27	16.36	16.38	16.38
20.00	28.40	11.26	11.26	11.26	11.26	11.26	11.26	11.26	11.19	12.79	13.15	13.23	13.25	13.26
21.00	27.00	8.05	8.05	8.05	8.05	8.05	8.05	8.05	9.02	10.52	10.85	10.93	10.95	10.95
22.00	26.40	5.35	5.35	5.35	5.35	5.35	5.35	5.35	7.12	8.53	8.85	8.92	8.94	8.94
23.00	26.00	3.64	3.64	3.64	3.64	3.64	3.64	3.64	5.85	7.17	7.47	7.54	7.56	7.56
Average	31.08							13.42						13.42

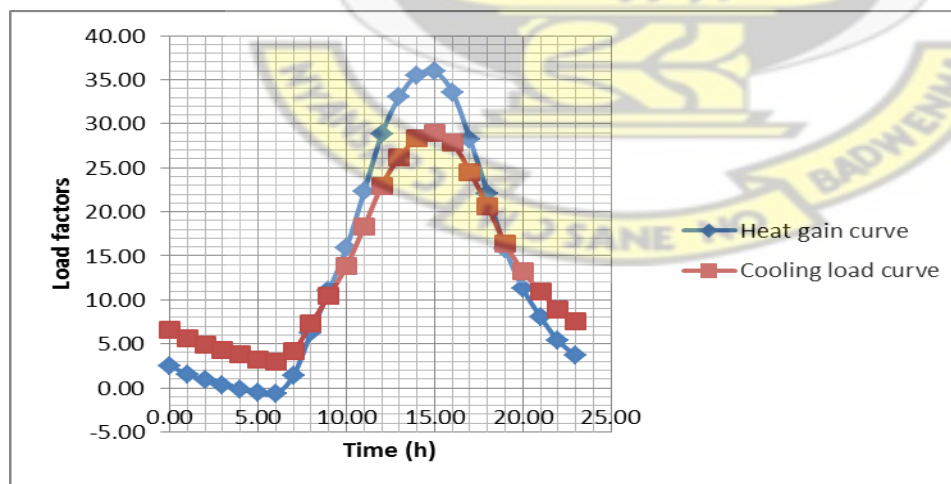


FIGURE A4. 63: Heat Gain and Cooling load factors for 1-in. wood SOUTH facing wall

TABLE A4.64: Heat Gain and Cooling load factors for 1-in. wood NORTH facing wall

t h	Tos,t oC	1st day	2nd day	3rd day	4th day	5th day	6th day	Heat Gain factor	1st day	2nd day	3rd day	4th day	5th day	Cooling load factor
-5.00	29.40	0.00							0.00					
-4.00	28.40	0.00							0.00					
-3.00	27.00	0.00							0.00					
-2.00	26.40	0.00							0.00					
-1.00	26.00	0.00							0.00					
0.00	25.60	1.31	2.48	2.48	2.48	2.48	2.48	2.48	-0.56	4.42	5.55	5.81	5.87	5.88
1.00	25.30	1.20	1.57	1.57	1.57	1.57	1.57	1.57	-1.00	3.68	4.75	4.99	5.04	5.05
2.00	25.10	0.75	0.87	0.87	0.87	0.87	0.87	0.87	-1.32	3.08	4.08	4.30	4.36	4.37
3.00	24.90	0.30	0.34	0.34	0.34	0.34	0.34	0.34	-1.55	2.59	3.53	3.74	3.79	3.80
4.00	24.70	-0.14	-0.13	-0.13	-0.13	-0.13	-0.13	-0.13	-1.76	2.13	3.02	3.21	3.26	3.27
5.00	24.50	-0.58	-0.58	-0.58	-0.58	-0.58	-0.58	-0.58	-1.97	1.69	2.52	2.71	2.75	2.76
6.00	25.00	-0.68	-0.68	-0.68	-0.68	-0.68	-0.68	-0.68	-1.95	1.49	2.27	2.45	2.49	2.50
7.00	26.65	0.58	0.58	0.58	0.58	0.58	0.58	0.58	-1.02	2.22	2.95	3.11	3.15	3.16
8.00	29.22	3.85	3.85	3.85	3.85	3.85	3.85	3.85	1.31	4.34	5.03	5.19	5.22	5.23
9.00	32.24	8.92	8.92	8.92	8.92	8.92	8.92	8.92	4.91	7.77	8.41	8.56	8.59	8.60
10.00	33.83	14.34	14.34	14.34	14.34	14.34	14.34	14.34	8.84	11.53	12.13	12.27	12.30	12.31
11.00	36.10	18.89	18.89	18.89	18.89	18.89	18.89	18.89	12.27	14.79	15.37	15.49	15.52	15.53
12.00	37.18	23.11	23.11	23.11	23.11	23.11	23.11	23.11	15.54	17.92	18.45	18.57	18.60	18.61
13.00	38.61	26.32	26.32	26.32	26.32	26.32	26.32	26.32	18.18	20.41	20.92	21.03	21.06	21.06
14.00	39.39	29.15	29.15	29.15	29.15	29.15	29.15	29.15	20.60	22.69	23.17	23.27	23.30	23.30
15.00	40.00	31.18	31.18	31.18	31.18	31.18	31.18	31.18	22.49	24.46	24.91	25.01	25.03	25.04
16.00	36.35	30.62	30.62	30.62	30.62	30.62	30.62	30.62	22.64	24.49	24.91	25.00	25.02	25.03
17.00	33.04	25.39	25.39	25.39	25.39	25.39	25.39	25.39	19.55	21.29	21.69	21.77	21.80	21.80
18.00	30.22	18.96	18.96	18.96	18.96	18.96	18.96	18.96	15.52	17.16	17.53	17.62	17.63	17.64
19.00	29.40	13.64	13.64	13.64	13.64	13.64	13.64	13.64	12.11	13.64	13.99	14.07	14.09	14.09
20.00	28.40	10.50	10.50	10.50	10.50	10.50	10.50	10.50	10.06	11.51	11.84	11.91	11.93	11.93
21.00	27.00	7.82	7.82	7.82	7.82	7.82	7.82	7.82	8.26	9.62	9.93	9.99	10.01	10.01
22.00	26.40	5.28	5.28	5.28	5.28	5.28	5.28	5.28	6.50	7.78	8.07	8.14	8.15	8.16
23.00	26.00	3.62	3.62	3.62	3.62	3.62	3.62	3.62	5.30	6.50	6.77	6.84	6.85	6.85
Average	30.21							11.50						11.50

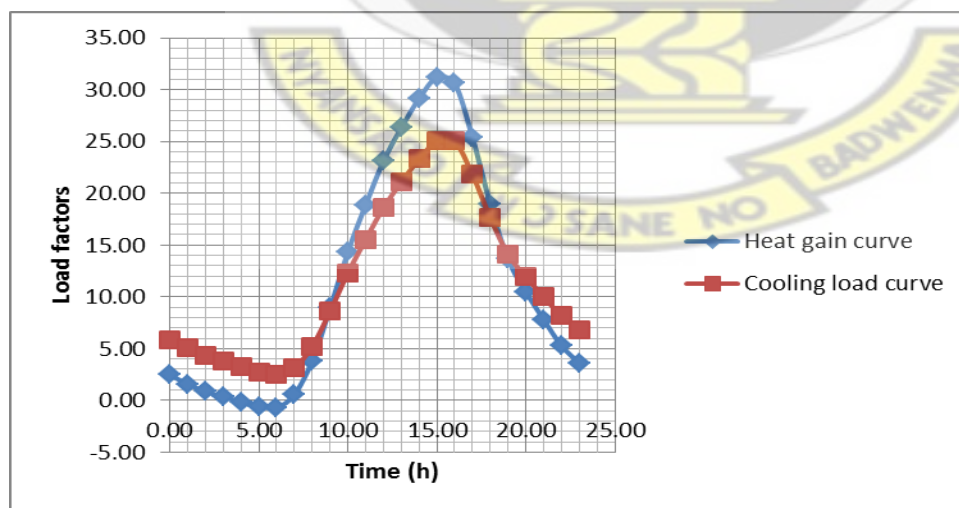


FIGURE A4. 64: Heat Gain and Cooling load factors for 1-in. wood NORTH facing wall

TABLE A4.65: Heat Gain and Cooling load factors for 1-in. wood N-E facing wall

t h	Tos,t oC	1st day	2nd day	3rd day	4th day	5th day	6th day	Heat Gain factor	1st day	2nd day	3rd day	4th day	5th day	Cooling load factor
-5.00	29.40	0.00							0.00					
-4.00	28.40	0.00							0.00					
-3.00	27.00	0.00							0.00					
-2.00	26.40	0.00							0.00					
-1.00	26.00	0.00							0.00					
0.00	25.60	1.31	2.48	2.48	2.48	2.48	2.48	2.48	-0.57	6.05	7.55	7.89	7.97	7.99
1.00	25.30	1.20	1.57	1.57	1.57	1.57	1.57	1.57	-1.01	5.21	6.62	6.94	7.02	7.03
2.00	25.10	0.75	0.87	0.87	0.87	0.87	0.87	0.87	-1.33	4.52	5.84	6.14	6.21	6.23
3.00	24.90	0.30	0.34	0.34	0.34	0.34	0.34	0.34	-1.56	3.94	5.19	5.47	5.53	5.55
4.00	24.70	-0.14	-0.13	-0.13	-0.13	-0.13	-0.13	-0.13	-1.76	3.40	4.57	4.84	4.90	4.91
5.00	24.50	-0.58	-0.58	-0.58	-0.58	-0.58	-0.58	-0.58	-1.97	2.89	3.99	4.24	4.29	4.30
6.00	25.00	-0.68	-0.68	-0.68	-0.68	-0.68	-0.68	-0.68	-1.95	2.61	3.65	3.88	3.94	3.95
7.00	40.10	7.29	7.29	7.29	7.29	7.29	7.29	7.29	3.55	7.84	8.81	9.03	9.08	9.09
8.00	49.30	28.69	28.69	28.69	28.69	28.69	28.69	28.69	18.34	22.38	23.29	23.50	23.55	23.56
9.00	51.92	46.43	46.43	46.43	46.43	46.43	46.43	46.43	31.05	34.84	35.70	35.89	35.94	35.95
10.00	49.38	53.86	53.86	53.86	53.86	53.86	53.86	53.86	37.03	40.59	41.40	41.58	41.63	41.64
11.00	45.61	52.10	52.10	52.10	52.10	52.10	52.10	52.10	36.84	40.19	40.95	41.12	41.16	41.17
12.00	38.79	44.41	44.41	44.41	44.41	44.41	44.41	44.41	32.52	35.67	36.38	36.55	36.58	36.59
13.00	38.68	35.23	35.23	35.23	35.23	35.23	35.23	35.23	26.98	29.94	30.62	30.77	30.80	30.81
14.00	39.46	32.17	32.17	32.17	32.17	32.17	32.17	32.17	25.39	28.18	28.81	28.95	28.98	28.99
15.00	40.07	32.24	32.24	32.24	32.24	32.24	32.24	32.24	25.85	28.46	29.06	29.19	29.22	29.23
16.00	37.11	31.41	31.41	31.41	31.41	31.41	31.41	31.41	25.66	28.12	28.68	28.81	28.84	28.84
17.00	34.73	27.20	27.20	27.20	27.20	27.20	27.20	27.20	23.14	25.46	25.98	26.10	26.13	26.13
18.00	30.92	21.54	21.54	21.54	21.54	21.54	21.54	21.54	19.53	21.70	22.19	22.31	22.33	22.34
19.00	29.40	15.23	15.23	15.23	15.23	15.23	15.23	15.23	15.36	17.40	17.86	17.97	17.99	18.00
20.00	28.40	11.05	11.05	11.05	11.05	11.05	11.05	11.05	12.50	14.42	14.86	14.96	14.98	14.98
21.00	27.00	7.99	7.99	7.99	7.99	7.99	7.99	7.99	10.33	12.14	12.54	12.64	12.66	12.66
22.00	26.40	5.33	5.33	5.33	5.33	5.33	5.33	5.33	8.38	10.08	10.46	10.55	10.57	10.57
23.00	26.00	3.64	3.64	3.64	3.64	3.64	3.64	3.64	7.04	8.64	9.00	9.08	9.10	9.10
Average	33.68							19.15						19.15

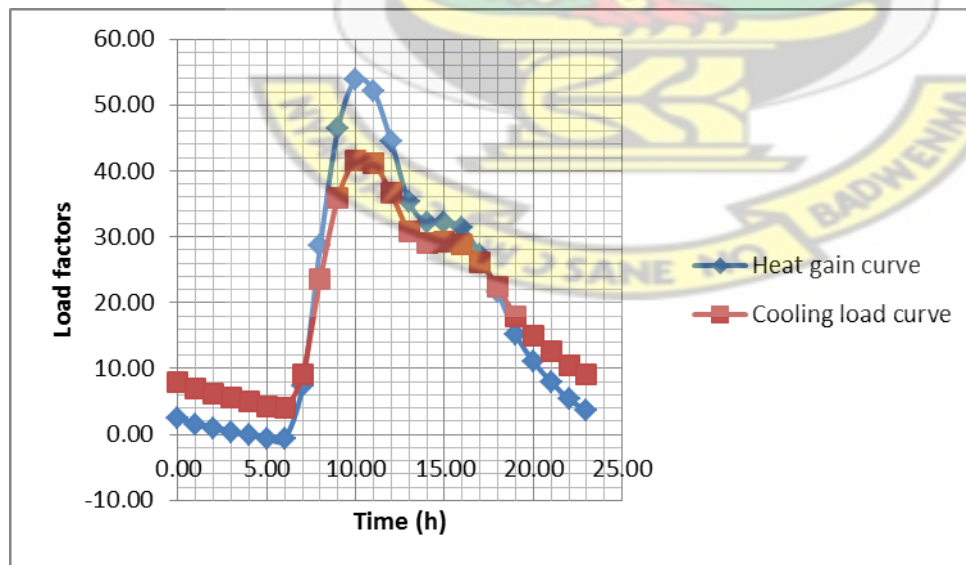


FIGURE A4. 65: Heat Gain and Cooling load factors for 1-in. wood N-E facing wall

TABLE A4.66: Heat Gain and Cooling load factors for 1-in. wood N-W facing wall

t h	Tos,t oC	1st day	2nd day	3rd day	4th day	5th day	6th day	Heat Gain factor	1st day	2nd day	3rd day	4th day	5th day	Cooling load factor
-5.00	29.40	0.00							0.00					
-4.00	28.40	0.00							0.00					
-3.00	27.00	0.00							0.00					
-2.00	26.40	0.00							0.00					
-1.00	26.00	0.00							0.00					
0.00	25.60	1.31	2.54	2.54	2.54	2.54	2.54	2.54	-0.63	6.90	8.61	8.99	9.08	9.10
1.00	25.30	1.20	1.58	1.58	1.58	1.58	1.58	1.58	-1.09	5.99	7.59	7.96	8.04	8.06
2.00	25.10	0.75	0.87	0.87	0.87	0.87	0.87	0.87	-1.42	5.24	6.75	7.09	7.17	7.19
3.00	24.90	0.30	0.34	0.34	0.34	0.34	0.34	0.34	-1.64	4.62	6.03	6.36	6.43	6.44
4.00	24.70	-0.14	-0.13	-0.13	-0.13	-0.13	-0.13	-0.13	-1.84	4.04	5.37	5.67	5.74	5.76
5.00	24.50	-0.58	-0.58	-0.58	-0.58	-0.58	-0.58	-0.58	-2.05	3.48	4.74	5.02	5.08	5.10
6.00	25.00	-0.68	-0.68	-0.68	-0.68	-0.68	-0.68	-0.68	-2.02	3.17	4.35	4.62	4.68	4.69
7.00	28.34	1.42	1.42	1.42	1.42	1.42	1.42	1.42	-0.51	4.37	5.48	5.73	5.79	5.80
8.00	30.17	6.19	6.19	6.19	6.19	6.19	6.19	6.19	2.85	7.44	8.48	8.71	8.77	8.78
9.00	31.80	10.45	10.45	10.45	10.45	10.45	10.45	10.45	5.95	10.27	11.25	11.47	11.52	11.53
10.00	33.32	14.21	14.21	14.21	14.21	14.21	14.21	14.21	8.78	12.84	13.76	13.97	14.02	14.03
11.00	36.15	18.36	18.36	18.36	18.36	18.36	18.36	18.36	11.93	15.75	16.61	16.81	16.85	16.86
12.00	37.24	22.99	22.99	22.99	22.99	22.99	22.99	22.99	15.47	19.06	19.87	20.05	20.09	20.10
13.00	47.05	30.55	30.55	30.55	30.55	30.55	30.55	30.55	21.07	24.44	25.21	25.38	25.42	25.43
14.00	54.70	46.10	46.10	46.10	46.10	46.10	46.10	46.10	32.23	35.40	36.11	36.28	36.31	36.32
15.00	59.82	61.43	61.43	61.43	61.43	61.43	61.43	61.43	43.50	46.48	47.16	47.31	47.34	47.35
16.00	56.71	70.07	70.07	70.07	70.07	70.07	70.07	70.07	50.46	53.26	53.90	54.04	54.07	54.08
17.00	48.01	65.86	65.86	65.86	65.86	65.86	65.86	65.86	48.77	51.40	52.00	52.13	52.16	52.17
18.00	36.51	50.37	50.37	50.37	50.37	50.37	50.37	50.37	39.25	41.72	42.28	42.41	42.44	42.44
19.00	29.40	30.49	30.49	30.49	30.49	30.49	30.49	30.49	26.38	28.70	29.23	29.35	29.38	29.38
20.00	28.40	16.24	16.24	16.24	16.24	16.24	16.24	16.24	16.92	19.11	19.60	19.71	19.74	19.74
21.00	27.00	9.63	9.63	9.63	9.63	9.63	9.63	9.63	12.38	14.43	14.90	15.00	15.02	15.03
22.00	26.40	5.85	5.85	5.85	5.85	5.85	5.85	5.85	9.64	11.57	12.01	12.11	12.13	12.13
23.00	26.00	3.80	3.80	3.80	3.80	3.80	3.80	3.80	8.01	9.83	10.24	10.33	10.36	10.36
Average	33.84							19.50						19.50

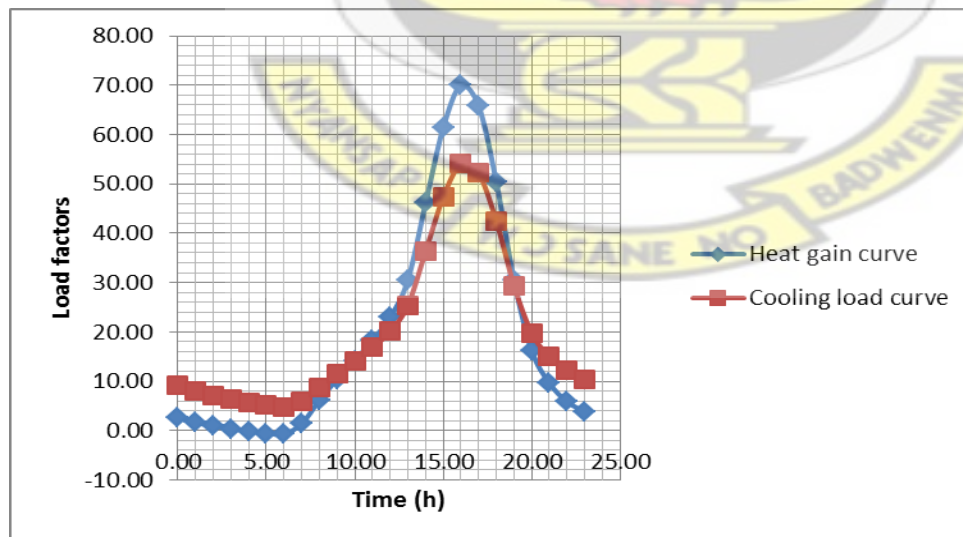


FIGURE A4. 66: Heat Gain and Cooling load factors for 1-in. wood N-W facing wall

TABLE A4.67: Heat Gain and Cooling load factors for 1-in. wood S-E facing wall

t h	Tos,t oC	1st day	2nd day	3rd day	4th day	5th day	6th day	Heat Gain factor	1st day	2nd day	3rd day	4th day	5th day	Cooling load factor
-5.00	29.40	0.00							0.00					
-4.00	28.40	0.00							0.00					
-3.00	27.00	0.00							0.00					
-2.00	26.40	0.00							0.00					
-1.00	26.00	0.00							0.00					
0.00	25.60	1.31	2.48	2.48	2.48	2.48	2.48	2.48	-0.57	6.08	7.58	7.92	8.00	8.02
1.00	25.30	1.20	1.57	1.57	1.57	1.57	1.57	1.57	-1.01	5.24	6.65	6.97	7.04	7.06
2.00	25.10	0.75	0.87	0.87	0.87	0.87	0.87	0.87	-1.33	4.54	5.87	6.17	6.24	6.25
3.00	24.90	0.30	0.34	0.34	0.34	0.34	0.34	0.34	-1.56	3.96	5.21	5.49	5.56	5.57
4.00	24.70	-0.14	-0.13	-0.13	-0.13	-0.13	-0.13	-0.13	-1.76	3.42	4.60	4.86	4.92	4.94
5.00	24.50	-0.58	-0.58	-0.58	-0.58	-0.58	-0.58	-0.58	-1.97	2.90	4.01	4.26	4.31	4.33
6.00	25.00	-0.68	-0.68	-0.68	-0.68	-0.68	-0.68	-0.68	-1.95	2.63	3.67	3.90	3.95	3.97
7.00	41.26	7.87	7.87	7.87	7.87	7.87	7.87	7.87	3.94	8.25	9.23	9.45	9.50	9.51
8.00	50.16	30.40	30.40	30.40	30.40	30.40	30.40	30.40	19.52	23.57	24.49	24.70	24.74	24.76
9.00	52.00	47.91	47.91	47.91	47.91	47.91	47.91	47.91	32.10	35.90	36.77	36.96	37.00	37.01
10.00	50.41	54.96	54.96	54.96	54.96	54.96	54.96	54.96	37.85	41.43	42.24	42.42	42.46	42.47
11.00	47.31	54.27	54.27	54.27	54.27	54.27	54.27	54.27	38.40	41.77	42.53	42.70	42.74	42.75
12.00	40.75	47.74	47.74	47.74	47.74	47.74	47.74	47.74	34.91	38.07	38.79	38.95	38.99	39.00
13.00	33.89	35.86	35.86	35.86	35.86	35.86	35.86	35.86	27.59	30.56	31.23	31.38	31.42	31.43
14.00	39.46	27.98	27.98	27.98	27.98	27.98	27.98	27.98	22.72	25.51	26.15	26.29	26.32	26.33
15.00	40.07	30.60	30.60	30.60	30.60	30.60	30.60	30.60	24.82	27.45	28.04	28.18	28.21	28.21
16.00	37.11	30.89	30.89	30.89	30.89	30.89	30.89	30.89	25.36	27.83	28.39	28.52	28.55	28.55
17.00	34.73	27.04	27.04	27.04	27.04	27.04	27.04	27.04	23.07	25.39	25.92	26.04	26.06	26.07
18.00	30.92	21.48	21.48	21.48	21.48	21.48	21.48	21.48	19.53	21.71	22.20	22.31	22.34	22.35
19.00	29.40	15.22	15.22	15.22	15.22	15.22	15.22	15.22	15.38	17.43	17.89	18.00	18.02	18.02
20.00	28.40	11.05	11.05	11.05	11.05	11.05	11.05	11.05	12.53	14.46	14.89	14.99	15.01	15.02
21.00	27.00	7.99	7.99	7.99	7.99	7.99	7.99	7.99	10.36	12.17	12.58	12.67	12.69	12.70
22.00	26.40	5.33	5.33	5.33	5.33	5.33	5.33	5.33	8.41	10.11	10.49	10.58	10.60	10.61
23.00	26.00	3.64	3.64	3.64	3.64	3.64	3.64	3.64	7.07	8.67	9.03	9.11	9.13	9.13
Average	33.77							19.34						19.34

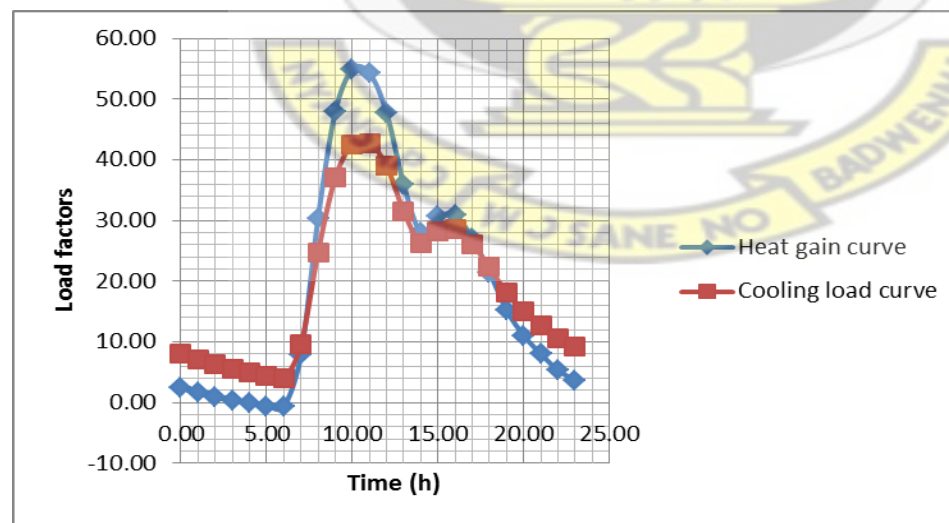


FIGURE A4. 67: Heat Gain and Cooling load factors for 1-in. wood S-E facing wall

TABLE A4.68: Heat Gain and Cooling load factors for 1-in. wood S-W facing wall

t h	Tos,t oC	1st day	2nd day	3rd day	4th day	5th day	6th day	Heat Gain factor	1st day	2nd day	3rd day	4th day	5th day	Cooling load factor
-5.00	29.40	0.00							0.00					
-4.00	28.40	0.00							0.00					
-3.00	27.00	0.00							0.00					
-2.00	26.40	0.00							0.00					
-1.00	26.00	0.00							0.00					
0.00	25.60	1.31	2.54	2.54	2.54	2.54	2.54	2.54	-0.64	6.99	8.72	9.11	9.20	9.22
1.00	25.30	1.20	1.58	1.58	1.58	1.58	1.58	1.58	-1.10	6.07	7.70	8.07	8.15	8.17
2.00	25.10	0.75	0.87	0.87	0.87	0.87	0.87	0.87	-1.42	5.32	6.85	7.19	7.27	7.29
3.00	24.90	0.30	0.34	0.34	0.34	0.34	0.34	0.34	-1.65	4.69	6.13	6.45	6.52	6.54
4.00	24.70	-0.14	-0.13	-0.13	-0.13	-0.13	-0.13	-0.13	-1.85	4.11	5.46	5.76	5.83	5.85
5.00	24.50	-0.58	-0.58	-0.58	-0.58	-0.58	-0.58	-0.58	-2.05	3.55	4.82	5.10	5.17	5.18
6.00	25.00	-0.68	-0.68	-0.68	-0.68	-0.68	-0.68	-0.68	-2.03	3.24	4.43	4.70	4.76	4.77
7.00	28.34	1.42	1.42	1.42	1.42	1.42	1.42	1.42	-0.52	4.43	5.55	5.80	5.86	5.87
8.00	30.17	6.19	6.19	6.19	6.19	6.19	6.19	6.19	2.84	7.49	8.55	8.78	8.84	8.85
9.00	31.80	10.45	10.45	10.45	10.45	10.45	10.45	10.45	5.95	10.32	11.31	11.53	11.58	11.60
10.00	33.32	14.21	14.21	14.21	14.21	14.21	14.21	14.21	8.78	12.89	13.82	14.03	14.08	14.09
11.00	30.19	15.38	15.38	15.38	15.38	15.38	15.38	15.38	9.90	13.76	14.64	14.84	14.88	14.89
12.00	39.56	17.57	17.57	17.57	17.57	17.57	17.57	17.57	11.72	15.35	16.18	16.36	16.40	16.41
13.00	48.81	31.53	31.53	31.53	31.53	31.53	31.53	31.53	21.58	24.99	25.76	25.94	25.98	25.99
14.00	55.84	48.79	48.79	48.79	48.79	48.79	48.79	48.79	33.93	37.14	37.86	38.03	38.07	38.08
15.00	60.04	63.59	63.59	63.59	63.59	63.59	63.59	63.59	44.90	47.92	48.60	48.76	48.79	48.80
16.00	57.46	71.41	71.41	71.41	71.41	71.41	71.41	71.41	51.35	54.18	54.83	54.97	55.00	55.01
17.00	49.22	67.61	67.61	67.61	67.61	67.61	67.61	67.61	49.96	52.63	53.23	53.37	53.40	53.40
18.00	37.30	52.50	52.50	52.50	52.50	52.50	52.50	52.50	40.73	43.24	43.81	43.93	43.96	43.97
19.00	29.40	31.99	31.99	31.99	31.99	31.99	31.99	31.99	27.47	29.83	30.36	30.48	30.51	30.51
20.00	28.40	16.77	16.77	16.77	16.77	16.77	16.77	16.77	17.37	19.59	20.09	20.20	20.23	20.24
21.00	27.00	9.79	9.79	9.79	9.79	9.79	9.79	9.79	12.59	14.67	15.14	15.25	15.27	15.28
22.00	26.40	5.90	5.90	5.90	5.90	5.90	5.90	5.90	9.77	11.73	12.17	12.27	12.29	12.30
23.00	26.00	3.82	3.82	3.82	3.82	3.82	3.82	3.82	8.12	9.96	10.37	10.47	10.49	10.49
Average	33.93							19.70						19.70

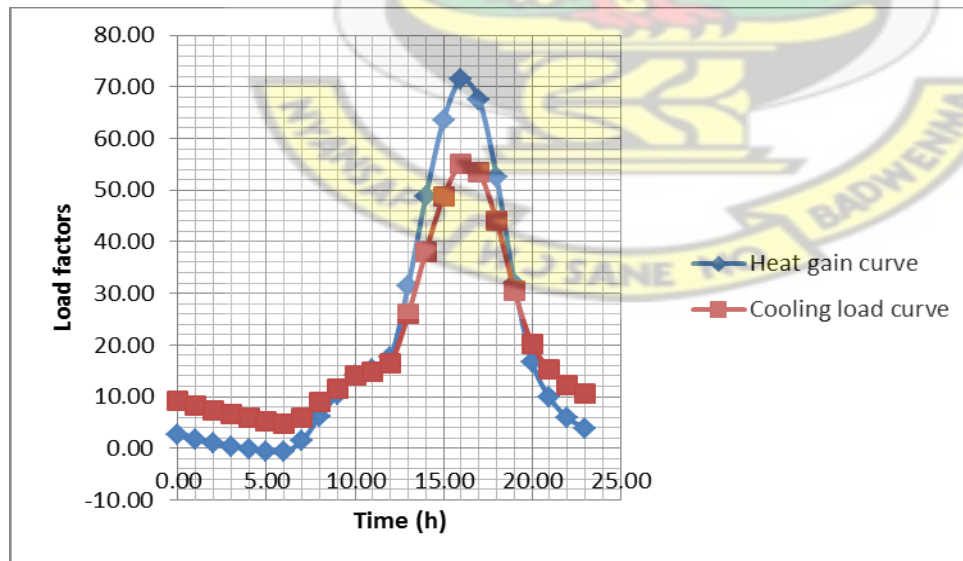


FIGURE A4. 68: Heat Gain and Cooling load factors for 1-in. wood S-W facing wall

TABLE A4.69: Heat Gain and Cooling load factors for 1-in. wood SHADED wall

t h	Tos,t oC	1st day	2nd day	3rd day	4th day	5th day	6th day	Heat Gain factor	1st day	2nd day	3rd day	4th day	5th day	Cooling load factor
-5.00	29.40	0.00							0.00					
-4.00	28.40	0.00							0.00					
-3.00	27.00	0.00							0.00					
-2.00	26.40	0.00							0.00					
-1.00	26.00	0.00							0.00					
0.00	25.60	1.31	2.48	2.48	2.48	2.48	2.48	2.48	-0.55	3.18	4.02	4.21	4.26	4.27
1.00	25.30	1.20	1.56	1.56	1.56	1.56	1.56	1.56	-0.99	2.51	3.31	3.49	3.53	3.54
2.00	25.10	0.75	0.87	0.87	0.87	0.87	0.87	0.87	-1.31	1.98	2.73	2.90	2.94	2.95
3.00	24.90	0.30	0.34	0.34	0.34	0.34	0.34	0.34	-1.54	1.56	2.26	2.42	2.45	2.46
4.00	24.70	-0.14	-0.13	-0.13	-0.13	-0.13	-0.13	-0.13	-1.75	1.16	1.82	1.97	2.01	2.01
5.00	24.50	-0.58	-0.58	-0.58	-0.58	-0.58	-0.58	-0.58	-1.96	0.78	1.40	1.54	1.57	1.58
6.00	25.00	-0.68	-0.68	-0.68	-0.68	-0.68	-0.68	-0.68	-1.94	0.63	1.22	1.35	1.38	1.39
7.00	25.00	-0.25	-0.25	-0.25	-0.25	-0.25	-0.25	-0.25	-1.57	0.85	1.40	1.52	1.55	1.55
8.00	25.40	0.12	0.12	0.12	0.12	0.12	0.12	0.12	-1.24	1.03	1.55	1.66	1.69	1.70
9.00	26.30	1.07	1.07	1.07	1.07	1.07	1.07	1.07	-0.52	1.62	2.10	2.21	2.24	2.24
10.00	27.40	2.79	2.79	2.79	2.79	2.79	2.79	2.79	0.75	2.76	3.22	3.32	3.34	3.35
11.00	30.00	5.73	5.73	5.73	5.73	5.73	5.73	5.73	2.87	4.76	5.19	5.29	5.31	5.32
12.00	31.00	9.68	9.68	9.68	9.68	9.68	9.68	9.68	5.74	7.52	7.92	8.01	8.03	8.03
13.00	32.50	12.80	12.80	12.80	12.80	12.80	12.80	12.80	8.10	9.77	10.14	10.23	10.25	10.25
14.00	33.50	15.76	15.76	15.76	15.76	15.76	15.76	15.76	10.40	11.97	12.32	12.40	12.42	12.43
15.00	34.50	18.24	18.24	18.24	18.24	18.24	18.24	18.24	12.41	13.88	14.22	14.29	14.31	14.31
16.00	32.20	18.89	18.89	18.89	18.89	18.89	18.89	18.89	13.20	14.58	14.90	14.97	14.98	14.99
17.00	31.10	16.43	16.43	16.43	16.43	16.43	16.43	16.43	11.87	13.17	13.47	13.53	13.55	13.55
18.00	30.50	14.17	14.17	14.17	14.17	14.17	14.17	14.17	10.60	11.83	12.10	12.17	12.18	12.18
19.00	29.40	12.27	12.27	12.27	12.27	12.27	12.27	12.27	9.52	10.67	10.93	10.99	11.00	11.01
20.00	28.40	10.09	10.09	10.09	10.09	10.09	10.09	10.09	8.20	9.28	9.53	9.58	9.60	9.60
21.00	27.00	7.69	7.69	7.69	7.69	7.69	7.69	7.69	6.68	7.69	7.92	7.98	7.99	7.99
22.00	26.40	5.24	5.24	5.24	5.24	5.24	5.24	5.24	5.07	6.03	6.24	6.29	6.30	6.31
23.00	26.00	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.97	4.87	5.07	5.12	5.13	5.13
Average	27.99							6.59						6.59

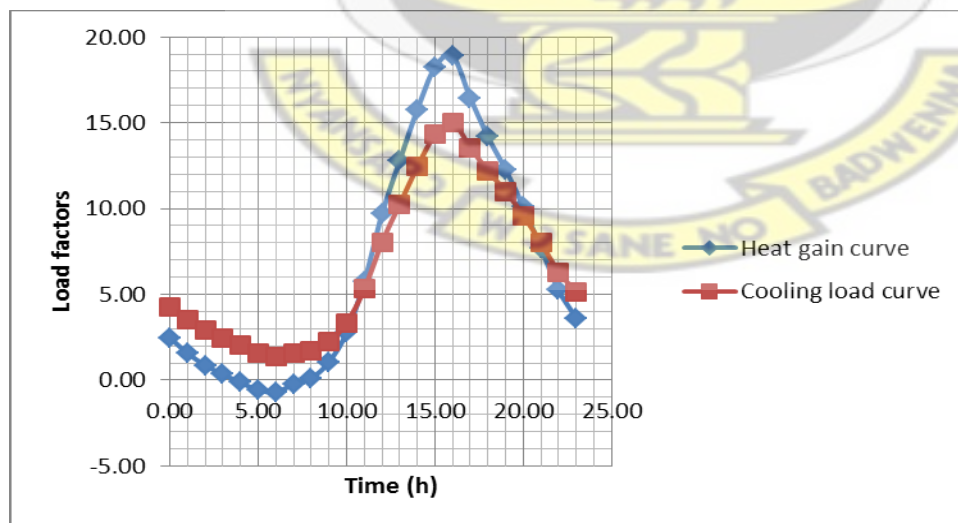


FIGURE A4. 69: Heat Gain and Cooling load factors for 1-in. wood SHADED wall

TABLE A4.70: Heat Gain and Cooling load factors for 2-in. wood WEST facing wall

t	T _{o,s,t}						Heat Gain							Cooling load factor
h	°C	1st day	2nd day	3rd day	4th day	5th day	6th day	factor	1st day	2nd day	3rd day	4th day	5th day	
-5.00	29.40	0.00							0.00					
-4.00	28.40	0.00							0.00					
-3.00	27.00	0.00							0.00					
-2.00	26.40	0.00							0.00					
-1.00	26.00	0.00							0.00					
0.00	25.60	0.54	8.03	8.03	8.03	8.03	8.03	8.03	-1.70	8.83	11.21	11.75	11.88	11.90
1.00	25.30	0.77	5.56	5.56	5.56	5.56	5.56	5.56	-2.80	7.10	9.34	9.85	9.96	9.99
2.00	25.10	0.74	3.80	3.80	3.80	3.80	3.80	3.80	-3.50	5.81	7.91	8.39	8.50	8.52
3.00	24.90	0.59	2.54	2.54	2.54	2.54	2.54	2.54	-3.92	4.82	6.81	7.25	7.36	7.38
4.00	24.70	0.37	1.62	1.62	1.62	1.62	1.62	1.62	-4.16	4.06	5.92	6.34	6.44	6.46
5.00	24.50	0.13	0.92	0.92	0.92	0.92	0.92	0.92	-4.29	3.44	5.19	5.59	5.68	5.70
6.00	25.00	-0.12	0.38	0.38	0.38	0.38	0.38	0.38	-4.34	2.92	4.57	4.94	5.03	5.04
7.00	28.30	-0.11	0.21	0.21	0.21	0.21	0.21	0.21	-4.17	2.65	4.20	4.55	4.63	4.65
8.00	30.20	0.96	1.17	1.17	1.17	1.17	1.17	1.17	-3.26	3.16	4.61	4.94	5.02	5.03
9.00	31.80	2.91	3.04	3.04	3.04	3.04	3.04	3.04	-1.72	4.31	5.68	5.99	6.06	6.08
10.00	33.30	5.14	5.22	5.22	5.22	5.22	5.22	5.22	0.05	5.72	7.01	7.30	7.37	7.38
11.00	36.20	7.46	7.52	7.52	7.52	7.52	7.52	7.52	1.92	7.26	8.46	8.74	8.80	8.81
12.00	38.30	10.18	10.21	10.21	10.21	10.21	10.21	10.21	4.10	9.11	10.24	10.50	10.56	10.57
13.00	51.00	13.47	13.49	13.49	13.49	13.49	13.49	13.49	6.69	11.41	12.47	12.71	12.77	12.78
14.00	61.30	19.90	19.91	19.91	19.91	19.91	19.91	19.91	11.48	15.91	16.91	17.14	17.19	17.20
15.00	67.90	29.74	29.75	29.75	29.75	29.75	29.75	29.75	18.68	22.84	23.78	24.00	24.05	24.06
16.00	65.50	40.35	40.36	40.36	40.36	40.36	40.36	40.36	26.57	30.48	31.37	31.57	31.62	31.63
17.00	54.70	47.95	47.96	47.96	47.96	47.96	47.96	47.96	32.57	36.25	37.08	37.27	37.32	37.32
18.00	39.40	49.19	49.19	49.19	49.19	49.19	49.19	49.19	34.34	37.80	38.58	38.76	38.80	38.80
19.00	29.40	43.20	43.20	43.20	43.20	43.20	43.20	43.20	31.15	34.40	35.13	35.30	35.34	35.35
20.00	28.40	33.04	33.04	33.04	33.04	33.04	33.04	33.04	24.95	28.01	28.70	28.85	28.89	28.90
21.00	27.00	23.62	23.62	23.62	23.62	23.62	23.62	23.62	19.02	21.89	22.54	22.69	22.72	22.73
22.00	26.40	16.58	16.59	16.59	16.59	16.59	16.59	16.59	14.51	17.21	17.82	17.96	17.99	17.99
23.00	26.00	11.55	11.55	11.55	11.55	11.55	11.55	11.55	11.20	13.74	14.31	14.44	14.47	14.48
Average	35.43							15.79						15.78

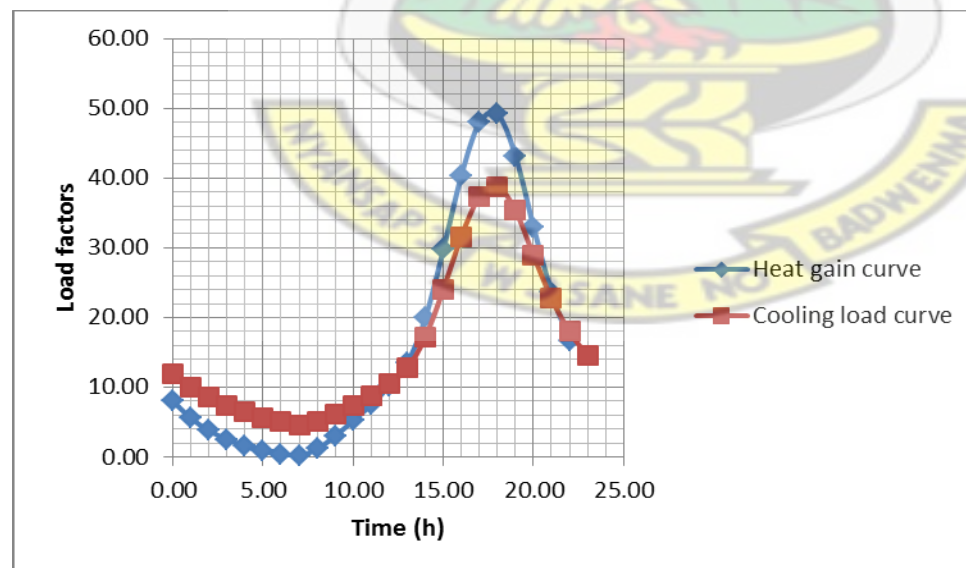


FIGURE A4. 70: Heat Gain and Cooling load factors for 2-in. wood WEST facing wall

TABLE A4.71: Heat Gain and Cooling load factors for 2-in. wood EAST facing wall

t	T _{os,t}														Cooling load factor
h	°C	1st day	2nd day	3rd day	4th day	5th day	6th day	Heat Gain factor	1st day	2nd day	3rd day	4th day	5th day		
	-5.00	29.40	0.00							0.00					
	-4.00	28.40	0.00							0.00					
	-3.00	27.00	0.00							0.00					
	-2.00	26.40	0.00							0.00					
	-1.00	26.00	0.00							0.00					
	0.00	25.60	0.54	4.79	4.79	4.79	4.79	4.79	4.79	-0.75	6.51	8.16	8.53	8.62	8.64
	1.00	25.30	0.77	3.49	3.49	3.49	3.49	3.49	3.49	-1.30	5.53	7.08	7.43	7.51	7.52
	2.00	25.10	0.74	2.48	2.48	2.48	2.48	2.48	2.48	-1.70	4.72	6.17	6.50	6.57	6.59
	3.00	24.90	0.59	1.69	1.69	1.69	1.69	1.69	1.69	-1.99	4.05	5.41	5.72	5.79	5.81
	4.00	24.70	0.37	1.08	1.08	1.08	1.08	1.08	1.08	-2.19	3.49	4.77	5.06	5.13	5.14
	5.00	24.50	0.13	0.58	0.58	0.58	0.58	0.58	0.58	-2.33	3.00	4.21	4.48	4.54	4.56
	6.00	25.00	-0.12	0.16	0.16	0.16	0.16	0.16	0.16	-2.44	2.57	3.71	3.97	4.03	4.04
	7.00	46.15	0.34	0.52	0.52	0.52	0.52	0.52	0.52	-2.04	2.67	3.74	3.98	4.04	4.05
	8.00	57.97	6.91	7.03	7.03	7.03	7.03	7.03	7.03	2.55	6.98	7.98	8.21	8.26	8.27
	9.00	60.11	18.82	18.90	18.90	18.90	18.90	18.90	18.90	10.90	15.06	16.00	16.22	16.27	16.28
	10.00	56.25	30.08	30.12	30.12	30.12	30.12	30.12	30.12	19.02	22.94	23.82	24.03	24.07	24.08
	11.00	50.01	36.96	36.99	36.99	36.99	36.99	36.99	36.99	24.36	28.04	28.88	29.06	29.11	29.12
	12.00	40.01	38.70	38.72	38.72	38.72	38.72	38.72	38.72	26.30	29.76	30.54	30.72	30.76	30.77
	13.00	38.68	35.59	35.60	35.60	35.60	35.60	35.60	35.60	24.92	28.17	28.91	29.08	29.11	29.12
	14.00	39.46	30.97	30.98	30.98	30.98	30.98	30.98	30.98	22.41	25.47	26.16	26.32	26.35	26.36
	15.00	40.07	27.61	27.62	27.62	27.62	27.62	27.62	27.62	20.64	23.51	24.16	24.31	24.34	24.35
	16.00	37.11	25.64	25.64	25.64	25.64	25.64	25.64	25.64	19.71	22.41	23.02	23.16	23.19	23.20
	17.00	34.73	23.63	23.63	23.63	23.63	23.63	23.63	23.63	18.70	21.24	21.81	21.94	21.97	21.98
	18.00	30.92	21.01	21.01	21.01	21.01	21.01	21.01	21.01	17.21	19.60	20.14	20.26	20.29	20.29
	19.00	29.40	17.65	17.65	17.65	17.65	17.65	17.65	17.65	15.15	17.39	17.90	18.02	18.04	18.05
	20.00	28.40	14.18	14.18	14.18	14.18	14.18	14.18	14.18	12.94	15.04	15.52	15.63	15.65	15.66
	21.00	27.00	11.20	11.20	11.20	11.20	11.20	11.20	11.20	10.98	12.96	13.41	13.51	13.54	13.54
	22.00	26.40	8.62	8.62	8.62	8.62	8.62	8.62	8.62	9.24	11.10	11.52	11.62	11.64	11.64
	23.00	26.00	6.46	6.46	6.46	6.46	6.46	6.46	6.46	7.73	9.48	9.88	9.97	9.99	9.99
Average	35.16								15.38						15.38

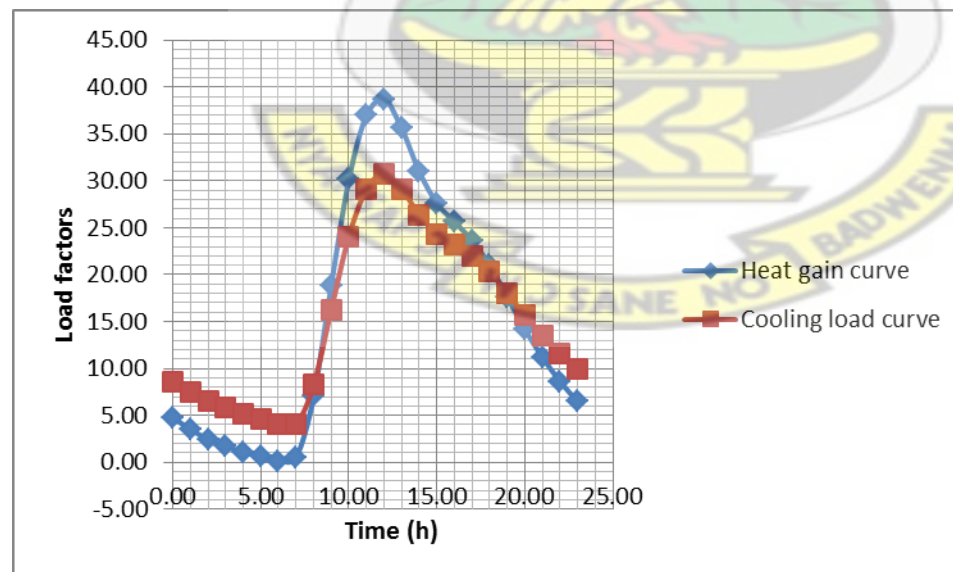


FIGURE A4. 71: Heat Gain and Cooling load factors for 2-in. wood EAST facing wall

TABLE A4.72: Heat Gain and Cooling load factors for 2-in. wood SOUTH facing wall

t	T _{os,t}						Heat Gain							Cooling load factor
h	°C	1st day	2nd day	3rd day	4th day	5th day	6th day	factor	1st day	2nd day	3rd day	4th day	5th day	
-5.00	29.40	0.00							0.00					
-4.00	28.40	0.00							0.00					
-3.00	27.00	0.00							0.00					
-2.00	26.40	0.00							0.00					
-1.00	26.00	0.00							0.00					
0.00	25.60	0.54	4.75	4.75	4.75	4.75	4.75	4.75	-0.74	5.08	6.40	6.70	6.76	6.78
1.00	25.30	0.77	3.47	3.47	3.47	3.47	3.47	3.47	-1.28	4.19	5.43	5.71	5.77	5.78
2.00	25.10	0.74	2.46	2.46	2.46	2.46	2.46	2.46	-1.68	3.46	4.62	4.89	4.95	4.96
3.00	24.90	0.59	1.68	1.68	1.68	1.68	1.68	1.68	-1.96	2.87	3.96	4.21	4.27	4.28
4.00	24.70	0.37	1.07	1.07	1.07	1.07	1.07	1.07	-2.16	2.38	3.41	3.64	3.70	3.71
5.00	24.50	0.13	0.57	0.57	0.57	0.57	0.57	0.57	-2.31	1.96	2.93	3.15	3.20	3.21
6.00	25.00	-0.12	0.16	0.16	0.16	0.16	0.16	0.16	-2.42	1.60	2.51	2.71	2.76	2.77
7.00	28.30	-0.11	0.07	0.07	0.07	0.07	0.07	0.07	-2.32	1.45	2.31	2.50	2.54	2.55
8.00	30.45	0.97	1.08	1.08	1.08	1.08	1.08	1.08	-1.49	2.06	2.86	3.04	3.08	3.09
9.00	32.34	3.00	3.07	3.07	3.07	3.07	3.07	3.07	0.02	3.35	4.11	4.28	4.32	4.33
10.00	35.28	5.45	5.49	5.49	5.49	5.49	5.49	5.49	1.85	4.99	5.70	5.86	5.89	5.90
11.00	39.10	8.40	8.43	8.43	8.43	8.43	8.43	8.43	4.07	7.02	7.69	7.84	7.87	7.88
12.00	40.56	12.07	12.09	12.09	12.09	12.09	12.09	12.09	6.82	9.59	10.22	10.36	10.39	10.40
13.00	41.72	15.74	15.75	15.75	15.75	15.75	15.75	15.75	9.63	12.24	12.83	12.96	12.99	13.00
14.00	41.60	18.84	18.85	18.85	18.85	18.85	18.85	18.85	12.11	14.56	15.11	15.24	15.27	15.27
15.00	40.84	21.08	21.08	21.08	21.08	21.08	21.08	21.08	14.04	16.34	16.86	16.97	17.00	17.01
16.00	37.41	22.23	22.23	22.23	22.23	22.23	22.23	22.23	15.24	17.40	17.89	18.00	18.03	18.04
17.00	34.74	21.79	21.79	21.79	21.79	21.79	21.79	21.79	15.36	17.39	17.85	17.96	17.98	17.99
18.00	31.33	19.95	19.95	19.95	19.95	19.95	19.95	19.95	14.49	16.40	16.83	16.93	16.95	16.96
19.00	29.40	17.10	17.10	17.10	17.10	17.10	17.10	17.10	12.88	14.68	15.08	15.18	15.20	15.20
20.00	28.40	13.92	13.92	13.92	13.92	13.92	13.92	13.92	10.97	12.65	13.04	13.12	13.14	13.15
21.00	27.00	11.05	11.05	11.05	11.05	11.05	11.05	11.05	9.19	10.77	11.13	11.21	11.23	11.24
22.00	26.40	8.52	8.52	8.52	8.52	8.52	8.52	8.52	7.58	9.07	9.41	9.48	9.50	9.51
23.00	26.00	6.40	6.40	6.40	6.40	6.40	6.40	6.40	6.19	7.59	7.91	7.98	8.00	8.00
Average	31.08							9.21						9.21

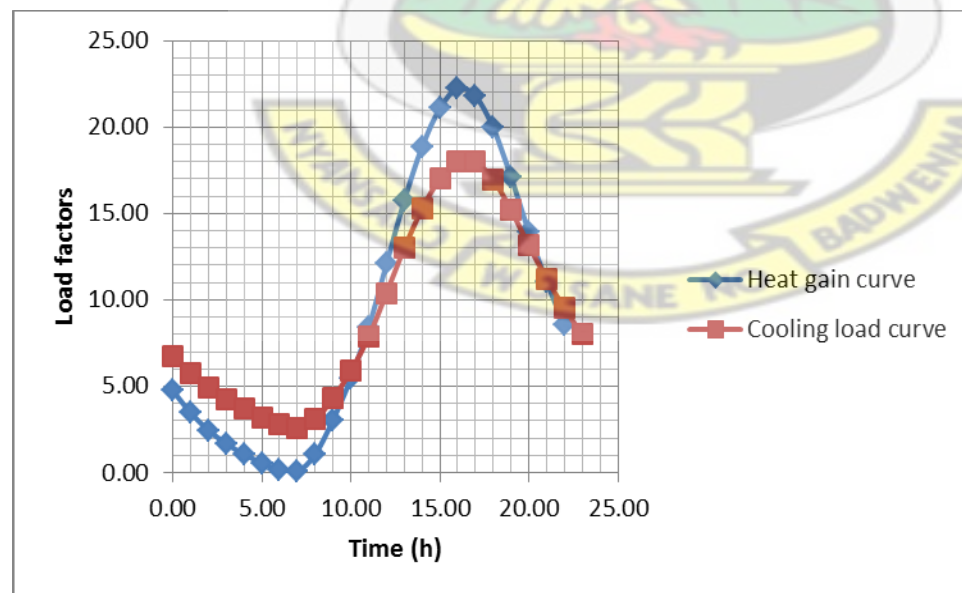


FIGURE A4. 72: Heat Gain and Cooling load factors for 2-in. wood SOUTH facing wall

TABLE A4.73: Heat Gain and Cooling load factors for 2-in. wood NORTH facing wall

t	T _{os,t}						Heat Gain							Cooling load factor
h	°C	1st day	2nd day	3rd day	4th day	5th day	6th day	factor	1st day	2nd day	3rd day	4th day	5th day	
-5.00	29.40	0.00							0.00					
-4.00	28.40	0.00							0.00					
-3.00	27.00	0.00							0.00					
-2.00	26.40	0.00							0.00					
-1.00	26.00	0.00							0.00					
0.00	25.60	0.54	4.45	4.45	4.45	4.45	4.45	4.45	-0.65	4.56	5.74	6.01	6.07	6.08
1.00	25.30	0.77	3.27	3.27	3.27	3.27	3.27	3.27	-1.14	3.75	4.86	5.11	5.17	5.18
2.00	25.10	0.74	2.34	2.34	2.34	2.34	2.34	2.34	-1.52	3.09	4.13	4.37	4.42	4.43
3.00	24.90	0.59	1.60	1.60	1.60	1.60	1.60	1.60	-1.78	2.54	3.52	3.74	3.79	3.81
4.00	24.70	0.37	1.02	1.02	1.02	1.02	1.02	1.02	-1.98	2.09	3.01	3.22	3.27	3.28
5.00	24.50	0.13	0.54	0.54	0.54	0.54	0.54	0.54	-2.13	1.70	2.56	2.76	2.80	2.81
6.00	25.00	-0.12	0.14	0.14	0.14	0.14	0.14	0.14	-2.24	1.36	2.17	2.35	2.40	2.41
7.00	26.65	-0.15	0.02	0.02	0.02	0.02	0.02	0.02	-2.18	1.20	1.96	2.14	2.18	2.19
8.00	29.22	0.45	0.56	0.56	0.56	0.56	0.56	0.56	-1.68	1.50	2.22	2.38	2.42	2.42
9.00	32.24	1.98	2.05	2.05	2.05	2.05	2.05	2.05	-0.53	2.46	3.13	3.29	3.32	3.33
10.00	33.83	4.42	4.47	4.47	4.47	4.47	4.47	4.47	1.27	4.08	4.71	4.86	4.89	4.90
11.00	36.10	7.20	7.23	7.23	7.23	7.23	7.23	7.23	3.34	5.98	6.58	6.71	6.75	6.75
12.00	37.18	10.08	10.09	10.09	10.09	10.09	10.09	10.09	5.53	8.01	8.57	8.70	8.72	8.73
13.00	38.61	12.78	12.79	12.79	12.79	12.79	12.79	12.79	7.64	9.97	10.50	10.62	10.64	10.65
14.00	39.39	15.23	15.24	15.24	15.24	15.24	15.24	15.24	9.61	11.80	12.30	12.41	12.44	12.44
15.00	40.00	17.37	17.37	17.37	17.37	17.37	17.37	17.37	11.40	13.46	13.93	14.04	14.06	14.07
16.00	36.35	19.02	19.03	19.03	19.03	19.03	19.03	19.03	12.89	14.83	15.26	15.36	15.39	15.39
17.00	33.04	19.14	19.14	19.14	19.14	19.14	19.14	19.14	13.34	15.16	15.57	15.66	15.68	15.69
18.00	30.22	17.50	17.50	17.50	17.50	17.50	17.50	17.50	12.57	14.28	14.66	14.75	14.77	14.78
19.00	29.40	14.84	14.84	14.84	14.84	14.84	14.84	14.84	11.05	12.66	13.02	13.10	13.12	13.13
20.00	28.40	12.18	12.18	12.18	12.18	12.18	12.18	12.18	9.47	10.98	11.32	11.40	11.42	11.42
21.00	27.00	9.89	9.89	9.89	9.89	9.89	9.89	9.89	8.07	9.49	9.81	9.89	9.90	9.91
22.00	26.40	7.78	7.78	7.78	7.78	7.78	7.78	7.78	6.74	8.08	8.38	8.45	8.46	8.47
23.00	26.00	5.93	5.93	5.93	5.93	5.93	5.93	5.93	5.54	6.80	7.08	7.15	7.16	7.16
Average	30.21							7.89						7.89

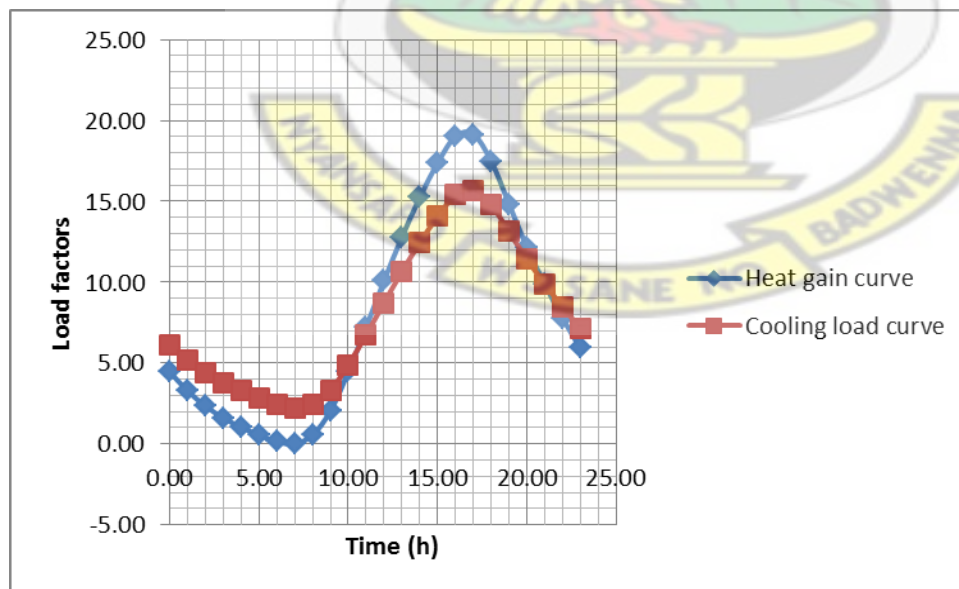


FIGURE A4. 73: Heat Gain and Cooling load factors for 2-in. wood NORTH facing wall

TABLE A4.74: Heat Gain and Cooling load factors for 2-in. wood N-E facing wall

t	T _{os,t}						Heat Gain							Cooling load factor
h	°C	1st day	2nd day	3rd day	4th day	5th day	6th day	factor	1st day	2nd day	3rd day	4th day	5th day	
-5.00	29.40	0.00							0.00					
-4.00	28.40	0.00							0.00					
-3.00	27.00	0.00							0.00					
-2.00	26.40	0.00							0.00					
-1.00	26.00	0.00							0.00					
0.00	25.60	0.54	4.73	4.73	4.73	4.73	4.73	4.73	-0.73	5.96	7.47	7.82	7.89	7.91
1.00	25.30	0.77	3.46	3.46	3.46	3.46	3.46	3.46	-1.28	5.02	6.44	6.76	6.84	6.85
2.00	25.10	0.74	2.46	2.46	2.46	2.46	2.46	2.46	-1.67	4.24	5.58	5.88	5.95	5.97
3.00	24.90	0.59	1.68	1.68	1.68	1.68	1.68	1.68	-1.95	3.60	4.86	5.15	5.21	5.23
4.00	24.70	0.37	1.07	1.07	1.07	1.07	1.07	1.07	-2.15	3.07	4.26	4.53	4.59	4.60
5.00	24.50	0.13	0.57	0.57	0.57	0.57	0.57	0.57	-2.30	2.61	3.73	3.98	4.04	4.05
6.00	25.00	-0.12	0.16	0.16	0.16	0.16	0.16	0.16	-2.41	2.21	3.26	3.49	3.55	3.56
7.00	40.10	0.18	0.37	0.37	0.37	0.37	0.37	0.37	-2.11	2.23	3.21	3.43	3.49	3.50
8.00	49.30	4.91	5.03	5.03	5.03	5.03	5.03	5.03	1.21	5.29	6.22	6.43	6.47	6.48
9.00	51.92	13.68	13.75	13.75	13.75	13.75	13.75	13.75	7.38	11.22	12.09	12.28	12.33	12.34
10.00	49.38	22.35	22.40	22.40	22.40	22.40	22.40	22.40	13.65	17.26	18.07	18.26	18.30	18.31
11.00	45.61	28.00	28.03	28.03	28.03	28.03	28.03	28.03	18.01	21.40	22.17	22.34	22.38	22.39
12.00	38.79	30.00	30.02	30.02	30.02	30.02	30.02	30.02	19.97	23.15	23.87	24.04	24.07	24.08
13.00	38.68	28.52	28.53	28.53	28.53	28.53	28.53	28.53	19.56	22.55	23.23	23.39	23.42	23.43
14.00	39.46	26.02	26.03	26.03	26.03	26.03	26.03	26.03	18.39	21.21	21.85	21.99	22.02	22.03
15.00	40.07	24.39	24.40	24.40	24.40	24.40	24.40	24.40	17.74	20.39	20.98	21.12	21.15	21.16
16.00	37.11	23.58	23.58	23.58	23.58	23.58	23.58	23.58	17.58	20.07	20.63	20.76	20.79	20.79
17.00	34.73	22.32	22.32	22.32	22.32	22.32	22.32	22.32	17.08	19.42	19.95	20.07	20.10	20.10
18.00	30.92	20.17	20.17	20.17	20.17	20.17	20.17	20.17	15.93	18.13	18.63	18.74	18.77	18.77
19.00	29.40	17.11	17.11	17.11	17.11	17.11	17.11	17.11	14.11	16.17	16.64	16.75	16.77	16.78
20.00	28.40	13.84	13.84	13.84	13.84	13.84	13.84	13.84	12.06	14.00	14.44	14.54	14.56	14.57
21.00	27.00	10.98	10.98	10.98	10.98	10.98	10.98	10.98	10.22	12.04	12.46	12.55	12.57	12.58
22.00	26.40	8.48	8.48	8.48	8.48	8.48	8.48	8.48	8.56	10.27	10.66	10.75	10.77	10.77
23.00	26.00	6.37	6.37	6.37	6.37	6.37	6.37	6.37	7.12	8.73	9.10	9.18	9.20	9.20
Average	33.68							13.15						13.14

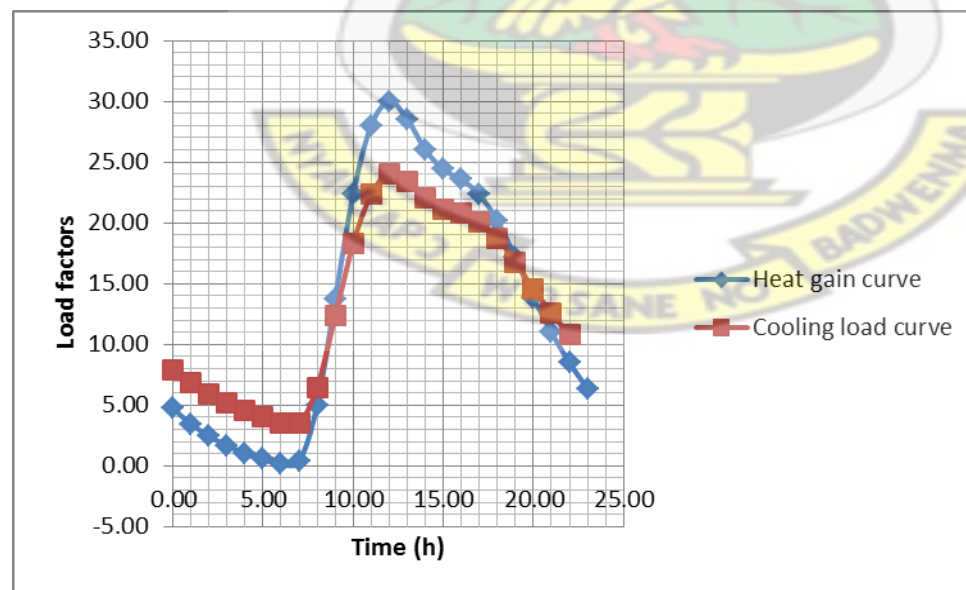


FIGURE A4. 74: Heat Gain and Cooling load factors for 2-in. wood N-E facing wall

TABLE A4.75: Heat Gain and Cooling load factors for 2-in. wood N-W facing wall

t	T _{o,s,t}						Heat Gain							Cooling load factor
h	°C	1st day	2nd day	3rd day	4th day	5th day	6th day	factor	1st day	2nd day	3rd day	4th day	5th day	
-5.00	29.40	0.00							0.00					
-4.00	28.40	0.00							0.00					
-3.00	27.00	0.00							0.00					
-2.00	26.40	0.00							0.00					
-1.00	26.00	0.00							0.00					
0.00	25.60	0.54	6.94	6.94	6.94	6.94	6.94	6.94	-1.38	7.52	9.54	10.00	10.10	10.13
1.00	25.30	0.77	4.86	4.86	4.86	4.86	4.86	4.86	-2.29	6.08	7.97	8.40	8.50	8.52
2.00	25.10	0.74	3.35	3.35	3.35	3.35	3.35	3.35	-2.89	4.98	6.76	7.16	7.25	7.27
3.00	24.90	0.59	2.25	2.25	2.25	2.25	2.25	2.25	-3.27	4.13	5.80	6.18	6.27	6.29
4.00	24.70	0.37	1.43	1.43	1.43	1.43	1.43	1.43	-3.49	3.46	5.03	5.39	5.47	5.49
5.00	24.50	0.13	0.80	0.80	0.80	0.80	0.80	0.80	-3.63	2.91	4.39	4.72	4.80	4.82
6.00	25.00	-0.12	0.31	0.31	0.31	0.31	0.31	0.31	-3.70	2.44	3.84	4.15	4.22	4.24
7.00	28.34	-0.11	0.17	0.17	0.17	0.17	0.17	0.17	-3.55	2.22	3.53	3.82	3.89	3.91
8.00	30.17	0.97	1.15	1.15	1.15	1.15	1.15	1.15	-2.66	2.76	3.99	4.27	4.34	4.35
9.00	31.80	2.92	3.03	3.03	3.03	3.03	3.03	3.03	-1.15	3.95	5.10	5.37	5.43	5.44
10.00	33.32	5.14	5.21	5.21	5.21	5.21	5.21	5.21	0.58	5.38	6.47	6.71	6.77	6.78
11.00	36.15	7.47	7.51	7.51	7.51	7.51	7.51	7.51	2.43	6.94	7.96	8.19	8.24	8.25
12.00	37.24	10.14	10.17	10.17	10.17	10.17	10.17	10.17	4.54	8.78	9.74	9.96	10.01	10.02
13.00	47.05	13.04	13.06	13.06	13.06	13.06	13.06	13.06	6.85	10.83	11.73	11.94	11.99	12.00
14.00	54.70	18.14	18.15	18.15	18.15	18.15	18.15	18.15	10.69	14.43	15.28	15.47	15.52	15.53
15.00	59.82	25.72	25.73	25.73	25.73	25.73	25.73	25.73	16.30	19.82	20.62	20.80	20.84	20.85
16.00	56.71	33.83	33.83	33.83	33.83	33.83	33.83	33.83	22.38	25.69	26.44	26.61	26.65	26.66
17.00	48.01	39.27	39.27	39.27	39.27	39.27	39.27	39.27	26.77	29.88	30.59	30.75	30.78	30.79
18.00	36.51	39.60	39.60	39.60	39.60	39.60	39.60	39.60	27.75	30.67	31.33	31.48	31.52	31.53
19.00	29.40	34.56	34.56	34.56	34.56	34.56	34.56	34.56	25.03	27.78	28.40	28.54	28.57	28.58
20.00	28.40	26.67	26.67	26.67	26.67	26.67	26.67	26.67	20.22	22.81	23.39	23.52	23.55	23.56
21.00	27.00	19.42	19.42	19.42	19.42	19.42	19.42	19.42	15.67	18.10	18.65	18.78	18.81	18.81
22.00	26.40	13.89	13.89	13.89	13.89	13.89	13.89	13.89	12.13	14.42	14.93	15.05	15.08	15.08
23.00	26.00	9.83	9.83	9.83	9.83	9.83	9.83	9.83	9.47	11.62	12.10	12.21	12.24	12.25
Average	33.84							13.38						13.38

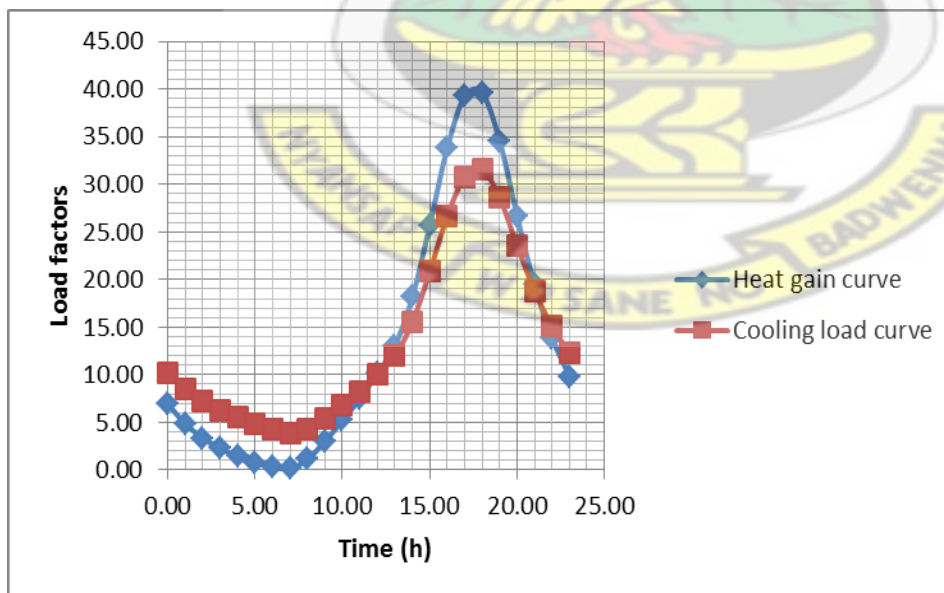


FIGURE A4. 75: Heat Gain and Cooling load factors for 2-in. wood N-W facing wall

TABLE A4.76: Heat Gain and Cooling load factors for 2-in. wood S-E facing wall

t	T _{os,t}						Gain factor						Cooling load factor
h	°C	1st day	2nd day	3rd day	4th day	5th day		1st day	2nd day	3rd day	4th day	5th day	
-5.00	29.40	0.00						0.00					
-4.00	28.40	0.00						0.00					
-3.00	27.00	0.00						0.00					
-2.00	26.40	0.00						0.00					
-1.00	26.00	0.00						0.00					
0.00	25.60	0.54	4.71	4.71	4.71	4.71	4.71	-0.73	5.97	7.48	7.83	7.91	7.92
1.00	25.30	0.77	3.44	3.44	3.44	3.44	3.44	-1.27	5.03	6.45	6.78	6.85	6.87
2.00	25.10	0.74	2.45	2.45	2.45	2.45	2.45	-1.66	4.26	5.60	5.90	5.97	5.98
3.00	24.90	0.59	1.67	1.67	1.67	1.67	1.67	-1.94	3.62	4.88	5.16	5.23	5.24
4.00	24.70	0.37	1.07	1.07	1.07	1.07	1.07	-2.14	3.09	4.27	4.54	4.60	4.62
5.00	24.50	0.13	0.57	0.57	0.57	0.57	0.57	-2.29	2.63	3.74	3.99	4.05	4.06
6.00	25.00	-0.12	0.16	0.16	0.16	0.16	0.16	-2.39	2.23	3.27	3.51	3.56	3.58
7.00	41.26	0.21	0.39	0.39	0.39	0.39	0.39	-2.08	2.26	3.25	3.47	3.52	3.53
8.00	50.16	5.28	5.39	5.39	5.39	5.39	5.39	1.47	5.55	6.48	6.69	6.74	6.75
9.00	52.00	14.40	14.47	14.47	14.47	14.47	14.47	7.89	11.73	12.60	12.79	12.84	12.85
10.00	50.41	23.07	23.12	23.12	23.12	23.12	23.12	14.18	17.78	18.60	18.78	18.83	18.84
11.00	47.31	28.84	28.87	28.87	28.87	28.87	28.87	18.63	22.02	22.79	22.96	23.00	23.01
12.00	40.75	31.27	31.29	31.29	31.29	31.29	31.29	20.89	24.08	24.80	24.96	25.00	25.01
13.00	33.89	30.14	30.16	30.16	30.16	30.16	30.16	20.74	23.74	24.42	24.57	24.61	24.61
14.00	39.46	26.19	26.20	26.20	26.20	26.20	26.20	18.61	21.43	22.07	22.21	22.24	22.25
15.00	40.07	23.59	23.60	23.60	23.60	23.60	23.60	17.29	19.94	20.54	20.68	20.71	20.71
16.00	37.11	22.91	22.91	22.91	22.91	22.91	22.91	17.21	19.70	20.26	20.39	20.42	20.42
17.00	34.73	21.87	21.87	21.87	21.87	21.87	21.87	16.84	19.18	19.71	19.83	19.86	19.86
18.00	30.92	19.88	19.89	19.89	19.89	19.89	19.89	15.79	17.99	18.49	18.60	18.62	18.63
19.00	29.40	16.93	16.93	16.93	16.93	16.93	16.93	14.02	16.09	16.56	16.67	16.69	16.69
20.00	28.40	13.72	13.72	13.72	13.72	13.72	13.72	12.01	13.96	14.40	14.50	14.52	14.52
21.00	27.00	10.91	10.91	10.91	10.91	10.91	10.91	10.20	12.02	12.44	12.53	12.55	12.56
22.00	26.40	8.43	8.43	8.43	8.43	8.43	8.43	8.55	10.27	10.66	10.75	10.77	10.77
23.00	26.00	6.34	6.34	6.34	6.34	6.34	6.34	7.12	8.74	9.10	9.19	9.20	9.21
Average	33.77						13.27						13.27

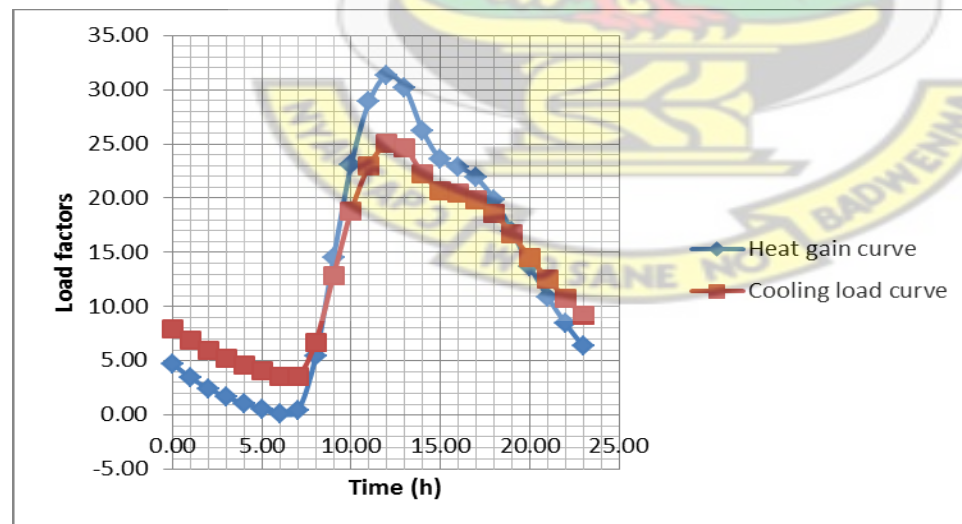


FIGURE A4. 76: Heat Gain and Cooling load factors for 2-in. wood S-E facing wall

TABLE A4.77: Heat Gain and Cooling load factors for 2-in. wood S-W facing wall

t	T _{os,t}													Cooling
h	°C	1st day	2nd day	3rd day	4th day	5th day	6th day	Heat Gain factor	1st day	2nd day	3rd day	4th day	5th day	load factor
-5.00	29.40	0.00							0.00					
-4.00	28.40	0.00							0.00					
-3.00	27.00	0.00							0.00					
-2.00	26.40	0.00							0.00					
-1.00	26.00	0.00							0.00					
0.00	25.60	0.54	7.10	7.10	7.10	7.10	7.10	7.10	-1.43	7.66	9.72	10.19	10.30	10.32
1.00	25.30	0.77	4.97	4.97	4.97	4.97	4.97	4.97	-2.37	6.18	8.11	8.55	8.65	8.67
2.00	25.10	0.74	3.42	3.42	3.42	3.42	3.42	3.42	-2.99	5.05	6.87	7.28	7.37	7.40
3.00	24.90	0.59	2.29	2.29	2.29	2.29	2.29	2.29	-3.37	4.18	5.90	6.28	6.37	6.39
4.00	24.70	0.37	1.46	1.46	1.46	1.46	1.46	1.46	-3.59	3.50	5.11	5.48	5.56	5.58
5.00	24.50	0.13	0.82	0.82	0.82	0.82	0.82	0.82	-3.73	2.95	4.46	4.80	4.88	4.89
6.00	25.00	-0.12	0.32	0.32	0.32	0.32	0.32	0.32	-3.80	2.48	3.90	4.22	4.29	4.31
7.00	28.34	-0.11	0.17	0.17	0.17	0.17	0.17	0.17	-3.65	2.25	3.58	3.89	3.95	3.97
8.00	30.17	0.97	1.15	1.15	1.15	1.15	1.15	1.15	-2.75	2.79	4.05	4.33	4.39	4.41
9.00	31.80	2.92	3.03	3.03	3.03	3.03	3.03	3.03	-1.24	3.97	5.15	5.42	5.48	5.49
10.00	33.32	5.14	5.21	5.21	5.21	5.21	5.21	5.21	0.50	5.40	6.51	6.76	6.82	6.83
11.00	30.19	7.32	7.36	7.36	7.36	7.36	7.36	7.36	2.25	6.85	7.90	8.13	8.19	8.20
12.00	39.56	8.44	8.47	8.47	8.47	8.47	8.47	8.47	3.31	7.64	8.62	8.84	8.89	8.90
13.00	48.81	11.42	11.44	11.44	11.44	11.44	11.44	11.44	5.64	9.71	10.63	10.84	10.89	10.90
14.00	55.84	17.90	17.91	17.91	17.91	17.91	17.91	17.91	10.40	14.22	15.09	15.29	15.33	15.34
15.00	60.04	26.31	26.32	26.32	26.32	26.32	26.32	26.32	16.57	20.17	20.98	21.17	21.21	21.22
16.00	57.46	34.58	34.59	34.59	34.59	34.59	34.59	34.59	22.79	26.17	26.93	27.11	27.15	27.16
17.00	49.22	40.09	40.09	40.09	40.09	40.09	40.09	40.09	27.24	30.42	31.14	31.30	31.34	31.35
18.00	37.30	40.65	40.65	40.65	40.65	40.65	40.65	40.65	28.40	31.38	32.06	32.21	32.25	32.25
19.00	29.40	35.72	35.72	35.72	35.72	35.72	35.72	35.72	25.78	28.58	29.22	29.36	29.40	29.40
20.00	28.40	27.61	27.61	27.61	27.61	27.61	27.61	27.61	20.85	23.49	24.09	24.22	24.25	24.26
21.00	27.00	20.06	20.06	20.06	20.06	20.06	20.06	20.06	16.11	18.59	19.15	19.28	19.31	19.32
22.00	26.40	14.30	14.30	14.30	14.30	14.30	14.30	14.30	12.43	14.76	15.29	15.41	15.43	15.44
23.00	26.00	10.09	10.09	10.09	10.09	10.09	10.09	10.09	9.67	11.86	12.36	12.47	12.50	12.50
Average	33.93							13.52						13.52

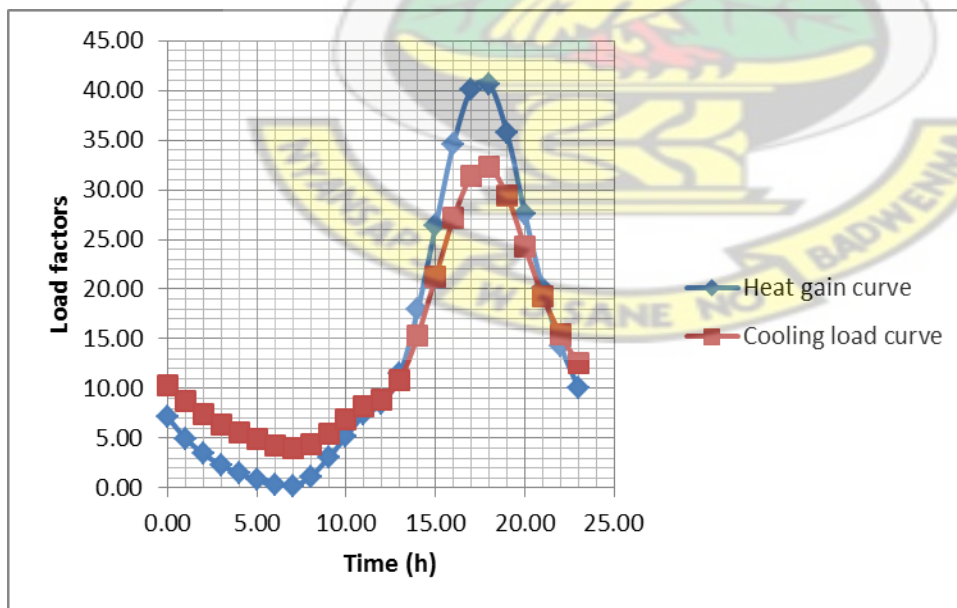


FIGURE A4. 77: Heat Gain and Cooling load factors for 2-in. wood S-W facing wall

TABLE A4.78: Heat Gain and Cooling load factors for 2-in. wood SHADED wall

t	T _{os,t}														Cooling load
h	°C	1st day	2nd day	3rd day	4th day	5th day	6th day	Heat Gain factor	1st day	2nd day	3rd day	4th day	5th day	factor	
-5.00	29.40	0.00							0.00						
-4.00	28.40	0.00							0.00						
-3.00	27.00	0.00							0.00						
-2.00	26.40	0.00							0.00						
-1.00	26.00	0.00							0.00						
0.00	25.60	0.54	3.94	3.94	3.94	3.94	3.94	3.94	-0.50	3.37	4.24	4.44	4.49	4.50	
1.00	25.30	0.77	2.95	2.95	2.95	2.95	2.95	2.95	-0.91	2.73	3.55	3.74	3.78	3.79	
2.00	25.10	0.74	2.13	2.13	2.13	2.13	2.13	2.13	-1.23	2.19	2.96	3.14	3.18	3.18	
3.00	24.90	0.59	1.47	1.47	1.47	1.47	1.47	1.47	-1.48	1.73	2.46	2.63	2.66	2.67	
4.00	24.70	0.37	0.94	0.94	0.94	0.94	0.94	0.94	-1.67	1.35	2.04	2.19	2.23	2.24	
5.00	24.50	0.13	0.49	0.49	0.49	0.49	0.49	0.49	-1.82	1.02	1.66	1.81	1.84	1.85	
6.00	25.00	-0.12	0.11	0.11	0.11	0.11	0.11	0.11	-1.94	0.73	1.34	1.47	1.50	1.51	
7.00	25.00	-0.19	-0.05	-0.05	-0.05	-0.05	-0.05	-0.05	-1.92	0.59	1.16	1.29	1.32	1.32	
8.00	25.40	-0.13	-0.04	-0.04	-0.04	-0.04	-0.04	-0.04	-1.80	0.56	1.09	1.21	1.24	1.25	
9.00	26.30	0.06	0.12	0.12	0.12	0.12	0.12	0.12	-1.59	0.63	1.13	1.24	1.27	1.27	
10.00	27.40	0.54	0.58	0.58	0.58	0.58	0.58	0.58	-1.17	0.91	1.38	1.49	1.51	1.52	
11.00	30.00	1.42	1.44	1.44	1.44	1.44	1.44	1.44	-0.48	1.48	1.92	2.02	2.05	2.05	
12.00	31.00	2.99	3.00	3.00	3.00	3.00	3.00	3.00	0.70	2.54	2.96	3.05	3.07	3.08	
13.00	32.50	4.88	4.89	4.89	4.89	4.89	4.89	4.89	2.12	3.85	4.25	4.33	4.35	4.36	
14.00	33.50	6.83	6.84	6.84	6.84	6.84	6.84	6.84	3.61	5.24	5.61	5.69	5.71	5.72	
15.00	34.50	8.74	8.74	8.74	8.74	8.74	8.74	8.74	5.10	6.63	6.98	7.06	7.07	7.08	
16.00	32.20	10.43	10.43	10.43	10.43	10.43	10.43	10.43	6.47	7.91	8.24	8.31	8.33	8.33	
17.00	31.10	11.09	11.10	11.10	11.10	11.10	11.10	11.10	7.16	8.51	8.82	8.89	8.91	8.91	
18.00	30.50	10.76	10.76	10.76	10.76	10.76	10.76	10.76	7.17	8.44	8.73	8.79	8.81	8.81	
19.00	29.40	10.05	10.05	10.05	10.05	10.05	10.05	10.05	6.90	8.10	8.37	8.43	8.44	8.45	
20.00	28.40	9.10	9.10	9.10	9.10	9.10	9.10	9.10	6.44	7.57	7.82	7.88	7.89	7.89	
21.00	27.00	7.92	7.92	7.92	7.92	7.92	7.92	7.92	5.80	6.86	7.10	7.15	7.16	7.17	
22.00	26.40	6.52	6.52	6.52	6.52	6.52	6.52	6.52	4.98	5.97	6.19	6.24	6.26	6.26	
23.00	26.00	5.13	5.13	5.13	5.13	5.13	5.13	5.13	4.12	5.05	5.26	5.31	5.32	5.32	
Average	27.99							4.52						4.52	

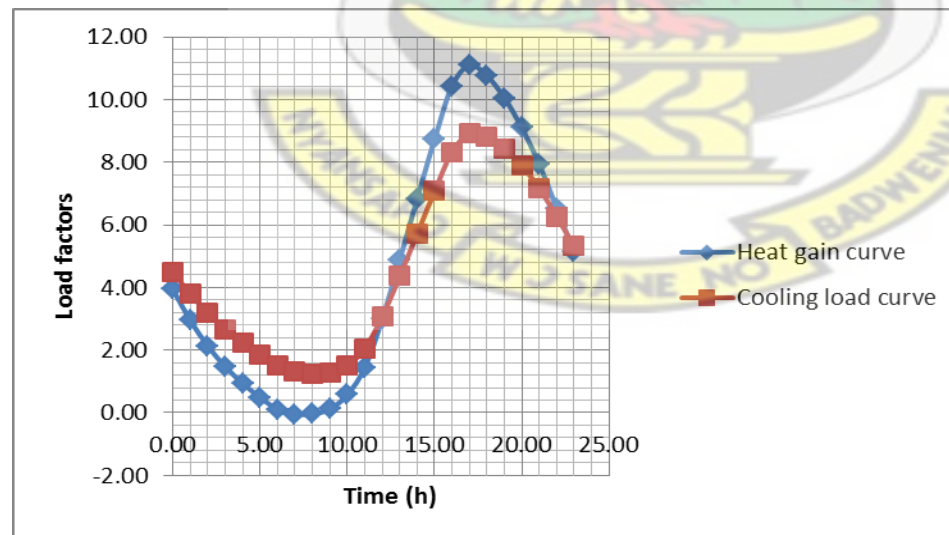


FIGURE A4. 78: Heat Gain and Cooling load factors for 2-in. wood SHADED wall

TABLE A4.79: Heat Gain and Cooling load factors for 4-in. h. w. concrete SUNLIT floor deck

t h	Tos,t oC	1st day	2nd day	3rd day	4th day	5th day	6th day	Heat Gain factor	1st day	2nd day	3rd day	4th day	5th day	Cooling load factor
-5.00	25.50	0.00							0.00					
-4.00	24.50	0.00							0.00					
-3.00	23.10	0.00							0.00					
-2.00	22.50	0.00							0.00					
-1.00	22.10	0.00							0.00					
0.00	21.70	-0.98	15.45	15.61	15.61	15.61	15.61	15.61	-1.91	15.88	19.91	20.82	21.03	21.08
1.00	21.40	-1.94	11.58	11.71	11.71	11.71	11.71	11.71	-3.51	13.21	17.00	17.86	18.05	18.09
2.00	21.20	-2.83	8.30	8.40	8.40	8.40	8.40	8.40	-4.85	10.87	14.43	15.23	15.42	15.46
3.00	21.00	-3.63	5.52	5.61	5.61	5.61	5.61	5.61	-5.96	8.82	12.16	12.92	13.09	13.13
4.00	20.80	-4.37	3.17	3.24	3.24	3.24	3.24	3.24	-6.88	7.01	10.16	10.87	11.03	11.07
5.00	20.60	-5.04	1.16	1.22	1.22	1.22	1.22	1.22	-7.64	5.41	8.37	9.04	9.19	9.22
6.00	21.10	-5.61	-0.51	-0.47	-0.47	-0.47	-0.47	-0.47	-8.26	4.01	6.79	7.42	7.56	7.59
7.00	29.17	-5.48	-1.28	-1.24	-1.24	-1.24	-1.24	-1.24	-8.32	3.22	5.83	6.42	6.55	6.58
8.00	41.95	-2.66	0.79	0.82	0.82	0.82	0.82	0.82	-6.49	4.35	6.81	7.37	7.49	7.52
9.00	54.81	3.81	6.65	6.68	6.68	6.68	6.68	6.68	-2.06	8.13	10.44	10.96	11.08	11.10
10.00	65.50	13.40	15.74	15.76	15.76	15.76	15.76	15.76	4.65	14.23	16.40	16.89	17.00	17.02
11.00	74.33	24.95	26.88	26.89	26.89	26.89	26.89	26.89	12.90	21.90	23.94	24.40	24.51	24.53
12.00	77.67	37.24	38.82	38.84	38.84	38.84	38.84	38.84	21.87	30.33	32.25	32.69	32.78	32.81
13.00	77.42	48.54	49.85	49.86	49.86	49.86	49.86	49.86	30.39	38.35	40.15	40.56	40.65	40.67
14.00	72.72	57.66	58.73	58.74	58.74	58.74	58.74	58.74	37.61	45.09	46.78	47.17	47.25	47.27
15.00	64.57	63.55	64.43	64.44	64.44	64.44	64.44	64.44	42.76	49.79	51.38	51.74	51.82	51.84
16.00	50.57	65.40	66.13	66.13	66.14	66.14	66.14	66.14	45.21	51.82	53.32	53.66	53.74	53.75
17.00	36.95	62.43	63.03	63.04	63.04	63.04	63.04	63.04	44.36	50.57	51.98	52.30	52.37	52.39
18.00	26.60	55.51	56.00	56.00	56.00	56.00	56.00	56.00	40.69	46.53	47.85	48.15	48.22	48.24
19.00	25.50	46.68	47.08	47.09	47.09	47.09	47.09	47.09	35.54	41.03	42.27	42.55	42.61	42.63
20.00	24.50	38.59	38.92	38.92	38.92	38.92	38.92	38.92	30.67	35.83	37.00	37.26	37.32	37.34
21.00	23.10	31.54	31.82	31.82	31.82	31.82	31.82	31.82	26.33	31.18	32.28	32.53	32.58	32.59
22.00	22.50	25.34	25.56	25.56	25.56	25.56	25.56	25.56	22.40	26.96	27.99	28.22	28.28	28.29
23.00	22.10	19.99	20.18	20.18	20.18	20.18	20.18	20.18	18.92	23.21	24.18	24.40	24.45	24.46
Average	39.07							27.29						27.28

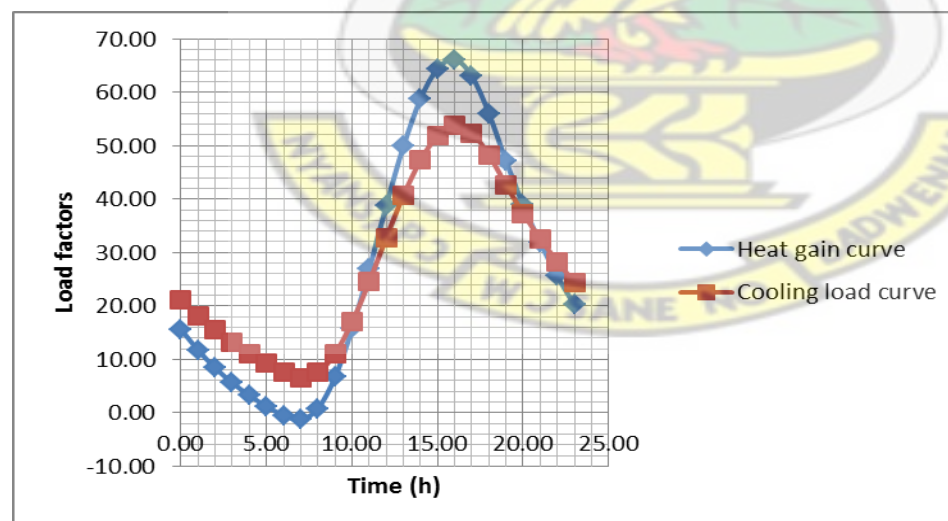


FIGURE A4. 79: Heat Gain and Cooling load factors for 4-in. h. w. concrete SUNLIT floor deck

TABLE A4.80: Heat Gain and Cooling load factors for 4-in. h. w. concrete SHADED floor deck

t h	Tos,t oC	1st day	2nd day	3rd day	4th day	5th day	6th day	Heat Gain factor	1st day	2nd day	3rd day	4th day	5th day	Cooling load factor
-5.00	29.40	0.00							0.00					
-4.00	28.40	0.00							0.00					
-3.00	27.00	0.00							0.00					
-2.00	26.40	0.00							0.00					
-1.00	26.00	0.00							0.00					
0.00	25.60	0.33	6.58	6.64	6.64	6.64	6.64	6.64	-0.23	5.13	6.34	6.62	6.68	6.70
1.00	25.30	0.47	5.62	5.67	5.67	5.67	5.67	5.67	-0.48	4.56	5.70	5.96	6.02	6.03
2.00	25.10	0.50	4.73	4.77	4.77	4.77	4.77	4.77	-0.72	4.02	5.09	5.33	5.39	5.40
3.00	24.90	0.44	3.92	3.96	3.96	3.96	3.96	3.96	-0.95	3.51	4.52	4.74	4.80	4.81
4.00	24.70	0.33	3.19	3.22	3.22	3.22	3.22	3.22	-1.16	3.03	3.98	4.19	4.24	4.25
5.00	24.50	0.16	2.52	2.54	2.54	2.54	2.54	2.54	-1.35	2.58	3.47	3.68	3.72	3.73
6.00	25.00	0.00	1.94	1.96	1.96	1.96	1.96	1.96	-1.51	2.18	3.02	3.21	3.26	3.27
7.00	25.00	-0.02	1.58	1.59	1.59	1.59	1.59	1.59	-1.56	1.92	2.71	2.88	2.92	2.93
8.00	25.40	0.01	1.32	1.33	1.33	1.33	1.33	1.33	-1.55	1.72	2.46	2.63	2.67	2.68
9.00	26.30	0.18	1.26	1.27	1.27	1.27	1.27	1.27	-1.41	1.66	2.35	2.51	2.55	2.56
10.00	27.40	0.62	1.51	1.52	1.52	1.52	1.52	1.52	-1.09	1.80	2.46	2.60	2.64	2.65
11.00	30.00	1.44	2.18	2.18	2.18	2.18	2.18	2.18	-0.48	2.24	2.85	2.99	3.02	3.03
12.00	31.00	2.84	3.44	3.45	3.45	3.45	3.45	3.45	0.54	3.10	3.67	3.81	3.84	3.84
13.00	32.50	4.44	4.94	4.94	4.94	4.94	4.94	4.94	1.73	4.13	4.68	4.80	4.83	4.83
14.00	33.50	6.22	6.63	6.63	6.63	6.63	6.63	6.63	3.08	5.33	5.84	5.96	5.98	5.99
15.00	34.50	8.05	8.38	8.39	8.39	8.39	8.39	8.39	4.49	6.61	7.09	7.20	7.22	7.23
16.00	32.20	9.69	9.97	9.97	9.97	9.97	9.97	9.97	5.80	7.79	8.24	8.34	8.37	8.37
17.00	31.10	10.49	10.71	10.72	10.72	10.72	10.72	10.72	6.56	8.43	8.86	8.95	8.97	8.98
18.00	30.50	10.74	10.93	10.93	10.93	10.93	10.93	10.93	6.95	8.71	9.11	9.20	9.22	9.23
19.00	29.40	10.69	10.84	10.85	10.85	10.85	10.85	10.85	7.13	8.79	9.16	9.25	9.27	9.27
20.00	28.40	10.30	10.43	10.43	10.43	10.43	10.43	10.43	7.07	8.63	8.98	9.06	9.08	9.08
21.00	27.00	9.60	9.71	9.71	9.71	9.71	9.71	9.71	6.78	8.25	8.58	8.65	8.67	8.67
22.00	26.40	8.62	8.71	8.71	8.71	8.71	8.71	8.71	6.28	7.65	7.96	8.03	8.05	8.05
23.00	26.00	7.58	7.65	7.65	7.65	7.65	7.65	7.65	5.71	7.00	7.29	7.36	7.37	7.37
Average	27.99							5.79						5.79

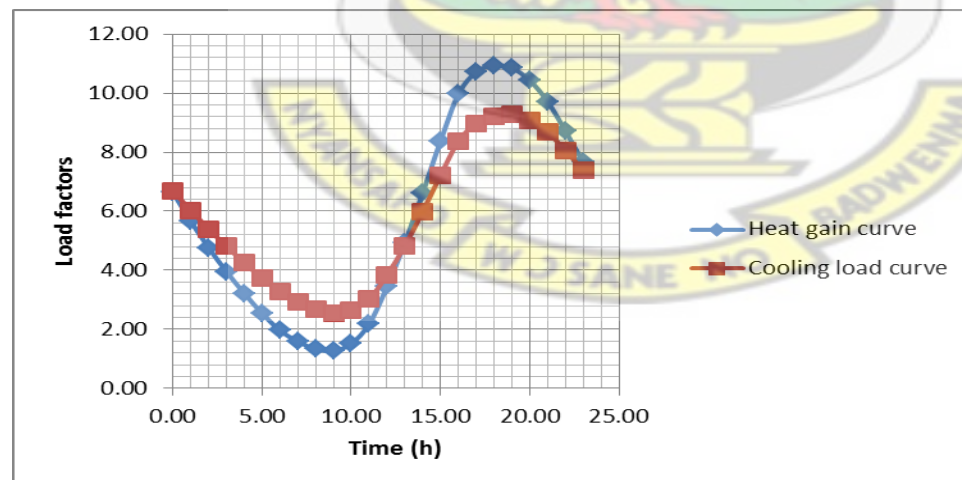


FIGURE A4. 80: Heat Gain and Cooling load factors for 4-in. h. w. concrete SHADED floor deck

TABLE A4.81: Heat Gain and Cooling load factors for 4-in. l. w. concrete SUNLIT deck with false ceiling

t h	T _{os} ,t oC	1st day	2nd day	3rd day	4th day	5th day	6th day	Heat Gain factor	1st day	2nd day	3rd day	4th day	5th day	Cooling load factor
-5.00	25.50	0.00							0.00					
-4.00	24.50	0.00							0.00					
-3.00	23.10	0.00							0.00					
-2.00	22.50	0.00							0.00					
-1.00	22.10	0.00							0.00					
0.00	21.70	-0.51	4.40	4.40	3.02	-3.02	4.39	4.40	-1.04	5.59	7.09	7.43	7.51	7.53
1.00	21.40	-1.01	2.72	2.73	0.22	-2.92	2.72	2.73	-1.86	4.37	5.79	6.11	6.18	6.20
2.00	21.20	-1.45	1.38	1.38	-1.95	-2.91	1.38	1.38	-2.50	3.36	4.69	4.99	5.06	5.07
3.00	21.00	-1.84	0.32	0.32	-3.63	-2.94	0.31	0.32	-2.99	2.52	3.76	4.05	4.11	4.13
4.00	20.80	-2.17	-0.53	-0.53	-4.93	-3.01	-0.54	-0.53	-3.37	1.81	2.98	3.24	3.30	3.32
5.00	20.60	-2.46	-1.22	-1.22	-5.94	-3.10	-1.22	-1.22	-3.67	1.20	2.30	2.55	2.61	2.62
6.00	21.10	-2.72	-1.77	-1.77	-6.73	-3.20	-1.77	-1.77	-3.90	0.68	1.71	1.95	2.00	2.01
7.00	29.17	-2.78	-2.06	-2.06	-7.19	-3.14	-2.06	-2.06	-3.97	0.34	1.31	1.53	1.58	1.59
8.00	41.95	-1.74	-1.20	-1.20	-6.48	-2.02	-1.20	-1.20	-3.27	0.78	1.69	1.90	1.95	1.96
9.00	54.81	1.15	1.57	1.57	-4.31	0.94	1.57	1.57	-1.26	2.54	3.40	3.60	3.64	3.65
10.00	65.50	5.82	6.13	6.13	-1.01	5.66	6.13	6.13	2.02	5.59	6.40	6.59	6.63	6.64
11.00	74.33	11.61	11.85	11.85	2.90	11.49	11.85	11.85	6.16	9.52	10.28	10.45	10.49	10.50
12.00	77.67	17.84	18.02	18.02	6.99	17.74	18.02	18.02	10.70	13.86	14.57	14.74	14.77	14.78
13.00	77.42	23.61	23.75	23.75	10.54	23.54	23.75	23.75	15.04	18.01	18.68	18.84	18.87	18.88
14.00	72.72	28.20	28.31	28.31	13.18	28.15	28.31	28.31	18.67	21.46	22.09	22.24	22.27	22.28
15.00	64.57	31.09	31.17	31.17	14.57	31.05	31.17	31.17	21.20	23.82	24.41	24.55	24.58	24.58
16.00	50.57	31.90	31.96	31.96	14.53	31.87	31.96	31.96	22.33	24.80	25.36	25.48	25.51	25.52
17.00	36.95	30.22	30.26	30.26	12.71	30.20	30.26	30.26	21.76	24.07	24.60	24.72	24.74	24.75
18.00	26.60	26.31	26.35	26.35	9.58	26.30	26.35	26.35	19.60	21.78	22.27	22.38	22.41	22.41
19.00	25.50	21.17	21.20	21.20	5.92	21.16	21.20	21.20	16.50	18.54	19.01	19.11	19.14	19.14
20.00	24.50	16.34	16.36	16.36	2.92	16.32	16.36	16.36	13.48	15.41	15.84	15.94	15.96	15.97
21.00	23.10	12.38	12.40	12.40	0.50	12.38	12.40	12.40	10.96	12.77	13.18	13.27	13.29	13.30
22.00	22.50	9.14	9.15	9.15	-1.51	9.13	9.15	9.15	8.83	10.53	10.92	11.01	11.03	11.03
23.00	22.10	6.50	6.51	6.51	-3.12	6.50	6.51	6.51	7.06	8.65	9.02	9.10	9.12	9.12
Average	39.07							11.54						11.54

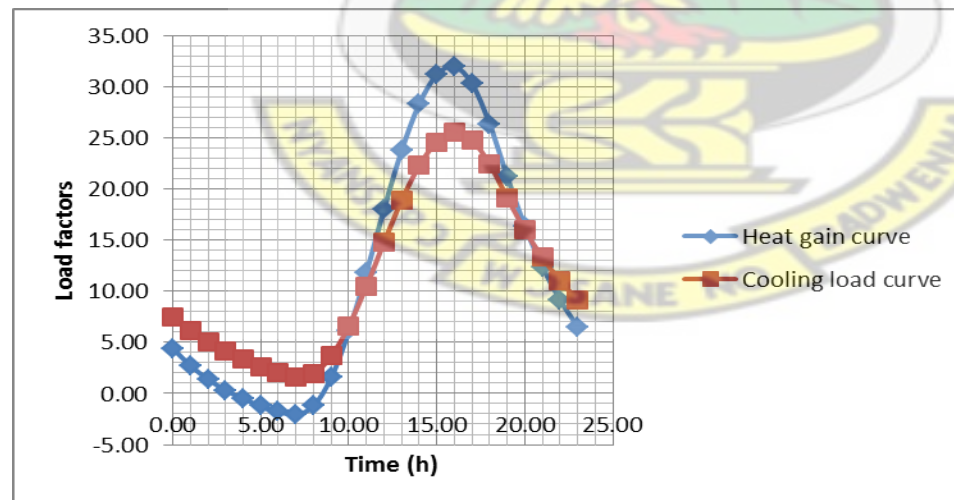


FIGURE A4. 81: Heat Gain and Cooling load factors for 4-in. l. w. concrete SUNLIT deck with false ceiling

TABLE A4.82: Heat Gain and Cooling load factors for 4-in. l. w. concrete SHADED deck with false ceiling

t h	T _o ,t oC	1st day	2nd day	3rd day	4th day	5th day	6th day	Heat Gain factor	1st day	2nd day	3rd day	4th day	5th day	Cooling load factor
-5.00	29.40	0.00							0.00					
-4.00	28.40	0.00							0.00					
-3.00	27.00	0.00							0.00					
-2.00	26.40	0.00							0.00					
-1.00	26.00	0.00							0.00					
0.00	25.60	0.20	2.68	2.69	1.06	-3.57	2.68	2.69	-0.18	2.11	2.63	2.75	2.78	2.78
1.00	25.30	0.30	2.19	2.19	-0.75	-2.58	2.18	2.19	-0.35	1.81	2.30	2.41	2.43	2.44
2.00	25.10	0.31	1.74	1.74	-2.18	-1.87	1.74	1.74	-0.50	1.53	1.99	2.09	2.11	2.12
3.00	24.90	0.27	1.36	1.36	-3.29	-1.39	1.36	1.36	-0.62	1.28	1.71	1.81	1.83	1.84
4.00	24.70	0.20	1.03	1.03	-4.16	-1.06	1.02	1.03	-0.73	1.06	1.46	1.56	1.58	1.58
5.00	24.50	0.11	0.73	0.74	-4.85	-0.85	0.73	0.74	-0.82	0.86	1.24	1.33	1.34	1.35
6.00	25.00	0.01	0.48	0.48	-5.39	-0.72	0.48	0.48	-0.90	0.68	1.04	1.12	1.14	1.14
7.00	25.00	-0.03	0.33	0.33	-5.75	-0.58	0.33	0.33	-0.92	0.56	0.90	0.98	0.99	1.00
8.00	25.40	-0.02	0.25	0.25	-6.01	-0.44	0.25	0.25	-0.90	0.50	0.81	0.88	0.90	0.90
9.00	26.30	0.04	0.25	0.25	-6.15	-0.28	0.25	0.25	-0.83	0.48	0.78	0.84	0.86	0.86
10.00	27.40	0.23	0.39	0.39	-6.15	-0.01	0.39	0.39	-0.67	0.56	0.84	0.90	0.92	0.92
11.00	30.00	0.59	0.71	0.71	-5.98	0.40	0.71	0.71	-0.39	0.77	1.03	1.09	1.10	1.11
12.00	31.00	1.24	1.33	1.33	-5.55	1.10	1.33	1.33	0.10	1.19	1.44	1.49	1.51	1.51
13.00	32.50	2.05	2.12	2.12	-5.07	1.94	2.12	2.12	0.71	1.73	1.97	2.02	2.03	2.03
14.00	33.50	2.93	2.98	2.98	-4.51	2.85	2.98	2.98	1.38	2.34	2.56	2.61	2.62	2.62
15.00	34.50	3.82	3.86	3.86	-3.96	3.76	3.86	3.86	2.08	2.98	3.19	3.23	3.25	3.25
16.00	32.20	4.67	4.70	4.70	-3.44	4.62	4.70	4.70	2.75	3.60	3.80	3.84	3.85	3.85
17.00	31.10	5.12	5.14	5.14	-3.31	5.08	5.14	5.14	3.17	3.97	4.15	4.19	4.20	4.20
18.00	30.50	5.18	5.20	5.20	-3.36	5.15	5.20	5.20	3.33	4.08	4.25	4.29	4.30	4.30
19.00	29.40	5.06	5.07	5.07	-3.49	5.04	5.07	5.07	3.36	4.06	4.22	4.26	4.27	4.27
20.00	28.40	4.79	4.80	4.80	-3.72	4.77	4.80	4.80	3.27	3.94	4.09	4.12	4.13	4.13
21.00	27.00	4.37	4.38	4.38	-4.04	4.36	4.38	4.38	3.08	3.70	3.85	3.88	3.88	3.89
22.00	26.40	3.82	3.83	3.83	-4.45	3.81	3.83	3.83	2.78	3.37	3.50	3.53	3.54	3.54
23.00	26.00	3.23	3.23	3.23	-4.84	3.22	3.23	3.23	2.44	2.99	3.12	3.14	3.15	3.15
Average	27.99							2.45						2.45

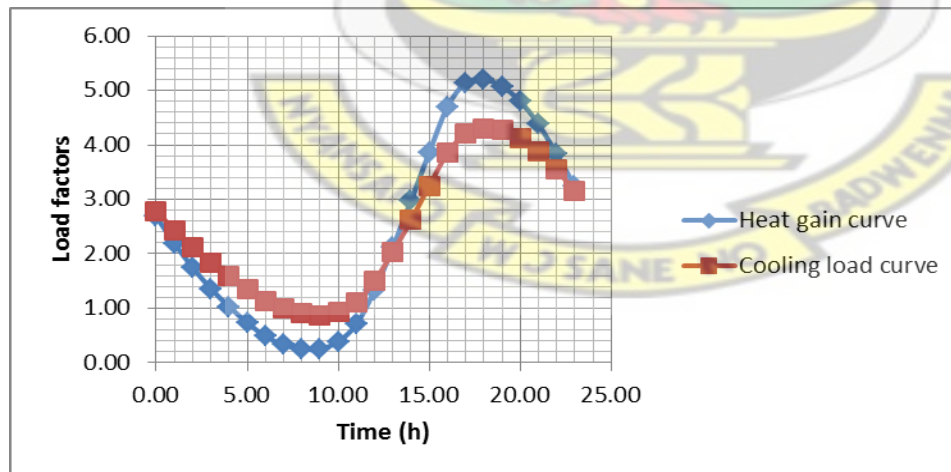


FIGURE A4. 82: Heat Gain and Cooling load factors for 4-in. l. w. concrete SHADED deck with false ceiling

TABLE A5.1: Heat gain and cooling load factors for equipment that is not used for the whole day, e.g. TV.

t	Heat gain Factors	1st day	2nd day	3rd day	Cooling Load Factors
h					
-2.00	0.00				
-1.00	0.00				
0.00	0.00	0.00	0.06	0.06	0.06
1.00	0.00	0.00	0.05	0.05	0.05
2.00	0.00	0.00	0.04	0.04	0.04
3.00	0.00	0.00	0.03	0.04	0.04
4.00	0.00	0.00	0.03	0.03	0.03
5.00	0.00	0.00	0.02	0.02	0.02
6.00	0.16	0.03	0.05	0.05	0.05
7.00	0.16	0.05	0.07	0.07	0.07
8.00	0.16	0.07	0.08	0.08	0.08
9.00	0.16	0.08	0.10	0.10	0.10
10.00	0.16	0.10	0.11	0.11	0.11
11.00	0.16	0.11	0.11	0.11	0.11
12.00	0.16	0.11	0.12	0.12	0.12
13.00	0.16	0.12	0.13	0.13	0.13
14.00	0.16	0.13	0.13	0.13	0.13
15.00	0.16	0.13	0.14	0.14	0.14
16.00	0.16	0.14	0.14	0.14	0.14
17.00	0.16	0.14	0.14	0.14	0.14
18.00	0.16	0.14	0.15	0.15	0.15
19.00	0.16	0.15	0.15	0.15	0.15
20.00	0.00	0.12	0.12	0.12	0.12
21.00	0.00	0.10	0.10	0.10	0.10
22.00	0.00	0.08	0.08	0.08	0.08
23.00	0.00	0.07	0.07	0.07	0.07
Average	0.16				0.12

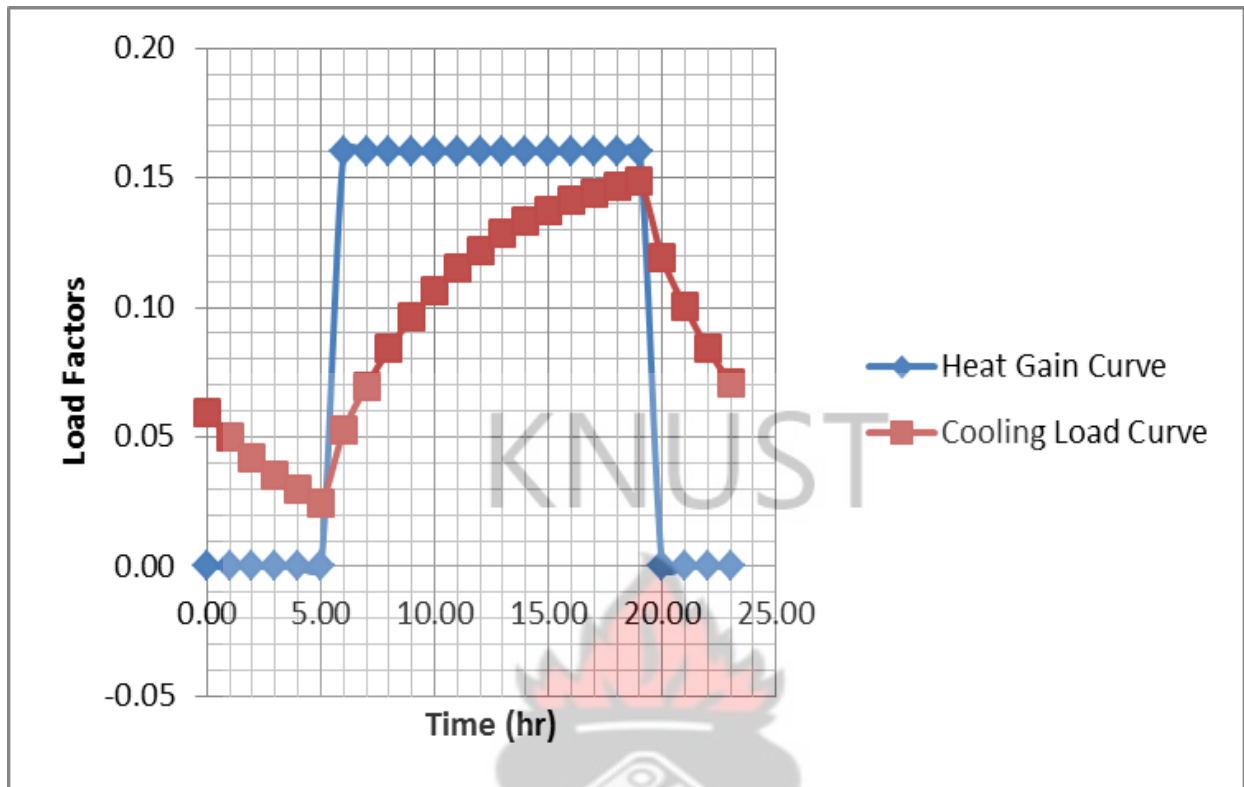


FIGURE A5. 1: A graph of thermal loads against time for equipment that is not used for the whole day, e.g. TV.

TABLE A5.2: Heat gain and cooling load factors for equipment that is used for the whole day, e.g. fridge.

t	Heat gain Factors	1st day	2nd day	3rd day	Cooling Load Factors
h					
-2.00	0.00				
-1.00	0.00				
0.00	0.16	0.03	0.16	0.17	0.17
1.00	0.16	0.05	0.16	0.17	0.17
2.00	0.16	0.07	0.16	0.16	0.16
3.00	0.16	0.08	0.16	0.16	0.16
4.00	0.16	0.10	0.16	0.16	0.16
5.00	0.16	0.11	0.16	0.16	0.16
6.00	0.16	0.11	0.16	0.16	0.16
7.00	0.16	0.12	0.16	0.16	0.16
8.00	0.16	0.13	0.16	0.16	0.16
9.00	0.16	0.13	0.16	0.16	0.16
10.00	0.16	0.14	0.16	0.16	0.16
11.00	0.16	0.14	0.16	0.16	0.16
12.00	0.16	0.14	0.16	0.16	0.16
13.00	0.16	0.15	0.16	0.16	0.16
14.00	0.16	0.15	0.16	0.16	0.16
15.00	0.16	0.15	0.16	0.16	0.16
16.00	0.16	0.15	0.16	0.16	0.16
17.00	0.16	0.15	0.16	0.16	0.16
18.00	0.16	0.15	0.16	0.16	0.16
19.00	0.16	0.16	0.16	0.16	0.16
20.00	0.16	0.16	0.16	0.16	0.16
21.00	0.16	0.16	0.16	0.16	0.16
22.00	0.16	0.16	0.16	0.16	0.16
23.00	0.16	0.16	0.16	0.16	0.16
Average	0.16				0.16

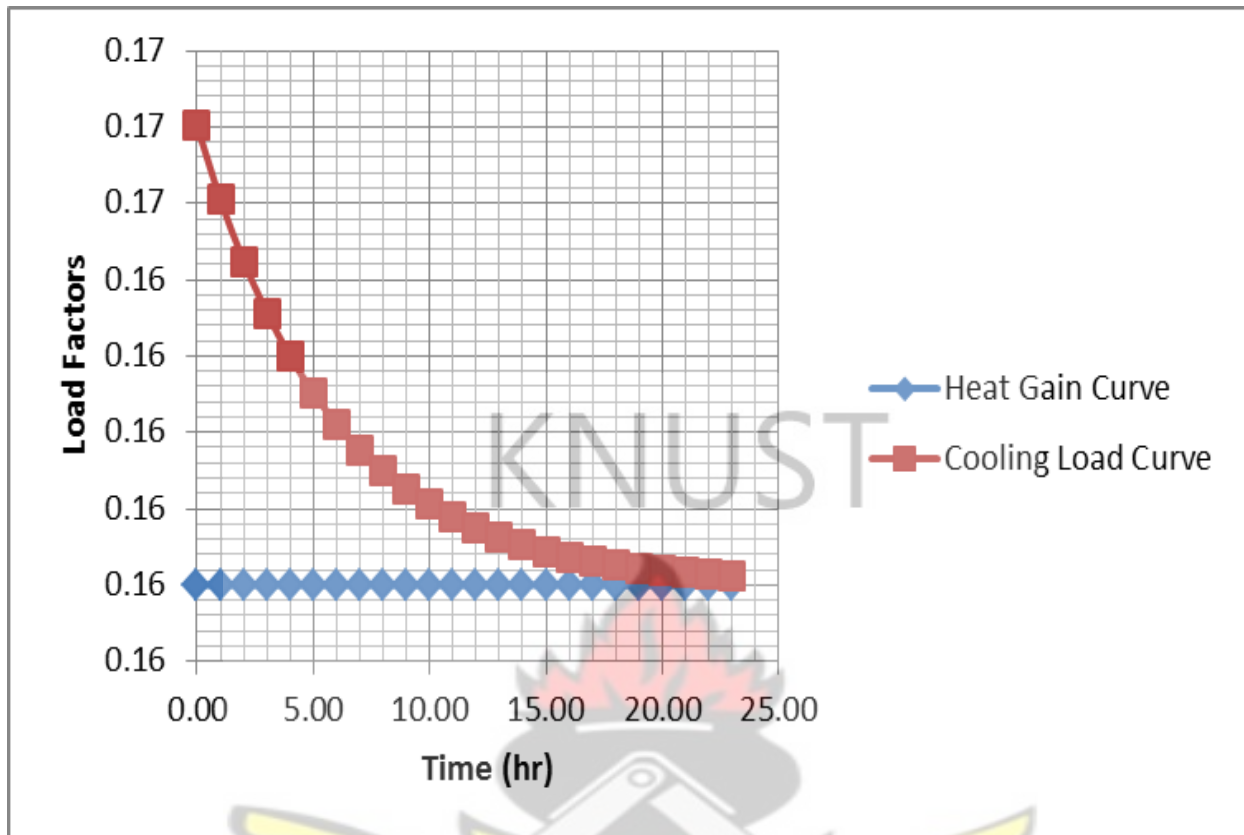
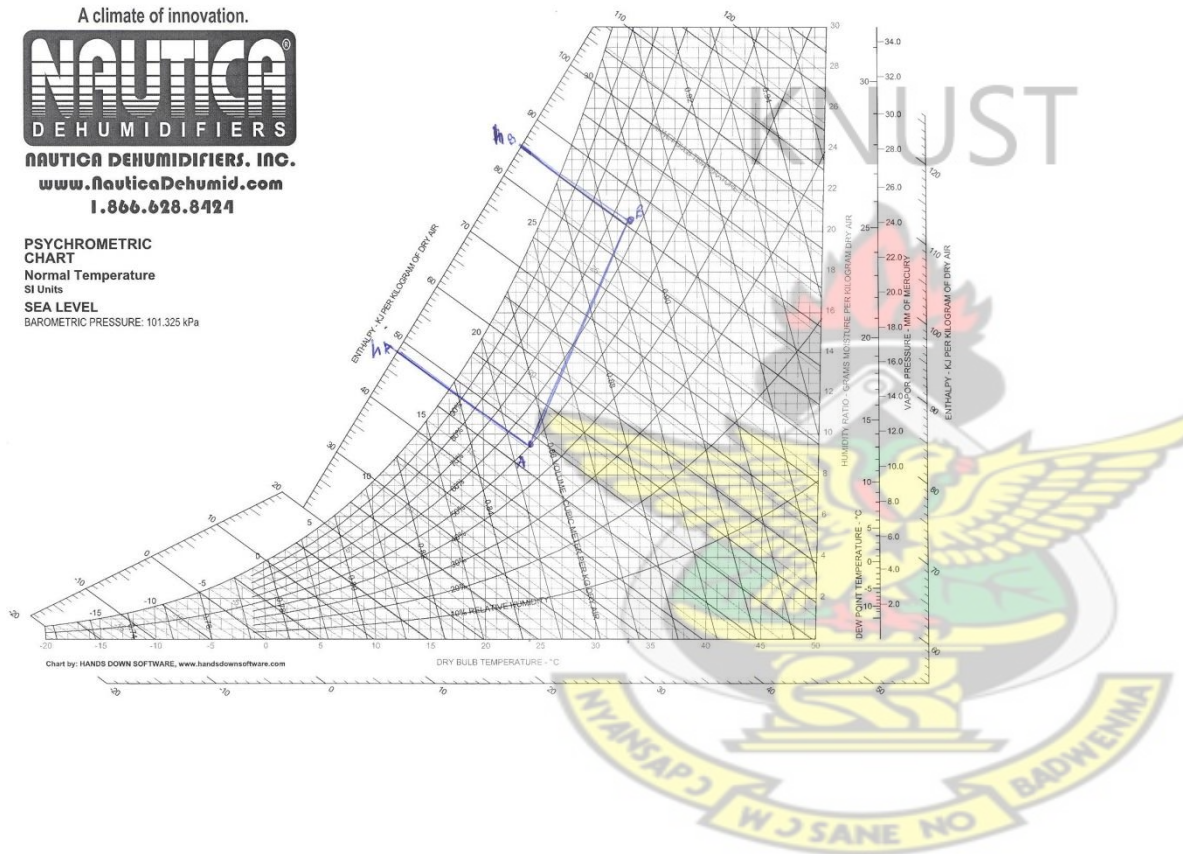


FIGURE A5. 2: A graph of thermal loads against time for equipment that is used for the whole day, e.g. fridge.

TABLE A6.1: Heat gain of air change for infiltration through leakage areas.



$$h_B - h_A = 85 - 47.5 = 37.5 \text{ kJ/kg}$$

$$\frac{37.5 \text{ kJ}}{\text{kg}} * \frac{1.2 \text{ kg}}{\text{m}^3} * \frac{1}{3600 \text{ s}} * 1 \text{ m}^3 = 12.5 \text{ W}$$

TABLE A7.1: Solar and Conductive Heat Gain for west facing window

t, h	t _o °C	t _i °C	I _{glo,vert}	SC					SHGF					QSOLAR GAIN/m3					U	QCOND.
				SINGLE GLASS					SC = 1	SC = 0.95	SC = 0.84	SC = 0.71	SC = 0.3	SC = 1	SC = 0.95	SC = 0.84	SC = 0.71	SC = 0.3		
0.00	25.60	25.00	0.00	1.00	0.95	0.84	0.71	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.90	3.54
1.00	25.30	25.00	0.00	1.00	0.95	0.84	0.71	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.90	1.77
2.00	25.10	25.00	0.00	1.00	0.95	0.84	0.71	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.90	0.59
3.00	24.90	25.00	0.00	1.00	0.95	0.84	0.71	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.90	-0.59
4.00	24.70	25.00	0.00	1.00	0.95	0.84	0.71	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.90	-1.77
5.00	24.50	25.00	0.00	1.00	0.95	0.84	0.71	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.90	-2.95
6.00	25.00	25.00	0.00	1.00	0.95	0.84	0.71	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.90	0.00
7.00	28.34	25.00	64.22	1.00	0.95	0.84	0.71	0.30	55.88	53.08	46.94	39.67	16.76	55.88	50.43	39.43	28.17	5.03	5.90	19.70
8.00	30.17	25.00	91.82	1.00	0.95	0.84	0.71	0.30	79.89	75.89	67.10	56.72	23.97	79.89	72.10	56.37	40.27	7.19	5.90	30.53
9.00	31.80	25.00	105.69	1.00	0.95	0.84	0.71	0.30	91.95	87.36	77.24	65.29	27.59	91.95	82.99	64.88	46.35	8.28	5.90	40.10
10.00	33.32	25.00	113.83	1.00	0.95	0.84	0.71	0.30	99.03	94.08	83.18	70.31	29.71	99.03	89.37	69.88	49.92	8.91	5.90	49.08
11.00	36.15	25.00	118.35	1.00	0.95	0.84	0.71	0.30	102.96	97.82	86.49	73.10	30.89	102.96	92.92	72.65	51.90	9.27	5.90	65.81
12.00	38.34	25.00	141.12	1.00	0.95	0.84	0.71	0.30	122.78	116.64	103.13	87.17	36.83	122.78	110.81	86.63	61.89	11.05	5.90	78.70
13.00	51.02	25.00	356.08	1.00	0.95	0.84	0.71	0.30	309.79	294.30	260.22	219.95	92.94	309.79	279.59	218.59	156.16	27.88	5.90	153.50
14.00	61.27	25.00	533.95	1.00	0.95	0.84	0.71	0.30	464.53	441.31	390.21	329.82	139.36	464.53	419.24	327.78	234.17	41.81	5.90	213.97
15.00	67.91	25.00	642.45	1.00	0.95	0.84	0.71	0.30	558.93	530.98	469.50	396.84	167.68	558.93	504.44	394.38	281.76	50.30	5.90	253.15
16.00	65.46	25.00	639.61	1.00	0.95	0.84	0.71	0.30	556.46	528.64	467.43	395.09	166.94	556.46	502.21	392.64	280.51	50.08	5.90	238.71
17.00	54.71	25.00	454.13	1.00	0.95	0.84	0.71	0.30	395.09	375.34	331.88	280.52	118.53	395.09	356.57	278.78	199.17	35.56	5.90	175.32
18.00	39.45	25.00	172.07	1.00	0.95	0.84	0.71	0.30	149.70	142.22	125.75	106.29	44.91	149.70	135.10	105.63	75.46	13.47	5.90	85.24
19.00	29.40	25.00	0.00	1.00	0.95	0.84	0.71	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.90	25.96
20.00	28.40	25.00	0.00	1.00	0.95	0.84	0.71	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.90	20.06
21.00	27.00	25.00	0.00	1.00	0.95	0.84	0.71	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.90	11.80
22.00	26.40	25.00	0.00	1.00	0.95	0.84	0.71	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.90	8.26
23.00	26.00	25.00	0.00	1.00	0.95	0.84	0.71	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.90	5.90
Average				1.00	0.95	0.84	0.71	0.30	248.92	236.47	209.09	176.73	74.67	248.92	224.65	175.64	125.48	22.40	5.90	116.98

TABLE A7.2: Solar and Conductive Heat Gain for east facing window

t, h	t _o °C	t _i °C	I _{glo,vert}	SC					SHGF					QSOLAR GAIN/m3					U	QCOND.
				SINGLE GLASS					SC = 1	SC = 0.95	SC = 0.84	SC = 0.71	SC = 0.3	SC = 1	SC = 0.95	SC = 0.84	SC = 0.71	SC = 0.3		
0.00	25.60	25.00	0.00	1.00	0.95	0.84	0.71	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.90	3.54
1.00	25.30	25.00	0.00	1.00	0.95	0.84	0.71	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.90	1.77
2.00	25.10	25.00	0.00	1.00	0.95	0.84	0.71	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.90	0.59
3.00	24.90	25.00	0.00	1.00	0.95	0.84	0.71	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.90	-0.59
4.00	24.70	25.00	0.00	1.00	0.95	0.84	0.71	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.90	-1.77
5.00	24.50	25.00	0.00	1.00	0.95	0.84	0.71	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.90	-2.95
6.00	25.00	25.00	0.00	1.00	0.95	0.84	0.71	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.90	0.00
7.00	28.34	25.00	406.71	1.00	0.95	0.84	0.71	0.30	353.84	336.15	297.22	251.23	106.15	353.84	319.34	249.67	178.37	31.85	5.90	19.70
8.00	30.17	25.00	626.37	1.00	0.95	0.84	0.71	0.30	544.94	517.70	457.75	386.91	163.48	544.94	491.81	384.51	274.71	49.04	5.90	30.53
9.00	31.80	25.00	650.15	1.00	0.95	0.84	0.71	0.30	565.63	537.35	475.13	401.60	169.69	565.63	510.48	399.11	285.13	50.91	5.90	40.10
10.00	33.32	25.00	554.74	1.00	0.95	0.84	0.71	0.30	482.63	458.50	405.41	342.67	144.79	482.63	435.57	340.54	243.29	43.44	5.90	49.08
11.00	36.15	25.00	384.80	1.00	0.95	0.84	0.71	0.30	334.77	318.03	281.21	237.69	100.43	334.77	302.13	236.22	168.76	30.13	5.90	65.81
12.00	38.34	25.00	173.33	1.00	0.95	0.84	0.71	0.30	150.80	143.26	126.67	107.07	45.24	150.80	136.09	106.40	76.02	13.57	5.90	78.70
13.00	51.02	25.00	118.75	1.00	0.95	0.84	0.71	0.30	103.31	98.15	86.78	73.35	30.99	103.31	93.24	72.90	52.08	9.30	5.90	153.50
14.00	61.27	25.00	114.68	1.00	0.95	0.84	0.71	0.30	99.77	94.78	83.81	70.84	29.93	99.77	90.04	70.40	50.29	8.98	5.90	213.97
15.00	67.91	25.00	107.15	1.00	0.95	0.84	0.71	0.30	93.22	88.56	78.30	66.18	27.96	93.22	84.13	65.77	46.99	8.39	5.90	253.15
16.00	65.46	25.00	94.36	1.00	0.95	0.84	0.71	0.30	82.09	77.99	68.96	58.29	24.63	82.09	74.09	57.92	41.38	7.39	5.90	238.71
17.00	54.71	25.00	69.84	1.00	0.95	0.84	0.71	0.30	60.76	57.72	51.04	43.14	18.23	60.76	54.84	42.87	30.63	5.47	5.90	175.32
18.00	39.45	25.00	8.13	1.00	0.95	0.84	0.71	0.30	7.07	6.72	5.94	5.02	2.12	7.07	6.38	4.99	3.56	0.64	5.90	85.24
19.00	29.40	25.00	0.00	1.00	0.95	0.84	0.71	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.90	25.96
20.00	28.40	25.00	0.00	1.00	0.95	0.84	0.71	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.90	20.06
21.00	27.00	25.00	0.00	1.00	0.95	0.84	0.71	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.90	11.80
22.00	26.40	25.00	0.00	1.00	0.95	0.84	0.71	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.90	8.26
23.00	26.00	25.00	0.00	1.00	0.95	0.84	0.71	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.90	5.90
Average				1.00	0.95	0.84	0.71	0.30	239.90	227.91	201.52	170.33	71.97	239.90	216.51	169.28	120.94	21.59	5.90	116.98

TABLE A7.3: Solar and Conductive Heat Gain for south facing window

t, h	t _o	t _i	I _{glo,vert}	SC					SHGF					QSOLAR GAIN/m3					U	QCOND.
	°C	°C		SINGLE GLASS					SC = 1	SC = 0.95	SC = 0.84	SC = 0.71	SC = 0.3	SC = 1	SC = 0.95	SC = 0.84	SC = 0.71	SC = 0.3		
0.00	25.60	25.00	0.00	1.00	0.95	0.84	0.71	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.90	3.54
1.00	25.30	25.00	0.00	1.00	0.95	0.84	0.71	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.90	1.77
2.00	25.10	25.00	0.00	1.00	0.95	0.84	0.71	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.90	0.59
3.00	24.90	25.00	0.00	1.00	0.95	0.84	0.71	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.90	-0.59
4.00	24.70	25.00	0.00	1.00	0.95	0.84	0.71	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.90	-1.77
5.00	24.50	25.00	0.00	1.00	0.95	0.84	0.71	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.90	-2.95
6.00	25.00	25.00	0.00	1.00	0.95	0.84	0.71	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.90	0.00
7.00	28.34	25.00	63.48	1.00	0.95	0.84	0.71	0.30	55.23	52.46	46.39	39.21	16.57	55.23	49.84	38.97	27.84	4.97	5.90	19.70
8.00	30.17	25.00	97.07	1.00	0.95	0.84	0.71	0.30	84.45	80.23	70.94	59.96	25.33	84.45	76.21	59.59	42.57	7.60	5.90	30.53
9.00	31.80	25.00	116.19	1.00	0.95	0.84	0.71	0.30	101.08	96.03	84.91	71.77	30.32	101.08	91.23	71.32	50.96	9.10	5.90	40.10
10.00	33.32	25.00	151.62	1.00	0.95	0.84	0.71	0.30	131.91	125.31	110.80	93.66	39.57	131.91	119.05	93.08	66.50	11.87	5.90	49.08
11.00	36.15	25.00	175.01	1.00	0.95	0.84	0.71	0.30	152.26	144.65	127.90	108.10	45.68	152.26	137.41	107.43	76.75	13.70	5.90	65.81
12.00	38.34	25.00	183.84	1.00	0.95	0.84	0.71	0.30	159.94	151.94	134.35	113.56	47.98	159.94	144.34	112.85	80.62	14.39	5.90	78.70
13.00	51.02	25.00	177.22	1.00	0.95	0.84	0.71	0.30	154.18	146.48	129.52	109.47	46.26	154.18	139.15	108.79	77.72	13.88	5.90	153.50
14.00	61.27	25.00	155.82	1.00	0.95	0.84	0.71	0.30	135.57	128.79	113.88	96.25	40.67	135.57	122.35	95.66	68.34	12.20	5.90	213.97
15.00	67.91	25.00	121.90	1.00	0.95	0.84	0.71	0.30	106.06	100.75	89.09	75.30	31.82	106.06	95.72	74.83	53.46	9.55	5.90	253.15
16.00	65.46	25.00	100.23	1.00	0.95	0.84	0.71	0.30	87.20	82.84	73.25	61.91	26.16	87.20	78.70	61.53	43.96	7.85	5.90	238.71
17.00	54.71	25.00	70.03	1.00	0.95	0.84	0.71	0.30	60.93	57.88	51.18	43.26	18.28	60.93	54.99	42.99	30.71	5.48	5.90	175.32
18.00	39.45	25.00	16.05	1.00	0.95	0.84	0.71	0.30	13.96	13.27	11.73	9.92	4.19	13.96	12.60	9.85	7.04	1.26	5.90	85.24
19.00	29.40	25.00	0.00	1.00	0.95	0.84	0.71	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.90	25.96
20.00	28.40	25.00	0.00	1.00	0.95	0.84	0.71	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.90	20.06
21.00	27.00	25.00	0.00	1.00	0.95	0.84	0.71	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.90	11.80
22.00	26.40	25.00	0.00	1.00	0.95	0.84	0.71	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.90	8.26
23.00	26.00	25.00	0.00	1.00	0.95	0.84	0.71	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.90	5.90
Average				1.00	0.95	0.84	0.71	0.30	103.56	98.39	86.99	73.53	31.07	103.56	93.47	73.07	52.21	9.32	5.90	116.98

TABLE A7.4: Solar and Conductive Heat Gain for north facing window

t, h	t _o °C	t _i °C	I _{glo,vert}	SC					SHGF					QSOLAR GAIN/m3					U	QCOND.
				SINGLE GLASS					SC = 1	SC = 0.95	SC = 0.84	SC = 0.71	SC = 0.3	SC = 1	SC = 0.95	SC = 0.84	SC = 0.71	SC = 0.3		
0.00	25.60	25.00	0.00	1.00	0.95	0.84	0.71	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.90	3.54
1.00	25.30	25.00	0.00	1.00	0.95	0.84	0.71	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.90	1.77
2.00	25.10	25.00	0.00	1.00	0.95	0.84	0.71	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.90	0.59
3.00	24.90	25.00	0.00	1.00	0.95	0.84	0.71	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.90	-0.59
4.00	24.70	25.00	0.00	1.00	0.95	0.84	0.71	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.90	-1.77
5.00	24.50	25.00	0.00	1.00	0.95	0.84	0.71	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.90	-2.95
6.00	25.00	25.00	0.00	1.00	0.95	0.84	0.71	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.90	0.00
7.00	28.34	25.00	31.78	1.00	0.95	0.84	0.71	0.30	27.65	26.27	23.23	19.63	8.30	27.65	24.95	19.51	13.94	2.49	5.90	19.70
8.00	30.17	25.00	73.42	1.00	0.95	0.84	0.71	0.30	63.88	60.68	53.66	45.35	19.16	63.88	57.65	45.07	32.20	5.75	5.90	30.53
9.00	31.80	25.00	114.14	1.00	0.95	0.84	0.71	0.30	99.30	94.34	83.42	70.51	29.79	99.30	89.62	70.07	50.06	8.94	5.90	40.10
10.00	33.32	25.00	123.73	1.00	0.95	0.84	0.71	0.30	107.64	102.26	90.42	76.43	32.29	107.64	97.15	75.95	54.26	9.69	5.90	49.08
11.00	36.15	25.00	117.39	1.00	0.95	0.84	0.71	0.30	102.13	97.02	85.79	72.51	30.64	102.13	92.17	72.06	51.48	9.19	5.90	65.81
12.00	38.34	25.00	118.78	1.00	0.95	0.84	0.71	0.30	103.34	98.17	86.80	73.37	31.00	103.34	93.26	72.92	52.09	9.30	5.90	78.70
13.00	51.02	25.00	118.75	1.00	0.95	0.84	0.71	0.30	103.31	98.15	86.78	73.35	30.99	103.31	93.24	72.90	52.08	9.30	5.90	153.50
14.00	61.27	25.00	114.68	1.00	0.95	0.84	0.71	0.30	99.77	94.78	83.81	70.84	29.93	99.77	90.04	70.40	50.29	8.98	5.90	213.97
15.00	67.91	25.00	107.15	1.00	0.95	0.84	0.71	0.30	93.22	88.56	78.30	66.18	27.96	93.22	84.13	65.77	46.99	8.39	5.90	253.15
16.00	65.46	25.00	94.36	1.00	0.95	0.84	0.71	0.30	82.09	77.99	68.96	58.29	24.63	82.09	74.09	57.92	41.38	7.39	5.90	238.71
17.00	54.71	25.00	69.84	1.00	0.95	0.84	0.71	0.30	60.76	57.72	51.04	43.14	18.23	60.76	54.84	42.87	30.63	5.47	5.90	175.32
18.00	39.45	25.00	8.13	1.00	0.95	0.84	0.71	0.30	7.07	6.72	5.94	5.02	2.12	7.07	6.38	4.99	3.56	0.64	5.90	85.24
19.00	29.40	25.00	0.00	1.00	0.95	0.84	0.71	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.90	25.96
20.00	28.40	25.00	0.00	1.00	0.95	0.84	0.71	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.90	20.06
21.00	27.00	25.00	0.00	1.00	0.95	0.84	0.71	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.90	11.80
22.00	26.40	25.00	0.00	1.00	0.95	0.84	0.71	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.90	8.26
23.00	26.00	25.00	0.00	1.00	0.95	0.84	0.71	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.90	5.90
Average			91.01	1.00	0.95	0.84	0.71	0.30	79.18	75.22	66.51	56.22	23.75	79.18	71.46	55.87	39.91	7.13	5.90	116.98

TABLE A7.5: Solar and Conductive Heat Gain for NE facing window

t, h	t _o °C	t _i °C	I _{glo,vert}	SC					SHGF					QSOLAR GAIN/m3					U	QCOND.
				SINGLE GLASS					SC = 1	SC = 0.95	SC = 0.84	SC = 0.71	SC = 0.3	SC = 1	SC = 0.95	SC = 0.84	SC = 0.71	SC = 0.3		
0.00	25.60	25.00	0.00	1.00	0.95	0.84	0.71	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.90	3.54
1.00	25.30	25.00	0.00	1.00	0.95	0.84	0.71	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.90	1.77
2.00	25.10	25.00	0.00	1.00	0.95	0.84	0.71	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.90	0.59
3.00	24.90	25.00	0.00	1.00	0.95	0.84	0.71	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.90	-0.59
4.00	24.70	25.00	0.00	1.00	0.95	0.84	0.71	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.90	-1.77
5.00	24.50	25.00	0.00	1.00	0.95	0.84	0.71	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.90	-2.95
6.00	25.00	25.00	0.00	1.00	0.95	0.84	0.71	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.90	0.00
7.00	28.34	25.00	290.33	1.00	0.95	0.84	0.71	0.30	252.59	239.96	212.17	179.34	75.78	252.59	227.96	178.23	127.33	22.73	5.90	19.70
8.00	30.17	25.00	459.52	1.00	0.95	0.84	0.71	0.30	399.78	379.79	335.82	283.85	119.93	399.78	360.80	282.09	201.53	35.98	5.90	30.53
9.00	31.80	25.00	492.73	1.00	0.95	0.84	0.71	0.30	428.68	407.24	360.09	304.36	128.60	428.68	386.88	302.48	216.10	38.58	5.90	40.10
10.00	33.32	25.00	422.73	1.00	0.95	0.84	0.71	0.30	367.77	349.38	308.93	261.12	110.33	367.77	331.91	259.50	185.39	33.10	5.90	49.08
11.00	36.15	25.00	300.27	1.00	0.95	0.84	0.71	0.30	261.24	248.18	219.44	185.48	78.37	261.24	235.77	184.33	131.69	23.51	5.90	65.81
12.00	38.34	25.00	149.80	1.00	0.95	0.84	0.71	0.30	130.32	123.81	109.47	92.53	39.10	130.32	117.62	91.96	65.70	11.73	5.90	78.70
13.00	51.02	25.00	118.75	1.00	0.95	0.84	0.71	0.30	103.31	98.15	86.78	73.35	30.99	103.31	93.24	72.90	52.08	9.30	5.90	153.50
14.00	61.27	25.00	114.68	1.00	0.95	0.84	0.71	0.30	99.77	94.78	83.81	70.84	29.93	99.77	90.04	70.40	50.29	8.98	5.90	213.97
15.00	67.91	25.00	107.15	1.00	0.95	0.84	0.71	0.30	93.22	88.56	78.30	66.18	27.96	93.22	84.13	65.77	46.99	8.39	5.90	253.15
16.00	65.46	25.00	94.36	1.00	0.95	0.84	0.71	0.30	82.09	77.99	68.96	58.29	24.63	82.09	74.09	57.92	41.38	7.39	5.90	238.71
17.00	54.71	25.00	69.84	1.00	0.95	0.84	0.71	0.30	60.76	57.72	51.04	43.14	18.23	60.76	54.84	42.87	30.63	5.47	5.90	175.32
18.00	39.45	25.00	8.13	1.00	0.95	0.84	0.71	0.30	7.07	6.72	5.94	5.02	2.12	7.07	6.38	4.99	3.56	0.64	5.90	85.24
19.00	29.40	25.00	0.00	1.00	0.95	0.84	0.71	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.90	25.96
20.00	28.40	25.00	0.00	1.00	0.95	0.84	0.71	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.90	20.06
21.00	27.00	25.00	0.00	1.00	0.95	0.84	0.71	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.90	11.80
22.00	26.40	25.00	0.00	1.00	0.95	0.84	0.71	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.90	8.26
23.00	26.00	25.00	0.00	1.00	0.95	0.84	0.71	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.90	5.90
Average				1.00	0.95	0.84	0.71	0.30	190.55	181.02	160.06	135.29	57.17	190.55	171.97	134.45	96.06	17.15	5.90	116.98

TABLE A7.6: Solar and Conductive Heat Gain for NW facing window

t, h	t _o °C	t _i °C	I _{glo,vert}	SC					SHGF					QSOLAR GAIN/m3					U	QCOND.
				SINGLE GLASS					SC = 1	SC = 0.95	SC = 0.84	SC = 0.71	SC = 0.3	SC = 1	SC = 0.95	SC = 0.84	SC = 0.71	SC = 0.3		
0.00	25.60	25.00	0.00	1.00	0.95	0.84	0.71	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.90	3.54
1.00	25.30	25.00	0.00	1.00	0.95	0.84	0.71	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.90	1.77
2.00	25.10	25.00	0.00	1.00	0.95	0.84	0.71	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.90	0.59
3.00	24.90	25.00	0.00	1.00	0.95	0.84	0.71	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.90	-0.59
4.00	24.70	25.00	0.00	1.00	0.95	0.84	0.71	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.90	-1.77
5.00	24.50	25.00	0.00	1.00	0.95	0.84	0.71	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.90	-2.95
6.00	25.00	25.00	0.00	1.00	0.95	0.84	0.71	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.90	0.00
7.00	28.34	25.00	64.22	1.00	0.95	0.84	0.71	0.30	55.88	53.08	46.94	39.67	16.76	55.88	50.43	39.43	28.17	5.03	5.90	19.70
8.00	30.17	25.00	91.82	1.00	0.95	0.84	0.71	0.30	79.89	75.89	67.10	56.72	23.97	79.89	72.10	56.37	40.27	7.19	5.90	30.53
9.00	31.80	25.00	105.69	1.00	0.95	0.84	0.71	0.30	91.95	87.36	77.24	65.29	27.59	91.95	82.99	64.88	46.35	8.28	5.90	40.10
10.00	33.32	25.00	113.83	1.00	0.95	0.84	0.71	0.30	99.03	94.08	83.18	70.31	29.71	99.03	89.37	69.88	49.92	8.91	5.90	49.08
11.00	36.15	25.00	118.35	1.00	0.95	0.84	0.71	0.30	102.96	97.82	86.49	73.10	30.89	102.96	92.92	72.65	51.90	9.27	5.90	65.81
12.00	38.34	25.00	119.93	1.00	0.95	0.84	0.71	0.30	104.34	99.13	87.65	74.08	31.30	104.34	94.17	73.62	52.60	9.39	5.90	78.70
13.00	51.02	25.00	279.73	1.00	0.95	0.84	0.71	0.30	243.37	231.20	204.43	172.79	73.01	243.37	219.64	171.72	122.68	21.90	5.90	153.50
14.00	61.27	25.00	407.64	1.00	0.95	0.84	0.71	0.30	354.65	336.91	297.90	251.80	106.39	354.65	320.07	250.24	178.78	31.92	5.90	213.97
15.00	67.91	25.00	486.98	1.00	0.95	0.84	0.71	0.30	423.67	402.49	355.88	300.80	127.10	423.67	382.36	298.94	213.57	38.13	5.90	253.15
16.00	65.46	25.00	471.41	1.00	0.95	0.84	0.71	0.30	410.13	389.62	344.51	291.19	123.04	410.13	370.14	289.39	206.74	36.91	5.90	238.71
17.00	54.71	25.00	325.26	1.00	0.95	0.84	0.71	0.30	282.98	268.83	237.70	200.92	84.89	282.98	255.39	199.67	142.65	25.47	5.90	175.32
18.00	39.45	25.00	115.62	1.00	0.95	0.84	0.71	0.30	100.59	95.56	84.50	71.42	30.18	100.59	90.78	70.98	50.71	9.05	5.90	85.24
19.00	29.40	25.00	0.00	1.00	0.95	0.84	0.71	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.90	25.96
20.00	28.40	25.00	0.00	1.00	0.95	0.84	0.71	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.90	20.06
21.00	27.00	25.00	0.00	1.00	0.95	0.84	0.71	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.90	11.80
22.00	26.40	25.00	0.00	1.00	0.95	0.84	0.71	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.90	8.26
23.00	26.00	25.00	0.00	1.00	0.95	0.84	0.71	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.90	5.90
Average				1.00	0.95	0.84	0.71	0.30	195.79	186.00	164.46	139.01	58.74	195.79	176.70	138.15	98.70	17.62	5.90	116.98

TABLE A7.7: Solar and Conductive Heat Gain for SE facing window

t, h	t _o	t _i	I _{glo,vert}	SC					SHGF					Q _{SOLAR GAIN/m3}					U	QCOND.	
	°C	°C		SINGLE GLASS					SC = 1	SC = 0.95	SC = 0.84	SC = 0.71	SC = 0.3	SC = 1	SC = 0.95	SC = 0.84	SC = 0.71	SC = 0.3			
0.00	25.60	25.00	0.00	1.00	0.95	0.84	0.71	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.90	3.54
1.00	25.30	25.00	0.00	1.00	0.95	0.84	0.71	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.90	1.77
2.00	25.10	25.00	0.00	1.00	0.95	0.84	0.71	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.90	0.59
3.00	24.90	25.00	0.00	1.00	0.95	0.84	0.71	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.90	-0.59
4.00	24.70	25.00	0.00	1.00	0.95	0.84	0.71	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.90	-1.77
5.00	24.50	25.00	0.00	1.00	0.95	0.84	0.71	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.90	-2.95
6.00	25.00	25.00	0.00	1.00	0.95	0.84	0.71	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.90	0.00
7.00	28.34	25.00	312.74	1.00	0.95	0.84	0.71	0.30	272.09	258.48	228.55	193.18	81.63	272.09	245.56	191.99	137.16	24.49	5.90	19.70	
8.00	30.17	25.00	476.24	1.00	0.95	0.84	0.71	0.30	414.33	393.61	348.03	294.17	124.30	414.33	373.93	292.35	208.86	37.29	5.90	30.53	
9.00	31.80	25.00	494.18	1.00	0.95	0.84	0.71	0.30	429.94	408.44	361.15	305.25	128.98	429.94	388.02	303.36	216.73	38.69	5.90	40.10	
10.00	33.32	25.00	442.45	1.00	0.95	0.84	0.71	0.30	384.93	365.68	323.34	273.30	115.48	384.93	347.40	271.61	194.04	34.64	5.90	49.08	
11.00	36.15	25.00	332.91	1.00	0.95	0.84	0.71	0.30	289.63	275.15	243.29	205.64	86.89	289.63	261.39	204.36	146.00	26.07	5.90	65.81	
12.00	38.34	25.00	187.43	1.00	0.95	0.84	0.71	0.30	163.06	154.91	136.97	115.78	48.92	163.06	147.17	115.06	82.20	14.68	5.90	78.70	
13.00	51.02	25.00	26.79	1.00	0.95	0.84	0.71	0.30	23.31	22.15	19.58	16.55	6.99	23.31	21.04	16.45	11.75	2.10	5.90	153.50	
14.00	61.27	25.00	114.68	1.00	0.95	0.84	0.71	0.30	99.77	94.78	83.81	70.84	29.93	99.77	90.04	70.40	50.29	8.98	5.90	213.97	
15.00	67.91	25.00	107.15	1.00	0.95	0.84	0.71	0.30	93.22	88.56	78.30	66.18	27.96	93.22	84.13	65.77	46.99	8.39	5.90	253.15	
16.00	65.46	25.00	94.36	1.00	0.95	0.84	0.71	0.30	82.09	77.99	68.96	58.29	24.63	82.09	74.09	57.92	41.38	7.39	5.90	238.71	
17.00	54.71	25.00	69.84	1.00	0.95	0.84	0.71	0.30	60.76	57.72	51.04	43.14	18.23	60.76	54.84	42.87	30.63	5.47	5.90	175.32	
18.00	39.45	25.00	8.13	1.00	0.95	0.84	0.71	0.30	7.07	6.72	5.94	5.02	2.12	7.07	6.38	4.99	3.56	0.64	5.90	85.24	
19.00	29.40	25.00	0.00	1.00	0.95	0.84	0.71	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.90	25.96	
20.00	28.40	25.00	0.00	1.00	0.95	0.84	0.71	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.90	20.06	
21.00	27.00	25.00	0.00	1.00	0.95	0.84	0.71	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.90	11.80	
22.00	26.40	25.00	0.00	1.00	0.95	0.84	0.71	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.90	8.26	
23.00	26.00	25.00	0.00	1.00	0.95	0.84	0.71	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.90	5.90	
Average				1.00	0.95	0.84	0.71	0.30	193.35	183.68	162.41	137.28	58.01	193.35	174.50	136.43	97.47	17.40	5.90	116.98	

TABLE A7.8: Solar and Conductive Heat Gain for SW facing window

t, h	t _o	t _i	I _{glo,vert}	SC					SHGF					QSOLAR GAIN/m3					U	QCOND.
	°C	°C		SINGLE GLASS					SC = 1	SC = 0.95	SC = 0.84	SC = 0.71	SC = 0.3	SC = 1	SC = 0.95	SC = 0.84	SC = 0.71	SC = 0.3		
0.00	25.60	25.00	0.00	1.00	0.95	0.84	0.71	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.90	3.54
1.00	25.30	25.00	0.00	1.00	0.95	0.84	0.71	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.90	1.77
2.00	25.10	25.00	0.00	1.00	0.95	0.84	0.71	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.90	0.59
3.00	24.90	25.00	0.00	1.00	0.95	0.84	0.71	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.90	-0.59
4.00	24.70	25.00	0.00	1.00	0.95	0.84	0.71	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.90	-1.77
5.00	24.50	25.00	0.00	1.00	0.95	0.84	0.71	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.90	-2.95
6.00	25.00	25.00	0.00	1.00	0.95	0.84	0.71	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.90	0.00
7.00	28.34	25.00	64.22	1.00	0.95	0.84	0.71	0.30	55.88	53.08	46.94	39.67	16.76	55.88	50.43	39.43	28.17	5.03	5.90	19.70
8.00	30.17	25.00	91.82	1.00	0.95	0.84	0.71	0.30	79.89	75.89	67.10	56.72	23.97	79.89	72.10	56.37	40.27	7.19	5.90	30.53
9.00	31.80	25.00	105.69	1.00	0.95	0.84	0.71	0.30	91.95	87.36	77.24	65.29	27.59	91.95	82.99	64.88	46.35	8.28	5.90	40.10
10.00	33.32	25.00	113.83	1.00	0.95	0.84	0.71	0.30	99.03	94.08	83.18	70.31	29.71	99.03	89.37	69.88	49.92	8.91	5.90	49.08
11.00	36.15	25.00	3.59	1.00	0.95	0.84	0.71	0.30	3.13	2.97	2.63	2.22	0.94	3.13	2.82	2.21	1.58	0.28	5.90	65.81
12.00	38.34	25.00	164.66	1.00	0.95	0.84	0.71	0.30	143.25	136.09	120.33	101.71	42.98	143.25	129.28	101.08	72.21	12.89	5.90	78.70
13.00	51.02	25.00	313.62	1.00	0.95	0.84	0.71	0.30	272.85	259.21	229.19	193.72	81.85	272.85	246.25	192.52	137.54	24.56	5.90	153.50
14.00	61.27	25.00	429.64	1.00	0.95	0.84	0.71	0.30	373.79	355.10	313.98	265.39	112.14	373.79	337.34	263.75	188.43	33.64	5.90	213.97
15.00	67.91	25.00	491.23	1.00	0.95	0.84	0.71	0.30	427.37	406.00	358.99	303.43	128.21	427.37	385.70	301.55	215.44	38.46	5.90	253.15
16.00	65.46	25.00	485.86	1.00	0.95	0.84	0.71	0.30	422.70	401.57	355.07	300.12	126.81	422.70	381.49	298.26	213.08	38.04	5.90	238.71
17.00	54.71	25.00	348.41	1.00	0.95	0.84	0.71	0.30	303.12	287.96	254.62	215.21	90.94	303.12	273.56	213.88	152.80	27.28	5.90	175.32
18.00	39.45	25.00	130.83	1.00	0.95	0.84	0.71	0.30	113.82	108.13	95.61	80.81	34.15	113.82	102.72	80.31	57.38	10.24	5.90	85.24
19.00	29.40	25.00	0.00	1.00	0.95	0.84	0.71	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.90	25.96
20.00	28.40	25.00	0.00	1.00	0.95	0.84	0.71	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.90	20.06
21.00	27.00	25.00	0.00	1.00	0.95	0.84	0.71	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.90	11.80
22.00	26.40	25.00	0.00	1.00	0.95	0.84	0.71	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.90	8.26
23.00	26.00	25.00	0.00	1.00	0.95	0.84	0.71	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.90	5.90
Average				1.00	0.95	0.84	0.71	0.30	198.90	188.95	167.07	141.22	59.67	198.90	179.50	140.34	100.26	17.90	5.90	116.98

TABLE A8.1: Estimating cooling load by worksheet for SAMPLE 1.

CUSTOMER NAME: <u>SAMPLE 1: KIA, CHECK-IN HALL</u>		HOUSE No.: _____					
ADDRESS: <u>ACCRA</u>		TEL: _____					
CITY: _____							

SECTION A: WALL TRANSMISSION							
ITEM		WEST	EAST	NORTH	SOUTH	FLOOR	CEILING
		W_1	W_2	W_3	W_4	W_5	W_6
Total Area (m ²)	a	248	248	101	101	2771	2771
Win. Area (m ²)	b	0	0	0	0	0	0
Net Area (m ²)	c = a - b	248	248	101	101	2771	10
Load Factor (Table A)	d	0	50.43	14.89	0	8.37	3.85
Total Load (W)	e = d * c	0	12,507	1,503	0	23,192	10,668
Total Load for Section A = $\Sigma W_i = W_1 + W_2 + W_3 + W_4 + W_5 + W_6 =$							47870

SECTION B: OCCUPANCY			SECTION C: LIGHT & EQUIPMENT		
No. of People	a	800	Floor Area (m ²)	a	2771
Load Factor (Table B)	b	185	Light (W)	b = 20 * a	55,420
Total Load (W)	c = a * b	148,000	Equipment (office and Commercial space) (W)	c = 20 * a	55,420
			or		
			Equipment (known heat generation) (W)	d	
			Total Load for SECTION B(W)	e = b + c	110,840
				or	
				e = b + d	

SECTION D: INFILTRATION & VENTILATION		
Volume of Space (m ³)	a	8313
ACH	b	2.33
Inf. Vol.	c = b * a	19,369
Total Inf. Load (W)	d = c * 12.5	242112

SECTION E: SOLAR LOAD					
ITEM		WEST	EAST	NORTH	SOUTH
Area (m ²)	a	0	0	0	0
Load Factor (Table F)	b	0	0	0	0
Total Solar Load (W)	c = a * b	0	0	0	0
Total Load for Section E					
0					

SUMMATION OF SECTIONAL LOADS						
ITEM	SECT. A	SECT. B	SECT. C	SECT. D	SECT. E	ESTIMATED LOADS (W)
Total Load (W)	47,870	148,000	110,840	242,112	0	548,822

Factor of Safety (Ranges from 0-5%)	f = 1 - Range	5%
Estimated Cooling Load (W)	a	548,822
Corrected Estimated Load (W)	b = a * f	576,263
Corrected Estimated Load (Btu/h)	c = b * 3.412	

TABLE A8.2: Estimating cooling load by worksheet for SAMPLE 2

CUSTOMER NAME: KIA MEETERS & GREETERS HALL					HOUSE No.:	
ADDRESS: ACCRA					TEL:	
CITY:						

SECTION A: WALL TRANSMISSION							
ITEM		WEST	EAST	NORTH	SOUTH	FLOOR	CEILING
		W_1	W_2	W_3	W_4	W_5	W_6
Total Area (m ²)	a	0	121	109	121	1,465	488
Win. Area (m ²)	b	121	0	0	0	0	0
Net Area (m ²)	c = a - b	0	121	109	121	1,465	488
Load Factor (Table A)	d		50.43	14.89	0	0	8.37
Total Load (W)	e = d * c		6,102	1,623	0	0	4,085
Total Load for Section A = $\Sigma W_i = W_1 + W_2 + W_3 + W_4 + W_5 + W_6 =$							11,810

SECTION B: OCCUPANCY		
No. of People	a	445
Load Factor (Table B)	b	185
Total Load (W)	c = a * b	82,325

SECTION C: LIGHT & EQUIPMENT		
Floor Area (m ²)	a	1,465
Light (W)	b = 20 * a	29,300
Equipment (office and Commercial space) (W)	c = 20 * a	0
or		
Equipment (known heat generation) (W)	d	
Total Load for SECTION C (W)	e = b + c	29,300
or		
e = b + d		

SECTION E: SOLAR LOAD						
ITEM		WEST	EAST	NORTH	SOUTH	
Area (m ²)	a	121	0	0	0	
Load Factor (Table F)	b	133				Total Load for Section E
Total Solar Load (W)	c = a * b	16,093				16,093

SUMMATION OF SECTIONAL LOADS						
ITEM	SECT. A	SECT. B	SECT. C	SECT. D	SECT. E	ESTIMATED LOADS (W)
Section Load (W)	11,810	92,201	29,300	79,335	16,093	228,739

Factor of Safety (Ranges from 0-5%)	f = 1 - Range	5%
Estimated Cooling Load (W)	a	228,739
Corrected Estimated Load (W)	b = a * f	240,176
Corrected Estimated Load (Btu/h)	c = b * 3.412	